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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

JANUARY 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

HIGHLIGHTS: Most of the Nation showed above-normal precipitation in January. Many stations in the western Great Lakes area noted record amounts of snowfall. Exceptions to the above-normal precipitation included most of the Pacific Northwest, where only 40 to 60% of normal fell, and across the northern tier of States along the Canadian border west of the Lakes. New England received record precipitation in the eastern portions of the region, rain caused some flooding. Southwestern Texas saw drier than normal weather.

January stood as a quite cold month as many stations broke records for the coldest first month. From the northern Rockies to the central Plains, monthly averages dipped 13 to 16° colder than normal.

During the first week, very cold air plunged into the western United States. While low temperature records fell in the Plains, new record highs were set in the East. At the onset of the cold weather, vegetable harvest was delayed in California, but no damage was noted. As the cold air moved eastward, the southern Texas vegetable and citrus area was not so fortunate. A moderate freeze inflicted considerable damage on the 2d and 3d. Moving rapidly eastward, the cold air nipped parts of Florida, but only slight damage to tender foliage was reported. Rain or snow preceded the eastward moving cold air and became heaviest from eastern Texas to southern New England. Late in the week, heavy rain fell in southern California where the Los Angeles area measured more than 3 inches.

The drier-than-normal Pacific Northwest picked up 1 to 2 inches of precipitation during the second week. The rain (snow at higher elevations) extended southward well into California and southern Plateau. Elsewhere, a storm system formed in Missouri and moved northeastward spreading snow to its north and west and rain to the east. An additional 6 inches of snow fell on the hard-hit Chicago area. Cold weather continued to dominate most of the Nation, but warming

began in the West and southern Florida.

The Pacific storm affecting the Northwest moved southward along the California Coast and then into the Southwest during January's third week. Light to moderate rain or snow accompanied the storm. A minor disturbance added another couple of inches of snow to the southwestern Great Lakes area. A third system wound up in the lower Mississippi Valley and spread heavy rain in the South and freezing rain and then snow from the mid-Atlantic States northward. Colder-than-normal weather, but not as cold as the previous 2 weeks, persisted in the northern States and most of the Southeast. Warmer-than-normal temperatures spread from California into Alabama.

The last full week of January (the 22d-28th) brought a return of the very cold weather to nearly all the United States. Cold air plunged southward to the West and moved eastward. A low pressure system off the coast of Newfoundland, with its counter-clockwise circulation, brought warmer air into the Northeast making that area the only part of the Nation where the temperatures averaged above normal. Nearly all parts of the country received some precipitation, but most occurred in the South and the Northeast. Heavy rain in some New England areas caused local flooding. Thunderstorms rumbled over the South as the cold air encountered the warmer moist air. Nearly an inch of precipitation fell in Arizona, and another six or more inches of snow plagued the western Lakes area.

During the last three days of January, the cold air displaced the warmer air in the Lakes area and most of the Northeast. Only New England remained warmer than normal. Moisture from the Gulf spread northward into Texas and light snow fell from the central Plains to the Lakes.

# OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

JANUARY 1979

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	2 Stations	76	1	Ashland 2 SSE	1	3	Reform 2 E	12.96	Fairhope 2 NE	5.04
Alaska	Port Heiden	52	30	Allakaket	-55	30	Little Port Walter	16.97	Lonely	T
Arizona	Tumacacori Natl Mon	76	4	Hawley Lake	-36	30	Sunrise Mountain	11.52	Saint Johns	.72
Arkansas	2 Stations	69	1	2 Stations	- 7	14+	Arkansas City	12.39	Yellville	1.50
California	El Centro 2 SSW	75	12	Big Bear Lake	-25	29	Strawberry Valley	15.32	Bishop WSO AP	.45
Colorado	Trinidad FAA AP	63	12	Maybell	-60	1	Independence Pass 5 SW	8.66	Browns Park Refuge	.06
Connecticut	Norwalk Gas Plant	65	2	Wigwam Reservoir	- 9	20+	West Hartford	15.47	Bulls Bridge Dam	7.87
Delaware	3 Stations	66	2+	Georgetown 5 SW	4	4	Newark University Farm	8.86	Georgetown 5 SW	6.78
Florida	Fort Lauderdale	88	14	Smith Creek	14	3	High Springs	11.36	Miami WSMO AP	1.28
Georgia	Waycross 4 NE	81	2	Blairsville Exp Station	2	9	Clayton 1 SSW	10.53	Midville Exp Station	2.98
Hawaii	2 Stations	91	9+	Mauna Kea Obs 111.2	19	21+	Kukaiua 222	60.44	Mahana 694	.08
Idaho	Reynolds	51	12	Hamer 4 NW	-48	1	Tensed	5.46	Riggins	.41
Illinois	Mt Carmel	49	1	3 Stations	-29	12+	Centralia	5.37	Jacksonville 2 E	D1.49
Indiana	Madison Sewage Plant	61	1	Lowell	-24	15	Shoals Hiway 50 Bridge	6.01	Fort Wayne WSO AP	1.64
Iowa	2 Stations	40	22	Anamosa 1 WNW	-29	2	Donnellson	4.15	Lake Park	.42
Kansas	Syracuse 2 W	60	21	Ellsworth	-25	2	La Cygne	4.96	Richfield 10 WSW	.29
Kentucky	Pikeville 2	67	2	2 Stations	- 9	15	Somerset 2 NE	8.64	Paducah FAA AP	3.25
Louisiana	New Roads 5 ESE	79	1	Plain Dealing	- 8	3+	Saint Joseph Exp Station	17.50	Hackberry 8 SSW	3.65
Maine	Bar Harbor 3 NW	58	2	Van Buren 2	-40	12	Jonesboro	12.53	Fort Fairfield 5 NE	4.07
Maryland	Millington	68	1	Mc Henry 2 NW	- 8	4+	Conowingo Dam	10.41	Savage River Dam	4.45
Massachusetts	Framingham	62	3+	Chester 2	-17	12	Sterling	14.34	Nantucket FAA AP	4.00
Michigan	Adrian 2 NNE	40	1	Stambaugh 1 S	-37	16+	Whitefish Point	D 5.91	St Ignace-Mackinac Br	1.21
Minnesota	2 Stations	29	26+	Wright 4 NW	-45	2	New London	2.82	Duluth Harbor Station	.25
Mississippi	Gulfport Naval Center	76	18	5 Stations	5	10+	Port Gibson 1 NW	16.98	Biloxi City	5.86
Missouri	Alton	53	17	Shelbina	-30	15	Wappapello	5.70	Macon	1.41
Montana	Augusta	48	21	Wisdom	-49	7+	Summit	D 3.59	Turner	.03
Nebraska	Benkelman	48	22	Box Butte Exp Station	-35	1	Nebraska City	2.90	Sidney 6 NNW	.08
Nevada	3 Stations	64	13+	Mountain City R S	-30	31+	Mount Rose Bowl	6.76	Dyer 4 SE	.08
New Hampshire	Greenland	61	2	2 Stations	-32	12	Mount Washington	12.62	Grafton	5.05
New Jersey	2 Stations	64	2	High Point Park	- 3	19	Morris Plains 1 W	13.24	Shiloh	6.31
New Mexico	3 Stations	71	13+	Tierra Amarilla 4 NNW	-33	2	Tohatchi 1 ESE	8.63	Carlsbad FAA AP	.20
New York	N Y Central Park WSO CI	63	2	Gouverneur 3 NW	-34	19	Green Port Power House	13.35	Massena FAA AP	2.52
North Carolina	4 Stations	74	8+	Grandfather Mountain	-12	3	Rosman	D12.60	William O. Huske L & D	3.33
North Dakota	Hebron	39	22	Belcourt Keya	-40	15+	Forman 5 SSE	D 1.11	2 Stations	T
Ohio	3 Stations	62	1	2 Stations	-22	12+	Portsmouth US Grant Br	6.39	Toledo Express WSO AP	1.24
Oklahoma	Waurika	64	18	Bixby 2 E	-14	31	Durant USDA	3.73	Boise City 2 E	.33
Oregon	Ashland	64	11	Seneca	-40	1	Port Orford 5 E	12.48	Union Exp Station	.47
Pennsylvania	Derry 4 SW	65	1	2 Stations	-24	11	Bucksville	11.54	Union City Filt Plant	2.33
Puerto Rico	Dos Bocas	92	31	Adjuntas Substation	45	31+	Pico Del Este	10.47	3 Stations	.00
Rhode Island	Providence WSO AP	59	2	2 Stations	- 1	20+	North Foster 1 E	14.38	Block Island WSO AP	8.83
South Carolina	2 Stations	77	2	Caesars Head	- 3	3	Caesars Head	14.57	Charleston WSO AP	3.43
South Dakota	Belle Fourche	52	21	Deerfield 4 NW	-34	1	Castlewood	2.45	Glad Valley 2 W	T
Tennessee	Kingsport	69	1	2 Stations	- 4	9+	Rockwood 2	10.00	Dyersburg FAA AP	2.98
Texas	3 Stations	85	19+	2 Stations	-12	2	Marshall	14.32	3 Stations	.00
Utah	2 Stations	57	12+	2 Stations	-43	2+	Silver Lake Brighton	5.50	Eskdale	.25
Vermont	Dorset 1 S	56	2	Enosburg Falls	-32	19	Searsburg Station	11.83	South Hero	4.38
Virginia	Diamond Springs	72	1	Mt Lake Biological Sta	-10	3	Meadows of Dan 5 SW	8.54	Wytheville 1 S	3.45
Virgin Islands	Cruz Bay	89	30+	Alex Hamilton Field FAA	61	27+	Granard	4.88	East End	.89
Washington	Seattle Jackson Park	57	18	Newport	-30	1	Rainier Paradise R S	7.67	Ephraia FAA AP	.26
West Virginia	2 Stations	69	2+	Snowshoe	-16	3	Snowshoe	10.24	Webster Springs 1 E	3.56
Wisconsin	Hillsboro	35	28	Couderay 7 W	-49	2	Milwaukee Mt Mary College	4.12	Rice Lake	.62
Wyoming	Chugwater	48	17	Darwin Ranch	-53	1	Snake River	3.84	2 Stations	.11



# CLIMATOLOGICAL DATA

METRIC UNITS

Station	Elevation (ground)	Pressure			Temperature					Precipitation				Wind				No. of days (sunrise to sunset)																	
		Station Q	mb	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32.2° or above	Min 32.2° or lower	No. of days	Total	Average relative humidity	Total	mm	Greatest in 24 hours	With thunderstorms	Snow, ice pellets	Maximum depth on ground	Residual direction	Residual speed	Fastest mile (1.6 kilometers)		Direction	Date						
																										mm	m/s			m/s	m/s	m/s	mm	m/s	mm
ALABAMA																																			
207 BIRMINGHAM U	997.3	1030.5	7.7	-1.9	2.9	-5.9	18.3	17*	-10.6	9*	0	23	-1.3	65	14.6	19	47	13	2	1	0	0	0	0	1.0	32	13.0	27	26**	2	7	22	8.3	Possible sunshine	
181 BIRMINGHAM	999.6	1030.6	8.1	-1.7	0.2	-4.2	15.4	17*	-11.8	1*	0	27	-0.9	71	15.1	21	44	13	0	1	25	1	0	0	1.9	31	13.0	27	26**	3	5	21	7.3		
131 BIRMINGHAM	1013.5	1030.6	12.1	-2.1	7.1	-0.5	21.7	1	-11.8	3	0	18	0.0	67	13.1	11	35	12	3	1	0	0	0	0	1.3	43	17.4	29	21*	5	12	14	7.8		
99 MONTGOMERY	1018.2	1030.5	11.1	-0.8	6.0	-2.6	21.1	17	-15.8	3	0	18	-1.7	61	14.0	47	58	12	1	1	0	0	0	0	1.3	33	17.4	29	21*	3	12	14	7.8		
ALASKA																																			
38 ANCHORAGE	1706.4	1011.5	-2.0	-8.8	-5.4	5.8	4.4	16	-17.2	19	8	13	-10.0	68	4	-15	3	7	0	91	432	0	0	0	0	0	10.4	33	18	4	5	22	7.6	21	
34 ANCHORAGE	1706.4	1011.5	2.6	-4.1	0.7	1.6	9.4	22	-15.0	5	0	25	-14.4	84	16.1	-56	48	14	0	445	127	0	0	0	0	0	15.6	14	18	0	5	22	7.6	21	
39 ANCHORAGE	1706.4	1011.5	2.6	-4.1	0.7	1.6	9.4	22	-15.0	5	0	25	-14.4	84	16.1	-56	48	14	0	445	127	0	0	0	0	0	15.6	14	18	0	5	22	7.6	21	
30 BAROT	1015.2	1015.7	-16.3	-22.0	-19.2	6.8	-6.1	2	-36.1	31*	0	31	-14.4	84	4	-10	1	7	0	18	178	0	0	0	0	0	20.2	2	2	0	0	0	0	0	
12 BATES ISLAND	12	997.3	1003.1	-2.8	-9.1	-5.9	4.0	3.3	12*	-22.8	26	0	29	-8.9	80	4	7	16	0	160	152	0	0	0	0	0	23.2	9	10	4	23	7.6			
38 BETHEL	991.2	1017.3	-16.4	-24.7	-20.6	4.5	-7.8	16	-41.7	29	0	31	-11.7	74	22	-16	1	5	0	89	638	0	0	0	0	0	26.1	18	13	4	23	7.6			
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38 BETHEL	991.2	1017.3	-16.4	-24.7	-20.6	4.5	-7.8	16	-41.7	29	0	31	-11.7	74	22	-16	1	5	0	89	638	0	0	0	0	0	26.1	18	13	4	23	7.6			
38 BETHEL	991.2	1017.3	-16.4	-24.7	-20.6	4.5	-7.8	16	-41.7	29	0	31	-11.7	74	22	-16	1	5	0	89	638	0	0	0	0	0	26.1	18	13	4	23	7.6			
38 BETHEL	991.2	1017.3	-16.4	-24.7	-20.6	4.5	-7.8	16	-41.7	29	0	31	-11.7	74	22	-16	1	5	0	89	638	0	0	0	0	0	26.1	18	13	4	23	7.6			
38 BETHEL	991.2	1017.3	-16.4	-24.7	-20.6	4.5	-7.8	16	-41.7	29	0	31	-11.7	74	22	-16	1	5	0	89	638	0	0	0	0	0	26.1	18	13	4	23	7.6			
38 BETHEL	991.2	1017.3	-16.4	-24.7	-20.6	4.5	-7.8	16	-41.7	29	0	31	-11.7	74	22	-16	1	5	0	8															



# CLIMATOLOGICAL DATA

METRIC UNITS

JANUARY 1979

State and Station	Elevation (ground)		Pressure				Temperature					Precipitation					Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	Possible sunshine %																				
	m	ft	Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest		Date	Lowest	Date	Max 37.2° or above	Min 0° or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	No. of days			Snow, ice pellets	Maximum depth on ground	Resonant speed	Resonant direction	Fastest mile (1.6 kilometers)		Direction	Date												
									°C																				°C				°C		°C		mm		mm		m/s		m/s	
									°F	°F																			°F	°F			°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F
INDIANA FOOT WAYNE	261	867.5	1019.0	-4.2	-12.1	-8.1	-4.4	2.2 17	-23.9 11	0 31	-12.8	70	42	-22	30 13	0	35.4	203	3.1	26	13.4	N 17	3 5	23	8.2																			
	261	867.5	1020.0	-3.7	-11.9	-7.8	-5.5	3.9 23*	-21.1 15*	0 30	-10.0	85	82	10	36 19	0	48.5	254	2.0	26	12.5	N 14	3 5	18	7.6																			
	236	888.8	1018.1	-4.2	-11.6	-7.8	-3.6	2.8 20	-23.6 15	0 31	-11.1	77	82	22	39 24	0	116.0	533	7.4	25	13.0	N 14	2 4	25	8.5																			
IOWA DURLINGTON	211	889.4	1022.5	-7.7	-16.5	-12.1	-7.1	2.8 19	-27.8 15	0 31	-17.2	68	44	6	12 0	0	57.7	241	2.1	31	12.5	N 13	8 2	21	6.7																			
	332	979.7	1020.0	-9.3	-19.8	-13.6	-6.0	2.2 22	-27.2 15	0 31	-17.2	68	44	15	18 12	0	42.2	356	2.4	31	13.4	N 13	10 4	17	6.4																			
	332	979.7	1020.0	-9.3	-19.8	-13.6	-6.0	2.2 23	-28.0 15	0 31	-17.2	68	44	22	30 10	0	76.4	635	2.4	31	13.4	N 13	10 4	17	6.4																			
	265	888.5	1022.7	-11.2	-20.3	-15.8	-7.1	-1.1 23*	-28.9 11	0 31	-15.6	68	34	10	12 9	0	43.7	483	2.1	31	12.5	N 13	12 4	15	5.0																			
KANSAS CONCORDIA	448	967.2	1022.7	-5.7	-15.8	-10.7	-7.6	5.6 22	-28.4 31	0 31	-15.0	70	28	12	14 8	0	34.8	330	1.7	32	13.9	N 21	13 2	16	5.8																			
	787	925.5	1020.0	-5.0	-14.1	-9.6	-8.9	5.6 22	-28.4 31	0 31	-12.8	77	34	26	17 13	1	24.2	127	2.1	34	24.6	N 22	9 7	15	6.0																			
	1114	887.6	1020.5	-1.6	-14.6	-8.1	-3.6	10.0 16	-25.1 14	0 31	-13.9	69	22	13	8 0	0	46.0	229	1.6	30	16.1	N 22	9 7	14	5.9																			
	403	972.6	1023.0	-4.1	-12.9	-8.5	-8.1	7.2 22	-23.9 8	0 31	-15.0	71	40	23	12 1	1	51.3	203	2.1	31	19.2	N 23	9 4	18	6.5																			
KENTUCKY COVINGTON	285	886.5	1019.5	-1.7	-10.2	-5.9	-5.4	15.0 1	-21.1 15	0 30	-9.4	77	93	9	45 13	0	44.5	152	2.1	27	11.2	N 27	25 3	20	7.8																			
	284	886.4	1019.5	-0.6	-8.6	-4.7	-4.7	13.9 1	-19.4 15	0 30	-8.7	87	103	3	32 15	0	290	102	1.7	25	11.2	N 24	24 3	5	23																			
	145	1001.7	1020.0	-0.1	-8.2	-4.1	-4.8	12.6 1	-17.8 15	0 30	-8.3	75	97	7	14 16	0	216	76	2.0	28	11.6	N 24	2 6	21	8.1																			
LOUISIANA BATON ROUGE	20	1019.3	1021.6	10.8	1.0	5.9	-4.6	22.2 19	-8.3 9*	0 16	1.1	73	159	47	44 11	3	1	0	1.1	1	13.0	N 20	5 21	7.6																				
	20	1020.0	1021.1	11.7	2.0	6.9	-3.9	23.3 1	-9.7 3*	0 16	1.1	73	122	54	46 10	4	1	0	1.6	1	13.0	N 20	5 21	7.6																				
	77	1011.9	1021.5	7.3	-1.3	3.0	-5.6	20.6 17	-11.1 2	0 22	0.0	81	234	132	81 12	4	1	0	1.3	35	14.3	N 20	4 1	26	6.4																			
MAINE CARIBOU	196	987.1	1012.1	-4.7	-13.8	-9.2	2.6	7.2 3*	-32.8 17	0 24	-7.8	79	114	62	32 19	0	81.5	991	2.3	31	14.8	NE 25	7 7	17	7.0																			
	14	1009.8	1012.1	-0.7	-8.4	-4.6	1.2	10.0 2	-22.2 20	0 26	-7.8	79	303	217	73 20	0	184.5	813	2.3	31	14.8	NE 25	7 7	17	6.9																			
MARYLAND BALTIMORE	45	1010.2	1016.0	4.7	-3.4	0.6	-0.2	17.8 2*	-13.3 4	0 25	-6.1	64	199	125	46 14	1	145	51	24.9	30	19.7	N 18	6 6	19	7.0																			
MASSACHUSETTS BLUE HILL OBS R	192	1011.2	1012.0	2.0	-6.2	-2.1	1.2	13.9 2	-17.8 19	0 27	-5.0	71	295	190	69 18	1	229	127	3.0	29	20.1	SE 21	5 21	27	7.1																			
	301	973.2	1012.0	0.0	-7.5	-3.7	0.9	13.9 2	-18.3 19	0 29	-7.2	72	283	198	74 15	1	406	229	3.0	30	14.6	E 25	8 6	20	7.4																			
MICHIGAN ALPENA	210	869.2	1015.6	-5.8	-14.3	-10.1	-2.2	0.0 24	-27.8 11	0 31	-12.8	78	44	3	23 13	0	59.2	635	2.1	28	8.5	N 18**	3 8	20	7.7																			
	189	991.5	1016.6	-4.0	-9.4	-6.7	-3.1	2.2 24*	-20.6 15	0 31	-10.6	78	39	-10	12 0	0	33.8	152	2.7	27	13.0	N 23	4 6	24	8.4																			
	193	991.5	1016.6	-3.6	-11.3	-7.4	-3.3	2.8 24	-22.8 15	0 31	-10.7	80	44	7	25 15	0	66.3	406	2.6	28	14.9	N 23	2 6	23	8.3																			
	239	985.1	1017.4	-4.8	-11.6	-8.3	-3.6	0.0 27*	-22.8 11	0 31	-11.7	78	34	4	22 17	0	156.0	584	1.6	28	12.5	N 25	1 3	27	9.2																			
MINNESOTA INTERNATIONAL FALLS	254	889.5	1022.3	-11.4	-20.4	-16.0	-8.0	5.0 27	-33.3 11	0 31	-13.9	61	28	9	11 0	0	62.0	635	2.5	30	13.0	N 26	6 12	3	16																			
	395	970.5	1021.9	-13.7	-23.5	-18.6	-8.0	-5.0 27	-33.3 11	0 31	-13.9	61	33	16	9 11	0	62.0	635	2.5	30	13.0	N 26	6 12	3	16																			
	313	982.4	1022.7	-13.3	-25.0	-19.2	-6.3	-5.0 21*	-37.8 11	0 31	-13.9	61	33	13	11 10	0	45.2	546	2.5	30	13.0	N 26	6 12	3	16																			
MISSISSIPPI JACKSON	94	1009.5	1021.6	8.4	-1.3	3.5	-4.9	20.6 1	-10.6 9	0 23	0.0	79	358	243	143 14	2	1	0.9	34	11.2	22 20	4 3	24	6.2																				











# CLIMATOLOGICAL DATA

METRIC UNITS

JANUARY 1979

State and Station	Elevation (ground)		Pressure		Temperature										Precipitation					Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	Possible sunshine %																	
	m	ft	Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32° or above	Min 0 or lower	No. of days	Average dew point	Average relative humidity	Total	mm	Departure from normal	mm	Greatest in 24 hours	25 mm. or more	With thunderstorms	Snow, ice pellets			Total	mm	Maximum depth on ground	Resultant speed	m/s	Resultant direction	Speed	m/s	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10				
																																									No. of days		m/s	
																																									m/s		m/s	
WASHINGTON	122	1021.7	1019.4	6.3	0.1	3.2	-0.2	11.7	20	-6.7	1	0	15	-3.0	59	57	-9.0	24	10	0	13	0	1.9	8	9.4	NE	4	6	7	18	7.2	45												
SEATTLE-TACOMA	718	935.7	1028.3	-7.6	-16.3	-11.9	-6.3	1.1	20	-30.0	1	0	31	-13.3	84	28	-35	11	10	0	419	632	0.8	6	8.9	N	4	5	23	7.9	41													
SPokane	1206	878.4		-5.6	-11.6	-7.6	-3.6	7.2	20	-22.8	1	0	31	-13.3	71	120	-20.4	31	15	0	1077	1631	0.8	6	8.9	N	4	6	23	7.9	41													
STARBUCK PASS R	289			-4.8	-10.3	-7.5	-3.5	7.2	20	-23.8	1	0	31	-13.3	71	34	-15	10	14	0	386	579	0.8	29	8.9	SE	21	0	2	11.6	11													
TALLA WALLA U	321	985.4	1026.2	-4.6	-14.5	-9.6	-7.1	5.6	21	-23.5	7	0	31	-13.3	71	23	-11	17	0	333	579	0.8	29	8.9	SE	21	4	5	22	8.1	11													
YAKIMA																																												
WEST IDAHOES	4	1013.9	1016.3	28.9	22.7	25.8	1.7	32.2	28	20.6	21	1	0	20.6	76	33	-62	10	16	0	0	0	2.6	6	13.4	NE	2	8	20	3	4.9	67												
SAN JUAN PAR.																																												
WEST VIRGINIA	763	925.5	1017.9	1.2	-8.4	-3.6	-3.2	17.2	1	-20.0	3	0	29	-5.6	85	135	47	40	18	1	704	229	1.8	23	13.9	SE	14	4	2	25	8.6													
BECKLEY	284	983.4	1016.7	2.1	-6.4	-2.2	-3.6	20.6	1	-16.1	3	0	27	-5.7	72	145	7.4	33	23	0	699	177	2.2	26	15.6	SE	14	1	4	26	8.7													
CHARLESTON	594	943.8		1.4	-8.5	-3.5	-2.4	17.8	1	-21.7	9	0	30	-7.2	72	159	6.6	42	22	0	782	229	1.8	21	13.9	SE	14	1	2	28	9.0													
ELKINS	252	987.5	1018.7	0.8	-7.1	-3.2	-4.4	15.0	1	-16.1	3	0	28	-7.2	72	134	5.4	37	19	0	373	127	1.6	27	10.3	SE	14	2	5	24	8.8													
HUNTINGTON	187			-0.1	-7.5	-3.8	-4.3	15.6	1	-16.1	3	0	30	-7.2	72	103	25	26	17	0	478	152	1.6	27	10.3	SE	14	2	5	24	8.8													
PARKERSBURG U																																												
MISSOURI	208	991.5	1019.9	-9.9	-19.2	-14.5	-8.3	-1.1	28*	-31.7	16*	0	31	-17.8	72	45	18	14	13	0	610	835	2.5	30	11.2	N	24*	10	5	16	6.0	51												
GREEN BAY	198	995.9	1022.1	-9.1	-19.8	-14.4	-8.6	-2.2	28*	-31.1	16	0	31	-16.1	65	61	37	11	11	0	754	813	2.1	30	13.0	N	14	8	7	16	6.7	48												
LA CRUSSE	262	986.5	1019.9	-8.9	-18.9	-13.9	-8.5	-1.7	28*	-33.3	16*	0	31	-16.7	74	43	11	14	12	0	683	813	2.1	30	13.0	N	14	8	7	16	6.7	48												
MAISON	204	992.6	1019.4	-7.8	-14.9	-11.3	-4.3	0.0	20	-26.7	15*	0	31	-15.6	71	76	35	34	14	0	853	864	3.3	28	13.4	N	13	4	19	7.0	52													
MILWAUKEE																																												
WYDING	1627	834.7	1021.6	-6.7	-19.1	-12.9	-6.0	3.3	18	-33.9	1	0	31	-17.2	67	21	8	7	10	0	414	178	4.6	23	19.7	SE	10	9	8	14	6.4													
CASPER	1467	905.6	1018.4	-1.9	-14.4	-8.2	-3.2	6.7	28*	-27.2	1	0	31	-17.2	50	7	-5	2	7	0	170	102	4.0	30	20.6	N	1	7	9	15	6.3	67												
CHERRY	1494	826.6	1028.2	-10.7	-23.4	-17.1	-10.2	2.4	16	-35.0	31*	0	31	-14.4	78	19	7	7	8	0	404	508	0.5	18	11.2	SE	16	7	7	17	6.3	45												
LANGER	1208	878.6	1028.6	-9.2	-22.6	-15.9	-9.8	5.0	21	-34.4	5	0	31	-15.6	69	12	-5	7	10	0	272	457	2.0	29	15.6	N	22*	4	14	13	6.7	56												
SHERIDAN																																												

## HEATING DEGREE DAYS

(Base 65°F.)

JANUARY 1979

State and Station	Current season			State and Station	Current season			State and Station	Current season		
	This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month
ALABAMA				ALABAMA				ALABAMA			
BIRMINGHAM U	855			IRAMA				IRAMA			
BIRMINGHAM	839	1797	1802	POISE	1503	4101	3437	NEBRASKA			
HUNTSVILLE	974	1990	2059	LEWISTON	1485	4041	3269	GRAND ISLAND	1777	4568	3721
MOBILE	613	1061	1088	POCATELLO	1678	4838	4083	LINCOLN	1777	4499	3685
MONTGOMERY	681	1293	1607					NORFOLK	1876	4705	4097
ALASKA				ILLINOIS				NORTH PLATTE	1879	4986	3733
ANCHORAGE	1321	9356	6523	CAIRO U	1247	2628	2362	OMAHA	1676	4074	3589
ANNETTE	1055	4063	3965	CHICAGO U MAKE	1622	4028	3729	OMAHA (NORTH)	1747	4402	3879
BARROW	2091	10700	11078	CHICAGO MIDWAY	1628	3963	3511	SCOTTSBLUFF	1690	4578	3893
BARTER ISLAND	2009	10220	10222	MOLINE	1820	4371	3747	VALENTINE	1888	5223	4194
BETHLEHEM	1347	4291	7462	PEORIA	1722	4043	3987	NEVADA			
BETTELLE	2173	8479	9591	ROCKFORD	1771	4446	3967	FLY	1306	4247	4311
BRIG DELTA	1991	7563	8434	SPRINGFIELD	1627	3638	3288	FLY	1479	4359	4355
COLD BAY	921	4080	5383	INDIANA				LAS VEGAS	737	1740	1697
FAIRBANKS	2200	7930	8891	EVANSVILLE	1360	3031	2799	RENO	1113	3839	3456
GULFKANA	2140	8627	9589	FORT WAYNE	1466	3694	3568	WINNEMICCA	1221	4087	3910
HOMER	1056	9087	9589	INDIANAPOLIS	1453	3381	3278	NEW HAMPSHIRE			
JUNEAU	1370	7140	5244	SOUTH BEND	1453	3669	3678	CONCORD	1284	4387	4167
KING SALMON	1076	3212	6718	IOWA				MT WASHINGTON OBS	1782	7857	7722
KODIAK	829	4175	4921	BURLINGTON	1692	4082	3619	NEW JERSEY			
KOTZBUE	1639	7454	8803	DES MOINES	1779	4271	3927	ATLANTIC CITY U	1032	2862	2799
MC GRATH	2038	7584	8834	DURHAM	1677	4781	4238	ATLANTIC CITY U	979	2632	2502
ROME	1387	6537	7961	ST LOUIS	1895	4894	4104	NEWARK	1001	2623	2829
ST PAUL ISLAND	946	5129	5915	WATERLOO	1903	4778	4342	TRENTON U	1013	2744	2800
TALKEETNA	1536	6359	7014	KANSAS				NEW MEXICO			
UNALAKLEET				CONCORDIA	1615	3795	3329	ALBUQUERQUE	998	2641	2657
VALOZ	1229	5511	6215	ODDGE CITY	1549	3541	2994	CLAYTON	1286	3431	2994
YAKUTAT	1294	4186	5422	GOODLAND	1470	4031	3531	RUSHELL	929	2482	2386
ARIZONA				TOPEKA	1643	3729	3157	NEW YORK			
FLAGSTAFF	1307	4266	4733	WICHITA	1491	3333	2847	ALBANY	1324	4048	3911
PHOENIX	455	1097	1015	KENTUCKY				BINGHAMTON	1351	4080	4054
TUCSON	511	1269	1695	COVINGTON	1348	3193	2972	BUFFALO	1371	3813	3788
WINSLOW	1102	3088	2894	LEXINGTON	1277	2971	2808	NEW YORK U	949	2677	2494
YUMA	399	909	692	LOUISVILLE	1246	2750	2778	NEW YORK KENNEDY	978	2551	2819
ARKANSAS				LOUISIANA				NEW YORK LA GUARDIA	1071	2724	2716
FORT SMITH	1215	2478	2108	RATON ROUGE	687	1250	1094	ROCHESTER	1342	3700	3703
LITTLE ROCK	1083	2189	2108	LAKE CHARLES	636	1137	968	SYRACUSE	1315	3777	3688
NO LITTLE ROCK	1158	2307	1956	NEW ORLEANS	586	965	949	NORTH CAROLINA			
CALIFORNIA				SHREVEPORT	849	1615	1398	ASHEVILLE	951	2377	2535
RAKERSFIELD	410	1233	1404	MAINE				CARE MATTERAS A	861	1240	1500
RISHOP	931	2749	2558	CARIBOU	1534	5641	5397	CHARLOTTE	873	1910	1997
BLUE CANYON	994	3134	2939	PORTLAND	1272	4139	4134	GREENSBORO	921	2258	2334
BUREKA U	562	2769	2554	MARYLAND				RALPHIGH	793	1903	2144
BRESDEN	549	1649	1641	BALTIMORE	984	2543	2744	WILMINGTON	653	1387	1497
LONG BEACH	344	925	866	MASSACHUSETTS				NORTH OAKDA	2084	5881	5244
LOS ANGELES	316	827	902	BLUE HILL OBS R	1134	3568	3478	RISHARCK	2147	6001	5374
LOS ANGELES U	354	931	639	ROSTON	1002	3106	3081	WILLISTON	7059	9005	5337
MT SHASTA R	1051	3767	3255	WORCESTER	1225	3919	3801	OHIO			
OAKLAND	491	1620	1915	MICHIGAN				AKRON	1397	3587	3524
RED BLUFF	561	1527	1612	ALBENA	1580	4612	4654	CINCINNATI ABBE OB	1303	3047	2667
SACRAMENTO	606	1832	1678	DETROIT	1390	3590	3472	CLEVELAND	1328	3327	3434
SAN DIEGO	244	643	776	DETROIT METRO	1432	3814	3624	COLUMBUS	1346	3348	3323
SAN FRANCISCO	536	1839	1663	FLINT	1518	3991	3939	COLUMBUS	1372	3396	3274
SAN FRANCISCO U	431	1684	1681	GRAND RAPIDS	1477	4181	3809	HANSFIELD	1437	3693	3319
SANTA MARIA	505	1778	1594	HOUGHTON LAKE	1655	4838	4648	TOLEDO	1441	3831	3656
STOCKTON	605	1752	1684	LANSING	1509	4090	3878	YOUNGSTOWN	1363	3618	3614
COLORADO				MUSKEGON	1481	4174	3787	OKLAHOMA			
ALAMOSA	1827	7624	5048	SAULT STE MARIE	1733	5130	5028	OKLAHOMA CITY	1221	2615	2293
COLORADO SPRINGS	1484	4227	3640	MINNESOTA				TULSA	1293	2654	2282
DENVER	1450	3988	3388	DOULUTH	1999	5904	5518	OREGON			
GRAND JUNCTION	1493	4158	3431	INTERNATIONAL FALLS	2287	6782	6113	ASTORIA	910	3207	2892
DUFBLO	1509	3903	3196	MINNEAPOLIS	1914	4985	4730	RUSS U	1517	4722	4133
CONNECTICUT				ROCHFSTER	2004	5507	4742	EUGENE	1029	3342	2882
BRIDGEPORT	1062	2841	2919	ST CLOUD	2093	5755	5134	MEADOWS	995	3089	2857
HARTFORD	1184	3798	3800	MISSISSIPPI				RENDLETON	1533	4100	3139
DELAWARE				JACKSON	821	1602	1468	RUTLAND	1058	3246	2748
WILMINGTON	1037	2836	2827	MERIDIAN	850	1963	1947	SALEM	1038	3223	2735
DIST OF COLUMBIA				MISSOURI				SEXTON SUMMIT R	998	3698	3772
WASHINGTON DULLES	1040	2810	2924	COLUMBIA REGIONAL	1515	3317	3027	PENNSYLVANIA			
WASHINGTON NATIONAL	918	2188	2481	KANSAS CITY	1624	3592	3211	ALLENSTOWN	1142	3198	3332
FLORIDA				ST JOSEPH	1680	3788	3264	ERIE	1476	3798	3720
ARLACHICOLA U	525	876	866	ST LOUIS	1496	3263	2844	HARRISBURG	1106	2909	3066
LAYTONA BEACH	279	354	550	SPRINGFIELD	1463	3218	2747	PHILADELPHIA	999	2659	2789
FORT MYERS	127	146	264	MONTANA				PITTSBURGH	1346	3507	3414
JACKSONVILLE	525	952	868	BILLINGS	1771	5265	4132	RITTSBURGH U	1258	3185	3034
KEY WEST	17	17	34	GLASGOW	2145	6122	5180	SCRANTON	1257	3717	3967
MIAMI	84	85	122	GREAT FALLS	1808	5352	4330	WILLIAMSBDRT	1179	3276	3635
IRLANDO	230	286	442	HAVRE	2098	5890	5624	RHODE ISLAND			
PENSACOLA	592	954	1007	WELLS	1979	5682	4751	RHOV ISLAND	985	2839	2936
TALLAHASSEE	581	1092	1019	KALISPELL	2023	5972	4988	PROVIDENCE	1075	3326	3278
TAMPA	245	322	443	MILES CITY	2010	5594	4490	SOUTH CAROLINA			
WEST PALM BEACH	124	126	183	MISSOULA	1841	5586	4659	CHARLESTON	602	1141	1353
GEORGIA								CHAKLESTON U	627	1028	1177
ATHENS	804	1736	1858					COLUMBIA	664	1407	1650
ATLANTA	853	1739	1921					GRNVILLE-SRRTNBRC	851	1943	1963
AUGUSTA	723	1541	1626					SOUTH DAKOTA			
COLUMBUS	693	1324	1512					ABERDEEN	2051	5668	5028
MACON	675	1342	1447					HURDY	2006	5346	4599
ROME	897	1948	2104					PARIO CITY	1791	4360	4113
SAVANNAH	602	1078	1254					SIOUTH FALLS	1960	5176	4665

# COOLING DEGREE DAYS

(Base 65°F.)

JANUARY 1979

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	0	0	9	HONOLOULU	153	153	197	GRAND ISLAND	0	0	0	CHARLESTON	0	0	12
BIRMINGHAM	0	0	9	HONOLULU	159	159	226	LINCOLN	0	0	0	CHARLESTON U	0	0	16
HUNTSVILLE	0	0	21	KAHULUI	197	197	208	MURFOLK	0	0	0	COLUMBIA	0	0	0
MORILE	0	0	14	LIHOE	263	263	198	NORTH PLATTE	0	0	0	GRUVILLE-SPORTNBRG	0	0	0
MONTGOMERY	0	0	21					THAMA (EPPLEY)	0	0	0				
				HAAMA (NORTH)	0	0	0	SCOTTSDALE	0	0	0				
ALASKA				POCATELLO	0	0	0	VALENTINE	0	0	0	SOUTH DAKOTA			
ANCHORAGE	0	0	0									ABERDEEN	0	0	0
ANNETTE	0	0	0	ILLINOIS				NEVADA				MURON	0	0	0
BARRON	0	0	0	CAIRO U	0	0	0	ELKO	0	0	0	RAPID CITY	0	0	0
BARTER ISLAND	0	0	0	CHICAGO D MAKE	0	0	0	FLY	0	0	0	SIDOU FALLS	0	0	0
BETHEL	0	0	0	CHICAGO MIWAY	0	0	0	LAS VEGAS	0	0	0				
BEYTES	0	0	0	HOLINE	0	0	0	RENO	0	0	0	TENNESSEE			
RIG DELTA	0	0	0	PERDIA	0	0	0	WINNEMUCCA	0	0	0	BRISTOL	0	0	0
DOLO BAY	0	0	0	POCAHONTAS	0	0	0					CHATTANOOGA	0	0	0
FAIRBANKS	0	0	0	SPRINGFIELD	0	0	0					KNOXVILLE	0	0	0
GULKANA	0	0	0					NEW HAMPSHIRE				MEMPHIS	0	0	0
HOMER	0	0	0	INDIANA				CUNCO	0	0	0	NASHVILLE	0	0	0
JUNEAU	0	0	0	EVANSVILLE	0	0	0	MT WASHINGTON OBS	0	0	0	OK RIDGE	0	0	0
KING SALMON	0	0	0	FORT WAYNE	0	0	0					TEXAS			
KODIAK	0	0	0	INDIANAPOLIS	0	0	0	NEW JERSEY				ABILENE	0	0	0
KOTZEBUE	0	0	0	SOUTH BEND	0	0	0	ATLANTIC CITY	0	0	0	AMARILLO	0	0	0
MC GRATH	0	0	0					ATLANTIC CITY U	0	0	0	AUSTIN	2	2	8
MOHE	0	0	0	IOWA				NEWARK	0	0	0	BROWNSVILLE	45	45	79
ST. PAUL ISLAND	0	0	0	BURLINGTON	0	0	0	TRENTON U	0	0	0	CORPUS CHRISTI	26	26	34
TALKEETNA	0	0	0	DES MOINES	0	0	0					DALLAS FT WORTH	0	0	0
UNALAKLEET	0	0	0	OURUQUE	0	0	0	NEW MEXICO				DEL RIO	0	0	8
VALOEZ	0	0	0	SIOUX CITY	0	0	0	ALBUQUERQUE	0	0	0	EL PASO	0	0	0
YAKUTAT	0	0	0	WATERLOO	0	0	0	CLAYTON	0	0	0	GALVESTON	0	0	20
								RUSWELL	0	0	0	HOUSTON INTERCON	7	7	16
ARIZONA				KANSAS								MIDLAND	0	0	0
FLAGSTAFF	0	0	0	CONCORDIA	0	0	0	NEW YORK				PORT ARTHUR	4	4	17
PHOENIX	0	0	0	DOOGE CITY	0	0	0	ALBANY	0	0	0	SAN ANGELO	0	0	0
TUCSON	0	0	0	GOODLAND	0	0	0	BINGHAMTON	0	0	0	SAN ANTONIO	3	3	8
WINSLOW	0	0	0	TOPEKA	0	0	0	BUFFALO	0	0	0	VICTORIA	7	7	16
YUMA	0	0	10	WICHITA	0	0	0	NEW YORK U	0	0	0	WACO	0	0	0
								NEW YORK KENNEDY	0	0	0	WICHITA FALLS	0	0	0
ARKANSAS				KENTUCKY				NEW YORK LA GUARDIA	0	0	0				
FORT SMITH	0	0	0	COVINGTON	0	0	0	ROCHESTER	0	0	0	UTAH			
LITTLE ROCK	0	0	0	LEXINGTON	0	0	0	SYRACUSE	0	0	0	MILFORD	0	0	0
NO. LITTLE ROCK	0	0	0	LOUISVILLE	0	0	0					SALT LAKE CITY	0	0	0
								NORTH CAROLINA							
CALIFORNIA				LOUISIANA				ASHEVILLE	0	0	0	VERMONT			
BAKERSFIELD	0	0	0	BATON ROUGE	1	1	17	CAPE HATTERAS R	0	0	0	BURLINGTON	0	0	0
RISHOP	0	0	0	LAKE CHARLES	2	2	21	CHARLOTTE	0	0	0				
BLUE CANYON	0	0	0	NEW ORLEANS	0	0	28	GREENSBORO	0	0	0				
BUREKA U	0	0	0	SHREVEPORT	0	0	0	RALEIGH	0	0	0	VIRGINIA			
FRESNO	0	0	0					WILMINGTON	0	0	9	LYNCHBURG	0	0	0
LONG BEACH	0	0	0	MAINE								NORFOLK	0	0	0
LOS ANGELES	0	0	0	CARIBOU	0	0	0	NORTH DAKOTA				RICHMOND	0	0	0
LOS ANGELES U	0	0	10	PORTLAND	0	0	0	BISHARCK	0	0	0	ROANOKE	0	0	0
MT SHASTA R	0	0	0					FARGO	0	0	0	WALLOPS ISLAND	0	0	0
MAKLANA	0	0	0	MARYLAND				WILLISTON	0	0	0				
RED BLUFF	0	0	0	BALTIMORE	0	0	0					WASHINGTON			
SACRAMENTO	0	0	0	MASSACHUSETTS				DHID	0	0	0	OLYMPIA	0	0	0
SAN NICO	0	0	10	BLUE HILL OBS R	0	0	0	AKRON	0	0	0	QUILLAPUTE	0	0	0
SAN FRANCISCO	0	0	0	ROSTON	0	0	0	CINCINNATI ABBE NB	0	0	0	SEATTLE	0	0	0
SAN FRANCISCO U	0	0	0	WORCESTER	0	0	0	CLEVELAND	0	0	0	SEATTLE-TACOMA	0	0	0
SANTA MARIA	0	0	0					COLUMBUS	0	0	0	SPokane	0	0	0
STOCKTON	0	0	0	MICHIGAN				DAYTON	0	0	0	STAMPEDE PASS R	0	0	0
				ALPENA	0	0	0	HANSFIELD	0	0	0	HALLA HALLA U	0	0	10
COLORADO				DETROIT	0	0	0	TULEO	0	0	0	YAKIMA	0	0	0
ALAMOSA	0	0	0	DETROIT METRO	0	0	0	YOUNGSTOWN	0	0	0				
COLORADO SPRINGS	0	0	0	FLINT	0	0	0	OKLAHOMA				WEST INOIES			
DENVER	0	0	0	GRAND RAPIDS	0	0	0	OKLAHOMA CITY	0	0	0	SAN JUAN P.R.	426	426	322
GRAND JUNCTION	0	0	0	HOUGHTON LAKE	0	0	0	TULSA	0	0	0				
PUEBLO	0	0	0	LANSING	0	0	0					WEST VIRGINIA			
				MUSKEGON	0	0	0	DREGUN				BECKLEY	0	0	0
CONNECTICUT				SAULT STE MARIE	0	0	0	ASTURIA	0	0	0	CHARLESTON	0	0	0
BRIDGEPORT	0	0	0					BURNS U	0	0	0	ELKINS	0	0	0
HARTFORD	0	0	0	MINNESOTA				EUGENE	0	0	0	HUNTINGTON	0	0	0
				DULUTH	0	0	0	MEFORD	0	0	0	PARKERSBURG U	0	0	0
DELAWARE				INTERNATIONAL FALLS	0	0	0	PENOLETON	0	0	0				
WILMINGTON	0	0	0	MINNEAPOLIS	0	0	0	PORTLAND	0	0	0	WISCONSIN			
				ROCHESTER	0	0	0	SALEM	0	0	0	GREEN BAY	0	0	0
DIST. OF COLUMBIA				ST CLOUD	0	0	0	SEXTON SUMMIT R	0	0	0	LA CROSSE	0	0	0
WASHINGTON DULLES	0	0	0									HALISON	0	0	0
WASHINGTON NATIONAL	0	0	0	MISSISSIPPI				PALFIC AREA				MILWAUKEE	0	0	0
				JACKSON	0	0	14	GUAM TAGUAC R	391	391	381	WYOMING			
FLORIDA				MERIDIAN	0	0	14	JUNHSTON	376	376	368	CASPER	0	0	0
APPALACHICOLA U	1	1	18					KUROR R	516	516	502	CHEYENNE	0	0	0
DAYTONA BEACH	26	26	37	MISSOURI				KWAJALEIN	502	502	507	LANDER	0	0	0
FORT MYERS	52	52	81	COLUMBIA REGIONAL	0	0	0	MAJURU	507	507	490	SHERIDAN	0	0	0
JACKSONVILLE	1	1	25	KANSAS CITY	0	0	0	PAGO PAGO	502	502	474				
KEY WEST	154	154	193	ST JOSEPH	0	0	0	PUNAPE R	524	524	484				
MIAMI	90	90	121	ST LOUIS	0	0	0	THUK HOEN ISLAND	533	533	495				
MIAMI	26	26	52	SPRINGFIELD	0	0	0	WAKE	392	392	372				
ORLANDO	0	0	27					YAP R	490	490	477				
PENSACOLA	0	0	23	MONTANA								PENNSYLVANIA			
TALLAHASSEE	0	0	23	GILLINGS	0	0	0	ALLENTOWN	0	0	0	ERIE	0	0	0
TAMPA	28	28	60	GLASGOW	0	0	0	HARRISBURG	0	0	0	PHILADELPHIA	0	0	0
WEST PALM BEACH	59	59	98	GREAT FALLS	0	0	0	PITTSBURGH	0	0	0	SCRANTON	0	0	0
				HELENA	0	0	0	WILLIAMSPORT	0	0	0				
GEORGIA				KALISPELL	0	0	0								
ATLANTA	0	0	0	MILES CITY	0	0	0								
AUGUSTA	0	0	0	MISSOULA	0	0	0								
COLUMBUS	0	0	10					RHODE ISLAND							
MACON	0	0	10					BLOCK ISLAND	0	0	0				
ROME	0	0	0					PROVIDENCE	0	0	0				
SAVANNAH	0	0	15												



# STORM SUMMARY

JANUARY 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	†DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE					
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama	*																												
Alaska	*																												
Arizona								3				5												7	6				
Arkansas								?	?															?	?				
California	3	2			6														9	?	7	7	1						
Colorado																													
Connecticut																								1	7				
Delaware												4																	
Florida	12	6		1	6						6	C																	
Georgia																													
Hawaii																													
Idaho																								2	6				
Illinois																							2	6					
Indiana														11	5	8							5	7					
Iowa																							3	3					
Kansas																													
Kentucky																													
Louisiana										45	6																		
Maine																													
Maryland & DC																								1	5				
Massachusetts																													
Michigan										1	4														7				
Minnesota											3													2	6				
Mississippi											3														7				
Missouri																									3				
Montana	*																												
Nebraska																													
Nevada																													
New Hampshire																													
New Jersey	*																												
New Mexico	*																												
New York																													
North Carolina																													
North Dakota																													
Ohio																													
Oklahoma	*																												
Oregon																													
Pacific																													
Pennsylvania																													
Puerto Rico											4																		
Rhode Island																													
South Carolina																													
South Dakota											3																		
Tennessee																													
Texas	1	1			4																								
Utah																													
Vermont																													
Virginia																													
Virgin Islands	*																												
Washington																													
West Virginia	*																												
Wisconsin																													
Wyoming																													



# RAWINSONDE DATA

Average monthly values

JANUARY 1979

		ALBANY, NY 1074 MB						ALBUQUERQUE, NM 836 MB						AMARILLO, TX 891 MB						ANCHORAGE, AK 1007 MB						ANNETTE, AK 1013 MB					
		Temperature °C		Resultant Wind		Dew Point °C †		Temperature °C		Resultant Wind		Dew Point °C †		Temperature °C		Resultant Wind		Dew Point °C †		Temperature °C		Resultant Wind		Dew Point °C †							
Standard pressure surface mb.	No. of observations	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.						
5FC	31	86	-6.7	-9.5	29	2.6	30	1,619	-2.9	-7.8	36	2.2	31	1,095	-7.1	-9.8	30	1.5	31	45	-4.6	-9.9	02	1.7	31	37	-1.2	-3.8	09	2.0	
1000	18	202	-10.0	-13.9	26	2.1	28	1,518	-11.5	-14.8	28	2.4	31	1,048	-7.1	-9.8	30	1.5	31	167	-4.9	-8.6	03	2.5	28	157	-4.4	-5.6	08	2.4	
950	31	518	-6.7	-9.4	26	2.1	28	1,518	-11.5	-14.8	28	2.4	31	1,048	-7.1	-9.8	30	1.5	31	501	-2.5	-8.4	06	1.2	31	550	-1.6	-7.4	14	3.8	
900	31	939	-8.0	-10.2	27	7.2	30	3,010	-9.9	-16.9	28	11.5	31	3,577	-8.7	-19.5	28	12.6	31	930	-3.7	-10.5	12	3.0	31	979	-3.8	-9.0	16	4.2	
850	31	1,383	-8.4	-12.7	26	9.4	30	3,151	-9.1	-18.2	28	14.5	31	4,193	-12.4	-23.0	28	15.3	31	1,379	-6.0	-12.9	14	4.1	31	1,429	-5.4	-11.9	19	4.0	
800	31	1,854	-8.7	-14.2	26	13.2	30	1,984	-2.7	-9.8	30	2.4	31	1,946	-3.4	-11.6	29	6.5	31	1,852	-8.6	-15.2	15	5.6	31	1,909	-7.3	-13.5	22	3.5	
750	31	2,354	-10.0	-16.4	26	16.5	30	2,437	-4.8	-11.6	28	5.2	31	2,798	-4.3	-14.0	28	12.7	31	2,350	-11.4	-17.0	16	6.3	31	2,405	-6.6	-11.9	25	4.0	
700	31	2,884	-11.5	-20.2	22	20.1	30	3,010	-9.9	-16.9	28	11.5	31	3,577	-8.7	-19.5	28	12.6	31	2,876	-14.1	-22.1	19	6.0	31	2,935	-12.1	-21.8	26	5.2	
650	31	3,450	-13.8	-22.9	25	24.1	30	3,594	-9.9	-16.9	28	11.5	31	3,577	-8.7	-19.5	28	12.6	31	3,435	-17.3	-25.6	21	5.9	31	3,498	-15.6	-25.0	26	6.3	
600	29	4,055	-16.7	-25.6	26	24.3	30	4,204	-13.1	-21.5	28	14.5	31	4,193	-12.4	-23.0	28	15.3	31	4,031	-21.3	-30.0	21	5.9	31	4,097	-19.7	-28.8	27	6.9	
550	29	4,704	-20.6	-30.8	26	25.2	30	4,862	-17.3	-26.2	28	17.8	31	4,853	-16.4	-27.5	27	17.7	31	4,667	-25.9	-33.6	22	6.2	31	4,738	-24.0	-32.5	27	9.0	
500	28	5,405	-25.1	-34.6	26	28.6	30	5,570	-21.9	-31.0	27	20.5	31	5,563	-21.3	-32.4	27	20.9	31	5,350	-30.8	-38.4	23	7.2	31	5,427	-28.7	-36.7	28	10.3	
450	28	6,163	-30.0	-40.2	26	28.9	30	6,337	-27.2	-36.6	27	22.3	31	6,332	-26.9	-35.9	27	22.4	31	6,090	-36.1	-42.3	22	8.2	31	6,173	-33.8	-41.9	28	12.8	
400	28	6,992	-36.0	-45.1	27	33.2	30	7,176	-32.7	-41.9	27	24.9	31	7,171	-32.8	-42.0	27	24.2	31	6,898	-41.8	-47.0	23	9.6	31	6,990	-39.3	-46.2	29	14.5	
350	28	7,910	-42.0	-44.8	27	32.5	30	8,107	-39.3	-44.4	27	27.0	31	8,101	-39.2	-44.9	27	27.8	31	7,795	-47.1	-51.2	23	10.0	31	7,896	-45.2	-51.2	29	16.0	
300	28	8,937	-48.3	-51.1	27	33.9	30	9,145	-46.1	-51.1	27	30.3	31	9,140	-45.9	-51.1	27	34.7	31	8,801	-52.1	-56.1	23	10.3	31	8,907	-51.5	-57.0	30	18.7	
250	28	10,123	-53.1	-53.1	26	36.8	30	10,341	-51.9	-51.9	27	35.6	31	10,334	-52.4	-52.4	27	40.4	31	9,974	-54.5	-54.5	24	10.4	31	10,077	-56.1	-56.1	30	17.9	
200	28	11,550	-58.6	-58.6	26	35.7	30	11,771	-56.1	-56.1	27	36.3	31	11,757	-55.7	-55.7	27	37.4	31	11,407	-52.5	-52.5	24	10.1	31	11,499	-54.2	-54.2	30	13.5	
175	24	12,398	-56.7	-56.7	27	34.4	28	12,617	-57.4	-57.4	27	35.4	29	12,606	-56.3	-56.3	27	36.7	31	12,274	-51.0	-51.0	23	10.1	31	12,358	-53.1	-53.1	30	12.0	
150	25	13,373	-56.2	-56.2	28	33.9	28	13,590	-58.2	-58.2	27	32.7	29	13,584	-56.6	-56.6	27	34.4	31	13,279	-50.3	-50.3	24	10.6	31	13,355	-52.3	-52.3	30	11.5	
125	24	14,536	-57.1	-57.1	27	34.1	28	14,733	-59.8	-59.8	27	30.1	29	14,736	-58.5	-58.5	27	30.1	31	14,469	-50.4	-50.4	25	9.9	31	14,533	-53.0	-53.0	31	10.9	
100	22	15,945	-60.0	-60.0	27	34.8	29	16,120	-61.7	-61.7	27	24.8	29	16,128	-62.1	-62.1	27	24.5	31	15,921	-55.5	-55.5	25	10.3	31	15,969	-53.9	-53.9	31	11.3	
100	19	17,332	-60.0	-60.0	27	18.3	29	17,499	-62.3	-62.3	27	18.3	29	17,504	-62.8	-62.8	27	19.6	31	17,368	-51.8	-51.8	26	10.4	31	17,402	-54.1	-54.1	31	9.9	
70	18	18,163	-60.0	-60.0	28	15.0	29	18,326	-61.3	-61.3	28	15.0	29	18,329	-61.7	-61.7	27	18.1	31	18,235	-51.8	-51.8	27	11.3	31	18,259	-56.0	-56.0	28	12.8	
60	17	19,119	-68.6	-68.6	28	9.4	29	19,282	-60.9	-60.9	28	9.4	29	19,281	-61.6	-61.6	28	12.0	31	19,234	-52.0	-52.0	27	11.5	30	19,245	-54.6	-54.6	31	12.4	
50	15	20,247	-60.2	-60.2	28	26.4	31	20,417	-60.8	-60.8	28	26.4	31	20,414	-60.3	-60.3	27	11.0	31	20,413	-52.7	-52.7	28	13.1	30	20,411	-54.8	-54.8	31	11.3	
40	13	21,640	-60.0	-60.0	28	8.3	28	21,810	-58.9	-58.9	28	8.3	28	21,810	-58.9	-58.9	28	8.4	31	21,853	-53.4	-53.4	28	15.6	30	21,837	-55.5	-55.5	32	14.3	
30	13	23,448	-59.4	-59.4	28	4.3	27	23,628	-56.0	-56.0	28	4.3	27	23,628	-56.0	-56.0	28	9.0	30	23,717	-54.3	-54.3	29	16.9	29	23,680	-56.3	-56.3	32	15.1	
25	24	24,592	-60.0	-60.0	28	2.2	28	24,765	-57.4	-57.4	28	2.2	28	24,765	-57.4	-57.4	28	2.2	28	24,765	-57.4	-57.4	28	2.2	28	24,765	-57.4	-57.4	28	2.2	
20	6	26,019	-57.7	-57.7	27	7.5	26	26,235	-51.7	-51.7	27	7.5	26	26,229	-52.7	-52.7	28	8.5	25	26,426	-53.1	-53.1	30	15.5	25	26,274	-57.7	-57.7	33	17.7	
15	5	27,865	-53.6	-53.6	27	13.2	24	28,021	-50.8	-50.8	27	13.2	24	28,010	-50.8	-50.8	28	8.2	21	28,368	-52.7	-52.7	29	12.8	22	28,025	-57.6	-57.6	33	19.4	
10	7				8	30,729	-44.7	-44.7	20	21	30,777	-45.4	-45.4	27	11.0	13	31,215	-47.2	-47.2	10	31,235	-46.1	-46.1	36	16.2						

		ATHENS, GA 988 MB						BARRON, AK 1015 MB						BARTER ISLAND, AK 1014 MB						BETHEL, AK 998 MB						BISMARCK, ND 960 MB					
		Temperature °C		Resultant Wind		Dew Point °C †		Temperature °C		Resultant Wind		Dew Point °C †		Temperature °C		Resultant Wind		Dew Point °C †		Temperature °C		Resultant Wind		Dew Point °C †							
Standard pressure surface mb.	No. of observations	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.	Dynamic height meters	Direction tens of deg	Speed m.p.s.						
5FC	31	246	1.2	-2.9	31	1.9	30	8	-18.3	-20.5	09	2.6	30	15	-17.0	-20.4	13	1.2	31	39	-5.3	-9.0	09	3.4	31	503	-20.8	-26.6	31	2.1	
1000	18	562	2.5	-5.3	28	4.0	30	518	-9.3	-14.3	12	3.7	30	519	-8.0	-15.3	12	2.9	31	432	-1.2	-6.1	13	6.2	27	597	-21.3	-24.2	31	4.3	
950	31	1,000	2.8	-5.5	27	7.0	30	1,180	-8.6	-15.1	13	3.5	30	1,180	-8.6	-15.1	13	3.5	31	862	-3.3	-8.4	15	7.5	31	906	-17.0	-19.6	32	6.7	
900	31	1,444	-1.1	-8.1	27	10.1	30	1,380	-9.4	-15.8	16	3.5	30	1,394	-8.9	-15.8	16	2.9	31	1,332	-5.6	-10.8	16	9.0	31	1,416	-15.6	-19.3	32	8.0	
850	31	1,952	1.3	-9.8	27	12.9	30	1,887	-11.7	-18.8	15	3.7	30	1,851	-11.6	-20.4	18	2.3	31	1,786	-8.1	-13.9	17	10.1	31	1,875	-14.9	-21.1	31	9.6	
800	31	2,470	-1.2	-12.0	27	15.2	30	2,338	-14.7	-22.5	17	3.8																			

RAWINSONDE DATA

Average monthly values

JANUARY 1979

Table with columns for station names (CARTERSVILLE, GA; CENTREVILLE, AL; CHARLESTON, SC; CHATHAM, MA; CHIHUAHUA, MEXICO) and rows for various meteorological parameters like Standard pressure, No. of observations, Dynamic height, Temperature, Dew Point, Resultant Wind, etc.

Table with columns for station names (COLD BAY, AK; DAYTON, OH; DEL RIO, TX; DENVER, CO; DESERT ROCK, NV) and rows for various meteorological parameters like Standard pressure, No. of observations, Dynamic height, Temperature, Dew Point, Resultant Wind, etc.

Table with columns for station names (DODGE CITY, KS; EL PASO, TX; ELY, NV; EMPALME, MEXICO; FAIRBANKS, AK) and rows for various meteorological parameters like Standard pressure, No. of observations, Dynamic height, Temperature, Dew Point, Resultant Wind, etc.









# RAWINSONDE DATA

Average monthly values

JANUARY 1979

MONETT, MO 968 MB										NASHVILLE, TN 999 MB										NOME, AK 1006 MB										NORTH PLATTE, NE 919 MB										OAKLAND, CA 1017 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg.	Speed m.p.s.																			
			Temperature °C	Dew Point °C					Temperature °C	Dew Point °C					Temperature °C	Dew Point °C					Temperature °C	Dew Point °C					Temperature °C	Dew Point °C			Temperature °C	Dew Point °C	Temperature °C	Dew Point °C															
5FC	31	438	-6.8	-11.4	18	.3	29	180	-2.7	-6.0	27	1.3	29	120	-5.2	-10.7	10	5.8	8	847	-16.4	-20.1	31	1.8	31	6	6.9	3.8	12	1.5																			
1000	31	584	-6.9	-9.8	27	2.0	29	572	-5.6	-9.0	30	1.0	21	520	-5.2	-10.7	10	5.8	8	847	-16.4	-20.1	31	1.8	31	6	6.9	3.8	12	1.5																			
950	31	1,003	-5.4	-10.4	28	6.1	29	999	-3.1	-7.5	24	4.2	29	405	-5.2	-9.5	12	7.3	3	3.6	1,007	-13.7	-16.9	32	3.6	31	1,007	5.1	-2.2	24	9																		
850	31	1,451	-5.4	-12.4	28	8.1	29	1,452	-2.9	-9.4	26	9.2	29	1,322	-7.8	-13.6	13	6.1	31	1,445	-10.7	-15.6	32	7.0	31	1,472	3.2	-7.4	24	2.8																			
800	31	1,927	-5.6	-12.7	28	10.3	29	1,932	-3.0	-10.8	27	11.4	29	1,792	-9.7	-16.5	14	6.7	31	1,913	-9.6	-16.7	31	9.7	31	1,962	1.8	-10.0	27	2.2																			
750	31	2,433	-6.1	-14.5	28	12.6	29	2,441	-4.9	-12.5	27	13.9	29	2,288	-12.5	-19.5	15	6.8	31	2,411	-10.5	-17.6	32	11.0	31	2,478	-1.9	-13.0	28	4.4																			
700	31	2,971	-6.2	-17.6	21	14.4	29	2,982	-6.7	-17.0	27	16.8	28	2,812	-15.6	-23.6	16	6.7	31	2,940	-12.6	-19.0	31	11.6	31	3,023	-4.8	-13.2	29	5.4																			
650	31	3,544	-11.1	-21.5	27	16.6	29	3,558	-9.4	-19.6	27	19.3	29	3,267	-19.2	-26.3	16	6.8	31	3,504	-15.1	-21.8	30	12.7	31	3,603	-8.4	-21.6	30	6.2																			
600	31	4,154	-14.9	-23.7	17	17.9	29	4,173	-12.7	-22.3	27	21.6	29	3,950	-23.1	-29.9	16	6.4	31	4,106	-18.2	-26.0	30	14.3	30	4,221	-12.6	-25.2	30	7.8																			
550	31	4,807	-19.1	-29.4	27	20.9	29	4,832	-16.5	-27.4	26	24.0	29	4,592	-27.5	-33.4	17	6.6	31	4,750	-22.2	-30.1	29	16.6	30	4,871	-17.2	-27.8	30	8.6																			
500	31	5,511	-23.2	-33.8	27	24.3	29	5,543	-20.9	-30.9	26	27.4	29	5,269	-32.5	-37.8	18	7.0	31	5,445	-26.7	-34.8	28	18.5	30	5,587	-22.1	-31.7	30	11.1																			
450	31	6,275	-28.2	-37.8	27	28.4	28	6,311	-24.2	-35.7	26	30.5	28	6,008	-36.9	-40.2	19	8.3	31	6,198	-31.9	-39.8	28	20.9	30	6,355	-27.0	-37.3	30	13.6																			
400	31	7,110	-34.0	-42.2	27	30.0	28	7,152	-32.1	-40.8	26	33.0	28	6,814	-42.5	-44.3	19	9.6	31	7,020	-37.7	-42.8	28	22.8	30	7,194	-32.7	-42.8	30	15.7																			
350	31	8,035	-40.2	-44.6	27	33.0	27	8,078	-38.7	-43.7	26	36.0	28	7,707	-48.3	-51.9	19	9.8	30	7,937	-43.6	-47.9	28	24.1	28	8,119	-39.5	-46.1	31	13.3																			
300	31	9,070	-46.5	-48.5	26	35.8	25	9,118	-45.9	-47.9	26	40.3	28	8,709	-52.8	-56.8	19	10.9	30	8,957	-49.9	-54.9	28	27.8	27	9,155	-47.1	-51.7	30	16.0																			
250	31	10,266	-51.6	-52.6	27	38.9	25	10,316	-51.8	-52.6	26	43.9	28	9,878	-55.3	-59.3	19	10.0	30	10,135	-54.4	-59.4	27	27.2	27	10,334	-54.2	-59.4	30	17.6																			
200	31	11,700	-55.0	-54.6	26	39.6	23	11,755	-56.3	-56.3	26	44.6	27	11,303	-53.1	-57.1	20	10.8	30	11,560	-54.8	-59.8	27	24.5	27	11,764	-56.6	-59.8	29	20.9																			
175	31	12,552	-55.8	-56.8	26	38.4	26	12,600	-57.6	-57.6	26	42.4	27	12,167	-52.5	-57.5	20	10.6	30	12,415	-54.4	-59.4	27	24.5	27	12,612	-56.4	-59.8	28	22.0																			
150	31	13,532	-56.2	-57.2	27	35.0	23	13,574	-57.9	-57.9	26	39.5	27	13,116	-51.3	-57.3	21	11.9	30	13,402	-54.7	-59.7	27	21.9	27	13,590	-56.6	-59.8	28	19.0																			
125	31	14,687	-57.7	-57.7	26	31.2	23	14,720	-59.5	-59.5	26	35.2	27	14,354	-51.3	-57.3	21	12.8	30	14,568	-55.4	-59.4	27	19.8	27	14,744	-58.0	-59.8	28	16.2																			
100	31	16,087	-60.3	-60.3	27	25.2	22	16,102	-62.0	-62.0	26	28.6	27	15,802	-51.6	-57.6	22	13.4	30	15,988	-57.0	-59.0	28	17.7	26	16,143	-59.7	-59.8	28	13.3																			
80	31	17,472	-61.2	-61.2	27	21.1	19	17,475	-63.0	-63.0	26	23.4	27	17,248	-52.1	-58.1	23	16.3	30	17,398	-57.5	-59.5	28	15.7	26	17,536	-59.7	-59.7	29	9.2																			
70	31	18,300	-61.2	-61.2	27	17.4	19	18,289	-62.5	-62.5	26	20.5	27	18,113	-52.4	-58.4	24	17.5	30	18,242	-58.3	-59.3	29	13.6	25	18,373	-59.8	-59.8	29	8.4																			
60	31	19,262	-60.5	-60.5	27	15.5	18	19,250	-60.9	-60.9	26	17.6	26	19,107	-52.5	-58.5	24	18.0	30	19,210	-58.6	-59.6	29	13.0	25	19,339	-58.9	-58.9	31	4.9																			
50	31	20,398	-60.1	-60.1	27	14.4	18	20,381	-60.9	-60.9	26	14.4	26	20,284	-53.4	-59.4	25	20.8	30	20,355	-58.0	-59.0	29	10.7	25	20,485	-58.6	-58.6	34	3.1																			
40	31	21,797	-58.7	-58.7	28	12.1	17	21,772	-58.6	-58.6	27	11.2	25	21,728	-53.8	-59.8	25	22.6	30	21,759	-58.0	-59.0	30	9.3	25	21,891	-57.7	-57.7	32	3.5																			
30	31	23,622	-56.1	-56.1	27	11.4	16	23,582	-56.0	-56.0	27	13.6	22	23,594	-53.5	-59.5	26	26.6	30	23,574	-57.1	-59.1	29	9.5	25	23,711	-56.5	-56.5	34	5.6																			
25	31	24,784	-55.1	-55.1	27	12.5	15	24,747	-54.7	-54.7	27	13.4	19	24,783	-54.0	-59.0	27	26.7	29	24,723	-56.7	-59.7	29	11.0	24	24,871	-54.9	-54.9	35	6.4																			
20	31	26,222	-52.6	-52.6	27	13.2	13	26,177	-52.7	-52.7	28	9.9	18	26,149	-53.4	-59.4	26	26.4	29	26,129	-52.9	-59.9	29	29.4	24	26,329	-52.9	-52.9	35	9.3																			
15	31	28,069	-50.3	-50.3	27	19.8	10	28,028	-51.2	-51.2	28	5.5	28	28,549	-50.4	-56.4	26	26.7	29	28,791	-52.7	-59.7	28	15.0	18	28,208	-50.5	-50.5	35	6.4																			
10						6	30,555	-52.7	-52.7									15	30,660	-48.7	-50.7					10	16.5	30,877	-45.8	-45.8	35	10.1																	

OMAHA, NE 972 MB										PAGO PAGO, AMERICAN SAMOA 1007 MB										PEORIA, IL 996 MB										PITTSBURGH, PA 973 MB										PONAPE, CAROLINE IS. 1004 MB									
5FC	31	403	-14.9	-18.0	32	2.2	31	5	28.9	24.6	09	1.7	31	200	-13.4	-17.0	31	1.7	31	359	-6.3	-9.3	25	2.3	31	39	28.1	24.0	06	3.2																			
1000	31	573	-13.5	-15.6	33	4.1	31	65	27.4	23.3	09	1.6	31	249	-19.6	-22.8	30	2.5	31	549	-7.1	-8.8	24	4.0	31	78	27.3	23.3	06	3.6																			
950	31	986	-12.0	-16.1	32	7.0	31	519	23.7	21.2	08	1.0	31	557	-11.5	-14.2	31	5.4	30	962	-7.8	-9.4	26	7.6	31	531	23.5	21.2	07	7.3																			
900	31	1,426	-10.5	-17.9	31	8.5	31	991	20.6	18.2	09	1.4	31	1,415	-9.3	-16.0	29	8.4	31	1,407	-7.9	-9.0	26	7.6	31	1,003	20.3	17.8	07	7.7																			
850	31	1,893	-10.3	-18.6	30	9.2	31	2,003	15.5	11.9	23	6.3	31	1,884	-9.5	-17.3	29	10.0	31	1,878	-8.3	-12.1	27	12.1	31	2,014	16.3	8.1	08	4.3																			
800	31	2,389	-11.3	-18.4	30	10.6	31	2,549	13.1	6.9	24	1.5	31	2,382	-10.2	-19.3	28	12.3	31	2,379	-9.3	-14.5	27	14.1	31	2,562	14.3	1.7	09	3.5																			
750	31	2,917	-13.0	-19.1	29	12.6	31	3,128	10.4	2.6	23	1.9	31	2,912	-12.1	-21.8	27	14.3	31	2,911	-10.9	-17.1	27	16.2	31	3,142	11.4	-3.0	09	3.5																			
700	31	3,479	-15.5	-22.1	29	14.5	31	3,742	7.6	-1.5	23	1.9	31	3,477	-14.4	-24.2	27	16.1	31	3,478	-13.3	-21.8	27	18.5	31	3,757	7.9	-9.3	08	4.6																			
650	31	4,080	-18.0	-25.4	28	16.4	31	4,409	4.1	-4.4	23	1.8	31	4,080	-17.6	-26.8	27	18.0	31	4,081	-16.3	-25.1	27	21.0	31	4,413	4.4	-13.6	08	5.9																			
600	31	4,725	-22.0	-29.4	28	16.9	31	5,102	1.5	-9.4	23	1.9	31	4,726	-21.7	-30.7	27	19.5	31	4,734	-20.0	-29.2	27	23.5	31	5,117	1.5	-16.8	09	7.2																			
550	31	5,420	-26.3	-34.5	28	19.7	31	5,862	-3.5	-14.7	22	1.7	31	5,422	-26.2	-34.6	27	21.9	30	5,440	-24.1	-33.4	27	26.5	31	5,875	-4.2	-21.9	08	8.8																			
500	31	6,174	-31.5	-39.9	28	20.6	31	6,688	-8.1	-20.3	20	1.8	31	6,176	-31.0	-39.3	26	24.3	30	6,202	-29.0	-37.3	27	27.9	31	6,697	-9.5	-25.9	09	9.1																			







# RAWINSONDE DATA

Average monthly values

JANUARY 1979

		WASHINGTON DULLES INT. AP 1006 M8						WAYCROSS, GA 1014 M8						WEST PALM BEACH, FL 1017 M8						WINNEMUCCA, NV 869 M8						WINSLOW, AZ 850 M8					
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind								
					Direction true of deg.	Speed m.p.s.					Direction true of deg.	Speed m.p.s.					Direction true of deg.	Speed m.p.s.					Direction true of deg.	Speed m.p.s.							
5FC	31	85	-2.6	-7.2	31	2.5	31	4.4	5.2	1.4	31	1.0	31	17	15.0	10.6	06	.2	30	1,312	-6.5	-10.7	08	.5	30	1,487	-4.0	-5.6	21	1.3	
1000	18	209	-5.1	-10.9	30	2.2	29	164	5.8	.9	34	1.2	31	154	16.9	10.6	09	.8													
950	31	533	-3.8	-8.4	29	6.2	31	574	7.3	.2	25	3.1	31	590	14.9	7.5	17	1.4													
900	31	960	-3.9	-9.0	27	9.3	31	1,019	6.9	-1.7	25	5.8	31	1,047	12.9	4.6	22	2.7													
850	31	1,412	-3.0	-10.4	28	12.3	31	1,488	5.7	-8.1	26	9.2	31	1,526	10.7	3.5	24	5.4	30	1,481	-4.1	-8.9	09	.9	17	1,527	-4.2	-9.8	21	.5	
800	31	1,891	-4.1	-10.6	28	13.3	31	1,984	7.7	-8.7	26	11.4	31	2,031	10.0	-1.6	25	7.8	30	1,960	-4.5	-10.9	22	1.1	30	1,972	-1.9	-9.1	24	2.9	
750	31	2,399	-5.7	-12.6	27	14.6	31	2,500	3.2	-11.4	26	14.7	31	2,566	8.2	-6.2	25	10.3	30	2,466	-6.4	-13.3	26	3.5	30	2,484	-3.6	-11.6	26	5.7	
700	31	2,938	-7.4	-15.5	27	16.3	31	3,066	.5	-13.9	26	17.3	31	3,133	5.4	-10.5	26	12.5	30	3,002	-8.6	-17.3	28	5.6	30	3,027	-6.0	-15.1	27	7.5	
650	31	3,512	-10.4	-18.6	26	18.0	31	3,657	-2.0	-16.8	26	20.7	31	3,735	2.2	-13.2	26	14.0	29	3,577	-11.5	-18.5	28	7.2	30	3,604	-9.2	-18.0	27	9.8	
600	31	4,125	-13.6	-21.7	26	19.6	31	4,290	-5.5	-20.7	26	23.5	31	4,377	-1.3	-17.6	26	16.1	29	4,188	-14.7	-22.4	30	9.5	30	4,219	-12.8	-23.3	28	12.1	
550	31	4,782	-17.7	-25.7	26	22.0	31	4,967	-9.6	-24.3	26	25.9	31	5,065	-5.5	-23.2	26	18.1	29	4,841	-18.9	-26.5	30	10.4	30	4,876	-16.5	-27.1	28	15.3	
500	31	5,489	-22.3	-31.6	26	24.4	31	5,696	-14.5	-27.7	26	29.5	31	5,805	-10.6	-26.0	26	20.1	29	5,544	-23.8	-31.0	30	11.2	30	5,589	-21.2	-31.6	28	17.7	
450	31	6,255	-27.3	-35.9	26	27.5	31	6,487	-19.6	-31.5	26	31.1	31	6,607	-16.0	-30.1	26	22.5	29	6,306	-29.3	-36.3	29	13.0	30	6,359	-26.3	-37.2	28	20.2	
400	31	7,094	-33.1	-40.4	26	29.9	31	7,352	-25.5	-36.4	26	34.5	31	7,484	-22.0	-35.3	26	24.7	29	7,136	-35.6	-41.2	29	15.4	30	7,200	-32.5	-41.5	28	22.9	
350	31	8,023	-39.3	-41.8	26	32.5	31	8,310	-32.3	-42.5	26	36.7	30	8,453	-29.5	-41.2	26	26.8	29	8,056	-41.9	-41.9	29	18.2	30	8,131	-39.3	-44.5	28	25.8	
300	31	9,061	-46.0		26	36.4	30	9,370	-40.7	-47.6	26	39.1	30	9,532	-37.7		26	28.1	29	9,082	-48.8		29	18.9	30	9,168	-46.2		28	30.0	
250	31	10,251	-51.7		26	40.5	30	10,586	-50.2		26	43.2	30	10,763	-47.7		26	31.9	29	10,261	-55.2		29	20.8	30	10,352	-52.6		28	33.7	
200	31	11,687	-56.4		26	43.6	29	12,015	-58.5		26	45.4	30	12,204	-57.0		26	34.2	28	11,674	-57.6		29	22.3	30	11,788	-56.6		27	38.0	
175	31	12,535	-56.6		26	41.5	29	12,849	-60.9		26	45.7	30	13,003	-60.3		26	34.8	28	12,519	-56.7		29	21.1	30	12,635	-57.1		28	35.4	
150	30	13,512	-56.4		26	36.3	29	13,805	-62.0		26	44.7	30	13,995	-64.2		25	35.6	28	13,498	-56.3		28	18.5	29	13,609	-57.5		28	31.2	
125	29	14,663	-58.2		26	34.2	29	14,926	-64.9		26	38.5	29	15,102	-68.8		25	32.4	28	14,654	-57.1		29	16.8	29	14,757	-59.2		27	26.9	
100	28	16,059	-60.5		26	28.6	29	16,274	-68.3		26	31.2	29	16,425	-72.4		26	26.3	28	16,061	-58.3		29	13.7	29	16,145	-62.2		27	20.8	
80	25	17,440	-61.5		26	24.5	29	17,607	-69.3		26	23.6	28	17,734	-73.9		26	16.9	26	17,460	-58.5		30	9.8	29	17,519	-63.0		28	15.3	
70	25	18,269	-61.0		26	22.8	27	18,407	-66.9		26	19.5	28	18,517	-71.6		26	12.4	26	18,300	-58.6		30	8.2	28	18,346	-61.6		28	11.8	
60	23	19,220	-60.9		28	17.5	27	19,342	-65.5		26	14.9	28	19,436	-67.9		25	7.9	26	19,269	-58.0		30	7.4	27	19,302	-60.7		29	8.8	
50	22	20,354	-59.8		26	16.9	26	20,455	-63.2		26	12.6	28	20,543	-63.8		26	4.5	25	20,420	-58.3		33	5.5	26	20,438	-59.8		29	6.3	
40	22	21,751	-59.9		26	18.6	26	21,833	-60.4		26	7.9	28	21,926	-59.2		26	1.7	23	21,824	-57.7		34	5.4	26	21,836	-58.5		29	4.5	
30	22	23,565	-56.1		27	14.0	21	23,636	-56.2		29	5.5	27	23,747	-54.2		33	1.0	21	23,661	-56.3		02	4.5	25	23,659	-55.9		26	3.7	
25	20	24,735	-54.5		26	14.9	22	24,796	-53.9		30	4.1	26	24,920	-51.6		26	.7	16	24,839	-55.6		02	5.0	23	24,816	-54.9		29	3.0	
20	19	26,192	-51.9		26	19.8	21	26,251	-50.6		28	3.0	24	26,374	-47.4		19	1.9	15	26,299	-53.5		04	7.5	19	26,263	-52.1		29	2.1	
15	19	28,064	-49.9		27	23.7	21	28,138	-48.0		26	6.2	21	28,297	-43.7		19	5.2	12	28,258	-50.7		05	17.6	15	28,142	-50.2		32	1.7	
10	10	30,613	-49.9		7		13	30,872	-45.2				12	31,093	-41.6				11	30,979	-45.7										

		YAKUTAT, AK 1013 M8						YAP, CAROLINE IS. 1010 M8					
5FC	31	12	-5.2	-7.4	11	.7	31	14	27.5	23.6	06	3.5	
1000	24	158	-1.1	-5.2	02	2.6	31	97	26.5	23.0	06	4.8	
950	31	523	-4.9	-7.0	13	2.1	31	549	23.2	20.5	06	8.6	
900	31	953	-3.2	-6.9	15	2.5	31	1,020	20.2	16.9	06	9.2	
850	31	1,403	-5.4	-13.4	16	2.6	31	1,513	17.5	12.5	07	8.8	
800	31	1,677	-7.7	-15.5	17	2.6	31	2,030	15.9	6.3	07	7.9	
750	31	2,377	-10.3	-18.2	20	2.7	31	2,578	14.0	.4	07	7.5	
700	31	2,906	-13.6	-22.3	22	3.4	31	3,157	11.4	-4.4	07	6.9	
650	31	3,466	-17.1	-27.6	24	3.7	31	3,773	8.1	-8.1	08	6.9	
600	31	4,061	-20.9	-29.7	24	5.1	31	4,428	4.0	-12.8	09	7.3	
550	31	4,699	-25.3	-33.2	25	5.8	31	5,130	-1.1	-16.6	09	6.6	
500	31	5,384	-30.0	-38.0	25	6.2	31	5,887	-4.6	-22.4	09	6.9	
450	31	6,127	-34.9	-42.6	26	7.5	31	6,709	-9.0	-27.4	09	6.6	
400	31	6,939	-40.8	-44.9	26	9.0	31	7,612	-14.5	-31.7	10	6.2	
350	31	7,839	-46.4		27	9.5	31	8,613	-21.5	-38.2	08	6.1	
300	31	8,849	-51.3		27	11.2	31	9,727	-30.3	-45.4	08	4.8	
250	31	10,023	-55.1		28	10.0	31	10,996	-40.5	-52.9	10	3.8	
200	31	11,452	-53.5		27	10.2	31	12,477	-52.8		13	4.9	
175	31	12,315	-52.0		27	9.6	31	13,325	-59.7		14	7.1	
150	31	13,316	-51.3		28	9.1	31	14,271	-67.4		13	9.7	
125	31	14,499	-51.9		28	10.1	31	15,350	-75.0		12	11.9	
100	31	15,944	-53.0		28	10.0	31	16,620	-82.1		10	9.8	
80	31	17,383	-53.0		29	10.2	31	17,866	-81.1		10	5.0	
70	31	18,244	-52.9		29	10.9	31	18,628	-75.4		06	1.1	
60	31	19,239	-52.9		29	11.7	31	19,536	-69.4		29	3.9	
50	31	20,414	-53.5		30	13.3	31	20,638	-64.7		27	5.3	
40	31	21,845	-54.8		30	16.1	31	22,014	-60.4		27	1.0	
30	30	23,665	-56.4		31	18.8	31	23,830	-55.3		10	8.8	
25	28	24,830	-57.3		31	19.4	31	24,999	-53.4		04	15.0	
20	28	26,239	-57.9		31	20.4	26	26,447	-50.7		09	20.0	
15	25	28,097	-57.6		32	20.0	25	28,346	-46.9		09	18.9	
10	16	31,134	-50.5		36	10.1	17	31,087	-41.5		10	19.9	

# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

JANUARY 1979

Sun's zenith distance										Sun's zenith distance									
Date	A.M.				•	P.M.				Date	A.M.				•	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MAUNA LOA OBSERVATORY, HI																			
Air mass										Air mass									
	3.34	2.67	2.01	1.34	•	1.34	2.01	2.67	3.34										
17----	1.30	1.37	1.47	1.59	----	----	----	----	----										
18----	1.35	1.41	1.49	1.58	1.66	1.53	1.40	1.26	1.16										
19----	1.32	1.38	1.45	1.56	1.63	1.53	1.41	1.31	1.21										
20----	1.28	1.34	1.41	1.55	1.63	----	----	----	----										
25----	1.27	1.36	1.43	1.54	1.63	1.50	1.40	1.30	1.22										
26----	1.32	1.40	1.49	1.59	1.69	1.59	1.47	1.38	1.29										
27----	1.18	1.31	1.42	1.55	1.67	----	----	----	----										
31----	1.26	1.33	1.43	1.53	----	----	----	----	----										
Average	1.29	1.36	1.45	1.56	1.66	1.54	1.42	1.31	1.22										

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	-74	-70	-61	-67	-73	-79	-79	-36	-9	-6	-57	-45	-49	-51	-63	-45	-48	-44	-58	-54	-57	-50	-47	-47	-33	-64	-25	-73	-64	-62	-59	-53

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for timea of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Cust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times \text{°C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DECREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DECREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ‡ No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, C.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygriators. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 C.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable	N	Sand
BN	Blowing Sand	CF	Ground Fog	K	Smoke	S	Slight Haze-indeterminable
D	Duat	H	Haze	KI	Intensae Smoke		
DI	Intensae Duat	HI	Intensae Haze	KM	Moderate Smoke		

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of aod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.



## DESCRIPTION OF CHARTS

CHART I. A. NORMAL DAILY AVERAGE TEMPERATURE ( $^{\circ}$ F. 1941-70) FOR MONTH. B. TEMPERATURE DEPARTURE FROM 30-YEAR MEAN ( $^{\circ}$ F. 1941-70) FOR MONTH. Chart I-A is reproduced from monthly normals maps prepared at the National Climatic Center. Chart I-B is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin," a publication of Environmental Data Service.

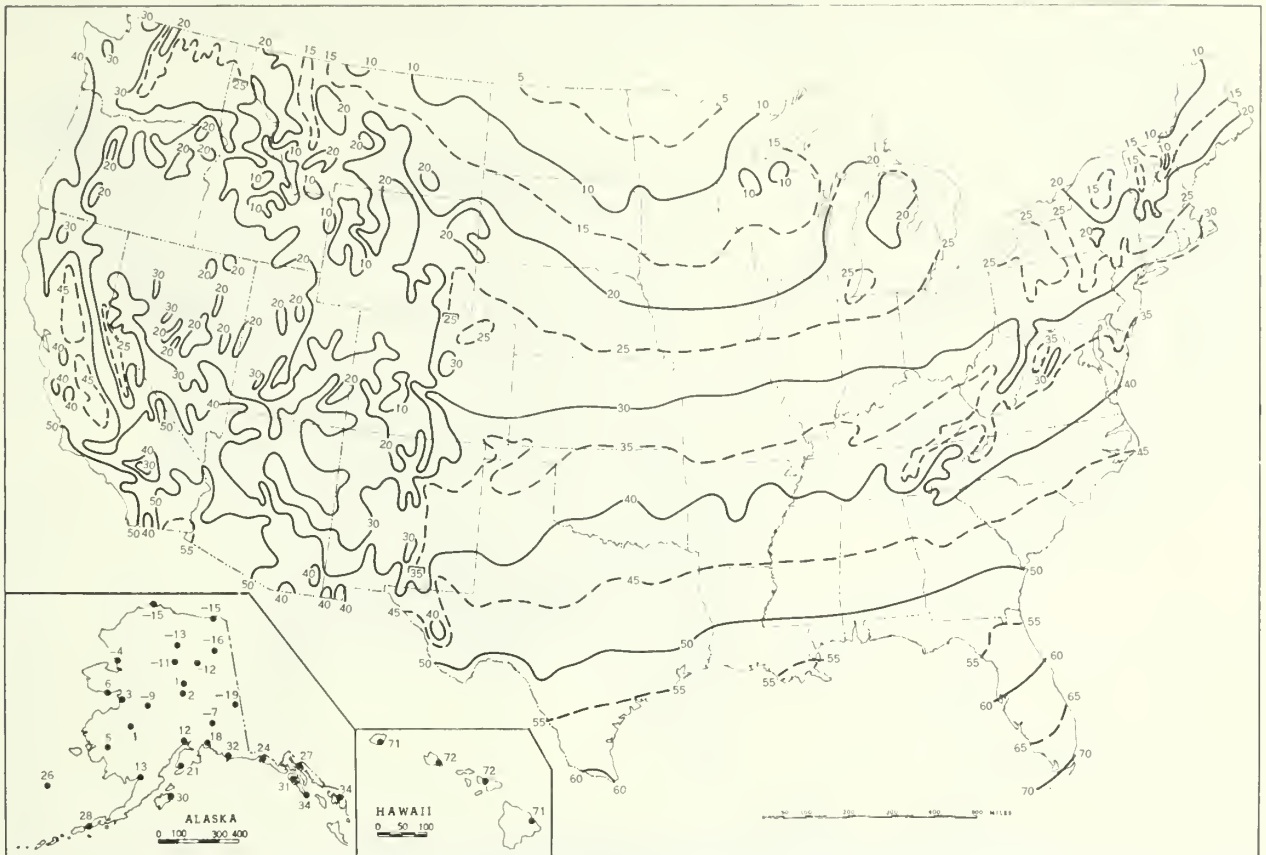
CHART II. A. TOTAL PRECIPITATION. Chart II. A. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

CHART II. B. PERCENTAGE OF NORMAL PRECIPITATION. Chart II. B. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

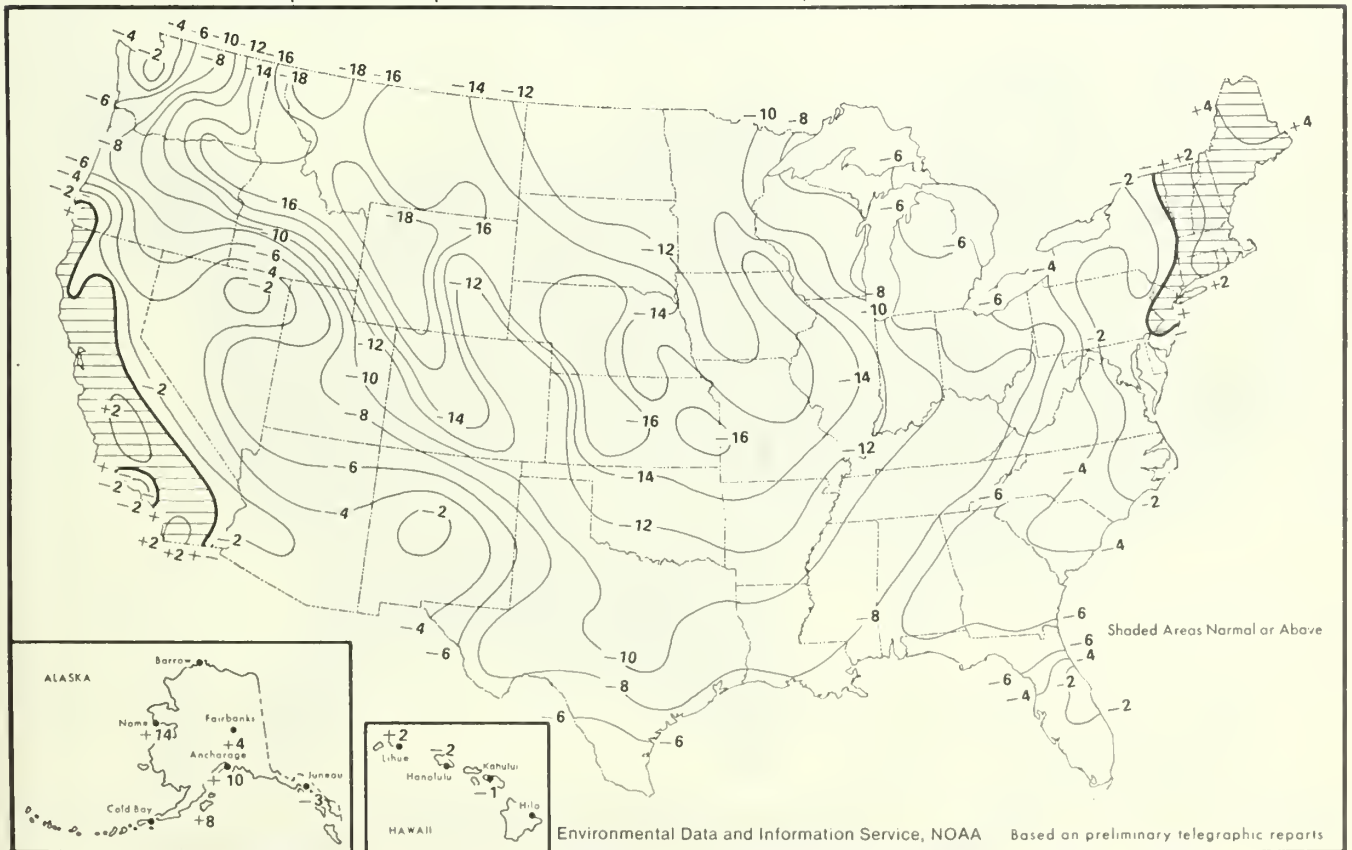
CHART III. TRACKS OF CENTERS OF ANTICYCLONES AT SEA LEVEL.

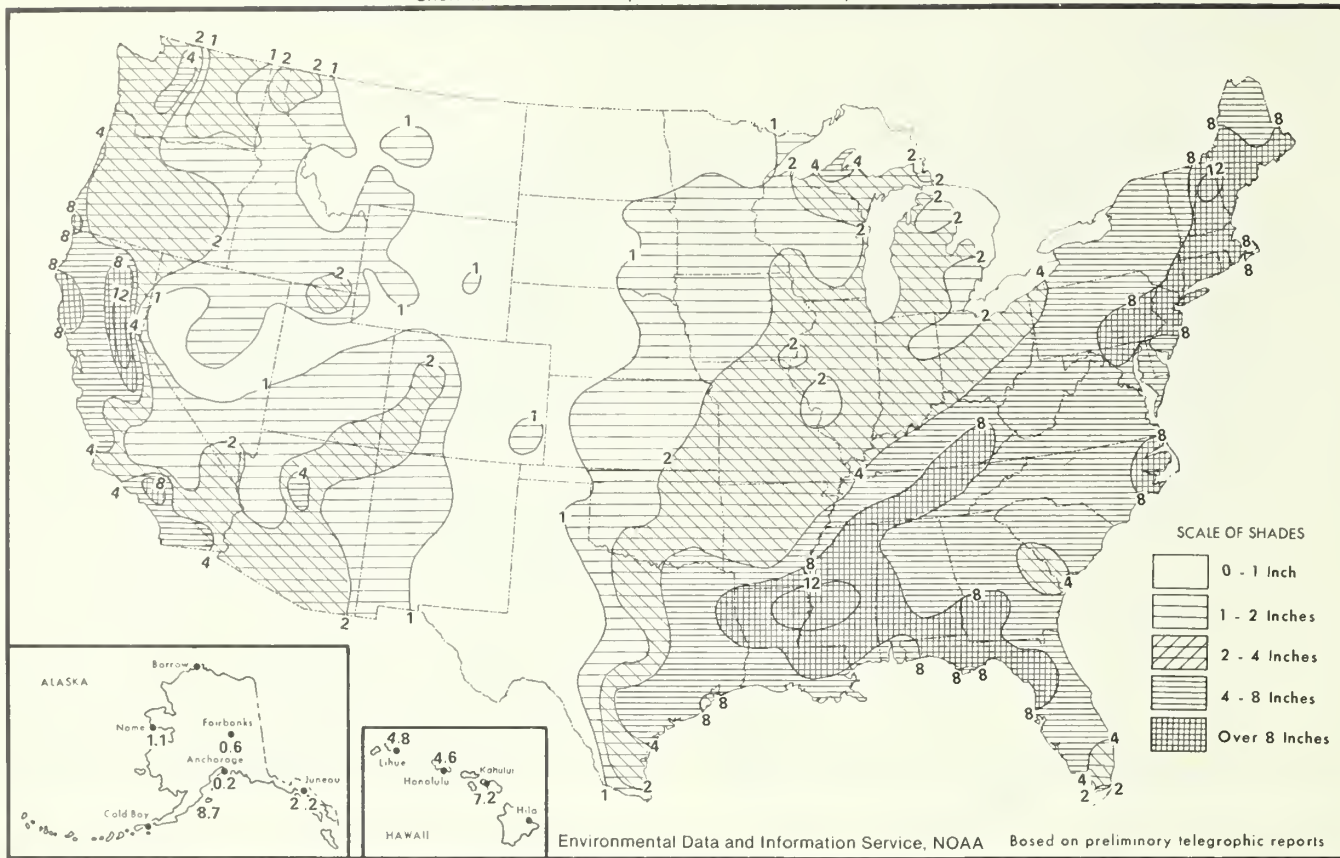
CHART IV. TRACKS OF CENTERS OF CYCLONES AT SEA LEVEL. Centers which can be identified for 24 hours or more are tracked in these charts. Semi-permanent features such as the Great Basin and Pacific Highs and Colorado and Mexico Lows are not shown. The 7:00 a.m., e.s.t., positions are shown by open circles, with the intermediate positions at 6-hour intervals shown by X's. The date is given above the circle and the central pressure to whole millibars below. A dashed track indicates a regeneration rather than actual movement to the next position. Squares indicate position of stationary center for period shown beside it.

Chart I. A. Normal Daily Average Temperature (°F. 1941-70), January



B. Temperature Departure from 30 - Year Mean (°F 1941-70), January 1979





B. Percentage of Normal Precipitation, January 1979

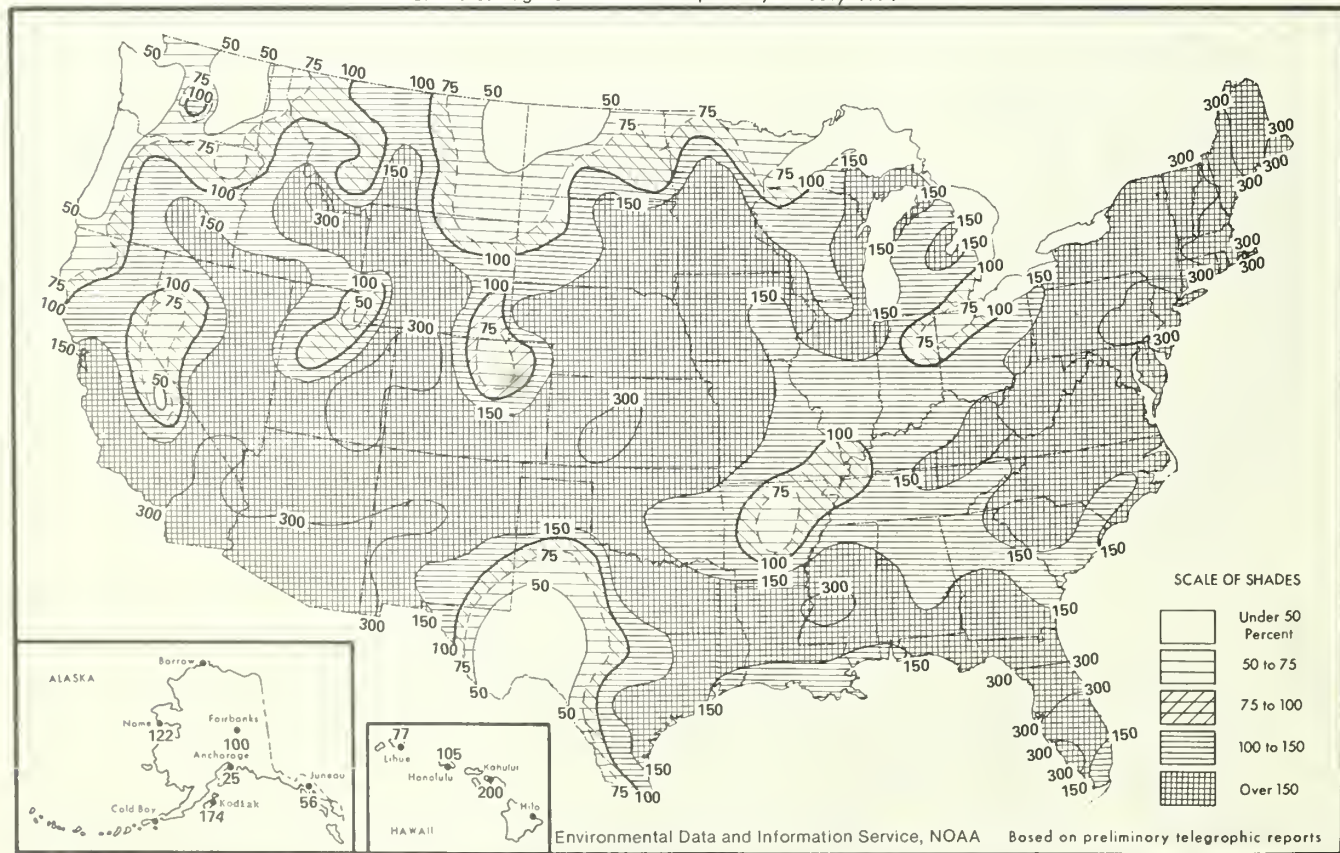
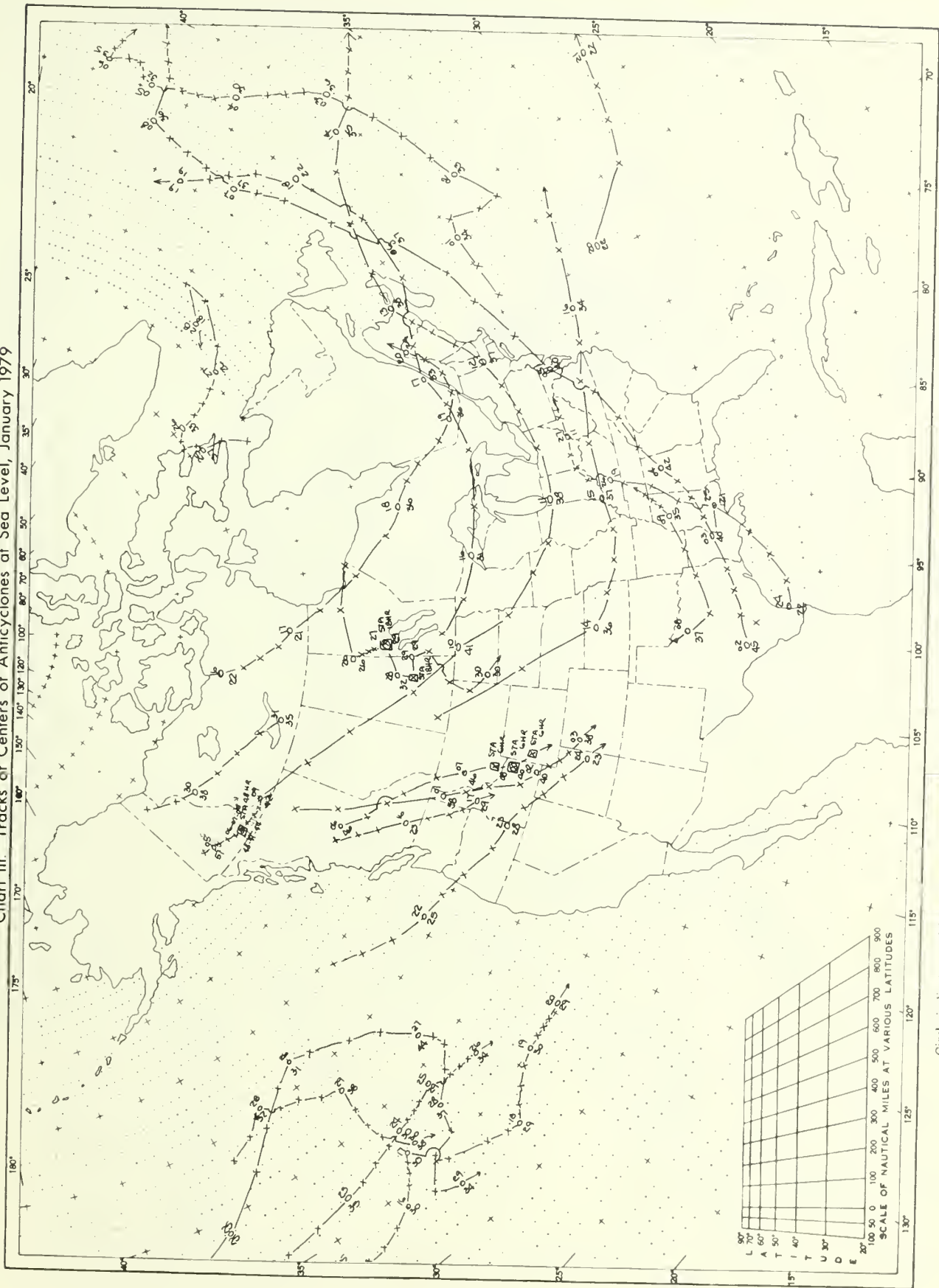


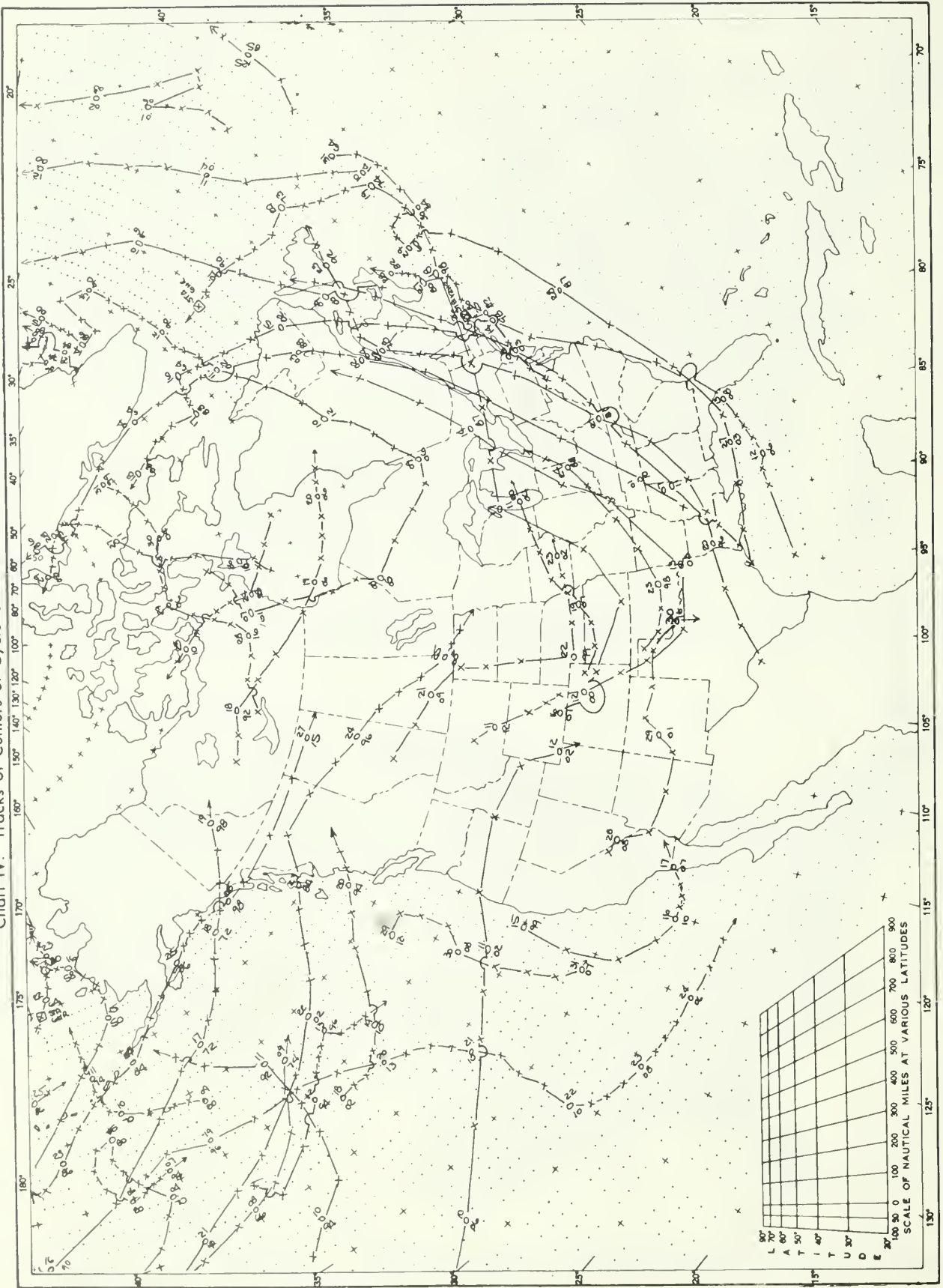


Chart III. Tracks of Centers of Anticyclones at Sea Level, January 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure below circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate reforming 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart IV. Tracks of Centers of Cyclones at Sea Level, January 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure below circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.









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FEBRUARY 1979

VOLUME 30

NUMBER 2

# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

noaa

NATIONAL OCEANIC AND  
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NATIONAL CLIMATIC CENTER  
ASHEVILLE, N.C.

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

FEBRUARY 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Much of California and the Pacific Northwest recorded above-normal precipitation during the month. Percentages ranged up to 150% above totals expected this time of year. The northern Plains also exceeded normal precipitation; amounts well above an inch brought parts of this area past 300% of normal. Precipitation was generally heavier than the average from New Mexico eastward to the Atlantic and from eastern Texas northeastward to Pennsylvania. Flooding occurred in the Deep South and in the mid-Atlantic area. Temperatures averaged colder than normal over most of the Nation. The northern and central Plains were 12 to 15° colder than normal. Only the West Coast and Plateau averaged near normal temperatures.

As the month began, a blast of cold air moved from western Canada to envelop the Rockies and Plains. Sub-zero temperatures were felt in the Plains as far south as Oklahoma. Spotty snowcover over most of the winter wheat area afforded some protection. A storm system moved into southern California and spread heavy rain along the coast with lesser amounts, in the form of snow, hitting the Plateau and central Rockies. A low pressure system formed in the Gulf of Mexico and spread precipitation northward and eastward to cover most of the area east of the Mississippi River.

Early in the week of the 5th-11th, another surge of cold air pushed southward into the Plains. The average temperature for the week was 21° colder than normal in parts of the central Plains. The coldest minimum temperature in this area plummeted to -20° in northern Missouri and southern Iowa. Freezing temperatures reached into northern Florida. Another storm system formed in the Gulf of Mexico, but this time stayed to the south and caused heavy rain from southern Louisiana to central Georgia and moderate rain or freezing rain into the mid-Atlantic States.

Some heavy rain, snow in the mountains, fell in the Pacific Northwest.

The mid-month week of the 12th-18th brought precipitation to nearly all of the Nation. Heavy rain or snow fell in the West with moderate amounts in the South and mid-Atlantic areas. Temperatures were warmer than normal in the West but colder east of the Rockies. Departures from normal plunged as much as 27° in New York State. At week's end, heavy snow began to fall in Georgia and moved northward.

Early in the week of the 19th-25th, a low pressure system moved northward along the East Coast and left a heavy snowcover from Georgia to southern New England. Amounts ranged from 3 to 5 inches in Georgia to 20 to 25 inches in parts of the mid-Atlantic area. Subsequent warm rain depleted most of the snowcover. Again, precipitation fell in most of the Nation during the week. Heaviest amounts dampened Washington State, northern California, and the Southeast. Temperatures averaged near or slightly above normal in much of the Nation, but the northern Plains showed 12 to 15 degrees colder than normal.

During the last days of the month, a strong low pressure system caused rain from the Carolinas to New England stretching as far west as the Ohio Valley. Local flooding occurred in some mid-Atlantic areas. In the West, some heavy rain fell from central California northward. Snow fell in the Plateau and northern Rockies. Thunderstorms broke out in the South, and hail was recorded at several places along the lower Mississippi River. Cold air moved all the way to northern Florida but was rapidly replaced by another warming trend. Moderately cold air dominated the northern tier of States.



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

FEBRUARY 1979

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	2 Stations	80	16-	Calera 2 SW	4	10	2 Stations	11.23	Muscle Shoals FAA AP	3.57	
Alaska	Cape Sarichef	50	21-	Northway FAA AP	-71	9	Beaver Falls	11.00	18 Stations	.00	
Arizona	Tumacacori Natl Monument	86	13	Hawley Lake	-20	7	Bright Angel R S	4.17	Dateland Whitewg Rch	.00	
Arkansas	2 Stations	79	16	3 Stations	-8	10+	Shirley	8.20	Gravette	1.98	
California	Kern River Power House 1	83	12	Bodie	-24	3	Bucks Creek Power House	19.15	Gold Rock Ranch	.00	
Colorado	Trinidad FAA AP	82	13	Taylor Park	-42	5	Independence Pass 5 SW	5.40	8 Stations	.00	
Connecticut	3 Stations	53	28	Falls Village	-21	12	Groton	5.17	Falls Village	2.71	
Delaware	Bridgetown 1 NW	56	28	Middletown 1 WSW	-15	14	Milford 2 WSW	7.44	Georgetown 5 SW	5.41	
Florida	Clewiston U.S. Engineers	89	25	2 Stations	15	10	Niceville	12.78	2 Stations	.16	
Georgia	Waycross 4 NE	83	24	Blairsville Exp Station	2	10	Warrenton	11.56	Glennville	2.89	
Hawaii	2 Stations	85	23+	Mauna Kea Obs 111.2	19	28+	Mount Waialeale 1047	80.97	Puukohola Heiau 98.1	2.64	
Idaho	Three Creek	62	11	Island Park Oam	-37	1	Mullan	7.50	Chilly Barton Flat	.07	
Illinois	Kaskaskia R Nav Lock	66	24	Mount Carroll	-28	5	Anna 1 E	7.19	Piper City 3 SE	.55	
Indiana	Paoli	65	23	Frankfort Disposal Plant	-22	5	Evansville	5.73	Auburn 2 SSE	.35	
Iowa	Keokuk Lock and Dam 19	47	23	Grinnell 3 SW	-34	9	Lansing	1.40	Marble Rock	.08	
Kansas	Hugoton	81	14	Lincoln 1 ESE	-24	1	Geneseo	1.92	2 Stations	.00	
Kentucky	Pikeville	73	24	2 Stations	-13	11+	Hickman 1 E	8.43	Meta 4 SE	2.34	
Louisiana	2 Stations	80	15+	Tallulah	13	10	Thibodaux	14.25	Hosston	3.88	
Maine	Saco	54	28	Rangeley	-38	14+	Woodland	4.02	Gardiner	.86	
Maryland	2 Stations	59	28+	Unionville	-20	13	Mechanicsville 1 SE	0 8.55	Hancock Fruit Lab	03.90	
Massachusetts	2 Stations	53	28+	Chester 2	-30	18+	Chatham WSMO	5.71	Birch Hill Oam	2.08	
Michigan	2 Stations	53	28	2 Stations	-44	17	Munising	4.71	Yale 1 NNE	T	
Minnesota	Moose Lake L SSE	48	28	Waskish Ranger Station	-40	16	Tower 3 S	2.81	Thielman	.27	
Mississippi	Columbia	79	15	2 Stations	5	10+	Pascagoula 2 ENE	14.72	Lafayette Springs	2.80	
Missouri	3 Stations	71	24+	Plattsburg Waterworks	-30	10+	Puxico	8.07	Sedalia Water Plant	.18	
Montana	Yellowtail Oam	61	13	Malta 7 E	-38	15	Heron 2 NW	5.98	2 Stations	T	
Nebraska	Benkelman	66	14	Mullen 21 NW	-30	2	Bruning	.84	2 Stations	.00	
Nevada	Pahrump U of N Lab	73	13	Spring Valley State Park	-28	3	Mount Rose Bowl	6.68	Las Vegas WSO AP	.07	
New Hampshire	Nashua 2 NNW	53	28	2 Stations	-40	12	Mount Washington	4.34	Colebrook 2 E	1.03	
New Jersey	Moorestown	65	28	Sussex 1 SE	-18	18	Millville FAA AP	7.57	Mahwah	2.86	
New Mexico	Sitter Lakes Wildlife Ref	86	15	El Vado Oam	-31	4	Sandia Crest	2.45	10 Stations	.00	
New York	New York Laurel Hill	58	28	Old Forge	-52	18	Holbrook	6.11	Chazy	.54	
North Carolina	2 Stations	75	26+	Celo 2 S	-6	10	Lake Toxaway 2 SW	9.36	Cedar Island	2.81	
North Dakota	Medora	46	19	3 Stations	-39	17+	Fullerton 1 ESE	2.28	Hannah 2 N	.12	
Ohio	4 Stations	65	24+	Oorset	-28	17	London Waterworks	5.27	Wauseon Water Plant	.46	
Oklahoma	3 Stations	84	15+	Pawhuska	-14	1	Hee Mountain Tower	6.02	Goodwell Research Station	T	
Oregon	Riddle	64	18	Seneca	-39	2	Valsetz	25.40	Malheur Refuge Hdq	.23	
Pennsylvania	Philadelphia WSFO	58	28	2 Stations	-34	18+	Chadds Ford	6.90	West Hickory	1.38	
Puerto Rico	Guayama	94	20	Adjuntas Substation	47	6+	Rio Grande El Verde	13.42	4 Stations	.00	
Rhode Island	Kingston	53	28	Kingston	-14	12	Newport	5.33	Woonsocket	3.71	
South Carolina	Holly Hill	79	16	Simms Water Plant	4	19	Santuck	9.22	Charleston WSO AP	3.04	
South Dakota	Belle Fourche	57	10	Britton	-33	4	Harding 3 SE	2.30	2 Stations	.01	
Tennessee	Chattanooga WSO AP	73	15	Livingston Radio WLIV	-13	10	Samburg Wildlife Refuge	7.87	Newport 1 NW	3.05	
Texas	Archer City	95	15	Perryton 5 NNE	-3	1	San Augustine	8.85	6 Stations	.00	
Utah	Zion National Park	68	13	3 Stations	-33	3	Snowbird	7.43	Wah Wah Ranch	.00	
Vermont	Oorset 1 S	50	28	Enosburg Falls	-38	12	Searsburg Station	3.13	3 Stations	.60	
Virginia	Grundy	72	24	Sterling (RCS)	-17	18	Lawrenceville 5 W	7.59	Grundy	3.13	
Virgin Islands	Truman Field FAA AP	90	25+	Alex Hamilton Field FAA	61	5	Beth Upper New Works	3.80	Water Isle	1.07	
Washington	4 Stations	62	27+	2 Stations	-20	2+	Spruce	30.16	Prosser 4 NE	.23	
West Virginia	Logan	72	24	Brandonville	-20	11	Snowshoe	7.20	Beckley WSO AP	2.54	
Wisconsin	Solon Springs	48	28	Brule Island	-48	17	Medford	2.29	Baraboo	.41	
Wyoming	2 Stations	66	13	3 Stations	-37	1	Snake River	3.89	3 Stations	.00	









# CLIMATOLOGICAL DATA

METRIC UNITS

FEBRUARY 1979

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind				No. of days (sunrise to sunset)															
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	Date	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms	Total	Snow, ice pellets	Maximum depth on ground	Resultant speed	Resultant direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10							
																											mm	mm	mm	mm	mm	mm	mm
MINNESOTA	254	991.9	1024.3	-7.1	-17.4	-12.2	-5.6	3.3	23+	-32.8	5	0	28	-17.8	60	3.5	14	13	10	1	34.3	635	0.4	14	10.7	SW 23+	5	6	14	6.8	65		
	395	973.2	1024.2	-9.2	-20.1	-14.6	-6.2	1.7	22	-32.9	5	0	28	-17.8	72	9	-8	5	16	0	127	593	1.2	21	14.8	SW 19	6	7	15	6.8			
	313	984.8	1024.5	-8.7	-21.3	-14.9	-4.6	2.8	26	-35.0	5	0	28	-17.8	72	4.2	23	18	15	0	351	660		8	4	16	6.6						
MISSISSIPPI	94	1009.5	1021.5	13.0	2.5	7.8	-2.1	25.6	15	-10.0	10	0	10	3.3	80	21.2	95	83	13	3	1	0	0.2	35	11.2	13 26+	2	7	19	7.9	34		
	88	1010.2	1021.6	13.3	1.9	7.6	-2.3	24.4	15	-9.4	10	0	10	2.8	76	18.9	66	69	12	3	1	0	0.5	34	8.9	34 9	2	5	21	8.0			
MISSOURI	270	989.2	1023.0	0.3	-10.3	-4.9	-5.8	11.7	27	-26.1	5	0	24	-9.4	71	3.6	-12	13	7	1	178	330	0.8	4	13.4	N 25+	8	2	18	7.0	45		
	309	984.1	1022.9	-1.3	-11.1	-6.2	-6.3	12.8	27	-24.4	5	0	25	-10.6	71	20	-12	14	6	0	38	279	0.4	4	13.0	NW 15	6	10	12	6.2	74		
	224	984.1	1022.9	0.9	-9.4	-4.2	-5.6	15.0	27	-23.3	1	0	23	-10.6	63	9	-14	8	5	0	38	279	0.9	35									
	247	984.1	1022.9	-2.8	-14.4	-8.6	-8.3	5.6	27	-30.6	1	0	27	-10.6	63	14	-12	8	6	0	74	330	0.9	35									
	163	1002.4	1023.7	-0.1	-9.8	-4.9	6.7	14.4	23	-12.2	9	0	26	-7.2	85	3.8	-15	16	11	1	122	203	0.7	1	14.8	N 25	7	1	20	7.3	41		
	386	974.6	1021.8	3.4	-8.9	-2.7	-5.5	18.9	22	-27.2	9	0	25	-6.7	75	-4.2	-14	15	7	1	46	305	0.5	16	11.6	NW 25+	7	5	16	6.9	42		
MONTANA	1087	888.6	1017.3	-1.7	-12.8	-7.3	-4.7	9.4	13	-26.1	16	0	28	-12.2	69	1.9	-2	5	10	0	221	432	1.7	25	21.0	NW 7	4	4	20	8.0	41		
	696	934.3	1021.6	-12.1	-21.8	-16.9	-7.6	1.7	5	-35.0	15	0	28	-16.1	77	15	14	11	0	404	483	2.7	9	13.9	NW 7	1	10	17	7.8	44			
	1116	885.5	1018.5	-0.9	-13.8	-7.3	-4.3	8.9	25+	-25.6	15	0	28	-13.3	64	14	-5	5	10	0	206	152	3.0	22	18.3	SW 5	0	4	24	8.4	53		
	788	922.3	1018.5	-9.6	-22.3	-15.9	-7.9	6.1	25	-35.0	15	0	28	-13.3	64	26	-16	9	12	0	617	559	0.1	21	13.4	24 9+	0	8	20	8.4	53		
	1167	877.8	1018.1	-0.6	-12.6	-6.6	-2.9	11.7	13	-31.1	2	0	27	-11.7	67	18	9	13	7	0	183	254	1.5	28	19.2	NW 7	0	7	21	8.6	44		
	904	908.6	1016.4	-0.6	-9.4	-4.9	-1.1	6.1	13	-29.4	2	0	25	-8.9	72	40	15	10	19	0	472	686	0.8	15	13.9	3 14	0	3	25	9.4			
	801	921.8	1020.1	-7.7	-19.1	-13.3	-7.6	3.9	5	-30.6	16	0	27	-16.1	76	29	16	11	0	300	500	0.9	3										
	972	901.5	1016.6	0.3	-7.5	-3.6	-0.9	7.8	12	-22.2	2	0	27	-6.7	79	2.6	8	6	17	0	180	584	0.6	6	14.8	E 14	0	1	27	9.6	20		
NEBRASKA	561	922.6	1022.6	-4.4	-15.8	-10.1	-7.7	5.0	19	-28.3	1	0	28	-13.3	78	11	-17	5	6	0	99	203	0.1	30	17.4	34 15	5	7	16	6.8			
	359	978.0	1023.1	-4.8	-16.3	-10.6	-8.3	6.7	27	-31.1	1	0	28	-14.4	74	12	-17	5	6	0	112	229	0.7	36	17.0	NW 15	6	7	15	7.0	53		
	471	964.1	1023.2	-5.6	-17.6	-11.6	-7.1	5.6	14	-28.9	16+	0	28	-15.0	74	11	-9	3	10	0	155	279	0.5	31	21.0	NW 15	6	7	15	6.8			
	846	918.4	1021.0	-1.7	-14.8	-8.2	-6.1	8.9	26	-28.3	1	0	28	-12.2	74	2	-11	2	3	0	8	127	0.6	34	15.6	NW 22	5	11	12	6.3	59		
	298	932.2	1021.0	-3.2	-13.2	-8.2	-5.9	7.8	27	-25.0	16	0	28	-12.2	74	8	-17	5	6	0	36	203	0.4	2									
	399	877.4	1017.3	-5.1	-15.4	-10.2	-6.6	6.1	27	-27.2	16	0	28	-8.3	65	10	-15	4	7	0	99	203		7	13.9	NW 15	7	7	14	6.4	53		
	1206	877.4	1017.3	5.4	-9.8	-2.2	-0.8	16.7	26	-23.2	2	0	28	-17.8	55	7	-6	1	3	0	41	127	1.2	33	13.9	31 22	3	10	15	7.1			
	789	924.5	1016.6	-2.6	-18.2	-10.4	-6.2	8.9	26	-29.4	16+	0	28	-17.8	55	3	-6	1	3	0	130	381	1.0	29	17.4	NW 15	3	9	16	7.0	69		
NEVADA	1539	843.6	1017.9	6.3	-5.2	0.6	2.1	12.8	11	-22.2	3	0	24	-2.2	83	30	11	10	10	0	330	127	1.2	24	9.8	24 14	1	3	24	8.7			
	1906	807.0	1018.3	5.3	-11.3	-3.0	-0.7	11.1	9	-26.1	3	0	28	-11.7	54	15	0	5	6	0	180	178	3.2	20	16.5	SE 14	3	4	21	8.1	62		
	959	942.1	1018.6	16.0	2.2	9.1	-0.4	21.7	13	-3.3	4	0	27	-2.8	48	2	-6	14	3	1	8	152	1.8	23	18.3	SW 14	9	8	11	5.7	81		
	1342	865.2	1017.1	10.2	-4.8	2.7	-0.1	17.8	10	-15.0	3	0	27	-5.6	60	21	-1	10	9	0	99	25	1.3	22	20.6	SW 13	1	7	20	8.1	66		
1311	867.6	1017.1	8.1	-3.7	2.2	1.0	16.1	11	-23.9	3	0	22	-5.0	61	31	10	10	11	0	307	76	2.5	20	15.6	SW 14	2	2	24	8.9	49			
NEW HAMPSHIRE	104	1005.1	1018.5	-4.7	-14.2	-9.4	-4.2	9.4	28	-26.7	13	0	28	-17.2	55	5.8	-4	30	8	0	114	356	3.8	31	16.1	NW 6	9	8	11	5.6	67		
	1909	807.0	1018.3	-13.3	-23.3	-18.3	-3.3	2.2	26	-38.9	14	0	28	-17.2	55	11.0	-5.5	41	14	0	566	381		8	63.9	NW 14	8	6	14	6.3	53		
NEW JERSEY	20	1017.6	1020.1	-0.5	-11.0	-5.7	-6.8	13.9	28	-23.9	12	0	24	-10.6	71	14.6	61	62	13	0	704	584	2.8	32	13.4	27 5	6	9	13	6.5	45		
	2	1020.0	1021.0	0.9	-6.1	-2.6	-4.4	12.2	28	-15.9	18+	0	23	-11.7	63	160	78	51	14	0	663	493	4.5	33	17.0	NW 1	8	6	14	6.1			
	2	1020.0	1021.0	-1.0	-8.4	-4.7	-5.1	13.5	28	-18.3	18+	0	22	-11.7	63	125	51	40	11	0	414	305		33	17.9	SW 11	1	8	14	6.1			
	17			-1.4	-7.9	-4.7	-5.4	12.2	28	-18.3	18	0	21	-11.7	63	118	49	40	14	0	414	305		33	17.4	NE 26	8	7	13	6.3	45		
NEW MEXICO	1619	838.1	1017.5	12.9	-2.8	5.1	0.6	22.8	14	-7.8	4+	0	24	-5.6	53	16	6	8	5</														





# CLIMATOLOGICAL DATA

METRIC UNITS

FEBRUARY 1979

State and Station	Elevation (ground)	Pressure		Temperature				Precipitation				Wind			No. of days (sunrise to sunset)																
		Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days Max 32.2° or above	No. of days Min. 0° or lower	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	Snow, ice pellets	Maximum depth on ground	Resultant speed	Resultant direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)		
																														mb	°C
<b>PENNSYLVANIA</b>																															
HARRISBURG	103	1009.5	1022.7	-1.3	-9.2	-5.2	-5.4	12.2	28	-20.6	18	0	24	60	120	59	38	12	0	650	508	32	13.0	31	1	6	4	15	6.4	55	
PHILADELPHIA	347	1020.7	1021.9	-1.2	-9.2	-5.0	-6.1	12.2	28	-16.9	11	0	24	60	196	97	50	13	0	701	508	32	12.1	31	1	6	5	17	7.0	42	
PITTSBURGH	287	1020.6	1022.1	-2.3	-12.7	-7.0	-6.3	7.8	28	-54.7	18	0	25	73	79	20	32	11	0	361	281	34	12.7	30	1	9	7	17	7.0	42	
SCRANTON	283	985.8	1022.1	-2.3	-12.7	-8.0	-6.3	7.8	28	-54.7	18	0	25	73	62	12	23	11	0	293	178	33	13.0	NW	5	6	4	18	7.0	52	
WILLIAMSPORT	169	1002.4	1022.6	-2.8	-10.9	-6.8	-4.9	8.9	28	-44.4	18	0	24	62	81	16	33	13	0	450	279	31	11.2	31	5	8	7	13	6.3		
<b>RHODE ISLAND</b>																															
BLOCK ISLAND	34	1016.3	1018.6	-2.6	-8.4	-5.5	-5.1	7.2	28+	-17.8	18+	0	23	59	104	16	56	9	0	140	102	32	13.9	30	5	10	8	10	5.4	71	
PROVIDENCE	16	1016.3	1018.6	-2.7	-10.9	-6.8	-5.4	10.6	28	-21.7	14+	0	26	59	104	16	56	9	0	140	102	32	13.9	30	5	10	8	10	5.4	71	
<b>SOUTH CAROLINA</b>																															
CHARLESTON	12	1019.3	1021.4	14.4	1.9	7.7	-2.1	24.4	15	-6.7	10	0	14	71	77	-6	25	12	0	66	51	29	13.4	20	25	5	6	17	7.3	58	
CHARLESTON U	3	1019.3	1021.4	14.4	1.9	7.7	-2.1	21.7	15	-6.1	19	0	8	71	109	30	35	10	0	56	51	29	13.4	20	25	5	6	17	7.3	58	
COLUMBIA	65	1012.5	1020.7	12.7	-0.6	6.1	-2.6	24.4	16	-8.9	2	0	17	-1.1	206	113	75	9	1	140	127	28	10.3	18	25+	6	7	15	7.0	62	
GRANVILLE-SPRTNBRG	292	983.1	1020.5	9.1	-1.1	4.0	-2.9	21.7	16	-11.1	19	0	19	-2.2	155	43	46	9	1	312	203	35	12.1	NE	1	7	5	16	6.9	48	
<b>SOUTH DAKOTA</b>																															
ABERDEEN	395	973.2	1023.0	-8.6	-21.7	-16.4	-7.0	-0.6	6	-32.2	4+	0	28	72	19	3	8	12	0	267	457	9	14.3	NW	3	3	7	18	7.9	48	
HURON	390	973.2	1023.0	-8.6	-21.7	-16.4	-7.0	1.1	27+	-30.6	16	0	28	72	19	-12	3	9	0	150	457	9	14.3	NW	3	3	7	18	7.9	48	
RAPID CITY	964	903.8	1020.0	-2.4	-14.6	-8.4	-5.0	11.1	14	-27.2	16	0	28	72	8	-6	4	6	0	112	76	11	17.9	NW	14	1	7	20	8.0	71	
SIoux FALLS	432	968.8	1023.9	-8.1	-19.2	-13.6	-6.6	1.7	27+	-32.2	1	0	28	68	10	-16	4	8	0	185	406	11	14.3	32	15	6	7	20	8.0	71	
<b>TENNESSEE</b>																															
BRISTOL	459	965.5	1021.5	5.0	-5.1	-0.1	-3.8	18.9	23	-17.2	10	0	22	72	91	-3	28	12	0	518	203	28	8.9	27	8	1	7	20	8.2	59	
CHATTANOOGA	203	990.3	1021.5	8.4	-0.9	3.8	-2.3	22.8	15	-12.2	10	0	19	-0.6	77	98	30	12	1	221	127	36	10.3	22	8	4	2	22	8.1	33	
KNOXVILLE	299	984.8	1020.9	7.3	-2.1	2.6	-3.4	20.0	15	-15.6	10	0	21	-1.7	106	-14	26	13	1	477	152	35	11.6	26	25+	2	5	21	8.3	47	
MEMPHIS	79	1011.5	1022.2	8.1	-0.9	3.6	-2.9	20.6	22	-12.8	9	0	20	-2.2	144	24	57	13	5	188	51	35	11.2	32	25	4	4	20	8.1	37	
NASHVILLE	180	999.3	1021.7	6.1	-4.6	0.8	-4.2	19.4	22	-19.4	10	0	22	-2.8	109	-11	39	13	2	480	203	31	9.4	17	28	3	5	21	8.0	36	
DAK RIDGE R	276	999.3	1021.7	6.9	-3.3	1.8	-2.8	17.2	15	-15.6	10	0	22	-2.8	109	-24	41	13	2	437	127	27	15.2	25	4	5	19	7.9			
<b>TEXAS</b>																															
ABILENE	544	955.0	1019.2	13.9	0.3	7.2	-1.7	31.1	14	-9.4	17	0	15	63	28	3	14	6	1	150	102	23	16.5	SW	27	7	8	13	6.4	59	
AMARILLO	1098	890.6	1016.4	12.6	-3.7	4.4	0.2	30.0	14	-11.1	16	0	15	63	28	3	14	6	1	150	102	23	16.5	SW	27	7	8	13	6.4	59	
AUSTIN	182	997.6	1023.1	14.4	3.9	9.2	-2.7	26.7	14	-5.0	19	0	8	4.4	77	90	11	37	9	48	51	24	16.5	24	22	8	11	9	5.4	78	
BROWNSVILLE	6	1018.3	1018.7	20.2	10.3	15.3	-2.2	28.3	24	1.7	17	0	8	11.7	83	28	10	14	9	2	0	0	0.8	3	13.9	N	15	4	15	7.0	38
CORPUS CHRISTI	12	1018.0	1019.6	19.6	8.2	13.9	-1.4	27.8	24+	0.6	17+	0	8	10.0	82	21	-28	12	7	0	0	0	0.8	12	15.6	5	27	4	8	7.3	41
DALLAS - FORT WORTH	168	995.0	1020.9	10.4	0.8	5.7	-3.6	27.8	24+	-8.9	9	0	12	2.2	82	39	-21	11	2	18	0	0	1.8	6	12.1	15	8	15	7.0	41	
DEL RIO	313	882.1	1018.7	17.8	4.6	11.2	-3.9	30.0	15	-2.2	17	0	12	2.2	82	39	-21	11	2	18	0	0	1.8	6	12.1	15	8	15	7.0	39	
EL PASO	1194	882.5	1016.1	16.1	0.6	8.4	-0.7	25.6	14	-2.2	17	0	16	2.2	82	39	-21	11	2	18	0	0	1.8	6	12.1	15	8	15	7.0	39	
GALVESTON	2	1016.6	1020.3	14.1	8.1	11.1	-4.4	22.8	28	-1.1	9	0	15	-2.8	51	17	7	13	3	30	0	27	14.3	29	24	12	10	6	4.3	81	
HOUSTON INTERCON	29	1016.6	1020.3	16.3	5.6	10.9	-6.0	23.6	28	-3.3	9	0	15	7.2	83	43	39	10	1	0	0	0	13.0	NW	25	3	5	20	7.9	37	
MCKINNEY	922	905.2	1017.9	13.8	-2.8	7.5	-0.4	30.6	14	-14.4	18	0	19	-5.0	57	22	9	18	4	218	178	5	11.2	24	27	8	12	6.0	68		
MIDLAND	869	917.4	1017.1	13.6	-1.1	11.4	-1.4	30.0	14	-9.4	18	0	16	-4.4	51	107	-8	5	3	51	25	0.7	25	19.7	27	27	11	4	13	5.4	32
PLANO	505	920.0	1018.9	16.1	6.6	11.4	-1.4	28.1	28	-2.2	9	0	4	7.2	79	37	10	1	0	0	0	1.0	10.7	31	23+	4	5	19	7.9	32	
SAN ANGELO	260	950.9	1019.4	16.0	9.2	11.2	-1.1	30.6	14	-8.3	19	0	13	-0.6	63	46	26	4	0	0	0	2.2	13.4	5	13	9	4	15	6.3	40	
SAN ANTONIO	20	1019.9	1020.0	17.0	5.7	11.2	-1.1	30.6	14	-8.3	19	0	13	-0.6	63	46	26	4	0	0	0	2.2	13.4	5	13	9	4	15	6.3	40	
SAN MARCOS	20	1019.9	1020.0	17.0	5.7	11.2	-1.1	30.6	14	-8.3	19	0	13	-0.6	63	46	26	4	0	0	0	2.2	13.4	5	13	9	4	15	6.3	40	
VICTORIA	153	1002.0	1020.1	16.6	0.4	11.5	-2.5	27.2	16	-9.3	9	0	6	8.3	59	1	28	10	0	0	0	1.3	16.3	3	8	7	16	7.1	7.8		
WACO	153	1002.0	1020.1	16.6	0.4	11.5	-2.5	27.2	16	-9.3	9	0	6	8.3	59	1	28	10	0	0	0	1.3	16.3	3	8	7	16	7.1	7.8		
WICHITA FALLS	303	983.1	1020.9	9.8	-3.1	3.4	-3.9	33.3	14	-10.6	16+	1	21	-1.7	76	18	-10	11	3	41	51	1.0	16.5	36	8	6	4	13	6.3		
<b>UTAH</b>																															
MILFORD	1533	845.9	1020.0	4.9	-7.9	-1.5	-1.2	11.7	26	-25.0	4+	0	27	77	17	-1	7	9	2	183	454	16	17.0	SW	14	1	10	17	7.7	55	
SALT LAKE CITY	1286	872.0	1019.1	5.0	-4.4	0.3	-0.5	11.1	13	-17.2	3	0	26	-3.9	27	-4	12	8	2	313	127	16	17.9	SW	14	0	2	26	9.3	53	
<b>VERMONT</b>																															



# HEATING DEGREE DAYS

(Base 65°F.)

FEBRUARY 1979

State and Station	Current season			State and Station	Current season			State and Station	Current season		
	This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month
ALABAMA				ALABAMA				ALABAMA			
BIRMINGHAM U	597			ALABAMA				ALABAMA			
BIRMINGHAM	594	2381	2319	ANCHORAGE	1515	6871	7845	ANCHORAGE	1515	6871	7845
MUNTSVILLE	691	2681	2664	ANNETTE	930	4973	4757	ANNETTE	930	4973	4757
MOBILE	401	1442	1423	BARRON	2390	13090	13419	BARRON	2390	13090	13419
MONTGOMERY	465	1758	1884	BARTER ISLAND	2402	12622	13288	BARTER ISLAND	2402	12622	13288
				BETHEL	1962	8253	9152	BETHEL	1962	8253	9152
				BETTLES	2574	11033		BETTLES	2574	11033	
				BIG DELTA	2375	9938	10159	BIG DELTA	2375	9938	10159
				COLD BAY	1020	5700	6413	COLD BAY	1020	5700	6413
				FAIRBANKS	2573	10463	10781	FAIRBANKS	2573	10463	10781
				GULKANA	2394	9950	10338	GULKANA	2394	9950	10338
				HOMER	1375	6462	7112	HOMER	1375	6462	7112
				JUNEAU	1505	6645	6280	JUNEAU	1505	6645	6280
				KING SALMON	1648	6860	8071	KING SALMON	1648	6860	8071
				KODIAK	1055	5230	5862	KODIAK	1055	5230	5862
				KOTZEBUE	2093	9547		KOTZEBUE	2093	9547	
				KC GRATH	2383	9937	10660	KC GRATH	2383	9937	10660
				MCHE	1847	8384	9639	MCHE	1847	8384	9639
				ST. PAUL ISLAND	976	6105	7091	ST. PAUL ISLAND	976	6105	7091
				TALKEETNA	1649	8008	8406	TALKEETNA	1649	8008	8406
				UNALASKET				UNALASKET			
				VALOZ	1379	6890	7408	VALOZ	1379	6890	7408
				YAKUTAT	1350	6536	6458	YAKUTAT	1350	6536	6458
ARIZONA				ARIZONA				ARIZONA			
FLAGSTAFF	1049	5355	4999	FLAGSTAFF	1049	5355	4999	FLAGSTAFF	1049	5355	4999
PHOENIX	254	1263	1307	PHOENIX	254	1263	1307	PHOENIX	254	1263	1307
TUCSON	311	1520	1428	TUCSON	311	1520	1428	TUCSON	311	1520	1428
WINSLOW	757	3825	3621	WINSLOW	757	3825	3621	WINSLOW	757	3825	3621
YUMA	174	1083	884	YUMA	174	1083	884	YUMA	174	1083	884
ARKANSAS				ARKANSAS				ARKANSAS			
FORT SMITH	869	3347	2714	FORT SMITH	869	3347	2714	FORT SMITH	869	3347	2714
LITTLE ROCK	732	2921	2724	LITTLE ROCK	732	2921	2724	LITTLE ROCK	732	2921	2724
ND. LITTLE ROCK	794	3101	2524	ND. LITTLE ROCK	794	3101	2524	ND. LITTLE ROCK	794	3101	2524
CALIFORNIA				CALIFORNIA				CALIFORNIA			
BAKERSFIELD	352	1585	1757	BAKERSFIELD	352	1585	1757	BAKERSFIELD	352	1585	1757
BISHOP	731	3480	3213	BISHOP	731	3480	3213	BISHOP	731	3480	3213
BLUE CANYON	833	3967	3612	BLUE CANYON	833	3967	3612	BLUE CANYON	833	3967	3612
EUREKA U	467	3236	3020	EUREKA U	467	3236	3020	EUREKA U	467	3236	3020
FRESNO	372	2021	2064	FRESNO	372	2021	2064	FRESNO	372	2021	2064
LONG BEACH	268	1193	1117	LONG BEACH	268	1193	1117	LONG BEACH	268	1193	1117
LDS ANGELES	295	1122	1178	LDS ANGELES	295	1122	1178	LDS ANGELES	295	1122	1178
LDS ANGELES U	274	1205	846	LDS ANGELES U	274	1205	846	LDS ANGELES U	274	1205	846
MT SHASTA R	842	4609	4017	MT SHASTA R	842	4609	4017	MT SHASTA R	842	4609	4017
OAKLAND	387	2007	1982	OAKLAND	387	2007	1982	OAKLAND	387	2007	1982
REO BLUFF	418	1945	2032	REO BLUFF	418	1945	2032	REO BLUFF	418	1945	2032
SACRAMENTO	446	2278	2104	SACRAMENTO	446	2278	2104	SACRAMENTO	446	2278	2104
SAN DIEGO	717			SAN DIEGO	717			SAN DIEGO	717		
SAN FRANCISCO	219	862	1013	SAN FRANCISCO	219	862	1013	SAN FRANCISCO	219	862	1013
SAN FRANCISCO U	606	2245	2049	SAN FRANCISCO U	606	2245	2049	SAN FRANCISCO U	606	2245	2049
SANTA MARIA	332	2016	2006	SANTA MARIA	332	2016	2006	SANTA MARIA	332	2016	2006
STOCKTON	442	2220	1960	STOCKTON	442	2220	1960	STOCKTON	442	2220	1960
	384	2136	2129		384	2136	2129		384	2136	2129
COLORADO				COLORADO				COLORADO			
ALAMOSA	1518	7142	6230	ALAMOSA	1518	7142	6230	ALAMOSA	1518	7142	6230
COLORADO SPRINGS	906	5133	4584	COLORADO SPRINGS	906	5133	4584	COLORADO SPRINGS	906	5133	4584
DENVER	854	4842	4297	DENVER	854	4842	4297	DENVER	854	4842	4297
GRAND JUNCTION	1154	5308	4310	GRAND JUNCTION	1154	5308	4310	GRAND JUNCTION	1154	5308	4310
PUEBLO	849	4812	4038	PUEBLO	849	4812	4038	PUEBLO	849	4812	4038
CONNECTICUT				CONNECTICUT				CONNECTICUT			
BRIDGEPORT	1126	3987	3874	BRIDGEPORT	1126	3987	3874	BRIDGEPORT	1126	3987	3874
HARTFORD	1210	5108	4670	HARTFORD	1210	5108	4670	HARTFORD	1210	5108	4670
DELAWARE				DELAWARE				DELAWARE			
WILMINGTON	1197	4033	3706	WILMINGTON	1197	4033	3706	WILMINGTON	1197	4033	3706
DIST. OF COLUMBIA				DIST. OF COLUMBIA				DIST. OF COLUMBIA			
WASHINGTON DULLES	1163	3973	3798	WASHINGTON DULLES	1163	3973	3798	WASHINGTON DULLES	1163	3973	3798
WASHINGTON NATIONAL	1019	3187	3257	WASHINGTON NATIONAL	1019	3187	3257	WASHINGTON NATIONAL	1019	3187	3257
FLORIDA				FLORIDA				FLORIDA			
APPALACHICOLA U	394	1270	1156	APPALACHICOLA U	394	1270	1156	APPALACHICOLA U	394	1270	1156
DAYTONA BEACH	244	598	760	DAYTONA BEACH	244	598	760	DAYTONA BEACH	244	598	760
FORT HYERS	100	246	409	FORT HYERS	100	246	409	FORT HYERS	100	246	409
JACKSONVILLE	371	1334	1127	JACKSONVILLE	371	1334	1127	JACKSONVILLE	371	1334	1127
KEY WEST	72	39	59	KEY WEST	72	39	59	KEY WEST	72	39	59
MIAMI	82	167	189	MIAMI	82	167	189	MIAMI	82	167	189
ORLANDO	214	500	626	ORLANDO	214	500	626	ORLANDO	214	500	626
PENSACOLA	390	1344	1530	PENSACOLA	390	1344	1530	PENSACOLA	390	1344	1530
TALLAHASSEE	424	1486	1342	TALLAHASSEE	424	1486	1342	TALLAHASSEE	424	1486	1342
TAMPA	190	512	619	TAMPA	190	512	619	TAMPA	190	512	619
WEST PALM BEACH	118	244	274	WEST PALM BEACH	118	244	274	WEST PALM BEACH	118	244	274
GEORGIA				GEORGIA				GEORGIA			
ATHENS	635	2371	2401	ATHENS	635	2371	2401	ATHENS	635	2371	2401
ATLANTA	646	2385	2481	ATLANTA	646	2385	2481	ATLANTA	646	2385	2481
AUGUSTA	582	2123	2101	AUGUSTA	582	2123	2101	AUGUSTA	582	2123	2101
COLUMBUS	577	1849	1960	COLUMBUS	577	1849	1960	COLUMBUS	577	1849	1960
MACON	541	1893	1870	MACON	541	1893	1870	MACON	541	1893	1870
ROME	676	2624	2492	ROME	676	2624	2492	ROME	676	2624	2492
SAVANNAH	448	1526	1633	SAVANNAH	448	1526	1633	SAVANNAH	448	1526	1633
IDAHO				IDAHO				IDAHO			
ROSF	855	4956	4263	ROSF	855	4956	4263	ROSF	855	4956	4263
LEWISTON	808	4849	4027	LEWISTON	808	4849	4027	LEWISTON	808	4849	4027
POCATELLO	1034	5872	5080	POCATELLO	1034	5872	5080	POCATELLO	1034	5872	5080
ILLINOIS				ILLINOIS				ILLINOIS			
CAIRO U	965	3593	3070	CAIRO U	965	3593	3070	CAIRO U	965	3593	3070
CHICAGO D HARE	1360	5308	4818	CHICAGO D HARE	1360	5308	4818	CHICAGO D HARE	1360	5308	4818
CHICAGO MIDWAY	1345	5308	4564	CHICAGO MIDWAY	1345	5308	4564	CHICAGO MIDWAY	1345	5308	4564
MOLINE	1445	5818	4847	MOLINE	1445	5818	4847	MOLINE	1445	5818	4847
PEORIA	1403	5440	4624	PEORIA	1403	5440	4624	PEORIA	1403	5440	4624
ROCKFORD	1458	5904	5115	ROCKFORD	1458	5904	5115	ROCKFORD	1458	5904	5115
SPRINGFIELD	1336	4974	4257	SPRINGFIELD	1336	4974	4257	SPRINGFIELD	1336	4974	4257
INDIANA				INDIANA				INDIANA			
EVANSVILLE	1125	4156	3613	EVANSVILLE	1125	4156	3613	EVANSVILLE	1125	4156	3613
FORT WAYNE	1401	5095	4615	FORT WAYNE	1401	5095	4615	FORT WAYNE	1401	5095	4615
INDIANAPOLIS	1248	4649	4238	INDIANAPOLIS	1248	4649	4238	INDIANAPOLIS	1248	4649	4238
SOUTH RENO	1356	5025	4754	SOUTH RENO	1356	5025	4754	SOUTH RENO	1356	5025	4754
IOWA				IOWA				IOWA			
RURLINGTON	1377	54									





# STORM SUMMARY

FEBRUARY 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	†DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS
Alabama								2		7	5																		4
Alaska								2	?	7	?																		
Arizona	*																												
Arkansas								3						1	4														6
California																													
Colorado																													
Connecticut	*																												
Delaware																													
Florida																													6
Georgia																													5
Hawaii																													
Idaho										9	5																		6
Illinois											4																		6
Indiana	*																												?
Iowa																													
Kansas	*																												
Kentucky		1	1																										
Louisiana					5																								
Maine	*																												
Maryland & DC																													
Massachusetts	*																												
Michigan																													
Minnesota																													
Mississippi																													
Missouri																													
Montana																													
Nebraska	*																												
Nevada																													
New Hampshire	*																												
New Jersey																													
New Mexico	*																												
New York																													
North Carolina		1	1																										
North Dakota																													
Ohio																													
Oklahoma																													
Oregon																													
Pacific	*																												
Pennsylvania																													
Puerto Rico																													
Rhode Island	*																												
South Carolina																													
South Dakota																													
Tennessee																													
Texas		2	2																										
Utah	*																												
Vermont	*																												
Virginia																													
Virgin Islands	*																												
Washington																													
West Virginia	*																												
Wisconsin																													
Wyoming																													

# RAWINSONDE DATA

Average monthly values

FEBRUARY 1979

ALBANY, NY 1012 MB										ALBUQUERQUE, NM 838 MB										AMARILLO, TX 891 MB										ANCHORAGE, AK 1007 MB										ANNETTE, AK 1002 MB									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.	Direction tens of deg.	Speed m.p.s.																	
5FC	26	81	-12.2	-16.8	31	2.9	27	1,619	-4.5	-5.9	36	1.6	28	1,095	-1.3	-6.2	28	2.1	28	45	-12.5	-23.2	01	4.0	28	37	-4.9	-3.2	10	2.0																			
1000	23	196	-12.4	-17.4	32	3.6	27	1,619	-4.5	-5.9	36	1.6	28	1,095	-1.3	-6.2	28	2.1	28	114	-12.3	-21.2	01	5.2	28	83	-1.2	-4.3	08	2.1																			
950	25	567	-13.4	-17.5	33	5.6	27	1,619	-4.5	-5.9	36	1.6	28	1,095	-1.3	-6.2	28	2.1	28	492	-12.3	-22.4	02	8.3	28	463	-3.0	-5.3	15	4.1																			
900	25	979	-18.7	-18.7	33	6.9	27	1,619	-4.5	-5.9	36	1.6	28	1,095	-1.3	-6.2	28	2.1	28	906	-11.1	-22.6	03	8.8	28	889	-5.6	-7.3	16	5.7																			
850	25	1,416	-12.5	-20.2	31	8.8	27	1,619	-4.5	-5.9	36	1.6	28	1,095	-1.3	-6.2	28	2.1	28	1,345	-11.8	-24.1	02	7.9	28	1,335	-7.9	-10.4	10	6.6																			
800	25	1,870	-21.0	-21.0	30	10.9	27	1,988	-4.6	-9.0	30	2.3	28	1,473	3.7	-8.3	27	5.4	28	1,808	-13.6	-26.1	03	6.3	28	1,805	-10.0	-13.6	20	7.3																			
750	25	2,373	-12.7	-23.0	30	13.5	27	2,504	-2.0	-10.9	30	5.3	28	2,487	1.0	-11.8	27	8.5	28	2,297	-15.8	-28.7	03	5.4	28	2,300	-12.7	-17.9	22	7.5																			
700	25	2,898	-13.8	-24.3	30	16.1	27	3,050	-4.8	-14.6	28	8.4	28	3,038	-2.6	-16.0	27	9.9	28	2,814	-18.2	-31.4	02	5.2	28	2,823	-16.4	-21.2	22	7.7																			
650	25	3,459	-16.4	-27.0	29	17.4	27	3,630	-7.8	-18.4	28	10.5	28	3,623	-5.9	-20.0	27	11.1	28	3,364	-21.3	-34.7	02	6.7	28	3,376	-20.4	-25.8	22	7.9																			
600	24	4,051	-20.1	-31.1	29	20.9	27	4,249	-11.4	-21.6	28	12.9	28	4,245	-9.9	-25.2	27	13.1	28	3,951	-24.6	-37.6	01	6.2	28	3,964	-24.5	-30.7	23	8.4																			
550	23	4,695	-23.6	-36.0	29	23.6	27	4,911	-15.7	-25.9	27	14.7	28	4,910	-14.6	-29.1	26	15.0	28	4,580	-28.5	-41.2	36	7.1	28	4,592	-28.9	-35.3	24	9.5																			
500	23	5,382	-24.0	-39.0	28	25.8	27	5,622	-21.0	-32.1	27	16.3	28	5,627	-19.6	-33.0	26	16.4	28	5,257	-33.1	-45.1	36	8.0	28	5,268	-33.9	-41.4	25	10.5																			
450	22	6,137	-32.7	-42.1	28	29.5	27	6,392	-26.3	-37.2	26	19.0	28	6,399	-24.9	-37.2	26	20.8	28	5,990	-37.7	-47.1	36	9.1	28	5,998	-38.8	-43.7	25	12.9																			
400	19	6,994	-37.6	-44.2	27	30.5	26	7,232	-32.1	-42.3	26	22.5	28	7,245	-31.3	-42.3	26	23.8	28	6,793	-42.9	-50.7	36	10.0	28	6,797	-44.0	-48.3	25	15.4																			
350	19	7,906	-43.8		27	29.8	26	8,165	-38.4	-43.3	26	26.8	28	8,180	-38.1	-46.3	26	26.2	28	7,688	-47.8		36	11.4	28	7,688	-48.4		26	14.7																			
300	19	8,926	-49.3		26	31.7	26	9,207	-45.4		26	29.5	28	9,221	-45.8		26	25.6	28	8,692	-51.9		36	12.4	28	8,691	-52.2		26	15.8																			
250	18	10,087	-52.8		26	32.5	26	10,401	-53.2		26	32.5	28	10,414	-53.6		27	29.4	28	9,673	-51.9		35	11.8	28	9,668	-52.2		27	13.1																			
200	18	11,524	-53.2		26	32.3	26	11,820	-57.6		26	32.3	28	11,830	-58.3		27	28.6	28	11,331	-48.7		33	9.8	28	11,332	-49.5		28	11.4																			
175	16	12,383	-54.0		26	30.7	28	12,670	-58.3		27	27.7	28	12,211	-47.8		27	27.7	28	12,211	-47.8		33	9.8	28	12,200	-48.9		28	10.9																			
150	16	13,366	-53.7		27	27.5	28	13,640	-58.6		27	25.7	28	13,420	-58.6		27	25.7	28	13,229	-47.7		32	9.3	28	13,213	-49.0		28	11.2																			
125	16	14,533	-55.6		27	25.7	28	14,782	-60.3		27	22.7	28	14,433	-47.4		27	22.7	28	14,433	-47.4		31	9.5	28	14,431	-49.3		29	10.3																			
100	16	15,951	-56.3		27	21.7	28	16,158	-63.2		27	21.7	28	16,158	-62.9		27	19.6	28	15,910	-47.2		31	9.7	28	15,872	-49.7		30	9.7																			
80	13	17,375	-56.7		27	7.2	26	17,528	-63.7		27	15.3	27	17,532	-63.3		27	16.0	28	17,386	-47.5		31	6.7	28	17,330	-49.9		27	6.3																			
70	12	18,228	-57.1		25	18.3	34	18,349	-63.1		27	12.1	27	18,353	-63.2		27	12.2	28	18,269	-47.2		31	9.6	28	18,204	-49.7		32	8.7																			
60	11	19,203	-54.8		25	19.2	37	19,297	-62.9		27	7.7	26	19,302	-62.0		25	10.2	28	19,289	-47.1		32	8.4	28	19,213	-49.9		33	8.6																			
50	10	20,361	-53.9		25	20.4	26	20,426	-60.5		26	6.3	26	20,434	-60.7		26	11.2	27	20,516	-46.5		32	8.7	28	20,405	-49.6		34	8.2																			
40	9	21,792	-53.4		25	21.8	22	21,822	-59.2		27	3.0	26	21,828	-59.0		26	6.6	27	21,908	-46.3		33	8.9	27	21,876	-49.7		35	9.0																			
30	8	23,644	-52.1		24	23.6	26	23,626	-58.5		28	2.1	25	23,638	-58.2		25	5.6	27	23,911	-46.3		34	7.9	27	23,760	-49.6		31	9.9																			
25	6	24,842	-50.5		24	24.8	26	24,822	-57.1		27	9.0	28	24,836	-57.0		27	9.0	28	24,836	-57.0		35	9.2	28	24,807	-53.9		01	11.6																			
20	6	26,325	-48.5		24	26.1	24	26,194	-55.8		29	1.4	21	26,197	-55.3		24	4.3	25	26,633	-45.0		36	9.3	26	26,316	-49.1		03	13.6																			
15	6	28,230	-45.6		21	28.0	23	28,043	-53.7		28	1.4	17	28,027	-52.6		24	11.3	25	28,557	-45.1		01	6.7	24	28,435	-47.6		04	15.4																			
10					10	30.6	85	30,685	-48.1		10	30.6	81	30,681	-48.6		15	31,212	-45.0						15	31,063	-45.1		05	14.3																			

ATHENS, GA 990 MB										BARROW, AK 1030 MB										BARTER ISLAND, AK 1029 MB										BETHEL, AK 1015 MB										BISMARCK, ND 960 MB									
5FC	28	246	2.3	-7.7	35	1.3	27	8	-29.8	-33.3	15	.9	28	15	-29.7	-32.9	24	3.2	27	39	-21.4	-27.4	02	8.3	28	503	-19.2	-24.7	08	.9																			
1000	28	581	4.0	-2.6	27	2.3	27	229	-21.2	-22.2	18	1.5	28	221	-23.4	-26.4	26	4.3	25	163	-16.9	-22.9	03	9.9	28	587	-18.6	-21.2	08	1.9																			
950	28	1,021	13.9	-4.7	26	3.7	27	1,019	-16.0	-22.9	28	2.2	28	1,003	-19.0	-25.8	28	5.2	27	1,420	-10.5	-22.1	01	8.1	28	987	-13.2	-16.3	26	1.6																			
900	28	1,485	3.5	-7.3	28	7.2	26	1,512	-6.7	-24.5	30	3.1	28	1,428	-19.8	-27.4	29	6.2	27	1,401	-9.9	-23.6	04	6.8	28	1,427	-11.7	-13.6	27	6.3																			
850	28	1,976	2.1	-9.2	27	9.5	26	1,906	-17.6	-26.7	30	4.2	28	1,877	-21.0	-29.0	32	3.6	27	1,868	-11.2	-25.1	04	6.4	28	1,897	-8.6	-15.1	28	6.4																			
800	28	2,495	-1.1	-11.8	27	11.4	26	2,387	-19.4	-29.1	31	4.6	28	2,352	-23.1	-30.6	34	4.2	27	2,361	-13.2	-27.0	03	6.9	28	2,397	-9.9	-16.3	29	9.0																			
750	28	3,045	-2.6	-14.7	27	13.6	26	2,898	-21.6	-31.1	31	6.2	28	2,854	-25.9	-33.7	34	5.4	27	2,884	-15.7	-28.9	03	6.8	28	2,926	-11.7	-19.0	29	11.0																			
700	28	3,630	-5.5	-16.7	28	17.3	26	3,411	-24.2	-34.0	32	8.0	28	3,388	-28.9	-35.5	35	6.7	27	3,440	-18.5	-31.8	02	7.6	28	3,488	-16.2	-22.5	29	12.8																			
650	28	4,254	-8.7	-20.3	27	19.8	26	4,021	-27.6	-36.1	32	9.0	28	4,012	-31.7	-38.1	35	7.4	27	4,056	-21.6	-34.1	02	7.4	28	4,104	-14.9	-25.8	31	14.8																			
600	28	4,924	-12.3	-23.8	27	23.6	26	4,642	-31.5	-38.6	32	10.3	28	4,568	-35.1	-40.4	35	9.5	27	4,670	-25.2	-38.1	01	8.2	28	4,726	-23.7	-30.1	29	16.0																			
550	28	5,646	-16.9	-28.0	27	26.7	26	5,311	-35.7	-42.2	32	11.9	28	5,228	-39.0	-42.5	35	11.5	27	5,356	-30.0	-41.4	01	8.2	28	5,418	-28.4	-34.8	29	18.3																			
500	28	6,430	-21.8	-32.2	27	29.7	25	6,038	-40.1	-42.5	32	14.6	28	5,944	-43.2	-45.1	35	13.6	27	6,098	-35.4	-44.9	01	9.1	28	6,166	-33.5	-38.3	29	19.9																			
450	28	7,287	-27.8	-37.3	27	32.6	25	6,833	-45.2		32	16.9	28	6																																			



# RAWINSONDE DATA

Average monthly values

FEBRUARY 1979

Standard pressure surface mb.	CARIBOU, ME 989 MB					CENTREVILLE, AL 1004 MB					CHARLESTON, SC 1019 MB					CHATHAM, MA 1015 MB					CHIHUAHUA, MEXICO 858 MB										
	Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind						
	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.							
5FC	28	191	-14.3	-20.7	31	4.5	28	140	3.5	01	1.1	28	13	4.7	1.5	31	1.0	28	16	-6.3	-10.3	32	3.4	28	1.428	5.3	-2.7	23	1.7		
1000	28	242	-12.3	-17.5	31	24	188	5.5	-1.2	31	1.3	28	170	6.3	4.6	28	13	26	143	-6.6	-10.7	32	4.5	28							
950	28	492	-16.1	-19.2	32	7.8	28	592	4.0	-1.9	26	2.4	28	591	6.1	-1.1	27	3.6	28	529	-6.0	-11.3	32	7.6	28						
900	28	898	-16.1	-19.5	33	10.5	28	1,032	4.4	-5.9	26	5.1	28	1,034	4.9	-4.4	26	4.3	28	950	-7.9	-14.4	31	7.5	28						
850	28	1,331	-14.1	-18.7	34	11.6	28	1,497	3.7	-7.5	27	7.5	28	1,499	3.8	-6.6	27	6.3	28	1,393	-9.0	-16.5	30	8.6	28	1,503	7.8	-4.4	24	2.0	
800	28	1,792	-13.9	-19.3	33	11.2	28	1,988	2.7	-9.1	28	9.5	28	1,991	2.6	-9.2	27	9.7	28	1,862	-9.8	-18.7	30	10.7	28	2,004	7.8	-5.9	24	3.6	
750	28	2,281	-15.3	-20.8	32	10.9	28	2,508	3.3	-12.1	27	11.1	28	2,513	2.7	-12.5	27	13.0	28	2,359	-11.5	-20.1	29	12.8	28	2,533	4.7	-8.4	25	5.2	
700	28	2,801	-17.5	-22.5	31	10.6	28	3,059	-2.7	-15.9	27	13.8	28	3,053	-1.7	-13.9	27	15.6	28	2,886	-13.5	-22.9	29	15.3	28	3,092	1.5	-11.8	26	8.4	
650	28	3,354	-19.5	-25.1	30	11.6	28	3,645	-4.9	-18.2	27	16.6	28	3,650	-4.7	-16.4	27	18.2	28	3,448	-15.7	-26.2	29	17.4	28	3,686	-1.3	-15.5	26	9.7	
600	28	3,945	-22.2	-27.6	30	11.3	28	4,271	-8.1	-20.5	27	19.3	28	4,276	-7.8	-19.2	27	22.3	28	4,048	-18.8	-29.8	29	19.8	28	4,319	-5.1	-20.1	26	11.1	
550	28	4,580	-25.9	-30.9	29	10.9	28	4,942	-11.9	-23.5	27	21.7	28	4,949	-11.2	-22.5	27	25.7	28	4,692	-22.6	-33.6	28	22.1	28	4,997	-9.8	-24.9	26	12.4	
500	28	5,265	-30.3	-33.8	29	12.7	28	5,665	-16.5	-27.3	27	23.9	28	5,674	-16.0	-26.5	27	28.2	28	5,385	-26.6	-37.8	28	25.4	28	5,725	-15.0	-29.0	26	15.7	
450	28	6,007	-35.3	-37.1	29	13.5	28	6,450	-21.6	-31.8	27	27.2	28	6,461	-20.9	-31.3	27	31.8	28	6,138	-31.7	-44.0	28	27.7	28	6,514	-20.3	-32.6	26	17.2	
400	28	6,818	-40.7	-41.8	28	14.2	28	7,307	-27.8	-36.9	26	30.2	28	7,320	-27.0	-37.0	27	34.7	28	6,949	-37.1	-44.4	28	30.7	28	7,375	-26.5	-38.0	26	19.6	
350	28	7,720	-45.8		28	17.3	28	8,257	-34.4	-43.0	26	34.6	28	8,271	-34.3	-43.4	27	38.2	27	7,865	-42.3	-44.0	28	33.3	28	8,330	-33.4	-42.2	26	21.5	
300	28	8,731	-49.4		27	19.0	28	9,314	-42.5	-47.9	26	36.6	28	9,329	-41.9	-48.9	27	43.3	27	8,894	-47.0		28	36.0	28	9,391	-41.9	-45.8	26	18.5	
250	28	9,921	-51.0		27	24.2	28	10,522	-51.2		26	40.8	28	10,541	-50.3		27	47.8	27	10,092	-50.1		28	36.3	28	10,600	-51.3		26	24.6	
200	28	11,379	-51.2		27	24.4	28	11,949	-51.9		26	43.3	28	11,972	-50.7		27	51.2	27	11,545	-51.5		28	35.4	28	12,023	-51.1		27	21.0	
175	28	12,247	-51.1		27	25.1	28	12,790	-58.7		26	44.0	28	12,817	-57.7		27	50.3	27	12,410	-52.0		28	33.5	28	12,861	-59.7		27	27.5	
150	28	13,249	-50.5		27	19.4	28	13,755	-60.5		26	41.6	28	13,785	-59.9		27	46.6	27	13,400	-52.5		27	30.4	28	13,821	-61.8		26	27.9	
125	28	14,453	-50.9		26	18.0	28	14,883	-63.8		26	35.4	28	14,914	-63.9		27	40.1	27	14,584	-53.7		27	29.2	27	14,945	-64.7		26	25.6	
100	28	15,899	-52.2		26	15.7	27	16,247	-66.3		26	27.8	28	16,273	-66.2		26	30.5	27	16,012	-55.6		27	24.3	26	16,295	-68.1		27	21.4	
80	28	17,347	-52.8		26	13.4	25	17,591	-67.3		26	19.7	28	17,620	-67.1		27	22.1	27	17,430	-56.6		27	17.3	25	17,626	-69.7		27	15.3	
60	28	18,209	-52.8		26	11.6	25	18,398	-66.3		26	15.2	26	18,433	-65.2		26	15.2	26	18,278	-56.5		27	14.9	27	18,978	-67.9		27	13.0	
40	28	19,199	-52.8		25	8.6	24	19,434	-64.6		26	12.1	25	19,375	-64.3		27	12.2	27	19,257	-55.8		27	12.2	24	19,353	-65.5		26	9.7	
20	28	20,374	-53.1		25	8.6	24	20,453	-62.0		26	9.6	25	20,498	-61.4		27	7.9	27	20,419	-55.5		27	10.1	21	20,470	-62.8		26	5.6	
10	28	21,812	-52.6		24	3.2	24	21,839	-60.0		27	6.6	24	21,893	-58.8		28	3.8	27	21,846	-54.6		26	6.2	21	21,855	-59.8		26	4.4	
	28	23,668	-51.8		22	2.4	22	23,646	-56.7		26	2.7	23	23,712	-56.3		26	4.9	26	23,696	-53.9		23	1.8	18	23,662	-57.7		27	3.1	
	28	24,855	-51.3		21	1.6	20	24,812	-55.8		25	2.3	20	24,866	-55.0		28	6.2	26	24,869	-53.1		02	1.1	15	24,819	-55.6		01	1.6	
	28	26,302	-50.7		07	2.3	26	26,307	-52.8		23	3.3	19	26,171	-49.6		13	1.3	26	26,197	-49.9		01	3.6	11	26,250	-53.5		15	1.4	
	28	28,183	-50.2		13	30.7	23	28,183	-49.2		27	4.5	5	30,832	-46.1		7	30,859	-49.5												

CCLD BAY, AK 1008 MB					DAYTON, OH 986 MB					DEL RID, TX 982 MB					DENVER, CO 834 MB					DESERT ROCK, NV 902 MB										
Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind	Temperature °C		Dew Point °C		Resultant Wind						
No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Direction lens of deg	Speed m.p.s.							
5FC	26	30	-1.9	-4.0	08	4.9	28	299	-9.4	-12.2	06	6.2	28	314	6.9	4.3	08	1.5	28	1.611	-3.8	-10.2	22	1.3	27	1.007	2.1	-2.7	13	6.6
1000	21	121	-2.6	-6.0	02	1.4																								
950	26	500	-4.7	-7.0	08	1.6	28	581	-7.7	-10.4	26	3.4	28	584	7.9	2.7	14	1.9												
900	26	923	-7.3	-10.5	04	1.4	28	1,003	-5.8	-11.2	27	3.6	28	1,031	8.3	2.21	3.4													
850	26	1,368	-8.3	-16.9	02	1.7	28	1,452	-4.9	-13.4	28	6.2	28	1,504	9.3	-4.8	23	5.0												
800	26	1,838	-9.2	-21.8	06	2.1	28	1,929	-5.6	-14.5	28	8.3	28	2,006	8.2	-8.2	26	5.5	28	1,944	-2.3	-12.8	27	3.4	27	1,493	4.6	-6.7	18	2.3
750	26	2,366	-10.8	-23.7	33	2.9	28	2,434	-6.8	-16.2	28	11.2	28	2,536	5.7	-11.6	26	7.0	28	2,460	-2.0	-16.3	29	4.7	27	2,503	-8.8	-12.3	23	5.2
700	26	2,863	-13.2	-26.4	33	3.2	28	2,971	-8.7	-19.0	28	13.5	28	3,097	2.4	-13.9	26	9.2	28	3,005	-5.7	-19.5	30	6.3	27	3,051	-3.5	-16.9	25	6.4
650	26	3,425	-16.2	-29.1	32	4.1	28	3,542	-12.1	-20.8	28	15.5	28	3,692	-1.4	-16.5	26	10.6	28	3,582	-9.7	-22.0	30	9.5	27	3,633	-6.7	-20.9	27	7.8
600	26	4,023	-19.7	-33.0	31	5.2	28	4,150	-15.6	-23.4	28	17.9	28	4,325	-5.3	-21.0	25	13.1	28	4,195	-13.5	-24.6	30	12.3	27	4,254	-10.8	-24.6	28	10.0
550	26	4,664	-23.8	-37.0	31	5.2	28	4,802	-19.3	-26.7	29	20.8	28	5,002	-9.6	-23.9	25	15.2	28	4,851	-18.0	-28.1	30	14.8	27	4,917	-15.4	-27.7	28	11.7
500	26	5,354	-28.5	-41.6	30	5.5	28	5,505	-23.7	-32.1	28	24.2	28	5,731	-14.8	-27.5	24	16.9	28	5,557	-22.9	-32.8	29	16.0	27	5,629	-20.6	-30.8	27	13.8
450	26	6,101	-33.7	-46.0	31	7.1	28	6,267	-28.9	-36.8	28	28.8	28	6,520	-20.1	-33.4	26	20.3	28	6,321	-28.5	-37.7	29	16.2	27	6,401	-25.9	-34.9	28	15.6
400	26	6,917	-39.4	-47.7	30	8.7	28	7,099	-35.1	-42.7	28	33.																		











# RAWINSONDE DATA

Average monthly values

FEBRUARY 1979

SALEM, IL 1001 MB				SALEM, OR 1006 MB				SALT LAKE CITY, UT 872 MB				SAN DIEGO, CA 1004 MB				SAN JUAN, P. R. 1017 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind						
					Direction true deg.	Speed m.p.s.	Speed kts.					Direction true deg.	Speed m.p.s.	Speed kts.					Direction true deg.	Speed m.p.s.	Speed kts.				
SFC	27	174	-8.0	-11.1	11	5	28	131	4.6	2.9	19	3.1	2.8	12	124	8.6	6.6	0.3	4	27	6	20.8	18.3	10	2.0
1000	8	220	-11.7	-14.3	02	1	24	63	5.2	2.9	19	4.0	3.6	27	158	10.1	6.0	0.5	.6	27	149	22.1	18.1	09	3.7
950	26	581	-8.2	-9.1	26	3	128	592	4.0	1.7	21	8.6	7.8	28	585	11.0	9.2	.6	.27	594	19.2	16.0	09	5.6	
900	26	1010	-4.6	-2.6	27	6	208	940	1.6	-.4	22	10.3	9.5	28	1034	9.1	4.2	2.7	2.1	1057	15.9	12.5	10	5.4	
850	26	1463	-2.1	-13.4	27	7	298	1479	-1.4	-3.3	23	11.9	10.9	28	1506	7.2	-8.3	2.8	3.2	1541	13.6	6.8	10	4.6	
800	26	1916	-1.5	-15.5	27	9	392	1932	-1.7	-7.7	23	12.7	11.7	28	2003	5.4	-11.5	2.9	3.9	2050	10.8	-4.6	10	3.6	
750	26	2455	-0.6	-16.5	28	11	488	2478	-1.4	-12.3	24	13.1	12.8	29	2528	2.4	-15.0	2.9	4.7	2589	9.7	-5.0	09	2.7	
700	26	2995	-0.7	-16.2	28	13	578	2915	-0.2	-16.4	25	13.3	12.9	29	3081	-0.9	-18.1	2.9	7.1	3159	7.4	-10.9	10	2.0	
650	26	3570	-10.1	-21.9	28	15	678	3575	-12.7	-23.9	25	14.2	13.8	29	3669	-4.5	-20.9	2.8	8.6	3727	3.7	-15.4	13	.9	
600	26	4182	-13.9	-24.7	28	17	778	4181	-16.6	-22.6	26	15.7	15.2	29	4294	-8.9	-25.2	2.8	9.9	4367	2.3	-18.8	16	.1	
550	26	4838	-17.9	-26.0	27	20	878	4790	-20.8	-27.1	26	16.4	16.4	28	4962	-13.5	-28.6	2.8	12.2	5114	-1.6	-22.2	27	1.3	
500	26	5424	-20.9	-27.1	27	23	978	5409	-25.3	-31.7	26	17.2	17.2	28	5680	-18.4	-33.7	2.8	13.6	5866	-6.6	-26.4	29	2.7	
450	26	6310	-27.6	-30.8	27	26	28	6245	-30.6	-38.1	26	18.5	18.5	28	6318	-29.2	-34.1	2.8	15.3	6457	-24.2	-37.8	28	3.6	
400	26	7148	-33.2	-42.1	27	31	28	7071	-41.9	-47.0	27	19.0	19.0	28	7150	-35.2	-40.4	2.8	17.5	7305	-30.5	-43.4	27	6.8	
350	26	8078	-39.2	-45.9	27	36	28	7994	-43.9	-49.6	27	20.5	20.5	28	8099	-42.7	-41.7	2.8	22.8	8245	-36.8	-47.6	27	9.4	
300	26	9115	-46.9	-46.9	27	36	28	9092	-50.7	-46.9	27	22.0	22.0	28	9299	-50.1	-46.9	2.8	24.5	9422	-44.6	-47.6	27	12.4	
250	26	10306	-53.6	-46.9	26	36	28	10256	-56.9	-46.9	26	22.7	22.7	27	10492	-52.7	-46.9	2.8	27.3	10790	-52.7	-46.9	27	15.3	
200	26	11727	-56.9	-46.9	26	36	28	11659	-58.6	-46.9	26	24.0	24.0	27	11855	-57.9	-46.9	2.8	28.5	12307	-58.6	-46.9	27	20.5	
175	26	12575	-56.1	-46.9	27	20	24	12572	-57.2	-46.9	27	20.4	20.4	28	12744	-59.6	-46.9	2.8	27	13070	-59.6	-46.9	27	18.8	
150	26	13355	-56.2	-46.9	27	32	26	13408	-54.9	-46.9	27	17.1	17.1	28	13705	-59.7	-46.9	2.8	27	14206	-59.7	-46.9	27	16.0	
125	26	14709	-57.6	-46.9	27	28	26	14573	-55.2	-46.9	26	14.8	14.8	27	14842	-61.2	-46.9	2.8	27	15280	-60.4	-46.9	27	12.1	
100	26	16112	-60.1	-46.9	27	23	26	15993	-56.0	-46.9	28	13.9	13.9	29	16220	-63.3	-46.9	2.8	27	16584	-76.4	-46.9	30	8.3	
80	26	17502	-60.0	-46.9	27	13	26	17415	-55.1	-46.9	29	9.6	9.6	30	17700	-67.3	-46.9	2.8	27	18097	-76.9	-46.9	30	5.7	
70	26	18333	-60.1	-46.9	27	15	26	18267	-55.4	-46.9	29	8.8	8.8	30	18439	-62.8	-46.9	2.8	27	19025	-76.9	-46.9	30	6.1	
60	26	19294	-60.0	-46.9	26	12	26	19249	-55.6	-46.9	30	7.1	7.1	30	19350	-62.3	-46.9	2.8	27	20026	-76.0	-46.9	30	2.2	
50	26	20436	-60.6	-46.9	26	10	26	20433	-55.2	-46.9	32	5.3	5.3	30	20480	-61.1	-46.9	2.8	25	20629	-66.2	-46.9	05	2.2	
40	26	21842	-57.8	-46.9	26	7	26	21831	-55.3	-46.9	34	5.4	5.4	30	21798	-57.7	-46.9	2.8	31	21873	-59.2	-46.9	08	5.7	
30	26	23684	-56.6	-46.9	32	3	26	23677	-54.9	-46.9	02	6.9	6.9	23	23686	-56.9	-46.9	2.8	30	23686	-56.9	-46.9	08	5.3	
20	26	24827	-56.9	-46.9	13	5	26	24814	-54.2	-46.9	28	16.5	16.5	28	24846	-56.0	-46.9	2.8	33	24849	-56.0	-46.9	10	10.0	
15	26	26257	-53.1	-46.9	15	1	26	26300	-52.9	-46.9	05	9.1	9.1	26	26241	-54.2	-46.9	2.8	04	27265	-54.7	-46.9	11	9.4	
10	26	30782	-47.7	-46.9	15	3	26	30780	-51.6	-46.9	05	11.7	11.7	26	30812	-51.3	-46.9	2.8	07	30812	-51.3	-46.9	12	6.5	
7	26	33222	-43.6	-46.9	09	5	26	33251	-48.7	-46.9	07	10.6	10.6							311000	-42.8	-46.9			

SAULT STE MARIE, MI 996 MB				SPOKANE, WA 925 MB				TAMPA BAY, FL 1019 MB				TOPEKA, KS 990 MB				TRUK, CAROLINE IS. 1011 MB															
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind												
					Direction true deg.	Speed m.p.s.	Speed kts.					Direction true deg.	Speed m.p.s.	Speed kts.					Direction true deg.	Speed m.p.s.	Speed kts.										
SFC	26	221	-16.7	-21.3	06	1	1	720	-2.8	-4.4	1E	2.8	2.8	13	10.7	8.6	0.3	4	28	268	-9.4	-12.1	36	1.3	28	2	28.1	23.1	07	4.5	
1000	8	271	-22.3	-27.3										18	17.1	13.3	8.7	0.8	1.2	28	268	-6.8	-10.2	28	1.4	28	98	27.1	22.9	06	5.7
950	26	576	-14.7	-19.5	10	1	5	968	-1.7	-4.0	21	6.3	6.3	12	6.0	12.3	6.7	1.8	1.8	28	585	-6.8	-10.2	28	1.4	28	252	23.5	20.6	07	7.6
900	26	986	-14.6	-19.6	23	5	28	968	-1.7	-4.0	21	6.3	6.3	12	6.0	12.3	6.7	1.8	1.8	28	585	-6.8	-10.2	28	1.4	28	252	23.5	20.6	07	7.6
850	26	1419	-14.9	-20.0	28	2	28	1423	-2.9	-7.4	23	8.4	8.4	28	1432	9.6	-2.0	2.5	4.9	28	1465	-2.9	-13.9	28	5.7	28	1515	17.4	13.3	08	6.1
800	26	1879	-14.8	-21.7	28	4	28	1901	-5.8	-10.3	24	9.5	9.5	28	2034	8.5	-6.0	2.4	6.4	28	1950	-1.0	-14.9	29	7.9	28	2032	15.6	7.1	09	4.4
750	26	2366	-16.4	-23.1	28	6	28	2404	-8.9	-13.1	24	9.5	9.5	28	2565	6.4	-10.0	2.6	6.4	28	2462	-3.4	-16.6	29	9.4	28	2579	14.0	4.2	10	3.9
700	26	2884	-17.9	-24.7	28	8	28	2935	-11.7	-18.6	25	11.0	11.0	28	3129	4.1	-13.7	2.6	10.7	28	3005	-6.4	-19.6	28	11.6	28	3158	11.2	-4.8	09	3.4
650	26	3436	-20.2	-28.6	28	11	28	3500	-14.8	-23.2	26	12.2	12.2	28	3728	.9	-15.7	2.7	12.8	28	3581	-9.5	-21.8	28	13.2	28	3773	7.9	-8.5	10	3.9
600	26	4027	-22.9	-31.0	28	13	28	4104	-18.1	-27.6	26	14.5	14.5	28	4366	-6.8	-19.0	2.6	16.7	28	4195	-13.2	-25.3	28	16.8	28	4429	9.4	-12.2	09	5.7
550	26	4660	-26.6	-34.5	28	15	28	4745	-22.9	-30.7	27	16.5	16.5	28	5051	-6.6	-21.5	2.6	18.5	28	4853	-17.4	-30.2	28	17.8	28	5132	1.1	-15.3	08	6.7
500	26	5342	-31.0	-38.3	29	18	28	5437	-27.4	-34.6	27	18.4	18.4	28	5789	-11.7	-25.5	2.6	20.6	28	5560	-22.2	-34.7	27	20.1	28	5890	-3.8	-20.1	08	6.5
450	26	6083	-35.7	-40.3	28	20	28	6187	-32.7	-38.5	27	19.9	19.9	28	6588	-16.7	-31.7	2.7	23.3	28	6326	-27.9	-40.5	28	20.9	28	6714	-8.7	-26.0	07	6.3
400	26	6892	-41.1	-42.0	28	24	28	7007	-38.7	-42.6	27	22.3	22.3	28	7462	-23.1	-37.4	2.6	24.5	28	7161	-34.3	-45.3	27	24.2	28	7617	-14.5	-31.5	06	7.7
350	26	7793	-46.1	-42.0	28	27	28	7913	-45.3	-42.0	27	25.3	25.3	28	8429	-30.4	-43.3	2.6	24.3	28	8086	-40.2	-45.3	27	30.2	28	8639	-21.4	-37.1	06	7.3
300	26	8804	-53.6	-42.0	28	30	28	8925	-51.9	-42.0	28	28.8	28.8	28	9504	-38.9	-43.8	2.7	27	28	9119	-47.4	-47.4	27	35.2	28	9734	-29.9	-44.1	06	5.4
250	26	9984	-53.6	-42.0	28	30	28	10098	-57.3	-42.0	27	30.5	30.5	28	10729	-48.2	-42.0	2.7	30	28	10505	-									







# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

FEBRUARY 1979

Sun's zenith distance										Sun's zenith distance											
Date	A.M.					*	P.M.				Date	A.M.					*	P.M.			
	78.7°	75.7°	70.7°	60.0°	60.0°		70.7°	75.7°	78.7°	78.7°		75.7°	70.7°	60.0°	60.0°	70.7°		75.7°	78.7°		
	MAUNA LOA OBSERVATORY, HI											TUCSON, AZ									
Air mass										Air mass											
	3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64		
22----	1.26	1.33	1.50	1.54	----	----	----	----	----	1-----	----	----	----	1.41	----	1.44	----	----	----		
23----	1.31	1.37	1.43	1.52	----	----	----	----	----	2-----	----	----	----	1.41	1.49	1.41	1.25	----	----		
24----	1.20	1.28	1.38	1.50	----	----	----	----	----	4-----	----	----	----	1.46	----	----	----	----	----		
27----	1.18	1.26	1.35	1.53	----	----	----	----	----	6-----	.97	1.08	1.22	1.40	1.50	1.38	1.25	1.14	1.04		
Aver-	1.24	1.31	1.42	1.52	----	----	----	----	----	13-----	1.04	1.14	1.25	1.37	1.45	1.31	1.15	1.03	.96		
ages										14-----	1.01	1.09	1.21	1.36	1.44	----	----	----	----		
										15-----	.97	1.07	1.18	1.33	1.39	1.24	1.10	.97	.89		
										16-----	----	----	1.13	1.25	1.42	1.31	1.15	1.04	.96		
										17-----	.98	1.09	1.19	1.34	1.43	1.28	1.14	1.03	.95		
										18-----	1.03	1.13	1.24	1.38	1.49	----	----	----	----		
										19-----	----	----	1.18	----	----	----	----	----	----		
										21-----	----	----	1.14	1.29	1.42	----	----	----	----		
										22-----	----	----	----	----	----	1.29	1.14	1.02	.89		
										23-----	.89	1.02	1.14	1.30	----	1.32	----	----	----		
										24-----	.99	1.09	1.19	1.36	----	----	----	----	----		
										25-----	1.07	1.16	1.26	1.39	1.48	1.36	1.21	1.11	1.02		
										26-----	----	----	----	* .73	----	1.30	1.13	1.01	.91		
										27-----	.63	.76	.94	1.21	1.41	1.30	1.15	.99	.90		
										28-----	.93	1.04	1.16	1.32	----	----	----	----	.90		
										Aver-	.96	1.06	1.17	1.34	1.45	1.33	1.17	1.04	.94		
										ages											

\* Solar Eclipse (Not included in average).

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . . .	-4	-2	-17	-12	-31	-62	-63	-62	-60	-58	-46	-36	-27	-30	-35	-36	-12	-23	-17	-23	-14	-17	-16	-19	-29	-16	-11	-14				-28

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- O Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- \* Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

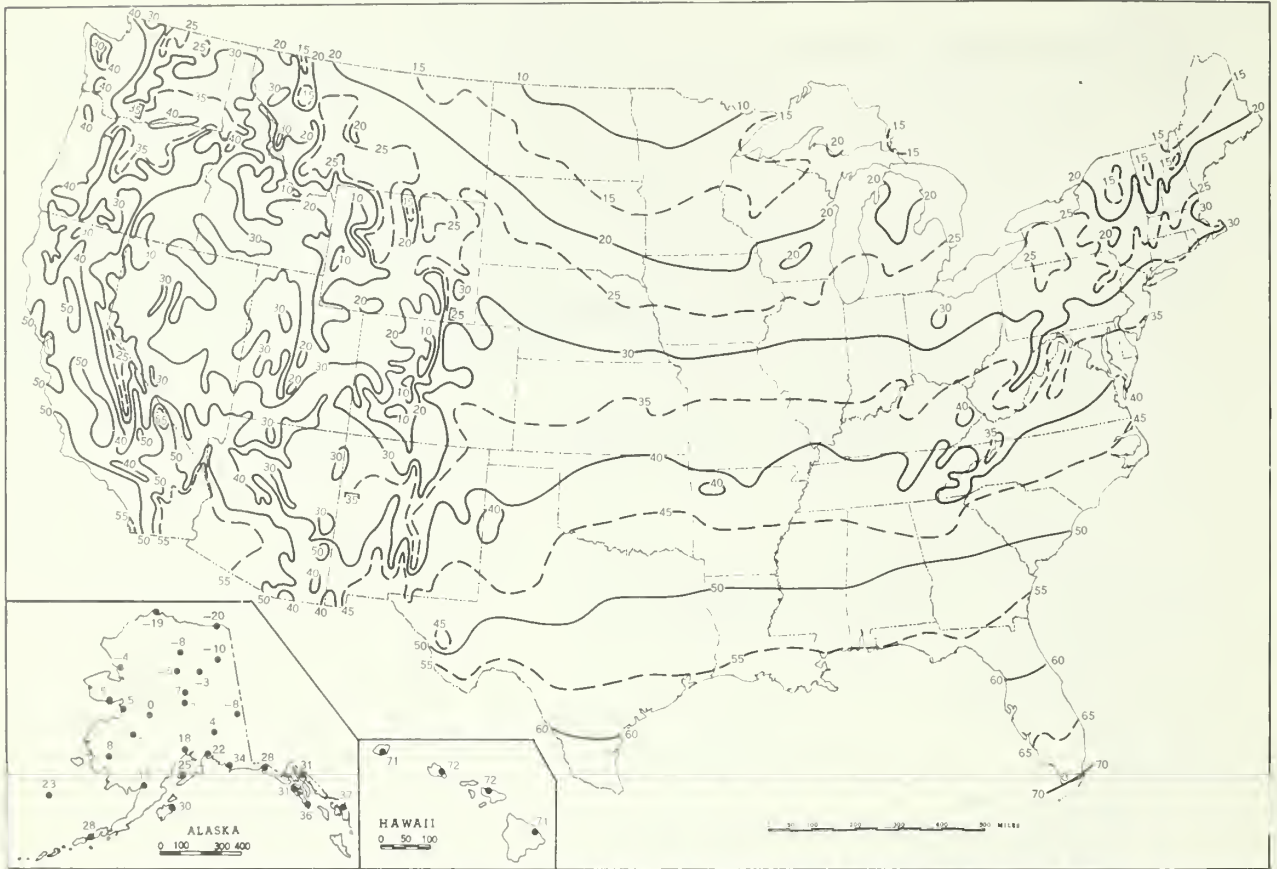
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( ) Clouds Present	OM Moderate Oust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Dust	HS Slight Haze	M Moderate Haze-indeterminable
BO Blowing Dust	F Fog	I Intense Haze-indeterminable	N Sand
BN Blowing Sand	GF Ground Fog	K Smoke	S Slight Haze-indeterminable
O Oust	H Haze	KI Intense Smoke	
OI Intense Oust	HI Intense Haze	KM Moderate Smoke	

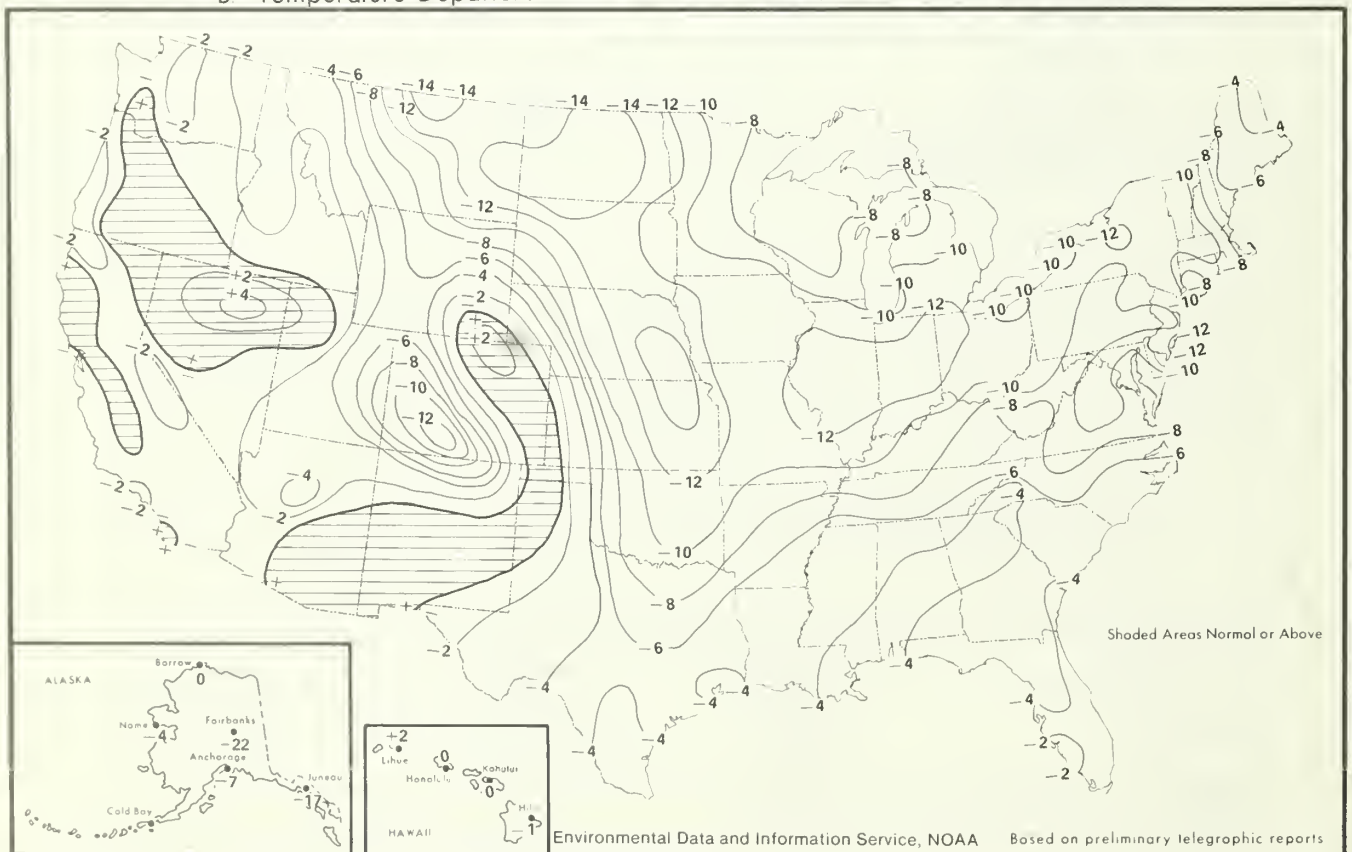
NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), February.



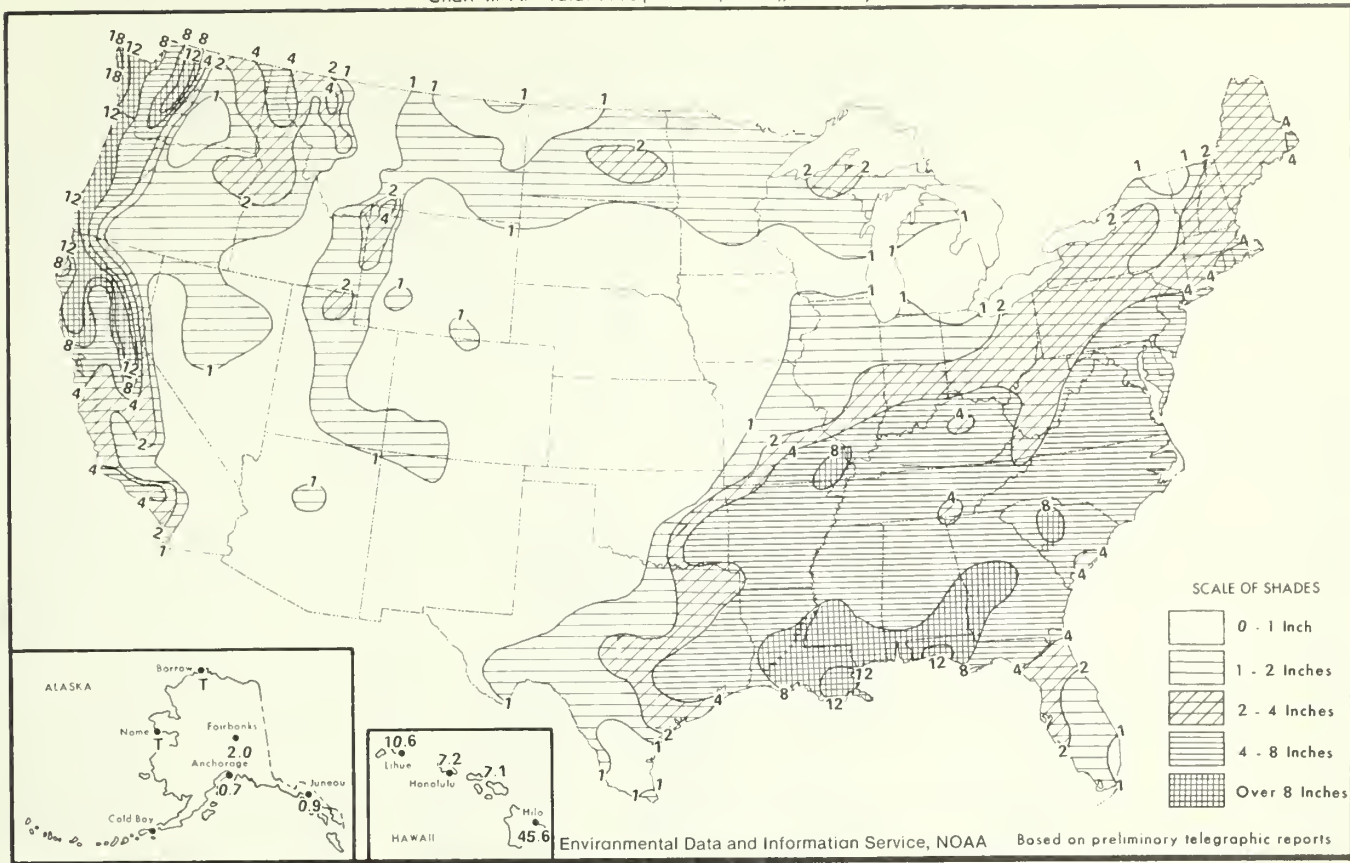
B. Temperature Departure from 30 - Year Mean (°F 1941-70), February 1979



Environmental Data and Information Service, NOAA Based on preliminary telegraphic reports



Chart II. A. Total Precipitation (Inches), February 1979



B. Percentage of Normal Precipitation, February 1979

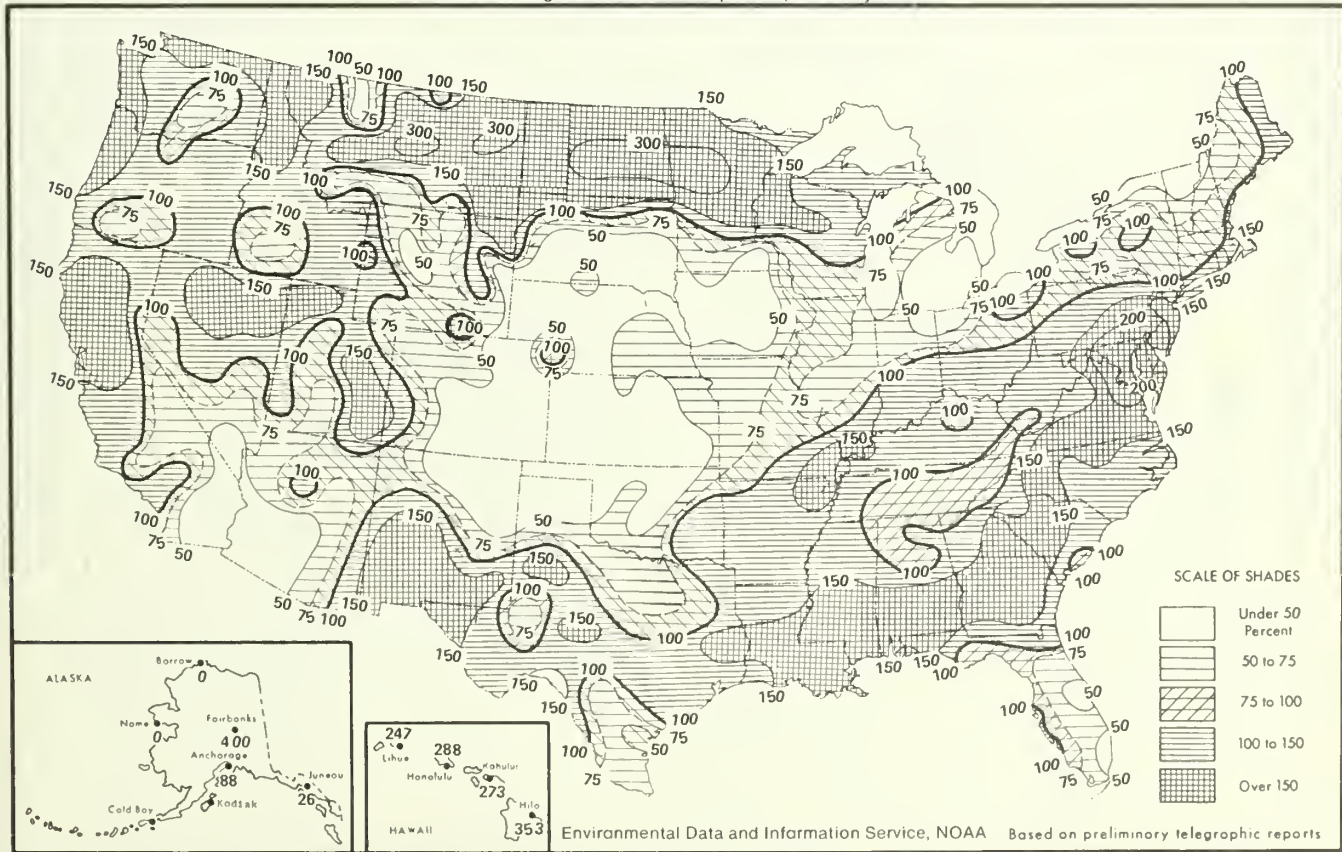
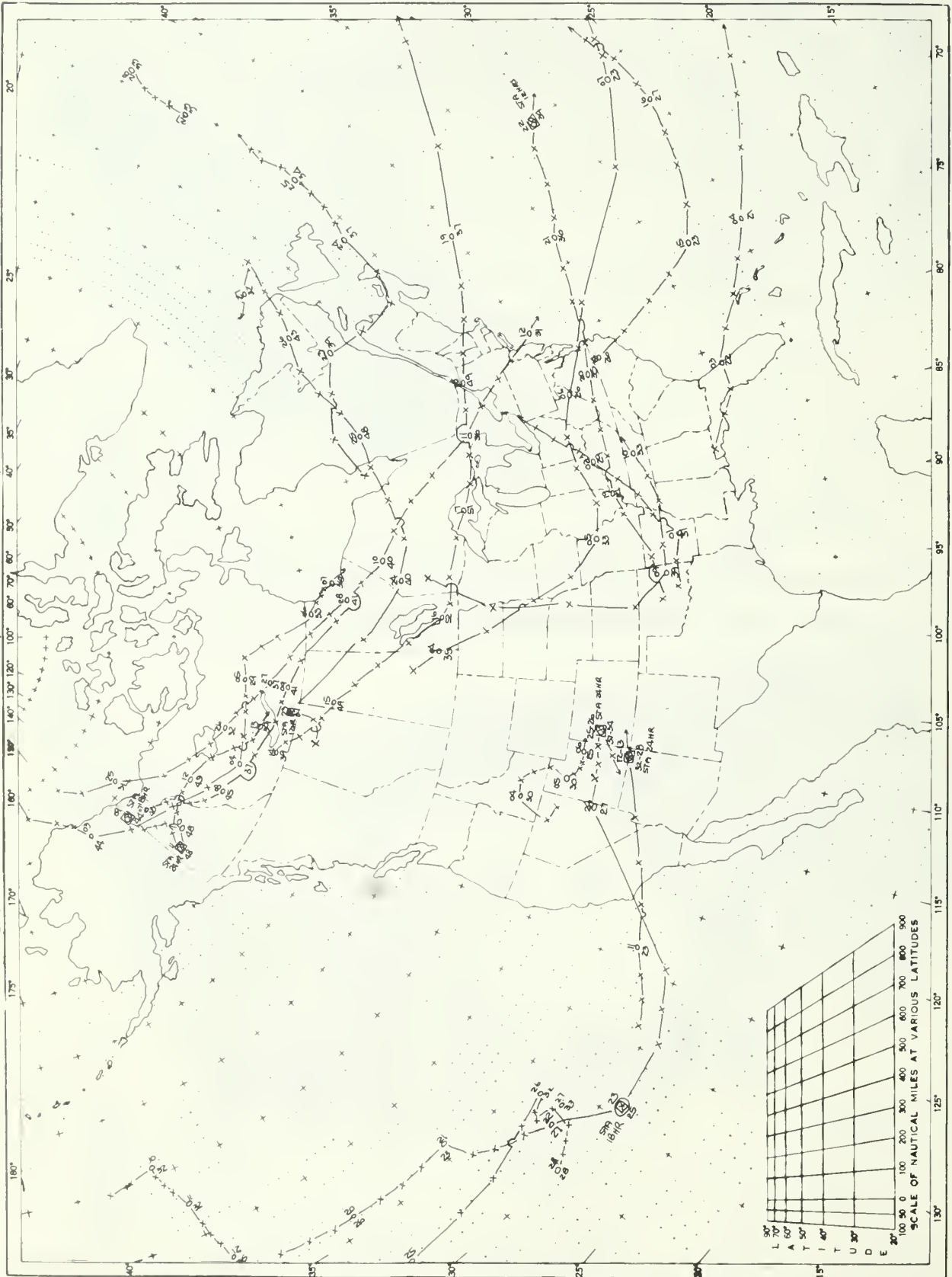
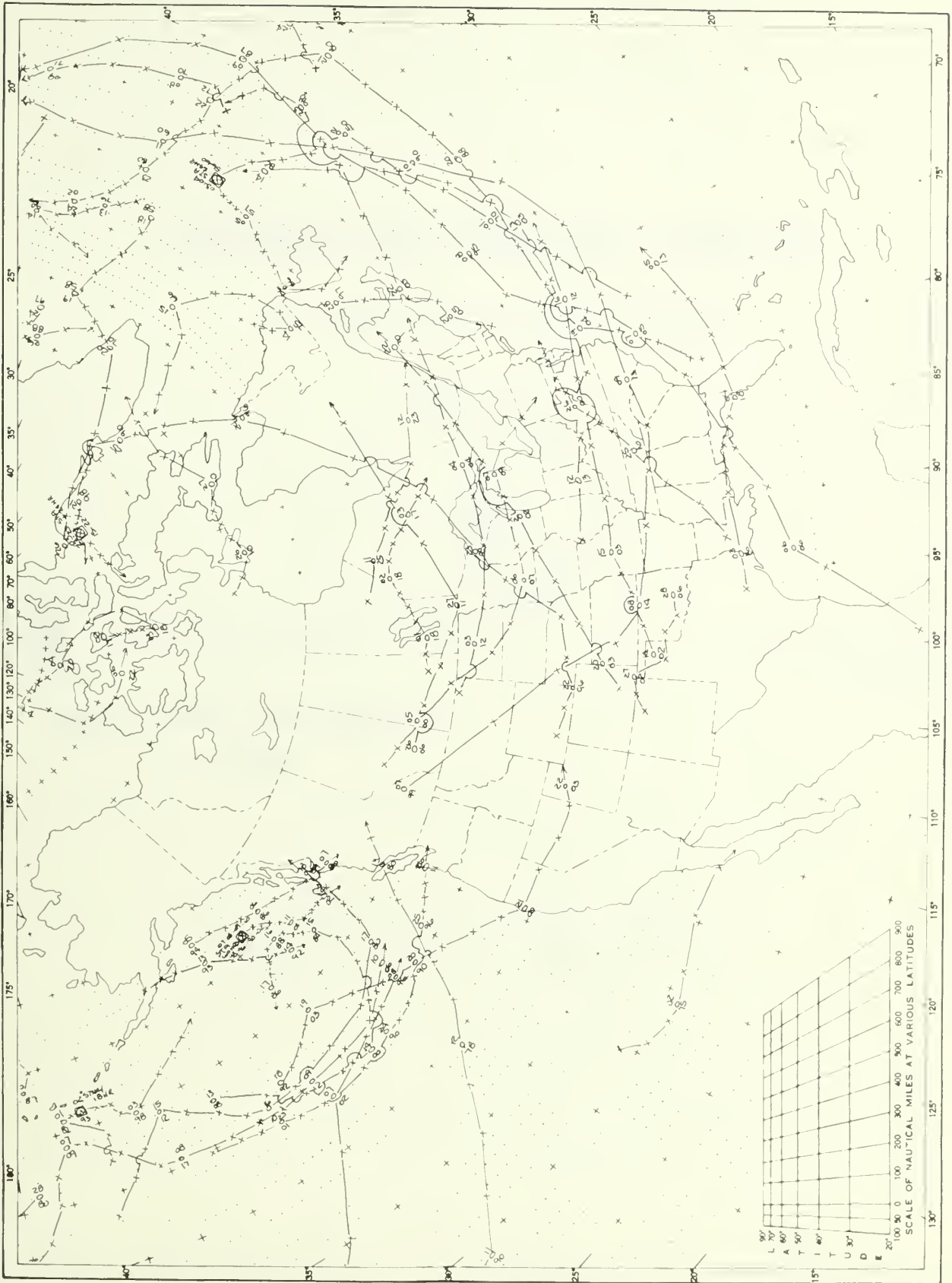


Chart III. Tracks of Anticyclones at Sea Level, February 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart IV. Tracks of Centers of Cyclones at Sea Level, February 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

MARCH 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Well above normal precipitation prevailed over central and southern California, the southern Plateau, and central and northern Rockies. Some areas in southern California accumulated more than 5 inches. Elsewhere, nearly all of the Great Plains, the western Great Lakes, New England, the central East Coast, and parts of the South recorded more than their normal amounts of precipitation. Local flooding occurred in some areas where melting snow mixed with heavy rain. Average temperatures for the month were generally warmer than normal except in the northern Plains.

Severe weather during the first four days of March dominated the lower Mississippi Valley and the area from southern Alabama into the Appalachians to western North Carolina. Heavy rain, thunderstorms with hail, and tornadoes moved from west to east in the area. Temperatures ranged cooler than normal in the northern Plains, near normal in the West, and warmer in the East.

The heavy rain area moved off the East Coast early in the week of the 5th-11th. More than 2 inches of rain fell along most of the East Coast and into central Florida. An arctic front brought cool air into the Rockies and Plains, and then spread eastward later in the week. Freezing temperatures dipped as far south as the Florida Panhandle. Light rain accompanied the system east of the Mississippi River. Average temperatures for the week were much warmer than normal in the West and Northeast. Northern California averaged 12° above normal, and northern Maine reached 15° over the normal mark. The Mississippi River Valley averaged near or cooler than normal.

Most of the Nation received some measurable precipitation in the week of the 12th-18th. The heaviest amounts fell in the southern and central Plains where

thunderstorms rumbled frequently. The major winter wheat areas of the central Plains, where wheat had begun to break dormancy, welcomed the wetting. Some areas in Texas, Oklahoma, and Kansas totaled more than 2 inches. Elsewhere, moderate rain fell along the West Coast with snow in the higher elevations of the Cascades, the Sierras, and the Plateau. The additional snowpack was helpful, building the water table. It was warmer than normal everywhere but the Appalachians and eastward, where temperatures cooled slightly.

A series of storms moved into the Southwest during the third week. The storm systems brought unwanted rain to southern California and rain or snow to the southern Plateau and central and southern Rockies. The storms moved slowly eastward and into warm, moist air moving northward from the Gulf of Mexico. This situation produced some heavy precipitation from Texas to the western Great Lakes, eastward to the Appalachians and into New England. Thunderstorms were again frequent in the southern States. Warm weather continued over most of the Nation. Only the Southwest was cooler than normal.

The last week of March was similar to the previous week. A series of weather disturbances moved down the West Coast, headed into the Southwest, and edged eastward. Moderate to heavy rain fell along the entire coast and snow, some heavy, in the mountains and Plateau. Heavy rain hit the strawberry area of southern California. Snow covered the ground in the northern Plains, and rain fell in the central Plains. Thunderstorms with heavy rain occurred from central Texas into the Ohio Valley. The Southeast remained dry. Cooler air moved into the northern Plains, the Rockies, and the Plateau.

# OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

MARCH 1979

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	2 Stations	87	22+	Guntersville	20	26	Dayton 1 N	10.98	Newton	3.10	
Alaska	2 Stations	57	14+	Umiat	-56	4	Yakutat WSO AP	27.35	Lonely	T	
Arizona	Gila Bend	89	12	Hawley Lake	-10	5	Sunrise Mountain	9.82	Yuma WSO AP	.17	
Arkansas	2 Stations	83	20+	3 Stations	17	11	Langley	11.60	Fayetteville Exp Station	2.01	
California	Death Valley	92	10	White Mountain 2	- 6	17	Lytle Creek Ranger Station	14.29	Ocotillo 2	.04	
Colorado	2 Stations	81	29+	Rio Grande Reservoir	-31	4	Independence Pass 5 SW	14.67	Gunnison	.20	
Connecticut	Bulls Bridge Dam	75	31	2 Stations	9	16	Saugatuck Reservoir	6.78	Groton	3.06	
Delaware	Milford 2 WSW	84	31	Wilmington Porter Resvr	15	16	Lewes 1 SW	5.58	Newark University Farm	2.06	
Florida	2 Stations	89	30+	2 Stations	25	26+	Pensacola FAA AP	12.96	2 Stations	.15	
Georgia	3 Stations	88	31+	2 Stations	21	17+	Unicoi State Park	9.49	Folkston 3 SW	.50	
Hawaii	Aloha Stadium-Halawa	90	8	Mauna Kea Obs 111.2	19	25	Hana Airport 355	17.51	3 Stations	.00	
Idaho	Grand View 2 W	74	24	Stanley	-21	3	Pierce	4.15	Anderson Dam	.20	
Illinois	Harrisburg	78	18	Rocelle	- 2	11	Carlyle Reservoir	8.26	Galena 1 N	2.08	
Indiana	Spurgee 2 N	79	23	3 Stations	1	13+	Mount Vernon	8.28	New Castle	.91	
Iowa	Glenwood	76	29	Milford 4 NW	-10	10	Sac City	7.78	Independence 2 SW	1.90	
Kansas	2 Stations	84	29+	Johnson 11 ESE	5	4	Osborne	7.80	Bird City 11 SSW	1.20	
Kentucky	2 Stations	82	23+	3 Stations	11	17+	Bardwell 2 E	7.08	Warsaw Markland Dam	.71	
Louisiana	Paradis 7 S	86	19	Plain Dealing	24	6+	Many	8.73	Morgan City	1.46	
Maine	Lewiston	73	23	Rangley	-11	13	Eastport	7.72	Jackman	1.54	
Maryland	3 Stations	87	31+	Oakland 1 SE	8	15	Snow Hill 4 N	5.86	Centreville	.97	
Massachusetts	Dunstable	77	23	Stockbridge	0	16	New Salem	6.14	Hatchville	1.94	
Michigan	2 Stations	73	23+	Champion Van Riper Park	-19	12	Marquette FAA AP	6.08	Yale 1 NNE	1.15	
Minnesota	2 Stations	52	16	Tower 3 S	-22	15	Isabella 1 W	5.68	Karlstad	.72	
Mississippi	2 Stations	85	29+	2 Stations	22	6+	Hickory 1 E	14.73	Monticello	3.00	
Missouri	Mansfield	85	19	Berryman 6 NW	5	11	Marble Hill	9.37	Osceola	1.81	
Montana	Grass Range	72	15	Elk Park	-26	1	Cooke City	3.29	Biddle 8 SW	.05	
Nebraska	Crete	82	28	2 Stations	- 1	10	Nebraska City	7.87	Mitchell 5 E	.62	
Nevada	Sunrise Manr Las Vegas	84	8	Mountain City R S	-10	3	Lake Valley Steward	3.92	Amarcosa Farms-Garey	.43	
New Hampshire	Epping	75	23	Mount Washington	-19	16	Pinkham Notch	5.59	Lebanon FAA AP	1.84	
New Jersey	Atlantic City WSO AP	85	31	2 Stations	10	17+	Greenwood Lake	4.63	Bound Brook 2 W	2.00	
New Mexico	2 Stations	83	9	Dulce	-15	4	Bloomfield 3 SE	2.97	12 Stations	.00	
New York	4 Stations	76	31+	Old Forge	-14	13	Piseco	7.21	Hector	.53	
North Carolina	Dunn 4 NW	85	31	Grandfather Mountain	5	15	Lake Toxaway 2 SW	21.00	Washington Main Street	1.95	
North Dakota	Watford City 14 S	56	16	Rugby	-24	10	Tagus	2.07	Fairfield	.14	
Ohio	4 Stations	79	31+	Canfield 1 S	3	15	Chardon	4.75	Lithopolis 2 S	.52	
Oklahoma	Waurika	88	29	Goodwell Research Station	11	4	Hee Mountain Tower	8.45	Goodwell Research Station	.70	
Oregon	2 Stations	82	10+	Seneca	-12	2	Valsetz	11.29	Seneca	.04	
Pennsylvania	Carlisle	83	30	Warren	2	15	Germania	4.95	Donegal 2 NW	.77	
Puerto Rico	2 Stations	93	26	Adjuntas Substation	44	6	Pico Del Este	13.09	Ponce City	.00	
Rhode Island	Providence WSO AP	71	22	North Foster 1 E	7	16	North Foster 1 E	3.19	Block Island WSO AP	1.07	
South Carolina	2 Stations	83	31+	Caesars Head	18	26	Hogback Mountain	10.95	Beaufort 7 SW	1.21	
South Dakota	3 Stations	74	17+	Camp Crook	-18	3	Vermillion 2 SE	4.05	Usta 8 WNW	.09	
Tennessee	Athens	83	31	Tazewell	14	16	Waverly 4 W	8.67	Greenville Exp Station	2.59	
Texas	Falcon Dam	94	19+	Dimmitt 2 N	13	4	Long Lake 5 SW	10.48	7 Stations	.00	
Utah	Saint George	77	8	Scotfield	-17	3	Blowhard Mtn Radar	9.25	Wendover Autob	.08	
Vermont	Rutland	73	23	Mount Mansfield	- 8	16	Searsburg Station	4.78	Montpelier FAA AP	1.87	
Virginia	Fredericksburg Natl Pk	88	31	2 Stations	9	16+	Meadows of Dan 5 SW	7.50	Woodstock 2 NE	2.19	
Virgin Islands	Truman Field FAA AP	92	18	Estate Pearl	58	20+	Ham Bluff L H Station	5.53	East End	1.14	
Washington	Cushman Power House 2	77	23+	Holden Village	1	1	Grays River Hatchery	11.64	Cmak 2 NW	.03	
West Virginia	5 Stations	83	31+	4 Stations	3	16	Snowshoe	6.01	Moorfield 2 SSE	.80	
Wisconsin	2 Stations	66	23+	2 Stations	-18	27+	Oshkosh	5.94	Viroqua	1.20	
Wyoming	South Pass City	72	11	Darwin Ranch	-27	4	Albin	4.05	9 Stations	T	





















# HEATING DEGREE DAYS

(Base 65°F.)

MARCH 1979

State and Station	Current season			State and Station	Current season			State and Station	Current season			State and Station	Current season					
	This month		Normals July through this month		This month		Normals July through this month		This month		Normals July through this month		This month		Normals July through this month	This month		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month		This month	Period July through this month	
ALABAMA				IDAHO				NEBRASKA				TENNESSEE						
BIRMINGHAM U	300			BOISE	668	5624	5004	GRAND ISLAND	866	6865	5740	BRISTOL	511	3961	3938			
BIRMINGHAM	303	2684	2708	LEWISTON	582	5631	4707	LINCOLN	816	6679	5611	CHATTANOOGA	390	3205	3289			
HUNTSVILLE	385	3066	3125	POCATELLO	887	6759	5998	NORFOLK	988	7199	6241	KNOXVILLE	376	3348	3258			
MOBILE	152	1594	1644					NORTH PLATTE	862	7183	5918	MEMPHIS	345	3117	3074			
HOMTGMERY	194	1952	2185	ILLINOIS				OMAHA (EPPLBY)	775	6182	5490	NASHVILLE	449	3688	3475			
ALASKA				CAIRO U	515	4108	3619	OMAHA (NDRTH)	921	6758	5926	DAK RIOGE	462	3785	3647			
ANCHORAGE	1029	7900	9125	CHICAGO D HARE	879	6267	5726	SCOTTSBLUFF	737	6344	5839							
ANNETTE	728	5701	5585	CHICAGO MIDWAY	910	6218	5440	VALENTINE	986	7655	6378	TEXAS						
BARROW	2534	15624	15905	MIDLINE	884	6700	5755	NEVADA				ABILENE	272	2781	2495			
BARTER ISLAND	2646	15268	15759	PEORIA	833	6279	5485	ELKO	775	5911	6242	AMARILLO	561	4290	3817			
BETHEL	1447	9700	10814	ROCKFORD	1026	6930	6073	ELY	933	6864	6392	AUSTIN	144	2024	1693			
BETTLES	1878	12911	12598	SPRINGFIELD	758	5732	5051	LAS VEGAS	270	2468	2465	BROWNSVILLE	41	736	650			
BIG DELTA	1520	11458	11793					RENO	709	5329	5003	CORPUS CHRISTI	38	1033	930			
COLD BAY	910	6610	7529	INDIANA				WINNEHUCCA	710	5606	5524	OALLAS FT WORTH	261	2659	2294			
FAIRBANKS	1638	12101	13585	EVANSVILLE	559	4715	4266	CONCORD	841	6620	6363	DEL RIO	125	1709	1507			
GULKANA	1362	11312	12948	FORT WAYNE	731	5826	5499	MT WASHINGTON DBS	1440	11147	11051	EL PASO	362	2610	2589			
GULHER	987	7449	8271	INDIANAPOLIS	665	5394	5020	NEW HAMPSHIRE				GALVESTON	120	1361	1204			
JUNEAU	904	7549	7306	SOUTH BEND	795	5820	5675	NEW YORK				HOUSTON INTERCON	135	1683	1411			
KING SALMON	1069	7929	9454	IDAHO				ALBUQUERQUE	509	3815	3952	LUBBOCK	369	3466	3326			
KODIAK	837	6067	6882	BURLINGTON	854	6313	5545	CLAYTON	660	4897	4566	LIVOLANG	297	2973	2523			
KOTZEBUE	1772	11319	11774	DES MOINES	912	6626	6033	ROSWELL	444	3517	3492	PORT ARTHUR	125	1451	1485			
KC GRATH	1574	11511	12399	DES MOINES	1053	7334	6456	NEW YORK				SAN ANGELO	251	2660	2166			
MC NE	1526	9910	11421	DUBOUQUE	1038	7492	6257	ATLANTIC CITY U	666	4343	4063	SAN ANTONIO	109	1699	1539			
ST. PAUL ISLAND	1065	7170	8368	SIoux CITY	1024	7349	6619	ATLANTIC CITY U	577	4395	4492	VICTORIA	79	1495	1212			
TALKEETNA	1148	9156	9801	WATERLOO				TRENTON U	568	4467	4428	WACO	217	2519	2002			
UNALAKLEET				KANSAS				NEW MEXICO				WICHITA FALLS	343	3348	2779			
VALDEZ	1020	7910	8592	CONCORDIA	720	5809	5070	ALBUQUERQUE	509	3815	3952	UTAH						
YAKUTAT	935	7471	7534	ODDGE CITY	615	5169	4566	CLAYTON	660	4897	4566	MILFORD	800	6013	5522			
ARIZONA				GODDOLAND	710	5677	5359	ROSWELL	444	3517	3492	SALT LAKE CITY	666	5227	5184			
FLAGSTAFF	1005	6360	5954	TOPEKA	693	5699	4783	NEW YORK				VERMONT						
PHOENIX	143	1406	1492	WICHITA	560	5036	4315	ALBANY	803	6265	6053	BURLINGTON	866	7005	6822			
TUCSON	260	1780	1671	KENTUCKY				BINGHAMTON	832	6329	6281	VIRGINIA						
WIMSLOW	646	4471	4247	COVINGTON	563	4972	4582	BUFFALO	823	6036	5945	LYNCHBURG	489	4070	3888			
YUHA	84	1167	981	LEXINGTON	522	4554	4313	NEW YORK U	554	4326	4324	NORFOLK	499	3212	3209			
ARKANSAS				LOUISVILLE	514	4294	4249	NEW YORK KENNEOY	603	4269	4534	RICHMOND	439	3616	3649			
FORT SMITH	393	3740	3187	LOUISIANA				NEW YORK LA GUAROIA	637	4534	4365	ROANOK	512	4150	3923			
LITTLE ROCK	314	3235	3194	BATON ROUGE	178	1846	1637	ROCHESTER	813	5945	5821	WALLOPS ISLAND	621	3858	3793			
NO. LITTLE ROCK	368	3469	2952	LAKE CHARLES	151	1694	1472	SYRACUSE	796	6030	5805	WASHINGTON						
CALIFORNIA				NEW ORLEANS	128	1440	1436	NORTH CAROLINA				OLYMPIA	536	4837	4488			
BAKERSFIELD	211	1796	2023	SHREVEPORT	216	2348	2097	ASHEVILLE	457	3644	3844	OLYMPIA	600	4834	4647			
BISHOP	514	3994	3793	MAINE				CAPE HATTERAS R	439	2342	2496	SEATTLE	479	4072	3887			
BLUE CANYON	720	4687	4449	CARIBOU	1018	7986	8139	CHARLOTTE	350	3010	3039	SEATTLE-TACOMA	479	4088	4216			
EUREKA U	459	3695	3538	PORTLAND	905	6424	6342	GREENSBORO	440	3592	3563	SPOKANE	756	6906	5797			
FRESNO	234	2255	2408	MARYLAND				RALEIGH	398	3093	3286	STAMPEOE PASS R	928	7761	7362			
LONG BEACH	177	1370	1364	BALTIMORE	520	4163	4279	WILMINGTON	346	2399	2329	WALLA WALLA U	517	4943	4241			
LOS ANGELES	237	1359	1439	MASSACHUSETTS				NORTH DAKOTA				YAKIMA	641	5934	5211			
LOS ANGELES U	226	1431	1036	BLUE HILL DBS R	790	5654	5449	RISHARCK	1320	9038	7923	WEST VIRGINIA						
HT SHASTA R	694	5303	4780	BOSTON	691	4966	4884	FARGO	1377	9241	8159	BECKLEY	597	4751	4944			
DAKLAND	294	2301	2332	WDCRSTER	824	6097	5901	WILLISTON	1294	9073	8003	CHARLESTON	456	4245	4180			
RED BLUFF	248	2193	2398	HICHIGAM				DMID				ELKINS	680	5286	5217			
SANBERG R	313	2591	2476	ALPENA	1038	7226	7166	AKRON	712	5647	5465	HUNTINGTON	484	4360	4205			
SAN DIEGO	153	1015	1232	OETROIT	841	5751	5457	CINCINNATI ABBE DB	594	4803	4412	PARKERSBURG U	579	4739	4369			
SAM FRANCISCO	319	2564	2421	OETROIT METRO	843	6012	5620	CLEVELAND	680	5288	5369	WISCONSIN						
SAN FRANCISCO U	281	2297	2338	FLINT	829	6278	6097	COLUMBUS	637	5255	5095	GREEN BAY	1117	7660	7033			
SANTA MARIA	372	2592	2338	GRAND RAPIDS	863	6437	5932	OAYTON	634	5281	5049	LAL CROSSE	992	7056	6632			
STOCKTON	262	2398	2518	HIGHTON LAKE	1053	7421	7145	HANSFIELD	744	5790	5143	HADISON	1013	7304	6770			
COLORADO				LANSING	834	6376	6021	TOLEDO	808	6029	5622	HILWAUKEE	980	6669	6397			
ALAMOSA	1069	8211	7284	HUSKERRN	969	6551	5919	YOUNGSTOWN	781	5731	5607	WYOHING						
COLORADO SPRINGS	825	5958	5805	SAULT STE MARIE	1171	8154	7693	OKLAHOMA				CASPER	910	7351	6351			
DENVER	751	5593	5158	MINNESOTA				OKLAHOMA CITY	434	3981	3479	CHEYENNE	893	6416	6036			
GRAND JUNCTION	732	6040	5048	OULUTH	1293	8876	8286	TULSA	391	4017	3476	LANOER	962	8060	6674			
PUEBLO	674	5486	4813	INTERNATIONAL FALLS	1402	10021	9113	OREGON				SHERIDAN	979	8001	6523			
CONNECTICUT				MINNEAPOLIS	1112	7634	7226	ASTORIA	543	4391	4130							
BRIODPORT	675	4662	4714	ROCHESTER	1183	8348	7242	BURNS U	792	6455	5981							
HARTFORD	730	5838	5581	ST CLOUD	1260	8692	7796	EUGENE	496	4452	3876							
DELAWARE				MISSISSIPPI				MOFORD	483	4211	4142							
WILMINGTON	605	4638	4431	JACKSON	262	2395	2220	PENOLETON	582	5499	4527							
DIST. OF COLUHRIA				MERIDIAN	261	2462	2302	PORTLAND	434	4295	3968							
WASHINGTON DULLES	578	4551	4517	HISOURI				SALEM	486	4328	3968							
WASHINGTON NATIONAL	425	3612	3874	COLUMBIA REGIONAL	633	5119	4636	SEXTON SUHMIT R	643	5180	4991							
FLORIDA				KANSAS CITY	698	5520	4879	PENNSYLVANIA										
APPALACHICOLA U	204	1474	1331	ST JOSEPH	758	5900	4979	ALLENSTOWN	633	5072	5163							
OAYTONA BEACH	79	677	880	ST LOUIS	644	5074	4365	ERIE	874	6096	5829							
FORT MYERS	13	259	457	SPRINGFIELD	606	4877	4191	HARRISBURG	611	4700	4726							
JACKSONVILLE	160	1494	1303	HOYTAMA				PHILADELPHIA	556	4385	4376							
KEY WEST	0	39	64	LANSING	887	7438	6189	PITTSBURGH	671	5549	5252							
MIAMI	13	180	206	GLASGOW	1283	9185	7808	PITTSBURGH U	626	5025	4725							
ORLANDO	71	571	720	GREAT FALLS	931	7575	6475	SCRAMS	747	5834	5535							
PENSACOLA	168	1512	1541	HAYRE	1024	8642	7579	WILLIAMSPORT	696	5236	5307							
TALLAHASSEE	217																	

# COOLING DEGREE DAYS

(Base 65°F.)

MARCH 1979

State and station	Current season			State and station	Current season			State and station	Current season						
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month	This month	Period January through this month	Normals January through this month	
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	11	11	61	HILLO	210	525	557	GRAND ISLAND	0	0	0	CHARLESTON	9	11	61
BIRMINGHAM	8	9	45	HONOLULU	250	618	678	LINCOLN	0	0	0	CHARLESTON U	5	5	68
HUNTSVILLE	9	9	27	KAMULUI	206	600	618	NORFOLK	0	0	0	COLUMBIA	13	13	30
MOBILE	28	34	99	LIHUP	220	707	583	NORTH PLATTE	0	0	0	GRNVILLE-SPPTNBRG	8	8	13
MONTGOMERY	13	15	65				OHAMA (EPPLEY)	0	0	0					
ALASKA				IDAHO				OHAMA (NORTH)	0	0	0	SOUTH DAKOTA			
ANCHORAGE	0	0	0	ROISE	0	0	0	SCOTTSDUFF	0	0	0	ABERDEEN	0	0	0
ANNETTE	0	0	0	LEWISTON	0	0	0	VALENTINE	0	0	0	HUPON	0	0	0
BAPPOW	0	0	0	POCATELLO	0	0	0				RAPID CITY	0	0	0	
BAPTER ISLAND	0	0	0				NEVADA				SIOUX FALLS	0	0	0	
RETHEL	0	0	0	ILLINOIS				ELKO	0	0	0				
BETTTLES	0	0	0	CAIRO U	0	0	16	ELY	0	0	0	TENNESSEE			
BIG DELTA	0	0	0	CHICAGO N HARE	0	0	0	LAS VEGAS	0	0	0	BRISTOL	0	0	9
COLO BAY	0	0	0	CHICAGO MIDWAY	0	0	0	RENO	0	14	0	CHATTANOOGA	0	0	18
FAIRBANKS	0	0	0	MOLINE	0	0	0	WINNFHUCCA	0	0	0	KNOXVILLE	15	15	24
GULKANA	0	0	0	PEORIA	0	0	0				MEMPHIS	19	19	23	
HOMER	0	0	0	POCKFORD	0	0	0	NEW HAMPSHIRE				NASHVILLE	11	11	19
JUNEAU	0	0	0	SPPINGFIELD	0	0	0	CONCORD	0	0	0	OAK PIGEON	2	2	12
KING SALMON	0	0	0				MT WASHINGTON OBS	0	0	0					
KODIAK	0	0	0	INDIANA							TEXAS				
KOTZEBUE	0	0	0	FVANSVILLE	0	0	11	NEW JERSEY				ABILENE	20	29	29
MC GRATH	0	0	0	FORT WAYNE	0	0	0	ATLANTIC CITY	5	5	0	AHAPILLO	0	0	0
NOME	0	0	0	INDIANAPOLIS	0	0	0	ATLANTIC CITY U	0	0	0	AUSTIN	29	38	76
ST. PAUL ISLAND	0	0	0	SOUTH RENO	0	0	0	NEWARK	0	0	0	BROWNSVILLE	173	274	358
TALKEETNA	0	0	0				TRONTUN U	0	0	0	COPPUS CMPISTI	140	205	199	
UNALAKLEET	0	0	0	INDIA							DALLAS FT WOPTH	9	10	25	
VALOZ	0	0	0	RUPLINGTON	0	0	0	NEW HEXICO				DEL PLO	66	75	118
YAKUTAT	0	0	0	DES MCINES	0	0	0	ALBUQUERQUE	0	0	0	EL PASO	0	0	6
ARIZONA				MURQUE	0	0	0	CLAYTON	0	0	0	GALVESTON	22	22	110
FLAGSTAFF	0	0	0	SIOUX CITY	0	0	0	ROSWELL	0	0	0	HOUSTON INTEPCON	62	82	97
PHOENIX	11	11	35	WATERLOO	0	0	0				LUBOCK	0	0	9	
TUCSON	1	1	24				NEW YORK				HIDLAND	5	5	13	
WINSLOW	0	0	0	KANSAS				ALRANY	0	0	0	POPT ARTHUR	54	75	97
YUMA	60	60	109	CONCORDIA	1	1	0	RINGHAMTON	0	0	0	SAN ANGELO	17	19	42
ARKANSAS				RODF CITY	2	2	0	BUFFALO	0	0	0	SAN ANTONIO	65	81	88
FORT SMITH	7	7	15	GOLOLANO	4	4	0	NEW YDPK U	0	0	0	VICTORIA	78	103	120
LITTLE ROCK	24	24	14	TOPEKA	2	2	0	NEW YDPK KENNEDY	0	0	0	WACO	21	22	44
NO. LITTLE ROCK	7	7	18	WICHITA	5	5	0	NEW YDPK LA GUARDIA	0	0	0	WICHITA FALLS	18	20	22
CALIFORNIA				KENTUCKY				POCHESTER	0	0	0	UTAH			
BAKERSFIELD	12	12	6	COVINGTON	2	2	0	SYRACUSE	0	0	0	HILFORD	0	0	0
BISHOP	0	0	0	LEXINGTON	2	2	10				SALT LAKE CITY	0	0	0	
BLUE CANYON	0	0	0	LOUISVILLE	5	5	10	NORTH CAROLINA							
EUPEKA U	0	0	0				ASHEVILLE	0	0	0	VERMONT				
FRESNO	2	2	0	LOUISIANA				CAPE HATTERAS R	2	2	12	BURLINGTON	0	0	0
LONG BEACH	10	10	7	RATON ROUGE	44	51	85	CHARLOTTE	4	4	15				
LOS ANGELES	9	9	12	LAKE CHARLES	36	40	104	GREENSBORO	6	6	11	VIRGINIA			
LOS ANGELES U	14	14	34	NEW ORLEANS	63	77	118	RALEIGH	6	6	12	LYNCHBURG	11	11	0
MT SHASTA R	0	0	0	SHPEVPORT	39	47	47	WILMINGTON	9	11	31	NORFOLK	11	11	0
OAKLAND	0	0	0							PICHMOND	16	16	8		
RED BLUFF	6	6	0	MAINE				NORTH DAKOTA				PONDKE	10	10	0
SACRAMENTO	0	0	0	CARIRU	0	0	0	BISHARCK	0	0	0	WALLOPS ISLAND	1	1	0
SAN DIEGO R	0	0	0	PORTLAND	0	0	0	FAPGO	0	0	0	WASHINGTON			
SAN DIEGO	10	10	10				WILLISTON	0	0	0	OLYMPIA	0	0	0	
SAN FRANCISCO	0	0	0	HAWAYLAND							OUILLAYUTE	0	0	0	
SAN FRANCISCO U	0	0	0	RALTIMORE	15	15	0	OHIN				SEATTLE	0	0	0
SANTA MARIA	0	0	0				AKPON	2	2	7	SEATTLE-TACOMA	0	0	0	
STOCKTON	0	0	0	MASSACHUSETTS				CINCINNATI ABBE DB	0	0	0	SPOKANE	0	0	0
COLOPADO				ALUE HILL OBS P	0	0	0	CLEVELAND	0	0	0	STAMPEE PASS P	0	0	0
ALAMOSA	0	0	0	ROSTON	0	0	0	COLUMBUS	0	0	0	WALLA WALLA U	0	0	10
DAYTONA BEACH	0	0	0	WORCESTER	0	0	0	DAYTON	1	1	0	YAKIMA	0	0	0
FORT MYERS	0	0	0				HANSFIELD	0	0	0	WEST INDIES				
GRAND JUNCTION	0	0	0	MICHIGAN				TOLEDON	0	0	0	SAN JUAN P.R.	404	1223	960
PUEBLO	0	0	0	ALPENA	0	0	0	YOUNGSTOWN	0	0	0				
CONNECTICUT				DETROIT	0	0	0				WEST VIRGINIA				
BRIDGEPORT	0	0	0	DETROIT METRO	0	0	0	OKLAHOMA				BECKLEY	0	0	0
HARTFORD	0	0	0	FLINT	0	0	0	OKLAHOMA CITY	10	10	11	CHARLESTON	13	13	7
DELAWARE				GRAND RAPIDS	0	0	0	TULSA	9	9	10	ELKINS	0	0	0
WILMINGTON	4	4	0	HOUGHTON LAKE	0	0	0	OPEGON				HUNTINGTON	13	13	0
DIST. OF COLUMBIA				LANSING	0	0	0	ASTOPIA	0	0	0	PARKERSBURG U	9	9	0
WASHINGTON DULLE	9	9	0	MUSKOGON	0	0	0	BUPNS U	0	0	0	WISCONSIN			
WASHINGTON NATIONAL	14	14	0	SAULT STE MARIE	0	0	0	FUGENE	0	0	0	GREEN BAY	0	0	0
FLORIDA				MINNESOTA				HEOFORD	0	0	0	LA CROSSE	0	0	0
APPALACHICOLA U	4	5	92	DULUTH	0	0	0	PENOLETUN	0	0	0	MAISON	0	0	0
DAYTONA BEACH	48	122	182	INTERNATIONAL FALLS	0	0	0	POPTLANO	0	0	0	MILWAUKEE	0	0	0
FORT MYERS	124	256	953	MINNEAPOLIS	0	0	0	SALEM	0	0	0	WYOMING			
JACKSONVILLE	36	50	121	POCHESTER	0	0	0	SEXTON SUMMIT R	0	0	0	CASPER	0	0	0
KEY WEST	240	551	706	ST CLODU	0	0	0	PACIFIC AREA				CHEYENNE	0	0	0
MIAMI	149	320	478				GUAH TAGUAC R	403	1138	1119	LANOER	0	0	0	
ORLANDO	65	122	260	MISSISSIPPI				JOHNSTON	384	1026	1048	SHERIDAN	0	0	0
PENSACOLA	16	18	117	JACKSON	35	37	68	KOPOP P	511	1490	1441				
TALLAHASSEE	10	12	102	MERIDIAN	13	13	68	KWJALEIN	561	1530	1479				
TAMPA	73	137	268				MAJURO	519	1480	1446					
WEST PALM BEACH	123	269	394	MISSOURI				PAGO PAGO	540	1507	1385				
GEORGIA				COLUMBIA REGIONAL	0	0	0	PONAPE	525	1514	1414				
ATHEENS	15	15	14	KANSAS CITY	1	1	0	TRUK HREN ISLAND	531	1553	1452				
ATLANTA	13	13	12	ST JOSEPH	2	2	0	WAKE	443	1149	1102				
AUGUSTA	9	9	31	ST LOUIS	2	2	0	YAP R	499	1423	1407				
COLUMBUS	21	23	47	SPPINGFIELD	0	0	9				PENNSYLVANIA				
MACON	18	19	59				ALLENTOWN	0	0	0					
POME	4	4	13	MONTANA				EPIC	0	0	0				
SAVANNAH	28	33	72	BILLINGS	0	0	0	HAPRISBURG	0	0	0				
				GLASGOW	0	0	0	PHILADELPHIA	6	6	0				
				GREAT FALLS	0	0	0	PITTSBURGH	0	0	0				
				HAYPE	0	0	0	SCRANTON	0	0	0				
				HELENA	0	0	0	WILLIAMSPDPT	0	0	0				
				KALISPELL	0	0	0				RHODE ISLAND				
				MILES CITY	0	0	0	BLACK ISLAND	0	0	0				
				MISSOULA	0	0	0	PROVIDENCE	0	0	0				

# STORM SUMMARY

MARCH 1979

STATE	TORNADOES					HAILSTORMS			WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE				
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			
Alabama	1	1			4						4												8		7			
Alaska	1	1		3	4					6	7						5							3	5			
Arizona	1	1																										
Arkansas	1	1			4																							
California	1	1																										
Colorado	1	1														5												
Connecticut	*	*																										
Delaware	*	*																										
Florida	3	2		6	5																				7	5		
Georgia	2	1		1	5																			1	1	7		
Hawaii	*	*																								6		
Idaho	1	1			4					2	4														7	?		
Illinois	*	*									?	?													?	?		
Indiana	5	2		21	7											2							1		?	?		
Iowa	2	2			5						6					6												
Kansas	2	2			5						5																	
Kentucky	2	2	1	21	6						5																	
Louisiana	2	2			5						?	?		1	5										?			
Maine	*	*																										
Maryland & DC	*	*																										
Massachusetts	*	*																								4		
Michigan	*	*											1	3														
Minnesota	*	*													1			1								7		
Mississippi	1	1		4	5			3	C		1	4				4												
Missouri	*	*																										
Montana	*	*																										
Nebraska	*	*						2				4			4											4		
Nevada	*	*																								6		
New Hampshire	*	*																										
New Jersey	*	*																										
New Mexico	*	*																										
New York	1	1		9	5						6	3														6		
North Carolina	*	*									2													5				
North Dakota	*	*																										
Ohio	*	*																										
Oklahoma	5	3			5			3	C		3	5														4		
Oregon	*	*																										
Pacific	*	*																								49		
Pennsylvania	*	*																								?		
Puerto Rico	*	*																								?		
Rhode Island	*	*																										
South Carolina	1	1		2	6					4	5															5		
South Dakota	*	*																										
Tennessee	1	1		3	4						5				3				4					1	1	?		
Texas	23	8		5	6			5	?		5	?		1	4									3	1	5		
Utah	*	*																										
Vermont	*	*																										
Virginia	*	*										3														3		
Virgin Islands	*	*																										
Washington	*	*																										
West Virginia	*	*																										
Wisconsin	*	*																								?		
Wyoming	*	*																										















# RAWINSONDE DATA

Average monthly values

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MONETT, MO 914 M6										NASHVILLE, TN 997 M6										NOME, AK 1010 M6										NORTH PLATTE, NE 916 M6										OAKLAND, CA 1016 M6									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.	Direction tens of deg.	Speed m.p.s.																	
5FC 31	438	4.2	1.0	16	1.1	31	180	6.9	3.3	24	.7	31	180	6.9	-10.1	-14.8	06	3.1	31	847	-1.2	-4.3	34	1.0	31	6	9.8	7.5	22	.4																			
1000 950	563	5.2	.3	19	1.4	31	215	4.5	-1.4	23	4.8	28	96	-8.0	-12.7	08	2.8	31	144	10.0	7.2	27	.9	31	564	6.6	4.9	27	1.7																				
900 31	999	5.5	-1.0	24	5.0	31	1,018	5.0	-2.2	24	7.4	31	900	-10.1	-15.8	10	4.7	31	989	-2	-3.0	33	2.2	31	1,011	7.5	-3.26	1.7	8.0																				
850 31	1,467	4.5	-3.8	26	7.1	31	1,483	3.2	-4.5	24	8.5	31	1,340	-10.9	-17.0	10	4.4	31	1,447	.4	-5.1	31	4.5	31	1,480	5.2	-5.6	24	2.0																				
800 31	1,959	2.7	-7.0	27	8.7	31	1,974	1.6	-6.5	25	9.1	31	1,806	-12.0	-19.9	09	4.7	31	1,934	.5	-6.6	31	6.6	31	1,973	2.9	-10.4	25	2.2																				
750 31	2,479	-2	-9.6	28	9.4	31	2,492	-7	-10.2	25	9.7	31	2,298	-14.0	-22.7	09	3.8	31	2,450	-1.5	-11.5	31	7.5	31	2,493	-2	-12.9	25	2.8																				
700 31	3,030	-2.9	-13.3	28	9.9	31	3,041	-3.3	-13.1	26	10.2	31	2,819	-16.0	-26.6	09	3.0	31	3,097	-4.4	-16.4	30	8.2	31	3,041	-8	-17.2	25	3.4																				
650 31	3,613	-6.2	-16.6	28	10.8	31	3,624	-6.5	-17.9	26	10.6	31	3,372	-19.9	-29.4	10	1.5	31	3,577	-6.1	-18.1	30	9.2	31	3,622	-7.7	-19.1	31	3.8																				
600 31	4,235	-9.9	-23.3	28	12.3	31	4,245	-10.5	-22.1	26	11.8	31	3,942	-22.9	-34.1	14	1.6	31	4,194	-12.3	-24.8	30	10.4	31	4,240	-12.1	-22.7	25	4.2																				
550 31	4,901	-14.2	-28.2	27	14.1	31	4,909	-15.1	-26.4	26	12.6	31	4,595	-26.9	-37.1	12	1.4	31	4,854	-16.5	-27.9	29	10.4	31	4,899	-16.8	-27.9	25	4.6																				
500 31	5,617	-19.2	-32.6	27	15.6	31	5,622	-20.3	-31.9	26	14.8	31	5,276	-31.3	-41.3	24	2.6	31	5,563	-22.0	-32.7	29	10.6	31	5,608	-21.7	-33.4	26	5.0																				
450 31	6,392	-24.8	-38.4	27	16.8	31	6,394	-25.7	-37.8	26	16.5	31	6,016	-35.9	-44.6	25	3.7	31	6,329	-27.7	-38.6	29	11.9	31	6,376	-27.2	-38.6	27	6.2																				
400 31	7,238	-31.3	-43.5	27	17.7	31	7,237	-32.1	-43.3	26	18.8	31	6,825	-41.1	-47.3	25	5.7	31	7,185	-34.2	-43.5	28	11.9	31	7,214	-33.5	-45.1	27	6.0																				
350 31	8,172	-38.5	-46.2	26	19.6	31	8,169	-38.8	-45.7	26	22.6	31	7,724	-46.2	-52.5	26	7.6	31	8,088	-41.5	-47.7	27	13.2	30	8,140	-40.6	-46.8	28	7.9																				
300 31	9,211	-46.3	26	22.5	31	9,208	-46.0	26	25.5	31	9.7	27	8,729	-52.5	26	8.3	31	9,113	-49.5	27	14.2	30	9,171	-48.0	28	10.0	28	8.0																					
250 31	10,404	-53.0	26	26.7	30	10,404	-52.8	26	26.8	31	9.905	-52.1	25	7.7	31	10,288	-56.3	26	17.0	30	10,357	-54.0	28	12.3	28	15.0	28	12.3																					
200 31	11,825	-57.8	26	30.9	30	11,825	-57.7	26	29.9	29	11,368	-60.7	25	7.3	31	11,697	-57.3	26	17.6	30	11,777	-56.3	28	15.0	28	16.4	27	15.1																					
175 31	12,668	-57.2	27	28.3	30	12,667	-58.0	27	30.0	29	12,248	-67.9	26	6.7	30	12,547	-57.5	26	20.8	30	12,628	-54.9	28	16.4	27	15.1	27	15.1																					
150 31	13,645	-56.8	27	27.1	30	13,645	-57.5	27	27.1	29	13,265	-67.8	26	7.0	30	13,533	-55.0	26	17.7	31	13,614	-55.4	28	16.4	27	15.1	27	15.1																					
125 31	14,796	-58.6	27	27.8	30	14,787	-59.8	26	26.8	29	14,467	-74.6	25	7.5	30	14,693	-56.6	26	13.3	30	14,770	-53.1	28	16.4	27	15.1	27	15.1																					
100 31	16,190	-60.9	27	19.4	30	16,173	-61.7	27	20.0	28	15,929	-69.6	26	5.7	30	16,102	-58.4	27	14.4	30	16,167	-60.3	28	11.9	28	11.9	28	11.9																					
80 29	17,572	-61.6	27	13.9	30	17,552	-62.4	27	14.7	27	17,383	-50.1	27	4.9	30	17,502	-59.3	27	12.8	30	17,555	-61.0	28	8.0	28	8.0	28	8.0																					
70 28	18,400	-61.6	27	11.6	30	18,376	-62.3	26	11.2	27	18,254	-50.8	28	5.1	30	18,338	-59.6	28	10.9	30	18,385	-60.8	27	5.9	27	5.9	27	5.9																					
60 28	19,351	-61.5	27	9.2	30	19,329	-62.3	26	8.8	27	19,255	-51.2	29	5.3	29	19,301	-59.4	28	9.3	29	19,344	-60.4	27	5.2	27	5.2	27	5.2																					
50 25	20,476	-60.9	28	7.6	30	20,460	-60.4	26	6.7	27	20,442	-60.4	30	5.6	29	20,441	-60.0	28	8.4	29	20,482	-60.1	28	4.4	28	4.4	28	4.4																					
40 24	21,855	-59.0	28	7.1	30	21,855	-59.0	26	7.1	27	21,858	-53.0	31	4.4	29	21,836	-59.6	28	7.3	29	21,876	-59.9	29	3.4	29	3.4	29	3.4																					
30 24	23,682	-57.2	27	7.5	30	23,670	-56.6	26	4.2	24	23,732	-55.0	32	6.7	28	23,644	-56.7	28	8.1	28	23,678	-59.2	28	3.8	28	3.8	28	3.8																					
25 24	24,838	-55.8	27	6.5	29	24,830	-54.9	29	3.7	22	24,911	-55.6	33	7.7	27	24,790	-57.6	27	9.2	27	24,825	-58.0	29	3.9	29	3.9	29	3.9																					
20 22	26,266	-53.4	26	8.2	28	26,265	-51.1	26	6.3	21	26,335	-56.1	33	8.7	25	26,210	-54.4	27	10.3	25	26,242	-55.2	29	6.6	29	6.6	29	6.6																					
15 19	28,131	-49.2	26	13.0	28	28,159	-45.6	26	9.0	16	28,148	-56.9	34	8.6	23	28,069	-50.5	26	14.9	22	28,086	-52.3	28	9.6	28	9.6	28	9.6																					
10 10	30,835	-40.4	26	16.4	20	30,925	-38.0	25	16.6									26	23.9	11	30,703	-49.8	27	14.7	27	14.7	27	14.7																					



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SALEM, IL 996 M8										SALEM, OR 1010 M8										SALT LAKE CITY, UT 871 M8										SAN DIEGO, CA 1001 M8										SAN JUAN, P. R. 1016 M8									
Standard pressure surface mb.		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind									
										Direction tens of deg.		Speed m.p.s.								Direction tens of deg.		Speed m.p.s.								Direction tens of deg.		Speed m.p.s.						Direction tens of deg.		Speed m.p.s.									
5FC	31	174	3.3	1.3	26	6.28	61	4.8	3.1	21	4.3	31	1,288	2.3	-1.1	17	2.1	31	124	10.4	8.5	16	6	31	140	21.1	18.6	08	2.3	31	140	22.0	17.2	08	3.2														
1000	8	213	-1.1	-4.2	26	157	7.5	4.1	25	4	27	5	22	155	11.3	7.6	20	31	565	10.8	3.8	20	11	31	584	19.0	14.8	08	4.6	31	584	19.0	14.8	08	4.6														
950	31	551	-3.7	-7.6	24	4.2	28	5.68	7.1	14	27	5	31	1,014	8.9	-8	21	1.3	31	1,014	8.9	-8	21	1.3	31	1,047	15.9	11.8	08	4.1	31	1,047	15.9	11.8	08	4.1													
850	31	1,456	1.8	-5.5	26	7.4	28	1,476	2.8	-5.3	24	3.4	31	1,492	3.5	-3.4	16	2.2	31	1,486	6.4	-4.9	23	2.0	31	1,531	12.9	9.1	07	3.0	31	1,531	12.9	9.1	07	3.0													
800	31	1,954	5.5	-7.3	26	8.6	2.8	1,965	2.8	-8.4	24	4.1	31	1,973	1.0	-6.4	18	1.7	31	1,981	4.0	-9.3	24	3.3	31	2,039	10.6	3.1	06	3.0	31	2,039	10.6	3.1	06	3.0													
750	31	2,460	-1.9	-9.1	26	9.6	2.8	2,480	-2.8	-12.0	25	4.7	31	2,489	-2.5	-8.6	26	1.5	31	2,503	1.4	-15.2	24	4.7	31	2,576	9.1	-3.8	05	1.8	31	2,576	9.1	-3.8	05	1.8													
700	31	3,007	-4.0	-13.6	26	9.9	2.8	3,023	-6.1	-17.9	25	5.4	31	3,033	-6.1	-12.4	28	2.6	31	3,055	-1.7	-17.6	25	5.6	31	3,145	6.7	-9.9	36	1.7	31	3,145	6.7	-9.9	36	1.7													
650	31	3,588	-7.4	-18.4	26	10.2	2.8	3,600	-9.3	-20.7	26	5.5	31	3,609	-9.8	-17.1	29	4.1	31	3,681	-5.1	-20.0	26	6.2	31	3,751	3.7	-13.1	32	4.4	31	3,751	3.7	-13.1	32	4.4													
600	31	4,278	-11.2	-22.2	26	10.5	2.8	4,214	-13.1	-24.5	27	5.2	31	4,222	-13.5	-21.9	30	5.0	31	4,265	-9.1	-25.1	26	7.8	31	4,397	5.5	-17.9	29	4.3	31	4,397	5.5	-17.9	29	4.3													
550	31	4,869	-15.7	-27.6	26	12.5	2.8	4,871	-17.9	-29.3	27	5.9	31	4,877	-17.9	-27.6	29	5.7	31	4,933	-13.5	-28.8	26	9.6	31	5,090	-3.4	-22.9	30	6.0	31	5,090	-3.4	-22.9	30	6.0													
500	31	5,382	-20.5	-32.6	27	14.3	2.8	5,577	-22.9	-35.4	27	5.9	31	5,584	-23.0	-33.5	29	6.7	31	5,650	-18.7	-33.6	27	11.3	31	5,837	-8.0	-26.4	30	8.4	31	5,837	-8.0	-26.4	30	8.4													
450	29	6,347	-25.9	-37.5	27	16.1	2.8	6,342	-28.2	-41.1	26	5.6	31	6,348	-28.8	-39.0	28	7.3	31	6,427	-24.3	-38.3	27	13.8	30	6,648	-13.3	-31.4	29	11.2	31	6,648	-13.3	-31.4	29	11.2													
400	29	7,188	-32.4	-42.9	27	18.9	2.8	7,175	-34.6	-44.9	26	5.8	31	7,179	-35.6	-45.5	27	7.6	31	7,274	-31.0	-43.2	27	15.7	30	7,534	-19.6	-36.6	30	13.3	31	7,534	-19.6	-36.6	30	13.3													
350	29	8,118	-39.7	-48.2	27	21.9	2.8	8,097	-41.8	-49.3	29	5.5	31	8,096	-42.9	-49.3	27	7.9	30	8,214	-37.7	-48.2	27	19.4	30	8,516	-26.0	-41.4	29	19.1	31	8,516	-26.0	-41.4	29	19.1													
300	29	9,152	-46.7	-54.7	27	20.8	2.7	9,125	-44.6	-49.3	31	5.5	31	9,116	-50.6	-49.3	28	7.8	30	9,258	-44.8	-48.2	27	24.4	30	9,612	-33.8	-48.3	29	23.2	31	9,612	-33.8	-48.3	29	23.2													
250	29	10,340	-53.4	-60.7	27	24.5	2.7	10,301	-56.2	-62.7	33	5.5	31	10,286	-56.7	-62.7	28	10.6	30	10,459	-51.5	-55.0	27	29.7	30	10,868	-42.5	-52.7	28	28.5	31	10,868	-42.5	-52.7	28	28.5													
200	29	11,764	-56.5	-64.2	27	28.4	2.7	11,708	-59.9	-67.9	31	5.9	31	11,694	-57.4	-67.9	28	13.1	30	11,893	-55.0	-55.0	26	32.7	30	12,340	-53.4	-57.1	27	31.0	31	12,340	-53.4	-57.1	27	31.0													
175	29	12,610	-57.1	-64.2	27	27.5	2.7	12,551	-56.4	-67.9	29	7.0	31	12,543	-55.7	-67.9	28	14.5	30	12,745	-55.5	-55.5	26	31.0	31	13,188	-59.3	-63.0	28	27.3	31	13,188	-59.3	-63.0	28	27.3													
150	29	13,590	-55.8	-67.6	27	24.5	2.7	13,533	-56.0	-67.9	29	7.9	31	13,526	-55.4	-67.9	27	14.0	30	13,725	-57.1	-57.1	26	30.6	30	14,140	-65.3	-68.0	28	25.5	31	14,140	-65.3	-68.0	28	25.5													
125	29	14,746	-57.6	-71.6	27	21.9	2.7	14,651	-56.8	-71.6	31	3.4	31	14,643	-57.3	-71.6	27	13.9	30	14,832	-60.0	-60.0	27	25.0	30	15,246	-70.6	-73.3	29	22.5	31	15,246	-70.6	-73.3	29	22.5													
100	29	16,149	-59.4	-74.6	27	18.3	2.7	16,100	-58.3	-74.6	29	7.6	31	16,087	-59.1	-74.6	27	12.3	30	16,252	-63.4	-63.4	26	19.3	30	16,540	-76.6	-79.3	29	16.4	31	16,540	-76.6	-79.3	29	16.4													
75	29	17,541	-60.1	-77.6	27	14.1	2.7	17,502	-58.7	-77.6	29	5.9	31	17,484	-59.8	-77.6	27	10.3	29	17,620	-64.4	-64.4	26	12.6	30	17,818	-77.8	-80.5	30	11.8	31	17,818	-77.8	-80.5	30	11.8													
70	28	18,374	-60.5	-77.6	28	12.1	2.7	18,342	-58.6	-77.6	30	5.4	31	18,318	-59.9	-77.6	27	8.9	29	18,439	-63.4	-63.4	26	9.6	30	18,887	-75.2	-77.9	30	7.1	31	18,887	-75.2	-77.9	30	7.1													
60	26	19,336	-60.1	-77.6	28	10.3	2.7	19,310	-59.0	-77.6	31	4.7	31	19,281	-59.6	-77.6	27	7.4	27	19,394	-62.0	-62.0	26	6.1	29	19,493	-70.5	-73.2	31	3.6	31	19,493	-70.5	-73.2	31	3.6													
50	27	20,474	-59.7	-77.6	28	8.5	2.7	20,451	-59.0	-77.6	30	4.0	31	20,421	-59.9	-77.6	28	6.8	25	20,528	-60.9	-60.9	26	4.3	28	20,590	-63.9	-66.6	30	1.1	31	20,590	-63.9	-66.6	30	1.1													
40	26	21,873	-58.4	-77.6	27	7.6	2.7	21,851	-58.8	-77.6	31	3.4	31	21,814	-60.2	-77.6	28	5.5	25	21,919	-62.3	-62.3	26	2.5	27	21,977	-70.6	-73.3	29	0.6	31	21,977	-70.6	-73.3	29	0.6													
30	26	23,691	-59.2	-77.6	27	7.4	2.7	23,658	-59.1	-77.6	30	4.4	29	23,606	-59.6	-77.6	29	5.0	22	23,726	-57.4	-57.4	26	4.4	26	23,807	-53.8	-56.5	30	5.0	31	23,807	-53.8	-56.5	30	5.0													
25	26	24,855	-54.7	-77.6	26	7.4	2.7	24,804	-58.2	-77.6	31	5.4	29	24,747	-59.4	-77.6	29	5.1	21	24,885	-55.6	-55.6	28	5.7	26	24,985	-51.5	-54.2	30	6.2	31	24,985	-51.5	-54.2	30	6.2													
20	26	26,296	-51.3	-77.6	25	9.5	2.7	26,214	-56.9	-77.6	31	5.6	27	26,149	-57.6	-77.6	29	7.5	20	26,318	-53.0	-53.0	27	7.4	24	26,448	-48.4	-51.1	31	7.7	31	26,448	-48.4	-51.1	31	7.7													
15	21	28,183	-47.3	-77.6	25	12.7	2.7	28,074	-54.7	-77.6	29	8.6	25	27,996	-53.8	-77.6	27	13.5	19	28,183	-47.8	-47.8	27	13.2	24	28,355	-45.5	-48.2	31	8.8	31	28,355	-45.5	-48.2	31	8.8													
10	13	30,900	-40.3	-77.6	26	13.8	1.2	30,674	-49.7	-77.6	28	14.3	12	30,697	-45.5	-77.6	27	21.5	7	30,838	-43.0	-43.0	27	14	31,120	-37.5	-40.2	31	8.8	31	31,120	-37.5	-40.2	31	8.8														

SAULT STE MARIE, MI 988 M8										SPOKANE, WA 931 M8										TAMPA BAY, FL 1018 M8										TOPEKA, KS 984 M8										TRUK, CAROLINE IS. 1011 M8									
5FC	31	221	-4.5	-7.3	08	1.1	31	720	.7	-2.8	17	1.1	31	13	13.4	11.7	07	.8	31	268	2.7	.5	31	.6	31	2	28.1	23.4	06	4.7	31	2	28.1	23.4	06	4.7													
1000	31	531	-4.7	-6.5	18	2.4	31	999	3.3	-4.6	23	1.4	31	603	14.7	7.6	15	2.4	31	550	3.3	-3.4	26	1.9	31	554	23.4	20.9	07	7.2	31	554	23.4	20.9	07	7.2													
950	31	957	-4.9	-7.4	24	3.3	31	1,461	1.3	-7.4	27	2.4	31	1,536	10.3	-1.6	23	2.5	31	1,451	2.4	-6.8	27	7.0	31	1,518	17.8	13.5	09	6.0	31	1,518	17.8	13.5	09	6.0													
850	31	1,884	-5.6	-9.6	26	7.0	31	1,947	-1.4	-10.3	26	3.0	31	2,039	9.0	-6.2	26	3.4	31	1,941	1.3	-8.2	27	8.0	31	2,036	15.8	7.3	09	5.3	31	2,036	15.8	7.3	09	5.3													
800	31	2,390	-6.8	-11.4	26	8.4	31	2,458	-4.6	-13.4	26	3.5	31	2,571	6.4	-10.9	27	4.9	31	2,459	-4.9	-11.2	28	8.8	31	2,583	14.1	1.0	09	5.5	31	2,583	14.1	1.0	09	5.5													
750	31	2,927	-8.7	-15.1	26	9																																											



# RAWINSONDE DATA

Average monthly values

MARCH 1979

		WASHINGTON DULLES INT. AP 1010 MB						WAYCROSS, GA 1015 MB						WEST PALM BEACH, FL 1019 MB						WINNEBUCCA, NV 868 MB						WINDSLOW, AZ 851 MB					
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind						
					Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.	Direction tens of deg.	Speed m.p.s.	Direction tens of deg.	Speed m.p.s.	
5FC	30	85	2.7	-6	26	.6	31	4.4	9.5	7.5	22	-5	31	7	16.5	12.5	09	1.8	31	1,312	.4	-4.6	10	.7	31	1,487	.1	-4.8	19	1.6	
1000	25	185	5.2	-1.5	26	1.0	30	170	12.6	6.8	20	8	31	167	18.8	12.6	09	2.3	31	1,312	.4	-4.6	10	.7	31	1,487	.1	-4.8	19	1.6	
950	30	581	4.9	-2.0	26	3.6	31	596	12.4	2.9	24	2.6	31	606	15.5	10.0	10	2.7	31	1,312	.4	-4.6	10	.7	31	1,487	.1	-4.8	19	1.6	
900	30	1,021	3.5	-3.8	26	5.9	31	1,048	10.1	-3.25	4.0	31	1,062	12.4	6.2	12	2.2	31	1,312	.4	-4.6	10	.7	31	1,487	.1	-4.8	19	1.6		
850	30	1,483	1.6	-6.5	27	7.5	31	1,522	7.9	-2.1	25	5.3	31	1,540	10.2	.4	17	.3	31	1,479	3.6	-2.3	10	.7	17	1,531	.9	-6.9	24	1.2	
800	30	1,970	.0	-10.5	27	8.6	31	2,020	5.8	-6.7	26	6.4	31	2,044	9.1	-8.1	28	1.9	31	1,971	2.2	-5.3	26	.5	31	1,985	3.6	-6.2	25	3.2	
750	30	2,485	-2.2	-13.7	27	9.5	31	2,546	3.6	-10.5	26	8.7	31	2,577	7.3	-11.7	29	3.4	31	2,489	-1.0	-8.6	28	1.9	31	2,506	.1	-9.4	26	4.4	
700	30	3,031	-4.4	-17.0	26	10.6	31	3,103	.4	-13.2	26	10.7	31	3,141	4.1	-14.3	28	5.4	31	3,036	-4.8	-11.6	28	3.2	31	3,055	-3.2	-13.2	25	5.5	
650	30	3,611	-7.7	-19.9	26	11.7	31	3,694	-3.1	-16.1	26	11.8	31	3,740	.9	-16.4	28	7.7	31	3,615	-9.0	-16.5	28	3.8	31	3,638	-6.8	-17.8	25	6.6	
600	30	4,230	-11.7	-22.6	26	12.5	31	4,323	-6.9	-21.3	26	12.9	31	4,378	-3.0	-19.7	28	10.0	31	4,230	-12.9	-21.5	28	4.2	31	4,259	-10.5	-24.0	26	7.5	
550	30	4,891	-15.9	-25.7	26	13.7	31	4,997	-11.2	-25.3	26	14.3	31	5,061	-7.7	-23.4	28	12.5	31	4,888	-17.3	-26.9	28	4.2	31	4,923	-15.0	-29.4	26	9.0	
500	30	5,602	-20.6	-31.6	27	15.1	31	5,722	-16.1	-28.8	27	16.4	31	5,796	-12.4	-27.6	28	16.2	31	5,595	-22.3	-32.7	28	4.5	31	5,637	-20.2	-34.9	26	10.6	
450	30	6,373	-26.0	-36.3	27	15.9	31	6,507	-21.7	-34.1	27	18.8	31	6,593	-17.7	-31.4	28	18.9	31	6,360	-28.1	-38.2	28	4.8	31	6,408	-25.9	-39.2	27	12.6	
400	30	7,214	-32.8	-42.1	27	17.3	31	7,363	-27.9	-36.5	27	22.8	30	7,466	-23.3	-36.6	28	21.6	31	7,194	-34.7	-44.4	28	6.0	31	7,251	-32.4	-44.7	27	15.7	
350	30	8,143	-39.7	-45.7	27	19.6	31	8,312	-34.8	-45.8	27	25.8	30	8,431	-30.6	-42.8	28	24.4	31	8,115	-42.3	-47.4	28	6.3	31	8,181	-39.6	-50.2	27	17.7	
300	30	9,177	-47.3	-52.7	27	22.5	31	9,368	-42.5	-48.6	27	28.4	30	9,505	-38.7	-50.2	28	29.2	30	9,144	-50.3	-52.9	29	7.4	31	9,216	-47.1	-52.9	27	21.9	
250	30	10,361	-55.1	-60.7	27	25.8	31	10,577	-50.7	-52.7	27	32.7	30	10,734	-47.5	-52.4	28	32.9	30	10,317	-56.0	-58.8	28	8.7	31	10,406	-53.3	-58.8	27	28.0	
200	30	11,773	-58.0	-68.0	28	27.4	31	12,008	-57.5	-60.7	27	35.6	30	12,181	-55.4	-58.8	28	34.0	30	11,727	-57.8	-60.7	29	10.3	31	11,832	-55.5	-60.7	27	29.9	
175	30	12,617	-57.1	-75.1	28	25.0	31	12,849	-58.2	-67.7	27	37.6	30	13,028	-58.1	-60.7	28	36.1	30	12,574	-55.8	-60.7	28	11.8	31	12,685	-55.1	-60.7	27	28.9	
150	30	13,594	-56.5	-82.1	27	22.3	31	13,818	-59.3	-75.7	27	37.0	30	13,993	-61.0	-60.7	27	34.1	30	13,557	-55.5	-60.7	28	13.2	31	13,667	-56.5	-60.7	27	26.9	
125	30	14,748	-57.6	-89.1	27	20.8	31	14,900	-63.5	-82.7	27	30.6	30	15,111	-66.7	-60.7	27	29.4	30	14,715	-57.3	-60.7	28	12.8	31	14,817	-59.4	-60.7	27	23.2	
100	30	16,148	-58.9	-96.1	27	18.3	31	16,308	-67.0	-89.7	27	24.3	30	16,493	-71.8	-60.7	27	23.4	30	16,118	-59.4	-60.7	28	9.7	31	16,204	-62.1	-60.7	27	17.8	
75	20	17,540	-60.5	-103.1	27	13.3	31	17,650	-67.5	-96.7	27	16.6	30	17,756	-71.6	-60.7	28	15.6	30	17,513	-59.8	-60.7	28	8.2	30	17,576	-62.9	-60.7	26	13.1	
70	29	18,372	-60.6	-108.1	28	10.8	31	18,456	-66.5	-103.7	27	11.4	30	18,548	-69.7	-60.7	28	10.8	28	18,348	-59.6	-60.7	27	6.7	30	18,401	-62.0	-60.7	27	9.7	
60	29	19,334	-59.8	-115.1	28	9.8	31	19,392	-65.1	-110.7	28	7.9	30	19,475	-66.4	-60.7	29	5.1	28	19,312	-59.4	-60.7	27	6.1	30	19,356	-61.6	-60.7	26	6.0	
50	29	20,475	-59.2	-122.1	28	6.6	31	20,512	-61.8	-117.7	29	4.6	30	20,590	-62.3	-60.7	33	2.0	28	20,454	-59.8	-60.7	27	6.0	29	20,487	-61.2	-60.7	26	4.9	
40	29	21,876	-58.2	-129.1	28	6.0	30	21,901	-59.6	-124.7	30	3.0	29	21,992	-57.8	-60.7	32	3.3	27	21,851	-59.2	-60.7	28	4.7	29	21,875	-60.7	-60.7	29	3.7	
30	28	23,708	-55.9	-136.1	28	6.5	29	23,716	-56.1	-131.7	32	2.1	28	23,814	-53.7	-60.7	35	0.5	19	23,651	-59.2	-60.7	29	4.4	28	23,663	-58.1	-60.7	28	5.7	
25	27	24,671	-54.4	-143.1	27	6.5	27	24,884	-53.6	-138.7	33	1.5	27	24,997	-51.0	-60.7	35	1.2	22	24,789	-58.4	-60.7	28	6.4	28	24,838	-56.1	-60.7	28	6.7	
20	26	26,320	-51.0	-150.1	26	8.5	27	26,331	-50.2	-145.7	31	2.1	24	26,468	-47.4	-60.7	03	4.2	26	26,201	-56.1	-60.7	28	9.0	24	26,271	-52.3	-60.7	27	11.3	
15	27	28,207	-46.7	-157.1	26	11.7	25	28,238	-43.6	-152.7	27	3.7	22	28,385	-42.2	-60.7	07	5.5	19	28,072	-51.1	-60.7	27	14.8	21	28,145	-47.3	-60.7	27	17.1	
10	7	30,910	-40.2	-164.1	13	37,993	-36.9				27	3.3	16	31,151	-37.2	-60.7		7		30,763	-44.8	-60.7									

		YAKUTAT, AK 1010 MB						YAP, CAROLINE IS. 1009 MB								
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	
					Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.
5FC	31	12	.2	-4.9	10	2.6	31	14	27.8	23.7	07	3.3				
1000	25	125	2.0	-1.9	11	2.8	31	95	26.4	22.8	07	4.2				
950	31	501	.4	-3.4	14	5.0	31	547	22.8	20.7	07	7.3				
900	31	933	-2.3	-5.9	16	6.7	31	1,018	20.0	18.1	07	7.2				
850	31	1,385	-5.1	-9.3	17	6.6	31	1,510	17.4	10.4	08	6.2				
800	31	1,659	-7.5	-11.7	19	6.2	31	2,027	16.1	4.8	08	5.0				
750	31	2,360	-10.1	-15.0	20	6.3	31	2,574	13.9	-3.3	08	4.7				
700	31	2,888	-13.2	-18.7	22	6.9	31	3,153	10.8	-4.2	08	5.0				
650	31	3,456	-16.2	-21.6	23	7.7	31	3,767	7.4	-8.1	08	5.9				
600	31	4,089	-19.7	-25.8	23	9.3	31	4,422	3.8	-9.4	09	6.4				
550	31	4,690	-23.4	-29.9	24	11.3	31	5,124	.1	-13.9	09	6.5				
500	31	5,382	-27.4	-34.9	25	13.0	31	5,882	-4.3	-17.9	09	6.8				
450	31	6,133	-32.3	-39.3	26	15.3	31	6,704	-9.2	-24.0	09	6.9				
400	31	6,954	-38.1	-43.5	26	18.3	31	7,606	-14.6	-29.8	09	7.2				
350	30	7,858	-44.5	-48.5	27	19.3	31	8,608	-21.4	-35.5	09	5.5				
300	30	8,873	-50.9	-54.9	27	21.3	31	9,722	-30.0	-42.5	11	4.7				
250	30	10,049	-54.4	-61.4	27	20.2	31	10,993	-40.4	-51.1	12	6.3				
200	30	11,481	-52.9	-68.9	28	15.4	31	12,473	-53.1	-58.1	13	9.0				
175	30	12,343	-52.6	-75.9	26	13.6	31	13,320	-60.0	-65.0	13	10.0				
150	30	13,342	-51.7	-82.9	28	13.1	31	14,265	-67.7	-72.7	12	11.2				
125	30	14,522	-52.7	-89.9	26	12.5	31	15,343	-75.1	-82.1	11	10.9				
100	30	15,959	-53.5	-96.9	29	11.1	31	16,613	-82.0	-89.0	10	6.9				

# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

MARCH 1979

Sun's zenith distance										Sun's zenith distance									
Date	A.M.				*	P.M.				Date	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MAUNA LOA OBSERVATORY, HA										TUCSON, AZ									
Air mass										Air mass									
3.34 2.67 2.01 1.34 * 1.34 2.01 2.67 3.34										4.64 3.71 2.78 1.86 * 1.86 2.78 3.71 4.64									
3-----	1.19	1.26	1.35	1.48	1.59	-----	-----	-----	-----	3-----	-----	.85	1.09	1.27	1.45	1.31	1.14	1.02	.93
4-----	1.19	1.28	1.36	1.48	1.58	-----	-----	-----	-----	4-----	.94	1.04	1.16	1.31	1.45	1.30	1.16	1.03	.95
5-----	1.20	1.28	1.32	1.48	1.60	-----	-----	-----	-----	5-----	.99	1.09	1.20	1.34	1.48	1.31	1.16	1.04	.93
6-----	1.21	1.30	1.37	1.46	1.58	1.60	1.37	1.29	1.26	6-----	.97	1.07	1.19	1.30	1.47	1.29	1.15	1.04	.95
7-----	1.19	1.28	1.37	1.48	1.58	-----	-----	-----	-----	7-----	.95	1.05	1.18	1.32	1.47	1.32	1.12	.99	.87
8-----	1.20	1.31	1.43	1.50	-----	1.49	1.38	1.31	1.24	8-----	.93	1.03	1.17	1.32	1.43	-----	1.13	-----	-----
15-----	1.14	1.22	1.34	1.46	-----	-----	-----	-----	-----	10-----	.92	1.01	1.13	1.28	1.40	1.27	1.10	.97	.86
16-----	-----	-----	-----	-----	1.58	1.47	1.32	1.23	1.12	11-----	.76	.86	.99	1.20	1.34	1.22	1.04	.90	.77
22-----	1.26	1.32	1.38	1.51	1.57	1.45	1.36	1.28	1.25	12-----	.85	.96	1.09	1.24	1.39	1.20	1.04	.92	.80
23-----	1.08	1.21	1.35	1.48	1.64	1.47	1.38	1.30	1.22	13-----	-----	.87	-----	-----	-----	-----	-----	-----	-----
29-----	1.08	1.17	1.28	1.41	1.65	1.48	1.35	1.25	1.16	14-----	.90	1.01	1.13	1.26	1.43	1.26	1.08	.95	.84
30-----	1.08	-----	-----	-----	1.58	1.55	1.35	1.26	1.17	15-----	.85	.95	1.07	1.26	1.42	1.24	1.10	.98	.89
Aver- ages	1.17	1.26	1.22	1.48	1.60	1.50	1.36	1.27	1.20	17-----	-----	-----	1.10	1.24	-----	1.21	-----	-----	-----
										23-----	-----	.96	1.06	1.22	1.42	1.24	1.08	.93	.82
										24-----	.76	.87	1.02	1.20	1.40	1.25	1.11	1.00	.90
										25-----	.89	1.00	1.12	1.28	-----	1.26	1.12	1.01	.91
										26-----	.82	.92	1.09	1.25	1.44	1.26	1.10	-----	-----
										29-----	-----	-----	-----	1.17	-----	1.17	.97	.85	.74
										30-----	.84	.97	1.11	1.26	-----	1.24	1.09	.96	.87
										31-----	.82	.93	1.07	1.24	1.43	-----	-----	-----	-----
										Aver- ages	.88	.98	1.11	1.26	1.43	1.26	1.10	.97	.87

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . . .	-36	-25	5	2	8	19	3	29	4	7	-10	-28	19	-5	34	19	47	-13	-47	-27	-15	3	23	39	63	52	40	102	-88	-59	66	8

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Data in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for time of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- + No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- + Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

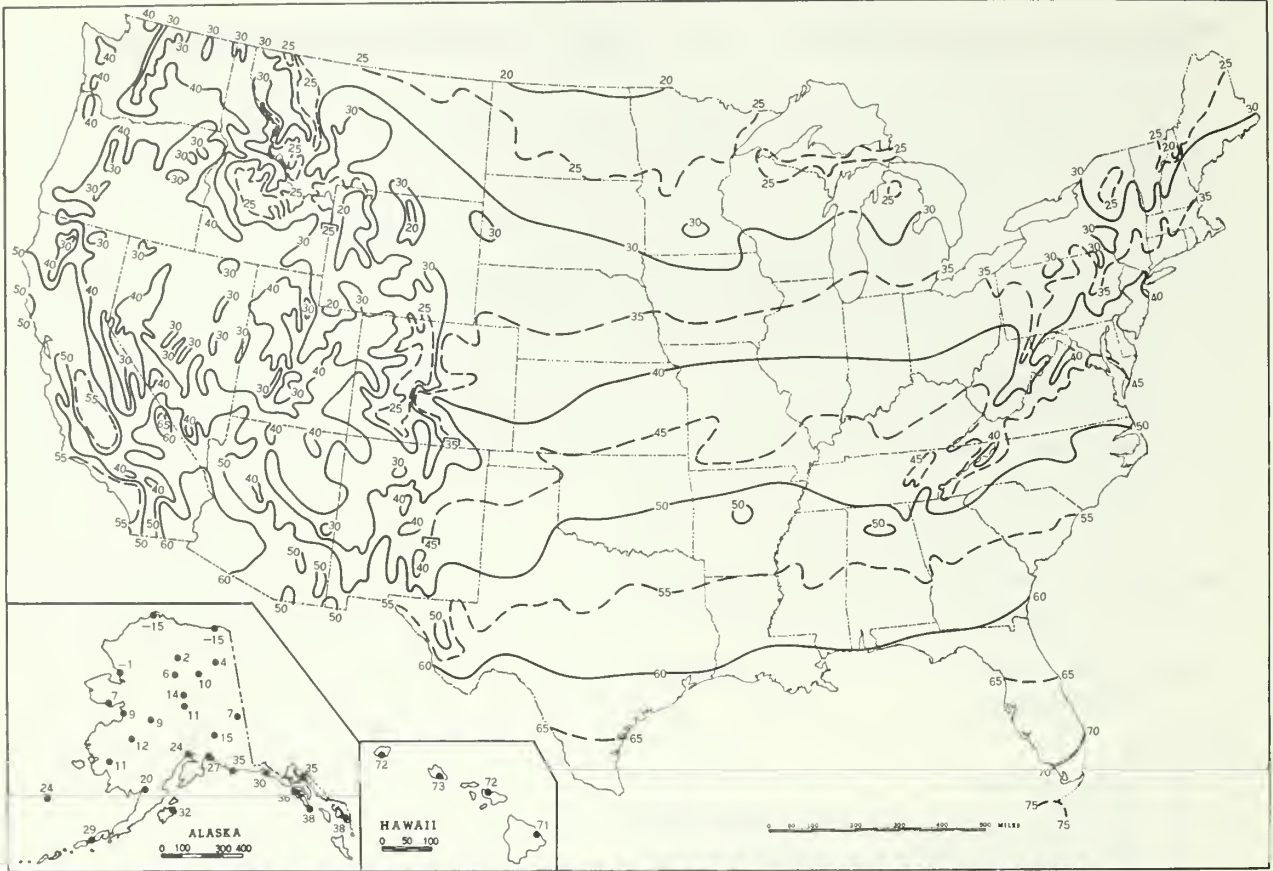
( ) Clouds Present	DM Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Dust	HS Slight Haze	M Moderate Haze-indeterminable
BD Blowing Dust	F Fog	I Intense Haze-indeterminable	N Sand
BN Blowing Sand	GF Ground Fog	K Smoke	S Slight Haze-indeterminable
D Dust	H Haze	KI Intense Smoke	
DI Intense Dust	HI Intense Haze	KM Moderate Smoke	

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

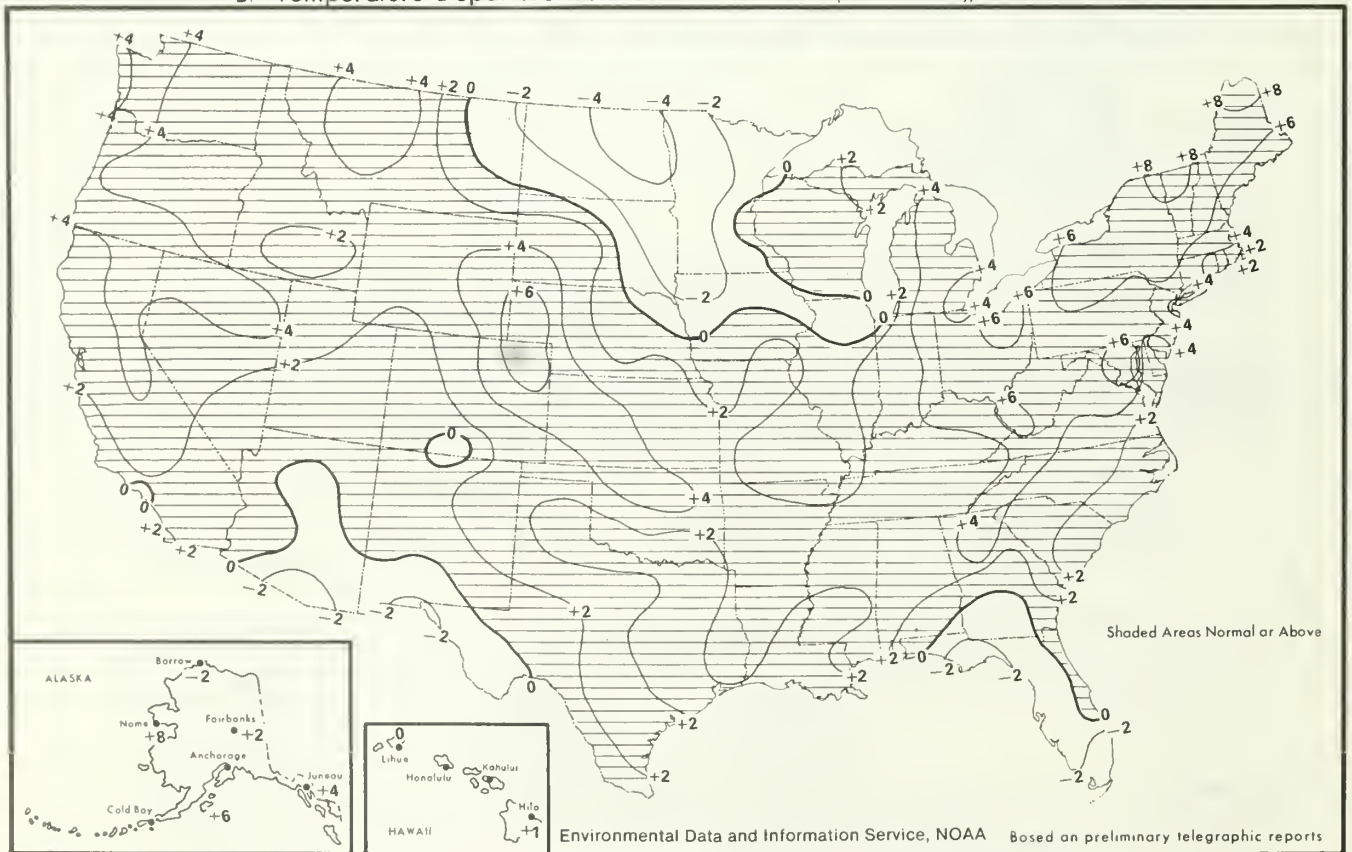
These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.



Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), March.

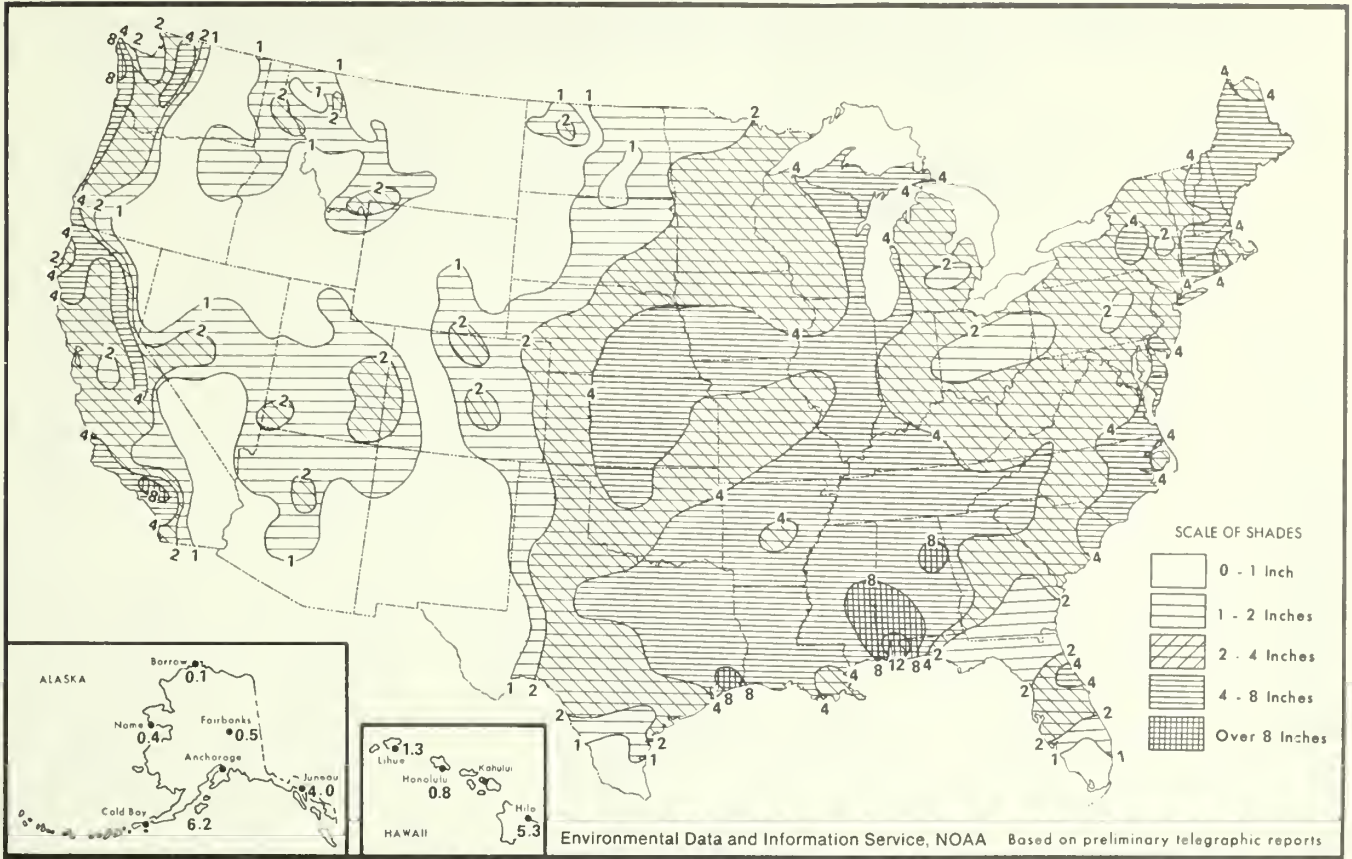


B. Temperature Departure from 30 - Year Mean (°F 1941-70), March 1979



Environmental Data and Information Service, NOAA Based on preliminary telegraphic reports

Chart II. A. Total Precipitation (Inches), March 1979



B. Percentage of Normal Precipitation, March 1979

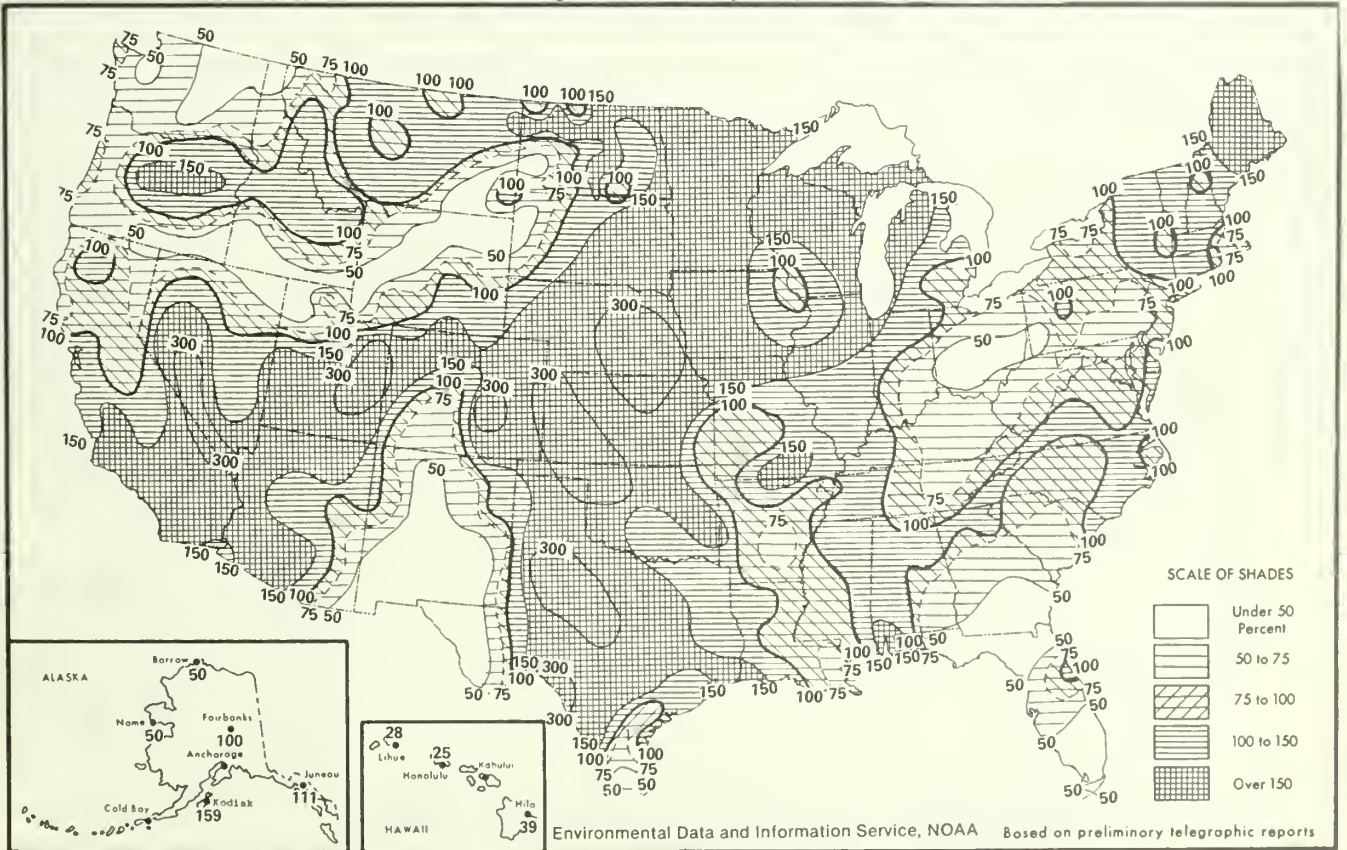
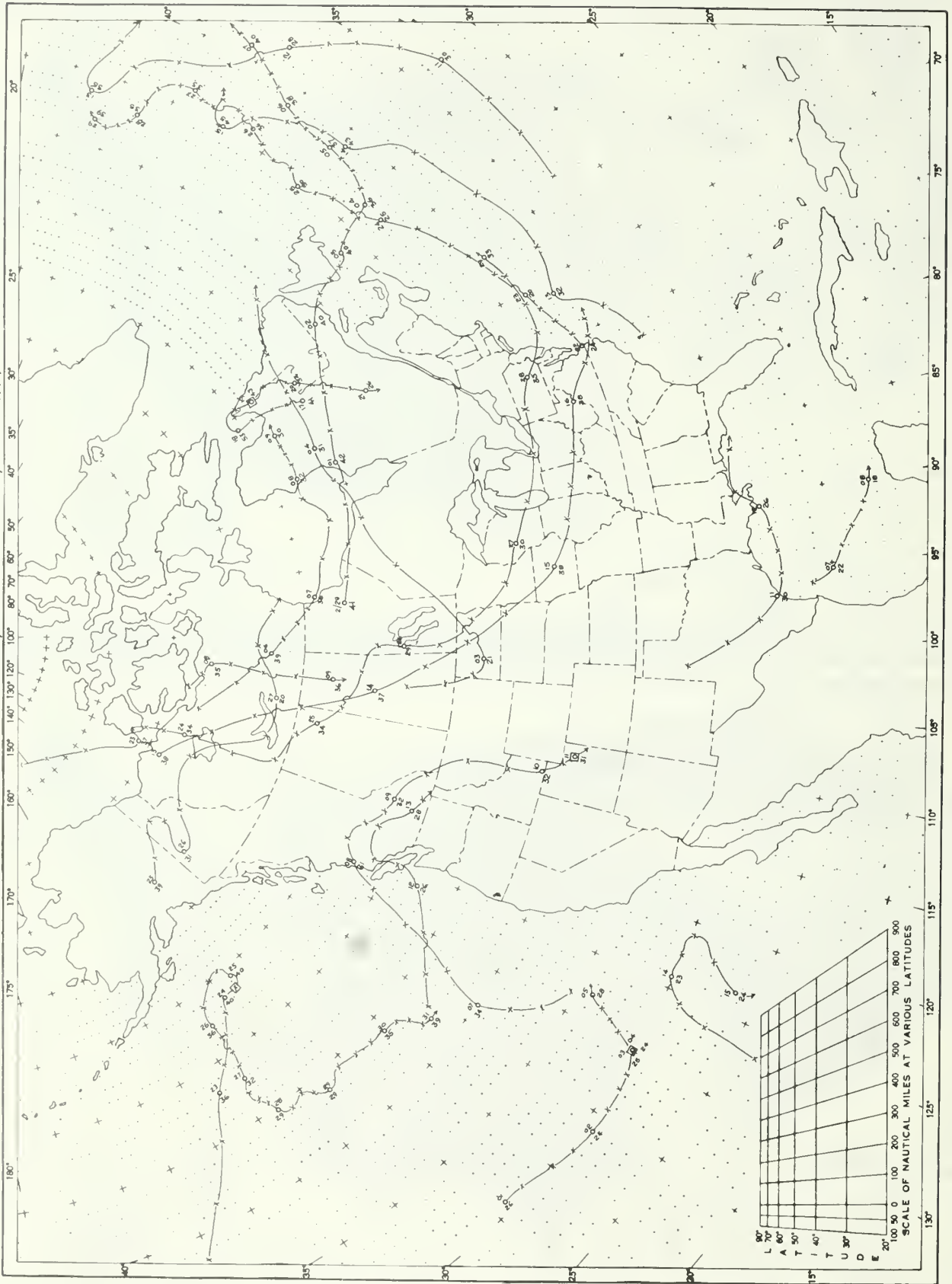




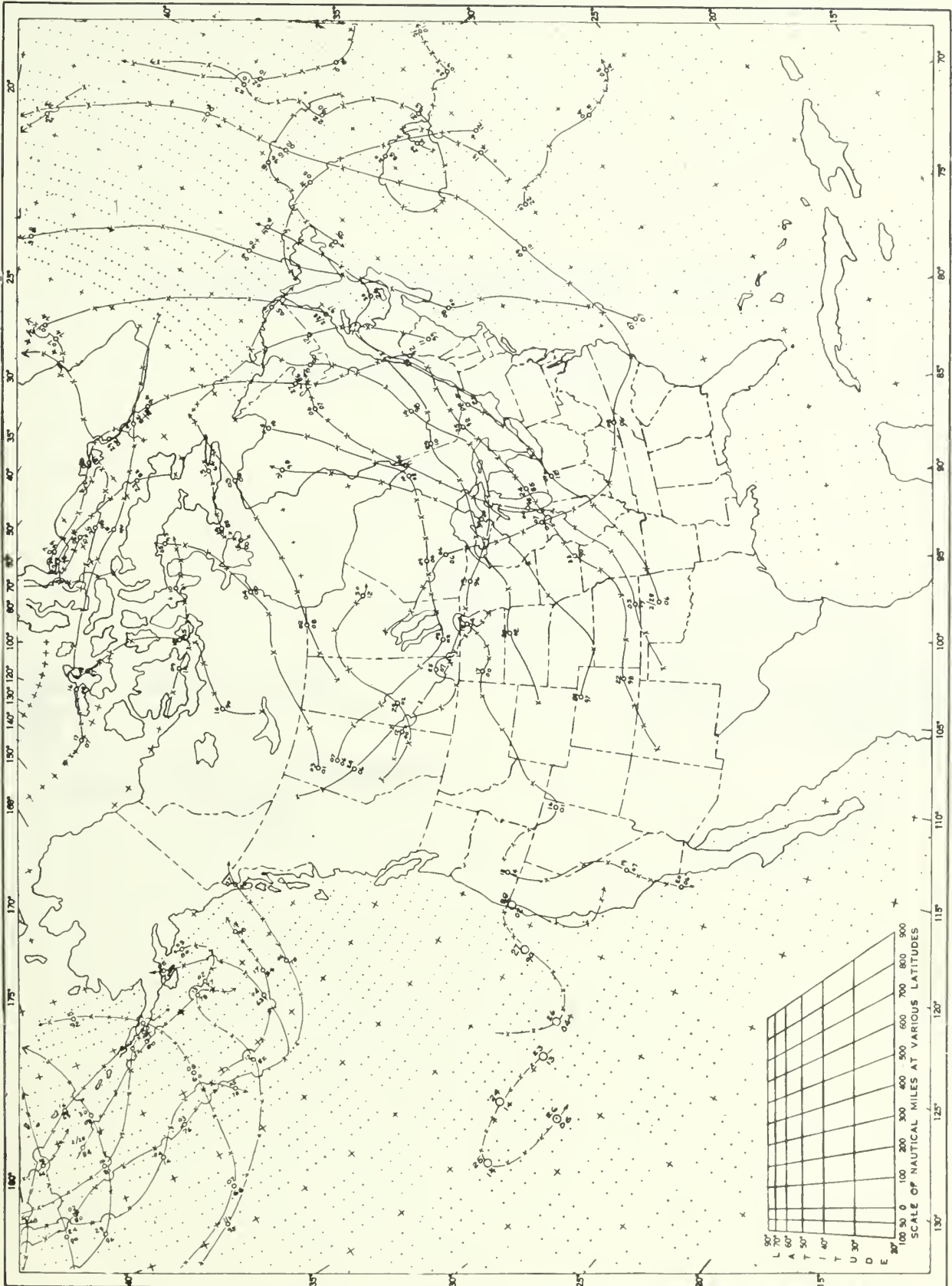
Chart III. Tracks of Centers of Anticyclones at Sea Level, March 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, March 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar. X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER



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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

APRIL 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** April averaged near-normal temperatures west of the Rockies, but most areas to the east were cooler than normal. The northern Plains averaged 6 to 8° cooler, while the western portion of the Corn Belt became 4 to 5° cooler. New England and Florida were slightly warmer than normal.

Moderate to heavy rain accumulated from the Sierras in California northward and across the Plateau and northern Rockies. Most areas east of the Rockies had normal or above rainfall. Severe weather hit most sections of the Nation east of the Rockies. Severe flooding occurred in several areas, and record floods plagued North Dakota, southeastern Texas, Mississippi, Alabama, and Florida.

In the early part of April's first week, a series of storm systems moved rapidly from western Canada south-eastward into the central United States and then eastward. Cool air met warm, moist Gulf air triggering heavy rain which reached into the South along a line from eastern Texas to the Ohio Valley and the Appalachians. More than 5 inches caused flooding in Mississippi and Alabama. A Pacific storm dumped rain in the Northwest and snow in the northern Rockies later in the week. April began with near-normal temperatures in the West and Southeast. Cold weather returned to the northern Plains and pushed southward into Texas.

The second week (9th-15th) also brought heavy rain in the South. A storm system moved into the Pacific Northwest causing rain with snow in the higher elevations of the Plateau and northern Rockies. A new storm center formed in Colorado and moved northeastward trailing behind it a cooler air mass which moved eastward. Again, the cooler air moving into warmer, moist air set off heavy rain. More than 2 inches fell from Oklahoma to Lake Michigan. As the cooler

air moved through the South, 5 inch-plus rains fell from northern Mississippi through northern Georgia. Some points in northeastern Mississippi measured 18 inches of rain during the week; severe flooding resulted.

Another weather system moved onto the central West Coast early in the week after mid-April (16th-22d). Rain fell along the coast northward and through the Plateau and northern Rockies. The frontal system moved through the Southwest remaining essentially dry but showers and thunderstorms broke out in western Texas as the front moved into that area. At mid-week, the front sat nearly north-south from central Manitoba in Canada to western Texas and moved slowly eastward. Light rain or showers fell along the front; the only severe weather occurred from central Texas through Louisiana, where some areas recorded over 10 inches of rain during the week. Temperatures in most of the Nation ranged warmer than normal, as much as 12° in the eastern slopes of the central Rockies. The East and West Coasts were near normal.

The last week of the month contained a mixture of weather systems. The old frontal system weakened and moved off the East Coast, but an intense low pressure system formed on its trailing end in Louisiana and edged eastward carrying heavy rain and severe weather to the Southeast. Almost at the same time, a disturbance moved through the southern Gulf of Mexico and turned northward to deluge southeastern Florida. Considerable crop damage resulted from the very heavy rain and flooding. Another front from the West caused heavy rain and severe weather through the Mississippi Valley and in southern Nebraska. Cooler air moved into the Plains and the South, but the West and New England remained warm.

# OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

APRIL 1979

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	Bankhead Lock and Dam	90	21	Heflin	29	10	Clanton	22.00	Mobile WSO AP	4.05
Alaska	4 Stations	76	30	Unlat	-42	14	Adak	6.64	2 Stations	T
Arizona	6 Stations	98	30+	Hawley Lake	3	4+	Sunrise Mountain	2.07	46 Stations	.00
Arkansas	4 Stations	89	25+	Lead Hill	25	5	Crossett 2 SSE	15.68	Siloam Springs	2.96
California	Mecca Fire Station	100	26	White Mountain 2	- 5	18	Gasquet Ranger Station	7.55	95 Stations	.00
Colorado	Lamar	89	24+	Rio Grande Reservoir	-28	2	Squaw Mountain	5.47	3 Stations	T
Connecticut	3 Stations	80	24+	Wigwam Reservoir	17	8	Stevenson Dam	7.97	Falls Village	4.04
Delaware	Dover	81	1	2 Stations	27	8	Wilmington Porter Reservoir	5.50	Bridgeville 1 NW	3.14
Florida	Clewiston U S Eng	96	14	Smith Creek	36	6	Fort Lauderdale	19.47	2 Stations	.40
Georgia	Douglas	92	18	2 Stations	29	10+	Waleska	15.51	Glennville	2.08
Hawaii	Puukohola Heiau 98.1	89	30+	Mauna Kea Obs 111.2	18	15	Kapala Ranch 36	23.41	Mauakea Obs 111.2	.15
Idaho	2 Stations	81	27+	Island Park Dam	- 6	19	Pierce	4.39	Lifton Pumping Station	.02
Illinois	3 Stations	84	21+	Kewanee 1 E	7	6	Mount Pulaski	10.84	Fulton Dam 13	2.79
Indiana	Charleston Ord Plant	86	21	2 Stations	14	7+	Tell City Power Plant	10.04	Fort Wayne WSO AP	2.17
Iowa	2 Stations	81	20+	Waukon	7	6	Vinton	5.33	Mapleton 4 NNW	1.50
Kansas	Hugoton	91	24	Ashland	11	4	Caldwell	4.95	Richfield 10 WSW	.52
Kentucky	Jackson	87	22	2 Stations	20	7+	Columbus	13.26	Ashland	2.81
Louisiana	4 Stations	89	20+	Ashland 2 S	31	5	Bayou Serrel Lock	18.53	New Orleans D P S 6	3.04
Maine	East Hiram	75	27	2 Stations	1	9	Jonesboro	9.67	Jackman	2.76
Maryland	Cumberland 2	85	25	McHenry 2 NW	15	7	Frostburg 2	4.78	Potomac Filter Plant	1.95
Massachusetts	Chester 2	85	24	2 Stations	15	11+	New Salem	7.10	Nantucket FAA AP	2.99
Michigan	Vanderbilt 11 ENE	79	25	Champion Van Riper Park	-12	7	Honroe	6.24	Kenton	.40
Minnesota	5 Stations	78	24+	Karlstad	-22	6	Thief River Falls	D 4.24	Collegeville St John U	.33
Mississippi	Wiggins 3 SSE	89	17	University	31	5	Louisville	24.10	Bay Saint Louis	4.27
Missouri	Carthage	87	20+	6 Stations	20	6	New Madrid	12.75	Trenton	1.84
Montana	3 Stations	86	18+	Elk Park	-10	3	Hinsdale 4 SW	3.96	Western Montana Br Station	.40
Nebraska	2 Stations	90	19	Chambers	11	6	Bertrand	5.79	Agate 3 E	.17
Nevada	Sunrise Manr Las Vegas	95	30	Clover Valley	7	3	Carlin Gold Mine	2.12	10 Stations	.00
New Hampshire	Concord WSO AP	77	28+	Mount Washington	- 1	8	Pinkham Notch	7.35	Lancaster	1.65
New Jersey	Hammonton 2 NNE	82	1	Essex Fells Service 81dg	21	4	West Wharton	5.24	New Milford	2.10
New Mexico	3 Stations	93	25+	Chama	- 3	2	Portales	2.48	8 Stations	.00
New York	Gowanda State Hospital	84	25	Franklinville 1 SSW	2	8	Boonville 2 SSW	6.79	Prattsburg 2 NW	DL.59
North Carolina	3 Stations	88	2+	Grandfather Mountain	21	7	Lake Toxaway 2 SW	12.76	Sloan 3 S	1.94
North Dakota	Medora	83	18	2 Stations	-22	6+	Petersburg 2 N	4.82	Reeder 13 N	.70
Ohio	3 Stations	85	26+	Carpenter 4 NW	15	7	Cincinnati-Fernbank	6.88	2 Stations	2.50
Oklahoma	Beaver	92	25	Hooker	7	4	Heavener 1 SE	7.86	Goodwell Research Station	.54
Oregon	Portland KGW-TV	84	26	Christmas Valley	8	18	Government Camp	12.72	Ontario KSRV	.26
Pennsylvania	Lewistown	89	25	Jamesstown 2 NW	11	6	Bakerstown 3 WNW	5.75	Raymond	1.14
Puerto Rico	2 Stations	95	22+	Cerro Maravilla	49	1	Pico Del Este	15.12	Ponce City	.00
Rhode Island	2 Stations	74	23	2 Stations	25	21+	North Foster 1 E	5.69	Block Island WSO AP	4.02
South Carolina	Sandhill Exp Station	89	2	Caesars Head	28	10	Hogback Mountain	14.86	Brookgreen Gardens	1.60
South Dakota	2 Stations	87	23	Deerfield 4 NW	- 5	3	Victor 1 ESE	3.54	Rapid City WSO AP	.31
Tennessee	5 Stations	86	21+	Tazewell	7	24	Huntingdon Water Plant	12.90	Greeneville Exp Station	3.43
Texas	Rio Grande City 3 W	103	12	Gruver	12	4	Comroe	19.30	10 Stations	.00
Utah	Saint George	86	29	Silver Lake Brighton	- 8	13	Snowbird	6.30	6 Stations	.00
Vermont	Vernon	80	25	Mount Mansfield	6	8	Mount Mansfield	6.27	Gilman	1.72
Virginia	2 Stations	86	2+	Big Meadows	16	7	Diamond Springs	7.54	Washington National WSO AP	1.88
Virgin Islands	2 Stations	92	30+	3 Stations	66	15+	Ham Bluff Light House Station	5.73	Frederiksted	.72
Washington	3 Stations	84	30+	2 Stations	16	1	Rainier Paradise R S	10.13	Smyrna	.03
West Virginia	Spencer	88	22	Spruce Knob	13	7	Thomas	5.83	Martinsburg FAA AP	1.65
Wisconsin	2 Stations	80	23	Amery	- 5	6	Burlington	6.32	Eagle River	.46
Wyoming	Colony	85	18	Old Faithful	-16	2	Black Mountain	2.61	2 Stations	T







# CLIMATOLOGICAL DATA

METRIC UNITS

APRIL 1979

State and Station	Pressure		Temperature							Precipitation					Wind			No. of days (sunrise to sunset)																					
	Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days	Max 3/2 °C or above	Min 0 °C or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms	Total	Snow, ice pellets	Resonant speed	Resonant direction	Fastest mile (1.6 kilometers)	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)	%							
																																	°C	°C	°C	°C	°C	°C	°C
ILLINOIS																																							
SPRINGFIELD	179	994.2	1016.8	15.2	5.2	10.2	-1.5	26.1	120	-5.0	6	4	4	4.4	70	182	77	113	12	5	4	T	T	0.4	21	NW	5	4	8	18	7.6	48							
INDIANA																																							
EVANSVILLE	116	1003.1	1017.0	17.6	7.2	12.4	-1.3	27.2	20	-1.7	6	0	2	6.1	68	154	51	37	13	6	0	0	0	0.1	4	SE	12	6	7	17	6.9	52							
FORT WAYNE	241	984.8	1017.1	13.0	2.6	8.2	-1.4	23.9	12	-7.2	7	0	6	2.8	70	85	-35	12	17	2	0	T	T	1.0	26	NW	5	4	4	22	9.0	61							
INDIANAPOLIS	241	987.8	1017.2	15.0	4.8	9.9	-1.4	28.1	12	-5.6	4	0	6	5.6	79	89	-19	31	17	5	0	T	T	0.5	25	NW	5	4	5	21	7.8	40							
SOUTH BEND	236	988.2	1016.6	12.9	2.8	7.9	-1.1	25.0	12	-5.6	7	0	9	2.8	72	147	45	28	16	6	0	T	T	0.4	30	NW	5	4	5	22	7.9								
IOWA																																							
BURLINGTON	211			13.9	3.3	8.7	-2.1	24.4	20	-7.8	6	0	8	2.2	66	100	4	39	10	4	0	0	0	0.4	32	NW	5	4	10	16	7.2								
DES MOINES	286	981.0	1016.2	13.5	3.1	8.3	-1.4	22.8	23	-7.2	6	0	8	2.2	70	82	7	10	13	4	0	0	0.3	17	NW	5	4	13	13	6.7	50								
QUINCY	322			11.6	1.3	6.5	-2.1	21.7	22	-10.6	6	0	12	1.6	60	60	-45	10	13	4	0	0	0.2	10	NW	5	4	13	13	6.7	50								
SIoux CITY	334	976.0	1016.2	14.5	1.7	8.1	-1.6	27.2	18	-8.3	6	0	15	1.7	68	59	-4	13	8	2	0	0	0.3	9	NW	5	4	13	13	6.6	56								
WATERLOO	265	985.1	1017.3	12.2	1.6	6.9	-1.7	22.2	22	-9.4	6	0	14	1.1	70	111	24	73	11	4	0	0	0.3	6	NW	5	4	8	16	6.8									
KANSAS																																							
CONCORDIA	648	961.4	1014.6	17.4	3.8	10.7	-0.8	28.3	16	-5.6	6	0	9	3.9	66	39	-18	11	9	5	0	0	0.4	13	NW	11	9	8	13	5.9	70								
ODDGE CITY	787	922.1	1012.8	19.3	5.2	12.3	0.1	31.1	16	-5.6	6	0	5	4.4	66	50	6	11	9	2	0	0	0.1	17	NW	11	10	9	11	5.4	57								
GODDARD	1114	884.5	1011.4	18.6	2.2	10.4	1.1	28.3	19	-5.6	6	0	10	3.3	67	28	-8	13	4	3	0	0	0.3	16	NW	11	9	10	10	5.3	57								
TOPEKA	267	983.4	1015.4	17.4	4.3	10.9	-1.6	27.8	17	-4.4	6	0	7	6.1	76	60	-32	12	6	0	0	0	0.6	10	NW	11	9	15	6.5	55									
WICHITA	603	966.5	1014.4	18.7	5.9	12.3	-1.4	27.8	16	-2.2	6	0	2	5.6	64	37	-39	12	7	4	0	0	0.1	15	NW	11	12	10	8	5.2	65								
KENTUCKY																																							
COVINGTON	265	985.8	1017.7	15.8	5.2	10.5	-1.7	26.7	21	-4.4	6	0	3	4.4	70	124	32	33	14	4	0	T	T	0.2	26	NW	11	10	16	7.1									
LEXINGTON	294	981.7	1017.3	17.8	6.4	12.1	-0.8	26.7	21	-1.7	7	0	2	5.0	65	125	27	57	12	0	0	T	T	0.7	23	NW	11	6	17	7.1									
LOUISVILLE	145	989.3	1016.9	18.1	7.5	12.8	-0.5	27.2	21	-1.1	6	0	2	5.6	65	186	82	64	11	3	0	T	T	0.7	25	NW	11	6	8	16	6.9	41							
LOUISIANA																																							
BATON ROUGE	21	1012.9	1015.4	25.6	15.3	20.4	0.2	29.4	1	6.7	5	0	0	15.6	77	292	162	145	8	7	0	0	0	1.4	12	NW	11	5	6	19	7.3								
LAKE CHARLES	3	1012.9	1014.1	24.8	16.0	20.4	-0.1	30.0	13	6.7	5	0	0	16.1	81	161	51	96	10	8	0	0	0	1.6	12	NW	11	5	6	18	7.0								
NEW ORLEANS	1	1013.5	1014.5	26.4	17.1	21.7	1.4	29.4	18	7.8	6	0	0	16.1	72	124	19	61	10	6	0	0	0	1.6	14	NW	11	4	8	18	7.5	46							
SHREVEPORT	77	1004.7	1014.0	24.5	13.3	18.9	-0.2	31.1	16	2.2	5	0	0	14.4	77	188	57	84	14	6	0	0	0	0.9	11	NW	11	7	5	18	6.8	48							
MAINE																																							
CARIBOU	190	991.2		9.1	1.1	5.1	2.5	23.3	26	-7.8	9	0	16	0.6	74	78	17	25	16	1	0	0	0	0.5	32	NW	7	3	24	8.3									
PORTLAND	13	1013.5	1015.9	10.2	1.1	5.7	-0.3	21.1	23	-3.9	8	0	15	0.6	74	165	80	91	18	1	0	0	0	0.5	32	NW	7	4	6	20	7.5	41							
MARYLAND																																							
BALTIMORE	45	1011.2	1017.0	16.8	6.7	11.7	-0.4	25.0	25	-1.1	7	0	1	4.4	64	86	8	42	10	0	0	T	T	1.2	32	NW	7	8	4	18	6.7	50							
MASSACHUSETTS																																							
BLUE HILL RES R	192			12.2	3.1	7.7	-0.3	23.9	24	-3.3	8	0	7	2.2	67	110	18	48	14	1	0	0	0	0.6	35	NW	6	8	3	19	7.1	42							
ROSTON	5	1014.6	1015.7	13.1	5.4	9.3	0.1	25.0	24	-0.6	8	0	0	2.2	67	81	-8	30	13	1	0	0	0	0.6	35	NW	6	8	3	19	7.1	49							
Worcester	301	977.7		11.6	2.4	7.1	-0.3	23.3	24	-4.4	8	0	13	-0.6	66	114	17	46	16	0	0	0	0	1.5	32	NW	7	5	6	19	7.2								
MICHIGAN																																							
ALPENA	210	999.9	1016.7	9.4	0.7	5.1	0.6	25.0	24	-6.7	7	0	15	-0.6	71	77	15	21	13	1	0	0	0.7	36	NW	6	7	6	17	7.1	46								
DETROIT	189			10.8	2.6	5.7	-2.2	21.1	25	-6.7	6	0	8	0.6	68	77	44	41	15	3	0	0	0.4	27	NW	6	5	2	20	7.6	37								
DETROIT METR N	193	992.2	1016.7	12.1	1.9	7.0	-0.7	22.2	23	-6.7	7	0	11	1.7	74	126	44	41	15	3	0	0	0.6	30	NW	5	5	2	20	7.6	37								
FLINT	235	984.2	1016.3	11.4	2.6	7.0	-0.7	22.8	23	-7.2	7	0	9	1.1	71	90	-13	10	18	1	0	0	0.6	26	NW	5	4	8	18	7.6	40								
GRAND RAPIDS	239	987.1	1016.8	12.3	1.6	6.9	-1.1	24.4	23	-7.8	7	0	10	1.1	71	90	4	20	16	2	0																		



# CLIMATOLOGICAL DATA

METRIC UNITS

APRIL 1979

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation						Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	Possible sunshine %							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32.2 °C or above	Min. 0 °C or lower	No. of days	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms	Snow, ice pellets		Residual speed	Residual direction	Speed			Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10		
																					mm	mm											mm	mm
MINNESOTA	254	985.8	1016.8	11.8	1.5	6.7	-0.6	25.6	23	-12.2	6	0	10	-1.7	58	17	-3.5	5	10	2	18	25	0.3	18	17.0	NW	5	5	7	18	7.2	52		
MINNEAPOLIS	395	968.2	1016.9	10.6	0.7	5.6	-1.3	23.3	23	-13.9	6	0	12	0.0	69	53	-7	10	11	2	188	127	0.3	24	18.8	30	5	5	20	7.6				
ROCHESTER	313	979.0	1017.0	9.2	-1.2	4.0	-2.1	22.8	23	-16.7	6	0	18	-0.0	8	19	-6.0	8	11	2	10	178												
ST. CLOUD																																		
MISSISSIPPI	94	1004.1	1015.9	24.1	12.3	18.2	-0.5	30.6	17	4.4	6+	0	0	13.3	80	365	247	21.4	11	6	0	0	1.0	9	10.3	11	22+	6	7	17	6.8	45		
JACKSON	88	1005.4	1016.4	24.1	11.9	18.0	-0.6	29.4	11	2.8	6	0	0	12.2	75	273	143	10.4	13	6	0	0	0.6	8	13.0	23	12	6	7	17	6.9			
MEMPHIS	270	983.7	1016.2	17.1	6.3	11.7	-1.1	28.3	20	-2.2	6	0	4	5.0	68	129	31	65	14	7	0	0	0.4	12	15.2	SW	12	3	7	20	7.8	38		
COLUMBIA REGIONAL	309	978.3	1015.5	16.2	5.6	10.9	-1.4	26.1	17	-3.9	6	0	3	5.0	71	60	-2.9	18	12	7	51	25	1.2	14.8	E	10	6	9	15	6.7	74			
KANSAS CITY	226	985.7	1015.5	18.1	6.6	12.3	-0.9	27.8	19+	-3.3	6	0	2	4.4	62	73	-4.9	21	12	4	15	20	0.9	3										
KANSAS CITY MUN AP	247	985.7	1015.5	18.1	6.6	12.3	-0.9	27.8	19+	-3.3	6	0	2	4.4	62	73	-4.9	21	12	4	15	20	0.9	3										
ST JOSEPH	247	985.7	1015.5	18.1	6.6	12.3	-0.9	27.8	19+	-3.3	6	0	2	4.4	62	73	-4.9	21	12	4	15	20	0.9	3										
ST LOUIS	163	996.3	1016.7	15.8	6.4	11.6	-2.0	28.9	20	-3.3	6	0	3	6.1	73	190	30	125	15	6	0	0	0.0	22	15.2	NE	11+	5	9	16	7.5	40		
ST LOUIS METRO	163	996.3	1016.7	15.8	6.4	11.6	-2.0	28.9	20	-3.3	6	0	3	6.1	73	190	30	125	15	6	0	0	0.0	22	15.2	NE	11+	5	9	16	7.5	40		
SPRINGFIELD	386	969.9	1015.5	18.5	5.4	12.0	-1.6	27.8	25+	-3.9	6	0	6	6.1	70	183	74	68	11	6	0	0	0.0	17	13.4	SE	11+	10	5	15	6.2	65		
SPRINGFIELD	386	969.9	1015.5	18.5	5.4	12.0	-1.6	27.8	25+	-3.9	6	0	6	6.1	70	183	74	68	11	6	0	0	0.0	17	13.4	SE	11+	10	5	15	6.2	65		
MONTANA	1087	888.3	1013.1	13.0	-0.2	6.4	-0.6	26.7	17	-10.0	5	0	14	-2.8	58	30	-9	11	14	1	94	25	2.1	32	16.1	NW	13	3	4	23	8.0	53		
BILLINGS	696	931.9	1015.5	7.0	-2.3	2.4	-3.6	22.2	17	-15.0	1	0	21	-1.1	82	32	-4	13	17	1	198	102	1.5	5	13.9	12	17	4	7	19	7.9			
GLASGOW	1116	886.2	1015.4	10.8	-1.2	4.8	-1.5	22.2	16	-8.9	5+	0	15	-3.9	57	52	22	22	13	2	218	76	1.8	25	15.6	SW	6	1	4	25	8.4	42		
GREAT FALLS	1077	821.4	1013.4	10.7	-1.4	4.7	-1.8	23.9	16	-12.2	5	0	18	-1.2	5	44	18	13	11	23.4	51	0.8	3	14.8	NW	27	1	4	25	8.7	68			
HAVRE	1167	878.1	1014.6	12.4	-0.6	5.9	0.0	21.7	16	-9.4	3	0	15	-2.8	60	57	34	22	12	0	236	127	2.6	28	20.1	NW	6	2	5	23	8.2	44		
HELENA	904	909.6	1015.3	12.6	-0.6	6.0	0.4	22.2	29	-11.1	5	0	17	-2.2	59	38	12	14	12	0	109	25	1.1	16	9.4	NW	6	2	2	26	8.3			
KALISPELL	801	919.7	1013.7	11.4	-1.0	5.2	-2.2	29.4	17	-11.7	5	0	16	0.0	73	19	-13	10	8	0	89	48	1.8	34	10.7	NE	27+	4	4	22	8.0	46		
MILES CITY	972	902.5	1015.1	12.9	0.3	6.6	0.0	22.2	27	-9.4	1	0	12	0.0	67	26	1	10	13	2	89	25	1.6	31	10.7	NE	27+	4	4	22	8.0	46		
MISSOULA	972	902.5	1015.1	12.9	0.3	6.6	0.0	22.2	27	-9.4	1	0	12	0.0	67	26	1	10	13	2	89	25	1.6	31	10.7	NE	27+	4	4	22	8.0	46		
NEBRASKA	561	948.2	1015.0	15.8	2.3	9.1	-0.9	26.1	17	-7.2	6	0	10	2.2	66	83	20	27	10	6	56	0	0	1.0	13	17.0	16	18	8	9	13	6.2		
GRAND ISLAND	359	972.2	1015.1	16.4	3.2	9.8	-0.9	25.6	19	-6.1	6+	0	8	3.3	67	74	9	42	8	4	114	25	0.7	8	14.8	NW	18+	7	9	14	6.3	34		
LINCOLN	471	959.4	1015.5	14.8	1.9	8.4	-0.8	25.6	18	-7.2	6+	0	13	1.1	66	49	-6	19	10	5	46	25	0.2	20	17.0	S	18	4	13	13	6.6			
NORTH PLATTE	298	915.3	1013.4	15.9	1.3	9.1	0.3	27.8	19	-6.7	6	0	10	0.0	59	37	-12	18	10	2	58	0	0.3	7										
OMAHA (EPPEL)	298	915.3	1013.4	15.9	1.3	9.1	0.3	27.8	19	-6.7	6	0	10	0.0	59	37	-12	18	10	2	58	0	0.3	7										
OMAHA (NORTH)	399	875.7	1011.5	14.4	2.9	8.7	-1.3	25.0	17	-5.0	5	0	5	-1.0	5	66	-10	7	2	28	0	0	0	0										
SCOTT'S BLUFF	1206	875.7	1011.5	14.4	2.9	8.7	-1.3	25.0	17	-5.0	5	0	11	-2.2	59	69	-3	16	10	5	122	102			12.5	NW	8	6	11	13	6.5	44		
SCOTT'S BLUFF	1206	875.7	1011.5	14.4	2.9	8.7	-1.3	25.0	17	-5.0	5	0	11	-2.2	59	69	-3	16	10	5	122	102			12.5	NW	8	6	11	13	6.5	44		
VALENTINE	789	921.4	1014.3	18.1	2.0	10.1	2.2	28.9	18+	-4.4	29	0	11	0.0	56	23	-16	14	8	2	109	0	0	0	17.9	SE	12	6	9	15	6.7	61		
VALENTINE	789	921.4	1014.3	18.1	2.0	10.1	2.2	28.9	18+	-4.4	29	0	11	0.0	56	23	-16	14	8	2	109	0	0	0	17.9	SE	12	6	9	15	6.7	61		
NEVADA	1599	842.5	1013.6	15.6	0.3	8.0	1.6	24.4	16	-5.6	3	0	14	-2.8	52	11	-10	4	7	1	53	0	0	1.7	26	13.0	26	23	3	13	14	6.9		
ELKO	1906	806.0	1012.2	14.4	-2.9	5.7	0.6	20.6	15	-11.1	3	0	24	-2.2	42	6	-20	3	4	1	71	0	0	0	1.7	23	16.1	NW	9	5	15	10	6.1	72
ELY	659	935.7	1011.5	28.9	10.9	18.9	1.3	33.3	29+	-6.4	11+	4	0	-4.4	22	2	-5	2	1	0	0	0	0	0	2.1	21	20.6	NW	10	14	12	4	3.7	91
LAS VEGAS	1342	864.5	1014.5	17.6	-1.0	8.3	0.1	23.9	14	-6.0	1	0	20	-3.3	47	10	-2	5	6	0	28	25	1.4	29	16.5	SW	16	5	15	10	6.2	94		
RENO	1311	867.3	1014.3	17.9	-1.2	8.4	1.1	26.1	30	-8.9	19+	0	17	-3.9	44	26	-8	8	9	2	48	0	0	0	1.7	25	14.8	SW	6	3	12	15	7.1	62
WINNEHICCA	1311	867.3	1014.3	17.9	-1.2	8.4	1.1	26.1	30	-8.9	19+	0	17	-3.9	44	26	-8	8	9	2	48	0	0	0	1.7	25	14.8	SW	6	3	12	15	7.1	62
NEW HAMPSHIRE	104	1003.4	1016.2	13.0	0.5	6.8	0.0	25.0	28+	-7.2	20+	0	17	-1.1	64	79	5	25	14	1	130	102	1.0	30	15.2	NW	7	8	2	20	7.1	48		
CONCORD	1909	842.5	1013.6	15.6	0.3	8.0	1.6	24.4	16	-5.6	3	0	14	-2.8</																				









# HEATING DEGREE DAYS

(Base 65°F.)

APRIL 1979

State and Station	Current season			State and Station	Current season			State and Station	Current season			State and Station	Current season		
	This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month
ALABAMA				ALABAMA				ALABAMA				ALABAMA			
BIRMINGHAM U	92			BIRMINGHAM U	41	6105	5484	BIRMINGHAM U	41	6105	5484	BIRMINGHAM U	41	6105	5484
HUNTSVILLE	155	3221	3270	HUNTSVILLE	448	5879	5148	HUNTSVILLE	448	5879	5148	HUNTSVILLE	448	5879	5148
MOBILE	8	1602	1684	MOBILE	623	7382	6589	MOBILE	623	7382	6589	MOBILE	623	7382	6589
MONTGOMERY	39	1991	2261	MONTGOMERY				MONTGOMERY				MONTGOMERY			
ALASKA				ALASKA				ALASKA				ALASKA			
ANCHORAGE	741	8681	10016	ANCHORAGE				ANCHORAGE				ANCHORAGE			
ANNETTE	621	6322	6251	ANNETTE				ANNETTE				ANNETTE			
BARROW	1978	17602	17882	BARROW				BARROW				BARROW			
BARTER ISLAND	1897	17165	17704	BARTER ISLAND				BARTER ISLAND				BARTER ISLAND			
BETHEL	998	10698	12020	BETHEL				BETHEL				BETHEL			
BETTLES	1280	14191	14933	BETTLES				BETTLES				BETTLES			
BIG OELTA	929	12387	12861	BIG OELTA				BIG OELTA				BIG OELTA			
COLD BAY	720	7330	8486	COLD BAY				COLD BAY				COLD BAY			
FAIRBANKS	1018	13119	13585	FAIRBANKS				FAIRBANKS				FAIRBANKS			
GULKANA				GULKANA				GULKANA				GULKANA			
HOMER	792	8241	9171	HOMER				HOMER				HOMER			
JUNEAU	712	8261	8089	JUNEAU				JUNEAU				JUNEAU			
KING SALMON	754	8683	10459	KING SALMON				KING SALMON				KING SALMON			
KODIAK	620	6687	7725	KODIAK				KODIAK				KODIAK			
KOTZEBUE	1380	12699	14334	KOTZEBUE				KOTZEBUE				KOTZEBUE			
MC GRATH	1040	12591	13554	MC GRATH				MC GRATH				MC GRATH			
NOME	1176	11086	12804	NOME				NOME				NOME			
ST. PAUL ISLAND	840	8030	9463	ST. PAUL ISLAND				ST. PAUL ISLAND				ST. PAUL ISLAND			
TALKEETNA	894	10050	10773	TALKEETNA				TALKEETNA				TALKEETNA			
UNALASKA				UNALASKA				UNALASKA				UNALASKA			
VALOZ	792	8702	9478	VALOZ				VALOZ				VALOZ			
YAKUTAT	834	8305	8401	YAKUTAT				YAKUTAT				YAKUTAT			
ARIZONA				ARIZONA				ARIZONA				ARIZONA			
FLAGSTAFF	722	7082	6641	FLAGSTAFF				FLAGSTAFF				FLAGSTAFF			
PHOENIX	30	1436	1552	PHOENIX				PHOENIX				PHOENIX			
TUCSON	76	1856	1752	TUCSON				TUCSON				TUCSON			
WINSLOW	314	4785	4595	WINSLOW				WINSLOW				WINSLOW			
YUMA	1	1168	1005	YUMA				YUMA				YUMA			
ARKANSAS				ARKANSAS				ARKANSAS				ARKANSAS			
FORT SMITH	175	3915	3319	FORT SMITH				FORT SMITH				FORT SMITH			
LITTLE ROCK	110	3345	3333	LITTLE ROCK				LITTLE ROCK				LITTLE ROCK			
NO. LITTLE ROCK	149	3618	3069	NO. LITTLE ROCK				NO. LITTLE ROCK				NO. LITTLE ROCK			
CALIFORNIA				CALIFORNIA				CALIFORNIA				CALIFORNIA			
BAKERSFIELD	87	1883	2163	BAKERSFIELD				BAKERSFIELD				BAKERSFIELD			
BISHOP	291	4285	4130	BISHOP				BISHOP				BISHOP			
BLUE CANYON	671	5358	5082	BLUE CANYON				BLUE CANYON				BLUE CANYON			
EUREKA	412	4107	3997	EUREKA				EUREKA				EUREKA			
FRESNO	96	2351	2590	FRESNO				FRESNO				FRESNO			
LONG BEACH	41	1411	1512	LONG BEACH				LONG BEACH				LONG BEACH			
LOS ANGELES	137	1496	1634	LOS ANGELES				LOS ANGELES				LOS ANGELES			
LOS ANGELES U	80	1511	1160	LOS ANGELES U				LOS ANGELES U				LOS ANGELES U			
MT. SHASTA R	623	5926	5341	MT. SHASTA R				MT. SHASTA R				MT. SHASTA R			
DAKLAND	244	2545	2602	DAKLAND				DAKLAND				DAKLAND			
RED BLUFF	172	2365	2616	RED BLUFF				RED BLUFF				RED BLUFF			
SACRAMENTO	236	2827	2703	SACRAMENTO				SACRAMENTO				SACRAMENTO			
SANBERG R	487			SANBERG R				SANBERG R				SANBERG R			
SAN DIEGO	45	1060	1376	SAN DIEGO				SAN DIEGO				SAN DIEGO			
SAN FRANCISCO	277	2841	2717	SAN FRANCISCO				SAN FRANCISCO				SAN FRANCISCO			
SAN FRANCISCO U	200	2547	2629	SAN FRANCISCO U				SAN FRANCISCO U				SAN FRANCISCO U			
SANTA MARIA	326	2918	2641	SANTA MARIA				SANTA MARIA				SANTA MARIA			
STOCKTON	126	2524	2724	STOCKTON				STOCKTON				STOCKTON			
COLORADO				COLORADO				COLORADO				COLORADO			
ALAMOSA	764	8915	7998	ALAMOSA				ALAMOSA				ALAMOSA			
COLORADO SPRINGS	494	6452	6069	COLORADO SPRINGS				COLORADO SPRINGS				COLORADO SPRINGS			
DENVER	473	6066	5683	DENVER				DENVER				DENVER			
GRAND JUNCTION	377	6417	5452	GRAND JUNCTION				GRAND JUNCTION				GRAND JUNCTION			
PUEBLO	391	5877	5218	PUEBLO				PUEBLO				PUEBLO			
CONNECTICUT				CONNECTICUT				CONNECTICUT				CONNECTICUT			
BRIEGPORT	440	5122	5212	BRIEGPORT				BRIEGPORT				BRIEGPORT			
HARTFORD	473	6311	6100	HARTFORD				HARTFORD				HARTFORD			
DELAWARE				DELAWARE				DELAWARE				DELAWARE			
WILMINGTON	424	5062	4812	WILMINGTON				WILMINGTON				WILMINGTON			
DIST. OF COLUMBIA				DIST. OF COLUMBIA				DIST. OF COLUMBIA				DIST. OF COLUMBIA			
WASHINGTON OULDER	383	4934	4874	WASHINGTON OULDER				WASHINGTON OULDER				WASHINGTON OULDER			
WASHINGTON NATIONAL	273	3885	4139	WASHINGTON NATIONAL				WASHINGTON NATIONAL				WASHINGTON NATIONAL			
FLORIDA				FLORIDA				FLORIDA				FLORIDA			
APPALACHICOLA U	13	1487	1361	APPALACHICOLA U				APPALACHICOLA U				APPALACHICOLA U			
DAYTONA BEACH	5	682	897	DAYTONA BEACH				DAYTONA BEACH				DAYTONA BEACH			
FORT MYERS	0	259	457	FORT MYERS				FORT MYERS				FORT MYERS			
JACKSONVILLE	13	1507	1327	JACKSONVILLE				JACKSONVILLE				JACKSONVILLE			
KEY WEST	0	39	64	KEY WEST				KEY WEST				KEY WEST			
MIAMI	0	180	204	MIAMI				MIAMI				MIAMI			
ORLANDO	0	571	733	ORLANDO				ORLANDO				ORLANDO			
PENSACOLA	6	1518	1578	PENSACOLA				PENSACOLA				PENSACOLA			
TALLAHASSEE	28	1731	1563	TALLAHASSEE				TALLAHASSEE				TALLAHASSEE			
TAMPA	0	565	718	TAMPA				TAMPA				TAMPA			
WEST PALM BEACH	0	267	299	WEST PALM BEACH				WEST PALM BEACH				WEST PALM BEACH			
GEORGIA				GEORGIA				GEORGIA				GEORGIA			
ATHENS	92	2752	2955	ATHENS				ATHENS				ATHENS			
ATLANTA	97	2761	3068	ATLANTA				ATLANTA				ATLANTA			
AUGUSTA	79	2467	2537	AUGUSTA				AUGUSTA				AUGUSTA			
COLUMBUS	34	2102	2377	COLUMBUS				COLUMBUS				COLUMBUS			
Macon	62	2171	2234	MACON				MACON				MACON			
ROME	127	3111	3309	ROME				ROME				ROME			
SAVANNAH	17	1724	1957	SAVANNAH				SAVANNAH				SAVANNAH			
IDAHO				IDAHO				IDAHO				IDAHO			
BOISE	441	6105	5484	BOISE				BOISE				BOISE			
LEWISTON	448	5879	5148	LEWISTON				LEWISTON				LEWISTON			
POCATELLO	623	7382	6589	POCATELLO				POCATELLO				POCATELLO			
ILLINOIS				ILLINOIS				ILLINOIS				ILLINOIS			
CAIRO U	225	4333	3795	CAIRO U				CAIRO U				CAIRO U			
CHICAGO N HARE	580	6847	6212	CHICAGO N HARE				CHICAGO N HARE				CHICAGO N HARE			
CHICAGO MIDWAY	606	6824	5893	CHICAGO MIDWAY				CHICAGO MIDWAY				CHICAGO MIDWAY			
MOLINE	521	7221	6191	MOLINE				MOLINE				MOLINE			
PEORIA	510	6789	5901	PEORIA				PEORIA				PEORIA			
ROCKFORD	658	7588	6577	ROCKFORD				ROCKFORD				ROCKFORD			
SPRINGFIELD	435	6167	5414	SPRINGFIELD				SPRINGFIELD				SPRING			

# COOLING DEGREE DAYS

(Base 65°F.)

APRIL 1979

State and station	Current season			State and station	Current season			State and station	Current season									
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month							
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA						
BIRMINGHAM U	40	51	144	HILLO	271	796	760	GRAND ISLAND	0	0	8	CHARLESTON	71	82	118			
BIRMINGHAM	43	52	107	HONOLULU	299	917	977	LINCOLN	7	7	8	CHARLESTON U	72	77	144			
HUNTSVILLE	16	25	73	KAHULUI	255	855	862	NORFOLK	2	2	0	COLUMBIA	36	49	86			
MOBILE	144	178	224	LIHOE	229	936	832	NORTH PLATTE	0	0	6	GRNVLLF-SPRTNBRG	28	36	37			
MONTGOMERY	77	92	147				OMAHA (ERRLEY)	8	8	10								
				INDIAN				OMAHA (NORTH)	1	1	6							
ALASKA				RUSSF	0	0	0	SCOTTSBLUFF	8	8	0	SOUTH DAKOTA						
ANCHORAGE	0	0	0	LEWISTON	0	0	0	VALENTINE	4	4	0	ABERDEEN	0	0	0			
ANNETTE	0	0	0	ROCAFELL	0	0	0				HURON	0	0	0				
BARRON	0	0	0				NEVADA				RAPID CITY	4	4	0				
BARTER ISLAND	0	0	0	ILLINOIS				ELKO	0	0	0	SIoux FALLS	3	3	0			
BETHEL	0	0	0	CAIRO U	14	14	51	FLY	0	0	0	TENNESSEE						
BETTLES	0	0	0	CHICAGO D HARE	2	2	0	LAS VEGAS	104	104	104	BRISTOL	1	1	18			
BIG DELTA	0	0	0	CHICAGO MIDWAY	1	1	0	RENO	0	0	0	CHATTANOOGA	12	12	48			
COLD BAY	0	0	0	HOLINE	0	0	0	WINNEMCCA	0	0	0	KNOXVILLE	20	35	56			
FAIRBANKS	0	0	0	REOLA	0	0	5				MEMPHIS	68	87	79				
GULKANA	0	0	0	ROCKFORD	0	0	0	NEW HAMPSHIRE				NASHVILLE	5	16	48			
HOMER	0	0	0	SPRINGFIELD	2	2	6	CONCORD	1	1	0	OAK RIDGE	5	7	34			
JUNEAU	0	0	0				MT WASHINGTON OBS	0	0	0								
KING SALMON	0	0	0	INDIANA				NEW JERSEY				TEXAS						
KODIAK	0	0	0	EVANSVILLE	13	13	25	ATLANTIC CITY	0	5	0	ABILENE	67	96	139			
KOTZEBUE	0	0	0	FORT WAYNE	4	4	0	NEWARK	2	2	0	AMARILLO	12	12	20			
MC GRATH	0	0	0	INDIANAPOLIS	7	7	6	TRFNTON U	1	1	0	AUSTIN	102	140	228			
NOME	0	0	0	SOUTH BEND	2	2	0				BROWNSVILLE	339	613	655				
ST. PAUL ISLAND	0	0	0				NEW MEXICO				CORRUS CHRISTI	289	494	437				
TALKEETNA	0	0	0	IOWA				ALBUQUERQUE	5	5	6	DALLAS FT WORTH	67	77	119			
UNALAKLEET	0	0	0	BURLINGTON	0	0	0	CLAYTON	1	1	0	OEL RIO	172	247	344			
VALOFZ	0	0	0	DES MOINES	0	0	0	ROSWELL	35	35	26	FL PASO	84	84	62			
YAKUTAT	0	0	0	MURDOCK	0	0	0				GALVESTON	128	150	236				
				SINUX CITY	3	3	6	NEW YORK				HOUSTON INTERCON	142	224	252			
ARIZONA				WATERLOO	0	0	0	ALBANY	0	0	0	LUBBOCK	44	44	49			
FLAGSTAFF	0	0	0				BINGHAMTUN	0	0	0	MOLANO	43	48	94				
PHOENIX	191	202	176	KANSAS				RUFFALO	6	6	0	PORT ARTHUR	156	231	243			
TUCSON	101	102	120	CONCORDIA	5	6	10	NEW YORK U	4	4	0	SAN ANGELO	77	96	182			
WINSLON	2	2	9	DOOGF CITY	23	25	14	NEW YORK KFNNLOY	0	0	0	SAN ANTONIO	166	247	257			
YUMA	232	292	319	CONOLAND	3	3	0	NEW YORK LA GUAROLA	0	0	0	VICTORIA	190	293	306			
				TOPEKA	7	11	22	ROCHESTER	1	1	0	WACD	61	83	169			
ARKANSAS				WICHTTA	14	19	31	SYRACUSE	2	2	0	WICHITA FALLS	49	69	113			
FORT SMITH	33	40	63															
LITTLE ROCK	48	72	54	KENTUCKY				NORTH CAROLINA				UTAH						
NO. LITTLE ROCK	39	46	72	COVINGTON	8	10	8	ASHEVILLE	1	1	6	MILFORD	0	0	0			
				LEXINGTON	8	10	21	CAPE HATTERAS R	23	25	17	SALT LAKE CITY	2	2	0			
CALIFORNIA				LOUISVILLE	10	15	23	CHARLOTTE	28	32	34	VERMONT						
BAKERSFIELD	40	52	77				GREENSBORO	26	32	22	BURLINGTON	2	2	0				
BISHOP	0	0	19	LOUISIANA				WILMINGTON	84	95	77							
BLUE CANYON	0	0	0	BATON ROUGE	141	192	220											
EUREKA U	0	0	0	LAKE CHARLES	140	190	247				VIRGINIA							
FRESNO	37	39	41	NEW ORLEANS	198	275	255				LYNCHBURG	12	23	8				
LONG BEACH	75	35	23	SHREVEPORT	86	133	154				NORFOLK	13	24	18				
LOS ANGELES	0	9	21				NORTH OAKOTA				RICHMOND	30	46	18				
LOS ANGELES U	17	31	59	MAINE				BISMARCK	0	0	0	ROANKE	7	17	10			
MT SHASTA R	0	0	0	FARIBAU	0	0	0	FARGO	0	0	0	WALLOPS ISLAND	0	1	0			
OAKLAND	0	0	0	ROSLAND	0	0	0	WILLISTON	0	0	0							
RED BLUFF	0	6	53															
SACRAMENTO	0	0	0	MARYLAND				OHIO				WASHINGTON						
SANORBERG R	0	0	0	BALTIMORE	4	19	0	AKRON	5	5	0	AKRJA	0	0	0			
SAN DIEGO	6	16	25				CINCINNATI	11	13	17	OLYMPIA	0	0	0				
SAN FRANCISCO	0	0	0	MASSACHUSETTS				CLEVELAND	6	6	0	QUILLAYUTE	0	0	0			
SAN FRANCISCO U	0	0	0	BLUE HILL OBS R	0	0	0	COLUMBUS	7	7	0	SEATTLE	0	0	0			
SANTA MARIA	0	0	0	ROSTON	0	0	0	DAYTON	12	13	5	SEATTLE-TACOMA	0	0	0			
STOCKTON	0	0	22	WORCESTER	0	0	0	MANSFIELD	4	4	0	SPOKANE	0	0	0			
							TOLEDO	0	0	0	STAMPEDE PASS R	0	0	0				
COLORADO				MICHIGAN				YOUNGSTOWN	7	7	0	WALLA WALLA U	3	3	10			
ALAMOSA	0	0	0	ALPENA	0	0	0				YAKIMA	0	0	0				
COLORADO SPRINGS	0	0	0	DETROIT	0	0	0	OKLAHOMA										
DENVER	0	0	0	DETROIT METRO	0	0	0	OKLAHOMA CITY	18	28	53	WEST INOIES						
GRAND JUNCTION	6	6	0	FLINT	0	0	0	TULSA	48	57	60	SAN JUAN P.R.	436	1659	1335			
PUEBLO	1	1	6	GRAND RARIOS	0	0	0											
				HIGHTON LAKE	0	0	0	OREGON				WEST VIRGINIA						
CONNECTICUT				LANSING	0	0	0	ASTORIA	0	0	0	BECKLEY	1	1	0			
BRIDGEPORT	0	0	0	MUSKOGON	0	0	0	BURNS U	0	0	0	CHARLESTON	18	31	21			
HARTFORD	0	0	0	SAULT STE MARIE	0	0	0	EUGENE	0	0	0	ELKINS	2	2	0			
							MEAFORD	0	0	0	HUNTINGTON	17	30	21				
DELAWARE				MINNESOTA				RENOLETUN	0	0	0	PARKERSBURG U	11	20	8			
WILMINGTON	1	5	0	DULUTH	0	0	0	ROSLAND	0	0	0							
				INTERNATIONAL FALLS	0	0	0	SALEM	0	0	0	WISCUNGIN	0	0	0			
DIST. OF COLUMBIA				MINNEAPOLIS	0	0	0	SEXTON SUMMIT R	0	0	0	GREEN BAY	0	0	0			
WASHINGTON DULLES	5	14	0	ROCHFESTER	0	0	0				LA CROSSE	0	0	0				
WASHINGTON NATIONAL	9	23	7	ST CLAUDIO	0	0	0	PACIFIC AREA				MADISON	0	0	0			
							GUAM TAGUAC R	423	1561	1539	MILWAUKEE	0	0	0				
FLORIDA				MISSISSIPPI				JOHNSTON	377	1403	1426							
APRALACHICOLA U	134	139	221	JACKSON	69	106	163	KOROR R	497	1987	1948	WYOMING						
OAYTONA BEACH	211	359	340	MERIDIAN	57	70	159	KWAJALEIN	504	2034	1983	CASPER	0	0	0			
FORT MYERS	344	600	600				MAJURO	447	1927	1929	CHEYENNE	0	0	0				
JACKSONVILLE	171	181	238	MISSOURI				RAGO PAGO	458	1965	1853	LANDER	0	0	0			
KEY WEST	417	968	1099	COLUMBIA REGIONAL	10	10	27	RONARE R	477	1991	1885	SHERIDAN	0	0	0			
MIAMI	391	711	778	KANSAS CITY	3	4	12	TRUK MEN ISLAND	511	2064	1941							
ORLANDO	260	382	467	ST JOSEPH	0	0	0	WAKE	458	1647	1501							
PENSACOLA	146	164	247	ST LOUIS	9	11	24	YAR R	510	1933	1908							
TALLAHASSEE	103	115	223	SPRINGFIELD	10	10	29											
TAMPA	243	420	487				PENNSYLVANIA											
WEST PALM BEACH	287	556	664	MONTANA				ALLENTOWN	1	1	0							
				BILLINGS	0	0	0	ERIE	3	3	0							
GEORGIA				CLASGM	0	0	0	HARRISBURG	5	5	0							
ATHENS	25	40	49	GREAT FALLS	0	0	0	RHILAOELRHIA	5	11	0							



# STORM SUMMARY

APRIL 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER					
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE							
								PROP. ERTY	CRDPS			PROP. ERTY	CRDPS			PROP. ERTY	CRDPS			PROP. ERTY	CRDPS			PROP. ERTY	CRDPS						
Alabama	2	2			5					4	6	4		1	5	3							7	3	7	6					
Alaska																															
Arizona	*																														
Arkansas	29	4		55	7			4		6	6				4							2	?	6	?						
California	*																														
Colorado																															
Connecticut	*																4														
Delaware	*																														
Florida	2	1			5			05	C	1	05	C										2	6	7	7						
Georgia	9	4		11	6						6				4							2	6	6	?						
Hawaii	*																														
Idaho	1	1			1																										
Illinois																															
Indiana	1	1	1		4					?	?	1	37	7								1		?	?						
Iowa												3	6	?										?	?						
Kansas	6	3		3	5			4	5			5		5																	
Kentucky	1	1		6	6																										
Louisiana	3	3		4	6			3		10	6			1	7							4	42	7	6						
Maine	*																														
Maryland										5	4																				
Massachusetts																															
Michigan	2	1		6	5					1		2	4		4							2	7								
Minnesota												10	7																		
Mississippi	1	1			6							5																			
Missouri	5	1		20	6			4				1	6									4	?	9	5						
Montana	*											7	5										3	5							
Nebraska	3	2			5			6	3			5			4																
Nevada	*																														
New Hampshire	*																														
New Jersey	*																														
New Mexico	1	1			4																										
New York	1	1		?	?							?	7	?																	
North Carolina	4	1		3	5			4							2																
North Dakota												5													5		C				
Ohio										2		1	5												08						
Oklahoma	17	3	3	112	7			5	5			2	6	5																	
Oregon								?	?																						
Pacific	*																														
Pennsylvania	1	1			4							?	6																		
Puerto Rico	*																														
Rhode Island	*																														
South Carolina	1	1			5							4	2																		
South Dakota																															
Tennessee	1	1			4							4		1	4																
Texas	31	7	53	1814	8			3	6	6		16	6	5	4	19	7	?													
Utah	*																														
Vermont	*																														
Virginia												1	4	3																	
Virgin Islands	*																														
Washington	*																														
West Virginia												4																			
Wisconsin																															
Wyoming	*																														

# RAWINSONDE DATA

Average monthly values

APRIL 1979

ALBANY, NY 1007 MB				ALBUQUERQUE, NM P35 MB				ANAPILLO, TX RAO MB				ANCHORAGE, AK 1017 MB				ANNAPITZ, AK 1017 MB														
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction (true) lens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction (true) lens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction (true) lens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction (true) lens of deg.	Speed m.p.s.						
5FC 25	86	4.2	-5	26	9	30	1,610	6.7	-7.7	05	4	30	1,095	7.0	2.1	21	1.6	10	4.5	2.7	-1.0	16	37	4.1	2.2	08	1.7			
1000 20	170	4.9	-6	29	1.8	27	1,610	6.7	-7.7	05	4	30	1,095	7.0	2.1	21	1.6	10	4.5	2.7	-1.0	16	37	4.1	2.2	08	1.7			
950 25	560	4.1	-1.6	28	3.0	27	1,610	6.7	-7.7	05	4	30	1,095	7.0	2.1	21	1.6	10	4.5	2.7	-1.0	16	37	4.1	2.2	08	1.7			
900 25	999	2.3	-3.6	26	4.7	27	1,610	6.7	-7.7	05	4	30	1,095	7.0	2.1	21	1.6	10	4.5	2.7	-1.0	16	37	4.1	2.2	08	1.7			
850 25	1,459	5.9	-6.0	27	6.7	27	1,610	6.7	-7.7	05	4	30	1,095	7.0	2.1	21	1.6	10	4.5	2.7	-1.0	16	37	4.1	2.2	08	1.7			
800 25	1,946	-1.5	-10.9	27	8.6	30	1,974	8.7	-4.4	29	1.5	30	1,463	9.1	-1.8	23	4.3	30	1,010	-6.5	-12.7	20	6.4	30	1,930	-3.7	-12.2	18	2.8	
750 25	2,460	-2.8	-13.5	28	10.3	30	2,505	4.8	-7.2	30	4.8	30	2,407	5.6	-8.5	26	5.6	30	2,415	-8.7	-15.9	21	6.5	30	2,437	-6.4	-16.5	26	1.2	
700 25	3,004	-5.3	-16.2	27	12.4	30	3,064	4.6	-9.6	29	6.8	30	3,057	1.9	-12.3	26	6.8	30	2,947	-11.4	-18.5	22	7.1	30	2,974	-9.6	-19.0	20	1.7	
650 25	3,583	-8.3	-20.1	27	14.2	30	3,655	-1.4	-13.3	28	8.6	30	3,650	-2.5	-14.8	26	8.1	30	3,512	-14.4	-22.3	22	7.1	30	3,542	-13.1	-24.7	11	1.9	
600 25	4,201	-11.5	-22.6	26	16.3	30	4,283	-7.8	-16.0	27	9.0	30	4,220	-7.1	-19.3	26	9.5	30	4,115	-18.0	-26.6	23	8.4	30	4,148	-17.1	-27.7	13	2.3	
550 25	4,823	-15.8	-27.0	26	17.1	30	4,954	-17.3	-22.4	27	11.7	30	4,892	-11.6	-24.7	26	10.7	30	4,741	-21.8	-30.6	24	9.4	30	4,795	-21.5	-31.7	11	3.0	
500 25	5,574	-20.8	-32.1	26	18.4	30	5,675	-21.7	-29.7	27	13.1	30	5,675	-16.0	-29.5	26	13.7	30	5,457	-26.1	-34.7	24	11.4	30	5,400	-26.4	-37.1	11	3.4	
450 24	6,351	-25.6	-34.8	26	20.2	30	6,456	-23.0	-34.0	27	14.8	30	6,458	-22.3	-35.0	26	16.3	30	6,211	-31.3	-39.3	24	12.8	30	6,244	-31.5	-40.6	11	4.6	
400 24	7,195	-31.7	-40.9	27	22.8	30	7,309	-29.6	-40.8	27	16.4	30	7,312	-29.1	-40.8	26	18.7	30	7,036	-37.3	-41.2	25	11.9	30	7,067	-37.6	-42.3	12	5.5	
350 23	8,121	-38.8	-45.1	26	26.6	30	8,250	-36.7	-46.0	27	18.8	30	8,256	-35.9	-46.2	26	21.4	30	7,954	-44.1	-45.2	25	14.0	29	7,970	-44.0	-47.9	12	7.1	
300 23	9,159	-46.5		26	30.4	30	9,206	-44.9		27	21.2	30	9,206	-44.0		26	24.8	29	8,971	-51.1		25	16.8	29	8,988	-50.0		12	9.7	
250 23	10,348	-53.9		27	34.9	30	10,405	-52.5		27	25.8	30	10,507	-52.5		26	29.5	29	10,144	-55.3		25	17.7	29	10,167	-54.3		13	6.6	
200 23	11,785	-59.0		27	32.2	30	11,912	-59.1		27	27.5	30	11,928	-59.0		26	28.5	29	11,544	-55.8		26	15.1	29	11,589	-56.4		13	6.3	
175 23	12,600	-59.5		27	27.0	30	12,747	-59.7		27	27.5	30	12,759	-59.9		26	26.6	29	12,417	-54.1		25	12.4	29	12,437	-56.1		12	7.0	
150 23	13,572	-57.0		26	23.8	30	13,712	-59.4		27	25.1	30	13,724	-59.5		26	25.0	29	13,409	-53.2		26	9.0	29	13,410	-55.4		11	6.3	
125 23	14,726	-57.2		27	22.3	30	14,848	-61.4		27	24.0	30	14,863	-60.4		26	23.4	29	14,588	-53.4		26	8.2	29	14,583	-55.3		11	6.0	
100 23	16,133	-58.7		27	16.2	30	16,229	-62.4		27	22.3	30	16,247	-62.1		26	19.5	29	16,017	-64.3		27	5.9	29	16,003	-56.4		11	5.7	
80 23	17,536	-58.2		27	15.0	30	17,607	-61.9		27	15.1	30	17,622	-61.9		26	17.1	29	17,404	-55.2		27	4.6	29	17,418	-57.0		10	4.0	
70 20	18,397	-57.9		27	11.7	30	18,432	-61.6		27	11.9	29	18,456	-61.3		26	12.1	29	18,297	-55.2		28	1.9	29	18,263	-56.0		11	4.0	
60 20	19,371	-56.9		27	9.5	30	19,387	-61.7		27	9.3	29	19,413	-61.1		26	9.0	29	19,282	-55.4		29	2.8	29	19,240	-56.9		11	4.1	
50 20	20,530	-55.4		26	6.6	29	20,527	-59.0		26	7.7	29	20,549	-59.1		26	10.1	28	20,445	-55.4		29	1.6	29	20,394	-57.0		12	3.4	
40 19	21,963	-54.2		26	6.0	29	21,931	-56.7		27	7.1	29	21,958	-56.3		27	8.4	28	21,871	-55.6		30	1.7	29	21,806	-57.2		13	3.5	
30 17	23,335	-51.9		26	6.6	29	23,372	-53.0		27	7.9	29	23,353	-52.3		27	9.5	28	23,703	-55.9		05	1.1	29	23,634	-57.1		15	2.4	
25 16	25,019	-49.7		25	8.5	28	24,959	-50.6		27	10.5	29	24,929	-49.1		27	10.8	28	24,864	-56.1		07	2.3	29	24,788	-56.8		15	3.8	
20 15	26,469	-48.8		27	10.5	28	26,428	-46.5		27	11.4	28	26,468	-45.8		26	14.0	27	26,267	-56.0		05	2.4	29	26,206	-55.3		14	1.6	
15 10	28,421	-46.7		26	12.8	28	28,346	-44.5		26	12.7	27	28,100	-43.3		26	13.7	25	28,120	-54.5		04	2.7	29	28,069	-52.7		29	2.3	
10 7				23	31.095	-36.3		26	17.3	27	31.152	-38.1		26	16.8	16	30.705	-51.0		07	2.9	11	30.802	-46.4						

ATHENS, GA 977 MB				BAPPOL, AK 1021 MB				BARTER ISLAND, AK 1022 MB				BETHEL, AK 1007 MB				RISMARK, ND 955 MB													
5FC 30	246	12.2	8.6	01	5	27	8-19.3	-22.0	09	2.1	27	15	-19.6	-22.1	12	7	30	19	-1.1	-3.0	17	2.7	10	503	-1.4	-3.7	02	1.1	
1000 30	576	14.2	5.4	27	21	27	173	-17.2	-19.2	10	2.5	27	174	-17.3	-19.1	10	1.1	22	136	-1.1	-4.4	17	4.8	10	675	-2.0	-4.5	13	2.1
950 30	1,027	12.5	1.8	25	3.0	27	965	-13.3	-16.8	15	7.0	27	971	-14.4	-17.8	11	1.2	30	902	-1.8	-4.8	18	8.1	27	675	-2.0	-4.5	13	2.1
900 30	1,505	9.8	-0.5	25	5.3	27	1,400	-13.7	-20.9	18	1.4	27	1,407	-14.5	-18.9	27	3.6	30	1,180	-6.2	-12.3	20	8.5	30	1,435	-1.2	-6.1	28	2.9
850 30	2,006	7.1	-4.2	26	5.9	27	1,860	-15.4	-22.0	21	1.2	27	1,865	-16.0	-20.3	27	4.0	30	1,853	-8.4	-16.6	20	8.5	30	1,918	-2.6	-8.0	28	5.0
800 30	2,535	4.4	-7.3	26	6.9	27	2,345	-17.3	-23.8	24	1.9	27	2,350	-18.0	-21.9	27	5.3	30	2,352	-10.8	-18.6	20	8.8	30	2,428	-5.0	-12.0	29	6.7
750 30	3,093	1.7	-12.2	26	9.2	27	2,861	-19.3	-26.5	24	3.4	27	2,862	-20.8	-26.3	27	5.4	30	2,870	-13.4	-21.9	20	9.7	30	2,966	-4.8	-15.4	29	7.5
700 30	3,639	-1.4	-16.1	26	11.2	27	3,554	-21.2	-29.2	26	6.0	27	3,559	-22.1	-29.1	26	7.5	30	3,566	-18.5	-26.3	20	10.5	30	3,634	-1.9	-19.8	28	11.5
650 30	4,321	-4.8	-20.8	26	14.5	27	3,993	-25.5	-33.0	26	6.0	27	3,990	-25.3	-32.7	27	8.7	30	4,004	-19.4	-28.5	21	10.6	30	4,150	-15.0	-27.3	28	11.5
600 30	5,000	-9.1	-21.1	26	15.8	27	4,620	-29.1	-36.3	26	7.5	27	4,615	-29.4	-36.5	27	10.4	30	4,681	-23.2	-33.2	21	11.4	30	4,803	-19.1	-27.5	28	13.1
550 30	5,731	-13.8	-24.5	26	18.0	27	5,295	-33.4	-39.3	27	9.0	27	5,299	-33.7	-40.0	27	12.0	30	5,374	-27.6	-37.1	21	12.6	30	5,506	-23.9	-32.4	28	15.3
500 30	6,524	-19.1	-30.6	26	19.8	26	6,030	-37.9	-45.2	26	11.1	27	6,021	-38.5	-40.8	27	13.6	30	6,124	-32.7	-42.6	21	13.6	30	6,270	-29.1	-37.6	28	15.7
450 30	7,390	-25.4	-37.1	26	21.0	26	6,835	-43.3	-49.7	26	11.2	27	6,822	-43.3	-44.3	27	15.2	30	6,944	-38.3	-44.6	22	14.4	30	7,098	-35.8	-43.6	28	16.9
400 30	8,340	-32.6	-42.9	26	23.5	26	7,723	-46.7		26	12.4	27	7,715	-46.4		27	18.2	30	7,853	-44.3		22	14.8	30	8,016	-42.7	-45.3	28	18.2
350 30	9,412	-40.9	-45.6	26	26.9	26	9,221	-52.8		26	13.1	27	9,222	-51.2		26	20.0	30	8,869	-50									

# RAWINSONDE DATA

Average monthly values

APRIL 1979

CARIBOU, ME 971 MB										MONTREVILLE, AL 1107 MB										CHARLESTON, SC 1014 MB										CHATHAM, MA 1014 MB										COLD BAY, AK 1007 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.																			
5FC	3	191	1.8	-1.4	36	7.8	30	1.0	17.9	10.6	04	1.2	30	1.3	14.1	11.9	22	3.0	30	1.6	5.2	2.6	35	7.2	28	3.0	3.7	1.6	16	5.2																			
1000	3	217	.4	-3.7	18	16.7	14.0	6.4	06	1.6	30	1.47	17.0	11.6	19	1.2	29	1.37	6.2	1.9	15	1.1	24	11A	2.9	5.17	6.0	17	6.0																				
950	3	532	.9	-2.3	07	5.3	30	5.76	14.7	6.1	13	1.7	30	5.84	15.5	7.3	22	3.6	30	5.41	5.3	20	2.0	28	931	.8	-1.7	18	6.5																				
900	3	966	-1.1	-4.2	24	3.3	30	1.033	13.0	4.0	21	3.3	30	1.042	13.1	4.2	24	3.6	30	992	4.0	-2.7	29	3.7	28	498	-1.2	-4.3	19	6.3																			
850	3	1471	-2.8	-6.2	29	1.0	30	1.511	10.4	1.9	24	4.8	30	1.520	10.3	7.4	6.1	30	1.456	2.5	-7.0	28	5.4	28	1.385	-3.6	-7.8	19	7.0																				
800	3	2001	-5.5	-9.2	29	2.1	30	2.014	7.8	-2.9	25	6.5	30	2.023	7.9	-3.7	25	7.2	30	1.944	3.1	-8.7	28	7.0	28	1.863	-5.7	-10.8	19	6.9																			
750	3	2408	-8.3	-12.2	29	3.4	30	2.544	5.0	-5.2	26	8.5	30	2.553	5.4	-8.7	26	8.0	30	2.460	-7.3	-11.7	28	8.7	28	2.367	-7.7	-14.9	20	10.4																			
700	3	2845	-10.9	-15.3	29	5.0	30	3.104	1.9	-7.9	26	10.4	30	3.114	2.7	-13.7	26	9.3	30	3.005	-5.0	-16.7	28	9.9	28	2.901	-10.6	-18.3	21	10.5																			
650	3	3516	-11.8	-18.6	29	6.3	30	3.649	-1.1	-11.8	26	12.6	30	3.711	-1.1	-16.0	26	11.1	30	3.588	-8.0	-20.2	28	11.1	28	3.468	-13.6	-22.1	21	12.3																			
600	3	4176	-13.0	-23.2	29	7.8	30	4.333	-6.7	-16.4	26	14.3	30	4.347	-4.1	-19.8	27	13.3	30	4.272	-11.6	-23.5	28	12.3	28	4.074	-16.9	-26.3	21	13.1																			
550	3	4778	-14.2	-28.2	29	9.5	30	5.013	-9.0	-22.4	26	15.5	30	5.027	-8.4	-27.6	27	15.5	30	4.948	-15.5	-27.4	28	13.3	28	4.727	-20.7	-30.6	27	14.9																			
500	3	5481	-23.8	-36.2	29	10.1	30	5.744	-13.6	-25.8	26	17.6	30	5.740	-13.4	-27.2	27	17.3	30	5.677	-20.3	-30.8	29	15.1	27	5.415	-24.7	-34.5	22	15.7																			
450	3	6243	-29.1	-37.9	29	12.0	30	6.537	-18.9	-30.8	26	18.9	30	6.553	-19.0	-30.8	27	19.2	30	6.349	-25.6	-35.3	29	16.6	27	6.175	-29.7	-39.0	22	16.3																			
400	3	7076	-34.6	-43.3	30	12.7	30	7.407	-25.2	-36.8	26	20.9	30	7.420	-24.9	-35.2	27	21.1	30	7.194	-31.5	-40.4	28	17.4	27	7.004	-35.8	-41.2	22	17.1																			
350	3	7999	-41.1	-45.8	29	15.1	30	8.362	-32.3	-43.4	26	23.5	30	8.380	-32.1	-42.0	27	24.3	30	8.178	-38.1	-47.6	29	18.8	26	7.927	-41.5	-41.3	22	17.9																			
300	3	9022	-47.9		28	17.1	29	9.432	-40.4	-46.9	26	26.5	30	9.447	-40.5	-44.2	27	26.5	30	9.171	-46.5	-52.9	29	21.2	26	8.954	-47.7		22	19.5																			
250	3	10207	-53.1		27	17.4	29	10.469	-46.9		26	29.9	30	10.484	-46.9		27	30.1	30	10.363	-52.4		29	24.9	25	10.652	-52.2		23	21.9																			
200	3	11631	-55.8		29	15.8	28	12.078	-60.7		26	37.1	30	12.091	-59.2		27	36.1	30	11.792	-68.0		28	28.2	24	11.577	-53.8		22	18.4																			
175	2	12482	-55.7		26	13.6	28	12.907	-62.5		26	38.1	30	12.922	-62.1		27	37.0	30	12.630	-59.2		28	24.9	23	12.439	-52.7		22	16.1																			
150	2	13452	-55.3		29	11.7	28	11.856	-62.9		27	38.2	30	13.870	-63.8		27	37.0	30	13.497	-58.9		28	21.4	22	13.440	-52.5		22	13.5																			
125	2	14612	-55.4		28	10.9	26	11.979	-63.7		26	33.6	28	14.993	-64.1		27	31.7	30	14.745	-58.2		28	19.7	21	14.618	-52.9		22	10.8																			
100	2	16035	-55.5		27	4.2	28	16.31	-65.6		27	25.6	28	16.384	-65.2		27	24.5	29	16.148	-58.9		28	15.9	21	16.053	-54.2		23	7.9																			
80	2	17454	-55.2		27	6.5	28	17.695	-66.0		27	19.3	28	17.499	-65.8		28	17.1	30	17.560	-58.4		28	12.6	20	17.470	-58.8		23	6.0																			
70	2	18308	-54.9		27	4.4	27	18.506	-66.9		27	13.4	28	18.513	-64.2		28	12.3	29	18.400	-68.2		28	10.9	20	18.332	-55.0		23	6.2																			
60	2	19294	-54.7		25	4.3	27	19.452	-62.9		27	9.6	28	19.462	-61.9		28	8.5	29	19.372	-57.4		28	8.9	20	19.317	-55.1		23	3.2																			
50	2	20473	-53.9		25	4.1	27	20.584	-62.1		28	5.8	28	20.600	-61.0		29	5.0	29	20.529	-55.7		27	7.1	20	20.480	-55.5		25	2.3																			
40	2	21906	-52.8		24	3.8	26	21.993	-55.5		28	5.1	27	22.016	-54.3		29	4.9	29	21.957	-53.4		27	6.8	20	21.902	-56.0		26	1.6																			
30	2	23740	-52.4		23	3.0	25	23.740	-52.4		28	2.6	26	23.759	-50.6		29	1.2	29	23.678	-51.7		26	9.6	19	23.740	-51.5		20	2.7																			
25	2	24953	-51.2		25	6.7	26	25.032	-48.9		28	2.4	26	25.082	-46.9		23	0.9	24	25.015	-49.0		26	8.6	19	24.900	-55.9		31	1.7																			
20	2	26393	-46.5		26	8.6	22	26.517	-46.0		27	4.3	24	26.583	-44.4		25	1.1	21	26.491	-47.1		26	10.3	18	26.309	-55.4		31	3.6																			
15	2	28285	-47.1		26	11.7	20	28.310	-43.3		28	7.2	18	28.522	-40.6		25	3.1	16	28.398	-46.0		26	13.7	15	28.155	-53.7		31	3.4																			
10					13	31.178	-38.9				5	31.170	-38.2										8	30.810	-89.9																								

DAYTON, OH 992 MB										DEL RIO, TX 975 MB										DENVER, CO 834 MB										FISHER ROCK, NV 899 MB										GOODE CITY, KS 922 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind Direction tens of deg.	Speed m.p.a.																			
5FC	3	299	6.0	2.7	28	3.3	30	3.14	16.6	12.7	10	2.1	30	1.611	3.8	-3.8	23	8.0	30	1.007	10.5	-3.5	07	4.0	30	7.91	6.4	3.8	17	1.0																			
1000																																																	
950	3	566	6.3	1.6	27	1.7	30	5.39	17.2	10.9	13	5.0																																					
900	3	1069	-1.1	-4.1	24	4.5	30	1.000	-5.8	8.7	13	6.4																																					
850	3	1474	2.9	-4.7	27	6.7	30	1.494	13.8	6.2	18	5.2																																					
800	3	1964	1.3	-6.5	27	8.2	30	1.934	12.2	-7.20	4	3.0																																					
750	3	2481	-8.8	-9.7	28	9.5	30	2.534	10.2	-7.2	24	3.9																																					
700	3	3030	-3.2	-13.0	28	11.0	30	3.104	6.6	-11.1	26	6.2																																					
650	3	3614	-5.9	-16.6	28	13.1	30	3.708	2.2	-15.6	27	8.8																																					
600	3	4237	-9.5	-20.4	28	14.0	28	4.308	-2.5	-17.6	26	10.6																																					
550	3	4904	-14.0	-25.8	28	15.7	30	5.032	-7.7	-21.3	26	12.5																																					
500	3	5621	-18.6	-30.4	27	16.4	30	5.764	-12.8	-28.5	26	14.4																																					
450	3	6399	-23.8	-35.1	27	19.1	30	6.560	-18.6	-32.1	26	16.2																																					
400	3	7248	-30.3	-40.3	26	21.4	30	7.428	-25.0	-37.5	26	19.1																																					
350	3	8188	-37.3	-43.4	26	24.8	30	8.386	-32.4	-44.0	26	22.4																																					
300	3	9233	-46.7		26	27.8	30	9.452	-39.7	-48.7	26	26.3																																					
250	3	10432	-52.6		26	30.0	30	10.668	-50.4		26	31.4																																					









# RAWINSONDE DATA

Average monthly values

APRIL 1979

NASHVILLE, TN 996 MB				NOME, AK 1011 MB				NORTH PLATT, NE 915 MB				OAKLAND, CA 1017 MB				OMAHA, NE 967 MB													
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind									
					Direction tens of deg	Speed m.p.s.				Direction tens of deg	Speed m.p.s.				Direction tens of deg	Speed m.p.s.				Direction tens of deg	Speed m.p.s.								
5FC 30	180	10.3	7.7	7.9	22	29	5	-4.7	-8.1	09	2.0	30	8.7	3.3	-1.3	11	2.0	30	10.1	7.9	27	2.9	30	4.0	4.5	1.4	02	2.9	
1000 30	201	9.4	2.6	2.6	22	129	9.4	-10.2	11	3.4	20	1.4	10.3	7.1	27	1.3	30	1.4	10.3	7.1	27	1.3	30	1.4	10.3	7.1	27	1.3	
950 30	574	10.4	3.8	1.8	1.5	29	4.9	-5.3	-9.6	15	5.7	20	5.7	9.0	2.8	10	2.5	29	5.3	5.2	29	5.3	5.2	29	5.3	5.2	29	5.3	
900 30	1,023	8.8	1.9	2.3	3.6	29	9.1	-6.4	-12.8	16	6.3	28	9.6	4.7	1.7	18	1.7	10.2	7.8	-2.3	30	9.8	4.5	-2.0	26	1.7	3.1		
850 30	1,495	7.0	-1.2	2.6	5.2	29	11.6	-11.5	-15.8	17	6.4	30	1.4	4.8	-9.2	21	3.8	1.4	9.0	5.9	-7.3	30	1.4	9.4	3.7	-5.2	27	8.1	
800 30	1,992	4.5	-2.8	2.7	7.5	29	1.8	-17.2	-17.9	18	5.8	30	1.9	5.6	-4.5	27	5.3	1.9	9.5	3.6	-11.1	29	4.0	10.0	1.9	4.7	6.1		
750 30	2,515	1.6	-6.8	2.8	8.4	29	7.3	-12.4	-21.4	18	6.3	29	2.5	6.1	-11.4	28	6.6	2.5	6.1	11.1	-18.6	28	4.6	30	2.6	-7.7	17.3		
700 30	3,069	-1.0	-9.6	2.9	10.6	29	2.6	-15.1	-25.8	18	6.9	30	3.0	1.2	-2.0	29	6.7	3.0	1.2	-2.0	29	6.7	3.0	1.2	-2.0	29	6.7		
650 30	3,657	-3.9	-14.1	2.7	12.0	29	3.4	-18.1	-27.6	19	7.8	30	3.6	2.7	-15.2	28	7.7	3.6	2.7	-15.2	28	7.7	3.6	2.7	-15.2	28	7.7		
600 30	4,285	-7.4	-17.6	2.7	13.5	29	4.0	-21.6	-30.0	19	8.6	30	4.2	-11.0	-19.9	28	9.4	4.2	-11.0	-19.9	28	9.4	4.2	-11.0	-19.9	28	9.4		
550 30	4,958	-11.5	-23.0	2.6	15.5	29	4.6	-25.4	-34.3	20	9.5	30	4.8	-15.1	-25.0	28	10.7	5.0	4.9	-13.6	-27.3	28	10.4	5.0	4.9	-13.6	-27.3	28	10.4
500 30	5,682	-16.2	-28.7	2.6	17.5	29	5.2	-30.8	-37.0	20	10.3	30	5.0	-20.5	-37.3	28	11.7	5.6	5.1	-18.6	-31.7	28	12.7	6.0	5.0	-17.4	-31.3	27	13.4
450 30	6,468	-21.3	-33.4	2.1	20.1	29	6.0	-36.6	-41.0	21	11.9	30	5.7	-25.4	-47.0	28	13.6	6.4	6.1	-23.1	-35.2	28	14.8	6.4	6.1	-23.1	-35.2	28	14.8
400 30	7,326	-27.6	-36.6	2.6	21.7	29	6.3	-40.0	-45.5	21	13.9	30	7.2	-32.3	-47.1	28	14.3	7.2	7.2	-30.0	-41.5	27	16.4	7.2	7.2	-30.0	-41.5	27	16.4
350 29	8,275	-34.6	-43.1	2.6	24.5	29	7.7	-46.1	-51.1	21	14.5	30	8.1	-39.4	-47.9	27	16.1	8.2	8.2	-37.0	-46.0	27	17.8	8.2	8.2	-37.0	-46.0	27	17.8
300 29	9,330	-42.8	-46.5	2.6	28.9	29	8.7	-51.7	-56.1	22	15.6	30	9.1	-47.5	-52.7	27	17.6	9.2	9.2	-45.2	-52.7	27	19.5	9.2	9.2	-45.2	-52.7	27	19.5
250 29	10,536	-52.0	-50.6	2.6	30.6	28	9.5	-54.3	-59.3	22	15.4	30	10.3	-54.7	-59.7	27	18.2	10.4	10.4	-53.8	-60.3	27	20.8	10.4	10.4	-53.8	-60.3	27	20.8
200 29	11,951	-60.6	-57.4	2.6	35.9	29	11.2	-59.3	-64.3	22	13.3	30	11.7	-60.0	-65.0	27	19.2	11.4	11.4	-60.3	-67.3	27	23.0	11.4	11.4	-60.3	-67.3	27	23.0
150 29	12,777	-62.9	-57.7	2.6	36.2	26	12.7	-60.7	-67.7	22	10.1	30	12.4	-61.1	-68.7	27	18.7	12.7	12.7	-60.4	-68.4	27	24.8	12.7	12.7	-60.4	-68.4	27	24.8
125 29	13,727	-61.6	-56.2	2.6	32.0	25	13.2	-59.3	-60.3	23	8.1	30	13.5	-57.1	-61.1	27	18.1	13.7	13.7	-58.9	-61.9	27	21.8	13.7	13.7	-58.9	-61.9	27	21.8
100 29	14,860	-61.7	-56.7	2.6	26.2	24	14.4	-57.2	-60.3	22	8.3	30	14.3	-57.9	-61.1	27	15.7	14.0	14.0	-59.3	-61.9	27	20.7	14.0	14.0	-59.3	-61.9	27	20.7
75 29	16,238	-62.7	-56.7	2.6	20.9	24	15.9	-51.6	-61.6	22	6.5	30	16.1	-58.8	-61.1	27	14.1	16.1	16.1	-60.8	-61.9	27	17.2	16.1	16.1	-60.8	-61.9	27	17.2
50 29	17,611	-63.2	-57.2	2.6	16.1	23	17.3	-57.2	-61.6	22	4.6	30	17.5	-59.5	-61.1	27	12.4	17.5	17.5	-60.4	-61.9	27	12.3	17.5	17.5	-60.4	-61.9	27	12.3
25 29	18,433	-63.3	-57.9	2.6	11.9	23	18.9	-57.0	-61.6	22	7.2	30	18.6	-58.7	-61.1	27	11.2	18.4	18.4	-60.2	-61.9	27	10.7	18.4	18.4	-60.2	-61.9	27	10.7
0 29	19,394	-61.0	-57.7	2.6	8.6	22	19.2	-54.4	-61.6	21	2.8	29	19.3	-58.4	-61.1	27	10.4	19.3	19.3	-58.4	-61.9	27	7.8	19.3	19.3	-58.4	-61.9	27	7.8
60 29	20,534	-58.1	-57.4	2.6	6.9	22	20.3	-54.7	-61.6	21	2.3	29	20.4	-57.7	-61.1	27	9.7	20.5	20.5	-59.0	-61.9	27	6.4	20.5	20.5	-59.0	-61.9	27	6.4
40 28	21,950	-55.6	-56.2	2.6	5.6	22	21.8	-56.0	-61.6	18	1.9	29	21.9	-56.6	-61.1	27	9.2	21.9	21.9	-57.5	-61.9	27	5.4	21.9	21.9	-57.5	-61.9	27	5.4
30 27	23,806	-51.0	-57.1	2.6	7.1	21	23.6	-56.3	-61.6	14	1.9	29	23.7	-53.6	-61.1	27	10.3	23.7	23.7	-54.5	-61.9	27	6.2	23.7	23.7	-54.5	-61.9	27	6.2
25 27	24,998	-48.8	-57.7	2.6	5.8	21	24.8	-55.7	-61.6	10	2.0	29	24.9	-51.5	-61.1	27	10.3	24.9	24.9	-52.9	-61.9	27	6.7	24.9	24.9	-52.9	-61.9	27	6.7
20 27	26,407	-45.1	-58.3	2.6	4.8	21	26.5	-54.6	-61.6	7	2.2	29	26.7	-48.7	-61.1	27	10.4	26.7	26.7	-46.0	-61.9	27	7.1	26.7	26.7	-46.0	-61.9	27	7.1
15 27	28,392	-43.3	-58.3	2.6	3.8	21	28.9	-55.1	-61.6	6	3.1	29	28.9	-44.7	-61.1	27	10.4	28.9	28.9	-46.0	-61.9	27	7.1	28.9	28.9	-46.0	-61.9	27	7.1
10 14	31,155	-38.0	-58.0	2.6	17.0	22	31.0	-40.0	-61.6	26	22.9	9	31.0	-38.5	-61.6	26	22.9	9	31.0	-38.5	-61.6	26	22.9	9	31.0	-38.5	-61.6	26	22.9

PAGO PAGO, AMERICAN SAPOA 1011 MB				PEORIA, IL 993 MB				PITTSBURGH, PA 974 MB				PONAPE, CAROLINE IS. 1005 MB				PORTLAND, ME 1014 MB													
5FC 30	5	29.3	24.1	13	1.9	30	200	5.6	2.8	10	5	30	3.9	6.0	1.2	23	4	30	27.4	24.3	07	3.3	30	20	3.0	2.9	32	1.2	
1000 30	99	27.4	22.9	13	1.8	30	215	4.5	-1.0	10	5	30	3.9	6.0	1.2	23	4	30	26.4	23.6	07	3.0	28	14.2	4.1	-8.4	34	1.8	
950 30	552	23.6	20.9	11	1.2	30	561	6.0	1.0	12	1.6	30	5.6	6.0	2.2	25	1.3	30	5.7	23.0	21.5	07	8.5	30	5.4	3.2	-2.7	14	2.7
900 30	1,024	20.6	17.3	0.6	8	30	1,003	4.5	-2.4	26	3.8	30	1,009	4.8	-1.2	26	4.4	30	1,008	20.2	18.5	08	8.5	30	9.8	1.5	-4.1	32	2.9
850 30	1,517	17.8	13.2	3.6	1.0	30	1,468	3.5	-4.9	27	5.8	30	1,474	7.4	-4.7	27	8.4	30	1,501	17.1	15.0	08	9.1	30	1,484	-1.1	-7.9	10	4.1
800 30	2,035	-5.3	-9.9	2.4	11.9	30	1,959	2.0	-7.7	27	7.2	30	1,967	-5.7	-7.7	27	8.0	30	2,020	16.0	11.2	08	10.7	30	1,993	-10.9	30	5.1	
750 30	2,580	12.8	4.3	3.2	2.7	30	2,478	-7	-10.4	28	8.6	30	2,478	-1.9	-10.1	27	9.7	30	2,547	13.4	7.2	10	5.6	30	2,440	-4.0	-13.6	29	6.1
700 30	3,157	9.8	-0.3	3.1	3.0	30	3,026	-3.6	-14.1	28	10.8	30	3,025	-4.5	-13.4	27	10.7	30	3,145	10.1	4.1	10	5.6	30	2,982	-6.7	-16.6	29	7.7
650 30	3,770	6.5	-4.1	3.2	3.1	30	3,608	-6.9	-18.6	27	12.2	30	3,606	-7.2	-16.1	27	12.2	30	3,760	7.1	-1.1	10	5.6	30	3,558	-9.5	-19.7	29	6.6
600 30	4,423	2.7	-6.9	3.2	3.1	30	4,228	-10.9	-22.8	27	13.7	30	4,226	-10.3	-19.9	28	14.0	30	4,414	3.4	-7.6	10	4.9	30	4,173	-17.7	-23.8	28	11.2
550 30	5,123	-17.0	-10	2.7	3.0	30	4,891	-15.1	-27.7	27	15.5	30	4,892	-14.0	-25.0	27	15.7	30	5,111	-2.2	-7.9	11	4.8	30	4,831	-18.6	-27.7	27	12.0
500 30	5,877	-5.1	-16.3	3.0	2.4	30	5,605	-1.9	-31.2	27	17.6	30	5,609	-18.8	-31.2	27	17.1	30	6,078	-3.8	-11.1	12	6.0	30	5,841	-21.8	-32.5	28	14.7
450 30	6,697	-10.3	-21.4	2.9	2.4	30	6,379	-25.3	-37.6	27	19.3	30	6,386	-24.0	-34.8	27	18.7	29	6,699	-8.7	-19.6	13	3.4	30	6,310	-26.8	-36.0	28	15.7
400 30	7,595	-16.0	-28.5	2.8	3.5	30	7,222	-31.3	-																				



# RAWINSONDE DATA

Average monthly values

APRIL 1979

SALTM, OR 1011 MB				SALT LAKE CITY, UT 849 MB				SAN PABLO, CA 1000 MB				SAN JUAN, P. R. 1016 MB				SAULT STE MARIE, MI 991 MB														
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	Resultant Wind		
																													No. of observations	Dynamic height meters
5FC	31	61	6.6	5.0	27	2.9	1.288	6.9	-3.3	16	2.5	30	124	12.1	9.7	12	3.0	6	22.8	20.1	10	4.7	29	221	-2.2	-6.1	06	1.0		
1000	30	147	8.1	5.8	22	1.2	1.967	4.7	-5.7	20	1.4	19	174	12.1	9.1	04	3.3	141	22.8	18.8	10	4.7	30	558	1.4	-4.9	08	1.3		
950	30	570	6.5	3.6	24	1.7	3.6	3.0	-4.8	30	5.55	12.5	4.8	30	1.2	30	5.87	19.9	16.6	10	7.0	29	558	1.4	-4.9	08	1.3			
900	30	1,012	3.9	1.4	25	2.4	3.0	1.009	17.7	-1.4	31	2.7	30	1.052	17.0	13.1	11	6.4	29	9.9	9.3	-2.7	5.9	22	1.1					
850	30	1,475	1.0	-2.2	26	3.6	1.470	7.6	-4.1	17	3.1	30	1.476	10.6	-7.6	30	4.4	1,538	14.0	9.3	11	5.2	29	1,449	-1.6	-9.3	28	2.3		
800	30	1,961	-1.4	-5.9	27	3.9	2.9	5.076	-21.5	-33.0	26	10.9	5.729	-13.6	-30.8	28	17.8	2,048	12.4	9.12	4.8	29	1,931	-3.1	-12.7	28	3.5			
750	30	2,473	-4.1	-10.5	27	4.5	2.9	4.990	-8.8	-9.8	24	3.6	3.0	5.310	-6.7	-14.2	29	5.8	2,588	10.4	-6.0	12	3.6	2.9	4.4	-4.0	-15.3	27	4.4	
700	30	3,014	-7.3	-14.7	27	5.8	2.9	3.740	-1.6	-12.4	26	5.2	3.0	3.072	3.5	-16.3	29	7.1	3,160	8.3	-8.4	12	2.2	2.9	2.9	-7.5	-17.6	26	5.3	
650	30	3,586	-10.6	-19.1	28	7.1	2.9	3.621	-7.8	-16.4	27	7.1	3.0	3.679	7.2	-10.9	28	8.3	3,768	5.0	-11.7	10	2.0	2.9	3,555	-10.1	-19.0	26	6.7	
600	30	4,200	-13.9	-24.8	28	8.5	2.9	4.238	-12.2	-20.7	26	7.9	3.0	4.316	-3.8	-22.1	28	10.3	4,417	1.4	-15.8	01	4.7	2.9	4,168	-13.5	-22.9	26	7.3	
550	30	4,856	-16.2	-28.5	28	9.6	2.9	4.897	-16.7	-26.9	26	9.3	3.0	4.997	-8.2	-26.5	28	11.7	5,113	-2.2	-18.9	9.6	2.1	2.9	4,825	-17.6	-27.0	27	8.2	
500	30	5,561	-23.0	-33.5	28	10.7	2.9	5.676	-21.5	-33.0	26	10.9	3.0	5.729	-13.6	-30.8	28	17.8	5,864	-6.4	-23.8	19	2.7	2.9	5,531	-22.4	-31.0	27	9.3	
450	30	6,325	-28.2	-36.2	29	11.3	2.9	6.375	-26.8	-37.4	26	13.5	3.0	6.571	-19.6	-35.8	28	15.2	6,680	-11.7	-28.3	31	4.8	2.9	6,297	-27.8	-35.9	26	11.5	
400	30	7,160	-34.3	-43.4	29	12.3	2.9	7.215	-32.4	-42.6	26	16.0	3.0	7.384	-22.6	-42.3	28	17.3	7,571	-18.0	-38.1	31	4.8	2.9	7,132	-34.3	-43.1	26	12.5	
350	30	8,083	-41.2	-47.6	29	13.6	2.9	8.144	-39.1	-46.9	27	16.8	3.0	8.337	-34.1	-47.6	28	19.6	8,558	-25.0	-40.2	30	9.9	2.9	8,056	-41.2	-43.6	26	14.7	
300	30	9,110	-49.0		28	11.6	2.9	9.182	-47.2		27	17.8	3.0	9.395	-42.3	-52.0	28	23.0	9,657	-33.3	-47.5	30	14.4	2.9	9,085	-49.0		26	17.0	
250	30	10,289	-57.6		27	12.4	2.8	10.367	-55.0		27	18.9	2.9	10.601	-51.3		28	26.9	10,913	-42.8		30	20.0	2.9	10,776	-54.1		26	20.8	
200	30	11,705	-67.4		27	10.6	2.8	11.778	-54.8		27	19.9	2.8	12.076	-40.5		28	32.2	12,382	-54.2		30	25.1	2.9	11,690	-67.4		26	21.2	
175	30	12,550	-54.0		27	10.8	2.8	12,616	-58.7		27	18.8	2.6	12,857	-62.0		27	33.4	13,227	-60.1		30	25.1	2.9	12,535	-56.6		27	18.8	
150	30	13,527	-56.7		27	10.3	2.6	13,587	-57.7		27	18.2	2.6	13,811	-61.4		27	32.4	14,175	-66.1		30	24.9	2.9	13,516	-56.6		27	15.2	
125	30	14,684	-56.8		27	10.1	2.6	14,738	-58.0		27	17.4	2.6	14,941	-61.8		27	28.1	15,265	-72.1		30	19.6	2.9	14,676	-56.2		27	14.5	
100	30	16,096	-57.7		28	9.9	2.8	16,142	-58.5		27	14.2	2.6	16,318	-63.6		27	21.6	16,659	-77.0		31	15.2	2.8	16,085	-57.0		27	12.8	
80	30	17,502	-58.3		28	9.0	2.8	17,542	-59.2		27	11.6	2.5	17,685	-64.2		27	16.3	17,801	-77.2		32	9.1	2.8	17,497	-57.2		27	10.2	
70	30	18,349	-57.7		28	8.5	2.8	18,394	-58.1		27	10.9	2.1	18,535	-62.9		27	17.6	18,631	-75.2		34	5.8	2.8	18,343	-56.9		27	10.6	
60	30	19,317	-57.7		28	8.5	2.8	19,346	-59.1		28	10.0	2.4	19,454	-61.8		27	8.9	19,516	-69.5		35	2.7	2.8	19,120	-56.6		28	9.8	
50	30	20,467	-57.9		28	7.3	2.7	20,492	-58.3		28	8.6	2.3	20,583	-59.8		27	6.6	20,623	-62.5		06	2.0	2.7	20,482	-55.6		27	8.7	
40	30	21,874	-57.7		29	8.0	2.7	21,900	-57.1		28	7.6	2.3	21,986	-56.9		27	7.3	22,022	-56.5		09	4.7	2.7	21,908	-58.5		27	6.3	
30	30	23,695	-56.2		28	7.0	2.6	23,735	-54.0		27	8.4	2.2	23,821	-53.2		27	9.3	23,869	-51.9		11	6.8	2.7	23,756	-53.1		26	7.2	
25	30	24,845	-55.4		28	8.6	2.6	24,905	-53.1		27	10.0	2.7	25,004	-50.2		27	10.9	25,058	-49.7		17	6.2	2.7	24,938	-54.4		27	7.8	
20	30	26,286	-49.6		28	12.6	2.6	26,342	-45.8		27	15.6	1.8	26,404	-42.0		26	13.1	26,455	-43.2		11	12.5	3.3	26,297	-49.3		26	9.7	
15	30	28,166	-49.6		28	12.6	2.6	28,242	-45.8		27	15.6	1.8	28,404	-42.0		26	13.1	28,455	-43.2		11	14.0	2.2	28,299	-46.1		26	12.2	
10	30	30,871	-43.5		17	37,990	-40.5		27	19.5	9	31,183	-36.0		22	31,220	-37.3		09	12.7	15	31,039	-41.6		26	18.3				

SPOKANE, WA 920 MB				TAMPA BAY, FL 1015 MB				TOPKA, KS 983 MB				TRUK, CAROLINE IS. 1011 MB				TUCSON, AZ 923 MB														
5FC	30	720	2.9	-3.3	17	1.2	30	13	17.7	16.3	12	1.4	30	26.8	6.9	5.0	03	5	30	2	28.3	28.1	06	4.4	30	789	11.2	-1.5	15	2.3
1000	30	144	19.9	16.3	13	3.0	30	144	19.9	16.3	13	3.0	30	97	27.3	28.5	06	5.7	30	551	23.7	21.1	07	8.1	30	998	16.4	-1.9	15	1.2
950	30	587	18.4	12.0	15	5.4	30	587	18.4	12.0	15	5.4	30	551	8.2	3.2	23	7	30	1,023	20.8	17.4	08	8.8	30	998	16.4	-1.9	15	1.2
900	30	1,049	16.0	8.0	17	4.7	30	1,049	16.0	8.0	17	4.7	30	998	7.6	1.8	25	3.9	30	1,156	18.1	14.0	09	7.9	30	1,482	18.0	-8.1	29	12.2
850	30	1,451	2.4	-5.5	25	2.2	30	1,523	13.6	5.1	18	3.6	30	1,466	6.7	-2.2	26	5.6	30	2,036	18.7	14.0	09	6.3	30	1,990	10.3	-6.2	26	2.6
800	30	1,939	-7.7	-10.8	25	2.9	30	1,941	11.3	-2.4	21	3.2	30	1,966	4.6	-5.4	27	8.8	2,037	18.7	14.0	09	6.3	30	1,990	10.3	-6.2	26	2.6	
750	30	2,451	-4.6	-10.3	26	3.8	30	2,579	9.2	-7.0	23	4.3	30	2,469	1.1	-8.4	27	8.8	2,582	13.8	2.4	09	5.6	30	2,523	6.7	-9.7	25	5.0	
700	30	2,990	-8.6	-13.6	26	4.6	30	3,147	6.1	-10.9	24	5.1	30	3,091	-1.8	-12.2	28	10.3	3,161	11.0	-2.1	10	4.7	30	3,086	3.0	-13.8	25	6.9	
650	30	3,562	-11.5	-19.6	26	6.4	30	3,751	2.8	-13.6	26	6.6	3.0	3,628	-2.7	-15.6	27	11.5	3,777	7.8	-8.5	10	4.0	30	3,682	-7	-17.2	25	7.9	
600	30	4,171	-15.4	-24.7	27	7.3	30	4,399	-1.2	-16.6	26	8.4	3.0	4,252	-9.5	-19.4	27	11.8	4,432	3.8	-5.5	10	3.5	30	4,316	-4.9	-22.0	26	9.5	
550	30	4,823	-19.4	-29.4	27	8.1	30	5,082	-5.5	-19.7	27	10.4	3.0	4,919	-16.3	-24.5	27	13.0	5,135	3.3	-11.9	10	3.8	30	4,938	-9.4	-25.7	27	11.4	
500	30	5,525	-24.0	-33.7	27	9.0	30	5,822	-10.7	-24.0	27	12.1	3.0	5,635	-19.2	-27.7	27	15.6	5,895	-7.0		10	3.6	30	5,724	-14.5	-30.9	27	13.9	
450	30	6,286	-29.5	-39.3	27	9.9	30	6,625	-15.7	-20.8	27	14.1	2.9	6,409	-24.6	-38.3	26	17.9	6,720	-8.2	-24.3	09	4.5	30	6,513	-20.4	-34.9	27	15.6	
400	30	7,115	-35.7	-43.7	27	8.6	30	7,503	-21.9	-33.8	27	16.5	2.9	7,255	-31.4	-43.7	27	19.1												

# RAWINSONDE DATA

Average monthly values

APRIL 1979

Standard pressure surface mb.	No. of observations	WAYCROSS, GA 1012 M8					WEST PALM BEACH, FL 1016 M6					WINNEMUCA, NV 868 M8					WINSLOW, AZ 849 M8					YAKUTAT, AK 1016 M8									
		Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind											
					Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.										
5FC	30	44	14.2	12.4	20	4.6	30	7	20.1	16.7	14	2.2	10	1.112	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	17	1.2	-4.6	08	.9	
1000	29	146	17.0	12.1	20	1.2	30	148	22.0	17.5	14	3.7	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	145	3.1	-4.0	10	.7	
950	30	581	16.7	7.1	22	3.2	30	592	18.9	15.9	14	4.9	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	555	1.6	-3.7	11	1.5	
900	30	1,040	14.2	4.7	23	4.5	30	1,055	14.1	10.1	15	4.3	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	989	-2	-7.1	13	2.1	
850	30	1,520	11.4	.8	25	5.4	30	1,540	14.0	3.1	16	3.2	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	1,445	-2	-11.4	16	1.4	
800	30	2,025	9.1	-5.5	25	6.2	30	2,050	12.3	-2.8	16	2.3	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	1,924	-4.4	-13.9	24	2.1	
750	30	2,557	6.9	-9.6	26	7.9	30	2,589	10.0	-6.7	23	3.1	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	2,443	-9.4	-16.8	26	3.1	
700	30	3,121	3.8	-12.5	26	8.6	30	3,158	6.7	-11.4	24	4.6	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	2,969	-9.4	-21.3	26	3.9	
650	30	3,720	.8	-15.7	26	10.2	30	3,763	3.3	-14.2	25	5.6	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	3,662	-3.1	-17.0	27	4.8	
600	30	4,358	-2.9	-16.5	26	17.1	30	4,407	-7.7	-17.1	28	6.6	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	4,290	-7.4	-22.1	26	8.9	
550	30	5,042	-7.6	-21.1	26	17.6	30	5,094	-5.0	-20.2	27	7.9	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	4,962	-11.9	-26.8	27	11.5	
500	30	5,777	-12.6	-24.5	26	15.8	30	5,839	-9.4	-25.7	27	10.7	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	5,685	-16.8	-31.4	27	13.5	
450	30	6,573	-17.9	-31.1	26	18.0	30	6,646	-14.6	-29.5	27	12.5	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	6,467	-29.8	-35.2	27	15.1	
400	30	7,443	-24.0	-35.6	26	20.5	30	7,527	-21.0	-34.2	27	14.6	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	7,319	-29.7	-41.8	27	16.9	
350	30	8,407	-31.0	-40.9	26	22.7	30	8,503	-27.9	-40.1	27	17.3	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	8,259	-37.1	-45.2	27	17.5	
300	30	9,479	-39.2	-46.3	26	26.3	30	9,589	-36.2	-47.5	27	19.5	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	9,304	-45.1	-48.2	27	21.0	
250	30	10,703	-49.1	-52.6	26	30.4	30	10,828	-46.4	-51.4	27	23.4	10	1.487	2.4	-5.1	22	1.0	29	1.487	4.8	-7.8	21	2.4	10	10,501	-52.7	-55.2	27	26.1	
200	30	12,133	-59.2	-62.7	26	36.2	29	12,275	-56.2	-61.7	27	27.9	29	11,772	-58.8	-64.4	28	22.5	29	11,918	-59.2	-64.8	28	29.1	29	11,589	-57.7	-61.4	30	11.4	
175	30	12,964	-62.2	-65.2	27	37.5	29	13,114	-60.5	-63.7	27	30.2	29	12,610	-58.7	-64.8	28	20.6	29	12,754	-59.8	-65.8	28	27.9	29	12,435	-56.0	-61.4	29	9.3	
150	30	13,910	-64.6	-67.2	27	36.9	28	14,065	-63.7	-67.2	27	31.9	29	13,582	-57.6	-67.2	27	18.2	29	13,718	-59.9	-69.2	27	25.1	29	13,419	-54.6	-61.4	30	7.8	
125	30	15,023	-65.1	-67.7	27	32.5	28	15,173	-68.9	-71.4	27	28.8	29	14,732	-57.9	-69.2	27	16.0	29	14,854	-61.1	-71.4	27	23.0	29	14,586	-55.0	-61.4	30	6.6	
100	30	16,375	-67.6	-70.2	27	26.3	28	16,529	-70.6	-73.1	26	23.8	28	16,137	-59.0	-71.4	27	13.6	29	16,235	-62.7	-73.1	27	18.7	29	16,010	-55.8	-61.4	30	5.8	
80	30	17,716	-68.4	-71.1	27	16.9	28	17,830	-71.3	-73.8	28	16.3	28	17,538	-59.4	-73.1	27	10.0	29	17,611	-62.4	-73.1	27	13.1	29	17,428	-56.3	-61.4	31	4.6	
70	30	18,521	-66.1	-71.1	27	12.1	28	18,621	-70.0	-72.5	28	9.9	28	18,374	-59.0	-73.1	27	8.8	29	18,438	-61.6	-73.1	28	10.8	29	18,277	-55.9	-61.4	32	4.4	
60	30	19,462	-63.5	-71.1	27	8.0	28	19,547	-65.8	-72.5	28	5.2	28	19,307	-58.5	-73.1	27	8.4	28	19,392	-61.4	-73.1	27	7.2	29	19,258	-56.0	-61.4	32	1.7	
50	29	20,589	-59.7	-71.1	28	5.0	28	20,672	-59.9	-72.5	30	2.2	28	20,489	-58.3	-73.1	28	6.8	28	20,527	-59.6	-73.1	27	6.2	29	20,418	-55.7	-61.4	33	3.1	
40	29	21,985	-55.6	-71.1	28	3.6	28	22,084	-55.0	-72.5	01	1.2	28	21,895	-57.6	-73.1	28	7.1	28	21,931	-57.0	-73.1	27	7.0	29	21,838	-56.2	-61.4	34	2.8	
30	29	23,853	-50.7	-71.1	33	2.7	27	23,945	-50.3	-72.5	07	4.8	27	23,793	-55.8	-73.1	28	9.0	28	23,770	-52.5	-73.1	27	7.6	28	23,671	-56.4	-61.4	04	2.4	
25	29	25,048	-48.4	-71.1	07	1.5	27	25,142	-47.5	-72.5	09	4.8	26	24,883	-53.4	-73.1	27	9.6	28	24,957	-50.3	-73.1	27	11.4	24	24,849	-56.1	-61.4	04	2.2	
20	29	26,527	-45.1	-71.1	12	1.3	27	26,628	-44.6	-72.5	10	4.7	24	26,377	-50.5	-73.1	27	13.0	26	26,426	-46.7	-73.1	27	12.0	22	26,269	-55.1	-61.4	07	2.4	
15	28	28,471	-41.6	-71.1	32	.6	25	28,570	-40.4	-72.5	09	5.3	21	28,271	-45.8	-73.1	27	16.6	25	28,351	-42.7	-73.1	27	13.0	18	28,130	-53.3	-61.4	09	1.4	
10	21	31,250	-37.6	-71.1	36	2.8	18	31,365	-35.7	-72.5	09	3.9	14	30,952	-39.4	-73.1			17	31,119	-38.1	-73.1			8	30,883	-47.3	-61.4			
7	5	33,732	-34.4	-71.1																											

YAP, CAROLINE IS. 1009 M8																	
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Direction tens of deg.	Speed m.p.s.	Dynamic height meters	Temperature °C	Dew Point °C †	Direction tens of deg.	Speed m.p.s.	Dynamic height meters	Temperature °C	Dew Point °C †	Direction tens of deg.	Speed m.p.s.	Dynamic height meters
5FC	30	14	28.6	23.4	08	4.8											
1000	30	93	26.6	22.4	08	5.5											
950	30	585	22.9	20.0	08	8.2											
900	30	1,016	20.0	15.6	08	7.9											
850	30	1,508	17.4	8.9	09	6.8											
800	30	2,025	16.1	2.7	09	5.3											
750	30	2,571	13.5	-7.0	09	4.9											
700	30	3,149	10.5	-6.4	09	4.3											
650	30	3,763	7.5	-9.6	09	4.0											
600	30	4,438	4.0	-13.8	09	4.7											
550	30	5,120	.1	-17.4	09	4.8											
500	30	5,878	-4.2	-20.5	09	5.3											
450	30	6,701	-8.6	-26.3	09	6.1											
400	30	7,604	-14.5	-31.5	10	5.3											
350	30	8,606	-21.3	-36.9	11	4.0											
300	30	9,721	-29.7	-44.6	11	2.7											
250	30	10,994	-40.0	-50.6	13	3.4											
200	30	12,478	-52.4	-61.4	14	5.3											
175	30	13,328	-59.0	-67.2	14	4.7											
150	30	14,278	-66.4	-74.1	12	2.1											
125	30	15,352	-74.1	-81.0	04	2.8											
100	30	16,640	-79.9	-88.0	08	3.8											
80	30	17,900	-80.2	-90.0	09	5.3											
70	30	18,666	-74.2	-83.0	09	.9											
60	30	19,577	-69.4	-78.0	28	2.8											
50	30	20,681	-64.2	-72.0	29	1.5											
40	30	22,063	-59.2	-67.0	09	4.9											
30	30	23,888	-54														

# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

APRIL 1923

Sun's zenith distance										Sun's zenith distance									
Date	A.M.				*	P.M.				Date	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MAUNA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass									
3.34    2.67    2.01    1.34    *    1.34    2.01    2.67    3.34										4.64    3.71    2.78    1.86    *    1.86    2.78    3.71    4.64									
8-----	1.17	1.27	1.38	1.49	1.65	1.48	1.40	1.32	1.26	1-----	.93	1.02	1.14	1.30	1.42	1.26	1.14	1.02	.94
9-----	---	---	---	---	1.65	1.48	1.33	1.26	1.16	2-----	.76	.86	1.01	1.19	---	1.19	1.01	.88	.78
11-----	1.13	1.22	1.33	1.48	1.59	---	---	---	---	3-----	.75	.86	.96	---	1.46	1.27	1.13	1.01	.91
12-----	1.07	1.13	1.25	1.38	1.53	1.38	1.24	1.13	1.03	4-----	.86	.97	1.09	1.24	1.42	1.23	1.08	.95	.84
19-----	1.04	1.15	1.26	1.36	---	---	---	---	---	5-----	.86	.96	1.09	1.25	1.48	1.27	1.09	---	---
23-----	---	---	---	---	---	---	---	---	---	6-----	.87	.97	1.10	1.28	1.42	1.29	1.13	1.01	.91
24-----	1.12	1.23	1.34	1.46	---	1.59	1.42	1.30	1.19	7-----	.87	.98	1.11	1.26	1.46	1.25	1.09	.98	.89
26-----	1.19	1.27	1.36	1.47	---	---	---	---	---	8-----	.79	---	---	1.15	1.37	---	1.05	.93	.82
28-----	1.16	1.24	1.32	1.43	1.60	---	---	---	---	9-----	.80	.89	1.00	1.16	1.42	1.22	---	.89	.75
Average	1.13	1.22	1.32	1.44	1.60	1.44	1.32	1.23	1.14	12-----	.73	.87	1.05	1.22	1.45	---	---	---	---
										13-----	---	---	---	---	1.42	---	1.01	.89	.78
										14-----	.86	.97	1.10	1.26	1.48	1.29	1.07	.96	.88
										15-----	.84	.96	1.10	1.27	1.47	1.24	1.09	.92	.84
										16-----	---	---	---	---	1.44	1.21	1.03	.91	.82
										17-----	.79	.91	1.04	1.22	1.45	1.19	1.03	.85	.74
										18-----	.60	.93	1.05	1.22	1.43	1.16	.98	.85	.73
										19-----	.60	.70	---	.95	1.38	1.15	.92	.77	.64
										20-----	---	---	---	1.03	1.41	1.11	.84	.67	.55
										21-----	.57	.67	.83	.99	1.32	1.01	.82	.65	.53
										22-----	.56	.69	.87	1.07	1.30	1.05	.86	.71	.60
										23-----	.62	.75	.89	1.07	1.36	1.12	.94	.81	.70
										24-----	.77	.88	---	1.19	1.38	1.21	1.01	.89	.77
										25-----	.85	.95	1.08	1.25	---	1.24	---	---	---
										26-----	.84	.93	1.05	1.23	1.41	1.19	.97	.84	.72
										27-----	.73	.83	.99	1.19	1.42	1.15	.93	---	---
										28-----	.79	.91	1.03	1.21	1.44	1.17	1.00	.87	.73
										29-----	.80	.92	1.06	1.24	1.42	1.20	1.03	.89	.78
										30-----	.81	.92	1.06	1.20	1.44	---	---	---	---
										Average	.78	.89	1.03	1.19	1.42	1.19	1.01	.88	.77

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	45	107	54	7	49	34	10	82	153	113	63	112	114	111	120	129	90	89	37	116	77	34	33	122	139	36	153	123	134	105	86	



REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

$$1 \text{ foot} = 0.3048 \text{ meters}$$

$$^{\circ}\text{F.} = \frac{9}{5} \times ^{\circ}\text{C} + 32$$

$$1 \text{ inch} = 25.4 \text{ millimeters}$$

$$1 \text{ mile per hour} = 0.447 \text{ meters per second}$$

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsonde; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- \* Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

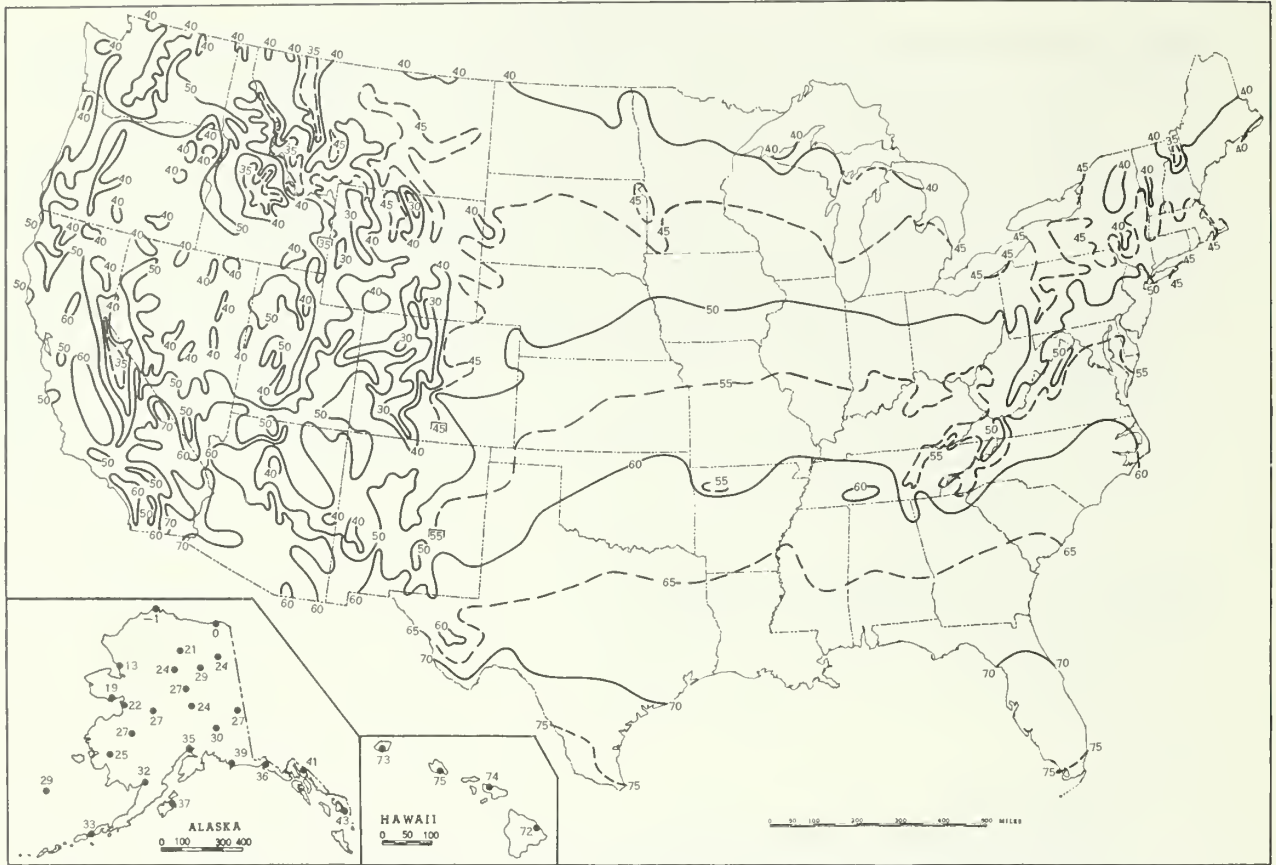
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( ) Clouds Present	DM Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Value corresponding to true solar noon	DS Slight Dust	HS Slight Haze	M Moderate Haze-indeterminable
BD Blowing Dust	F Fog	I Intense Haze-indeterminable	N Sand
BN Blowing Sand	GF Ground Fog	K Smoke	S Slight Haze-indeterminable
D Dust	H Haze	KI Intense Smoke	
DI Intense Dust	HI Intense Haze	KM Moderate Smoke	

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), April.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), April 1979

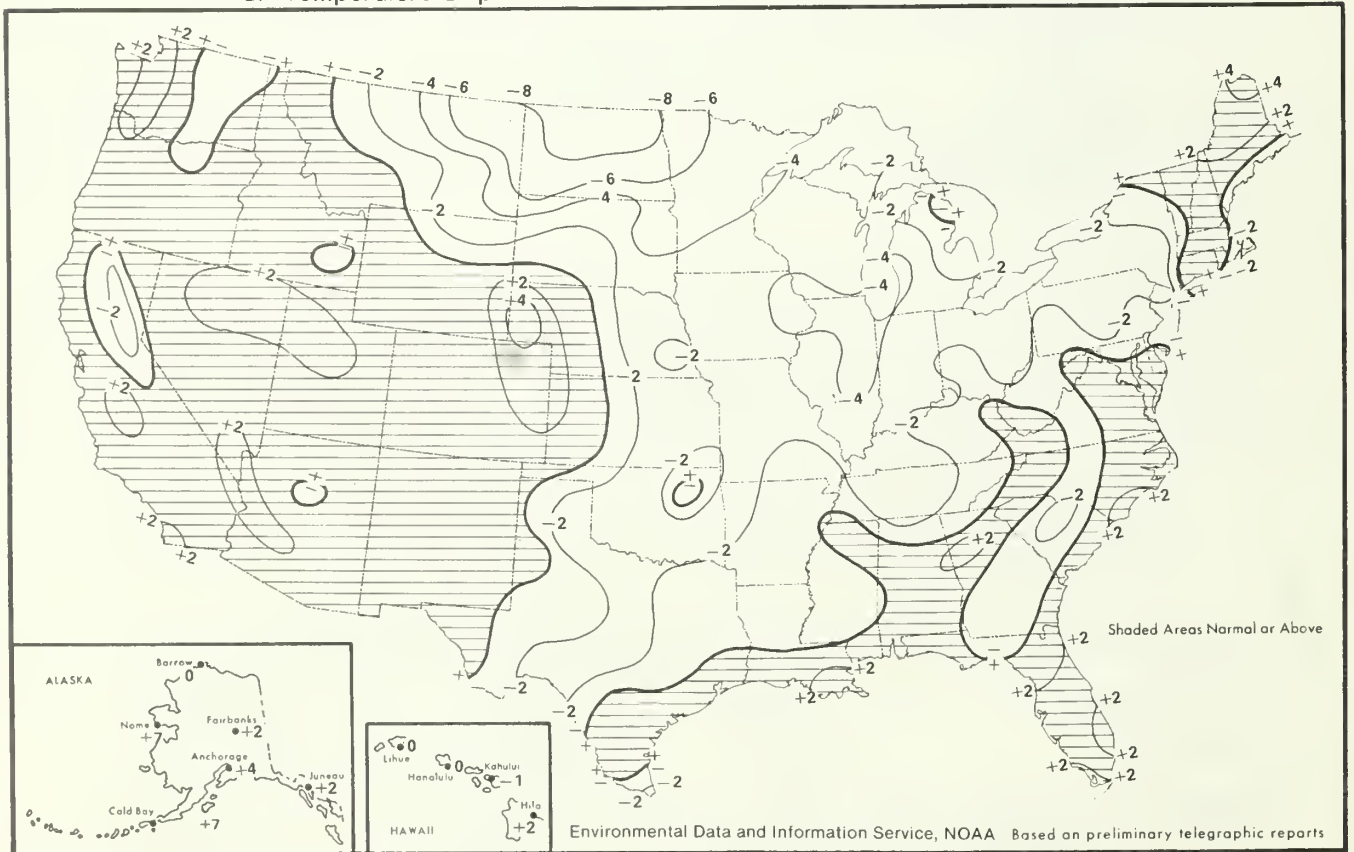
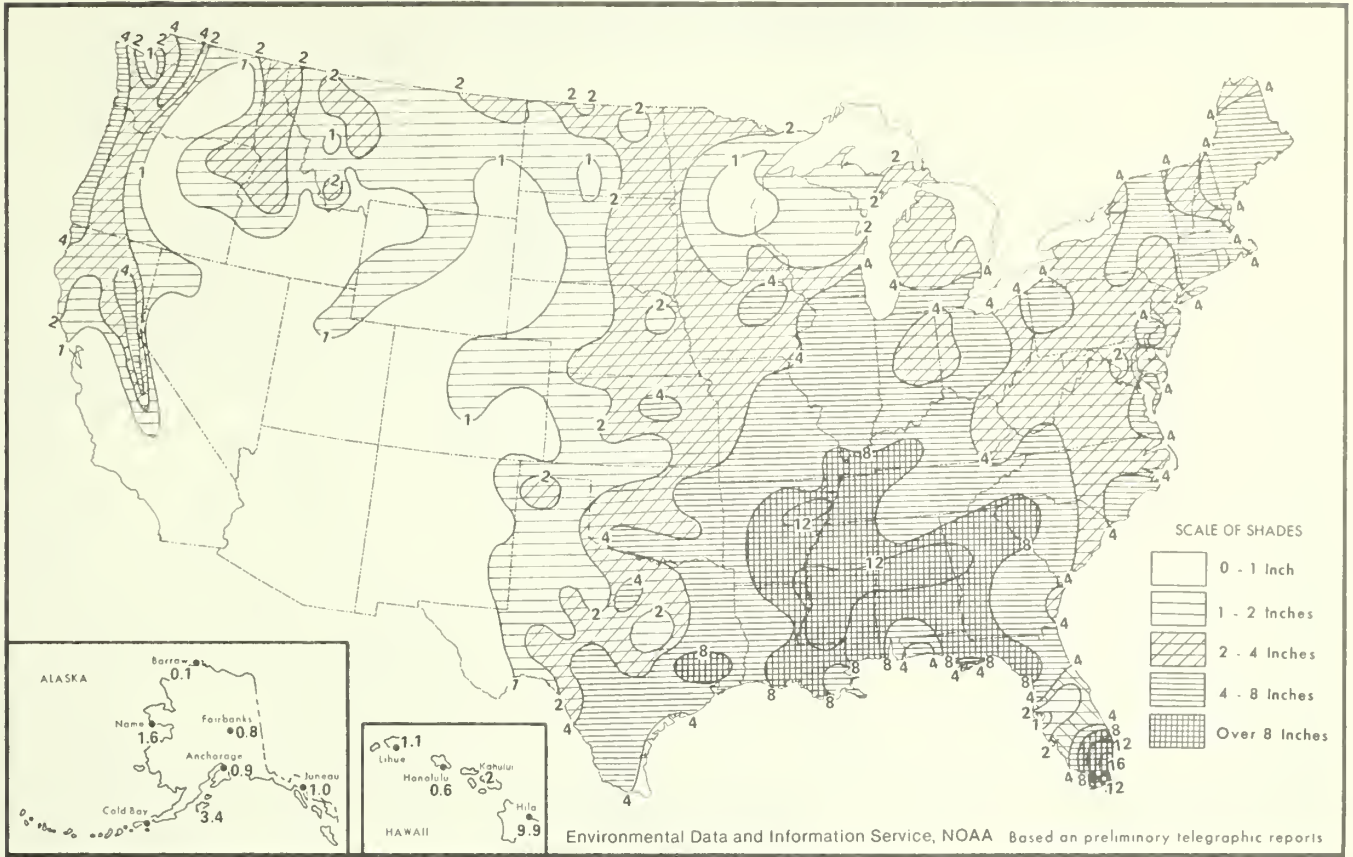


Chart II. A. Total Precipitation (Inches), April 1979



B. Percentage of Normal Precipitation, April 1979

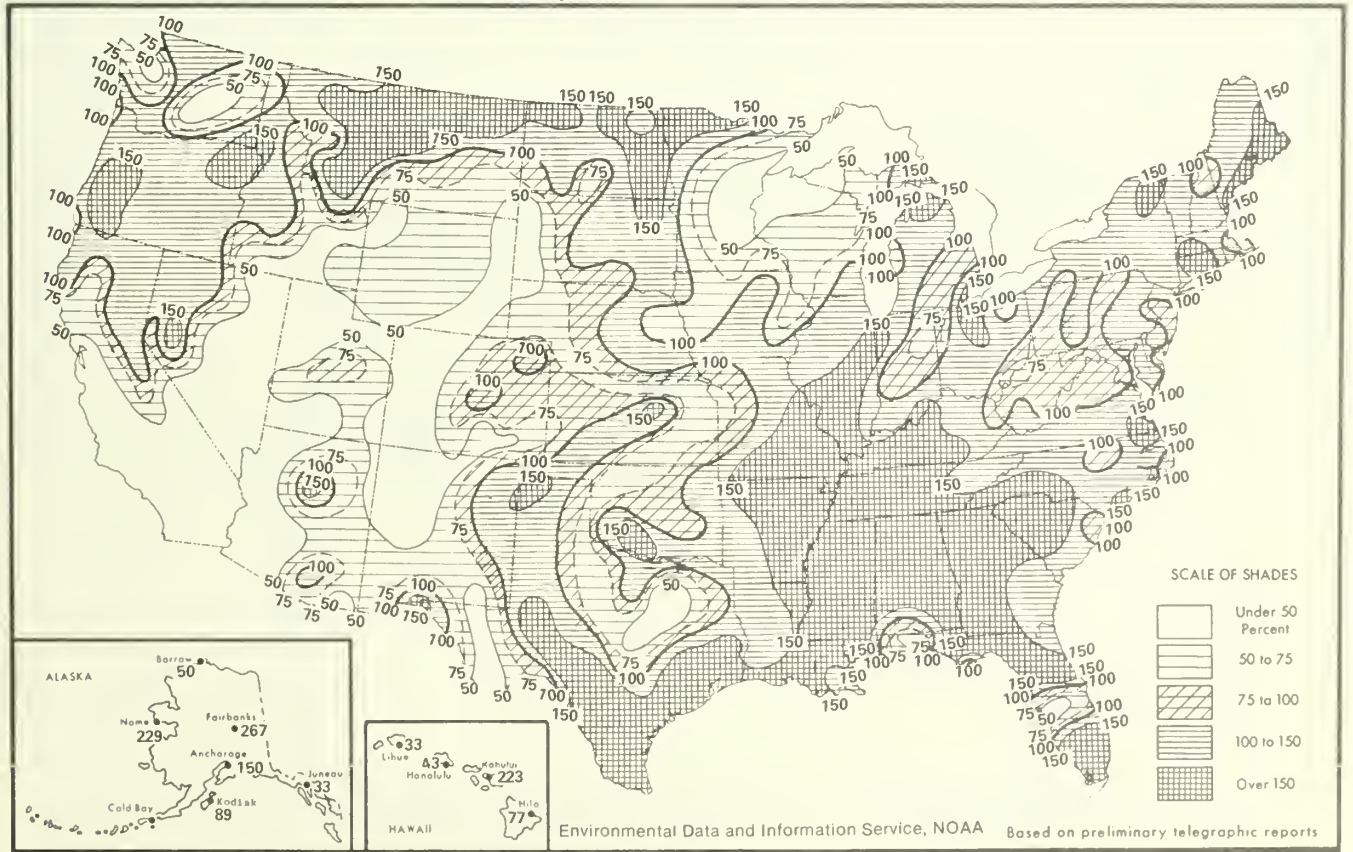




Chart III. Tracks of Centers of Anicyclones at Sea Level, April 1979

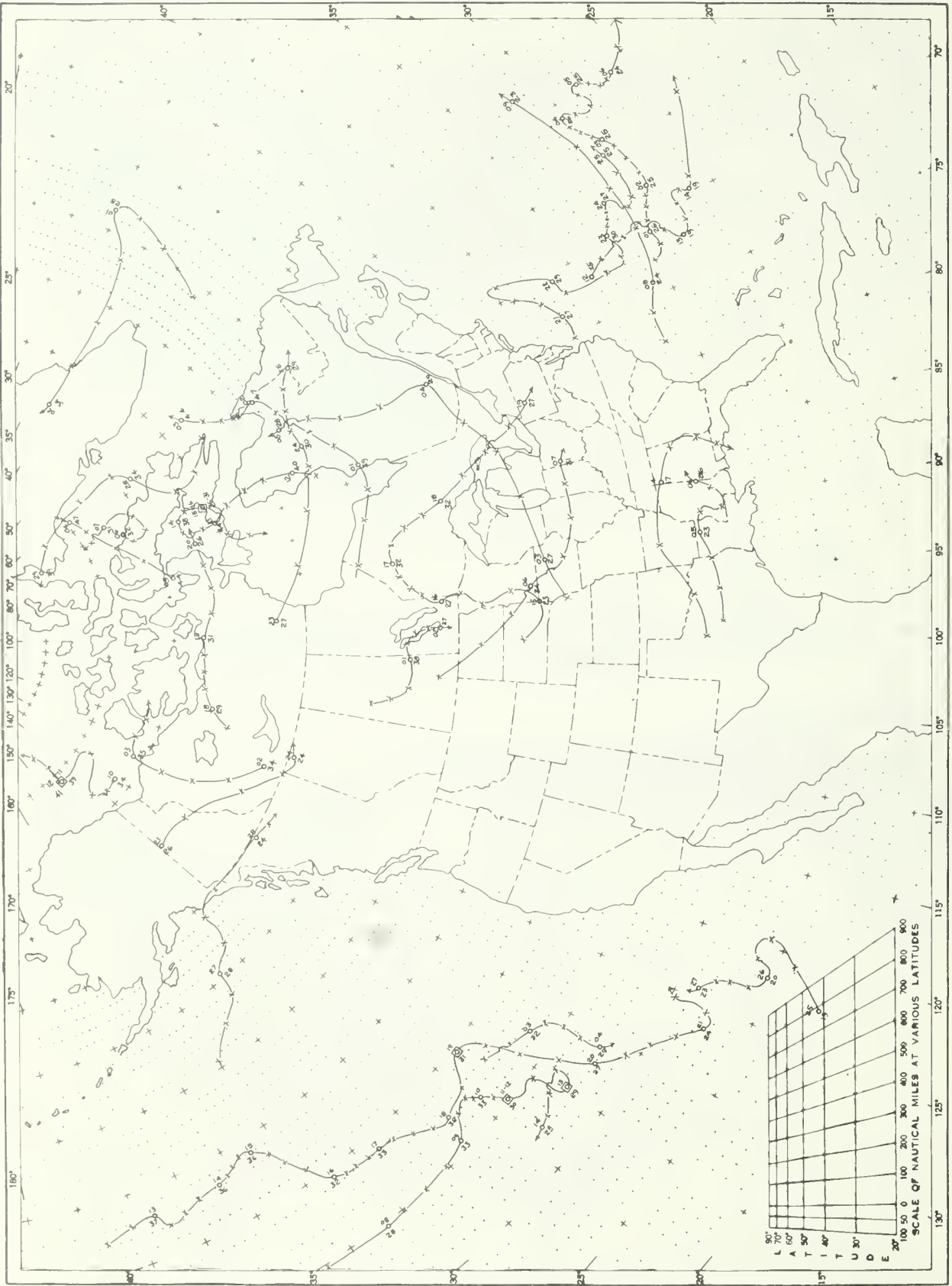
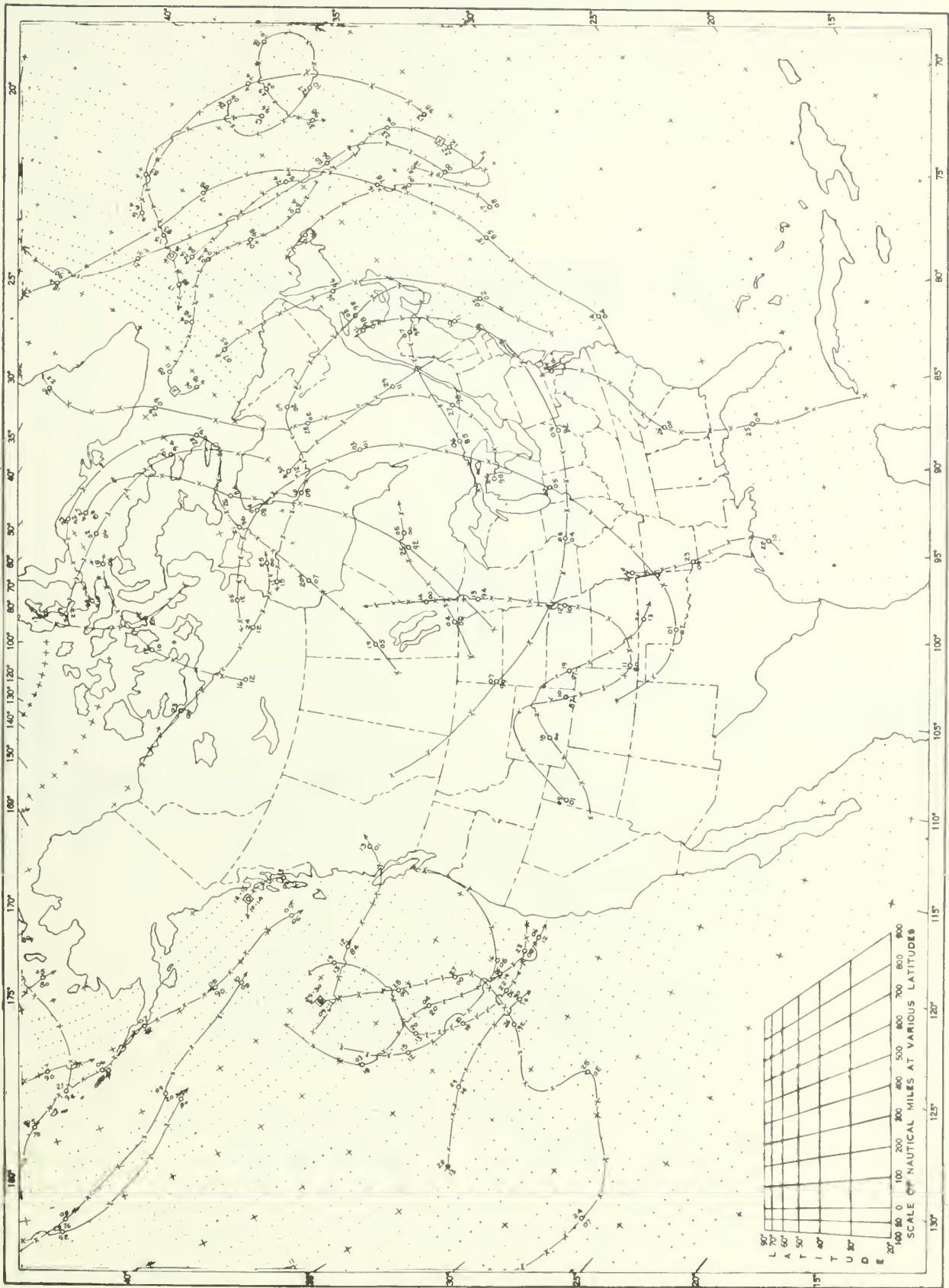


Chart IV. Tracks of Centers of Cyclones at Sea Level, April 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

MAY 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Temperatures averaged close to normal in most of the Nation, but extremes, both hot and cold, were common. The West, from the Plateau to the Coast, averaged 4 to 5° warmer than normal. Freezing temperatures reached as far south as Kansas, and many record high temperatures were marked in the East.

Nearly all of the Nation received some rain, and numerous thunderstorms formed. Record amounts of rain accumulated in many areas. Rainfall was frequent in most of the agricultural areas where farmers were trying to plant spring crops.

Three distinct rain patterns moved from the Rockies eastward during the first week of May. The first storm system moved from the central Plains through the Great Lakes. Moderate showers and thunderstorms accompanied the path of the storm with lesser amounts to the south. The succeeding storms brought the heaviest activity further to the south. Nearly all areas east of the Rockies had rain on at least 3 of the 6 days. At the end of the week, a storm moved into the Pacific Northwest and brought moderate rain to the coastal areas and snow to the mountains. Freezing temperatures dipped into the mountains and moved to the northern Plains.

In the week of the 7th-13th, a mass of much cooler air pushed into the Plateau and Rockies and moved slowly eastward during the week. Warm, moist air edged into the Nation from the south ahead of the cooler air. Rain or snow showers accompanied the influx of cool air in the West, while heavier showers,

thunderstorms, and tornadoes were plentiful east of the Rockies. The most severe weather hit the Nation's Southeast where some rains exceeded 10 inches. Freezing temperatures dipped into the Plains as far south as Kansas, while record high temperatures were being recorded east of the cold air.

A new weather system originated in Alberta, Canada, and moved eastward through the Canadian Provinces in the third week of May (14th-20th). A line of showers and thunderstorms extended southwestward from the center. Heavy amounts of rain soaked parts of the Texas-Oklahoma border, northern Arkansas, and southern Missouri. Late in the week, an upper air system caused moderate showers in the Southwest. Temperatures ranged warmer than normal through most of the Nation. Only the northern Plains, the South, and the Southeast recorded slightly cooler than normal readings.

The slow-moving system extending from the low pressure in southern Canada moved through the United States early in the week of the 21st-27th, and the upper air disturbance moved from the Southwest causing a surface low pressure to form in Texas. Heavy rains accompanied the storm, and it became more intense as it moved northeastward. More than 5 inches of rain soaked Texas and Arkansas, and 2- to 4-inch amounts extended from the southern Appalachians through the New England coastal areas. The severe storm lingered in the New England area, and the rain persisted until the end of the month.



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

MAY 1979

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	Brewton 3 SSE	92	20	Valley Head	33	26	Vernon 2 N	8.69	Wetumpka	1.24
Alaska	2 Stations	78	28+	Allakaket	- 4	9	Little Port Walter	14.77	3 Stations	T
Arizona	2 Stations	107	14+	Hawley Lake	7	10	Hawley Lake	4.90	Stephens Ranch	.10
Arkansas	Monticello 3 SW	95	21	Mountain Home C of Eng	33	5	Madison 1 NW	14.64	Texarkana FAA AP	4.01
California	Death Valley	110	26	White Mountain 2	0	8	Fort Dick	7.69	55 Stations	.00
Colorado	2 Stations	94	30+	Wolf Creek Pass 1 E	1	11	Wolf Creek Pass 1 E	7.21	Creede	.38
Connecticut	Hartford WSO AP	97	9	Coventry	29	2	Norwich Pub-Util Plant	6.91	Hartford WSO AP	3.48
Delaware	5 Stations	88	11+	Georgetown 5 SW	35	2	Lees 1 SW	5.75	Middletown 1 WSW	3.03
Florida	Myakka River State Park	98	30	4 Stations	40	26	Tampa WSCMO AP	17.64	Venice	1.43
Georgia	Lumpkin 2 SE	99	22	3 Stations	32	26	Clayton 1 SSW	12.17	West Point	.67
Hawaii	Puukohola Heiau 9B.1	98	5	Mauna Kea Obs 111.2	12	17	Kalaoo 69.22	17.88	12 Stations	.00
Idaho	Swan Falls Power House	96	26	Swan Valley	13	6	Pierce	5.75	Aberdeen Exp Station	.09
Illinois	Golden 1 NW	92	8	2 Stations	28	2+	Brookport Dam 52	6.18	Jacksonville 2 E	.90
Indiana	2 Stations	91	11	2 Stations	25	5+	Elliston	6.59	Warsaw	.99
Iowa	Algona 3 W	94	29	Winterset 2 NNE	26	1	Ocheyedan	7.42	Blockton 2 S	1.02
Kansas	2 Stations	95	17+	Elkhart 6 NNE	21	4	Webster Dam	8.43	Ionia	.82
Kentucky	2 Stations	92	10+	Owenton	30	5	Murray	9.86	Shelbyville 6 NW	2.30
Louisiana	Franklinton 3 SW	94	10	2 Stations	43	26	Oberlin Fire Tower	11.30	Belah Fire Tower	2.16
Maine	Lewiston	96	9	2 Stations	21	7+	Machias	10.61	Van Buren 2	3.36
Maryland	Cumberland 2	95	9	Oakland 1 SE	26	2	Fatuxent River	6.38	Upper Marlboro 3 NNW	2.49
Massachusetts	Chester 2	100	10	Great Barrington AP	28	2	Chester 2	8.80	Nantucket FAA AP	2.65
Michigan	Monroe	92	12	Champion Van Riper Park	16	1	Vanderbilt 11 ENE	4.95	2 Stations	.88
Minnesota	Olivia	93	29	4 Stations	21	19+	Two Harbors	7.37	2 Stations	1.04
Mississippi	Wiggins 3 SSE	95	11+	Tupelo 2 WNW	37	25	Hernando	11.78	Richton 3 SSE	2.21
Missouri	2 Stations	94	9	Waynesville 2 W	29	5	Oldfield	10.06	St Charles 7 SSW	.66
Montana	Poplar	95	27	Wisdom	11	7	Bozeman 12 NE	3.82	Choteau Airport	.09
Nebraska	Ellsmere 9 ENE	96	6	2 Stations	19	11	Meadow Grove	7.38	Mitchell 5 E	1.07
Nevada	2 Stations	103	22	2 Stations	16	9+	Lund	2.01	2 Stations	.00
New Hampshire	North Conway	95	10	Mount Washington	12	6	Pinkham Notch	8.33	Monroe 5 NNE	3.25
New Jersey	2 Stations	93	11+	Newton St Pauls Abbey	30	2	Long Branch Oakhurst	9.43	Atlantic City WSO AP	2.80
New Mexico	Bitter Lakes Wildlife Refuge	98	7	2 Stations	16	11	Springer 2 NW	7.14	Hachita	.00
New York	New York Laurel Hill	96	10	2 Stations	21	2	Fishs Eddy	8.29	Massena FAA AP	1.61
North Carolina	Dunn 4 NW	93	30	Grandfather Mountain	26	26	North Fork 2	11.77	Monroe 4 SE	2.55
North Dakota	Oakes 2 S	93	29	Kenmare 1 WSW	11	4	Pembina	3.33	Wilton	.55
Ohio	Toledo Blade	92	12+	Mansfield 5 W	23	1	Bolivar Dam	7.76	Eaton	2.66
Oklahoma	Hollis	103	19	Boise City 2 E	20	4	Fanshawe	14.67	Hulah Dam	2.15
Oregon	5 Stations	94	25+	Fremont	15	29	Port Orford 5 E	7.50	Pine Grove	.09
Pennsylvania	Laurelton St Village	95	9	Clermont 4 NW	18	2	Washington	8.96	Austin 4 NNW	.76
Puerto Rico	Magueways Island	96	18	2 Stations	52	25+	Paraiso	38.32	Ponce City	1.80
Rhode Island	Providence WSO AP	92	10	Kingston	36	3	Providence WSO AP	7.62	Block Island WSO AP	4.74
South Carolina	McColl	92	12	2 Stations	33	26	Hogback Mountain	12.73	Chester	1.50
South Dakota	Midland	98	28	Ralph	15	11	Vermillion 2 SE	5.49	Dupree 15 SSE	.50
Tennessee	Athens	92	12	Crossville Exp Station	30	26	Franklin Sewage Plant	12.60	Kingsport	3.12
Texas	Falcon Dam	107	31	Dalhart FAA AP	27	4	Marlin 3 NE	18.38	Duncan Wilson Ranch	.08
Utah	2 Stations	96	23+	Silver Lake Brighton	6	9	Hanksville	3.11	La Verkin	.02
Vermont	Vernon	95	10	Mount Mansfield	20	5	Ball Mountain Lake	8.48	Bristol 5 NNW	2.98
Virginia	Lincoln	93	9	Mt Lake Biological Station	29	26+	Norfolk WSO AP	10.12	Columbia	1.97
Virgin Islands	Estate Pearl	97	9	2 Stations	66	26+	Estate Rust Op Twist	17.93	Be/h Upper New Works	7.50
Washington	2 Stations	95	23+	Satus Pass 2 SSW	22	29	Clearwater	6.02	Wapato	T
West Virginia	Spencer	96	12	2 Stations	21	17+	Middlebourne 2 ESE	7.45	East Rainelle 3 NNE	2.88
Wisconsin	2 Stations	90	10+	Newald 4 N	17	1	Fairchild Ranger Station	8.35	Brodhead	.92
Wyoming	Colony	92	16+	Pinedale	9	7	Anchor Dam	4.94	Farson	.08















# CLIMATOLOGICAL DATA

METRIC UNITS

MAY 1979

State and Station	Elevation (ground)	Pressure			Temperature				Precipitation				Wind				No. of days (sunrise to sunset)															
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	No. of days	With thunderstorms	Snow, ice pellets	Maximum depth on ground	Resulant speed	Resulant direction	Fastest mile (1.6 kilometers)	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)	%				
																													Max 32° or above	Min. 0° or lower	Average dew point	Average relative humidity
RHODE ISLAND	16	1016.6	1017.0	20.1	11.4	15.7	1.9	33.3	10	4.4	2	0	9.4	72	194	105	83	18	3	0	0	0.6	22	10.7	SE	5	6	8	17	7.2	49	Possible sunshine
SOUTH CAROLINA																																
CHARLESTON	12	1015.2	1017.0	27.7	17.2	22.4	0.2	31.7	19	10.0	26	0	16.7	75	205	109	72	13	10	0	0	1.1	18	10.7	SE	21	7	7	17	6.5	75	
CHARLESTON U	3			25.1	17.5	21.3	-1.7	28.9	29*	10.0	26	0	0	0	155	71	42	13	10	0	0	0	0	1.8	27	4	4	18	6.3	77		
COLUMBIA	65	1008.1	1016.1	27.1	14.1	20.6	-1.7	30.6	30*	4.4	26	0	14.4	73	184	79	30	13	13	0	0.6	16	9.4	W	17	8	6	17	6.4	57		
GRIVILLE-SPPTBRG	292	981.4	1015.7	26.2	15.6	20.9	0.3	31.7	11	7.2	26	0	15.0	73	145	70	55	19	4	0	0.5	20	11.6	W	17	8	6	17	6.4	57		
SOUTH DAKOTA																																
ABERDEEN	395	966.8		17.8	5.0	11.4	-1.7	32.2	28	-1.1	12*	1	4	49	-1.6	23	12	2	23	T	0	0.8	34	14.8	SE	4	6	11	16	7.2	71	
HURON	390	967.2		18.6	4.4	11.7	-2.2	34.4	28	-3.9	3	1	3	42	-2.8	17	11	2	T	0	0.8	34	17.9	NW	17*	3	15	13	6.7	47		
RAPID CITY	964	908.2	1014.6	19.2	4.8	12.0	-0.9	32.9	16	-3.3	11	1	5	71	25	2.0	34	17.9	NW	17*	3	9	8	12	11	6	4	16	6.1	44		
SIoux FALLS	432	962.8	1014.2	19.3	6.4	12.9	-1.4	31.7	28	-0.6	4*	0	2	124	30	57	14	7	0	0	0.6	36	14.3	3	9	8	12	11	6	4		
TENNESSEE																																
BRISTOL	459	962.4	1016.2	23.9	11.3	17.7	-0.6	28.9	12*	3.3	1	0	0	85	2	22	13	4	0	0	0.5	26	8.0	W	4	8	10	13	6.2	46		
CHATTANOOGA	203	991.2	1015.7	25.2	13.9	19.6	-0.7	30.0	11*	4.4	26	0	15.0	77	234	147	88	12	10	0	0.4	23	13.0	W	22	6	7	18	6.5	44		
KNOXVILLE	299	980.4	1015.1	25.1	13.7	19.4	-0.8	30.0	11*	3.3	26	0	13.9	75	100	56	7	0	0	0	0.8	28	10.3	W	4	8	7	16	6.5	75		
MEMPHIS	79	1005.1	1015.2	25.7	16.5	21.1	-0.5	30.6	20*	10.6	12	0	13.3	94	198	86	85	13	8	0	0.7	17	9.9	SE	3	11	6	14	6.1	70		
NASHVILLE	180	993.9	1015.3	24.7	13.4	19.1	-1.2	31.1	10	7.2	26*	0	13.5	74	208	104	106	10	7	0	0.5	21	9.8	SE	25	6	11	14	6.4	44		
DAK RING*	276			24.8	11.2	18.0	-1.3	31.1	11	1.7	24	0	0	237	147	76	14	0	0	0	0	0	13.0	W	4	11	4	16	6.1	44		
TEXAS																																
ABILENE	584	949.9	1011.8	27.5	16.4	21.0	-1.4	36.1	29	2.2	12	7	0	12.2	47	-5.1	27	6	7	0	3.0	16	15.2	N	1	8	9	14	5.3	66		
AIRVILLE	192	989.9	1010.9	23.9	12.6	16.9	-1.7	32.2	19	0.9	4	2	0	17.1	100	2.8	11	8	0	0	1.4	18	16.1	W	9	7	10	14	6.5	61		
ARMAVILLE	101	1011.5	1012.0	23.2	20.6	21.0	-2.1	32.6	30*	13.3	3	0	20.0	77	189	84	144	9	0	0	0.2	14	15.3	NW	11	8	17	16	6.5	44		
BORLAND	15	1010.5	1012.0	20.9	19.6	19.6	-0.7	32.4	30*	11.1	3	2	0	20.0	77	-9.9	7	4	0	0	3.6	14	12.3	W	3	6	13	10	6.5	65		
CORPUS CHRISTI	168	992.5	1012.9	20.9	15.0	20.9	-0.7	32.8	28*	7.8	15	2	0	15.0	109	29	61	7	3	0	0	3.6	19	15.9	W	3	5	13	13	6.4	69	
ODDYSSEY FORT WORTH	180	993.9	1015.3	24.7	13.4	19.1	-1.2	31.1	10	7.2	26*	0	13.5	74	208	104	106	10	7	0	0.5	21	9.8	SE	25	6	11	14	6.4	44		
EL PASO	313	975.2	1013.9	20.8	17.1	20.9	-1.3	34.1	20*	7.3	12	0	12.4	60	16	-4.5	10	8	6	0	0	3.1	12	15.0	W	10	6	13	8.1	60		
EL PASO	1194	878.4	1008.9	20.8	12.4	21.2	-1.2	38.1	30	8.6	13*	12	0	3.3	36	-7	24	5	0	0	1.4	76	20.0	NW	16	17	10	12	3.1	89		
GALVESTON	2	1009.8	1013.5	28.9	20.4	23.1	-1.5	32.2	31	15.0	6*	2	0	17.8	77	8.8	24	5	0	0	1.6	13	16.1	W	22	8	10	13	6.5	59		
HOUSTON	29	901.5	1013.5	27.5	13.8	20.7	0.4	35.0	18*	10.6	4	2	0	17.2	51	102	21	73	6	0	1.9	17	14.3	W	22	11	18	12	5.5	72		
LURROCK	869	913.3	1010.0	29.2	13.8	21.5	-0.9	35.6	18*	3.9	4	10	0	8.3	50	-2.1	73	6	7	0	1.2	17	19.7	W	20	10	11	15	6.1	61		
MIDLAND	5	1013.5	1010.0	27.8	17.6	22.7	-1.2	31.1	31	11.7	6	0	18.3	78	117	-5.2	40	5	4	0	1.7	15	11.2	W	22	11	14	12	5.6	61		
PURT ARTHUR	5	1013.5	1010.0	27.8	17.6	22.7	-1.2	31.1	31	11.7	6	0	18.3	78	117	-5.2	40	5	4	0	1.7	15	11.2	W	22	11	14	12	5.6	61		
SAN ANGELO	590	945.8	1011.4	29.2	15.4	22.3	-1.3	37.2	29	2.8	12	8	0	11.1	54	11	26	0	0	0	2.4	16	15.6	W	25	11	7	17	6.4	51		
SAN ANTONIO	260	1009.8	1012.5	28.3	23.3	23.3	-1.2	32.8	30	8.9	5	2	0	17.2	50	-6.9	20	10	6	0	2.2	12	13.0	W	24	7	17	16	6.4	51		
SAN ANTONIO	32	1009.5	1013.5	27.9	18.1	23.1	-1.7	32.8	30	10.0	5	2	0	18.3	78	19.9	69	7	0	0	2.2	12	13.0	W	24	7	17	16	6.4	51		
VICTORIA	153	995.3	1013.1	26.2	15.4	20.8	-2.8	31.1	30	7.8	12	0	0	16.1	76	24.6	129	103	9	0	2.1	18	13.0	W	29	7	8	16	6.4	51		
WACO	301	978.3	1012.6	28.1	14.1	21.1	-1.3	38.9	19	2.2	12	8	0	13.3	67	119	3	107	6	0	2.1	16	13.0	W	18	17	10	4	17	5.3	47	
UTAH																																
MILFORD	1533	846.2	1012.2	22.4	3.9	13.2	-0.4	30.0	22	-2.2	11*	0	8	24	9	8	7	0	53	T	0.9	20	16.1	SW	5	14	8	9	4.5	72		
SALT LAKE CITY	1287	869.3	1011.4	23.4	7.9	15.7	1.1	31.7	23	1.1	30*	0	0	3.3	49	-1.7	8	9	7	0	0.9	20	16.1	S	5	12	9	10	5.3	72		
VERMONT																																
BURLINGTON	101	1008.7	1016.2	20.2	9.2	14.7	2.1	33.3	9	-1.1	6	1	2	8.3	68	79	3	23	14	0	0.6	19	12.5	S	12	2	12	17	7.4	47		
VIRGINIA																																
LYNCHBURG	279	982.7		23.4	11.9	17.7	-0.7	28.3	11	5.0	26	0	0	79	-3	24	11	7	0	0	0.9	22	11.2	NW	24*	6	12	13	6.3	67		
NORFOLK	7	1015.9	1016.9	23.9	14.7	19.3	0.0	29.4	9	6.1	6	0	13.9	75	257	172	54	15	7	0	1.2	19	17.0	W	2	5	9	17	6.1	48		
RICHMOND	50	1009.8	1016.2	25.4	13.6	19.5	0.3	30.6	9	6.7	5*	0	0	15.6	81	97	10	26	13	0	0.8	19	10.3	SW	27*	6	9	16	6.7	70		
RANDOLPH	350	974.3	1015.9	23.8	11.5	17.7	-0.3	29.4	10	3.3	2	0	0	12.2	73	67	-2.1	30	14	7	0	0.4	23	13*	5	12	14	6.7	70			
WALLOPS ISLAND	3			20.1	14.4	17.3	-0.1	27.2	4	7.8	6*	0	0	205	119	70	13	0	0	0	0	0	17.9	SW	24	5	12	14	6.7	70		
WASHINGTON																																
OLYMPIA	59	1010.5	1017.9	20.0	5.4	12.6	0.5	27.2	25	1.1	30*	0																				



# HEATING DEGREE DAYS

(Base 65°F.)

MAY 1979

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				IOAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	25			BOISE	241	6346	5736	GKANO ISLAND	258	7615	6385	BRISTOL	88	4332	4298
BIRMINGHAM	33	2800	2844	LEWISTON	190	6069	5380	CHATTANOOGA	197	7339	6192	CHATTANOOGA	42	3397	3505
HUNTSVILLE	48	3249	3302	POCATELLO	320	7702	6925	NORFOLK	248	7980	6944	KNOXVILLE	46	3661	3478
MOBILE	4	1606	1684					NORTH PLATTE	259	7933	6748	MEMPHIS	23	3261	3227
MONTGOMERY	9	2000	2269	ILLINOIS				OMAHA (EPPLBY)	156	6789	6029	NASHVILLE	57	3958	3696
				CAIRO U	61	4394	3833	VALENTINE	199	7471	6568	DAK RIDGE	86	4101	3944
ALASKA				CHICAGO O HARE	233	7080	6452					TEXAS			
ANCHORAGE	454	9135	10599	CHICAGO MIDWAY	216	7040	6101	NEVADA				ABILENE	55	2920	2610
ANNETTE	532	6854	6735	MDLINE	172	7393	6375	ELKO	265	6729	7293	AMARILLO	144	4753	4173
BARROW	1395	18977	19305	PEORIA	194	6983	6081	ELY	400	7939	7573	AUSTIN	10	2071	1737
BARTER ISLAND	1242	18407	19067	ROCKFORD	245	7833	6810	LAS VEGAS	18	2552	2601	BROWNSVILLE	0	736	650
BETHEL	637	11332	12801	SPRINGFIELD	119	6286	5546	RENO	247	6112	5877	CORPUS CHRISTI	0	1034	930
BETTLES	521	14712	15655					WINNEMUCCA	205	6363	6480	OALLAS FT WORTH	29	2767	2382
BIG DELTA	620	12807	13441	INDIANA								OEL RIO	0	1717	1523
COLORADO	661	7991	9277	EVANSVILLE	106	5147	4624	NEW HAMPSHIRE	280	7517	7302	EL PASO	26	2754	2678
COLORADO BAY	463	13582	14134	FORT WAYNE	198	6566	6186	CONCORD	841	13217	13269	GALVESTON	2	1375	1224
FAIRBANKS	651	8892	9875	INDIANAPOLIS	170	5959	5566	MT WASHINGTON 085				HOUSTON INTERCON	2	1708	1434
GULKANA	528	8789	8653	SOUTH BEND	241	6621	6427					LUBBOCK	45	3648	3545
HONER	344	9227	11153	IOWA				NEW JERSEY				MIDLAND	34	3113	2621
JUNEAU	586	7273	8401	BURLINGTON	162	6990	6133	ATLANTIC CITY	110	5209	4937	PORT ARTHUR	0	1463	1518
KING SALMON	969	13668	15394	OES MOINES	163	7321	6684	ATLANTIC CITY	173	4943	4678	SAN ANGELO	34	2754	2240
KODIAK	507	13058	14202	OSUQUO	247	8213	7228	ATLANTIC CITY U	68	4809	5034	SAN ANTONIO	4	1723	1570
KOTZEBUE	715	11851	13740	SIDUX CITY	235	8293	6920	NEWARK	98	4973	4947	VICTORIA	6	1514	1227
MC GRATH	747	8777	10396	WATERLOO	238	8200	7376	TRENTON U				WACO	30	2608	2058
NOME	553	10603	11402	KANSAS				NEW MEXICO				WICHITA FALLS	47	3523	2904
ST. PAUL ISLAND	575	9277	10131	CONCORDIA	164	6384	5601	ALBUQUERQUE	100	4156	4292	UTAH			
TALKEETNA	624	8929	9074	ODOGE CITY	175	5687	5025	CLAYTON	252	5565	5169	MILFORD	284	6828	6330
VALDEZ				GOODLAND	269	6370	6064	ROSWELL	51	3729	3697	SALT LAKE CITY	196	5837	5895
YAKUTAT				TOPEKA	129	6229	5230					VERMONT			
				WICHITA	104	5473	4680	NEW YORK				BURLINGTON	224	7870	7813
ARIZONA				KENTUCKY				ALBANY	188	7032	6849				
FLAGSTAFF	524	7606	7103	COVINGTON	179	5576	5061	BINGHAMTON	325	7321	7210	LYNCHBURG	83	4418	4233
PHOENIX	0	1436	1552	LEXINGTON	110	5001	4721	SUFFALO	285	6940	6869	NEW YORK U	55	4750	4848
TUCSON	20	1876	1752	LOUISVILLE	94	4689	4640	NEW YORK KENNEDY	88	6754	6175	NEW YORK LA GUAROA	94	5074	4909
WINSLOW	156	4941	4719	LOUISIANA				ROCHESTER	310	6881	6673	RICHMOND	44	3878	3939
YUMA	0	1166	1005	BATON ROUGE	5	1870	1670	SYRACUSE	242	6863	6632	ROANOKE	88	4517	4307
				LAKE CHARLES	0	1713	1498	NORTH CAROLINA				WALLOP5 ISLAND	77	4282	4233
ARKANSAS				NEW ORLEANS	2	1450	1465	ASHEVILLE	71	3983	4223	WASHINGTON	309	5600	5333
FORT SMITH	54	3969	3336	SHREVEPORT	11	2409	2167	CAPE HATTERAS R	32	2572	2731	OLYMPIA	383	5743	5657
LITTLE ROCK	13	3358	3354	MAINE				CHARLOTTE	30	3203	3215	OUILLYAYUTE	215	4698	4594
NO. LITTLE ROCK	35	3653	3088	CARIBOU	326	9020	9462	GREENSBORO	52	3842	3825	SEATTLE-TACOMA	235	474	3018
				PORTLAND	311	7412	7392	RALEIGH	43	3319	3514	SPOKANE	313	7796	6691
CALIFORNIA				MARYLAND				WILMINGTON	5	2404	2433	STAMPEDE PASS R	624	9225	8926
BAKERSFIELD	8	1891	2185	BALTIMORE	75	4592	4729	NORTH DAKOTA				WALLA WALLA U	119	5607	4786
BISHOP	97	4382	4275	MASSACHUSETTS				BISHARCK	463	10392	8922	YAKIMA	178	6568	5915
BLUE CANYON	303	5461	5507	BLUE HILL 085 R	207	6434	6281	FARGO	457	10559	9174	WEST VIRGINIA			
EUREKA U	374	4481	4385	BOSTON	149	5596	5594	WILLISTON	495	10474	9026	BECKLEY	175	5315	5576
FRESNO	34	2385	2641	WORCESTER	243	6941	6787	OHIO				CHARLESTON	125	4678	4580
LONG BEACH	30	1441	1583	MICHIGAN				AKRON	288	6485	6191	ELKINS	231	5984	5912
LOS ANGELES	74	1570	1748	ALPENA	443	8381	8368	CINCINNATI 888E 08	138	5343	4837	HUNTINGTON	110	4762	4613
LOS ANGELES U	46	1557	1220	DETROIT	273	6665	6202	CLEVELAND	290	6130	6114	PARKERSBURG U	152	5271	4809
MT SHASTA R	333	6259	5712	DETROIT METRO	291	6907	6383	COLUMBUS	185	5889	5689	WISCONSIN			
OAKLAND	117	2662	2795	FLINT	291	7175	6976	OAYTON	166	5892	5628	GREEN BAY	389	8740	8007
RED BLUFF	41	2406	2680	GRAND RAPIDS	264	7308	6757	MANSFIELD	290	6637	5794	LA CROSSE	239	7864	7378
SACRAMENTO	57	2884	2823	HUGHTON LAKE	396	8559	8227	TOLEDO	259	6865	6349	MAISON	283	8258	7658
SAN DIEGO	20	1080	1455	LANSING	289	7273	6856	YOUNGSTOWN	310	6699	6384	MILWAUKEE	322	7672	7354
SAN FRANCISCO	148	2989	2922	MUSKEGON	340	7599	6826	OKLAHOMA				WYOMING			
SAN FRANCISCO U	185	2732	2886	SAULT STE MARIE	477	9466	8993	OKLAHOMA CITY	81	4279	3695	CASPER	479	8461	7408
SANTA MARIA	189	3107	2886	MINNESOTA				TULSA	47	4228	3680	CHEYENNE	459	7472	7099
STOCKTON	27	2551	2791	OULUTH	549	10335	9562	OREGON				LANDER	415	9095	7719
				INTERNATIONAL FALLS	580	11524	10379	ASTORIA	338	5196	5040	SHERIDAN	447	9175	7540
COLORADO				MINNEAPOLIS	307	8564	8094	BURNS U	350	7423	7007				
ALAMOSA	438	9353	8438	ROCHESTER	319	9347	8149	EUGENE	288	5172	4606				
COLORADO SPRINGS	336	6788	6370	ST CLOUD	438	9897	8783	MEAFORD	223	4844	4836				
DENVER	313	6379	5936	MISSISSIPPI				PENDLETON	184	6115	5170				
DENVER JUNCTION	192	6609	5585	JACKSON	20	2484	2300	PORTLAND	162	4808	4664				
PUEBLO	247	6124	5366	MERIDIAN	15	2546	2388	SALEM	249	5007	4719				
								SEXTON SUMMIT R	416	6253	6138				
CONNECTICICUT				MISSOURI				PENNSYLVANIA							
BRIEGEPORT	114	5236	5437	COLUMBIA REGIONAL	94	5573	5067	ALLEN TOWN	125	5657	5806				
HARTFORD	81	6392	6326	KANSAS CITY	115	6035	5342	ERIE	369	7143	6771				
				ST JOSEPH	170	6552	5429	HARRISBURG	123	5258	5224				
DELAWARE				ST LOUIS	80	5518	4740	PHILADELPHIA	38	4801	4865				
WILMINGTON	89	5151	4940	SPRINGFIELD	132	5351	4560	PITTSBURGH	219	6226	5904				
				MONTANA				PITTSBURGH U	190	5653	5268				
DIST. OF COLUMBIA				BILLINGS	350	8424	7134	SCRANTON	221	6607	6249				
WASHINGTON DULLES	113	5049	5005	GLASGOW	445	10493	8818	WILLIAMSPORT	167	5907	5958				
WASHINGTON NATIONAL	30	3915	4211	GREAT FALLS	417	9714	7490	RHODE ISLAND							
				HAVRE	392	9767	8541	BLOCK ISLAND	235	5622	5689				
FLORIDA				HELENA	359	8886	7996	PROVIDENCE	162	6044	5936				
APALACHICOLA U	4	1491	1361	KALISPELL	404	9170	8305								
OAYTONA BEACH	0	682	897	MILES CITY	368	9347	7772	SOUTH CAROLINA							
FORT MYERS	0	259	457	MISSOULA	389	8592	7730	CHARLESTON	2	1959	2146</				



# COOLING DEGREE DAYS

(Base 65°F.)

MAY 1979

State and station	Current season			State and station	Current season			State and station	Current season						
	This month	Period January through this month			This month	Period January through this month			This month	Period January through this month		This month	Period January through this month		
		January	through this month			January	through this month			January	through this month		January	through this month	
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	176	227	371	HILO	278	1074	1033	GRAND ISLAND	36	36	59	CHARLESTON	241	323	343
BIRMINGHAM	188	240	297	HONOLULU	412	1329	1341	LINCOLN	42	49	81	CHARLESTON U	170	255	407
HUNTSVILLE	113	138	247	KAHULUI	346	1201	1204	NORFOLK	39	41	48	COLUMBIA	157	206	319
MOBILE	267	465	530	LIHUE	320	1256	1154	NORTH PLATTE	27	27	36	GRVILLE-SPRTRNBRG	164	200	193
MONTGOMERY	214	306	384					OMAHA (ERPLEY)	64	72	96				
								OMAHA (NORTH)	47	48	65				
ALASKA								SCOTTSDUFF	19	27	16	SOUTH DAKOTA			
ANCHORAGE	0	0	0	ROISE	27	27	17	VALENTINE	20	24	22	ABERDEEN	11	11	15
ANNETT	0	0	0	LEWISTON	15	15	14					HURON	13	13	25
BARROW	0	0	0	POCATELLO	0	0	0					RAPID CITY	15	19	15
BARTER ISLAND	0	0	0					NEVADA				SIOUX FALLS	25	28	32
BETHEL	0	0	0					ELKO	9	9	0				
BETTLES	0	0	0	ILLINOIS				ELY	0	0	0	TENNESSEE			
BIG DELTA	0	0	0	CAIRO U	131	145	222	LAS VEGAS	346	450	372	BRISTOL	59	90	105
COLD BAY	0	0	0	CHICAGO O HARE	61	63	35	RENO	9	9	6	CHATTAHOOGA	119	131	207
FAIRMARNS	0	0	0	CHICAGO MIDWAY	91	92	53	WINNEMUCCA	29	29	11	KNOXVILLE	111	146	208
GULKANA	0	0	0	MOLINE	83	83	63					MEMPHIS	184	271	284
HOMER	0	0	0	PEORIA	62	62	74					NASHVILLE	103	119	201
JUNEAU	0	0	0	ROCKFORD	56	56	41					OAK RIDGE	74	81	163
KING SALMON	0	0	0	SPRINGFIELD	93	95	88								
KODIAK	0	0	0					CONCORD	15	16	8				
KOTZEBE	0	0	0	INDIANA				MT WASHINGTON OBS	0	0	0				
MC GRATH	0	0	0	EVANSVILLE	65	78	142					TEXAS			
MOHE	0	0	0	FORT WAYNE	58	62	44	ALBANY	39	39	27	ABILENE	209	305	379
ST. PAUL ISLAND	0	0	0	INDIANAPOLIS	57	64	74	RINGHAMTON	23	23	13	AMARILLO	64	76	119
TALKEETNA	0	0	0	SOUTH BEND	48	50	45	BUFFALO	40	46	14	AUSTIN	216	356	544
UNALAKLEET	0	0	0					NEWARK	39	61	47	BROWNSVILLE	380	993	1098
VALOEZ	0	0	0	IOWA				TRENTON U	44	45	45	CORPUS CHRISTI	266	860	837
YAKUTAT	0	0	0	RURLINGTON	65	65	74					OALLAS FT WORTH	179	256	355
				DES MOINES	48	48	59	NEW MEXICO				OEL RISO	340	587	753
				DUBUQUE	36	36	30	ALBUQUERQUE	67	72	73	EL PASO	190	274	285
				SIoux CITY	33	36	64	CLAYTON	6	7	17	GALVESTON	271	421	594
				WATERLOO	35	35	37	ROSWELL	133	168	154	HOUSTON INTERCON	261	485	587
ARIZONA								NEW YORK				LUBBOCK	183	227	187
FLAGSTAFF	0	0	0	KANSAS				ALBANY	39	39	27	MIDLAND	216	264	324
PHOENIX	411	613	531	CONCORDIA	39	45	94	RINGHAMTON	23	23	13	PORRT ARTHUR	250	481	553
TUCSON	249	351	392	ODDGE CITY	46	71	94	BUFFALO	40	46	14	SAN ANGELO	243	359	480
WINSLON	30	32	61	GOODLAND	29	32	27	NEW YORK U	71	75	54	SAN ANTONIO	285	392	598
YUMA	436	728	744	TORREKA	76	87	125	NEW YORK U KENNEDY	26	26	27	VICTORIA	277	570	666
				WICHITA	81	100	155	NEW YORK LA GUARDIA	41	41	46	WICHITA FALLS	177	260	464
ARKANSAS								ROCHESTER	52	53	22				
FORT SMITH	113	153	234	KENTUCKY				SYRACUSE	30	52	18	UTAH			
LITTLE ROCK	178	250	221	COVINGTON	38	48	90					SALT LAKE CITY	4	4	10
NO. LITTLE ROCK	131	177	249	LEXINGTON	37	47	114	NORTH CAROLINA							
				LOUISVILLE	73	88	122	ASHEVILLE	55	56	66	HILFORD	4	4	30
CALIFORNIA								CAPE HATTERAS R	121	146	126	SALT LAKE CITY	54	56	30
BAKERSFIELD	321	373	244	LOUISIANA				CHARLOTTE	122	154	186	VERMONT			
BISHOP	70	70	77	RATON ROUGE	233	425	524	GREENSBORO	95	127	140	BURLINGTON	29	31	15
BLUE CANYON	12	12	0	LAKE CHARLES	248	428	563	RALEIGH	105	139	150				
EUREKA U	0	0	0	NEW ORLEANS	307	582	564	WILMINGTON	210	305	276	VIRGINIA			
FRESNO	229	268	164	SHREVEPORT	178	311	426					LYNCHBURG	54	77	99
LONG BEACH	61	96	65					NORTH DAKOTA				NORFOLK	112	126	124
LOS ANGELES	35	44	38	MAINE				BISHARCK	6	6	11	RICHMOND	117	163	129
LOS ANGELES U	67	98	110	CARIBOU	8	8	0	FARGO	12	12	11	ROANOK	56	73	93
MT SHASTA R	2	2	0	PORTLAND	15	15	0	WILMINGTON	12	12	7	WALLOPS ISLAND	26	27	57
DAKLAND	13	13	0												
RED BLUFF	246	252	192	MARYLAND				OHIO				WASHINGTON			
SACRAMENTO	117	117	124	BALTIMORE	72	91	76	AKRON	36	41	36	OLYMPIA	0	0	0
SAN DIEGO	46	62	51					CINCINNATI ABBE OB	64	77	117	OUILLAYUTE	0	0	0
SAN FRANCISCO	11	11	0	MASSACHUSETTS				CLEVELAND	42	48	37	SEATTLE	1	1	6
SAN FRANCISCO U	11	11	0	BLUE HILL OBS R	26	26	10	COLUMBUS	54	61	35	SEATTLE-TACOMA	2	2	0
SANTA MARIA	8	8	0	BOSTON	35	35	20	DAYTON	63	76	66	SPOKANE	1	1	8
STOCKTON	192	192	95	WORCESTER	24	24	10	HANSFIELD	38	42	52	STAMREDE RASS R	0	0	0
								TOLEDO	46	46	37	WALLA WALLA U	44	47	39
COLORADO				MICHIGAN				YOUNGSTOWN	38	45	29	YAKIMA	12	12	19
ALAMOSA	0	0	0	ALPENA	10	10	4					WEST INOIES			
COLORADO SPRINGS	1	1	6	DETROIT	46	46	33	OKLAHOMA				SAN JUAN P.R.	512	2171	1775
DENVER	2	2	0	DETROIT METRO	32	32	39	OKLAHOMA CITY	112	140	191				
GRAND JUNCTION	52	58	47	FLINT	43	43	21	TULSA	167	224	205	WEST VIRGINIA			
PUEBLO	25	26	33	GRAND RAPIDS	46	46	25					BECKLEY	31	32	24
				HUGHTON LAKE	18	18	11	OREGON				CHARLESTON	69	100	118
CONNECTICUT				LANSING	48	48	24	ASTORIA	0	0	0	ELKINS	21	23	25
BRIEGEPFORT	16	16	17	MUSKEGON	29	29	18	RURNS U	3	3	5	HUNTINGTON	76	106	120
HARTFORD	60	60	18	SAULT STE MARIE	0	0	0	EUGENE	0	0	0	PARKERSBURG U	70	90	94
								MEAFORD	2	2	11				
DELAWARE				MINNESOTA				PENDELTON	21	21	18	WISCONSIN			
WILMINGTON	57	62	44	DULUTH	4	4	0	RURLAND	18	18	7	GREEN BAY	6	6	12
				INTERNATIONAL FALLS	1	1	0	SALEM	0	0	7	LA CROSSE	30	30	38
DIST. OF COLUMBIA				MINNEAPOLIS	17	17	24	SEXTON SUMMIT R	5	5	0	MADISON	33	33	18
WASHINGTON DULLES	69	83	57	ROCHESTER	21	21	19					MILWAUKEE	16	16	13
WASHINGTON NATIONAL	120	143	116	ST CLOUD	14	14	14	RACIFIC AREA							
								GUAM TAGUAC R	480	2041	1985	WYOMING			
FLORIDA				MISSISSIPPI				JUNSTON	442	1845	1857	CASPER	0	0	6
APALACHICOLA U	252	391	524	JACKSON	190	296	404	KORDR R	547	2534	2475	CHEYENNE	1	1	0
DAYTONA BEACH	332	645	450	MERIDIAN	168	238	395	KWJALEIN	544	2578	2504	LANDER	2	2	0
FORT MYERS	444	1044	1007					MAJURO	501	2428	2434	SHERIDAN	1	1	7
JACKSONVILLE	259	440	324	MISSOURI				PAGO PAGO	509	2474	2303				
KEY WEST	516	1484	1592	COLUMBIA REGIONAL	73	83	120	PONAPE R	520	2511	2372				
MIAMI	492	1203	1181	KANSAS CITY	77	81	111	TRUK MOEN ISLAND	531	2595	2446				
ORLANDO	330	712	515	ST JOSEPH	48	48	114	WAKE	527	2174	1960				
PENSACOLA	276	440	563	ST LOUIS	102	113	154	YAP R	518	2451	2429				
TALLAHASSEE	241	350	527	SPRINGFIELD	56	66	127								
TAMPA	344	744	865					PENNSYLVANIA							
WEST PALM BEACH	349	905	1052	MONTANA				ALLEN TOWN	42	43	38				
				BILLINGS	12	12	4	ERIE	29	32	13				
GEORGIA				GLASGOW	8	8	9	HARRISBURG	43	48	69				
ATHENS	180	220	224	GREAT FALLS	2	2	0	PHILADELPHIA	90	101	67				
ATLANTA	181	227	193	HAVRE	5	5	4	RITTSBURGH	41	50	46				
AUGUSTA	197	235	309	HELENA	1	1	0	SCRANTON	32	34	30				
COLUMBUS	243	352	360	KALISRELL											



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ALBANY, NY 1007 M8										ALBUQUERQUE, NM 836 M8										AMARILLO, TX 889 M8										ANCHORAGE, AK 1006 M8										ANNETTE, AK 1012 M8									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.	Direction tens of deg.	Speed m.p.s.	Direction tens of deg.	Speed m.p.s.															
5FC 31	86	11.7	9.1	26	1.3		30	1,619	10.8	2.3	10	.5	31	1,095	11.4	6.4	20	1.5	31	45	7.7	2.1	16	3.5	31	7.3	7.3	4.9	13	1.7																			
1000	29	15.3	11.4	7.2	26	1.9		30	1,534	10.8	2.3	10	.5	31	1,095	11.4	6.4	20	1.5	31	45	7.7	2.1	16	3.5	31	7.3	7.3	4.9	13	1.7																		
950	31	5.75	10.7	6.0	27	1.5		30	1,497	10.7	2.3	10	.5	31	1,095	11.4	6.4	20	1.5	31	45	7.7	2.1	16	3.5	31	7.3	7.3	4.9	13	1.7																		
900	31	1,025	8.9	3.9	27	2.6		30	1,497	10.7	2.3	10	.5	31	1,095	11.4	6.4	20	1.5	31	45	7.7	2.1	16	3.5	31	7.3	7.3	4.9	13	1.7																		
850	31	1,497	8.4	1.7	26	3.7		30	1,497	10.7	2.3	10	.5	31	1,095	11.4	6.4	20	1.5	31	45	7.7	2.1	16	3.5	31	7.3	7.3	4.9	13	1.7																		
800	31	1,992	4.2	-4.4	26	5.7		30	1,992	4.2	-4.4	26	5.7	30	1,992	4.2	-4.4	26	5.7	30	1,992	4.2	-4.4	26	5.7	30	1,992	4.2	-4.4	26	5.7																		
750	31	2,516	2.0	-7.8	25	7.9		30	2,516	2.0	-7.8	25	7.9	30	2,516	2.0	-7.8	25	7.9	30	2,516	2.0	-7.8	25	7.9	30	2,516	2.0	-7.8	25	7.9																		
700	31	3,070	-1.0	-13.5	24	9.2		30	3,070	-1.0	-13.5	24	9.2	30	3,070	-1.0	-13.5	24	9.2	30	3,070	-1.0	-13.5	24	9.2	30	3,070	-1.0	-13.5	24	9.2																		
650	31	3,658	-4.2	-16.6	25	10.1		30	3,658	-4.2	-16.6	25	10.1	30	3,658	-4.2	-16.6	25	10.1	30	3,658	-4.2	-16.6	25	10.1	30	3,658	-4.2	-16.6	25	10.1																		
600	31	4,295	-7.7	-21.1	25	11.8		30	4,295	-7.7	-21.1	25	11.8	30	4,295	-7.7	-21.1	25	11.8	30	4,295	-7.7	-21.1	25	11.8	30	4,295	-7.7	-21.1	25	11.8																		
550	31	4,957	-11.7	-24.6	25	14.1		30	4,957	-11.7	-24.6	25	14.1	30	4,957	-11.7	-24.6	25	14.1	30	4,957	-11.7	-24.6	25	14.1	30	4,957	-11.7	-24.6	25	14.1																		
500	31	5,682	-16.0	-29.2	25	18.2		30	5,682	-16.0	-29.2	25	18.2	30	5,682	-16.0	-29.2	25	18.2	30	5,682	-16.0	-29.2	25	18.2	30	5,682	-16.0	-29.2	25	18.2																		
450	31	6,467	-21.3	-34.5	24	15.9		30	6,467	-21.3	-34.5	24	15.9	30	6,467	-21.3	-34.5	24	15.9	30	6,467	-21.3	-34.5	24	15.9	30	6,467	-21.3	-34.5	24	15.9																		
400	31	7,325	-27.9	-40.5	24	17.6		30	7,325	-27.9	-40.5	24	17.6	30	7,325	-27.9	-40.5	24	17.6	30	7,325	-27.9	-40.5	24	17.6	30	7,325	-27.9	-40.5	24	17.6																		
350	31	8,273	-34.9	-44.5	24	19.6		30	8,273	-34.9	-44.5	24	19.6	30	8,273	-34.9	-44.5	24	19.6	30	8,273	-34.9	-44.5	24	19.6	30	8,273	-34.9	-44.5	24	19.6																		
300	31	9,322	-43.1	-46.3	24	21.6		30	9,322	-43.1	-46.3	24	21.6	30	9,322	-43.1	-46.3	24	21.6	30	9,322	-43.1	-46.3	24	21.6	30	9,322	-43.1	-46.3	24	21.6																		
250	31	10,528	-60.9		25	21.9		30	10,528	-60.9		25	21.9	30	10,528	-60.9		25	21.9	30	10,528	-60.9		25	21.9	30	10,528	-60.9		25	21.9																		
200	31	11,962	-56.1		25	20.5		30	11,962	-56.1		25	20.5	30	11,962	-56.1		25	20.5	30	11,962	-56.1		25	20.5	30	11,962	-56.1		25	20.5																		
175	30	12,809	-56.9		24	18.9		30	12,809	-56.9		24	18.9	30	12,809	-56.9		24	18.9	30	12,809	-56.9		24	18.9	30	12,809	-56.9		24	18.9																		
150	30	13,787	-56.3		25	15.4		30	13,787	-56.3		25	15.4	30	13,787	-56.3		25	15.4	30	13,787	-56.3		25	15.4	30	13,787	-56.3		25	15.4																		
125	29	14,947	-57.4		25	12.5		30	14,947	-57.4		25	12.5	30	14,947	-57.4		25	12.5	30	14,947	-57.4		25	12.5	30	14,947	-57.4		25	12.5																		
100	29	16,354	-58.3		26	9.5		30	16,354	-58.3		26	9.5	30	16,354	-58.3		26	9.5	30	16,354	-58.3		26	9.5	30	16,354	-58.3		26	9.5																		
75	29	17,759	-57.2		25	8.2		30	17,759	-57.2		25	8.2	30	17,759	-57.2		25	8.2	30	17,759	-57.2		25	8.2	30	17,759	-57.2		25	8.2																		
50	29	18,603	-57.1		27	2.1		30	18,603	-57.1		27	2.1	30	18,603	-57.1		27	2.1	30	18,603	-57.1		27	2.1	30	18,603	-57.1		27	2.1																		
25	29	19,579	-56.5		33	.6		30	19,579	-56.5		33	.6	30	19,579	-56.5		33	.6	30	19,579	-56.5		33	.6	30	19,579	-56.5		33	.6																		
0	29	20,740	-55.4		07	1.0		30	20,740	-55.4		07	1.0	30	20,740	-55.4		07	1.0	30	20,740	-55.4		07	1.0	30	20,740	-55.4		07	1.0																		
	40	22,167	-53.8		03	1.0		30	22,167	-53.8		03	1.0	30	22,167	-53.8		03	1.0	30	22,167	-53.8		03	1.0	30	22,167	-53.8		03	1.0																		
	30	24,026	-51.6		33	.9		30	24,026	-51.6		33	.9	30	24,026	-51.6		33	.9	30	24,026	-51.6		33	.9	30	24,026	-51.6		33	.9																		
	25	25,214	-49.7		25	2.0		30	25,214	-49.7		25	2.0	30	25,214	-49.7		25	2.0	30	25,214	-49.7		25	2.0	30	25,214	-49.7		25	2.0																		
	20	26,684	-47.2		35	1.3		30	26,684	-47.2		35	1.3	30	26,684	-47.2		35	1.3	30	26,684	-47.2		35	1.3	30	26,684	-47.2		35	1.3																		
	15	28,615	-43.2		14	.5		30	28,615	-43.2		14	.5	30	28,615	-43.2		14	.5	30	28,615	-43.2		14	.5	30	28,615	-43.2		14	.5																		
	10	31,373	-39.2		7			30	31,373	-39.2		7		30	31,373	-39.2		7		30	31,373	-39.2		7		30	31,373	-39.2		7																			



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		CARIBOU, ME 993 MB				CENTREVILLE, AL 999 MB				CHARLESTON, SC 1015 MB				CHATHAM, MA 1015 MB				COLD BAY, AK 999 MB													
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind											
					Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.										
SFC	31	191	9.0	5.2	30	.6	31	140	16.5	14.7	28	4.4	31	13	18.6	16.6	19	.5	31	16	11.6	9.4	16	.8	31	30	4.5	1.4	13	1.9	
1000	31	559	7.8	2.8	22	1.5	31	161	14.8	10.3	35	6.6	31	144	19.3	16.1	21	1.4	31	143	13.4	9.2	20	1.1	15	95	6.6	2.8	16	2.2	
950	31	1,005	6.6	2.3	25	2.3	31	1,036	15.5	9.9	23	4.5	31	1,047	15.4	8.9	25	3.9	31	1,032	11.8	4.5	25	3.2	31	441	2.9	-1.2	4.6		
850	31	1,472	4.6	-0.8	27	3.3	31	1,518	12.3	6.3	24	4.0	31	1,530	12.5	5.0	25	3.5	31	1,508	8.9	4.5	25	6.2	31	1,331	-3.1	-7.0	12	4.5	
800	31	1,965	2.7	-3.3	26	4.1	31	2,025	9.4	1.7	25	4.2	31	2,037	9.5	1.0	25	4.6	31	2,008	6.0	5.2	25	7.7	31	1,809	-5.9	-10.8	12	4.7	
750	31	2,486	4	-6.7	26	6.0	31	2,558	6.5	-2.4	26	4.9	31	2,570	6.6	-1.6	24	5.7	31	2,535	3.1	-2.9	25	9.5	31	2,311	-9.0	-14.3	11	4.0	
700	31	3,037	-2.4	-10.8	25	6.9	31	3,121	3.9	-8.7	26	5.7	31	3,133	3.6	-7.1	25	7.0	31	3,092	4.6	-8.5	25	10.8	31	2,842	-12.2	-19.3	10	4.1	
650	31	3,622	-5.3	-15.3	25	8.5	31	3,720	4.6	-11.6	27	6.9	31	3,732	4.6	-11.2	24	7.9	31	3,684	-2.5	-12.1	25	11.8	31	3,406	-15.8	-22.7	11	4.7	
600	31	4,247	-9.0	-20.4	25	10.1	31	4,359	-3.3	-15.6	27	8.4	31	4,370	-3.4	-14.3	26	8.6	31	4,316	-5.9	-17.5	25	11.9	31	4,004	-19.7	-27.0	11	5.3	
550	31	4,915	-12.9	-23.4	25	11.4	31	5,042	-7.3	-20.8	27	10.0	31	5,053	-7.6	-19.4	26	9.9	31	4,992	-10.1	-21.4	25	13.2	31	4,645	-23.9	-32.0	10	4.4	
500	31	5,636	-17.4	-26.5	24	11.5	31	5,778	-12.4	-26.3	27	11.4	31	5,788	-12.4	-23.2	26	10.8	31	5,720	-14.8	-26.6	25	14.7	31	5,334	-28.7	-37.1	10	2.8	
450	31	6,417	-22.6	-32.5	24	12.2	31	6,574	-17.9	-31.0	27	12.9	31	6,585	-17.4	-28.7	26	12.1	31	6,510	-20.0	-30.4	25	16.7	30	6,085	-33.5	-39.6	10	2.9	
400	31	7,272	-28.4	-39.0	24	13.8	31	7,445	-24.0	-37.6	27	13.7	31	7,458	-23.4	-36.0	27	12.8	31	7,373	-26.1	-36.9	25	17.2	30	6,703	-39.1	-42.9	09	3.6	
350	31	8,218	-35.3	-44.1	21	16.6	31	8,409	-31.0	-43.9	28	15.2	31	8,423	-30.7	-43.2	26	14.4	31	8,328	-33.5	-43.9	25	17.6	30	7,810	-44.3	-46.0	10	2.4	
300	31	9,272	-43.2	-47.6	24	17.5	31	9,480	-39.6	-48.5	28	15.4	31	9,496	-39.2	-48.0	26	15.6	31	9,388	-41.8	-49.2	25	19.7	30	8,831	-48.4	-51.4	9	4.9	
250	31	10,478	-51.3	-51.3	25	18.6	31	10,703	-48.8	-51.3	28	17.3	31	10,720	-48.7	-51.3	27	17.1	31	10,598	-50.9	-51.3	25	20.8	30	10,030	-48.6	-51.3	23	1.2	
200	31	11,910	-56.1	-56.1	25	18.6	31	12,139	-57.3	-57.3	28	19.9	31	12,155	-57.7	-57.7	27	19.1	31	12,024	-58.3	-58.3	25	19.9	30	11,503	-47.2	-51.3	24	2.4	
175	31	12,759	-56.1	-56.1	26	16.7	30	12,978	-59.5	-59.5	28	22.0	31	12,992	-60.5	-60.5	28	19.7	31	12,862	-58.8	-58.8	25	17.0	30	12,387	-47.2	-51.3	23	3.3	
150	31	13,746	-55.2	-55.2	26	13.5	30	13,940	-60.6	-60.6	28	20.9	31	13,958	-61.9	-61.9	27	18.3	31	13,829	-58.7	-58.7	25	13.7	30	13,308	-47.2	-51.3	22	6.6	
125	31	14,903	-55.9	-55.9	26	11.1	30	15,070	-62.5	-62.5	28	16.5	31	15,076	-62.3	-62.3	27	15.0	31	14,975	-58.8	-58.8	25	11.4	30	14,614	-48.0	-51.3	23	2.2	
100	31	16,321	-56.4	-56.4	26	7.2	30	16,442	-64.3	-64.3	27	11.6	31	16,445	-64.3	-64.3	28	11.2	31	16,372	-59.7	-59.7	26	8.0	30	16,084	-48.5	-51.3	20	2.2	
80	31	17,736	-56.7	-56.7	26	4.3	30	17,806	-64.1	-64.1	28	7.3	31	17,813	-63.1	-63.1	29	6.2	29	17,763	-58.7	-58.7	26	4.2	29	17,550	-49.1	-51.3	19	3.2	
70	31	18,584	-56.1	-56.1	27	3.1	30	18,627	-62.5	-62.5	29	3.5	31	18,637	-62.1	-62.1	31	3.2	29	18,603	-58.2	-58.2	27	2.4	29	18,225	-49.6	-51.3	19	2.7	
60	31	19,566	-55.6	-55.6	29	1.7	30	19,583	-60.6	-60.6	32	1.8	31	19,576	-60.2	-60.2	36	1.4	29	19,576	-62.1	-62.1	28	1.4	29	19,317	-49.5	-51.3	17	2.5	
50	31	20,710	-54.6	-54.6	30	1.1	29	20,725	-61.5	-61.5	37	0.7	30	20,738	-61.7	-61.7	37	0.7	29	20,728	-55.8	-55.8	28	1.4	28	20,635	-48.0	-51.3	15	4.7	
40	29	22,159	-53.3	-53.3	03	.8	29	22,143	-54.3	-54.3	08	3.6	30	22,162	-53.6	-53.6	08	3.6	27	22,154	-54.0	-54.0	01	.6	27	22,096	-49.8	-51.3	14	2.1	
30	29	24,017	-51.1	-51.1	02	.7	29	24,006	-49.9	-49.9	08	5.4	29	24,022	-50.1	-50.1	08	4.7	26	24,020	-51.1	-51.1	34	1.1	27	23,977	-50.1	-51.3	14	1.2	
25	26	25,215	-49.3	-49.3	36	.7	25	25,203	-48.4	-48.4	08	5.4	28	25,221	-48.1	-48.1	09	4.5	26	25,212	-49.0	-49.0	29	1.3	27	25,170	-49.4	-51.3	13	1.2	
20	21	26,687	-47.1	-47.1	33	.6	20	26,683	-45.5	-45.5	08	4.5	24	26,700	-44.7	-44.7	04	2.6	26	26,679	-46.6	-46.6	28	2.4	27	26,638	-47.9	-49.1	09	1.7	
15	14	28,631	-42.7	-42.7	27	1.4	14	28,616	-42.6	-42.6	09	4.0	15	28,619	-41.9	-41.9	04	1.5	28	28,593	-43.3	-43.3	27	2.4	27	28,525	-42.1	-42.1	05	2.1	
10	7						18	31,361	-37.8	-37.8	07	4.8	5	31,398	-36.5	-36.5	04	1.1	31,315	-37.6	-37.6	22	3.3	29	33,298	-40.2	-40.2	05	1.4		
5	7																														

# RAWINSONDE DATA

Average monthly values

MAY 1979

		GLASGOW, MT 933 M8				GRAND JUNCTION, CO 850 M8				GREAT FALLS, MT 888 M8				GREEN BAY, WI 989 M8				GREENSBORO, NC 985 M8												
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind							
					Direction true deg.	Speed m.p.s.					Direction true deg.	Speed m.p.s.					Direction true deg.	Speed m.p.s.					Direction true deg.	Speed m.p.s.						
5FC	31	696	5.5	2.7	07	1.3	31	1,472	10.8	3.4	12	2.5	31	1,118	5.9	-7	26	1.2	31	210	7.4	4.6	35	.7	31	275	14.4	12.0	20	.4
1000	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
950	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
900	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
850	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
800	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
750	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
700	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
650	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
600	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
550	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
500	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
450	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
400	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
350	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
300	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
250	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
200	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
175	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
150	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
125	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
100	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
75	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
50	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
25	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9
0	31	1,483	6.3	-1.8	28	3.5	17	1,512	12.5	2.7	13	3.1	31	1,473	7.3	-1.5	27	2.9	31	988	8.8	3.3	34	.5	31	579	15.5	9.7	25	.9

		GUADALUPE IS., MEXICO 1012 M8				GUAM, MARIANA IS. 999 M8				HILO, HI 1017 M8				HUNTINGTON, WV 987 M8				INTERNATIONAL FALLS, MN 971 M8												
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind							
					Direction true deg.	Speed m.p.s.					Direction true deg.	Speed m.p.s.					Direction true deg.	Speed m.p.s.					Direction true deg.	Speed m.p.s.						
5FC	30	23	15.7	11.1	33	6.8	31	111	25.4	22.7	09	3.4	31	10	20.5	18.0	23	1.3	31	246	12.3	7.7	18	-2	31	359	3.8	-7	23	.4
1000	30	122	15.0	10.2	33	7.1	13	117	25.5	22.8	09	3.1	31	155	21.0	17.7	23	1.0	31	150	14.7	6.9	22	2.8	31	536	5.2	-4	23	1.0
950	30	555	13.0	5.6	32	5.3	31	557	22.7	20.4	10	7.2	31	598	18.0	15.8	10	1.8	31	566	14.7	6.9	22	2.8	31	536	5.2	-4	23	1.0
900	30	1,010	13.8	-3.2	33	3.3	31	1,027	22.1	16.3	10	6.9	31	1,022	12.5	9.4	7.2	2.8	31	1,022	12.5	9.4	7.2	2.8	31	1,022	12.5	9.4	7.2	2.8
850	30	1,491	13.4	-7.4	32	3.3	31	1,520	17.9	11.2	10	6.3	31	1,543	12.0	9.0	9.8	2.1	31	1,500	11.3	1.25	5.3	3.1	31	1,438	1.0	-4.8	26	9.9
800	30	2,000	11.8	-9.9	33	3.1	31	2,038	15.7	5.8	10	4.7	31	2,049	10.1	3.0	7.7	2.2	31	2,002	7.2	-1.2	2.6	6.2	31	1,924	-1.0	-7.6	27	4.0
750	30	2,537	9.8	-11.8	32	4.1	31	2,584	13.3	1.5	11	4.3	31	2,586	9.4	-7.0	0.6	1.9	31	2,531	4.3	-4.3	2.7	7.3	31	2,437	-2.9	-10.8	27	5.8
700	30	3,107	7.0	-14.1	31	4.1	31	3,161	10.3	-3.3	10	3.5	31	3,157	8.0	-13.6	0.2	1.3	31	3,089	1.4	-9.3	2.7	7.7	31	2,981	-5.6	-17.6	27	7.3
650	30	3,712	3.6	-16.9	30	4.6	31	3,775	7.2	-7.4	09	2.9	31	3,764	5.0	-16.6	0.6	5.3	31	3,683	-1.7	-12.9	2.7	8.2	31	3,560	-8.3	-22.6	27	7.7
600	30	4,357	-1.1	-20.4	29	4.1	31	4,429	3.7	-11.0	08	3.1	31	4,463	1.2	-19.4	1.5	1.4	31	4,316	-5.4	-18.0	2.7	11.9	31	4,177	-12.0	-25.6	27	8.5
550	30	5,046	-5.1	-24.8	30	6.3	31	5,131	-1.1	-15.9	08	2.7	31	5,106	-3.5	-23.1	2.1	6.3	31	4,994	-9.7	-21.9	2.7	9.5	31	4,838	-16.1	-29.3	27	10.1
500	30	5,787	-10.6	-29.4	29	5.9	31	5,889	-4.3	-21.2	06	3.5	31	5,852	-8.5	-26.8	2.7	9.3	31	5,723	-14.4	-27.5	2.7	10.5	31	5,549	-20.9	-32.6	27	12.2
450	30	6,588	-16.7	-33.7	28	6.6	31	6,712	-9.4	-25.0	06	2.5	31	6,661	-13.9	-31.0	2.8	2.2	31	6,513	-19.8	-33.2	2.7	12.7	31	6,320	-25.8	-37.1	27	13.2
400	30	7,460	-23.8	-39.6	29	7.1	31	7,611	-15.6	-31.4	04	2.6	31	7,545	-20.3	-36.4	3.0	3.6	31	7,377	-26.1	-38.8	2.7	13.6	31	7,163	-31.9	-41.0	27	15.9
350	30	8,490	-31.2	-45.8	28	8.7	31	8,602	-30.3	-37.9	2.7	1.9	31	8,522	-37.6	-41.8	3.0	5.4	30	8,333	-33.1	-44.4	2.7	15.8	31	8,096	-38.8	-42.7	27	18.5
300	30	9,496	-39.0	-51.8	28	10.6	31	9,720	-31.0	-37.9	3.6	3.4	31	9,610	-35.8	-40.8	2.8	8.3	30	9,396	-41.1	-44.8	2.7	17.3	31	9,156	-46.0	-47.0	27	20.7
250	30	10,722	-47.8	-58.2	28	11.8	31	10,987	-41.0	-37.0	3.0	3.7	31	10,852	-45.3	-41.3	2.8	12.0	30	10,613	-49.4	-44.2	2.7	20.1	31	10,332	-52.0	-47.0	27	21.4
200	30	12,168	-55.8	-65.8	27	13.1	31	12,464	-53.3	-43.0	2.9																			



# RAWINSONDE DATA

Average monthly values

MAY 1979

KING SALMON, AK 1005 MB										KODOR, CAROLINE IS. 1007 MB										KOTZERUE, AK 1012 MB										LAKE CHARLES, LA 1014 MB										LANDER, WY 828 MB									
Standard pressure surface		Dynamic height		Temperature		Dew Point		Resultant Wind		Dynamic height		Temperature		Dew Point		Resultant Wind		Dynamic height		Temperature		Dew Point		Resultant Wind		Dynamic height		Temperature		Dew Point		Resultant Wind																	
Surface	No. of observations	Meters	°C	°C	°C	°C	°C	Dir.	Speed	Meters	°C	°C	°C	Dir.	Speed	Meters	°C	°C	°C	Dir.	Speed	Meters	°C	°C	Dir.	Speed	Meters	°C	°C	Dir.	Speed																		
SFC	31	75	4.6	-4.0	2.5	31	28.3	24.9	08	1.6	25	5	-4.4	-2.3	30	1.9	30	5	18.6	17.5	08	1.7	31	1,697	5.3	-4.4	22	4.8																					
1000	24	78	5.9	-1.2	11	24	31	24.7	08	1.9	24	102	2.5	-3.4	32	1.5	30	124	20.3	16.6	13	1.7																											
950	30	77	4.2	-1.8	10	5.6	31	22.6	09	3.5	25	514	3.7	-4.8	04	4.6	30	567	18.4	12.9	16	4.2																											
900	30	915	1.5	-2.9	10	5.4	31	1,018	21.2	19.1	09	3.7	25	951	1.1	-7.6	24	1,029	16.2	8.8	18	4.3																											
850	30	1,372	-1.8	-5.8	11	5.6	31	1,513	14.6	14.9	09	3.3	25	1,409	-2.1	-10.2	21	1,514	14.1	-3.1	19	4.1																											
800	30	1,852	-2.8	-8.8	12	6.5	31	2,033	16.4	11.5	09	2.7	25	1,890	-1.2	-12.9	22	2,024	12.1	-2.1	21	4.2																											
750	30	2,356	-8.6	-13.6	12	7.7	31	2,581	13.6	8.6	09	2.0	25	2,396	-7.4	-15.5	23	2,563	10.0	-6.0	24	4.1																											
700	30	2,868	-11.9	-17.7	11	7.2	31	3,160	10.7	3.6	10	1.9	25	2,930	-10.7	-18.3	22	3,133	6.8	-8.3	26	3.9																											
650	30	3,451	-15.5	-21.8	11	7.6	31	3,776	7.4	4.1	10	2.1	25	3,496	-14.1	-23.2	21	2.7	3.0	-12.6	27	5.0																											
600	30	4,051	-19.6	-25.9	11	8.5	31	4,431	3.6	-3.6	09	2.6	25	4,099	-17.9	-27.4	21	3.1	4,380	-1.4	-17.5	27	6.8																										
550	30	4,692	-23.6	-31.3	12	9.1	31	5,133	-2.2	-7.8	08	3.0	25	4,745	-22.0	-32.4	22	3.3	5,068	-16.1	-22.1	27	8.4																										
500	30	5,382	-28.2	-35.9	12	9.5	31	5,981	-4.1	-13.4	09	4.0	25	5,439	-26.2	-36.5	22	3.4	6,007	-11.1	-27.5	28	9.4																										
450	30	6,130	-33.6	-41.3	12	10.2	31	6,714	-9.0	-18.5	09	4.2	25	6,192	-31.9	-40.6	23	4.0	6,607	-16.6	-32.9	27	11.0																										
400	30	6,946	-39.7	-43.6	12	10.7	30	7,617	-14.8	-24.5	10	4.3	25	7,014	-38.0	-44.3	23	3.4	7,481	-22.8	-37.3	27	12.3																										
350	30	7,850	-45.9	-49.9	11	10.5	30	8,619	-21.1	-32.5	10	4.2	25	7,924	-45.8	-51.8	21	5.5	8,450	-29.9	-42.3	27	14.2																										
300	30	8,862	-50.3	-55.3	11	9.1	30	9,736	-29.4	-41.4	10	5.3	25	8,937	-51.5	-58.2	22	5.4	9,527	-38.3	-49.2	27	16.1																										
250	30	10,049	-50.6	-56.6	12	6.4	30	11,011	-39.2	-50.0	09	5.0	25	10,105	-51.1	-58.1	23	6.7	10,756	-47.6	-54.6	28	21.6																										
200	30	11,510	-48.3	-54.9	14	4.8	30	12,497	-52.1	-57.1	09	5.9	25	11,538	-51.3	-57.3	22	2.5	12,201	-55.9	-62.9	28	26.3																										
175	30	12,390	-47.9	-54.9	16	4.0	30	13,349	-50.9	-57.4	07	4.7	25	12,409	-49.8	-57.8	19	1.3	13,044	-59.4	-67.4	27	26.7																										
150	30	13,407	-47.9	-54.9	17	2.5	30	14,299	-66.7	-70.7	05	5.1	25	13,419	-49.6	-57.6	20	1.6	14,002	-62.1	-70.1	27	25.2																										
125	30	14,610	-48.3	-54.9	17	2.5	30	15,382	-73.7	-77.7	05	5.1	25	14,613	-49.5	-57.6	17	1.6	15,125	-64.1	-72.1	27	21.0																										
100	30	16,079	-48.5	-54.9	18	2.9	30	16,665	-79.0	-83.0	05	4.6	25	16,077	-49.2	-57.6	16	1.9	16,481	-66.4	-74.4	27	14.0																										
80	30	17,544	-49.5	-54.9	19	2.3	30	17,936	-74.3	-78.3	05	2.6	25	17,541	-49.9	-57.6	16	2.0	17,831	-66.6	-74.6	27	7.3																										
70	30	18,078	-49.8	-54.9	18	2.2	30	18,173	-72.5	-76.5	33	1.0	25	18,420	-84.4	-88.4	16	2.0	18,642	-64.5	-72.5	27	3.0																										
60	30	19,427	-49.9	-54.9	18	2.3	30	19,631	-67.6	-71.6	27	4.9	25	19,435	-48.3	-56.3	16	2.0	19,596	-62.0	-70.0	27	10.9																										
50	30	20,620	-49.6	-54.9	16	2.1	30	20,744	-62.2	-66.2	08	2.8	25	20,636	-48.5	-56.5	13	1.8	20,733	-59.9	-67.9	27	3.8																										
40	30	22,080	-50.0	-54.9	17	1.6	30	22,135	-58.9	-62.9	09	10.3	25	22,105	-48.4	-56.4	11	2.6	22,146	-55.1	-63.1	27	0.9																										
30	30	23,957	-50.3	-54.9	17	1.5	30	23,940	-51.4	-55.4	09	22.6	25	23,952	-47.2	-55.2	11	3.0	24,002	-50.7	-58.7	28	6.8																										
25	30	25,150	-49.9	-54.9	18	1.5	30	25,139	-50.1	-54.1	08	26.6	25	25,201	-47.9	-55.9	6.3	2.0	25,194	-48.2	-56.2	08	5.8																										
20	30	26,600	-49.1	-54.9	09	1.7	26	26,603	-47.4	-51.4	09	26.7	23	26,679	-46.4	-54.4	08	4.2	27	26,675	-45.5	-53.5	08	8.0																									
15	30	28,498	-49.8	-54.9	07	2.5	25	28,525	-43.1	-47.1	09	33.3	20	28,611	-43.7	-51.7	09	5.2	28	28,606	-42.8	-50.8	08	9.2																									
10	30	31,247	-41.8	-47.8	09	3.2	18	31,306	-36.2	-40.2	09	38.8	10	31,327	-38.9	-46.9	12	31,368	-39.2	-47.2	10	31,318	-38.3																										
7	11	33,770	-36.6				7	33,778	-33.0																																								

LIMUE PAULI, HI 1014 MB										LITTLE ROCK, AR 994 MB										LONGVIEW, TX 1000 MB										MCGRATH, AK 997 MB										MAJURO, MARSHALL IS. 1011 MB									
Standard pressure surface		Dynamic height		Temperature		Dew Point		Resultant Wind		Dynamic height		Temperature		Dew Point		Resultant Wind		Dynamic height		Temperature		Dew Point		Resultant Wind		Dynamic height		Temperature		Dew Point		Resultant Wind																	
Surface	No. of observations	Meters	°C	°C	°C	°C	°C	Dir.	Speed	Meters	°C	°C	°C	Dir.	Speed	Meters	°C	°C	°C	Dir.	Speed	Meters	°C	°C	Dir.	Speed	Meters	°C	°C	Dir.	Speed																		
SFC	31	36	22.5	19.5	05	3.0	31	79	15.8	13.5	19	-2	31	124	17.0	15.0	19	1.0	31	103	5.2	-1.8	27	7.3	31	28.3	23.7	24.5	07	5.6																			
1000	31	157	21.8	18.4	06	4.0	31	157	16.1	17.1	12	1.1	13	161	17.1	12.1	13	3.1	141	8.0	1.6	27	7.3	31	102	26.7	23.5	07	6.6																				
950	31	601	18.4	16.5	07	5.6	31	560	16.3	10.7	22	1.9	31	560	17.4	12.8	20	4.9	31	497	7.4	-1.3	27	7.3	31	555	23.5	21.4	08	9.6																			
900	31	1,064	15.3	12.7	07	5.5	31	1,039	16.7	7.6	23	3.6	31	1,022	15.8	8.3	21	5.4	1,040	4.4	-3.3	22	6.1	31	1,027	17.0	16.0	08	9.7																				
850	31	1,547	12.3	8.9	07	5.6	31	1,506	16.7	3.9	24	2.4	31	1,506	17.7	4.1	22	5.1	1,402	10.0	-5.5	18	7.3	31	1,700	17.9	14.9	09	9.5																				
800	31	2,054	10.3	-2.07	4.5	31	2,007	9.5	-5.2	4.8	31	2,015	11.5	-1.23	4.7	31	1,887	-2.5	-7.7	13	2.2	31	2,039	16.0	9.4	09	8.4																						
750	31	2,590	9.5	-7.6	08	3.5	31	2,541	6.9	-4.9	26	4.5	31	2,553	9.2	-4.5	25	4.7	2,395	-6.3	-10.4	13	3.4	31	2,586	13.7	5.2	09	8.7																				
700	31	3,161	7.9	-13.4	07	2.2	31	3,105	3.8	-8.0	27	5.7	31	3,122	5.4	-6.6	27	5.4	2,931	-10.2	-14.7	13	4.8	31	3,165	10.4	2.9	09	7.2																				
650	31	3,768	5.1	-15.5	08	1.0	31	3,704	-2.2	-11.4	28	6.0	31	3,722	1.3	-10.8	28	7.0	3,499	-13.8	-19.7	12	5.4	31	3,780	7.2	-5.0	6.4																					
600	31	4,437	1.6	-18.4	02	5.1	31	4,340	-7.9	-15.0	28	6.2	31	4,362	-2.2	-16.2	28	6.2	4,102	-17.1	-24.2	12	6.8	31	4,435	-5.2	-2.6	09	7.1																				
550	31	5,113	-2.6	-22.1	03	5.1	31	5,022	-8.2	-20.8	28	8.5	31	5,047	-7.0	-21.2	27	6.3	4,747	-2.2	-28.7	12	5.5	31	5,136	-4.5	-7.4	11	3.5																				
500	31	5,860	-8.3	-26.1	02	1.4	31	5,755	-12.9	-25.9	27	9.2	31	5,784	-11.6	-26.6	27	9.9	5,441	-27.2	-34.2	12	6.0	31	5,894	-4.3	-13.3	10	2.0																				
450	31	6,670	-13.6	-31.6	01	1.3	31	6,551	-18.2	-31.4	2																																						



# RAWINSONDE DATA

Average monthly values

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NASHVILLE, TN 995 MB										NOME, AK 1010 MB										NORTH PLATE, NE 916 MB										OAKLAND, CA 1014 MB										OMAHA, NE 966 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.	Direction tens of deg.	Speed m.p.a.																	
5FC	31	180	14.3	12.6	21	.4	31	5	3.3	-9	02	2.1	31	847	8.4	2.9	05	.9	31	6	12.3	9.4	28	1.2	31	403	10.9	7.1	17	.7																			
1000	31	5	29.3	24.9	09	3.7	31	200	10.1	7.1	18	.8	31	359	10.8	7.0	18	.7	31	39	28.4	24.7	08	2.9	31	20	10.5	6.6	34	.4																			
950	31	58	15.6	10.3	21	3.5	31	500	3.7	-2.9	08	2.5	31	1,001	9.1	4.3	01	.5	31	120	12.2	9.1	28	1.6	31	551	12.8	4.4	31	2.6	29	5.50	11.7	5.5	19	1.1													
900	31	1,026	13.0	7.9	23	5.0	31	938	1.7	-5.8	12	2.4	30	1,470	9.2	1.8	30	1.5	31	1,006	14.1	-1.8	33	3.7	31	1,488	13.1	-5.2	33	3.2	31	1,469	9.5	2.0	25	6.0													
850	31	1,505	10.7	4.1	25	6.4	31	1,396	-7.9	-7.4	13	2.8	31	1,470	9.2	1.8	30	1.5	31	1,488	13.1	-5.2	33	3.2	31	1,469	9.5	2.0	25	6.0																			
800	31	2,005	7.8	1.7	25	6.4	31	1,878	-9.9	-10.8	14	3.2	25	11,975	-5.5	-27.4	27	16.0	31	1,959	9.9	-7.7	31	2.6	31	2,005	7.8	1.7	25	6.4																			
750	31	2,538	4.8	-3.8	26	6.9	31	2,384	-7.1	-14.1	14	3.6	31	2,502	4.9	-3.4	30	3.5	31	2,527	7.0	-12.1	29	3.3	31	2,500	4.5	-6.9	26	7.4																			
700	31	3,098	1.8	-9.0	26	7.7	31	2,919	-10.3	-16.2	14	4.0	31	3,062	1.5	-6.7	29	5.5	31	3,091	3.8	-15.6	29	3.9	31	3,059	1.4	-9.7	27	7.9																			
650	31	3,692	-1.5	-13.2	26	7.6	31	3,487	-13.7	-22.5	14	4.1	31	3,655	-2.1	-10.0	29	6.4	31	3,689	.4	-19.2	30	5.2	31	3,652	-2.2	-15.5	27	9.0																			
600	31	4,326	-4.9	-18.7	26	8.7	31	4,090	-17.5	-25.9	14	4.1	31	4,287	-6.1	-15.3	27	8.4	31	4,326	-3.5	-23.0	31	6.8	31	4,283	-5.5	-20.9	27	10.3																			
550	31	5,025	-9.0	-23.4	26	10.1	31	4,736	-21.8	-30.3	13	4.3	31	4,962	-10.7	-20.3	27	9.1	31	5,008	-7.9	-26.6	30	8.4	31	4,959	-10.4	-24.4	27	11.5																			
500	31	5,736	-14.0	-28.2	26	12.2	31	5,431	-26.5	-35.7	13	4.7	31	5,678	-15.5	-27.4	27	10.1	31	5,781	-12.9	-31.0	30	10.3	31	5,688	-15.9	-29.3	28	12.4																			
450	31	6,528	-19.5	-32.7	27	13.0	31	6,184	-32.0	-41.0	13	4.6	31	6,476	-20.7	-33.4	27	11.9	31	6,536	-18.5	-35.2	30	11.7	31	6,474	-20.4	-33.8	28	13.8																			
400	31	7,392	-25.7	-37.0	27	13.4	31	7,005	-38.4	-46.9	13	5.2	31	7,336	-27.0	-39.6	27	13.8	31	7,403	-25.3	-41.0	31	13.5	31	7,336	-26.6	-38.7	28	15.3																			
350	31	8,349	-32.9	-45.1	27	14.2	31	7,913	-44.9	-54.9	13	6.1	31	8,288	-34.1	-45.0	26	14.8	31	8,360	-32.9	-45.9	30	15.9	31	8,288	-34.1	-43.1	27	16.7																			
300	31	9,413	-41.0	-50.6	27	16.6	30	8,928	-51.6	-61.6	13	6.6	31	9,345	-42.4	-50.2	26	15.0	31	9,424	-41.1	-50.3	31	16.3	31	9,346	-42.5	-49.4	27	17.8																			
250	31	10,628	-49.9	-57.9	27	19.1	30	10,049	-54.8	-64.8	12	7.1	31	10,552	-51.7	-57.7	26	15.2	31	10,638	-50.3	-57.3	31	17.7	31	10,554	-51.4	-50.4	27	19.7																			
200	31	12,059	-57.9	-65.9	27	22.0	30	11,538	-61.3	-71.3	12	7.7	31	12,052	-57.7	-64.7	26	16.0	31	12,142	-56.6	-64.2	31	19.1	31	11,976	-59.1	-51.9	27	21.9																			
175	31	12,898	-59.3	-67.3	28	20.0	30	12,402	-64.5	-74.5	13	8.2	30	12,810	-60.5	-67.5	27	17.2	30	12,909	-60.1	-67.1	31	16.9	31	12,811	-59.9	-59.9	27	22.4																			
150	31	13,862	-59.9	-67.3	27	18.7	29	13,142	-64.6	-74.6	14	7.3	29	13,778	-57.8	-64.8	27	15.2	30	13,870	-60.5	-67.5	30	15.8	31	13,781	-57.0	-57.0	27	18.9																			
125	31	15,000	-60.4	-67.3	27	16.6	29	14,607	-64.9	-74.9	14	7.3	29	14,928	-58.0	-64.8	27	13.0	29	15,010	-61.7	-67.7	29	13.8	31	14,934	-57.5	-57.5	27	14.8																			
100	31	16,386	-61.8	-67.3	27	12.5	29	16,070	-64.9	-74.9	15	7.3	29	16,333	-58.4	-64.8	27	8.8	29	16,389	-62.7	-67.7	30	9.3	31	16,341	-58.8	-58.8	27	10.4																			
75	31	17,758	-61.0	-67.3	27	8.5	29	17,532	-64.5	-74.5	15	7.3	29	17,735	-58.4	-64.8	27	6.1	29	17,762	-62.4	-67.4	29	6.5	31	17,994	-58.8	-58.8	27	7.6																			
50	31	18,596	-59.7	-67.3	28	4.8	29	18,408	-64.9	-74.9	15	7.3	29	18,578	-57.6	-64.8	27	5.6	28	18,595	-60.5	-67.5	30	2.8	31	18,586	-58.8	-58.8	26	5.0																			
25	31	19,560	-59.4	-67.3	30	2.0	29	19,420	-64.9	-74.9	15	7.3	29	19,553	-56.3	-64.8	28	4.5	28	19,559	-59.2	-67.2	32	1.3	31	19,566	-58.0	-58.0	27	3.4																			
10	31	20,707	-57.2	-67.3	05	1.4	28	20,617	-64.9	-74.9	14	2.3	28	20,714	-55.4	-64.8	28	1.7	28	20,707	-57.0	-67.0	04	.7	31	20,728	-54.9	-54.9	28	1.4																			
5FC	31	5	29.3	24.9	09	3.7	31	200	10.1	7.1	18	.8	31	359	10.8	7.0	18	.7	31	39	28.4	24.7	08	2.9	31	20	10.5	6.6	34	.4																			
1000	31	5	29.3	24.9	09	3.7	31	557	13.2	5.1	23	2.7	31	567	12.0	6.2	22	1.8	31	540	23.7	21.5	08	7.5	31	571	10.6	4.6	26	.8																			
950	31	58	23.7	21.4	09	3.9	31	1,011	11.1	2.6	26	4.4	31	1,019	10.3	3.9	25	3.6	31	1,012	20.9	18.4	09	8.8	31	1,021	9.3	2.8	24	2.5																			
900	31	1,030	20.7	17.9	07	3.8	31	1,011	11.1	2.6	26	4.4	31	1,019	10.3	3.9	25	3.6	31	1,012	20.9	18.4	09	8.8	31	1,021	9.3	2.8	24	2.5																			
850	31	1,505	14.2	10.7	07	4.8	31	1,478	6.5	-5.9	27	5.3	31	1,492	5.3	-2.1	27	5.5	31	1,502	16.4	11.2	09	6.9	31	1,490	4.5	-1.5	25	6.2																			
800	31	2,042	13.2	7.9	07	2.6	31	1,987	6.5	-5.9	27	5.3	31	1,992	5.3	-2.1	27	5.5	31	2,025	16.4	11.2	09	6.9	31	1,990	4.5	-1.5	25	6.2																			
750	31	2,590	16.6	2.9	04	2.0	31	2,514	3.7	-9.9	27	6.3	31	2,517	2.6	-5.7	26	6.7	31	2,573	13.7	7.8	10	6.0	31	2,514	1.7	-6.1	25	7.7																			
700	31	3,168	10.4	-1.0	1.3	1.8	31	3,071	4.5	-11.8	27	7.2	31	3,073	-2.2	-11.4	26	7.8	31	3,152	10.5	4.2	10	5.6	31	3,067	-1.2	-10.2	25	9.0																			
650	31	3,781	6.8	-4.3	0.2	1.8	31	3,663	-3.0	-14.2	27	8.4	31	3,663	-3.6	-13.3	26	8.8	31	3,767	7.3	1.9	10	5.4	31	3,656	-4.0	-15.1	25	10.3																			
600	31	4,435	-0.8	-8.3	0.1	2.6	31	4,292	-6.9	-19.4	27	9.7	31	4,291	-7.3	-18.3	26	9.1	31	4,402	3.3	-2.4	09	6.9	31	4,283	-7.9	-12.6	24	7.6																			
550	31	5,135	-5.7	-13.5	0.2	1.5	31	4,966	-11.1	-23.3	27	10.0	31	4,966	-11.3	-24.4	26	11.0	31	5,125	0.0	-7.4	10	4.4	31	4,955	-11.6	-24.7	25	13.8																			
500	31	5,890	-9.4	-18.0	0.2	1.8	31	5,691	-15.9	-28.9	27	11.6	31	5,689	-16.2	-28.7	26	12.0	31	5,883	-3.9	-13.9	08	3.8	31	5,679	-16.4	-29.9	25	15.4																			
450	31	6,709	-10.3	-22.3	0.4	1.8	31	6,477	-20.9	-34.7	28	14.1	31	6,473	-21.5	-33.5	26	12.7	31	6,708	-8.6	-19.2	09	2.9	31	6,463	-21.6	-34.9	25	16.8																			
400	31	7,607	-16.3	-28.1	0.2	2.8	31	7,337	-27.2	-41.0	28	15.4	30	7,327	-27.8	-39.3	27	15.3	30	7,612	-14.2	-25.9	12	2.4	31	7,320	-27.9	-39.8	25	18.1																			
350	31	8,602	-23.0	-34.7	0.2	4.3	31	8,287	-34.4	-45.2	27	17.9	29	8,277	-34.9	-44.6	27	18.8	30	8,615	-20.8	-33.3	13	2.5	31	8,269	-34.9	-44.5	25	18.7																			
300	31	9,711	-30.9	-43.2	0.2	6.0	31	9,345	-42.3	-58.2	27	20.1	29	9,332	-42.9	-58.3	27	17.2	30	9,733	-29.2	-40.9	16	2.1	31	9,325	-42.5	-58.3	25	21.4																			
250	31	10,978	-40.8	-52.5	0.1	6.4	31	10,555	-50.9	-67.7	27	22.0	29	10,539	-50.7	-67.7	27	20.3	30	11,010	-39.4	-50.8	19	3.2	31	10,534	-50.6	-67.6	24	21.4																			
200	31	12,456	-52.9	-61.7	0.2	7.6	31	11,982	-57.9	-74.9	27	23.2	29	11,973																																			

# RAWINSONDE DATA

Average monthly values

MAY 1979

		SALEM, OR 1011 MB				SALT LAKE CITY, UT 869 MB				SAN DIEGO, CA 999 MB				SAN JUAN, P. R. 1014 MB				SAULT STE MARIE, MI 989 MB														
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.								
																									No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters
5FC	31	61	6.6	6.3	22	.9	31	1,288	10.2	3.5	16	2.4	31	124	14.1	10.3	25	.5	31	6	23.6	22.0	12	1.8	31	221	5.6	2.3	05	.9		
1000	28	165	11.0	6.8	35	.8	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
950	31	581	9.1	5.2	35	1.0	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
900	31	1,028	7.9	1.3	29	1.0	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
850	31	1,498	5.9	-3.0	27	2.6	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
800	31	1,993	3.9	-7.4	28	3.6	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
750	31	2,515	1.5	-11.4	28	4.6	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
700	31	3,068	-1.3	-15.9	27	5.9	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
650	31	3,655	-4.7	-18.2	27	7.1	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
600	31	4,281	-8.4	-22.4	28	9.0	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
550	31	4,951	-12.6	-24.9	28	10.7	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
500	31	5,672	-17.2	-28.6	27	11.8	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
450	31	6,454	-22.6	-33.5	28	12.5	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
400	31	7,306	-29.3	-37.7	28	14.5	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
350	31	8,250	-36.1	-43.6	29	16.2	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
300	31	9,300	-43.6	-49.6	29	19.0	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
250	31	10,504	-51.6	-57.6	30	21.2	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
200	31	11,929	-57.2	-64.2	29	25.0	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
175	31	12,771	-57.7	-64.2	29	19.8	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
150	31	13,746	-56.5	-65.6	28	17.4	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
125	31	14,904	-56.6	-65.6	29	14.9	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
100	31	16,318	-57.5	-65.6	29	9.9	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
80	31	17,724	-57.2	-65.6	29	6.6	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
70	31	18,570	-56.8	-65.6	29	4.8	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
60	31	19,549	-56.3	-65.6	30	3.6	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
50	31	20,709	-55.3	-65.6	31	2.2	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
40	31	22,136	-54.5	-65.6	32	2.0	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
30	31	23,985	-53.2	-65.6	33	2.4	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
25	31	25,163	-51.6	-65.6	33	2.5	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
20	31	26,619	-48.8	-65.6	34	1.9	31	1,476	12.6	.4	17	3.0	31	136	13.7	9.0	31	31	127	23.3	12	3.2	31	127	23.3	12	3.2	31	127	23.3	12	3.2
15	29	28,537	-45.2	-65.6	32	.6	25	28,567	-47.1				28	2.8	31	19,567	-60.7		32	.9	30	19,550	-65.0		08	4.6	28	19,549	-53.8		24	1.4
10	24	31,300	-38.6	-65.6	21	1.2	15	31,321	-39.0				27	7.4	18	31,318	-40.0		08	5.5	17	31,249	-37.9		11	19.1	20	31,342	-38.1		20	.7

		SPOKANE, WA 931 MB				TAMPA BAY, FL 1015 MB				TOPEKA, KS 982 MB				TRUK, CAROLINE IS. 1011 MB				TUCSON, AZ 922 MB												
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.						
																									No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.
5FC	31	720	7.5	3.0	19	2.1	31	13	19.4	18.3	11	1.5	31	26.8	12.3	10.4	17	.9	31	2	28.3	24.5	08	3.4	31	789	16.3	3.2	15	1.9
1000	31	1,400	2.1	18.6	12	2.5	31	140	21.1	18.6	12	2.5	31	140	21.1	18.6	12	2.5	31	99	27.4	24.3	08	4.3	31	996	16.7	2.9	16	2.6
950	31	1,998	10.4	1.0	22	2.6	31	1,049	17.1	11.5	16	3.5	31	508	14.3	7.7	19	3.9	31	553	24.1	21.0	09	7.1	31	996	16.7	2.9	16	2.6
900	31	1,472	8.1	-2.7	25	4.1	31	1,049	17.1	11.5	16	3.5	31	508	14.3	7.7	19	3.9	31	1,026	21.5	18.0	09	7.9	31	1,488	18.3	3.1	17	2.2
850	31	1,970	4.5	-4.4	26	3.9	31	2,046	12.0	-2.3	21	3.5	31	1,989	9.2	-2.1	25	6.9	31	2,041	16.2	11.3	09	6.9	31	1,997	12.7	-1.7	19	2.2
800	31	2,492	.7	-8.0	26	4.1	31	2,584	9.1	-1.6	23	2.9	31	2,521	6.0	-6.0	25	7.0	31	2,589	13.5	7.6	09	6.9	31	2,534	8.8	-4.2	20	2.6
750	31	3,042	-3.1	-13.4	26	6.3	31	3,152	6.0	-5.9	25	2.8	31	3,083	2.5	-10.1	26	7.0	31	3,167	10.5	3.7	10	5.7	31	3,101	4.5	-6.5	20	3.2
700	31	3,624	-6.7	-16.6	27	7.3	31	3,756	2.5	-10.3	26	3.1	31	3,678	-1.0	-14.2	27	8.0	31	3,783	7.5	.5	10	5.7	31	3,700	-2.2	-11.5	21	3.8
650	31	4,200	-10.4	-20.3	27	8.6	31	4,339	-8.8	-15.4	27	4.4	31	4,312	-1.7	-17.7	27	9.2	31											







# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

MAY 1979

Date	Sun's zenith distance									Date	Sun's zenith distance								
	A.M.				*	P.M.					A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MAUNA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass									
3.34 2.67 2.01 1.34 * 1.34 2.01 2.67 3.34										4.64 3.71 2.78 1.86 * 1.86 2.78 3.71 4.64									
2-----	1.09	1.17	1.27	1.41	-----	-----	-----	-----	-----	2-----	.72	.84	1.00	1.16	1.44	1.14	-----	-----	-----
4-----	1.09	1.17	1.26	1.40	1.55	1.40	1.27	1.17	1.08	3-----	.74	.83	.96	1.11	1.38	1.14	.98	.84	.72
5-----	1.10	1.18	1.29	1.43	1.58	1.43	1.32	1.21	1.13	4-----	.72	.84	1.01	1.22	1.44	1.16	.98	.85	.74
6-----	1.12	1.22	1.32	1.43	1.55	1.36	1.24	1.13	1.06	5-----	.86	.96	1.08	1.26	1.52	1.25	1.10	.98	.89
8-----	1.33	1.36	1.41	1.46	-----	-----	-----	-----	-----	6-----	.84	.95	1.09	1.27	1.46	1.23	1.00	.84	.74
11-----	1.13	1.22	1.31	1.40	-----	-----	-----	-----	-----	7-----	.89	.99	1.12	1.26	1.46	1.24	1.06	-----	-----
13-----	1.12	1.15	1.27	1.39	1.52	-----	-----	-----	-----	8-----	-----	.99	1.09	-----	1.43	-----	-----	-----	-----
14-----	1.06	1.15	1.25	1.36	-----	-----	-----	-----	-----	10-----	.88	.99	1.12	1.29	1.47	1.26	1.11	.98	.86
15-----	1.08	1.16	1.27	1.40	1.54	-----	-----	-----	-----	11-----	.95	1.07	1.18	1.32	1.48	1.24	1.01	.91	.83
16-----	1.13	1.21	1.32	1.42	-----	-----	-----	-----	-----	12-----	.83	.94	1.08	1.26	1.47	1.24	1.06	.93	.81
30-----	1.14	1.21	1.31	1.42	-----	-----	-----	-----	-----	13-----	.83	.93	1.06	1.24	1.44	1.15	.94	.82	.69
Averages	1.12	1.20	1.30	1.41	1.55	1.39	1.28	1.17	1.09	14-----	.75	.86	.98	1.15	1.37	-----	-----	-----	-----
										15-----	.84	.94	1.06	1.23	1.39	1.05	.86	.77	.66
										16-----	-----	-----	-----	-----	1.10	.85	-----	-----	-----
										17-----	.72	.84	.98	1.17	-----	1.12	.92	.83	.73
										18-----	.78	-----	-----	1.20	1.37	-----	-----	-----	-----
										19-----	-----	-----	.93	1.12	1.33	-----	-----	-----	-----
										20-----	-----	-----	-----	-----	-----	-----	1.02	-----	-----
										21-----	-----	.84	-----	-----	1.38	1.13	1.01	.88	.78
										22-----	.79	.87	1.02	1.15	1.36	1.07	-----	-----	-----
										23-----	.64	.76	.89	1.07	-----	-----	-----	-----	-----
										24-----	-----	-----	-----	-----	1.28	-----	-----	-----	-----
										25-----	-----	.93	-----	-----	1.45	-----	-----	-----	-----
										26-----	-----	-----	1.01	1.17	-----	-----	-----	-----	-----
										27-----	-----	-----	-----	1.10	-----	-----	-----	-----	-----
										28-----	.63	.76	.91	1.12	1.36	-----	-----	-----	-----
										29-----	-----	-----	-----	-----	1.38	1.16	1.00	.85	.76
										30-----	.68	.80	.92	1.11	1.40	1.16	.99	.88	.73
										31-----	.74	.87	1.02	1.21	1.39	1.20	1.03	.93	.84
										Averages	.78	.90	1.02	1.19	1.41	1.17	1.00	.88	.77

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	113	161	199	124	178	89	52	114	121	201	132	165	158	175	106	124	198	205	142	M	M	M	106	135	169	176	201	196	202	136	125	150

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Oates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See Individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- O Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

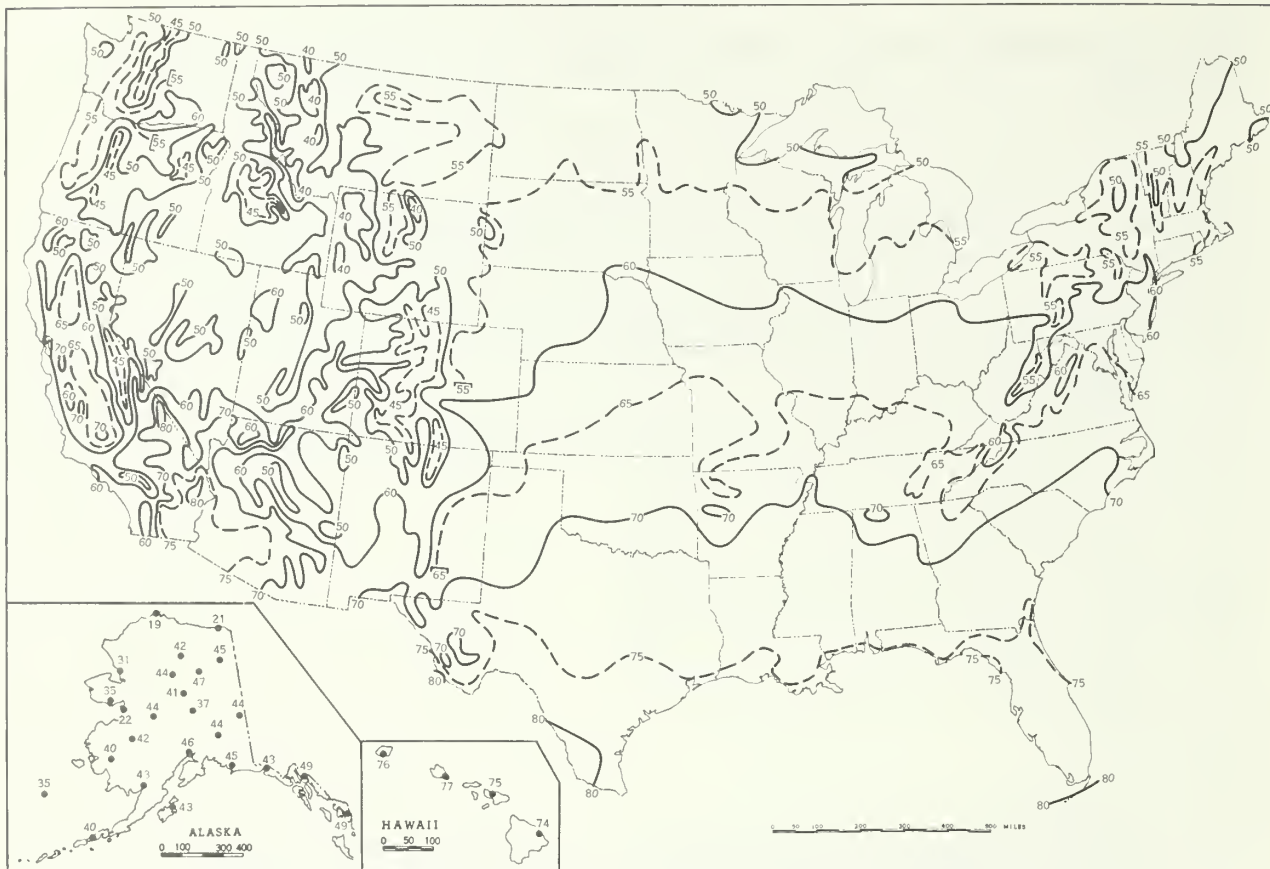
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( ) Clouds Present	DM Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Dust	HS Slight Haze	M Moderate Haze-indeter-
BD Blowing Dust	F Fog	I Intense Haze-indeterminable	minable
BN Blowing Sand	GF Ground Fog	K Smoke	N Sand
D Dust	H Haze	KI Intense Smoke	S Slight Haze-indeter-
OI Intense Dust	HI Intense Haze	KM Moderate Smoke	minable

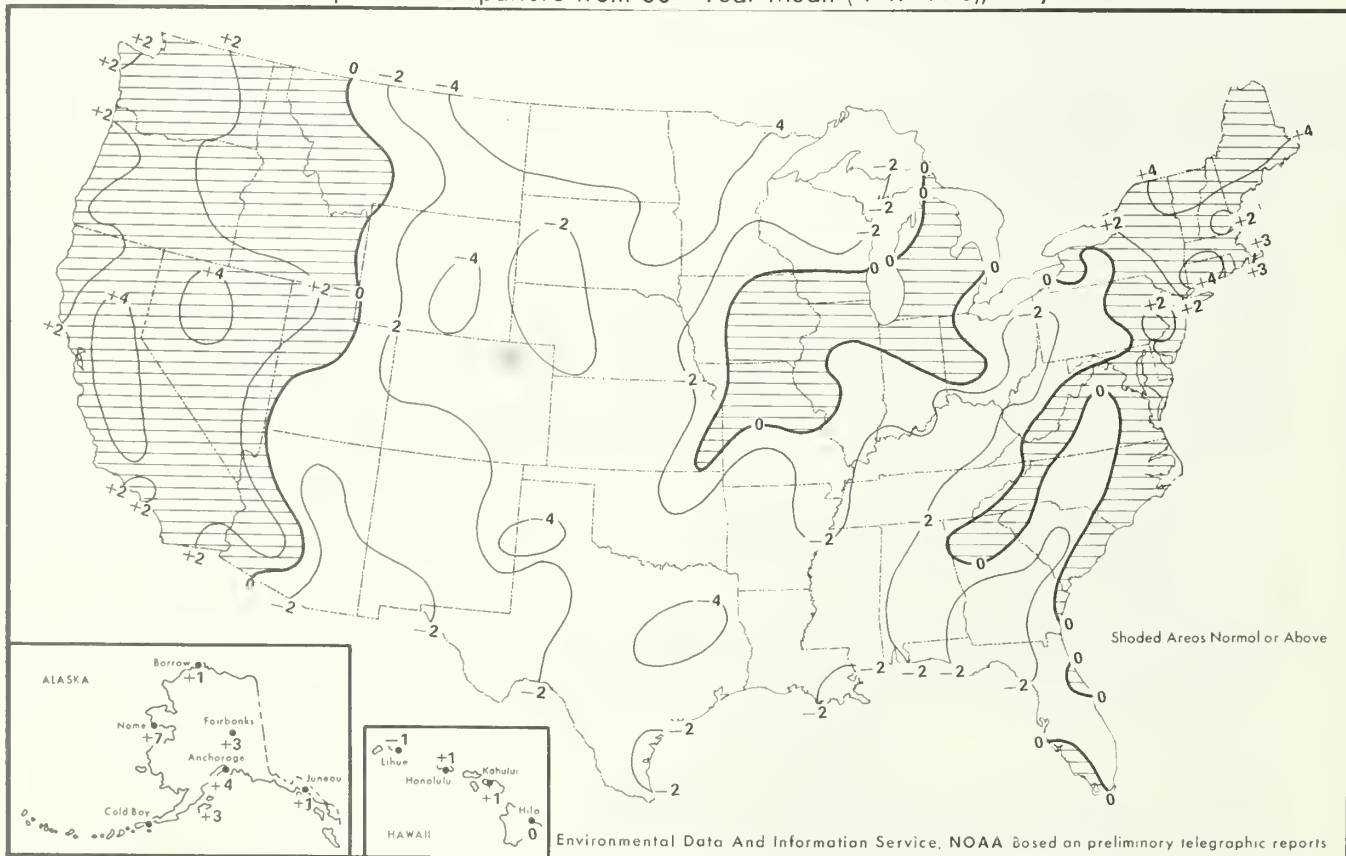
NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), May.



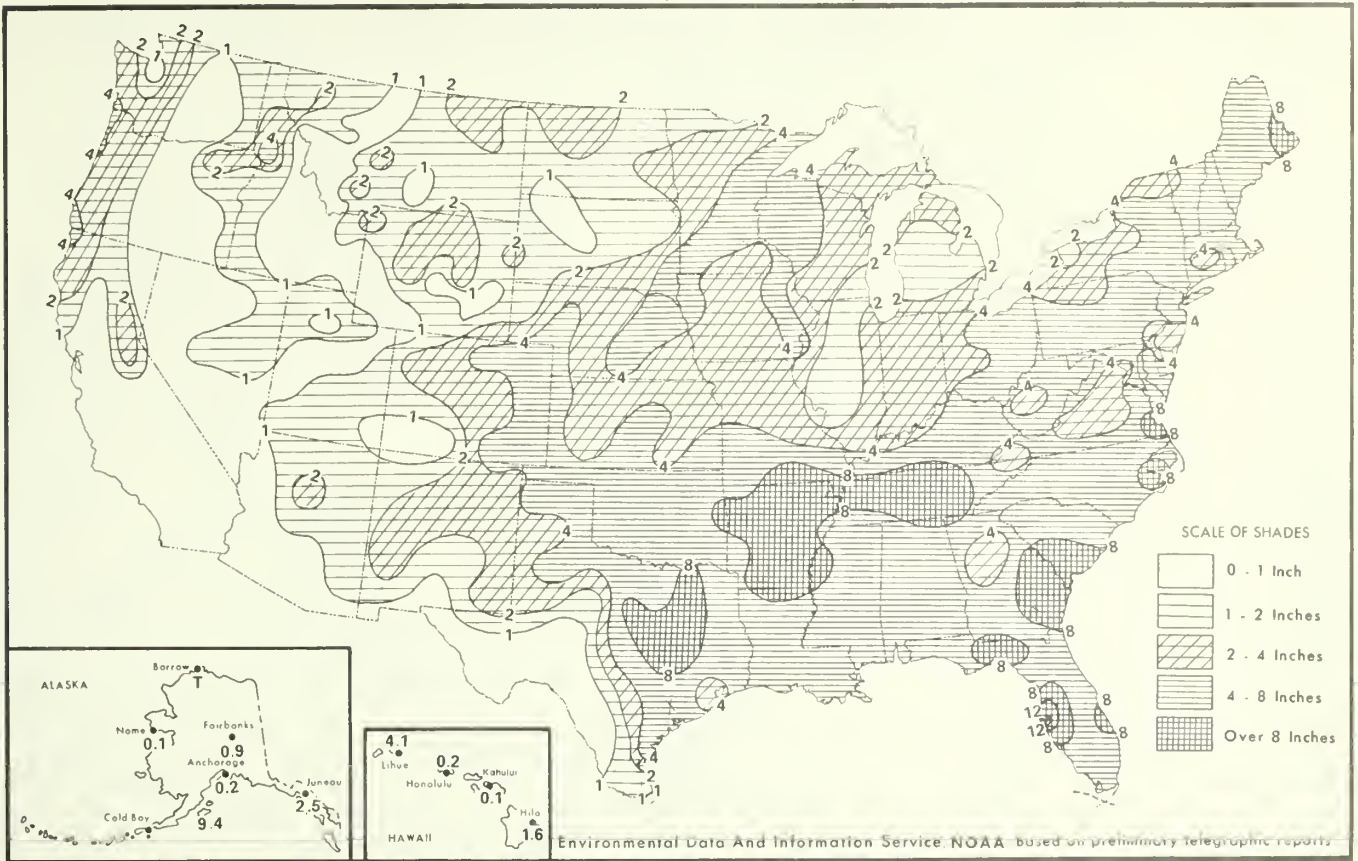
B. Temperature Departure from 30 - Year Mean (°F 1941-70), May 1979



Environmental Data And Information Service, NOAA based on preliminary telegraphic reports



Chart II. A. Total Precipitation (Inches), May 1979



B. Percentage of Normal Precipitation, May 1979

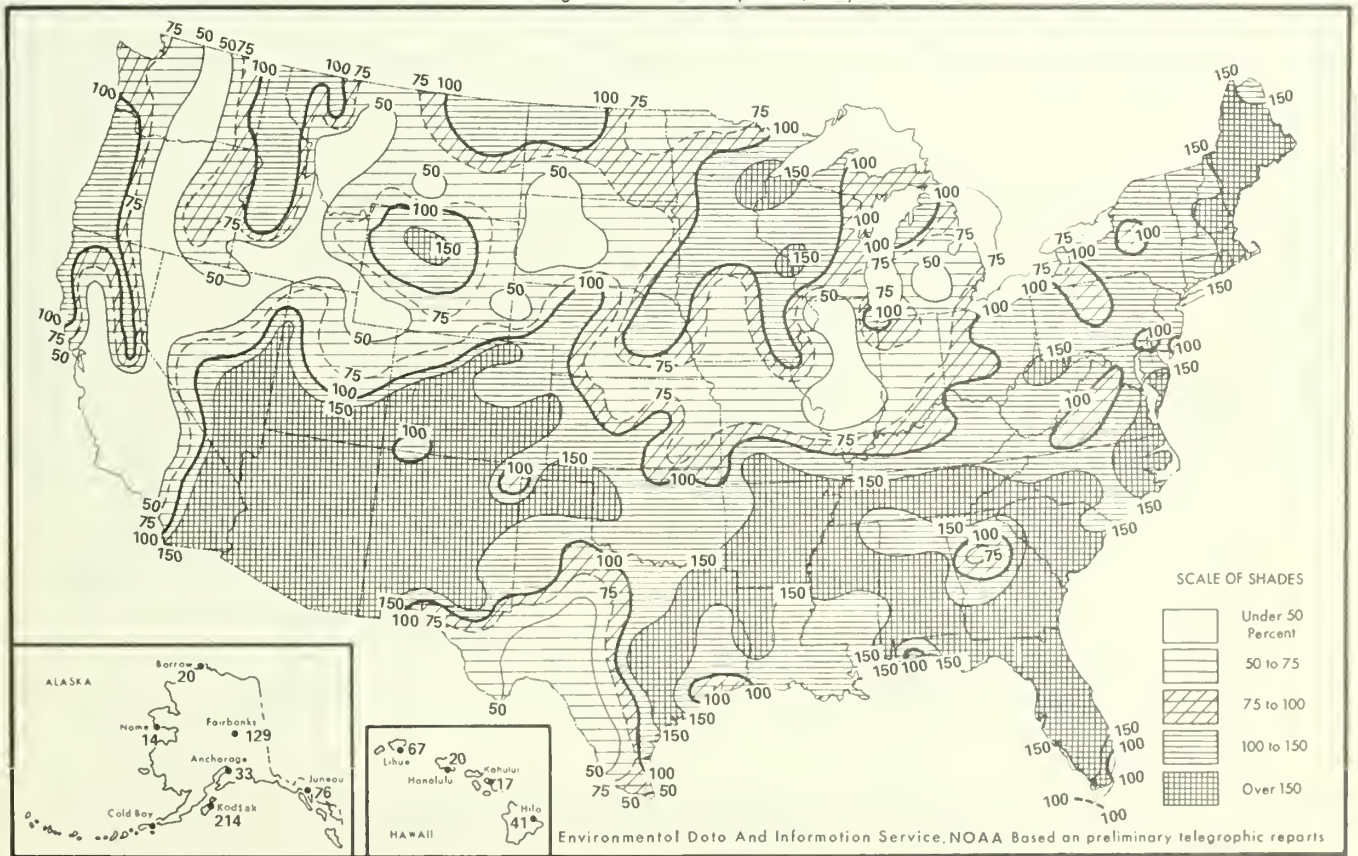
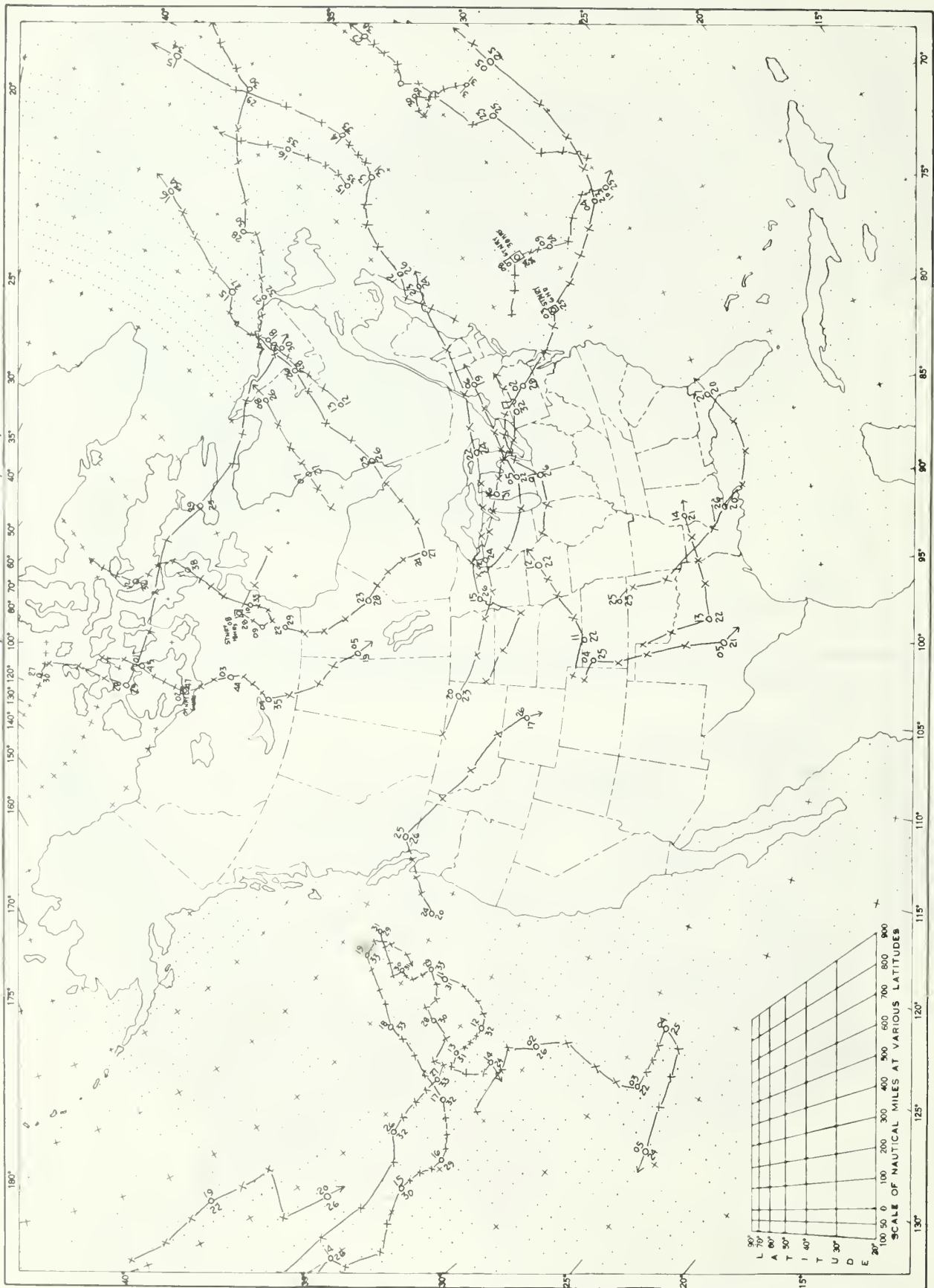
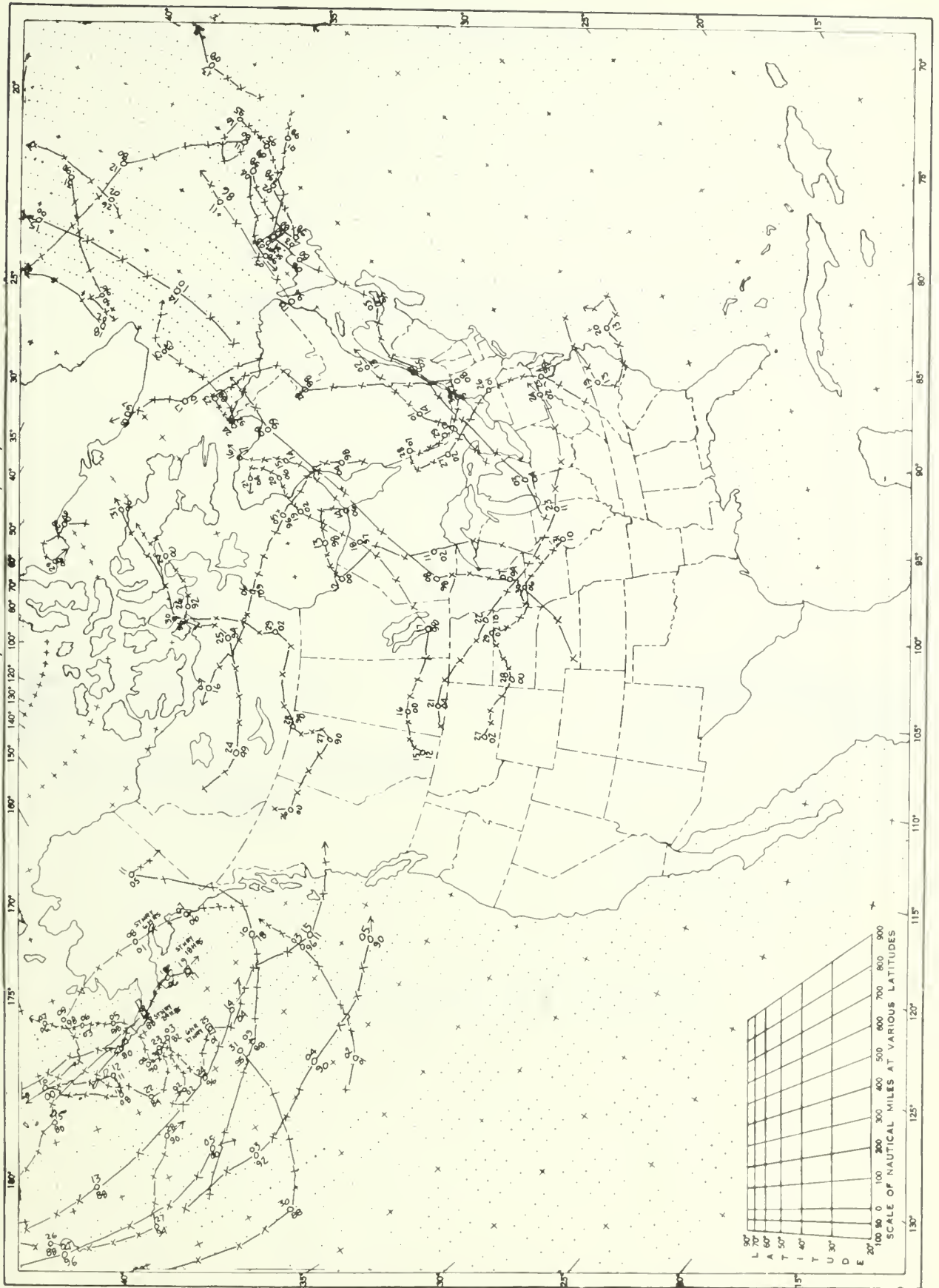


Chart III. Tracks of Centers of Anicyclones at Sea Level, May 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart IV Tracks of Centers of Cyclones at Sea Level, May 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

JUNE 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** A typical June provided thunderstorms east of the Rockies and relatively light rain west of that mountain range. However, the West became much drier than normal this year. East of the Rockies, the thunderstorms produced deluges of rain in some areas, but the very spotty rain left many portions of the Nation far below their normal June rainfall. An area from central Illinois to northern Arkansas had less than half the normal rainfall for the month. The southern coastal area, New England, North Dakota, and Montana were also much drier than normal. Temperatures ranged cooler than normal from New England down the Appalachians and across the South to New Mexico. Warm weather prevailed in the Southwest and the Plateau Region.

A low pressure system in Ohio, with a cold front extending southward, moved rapidly eastward during the first three days of June. Some heavy rain fell in the mid-Atlantic States and in the Southeast.

In the period of the 4th-10th, another upper air disturbance began moving out of the Southwest, and low-level winds carried moisture northward from the Gulf of Mexico. Thunderstorms and rain, heavy in places, fell from the middle Rio Grande Valley in Texas through the Great Lakes area. Severe weather, including tornadoes, covered this area. Rain totals for the week exceeded 5 inches in some places. Cool weather prevailed in the Rockies and western Plains, but warm temperatures were noted elsewhere.

The second week in June brought relief from severe weather and rain in most of the South. The exception took the form of a low pressure system that moved northward along the East Coast and spread rain from Florida to New England. Elsewhere, a series of storms moved across southern Canada and caused rain in that area and the northern half of the United

States. The weather was warm through most of the West, the Rockies, central and northern Plains, and through the Great Lakes. Maximum temperatures exceeded 100° in parts of the northern Plains.

Rain dampened nearly all of the Nation east of the Rockies during the week of the 18th-24th. The exception was central Texas and southward, where no rain fell. A storm system formed in the central Rockies trailing a cold front southwestward. The center of the storm moved to the central Plains and then northeastward through the western Great Lakes. The most rain occurred in the northern Plains, as the storm center pushed through and into the central Plains, where a wave formed on the front. Later in the week, thunderstorms with heavy rain headed through the Ohio Valley, northern Mississippi, and central Alabama. Cooler than normal readings blanketed most of the Rockies and Plateau, the northern Plains, Great Lakes, and eastern portion of the country. Other areas averaged up to 3° warmer than normal.

The last week in June saw precipitation in all but the southwestern quadrant of the Nation. As the week began, a high pressure center over the Great Lakes kept the weather cool and dry over the Midwest. When the high pressure moved eastward, warm, moist air rushed northward behind it and rekindled the showers and thunderstorms from Texas to the Great Lakes. A low pressure center trekked out of the northern Plains to the eastern Great Lakes by the end of June. The heaviest rain fell in central Texas and the central Mississippi Valley. However, as the month ended, heavy showers soaked southern Michigan, northern Indiana, and Ohio. Average temperatures for the week ranged warmer than normal west of a line from central Texas to central Wisconsin and cooler than normal in the East.

# TROPICAL STORM ANA

June 19 - 24, 1979

National Hurricane Center, NOAA  
Miami, Florida

Ana was the first June storm to develop east of the Lesser Antilles since 1933 and only the second such in 100 years of record. Ana was the earlier but the 1933 storm developed farther to the east.

The disturbance which was to become Ana left the African west coast on the 14th. First evidence that a tropical depression was forming came on the morning of the 19th when satellite pictures indicated a circulation was developing near 10°N 45°W. The depression moved towards the westnorthwest about 12 kts until late on the 20th when it slowed and turned to the northwest in response to a weak trough approaching in the higher latitude westerlies. Some slight strengthening occurred at this time. Air Force reconnaissance reports indicated the depression was nearing tropical storm strength late on the 21st, and this was confirmed on the morning of the 22d by another reconnaissance flight.

Ana was named at noon AST on the 22d, and gale warn-

ings were issued for the islands from Martinique to Guadeloupe because of the proximity of the storm. However, strong westerlies at high levels began shearing the convection from the circulation center, and Ana reached the islands as a minimal tropical storm late that day. Continued weakening took place as the depression turned more to the west and Ana was downgraded to a tropical depression on the morning of the 23d and to a tropical wave in the central Caribbean early on the 24th.

The maximum sustained winds in Ana were estimated to be 50 kts on the morning of the 22d with the minimum central pressure of 1005 mbs also occurring at that time.

There was no heavy rainfall in the islands and no reports of gale force winds. No deaths or significant damage have been reported.

# TROPICAL STORM ANA

Preliminary Report

<u>DATE</u>	<u>TIME (GMT)</u>	<u>POSITION</u>		<u>WIND MAX. (KT)</u>	<u>PRESSURE (MIN) (MB.)</u>	<u>STAGE</u>
		<u>LATITUDE</u>	<u>LONGITUDE</u>			
19	1200	10.0	45.0	25	1011	DEPRESSION
	1800	10.2	46.0	25		
20	0000	10.5	47.0	25		
	0600	10.9	48.1	25		
	1200	11.3	49.2	25		
	1800	11.8	50.2	25		
21	0000	12.3	51.1	30	1009	
	0600	12.9	51.9	30		
	1200	13.5	52.7	30		
	1800	13.9	53.5	30		
22	0000	14.2	54.7	35	1007	STORM
	0600	14.2	55.8	40		
	1200	14.2	56.9	50		
	1800	14.1	58.3	40		
23	0000	14.1	59.8	35	1010	
	0600	14.0	61.3	30		
	1200	14.0	62.8	25		
	1800	14.0	64.5	25		
24	0000	14.0	66.2	25		DEPRESSION



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

JUNE 1979

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
	°F			°F			In.		In.	
Alabama	2 Stations	100	20	Valley Head	46	12	Oauphin Island 2	6.85	Montgomery WSO AP	.33
Alaska	Cakona 1 N	81	22	Barrow WSO AP	22	27	Yakutat WSO AP	13.84	Barrow WSO AP	.62
Arizona	Willow Beach	120	29	Sunrise Mountain	16	17	Black River Pumps	3.76	20 Stations	.00
Arkansas	Stamps	100	30	3 Stations	46	12+	Dermott 3 NE	8.77	Saint Francis	.88
California	Palm Springs	120	27	White Mountain 2	6	19	Jess Valley	.90	266 Stations	.00
Colorado	2 Stations	104	30+	Berthoud Pass	11	1	Julesburg	4.49	Brooms Park Refuge	.09
Connecticut	Hartford WSO AP	95	16	Falls Village	32	26	Bridgeport WSO AP	3.29	Barkhamsted	.62
Delaware	Bridgeville 1 NW	89	7	Georgetown 5 SW	45	27+	Georgetown 5 SW	6.25	Newark University Farm	3.06
Florida	5 Stations	100	21+	Smith Creek	49	13+	Avon Park 2 W	10.17	Plant City	.56
Georgia	Marshallville	102	23	Blairsville Exp Station	41	12	Folkston 3 SW	9.13	Newnan	.50
Hawaii	2 Stations	91	28+	Mauna Kea Obs 111.2	24	21+	Mount Waialeale 1047	45.21	12 Stations	.00
Idaho	Brownlee Dam	105	29	3 Stations	20	8+	Warren	2.23	2 Stations	T
Illinois	Hillsboro	100	16	Marengo	39	25	Elgin	8.59	Virginia	.49
Indiana	Evansville WSO AP	96	19	Angola	33	25	Spurgeon 2 N	12.10	Rockville	.89
Iowa	4 Stations	100	15+	3 Stations	36	1	Blackton 2 S	8.76	Wapello	1.43
Kansas	2 Stations	106	27+	Atwood	36	10	Cassoday	13.96	Dodge City WSO AP	.89
Kentucky	3 Stations	96	22+	2 Stations	41	26+	Boston 6 SW	10.02	Hickman 1 E	1.31
Louisiana	5 Stations	98	30+	Ashland 2 S	50	12	Cotton Valley	8.08	Lafayette FAA AP	.04
Maine	2 Stations	94	16	5 Stations	31	26+	2 Stations	4.24	Newcastle	.20
Maryland	2 Stations	90	10+	Oakland 1 SE	36	26+	Laurel 3 W	6.87	Hancock Fruit Lab	1.62
Massachusetts	Boston WSO AP	95	16	Chester 2	24	26	Bedford	3.72	Rockport 1 ESE	.32
Michigan	Lapeer	94	10	Champion Van Riper Park	27	24	Gull Lake Biol Station	9.28	Hesperia 4 WNW	1.54
Minnesota	Lamberton SW Exp Station	106	15	Hibbing Power Substation	25	1	Stillwater 1 SE	8.58	Hallcock	1.02
Mississippi	Wiggins 3 SSE	102	30	University	48	12	Baldwyn	11.12	Wiggins 3 SSE	.25
Missouri	5 Stations	98	22+	2 Stations	41	25+	Lockwood	9.81	Parma	.20
Montana	Wolf Point	105	13	Wisdom	19	8	2 Stations	5.44	Potomac	.02
Nebraska	Osmond	106	14	2 Stations	29	2+	Pawnee City	9.34	Stratton	1.38
Nevada	Sunrise Manr Las Vegas	115	29+	Rand Ranch Palisade	18	8	Lund	1.26	25 Stations	.00
New Hampshire	North Conway	94	17	Mount Washington	24	13	First Conn Lake	4.26	Blackwater Dam	.42
New Jersey	2 Stations	90	18+	Cranford	32	12	Bridgeton 3 NE	7.55	Bound Brook 2 W	1.68
New Mexico	Orogrande	105	29	Luna Ranger Station	24	20	Canton	7.03	Fruitland 2 E	.04
New York	4 Stations	93	17+	Old Forge	28	26+	Manorkill	4.03	Chazy	.46
North Carolina	Hamlet	95	27	Grandfather Mountain	37	12	Lake Lure	10.36	Franklin	1.29
North Dakota	3 Stations	105	14+	Carson	31	8	Napoleon	5.47	Powers Lake 1 N	.53
Ohio	Chillicothe-Mound CI	97	11	Carpenter 4 NW	35	25	Chilo Meldahl Dam	9.55	Painesville 4 NW	1.10
Oklahoma	Mangum Research Station	107	30	Boise City 2 E	42	1	Marlow 1 WSW	13.29	Cherokee Power Plant	1.08
Oregon	6 Stations	100	29+	Unity	20	8	Tillamook 1 W	3.07	2 Stations	.00
Pennsylvania	Phoenixville 1 E	92	7	Clermont 4 NW	28	26+	Shippensburg	4.97	Austin 4 NNW	1.01
Puerto Rico	Manati 2 E	97	14	Yarucoa 1 NNE	23	28	San Lorenzo 3 S	23.58	Morovis	3.97
Rhode Island	Providence WSO AP	90	16	Kingston	37	13	Kingston	1.95	Woonsocket	1.13
South Carolina	3 Stations	98	19+	3 Stations	46	12	Cheraw	11.01	Clark Hill Dam	.80
South Dakota	Midland	110	13	Deerfield 4 NW	22	10	Cedar Butte	7.86	Camp Crook	1.27
Tennessee	4 Stations	95	23+	Taxwell	42	12	Moscow	6.82	Fikeville	.92
Texas	Candelaria	109	22	2 Stations	41	12+	Uvalde	14.90	El Paso WSO AP	.03
Utah	Saint George	108	29	2 Stations	20	9+	Pine View Dam	2.12	39 Stations	.00
Vermont	Vernon	93	17	West Burke	29	26	Mount Mansfield	3.89	Union Village Dam	.82
Virginia	4 Stations	92	19+	Monterey	35	25	Rockfish	11.02	Hopewell	2.33
Virgin Islands	Truman Field FAA AP	98	25+	Alex Hamilton Field FAA	66	28	Estate Rust OP Twist	12.29	Wittberg	2.66
Washington	4 Stations	101	29+	3 Stations	25	7	Neah Bay 1 E	2.94	2 Stations	.00
West Virginia	Wayne 2	92	7	2 Stations	32	25	Man	9.88	Brandonville	1.18
Wisconsin	Port Washington	93	15	Newald 4 N	29	24	Amery	9.74	Dodgeville 1 NE	1.54
Wyoming	Colony	105	13	Burgess Junction	14	8	Gillette 18 SW	4.05	Farson	.00















# CLIMATOLOGICAL DATA

METRIC UNITS

JUN 1979

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)															
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 37.2 °C or above	Min. 0 °C or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more		No. of days	With thunderstorms	Snow, ice pellets	Maximum depth on ground	Residual speed	Residual direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10			
																																	mb	°C	°C
SHORE ISLAND	16	1016.3	1018.7	23.7	13.0	18.4	-0.7	32.2	16	8.3	27*	1	0	12.2	71	37	-31	14	7	1	0	0	0	0	11.6	22	14.3	32	18	11	8	11	5.4	71	Possible sunshine
PROVIDENCE	12	1016.6	1018.6	29.4	19.3	24.4	-1.1	36.1	19	13.9	13*	5	0	18.9	75	97	-103	26	7	4	0	0	0	0	0.4	7	10.3	34	16	7	10	13	6.2	76	
CHARLESTON U	63	1010.2	1018.3	28.8	16.7	22.8	-3.2	34.4	19	9.4	12	3	0	16.7	72	139	-42	81	7	6	0	0	0	0	0.6	6	11.6	4	16	5	14	11	6.4	77	
COLUMBIA	292	994.1	1018.3	27.3	17.1	22.2	-2.2	31.7	2	10.0	12	0	0	16.7	73	95	-8	44	13	5	0	0	0	0	0.3	1	7.6	NE 16*	7	9	14	6.4	60		
GRNVILLE-SPRTNBRG	395	967.2	1013.2	27.6	13.4	20.5	1.0	35.6	14	6.1	2	4	0	13.3	66	127	35	87	9	6	0	0	0	0	0.3	17	17.0	NW 20	9	13	8	5.3	71		
ABERDEEN	394	905.5	1014.7	25.6	11.5	18.6	0.7	39.4	13	2.2	1	3	0	13.3	67	91	-2	28	15	12	9	0	0	0	1.2	1	18.3	NW 6	11	10	9	5.4	66		
MURON	439	963.8	1014.5	25.9	13.8	19.9	0.1	36.1	14	6.1	2	1	0	13.3	67	76	-35	20	12	9	0	0	0	0	0.5	18	15.6	22	19*	9	12	9	5.4	66	
STOIX FALLS	459	965.5	1019.2	26.1	14.1	20.1	-2.3	30.0	8	8.9	12	0	0	15.0	75	90	-1	38	11	4	5	0	0	0	0.4	34	8.9	30	11*	9	10	13	6.3	65	
ARISTOL	203	993.4	1018.2	29.2	17.6	23.4	-1.1	31.7	20*	12.2	12	5	0	17.2	71	99	-35	37	8	7	0	0	0	0	0.2	22	10.7	5	11	9	10	11	5.8	65	
CHATTANOOGA	299	983.4	1018.0	27.9	17.4	22.7	-1.5	34.7	20*	12.2	12	0	0	16.7	70	97	-4	34	6	7	0	0	0	0	0.6	32	10.3	4	22*	8	13	9	5.9	68	
KNOXVILLE	79	1007.8	1017.8	30.5	20.5	25.5	-0.4	34.4	20*	15.0	11	9	0	16.7	60	121	37	70	6	5	0	0	0	0	1.0	18	12.5	34	21	12	11	7	4.7	80	
MEMPHIS	180	996.3	1017.8	29.1	17.2	23.2	-1.6	33.3	19	11.1	12	5	0	17.8	73	71	-15	24	8	6	0	0	0	0	1.2	20	11.6	31	10	9	12	9	5.4	59	
NASHVILLE	276	987.3	1017.8	28.7	15.2	21.9	-1.5	32.8	18	8.9	12	4	0	17.8	73	95	-5	55	9	9	0	0	0	0	0	0	12.1	12.1	22	11	11	8	8.2	59	
DAX RIDGE R	2	922.9	1014.5	32.5	19.7	26.1	-0.7	37.2	20*	11.7	12	19	0	16.1	59	73	2	38	8	4	0	0	0	0	0	3.8	17	15.2	NW 25	13	9	8	4.4	70	
ABILENE	1098	892.3	1013.6	28.8	14.4	21.6	-2.1	36.7	30*	7.8	10	13	0	15.2	61	81	-7	26	8	9	0	0	0	0	2.7	21	14.3	27	19	14	10	6.4	74		
AMARILLO	189	993.9	1015.8	31.6	21.5	26.6	-1.0	36.1	30*	15.6	13	20	0	18.9	68	31	-5A	13	5	2	0	0	0	0	2.1	17	10.7	N 10	9	15	6	4.7	62		
AUSTIN	6	1014.6	1015.1	32.5	23.1	27.8	-0.4	36.1	30*	16.1	13	20	0	21.7	73	39	-3A	26	7	3	0	0	0	0	3.0	13	9.4	14	18	12	12	6.4	60		
FRONTSVILLE	17	1013.9	1015.7	32.7	22.5	27.2	-0.4	36.1	30*	15.0	13	20	0	22.2	74	82	14	49	5	3	0	0	0	0	3.1	14	10.7	16	15*	12	13	5.4	85		
CORPUS CHRISTI	168	984.9	1013.9	33.8	20.7	27.2	-0.2	39.4	30*	18.8	11	23	0	17.8	61	30	-43	16	4	2	0	0	0	0	2.8	18	9.4	26	25*	7	16	7	4.9	74	
DALLAS - FORT WORTH	319	978.7	1016.0	32.2	20.7	26.4	-2.6	36.7	30*	15.4	11*	18	0	18.9	66	110	58	59	6	0	0	0	0	0	3.8	13	13.6	8	25	13	8	9	4.8	87	
DEL RIO	1194	862.5	1011.1	33.2	18.4	25.8	-1.1	41.7	28	8.9	11	22	0	6.1	34	1	-14	1	2	2	0	0	0	0	0.8	18	13.4	8	25	20	6	4	3.1	87	
EL PASO	2	1012.5	1016.2	32.2	20.9	26.6	-0.7	36.1	30	20.6	12	0	0	21.7	79	44	-67	29	6	2	0	0	0	0	1.7	14	8.9	17	15*	7	8	4.4	67		
GALVESTON	492	904.9	1013.5	31.7	18.0	24.8	-0.2	38.9	21	12.2	10	16	0	15.8	54	94	23	39	8	4	0	0	0	0	2.5	19	16.5	31	9	16	8	6.3	82		
HOUSTON INTERCON	469	916.3	1013.1	31.3	18.1	25.2	-1.4	38.9	30	12.2	11	19	0	13.9	56	76	38	55	6	0	0	0	0	0	3.0	16	18.3	34	23	17	6	5.6	82		
LUBBOCK	580	984.2	1014.5	31.9	19.2	25.6	-2.0	37.9	30	10.1	13	9	0	22.2	80	101	-22	51	8	4	0	0	0	0	1.6	16	8.9	14	18*	11	12	7	8.8	72	
PORT ARTHUR	240	984.2	1014.5	31.9	19.2	25.6	-2.0	37.9	30	9.4	12	19	0	16.1	59	55	-77	30	5	3	0	0	0	0	3.4	16	12.5	14	6	13	7	10	8.3	70	
SAN ANTONIO	132	982.6	1015.9	31.8	22.2	27.0	-0.8	34.4	30*	15.0	13	14	0	20.4	71	142	71	98	6	3	0	0	0	2.7	14	11.2	36	10	7	15	8	5.7	70		
SAN ANTONIO	132	982.6	1015.9	31.8	22.2	27.0	-0.8	34.4	30*	15.0	13	14	0	20.4	71	142	71	98	6	3	0	0	0	2.7	14	11.2	36	10	7	15	8	5.7	70		
VICTORIA	132	982.6	1015.9	31.8	22.2	27.0	-0.8	34.4	30*	15.0	13	14	0	20.4	71	142	71	98	6	3	0	0	0	2.7	14	11.2	36	10	7	15	8	5.7	70		
WACATA FALLS	303	979.0	1014.7	33.5	20.6	26.1	-1.7	39.6	30	12.8	10	19	0	18.9	60	119	50	70	3	0	0	0	0	3.0	18	9.8	18	19	9	14	7	5.0	87		
WACATA FALLS	303	979.0	1014.7	33.5	20.6	26.1	-1.7	39.6	30	12.8	10	19	0	18.9	60	119	50	70	3	0	0	0	0	3.0	18	9.8	18	19	9	14	7	5.0	87		
UTAH	1533	844.6	1013.2	29.7	6.2	18.0	-0.4	36.7	28	-1.1	9	13	3	0	2.2	33	7	-14	7	0	3	0	0	0	0.8	19	17.0	NW 17	22	6	2	2.1	93		
MILFORD	1287	871.3	1012.4	30.2	12.1	21.2	2.2	40.0	29	3.9	8	10	0	2.2	33	9	-24	7	4	3	0	0	0	0	0	0	18.8	SW 17	22	6	2	2.1	93		
SALT LAKE CITY	101	1004.4	1016.8	24.5	12.5	18.5	0.1	31.7	17*	3.9	25	0	0	12.2	70	35	-53	22	9	3	0	0	0	2.2	19	14.3	5	11	6	8	16	6.7	53		
VERMONT	278	985.4	1019.1	26.3	16.3	21.3	-2.3	32.2	23	7.8	12	1	0	14.4	67	134	47	51	13	2	0	0	0	0	0.3	22	12.5	5	16	9	11	10	5.8	64	
LYNCHBURG	57	1012.2	1018.7	27.9	15.2	21.6	-0.8	33.3	18	8.9	15	4	0	17.2	77	61	-17	37	7	2	0	0	0	0	0.6	15	13.0	4	11	6	10	14	6.5	66	
NORFOLK	350	977.3	1018.7	26.5	14.9	20.7	-1.3	31.7	10	7.8	26	0	0	15.6	74	147	58	43	12	7	0	0	0	0	0.7	16	10.7	N 11	6	10	14	6.5	74		
RICHMOND	350	977.3	1018.7	26.5	14.9	20.7	-1.3	31.7	10	7.8	26	0	0	15.6	74	147	58	43	12	7	0	0	0	0	0.4	34	11.2	33	11	6	10				



# MONTHLY AND SEASONAL HEATING DEGREE DAYS

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State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
ALABAMA														
BIRMINGHAM U				154	213	577	455	597	300	92	25	0		
BIRMINGHAM	0	0	0	191	220	570	459	594	303	33	0	0		2844
HUNTSVILLE	0	0	0	20	53	602	474	691	385	155	48	0	3269	3302
MOBILE	0	0	0	72	109	431	681	465	194	39	9	0	1606	1684
MONTGOMERY	0	0	0									0	2000	2269
ALASKA														
ANCHORAGE	186	160	400	792	1153	1344	1321	1515	1029	781	454	268	9403	10911
ANNETTE	213	196	333	519	780	947	1055	930	728	621	532	373	7227	7053
BARROW	777	874	936	1793	1786	2448	2091	2390	2534	1978	1395	970	19967	22655
BARTER ISLAND	743	867	867	1742	1726	2268	2009	2402	2646	1897	1242	925	19334	19994
BETHEL	334	293	605	1151	1223	1338	1347	1962	1447	994	634	508	11840	13203
BETTLES	94	257	374	1521	1696	2144	2173	2574	1878	1280	521	271	14983	15925
BIG DELTA	83	216	355	1222	1579	1914	1991	2375	1520	929	420	244	13048	13698
COLORADO BAY	471	325	481	766	799	917	921	1020	910	720	661	423	8416	9865
FAIRBANKS	65	176	342	1286	1689	1912	2260	2533	1638	1018	463	220	13802	14345
GULKANA			559	995	1624	2009	2140	2324	1382				378	
HOMER	366	310	522	761	984	1088	1056	1375	987	792	651	481	9373	10364
UNEAU	294	260	427	612	1037	1134	1370	1505	904	712	528	378	9167	9007
KING SALMON	326	237	514	876	1042	1141	1076	1648	1069	754	544	380	9607	11582
KOTIAK	383	239	417	640	765	902	829	1055	837	620	586	344	7617	8860
KOTZEBUE	199	264	550	1379	1470	1953	1639	2093	1772	1380	969	485	14153	16039
MC GRATH	176	224	385	1291	1520	1720	2038	2383	1574	1040	507	367	13425	14487
NOOME	321	323	543	1171	1225	1567	1387	1847	1526	1176	715	522	12323	14325
ST. PAUL ISLAND	564	496	518	792	802	1011	946	976	1065	860	747	548	9325	9325
TALKEETNA	238	226	515	952	1328	1564	1536	1649	1148	894	553	319	10922	11708
UNALAKLEET	236	237												
VALDEZ	374	294	491	820	1059	1244	1229	1379	1020	792	575	402	9679	10545
YAKUTAT	356	306	487	657	986	1100	1294	1350	935	834	624	458	9387	9533
ARIZONA														
FLAGSTAFF	33	73	227	465	907	1254	1307	1089	1005	722	524	219	7825	7322
PHOENIX	0	0	0	1	148	405	455	254	143	30	0	0	1436	1552
TUCSON	0	0	0	15	213	470	511	311	260	76	20	0	1876	1752
WINSLOW	0	0	37	180	573	1176	1102	757	646	314	156	27	4968	4733
YUMA	0	0	0	0	136	374	399	174	84	1	0	0	1168	1005
ARKANSAS														
FORT SMITH	0	0	0	133	359	771	1215	869	393	175	54	0	3969	3336
LITTLE ROCK	0	0	0	118	321	667	1083	732	314	110	13	0	3358	3354
NO. LITTLE ROCK	0	0	0	126	316	707	1158	794	368	149	35	0	3653	3088
CALIFORNIA														
BAKERSFIELD	0	0	0	9	236	578	410	352	211	87	9	0	1891	2185
BISHOP	0	1	93	169	653	906	931	731	514	291	97	18	4400	4313
BLUE CANYON	55	107	247	198	701	872	954	833	720	671	303	0		
EUREKA U	274	241	215	307	503	667	562	467	459	412	374	323	4804	4679
FRESNO	0	0	6	30	382	682	549	372	234	96	34	0	2385	2650
LONG BEACH	0	0	0	4	201	376	344	268	177	41	30	1	1442	1606
LOS ANGELES	1	0	0	5	179	326	316	295	237	137	74	1	1571	1819
LOS ANGELES U	0	0	0	7	209	361	354	274	226	80	46	6	1563	1245
MT SHASTA R	48	115	298	348	840	1067	1051	842	694	623	333	144	6403	5890
OKLAND	49	21	12	104	349	594	491	387	294	244	117	104	2766	2909
RED BLUFF	0	0	1	17	353	615	541	418	248	172	41	0	2406	2688
SACRAMENTO	0	0	11	51	445	715	606	446	313	236	57	2	2886	2843
SANBERG R	20	23	141	108	598			717	657	487				
SAN DIEGO	0	0	0	0	102	297	244	219	153	45	20	6	1086	1507
SAN FRANCISCO	111	65	32	143	371	581	536	406	319	277	148	132	3121	3042
SAN FRANCISCO U	196	137	43	138	268	471	431	332	281	250	185	197	2929	3080
SANTA MARIA	112	45	54	139	379	544	505	442	372	326	189	130	3237	3053
STOCKTON	0	0	3	33	398	713	605	384	262	126	27	0	2551	2806
COLORADO														
ALAMOSA	18	141	278	632	966	1762	1827	1518	1069	704	438	203	9556	8609
COLORADO SPRINGS	3	44	119	400	848	1329	1484	906	825	494	336	97	6885	6473
DENVER	0	20	96	366	811	1245	1450	854	751	473	313	81	6460	6016
GRAND JUNCTION	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646	5605
PUEBLO	0	6	59	347	778	1264	1509	849	674	391	247	48	6172	5394
CONNECTICUT														
BRIDGEPORT	4	0	92	290	524	889	1062	1126	675	460	114	23	5259	5461
HARTFORD	9	15	209	489	790	1102	1184	1310	730	473	81	26	6418	6350
DELAWARE														
WILMINGTON	6	0	60	337	542	854	1037	1197	605	424	89	28	5179	4940
DIST. OF COLUMBIA														
WASHINGTON DULLES	0	0	58	349	539	824	1040	1163	578	383	115	43	5092	5010
WASHINGTON NATIONAL	0	0	9	192	378	671	918	1019	425	273	30	0	3915	4211
FLORIDA														
APPALACHICOLA U	0	0	0	24	35	292	525	394	204	13	4	0	1491	1361
DAYTONA BEACH	0	0	0	0	4	71	279	244	79	5	0	0	682	897
FORT MYERS	0	0	0	0	19	127	100	13	0	0	0	0	259	457
JACKSONVILLE	0	0	0	46	68	324	525	371	160	13	3	0	1510	1327
KEY WEST	0	0	0	0	0	0	17	22	0	0	0	0	39	64
LAKELAND U	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIAMI	0	0	0	0	0	1	84	82	13	0	0	0	180	206
ORLANDO	0	0	0	0	0	56	230	214	71	0	0	0	571	733
PENSACOLA	0	0	0	17	23	322	592	390	168	6	4	0	1522	1578
TALLAHASSEE	0	0	0	41	76	364	581	424	217	28	13	0	1744	1563
TAMPA	0	0	0	2	75	245	245	190	53	0	0	0	565	718
WEST PALM BEACH	0	0	0	0	0	2	124	118	23	0	0	0	267	299
GEORGIA														
ATHENS	0	0	1	132	218	581	804	635	289	92	22	0	2774	2975
ATLANTA	0	0	0	112	194	580	853	646	279	97	16	0	2777	3095
AUGUSTA	0	0	0	103	184	531	723	582	265	79	15	2	2484	2547
COLUMBUS	0	0	0	57	104	468	693	527	219	34	7	0	2109	2378
MACON	0	0	0	70	130	467	675	541	226	62	7	0	2178	2240
ROME	0	0	0	154	259	638	897	676	360	127	31	0	3142	3342
SAVANNAH	0	0	0	45	53	378	602	448	181	17	1	0	1725	1952



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1978-1979

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
<b>IOAHO</b>														
POI3E	5	38	173	370	841	1171	1505	855	668	481	241	72	6418	5855
LEWISTON	6	22	139	390	890	1109	1485	808	582	448	190	61	6150	5464
POCATELLO	10	59	241	473	990	1587	1678	1054	887	623	520	155	7857	7065
<b>ILLINOIS</b>														
CAIRO U	0	0	0	193	387	801	1247	965	515	225	61	0	4594	5835
CHICAGO O HARE	1	4	59	418	718	1206	1622	1560	879	580	233	20	7110	6497
CHICAGO MIDWAY	4	1	50	410	671	1199	1628	1545	910	600	216	28	7058	6127
MOLINE	1	4	59	413	787	1305	1820	1445	884	521	172	12	7405	6595
PEORIA	0	4	49	590	704	1174	1722	1403	855	510	194	10	6995	6098
ROCKFORD	2	7	66	461	806	1353	1771	1458	1026	658	245	27	7860	6845
SPRINGFIELD	0	0	36	349	591	1055	1627	1336	758	455	119	0	6286	5558
<b>INDIANA</b>														
EVANSVILLE	0	0	10	523	475	865	1360	1125	559	326	106	0	5147	4624
FORT WAYNE	1	5	55	451	686	1050	1466	1401	751	542	106	26	6592	6209
INDIANAPOLIS	0	0	36	377	571	944	1453	1288	665	455	170	5	5964	5577
SOUTH BEND	5	4	57	599	656	1095	1455	1356	795	560	241	22	6645	6462
<b>IOWA</b>														
BURLINGTON	0	5	55	391	751	1210	1692	1377	854	515	162	5	6995	6149
DES MOINES	0	0	48	585	776	1293	1779	1435	912	532	165	13	7334	6710
OSURQUE	3	12	90	505	809	1414	1877	1511	1055	632	247	25	8405	7277
SIOUX CITY	1	8	65	446	948	1531	1895	1560	1058	546	255	31	8324	6955
WATERLOO	2	9	78	466	914	1404	1905	1547	1024	615	238	20	8220	7415
<b>KANSAS</b>														
CONCORDIA	0	0	41	288	719	1152	1615	1294	720	411	164	19	6405	5625
GOODE CITY	0	2	41	228	667	1054	1549	1015	615	543	175	25	5712	5046
GOUDLAND	0	18	63	375	876	1229	1470	936	710	424	269	58	6428	6119
TOPEKA	0	0	54	319	655	1078	1643	1277	695	401	129	9	6238	5243
WICHITA	0	0	18	210	598	1016	1491	1145	560	533	104	3	5476	4687
<b>KENTUCKY</b>														
COVINGTON	0	0	21	581	552	891	1348	1216	563	425	179	15	5591	5070
LEXINGTON	0	0	20	348	492	854	1277	1061	522	557	110	15	5016	4729
LOUISVILLE	0	0	4	293	442	765	1246	1030	514	301	94	5	4694	4640
<b>LOUISIANA</b>														
BATON ROUGE	0	0	0	52	104	427	687	418	178	19	5	0	1870	1670
LAKE CHARLES	0	0	0	26	98	377	636	406	151	19	0	0	1713	1498
NEW ORLEANS	0	0	0	16	39	324	586	547	128	8	2	0	1450	1465
SHREVEPORT	0	0	0	57	181	528	849	517	216	50	11	0	2409	2167
<b>MAINE</b>														
CARIBOU	53	86	434	717	1114	1505	1934	1527	1018	708	526	104	9124	9632
PORTLAND	39	32	250	513	852	1201	1272	1380	905	677	311	97	7309	7498
<b>MARYLAND</b>														
BALTIMORE	0	0	55	280	485	765	984	1100	520	354	75	6	4598	4729
<b>MASSACHUSETTS</b>														
BLUE HILL OBS R	19	19	196	447	717	1036	1154	1296	790	573	207	66	6500	6535
BOSTON	11	11	150	381	635	916	1002	1169	691	481	149	19	5615	5621
WORCESTER	53	38	229	511	767	1116	1225	1554	824	601	245	80	7021	6848
<b>MICHIGAN</b>														
ALBENA	63	48	212	577	862	1270	1580	1576	1038	712	445	164	8545	8518
DETROIT	8	0	57	413	688	1056	1390	1340	841	621	275	46	6711	6228
DETROIT METRO	17	0	73	452	728	1112	1452	1355	845	604	291	55	6962	6419
FLINT	17	8	89	449	725	1187	1516	1458	829	608	291	64	7259	7041
GRAND RAPIDS	14	22	124	545	816	1182	1477	1393	865	607	284	42	7550	6801
HOUGHTON LAKE	79	46	220	636	869	1553	1655	1530	1055	742	396	135	8694	8547
LANSING	24	13	105	507	751	1181	1509	1482	854	608	289	58	7351	6904
MARQUETTE U	64	57	220	554	918	1585	1811	1509	1482	854	608	289	7351	6904
MUSKOGON	29	15	125	519	815	1190	1481	1408	969	708	540	84	7683	6890
SAULT STE MARIE	112	96	282	645	989	1453	1753	1675	1171	835	477	237	9705	9195
<b>MINNESOTA</b>														
DULUTH	71	99	262	615	1159	1699	1999	1679	1295	910	549	172	10507	9756
INTERNATIONAL FALLS	95	119	299	661	1329	1992	2287	1857	1402	925	580	177	11701	10547
MINNEAPOLIS	5	7	89	464	968	1538	1914	1557	1112	625	507	58	8602	8159
ROCHESTER	11	20	142	577	1069	1624	2064	1658	1183	680	519	31	9378	8227
ST CLOUD	51	26	175	579	1115	1736	2095	1677	1260	767	458	87	9984	8868
<b>MISSISSIPPI</b>														
JACKSON	0	0	0	98	164	519	821	551	262	68	20	0	2484	2500
MERIDIAN	0	0	0	110	178	547	850	556	261	69	15	0	2546	2588
<b>MISSOURI</b>														
COLUMBIA REGIONAL	0	0	21	280	552	949	1515	1169	635	560	94	0	5575	5078
KANSAS CITY	0	0	28	272	618	1050	1624	1230	698	400	115	8	6040	5557
ST JOSEPH	0	2	55	318	605	1090	1680	1554	758	482	170	9	6561	5440
ST LOUIS	0	0	24	292	528	923	1496	1167	644	564	80	0	5518	4750
SPRINGFIELD	0	0	19	268	555	953	1463	1085	606	542	132	14	5365	4570
<b>MONTANA</b>														
BILLINGS	41	45	204	487	1208	1509	1771	1286	887	636	550	71	8495	7265
GLASGOW	42	70	253	601	1506	1725	2145	1780	1285	855	455	88	10579	8969
GREAT FALLS	54	97	256	496	1228	1475	1808	1492	951	722	417	111	8825	7652
HAYDEN	40	48	218	544	1317	1625	2098	1728	1024	733	592	72	9859	8687
HELENA	52	60	244	564	1265	1540	1979	1250	930	665	359	128	9014	8190
KALISPELL	60	139	351	685	1167	1567	2025	1168	964	662	474	152	9522	8554
MILES CITY	14	24	167	502	1265	1614	2010	1594	1086	705	368	62	9409	7889
MISSOULA	67	110	508	604	1141	1515	1841	1099	895	625	589	125	8718	7951
<b>NEBRASKA</b>														
GRAND ISLAND	0	3	64	400	886	1438	1777	1451	866	492	258	38	7655	6420
LINCOLN	0	5	62	392	848	1515	1787	1454	816	463	197	16	7355	6218
NORFOLK	1	9	49	454	900	1476	1856	1506	988	553	248	53	8015	6981
NORTH PLATTE	5	24	99	488	982	1560	1828	1335	862	491	299	55	7989	6745
OMAHA (ERPLEY)	0	0	59	350	754	1255	1676	1333	775	451	156	12	6801	6049
OMAHA (NORTH)	0	3	52	385	837	1358	1767	1435	921	514	199	24	7495	6601
SCOTTSLUFF	2	20	99	412	930	1425	1690	1029	737	447	288	50	7129	6774
VALENTINE	4	32	109	515	1055	1622	1888	1446	986	574	526	67	8622	7500

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State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
<b>NEVADA</b>														
ELKO	23	47	267	439	888	1277	1306	889	775	553	265	86	6815	7483
ELY	0	103	336	490	1047	1361	1479	1072	933	675	400	179	8118	7814
LAS VEGAS	21	0	1	2	324	676	737	458	270	66	18	0	2592	2601
RENO	0	62	234	347	826	1236	1113	781	709	536	247	91	6203	6022
WINNEMUCCA	21	53	241	442	907	1202	1221	809	710	532	205	63	6406	6629
<b>NEW HAMPSHIRE</b>														
CONCORD	45	34	275	563	882	1304	1284	1392	841	617	280	99	7616	7360
MT WASHINGTON OBS	497	493	811	1128	1355	1791	1782	1849	1440	1229	841	593	13809	13878
<b>NEW JERSEY</b>														
ATLANTIC CITY	6	0	116	365	512	831	1032	1208	623	406	110	39	5248	4946
ATLANTIC CITY U	6	0	62	297	497	791	979	1045	666	427	173	22	4965	4693
NEWARK	6	0	66	239	481	830	1001	1195	577	386	68	11	4820	5034
TRENTON U	7	0	79	300	521	824	1013	1195	568	408	98	19	4992	4947
<b>NEW MEXICO</b>														
ALBUQUERQUE	0	0	20	167	521	945	988	665	509	241	100	12	4168	4292
CLAYTON	0	8	68	291	678	1100	1286	806	660	416	252	62	5627	5207
ROSWELL	0	0	55	174	468	856	929	591	444	161	51	2	3731	3697
<b>NEW YORK</b>														
ALBANY	43	19	256	503	784	1119	1324	1414	803	579	188	63	7095	6888
BINGHAMTON	53	7	208	533	765	1143	1351	1437	832	667	325	127	7448	7285
BUFFALO	14	3	154	472	732	1067	1371	1400	823	619	285	65	7005	6927
NEW YORK U	5	0	75	311	510	802	969	1100	554	369	55	14	4764	4848
NEW YORK KENNEDY	2	0	62	237	481	791	978	1115	603	397	88	13	4773	5184
NEW YORK LA GUARDIA	5	0	72	287	498	831	1031	1173	537	446	96	15	5088	4909
ROCHESTER	5	1	136	428	711	1077	1342	1432	813	626	310	79	6960	6719
SYRACUSE	10	1	184	470	735	1062	1315	1457	796	591	242	74	6937	6678
<b>NORTH CAROLINA</b>														
ASHEVILLE	0	0	12	283	390	741	951	810	457	268	71	18	4001	4237
CAPE HATTERAS R	0	0	0	90	123	426	601	663	439	198	32	0	2572	2731
CHARLOTTE	0	0	7	155	255	620	873	750	350	163	30	4	3207	3218
GREENSBORO	0	0	16	238	381	700	921	896	440	198	52	8	3850	3825
RALEIGH	0	0	7	184	292	627	793	792	398	183	43	8	3327	3514
WILMINGTON	0	0	0	91	154	489	653	606	346	60	5	0	2404	2433
<b>NORTH DAKOTA</b>														
BISMARCK	18	35	217	585	1263	1679	2084	1837	1320	891	463	81	10473	9044
FARGO	15	39	179	571	1252	1788	2147	1863	1377	861	457	64	10623	9271
HILLISTON	21	39	213	569	1322	1756	2085	1774	1294	906	495	75	10550	9161
<b>OHIO</b>														
AKRON	9	0	58	456	670	997	1397	1348	712	550	288	62	6547	6224
CINCINNATI ABSE DB	0	0	21	356	526	841	1303	1157	594	402	138	10	5348	4844
CLEVELAND	7	2	43	362	620	965	1328	1281	680	552	290	60	6190	6154
COLUMBUS	0	0	38	411	610	943	1346	1270	637	449	185	18	5907	5702
DAYTON	1	11	47	396	597	942	1372	1281	634	445	166	15	5907	5641
MANSFIELD	12	6	63	449	686	1044	1433	1253	744	557	290	54	6691	5818
TOLEDO	11	11	74	466	732	1076	1461	1390	808	577	259	42	6907	6381
YOUNGSTOWN	21	2	82	456	680	1004	1363	1332	781	568	310	74	6683	6426
<b>OKLAHOMA</b>														
OKLAHOMA CITY	0	0	2	89	437	866	1221	932	434	217	81	0	4279	3695
TULSA	0	0	0	121	406	834	1293	972	391	164	47	0	4228	3680
<b>OREGON</b>														
ASTORIA	125	110	202	324	693	843	910	641	543	467	338	243	5439	5295
BURNS U	34	122	310	443	991	1335	1517	941	792	618	350	50	7573	7212
EUGENE	52	48	165	366	763	919	1029	614	496	432	288	159	5331	4739
MEAFORO	4	15	180	244	768	973	905	639	483	410	223	58	4902	4930
PENDLETON	7	41	146	403	936	1094	1333	757	582	432	184	62	6177	5240
PORTLAND	29	26	134	312	772	915	1058	615	434	351	162	57	4865	4792
SALEM	17	20	129	328	763	928	1038	619	486	430	249	121	5128	4852
SEXTON SUMMIT R	135	189	377	283	784	1012	908	849	643	657	416	240	6493	6430
<b>PENNSYLVANIA</b>														
ALLENTOWN	9	0	94	368	614	971	1142	1241	633	460	125	29	5686	5827
ERIE	15	2	125	481	723	1046	1406	1424	874	678	369	106	7249	6851
HARRISBURG	14	0	48	321	544	876	1106	1182	611	435	123	26	5286	5224
PHILADELPHIA	5	0	41	296	507	811	999	1170	556	378	38	17	4818	4865
PITTSBURGH	4	3	80	485	656	993	1346	1311	671	458	219	38	6264	5930
PITTSBURGH U	10	1	49	387	577	903	1258	1214	626	438	190	23	5676	5278
SCRANTON	38	2	153	436	728	1103	1257	1370	747	552	221	66	6673	6277
WILLIAMSPORT	9	0	76	381	633	998	1179	1264	696	497	167	40	5940	5981
<b>RHODE ISLAND</b>														
BLOCK ISLAND	16	5	125	331	550	827	985	1196	769	583	235	68	5690	5771
PROVIDENCE	8	8	180	412	673	970	1075	1261	755	540	162	52	6096	5972
<b>SOUTH CAROLINA</b>														
CHARLESTON	0	0	0	57	83	399	602	505	241	70	2	0	1959	2146
CHARLESTON U	0	0	0	28	53	320	627	527	259	38	6	0	1858	1904
COLUMBIA	0	0	0	89	162	492	664	613	294	107	27	2	2450	2598
GRNVILLE-SPRTNBRG	0	0	6	152	276	658	851	715	336	129	15	3	3141	3163
<b>SOUTH DAKOTA</b>														
ABERDEEN	13	23	142	540	1221	1678	2051	1750	1245	727	389	68	9847	8617
MURDOCK	12	27	132	539	1070	1560	2006	1647	1130	668	374	35	9200	8055
RAPID CITY	17	40	111	443	1068	1480	1781	1348	910	614	362	82	8256	7324
SIOUX FALLS	11	18	104	525	1004	1594	1960	1607	1134	622	321	40	8900	7838
<b>TENNESSEE</b>														
BRISTOL	0	0	0	268	411	786	1065	920	511	283	88	11	4343	4306
CHATTANOOGA	0	0	0	192	299	637	962	725	390	152	42	0	3399	3505
KNOXVILLE	0	0	0	210	310	681	985	786	376	167	46	0	3561	3478
MEMPHIS	0	0	0	116	230	643	1049	734	345	121	23	0	3261	3227
NASHVILLE	0	0	1	240	338	695	1088	877	449	213	57	0	3958	3696
OK RHOGE	0	0	0	281	393	780	1043	826	462	230	86	2	4103	3944

# MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°F)

1978-1979

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
TEXAS														
ABILENE	0	0	5	54	308	667	906	567	272	84	55	0	2920	2610
AMARILLO	0	0	33	197	574	992	1256	697	561	519	144	30	4783	4183
AUSTIN	0	0	0	5	186	475	754	460	144	37	10	0	2071	1737
BROWNSVILLE	0	0	0	0	35	152	303	203	41	0	0	0	726	650
CORPUS CHRISTI	0	0	0	1	57	236	445	236	58	1	0	0	1024	950
DALLAS FT WORTH	0	0	0	27	247	578	911	635	261	78	29	0	2766	2382
DEL RIO	0	0	1	8	147	426	639	363	125	8	0	0	1717	1525
EL PASO	0	0	16	106	272	625	735	494	862	118	26	1	2755	2678
GALVESTON	0	0	0	0	72	258	550	361	120	12	2	0	1375	1224
HOUSTON INTERCON	0	0	0	22	111	393	646	376	135	25	2	0	1705	1434
LUBBOCK	0	0	31	129	447	827	1023	640	369	136	45	9	3634	3545
MIDLAND	0	0	36	134	374	689	893	546	297	106	54	5	3116	2621
PORT ARTHUR	0	0	0	4	75	296	591	360	125	12	0	0	1463	1518
SAN ANGELO	0	0	3	74	294	642	886	510	251	60	34	0	2754	2240
SAN ANTONIO	0	0	0	12	152	413	657	456	109	20	4	0	1723	1570
VICTORIA	0	0	0	3	121	349	591	352	79	15	6	0	1514	1227
WACO	0	0	0	23	256	573	880	570	217	59	30	0	2608	2058
WICHITA FALLS	0	0	1	76	364	758	1056	750	343	130	47	0	3525	2904
UTAH														
MILFORD	1	21	206	375	920	1288	1409	993	800	551	284	101	6929	6412
SALT LAKE CITY	0	12	144	284	714	1178	1327	902	666	414	196	57	5894	5985
VERMONT														
BURLINGTON	49	38	295	571	897	1227	1492	1610	866	641	224	90	7960	7876
VIRGINIA														
LYNCHBURG	0	0	25	289	439	777	1018	1033	489	265	83	11	4429	4253
NORFOLK	0	0	3	162	268	614	787	879	499	215	52	5	3482	3488
RICHMOND	0	0	16	214	366	694	876	1011	439	218	44	4	3882	3959
ROANOKE	0	0	29	335	461	784	1057	992	512	279	88	15	4522	4307
WALLOPS ISLAND	0	0	21	230	373	720	889	1004	621	347	77	7	4289	4240
WASHINGTON														
OLYMPIA	55	78	240	442	805	952	1048	683	536	454	309	188	5788	5520
QUILLAYUTE	179	154	266	404	782	892	913	703	800	528	383	294	6037	5951
SEATTLE	43	45	170	310	688	822	886	630	479	411	215	118	4816	4727
SEATTLE-TACOMA	44	42	180	324	706	846	937	630	479	420	235	96	4839	5195
SPOKANE	37	97	252	562	1083	1424	1684	1011	756	877	513	154	7950	6835
STAMPEDE PASS R	283	343	563	633	1101	1336	1494	1080	928	840	624	462	9687	9400
WALLA WALLA U	5	17	83	322	863	1007	1426	693	517	343	119	41	5448	4835
YAKIMA	6	55	184	470	975	1155	1549	901	641	456	178	72	6640	6009
WEST VIRGINIA														
BECKLEY	14	5	58	411	521	864	1215	1070	597	589	175	69	5384	5615
CHARLESTON	0	0	18	344	462	797	1137	1031	456	308	125	19	4697	4590
EKINS	13	6	75	534	617	961	1213	1187	680	467	231	83	6067	5975
HUNTINGTON	0	0	15	334	504	815	1194	1014	484	292	110	12	4774	4624
PARKERSBURG U	0	0	25	366	552	863	1226	1128	579	380	152	21	5292	4817
WISCONSIN														
GREEN BAY	35	18	152	549	953	1442	1850	1564	1117	691	389	70	8810	8098
LA CROSSE	6	0	78	427	871	1388	1828	1466	992	569	239	29	7893	7417
MADISON	19	22	150	543	940	1548	1800	1489	1013	671	283	52	8310	7750
MILWAUKEE	21	5	76	473	796	1273	1654	1391	980	681	322	91	7763	7444
WYOMING														
CASPER	17	60	212	522	1137	1602	1738	1153	910	651	479	151	8612	7555
CHEYENNE	28	73	200	523	937	1358	1471	933	893	597	459	159	7611	7255
LANDER	26	54	226	519	1321	1730	1974	1248	962	620	415	137	9222	7869
SHERIDAN	43	75	232	523	1235	1623	1911	1376	979	727	447	154	9329	7708



# COOLING DEGREE DAYS

(Base 65°F.)

JUNE 1979

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season					
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month			
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA						
BIRMINGHAM U	317	544	785	HILO	280	1354	1321	GRAND ISLAND	211	247	265	CHARLESTON	335	658	730			
BIRMINGHAM	308	546	669	HONOLULU	458	1787	1758	LINCOLN	235	284	313	CHARLESTON U	416	571	833			
HUNTSVILLE	280	418	604	KAHULUI	410	1911	1867	NORFOLK	212	253	232	COLUMBIA	253	459	733			
MOBILE	448	893	989	LIHUE	374	1630	1533	NORTH PLATTE	156	183	191	GRNVILLE-SPRNGBRG	215	415	520			
MONTGOMERY	346	652	801				OMAHA (EPPLEY)	249	321	332								
				IOAHO				OMAHA (NORTH)	206	254	254							
ALASKA				ROISE	129	156	108	SCOTTSBLUFF	163	190	134	SOUTH DAKOTA						
ANCHORAGE	0	0	0	LEWISTON	131	146	102	VALENTINE	136	160	152	ABERDEEN	83	94	120			
ANNETTE	0	0	0	POCATELLO	64	64	48				AURON	185	175	160				
BARKUK	0	0	0				NEVADA				RAPID CITY	95	118	125				
BARTER ISLAND	0	0	0	ILLINOIS				ELKO	120	129	28	SIOUX FALLS	131	159	175			
BETHEL	0	0	0	CAIRO II	402	547	603	FLY	35	35	22							
BETHEL	0	0	0	CHICAGO O HAKE	164	227	173	LAS VEGAS	675	1075	891	TENNESSEE						
BIG BELTA	0	0	0	CHICAGO MIDWAY	165	217	244	RENO	63	72	46	KRISTOL	113	173	335			
COLO BAY	0	0	0	MOLINE	206	289	257	WINNEVOCA	114	163	61	CHATTANOOGA	279	410	537			
FAIRBANKS	0	0	0	PEORIA	206	268	287				KNOXVILLE	242	388	523				
GULFKANA	0	0	0	ROCKFORD	134	190	190				MEMPHIS	394	665	692				
HOMER	0	0	0	SPRINGFIELD	305	400	337	NEW HAMPSHIRE				NASHVILLE	264	383	349			
JUNEAU	0	0	0				CUNDOCK	09	85	57	OAK RIDGE	202	283	444				
KING SALMON	0	0	0	INDIANA				MT WASHINGTON OBS	0	0	0							
KODIAK	0	0	0	EVANSVILLE	310	388	438				TEXAS							
KOTZEBIE	0	0	0	FORT WAYNE	156	218	206	NEW JERSEY				ABILENE	428	733	838			
MC GRATH	0	0	0	INDIANAPOLIS	197	261	297	ATLANTIC CITY U	103	158	193	AMARILLO	218	294	417			
MORRIS	0	0	0	SOUTH BEND	181	231	183	ATLANTIC CITY U	74	79	148	AUSTIN	449	805	1042			
ST. PAUL ISLAND	0	0	0				NEWARK	147	208	244	BROWNSVILLE	517	1510	1632				
TALKEETNA	0	0	0	IOWA				WENTZFU U	131	176	239	CORPUS CHRISTI	507	1367	1390			
UNALASKA LEFT	0	0	0	BURLINGTON	212	277	288	NEW MEXICO				ODALLAS ED WURTH	489	745	823			
VALOZ	0	0	0	DES MOINES	194	242	250	ALBUQUERQUE	269	341	364	OEL RID	444	1031	1332			
YAKUTAT	0	0	0	DUBUQUE	106	142	154	CLAYTON	145	152	181	EL PASO	414	688	744			
				SIOUX CITY	186	222	200	RUSWELL	311	479	514	GALVESTON	488	909	1083			
				WATERLOO	153	188	181				HJSTOWN INTERCON	454	939	1070				
ARIZONA				KANSAS				NEW YORK				LUBBOCK	371	598	550			
EL PASO	10	10	15	CONCORDIA	201	306	344	ALBANY	99	138	141	MIDLAND	383	647	771			
PHOENIX	551	972	1119	DOUGLE CITY	292	363	380	BINGHAMTON	47	70	82	POT ARTHJP	464	945	1027			
TUCSON	213	245	279	GOOLAND	176	208	208	RUFFALO	118	144	93	SAN ANGELO	394	753	978			
YUMA	724	1452	1368	TOPEKA	237	324	393	NEW YORK U	149	224	256	SAN ANTONIO	482	1014	1114			
				WICHITA	294	394	488	NEW YORK KENNEDY	83	109	171	VICTORIA	476	1046	1176			
ARKANSAS							NEW YORK LA GUARDIA	138	179	245	WACU	426	686	971				
FORT SMITH	307	460	628	KENTUCKY				RUCHESTER	121	174	125	WICHITA FALLS	444	721	841			
LITTLE ROCK	396	606	610	COVINGTON	154	202	317	SYRACUSE	109	141	121							
MO. LITTLE ROCK	329	506	630	LEXINGTON	199	266	366				UTAH							
				LOUISVILLE	279	367	376	NORTH CAROLINA				MILESOKE	89	93	98			
CALIFORNIA							ASHEVILLE	141	197	248	SALT LAKE CITY	214	270	154				
BAKERSEFIELD	500	873	610	LOUISIANA				CAPE HATTERAS R	203	349	409							
BISHOP	187	257	258	BATON ROUGE	430	855	983	CHARLOTTE	208	342	513	VFRMONT						
BLUE CANYON	0	0	0	LAKE CHARLES	444	872	1038	GREENSBORO	159	286	428	BURLINGTON	106	137	84			
EUREKA U	0	0	0	NEW ORLEANS	491	1073	1038	RALEIGH	159	298	432							
FRESNO	396	654	442	SHREVEPORT	395	766	878	WILMINGTON	298	603	651	VIRGINIA						
LONG BEACH	220	316	158							LYNCHBURG	143	220	331					
LOS ANGELES	133	177	94	MAINE				NORTH DAKOTA				NORFOLK	171	307	409			
LOS ANGELES U	209	307	325	CARIBOU	50	58	8	FARGO	85	97	99	RICHMOND	188	351	405			
MT SHASTA R	19	21	38	PORTLAND	34	49	22	HILLISTON	83	95	73	ROADKNE	150	223	298			
OAKLAND	29	42	21							WALLOPS ISLAND	124	151	256					
RED BLUFF	401	653	515	MARYLAND				OHIO										
SACKAMENTU	214	331	309	BALTIMORE	183	274	298	AKRON	106	147	168	WASHINGTON						
SAN DIEGO	169	231	118				CINCINNATI ABBE DR	173	250	367	OLYMPIA	6	6	14				
SAN FRANCISCO	19	30	18	MASSACHUSETTS				CLEVELAND	122	170	164	OUTLLAYUTE	0	0	0			
SAN FRANCISCO U	13	24	5	BLUE HILL OBS R	56	82	70	COLUMBUS	163	224	230	SEATTLE	12	13	28			
SANTA MARTA	14	22	4	HOSTON	122	157	137	DAYTON	179	258	268	SEATTLE-TACOMA	27	29	11			
STOCKTON	309	501	714	WORCESTER	44	68	74	MANSFIELD	109	151	220	SPKANE	73	74	47			
							TULEO	127	173	186	STAMPOE PASS R	1	1	0				
COLORADO				MICHIGAN				YOUNGSTOWN	95	140	131	WALLA-WALLA U	165	212	154			
ALAMOSA	0	0	0	ALPENA	47	57	33				YAKIMA	91	103	98				
COLUMADO SPRINGS	84	95	97	DETROIT	138	184	182	OKLAHOMA										
GENVER	112	114	110	DETROIT METRO	109	141	165	OKLAHOMA CITY	314	444	545	WEST INOIES						
GRAND JUNCTION	225	283	256	ELINT	118	161	117	TULSA	388	612	574	SAN JUAN P.R.	571	2742	2240			
PUEBLO	169	195	232	GRAND RAPIDS	129	175	141											
				Houghton Lake	58	76	59	OREGON				WEST VIRGINIA						
CONNECTICUT				LANSING	133	181	137	ASTORIA	0	0	0	RECKLEY	49	81	132			
BRIEGEFORT	79	95	128	MUSKOGON	67	96	100	BURNS U	48	51	30	CHARLESTON	138	238	338			
HARTFORD	151	211	126	SAULT STE MARIE	13	13	11	FUGENE	16	16	25	ELKINS	45	68	109			
							MEOPKO	95	97	84	HUNTINGTON	173	279	353				
DELAWARE				MINNESOTA				PENOLETON	114	135	106	PARKERSBURG U	129	219	315			
WILMINGTON	123	185	244	DULUTH	25	29	14	PURTLAND	65	83	45							
				INTERNATIONAL FALLS	18	19	30	SALEM	29	29	26	WISCONSIN						
DIST. OF COLUMBIA				MINNEAPOLIS	113	130	149	SEXTON SUMMIT R	35	40	7	GREEN BAY	68	74	88			
WASHINGTON CULLES	147	230	244	ROCHESTER	119	140	127				LA CROSSE	104	134	182				
WASHINGTON NATIONAL	231	374	404	ST CLOUD	52	66	93	PACIFIC AREA				MADISON	88	121	114			
							GUAM TAGUAC R	491	2532	2429	MILWAUKEE	87	103	88				
FLORIDA				MISSISSIPPI				JUNSTON	459	2304	2313							
APPALACHICOLA U	426	817	978	JACKSON	357	653	840	KUROR R	488	3022	2973	WYOMING						
DAYTUNA BEACH	535	1579	1483	MERIDIAN	309	547	821	KWAJALEIN	326	3144	3011	CASPER	62	62	60			
FORT MYERS	369	899	952				MAJURU	504	2932	2914	CHEYENNE	42	43	45				
JACKSONVILLE	588	2072	2147	MISSOURI				PAGO PAGO	487	2911	2726	LANGER	81	83	36			
KEY WEST	516	1719	1861	COLUMBIA REGIONAL	224	307	371	PUNAPE R	576	3017	2837	SHERIDAN	42	43	58			
MIAMI	479	1191	1271	KANSAS CITY	229	310	366	TRUK MOEN ISLAND	527	3122	2935							
ORLANDO	467	907	1031	ST JOSEPH	194	247	394	WAKE	556	2730	2455							
PENSACOLA	378	734	977	ST LOUIS	354	467	461	YAP R	500	2951	2930							
TALLAHASSEE	482	1240	1344	SPRINGFIELD	183	249	393											
TAMPA	461	1366	1417				PENNSYLVANIA				ALLENTOWN	126	169	194				
WEST PALM BEACH				PONTANA	126	138	67	FRIE	49	191	81	HARRISBURG	138	186	283			
				GLASGOW	70	78	77	PHILADELPHIA	146	247	290	PITTSBURGH	125	175	180			
GEORGIA				GREAT FALLS	55	57	36	SCRANTON	78	112	145							

# STORM SUMMARY

JUNE 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				o ALL D THER							
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE					
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama	1	1			3																												
Alaska	*																																
Arizona	2	1			6							?																					
Arkansas																																	
California	*																																
Colorado	12	6		1	7		4	6	6				?	2																			
Connecticut	*																																
Delaware								3	3																								
Florida	2	2			4			04	C																								
Georgia												4		1																			
Hawaii	*																																
Idaho												5																					
Illinois	3	3		1	5			?	?			5																					
Indiana	1							5	5		2	5																					
Iowa	18	5	5	70	7			6	5			6	5																				
Kansas	6	3			6			6	7		2	6	6																				
Kentucky	2	1		7	5				4																								
Louisiana	1	1		1	4																												
Maine																																	
Maryland & DC								3	3																								
Massachusetts																																	
Michigan	6	2		1	5																												
Minnesota	17	2		1	6			6	7		25	7	7		1	47	4	5								1	1	5	3	C			
Mississippi																																	
Missouri								4	5		1	6																					
Montana	4	2			5			?	?	2		5	?																				
Nebraska	8	4			5		2	6	7	2	3	7	6																				
Nevada	*																																
New Hampshire																																	
New Jersey											1	4	C																				
New Mexico	1	1						3	4																								
New York	*																																
North Carolina	1	1			4			5	5			5	4																				
North Dakota	8	6			5							5	5																				
Ohio	2	2		4	5			3	5		5																						
Oklahoma	3	3			3			5	6			6	6																				
Oregon																																	
Pacific	†																																
Pennsylvania	1	1			4			4	6			4																					
Puerto Rico	1	1			5							3																					
Rhode Island																																	
South Carolina								2	6	1		3	2																				
South Dakota	15	3	1		6			4	6			4	6																				
Tennessee	1	1	2		1	4					2	5	5																				
Texas	14	7		2	5			4	6																								
Utah	*																																
Vermont	*																																
Virginia																																	
Virgin Islands																																	
Washington	*																																
West Virginia								3	3			?	?																				
Wisconsin	8	4		12	6																												
Wyoming	14	7			6			06	?	C		04	?	C																			

# RAWINSONDE DATA

Average monthly values

JUNE 1979

ALBANY, NY 1009 MB										ALBUQUERQUE, NM 840 MB										AMARILLO, TX 892 MB										ANCHORAGE, AK 1010 MB										ANNETTE, AK 1015 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																								
					Speed m.p.s.					Speed m.p.s.					Speed m.p.s.						Speed m.p.s.				Speed m.p.s.																								
5FC	37	86	14.9	12.4	18	1.6	1,619	15.5	4.4	10	1.1	1,095	15.9	11.5	21	3.9	10	45	10.4	6.5	18	2.1	30	37	9.5	8.0	12	1.2																					
1000	27	169	14.5	10.4	18	1.9																																											
950	30	594	14.4	8.6	23	2.0																																											
900	30	1,050	12.8	5.9	28	3.2																																											
850	30	1,528	9.7	2.7	28	4.6																																											
800	30	2,030	7.9	-1.4	28	4.7																																											
750	30	2,559	5.0	-6.7	27	5.7																																											
700	30	3,120	2.3	-12.0	27	6.7																																											
650	30	3,716	-0.5	-15.9	27	7.6																																											
600	30	4,351	-4.1	-19.8	26	8.0																																											
550	30	5,032	-8.3	-23.1	28	8.0																																											
500	30	5,765	-13.0	-29.6	28	8.7																																											
450	30	6,561	-18.1	-32.6	28	9.3																																											
400	30	7,430	-24.4	-37.4	28	11.5																																											
350	30	8,393	-31.5	-44.4	28	14.7																																											
300	30	9,462	-39.9	-47.7	28	17.7																																											
250	30	10,685	-48.3		28	16.4																																											
200	30	12,136	-54.5		28	17.3																																											
175	29	12,989	-55.4		27	16.7																																											
150	28	13,977	-55.8		28	13.8																																											
125	27	15,132	-57.6		27	11.7																																											
100	27	16,537	-58.7		28	8.6																																											
80	27	17,941	-57.8		29	3.7																																											
70	26	18,789	-56.8		31	1.7																																											
60	26	19,768	-56.0		04	1.8																																											
50	26	20,934	-54.0		09	3.2																																											
40	26	22,374	-51.4		09	4.8																																											
30	26	24,253	-48.6		08	5.7																																											
25	26	25,459	-46.4		09	5.2																																											
20	26	26,946	-43.9		09	6.1																																											
15	26	28,873	-40.4		09	7.2																																											
10	7	31,653	-36.3		09	6.1																																											



# RAWINSONDE DATA

Average monthly values

JUNE 1979

Standard pressure surface mb.	* CARIBOU, ME 992 MB					CENTREVILLE, AL 1002 MB					CHARLESTON, SC 1017 MB					CHATHAM, VA 1017 MB					* COLO BAY, AK 1012 MB									
	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind					
																										Direction tens of deg	Speed m.p.s.	Direction tens of deg	Speed m.p.s.	Direction tens of deg
5FC	30	191	13.1	10.2	23	1.0	34	14.9	19.1	17.7	04	4	30	13	20.6	15.7	32	8	30	16	14.8	12.2	29	1.3	30	30	8.5	6.1	18	2.9
1000	30	191	13.1	10.2	23	1.0	34	14.9	19.1	17.7	04	4	30	13	20.6	15.7	32	8	30	16	14.8	12.2	29	1.3	30	30	8.5	6.1	18	2.9
950	30	556	13.0	7.0	26	2.3	30	6.02	20.5	14.9	21	1.4	30	6.03	20.1	14.6	06	8	30	5.93	14.5	6.8	29	3.6	30	551	6.4	4.6	21	3.0
900	30	1,011	11.9	5.1	28	3.9	30	1,068	17.9	12.6	23	1.2	30	1,068	17.5	11.8	36	9	30	1,049	12.6	5.2	29	3.6	30	994	5.2	1.6	22	3.6
850	30	1,488	9.3	2.8	29	4.0	30	1,555	14.9	9.1	25	2.3	30	1,555	14.5	9.0	33	1	30	1,527	10.0	2.8	29	4.4	30	1,480	3.7	-2.4	23	4.9
800	30	1,988	6.5	-0.8	28	4.9	30	2,066	11.9	4.5	26	2.6	30	2,065	11.9	4.0	30	2.1	30	2,029	7.7	-3.5	28	5.3	30	1,951	1.9	-4.8	24	6.4
750	30	2,516	3.9	-5.3	27	5.3	30	2,605	9.2	-1.3	27	2.6	30	2,604	9.0	-6.9	29	2.7	30	2,563	6.2	-9.7	28	5.5	30	2,470	-4.4	-8.1	25	6.7
700	30	3,074	4.9	-11.2	27	6.1	30	3,178	7.7	-7.1	26	3.3	30	3,172	-1.1	-31.9	29	3.2	30	3,122	3.2	-12.7	28	6.0	30	3,020	-3.3	-9.7	25	7.5
650	30	3,666	-2.3	-14.3	27	7.8	30	3,779	5.5	-11.6	29	3.5	30	3,777	3.2	-6.0	30	3.6	30	3,719	-1.1	-14.7	26	6.5	30	3,603	-6.5	-12.5	25	7.5
600	30	4,299	-5.7	-19.6	27	8.9	30	4,425	-3.3	-16.5	30	4.4	30	4,422	-5.5	-12.1	28	4.1	30	4,356	-3.8	-18.4	27	6.9	30	4,225	-9.9	-18.4	26	8.3
550	30	4,974	-9.9	-24.7	27	9.2	30	5,116	-4.3	-20.3	30	5.6	30	5,113	-4.3	-18.3	28	5.1	30	5,037	-6.0	-22.8	26	6.9	29	4,885	-14.0	-25.7	26	9.8
500	30	5,703	-14.6	-28.0	27	10.0	30	5,860	-9.9	-23.3	30	6.7	30	5,856	-8.9	-23.3	27	6.1	30	5,771	-12.7	-27.7	26	8.1	29	5,602	-18.5	-30.2	26	10.4
450	30	6,494	-19.7	-33.2	27	10.5	30	6,669	-13.8	-29.2	30	7.7	30	6,666	-13.7	-27.8	27	7.4	30	6,567	-17.8	-32.3	27	9.9	29	6,380	-23.8	-34.3	27	11.5
400	30	7,357	-26.0	-39.2	27	10.6	30	7,550	-20.7	-33.6	29	9.5	30	7,550	-20.2	-34.1	27	8.2	30	7,437	-24.4	-37.6	26	10.6	29	7,230	-30.0	-39.9	27	11.9
350	30	8,312	-33.4	-43.9	27	11.0	30	8,532	-27.1	-40.5	29	11.9	30	8,529	-27.1	-39.6	28	10.0	30	8,399	-31.7	-43.7	26	11.4	29	8,170	-37.0	-43.4	27	14.1
300	30	9,374	-41.3	-48.5	27	11.8	30	9,621	-35.7	-47.0	29	14.0	30	9,619	-35.5	-46.7	28	11.5	30	9,467	-39.9	-49.8	26	12.5	29	9,217	-44.5	-48.0	28	14.2
250	30	10,589	-49.7	-53.0	27	13.2	30	10,864	-45.1	-51.0	29	15.5	30	10,862	-45.1	-51.0	28	12.8	30	10,690	-48.2	-51.0	27	14.1	29	10,419	-51.0	-51.0	27	15.3
200	30	12,034	-53.9	-53.9	27	14.4	30	12,324	-54.3	-54.3	29	18.3	30	12,318	-55.6	-55.6	29	14.9	30	12,136	-54.9	-54.9	28	14.5	29	11,857	-54.3	-54.3	27	15.1
175	30	12,892	-54.0	-54.0	27	14.7	30	13,171	-58.6	-58.6	29	18.1	30	13,160	-60.0	-60.0	29	17.2	30	12,967	-56.2	-56.2	27	13.6	29	12,715	-53.2	-53.2	27	11.7
150	30	13,882	-53.8	-53.8	27	12.8	30	14,132	-59.3	-59.3	29	15.9	30	14,115	-63.1	-63.1	30	14.7	30	13,967	-56.7	-56.7	28	12.2	29	13,712	-51.8	-51.8	27	8.8
125	30	15,050	-55.1	-55.1	26	10.6	30	15,250	-65.7	-65.7	30	11.0	30	15,230	-65.5	-65.5	31	10.6	30	15,118	-58.4	-58.4	28	9.6	29	14,894	-52.0	-52.0	27	6.8
100	20	16,474	-55.9	-55.9	27	7.3	30	16,597	-67.8	-67.8	31	5.5	30	16,582	-67.0	-67.0	33	4.5	30	16,518	-59.3	-59.3	28	5.6	27	16,336	-51.6	-51.6	27	3.7
80	20	17,897	-55.1	-55.1	27	4.1	30	17,944	-65.9	-65.9	32	3.2	30	17,935	-64.8	-64.8	33	3.0	30	17,916	-58.7	-58.7	28	2.1	26	17,782	-51.0	-51.0	27	1.7
60	20	18,751	-54.5	-54.5	28	1.9	30	18,761	-63.0	-63.0	37	4.3	30	18,755	-62.7	-62.7	36	4.6	30	18,757	-57.8	-57.8	32	9.2	26	18,651	-50.7	-50.7	29	9.7
40	20	19,740	-53.7	-53.7	28	4.2	30	19,715	-61.1	-61.1	38	6.2	30	19,711	-60.2	-60.2	38	6.8	30	19,732	-56.6	-56.6	36	1.5	25	19,656	-50.4	-50.4	18	3.3
20	20	20,917	-52.1	-52.1	29	1.5	30	20,859	-59.3	-59.3	38	8.4	29	20,856	-58.1	-58.1	38	8.2	30	20,895	-54.5	-54.5	38	3.1	25	20,847	-49.9	-49.9	27	6.8
10	20	22,366	-50.8	-50.8	08	2.9	29	22,278	-54.0	-54.0	39	9.7	29	22,282	-53.5	-53.5	39	10.1	30	22,331	-52.4	-52.4	39	4.2	25	22,308	-49.3	-49.3	10	1.9
7	20	24,252	-47.5	-47.5	09	4.7	28	24,148	-49.6	-49.6	39	10.3	27	24,151	-49.5	-49.5	39	10.2	27	24,213	-48.6	-48.6	39	5.2	25	24,202	-47.6	-47.6	08	3.8
5	25	25,464	-45.3	-45.3	09	5.4	27	25,347	-47.8	-47.8	39	10.7	23	25,348	-47.4	-47.4	39	10.5	27	25,417	-46.8	-46.8	39	5.6	25	25,410	-46.2	-46.2	08	4.1
3	25	26,961	-43.2	-43.2	09	5.3	26	26,828	-45.1	-45.1	39	12.4	21	26,829	-45.1	-45.1	39	11.7	27	26,906	-44.1	-44.1	39	7.0	25	26,900	-44.1	-44.1	08	6.1
1	15	28,917	-39.9	-39.9	09	6.0	23	28,764	-41.9	-41.9	39	13.8	14	28,761	-42.6	-42.6	39	14.0	25	28,844	-40.6	-40.6	39	7.6	23	28,845	-40.8	-40.8	09	6.2
7	10					18	31,536	-37.0	-37.0	39	16.3	14	31,555	-37.6	-37.6	39	14.0	12	31,640	-36.3	-36.3	39	8.6	9	34,135	-31.1	-31.1	08	6.1	

* DAYTON, OH 933 MB					DEL RIO, TX 979 MB					DENVER, CO 840 MB					DESERT ROCK, NV 900 MB					DODGE CITY, KS 924 MB										
5FC	30	299	16.5	13.7	18	.7	30	314	21.7	19.2	11	3.1	30	1,611	12.4	5.9	22	1.0	30	1,007	19.4	-5.0	06	1.4	30	791	16.4	11.2	19	1.5
1000	30	299	16.5	13.7	18	.7	30	314	21.7	19.2	11	3.1	30	1,611	12.4	5.9	22	1.0	30	1,007	19.4	-5.0	06	1.4	30	791	16.4	11.2	19	1.5
950	30	589	17.7	11.4	25	3.4	30	574	21.5	17.7	14	6.5	30	2,021	15.1	2.9	25	2.6	30	2,020	17.7	-1.9	30	2.2	30	2,033	17.6	6.3	24	5.8
900	30	1,051	16.0	9.0	27	5.1	30	1,043	19.8	15.2	16	8.5	30	2,021	15.1	2.9	25	2.6	30	2,020	17.7	-1.9	30	2.2	30	2,033	17.6	6.3	24	5.8
850	30	1,576	13.4	5.6	28	6.0	30	1,535	17.8	10.7	16	7.4	30	2,021	15.1	2.9	25	2.6	30	2,020	17.7	-1.9	30	2.2	30	2,033	17.6	6.3	24	5.8
800	30	2,044	10.5	1.6	28	5.8	30	2,052	15.7	5.6	16	5.4	30	2,021	15.1	2.9	25	2.6	30	2,020	17.7	-1.9	30	2.2	30	2,033	17.6	6.3	24	5.8
750	30	2,579	7.0	-1.7	28	7.7	30	2,599	13.7	-4.8	16	4.3	30	2,565	12.2	-1.3	27	3.2	30	2,568	13.4	-4.1	22	2.1	30	2,581	13.3	-1.1	26	5.2
700	30	3,143																												

# RAWINSONDE DATA

Average monthly values

JUNE 1979

GLASGOW, MT 933 MB										GRAND JUNCTION, CO 953 MB										GREAT FALLS, MT 889 MB										GREEN BAY, WI 990 MB										GREENSBORO, NC 987 MB									
Standard pressure surface mb.	No. of observations	Temperature °C			Resultant Wind			No. of observations	Temperature °C			Resultant Wind			No. of observations	Temperature °C			Resultant Wind			No. of observations	Temperature °C			Resultant Wind																							
		Dew Point °C	Direction tens of deg.	Speed m.p.s.	Dew Point °C	Direction tens of deg.	Speed m.p.s.		Dew Point °C	Direction tens of deg.	Speed m.p.s.	Dew Point °C	Direction tens of deg.	Speed m.p.s.		Dew Point °C	Direction tens of deg.	Speed m.p.s.	Dew Point °C	Direction tens of deg.	Speed m.p.s.		Dew Point °C	Direction tens of deg.	Speed m.p.s.	Dew Point °C	Direction tens of deg.	Speed m.p.s.																					
5FC	30	6.96	11.1	5.9	10	1.3	30	1,472	15.1	.7	12	3.3	30	1,118	11.2	3.5	23	2.4	30	210	13.5	10.2	29	.5	30	275	16.4	14.2	22	.2																			
1000	30																																																
950	30	1,005	16.2	4.0	23	1.4																																											
850	30	1,489	14.0	1.1	27	3.0	22	1,526	16.7	.5	12	3.4	30	1,492	14.2	1.2	25	3.3	30	1,494	11.3	1.1	27	4.0	30	1,550	13.4	6.8	30	2.9																			
800	30	1,998	10.4	-.9	28	4.2	30	2,019	16.9	-.1	14	3.6	30	2,001	10.9	-1.5	27	3.7	30	1,999	8.7	-.4	27	6.2	30	2,059	11.1	3.2	30	3.1																			
750	30	2,531	6.4	-.3	29	5.8	30	2,566	17.8	-.4	12	2.2	30	2,536	6.9	-4.0	27	4.4	30	2,530	5.4	-3.2	27	7.5	30	2,596	8.1	-.5	30	3.2																			
700	30	3,093	2.1	-6.4	29	7.3	30	3,143	9.3	-.7	16	2.6	30	3,093	2.5	-6.9	27	5.9	30	3,091	2.2	-9.6	27	8.3	30	3,162	5.0	-5.9	29	3.9																			
650	30	3,687	-2.2	-.9	29	8.7	30	3,752	4.3	-.9	26	4.5	30	3,693	-1.7	-11.8	27	7.7	30	3,686	-1.2	-13.6	27	8.5	30	3,764	2.0	-11.1	29	5.3																			
600	30	4,319	-6.2	-1.6	29	10.8	30	4,339	-1.8	-1.2	29	5.8	30	4,324	-6.3	-16.4	27	9.8	28	4,320	-4.7	-17.5	27	9.5	30	4,406	-1.7	-13.6	29	5.6																			
550	30	4,994	-10.6	-.2	29	12.8	30	5,084	-6.6	-1.6	25	7.1	30	4,999	-10.9	-21.4	27	12.0	30	5,000	-9.0	-21.9	27	10.0	30	5,094	-5.5	-17.8	28	6.2																			
500	30	5,720	-15.7	-30.7	28	13.9	30	5,821	-11.7	-24.2	25	8.7	30	5,725	-16.0	-24.3	27	13.1	30	5,731	-13.7	-27.4	27	11.8	30	5,835	-10.3	-24.0	27	6.6																			
450	30	6,507	-21.1	-35.2	28	15.2	30	6,620	-17.2	-30.6	25	11.0	30	6,510	-21.6	-33.0	26	13.0	30	6,524	-19.2	-32.2	28	13.9	30	6,638	-15.5	-30.1	27	7.4																			
400	30	7,365	-27.5	-40.0	28	16.7	30	7,492	-23.7	-35.9	25	12.6	30	7,367	-28.1	-38.1	26	14.5	30	7,390	-25.1	-37.9	28	15.9	30	7,517	-21.7	-33.8	28	7.9																			
350	30	8,314	-34.8	-45.5	28	18.0	30	8,456	-31.1	-43.5	26	13.6	30	8,333	-35.6	-44.5	27	16.8	30	8,349	-32.3	-44.4	28	17.0	30	8,490	-28.6	-33.9	28	9.0																			
300	30	9,370	-42.7		28	19.4	30	9,528	-39.0	-49.9	26	15.6	30	9,355	-43.6	-44.5	27	17.7	30	9,415	-40.5	-48.9	28	20.0	30	9,573	-36.7	-47.6	28	11.1																			
250	30	10,579	-51.3		28	19.9	30	10,756	-47.8		26	19.2	30	10,549	-51.7		27	19.9	30	10,635	-48.9		28	23.2	30	10,810	-46.8		28	13.8																			
200	30	12,018	-54.6		27	21.6	29	12,209	-54.8		26	20.5	30	11,998	-55.9		27	20.3	30	12,076	-54.9		28	23.7	30	12,261	-55.3		29	17.5																			
175	30	12,877	-52.3		27	19.9	29	13,058	-57.0		26	18.5	30	12,852	-53.9		27	19.3	30	12,929	-55.7		28	20.5	30	13,104	-58.3		29	17.9																			
150	30	13,877	-51.6		27	16.5	29	14,031	-58.9		26	17.5	30	13,884	-53.7		27	14.6	30	13,913	-54.9		28	16.4	30	14,068	-60.7		30	14.7																			
125	30	15,055	-53.3		27	14.3	29	15,168	-61.6		26	14.6	30	15,015	-54.2		26	13.0	30	15,074	-56.6		28	12.5	30	15,199	-62.6		30	9.8																			
100	30	16,487	-54.8		27	9.5	29	16,543	-63.4		26	8.3	30	16,470	-56.2		26	8.6	30	16,482	-58.5		28	9.4	30	16,570	-64.1		30	5.4																			
80	30	17,912	-55.2		28	5.8	29	17,920	-64.8		23	2.6	30	17,859	-59.9		25	5.5	30	17,886	-57.9		28	5.5	30	17,941	-62.3		36	2.4																			
70	30	18,768	-54.0		27	1.1	28	18,752	-59.4		20	1.5	30	18,711	-55.1		25	2.0	30	18,731	-56.8		30	2.8	29	18,769	-60.6		07	3.2																			
60	30	19,760	-53.1		28	1.4	27	19,722	-57.6		11	2.0	30	19,697	-54.2		25	1.6	30	19,711	-55.7		30	1.3	29	19,734	-58.5		08	4.4																			
50	30	20,938	-52.0		03	6.2	27	20,880	-55.4		09	3.4	30	20,869	-53.1		13	6.6	30	20,875	-54.6		05	1.4	29	20,889	-55.5		09	6.1																			
40	30	22,389	-50.6		09	1.6	27	22,312	-52.9		08	4.9	30	22,313	-51.5		08	3.1	29	22,310	-52.6		06	2.7	29	22,323	-52.1		09	7.1																			
30	30	24,273	-48.5		08	3.6	25	24,185	-49.4		10	6.4	30	24,191	-48.7		08	3.8	29	24,185	-48.9		06	4.3	28	24,203	-48.8		09	2.5																			
25	30	25,479	-46.2		08	5.5	24	25,388	-47.0		09	7.0	29	25,400	-46.5		08	5.1	29	25,388	-46.9		06	4.8	28	25,408	-46.6		09	8.8																			
20	30	26,972	-43.4		08	5.3	24	26,870	-44.8		08	6.1	26	26,890	-43.8		08	6.1	26	26,870	-44.1		09	4.5	28	26,898	-43.8		09	10.1																			
15	30	28,922	-40.1		09	5.6	24	28,811	-41.5		09	8.4	19	28,837	-39.9		08	6.8	23	28,815	-41.1		09	5.3	25	28,844	-41.2		09	11.3																			
10	30	31,722	-34.9		09	7.4	15	31,608	-36.4		09	11.7	9	31,649	-34.1		08	14	31,583	-35.9		08	7.0	14	31,625	-35.8		09	14.6																				
7	8	34,295	-30.8																																														







# RAWINSONDE DATA

Average monthly values

JUNE 1972

NASHVILLE, TN 997 MB										NOME, AK 1010 MB										NORTH PLATTE, NE 918 MB										OAKLAND, CA 1015 MB										OMAHA, NE 968 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.	Direction lens of deg.	Speed m.p.s.	Direction lens of deg.	Speed m.p.s.															
5FC	30	180	18.0	16.7	17	1.1	30	5	6.7	3.6	22	4	30	847	14.5	9.9	10	2	30	6	12.5	9.8	27	1.1	30	403	16.6	13.0	14	1.1																			
1000	30	194	16.4	13.4	16	2.8	103	7.0	3.4	23	4.6	30	131	16.1	12.3	9.3	27	1.6	30	131	16.1	12.3	9.3	27	1.6	30	556	18.0	12.3	17	1.7																		
950	30	599	20.1	14.6	22	3.9	30	510	6.3	1.1	18	2.3	30	1,025	15.8	4.0	30	3.0	30	1,025	15.8	4.0	30	3.0	30	1,019	18.0	9.1	24	4.3																			
900	30	1,065	17.2	11.6	24	3.5	30	952	4.2	-1.6	18	3.4	30	1,502	17.2	6.5	26	2.7	30	1,514	17.0	-5.8	31	3.2	30	1,508	16.0	5.4	25	5.7																			
850	30	1,550	14.1	8.2	26	2.9	30	1,415	2.1	-4.7	18	3.7	30	2,017	14.6	3.6	26	3.0	30	2,027	14.1	-8.3	29	3.2	30	2,021	13.2	1.6	26	5.7																			
800	30	2,060	11.1	3.4	28	2.7	30	1,903	-4	-7.2	18	4.1	30	2,560	11.5	-8.2	29	5.3	30	2,568	10.7	-10.9	26	2.9	30	2,561	9.9	-3.1	26	5.9																			
750	30	2,597	8.0	-2.0	28	2.7	30	2,417	-3.3	-9.7	17	4.2	30	3,138	8.4	-5.3	29	5.3	30	3,138	8.4	-14.7	26	3.6	30	3,130	5.9	-6.9	27	6.5																			
700	30	3,164	5.3	-6.5	29	3.3	30	2,980	-6.3	-12.4	18	3.7	30	3,739	7.7	-5.3	29	6.2	30	3,743	3.2	-17.8	26	4.7	30	3,732	1.7	-9.0	27	7.8																			
650	30	3,769	2.2	-10.5	29	4.6	30	3,534	-6.8	-17.4	17	3.2	30	4,383	-1.6	-11.9	30	8.3	30	4,386	-4.9	-21.2	27	5.8	30	4,373	-2.3	-14.0	28	8.5																			
600	30	4,408	-1.6	-14.3	29	5.5	30	4,150	-13.3	-22.2	18	3.1	30	5,069	-6.7	-16.2	29	10.1	30	5,075	-5.4	-25.2	27	7.2	30	5,059	-6.8	-19.0	28	9.6																			
550	30	5,095	-5.6	-19.4	29	6.5	30	4,807	-17.4	-25.8	20	2.6	30	5,806	-11.9	-22.6	28	10.8	30	5,815	-10.7	-29.0	27	8.9	30	5,796	-11.8	-24.0	28	11.6																			
500	30	5,837	-10.0	-25.1	29	7.3	30	5,515	-22.0	-30.7	23	2.8	30	6,605	-6.0	-17.0	-29.6	28	13.6	30	6,617	-16.3	-33.5	27	10.9	30	6,595	-16.8	-30.5	28	12.9																		
450	30	6,642	-15.2	-30.7	29	8.2	30	6,282	-27.4	-36.2	25	3.5	30	7,479	-23.2	-35.3	-28	13.6	30	7,491	-23.1	-39.0	27	11.9	30	7,468	-22.9	-35.8	27	14.8																			
400	30	7,521	-21.7	-35.4	29	11.2	30	7,119	-35.8	-41.5	27	5.2	30	8,445	-5.0	-24.7	-14.7	17	17.0	30	8,458	-30.5	-44.6	27	14.6	29	8,434	-29.9	-41.5	27	16.6																		
350	30	8,493	-26.8	-42.4	29	11.6	30	8,084	-40.4	-43.7	27	6.2	30	9,520	-38.6	-49.8	27	17.1	29	9,539	-39.4	-51.7	26	16.4	29	9,511	-38.2	-47.8	27	20.1																			
300	30	9,574	-37.1	-47.9	29	13.3	29	9,080	-47.5	-51.7	27	7.2	30	10,748	-47.6	-56.0	26	20.3	29	10,762	-48.8	-60.0	26	19.1	29	10,740	-47.6	-56.0	27	21.7																			
250	30	10,810	-46.3	-55.0	29	16.8	29	10,271	-51.7	-57.7	26	8.0	30	12,194	-55.4	-62.0	27	21.2	29	12,197	-57.7	-65.4	25	20.8	29	12,187	-55.3	-62.0	27	23.2																			
200	30	12,263	-55.0	-62.0	29	21.1	29	11,724	-58.9	-64.0	26	4.3	30	13,041	-57.0	-67.0	27	21.4	29	13,035	-59.8	-70.0	25	20.6	29	13,035	-56.9	-64.0	27	22.2																			
175	30	13,109	-58.2	-65.0	29	20.6	29	12,603	-62.0	-67.0	26	4.5	30	14,011	-58.0	-70.0	27	19.8	29	13,978	-59.9	-72.0	25	13.9	29	13,978	-56.9	-64.0	27	24.5																			
150	30	14,076	-59.9	-67.0	29	16.7	29	13,600	-68.0	-72.0	26	3.5	30	15,000	-58.0	-75.0	27	18.6	29	15,000	-60.0	-75.0	25	13.6	29	15,000	-56.9	-64.0	27	25.2																			
125	30	15,200	-63.2	-72.0	29	12.1	29	14,821	-72.0	-75.0	26	4.2	30	16,000	-58.0	-80.0	27	17.5	29	16,116	-60.0	-80.0	25	13.6	29	15,156	-56.9	-64.0	27	28.1																			
100	30	16,571	-64.0	-75.0	30	6.4	29	16,290	-84.5	-85.0	27	1.2	30	16,547	-61.7	-85.0	27	7.6	29	16,518	-62.3	-85.0	25	7.3	29	16,547	-61.1	-72.0	27	30.6																			
80	30	17,933	-64.0	-75.0	30	2.5	29	17,759	-84.0	-85.0	30	1	30	17,933	-60.1	-85.0	26	4.5	29	17,896	-61.4	-85.0	24	2.8	29	17,934	-60.1	-72.0	27	3.9																			
70	30	18,756	-61.6	-75.0	05	3.0	29	18,641	-47.7	-75.0	06	6	30	18,771	-58.1	-85.0	25	1.8	29	18,728	-59.9	-85.0	17	7.7	29	18,771	-58.7	-72.0	27	1.5																			
60	29	19,713	-59.6	-75.0	08	4.5	29	19,660	-47.7	-75.0	01	1.4	30	19,744	-57.2	-85.0	01	1.8	29	19,695	-58.3	-85.0	10	2.8	29	19,743	-57.2	-72.0	27	0.9																			
50	28	20,843	-56.7	-75.0	07	2.6	28	20,867	-46.8	-75.0	07	2.6	28	20,999	-55.4	-85.0	08	4.2	28	20,948	-56.2	-85.0	10	4.2	28	20,901	-55.3	-72.0	27	2.5																			
40	28	22,269	-51.8	-75.0	09	6.8	29	22,346	-46.3	-75.0	08	5.8	28	22,332	-52.6	-85.0	08	3.7	29	22,273	-53.9	-85.0	08	5.9	29	22,335	-52.6	-72.0	27	3.9																			
30	28	23,959	-49.6	-75.0	09	7.8	29	24,264	-45.0	-75.0	09	4.5	28	24,206	-49.1	-85.0	09	4.2	27	24,130	-50.9	-85.0	08	7.6	28	24,206	-49.5	-72.0	27	4.4																			
25	27	25,358	-47.6	-75.0	08	9.1	28	25,488	-43.7	-75.0	08	5.4	27	25,411	-47.1	-85.0	09	4.5	27	25,323	-48.7	-85.0	08	8.9	26	25,399	-47.2	-72.0	27	4.8																			
20	27	26,842	-45.1	-75.0	09	10.1	25	26,991	-42.0	-75.0	09	6.3	26	26,896	-44.4	-85.0	09	5.4	27	26,801	-45.5	-85.0	09	9.2	25	26,884	-44.3	-72.0	27	6.2																			
15	23	28,781	-41.8	-75.0	09	11.4	21	28,944	-38.7	-75.0	08	8.6	25	28,842	-41.3	-85.0	08	6.9	27	28,734	-42.2	-85.0	09	9.6	23	28,819	-41.8	-72.0	27	7.0																			
10	13	31,566	-36.6	-75.0	09	14.5	7	31,762	-34.3	-75.0	08	8.6	15	31,631	-36.7	-85.0	09	9.6	25	31,508	-37.7	-85.0	09	10.4	13	31,603	-36.6	-72.0	27	7.8																			

PAGO PAGO, AMERICAN SAMOA 1012 MB										PEORIA, IL 993 MB										PITTSBURGH, PA 977 MB										PONAPE, CAROLINE IS. 1005 MB										PORTLAND, ME 1015 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.					Direction lens of deg.	Speed m.p.s.	Direction lens of deg.	Speed m.p.s.	Direction lens of deg.	Speed m.p.s.															
5FC	30	5	28.8	24.8	10	5.3	30	200	16.3	13.4	19	1.1	30	359	15.1	10.3	21	.8	30	39	28.3	24.9	09	2.9	30	20	14.3	10.5	26	1.4																			
1000	30	111	26.9	23.6	10	5.7	30	576	18.9	11.5	25	4.6	30	594	16.2	9.6	24	2.5	30	534	23.3	21.7	09	3.4	30	148	14.3	9.4	27	2.1																			
950	30	564	23.3	21.8	09	6.3	30	576	18.9	11.5	25	4.6	30	1,053	14.4	7.3	26	3.0	30	1,007	23.2	18.4	09	3.0	30	1,035	14.6	8.0	29	2.8																			
900	30	1,529	19.1	13.8	08	7.0	30	1,527	14.4	6.7	26	6.4	30	1,574	11.2	4.2	27	3.8	30	1,502	18.7	15.5	09	6.7	30	1,515	9.7	1.4	30	2.6																			
850	30	2,047	16.0	8.5	08	6.1	30	2,037	11.4	2.4	26	7.0	30	2,039	9.2	-7.2	28	5.4	30	2,022	16.3	12.4	09	7.0	30	2,017	7.4	-3.2	29	3.2																			
800	30	2,594	13.4	4.3	07	4.3	30	2,573	8.3	-2.1	26	6.7	30	2,572	6.6	-4.6	27	6.7	30	2,569	13.6	7.0	09	6.6	30	2,547	5.0	-8.4	29	4.8																			
750	30	3,172	10.3	-1.7	07	3.3	30	3,143	4.7	-5.8	27	7.5	30	3,135	3.5	-8.7	27	7.4	30	3,148	10.6	2.3	09	7.0	30	3,106	2.0	-11.9	29	6.1																			
700	30	3,785	7.1	-6.0	07	3.0	30	3,741	1.4	-10.1	27	7.6	30	3,733	4.4	-12.8	27	8.2	30	3,763	7.1	-1.1	09	6.3	30	3,701	-1.3	-15.2	29	6.8																			
650	30	4,444	3.4	-11.0	07	2.6	30	4,381	-2.3	-14.0	27	8.1	30	4,413	-3.7	-15.4	27	8.4	30	4,431	3.3	-2.2	09	6.3	30	4,433	-4.8	-20.1	28	7.5																			
600	30																																																









# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

JUNE 1979

Sun's zenith distance										Sun's zenith distance									
Date	A.M.				•	P.M.				Date	A.M.				•	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MAINA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass									
	3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64
1-----	1.18	1.25	1.34	1.43	----	----	----	----	----	1-----	.80	.91	1.04	1.22	1.46	1.24	1.07	.94	.86
7-----	1.07	1.16	1.26	1.38	1.52	----	----	----	----	2-----	.72	.87	1.02	1.18	----	1.24	1.07	.95	.86
8-----	1.09	1.18	1.28	1.40	----	----	----	----	----	3-----	.77	.87	1.00	1.16	----	----	----	----	----
9-----	1.14	1.21	1.29	1.41	1.52	----	----	----	----	4-----	.72	----	----	----	----	----	----	----	----
13-----	1.16	1.22	1.31	1.35	----	----	----	----	----	6-----	----	----	----	1.05	1.32	1.10	.92	.80	.69
14-----	1.16	1.24	1.34	1.45	1.53	----	----	----	----	7-----	.69	.81	.94	1.13	1.35	1.05	.89	.75	.65
16-----	1.17	1.24	1.33	1.43	1.52	----	----	----	----	9-----	.79	.89	1.04	1.22	1.42	1.27	1.12	1.01	.91
17-----	1.14	1.21	1.30	1.41	----	----	----	----	----	10-----	.87	.98	1.10	1.25	1.40	1.11	.91	.76	.65
23-----	1.14	1.21	1.26	1.41	----	----	----	----	----	11-----	.77	.88	1.00	1.19	1.43	1.19	1.04	.91	.81
Aver-										12-----	.94	1.04	1.15	1.30	1.44	1.17	1.01	.90	.78
ages	1.14	1.21	1.17	1.41	1.52	----	----	----	----	13-----	.87	.97	1.09	1.24	1.39	----	----	----	----
										14-----	.66	.76	.89	1.07	1.30	----	----	----	----
										15-----	.61	.72	.86	1.05	1.30	----	----	----	----
										16-----	----	----	----	1.20	----	1.22	1.06	.96	.85
										17-----	.92	1.03	1.14	1.29	1.49	1.26	1.10	.97	.86
										18-----	.83	.95	1.07	1.24	1.44	1.24	1.06	.94	.83
										19-----	.85	.96	1.10	1.25	1.47	1.23	1.08	.95	.83
										20-----	.85	.95	1.07	1.22	1.41	1.21	1.06	.94	.85
										21-----	.73	.84	.97	1.15	1.41	1.20	1.07	.93	.84
										22-----	.83	.91	----	----	----	1.16	1.02	.92	.81
										23-----	.83	.94	1.06	1.22	1.42	1.24	1.06	.93	.83
										24-----	.85	.95	1.09	1.26	1.45	1.22	1.09	.98	.88
										25-----	.82	.92	1.04	1.20	1.36	1.13	.93	.76	.65
										26-----	.61	.73	.87	1.07	1.32	----	----	----	----
										27-----	.66	.76	.87	1.05	1.28	----	----	----	----
										28-----	.55	.67	.81	.99	----	----	----	----	----
										29-----	----	----	----	----	1.29	----	----	----	----
										30-----	.53	.61	----	----	----	----	----	.69	----
										Aver-	.76	.87	1.01	1.18	1.39	1.19	1.03	.89	.80
										ages									

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

JUNE 1979

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	188	148	116	85	126	199	121	172	194	223	158	156	191	102	223	212	144	211	214	159	117	253	235	239	153	111	174	125	340	168	175	

## CORRECTIONS

Heating Degree Days - April 1979

<u>This Month</u>	<u>Period July through this Month</u>
Birmingham: 83	2767
<u>Normals July through this Month</u>	
2824	

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- 0 Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times \text{°C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- \* No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Oew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Oew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Oew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Oew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Oew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Oew Point temperatures replaced Relative Humidity January 1967.

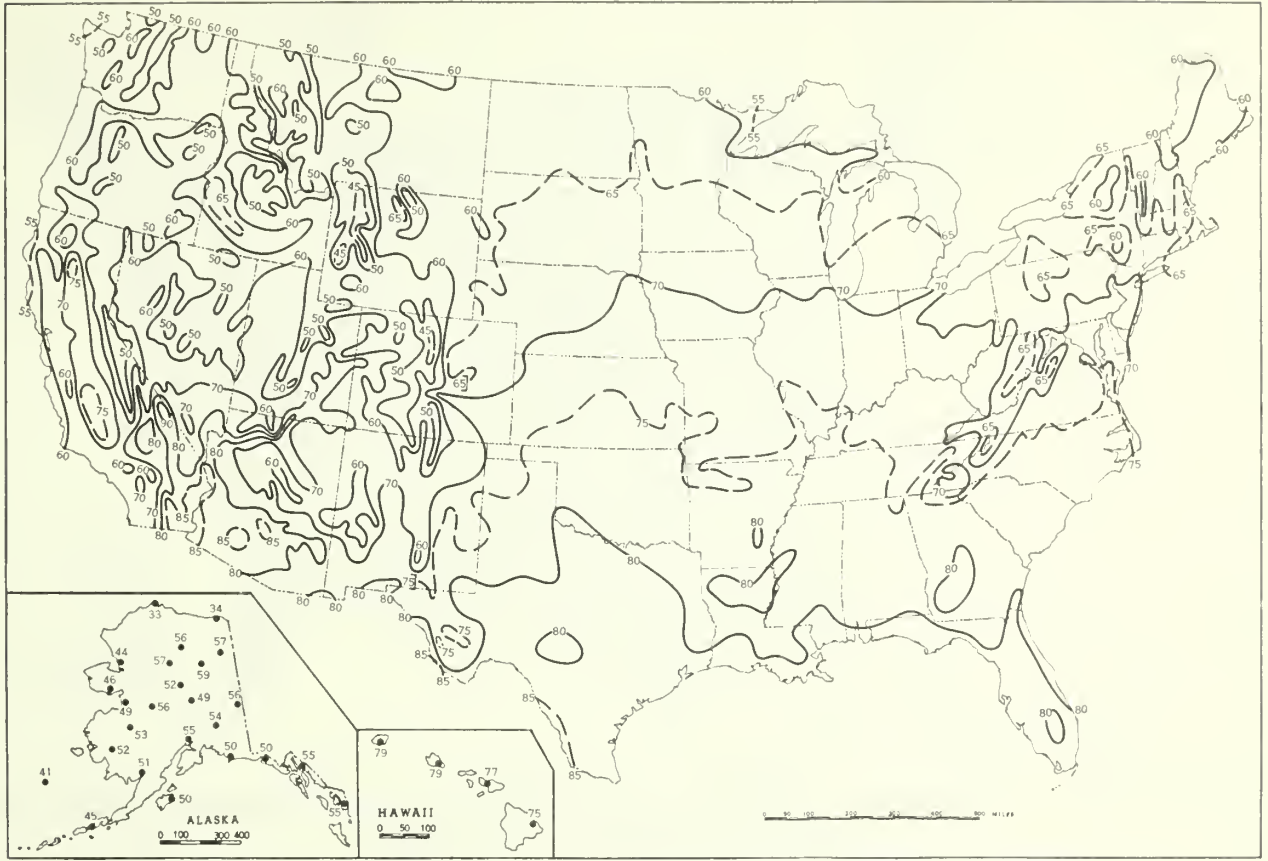
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( ) Clouds Present	OM Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Oust	HS Slight Haze	M Moderate Haze-indeter-
BD Blowing Oust	F Fog	I Intense Haze-indeterminable	minable
BN Blowing Sand	GF Ground Fog	K Smoke	N Sand
0 Oust	H Haze	KI Intense Smoke	S Slight Haze-indeter-
01 Intense Dust	HI Intense Haze	KM Moderate Smoke	minable

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), June.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), June 1979

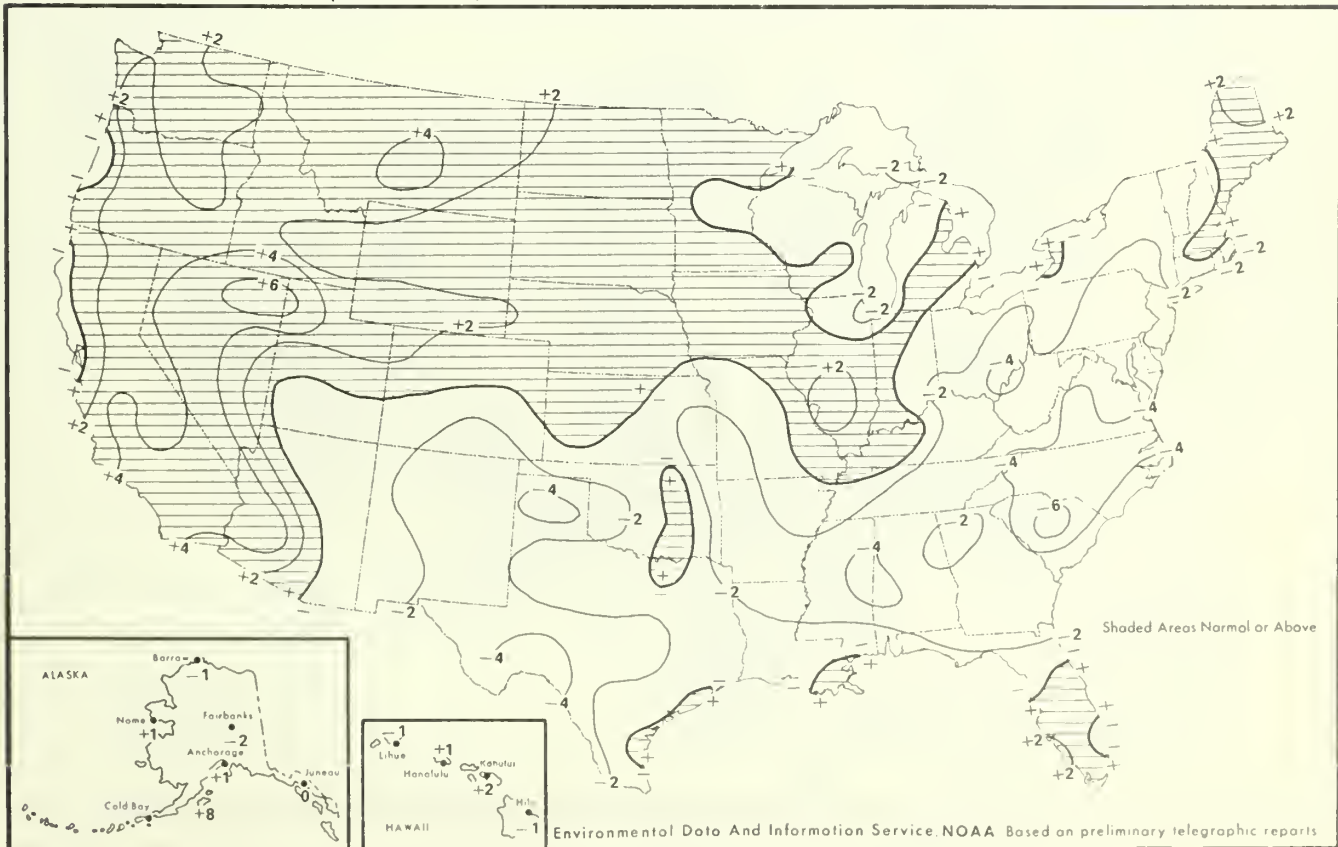
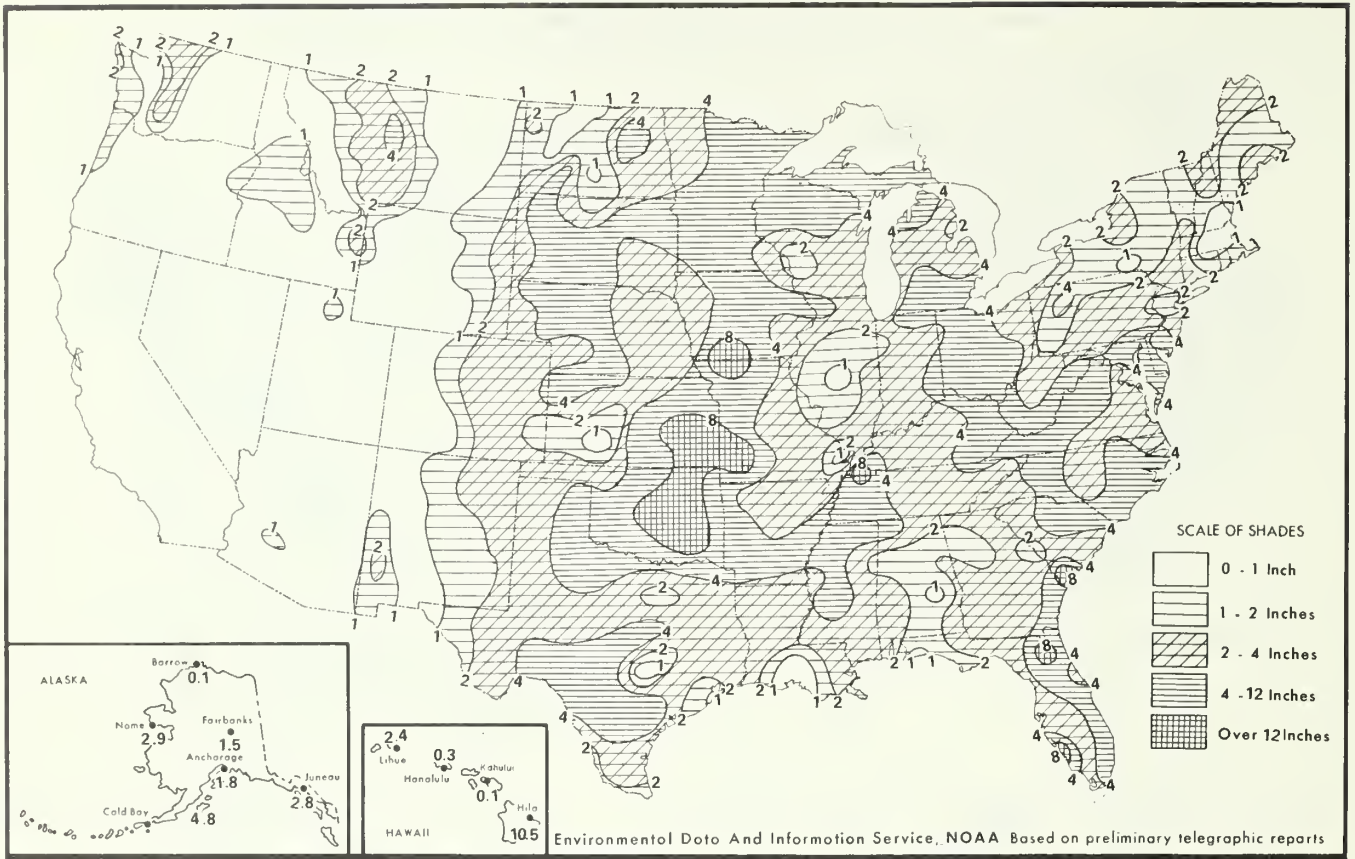




Chart II. A. Total Precipitation (Inches), June 1979



B. Percentage of Normal Precipitation, June 1979

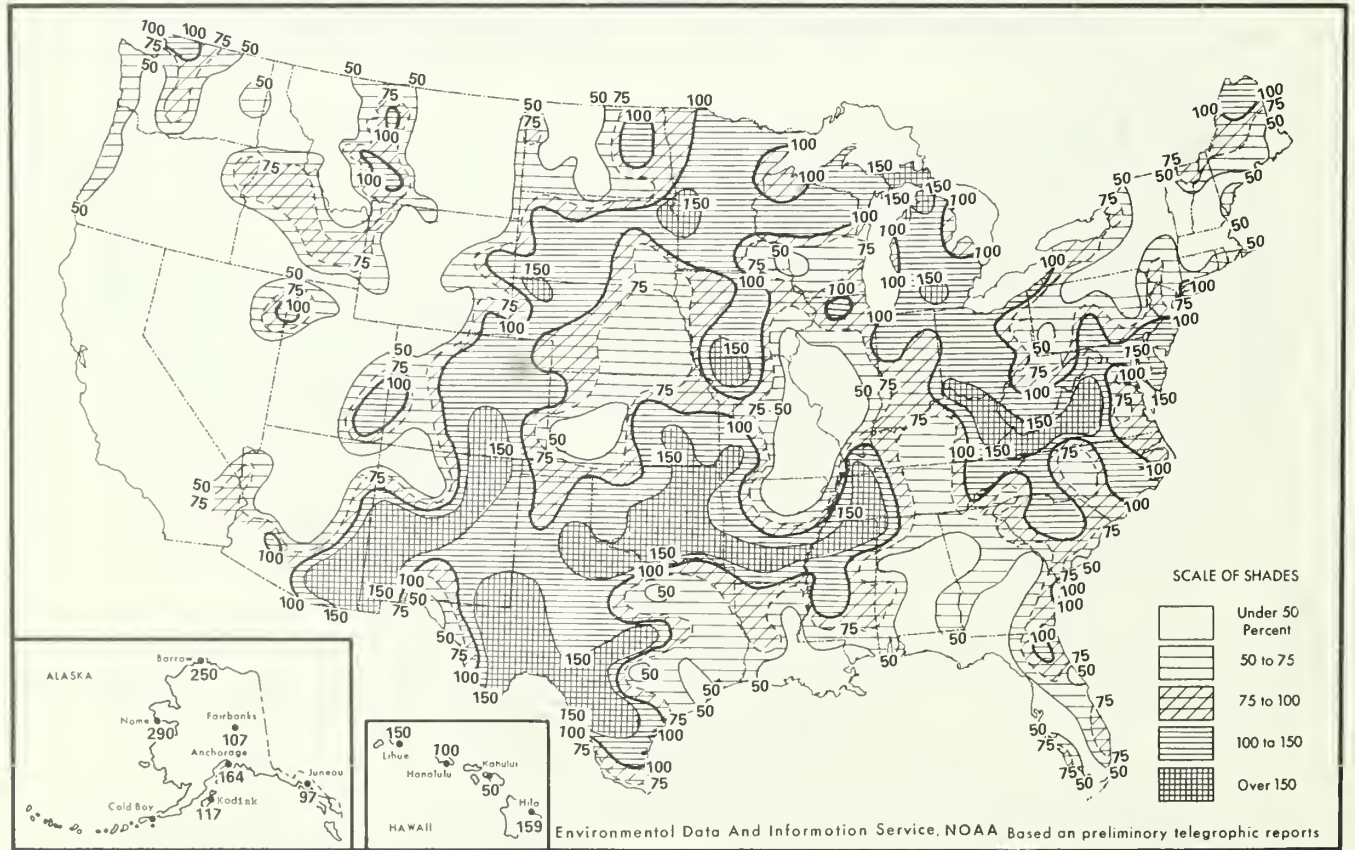
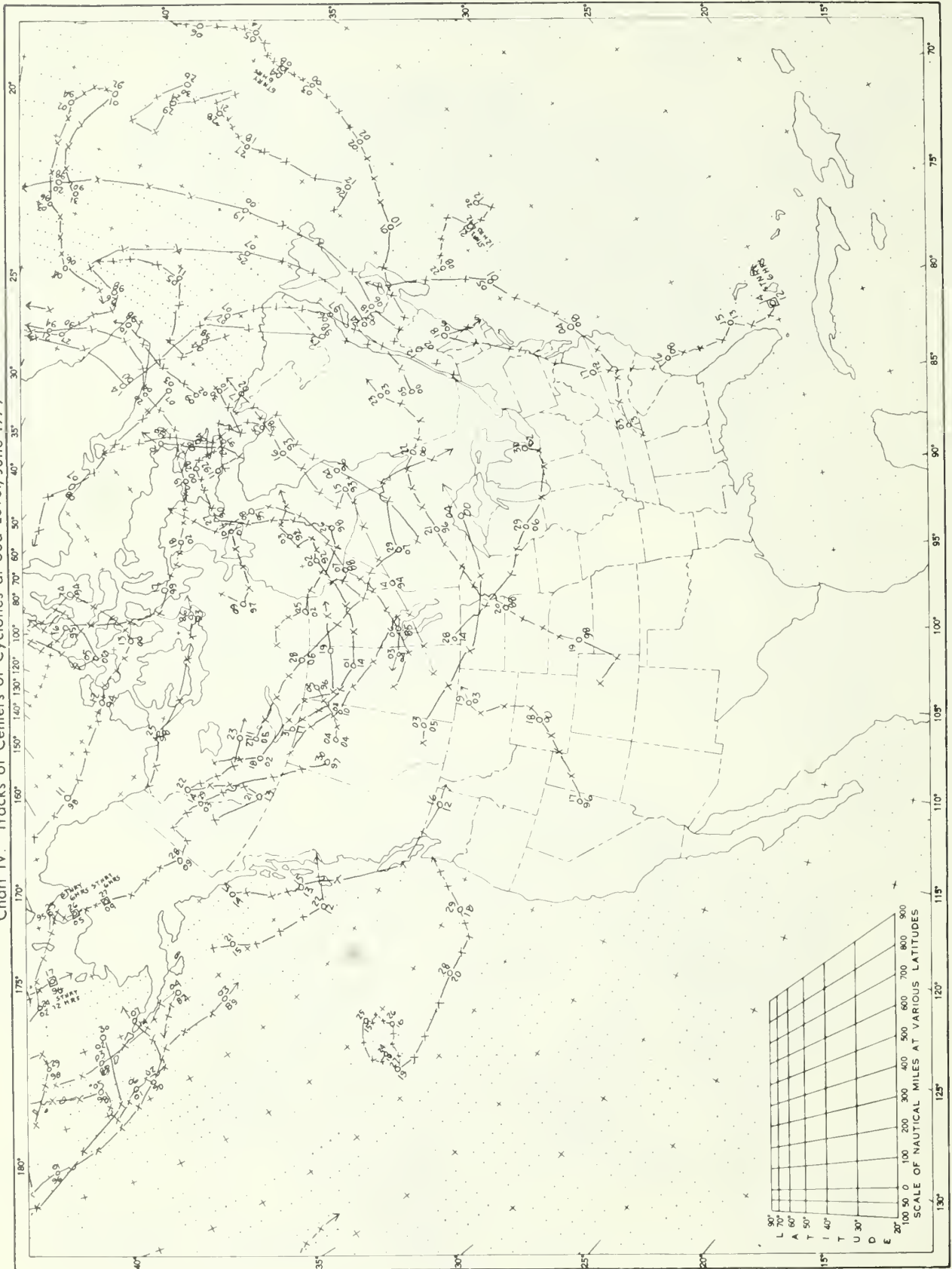




Chart IV. Tracks of Centers of Cyclones at Sea Level, June 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 Squares indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.















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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

JULY 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** July rainfall covered nearly every point in the country. Some areas in the normally dry Southwest and Plateau Region received up to 2 inches. Two tropical systems, Bob and Claudette, dominated the rain patterns in the East. Both storms, occurring a week apart, followed similar tracks from southeastern Texas to the Ohio Valley and the middle Atlantic States. Flooding occurred in Texas and Indiana. Temperatures in the Pacific Northwest averaged above normal. During parts of the month, unusual high readings ranged above 100° in the State of Washington. Temperatures in New Mexico and New England also averaged well above normal for the month.

A cool high pressure system was poised over Hudson Bay in Canada as July began. As the first week of the month progressed, the cold front marking the periphery of the cool air moved southward and encompassed all of the central and eastern United States. Precipitation fell all along the front as it moved southward. Light amounts were recorded in very dry central Illinois. The heaviest rain fell in the eastern portion of the southern Plains and in the central Gulf Coast States, where severe weather, including heavy downpours and tornadoes, was reported. Tornadoes also touched down in the eastern Great Plains.

Many record low temperatures chilled the Midwest and Eastern Seaboard. Only the Rocky Mountains and Florida showed warmer than normal temperatures.

The cool air moved eastward out of the Nation during the early part of the second week (9th to 15th). Light showers edged through the eastern part of the Midwest as the cooler air departed. At midweek, Hurricane Bob moved onto the Louisiana coast and proceeded to the Ohio Valley and the Middle Atlantic States. Heavy downpours fell along the track of the

storm. Five to 8 inches were measured in Mississippi, Alabama and southern Indiana. Another area of thunderstorms rolled into the northern Plains in the latter half of the week. Temperatures ranged warmer than normal throughout the Southwest, the Plains, and through the Great Lakes to New England.

Early in the third week of the month (16th to 22d), showers and thunderstorms formed in the central and northern Plains, but then the moisture from the Gulf of Mexico began to flow toward the Southwest. Above-normal rain fell as showers in the Southwest and the Plateau Region. Heavy showers also fell in central and western Texas, the Southeast, and throughout the area east of the Appalachians.

The Pacific Northwest averaged 9 to 10° warmer than normal with some daytime temperatures exceeding 100° as far north as the State of Washington. The central Plains cooled to an average of 6° below normal.

In the beginning of the last period (23d to 31st), Tropical Storm Claudette approached the southeastern coast of Texas. The storm was downgraded to a low pressure system as it moved slowly to northeastern Texas. A circulation pattern carried large amounts of moisture into the area from southeastern Texas to the Midwest. More than 12 inches of rain flooded portions of the Texas coast. Five or more inches fell on already wet southern Indiana and flooded large acreages there. Only at week's end did the remnants of the storm move out of the country through the Middle Atlantic States. The last two days of the month produced thunderstorms from the central Plains to the upper Mississippi Valley. Hot weather continued in the West and from the mid-Atlantic Coast through New England.



# HURRICANE BOB

July 9 - 16, 1979

National Hurricane Center, NOAA  
Miami, Florida

Hurricane Bob developed from one of the many disturbances that originate over Africa each hurricane season. It was first detected in the eastern North Atlantic near the Cape Verde islands the last week of June and continued westward without showing any signs of development until the system reached the northwest Caribbean on 6 July.

After passing across the Yucatan Peninsula during the 7th, a weak circulation began forming on the 8th and organized into the third tropical depression of the year by the 9th.

On the morning of the 10th an Air Force reconnaissance aircraft reported a developing tropical storm about 400 mi south of the Louisiana Coast with maximum winds estimated 50 kts and lowest pressure 998 mbs. This was a drop of 14 mbs since the flight on the previous day. Afternoon flights measured winds of 60 to 70 kts and reported that the lowest pressure had dropped another 10 mbs. The storm was upgraded to a hurricane in the late afternoon and it remained a minimal hurricane with lowest pressure 986 mbs as the center moved inland west of Grand Isle, LA, early on the morning of the 11th.

During the development stage the depression moved toward the northeast around 10 kts. After reaching tropical storm strength, Bob made a gradual turn to the north with an increase in forward speed to 15 kts as it approached the coast. This motion was associated with the effects of a deepening upper level trough west of the system. The upper atmospheric acceleration of the wind field over Bob, which was produced by this trough, contributed significantly to the hurricane's rather rapid intensification.

After moving inland Bob moved north northeast up the Mississippi Valley into western Tennessee on the 12th

and into southern Ohio the 13th. Thereafter, the low pressure area that was once Bob drifted southeast off the mid-Atlantic coast on the 16th and was absorbed in a low pressure system over the western Atlantic.

The statistics associated with Bob were typical of a minimal hurricane. Tides were generally 3 to 5 feet above normal and rainfall totals between 3 and 6 inches. Highest winds were 45 to 55 kts along the coast with a few locations reporting 65 kt winds. Eight tornadoes were reported but only one produced significant damage. A tornado caused damage estimated at \$27,500 in Biloxi, MS. There was one death and one injury in Lafitte, LA, when two men were blown off a marina roof during the height of the storm.

No serious flooding was reported in Louisiana, Mississippi, or Alabama. The remnants of Bob produced flooding over portions of Indiana, Ohio, and West Virginia, but details are sketchy at this time.

A number of boats were sunk or damaged and there was considerable pier damage due to high tides and rough seas. Besides the usual tree and power line damage, gusty winds produced some window breakage in the business district of New Orleans. Total storm damage may reach several million dollars including an estimated one quarter million dollars in Harrison County, MS, alone.

Hurricane Bob was a well behaved storm so that warnings and forecasts were exceptionally good. The fact that Bob was a minimal hurricane may make it difficult for the public to comprehend the danger, and to heed the warnings, when a more severe storm strikes the United States coast.

# HURRICANE BOB

## Preliminary Report

<u>DATE</u>	<u>TIME</u> <u>(GMT)</u>	<u>LAT.</u>	<u>LONG.</u>	<u>PRESSURE</u> <u>(MB)</u>	<u>WIND</u> <u>(KT)</u>	<u>STAGE</u>
7/9	1200	22.0	96.0	1012	20	DEPRESSION
	1800	22.5	95.3	1010	25	
7/10	0000	23.0	94.6	1007	30	
	0600	23.5	93.8	1004	35	TROPICAL STORM
	1200	24.0	93.0	998	50	
	1800	25.0	92.3	996	55	
7/11	0000	26.2	91.6	988	65	HURRICANE
	0600	27.8	91.1	991	65	
	1200	29.1	90.6	986	65	
	1800	31.0	90.2	992	40	TROPICAL STORM
7/12	0000	32.5	89.9	998	30	DEPRESSION
	0600	34.0	89.7	1002	25	
	1200	35.9	89.1	1004	25	
	1800	37.2	87.8	1006	25	
7/13	0000	38.5	86.5	1006	25	
	1200	39.0	84.0	1007	25	
7/14	0000	39.0	81.3	1009	20	
	1200	38.3	78.8	1010	20	
7/15	0000	37.5	76.5	1011	20	
	1200	36.0	76.0	1012	20	
7/16	0000	34.0	76.5	1013	20	
	1200	33.0	75.0	1014	20	

# TROPICAL STORM CLAUDETTE

July 15 - 29, 1979

National Hurricane Center, NOAA  
Miami, Florida

Claudette was a tropical storm for two brief periods separated by a five day interval during which it weakened to a disorganized tropical wave. However, the storm will long be remembered for its record-breaking rains in eastern Texas. If a measurement of 42 inches or rain in twenty-four hours near Alvin, TX, is accepted, Claudette has the dubious distinction of establishing a United States record for the greatest twenty-four hr rainfall total. This may also be a record for the world's greatest twenty-four hour rainfall occurring over flat terrain.

Claudette began as a tropical wave which moved off the African coast on 11 July. The wave was characterized by strong middle level winds just to the east of the wave axis. The rawinsonde report from Dakar, Senegal, at 1200 GMT, 12 July showed winds of 85 kts at 550 mbs - the strongest winds recorded at any level at that station during the hurricane season thus far.

A tropical depression formed from the wave on 16 July, about 450 miles east of the Leeward Islands. The depression was tracked west northwestward using satellite imagery until 1225 GMT, 17 July, when the first reconnaissance flight into the system measured winds of 45 kts, although the lowest pressure was only 1011 mbs. Even though the minimum pressure did not suggest a tropical storm, the depression was upgraded to Tropical Storm Claudette at 1600 GMT, based on wind measurements, and gale warnings were issued for the Leeward and Virgin Islands and Puerto Rico.

The center crossed the northern Virgin Islands but the heaviest convection extended for a considerable distance to the south and east of the center. Rainfall amounts generally ranged from 1.5 inches in the Virgin Islands to 2.5 inches in the larger islands of the French Antilles. However, there were reports of 7 to 8 inches of rain with flooding in the Point a Pitre to Grand Fonds region of Guadeloupe.

As the center approached Puerto Rico during the night of 17 July, the circulation became disorganized and the system weakened to a tropical depression. Further weakening ensued as the depression crossed the Mona Passage, and upon encountering the island of Hispaniola, the system became a disorganized tropical wave.

As the center skirted along the north coast of Puerto Rico, heavy rains fell over the southern part of the island. Amounts exceeding nine inches were measured in the Ponce area. One man drowned while attempting to cross a swollen river. Property losses were estimated at \$750,000. The metropolitan San Juan area received less than two inches of rain, and storm effects on the city were negligible.

During the period 18-21 July, portions of the wave

crossed the Dominican Republic, Haiti, Jamaica, the Bahamas, Cuba and extreme southern Florida, causing locally heavy rains and gusty winds. As the wave emerged into the southeast Gulf of Mexico, a depression formed on 21 July. Since the depression could be traced to the remnants of Claudette, the original name was retained.

As the depression moved northwestward through the Gulf of Mexico, its lack of organization made tracking difficult. The accompanying "best track" represents a considerably smoothed fit to reconnaissance and satellite position estimates that were frequently at variance with one another, which fell systematically to the north of corresponding reconnaissance fixes during the period. There is some suggestion that satellite images depicted a middle level vorticity center which paralleled the track of the surface center as determined from aerial reconnaissance data.

During the early morning hours of 23 July, an Air Force reconnaissance mission found that winds had reached gale force, and Claudette once again became a tropical storm. Gale warnings were issued from Biloxi, MS, to Freeport, TX, at 1300 GMT. As the storm approached the upper Texas coast, the situation became increasingly complex. The central part of the storm circulation elongated, and there is some evidence that the original center, situated in the southern part of this elongated envelope, weakened while a new center formed to the north. As the original center drifted to the west and dissipated, gale warnings were discontinued during the night of 24 July. However as the new center formed, and offshore oil rigs reported winds increasing to 40 kts, gale warnings were issued at 1430 GMT from Grand Isle, LA to Galveston, TX.

By midday on 24 July, the storm center came under surveillance of radars at Lake Charles, LA, and Galveston, TX. These radar reports showed that the center drifted northward and crossed the coast near the Texas-Louisiana border about 1900 GMT, 24 July. The center passed just north of Beaumont during the evening. It was thought that the predominant northward motion would continue since the storm was embedded in a strong east-west pressure gradient. Based on this reasoning, gale warnings were discontinued along the coast at 2200 GMT, 24 July. However, during the night the motion of the center became slow and erratic. Based on an examination of the surface winds and pressures at Beaumont, Houston, Lufkin and College Station, it appears that the track of the low pressure center described a small counterclockwise loop within the area bounded by these cities.

Since the center remained close to the coast, and the main source of inflow was a confluent band of southerly winds off the warm waters of the northwest Gulf



## TROPICAL STORM CLAUDETTE

of Mexico, the storm did not weaken as expected. Instead, the minimum pressure at Beaumont dipped to 997.8 mbs at 0030 GMT, 25 July, which was the lowest measurement during the life of the storm.

Finally, on 26 July the residual low pressure system weakened as it moved northward, passing just to the east of Waco and Dallas. The low crossed eastern Oklahoma, Missouri, Illinois, Indiana, Ohio and into West Virginia where it merged with a frontal system on 29 July.

As the storm stalled over eastern Texas during the night of 24 July, torrential rains began along the coastal sections of Texas from the Houston-Galveston area to Matagorda. This area of heavy rain coincided with a zone of low level convergence which persisted for about 30 hours. Maximum amounts in excess of thirty inches occurred near Alvin, in Brazoria County and near Sargent, in Matagorda County. A subsequent report received from a cooperative observer located 8.5 miles due west of WSO, Alvin showed that 42 inches of rain fell between 1200 GMT, 25 July and 1200 GMT, 26 July - a United States record for twenty-four

hour rainfall amount. The same station had a storm total rainfall of 45 inches.

No estimate of dollar damage due to flooding is available at this writing. However, it is likely to exceed \$100 million. At least one death in Texas was attributed to Claudette. Minor damage due to tide and wave action occurred along the Louisiana coast, where tides were generally 1.5 to 3.5 feet above normal. Several boats were sunk and homes damaged in Cameron, LA, where about one hundred persons were evacuated.

The highest sustained winds associated with Claudette were 45 kts reported by an oil rig off the central Louisiana coast from 1200 GMT to 1600 GMT 24 July. Oil rigs also reported winds of 40 kts off the upper Texas and Louisiana coasts on 26 July, thirty hours after the storm center moved inland. Winds were estimated at 45 to 55 kts at Cameron at 1915 GMT, 24 July. Air Force reconnaissance reported surface winds of 45 kts at 1225 GMT, 17 July as Claudette originally developed east of the Virgin Islands.

# TROPICAL STORM CLAUDETTE

## Preliminary Report

DAY	TIME Z	LATITUDE	LONGITUDE	MIN. PRES. (mbs)	MAX WIND (kts)	CATEGORY
15	12	12.5	46.3	1014	20	trop disturbance
	18	12.8	48.4	1014	20	
16	00	13.4	50.4	1012	25	trop depression
	06	14.6	52.1	1012	25	
	12	15.7	53.8	1011	30	
17	18	16.5	55.5	1011	30	trop storm
	00	17.0	57.2	1011	30	
	06	17.5	58.8	1011	30	
	12	17.8	60.3	1011	40	
18	18	18.0	62.1	1010	40	trop depression
	00	18.2	63.8	1010	40	
	06	18.3	65.4	1011	30	
	12	18.4	67.0	1011	30	
19	18	18.5	68.5	1012	25	trop. disturbance (wave)
	00	18.7	69.5	1012	20	
	06	18.8	70.5	1012	20	
	12	18.8	71.4	1012	20	
20	18	19.0	72.4	1012	20	
	00	19.0	73.3	1013	20	
	06	19.2	74.7	1013	20	
	12	19.5	76.7	1013	20	
21	18	20.0	78.7	1013	20	
	00	20.6	80.4	1013	20	
	06	21.4	82.2	1013	25	
	12	22.1	83.5	1012	30	
22	18	22.8	85.0	1010	30	trop depression
	00	23.5	86.5	1007	30	
	06	24.0	87.4	1007	30	
	12	24.5	88.5	1007	30	
23	18	25.0	89.5	1006	30	
	00	25.4	90.5	1005	30	
	06	25.9	91.4	1004	30	
	12	26.4	92.4	1003	35	
24	18	26.9	92.9	1003	35	trop storm
	00	27.5	93.4	1003	35	
	06	28.3	93.5	1003	35	
	12	28.8	93.7	1002	45	
25	18	29.6	93.9	1000	45	
	00	30.3	93.9	997	40	
	06	30.3	94.3	998	35	
	12	30.5	94.8	1000	30	
25	18	30.5	95.2	1001	30	trop depression (over-land)
	00	30.2	95.3	1001	30	

# TROPICAL STORM CLAUDETTE

Day	Time	Latitude	Longitude	Min. Pres.	Max Wind	Category
26	06	30.6	95.1	1002	30	trop depression (over land)
	12	30.8	95.4	1003	30	
	18	31.3	96.3	1004	25	
27	00	31.8	96.6	1004	20	
	06	32.7	96.4	1006	20	
	12	34.0	95.9	1007	15	
	18	35.3	95.3	1007	15	
28	00	36.4	94.6	1007	15	
	06	37.8	93.4	1008	15	
	12	38.6	91.0	1009	15	
	18	38.8	88.0	1009	15	
29	00	39.0	85.2	1010	15	
	06	39.0	82.8	1011	15	
	12	39.0	80.2	1011	15	



# OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

JULY 1979

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	2 Stations	103	6+	Scottsboro	52	2	Dadeville	13.94	Hightower	2.73	
Alaska	2 Stations	87	25+	Barrow WSD AP	27	11	Little Port Walter	17.25	Five Mile	.36	
Arizona	Chandler	123	29	Fort Valley	29	8+	Arivaca 1 E	5.22	6 Stations	.00	
Arkansas	2 Stations	101	5+	2 Stations	54	5+	Prescott	11.27	Lake City	2.16	
California	2 Stations	123	19+	Bodie	17	B	Deep Canyon Laboratory	3.53	126 Stations	.00	
Colorado	Holly	107	14	Spicer	26	31	Stratton	5.78	Boulder	T	
Connecticut	2 Stations	96	13	2 Stations	37	7+	Stevenson Dam	3.88	East Haven Saltonstall	.32	
Delaware	3 Stations	92	29+	Milford 2 WSW	47	6	Middletown 1 WSW	4.89	Newark University Farm	2.10	
Florida	Myakka River State Park	101	3	4 Stations	62	22+	Pensacola FAA AP	20.36	Moore Haven Lock 1	1.45	
Georgia	Lumpkin 2 SE	104	5	2 Stations	49	1	Atkinson 2 E	15.24	Godfrey 3 NE	2.22	
Hawaii	3 Stations	93	24+	Mauna Kea Obs 111.2	22	1	Puohokamao 2 343	21.80	25 Stations	.00	
Idaho	2 Stations	110	18+	Stanley	25	11	Malad City	2.16	6 Stations	.00	
Illinois	Du Quoin 4 SE	101	15	2 Stations	42	6+	Mt Carmel	14.26	Antioch 2 NW	1.25	
Indiana	Crane Naval Depot	98	30	Logansport Radio WSAL	40	6	Elliston	16.66	Goshen College	1.08	
Iowa	Leon	100	13	Elkader 5 SSW	40	6	Parkersburg	10.03	Mapleton	1.25	
Kansas	Webster Dam	110	12	Brewster	50	20	Highland	10.52	Sublette	1.11	
Kentucky	5 Stations	96	31+	2 Stations	46	7+	Taylorsville	11.34	Fords Ferry Dam 50	2.87	
Louisiana	Bogalusa	102	6	Monroe FAA AP	64	14	Hackberry 8 SSW	22.01	Dak Grove 2 WSW	2.99	
Maine	Saco	94	13	Clayton Lake 2	32	5	West Buxton 2 NNN	5.96	Jackman	1.14	
Maryland	Baltimore WSD CI	96	12	Dakland 1 SE	36	7	Cambridge Wtr Trmt Plant	7.88	Fredrick Police Brks	1.78	
Massachusetts	Chester 2	93	14	Chester 2	33	7	Holyoke	8.82	Egartown	.98	
Michigan	2 Stations	103	24+	2 Stations	31	17+	Ishpeming	8.46	Hesperia 4 WNW	.49	
Minnesota	Ada	94	9	Tower 3 S	32	5	Waseca Exp Station	9.64	Willmar State Hospital	.86	
Mississippi	Liberty 1 W	102	7+	2 Stations	57	1	Standard	18.49	Rosedale	2.93	
Missouri	4 Stations	101	14+	Bowling Green 2 NE	47	18	Bloomfield	11.73	Bowling Green 2 NE	.86	
Montana	Thompson Falls Power House	106	19	Polebridge	25	3	Albion 6 NE	5.13	Eureka Ranger Station	T	
Nebraska	2 Stations	105	14+	Agate 3 E	41	15	Moorefield	9.89	Lyman	.55	
Nevada	Sunrise Manr Las Vegas	116	16+	Spring Valley State Park	26	7	Lake Valley Steward	3.78	Paradise Valley 1 NW	.13	
New Hampshire	6 Stations	94	23+	Mount Washington	27	5	Bradford	7.72	Bethlehem	1.44	
New Jersey	Plainfield	96	13	2 Stations	40	7+	Princeton Waterworks	7.98	Ringwood	1.14	
New Mexico	3 Stations	109	15+	Dulce	31	18	Duval Potash Mine	6.82	Tohatchi 6 NE	.00	
New York	Valatie 1 N	99	15	Dld Forge	32	7	Bolivar	9.37	Lyons Falls	.49	
North Carolina	Willard 4 SW	98	29	Transou	39	6	Highlands	21.48	Butner Filter Plant	1.10	
North Dakota	2 Stations	100	22+	Foxholm 7 N	35	16	Mandan Exp Station	6.99	Fosholm 7 N	.37	
Dhio	Painesville 4 NW	94	16	Dorset	37	6	West Manchester 3 SW	10.17	Put In Bay Perry Monument	1.55	
Oklahoma	Great Salt Plains Dam	106	5+	Boise City 2 E	52	19	Taloga	11.53	Chickasaw NRA	.80	
Oregon	Felton Dam	110	19+	Brothers	19	2	Nehalem 9 NE	2.68	28 Stations	.00	
Pennsylvania	Marcus Hook	98	16+	Clermont 4 NW	31	6	Coatesville 1 SW	10.14	Rushville	1.01	
Puerto Rico	Manati 2 E	97	11	Cerro Maravilla	48	18	San Lorenzo 3 S	15.68	Puerto Real	.70	
Rhode Island	Providence WSD AP	92	13	Kingston	42	6	Woonsocket	2.76	North Foster 1 E	1.63	
South Carolina	4 Stations	99	15+	Caesars Head	52	8	Pinopolis Dam	10.51	Clark Hill Dam	2.94	
South Dakota	Spearfish 1 W	101	11	Pactola Dam	41	15	Hill City 1 SSE	8.85	Centerville 6 SE	1.56	
Tennessee	Jackson FAA AP	99	4	2 Stations	51	6+	Rockwood 2	14.64	Newbern	2.74	
Texas	El Paso WSD AP	112	10	Ysleta	47	6	Alvin (Houston Area WSD)	35.70	5 Stations	.00	
Utah	Hanksville	109	27	Thistle 2 SW	26	29	Corinne	1.99	5 Stations	.00	
Vermont	Vernon	96	15	Mount Mansfield	31	5	Cavendish	6.17	South Hero	.67	
Virginia	3 Stations	95	14	Burkes' Garden	37	6	Painter 2 W	9.99	Louisa	.90	
Virgin Islands	Truman Field FAA AP	97	30+	Alex Hamilton Field FAA	67	19	Granard	8.29	East End	2.85	
Washington	Priest Rapids Dam	110	19	Rainier Paradise Ranger Station	28	2+	Baring	4.42	2 Stations	T	
West Virginia	2 Stations	93	31+	Canaan Valley	32	7+	Hacker Valley	12.26	Franklin 2 NE	2.05	
Wisconsin	Grantsburg	95	21	Newald 4 N	34	5	Brule Ranger Station	6.88	Milwaukee WSD AP	1.06	
Wyoming	2 Stations	104	10	Darwin Ranch	24	15	Alva 5 SE	5.31	2 Stations	.00	

# CLIMATOLOGICAL DATA

METRIC UNITS

JULY 1979

State and Station	Elevation (ground)	Pressure		Temperature					Precipitation				Wind				No. of days (sunrise to sunset)											
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	No. of days	Snow, ice pellets	Resultant speed	Resultant direction	Speed	Direction	Fastest mile (1.6 kilometers)	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)	%
ALABAMA																												
BIRMINGHAM U	207			31.1	21.5	26.3	-0.9	36.7	5	15.6	1	164	30	39	19	0	0	0.7	16	12.5	11 11		1	12	18	7.8	5.1	
BIRMINGHAM	189	995.3	1017.2	31.1	22.1	26.6	0.0	37.2	5	15.6	1	754	12.1	77	13	0	0	1.3	16	12.5	11 11		1	12	18	7.8	5.1	
HUNTSVILLE	190	994.2	1017.0	29.8	20.9	25.4	-1.0	35.6	3	15.6	1	105	41	54	18	0	0	1.6	17	12.5	22 11		2	10	18	7.4	4.2	
MOBILE	64	1009.1	1016.8	31.7	23.1	27.8	-0.2	36.1	5	18.3	1	774	4	28	17	0	0	0.6	17	13.4	5 11		2	10	18	7.4	4.2	
MONTGOMERY	59	1016.2	1017.2	31.4	23.2	26.8	-0.4	36.1	5	18.3	1	131	2	28	17	0	0	0.6	17	13.4	5 11		2	10	18	7.4	4.2	
ALASKA																												
ANCHORAGE	35	1009.5	1014.3	19.2	12.3	15.8	1.7	26.1	3	8.9	26	99	45	24	15	0	0	1.2	22	10.3	20 5		3	5	23	6	4.4	
ANCHORAGE	34	1012.9	1015.9	18.1	12.0	15.1	0.7	25.9	24	8.9	1	91	7.4	31	13	0	0	1.9	14	9.6	10 6		3	5	23	6	7.0	
ANNETT	9	1012.5	1012.8	10.4	1.8	6.6	2.4	18.3	3	-2.8	11	21	-6	8	9	0	0	0.7	11	9.6	10 6		3	5	23	6	7.0	
BARROW	12	1011.9	1013.7	9.0	2.8	5.6	1.4	20.0	14	1.1	20*	20	-6	9	0	0	2.0	11	15.0	21 31*		5	11	13	6.4	4.8		
BARTER ISLAND	194	1010.5	1015.9	15.9	8.1	12.0	-0.6	23.3	15	4.4	7	34	12	10	0	0	2.0	25	15.6	19 5		6	5	22	8.6	6.4		
BETHEL	194	989.2	1013.2	20.6	9.1	14.3	0.5	23.8	15	4.4	7	34	12	10	0	0	1.2	20	15.6	19 5		6	5	22	8.6	6.4		
BETHEL	194	989.2	1013.2	20.6	9.1	14.3	0.5	23.8	15	4.4	7	34	12	10	0	0	1.2	20	15.6	19 5		6	5	22	8.6	6.4		
BIG DELTA	129	1013.9	1017.6	21.4	11.1	16.3	1.1	28.4	4	7.2	18*	51	25	31	12	0	0	0.8	25	17.9	15 2		1	3	27	9.1	7.7	
CULO BAY	133	996.3	1013.1	21.6	10.7	16.2	0.3	27.6	12*	7.2	17	51	14	19	10	0	0	0.8	25	10.3	31 31*		3	10	18	7.7	7.7	
FAIRBANKS	478	1011.9	1014.3	20.0	8.7	14.8	0.9	21.2	17	2.2	17	34	-1	13	14	0	0	1.4	25	10.3	31 31*		3	10	18	7.7	7.7	
FAIRBANKS	478	1011.9	1014.3	20.0	8.7	14.8	0.9	21.2	17	2.2	17	34	-1	13	14	0	0	1.4	25	10.3	31 31*		3	10	18	7.7	7.7	
FOURNA	19	1015.8	1015.8	19.6	9.5	12.9	1.5	21.1	2	5.6	8	1	13	14	0	0	1.6	24	9.4	27 29*		1	10	20	7.8	8.3		
HONOLULU	15	1012.5	1014.5	19.1	11.6	14.3	0.5	26.4	22	5.6	16	157	19	21	13	0	0	2.0	23	11.2	17 22*		1	7	23	8.3	8.3	
KADIAQUIMON	3	1012.5	1014.5	19.1	11.6	14.3	0.5	26.4	22	5.6	16	157	19	21	13	0	0	2.0	23	11.2	17 22*		1	7	23	8.3	8.3	
KADIAQUIMON	3	1012.5	1014.5	19.1	11.6	14.3	0.5	26.4	22	5.6	16	157	19	21	13	0	0	2.0	23	11.2	17 22*		1	7	23	8.3	8.3	
KOTIERIE	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
KOTIERIE	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8		4	5	21	7.4	7.4	
MC GRATH	105	1012.0	1012.9	18.5	8.9	12.2	-0.3	20.7	20	3.7	12	51	-9	17	13	0	0	1.9	29	16.5	24 8							

















# HEATING DEGREE DAYS

(Base 65°F.)

JULY 1979

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				ALABAMA				ALABAMA				ALABAMA			
BIRMINGHAM U	0	0	0	BOISE	5	5	0	NEBRASKA				BRISTOL	3	3	0
BIRMINGHAM	0	0	0	LEWISTON	12	12	0	GRAND ISLAND	9	9	6	CHATTANOOGA	0	0	0
HUNTSVILLE	0	0	0	PDCATELLU	1	1	0	LINCOLN	3	3	0	KNXVILLE	0	0	0
MOBILE	0	0	0					NORFOLK	3	3	6	MEMPHIS	0	0	0
MONTGOMERY	0	0	0	ILLINOIS				NORTH PLATTE	4	4	7	NASHVILLE	0	0	0
				CAIRO U	0	0	0	OMAHA (EPPLEY)	1	1	0	OAK RIDGE	0	0	0
ALASKA				CHICAGO U MAKE	16	16	7	OMAHA (NORTH)	4	4	7				
ANCHORAGE	138	138	227	CHICAGO MIDWAY	2	2	0	SCOTTSSALUFF	0	0	0	TEXAS			
ANNETTE	176	176	231	INDIANAPOLIS	5	5	0	VALENTINE	14	14	8	ABILENE	0	0	0
BARKEH	676	676	815	PEORIA	3	3	0	NEVADA				AMARILLO	0	0	0
BARTER ISLAND	688	688	0	ROCKFORD	9	9	0	ELKO	0	0	27	AUSTIN	0	0	0
BETHEL	345	345	319	SPRINGFIELD	0	0	0	FLY	22	22	23	BROWNSVILLE	0	0	0
BETTLES	194	194	731					LAS VEGAS	0	0	0	CDPPUS CHRISTI	0	0	0
BIG DELTA	118	118	181	INDIANA				RENO	9	9	17	DALLAS FT WORTH	0	0	0
COLD BAY	387	387	462	EVANSVILLE	0	0	0	WINNFUCCA	1	1	6	DEL RIO	0	0	0
FAIKBANKS	124	124	148	FORT WAYNE	8	8	0					FL PASS	0	0	0
GULFANA	215	215	254	INDIANAPOLIS	3	3	0	NEW HAMPSHIRE				GALVESTON	0	0	0
MOBER	302	302	394	SOUTH RENO	3	3	0	CUNCKO	33	33	16	HOUSTON INTERCON	0	0	0
JUNEAU	251	251	288					MT WASHINGTON DBS	430	430	502	LUBBOCK	0	0	0
KING SALMON	214	214	326	IOWA								MIPLANO	0	0	0
KOIKAI	200	200	338	RURLINGTON	2	2	0	NEW JERSEY				RORT ARTHUR	0	0	0
KOTZEBUE	332	332	375	DES MOINES	1	1	0	ATLANTIC CITY	6	6	0	SAN ANGELO	0	0	0
MC URATH	221	221	219	DUBUQUE	6	6	11	ATLANTIC CITY U	5	5	0	SAN ANTONIO	0	0	0
NGM	435	435	462	SIOUX CITY	1	1	0	NEWARK	2	2	0	VICTORIA	0	0	0
ST RAUL ISLAND	497	497	598	WATERLOO	2	2	7	TKENTON U	7	7	0	WACO	0	0	0
TALHEENA	152	152	227					NEW MEXICO				WICHITA FALLS	0	0	0
UNALAKLEET				KANSAS				ALBUQUERQUE	0	0	0				
VALUEZ	287	287	363	CONCURIA	6	6	0	CLAYTON	0	0	0	UTAH			
YAKUTAT	284	284	360	DOUG CITY	0	0	0	RUSWELL	0	0	0	WILFORD	0	0	0
				GODULANO	0	0	0					SALT LAKE CITY	0	0	0
ARIZONA				TOPEKA	0	0	0								
FLAGSTAFF	68	68	52	WICHITA	0	0	0	NEW YORK				VERMONT			
PHOENIX	0	0	0					ALBANY	19	19	9	RURLINGTON	23	23	20
TUCSON	0	0	0	KENTUCKY				RINGHAMTON	37	37	21				
WINDSON	0	0	0	COVINGTON	1	1	0	RUFFALO	16	16	12	VIRGINIA			
YUMA	0	0	0	LEXINGTON	0	0	0	NEW YURK U	4	4	0	LYNCHBURG	0	0	0
				LOUISVILLE	0	0	0	NEW YURK KENNEDY	2	2	0	NORFOLK	0	0	0
ARKANSAS								NEW YURK LA GUARDIA	2	2	0	RICHMOND	0	0	0
FORT SMITH	0	0	0	LOUISIANA				RUCHESTEP	13	13	9	RDANOKE	3	3	0
LITTLE ROCK	0	0	0	RATON ROUGE	0	0	0	SYRACUSE	19	19	11	WALLOPS ISLAND	0	0	0
NO LITTLE ROCK	0	0	0	LAKE CHARLES	0	0	0					WASHINGTON			
				NEW ORLEANS	0	0	0	NORTH CAROLINA				ASHEVILLE	5	5	0
CALIFORNIA				SHREVEPORT	0	0	0	CARE HATTERAS R	0	0	0	DULLAYUTE	157	157	194
BAKERSFIELD	0	0	0					CHARLOTTE	1	1	0	SEATTLE	33	33	62
BISHOP	0	0	0	MAINE				GREENSBORO	1	1	0	SEATTLE-TACOMA	27	27	80
BLUE CANYON	94	94	27	CARIBOU	34	34	84	RALEIGH	0	0	0	SPOKANE	41	41	21
EUREKA U	208	208	270	RURLANO	21	21	27	WILMINGTON	0	0	0	STAMFORD PASS R	291	291	281
FRESNO	0	0	0									HALLA HALLA U	7	7	5
LONG BEACH	0	0	0	MARYLAND				NORTH DAKOTA				YAKIMA	29	29	20
LOS ANGELES	0	0	19	BALTIMORE	2	2	0	RISHARCK	11	11	18				
LOS ANGELES U	0	0	0					FARGO	3	3	13	WEST VIRGINIA			
MT SHASTA R	44	44	37	MASSACHUSETTS				WILLISTON	7	7	22	RECKLEY	28	28	11
OAKLAND	33	33	80	BLUE HILL OBS R	15	15	0					CHARLESTON	5	5	0
RED BLUFF	0	0	0	ROSTON	2	2	0	AKRON	35	35	9	ELKINS	39	39	20
SACKAMENTO	0	0	0	WORCESTER	25	25	10	DHID				HUNTINGTON	2	2	0
SAN DIEGO	0	0	6					CINCINNATI ABBE NB	2	2	0	PARKERSBURG U	9	9	0
SAN FRANCISCO	55	55	93	MICHIGAN				CLEVELAND	20	20	9				
SAN FRANCISCO U	151	151	202	ALPENA	45	45	75	CULUMBUS	11	11	0	WISCONSIN			
SANIA MARIA	69	69	112	DETROIT	8	8	0	DAYTON	7	7	0	GREEN BAY	14	14	22
STOCKTON	0	0	0	FLINT	17	17	14	MANSFIELD	38	38	0	LA CROSS	1	1	10
				GRAND RAPIDS	7	7	4	TULEO	16	16	5	440ISON	14	14	14
COLORADO				HOUGHTON LAKE	48	48	50	YUONGSTOWN	35	35	9	MILWAUKEE	20	20	15
ALAMUSA	57	57	55	LANSING	19	19	9					WYOMING			
COLORADO SPRINGS	6	6	9	MUSKEGON	19	19	14	OKLAHOMA				CASPER	0	0	13
DENVER	0	0	0	SAULT STE MARIE	69	69	96	OKLAHOMA CITY	0	0	0	CHEYENNE	2	2	22
GRAND JUNCTION	0	0	0					TULSA	0	0	0	LANDER	0	0	9
PUEBLO	0	0	0	MINNESOTA								SHERIDAN	6	6	28
				DULUTH	52	52	67	OREGON							
CONNECTICUT				INTERNATIONAL FALLS	36	36	64	ASTORIA	91	91	163				
BRIROGPORT	8	8	0	MINNEAPOLIS	0	0	11	BURNS U	93	93	30				
HARTFORD	16	16	0	ROCHFSTER	0	0	21	EUGENE	33	33	41				
				ST CLOUD	8	8	1R	MEMPHORD	8	8	11				
DELAWARE								RENOLETUN	12	12	6				
WILMINGTON	4	4	0	MISSISSIPPI				PORTLAND	8	8	48				
				JACKSON	0	0	0	SALEM	24	24	43				
DIST OF COLUMBIA				MERIDIAN	0	0	0	SEXTON SUMMIT R	122	122	97				
WASHINGTON DULLES	7	7	0												
WASHINGTON NATIONAL	0	0	0	MISSOURI				PENNSYLVANIA							
				COLUMBIA REGIONAL	2	2	0	ALLENTOWN	13	13	0				
FLORIDA				KANSAS CITY	5	5	0	ERIE	36	36	24				
APRALACHICOLA U	0	0	0	ST JOSEPH	5	5	0	HARKISBURG	12	12	0				
DAYTONE BEACH	0	0	0	ST LOUIS	0	0	0	PHILADELPHIA	4	4	0				
FORT MYERS	0	0	0	SPRINGFIELD	0	0	0	PITTSBURGH	23	23	7				
JACKSONVILLE	0	0	0					PITTSBURGH U	15	15	0				
KEY WEST	0	0	0	MONTANA				SRANTON	34	34	0				
MIAMI	0	0	0	BILLINGS	2	2	10	WILLIAMSPORT	15	15	0				
ORLANDO	0	0	0	GLASGOW	6	6	15								
PENSACOLA	0	0	0	GRFAT FALLS	19	19	10	RHODE ISLAND							
TALLAHASSEE	0	0	0	HAYR	23	23	10	BLACK ISLAND	18	18	9				
TAMPA	0	0	0	HELENA	11	11	33	PROVIDENCE	11	11	0				
WEST PALM BEACH	0	0	0	KALISPELL	50	50	72								
				MILES CITY	1	1	0	SOUTH CAROLINA							
GEORGIA				MOBILE	37	37	39	CHARLESTON	0	0	0				
ATHENS	0	0	0					CHARLESTON U	0	0	0				
ATLANTA	0	0	0					COLUMBIA	0	0	0				
AUGUSTA	0	0	0					GRNVILLE-SPRTNARG	1	1	0				
COLUMBUS	0	0	0												
MACUN	0	0	0					SOUTH OAKOTA							
ROME															



# COOLING DEGREE DAYS

(Base 65°F.)

JULY 1979

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	452	996	1284	HILO	302	1656	1644	OKLAHOMA				CHARLESTON	533	1191	1201
BIRMINGHAM	466	1014	1131	HONOLULU	500	2287	2226	OKLAHOMA CITY	505	959	1057	CHARLESTON U	516	1087	1341
HUNTSVILLE	400	818	1054	KAMULUI	446	2057	1974	TULSA	577	1189	1104	COLUMBIA	425	884	1235
MOBILE	512	1475	1504	LIMU	423	2053	1949	WILMINGTON	487	1090	1128	GRYLVILLE-SPRYNBRG	312	727	932
MONTGOMERY	482	1134	1297												
ALASKA				IDAHO				NEVADA				SOUTH DAKOTA			
ANCHORAGE	4	4	0	BOISE	293	449	403	ELKO	284	413	194	ABERDEEN	183	277	343
ANNETTE	1	1	14	LEWISTON	360	506	366	ELV	103	138	114	HURON	324	499	438
BARROW	0	0	0	POCATELLO	207	271	254	LAS VEGAS	813	1898	1454	RAPID CITY	179	297	374
BARTER ISLAND	0	0	0				RENO	189	241	196	SIOUX FALLS	289	448	442	
BETHEL	0	0	0	ILLINOIS				WINNEMUCA	256	395	253				
BETTLES	11	11	1	CAIRO U	484	1031	1099	NEW HAMPSHIRE	232	317	219	TENNESSEE			
BFC DELTA	0	0	0	CHICAGO U MARE	241	468	394	CONCORD	0	0	0	BRISTOL	194	367	651
COLO BAY	0	0	0	CHICAGO MIDWAY	251	468	545	MT WASHINGTON OBS	0	0	0	CHATTANOOGA	361	771	965
FAIKBANKS	16	16	46	MOLINE	272	561	558				KNOXVILLE	317	705	932	
GULKANA	1	1	0	PEORIA	259	527	595				MEMPHIS	553	1218	1267	
HOMER	0	0	0	ROCKFORD	217	407	437				NASHVILLE	393	776	1002	
JUNEAU	0	0	0	SPRINGFIELD	327	727	681				OK RIDGE	285	568	816	
KING SALMON	0	0	0												
KOTZEBUE	1	1	0	INDIANA				NEW JERSEY				ABILENE	586	1319	1424
MC WRATH	1	1	14	EVANSVILLE	365	793	538	ATLANTIC CITY	308	466	506	AMARILLO	380	674	842
NOME	0	0	0	FORT WAYNE	198	416	457	ATLANTIC CITY U	252	331	436	AUSTIN	370	1375	1650
ST. PAUL ISLAND	0	0	0	INDIANAPOLIS	255	516	600	NEWARK	381	589	597	BROWNSVILLE	645	2155	2239
TALKEETNA	0	0	0	SOUTH RENO	236	467	414	TRENTON U	308	484	577	CORPUS CHRISTI	639	2006	1973
UNALAKLEET	0	0	0							DALLAS FT WORTH	613	1358	1437		
VALDEZ	4	4	0	IOWA				NEW MEXICO				DEL RIO	701	1732	2004
YAKUTAT	0	0	0	BURLINGTON	275	552	608	ALBUQUERQUE	491	832	789	EL PASO	630	1318	1280
				DES MOINES	304	546	567	CLAYTON	283	435	452	GALVESTON	544	1453	1647
ARIZONA				OKLAHOMA				RUSHELL	506	985	954	HOUSTON INTERCON	552	1491	1637
FLAUSTAFF	47	47	84	CONCORDIA	381	687	749	NEW YORK				LUSBOCK	524	1122	1006
PHOENIX	92	2255	1931	INDIANAPOLIS	411	774	820	ALBANY	258	396	367	MIDLAND	359	1156	1307
TUCSON	706	1000	1465	INDIANAPOLIS	411	774	820	RINGHAMTON	167	237	230	PORT ARTHUR	329	1474	1588
WINLOW	430	675	691	INDIANAPOLIS	411	774	820	RUFFALO	217	381	263	SAN ANGELO	579	1332	1589
YUMA	867	2314	2254	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616	SAN ANTONIO	619	1633	1725
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616	VICTORIA	563	1609	1777
ARKANSAS				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616	WACO	544	1230	1610
FORT SMITH	444	924	1101	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616	WICHITA FALLS	628	1349	1486
LITTLE ROCK	502	1148	1124	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
NO. LITTLE ROCK	472	978	1138	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
CALIFORNIA				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
BAKERSFIELD	614	1497	1196	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
BISHOP	365	622	616	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
BLUE CANYON	0	0	0	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
ERUEKA U	0	0	0	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
FRESNO	541	1205	926	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
LONG BEACH	226	542	984	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
LOS ANGELES	112	289	221	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
LOS ANGELES U	229	536	483	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
MT SHASTA R	123	144	160	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
OAKLAND	35	77	42	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
RED BLUFF	556	1209	1051	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
SACRAMENTO	336	667	625	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
SAN DIEGO	216	447	267	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
SAN FRANCISCO	23	95	34	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
SAN FRANCISCO U	10	34	5	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
SANTA MARIA	21	43	27	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
STOCKTON	412	913	677	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
COLORADO				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
ALAMOSA	21	21	64	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
COLORADO SPRINGS	185	270	283	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
DENVER	275	489	358	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
GRAND JUNCTION	428	711	681	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
PUEBLO	363	558	585	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
CONNECTICUT				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
BRIDGEPORT	288	383	401	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
HARTFORD	320	531	365	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
DELAWARE				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
WILMINGTON	327	512	579	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
DIST. OF COLUMBIA				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
WASHINGTON D.C.	297	527	564	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
WASHINGTON NATIONAL	431	605	629	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
FLORIDA				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
APALACHICOLA U	513	1330	1486	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
DAYTONA BEACH	538	1642	1978	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
FORT MEADE	650	2229	2028	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
JACKSONVILLE	532	1341	1448	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
KEY WEST	637	2709	2755	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
MIAMI	572	2291	2197	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
ORLANDO	575	1766	1779	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
PENSACOLA	546	1495	1552	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
TALLAHASSEE	503	1237	1474	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
TAMPA	592	1836	1849	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
WEST PALM BEACH	555	1421	2041	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
GEORGIA				INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
ATLANTA	398	904	1015	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
AUGUSTA	436	990	917	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
COLUMBUS	473	1009	1182	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
MACON	536	1286	1255	INDIANAPOLIS	411	774	820	NEW YORK U	378	602	616				
ROME	505	1166	13												

# STORM SUMMARY

JULY 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTDRMS AND BLIZZARDS				# ICE STORMS				o ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	†DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE					
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama	4	3		4	5		1	3			4	5	?											2	6	6			
Alaska																													
Arizona										17	5	?		2	5	6									4				
Arkansas	1	1						6	?				2	1															
California																							1						
Colorado	21	11		4	1	25	7	5		1	4			2	2							1							
Connecticut	*																												
Delaware																													
Florida	8	6		6	6			?	?				10	4	?														
Georgia	2	2			3				?	2	4	?	1	7															
Hawaii													2																
Idaho													5	2	?										4	3			
Illinois	1	1			5				?				5	?	?										5	?			
Indiana	3	3			4				?				5	?	?								2	1	8	?			
Iowa	9	5			5			5	6	1	6	?		1	4														
Kansas	3	3			5			6	6		1	6	5		4										6	5			
Kentucky	1	1			5																		3			7	4		
Louisiana					5				?	?	1	2	6	?	1											?	?		
Maine																1											?		
Maryland & DC											4		4		1	3	5									4			
Massachusetts																											3		
Michigan	4	3			4											2	5									6			
Minnesota	4	3			6												5									4			
Mississippi								5	7				5	4												6	4		
Missouri								3	4				4	3	1	6	5									5			
Montana	3	2			5				5				5			5											6	5	
Nebraska	6	4		1	6			6	8				6	5		5										4	?		
Nevada																											4	?	
New Hampshire	*																										4		
New Jersey															2	1	?	?											
New Mexico	4	3			4			4	3					2		4													
New York	1	1		1	4			3					4	3		4										5	?		
North Carolina	1	1			2			4	5				4		3	3													
North Dakota	7	3			2			4	6				5	5		5										5	6		
Ohio	1	1			4							05	3			4											?	?	
Oklahoma	2	2			5			5	5				6	5	1	4	5										6	5	
Oregon													?	?														?	?
Pacific	‡																												
Pennsylvania																1	5										6	4	
Puerto Rico																							1			06		C	
Rhode Island																	3												
South Carolina	1	1			3										1	4											5		
South Dakota	10	6			6			?	5				3	5	1														
Tennessee													4	?	1												1	6	?
Texas	13	9			5			6	6		2		6	?	4	1	?	?					1	1		9	?		
Utah	*																												
Vermont	*																												
Virginia	1	1			5			3	5				4		1	5										2	4	7	5
Virgin Islands																													
Washington	1	1																										5	
West Virginia	1	1			1			3	?				1	?		2										2	6	?	
Wisconsin	2	1		3	?			?	?	?	?	?	?	?	2												5	?	
Wyoming	18	7	1	40	7			07	C				05	C	1													5	

# RAWINSONDE DATA

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		ALBANY, NY 1007 M#								ALBUQUERQUE, NM 840 M#								AMARILLO, TX 893 M#								ANCHORAGE, AK 1010 M#								ANNETT, AK 1013 M#							
Surface pressure standard mb	No. of observations	Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations	Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations	Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations	Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind						
		Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.		Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.		Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.		Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.	Direction /10s of deg	Speed m p.s.					
5FC	31	86	18.2	16.4	18	1.0	30	1,619	19.8	8.6	07	2.5	31	1,095	19.3	14.8	19	2.8	31	45	13.6	11.5	17	1.8	31	17	13.2	11.3	13	1.2											
1000	29	150	18.4	15.4	20	2.9							31	1,26	13.7	9.7	17	1.9	31	126	13.7	9.7	17	1.9	31	145	13.5	9.7	14	1.9											
950	31	586	18.2	13.4	28	4.6							31	558	11.9	6.9	18	2.5	31	558	11.9	6.9	18	2.5	31	576	11.5	7.7	15	4.0											
900	31	1,049	16.2	10.4	28	3.3							31	1,009	9.2	5.4	16	1.8	31	1,009	9.2	5.4	16	1.8	31	1,026	8.9	5.3	17	4.8											
850	31	1,533	12.9	7.5	29	3.8							31	1,480	6.3	3.4	13	1.2	31	1,480	6.3	3.4	13	1.2	31	1,498	6.3	3.1	17	4.9											
800	31	2,017	9.6	5.1	28	3.0							31	1,976	3.5	9.12	4.6	31	1,976	3.5	9.12	4.6	31	1,993	3.7	-2.17	5.6														
750	31	2,574	6.8	-1.5	27	4.7	30	2,595	17.2	2.9	21	1.5	31	2,595	15.9	3.9	25	2.7	31	2,497	-7	-2.8	15	0.7	31	2,516	1.3	-9.7	18	6.1											
700	31	3,139	3.8	-7.2	27	5.7	30	3,180	13.1	-0.27	1.8	1.8	31	3,177	11.6	1.1	28	1.8	31	3,049	-2.5	-7.6	14	0.7	31	3,169	-1.2	-9.7	18	5.7											
650	31	3,738	1.3	-13.7	28	5.7	30	3,799	8.5	-3.7	29	2.2	31	3,792	7.3	-3.4	28	1.7	31	3,634	-5.5	-10.3	11	0.6	31	3,657	-3.3	-13.3	19	6.1											
600	31	4,379	-1.8	-18.3	28	7.8	30	4,455	3.3	-7.1	30	3.2	31	4,446	2.7	-6.8	30	2.1	31	4,258	-9.0	-16.0	08	0.5	31	4,284	-7.7	-18.6	18	6.0											
550	31	5,036	-5.4	-21.8	28	8.1	30	5,153	-2.1	-11.2	29	3.7	31	5,158	-2.1	-12.1	31	3.1	31	4,927	-13.4	-20.0	01	0.5	31	4,956	-11.7	-23.1	19	6.1											
500	31	5,808	-10.1	-26.8	28	9.3	30	5,974	-7.1	-18.4	29	4.6	31	5,896	-6.7	-17.7	30	4.0	31	5,646	-17.9	-26.5	35	-9.9	31	5,672	-17.4	-27.8	19	5.7											
450	31	6,612	-15.1	-31.2	28	10.3	30	6,708	-12.3	-24.1	30	5.4	31	6,711	-12.1	-21.7	29	4.8	31	6,427	-23.1	-31.3	33	1.5	31	6,464	-21.6	-31.2	20	6.1											
400	31	7,492	-21.5	-35.5	28	12.3	30	7,607	-18.5	-31.0	30	6.0	31	7,602	-18.0	-28.1	29	5.6	31	7,278	-29.4	-38.1	35	2.2	31	7,321	-27.9	-37.1	21	6.1											
350	31	8,464	-28.7	-41.1	28	13.4	29	8,595	-25.5	-38.1	29	7.9	31	8,590	-24.6	-34.9	29	7.1	30	8,220	-36.4	-45.4	34	2.7	31	8,270	-35.1	-44.1	22	6.1											
300	31	9,546	-37.2	-47.4	28	15.2	29	9,691	-33.8	-45.2	28	8.9	31	9,691	-33.0	-44.2	29	7.6	30	9,269	-44.6	-53.6	33	3.2	31	9,324	-43.2	-46.5	23	6.3											
250	31	10,783	-45.8	29	2.3	26	17,991	-65.5	09	3.7	11.5	11	10,946	-43.1	29	8.5	30	10,469	-51.4	31	6.9	31	10,532	-57.0	24	7.4															
200	31	12,241	-53.8	28	19.9	27	12,408	-54.7	28	13.3	13	12,413	-54.1	28	9.4	30	11,924	-49.2	29	4.6	31	11,984	-50.6	23	6.7																
175	31	13,094	-56.5	28	17.5	26	13,256	-59.6	28	14.2	13	13,259	-59.2	28	11.2	30	12,803	-47.6	28	3.2	31	12,859	-49.1	23	6.0																
150	31	14,069	-57.7	27	14.4	26	14,208	-64.5	28	12.3	13	14,216	-63.4	28	11.0	30	13,821	-47.9	27	2.7	31	13,871	-49.1	23	4.8																
125	31	15,216	-58.9	27	11.7	26	15,313	-68.1	28	8.2	13	15,326	-66.7	29	7.2	30	15,023	-48.4	26	1.9	31	15,066	-49.6	23	3.5																
100	31	16,617	-58.3	28	6.8	26	16,649	-68.7	28	1.8	12	16,671	-67.7	29	1.2	30	16,491	-48.5	23	0.8	31	16,523	-50.6	21	2.8																
75	31	18,872	-55.7	04	9.9	26	18,830	-62.7	09	6.0	13	18,823	-61.5	09	3.1	30	17,960	-48.4	17	0.8	31	17,975	-51.2	24	7.4																
50	29	19,861	-54.3	08	2.6	26	19,767	-59.8	08	4.0	13	19,840	-62.5	09	5.6	30	18,839	-48.5	12	0.9	31	18,844	-51.0	15	1.5																
25	29	21,035	-52.3	09	5.2	26	20,915	-56.7	09	9.9	12	20,946	-56.0	09	9.7	30	21,057	-47.8	09	2.9	31	21,037	-50.1	10	3.1																
15	28	22,485	-50.6	09	6.8	26	22,340	-53.8	09	11.5	13	22,375	-53.5	09	11.4	30	22,532	-47.2	09	4.1	31	22,500	-48.6	09	4.5																
10	27	24,374	-45.9	09	7.7	26	24,203	-50.4	09	13.3	13	24,235	-50.4	09	13.2	30	24,260	-49.0	09	4.8	31	24,242	-48.8	09	6.2																
5	25	25,584	-45.7	08	10.1	26	25,478	-50.5	09	14.9	13	25,433	-45.6	09	14.3	29	25,663	-43.8	08	7.9	29	25,614	-46.8	09	6.4																
0	23	27,081	-42.9	09	12.6	22	26,974	-45.9	09	19.9	26	27,013	-45.6	09	19.9	29	27,170	-41.4	08	7.4	26	27,114	-42.6	08	7.5																
0	15	29,030	-40.3	09	12.6	21	28,799	-43.6	09	18.4	24	28,846	-42.6	09	18.1	27	29,137	-38.1	08	8.3	25	29,074	-39.1	08	9.4																
0	10																																								





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Standard pressure surface mb.	FLINT, MI 989 MB					GLASGOW, MT 935 MB					GRAND JUNCTION, CO 853 MB					GREAT FALLS, MT 890 MB					GREEN RAY, WY 991 MB									
	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind					
																										Direction tens of deg	Speed m p.s	Direction tens of deg	Speed m p.s	Direction tens of deg
5FC 1000	31	236	16.1	14.8	21	1.1	31	696	16.2	10.3	10	1.1	31	1,472	19.4	5.4	12	3.4	31	1,118	14.1	5.8	23	1.5	31	214	15.8	12.1	30	4.5
950	31	581	18.4	11.6	27	2.1	31	1,022	19.6	9.4	17	1.2	31	1,506	20.5	5.3	12	3.9	31	1,510	16.4	2.5	23	1.8	31	1,038	16.2	9.9	30	2.9
900	31	1,043	16.0	8.9	29	3.3	31	1,512	17.4	5.7	23	1.7	29	1,506	20.5	5.3	12	3.9	31	1,510	16.4	2.5	23	1.8	31	1,038	16.2	9.9	30	2.9
850	31	1,527	13.0	6.3	29	3.5	31	1,512	17.4	5.7	23	1.7	29	1,506	20.5	5.3	12	3.9	31	1,510	16.4	2.5	23	1.8	31	1,038	16.2	9.9	30	2.9
800	31	2,013	9.2	2.9	26	4.0	31	1,512	17.4	5.7	23	1.7	29	1,506	20.5	5.3	12	3.9	31	1,510	16.4	2.5	23	1.8	31	1,038	16.2	9.9	30	2.9
750	31	2,570	7.9	-3.4	29	4.7	31	1,569	10.0	9.26	10	3.0	31	2,583	18.0	-0.19	2.2	2.2	31	2,023	13.2	-1.5	26	2.5	31	2,564	7.4	-3.4	30	4.1
700	31	3,136	5.2	-8.3	29	5.4	31	3,138	6.1	-3.9	27	4.5	31	3,169	13.6	-3.3	2.4	2.8	31	3,132	5.7	-4.4	25	4.5	31	3,129	4.4	-6.6	29	5.6
650	31	3,736	1.9	-10.2	28	5.9	31	3,742	-2.4	-7.3	27	6.2	31	3,788	8.7	-6.2	2.6	4.1	31	3,735	1.5	-9.5	25	7.1	31	3,733	1.5	-12.3	30	5.6
600	31	4,378	-1.7	-14.8	28	6.7	31	4,384	-2.1	-11.7	27	7.6	31	4,443	3.2	-9.3	2.6	5.1	31	4,374	-2.8	-15.0	25	9.1	31	4,370	-2.3	-16.3	29	6.3
550	31	5,065	-5.6	-21.5	28	7.4	31	5,070	-5.9	-15.5	27	9.0	31	5,141	-2.9	-12.2	2.5	5.9	31	5,058	-7.5	-19.4	25	11.6	31	5,056	-6.4	-21.2	29	7.1
500	31	5,806	-9.2	-23.8	28	8.6	31	5,807	-11.1	-21.2	27	9.8	31	5,888	-8.7	-16.0	2.2	6.6	31	5,793	-12.6	-25.3	25	12.5	31	5,795	-11.4	-24.7	29	8.2
450	31	6,610	-15.4	-26.6	28	9.9	31	6,607	-16.8	-28.8	27	10.6	31	6,697	-13.6	-25.9	2.6	8.1	31	6,588	-17.9	-29.4	25	12.3	31	6,598	-16.0	-30.3	29	9.2
400	31	7,489	-21.3	-33.9	28	10.2	31	7,481	-22.9	-34.5	27	12.0	31	7,582	-19.7	-33.7	2.7	9.4	31	7,458	-24.3	-35.3	25	13.7	31	7,474	-22.3	-35.8	29	10.0
350	31	8,464	-28.3	-41.0	28	12.8	31	8,448	-30.3	-41.6	27	14.2	31	8,563	-26.6	-40.4	2.7	12.3	31	8,420	-31.3	-42.6	25	15.1	31	8,445	-29.2	-40.9	29	11.6
300	31	9,548	-36.6	-47.9	28	15.6	31	9,522	-38.9	-49.8	26	15.0	31	9,655	-34.9	-47.1	2.6	14.9	31	9,491	-39.6	-49.9	26	17.4	31	9,526	-37.1	-47.8	29	14.9
250	31	10,787	-45.4	-53.5	29	19.0	31	10,747	-48.5	-56.5	26	16.3	31	10,901	-44.8	-52.8	2.6	16.3	31	10,713	-48.9	-56.5	26	18.9	31	10,763	-46.0	-52.9	29	19.4
200	31	12,286	-53.5	-57.5	29	22.3	31	12,192	-54.4	-60.4	27	17.3	31	12,351	-54.5	-60.4	2.6	17.2	31	12,156	-54.6	-60.4	26	20.0	31	12,220	-51.1	-57.2	29	21.6
175	31	13,102	-55.9	-57.9	29	21.1	31	13,047	-53.9	-60.4	27	16.8	31	13,209	-58.0	-60.4	2.6	16.1	31	13,012	-53.8	-60.4	26	17.0	31	13,072	-56.3	-57.9	29	21.3
150	31	14,079	-57.6	-57.6	29	16.5	31	14,039	-53.5	-60.4	26	15.3	31	14,173	-61.0	-60.4	2.6	14.0	31	14,004	-53.7	-60.4	26	15.0	31	14,051	-56.5	-57.9	29	16.3
125	31	15,224	-59.7	-57.6	28	12.5	31	15,209	-54.9	-60.4	27	11.5	31	15,298	-64.0	-60.4	2.7	10.0	31	15,170	-55.8	-60.4	26	11.5	31	15,204	-58.0	-57.9	29	12.4
100	31	16,617	-60.1	-56.5	29	8.5	31	16,630	-56.5	-60.4	28	6.7	31	16,660	-64.6	-60.4	2.7	5.3	31	16,586	-57.2	-60.4	27	6.4	31	16,606	-58.8	-57.9	29	8.0
75	31	18,558	-58.3	-54.5	31	3.8	31	18,531	-52.9	-61.1	32	2.2	31	18,029	-61.2	-60.4	1.1	8.2	31	18,000	-56.3	-60.4	26	1.7	31	18,000	-57.6	-57.6	29	4.1
50	29	18,853	-56.8	-51.1	31	1.1	31	18,902	-54.6	-60.4	33	1.0	31	18,059	-60.2	-60.4	1.0	2.7	31	18,950	-55.6	-60.4	0.1	4.4	31	18,856	-55.9	-57.9	31	9.5
25	29	19,833	-55.3	-51.1	05	2.1	31	19,891	-53.6	-60.4	04	1.8	29	19,825	-57.7	-60.4	0.9	5.0	31	19,836	-54.1	-60.4	0.8	1.8	29	19,844	-54.2	-57.9	31	11.6
00	29	21,003	-53.1	-51.1	08	4.0	31	21,068	-51.8	-60.4	08	2.9	29	20,983	-55.3	-60.4	0.9	6.8	29	21,009	-52.6	-60.4	0.9	3.3	29	21,018	-52.5	-57.9	31	13.7
5	28	22,449	-51.1	-49.4	08	6.0	31	22,524	-49.4	-60.4	09	4.5	29	22,418	-52.3	-60.4	0.9	7.9	29	22,548	-50.2	-60.4	0.9	4.4	28	22,467	-50.5	-57.9	31	15.8
10	28	24,334	-48.0	-47.6	09	7.8	31	24,418	-47.6	-60.4	09	6.0	29	24,294	-49.3	-60.4	0.9	9.9	29	24,348	-47.4	-60.4	0.9	6.6	27	24,358	-47.3	-57.9	31	17.9
15	25	25,558	-46.1	-45.7	09	8.5	31	25,643	-45.7	-60.4	09	6.8	29	25,523	-47.7	-60.4	0.9	11.2	28	25,535	-42.9	-60.4	0.9	8.5	27	25,545	-45.9	-57.9	31	19.9
20	25	27,036	-43.2	-43.6	08	9.9	31	27,123	-42.7	-60.4	09	8.0	27	26,974	-45.0	-60.4	0.9	11.7	28	27,053	-42.9	-60.4	0.9	8.6	27	27,063	-43.3	-57.9	31	21.9
15	18	28,975	-41.0	-39.5	08	11.9	27	29,081	-39.5	-60.4	09	9.8	25	28,912	-42.0	-60.4	0.9	13.6	26	29,005	-40.3	-60.4	0.8	9.8	24	29,004	-40.6	-57.9	31	23.9
10								11,31,972	-35.6	-60.4	09	19	31,680	-37.5	-60.4	0.9	17.2	18	31,790	-35.9	-60.4	0.9	12.6	14	31,780	-36.4	-57.9	31	25.9	

GREENSBORO, NC 987 MB					GUADALUPE IS., MEXICO 1012 MB					GUAM, MARIANA IS. 999 MB					HILO, HI 1017 MB					HUNTINGTON, WV 988 MB										
No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind						
																									Direction tens of deg	Speed m p.s	Direction tens of deg	Speed m p.s	Direction tens of deg	Speed m p.s
5FC 1000	31	275	19.9	17.5	26	.9	31	23	18.2	15.1	34	6.5	31	111	25.3	23.5	10	2.5	31	10	21.3	19.3	25	1.1	31	246	19.1	17.1	18	.7
950	31	602	20.7	16.1	28	2.4	30	124	17.6	14.6	33	6.2	12	121	25.5	23.2	10	1.6	31	156	21.7	19.0	23	5	31	589	20.0	16.1	25	1.9
900	31	1,069	18.4	13.5	30	3.2	30	1,033	23.3	16.3	33	1.8	31	1,026	21.0	17.8	11	6.6	31	1,063	16.0	14.1	19	3.0	31	1,055	18.0	13.0	27	3.8
850	31	1,558	15.6	10.4	30	4.1	30	1,511	22.9	-11.1	32	2.2	31	1,570	14.5	11.1	10	8.1	31	1,548	13.3	10.6	18	3.6	31	1,543	15.9	9.7	27	4.8
800	31	2,071	12.7	7.8	29	4.8	30	2,056	20.2	-3.2	30	1.0	31	2,029	15.9	11.1	10	5.9	31	2,058	12.0	5.1	19	3.8	31	2,055	12.5	5.2	27	5.2
750	31	2,611	10.1	2.6	28	6.1	30	2,606	16.7	-5.1	29	4.1	31	2,586	13.1	7.5	10	6.1	31	2,597	10.0	-1.4	19	4.0	31	2,595	9.9	1.8	27	6.1
700	31																													







# RAWINSONDE DATA

Average monthly values

JULY 1979

MONETT, MO 966 MB				NASHVILLE, TN 996 MB				NOME, AK 1013 MB				NORTH PLATTE, NE 919 MB				OAKLAND, CA 1014 MB															
Standard pressure surface mb	No. of observations	Temperature °C		Resultant Wind		Dynamic height meters	Temperature °C	Resultant Wind		Dynamic height meters	Temperature °C	Resultant Wind		Dynamic height meters	Temperature °C	Resultant Wind															
		Dynamic height meters	Dew Point °C	Direction tens of deg	Speed mps			Direction tens of deg	Speed mps			Direction tens of deg	Speed mps			Direction tens of deg	Speed mps	Direction tens of deg	Speed mps												
5FC 1000	31	438	20.0	18.6	14	1.6	31	180	21.1	19.2	17	.8	30	5	9.0	5.5	22	.8	31	847	18.4	14.9	11	1.1	30	6	14.2	12.5	27	1.1	
950	31	582	21.6	18.3	18	3.0	31	590	21.7	19.1	23	4.1	30	535	7.2	2.9	21	2.9	4.4	31	1,024	18.7	14.9	14	1.8	30	152	16.6	11.8	27	2.5
900	31	1,542	17.5	12.8	25	5.6	31	1,260	19.6	16.8	24	5.2	30	985	5.9	1.0	21	4.4	31	1,517	19.6	10.0	20	3.4	30	1,511	19.3	-2.3	25	5.5	
850	31	2,061	14.9	6.9	27	3.2	31	2,067	14.8	9.0	25	5.1	30	1,938	1.8	-4.8	21	4.0	31	2,038	17.4	6.0	23	3.1	30	2,030	16.5	-4.8	24	3.1	
800	31	2,606	12.4	2.5	29	3.1	31	2,610	11.3	4.8	26	6.9	30	2,457	-3.9	-7.2	21	4.3	31	2,586	14.0	3.1	26	3.1	30	2,575	13.3	-8.0	23	3.6	
750	31	3,182	9.0	-1.3	29	2.6	31	3,184	8.2	-8.26	26	5.9	30	3,005	-3.4	-12.7	20	4.5	31	3,184	10.0	-6.8	28	4.3	30	3,152	10.1	-11.7	22	4.4	
700	31	3,792	5.3	-5.2	29	2.6	31	3,793	4.7	-2.7	27	6.6	30	3,588	-6.3	-16.7	21	4.5	31	3,776	5.6	-4.5	28	5.2	30	3,763	6.4	-14.2	22	4.7	
650	31	4,441	-9	-9.1	31	3.0	31	4,442	-1.1	-7.5	27	7.1	30	4,219	-6.5	-20.6	22	4.9	31	4,426	11.1	-9.2	29	7.0	30	4,434	2.0	-17.5	23	5.6	
600	31	5,136	-3.0	-14.5	30	3.4	31	5,137	-2.8	-12.5	27	7.8	30	4,848	-13.7	-25.6	23	4.0	31	5,119	-3.7	-12.8	29	7.2	30	5,110	-2.9	-21.2	23	6.0	
550	31	5,885	-7.4	-21.4	29	4.7	31	5,887	-7.1	-18.2	27	7.6	30	5,596	-18.6	-30.2	24	5.1	31	5,865	-8.7	-18.1	29	7.0	30	5,857	-8.1	-26.1	24	6.9	
500	31	6,698	-12.3	-26.1	29	5.6	31	6,702	-11.8	-23.9	27	8.3	30	6,374	-23.9	-34.9	25	6.0	31	6,674	-14.1	-25.6	29	7.9	30	6,667	-13.7	-31.1	24	8.4	
450	31	7,588	-18.0	-31.9	29	6.3	31	7,594	-17.5	-30.9	28	9.4	30	7,223	-30.2	-39.3	25	6.7	31	7,558	-20.1	-31.5	28	10.3	29	7,550	-20.5	-35.9	25	10.7	
400	31	8,576	-24.9	-36.9	29	7.5	30	8,582	-24.6	-35.2	27	10.3	30	8,162	-37.1	-46.1	25	7.1	30	8,536	-27.2	-39.9	28	12.3	29	8,527	-27.7	-42.8	25	12.1	
350	31	9,676	-31.2	-44.8	29	8.6	30	9,684	-32.5	-42.7	27	13.1	30	9,208	-44.7	-55.5	25	8.5	30	9,625	-35.4	-47.8	28	15.0	29	9,613	-36.3	-50.0	25	13.5	
300	31	10,930	-33.4	-49.0	30	10.5	30	10,942	-42.6	-50.1	27	15.7	30	10,410	-50.7	-62.7	25	9.0	30	10,870	-44.9	-54.9	27	16.7	29	10,853	-45.4	-54.5	25	14.3	
250	31	12,395	-43.9	-53.9	29	11.6	30	12,412	-53.8	-60.1	27	17.1	30	11,872	-47.4	-57.4	25	6.3	30	12,329	-54.9	-62.7	27	18.2	29	12,311	-54.5	-62.7	25	15.2	
200	31	13,243	-58.8	-64.8	28	12.8	30	13,259	-59.2	-67.2	27	17.2	30	12,757	-46.8	-54.8	24	5.1	29	13,174	-58.7	-67.2	27	18.3	28	13,169	-57.7	-67.2	25	15.4	
175	31	14,203	-62.4	-69.4	29	12.0	30	14,215	-63.1	-70.1	28	12.2	30	13,780	-46.8	-54.8	24	4.1	29	14,138	-60.6	-67.2	27	14.6	28	14,136	-60.5	-67.2	25	12.8	
150	31	15,318	-65.6	-72.9	29	8.3	30	15,332	-72.2	-78.2	27	7.9	29	14,584	-48.0	-54.8	24	3.8	29	15,268	-62.3	-67.2	28	11.2	28	15,265	-62.9	-67.2	25	9.3	
125	31	16,670	-66.4	-74.0	30	2.8	30	16,685	-66.1	-74.0	30	3.8	29	16,465	-46.8	-54.8	23	1.7	29	16,643	-63.2	-67.2	28	5.5	28	16,635	-63.8	-67.2	24	4.1	
100	31	18,027	-64.2	-70.6	26	2.1	30	18,043	-64.0	-70.6	26	2.6	28	17,944	-47.0	-54.8	20	1.3	29	18,021	-61.4	-67.2	29	1.3	28	18,006	-62.6	-67.2	22	2.0	
70	31	18,850	-61.4	-67.4	07	4.1	30	18,866	-61.4	-67.4	06	4.5	28	18,829	-46.9	-54.8	17	1.5	29	18,853	-59.2	-67.2	06	1.6	28	18,833	-61.0	-67.2	09	4.0	
60	31	19,812	-59.3	-65.3	08	6.0	30	19,829	-58.5	-65.3	08	7.0	28	19,851	-47.0	-54.8	13	1.1	29	19,825	-56.9	-67.2	08	3.9	27	19,796	-58.6	-67.2	09	6.2	
50	31	20,964	-55.7	-62.9	08	8.7	30	20,985	-55.2	-62.9	09	9.4	27	21,061	-46.6	-54.8	10	2.2	29	20,987	-54.2	-67.2	09	5.7	26	20,949	-55.7	-67.2	08	8.1	
40	31	22,394	-43.1	-49.8	09	10.5	30	22,420	-41.1	-49.8	09	10.7	29	22,584	-46.9	-54.8	09	3.1	29	22,482	-46.9	-54.8	09	7.0	25	22,377	-53.5	-67.2	09	6.4	
30	31	24,262	-49.8	-56.3	09	11.5	27	24,294	-49.3	-56.3	09	11.7	26	24,464	-44.8	-54.8	09	4.6	27	24,302	-48.5	-67.2	09	8.8	25	24,240	-50.5	-67.2	09	11.0	
25	30	25,548	-47.9	-54.9	09	12.9	27	25,496	-47.8	-54.9	09	12.6	26	25,688	-43.3	-54.8	08	5.1	27	25,506	-47.0	-67.2	09	9.4	25	25,435	-48.7	-67.2	09	12.9	
20	30	26,936	-46.0	-52.9	09	14.6	25	26,976	-45.8	-52.9	09	15.2	26	27,198	-40.9	-54.8	08	6.5	26	26,971	-45.1	-67.2	09	10.3	22	26,914	-46.2	-67.2	09	13.9	
15	27	28,862	-42.8	-49.8	09	16.2	22	28,916	-42.9	-49.8	09	17.0	20	29,159	-38.3	-54.8	08	7.4	23	28,926	-42.2	-67.2	09	12.8	22	28,837	-43.5	-67.2	09	17.2	
10	12	31,615	-39.0	-47.0	09	16.2	22	31,691	-37.0	-47.0	09	17.0	20	31,978	-33.3	-54.8	08	7.4	23	31,697	-37.8	-67.2	09	14.9	14	31,599	-38.1	-67.2	09	17.2	

# RAWINSONDE DATA

Average monthly values

JULY 1979

SALEM, IL 996 MB										SALEM, OR 1010 MB										SALT LAKE CITY, UT 871 MR										SAN DIEGO, CA 998 MB										SAN JUAN, P. R. 1017 MB									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																
					Direction tens of deg	Speed m.p.s.	Speed kts					Direction tens of deg	Speed m.p.s.	Speed kts					Direction tens of deg	Speed m.p.s.	Speed kts					Direction tens of deg	Speed m.p.s.	Speed kts					Direction tens of deg	Speed m.p.s.	Speed kts	Direction tens of deg	Speed m.p.s.	Speed kts											
SFC 31	174	19.5	18.1	13	4	31	61	13.2	10.3	23	5	31	1,288	19.1	6.0	16	3	7	31	124	17.3	15.7	34	3	31	15	6	25.3	23.6	11	3	2																	
1000	191	16.7	11.6	2	1	31	192	15.5	10.7	23	3	31	1,288	19.1	6.0	16	3	7	31	124	17.3	15.7	34	3	31	15	6	25.3	23.6	11	3	2																	
950	182	15.5	10.6	22	1.6	31	182	15.5	10.7	23	3	31	1,288	19.1	6.0	16	3	7	31	124	17.3	15.7	34	3	31	15	6	25.3	23.6	11	3	2																	
900	1,050	18.7	12.9	25	2.9	31	1,035	13.7	5.7	31	1.3	31	1,035	13.7	5.7	31	1.3	31	1,035	13.7	5.7	31	1.3	31	1,035	13.7	5.7	31	1.3	31	1,035	13.7	5.7	31	1.3	31													

SAULT STE MARIE, MI 990 MB										SPOKANE, WA 931 MB										TAMPA BAY, FL 1016 MB										TOPEKA, KS 984 MB										TRUK, CAROLINE IS. 1011 MB									
SFC 31	221	14.1	12.0	01	4	31	720	15.1	6.1	17	1	31	11	23.4	22.5	12	1.4	31	268	21.6	19.6	11	1	2	31	2	28.4	24.4	09	1	7																		
1000	571	16.6	9.5	32	2.1	31	1,010	17.7	3.7	20	2	31	156	25.4	23.3	14	2	31	573	22.1	18.2	19	3	31	102	27.4	23.8	09	2	0																			
950	1,031	14.9	7.3	30	3.6	31	1,017	16.7	3.7	20	2	31	156	25.4	23.3	14	2	31	573	22.1	18.2	19	3	31	102	27.4	23.8	09	2	0																			
900	1,513	12.1	5.7	29	4.1	31	1,498	16.5	-2	23	2	31	1,079	21.0	14.9	17	3	31	1,043	20.9	15.6	23	4	31	1,029	21.3	18.2	10	3	3																			

TUCSON, AZ 923 MB										VANDENBERG AFB, CA 1002 MB										VICTORIA, TX 1010 MB										WAKE IS., PACIFIC AREA 1015 MB										WALLOPS ISLAND, VA NASA 1017 MB									
SFC 31	789	25.0	9.6	14	2.0	31	100	12.1	11.2	33	1.3	31	33	24.4	23.2	17	1.0	31	5	27.6	23.7	09	3	31	4	22.7	20.5	32	4	4																			
1000	1,015	27.3	10.2	15	1.5	31	1,019	22.0	1.8	22	1.0	31	1,045	25.7	20.6	18	2	31	591	22.8	20.3	09	7	31	599	20.6	15.8	29	2	6																			
950	1,519	24.8	7.3	22	3	31	1,514	20.0	-1.0	22	3	31	1,339	21.1	16.8	18	6	31	1,061	19.9	16.5	10	7	31	1,065	17.7	12.8	28	2	2																			
900	2,048	21.1	5.0	26	1.0	31	2,034	18.3	-3.6	34	1.8	31	2,057	15.8	8.9	18	3	31	2,069	14.6	7.9	10	6	31	2,064	12.0	5.8	26	3	7																			



RAWINSONDE DATA

Average monthly values

JULY 1979

Table with columns for station name (WASHINGTON DULLES INT. AP, WAYCROSS, GA, WEST PALM BEACH, FL, WINNEMUCCA, NV, WINSLOW, AZ), time of day (1007 M8, 1012 M8, 1017 M8, 869 M8, 853 M8), and various meteorological parameters (Standard pressure, No. of observations, Dynamic height, Temperature, Dew Point, Resultant Wind, etc.).



# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

JULY 1979

Sun's zenith distance										Sun's zenith distance									
Date	A.M.				*	P.M.				Date	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
HAUNA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass									
	3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64
1-----	1.13	1.21	1.30	1.40	1.52	1.37	1.26	1.17	1.11	1-----	.76	.87	.99	1.15	1.40	1.19	1.03	.93	.54
2-----	1.11	1.18	1.28	1.39	1.51	-----	-----	-----	-----	2-----	.75	-----	-----	1.17	1.39	1.22	1.06	.95	.84
3-----	1.13	1.21	1.30	1.41	-----	-----	-----	-----	-----	3-----	.84	.95	1.06	1.23	1.41	1.23	1.07	.95	.84
4-----	1.15	1.22	1.31	1.41	-----	-----	-----	-----	-----	4-----	.80	.90	1.04	1.19	1.42	1.18	1.04	.93	.83
5-----	1.12	1.21	1.29	1.40	-----	-----	-----	-----	-----	5-----	.76	.86	.98	1.16	1.32	1.14	.99	.90	.82
6-----	1.14	1.21	1.30	1.41	1.55	-----	-----	-----	-----	6-----	.73	.84	.94	1.11	1.36	1.23	1.09	.99	.89
7-----	1.16	1.22	1.31	1.42	-----	-----	-----	-----	-----	7-----	.76	.87	.99	1.15	1.36	1.17	1.05	.92	.82
8-----	1.17	1.25	1.31	1.42	-----	-----	-----	-----	-----	8-----	.78	.88	1.02	1.19	1.38	1.20	1.05	.93	.83
9-----	1.16	1.21	1.30	1.40	-----	-----	-----	-----	-----	9-----	.85	.96	1.05	1.23	1.38	1.21	.95	.83	.71
10-----	1.14	1.21	1.30	1.41	1.55	-----	-----	-----	-----	10-----	.85	.95	1.07	1.23	1.41	1.23	1.08	.96	.87
11-----	1.16	1.22	1.31	1.42	-----	-----	-----	-----	-----	11-----	.88	.98	1.11	1.26	1.41	1.14	.95	.81	.67
12-----	1.17	1.25	1.31	1.42	-----	-----	-----	-----	-----	12-----	H .33	H .47	H .64	H .88	1.27	1.13	1.02	.86	.67
13-----	1.16	1.21	1.30	1.40	-----	-----	-----	-----	-----	13-----	.61	-----	-----	1.02	1.27	.89	-----	.70	-----
14-----	1.14	1.21	1.29	1.39	-----	-----	-----	-----	-----	14-----	-----	-----	-----	1.27	-----	-----	-----	.74	-----
15-----	1.14	1.22	1.29	1.39	1.52	-----	-----	-----	-----	15-----	-----	-----	-----	1.27	-----	-----	-----	-----	-----
16-----	1.11	1.17	1.27	1.40	1.52	-----	-----	-----	-----	16-----	-----	-----	.78	.96	-----	-----	-----	-----	-----
17-----	1.17	1.26	1.35	1.40	1.60	-----	-----	-----	-----	17-----	-----	-----	-----	1.23	-----	-----	-----	-----	-----
18-----	1.19	1.28	1.35	1.40	1.58	-----	-----	-----	-----	18-----	.51	.61	.76	.94	1.26	-----	-----	-----	-----
19-----	1.18	1.30	1.37	1.48	1.57	-----	-----	-----	-----	19-----	.61	.71	.86	1.08	-----	-----	-----	.92	.82
20-----	1.10	1.20	1.28	1.40	1.55	-----	-----	-----	-----	20-----	.76	.85	.97	1.13	1.38	1.17	1.01	.92	.82
21-----	1.10	1.21	1.29	1.41	1.56	-----	-----	-----	-----	21-----	-----	.84	-----	-----	1.12	.98	-----	-----	-----
22-----	1.18	1.27	1.36	1.47	1.58	-----	-----	-----	-----	22-----	.66	.77	.91	1.08	1.29	-----	-----	.75	.65
23-----	1.21	1.30	1.38	1.49	1.58	-----	-----	-----	-----	23-----	.52	.63	.77	.95	1.27	1.05	.89	.73	.60
24-----	1.16	1.24	1.31	1.42	-----	-----	-----	-----	-----	24-----	.52	.63	.78	.95	1.26	.99	.80	.66	.54
25-----	1.16	1.24	1.32	1.42	-----	-----	-----	-----	-----	25-----	.53	.62	.76	.95	1.25	-----	-----	-----	-----
26-----	1.16	1.24	1.32	1.42	-----	-----	-----	-----	-----	26-----	.68	.79	.89	1.07	1.18	.97	.83	.68	.59
27-----	1.16	1.24	1.32	1.42	-----	-----	-----	-----	-----	27-----	.62	.72	.86	1.04	1.29	1.08	-----	-----	.71
28-----	1.16	1.24	1.32	1.42	-----	-----	-----	-----	-----	28-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
29-----	1.16	1.24	1.32	1.42	-----	-----	-----	-----	-----	29-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
30-----	1.16	1.24	1.32	1.42	-----	-----	-----	-----	-----	30-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
31-----	1.16	1.24	1.32	1.42	-----	-----	-----	-----	-----	31-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Averages	1.15	1.23	1.31	1.42	1.55	1.37	1.26	1.17	1.11	Averages	.69	.80	.91	1.09	1.32	1.13	.97	.86	.76

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . . .	217	228	238	173	141	77	76	59	218	220	150	48	92	51	47	103	221	107	207	219	70	188	143	184	52	215	177	162	146	56	---	143

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times \text{°C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ‡ No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeter-
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable		minable
BN	Blowing Sand	GF	Ground Fog	K	Smoke	N	Sand
D	Dust	H	Haze	KI	Intense Smoke	S	Slight Haze-indeter-
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		minable

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

## DESCRIPTION OF CHARTS

CHART I. A. NORMAL DAILY AVERAGE TEMPERATURE ( $^{\circ}\text{F}$ . 1941-70) FOR MONTH. B. TEMPERATURE DEPARTURE FROM 30-YEAR MEAN ( $^{\circ}\text{F}$ . 1941-70) FOR MONTH. Chart I-A is reproduced from monthly normals maps prepared at the National Climatic Center. Chart I-B is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin," a publication of Environmental Data Service.

CHART II. A. TOTAL PRECIPITATION. Chart II. A. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

CHART II. B. PERCENTAGE OF NORMAL PRECIPITATION. Chart II. B. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

CHART III. TRACKS OF CENTERS OF ANTICYCLONES AT SEA LEVEL.

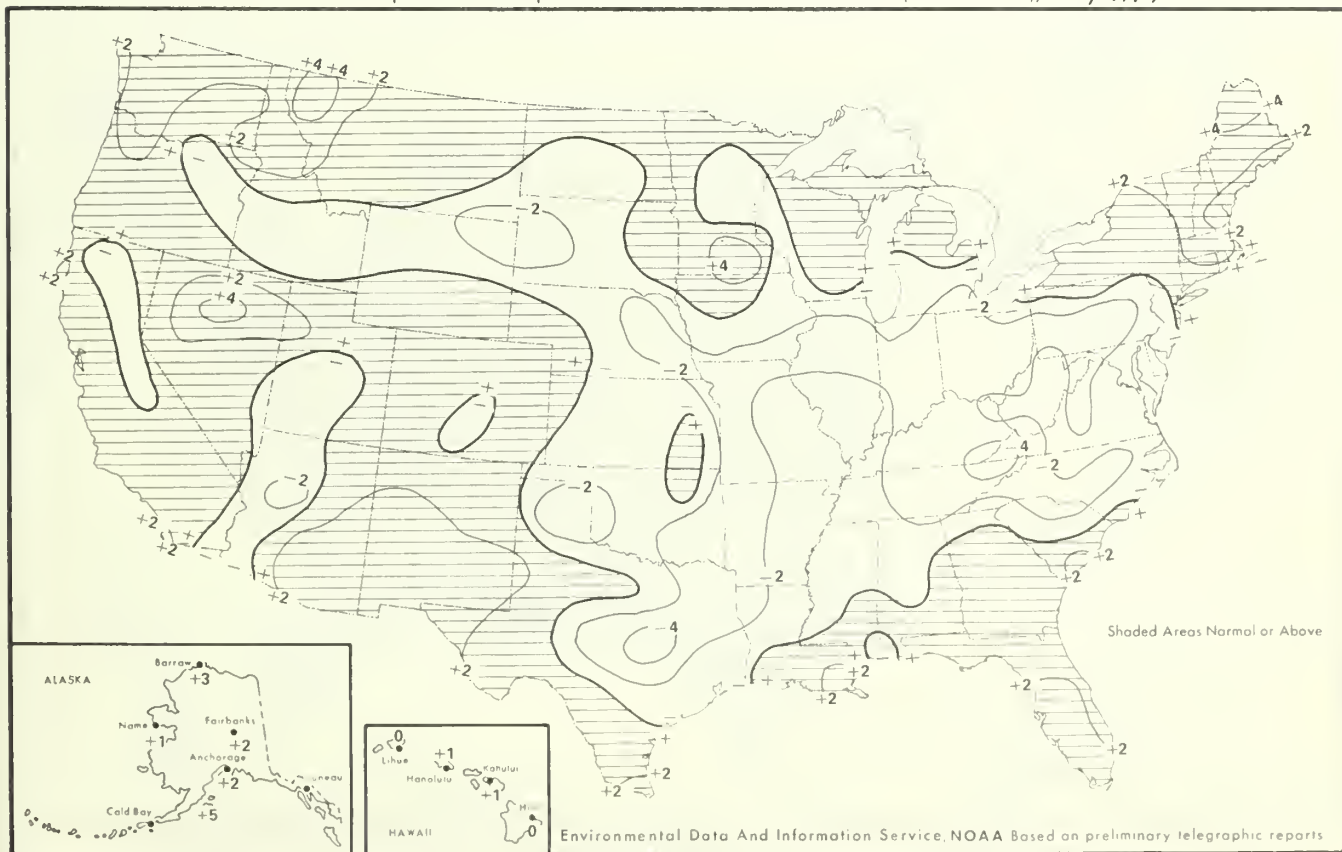
CHART IV. TRACKS OF CENTERS OF CYCLONES AT SEA LEVEL. Centers which can be identified for 24 hours or more are tracked in these charts. Semi-permanent features such as the Great Basin and Pacific Highs and Colorado and Mexico Lows are not shown. The 7:00 a.m., e.s.t., positions are shown by open circles, with the intermediate positions at 6-hour intervals shown by X's. The date is given above the circle and the central pressure to whole millibars below. A dashed track indicates a regeneration rather than actual movement to the next position. Squares indicate position of stationary center for period shown beside it.



Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), July

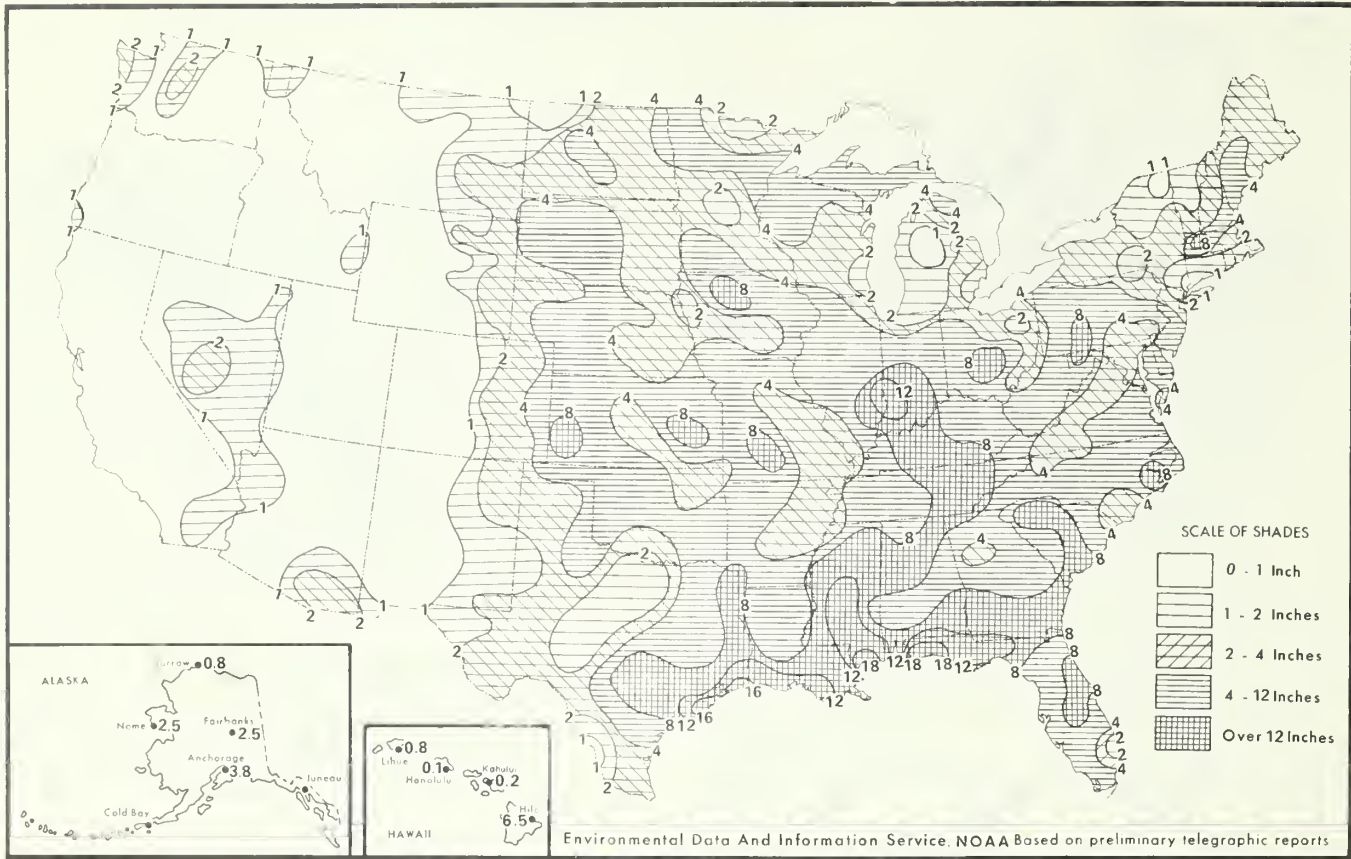


B. Temperature Departure from 30 - Year Mean (°F 1941-70), July 1979



Environmental Data And Information Service, NOAA Based on preliminary telegraphic reports

Chart II. A. Total Precipitation (Inches), July 1979



B. Percentage of Normal Precipitation, July 1979

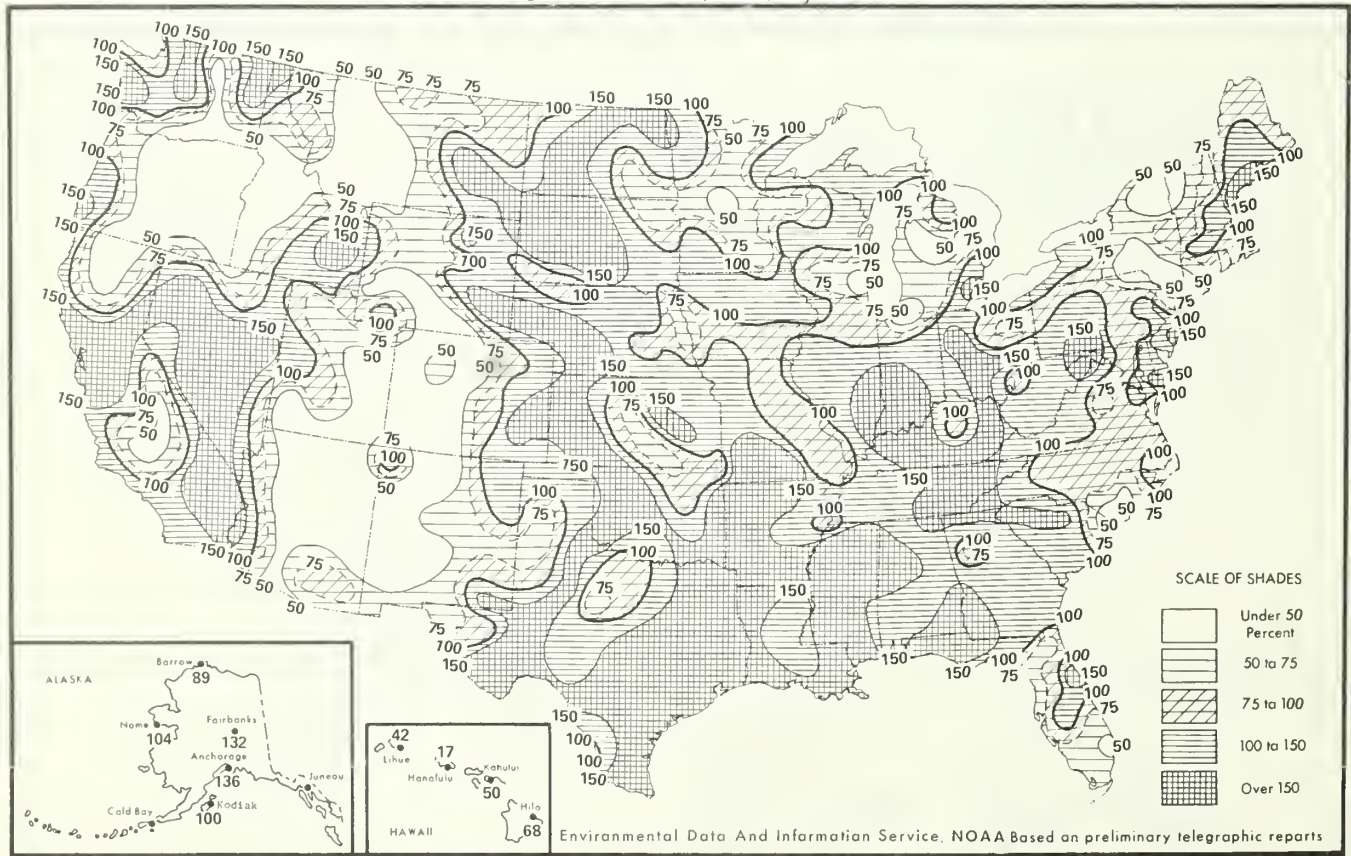
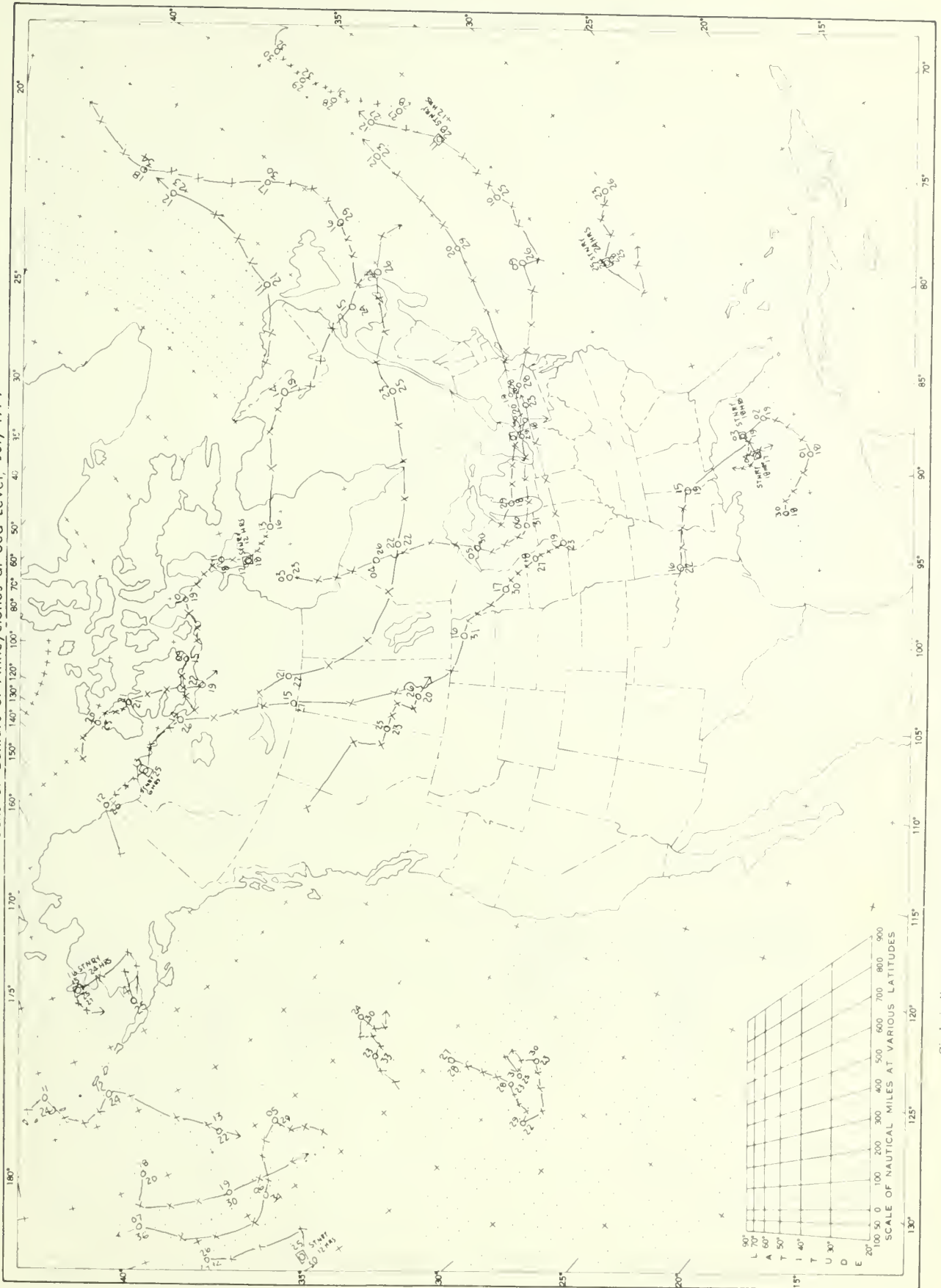


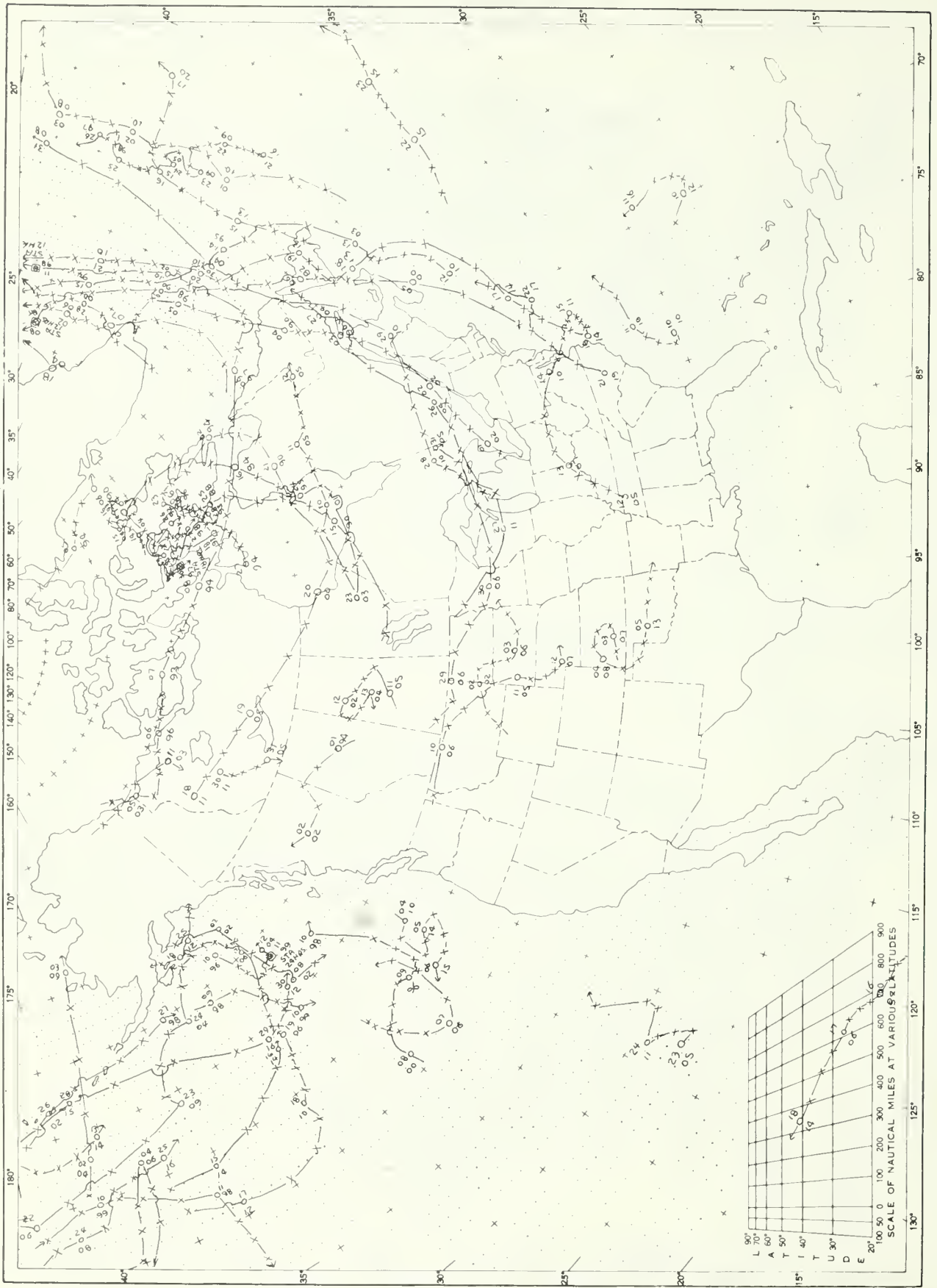
Chart III. Tracks of Centers of Anticyclones at Sea Level, July 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Cyclones at Sea Level, July 1979



Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included



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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

AUGUST 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** August was a month of many contrasts. Some areas reported both record high and low temperatures. The season's first frost occurred in the northern tier from North Dakota to New England. Some of the heaviest precipitation of the month fell in the northern part of Iowa and in Ohio where as much as three times the normal amount was recorded.

A typical summer rainfall pattern prevailed from July 30 to August 5 as warm, moist air from the Gulf of Mexico flowed northward causing showers and thunderstorms in nearly all areas east of the Rockies. Seasonal showers edged westward into southern New Mexico and Arizona. Temperatures ranged cooler than normal in the northern and southern Plains, but most of the Nation was near or above normal.

August showers began in earnest in the Southwest, Plateau, and central Rockies during the week of the 6th-12th. The showers extended northward into southern Idaho where numerous fires burned dry forests. East of the Rockies, the influx of warm air continued into the early part of the week, but cooler air from Canada covered the area by the end of the week. Record high temperatures early in the week were followed by record low readings. Frost was reported in northern Minnesota and Michigan.

The cool air enveloped nearly all of the Nation early in the week of the 13th-19th and frost spanned the Canadian border from North Dakota through New England. Showers and thunderstorms were moderate to heavy throughout the Southwest, Plateau, and northward into the State of Washington. The fire danger lowered in the West. Heavy showers also extended into the central Rockies and eastward into the upper Midwest. Flooding plagued northern Nebraska, Iowa, and Illinois. Moderate to heavy rain fell along the Gulf Coast.

The week of the 20th-26th was one of very heavy rain in some areas. Six to 8 inches aggravated the flooding in parts of Iowa and Minnesota. The lower Mississippi Valley, northern Alabama, and Georgia also reported heavy rain. Isolated heavy thunderstorms occurred throughout the week from northern Texas through the Plains. A succession of cool air surged into the central portion of the Nation triggering heavy downpours. Storm systems formed in the central United States and moved eastward. Most of the cold air remained in Canada producing some light frost near the North Dakota border. Average temperatures for the week were 3 to 6° colder than normal in the central Rockies and eastern slopes, and about 3° warmer than normal east of the Appalachians and on the West Coast.

Frequent rains fell from the eastern Great Plains to the Atlantic Coast from the 27th to the end of the month. Heavy amounts soaked eastern Kansas, western Missouri, and eastern Oklahoma where thunderstorms were most frequent at midweek. Early in the week, a tropical storm in the Gulf of Mexico dumped 5 or more inches of rain on Texas's southern tip. The storm stalled off the Mexican Coast and slowly dissipated but still brought moderate rain all along the Texas Gulf Coast. At the end of the month, another tropical storm was moving toward the Texas Coast, while Hurricane David brought rampaging winds and torrential rains to Puerto Rico on its westward trek.

Most of the Nation ranged warmer than normal during the last week of August. The area from Nebraska eastward through Ohio averaged 3 to 6° warmer than normal.



# HURRICANE DAVID

August 25 - September 7, 1979

National Hurricane Center, NOAA  
Miami, Florida

The following is a summary of the major meteorological events that occurred in connection with Hurricane David. Many of the descriptions of damage and fatalities are extracted from a report authored by Dick DeAngelis of the Environmental Data and Information Services (EDIS) NOAA.

A "best track" is attached. This is a listing of position coordinates every six hours, as well as the intensity parameters of minimum central pressure and maximum sustained wind speed. The best track is based on analysis of all available data.

David may be regarded as a typical "Cape-Verde" hurricane. It moved off of the African coast in late August and a mostly smooth path was followed around the periphery of the Atlantic subtropical high pressure ridge.

This trajectory resulted in an impact on a large number of people. David was a continual threat to populated land areas from the time it approached the eastern Caribbean on August 29th until it lost tropical characteristics over New England on September 6th. Hurricane warnings were posted at various times for most of the Lesser Antilles, Puerto Rico, Hispaniola, the Bahamas, and from the middle Florida Keys northward to southern North Carolina. Gale warnings were extended in stages from the Carolinas north to Eastport, Maine.

Historically, there have been few storms whose effects were so widespread.

David's track basically resembles an outline of the Atlantic subtropical high pressure ridge. This track describes an arc extending across the tropical Atlantic and then roughly paralleling the Greater Antilles and the U. S. east coast. This similarity of storm track and pressure patterns is, of course, the observational basis for using pressure patterns to understand and forecast the motion of hurricanes.

During most of David's history, the subtropical ridge extended westward to the vicinity of the United States' east coast and David proceeded steadily across the Atlantic and into the eastern Caribbean. As it moved just south of the eastern tip of the Dominican Republic, an abrupt turn to the north northwest was noted on August 31st, followed by another turn to the west. Then a mostly northwesterly course was resumed. This oscillation in course resulted in a landfall near Santa Domingo, after which the storm assumed a heading toward the United States.

During the 31st, a short wave trough in the westlies moved off the United States coast to a position north of the storm along longitude 70° W. It is possible that such a trough could, with subtlety,

weaken the subtropical ridge and be a factor in the change in course, referred to above. It is also possible that the mountainous terrain of Hispaniola with peaks to 10,000 feet was a factor in David's motion, although the theoretical details of such an interaction are poorly understood.

A study of the storm track shows that there are several oscillations in the track. It could also be surmised that the zig-zag across Hispaniola is just the largest of these oscillations.

Late on September 2d, as David was over Andros Island and approaching southern Florida, the track heading was 310°. David was heading directly for Miami. Less than 12 hours later, the heading had changed to 330°, a change of 20°. Because of the orientation of the southeast Florida coast relative to the track, this small change in course resulted in a landfall north of Palm Beach rather than at Miami. This 20° change appears to be part of one of the oscillations discussed above.

David was first identified as a tropical weather system on August 22d, while moving westward from Africa into the tropical Atlantic. Satellite surveillance indicated substantial concentrated convection and organization as this system passed to the south of Cape Verdes. On the 25th, it was assigned tropical depression status, and was named Tropical Storm David on the 26th while located midway between Cape Verdes and the Lesser Antilles.

With this auspicious start, conditions remained favorable for David's strengthening. Hurricane intensity was reached by the 27th. The naming of David and the upgrading to hurricane status was based solely on satellite data. Reconnaissance aircraft began monitoring the storm on the 27th. Deepening occurred at the rate of 1.5 mb/hr for 36 hours, beginning when David became a hurricane. On the 29th David moved directly across Dominica with maximum winds estimated at 125 knots. This estimate is based on aerial reconnaissance data and should qualify David as the most intense storm to affect Dominica during this century.

Dominica took the brunt of the storm. Winds were estimated in excess of 100 knots, and rainfall up to 10 inches caused extensive flooding. The capital, Roseau, was devastated, resembling an air raid. The city was without food, water, or shelter for several days. Damage was heaviest over the southwest portion of the island. Roads to and from the capital were made impassible by landslides, washouts, and fallen trees. Some shipping was possible to the port of Roseau, but the pier was partially damaged. Death estimates have reached into the 50's with 180 reported injured. Some 60,000 people were made homeless--nearly three-

# HURRICANE DAVID

fourths of the island's population. Crop damage was extensive. About three-fourths of the banana and coconut crops was destroyed.

On Martinique winds at Fort St. Louis were measured at 89 knots. Fifteen-foot waves battered the port of Fort de France. There were no deaths, 20 to 30 injuries, and 500 people left homeless. Crop damage, mainly bananas, was estimated at \$50 million. On Guadeloupe the southern region of Basse Terre was hit severely. The dock at the main banana port was destroyed. Crop damage was estimated at \$100 million; the banana crop in Basse Terre was completely destroyed. No deaths, few injuries, and several hundred homeless were reported on the island. Marie Calante and Les Saintes, a small island group, were both devastated by the storm.

More strengthening occurred as the storm moved into the Caribbean. Moving west northwestward, the eye passed about 70 n.mi. south of Puerto Rico, where torrential rainfall was the primary effect. Severe flooding occurred over many sections of Puerto Rico on the 31st. Rainfall totals from David reached to near 20 inches in the central mountains, 19 inches in the southwest and lesser amounts elsewhere.

St. Croix reported some flooding with rainfall amounts of 10-12 inches.

Puerto Rico was declared a disaster area. The death count was seven. Three deaths in Toa Baja and one in Guaynebo were accidents involving electrocution from loose electric wires. A person in San Sebastian was killed by a falling tree. Agricultural losses were reported as severe.

Winds continued to increase before landfall in the Dominican Republic. Aerial reconnaissance reported 150 knot winds and a central pressure of 924 millibars. This is the maximum intensity of the hurricane and occurred at 1800 GMT on August 30, while located south of Puerto Rico.

Maintaining winds close to 150 knots, David made landfall on the afternoon of the 31st just west of Santo Domingo on the south coast of the Dominican Republic. The year 1930 was the last time that a storm of such intensity directly affected the Dominican Republic.

Floods were the great killer. They isolated communities, swept villages away, and were mainly responsible for more than 1,000 deaths that have been estimated so far. The port of Santo Domingo was closed for several days to permit soundings in the channels. At the Sea-Land terminal in Rio Haina a rail-mounted container crane collapsed. Most roads were heavily damaged as were the cities of Jarabacoa, San Cristobal, and Bani.

In the mountain village of Padre las Casas several hundred people were killed when a church and school they were using as a haven was swept away by a rampaging river. Crop damage was severe and widespread. Almost 70% of the crops were destroyed, 150,000 were left homeless. President Guzman was reported to have estimated the agricultural, industrial and other pro-

perty losses at \$1 billion.

Crossing Hispaniola on September 1st while moving in a northwesterly direction, David emerged over the Windward Passage in a much weakened state. Maximum winds were reduced to 60 knots as a result of passage over the mountainous terrain.

The path continued across the eastern tip of Cuba and then northwestward toward Florida. Intensification began anew as warm Bahamian waters were encountered, but David did not regain its previous strength. It crossed Andros Island in the western Bahamas on the 2d. During that afternoon Andros Island reported 60-70 knot winds shortly before the eye arrived. Up to 8 inches of rainfall was reported in the Bahamas.

Early on the 3d (Labor Day) David was less than 150 n.mi. away from the southeast Florida coast, when aerial reconnaissance reports indicated that the central pressure had dropped to 965 millibars. The report is questionable because within a few hours, the pressure was back up to 980 millibars.

David moved inland just north of Palm Beach at approximately 1600 GMT on the 3d. At this time the eye diameter was 20 to 30 n.mi. The eye passed over a number of coastal cities in a zone from Jupiter in Martin County northward to New Smyrna Beach (just south of Daytona Beach), where it moved offshore. Since the storm was moving almost due north at about 10 knots, some locations were within David's eye for periods of about two hours.

Minimum pressure along the central Florida east coast was in the lower 970 millibar range. Highest surface winds experienced in Florida were gusts to 75 knots at South Melbourne Beach and a 74 knot gust at Jupiter. Heavy surf and rainfall amounts in the 5-10 inch range accompanied the storm. Vero Beach measured 8.92 inches and up to 12 inches were estimated in the vicinity of the city.

Changing very little in intensity, David made its final landfall just south of Savannah Beach, GA, during the afternoon of the 4th. Savannah reported 50 knot sustained winds and 970 millibars pressure. Pressure-wind relationships suggest that 75-80 knot winds may have occurred on the beach in the landfall area. Tides were generally 3 to 5 feet above normal. Two people were drowned in the heavy surf off Jekyll Island. To the north gusts along the coast ranged from 50 to 60 knots. Charleston reported 49 knot gusts. Several tornadoes occurred between Charleston and Myrtle Beach. Rainfall was heavy in some areas with Savannah receiving 6.86 inches. There were reports of up to 10 inches in interior South Carolina. Flooding was light to moderate. However, in North Carolina major flooding was reported on the Lumber River.

The storm accelerated to the north, then to the northeast as it moved across the middle Atlantic states into New England. Sustained winds gradually decreased to near 40 knots. Raleigh and Greensboro reported gusts to 31 knots. To the east Elizabeth City was drenched by 8.52 inches of rain. Tornadoes touched

## HURRICANE DAVID

down in Maryland, Virginia, Pennsylvania, Delaware, and New Jersey. Wilmington, DE, recorded a 46 knot gust, while winds at Richmond gusted to 39 knots. Wind and rain were responsible for widespread power outages all along the eastern seaboard. In the New York metropolitan area, 2.5 million people were without electricity.

David lost its tropical characteristics on the 6th, by the time it reached New England. As an extratropical storm it moved across New Brunswick and New-

foundland on the 7th and into the far North Atlantic by the 8th.

Fatality estimates in the United States range from 10 to 20. Although United States damage was generally light in most areas, the total loss is substantial, due to the large total area affected. Rainfall flooding, several tornadoes, minor to occasionally moderate beach erosion, and agricultural losses all figure in the damage totals.



# HURRICANE DAVID

## Preliminary Report

DATE	TIME (GMT)	LAT.	LONG.	PRESSURE (MB)	WIND (KT)	STAGE
8/25	1200	11.7	36.1	1008	25	Tropical Depression
	1800	11.7	38.2	1007	25	
8/26	0000	11.7	40.3	1006	30	Tropical Storm
	0600	11.6	42.2	1005	35	
	1200	11.6	44.0	1003	40	
	1800	11.6	45.5	998	45	
8/27	0000	11.7	47.0	990	55	Hurricane
	0600	11.8	48.5	980	65	
	1200	11.8	50.0	966	80	
	1800	11.9	51.5	954	95	
8/28	0000	12.2	52.9	947	115	
	0600	12.5	54.4	941	125	
	1200	12.8	55.7	938	130	
	1800	13.2	56.9	941	125	
8/29	0000	13.7	58.0	944	120	
	0600	14.2	59.2	942	120	
	1200	14.8	60.3	938	125	
	1800	15.3	61.6	933	125	
8/30	0000	15.6	62.8	929	130	
	0600	16.0	64.2	925	140	
	1200	16.3	65.2	924	145	
	1800	16.6	66.2	924	150	
8/31	0000	16.8	67.3	927	145	
	0600	17.0	68.3	928	145	
	1200	17.2	69.1	927	145	
	1800	17.9	69.7	926	150	
9/01	0000	18.8	70.4	953	130	
	0600	19.3	72.0	978	100	
	1200	19.7	73.7	1002	65	
	1800	20.6	74.6	1002	60	
9/02	0000	21.3	75.2	997	65	Tropical Storm Hurricane
	0600	21.9	75.5	990	70	
	1200	23.0	76.3	984	70	
	1800	23.9	77.4	979	75	
9/03	0000	24.6	78.3	976	80	
	0600	25.3	79.1	974	80	
	1200	26.3	79.6	973	85	
	1800	27.2	80.2	972	85	
9/04	0000	28.0	80.5	971	85	
	0600	29.1	80.8	970	85	
	1200	30.2	80.9	970	85	
	1800	31.5	81.2	970	80	
9/05	0000	32.5	81.1	972	65	Tropical Storm
	0600	33.5	80.9	976	55	
	1200	34.9	80.6	980	45	
	1800	36.2	80.1	984	40	

# HURRICANE DAVID

DATE	(GMT)	LAT.	LONG.	PRESSURE (MB)	WIND (KT)	STAGE
9/06	0000	37.6	79.5	987	40	Extratropical
	0600	39.2	78.5	989	40	
	1200	41.5	76.3	991	40	
	1800	43.3	73.7	992	40	
9/07	0000	45.0	70.0	991	45	
	0600	46.5	66.0	988	50	
	1200	47.5	61.5	987	50	
	1800	50.0	57.0	986	55	
9/08	0000	52.5	52.5	985	60	

# HURRICANE FREDERIC

29 August - 14 September 1979

National Hurricane Center, NOAA  
Miami, Florida

The tropical wave from which Frederic developed left the west African coast late on August 27th with little to distinguish it from most other waves. By midday on the 28th, however, satellite pictures showed a rather large, circular area of convection south of the Cape Verde Islands. Peripheral ship and satellite data indicated that a tropical depression had formed by 0600 GMT on the 29th. The depression gradually strengthened while moving westward at 18 kts for the next 24 hours and reached tropical storm strength near 11.5N 36.0W about 1200 GMT on the 30th. Frederic continued at a remarkably steady 18 kt forward movement for the next 48 hours while gradually turning to the west northwest. Conditions appeared ideal for Frederic to become a very intense hurricane, as David had in the same area. An eye became visible on infrared satellite pictures about 0600 GMT on September 1 and Frederic was upgraded to a hurricane near 13N 49W.

About this time the outflow from David, which had become a very intense hurricane lashing Hispaniola, began to descend from the northwest right over Frederic, and the newborn hurricane weakened to a tropical storm again by 0000 GMT on the 2d. Frederic gradually turned more to the west and decelerated with the weakening trend continuing until winds finally dropped below storm strength just north of Haiti about 1800 GMT on the 6th.

Frederic had passed over Puerto Rico and the Dominican Republic which helped disrupt the low level wind circulation in addition to the continued unfavorable impact of the outflow from David. The storm actually moved towards the southwest at less than 10 kts while southeast of the Dominican Republic, and then suddenly changed course towards the northwest during the afternoon of the 5th in a manner similar to David, passing just west of Santo Domingo about 0000 GMT on the 6th.

As David weakened over the northeastern United States, Frederic continued slowly westward over or just south of the Cuban coast for the next four days. Escaping the unfavorable influence of David, Frederic proceeded to strengthen beginning about midday on the 7th, and regained tropical storm strength about 100 miles east of the Isle of Pines, Cuba, about 0000 GMT on the 9th. Frederic turned to the northwest during the next 48 hours, moving at an average forward speed of 4 kts, and regained hurricane intensity over the western end of Cuba about 1200 GMT on the 10th. Factors which probably contributed to the strengthening while the center was so close to land were the very warm sea surface temperatures of 29-30°C, the large cyclonic envelope of the storm, and the establishment of a large anticyclone at 200 mb over the storm.

Except for the trochoidal motion frequently observed

with tropical cyclones, Frederic moved steadily northwest and turned to the north northwest with increasing forward speed for the next 60 hours, the eye passing across Dauphin Island, AL about 0300 GMT on the 13th and crossing the coastline near the Mississippi-Alabama border about one hour later.

Frederic turned north and northeast and increased its forward speed to 20 kts during the next 24 hours, losing hurricane intensity near Meridian, MS, about 1200 GMT on the 13th and becoming part of a frontal low pressure area near the southwest corner of Pennsylvania about 1200 GMT on the 14th. The extra-tropical remnants of Frederic moved very rapidly northeastward through Pennsylvania, New York, and western New England during the day and exited from northern Maine that evening.

## METEOROLOGICAL STATISTICS, DEATHS, AND DAMAGES.

- a.) Leeward Islands, Virgin Islands, and Puerto Rico. Frederic weakened approaching the Leeward Islands and post-analysis indicates sustained winds had dropped below hurricane force well before the center reached the Leeward Islands. Maximum sustained winds were 25-35 kts with gusts of 45-60 kts. Rainfall amounts were 10 inches in 12 hours in eastern Puerto Rico, 12 inches in 24 hours in St. Thomas, and 24 inches in 30 hours at St. Croix. A few tornadoes were reported in the Virgin Islands and Puerto Rico. Seven deaths have been reported at St. Maarten.
- b.) Dominican Republic, Haiti, and Cuba. Frederic continued to weaken to a tropical depression while over eastern Cuba, but regained hurricane status before leaving western Cuba. Heavy rains occurred over the Dominican Republic for several days after the center passed, augmenting the damage caused by David. Rains diminished as Frederic moved over eastern Cuba, but heavy rains and gale force winds were reported over western Cuba as the depression regained hurricane strength. No reports of deaths have been received from these areas, but damage estimates from western Cuba are high.
- c.) As Frederic strengthened over the southeastern Gulf of Mexico, winds of 45-50 kts were reported at Dry Tortugas during the evening of the 10th and morning of the 11th.

The highest winds reported in squalls and gusts are as follows: Dauphin Island bridge, 126 kts; Dauphin Island Sea Lab, 119 kts before equipment destroyed; Pascagoula Ingalls Ship Yard, 110 kts; Pascagoula Civil Defense, 100 kts before equipment broke;



# HURRICANE FREDERIC

Biloxi Civil Defense, Keesler AFB, and Gulfport Air National Guard, all 85 kts; Mobile Airport and Civil Defense, both 84 kts; Pensacola Naval Air Station, 83 kts; Hattiesburg, MS, 78 kts; Meridian, MS, Airport 70 kts; Pensacola Municipal Airport 68 kts; Hancock County, Mississippi, 64 kts.

Gale force winds in gusts occurred near the track of Frederic throughout eastern Mississippi, western Alabama, and many sections of Tennessee, Kentucky, southern Ohio, western portions of Pennsylvania and New York, and through western New England. Along the coasts, gale force winds or higher occurred from the New Orleans east area southward to the Mississippi River delta and eastward to the Panama City area, as well as along portions of the New England coast.

Tides of 8 to 12 feet above normal were reported in the hurricane warning area from Pascagoula, Mississippi to western Santa Rosa Island. Tides were 12 feet at Gulf Shores, AL, 11 feet at Fort Morgan, AL, 9.5 feet at Gulf State Park, 12 feet just south of Mobile Tunnel and 8 feet just north of Mobile Tunnel, 10 feet on the east end of Dauphin Island and 7.5 feet on the west end, 9 feet at Bayou La Batre, 9 feet at Fairhope, 9 feet on western Santa Rosa Island, FL.

Rainfall amounts of 8 to 12 inches fell from Pascagoula to Mobile with 4 to 6 inches through other parts of eastern Mississippi and western Alabama, and northwestern Florida and northward through Tennessee. Amounts of 2 to 4 inches were reported along the track all the way to New England. No rainfall induced flooding of any consequence was associated with Frederic in the United States.

Over a dozen tornadoes were reported, mostly along the Gulf coastal sections, but they resulted in no

deaths or injuries and only minor property damage.

Thus far, 11 storm related deaths have been attributed to Frederic in the United States, but only 2 were caused directly. Although a final count of storm related deaths is unavailable, it is believed to be less than 15.

Preliminary estimates of damages exceeding \$2 billion make it likely that Frederic will rank as one of the costliest if not the costliest hurricane ever to hit the United States. Insurance industry estimates of insured losses stand at \$750 million as of this report.

Between 300,000 and 400,000 persons were evacuated.

The maximum sustained winds in Frederic during its lifetime were estimated at 115 kts, based on aircraft reconnaissance and pressure-wind relationships. The NOAA research aircraft reported a flight level wind of 138 kts a short time prior to landfall, very close to that observed at Dauphin Island. The lowest central pressure of 943 millibars was reported by Air Force reconnaissance aircraft about 1200 GMT on the 12th, when the center was about 200 miles southeast of Mobile. However, the central pressure reported by reconnaissance aircraft during the last 6 hours was 946 millibars. Unofficial pressure reports along the coast in the eye were Dauphin Island Sea Lab 943 mb, Grand Bay, AL 931 mb (appears unrealistic), Pascagoula Civil Defense 946 mb. Meridian, MI had a minimum sea level pressure of 977 mb (28.85 inches), the lowest in their records. Calm winds were observed at Pascagoula for about one hour, and over the western end of Dauphin Island. Calm winds were not observed in Mobile.

# HURRICANE FREDERIC

## Preliminary Report

<u>DATE</u>	<u>TIME (GMT)</u>	<u>LAT.</u>	<u>LONG.</u>	<u>PRESSURE (MB)</u>	<u>WIND (KT)</u>	<u>STAGE</u>	
8/29	06	11.0	25.5		25	TROPICAL DEPRESSSION	
	12	11.1	28.0		30		
	18	11.2	30.5		30		
8/30	00	11.3	32.5		30	TROPICAL STORM	
	06	11.4	34.2		30		
	12	11.5	36.0		35		
8/31	18	11.6	37.8		40		
	00	11.7	39.7		45		
	06	11.8	41.6		50		
9/01	12	11.9	43.5		55	HURRICANE	
	18	12.0	45.1		55		
	00	12.5	47.0		60		
9/02	06	12.9	48.7		65	TROPICAL STORM	
	12	13.3	50.4		65		
	18	13.8	52.3		65		
9/03	00	14.3	54.1		60		TROPICAL STORM
	06	14.9	55.5		60		
	12	15.5	57.2	996	60		
9/04	18	16.3	58.8	999	55	TROPICAL STORM	
	00	16.7	59.8	1002	55		
	06	17.1	60.8		55		
9/05	12	17.5	61.8	999	50	TROPICAL STORM	
	18	17.8	62.8		50		
	00	18.0	63.8		50		
9/06	06	18.1	64.8		45	TROPICAL STORM	
	12	18.1	65.8	1004	45		
	18	18.1	66.8		45		
9/07	00	18.0	67.8		45	TROPICAL STORM	
	06	17.5	68.7		45		
	12	17.4	69.2	1008	40		
9/08	18	17.8	69.6		40	TROPICAL STORM	
	00	18.5	69.9	1005	40		
	06	19.4	70.7		35		
9/09	12	19.9	71.8	1006	35	TROPICAL DEPRESSION	
	18	20.0	73.0		30		
	00	20.1	74.5		30		
9/10	06	20.3	75.8		25	TROPICAL DEPRESSION	
	12	20.6	77.0	1005	25		
	18	20.9	78.0	1004	25		
9/11	00	21.1	78.7	1003	30	TROPICAL DEPRESSION	
	06	21.3	79.3	1003	30		
	12	21.5	79.8	1002	30		
9/12	18	21.6	80.5	1002	30	TROPICAL DEPRESSION	

# HURRICANE FREDERIC

<u>DATE</u>	<u>TIME (GMT)</u>	<u>LAT.</u>	<u>LONG.</u>	<u>PRESSURE (MB)</u>	<u>WIND (KT)</u>	<u>STAGE</u>
9/09	00	21.7	81.0	1001	35	TROPICAL STORM
	06	21.8	81.5	1000	40	
	12	21.9	82.0	999	45	
	18	22.0	82.5	997	50	
9/10	00	22.4	83.0	995	55	HURRICANE
	06	22.7	83.3	992	60	
	12	22.8	83.6	990	65	
	18	23.0	83.8	987	70	
9/11	00	23.3	84.0	985	75	
	06	23.8	84.4	983	75	
	12	24.4	84.8	980	85	
	18	25.0	85.2	968	95	
9/12	00	25.7	85.8	960	105	
	06	26.5	86.4	952	110	
	12	27.4	87.0	943	115	
	18	28.4	87.7	950	115	
9/13	00	29.7	88.0	946	115	TROPICAL STORM
	06	30.8	88.5	955	95	
	12	32.2	88.7	975	65	
	18	34.0	88.0	985	45	
9/14	00	35.2	87.0	990	40	EXTRA TROPICAL
	06	37.0	84.5	996	35	
	12	39.5	81.0	997	35	
	18	42.5	76.0	998	30	
9/15	00	48.0	68.0			

## LANDFALLS (APPROXIMATE)

1	9/03	18	17.8	62.8	ST. BARTHELMY
2	9/04	12	18.1	65.8	HUMACAO, PUERTO RICO
3	9/06	00	18.5	69.9	SANTO DOMINGO, DOMINICAN REPUBLIC
4	9/07	00	20.1	74.5	EASTERN TIP OF CUBA
5	9/13	03	30.3	88.2	DAUPHIN ISLAND, ALABAMA



# TROPICAL STORM ELENA

29 August - 1 September 1979

National Hurricane Center, NOAA  
Miami, Florida

The tropical wave from which Elena developed was relatively weak when it passed over Florida on 27 August. After that the wave amplified slowly and by the morning of the 29th, ship and data buoy reports and satellite photographs suggested that a low level circulation was forming. An Air Force reconnaissance flight confirmed the existence of a tropical depression in the central Gulf of Mexico at 2308 GMT on the 29th. Slow development ensued as the depression moved generally west northwestward about 10 kt, and by early afternoon on the 30th minimal tropical storm strength was attained.

Elena continued toward the west northwest without intensification but turned gradually toward the north as the center reached the Texas coast near Matagorda on the morning of 1 September. Barely of tropical storm strength when it made landfall, Elena could no longer be identified even as a tropical depression by the morning of the 2d.

The steering of Elena was controlled by a high pressure area located over the Southern United States. Pressure falls ahead of an approaching frontal trough began to erode the high by 31 August, allowing the storm to turn toward the north as it neared the Texas coast.

The flow at 200 mb was anticyclonically curved

throughout Elena's existence, but generally from a northerly direction. When the depression formed on the 29th, the 200 mb anticyclone was centered over extreme southern Texas, and by 1 September when the storm made landfall it had moved westward to Baja California. Although tropical storms sometimes develop under this type of upper flow, it is not usually conducive to continued strengthening.

Gale warnings were issued from Port O'Connor, TX to Morgan City, LA, in the first tropical storm advisory, and remained in effect until the center moved inland on the afternoon of 1 September. The highest wind reported on shore was a gust to 40 kt at Galveston on the evening of the 1st.

Some heavy rains fell along the Texas coast on the 1st, including 4.6 inches in downtown Houston, 3 inches in Beaumont, and over an inch at Victoria.

Highest tides reported were just over three feet MSL at Galveston, Texas City, and Baytown.

There have been no reports of damages or casualties associated with Elena.

# TROPICAL STORM ELENA

## Preliminary Report

<u>DATE</u>	<u>TIME</u> <u>(GMT)</u>	<u>LAT.</u>	<u>LONG.</u>	<u>PRESSURE</u> <u>(MB)</u>	<u>WIND</u> <u>(KT)</u>	<u>STAGE</u>
8/30	0000	25.5	89.1	1008	25	DEPRESSION
	0600	26.0	89.9			
	1200	26.4	90.7			
	1800	26.8	91.8	1006	35	TROPICAL STORM
8/31	0000	26.5	93.0	1004		
	0600	26.8	93.8			
	1200	27.0	94.2	1008		
	1800	27.3	94.7			
9/01	0000	27.6	95.1			
	0600	27.9	95.5			
	1200	28.5	95.8			
	1800	29.0	95.8		25	DEPRESSION
9/02	0000	29.6	95.8			

# OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

AUGUST 1979

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	Bankhead Lock and Dam	100	9	Athens 2	49	13	Moulton 2	10.84	Clanton	.95
Alaska	2 Stations	86	25+	Chandalar Lake	19	30	Cannery Creek	16.94	Haines	.01
Arizona	Willow Beach	119	2	Sunrise Mountain	27	22	Oracle 2 SE	7.87	Willow Beach	.08
Arkansas	Alicia	99	7+	Calico Rock	49	14	Buffalo Tower	8.75	Blytheville	.59
California	Death Valley	120	4+	Bodie	18	23	Mitchell Caverns	8.39	157 Stations	.00
Colorado	Grand Valley	107	5	Hermit	27	29+	Fountain	6.23	Colorado National Monument	.13
Connecticut	Wigwam Reservoir	95	6	Falls Village	37	17	West Hartford	11.02	Stevenson Dam	3.42
Delaware	Lewes 1 SW	95	10	Middletown 1 WSW	47	17	Bridgeville 1 NW	11.39	Middletown 1 WSW	4.34
Florida	Winter Haven	100	1	2 Stations	61	16+	Saint Leo	16.99	St. Augustine WFOY	1.10
Georgia	2 Stations	102	22+	Clayton 1 SSW	49	17	Hahunta	13.14	Lumber City	.31
Hawaii	Aloha Stadium-Halawa	97	29	Mauna Kea Obs 111.2	17	19	H Waialua Ditch 1051	12.62	7 Stations	.00
Idaho	Boise Lucky Peak Dam	107	11	Stanley	27	3	Boise 7 N	2.75	2 Stations	.27
Illinois	Griggsville	100	7	2 Stations	39	15	Peru 2 W	12.41	Havana 4 NNE	.66
Indiana	Horth Vernon 2 SW	97	8	Angola	39	16	Goshen College	11.68	Hewburgh Lock & Dam	1.77
Iowa	Knoxville	99	7	2 Stations	39	15	Forest City	16.17	Beaconsfield	.95
Kansas	Webster Dam	104	10+	Syracuse 2 W	44	11	Gridley	8.32	Anthony	.25
Kentucky	2 Stations	99	7	2 Stations	44	17+	Barren River Lake	10.48	Louisville WFO	2.37
Louisiana	Rosepine Exp Station	99	6	2 Stations	60	29+	Franklin 3 NW	10.49	Marksville	.08
Maine	Ellsworth	94	5	Rangleley	32	17	Vanceboro 2	7.76	Harris Station	3.95
Maryland	Baltimore WSO CI	98	8	Oakland 1 SE	36	17	Solomons	11.07	Hancock Fruit Lab	3.31
Massachusetts	Chester 2	97	1	Chester 2	33	17	Hardwick	11.47	Heath	3.42
Michigan	2 Stations	94	8	5 Stations	29	16+	Hudson	8.09	Port Huron	.76
Minnesota	3 Stations	96	6	Tower 3 S	27	15	Fairmont	13.90	Leech Lake Dam	.63
Mississippi	5 Stations	98	30+	Iuka	55	17	Abbeville	9.85	Lambert 5 E	.89
Missouri	Vandalia	102	7	Bowling Green 2 HE	41	12	Conception	6.95	Fisk	1.09
Montana	Biddle 8 SW	105	5	Wisdom	28	10	Livingston FAA AP	3.90	Brockway 3 WSW	T
Nebraska	2 Stations	105	8+	Ellsworth 15 HHE	41	26	Northeast Nebraska Exp Station	8.63	Arnold	.54
Nevada	Sunrise Manr Las Vegas	117	1	2 Stations	29	31+	Elgin 3 SE	5.32	Minden	.00
New Hampshire	3 Stations	92	5+	Mount Washington	28	9	Mount Washington	7.53	Lebanon FAA AP	2.58
New Jersey	Hewark WSO AP	96	10	Essex Fells Serv 81dg	37	17	Mays Landing 1 W	9.73	High Point Park	2.83
New Mexico	2 Stations	103	8	2 Stations	30	21	Kelly Ranch	6.13	Shiprock	.10
New York	New York Laurel Hill	98	5	3 Stations	32	17	Sinclairville	10.05	Avon	1.81
North Carolina	Smithfield	101	10	Transou	35	16	Lake Toxaway 2 SW	11.81	Hushville	.53
North Dakota	Breten	98	6	Kenmare 1 WSW	27	14	Cavallier 7 NW	5.37	Grenora	.02
Ohio	Cincinnati-Fernbank	96	9	3 Stations	37	16	Gallipolis	11.29	Put in Bay Perry Mon	2.36
Oklahoma	Mangum Research Station	104	19	Boise City 2 E	46	11	Hollis	7.68	Helena 1 SSE	.49
Oregon	Lost Creek Dam	102	1	Sisters	31	7	Eugene WSO AP	3.46	Port Orford 2	.29
Pennsylvania	3 Stations	95	11+	3 Stations	34	17	Burgettstown 2 W	10.73	Blosserville 1 H	1.75
Puerto Rico	Magueyes Island	98	29+	Pico Del Este	54	30	Cidra 1 E	24.67	Ponce City	3.98
Rhode Island	2 Stations	89	5+	2 Stations	46	18	Providence WSO AP	10.09	Hewport	4.80
South Carolina	Marion	104	21	Ninety Nine Islands	49	17	Salem	8.41	Parr	.41
South Dakota	3 Stations	107	6	Ipswich	36	14	Faulkton 1 NW	6.57	Dupree 15 SSE	.49
Tennessee	Pulaski Water Plant	99	9	Tazewell	43	16	Cordell Hull Lock and Dam	8.84	Ripley	.80
Texas	Uvalde	108	22	Vega	46	11	Weatherford	8.46	3 Stations	.00
Utah	Hanksville	110	5	Hardware Ranch	30	23	Blowhard Mtn Radar	3.65	Eskdale	.08
Vermont	Vernon	93	2	Chelsea	34	17	Mount Mansfield	9.72	Whittingham 1 W	2.62
Virginia	2 Stations	100	11	Burkes Garden	33	16	The Plains 2 NNE	11.51	Stuart 1 SSE	1.18
Virgin Islands	Truman Field FAA AP	99	8	Alex Hamilton Field FAA	67	31	Annaly	15.12	Charlotte Amalie 2	5.84
Washington	Walla Walla FAA AP	102	10	Greenwater	33	4	Rainier Paradise R S	4.41	Wenatchee	.07
West Virginia	2 Stations	97	10+	Canaan Valley	32	17	Hogsett Gallipolis Dam	9.61	Princeton	1.78
Wisconsin	3 Stations	94	7	Coddington 1 E	29	15	Clinton 2 NNW	12.41	Superior	1.61
Wyoming	4 Stations	107	5	Rondurant	26	3	Lance Creek 3 WNW	4.56	Bitter Creek 4 HE	.49











# CLIMATOLOGICAL DATA

METRIC UNITS

AUGUST 1979

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind			No. of days (sunrise to sunset)																		
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	Date	No. of days	Greatest in 24 hours	With thunderstorms	Maximum depth on ground	Resultant speed	Resultant direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)											
																									mm	mb	°C	°C	°C	°C	°C	°C	°C	mm	mm
MISSISSIPPI	88	1006.4	1017.2	32.8	21.2	27.1	0.0	35.6	8*	17.2	13	22	0	21.7	78	37	-62	17	8	9	0	0	0	0	0	0.3	22	8.9	9	25	9	15	7	5.2	Possible sunshine
MERIDIAN																																			
MISSOURI	270	984.4	1016.2	30.4	17.8	24.1	-0.3	35.6	6*	10.0	12	14	0	18.3	74	71	-10	29	8	7	0	0	0	0	0	0	1.5	19	13.4	W 31	12	10	9	4.7	74
COLUMBIA REGIONAL	297	979.0	1015.1	29.5	19.1	24.3	-0.4	34.4	7*	12.2	12	11	0	18.9	74	93	-4	33	9	8	0	0	0	0	0	0	2.8	18	14.3	W 19	14	9	8	4.5	65
KANSAS CITY	226	979.0	1015.1	31.7	21.4	26.6	0.5	37.2	6	15.0	15*	19	0	18.9	65	55	-45	14	12	7	4	0	0	0	0	0	0.8	11	13.9	W 18	13	9	5.6	87	
KANSAS CITY MUN AP	247	979.0	1015.1	29.7	19.4	24.6	-0.2	35.0	5	12.2	12	11	0	18.9	65	52	-51	14	12	7	4	0	0	0	0	0	1.2	30	13.9	W 10	12	9	10	5.2	64
ST JOSEPH	163	996.6	1016.4	30.9	20.6	25.8	0.7	36.1	8*	13.9	12	14	0	18.3	66	92	-15	28	7	6	0	0	0	0	0	0	0.3	7	11.2	3 12*	12	9	10	4.9	
ST LOUIS	386	971.9	1016.4	30.4	18.1	24.2	-0.8	34.4	8	10.0	12	9	0	18.9	75	92	17	31	11	8	0	0	0	0	0	0	1.2	21	13.0	N 20	10	11	5.6	70	
SPRINGFIELD																											0.5	29	12.5	N 29	12	7	4.8	72	
MONTANA	1087	891.0	1012.4	29.2	14.7	21.9	0.8	35.6	5	11.1	26	8	0	8.3	47	22	-3	13	5	2	0	0	0	0	0	0	0.5	31	15.2	W 11	13	4	5.5	52	
BILLINGS	696	933.0	1013.2	28.2	13.6	20.9	0.4	33.3	18*	9.4	26	7	0	9.4	52	19	-19	16	6	3	0	0	0	0	0	0	2.1	10	11.6	9 13	11	11	3.3		
GLASSBORO	1116	888.9	1013.5	28.8	11.7	20.3	0.6	37.8	5	8.3	29*	6	0	5.6	43	7	-20	2	6	4	0	0	0	0	0	0	1.0	25	13.9	W 15	19	10	12	5.8	61
GREAT FALLS	788	922.5	1013.3	29.9	12.6	21.3	1.3	36.7	30	8.3	27*	10	0	6.7	49	20	-5	11	7	5	0	0	0	0	0	0	0.8	11	13.9	W 18	13	9	5.6	87	
HAVRE	1167	881.1	1013.9	28.1	11.6	19.8	0.8	36.7	5	7.8	29	7	0	6.7	49	20	-5	11	7	5	0	0	0	0	0	0	1.2	30	13.9	W 10	12	9	10	5.2	64
MELBNA	904	911.3	1014.1	29.3	9.9	19.6	2.7	32.8	10*	4.4	6	9	0	8.9	56	28	-5	8	7	4	0	0	0	0	0	0	0.3	7	11.2	3 12*	12	9	10	4.9	
KALISPELL	801	921.1	1012.2	29.1	15.3	22.2	-0.3	36.7	5	10.0	28*	11	0	10.0	50	17	-13	10	5	3	0	0	0	0	0	0	1.3	7	10.7	NW 6	11	9	11	5.0	74
MILES CITY	972	903.8	1013.7	29.2	11.9	20.6	2.3	36.1	4	8.3	28*	10	0	7.8	50	33	10	15	6	8	0	0	0	0	0	0	0.5	29	12.5	NW 6	11	9	11	5.0	74
MISSOULA																																			
NEBRASKA	561	948.9	1017.7	30.3	16.6	23.4	-0.4	38.3	8*	10.0	11	13	0	15.6	66	35	-29	12	6	6	0	0	0	0	0	0	2.1	18	12.5	20 12	12	9	10	5.0	
GRAND ISLAND	359	971.9	1013.8	29.9	18.1	24.0	-0.2	36.7	5	11.1	24	12	0	18.3	74	71	-21	20	9	9	0	0	0	0	0	0	1.8	18	19.2	NW 11	10	10	11	5.5	74
LINCOLN	471	959.0	1013.3	28.7	16.7	22.7	-0.5	36.1	7*	11.7	15	10	0	16.7	71	72	-15	26	6	5	0	0	0	0	0	0	1.6	17	10.7	SE 12	14	10	7	4.8	78
NORFOLK	846	917.7	1013.3	30.2	15.2	22.7	-0.1	36.7	4	12.2	23*	13	0	13.9	90	53	-13	26	6	5	0	0	0	0	0	0	1.6	17	10.7	NW 9	11	11	9	5.3	63
NORTH PLATTE	298	28.8	28.8	18.7	18.1	23.4	0.2	36.1	7*	11.7	11	12	0	18.3	71	53	-19	24	8	7	0	0	0	0	0	0	0.9	7	14.3	NW 9	11	11	9	5.3	63
OMAHA (NORTH)	399	28.7	28.7	18.1	18.1	23.4	0.2	36.1	7*	11.7	11	12	0	18.3	71	53	-19	24	8	7	0	0	0	0	0	0	0.9	7	14.3	NW 9	11	11	9	5.3	63
OMAHA (SOUTH)	1206	880.1	1013.2	29.5	14.6	21.1	0.1	38.9	6	11.1	15	11	0	12.8	62	65	-3	24	10	10	0	0	0	0	0	0	0.7	19	15.6	S 3	9	13	9	5.7	70
SCOTTSBUFF	789	922.5	1013.7	29.1	13.9	21.5	-1.0	38.9	6	7.8	23	12	0	12.8	62	20	-40	16	10	10	0	0	0	0	0	0	0.7	19	15.6	S 3	9	13	9	5.7	70
VALENTINE																																			
NEVADA	1539	844.6	1011.8	31.5	12.1	21.8	2.3	40.6	4	5.6	31	16	0	2.2	33	9	-6	7	4	5	0	0	0	0	0	0	0.9	23	11.2	19 29	13	8	10	5.0	
ELKO	1926	810.0	1011.3	27.5	7.6	17.6	-1.1	35.0	3	2.8	31	6	0	2.2	40	15	1	5	10	9	0	0	0	0	0	0	3.0	21	13.4	NE 15*	11	11	9	4.9	69
ELY	1659	915.3	1009.7	31.7	22.2	29.9	-0.8	46.7	3*	11.8	20	26	0	7.8	30	54	4	40	5	4	0	0	0	0	0	0	2.1	20	13.9	SW 11	19	5	7	3.2	83
LAS VEGAS	1342	865.2	1012.1	30.8	8.9	19.8	0.4	38.3	3	1.9	31*	11	0	4.4	40	10	10	10	2	4	0	0	0	0	0	0	1.2	28	15.6	SW 12	16	8	7	4.0	95
RENO	1311	867.6	1011.5	31.7	9.9	20.8	0.9	39.4	4	5.0	31*	14	0	5.6	44	44	38	15	8	6	0	0	0	0	0	0	0.7	21	14.8	NW 29	14	5	12	4.8	69
WINNEUCA																																			
NEW HAMPSHIRE	104	1003.7	1016.2	25.7	13.8	19.7	0.2	33.3	5	4.4	17	2	0	13.9	70	107	33	28	15	7	0	0	0	0	0	0	0.7	26	10.7	W 15	5	10	16	6.7	56
CONCORD	1909	844.6	1013.2	25.7	13.8	19.7	0.2	33.3	5	4.4	17	2	0	13.9	70	107	33	28	15	7	0	0	0	0	0	0	0.7	26	10.7	W 15	5	10	16	6.7	56
WASHINGTON OBS																																			
NEW JERSEY	20	1014.2	1016.5	27.4	17.8	22.6	-0.4	33.9	10	7.8	17	4	0	16.7	71	104	-20	44	12	7	0	0	0	0	0	0	0.9	22	9.4	33 15	6	16	9	5.8	71
ATLANTIC CITY	3	25.8	25.8	19.9	22.8	22.8	-0.3	32.2	10	12.8	17	9	0	17.2	67	111	35	94	14	12	0	0	0	0	0	0	1.3	24	18.3	30 10	4	15	12	6.7	53
ATLANTIC CITY U	2	1015.6	1016.6	29.0	20.6	24.8	1.1	35.6	10	12.8	17	9	0	17.2	67	111	35	94	14	12	0	0	0	0	0	0	1.3	24	18.3	30 10	4	15	12	6.7	53
NEWARK	17	28.1	28.1	19.2	23.6	23.6	0.3	33.3	10*	11.1	17	6	0	16.7	76	115	9	35	13	3	0	0	0	0	0	0	0.7	21	14.8	NW 29	14	5	12	4.8	



# CLIMATOLOGICAL DATA

METRIC UNITS

AUGUST 1979

State and Station	Elevation (ground)	Pressure		Temperature					Precipitation					Wind			No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine %														
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	Date	No. of days	Greatest in 24 hours	25 mm. or more	With thunderstorms	Snow, ice pellets	Maximum depth on ground	Residual speed	Residual direction			Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10								
																												mb	mb	°C	°C	°C	°C	°C	°C
RAQUE ISLAND	16	1014.6	1016.7	25.4	17.0	21.2	-0.1	31.7	1	10.6	18	0	0	16.7	78	256	157	170	13	7	0	0	0	1.3	22	11.2	22	10	4	12	15	7.2	49		
SOUTH CAROLINA																																			
CHARLESTON	12	1016.3	1018.1	33.2	21.6	27.4	1.0	36.7	7	13.3	18	26	0	21.7	78	22	-14.1	13	6	8	0	0	0	0	1.1	20	9.4	5	22	11	17	3	4.7	80	
CHARLESTON U	3	1016.6	1018.4	32.1	23.6	27.8	0.7	35.6	7	17.8	13	19	0	20.4	73	38	-11.4	24	5	9	0	0	0	0	0.3	18	11.6	31	22	15	8	4.5	80		
COLUMBIA	65	1009.5	1017.5	32.9	20.0	26.5	-0.3	37.2	20	13.9	18	20	0	19.4	78	103	-4.0	55	7	9	0	0	0	0	0.2	36	10.7	34	11	13	12	6	4.4	72	
GRNVILLE-SPRINGR	292	983.4	1017.5	30.5	19.1	24.8	-0.5	35.0	9	12.2	17	11	0	19.4	73	110	5.5	35	12	8	0	0	0	0	0.2	36	10.7	34	11	13	12	6	4.4	72	
SOUTH DAKOTA																																			
ABERDEEN	395	966.8	1013.1	26.5	13.8	20.2	-1.3	33.9	6	5.6	14	2	0	15.0	73	31	-2.2	19	9	9	0	0	0	0	0	0	16.1	5	31	11	6	13	6.3	58	
HURON	390	967.2	1013.1	27.5	14.4	21.0	-1.3	38.9	6	5.6	14	5	0	15.0	73	38	-1.2	14	8	5	0	0	0	0	0	0	14.4	5	31	11	6	13	6.3	58	
RAPID CITY	984	905.2	1014.0	26.9	13.6	20.3	-1.7	35.6	30	8.9	14	1	0	12.2	64	59	2.2	11	13	7	0	0	0	0	0	0	12.5	3	14	10	5.7	66			
STOUD FALLS	432	963.8	1014.5	26.0	16.1	21.1	-1.1	34.4	6	7.8	25	2	0	16.1	75	110	3.8	32	14	15	0	0	0	0	0	0	11.2	3	18	14	6.0	66			
TENNESSEE																																			
BRISTOL	459	965.5	1018.7	28.6	16.8	22.8	-0.6	31.7	9	8.3	16	0	0	18.3	81	71	-2.1	33	11	7	0	0	0	0	0	0	8.9	18	28	4	19	8	5.9	59	
CHATTANOOGA	203	993.2	1017.4	30.6	20.4	25.6	0.0	33.9	21	15.0	17	0	0	20.0	76	15	-2.4	18	9	10	0	0	0	0	0	0	8.0	32	30	11	10	10	5.2	72	
INDYVILLE	293	1001.1	1017.4	31.3	22.6	27.2	0.2	35.0	8	17.8	13	15	0	20.6	71	15	-2.6	72	13	9	0	0	0	0	0	0	8.0	18	3	15	6	5.2	80		
MADISON	171	1001.1	1017.4	31.7	22.6	27.2	0.2	35.0	8	17.8	13	15	0	20.6	71	15	-2.6	72	13	9	0	0	0	0	0	0	8.0	18	3	15	6	5.2	80		
NASHVILLE	180	995.9	1017.2	30.7	22.9	25.8	-0.6	32.0	20	11.7	17	1	0	20.6	80	11	-1.3	34	7	10	5	0	0	0	0	0	8.0	20	11	8	11	12	5.9	52	
OKA RIDGE R	279	977.7	1013.0	29.9	17.7	23.8	-0.7	33.9	9	10.6	17	1	0	20.6	80	139	4.2	41	9	9	0	0	0	0	0	0	13.9	11	11	13	12	6	5.1	52	
TEXAS																																			
ABILENE	544	951.3	1014.5	34.4	21.3	27.9	-0.8	37.8	22	16.1	12	28	0	16.1	53	39	-1.3	29	7	6	0	0	0	0	0	0	4.0	16	15	13	3	4.4	75		
AMARILLO	1098	899.0	1014.0	30.3	15.9	23.1	-2.2	31.3	19	10.6	11	10	0	14.4	63	129	5.5	91	11	4	0	0	0	0	0	0	4.2	19	15	9	7	3.9	75		
AUSTIN	192	991.6	1015.2	33.2	22.5	28.1	-0.2	35.6	22	19.4	25	28	0	20.6	69	15	-0.0	9	4	0	0	0	0	0	0	0	1.8	16	14	7	5.1	68			
BROOKSVILLE	141	1013.9	1014.4	34.1	24.2	29.2	0.1	36.7	23	22.8	24	27	0	22.8	73	133	6.6	83	12	11	0	0	0	0	0	0	2.7	14	13	0	5	5.5	70		
COPIAS CHRISTI	12	1013.2	1014.9	34.3	24.4	29.2	0.1	37.2	22	21.7	25	27	0	23.3	74	64	-1.7	27	11	2	0	0	0	0	0	0	3.5	14	11	2	7	5.0	86		
DALLAS - FORT WORTH	12	1013.2	1014.9	34.3	24.4	29.2	0.1	37.2	22	21.7	25	27	0	23.3	74	64	-1.7	27	11	2	0	0	0	0	0	0	3.5	14	11	2	7	5.0	86		
DALLAS - FORT WORTH	12	1013.2	1014.9	34.3	24.4	29.2	0.1	37.2	22	21.7	25	27	0	23.3	74	64	-1.7	27	11	2	0	0	0	0	0	0	3.5	14	11	2	7	5.0	86		
DEL RIO	313	977.7	1013.0	35.9	22.9	29.4	-0.6	38.3	18	20.0	24	29	0	18.9	58	18	-1.3	11	5	5	0	0	0	0	0	0	4.0	13	15	12	12	7	5.1	89	
EL PASO	1194	882.5	1011.2	33.6	18.4	26.0	-0.9	37.2	28	15.0	23	25	0	14.4	54	55	2.6	19	8	12	0	0	0	0	0	0	1.3	15	15	18	8	5	3.4	89	
GALVESTON	2	1012.2	1015.7	33.1	30.6	25.4	-0.5	33.3	6	20.6	24	2	0	14.4	54	55	2.6	19	8	12	0	0	0	0	0	0	1.3	15	15	18	8	5	3.4	89	
HOUSTON INTERCON	29	1012.2	1015.7	33.1	30.6	25.4	-0.5	33.3	6	20.6	24	2	0	14.4	54	55	2.6	19	8	12	0	0	0	0	0	0	1.3	15	15	18	8	5	3.4	89	
LUBBOCK	992	905.2	1013.8	31.3	19.2	25.2	-0.6	33.9	22	12.2	12	16	0	15.6	59	97	4.9	37	9	11	0	0	0	0	0	0	0.8	11	10	7	3	23	5	5.6	63
MIDLAND	869	917.0	1013.0	32.8	19.4	26.1	-0.6	35.6	7	15.6	24	23	0	16.1	60	103	-4.1	32	18	11	0	0	0	0	0	0	0.6	11	11	17	0	3	1	3.1	88
PORT ARTHUR	5	1015.6	1013.0	31.6	23.6	27.6	-0.8	33.9	6	21.7	23	11	0	16.1	60	103	-4.1	32	18	11	0	0	0	0	0	0	0.6	11	11	17	0	3	1	3.1	88
SAN ANGELO	580	949.2	1014.2	32.9	20.8	26.9	-2.3	36.7	22	16.7	24	26	0	17.2	58	55	19	17	7	6	0	0	0	0	0	0	3.4	15	13	4	16	11	6.3	51	
SAN ANTONIO	240	987.5	1015.0	33.1	23.7	28.9	-0.9	35.6	10	21.1	24	26	0	21.7	71	53	-1.8	28	5	6	0	0	0	0	0	0	2.4	13	10	7	4	19	8	5.7	71
VICTORIA	32	1011.5	1015.7	32.9	23.4	28.2	-0.9	34.4	30	20.6	25	25	0	22.8	78	53	-2.0	26	12	9	0	0	0	0	0	0	2.2	13	15	6	17	5	5.2		
WACO	153	997.6	1015.3	33.4	21.9	27.7	-2.2	36.7	10	17.8	12	26	0	21.1	71	116	7.0	54	7	7	0	0	0	0	0	0	2.3	17	13	0	19	10	5	4.1	
WICHITA FALLS	303	976.0	1014.9	35.4	20.6	28.0	-1.7	38.3	14	15.0	12	28	0	19.4	65	91	4.6	59	8	8	0	0	0	0	0	0	3.5	16	20	6	19	10	2	3.1	
UTAH																																			
MILFORD	1533	846.6	1012.3	31.1	11.2	21.2	-1.4	38.3	4	6.7	23	15	0	8.3	43	18	1	7	6	9	0	0	0	0	0	0	1.8	16	15	11	5	3.6	80		
SALT LAKE CITY	1287	870.3	1010.8	32.3	16.1	24.2	0.6	40.0	4	11.1	25	17	0	8.3	43	16	-8	5	8	9	0	0	0	0	0	0	1.8	16	15	11	5	3.6	80		
VERMONT																																			
8URLINGTON	101	1003.4	1015.9	23.8	13.9	18.8	-0.8	31.7	2	5.6	17	0	0	13.9	77	87	-8	19	15	6	0	0	0	0	0	0	0.6	19	12	5	3	12	16	7.3	41
VIRGINIA																																			
LYNCHBURG	279	984.4	1017.4	29.7	18.1	23.9	0.3	34.4	10	10.0	16	9	0	20.0	74	87	-1.6	36	8	8	0	0	0	0	0	0	0.3	25	11	9	9	5.1	64		
NORFOLK	7	1016.6	1017.4	30.3	21.4	25.8	0.9	36.7																											





# HEATING DEGREE DAYS

(Base 65°F.)

AUGUST 1979

State and Station	Current season			State and Station	Current season			State and Station	Current season			State and Station	Current season		
	This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	0	0	0	BOISE	2	7	12	GRAND ISLAND	10	19	6	BRISTOL	3	6	0
BIRMINGHAM	0	0	0	LEWISTON	0	12	17	LINCOLN	7	10	0	CHATTANOOGA	0	0	0
HUNTSVILLE	0	0	0	POCATELLO	10	11	20	NORFOLK	14	17	17	*NOXVILLE	0	0	0
MOBILE	0	0	0	ILLINOIS				NORTH PLATTE	11	15	15	MEMPHIS	0	0	0
MONTGOMERY	0	0	0	CAIRO U	0	0	0	OMAHA (EPPELY)	6	7	6	NASHVILLE	0	0	0
ALASKA				CHICAGO O HARE	19	35	25	OMAHA (NORTH)	15	19	17	OAK RIDGE	0	0	0
ANCHORAGE	184	322	502	CHICAGO MIDWAY	13	15	8	SCOTT'S BLUFF	10	10	8	TEXAS			
ANNETTE	137	313	442	MOLINE	22	27	11	VALENTINE	24	38	18	ABILENE	0	0	0
BARROW	579	1255	1664	PEORIA	19	22	8	NEVADA				AMARILLO	2	2	0
BARTER ISLAND	675	1363	1584	ROCKFORD	26	35	22	ELKO	4	4	87	AUSTIN	0	0	0
BETHEL	361	706	713	SPRINGFIELD	9	9	8	ELY	95	117	85	BROWNSVILLE	0	0	0
BETHTLES	218	412	637	INDIANA				LAS VEGAS	0	0	0	CORPUS CHRISTI	0	0	0
BIG DELTA	146	264	503	EVANSVILLE	1	1	0	RENO	28	37	67	DALLAS FT WORTH	0	0	0
COLD BAY	400	787	887	FORT WAYNE	31	39	12	WINNEMUCCA	18	19	48	DEL RIO	0	0	0
FATRBANKS	143	267	452	INDIANAPOLIS	13	16	5	NEW HAMPSHIRE				EL PASO	0	0	0
GULKANA	218	433	620	MT BENO	17	20	30	CONCORD	64	97	61	GALVESTON	0	0	0
HOHER	316	618	785	IOWA				HOUSTON INTERCON	607	1037	1060	LUBBOCK	0	0	0
JUNEAU	205	456	620	BURLINGTON	16	18	8	MT WASHINGTON OBS				HIDALGO	0	0	0
KING SALMON	274	488	673	OES MOINES	10	11	13	NEW JERSEY				PORT ARTHUR	0	0	0
KOOIAR	236	436	651	OUBOUQUE	27	33	38	ATLANTIC CITY	19	25	0	SAN ANGELO	0	0	0
KOTZEBUE	282	614	818	SIoux CITY	13	14	10	ATLANTIC CITY U	3	8	0	SAN ANTONIO	0	0	0
MC GRATH	242	463	576	WATERLOO	13	15	33	NEWARK	4	6	0	VICTORIA	0	0	0
NOME	360	795	952	KANSAS				TRENTON U	10	17	0	WACO	0	0	0
ST. PAUL ISLAND	444	941	1141	CONCORDIA	10	16	5	NEW MEXICO				WICHITA FALLS	0	0	0
TALKEETHA	216	368	542	DOODGE CITY	7	7	0	ALBUQUERQUE	0	0	0	UTAH			
UNALASKLET				GOODLAND	21	21	0	CLAYTON	7	7	0	MILFORD	8	8	7
VALDEZ	326	613	766	TOPEKA	4	4	0	ROSWELL	0	0	0	SALT LAKE CITY	0	0	5
YAKUTAT	308	592	735	WICHITA	0	0	0	NEW YORK				VERMONT			
ARIZONA				KENTUCKY				ALBANY	37	56	31	BURLINGTON	65	88	69
FLAGSTAFF	157	225	145	COVINGTON	14	15	0	BINGHAMTON	73	110	61	BUFFALO	35	51	45
PHOENIX	0	0	0	LEXINGTON	5	5	0	BUFFALO	35	51	45	NEW YORK U	4	8	0
TUCSON	0	0	0	LOUISVILLE	0	0	0	NEW YORK KENNEDY	6	8	0	NEW YORK LA GUARDIA	5	7	0
WINSLOW	0	0	0	LOUISIANA				ROCHESTER	37	50	35	SYRACUSE	39	58	29
YUMA	0	0	0	BATON ROUGE	0	0	0	NORTH CAROLINA				ASHEVILLE	0	5	0
ARKANSAS				LAME CHARLES	0	0	0	CAPE HATTERAS R	0	0	0	CHARLOTTE	0	1	0
FORT SMITH	0	0	0	NEW ORLEANS	0	0	0	GREENSBORO	2	3	0	RALEIGH	0	0	0
LITTLE ROCK	0	0	0	SHREVEPORT	0	0	0	WILMINGTON	0	0	0	NORTH DAKOTA			
NO. LITTLE ROCK	0	0	0	MAINE				BISMARCK	55	66	53	FARGO	45	48	46
CALIFORNIA				CARIBOU	146	180	206	WILLISTON	42	49	57	OHIO			
BAKERSFIELD	0	0	0	PORTLAND	82	103	82	AKRON	28	63	25	CINCINNATI ABBE OB	5	7	0
BISHOP	0	0	5	MARYLAND				CLEVELAND	11	31	26	COLUMBUS	16	27	8
BLUE CANYON	134	228	85	BALTIMORE	3	5	0	DAYTON	23	30	7	DAYTON	23	30	7
EUREKA U	165	373	518	MASSACHUSETTS				HANSFELD	39	77	10	HANSFELD	39	77	10
FRESNO	0	0	0	BLUE HILL OBS R	41	56	20	TOLEDO	33	49	23	TOLEDO	33	49	23
LONG BEACH	0	0	0	BOSTON	15	17	8	YOUNGSTOWN	37	72	31	YOUNGSTOWN	37	72	31
LOS ANGELES	0	0	0	WORCESTER	53	78	34	OKLAHOMA				OKLAHOMA CITY	0	0	0
LOS ANGELES U	0	0	0	MICHIGAN				TULSA	0	0	0	OREGON			
MT SHASTA R	99	143	101	ALPENA	107	152	185	ASTORIA	92	183	314	BURNS U	45	78	98
OAKLAND	26	59	154	DETROIT	26	34	11	BURNS U	45	78	98	EUGENE	19	52	92
RED BLUFF	0	0	0	DETROIT METRO	29	41	21	MEDFORD	2	10	32	PENDLETON	0	12	19
SACRAMENTO	0	0	0	FLINT	36	53	50	PORTLAND	2	10	104	SALEM	21	45	96
SAN DIEGO	0	0	0	GRAND RAPIDS	31	38	35	SEXTON SUMMIT R	135	257	212	PENNSYLVANIA			
SAN FRANCISCO	56	111	177	HOUGHTON LAKE	109	157	153	ALLENTOWN	22	35	6	ALLENTOWN	22	35	6
SAN FRANCISCO U	125	276	379	LANSING	41	60	36	ERIE	17	53	67	ERIE	17	53	67
SANTA MARIA	35	104	214	MUSKEGON	49	68	52	HARRISBURG	14	26	0	HARRISBURG	14	26	0
STOCKTON	0	0	0	SAULT STE MARIE	134	203	221	PHILADELPHIA	7	11	0	PHILADELPHIA	7	11	0
COLORADO				MINNESOTA				PITTSBURGH	26	49	23	PITTSBURGH	26	49	23
ALAMOSA	127	184	151	DULUTH	115	167	171	PITTSBURGH U	15	30	6	PITTSBURGH U	15	30	6
COLORADO SPRINGS	41	47	22	INTERNATIONAL FALLS	161	197	178	SCRANTON	31	65	25	SCRANTON	31	65	25
DENVER	20	20	0	MINNEAPOLIS	24	24	32	WILLIAMSPORT	19	34	14	WILLIAMSPORT	19	34	14
GRAND JUNCTION	3	3	0	ROCHESTER	47	47	56	RHODE ISLAND				RHODE ISLAND			
PUEBLO	8	8	0	ST CLOUD	79	87	55	BLOCK ISLAND	11	29	20	BLOCK ISLAND	11	29	20
CONNECTICUT				MISSISSIPPI				PROVIDENCE	25	36	18	PROVIDENCE	25	36	18
BRIDGEPORT	13	21	0	JACKSON	0	0	0	SOUTH CAROLINA				SOUTH CAROLINA			
HARTFORD	30	46	12	MERIDIAN	0	0	0	CHARLESTON	0	0	0	CHARLESTON	0	0	0
DELAWARE				MISSOURI				CHARLESTON U	0	0	0	CHARLESTON U	0	0	0
WILMINGTON	7	11	0	COLUMBIA REGIONAL	4	6	0	COLUMBIA	0	0	0	COLUMBIA	0	0	0
DIST. OF COLUMBIA				KANSAS CITY	5	10	0	GRNVILLE-SPRTNBORG	0	1	0	GRNVILLE-SPRTNBORG	0	1	0
WASHINGTON DULLES	15	22	0	ST JOSEPH	6	11	5	SOUTH DAKOTA				SOUTH DAKOTA			
WASHINGTON NATIONAL	0	0	0	ST LOUIS	0	0	0	ABERDEEN	41	47	33	ABERDEEN	41	47	33
FLORIDA				SPRINGFIELD	1	1	6	HURON	32	32	22	HURON	32	32	22
APPALACHICOLA U	0	0	0	MONTANA				RAPID CITY	25	28	30	RAPID CITY	25	28	30
DAYTONA BEACH	0	0	0	BILLINGS	7	9	25	SIoux FALLS	28	28	28	SIoux FALLS	28	28	28
FORT MYERS	0	0	0	GLASGOW	17	23	45								
JACKSONVILLE	0	0	0	GREAT FALLS	15	34	60								
KEY WEST	0	0	0	HAYRE	13	36	58								
MIAMI	0	0	0	HELENA	15	26	90								
ORLANDO	0	0	0	KALISPELL	17	67	194								
PENSACOLA	0	0	0	MILES CITY	14	15	25								
TALLAHASSEE	0	0	0	MISSOULA	13	50	110								
TAMPA	0	0	0	GEORGIA											
WEST PALM BEACH	0	0	0	ATMENS	0	0	0								
GEORGIA				ATLANTA	0	0	0								
ATMENS	0	0	0	AUGUSTA	0	0	0								
ATLANTA	0	0	0	COLUMBUS	0	0	0								
AUGUSTA	0	0	0	Macon	0	0	0								
COLUMBUS	0	0	0	ROME	0	0	0								
MACON	0	0	0	SAVANNAH	0	0	0								
ROME	0	0	0												
SAVANNAH	0	0	0												





# STORM SUMMARY

AUGUST 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE					
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama																													
Alaska												5		1	7	5													
Arizona																4									3				
Arkansas	1	1										5	7		9	6									5	5			
California	1	1										?			?										1	?			
Colorado																													
Connecticut												3	3			3									1	5			
Delaware	1	1			5						6	7	5		1	2	4								3				
Florida	8	4		1	5							?	?		?	?													
Georgia												05	C		3	8	4												
Hawaii	*																												
Idaho												1	3	7		5	3									5			
Illinois	6	5			6							?	?		1	2	4								?				
Indiana	4	2		1	5							?	?		2	5	?	?						3	?				
Iowa	16	6	2	16	6							6	6		6	6								1	?				
Kansas																										?			
Kentucky	6	2			5							4	6	5		4	4								?				
Louisiana												5			4	4									?				
Maine	*											?	?		5	?									?				
Maryland & DC														3	4	4									1	5			
Massachusetts			2	3	6										4	4										3			
Michigan	2	1			5							4			2	4	5												
Minnesota	9	4			4							4	5		5	C	6								29	4			
Mississippi	1	1			4							4	4		1	1	1									5			
Missouri												5	1	15	5	5										6			
Montana	*																												
Nebraska	2	1			2							5	6		5	5										6			
Nevada	2	2																								5			
New Hampshire															6	C													
New Jersey												?	?		2	?													
New Mexico	5	4			5							5	5		5	5									1	5			
New York	1	1			3							1	7		6	6									1	7			
North Carolina	2	1			1							4	5		4	5										6			
North Dakota	8	3			5							2	6	8	5	6										5			
Ohio	1	1			5									2	27	7	6									5			
Oklahoma	13	5			5							5	5		1	6	5									?			
Oregon												?	?		?	?										?			
Pacific	*																												
Pennsylvania	1	1			4							6	7	3		3	5									5			
Puerto Rico												3	?	6	7											?			
Rhode Island																										8			
South Carolina															5											4			
South Dakota	2	2			6										4	2										2			
Tennessee															?	?										4			
Texas	10	6			4							3	8		6	6										6			
Utah															6	6										5			
Vermont	*																									6			
Virginia															4	3										5			
Virgin Islands	1	1			5							06	C		1	5										6			
Washington	*																									?			
West Virginia	2	1			3							2	4	?		2	3									?			
Wisconsin	15	3	1	1	6							?	?	2	1	?										?			
Wyoming	7	3			4							05	C													05			







# RAWINSONDE DATA

Average monthly values

AUGUST 1979

FLINT, MT 949 MB				GLASGOW, MT 934 MB				GRAND JUNCTION, CO 853 MB				GREAT FALLS, MT 889 MB				GREEN BAY, WI 990 MB															
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Resultant Wind															
				Direction tens of deg.	Speed m.p.s.	Direction tens of deg.				Speed m.p.s.	Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.														
850	31	236	15.3	14.1	21	1.1	31	696	14.9	9.1	09	2.4	31	1,472	17.9	5.7	14	3.5	31	1,118	14.7	5.6	25	2.1	31	210	15.5	14.3	25	3.0	9.9
950	31	577	16.6	12.1	26	2.3	31	1,498	17.1	4.8	24	1.4	24	1,509	19.1	5.6	14	3.5	31	1,499	16.2	4.2	27	2.7	31	1,504	14.3	9.7	27	4.6	6.1
900	31	1,37	14.8	9.5	28	3.3	31	1,008	18.4	7.7	14	2.3	2.3	2,021	19.3	4.0	14	3.8	31	2,013	13.7	1.5	25	2.6	31	2,011	9.8	-6.2	28	6.8	8.8
850	31	1,519	12.2	4.9	27	5.1	31	1,498	17.1	4.8	24	1.4	24	1,509	19.1	5.6	14	3.5	31	1,499	16.2	4.2	27	2.7	31	1,504	12.1	5.4	27	6.1	6.8
800	31	2,026	9.9	-1.4	28	6.6	31	2,013	17.7	2.6	29	2.7	31	2,021	19.3	4.0	14	3.8	31	2,013	13.7	1.5	25	2.6	31	2,011	9.8	-6.2	28	6.8	8.8
750	31	2,563	7.9	-4.9	28	8.0	31	2,553	9.7	-6	30	4.8	31	2,558	11.2	-1.2	25	5.9	31	2,558	10.3	-1.8	25	3.1	31	2,555	7.4	-5.2	28	7.6	8.8
700	31	3,096	6.1	-7.8	28	9.5	31	3,079	8.1	-7.8	28	6.6	31	3,087	9.6	-3.8	25	6.5	31	3,087	8.1	-7.8	28	6.6	31	3,079	6.1	-7.8	28	9.2	10.9
650	31	3,728	1.9	-11.3	28	10.5	31	3,724	1.3	-6.1	29	6.6	31	3,769	6.6	-3.8	25	4.2	31	3,727	1.9	-8.2	26	6.5	31	3,709	1.9	-12.2	28	9.2	10.9
600	31	4,370	-1.4	-17.1	28	12.1	31	4,364	-2.9	-12.7	28	6.5	31	4,420	1.1	-6.6	24	4.6	31	4,367	-2.8	-12.6	26	7.9	31	4,308	-2.7	-16.4	28	10.9	12.0
550	31	5,008	-5.4	-20.5	28	13.0	31	5,008	-1.7	-18.3	28	10.5	31	5,113	-4.3	-11.5	24	5.1	31	5,052	-6.7	-18.4	26	9.4	31	5,033	-6.5	-21.1	28	12.0	12.9
500	31	5,650	-10.1	-24.8	28	14.9	31	5,785	-11.7	-24.3	28	11.8	31	5,858	-9.5	-18.0	25	5.7	31	5,790	-11.5	-25.1	26	10.4	31	5,771	-11.3	-25.6	28	12.9	15.2
450	31	6,304	-15.5	-30.4	28	16.4	31	6,584	-17.0	-30.5	27	12.9	31	6,665	-14.5	-25.0	25	5.9	31	6,589	-16.7	-29.1	26	11.7	31	6,572	-16.5	-29.3	28	15.2	16.7
400	31	7,064	-21.2	-33.5	28	17.7	31	7,458	-23.1	-35.9	28	14.3	31	7,548	-20.2	-32.5	25	7.2	31	7,463	-23.2	-35.2	26	11.4	31	7,447	-22.4	-36.2	28	16.2	19.2
350	31	8,460	-27.7	-42.2	28	20.6	31	8,424	-30.5	-42.2	26	16.9	31	8,526	-27.4	-40.8	26	8.5	31	8,430	-30.5	-42.3	26	13.0	30	8,416	-29.2	-41.6	26	19.2	22.9
300	31	9,947	-36.0	-46.9	28	23.5	31	9,998	-38.9	-49.3	28	19.1	31	9,613	-36.0	-47.9	26	10.0	31	9,503	-39.2	-50.2	26	14.9	30	9,946	-37.2	-48.3	28	22.9	27.2
250	31	10,789	-45.2	-50.8	28	27.0	31	10,728	-48.1	-52.8	28	22.2	31	10,854	-45.4	-51.6	26	11.6	31	10,728	-48.2	-51.6	26	16.9	30	10,732	-46.4	-50.8	28	27.2	28.5
200	31	12,246	-55.0	-54.7	27	29.2	31	12,170	-54.5	-57.5	28	24.0	31	12,313	-51.1	-56.1	26	14.6	31	12,174	-54.1	-57.5	26	19.0	29	12,182	-54.1	-57.5	28	28.5	29.7
175	31	13,094	-61.7	-54.7	28	25.5	31	13,029	-54.7	-57.5	27	22.7	31	13,164	-52.2	-56.1	26	14.1	31	13,030	-55.9	-57.5	26	15.5	28	13,033	-56.0	-57.5	28	29.7	30.7
150	31	14,063	-59.3	-54.7	28	21.2	30	14,013	-56.0	-57.5	28	19.1	31	14,131	-60.7	-57.5	26	12.0	31	14,013	-55.9	-57.5	27	11.7	28	14,009	-57.8	-57.5	28	20.7	16.8
125	30	15,203	-60.3	-57.4	28	15.4	30	15,169	-57.4	-57.4	28	15.6	31	15,259	-63.1	-61.7	26	8.5	31	15,168	-57.9	-57.5	27	11.7	28	15,157	-58.9	-57.5	28	16.8	11.3
100	29	16,589	-61.0	-58.4	28	10.5	30	16,576	-58.4	-58.4	28	11.6	31	16,626	-64.2	-61.7	26	3.0	31	16,572	-58.6	-57.5	28	8.0	28	16,553	-60.1	-57.5	28	11.3	7.1
75	29	17,981	-59.6	-57.4	29	6.2	30	17,983	-57.4	-57.4	30	7.4	30	17,977	-62.4	-61.7	13	1.4	31	17,977	-57.6	-57.5	29	5.4	28	17,950	-58.5	-57.5	29	7.1	2.9
50	29	18,675	-57.7	-57.4	29	4.0	30	18,678	-57.4	-57.4	32	2.7	30	18,677	-59.6	-61.7	1.4	0.1	31	18,678	-57.6	-57.5	29	4.5	28	18,694	-55.0	-57.5	29	4.9	2.9
25	29	19,799	-55.5	-57.4	29	1.2	29	19,811	-57.4	-57.4	32	2.8	29	19,796	-58.4	-61.7	0.9	0.2	30	19,801	-55.5	-57.5	31	1.9	28	19,775	-55.0	-57.5	29	2.9	1.2
0	29	20,968	-53.3	-57.4	29	0.8	29	20,983	-53.0	-57.4	35	1.7	28	20,954	-55.5	-57.5	0.8	0.3	30	20,968	-53.7	-57.5	36	1.6	28	20,966	-53.1	-57.5	30	1.2	1.5
7	29	22,413	-51.2	-57.4	29	3.9	29	22,429	-50.8	-57.4	05	1.8	28	22,385	-52.9	-57.5	0.8	0.6	29	22,413	-51.6	-57.5	36	1.9	28	22,391	-51.0	-57.5	30	1.5	3.9
3	27	24,291	-49.0	-47.4	08	5.6	29	24,318	-47.4	-47.4	09	2.1	26	24,252	-50.2	-57.5	0.9	7.1	28	24,296	-47.9	-47.5	08	2.4	27	24,274	-48.8	-47.5	08	3.9	4.3
2	25	25,494	-47.1	-47.4	08	6.2	29	25,526	-46.3	-47.4	09	3.5	26	25,449	-48.2	-57.5	0.9	8.3	28	25,503	-46.5	-47.5	08	2.9	27	25,476	-47.4	-47.5	08	4.3	7.4
1	15	26,978	-45.6	-47.4	08	7.2	29	27,016	-47.1	-47.4	07	4.8	26	26,978	-49.6	-57.5	0.9	9.3	28	26,978	-45.6	-47.5	08	4.8	31	26,984	-45.0	-47.5	08	5.7	9.9
7	15	28,926	-41.7	-47.4	08	8.1	28	28,951	-41.6	-47.4	08	5.2	25	28,851	-43.1	-57.5	0.9	11.0	25	28,925	-41.9	-47.5	08	5.0	21	28,909	-42.1	-47.5	08	7.4	7.9
7	15	31,722	-37.1	-47.4	08	6.3	29	31,722	-37.1	-47.4	08	6.2	29	31,604	-39.0	-57.5	0.9	12.5	19	31,699	-37.2	-47.5	07	6.1	14	31,680	-38.0	-47.5	08	7.9	9.9

GREENSBORO, NC 987 MB				GUADALUPE IS., MEXICO 1011 MB				GUAM, MARIANA IS. 998 MB				HILO, HI 1015 MB				HUNTINGTON, WV 989 MB														
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Resultant Wind			No. of observations	Dynamic height meters	Temperature °C	Resultant Wind														
				Direction tens of deg.	Speed m.p.s.	Direction tens of deg.				Speed m.p.s.	Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.													
850	31	275	19.4	17.9	30	4.5	31	23	19.3	15.3	32	6.0	31	111	25.2	23.7	08	2.2	31	10	21.7	19.2	23	1.4	31	246	19.2	17.1	18	4.4
950	31	602	21.3	16.7	30	2.2	31	558	19.5	14.4	32	7.9	31	541	23.6	21.7	13	5.1	31	586	20.0	18.2	08	1.6	31	592	20.2	17.6	26	3.5
900	31	1,070	19.1	14.0	29	2.8	31	1,025	21.1	1.4	33	4.2	31	1,014	20.9	18.2	11	1.1	31	1,052	17.2	14.9	08	2.7	31	1,059	18.0	15.3	27	5.2
850	31	1,562	16.3	11.8	29	4.1	31	1,519	20.9	-1.9	33	4.2	31	1,508	18.4	14.6	10	1.1	31	1,538	14.4	11.1	08	3.2	31	1,547	15.3	10.9	27	5.5
800	31	2,075	13.7	8.0	28	4.0	31	2,028	16.3	-3.7	32	2.7	30	2,027	15.6	11.1	11	1.8	31	2,050	12.7	2.9	08	4.8	31	2,050	12.7	2.9	08	6.7
750	31	2,617	10.9	1.9	28	4.9	31	2,589	15.0	-6.3	29	1.6	31	2,574	13.1	7.8	10	3.0	31	2,591	11.2	-5.1	09	3.1	31	2,601	10.6	1.1	27	6.3
700	31	3,189	7.9	-2.8	28	5.0	31	3,168	11.2	-9.3	28	1.6	31	3,152	10.0	3.6	11	3.0	31	3,165	9.3	-10.6	08	3.0	31	3,173	7.5	-2.1	27	7.5
650	31	3,798	4.6	-7.3	28	5.3	31	3,782	7.2	-12.5	27	1.7	31	3,766	6.6	-5.1	11	2.9	31	3,775	6.0	-12.4	08	2.3	31	3,780	4.3	-5.0	28	7.9
600	31	4,446	4.9	-11.4	28	5.5	31	4,435	2.8	-16.2	24	2.2	31	4,419	2.8	-5.3	11	2.7	31	4,426	2.3	-15.9	06	1.0	31	4,428	4.8	-10.2	27	8.9
550	31	5,140	-3.3	-14.8	28	6.0	31	5,133	-2.1	-21.0	22	2.7	31	5,119	-1.1	-10.6	10	3.1	31	5,124	-1.6	-16.8	11	5.1	31	5,123	-3.2	-15.5	28	9.0
500	31	5,888	-8.6	-18.4	28	7.0	31	6,028	-7.1	-25.2	20	3.7	31	6,074	-5.3	-14.6	6	3.1	31	6,058	-6.2	-21.9	23	6.8	31	6,058	-6.2	-21.9	23	

# RAWINSONDE DATA

Average monthly values

AUGUST 1979

KEY WEST, FL 1016 M#										KING SALMON, AK 1017 M#										POROR, CAROLINE IS. 1007 M#										KOTZEBUE, AK 1008 M#										LAKE CHARLES, LA 1016 M#																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					Direction tens of deg	Speed in m.p.s.					Direction tens of deg	Speed in m.p.s.					Direction tens of deg	Speed in m.p.s.					Direction tens of deg	Speed in m.p.s.					Direction tens of deg	Speed in m.p.s.	Direction tens of deg	Speed in m.p.s.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
5FC	31	3	27.6	24.0	11	2.7	31	30	27.9	24.4	21	1.7	25	5	11.9	10.0	13	2.6	31	5	23.3	22.6	07	-7	1000	31	141	27.2	23.7	11	3.6	6	19	27.1	24.4	23	2.0	21	8.4	12.3	8.5	16	2.6	31	141	25.2	23.2	14	6.5	950	31	594	23.5	21.6	11	4.8	31	542	20.7	17.6	23	5.0	31	542	20.7	17.6	23	5.0	31	594	23.5	21.6	11	4.8	900	31	1,066	20.6	17.0	12	4.6	31	1,015	20.9	17.2	25	4.0	25	945	7.1	4.2	18	5.4	31	1,066	20.6	17.0	12	4.6	850	31	1,559	17.9	12.1	11	3.8	31	1,508	18.0	13.7	27	4.8	25	1,413	4.0	2.18	5.7	31	1,559	17.9	12.1	11	3.8	800	31	2,077	15.4	6.5	11	3.5	31	2,027	15.5	10.6	27	4.4	25	1,904	1.3	-2.1	18	6.3	31	2,077	15.4	6.5	11	3.5	750	31	2,622	12.3	2.9	11	3.4	31	2,573	12.8	7.4	27	4.2	25	2,421	-1.7	-4.6	18	7.5	31	2,622	12.3	2.9	11	3.4	700	31	3,199	8.9	-1.1	11	2.8	31	3,150	9.7	7.26	26	4.0	25	2,968	-4.7	-8.8	15	8.7	31	3,199	8.9	-1.1	11	2.8	650	31	3,807	4.5	-4.6	12	2.5	31	3,763	3.3	-4.4	24	3.5	25	3,548	-7.9	-13.2	18	8.7	31	3,807	4.5	-4.6	12	2.5	600	31	4,457	1.5	-7.2	12	2.4	31	4,416	2.5	-3.3	25	2.5	25	4,167	-11.3	-18.3	18	9.0	31	4,457	1.5	-7.2	12	2.4	550	31	5,119	-2.5	-11.9	12	2.0	31	5,115	-1.3	-6.7	19	1.2	25	4,829	-15.2	-22.2	19	9.3	31	5,119	-2.5	-11.9	12	2.0	500	31	5,904	-7.0	-17.5	11	1.5	31	5,870	-5.3	-11.5	13	2.4	25	5,542	-20.2	-28.0	19	10.3	31	5,904	-7.0	-17.5	11	1.5	450	31	6,719	-11.9	-24.2	08	1.6	31	6,691	-10.0	-17.1	11	3.7	25	6,315	-25.3	-33.4	19	11.8	31	6,719	-11.9	-24.2	08	1.6	400	31	7,611	-17.2	-28.6	06	2.3	31	7,590	-15.8	-22.1	09	4.7	25	7,180	-31.5	-39.5	19	12.9	31	7,611	-17.2	-28.6	06	2.3	350	31	8,603	-24.5	-33.5	04	3.0	31	8,587	-22.2	-30.1	09	6.6	25	8,095	-38.3	-45.3	19	13.7	31	8,603	-24.5	-33.5	04	3.0	300	30	9,701	-33.0	-41.5	03	3.3	31	9,700	-30.5	-39.6	07	8.8	25	9,135	-45.7	51.9	15	15.1	31	9,701	-33.0	-41.5	03	3.3	250	29	10,956	-43.3	02	3.6	30	10,969	-40.4	-50.7	07	11.2	25	10,335	-49.9	20.0	14	17.0	30	10,956	-43.3	02	3.6	200	27	12,419	-55.2	02	5.2	30	12,450	-52.7	06	12.7	25	11,806	-66.8	22.0	10	24.7	30	12,419	-55.2	02	5.2	175	27	13,259	-61.3	01	4.6	30	13,299	-59.5	05	12.3	25	12,691	-74.0	22.0	8.9	29	31	13,259	-61.3	01	4.6	150	27	14,202	-66.6	02	5.8	30	14,246	-67.2	06	12.7	25	13,711	-87.5	22.0	7.0	29	31	14,202	-66.6	02	5.8	125	27	15,300	-68.6	05	5.4	30	15,327	-74.6	06	12.4	25	14,915	-88.2	22.0	5.4	29	31	15,300	-68.6	05	5.4	100	26	16,636	-69.4	07	7.2	29	16,614	-76.3	08	8.6	25	16,384	-88.6	23	3.8	29	31	16,636	-69.4	07	7.2	75	26	17,974	-66.9	08	9.0	29	17,919	-70.6	08	8.6	25	17,852	-88.4	22	2.1	29	31	17,974	-66.9	08	9.0	50	26	18,786	-64.4	08	11.5	29	18,718	-67.2	09	11.6	25	18,733	-88.2	22	1.3	29	31	18,786	-64.4	08	11.5	25	26	19,599	-61.7	11	9.8	29	19,653	-65.0	09	12.6	25	19,616	-88.3	17	0.9	29	31	19,599	-61.7	11	9.8	0	26	20,872	-57.7	09	16.6	29	20,777	-61.0	09	19.0	25	20,949	-88.5	15	1.2	28	31	20,872	-57.7	09	16.6	40	26	22,285	-55.4	09	19.5	29	22,167	-58.3	09	27.3	25	22,417	-88.4	10	1.4	28	31	22,285	-55.4	09	19.5	30	26	24,137	-51.3	09	20.6	29	23,996	-53.9	09	31.7	25	24,314	-87.8	07	1.8	24	31	24,137	-51.3	09	20.6	20	25	25,329	-49.1	09	21.3	28	25,175	-51.0	09	33.5	25	25,521	-86.4	09	2.5	24	31	25,329	-49.1	09	21.3	10	25	26,803	-46.8	09	20.5	24	26,631	-47.6	09	35.7	25	27,010	-84.1	08	2.5	22	31	26,803	-46.8	09	20.5	5	25	28,721	-41.6	08	23.1	23	28,531	-41.6	09	31.3	25	28,811	-80.7	08	2.7	20	31	28,721	-41.6	08	23.1	0	25	31,469	-41.6	08	23.1	10	31,278	-39.8	10	31.3	25	31,769	-37.2	11	31,471	-40.5	08	20.0



# RAWINSONDE DATA

Average monthly values

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MONETT, MO 957 MB										NASHVILLE, TN 997 MB										NOME, AK 1007 MB										NORTH PLATTE, NE 918 MB										DAKLAND, CA 1013 MB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Standard pressure surface mb.	No. of observations	Dynamic height meters			Temperature °C			Dew Point °C			Resultant Wind			No. of observations	Dynamic height meters			Temperature °C			Dew Point °C			Resultant Wind			No. of observations	Dynamic height meters			Temperature °C			Dew Point °C			Resultant Wind			No. of observations	Dynamic height meters			Temperature °C			Dew Point °C			Resultant Wind																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		Dynamic height meters	Temperature °C	Dew Point °C	Direction	Speed	Dynamic height meters	Temperature °C	Dew Point °C	Direction	Speed	Dynamic height meters	Temperature °C		Dew Point °C	Direction	Speed	Dynamic height meters	Temperature °C	Dew Point °C	Direction	Speed	Dynamic height meters	Temperature °C	Dew Point °C	Direction		Speed	Dynamic height meters	Temperature °C	Dew Point °C	Direction	Speed	Dynamic height meters	Temperature °C	Dew Point °C	Direction	Speed																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5FC	31	438	19.2	17.9	17	1.5	31	180	19.8	19.2	14	6	31	5	11.0	9.0	1.4	1.8	31	847	16.8	12.5	16	.5	30	6	14.7	12.6	26	1.2	1000	31	105	14.2	12.6	25	1.5	950	31	586	21.2	18.0	22	3.9	31	596	21.6	18.0	24	2.7	31	489	8.6	6.4	17	4.8	31	1,016	18.2	13.3	20	1.5	30	548	14.9	6.9	26	2.9	900	31	1,356	20.3	15.2	25	6.3	31	1,065	19.1	14.3	26	3.7	31	934	5.7	4.1	18	5.9	31	1,016	18.2	13.3	20	1.5	30	1,010	18.4	5.2	28	4.0	850	31	1,549	17.9	9.6	26	5.1	31	1,555	18.6	10.9	27	3.6	31	1,400	3.2	1.0	18	6.5	31	1,507	18.6	8.0	24	3.8	30	1,499	16.7	-3.6	27	3.3	800	31	2,056	15.1	4.7	27	4.0	31	2,070	14.2	5.4	26	6.9	31	1,891	-2.8	-2.8	19	7.1	31	2,026	16.4	4.2	25	5.2	30	2,011	14.0	-16.2	24	3.9	750	31	2,609	11.7	-3.27	3.2	31	2,612	11.2	1.2	2.6	4.1	31	2,408	-1.0	-6.8	19	7.8	31	2,572	13.4	1.7	25	5.7	30	2,552	11.2	-8.2	24	3.8	700	31	3,183	7.9	-3.8	2.6	31	3,185	8.0	-3.5	2.6	4.6	31	2,956	-3.6	-10.9	19	8.3	31	3,149	9.3	-1.1	25	5.2	30	3,124	7.8	-12.2	24	4.1	650	31	3,790	4.1	-7.7	2.5	2.8	31	3,793	4.5	-7.0	2.6	4.6	31	3,539	-6.6	-13.7	19	8.3	31	3,759	4.8	-4.9	26	5.2	30	3,731	4.5	-15.5	23	4.5	600	31	4,429	0.4	-12.7	2.5	3.5	31	4,441	.8	-11.3	2.7	4.7	31	4,161	-10.3	-17.6	19	8.6	31	4,407	4.8	-8.5	28	5.3	30	4,378	4.7	-19.0	24	5.4	550	31	5,129	-3.6	-19.9	2.5	4.1	31	5,136	-7.7	-15.5	2.6	5.4	31	4,826	-14.3	-22.7	19	8.9	31	5,099	-4.2	-13.8	28	5.8	30	5,071	-4.2	-22.9	24	7.2	500	31	5,876	-8.5	-25.2	2.5	4.4	31	5,888	-14.6	-21.6	2.6	6.7	31	5,542	-27.6	-35.9	19	10.0	31	5,884	-9.0	-20.7	28	6.5	30	5,814	-9.7	-27.7	24	8.8	450	31	6,684	-13.0	-30.1	2.7	5.0	31	6,696	-12.6	-25.7	2.6	6.2	31	6,317	-24.6	-32.3	19	10.8	31	6,652	-13.9	-27.8	28	7.8	30	6,619	-15.2	-31.6	24	10.1	400	31	7,574	-19.3	-35.1	2.8	6.1	31	7,586	-18.4	-31.6	2.7	7.0	31	7,165	-30.9	-39.1	20	12.0	31	7,536	-20.5	-34.3	28	8.9	30	7,498	-21.0	-37.8	24	11.7	350	31	8,557	-26.2	-40.5	2.7	6.9	31	8,572	-25.2	-38.4	2.7	7.9	31	8,101	-37.8	-42.3	20	12.9	31	8,513	-27.7	-39.9	28	9.8	30	8,469	-29.1	-44.2	24	13.1	300	31	9,651	-34.2	-47.1	2.8	8.6	31	9,670	-33.6	-46.4	2.8	8.5	31	9,146	-44.0	-42.4	21	12.9	31	9,599	-36.4	-47.1	27	11.6	30	9,549	-37.5	-49.1	24	15.6	250	31	10,902	-43.9	-52.8	2.8	9.4	31	10,923	-43.5	-51.5	2.8	9.6	31	10,359	-54.5	-47.5	22	13.1	31	10,838	-45.6	-52.7	27	12.1	30	10,783	-46.9	-53.1	23	17.7	200	31	12,367	-53.6	-58.4	2.8	9.4	31	12,388	-54.3	-57.9	2.8	9.6	31	11,637	-64.6	-54.5	22	11.5	31	12,297	-53.6	-58.4	27	14.1	30	12,236	-54.1	-59.7	23	19.7	150	31	13,218	-57.7	-62.1	2.8	8.0	31	13,235	-57.8	-62.2	2.8	8.8	30	12,725	-66.2	-60.2	23	9.5	31	13,149	-56.6	-62.0	28	14.2	30	13,089	-55.9	-62.0	23	18.6	100	31	14,180	-62.1	-65.4	2.8	7.8	30	14,192	-62.9	-65.0	2.8	7.3	30	13,747	-67.5	-64.5	23	8.1	31	14,120	-59.4	-64.2	28	11.7	30	14,065	-58.0	-64.2	23	15.0	50	31	15,320	-69.5	-72.9	2.9	6.4	30	15,306	-66.0	-72.0	2.8	5.3	30	14,948	-74.0	-69.0	25	6.9	31	15,252	-62.4	-68.4	28	9.0	30	15,207	-60.6	-68.4	23	10.6	0	31	16,657	-65.7	-71.7	3.1	3.0	30	16,656	-66.9	-71.9	3.0	2.5	30	16,411	-69.4	-70.4	23	5.1	30	16,624	-64.0	-70.0	28	6.0	30	16,592	-61.7	-71.0	21	5.0	85	31	18,017	-62.2	-70.7	3.1	4.6	31	18,014	-64.2	-70.9	3.0	4.1	31	17,875	-68.1	-70.4	22	2.8	30	17,996	-68.6	-70.6	25	2.9	30	17,908	-68.2	-70.6	15	6.8	70	31	18,843	-60.9	-69.9	3.1	3.9	30	18,841	-60.9	-69.9	3.0	2.4	30	18,751	-69.0	-70.0	22	2.4	30	18,829	-59.5	-69.5	31	1.4	29	18,812	-59.1	-71.1	11	2.7	60	31	19,808	-58.0	-68.0	3.1	4.5	30	19,805	-58.5	-68.5	3.0	4.5	30	19,763	-69.1	-70.1	20	1.5	30	19,798	-57.4	-67.4	03	1.2	28	19,783	-57.7	-70.0	3.8	3.8	50	30	20,964	-55.2	-65.8	3.1	5.9	30	20,959	-55.5	-65.5	3.0	4.3	30	20,960	-69.2	-70.2	18	1.2	30	20,959	-54.4	-67.4	07	2.2	28	20,940	-55.6	-70.0	10	3.9	40	30	22,397	-52.8	-63.2	3.1	7.4	30	22,389	-53.2	-63.2	3.0	6.1	30	22,242	-69.4	-70.4	12	1.3	30	22,396	-51.9	-67.9	09	3.4	28	22,368	-53.7	-70.0	09	6.5	30	29	24,285	-49.8	-60.9	3.1	9.5	30	24,256	-49.9	-60.9	3.0	8.1	30	24,210	-68.5	-70.5	09	2.3	28	24,270	-49.8	-67.9	08	5.2	28	24,230	-50.4	-70.0	08	8.7	20	31	25,461	-46.1	-58.1	3.1	11.6	31	25,437	-48.9	-58.9	3.0	10.1	31	25,395	-68.1	-70.1	08	1.2	28	25,423	-49.7	-67.9	07	4.9	28	25,382	-49.7	-70.0	06	6.2	10	31	26,944	-45.8	-56.8	3.1	9.9	31	26,935	-45.8	-56.8	3.0	12.2	31	27,006	-64.8	-70.8	09	1.2	26	26,952	-45.1	-67.9	08	7.4	27	26,894	-46.8	-70.0	09	10.2	5	31	28,868	-43.6	-54.6	3.1	13.3	31	28,860	-43.8	-54.8	3.0	14.6	31	28,937	-62.8	-70.8	09	1.4	26	28,888	-42.4	-67.9	08	8.1	23	28,810	-44.6	-70.0	09	11.4	1	31	31,606	-40.0	-51.0	3.1	16.3	31	31,632	-39.1	-51.0	3.0	16.0	31	31,662	-38.3	-47.0	08	1.5	15	31,646	-38.2	-47.0	08	10.5	14	31,527	-42.3	-70.0	09	14.5



# RAWINSONDE DATA

Average monthly values

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		SALF M., IL 996 MB					SALEM, OR 1009 MB					SALT LAKE CITY, UT 871 MB					SAN DIEGO, CA 998 MB					SAN JUAN, P. R. 1015 MB																			
Standard pressure surface mb.	No. of observations	Dynamometer meters	Temperature °C	Resultant Wind		Dynamometer meters	Temperature °C	Resultant Wind		Dynamometer meters	Temperature °C	Resultant Wind		Dynamometer meters	Temperature °C	Resultant Wind		Dynamometer meters	Temperature °C	Resultant Wind																					
				Direction tens of deg	Speed m.p.s.			Direction tens of deg	Speed m.p.s.			Direction tens of deg	Speed m.p.s.			Direction tens of deg	Speed m.p.s.			Direction tens of deg	Speed m.p.s.	Direction tens of deg	Speed m.p.s.																		
5FC 1000	31	174	19.2	18.3	17	3	51	15.1	12.1	31	1.288	18.1	9.0	16	3.1	30	124	18.4	16.8	30	3	31	6	25.3	23.4	11	2.1														
950	31	587	21.1	16.2	26	3	2	5.69	14.0	11.0	2	1.6	30	5.82	17.8	4	31	132	25.3	22.9	11	4	31	152	22.6	20.5	11	4.8													
900	31	1,254	18.6	13.2	26	4	2	1.025	12.8	7.8	36	.8	30	1,008	20.6	3.7	30	1.6	31	1,053	19.8	16.7	11	9.8	30	1,545	17.2	11.8	11	9.4											
850	31	1,543	16.4	6.6	27	4	5	1,504	10.9	3.8	24	1.0	31	1,494	21.2	5.6	16	4.6	30	1,502	20.8	-9.2	29	31	1,545	17.2	11.8	11	9.4												
800	31	2,058	14.0	2.7	27	5	0	2,008	8.9	-7.2	23	2.4	31	2,017	19.3	3.1	18	4.3	30	2,023	18.1	-3.2	26	2.7	31	2,061	14.6	6.5	11	9.0											
750	31	2,599	10.9	2.8	27	5	5	2,541	6.8	-4.5	22	3.6	31	2,569	15.6	-3.2	21	3.1	30	2,571	14.6	-5.1	24	2.6	31	2,605	12.3	0.0	11	8.4											
700	31	3,172	7.3	-2.0	27	5	8	3,104	3.7	-9.2	22	4.7	31	3,149	10.7	-8.0	22	3.0	30	3,150	10.7	-12.6	21	4.2	31	3,180	6.8	-4.0	12	8.1											
650	31	3,778	3.8	-7.3	27	6	5	3,702	-1	-12.4	21	6.5	31	3,762	8.8	-5.8	22	4.3	30	3,782	6.4	-12.6	21	4.2	31	3,785	12.8	-7.0	12	7.6											
600	31	4,424	0.1	-12.2	27	6	8	4,339	-3.7	-17.5	21	7.6	31	4,410	3	-6.0	23	5.9	30	4,413	2.4	-16.3	21	4.2	31	4,438	1.2	-12.1	11	6.0											
550	31	5,116	-3.9	-16.2	27	7	2	5,021	-7.9	-21.4	21	8.7	31	5,102	-4.8	-12.3	23	6.6	30	5,110	-2.4	-20.4	21	3.7	31	5,134	-1.9	-17.4	11	4.5											
500	31	5,862	-8.4	-21.7	27	8	0	5,755	-13.0	-28.0	22	9.7	31	5,845	-9.9	-20.1	24	7.7	30	5,859	-7.8	-24.1	21	4.1	31	5,886	-6.2	-21.6	11	3.4											
450	31	6,673	-13.5	-27.8	27	8	3	6,550	-18.3	-32.3	22	11.2	31	6,650	-14.7	-28.3	24	8.6	30	6,670	-13.2	-29.7	23	3.9	31	6,703	-11.2	-26.0	12	2.5											
400	31	7,559	-19.3	-33.2	27	9	2	7,419	-24.4	-37.3	23	13.1	31	7,533	-20.8	-34.5	24	9.7	30	7,556	-19.6	-35.9	23	4.8	31	7,594	-17.4	-31.7	13	1.2											
350	31	8,541	-26.5	-39.9	27	9	7	8,380	-31.8	-42.4	22	15.7	31	8,507	-28.3	-41.6	25	11.4	30	8,537	-26.9	-42.2	23	5.7	31	8,585	-24.6	-36.7	19	0.5											
300	31	9,633	-34.7	-47.1	27	10	4	9,448	-40.2	-49.6	22	18.2	31	9,591	-36.8	-48.2	25	12.2	29	9,625	-35.4	-48.4	23	9.0	31	9,685	-33.1	-44.2	23	2.0											
250	31	10,881	-44.1	-57.1	27	12	5	10,668	-48.8	-58.8	22	19.6	29	10,837	-45.8	-58.8	25	14.0	29	10,871	-44.7	-58.7	23	11.4	31	10,940	-43.5	-58.7	25	3.8											
200	31	12,343	-54.7	-67.1	28	13	3	12,124	-51.3	-67.2	23	18.4	29	12,292	-54.4	-67.2	25	18.7	29	12,334	-53.3	-67.2	23	14.8	31	12,403	-55.2	-67.2	27	6.0											
175	31	13,189	-58.9	-72.1	28	12	6	12,990	-52.0	-72.1	23	15.7	29	13,142	-57.2	-72.1	25	16.4	29	13,185	-57.7	-72.1	23	14.1	31	13,244	-61.2	-72.1	28	7.9											
150	31	14,150	-61.9	-76.1	28	11	8	13,984	-54.2	-76.1	23	12.9	29	14,112	-59.7	-76.1	25	13.5	29	14,168	-62.1	-76.1	23	13.4	31	14,189	-64.1	-76.1	28	5.4											
125	31	15,272	-64.2	-79.1	29	8	6	15,148	-56.2	-79.1	23	9.6	29	15,245	-62.2	-79.1	24	9.4	29	15,266	-65.3	-79.1	23	9.1	30	15,287	-66.1	-79.1	24	1.7											
100	31	16,631	-65.2	-82.1	28	4	5	16,562	-57.3	-82.1	23	5.9	29	16,620	-63.1	-82.1	25	4.4	29	16,618	-66.7	-82.1	18	3.0	30	16,608	-72.6	-82.1	11	4.0											
80	30	17,996	-62.3	-85.1	32	1	17	17,972	-57.6	-85.1	22	2.7	29	17,999	-61.1	-85.1	23	6.2	28	17,972	-69.6	-85.1	11	4.5	30	17,926	-69.6	-85.1	10	10.6											
70	30	18,626	-59.8	-88.1	31	1	18	18,616	-57.2	-88.1	21	1.0	29	18,632	-59.5	-88.1	09	4.2	27	18,792	-62.0	-88.1	10	6.4	30	18,729	-66.3	-88.1	10	14.1											
60	30	19,996	-57.5	-91.1	28	7	19	19,976	-54.9	-91.1	20	1.7	29	19,992	-57.2	-91.1	09	2.7	27	19,994	-60.3	-91.1	09	9.0	30	20,000	-60.3	-91.1	10	17.7											
50	29	20,955	-55.1	-94.1	08	4	8	20,960	-54.5	-94.1	09	1.7	27	20,957	-55.3	-94.1	09	2.9	27	20,894	-57.6	-94.1	09	9.0	30	20,796	-60.3	-94.1	10	17.7											
40	29	22,368	-52.7	-97.1	09	6	4	22,397	-52.0	-97.1	08	2.4	27	22,388	-52.9	-97.1	08	4.8	27	22,312	-54.9	-97.1	09	10.4	28	22,197	-56.9	-97.1	11	22.2											
30	28	24,263	-49.6	-100.1	09	8	2	24,272	-49.2	-100.1	08	3.9	26	24,259	-50.1	-100.1	08	6.4	26	24,163	-52.9	-100.1	09	13.7	28	24,034	-53.5	-100.1	11	24.1											
25	28	25,461	-47.8	-103.1	09	8	6	25,471	-47.8	-103.1	09	4.5	25	25,466	-48.4	-103.1	09	6.9	24	25,346	-50.4	-103.1	09	14.6	28	25,213	-51.6	-103.1	11	25.5											
20	26	26,946	-45.3	-106.1	09	9	7	26,953	-45.8	-106.1	09	5.2	24	26,929	-46.2	-106.1	09	8.2	22	26,806	-47.8	-106.1	09	14.5	27	26,670	-49.1	-106.1	11	26.6											
15	24	28,678	-42.9	-109.1	09	10	8	28,689	-43.1	-109.1	09	6.0	19	28,672	-43.6	-109.1	09	8.6	21	28,722	-45.4	-109.1	09	16.2	24	28,584	-46.7	-109.1	10	26.7											
10	21	31,646	-39.4	-112.1	09	15	9	31,647	-38.9	-112.1	09	8.0	19	31,596	-39.0	-112.1	09	10.7	12	31,444	-42.9	-112.1	09	21.2	18	31,307	-42.3	-112.1	10	30.4											
7	9																																								
* SAULT STE MARIE, MI 989 MB																						SPOKANE, WA 939 MB					TAMPA BAY, FL 1016 MB					TOPEKA, KS 984 MB					TRUK, CAROLINE IS. 1010 MB				
5FC 1000	31	221	12.9	12.0	35	2	31	720	15.3	6.9	16	1.6	31	13	23.1	22.3	10	1.2	31	268	20.4	18.2	20	1.5	31	2	28.0	24.4	29	3.0											
950	31	560	14.0	9.7	26	2	1	561	14.4	6.0	19	1.8	31	152	24.7	22.9	13	2.3	31	571	21.6	16.4	22	6.6	31	94	27.1	23.7	29	2.8											
900	31	1,016	12.6	7.2	27	4	6	1,001	18.4	6.0	19	1.8	31	603	23.3	19.1	16	2.9	31	1,041	20.8	13.6	23	7.6	31	1,020	20.9	17.5	28	4.3											
850	31	1,494	9.8	4.9	28	6	2	1,490	16.7	2.9	20	1.9	31	1,567	17.6	12.9	16	1.8	31	1,534	18.3	10.4	25	6.4	31	1,514	14.0	14.0	30	3.2											
800	31	2,058	7.3	2.9	28	7	2	2,005	13.1	9.0	20	2.7	31	2,005	14.5	9.6	16	1.7	31	2,051	15.0	7.5	26	6.0	31	2,033	15.9	11.7	30	3.4											
750	31	2,526	5.1	-4.8	29	8	9	2,520	9.6	-8.2	19	3.7	31	2,507	11.7	5.0	16	2.0	31	2,595	6.6	-4.8	26	5.4	31	2,580	13.3	0.0	35	1.0											
700	31	3,087	2.4	-9.8	28	9	3	3,109	4.9	-3.9	22	4.7	31	3,201	8.3	2.1	17	1.9	31	3,168	8.0	-4.2	27	4.9	31	3,158	10.1	4.8	30	1.5											
650	31	3,683	-3.3	-13.7	28	10	9	3,709	9	-9.4	23	5.8	31	3,611	4.6	-1.7	19	1.3	31	3,776	4.3	-8.3	26	5.0	31	3,772	6.9	6.2	15	1.5											
600	31	4,319	-3.																																						



# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

AUGUST 1979

Sun's zenith distance										Sun's zenith distance									
Date	A.M.				*	P.M.				Date	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MAUNA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass									
3.34   2.67   2.01   1.34   *   1.34   2.01   2.67   3.34										4.64   3.71   2.78   1.86   *   1.86   2.78   3.71   4.64									
1-----	1.18	1.27	1.35	1.47	1.60	----	----	----	----	1-----	.64	.76	.90	1.07	1.25	1.11	.94	.81	.71
2-----	1.14	1.22	1.31	1.42	1.51	----	----	----	----	2-----	.64	.74	.88	1.07	1.30	1.11	.94	.81	.70
3-----	1.16	1.24	1.32	1.42	1.55	----	----	----	----	3-----	.63	.74	.88	1.07	1.32	1.08	.91	.79	.69
4-----	1.17	1.26	1.33	1.43	1.58	1.45	1.35	1.26	1.19	4-----	.65	.76	.90	1.09	1.22	----	----	----	----
5-----	1.15	1.24	1.32	1.43	----	----	----	----	----	5-----	.67	----	----	----	1.34	----	----	----	----
6-----	1.11	1.20	1.30	1.41	----	----	----	----	----	6-----	.54	.68	.82	.98	1.25	1.02	.83	.76	.66
7-----	1.11	1.18	1.27	1.39	----	----	----	----	----	7-----	----	----	.73	1.02	----	----	----	----	----
8-----	1.13	1.19	1.29	1.41	1.55	----	----	----	----	8-----	.54	.68	.82	.98	1.25	1.02	.83	.76	.66
9-----	1.15	1.22	1.32	1.43	1.55	1.30	1.19	1.18	1.12	9-----	----	----	.75	----	1.23	.98	----	----	----
10-----	1.16	1.22	1.31	1.42	1.54	----	----	----	----	10-----	----	----	.90	----	----	----	----	.64	.55
11-----	1.16	1.23	1.31	1.42	1.55	1.40	1.30	1.21	1.14	11-----	----	----	----	1.00	----	----	----	----	----
12-----	1.17	1.24	1.32	1.45	1.55	----	----	----	----	12-----	----	----	.92	1.08	----	----	----	----	----
13-----	1.18	1.26	1.35	1.45	1.55	1.41	1.31	1.23	1.15	13-----	----	----	----	----	1.37	1.22	1.05	.92	.81
14-----	1.21	1.28	1.36	1.46	1.53	1.35	1.21	1.11	1.04	14-----	.76	.86	.97	1.14	1.34	----	----	----	----
15-----	1.18	1.24	1.32	1.42	1.55	1.41	1.31	1.23	1.15	15-----	.82	.92	1.04	1.18	1.34	----	----	----	----
16-----	1.18	1.24	1.32	1.42	1.57	1.41	1.30	1.20	1.12	16-----	.82	.92	1.04	1.20	1.39	1.17	.99	.86	.77
17-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	17-----	.81	.91	1.02	1.19	1.39	----	----	----	----
18-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	18-----	.81	.92	1.04	1.21	1.38	1.22	----	----	----
19-----	1.18	1.26	1.35	1.45	1.55	1.41	1.31	1.23	1.15	19-----	.81	.90	1.04	1.23	1.41	1.21	1.07	.97	.87
20-----	1.18	1.24	1.32	1.42	1.57	1.41	1.30	1.20	1.12	20-----	.91	1.00	1.12	1.26	1.42	1.28	1.16	1.06	.98
21-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	21-----	.95	1.03	1.13	1.27	1.46	1.30	1.15	1.05	.96
22-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	22-----	.94	1.03	1.14	1.24	1.45	1.27	1.12	1.00	.88
23-----	1.18	1.26	1.35	1.45	1.55	1.41	1.31	1.23	1.15	23-----	.92	1.00	1.12	1.28	1.48	1.24	1.11	.99	.90
24-----	1.18	1.24	1.32	1.42	1.57	1.41	1.30	1.20	1.12	24-----	.84	.95	1.07	1.23	1.42	1.22	1.06	.93	.81
25-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	25-----	----	.96	----	1.23	1.41	1.24	1.12	----	----
26-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	26-----	.86	.96	1.08	1.25	1.41	1.19	1.06	.97	.85
27-----	1.18	1.26	1.35	1.45	1.55	1.41	1.31	1.23	1.15	27-----	.86	.98	1.09	1.24	1.40	1.23	1.08	.96	.87
28-----	1.18	1.24	1.32	1.42	1.57	1.41	1.30	1.20	1.12	28-----	.70	.81	.96	1.14	1.34	1.22	1.05	.93	.79
29-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	29-----	.74	.85	.97	1.16	1.36	----	----	----	----
30-----	1.16	1.24	1.33	1.45	1.58	1.45	1.33	1.23	1.17	30-----	.79	.89	1.01	1.17	1.35	1.08	.90	.78	.69
31-----	1.18	1.26	1.35	1.45	1.55	1.41	1.31	1.23	1.15	31-----	.77	.86	1.01	1.19	1.36	1.14	1.00	.86	.76
Average	1.16	1.24	1.32	1.43	1.56	1.41	1.30	1.22	1.15	Averages	.78	.89	.98	1.16	1.36	1.17	1.03	.89	.79

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	174	153	181	185	185	166	155	162	148	94	75	148	259	182	99	134	130	158	163	108	175	148	136	133	134	132	124	136	119	124	136	147



REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times \text{°C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

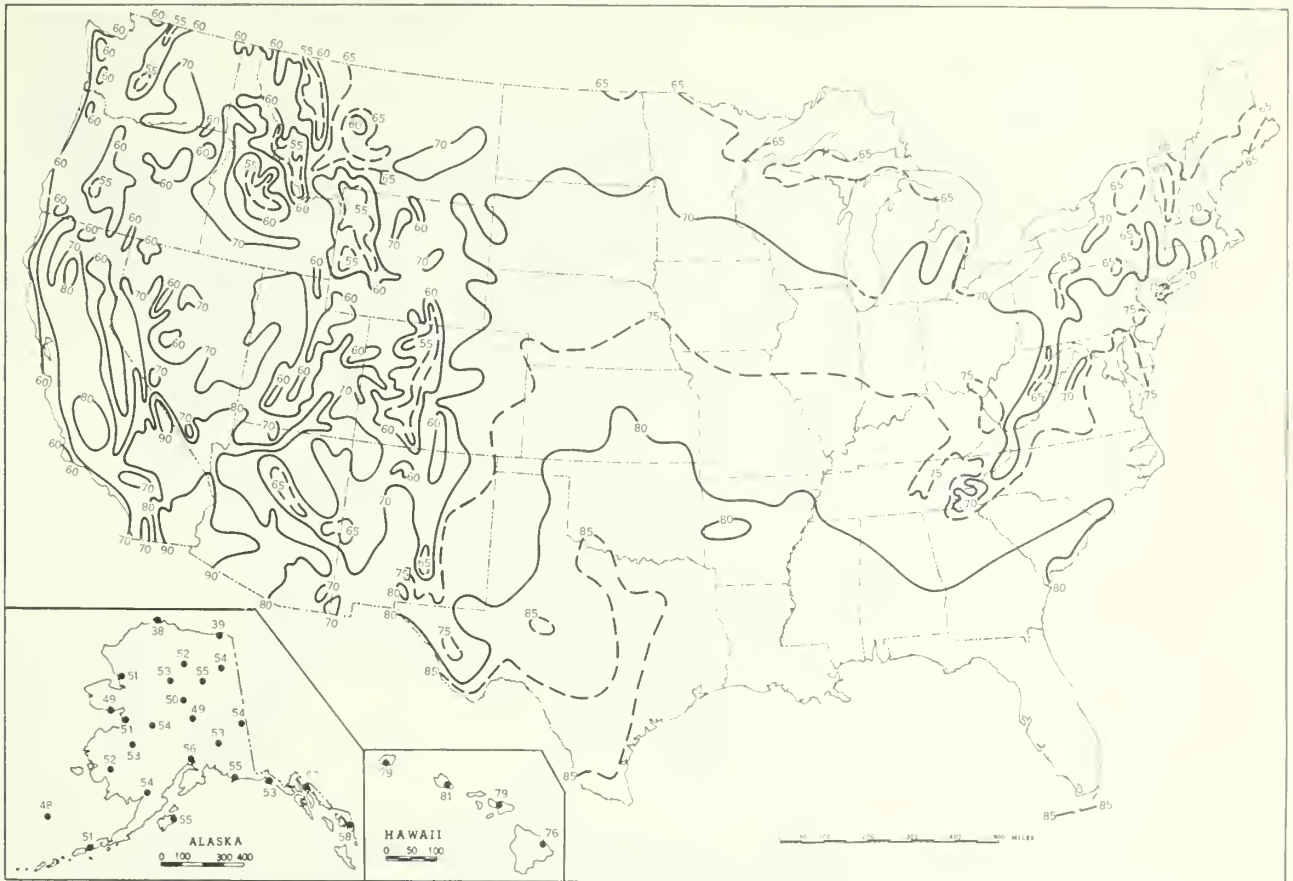
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable	N	Sand
BN	Blowing Sand	CF	Ground Fog	K	Smoke	S	Slight Haze-indeterminable
D	Dust	H	Haze	KI	Intense Smoke		
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), August.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), August 1979

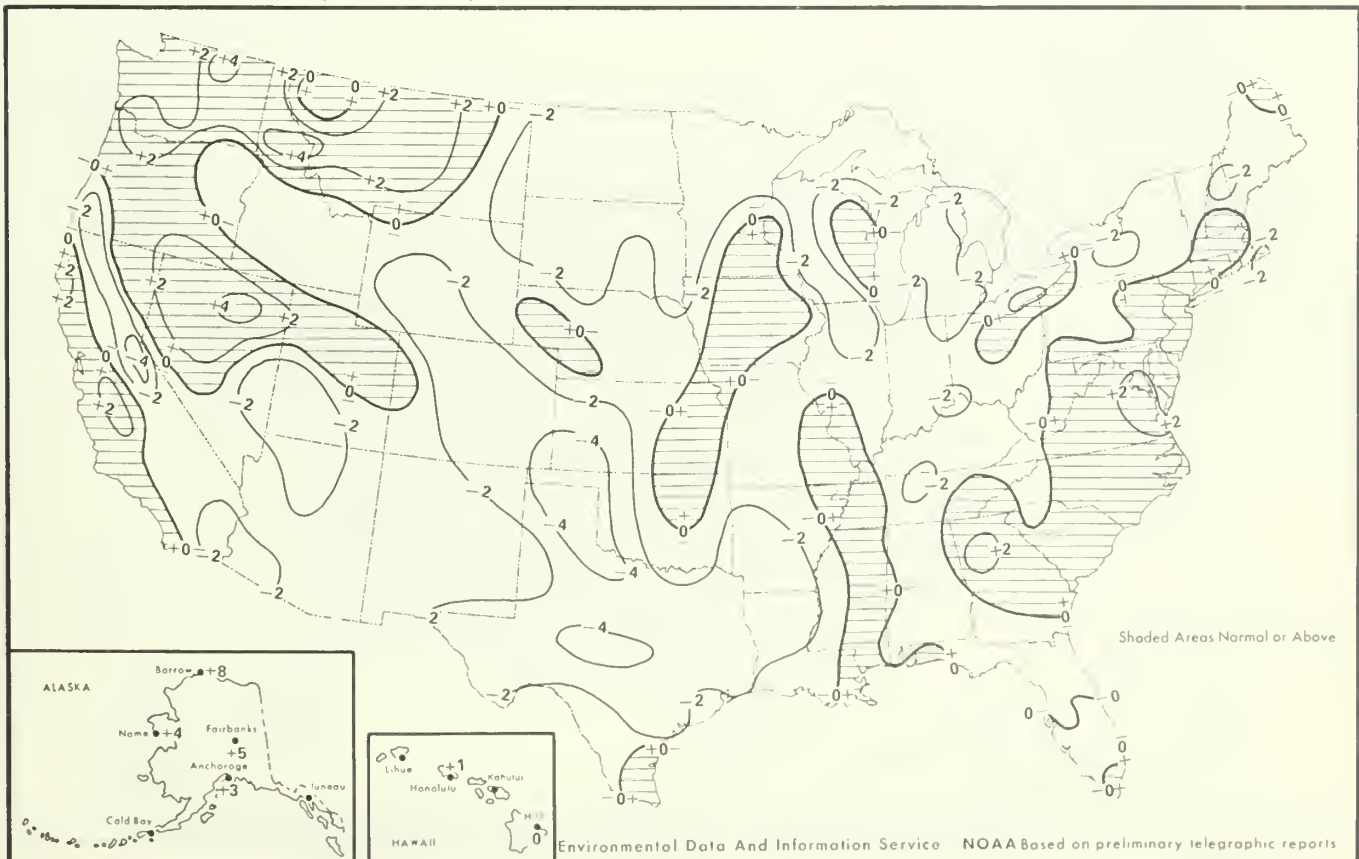
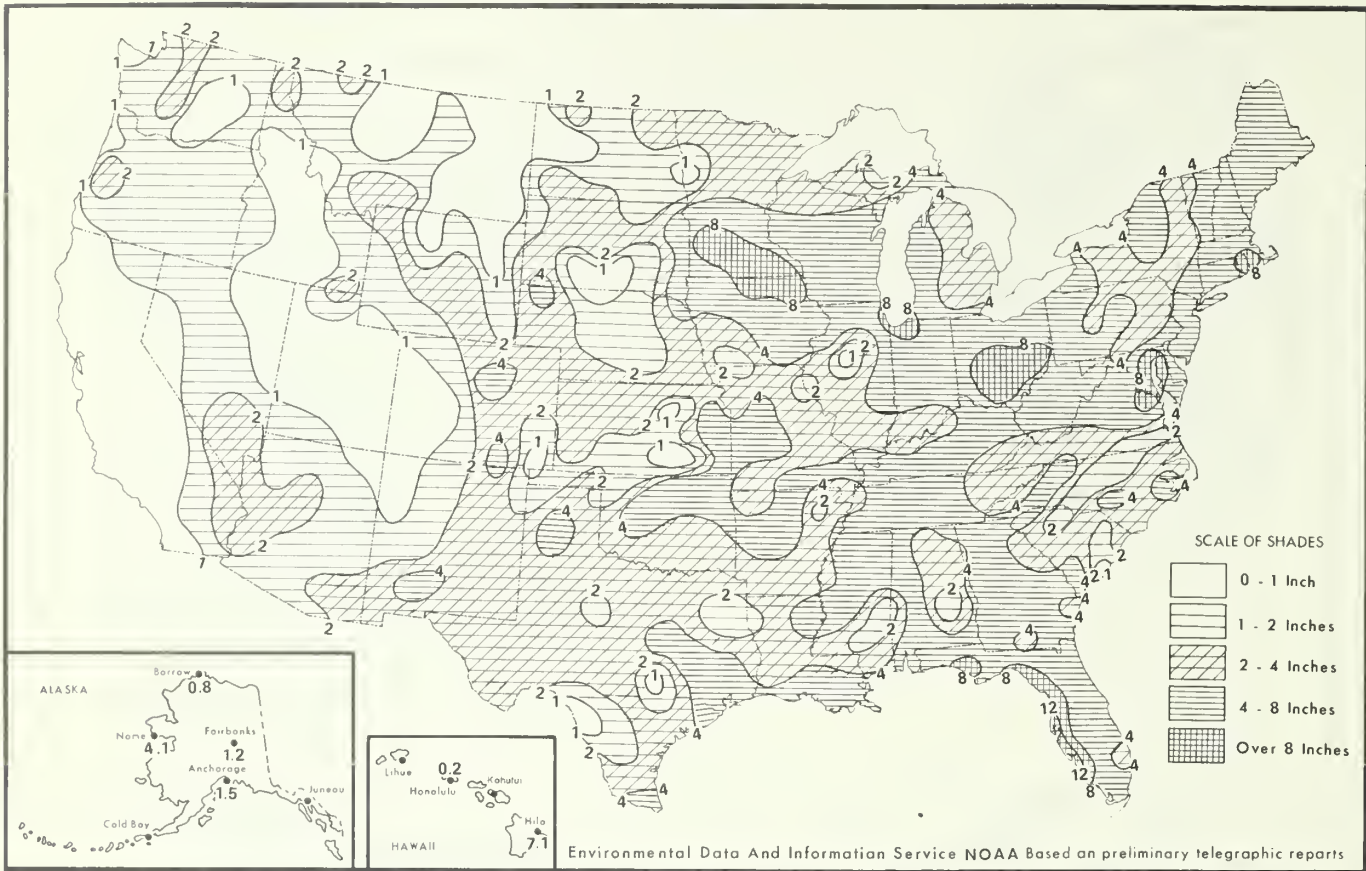


Chart II. A. Total Precipitation (Inches), August 1979



B. Percentage of Normal Precipitation, August 1979

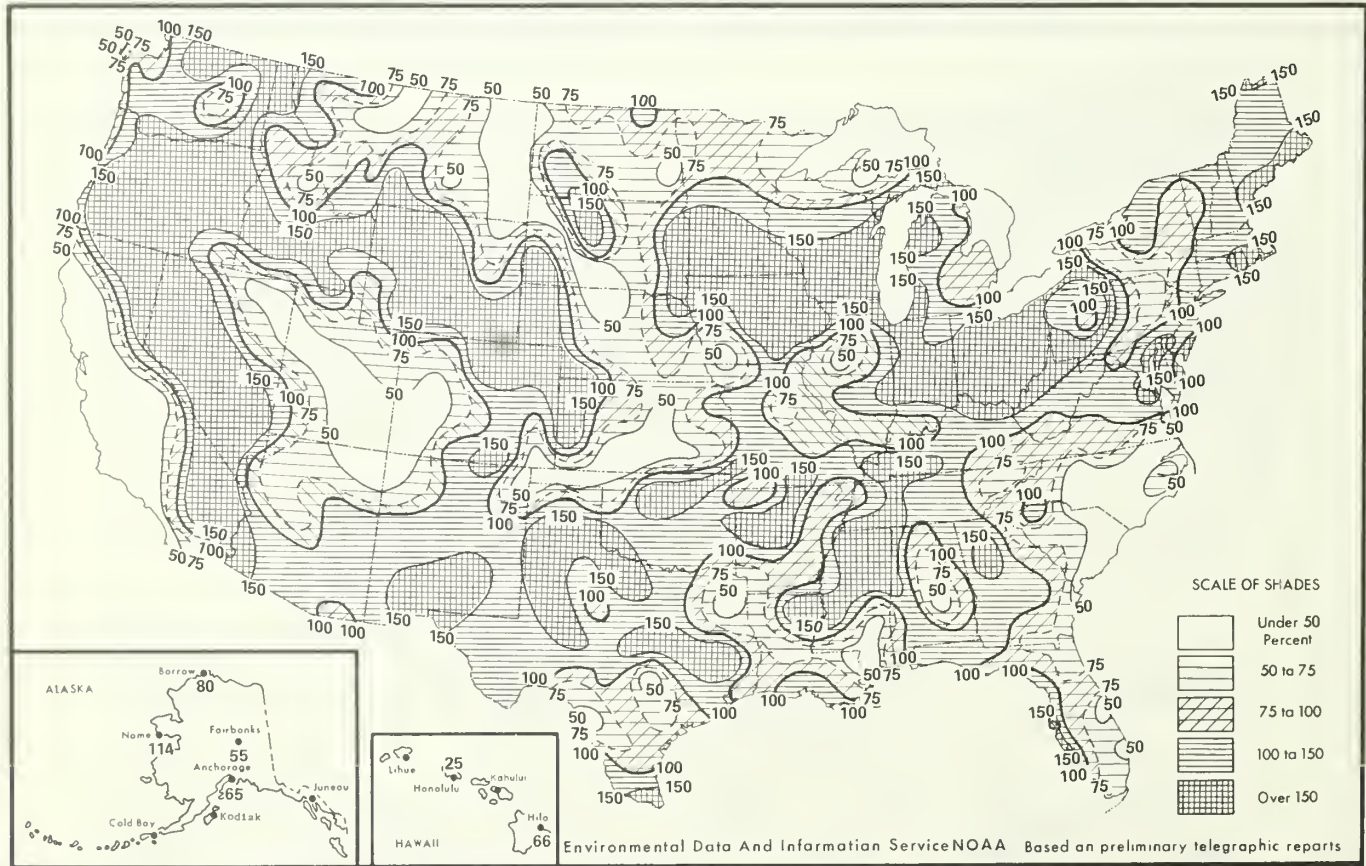
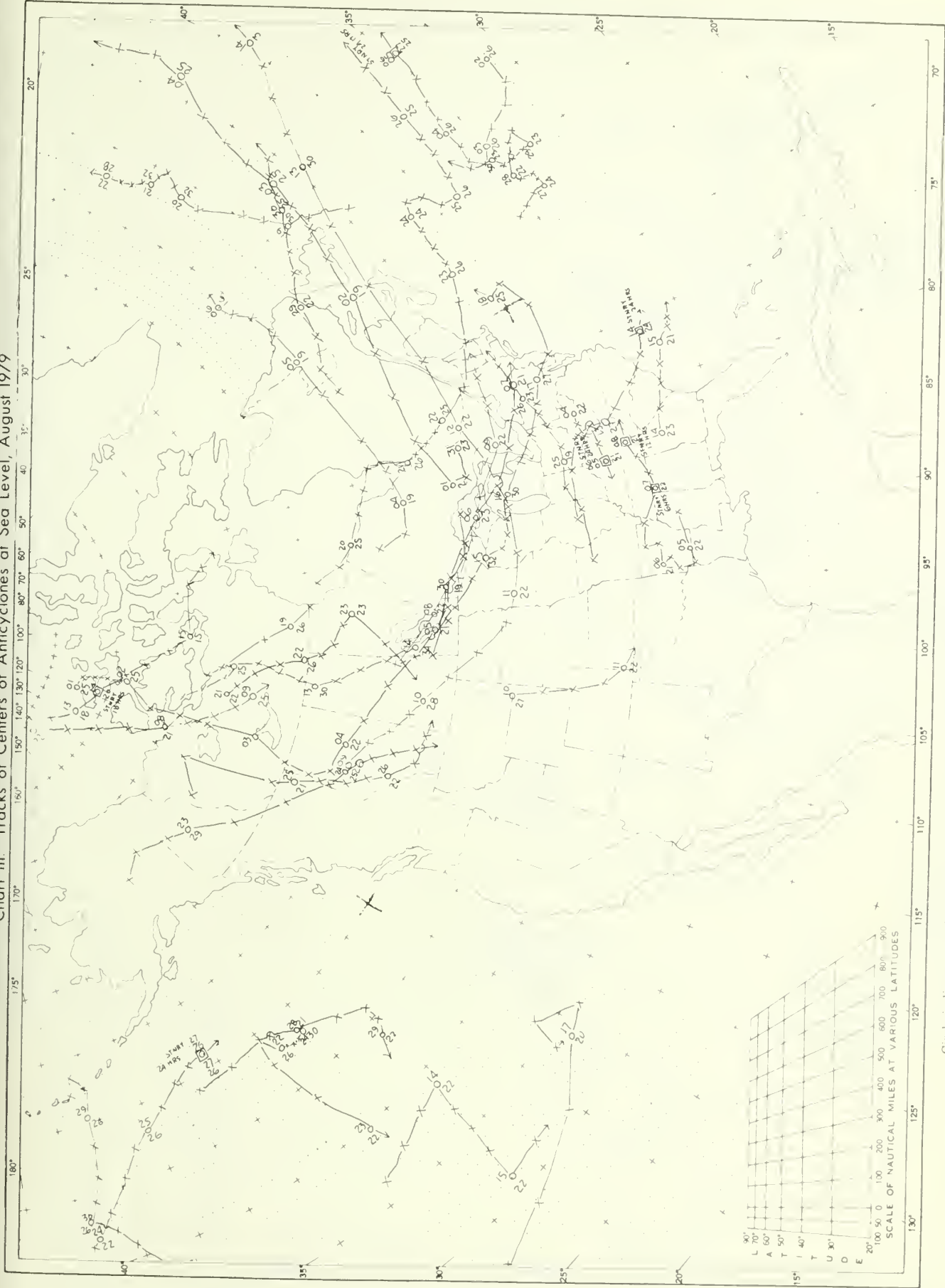


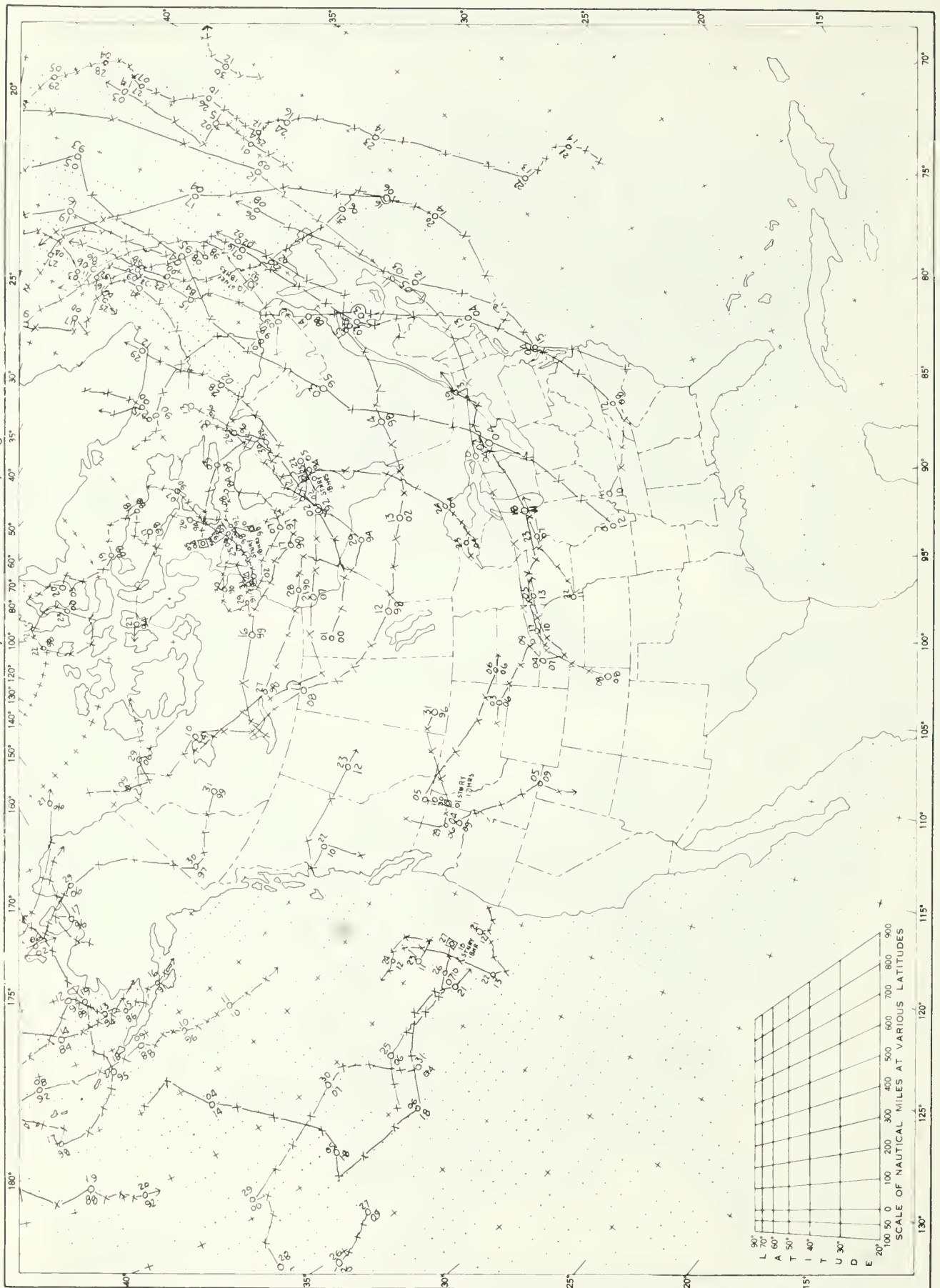


Chart III. Tracks of Anticyclones at Sea Level, August 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included

Chart IV. Tracks of Centers of Cyclones at Sea Level, August 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.





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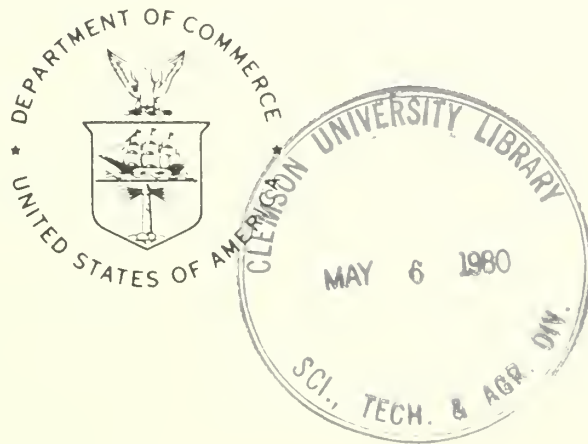
SEPTEMBER 1979

VOLUME 30

NUMBER 9

# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Samuel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

SEPTEMBER 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Wet, cloudy, and humid weather prevailed over the South and East, as two hurricanes and other storm systems moved across those regions during September. Rainfall totaled more than 12 inches along most of the Gulf Coast, Florida, and the southeastern Coastal Plain. Over 23 inches in 2 days drenched Freeport, TX, just southwest of Galveston. Record dryness occurred from Michigan to central Texas and over parts of the West. It was also unseasonably warm in the West, and a prolonged heat wave baked California during the first three weeks. Pleasant, sunny weather was the rule in the Rockies.

Hurricane David, after killing more than 1,000 people in the Dominican Republic on August 31 reached southern Florida three days later. It marched northward and triggered heavy rains, gusty winds, flash floods, and a few tornadoes from Florida to Connecticut. More than 10 inches of rain soaked the eastern Carolinas on the 5th.

Meanwhile, dry weather developed from Michigan to central Texas and over most of the West. Unseasonable warmth settled over the West, with several stations measuring 8 to 10° above normal.

Hurricane Frederic slammed into the central Gulf Coast near Mobile, AL, on the 13th. It brought heavy rains, up to 9 inches along the coast and 4 to 6

inches across its track through Tennessee into western New York.

Dry weather continued from Michigan to central Texas and in the Far West during the week of the 10th-16th.

A heat wave became concentrated over California, with temperatures averaging 9 to 11° above normal during the second week.

A low pressure storm system developed along the Texas coast on the 18th and triggered heavy rains over the southeastern third of the Nation. Torrential amounts fell along most of the Texas and Louisiana coasts. Freeport, TX, just southwest of Galveston, received more than 20 inches. Elsewhere, dry weather was the general rule.

The California heat wave abated during the third week, but it was still unseasonably warm over the West.

Heavy rains fell over the Southeast in association with a stationary front during the last week of September. Three to 6 inches soaked some sections from Florida into Tennessee and Virginia. Light showers heralded the beginning of the fall rain season over parts of the West.

# HURRICANE GLORIA

September 4 - 15, 1979

National Hurricane Center, NOAA  
Miami, Florida

Gloria began as a well organized African disturbance and became a tropical depression soon after moving off the African coast on 4 September. Instead of a westerly course, as is usual for early September, the eleventh tropical depression of the season turned northwest and passed just northeast of the Cape Verde islands by 5 September. This northwesterly course can be attributed to the influence of a pronounced trough in the westerlies over the east Central North Atlantic.

Based on satellite estimates of wind speeds, the depression was designated Gloria as it attained tropical storm strength on 6 September. It reached hurricane strength early on the following day. During this period Gloria was moving on a steady westnorthwest course around 15 kts.

Soon after becoming a hurricane, Gloria turned more

toward the northwest and slowed to 10 kts. On 10 September, rising pressure north of the storm effectively blocked Gloria and produced a slow westward drift for two days. Gloria temporarily lost hurricane strength on the 20th but regained it on 11 September as the storm recurved toward the northeast.

A rather rapid acceleration toward the northeast developed in the following 48 hours. Satellite classifications indicated Gloria reached maximum strength on 13 September with winds estimated 85 kts. The storm merged with a large low pressure system north of the Azores islands and lost tropical characteristics on 15 September.

Gloria was a threat only to marine interests but there have been no reports of damage sustained by shipping.

# HURRICANE GLORIA

September 4-15, 1979

<u>DATE</u>	<u>TIME (GMT)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>PRESSURE (MB)</u>	<u>WIND (KT)</u>	<u>STAGE</u>
4	1200	15.5	21.0	1005	25	Tropical depression
	1800	16.5	22.5			
5	0000	17.5	24.0	1002	30	
	0600	18.5	25.5			
	1200	19.0	27.0			
6	1800	19.8	28.8	1000	35	Tropical storm
	0000	20.5	30.3			
	0600	21.2	32.0			
7	1200	22.0	33.8	998	45	
	1800	22.5	35.5			
	0000	23.2	36.8			
8	0600	24.4	37.2	995	55	Hurricane
	1200	25.6	38.0			
	1800	26.4	38.7			
9	0000	27.0	39.2	988	70	
	0600	27.5	40.0			
	1200	28.0	40.3			
10	1800	28.6	41.0	992	65	
	0000	29.3	41.7			
	0600	29.9	42.5			
11	1200	30.4	43.2	988	70	
	1800	31.0	44.0			
	0000	31.5	45.0			
12	0600	31.2	45.8	994	60	Tropical storm
	1200	31.0	46.8			
	1800	31.1	47.0			
13	0000	31.3	47.4	995	55	
	0600	31.4	47.9			
	1200	31.6	48.1			
14	1800	31.8	48.4	992	65	Hurricane
	0000	32.2	48.6			
	0600	32.4	48.6			
15	1200	32.8	48.3	988	70	
	1800	33.2	47.8			
	0000	33.9	47.0			
16	0600	34.5	46.0	980	80	
	1200	35.0	45.0			
	1800	36.0	43.8			
17	0000	37.0	41.5	985	75	
	0600	38.5	39.5			
	1200	40.2	37.8			
18	1800	42.0	35.8	988	70	
	0000	43.4	34.0			
	0600	45.0	32.0			
				994	60	Extratropical



# HURRICANE HENRI

September 14 - 24, 1979

National Hurricane Center, NOAA  
Miami, Florida

Henri followed an unusual track in the Gulf of Mexico. At one time or another during its life it headed in each direction of the compass. It was also one of the few storms to reach hurricane strength in the Gulf of Mexico during the heart of the hurricane season and subsequently fail to make landfall.

Henri formed from an African wave which moved into the extreme northwest Caribbean Sea on 14 September. On that day a NOAA reconnaissance flight found that a closed low-level circulation had formed near Cozumel Island. However, during the morning of 15 September satellite pictures indicated that the circulation was centered north of the northeastern tip of the Yucatan Peninsula. This was confirmed by Air Force Reconnaissance data later in the day. It is uncertain whether the original center moved northward over northeast Yucatan during the previous night, or whether a new center formed in the broad envelope of low pressure as the original center dissipated.

During the following twenty-four hours the depression moved westward under the influence of a high pressure ridge to the north. The circulation became somewhat better organized and winds increased to tropical storm strength, due in part to the pressure gradient between the tropical system and the ridge to the north. The building ridge had the additional influence of causing the storm to turn toward the southwest into the Bay of Campeche. A brief period of rather rapid strengthening occurred between 0000 GMT and 1200 GMT, 17 September, as the central pressure fell from 995 to about 983 mbs, and Henri became the

fifth hurricane of 1979. Henri turned toward the northwest as the ridge over the northwest Gulf of Mexico weakened, but the movement became slow and erratic as the hurricane was embedded in a broad area of low pressure with an absence of any established steering current.

Henri maintained hurricane strength for only about twenty-four hours. One factor which may have contributed to its weakening was that some of the low-level inflow came from off the land mass of Mexico, thus restricting the storm's moisture supply. This was evidenced by the steady decrease in convection from 18 September until 20 September, during which time Henri weakened from a hurricane to a tropical depression.

On 20 September the depression turned toward the northeast and headed in that general direction for the next three days until it finally lost identity as it merged with a frontal trough in the northeast Gulf of Mexico on 24 September.

Henri attained its maximum strength during the morning of 17 September, when surface winds were estimated at 75 kts and the central pressure was about 983 mbs. Henri threatened the southwest coastline of the Bay of Campeche for a time but did not make landfall. The hurricane also hampered efforts to control a runaway oil well in the Bay of Campeche. However, no reports of casualties nor monetary losses attributable to Henri have been received.

# HURRICANE HENRI

September 14-24, 1979

Date/Time (GMT)	Latitude	Longitude	Min. Pres. (mbs)	Max. Winds (kts)	Category
15/00	20.3	86.8	1003	25	Trop Dep
06	21.5	86.9	1003	25	Trop Dep
12	22.5	87.4	1003	30	Trop Dep
18	22.5	88.5	1003	30	Trop Dep
16/00	22.5	89.7	1003	30	Trop Dep
06	22.5	91.0	1002	30	Trop Dep
12	22.1	92.2	1001	35	Trop Stm
18	21.3	93.1	999	45	Trop Stm
17/00	20.2	93.6	995	55	Trop Stm
06	20.2	94.0	990	65	Hurricane
12	20.4	94.3	983	75	Hurricane
18	20.8	94.6	984	70	Hurricane
18/00	20.9	95.0	992	65	Hurricane
06	21.0	95.4	997	60	Trop Stm
12	21.2	95.7	1000	50	Trop Stm
18	21.6	95.7	1000	40	Trop Stm
19/00	21.5	95.7	1000	40	Trop Stm
06	21.3	95.6	1001	40	Trop Stm
12	21.1	95.5	1003	35	Trop Stm
18	21.1	95.3	1005	30	Trop Dep
20/00	21.1	94.9	1005	30	Trop Dep
06	21.1	94.5	1005	30	Trop Dep
12	21.2	94.2	1006	30	Trop Dep
18	21.2	93.7	1006	30	Trop Dep
21/00	21.4	93.4	1006	30	Trop Dep
06	21.7	93.1	1007	30	Trop Dep
12	22.0	92.7	1008	30	Trop Dep
18	22.3	92.3	1009	30	Trop Dep
22/00	22.6	92.1	1010	25	Trop Dep
06	23.0	91.7	1011	20	Trop Dep
12	23.3	91.5	1011	20	Trop Dep
18	23.8	91.0	1011	20	Trop Dep
23/00	24.3	90.5	1011	20	Trop Dep
06	24.8	90.1	1011	20	Trop Dep
12	25.3	89.6	1011	20	Trop Dep
18	25.4	88.8	1011	20	Trop Dep
24/00	25.6	88.0	1011	20	Trop Dep
06	26.0	87.3	1011	20	Trop Dep
12	26.4	86.7	1011	20	Extratropical

# OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

SEPTEMBER 1979

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	Nartin Dam	96	2	Athens 2	45	23	Fayette	13.07	Georgianna	2.93
Alaska	2 Stations	75	9	Chandalar Lake	- 7	18	Little Port Walter	25.88	Tok	.07
Arizona	Gila Bend	118	7	Alpine	27	26	Walnut Creek	1.94	43 Stations	.00
Arkansas	2 Stations	96	7+	2 Stations	37	17+	Des Arc	7.68	Gravette	.30
California	Death Valley	118	9	Bodie	15	23	Gaquet Ranger Station	2.88	127 Stations	.00
Colorado	2 Stations	103	10+	2 Stations	13	15	Doherty Ranch	2.15	9 Stations	.00
Connecticut	New Haven	88	5	Coventry	25	20	Danbury	7.02	Hartford WSO AP	2.95
Delaware	Bridgeville 1 NW	89	4	2 Stations	39	20	Middletown 1 WSW	7.22	Lewes 1 SW	4.48
Florida	2 Stations	97	5	De Funak Springs	56	24	Jacksonville Beach	24.35	Key West WSO AP	2.84
Georgia	3 Stations	96	8+	Greenville 2 NNW	44	25	Doctortown 1 WSW	17.88	Hartwell	2.02
Hawaii	Puukohola Heiau 98.1	95	25+	Mauna Kea Dbs 111.2	23	1	Lanikai 68.2	17.13	8 Stations	.00
Idaho	Lucile	103	15	Stanley	16	11	Sandpoint KSPT	1.26	2 Stations	.00
Illinois	Minonk	94	13	2 Stations	32	23+	Brookport Dam 52	4.72	8 Stations	.00
Indiana	2 Stations	92	3+	Lagrange Sewage Plant	31	23	Vevay	10.36	7 Stations	.00
Iowa	Red Dak	94	5	Indianola 2 SSW	28	22	Milford 4 NW	5.26	Wapello	.00
Kansas	Webster Dam	104	6	3 Station	35	16+	Stilwell	5.19	14 Stations	.00
Kentucky	Gilbertsville KY Dsm	94	3	Maysville Sewage Plant	39	24	Bernheim Forest	14.72	Middlesboro	3.33
Louisiana	Logansport 4 ENE	97	1	Red Riv Valley Exp Station	47	16	Dskdale	18.22	Livingsboro	1.66
Maine	5 Stations	88	7+	2 Stations	23	27+	Van Buren 2	5.03	Harris Station	2.00
Maryland	Baltimore WSD C1	92	3	2 Stations	32	20	Catoctin Mountain Park	15.47	Cumberland 2	4.46
Massachusetts	Chester 2	90	3	Chester 2	19	20	Lanesboro	8.10	Edgartown	1.62
Michigan	2 Stations	89	5+	3 Stations	24	23+	Copper Harbor 3 WSW	6.21	11 Stations	.00
Minnesota	2 Stations	96	5+	Hibbing Pwr Substation	22	19	Sandy Lake Dam Libby	4.42	Greenwood 2 WNW	.00
Mississippi	2 Stations	96	8+	Batesville 2 SW	42	25+	Laurel	16.76	Lake Cormorant 1 W	2.70
Missouri	Wappapello Dam	95	7	Berryman 6 NW	30	15	Caruthersville	6.45	6 Stations	.00
Montana	3 Stations	101	9+	Wisdom	16	12	Ekalaka	2.35	8 Stations	.00
Nebraska	3 Stations	102	9	Agate 3 E	26	14	Ellsmere 9 ENE	4.84	Raymond	T
Nevada	Sunrise Near Las Vegas	112	8	Mountain City R S	19	12+	Goldfield	.74	25 Stations	.00
New Hampshire	2 Stations	87	4+	Mount Washington	15	20+	Mount Washington	6.62	Milan 7 NNW	1.97
New Jersey	4 Stations	90	4+	2 Stations	31	20	Greenwood Lake	9.59	Millville FAA AP	3.04
New Mexico	3 Stations	102	6+	Red River	25	16	Winston	3.38	6 Stations	.00
New York	New York Laurel Hill	93	4	2 Stations	22	20	Slide Mountain	12.42	Ellenburg Depot	2.47
North Carolina	2 Stations	94	6+	Banner Elk	38	11	Blowing Rock	20.73	Murphy 3 SE	2.79
North Dakota	Fullerton 1 ESE	99	5+	2 Stations	21	21	Uppham 3 N	3.87	Larimore	.06
Ohio	Ironton	90	5	Dorset	30	23	Higginsport	10.05	Stryker	.67
Oklahoma	Gate 1 NNE	103	24	Zoe 1 E	37	16	Okemah	6.05	5 Stations	.00
Oregon	Medford WSD AP	103	14	Seneca	23	12	Laurel Mountain	6.30	3 Stations	.00
Pennsylvania	Warren	93	2	Clermont 4 NW	24	20	Chadds Ford	11.96	Russell	1.74
Puerto Rico	Magueyes Island	98	1	Cerro Maravilla	53	2	Yabucos 1 NNE	23.63	Rincon Power Plant	4.67
Rhode Island	3 Stations	85	4	Kingston	30	20	Kingston	5.24	Block Island WSO AP	2.66
South Carolina	3 Stations	96	6+	2 Stations	48	24+	Lake City 1 SE	20.62	Anderson	3.31
South Dakota	Midland	108	9	Deerfield 4 NW	15	16+	Sioux Falls WSO AP	4.03	10 Stations	.00
Tennessee	Pulaski Water Plant	95	1	2 Stations	42	24+	North Springs	12.64	Rogersville 1 NE	2.46
Texas	8 Stations	104	30+	Mount Locke	40	15	Freeport 2 NW	31.61	34 Stations	.00
Utah	2 Stations	104	9+	2 Stations	22	16+	Allens Ranch	.36	41 Stations	.00
Vermont	Vernon	87	4	2 Stations	23	24+	Powal 1 NE	8.73	Gilman	2.27
Virginia	Colonial Beach	97	7	Burkes Garden	32	10	Woolwine 4 S	21.22	Pensington Gap	3.05
Virgin Islands	Truman Field FAA AP	92	27	Alex Hamilton Field FAA	63	5	Estate Rust-Op-Twist	29.00	Truman Field FAA AP	11.43
Washington	2 Stations	99	15	Glenwood 2	29	29+	Spruce	10.59	Wenatchee	.02
West Virginia	Ripley 4 NNE	92	4	Canaan Valley	29	20	Camden On Gauley	8.34	East Rainelle 3 NNE	2.51
Wisconsin	Wisconsin Dells	90	1	2 Stations	25	23+	Gurney	6.33	2 Stations	T
Wyoming	2 Stations	101	9+	Darwin Ranch	14	14	Carpenter 3 E	.88	12 Stations	.00











# CLIMATOLOGICAL DATA

METRIC UNITS

SEPTEMBER 1979

State and Station	Elevation (ground)		Pressure		Temperature										Precipitation					Wind				No. of days (sunrise to sunset)								
	m	ft	Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. $\geq 32^{\circ}\text{C}$ or above	Min. $0^{\circ}\text{C}$ or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No. of days With thunderstorms ≥ 25 mm. or more	Snow, ice pellets	Resultant speed	Resultant direction	Fastest mile (1.6 kilometers)		Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)	%		
																								Speed	Direction						Date	Direction
MISSISSIPPI	88	1007.4	1019.2		19.9	23.9	-0.1	34.4	5	13.9	16	5	0	18.9	79	207	123	119	11	2	0	2.0	2	20.1	2	13	9	12	5.8			
MISSOURI	270	985.8	1017.7		27.2	12.5	19.8	-0.3	31.7	3	6.1	22	0	12.8	68	11	-10.0	11	2	1	0	0.4	11	11.6	NE	1	21	3	6	2.8	87	
KANSAS CITY	297	987.7	1017.1		27.1	13.6	20.3	0.3	31.7	5	5.6	22	0	11.7	60	29	-7.7	19	2	2	0	1.2	14	14.8	N	6	23	5	2	2.1	86	
KANSAS CITY MUN AP	226	16	16		29.1	16.1	22.6	1.2	33.9	5	8.9	22	5	13.9	59	53	-5.0	19	2	2	0	0.8	13									
ST JOSEPH	247	997.6	1017.6		27.8	12.1	19.9	0.1	32.2	3	3.9	22	1	0	13.3	20	-7.7	15	3	0	0	0.3	7	9.4	N	13	22	3	5	2.9	79	
ST LOUIS	163	972.6	1017.3		28.1	15.1	21.6	0.7	32.8	3	8.3	23	4	0	13.3	62	-7.3	15	3	1	0	0.9	12	11.6	NE	1	20	5	5	3.0	83	
SPRINGFIELD	386	972.6	1017.3		28.1	12.7	20.4	-0.3	32.8	30	4.4	15	4	0	13.3	67	-5.2	47	4	3	0	0.9	12	11.6	NE	1	20	5	5	3.0	83	
MONTANA	1087	992.3	1014.5		27.3	10.6	19.0	4.1	37.2	8	3.9	14	4	0	2.8	37	4	-3.1	3	2	2	1.0	27	14.8	N	30	16	13	1	3.0	85	
BILLINGS	696	933.6	1014.8		25.4	8.5	16.9	2.9	33.9	16	2.2	13	3	0	5.0	50	15	-1.5	5	3	0	0.8	33	13.4	29	28	15	14	1	3.4	87	
GLASGOW	1116	889.9	1015.6		26.2	8.2	17.2	3.1	36.7	8	2.2	11	5	0	1.7	38	8	-2.1	5	4	1	0.8	23	23.2	SW	28	13	12	5	4.1	82	
GREAT FALLS	788	923.5	1015.6		26.7	7.4	17.1	3.1	36.1	8	1.7	24	2	0	1.7	42	17	-1.2	11	4	0	1.4	25	19.2	N	28	11	13	6	4.2	87	
HAVRE	1167	882.5	1016.2		25.9	6.6	16.3	3.2	32.8	8	1.7	14	2	0	1.7	42	3	-2.2	4	1	0	1.4	28	14.3	NW	11	16	13	1	3.1	84	
HELENA	904	913.7	1017.4		24.7	4.8	14.7	2.9	30.6	16	0.6	30	0	0	6.1	63	10	-1.9	5	5	4	0.4	21	10.3	24	16	14	13	3	3.7	87	
KALISPELL	801	922.5	1014.2		27.3	10.2	18.7	3.2	35.6	8	2.8	14	5	0	5.0	44	1	-2.9	5	1	1	0.8	34									
MILES CITY	972	905.9	1017.0		26.1	6.5	16.3	3.4	31.7	8	2.8	14	0	0	4.4	51	1	-2.6	1	2	2	1.3	30	13.9	NW	3	16	10	4	3.4	87	
MISSOULA	972	905.9	1017.0		26.1	6.5	16.3	3.4	31.7	8	2.8	14	0	0	4.4	51	1	-2.6	1	2	2	1.3	30	13.9	NW	3	16	10	4	3.4	87	
NEBRASKA	561	957.9	1016.4		27.7	11.8	19.8	1.8	33.9	5	5.6	21	5	0	11.1	62	6	-2	4	4	4	1.8	18	15.6	4	5	24	4	2	1.8	91	
GRAND ISLAND	359	974.3	1016.3		28.6	12.2	20.4	1.7	33.9	10	4.4	22	7	0	12.8	66	10	-7.2	9	4	4	0	1.9	18	12.1	5	9	26	3	1	5.5	91
LINCOLN	471	961.1	1016.2		27.0	12.1	19.6	2.2	34.4	5	4.4	21	4	0	11.1	63	46	-1.5	23	3	1	0.9	13	21.5	SW	8	25	3	2	1.8	89	
NORFOLK	846	919.4	1015.9		29.5	9.5	19.5	2.7	38.9	9	2.8	21	8	0	8.3	52	11	-4.0	6	5	3	0	1.3	15	15.2	N	10	21	5	4	2.6	89
NORTH PLATTE	298	926.3	1015.9		26.3	12.2	19.3	0.2	33.3	5	3.9	22	3	0	8.3	52	8	-4.0	6	5	3	0	1.3	15	15.2	N	10	21	5	4	2.6	89
OMAHA (EPPLEY)	399	881.8	1015.6		26.3	13.6	19.9	1.9	33.3	5	6.1	21	2	0	7.2	52	59	-2.2	4	1	1	0.7	12	11	5	25	4	1	1.7	88		
OMAHA (NORTH)	1206	924.5	1015.6		28.9	9.9	19.4	3.2	37.8	9	3.9	15	7	0	7.2	52	19	-1.0	11	4	5	0.7	7	16.5	31	10	21	5	4	2.8	88	
SCOTTSBLUFF	739	924.5	1015.6		29.0	9.3	19.2	2.8	38.9	9	0.6	21	11	0	4.4	51	36	-2	15	5	0	1.3	22	17.9	S	7	22	3	5	2.5	88	
VALENTINE	739	924.5	1015.6		29.0	9.3	19.2	2.8	38.9	9	0.6	21	11	0	4.4	51	36	-2	15	5	0	1.3	22	17.9	S	7	22	3	5	2.5	88	
NEVADA	1539	846.3	1014.5		31.1	6.8	18.9	4.7	36.7	7	3.3	27	13	0	11.1	62	6	-2	6	1	1	0.3	29	11.2	19	25	28	1	1	0.9	91	
ELKO	1906	811.4	1013.4		27.8	4.6	16.2	2.4	32.2	6	-1.7	15	1	3	-4.4	27	2	-14	2	2	2	0	2.8	21	12.2	SW	25	5	0	1.6	91	
ELY	659	935.7	1012.2		38.3	20.9	29.6	2.9	43.3	8	18.3	28	30	0	2.2	19	7	-7	7	0	0	1.3	23	11.2	SW	25	22	6	2	1.9	91	
LAS VEGAS	1342	866.6	1014.1		30.4	5.3	17.9	2.2	35.0	7	1.1	22	10	0	1.7	38	148	58	53	9	2	0.4	27	10.3	SE	24	28	2	0	0.9	99	
RENO	1311	869.6	1014.7		30.3	4.3	17.3	2.2	35.6	7	0.0	28	9	1	-1.1	33	135	57	40	8	0	0.0	0	0	0.0	0	0	0	0	0.5	95	
WINNEVECCA	1311	869.6	1014.7		30.3	4.3	17.3	2.2	35.6	7	0.0	28	9	1	-1.1	33	135	57	40	8	0	0.0	0	0	0.0	0	0	0	0	0.5	95	
NEW HAMPSHIRE	104	1005.4	1018.1		23.0	7.8	15.4	0.2	30.6	3	-2.2	20	0	2	9.4	71	80	2	3	4	1	0	0.8	25	11.2	W	26	11	7	12	5.4	70
CONCORD	1909	883	1018.1		8.3	1.6	4.9	-0.2	15.6	2	-9.4	20	0	12	9.4	71	168	7	75	13	1	0	0.8	25	11.2	SE	6	4	7	19	7.4	49
PT. WASHINGTON OBS	1909	883	1018.1		8.3	1.6	4.9	-0.2	15.6	2	-9.4	20	0	12	9.4	71	168	7	75	13	1	0	0.8	25	11.2	SE	6	4	7	19	7.4	49
NEW JERSEY	20	1015.2	1017.8		23.6	13.4	18.7	-0.8	29.4	4	1.1	20	0	0	13.3	71	84	8	38	8	0	0.4	15	15.6	16	6	10	7	13	6.1	67	
ATLANTIC CITY	3	22.5	1018.3		22.5	16.9	19.7	-0.4	28.3	6	8.9	20	0	0	13.9	68	93	27	47	7	0	0.3	33	17.0	SE	6	11	4	15	5.9	67	
ATLANTIC CITY U	3	22.5	1018.3		22.5	16.9	19.7	-0.4	28.3	6	8.9	20	0	0	13.9	68	93	27	47	7	0	0.3	33	17.0	SE	6	11	4	15	5.9	67	
NEWARK	17	1017.3	1018.3		24.0	15.3	20.6	0.7	31.1	6	6.7	20	0	0	13.9	68	138	57	40	8	0	0.0	0	0	0.0	0	0	0	0	0	0	0
TRENTON U	17	1017.3	1018.3		24.0	15.3	20.6	0.7	31.1	6	6.7	20	0	0	13.9	68	138	57	40	8	0	0.0	0	0	0.0	0	0	0	0	0	0	0
NEW MEXICO	1619	847.8	1013.7		30.7	14.1	22.4	1.2	37.8	5	8.3	16	15	0	5.6	39	10	-9	5	4	3	0	1.3	12	19.2	E	14	18	6	6	3.4	78
ALBUQUERQUE	1515	847.8	1013.7		30.7	14.1	22.4	1.2	37.8	5	8.3	16	15	0	5.6	39	10	-9	5	4	3	0	1.3	12	19.2	E	14	18	6	6	3.4	78
CLAYTON	1112	892.0	1013.9		29.8	11.3	19.9	0.6	32.8	5	4.4	15	3	0	9.4	49	33	-12	22	6	2	0	0.9	15	8.0	E	3	17	7	6	3.8	70
ROSWELL	1112	892.0	1013.9		29.8	11.3	19.9	0.6	32.8	5</																						











# COOLING DEGREE DAYS

(Base 65°F.)

SEPTEMBER 1979

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season					
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month	This month	Period January through this month	Normals January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA						
BIRMINGHAM U	222	1671	2095	HILO	351	2345	2296	GRAND ISLAND	132	976	1025	CHARLESTON	354	2059	1960			
BIRMINGHAM	198	1636	1844	HONOLULU	489	3261	3175	LINCOLN	160	1094	1133	CHARLESTON U	355	1977	2182			
HUNTSVILLE	189	1400	1736	KAHULUI	485	3028	2806	NORFOLK	128	946	915	COLUMBIA	276	1621	1995			
MOBILE	361	2275	2391	LIHUE	474	2972	2799	NORTH PLATTE	123	862	802	GRNVILLE-SPRTRNBGR	180	1275	1530			
MONTGOMERY	337	1945	2114					OHAMA (EPFLEY)	122	1132	1154							
				IOAHO				OHAMA (NORTH)	142	1000	935							
ALASKA				BOISE	101	749	708	SCOTTSDBLUFF	121	852	666	SOUTH DAKOTA						
ANCHORAGE	0	4	0	LEWISTON	140	961	657	VALENTINE	129	777	731	ABERDEEN	75	502	566			
ANNETTE	0	9	14	POCATELLO	63	479	437					HURON	96	703	711			
BARROW	0	0	0					NEVADA				RAPID CITY	110	548	652			
BARTER ISLAND	0	0	0	ILLINOIS				ELKO	70	690	342	SIOUX FALLS	87	724	713			
BETHEL	0	0	0	CAIRO U	221	1696	1751	ELY	14	208	207	TENNESSEE						
BETTES	0	12	17	CHICAGO O HARE	95	780	652	LAS VEGAS	614	3158	2801	BRISTOL	85	711	1078			
BIG DELTA	0	28	34	CHICAGO MIDWAY	92	787	906	RENO	38	401	329	CHATTANOOGA	227	1408	1584			
COLO BAY	0	0	0	HOLINE	79	885	877	WINNEHUCCA	26	590	407	KNOXVILLE	224	1326	1521			
FAIRBANKS	0	23	52	PEORIA	95	880	951					MEMPHIS	259	1976	1949			
GULKANA	0	0	0	ROCKFORD	69	663	703	NEW HAMPSHIRE				NASHVILLE	175	1332	1641			
HOMER	0	0	0	SPRINGFIELD	138	1160	1095	CONCORD	46	513	349	OAK RIDGE	151	1033	1333			
JUNEAU	0	1	0					MT WASHINGTON OBS	0	0	0							
KING SALMON	0	0	0	INDIANA								TEXAS						
KODIAK	0	8	0	EVANSVILLE	138	1203	1339	NEW JERSEY				ABILENE	390	2248	2334			
KOTZEBUE	0	1	0	FORT WAYNE	78	661	739	ATLANTIC CITY	103	835	864	AMARILLO	177	1127	1397			
MC GRATH	0	2	14	INDIANAPOLIS	92	858	961	ATLANTIC CITY U	111	705	825	AUSTIN	385	2309	2678			
NOME	0	0	0	SOUTH BEND	93	780	687	NEWARK	158	1119	1013	BROWNSVILLE	388	3157	3332			
ST. PAUL ISLAND	0	0	0					TRENTON U	119	946	958	CORPUS CHRISTI	421	3051	3076			
TALKEETNA	0	1	6	IOWA								DALLAS FT WORTH	366	2275	2435			
UNALASKA	0	0	0	BURLINGTON	101	912	974	NEW MEXICO				DEL RIO	483	2840	3115			
VALDEZ	0	4	0	DES MOINES	118	969	910	ALBUQUERQUE	249	1463	1309	EL PASO	308	2058	2037			
YAKUTAT	0	0	0	DUBUQUE	66	592	596	CLAYTON	117	725	759	GALVESTON	339	2339	2664			
				STOUC CITY	95	865	923	ROSWELL	251	1600	1533	HOUSTON INTERCON	324	2334	2633			
				WATERLOO	106	761	665					LUBBOCK	264	1780	1609			
ARIZONA				KANSAS				NEW YORK				HIGHLAND	314	1942	2140			
FLAGSTAFF	4	85	140	CONCORDIA	201	1253	1275	ALBANY	55	619	574	PORT ARTHUR	352	2349	2563			
PHOENIX	764	3782	3242	DODGE CITY	206	1276	1384	BINGHAMTON	22	357	369	SAN ANGELO	309	2128	2548			
TUCSON	580	2764	2601	GOODLAND	139	928	916	BUFFALO	49	550	437	SAN ANTONIO	418	2621	2765			
WINSLOW	187	1172	1189	TOPEKA	144	1248	1331	NEW YORK U	192	1170	1054	VICTORIA	362	2530	2835			
YUMA	809	3941	3783	WICHITA	249	1596	1629	NEW YORK KENNEDY	115	817	853	WACO	320	2079	2669			
								NEW YORK LA GUARDIA	131	1027	1038	WICHITA FALLS	324	2224	2482			
ARKANSAS				KENTUCKY				ROCHESTER	49	579	551							
FORT SMITH	207	1557	1943	COVINGTON	102	823	1063	SYRACUSE	46	573	551	UTAH						
LITTLE ROCK	240	1830	1862	LEXINGTON	102	947	1174					HILFORD	54	588	688			
NO. LITTLE ROCK	194	1603	1876	LOUISVILLE	154	1197	1241	NORTH CAROLINA				SALT LAKE CITY	208	1253	916			
								ASHEVILLE	96	788	857							
CALIFORNIA				LOUISIANA				CAPE HATTERAS R	313	1463	1461	VERMONT						
BAKERSFIELD	513	2524	2059	BATON ROUGE	338	2215	2400	CHARLOTTE	183	1333	1546	BURLINGTON	27	518	396			
BISHOP	172	1037	1022	LAKE CHARLES	336	2243	2508	GREENSBORO	157	1148	1312							
BLUE CANYON	80	15	0	NEW ORLEANS	435	2648	2474	WILMINGTON	205	1219	1357	VIRGINIA						
EUREKA U	15	15	0	SHREVEPORT	284	1982	2376					LYNCHBURG	121	967	1083			
FRESNO	442	2118	1605					BISHARCK	28	365	487	NORFOLK	239	1357	1403			
LONG BEACH	302	1116	655	MAINE				FARGO	58	504	473	RICHMOND	195	1324	1326			
LOS ANGELES	271	753	509	CARIBOU	16	284	128	VILLISTON	33	415	422	ROANOK	97	809	1018			
LOS ANGELES U	379	1167	1001	PORTLAND	19	313	252					WALLOPS ISLAND	229	1149	1081			
MT SHASTA R	27	230	286					NORTH DAKOTA										
OAKLAND	114	224	114	MARYLAND				BISMARCK	28	365	487	WASHINGTON						
RED BLUFF	444	2076	1822	BALTIMORE	145	1108	1094	FARGO	58	504	473	OLYMPIA	2	93	101			
SACRAMENTO	295	1222	1111					VILLISTON	33	415	422	QUILLAYUTE	3	15	8			
SAN DIEGO	348	1078	631	OHIO								SEATTLE	20	139	183			
SAN FRANCISCO	88	164	95	AKRON	68	554	628	CINCINNATI	122	907	1166	SEATTLE-TACOMA	21	171	129			
SAN FRANCISCO U	72	109	23	CLEVELAND	93	694	606	COLUMBUS	93	786	801	SPOKANE	39	496	388			
SANTA MARIA	51	101	67	COLUMBUS	87	836	923	DAYTON	60	514	808	STAMPEDE PASS R	0	33	16			
STOCKTON	390	1689	1217	DAYTON	67	580	678	HANSFIELD	67	580	678	WALLA WALLA U	135	1021	856			
				WORCESTER	38	473	387	TOLEDO	61	487	518	YAKIMA	37	569	479			
COLORADO								YOUNGSTOWN	61	487	518							
ALAMOSA	0	34	88	MICHIGAN								WEST INDIES						
COLORADO SPRINGS	77	471	455	ALPENA	41	265	208	OKLAHOMA				SAN JUAN P.R.	511	4399	3721			
DENVER	102	654	620	DETROIT	69	586	733	OKLAHOMA CITY	252	1682	1808							
GRAND JUNCTION	215	1236	1129	DETROIT METRO	57	506	646	TULSA	298	2014	1871	WEST VIRGINIA						
PUEBLO	124	903	971	FLINT	57	492	432					BECKLEY	39	398	484			
				GRAND RAPIDS	69	595	569	OREGON				CHARLESTON	105	877	1036			
CONNECTICUT				HOUGHTON LAKE	31	264	250	ASTORIA	11	26	13	ELKINS	33	392	389			
BRIDGEPORT	85	727	729	LANSING	63	561	529	BURNS U	27	361	289	HUNTINGTON	113	979	1078			
HARTFORD	56	805	584	HUSKEGON	36	372	463	EUGENE	15	182	239	PARKERSBURG U	96	822	1025			
				SAULT STE MARIE	15	145	139	HEDFORD	108	628	562							
DELAWARE								PENDELTON	65	647	656	WISCONSIN						
WILMINGTON	138	974	980	MINNESOTA				PORTLAND	65	455	300	GREEN BAY	23	379	386			
				DULUTH	15	169	176	SALEM	20	218	232	LA CROSSE	60	581	683			
DIST. OF COLUMBIA				INTERNATIONAL FALLS	8	131	176	SEXTON SUMMIT R	63	202	137	MADISON	33	437	454			
WASHINGTON DULLES	112	949	931	MINNEAPOLIS	65	651	578					MILWAUKEE	68	527	444			
WASHINGTON NATIONAL	208	1438	1386	ROCHESTER	57	610	467	PACIFIC AREA										
				ST CLOUD	31	324	426	GUAM TAGUAC R	425	3853	3735	WYOMING						
FLORIDA								JOHNSTON	532	3867	3782	CASPER	37	415	458			
APPALACHICOLA U	406	2234	2406	MISSISSIPPI				KOROR	520	4572	4472	CHRYENNE	49	352	327			
DAYTONA BEACH	462	2575	2512	JACKSON	269	1865	2190	KAWAJALEIN	547	4733	4609	LANDER	55	436	383			
FORT MYERS	563	3396	3076	MERIDIAN	307	1873	2119	HAJURO	512	4464	4414	SHERIDAN	46	318	446			
JACKSONVILLE	436	2261	2340					PAGO PAGO	469	4290	3967							
KEY WEST	566	3907	3912	MISSOURI				PANAPE P	512	4539	4238							
MIAMI	481	3309	3253	COLUMBIA REGIONAL	125	1126	1239	PHIL HOEN ISLAND	531	4694	4335							
ORLANDO	498	2810	2753	FANSAS CITY	147	1145	1255	WANE	550	4430	4056							
PENSACOLA	401	2381	2472	ST JOSEPH	135	1069	1298	YAP R	501	4404	4417							
TALLAHASSEE	366	2059	2368	ST LOUIS	195	1528	1434											
TAMPA	515	2896	2876	SPRINGFIELD	148	1057	1341	PENNSYLVANIA				ALLENTOWN	92	803	766			
WEST PALM BEACH	496	2966	3072					ERIE	71	460								





# RAWINSONDE DATA

Average monthly values

SEPTEMBER 1979

		ALBANY, NY 1009 MB				ALBUQUERQUE, NM 841 MB				AMARILLO, TX 894 MB				ANCHORAGE, AK 1001 MB				ANNETTE, AK 1009 MB														
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind									
					Direction ten's of deg	Speed m.p.s.					Direction ten's of deg	Speed m.p.s.					Direction ten's of deg	Speed m.p.s.					Direction ten's of deg	Speed m.p.s.								
5FC	30	86	11.2	10.0	29	4	29	1,619	15.8	5.7	06	1.5	30	1,095	14.7	9.6	20	1.9	30	45	9.4	7.5	18	5	30	37	11.8	10.2	11	1.7		
1000	26	172	11.5	10.2	24	5														16	99	10.3	5.3	15	10	23	138	12.0	10.1	14	2.1	
950	30	590	13.3	9.3	24	2.1														30	477	9.4	3.0	12	1.2	30	536	10.5	7.5	16	5.8	
900	30	1,044	11.4	4.8	27	3.9														30	924	6.9	0.8	12	2.8	30	985	7.9	4.6	17	6.9	
850	30	1,520	9.5	-1.6	28	5.6														30	1,880	5.1	-2.7	14	5.2	30	1,948	2.3	-1.4	19	8.2	
800	30	2,022	8.1	-3.4	27	6.8	29	2,042	16.7	4.4	18	2.2	30	2,043	15.8	4.0	24	4.1	30	2,395	-3.1	-6.4	15	6.0	30	2,467	-4.4	-6.6	19	8.7		
750	30	2,554	6.7	-7.5	26	8.2	29	2,589	13.8	1.6	22	1.7	30	2,588	12.1	1.5	26	2.7	30	2,938	-6.3	-11.1	15	6.1	30	3,016	-3.1	-9.9	20	9.2		
700	30	3,118	4.2	-11.5	27	9.7	29	3,167	9.7	-1.3	25	1.3	30	3,162	8.2	-2.5	30	2.1	30	3,515	-9.6	-16.1	16	6.0	30	3,600	-6.2	-12.6	20	9.3		
650	30	3,718	1.9	-14.4	26	12.0	29	3,777	5.2	-4.4	27	0.9	30	3,770	4.1	-7.3	35	2.1	30	4,129	-13.1	-21.1	16	5.7	30	4,223	-9.8	-16.6	20	10.3		
600	30	4,357	-2.6	-18.4	26	13.6	29	4,425	1.2	-8.8	36	1.3	30	4,416	-4.3	-11.9	02	3.1	30	4,787	-17.3	-25.5	16	5.6	30	4,889	-14.1	-21.9	20	10.3		
550	30	5,042	-4.6	-22.7	26	14.8	29	5,117	-4.8	-14.0	01	0.5	30	5,106	-4.7	-17.6	01	3.8	30	5,495	-22.1	-30.1	17	5.9	30	5,606	-18.8	-28.1	21	10.6		
500	30	5,779	-11.6	-26.4	26	17.0	29	5,860	-9.5	-19.6	24	7.7	30	5,849	-9.4	-24.7	35	3.0	30	6,262	-27.3	-35.1	17	6.2	30	6,383	-24.0	-33.8	22	10.7		
450	29	6,578	-17.1	-32.5	27	19.9	28	6,668	-14.4	-28.2	29	1.4	30	6,655	-15.0	-29.4	33	3.6	30	7,099	-33.8	-41.1	17	5.7	30	7,232	-30.3	-39.8	22	11.4		
400	29	7,441	-23.3	-38.3	26	21.6	28	7,551	-20.8	-34.3	30	3.7	30	7,535	-21.3	-35.2	32	4.4	30	8,026	-40.1	-46.2	17	5.9	30	8,163	-37.8	-42.5	22	11.5		
350	28	8,428	-29.9	-42.9	26	23.9	28	8,528	-27.8	-41.3	29	5.9	30	8,509	-28.6	-42.3	31	6.3	30	9,058	-47.7			18	5.5	29	9,204	-46.0			22	14.6
300	28	9,416	-37.8	-48.0	26	26.5	28	9,615	-36.0	-48.5	30	10.0	30	9,592	-36.7	-48.9	31	9.6	30	10,246	-52.6			21	4.9	28	10,399	-51.6			22	14.6
250	28	10,740	-46.2		26	31.7	28	10,858	-44.7		32	13.8	30	10,832	-45.1		30	12.4	30	11,695	-50.2			23	4.7	28	11,845	-51.9			24	10.7
200	28	12,197	-54.0		27	33.8	28	12,324	-52.8		29	17.2	30	12,296	-53.0		30	15.2	30	12,569	-49.4			23	4.9	28	12,710	-51.9			24	10.9
175	28	13,048	-57.4		27	32.5	27	13,174	-57.5		29	16.9	30	13,149	-57.1		30	15.0	30	13,578	-50.2			23	4.5	28	13,709	-52.3			23	10.2
150	28	14,015	-60.3		27	27.5	27	14,137	-62.4		29	14.7	30	14,114	-61.6		29	14.3	30	14,768	-50.4			23	4.8	28	14,887	-53.1			24	8.7
125	27	15,147	-62.5		27	23.5	27	15,248	-67.2		29	11.5	30	15,232	-65.8		29	10.6	30	16,223	-50.7			23	4.7	28	16,324	-53.1			24	7.9
100	27	16,519	-63.1		27	16.2	27	16,585	-69.5		30	6.5	29	16,577	-68.2		29	5.4	30	17,675	-51.4			23	4.8	28	17,776	-52.6			24	8.7
80	24	17,905	-61.0		26	10.2	26	17,923	-65.0		32	2.5	29	17,922	-65.1		31	1.7	30	19,547	-51.3			23	4.4	28	19,643	-52.8			24	6.6
70	25	18,734	-59.4		28	7.7	26	18,735	-64.5		04	1.6	28	18,742	-64.0		05	1.2	30	20,731	-51.5			23	4.4	28	20,793	-53.1			24	6.2
60	24	19,701	-58.0		28	5.0	26	19,684	-61.6		07	2.6	27	19,692	-61.2		08	2.2	30	22,180	-51.6			24	4.3	28	22,229	-53.8			26	4.6
50	24	20,856	-55.9		28	2.6	26	20,822	-58.8		08	3.2	27	20,833	-58.3		09	2.7	30	24,051	-51.5			25	4.9	28	24,081	-52.9			28	4.8
40	21	22,284	-53.8		25	2.1	26	22,232	-56.3		08	2.4	26	22,246	-56.0		08	2.9	30	25,242	-51.0			25	4.9	28	25,259	-52.6			29	5.5
30	20	24,154	-51.0		26	1.6	25	24,073	-53.0		08	4.3	25	24,095	-52.0		09	4.4	30	26,679	-48.2			26	6.0	26	26,713	-52.3			30	6.3
25	18	25,346	-49.3		26	1.2	25	25,225	-50.2		09	4.6	25	25,206	-48.2		09	5.1	30	28,565	-49.2			26	6.0	26	28,591	-50.4			31	7.0
20	17	26,830	-47.1		26	2.5	24	26,720	-48.9		08	7.1	22	26,645	-45.7		07	6.0	30	31,370	-42.1			28	6.2	25	31,235	-47.5			31	7.5
15	12	28,755	-44.9		08	1.3	20	28,619	-47.0		08	7.1	22	28,645	-45.7		07	6.0	30	33,170	-38.1			28	6.2	25	33,199	-40.3				
10	7										08	7.7	18	31,370	-42.1		08	6.9	17	33,796	-40.3											
7																																



# RAWINSONDE DATA

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Standard pressure surface mb	CARIBOU, ME 992 MB				CENTREVILLE, AL 998 MB				CHARLESTON, SC 1013 MB				CHATHAM, MA 1017 MB				CHIHUAHUA, MEXICO 859 MB												
	No. of observations		Resultant Wind		No. of observations		Resultant Wind		No. of observations		Resultant Wind		No. of observations		Resultant Wind		No. of observations		Resultant Wind										
	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.									
5FC	30	191	8.5	5.7	23	1.8	30	140	18.3	17.4	03	2.3	30	13	21.9	20.2	03	2.5	30	16	15.6	15.6	30	1,428	14.4	10.7	07	.2	
1000	30	550	9.9	5.5	28	6.4	30	155	16.1	14.5	04	3.0	30	129	22.0	19.6	05	3.0	30	158	16.7	12.9	25	1,444	14.4	10.7	07	.2	
950	30	999	8.1	3.6	29	8.6	30	1,029	17.5	15.2	03	3.4	30	1,042	18.5	15.6	17	2.1	30	1,052	12.8	4.9	27	1,455	14.4	10.7	07	.2	
900	30	1,459	5.9	-6.29	9.1	30	1,516	15.0	9.7	10	1.1	30	1,532	16.0	12.1	19	3.5	30	1,531	11.6	-7.27	6.4	30	1,517	16.2	8.9	07	.4	
850	30	1,954	4.2	-4.3	28	10.8	30	2,029	11.3	3.8	11	.7	30	2,056	13.6	8.4	20	3.8	30	2,037	9.9	-2.8	27	1,465	14.4	10.7	07	.2	
800	30	2,488	1.9	-8.8	27	12.7	30	2,570	11.3	-2.4	13	-.2	30	2,589	11.0	5.0	21	4.8	30	2,572	7.8	-6.9	27	1,470	14.4	10.7	07	.2	
750	30	3,042	-1.5	-12.3	27	13.6	30	3,143	8.1	-5.2	19	1.1	30	3,162	8.2	-1.21	5.3	30	3,137	4.9	-10.8	27	1,480	14.4	10.7	07	.2		
700	30	3,631	-3.1	-16.0	27	15.6	30	3,751	4.7	-8.9	20	2.6	30	3,772	5.2	-5.1	23	5.2	30	3,738	1.8	-13.5	26	1,490	14.4	10.7	07	.2	
650	30	4,260	-6.5	-21.6	27	18.1	30	4,399	-6	-12.2	21	3.2	30	4,422	1.6	-8.4	22	5.7	30	4,379	-1.7	-18.1	26	1,500	14.4	10.7	07	.2	
600	30	4,915	-10.3	-26.2	27	20.0	30	5,093	-3.3	-15.9	22	3.9	30	5,118	-2.3	-12.4	23	6.5	30	5,067	-5.6	-21.1	26	1,510	14.4	10.7	07	.2	
550	30	5,663	-14.8	-31.3	27	21.8	30	5,841	-7.8	-20.8	23	5.5	30	5,869	-6.5	-17.1	23	6.3	30	5,808	-10.3	-23.3	26	1,520	14.4	10.7	07	.2	
500	30	6,452	-20.1	-35.5	27	24.6	30	6,653	-12.8	-25.5	23	6.5	30	6,686	-11.5	-22.3	23	7.4	30	6,612	-15.6	-29.3	26	1,530	14.4	10.7	07	.2	
450	30	7,315	-26.1	-39.6	27	27.5	30	7,541	-18.6	-32.3	24	8.3	30	7,579	-17.3	-27.0	23	8.0	30	7,489	-22.0	-34.8	26	1,540	14.4	10.7	07	.2	
400	30	8,271	-32.8	-45.4	27	30.1	30	8,527	-25.2	-38.6	24	11.3	30	8,570	-24.1	-33.5	23	9.3	30	8,462	-28.4	-39.6	26	1,550	14.4	10.7	07	.2	
350	30	9,337	-40.1	-46.3	27	32.0	30	9,627	-33.1	-45.0	24	14.1	29	9,673	-32.4	-43.4	24	11.7	30	9,547	-36.2	-46.9	26	1,560	14.4	10.7	07	.2	
300	30	10,562	-47.2		27	33.0	30	10,884	-42.2		23	17.2	29	10,933	-42.1	-52.7	25	13.0	30	10,787	-45.4		26	1,570	14.4	10.7	07	.2	
250	30	12,021	-52.7		27	34.2	30	12,361	-52.1		24	19.5	29	12,406	-53.3		25	15.2	30	12,245	-54.6		27	1,580	14.4	10.7	07	.2	
200	30	12,890	-54.3		27	31.5	30	13,215	-57.4		24	18.9	27	13,252	-59.1		26	16.1	30	13,092	-58.4		27	1,590	14.4	10.7	07	.2	
150	30	13,864	-55.9		27	28.1	30	14,177	-62.8		25	15.3	27	14,204	-65.2		27	12.5	30	14,053	-61.9		27	1,600	14.4	10.7	07	.2	
125	30	15,162	-57.3		27	23.8	30	16,127	-67.6		26	10.4	27	16,302	-69.2		27	8.0	30	15,145	-64.2		27	1,610	14.4	10.7	07	.2	
100	30	16,429	-57.2		27	17.6	30	16,119	-69.4		26	3.8	26	16,294	-71.0		27	3.0	30	16,539	-64.2		27	1,620	14.4	10.7	07	.2	
75	30	17,842	-56.6		27	12.1	30	17,960	-66.3		05	8	26	17,958	-66.3		04	1.9	30	17,909	-62.2		27	1,630	14.4	10.7	07	.2	
50	30	18,691	-55.6		27	10.3	29	18,773	-63.2		07	2.4	26	18,774	-62.8		07	2.5	30	18,739	-60.1		27	1,640	14.4	10.7	07	.2	
25	30	19,674	-55.0		27	6.8	29	19,727	-60.7		07	3.5	26	19,731	-60.2		07	3.6	30	19,707	-58.1		27	1,650	14.4	10.7	07	.2	
0	30	20,844	-53.6		26	5.9	29	20,870	-57.9		08	4.8	26	20,876	-57.2		08	5.0	30	20,861	-56.2		27	1,660	14.4	10.7	07	.2	
	30	22,225	-51.8		26	5.3	29	22,287	-55.0		09	4.8	26	22,297	-54.5		09	5.6	30	22,287	-53.9		26	1,670	14.4	10.7	07	.2	
	30	24,150	-49.9		26	5.7	29	24,137	-51.8		08	5.9	26	24,137	-51.8		08	6.6	30	24,146	-51.0		26	1,680	14.4	10.7	07	.2	
	25	25,361	-47.4		26	5.2	27	25,325	-49.9		08	7.4	22	25,349	-49.2		09	6.7	25	25,337	-49.0		01	22	25,352	-51.3		09	11.9
	20	26,839	-45.7		25	2.0	26	26,794	-47.7		09	6.9	20	26,818	-46.5		09	7.5	26	26,794	-47.3		11	20	26,713	-48.7		09	12.1
	15	28,768	-42.7		27	3.0	24	28,706	-45.4		08	8.3	17	28,732	-44.3		08	8.7	23	28,688	-45.3		02	5	28,602	-45.9			
	10				15	31,410	-42.0				08	8.7	5	31,490	-40.6				6	31,451	-40.7								
	7				5	33,825	-38.5																						













# RAWINSONDE DATA

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		SALEM, IL 997 MB				SALEM, OR 1008 MB				SALT LAKE CITY, UT 872 MB				SAN DIEGO, CA 996 MB				SAN JUAN, P. R. 1013 MB													
Standard pressure surface ft. mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind											
					Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.				Direction tens of deg.	Speed m.p.s.										
5FC	30	174	13.7	12.7	05	-9	61	12.2	10.3	21	-3	1,288	15.6	4.5	15	3.0	124	19.4	16.5	35	.6	30	6	24.6	23.0	12	2.3				
1000	9	189	11.9	7.6	03	1.0	28	13.6	14.4	33	.1						30	120	24.7	22.5	12	4.2	30	570	24.7	22.5	12	4.2			
950	30	584	17.9	10.8	03	1.0	30	10.6	15.2	22	0.9	02	3				30	531	22.5	7.1	02	.8	30	570	22.4	19.5	12	7.2			
900	30	1,045	15.6	6.6	30	1.5	30	1,024	14.3	5.6	22	-1					30	1,004	24.5	2.8	34	1.0	30	1,040	19.8	15.8	12	7.6			
850	30	1,528	13.3	.8	30	2.3	30	1,505	12.5	-1.3	23	3.3	30	1,509	20.3	.3	17	4.7	1,502	22.4	.2	24	.4	30	1,531	17.1	12.1	12	7.5		
800	30	2,037	11.4	-4.0	33	2.3	30	2,013	11.1	-5.5	23	4.8	30	2,030	10.6	-2.4	19	4.6	2,025	19.0	-2.5	19	1.5	30	2,048	14.7	7.7	12	7.2		
750	30	2,574	9.1	-8.1	32	2.2	30	2,548	8.2	-8.9	23	6.4	30	2,580	14.7	-5.5	22	3.9	2,575	14.8	-5.1	18	3.9	30	2,592	12.2	1.6	12	5.7		
700	30	3,143	6.3	-11.3	31	2.3	30	3,114	4.6	-10.1	23	7.6	30	3,158	10.1	-8.3	24	4.7	3,153	10.1	-8.2	18	4.2	30	3,167	9.0	-2.7	12	4.2		
650	30	3,746	2.9	-15.3	32	2.2	30	3,714	1.0	-13.2	23	8.5	30	3,768	5.7	-11.2	25	5.8	3,764	5.8	-10.3	27	3.7	30	3,777	15.6	-5.1	12	3.7		
600	30	4,390	-1.2	-19.7	31	2.4	30	4,353	-2.9	-17.1	23	9.3	30	4,416	1.0	-13.9	25	6.0	4,414	1.5	-14.7	17	3.2	30	4,427	1.6	-9.2	13	3.0		
550	30	5,078	-5.5	-23.8	29	3.3	30	5,037	-7.1	-21.5	24	10.5	30	5,106	-5.3	-17.7	25	6.4	5,108	-2.7	-21.6	17	3.1	30	5,123	-2.5	-14.4	13	2.8		
500	30	5,818	-10.5	-28.5	28	4.2	30	5,773	-11.8	-25.8	24	12.2	30	5,847	-10.1	-25.5	26	7.6	5,858	-7.2	-25.8	20	2.9	29	5,875	-7.0	-18.6	15	1.3		
450	29	6,618	-16.1	-33.1	28	4.9	30	6,572	-17.2	-31.6	24	13.4	30	6,651	-15.5	-31.3	26	8.1	6,670	-12.6	-30.4	23	4.6	29	6,690	-11.9	-22.3	22	.7		
400	29	7,495	-22.4	-37.7	27	6.1	30	7,448	-23.7	-38.2	24	15.5	30	7,529	-22.0	-37.3	26	9.5	7,560	-18.5	-36.3	25	6.9	29	7,581	-18.1	-29.1	29	2.8		
350	29	8,465	-29.3	-43.0	27	7.8	30	8,409	-30.8	-45.3	25	16.9	30	8,500	-29.6	-43.3	26	14.7	8,536	-25.1	-41.9	26	16.8	29	8,569	-25.0	-34.6	29	4.2		
300	29	9,544	-37.6	-48.4	26	10.0	30	9,481	-39.5	-52.3	25	17.0	30	9,577	-38.5	-50.7	26	11.5	9,646	-32.7	-48.0	26	15.1	29	9,668	-33.3	-43.3	31	5.4		
250	29	10,740	-45.7		26	13.6	30	10,704	-48.5		25	17.6	30	10,806	-46.6		27	15.5	10,905	-42.1		-53.8	26	18.6	28	10,920	-43.2		32	7.5	
200	29	12,243	-52.9		26	17.6	30	12,152	-54.7		26	19.7	30	12,262	-54.2		27	19.6	12,381	-52.4			26	20.0	28	12,385	-54.9		33	11.7	
175	29	13,098	-56.4		26	18.5	30	13,003	-56.5		26	19.4	30	13,112	-57.2		27	19.5	13,234	-57.9			26	19.2	28	13,227	-61.2		32	12.5	
150	29	14,068	-60.3		26	16.1	30	13,977	-58.6		26	17.3	30	14,080	-60.4		27	18.1	14,193	-63.8			26	16.9	28	14,169	-67.4		33	10.8	
125	29	15,118	-63.6		26	13.0	30	15,130	-63.7		26	12.4	30	15,220	-63.7		26	14.7	15,336	-69.4			26	12.0	28	15,316	-72.0		35	7.1	
100	29	16,555	-67.3		27	8.7	30	16,514	-59.5		25	11.4	29	16,610	-64.5		28	8.1	16,617	-71.3			26	6.4	28	16,544	-76.7		05	4.0	
90	28	17,919	-64.1		28	4.1	28	17,912	-59.1		26	7.6	29	17,935	-63.6		28	4.4	17,946	-67.9			02	1.6	28	17,882	-69.7		09	6.8	
70	28	18,741	-62.0		29	3.1	28	18,752	-57.9		26	4.4	29	18,760	-60.9		31	2.5	18,755	-65.1			07	3.6	28	18,684	-67.2		10	11.0	
60	28	19,699	-60.1		33	2.1	27	19,723	-57.7		27	2.2	29	19,721	-59.6		35	1.4	19,699	-62.4			09	4.9	28	19,620	-64.6		10	14.0	
50	28	20,844	-57.3		36	1.0	25	20,874	-56.8		31	1.1	28	20,862	-58.3		01	1.6	20,835	-58.8			09	4.9	28	20,744	-60.8		10	16.4	
40	28	22,263	-54.7		34	0.6	25	22,291	-56.0		01	1.5	27	22,272	-56.5		03	2.1	22,245	-56.2			09	5.2	28	22,143	-57.5		10	19.1	
30	28	24,118	-51.6		06	6.6	25	24,130	-53.7		26	2.5	28	24,134	-53.1		10	1.0	24,086	-53.3			08	7.4	28	23,973	-51.1		11	24.4	
25	28	25,308	-49.3		04	1.1	25	25,305	-52.6		36	2.5	26	25,294	-51.5		36	.9	25,263	-51.5			09	7.4	28	25,157	-51.6		10	22.7	
20	28	26,786	-47.3		08	2.0	24	26,754	-50.6		34	3.2	26	26,751	-49.2		31	1.5	26,707	-49.6			09	7.4	27	26,613	-49.5		11	24.1	
15	28	28,701	-44.6		07	2.9	21	28,636	-48.3		33	3.5	26	28,649	-46.7		29	1.8	28,600	-47.3			09	7.8	28	28,505	-46.7		10	24.4	
10	28	31,443	-41.2		16	31,358	-43.1		30	4.2	18	31,359	-43.7		24	1.8	31,299	-44.2			08	7.9	28	31,223	-42.5						
7																															

# RAWINSONDE DATA

Average monthly values

SEPTEMBER 1979

WASHINGTON DULLES INT. AP 1008 M8										WAYCROSS, GA 1008 M8										WEST PALM BEACH, FL 1013 M8										WINNEMUCCA, NV 870 M8										WINSLOW, AZ 853 M8									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.																			
5FC	30	85	14.8	13.9	31	4.4	30	44	21.9	20.2	03	1.6	29	7	25.3	23.3	13	2.2	29	1,312	9.3	-1.6	11	.7	30	1,467	14.2	2.6	18	.8																			
1000	26	167	15.6	13.9	36	.9	29	117	21.6	20.6	06	1.5	29	116	25.7	23.6	14	3.4	29	1,507	17.5	-1.1	05	.9	27	1,520	16.4	2.6	17	1.0																			
950	30	590	16.5	12.4	33	.9	30	560	21.0	21.0	10	3.1	29	568	22.9	21.0	15	6.2	29	2,024	16.5	-3.0	31	.5	30	2,037	19.4	3.3	23	2.1																			
900	30	1,049	14.1	9.3	30	.8	30	1,028	19.0	16.1	13	2.9	29	1,039	20.2	17.6	15	5.8	29	2,570	12.8	-5.3	23	2.4	30	2,588	15.6	.0	24	1.6																			
850	30	1,530	12.4	3.5	28	2.5	30	1,519	16.5	12.9	16	2.5	29	1,531	17.6	13.5	16	5.1	29	3,144	8.7	-8.2	23	4.6	30	3,169	10.9	-2.9	25	.8																			
800	30	2,038	10.8	.7	26	3.7	30	2,034	14.1	9.4	18	2.7	29	2,049	15.3	9.0	16	4.9	29	2,570	12.8	-5.3	23	2.4	30	2,588	15.6	.0	24	1.6																			
750	30	2,575	8.9	-3.1	25	4.7	30	2,578	11.4	4.9	19	3.1	29	2,594	12.4	4.5	16	4.6	29	3,144	8.7	-8.2	23	4.6	30	3,169	10.9	-2.9	25	.8																			
700	30	3,144	6.1	-5.7	25	6.5	30	3,152	8.6	.5	19	3.0	29	3,170	9.2	1.6	15	4.4	29	3,782	4.7	-11.6	23	7.5	30	3,782	5.9	-5.7	19	.6																			
650	30	3,748	3.2	-10.6	25	7.5	30	3,762	5.0	-1.6	19	3.0	29	3,782	6.0	-2.7	16	3.9	29	4,399	-1.1	-14.8	23	8.9	30	4,431	.2	-7.9	16	1.8																			
600	30	4,393	-1.1	-15.0	25	8.6	30	4,412	1.4	-5.5	20	3.8	29	4,434	2.4	-7.3	16	3.5	29	5,089	-8.9	-20.8	23	8.6	30	5,121	-5.0	-14.0	16	2.6																			
550	30	5,085	-4.2	-19.9	25	9.4	30	5,108	-2.4	-10.1	21	4.3	29	5,133	-1.5	-12.3	16	2.0	29	5,832	-9.5	-27.0	24	8.7	30	5,865	-9.0	-22.5	21	1.3																			
500	30	5,830	-8.6	-23.6	25	11.0	30	5,860	-6.6	-14.6	22	4.6	29	5,887	-5.9	-16.2	16	1.5	29	6,638	-14.9	-31.9	25	8.8	30	6,673	-13.8	-30.6	29	2.1																			
450	30	6,639	-14.2	-29.1	25	12.3	30	6,676	-11.3	-20.6	23	6.2	29	6,705	-10.6	-21.3	15	1.2	29	7,517	-21.7	-38.0	25	9.4	30	7,557	-20.1	-36.3	29	4.6																			
400	30	7,521	-20.5	-32.9	25	14.6	29	7,569	-17.2	-28.1	23	7.6	29	7,603	-15.9	-26.4	17	.5	29	8,488	-29.4	-44.6	25	10.7	30	8,536	-27.2	-42.3	30	7.7																			
350	30	8,500	-27.1	-39.2	25	17.7	29	8,561	-23.9	-34.5	24	8.6	29	8,599	-22.8	-33.0	20	.4	29	9,567	-38.2	-51.3	26	12.9	30	9,626	-35.2	-49.4	29	11.6																			
300	30	9,591	-34.9	-46.7	25	20.4	29	9,665	-32.1	-43.0	24	10.2	29	9,708	-30.9	-41.7	10	.6	29	10,798	-46.5	-58.5	26	16.5	30	10,874	-43.6	-57.5	29	16.2																			
250	30	10,838	-44.1	-49.9	25	24.1	29	10,926	-42.0	-51.8	24	12.6	29	10,975	-41.1	-50.3	3	1.5	29	12,251	-54.6	-66.6	26	20.3	30	12,344	-53.0	-67.5	29	19.5																			
200	30	12,335	-51.0		26	26.3	29	12,399	-51.3		25	13.7	29	12,452	-53.4		33	3.8	29	13,101	-57.4		26	20.7	30	13,195	-56.0		29	18.5																			
175	30	13,156	-57.8		26	25.1	29	13,247	-59.4		25	13.2	29	13,299	-60.0		33	5.3	29	14,068	-66.5		26	18.8	30	14,154	-63.2		29	17.2																			
150	30	14,118	-62.2		26	21.3	29	14,198	-65.5		26	10.3	29	14,245	-66.5		36	4.6	29	15,195	-73.3		02	4.6	29	15,263	-68.1		29	11.9																			
125	30	15,233	-66.1		26	16.9	29	15,290	-71.6		27	6.9	29	15,333	-72.3		06	4.6	29	16,561	-84.4		06	5.3	29	16,593	-69.9		29	6.2																			
100	30	16,584	-66.2		27	10.4	29	16,602	-72.1		26	1.1	29	16,639	-73.4		02	5.3	29	17,931	-82.9		27	3.7	30	17,927	-67.5		32	2.1																			
80	30	17,944	-63.6		28	6.4	29	17,925	-68.4		07	3.3	29	17,956	-68.8		08	5.8	29	18,758	-61.2		28	2.1	30	18,738	-64.4		05	1.7																			
70	30	18,767	-61.8		29	2.5	29	18,749	-68.1		07	4.3	29	18,784	-64.8		09	6.7	29	19,719	-59.5		35	1.2	30	19,687	-61.6		07	2.6																			
60	30	19,727	-59.2		29	2.5	29	19,684	-61.9		07	5.3	29	19,710	-62.4		08	8.7	29	20,863	-58.2		04	1.4	30	20,825	-59.0		08	3.0																			
50	30	20,877	-56.9		27	1.7	29	20,820	-58.9		08	7.0	28	20,845	-58.9		08	11.5	29	22,273	-56.5		06	2.4	30	22,234	-56.1		08	3.3																			
40	30	22,298	-54.5		27	.6	29	22,232	-55.8		09	7.2	28	22,258	-55.5		09	12.9	29	24,078	-53.2		04	1.8	29	24,078	-53.2		09	4.5																			
30	29	24,157	-51.3		03	.8	29	24,076	-52.3		08	8.0	28	24,107	-51.9		09	13.0	28	25,294	-51.4		01	1.3	28	25,256	-51.5		09	5.6																			
25	28	25,344	-49.6		07	1.2	29	25,260	-50.8		09	9.3	26	25,291	-50.3		09	13.3	26	26,754	-48.4		09	14.0	22	26,739	-48.9		32	1.5																			
20	27	26,813	-47.0		06	1.6	28	26,719	-49.1		09	9.4	26	26,754	-48.4		09	14.0	22	28,632	-47.4		28	2.6	20	28,618	-47.1		08	7.3																			
15	24	28,737	-44.5		09	2.8	26	28,611	-46.5		08	10.3	24	28,659	-45.4		08	13.9	20	31,375	-42.2		25	3.2	10	31,286	-44.0																						
10	19	31,474	-41.6		09	4.4	16	31,298	-43.8		08	10.4	16	31,375	-42.2		09	16.4	14																														

YAKUTAT, AK 1008 M8										YAP, CAROLINE IS. 1008 M8																				
5FC	30	12	8.6	8.1	10	1.6	30	14	28.8	25.0	32	.7																		
1000	26	94	10.5	8.3	11	2.2	30	86	27.5	24.2	32	.6																		
950	30	507	9.9	5.6	14	4.0	30	540	24.0	22.2	28	.5																		
900	30	954	6.8	3.3	14	4.5	30	1,013	21.2	18.4	24	.3																		
850	30	1,422	3.5	.4	14	4.6	30	1,507	16.2	15.3	11	.6																		
800	30	1,912	.6	-2.5	15	4.5	30	2,027	15.8	12.0	09	1.5																		
750	30	2,427	-2.4	-6.5	15	5.0	30	2,574	13.3	8.0	07	1.5																		
700	30	2,972	-5.9	-10.0	17	4.5	30	3,152	10.2	3.8	08	2.4																		
650	30	3,549	-9.2	-16.4	17	4.7	30	3,766	6.9	-.7	06	2.4																		
600	30	4,165	-12.3	-19.8	18	5.2	30	4,420	3.2	-4.1	09	3.0																		
550	30	4,824	-16.5	-25.6	19	5.8	30	5,122	-.4	-9.6	09	3.1																		
500	30	5,535	-21.3	-32.0	19	6.0	30	5,879	-4.1	-14.1	09	2.7																		
450	30	6,373	-26.9	-36.9	20	5.9	30	6,701	-9.4	-16.7	08	2.8																		
400	30	7,142	-33.1	-42.1	21	7.3	30	7,603	-15.0	-25.7	10	2.7																		
350	30	8,071	-39.8	-46.0	21	8.7	30	8,603	-21.6	-33.3	09	2.4																		
300	30	9,105	-47.3		21	9.4	30	9,717	-29.9	-41.6	08	1.6																		
250	30	10,294	-52.5		22	10.1	30	10,988	-40.2	-48.8	08	4.0																		
200	30	11,743	-50.4		23	8.8	30	12,470	-52.9		07	6.0																		
175	30	12,614	-50.3		23	8.9	30	13,317	-60.0		07	6.2																		
150	29	13,620	-50.8	</																										

# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

SEPTEMBER 1979

Sun's zenith distance										Sun's zenith distance									
Date	A.M.				*	P.M.				Date	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MAUNA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass									
	3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64
1-----	1.21	1.27	1.36	1.46	1.56	1.42	1.31	1.22	1.14	1-----	.68	.78	.92	1.06	1.24	1.06	.90	.73	.64
2-----	1.18	1.25	1.33	1.45	1.58	1.42	1.31	1.22	1.16	2-----	.68	.79	.90	1.07	1.31	1.12	.92	.81	.67
3-----	1.17	1.25	1.32	1.44	1.57	1.42	1.31	1.22	1.16	3-----	.51	.64	.80	.99	1.24	1.08	.86	.69	.59
4-----	1.16	1.29	1.26	1.42	1.55	1.42	1.31	1.22	1.16	4-----	.71	.81	.98	1.16	1.41	1.22	1.04	.91	.80
5-----	1.18	1.26	1.34	1.45	1.55	1.44	1.33	1.22	1.16	5-----	.68	.79	.90	1.07	1.31	1.12	.92	.81	.67
6-----	1.12	1.20	1.31	1.44	1.59	1.42	1.31	1.30	1.16	6-----	.63	.73	.87	1.03	1.27	1.08	.86	.69	.59
7-----	1.17	1.24	1.33	1.44	1.52	1.42	1.31	1.30	1.16	7-----	.71	.82	.97	1.14	1.40	1.15	.97	.84	.74
8-----	1.15	1.21	1.31	1.41	1.55	1.42	1.31	1.30	1.16	8-----	.80	.90	1.03	1.21	1.38	1.15	.96	.84	.76
9-----	1.18	1.26	1.34	1.45	1.55	1.42	1.31	1.30	1.16	9-----	.85	.95	1.04	1.17	1.38	1.18	.98	.85	.71
10-----	1.16	1.23	1.34	1.45	1.55	1.42	1.31	1.30	1.16	10-----	.71	.80	.93	1.09	1.30	1.12	.92	.81	.67
11-----	1.18	1.26	1.35	1.45	1.57	1.42	1.31	1.30	1.16	11-----	.58	.67	.82	.99	1.21	.85	.69	.57	.47
12-----	1.21	1.30	1.37	1.49	1.60	1.49	1.37	1.30	1.20	12-----	.60	.71	.84	1.01	1.17	.95	.73	.60	.47
13-----	1.21	1.28	1.36	1.47	1.59	1.46	1.35	1.27	1.18	13-----	.60	.71	.84	1.01	1.17	.95	.73	.60	.47
14-----	1.18	1.25	1.35	1.46	1.56	1.46	1.37	1.30	1.21	14-----	.56	.66	.79	.98	1.16	.94	.74	.61	.47
15-----	1.22	1.30	1.40	1.51	1.61	1.46	1.37	1.30	1.21	15-----	.56	.66	.79	.98	1.16	.94	.74	.61	.47
16-----	1.21	1.29	1.37	1.48	1.58	1.46	1.37	1.30	1.21	16-----	.88	.98	1.09	1.25	1.38	1.14	.96	.83	.74
17-----	1.23	1.30	1.36	1.46	1.55	1.46	1.37	1.30	1.21	17-----	.77	.87	.98	1.14	1.30	1.10	.88	.75	.65
18-----	1.13	1.23	1.32	1.43	1.55	1.46	1.37	1.30	1.21	18-----	.79	.89	1.02	1.19	1.37	1.16	.97	.81	.72
19-----	1.17	1.24	1.33	1.43	1.55	1.39	1.29	1.18	1.10	19-----	.78	.88	.99	1.17	1.36	1.10	.94	.83	.70
20-----	1.18	1.27	1.35	1.46	1.55	1.39	1.29	1.18	1.10	20-----	.69	.78	.90	1.09	1.24	.94	.83	.70	.58
Averages	1.18	1.26	1.34	1.45	1.56	1.44	1.33	1.25	1.16	21-----	.55	.66	.80	1.02	1.17	.89	.65	.51	.41
										22-----	.65	.74	.80	1.08	1.24	.94	.83	.70	.58
										23-----	.83	.93	1.04	1.22	1.37	1.16	.95	.83	.70
										24-----	.75	.85	.97	1.14	1.30	1.10	.94	.83	.70
										25-----	.75	.85	.97	1.14	1.30	1.10	.94	.83	.70
										26-----	.56	.66	.80	1.02	1.17	.89	.65	.51	.41
										27-----	.56	.66	.80	1.02	1.17	.89	.65	.51	.41
										28-----	.70	.79	.90	1.11	1.27	1.04	.88	.75	.64
										29-----	.70	.79	.90	1.11	1.27	1.04	.88	.75	.64
										Averages	.70	.79	.90	1.11	1.27	1.04	.88	.75	.64

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . . .	94	78	115	55	82	106	77	95	66	96	59	93	1	-2	-7	-1	5	11	-11	7	9	-3	-17	11	6	-8	-6	3	-30	3	33	



REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times \text{°C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- \* Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

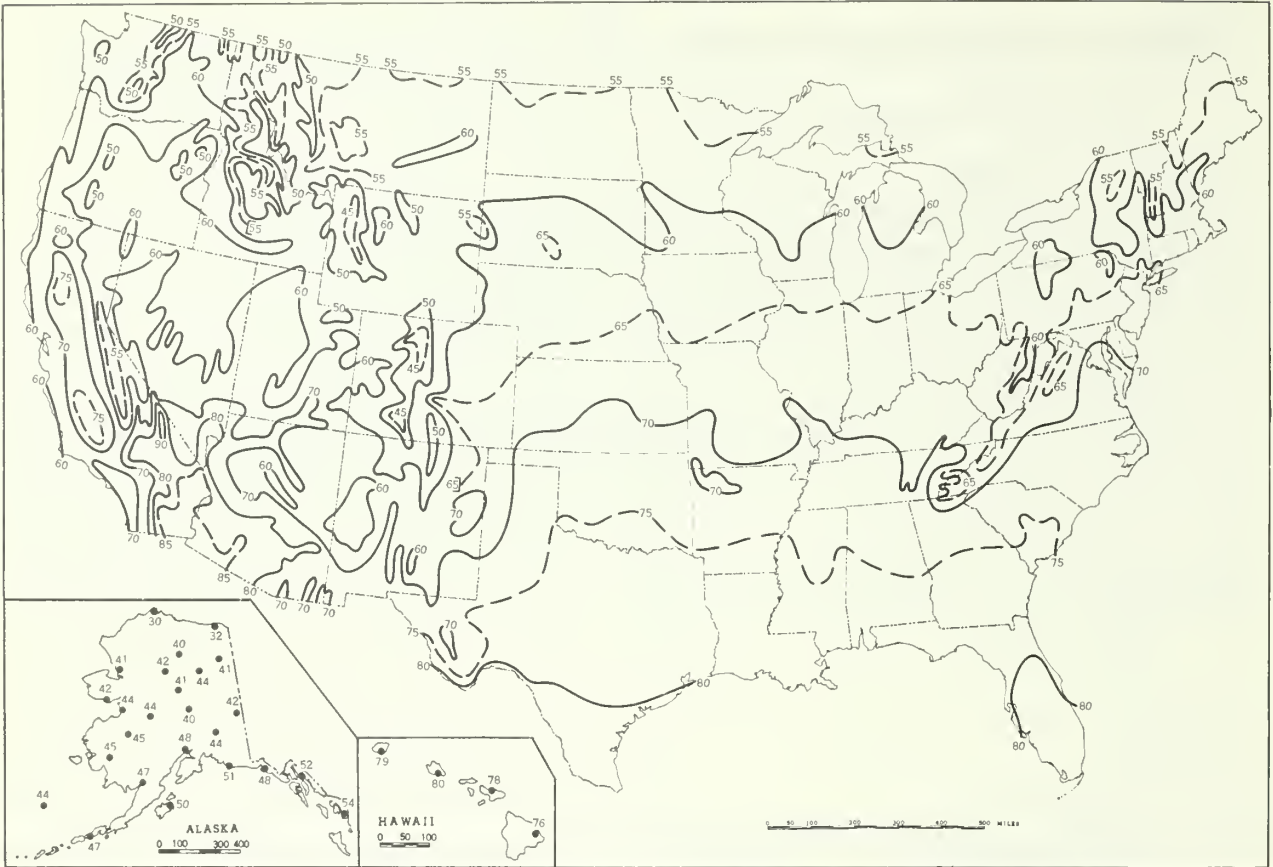
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable	N	Sand
BN	Blowing Sand	CF	Ground Fog	K	Smoke	S	Slight Haze-indeterminable
D	Dust	H	Haze	KI	Intense Smoke		
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), September.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), September 1979

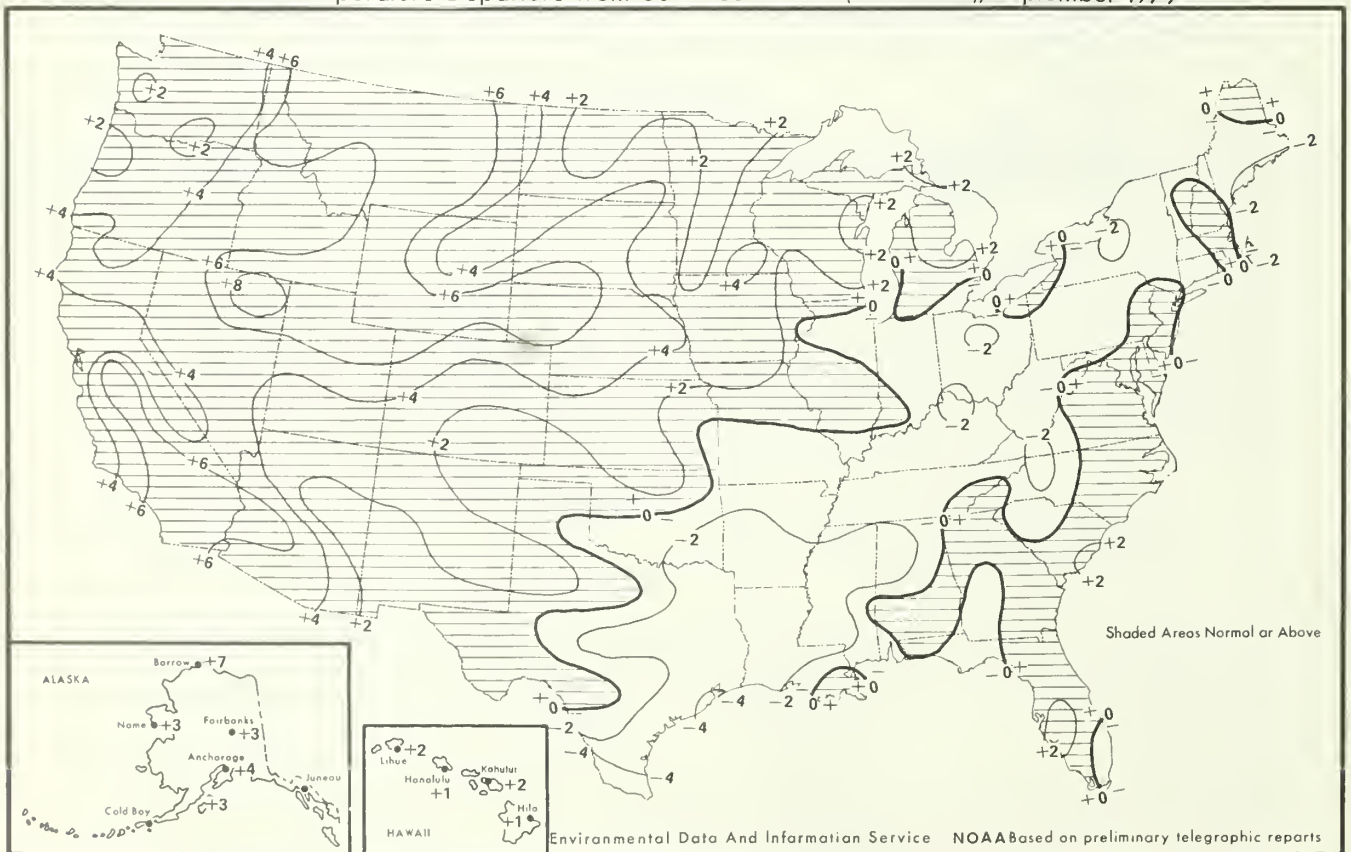
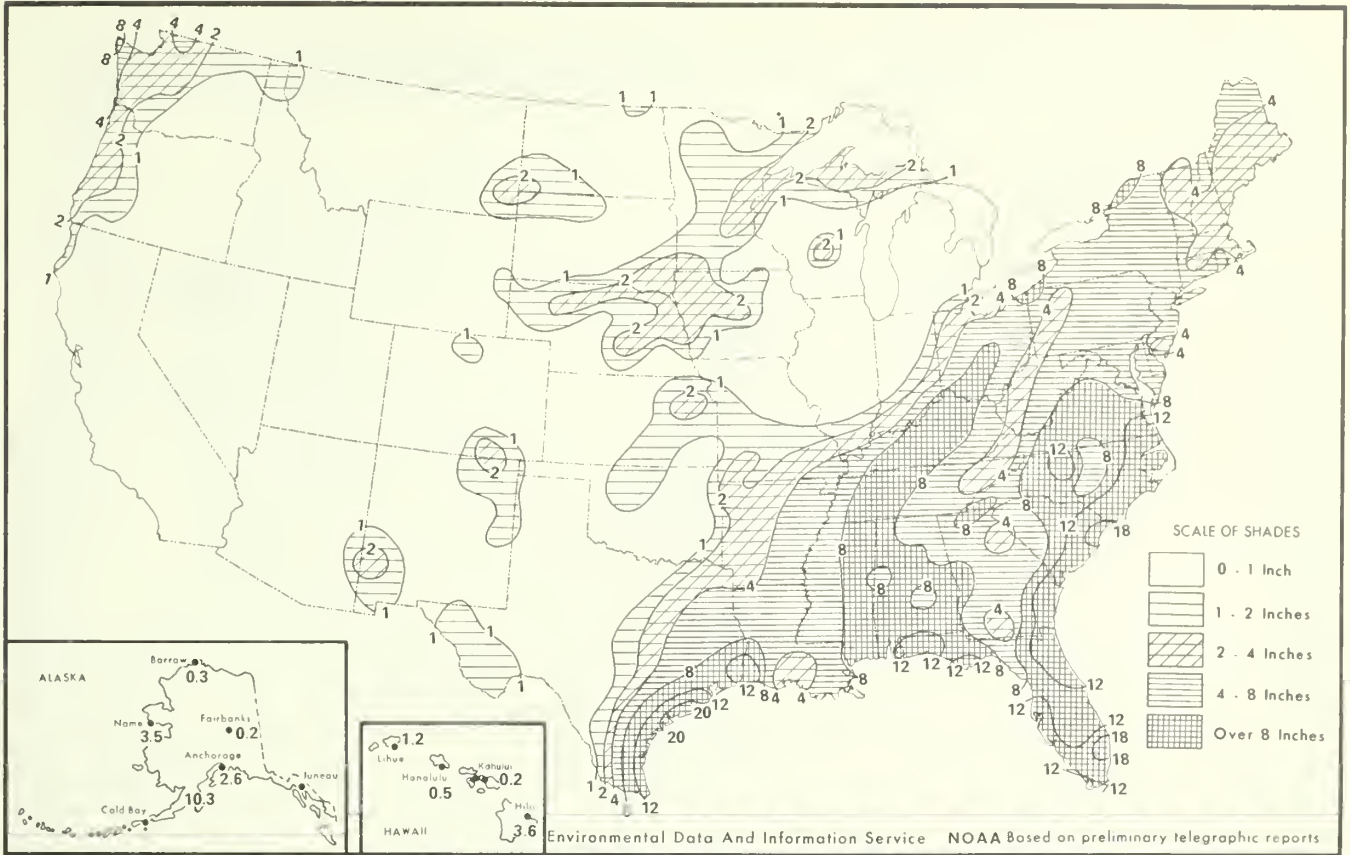


Chart II. A. Total Precipitation (Inches), September 1979



B. Percentage of Normal Precipitation, September 1979

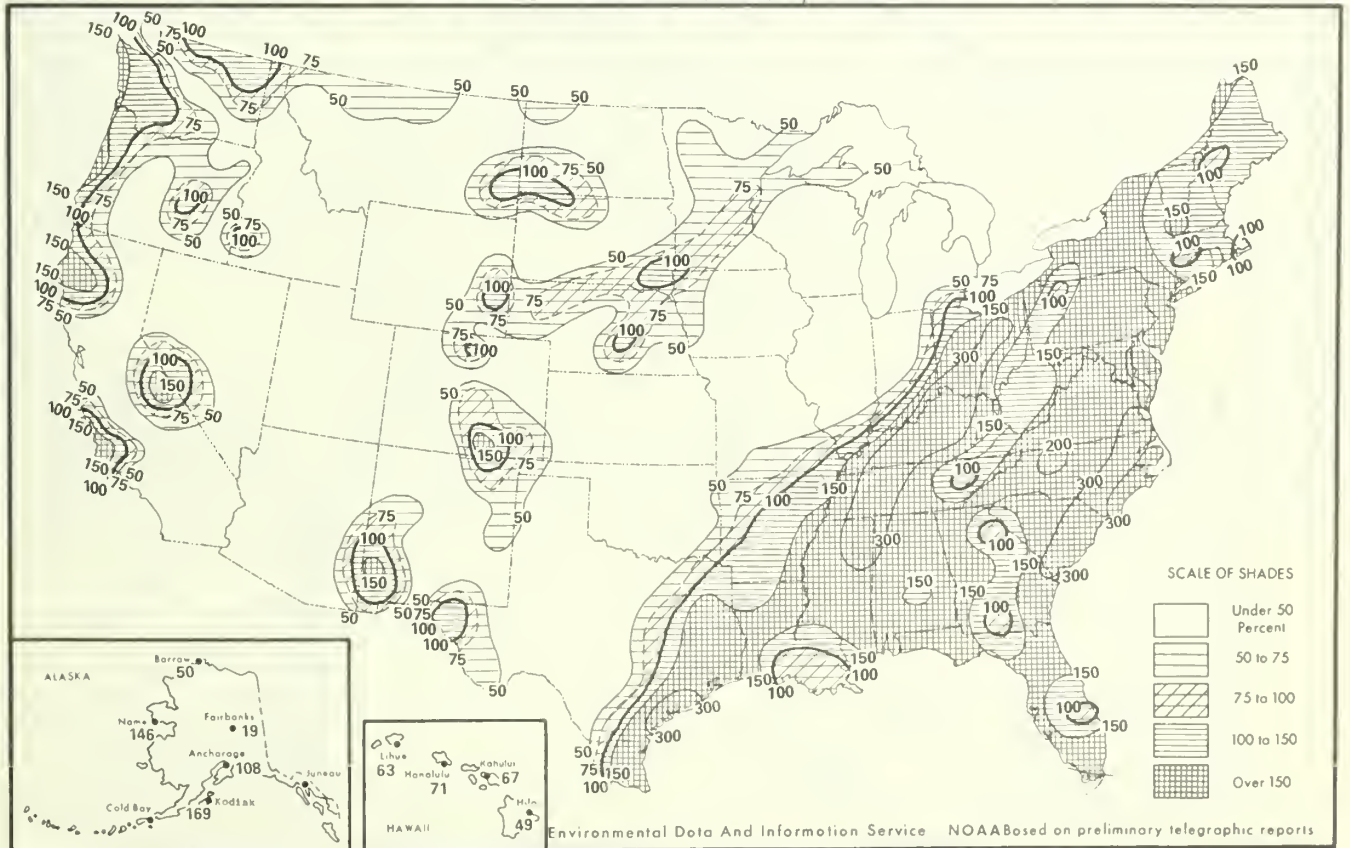
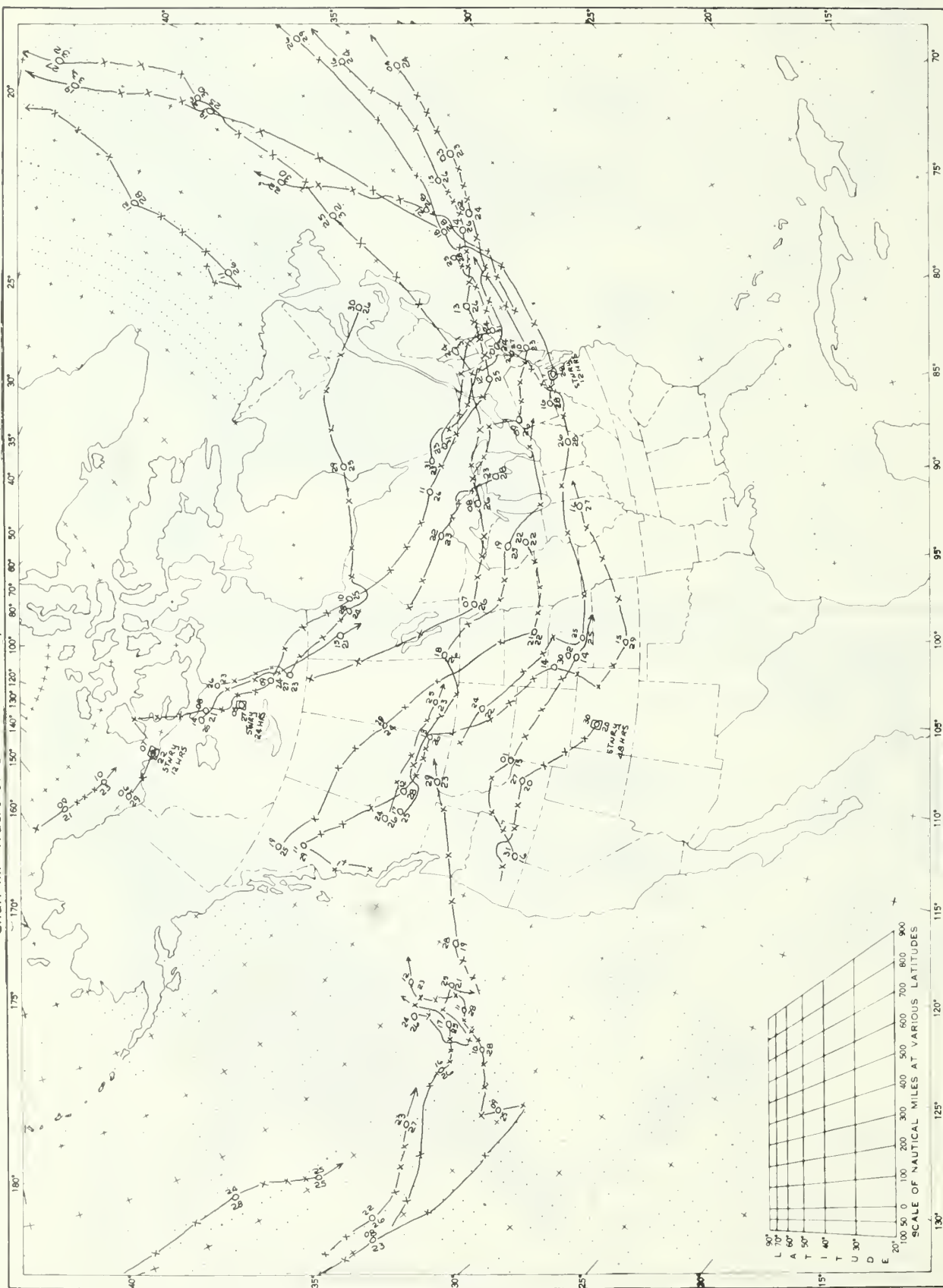


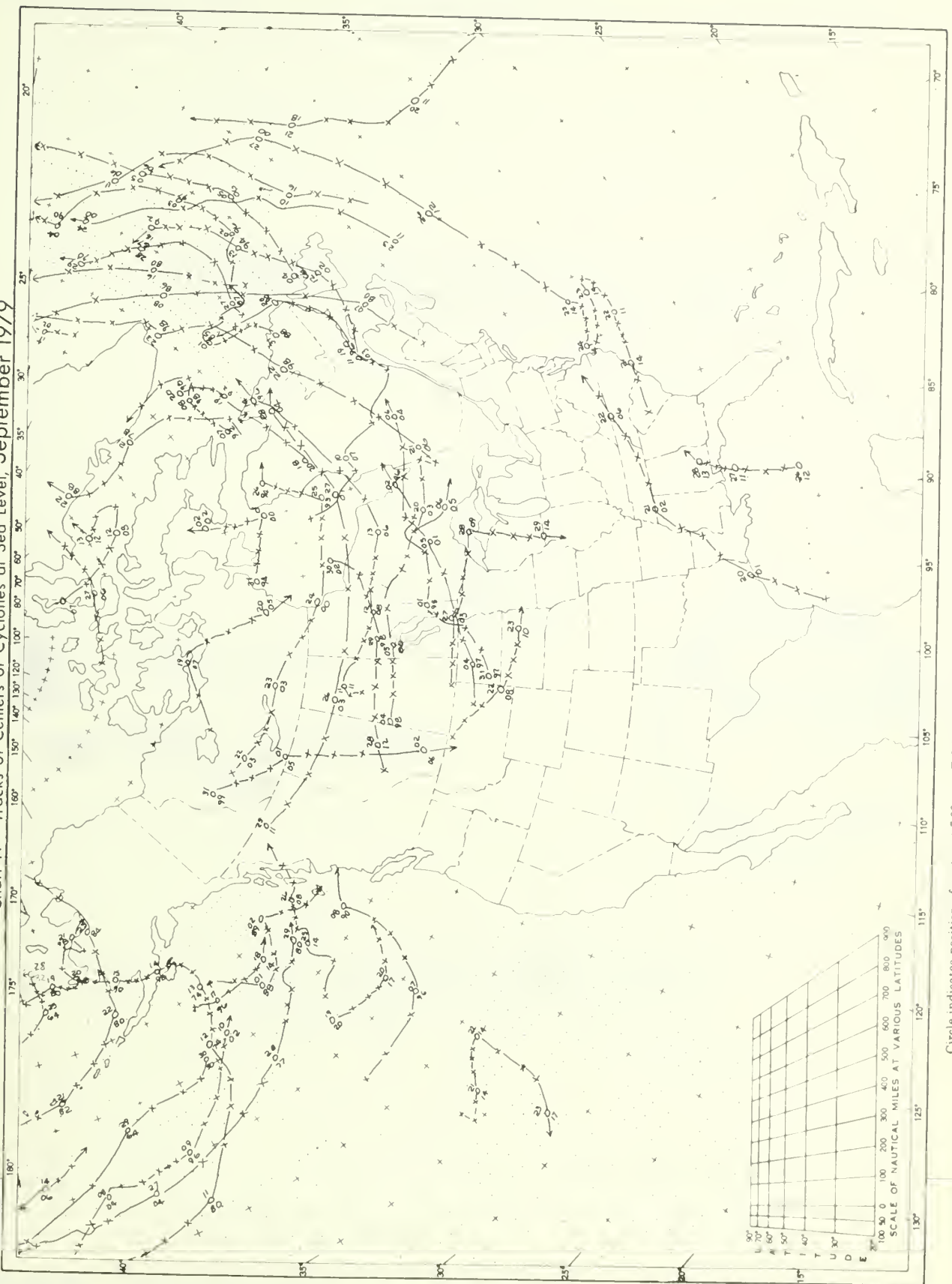


Chart III. Tracks of Centers of Anticyclones at Sea Level, September 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X s indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

# Chart IV Tracks of Centers of Cyclones at Sea Level, September 1979



Circle indicates position of center at 7:00 a. m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 'x's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

OCTOBER 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Early in October, rain was generally confined to the eastern United States. The already too wet mid-Atlantic States and eastern New England continued to accumulate surplus moisture. By the end of October, nearly twice the normal amount of rain had fallen.

Seasonal precipitation began in the West at mid-month. Rain or snow in some amount fell nearly everywhere in the West. Well above normal amounts were recorded in all but the Southwest. Near the end of the month, a severe storm brought blizzard conditions to the western Plains and heavy rain to the eastern Plains. Goodland, KS, measured a record 17.6 inches of snow during October.

Average temperatures for the month were above normal in the West and colder than normal in the East.

Rainfall was confined to the area from the eastern Plains to the east Coast in the first week of October. The area of heaviest rain extended from the New England Coast into central Virginia where more than 2 inches were recorded. Moderate rain fell in the Great Lakes area and from the central Mississippi Delta through South Carolina. Average temperatures for the week were very warm in the west and generally cool in the east except for New England.

Rainfall was generally sparse over the Nation for the week of the 8th-14th, except in West Virginia, Virginia, and Maryland. A freak snowstorm hit the western portion of this area and deposited as much as a foot of snow in some parts. Fully foliated trees toppled under the unusual weight. Temperatures warmed west of the Rockies and got colder in the east. The freeze line plunged as far south as Tennessee in the Mississippi River Valley. Average temperatures for the week ranged from 9 to 12° colder than normal in the upper Mississippi Valley.

Seasonal rains began in the west during the week of the 15th-21st. Heavy amounts accumulated in the coastal area of the Pacific Northwest, and lesser amounts fell through the entire west. Snow fell on the higher elevations. Elsewhere, moderate to heavy rain fell from north central Texas to the western Lakes area. The winter grain area in the central Plains got some much-needed rain, but the western portion needed more. Average temperatures for the week were near normal in most of the west but well above normal in the east.

Rain continued in the northwest during the week of the 22d-28th. The coastal area from northern California through Washington recorded heavy amounts. The southwest, most of the Rockies, and the western Plains had little or no precipitation. A series of low pressure centers deepened in the western Great Lakes area and moved northeastward. Lines of weather from the low centers southward brought rain to most of the east. Heavy snow blanketed northern Michigan. One to 2 inches of rain fell in Iowa, and severe weather, with several tornadoes, moved through the lower Mississippi Valley. Cold air moved into the east and plunged temperatures. Average temperatures for the week in parts of the Midwest were about 6° colder than normal.

The last days of the month, the 29th-31st, brought some significant weather. A severe autumn storm formed in the southern Rockies and moved northeastward and eastward. Blizzard conditions ensued throughout the western Plains. Heavy snow and winds to 60 mph stressed livestock in the southwestern Plains. Heavy rain through the winter grain area brought soil moisture levels up. Cold weather moved in behind the storm and some record cold temperatures were noted.



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

OCTOBER 1979

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	Chatom 4 N	91	2	Hamilton 3 S	28	25+	Coden	7.79	Newton	.20	
Alaska	3 Stations	64	2+	Galbraith	-31	29	Pelican	32.91	Tok	.04	
Arizona	Gila Bend	108	4+	Hawley Lake	8	31	Bright Angel Ranger Station	2.60	18 Stations	.00	
Arkansas	3 Stations	95	12+	Bentonville	25	11+	De Queen	6.41	Saint Francis	1.50	
California	3 Stations	106	6+	White Mountain 2	2	29	Occidental	14.91	11 Stations	.00	
Colorado	John Martin Dam	98	8	Independence Pass 5 SW	-10	31	Wolf Creek Pass 1 E	7.58	Saguache	.13	
Connecticut	Bulls Bridge Dam	87	22	Falls Village	21	31	West Hartford	7.55	Brooklyn	2.58	
Delaware	Middletown 1 WSW	86	21	3 Stations	30	27+	Dover	5.20	Lewes 1 SW	3.01	
Florida	Mountain Lake	95	22	Fountain 3 SSE	36	31	Fort Lauderdale	7.91	2 Stations	.00	
Georgia	2 Stations	91	3+	Blairville Exp Station	25	27+	Winder 1 SSE	4.98	Plains SW GA Exp Station	.00	
Hawaii	Puukohola Heiau 98.1	95	27	Mauna Kea Obs 111.2	20	3	Kukui 380	24.00	Campbell Ind Pk 702.5	.13	
Idaho	Lucile	93	5	Tetonia Exp Station	4	30	Pierce	4.12	Gibbonsville	.16	
Illinois	3 Stations	90	9+	2 Stations	19	26	Pectone	4.64	Piper City 3 SE	.77	
Indiana	Crane Naval Depot	90	1	Rockville	20	27	La Porte	4.88	Edwardsport Power Plant	1.02	
Iowa	Sidney	88	20	Corning	15	14+	Onawa	6.96	Fort Madison	1.98	
Kansas	Kingmar	100	8	2 Stations	22	13	Hutchinson Exp Field	11.52	Wellington 2 S	1.01	
Kentucky	3 Stations	88	23+	5 Stations	24	28+	Frenchburg 2 W	4.01	Lovelaceville	1.17	
Louisiana	6 Stations	94	24+	4 Stations	35	25+	Vinton	9.32	Saint Bernard	.52	
Maine	3 Stations	85	23+	2 Stations	16	18+	West Rockport 1 NNW	8.16	Caribou WSO AP	1.68	
Maryland	2 Stations	88	22+	Oakland 1 SE	15	27	Damascus 2 SW	8.64	Asateague State Park	2.13	
Massachusetts	Chester 2	91	22	Chester 2	15	27	New Salem	8.66	Boston WSO AP	3.14	
Michigan	Washington 2 NNW	84	1	Ironwood	12	26	Chatham Exp Farm	7.95	Port Huron	1.08	
Minnesota	Browns Valley	84	1	3 Stations	9	26+	Beaver	6.44	Caribou 2 S	.63	
Mississippi	5 Stations	92	21+	2 Stations	29	14	Leakesville	5.45	Gholson 8 W	.42	
Missouri	Appleton City	95	8	Berryman 6 NW	18	14	Bolivar 1 NE	8.01	Zalma 4 E	.79	
Montana	6 Stations	89	10+	West Yellowstone	1	31	Hungry Horse Dam	3.04	Moccasin Exp Station	.07	
Nebraska	2 Stations	93	3	Atkinson	12	13	Lyons	6.96	Stockville	.70	
Nevada	Sunrise Manr Las Vegas	103	7	Rand Ranch Palisade	9	30	Metropolis	3.43	10 Stations	.00	
New Hampshire	3 Stations	86	22	Mount Washington	8	27	South Lyndeboro	6.80	Jefferson 4 S	2.10	
New Jersey	3 Stations	88	23+	Long Valley	22	27	Pottersville 2 NNW	6.40	Atlantic City	2.07	
New Mexico	2 Stations	99	8+	Wolf Canyon	6	31	San Jon	2.21	25 Stations	.00	
New York	New York Laurel Hill	90	22	2 Stations	19	31+	Hooker 4 N	7.64	Ticonderoga 3 NE	1.53	
North Carolina	Louisburg	89	2	Henderson 2 NNW	20	28+	Casar	6.23	Wilmington WSO AP	.38	
North Dakota	Wilton	86	1	5 Stations	9	13	Fargo WSO AP	2.60	2 Stations	.06	
Ohio	Newark Waterworks	87	22	3 Stations	18	27+	Chardon	6.45	Akron	1.03	
Oklahoma	Walters	103	8	Boise City 2 E	24	30	Broken Bow 1 N	6.36	Grandfield	.24	
Oregon	Lost Creek Dam	98	4	2 Stations	13	24+	Otis 2 NE	13.47	Drewsey	.17	
Pennsylvania	Phoenixville 1 E	90	23	Slippery Rock 1 SSW	15	27	York 3 SSW Pump Station	7.60	Weedville 1 N	1.52	
Puerto Rico	Magueyes Island	106	25	Adjuntas Substation	51	31	Coloso	15.77	2 Stations	1.17	
Rhode Island	Providence WSO AP	86	22	Kingston	24	27	Kingston	4.63	Woonsocket	3.21	
South Carolina	Sandhill Exp Station	92	1	Longcreek	27	14	Hogback Mountain	4.90	Little Mountain	.22	
South Dakota	2 Stations	92	7+	2 Stations	9	13	Bonesteel	4.25	Maurine 10 SW	.15	
Tennessee	2 Stations	89	22+	Tazewell	23	27	Monterey	6.55	Dresden	1.60	
Texas	2 Stations	106	3+	Dell City 5 SSW	23	31	Port Arthur WSO AP	6.62	54 Stations	.00	
Utah	La Verkin	96	1	Uintalands	4	31	Alta	5.16	Boulder	.00	
Vermont	4 Stations	84	23+	Mount Mansfield	16	27	Mount Mansfield	5.70	Bristol 5 NNW	1.31	
Virginia	Charlotte Court House	88	23	Monterey	16	27	Sterling (RCS)	10.58	Williamsburg 2 N	1.57	
Virgin Islands	Truman Field FAA AP	94	22	2 Stations	67	23+	Fountain	6.62	Lameshur Bay	1.25	
Washington	Glenoma 1 W	91	4	2 Stations	20	31	Spruce	13.08	Smyrna	.58	
West Virginia	3 Stations	88	22+	Seneca State Forest	10	27	Thomas	8.12	New Cumberland	1.83	
Wisconsin	Arboretum-Univ of WI	82	22	3 Stations	12	26	Owen	7.47	Burlington	1.56	
Wyoming	Whalen Dam	89	8	Old Faithful	-6	30	Seminole Dam	2.69	Thermopolis 25 WNW	.04	



# CLIMATOLOGICAL DATA

## METRIC UNITS

OCTOBER 1979

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	Possible sunshine							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days	Greatest in 24 hours	25 mm. or more	With thunderstorms	Snow, ice pellets	Maximum depth on ground	Residual speed	Residual direction			Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	
																												mm
COLORADO																												
2297	ALAMOSA	19.0	-3.9	7.6	0.9	27.2	7	-13.3	22	0	27	-1.3	4	3	0	25	T	2.1	1	16.1	SE	30	10	11	10	5.1		
1873	COLORADO SPRINGS	18.6	3.3	10.9	0.7	30.0	7	-7.6	11	0	3	-4	8	4	0	33	T	0.2	9	14.3	NE	8	11	12	10	5.3		
1610	DOVER	25.8	7.5	12.8	2.2	29.4	2*	-3.7	31	0	2	-17	5	2	1	0	U	0.8	12	15.2	SW	20	14	9	8	4.4	7.4	
1428	GRAND JUNCTION	22.9	2.8	12.9	0.4	33.3	7	-3.9	31	2	6	-1.5	9	1	1	T	0	0	24.6	N	29	11	11	9	4.9	8.6		
CONNECTICUT																												
2	BRIDGEPORT	15.4	8.1	11.8	-2.0	23.9	22	0.0	27	0	1	6.1	70	9	2	1	U	2.4	28	17.4	W	5	8	8	15	6.5		
52	HARTFORD	15.5	5.3	10.4	-1.1	29.4	22	-2.8	31*	0	8	5.0	72	4	2	43	25	1.1	27	28.6	NW	3	6	8	17	7.1	4.1	
DELAWARE																												
23	MILFORD	18.0	7.5	12.8	-1.2	27.8	21	0.6	26	0	0	7.2	71	2	2	6.4	T	1.5	25	9.8	W	7	9	10	12	5.9		
DIST. OF COLUMBIA																												
88	WASHINGTON	18.9	6.1	12.6	-0.7	30.0	21	-4.4	27	0	4	7.2	74	12	4	33	25	1.1	24	8.9	W	7	8	15	6.1	5.4		
3	WASHINGTON NATIONAL	19.4	10.1	14.8	-0.7	26.9	22	2.2	27*	0	0	10.0	77	12	3	8	T	1.3	24	12.1	W	7	9	10	12	5.6		
FLORIDA																												
6	APALACHICOLA	26.4	14.8	20.6	-0.9	30.0	2	8.9	25	0	0	15.0	74	7	2	0	0	0.9	6	8.5	SE	31	18	10	3	3.0		
9	DAYTONA BEACH	27.7	17.7	22.7	-0.2	31.1	4*	12.8	29*	0	0	17.8	76	5	1	0	0	1.3	6	9.4	W	17	19	10	2	3.7		
5	FORT MYERS	31.0	21.3	26.2	1.5	32.8	22*	16.1	24*	0	0	19.4	72	10	0	0	0	0.8	4	9.8	NE	13	12	14	5	4.5		
9	JACKSONVILLE	27.2	14.9	20.7	-0.7	30.6	4*	7.8	25	0	0	16.1	80	6	2	0	0	0.7	2	12.5	NE	14	14	3	3.6	8.0		
2	KEY WEST	29.4	24.9	27.2	0.7	31.7	12	23.3	28*	0	0	22.8	79	6	1	0	0	0.4	9	9.4	W	28*	9	14	6.0	6.4		
2	MIAMI	28.7	22.2	25.5	0.1	31.1	25*	18.3	8	0	0	20.6	75	13	2	0	0	0.2	7	10.7	W	30*	10	9	12	5.9	7.5	
29	MCLEANDY/PC COY AFB	29.6	17.6	23.6	0.1	32.2	3	12.8	26	1	0	17.8	76	11	0	0	0	1.5	3	10.7	W	30*	11	15	5	4.8		
34	PENSACOLA	27.1	14.4	20.8	-0.3	31.7	2	7.2	25	0	0	14.4	70	1	0	0	0	0.8	5	9.8	W	31	22	6	3	2.6		
17	TALLAHASSEE	27.1	11.1	19.1	-0.7	31.7	2	1.7	25	0	0	12.8	74	9	1	0	0	0.8	4	8.0	W	31	18	12	2	3.1	7.1	
6	TAMPA	28.7	19.3	24.0	0.3	30.6	22*	1.7	26	0	0	18.3	72	2	3	0	0	1.5	5	9.4	SW	15	17	12	2	3.1		
5	WEST PALM BEACH	29.4	21.2	25.3	0.2	32.2	11	17.2	28*	1	0	20.6	77	12	1	0	0	2.5	7	13.0	W	8	15	7	12	5.7		
GEORGIA																												
249	ATLANTA	23.1	9.8	16.5	-0.5	27.8	21*	3.9	27*	0	0	10.0	70	4	2	0	0	0.5	29	8.9	W	28	7	16	10	5	4.0	
30	AUGUSTA	26.9	10.8	18.9	-0.6	30.2	21*	1.7	27	0	0	10.9	74	11	4	0	0	0.3	25	9.8	SE	10	16	8	7	4.1	7.4	
5	COLUMBUS	28.7	18.0	23.3	0.0	30.0	21*	1.1	27*	0	0	12.2	73	3	0	0	0	0.5	25	10.3	W	31	4	19	8	4	3.3	
173	MACON	25.8	10.7	18.4	-0.3	30.6	21*	2.8	27	0	0	11.1	69	1	0	0	0	0.4	29	10.7	NW	4	17	11	3	3.2		
194	ROME	22.5	17.4	14.9	-1.2	28.3	28*	0.0	26	0	1	11.1	69	22	5	0	0	0.4	29	10.7	NW	4	18	6	5	3.4	7.6	
14	SAVANNAH	28.0	13.4	19.7	0.2	30.6	2	6.1	27	0	0	12.8	69	11	6	3	0	0.5	5	10.7	W	5	19	10	2	2.9	8.0	
HAWAII																												
9	HONOULULU	29.9	20.1	24.5	0.6	32.8	8	18.3	27	1	0	20.6	68	12	23	0	0	0.5	19	7.6	E	29*	5	10	16	7.0	4.4	
2	KAHULUI	31.3	22.5	26.9	1.8	33.3	11*	16.7	24	11	0	20.6	68	11	5	0	0	3.8	6	13.9	NE	19	9	15	7	5.5	7.0	
31	LIHUE	29.0	22.7	25.8	0.7	31.7	7	19.4	25*	0	0	21.7	80	95	-2	12	22	0	2.9	6	10.7	NE	21	8	15	8	5.7	6.7
IDAHO																												
865	BOISE	19.4	5.4	12.4	1.3	28.3	6*	-2.8	30	0	3	1.1	51	38	0	0	0	0.5	13	17.9	NW	19*	8	11	12	6.2	5.7	
431	LEWISTON	19.1	7.5	13.3	2.3	28.3	8*	1.7	31	0	0	4.0	12	15	12	0	0	0	10.7	10.7	W	19*	10	5	16	6.1	24*	
1358	POCATELLO	19.0	2.2	10.6	1.5	31.1	7	-5.0	30	0	7	-1.1	50	20	1	2	T	1.8	23	17.0	SW	19*	6	11	12	5.5	6.9	
ILLINOIS																												
96	CAIRO	22.5	11.4	16.9	0.4	30.6	21	3.9	14	0	0	5.0	65	43	28	5	0	2.0	23	13.4	SW	6	4	11	16	7.0	5.4	
201	CHICAGO O'HARE	17.1	6.6	11.8	-0.3	28.9	21	-2.8	26	0	4	5.0	65	46	3	0	0	0	2.0	23	13.4	SE	31	4	10	17	7.0	5.0
185	CHICAGO MIDWAY	16.7	7.5	12.1	-0.9	28.9	21	-2.1	26	0	2	5.6	67	48	2	0	0	1.9	22	13.9	SE	31	4	10	17	7.0	5.0	
177	EVANSTON	17.7	4.6	11.2	-1.3	28.9	21*	-3.9	26	0	12	5.9	69	64	5	0	T	1.6	25	13.4	SE	31	6	10	14	6.3	5.3	
179	PEORIA	17.8	5.1	11.4	-1.3	30.0	21	-3.9	26	0	7	5.6	71	43	2	0	0	1.7	22	13.4	SE	31*	6	10	15	7.2	5.9	
221	SPRINGFIELD	16.1	4.7	10.4	-1.1	28.7	21	-5.6	26	0	5	6.7	76	39	3	0	0	1.2	22	16.1	SE	31	4	8	19	7.0	5.6	
174	SPRINGFIELD	19.9	6.4	13.2	-0.5	31.7	21	-2.8	14*	0	5	8.1	67	54	15	9	2	0	1.9	22	17.0	SE	31	8	11	12	6.2	5.6
INDIANA																												
116	EVANSVILLE	20.2	7.1	13.6	-0.9	30.0	21	-1.7	14	0	4	6.7	65	68	4	0	0	1.7	22	16.1	W	1	6	13	12	5.9	6.5	





# CLIMATOLOGICAL DATA

METRIC UNITS

OCTOBER 1979

State and Station	Elevation (ground)		Pressure		Temperature				Precipitation				Wind			No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	%															
	m	ft	Station Q	Sea level	Average maximum	Average minimum	Average from normal	Highest	Date	Lowest	Date	Max 32.2° or above	Min. 0° or lower	Average dew point	Average relative humidity	Total	mm			mm	mm	Greatest in 24 hours	25 mm. or more	No. of days	Snow, ice pellets	Maximum depth on ground	Resurfant speed	Resurfant direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10
MISSISSIPPI	88	1005.4	1016.4	25.9	9.4	17.7	-0.6	31.1	1	2.2	24	0	0	11.7	73	81	26	60	6	2	0	0	0	0.4	23	13.0	13	31	20	6	5	3.3		
MISSOURI	370	981.0	1013.3	20.7	7.6	14.2	-0.3	31.7	8	-3.1	13	0	1	5.6	60	112	42	8	5	0	0	0	0	1.3	21	18.3	5	30	9	13	5.7	56		
COLUMBIA REGIONAL	509	976.0	1012.4	20.7	7.6	14.2	-0.3	31.7	8	-2.8	13	0	1	3.9	54	90	31	7	5	0	0	0	0	1.4	21	16.1	5	20	9	10	12	5.7	63	
PARSONS CITY MUN AP	276	913.6	1011.7	21.1	9.1	13.9	-0.3	33.3	8	-3.9	13	0	1	6.7	56	97	34	40	5	0	0	0	0	0.8	20									
ST JOSEPH	247	913.6	1011.7	21.1	9.1	13.9	-0.3	33.3	8	-3.9	13	0	1	6.7	56	97	34	40	5	0	0	0	0	0.8	20									
ST LOUIS	163	981.6	1013.7	21.1	9.1	13.9	-0.3	33.3	8	-3.9	13	0	1	7.2	64	46	25	23	8	3	0	0	0	1.5	22	16.5	SE	31	6	13	12	6.2	52	
SPRINGFIELD	386	968.5	1013.6	23.4	8.6	16.1	1.1	33.3	8	-1.1	10	1	2	6.1	56	83	-5	33	7	5	1	1	1.8	19	20.1	S	30	12	8	11	5.2	63		
MONTANA	1087	891.0	1018.9	18.1	4.8	11.4	1.8	29.4	7	-3.3	31	0	5	0.0	53	19	-4	6	7	0	0	36	T	2.0	25	17.9	W	19	7	10	14	6.2	64	
PILLINGS	696	932.3	1018.6	16.3	2.6	9.4	1.4	30.0	4	-6.7	31	0	12	0.6	59	14	0	11	4	0	18	T	1.2	32	16.1	32	10	6	10	15	6.5	62		
GLASGOW	1116	888.3	1016.0	16.8	2.5	9.7	0.6	30.0	4	-6.1	31	0	12	-1.1	51	21	4	11	5	0	18	T	2.7	23	15.2	SW	26	6	9	16	6.7	42		
GREAT FALLS	788	922.1	1016.9	17.2	1.7	9.4	1.3	31.1	4	-8.3	30	0	10	0	5	14	3	10	6	0	0	0	2.1	25	14.8	W	17	6	10	15	6.6	67		
HAVRE	1167	881.1	1016.9	16.6	0.9	8.8	1.4	27.2	11	-9.4	31	0	12	-1.7	54	10	-5	8	3	0	5	0	1.7	28	13.4	NW	26	6	7	18	6.8	51		
HELENA	904	912.6	1018.2	15.5	-0.4	7.6	1.7	27.8	7	-5.6	18	0	22	1.7	72	37	6	15	11	0	10	0	0.4	18	11.6	3	8	5	9	17	7.0			
KALISPELL	801	921.4	1018.4	17.4	3.4	10.4	1.1	28.3	4	-7.2	31	0	9	0.6	54	8	-1	1	0	0	10	T	0.2	30	10.7	E	8	8	5	18	6.9	63		
MILES CITY	972	905.5	1018.0	15.8	2.1	8.9	2.2	27.2	5	-5.6	31	0	9	1.1	66	25	1	11	9	0	0	T	0.2	30	10.7	E	8	8	5	18	6.9	63		
MISSOULA	561	946.8	1013.0	19.8	3.4	11.7	-0.4	27.8	11	-4.4	13	0	6	1.7	55	77	49	57	5	1	15	25	1.7	34	15.6	31	31	7	14	10	5.8			
NEBRASKA	359	969.5	1012.3	20.6	4.4	12.5	-0.2	27.8	11	-5.6	13	0	4	5.0	65	134	91	109	6	4	10	T	2.5	33	15.6	NW	1	12	8	11	5.5	62		
GRAFO ISLAND	471	957.0	1012.8	17.9	3.2	10.6	-0.8	27.2	7	-6.7	13	0	6	2.2	60	108	74	50	7	3	2	0	1.1	33	18.8	NW	31	9	10	12	5.8	68		
LINCOLN	846	915.0	1013.7	21.6	2.6	12.1	1.6	32.2	2	-2.2	28	0	7	0.6	51	34	8	24	5	0	74	76	2.1	34	21.0	NW	31	9	12	10	5.8	68		
NORFOLK	298	915.0	1013.7	21.6	2.6	12.1	1.6	32.2	2	-2.2	28	0	7	0.6	51	34	8	24	5	0	74	76	2.1	34	21.0	NW	31	9	12	10	5.8	68		
NORTH PLATTE	399	878.8	1014.5	20.2	3.3	11.7	1.6	30.0	7	-2.2	31	0	8	1.1	56	113	69	65	7	4	48	51	2.2	32	18.8	NW	10	11	10	10	5.3	48		
OMAHA (KNORPH)	789	922.5	1018.0	15.8	2.1	8.9	2.2	27.2	5	-5.6	31	0	9	1.1	66	25	1	11	9	0	0	T	0.2	30	10.7	E	8	8	5	18	6.9	63		
OMAHA (NORTH)	1206	878.8	1014.5	20.2	3.3	11.7	1.6	30.0	7	-2.2	31	0	8	1.1	56	113	69	65	7	4	48	51	2.2	32	18.8	NW	10	11	10	10	5.3	48		
SCOTTSBUFF	179	922.5	1018.0	15.8	2.1	8.9	2.2	27.2	5	-5.6	31	0	9	1.1	66	25	1	11	9	0	0	T	0.2	30	10.7	E	8	8	5	18	6.9	63		
VALENTINE	1539	885.6	1015.7	21.4	3.7	12.6	4.3	31.1	5	-6.1	10	0	4	-1.7	45	11	-6	6	5	0	38	25	0.5	26	9.4	19	35	10	9	12	5.5	66		
NEVADA	1906	807.7	1015.1	18.6	10.2	2.2	2.2	16.3	6	-10.9	10	0	15	-5.0	74	19	4	17	4	0	18	0	1.7	20	13.5	19	38	15	11	10	5.1	89		
ELKO	953	874.4	1015.7	22.8	1.2	11.5	2.0	31.7	5	-3.7	11	0	9	0.6	50	8	-9	0	0	0	0	0	0.6	23	21.9	SW	26	11	12	6	5.0	85		
ELI VEGAS	1342	866.9	1015.9	22.0	1.4	11.7	2.1	32.2	6	-8.9	30	1	10	-1.1	47	15	-1	10	4	0	0	0	0.2	27	14.3	SW	35	9	11	11	5.7	61		
WINEMUCCA	1311	869.3	1015.9	22.0	1.4	11.7	2.1	32.2	6	-8.9	30	1	10	-1.1	47	15	-1	10	4	0	0	0	0.2	27	14.3	SW	35	9	11	11	5.7	61		
NEW HAMPSHIRE	104	1001.4	1016.3	14.4	2.6	8.6	-1.1	30.0	22	-6.7	31	0	17	4.4	75	96	28	33	10	2	33	T	0.9	25	13.4	NW	8	5	8	18	7.1	44		
CONCORD	1909	885.6	1015.7	21.4	3.7	12.6	4.3	31.1	5	-6.1	10	0	4	-1.7	45	11	-6	6	5	0	38	25	0.5	26	9.4	19	35	10	9	12	5.5	66		
MT WASHINGTON OBS	1909	885.6	1015.7	21.4	3.7	12.6	4.3	31.1	5	-6.1	10	0	4	-1.7	45	11	-6	6	5	0	38	25	0.5	26	9.4	19	35	10	9	12	5.5	66		
NEW JERSEY	20	1013.2	1015.5	17.8	7.0	12.4	-1.3	28.3	22	-1.1	15	0	4	7.2	72	56	-32	27	8	1	T	0	1.7	24	10.3	21	9	7	13	11	5.6	50		
ATLANTIC CITY	3	1014.2	1015.4	17.8	9.4	13.6	-0.6	30.0	22	1.7	10	0	0	7.2	68	116	45	35	6	1	T	0	2.0	25	13.4	SW	9	6	11	14	6.5	45		
NEWARK	17	1014.2	1015.4	16.7	8.6	12.7	-1.3	28.3	22	0.6	10	0	0	7.2	68	93	29	37	9	1	T	0	2.0	25	13.4	SW	5	6	10	15	6.6	45		
TRENTON U	1619	838.1	1012.4	25.6	7.1	16.4	1.8	32.8	5	-3.3	31	3	2	-1.7	33	7	-13	5	2	1	23	T	0.1	19	15.2	E	9	15	9	7	4.0	84		
NEW MEXICO	1515	888.9	1011.9	26.9	8.3	17.7	2.3	35.0	12	0.0	31	8	1	0.6	35	5	-26	5	1	0	10	0	0.5	25	15.6	W	21	16	8	7	3.8	66		
ALBUQUERQUE	1112	888.9	1011.9	26.9	8.3	17.7	2.3	35.0	12	0.0	31	8	1	0.6	35	5	-26	5	1	0	10	0	0.5	25	15.6	W	21	16	8	7	3.8	66		
CLAYTON	84	1003.7	1018.5	15.3	4.9	10.1	-0.7	30.0	22	-3.9	31	0	11	4.4	69	87	20	41	8	1	T	0	1.6	21	15.2	SW	6	3	9	19	7.4	31		
POSWAY	485	955.3	1018.2	13.0	5.2	9.1	-1.1	27.2	22	-2.2	31	0	5	4.4	76	62	-14	19	15	2	T	0	2.3	22	12.5	SW	6	1	8	22	8.1	30		
NEW YORK	215	987.1	1012.9	13.9	6.8	10.4	-0.4	27.2	22	-0.6	10	0	2	6.1	75	99	22	17	2	0	T	0	2.4	23										







# CLIMATOLOGICAL DATA

METRIC UNITS

OCTOBER 1979

State and Station	Elevation (ground)		Pressure		Temperature							Precipitation				Wind				No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine %										
	m	ft	Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. $\geq 32.2^{\circ}\text{C}$ or above	Min. $0^{\circ}\text{C}$ or lower	No. of days	Average relative humidity	Total	mm	Greatest in 24 hours	No. of days	With thunderstorms	Snow, ice pellets			Maximum depth on ground	Resultant speed	Resultant direction	Fastest mile (1.6 kilometers)		Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10		
																												°C	°C				°C	°C
WASHINGTON	122	999.3	1015.6	15.9	8.7	12.3	1.1	25.0	3	5.0	29*	0	0	7.2	73	86	-1.3	20	13	0	0	0	0	0	0.8	13	12.5	5	25	7	18	7.2	43	
SEATTLE-TACOMA	718	931.9	1016.1	16.8	4.4	10.6	1.8	27.2	6	-2.2	31	0	2	1.7	61	31	-5	23	8	0	0	0	0	0	1.5	17	10.7	SW 19	11	15	5.9	68		
SPokane	1236	879.4	1028	10.8	3.9	7.4	2.0	21.7	12	-2.2	28	0	0	0	126	126	-10.0	24	14	0	0	569	28*	0	0	0	0	0	0	0	0	0	0	
STAMPADE PASS R	289	977.3	1015.9	20.1	8.8	14.4	2.0	31.0	5	2.8	31	0	0	0	68	68	5.0	32	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
HALLA CULLA U	321	977.3	1015.9	19.3	3.9	11.6	1.6	27.8	7	-2.2	31	0	4	3.3	63	19	4	12	5	0	0	0	0	0	0	1.5	26	10.7	23	25	12	7	12	5.1
YAKIMA	321	977.3	1015.9	19.3	3.9	11.6	1.6	27.8	7	-2.2	31	0	4	3.3	63	19	4	12	5	0	0	0	0	0	0	1.5	26	10.7	23	25	12	7	12	5.1
*EST INDIES	4	1010.8	1013.3	32.3	24.4	28.3	1.3	35.0	23	23.3	1	16	0	24.4	82	30	-11.4	20	10	4	0	0	0	0	0	1.9	10	11.2	SE 4	5	22	4	5.2	84
SAN JUAN P.R.	4	1010.8	1013.3	32.3	24.4	28.3	1.3	35.0	23	23.3	1	16	0	24.4	82	30	-11.4	20	10	4	0	0	0	0	0	1.9	10	11.2	SE 4	5	22	4	5.2	84
NORTH VIRGINIA	765	927.9	1016.7	15.6	4.9	10.3	-1.3	26.1	21	-5.0	27	0	6	6.7	83	66	3	18	15	3	0	69	3	0	0	1.6	23	11.2	14	31	6	17	7.2	
BECHLEY	313	981.4	1016.7	18.6	6.5	12.6	-1.3	30.0	21	-3.3	27	0	4	6.7	73	93	31	41	13	5	0	25	1	0	0	1.6	23	7.6	18	31*	7	17	6.9	
CHARLESTON	594	945.5	1018.7	15.4	3.4	9.4	-1.4	26.1	22	-8.3	27	0	8	6.7	70	131	62	39	17	0	99	76	0	0	0	1.4	22	10.3	27	23	6	8	19	7.6
ELKINS	252	985.8	1018.9	18.7	7.2	13.0	-0.9	29.4	22*	-2.2	27	0	4	6.7	70	62	15	44	12	3	0	0	0	0	0	1.4	22	10.3	27	23	6	8	17	7.2
HUNTINGTON	187	977.3	1015.9	17.3	7.3	12.3	-1.6	28.3	22*	-2.2	27	0	2	6.7	70	75	2.2	22	11	0	0	0	0	0	0	1.4	22	10.3	27	23	6	8	17	7.2
PARAERSBURG U	187	977.3	1015.9	17.3	7.3	12.3	-1.6	28.3	22*	-2.2	27	0	2	6.7	70	75	2.2	22	11	0	0	0	0	0	0	1.4	22	10.3	27	23	6	8	17	7.2
*WISCONSIN	208	985.8	1011.8	12.2	3.1	7.7	-1.9	23.9	21	-5.6	14	0	7	5.0	83	69	2.0	30	14	3	0	0	0	0	0	0.8	30	13.9	SW 31	0	9	22	8.5	38
GREEN RAY	198	987.8	1012.6	13.6	3.8	8.7	-2.3	23.3	20	-4.4	26	0	9	5.0	82	112	6.0	31	6	0	0	0	0	0	0	0.7	31	11.2	14	31	6	8	17	7.2
LA CROSSE	282	983.4	1012.0	14.6	2.6	8.6	-1.3	27.2	21	-2.2	26	0	9	4.4	79	79	2.4	43	9	3	0	0	0	0	0	1.0	28	13.9	SW 31	3	9	19	7.7	32
WADSWORTH	205	986.5	1011.8	14.9	6.2	10.6	0.1	26.1	21	-2.8	26*	0	3	6.7	79	45	-5	14	10	3	0	0	0	0	0	1.9	26	15.2	SW 20*	3	10	18	7.3	41
*ILLINOIS	1627	837.8	1015.8	17.2	0.3	8.8	0.1	28.3	7	-9.4	31	0	15	-3.3	49	13	-11	8	0	0	0	0	0	0	0	2.6	25	16.5	24	19	6	11	14	6.4
CASPER	1867	811.7	1014.2	17.2	2.5	9.9	1.1	27.2	7	-8.3	31	0	9	-2.2	40	12	-12	6	0	0	0	0	0	0	0	2.6	25	16.5	24	19	6	11	14	6.4
CHEYENNE	1668	827.7	1015.5	17.4	2.3	9.9	1.7	27.2	7*	-8.3	31	0	11	-2.2	40	12	-12	6	0	0	0	0	0	0	0	2.6	25	16.5	24	19	6	11	14	6.4
LANDER	1208	874.8	1016.2	17.4	1.2	9.3	0.6	24.3	7	-3.0	31	0	13	0.0	59	58	-3	23	8	0	0	0	0	0	0	1.7	30	14.3	NW 8	6	10	15	6.4	
SHEPHERD	1208	874.8	1016.2	17.4	1.2	9.3	0.6	24.3	7	-3.0	31	0	13	0.0	59	58	-3	23	8	0	0	0	0	0	0	1.7	30	14.3	NW 8	6	10	15	6.4	

# HEATING DEGREE DAYS

(Base 65°F.)

OCTOBER 1979

State and Station	Current season			State and Station	Current season			State and Station	Current season			State and Station	Current season		
	This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	136	137	101	BOISE	326	359	545	GRAND ISLAND	366	434	475	BRISTOL	323	352	286
BIRMINGHAM	101	101	143	LEWISTON	281	307	550	LINCOLN	324	376	417	CHATTANOOGA	167	167	191
HUNTSVILLE	152	152	170	POCATELLO	422	499	727	NORFOLK	430	503	537	KNOXVILLE	220	220	185
MOBILE	43	43	39					NORTH PLATTE	341	408	595	MEMPHIS	76	76	149
MONTGOMERY	76	76	93	ILLINOIS				OMAHA (EPPLEY)				NASHVILLE	160	185	190
				CAIRO U	134	138	168	OMAHA (NORTH)	354	421	458	OAK RIDGE	267	274	236
ALASKA				CHICAGO O HARE	382	479	475	SCOTTSDRUFF	363	428	627				
ANCHORAGE	735	1441	1945	CHICAGO MIDWAY	367	443	381	VALENTINE	478	593	642	TEXAS			
ANNETTE	490	1083	1333	MOLINE	415	537	434					AMARILLO	43	43	89
BARROW	1419	3525	4246	PEORIA	401	493	405	NEVADA				AMARILLO	186	216	226
BARTER ISLAND	1342	3617	4093	ROCKFORD	450	605	513	ELKO	320	356	896	AUSTIN	16	16	39
BETHEL	952	2258	2392	SPRINGFIELD	323	382	338	ELY	464	705	939	KNOXVILLE	0	0	5
BETTLES	1154	2221	2782					LAS VEGAS	44	44	74	CORPUS CHRISTI	6	6	7
BIG DELTA	925	1681	2379	INDIANA				RENO	339	432	691	DALLAS FT WORTH	34	34	60
COLD BAY	712	1973	2205	EVANSVILLE	290	319	270	WINNEMUCCA	363	457	765	DEL RIO	10	10	34
FAIRBANKS	1004	1819	2304	FORT WAYNE	440	573	465					EL PASO	56	80	92
GULKANA	944	1917	2446	INDIANAPOLIS	384	487	370	NEW HAMPSHIRE				GALVESTON	7	7	12
HOMER	692	1732	2181	SOUTH BEND	353	446	496	CONCORD	546	842	730	HOUSTON INTERCON	27	27	24
JUNEAU	609	1480	1813					MT WASHINGTON OBS	1090	2842	2813	LUBBOCK	104	113	170
KING SALMON	788	1717	2177	IOWA								MIDLAND	63	66	81
KODIAK	577	1390	1858	BURLINGTON	359	431	398	NEW JERSEY				PORT ARTHUR	23	23	35
KOTZEBUE	1168	2467	2818	DES MOINES	339	407	457	ATLANTIC CITY	341	446	297	SAN ANGELO	57	57	73
MC GRATH	958	1976	2443	DUBUQUE	449	592	594	ATLANTIC CITY U	275	310	222	SAN ANTONIO	15	15	32
NOME	935	2336	2771	SILOU CITY	457	552	501	NEWARK	289	323	277	VICTORIA	20	20	15
ST. PAUL ISLAND	667	2109	2602	WATERLOO	431	516	596	TRENTON U	328	386	291	WACO	43	43	51
TALKEETNA	852	1690	2129									WICHITA FALLS	57	57	92
UNALAKLEET				KANSAS				NEW MEXICO							
VALDEZ	724	1786	2174	CONCORDIA	233	271	348	ALBUQUERQUE	148	171	225	UTAH			
YAKUTAT	609	1621	1986	GODDGE CITY	237	271	288	CLAYTON	275	351	391	MILFORD	361	397	570
				GOODLAND	337	427	495	ROSWELL	115	142	212	SALT LAKE CITY	270	277	512
ARIZONA				TOPEKA	267	316	314								
FLAGSTAFF	526	937	934	WICHITA	156	166	243	NEW YORK				VERMONT			
PHOENIX	11	11	17					ALBANY	468	687	588	BURLINGTON	528	829	762
TUCSON	26	26	29	KENTUCKY				BINGHAMTON	522	836	689				
WINSLOW	229	235	271	COVINGTON	346	421	315	BUFFALO	455	640	602	VIRGINIA			
YUMA	2	2	0	LEXINGTON	307	352	286	NEW YORK U	271	299	238	LYNCHBURG	320	353	267
				LOUISVILLE	244	263	276	NEW YORK KENNEDY	313	366	289	NORFOLK	190	190	150
ARKANSAS								NEW YORK LA GUARDIA	295	334	254	RICHMOND	242	250	224
FORT SMITH	123	131	135	LOUISIANA				ROCHESTER	468	673	559	ROANOKE	329	390	267
LITTLE ROCK	80	80	148	EATON ROUGE	44	44	54	SYRACUSE	454	658	541	WALLOPS ISLAND	203	206	190
NO. LITTLE ROCK	98	103	128	LAKE CHARLES	25	25	36								
				NEW ORLEANS	13	13	40	NORTH CAROLINA				WASHINGTON	404	699	836
CALIFORNIA				SHREVEPORT	52	52	70	ASHEVILLE	299	348	319	OLYMPIA	404	699	836
BAKERSFIELD	22	22	55					CAPE HATTERAS R	112	112	76	QUILLAYUTE	382	823	1078
BISHOP	232	238	305	MAINE				CHARLOTTE	197	212	162	SEATTLE	304	417	604
BLUE CANYON	400	710	534	CARIBOU	612	1119	1190	GREENSBORO	239	267	233	SEATTLE-TACOMA	327	480	729
EUREKA U	231	696	1099	PORTLAND	539	882	775	RALEIGH	196	209	198	SPOKANE	423	559	797
FRESNO	56	56	90					WILMINGTON	110	112	80	STAMPEDE PASS R	602	1504	1710
LONG BEACH	21	21	55	MARYLAND								WALLA WALLA U	223	239	419
LOS ANGELES	18	16	134	BALTIMORE	311	338	277	NORTH DAKOTA				YAKIMA	371	463	666
LOS ANGELES U	1	1	40					BISHARCK	626	883	869				
MT SHASTA R	401	638	668	MASSACHUSETTS				FARGO	689	876	838	WEST VIRGINIA			
OKLAND	47	108	348	BLUE HILL OBS R	445	639	497	WILLISTON	560	754	929	BECKLEY	448	629	526
RED BLUFF	89	89	82	GOSTON	390	487	381					CHARLESTON	331	385	313
SACRAMENTO	100	100	106	WORCESTER	500	758	593	OHIO				ELKINS	491	706	615
SAN DIEGO	4	4	65					AKRON	444	625	495	HUNTINGTON	312	355	311
SAN FRANCISCO	85	209	380	MICHIGAN				CINCINNATI ABBE OB	333	391	282	PARKERSBURG U	346	416	314
SAN FRANCISCO U	64	363	608	ALPENA	630	999	999	CLEVELAND	403	521	475				
SANTA MARIA	97	228	467	DETROIT	459	596	433	COLUMBUS	376	486	426	WISCONSIN			
STOCKTON	60	60	88	DETROIT METRO	471	638	493	OAYTON	397	518	377	GREEN BAY	590	806	757
				PLINT	477	650	630	MANSFIELD	453	648	421	LA CROSSE	535	689	578
COLORADO				GRAND RAPIDS	411	578	558	TOLEDO	440	610	501	MADISON	546	766	700
ALAMOSA	590	1041	1093	HOUGHTON LAKE	597	950	940	YOUNGSTOWN	445	658	533	MILWAUKEE	436	551	631
COLORADO SPRINGS	407	542	633	LANSING	491	659	591								
DENVER	347	425	528	MUSKEGON	482	710	610	OKLAHOMA				WYOMING			
GRAND JUNCTION	209	212	384	SAULT STE MARIE	696	1204	1095	OKLAHOMA CITY	92	94	160	CASPER	523	682	795
PUEBLO	299	352	390					TULSA	90	90	153	CHEYENNE	468	637	808
				MINNESOTA								LANOER	683	608	812
CONNECTICUT				DULUTH	674	1093	1100	OREGON				SHERIDAN	497	643	837
BRIDGEPORT	360	465	303	INTERNATIONAL FALLS	862	1423	1209	ASTORIA	305	599	893				
HARTFORD	442	640	502	MINNEAPOLIS	566	695	677	BURNS U	434	615	873				
				ROCHESTER	500	710	726	EUGENE	257	359	577				
DELAWARE				ST CLOUD	623	930	822	MEFORD	203	218	481				
WILMINGTON	318	360	286					PENOLETON	326	381	500				
				MISSISSIPPI				PORTLAND	214	243	570				
DIST.OF COLUMBIA	337	409	334	JACKSON	98	98	91	SALEM	315	436	582				
WASHINGTON DULLES	337	409	334	MERIDIAN	93	93	111	SEXTON SUMMIT R	405	803	841				
WASHINGTON NATIONAL	231	236	204												
				MISSOURI				PENNSYLVANIA							
FLOPIA				COLUMBIA REGIONAL	261	301	289	ALLEN TOWN	386	497	435				
APPALACHICOLA U	10	10	22	KANSAS CITY	247	292	309	ERIE	378	515	623				
OAYTONA BEACH	0	0	0	ST JOSEPH	263	316	319	HARRISBURG	393	490	344				
FORT MYERS	0	0	0	ST LOUIS	223	239	259	PHILADELPHIA	324	363	287				
JACKSONVILLE	19	19	19	SPRINGFIELD	184	216	268	PITTSBURGH	438	598	493				
KEY WEST	0	0	0					SCRANTON	420	605	532				
MIAMI	0	0	0	MONTANA				WILLIAMSPORT	438	603	479				
ORLANDO	0	0	0	BILLINGS	383	436	733								
PENSACOLA	19	19	32	GLASGOW	489	626	885	RHODE ISLAND							
TALLAHASSEE	54	54	31	GREAT FALLS	462	622	844	BLOCK ISLAND	315	414	400				
TAMPA	0	0	0	HAVRE	495	641	892	PROVIDENCE	380	510	453				
WEST PALM BEACH	0	0	0	HELENA	528	681	1005								
				KALISPELL	595	853	1256	SOUTH CAROLINA							
GEORGIA				MILES CITY	437	518	750	CHARLESTON	68	68	74				
ATHENS	134	140	138	MISSOULA	517	688	1059	CHARLESTON U	32	32	50				
ATLANTA	122	127	145					COLUMBIA	138</						



# COOLING DEGREE DAYS

(Base 65°F.)

OCTOBER 1979

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month
ALABAMA				ALABAMA				ALABAMA				ALABAMA			
BIRMINGHAM U	49	1722	2217	HILLO	350	2695	2606	NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM	74	1711	1928	HONOLULU	504	3765	3606	GRAND ISLAND	2	978	1036	CHARLESTON	105	2164	2068
HUNTSVILLE	36	1436	1808	KAHULUI	487	3515	3187	LINCOLN	4	1008	1148	CHARLESTON U	144	2121	2325
MOBILE	146	2421	2551	LIHUE	426	3398	3180	NORFOLK	0	946	925	COLUMBIA	50	1671	2082
MONTGOMERY	79	2024	2232					NORTH PLATTE	0	862	802	GRNVLLA-SPRTNBRG	20	1295	1573
ALASKA				IDAHO				OMAHA (ERPLEY)	2	1002	949				
ANCHORAGE	0	4	0	POISE	3	752	714	OMAHA (NORTH)	1	853	666	SOUTH DAKOTA			
ANNETTE	0	9	14	LEWISTON	7	968	657	SCOTTSBLUFF	0	777	736	ABERDEEN	0	502	566
BARRO	0	0	0	POCATELLO	0	479	437	VALENTINE	1	853	666	HURON	0	783	711
BARTER ISLAND	0	0	0									RAPID CITY	2	550	661
BETHEL	0	0	0	ILLINOIS				NEVADA				SIOUX FALLS	0	724	719
BETTTLES	0	12	17	CAIRO	66	1762	1816	ELKO	4	694	342	TENNESSEE			
PIG DELTA	0	26	34	CHICAGO O HARE	26	806	664	FLY	0	208	207	BRISTOL	9	720	1107
COLD BAY	0	0	0	CHICAGO MIDWAY	25	812	925	LAS VEGAS	229	3387	2940	CHATTANOOGA	24	1432	1636
FAIRBANKS	0	23	52	MOLINE	22	907	893	RENO	3	404	329	CHNOXVILLE	23	1351	1569
GULF BANA	0	0	0	PEORIA	23	903	968	WINNEMUCCA	3	593	407	MEMPHIS	108	2084	2029
HOWEO	0	0	0	ROCKFORD	16	679	714					NASHVILLE	44	1376	1694
JUNEAU	0	0	0	SPRINGFIELD	41	1201	1116	NEW HAMPSHIRE				DAK RIGGS	11	1044	1367
KING SALMON	0	0	0					CONCORD	6	519	349				
KODIAK	0	8	0	INDIANA				MT WASHINGTON OBS	0	0	0	TEXAS			
KOTZEBUE	0	1	0	EVANSVILLE	35	1238	1364					ABILENE	253	2501	2457
MC CRATH	0	2	14	FORT WAYNE	16	677	748	NEW JERSEY				AMARILLO	41	1168	1433
NEW	0	0	0	INDIANAPOLIS	24	882	974	ATLANTIC CITY	15	850	864	AUSTIN	285	2594	2875
ST. PAUL ISLAND	0	0	0	SOUTH BEND	21	801	695	ATLANTIC CITY U	8	713	835	BROWNSVILLE	368	3525	3669
TALKRENA	0	0	0					NEWARK	34	1153	1024	CORPUS CHRISTI	333	3384	3359
UNALASKLEET	0	0	0	IOWA				TRENTON U	19	935	968	DALLAS FT WORTH	220	2495	2576
WALDFZ	0	0	0	MURLINGTON	19	931	994					DEL RIO	337	3177	3341
YAKUTAT	0	0	0	DES MOINES	15	984	928	NEW MEXICO				EL PASO	99	2157	2058
				DURBUO	8	606	606	ALBUQUERQUE	45	1508	1316	GALVESTON	268	2607	2927
APIZOCA				SIYOU CITY	8	865	932	CLAYTON	17	742	767	HOUSTON INTERCON	211	2545	2840
FLAGSTAFF	0	85	140	WATERLOO	9	770	675	ROSWELL	84	1684	1560	LUBBOCK	98	1878	1647
PHOENIX	377	4179	3482									MIDLAND	167	2109	2245
TUCSON	282	3546	2788	KANSAS				NEW YORK				RORT ARTHUR	203	2552	2750
WINSLOW	13	1185	1203	CONCORDIA	27	1280	1302	BINGHAMTON	17	636	574	SAN ANGELO	217	2345	2689
YUMA	416	4357	4126	DOORF CITY	40	1316	1411	RUFFALO	14	371	369	SAN ANTONIO	322	2943	2967
				GOODLAND	11	939	925	NEW YORK U	43	1213	1068	VICTORIA	266	2796	3074
ARKANSAS				TORLKA	27	1275	1361	NEW YORK KENNEDY	7	824	861	WACO	220	2299	2847
FORT SMITH	85	1642	2022	WICHITA	67	1663	1673	NEW YORK LA GUARDIA	22	1049	1048	WICHITA FALLS	176	2400	2605
LITTLE ROCK	95	1925	1925					ROCHESTER	18	597	531	UTAH			
NO. LITTLE ROCK	59	1702	1951	KENTUCKY				SYRACUSE	22	595	551	MILFORD	1	589	688
CALIFORNIA				COVINGTON	22	845	1080					SALT LAKE CITY	21	1274	927
BAKERSFIELD	205	2729	2173	LEXINGTON	21	968	1197	NORTH CAROLINA							
BISHOP	17	1054	1037	LOUISVILLE	39	1236	1268	CARE HATTERAS R	4	792	872	VERMONT			
BLUE CANYON	14	0	0	LOUISIANA				CHARLOTTE	69	1532	1543	RURLINGTON	13	531	396
EUPEKA U	0	15	0	FATON POUGE	144	2359	2563	GREENSBORO	28	1176	1341	VIRGINIA			
FRSNG	149	2267	1671	LAKE CHARLES	163	2426	2699	RALEIGH	46	1265	1394	LYNCHBURG	21	982	1100
LONG BEACH	72	1186	962	NEW ORLEANS	206	2854	2663	WILMINGTON	65	1938	1958	NORFOLK	54	1411	1441
LOS ANGELES	60	813	592	SHREVEPORT	124	2106	2524					PICHMONO	42	1366	1353
LOS ANGELES U	124	1291	1141					NORTH DAKOTA				ROANOKE	12	901	1030
MT SHASTA R	5	235	286	MAINE				BISMARCK	0	365	487	WALLORS ISLAND	38	1187	1107
OAKLAND	28	252	128	CARIBOU	6	290	128	FARGO	0	504	473	WASHINGTON			
PED BLUFF	132	2208	1904	PORTLAND	3	316	252	WILLISTON	0	415	422	OLYMPIA	0	93	101
SACRAMENTO	72	1294	1159									QUILLAYUTE	0	15	8
SAN DIEGO	124	1202	708	MARYLAND				AKRON	10	564	634	SEATTLE	0	139	183
SAN FRANCISCO	18	182	108	MALTIMORE	28	1136	1108	CINCINNATI ABBE OB	23	930	1188	SEATTLE-TACOMA	0	171	129
SAN FRANCISCO U	16	125	39	MASSACHUSETTS				CLEVELAND	21	715	613	SPokane	0	496	388
SANTA MARIA	12	113	84	BLUE HILL OBS R	14	584	457	COLUMBUS	22	808	809	STAMFORD RASS R	0	33	16
STOCKTON	104	1793	1259	ROSTON	17	789	561	DAYTON	18	859	936	WALLA WALLA U	11	1032	862
COLOREAD				WORCESTER	10	483	387	MANSFIELD	17	531	818	YAKIMA	2	571	479
ALAMOSA	0	34	88					TOLDOO	22	602	685	WEST INDIES			
COLOPADO SPRINGS	2	473	461	MICHIGAN				YOUNGSTOWN	14	501	518	SAN JUAN P.R.	569	4968	4205
DEWEER	7	661	625	ALBENA	7	272	208					WEST VIRGINIA			
GRAND JUNCTION	27	1243	1140	DETROIT	12	598	743	OKLAHOMA				BECKLEY	6	404	490
PUEBLO	1	964	981	DETROIT METRO	16	522	654	OKLAHOMA CITY	121	1803	1876	CHARLESTON	17	894	1055
CONNECTICUT				FLINT	17	509	438	TULSA	137	2151	1949	ELKINS	0	392	389
BRIDGEPORT	4	731	735	GRAND RAPIDS	19	614	575					HUNTINGTON	22	1001	1098
HARTFORD	6	811	594	HOUGHTON LAKE	7	271	250	ASTORIA	1	27	1*	PARKERSBURG U	18	800	1045
DELAWARE				LANSING	17	578	535	BURNS U	6	367	289				
WILMINGTON	16	990	992	MUSKOGON	7	379	469	EUGENE	0	182	239	WISCONSIN			
DIST. OF COLUMBIA				SAULT STE MARIE	0	145	139	MEADOW	30	658	562	GREEN BAY	1	380	386
WASHINGTON OUILLES	21	976	940	MINNESOTA				PENDLETON	3	650	656	LA CROSSE	3	584	695
WASHINGTON NATIONAL	39	1477	1415	DULUTH	0	169	176	ROPLAND	7	462	300	MAISON	13	450	460
				INTERNATIONAL FALLS	0	131	176	SALFORD	1	219	232	MILWAUKEE	11	538	450
				MINNEAPOLIS	0	651	585					WYOMING			
				POCHESTER	1	611	474	RACIFIC AREA				CASPER	0	415	458
				ST CLOUD	0	324	426	GUAM TAGUAC R	447	4300	4166	CHEYENNE	0	352	327
FLOPIDA								JOHNSTON	534	4401	4266	LANDER	0	436	383
APRALACHICOLA U	147	2381	2618	MISSISSIPPI				KOROD R	533	5105	4996	SHERIDAN	0	318	446
DAYTONA BEACH	252	2827	2774	JACKSON	76	1941	2306	KWAJALEIN	559	5292	5148				
FORT MYERS	442	3836	3429	MERIDIAN	63	1936	2224	MAJURO	537	5001	4919				
JACKSONVILLE	156	2419	2530					RAGO RAGO	502	4792	4413				
KEY WEST	502	4474	4365	MISSOURI				RONARE R	524	5063	4709				
MIAMI	437	3714	3650	COLUMBIA REGIONAL	39	1165	1269	TRUK MOEN ISLAND	513	5207	4894				
ORLANDO	299	3119	3041	KANSAS CITY	29	1174	1285	WAKE	576	5006	4571				
PENSACOLA	162	2543	2659	ST JOSEPH	28	1097	1334	YAP P	505	4909	4925				
TALLAHASSEE	102	2161	2532	ST LOUIS	50	1578	1475								
TAMPA	322	3218	3177	SPRINGFIELD	65	1122	1387	PENNSYLVANIA				ALLENSTOWN	7	810	772
WEST PALM BEACH	396	3362	3450					FRIC	32	492	373	HARRISBURG	7	828	1025
FLORIDIA				MONTANA				PHILADELPHIA	16	1096	1104	PITTSBURGH	7	620	647
ATHENS	40	1608	1722	BILLINGS	6	716	498	SCRANTON	15	634	608	WILLIAMSPORT	4	707	698
ATLANTA	49	1757	1589	GLASGOW	1	533	438					RHODE ISLAND			
AUGUSTA	52	1809	1990	BREAT FALLS	5	396	339	BLOCK ISLAND	2	509	359	PROVINCE	12	640	



# RAWINSONDE DATA

Average monthly values

OCTOBER 1979

ALBANY, NY 1004 MB										ALBUQUERQUE, NM 838 MB										APARILLO, TX 890 MB										ANCHORAGE, AK 995 MB										ANNETTE, AK 1007 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg	Speed m.p.s.					Direction tens of deg	Speed m.p.s.					Direction tens of deg	Speed m.p.s.					Direction tens of deg	Speed m.p.s.					Direction tens of deg	Speed m.p.s.	Direction tens of deg	Speed m.p.s.	Direction tens of deg	Speed m.p.s.															
5FC	30	8.6	7.5	5.7	22	1.6	31	1,619	9.8	-1.6	04	1.2	31	1,095	9.4	-2	26	1.6	31	45	4.6	2.0	13	.7	31	37	8.6	5.8	12	3.1																			
1000	21	14.6	9.1	5.8	21	1.7	29	1,420	9.4	-1.4	08	1.2	31	1,095	9.4	-2	26	1.6	31	8	4.6	1.0	23	.7	31	147	9.3	6.1	13	3.5																			
950	30	14.6	7.0	4.2	25	4.4	30	1,420	9.4	-1.4	08	1.2	31	1,095	9.4	-2	26	1.6	31	83	4.7	-1.4	08	2.2	31	521	7.6	3.2	15	6.5																			
900	30	9.4	5.2	2.1	26	7.0	30	1,420	9.4	-1.4	08	1.2	31	1,095	9.4	-2	26	1.6	31	863	2.5	-3.1	11	1.8	30	5.0	5.0	8.6	7.2																				
850	30	1,450	2.8	-2.2	26	9.3	30	1,420	9.4	-1.4	08	1.2	31	1,095	9.4	-2	26	1.6	31	1,322	-5.7	-4.7	13	5.9	31	1,430	2.1	-9.9	18	6.9																			
800	30	1,939	.9	-4.8	26	10.5	31	2,008	17.9	-1.9	30	1.3	31	1,990	12.4	-1.7	29	4.9	31	1,805	-3.7	-7.1	14	7.6	31	1,918	-2.5	-4.1	20	7.4																			
750	30	2,457	-3.9	-8.6	26	11.3	31	2,549	10.7	-4.6	30	4.0	31	2,533	10.8	-6.0	28	6.0	31	2,312	-6.8	-11.1	15	9.0	31	2,431	-3.2	-7.9	21	8.1																			
700	30	3,005	-7.8	-12.6	26	12.4	31	3,119	6.7	-7.8	30	7.9	31	3,102	7.9	-10.0	28	7.0	31	2,847	-10.3	-14.8	16	9.0	31	2,975	-6.1	-12.6	21	9.0																			
650	30	3,597	-15.3	-15.3	26	13.0	31	3,724	-6.7	-11.4	29	8.6	31	3,708	-6.4	-11.3	28	8.4	31	3,485	-13.7	-19.8	12	9.6	31	3,552	-9.3	-16.6	22	10.4																			
600	30	4,208	-20.0	-21.3	25	16.2	31	4,367	-5.5	-16.4	28	10.1	31	4,352	-1.0	-16.6	28	9.6	31	4,019	-17.6	-22.8	18	9.7	31	4,121	-12.7	-23.9	23	9.9																			
550	30	4,874	-13.9	-25.3	26	19.1	31	5,056	-5.2	-20.7	28	11.0	31	5,040	-5.7	-21.4	27	10.7	31	4,665	-21.9	-27.7	18	10.1	31	4,827	-16.5	-23.4	23	11.8																			
500	30	5,593	-18.1	-31.0	26	21.0	31	5,798	-10.2	-25.4	28	12.4	31	5,780	-10.7	-26.2	28	12.3	31	5,359	-26.8	-33.5	18	10.4	31	5,537	-21.0	-28.7	24	12.8																			
450	30	6,372	-23.3	-35.7	25	23.0	31	6,601	-16.1	-30.1	28	12.6	31	6,582	-16.3	-31.4	28	13.8	31	6,111	-32.3	-38.5	18	11.8	31	6,307	-26.3	-33.0	24	13.8																			
400	30	7,223	-29.6	-40.1	25	23.3	31	7,477	-22.5	-35.7	27	12.8	31	7,456	-23.0	-36.7	28	15.3	31	6,931	-38.7	-44.1	19	12.7	31	7,149	-32.2	-38.6	24	15.7																			
350	30	8,165	-36.8	-45.6	25	24.8	31	8,448	-29.4	-41.5	29	14.4	31	8,423	-30.5	-43.2	29	15.7	31	7,838	-45.3	-50.7	12	14.0	31	8,082	-38.9	-39.8	25	16.6																			
300	30	9,216	-43.0	-51.5	25	27.8	31	9,523	-36.0	-47.6	26	16.0	31	9,497	-38.0	-48.0	27	15.9	31	8,849	-51.6	-56.9	12	15.1	31	9,121	-45.9	-48.0	25	16.8																			
250	29	10,434	-48.6	-56	25	28.4	31	10,756	-54.4	-54.4	29	17.7	31	10,726	-47.3	-53	30	18.8	31	10,025	-53.4	-53.4	20	15.1	31	10,316	-52.3	-52.3	25	16.0																			
200	29	11,885	-53.1	-57	25	27.0	31	12,205	-58.8	-58.8	29	21.4	31	12,171	-56.7	-56.7	29	19.0	31	11,470	-50.8	-50.8	21	12.9	30	11,756	-54.6	-54.6	26	15.9																			
175	29	12,743	-54.6	-58	25	25.5	31	13,049	-59.6	-59.6	29	20.7	30	13,011	-60.0	-60.0	29	20.9	31	12,349	-50.2	-50.2	21	12.5	29	12,601	-54.4	-54.4	26	15.1																			
150	28	13,731	-56.4	-59	25	23.1	31	14,004	-63.1	-63.1	29	18.0	30	13,965	-63.0	-63.0	29	19.6	31	13,347	-50.4	-50.4	22	12.7	29	13,588	-54.8	-54.8	25	12.5																			
125	28	14,885	-58.3	-60	25	17.7	31	15,114	-66.9	-66.9	29	14.9	30	15,078	-66.3	-66.3	29	16.2	31	14,538	-50.4	-50.4	22	12.0	29	14,754	-55.3	-55.3	26	11.9																			
100	25	16,290	-60.7	-62	25	11.5	31	16,445	-69.4	-69.4	29	11.1	30	16,407	-68.7	-68.7	29	11.7	31	15,993	-50.8	-50.8	23	11.1	29	16,177	-55.3	-55.3	25	13.6																			
80	23	17,687	-60.2	-62	26	11.1	31	17,788	-66.4	-66.4	31	7.4	30	17,763	-67.4	-67.4	29	7.2	31	17,445	-51.3	-51.3	23	10.2	29	17,601	-57.7	-57.7	25	9.4																			
75	22	18,520	-59.5	-62	26	9.3	31	18,593	-65.9	-65.9	31	4.4	30	18,572	-65.2	-65.2	30	4.6	31	18,313	-51.2	-51.2	23	9.7	29	18,457	-54.6	-54.6	26	8.6																			
62	22	19,486	-59.4	-62	26	7.7	31	19,534	-63.7	-63.7	30	3.0	30	19,517	-62.7	-62.7	29	3.6	30	19,304	-51.9	-51.9	24	8.9	29	19,443	-55.1	-55.1	26	7.6																			
50	21	20,632	-58.6	-62	27	6.7	31	2,660	-61.1	-61.1	32	1.6	29	20,647	-60.7	-60.7	28	3.2	30	20,486	-51.9	-51.9	23	9.5	29	20,607	-55.1	-55.1	26	6.4																			
40	21	22,035	-58.2	-62	26	6.7	31	22,055	-58.3	-58.3	28	2.6	27	22,038	-58.5	-58.5	28	3.2	29	21,932	-52.2	-52.2	24	9.3	29	22,031	-55.6	-55.6	27	4.7																			
30	20	23,850	-55.1	-62	26	6.7	31	23,876	-55.3	-55.3	28	4.0	27	23,862	-55.1	-55.1	27	4.9	29	23,792	-52.6	-52.6	23	11.1	29	23,860	-56.4	-56.4	25	3.5																			
25	20	25,014	-55.0	-62	27	8.4	31	25,044	-54.0	-54.0	28	4.4	27	25,029	-54.2	-54.2	28	5.3	29	24,949	-53.0	-53.0	26	7.7	29	25,018	-56.5	-56.5	29	2.9																			
20	19	26,450	-52.6	-62	27	9.6	31	26,482	-52.3	-52.3	28	4.0	26	26,466	-52.4	-52.4	27	4.9	28	26,406	-53.6	-53.6	26	6.3	26	26,408	-56.1	-56.1	31	2.9																			
15	15	28,305	-51.1	-62	26	12.3	30	28,351	-50.2	-50.2	26	4.7	25	28,346	-49.7	-49.7	26	6.1	24	28,251	-53.9	-53.9	29	5.6	21	28,252	-55.9	-55.9	32	4.4																			
10	7					21	31,031	-46.4	-46.4	27	6.5	19	31,023	-45.4	-45.4	26	7.3	11	30,871	-52.9	-52.9	29	5.6	11	30,862	-54.1	-54.1	32	4.5																				



# RAWINSONDE DATA

Average monthly values

OCTOBER 1979

		CARLETON, ME 988 MB				CENTREVILLE, AL 1000 MB				CHAPLETON, SC 1016 MB				CHATHAM, MA 1013 MB				CHIHUAHUA, MEXICO 858 MB													
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.							
																									SFC	31	191	5.3	3.2	25	1.2
1000	31	507	5.1	2.4	26	3.6	31	162	11.2	8.4	05	1.7	31	145	17.6	11.8	03	.9	30	129	10.8	6.6	26	2.1	30	1,455	9.7	5.0	27	4.8	
950	31	946	3.2	-.3	26	5.1	31	1,032	13.4	4.1	24	3.0	31	98	11.6	7.4	26	.5	31	55	9.7	5.0	27	4.8	30	1,455	9.7	5.0	27	4.8	
850	31	1,410	1.8	-2.4	27	6.4	31	1,512	11.3	-1.2	26	4.0	31	1,522	11.8	-.8	25	4.2	31	1,666	4.6	-1.8	26	8.8	29	1,513	14.5	-.6	24	.9	
800	31	1,896	-1.6	-6.2	27	7.7	31	2,017	9.8	-5.6	27	5.8	31	2,027	9.8	-5.4	25	5.9	31	1,959	3.0	-6.7	26	10.2	30	2,026	17.0	-1.4	25	2.1	
750	31	2,403	-3.4	-11.4	26	9.7	31	2,551	7.5	-7.8	27	7.2	31	2,561	7.4	-7.8	25	7.0	31	2,480	1.0	-9.8	26	12.4	29	2,573	13.9	-4.5	25	2.3	
700	31	2,952	-5.4	-15.2	26	11.0	31	3,117	4.7	-10.6	27	8.2	31	3,126	4.7	-11.7	25	8.3	31	3,033	-1.3	-14.6	26	14.4	29	3,150	10.2	-7.8	26	3.3	
650	31	3,531	-8.4	-19.3	26	12.4	31	3,717	2.7	-15.0	28	9.1	31	3,726	1.4	-15.4	26	9.2	31	3,621	-3.9	-17.0	26	16.0	29	3,752	5.8	-10.5	25	3.3	
600	31	4,136	-11.0	-24.1	26	14.8	31	4,357	-2.2	-18.3	27	10.8	31	4,366	-.2	-19.5	26	10.7	31	4,249	-7.3	-19.9	25	17.9	29	4,411	1.2	-14.4	27	4.1	
550	31	4,810	-15.4	-28.1	26	15.3	31	5,043	-6.6	-23.1	28	12.4	31	5,051	-6.5	-23.8	26	12.1	31	4,922	-11.2	-24.5	25	19.8	29	5,106	-2.8	-21.2	27	5.7	
500	31	5,523	-20.0	-32.3	26	17.2	31	5,781	-11.2	-27.7	28	13.9	31	5,789	-11.4	-28.0	26	14.3	31	5,647	-16.0	-29.2	25	21.2	29	5,854	-7.6	-26.1	27	7.4	
450	31	6,297	-25.0	-36.4	25	19.8	31	6,580	-17.0	-34.0	28	14.7	31	6,589	-16.9	-33.6	26	14.9	31	6,433	-20.0	-33.9	25	23.1	29	6,666	-13.4	-31.0	28	8.2	
400	31	7,143	-30.9	-41.5	25	23.0	31	7,453	-23.5	-39.7	28	16.8	31	7,463	-23.2	-38.8	26	16.4	31	7,293	-27.2	-39.4	25	24.5	29	7,550	-20.2	-36.5	29	9.1	
350	31	8,086	-37.1	-46.6	25	26.7	31	8,418	-30.7	-44.6	28	17.8	31	8,428	-30.4	-44.5	26	17.7	31	8,244	-34.2	-45.9	25	26.4	29	8,528	-27.8	-40.9	29	10.0	
300	31	9,134	-43.7	-51.3	25	27.4	31	9,492	-38.5	-50.3	27	19.3	31	9,503	-38.7	-51.1	26	19.0	31	9,303	-41.5	-51.1	25	27.3	29	9,613	-36.4	-47.9	30	12.7	
250	31	10,351	-49.0	-.5	25	29.8	31	10,722	-47.0	-.2	28	20.4	31	10,733	-47.1	-.1	26	21.2	31	10,521	-48.5	-.5	25	27.7	29	10,853	-45.5	-.5	29	15.9	
200	31	11,803	-52.5	-.5	25	29.1	31	12,176	-52.0	-.2	28	21.0	31	12,185	-54.1	-.1	26	21.7	31	11,970	-54.5	-.5	25	28.0	29	12,308	-55.8	-.5	29	18.5	
175	28	12,664	-53.6	-.5	25	26.3	29	13,021	-59.0	-.2	28	21.5	31	13,032	-58.5	-.5	26	24.8	31	12,824	-55.8	-.5	25	27.2	29	13,147	-61.0	-.5	29	18.3	
150	28	13,654	-54.5	-.5	25	24.0	29	13,980	-62.8	-.5	26	20.6	30	13,992	-62.5	-.5	26	23.1	31	13,801	-58.0	-.5	25	24.2	29	14,093	-66.3	-.5	29	15.0	
125	28	14,818	-55.9	-.5	26	20.6	28	15,093	-65.9	-.5	28	18.6	30	15,109	-65.6	-.5	26	19.3	31	14,942	-60.7	-.5	25	21.9	29	15,186	-70.5	-.5	29	10.0	
100	28	16,236	-56.9	-.5	25	17.6	28	16,481	-67.9	-.5	28	17.6	30	16,497	-67.1	-.5	26	17.8	31	16,328	-65.6	-.5	25	19.8	29	16,528	-74.8	-.5	29	9.9	
75	27	17,656	-57.8	-.5	28	13.2	28	17,765	-66.2	-.5	28	14.2	30	17,809	-65.5	-.5	26	14.8	31	17,715	-60.5	-.5	25	12.6	26	17,814	-70.8	-.5	31	4.7	
70	26	18,499	-57.1	-.5	26	11.6	28	18,599	-64.3	-.5	27	4.8	30	18,626	-63.5	-.5	26	5.9	31	18,548	-60.3	-.5	25	10.8	24	18,613	-67.3	-.5	31	2.3	
60	26	19,476	-57.1	-.5	26	10.1	28	19,548	-61.7	-.5	26	4.2	30	19,579	-60.6	-.5	26	5.3	30	19,514	-59.6	-.5	26	8.7	24	19,553	-63.4	-.5	35	1.0	
50	25	20,623	-56.8	-.5	25	8.5	28	20,684	-59.3	-.5	26	3.8	30	20,720	-58.5	-.5	26	3.4	29	20,659	-57.5	-.5	26	7.5	23	20,688	-60.2	-.5	07	1.5	
40	25	22,039	-56.3	-.5	26	7.0	28	22,089	-57.2	-.5	27	2.8	30	22,133	-56.0	-.5	28	1.7	29	22,066	-57.3	-.5	26	7.4	23	22,090	-57.7	-.5	09	4.5	
30	23	23,876	-54.5	-.5	26	7.4	28	23,921	-54.5	-.5	27	1.3	29	24,000	-53.7	-.5	28	1.1	29	23,921	-54.5	-.5	26	7.4	23	23,921	-54.5	-.5	10	9.5	
25	23	25,000	-52.5	-.5	26	9.1	28	25,093	-53.2	-.5	26	1.1	27	25,136	-52.0	-.5	30	2.1	29	25,056	-54.5	-.5	26	8.4	20	25,082	-52.7	-.5	09	3.8	
20	21	26,491	-51.1	-.5	27	10.3	26	26,539	-51.1	-.5	01	1.1	26	26,579	-50.3	-.5	30	4.9	29	26,493	-52.2	-.5	27	9.9	14	26,520	-50.7	-.5	07	3.6	
15	16	28,370	-49.6	-.5	26	14.4	23	28,425	-48.5	-.5	27	1.2	20	28,470	-47.6	-.5	26	1.2	21	28,354	-50.7	-.5	27	11.8	7	28,394	-48.7	-.5	27	16.8	
10	16	31,081	-44.9	-.5	27	17.1	13	31,104	-44.3	-.5	29	3.0	11	31,207	-43.4	-.5	14	3.0	9	30,994	-47.4	-.5	27	16.8							
7						5	33,507	-41.0																							

		COLD BAY, AK 989 MB				DAYTON, OH 979 MB				DEL RIO, TX 977 MB				DENVER, CO 838 MB				DESERT ROCK, NV 900 MB													
SFC	31	30	4.9	2.7	21	1.8	31	299	8.2	5.9	23	2.0	31	314	18.2	10.7	11	2.4	31	1,611	6.4	.7	18	-.4	31	1,007	13.6	-2.4	06	.4	
1000	9	72	5.4	1.3																											
950	31	361	4.1	1.1	24	2.9	31	551	9.6	4.7	24	5.6	31	552	19.6	11.1	15	5.9													
900	31	798	9	-1.1	23	2.7	31	998	7.5	1.7	26	6.1	31	1,018	18.9	7.7	17	6.6													
850	31	1,255	-2.3	-3.9	22	2.3	31	1,467	4.9	-1.5	26	9.3	31	1,508	17.9	3.2	18	4.1													
800	31	1,735	-5.0	-9.0	22	2.8	31	1,960	2.7	-3.5	27	9.9	31	2,026	16.6	-1.7	24	2.3	31	1,994	9.7	-3.9	32	3.5	31	2,009	12.8	-1.6	30	1.9	
750	31	2,240	-7.5	-14.5	23	3.3	31	2,481	6.6	-8.5	27	10.4	31	2,573	13.9	-6.6	29	3.3	31	2,527	7.1	-7.5	33	5.2	31	2,547	9.0	-6.9	20	2.6	
700	31	2,774	-10.7	-18.1	23	3.4	31	3,033	-1.5	-12.7	27	11.3	31	3,150	9.8	-10.4	30	4.8	31	3,091	3.8	-10.1	31	5.8	31	3,114	5.6	-10.1	21	2.3	
650	31	3,340	-14.2	-23.1	24	3.9	31	3,620	-4.7	-16.4	27	13.1	31	3,760	5.6	-12.5	30	5.7	31	3,689	-.1	-12.7	31	8.1	31	3,717	2.0	-			

# RAWINSONDE DATA

Average monthly values

OCTOBER 1979

		FLINT, MI 984 MB				GLASSCO, MT 933 MB				GRAND JUNCTION, CO 853 MB				GREAT FALLS, MT 888 MB				GREEN BAY, WI 986 MB												
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.						
			Temperature °C	Dew Point °C					Temperature °C	Dew Point °C					Temperature °C	Dew Point °C					Temperature °C	Dew Point °C			Temperature °C	Dew Point °C	Temperature °C	Dew Point °C		
SFC 1000	31	236	7.6	5.7	22	1.6	31	696	5.0	.0	34	.5	31	1,472	9.5	-3.4	13	2.2	31	1,118	6.2	-1.9	22	2.7	31	210	5.0	3.2	30	1.2
950	31	529	7.6	3.4	24	4.4	31	994	9.2	.2	31	4.2	31	1,519	11.4	-4.0	13	3.3	31	1,480	8.5	-2.3	25	5.0	31	1,419	2.4	-2.7	29	4.7
900	31	973	5.6	1.7	26	6.8	31	1,467	7.1	-1.6	31	6.9	25	2,005	11.4	-4.2	14	2.3	31	1,979	5.3	-4.5	27	5.7	31	1,907	.0	-6.1	28	5.8
850	31	1,439	3.3	-5.2	27	7.6	31	1,963	3.9	-4.3	31	8.9	25	2,541	8.5	-7.1	25	7.5	31	2,503	1.8	-7.4	28	6.6	31	2,423	-2.0	-10.8	28	7.2
800	31	1,929	-7.7	-4.3	27	8.1	31	2,484	-2.5	-6.2	31	10.9	31	3,107	8.7	-9.7	27	4.0	31	3,056	-1.8	-11.2	28	8.1	31	2,969	-4.7	-14.7	28	8.3
750	31	2,446	-1.3	-8.9	26	8.9	31	3,036	-2.5	-10.4	30	12.3	31	3,707	7.7	-12.9	28	8.0	31	3,642	-8.9	-14.9	29	10.2	31	3,508	-8.0	-17.6	29	9.2
700	31	2,997	-3.9	-13.2	26	10.7	31	3,620	-5.8	-15.5	30	13.4	31	4,307	7.7	-16.1	29	7.5	31	4,266	-8.3	-20.0	29	12.3	31	4,186	-11.6	-22.1	29	9.8
650	31	3,575	-7.1	-16.9	26	11.8	31	4,243	-9.6	-19.7	30	14.7	31	4,945	-3.7	-21.7	28	9.2	30	4,935	-12.7	-24.5	29	13.0	31	4,829	-15.3	-27.5	29	11.9
600	31	4,195	-10.6	-22.5	27	12.4	31	4,810	-13.7	-24.1	30	15.4	31	5,527	-7.7	-26.4	28	11.6	29	5,452	-17.5	-28.6	29	13.7	31	5,349	-19.7	-30.7	29	13.7
550	31	4,860	-14.5	-27.3	27	14.5	31	5,428	-18.5	-28.1	30	17.3	31	6,162	-17.8	-31.1	28	12.5	29	6,033	-22.7	-33.2	29	15.1	31	5,931	-24.9	-35.3	29	15.6
500	31	5,576	-18.9	-32.6	27	16.6	31	6,028	-23.6	-33.3	30	19.5	31	6,850	-24.2	-35.5	28	13.8	28	7,292	-28.7	-37.3	29	19.1	31	7,163	-30.8	-41.2	29	17.5
450	31	6,352	-24.3	-37.2	27	17.7	31	6,740	-29.5	-39.6	30	20.7	31	7,630	-29.2	-41.6	28	15.1	28	8,037	-34.0	-41.3	29	21.8	31	8,102	-37.1	-44.8	28	19.8
400	31	7,201	-30.2	-41.2	27	18.8	31	7,528	-34.5	-44.4	30	23.1	31	8,423	-31.4	-46.9	28	17.2	27	8,776	-44.1	-46.9	29	23.3	30	9,500	-45.3	-49.0	29	20.0
350	31	8,181	-36.8	-46.3	27	21.9	31	8,200	-38.4	-49.4	30	25.2	31	9,123	-37.4	-50.2	28	18.6	27	10,482	-50.6	-50.6	29	23.2	29	10,373	-48.9	-50.6	29	23.4
300	31	9,204	-43.7	-51.1	27	24.9	31	9,048	-44.5	-53.7	30	27.6	31	10,000	-47.5	-54.7	28	19.4	27	11,919	-55.0	-55.0	29	23.2	29	11,825	-53.1	-53.1	29	23.2
250	31	10,403	-48.4	-55.4	28	23.4	31	11,460	-49.5	-57.4	30	25.7	31	12,090	-54.6	-57.4	28	19.4	27	12,771	-56.0	-56.0	29	21.2	29	12,682	-54.3	-54.3	29	23.5
200	31	11,898	-52.1	-58.4	28	24.2	31	13,107	-53.7	-60.4	30	26.6	31	13,955	-61.1	-61.1	28	16.4	26	13,756	-57.5	-57.5	29	20.8	29	13,668	-55.5	-55.5	29	20.1
175	31	12,710	-55.1	-60.4	28	22.2	31	14,886	-58.3	-63.4	30	23.7	31	15,060	-63.8	-63.8	28	14.1	26	14,924	-59.4	-59.4	29	17.3	29	14,823	-58.2	-58.2	29	15.7
150	31	13,699	-55.3	-62.4	28	20.6	31	16,795	-61.3	-66.4	30	22.5	31	16,944	-65.9	-65.9	28	14.1	26	16,294	-60.5	-60.5	29	15.0	29	16,224	-59.3	-59.3	29	14.8
125	31	14,856	-57.4	-64.4	28	18.2	31	18,826	-64.3	-69.4	30	19.4	31	17,993	-68.5	-68.5	28	8.0	26	17,665	-60.0	-60.0	29	10.2	29	17,620	-59.5	-59.5	29	10.2
100	31	16,260	-59.1	-66.4	28	13.4	31	20,859	-67.3	-71.4	30	10.9	31	18,793	-73.5	-73.5	28	5.0	25	18,516	-60.0	-60.0	29	6.7	29	18,457	-59.0	-59.0	29	8.2
75	31	17,660	-58.8	-68.4	27	10.7	31	22,993	-70.3	-74.3	30	9.2	30	18,610	-75.5	-75.5	28	2.6	25	18,516	-60.0	-60.0	29	5.4	29	19,425	-58.8	-58.8	29	7.3
70	31	18,500	-58.4	-70.4	27	8.3	31	25,132	-73.3	-77.3	30	6.6	30	20,690	-80.6	-80.6	28	2.9	29	20,628	-56.7	-56.7	29	2.9	29	20,570	-56.2	-56.2	29	6.9
60	31	19,470	-56.4	-72.4	27	6.6	31	27,652	-77.3	-81.3	30	4.9	30	22,690	-86.9	-86.9	28	2.1	25	22,031	-58.5	-58.5	29	2.9	29	21,976	-57.6	-57.6	29	6.0
50	31	20,618	-57.8	-74.4	27	6.7	31	29,864	-81.3	-85.3	30	2.6	30	24,900	-91.9	-91.9	28	3.0	29	24,900	-59.9	-59.9	29	3.0	29	24,801	-58.1	-58.1	29	5.4
40	31	23,861	-55.8	-76.4	27	6.7	31	32,180	-85.3	-89.3	30	3.1	30	26,501	-97.4	-97.4	28	3.0	29	26,496	-57.2	-57.2	29	3.1	26	24,967	-55.3	-55.3	29	7.8
30	31	25,028	-54.4	-78.4	27	6.5	31	34,504	-89.3	-93.3	30	3.5	30	28,605	-102.4	-102.4	28	6.0	19	26,425	-55.7	-55.7	29	3.1	26	26,401	-53.7	-53.7	29	5.0
20	31	26,465	-52.6	-80.4	27	7.9	31	36,944	-93.3	-97.3	30	3.7	30	30,793	-107.4	-107.4	28	6.3	16	28,268	-54.4	-54.4	29	3.8	23	28,264	-51.8	-51.8	29	9.5
15	31	28,330	-50.9	-82.4	28	9.4	31	39,314	-97.3	-101.3	30	3.7	30	32,993	-111.4	-111.4	28	11.2	7	30,893	-52.2	-52.2	29	3.8	20	30,911	-49.0	-49.0	28	14.2
10	31	31,020	-46.9	-84.4	28	10	31	41,021	-101.3	-105.3	30	4	31	35,348	-115.4	-115.4	28	11.2	7	33,348	-43.8	-43.8	29	4	20	33,348	-43.8	-43.8	28	14.2

		GREENSBORO, NC 985 MB				GUADALUPE IS., MEXICO 1012 MB				EUAM, MARINA IS. 987 MB				HILD, MI 981 MB				HUNTINGTON, WV 987 MB												
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C		Resultant Wind Direction tens of deg	Speed m.p.s.						
			Temperature °C	Dew Point °C					Temperature °C	Dew Point °C					Temperature °C	Dew Point °C					Temperature °C	Dew Point °C			Temperature °C	Dew Point °C	Temperature °C	Dew Point °C		
SFC 1000	31	275	9.2	6.7	28	.4	27	23	19.8	15.1	32	6.4	31	111	25.4	24.3	10	2.7	31	10	21.6	19.3	24	1.5	31	246	9.1	5.9	22	1.2
950	31	574	12.3	6.5	26	3.1	27	568	16.4	9.5	32	6.7	31	537	23.7	22.1	12	6.0	31	583	20.7	18.3	22	1.7	31	561	11.3	5.2	24	5.6
900	31	1,020	10.4	3.7	27	5.3	27	1,029	17.7	-2.1	32	6.4	31	1,059	21.2	18.7	12	5.8	31	1,049	17.7	15.9	20	2.7	31	1,012	-1.1	-2.4	25	8.4
850	31	1,502	8.7	-1.7	27	6.8	31	1,517	17.1	-5.4	30	8.1	31	1,569	11.4	-1.7	12	5.6	31	1,537	14.7	12.8	18	3.1	31	1,593	6.4	-1.0	29	9.3
800	31	2,002	6.8	-4.3	26	8.3	27	2,032	15.1	-7.3	28	5.1	31	2,024	16.1	12.4	13	5.2	31	2,049	12.4	7.9	11	2.3	31	1,979	4.3	-3.2	26	9.4
750	31	2,530	4.6	-8.9	26	9.4	27	2,575	12.5	-9.4	27	6.3	31	2,571	13.5	9.2	13	5.7	31	2,590	11.2	.0	10	2.7	31	2,503	2.3	-6.9	27	10.1
700	31	3,089	1.6	-12.0	26	10.6	27	3,150	9.3	-12.0	26	6.2	31	3,151	10.5	5.2	12	6.5	31	3,164	8.8	-5.2	08	2.7	31	3,058	-4.4	-11.0	27	11.7
650	31																													







# RAWINSONDE DATA

Average monthly values

OCTOBER 1979

		MONETT, MO 963 MB						NASHVILLE, TN 995 MB						NOME, AK 999 MB						NORTH PLATTE, NE 916 MB						OAKLAND, CA 1015 MB					
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.	
5FC	31	438	11.4	6.1	18	1.9	31	180	10.8	8.6	18	1.3	31	425	7.7	-2.6	02	2.4	31	847	5.9	-1.3	34	2.0	31	6	14.7	12.0	25	.6	
1000	31	549	14.1	5.1	21	2.5	31	566	12.7	6.4	22	4.7	31	406	4.2	-5.6	02	2.4	31	994	9.0	-1.9	32	3.8	31	134	15.2	11.2	27	.9	
950	31	1,006	13.5	2.5	24	6.4	31	1,019	10.7	3.4	25	5.9	31	838	-2.6	-5.9	10	1.7	31	994	9.0	-1.9	32	3.8	31	1,025	14.2	5.9	26	1.9	
850	31	1,486	11.5	-1.27	8.2	31	1,494	8.8	1.8	27	7.0	31	1,289	-5.1	-9.7	12	1.5	31	1,470	10.3	-1.9	33	6.5	31	1,506	12.4	-5.3	23	1.8		
800	31	1,991	9.2	-2.2	28	9.3	31	1,995	6.9	-2.3	27	8.4	31	1,764	-7.3	-13.5	14	1.6	31	1,973	8.7	-4.9	33	7.0	31	2,012	9.7	-7.7	25	2.4	
750	31	2,524	6.9	-6.8	28	10.4	31	2,524	2.8	-26.4	28	19.2	31	2,279	-10.8	-18.5	13	1.2	31	2,504	5.6	-7.1	32	8.4	31	2,544	6.6	-9.3	24	3.4	
700	31	3,067	3.5	-9.4	29	11.2	31	3,084	2.0	-9.2	28	11.0	31	2,794	-13.9	-21.3	16	1.3	31	3,064	2.3	-36.9	32	10.2	31	3,107	3.1	-11.7	23	4.0	
650	31	3,606	-7	-14.0	29	12.7	31	3,679	-9	-13.4	28	12.6	31	3,355	-16.3	-24.7	17	1.9	31	3,659	-1.1	-12.2	31	12.4	31	3,704	-4	-14.3	24	4.7	
600	31	4,324	-3.4	-16.2	29	13.7	31	4,314	-4.5	-16.9	28	14.6	31	3,953	-20.0	-28.7	18	2.4	31	4,293	-5.0	-15.6	31	14.5	31	4,340	-4.3	-18.7	24	5.4	
550	31	5,006	-7.8	-20.6	29	14.7	31	4,994	-8.6	-21.9	28	15.9	31	4,593	-24.3	-32.8	19	3.5	31	4,972	-9.1	-18.8	30	16.3	31	5,020	-8.3	-21.9	25	7.3	
500	31	5,741	-12.6	-26.5	28	15.4	31	5,726	-13.5	-27.2	26	17.9	31	5,281	-29.1	-38.0	20	3.9	31	5,704	-13.8	-23.4	30	17.3	31	5,753	-13.1	-26.7	25	8.9	
450	31	6,537	-18.0	-30.9	28	16.2	31	6,520	-18.7	-33.0	28	19.4	31	6,023	-30.6	-41.4	20	3.5	31	6,496	-16.9	-30.0	29	17.4	31	6,548	-18.2	-31.5	25	11.0	
400	31	7,407	-24.4	-37.2	28	17.4	31	7,384	-25.6	-38.7	27	21.7	31	6,835	-40.9	-44.8	19	5.0	31	7,363	-25.3	-36.4	29	18.8	31	7,417	-25.1	-35.6	26	11.9	
350	31	8,368	-31.7	-43.9	28	19.2	31	8,344	-32.5	-44.7	28	23.0	31	7,737	-47.2	-52.8	17	4.1	31	8,321	-32.6	-43.9	29	20.0	31	8,378	-31.6	-42.1	25	14.9	
300	31	9,367	-39.6	-50.6	29	21.1	31	9,411	-39.9	-51.9	28	23.3	31	8,741	-52.8	-58.9	19	4.5	31	9,383	-40.6	-48.4	29	21.9	31	9,448	-39.1	-48.2	24	13.8	
250	31	10,661	-48.3	-58.3	29	21.7	31	10,636	-47.3	-58.3	28	24.5	31	9,912	-54.2	-61.9	19	5.7	31	10,601	-49.3	-58.9	29	22.4	31	10,676	-46.8	-53.0	25	15.8	
200	31	12,104	-55.5	-65.5	29	23.6	31	12,088	-54.5	-65.5	28	24.5	31	11,355	-60.9	-68.9	21	6.0	31	12,044	-55.2	-65.9	29	22.3	31	12,135	-52.8	-61.4	26	14.5	
175	31	12,951	-61.0	-71.0	29	22.8	31	12,937	-57.7	-71.0	28	23.9	31	12,225	-67.5	-75.5	22	9.5	31	12,891	-58.0	-68.0	29	23.2	31	12,991	-56.0	-62.6	26	12.6	
150	31	13,916	-61.1	-71.0	29	20.6	31	13,909	-60.3	-71.0	28	21.1	31	13,211	-67.7	-75.7	21	7.4	31	13,857	-60.8	-70.8	29	21.8	31	14,054	-59.6	-65.6	26	11.1	
125	31	15,045	-64.6	-74.6	29	17.6	31	15,038	-63.2	-74.6	28	17.5	31	14,421	-60.6	-70.6	22	6.4	31	14,988	-62.8	-72.8	29	17.3	31	15,093	-63.2	-70.2	26	10.2	
100	31	16,401	-66.2	-76.2	29	12.8	31	16,401	-65.1	-76.2	28	13.8	31	15,867	-50.8	-60.8	23	8.5	31	16,357	-64.1	-74.1	29	13.5	31	16,455	-66.0	-73.0	27	9.3	
80	31	17,756	-64.7	-76.2	29	9.5	31	17,765	-63.5	-76.2	27	8.9	31	17,320	-50.8	-60.8	23	9.1	31	17,726	-63.4	-73.4	30	9.2	31	17,806	-66.4	-74.4	28	6.3	
70	31	18,574	-63.2	-76.2	28	6.9	31	18,588	-62.2	-76.2	27	7.5	31	18,193	-51.0	-61.0	23	8.8	31	18,588	-62.4	-72.4	31	7.8	31	18,618	-65.0	-73.0	30	4.1	
60	31	19,526	-61.6	-76.2	28	5.3	31	19,544	-60.7	-76.2	27	6.2	31	19,196	-51.1	-61.1	23	9.5	31	19,502	-61.2	-71.2	31	5.8	31	19,561	-63.6	-71.6	32	2.9	
50	31	20,461	-59.9	-76.2	28	4.1	31	20,481	-59.1	-76.2	26	4.4	31	20,387	-40.7	-50.7	24	9.5	31	20,637	-60.3	-70.3	31	3.8	31	20,666	-62.1	-70.1	31	1.8	
40	31	22,051	-57.9	-76.2	28	4.6	31	22,093	-57.0	-76.2	26	5.4	31	21,629	-51.8	-61.8	24	8.9	31	22,037	-58.2	-68.2	31	3.2	31	22,068	-59.9	-67.9	32	1.5	
30	31	23,687	-55.2	-76.2	28	5.7	31	23,927	-54.2	-76.2	27	5.9	31	23,625	-51.8	-61.8	25	10.1	31	23,853	-56.8	-66.8	29	3.4	31	23,884	-56.9	-67.9	30	.9	
25	31	25,055	-53.5	-76.2	27	5.9	31	25,100	-52.8	-76.2	27	5.6	31	24,880	-51.8	-61.8	25	10.6	31	25,017	-55.2	-65.2	28	4.2	31	25,041	-54.9	-67.9	27	3.8	
20	31	26,498	-51.7	-76.2	27	5.7	31	26,550	-50.9	-76.2	27	5.3	31	26,322	-51.8	-61.8	25	10.0	31	26,457	-53.2	-63.2	28	6.2	31	26,477	-52.8	-67.9	28	5.9	
15	31	28,370	-49.6	-76.2	27	6.9	31	28,435	-48.5	-76.2	26	5.9	31	28,208	-51.8	-61.8	25	10.2	31	28,318	-50.9	-60.9	27	8.9	31	28,360	-50.0	-67.9	27	8.5	
10	31	31,050	-45.6	-76.2	27	10.1	31	31,151	-44.4	-76.2	27	10.2	31	30,985	-44.4	-54.4	22	9.5	31	31,085	-44.4	-54.4	27	12.7	31	31,035	-46.0	-60.0	27	8.5	

		OMAHA, NE 965 MB						PAGO PAGO, AMERICAN SAMOA 1012 MB						PEOPIA, IL 989 MB						PITTSBURGH, PA 972 MB						PONAPE, CAROLINE IS. 1005 MB					
5FC	31	403	7.7	3.4	33	.8	30	5	28.7	23.6	10	4.2	31	200	7.6	5.0	19	1.2	31	359	8.3	5.5	22	2.0	31	39	29.1	24.8	08	.9	
1000	29	538	9.4	1.7	32	1.9	30	562	22.5	20.6	10	4.8	31	537	10.0	3.1	23	3.4	31	551	9.1	5.5	24	4.9	31	81	27.7	23.8	08	1.0	
950	31	978	10.0	-5.33	2.4	30	1,031	19.3	16.6	09	4.8	31	985	8.5	-7.6	5.6	31	998	7.3	2.9	26	8.1	31	1,008	21.6	18.3	10	2.3			
850	31	1,452	8.4	-2.9	31	6.6	30	1,522	16.7	12.6	09	4.0	31	1,457	6.7	-1.8	27	7.5	31	1,467	5.0	-7.7	27	8.8	31	1,503	19.0	15.1	11	2.5	
800	31	1,952	6.4	-6.8	31	7.8	30	2,038	14.7	9.1	06	2.4	31	1,953	4.5	-5.5	29	9.2	31	1,960	2.2	-3.7	27	9.8	31	2,024	16.4	11.1	12	1.9	
750	31	2,479	3.9	-9.4	31	7.7	30	2,583	12.5	2.3	01	2.0	31	2,476	1.5	-8.2	28	9.9	31	2,477	-1.1	-10.2	27	11.1	31	2,571	13.6	7.7	11	2.5	
700	31	3,037	1.2	-13.2	30	9.4	30	3,159	9.5	-3.0	35	1.6	31	3,029	-1.5	-12.0	29	11.0	31	3,027	-2.5	-11.9	27	11.1	31	3,150	10.4	4.6	11	2.8	
650	31	3,631	-1.9	-16.0	30	11.1	30	3,771	6.3	-5.9	9	1.6	31	3,511	-16.7	-24.7	29	19.8	31	3,613	-15.6	-26.6	28	12.8	31	3,765	6.1	0.1	1.8		
600	31	4,262	-5.7	-17.6	30	13.0	30	4,423	2.8	-9.9	30	2.6	31	4,244	-7.7	-19.6	28	14.1	31	4,237	-8.8	-20.2	26	14.5	31	4,420	3.5	-3.6	10	3.6	
550	31	4,939	-9.7	-21.6	29	14.9	30	5,123	-1.2	-14.7	29	3.4	31	4,916	-11.6	-23.7	29	15.8	31	4,906	-12.7	-24.4	26	14.5	31	5,122	-3.5	-7.7	10	4.1	
500	31	5,668	-14.5	-25.1	29	15.6	30	5,877	-5.4	-19.4	28	4.9	31	5,641	-16.2	-27.9	29	17.1	31	5,627	-17.1	-28.2	27	17.7	31	5,880	-4.2	-13.0	10	4.5	
450	31	6,459	-19.5	-29.6	30	17.3	29	6,695	-10.4	-23.3	28	6.5	31	6,426	-21.2	-34.9	29	19.0	31	6,410	-22.5	-33.4	27	19.8	31	6,703	-9.1	-17.5	11	4.6	
400	31	7,324	-25.6	-35.0																											

# RAWINSONDE DATA

Average monthly values

OCTOBER 1979

SALEM, OR 1009 MB										SALT LAKE CITY, UT 872 MB										SAN DIEGO, CA 1000 MB										SAN JUAN, P. R. 1013 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																
					Direction tens of deg	Speed m.p.s.					Direction tens of deg	Speed m.p.s.					Direction tens of deg	Speed m.p.s.					Direction tens of deg	Speed m.p.s.															
5FC 31	174	9.7	6.3	1.9	1.2	31	61	9.1	7.9	20	1.1	31	1,288	8.2	2.8	15	2.5	31	124	15.9	13.6	35	3	31	6	24.4	22.6	13	.9										
1000 95	545	12.1	4.0	2.7	4.0	31	152	12.2	6.4	19	4.6	20	2.5	25	10	1.5	31	134	14.0	13.5	35	7	31	116	24.8	22.3	12	2.4											
850 31	596	10.0	1.2	2.5	6.7	31	1,015	10.7	2.8	21	3.7	31	1,017	16.3	-7.30	1.2	31	557	15.9	7.1	32	1.2	31	1,037	22.8	19.3	12	5.3											
750 31	1,471	8.3	-1.3	2.7	8.2	31	1,469	8.9	-1.5	24	4.6	31	1,500	12.6	-1.5	1.6	2.7	31	1,501	15.1	-5.2	28	3.0	31	1,529	17.2	12.3	13	4.7										
800 31	1,970	5.9	-3.7	2.8	8.8	31	1,989	6.5	-4.1	24	5.6	31	2,008	11.0	-4.8	1.9	2.6	31	2,013	13.3	-7.3	27	4.0	31	2,045	14.7	7.3	13	4.3										
850 31	2,496	3.3	-7.3	2.8	10.6	31	2,517	3.8	-7.7	25	6.4	31	2,575	7.5	-7.5	2.8	3.1	31	2,575	10.7	-9.5	26	5.6	31	2,589	12.1	2.3	13	3.9										
900 31	3,053	-1.7	-10.2	2.6	12.6	31	3,074	-1.7	-11.0	25	7.7	31	3,106	-1.0	-10.3	2.8	4.3	31	3,124	7.5	-12.1	26	6.1	31	3,165	9.0	-2.2	14	3.0										
650 31	3,644	-7.7	-19.2	2.6	14.0	31	3,665	-2.9	-14.1	25	8.5	31	3,704	-4.4	-14.0	2.7	6.3	31	3,730	4.3	-16.4	26	7.4	31	3,775	5.7	-8.2	14	3.0										
600 31	4,274	-16.3	-18.4	2.8	15.4	31	4,295	-6.9	-19.7	25	5.1	31	4,339	-4.5	-18.3	2.7	7.8	31	4,377	6.6	-19.1	26	8.8	31	4,425	1.9	-12.1	15	2.4										
550 31	4,955	-10.3	-23.4	2.9	16.9	31	4,979	-11.0	-23.2	25	10.3	31	5,018	-9.1	-22.6	2.7	8.7	31	5,070	-3.8	-23.0	26	11.1	31	5,122	-1.9	-15.1	15	1.9										
500 31	5,677	-15.0	-26.8	2.9	18.1	31	5,699	-16.1	-28.7	25	10.4	31	5,750	-13.6	-27.0	2.7	10.6	31	5,814	-9.1	-27.1	26	12.5	31	5,875	-6.1	-20.8	16	1.1										
450 31	6,467	-19.9	-31.9	2.9	20.8	31	6,491	-21.5	-33.4	25	10.6	31	6,543	-19.0	-31.0	2.7	11.1	31	6,621	-14.9	-31.6	26	13.3	31	6,692	-11.0	-26.7	21	1.5										
400 31	7,331	-25.8	-39.2	2.9	23.7	31	7,356	-27.9	-39.5	25	10.9	31	7,403	-25.3	-35.8	2.7	13.9	31	7,501	-21.3	-36.5	25	13.9	31	7,587	-16.5	-32.8	32	1.4										
350 31	8,286	-32.8	-45.3	2.9	25.6	31	8,265	-34.6	-43.5	25	12.4	31	8,367	-32.4	-42.0	2.7	14.5	31	8,474	-29.0	-41.8	25	16.1	31	8,580	-23.5	-38.2	34	3.7										
300 31	9,352	-40.9	-50.4	2.9	25.6	31	9,342	-41.8	-50.6	26	14.6	31	9,434	-40.2	-49.0	2.7	15.9	30	9,577	-37.1	-46.7	24	17.8	31	9,686	-32.1	-45.4	35	6.1										
250 31	10,573	-47.9	2.9	26.3	31	10,558	-48.6	2.9	26.3	31	10,658	-48.2	2.9	26.3	31	10,794	-46.0	2.9	26.3	31	10,945	-42.2	2.9	26.3	31	11,095	-42.2	2.9	34	9.9									
200 31	12,123	-54.0	2.9	26.5	31	12,008	-53.6	2.9	26.5	31	12,100	-55.0	2.9	26.5	31	12,248	-55.0	2.9	26.5	31	12,417	-53.9	2.9	26.5	31	12,597	-53.9	2.9	34	13.6									
175 31	12,875	-56.5	2.9	25.3	31	12,863	-55.5	2.9	25.3	31	12,946	-57.5	2.9	25.3	31	13,079	-59.0	2.9	25.3	31	13,263	-60.1	2.9	25.3	31	13,452	-60.1	2.9	33	13.9									
150 31	13,687	-58.9	2.9	21.5	31	13,679	-57.9	2.9	21.5	31	13,759	-59.5	2.9	21.5	31	13,850	-63.1	2.9	21.5	31	14,050	-63.1	2.9	21.5	31	14,260	-63.1	2.9	33	14.5									
125 31	14,982	-61.1	2.9	18.4	31	14,986	-60.2	2.9	18.4	31	15,054	-63.2	2.9	18.4	31	15,165	-66.6	2.9	18.4	31	15,290	-73.8	2.9	18.4	31	15,429	-73.8	2.9	33	9.7									
100 31	16,359	-62.6	2.9	14.0	30	16,372	-61.7	2.9	14.0	30	16,408	-65.1	2.9	14.0	30	16,502	-69.8	2.9	14.0	30	16,579	-76.7	2.9	14.0	30	16,679	-76.7	2.9	33	5.0									
75 31	17,735	-61.9	2.9	9.7	30	17,755	-61.3	2.9	9.7	30	17,766	-65.2	2.9	9.7	30	17,828	-69.9	2.9	9.7	30	17,864	-75.1	2.9	9.7	30	17,884	-75.1	2.9	33	2.3									
60 31	18,564	-61.0	2.9	7.9	30	18,585	-60.9	2.9	7.9	30	18,583	-63.5	2.9	7.9	30	18,624	-67.9	2.9	7.9	30	18,647	-71.5	2.9	7.9	30	18,647	-71.5	2.9	33	5.9									
70 31	19,525	-59.6	2.9	6.6	30	19,545	-60.6	2.9	6.6	30	19,537	-62.4	2.9	6.6	30	19,562	-65.6	2.9	6.6	30	19,567	-67.4	2.9	6.6	30	19,567	-67.4	2.9	33	8.4									
80 31	20,869	-58.2	2.9	6.3	30	20,882	-59.5	2.9	6.3	30	20,866	-60.5	2.9	6.3	30	20,866	-62.5	2.9	6.3	30	20,866	-64.5	2.9	6.3	30	20,866	-64.5	2.9	33	11.9									
40 31	22,078	-54.8	2.9	6.2	31	22,079	-54.9	2.9	6.2	31	22,079	-57.9	2.9	6.2	31	22,079	-59.3	2.9	6.2	31	22,079	-60.1	2.9	6.2	31	22,079	-60.1	2.9	33	14.5									
30 31	23,909	-54.5	2.9	5.7	28	23,889	-57.5	2.9	5.7	28	23,871	-57.1	2.9	5.7	28	23,889	-55.8	2.9	5.7	28	23,889	-55.6	2.9	5.7	28	23,889	-55.6	2.9	33	14.3									
25 31	25,582	-52.6	2.9	7.7	28	25,045	-56.3	2.9	7.7	28	25,028	-55.5	2.9	7.7	28	25,055	-53.6	2.9	7.7	28	25,055	-53.2	2.9	7.7	28	25,055	-53.2	2.9	33	19.9									
20 31	26,536	-50.5	2.9	7.3	25	26,471	-55.0	2.9	7.3	25	26,448	-54.1	2.9	7.3	25	26,497	-51.8	2.9	7.3	25	26,497	-50.0	2.9	7.3	25	26,497	-50.0	2.9	33	11.9									
15 31	28,416	-46.6	2.9	6.2	22	28,328	-53.0	2.9	6.2	22	28,316	-51.5	2.9	6.2	22	28,370	-49.5	2.9	6.2	22	28,370	-47.4	2.9	6.2	22	28,370	-47.4	2.9	33	18.4									
10 31	31,115	-45.4	2.9	12.5	9	31,077	-49.0	2.9	12.5	9	31,021	-47.0	2.9	12.5	9	31,045	-46.5	2.9	12.5	9	31,077	-44.3	2.9	12.5	9	31,077	-44.3	2.9	33	16.6									

SAULT STE MARIE, MI 964 MB										SPOKANE, WA 932 MB										TAMPA BAY, FL 1014 MB										TOPEKA, KS 981 MB										TRUK, CAROLINE IS. 1010 MB									
5FC 31	221	3.9	2.2	0.7	.5	31	720	6.5	.6	16	.8	31	133	18.7	17.6	06	1.2	31	268	9.6	4.7	26	.4	29	2	28.4	25.0	07	.9																				
1000 95	511	4.4	2.7	1.6	.4	31	1,007	10.2	.5	17	1.7	31	578	20.5	14.2	07	2.3	31	598	13.1	4.4	27	1.8	29	5.2	27.4	24.4	07	1.0																				
850 31	1,412	-1.0	-3.6	2.7	4.9	31	1,481	8.1	-2.4	22	2.4	31	1,529	15.1	4.7	23	1.3	31	1,470	10.6	-1.1	29	7.2	29	2,015	19.0	15.1	11	1.7																				
800 31	1,898	-1.0	-7.4	2.7	5.4	31	1,979	5.5	-4.6	25	3.1	31	2,041	12.9	2.2	24	1.5	31	1,973	8.3	-3.7	29	8.4	29	2,535	16.3	12.3	10	1.6																				
750 31	2,411	-3.5	-10.1	2.7	6.8	31	2,504	2.8	-7.7	26	5.1	31	2,581	10.0	-5.1	25	2.3	31	2,504	5.5	-6.7	29	8.8	29	2,584	13.6	8.7	09	1.6																				
700 31	2,954	-5.9	-16.1	2.7	7.9	31	3,058	-.8	-10.9	26	6.5	31	3,151	7.4	-1.0	26	3.2	31	3,065	2.7	-9.7	29	10.5	29	3,163	10.7	4.8	09	1.5																				
650 31	3,532	-6.9	-19.2	2.7	8.7	31	3,647	-3.9	-15.5	26	7.9	31	3,758	4.0	-14.4	2.7	4.2	31	3,662	-2.2	-13.5	29	12.0	29	3,743	7.5	1.0	2	2.2																				
600 31	4,008	-11.3	-24.6	2.7	10.3	31	4,146	-11.9	-22.6	26	9.8	31	5,095	-3.8	-23.2	2.7	5.5	31	4,979	-8.5	-20.6	29	15.8	29	5,138	0.0	-8.0	10	4.2																				
550 31	5,519	-21.0	-31.7	2.7	11.4	31	5,669	-16.7	-26.3	26	10.7	31	5,841	-8.9	-27.4	2.7	6.5	31	5,711	-13.7	-26.3	29	17.1	29	5,896	-4.2	-13.2	09	4.4																				
500 31	6,289	-26.2	-38.5	2.8	12.8	31	6,452	-22.2	-31.6	26	12.6	31	6,648	-14.3	-32.1	2.7	8.4	31	6,504	-19.0	-30.9	29	19.3	28	6,721	-8.8	-20.2	09	4.0																				
450 31	7,131	-31.8	-41.6	2.8	14.3	31	7,308	-28.4	-36.1	26	14.6	31	7,530	-20.9	-36.6	2.7	11.6	31	7,371	-24.9	-36.4	29	20.0	28	7,624	-14.1	-25.4	08	3.6																				
400 31	8,065	-38.5	-47.3	2.8	16.2	31	8,253	-35.8	-40.7	26	15.2	31	8,505	-28.1	-42.6	2.7	13.9	31	8,331	-32.0	-42.6	29	21.4	28	8,628	-20.7	-31.9	07	3.5																				
300 31	9,105	-45.3	-53.1	2.8	18.0	31	9,304																																										







# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

OCTOBER 1979

Sun's zenith distance										Sun's zenith distance									
A.M.					*	P.M.				A.M.					*	P.M.			
78.7°	75.7°	70.7°	60.0°	60.0°		70.7°	75.7°	78.7°	78.7°	75.7°	70.7°	60.0°	60.0°	70.7°		75.7°	78.7°		
MAUNA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass									
3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34	4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64		
11----	1.07	1.16	1.26	1.37	----	----	----	----	3-----	----	----	----	1.22	----	----	----	----		
14----	1.15	1.21	1.33	1.43	----	----	----	----	6-----	.84	.94	1.07	1.24	1.38	1.19	1.01	.86		
15----	1.21	1.28	1.38	1.48	----	----	----	----	7-----	.80	.92	1.05	1.21	1.34	1.13	.97	.78		
16----	1.16	1.23	1.35	1.45	----	----	----	----	8-----	.82	----	1.04	----	1.32	1.20	----	----		
20----	1.16	1.24	1.34	1.46	1.58	----	----	----	9-----	----	----	----	----	----	1.03	.89	.80		
21----	1.17	1.24	1.33	1.46	1.57	----	----	----	10-----	.76	.87	.99	1.16	1.34	1.14	.98	.89		
23----	1.20	1.29	1.37	1.51	1.59	----	----	----	11-----	.85	.96	----	1.27	1.42	----	1.10	----		
24----	1.22	1.31	1.39	1.50	1.55	1.47	1.36	1.28	12-----	.85	.95	1.10	1.27	1.39	1.26	1.07	.94		
25----	1.18	1.27	1.35	1.47	1.58	1.48	1.38	1.30	14-----	.97	1.07	1.18	1.33	1.45	1.32	1.16	1.04		
26----	1.20	1.29	1.37	1.48	1.56	1.44	1.34	1.26	15-----	.88	1.00	1.13	1.30	----	1.26	1.07	.93		
29----	1.14	1.22	1.34	1.43	----	----	----	----	16-----	.86	.99	1.09	1.25	1.43	----	1.06	.92		
Aver-									17-----	.87	----	----	1.27	1.44	1.28	1.09	.86		
ages	1.17	1.25	1.35	1.46	1.57	1.46	1.36	1.28	18-----	----	1.05	1.16	1.26	1.40	1.28	1.15	.91		
									19-----	.96	1.05	1.16	1.31	----	1.26	1.07	.99		
									20-----	.92	1.02	1.14	1.30	1.40	1.27	1.12	1.01		
									21-----	.97	1.06	1.16	1.32	1.43	1.30	1.14	1.01		
									22-----	.97	1.06	1.21	1.34	1.46	----	1.21	1.08		
									23-----	1.02	1.12	1.26	1.38	----	----	1.03	.97		
									24-----	.99	1.09	1.20	1.34	1.48	1.33	1.12	1.04		
									25-----	.95	1.06	1.18	1.35	1.47	1.28	1.15	1.03		
									26-----	.91	1.00	1.13	1.32	1.44	1.30	1.04	.87		
									27-----	.91	1.01	1.15	1.31	1.46	1.29	1.15	1.00		
									28-----	.98	1.09	1.19	1.34	1.46	1.33	1.16	1.04		
									29-----	.84	.91	1.03	1.16	1.38	----	1.07	.79		
									30-----	.94	1.04	1.17	1.35	1.48	1.32	1.17	1.01		
									31-----	.97	1.04	1.21	1.36	1.47	1.35	1.23	1.12		
Aver-									Av-	.91	1.01	1.13	1.29	1.41	1.27	1.10	.97		
ages									ages										

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	16	- 57	-21	M	649	- 53	48	99	117	122	122	91	- 20	- 23	96	143	147	143	147	138	139	149	146	137	136	128	- 7	6	- 10	- 12	- 15	90

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Data in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times \text{°C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

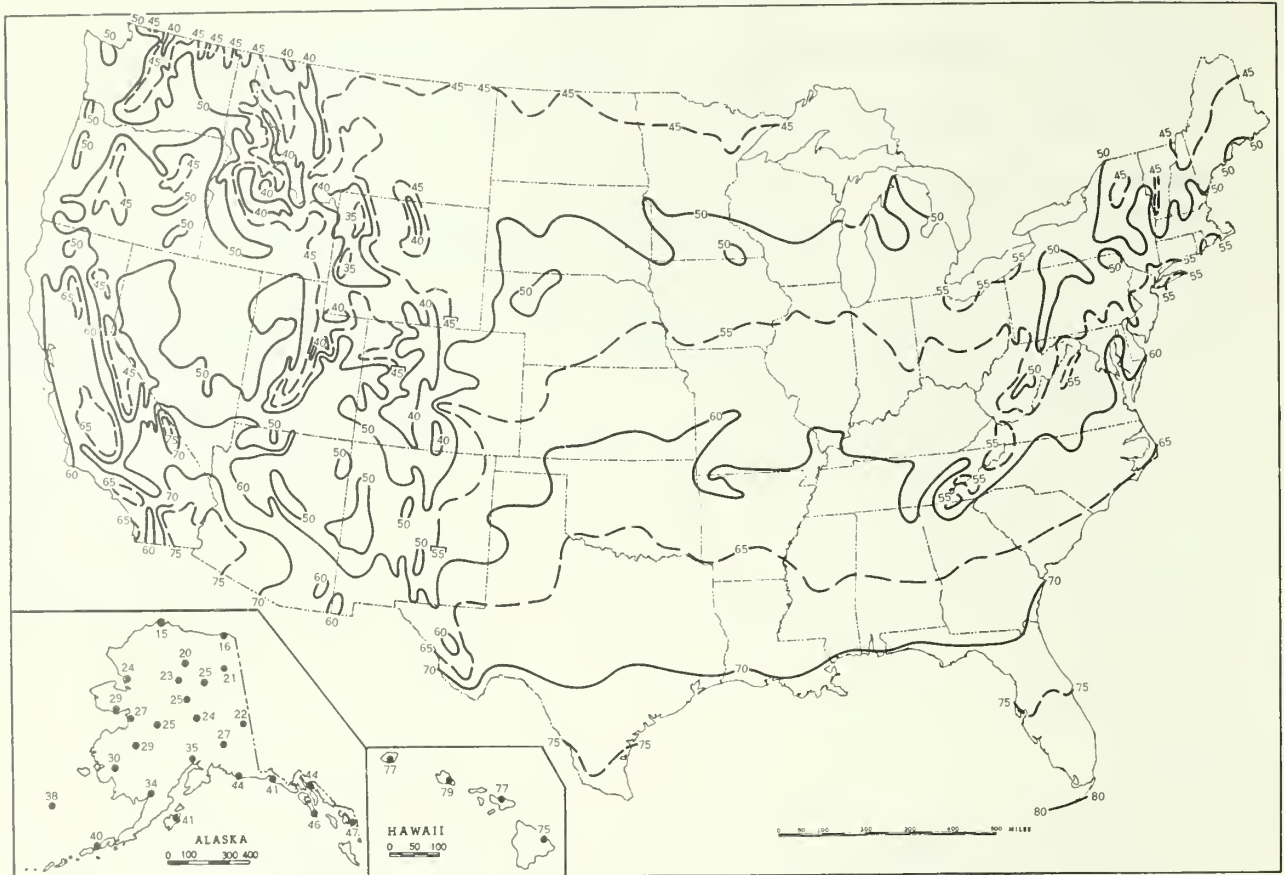
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( ) Clouds Present	DM Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Dust	HS Slight Haze	M Moderate Haze-indeterminable
BD Blowing Dust	F Fog	I Intense Haze-indeterminable	
BN Blowing Sand	GF Ground Fog	K Smoke	N Sand
D Dust	H Haze	KI Intense Smoke	S Slight Haze-indeterminable
DI Intense Dust	HI Intense Haze	KM Moderate Smoke	

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), October.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), October 1979

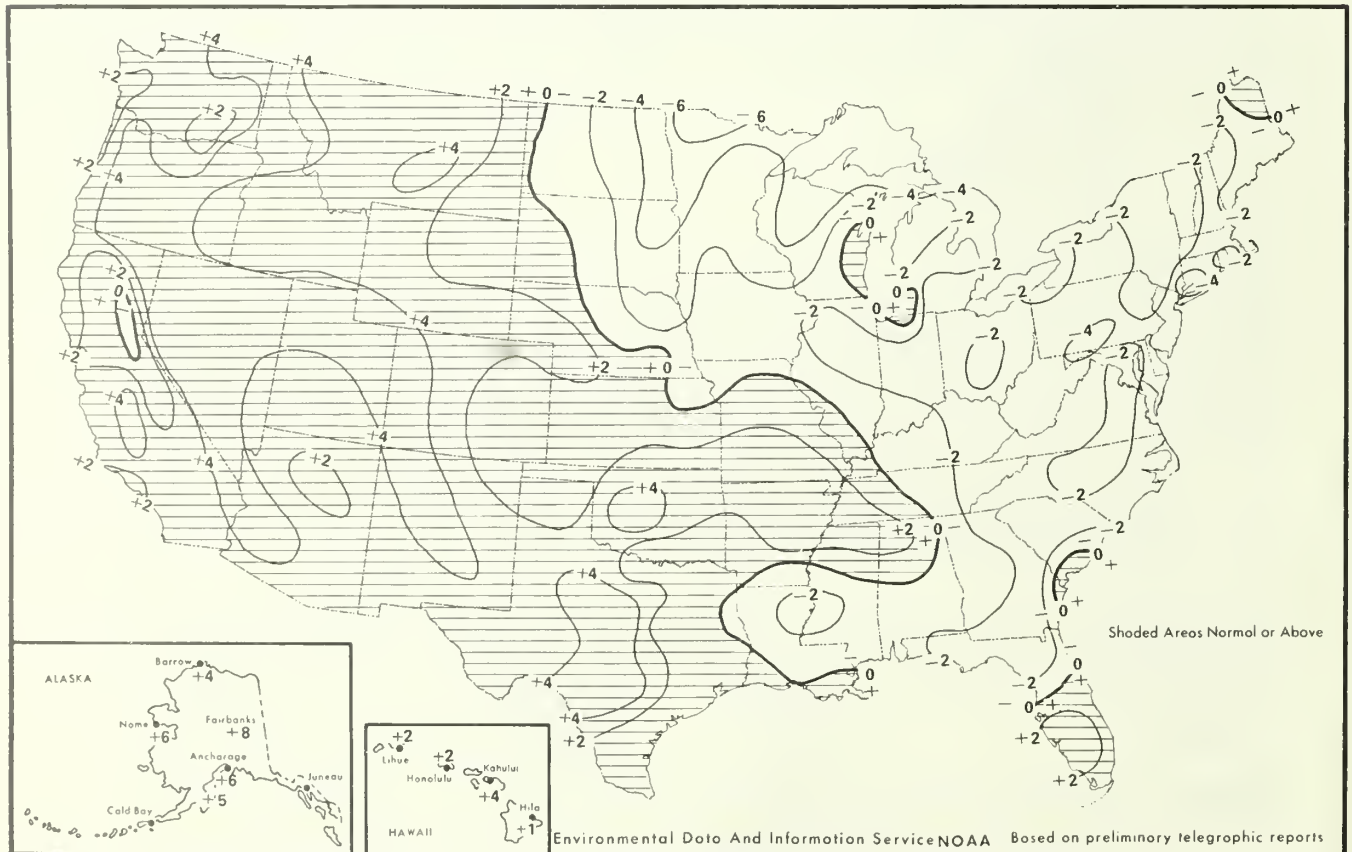
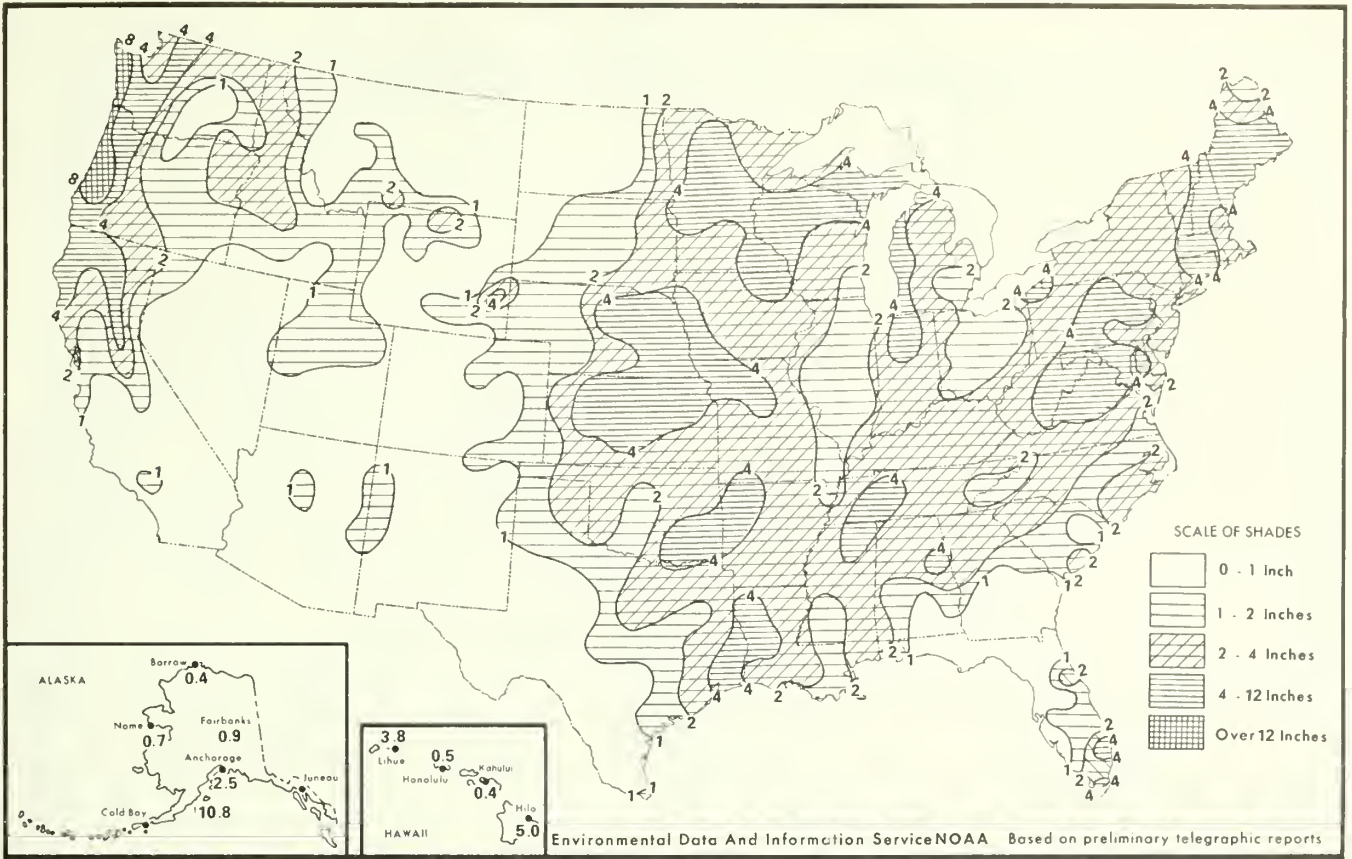




Chart II. A. Total Precipitation (Inches), October 1979



B. Percentage of Normal Precipitation, October 1979

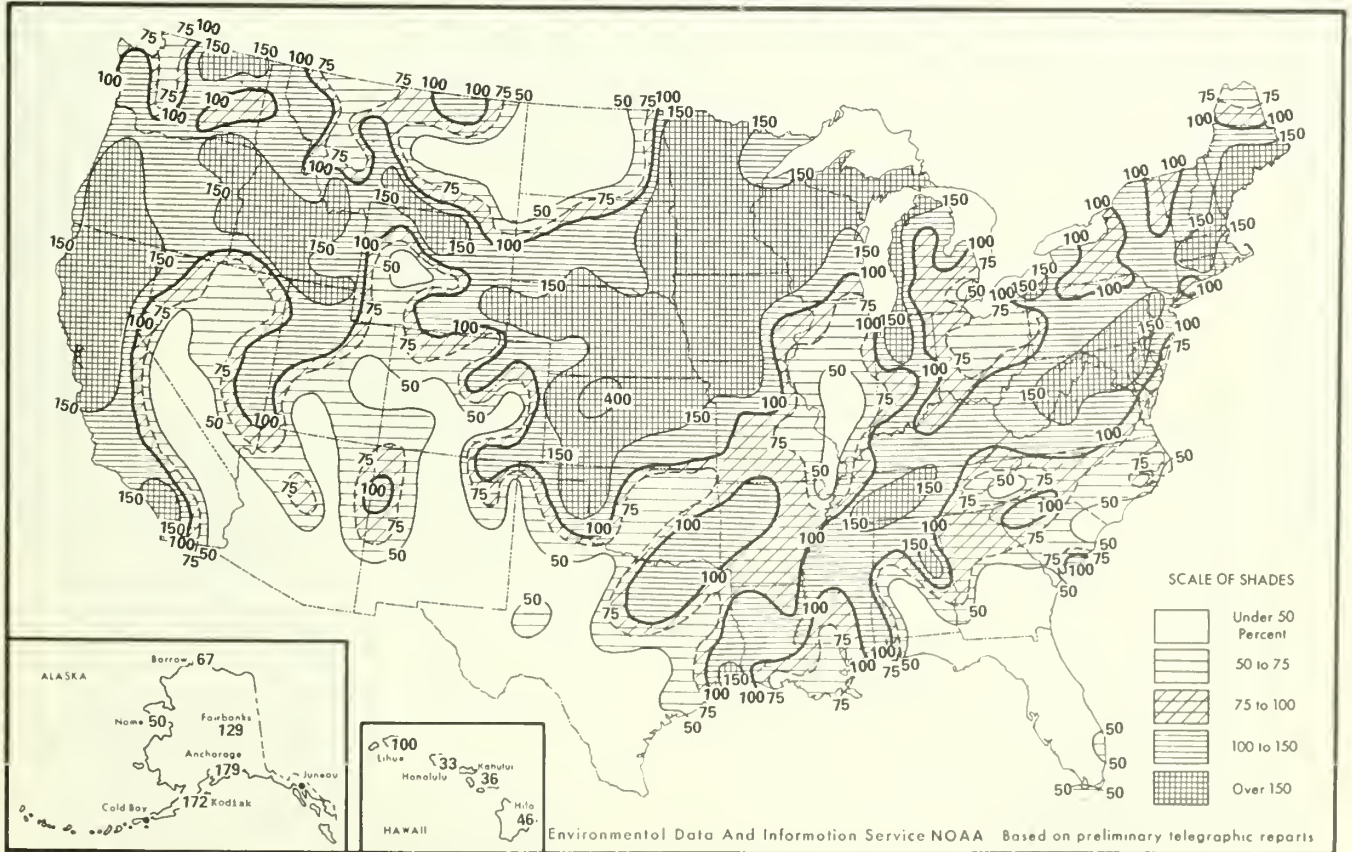
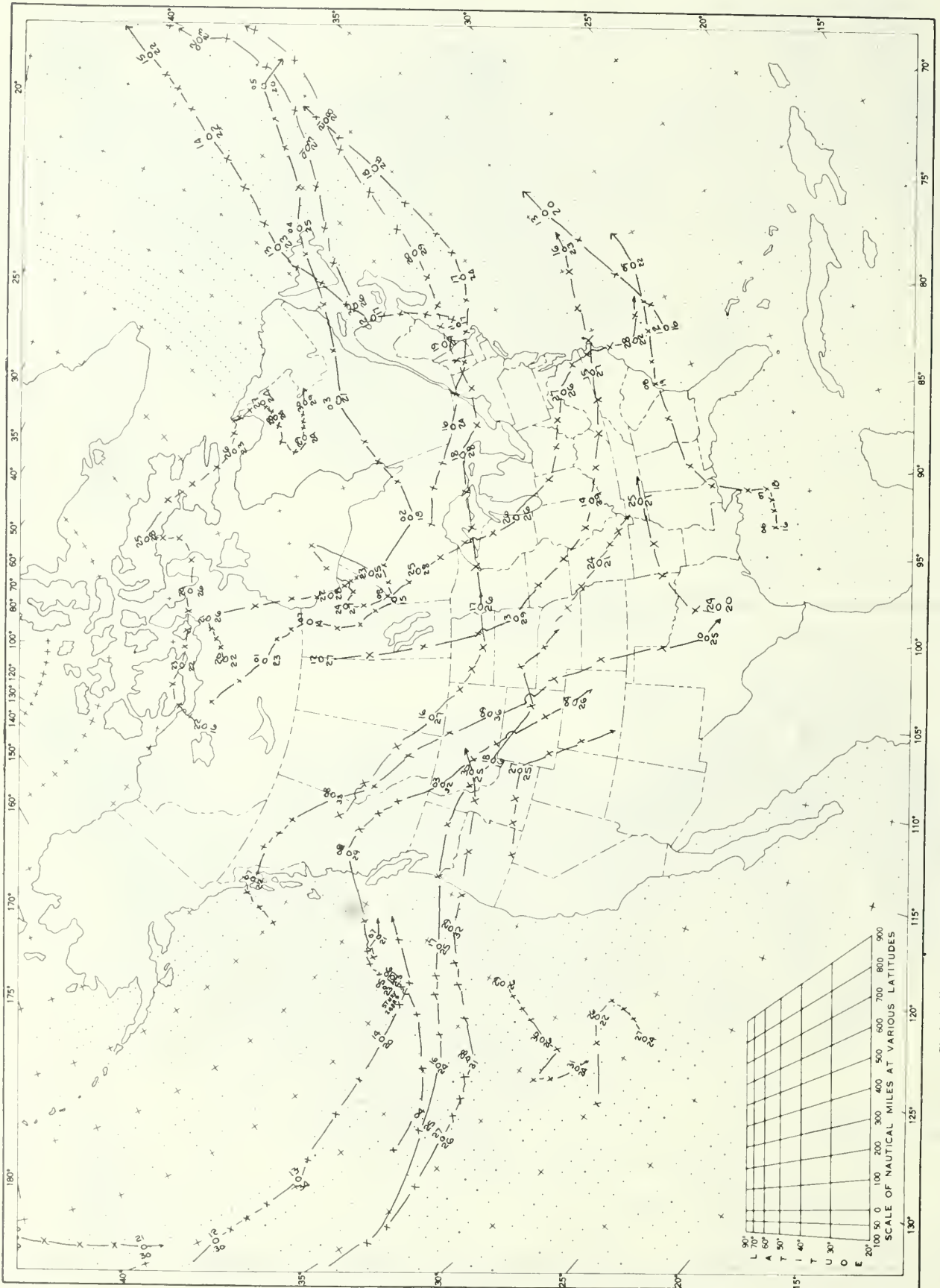
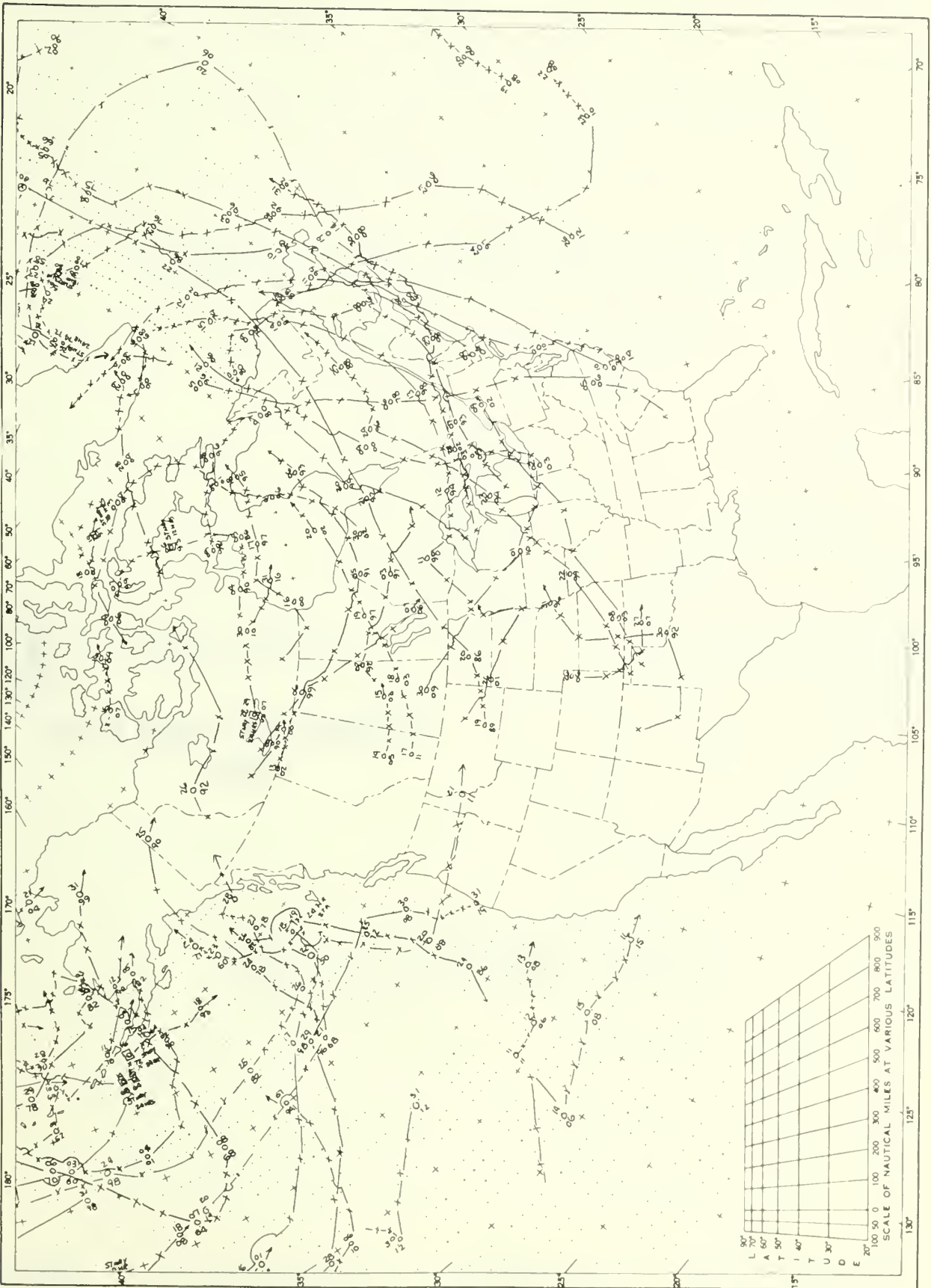


Chart III. Tracks of Centers of Anticyclones at Sea Level, October 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar  
 X's indicate intervening 6-hourly positions. Squares indicate stationary center for period shown. Dashed line in track  
 indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart IV. Tracks of Centers of Cyclones at Sea Level, October 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar  
 'X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track  
 indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

NOVEMBER 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Early in November, a frontal system stagnated in the Southeast and spread heavy rain from the lower Mississippi River to the mid-Atlantic States. Again, later in the month, a low center formed in the Texas Panhandle and moved northeastward through the Great Lakes spreading rain from the lower Mississippi River through the New England Coast. Strong northerly winds blowing across the warmer Great Lakes dropped snow, heavy in the eastern portions, on the lee shores. Monthly average temperatures were warmer than normal in the eastern third of the Nation and colder in the West.

A vigorous frontal system edged through the eastern United States as November began at midweek. Rain, showers, and some thunderstorms moved with the front from the Mississippi River Valley to the East Coast. Snow fell in the northern Plains and great lakes area.

At the beginning of the week of the 5th - 11th, a cold airmass moved into the northern Plains, and by midweek, has pushed southward into Mexico and off the Atlantic Coast. A second, somewhat colder system developed and moved rapidly, but slowed as it neared the East Coast. Precipitation with the first system was confined to snow in the central Plains and Rockies and rainshowers in the Lakes area. Rain, with snow at higher elevations, covered the Pacific Northwest and continued eastward. As the second system slowed toward the end of the week, more widespread and heavier rain occurred. The central and lower sections of the Mississippi River were deluged with more than 3 inches of rain. The area from Mississippi to the mid-Atlantic States measured over 2 inches. The colder air averaged 12° below normal in the central Plains.

Precipitation was sparse over most of the Nation during the week of the 12th - 18th, but late in the week a weather system headed into the Northwest spreading rain, with snow at higher elevations, through most of California and the central and northern Plateau. Elsewhere, the remnants of an earlier weather system spread rain along the Coast from the mid-Atlantic States through New England. Light rain or snow fell in the Great Lakes area. Average temperatures for the week in the central and northern Plains and Southwest showed warmer than normal, and the rest of the Nation was near normal.

The week of the 19th - 25th was another week of heavy rain. An upper air low pressure system moved into the Southwest and slowly eastward. Warm, moist air from the Gulf of Mexico moved northward. Blizzard conditions occurred in the Colorado/Wyoming border area and moved eastward toward the Great Lakes. Areas of heavy rain fell from central Oklahoma into northern Missouri and from the lower Mississippi River Valley through the Ohio Valley. The Mississippi Delta was again deluged with 5 or more inches of rain. Temperatures rose sharply in the East. Weekly averages ranged as much as 15° warmer than normal. All of the area west of the Plains was cooler than normal.

During the last week, a large mass of very cold air dropped southward out of Canada and centered in Idaho. The center remained nearly stationary most of the week but elongated southeastward. The cold air reached from the Sierras in the West to the East Coast by the last of the month. Cold northerly winds blowing across the warmer Great Lakes produced snow squalls south of the Lakes. Much of the lee side of the eastern Lakes accumulated 2 to 3 feet of snow. More rain fell in the Pacific Northwest as November ended.

# OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

November 1979

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least	
		°F			°F		<i>In.</i>			<i>In.</i>	
Alabama	4 Stations	83	1	Guntersville	7	30	Cuba	11.77	Beatrice 1 E	3.38	
Alaska	Wrangell	60	15	Gadbraith	-31	23	Little Fort Walter	36.13	Tok	.06	
Arizona	Tacna 3 NE	89	18	3 Stations	-5	22*	Sunrise Mountain	2.70	22 Stations	.00	
Arkansas	2 Stations	81	21+	6 Stations	11	30	Saint Charles	9.04	Oanville	1.05	
California	Thermal FAA AP	88	15	2 Stations	-9	20	Standish-Nickey St Pk	14.80	25 Stations	.00	
Colorado	Wray	73	18	Antero Reservoir	-33	30	Independence Pass 5 SW	10.37	Dinosaur Natl Monument	.16	
Connecticut	Norwich Pub Util Plt	78	25	Falls Village	17	30	Round Pond	5.47	East Haven Saltonstall	2.30	
Delaware	2 Stations	78	2	3 Stations	23	30	Lewes 1 SW	5.29	Wilmington WSO AP	3.23	
Florida	Clevisston U S Eng	93	11	Smith Creek	17	30	Oaytona Reach WSO AP	7.96	Flamingo Ranger Sta	.36	
Georgia	5 Stations	86	11+	Clayton 1 SSW	9	30	Clayton 1 SSW	11.70	Swainsboro	.78	
Hawaii	Nana Airport 355	94	3	Mauna Kea Oba 111.2	23	14	Puohokamda 2 343	40.60	3 Stations	.00	
Idaho	Council	66	8	Island Park Oam	-28	30	Moscow-Univ of Idaho	2.85	Mackay Ranger Station	.17	
Illinois	Cahokia	78	20	3 Stations	11	30*	2 Stations	7.77	Peru 2 W	1.54	
Indiana	4 Stations	78	1	Angola	13	13*	English	8.96	Ft Wayne Oisposal Pl	3.13	
Iowa	Logan	72	17	2 Stations	5	13*	Buckeye	3.63	Knoxville	.85	
Kansas	Greeneburg	79	17	Tribune 1 W	7	30	Elgin	10.94	Elkhart 6 NNE	0	
Kentucky	2 Stations	80	21+	Vanceburg	19	30	Nopkinsville	9.95	Ashland	2.24	
Louisiana	2 Stations	86	9	Ashland 2 S	16	30	Marksville	8.66	Abbeville	2.80	
Maine	Lewiston	72	2	Squa Pan Oam	6	20	Ellsworth	5.91	Fort Kent	2.09	
Maryland	Cumberland 2	78	23	Frostburg 2	14	30	Salisbury FAA AP	6.50	Savage River Dam	1.76	
Massachusetts	Chester 2	74	24+	Chester 2	10	17	Chester 2	5.78	Nantuckett FAA AP	2.65	
Michigan	3 Stations	74	1	Nerman	-11	11	Gull Lake 8101 Sta	5.54	Kenton	1.42	
Minnesota	2 Stations	70	18+	2 Stations	-13	8	Albert Lea	3.41	Orconville	.08	
Mississippi	Columbia	87	9	Charleston	12	30	Dancy	12.29	Vicksburg Military Pk	4.12	
Missouri	3 Stations	79	21+	Willow Springs RDO KUKU	7	30	Waco 2 E	7.24	Weldon Sprng Wildlife Ar	1.19	
Montana	Grass Range	72	16	West Yellowstone	-27	28	2 Stations	1.69	7 Stations	T	
Nebraska	Gothenburg	75	16	Crescent Lake Natl WLR	-7	27	Taylor	4.62	Gordon 3 W	.12	
Nevada	Sunrise Manr Las Vegas	78	15	Mountain City R 5	-22	28	Denio	2.03	8 Stations	.00	
New Hampshire	2 Stations	72	3+	Mount Washington	-6	18	Mount Washington	5.97	Newport	2.30	
New Jersey	Hightstown 2 W	77	3	4 Stations	19	30	Greenwood Lake	5.55	Trenton WSO C1	2.60	
New Mexico	Carlsbad FAA AP	82	4	Chama	-10	28	Bloomfield 3 SE	2.29	14 Stations	.00	
New York	Setauket	74	25	Old Forge	7	16	Nooker 4 N	8.01	2 Stations	1.61	
North Carolina	Elizabethtown Lock 2	87	10	Grandfather Mountain	5	30	Lake Toxaway 2 SW	18.26	Wilmington WSO AP	2.01	
North Dakota	2 Stations	70	16	3 Stations	-10	10	Petersburg 2 N	1.47	9 Stations	T	
Ohio	Gallipolis	79	1	Chardon	12	30	Cincinnati-Fernbank	5.54	New Philadelphia 1 A	2.37	
Oklahoma	Waurika	83	19	2 Stations	8	30	Ponca City FAA AP	12.14	Goodwell Research Sta	.06	
Oregon	Gold Reach Ranger Sta	74	7	Minam 7 NE	-18	29	Port Orford SE	15.79	Orewey	.59	
Pacific	Ponape WSO	93	30	Midway Sand Island	56	30	Truk Moen 1 WSO AP	20.97	Wake Island WSO AP	3.09	
Pennsylvania	Morgantown	80	26	Warren	13	29	Erie WSO AP	5.84	Landisville 2 NW	1.83	
Puerto Rico	Lajas Substation	94	4	Adjuntas Substation	53	29	Pico Oel Este	24.54	Puerto Real	1.49	
Rhode Island	Providence WSO AP	73	24	Kingston	22	30	Kingston	5.35	Block Island WSO AP	2.83	
South Carolina	Florence FAA AP	87	10	Caesars Nead	11	30	Caesars Nead	13.58	Aiken 4 NE	1.97	
South Dakota	Belle Fourche	73	16	2 Stations	-4	29*	Tyndall 1 N	2.99	2 Stations	.00	
Tennessee	Kingston Springs 2 NNE	80	21	Sevierville 1 SE	12	30	Gover 1 W	10.50	Newport 1 NW	3.45	
Texas	Zapata	95	7	Meritzon	6	30	Cypressa	7.15	36 Stations	.00	
Utah	La Verkin	73	6	Woodruff	-30	30	Alta	7.02	2 Stations	.00	
Vermont	Oorset i S	72	23	Mount Mansfield	5	17*	Mount Mansfield	5.69	South Newbury	2.34	
Virginia	Norfolk WSO AP	83	10	2 Stations	10	30	Waverly	9.12	Luray 5 E	2.10	
Virgin Islands	Cruz Bay	91	9	Catherineburg	65	24	Annaly	17.18	Tague Bay	7.32	
Washington	Gienoma 1 W	72	15	Winthrop 1 WSW	-5	29	Long Beach Exp Sta	9.36	Sequ'a	.26	
West Virginia	Nuntington WSO AP	82	1	Snowshoe	5	30	Pickens 1	5.13	Parkersburg WSO C1	2.38	
Wisconsin	3 Stations	69	18+	Newald 4 N	-7	11	Summit Lake Ranger Sta	3.38	Foxboro	.40	
Wyoming	2 Stations	69	18+	Sage 4 NNW	-32	30	La Orange	3.74	Shoshoni	T	





















# HEATING DEGREE DAYS

(Base 65°F.)

NOVEMBER 1979

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				ALABAMA				ALABAMA				ALABAMA			
BIRMINGHAM U	398	535	429	BOISE	903	1262	1301	NEBRASKA	915	1349	1279	TENNESSEE	483	835	865
BIRMINGHAM	365	466	534	LEWISTON	819	1126	1285	GRAND ISLAND	825	1201	1192	CHATTANOOGA	438	605	674
HUNTSVILLE	469	621	611	POCATELLO	1090	1589	1606	LINCOLN	954	1457	1398	KNOXVILLE	407	627	659
MOBILE	246	289	250					NOPOLK	975	1383	1459	MEMPHIS	426	502	572
MONTGOMERY	282	358	399	ILLINOIS				NORTH PLATTE	867			NASHVILLE	487	672	688
				CAIRO U	495	633	669	OMAHA (EPPELY)	837	1258	1271	OAK RIDGE	507	781	773
ALASKA				CHICAGO O HARE	722	1201	1249	OMAHA (NORTH)	984	1412	1491				
ANCHORAGE	937	2376	3262	CHICAGO MIDWAY	726	1169	1119	SCOTTSBLUFF	1040	1633	1554	TEXAS			
ANNETTE	652	1735	2086	MOLINE	831	1368	1264	NEVADA				ABILENE	429	472	425
BARROW	840	5185	6211	PEORIA	804	1297	1158	ELKO	933	1289	1802	AMARILLO	727	943	787
BARTER ISLAND	1591	5208	6037	ROCKFORD	866	1471	1335	ELY	1005	1710	1869	AUSTIN	278	294	244
BETHEL	1186	3444	3826	SPRINGFIELD	684	1066	1031	LAS VEGAS	395	439	431	BROWNSVILLE	99	99	40
BETTLES	1435	3656	4774				RENO	805	1237	1438	CORPUS CHRISTI	131	137	88	
BIG DELTA	1216	2897	4122	INDIANA				WINNEPUECA	875	1332	1596	DALLAS FT WORTH	370	404	347
COLD BAY	893	2866	3126	EVANSVILLE	619	938	873				DEL RIO	233	243	218	
FAIRBANKS	1336	3155	4170	FORT WAYNE	756	1329	1209	NEW HAMPSHIRE				EL PASO	505	585	494
GULKANA	1220	3137	4213	INDIANAPOLIS	705	1192	1089	CONCORD	675	1517	1540	GALVESTON	200	207	117
HOMER	861	2593	3285	SOUTH BEND	672	1118	1258	MT WASHINGTON OBS	1165	4027	4145	HOUSTON INTERCON	297	324	179
JUNEAU	830	2310	2788					NEW JERSEY				LUBBOCK	570	683	656
KING SALMON	1063	2780	3464	IOWA				ATLANTIC CITY	483	929	867	MIDLAND	459	525	437
KODIAK	785	2175	2760	SUPLINGTON	762	1193	1154	ATLANTIC CITY U	404	714	720	PORT ARTHUR	278	301	219
KOTzebUE	1400	3867	4537	OES MOINFS	801	1208	1273	NEWARK	393	716	841	SAN ANGELO	430	487	371
KTC GRATH	1299	3275	4243	DUBUQUE	873	1465	1467	TRENTON U	422	808	852	SAN ANTONIO	243	258	211
NOME	1207	3543	4253	SIOUX CITY	922	1474	1362					VICTORIA	243	263	138
ST. PAUL ISLAND	843	2952	3556	WATERLOO	675	1391	1493					WACO	384	427	292
TALKEETNA	1131	2821	3554					NEW MEXICO				WICHITA FALLS	464	521	461
UNALAKLEET				KANSAS				ALBUQUERQUE	715	886	840	UTAH			
VALDEZ	948	2734	3341	CONCORDIA	788	1059	1056	CLAYTON	818	1169	1078	MILFORD	958	1355	1401
YAKUTAT	800	2421	2970	GODDGE CITY	816	1087	954	ROSWELL	602	744	755	SALT LAKE CITY	846	1123	1289
				GOODLAND	909	1316	1290								
ARIZONA				TOPEKA	741	1057	977					VERMONT			
FLAGSTAFF	1008	1945	1792	WICHITA	690	856	849	NEW YORK				RUPLINGTON	703	1532	1602
PHOENIX	204	215	199					ALBANY	619	1306	1350				
TUCSON	252	278	250	KENTUCKY				BINGHAMTON	669	1505	1493				
WINSLOW	796	1031	925	COVINGTON	616	1037	951	BUFFALO	636	1276	1358	VIRGINIA			
YUMA	84	86	108	LEXINGTON	574	926	898	NEW YORK U	373	672	766	LYNCHBURG	444	797	807
				LOUISVILLE	534	797	876	NEW YORK KENECY	493	859	844	NORFOLK	272	462	552
ARKANSAS								NEW YORK LA GUARDIA	440	774	785	RICHMOND	353	603	704
FORT SMITH	567	698	573	LOUISIANA				ROCHESTER	655	1328	1294	ROANOKE	458	808	816
LITTLE ROCK	436	516	589	BATON ROUGE	308	352	262	SYRACUSE	607	1265	1261	WALLOPS ISLAND	353	559	658
NO. LITTLE ROCK	466	569	539	LAKE CHARLES	284	309	213								
				NEW ORLEANS	230	243	219	NORTH CAROLINA				WASHINGTON			
CALIFORNIA				SHREVEPORT	366	418	348	ASHEVILLE	468	816	880	OLYMPIA	737	1436	1487
BAKERSFIELD	196	218	331					CAPE HATTERAS R	208	320	353	OUILLAYUTE	625	1448	1705
BISHOP	634	872	884	MAINE				CHARLOTTE	357	569	582	SEATTLE	591	1008	1183
BLOOM	640	1350	1149	CARIBOU	870	1989	2198	GREENSBORO	377	644	734	SEATTLE-TACOMA	628	1108	1341
EUREKA U	369	1065	1498	PORTLAND	672	1554	1567	RALPH	394	603	648	SPOKANE	1029	1588	1682
FRESNO	323	379	435	MARYLAND				WILMINGTON	239	351	368	STAMPEDE PASS R	1086	2590	2727
LONG BEACH	147	166	210	PALTIMORE	425	763	844					WALLA WALLA U	829	1088	1088
LOS ANGELES	121	139	292					NORTH DAKOTA				YAKIMA	919	1382	1464
LOS ANGELES U	59	60	153	MASSACHUSETTS				BISMARCK	1166	2049	1952				
MT SHASTA P	798	1436	1367	BLUE HILL OBS R	546	1185	1178	FARGO	1209	2085	1930	WEST VIRGINIA			
OAKLAND	257	365	639	ROSTON	484	971	979	WILLISTON	1190	1944	2036	BECKLEY	611	1240	1222
RED BLUFF	355	444	421	WORCESTER	614	1372	1346					CHARLESTON	519	904	901
SACRAMENTO	391	491	466					OHIO				ELKINS	652	1358	1344
SAN DIEGO	75	79	205	MICHIGAN				AKRON	664	1289	1224	HUNTINGTON	494	849	896
SAN FRANCISCO	320	529	671	ALPENA	929	1928	1902	CINCINNATI ABBE OB	592	984	894	PARKERSBURG U	512	928	914
SAN FRANCISCO U	213	576	843	DETROIT				CLEVELAND	670	1191	1177				
SANTA MARIA	299	527	737	DETROIT METRO	758	1396	1240	COLUMBUS	632	1118	1125	WISCONSIN			
STOCKTON	338	398	451	FLINT	753	1403	1431	OAYTON	649	1167	1073	GREEN BAY	928	1734	1684
				GRAND RAPIDS	731	1309	1347	MANSFIELD	719	1367	1111	LA CROSSE	894	1583	1466
COLORADO				HOUGHTON LAKE	893	1843	1856	TOLEDO	724	1334	1263	MAISON	890	1656	1609
ALAMOSA	1312	2353	2146	LANSING	792	1461	1389	YOUNGSTOWN	652	1310	1274	MILWAUKEE	797	1348	1486
COLORADO SPRINGS	1005	1547	1458	MUSKOGON	766	1476	1384								
DENVER	941	1366	1296	SAULT STE MARIE	979	2183	2061	OKLAHOMA				WYOMING			
GRAND JUNCTION	945	1157	1140					OKLAHOMA CITY	551	645	634	CASPER	1149	1831	1728
PUEBLO	670	1222	1116	MINNESOTA				TULSA	525	615	621	CHEYENNE	1058	1695	1693
				DULUTH	1059	2152	2198					LAMER	1164	1772	1817
CONNECTICUT				INTERNATIONAL FALLS	1277	2700	2412	OREGON				SHERIDAN	1051	1694	1785
BRIDGEPORT	523	988	873	MINNEAPOLIS	992	1687	1655	ASTORIA	537	1136	1448				
HARTFORD	578	1218	1213	ROCHESTER	974	1684	1698	BURNS U	984	1599	1749				
				ST CLOUD	1081	2011	1872	EUGENE	673	1032	1159				
DELAWARE								HOPEFORD	668	886	1126				
WILMINGTON	458	818	865	MISSISSIPPI				PENDELTON	902	1283	1208				
				JACKSON	421	519	392	PORTLAND	592	835	1161				
DIST. OF COLUMBIA				MERICIAN	374	467	442	SALEM	691	1127	1176				
WASHINGTON DULLES	461	870	943					SEXTON SUMMIT R	676	1479	1555				
WASHINGTON NATIONAL	313	549	714	MISSOURI											
				COLUMBIA REGIONAL	698	999	922	PENNSYLVANIA							
FLORIDA				KANSAS CITY	720	1012	990	ALLEN TOWN	509	1006	1116				
APPALACHICOLA U	147	157	160	ST JOSEPH	729	1036	1006	ERIE	634	1149	1370				
DAYTONA BEACH	75	75	97	ST LOUIS	610	849	859	HARRISBURG	536	1026	980				
FORT MYERS	14	14	44	SPRINGFIELD	633	849	853	PHILADELPHIA	439	802	851				
JACKSONVILLE	144	163	180					PITTSBURGH	601	1199	1204				
KEY WEST	0	0	0	MONTANA				SCRANTON	568	1173	1258				
MIAMI	6	6	13	BILLINGS	937	1373	1612	WILLIAMSPORT	601	1204					

# COOLING DEGREE DAYS

(Base 65°F.)

NOVEMBER 1979

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	5	1725	2219	HILO	246	2941	2861	GRAND ISLAND	0	978	1036	CHARLESTON	40	2204	2078
BIRMINGHAM	T	1711	1928	HONOLULU	378	4143	3951	LINCOLN	0	1098	1148	CHARLESTON U	47	2168	2347
HUNTSVILLE	D	1436	1808	KAMULUI	354	3869	3496	NORFOLK	0	946	925	COLUMBIA	22	1693	2087
MOBILE	16	2437	2567	LIHUE	303	3701	3486	NORTH PLATTE	0	862	802	GRNVILLE-SPRTNBRG	1	1296	1573
MONTGOMERY	8	2032	2238					OMAHA (EPPLEY)	0	1002	949				
ALASKA				IDAHO				OMAHA (NORTH)	0	853	666	SOUTH DAKOTA			
ANCHORAGE	0	4	0	BOISE	0	752	714	SCOTTSBLUFF	0	777	736	ABERDEEN	0	502	566
ANNETTE	0	9	0	LEWISTON	0	968	657	VALENTINE	0	0	0	HURON	0	783	711
BARROW	0	0	0	POCATELLO	0	479	437					RAPID CITY	0	550	661
BARTER ISLAND	0	0	0					NEVADA				SIOUX FALLS	0	724	719
BETHEL	0	0	0	ILLINOIS				ELKO	0	694	342	TENNESSEE			
BETTLES	0	12	17	CAIRO	2	1764	1806	ELY	0	208	207	BRISTOL	0	720	1107
BIG DELTA	0	28	34	CHICAGO O HARE	0	806	664	LAS VEGAS	0	3387	2946	CHATTANOOGA	0	1432	1636
COLD BAY	0	0	0	CHICAGO MIDWAY	0	812	925	RENO	0	404	329	KNOXVILLE	4	1355	1569
FAIRBANKS	0	23	52	MOLINE	0	907	893	WINNEMUCCA	0	593	407	HEMPHIS	4	2088	2029
GULKANA	0	0	0	PEORIA	0	903	968					NASHVILLE	0	1376	1694
HOMER	0	0	0	ROCKFORD	0	679	714	NEW HAMPSHIRE				DAK RIDGE	0	1044	1367
JUNEAU	0	1	0	SPRINGFIELD	0	1201	1116	CONCORD	0	519	349				
KING SALMON	0	0	0				MT WASHINGTON OBS	0	0	0	TEXAS				
KODIAK	0	8	0	INDIANA				NEW JERSEY				ABILENE	11	2512	2466
KOTZEBUE	0	1	0	EVANSVILLE	0	1238	1364	ATLANTIC CITY	0	850	864	AMARILLO	0	1168	1433
MC GRATH	0	2	14	FORT WAYNE	0	677	748	ATLANTIC CITY U	0	713	835	AUSTIN	29	2623	2903
NOME	0	0	0	INDIANAPOLIS	0	882	974	NEWARK	3	1156	1024	BROWNSVILLE	118	3643	3797
ST. PAUL ISLAND	0	0	0	SOUTH BEND	0	801	695	TRENTON U	1	936	968	CORPUS CHRISTI	89	3473	3437
TALKEETNA	0	1	6					NEW MEXICO				DALLAS FT WORTH	14	2509	2587
UNALASKA LEE7	0	0	0	IOWA				ALBUQUERQUE	0	1508	1316	DEL RIO	24	3201	3363
VALDEZ	0	4	0	BURLINGTON	0	931	994	CLAYTON	0	742	767	EL PASO	0	2157	2098
YAKUTAT	0	0	0	DES MOINES	0	984	928	ROSWELL	0	1684	1560	GALVESTON	22	2629	2987
ARIZONA				DUBUQUE	0	600	606					HOUSTON INTERCON	26	2571	2878
FLAGSTAFF	0	85	140	SIOUX CITY	0	865	932					LUBBOCK	0	1878	1647
PHOENIX	7	4186	3508	WATERLOO	0	770	675					MDLANO	0	2109	2250
TUCSON	6	3052	2814	KANSAS				NEW YORK				PORT ARTHUR	27	2519	2790
WINSLOW	0	1185	1203	CONCORDIA	0	1280	1302	ALBANY	0	636	574	SAN ANGELO	12	2357	2702
YUMA	14	4371	4189	ODDGE CITY	0	1316	1411	BINGHAMTON	0	371	369	SAN ANTONIO	42	2985	2987
ARKANSAS				GOODLAND	0	939	925	BUFFALO	0	570	437	WICHITA	28	2824	3125
FORT SMITH	4	1646	2022	TOPEKA	0	1275	1361	NEW YORK U	5	1218	1068	WACO	17	2316	2863
LITTLE ROCK	1	1926	1925	WICHITA	0	1663	1673	NEW YORK KENNEDY	0	824	861	WICHITA FALLS	14	2414	2611
NO. LITTLE ROCK	1	1703	1951	KENTUCKY				NEW YORK LA GUARDIA	0	1049	1048				
CALIFORNIA				COVINGTON	0	845	1080	ROCHESTER	0	597	531	UTAH			
BAKERSFIELD	1	2730	2179	LEXINGTON	0	968	1197	SYRACUSE	0	595	551	HILFORD	0	589	688
BISHOP	0	1054	1037	LOUISVILLE	0	1236	1268					SALT LAKE CITY	0	1274	927
BLUE CANYON	0	0	0	LOUISIANA				NORTH CAROLINA				VERMONT			
EUREKA	0	15	0	BATON ROUGE	14	2373	2579	ASHEVILLE	0	792	872	BURLINGTON	0	531	396
FRESNO	0	2267	1671	LAKE CHARLES	17	2443	2732	CAPE HATTERAS R	24	1556	1550				
LONG BEACH	1	1189	985	NEW ORLEANS	25	2879	2695	CHARLOTTE	3	1366	1596	LYNCHBURG	0	982	1100
LOS ANGELES	9	822	615	SHREVEPORT	8	2114	2538	GREENSBORO	4	1180	1341	NORFOLK	22	1433	1441
LOS ANGELES U	53	1344	1185	MAINE				RALEIGH	10	1275	1394	RICHMOND	9	1375	1353
MT SHASTA R	0	235	286	CARIBOU	0	290	128	WILMINGTON	28	1966	1964	ROANOKE	1	902	1030
OAKLAND	0	252	128	PORTLAND	0	316	252					WALLOPS ISLAND	0	1187	1107
PEO BLUFF	0	2208	1904	MARYLAND				NORTH DAKOTA							
SACRAMENTO	0	1294	1159	BALTIMORE	1	1137	1108	BISMARCK	0	365	487	WASHINGTON			
SAN DIEGO	5	1207	722	ALPENA	0	272	208	FARGO	0	504	473	OLYMPIA	0	93	101
SAN FRANCISCO	0	182	108	DETROIT	0	522	654	WILLISTON	0	415	422	DUILLAYUE	0	15	8
SAN FRANCISCO U	0	125	39	DETROIT METRO	0	509	438					SEATTLE	0	139	183
SANTA MARIA	0	113	84	FLINT	0	614	575	AKRON	0	564	634	SEATTLE-TACOMA	0	171	129
STOCKTON	0	1793	1259	GRAND RAPIDS	0	614	438	CINCINNATI ABBE OB	0	930	1188	SPOKANE	0	496	388
COLORADO				HOUGHTON LAKE	0	271	250	CLEVELAND	0	715	613	STAMPEE PASS R	0	33	16
ALAMOSA	0	34	88	LANSING	0	578	535	COLUMBUS	0	808	809	WALLA WALLA U	0	1032	862
COLORADO SPRINGS	0	473	461	HUSKEGON	0	379	469	DAYTON	0	854	936	YAKIMA	0	571	479
DENVER	0	861	625	SAULT STE MARIE	0	145	139	HANSFIELD	0	531	818				
GRAND JUNCTION	0	1263	1140	MINNESOTA				TOLEDO	0	602	685	WEST INDIES			
PUEBLO	0	904	981	DULUTH	0	169	176	YOUNGSTOWN	0	501	518	SAN JUAN P.R.	477	5445	4616
CONNECTICUT				INTERNATIONAL FALLS	0	131	176	OHIO							
BRIDGEPORT	0	731	735	MINNEAPOLIS	0	651	585	AKRON	0	564	634	WEST VIRGINIA			
HARTFORD	0	811	584	ROCHESTER	0	611	474	CINCINNATI	0	930	1188	BECKLEY	0	404	490
DELAWARE				ST CLOUD	0	324	426	CLEVELAND	0	715	613	CHARLESTON	0	894	1055
WILMINGTON	0	990	992	MISSISSIPPI				COLUMBUS	0	808	809	ELKINS	0	392	389
DIST. OF COLUMBIA				JACKSON	4	1945	2316	DAYTON	0	854	936	HUNTINGTON	3	1004	1098
WASHINGTON DULLES	6	976	940	MERIDIAN	6	1942	2231	HANSFIELD	0	531	818	PARKERSBURG U	0	840	1045
WASHINGTON NATIONAL	2	1479	1415	MISSOURI				TOLEDO	0	602	685				
FLORIDA				COLUMBIA REGIONAL	0	1165	1269	YOUNGSTOWN	0	501	518	WISCONSIN			
APPLACHICOLA U	46	2427	2649	KANSAS CITY	0	1174	1285	AKRON	0	564	634	GREEN BAY	0	380	386
DAYTONA BEACH	111	2938	2874	ST JOSEPH	0	1097	1334	CINCINNATI	0	930	1188	LA CROSSE	0	584	695
FORT MYERS	287	4125	3605	ST LOUIS	0	1578	1475	OHIO	0	564	634	HADISON	0	450	460
JACKSONVILLE	61	2440	2577	SPRINGFIELD	0	1122	1382	OKLAHOMA CITY	2	1805	1876	MILWAUKEE	0	538	450
KEY WEST	362	4771	4668	MONTANA				TULSA	6	2157	1949				
MIAMI	324	4040	3879	BILLINGS	0	716	498	OREGON				ASTORIA	0	27	13
ORLANDO	153	3262	3164	GLASGOW	0	533	438	BURNS U	0	367	289	BURNS U	0	367	289
PENSACOLA	16	2559	2683	GREAT FALLS	0	396	339	EUGENE	0	182	239	EUGENE	0	182	239
TALLAHASSEE	35	2196	2553	HAVRE	0	514	395	MEADFORD	0	658	562	MEADFORD	0	658	562
TAMPA	164	3382	3302	HELENA	0	322	256	PENDELTON	0	650	656	PORTLAND	0	462	300
WEST PALM BEACH	266	3628	3652	HALISPELL	0	258	117	SALEM	0	219	232	SALEM	0	219	232
GEORGIA				WILES CITY	0	802	752	SEXTON SUMMIT R	0	228	137	SEXTON SUMMIT R	0	228	137
ATHENS	6	1614	1722	MISSOULA	0	390	188					PACIFIC AREA			
ATLANTA	5	1762	1829					GUAM TAGUAC R	422	4722	4592	GUAM TAGUAC R	422	4722	4592
AUGUSTA	20	1829	1995					HONOLULU	424	4825	4695	HONOLULU	424	4825	4695
COLUMBUS	24	2241	2143					MOROR R	522	5627	5503	MOROR R	522	5627	5503
MACON	13	2111	2294					KWAJALEIN	530	5822	5649	KWAJALEIN	530	5822	5649
ROME	0	0	0					MAJURO	510	5511	5405	MAJURO	510	5511	5405
SAVANNAH	51	2388	2311					PAGO PAGO	470	5262	4860	PAGO PAGO	470	5262	4860
								PONAPE R	508	5571	5168	PONAPE R	508	5571	5168
								TRUK MOEN ISLAND	504	5711	5383	TRUK MOEN ISLAND	504	5711	5383

# STORM SUMMARY

November 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				♠ ALL OTHER				
	NUMBER	DAYS	DEATHS	INJURIES	†DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		
								PROP. ERTY	CRDPS			PROP. ERTY	CRDPS			PROP. ERTY	CRDPS			PROP. ERTY	CRDPS			PROP. ERTY	CRDPS			PROP. ERTY	CRDPS	
Alabama	8	2		36	6					2		6							?	4							3		7	
Alaska																														
Arizona																														
Arkansas	*																													
California	*																													
Colorado																			2	1	5	?								
Connecticut	*																													
Delaware	*																													
Florida	2	2			5																									
Georgia	3	3			6																									
Hawaii																											1	6	6	
Idaho	*																													
Illinois	*											4																		
Indiana												4																		
Iowa	*																													
Kansas	*																													
Kentucky	*																													
Louisiana										1		4				1											4			
Maine																														
Maryland & DC												4																		
Massachusetts	*																													
Michigan											1	5										8	4							
Minnesota	*																													
Mississippi										1	4																			
Missouri																4														
Montana	*																													
Nebraska																														
Nevada													5																	
New Hampshire																														
New Jersey	3	1			?								?	?														5		
New Mexico	*																													
New York												4	?														5	6		
North Carolina	*																													
North Dakota	*																													
Ohio	*																													
Oklahoma	1	1			4							4		1	1	4												6	?	
Oregon	*																													
Pennsylvania	3	1			4							5																4		
Puerto Rico																											1	5		
Rhode Island	*																													
South Carolina																												3	3	
South Dakota																														
Tennessee										1	4																			
Texas	3	2			5			5			5	?	1	1	4													3		
Utah	*																													
Vermont												3																	4	
Virginia												4																		
Virgin Islands	*																													
Washington												5																		
West Virginia	*																													
Wisconsin																														
Wyoming																														



# RAWINSONDE DATA

Average monthly values

NOVEMBER 1979

ALBANY, NY 1009 MB										ALBUQUERQUE, NM 839 MB										MARILLO, TX 863 MB										ANCHORAGE, AK 999 MB										ANNETTE, AK 1011 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction lens of deg.	Speed m.p.a.					Direction lens of deg.	Speed m.p.a.					Direction lens of deg.	Speed m.p.a.					Direction lens of deg.	Speed m.p.a.					Direction lens of deg.	Speed m.p.a.	Direction lens of deg.	Speed m.p.a.																	
SFC 29	86	4.7	2.1	21	1.6	30	1,619	-1.1	-6.3	04	1.2	30	1,095	.3	-2.6	28	2.0	30	45	.8	-1.9	13	1.5	29	37	5.4	1.8	12	2.8																				
1000 26	172	5.3	1.6	21	2.2	30																																											
950 29	581	5.1	.7	22	5.5	30																																											
900 29	1,022	3.7	-1.2	25	7.9	30																																											
850 29	1,440	2.3	-6.0	25	10.8	30																																											
800 29	1,974	1.8	-8.6	25	12.6	30	2,004	-1.7	-7.9	32	1.6	30	1,987	2.1	-6.2	29	4.8	30	1,815	-6.0	-11.8	17	10.0	29	1,448	1.0	-6.9	17	8.1																				
750 29	2,492	-.9	-12.8	25	15.3	30	2,521	-1.1	-10.8	29	4.1	30	2,506	-3.3	-11.9	27	7.4	30	2,317	-9.4	-14.2	18	11.5	29	2,440	-3.7	-14.5	19	8.7																				
700 29	3,040	-3.6	-15.2	25	17.1	30	3,069	-3.8	-14.4	28	7.7	30	3,055	-3.3	-14.7	27	9.2	30	2,848	-12.4	-17.6	18	12.1	29	2,982	-7.1	-18.0	20	8.8																				
650 29	3,622	-6.6	-19.0	25	19.4	30	3,651	-6.9	-19.1	28	10.1	30	3,638	-6.4	-19.3	27	10.7	30	3,411	-15.5	-21.0	19	13.7	29	3,556	-10.3	-21.7	20	9.1																				
600 29	4,243	-10.3	-23.2	25	22.0	30	4,272	-10.1	-22.9	28	11.9	30	4,259	-10.1	-23.6	27	13.0	30	4,010	-19.4	-25.7	20	14.6	29	4,168	-14.6	-25.5	20	9.4																				
550 29	4,905	-14.2	-27.0	25	25.0	30	4,934	-14.1	-26.7	28	13.8	30	4,925	-14.2	-26.6	27	15.2	30	4,651	-23.9	-28.9	20	16.3	29	4,822	-19.0	-30.4	21	10.6																				
500 29	5,626	-18.4	-29.4	25	28.3	30	5,654	-18.9	-30.9	28	16.7	30	5,641	-18.9	-30.8	27	16.9	30	5,341	-28.7	-32.5	20	17.9	29	5,524	-24.0	-34.8	21	10.7																				
450 29	6,405	-23.3	-32.5	25	30.2	30	6,431	-24.2	-35.1	28	18.5	30	6,414	-24.0	-35.6	27	20.5	30	6,087	-34.1	-36.8	20	19.6	29	6,286	-29.0	-37.8	22	10.3																				
400 29	7,257	-29.3	-39.2	24	30.5	30	7,280	-30.2	-40.7	28	20.1	30	7,268	-30.0	-41.0	27	23.0	29	6,901	-40.0	-41.3	21	19.9	29	7,117	-35.1	-41.6	22	8.6																				
350 29	8,201	-35.6	-45.3	25	30.8	30	8,221	-36.6	-45.5	28	23.2	30	8,208	-37.0	-45.5	27	25.0	29	7,804	-45.8	-40.2	21	21.2	29	8,038	-41.5	-44.7	23	10.2																				
300 29	9,253	-43.9	-51.0	25	31.0	30	9,269	-44.0		28	25.4	30	9,255	-44.4		27	27.4	29	8,817	-50.9		21	22.1	29	9,068	-47.5		23	11.5																				
250 29	10,459	-51.2		25	31.3	30	10,475	-50.9		28	30.0	30	10,458	-51.1		27	30.4	29	9,996	-53.5		22	21.8	28	10,256	-53.2		23	11.6																				
200 27	11,889	-57.9		26	33.4	30	11,910	-55.0		28	27.0	30	11,894	-55.4		27	26.8	29	11,429	-53.4		22	18.2	28	11,679	-56.8		25	9.9																				
175 26	12,724	-59.4		26	29.4	30	12,760	-57.0		28	24.9	30	12,742	-57.3		27	26.6	29	12,293	-52.0		22	15.7	28	12,524	-57.3		26	7.8																				
150 25	13,687	-60.1		26	27.8	29	13,731	-59.9		28	22.2	30	13,713	-58.3		27	26.2	29	13,291	-52.1		22	13.7	28	13,502	-55.5		26	8.0																				
125 12	14,827	-60.2		26	22.5	29	14,866	-61.7		28	19.8	30	14,852	-60.9		27	21.7	27	14,478	-51.4		23	12.8	28	14,667	-54.6		26	7.7																				
100 11	16,210	-61.9		26	16.3	29	16,242	-63.0		28	15.7	29	16,232	-62.6		27	17.8	27	15,927	-51.4		23	12.0	28	16,094	-54.8		27	5.4																				
80 16	17,613	-62.5		27	12.8	29	17,614	-63.0		27	11.4	29	17,608	-62.5		27	9.4	27	17,360	-51.5		23	8.2	28	17,523	-54.7		27	5.1																				
70 12	18,430	-60.8		27	11.5	28	18,437	-62.4		28	8.2	29	18,434	-61.7		26	11.0	27	18,246	-52.0		23	8.7	28	18,376	-55.2		27	4.9																				
60 11	19,398	-61.3		28	8.4	28	19,389	-62.1		28	5.5	29	19,389	-61.5		26	7.0	27	19,243	-52.5		23	8.8	28	19,361	-55.2		28	4.0																				
50 11	20,528	-62.1		28	7.7	27	20,520	-60.7		27	5.6	29	20,523	-60.4		26	7.8	27	20,420	-52.9		23	7.2	28	20,525	-55.1		29	3.0																				
40 9	21,925	-60.9		28	21,913	-59.1		27	5.3	28	21,915	-59.5		27	6.2	27	21,861	-52.9		24	6.8	28	21,951	-54.8		29	2.4																						
30 9	23,717	-60.1		28	23,727	-57.5		28	4.6	27	23,727	-57.5		28	4.6	27	23,707	-51.4		24	6.3	28	23,798	-53.1		31	0.0																						
25 9	24,855	-60.1		28	24,841	-56.8		28	5.0	27	24,868	-57.3		29	6.7	24	24,882	-52.3		23	6.3	24	24,968	-53.7		36	1.8																						
20 8	26,245	-58.7		28	26,267	-55.8		29	3.5	26	26,280	-56.4		29	5.3	23	26,321	-51.5		25	4.7	24	26,406	-52.9		02	2.1																						
15 5	28,075	-57.5		28	28,131	-53.9		29	6.1	23	28,119	-54.5		29	7.0	20	28,183	-51.9		25	4.8	22	28,272	-51.8		01	3.7																						
10 7					7 30,720	-51.5		18	30,733	-52.1		29	11.8	12	30,861	-51.0		25	8.9	17	30,952	-49.5		01	6.3																								

### ATHENS, GA 991 MB

### BARRD, AK 1009 MB

### BARTER ISLAND, AK 1004 MB

### BETHEL, AK 994 MB

### BISMARCK, ND 957 MB

SFC 30	246	8.5	5.8	28	.4	11	8	-8.0	-10.1	20	2.5	30	15	-11.5	-13.4	27	1.2	30	39	-3.2	-5.6	19	1.6	30	503	-6.4	-9.3	30	1.7	
1000																														
950 30	595	11.5	4.7	23	1.7	11	80	-7.6	-8.6	20	9.4	-8.2	-10.7	27	.9	14	81	-4.4	-3.6	16	2.8									
900 30	1,047	10.0	1.1	23	3.6		90	-7.1	-8.4	20	30	8.6	-7.4	-14.2	26	2.1	30	822	-5.1	-8.2	21	4.0	25	593	-4.9	-8.0	32	3.1		
850 30	1,520	8.1	-2.5	24	5.4	11	1,343	-11.3	-15.0	22	6.8	30	1,309	-9.1	-15.5	26	5.2	30	1,270	-7.3	-12.8	21	6.9	30	1,447	-3.5	-11.5	31	8.3	
800 30	2,020	6.8	-7.5	25	7.1	11	1,807	-13.2	-18.4	21	6.9	30	1,777	-11.0	-15.8	25	5.8	30	1,741	-9.3	-16.2	21	6.7	30	1,925	-5.4	-11.5	32	9.1	
750 30	2,548	5.0	-11.5	24	9.9	11	2,296	-16.3	-21.5	20	6.5	30	2,271	-13.2	-18.1	24	6.9	30	2,237	-12.1	-20.0	21	7.3	30	2,430	-7.4	-17.3	31	10.0	
700 30	3,109	2.7	-15.3	24	11.8	11	2,812	-19.0	-28.4	21	7.2	30	2,794	-16.3	-22.0	24	8.0	30	2,762	-15.1	-24.0	21	8.2	30	2,968	-10.4	-19.5	31	10.6	
650 30	3,705	-1.3	-17.9	25	13.8	11	3,361	-22.0	-31.6	20	8.1	30	3,348	-19.2	-25.1	23	9.6	30	3,319	-18.6	-26.9	21	8.9	30	3,532	-13.1	-23.0	32	11.7	
600 30	4,341	-4.1	-21.2	25	14.9	11	3,946	-25.3	-34.5	21	8.7	30	3,939	-22.9	-28.9	24	10.1	30	3,911	-22.3	-30.7	21	9.4	30	4,138	-16.3	-26.4	32	12.3	
550 30	5,021	-8.5	-24.8	25	17.3	11	4,572	-29.7	-38.3	21	9.0	30	4,572	-26.9	-33.8	24	11.2	30	4,545	-26.7	-34.6	21	10.4	30	4,786	-20.3	-30.0	32	12.8	
500 30	5,754	-13.4	-29.6	25	19.7	11	5,244	-35.0	-42.2	21	9.2	30	5,253	-31.9	-37.8	23	12.6	30	5,227	-31.2	-38.5	22	11.1	30	5,488	-24.6	-34.6	31	13.5	
450 30	6,547	-19.0	-32.9	25	20.9	11	5,971	-40.1		22	10.7	30	5,990	-36.7	-39.4	23	14.9	30	5,966	-36.2	-40.8	22	11.4	30	6,247	-29.6	-37.1	31	13.8	
400 30	7,413	-25.4	-36.7	25	22.3	11	6,766	-45.6		22	13.4	30	6,796	-42.0	-43.4	23	18.3	29	6,764	-41.8	-42.5	21	11.3	30	7,077	-35.5	-41.9	30	14.0	
350 30	8,372	-32.4	-41.7	25	23.9	11	7,650	-49.1		23	16.6	30	7,696	-47.2		24	19.5	29	7,661	-46.9		21	12.7	30	7,996	-42.2	-43.6	30	14.1	
300 30	9,437	-40.6																												





# RAWINSONDE DATA

Average monthly values

NOVEMBER 1979

FLINT, MI 988 MB				GLASGOW, MT 936 MB				GRAND JUNCTION, CO 855 MB				GREAT FALLS, MT 890 MB				GREEN BAY, WI 989 MB														
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Resultant Wind			Dynamic height meters	Temperature °C	Resultant Wind			Dynamic height meters	Temperature °C	Resultant Wind			Dynamic height meters	Temperature °C	Resultant Wind											
				Direction true deg.	Speed m.p.s.	Dew Point °C			Direction true deg.	Speed m.p.s.	Dew Point °C			Direction true deg.	Speed m.p.s.	Dew Point °C			Direction true deg.	Speed m.p.s.	Dew Point °C									
5FC	30	236	3.0	25	2.7	30	696	-5.8	-8.3	31	1.6	30	1,472	-2.6	-8.6	11	1.4	29	1,118	-1.9	-9.3	22	4.0	30	210	-2.0	-8.1	27	1.8	
1000	30	556	2.4	-2.1	2.4	6.3																			30	535	-0.9	-4.2	28	4.6
950	30	992	-8.7	-25	8.9	30	1,011	-4.4	-7.8	31	5.9	8.0	2.3	1,546	-1.8	-9.8	11	1.9	29	1,490	-9	-10.7	27	7.2	30	1,419	-4.1	-9.4	27	7.5
900	30	1,450	-11.1	-8.4	25	10.1	30	1,467	-1.2	-10.1	31	8.0	2.3	1,546	-1.8	-9.8	11	1.9	29	1,490	-9	-10.7	27	7.2	30	1,419	-4.1	-9.4	27	7.5
850	30	1,932	-2.7	-11.9	25	11.1	30	1,949	-3.4	-12.9	31	9.0	30	2,005	-1.3	-9.6	12	1.7	29	1,976	-1.4	-12.6	29	6.8	30	1,896	-5.5	-12.7	27	9.7
800	30	2,442	-4.6	-14.8	25	12.5	30	2,457	-5.9	-17.1	31	9.9	30	2,517	-4.0	-11.7	23	6.29	2,487	-4.4	-14.9	30	6.4	30	2,400	-7.2	-16.3	27	12.3	
750	30	2,983	-7.4	-18.8	25	14.9	30	2,995	-8.5	-18.7	32	10.8	30	3,059	-8.9	-15.3	27	2.9	29	3,027	-7.7	-17.8	30	6.5	30	2,936	-9.7	-19.3	27	14.0
700	30	3,557	-10.0	-22.3	25	16.3	30	3,566	-12.0	-22.5	32	11.5	30	3,631	-10.9	-14.9	21	8.5	30	3,505	-12.4	-21.1	31	8.5	30	3,505	-12.4	-21.1	31	8.5
650	30	4,171	-13.6	-26.1	25	18.1	30	4,174	-15.3	-24.7	32	12.0	30	4,248	-13.1	-24.5	30	6.1	29	4,112	-14.4	-25.2	31	8.0	30	4,113	-15.6	-26.9	26	15.0
600	30	4,828	-17.3	-28.2	24	20.5	30	4,826	-19.4	-28.4	32	12.6	30	4,906	-17.2	-29.2	31	8.0	29	4,866	-18.5	-29.2	32	8.2	30	4,765	-19.3	-30.5	26	15.7
550	30	5,536	-21.9	-33.4	24	23.1	30	5,528	-24.0	-33.3	32	12.9	30	5,615	-21.4	-31.9	31	10.2	29	5,571	-23.0	-33.3	32	9.4	30	5,468	-23.7	-34.2	26	17.4
500	30	6,304	-26.8	-38.4	25	24.6	30	6,290	-28.9	-37.8	33	13.5	30	6,384	-26.4	-37.1	31	12.7	28	6,333	-28.4	-37.8	33	9.4	30	6,230	-28.9	-38.3	26	18.6
450	30	7,144	-32.6	-40.9	25	28.9	30	7,123	-34.9	-42.1	33	14.1	29	7,224	-32.4	-42.5	30	15.8	28	7,167	-34.6	-43.7	33	9.5	30	7,062	-35.0	-43.0	26	20.6
400	30	8,066	-38.9	-43.5	24	29	30	8,044	-41.6	-42.7	33	13.8	29	8,157	-38.6	-47.1	30	16.8	28	8,089	-41.5	-47.4	33	8.9	30	7,985	-41.0	-46.5	26	21.8
350	29	9,107	-45.3		24	32.7	30	9,070	-48.6		33	14.4	29	9,197	-45.6		30	20.4	28	9,117	-47.4		33	8.5	30	9,016	-47.2		26	23.4
300	29	10,308	-50.8		25	31.1	30	10,254	-54.1		33	13.8	29	10,396	-51.6		30	20.8	28	10,304	-53.9		33	11.3	30	10,210	-54.4		26	23.5
200	28	11,740	-54.7		26	27.0	30	11,681	-55.3		32	14.0	29	11,834	-54.8		30	20.6	28	11,729	-56.2		32	12.2	30	11,653	-53.1		26	21.6
175	28	12,595	-54.5		26	24.4	30	12,535	-54.5		31	12.6	28	12,676	-56.1		29	19.2	28	12,578	-56.0		31	12.2	30	12,513	-53.6		26	21.0
150	28	13,581	-55.2		26	21.6	30	13,523	-54.6		31	12.8	28	13,655	-56.3		29	17.6	28	13,559	-55.8		31	11.2	30	13,502	-54.5		26	15.5
125	28	14,742	-56.6		26	19.1	29	14,692	-55.2		30	30	14,810	-57.9		29	16.4	28	14,720	-56.4		31	10.8	30	14,666	-55.7		26	17.1	
100	28	16,153	-57.8		26	15.3	29	16,113	-55.9		30	9.3	28	16,211	-59.7		29	12.4	28	16,113	-57.1		31	9.0	30	16,082	-57.3		26	13.7
75	28	17,557	-58.7		26	12.8	29	17,533	-56.1		31	7.8	27	17,600	-60.3		29	10.2	28	17,548	-56.9		31	6.4	30	17,491	-58.0		25	11.7
70	28	18,395	-58.9		25	11.2	29	18,361	-56.5		31	6.8	26	18,434	-60.9		29	7.0	28	18,399	-57.3		31	6.4	30	18,336	-58.6		26	9.1
60	28	19,362	-59.2		26	9.7	29	19,360	-56.7		32	5.9	26	19,397	-60.2		29	5.6	28	19,368	-57.5		32	5.4	29	19,304	-58.8		26	8.7
55	27	20,800	-61.1		26	9.2	29	20,516	-56.3		32	4.4	25	20,533	-60.0		29	4.6	28	20,521	-57.1		33	4.1	30	20,508	-59.2		27	7.2
40	23	21,901	-59.4		27	7.0	29	21,933	-56.6		33	4.4	25	21,930	-58.8		30	2.7	28	21,934	-56.7		35	3.2	27	21,881	-59.2		26	5.8
30	22	23,703	-58.8		28	6.8	27	23,758	-56.3		36	4.7	24	23,747	-57.2		33	1.3	27	23,763	-56.2		01	3.3	26	23,645	-58.9		30	5.4
25	21	24,842	-58.5		29	8.7	26	24,921	-55.4		01	4.7	23	24,903	-56.0		34	2.0	27	24,924	-55.2		01	4.2	25	24,791	-58.2		31	6.1
20	19	26,259	-57.6		31	5.8	26	26,348	-54.5		01	6.0	22	26,328	-54.8		36	3.6	25	26,350	-54.4		03	5.1	23	26,195	-57.8		32	6.2
15	15	28,097	-55.9		31	6.7	28	28,200	-54.2		02	7.5	19	28,175	-53.5		36	3.9	24	28,194	-54.0		02	6.4	20	28,010	-56.4		32	8.0
10	5	30,728	-52.7		12	30,776	-52.5										11	30,795	-53.8					13	30,624	-53.4		29	10.3	

GREENSBORO, NC 988 MB				GUADALUPE 15., MEXICO 1015 MB				GUAM, MARIANA IS. 998 MB				HILD, HI 1015 MB				HUNTINGTON, WV 991 MB														
5FC	30	275	6.7	3.1	29	5	30	23	16.7	11.2	33	5.2	30	111	25.6	23.5	08	4.5	30	10	20.7	18.0	28	1.1	30	246	5.6	1.5	24	-6
1000	30	600	10.0	2.9	25	2.0	30	585	13.9	10.9	33	6.4													30	136	22.0	19.0	33	-7
950	30	1,049	8.1	.9	25	4.6	30	1,039	13.0	-3.7	31	4.7	30	1,015	20.8	17.4	08	11.1	30	1,045	16.5	15.0	07	2.5	30	1,035	4.8	-1.2	25	6.4
900	30	1,519	6.8	-4.4	25	6.3	30	1,519	12.8	-8.0	31	4.7	30	1,509	18.4	12.6	09	9.4	30	1,530	13.6	12.0	09	2.6	30	1,500	3.2	-4.3	25	8.9
850	30	2,017	5.6	-7.5	25	8.4	30	2,026	10.7	-9.6	31	4.9	30	2,028	16.3	8.8	09	8.5	30	2,040	11.0	5.4	11	2.5	30	1,990	1.7	-9.1	25	10.8
800	30	2,543	3.6	-11.3	24	10.3	30	2,541	8.3	-12.5	30	5.6	30	2,536	13.7	2.8	28	8.2	30	2,578	9.6	-4.6	11	3.1	30	2,508	-5.9	-13.1	25	12.4
750	30	3,101	-1.1	-14.7	24	12.2	30	3,127	5.3	-15.5	26	7.2	30	3,154	10.8	-1.2	09	8.4	30	3,149	7.6	-6.6	11	2.5	30	3,059	-2.2	-16.1	25	14.4
700	30	3,693	-2.0	-18.8	24	13.9	30	3,729	1.9	-18.5	28	9.2	30	3,769	7.6	-5.1	10	8.2	30	3,756	4.7	-10.4	09	4.0	30	3,645	-5.1	-18.1	25	16.1
650	30	4,325	-5.7	-21.9	25	15.9	30	4,370	-1.9	-20.6	28	10.4	30	4,425	4.1	-11.7	10	8.4	30	4,405	1.2	-14.4	35	.9	30	4,270	-8.5	-20.7	25	17.7
600	30	5,003	-9.5	-25.8	25	18.4	30	5,056	-6.4	-23.4	27	12.6	30	5,127	-1.1	-16.6	10	9.1	30	5,099	-2.9	-19.5	32	1.4	30	4,940	-12.4	-24.6	24	20.5
550	30	5,732	-14.2	-29.3	25	20.3	30	5,793	-11.6	-27.4	27	14.6	30	5,865	-4.4	-21.3	09	9.4	30	5,848	-7.6	-24.9	33	2.0	30	5,662	-16.9	-28.7	25	22.7
500	30	6,524	-19.6	-32.6	25	21.9	30	6,592	-17.2	-31.7	27	17.8	30	6,704	-9.1	-25.1	09	11.8	29	6,680	-12.6	-29.1	30	3.1	30	6,489	-21.8	-31.6	25	25.3
450	30	7,388	-25.9	-37.7	25	23.1	30	7,464	-23.8	-35.8	27	19.2	30	7,608	-15.1	-31.1	09	8.9	29	7,547	-19.3	-34.8	29	4.2	29	7,306	-27.8	-38.7	25	27.5
400	30	8,343	-33.0	-43.7	25	23.2	30	8,427	-31.3	-43.2	27	22.3	30	8,600	-22.1	-36.4	09	6.7	29	8,529	-26.5	-40.9	29	7.1	29	8,255	-34.6	-43.6	25	29.4
350	30	9,406	-41.3	-48.7	25	25.2	30	9,496	-39.8	-50.2	27	25.8	30	9,719	-30.4	-43.7	09	4.1	29	9,620	-35.3	-48.6	30	10.2						



# RAWINSONDE DATA

Average monthly values

NOVEMBER 1979

KEY WEST, FL 1016 MB				KING SALMON, AK 997 MB				KOPPO, CAROLINE IS. 1005 MB				KOTZEBUE, AK 998 MB				LAKE CHARLES, LA 1020 MB								
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.
SFC 30	3	23.4	20.5	05	3.6	2.9	15	-2.4	-4.3	14	2.6	3.0	30	28.4	25.0	04	1.5	3.0	5	8.2	6.2	02	1.3	
1000	30	138	19.8	06	4.9	16	76	-2.3	-1.3	16	3.5	3.0	78	27.3	25.1	05	1.7	1.4	72	-7.1	-9.4	11	5.0	
950	30	584	20.0	06	6.1	29	401	-1.3	-4.1	18	4.1	3.0	532	24.2	22.2	06	2.3	3.0	390	-7.5	-9.7	13	5.6	
900	30	1,050	17.3	09	9.9	29	831	-1.7	-5.6	16	4.3	3.0	1,006	21.3	18.5	06	2.2	3.0	810	-9.2	-11.4	15	6.4	
850	30	1,536	14.6	11	12.9	29	1,282	-2.7	-9.5	21	4.1	3.0	1,501	18.6	15.8	07	1.9	3.0	1,251	-10.7	-14.4	17	6.0	
800	30	2,048	12.3	4.5	1.2	29	1,756	-7.9	-14.3	21	4.8	3.0	2,020	16.2	12.6	07	2.3	2.9	1,717	-12.1	-17.0	18	6.1	
750	30	2,588	10.5	-1.7	1.5	29	2,129	-10.4	-17.6	21	4.8	3.0	2,568	13.5	8.8	08	2.5	2.9	2,208	-14.4	-19.8	18	7.1	
700	30	3,160	8.1	-6.3	1.7	1.5	29	2,783	-13.6	-21.0	21	5.7	3.0	3,147	10.5	4.4	09	3.2	2.9	2,728	-17.6	-23.6	18	8.2
650	30	3,769	5.2	-9.9	2.2	1.1	29	3,343	-16.7	-25.0	21	6.6	3.0	3,762	7.3	0.9	09	3.3	2.9	3,279	-21.1	-26.5	19	8.9
600	30	4,418	1.5	-13.5	2.5	2.1	26	3,943	-20.8	-30.3	20	8.4	3.0	4,418	3.8	-1.4	10	3.5	2.9	3,866	-24.8	-30.6	19	11.0
550	30	5,114	-2.4	-18.8	2.7	4.0	28	4,581	-25.0	-34.2	20	8.2	3.0	5,121	-2.2	-6.5	09	4.1	2.9	4,494	-28.9	-36.1	19	13.0
500	30	5,863	-7.4	-24.6	2.7	5.6	28	5,267	-29.7	-37.7	21	8.7	3.0	5,678	-4.6	-14.2	10	3.9	2.9	5,170	-33.4	-40.0	20	16.2
450	30	6,675	-12.8	-29.2	2.7	7.3	28	6,011	-34.5	-40.5	21	9.5	3.0	6,701	-9.2	-19.8	11	3.0	2.9	5,902	-38.1	-42.3	20	17.9
400	30	7,563	-19.2	-33.6	2.7	9.3	28	6,825	-40.4	-44.4	21	11.2	3.0	7,602	-14.7	-26.2	12	2.4	2.9	6,704	-43.3	-42.2	20	20.9
350	30	8,545	-26.3	-39.8	2.7	12.3	28	7,728	-45.6	-49.6	21	13.2	3.0	8,604	-21.1	-36.3	09	2.2	2.7	7,585	-48.5	-42.1	20	21.2
300	30	9,639	-34.2	-48.0	2.7	17.3	27	8,758	-49.4	-53.4	21	15.3	3.0	9,721	-25.6	-41.8	08	1.1	2.7	8,586	-52.8	-42.1	20	21.5
250	30	10,888	-44.3	-56.2	2.6	20.3	27	9,947	-51.3	-55.3	21	12.7	3.0	10,994	-40.0	-52.0	13	2.4	2.7	9,761	-52.7	-42.1	20	20.2
200	30	12,347	-55.4	-64.2	2.6	24.7	27	11,398	-51.1	-55.1	23	11.0	3.0	12,477	-52.6	-52.6	11	4.2	2.7	11,206	-51.4	-42.1	20	16.0
175	30	13,188	-61.0	-70.2	2.6	26.4	26	12,263	-50.8	-54.8	23	10.4	3.0	13,326	-59.7	-59.7	10	6.4	2.7	12,075	-50.5	-42.1	20	14.8
150	30	14,133	-66.3	-76.3	2.7	25.1	26	13,268	-50.3	-54.3	23	10.6	3.0	14,722	-67.3	-67.3	09	8.0	2.7	13,081	-50.4	-42.1	20	14.5
125	30	15,224	-71.4	-82.3	2.6	21.3	26	14,461	-49.6	-53.6	23	10.2	3.0	15,350	-75.1	-75.1	08	6.6	2.6	14,707	-50.4	-42.1	20	14.7
100	30	16,528	-75.2	-87.2	2.6	13.7	27	15,920	-49.8	-53.8	23	9.6	3.0	16,621	-82.0	-82.0	08	7.9	2.6	15,723	-49.2	-42.1	20	14.2
75	29	17,820	-74.1	-86.2	2.6	5.8	25	17,369	-50.4	-54.4	23	8.6	3.0	17,870	-80.1	-80.1	08	8.9	2.5	17,183	-50.2	-42.1	20	14.5
70	29	18,605	-70.3	-82.3	2.6	2.1	25	18,240	-50.5	-54.5	23	8.4	3.0	18,636	-75.1	-75.1	09	8.0	2.5	18,056	-50.2	-42.1	20	15.4
60	29	19,529	-66.9	-78.3	1.0	2.4	19,232	-51.0	-55.0	23	6.9	3.0	19,540	-70.8	-70.8	09	12.3	2.5	19,063	-50.0	-42.1	20	14.5	
50	29	20,643	-62.7	-74.3	1.0	1.4	22,205	-51.8	-55.8	23	5.3	3.0	20,634	-66.2	-66.2	09	20.1	2.3	20,253	-50.1	-42.1	20	13.1	
40	29	22,015	-58.1	-70.3	1.0	0.9	22,063	-52.3	-56.3	23	4.5	3.0	22,055	-61.6	-61.6	09	28.4	2.2	21,707	-50.4	-42.1	20	12.6	
30	27	23,857	-54.8	-66.3	0.6	1.8	19,233	-51.1	-55.1	21	4.2	3.0	23,823	-59.4	-59.4	09	30.4	2.0	23,576	-50.5	-42.1	20	10.3	
25	25	25,024	-53.7	-64.7	0.9	3.3	19,240	-51.2	-55.2	20	2.6	3.0	25,001	-50.5	-50.5	09	29.4	2.0	24,764	-50.9	-42.1	20	10.3	
20	25	26,467	-51.2	-62.7	2.6	2.8	18,263	-51.2	-55.2	20	2.3	2.9	26,469	-46.8	-46.8	10	16.2	2.0	26,216	-51.4	-42.1	20	9.8	
15	20	28,337	-49.9	-61.7	2.6	7.8	15,288	-50.7	-54.7	18	3.3	2.8	28,407	-41.2	-41.2	27	5.3	1.7	28,113	-51.2	-42.1	20	10.7	
10	9	31,009	-45.6	-57.7	7	30,902	-50.3	-54.3	7	31,169	-38.1	-38.1												

LANDER, WY 830 MB				LIHUE KAUAI, HI 1012 MB				LITTLE ROCK, AR 1000 MB				LONGVIEW, TX 1007 MB				MCGRAH, AK 989 MB													
SFC 30	1,697	-6.8	-11.4	24	1.2	30	36	23.2	19.4	05	4.2	30	79	5.9	1.8	28	1.0	30	124	7.3	4.0	30	.5	30	105	-5.7	-7.9	18	1.2
1000						30	143	23.1	18.6	05	5.3	17	208	5.1	-1.9	32	1.5	25	194	7.9	1.8	33	1.2	9	132	-7.0	-8.2	16	3.7
950						30	589	19.6	17.0	06	3.7	30	1,748	6.1	-1.9	27	4.6	30	1,062	6.5	-2.7	1.3	20	423	-3.8	-5.6	16	3.7	
900						30	1,053	16.2	13.9	06	6.4	30	1,037	5.9	-6.5	27	5.4	30	1,040	7.6	-5.5	26	4.2	30	850	-4.4	-7.2	18	6.8
850						30	1,538	13.1	10.1	06	5.8	30	1,504	5.0	-9.5	26	6.4	30	1,519	6.8	-9.9	26	4.3	30	1,299	-6.1	-9.7	19	8.7
800						7	2,047	11.7	1.4	07	4.4	30	1,997	2.9	-14.2	26	7.8	30	2,015	5.0	-11.8	27	5.8	30	1,772	-8.4	-13.6	19	9.5
750						30	2,586	10.5	-7.0	07	2.4	30	2,517	0.9	-15.4	26	10.3	30	2,540	2.4	-12.9	27	7.4	30	2,270	-11.3	-17.7	19	10.0
700						30	3,158	8.6	-11.1	06	1.1	30	3,068	-2.1	-17.0	26	12.1	30	3,095	1.1	-15.0	26	9.5	30	2,796	-14.4	-22.1	20	10.0
650						30	3,765	-1.3	-14.3	06	3.5	30	3,688	-6.1	-20.0	26	13.7	30	3,682	-6.1	-17.9	26	12.6	30	3,385	-18.5	-26.5	20	11.4
600						7	4,418	2.2	-17.9	03	1.3	30	4,281	-8.1	-23.2	26	16.4	30	4,315	-6.4	-21.6	26	14.5	30	3,950	-21.3	-29.5	19	13.0
550						7	5,115	-2.2	-21.7	03	3.2	30	4,952	-11.9	-27.1	26	18.9	30	4,990	-10.2	-25.8	26	17.4	30	4,586	-25.6	-33.0	20	13.5
500						8	5,865	-7.1	-25.4	03	3.5	30	5,674	-16.8	-30.2	25	21.2	30	5,718	-15.1	-29.8	26	19.7	30	5,271	-33.3	-35.7	20	13.2
450						30	6,678	-12.6	-29.7	04	3.2	30	6,457	-22.2	-35.3	25	22.4	30	6,506	-20.6	-32.7	25	23.1	30	6,013	-35.2	-40.7	20	14.3
400						30	7,566	-18.9	-35.2	03	4.5	30	7,312	-28.4	-40.7	25	25.2	30	7,367	-26.5	-38.4	25	26.4	30	6,824	-40.4	-42.6	20	15.7
350						30	8,549	-26.3	-41.1	03	7.6	30	8,259	-35.2	-46.4	25	28.8	30	8,321	-33.3	-43.7	26	29.5	30	7,726	-46.0	-47.9	20	17.9
300						31	9,641	-35.2	-47.8	03	10.8	30	9,313	-43.3	-47.5	25	31.1	30	9,384	-41.4	-50.5	26	32.0	30	8,739	-50.7	-51.3	21	16.3
250						30	10,885	-44.7	-53.0	03	17.7	30	10,519	-51.0	-54.0	25	33.9	30	10,597	-50.4	-52.6	26	33.9	30	9,909	-52.3	-53.1	21	15.5
200						30	12,341	-55.5	-59.5	03	29	12,025	-57.8	-59.8	25	35.4	30	12,028	-57.8	-59.8	26	35.3	29	11,353	-51.5	-52.5	22	14.9	
175						30	13,743	-61.1	-65.5	03	29	13,427	-61.1	-63.1	25	35.3	30	13,427	-61.1	-63.1	26	34.7	29	12,222	-50.7	-51.7	22	13.6	
150						29	15,219	-66.5	-71.5	03	29	15,000	-60.5	-62.5	25	21.5	30	15,023	-62.1	-64.1	26	33.6	29	13,227	-57.8	-58.8	22	13.2	
125						29	17,127	-71.1	-77.1	03	2																		





# RAWINSONDE DATA

Average monthly values

NOVEMBER 1979

		SALEM, IL 998 MB						SALEM, OR 1012 MB						SALT LAKE CITY, UT 875 MB						SAN DIEGO, CA 1003 MB						SAN JUAN, P. R. 1013 MB					
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.	Direction tens of deg.
SFC	30	174	3.0	-1.23	1.5	30	61	3.4	2.4	14	4	30	1,288	-7	-4.3	17	1.5	27	124	10.7	6.5	06	7	30	6	23.5	21.6	09	2.3		
1000	15	196	1.2	-3.6	27	4	160	5.2	2.4	14	4	30	1,288	-7	-4.3	17	1.5	27	124	10.7	6.5	06	7	30	6	23.5	21.6	09	2.3		
950	30	223	-1.1	-2.3	25	4.8	11	30	800	6.4	1.2	18	3.1	1	1	27	579	14.0	7	30	112	23.8	21.4	09	3	3	18.8	09	5.6		
900	30	1,015	3.1	-4.5	26	6.7	30	1,025	6.6	-3.1	19	5.5	2	2	27	1,034	12.5	-4.1	32	1.7	30	1,030	18.9	15.8	10	5.5	10	4.2	5.5		
850	30	1,477	1.3	-7.6	26	8.0	30	1,493	5.1	-6.2	21	6.2	30	1,520	1.0	-6.1	18	1.8	27	1,512	10.4	-8.8	32	1.7	30	1,519	16.2	12.5	10	4.5	
800	30	1,964	-1.1	-11.9	26	9.1	30	1,985	2.3	-9.0	23	5.8	30	2,006	-3.8	-9.7	22	1.9	27	2,014	8.1	-11.2	31	4.0	30	2,034	13.5	9.0	10	3.2	
750	30	2,479	-2.1	-14.4	26	10.6	30	2,504	-6.6	-12.8	24	6.8	30	2,519	-3.8	-12.8	26	2.8	27	2,544	5.8	-13.6	30	5.5	30	2,576	11.1	5.2	10	2.6	
700	30	3,025	-4.5	-18.8	25	12.3	30	3,058	-3.9	-15.6	24	6.8	30	3,076	-2.9	-15.6	24	6.8	30	3,105	-2.4	-17.6	31	6.9	30	3,150	8.4	-2.1	10	2.1	
650	30	3,076	-7.0	-21.6	25	14.9	30	3,134	-7.2	-18.5	25	6.7	30	3,136	-9.9	-21.1	29	6.4	27	3,700	-9.9	-19.9	30	8.2	30	3,759	5.2	-5.1	12	1.1	
600	30	4,226	-10.5	-25.7	25	16.9	30	4,253	-11.2	-22.4	26	7.3	30	4,250	-13.0	-24.9	30	8.2	27	4,335	-4.5	-23.8	29	10.6	30	4,409	1.7	-10.0	17	3.3	
550	30	4,890	-15.0	-28.1	25	18.8	30	4,915	-15.6	-26.4	27	8.7	30	4,908	-17.2	-27.8	30	9.9	27	5,013	-9.3	-26.8	28	12.4	30	5,106	-1.8	-15.7	32	6.8	
500	30	5,605	-19.4	-31.2	25	21.7	30	5,628	-20.2	-32.1	28	10.9	30	5,616	-21.9	-31.7	30	11.5	26	5,748	-14.1	-29.8	28	14.3	30	5,859	-6.2	-20.2	33	1.7	
450	29	6,376	-24.6	-34.7	25	24.6	30	6,400	-25.5	-36.3	28	11.9	30	6,384	-27.0	-36.6	30	13.2	25	6,539	-19.5	-32.6	28	18.2	30	6,675	-11.4	-26.2	31	2.6	
400	29	7,224	-30.0	-42.2	25	28.9	30	7,244	-31.7	-40.7	27	12.3	30	7,223	-32.7	-42.8	30	14.7	24	7,404	-25.7	-36.9	28	25.0	30	7,569	-17.5	-32.0	29	5.2	
350	29	8,164	-36.9	-47.2	25	28.9	30	8,178	-38.4	-45.9	28	12.7	30	8,154	-39.9	-46.0	30	17.7	24	8,359	-32.9	-43.3	28	23.9	30	8,558	-24.4	-38.6	30	5.1	
300	29	9,211	-44.6	-52.0	25	32.0	30	9,219	-45.5	-52.0	28	12.9	30	9,192	-46.0	-52.0	30	18.9	24	9,424	-40.8	-51.2	28	26.8	30	9,660	-32.8	-46.3	30	6.5	
250	29	10,417	-50.7	-55.7	25	33.5	30	10,412	-53.4	-54.4	29	14.2	30	10,388	-52.4	-54.4	30	20.4	24	10,640	-50.0	-52.0	28	29.3	30	10,918	-42.6	-48.3	31	10.5	
200	29	11,853	-55.8	-58.2	25	33.0	30	11,832	-58.2	-58.2	29	14.3	30	11,817	-56.0	-56.0	29	20.8	24	12,068	-58.7	-58.7	28	33.1	29	12,388	-53.3	-53.3	31	13.5	
175	29	12,703	-56.2	-58.2	25	31.1	30	12,671	-58.7	-58.7	28	13.4	30	12,664	-57.2	-57.2	29	19.0	28	12,900	-61.8	-61.8	28	31.0	29	13,236	-57.7	-57.7	30	15.5	
150	29	13,681	-56.9	-58.2	25	27.5	30	13,641	-57.9	-57.9	28	12.8	30	13,639	-57.3	-57.3	29	16.7	23	13,850	-62.9	-62.9	27	30.1	29	14,184	-66.5	-66.5	31	14.1	
125	29	14,831	-59.1	-58.2	25	23.1	30	14,790	-58.3	-58.3	28	10.2	30	14,789	-58.7	-58.7	29	15.8	23	14,967	-64.6	-64.6	27	24.4	29	15,272	-72.4	-72.4	31	11.4	
100	29	16,226	-60.2	-58.2	25	18.4	30	16,193	-58.6	-58.6	28	8.3	30	16,185	-60.0	-60.0	29	12.4	23	16,326	-66.5	-66.5	27	16.8	29	16,566	-77.3	-77.3	32	6.4	
80	26	17,615	-60.6	-58.2	25	14.6	30	17,596	-58.4	-58.4	29	5.6	30	17,578	-60.0	-60.0	29	9.3	18	17,679	-65.8	-65.8	28	10.1	29	17,846	-76.6	-76.6	03	2.7	
70	25	18,485	-66.3	-58.2	25	11.1	28	18,438	-58.2	-58.2	27	3.9	30	18,611	-61.4	-61.4	28	6.5	18	19,058	-69.9	-69.9	27	7.1	29	19,205	-72.4	-72.4	20	2.9	
60	26	19,409	-59.2	-58.2	25	9.4	29	19,407	-58.8	-58.8	30	2.8	30	19,373	-60.2	-60.2	30	4.3	16	19,439	-64.1	-64.1	28	4.7	29	19,540	-68.0	-68.0	09	2.9	
50	24	20,551	-59.2	-58.2	26	8.0	28	20,553	-58.4	-58.4	32	1.5	29	20,511	-59.7	-59.7	30	4.3	16	20,561	-62.0	-62.0	28	3.8	29	20,648	-63.6	-63.6	10	5.7	
40	22	21,941	-59.4	-58.2	27	6.8	28	21,956	-57.8	-57.8	01	1.3	27	21,909	-59.2	-59.2	33	2.7	15	21,951	-60.4	-60.4	28	5.1	29	22,030	-60.0	-60.0	10	9.4	
30	20	23,708	-58.7	-58.2	28	5.7	28	23,776	-56.4	-56.4	04	3.1	27	23,719	-57.4	-57.4	36	1.9	14	23,758	-57.5	-57.5	27	4.6	28	23,854	-54.3	-54.3	10	13.0	
25	19	24,892	-58.1	-58.2	28	6.6	28	24,938	-55.4	-55.4	06	3.6	27	24,874	-56.5	-56.5	02	3.1	13	24,918	-55.7	-55.7	26	4.8	28	25,029	-52.1	-52.1	11	13.4	
20	19	26,301	-58.1	-58.2	29	6.2	29	26,388	-57.9	-57.9	07	3.8	28	26,302	-58.2	-58.2	02	4.0	12	26,352	-58.2	-58.2	25	5.6	28	26,466	-54.3	-54.3	10	13.4	
15	18	28,134	-54.7	-58.2	29	8.9	26	28,219	-52.9	-52.9	06	5.5	19	28,148	-53.9	-53.9	02	5.0	12	28,193	-52.9	-52.9	28	5.8	26	28,364	-46.5	-46.5	14	3.9	
10	10	30,768	-49.4	-58.2	14	33,877	-51.6	-51.6	04	7.2	5	30,795	-50.4	-50.4															28	9.5	

		SAULT STE MARIE, MI 987 MB						SPokane, WA 937 MB						TAMPA BAY, FL 1017 MB						TOPEKA, KS 987 MB						TRUK, CAROLINE IS. 1009 MB					
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.	Direction tens of deg.
SFC	30	221	-0	-2.3	21	7	29	720	-2.0	-3.9	07	6	30	13	16.0	14.6	05	1.7	30	268	1.3	-2.4	28	1.2	30	2	28.4	24.7	19	1.1	
1000	30	221	-0	-2.3	21	7	29	720	-2.0	-3.9	07	6	30	13	16.0	14.6	05	1.7	30	268	1.3	-2.4	28	1.2	30	2	28.4	24.7	19	1.1	
950	30	525	-7	-2.9	25	3.3	30	1,043	-7	-3.9	12	1.6	30	157	18.1	14.6	07	2.8	30	574	3.3	-3.0	26	4.3	30	82	27.5	24.1	13	1.1	
900	30	956	-2.6	-4.8	26	5.2	29	1,043	-7	-3.9	12	1.6	30	1,058	14.8	8.3	14	2.3	30	1,012	2.4	-6.2	27	6.5	30	1,010	21.5	18.9	11	2.0	
850	30	1,403	-4.3	-8.1	26	7.4	29	1,501	-7.7	-10.3	23	1.4	30	1,540	12.6	4.2	17	1.8	30	1,472	8.8	-8.7	28	7.6	30	1,505	18.7	15.3	10	2.5	
800	30	1,885	-6.3	-12.0	25	10.0	29	1,938	-12.6	-17.4	27	2.9	30	1,941	11.4	-11.4	20	2.0	30	1,958	-9	-12.1	29	8.1	30	1,981	-12.2	-12.2	20	2.9	
750	30	2,388	-8.4	-16.9	25	11.7	29	2,495	-4.3	-15.5	28	3.9	30	2,586	9.8	-6.9	21	2.6	30	2,471	-3.1	-15.4	28	8.8	30	2,574	13.9	8.3	10	2.8	
700	30	2,921	-10.7	-19.4	25	12.8	29	3,036	-7.0	-19.3	28	4.7	30	3,157	6.8	-9.9	22	3.3	30	3,015	-5.9	-17.8	28	10.2	30	3,154	10.8	4.1	09	3.2	
650	30	3,488	-13.4	-23.2	25	13.9	29	3,610	-10.1	-23.4	29	5.3	30	3,762	3.5	-13.7	23	4.9	30	3,593	-8.6	-21.6	28	12.3	30	3,769	7.6	-4.0	09	4.2	
600	30	4,094	-16.5	-26.8	25	16.3	29	4,223	-13.9	-26.6	30	6.1	30	4,407	-2	-18.8	25	6.3	30	4,209	-12.1										





# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

NOVEMBER 1979

Sun's zenith distance										Sun's zenith distance											
Date	A.M.					*	P.M.				Date	A.M.					*	P.M.			
	78.7°	75.7°	70.7°	60.0°	60.0°		70.7°	75.7°	78.7°	78.7°		75.7°	70.7°	60.0°	60.0°	70.7°		75.7°	78.7°		
	MAUNA LOA OBSERVATORY, HI											TUCSON, AZ									
Air mass										Air mass											
	3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64		
6-----	1.11	1.21	1.35	1.51	1.63	---	---	---	---	1-----	.98	1.05	1.19	1.37	1.47	1.35	1.18	1.07	.98		
10-----	1.21	1.30	1.39	1.51	1.61	1.48	1.37	1.29	1.21	2-----	1.01	1.09	1.22	1.36	1.47	1.38	1.22	1.08	.94		
11-----	1.22	1.32	1.41	1.52	1.60	1.50	1.39	1.30	1.22	3-----	1.02	1.12	1.23	1.38	1.47	1.34	---	---	---		
21-----	1.25	1.33	1.42	1.53	---	---	---	---	---	4-----	.98	1.10	1.21	1.35	1.46	1.33	1.18	1.06	.96		
30-----	---	---	---	---	1.62	1.52	1.41	1.33	1.24	5-----	.97	1.09	1.19	1.35	1.46	1.34	1.17	1.06	.94		
Aver-										8-----	---	---	---	---	1.43	---	---	---	---		
ages	1.20	1.29	1.39	1.52	1.61	1.50	1.39	1.30	1.22	9-----	.96	1.06	1.18	1.34	1.39	1.30	1.19	1.05	.95		
										10-----	.89	1.00	1.13	1.30	1.42	1.32	1.20	1.09	.97		
										11-----	1.01	1.11	---	---	---	---	---	---	---		
										12-----	1.01	1.11	1.27	1.43	1.52	1.43	1.28	1.16	1.03		
										13-----	1.13	1.23	1.33	1.46	1.52	1.42	1.24	1.14	1.02		
										14-----	---	---	1.24	---	---	---	---	1.10	---		
										15-----	.97	1.08	---	---	1.41	1.30	1.12	.98	.89		
										16-----	.88	1.00	1.12	1.27	1.38	1.25	1.09	.94	.83		
										17-----	.90	---	---	---	---	---	---	1.04	---		
										18-----	.91	.98	1.13	1.30	1.37	1.33	1.15	1.01	.88		
										20-----	.99	1.10	1.21	1.36	1.53	1.44	1.29	1.16	1.05		
										21-----	.99	1.11	1.26	1.41	1.46	1.35	1.19	1.03	.92		
										22-----	.94	1.05	1.20	1.35	1.46	1.40	1.29	1.18	1.08		
										23-----	---	---	---	---	---	---	---	---	1.00		
										24-----	1.05	1.15	1.25	1.40	1.48	1.38	1.24	1.11	1.01		
										25-----	1.02	1.12	1.25	---	1.46	1.38	1.24	1.12	1.01		
										26-----	1.02	---	---	---	1.46	---	1.25	1.12	1.00		
										27-----	1.02	1.12	1.24	1.37	1.44	1.36	1.18	1.07	.96		
										28-----	.92	1.01	1.17	1.35	1.43	1.34	1.20	1.07	---		
										29-----	.97	1.08	1.21	1.38	1.41	---	---	---	---		
										30-----	---	1.07	1.21	---	---	1.33	1.20	1.04	.89		
										Aver-	.98	1.08	1.21	1.36	1.45	1.35	1.20	1.08	.97		
										ages											

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . . .	- 11	- 10	- 18	- 12	- 11	- 13	- 13	- 13	- 10	- 17	- 12	- 8	- 11	M	- 13	- 12	- 3	0	28	- 8	- 8	- 6	1	2	1	7	- 2	- 1	1	4		- 58

REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for time of observational).

- + And also on an earlier date or datea.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Cust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

$$1 \text{ foot} = 0.3048 \text{ meters}$$

$$^{\circ}\text{F.} = \frac{9}{5} \times ^{\circ}\text{C} + 32$$

$$1 \text{ inch} = 25.4 \text{ millimeters}$$

$$1 \text{ mile per hour} = 0.447 \text{ meters per second}$$

HEATING DECREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DECREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, C.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygriators. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 C.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

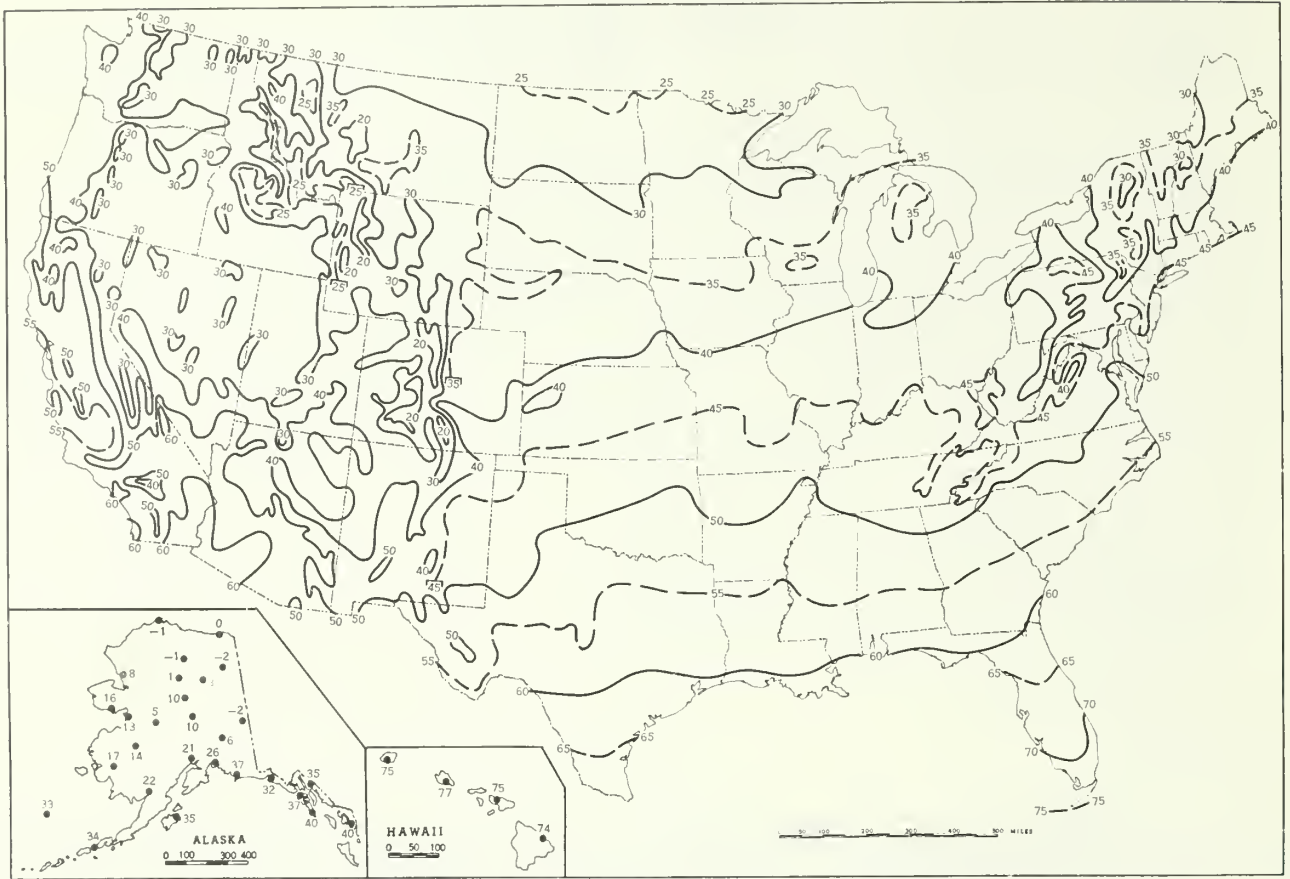
( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeter-
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable		minable
BN	Blowing Sand	CF	Ground Fog	K	Smoke	N	Sand
D	Dust	H	Haze	KI	Intense Smoke	S	Slight Haze-indeter-
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		minable

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.



Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), November.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), November 1979

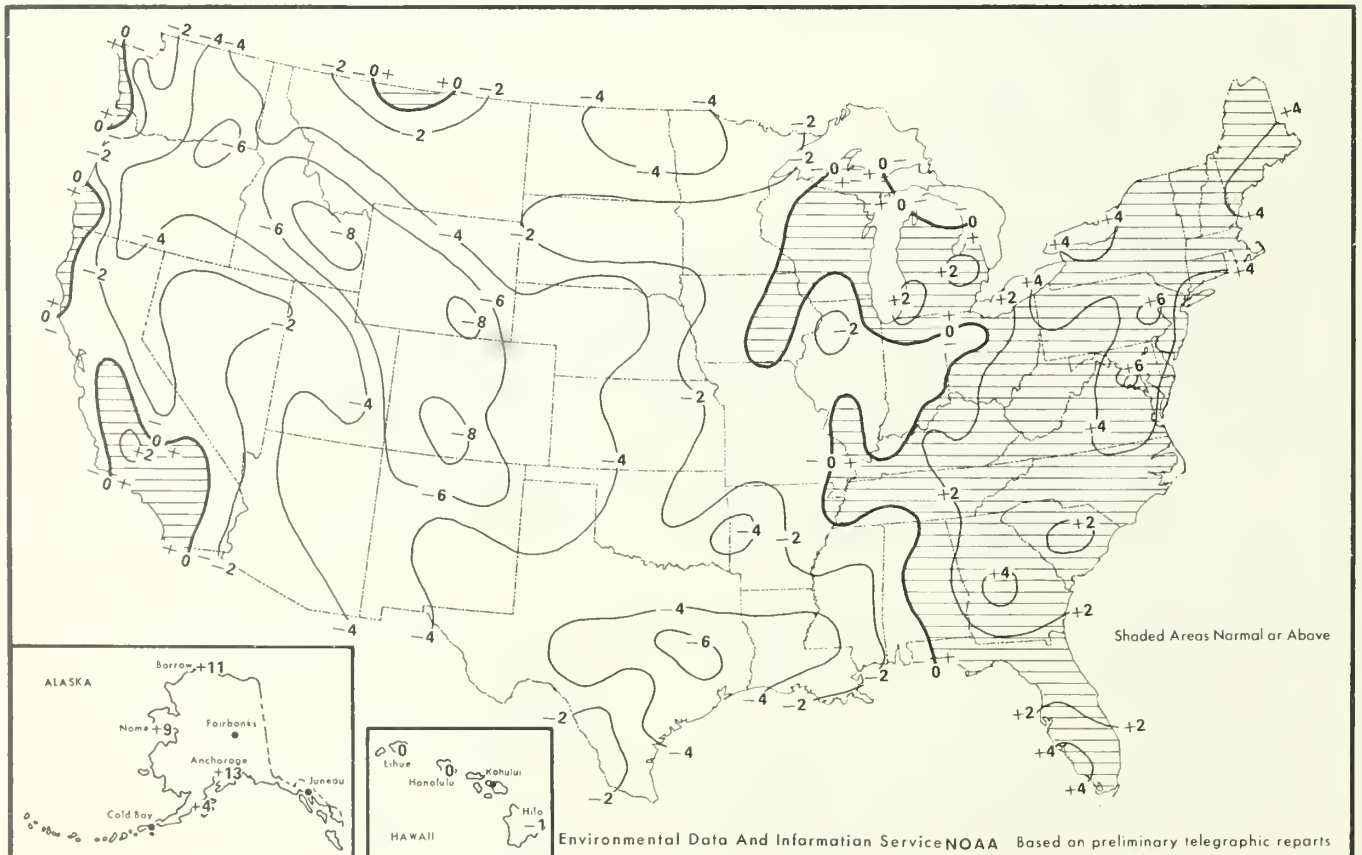
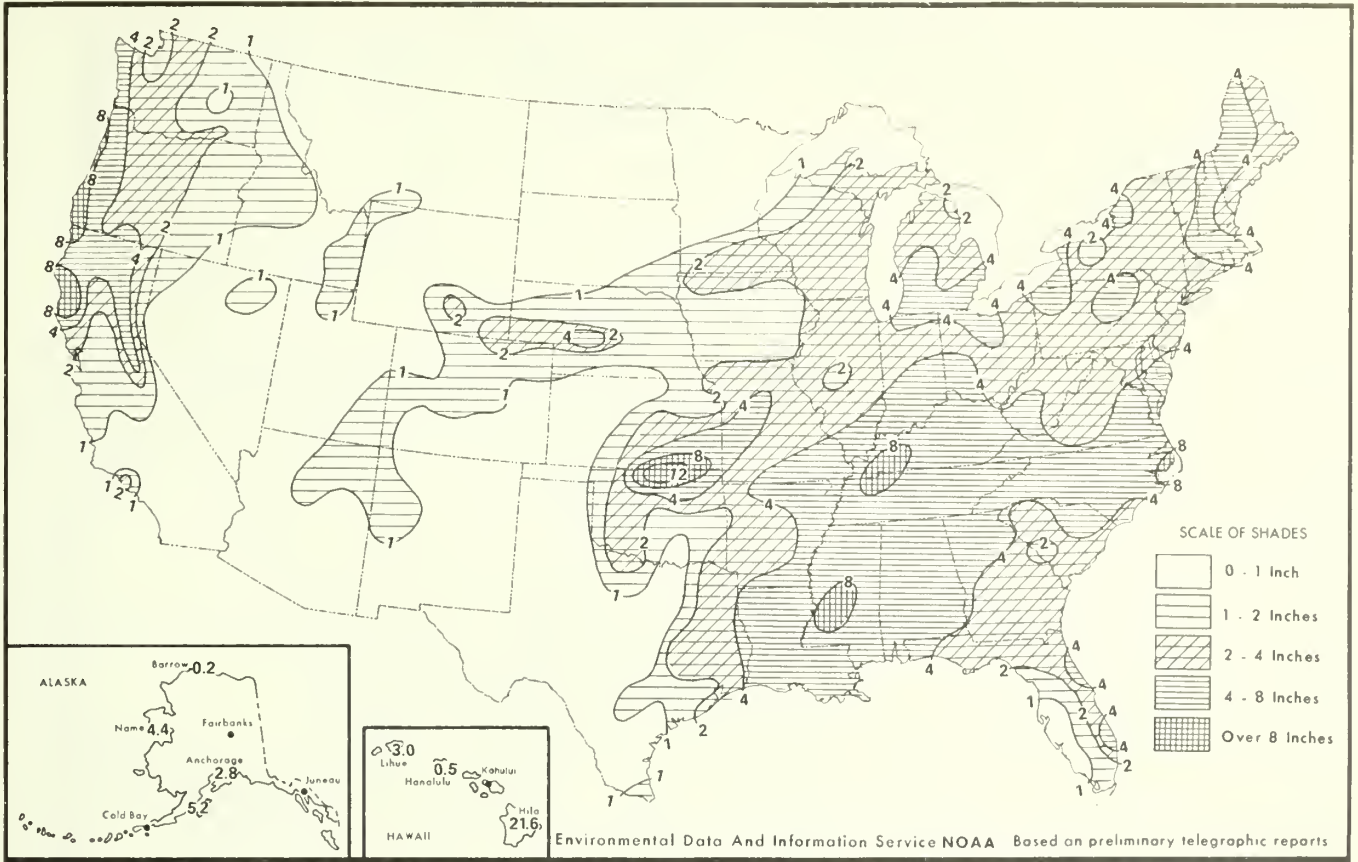


Chart II. A. Total Precipitation (Inches), November 1979



B. Percentage of Normal Precipitation, November 1979

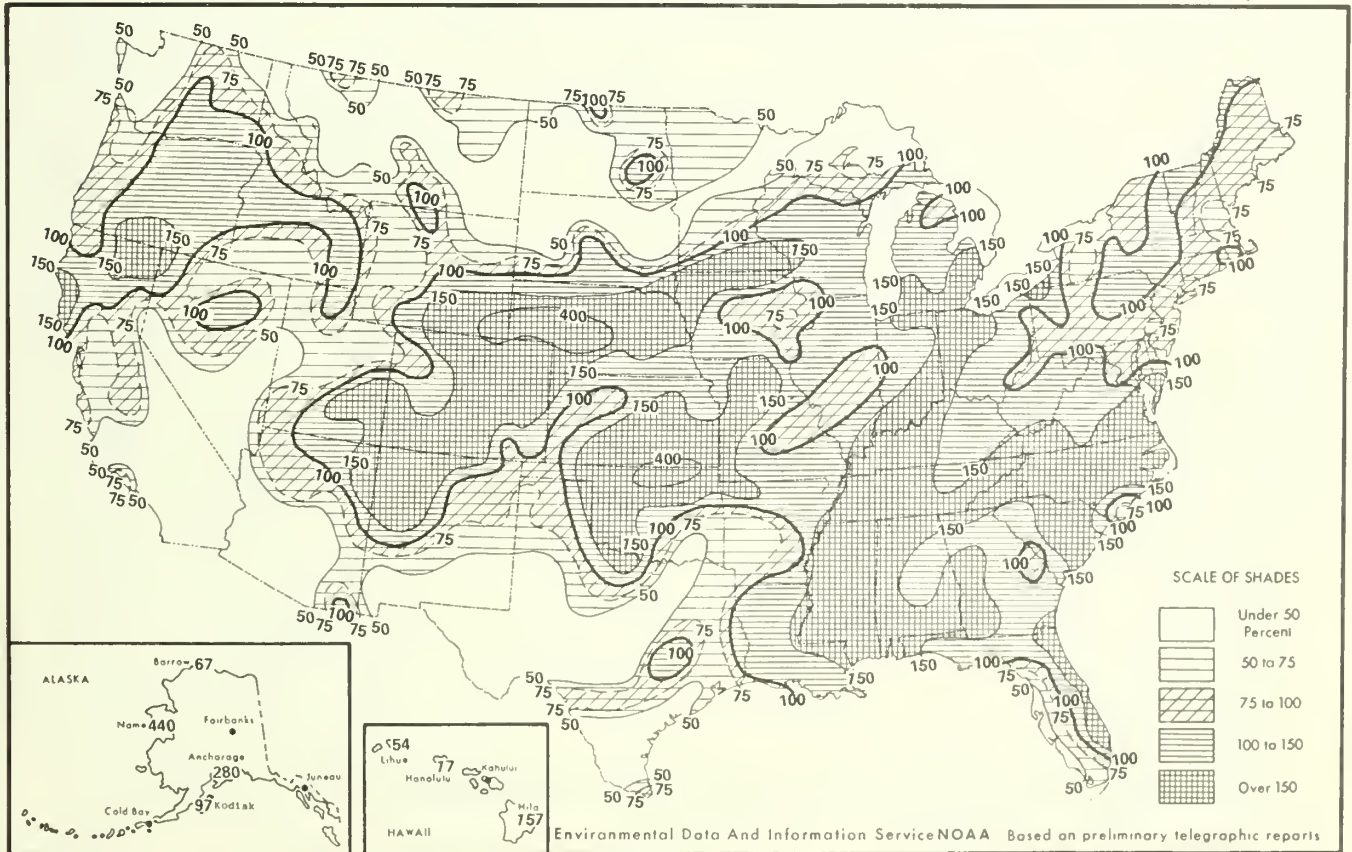
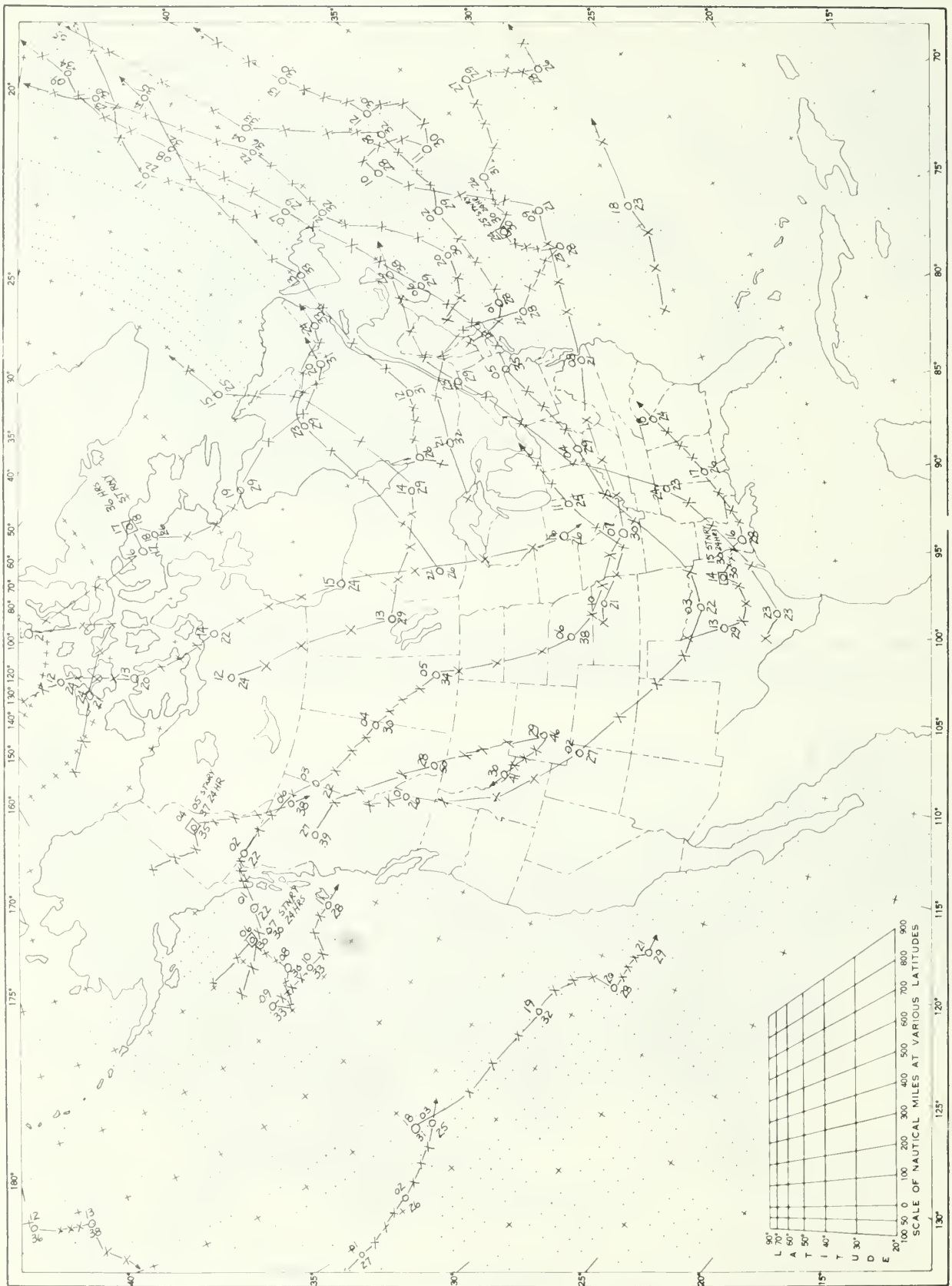


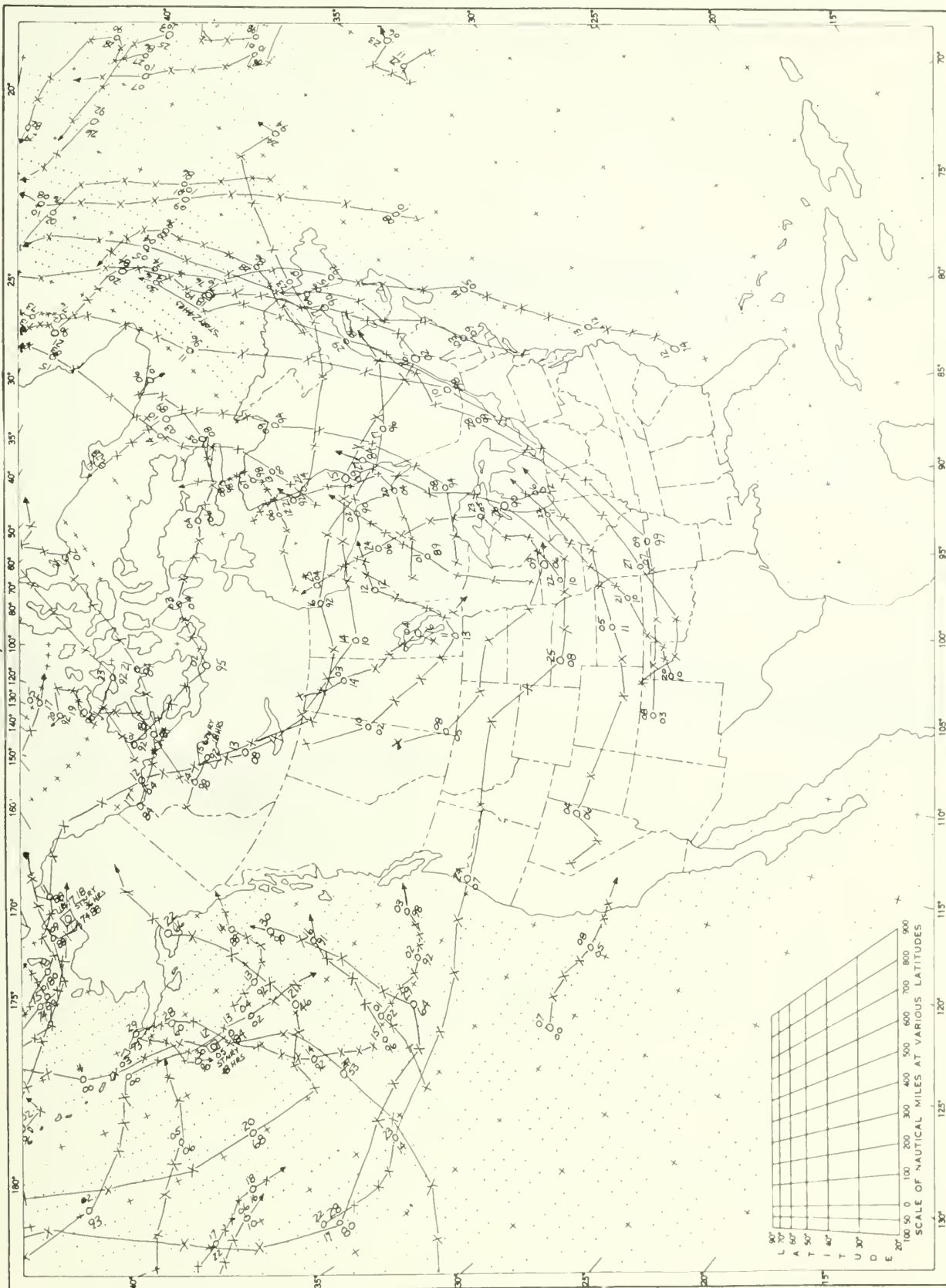
Chart III. Tracks of Centers of Anticyclones at Sea Level, November 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, November 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER



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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

DECEMBER 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** The heaviest precipitation areas ranged from Texas through the Great Lakes, from central California through Washington, and in the southeast. It was late in the month when heavy snow fell in the Cascades, the Sierras, and the central Rockies; the deep snow was most welcome in those snow-free areas. The dry parts of western Texas were soaked by more than 2.5 inches of moisture, generally in the form of snow. Much of the Nation recorded less than the normal amount of precipitation. Temperatures averaged well above normal in much of the Nation. Parts of the northern Plains were as much as 10° warmer than normal.

Early in December, a low pressure system moving through the Great Lakes deposited large amounts of snow. The areas along the southern shores of the eastern Lakes accumulated over 20 inches in the first 2 days of the month.

The week of the 3d-9th was unusually warm in the west. A high pressure system centered in the Rockies, brought warm breezes through California from the south and colder air into the Plains from the north. Contrasting temperatures showed record low readings in the Plains and the south and record highs in the west. Precipitation during the period was confined to heavy rains in the southeast with lesser amounts all along the East Coast, snow in the Great Lakes area, and heavy rain in the Pacific Northwest.

In the following week, the 10th-16th, the warm weather moved to the eastern United States. Readings in the 60°s were recorded in the Great Lakes area and Maine. Later in the week, a mass of cold air dropped southward through Montana plunging temperatures from record highs to record lows.

Rain amounts increased in the Pacific Northwest during this week. Amounts of 5 or more inches resulted

in flooding in Washington from the Cascades to the coast. Elsewhere, a frontal system moving eastward encountered moisture from southern New Mexico north-eastward, and rain or snow fell all along the front as it tracked eastward. The previously dry areas in southern New Mexico and western Texas got up to 2 inches of moisture, mostly in the form of snow. The rain became heavier as the front moved further into the moist air. From 2 to 5 inches fell from the lower Mississippi Valley through Kentucky, and substantial amounts extended into Pennsylvania.

Precipitation was more widespread in the third week of the month, the 17th-23d. The moisture in the west spread to southern California and into the Rockies. Cooler air at the end of the week allowed snow to accumulate in the mountains. In the east, after a cold beginning, temperatures warmed by week's end and heavy showers, thunderstorms, and even tornadoes occurred in the lower Mississippi Valley on the 22d.

The last week of the month and year was a wet one in most of the Nation. Snow fell in the Cascades, the Sierras, the central Rockies, and the west central Plains and was welcome in these snowless areas. However, snow was scarce elsewhere. Beneficial rain fell on central Texas, Oklahoma, and eastern Kansas, and rainy weather enveloped the region from the Mississippi River to the east coast. Most of the Nation was warmer than normal. Average temperatures for the week were as much as 15° warmer than normal in the northern Plains. However, freezing temperatures did reach as far south as northern Florida in the latter part of the week.

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

DECEMBER 1979

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	Brantley	79	13	Saint Bernard	10	18	Evergreen	5.00	Hightower	.79	
Alaska	Ketchikan	55	28	Allakaket	-59	24	Pelican	26.81	Lonely	D .01	
Arizona	2 Stations	87	4	Hawley Lake	-10	29	Tonto Creek F H 2	2.54	4 Stations	.00	
Arkansas	2 Stations	75	12+	3 Stations	1	18+	Amity 3 NE	7.34	Greenforest	.91	
California	2 Stations	95	5+	Bridgeport	-20	28	Lake Spaulding	15.31	10 Stations	.00	
Colorado	4 Stations	76	5+	Taylor Park	-31	29	Wolf Creek Pass 1 E	5.44	2 Stations	.10	
Connecticut	West Thompson Lake	67	13	2 Stations	1	19+	Norfolk 2 SW	3.30	West Thompson Lake	1.96	
Delaware	2 Stations	68	12	Milford 2 WSW	17	18	Georgetown 5 SW	1.74	Middletown 1 WSW	1.37	
Florida	2 Stations	87	24+	Smith Creek	17	1	St Augustine WFOY	7.28	Deland 1 SSE	.46	
Georgia	2 Stations	82	13	8lairsville Exp Station	8	3	Valdosta 3 E	6.61	Atlanta 80lon	.67	
Hawaii	Puukohola Heiau 98.1	91	12	Mauna Kea Obs 111.2	20	27	Manoa Lyon Arboretum	16.25	2 Stations	.00	
Idaho	Three Creek	64	17+	Island Park Dam	-30	11	Sandpoint KSPT	D 7.19	Leadore 2	T	
Illinois	Cahokia	70	6	Rochelle	-8	17	Anna 1 E	4.08	Moweagua	.55	
Indiana	2 Stations	68	12+	Kewanna 7 NW	-5	18	Crane Naval Depot	4.13	Hobart	1.01	
Iowa	6 Stations	63	10+	Estherville 2 N	-12	16	De Witt	2.82	2 Stations	T	
Kansas	Syracuse 2 W	78	4	Hunter	-7	17	Wichita WSO AP	1.99	8 Stations	.00	
Kentucky	6 Stations	70	13+	3 Stations	8	17+	Caneyville	7.42	Elkhorn City	1.65	
Louisiana	3 Stations	81	13+	Converse	9	18	LSU Dean Lee Exp Station	9.01	Gonzales	2.21	
Maine	Saco	67	12	Van Buren 2	-25	21+	Woodland	3.67	Long Falls Dam	1.64	
Maryland	Cumberland 2	73	11	Oakland 1 SE	-2	3	Mc Henry 2 NW	2.85	Assateague State Park	.41	
Massachusetts	Chester 2	72	12	Chester 2	-13	20	Amherst	4.00	Rockport 1 ESE	.95	
Michigan	2 Stations	61	11	Crystal Falls 6 NE	-15	17	South Haven Exp Farm	3.88	Baraga 5 WNW	.36	
Minnesota	2 Stations	57	11	Tower 3 S	-30	12	Winona	1.02	11 Stations	T	
Mississippi	2 Stations	79	12+	2 Stations	10	18	Natchez	6.42	Crawford 5 W	2.12	
Missouri	Dora	74	6	Cole Camp 9 SE	-6	17	Wappapello Dam	4.67	2 Stations	T	
Montana	2 Stations	72	4	Ingomar 11 NE	-41	16	Many Glacier	10.79	15 Stations	T	
Nebraska	Beaver City	75	4	Nenzel 20 S	-20	16	Ravenna	.99	Merriman	.00	
Nevada	Sunrise Manr Las Vegas	80	5	Mountain City Ranger Station	-15	23	Glenbrook	D 5.73	6 Stations	.00	
New Hampshire	Durham	68	12	Mount Washington	-25	17	Pinkham Notch	3.51	Milford	1.16	
New Jersey	2 Stations	71	13	2 Stations	-1	22+	Tuckerton	3.59	Shilon	1.35	
New Mexico	2 Stations	79	10+	Eagle Nest	-20	29	El Morro Natl Mon	1.93	2 Stations	.00	
New York	3 Stations	68	13+	Old Forge	-18	19	West Seneca 1 NE	4.65	Watertown FAA AP	.32	
North Carolina	3 Stations	76	25+	2 Stations	2	3+	Cape Hatteras WSO	5.19	Louisburg	.58	
North Dakota	3 Stations	67	5+	2 Stations	-28	16	Forbes 9 NNW	.90	2 Stations	.00	
Ohio	Portsmouth	70	12	Plymouth 2 WSW	-2	3	Dorset	7.16	Lancaster 2 NW	1.25	
Oklahoma	2 Stations	78	12+	Mannford 6 NW	-1	17	Valliant 3 W	7.13	4 Stations	T	
Oregon	Silver Creek Falls	75	17	2 Stations	-3	28+	Nehalem 9 NE	22.61	Christmas Valley	T	
Pennsylvania	Mercersburg 1 E	70	13+	8akerstown 3 WNW	1	18	Erie WSO AP	4.90	Morgantown	.61	
Puerto Rico	2 Stations	93	18+	Adjuntas Substation	46	26	Pico Del Este	11.35	Santa Rita	.00	
Rhode Island	Providence WSO AP	69	12	North Foster 1 E	1	19	Newport	2.84	Kingston	1.54	
South Carolina	Summerville 4 NW	81	13	Caesars Head	11	17	Walterboro 2 SW	5.98	Woodruff 5 NW	.95	
South Dakota	2 Stations	74	18	Deerfield 4 NW	-30	16	Deerfield 4 NW	.95	2 Stations	.00	
Tennessee	Erwin 2 SW	75	13	2 Stations	6	18+	Savannah	7.34	Erwin 2 SW	1.46	
Texas	3 Stations	87	12	Lipscomb	2	17	Bronson	7.41	7 Stations	.00	
Utah	Garrison	72	4	Scotfield	-21	12	Monticello	1.75	3 Stations	.00	
Vermont	Ball Mountain Lake	63	13	Enosburg Falls	-20	19	Mount Mansfield	D 4.26	Bristol 5 NNW	.92	
Virginia	Colonial Beach	74	24	Mt Lake Biological Station	1	17	Pennington Gap	3.42	2 Stations	.45	
Virgin Islands	Truman Field FAA AP	89	24+	Dorothea AES	61	26	Ham Bluff L R Station	6.29	Cruz Bay	1.66	
Washington	Nud Mountain Dam	65	18	Chesaw 4 NNW	5	15	Forks 1 E	40.12	Richland	.38	
West Virginia	Martinsburg FAA AP	74	12	Canaan Valley	-3	3	Corton	3.92	Cacapon State Park 2	.73	
Wisconsin	2 Stations	58	10	3 Stations	-15	17+	West Allis	2.66	2 Stations	.08	
Wyoming	2 Stations	69	4	Recluse 14 NNW	-32	16	Cheyenne WSFO AP	1.50	8 Stations	T	





















# HEATING DEGREE DAYS

(Base 65°F.)

DECEMBER 1979

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				IDAHO				NEBRASKA			
BIRMINGHAM U	615	1150	978	BOISE	899	2161	2321	GRAND ISLAND	978	2327	2457
RIPMINGHAM	598	1054	1148	LEWISTON	774	1900	2221	LINCOLN	1007	2208	2361
HUNTSVILLE	714	1335	1332	POCATELLO	1100	2689	2787	1346	2503	2663	2787
MOBILE	424	713	635					NORTH PLATTE	957	2340	2643
MONTGOMERY	466	824	911	ILLINOIS				OMAHA (EPPLRY)	1070		
				CAIRO U	727	1360	1472	OMAHA (NORTH)	1016	2274	2489
ALABAMA				CHICAGO O HARE	967	2168	2424	SCOTTSBLUFF	946	2358	2650
ANCHORAGE	1704	4082	4874	CHICAGO MIDWAY	951	2120	2251	VALENTINE	1010	2643	2813
ANNETTE	854	2589	2988	MOLINE	1027	2395	2398				
PAPPOL	2391	7576	8607	PEORIA	1022	2319	2305	NEVADA			
BAPTER ISLAND	2463	7671	8436	ROCKFORD	1110	2581	2578	ELKO	1032	2321	3014
RETHEL	2073	5517	5705	SPRINGFIELD	896	1964	2101	ELY	1035	2745	3072
RETTLES	2720	6376	7167					LAS VEGAS	546	985	1045
RTG DELTA	2360	5257	6267	INDIANA				PENO	908	2145	2430
COLO EAY	1179	4045	4242	EVANSVILLE	813	1751	1794	WINNEMUCCA	988	2320	2669
FAIRBANKS	2335	5490	6507	FORT WAYNE	1037	2366	2337				
GULKANA	2307	5444	6366	INDIANAPOLIS	929	2121	2126	NEW HAMPSHIRE			
HOPER	1432	4025	4637	SOUTH BEND	928	2046	2399	CONCORD	1098	2615	2786
JUNEAU	1197	3497	3935					MT WASHINGTON OBS	1657	5684	5884
WISC SALMON	1872	4652	5116	IOWA							
KODIAK	1177	3352	3848	BURLINGTON	1004	2197	2313	NEW JERSEY			
KOTZEBUE	2372	6279	6673	DES MOINES	1031	2239	2513	ATLANTIC CITY	830	1759	1794
MC CRATH	2473	5748	6543	DUBUQUE	1067	2552	2769	ATLANTIC CITY U	708	1422	1566
NOML	2134	5677	6132	SIOUX CITY	1075	2549	2649	NEWARK	763	1479	1787
ST. RAUL ISLAND	1030	3982	4709	WATERLOO	1131	2522	2832	TRENTON U	788	1596	1785
TALKEETNA	1949	4770	5290					NEW MEXICO			
UNALASKA				KANSAS				ALBUQUERQUE	840	1726	1733
VAN DEC	1397	4131	4752	CONCORDIA	909	1968	2132	BUFFALO	836	2005	2005
YAKUTAT	1160	3581	4157	DODGE CITY	940	2027	1934	ROSWELL	748	1492	1552
				GOODLAND	907	2223	2372				
ARIZONA				TOPEKA	908	1965	2006	NEW YORK			
FLAGSTAFF	1042	2987	2683	WICHITA	878	1694	1795	ALBANY	1036	2342	2562
PHOENIX	277	492	587					BINGHAMTON	1040	2545	2721
TUCSON	302	580	653	KENTUCKY				BUFFALO	973	2249	2508
WINSLGA	966	2003	1972	COVINGTON	887	1924	1921	NEW YORK U	734	1406	1681
YUMA	169	255	384	LEXINGTON	633	1759	1813	NEW YORK KENNEDY	827	1686	1777
				LOUISVILLE	792	1589	1787	NEW YORK LA GUARDIA	802	1576	1696
ARKANSAS								ROCHESTER	1006	2334	2432
FORT SMITH	699	1397	1302	LOUISIANA				SYRACUSE	971	2236	2405
LITTLE ROCK	598	1104	1314	BATON ROUGE	465	817	643				
NO. LITTLE ROCK	633	1202	1221	LAKE CHARLES	400	709	551	NORTH CAROLINA			
				NEW ORLEANS	396	639	546	ASHEVILLE	707	1523	1695
CALIFORNIA				SHREVEPORT	498	916	838	CAPE HATTERAS R	487	807	889
BAKERSFIELD	334	552	861					CHARLOTTE	655	1224	1280
BISHOP	805	1677	1693	MAINE				GREENSBORO	719	1363	1521
BLUE CANYON	657	2007	1952	CARIBOU	1413	3402	3714	PALEIGH	661	1264	1386
FUREKA U	404	1469	2006	PORTLAND	1083	2627	2785	WILMINGTON	525	876	911
FRESNO	555	934	1030								
LONG BEACH	224	372	505	MARYLAND				NORTH DAKOTA			
LOS ANGELES	150	289	571	BALTIMORE	757	1520	1765	BISMARCK	1273	3322	3483
LOS ANGELES U	114	174	371					FARGO	1367	3452	3542
MT SHASTA R	625	2261	2282	MASSACHUSETTS				WILLISTON	1272	3216	3574
OAKLAND	390	755	1107	BLUE HILL OBS R	949	2134	2272				
RED BLUFF	472	916	998	BOSTON	873	1844	1971	OHIO			
SACRAMENTO	558	1049	1061	WORCESTER	1019	2391	2518	AKRON	981	2270	2328
SAN DIEGO	136	215	462					CINCINNATI ABBE OB	850	1834	1843
SAN FRANCISCO	431	960	1145	MICHIGAN				CLEVELAND	967	2158	2253
SAN FRANCISCO U	293	869	1284	ALPENA	1128	3056	3192	COLUMBUS	920	2038	2188
SANTA MARIA	330	857	1146	DETROIT				DAYTON	923	2090	2130
STOCKTON	518	916	1052	DETROIT METRO	1019	2415	2372	MANSFIELD	1018	2385	2171
				FLINT	1014	2417	2615	TOLEDO	1009	2343	2410
COLORADO				GRAND RAPIDS	984	2293	2513	YOUNGSTOWN	987	2297	2396
ALAMOSA	1428	3791	3566	HOUGHTON LAKE	1153	2996	3172				
COLORADO SPRINGS	969	2516	2512	LANSING	1058	2519	2564	OKLAHOMA			
DENVER	939	2309	2300	MUSKOGON	1039	2515	2516	OKLAHOMA CITY	669	1314	1409
GRAND JUNCTION	1175	2332	2241	SAULT STE MARIE	1263	3446	3453	TULSA	632	1247	1402
PUEBLO	959	2181	2108								
				MINNESOTA				OREGON			
CONNECTICUT				DULUTH	1317	3469	3767	ASTORIA	540	1676	2136
BRIODERPT	833	1821	1840	INTERNATIONAL FALLS	1539	4239	4157	BURNS U	1082	2681	2899
HARTFORD	965	2183	2354	MINNEAPOLIS	1203	2890	3093	EUGENE	671	1703	1888
				POCHESTER	1201	2885	3127	MEPOPOD	776	1662	1972
DELAWARE				ST CLOUD	1297	3308	3397	PENDELTON	823	2106	2116
WILMINGTON	827	1645	1804					PORTLAND	631	1466	1914
				MISSISSIPPI				SALEM	620	1747	1923
DIST. OF COLUMBIA				JACKSON	580	1099	896	SEXTON SUMMIT R	762	2241	2426
WASHINGTON CULLES	765	1635	1904	MERIDIAN	536	1003	972				
WASHINGTON NATIONAL	654	1203	1570					PENNSYLVANIA			
				MISSOURI				ALLENTOWN	884	1890	2179
FLORIDA				COLUMBIA REGIONAL	897	1896	1920	ERIE	939	2088	2483
APPALACHICOLA U	335	492	498	KANSAS CITY	918	1930	2035	HARRISBURG	844	1870	1984
DAYTONA BEACH	183	258	309	ST JOSEPH	614	1974	2063	PHILADELPHIA	823	1625	1775
FORT MYERS	44	58	156	ST LOUIS	610	1659	1801	PITTSBURGH	935	2134	2274
JACKSONVILLE	331	494	497	SPRINGFIELD	726	1575	1752	SCRANTON	900	2073	2371
KEY WEST	0	0	18					WILLIAMSPORT	919	2123	2263
MIAMI	10	16	69	MONTANA							
ORLANDO	119	166	245	BILLINGS	884	2257	2796	RHODE ISLAND			
PENACOLA	392	605	580	GLASGOW	1187	2952	3450	BLOCK ISLAND	745	1561	1894
TALLAHASSEE	399	686	611	GRFAT FALLS	934	2495	2950	PROVIDENCE	849	1855	2143
TAMPA	112	159	240	HAYRE	1118	2764	3393				
WEST PALM BEACH	46	57	100	HELENA	1138	2891	3297	SOUTH CAROLINA			
				KALISPELL	1008	2932	3565	CHARLESTON	500	771	832
GEORGIA				MILES CITY	1107	2673	3061	CHARLESTON U	407	583	696
ATHENS	567	1002	1188	MISSOULA	1043	2861	3289	GRNVILLE-SPRTN8RG	600	1165	1259
ATLANTA	559	1006	1220								
AUGUSTA	584	1007	1025					SOUTH DAKOTA			
COLUMBUS	475	790	941					ABERDEEN	1215	3039	3307
MACON	461	764	904					HURON	1117	2842	3071
ROME	667							PAPID CITY	982	2459	2777
SAVANNAH	438	662	771					SIOUX FALLS	1168	2849	3010

# MONTHLY AND SEASONAL COOLING DEGREE DAYS

(Base 65°F)

1979

State and Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Season	Normals Jan.- Dec.
<b>ALABAMA</b>														
BIRMINGHAM U	0	0	11	40	176	317	452	453	222	49	5	1	1726	2219
BIRMINGHAM	0	1	8	43	188	308	466	424	198	74	7	2	1719	1928
HUNTSVILLE	C	0	9	16	113	280	400	393	189	36	0	0	1436	1808
MOBILE	C	6	28	144	267	448	512	509	361	146	16	5	2442	2577
MONTGOMERY	0	2	13	77	214	346	482	474	337	79	8	1	2033	2238
<b>ALASKA</b>														
ANCHORAGE	C	0	0	0	0	0	4	0	0	0	0	0	4	0
ANNETTE	C	0	0	0	0	0	1	8	0	0	0	0	9	14
BARROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BARTER ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BETHEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PETTLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIG DELTA	0	0	0	0	0	0	11	1	0	0	0	0	12	17
COLO BAY	0	0	0	0	0	0	13	15	0	0	0	0	28	34
FAIRBANKS	0	0	0	0	0	0	16	7	0	0	0	0	0	0
GULKANA	0	0	0	0	0	0	1	0	0	0	0	0	23	52
HONER	C	0	0	0	0	0	0	0	0	0	0	0	0	0
JUNEAU	0	0	0	0	0	0	0	1	0	0	0	0	1	0
KING SALMON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KODIAK	0	0	0	0	0	0	8	0	0	0	0	0	8	0
KOTZEBUE	0	0	0	0	0	0	1	0	0	0	0	0	1	0
MC GRATH	0	0	0	0	0	0	1	1	0	0	0	0	2	14
NOME	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ST. PAUL ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TALKEETNA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNALAKLEET	0	0	0	0	0	0	0	1	0	0	0	0	1	6
VALOZ	0	0	0	0	0	0	4	0	0	0	0	0	4	0
YAKUTAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>ARIZONA</b>														
FLAGSTAFF	0	0	0	0	0	10	47	24	4	0	0	0	85	140
PHOENIX	0	0	11	191	411	741	901	763	764	397	7	0	4186	3508
TUCSON	C	0	1	101	249	551	706	576	580	282	6	0	3052	2814
WINLOW	0	0	0	2	30	213	430	310	187	13	0	0	1185	1203
YUMA	0	0	60	232	436	724	867	813	809	416	14	10	4381	4195
<b>ARKANSAS</b>														
FORT SMITH	C	C	7	33	113	307	464	426	207	85	4	0	1646	2022
LITTLE ROCK	0	0	24	48	178	396	502	442	240	95	1	0	1926	1925
NO. LITTLE ROCK	0	0	7	39	131	329	472	431	194	99	1	0	1703	1951
<b>CALIFORNIA</b>														
BAKERSFIELD	0	0	12	40	321	500	614	524	513	205	1	3	2733	2179
BISHOP	0	0	0	0	70	187	365	243	172	17	0	0	1054	1037
BLUE CANYON	0	0	0	0	12	0	128	61	80	14	0	0	295	0
EUREKA U	0	0	0	0	0	0	0	0	15	0	0	2	17	0
FRESNO	0	0	2	37	229	396	541	471	442	149	0	0	2267	1671
LONG BEACH	0	0	10	25	61	220	226	272	302	72	1	14	1203	965
LOS ANGELES	C	0	0	0	35	133	112	193	271	60	9	23	845	615
LOS ANGELES U	0	0	14	17	67	209	229	252	379	124	53	62	1406	1185
MT SHASTA R	0	0	0	0	2	19	123	59	27	5	0	0	235	286
OAKLAND	0	0	0	0	13	29	35	33	114	28	0	0	252	128
RED BLUFF	0	0	6	0	246	401	556	423	444	132	0	0	2208	1904
SACRAMENTO	0	0	0	0	117	214	336	260	295	72	0	0	1294	1159
SANBERG R	0	0	0	0	0	0	0	0	0	0	0	0	0	800
SAN DIEGO	0	0	10	6	46	169	216	283	348	124	5	8	1215	722
SAN FRANCISCO	0	0	0	0	11	19	25	21	88	18	0	0	182	108
SAN FRANCISCO U	0	0	0	0	11	13	10	3	72	16	0	0	125	39
SANTA MARIA	C	0	0	0	8	14	21	7	51	12	0	0	113	84
STOCKTON	0	0	0	0	192	309	412	386	390	104	0	0	1793	1259
<b>COLORADO</b>														
ALAMOSA	0	0	0	0	0	0	21	13	0	0	0	0	34	88
COLORADO SPRINGS	C	0	0	0	0	1	84	185	124	77	2	0	473	461
DENVER	0	0	0	0	2	112	275	163	102	7	0	0	661	625
GRAND JUNCTION	0	0	0	6	52	225	428	310	215	27	0	0	1263	1140
PUEBLO	0	0	0	1	25	169	363	221	124	1	0	0	904	981
<b>CONNECTICUT</b>														
BRIDGEPORT	0	0	0	0	16	79	288	259	85	4	0	0	731	735
HARTFORD	0	0	0	0	60	151	320	218	56	6	0	0	811	584
<b>DELAWARE</b>														
WILMINGTON	0	0	4	1	57	123	327	324	138	16	0	0	990	992
<b>DIST. OF COLUMBIA</b>														
WASHINGTON DULLES	0	0	9	5	69	147	297	310	112	21	6	0	976	940
WASHINGTON NATIONAL	0	0	14	9	120	231	431	425	208	39	2	0	1479	1415
<b>FLORIDA</b>														
APPALACHICOLA U	1	0	4	134	252	426	513	498	406	147	46	1	2428	2663
DAYTONA BEACH	26	28	68	231	332	419	538	471	462	252	111	23	2961	2919
FORT MYERS	52	80	124	344	444	535	650	604	563	442	287	112	4237	3711
JACKSONVILLE	1	13	36	131	259	369	532	484	436	158	61	3	2483	2596
KEY WEST	154	147	250	417	516	588	637	632	566	502	362	235	5006	4888
MIAMI	90	81	149	391	492	516	572	537	481	407	324	178	4218	4038
ORLANDO	26	31	65	260	330	479	575	546	498	299	153	53	3315	3226
PENSACOLA	0	2	16	146	276	467	546	527	401	162	16	1	2560	2695
TALLAHASSEE	0	2	10	103	241	378	503	456	366	102	35	2	2198	2563
TAMPA	28	36	73	283	344	482	592	543	515	322	164	55	3437	3366
WEST PALM BEACH	59	87	123	267	349	461	555	549	496	396	266	117	3745	3786
<b>GEORGIA</b>														
ATHENS	0	0	15	25	180	286	398	443	221	40	6	0	1614	1722
ATLANTA	0	0	13	33	181	327	436	475	243	49	5	0	1762	1589
AUGUSTA	0	0	9	29	197	301	473	460	288	52	20	0	1829	1995
COLUMBUS	0	2	21	86	243	398	536	518	314	99	24	2	2243	2143
MADON	C	1	18	57	210	375	505	514	312	86	73	4	2115	2294
ROME	0	0	4	15	158	285	378	447	202	17	0	0	0	0
SAVANNAH	0	5	28	105	282	360	537	516	378	126	51	2	2390	2317



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<b>HAWAII</b>														
HILLO	155	160	210	271	278	280	302	338	351	350	246	248	3189	3066
HONOLULU	159	209	250	299	412	458	500	485	489	504	378	326	4469	4221
KAHULUI	197	197	206	255	346	410	446	486	485	487	354	331	4200	3732
LIHUE	263	224	220	229	320	374	423	445	474	426	303	252	3953	3719
<b>IDAHO</b>														
BOISE	0	0	0	0	27	129	293	199	101	3	0	0	752	714
LEWISTON	0	0	0	0	15	131	360	315	140	7	0	0	968	657
POCATELLO	0	0	0	0	0	64	207	145	63	0	0	0	479	437
<b>ILLINOIS</b>														
CAIRO	0	0	0	14	131	402	484	444	221	66	2	0	1764	1806
CHICAGO O'HARE	0	0	0	2	61	164	241	213	99	26	0	0	806	664
CHICAGO MIDWAY	0	0	0	1	51	165	251	227	92	25	0	0	812	925
MOLINE	0	0	0	0	83	206	272	245	79	22	0	0	907	893
PEORIA	0	0	0	0	62	206	259	258	95	23	0	0	903	968
ROCKFORD	0	0	0	0	56	134	217	187	69	16	0	0	679	714
SPRINGFIELD	0	0	0	2	93	305	327	295	138	41	0	0	1201	1116
<b>INDIANA</b>														
EVANSVILLE	0	0	0	13	65	310	365	312	138	35	0	0	1238	1364
FORT WAYNE	0	0	0	4	58	156	198	167	78	16	0	0	677	748
INDIANAPOLIS	0	0	0	7	57	197	255	250	92	24	0	0	882	974
SOUTH BEND	0	0	0	2	46	181	236	220	93	21	0	0	801	695
<b>IOWA</b>														
BURLINGTON	0	0	0	0	65	212	275	259	101	19	0	0	931	994
DES MOINES	0	0	0	0	48	194	304	305	118	15	0	0	984	928
DUBUQUE	0	0	0	0	36	106	203	181	66	8	0	0	600	606
SIOUX CITY	0	0	0	3	33	186	299	249	95	0	0	0	865	932
WATERLOO	0	0	0	0	35	153	237	230	106	9	0	0	770	675
<b>KANSAS</b>														
CONCORDIA	0	0	1	5	39	261	381	365	201	27	0	0	1280	1302
DODGE CITY	0	0	2	23	46	292	411	296	206	40	0	0	1316	1411
GOODLAND	0	0	0	3	29	176	346	235	139	11	0	0	939	925
TOPEKA	0	0	4	7	76	237	401	379	144	27	0	0	1275	1361
WICHITA	0	0	5	14	81	294	488	465	249	67	0	0	1663	1673
<b>KENTUCKY</b>														
COVINGTON	0	0	2	8	38	154	271	248	102	22	0	0	845	1080
LEXINGTON	0	0	2	8	57	199	287	292	102	21	0	0	968	1197
LOUISVILLE	0	0	5	10	73	279	326	350	154	39	0	0	1236	1268
<b>LOUISIANA</b>														
BATON ROUGE	1	6	44	141	233	430	521	501	338	144	14	6	2379	2585
LAKE CHARLES	2	2	36	140	248	444	521	514	336	183	17	1	2444	2739
NEW ORLEANS	0	14	63	198	307	491	581	559	435	206	25	16	2895	2706
SHREVEPORT	0	8	39	86	178	395	509	483	284	124	8	2	2116	2538
<b>MAINE</b>														
CARIBOU	0	0	0	0	8	50	153	57	16	6	0	0	290	128
PORTLAND	0	0	0	0	15	34	162	83	19	3	0	0	316	252
<b>MARYLAND</b>														
BALTIMORE	0	0	15	4	72	183	348	341	145	28	1	0	1137	1108
<b>MASSACHUSETTS</b>														
BLUE HILL OBS R	0	0	0	0	26	56	264	167	57	14	0	0	584	457
BOSTON	0	0	0	0	35	122	304	226	85	17	0	0	789	661
WORCESTER	0	0	0	0	24	44	225	142	38	10	0	0	483	387
<b>MICHIGAN</b>														
ALPENA	0	0	0	0	10	47	112	55	41	7	0	0	272	208
DETROIT	0	0	0	0	46	138	198	135	69	12	0	0	598	598
DETROIT METRO	0	0	0	0	32	109	184	124	57	16	0	0	522	654
FLINT	0	0	0	0	43	118	177	97	57	17	0	0	509	438
GRAND RAPIDS	0	0	0	0	46	129	204	147	69	19	0	0	614	575
HOUGHTON LAKE	0	0	0	0	18	58	112	45	31	7	0	0	271	250
LANSING	0	0	0	0	48	133	192	125	63	17	0	0	578	535
MUSKEGON	0	0	0	0	29	67	137	103	36	7	0	0	379	469
SAULT STE MARIE	0	0	0	0	0	13	87	30	15	0	0	0	145	139
<b>MINNESOTA</b>														
DULUTH	0	0	0	0	4	25	95	30	15	0	0	0	169	176
INTERNATIONAL FALLS	0	0	0	0	1	18	86	18	8	0	0	0	131	176
MINNEAPOLIS	0	0	0	0	17	113	275	181	65	0	0	0	651	585
POCHESTER	0	0	0	0	21	119	246	167	57	1	0	0	611	474
ST CLOUD	0	0	0	0	14	52	140	87	31	0	0	0	324	426
<b>MISSISSIPPI</b>														
JACKSON	0	2	35	69	190	357	482	461	269	76	4	2	1947	2321
MERIDIAN	0	0	13	57	168	309	526	493	307	63	6	0	1942	2231
<b>MISSOURI</b>														
COLUMBIA REGIONAL	0	0	1	10	73	224	357	337	125	39	0	0	1165	1269
KANSAS CITY	0	0	0	3	77	229	348	340	147	29	0	0	1174	1285
ST JOSEPH	0	0	0	0	48	199	331	356	135	28	0	0	1097	1334
ST LOUIS	0	0	2	9	102	354	446	420	195	50	0	0	1578	1475
SPRINGFIELD	0	0	0	10	56	183	319	341	148	65	0	0	1122	1382
<b>MONTANA</b>														
BILLINGS	0	0	0	0	12	126	270	216	86	6	0	0	716	498
GLASGOW	0	0	0	0	8	70	236	170	48	1	0	0	533	438
GREAT FALLS	0	0	0	0	2	55	152	132	50	5	0	0	396	339
HAVRE	0	0	0	0	5	83	187	185	48	6	0	0	395	395
HELENA	0	0	0	0	1	45	152	103	21	0	0	0	322	256
KALISPELL	0	0	0	0	0	18	142	96	2	0	0	0	258	117
MILES CITY	0	0	0	4	26	138	305	237	92	0	0	0	802	752
MISSOULA	0	0	0	0	0	50	177	146	17	0	0	0	390	188

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1979

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<b>NEBRASKA</b>														
GRAND ISLAND	0	0	0	0	36	211	294	303	132	2	0	0	978	1036
LINCOLN	0	0	0	7	42	235	320	330	160	4	0	0	1098	1148
NORFOLK	0	0	0	2	39	212	297	268	128	0	0	0	946	925
NORTH PLATTE	0	0	0	0	27	156	294	262	123	0	0	0	862	802
OMAHA (EPPLEY)	0	0	0	8	64	249	344	345	122	0	0	0	1132	
OMAHA (NORTH)	0	0	0	1	47	206	301	303	142	2	0	0	1002	949
SCOTTSBLUFF	0	0	0	8	19	163	317	224	121	1	0	0	853	666
VALENTINE	0	0	0	4	20	136	280	208	129	0	0	0	777	736
<b>NEVADA</b>														
ELKO	0	0	0	0	9	120	284	207	70	4	0	0	694	342
ELY	0	0	0	0	0	35	103	56	14	0	0	0	208	207
LAS VEGAS	0	0	0	104	346	625	813	656	614	229	0	0	3387	2946
RENO	0	0	0	0	9	63	169	122	38	3	0	0	404	329
WINNEMUCCA	0	0	0	0	29	114	256	165	26	3	0	0	593	407
<b>NEW HAMPSHIRE</b>														
CONCORD	0	0	0	1	15	69	232	150	46	6	0	0	519	349
NT WASHINGTON O&S	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>NEW JERSEY</b>														
ATLANTIC CITY	0	0	5	0	50	103	308	266	103	15	0	0	850	864
ATLANTIC CITY U	0	0	0	0	5	74	252	263	111	8	0	0	835	
NEWARK	0	0	0	2	59	147	381	372	158	34	3	0	1156	1024
TRENTON U	0	0	0	1	44	131	308	313	119	19	1	0	936	968
<b>NEW MEXICO</b>														
ALBUQUERQUE	0	0	0	5	67	269	491	382	249	45	0	0	1508	1316
CLAYTON	0	0	0	1	6	145	283	173	117	17	0	0	742	767
ROSWELL	0	0	0	35	133	311	506	364	251	84	0	0	1684	1560
<b>NEW YORK</b>														
ALBANY	0	0	0	0	39	99	258	168	55	17	0	0	636	574
BINGHAMTON	0	0	0	0	23	47	167	98	22	14	0	0	371	369
BUFFALO	0	0	0	6	40	118	217	120	49	20	0	0	570	437
NEW YORK U	0	0	0	4	71	149	378	376	192	43	5	0	1218	1068
NEW YORK KENNEDY	0	0	0	0	26	83	310	283	115	7	0	0	824	861
NEW YORK LA GUARDIA	0	0	0	0	41	138	382	335	131	22	0	0	1049	1048
ROCHESTER	0	0	0	1	52	121	244	112	49	18	0	0	597	531
SYRACUSE	0	0	0	2	50	109	232	134	46	22	0	0	595	551
<b>NORTH CAROLINA</b>														
ASHEVILLE	0	0	0	1	55	141	234	261	96	4	0	0	792	872
CAPE HATTERAS R	0	0	2	23	121	203	394	407	313	69	24	0	1556	1550
CHARLOTTE	0	0	4	28	122	208	369	419	183	30	3	0	1366	1596
GREENSBORO	0	0	6	26	95	159	340	365	157	28	4	0	1180	1341
RALEIGH	0	0	6	28	105	159	332	384	205	46	10	0	1275	1394
WILMINGTON	0	2	9	84	210	298	487	490	293	65	28	0	1966	1964
<b>NORTH DAKOTA</b>														
BISMARCK	0	0	0	0	6	67	178	86	28	0	0	0	365	487
FARGO	0	0	0	0	12	85	225	124	58	0	0	0	504	473
WILLISTON	0	0	0	0	12	83	180	107	33	0	0	0	415	422
<b>OHIO</b>														
AKRON	0	0	0	5	36	106	173	166	68	10	0	0	564	634
CINCINNATI A88E 0B	0	0	2	11	64	173	254	281	122	23	0	0	930	1188
CLEVELAND	0	0	0	6	42	122	213	218	93	21	0	0	715	613
COLUMBUS	0	0	0	7	54	163	230	239	93	22	0	0	808	809
DAYTON	0	0	1	12	63	179	260	234	87	18	0	0	854	936
MANSFIELD	0	0	0	4	38	109	157	146	60	17	0	0	531	818
TOLEDO	0	0	0	0	46	127	182	158	67	22	0	0	602	685
YOUNGSTOWN	0	0	0	7	38	95	147	139	61	14	0	0	501	518
<b>OKLAHOMA</b>														
OKLAHOMA CITY	0	0	10	18	112	314	505	471	252	121	2	0	1805	1876
TULSA	0	0	9	48	167	388	577	527	298	137	6	0	2157	1949
<b>OREGON</b>														
ASTORIA	0	0	0	0	0	0	15	0	11	1	0	0	27	13
BURNS U	0	0	0	0	3	48	172	111	27	6	0	0	367	289
EUGENE	0	0	0	0	0	16	111	40	15	0	0	0	182	239
MEFORD	0	0	0	0	2	95	251	172	108	30	0	0	658	562
PENOLETON	0	0	0	0	21	114	261	186	65	3	0	0	650	656
PORTLAND	0	0	0	0	18	65	183	124	65	7	0	0	462	300
SALEM	0	0	0	0	0	29	121	48	20	1	0	0	219	232
SEXTON SUNNIT R	0	0	0	0	5	35	88	11	63	26	0	0	228	137
<b>PACIFIC APEA</b>														
GUAN TAGUAC R	391	344	403	423	480	491	461	435	425	447	422	408	5130	5011
JOHNSTON	338	304	384	377	442	459	500	531	532	534	424	431	5256	5086
KORDOR R	516	463	511	497	547	488	506	524	520	533	522	520	6147	6008
KWAJALEIN	502	467	561	504	544	526	546	536	547	559	530	532	6354	6164
NAJURD	507	454	519	447	501	504	520	500	512	537	510	527	6038	5904
PAGO PAGO	502	465	540	458	509	487	424	436	469	502	470	487	5749	5325
PONAPE R	524	465	525	477	520	506	516	494	512	524	508	503	6074	5652
TRUK NOEN ISLAND	533	489	531	511	531	527	529	512	531	513	504	517	6228	5888
WAKE	392	354	443	458	527	556	632	518	550	576	436	426	5868	5455
YAP R	490	434	499	510	518	500	475	477	501	505	493	485	5887	5916
<b>PENNSYLVANIA</b>														
ALLENTOWN	0	0	0	1	42	126	274	268	92	7	1	0	811	772
ERIE	0	0	0	3	29	69	125	164	71	32	0	0	493	373
HARRISBURG	0	0	0	5	43	138	279	264	92	7	0	0	828	1025
PHILADELPHIA	0	0	6	5	90	146	357	339	137	16	1	0	1097	1104
PITTSBURGH	0	0	0	9	41	125	193	175	70	7	0	0	620	647
SCRANTON	0	0	0	2	32	78	218	214	75	15	0	0	634	608
WILLIAMSPORT	0	0	0	3	48	105	262	212	73	4	0	0	707	698
<b>RHODE ISLAND</b>														
BLOCK ISLAND	0	0	0	0	0	22	211	190	84	2	0	0	509	359
PROVIDENCE	0	0	0	0	26	59	279	190	74	12	0	0	640	532

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<b>SOUTH CAROLINA</b>														
CHARLESTON	0	2	9	71	241	335	533	514	354	105	40	0	2204	2078
CHARLESTON U	0	0	5	72	178	316	516	535	355	144	47	1	2169	2354
COLUMBIA	0	C	13	36	157	253	425	461	276	50	22	0	1693	2087
GRNVILLE-SPRTRNG	0	L	8	28	164	215	312	368	180	20	1	0	1296	1573
<b>SOUTH DAKOTA</b>														
ABERDEEN	0	0	0	0	11	83	183	150	75	0	0	0	502	566
HURON	0	0	0	0	13	162	324	188	96	0	0	0	783	711
RAPID CITY	0	0	0	4	15	99	179	141	110	2	0	0	550	661
SIOLX FALLS	0	0	0	3	25	131	289	189	87	0	0	0	724	719
<b>TENNESSEE</b>														
BRISTOL	0	U	0	1	59	113	194	259	85	9	0	0	720	1107
CHATTANOOGA	0	0	0	12	119	279	361	410	227	24	0	0	1432	1636
KNOXVILL	0	C	15	20	111	242	317	399	224	23	4	0	1355	1569
MEMPHIS	0	0	19	68	184	394	553	499	259	108	4	0	2088	2029
NASHVILLE	0	L	11	5	103	264	393	381	175	44	0	0	1376	1694
OAK RIDGE	0	0	2	5	74	202	285	314	151	11	0	0	1044	1367
<b>TEXAS</b>														
ABILENE	0	9	20	67	209	428	586	539	390	253	11	0	2512	2466
AMARILLO	0	C	0	12	64	218	380	276	177	41	0	0	1168	1433
AUSTIN	2	7	29	102	216	449	570	549	385	285	29	8	2631	2908
BROWNSVILLE	45	56	173	339	380	517	645	614	388	368	118	46	3689	3874
CORPUS CHRISTI	26	39	140	289	366	507	639	624	421	333	89	47	3520	3474
DEL RIO	0	1	9	67	179	489	613	551	366	220	14	0	2509	2587
EL PASO	0	0	0	84	190	414	630	432	308	99	0	0	2157	2098
GALVESTON	0	0	22	128	271	488	544	547	339	268	22	0	2629	3004
HOUSTON INTERCON	7	13	62	142	261	454	552	519	324	211	26	6	2577	2889
LUBBOCK	0	0	0	44	183	371	524	394	264	98	0	0	1878	1647
MIDLAND	0	0	5	43	216	383	539	442	314	167	0	0	2109	2250
PORT ARTHUR	4	17	54	156	250	464	529	523	352	203	27	11	2590	2798
SAN ANGELO	0	2	17	77	263	394	579	487	309	217	12	0	2357	2702
SAN ANTONIO	3	13	61	166	285	482	619	570	418	322	42	13	2998	2994
VICTORIA	7	18	78	190	277	476	563	559	362	266	28	5	2829	3140
WACO	0	1	21	61	177	426	544	529	320	220	17	1	2317	2863
WICHITA FALLS	0	2	18	49	208	444	628	551	324	176	14	1	2415	2611
<b>UTAH</b>														
MILFORD	0	0	0	0	4	89	267	174	54	1	0	0	589	688
SALT LAKE CITY	0	0	0	2	54	214	439	336	208	21	0	0	1274	927
<b>VERMONT</b>														
BURLINGTON	0	0	0	2	29	106	253	101	27	13	0	0	531	396
<b>VIRGINIA</b>														
LYNCHBURG	0	0	11	12	54	143	298	322	121	21	0	0	982	1100
NORFOLK	0	0	11	13	112	171	385	426	239	54	22	0	1433	1441
RICHMOND	0	0	16	30	117	188	374	404	195	42	9	0	1375	1353
ROANOKE	0	0	10	7	56	150	273	296	97	12	1	0	902	1030
WALLOPS ISLAND	0	0	1	0	26	124	375	394	229	38	0	0	1187	1107
<b>WASHINGTON</b>														
OLYMPIA	0	0	0	0	0	6	73	12	2	0	0	0	93	101
QUILLAYUTE	0	0	0	0	0	0	11	1	3	0	0	0	15	8
SEATTLE	0	0	0	0	1	12	79	27	20	0	0	0	139	183
SEATTLE-TACOMA	0	0	0	0	2	27	106	15	21	0	0	0	171	129
SPOKANE	0	0	0	0	1	73	217	166	39	0	0	0	496	388
STAMPEDE PASS R	0	0	0	0	0	1	32	0	0	0	0	0	33	16
WALLA WALLA U	0	0	0	3	44	165	375	299	135	11	0	0	1032	862
YAKIMA	0	0	0	0	12	91	255	174	37	2	0	0	571	479
<b>WEST INDIES</b>														
SAN JUAN P.R.	426	393	404	436	512	571	582	564	511	569	477	432	5877	4982
<b>WEST VIRGINIA</b>														
BECKLEY	0	0	0	1	31	49	121	157	39	6	0	0	404	490
CHARLESTON	0	0	13	18	69	138	257	277	105	17	0	0	894	1055
ELKINS	0	0	0	2	21	45	142	149	33	0	0	0	392	389
HUNTINGTON	0	0	13	17	76	173	286	301	113	22	3	0	1004	1098
PARKERSBURG U	0	0	9	11	70	129	240	267	96	18	0	0	840	1045
<b>WISCONSIN</b>														
GREEN BAY	0	0	0	0	6	68	191	91	23	1	0	0	380	386
LA CROSSE	0	0	0	0	30	104	226	161	60	3	0	0	584	695
MADISON	0	0	0	0	33	88	168	115	33	13	0	0	450	460
MILWAUKEE	0	0	0	0	16	87	209	147	68	11	0	0	538	450
<b>WYOMING</b>														
CASPER	0	0	0	0	0	62	187	129	37	0	0	0	415	458
CHEYENNE	0	0	0	0	1	42	160	100	49	0	0	0	352	327
LANDER	0	0	0	0	2	81	185	113	55	0	0	0	436	383
SHERIDAN	0	0	0	0	1	42	108	121	46	0	0	0	318	446



# STORM SUMMARY

DECEMBER 1979

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE					
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS								
Alabama	*																												
Alaska											4						5												
Arizona	*																												
Arkansas		2	1		5																								
California												6	C				5	C											
Colorado												6																	
Connecticut										1		4																	
Delaware	*																												
Florida	*																												
Georgia	*																												
Hawaii	‡																												
Idaho	*																												
Illinois										1		4											3						
Indiana											5	4																	
Iowa	*																												
Kansas	*																												
Kentucky	*																												
Louisiana												4																	
Maine	*																												
Maryland & DC																													
Massachusetts	*																												
Michigan											2	5																	
Minnesota	*																												
Mississippi											?	4																	
Missouri																							4						
Montana												5																	
Nebraska												4																	
Nevada	*																												
New Hampshire	*																												
New Jersey		3	1		?												?	?											
New Mexico	*																												
New York																	5	?							3				
North carolina																									4				
North Dakota																									5				
Ohio											8	6													6				
Oklahoma	*																												
Oregon	*																												
Pacific																													
Pennsylvania												5																	
Puerto Rico	*																2												
Rhode Island												5																	
South Carolina	*																												
South Dakota	*																												
Tennessee	*																						4	4	?				
Texas																													
Utah	*																												
Vermont	*																												
Virginia	*																												
Virgin Islands	*																												
Washington												5													6				
West Virginia	*																												
WI.consin											?	?													?				
Wyoming												6																	

# RAWINSONDE DATA

Average monthly values

DECEMBER 1979

		ALBANY, NY 1009 MB						ALBUQUERQUE, NM R41 MB						AMARILLO, TX 894 MB						ANCHORAGE, AK 1000 MB						ANNETTE, AK 1003 MB						
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind									
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.								
5FC	31	86	-1.5	-5.7	27	1.8	31	1,619	-1.9	-8.3	01	1.3	31	1,095	-1.3	-7.2	29	2.4	30	45	-11.7	-15.4	01	1.8	31	37	3.1	27	14	2.6		
1000	25	182	-2.7	-7.8	27	2.5																										
950	31	567	-2.4	-6.6	28	6.1																										
900	31	990	-4.0	-8.7	29	9.6																										
850	30	1,437	-5.1	-11.9	29	11.4																										
800	30	1,913	-5.3	-16.1	29	12.8	31	2,023	1.4	-8.8	33	2.8	31	1,998	5.2	-9.5	28	4.9	30	1,755	-14.2	-19.5	19	4.3	31	1,832	-6.8	-10.4	21	8.9		
750	30	2,419	-6.8	-18.3	29	14.6	31	2,592	2.7	-11.2	31	5.8	31	2,476	-3.1	-12.6	28	6.7	30	2,282	-17.2	-22.9	19	8.3	31	2,334	-9.4	-14.0	22	9.9		
700	30	2,955	-9.0	-20.1	29	16.5	31	3,094	4.5	-13.7	31	7.5	31	3,079	3.3	-15.6	27	7.2	30	2,756	-20.5	-25.9	25	1.6	31	2,865	-12.5	-19.4	23	11.2		
650	30	3,526	-11.5	-23.1	28	18.6	31	3,681	-4.1	-18.1	30	7.2	31	3,670	-3.1	-18.6	28	8.2	30	3,301	-23.7	-31.5	26	2.6	30	3,427	-15.7	-24.2	22	11.6		
600	30	4,137	-14.1	-24.8	28	20.5	31	4,308	-7.8	-21.3	30	7.1	31	4,299	-7.2	-21.0	28	8.4	30	3,882	-27.4	-36.0	26	3.8	30	4,027	-19.4	-25.9	23	12.1		
550	30	4,793	-17.9	-29.3	28	22.7	31	4,979	-12.4	-25.9	29	7.6	31	4,971	-11.9	-25.0	28	9.2	30	4,503	-31.3	-40.4	25	4.3	30	4,668	-23.6	-30.9	23	13.0		
500	30	5,500	-22.2	-33.2	27	26.0	31	5,700	-17.2	-31.0	28	8.5	31	5,693	-17.1	-31.0	27	11.0	30	5,173	-35.4	-45.6	26	5.5	30	5,359	-27.8	-35.5	24	14.9		
450	30	6,268	-26.8	-37.6	28	27.1	31	6,482	-22.8	-36.1	28	9.3	31	6,476	-22.4	-36.4	27	12.1	30	5,899	-40.0	-49.3	26	7.2	30	6,109	-32.7	-38.6	25	15.5		
400	29	7,102	-32.9	-43.5	29	26.5	31	7,334	-29.5	-41.5	27	10.7	31	7,330	-28.8	-40.9	26	12.8	30	6,696	-44.5	-53.4	26	9.5	30	6,929	-38.4	-41.8	25	17.7		
350	29	8,031	-39.5	-45.8	27	31.7	31	8,276	-36.4	-45.0	27	11.0	31	8,274	-35.8	-45.7	26	14.1	30	7,585	-48.5	-58.5	26	12.5	30	7,838	-44.2	-48.1	25	20.1		
300	29	9,068	-46.5	-52.7	27	34.5	31	9,326	-43.7	-52.7	27	13.4	31	9,326	-43.8	-52.7	26	16.8	30	8,587	-52.2	-62.6	26	15.9	30	8,856	-50.2	-56.2	25	19.6		
250	29	10,260	-53.3	-59.3	27	31.7	30	10,532	-51.3	-58.0	28	16.0	31	10,530	-51.4	-58.0	27	20.8	29	9,763	-53.2	-63.0	26	17.1	30	10,031	-55.2	-61.7	25	20.1		
200	27	11,650	-55.5	-61.7	27	27.5	30	11,963	-56.6	-62.8	28	16.4	31	11,959	-56.5	-62.8	26	22.1	29	11,200	-53.0	-62.6	26	16.8	29	11,443	-55.1	-61.5	25	17.8		
175	25	12,541	-55.7	-61.7	27	28.2	30	12,807	-57.7	-64.7	28	16.5	31	12,804	-58.0	-64.7	26	21.4	29	12,060	-53.6	-62.2	26	21.2	28	12,298	-54.3	-61.2	25	17.0		
150	25	13,518	-55.6	-61.7	27	26.0	30	13,775	-59.9	-67.1	27	15.2	31	13,775	-59.9	-67.1	26	19.1	29	13,051	-54.0	-62.6	26	17.7	29	13,286	-54.7	-61.7	25	17.6		
125	25	14,685	-56.9	-62.7	28	27.7	30	14,910	-62.0	-69.1	27	14.8	31	14,909	-61.9	-69.1	27	17.7	29	14,218	-55.2	-62.6	26	18.8	29	14,450	-55.5	-62.5	25	17.5		
100	19	16,099	-58.7	-67.7	27	18.9	30	16,278	-64.9	-72.9	27	13.3	31	16,280	-64.4	-72.9	27	13.8	29	15,637	-56.8	-65.8	26	19.1	29	15,868	-56.7	-64.5	25	18.9		
80	18	17,497	-60.3	-72.3	28	15.3	30	17,635	-65.9	-74.9	27	9.3	31	17,640	-65.7	-74.9	27	9.6	29	17,046	-58.7	-68.7	26	20.5	28	17,274	-57.9	-66.3	25	18.4		
70	17	18,336	-60.1	-72.3	28	12.9	29	18,447	-65.3	-74.9	27	7.0	31	18,453	-65.0	-74.9	27	8.6	29	17,883	-59.5	-69.5	26	21.2	28	18,116	-58.2	-66.7	25	17.8		
60	17	19,299	-60.0	-72.3	28	10.9	28	19,387	-64.6	-74.9	28	6.1	31	19,394	-64.2	-74.9	27	7.4	29	18,846	-58.6	-68.7	26	23.2	28	19,084	-54.3	-62.5	25	16.5		
50	16	20,437	-60.0	-72.3	28	9.0	27	20,506	-62.7	-74.9	29	4.5	31	20,515	-62.5	-74.9	26	6.0	29	19,778	-62.2	-72.9	26	21.8	28	20,224	-60.2	-67.7	25	15.1		
40	15	21,835	-60.3	-72.3	29	6.8	27	21,886	-61.1	-74.9	28	3.6	31	21,896	-61.3	-74.9	29	3.8	28	21,355	-63.5	-73.9	26	25.6	25	21,623	-61.5	-69.5	25	15.2		
30	14	23,229	-60.2	-72.3	30	6.0	27	23,682	-59.0	-74.9	27	3.7	31	23,691	-58.8	-74.9	28	4.3	24	23,172	-64.8	-74.9	26	24.5	22	23,443	-62.2	-70.5	25	15.9		
25	13	24,765	-61.2	-72.3	29	7.6	26	24,829	-58.0	-74.9	28	3.7	31	24,839	-58.0	-74.9	28	4.6	22	24,315	-65.3	-75.9	26	26.0	19	24,595	-61.9	-70.5	25	15.2		
20	12	26,144	-62.1	-72.3	29	11.1	26	26,241	-56.4	-74.9	28	6.2	31	26,250	-56.7	-74.9	29	5.9	19	25,688	-66.4	-76.9	26	25.0	14	25,946	-63.6	-71.5	25	15.2		
15	12	27,924	-61.8	-72.3	28	13.9	23	28,090	-54.7	-74.9	29	9.8	25	28,084	-55.7	-74.9	28	10.6	15	27,436	-67.5	-77.9	26	26.8	8	27,773	-63.7	-71.5	25	15.2		
10	9	30,456	-59.7	-72.3	11	30	30,702	-52.4	-74.9	29	15.5	13	30,690	-53.0	-74.9																	

		ATHENS, GA 992 MB						BARROW, AK 1016 MB						BARTER ISLAND, AK 1011 MB						BETHEL, AK 1005 MB						BISHOP, ND 957 MB					
5FC	31	246	3.8	-1.1	36	1.0	24	8	-25.0	-28.3	21	4.6	27	15	-25.7	-27.6	27	1.3	30	39	-18.8	-21.7	35	1.5	31	503	-7.8	-9.9	32	1.1	
1000	31	601	6.4	-1.8	27	1.0	24	151	-25.8	-26.6	26	1.1	27	148	-25.8	-28.6	27	3.5	18	170	-16.4	-21.6	02	1.8	27	580	-6.2	-8.6	29	1.6	
950	31	1,046	7.3	-5.2	25	3.0	24	895	-21.9	-23.6	08	1.2	27	863	-21.8	-25.4	22	1.2	30	878	-13.5	-20.0	02	1.6	31	990	-6.7	-7.8	28	6.1	
900	31	1,516	6.6	-7.6	26	5.4	24	1,316	-21.7	-24.2	32	1.7	27	1,285	-20.5	-23.7	24	1.5	30	1,312	-14.1	-22.1	35	2.9	31	1,448	-4.4	-10.5	29	7.8	
850	31	2,013	5.7	-10.5	27	7.4	24	1,762	-22.5	-25.9	27	3.7	27	1,734	-21.2	-25.3	24	1.2	29	1,770	-15.4	-24.6	33	2.6	31	1,931	-2.5	-12.3	29	8.9	
800	31	2,539	3.7	-12.4	27	9.7	24	2,234	-24.3	-28.4	28	1.0	27	2,208	-23.2	-26.8	25	1.0	28	2,257	-17.4	-26.9	30	4.0	31	2,441	-5.0	-14.4	30	10.8	
750	31	3,076	-15.5	-17.2	11	2.2	24	2,735	-26.5	-31.3	29	1.4	27	2,711	-25.6	-29.4	24	1.5	28	2,771	-20.0	-30.6	31	4.1	31	2,980	-8.0	-17.9	30	12.3	
700	31	3,686	-3.0	-16.0	27	9.6	24	3,267	-29.4	-34.1	29	2.2	27	3,246	-29.4	-33.8	24	1.9	28	3,318	-23.0	-35.0	30	5.1	31	3,593	-11.0	-20.3	29	14.4	
650	31	4,316	-6.5	-18.8	27	13.2	24	3,835	-32.9	-38.0	28	2.7	27	3,816	-31.7	-37.7	24	2.6	28	3,900	-26.5	-36.6	30	5.3	31	4,163	-14.6	-24.3	29	15.1	
600	31	4,991	-10.5	-23.3	27	14.9	24	4,442	-36.8	-40.2	27	3.3	27	4,426	-35.4	-40.9	25	3.5	28	4,523	-30.6	-40.4	29	6.5	31	4,818	-18.2	-28.5	30	15.6	
550	31	5,718	-15.2	-27.5	27	17.9	24	5,096	-41.2	-47.6	28	4.0	27	5,084	-39.9	-42.8	25	5.1	27	5,189	-35.2	-43.2	28	9.0	31	5,524	-22.8	-32.6	30	17.0	
500	31	6,506	-20.6	-31.2	27	20.5	24	5,805	-45.6	-52.0	28	5.2	27	5,797	-44.9	-49.2	24	6.4	26	5,921	-39.3	-43.9	29	11.6	31	6,288	-28.0	-37.6	30	18.9	
450	31	7,368	-26.7	-36.6	27	22.5	24	6,581	-50.8	-58.7	28	6.2	27	6,578	-49.4	-54.7	24	7.8	26	6,719	-44.4	-47.5	29	11.8	31	7,124					

# RAWINSONDE DATA

Average monthly values

DECEMBER 1979

Standard pressure surface mb.	CARIBOU, MO 989 MB					CENTREVILLE, AL 1006 MB					CHARLESTON, SC 1021 MB					CHATHAM, MA 1015 MB					CHIHUAHUA, MEXICO 861 MB								
	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind				
																										Direction tens of deg.	Speed m.p.a.	Direction tens of deg.	Speed m.p.a.
5FC	30	191	-8.3	-12.2	30	3.0	140	3.9	-1.0	02	1.3	31	181	5.4	2.3	34	1.5	31	16	2.6	-1.8	30	3.0	31	1,428	3.1	-2.0	25	0.6
1000	7	233	-17.1	-21.1	29	25	206	4.5	-7.05	25	1.7	31	181	5.4	2.3	34	1.5	31	16	2.6	-1.8	30	3.0	31	1,428	3.1	-2.0	25	0.6
950	31	500	-8.0	-11.0	28	6.0	612	7.0	-2.7	24	3.3	31	607	9.5	2.0	30	1.3	31	550	2.1	-3.4	29	4.5	30	7.6	4.8	25	2.3	
900	31	920	-8.8	-12.4	29	9.0	1,057	3.3	-6.5	26	3.2	31	1,055	8.9	-3.5	26	3.6	31	982	-1.7	-7.1	29	8.5	29	4.5	25	8.0		
850	31	1,363	-9.4	-13.6	29	11.3	1,527	7.2	-8.0	27	5.3	31	1,528	7.6	-6.2	26	5.5	31	1,437	-2.3	-12.9	29	10.2	31	1,529	6.2	-2.7	25	8.0
800	31	1,831	-10.3	-16.1	29	13.9	2,025	5.7	-9.9	27	6.5	31	2,026	6.3	-9.1	26	7.7	31	1,918	-3.1	-16.7	29	12.2	31	2,028	7.2	-3.3	25	2.3
750	31	2,328	-11.3	-17.8	29	15.1	2,511	4.1	-11.2	27	9.0	31	2,513	4.1	-11.2	27	9.0	31	2,427	-5.0	-18.6	28	14.5	31	2,558	5.1	-5.5	24	3.6
700	31	2,856	-13.3	-20.2	28	14.5	3,107	4.4	-13.0	26	9.8	31	3,111	4.4	-13.1	27	11.3	31	2,967	-7.4	-20.9	28	19.5	31	3,119	2.8	-10.1	24	6.2
650	31	3,418	-15.7	-23.9	28	15.5	3,699	-2.8	-14.8	26	11.6	31	3,705	-1.8	-15.4	27	12.6	31	3,582	-10.0	-22.6	28	25.0	31	3,715	-5.5	-15.5	24	6.8
600	31	4,018	-18.7	-26.5	28	17.5	4,329	-6.5	-18.6	26	13.3	31	4,337	-5.4	-19.7	27	14.8	31	4,155	-13.5	-26.6	28	21.3	31	4,350	-4.4	-20.4	24	6.6
550	31	4,662	-22.5	-30.5	28	18.1	5,005	-10.1	-23.4	27	15.6	31	5,015	-9.3	-23.5	27	17.2	31	4,813	-17.0	-29.0	28	22.5	31	5,030	-8.6	-24.7	24	10.6
500	31	5,356	-26.9	-33.5	28	20.2	5,734	-14.2	-27.2	27	18.3	31	5,745	-14.2	-27.5	27	20.3	31	5,522	-21.5	-33.6	28	25.2	31	5,762	-13.7	-28.7	24	11.6
450	31	6,109	-31.8	-38.1	27	21.8	6,525	-19.8	-32.6	26	20.5	31	6,536	-19.7	-32.4	27	22.4	30	6,292	-26.2	-38.3	27	26.8	31	6,554	-19.3	-33.7	24	13.6
400	31	6,933	-37.1	-42.2	27	23.4	7,394	-25.8	-37.6	26	23.8	31	7,400	-25.9	-38.5	27	25.4	30	7,133	-32.5	-44.4	27	28.8	31	7,419	-25.1	-37.4	24	16.0
350	31	7,848	-42.5	-46.9	27	26.8	8,350	-33.1	-43.1	26	26.4	31	8,355	-33.1	-43.8	27	28.0	30	8,064	-39.2	-47.7	27	30.9	31	8,440	-31.1	-45.7	24	17.8
300	31	8,875	-47.5	-51.4	27	28.4	9,412	-41.5	-48.4	26	30.8	31	9,418	-41.0	-47.0	27	32.2	30	9,100	-46.7	-51.4	27	31.8	31	9,440	-41.1	-45.7	24	17.8
250	31	10,062	-51.4	-55.2	27	30.8	10,625	-50.3	-52.7	26	35.5	31	10,635	-49.7	-52.7	27	36.0	30	10,292	-52.5	-55.2	27	33.2	30	10,653	-50.0	-52.7	24	20.7
200	31	11,508	-55.2	-59.0	27	33.0	12,055	-57.9	-57.9	26	35.7	31	12,068	-57.5	-57.5	27	38.8	30	11,724	-54.8	-57.5	27	32.4	30	12,086	-57.0	-57.0	24	23.1
175	29	12,317	-55.2	-57.0	27	29.8	12,892	-59.7	-59.7	26	33.8	31	12,911	-59.3	-59.3	27	37.1	30	12,578	-55.3	-59.3	27	29.7	30	12,926	-59.4	-59.4	24	23.3
150	29	13,367	-52.9	-54.1	27	24.6	13,851	-62.2	-62.2	26	29.9	31	13,864	-61.1	-61.1	27	27.5	30	14,713	-58.4	-61.1	27	27.4	30	13,885	-62.3	-62.3	24	22.3
125	29	14,525	-54.1	-54.1	27	20.0	14,966	-64.5	-64.5	27	26.1	30	14,993	-64.7	-64.7	27	27.5	30	14,713	-58.4	-64.7	27	25.0	30	15,004	-62.5	-62.5	24	20.2
100	26	15,956	-54.8	-54.8	28	20.0	16,320	-67.0	-67.0	27	18.9	30	16,345	-67.4	-67.4	27	21.8	29	16,113	-58.9	-67.4	27	20.1	30	16,352	-68.1	-68.1	24	15.9
80	26	17,385	-55.7	-57.0	28	15.8	17,664	-67.7	-67.7	27	14.8	30	17,689	-67.5	-67.5	27	15.8	28	17,507	-59.8	-67.7	27	17.0	27	17,688	-69.5	-69.5	24	9.3
70	25	18,233	-57.0	-67.0	27	15.9	18,409	-66.7	-66.7	27	11.5	30	18,495	-66.7	-66.7	27	11.6	28	18,300	-60.4	-66.7	27	15.1	24	18,688	-68.0	-68.0	24	7.0
60	24	19,204	-57.7	-65.8	27	15.9	19,409	-65.8	-65.8	27	7.8	30	19,431	-65.2	-65.2	27	8.4	28	19,303	-59.6	-65.8	27	12.7	23	19,420	-65.7	-65.7	24	4.8
50	23	20,353	-57.3	-63.3	27	13.9	20,519	-63.3	-63.3	28	7.3	29	20,544	-63.1	-63.1	28	7.5	27	20,465	-59.2	-63.3	27	10.5	23	20,535	-63.1	-63.1	24	3.3
40	23	21,763	-58.1	-61.4	27	10.6	21,897	-61.4	-61.4	28	6.8	29	21,928	-61.0	-61.0	29	5.3	27	21,845	-58.8	-61.4	28	9.4	23	21,917	-60.5	-60.5	24	2.4
30	19	23,575	-57.8	-58.8	27	11.5	23,695	-58.8	-58.8	30	4.1	29	23,726	-57.8	-57.8	30	3.6	26	23,654	-58.8	-58.8	28	8.9	20	23,723	-67.1	-67.1	24	2.2
25	15	24,727	-58.0	-58.0	27	10.6	24,845	-58.0	-58.0	29	4.5	28	24,880	-56.9	-56.9	29	3.5	25	24,799	-58.0	-58.0	28	9.1	19	24,884	-55.6	-55.6	24	3.4
20	12	26,143	-57.8	-56.6	27	11.3	26,259	-56.6	-56.6	29	6.4	28	26,302	-55.2	-55.2	29	5.9	25	26,205	-58.4	-56.6	27	8.6	13	26,314	-53.0	-53.0	24	1.0
15	7	27,983	-56.9	-53.7	28	12.2	28,101	-53.7	-53.7	28	18.5	15	30,607	-48.0	-48.0	28	10.1	17	28,002	-58.7	-53.7	28	14.0	5	28,206	-50.0	-50.0	24	0.0
10					14	30.703	-49.4																						

Standard pressure surface mb.	COLO BAY, AK 1003 MB					DAYTON, OH 984 MB					DEL RIO, TX 984 MB					DENVER, CO 839 MB					DESERT ROCK, NV 906 MB									
	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind					
																										Direction tens of deg.	Speed m.p.a.	Direction tens of deg.	Speed m.p.a.	Direction tens of deg.
5FC	30	30	-2.8	-5.9	22	4.9	299	-1.1	-4.1	22	1.7	31	314	8.3	3.6	06	1.5	31	1,611	-2.3	-9.2	18	1.5	31	1,007	3.5	-7.8	07	1.4	
1000	19	142	-1.9	-7.0	16	1.4																								
950	30	462	-3.6	-7.7	26	1.5	582	4.6	-5.6	25	4.6	31	607	9.6	3.6	15	2.0	2.0												
900	30	887	-6.6	-10.8	29	3.7	1,017	9.9	-8.2	26	6.6	31	1,056	9.5	2.0	20	2.7													
850	30	1,332	-8.4	-15.4	28	4.2	1,476	7.7	-9.9	27	8.8	31	1,532	9.2	-5.2	33	3.3													
800	30	1,801	-10.5	-19.0	29	4.9	1,963	-3.3	-10.9	27	10.9	31	2,032	8.2	-5.1	27	4.3	31	1,992	2.7	-10.5	26	3.1	31	2,026	4.7	-10.5	11	2.3	
750	30	2,296	-12.2	-22.4	27	5.9	2,477	-2.3	-13.5	27	13.3	31	2,563	5.8	-8.3	27	5.7	31	2,513	1.2	-13.9	29	5.3	31	2,550	2.6	-11.5	12	4.5	
700	30	2,820	-14.1	-25.2	28	7.5	3,023	-6.6	-16.5	27	16.8	31	3,125	-4.8	-14.8	27	8.2													



# RAWINSONDE DATA

Average monthly values

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				FLINT, MI 990 M8				GLASGOW, MT 933 M8				GRAND JUNCTION, CO 858 M8				GREAT FALLS, MT 887 M8				GREEN BAY, WI 992 M8											
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	
																															Resultant Wind Direction tens of deg.
5FC	31	236	-1.1	-3.8	24	1.7	31	696	-5.6	-8.9	04	3	31	1,472	-5.4	-9.3	13	2.2	31	1,118	-4	-9.0	21	6.3	30	210	-4.8	-7.7	26	1.6	
1000	31	560	-1.7	-5.6	26	4.8	31	1,158	-14.0	-7.0	34	3.7	7	116	21.8	07	3.3	31	10	20.0	17.3	26	4.9	31	246	-4.0	-7.7	27	1.2		
950	31	989	-2.4	-9.2	28	6.3	31	983	-5	-7.2	27	5.4	10	208	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0
800	31	1,443	-2.5	-13.3	28	8.2	31	1,443	-11.0	-10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	28	10.0	
650	31	1,924	-2.8	-14.9	27	11.0	31	1,928	-11.3	-11.6	28	11.6	31	2,031	-2.2	-2.2	14	2.7	31	1,992	-1.1	-11.2	25	13.3	30	1,907	-3.6	-17.7	29	8.5	
500	31	2,434	-4.8	-17.0	27	12.7	31	2,440	-4.1	-14.4	28	12.0	31	2,440	-1.1	-1.1	26	2.2	31	2,454	-3.4	-12.4	26	13.7	30	2,435	-5.8	-19.6	29	9.5	
350	31	2,974	-7.3	-21.5	27	13.8	31	2,981	-9.9	-17.6	29	12.3	31	3,091	-1.5	-14.5	28	3.6	31	2,998	-5.7	-14.6	27	15.4	30	2,953	-8.5	-23.0	29	10.6	
200	31	3,549	-10.2	-22.7	28	14.6	31	3,556	-10.1	-20.2	29	14.2	31	3,674	-6.2	-16.7	28	6.1	31	3,576	-8.4	-18.0	28	15.7	30	3,525	-11.4	-21.8	29	11.4	
100	31	4,162	-13.5	-26.3	28	16.3	31	4,169	-13.8	-23.4	29	15.8	31	4,297	-9.3	-21.6	29	8.1	30	4,193	-12.1	-21.8	28	17.0	30	4,135	-14.8	-26.3	29	13.3	
70	31	4,818	-17.7	-29.9	28	17.6	31	4,825	-18.0	-26.7	29	16.6	31	4,964	-13.5	-25.8	29	9.3	29	4,851	-16.7	-26.9	28	17.5	30	4,788	-18.8	-30.1	28	15.2	
50	31	5,525	-22.3	-33.2	28	19.1	31	5,531	-22.5	-30.9	29	19.3	31	5,682	-18.5	-30.7	29	10.4	29	5,560	-21.7	-31.5	29	18.5	30	5,492	-23.1	-35.0	28	17.9	
400	31	6,292	-27.2	-38.5	28	21.5	31	6,297	-27.6	-35.5	29	21.3	31	6,460	-23.9	-35.7	29	11.0	29	6,329	-26.7	-36.4	28	20.0	30	6,257	-28.2	-38.9	29	19.7	
300	31	7,130	-33.1	-42.7	27	23.7	31	7,134	-33.7	-40.9	29	23.0	31	7,309	-30.4	-41.0	29	11.0	29	7,169	-32.8	-42.5	29	20.4	30	7,092	-33.9	-43.7	28	21.1	
350	31	8,060	-39.4	-47.5	28	27.0	31	8,060	-40.5	-42.8	29	25.2	31	8,247	-37.6	-45.6	29	11.1	29	8,098	-39.4	-44.7	29	21.4	30	8,018	-40.3	-47.9	28	23.3	
300	31	9,097	-46.0	-52.8	28	29.2	31	9,090	-48.0	-50.9	29	25.8	31	9,291	-45.2	-52.9	29	13.8	29	9,132	-47.5	-52.8	28	23.1	30	9,051	-47.3	-52.8	28	24.8	
250	31	10,292	-52.5	-58.5	28	31.9	31	10,274	-54.8	-58.8	29	25.3	31	10,489	-52.0	-60.0	29	16.3	28	10,329	-54.7	-60.0	29	24.6	30	10,238	-54.1	-60.0	28	25.1	
200	31	11,724	-54.8	-60.0	27	31.4	30	11,691	-56.9	-60.0	28	24.2	31	11,915	-57.4	-60.0	29	16.7	27	11,738	-58.2	-60.0	28	24.6	30	11,662	-55.6	-60.0	28	24.5	
175	31	12,579	-54.5	-60.0	27	31.1	29	12,534	-56.2	-60.0	28	22.2	31	12,758	-58.0	-60.0	29	15.9	27	12,578	-58.3	-60.0	27	24.5	30	12,502	-54.7	-60.0	28	21.6	
150	29	13,564	-55.5	-60.0	27	28.7	29	13,515	-55.8	-60.0	28	22.1	31	13,728	-58.5	-60.0	29	14.7	27	13,549	-58.0	-60.0	28	22.0	30	13,500	-55.8	-60.0	27	19.6	
125	29	14,722	-57.0	-60.0	27	25.6	29	14,672	-57.1	-60.0	28	21.1	30	14,874	-60.3	-60.0	29	14.3	26	14,706	-57.8	-60.0	28	20.4	30	14,656	-57.3	-60.0	28	18.2	
100	29	16,127	-59.2	-60.0	28	20.7	29	16,077	-58.7	-60.0	28	21.2	29	16,263	-62.5	-60.0	28	11.6	25	16,108	-59.6	-60.0	28	16.7	30	16,060	-58.8	-60.0	28	16.8	
80	28	17,523	-59.9	-60.0	28	16.0	29	17,478	-58.9	-60.0	28	17.8	29	17,635	-63.7	-60.0	28	10.6	23	17,499	-59.2	-60.0	28	16.8	30	17,458	-59.8	-60.0	28	12.0	
70	27	18,351	-60.1	-60.0	28	15.3	29	18,317	-58.6	-60.0	28	17.5	29	18,456	-62.9	-60.0	28	8.9	21	18,330	-59.7	-60.0	27	15.6	30	18,292	-60.1	-60.0	29	11.4	
60	26	19,306	-60.3	-60.0	28	15.2	28	19,286	-59.1	-60.0	28	15.7	29	19,407	-62.4	-60.0	28	7.1	19	19,292	-59.0	-60.0	27	15.6	30	19,255	-60.4	-60.0	28	11.4	
50	25	20,444	-60.7	-60.0	28	14.7	28	20,422	-58.2	-60.0	28	14.9	29	20,535	-61.4	-60.0	28	5.6	18	20,436	-59.5	-60.0	28	13.2	30	20,393	-59.9	-60.0	29	10.3	
40	24	21,848	-59.3	-60.0	28	10.0	27	21,816	-60.2	-60.0	28	14.3	28	21,922	-60.7	-60.0	28	5.1	16	21,816	-60.0	-60.0	28	14.4	28	21,777	-59.6	-60.0	29	8.3	
30	23	23,646	-58.8	-60.0	28	9.2	25	23,616	-60.7	-60.0	28	14.1	27	23,720	-59.3	-60.0	28	5.0	12	23,628	-60.0	-60.0	28	13.8	28	23,578	-59.2	-60.0	29	7.5	
25	23	24,791	-58.8	-60.0	28	9.7	24	24,763	-60.5	-60.0	28	13.3	26	24,867	-58.1	-60.0	28	5.1	12	24,763	-61.1	-60.0	27	16.0	26	24,720	-60.1	-60.0	29	8.2	
20	22	26,193	-58.7	-60.0	27	10.1	23	26,151	-61.6	-60.0	28	12.8	24	26,278	-57.3	-60.0	28	6.9	11	26,173	-61.0	-60.0	27	14.7	25	26,122	-60.0	-60.0	29	8.7	
15	17	28,024	-57.5	-60.0	27	9.5	17	27,942	-61.9	-60.0	27	12.1	19	28,088	-56.6	-60.0	28	10.8	9	27,946	-63.3	-60.0	27	22	27	28,018	-61.1	-60.0	28	11.6	
10	7	30,563	-56.4	-60.0	27	7	30,554	-59.6	-60.0	27	7	30,554	-59.6	-60.0	27	7	30,554	-59.6	-60.0	27	7	30,554	-59.6	-60.0	27	7	30,554	-59.6	-60.0	27	7

# RAWINSONDE DATA

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KEY WEST, FL 1019 MB				KING SALMON, AK 1004 MB				KOROR, CAROLINE IS. 1007 MB				KOTZEBUE, AK 1012 MB				LAKE CHARLES, LA 1022 MB														
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg.	Resultant Wind Speed m.p.s.						
																									Temperature °C	Dew Point °C	Direction lens of deg.	Resultant Wind Speed m.p.s.	Temperature °C	Dew Point °C
SFC	31	3	20.7	18.2	03	3.1	31	15	-15.0	-19.5	34	2.3	31	30	27.7	24.3	04	1.3	29	5	-23.7	-26.7	07	2.7	31	5	6.7	5.2	04	1.8
1000	31	63	20.3	16.6	05	4.4	19	141	-13.2	-17.3	34	3.4	31	88	26.8	24.5	04	1.7	21	157	-21.2	-25.4	09	1.5	31	183	10.5	4.1	07	1.3
950	31	107	17.8	14.9	07	4.2	31	436	-11.6	-17.0	34	6.0	31	542	23.6	21.9	04	3.3	29	469	-18.1	-23.2	08	1.6	31	611	10.6	1.2	24	2.8
900	31	165	15.4	11.4	09	2.5	31	850	-12.1	-17.8	34	6.5	31	1,011	21.9	19.7	04	2.2	29	1,300	-18.4	-24.2	34	1.9	31	1,536	9.4	-5.8	26	4.5
850	31	219	13.6	6.1	13	7.3	1	1,287	-12.4	-21.1	33	7.2	31	1,508	18.0	15.2	03	1.9	29	1,300	-18.4	-24.2	34	1.9	31	1,536	9.4	-5.8	26	4.5
800	31	265	12.2	-2.4	25	1.0	31	1,750	-13.2	-23.6	32	7.2	31	2,027	15.9	11.3	04	1.4	29	1,752	-19.2	-26.7	32	3.3	31	2,037	7.4	-7.4	26	5.4
750	31	259	10.2	-7.1	28	2.0	30	2,456	-15.1	-26.1	32	7.3	31	2,574	13.2	7.3	06	8.2	29	2,231	-20.7	-28.9	29	3.8	31	2,567	5.7	-9.4	26	6.5
700	31	316	7.5	-9.8	28	3.2	30	2,765	-17.9	-29.6	31	7.4	31	3,153	10.6	3.1	02	2.2	29	2,739	-23.3	-31.4	29	4.3	31	3,126	2.8	-11.9	26	8.4
650	31	3,775	4.0	-12.7	29	4.2	30	3,016	-20.9	-32.4	31	7.3	31	3,156	7.4	-2.4	17	7.2	29	3,278	-25.9	-34.0	29	5.1	31	3,724	-5.5	-16.0	26	9.5
600	31	4,421	0.5	-16.4	27	5.6	30	3,904	-24.3	-36.1	31	8.1	31	4,423	3.1	-5.4	11	1.7	29	3,854	-29.4	-36.6	29	6.4	31	4,465	-39.8	-47.5	26	11.2
550	31	5,113	-3.9	-19.6	27	7.5	30	4,533	-28.1	-40.0	29	9.8	31	5,124	-4.4	-9.9	10	3.1	29	4,470	-33.2	-40.1	29	7.4	31	5,092	-8.1	-24.1	21	12.4
500	31	5,859	-8.7	-22.3	27	8.9	30	5,212	-31.9	-42.8	29	12.5	31	5,881	-4.8	-15.0	10	5.3	29	5,134	-37.7	-42.1	28	8.2	31	5,775	-12.8	-28.6	26	14.5
450	31	6,667	-14.0	-25.3	26	10.4	30	5,950	-36.6	-45.5	28	15.2	31	6,703	-9.5	-18.7	10	6.5	29	5,853	-42.7	-42.0	28	8.4	31	6,570	-18.6	-32.0	25	16.6
400	31	7,550	-20.6	-33.2	27	12.6	30	6,757	-41.6	-45.7	28	14.4	30	7,603	-15.0	-25.6	10	7.0	29	6,639	-48.2	-47.2	27	10.7	31	7,437	-25.2	-35.7	25	19.4
350	31	8,528	-28.1	-40.1	27	14.9	30	7,655	-46.6	-45.5	28	16.4	30	8,603	-21.7	-32.7	09	7.3	29	7,511	-53.2	-52.2	27	12.5	31	8,396	-32.0	-41.9	25	21.9
300	31	9,611	-36.5	-47.2	27	18.6	30	8,665	-51.0	-45.5	28	17.2	30	9,717	-30.1	-40.8	11	8.0	29	8,492	-57.1	-56.0	26	13.2	31	9,465	-39.8	-47.5	26	26.8
250	31	10,849	-46.3	-54.7	27	21.8	30	9,845	-53.1	-45.5	28	12.8	30	10,988	-40.3	-50.4	10	8.0	29	9,642	-58.0	-58.0	26	14.6	31	10,688	-38.6	-47.5	26	30.9
200	31	12,297	-56.4	-61.4	27	27.5	29	11,285	-53.5	-45.5	26	13.1	30	12,469	-52.9	-50.4	10	10.1	28	11,058	-56.5	-56.5	26	16.0	31	12,127	-57.1	-57.1	25	35.8
175	31	13,135	-61.4	-66.0	27	26.7	29	12,144	-53.6	-45.5	26	12.9	30	13,317	-60.0	-60.0	10	12.3	28	11,906	-56.2	-56.2	26	16.3	31	12,965	-60.3	-60.3	26	33.0
150	31	14,080	-66.0	-73.0	27	24.6	29	13,137	-53.5	-45.5	26	13.4	30	14,261	-68.0	-68.0	10	16.3	28	12,885	-56.8	-56.8	25	17.9	31	13,920	-63.0	-63.0	26	29.2
125	31	15,178	-73.0	-80.0	27	20.9	29	14,309	-54.3	-45.5	26	15.1	30	15,336	-74.8	-74.8	10	14.7	28	14,038	-57.7	-57.7	25	19.5	31	15,035	-65.8	-65.8	25	23.7
100	31	16,500	-80.0	-87.0	27	13.5	29	15,735	-55.6	-45.5	26	16.0	30	16,610	-81.6	-81.6	10	16.6	28	15,816	-60.9	-60.9	25	21.7	31	16,379	-78.0	-78.0	26	20.1
75	31	17,801	-84.4	-91.0	27	6.9	29	17,152	-56.9	-45.5	26	17.3	30	17,857	-81.1	-81.1	09	8.5	28	16,834	-61.2	-61.2	26	23.7	29	17,713	-68.8	-68.8	26	1.5
50	31	18,580	-87.2	-93.0	27	3.8	29	17,996	-57.8	-45.5	26	19.4	30	18,618	-76.3	-76.3	09	9.3	26	17,686	-61.7	-61.7	25	25.0	29	18,514	-67.9	-67.9	26	6.2
25	31	19,497	-87.7	-93.0	26	2.0	29	18,966	-59.0	-45.5	26	19.5	29	19,525	-70.5	-70.5	09	14.2	25	18,644	-62.5	-62.5	25	26.6	28	19,441	-65.8	-65.8	26	5.2
0	31	20,606	-83.6	-90.0	33	5.8	28	20,121	-60.1	-45.5	26	21.8	28	20,619	-65.7	-65.7	09	20.8	21	19,804	-62.2	-62.2	25	28.1	27	20,554	-64.8	-64.8	26	5.7
0	31	21,985	-80.4	-86.0	31	12.2	26	21,500	-59.9	-45.5	26	26.4	28	21,994	-69.1	-69.1	09	24.9	19	21,211	-63.2	-63.2	24	29.7	27	21,928	-61.7	-61.7	28	5.0
0	31	23,792	-57.0	-63.0	31	3.4	24	23,308	-62.5	-45.5	26	29.7	27	23,616	-57.0	-57.0	09	25.1	19	23,710	-55.8	-55.8	24	30.2	27	23,853	-62.7	-62.7	28	4.4
0	31	24,947	-55.8	-61.0	31	4.5	22	24,428	-63.5	-45.5	26	31.7	21	24,995	-49.4	-49.4	10	13.9	17	24,087	-66.5	-66.5	24	30.7	25	24,876	-57.2	-57.2	29	4.0
0	31	26,377	-52.9	-59.0	27	6.3	19	25,827	-65.1	-45.5	27	30.8	15	26,472	-44.2	-44.2	26	3.7	11	25,650	-64.7	-64.7	23	24.9	25	26,295	-55.3	-55.3	29	5.5
0	31	28,241	-48.4	-55.0	27	10.6	13	27,728	-65.5	-45.5	27	13	28,409	-42.0	-42.0	27	14.3	6	27,666	-64.5	-64.5	23	24.9	25	28,150	-52.7	-52.7	29	10.8	
0	31	30,932	-42.7	-49.0	27	19.5	6	31,153	-39.9	-45.5	27	6	31,153	-39.9	-39.9	27	14.3	6	27,666	-64.5	-64.5	23	24.9	25	28,150	-52.7	-52.7	29	10.8	

LANDER, NY 831 MB				LIHUE KAUAI, HI 1012 MB				LITTLE ROCK, AR 1002 MB				LONGVIEW, TX 1008 MB				MCGRATH, AK 997 MB														
SFC	31	1,697	-6.7	-11.6	20	1.3	31	36	21.4	18.3	36	1.6	31	79	3.4	-1.5	30	8	31	124	5.8	1.1	15	3	31	103	-25.1	-26.6	31	.7
1000	31	1,697	-6.7	-11.6	20	1.3	31	142	21.8	18.6	02	2.2	27	230	8	-5.2	02	1.5	27	201	6.3	-2.15	8	12	229	-25.8	-28.3	35	.5	
950	31	1,697	-6.7	-11.6	20	1.3	31	586	18.9	16.6	05	2.8	31	602	5.4	-4.5	28	3.8	31	611	8.4	-1.8	24	2.9	31	460	-18.5	-21.7	36	1.7
900	31	1,697	-6.7	-11.6	20	1.3	31	1,050	15.9	13.3	05	2.0	31	1,045	6.5	-6.9	26	5.3	31	1,058	6.3	-4.4	25	3.7	31	1,058	-18.7	-21.6	36	2.6
850	31	1,697	-6.7	-11.6	20	1.3	31	1,534	13.2	9.5	05	1.1	31	1,514	5.5	-7.2	27	5.9	31	1,529	4.2	-5.0	26	4.7	31	1,292	-16.9	-21.7	03	2.8
800	31	1,993	-9.9	-11.2	23	.5	31	2,043	11.6	2.5	06	1.0	31	2,008	4.0	-8.5	27	7.1	31	2,027	5.6	-7.9	26	6.1	31	1,747	-17.0	-22.8	02	2.2
750	31	2,508	-1.7	-13.8	27	2.8	31	2,582	10.6	-5.5	03	1.0	31	2,531	2.0	-10.9	27	8.1	31	2,553	4.0	-10.7	27	7.2	31	2,230	-18.7	-25.2	34	1.8
700	31	3,054	-4.3	-15.7	28	6.8	31	3,155	9.3	-10.6	29	2.3	31	3,075	-6.6	-13.7	27	9.0	31	3,111	1.4	-14.0	26	8.6	31	2,742	-21.2	-29.4	33	2.6
650	31	3,635	-7.4	-17.8	29	11.7	31	3,766	8.4	-13.6	28	3.6	31	3,674	-4.0	-16.2	27	10.5	31	3,704	-2.0	-17.9	27	10.1	30	3,283	-33.2	-33.2	32	5.2
600	31	4,255	-10.4	-22.8	31	12.2	26	4,148	2.4	-16.7	29	2.6	31	4,148	2.4	-16.7	29	2.6	31	4,148	2.4	-16.7	29	2.6	31	4,148	2.4	-16.7	29	2.6
550	31	4,921	-14.2	-26.6	30	15.4	31	5,115	-1.9	-20.8	28	7.4	31	4,973	-11.7	-25.6	27	12.3	31	5,013	-9.9	-25.2	26	13.9	30	4,483	-31.7	-40.8	31	4.1
500	31	5,637	-19.1	-30.8	29	15.1	31	5,866	-7.0</																					



# RAWINSONDE DATA

Average monthly values

DECEMBER 1979

		MONETT, MO 969 MB						NASHVILLE, TN 1001 MB						NDPE, AK 1010 MB						NORTH PLATTE, NE 921 MB						OAKLAND, CA 1019 MB						
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind			
					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.					Direction tens of deg.	Speed m.p.s.	Direction tens of deg.	Speed m.p.s.
5FC	31	438	.9	-3.2	21	.9	31	180	2.3	-1.0	19	.7	31	5	-20.0	-25.0	04	.8	31	847	-3.6	-8.2	32	2.2	31	6	8.1	5.1	13	1.0		
1000																																
950	31	596	3.0	-3.6	24	2.1	31	600	3.8	-2.9	23	4.7	31	155	-18.0	-23.3	06	1.5	31	166	10.9	4.3	12	1.2	31	166	10.9	4.3	12	1.2		
900	31	1,036	8.8	-5.9	27	6.7	31	1,000	4.2	-4.9	26	6.3	31	461	-15.5	-22.8	36	2.5	31	1,045	10.5	-4.2	19	1.6	31	1,045	10.5	-4.2	19	1.6		
850	31	1,902	4.3	-7.9	28	7.0	31	1,505	4.3	-9.0	27	6.9	31	1,299	-16.3	-25.5	31	2.7	31	1,489	3.0	-10.0	31	5.7	31	1,519	8.7	-7.0	22	3.4		
800	31	1,995	3.9	-10.8	26	7.9	31	1,998	3.3	-9.9	27	8.2	31	1,755	-17.2	-27.3	32	3.3	31	1,978	1.4	-11.4	31	6.0	31	2,019	6.2	-9.1	23	3.9		
750	31	2,518	1.8	-12.0	28	9.2	31	2,520	1.4	-10.9	27	9.5	31	2,237	-19.2	-30.7	31	4.1	31	2,496	-1.0	-13.4	31	7.1	31	2,545	3.6	-11.7	24	4.4		
700	31	3,071	-1.0	-15.3	28	10.1	31	3,072	-1.2	-13.1	28	10.9	31	2,748	-21.8	-32.0	30	4.6	31	3,043	-3.8	-15.9	30	8.3	31	3,101	3.6	-16.5	25	6.0		
650	31	3,659	-9.5	-17.4	27	11.2	31	3,661	-4.2	-14.8	27	12.3	31	3,290	-24.6	-35.8	28	5.6	31	3,625	-6.8	-18.7	29	8.7	31	3,692	-3.1	-19.2	26	6.8		
600	31	4,284	-8.2	-21.4	27	12.3	31	4,288	-7.2	-17.8	27	13.7	31	3,869	-28.1	-36.2	30	6.7	31	4,246	-10.2	-22.4	29	9.7	31	4,321	-7.1	-23.0	27	7.9		
550	31	4,954	-14.4	-25.4	27	12.8	31	4,961	-11.8	-21.2	27	16.0	31	4,489	-32.1	-40.2	30	7.5	31	4,911	-14.4	-26.2	29	10.4	31	4,994	-11.5	-26.8	27	8.9		
500	31	5,676	-16.8	-29.6	27	13.9	31	5,684	-16.7	-26.4	27	18.1	31	5,155	-36.7	-43.1	29	8.0	31	5,627	-19.1	-30.9	29	11.6	31	5,717	-16.9	-30.7	26	9.6		
450	31	6,459	-22.5	-35.0	27	15.4	31	6,465	-21.9	-33.5	27	19.4	31	5,877	-41.6	-44.3	29	8.1	31	6,403	-24.5	-34.8	29	12.1	31	6,499	-22.6	-35.6	26	10.6		
400	31	7,313	-28.7	-40.3	27	17.9	31	7,321	-22.0	-39.6	27	21.4	31	6,667	-46.8	-46.8	28	9.0	31	7,250	-31.0	-40.5	28	12.9	31	7,352	-29.1	-41.1	27	11.5		
350	31	8,259	-35.3	-45.4	27	20.8	31	8,269	-34.9	-46.2	27	24.6	31	7,544	-52.2	-52.2	28	9.1	31	8,186	-37.9	-45.7	28	15.8	31	8,296	-36.1	-45.5	27	13.6		
300	31	9,313	-43.2	-52.0	27	23.9	31	9,327	-43.0	-46.2	27	27.7	31	8,530	-59.9	-59.9	28	9.7	31	9,228	-45.6	-54.6	29	15.5	31	9,345	-44.2	-49.3	27	16.3		
250	31	10,521	-50.9	-57.9	27	27.7	31	10,534	-51.1	-46.2	27	30.9	31	9,686	-56.8	-56.8	27	11.1	31	10,425	-52.9	-52.9	28	15.5	31	10,547	-51.9	-51.9	28	18.0		
200	31	11,952	-56.9	-57.9	27	27.0	31	11,965	-57.0	-46.2	27	31.4	31	11,102	-55.8	-55.8	26	13.1	31	11,850	-56.9	-56.9	28	17.7	31	11,969	-58.1	-58.1	28	21.0		
175	31	12,797	-57.4	-57.4	27	26.5	31	12,808	-57.8	-57.8	27	30.3	31	11,953	-55.6	-55.6	26	14.9	31	12,694	-57.3	-57.3	28	16.4	31	12,807	-59.2	-59.2	28	20.7		
150	31	13,767	-58.8	-58.8	27	24.1	31	13,778	-59.5	-59.5	27	27.7	31	12,934	-55.9	-55.9	26	15.9	31	13,668	-57.9	-57.9	28	16.6	31	13,771	-59.6	-59.6	28	20.0		
125	31	14,906	-61.2	-61.2	27	21.2	31	14,914	-62.2	-62.2	27	24.3	31	14,093	-56.7	-56.7	26	17.2	31	14,815	-59.5	-59.5	28	15.5	31	14,907	-61.8	-61.8	28	16.8		
100	31	16,223	-63.4	-63.4	27	16.2	31	16,203	-64.4	-64.4	27	18.2	31	15,505	-57.9	-57.9	26	19.9	31	16,203	-61.7	-61.7	28	13.2	31	16,223	-63.5	-63.5	28	14.1		
80	31	17,450	-64.2	-64.2	27	13.3	31	17,465	-64.6	-64.6	27	14.2	31	16,907	-59.4	-59.4	25	21.5	31	17,583	-62.1	-62.1	28	11.5	31	17,449	-64.3	-64.3	27	9.2		
60	31	18,466	-64.4	-64.4	27	11.1	31	18,458	-64.3	-64.3	28	12.5	31	17,740	-60.7	-60.7	26	23.2	31	18,411	-61.6	-61.6	28	9.6	31	18,467	-63.6	-63.6	28	7.5		
40	31	19,413	-63.3	-63.3	27	9.2	31	19,402	-63.7	-63.7	28	9.9	31	18,697	-62.1	-62.1	26	25.5	31	19,366	-61.8	-61.8	28	8.8	31	19,415	-63.0	-63.0	28	5.7		
50	31	20,537	-62.1	-62.1	27	6.4	31	20,523	-62.2	-62.2	28	8.1	31	19,826	-63.1	-63.1	25	25.5	31	20,497	-60.9	-60.9	28	6.9	31	20,540	-62.1	-62.1	30	3.0		
40	29	21,920	-61.2	-61.2	28	5.8	31	21,908	-60.7	-60.7	30	5.7	31	21,218	-64.3	-64.3	25	25.8	31	21,887	-60.9	-60.9	28	7.1	31	21,922	-61.3	-61.3	31	2.7		
30	28	23,721	-57.6	-57.6	29	4.7	31	23,717	-58.4	-58.4	28	4.2	31	23,058	-65.2	-65.2	26	19.9	31	23,623	-59.7	-59.7	28	13.2	31	23,720	-61.2	-61.2	29	2.7		
25	28	24,868	-58.1	-58.1	29	4.3	31	24,877	-57.5	-57.5	28	5.4	31	24,167	-62.2	-62.2	25	31.4	31	24,827	-59.4	-59.4	29	7.8	31	24,866	-57.7	-57.7	30	3.0		
20	27	26,273	-57.4	-57.4	29	6.2	31	26,294	-55.7	-55.7	28	5.4	31	25,405	-68.9	-68.9	27	26.2	31	26,227	-58.6	-58.6	28	9.9	31	26,277	-55.4	-55.4	28	5.7		
15	28	28,104	-55.2	-55.2	29	8.6	31	28,128	-54.5	-54.5	26	10.3																				
10	5	30,723	-53.8	-53.8	10	30,747	-54.7																									

		OMAHA, NE 971 MB						PAGO PAGO, AMERICAN SAMOA 1009 MB						PEORIA, IL 996 MB						PITTSBURGH, PA 977 MB						PONAPE, CAROLINE IS. 1004 MB						
5FC	31	403	-2.8	-5.5	30	1.6	31	5	28.7	23.7	11	1.6	31	200	-2.3	-4.9	24	1.0	31	359	.1	-5.1	22	2.1	31	39	28.1	24.4	07	1.3		
1000																																
950	31	575	.9	-5.8	29	3.0	31	534	27.0	20.7	08	1.5	31	576	1.4	-6.6	27	4.5	31	587	-4.4	-4.9	24	5.2	31	527	23.9	21.9	07	4.0		
900	31	1,033	2.1	-8.7	30	6.1	31	1,005	20.0	17.6	02	1.9	31	1,011	1.6	-9.8	28	6.8	31	1,019	-1.2	-8.1	26	9.6	31	1,000	21.0	18.8	08	4.9		
850	31	1,471	2.1	-11.6	31	7.0	31	1,497	17.2	14.4	35	2.5	31	1,472	1.1	-12.7	28	7.6	31	1,474	-2.0	-11.2	27	11.1	31	1,494	18.1	15.4	08	4.6		
800	31	1,959	.4	-14.7	30	8.1	31	2,014	15.4	8.9	32	3.3	31	1,958	-.3	-14.9	28	8.1	31	1,955	-2.6	-13.4	28	11.9	31	2,013	16.2	10.8	08	5.5		
750	31	2,475	-1.6	-16.3	29	9.1	31	2,561	13.2	5.1	31	3.4	31	2,478	-2.1	-16.8	28	9.9	31	2,467	-3.6	-15.2	28	13.8	31	2,561	13.7	6.9	08	5.6		
700	31	3,022	-4.3	-18.6	29	10.2	31	3,139	10.3	-.0	29	4.1	31	3,023	-4.5	-18.4	27	12.5	31	3,010	-5.9	-17.2	28	15.8	31	3,140	10.7	2.3	09	5.6		
650	31	3,603	-7.2	-20.2	29	12.5	31	3,752	6.9	-4.0	29	4.0	31	3,604	-7.3	-20.6	27	14.1	31	3,588	-8.7	-19.7	28	17.3	31	3,755	7.3	-.5	09	6.1		
600	31	4,223	-10.2	-23.4	29	14.2	31	4,406	3.1	-8.1	29	4.8	31	4,224	-10.2	-24.8	28	15.1	31	4,204	-12.1	-22.4	28	19.3	31	4,410	3.7	-3.2	08	7.0		
550	31	4,888	-14.4	-26.3	29	15.3	31	5,107	-.4	-11.9	28	4.9	31	4,888	-14.6	-27.8	28	17.9	31	4,865	-15.3	-26.3	28	20.8	31	5,113	-5.8	-.6	08	7.1		
500	31	5,604	-19.1	-29.9	28	15.3	31	5,864	-9.6	-17.9	28	6.4	31	5,604	-19.2	-32.0	27	19.7	31	5,576	-20.7	-31.2	28	22.9	31	5,871	-4.4	-14.2	09	8.7		
450	31	6,380	-24.4	-35.3	28	16.8																										



# RAWINSONDE DATA

Average monthly values

DECEMBER 1979

SALEM, IL 1000 M <sup>9</sup>										SALEM, OR 1011 M <sup>6</sup>										SALT LAKE CITY, UT 877 M <sup>9</sup>										SAN DIEGO, CA 1004 M <sup>6</sup>										SAN JUAN, P. R. 1015 M <sup>6</sup>																																																																																	
Standard pressure surface mb.		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C †		Resultant Wind																																																																																	
										Direction deg. of deg.		Speed m.p.s.								Direction deg. of deg.		Speed m.p.s.								Direction deg. of deg.		Speed m.p.s.						Direction deg. of deg.		Speed m.p.s.																																																																																	
SFC	31	174	-5	-3.3	25	1.2	31	6.1	4.8	20	1.7	31	1,288	-2.9	-5.7	16	9	29	124	10.3	-1.1	07	4	31	6	22.3	19.5	09	2.0	SFC	31	582	-4.7	-6.6	31	8	30	720	.9	-2.6	20	3.2	31	13	12.6	11.0	03	1.5	31	268	-1.7	-5.6	27	1.1	30	2	28.4	24.4	06	2.1	SFC	31	174	-5	-3.3	25	1.2	31	6.1	4.8	20	1.7	31	1,288	-2.9	-5.7	16	9	29	124	10.3	-1.1	07	4	31	6	22.3	19.5	09	2.0	SFC	31	582	-4.7	-6.6	31	8	30	720	.9	-2.6	20	3.2	31	13	12.6	11.0	03	1.5	31	268	-1.7	-5.6	27	1.1	30	2	28.4	24.4	06	2.1

SAULT STE MARIE, MI 989 M <sup>6</sup>										SPOKANE, WA 933 M <sup>6</sup>										TAMPA BAY, FL 1019 M <sup>6</sup>										TOPEKA, KS 989 M <sup>6</sup>										TRUK, CAROLINE IS. 1010 M <sup>6</sup>																																																																																			
SFC	31	221	-4.7	-6.6	31	8	30	720	.9	-2.6	20	3.2	31	13	12.6	11.0	03	1.5	31	268	-1.7	-5.6	27	1.1	30	2	28.4	24.4	06	2.1	SFC	31	221	-4.7	-6.6	31	8	30	720	.9	-2.6	20	3.2	31	13	12.6	11.0	03	1.5	31	268	-1.7	-5.6	27	1.1	30	2	28.4	24.4	06	2.1	SFC	31	221	-4.7	-6.6	31	8	30	720	.9	-2.6	20	3.2	31	13	12.6	11.0	03	1.5	31	268	-1.7	-5.6	27	1.1	30	2	28.4	24.4	06	2.1	SFC	31	221	-4.7	-6.6	31	8	30	720	.9	-2.6	20	3.2	31	13	12.6	11.0	03	1.5	31	268	-1.7	-5.6	27	1.1	30	2	28.4	24.4	06	2.1

TUCSON, AZ 928 M <sup>6</sup>										VANORNBERG AFB, CA 1008 M <sup>6</sup>										VICTORIA, TX 1018 M <sup>6</sup>										WAKE IS., PACIFIC AREA 1015 M <sup>6</sup>										WALLOPS ISLAND, VA NASA 1021 M <sup>6</sup>																																																																																			
SFC	31	789	8.0	-6.4	14	3.0	31	100	11.4	1.5	08	1.8	31	33	8.3	6.1	36	1.4	31	5	24.9	21.5	07	3.7	31	4	3.7	-1.0	31	2.2	SFC	31	789	8.0	-6.4	14	3.0	31	100	11.4	1.5	08	1.8	31	33	8.3	6.1	36	1.4	31	5	24.9	21.5	07	3.7	31	4	3.7	-1.0	31	2.2	SFC	31	789	8.0	-6.4	14	3.0	31	100	11.4	1.5	08	1.8	31	33	8.3	6.1	36	1.4	31	5	24.9	21.5	07	3.7	31	4	3.7	-1.0	31	2.2	SFC	31	789	8.0	-6.4	14	3.0	31	100	11.4	1.5	08	1.8	31	33	8.3	6.1	36	1.4	31	5	24.9	21.5	07	3.7	31	4	3.7	-1.0	31	2.2



# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

DECEMBER 1979

Sun's zenith distance										Sun's zenith distance										
Date	A.M.				*	P.M.				Date	A.M.				*	P.M.				
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°	
	MAUNA LOA OBSERVATORY, HI										TUCSON, AZ									
Air mass										Air mass										
	3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64	
4-----	1.22	1.28	1.38	1.51	1.58	1.47	1.36	1.26	1.17											
5-----	1.21	1.30	1.39	1.50	---	---	---	---	---											
6-----	1.20	1.28	1.36	1.49	---	---	---	---	---											
7-----	1.18	1.26	1.36	1.49	---	---	---	---	---											
8-----	1.22	1.31	1.38	1.52	---	---	---	---	---											
10-----	1.23	1.32	1.40	1.52	---	---	---	---	---											
11-----	1.22	1.30	1.40	1.52	---	---	---	---	---											
12-----	1.19	1.28	1.37	1.50	1.57	1.50	1.38	1.29	1.20											
13-----	---	---	---	---	---	1.46	1.33	1.22	1.14											
14-----	---	---	---	---	---	1.64	1.50	1.39	1.22											
17-----	---	---	---	---	---	1.61	1.52	1.41	1.33											
19-----	---	---	---	---	---	1.65	1.56	1.46	1.36											
20-----	1.23	1.35	1.44	1.55	1.64	1.55	1.45	1.35	1.26											
21-----	1.28	1.35	1.45	1.56	1.65	1.56	1.46	1.37	1.30											
22-----	1.28	1.36	1.45	1.56	1.65	1.56	1.46	1.37	1.30											
23-----	1.30	1.37	1.46	1.57	---	1.55	1.45	1.36	1.30											
27-----	1.26	1.33	1.42	1.54	1.62	---	---	---	---											
28-----	1.26	1.35	1.43	1.53	1.61	---	---	---	---											
29-----	1.28	1.35	1.44	1.54	1.62	1.52	1.41	1.31	1.21											
30-----	1.30	1.36	1.46	1.55	1.64	1.51	1.40	1.30	1.20											
31-----	---	---	---	---	1.68	1.54	1.42	1.33	1.26											
Aver- ages	1.24	1.32	1.41	1.53	1.63	1.52	1.41	1.32	1.24											

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . . .	0	1	7	-1	-18	7	0	-2	3	8	1	3	5	5	13	-1	6	6	130	18	-29	-21	-17	-12	-31	8	-52	-77	-49	-41	-31	-56

## STORM SUMMARY

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				o ALL OTHER								
	NUMBER	DAYS	DEATHS	INJURIES	†DAMAGE	DEATHS	INJURIES	PROP. ERTY	CROPS	DEATHS	INJURIES	PROP. ERTY	CROPS	DEATHS	INJURIES	PROP. ERTY	CROPS	DEATHS	INJURIES	PROP. ERTY	CROPS	DEATHS	INJURIES	PROP. ERTY	CROPS	DEATHS	INJURIES	PROP. ERTY	CROPS					
																														DEATHS	INJURIES	PROP. ERTY	CROPS	
LATE REPORTS																																		
JULY 1979																																		
Utah																1																		
CORRECTIONS																																		
JUNE 1979																																		
Minnesota																2																		



REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- † No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

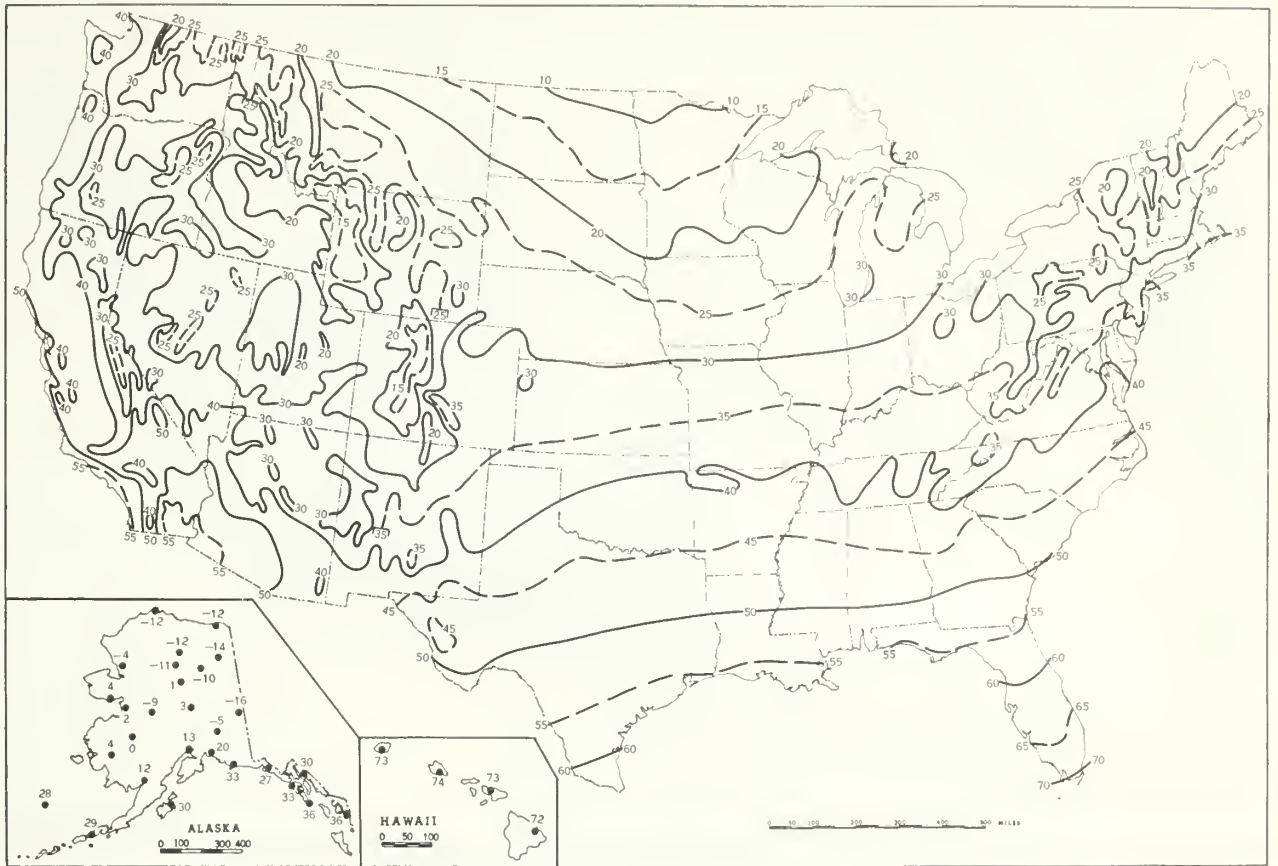
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeter-
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable		minable
BN	Blowing Sand	CF	Ground Fog	K	Smoke	N	Sand
D	Dust	H	Haze	KI	Intense Smoke	S	Slight Haze-indeter-
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		minable

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), December.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), December 1979

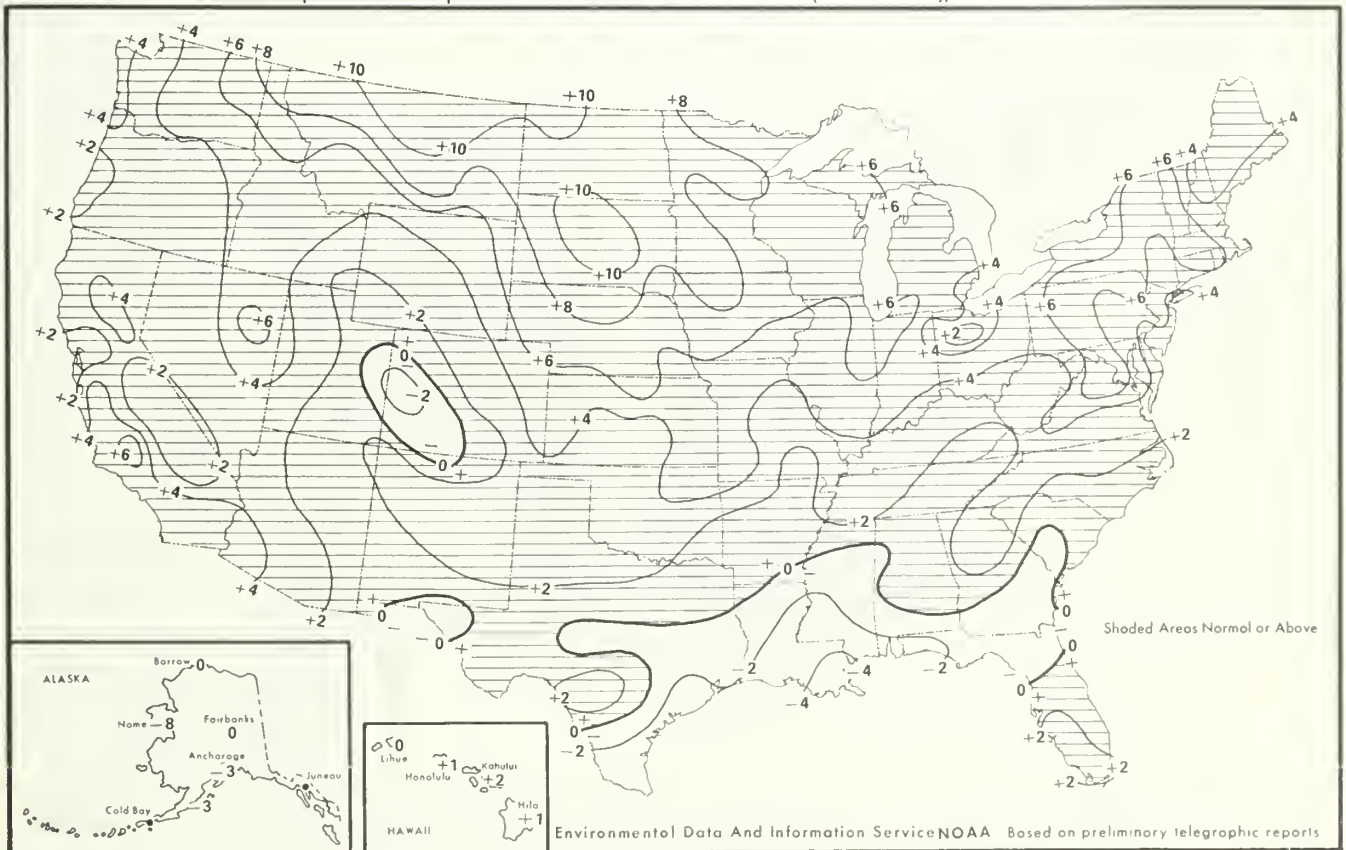
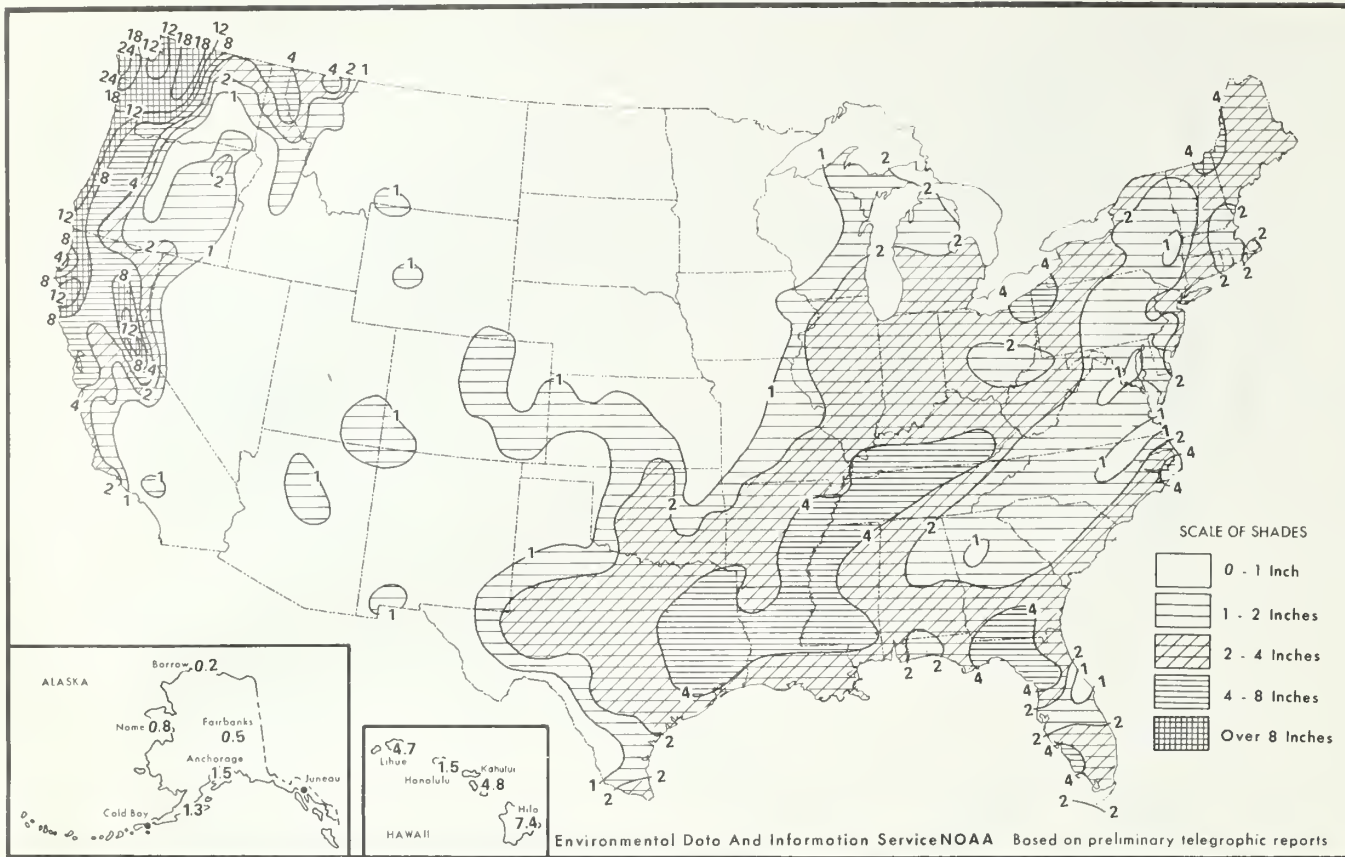


Chart II. A. Total Precipitation (Inches), December 1979



B. Percentage of Normal Precipitation, December 1979

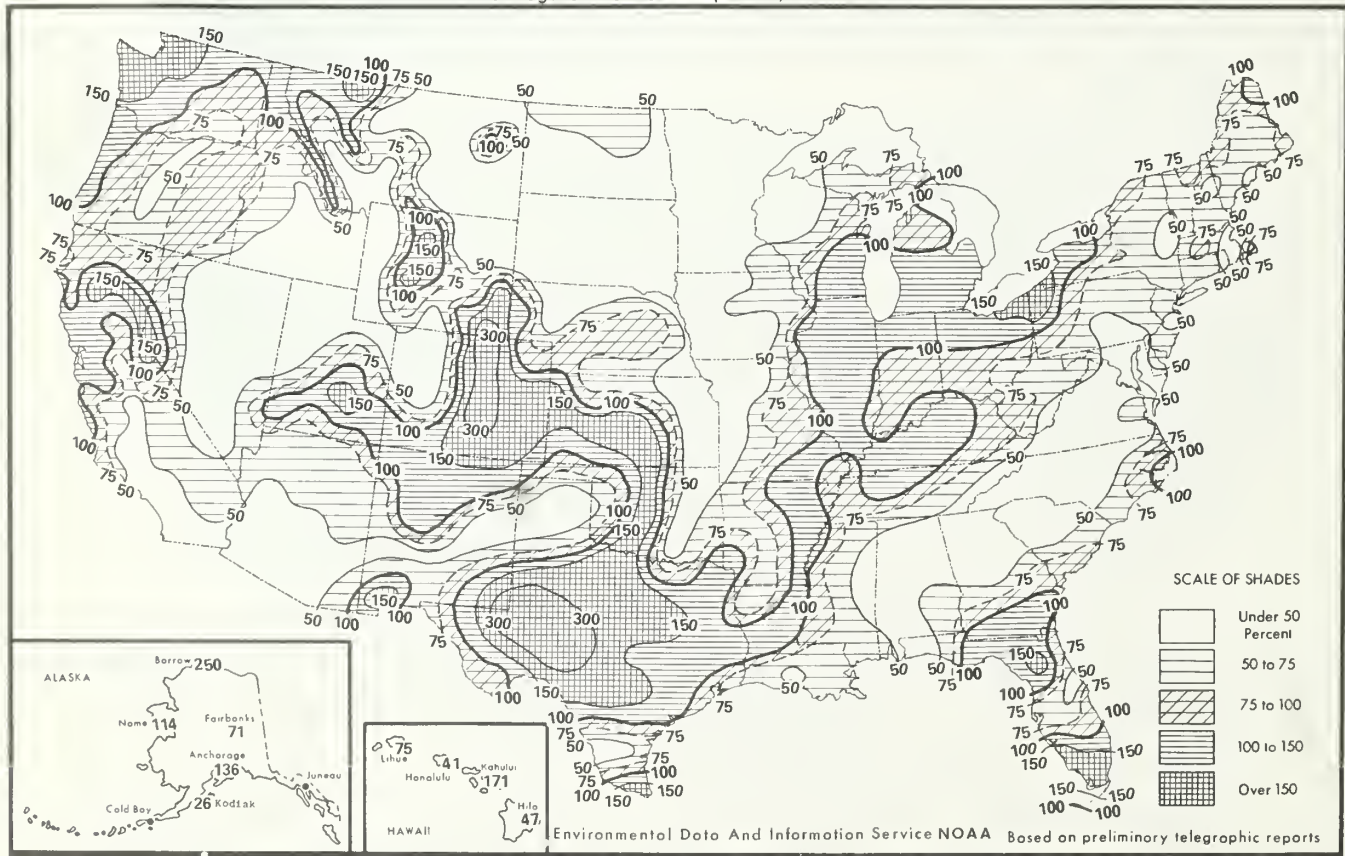
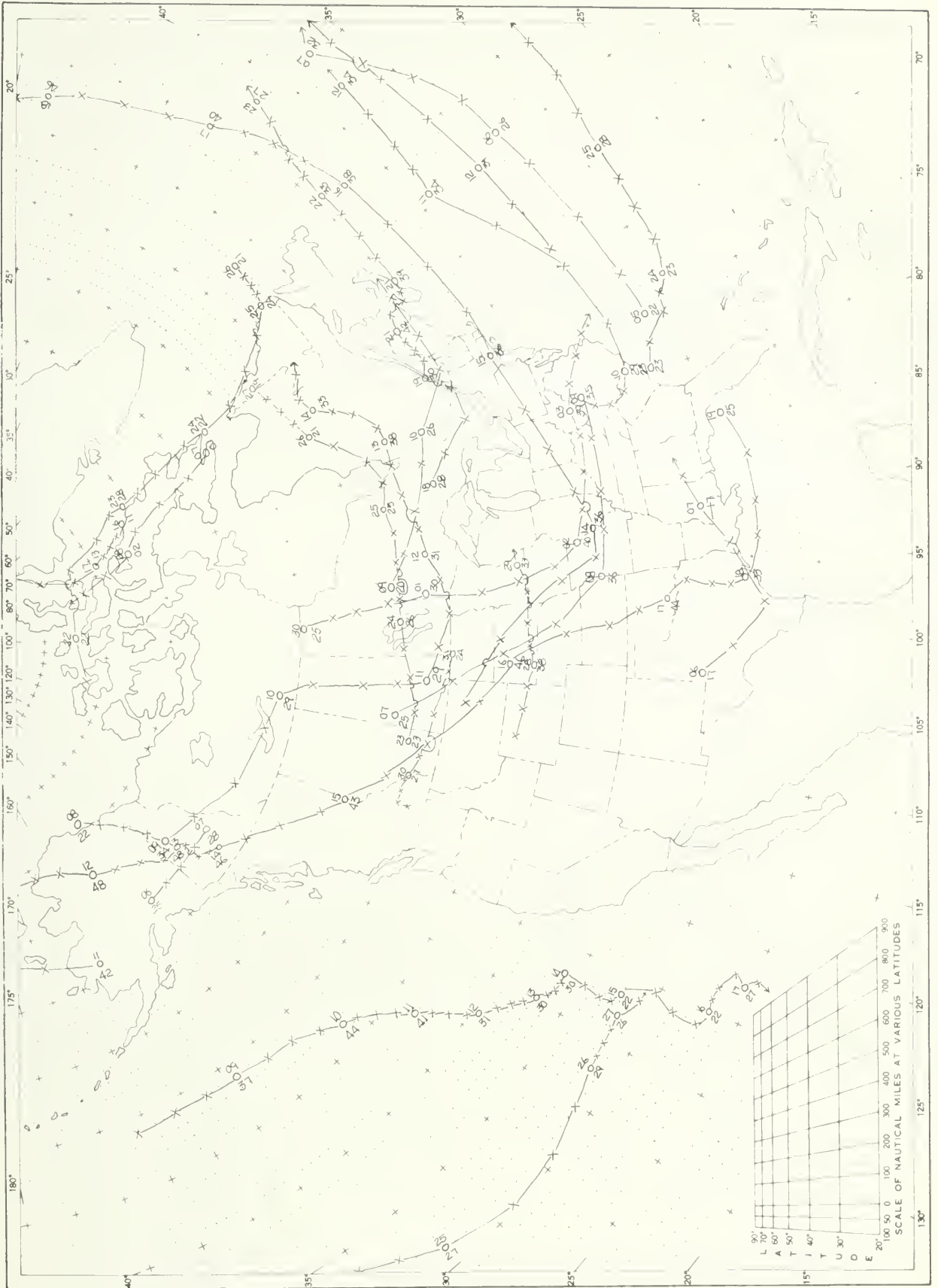


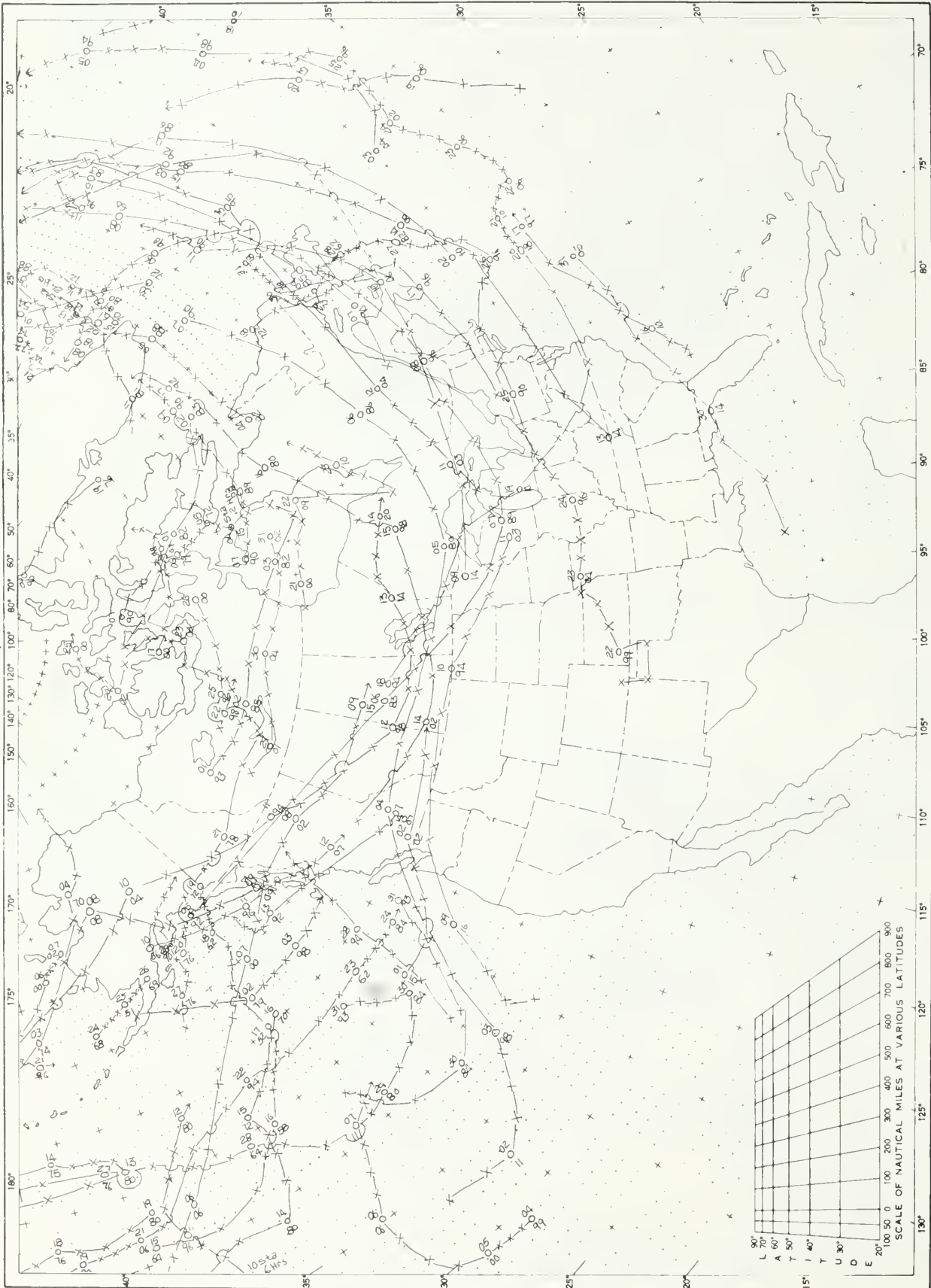


Chart III. Tracks of Centers of Anticyclones at Sea Level, December 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart IV. Tracks of Centers of Cyclones at Sea Level, December 1979



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.





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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

C O N T E N T S

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

YEAR 1979

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lewis A. Blodgett, Meteorological Advisor, NCC

The year began with the third successive severely cold January over a large part of the United States, an unprecedented event in the climatological records. In contrast to the previous two Januaries, the cold weather extended west of the Rockies to the Pacific Coast, with the exception of coastal California, which with New England, averaged slightly above normal temperatures. Several midwestern stations reported their coldest January of record.

Heavy snow accompanied the cold. Again, several stations in the central United States reported their snowiest January. In fact, most of the country reported above normal amounts of precipitation. Record amounts fell in New England with attendant flooding, as successive coastal storms moved along the seaboard; the relatively mild temperatures in this area caused the precipitation to fall mostly as rain.

The cold weather of the previous month continued throughout the entire country except the southern Rockies, parts of Nevada, California, and Oregon. The Northeast, which escaped severe cold in January, was covered with Arctic air for two weeks during February, with many low temperature records established. Three consecutive severe winters went into the record books.

Precipitation during February was above normal over most of the country except the Central Plains northeastward across the Great Lakes. During the 17th-19th, a storm originating in the Gulf of Mexico spread record or near-record amounts of snow from Georgia northeastward across the Atlantic coastal states. Washington, D.C., had a record 24-hour amount for February of 18.7 inches, with deeper amounts along the coastal areas of Maryland and Delaware. In the Northern Plains, heavy snow occurred during the month with Bismarck, North Dakota, reporting a February record of 25.6 inches.

March brought a welcome turnabout in temperatures. In contrast to the previous two months, warmer than normal temperatures prevailed across the country, except for some areas in the

Northern Plains, extreme Southwest, and Florida. Records were set with temperatures in the mid-80's on the 30th in the mid-Atlantic states. Heavy precipitation occurred in the Southwest and the central states. Florida was rather dry.

Heavy rains and flooding characterized April in the Southeast, with some stations reporting their wettest April. Severe damage occurred in Jackson, Mississippi, as the Pearl River reached a record crest. The Northwest and Northern Plains also experienced above normal precipitation, with the Southwest, Southern Plains, and western Great Lakes region comparatively dry. Temperatures averaged 8° below normal in the extreme Northern Plains, with cooler than normal prevailing in most areas east of the Rockies except New England and parts of the Southeast.

In contrast to April, May was wet in the Southwest, with a record of 1.39 inches for the month at Winslow, Arizona. Sheridan, Wyoming, reported a record May snowfall amount of 12.5 inches. Rain continued heavy in the Southeast, and was above normal in New England. Temperaturewise, the West, from the Plateau to the Pacific Coast, and the Atlantic Coast, including New England, were warmer than normal. Slightly cooler than normal temperatures prevailed in most of the remainder of the nation.

June was dry west of the Rockies, with spotty heavy precipitation throughout the rest of the country. However, this sporadic pattern left many areas quite below their normal June rainfall. Warm weather prevailed in the Plateau region and extreme Southwest westward to the coast. However, cooler than normal temperatures were the rule from New England southwestward to include New Mexico. The Southeast was especially cool, with Raleigh, North Carolina, and Columbia, South Carolina, for example, reporting their coolest June.

July rainfall was much more generous than June, with ample rain in most of the country. The normally dry Southwest and Plateau area received

# GENERAL SUMMARY OF WEATHER CONDITIONS

YEAR 1979

much more than normal precipitation. Two tropical storms, Bob and Claudette, caused heavy rains and flooding along the Gulf Coast, up to 35 inches for the month near Houston, Texas. Spotty dry areas persisted in the Northeast and Great Lakes area. Temperatures averaged slightly above normal in the Central Plains eastward to the middle Atlantic Coast, and warmer than normal elsewhere. One striking feature was a 5.8 inch snowfall at Stampede Pass, Washington, on the 1st, a new July record. Mount Washington, New Hampshire, also recorded snow during July, during a Northeast cool spell early in the month.

August was another wet month as most of the nation experienced above normal precipitation. Divergent locations such as Rochester, Minnesota, Columbus, Ohio, and Denver, Colorado, reported their wettest August. But some areas, such as the southern Atlantic coastal and Piedmont, were dry. Temperatures were quite variable within the month; as early in the month warm, showery conditions prevailed in the East, and again near the end, however, it was very cool with some frost in the Northeast and North Central during the third week. The month ended with the Northwest significantly warmer than normal, with the rest of the country near average, except somewhat cooler in the central United States.

Extreme precipitation contrasts characterized September. Hurricanes David and Frederic aided in heavy rainfall amounts in the East, eastward of a Texas-Michigan line. Locations such as Norfolk, Virginia, Nashville, Tennessee, Louisville, Kentucky, experienced their wettest September. However, west of this area, very dry conditions prevailed. Many stations, such as Springfield, Illinois, Milwaukee, Wisconsin, and Grand Rapids, Michigan, reported their driest month of record, with amounts in the trace-0.02 range. The entire West was dry, with the exception of the Northwest coast.

September was a warm month, except for a strip running northeast from eastern Texas to New York. The West was especially warm. San Diego, California, and Salt Lake City, Utah, for example, experienced their warmest September.

October continued warm in the West, with some stations reporting high October extremes, if not means, such as 103° on the 1st at Abilene, Texas. The area of the Northern Plains eastward across the Great Lakes to New England and extending southward to Tennessee and Louisiana were below normal temperature, as repeated polar outbreaks kept readings down. Dry weather accompanied the heat in the Southwest. Florida and southern Georgia, as well as North Dakota, were dry also. Elsewhere, especially in the North Central and Northeast, precipitation was mostly ample. An unusual snowstorm in the Northeast on the 10th gave record amounts for so early in the season. At Worcester, Massachusetts, 7.5 inches fell.

During November, temperatures were above normal in the eastern third of the country. New York City had its warmest November. In the West, colder than normal was the rule. Precipitation was heavy in the Central and Western Plains and the Southeast. Colorado Springs, Colorado, reported its snowiest November, 19.1 inches. In contrast, it was the first November of the century without even a trace of snow at Albany, New York.

The 1979-80 winter started mild as December averaged considerably warmer than normal over most of the country, up to 10° in the Northern Plains and Rockies. Only a narrow area near the Gulf Coast was colder than normal. Precipitation was deficient over a large part of the country, especially in the Northern Plains and parts of the Southeast. However, the southern Rockies and western Texas were wet.

The year ended with cities such as Jackson, Mississippi, Nashville, Tennessee, Louisville, Kentucky, and Sault St. Marie, Michigan, reporting their greatest annual amounts of precipitation.





# MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	90	120	150	180	
JAN	LITTLE ROCK, ARKANSAS	.05	.08	.09	.09	.10	.11	.11	.18	.21	.24	.28	.31
	DATE	25	25	25	25	25	25	25	25	25	25	25	25
FEB	LITTLE ROCK, ARKANSAS	.25	.45	.60	.65	.68	.96	.98	.99	1.00	1.00	1.00	1.00
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
MAR	LITTLE ROCK, ARKANSAS	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	DATE	03	03	03	03	03	03	03	03	03	03	03	03
APR	LITTLE ROCK, ARKANSAS	.50	.90	.97	1.03	1.07	1.10	1.13	1.13	1.13	1.13	1.13	1.13
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
MAY	LITTLE ROCK, ARKANSAS	.22	.40	.55	.68	.87	1.02	1.05	1.08	1.13	1.18	1.25	1.30
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
JUN	LITTLE ROCK, ARKANSAS	.20	.39	.53	.65	.99	1.18	1.21	1.25	1.28	1.27	1.30	1.30
	DATE	21	21	21	21	21	21	21	21	21	21	21	21
JUL	LITTLE ROCK, ARKANSAS	.15	.29	.38	.48	.42	.59	.49	.41	.43	.45	.45	.45
	DATE	15	15	15	15	15	15	15	15	15	15	15	15
AUG	LITTLE ROCK, ARKANSAS	.70	.95	1.15	1.31	1.30	1.32	1.42	1.53	1.53	1.53	1.53	1.53
	DATE	22	22	22	22	22	22	22	22	22	22	22	22
SEP	LITTLE ROCK, ARKANSAS	.17	.25	.32	.35	.41	.55	.60	.65	.68	.65	1.05	1.10
	DATE	12	12	12	12	12	12	12	12	12	12	12	12
OCT	LITTLE ROCK, ARKANSAS	.26	.35	.36	.37	.64	.68	.73	.78	.83	.93	1.03	1.14
	DATE	30	30	30	30	30	30	30	30	30	30	30	30
NOV	LITTLE ROCK, ARKANSAS	.15	.26	.27	.28	.29	.32	.35	.37	.37	.38	.40	.41
	DATE	01	01	01	01	01	01	01	01	01	01	01	01
DEC	LITTLE ROCK, ARKANSAS	.14	.18	.21	.25	.34	.40	.55	.70	.75	.82	.90	.97
	DATE	23	23	23	23	23	23	23	23	23	23	23	23
YEAR	MONTH	.50	.93	.97	1.15	1.30	1.30	1.42	1.51	1.53	1.57	1.60	1.60

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	90	120	150	180	
JAN	BAKERSFIELD, CALIFORNIA	.05	.08	.10	.12	.19	.25	.31	.34	.37	.38	.42	.42
	DATE	29	29	15	15	15	15	15	15	15	15	15	15
FEB	BAKERSFIELD, CALIFORNIA	.03	.04	.06	.07	.09	.12	.16	.21	.26	.30	.33	.33
	DATE	22	22	22	22	20	20	20	20	20	20	20	20
MAR	BAKERSFIELD, CALIFORNIA	.07	.11	.14	.18	.20	.21	.22	.22	.22	.22	.22	.22
	DATE	14	14	14	14	14	14	14	14	14	14	14	14
APR	BAKERSFIELD, CALIFORNIA	.10	.15	.12	.12	.13	.15	.15	.15	.15	.15	.15	.15
	DATE	01	01	01	01	01	01	01	01	01	01	01	01
MAY	BAKERSFIELD, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
JUN	BAKERSFIELD, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
JUL	BAKERSFIELD, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
AUG	BAKERSFIELD, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
SEP	BAKERSFIELD, CALIFORNIA	.10	.10	.10	.11	.13	.14	.15	.18	.18	.18	.18	.18
	DATE	30	30	30	30	24	24	24	24	24	24	24	24
OCT	BAKERSFIELD, CALIFORNIA	.03	.05	.05	.06	.09	.11	.15	.16	.16	.18	.20	.20
	DATE	20	20	20	20	20	20	20	20	20	20	20	20
NOV	BAKERSFIELD, CALIFORNIA	.01	.02	.02	.03	.04	.05	.07	.07	.08	.09	.11	.12
	DATE	17	17	17	17	17	17	17	17	17	17	17	17
DEC	BAKERSFIELD, CALIFORNIA	.07	.08	.09	.09	.10	.10	.10	.16	.17	.17	.17	.17
	DATE	21	21	21	21	21	21	21	21	21	21	21	21
YEAR	MONTH	.13	.18	.18	.20	.25	.31	.34	.37	.38	.42	.42	.42

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	16	20	30	45	60	90	100	120	150	180
JAN	BISHOP, CALIFORNIA	.05	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
	DATE	20	20	20	20	20	20	20	20	20	20	20	20
FEB	BISHOP, CALIFORNIA	.04	.04	.05	.07	.09	.12	.14	.16	.20	.20	.22	.25
	DATE	20	20	20	20	20	20	20	20	20	20	20	20
MAR	BISHOP, CALIFORNIA	.02	.03	.04	.05	.07	.08	.07	.10	.12	.12	.12	.13
	DATE	27	27	27	27	27	27	27	27	27	27	27	27
APR	BISHOP, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
MAY	BISHOP, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
JUN	BISHOP, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
JUL	BISHOP, CALIFORNIA	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.02
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
AUG	BISHOP, CALIFORNIA	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	DATE	00	00	00	00	00	00	00	00	00	00	00	00
SEP	BISHOP, CALIFORNIA	.02	.03	.04	.05	.06	.07	.09	.10	.11	.11	.11	.11
	DATE	24	24	24	24	24	24	24	24	24	24	24	24
OCT	BISHOP, CALIFORNIA	.01	.02	.02	.02	.02	.02	.03	.03	.04	.04	.04	.04
	DATE	01	01	01	01	01	01	01	01	01	01	01	01
NOV	BISHOP, CALIFORNIA	.01	.02	.03	.04	.04	.04	.04	.04	.04	.04	.04	.04
	DATE	03	03	03	03	03	03	03	03	03	03	03	03
DEC	BISHOP, CALIFORNIA	.03	.04	.05	.08	.10	.12	.14	.17	.20	.22	.24	.24
	DATE	24	24	24	24	24	24	24	24	24	24	24	24
YEAR	MONTH	.03	.04	.05	.08	.10	.12	.14	.17	.20	.22	.24	.24

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	90	120	150	180	
JAN	BLUE JAVAN, CALIFORNIA	.14	.19	.23	.24	.24	.35	.46	.58	.74	.87	1.05	1.22
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
FEB	BLUE JAVAN, CALIFORNIA	.04	.07	.10	.12	.15	.18	.23	.30	.37	.43	.54	.61
	DATE	05	05	05	05	05	05	05	05	05	05	05	05
MAR	BLUE JAVAN, CALIFORNIA	.05	.09	.12	.16	.19	.26	.34	.38	.42	.44	.54	.54
	DATE	27	27	27	27	27	27	27	27	27	27	27	27
APR	BLUE JAVAN, CALIFORNIA	.06	.07	.11	.12	.13	.16	.22	.30	.36	.47	.58	.61
	DATE	26	26	26	26	26	26	26	26	26	26	26	26
MAY	BLUE JAVAN, CALIFORNIA	.11	.21	.22	.23	.23	.24	.27	.34	.39	.48	.57	.61
	DATE	04	04	04	04	04	04	04	04	04	04	04	04
JUN	BLUE JAVAN, CALIFORNIA	.02	.03	.04	.05	.05	.05	.06	.06	.06	.06	.06	.06
	DATE	26	26	26	26	26	26	26	26	26	26	26	26
JUL	BLUE JAVAN, CALIFORNIA	.03	.05	.04	.07	.09	.14	.17	.17	.23	.24	.30	.30
	DATE	21	21	21	21	21	21	21	21	21	21	21	21
AUG	BLUE JAVAN, CALIFORNIA	.12	.12	.13	.15	.16	.21	.26	.24	.26	.26	.26	.26
	DATE	28	28	28	28	28	28	28	28	28	28	28	28
SEP	BLUE JAVAN, CALIFORNIA	.03	.03	.03	.03	.03	.04	.06	.07	.07	.07	.07	.07
	DATE	26	26	26	26	26	26	26	26	26	26	26	26
OCT	BLUE JAVAN, CALIFORNIA	.13	.16	.14	.19	.23	.29	.38	.45	.59	.69	.77	.89
	DATE	13	13	13	13	13	13	13	13	13	13	13	13
NOV	BLUE JAVAN, CALIFORNIA	.06	.07	.11	.12	.14	.18	.24	.30	.37	.43	.49	.54
	DATE	26	26	26	26	26	26	26	26	26	26	26	26
DEC	BLUE JAVAN, CALIFORNIA	.09	.14	.20	.22	.24	.30	.40	.42	.54	.60	.65	.65
	DATE	30	30	30	30	30	30	30	30	30	30	30	30
YEAR	MONTH	.14	.21	.23	.24	.24	.35	.46	.58	.74	.87	1.05	1.22

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	90	120	150	180	
JAN	EUROMA, CALIFORNIA	.30	.43	.46	.49	.54	.62	.68	.77	.77	.79	.79	.79
	DATE	12	12	12	12	12	12	12	12	12	12	12	12
FEB	EUROMA, CALIFORNIA	.09	.11	.15	.14	.14	.19	.21	.24	.32	.35	.37	.42
	DATE	29	29	29	29	29	29	29	29	29	29	29	29
MAR	EUROMA, CALIFORN												





MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

Table for ALABAMA, COLORADO, GRAND JUNCTION, COLORADO, and HARTFORD, CONNECTICUT. Columns include month, day, and maximum precipitation in inches (5 to 180 minutes).

Table for COLORADO SPRINGS, COLORADO, PUEBLO, COLORADO, and WILMINGTON, DELAWARE. Columns include month, day, and maximum precipitation in inches (5 to 180 minutes).

Table for DENVER, COLORADO, BRIDGEPORT, CONNECTICUT, APALACHEE, FLORIDA, and HARTFORD, CONNECTICUT. Columns include month, day, and maximum precipitation in inches (5 to 180 minutes).



# MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1970

Maximum precipitation in inches (5 to 180 minutes)																
	5	10	15	20	30	45	60	90	100	120	150	180				
<b>DAYTONA BEACH, FLORIDA</b>																
JAN	.26	.42	.58	.78	.85	.93	1.04	1.15	1.32	1.36	1.41	1.53				
DATE	21	02	02	02	02	02	02	02	02	02	02	02				
TIME	1449	1315	1320	1325	1335	1348	1400	1408	1410	1410	1415	1420				
FEB	.23	.18	.39	.40	.42	.45	.47	.47	.47	.47	.47	.50				
DATE	24	24	24	24	24	24	24	24	24	24	24	24				
TIME	1915	1915	1914	1925	1945	1947	2003	2025	2030	2030	2030	1830				
MAR	.22	.37	.42	.44	.45	.46	.48	1.01	1.23	1.45	1.65	1.81				
DATE	05	05	05	05	05	05	05	05	05	05	05	05				
TIME	1915	1915	1915	1915	1930	1930	1930	1930	1930	1930	1930	1930				
APP	.19	.65	.67	.72	.77	.78	.79	.79	.79	.80	.82	.84				
DATE	14	14	14	14	14	14	14	14	14	14	14	14				
TIME	0625	0435	0435	0400	0500	0705	0700	0700	0700	0820	0850	0920				
MAY	.32	.54	.55	.50	.69	.76	.84	.86	.96	1.01	1.24	1.85				
DATE	09	09	09	09	09	09	09	09	09	09	09	09				
TIME	1455	1500	1502	1505	0800	0800	0800	0800	0800	0800	0800	1130				
JUN	.23	.45	.51	.68	.80	.89	.95	.97	.97	.97	.97	.97				
DATE	05	05	05	05	05	05	05	05	05	05	05	05				
TIME	1445	1450	1450	1500	1510	1520	1525	1525	1525	1525	1525	1525				
JUL	.36	.70	.91	1.25	1.55	1.74	1.81	1.85	1.88	1.95	2.04	2.22				
DATE	11	12	12	12	12	12	12	12	12	12	12	12				
TIME	1220	1550	1555	1600	1612	1607	1627	1645	1620	2117	2150	2230				
AUG	.95	.62	.85	1.30	1.45	1.55	1.55	1.55	1.55	1.55	1.55	1.55				
DATE	08	08	08	08	08	08	08	08	08	08	08	08				
TIME	1010	1010	1015	1020	1030	1045	1051	1051	1051	1051	1051	1300				
SEP	.50	.90	1.05	1.18	1.32	1.58	1.92	2.10	2.16	2.37	2.17	2.17				
DATE	11	12	12	12	12	12	12	12	12	12	12	12				
TIME	1553	1558	1600	1618	1618	1635	1650	1710	1730	1735	1735	1735				
OCT	.33	.42	.47	.44	.53	.54	.57	.72	.78	.80	.80	.80				
DATE	11	12	12	12	12	12	12	12	12	12	12	12				
TIME	1748	1418	1420	1425	1410	1815	0300	0320	0335	0405	0405	0405				
NOV	.44	.74	.90	.95	1.34	1.77	2.04	2.52	2.79	2.88	3.06	3.08				
DATE	02	02	02	02	02	02	02	02	02	02	02	02				
TIME	0635	0638	0635	0635	0635	0635	0635	0635	0635	0635	0635	0635				
DEC	.40	.66	.67	.67	.11	.12	.17	.18	.20	.21	.22	.21				
DATE	21	21	21	21	21	21	21	21	21	21	21	21				
TIME	2240	2240	2240	2240	2240	2240	2240	2254	2314	2305	0005					
YEAR	.50	.90	1.05	1.30	1.55	1.77	2.04	2.52	2.79	2.88	3.06	3.08				
MONTH	09	09	08	07	11	11	11	11	11	11	11	11				

Maximum precipitation in inches (5 to 180 minutes)																
	5	10	15	20	30	45	60	90	100	120	150	180				
<b>JACKSONVILLE, FLORIDA</b>																
JAN	.14	.18	.27	.33	.42	.53	.63	.77	.93	1.06	1.14	1.19				
DATE	20	20	20	20	20	20	20	20	20	20	20	20				
TIME	2111	2103	2110	2112	2111	2113	2113	2113	2113	2113	2113	2113				
FEB	.00	.55	.78	.85	1.11	1.15	1.30	1.35	1.36	1.37	1.37	1.43				
DATE	25	25	25	25	25	25	25	25	25	25	25	25				
TIME	1504	1504	1504	1504	1520	1520	1520	1520	1520	1520	1520	1520				
MAR	.09	.09	.09	.09	.11	.12	.13	.15	.17	.20	.22	.26				
DATE	04	04	04	04	04	04	04	04	04	04	04	04				
TIME	2103	2103	2103	2103	2122	2124	0944	0954	1011	1052	1052	0957				
APP	.26	.40	.48	.54	.62	.65	.71	.81	.88	.91	.88	.91				
DATE	25	25	25	25	25	25	25	25	25	25	25	25				
TIME	2354	2357	2359	2359	0701	0714	0751	0811	0831	0901	0931					
MAY	.34	.64	.85	1.14	1.38	1.69	1.75	1.82	1.83	1.83	1.87	1.83				
DATE	11	11	11	11	11	11	11	11	11	11	11	11				
TIME	1503	1506	1511	1515	1523	1538	1553	1558	1608	1628	1658	1728				
JUN	.25	.49	.61	.77	.96	1.33	1.63	1.68	1.61	1.98	2.07	2.31				
DATE	15	14	15	15	15	15	15	15	15	15	15	15				
TIME	0954	0944	0957	1004	1013	1008	1010	1037	1100	1120	1138	1121				
JUL	.28	.51	.60	.61	.76	.85	.85	.85	.85	.86	.86	.86				
DATE	07	07	07	07	07	07	07	07	07	07	07	07				
TIME	1236	1251	1242	1247	1257	1312	1312	1312	1312	1312	1312	1532				
AUG	.49	.67	.82	.99	1.44	1.84	1.87	1.91	1.92	1.95	1.98	2.75				
DATE	05	05	05	05	05	05	05	05	05	05	05	05				
TIME	1734	1737	1739	1742	1748	1801	1816	1836	1857	1914	1948	1818				
SEP	.30	.48	.61	.83	1.10	1.46	1.56	2.08	2.16	2.23	2.29	2.33				
DATE	11	12	12	12	12	12	12	12	12	12	12	12				
TIME	1546	1548	1553	1555	1602	1615	1608	1620	1620	1620	1620	1620				
OCT	.19	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22				
DATE	10	10	10	10	10	10	10	10	10	10	10	10				
TIME	1355	1402	1402	1402	1402	1402	1402	1402	1402	1402	1402	1402				
NOV	.21	.45	.61	.86	.51	.64	.61	.64	.70	.78	.80	.87				
DATE	07	07	07	07	07	07	07	07	07	07	07	07				
TIME	1612	1615	1614	1614	1616	1620	1634	1658	1755	1755	1804	1810				
DEC	.15	.20	.22	.24	.37	.47	.56	.64	.72	.75	.80	.83				
DATE	06	06	06	06	06	06	06	06	06	06	06	06				
TIME	1409	1414	1417	1424	1434	1449	1504	1523	1544	1600	1655	1701				
YEAR	.49	.67	.85	1.16	1.49	1.69	2.06	2.18	2.23	2.29	2.33	2.75				
MONTH	08	08	05	05	09	05	09	09	09	09	09	08				

Maximum precipitation in inches (5 to 180 minutes)																
	5	10	15	20	30	45	60	90	100	120	150	180				
<b>KEY WEST, FLORIDA</b>																
JAN	.31	.33	.34	.37	.38	.40	.41	.42	.42	.42	.42	.47				
DATE	21	21	21	21	21	21	21	21	21	21	21	21				
TIME	0625	0630	0635	0640	0650	0650	0650	0650	0650	0650	0650	1600				
FEB	.07	.11	.17	.22	.24	.25	.28	.47	.51	.65	.65	.75				
DATE	07	07	07	07	07	07	07	07	07	07	07	07				
TIME	1904	1904	1911	1914	1913	1928	1943	2003	2023	2023	2023	2023				
MAR	.14	.18	.25	.28	.35	.45	.48	.52	.54	.58	.58	.				

MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

Table for Atlanta, Georgia showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Rome, Georgia showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Savannah, Georgia showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Macon, Georgia showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Columbus, Georgia showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Marietta, Georgia showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Boise, Idaho showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Lewis, Idaho showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.

Table for Pocatello, Idaho showing maximum precipitation in inches (5 to 180 minutes) for years 1970-1979. Columns include year, month, and precipitation values for various durations.







MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

Table for INDIANAPOLIS, INDIANA. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for SOUTH BEND, INDIANA. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for DES MOINES, IOWA. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for DUBUQUE, IOWA. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for SIOUX CITY, IOWA. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for WATERLOO, IOWA. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for CONCORDIA, KANSAS. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for DODGE CITY, KANSAS. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for GOODLAND, KANSAS. Columns: Date (5-180), Max precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.





MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1970

Table for SHREVEPORT, LOUISIANA. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for CARHOUDE, MASSACHUSETTS. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for PORTLAND, MASSACHUSETTS. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for BALTIMORE, MARYLAND. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for BLUE HILL, MASSACHUSETTS. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for BOSTON, MASSACHUSETTS. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for ALPHEA, MICHIGAN. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for DETROIT, MICHIGAN METRO. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for FLINT, MICHIGAN. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.



MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

Table for Grand Rapids, Michigan. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for Houghton Lake, Michigan. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for Lansing, Michigan. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for Marquette, Michigan. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for Muskegon, Michigan. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for Sault Ste. Marie, Michigan. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for Duluth, Minnesota. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for International Falls, Minnesota. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for Minn. St. Paul, Minnesota. Columns: Date, 5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180. Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1970

Table for ROCHESTER, MINNESOTA. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for SAINT CLOUD, MINNESOTA. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for JACKSON, MISSISSIPPI. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for MERIDIAN, MISSISSIPPI. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for COLUMBIA, MISSISSIPPI. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for KANSAS CITY, MISSOURI INTL AP. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for ST. LOUIS, MISSOURI. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for SPRINGFIELD, MISSOURI. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.

Table for BILLINGS, MONTANA. Columns: Maxium precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, YEAR, MONTH.



# MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

CLASSIFICATION	Maximum precipitation in inches (5 to 180 minutes)										
	5	10	15	20	30	45	60	90	120	150	180
JAN 7	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
FEB 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MAR 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
APR 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MAY 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
JUN 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
JUL 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
AUG 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SEP 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
OCT 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
NOV 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
DEC 01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
YEAR MONTH	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

CLASSIFICATION	Maximum precipitation in inches (5 to 180 minutes)										
	5	10	15	20	30	45	60	90	120	150	180
JAN 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
FEB 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
MAR 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
APR 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
MAY 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
JUN 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
JUL 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
AUG 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
SEP 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
OCT 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
NOV 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
DEC 02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
YEAR MONTH	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

CLASSIFICATION	Maximum precipitation in inches (5 to 180 minutes)										
	5	10	15	20	30	45	60	90	120	150	180
JAN 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
FEB 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MAR 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
APR 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MAY 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
JUN 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
JUL 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
AUG 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SEP 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
OCT 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
NOV 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
DEC 03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
YEAR MONTH	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01



# MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	80	100	120	150	180
NORTH PLATTE, NEBRASKA	JAN	.01	.02	.03	.04	.06	.08	.11	.13	.15	.17	.19	.21
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	1405	1410	1415	1420	1430	1438	1438	1505	1510	1540	1610	
FEB	JAN	.01	.02	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	DATE	27	27	27	27	27	27	27	27	27	27	27	27
	TIME	1150	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158
MAR	JAN	.03	.06	.08	.09	.13	.15	.16	.22	.25	.26	.31	.38
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	0921	0930	0932	0932	0930	0945	1000	1020	1040	1100	1435	1500
APR	JAN	.11	.14	.15	.16	.16	.16	.20	.23	.26	.30	.37	.42
	DATE	17	26	26	26	26	26	26	26	26	26	26	26
	TIME	2108	1659	1704	1706	1719	0259	0300	0300	0300	0300	0300	0300
MAY	JAN	.18	.22	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	0148	0153	0153	0200	0208	0228	0258	0303	2303	2313	2324	2313
JUN	JAN	.27	.31	.42	.50	.55	.57	.57	.58	.67	.72	.73	.73
	DATE	17	17	17	17	17	17	17	17	17	17	17	17
	TIME	0135	0139	0144	0149	0159	0210	0219	0215	0236	0255	0317	0317
JUL	JAN	.52	.80	1.10	1.10	1.28	1.68	1.68	1.90	1.91	1.92	1.93	1.95
	DATE	16	27	27	27	27	27	27	27	27	27	27	27
	TIME	1350	0053	0058	0058	0058	0106	0125	0144	0202	0206	0236	0236
AUG	JAN	.44	.46	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47
	DATE	15	15	15	15	15	15	15	15	15	15	15	15
	TIME	1353	1358	1401	1408	1414	1414	1414	1414	1414	1414	1414	1414
SEP	JAN	.04	.05	.06	.07	.07	.07	.08	.09	.12	.13	.15	.15
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
	TIME	2133	2133	2133	2132	2130	2120	0218	0218	0228	0622	0622	0622
OCT	JAN	.03	.06	.06	.11	.12	.14	.20	.28	.35	.39	.44	.49
	DATE	21	21	21	21	21	21	21	21	21	21	21	21
	TIME	1335	1320	1325	1330	1340	1345	1400	1417	1440	1445	1515	1545
NOV	JAN	.07	.10	.12	.15	.22	.27	.34	.48	.59	.68	.77	.84
	DATE	04	04	04	04	04	04	04	04	04	04	04	04
	TIME	0125	0125	0125	0124	0125	0141	0240	0240	0240	0245	0245	0245
DEC	JAN	.01	.01	.02	.02	.03	.04	.04	.07	.08	.09	.10	.10
	DATE	28	28	28	28	28	28	28	28	28	28	28	28
	TIME	1520	1525	1645	1650	1700	1715	1715	1700	1700	1700	1700	1830
YEAR	.52	.80	1.10	1.10	1.28	1.68	1.68	1.90	1.91	1.92	1.93	1.95	
MONTH	07	07	07	07	07	07	07	07	07	07	07	07	

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	80	100	120	150	180
OMAHA, NEBRASKA	JAN	.02	.02	.03	.04	.05	.06	.10	.12	.14	.18	.20	.24
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	2000	2000	2015	2020	2030	2045	2100	2120	2140	2200	2230	2300
FEB	JAN	.01	.01	.01	.02	.02	.03	.03	.04	.05	.06	.07	.09
	DATE	17	17	17	17	17	17	17	17	17	17	17	17
	TIME	0200	0210	0215	0220	0230	0245	0300	0320	0340	0400	0430	0500
MAR	JAN	.10	.14	.25	.27	.27	.27	.28	.35	.40	.45	.47	.49
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	1935	1945	1950	1955	1955	1955	2000	2300	2340	2359	2359	2359
APR	JAN	.07	.10	.14	.18	.21	.24	.26	.33	.33	.33	.33	.38
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
	TIME	1905	1915	1920	1925	1935	1935	1955	2005	1835	1835	2030	2030
MAY	JAN	.11	.13	.17	.20	.23	.25	.25	.31	.36	.46	.56	.68
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	1710	1710	1710	1640	1640	2307	0010	0010	0010	0010	0010	0010
JUN	JAN	.25	.30	.38	.42	.47	.53	.63	.73	.85	.97	.98	.98
	DATE	19	19	19	19	19	19	19	19	19	19	19	19
	TIME	1617	1617	1617	1617	1617	1617	1617	1617	1617	1617	1617	1607
JUL	JAN	.52	.51	.65	.70	.79	.82	.87	.87	.87	.92	.95	.97
	DATE	15	15	15	15	15	15	15	15	15	15	15	15
	TIME	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244
AUG	JAN	.25	.45	.55	.60	.63	.64	.65	.66	.66	.66	.66	.66
	DATE	09	09	09	09	09	09	09	09	09	09	09	09
	TIME	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017
SEP	JAN	.26	.46	.53	.54	.54	.55	.56	.60	.65	1.03	1.03	1.03
	DATE	02	02	02	02	02	02	02	02	02	02	02	02
	TIME	0015	0015	0015	0015	0015	0015	0015	0015	0015	0015	0015	0015
OCT	JAN	.34	.40	.65	.80	.84	.90	.93	.93	.98	.98	.98	.98
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	1813	1813	1813	1813	1813	1813	1813	1813	1813	1813	1813	1813
NOV	JAN	.07	.12	.14	.17	.24	.29	.33	.38	.44	.47	.50	.54
	DATE	21	21	21	21	21	21	21	21	21	21	21	21
	TIME	0915	0915	0915	0940	0940	0940	0940	0940	0940	0940	0940	0940
DEC	JAN	.02	.02	.04	.04	.04	.04	.04	.04	.05	.05	.05	.05
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	1810	1830	1830	1830	1830	1830	1830	1830	2015	2030	2030	2030
YEAR	.34	.40	.65	.80	.84	.90	.93	.93	.98	.98	.98	.98	
MONTH	07	07	07	07	07	07	07	07	07	07	07	07	

		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	18	20	30	45	60	80	100	120	150	180
SCOTTSBLUFF, NEBRASKA	JAN	.01	.02	.02	.02	.03	.04	.05	.06	.08	.10	.11	.11
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
	TIME	1946	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
FEB	JAN	.02	.02	.03	.03	.03	.04	.04	.04	.04	.04	.04	.04
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	1805	1810	1815	1820	1830	1845	1848	1848	1848	1848	1848	1848
MAR	JAN	.03	.05	.06	.08	.11	.15	.19	.23	.23	.23	.24	.24
	DATE	29	29	29	29	29	29	29	29	29	29	29	29
	TIME	1958	1958	1958	1958	1958	1958	2017	2017	2017	2017	2017	2017
APR	JAN	.03	.04	.05	.05	.05	.07	.08	.09	.10	.12	.13	.15
	DATE	10	10	10	10	10	10	10	10	10	10	10	10
	TIME	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240	2240
MAY	JAN	.01	.04	.05	.06	.06	.07	.09	.12	.15	.18	.20	.20
	DATE	18	18	18	18	18	18	18	18	18	18	18	18
	TIME	1803	1808	1813	1817	1817	1817	1817	1817	1817	1817	1817	1817
JUN	JAN	.16	.28	.33	.38	.44	.46	.46	.46	.55	.55	.55	.56
	DATE	27	27	27	27	27	27	27	27	27	27	27	27
	TIME	1747	1750	1750	1750	1750	1805	1805	2150	2120	2210	2210	2210
JUL	JAN	.32	.54	.70	.80	.97	1.12	1.20	1.26	1.27	1.28	1.28	1.28
	DATE	26	26	26	26	26	26	26	26	26	26	26	26
	TIME	2112	2116	2120	2124	2130	2146	2146	2146	2146	2146	2146	2146
AUG	JAN	.18	.25	.29	.32	.33	.34	.37	.41	.45	.48	.53	.54
	DATE	17	17	17	17	17	17	17	17	17	17	17	17
	TIME	2323	2328	2333	2338	2343	2348	0001	0028	0048	0113	0138	0208
SEP	JAN	.18	.20	.20	.21	.24	.25	.26	.26	.36	.40	.41	.41
	DATE	11	11	11	11	11	11	11	11	11	11	11	11
	TIME	2330	2332	2332	2332	2340	2346	0000	0000	2330	2346	0015	0045
OCT	JAN	.04	.04	.07	.08	.12	.17	.21	.28	.36	.39	.49	.59
	DATE	29	29	29	29	29	29	29	29	29	29	29	29
	TIME	0833	0833	0845	0845	0853	0913	0903					

MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1970

Table with 18 columns for months (JAN to DEC) and 18 rows for precipitation amounts (5 to 180 inches). It contains data for 18 different locations: Concord, New Hampshire; Atlantic City, New Jersey; Newark, New Jersey; Trenton, New Jersey; Albuquerque, New Mexico; Roswell, New Mexico; Albany, New York; and Binghamton, New York. Each cell contains a numerical value representing the maximum short duration precipitation for that month and amount.



MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

Table header for Buffalo, New York, showing maximum precipitation in inches (5 to 180 minutes).

Main data table for Buffalo, New York, with columns for month, day, and precipitation values for various durations.

Table header for New York, New York, showing maximum precipitation in inches (5 to 180 minutes).

Main data table for New York, New York, with columns for month, day, and precipitation values for various durations.

Table header for Rochester, New York, showing maximum precipitation in inches (5 to 180 minutes).

Main data table for Rochester, New York, with columns for month, day, and precipitation values for various durations.

Table header for Cape Hatteras, North Carolina, showing maximum precipitation in inches (5 to 180 minutes).

Main data table for Cape Hatteras, North Carolina, with columns for month, day, and precipitation values for various durations.

Table header for Charlotte, North Carolina, showing maximum precipitation in inches (5 to 180 minutes).

Main data table for Charlotte, North Carolina, with columns for month, day, and precipitation values for various durations.





MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1970

Table for Toledo, Ohio, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Youngstown, Ohio, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Oklahoma City, Oklahoma, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Tulsa, Oklahoma, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Astoria, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Burns, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.



MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1970

Table for Eugene, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Medford, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Pendleton, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Portland, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Salem, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Seaford, Summit, Oregon, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Allegheny, Pennsylvania, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Erie, Pennsylvania, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).

Table for Harrisburg, Pennsylvania, showing maximum precipitation in inches (5 to 180 minutes) for years 1968-1970. Columns include year, month, and duration (5, 10, 15, 20, 30, 45, 60, 90, 120, 150, 180 minutes).



MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

Table for Philadelphia, Pennsylvania, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Pittsburgh, Pennsylvania, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Providence, Rhode Island, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Wilkes-Barre-Scranton, Pennsylvania, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Block Island, Rhode Island, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Providence, Rhode Island (continued), showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Charleston, South Carolina, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Columbia, South Carolina, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

Table for Greenville-Spartanburg, South Carolina, showing maximum precipitation in inches (5 to 180 minutes) for each month from January to December.

MAXIMUM SHORT DURATION PRECIPITATION

YEAR 2079

Table for SIOUX FALLS, SOUTH DAKOTA. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, MONTH. Data values range from 0.0 to 1.77.

Table for BAPTIST CITY, SOUTH DAKOTA. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, MONTH. Data values range from 0.0 to 3.20.

Table for CHATTANOOGA, TENNESSEE. Columns: Maximum precipitation in inches (5 to 180 minutes). Rows: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC, MONTH. Data values range from 0.0 to 3.70.



MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1976

Table for Abilene, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for Amarillo, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for Austin, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for Brownsville, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for Corpus Christi, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for Dallas-Fort Worth, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for El Paso, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for Galveston, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.

Table for Houston, Texas, showing maximum precipitation in inches (5 to 180 minutes) for years 1950-1975. Columns include year, month, and precipitation values for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150, and 180 minutes.





# MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

		Maximum precipitation in inches (5 to 180 minutes)									
		5	10	20	30	45	60	90	120	150	180
<b>WICHITA FALLS, TEXAS</b>											
JAN	11	18	23	25	31	31	31	31	32	35	42
DATE	18	18	18	18	18	18	18	18	25	25	75
TIME	1400	1405	1410	1410	1410	1410	1410	1410	1410	1410	1330
FEB	04	09	12	13	15	20	23	28	32	33	38
DATE	24	24	24	24	24	24	24	24	24	24	24
TIME	0405	0615	0820	0825	0835	0850	0900	0925	0945	1005	1105
MAR	22	23	25	32	37	43	47	49	63	70	83
DATE	22	22	22	22	22	22	22	22	22	22	22
TIME	0115	0210	0215	0210	0140	0150	0210	0210	0745	0310	0405
APR	35	48	50	52	53	53	55	55	60	61	63
DATE	10	10	10	10	10	10	10	10	10	10	10
TIME	1815	1820	1820	1820	1815	1805	1800	1800	1520	1620	1340
MAY	148	110	124	171	179	192	271	299	304	312	324
DATE	20	20	20	20	20	20	20	20	20	20	21
TIME	2145	2145	2150	2150	2150	2205	2230	2250	2310	2330	0000
JUN	25	45	51	70	97	121	151	159	167	201	243
DATE	05	05	05	05	05	05	05	05	05	05	05
TIME	0740	0750	0755	0800	0815	0830	0845	0900	0900	0950	0850
JUL	48	42	48	48	42	29	26	34	40	41	52
DATE	05	05	05	05	05	05	05	05	05	05	05
TIME	0728	0732	0745	0820	0830	0820	0740	0720	0740	0800	0950
AUG	22	22	22	22	22	22	22	22	22	22	22
DATE	20	20	20	20	20	20	20	20	20	20	20
TIME	1605	1605	1605	1605	1557	1605	1605	1605	1605	1605	1605
SEP	01	02	03	03	03	03	03	03	03	03	03
DATE	02	02	02	02	02	02	02	02	02	02	02
TIME	0705	0710	0715	0715	0715	0715	0715	0715	0715	0715	0715
OCT	27	37	42	56	59	63	66	66	67	68	70
DATE	15	15	15	15	15	15	15	15	15	15	15
TIME	1151	1151	1201	1201	1216	1231	1246	1250	1250	1250	1250
NOV	137	120	125	28	31	41	57	57	57	57	58
DATE	20	20	20	20	20	20	20	20	20	20	20
TIME	1505	1510	1544	2025	2030	2050	2115	2145	2205	2235	2305
DEC	01	01	01	01	01	01	01	01	01	01	01
DATE	28	28	28	28	28	28	28	28	28	28	28
TIME	0155	0110	0110	0110	0110	0110	1025	1025	1025	1025	1025
YEAR	66	110	124	171	179	192	271	299	304	312	324
MONTH	05	05	05	05	05	05	05	05	05	05	05

		Maximum precipitation in inches (5 to 180 minutes)										
		5	10	15	20	30	45	60	90	120	150	180
<b>MILFORD, UTAH</b>												
JAN	02	02	03	03	04	04	04	05	06	07	08	10
DATE	11	17	17	17	17	17	17	17	06	06	06	06
TIME	1350	1350	1350	1350	1350	1350	1350	0010	0010	0010	0125	0155
FEB	05	06	07	09	14	16	17	17	17	17	17	18
DATE	23	23	23	23	23	23	23	23	23	23	23	23
TIME	1510	1514	1846	1856	1910	1916	1931	1931	1931	1931	1931	1931
MAR	05	07	09	11	14	15	17	18	19	20	24	31
DATE	28	28	28	28	28	28	28	28	28	28	28	28
TIME	0626	0631	0636	0641	0651	0701	0701	0701	0701	0701	0701	0701
APR	06	09	10	13	14	14	14	14	20	24	30	37
DATE	29	09	09	09	09	09	09	09	09	09	09	09
TIME	1955	1750	1755	1800	2035	2050	2110	2130	2140	2220	2240	2300
MAY	06	12	16	24	29	34	35	35	35	35	35	35
DATE	10	02	02	02	02	02	02	02	02	02	02	02
TIME	1113	0032	0032	0032	0047	0051	0051	0051	0051	0057	0057	0057
JUN	T	T	T	T	T	T	T	T	T	T	T	T
DATE	T	T	T	T	T	T	T	T	T	T	T	T
TIME	T	T	T	T	T	T	T	T	T	T	T	T
JUL	01	01	01	01	01	01	02	02	02	02	03	03
DATE	21	21	21	21	21	21	20	20	20	20	21	21
TIME	1109	1109	1109	1109	1109	1109	1109	1109	1109	1109	0045	0045
AUG	10	13	15	15	15	15	15	15	16	16	16	16
DATE	19	12	12	12	12	12	12	12	12	12	12	12
TIME	2000	1526	1531	1531	1531	1531	1531	1646	1646	1646	1646	1646
SEP	T	T	T	T	T	T	T	T	T	T	T	T
DATE	T	T	T	T	T	T	T	T	T	T	T	T
TIME	T	T	T	T	T	T	T	T	T	T	T	T
OCT	02	03	05	06	08	11	16	20	24	25	28	33
DATE	20	20	20	20	20	20	20	20	20	20	20	20
TIME	1240	1245	1250	1255	1305	1320	1335	1355	1415	1435	1435	1435
NOV	01	02	03	04	06	08	10	14	17	20	22	27
DATE	10	10	10	10	10	10	10	10	10	10	10	10
TIME	1015	1020	1025	1030	0645	0950	0715	0720	0720	0720	0730	0730
DEC	01	02	03	04	05	07	08	09	13	13	14	15
DATE	22	21	21	21	21	21	21	21	21	21	21	21
TIME	1132	1814	1819	1824	1834	1847	1847	1847	1847	1847	1847	1847
YEAR	10	13	15	15	15	15	15	15	15	15	15	15
MONTH	08	08	08	08	08	08	08	08	08	08	08	08

		Maximum precipitation in inches (5 to 180 minutes)										
		5	10	15	20	30	45	60	90	120	150	180
<b>SALT LAKE CITY, UTAH</b>												
JAN	03	04	06	07	09	10	11	13	13	14	14	14
DATE	11	11	11	11	11	11	11	11	17	17	17	17
TIME	1815	1815	1815	1815	1815	1815	1815	1815	2006	2021	2024	2024
FEB	03	04	05	06	08	10	12	16	17	18	18	18
DATE	25	25	25	25	25	25	25	25	25	25	25	25
TIME	1541	1541	1630	1639	1650	1650	1650	1650	1650	1650	1708	1728
MAR	03	05	05	05	07	08	09	10	11	11	11	11
DATE	30	30	30	30	30	30	30	30	30	30	30	30
TIME	1140	1145	1145	1145	1622	1700	1712	1712	1728	1728	1728	1728
APR	03	05	06	06	08	11	11	11	11	11	11	11
DATE	25	25	25	25	25	25	25	25	25	25	25	25
TIME	1356	1356	1401	1401	1421	1424	1424	1424	0306	0306	0306	0306
MAY	06	07	08	09	10	12	13	13	13	13	13	13
DATE	27	27	27	27	27	27	27	27	07	07	07	07
TIME	1454	1451	1504	1504	1624	1624	1624	1624	1515	1515	1515	1515
JUN	07	08	08	09	11	11	11	11	11	11	11	11
DATE	18	18	18	18	18	18	18	18	18	18	18	18
TIME	0203	0126	0128	0128	0211	0202	0211	0211	0221	0236	0236	0236
JUL	07	14	19	21	22	24	24	24	24	24	24	24
DATE	22	22	22	22	22	22	22	22	22	22	22	22
TIME	1752	1754	1800	1804	1814	1829	1833	1833	1833	1833	1833	1833
AUG	11	12	12	12	15	15	15	15	15	15	15	15
DATE	07	07	07	07	07	07	07	07	07	07	07	07
TIME	1408	1407	1409	1409	1405	1405	1405	1405	1405	1405	1405	1405
SEP	02	02	02	02	03	03	03	03	03	03	03	03
DATE	18	18	18	18	18	18	18	18	18	18	18	18
TIME	0100	0100	0100	0100	0126	0126	0130	0130	0130	0130	0130	0130
OCT	03	04	06	07	11	14	15	16	20	23	23	23
DATE	17	17	17	17	17	17	17	17	19	19	19	19
TIME	1805	1805	0800	0826	0826	0826	0840	0840	0307	0307	0307	0307
NOV	04	06	08	10	10	10	10	10	10	10	10	10
DATE	23	23	23	23	23	23	23	23	23	23	23	23
TIME	2332	2327	2347	2344	2344	2350	2305	2329	2350	0005	0040	0110
DEC	02	03	04	05	07	08	09	10	11	11	11	11
DATE	21	21	21	21	21	21	21	21	21	21	21	21
TIME	1133	1138	1138	1127	1133	1138	1138	1245	1305	1315	1400	1400
YEAR	13	14	19	21	22	24	24	24	24	24	24	24
MONTH	08	07	07	07	07	07	07	07	07	07	07	07

|--|--|







MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

		Maximum precipitation in inches (5 to 180 minutes)																									
		5	10	15	20	30	45	60	90	120	150	180															
CHARLESTON, WEST VIRGINIA																											
JAN	09	13	14	15	16	17	20	25	28	31	36	40															
DATE	01	01	01	01	01	01	01	01	01	01	01	01															
TIME	1552	1559	1559	1603	1615	0607	0611	0631	0648	0715	0730	0730															
FEB	07	12	19	22	24	29	40	55	55	55	57	58															
DATE	23	23	04	04	04	04	04	04	04	04	04	04															
TIME	1614	1623	1623	1628	1628	1628	1628	1628	1628	1642	1645	1646	1714														
MAR	11	17	19	21	22	26	36	36	38	40	44	47															
DATE	23	23	23	23	23	23	23	23	23	23	23	23															
TIME	1926	1920	1920	1920	1920	1920	1927	1935	1958	2015	2025	2115															
APR	11	15	17	20	23	27	28	32	34	36	41	47															
DATE	13	13	04	04	04	04	04	04	04	04	04	04															
TIME	2105	2110	1410	1415	1415	1415	1415	1450	1455	1515	0930	1000															
MAY	10	11	11	14	19	23	25	28	32	35	41	45															
DATE	27	12	12	23	23	23	23	27	27	24	24	24															
TIME	1632	1730	1730	1340	1345	1345	1400	1745	1805	0100	0100	0145															
JUN	20	32	36	44	55	55	55	55	55	55	55	57															
DATE	30	10	10	01	01	01	01	01	01	01	01	01															
TIME	2015	0200	0205	1300	1130	1130	1130	1130	1130	1130	1130	1130															
JUL	30	40	70	82	83	88	88	80	90	90	91	92															
DATE	12	12	12	12	12	12	12	12	12	12	12	12															
TIME	2014	2028	2030	2033	2040	2042	2054	2100	2100	2100	2100	2100															
AUG	30	52	56	56	62	64	65	67	68	68	68	68															
DATE	19	19	19	19	19	19	19	19	19	19	19	19															
TIME	0024	0028	0031	0030	0040	0045	0055	0120	0145	0200	0230	0300															
SEP	11	19	20	29	40	56	66	76	86	91	98	106															
DATE	21	21	21	21	21	21	21	21	21	21	21	21															
TIME	1427	1427	1429	1450	1445	1458	1500	1510	1514	1538	1528	1530															
OCT	09	10	12	13	16	17	24	30	36	43	53	59															
DATE	10	10	09	09	06	06	09	09	09	09	09	09															
TIME	1433	1435	0815	0920	1955	2000	1900	1940	2000	2000	2030	2030															
NOV	20	27	30	35	40	47	47	49	52	60	74	83															
DATE	26	26	26	26	27	27	27	27	27	24	24	24															
TIME	0017	0020	0023	0037	0052	0107	0127	0147	0415	0410	0428	0450															
DEC	05	07	09	11	12	16	21	26	35	39	44	45															
DATE	12	12	12	12	12	12	12	12	12	12	12	12															
TIME	1531	1535	1543	1548	1558	1613	1700	1717	1708	1728	1758	1828															

		Maximum precipitation in inches (5 to 180 minutes)																									
		5	10	15	20	30	45	60	90	120	150	180															
ELKINS, WEST VIRGINIA																											
JAN	04	08	10	14	16	22	27	33	38	47	54	55															
DATE	20	20	20	20	20	20	20	20	21	21	21	21															
TIME	2335	2340	2347	2340	2340	2340	2340	2325	1225	1230	1220	1247	1315														
FEB	05	07	08	11	13	15	15	17	21	23	27	32															
DATE	04	04	04	04	04	04	04	04	04	04	04	04															
TIME	1927	1930	1645	1645	1645	1934	1944	2007	1750	1811	1829	1802	1800														
MAR	04	06	07	10	14	17	17	18	21	23	24	28															
DATE	24	24	24	24	24	24	24	24	24	24	24	24															
TIME	1114	1116	1113	1113	1113	1117	1132	1151	0915	0925	0932	0932															
APR	07	08	10	15	20	28	34	40	44	44	44	47															
DATE	10	10	10	10	10	10	10	10	10	10	10	10															
TIME	1527	1532	2124	2132	2143	2150	2200	2213	2230	2237	2305	2305															
MAY	22	45	47	47	48	48	52	75	88	88	88	103															
DATE	12	12	12	12	12	12	12	12	12	12	12	12															
TIME	1450	1453	1455	1458	1458	1458	1458	1540	1600	1613	1623	1653	1739														
JUN	27	50	53	63	67	104	121	137	137	137	137	137															
DATE	16	16	16	16	16	16	16	16	16	16	16	16															
TIME	1334	1346	1346	1355	1446	1446	1446	1446	1446	1446	1446	1446	1446														
JUL	28	54	58	70	89	91	92	92	92	95	95	95															
DATE	16	16	16	16	16	16	16	16	16	16	16	16															
TIME	1831	1835	1835	1835	1845	1848	1848	1905	1930	1950	2010	2040	2110														
AUG	17	33	37	53	59	74	81	83	83	83	83	83															
DATE	01	01	01	01	01	01	01	01	01	01	01	01															
TIME	1628	1629	1631	1634	1647	1700	1715	1735	1758	1815	1845	1915															
SEP	20	50	50	51	51	51	51	52	52	53	76	76															
DATE	02	02	02	02	02	02	02	02	02	02	02	02															
TIME	1714	1722	1727	1731	1754	1811	1831	1851	0113	0143	0213	0213															
OCT	21	35	37	43	47	52	59	64	66	66	66	66															
DATE	02	02	02	02	02	02	02	02	02	02	02	02															
TIME	1714	1728	1726	1730	1730	1730	1729	1745	1745	1745	1745	1745															
NOV	10	17	20	24	28	35	44	55	73	76	78	80															
DATE	02	02	02	02	02	02	02	02	02	02	02	02															
TIME	0400	0337	0253	0253	0403	0403	0403	0403	0465	0507	0548	0613															
DEC	04	11	15	18	22	27	34	37	40	42	47	50															
DATE	25	25	25	25	25	25	25	25	25	25	25	25															
TIME	1929	1933	1938	1943	1953	2000	2023	2045	2105	2125	2155	2225															

		Maximum precipitation in inches (5 to 180 minutes)																									
		5	10	15	20	30	45	60	90	120	150	180															
HUNTINGTON, WEST VIRGINIA																											
JAN	04	07	08	08	11	14	18	21	24	27	31	36															
DATE	01	01	01	01	01	01	01	01	01	01	01	01															
TIME	1427	1432	1435	1440	2000	2000	2000	2000	2000	2000	2000	2030	2030														
FEB	07	12	13	15	22	26	32	41	42	42	42	47															
DATE	25	25	25	25	25	25	25	25	25	25	25	25															
TIME	1015	1015	1015	0958	0913	0914	1015	1015	1015	1015	1015	1015	1010														
MAR	14	16	17	18	21	23	26	40	45	47	47	49															
DATE	31	31	31	31	31	31	31	31	31	31	31	31															
TIME	2055	2055	2055	2055	1747	1747	1747	1747	1810	1825	1825	2220															
APR	17	28	31	35	38	40	41	42	42	42	42	47															
DATE	29	29	29	29	29	29	29	29	29	29	29	29															
TIME	2039	2039	2044	2049	2059	2109	2109	2149	2209	2229	2259	2329															
MAY	20	34	42	53	65	67	67	67	67	67	67	76															
DATE	31	31	31	31	31	31	31	31	31	31	31	31															
TIME	1810	1810	1810	1820	1830	1845	1900	1920	1940	2000	2025	2325															
JUN	58	69	74	75	105	110	146	147	148	149	154	154															
DATE	23	23	23	23	23	23	23	23	23	23	23	23															
TIME	1540	1540	1508	0842	0842	0842	0842	0842	0842	0842	0842	0842															
JUL	33	42	47	70	79	87	87	87	87	90	90	95															
DATE	24	24	24	24	24	24	24	24	24	24	24	24															
TIME	2353	1814	1820	1820	1820	1825	1835	1830	0118	0118	0118	0120	1820														
AUG	46	74	80	89	93	99	103	104	104	104	104	104															
DATE	10	10	10	10	10	10	10	10	10	10	10	10															
TIME	2225	2227	2227	2230	2240	2240	2240	2240	2300	2300	2300	2300	2300														
SEP	12	18	25	27	41	54	60	69	70	70	70	89															
DATE	24	24	24	24	24	24	24	24	24	24	24	24															
TIME	0430	0431	0430																								





MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1979

		Maximum precipitation in inches (5 to 180 minutes)										
		5	10	15	20	30	45	60	90	100	120	150
YAKUTAT, ALASKA												
JAN	04	07	08	09	10	14	20	26	31	37	44	50
FEB	03	04	05	06	07	09	12	15	17	21	25	28
MAR	02	02	02	03	03	03	03	03	03	03	03	03
APR	02	02	02	02	02	02	02	02	02	02	02	02
MAY	05	10	13	15	23	30	45	57	72	76	92	102
JUN	10	12	14	17	24	34	45	60	77	89	109	127
JUL	15	16	16	16	16	16	16	16	16	16	16	16
AUG	04	05	06	07	08	09	10	11	12	13	14	15
SEP	03	03	03	03	03	03	03	03	03	03	03	03
OCT	02	02	02	02	02	02	02	02	02	02	02	02
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	03	03	03	03	03	03	03	03	03	03	03	03
NILO, HAWAII												
JAN	22	38	41	40	70	85	95	113	151	164	178	186
FEB	39	72	03	136	198	246	08	353	391	414	459	478
MAR	20	20	20	20	20	20	20	20	20	20	20	20
APR	14	18	24	25	25	25	25	25	25	25	25	25
MAY	08	10	10	10	10	10	10	10	10	10	10	10
JUN	15	21	21	21	21	21	21	21	21	21	21	21
JUL	15	15	15	15	15	15	15	15	15	15	15	15
AUG	22	39	50	69	95	119	119	120	120	120	120	120
SEP	03	03	03	03	03	03	03	03	03	03	03	03
OCT	02	02	02	02	02	02	02	02	02	02	02	02
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	03	03	03	03	03	03	03	03	03	03	03	03
HONOLULU, HAWAII												
JAN	09	15	20	27	34	43	48	52	59	64	68	68
FEB	21	33	45	43	48	50	50	50	50	50	50	50
MAR	16	24	23	23	23	23	23	23	23	23	23	23
APR	05	06	07	07	07	07	07	07	07	07	07	07
MAY	01	04	04	04	04	04	04	04	04	04	04	04
JUN	03	05	06	07	08	09	10	11	12	13	14	15
JUL	02	02	02	02	02	02	02	02	02	02	02	02
AUG	02	02	02	02	02	02	02	02	02	02	02	02
SEP	01	01	01	01	01	01	01	01	01	01	01	01
OCT	01	01	01	01	01	01	01	01	01	01	01	01
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	01	01	01	01	01	01	01	01	01	01	01	01
KAPULANI, HAWAII												
JAN	17	29	32	36	47	55	60	67	73	83	94	107
FEB	14	21	25	31	39	51	72	85	101	105	114	119
MAR	09	09	09	09	09	09	09	09	09	09	09	09
APR	02	02	02	02	02	02	02	02	02	02	02	02
MAY	01	02	02	02	02	02	02	02	02	02	02	02
JUN	02	03	03	03	03	03	03	03	03	03	03	03
JUL	02	02	02	02	02	02	02	02	02	02	02	02
AUG	04	06	06	06	06	06	06	06	06	06	06	06
SEP	03	03	03	03	03	03	03	03	03	03	03	03
OCT	02	02	02	02	02	02	02	02	02	02	02	02
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	01	01	01	01	01	01	01	01	01	01	01	01
GUAM, PACIFIC												
JAN	14	23	33	42	50	57	60	62	62	62	62	62
FEB	13	14	14	14	14	14	14	14	14	14	14	14
MAR	10	10	10	10	10	10	10	10	10	10	10	10
APR	02	02	02	02	02	02	02	02	02	02	02	02
MAY	01	01	01	01	01	01	01	01	01	01	01	01
JUN	01	01	01	01	01	01	01	01	01	01	01	01
JUL	01	01	01	01	01	01	01	01	01	01	01	01
AUG	01	01	01	01	01	01	01	01	01	01	01	01
SEP	01	01	01	01	01	01	01	01	01	01	01	01
OCT	01	01	01	01	01	01	01	01	01	01	01	01
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	01	01	01	01	01	01	01	01	01	01	01	01
JOHNSON ISLAND, PACIFIC												
JAN	11	25	29	31	45	53	62	63	71	72	72	72
FEB	12	22	23	23	23	23	23	23	23	23	23	23
MAR	09	09	09	09	09	09	09	09	09	09	09	09
APR	02	02	02	02	02	02	02	02	02	02	02	02
MAY	01	01	01	01	01	01	01	01	01	01	01	01
JUN	01	01	01	01	01	01	01	01	01	01	01	01
JUL	01	01	01	01	01	01	01	01	01	01	01	01
AUG	01	01	01	01	01	01	01	01	01	01	01	01
SEP	01	01	01	01	01	01	01	01	01	01	01	01
OCT	01	01	01	01	01	01	01	01	01	01	01	01
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	01	01	01	01	01	01	01	01	01	01	01	01
KOROR ISLAND, PACIFIC												
JAN	15	22	22	22	22	22	22	22	22	22	22	22
FEB	24	34	44	55	66	77	88	99	109	112	118	118
MAR	09	09	09	09	09	09	09	09	09	09	09	09
APR	02	02	02	02	02	02	02	02	02	02	02	02
MAY	01	01	01	01	01	01	01	01	01	01	01	01
JUN	01	01	01	01	01	01	01	01	01	01	01	01
JUL	01	01	01	01	01	01	01	01	01	01	01	01
AUG	01	01	01	01	01	01	01	01	01	01	01	01
SEP	01	01	01	01	01	01	01	01	01	01	01	01
OCT	01	01	01	01	01	01	01	01	01	01	01	01
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	01	01	01	01	01	01	01	01	01	01	01	01
MAJURO, MARSHALL ISLANDS, PACIFIC												
JAN	28	43	55	61	85	97	100	103	103	103	103	103
FEB	25	35	42	45	55	55	55	55	55	55	55	55
MAR	16	16	16	16	16	16	16	16	16	16	16	16
APR	02	02	02	02	02	02	02	02	02	02	02	02
MAY	01	01	01	01	01	01	01	01	01	01	01	01
JUN	01	01	01	01	01	01	01	01	01	01	01	01
JUL	01	01	01	01	01	01	01	01	01	01	01	01
AUG	01	01	01	01	01	01	01	01	01	01	01	01
SEP	01	01	01	01	01	01	01	01	01	01	01	01
OCT	01	01	01	01	01	01	01	01	01	01	01	01
NOV	01	01	01	01	01	01	01	01	01	01	01	01
DEC	01	01	01	01	01	01	01	01	01	01	01	01
YEAR	01	01	01	01	01	01	01	01	01	01	01	01





## MAXIMUM SHORT DURATION PRECIPITATION

This table contains statistics of maximum amounts of precipitation during the calendar year indicated. Data are for stations equipped with recording gages and are from airport locations unless otherwise noted. The ending time and date is included in the table for each monthly maximum amount except in cases of zero and trace events. Maximum amounts for the year with month of occurrence are also indicated for each of the 12 time periods. Annual extremes and New records are based on available data. Some periods of record may be missing.

Beginning with data for 1973 and continuing to the present time, only the maximum amount of precipitation that occurred during the month for each of the 12 time periods shown were determined. These maximum amounts may be from different storms, and the threshold intensities required for Excessive Precipitation prior to 1973 are not a consideration. (A detailed explanation of the methods and threshold intensities used prior to 1973 can be found in the publications listed in the following paragraph.)

Publication of Data: A summary of maximum precipitation data for the years prior to 1896 was published in the annual report of the Chief of the Weather Bureau for 1895-1896. Excessive precipitation data for the period 1881-1896 were published in the annual report of the Chief of the Weather Bureau 1896-1897. Data for the years 1897 through 1934 have been published in the appropriate annual reports of the Chief of the Weather Bureau. For the years 1935 through 1949 these data were published in the appropriate issue of the United States Meteorological Yearbook. The annual issues of the Climatic Data National Summary present Excessive Precipitation each year 1950-1972 and Maximum Precipitation for 1973 and succeeding years.

U Indicates Urban sites

M No Record

T Trace event

+ Also occurred on an earlier date or dates

\* Equals or exceeds previous record for duration and period of record. Period of record, updated through the current year, includes data compiled in Weather Bureau Technical Paper No. 2, revised 1963. This publication contains extreme data for 296 first order stations from beginning of record through 1961. Due to data limitations, new records are denoted only for 5, 10, 15, 30, 60, 120, and 180 minutes. (The 15 minute amount was not computed for 1936-1943.)

District of Columbia - See Virginia.

# SUNSHINE, AMOUNT AND PERCENT

YEAR 1979

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual		
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	
ALABAMA																											
BIRMINGHAM U	107	34	109	35	230	62	228	58	230	55	289	67	233	53	292	70	137	37	279	79	211	67	197	64	2547		
MONTGOMERY	112	35	112	36	273	74	229	59	236	54	248	58	185	42	245	59	148	40	267	76	194	61	152	49	2395	54	
ALASKA																											
ANCHORAGE	42	21	200	79	167	45	226	51	276	51	268	47	248	44	242	41	178	46	57	18	34	16	65	37	1963	43	
JUNEAU	133	59	158	60	132	36	292	67	351	67																	
NUWE	50	30	198	83	207	56	152	33	278	48	192	30	194	32	47	9	132	34	76	25	27	14	66	52	1620	35	
ARIZONA																											
FLAGSTAFF	135	43	208	68			326	83	282	65	382	91	385	67	392	94	368	99	327	93	295	95	245	80			
PHOENIX	173	55	251	81	284	76	375	96	391	91	407	95	407	93	370	89	337	91	317	90	272	87	245	79	3827	86	
TUCSON	209	65	274	88	316	85	379	97	392	92	393	92	393	90	369	90	352	95	336	95	284	90	248	78			
YUMA	207	65	279	90	301	81	382	98	402	94	424	99	429	98	391	95	362	97	337	96	299	95	282	91	4092	92	
ARKANSAS																											
FORT SMITH	89	28	113	37	184	50	242	62	252	58	312	72	287	65	306	74	306	82	273	67	182	59	173	57	2680	60	
NO. LITTLE ROCK	157	50	176	58	279	75	304	78	337	78	348	80	308	70	289	69	295	79	260	74	207	66	224	73	3183	72	
CALIFORNIA																											
EUREKA	139	46	66	22	183	49	240	60	275	61	363	80	361	83	365	86	277	74	132	38	117	46	144	50	2703	61	
FRESNO	125	42	183	60	272	73	361	92	424	97	437	99	433	97	406	97	367	99	292	84	216	70	170	57	3690	83	
RED BLUFF	185	62	171	57	278	75	336	84	419	94	443	98	416	96	401	94	368	98	242	70	179	60	195	67	3651	82	
SACRAMENTO	114	38	135	45	237	64	346	87	426	96	444	100	440	98	413	98	362	97	272	78	213	70	150	51	3552	80	
SAN DIEGO	206	65	251	81	260	70	298	76	233	54	271	63	302	69	262	63	304	82	241	68	251	80	267	86	3144	71	
COLORADO																											
DENVER	231	77	231	77	290	78	326	82	281	63	366	82	371	62	324	76	322	86	252	73	199	66	239	82	3431	77	
FRANK JUNCTION	106	35	105	36	176	47	256	64	270	61	350	78	345	76	280	66	327	88	257	74	163	54	172	59	2810	63	
PUEBLO	257	84	257	85	314	85	357	90	336	77	394	89	391	87	366	87	342	92	299	86	254	84	229	77	3799	85	
CONNECTICUT																											
HARTFORD	122	41	182	61	216	58	232	58	246	54	339	74	307	67	234	55	250	67	140	41	120	41	164	58	2551	57	
DIST/COLUMBIA																											
WASHINGTON NATIONAL	106	35	127	42	240	65	191	48	263	59	290	65	272	60	278	66	224	60	188	54	158	52	160	54	2498	56	
FLORIDA																											
APPALACHICOLA U	143	44	153	49	273	73	252	65	349	82	357	85															
JACKSONVILLE	201	62	173	55	293	79	301	78	315	74	331	78	321	74	308	75	173	47	282	80	249	78	195	61	3140	71	
KEY WEST	254	76	251	79	314	84	313	82	339	62	338	83	322	77	265	66	242	66	228	64	211	64	230	70	3306	75	
MIAMI	172	52	212	67	285	77	292	76	177	42	351	85	351	83	313	78	282	76	270	75	216	66	200	61	3120	70	
TAMPA	185	56	197	63	263	76	310	80	322	77	337	81	293	69	224	55	148	40	253	71	217	67	166	51	2933	66	
GEORGIA																											
ATLANTA	138	44	135	44	232	62	224	57	229	53	284	66	224	51	282	68	155	42	259	74	195	62	183	59	2540	57	
MACK	178	56	159	51	276	74	270	69	317	74	293	69	276	54	283	69	132	36	267	76	213	68	195	63	2820	63	
SAVANNAH	168	53	140	45	258	70	250	64	253	59	259	61	215	49	230	56	132	36	282	80	236	75	187	60	2610	59	
HAWAII																											
HILO	147	43	103	32	190	51	116	31	194	48	185	46	188	46	223	56	292	79	161	44	156	46	178	52	2132	48	
HONOLULU	187	55	96	30	288	77	295	78	286	70	290	72	320	78	305	77	301	82	229	63	222	66	214	63	3032	68	
KAHULUI	191	56	123	38	272	73	225	59	299	73	254	63	296	72	320	80	264	72	253	70	231	69	231	68	2957	67	
LIHUE	158	47	129	40	245	66	241	63	308	75	276	68	304	74	314	79	294	80	242	67	154	46	132	39	2797	63	
IOAH																											
ICEISE	77	26	87	30	285	77	239	59	352	77	329	71															
POCATELLO	126	43	114	40	266	72	282	70	265	58	371	81	395	85	306	71	342	91	196	57	176	47	175	28			
ILLINOIS																											
CAIRO U	126	41	111	37	166	45	232	59	243	55	313	71	207	46	254	61	261	70	188	54	151	49	138	46	2391	54	
CHICAGO MIDWAY	119	40	121	41	166	45	213	53	348	77	332	73	321	70	251	58	297	79	173	50	109	37	156	55	2605	58	
MOLINE	100	34	127	43	120	32	176	44	293	65	237	52	204	44	245	57	296	79	181	53	120	40	145	51	2245	50	
PEORIA	152	51	149	50	110	30	184	46	329	73	336	74	240	57	257	60	318	85	203	59	139	47	153	53	2589	58	
SPRINGFIELD	119	40	137	46	95	26	193	48	324	73	332	74	291	64	304	72	319	85	194	56	121	40	139	48	2569	58	
INDIANA																											
EVANSVILLE	123	40	95	32	171	46	207	52	261	59	339	76	224	50	230	55	297	80	227	65	142	47	153	52	2469	55	
FORT WAYNE	144	48	180	60	204	55	246	61	368	82	378	84	367	80	307	72	317	85	202	59	147	49	156	54	3015	68	
INDIANAPOLIS	105	35	109	36	126	34	159	40	298	67	266	59	215	47	214	50	274	73	156	45	117	39	125	43	2163	49	
IOWA																											
DES MOINES	122	41	156	52	127	34	199	50	311	69	322	71	314	66	296	69	337	90	225	65	163	55	150	53	2722	61	
SIoux CITY	182	62	175	59	161	44	224	56	278	61	305	67	263	57	266	62	317	85	147	55	128	44	163	57	2649	59	
KANSAS																											
CONCORDIA	195	65	212	71	234	63	280	70	371	83	371	83	309	68	356	84	350	94	290	84	230	76	215	73	3413	77	
ODDGE CITY	185	60	226	75	226	61	226	57	245	56	311	70	285	64	314	74	331	89	272	78	207	68	211	71	3037	68	
TOPEKA	160	53	162	54	173	47	217	55																			





# SUNSHINE, AMOUNT AND PERCENT

YEAR 1979

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual			
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible		
SOUTH DAKOTA																												
HUPON	175	61	141	48	198	54	230	57	324	71	329	71	292	62	253	58	323	86	174	51	201	69	190	69	2830	63		
RAPID CITY	239	83	208	71	223	60	205	51	216	47	307	66	323	69	284	66	324	86	201	59	147	51	155	56	2832	63		
TENNESSEE																												
CHATTANOOGA	108	35	101	33	196	53	223	57	198	46	283	65	145	33	246	59	162	44	237	68	185	60	192	63	2277	51		
KNOXVILLE	141	45	145	47	261	70	311	79	327	75	295	68	219	49	303	72	199	54	227	65	164	53	175	58	2767	62		
MEMPHIS	135	43	114	37	224	60	254	65	304	70	348	80	306	69	332	80	277	75	269	77	217	70	181	59	2961	67		
NASHVILLE	98	32	109	36	188	51	209	53	214	49	259	59	182	41	217	52	203	55	243	69	170	55	145	48	2236	50		
TEXAS																												
ABILENE	179	56	184	59	217	58	269	69	283	66	300	70	325	75	311	75	296	80	288	82	227	72	185	59	3063	69		
AMARILLO	190	61	240	78	237	64	300	76	267	61	323	74	307	69	315	75	309	83	292	83	226	73	196	64	3202	72		
AUSTIN	106	33	117	38	171	46	179	46	185	44	261	62	240	56	281	68	267	72	247	70	229	72	172	54	2455	55		
BROWNSVILLE	101	30	131	41	184	49	218	57	279	67	329	80	325	77	284	70	256	69	275	77	154	47	114	35	2649	60		
COPPU CHRISTI	141	43	130	41	224	60	219	57	288	69	355	85	332	78	348	86	276	75	304	85	228	70	144	44	2988	67		
DALLAS FT WORTH	112	35	121	39	191	51	214	55	258	60	298	70	327	75	321	78	296	80	265	75	196	62	192	62	2791	67		
EL PASO	197	62	252	81	344	92	372	96	380	89	370	87	363	84	366	89	328	88	345	98	284	90	264	84	3865	87		
GALLVESTON	114	35	115	37	245	66	158	41	286	68	336	80	289	67	308	75	245	66	324	91	227	71	159	50	2805	63		
HGUSTON INTERCON	117	36	88	28	194	52	151	39	252	59	281	67	230	54	256	63	239	65	294	83	221	69	176	55	2500	56		
LUBBOCK	160	57	209	68	257	69	294	75	312	72	355	82	353	80	364	88	321	86	298	65	231	74	207	67	3381	76		
PORT ARTHUR	127	39	101	32	218	59	169	44	259	61	303	72	255	59	210	51	227	61	292	82	252	79	194	61	2606	59		
SAN ANTONIO	94	29	125	40	161	43	177	46	216	51	295	70	258	60	291	71	268	72	261	73	184	57	149	47	2479	56		
UTAH																												
HILFORD	116	38	167	55	228	62	282	71	317	72	413	93	398	88	339	80	342	92	266	77	210	69	217	73	3296	74		
SALT LAKE CITY	112	38	104	35	226	62	271	68	323	72	394	87	406	69	331	79	345	92	243	71	181	61	171	59	3109	70		
VERMONT																												
RUPLINGTON	78	27	172	59	157	42	170	42	217	47	245	53	267	57	177	41	201	54	85	25	70	24	87	32	1926	43		
VIRGINIA																												
LYNCHBURG	161	52	155	51	272	73	265	67	294	67	282	64	246	55	268	64	160	43	220	63	172	56	205	68	2698	61		
NOFFOLK	148	48	155	51	257	69	221	56	213	48	245	56	200	45	236	56	212	57	227	58	262	75	206	67	189	63	2970	67
RICHMOND	164	53	176	58	268	72	256	65	307	70	325	74	297	66	303	72	217	58	262	75	206	67	189	63	2970	67		
WASHINGTON																												
QUILLAYUTE	91	33	42	15	173	47	144	35	181	38	178	37	161	33	150	34	153	40	111	33	81	29	22	8	1488	33		
SEATTLE-TACOMA	125	45	40	14	224	61	213	52	268	57	349	73	405	84	262	59	190	50	145	43	79	28	41	15	2340	52		
SPOKANE	113	41	79	28	250	68	270	66	359	77	390	82	425	88	383	67	335	89	229	68	102	36	33	12	2968	66		
WALLA WALLA U	71	11	47	16	230	62	216	53	327	71	364	77	413	87	311	71	303	81	183	54	46	16	49	18	2521	56		
WEST INDIES																												
SAN JUAN P.R.	223	67	231	71	211	56	131	35	174	43	222	56	311	77	277	70	227	62	306	84	247	73	254	74	2824	64		
WEST VIRGINIA																												
PAPERSBURG U	123	41	188	63	264	71	187	47	252	57	267	60	263	58	212	50	273	73	221	64	158	52	124	42	2531	57		
WISCONSIN																												
GREEN BAY	146	51	166	64	142	38	178	44	277	60	278	60	324	69	280	64	279	74	131	38	117	41	144	52	2481	56		
MADISON	141	48	172	58	130	35	164	41	283	62	284	62	303	65	194	45	274	73	110	32	84	29	165	59	2305	52		
MILWAUKEE	152	52	156	54	157	42	175	44	303	67	305	67	310	67	225	52	280	75	142	41	102	35	126	45	2436	54		
WYOMING																												
CHEYENNE	201	67	198	66	251	68	309	77	280	62	342	75	307	67	295	69	309	83	214	62	177	60	165	57	3048	68		
LANDER	130	45	167	57	219	59	216	54	243	54	384	84	380	82	318	74	334	89	227	66	187	64	136	49	2943	66		
SHERIDAN	160	56	149	51	221	60	197	49	240	52	300	64	313	67	224	52	304	81	185	54	155	54	167	61	2614	59		

Data from airport unless otherwise specified.  
 "U" indicates Urban, "R" indicates Rural, sites.







# ANNUAL CLIMATOLOGICAL DATA METRIC UNITS

YEAR 1979

State and Station	Temperature				Precipitation				Relative humidity				Wind				Number of days																
	Averages		Extremes		Total	Greatest in 24 hours	Date	Total	Greatest in 24 hours	Date	100m EST	700m EST	700m EST	Average speed	Resistant direction	Resistant speed	Fastest mile (1.6 kilometers)	Direction	Sunrise to sunset	Precipitation 25mm or more	Snow 25mm or more	Thunderstorms	Heavy fog	Max. temp. 0°C and below	Min. temp. -17.8°C and below								
	Daily maximum	Daily minimum	Annual	Highest																						Date	Lowest	Date					
	°C	°C	°C	°C	mm	mm	mm	mm	mm	mm	%	%	%	m/s	m/s	m/s	(1.6 kilometers)		Clear, 0-0.3	Partly cloudy, 0.4-0.7	Cloudy, 0.8-1.0		°C and above	°C and below									
FLORIDA																																	
FORT MYERS	29.4	18.9	24.2	36.1	JAN 3	166	2354	1701	136	SEP	83	84	54	70	3.5	0.9	7	11.2	26	SEP*	5.5	88	186	91	115	0	72	3	136	0	0		
JACKSONVILLE	25.4	13.7	19.6	35.6	JAN 3	870	1380	1569	97	9-10	89	90	61	78	3.2	0.1	7	15.2	NE	AUG 5	6.0	93	123	149	128	0	76	34	52	0	24		
MAY WEST	28.3	23.2	25.8	33.9	JAN 14*	22	2781	716	69	23-24	81	83	70	76	5.7	3.3	10	17.9	34	APR 30	5.8	87	160	118	101	0	57	1	72	0	0		
MIAMI	27.7	25.8	24.3	34.4	JAN 4	108	2344	1527	412	24-25	79	81	60	70	4.7	2.3	9	16.5	12	SEP 25	6.3	72	158	135	123	0	48	3	28	0	0		
ORLANDO	28.0	16.3	22.2	35.6	JAN 4	378	1842	1276	94	3-4	90	93	56	73	3.9	0.6	7	15.6	02	SEP 3	6.1	81	143	141	121	0	84	18	98	0	1		
PENSACOLA	24.3	14.4	19.4	36.1	JAN 10	981	1422	2022	282	MAY 7	83	86	61	70	4.0	0.7	6	23.7	10	SEP 12	5.7	101	132	132	101	0	63	35	54	0	26		
TALLAHASSEE	25.2	12.0	18.6	37.2	JAN 4	1072	1221	2043	114	MAY 7	90	93	58	72	2.7	0.5	6	15.6	16	JUN 18	6.1	88	125	152	110	0	77	37	61	0	41		
TAMPA	27.0	17.8	22.4	34.4	JUL 3	359	1910	1688	301	7-8	86	91	63	71	3.6	0.8	7	17.4	21	MAY 8	5.6	104	144	117	104	0	73	14	63	0	3		
WEST PALM BEACH	27.8	18.9	23.4	34.4	JAN 3	179	2081	1554	186	24-25	82	83	63	74	4.9	2.0	10	25.9	36	SEP 3	6.2	69	162	134	135	0	69	4	67	0	0		
GEORGIA																																	
ATHENS	21.8	10.7	16.3	36.1	AUG 20	1580	897	1245	98	12-13	79	86	57	63	3.3	0.5	3	14.3	30	JAN 24	6.0	107	100	158	121	2	44	40	33	2	52		
ATLANTA	21.7	11.1	16.4	36.1	JUL 7	1610	979	1390	142	12-13	76	82	57	60	4.3	0.5	32	15.6	14	JUN 18	6.4	95	90	180	115	1	41	31	36	2	54		
AUGUSTA	23.3	10.4	16.9	37.2	OCT 15*	1485	1016	1256	94	21-22	86	88	53	67	2.9	0.2	27	13.4	28	DEC 12*	5.7	119	98	148	120	1	47	27	47	1	55		
COLUMBUS	23.8	12.4	18.1	38.9	JUL 5	1261	1246	1387	115	3-4	51	18	84	88	57	64	2.48	0.4	3	12.5	04	19	6.0	101	115	149	113	1	50	13	60	1	43
MACON	24.1	11.7	17.9	38.3	JAN 4	1264	1175	1339	68	25-26	86	88	57	65	3.4	0.4	30	16.5	5	JAN 21	6.1	98	108	159	113	1	43	23	57	1	49		
ROME																																	
SAVANNAH	24.4	13.3	18.9	37.2	JUL 4	1062	1328	1573	173	4-5	78	80	84	54	66	3.3	0.2	30	25.9	E	SEP 4	6.2	100	88	177	127	0	53	38	64	0	32	
HAWAII																																	
HILO	27.7	18.8	23.1	32.8	OCT 8*	0	1772	4033	566	19-20	0	81	70	83	86	2.7	0.2	15	11.6	SE	JAN 9	7.1	44	134	187	272	0	9	0	4	0	0	
HONOLULU	29.3	20.7	25.0	33.9	OCT 11	0	2483	430	69	3-4	0	74	57	72	79	5.1	3.6	7	15.2	W	DEC 31*	5.8	76	190	99	89	0	6	0	51	0	0	
KAHULUI	29.1	20.0	24.6	34.4	OCT 10	0	2334	681	68	FEB 9	0	76	60	75	5.5	4.1	5	18.3	NW	JAN 11	5.2	122	157	86	104	0	2	0	52	0	0	0	
LIHUE	27.6	20.8	24.2	31.7	JAN 7*	0	2196	942	130	9	0	81	66	78	83	5.2	3.7	6	14.8	NE	JAN 14	6.0	55	205	105	201	0	1	0	0	0	0	
IDAHO																																	
BOISE	16.9	3.4	10.2	38.9	JUL 17	3323	418	307	41	13	640	102	25-26	47	40	57	64	3.4	0.0	5	17.9	5.9	112	89	164	98	8	23	41	33	124	11	
LEAVISTON	17.1	5.5	11.3	41.1	JUL 20	3541	538	309	17	4-5	340	114	11-12	62	50	74	21.0		DEC 9	6.4	99	81	185	107	6								
POCATELLO	14.9	.3	7.6	38.3	AUG 4	4104	266	224	13	21-22	1105	76	25-26	53	43	71	17.0	SW	OCT 19	6.0	101	104	160	93	18								
ILLINOIS																																	
CAIRO U	18.5	9.8	14.2	36.7	AUG 7	2430	980	1303	68	3-4	462	69	6-7	74	78	60	62	4.9	1.1	24	19.2	6.5	79	112	174	127	12	41	21	15	57	135	24
CHICAGO O HARE	14.2	3.6	8.9	34.4	JUL 23	3618	448	942	57	28-29	1222	339	13	74	60	62	4.9	1.1	24	20.6	5	6.8	70	104	191	127	15	40	15	2	58	131	22
CHICAGO MIDWAY	13.5	4.3	8.9	33.3	AUG 7	3608	451	966	72	17-18	1845	419	13	74	79	64	64	4.7	0.9	22	25.9	6.8	70	104	191	127	15	40	15	2	58	131	22
MOLINE	14.3	2.6	8.4	34.4	AUG 6	4028	504	876	63	17-20	963	384	12-13	77	81	59	63	4.6	1.1	24	21.9	6.2	90	111	164	122	12	51	21	16	61	144	33
PEORIA	14.5	3.2	8.8	34.4	AUG 7	3684	502	736	61	24-25	907	310	13	79	84	62	65	4.4	0.8	22	18.3	6.5	82	93	190	112	9	35	31	15	62	138	29
POCKFORD	12.9	1.7	7.3	33.3	JUN 15*	4315	377	917	58	25-26	1285	251	12-13	82	85	63	66	4.6	0.8	23	20.6	6.4	81	107	177	131	14	50	33	2	73	150	35
SPRINGFIELD	16.2	4.7	10.4	36.1	JUN 19	3466	667	745	113	11	749	150	9	74	83	61	64	4.8	1.0	22	17.0	6.5	90	89	186	109	10	35	18	28	51	124	22

See reference notes at end of table

# ANNUAL CLIMATOLOGICAL DATA METRIC UNITS

YEAR 1979

State and Station	Temperature				Precipitation				Relative humidity				Wind				Number of days																					
	Averages		Extremes		Total		24 hours		1000m EST		700m EST		Average speed		Resilient speed		Fastest mile (1.6 kilometers)		Sunrise to sunset		Snow 1/2mm. or more		Thunderstorms		Max. temp.													
	Daily maximum	Daily minimum	Annual	Highest	Date	Lowest	Date	Heating degree days	Cooling degree days	mm	mm	Date (s)	Total	mm	mm	Date (s)	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm										
	°C	°C	°C	°C	°C	°C	°C	°C	°C	mm	mm	Date (s)	mm	mm	Date (s)	mm	mm	Date (s)	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm										
INDIANA																																						
EVANSVILLE	17.6	6.5	12.1	35.6	JUN 19	-22.8	2904	638	1326	58	30-31	MAR 599	114	JAN 27	79	80	62	65	3.7	0.5	25	18.8	SE 12	103	82	180	139	8	51	22	32	36	106	11				
FORT WAYNE	14.0	3.7	8.9	32.2	FEB 20	-25.6	3739	376	787	51	JUL 24	775	137	FEB 20	79	82	63	67	4.3	1.5	24	22.8	SW 40	6.9	71	89	205	129	8	27	24	1	56	130	21			
INDIANAPOLIS	15.5	4.7	10.1	33.3	FEB 5	-26.7	3421	490	1133	110	12-13	983	211	JAN 25	86	86	67	71	4.2	0.9	23	18.8	S 30	6.7	84	85	196	151	10	38	30	4	45	125	20			
SOUTH BEND	14.2	4.7	9.4	33.3	FEB 15	-25.6	3586	445	1159	71	10	2248	351	JAN 13-14	79	83	66	68	4.3	1.2	23	20.6	W 28	7.1	63	86	216	155	24	34	28	3	53	120	16			
10-A																																						
BURLINGTON	14.6	3.7	9.2	33.9	AUG 9	-28.9	3779	517	744			894		JAN 1	70	74	57	58	4.4	0.9	25	14.3	SE 33	6.1	93	111	161	94	12	45	22	10	58	134	25			
DES MOINES	14.2	3.5	8.8	36.1	FEB 7	-28.3	1929	547	809	57	27	965	196	DEC 13	73	77	59	60	4.6	0.5	26	25.0	SW 19	6.1	102	100	163	102	12	48	30	11	59	141	31			
DUBUQUE	12.2	1.4	7.0	30.6	SEP 2*	-32.8	4388	333	901	50	17-18	1240	284	DEC 13	81	83	62	63	4.6	0.5	26	25.0	SW 19	6.1	102	100	163	102	12	48	30	11	59	141	31			
SIOUX CITY	13.3	1.6	7.4	37.2	JUN 14	-31.1	4375	481	825	116	29-30	757	150	MAR 3-4	77	82	62	62	5.1	0.3	35	24.1	NW 30	5.9	106	103	156	102	11	41	28	16	69	160	40			
WATERLOO	12.4	1.4	7.3	32.8	AUG 6	-31.1	4371	428	968	73	17-18	808	135	DEC 13	76	79	61	62	4.6	0.6	26	19.2	N 11	6.4	87	100	178	108	11	44	24	6	75	152	38			
AMNAS																																						
CONCORDIA	17.2	4.1	10.7	38.3	JUL 13	-26.1	3440	711	675	105	29-30	676	203	DEC 13	73	79	57	56	5.2	0.7	18	17.9	NW 28	5.2	139	102	124	82	10	61	19	50	46	14.7	26			
DODGE CITY	18.2	4.5	11.4	38.3	JUL 14	-24.4	3183	731	600	72	22-23	605	97	DEC 13	71	78	52	50	6.1	0.8	20	24.6	N 22	4.9	150	103	112	88	9	53	23	60	37	138	14			
GOODLAND	17.7	2.9	10.3	40.0	JUL 11	-26.1	3384	522	675	55	1-2	2179	305	30-31	54	52	76	83	5.8	0.7	23	20.1	SE 28	4.6	159	105	101	87	20	44	25	45	30	151	10			
TOPEKA	17.0	4.4	10.7	36.7	JUL 13	-30.6	3599	708	881	64	28	808	180	DEC 13	80	84	61	61	3.8	0.3	21	16.1	NW 16	5.7	116	100	149	98	11	55	12	30	45	136	23			
WICHITA	18.9	6.2	12.6	38.3	JAN 8	-23.9	2960	924	729	66	7-8	559	117	3-4	72	77	54	54	5.1	0.8	16	21.0	N 23	5.2	136	100	127	83	8	54	16	73	40	114	17			
KENTUCKY																																						
COVINGTON	15.9	5.6	10.8	33.3	AUG 8	-22.8	3150	469	1340	115	13-14	810	137	27-28	79	82	65	68	4.2	1.1	24	15.6	SE 20	6.6	83	85	197	141	11	35	35	4	42	111	13			
LEXINGTON	17.0	6.7	11.9	33.3	AUG 15	-19.4	2823	518	1372	110	20-21	589	127	FEB 7	70	83	65	67	3.9	1.1	21	14.8	SE 13	6.9	74	95	196	139	7	44	28	5	37	100	5			
LOUISVILLE	17.0	7.5	12.7	35.0	AUG 8	-17.8	2655	687	1519	139	25-26	518	119	FEB 18	78	87	62	64	3.8	0.8	24	17.0	W 22	6.6	87	92	186	134	5	39	15	12	33	93	1			
LOUISIANA																																						
RATON ROUGE	24.1	12.0	18.6	36.7	JUL 5	-8.3	1180	1322	1674	145	21-22	T	T	JAN 29	86	91	81	85	3.0	0.5	8	13.4	SE 23	5.9	108	108	149	101	0	57	30	63	1	34	0			
LAKE CHARLES	24.0	13.0	18.9	35.6	JUL 16	-6.7	1067	1358	1925	284	19-20	T	T	29	89	91	85	72	3.6	0.8	10	13.0	SE 30	5.8	113	107	145	94	0	74	49	43	0	21	0			
NEW ORLEANS	25.1	14.0	20.0	36.1	JUL 5	-5.0	950	1608	1530	133	5-6	T	T	JAN 29	77	81	63	67	3.4	0.6	8	19.7	SE 11	6.0	103	99	163	111	0	62	23	82	0	20	0			
SHREVEPORT	23.3	11.7	17.5	35.0	AUG 6	-11.1	1422	1176	1624	97	21	38	25	FEB 17	84	89	63	65	3.4	0.3	15	14.3	SE 20	5.9	115	84	166	110	1	57	14	71	2	49	0			
MAINE																																						
CARIBOU	10.3	6	5.4	33.3	JUN 16	-32.8	4789	161	1062	78	6-7	2423	277	21-22	78	81	68							7.4	47	96	222	179	26									
PORTLAND	12.4	7.6	7.5	33.3	FEB 9	-25.0	4084	176	1553	91	27	1862	688	JAN 17-18	84	81	61	74	3.6	0.9	28	15.6	W 6	6.5	89	90	166	145	14	15	60	3	45	141	19			
WASYLEND																																						
BALTIMORE	18.1	7.7	12.9	34.4	AUG 10	-19.4	2533	632	1498	112	5-6	996	508	FEB 18-19	76	78	57	65	1.9	1.1	29	10.7	N 18	6.2	104	93	168	127	7	27	22	13	21	87	3			
MASSACHUSETTS																																						
BLUE HILL OBS. R.	14.2	4.9	9.6	34.4	JUL 14	-22.2	3445	324	1420	119	26-27	874	173	OCT 10	82	81	61	73																				
BOSTON	15.3	6.9	11.2	35.0	JUN 16	-19.4	2975	438	1122	69	20-21	500	107	JAN 75	75	75	61	69	5.6	1.6	27	20.1	SE 6	6.1	103	99	163	131	7	19	33	12	30	80	6			
WORCESTER	13.2	4.1	8.6	32.8	JUL 14	-23.9	3733	268	1364	74	24-25	986	191	OCT 10	78	77	61	70																				

See reference notes at end of table



# ANNUAL CLIMATOLOGICAL DATA METRIC UNITS

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State and Station	Temperature				Precipitation		Relative humidity			Wind				Number of days																								
	Daily maximum	Daily minimum	Annual	Extremes		Total	Greatest in 24 hours	Date (s)	700 m EST	1000 m EST	700 pm EST	Fastest mile (1.6 kilometers)	Resilient speed	Resilient direction	Speed	Direction	Date	Average sky cover	Clear, 0-3	Partly cloudy, 0-4-07	Cloudy, 08-10	Precipitation 25mm or more	Snow 25mm or more	Thunderstorms	Heavy fog	Max. temp. 32.2 °C and above	Min. temp. -17.8 °C and below											
				Highest	Lowest																							Heating degree days	Cooling degree days	Total	Greatest in 24 hours	Date (s)	Average speed	Resilient speed	Resilient direction	Speed	Direction	Date
MICHIGAN	10.9	1.5	5.5	33.9	24	-38.3	17	476.1	151	88	86	86	66	73	4.0	0.8	25	14.8	W	APR 6	7.2	56	96	213	141	26	26	35	3	77	164	29						
ALPENA	13.6	3.0	8.3	33.3	AUG 7	-23.9	JAN 15	3886	290	839	78	11	721	122	13-14	JAN 11	83	84	63	71	4.4	1.2	26	25.0	NW 5	6.7	80	93	192	135	11	22	23	1	58	136	15	
DETROIT	12.9	3.1	7.9	32.2	AUG 17	-28.3	JAN 15	3990	293	641	43	30-11	1217	279	13-14	JAN 12	82	84	64	70	4.6	1.5	23	18.3	28	7.0	69	93	203	141	17	19	20	1	68	130	22	
FLINT	13.7	3.2	8.4	32.2	AUG 11	-29.4	JAN 11	3855	341	829	46	24-25	1824	277	13-14	JAN 12	82	84	64	70	4.4	1.1	23	21.9	W 5	7.3	68	71	226	141	22	22	26	5	59	128	15	
GRAND RAPIDS	11.1	1.1	5.6	31.1	AUG 13	-36.7	JAN 17	4726	151	662	69	9-10	1588	193	5-6	JUN 10	86	86	70	70	4.4	1.1	23	21.9	W 5	7.1	64	90	211	119	20	18	37	0	76	163	29	
HOUGHTON LAKE	13.3	2.6	7.9	33.3	AUG 7	-28.9	JAN 17	4039	321	654	74	29-30	1201	277	13-14	JAN 10	84	86	66	71	4.3	1.4	24	21.0	W 10	7.1	66	86	213	135	16	21	23	6	65	141	24	
LANSING	11.8	2.7	7.3	30.0	JUL 13	-25.0	JAN 17	4170	211	789	44	3-4	2736	353	JAN 15	82	84	67	71	4.7	1.0	24	17.9	29	5	7.1	70	87	208	150	36	35	31	0	70	139	6	
MUSKEGON	8.9	-1.4	3.8	32.2	JUL 12	-37.2	JAN 17	5318	81	1101	68	7	3523	292	5-6	JAN 6	86	86	70	76	3.7	0.3	32	21.0	NW 6	7.1	72	81	212	170	40	34	39	1	90	176	38	
SAULT STE MARIE	7.9	-1.8	3.1	31.1	JUL 11	-35.6	JAN 11	5595	94	785	83	9-10	1692	196	22-23	MAY 19	74	76	61	62	4.5	0.4	31	18.3	SW 3	7.2	58	101	206	147	22	33	51	0	110	179	48	
DULUTH	6.6	-4.8	9	31.7	JUL 21	-42.2	JAN 23	6359	73	557	67	30-31	1577	137	22-23	FEB 10	77	81	64	64	3.8	0.5	27	13.0	30	25	7.1	67	82	216	131	23	27	24	0	125	215	70
INTERNATIONAL FALLS	11.4	1.2	6.3	35.6	JUL 6	-33.3	JAN 11	4679	362	789	58	20-21	1173	127	20-21	FEB 10	70	74	59	59	4.4	0.4	28	17.0	NW 5	6.6	82	100	183	116	15	48	14	11	83	157	38	
MINNEAPOLIS	10.9	1.3	5.6	33.9	FEB 5	-33.9	JAN 15	4900	339	839	69	22-23	1511	170	23-24	JAN 19	80	82	66	69	5.9	1.2	25	22.8	23	19	6.8	79	78	208	128	19	42	28	10	92	159	45
ROCHESTER	9.8	-1.9	3.9	35.0	JUN 14	-37.8	JAN 11	5350	180	792	94	9-10	1303	163	18-19	JAN 19	86	86	65	65	7.2	0.3	32	21.0	NW 6	7.1	72	81	212	170	40	34	39	1	90	176	38	
ST CLOUD	7.9	-1.8	3.1	31.1	JUL 11	-35.6	JAN 11	5595	94	785	83	9-10	1692	196	22-23	MAY 19	74	76	61	62	4.5	0.4	31	18.3	SW 3	7.2	58	101	206	147	22	33	51	0	110	179	48	
DULUTH	6.6	-4.8	9	31.7	JUL 21	-42.2	JAN 23	6359	73	557	67	30-31	1577	137	22-23	FEB 10	77	81	64	64	3.8	0.5	27	13.0	30	25	7.1	67	82	216	131	23	27	24	0	125	215	70
INTERNATIONAL FALLS	11.4	1.2	6.3	35.6	JUL 6	-33.3	JAN 11	4679	362	789	58	20-21	1173	127	20-21	FEB 10	70	74	59	59	4.4	0.4	28	17.0	NW 5	6.6	82	100	183	116	15	48	14	11	83	157	38	
MINNEAPOLIS	10.9	1.3	5.6	33.9	FEB 5	-33.9	JAN 15	4900	339	839	69	22-23	1511	170	23-24	JAN 19	80	82	66	69	5.9	1.2	25	22.8	23	19	6.8	79	78	208	128	19	42	28	10	92	159	45
ROCHESTER	9.8	-1.9	3.9	35.0	JUN 14	-37.8	JAN 11	5350	180	792	94	9-10	1303	163	18-19	JAN 19	86	86	65	65	7.2	0.3	32	21.0	NW 6	7.1	72	81	212	170	40	34	39	1	90	176	38	
ST CLOUD	7.9	-1.8	3.1	31.1	JUL 11	-35.6	JAN 11	5595	94	785	83	9-10	1692	196	22-23	MAY 19	74	76	61	62	4.5	0.4	31	18.3	SW 3	7.2	58	101	206	147	22	33	51	0	110	179	48	
DULUTH	6.6	-4.8	9	31.7	JUL 21	-42.2	JAN 23	6359	73	557	67	30-31	1577	137	22-23	FEB 10	77	81	64	64	3.8	0.5	27	13.0	30	25	7.1	67	82	216	131	23	27	24	0	125	215	70
INTERNATIONAL FALLS	11.4	1.2	6.3	35.6	JUL 6	-33.3	JAN 11	4679	362	789	58	20-21	1173	127	20-21	FEB 10	70	74	59	59	4.4	0.4	28	17.0	NW 5	6.6	82	100	183	116	15	48	14	11	83	157	38	
MINNEAPOLIS	10.9	1.3	5.6	33.9	FEB 5	-33.9	JAN 15	4900	339	839	69	22-23	1511	170	23-24	JAN 19	80	82	66	69	5.9	1.2	25	22.8	23	19	6.8	79	78	208	128	19	42	28	10	92	159	45
ROCHESTER	9.8	-1.9	3.9	35.0	JUN 14	-37.8	JAN 11	5350	180	792	94	9-10	1303	163	18-19	JAN 19	86	86	65	65	7.2	0.3	32	21.0	NW 6	7.1	72	81	212	170	40	34	39	1	90	176	38	
ST CLOUD	7.9	-1.8	3.1	31.1	JUL 11	-35.6	JAN 11	5595	94	785	83	9-10	1692	196	22-23	MAY 19	74	76	61	62	4.5	0.4	31	18.3	SW 3	7.2	58	101	206	147	22	33	51	0	110	179	48	
DULUTH	6.6	-4.8	9	31.7	JUL 21	-42.2	JAN 23	6359	73	557	67	30-31	1577	137	22-23	FEB 10	77	81	64	64	3.8	0.5	27	13.0	30	25	7.1	67	82	216	131	23	27	24	0	125	215	70
INTERNATIONAL FALLS	11.4	1.2	6.3	35.6	JUL 6	-33.3	JAN 11	4679	362	789	58	20-21	1173	127	20-21	FEB 10	70	74	59	59	4.4	0.4	28	17.0	NW 5	6.6	82	100	183	116	15	48	14	11	83	157	38	
MINNEAPOLIS	10.9	1.3	5.6	33.9	FEB 5	-33.9	JAN 15	4900	339	839	69	22-23	1511	170	23-24	JAN 19	80	82	66	69	5.9	1.2	25	22.8	23	19	6.8	79	78	208	128	19	42	28	10	92	159	45
ROCHESTER	9.8	-1.9	3.9	35.0	JUN 14	-37.8	JAN 11	5350	180	792	94	9-10	1303	163	18-19	JAN 19	86	86	65	65	7.2	0.3	32	21.0	NW 6	7.1	72	81	212	170	40	34	39	1	90	176	38	
ST CLOUD	7.9	-1.8	3.1	31.1	JUL 11	-35.6	JAN 11	5595	94	785	83	9-10	1692	196	22-23	MAY 19	74	76	61	62	4.5	0.4	31	18.3	SW 3	7.2	58	101	206	147	22	33	51	0	110	179	48	
DULUTH	6.6	-4.8	9	31.7	JUL 21	-42.2	JAN 23	6359	73	557	67	30-31	1577	137	22-23	FEB 10	77	81	64	64	3.8	0.5	27	13.0	30	25	7.1	67	82	216	131	23	27	24	0	125	215	70
INTERNATIONAL FALLS	11.4	1.2	6.3	35.6	JUL 6	-33.3	JAN 11	4679	362	789	58	20-21	1173	127	20-21	FEB 10	70	74	59	59	4.4	0.4	28	17.0	NW 5	6.6	82	100	183	116	15	48	14	11	83	157	38	
MINNEAPOLIS	10.9	1.3	5.6	33.9	FEB 5	-33.9	JAN 15	4900	339	839	69	22-23	1511	170	23-24	JAN 19	80	82	66	69	5.9	1.2	25	22.8	23	19	6.8	79	78	208	128	19	42	28	10	92	159	45
ROCHESTER	9.8	-1.9	3.9	35.0	JUN 14	-37.8	JAN 11	5350	180	792	94	9-10	1303	163	18-19	JAN 19	86	86	65	65	7.2	0.3	32	21.0	NW 6	7.1	72	81	212	170	40	34	39	1	90	176	38	
ST CLOUD	7.9	-1.8	3.1	31.1	JUL 11	-35.6	JAN 11	5595	94	785	83	9-10	1692	196	22-23	MAY 19	74	76	61	62	4.5	0.4	31	18.3	SW 3	7												



# ANNUAL CLIMATOLOGICAL DATA METRIC UNITS

YEAR 1979

State and Station	Temperature				Precipitation				Relative humidity				Wind				Number of days																						
	Averages		Extremes		Heating degree days		Cooling degree days		Snow †		700 m EST		1000 m EST		700 m EST		Fastest mile (1.6 kilometers)		Sunrise to sunset		Thunderstorms		Heavy fog		Max. temp.		Min. temp.												
	Daily maximum	Daily minimum	Annual	°C	Date	°C	Date	°C	Date	°C	Date	mm	Date (s)	mm	Date (s)	%	Date	%	Date	%	Date	mm	Date (s)	mm	Date (s)	mm	Date (s)	mm	Date (s)	mm	Date (s)								
	°C	°C	°C	°C	°C	°C	°C	°C	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm								
NORTH CAROLINA																																							
GREENSBORO	19.9	8.1	14.1	35.0	FEB 10	-15.0	FEB 10	2155	656	1303	144	21-22	4.14	236	18-19	FEB	82	86	58	66	3.3	0.5	27																
RALEIGH	21.0	8.6	14.8	36.7	FEB 8	-13.3	FEB 10	1934	708	1152	65	45	44.7	264	18-19	FEB	88	91	59	72	3.1	0.4	25	13.0	22	21	5.8	113	106	146	107	4	45	34	18	2	78	0	
WILMINGTON	23.0	11.5	17.3	37.2	FEB 9	-8.9	FEB 10	1415	1092	1424	161	45	5	10	83	84	59	73	3.5	0.3	22	20.1	22																
NORTH DAKOTA																																							
RISPARCK	10.1	-3.2	3.4	35.0	JUL 1	-34.4	FEB 1	5555	203	350	21	20-21	1499	226	22	FEB	75	80	57	56	4.2	0.9	33	21.0	33	19	6.5	87	104	174	89	18	36	9	15	97	196	62	
FARGO	8.8	-2.2	3.3	36.7	SEP 4	-34.4	FEB 17	5679	280	507	52	23-24	1118	163	22	FEB	74	78	63	62	5.2	0.3	29	23.7	23	23	7.3	57	93	215	105	14	26	19	11	118	185	62	
WILLISTON	10.5	-3.0	3.8	39.4	JUN 13	-34.4	FEB 16	5470	231	286	30	27-28	986	183	12	APR	74	80	58	55	4.2	0.9	30	19.7	30	12	6.2	86	123	156	74	13	27	13	15	92	197	59	
OHIO																																							
AKRON	13.8	3.9	8.9	32.2	JUL 12	-25.0	FEB 12	3682	313	998	160	13-14	1224	137	7	JAN	75	74	61	65	4.2	1.3	23	15.6	23	0	7.2	61	93	211	167	15	29	24	1	53	130	18	
CINCINNATI ARBE OB	16.4	6.1	11.3	34.4	AUG 8	-20.6	FEB 8	3024	517	1223																													
CLEVELAND	14.6	4.5	9.6	32.8	FEB 7	-22.8	FEB 11	3528	397	1012	63	24-25	980	175	26	FEB	77	79	62	68	4.8	1.7	23	17.9	26	6	7.5	59	69	237	159	11	29	10	2	51	126	15	
COLUMBUS	15.3	5.2	10.3	32.2	AUG 7	-21.7	FEB 17	3302	449	1249	123	13-14	892	168	12	FEB	80	82	64	68	3.8	0.9	23	21.5	23	5	7.1	64	87	214	146	10	31	16	1	51	117	14	
DAYTON	15.7	4.9	10.3	33.3	AUG 15	-23.9	FEB 15	3335	474	1100	60	13-14	986	213	11	JAN	79	82	65	68	4.5	1.3	23	19.7	23	7	7.1	72	84	209	165	12	33	32	6	47	114	16	
MANSFIELD	13.4	3.6	8.6	30.6	AUG 7	-23.9	FEB 17	3787	295	1171	104	13-14	988	152	7	APR	81	84	66	71	4.7	1.8	23	16.5	31	23	6.9	71	67	83	215	153	17	38	32	0	58	133	20
TOLEDO	13.8	3.3	8.6	33.3	JUL 7	-25.6	FEB 11	3823	334	919	60	13-14	533	66	4	JAN	83	85	64	70	4.2	1.3	25	20.1	25	5	6.9	71	97	197	149	6	25	21	2	61	138	20	
YOUNGSTOWN	13.7	3.5	8.6	31.1	JUL 31	-25.6	FEB 17	3736	278	1007	102	13-14	955	135	7	JAN	78	79	61	67	4.4	1.2	23	17.4	27	6	7.4	50	92	223	161	13	24	27	0	57	130	15	
OKLAHOMA																																							
OKLAHOMA CITY	20.7	8.3	14.5	36.1	AUG 16	-19.4	FEB 6	2333	1003	1044	121	5	257	155	6	FEB	73	79	56	54	5.0	0.8	15	20.1	15	4	5.1	146	91	126	86	2	48	26	64	23	91	3	
TULSA	21.1	9.2	15.2	38.3	JUL 30	-21.7	FEB 1	2286	1198	1076	122	20-21	409	81	6	FEB	73	80	57	56	4.5	1.2	18	16.1	23	11	5.4	128	106	131	90	6	46	15	76	27	86	4	
OREGON																																							
ASTORIA	15.1	6.6	10.9	31.1	SEP 13	-10.0	JAN 1	2677	15	1679	62	1-2	20	8	18	NOV	80	73	87	90	4.0	0.7	21	21.0	19	12	7.5	46	89	230	177	0	5	33	0	1	39	0	
BURNS U	15.1	9	8.0	36.7	JUL 17	-26.1	FEB 2	3916	204	373	26	10-11	1730	246	23-24	DEC	57			71																			
EUGENE	17.4	5.1	11.3	38.9	JUL 10	-13.9	FEB 10	2623	101	1303	83	13-19	T	T	DEC	73	59	81																					
MDFORD	19.7	5.3	12.5	40.6	JUL 17	-10.0	FEB 2	2434	366	514	53	10-11	18	15	27	APR	67	48	69	80	2.1	0.8	31	13.0	14	23	5.9	118	77	170	99	0	9	50	56	4	74	0	
PENDLETON	16.4	4.7	10.6	40.6	JUL 20	-24.4	JAN 1	3142	361	305	20	18-19	538	104	11	JAN	59	51																					
PORTLAND	17.4	7.7	12.6	40.0	JUL 16	-10.0	FEB 1	2302	257	968	42	1-2	76	28	3	FEB	73	59	76	86	4.0	0.5	13	19.7	5	12	7.1	73	72	220	148	1	7	27	9	10	43	0	
SALEM	17.4	5.3	11.4	39.4	JUL 16	-12.2	FEB 2	2606	122	983	42	18-19	71	43	4	JAN	74	60	81	89	2.9	0.7	22	13.4	19	12	6.8	78	79	208	141	1	6	33	12	7	59	0	
SEXTON SUMMIT R	13.8	5.1	9.4	33.3	JUL 17	-8.3	FEB 24	3308	127	928	52	24-25	1654	292	23-24	DEC	66	58																					
PACIFIC AREA																																							
GUAM TAGUAC R	29.7	22.3	26.0	32.8	JUL 16	17.2	FEB 23	0	2850	2304	288	9-10	0	0	0	NOV	76	89		76	19.2																		
JOHNSON	28.4	23.9	26.2	31.1	SEP 12	19.4	JAN 12	0	2920	782	136	5-6	0	0	0	NOV	82	75	81	83	7.5	6.8	8	19.7	8	19	5.1	140	133	92	171	0	2	0	0	0	0	0	
KOROR R	31.1	24.1	27.6	33.3	SEP 20	20.6	APR 13	0	3415	4066	431	12-13	0	0	0	APR	76	87	79	3.3	0.8	5	15.6	5	13	8.6	4	87	274	264	0	25	0	58	0	0	0		
KWAJALEIN	30.5	25.3	27.9	32.2	JAN 13	20.0	JAN 4	0	3530	2776	164	3-4	0	0	0	JAN	83	74	78	83	21.5																		
MAJURO	30.2	24.6	27.4	32.2	DEC 4	21.1	JAN 2	0	3355	2776	117	6-7	0	0	0	DEC	83	76	79	82	4.8	4.2	7	15.2	7	2	9.0	3	61	301	260	0	4	0	9	0	0	0	
PAGO PAGO	29.8	24.1	26.9	32.8	AUG 8	17.8	AUG 15	0	3194	2818	126	10-11	0	0	0	SEP	87	75	83	86	5.1	3.1	10	17.0	10	11	7.5	18	145	202	232	0	26	0	12	0	0	0	
PONAPE R	31.3	23.6	27.4	33.9	JAN 9	20.6	JAN 5	0	3375	4979	189	31-1	0	0	0	AUG	79	88		77	8.5																		

See reference notes at end of table







# ANNUAL CLIMATOLOGICAL DATA METRIC UNITS

YEAR 1979

State and Station	Temperature				Extremes		Heating degree days		Cooling degree days		Precipitation			Relative humidity			Wind				Number of days																			
	Averages		Annual		Date		Date		Base 65°F		Base 65°F		Snow†			700 m EST			700 m EST			Resultant speed		Fog†		Thunderstorms		Snow 25 mm or more		Precipitation 25 mm or more		Sunrise to sunset		Clear, 0-3		Partly cloudy, 0-4		Cloudy, 0-8		
	°C	°C	°C	°C	°C	°C	°C	°C	Base 65°F	Base 65°F	mm	Greatest in 24 hours	Date (s)	mm	Greatest in 24 hours	Date (s)	%	%	%	%	m/s	m/s	direction	direction	Speed	m/s	Direction	Note	Tenths	Average sky cover	Clear, 0-3	Partly cloudy, 0-4	Cloudy, 0-8	25 mm or more	Thunderstorms	Heavy fog	Max. temp. above 32.2°C	Min. temp. below -17.8°C		
WASHINGTON	16.8	2.6	9.7	40.0	19	JUL	-23.3	24	FEB	3394	317	JAN 9-10	907	277	JAN 9-10	53	44	65	74	3.1	1.5	28	14.3	29	5	5.9	114	92	159	66	8	5	35	34	40	140	14			
YAKIMA	16.8	2.6	9.7	40.0	19	JUL	-23.3	24	FEB	3394	317	JAN 9-10	907	277	JAN 9-10	53	44	65	74	3.1	1.5	28	14.3	29	5	5.9	114	92	159	66	8	5	35	34	40	140	14			
WEST INDIES	30.3	23.9	27.1	35.0	23	OCT	19.4	7	MAR	0	0	NOV 25	0	0	NOV 25	85	82	70	81	3.8	2.9	8	21.5	30	6.2	54	185	126	195	0	59	0	64	0	0	0	0	0		
SAN JUAN P.R.	30.3	23.9	27.1	35.0	23	OCT	19.4	7	MAR	0	0	NOV 25	0	0	NOV 25	85	82	70	81	3.8	2.9	8	21.5	30	6.2	54	185	126	195	0	59	0	64	0	0	0	0	0	0	
EAST VIRGINIA	15.3	4.9	10.2	30.0	8	AUG	-20.6	10	FEB	3135	224	JUN 55	21-22	1814	216	FEB 6-7	86	87	67	73	4.0	1.1	23	16.1	14	1	7.7	50	78	237	166	24	33	67	0	38	114	6		
BECKLEY	15.3	4.9	10.2	30.0	8	AUG	-20.6	10	FEB	3135	224	JUN 55	21-22	1814	216	FEB 6-7	86	87	67	73	4.0	1.1	23	16.1	14	1	7.7	50	78	237	166	24	33	67	0	38	114	6		
CHARLESTON	17.9	6.5	12.2	32.8	9	AUG	-17.2	11	FEB	2667	497	JUN 50	20-21	1382	183	FEB 18-19	79	82	59	64	3.0	1.0	25	15.6	25	14	7.0	67	94	204	183	17	46	98	5	28	95	0		
ELKINS	15.6	3.1	9.3	31.1	8	AUG	-27.8	10	FEB	3430	218	JUN 52	9-10	1895	130	OCT 1-2	88	85	74	74	2.9	0.7	24	12.5	30	7.4	7.8	47	82	243	201	27	11	36	139	11	0	36	139	11
HUNTINGTON	17.8	7.0	12.4	33.9	9	AUG	-17.2	10	FEB	2641	558	JUN 87	20-21	859	165	FEB 7	74	77	59	61	2.9	0.7	24	12.5	30	7.4	7.5	52	92	221	165	10	39	78	6	33	98	0		
HUNTINGTON	17.8	7.0	12.4	33.9	9	AUG	-17.2	10	FEB	2641	558	JUN 87	20-21	859	165	FEB 7	74	77	59	61	2.9	0.7	24	12.5	30	7.4	7.5	52	92	221	165	10	39	78	6	33	98	0		
PARAFERSBURG U	16.5	6.2	11.4	33.3	7	AUG	-17.8	17	FEB	2929	467	JUN 45	21	1092	188	FEB 10-19	74	77	59	61	2.9	0.7	24	12.5	30	7.4	7.5	52	92	221	165	10	39	78	6	33	98	0		
PARAFERSBURG U	16.5	6.2	11.4	33.3	7	AUG	-17.8	17	FEB	2929	467	JUN 45	21	1092	188	FEB 10-19	74	77	59	61	2.9	0.7	24	12.5	30	7.4	7.5	52	92	221	165	10	39	78	6	33	98	0		
WISCONSIN	10.9	-6	5.7	32.2	12	JUL	-31.7	16	JAN	4748	211	AUG 47	26-27	1387	163	JAN 23	81	84	67	70	4.4	0.8	28	18.3	14	5	6.7	77	94	194	126	17	30	26	1	79	161	33		
GREEN BAY	10.9	-6	5.7	32.2	12	JUL	-31.7	16	JAN	4748	211	AUG 47	26-27	1387	163	JAN 23	81	84	67	70	4.4	0.8	28	18.3	14	5	6.7	77	94	194	126	17	30	26	1	79	161	33		
LA CROSSE	12.4	1.7	7.1	32.8	8	AUG	-32.2	16	JAN	4355	324	FEB 82	85	67	3.7	0.5	28	82	85	67	3.7	0.5	28	18.3	14	5	6.7	77	94	194	126	17	30	26	1	79	161	33		
WADISON	12.6	4	6.5	32.8	7	AUG	-33.3	16	JAN	4487	250	OCT 43	22-23	1341	208	JAN 12-13	86	88	65	69	4.0	0.8	26	19.7	14	5	6.8	72	104	189	122	18	37	34	1	73	160	34		
WADISON	12.6	4	6.5	32.8	7	AUG	-33.3	16	JAN	4487	250	OCT 43	22-23	1341	208	JAN 12-13	86	88	65	69	4.0	0.8	26	19.7	14	5	6.8	72	104	189	122	18	37	34	1	73	160	34		
MILLAUVEE	11.9	3.1	7.6	34.4	7	AUG	-26.7	15	JAN	4169	299	AUG 52	25-26	1331	320	JAN 12-13	79	81	66	70	4.9	1.3	26	23.2	14	5	6.6	80	101	184	131	11	37	36	5	70	133	21		
MILLAUVEE	11.9	3.1	7.6	34.4	7	AUG	-26.7	15	JAN	4169	299	AUG 52	25-26	1331	320	JAN 12-13	79	81	66	70	4.9	1.3	26	23.2	14	5	6.6	80	101	184	131	11	37	36	5	70	133	21		
YONING	14.1	-1.0	6.6	38.9	5	AUG	-33.9	1	JAN	4450	231	AUG 44	18-19	2636	320	NOV 19-20	46	43	63	70	5.5	2.6	24	20.6	22	24	6.2	91	118	156	102	25	30	9	32	61	191	32		
CASPER	14.1	-1.0	6.6	38.9	5	AUG	-33.9	1	JAN	4450	231	AUG 44	18-19	2636	320	NOV 19-20	46	43	63	70	5.5	2.6	24	20.6	22	24	6.2	91	118	156	102	25	30	9	32	61	191	32		
CHEYENNE	14.6	9	7.8	35.6	6	AUG	-27.2	21	JAN	3986	196	NOV 42	24-25	2499	503	NOV 20	38	41	56	57	5.1	2.4	29	25.0	14	5	5.8	101	129	135	120	24	61	23	12	41	169	16		
CHEYENNE	14.6	9	7.8	35.6	6	AUG	-27.2	21	JAN	3986	196	NOV 42	24-25	2499	503	NOV 20	38	41	56	57	5.1	2.4	29	25.0	14	5	5.8	101	129	135	120	24	61	23	12	41	169	16		
LANDER	13.6	-1.4	6.1	38.3	5	AUG	-35.0	31	JAN	4646	242	NOV 44	1-2	3137	513	NOV 10-11	50	45	59	66	2.9	0.8	23	27.3	14	5	5.5	112	119	134	64	24	27	4	20	64	191	37		
LANDER	13.6	-1.4	6.1	38.3	5	AUG	-35.0	31	JAN	4646	242	NOV 44	1-2	3137	513	NOV 10-11	50	45	59	66	2.9	0.8	23	27.3	14	5	5.5	112	119	134	64	24	27	4	20	64	191	37		
SHERIDAN	13.9	-2.0	5.9	37.8	5	AUG	-34.4	5	JAN	4629	177	JAN 23	28-29	1826	277	MAY 8-9	52	50	72	76	3.5	1.4	30	21.0	14	4	6.0	93	121	151	96	25	36	7	23	58	195	45		
SHERIDAN	13.9	-2.0	5.9	37.8	5	AUG	-34.4	5	JAN	4629	177	JAN 23	28-29	1826	277	MAY 8-9	52	50	72	76	3.5	1.4	30	21.0	14	4	6.0	93	121	151	96	25	36	7	23	58	195	45		

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.  
 \* Includes all forms of frozen precipitation, except hail occurring alone.  
 † Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.  
 ‡ Wind directions under resultant direction are in tens of degrees.  
 § Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.  
 ¶ Data in this table are obtained by conversion from data in the English Units table.  
 • Sun below horizon November 19 - January 23, inclusive.  
 × Sun below horizon November 24 - January 17, inclusive.  
 †† Peak gust.  
 ‡‡ Number of days maximum 21.1°C. or above for Alaskan Stations.  
 §§ And also on an earlier date or dates.  
 ¶¶ Includes all forms of frozen precipitation, except hail occurring alone.









# NORMALS, MEANS AND EXTREMES

State and Station	Elevation Ground (Meters)	Temperature (°C)						Precipitation (Millimeters)				Relative Humidity (Percent)				Wind Speed (m.p.s.)		Annual Mean Number of Days									
		Normal (1941-1970)			Extremes			Normal (1941-1970)		Extremes		Snow @		Humidity		Speed		Sunshine		Precipitation		Temperature					
		January	July	Annual	Record Highest	Record Lowest	Length (Yrs)	Wettest Month	Driest Month	Annual	Wettest Month	Driest Month	January	Maximum	January	July	January	July	January	July	Clear	Partly Cloudy	Cloudy	Max	Min		
		Maximum	Minimum										Mean Total	Ex-treme	1:00 a.m. EST	7:00 p.m. EST	Fastest Mile	Mean Speed	(% of Possible)	2.5mm or More	25.4mm or More	Thunderstorms	°C	°F			
ILLINOIS																											
CAIRO U	96	6.5	-1.8	32.1	22.0	15.2	37.2	37.2	494	2129	132	68	1197	380	Y	182	94	262	3458	867	845	4.4	2.9	28	47	66	
CHICAGO O HARE	201	-0.5	-9.6	28.4	15.9	9.4	21	37	725	3609	105	33	806	291	Y	117	287	1008	4676	667	1815	5.2	3.6	25	39	14	
CHICAGO MIDWAY	185	-0.3	-8.3	29.1	18.3	10.3	37	40	749	3404	104	40	875	360	Y	156	257	1092	5372	668	1855	5.1	3.8	26	41	14	
MOLINE	177	-1.1	-10.6	29.6	17.7	9.9	47	41	709	3552	116	33	909	360	Y	206	785	4172	265	88	4575	4.8	3.4	26	49	19	
PEORIA	199	-0.1	-9.1	29.7	18.1	10.4	49	39	749	3387	111	38	891	332	Y	159	168	632	4177	697	1856	5.0	3.6	23	41	20	
ROCKFORD	221	-1.1	-11.4	29.0	16.3	8.9	29	39.4	772	3802	112	33	933	300	Y	141	218	894	2777	667	1856	4.6	3.6	24	43	20	
SPRINGFIELD	179	1.6	-7.4	30.3	18.7	11.5	32	44.4	659	3087	106	44	890	252	Y	130	150	607	2777	697	1856	5.8	3.8	23	48	19	
INDIANA																											
EVANSVILLE	116	5.3	-4.6	31.6	19.3	13.3	39	46.7	558	2569	119	64	1064	343	Y	309	112	358	2697	768	457	4.2	2.8	26	45	15	
FORT WAYNE	241	0.3	-7.8	28.7	16.9	9.9	33	39.4	684	3449	99	52	909	247	Y	147	151	605	3459	717	48	5.2	3.7	29	40	13	
INDIANAPOLIS	241	2.2	-6.8	29.7	18.1	11.3	40	40.0	739	3098	106	60	984	322	Y	125	155	569	3188	1707	38	5.0	3.4	24	41	9	
SOUTH BEND	236	-0.3	-6.6	28.2	16.5	9.5	40	38.3	706	3590	102	49	919	248	Y	119	493	1798	4458	674	58	5.4	3.7	28	43	8	
IOWA																											
RUSSELLINGTON	211	-0.2	-9.9	30.1	18.1	10.4	82	43.9	725	3416	124	32	880	384	Y	424	185	660	3347	697	285	5.1	3.5	23	50	18	
DES MOINES	286	-2.5	-11.5	29.4	18.5	9.4	40	40.6	785	3727	124	37	784	360	Y	157	216	953	3037	666	98	5.2	4.0	24	48	11	
DUBUQUE	322	-3.2	-12.6	27.8	16.3	8.1	29	37.2	814	4042	134	32	1023	393	Y	225	231	1102	3947	367	38	5.0	3.9	24	49	25	
SIoux CITY	334	-2.1	-13.5	30.4	17.7	9.1	39	41.7	809	3862	117	17	654	262	Y	180	160	772	2907	687	118	5.0	4.1	20	45	39	
WATERLOO	265	-3.5	-13.9	28.7	16.4	8.0	31	39.4	839	4119	127	23	857	320	Y	236	173	800	3761	567	286	5.1	3.8	24	42	21	
KANSAS																											
CONCORDIA	448	2.7	-9.0	32.1	18.9	11.7	18	42.2	665	3124	127	17	701	359	Y	320	137	566	3350	1670	252	5.4	5.1	20	37	9	
DODGE CITY	787	5.9	-7.2	33.0	19.4	12.7	37	42.6	589	2803	85	13	523	232	Y	101	107	470	3257	859	54	6.1	5.8	24	38	5	
GODDARD	1114	5.3	-10.2	32.9	18.3	10.3	39	43.9	644	3399	74	9	423	205	Y	98	145	889	3877	576	38	4.6	5.4	29	48	15	
TOPEKA	267	3.5	-7.9	31.6	19.6	12.4	33	42.8	637	2917	147	25	880	386	Y	140	155	546	3867	756	66	5.5	3.9	26	49	8	
WICHITA	403	5.2	-6.0	33.2	20.9	13.7	27	45.0	580	2604	114	22	777	266	Y	126	119	404	3437	963	67	5.5	5.0	17	33	3	
KENTUCKY																											
COVINGTON	265	4.3	-5.3	30.3	18.1	12.2	18	45.6	584	2816	105	55	992	309	Y	284	202	632	2497	687	98	4.8	3.2	20	37	7	
LEXINGTON	294	5.2	-4.2	30.2	18.6	12.9	35	39.4	553	2627	123	54	1130	423	Y	169	157	427	2417	871	18	5.1	3.4	20	37	3	
LOUISVILLE	145	5.6	-4.2	30.7	19.1	13.1	32	40.6	546	2574	128	60	1095	379	Y	177	157	467	3587	763	86	4.3	3.0	27	45	2	
LOUISIANA																											
ALEXANDRIA	28	4.8	2.6	33.0	21.3	18.3	17	40.0	304	1222	142	83	1373	332	Y	559	10	18	1958	867	77	3.3	2.2	20	36	0	
BATON ROUGE	20	4.4	4.7	32.9	22.6	19.7	29	39.4	251	928	165	67	1373	369	Y	307	1	5	4685	667	13	4.2	2.7	25	37	0	
LAKE CHARLES	3	16.4	6.1	32.9	23.1	20.2	15	37.2	231	832	166	88	1409	507	Y	358	8	8	1028	770	36	4.7	2.9	25	37	0	
NEW ORLEANS INTL AP	1	16.8	6.4	32.4	22.9	20.2	33	37.8	224	814	171	57	1442	485	Y	224	1	5	6945	577	36	4.2	2.8	30	39	0	
SHREVEPORT	77	13.7	3.2	34.2	22.7	18.8	27	41.7	307	1204	132	68	1136	315	Y	182	23	41	1778	364	65	4.4	3.3	19	36	0	
MAINE																											
CARIBOU	190	-6.8	-16.9	24.2	12.3	3.8	40	40.6	935	5351	101	52	910	215	Y	204	602	2263	4627	3671	18	5.5	4.4	20	27	43	
PORTLAND	13	-0.4	-11.3	26.2	13.8	7.2	39	39.4	749	4165	123	66	1036	312	Y	196	498	1892	6867	7627	18	4.2	3.4	20	27	15	
MARYLAND																											
BALTIMORE INTL AP	45	5.5	-3.9	30.4	19.2	12.8	29	38.9	544	2627	107	71	1028	466	Y	199	135	569	5087	158	25	4.5	3.6	29	30	9	
MASSACHUSETTS																											
BLUE HILL OBS R	192	0.9	-7.4	26.9	16.5	9.3	94	38.3	668	3519	129	75	1189	477	Y	461	396	1537	7167	762	6	7.8	5.8	16	23	4	
ROSTON	5	2.2	-5.3	27.4	18.4	10.7	28	38.9	617	3122	115	70	1080	434	Y	213	323	1082	5996	656	27	6.3	4.8	16	23	11	
WORCESTER	301	-0.6	-8.8	26.3	16.0	8.4	24	35.6	713	3804	118	81	1149	334	Y	122	434	1867	6107	3606	129	5.5	3.8	16	21	7	
MICHIGAN																											
ALPENA	210	-2.8	-12.9	26.1	11.1	5.6	21	36.7	813	4732	83	34	701	213	Y	48	561	2179	4178	673	36	3.6	3.0	19	26	25	
DETROIT CITY AP	189	-0.2	-7.1	28.4	17.4	9.9	45	40.6	680	3460	127	68	786	204	Y	94	201	805	2548	6737	114	5.2	3.8	20	27	2	
DETROIT METRO. AP	193	-0.1	-8.2	28.6	16.2	9.5	21	38.9	695	3566	87	44	805	199	Y	4	251	1013	4688	5707	35	5.2	3.8	22	22	13	
FLINT	235	-1.2	-9.7	27.3	14.6	8.2	23	37.2	735	3911	87	40	756	280	Y	153	300	1158	5037	707	132	5.3	3.7	19	26	10	

















# ELEVATIONS

State and Station			State and Station			State and Station			State and Station		
	Ft	Mtrs		FT	Mtrs		Ft	Mtrs		Ft	Mtrs
<b>ALABAMA</b>			<b>IDAHO</b>			<b>NEVADA</b>			<b>TENNESSEE</b>		
Birmingham	630	192	Boise	2868	871	Elko	5077	1547	Bristol	1525	465
Huntsville	644	196	Lewiston	1436	438	Ely	6262	1909	Chattanooga	688	210
Mobile	221	67	Pocatello	4478	1365	Las Vegas	2180	664	Knoxville	980	299
Montgomery	202	62	<b>ILLINOIS</b>			Reno	4400	1341	Memphis	284	87
<b>ALASKA</b>			Cairo	U 357	109	Winnemucca	4314	1314	Nashville	605	184
Anchorage	132	40	Chicago (O'Hare)	674	205	<b>NEW HAMPSHIRE</b>			Oak Ridge	R 914	279
Annette	110	34	Chicago (Midway)	623	190	Concord	346	105	<b>TEXAS</b>		
Sarow	13	4	Moline	594	181	Mt. Washington	6267	2056	Abilene	1753	534
Sarter Island	50	15	Peoria	662	202	<b>NEW JERSEY</b>			Amarillo	3604	1099
Bethel	150	46	Rockford	743	226	Atlantic City	67	20	Austin	621	189
Settles	672	205	Springfield	613	187	Newark	30	9	Brownsville	20	6
Sig Delta	1274	389	<b>INDIANA</b>			Trenton	U 190	58	Corpus Christi	44	13
Cold Bay	103	31	Evansville	388	118	<b>NEW MEXICO</b>			Dallas/Fort Worth	576	176
Fairbanks	454	138	Fort Wayne	828	252	Albuquerque	5314	1620	Del Rio	1027	313
Gulkana	1579	481	Indianapolis	808	246	Clayton	4972	1515	El Paso	3916	1194
Homer	73	22	South Bend	773	236	Roswell	3619	1103	Galveston	U 54	16
Juneau	24	7	<b>IOWA</b>			<b>NEW YORK</b>			Houston Intercom	108	33
King Salmon	49	15	Burlington	702	214	Albany	292	89	Lubbock	3241	988
Kodiak	111	34	Des Moines	963	294	Binghamton	1638	499	Midland	2862	872
Kotzebue	16	5	Fort Dodge	1080	329	Buffalo	706	215	Port Arthur	22	7
Mc Grath	338	103	Sioux City	1103	336	New York	U 87	27	San Angelo	1908	582
Nome	28	9	Waterloo	878	268	New York Kennedy AP	22	7	San Antonio	794	242
St. Paul Island	28	9	<b>KANSAS</b>			Rochester	555	169	Victoria	117	36
Summit	2405	733	Concordia	1484	452	Syracuse	408	124	Waco	508	155
Talkeetna	356	180	Dodge City	2592	790	<b>NORTH CAROLINA</b>			Wichita Falls	1030	314
Unalakleet	21	6	Goodland	3688	1124	Asheville	2170	661	<b>UTAH</b>		
Yakutat	31	9	Topeka	885	270	Cape Hatteras	R 11	3	Milford	5033	1534
<b>ARIZONA</b>			Wichita	1340	408	Charlotte	769	234	Salt Lake City	4227	1288
Flagstaff	7018	2139	<b>KENTUCKY</b>			Greensboro	886	270	Wendover	4239	1292
Phoenix	1107	337	Covington	877	267	Raleigh	441	134	<b>VERMONT</b>		
Tucson	2555	779	Lexington	989	301	Wilmington	38	12	Burlington	340	104
Wanslow	4883	1488	Louisville	488	149	<b>VIRGINIA</b>			Lynchburg	937	286
Yuma	206	63	<b>LOUISIANA</b>			Bismarck	1660	506	Norfolk	30	9
<b>ARKANSAS</b>			Alexandria	118	36	Fargo	899	274	Richmond	177	54
Fort Smith	463	141	Saton Rouge	76	23	Williston	1905	581	Roanoke	1176	358
Little Rock	265	81	Lake Charles	32	10	<b>WASHINGTON</b>			Olympia	200	61
<b>CALIFORNIA</b>			New Orleans	30	9	Olympia	200	61	Quillayute	205	62
Sakersfield	492	150	Shreveport	259	79	Akron	1236	377	Seattle-Tacoma	450	137
Bishop	4145	1263	<b>MAINE</b>			Cincinnati Abbe Ob.	627	191	Seattle	28	9
Blue Canyon	5283	1610	Caribou	628	191	Cleveland	805	245	Spokane	2365	721
Eureka	U 60	18	Portland	63	19	Columbus	833	254	Stampede Pass	R 3967	1209
Fresno	327	100	<b>MARYLAND</b>			Dayton	1003	306	Walla Walla	U 991	302
Long Beach	40	12	Baltimore	155	47	Mansfield	1312	400	Yakima	1066	325
Los Angeles	U 104	32	<b>MASSACHUSETTS</b>			Toledo	692	211	<b>WEST INDIES</b>		
Los Angeles	U 512	156	Blue Hill Obs.	R 640	195	Youngstown	1186	361	San Juan, P. R.	62	19
Mt. Shasta	R 3587	1093	Boston	29	9	<b>OKLAHOMA</b>			Beckley	2514	766
Oakland	7	2	Worcester	1017	310	Oklahoma City	1304	397	Charleston	951	290
Red Bluff	353	108	<b>MICHIGAN</b>			Tulsa	676	206	Elkins	1997	608
Sacramento	25	8	Alpena	693	211	<b>OREGON</b>			Huntington	838	255
Sandberg	R 4523	1379	Detroit	626	191	Astoria	22	7	Parkersburg	U 637	194
San Diego	28	9	Detroit Metro.	664	202	Burns	U 4170	1271	<b>WISCONSIN</b>		
San Francisco	U 155	47	Flint	766	233	Eugene	373	114	Green Bay	702	214
San Francisco	18	5	Grand Rapids	803	245	Meacham	4056	1236	LaCrosse	672	205
Santa Maria	238	73	Houghton Lake	1160	354	Medford	1329	405	Madison	866	264
Stockton	27	8	Lansing	874	266	Pendleton	1495	456	Milwaukee	693	211
<b>COLORADO</b>			Marquette	U 734	224	Portland	39	12	<b>WYOMING</b>		
Alamosa	7541	2298	Muskegon	633	193	Salem	201	61	Casper	5290	1612
Colorado Springs	6170	1881	Sault Ste. Marie	724	221	Sexton Summit	R 3841	1171	Cheyenne	6141	1872
Denver	5332	1625	<b>MINNESOTA</b>			<b>PACIFIC AREA</b>			Lander	5558	1694
Grand Junction	4839	1475	Duluth	1417	432	Guam Taguac	R 365	111	Sheridan	3968	1209
Pueblo	4720	1439	International Falls	1183	361	Johnston	17	5	<b>ALABAMA</b>		
<b>CONNECTICUT</b>			Minneapolis	838	255	Korer	R 109	33	Birmingham	630	192
Bridgeport	17	5	Rochester	1320	402	Kwajalein	26	8	Huntsville	644	196
Hartford	179	55	St. Cloud	1043	318	Majuro	10	3	Mobile	221	67
<b>DELAWARE</b>			<b>MISSISSIPPI</b>			Pago Pago	R 10	3	Montgomery	202	62
Wilmington	80	24	Jackson	331	101	Ponape	R 151	46	Flagstaff	7018	2139
<b>DISTRICT OF COLUMBIA</b>			Meridian	310	94	Truk Moen Island	8	2	Phoenix	1107	337
Wash. Dulles Int. AP	323	98	<b>MISSOURI</b>			Wake Island	12	4	Tucson	2555	779
Wash. Nat'l AP	65	20	Columbia, Regional	898	274	Yap	R 56	17	Wanslow	4883	1488
<b>FLORIDA</b>			Kansas City	750	229	<b>PENNSYLVANIA</b>			Yuma	206	63
Apalachicola	U 35	11	St. Joseph	817	249	Allentown	385	117	<b>ARIZONA</b>		
Daytona Beach	41	12	St. Louis	564	172	Erie	737	225	Flagstaff	7018	2139
Fort Myers	12	4	Springfield	1270	387	Harrisburg	351	107	Phoenix	1107	337
Jacksonville	31	9	<b>MONTANA</b>			Philadelphia	28	9	Tucson	2555	779
Key West	21	6	Billings	3570	1088	Pittsburgh	1225	373	Wanslow	4883	1488
Lakeland	U 236	72	Glasgow	2298	700	Pittsburgh	U 1017	334	Yuma	206	63
Miami	12	4	Great Falls	3657	1115	Scranton	948	289	<b>ARIZONA</b>		
Orlando	119	36	Harve	2599	792	Williamsport	525	160	Flagstaff	7018	2139
Pensacola	118	36	Helena	3898	1188	<b>RHODE ISLAND</b>			Phoenix	1107	337
Tallahassee	68	21	Kalispell	2973	906	Block Island	118	36	Tucson	2555	779
Tampa	11	3	Miles City	2634	803	Providence	62	19	Wanslow	4883	1488
West Palm Beach	21	6	Missoula	3189	972	<b>SOUTH CAROLINA</b>			Yuma	206	63
<b>GEORGIA</b>			<b>NEBRASKA</b>			Charleston	48	15	Flagstaff	7018	2139
Athens	811	247	Grand Island	1856	566	Columbia	225	69	Phoenix	1107	337
Atlanta	1034	315	Lincoln	1189	362	Grnvl-Spartanburg	971	296	Tucson	2555	779
Augusta	148	45	Norfolk	1351	413	<b>SOUTH DAKOTA</b>			Wanslow	4883	1488
Columbus	394	120	North Platte	2787	849	Aberdeen	1300	396	Yuma	206	63
Macon	362	110	Omaha	982	299	Huron	1289	393	<b>ALABAMA</b>		
Rome	643	196	Scottsbluff	3958	1206	Rapid City	3168	966	Birmingham	630	192
Savannah	51	16	Valentine	2598	792	Sioux Falls	1427	435	Huntsville	644	196
<b>HAWAII</b>			<b>NEBRASKA</b>			<b>UTAH</b>			Knoxville	980	299
Hilo	36	11	Grand Island	1856	566	Milford	5033	1534	Memphis	284	87
Honolulu	15	5	Lincoln	1189	362	Salt Lake City	4227	1288	Nashville	605	184
Kahului	67	20	Norfolk	1351	413	Wendover	4239	1292	Oak Ridge	R 914	279
Lihue	148	45	North Platte	2787	849	<b>VERMONT</b>			Burlington	340	104
<b>ALABAMA</b>			Omaha	982	299	<b>VIRGINIA</b>			Lynchburg	937	286
Birmingham	630	192	Scottsbluff	3958	1206	Norfolk	30	9	Norfolk	30	9
Huntsville	644	196	Valentine	2598	792	Richmond	177	54	Roanoke	1176	358
Mobile	221	67	<b>NEBRASKA</b>			<b>WASHINGTON</b>			Olympia	200	61
Montgomery	202	62	Grand Island	1856	566	Olympia	200	61	Quillayute	205	62
<b>ALASKA</b>			Lincoln	1189	362	Seattle-Tacoma	450	137	Seattle	28	9
Anchorage	132	40	Norfolk	1351	413	Spokane	2365	721	Stampede Pass	R 3967	1209
Annette	110	34	North Platte	2787	849	Walla Walla	U 991	302	Yakima	1066	325
Sarow	13	4	Omaha	982	299	<b>WEST INDIES</b>			San Juan, P. R.	62	19
Sarter Island	50	15	Scottsbluff	3958	1206	<b>WEST VIRGINIA</b>			Beckley	2514	766
Bethel	150	46	Valentine	2598	792	Charleston	951	290	Elkins	1997	608
Settles	672	205	<b>NEBRASKA</b>			Huntington	838	255	Parkersburg	U 637	194
Sig Delta	1274	389	Grand Island	1856	566	<b>WISCONSIN</b>			Green Bay	702	214
Cold Bay	103	31	Lincoln	1189	362	LaCrosse	672	205	Madison	866	264
Fairbanks	454	138	Norfolk	1351	413	Milwaukee	693	211	<b>WYOMING</b>		
Gulkana	1579	481	North Platte	2787	849	Casper	5290	1612	Cheyenne	6141	1872
Homer	73	22	Omaha	982	299	Lander	5558	1694	Sheridan	3968	1209
Juneau	24	7	Scottsbluff	3958	1206	<b>ALABAMA</b>			Birmingham	630	192
King Salmon	49	15	Valentine	2598	792	Huntsville	644				



## GENERAL SUMMARY OF TORNADES, 1979

HENRY N. VIGANSKY  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
ENVIRONMENTAL DATA AND INFORMATION SERVICE  
NATIONAL CLIMATIC CENTER

A total of 852 tornadoes was reported in the United States and its territories in 1979. Tornadoes occurred on 186 days, killed 84 people, injured 3,077 others, and caused property losses well in excess of one billion dollars. Twenty-one of these storms were killer tornadoes. In 1979 tornadoes destroyed or damaged 1,061 mobile homes resulting in 9 deaths and injuries to 130 persons.

New monthly records of tornado occurrences by state, territory, and nation, state to state border crossings, and location of killer tornadoes are shown in the following three tables:

### NEW MONTHLY TORNADE RECORDS

<u>Month</u>	<u>State</u>	<u>New Record</u>	<u>Previous Record</u>
January	California	3	2 (1958)
	Florida	12	11 (1978)
April	Arkansas	29	19 (1973)
May	Florida	27	25 (1978)
June	Minnesota	17	13 (1968)
	Wyoming	14	12 (1976)
July	Alabama	4	2 (1977)
	Colorado	21	12 (1958)
	Wyoming	18	8 (1958)
August	United States	127	107 (1974)
	Iowa	16	10 (1964)
	Nevada	2	1 (1975)
	Oklahoma	13	5 (1976)
	Virgin Islands	1	0
	Wisconsin	15	10 (1968)
	Wyoming	7	5 (1975)
September	Florida	24	11 (1947)
	Georgia	4	2 (1956)
	Maryland	7	2 (1935)
	Virginia	8	6 (1935)
	Wyoming	2	1 (1973)
October	Pennsylvania	6	1 (1975)
	Virginia	2	1 (1976)
	West Virginia	1	0
November	Pennsylvania	3	2 (1957)

### STATE TO STATE BORDER CROSSINGS

<u>DATE</u>	<u>NUMBER</u>		<u>STATE</u>		<u>STATE</u>
March 19	1	from	Missouri	into	Iowa
April 10	3	from	Texas	into	Oklahoma
April 11	1	from	Oklahoma	into	Arkansas

# GENERAL SUMMARY OF TORNAOES

## KILLER TORNAOES

<u>Date</u>	<u>State</u>	<u>County</u>	<u>Total Deaths</u>
March 31	Kentucky	Barren	1
April 10	Oklahoma	Comanche	3
10	Texas	Wichita	42
10	Texas	Wilbarger	11
10	Texas	Wilbarger	1
12	Indiana	Warrick	1
May 2	Oklahoma	Woodward	1
8	Florida	Polk	1
June 19	South Dakota	Roberts	1
28	Iowa	Calhoun	3
28	Iowa	Kossuth	2
30	Tennessee	Jackson	2
July 16	Wyoming	Laramie	1
August 9	Wisconsin	Calumet	1
10	Massachusetts	Worcester	2
28	Iowa	Page	1
		Fremont	1
September 5	Pennsylvania	Chester	1
5	Virginia	Fairfax	1
October 3	Connecticut	Hartford	3
22	Arkansas	Chicot	1
30	Oklahoma	Carter	3

Some of the more significant tornadoes are described briefly in the following annual summary:

On New Years Day at 2:05 p.m., the first tornado of the 1979 season touched down briefly in Jay, Florida, damaging power lines and uprooting a few trees.

At 4:30 p.m., on March 31, a tornado touched down 4 miles (6.4 km) east of Hays, Kentucky, and left an 8 mile (12.9 km) path of destruction. This storm was responsible for the first fatality of the 1979 season.

During the afternoon of April 10, a line of fast moving thunderstorms spawned 10 destructive tornadoes in northern Texas. At 3:20 p.m., a large tornado touched down in the Lockett area and moved northeastward through Vernon, Texas, and then crossed the Red River into Oklahoma. This storm was responsible for one death in Lockett, 10 in Vernon, and for injuries to 67 people. Total property damage was estimated to be in excess of 27 million dollars. This same afternoon a violent tornado touched down at 5:50 p.m. 3 miles (4.8 km) northeast of Halliday, Texas, and then moved northeastward leaving a path of destruction from 1/4 mile (.4 km) up to one mile (1.6 km) wide as it passed through 8 miles (12.9 km) of residential area in Wichita Falls, Texas. Three thousand and ninety-five suburban homes, 1,062 apartment units and 93 mobile homes were demolished. Six hundred homes and 130 condominium units sustained major damage. The Ben Milam Elementary and the Joe B. McNeil Junior High Schools were damaged beyond repair, and the city's eight other elementary schools received minor damage. Numerous business establishments and two shopping centers were heavily damaged. It was estimated that about 20,000 people were left homeless, 1,740 people were injured and 42 lost their lives. Twenty-five of the fatalities were automobile related; sixteen people were killed while attempting to evade the storm. Eleven of these 16 people left homes that were not damaged by the tornado. This tornado ranks fifth in being the most destructive tornado in the nation's history. This same storm system also spawned the tornado having the longest path for the 1979 season. The tornado touched down near Harrold, Texas, and then crossed the Red River into Oklahoma. This twister was on the ground 9 miles (14.5 km) in Texas and 55 miles (88.5 km) in Oklahoma. Damage was light in Texas, but the storm was responsible for the death of one woman. The airport in Grandfield, Oklahoma was demolished, 8 airplanes were destroyed and one was badly damaged. The storm continued on its northeastward course destroying 18 homes, 9 mobile homes and 2 grain elevators before it subsided in the northwestern corner of Stephens County, Oklahoma.

## GENERAL SUMMARY OF TORNADOES

On May 8, about 2:15 p.m., a tornado touched down southwest of Auburndale, Florida. The storm demolished a 200-unit trailer park, destroyed several homes, severely damaged a citrus processing plant, and ripped off the roofs from the Auburndale Senior, Junior and Middle School complex. The school children took refuge in the interior hallways and by taking this safety precaution, averted a major disaster. Thirteen students and 27 other people were injured. One elderly lady was killed when the storm demolished a concrete block shed in which she had sought shelter from the oncoming tornado.

During the early evening hours of June 28, an outbreak of 10 tornadoes swept through north-central Iowa. One of the two most destructive of these tornadoes touched down 3 miles (4.8 km) southwest of Bancroft and moved south-southeast to one mile (1.6 km) northeast of Irvington, Iowa. The city of Algona was in the direct path of the storm resulting in 104 destroyed homes, 349 damaged homes and 20 razed business establishments. Two people lost their lives and 34 were injured. The other destructive twister touched down 6 miles (9.7 km) west of Palmer and left a 30 mile (48.3 km) long path of rubble 1/2 mile (.8 km) northwest of Knierim, Iowa. As the tornado passed through Manson, the path widened to 1,000 feet (305 m) and destroyed 110 homes, the junior high school and 25 businesses. The storm was responsible for 26 injuries and three fatalities.

At 3:25 p.m. on July 16, the most devastating tornado in the history of Wyoming developed from a moderate thunderstorm and moved through the northern section of Cheyenne, destroying 140 homes, 17 mobile homes and damaging 325 homes. Also, this storm caused major damage to the Cheyenne Municipal Airport including four C-130 airplanes. A 14 month old boy was killed, his mother and another child were seriously injured, and 38 other people received minor injuries.

During the period September 3 through September 6, Hurricane David spawned 34 tornadoes along the eastern coast of the United States. The following states reported tornadoes: Delaware 1; Florida 10; Maryland 7; New Jersey 1; Pennsylvania 2; South Carolina 5; and, Virginia 8. Two of these tornadoes are classified as killer tornadoes, each causing the death of one person, and they were recorded in Pennsylvania and Virginia.

On October 3, a huge tornado struck without warning at the Bradley International Airport, Connecticut, and caused considerable damage to the Bradley Air Museum. Sixteen of the vintage airplanes stored at the museum were demolished and 13 others badly damaged. Also, 17 corporate aircraft received extensive damage. Another area hard hit by the storm was between Bradley International Airport and Windsor Locks, where scores of businesses and homes were reduced to rubble. Damage exceeded 200 million dollars and the tornado left a toll of three dead and 500 injured. This was the first killer tornado in the state of Connecticut during the month of October since records have been kept.

On December 23 at 8:20 p.m., the final tornado of the 1979 season touched down in the northeastern section of Dermott, Arkansas. The storm demolished one mobile home and a frame house and caused considerable damage to four other houses. No fatalities or injuries were reported.

Additional tornado information is presented in the following charts and tables. More detailed information about tornadic activity can be obtained from the monthly Storm Data publications. The National Severe Storms Forecast Center has developed a magnetic tape containing tornado statistics for the period 1950-1979. The tape contains the date/time (year, month, day and hour), location (latitude-longitude, state and county), path (length and width), number of fatalities, number of injuries and amount of property damage. A copy of this tape can be obtained by contacting the National Climatic Center, Federal Building, Asheville, NC 28801.





TORNADO SUMMARY 1979

STATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
ILLINOIS	Number			3	6	6	6	2					20
	Days			2	4	4	4	1					12
	Deaths												0
INDIANA	Number						1		5				6
	Days						1		1				4
	Injuries												0
NEVADA	Number							2					2
	Days							2					0
	Injuries												0
NEW HAMPSHIRE (None)	Number												3
	Days												14
	Injuries												0
NEW JERSEY	Number												6
	Days												4
	Injuries												2
NEW MEXICO	Number			1	2	1	4	5					13
	Days			1	2	1	3	4					11
	Injuries												0
NEW YORK	Number			1			1	1					3
	Days			1			1	1					3
	Injuries						1						1
NORTH CAROLINA	Number			1	4	1	1	2	1				12
	Days			1	1	1	1	1	1				8
	Injuries			3	9	3							15
NORTH DAKOTA	Number			1	8	7	8						25
	Days			1	6	3	3						14
	Injuries												0
OHIO	Number				2	1	1	1					4
	Days				2	1	1	1					4
	Injuries						4						4
OKLAHOMA	Number			5	17	7	2	13	1	2	1		51
	Days			3	3	2	3	5	1	2	1		22
	Injuries			112	26					3	2		140
OREGON (None)	Number												
	Days												
	Injuries												
PENNSYLVANIA	Number			1	1	1	1	1	2	6	3		14
	Days			1	1	1	1	1	1	2	1		7
	Injuries								4	1			5
PUERTO RICO	Number			1	1	1							2
	Days			1	1	1							2
	Injuries												0
RHODE ISLAND (None)	Number			1	1	1							3
	Days			1	1	1							14
	Injuries												0
SOUTH CAROLINA	Number			1	1	1	1		5				9
	Days			1	1	1	1		1				6
	Injuries												2
SOUTH DAKOTA	Number			3	15	11	11	7	1				55
	Days			2	3	6	2	1	1				14
	Injuries												0
TENNESSEE	Number			1	1	1							3
	Days			1	1	1							4
	Injuries												2
TEXAS	Number	1	2	24	33	39	14	10	4	15	3		157
	Days	1	2	8	7	10	6	9	5	2	3		55
	Injuries	1	5	1014	5	2				7			1834
UTAH (None)	Number			1									1
	Days			1									1
	Injuries												0
VERMONT (None)	Number												1
	Days												1
	Injuries												0
VIRGINIA	Number			1	4	1	1	2	1				12
	Days			1	1	1	1	1	1				8
	Injuries			3	9	3							15
VIRGIN ISLANDS	Number			1	8	7	8						25
	Days			1	6	3	3						14
	Injuries												0
WASHINGTON	Number				2	1	1	1					4
	Days				2	1	1	1					4
	Injuries						4						4
WEST VIRGINIA	Number			5	17	7	2	13	1	2	1		51
	Days			3	3	2	3	5	1	2	1		22
	Injuries			112	26					3	2		140
WISCONSIN	Number												
	Days												
	Injuries												
WYOMING	Number			1	1	1	1	1	2	6	3		14
	Days			1	1	1	1	1	1	2	1		7
	Injuries								4	1			5
UNITED STATES	Number	16	4	53*	120*	112	150	132	127	68	47	21	852*
	Days	9	3	13	17	23	24	30	27	19	12	8	186
	Injuries	1	4	75	2037	158	98	55	22	36	555	36	3077

\* Corrected for boundary-crossing tornadoes  
 † Tornado Days for County as a whole

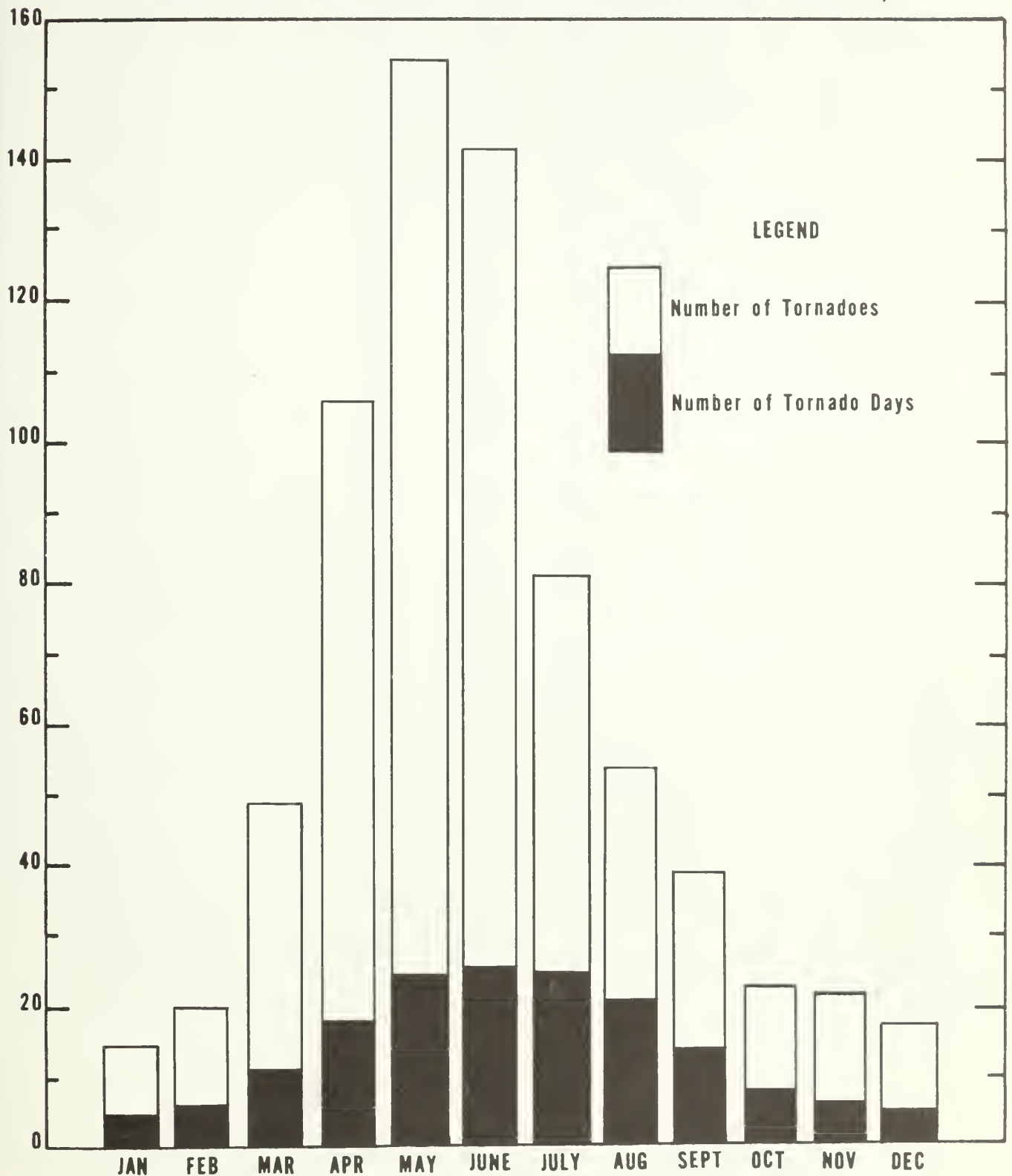
NUMBER OF TORNADES, TORNADO DAYS, AND DEATHS BY MONTHS, 1953 - 1979

YEAR	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		ANNUAL														
	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS	NUMBER	DEATHS													
1953	14	0	16	3	40	10	24	47	34	94	21	161	111	24	244	31	19	0	24	15	0	5	4	0	6	4	0	12	6	0	21	8	49	421	136	515			
1954	2	0	17	2	63	13	10	112	22	3	101	22	9	107	26	5	45	23	0	39	21	1	15	10	3	14	8	2	2	2	17	3	1	550	160	36			
1955	3	0	4	0	43	15	5	99	18	7	167	26	103	158	28	2	49	21	5	33	18	0	21	8	2	23	7	1	20	4	1	593	152	126					
1956	2	0	4	0	31	7	1	85	15	67	79	24	4	65	21	0	91	26	1	43	20	2	16	10	0	29	8	0	7	6	0	504	155	83					
1957	17	3	13	5	38	7	1	216	21	29	227	26	87	147	25	14	55	19	0	20	14	0	17	10	2	18	11	2	58	11	25	856	154	192					
1958	12	7	0	20	15	10	0	76	19	4	68	21	0	127	27	42	121	30	1	46	20	1	24	14	1	9	6	4	45	6	0	564	166	66					
1959	16	2	3	20	43	11	9	30	12	1	226	28	8	73	25	2	63	24	0	38	18	0	58	15	14	20	10	11	4	0	2	604	156	58					
1960	9	4	0	28	10	0	70	20	0	7	201	26	34	124	27	3	43	22	0	47	23	1	22	13	0	18	10	1	25	6	0	616	172	46					
1961	1	0	31	8	0	124	17	7	74	19	3	137	25	23	107	23	2	77	27	0	27	16	0	53	16	15	14	5	0	36	7	1	697	169	51				
1962	12	3	1	25	7	0	37	9	41	8	1	200	22	3	171	29	0	78	26	0	51	21	6	24	11	0	11	10	0	5	4	0	657	152	28				
1963	15	5	1	6	0	48	12	8	84	14	16	71	21	1	91	23	0	62	26	0	26	13	2	33	13	3	13	5	0	15	6	0	464	141	31				
1964	14	3	10	2	2	0	36	11	6	157	23	15	135	20	16	136	24	0	63	23	0	79	23	2	25	10	0	22	4	22	17	8	0	704	156	73			
1965	21	11	0	32	4	0	34	9	2	129	20	264	275	25	17	147	28	6	86	26	0	61	23	1	64	21	0	16	4	1	34	6	5	7	4	0	906	181	296
1966	1	0	28	5	0	12	6	58	80	20	12	98	17	0	126	28	19	100	27	3	58	21	0	22	13	0	29	6	6	20	3	0	585	150	98				
1967	39	4	7	8	5	0	42	14	3	149	18	73	116	25	3	210	28	6	90	25	1	28	16	2	139	16	5	36	7	4	8	5	0	926	173	114			
1968	5	3	0	7	0	28	8	0	102	15	40	145	26	72	136	27	11	56	22	2	66	23	2	25	14	0	14	9	0	44	12	3	660	171	131				
1969	3	1	32	5	0	8	2	1	68	15	2	145	25	4	137	28	7	99	27	0	69	21	19	20	11	0	26	10	0	5	3	0	23	7	1	608	155	96	
1970	9	5	0	16	3	0	25	12	2	117	16	29	88	19	26	134	24	6	81	26	3	55	21	0	54	20	0	50	13	6	10	4	0	653	171	172			
1971	18	7	1	83	12	131	40	13	2	75	14	11	166	24	7	199	28	1	100	30	1	50	21	0	47	15	0	38	12	0	16	7	0	888	192	156			
1972	33	10	5	7	4	0	69	17	0	96	20	16	140	27	0	114	25	2	115	29	0	59	23	2	49	19	0	34	10	0	17	4	2	741	194	27			
1973	33	7	1	10	4	0	80	16	17	150	22	10	250	26	35	224	26	2	80	26	0	51	23	4	69	22	3	25	11	0	81	11	12	1102	206	87			
1974	24	8	2	23	9	0	36	12	1	269	22	313	144	28	10	194	26	31	59	19	0	107	26	0	25	11	0	45	10	4	13	8	0	8	5	0	947	184	361
1975	52	7	12	45	12	7	84	16	12	108	20	13	188	30	5	196	28	6	79	26	2	60	25	2	34	17	0	12	7	0	40	8	0	22	8	1	920	204	60
1976	12	5	0	37	6	5	180	18	21	113	23	1	155	24	8	169	26	3	84	28	2	38	18	1	35	15	3	11	5	0	0	0	1	1	0	835	169	44	
1977	5	4	0	17	3	2	64	15	0	88	15	26	228	29	4	132	27	0	99	27	1	82	26	6	65	21	1	25	5	1	24	10	0	23	7	2	852	189	43
1978	23	7	2	6	0	17	8	0	107	17	4	213	27	2	148	28	17	143	30	11	65	24	1	20	10	6	7	5	0	9	5	0	30	9	5	788	173	53	
1979	16	9	0	4	3	0	53	13	1	120	17	58	112	23	2	150	24	8	132	30	1	127	27	5	68	19	2	47	12	7	21	8	0	2	1	0	852	186	84
1953-79	TOTAL	411	128	90	549	151	192	1318	311	208	2862	481	1059	4149	657	3829	703	439	2181	684	34	1459	560	60	1049	378	60	616	214	61	595	164	49	475	136	96	19493	4567	2997
MEAN	15	5	3	20	6	7	49	12	8	106	18	39	154	24	24	142	26	16	81	25	1	54	21	2	39	14	2	23	8	2	22	6	2	18	5	4	722	169	111



# AVERAGE NUMBER OF TORNADOES AND TORNADO DAYS EACH MONTH IN THE UNITED STATES

(BASED ON 19,493 TORNADOES THAT OCCURRED FROM 1953-1979)



NUMBER OF TORNADES, TORNADO DAYS, DEATHS, AND RESULTING LOSSES BY YEARS, 1916 - 79

YEAR	Number Tornadoes	Tornado Days	Total Deaths	Most Deaths in Single Tornado	Total Property Losses †	PROPERTY LOSS FREQUENCY*		
						Category 5	Category 6	Category 7 and Over
1916	90	36	150	30	6	7	1	0
1917	121	38	551	101	7	21	9	0
1918	81	45	136	36	7	20	5	0
1919	64	35	206	59	7	10	2	0
1920	87	50	499	87	7	14	10	0
1921	105	55	202	61	7	22	3	0
1922	108	64	135	16	7	27	5	0
1923	102	59	110	23	6	21	1	0
1924	130	57	376	85	7	26	11	1
1925	119	65	794	689	7	34	2	1
1926	111	57	144	23	6	28	0	0
1927	163	62	540	92	7	42	9	1
1928	203	79	95	14	7	40	7	0
1929	197	74	274	40	7	48	4	0
1930	192	72	179	41	7	38	6	0
1931	94	57	36	6	6	14	1	0
1932	151	67	394	37	7	23	1	1
1933	258	96	362	34	7	46	9	0
1934	147	77	47	6	6	10	3	0
1935	180	77	71	11	6	29	0	0
1936	151	71	552	216	7	17	5	1
1937	147	75	29	5	6	24	0	0
1938	213	76	183	32	7	29	6	0
1939	152	75	91	27	7	21	3	0
1940	124	62	65	18	7	13	2	0
1941	118	57	53	25	6	24	1	0
1942	167	66	384	65	7	42	10	0
1943	152	61	58	5	7	28	8	0
1944	169	68	275	100	7	50	9	0
1945	121	66	210	69	7	21	10	1
1946	106	65	78	15	7	29	7	0
1947	165	78	313	169	7	46	7	1
1948	183	68	139	33	7	62	11	2
1949	249	80	211	58	7	54	13	0
1950	200	88	70	18	7	47	9	0
1951	262	113	34	6	7	35	11	2
1952	240	98	229	57	7	53	19	0
1953	421	136	515	116	8	63	18	7
1954	550	160	36	6	7	63	8	1
1955	593	152	126	80	7	74	13	1
1956	504	155	83	25	7	83	24	1
1957	856	154	192	44	8	129	26	3
1958	564	166	66	19	7	70	8	1
1959	604	156	58	21	7	70	4	1
1960	616	172	46	16	7	65	11	1
1961	697	169	51	16	7	103	21	1
1962	657	152	28	17	7	51	10	0
1963	464	141	31	5	7	77	15	1
1964	704	156	73	22	7	113	17	5
1965	906	181	296	44	8	126	30	11
1966	585	150	98	58	8	79	13	4
1967	926	173	114	33	8	125	33	8
1968	660	171	131	34	8	82	26	6
1969	608	155	66	32	8	98	16	3
1970	653	171	72	26	8	97	24	6
1971	888	192	156	58	8	71	30	5
1972	741	194	27	6	8	100	28	1
1973	1102	206	87	7	9	219	67	9
1974	947	184	361	34	9	166	82	25
1975	920	204	60	9	9	189	31	11
1976	835	169	44	5	8	145	41	5
1977	852	189	43	22	8	173	40	6
1978	788	173	53	16	9	153	53	6
1979	852	186	84	42	9	169	62	11
Means: 1953-79	722	169	111	---	---	109	28	5

NOTE: -- The above estimated losses are based on values at time of occurrence.

† Storm damages in categories:

- 5. \$50,000 to \$500,000
- 6. \$500,000 to \$5 million
- 7. \$5 million to \$50 million
- 8. \$50 million to \$500 million
- 9. \$500 million and over

\*Number of times property losses reported in Storm Data in Categories 5, 6, 7 and over.

**NUMBER OF TORNADES, TORNAO DAYS, AND DEATHS BY STATES, 1953-79**

STATE	TORNADES							DAYS		DEATHS		
	TOTAL	AVER AGE	GREAT EST	YEAR	LEAST	YEAR	Per # 10,000 Sq. Mi.	TOTAL	AVER- AGE	TOTAL	AVER AGE	Per @ 10,000 Sq. Mi.
Alabama	536	20	45	1973+	5	1956	3.85	291	11	202	7	39
Alaska	1	0	1	1959	0	1979+	.00	1	0	0	0	0
Arizona	99	4	17	1972	0	1965+	.32	82	3	3	0	0
Arkansas	549	20	50	1973	2	1969	3.83	278	10	121	4	23
California	88	3	13	1978	0	1968+	.21	64	2	0	0	0
Colorado	435	16	42	1976	1	1959	1.55	284	11	2	0	0
Connecticut	41	2	8	1973	0	1978+	3.03	37	1	4	0	8
Delaware	26	1	5	1975	0	1978+	4.68	24	1	0	0	0
District of Columbia	0	0	0	-	0	1978+	.00	0	0	0	0	0
Florida	1095	41	97	1975	10	1956	6.93	697	26	51	2	9
Georgia	562	21	46	1971+	7	1960	3.54	326	12	72	3	12
Hawaii	16	1	4	1971	0	1978+	.92	13	0	0	0	0
Idaho	36	1	5	1967	0	1977	.16	28	1	0	0	0
Illinois	736	27	107	1974	4	1953	4.83	342	13	129	5	23
Indiana	603	22	48	1973	6	1972+	6.15	290	11	200	7	55
Iowa	726	27	54	1964	7	1956+	4.78	339	13	54	2	10
Kansas	1194	44	97	1955	14	1976	5.38	555	21	162	6	20
Kentucky	214	8	34	1974	0	1953	1.96	121	4	99	4	25
Louisiana	530	20	55	1974	3	1955	4.05	334	12	86	3	18
Maine	70	3	11	1971	0	1979+	.78	62	2	1	0	0
Maryland	75	3	10	1975	0	1970+	2.63	60	2	1	0	1
Massachusetts	107	4	12	1958	0	1959	4.80	77	3	99	4	120
Michigan	425	16	39	1974	2	1959	2.70	246	9	226	8	39
Minnesota	453	17	34	1968	5	1972	2.00	273	10	73	3	9
Mississippi	578	21	44	1973	1	1979	4.49	311	12	314	12	66
Missouri	750	28	79	1973	6	1953	3.99	359	13	120	4	17
Montana	109	4	13	1978	0	1974+	.27	81	3	0	0	0
Nebraska	947	35	78	1975	10	1966	4.54	471	17	44	2	6
Nevada	18	1	4	1964	0	1978+	.06	17	1	0	0	0
New Hampshire	59	2	9	1963	0	1979+	2.35	53	2	0	0	0
New Jersey	43	2	8	1973	0	1978+	2.03	35	1	0	0	0
New Mexico	229	8	18	1972	0	1953	.70	172	6	3	0	0
New York	96	4	8	1978	0	1953	.72	81	3	2	0	0
North Carolina	314	12	38	1973	2	1970	2.21	197	7	22	1	4
North Dakota	444	16	52	1976	2	1961	2.33	259	10	21	1	3
Ohio	367	14	43	1973	3	1976	3.30	203	8	147	5	36
Oklahoma	1452	54	107	1957	21	1978	7.69	613	23	177	7	25
Oregon	24	1	3	1975+	0	1979+	.09	20	1	0	0	0
Pacific	1	0	1	1975	0	1979+	.52	1	0	0	0	0
Pennsylvania	201	7	23	1976	0	1959	1.64	145	5	8	0	2
Puerto Rico	9	0	2	1979+	0	1978+	.97	8	0	0	0	0
Rhode Island	1	0	1	1972	0	1979+	.31	1	0	0	0	0
South Carolina	246	9	23	1973	1	1970+	2.93	169	6	24	1	8
South Dakota	632	23	64	1965	1	1959	3.04	320	12	8	0	1
Tennessee	298	11	44	1974	1	1962	2.61	161	6	74	3	18
Texas	3192	118	232	1967	32	1953	4.42	1322	49	370	14	14
Utah	32	1	5	1970+	0	1979+	.14	25	1	0	0	0
Vermont	25	1	5	1962	0	1979+	.96	21	1	0	0	0
Virginia	156	6	22	1975	1	1963	1.42	107	4	16	1	4
Virgin Islands	2	0	1	1979+	0	1978+	5.57	2	0	0	0	0
Washington	30	1	4	1978+	0	1977+	.16	24	1	6	0	1
West Virginia	54	2	6	1974	0	1960+	.83	43	2	1	0	0
Wisconsin	471	17	33	1964	3	1953	3.11	261	10	53	2	9
Wyoming	239	9	42	1979	0	1970	.90	168	6	2	0	0
TOTAL: UNITED STATES	*19493	722	1102	1973	421	1953	2.00	†4567	169	2997	111	8

+ Also in earlier year(s).

\* Corrected for boundary-crossing tornadoes.

† Tornado Days for Country as a whole.

# Mean annual tornadoes per 10,000 square miles.

@ Number of deaths per 10,000 square miles -- 1953-79.



## NUMBER OF FUNNEL CLOUDS 1979

STATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
Alabama	2			2	2			3		2	5		16
Alaska													0
Arizona		2						1					3
Arkansas		2	3	13	12		8	3					41
California	1												1
Colorado					4	11	15	1					31
Connecticut													0
Delaware													0
District of Columbia													0
Florida	1	1		2	24	9	15	15	16	1	2		86
Georgia										3			3
Hawaii	1	1	3	1									6
Idaho				1									1
Illinois													0
Indiana						4	4	18		3			29
Iowa						2	20	1					23
Kansas				2	1	6	2	5	5	5			26
Kentucky													0
Louisiana													0
Maine													0
Maryland													0
Massachusetts													0
Michigan			2	1	1	11	2	4		1			22
Minnesota					7	50	12	18	1				88
Mississippi													0
Missouri									8				8
Montana													0
Nebraska				7	1	26	11	4	3				52
Nevada													0
New Hampshire													0
New Jersey													0
New Mexico				1	6			6					13
New York													0
North Carolina				1			3						4
North Dakota					2	11	39	11					63
Ohio													0
Oklahoma				7	14	24	7	6	1		2		61
Oregon					4								4
Pacific													0
Pennsylvania								2		3			5
Puerto Rico													0
Rhode Island	1												1
South Carolina													0
South Dakota					5				6				11
Tennessee				2				1					3
Texas		6	15	28	61	22	59	58	11	2	1		263
Utah													0
Vermont													0
Virginia													0
Virgin Islands	1												1
Washington					5								5
West Virginia						1	1	1					3
Wisconsin													0
Wyoming							5						5
United States	7	12	23	68	149	177	203	158	51	20	10	0	878



**TRACKS OF TORNADOES, 1979**

- LEGEND**
- TORNADO TRACK
  - LOCATION OF TORNADO TRACK TOO SHORT TO INDICATE
  - - - NON-CONTINUOUS PATH

PUERTO RICO (2 TORNADOES)  
 VIRGIN ISLANDS (1 TORNADO)

USGS-PA-1-1979-100

# GENERAL SUMMARY OF LIGHTNING, 1959-79

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National Climatic Center

During the period 1959 through 1979, of the 2,210 lightning deaths reported in the United States, there were 19 incidents of three or more deaths caused by a single lightning strike. Also, there were 106 cases of six or more injuries associated with a single bolt of lightning. Fifteen percent of the fatalities occurred while people were under trees; 12 percent while boating, fishing or swimming; five percent while golfing; six percent while driving tractors, farm machinery or heavy road equipment; 26 percent of the fatalities occurred in open fields, ball fields and playgrounds; one percent while talking on telephones and 34 percent at various other and unknown locations.

Alaska and Hawaii are the only states that did not record a single fatality or injury for the entire period of record.

Some of the most unusual lightning associated deaths and injuries are described in the following paragraphs:

JULY 1959. In New York City on the 19th, lightning struck a tree killing four people and injuring four others. On the 20th, one soldier was killed and 17 others were injured by lightning at Fort Devins, Massachusetts.

JUNE 1960. At Warner Robins, Georgia, on the 25th, lightning struck a tin roofed shed located on a golf course, two people were killed and 20 injured.

APRIL 1961. Near Northboro, Massachusetts, on the 26th, a premature explosion of five pounds of dynamite caused by lightning resulting in one death and 11 injuries.

JUNE 1961. At Lake Champlain, Vermont, on the 25th, lightning struck and killed four men, while they were fishing from a boat.

JULY 1961. On the 7th, at Fort Benning, Georgia, four soldiers were killed and 15 injured as a result of a lightning strike within a group of soldiers on the rifle range. Three miles (4.8 km) north of Clinton, North Carolina, on the 12th, nine tobacco workers were struck by lightning while taking shelter in a tobacco barn from a thunderstorm. Only one person survived. On the 19th, in Cambridge, Ohio, four construction workers sought shelter from a storm under a tree and were killed when lightning struck the tree.

AUGUST 1961. At Camp A.P. Hill, Virginia, at 3:40 p.m., on the 3rd, lightning struck a field kitchen, two soldiers were killed and 10 others were injured.

JUNE 1963. In Gadsden County, Florida, on the 10th, lightning killed two and injured 21 tobacco workers as they took refuge from a storm in a tobacco barn. On the 12th, lightning struck the Livingston Manor located in Sullivan County, New York, resulting in \$100,000 damage and claiming the lives of three people and injuring eight others.

DECEMBER 1963. The crash of a Jet Airliner, killing 81 persons, at Elkton, Maryland, on the 8th, was attributed to lightning by the Civil Aeronautics Board Investigators.

MARCH 1964. At 9:30 p.m., on the 3rd, in Saint Francis County, Arkansas, lightning struck a house, the building burned rapidly and seven people perished.

JULY 1964. At Fort Jackson, South Carolina, on the 24th, at 3:00 p.m., 28 soldiers on a training exercise were injured by lightning.

JUNE 1965. In Madison County, Tennessee, on the 8th, at approximately 9:30 p.m., six small children perished in a house fire resulting from a lightning strike. On the 23rd, four men were killed and six others injured on a golf course near Butler, Pennsylvania. Lightning struck a wooden shelter under which they were standing.

MAY 1966. At 5:24 p.m., on the 31st, at the ball park in Clovis, New Mexico, lightning struck a tree injuring 10 people.

JUNE 1966. On the 5th, in Gibraltar, Michigan, eleven teenagers taking shelter from a storm under a large tree were struck by lightning. They were taken to a hospital and treated for flash burns, cuts and bruises. Some of the children were sent sprawling up to 25 feet (7.6 m) from where they were standing at the time of the lightning strike.



# GENERAL SUMMARY OF LIGHTNING

SEPTEMBER 1966. Five miles (8 km) northeast of Elfrida, Arizona, on the 1st, at 11:30 a.m., lightning struck in the midst of 35 field workers killing three and injuring 10 others.

JULY 1968. On the 1st, seventeen National Guardsmen were injured by lightning at Camp Shelby, Mississippi. Some of the men were in a chow line and some were sitting in a PX tent. A man serving food was knocked unconscious and he bled at the ears; another man was knocked off a metal chair, receiving second degree burns and split trousers. On the 18th, at Fort Polk, Louisiana, 50 military recruits received treatment for minor burns and lacerations after lightning struck the ground near where they were training.

AUGUST 1968. At about 5 p.m., on the 1st, a 16 year old boy was killed instantly, while making an emergency telephone call, when lightning struck the telephone lines near his home located 3 miles (4.8 km) east of Poteau, Oklahoma. On the 24th, lightning struck the tent poles at the Crawford County Fairgrounds, Pennsylvania, killing two people and injuring 72 others. Lightning struck in a camping area of the Baxter State Park, Maine, on the 25th. One person was killed and 28 injured.

JUNE 1969. At Fort Knox, Kentucky, the National Guard Communications Center was struck by lightning on the 20th. Two soldiers were admitted to the hospital for shock and burns and 16 others were treated for minor injuries.

JUNE 1970. On the 29th, one soldier was killed and 16 injured when struck by lightning while undergoing basic training at Fort Dix, New Jersey.

SEPTEMBER 1970. At the Gibbs Comprehensive High School, Saint Petersburg, Florida, on the 7th, a lightning bolt struck in a group of football players, killing two and injuring 22. All 38 players and four coaches were knocked off their feet.

JULY 1971. At 12:05 p.m., on the 18th, near the entrance of Black Copper Canyon, New Mexico, four cyclists were killed and two injured when lightning struck a tree in a grove where they took shelter from a storm. On the 21st at Camp Shelby, Mississippi, 13 Alabama National Guardsmen were injured when lightning struck a field radio antenna. One soldier was killed and 15 injured on the 26th, at Fort Dix, New Jersey, when they were struck by lightning while taking a refresher training course.

SEPTEMBER 1971. In the Fountain Run Area near Tompkinsville, Kentucky, on the 6th, at 3:00 p.m., four men hanging tobacco were killed instantly when lightning struck the metal roof of the barn. The lightning apparently hit the man standing near the roof and passed through the tobacco sticks to the other victims. A teenage daughter of one of the victims was standing on the truck bed being unloaded but was not hurt. A similar incident occurred on the same day near Lafayette, Tennessee. Four men working in a barn hanging tobacco were killed. Again it was reported that lightning struck the metal roof of the barn.

JULY 1972. In Appleton, Wisconsin, on the 20th, at 4:30 p.m., a lightning strike caused power failure at a paper mill permitting trichorethylene gas to escape. One person was killed and 13 injured. On the 23rd, near Solon, Ohio, lightning killed three and seriously hurt two other fishermen standing on the shore of a small lake.

AUGUST 1972. On the 8th, in Raleigh, North Carolina, five people perished in a house fire that was caused by lightning.

JULY 1973. On the 21st, at Wiggins, Mississippi, lightning struck within a baseball field filled with people. Thirty people received minor injuries and burns.

AUGUST 1973. At the Petit Jean State Park, Arkansas, on the 9th, at 5:30 p.m., 13 people took refuge from a storm in a cave-like rock formation. They were injured when lightning passed through a one-foot (.30 m) opening at the top of the formation. On the 12th, in Madison County, Illinois, 10 persons were injured when lightning struck a tree under which they were standing.

MAY 1974. On the 30th, at 1:00 p.m., in Saint Louis, Missouri, four teenage girls and one woman golfer were killed by lightning while standing under a tree. Also, one other person was injured.

JULY 1975. Near Mayo, Florida, on the 8th, three persons were killed and six injured by lightning while stringing tobacco under a tin shelter. The lightning first struck a nearby walnut tree. On the 20th, near Annandale, Virginia, 16 persons were injured by lightning while attending a picnic. One man was seriously injured but because of prompt first aid applications his life was saved. During the afternoon of the 24th, near Rochester, New York, lightning struck a tree under which 30 people sought shelter from the rain. Twelve of them were injured and one girl was killed.

AUGUST 1975. On the 3rd, at 5:00 p.m., lightning struck a tin roofed pavilion near Jamestown, New York.

## GENERAL SUMMARY OF LIGHTNING

One man was killed and 11 others were injured. Ninety people were injured by lightning on the 23rd, at a campground near Leslie, Michigan.

SEPTEMBER 1975. During the afternoon of the 30th, in Miami, Florida, a bolt of lightning struck the Columbus High School Athletic Field injuring 14 football players and three coaches. A fifteen year old boy apparently was struck directly in the chest and was critically injured. He died three days later.

JULY 1976. On the 27th at Fort Benning, Georgia, 19 soldiers were injured as lightning struck the ground near their shelter.

AUGUST 1977. In the Buck Creek area of Delaware County, Iowa, at 12:30 a.m., on the 8th, lightning struck a roof mounted citizens band antenna which started a house fire, six people perished.

SEPTEMBER 1977. On the 5th, at 2:55 p.m., in Van Wert County, Ohio, lightning struck a fence at the county fairgrounds injuring the 25 people who were leaning on the fence.

JUNE 1978. In Old Lyme, Connecticut, on the 19th, lightning struck a tree near a ball field and injured 12 softball players. During a training exercise at Camp Blanding, Florida, on the 30th, at 6:00 p.m., 27 National Guardsmen were injured by lightning.

JULY 1978. On the 26th, at 7:30 a.m., at Palo, Iowa, Nuclear Power Plant, 10 men were injured by a bolt of lightning while replacing a deteriorated pipe.

SEPTEMBER 1978. In Whitman, Massachusetts, on the 11th, a bolt of lightning struck a field where football practice was being held. The players and coaches ran for shelter, but while running a young coach was hit in the head by lightning and killed instantly. Sixteen of the players were injured.

APRIL 1979. On the 19th, at 9:45 p.m., lightning hit a Liberian Tanker while it was docked at the Sun Oil Terminal in Nederland, Texas, and 16 crewmen were injured.

JUNE 1979. At Camp Grayling, Michigan, on the 20th, at 9:00 p.m., lightning struck a mess tent injuring 45 National Guardsmen.

Additional lightning information is presented in the following tables. The National Climatic Center has developed a magnetic tape containing lightning statistics for the period 1959-1979. The tape contains the date/time (year, month, day and hour), location (state and county), number of fatalities, number of injuries and amount of property damage. A copy of this tape can be obtained by contacting the National Climatic Center, Federal Building, Asheville, North Carolina 28801.

## LIGHTNING FATALITIES, 1979

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	0	0	0	0	0	0	0	1	0	0	0	0	1
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARKANSAS	0	0	0	0	1	0	2	2	0	0	0	0	5
CALIFORNIA	0	0	0	0	0	0	0	0	0	0	0	0	0
COLORADO	0	0	0	0	0	2	0	1	0	0	0	0	3
CONNECTICUT	0	0	0	0	0	0	0	0	0	0	0	0	0
DELAWARE	0	0	0	0	2	0	0	0	0	0	0	0	0
DISTRICT OF COLUMBIA	0	0	0	0	0	0	0	1	0	0	0	0	1
FLORIDA	0	0	0	0	1	0	0	3	0	0	0	0	4
GEORGIA	0	0	0	0	0	1	1	0	0	0	0	0	2
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	0	0	0	0	0	0	0	0	0	0
ILLINOIS	0	0	0	0	0	0	0	1	0	0	0	0	1
INDIANA	0	0	0	0	0	0	0	0	0	0	0	0	0
IOWA	0	0	0	0	0	0	0	0	0	0	0	0	0
KANSAS	0	0	0	0	0	0	0	0	0	0	0	0	0
KENTUCKY	0	0	0	0	0	0	0	0	0	0	0	0	0
LOUISIANA	0	0	0	1	0	0	1	0	2	0	0	0	4
MAINE	0	0	0	0	0	0	0	0	0	2	0	0	2
MARYLAND	0	0	0	0	0	0	1	0	0	0	0	0	1
MASSACHUSETTS	0	0	0	0	1	0	0	2	0	0	0	0	3
MICHIGAN	0	0	0	0	0	1	0	1	0	0	0	0	2
MINNESOTA	0	0	0	0	0	0	0	1	0	0	0	0	1
MISSISSIPPI	0	0	0	0	0	0	1	1	0	0	0	0	2
MISSOURI	0	0	0	0	0	0	0	0	0	0	0	0	0
MONTANA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEBRASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEVADA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW JERSEY	0	0	0	0	1	0	2	0	0	0	0	0	3
NEW MEXICO	0	0	0	0	0	0	2	0	0	0	0	0	2
NEW YORK	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH CAROLINA	0	0	0	0	2	0	0	1	0	0	0	0	3
NORTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
OHIO	0	0	0	0	0	0	0	0	0	0	0	0	0
OKLAHOMA	0	0	0	0	1	0	1	0	0	1	1	0	4
OREGON	0	0	0	0	0	0	0	0	1	0	0	0	1
PENNSYLVANIA	0	0	0	0	0	0	0	0	0	0	0	0	0
PUERTO RICO	0	0	0	0	0	0	0	0	0	0	0	0	0
RHODE ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH CAROLINA	0	0	0	0	2	0	1	1	0	0	0	0	4
SOUTH DAKOTA	0	0	0	0	0	0	1	0	1	0	0	0	2
TENNESSEE	0	0	0	0	1	0	1	0	0	0	0	0	2
TEXAS	0	0	0	2	1	0	3	0	0	0	1	0	7
UTAH	0	0	0	0	0	0	0	0	0	0	0	0	0
VERMONT	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRGINIA	0	0	0	0	0	0	0	0	0	0	0	0	0
WASHINGTON	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST VIRGINIA	0	0	0	0	0	0	0	0	0	0	0	0	0
WISCONSIN	0	0	0	0	0	0	2	0	0	0	0	0	2
WYOMING	0	0	0	0	0	0	1	0	0	0	0	0	1
TOTAL	0	0	0	3	11	4	20	16	4	3	2	0	63



# LIGHTNING INJURIES, 1979

STATE ----	JAN ---	FEB ---	MAR ---	APR ---	MAY ---	JUN ---	JUL ---	AUG ---	SEP ---	OCT ---	NOV ---	DEC ---	ANN ---
ALABAMA	0	0	0	1	0	0	0	7	0	0	0	0	8
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	2	0	2	0	0	0	0	0	4
ARKANSAS	0	1	0	0	1	0	1	2	0	0	0	0	5
CALIFORNIA	0	0	0	0	0	0	0	0	0	0	0	0	0
COLORADO	0	0	0	0	5	0	2	2	0	0	0	0	9
CONNECTICUT	0	0	0	0	0	0	0	0	0	0	0	0	0
DELAWARE	0	0	0	0	0	0	0	0	0	0	0	0	0
DISTRICT OF COLUMBIA	0	0	0	0	0	0	0	1	0	0	0	0	1
FLORIDA	0	0	0	0	1	0	10	8	6	0	0	0	25
GEORGIA	0	0	0	0	0	0	7	4	0	1	0	0	12
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	0	0	0	0	0	0	0	0	0	0
ILLINOIS	0	0	0	0	0	0	9	2	0	0	0	0	11
INDIANA	0	0	0	0	0	0	3	4	0	0	0	0	7
IOWA	0	0	0	0	0	0	0	3	0	0	0	0	3
KANSAS	0	0	0	0	0	0	0	0	0	0	0	0	0
KENTUCKY	0	0	0	0	0	1	0	0	0	0	0	0	1
LOUISIANA	0	0	1	0	0	0	0	0	2	0	0	0	3
MAINE	0	0	0	0	0	0	0	0	0	0	0	0	0
MARYLAND	0	0	0	0	0	0	3	1	0	0	0	0	4
MASSACHUSETTS	0	0	1	0	0	0	2	4	0	0	0	0	7
MICHIGAN	0	0	0	0	1	47	0	0	0	0	0	0	48
MINNESOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
MISSISSIPPI	0	1	1	0	1	0	6	1	0	0	0	0	10
MISSOURI	0	0	0	3	0	0	0	1	0	0	0	0	4
MONTANA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEBRASKA	0	0	0	0	2	0	0	0	1	0	0	0	3
NEVADA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW JERSEY	0	0	0	0	1	0	1	1	0	0	0	0	3
NEW MEXICO	0	0	0	0	0	1	0	1	0	0	0	0	2
NEW YORK	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH CAROLINA	0	0	0	2	2	6	3	0	0	1	0	0	14
NORTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
OHIO	0	0	0	0	0	7	0	0	0	0	0	0	7
OKLAHOMA	0	0	0	0	2	6	4	1	0	0	1	0	14
OREGON	0	0	0	0	0	0	0	0	0	0	0	0	0
PENNSYLVANIA	0	0	0	0	0	3	0	2	0	0	0	0	5
PUERTO RICO	0	0	0	0	0	0	0	0	0	0	0	0	0
RHODE ISLAND	0	0	0	0	0	1	0	0	0	0	0	0	1
SOUTH CAROLINA	0	0	0	0	4	0	1	0	0	0	0	0	5
SOUTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
TENNESSEE	0	0	0	1	0	0	0	1	0	0	0	0	2
TEXAS	0	0	1	19	10	0	1	0	0	0	1	0	32
UTAH	0	0	0	0	0	0	0	0	0	0	0	0	0
VERMONT	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRGINIA	0	0	0	0	0	0	0	1	0	0	0	0	1
WASHINGTON	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST VIRGINIA	0	0	0	0	0	0	0	2	0	0	0	0	2
WISCONSIN	0	0	0	0	0	1	0	0	0	0	0	0	1
WYOMING	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	2	4	26	32	73	55	49	9	2	2	0	254

TOTAL LIGHTNING FATALITIES BY STATE FOR PERIOD, 1959-79

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
----	---	---	---	---	---	---	---	---	---	---	---	---	---
ALABAMA	0	0	2	2	4	15	18	11	1	1	0	0	54
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	1	1	12	11	6	0	0	0	31
ARKANSAS	0	0	8	0	10	26	19	15	3	0	0	0	81
CALIFORNIA	0	0	0	0	0	2	1	5	3	0	0	0	11
COLORADO	0	0	0	0	6	8	26	11	0	1	0	0	52
CONNECTICUT	0	0	0	0	0	3	5	3	0	0	0	0	11
DELAWARE	0	0	0	0	0	1	3	3	0	0	0	0	7
DISTRICT OF COLUMBIA	0	0	0	0	0	1	1	1	0	0	0	0	3
FLORIDA	0	0	3	3	17	56	62	50	28	2	1	1	223
GEORGIA	0	0	2	3	4	15	19	8	2	1	0	0	54
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	1	1	5	5	5	1	0	0	0	18
ILLINOIS	0	0	0	3	7	18	12	10	7	2	0	0	59
INDIANA	0	0	1	2	6	17	15	10	4	2	0	0	57
IOWA	0	0	1	3	9	14	6	11	4	4	0	0	52
KANSAS	0	0	0	3	8	5	10	6	4	1	1	0	38
KENTUCKY	1	0	0	2	5	15	13	7	10	0	0	0	53
LOUISIANA	0	0	1	5	6	16	28	12	10	0	1	1	80
MAINE	0	0	0	0	0	3	3	6	0	3	0	0	15
MARYLAND	0	0	0	0	0	5	5	6	1	0	0	81	98
MASSACHUSETTS	0	0	0	1	3	2	3	7	1	0	0	0	17
MICHIGAN	0	0	0	0	6	16	14	15	3	0	0	0	54
MINNESOTA	0	0	0	2	2	6	4	10	8	1	0	0	33
MISSISSIPPI	1	0	4	0	9	7	17	15	4	0	0	0	57
MISSOURI	0	0	5	4	17	17	10	7	3	1	0	0	64
MONTANA	0	0	0	0	2	6	6	1	0	0	0	0	15
NEBRASKA	0	0	0	1	3	12	6	5	4	0	0	0	31
NEVADA	0	0	0	0	0	1	0	2	0	0	0	0	3
NEW HAMPSHIRE	0	0	0	0	0	3	1	0	0	0	0	0	4
NEW JERSEY	0	0	0	1	2	5	16	14	3	0	0	0	41
NEW MEXICO	0	0	0	1	3	8	17	20	3	0	0	0	52
NEW YORK	0	0	0	0	5	18	38	21	4	2	0	0	88
NORTH CAROLINA	0	1	3	2	18	22	36	29	2	0	0	0	113
NORTH DAKOTA	0	0	0	0	0	4	3	3	0	0	0	0	10
OHIO	0	0	0	3	6	15	33	11	7	2	1	0	78
OKLAHOMA	0	1	1	9	11	9	7	13	11	2	1	0	65
OREGON	0	0	0	0	1	0	0	1	2	0	0	0	4
PENNSYLVANIA	0	1	0	0	7	24	26	24	6	1	0	0	89
PUERTO RICO	0	0	0	0	0	3	2	4	5	3	0	0	17
RHODE ISLAND	0	0	0	0	0	0	1	0	2	0	0	0	3
SOUTH CAROLINA	0	0	1	0	5	9	23	8	3	0	0	0	49
SOUTH DAKOTA	0	0	0	0	2	1	4	0	3	2	0	0	12
TENNESSEE	0	1	1	4	12	29	12	11	11	2	2	0	85
TEXAS	0	0	0	9	20	10	35	21	11	4	1	0	111
UTAH	0	0	0	0	0	5	1	3	2	0	0	0	11
VERMONT	0	0	0	0	0	4	5	3	0	0	0	0	12
VIRGINIA	0	0	0	0	9	4	7	8	2	0	0	0	30
WASHINGTON	0	0	0	0	0	1	0	0	0	0	0	0	1
WEST VIRGINIA	0	0	0	0	4	2	6	2	1	0	0	0	15
WISCONSIN	0	0	0	0	0	8	11	7	2	1	0	1	30
WYOMING	0	0	0	0	2	3	7	5	2	0	0	0	19
TOTAL	2	4	33	64	233	480	614	461	169	38	8	84	2210

# TOTAL LIGHTNING INJURIES BY STATE FOR PERIOD, 1959-79

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	6	1	6	2	1	10	40	27	0	2	0	0	95
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	2	0	0	0	6	1	22	15	12	0	0	0	58
ARKANSAS	1	2	2	9	22	12	28	45	9	0	0	0	130
CALIFORNIA	0	0	0	0	0	0	6	7	1	0	0	1	15
COLORADO	0	0	0	0	8	24	39	35	4	0	0	0	110
CONNECTICUT	0	0	0	0	3	14	10	10	4	0	0	0	41
DELAWARE	0	0	0	0	1	8	0	1	2	0	0	0	12
DISTRICT OF COLUMBIA	0	0	0	0	0	4	1	1	0	0	1	0	7
FLORIDA	0	1	11	2	19	136	142	135	107	12	0	1	566
GEORGIA	0	0	2	2	12	37	78	29	3	5	0	0	168
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	1	6	15	12	15	4	1	0	0	54
ILLINOIS	0	0	0	2	12	34	22	25	9	1	0	0	105
INDIANA	0	0	0	4	16	30	26	16	1	0	0	0	93
IOWA	0	0	1	5	21	39	32	15	16	2	1	0	132
KANSAS	0	0	4	9	10	18	35	18	20	4	1	0	119
KENTUCKY	0	0	0	2	15	45	42	13	10	1	0	0	128
LOUISIANA	1	0	6	2	12	8	81	32	13	0	1	1	157
MAINE	0	0	0	0	3	5	17	43	0	0	1	0	69
MARYLAND	0	0	0	0	14	14	22	13	3	0	0	0	66
MASSACHUSETTS	0	0	1	11	8	30	89	58	21	4	2	1	225
MICHIGAN	0	0	1	7	31	112	55	174	18	6	0	0	404
MINNESOTA	0	0	0	0	6	17	11	13	5	3	0	0	55
MISSISSIPPI	1	2	3	2	10	8	90	22	6	1	1	1	147
MISSOURI	0	1	1	8	12	16	4	13	3	2	0	0	60
MONTANA	0	0	0	0	5	8	10	6	0	0	0	0	29
NEBRASKA	0	0	0	2	9	6	7	9	5	0	0	0	38
NEVADA	0	0	0	0	0	0	0	2	0	0	0	0	2
NEW HAMPSHIRE	0	0	0	0	2	17	3	0	2	0	0	0	24
NEW JERSEY	0	0	0	0	3	11	48	18	14	0	0	0	94
NEW MEXICO	0	0	0	1	17	8	28	14	6	0	0	0	74
NEW YORK	0	0	0	0	4	42	60	76	16	3	1	0	202
NORTH CAROLINA	0	2	8	12	37	48	66	66	16	2	1	0	258
NORTH DAKOTA	0	0	0	0	1	0	0	3	2	0	0	0	6
OHIO	0	0	0	1	13	33	30	40	40	3	0	0	160
OKLAHOMA	0	1	3	12	24	34	30	30	16	2	5	1	158
OREGON	0	0	0	0	2	2	0	9	3	0	0	0	16
PENNSYLVANIA	0	5	0	0	9	59	60	119	10	2	0	0	264
PUERTO RICO	0	0	0	0	0	0	1	0	2	1	0	0	4
RHODE ISLAND	0	2	0	0	1	5	3	6	2	0	1	0	20
SOUTH CAROLINA	0	0	0	1	15	5	65	12	13	0	0	0	111
SOUTH DAKOTA	0	0	0	1	2	12	4	5	1	0	0	0	25
TENNESSEE	0	1	4	2	22	27	54	25	16	4	0	0	155
TEXAS	0	1	3	26	35	30	28	33	18	5	2	0	181
UTAH	0	0	0	0	1	18	1	6	4	0	0	0	30
VERMONT	0	0	0	0	0	3	10	1	0	0	0	0	14
VIRGINIA	0	0	0	1	4	10	32	21	0	0	0	0	68
WASHINGTON	0	0	0	0	4	1	5	7	0	0	0	0	17
WEST VIRGINIA	0	0	0	0	0	2	18	5	1	1	0	0	27
WISCONSIN	0	1	2	2	4	19	27	6	6	1	1	0	71
WYOMING	0	0	0	0	4	32	16	20	6	0	0	0	78
TOTAL	11	20	58	129	466	1069	1510	1316	470	68	19	6	5142



# LIGHTNING FATALITIES AND INJURIES BY YEAR, 1959-79

## LIGHTNING FATALITIES

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1959	1	0	1	4	18	25	50	39	13	7	0	0	158
1960	0	0	1	5	7	33	25	17	9	0	0	0	97
1961	0	0	1	2	9	23	47	20	10	1	0	0	113
1962	0	0	3	6	27	20	26	28	9	1	0	0	120
1963	0	0	4	3	11	37	42	20	10	2	0	81	210
1964	0	0	9	6	15	21	29	19	7	1	1	0	108
1965	0	0	2	4	12	34	39	28	4	2	0	0	125
1966	0	0	1	1	8	15	21	16	11	3	0	0	76
1967	1	0	1	2	3	26	21	14	1	2	1	1	73
1968	0	0	0	1	5	24	30	29	9	3	1	1	103
1969	0	0	1	5	13	17	27	13	14	3	0	0	93
1970	0	0	0	1	17	25	27	19	21	1	0	0	111
1971	0	0	2	1	12	27	33	19	19	0	0	0	113
1972	0	0	1	1	5	21	31	28	3	1	0	0	91
1973	0	1	2	3	10	24	31	18	13	2	1	0	105
1974	0	2	0	7	12	21	28	24	6	0	2	0	102
1975	0	1	3	3	11	19	28	18	6	2	0	0	91
1976	0	0	0	1	9	19	19	19	3	2	0	0	72
1977	0	0	0	4	9	19	16	35	14	1	0	0	98
1978	0	0	1	1	9	26	24	22	3	1	0	1	88
1979	0	0	0	3	11	4	20	16	4	3	2	0	63
TOTAL	2	4	33	64	233	480	614	461	189	38	8	84	2210
AVERAGE	0	0	2	3	11	23	29	22	9	2	0	4	105

## LIGHTNING INJURIES

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1959	0	0	0	5	27	52	110	103	23	3	1	1	325
1960	0	0	2	11	12	70	28	50	16	9	4	0	202
1961	0	0	7	14	15	49	83	50	31	5	1	1	256
1962	0	0	3	5	39	38	90	49	12	6	0	0	242
1963	7	0	0	6	14	64	55	44	18	1	0	0	209
1964	0	0	10	15	14	38	99	53	8	1	1	0	239
1965	3	2	2	4	26	42	59	59	19	1	0	0	217
1966	0	2	1	2	37	39	42	44	15	1	0	0	183
1967	0	0	0	4	7	35	59	33	4	2	0	1	145
1968	0	0	4	2	16	52	117	155	14	9	1	0	370
1969	0	0	0	4	19	75	39	23	12	0	0	1	173
1970	0	0	1	5	40	40	82	43	43	4	1	0	259
1971	0	1	0	1	24	71	79	54	22	1	1	0	254
1972	0	0	8	6	12	24	72	54	24	2	1	0	203
1973	0	0	10	2	20	23	74	59	29	9	2	0	228
1974	1	9	1	3	12	27	56	51	12	1	0	0	173
1975	0	3	0	1	30	60	107	154	42	1	0	1	399
1976	0	1	0	7	16	39	73	68	13	1	0	1	219
1977	0	0	0	3	35	58	58	67	62	4	4	0	291
1978	0	0	5	3	19	100	73	54	42	5	0	0	301
1979	0	2	4	26	32	73	55	49	9	2	2	0	254
TOTAL	11	20	58	129	466	1069	1510	1316	470	68	19	6	5142
AVERAGE	1	1	3	6	22	51	72	63	22	3	1	0	245

## HAILSTORMS LOSSES FOR PAST YEARS

Year	Property (exclusive of crops)	Crops	Total	Year	Property (exclusive of crops)	Crops	Total
1933	-	-	7	1959	6	7	7
1934	-	-	7	1960	7	8	8
1935	-	-	7	1961	8	8	8
1936	6	7	7	1962	9	8	9
1937	6	7	7	1963	8	8	8
1938	6	7	7	1964	8	8	8
1939	5	6	6	1965	8	8	8
1940	6	7	7	1966	8	8	8
1941	6	7	7	1967	8	8	8
1942	6	7	7	1968	8	8	8
1943	6	7	7	1969	8	8	8
1944	7	7	8	1970	8	8	8
1945	6	7	7	1971	7	7	7
1946	7	7	7	1972	7	7	7
1947	6	8	8	1973	7	7	7
1948	7	8	8	1974	7	7	7
1949	7	7	7	1975	7	8	8
1950	7	7	7	1976	7	8	8
1951	7	7	8	1977	7	8	8
1952	7	7	7	1978	8	8	8
1953	7	7	7	1979	7	8	8
1954	7	8	8				
1955	7	7	8				
1956	7	8	8				
1957	7	8	8				
1958	7	8	8				

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50	4 \$5,000 to \$50,000	7 \$5 million to \$50 million	8 \$50 million to \$500 million
2 \$50 to \$500	5 \$50,000 to \$500,000	8 \$50 million to \$500 million	9 \$500 million to \$5 billion.
3 \$500 to \$5,000	6 \$500,000 to \$5 million		

NOTE.--The above estimated losses are based on values at time of occurrence.

## WINDSTORM LOSSES PAST YEARS

(Windstorms other than tornadoes)

Year	Total loss of life	Total property loss	Year	Total loss of life	Total property loss
1916	65	7	1951	289	8
1917	25	6	1952	137	8
1918	79	7	1953	118	8
1919	344	7	1954	292	9
1920	42	6	1955	301	8
1921	65	7	1956	196	8
1922	133	7	1957	553	8
1923	68	7	1958	129	8
1924	78	7	1959	145	7
1925	88	7	1960	85	8
1926	357	8	1961	64	8
1927	64	7	1962	134	9
1928	1,947	8	1963	54	9
1929	46	7	1964	64	9
1930	49	7	1965	107	9
1931	17	7	1966	74	8
1932	306	7	1967	48	8
1933	156	8	1968	49	8
1934	109	7	1969	194	9
1935	461	7	1970	64	8
1936	121	7	1971	76	8
1937	43	7	1972	103	8
1938	630	8	1973	80	8
1939	60	6	1974	30	9
1940	251	7	1975	103	8
1941	43	7	1976	127	8
1942	68	7	1977	65	8
1943	61	7	1978	71	8
1944	448	8	1979	51	9
1945	85	7			
1946	70	7			
1947	117	8			
1948	52	8			
1949	102	8			
1950	210	8			
			Total	10,653	

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50	4 \$5,000 to \$50,000	7 \$5 million to \$50 million	8 \$50 million to \$500 million
2 \$50 to \$500	5 \$50,000 to \$500,000	8 \$50 million to \$500 million	9 \$500 million to \$5 billion.
3 \$500 to \$5,000	6 \$500,000 to \$5 million		

NOTE.--The above estimated losses are based on values at time of occurrence.

# NORTH ATLANTIC TROPICAL CYCLONES, 1979

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The 1979 tropical cyclone season showed some signs of returning to what is considered normal; that is, lower latitude origins and tracks, more U. S. landfalls, and more intense hurricanes striking land areas in the western North Atlantic. There were eight named storms, five of which became hurricanes, and one subtropical storm this season. The most recent 30-yr average is 10 named storms and 6 hurricanes, so this past year continues the generally below-normal activity of the recent decade. This was the tenth consecutive year that the number of hurricanes has been average or below. Figure 1 gives the tracks of the 1979 named tropical cyclones and the subtropical cyclone, Table 1 gives a statistical summary, and Tables 2 and 3 show past years' data.

Even though there were fewer storms in 1979 than in 1978, the number of hurricane hours (each hour that a storm has windspeeds greater than 63 kn) reached 522. This was up markedly from last year's 307 and close to the 30-yr average of 620 hurricane hours. As one would expect, the large number of storms affecting the Gulf of Mexico, eastern Caribbean Sea, and the Atlantic seaboard also resulted in a larger number of ships reporting gale-force winds. There were 95 ships which reported winds of gale force on 144 observations received and plotted at the National Hurricane Center during the storms. Oddly enough, the only ship report of hurricane-force winds came from the KAPUS-KASING as the subtropical storm crossed the North Atlantic shipping lanes on October 24.

Three ships had the misfortune to encounter more than one tropical cyclone this year. The American ship TEXACO WISCONSIN encountered Bob and David, the American ship EL PASO ARZEW encountered David and Gloria, and the Dutch ship WINSUM encountered Frederic and Gloria. However, dubious top honors go to the American ship WALTER RICE, which encountered David, Frederic, and Henri while traveling down the U.S. East Coast and through the Gulf of Mexico. Twenty-two ships reported gale force winds more than once, with eight reporting gales more than three times, attesting especially to the large size of David and Frederic. Only the short-lived and minimal tropical storm Elena had no gale reports.

The lull in landfalling U.S. and eastern Caribbean hurricanes ended this year. Bob affected New Orleans, David the Miami-Fort Lauderdale area northward to Savannah, and Frederic the Mobile, AL-Pascagoula, MS, area. In addition, David devastated the Dominican Republic capital of Santo Domingo and seriously affected Dominica. The five landfalls of storms and hurricanes in the United States with three hurricanes and one major hurricane were near or

above the long-term averages of three, two, and one, respectively. Nevertheless, the decade of the seventies had both the lowest number of landfalling hurricanes, 12, and landfalling major hurricanes, 4, in this century. The previous lowest totals were 14 and 5, respectively.

The outstanding features of the 1979 hurricane season were:

(1) Hurricane David, the most intense hurricane of this century in the eastern Caribbean Sea, which devastated the island of Dominica, killing 56 and leaving 60,000 of the 80,000 residents homeless, and then killing an estimated 1,200 in the Dominican Republic with that country's government estimating damage in excess of \$1 billion and 200,000 homeless;

(2) Hurricane Frederic, which was the first hurricane to strike Mobile, AL, since 1926, caused an estimated \$2.3 billion damage in the United States;

(3) A reported 42 in of rain in 24 hr near Alvin, TX, during Claudette, which if confirmed would be a U.S. 24-hr rainfall record; and

(4) The greatest combined damage total in the United States in 1 yr from tropical cyclones.

## TROPICAL STORM ANA, JUNE 19-23

Mariners were probably surprised to hear advisories being issued on a tropical cyclone east of the Lesser Antilles in June. Ana was the first June storm to form east of the Lesser Antilles since 1933 and only the second during the past 100 yr. Ana developed a few days earlier than the 1933 storm, which developed somewhat farther to the east of the islands.

The first evidence of something unusual came on the 19th at 0000 when the Mexican ship DRAGAMINAS reported southwest winds of 35 kn near 7.2°N, 42.6°W. Satellite pictures the next morning indicated that a depression was forming near 10°N, 45°W. Postanalysis showed that Ana reached tropical-storm strength about 0000 on June 22. However, the storm was not named until 1600, when the first reconnaissance flight indicated winds of 50 kn. Gale warnings were then issued for the islands from Martinique to Guadeloupe because of the proximity of the storm. Strong westerly winds at high levels separated the convective energy source from the low-level circulation center, however, and Ana weakened to a minimal tropical storm before passing through the islands during the evening of June 22. Further weakening took place, and Ana degenerated into a tropical wave in the eastern Caribbean Sea early



# NORTH ATLANTIC TROPICAL CYCLONES

on the 24th.

There were no reports of gale-force winds or heavy rains in the islands and no deaths or damage.

## HURRICANE BOB, July 9-16

Bob developed from one of the many disturbances that originate over Africa each year. He was the first of five named storms in the Gulf of Mexico during 1979. A depression formed in the southwest Gulf of Mexico on July 9 and began moving northeastward in advance of a low-pressure trough approaching from the west. Reconnaissance reports indicated the depression had reached tropical-storm strength the next morning, and gale warnings were issued at 1600 for the central Gulf Coast from Vermilion Bay, LA, to Biloxi, MS. Bob was upgraded to a hurricane at 2200 on July 10 as winds reached 65 kn. He was the first July hurricane in the Gulf since 1959.

The storm's center crossed the Louisiana coast near Grand Isle about daybreak on the 11th, passing just west of New Orleans later that morning, and weakening rapidly after crossing Lake Pontchartrain. The remnants of Bob produced some flooding from locally heavy rains in southern Indiana and Ohio and West Virginia.

Along the coast the statistics associated with Bob were typical of a minimal hurricane. The maximum sustained winds of 65 kn and minimum pressure of 986 mb occurred about the time of landfall. Highest measured winds on the coast were 45 to 55 kn with a few gusts to 65 kn. Tides were generally 3 to 5 ft above normal from the landfall point eastward to Mobile Bay. Rainfall totals were between 3 and 4 in. Eight tornadoes were reported but only one, in Biloxi, MS, produced significant damage. There was one death in Louisiana. Coastal damage was less than \$5 million, but it exceeded \$15 million in the Indiana floods.

## TROPICAL STORM CLAUDETTE, JULY 16-29

Claudette was a tropical storm for two brief periods separated by a 5-day interval during which she weakened to a disorganized wave. A surface circulation was first evident on July 16 about 450 mi east of the Leeward Islands. A reconnaissance aircraft indicated that winds had reached 45 kn the next morning, and the depression was upgraded to tropical storm Claudette at 1600, even though the minimum sea-level pressure was 1011 mb. As had been the case with Ana, gale warnings were required in the first advisory because of the proximity of the storm to the islands, this time for the Leeward Islands, the Virgin Islands, and Puerto Rico. This was the third consecutive storm in which gale warnings were issued in the first advisory. Once again, however, strong high-level westerly winds caused Claudette to weaken to a depression over Puerto Rico and to a tropical wave over Hispaniola. Some flooding resulted from 7 to

8 in of rain over Guadeloupe, and amounts exceeding 9 in. in southern Puerto Rico caused one death and an estimated \$750,000 damage from river floods.

Part two of tropical storm Claudette began as the tropical wave remnants moved into the southeastern Gulf of Mexico on the morning of July 21. A depression formed later that day and reached tropical-storm strength on the 23rd. Once again, gale warnings were issued with the first advisory at 1300 from Biloxi, MS, to Freeport, TX. The center of Claudette was poorly defined and elongated in a north-south direction. The storm had been moving steadily towards the northwest, and late on the 23d it appeared that it had weakened to a depression again. Gale warnings were discontinued. However, a dominant center formed to the north and began drifting northward shortly before daybreak on the 24th. Offshore oil rigs began reporting gale-force winds, and gale warnings were issued once again at 1430, this time from Grand Isle, LA, to Galveston, TX. The center crossed the coast near the Texas-Louisiana border about 1800 and was expected to continue northward and spread heavy rains through the lower Mississippi Valley. The development of a high-pressure system aloft to the north of the center blocked Claudette and caused it to turn slowly toward the west, describing a tight loop over extreme southeastern Texas during the next 24 hr, before finally moving off to the north. Claudette did not weaken because of the proximity of the center to the water, and offshore oil rigs reported winds of gale force for 30 hr after the center moved inland. Claudette's lowest central pressure of 997 mb occurred at Beaumont, TX, after the center had moved inland. Maximum sustained winds of 45 kn were observed by reconnaissance aircraft east of the Leeward Islands and in the northwestern Gulf of Mexico.

In spite of her disorganized life, Claudette will be remembered along coastal southeastern Texas for the torrential rains which occurred while the center was making a loop in that area. An unofficial report of 42 in of rain in 24 hr from an observer near Alvin, TX, will be a U.S. 24-hr rainfall record if verified. There were also several reports of storm rainfall exceeding 30 in from Alvin, Freeport, and Sargent, TX, making Claudette one of the wettest tropical cyclones ever to affect the United States.

The highest winds on the coast were estimated to be 45 to 55 kn in gusts at Cameron, LA, around the time of landfall. Tides of 2 to 4 ft above normal caused minor damage along the Louisiana coast. There was one death in Texas attributed to Claudette, and damage from the flooding produced by her heavy rains will likely exceed \$400 million.

## HURRICANE DAVID, AUGUST 25-SEPTEMBER 7

David was the most intense hurricane of this century to affect the islands of the eastern

## NORTH ATLANTIC TROPICAL CYCLONES

Caribbean Sea. The central pressure of 924 mb while south of Puerto Rico on August 30 is the lowest measured central pressure in that region. David may be regarded as a typical Cape Verde hurricane. Characteristics of this type of hurricane are:

(1) Attaining hurricane intensity well east of the Lesser Antilles.

(2) Following a parabolic track around the periphery of the Azores-Bermuda High and frequently affecting the Lesser Antilles, the Greater Antilles, and the United States;

(3) Maintaining major hurricane intensity for the duration of the hurricane, unless weakened by landfall; and

(4) Expanding in size with movement to higher latitudes to become both large and intense before reaching the United States.

In David's case, this trajectory resulted in an impact on a large number of people both on land and at sea. Hurricane warnings were posted in advance of the center for most of the Lesser Antilles, Puerto Rico, Hispaniola, the Bahamas, and from the middle Florida Keys northward to southern North Carolina. Gale warnings were extended ahead of the inland storm from North Carolina northward to Eastport, ME. Historically, there have been few storms whose effects were so widespread.

While many ships were affected by David's 2-week journey, the Liberian ROBERTSBANK and the British CAUSEWAY had the dubious distinction of accompanying the developing David from the African coast to the Leeward Islands. The ships frequently reported easterly winds of 30 kn and 8-ft seas, but they did not report winds of gale force until the strengthening David had reached the islands. David had 210 hurricane hours, mostly at sea, and accounted for 68 gale-force observations or about half of the total for 1979.

David was the most intense hurricane of the season. Maximum strength of 150 kn and minimum pressure of 924 mb were reached south of Puerto Rico on August 30, but there was little difference in strength when David struck Dominica and Santo Domingo. He was the strongest hurricane at Dominica since 1834 and at Santo Domingo since 1930. David was not a major hurricane when it struck the United States. The landfall pressure of 972 mb just north of Palm Beach, FL, around midday on September 3 and estimated winds of 85 kn changed little before the second landfall near Savannah Beach, GA, approximately 24 hr later. Savannah reported a minimum pressure of 970 mb. David was the first hurricane to strike the Cape Canaveral, FL, area directly since 1926. Cape Canaveral was tied with Mobile, AL, for having gone the longest of any location south of Cape Hatteras, NC, without a hurricane. Even though the center of David stayed inland after moving

into Georgia, the proximity of the track to the coast produced gale-force winds well out to sea along the Atlantic seaboard and affected a large number of ships.

The death toll in Dominica was 56, and 60,000 of the 80,000 residents were left homeless. In Puerto Rico there were seven deaths. The Dominican Republic government estimated their death toll in excess of 1,200 with damage over \$1 billion U.S. dollars. In the United States there were 5 deaths directly attributed to David with about 10 more indirect deaths. Damage in the United States was not great at any particular location, but the cumulative total caused by winds, tides, floods, and tornadoes over the large area affected will likely exceed \$300 million.

### TROPICAL STORM ELENA AUGUST 29-SEPTEMBER 1

Elena was named a tropical storm at the same time as Frederic, which was the most noteworthy aspect of the storm. A depression formed in the central Gulf of Mexico on August 29 and reached minimal tropical-storm strength about 24 hr later during the afternoon of the 30th. For the fourth time out of the first five named storms, the first advisory on a storm had gale warnings--this time for Port O'Connor, TX, to Morgan City, LA. Little change in strength occurred before landfall on the central Texas coast during the afternoon of September 1, and the storm lost its identity entirely less than 12 hr after landfall.

Maximum sustained winds associated with Elena were 35 kn, and the minimum pressure of 1004 mb occurred during the evening of the 30th. The highest wind reported on land was a 40-kn gust at Galveston, TX, on the evening of September 1. Highest tides were about 3 ft above mean sea level at Galveston and Baytown, TX. The only heavy rain of consequence fell on downtown Houston, which recorded 4.6 in, and Beaumont, TX, which had 3 in. Two persons drowned in Houston from floods caused by the heavy rains, and three crewmen were killed on the CHEVRON HAWAII, when it was struck by lightning and caught fire while thunderstorms associated with Elena were in the vicinity. Except for the ship, damage along the coast was not great.

### HURRICANE FREDERIC AUGUST 29-SEPTEMBER 14

The similarity of the initial development of Frederic to that of David caused much apprehension in the eastern Caribbean Sea area. It appeared that a second Cape Verde hurricane would shortly move through that area even as David was still wreaking havoc. However, the very strength of David caused the weakening of Frederic as the warm outflowing air aloft from David descended onto Frederic and stifled his development. As the weakening Frederic approached, gale warnings were issued for the Leeward Islands, Virgin Islands, Puerto Rico, most of Hispaniola, and the southeast



## NORTH ATLANTIC TROPICAL CYCLONES

Bahamas, Turks, and Caicos Islands. The main consequence of Frederic in the islands of the eastern Caribbean Sea was heavy rains, especially over the Dominican Republic. However, seven deaths were reported from St. Maarten when a fishing boat sank.

Once Frederic regained strength in the Gulf of Mexico, earlier apprehension during the initial development became well-founded. The presence of David to the east just a week earlier and of Frederic over Cuba left few people unaware of the threat from Frederic. Hurricane warnings went into effect from Grand Isle, LA, to Panama City, FL, at 0230 September 11 with gale warnings east of Panama City to Cedar Key, FL. It didn't take much urging for people to evacuate early the next day. Of the 41 gale-force observations received at the National Hurricane Center during Frederic, 32 came as the hurricane plowed through the Gulf of Mexico.

Frederic was the first hurricane to strike Mobile, AL, directly since 1926. As mentioned previously, Mobile, and the Cape Canaveral, FL, area had gone the longest time of any location south of Cape Hatteras without a hurricane. The central pressure of 946 mb and estimated maximum sustained winds of 115 kn at landfall made Frederic the most intense hurricane of this century to affect the Mobile, AL-Pascagoula, MS, area. The highest wind reported in the United States was a gust to 126 kn on Dauphin Island bridge in Alabama, while a gust to 119 kn was observed at the Dauphin Island Sea Lab before the equipment was destroyed. The peak storm surge of 12 ft over Gulf Shores, AL, destroyed much of the island. An 11-ft surge at Dauphin Island destroyed the causeway leading to the island. Five deaths have been attributed directly to Frederic. The estimated damage total of \$2.3 billion makes Frederic the costliest U.S. hurricane in history.

### HURRICANE GLORIA, SEPTEMBER 4-15

Gloria was the first storm of the 1979 season not to affect any land areas. The disturbance which produced Gloria became a depression soon after moving off the northwest coast of Africa on September 4. It passed just north of the Cape Verde Islands, following a northwesterly course instead of the usual westerly course for early September. Satellite pictures indicated that Gloria reached tropical-storm strength on the 6th and hurricane strength early the following day while about 1,000 mi south-southwest of the Azores. The hurricane moved steadily northwestward at about 10 kn for the next 2 days before turning southwest and weakening briefly to a tropical storm late on the 10th. The weakening and blocking of the hurricane was associated with a higher latitude frontal system and its following high-pressure area. After the HIGH passed to the north, Gloria turned northeastward and accelerated in advance of the next frontal system, losing tropical characteristics about 300 mi northwest of

the Azores late on the 14th.

Satellite classifications of strength indicate that Gloria reached maximum intensity of 85 kn on the 13th with an estimated minimum central pressure of 975 mb. Gloria was a threat only to shipping, but there were no reports of damage.

### HURRICANE HENRI, SEPTEMBER 14-24

While Henri existed as a tropical cyclone for almost 10 days, only 3 of these were as a storm or hurricane. At one time or another during his life, Henri headed in each direction of the compass. In addition, he was the second hurricane of this century to form in the Gulf of Mexico and not make landfall as a storm, further, destroying the old saying that a landfall is inevitable once a hurricane is in the Gulf of Mexico. Because Henri remained in the southwest Gulf of Mexico while a storm, few ships were affected.

Late on September 14, reports from NOAA reconnaissance aircraft indicated a depression had formed near Cozumel, MX. On the morning of the 15th Air Force reconnaissance located the center north of the northeastern tip of the Yucatan Peninsula. It was moving westward, since a large high-pressure system to the north blocked any northward motion. Winds reached tropical-storm strength on the morning of the 16th as the center turned southwestward under the continued blocking influence of the large high-pressure system to the north. Henri became a hurricane early on the 17th as the center turned toward the northwest in response to the weakening ridge of high pressure over the northwest Gulf of Mexico. As a broad area of low pressure developed over the western Gulf of Mexico, Henri's movement became slow and erratic. He reached maximum strength of 75 kn and minimum sea-level pressure of 983 mb in the Bay of Campeche on the 17th, then weakened steadily for the next 48 hr to become a tropical depression on the afternoon of the 19th. The depression moved slowly east-northeastward for the next 5 days, remaining just south of a cold front which had moved into the northern Gulf of Mexico, and finally became part of the frontal low-pressure trough on the 24th.

Henri threatened the southwest coastline of Mexico in the Bay of Campeche for a time and also hampered efforts to control a runaway oil well in the Bay of Campeche. There have been no reports of casualties or monetary losses caused by Henri.

### SUBTROPICAL STORM, OCTOBER 23-25

A low-pressure system which developed on a front south of Bermuda about midday on October 23 strengthened rapidly as it moved north-northeastward and acquired some tropical characteristics. Bermuda reported a minimum pressure of 1002 mb at 2100 on the 23d, and the first visible satellite picture on the morning of the 24th suggested winds had reached 40 kn. The



## NORTH ATLANTIC TROPICAL CYCLONES

LOW accelerated to a forward speed of 25 kn during the afternoon, while continuing towards the north-northeast, passing through the North Atlantic shipping lanes south of Nova Scotia. The KAPUSKASING, east of the center, reported south-southeasterly winds of 65 kn with seas of 20 ft, and several other ships within 125 mi of the center reported winds of 45 to 50 kn. This was a

typical example of the rapidity with which this type of storm can form and move. Sable Island reported a pressure of 984 mb during the evening of the 24th, and the minimum pressure of the storm was estimated to be 980 mb about this time. The storm lost tropical characteristics near Newfoundland. No effects on maritime interests have been received.

Table 1.--Summary of North Atlantic tropical and subtropical cyclone statistics, 1979

No.	Name	Class	Dates	Maximum sustained winds (kn)	Lowest pressure (mb)	U.S. damage (\$ million) <sup>1</sup>	Deaths
1	Ana	T	June 19-23	50	1005		
2	Bob	H	July 9-16	65	986	20	1-U.S.
3	Claudette	T	July 16-29	45	997	400	1-U.S. 1-Puerto Rico
4	David	H	Aug. 25-Sept. 7	150	924	320	5-U.S. 7-Puerto Rico 56-Dominica 1,200-Dom. Rep.
5	Elena	T	Aug. 29-Sept. 1	35	1004	< 10	2-U.S.
6	Frederic	H	Aug. 29-Sept. 14	115	943	2,300	5-U.S. 7-St. Maarten
7	Gloria	H	Sept. 4-15	85	975		
8	Henri	H	Sept. 14-24	75	983		
9	--	ST	Oct. 23-25	65	980		

T - tropical storm (winds 34-63 kn)

H - hurricane (winds 64 kn or higher)

ST - subtropical storm (winds 34 kn or higher)

<sup>1</sup> includes Puerto Rico and U.S. Virgin Islands

**Table 2**  
**NORTH ATLANTIC TROPICAL CYCLONES FOR PAST YEARS**

TOTAL NUMBER OF TROPICAL CYCLONES, LOSS OF LIFE AND DAMAGE								
Total Number Tropical Cyclones*			Total Number Hurricanes		Loss of Life		Damage by Categories**	
Year	All Areas	Reaching U.S. Coast	All Areas	Reaching U.S. Coast	Total All Areas	United States	Total All Areas	United States
1931	9	2	2	0		0		#
1932	11	5	6	2		0		#
1933	21	7	9	5		63		7
1934	11	5	6	3		17		6
1935	6	2	5	2		414		7
	58	21	28	12				
1936	16	7	7	3		9		6
1937	9	4	3	0		0		4
1938	8	4	3	2		600		8
1939	5	3	3	1		3		3
1940	8	3	4	2		51		6
	46	21	20	8				
1941	6	4	4	2		10		7
1942	10	3	4	2	17	8	7	7
1943	10	4	5	1	19	16	7	7
1944	11	4	7	3	1,076	64	8	8
1945	11	5	5	3	29	7	8	8
	48	20	25	11				
1946	6	4	3	1	5	0	7	7
1947	9	7	5	3	72	53	8	8
1948	9	4	6	3	24	3	7	7
1949	13	3	7	2	4	4	8	8
1950	13	4	11	3	27	19	7	7
	50	22	32	12				
1951	10	1	8	0	244	0	7	6
1952	7	2	6	1	16	3	6	6
1953	14	6	6	2	3	2	7	7
1954	11	4	8	3	720+	193	9	9
1955	12	5	9	3	1,518+	218	9	9
	54	18	37	9				
1956	8	2	4	1	76	21	8	7
1957	8	5	3	1	475	395	8	8
1958	10	1	7	0	49	2	7	7
1959	11	7	7	3	57	24	7	7
1960	7	5	4	2	185	65	8	8
	44	20	25	7				
1961	11	3	8	1	345	46	8	8
1962	5	1	3	0	4	4	6	6
1963	9	1	7	1	7,218-	11	9	7
1964	12	6	6	4	266	49	9	9
1965	6	2	4	1	76	75	9	9
	43	13	28	7				
1966	11	2	7	2	1,040	54	8	7
1967	8	2	6	1	68	18	8	8
1968	8	3	5	1	11	9	7	7
1989	18	3	12	2	364	256	9	9
1970	10	3	5	1	74	11	9	8
	55	13	35	7				
1971	13	5	6	3	44	8	8	8
1972	7	3	3	1	128	121	9	9
1973	8	1	4	0	16	5	7	7
1974	11	2	4	1	3,000+	1	8	8
1975	9	1	6	1	80	21	9	9
	48	12	23	6				
1976	10	4	6	1	77	9	8	8
1977	6	1	5	1	10	0	7	7
1978	12	2	5	0	41	35	7	7
1979	9	5	5	4	1,285	22	9	9
Total	483	172	274	84				
Mean	9.9	3.5	5.6	1.7				

\*\*The Environmental Data Service has for some time recognized that, without detailed expert appraisal of damage, all figures published are merely approximations. Since errors in dollar estimates vary in proportion of the total damage, storms are placed in categories varying from 1 to 9 as follows:

- |                    |                            |                                    |
|--------------------|----------------------------|------------------------------------|
| 1 Less than \$50   | 4 \$5,000 to \$50,000      | 7 \$5,000,000 to \$50,000,000      |
| 2 \$50 to \$500    | 5 \$50,000 to \$500,000    | 8 \$50,000,000 to \$500,000,000    |
| 3 \$500 to \$5,000 | 6 \$500,000 to \$5,000,000 | 9 \$500,000,000 to \$5,000,000,000 |

\* Including hurricanes and after 1967 subtropical cyclones

# Not reported in literature, believed minor.

- Additional deaths for which figures are not available.

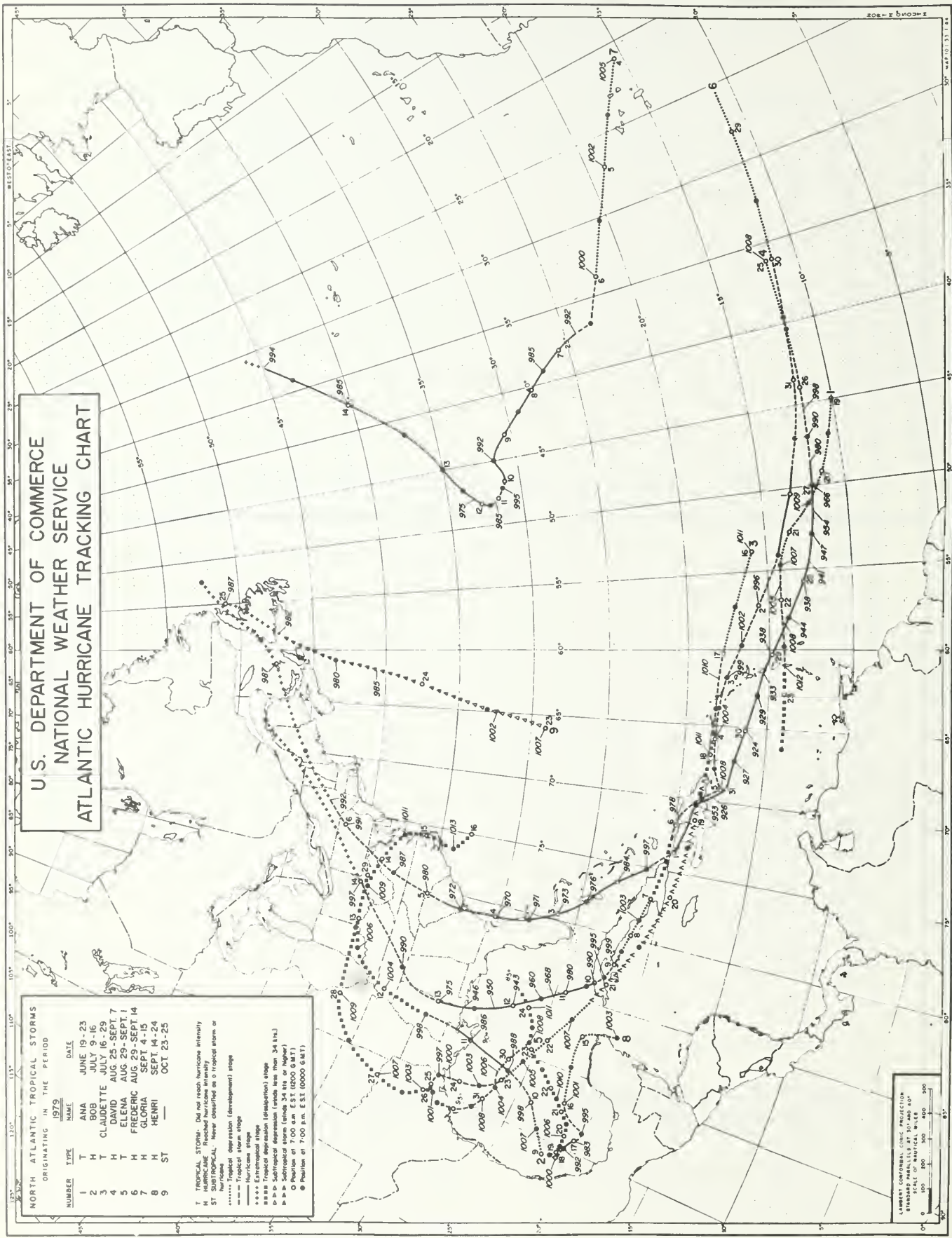




# U.S. DEPARTMENT OF COMMERCE NATIONAL WEATHER SERVICE ATLANTIC HURRICANE TRACKING CHART

NORTH ATLANTIC TROPICAL STORMS ORIGINATING IN THE PERIOD		
NUMBER	NAME	DATE
1	ANA	JUNE 19-23
2	BOB	JULY 9-16
3	CLAUDETTE	JULY 16-29
4	DAVID	AUG 29-SEPT 7
5	ELENA	AUG 29-SEPT 14
6	FREDERIC	AUG 29-SEPT 14
7	GLORIA	SEPT 4-15
8	HENRI	SEPT 14-24
9	ST	OCT 23-25

T Tropical Storm; Del not used; hurricane intensity  
 H Hurricane; Reached hurricane intensity  
 ST SUBTROPICAL; Never classified as a tropical storm or  
 hurricane  
 --- Tropical depression (development) stage  
 --- Hurricane stage  
 \*\*\*\* Extratropical stage  
 ■■■■ Tropical depression (dissipation) stage  
 >>> Subtropical depression (depth less than 34 fms.)  
 ○ Position at 7:00 a.m. EST (0200 GMT)  
 ● Position at 7:00 p.m. EST (0200 GMT)



LAMBERT CONFORMAL PROJECTION  
 STANDARD PARALLELS AT 30° AND 60°  
 SCALE OF NAUTICAL MILES  
 0 100 200 300 400 500

# EASTERN NORTH PACIFIC TROPICAL CYCLONES, 1979

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The 1979 eastern North Pacific tropical cyclone season began on May 31 and ended November 18. Spanning 172 days, the season was 28 days longer than the 1978 season, but it was less active. There were only 13 cyclones in 1979, compared to 21 in 1978. Of the 13, 3 were tropical depressions, 4 were tropical storms, and 6 were hurricanes. Hurricane hours (326) in 1979 were down 61 percent from the 1978 season, and tropical storm hours (482) were down 45 percent. The highest sustained windspeed during the 1979 season was 125 kn. Two-thirds (4) of the 1979 hurricanes had windspeeds of 100 kn or more compared to only half of the 1978 hurricanes (6). Table 1 shows the monthly distribution of 1979 tropical-cyclone activity and tables 2 and 3 compare this activity with that of recent years. The 1966-79 period was chosen for comparison, since it probably includes all tropical-cyclone activity in the area owing to excellent satellite coverage. Prior to 1966 some activity was undetected because of the sparsity of data. Cyclone tracks are shown in Figures 1 and 2.

The Eastern Pacific Hurricane Center issued 198 tropical-cyclone advisories during the 1979 season, a 50-percent decrease from the previous season. Advisories were issued four times daily on a regular schedule for cyclone positions at 0000, 0600, 1200, and 1800.

Although several ships passed close to the centers of tropical cyclones and undoubtedly experienced heavy weather and seas, no reports of casualties or damage were received.

Three tropical cyclones moved onshore, all into Mexico. The first was hurricane Andres with 65-kn winds 90 mi southeast of Manzanillo at 1300 June 4. The second was tropical depression Nine with 25-kn winds 145 mi east-southeast of Acapulco at 1800 on September 4, and the last to move onshore was hurricane Ignacio with 30-kn winds 140 mi east-southeast of Manzanillo at 1200 October 30. No reports of casualties or damage were received.

The National Environmental Satellite Service Field Station, collocated with the Eastern Pacific Hurricane Center, provided excellent satellite coverage during the 1979 season. Movie loops, GOES visual and infrared data, and polar-orbiting satellite data were available. Cyclonic intensity was calculated using the Dvorak technique of satellite cyclone analysis.

The U.S. Air Force made three reconnaissance

flights into hurricane Ignacio off the central Mexican coast during October 27 to 29.

Although satellite imagery continues to improve and is probably one of the most important tools used by the tropical forecaster today, aircraft reconnaissance and synoptic ship reports retain their importance as invaluable comparative ground-truth observations.

Several computer-derived forecasts of tropical-cyclone tracks for the eastern North Pacific were provided by the National Hurricane Center in Miami. The forecast tracks included an analog model (EPANA-LOG), a statistical synoptic model (EPHC77), a simulated analog model (CLIPER), and a barotropic model (SANBAR).

Only named tropical cyclones are described in the following paragraphs. There were three numbered cyclones that did not develop to tropical-storm strength. None of these moved into the central North Pacific area west of 140°W.

## HURRICANE ANDRES - MAY 31-JUNE 4

The first cyclone of the season only reached depression strength. Andres, the second cyclone of the season, began as a tropical disturbance 200 mi south of the Gulf of Tehuantepec on May 31. By 1800 cyclonic circulation had developed and he was upgraded to a tropical depression near 11°N, 95.5°W, with winds between 25 and 30 kn. The cyclone turned north-northwestward and slowly began to intensify. At 1800 June 1 the cargo ship ATLANTIC NEPTUNE, 105 mi west of the depression, reported north-northwesterly 25-kn winds, 15-ft seas, and a sea-surface temperature of 86°F. At 0600 on June 2 winds near the center had increased to 35 kn, and the cyclone was upgraded to tropical storm Andres near 12.8°N, 98.8°W, about 250 mi south of Acapulco, Mexico. Winds had reached 55 kn by June 3. The cargo ships SATURN DIAMOND and MAMMOTH FIR and the tankers OVERSEAS ALEUTIAN and ATIGUN PASS were helpful in locating the center of Andres between 1800 June 2 and 0000 June 3. At 1200 on the 3rd another tanker, the TEXACO GEORGIA, 140 mi east of Andres, reported east-southeasterly 32-kn winds, heavy rains, and 14-ft seas. The ATIGUN PASS was now 100 mi east-southeast of Andres and reported east-southeasterly 60 to 65-kn winds, heavy rains, high seas, and a pressure of 992 mb. At 1500 winds on the TEXACO GEORGIA, which was now 100 mi east of the storm's center, had shifted to the south-southeast at 44 kn and the seas had increased to 18 ft. At 1800 the storm was upgraded to a hurricane near 16.7°N, 100.7°W just



## EASTERN NORTH PACIFIC TROPICAL CYCLONES

50 mi west of Acapulco. Andres now turned west-northwestward and continued intensification. At 2300 the TEXACO GEORGIA, 25 mi east of Andres, reported 77-kn winds and 30-ft seas. The ship also reported the apparent center of the hurricane as a violent circular squall area, 18 mi in radius, converging from all quadrants. By June 4 winds near the center of the hurricane had reached maximum intensity of 85 kn. The TEXACO GEORGIA, 6 mi to the east, reported southerly 80-kn winds, heavy continuous rain, sea-surface temperature of 81°F, and a pressure of 997.6 mb. At 0230 June 4 the tanker KEYSTONEER reported the hurricane eye at 17.2°N, 101.9°W. The ship, 90 mi south of Andres, reported 70-kn winds, 20-ft seas, and 995-mb pressure. The hurricane was 25 mi from the Mexican coast, midway between Acapulco and Manzanillo. Andres turned northwestward and began to weaken. By 1200 winds had decreased to 65 kn, and at 1300 Andres moved onshore 215 mi west-northwest of Acapulco and 90 mi southeast of Manzanillo and weakened rapidly.

### TROPICAL STORM BLANCA - JUNE 21-25

An Atlantic tropical disturbance crossed the Isthmus of Panama and Costa Rica and moved into the eastern North Pacific on June 17. On the 21st satellite imagery showed cyclonic circulation, and the disturbance was upgraded to a tropical depression about 400 mi east of Clipperton Island. Winds near the center increased to 35 kn by the 22nd, and the depression was upgraded to tropical storm Blanca near 9.3°N, 107°W. Moving westward, the storm continued to intensify over 84°F water. Blanca reached maximum intensity of 45 kn by 0600 about 80 mi east-southeast of Clipperton Island. The storm passed 30 mi south of Clipperton Island at 1300, then turned west-northwestward and weakened. On the 24th the winds had diminished to 35 kn. On the 25th they were down to 25 kn, and the storm was downgraded to a tropical depression near 12.8°N, 122.8°W. The cyclone was now over 80°F water and weakening rapidly.

### TROPICAL STORM CARLOS - JULY 14-16

The fourth cyclone of the season developed near the Gulf of Tehuantepec on July 11. It moved across the Gulf at 8 kn and began to slowly intensify. Late on the 14th satellite pictures showed cyclonic circulation, and the disturbance was upgraded to a tropical depression 220 mi west of Acapulco, Mexico. The depression turned west-northwestward and began to intensify rapidly, while moving over a ridge of warm 86°F water. On the 15th the depression was upgraded to tropical storm Carlos at 17.4°N, 104.4°W. Winds near the center increased to maximum intensity of 45 kn from 1200 through 1800, then began to decrease as the storm accelerated to 18 kn over 82°F water. The cargo ship HIRATSUKA MARU helped locate the center of the storm between 0600 and 1800. By 0000 on the 16th winds had diminished to 30 kn, and Carlos was downgraded to a tropical depression about 40 mi east-southeast of Socorro Island. The cyclone then turned westward and passed 15 mi south of Socorro Island between 0100 and 0200. Moving toward cooler water and low clouds to the

west, the depression weakened rapidly.

### HURRICANE DOLORES - JULY 17-23

Hurricane Dolores was spawned 350 mi south of the Guatemalan coast on July 14. Moving west at 10 kn, the disturbance began to intensify. At 0600 on the 17th the disturbance was upgraded to a tropical depression near 10.5°N, 103.7°W. Winds near the center increased to 35 kn by 1800, and the depression was upgraded to tropical storm Dolores near 11.2°N, 107°W. The RODE ZEE reported in while 160 mi to the northeast of the center. Dolores continued to intensify over 85°F water as she moved around the southern side of an upper level high-pressure area centered over Baja, California. On the 18th her winds had increased to 65 kn, and she was upgraded to a hurricane near 12.4°N, 112.6°W. Satellite pictures showed Dolores with a well-defined eye by 1800 on the 19th. Winds increased to 100 kn by 0600 on the 20th and reached maximum intensity of 105 kn by 0000 on the 21st. Increasing in forward speed to 11 kn, Dolores continued to move northwestward around the upper level high-pressure area, which had moved to northern Mexico. She was 600 mi offshore and moving parallel to the Baja California coast. The cyclone began to weaken over colder 78°F water. At 0000 on the 22nd her winds had decreased to 60 kn, and the hurricane was downgraded to a tropical storm near 20.3°N, 121.8°W. Low clouds feeding into the cyclonic circulation from the north and west rapidly weakened the cyclone. By 1800 her winds had diminished to 30 kn, and the storm was downgraded to a tropical depression near 23.3°N, 124.2°W.

### HURRICANE ENRIQUE - AUGUST 17-24

Three and one-half weeks elapsed before the next cyclone, which began as a tropical disturbance near 11°N, 107°W. Moving westward, it began to intensify over 86°F water. At 1800 on the 17th the disturbance was upgraded to tropical depression, and 6 hr later it was upgraded to tropical storm Enrique near 11.2°N, 114.9°W. The cyclone turned west-northwestward with winds increasing to 55 kn by 1800 on the 18th. Enrique then turned westward and was upgraded to a hurricane at 0000 on the 19th near 12.8°N, 119°W. Satellite pictures were beginning to show an eye near the center of the cyclone. A report at 1800 from the CHAMPLAIN was especially useful in the analysis. Winds had increased to 70 kn, but decreased to 65 kn as the storm moved over 81°F water on the 20th. Enrique then turned northwestward and continued to weaken as low clouds to the north began to feed into the cyclonic circulation. On the 21st winds had diminished to 55 kn, and Enrique was downgraded to a tropical storm. About 1,300 mi to the east the next cyclone of the season had just been upgraded to tropical storm Fefa, 250 mi southwest of Acapulco, Mexico. Still moving northwestward, Enrique passed beyond the field of low clouds and once again began to intensify. By 1700 on the 21st his winds had increased to 70 kn, and he was again upgraded to a hurricane. Continuing northwestward, Enrique intensified rapidly. By



## EASTERN NORTH PACIFIC TROPICAL CYCLONES

0000 on the 22nd the winds had reached 110 kn; by 1200 Enrique reached maximum intensity of 125 kn. The cargo ship AUSTRAL MOON, 70 mi to the west, reported northwesterly 50-kn winds, 35-ft seas, an air temperature of 75°F, and a sea-surface temperature of 72°F. By 1800 Enrique was near 18.9°N, 129.9°W, and the AUSTRAL MOON, 180 mi to the south-southwest, reported northwesterly 35-kn winds and 24-ft seas. The CRYSTAL AZALEA, 230 mi west of Enrique, reported northeasterly 35-kn winds, 13-ft seas, an air temperature of 75°F, and a sea-surface temperature of 72°F. Continuing northwestward, Enrique began to move over progressively colder water and weakened. With low clouds feeding into the cyclone his winds diminished to 55 kn on the 23rd, and he was downgraded to a tropical storm near 20.4°N, 132°W. On the 24th the winds were only 30 kn, and the storm was downgraded to a tropical depression at 21.1°N, 133.5°W.

### HURRICANE FEFA - AUGUST 21-25

Hurricane Fefa began 340 mi south-southeast of Acapulco on August 19. On the 21st the disturbance was upgraded to a tropical depression near 13.9°N, 101.8°W. By 0600 winds had increased to 35 kn, and the cyclone was upgraded to tropical storm Fefa 250 mi southwest of Acapulco. As the storm moved west-northwestward, the tanker ANCO SCEPTRE and the cargo ship ALPS MARU aided the analysts. Fefa had turned westward and, with 55-kn winds increasing to 75 kn, was upgraded to a hurricane near 15.8°N, 109.6°W, at 0600 on the 22nd. Winds reached 90 kn by 1200 as Fefa passed 150 mi south of Socorro Island. She reached maximum intensity of 100 kn at 1200 on the 23rd. Turning westward, Fefa began to slow and weaken over 78°F water. At 0600 on the 24th the hurricane was downgraded to a tropical storm with 55-kn winds near the center. Weakening rapidly, Fefa was downgraded to a tropical depression at 1800.

### HURRICANE GUILLERMO - SEPTEMBER 8-13

Guillermo, the tenth cyclone of the season, began as a tropical disturbance 130 mi south of the Gulf of Tehuantepec on September 7. The PISCES, 170 mi southeast of the center, was helpful in locating the center of the depression. Winds increased to 40 kn by 0600 on the 9th, and the depression was upgraded to tropical storm Guillermo near 16.8°N, 103.9°W. The KEELONG and HOHKOKUSAN MARU were useful on the 1800 analysis. Guillermo turned northwestward and began to move around the southwestern side of an upper level HIGH centered over central Mexico. The cargo ship AMERICAN HIGHWAY reported in the area at 1800 on the 10th. The cargo ships AMERICAN LEGION and KUROBE MARU reported on the 11th. The cargo ship CHU FUJINO, 20 mi southeast of the storm at 1600, found 60-kn winds, rough seas, and a pressure of 994 mb. Winds near the center of Guillermo reached maximum intensity of 65 kn by 1800, and the storm was upgraded to a hurricane near 21.1°N, 110.5°W. Guillermo slowly weakened over 79°F water and winds decreased. He was downgraded to a tropical storm at 0600 on the 12th and to a

tropical depression on the 13th. In the 30 hr between 1800 September 11 and 0000 on the 13th, the AGNES FOSS, DANWOOD ICE, HAITI MARU, LEDA, OGDEN DANUBE, and FIREBUSH helped to locate the storm.

### TROPICAL STORM HILDA - OCTOBER 4-6

Tropical cyclone eleven began 200 mi south of the Guatemalan coast on October 1. Moving westward over 82°F water, the disturbance intensified to a tropical depression by the 4th. Tuna fishing boats north and south of the cyclone aided in locating the cyclone. Moving westward over 85°F water, the depression continued to intensify, then turned west-northwestward, and was upgraded to tropical storm Hilda with 40-kn winds near 14.6°N, 110.4°W, on the 5th. Hilda turned westward again and passed 250 mi south of Socorro Island at 0900. By 0000 on the 6th her winds had decreased to 30 kn, and the storm was downgraded to a depression.

### HURRICANE IGNACIO - OCTOBER 23-30

Two weeks elapsed before the next cyclone, which began 200 mi southwest of the Guatemalan coast on October 22. The disturbance began to intensify and was upgraded to a depression near 11.7°N, 95.3°W, at 1800 on the 23rd. The winds increased to 35 kn by 1200 on the 24th, and the depression was upgraded to tropical storm Ignacio near 11.4°N, 97.9°W. At 1800 on the 26th winds were found to have increased to 70 kn over 87°F water, and the storm was upgraded to a hurricane. At 1742 on the 27th U.S. Air Force reconnaissance aircraft located the center of Ignacio near 17°N, 107.3°W. Winds near the center of the cyclone had increased to their maximum intensity of 125 kn. The hurricane eye had a well-defined, closed wall 20 mi in diameter. Surface pressure was estimated at 938 mb. Reconnaissance aircraft made a second and third penetration of the cyclone at 1930 and 2022. Surface pressure was estimated at 937 mb, and the eye was reported covered with broken clouds. At the same time the BODENA, LUTSK, PIONEER COMMANDER, and VERRANZANO BRIDGE were penetrating the storm. At 1755 on the 28th reconnaissance aircraft flew into Ignacio again and located the center near 17.7°N, 108.1°W. Surface pressure was now estimated at 969 mb and the eye, filled with low clouds, had decreased to a diameter of 5 mi. A second penetration of the cyclone at 1930 showed little change. The cyclone now turned eastward, and with 80-kn winds continued to weaken. The following ships reported on the storm: the TOYOTA MARU No. 19, NEDLLOYD KINGSTON, PANGUEON, PACIFIC ACE, and FAIRSEA. Winds near the center of the cyclone diminished to 55 kn by 1800 on the 29th, and the hurricane was downgraded to a tropical storm. Reconnaissance aircraft again flew through Ignacio at 2137 on the 29th. Surface winds were verified at 55 kn, and the surface pressure was 995 mb. The eye had expanded to a diameter of 20 mi, but it was poorly defined and filled with midlevel clouds. A second penetration at 2252 estimated the winds at 50 kn with a pressure of 997 mb and the eye open to the north and south. A third and fourth penetration

## EASTERN NORTH PACIFIC TROPICAL CYCLONES

at 0003 and 0038 on the 30th showed little change. Ignacio was now 75 mi southwest of Manzanillo, Mexico. He moved rapidly eastward toward the Mexican coast and moved onshore 140 mi east-south-east of Manzanillo. Remnants of Ignacio drifted across southern Mexico, dissipating over the Yucatan Peninsula on October 31.

### TROPICAL STORM JIMENA - NOVEMBER 15-18

The thirteenth and final cyclone of the season was discovered 80 mi south of Panama on November 13. It began to intensify over 84°F water, and by 0600 on the 15th satellite imagery showed cyclonic circulation. The winds increased to 35 kn by 2100, and the depression was upgraded

to tropical storm Jimena. By 0000 on the 16th Jimena was near 8.5°N, 91°W. She turned west-northwestward and continued to intensify. The cargo ship NORSE PILOT and the passenger liner ISLAND PRINCESS reported on the cyclone near 9°N, 93°W, at 1200. The winds reached maximum intensity of 55 kn by 1800. The storm then began to weaken over 82° F water and under the influence of the Tehuantepec winds flowing in from the north. By 0000 on the 18th winds had decreased to 30 kn, and the cyclone was downgraded to a depression. The final advisory was issued at 0600 with the center 370 mi south of Acapulco, Mexico. Remnants of Jimena drifted westward for another 72 hr before disappearing from satellite view.

Table 1.--Monthly distribution of eastern North Pacific tropical cyclones, 1979\*

	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
Tropical depressions	1	0	1	0	1	0	0	3
Tropical storms	0	1	1	0	0	1	1	4
Hurricanes	0	1	1	2	1	1	0	6
<b>Total</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>13</b>

\*Cyclones are ascribed to the month in which they began.

Table 2.--Frequency of eastern North Pacific tropical storms and hurricanes combined by months and years\*

Year	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
1966	0	1	0	4	6	2	0	13
1967	0	3	4	4	3	3	0	17
1968	0	1	4	8	3	3	0	19
1969	0	0	3	2	4	1	0	10
1970	1	3	6	4	1	2	1	18
1971	1	1	7	4	2	2	1	18
1972	1	0	1	6	2	1	1	12
1973	0	3	4	1	3	1	0	12
1974	1	3	3	6	2	2	0	17
1975	0	2	4	5	3	1	1	16
1976	0	2	4	4	3	1	0	14
1977	1	1	1	1	3	1	0	8
1978	1	3	4	6	2	2	0	18
1979	0	2	2	2	1	2	1	10
<b>Total</b>	<b>6</b>	<b>25</b>	<b>47</b>	<b>57</b>	<b>38</b>	<b>24</b>	<b>5</b>	<b>202</b>
<b>Average</b>	<b>0.4</b>	<b>1.8</b>	<b>3.4</b>	<b>4.1</b>	<b>2.7</b>	<b>1.7</b>	<b>0.4</b>	<b>14.4</b>

\*Cyclones are ascribed to the month in which they began.

Table 3.--Number of eastern North Pacific tropical storms reaching hurricane intensity by months and years\*

Year	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
1966	0	1	0	4	2	0	0	7
1967	0	1	0	2	1	2	0	6
1968	0	0	0	3	2	1	0	6
1969	0	0	1	1	1	1	0	4
1970	1	0	1	1	0	1	0	4
1971	1	1	5	2	2	1	0	12
1972	1	0	0	6	1	0	0	8
1973	0	1	3	0	2	1	0	7
1974	0	2	2	4	2	1	0	11
1975	0	1	2	3	1	1	0	8
1976	0	2	1	2	3	0	0	8
1977	0	0	1	1	1	1	0	4
1978	1	2	3	4	1	1	0	12
1979	0	1	1	2	1	1	0	6
<b>Total</b>	<b>4</b>	<b>12</b>	<b>20</b>	<b>35</b>	<b>20</b>	<b>12</b>	<b>0</b>	<b>103</b>
<b>Average</b>	<b>0.3</b>	<b>0.9</b>	<b>1.4</b>	<b>2.5</b>	<b>1.4</b>	<b>0.9</b>	<b>0.0</b>	<b>7.4</b>

\*Cyclones are ascribed to the month in which they began.



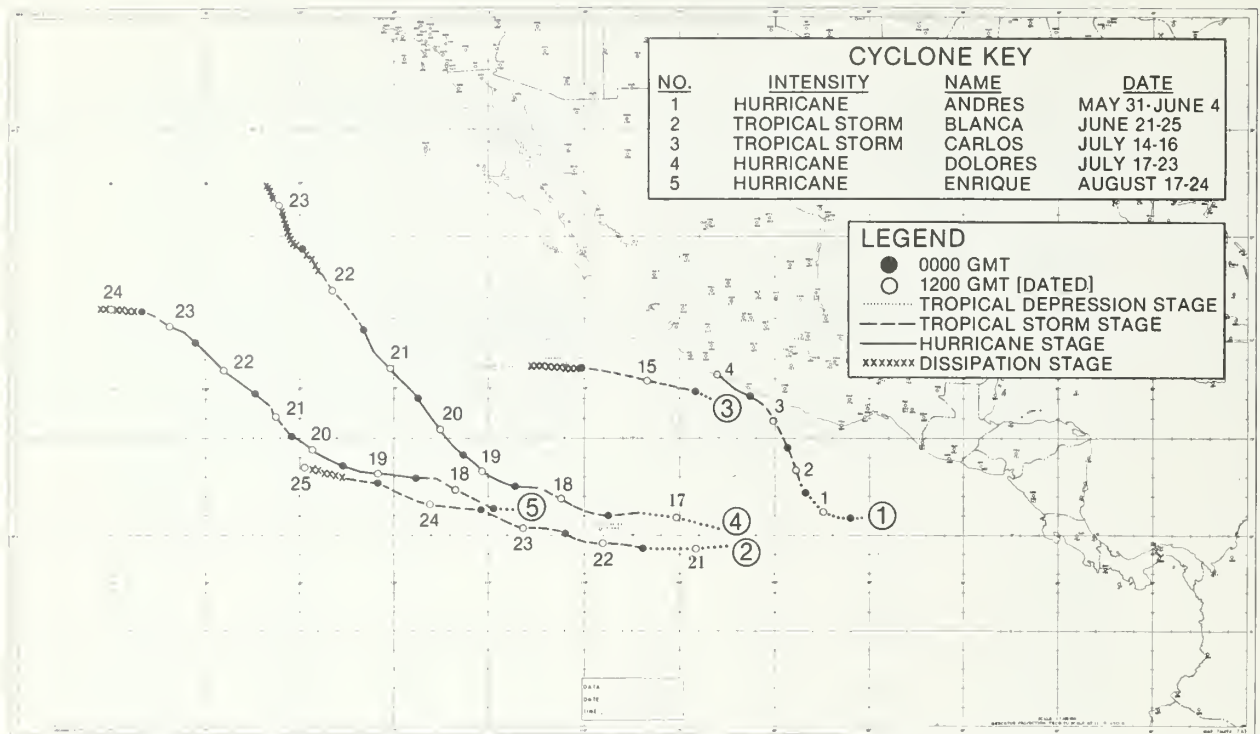


Figure 1. ---Tracks of eastern North Pacific tropical cyclones, May 31 to August 24, 1979.

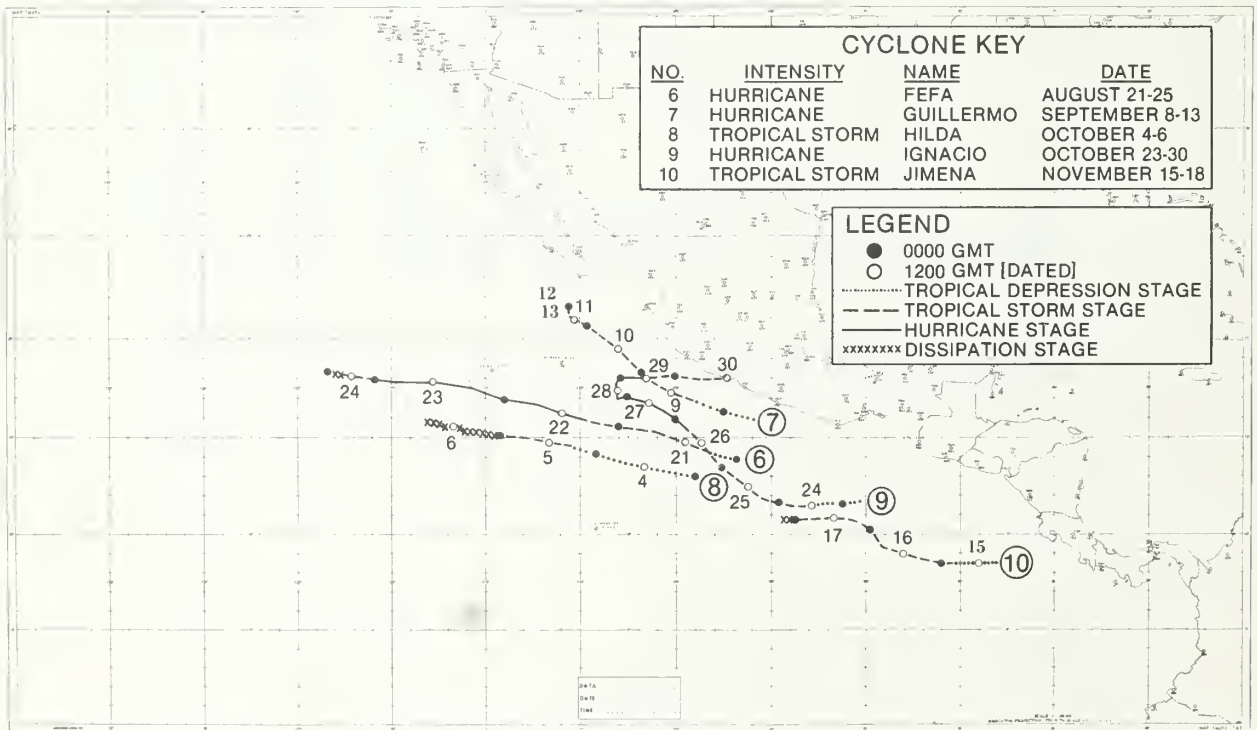


Figure 2. ---Tracks of eastern North Pacific tropical cyclones, August 21 to November 18, 1979.

# WESTERN NORTH PACIFIC TYPHOONS, 1979

Extracted from Annual Typhoon Report, 1979, U.S.  
Fleet Weather Central, Joint Typhoon Warning Center,  
Guam, Mariana Islands

The western North Pacific experienced a below-normal year of tropical-cyclone activity with 28 cyclones during 1979 (Table 1). By comparison, 1978 was a nearly normal year with 32 cyclones, and 1977 was a near record-low year with 21 cyclones. Five significant tropical cyclones never developed beyond the tropical-depression stage, and nine developed into tropical storms. Of the 14 cyclones that developed to typhoon stage, only 4 reached the 130-kn intensity necessary to be classified as a supertyphoon. This season, beginning with typhoon Bess, tropical cyclones attaining tropical-storm strength or greater were assigned names on an alternating male/female basis. This change was a result of the 1979 Tropical Cyclone Conference. Each tropical cyclone's maximum surface wind (kn) and minimum observed sea-level pressure (mb) were obtained from best estimates of all available data. The distance traveled (mi) was calculated from the Joint Typhoon Warning Center's (JTWC) official best track.

Tables 2 and 3 provide further information on the monthly distribution of tropical cyclones. Even though there were four fewer cyclones this season compared to last season, there were 18 more warning days for a total of 149. There were 38 warning days with two cyclones and 5 warning days with three or more cyclones.

The cyclone tracks are shown in Figures 1, 2, and 3. The tracks are indicated from first detection until dissipation or becoming extratropical. In Tables 2 and 3 the storms are credited in the month that the first warning was issued.

## TYPHOON ALICE

Typhoon Alice, the first tropical cyclone of the 1979 season, was actually first sighted as a tropical disturbance on December 27, 1978. The potential for development was considered poor as it was so near the Equator. On January 1, 1979, the disturbance accelerated to higher latitudes and was named Alice. She meandered through the Marshall Islands, causing much damage as an upper air, short-wave trough temporarily steered her on a northeasterly track. On the 4th she turned back on a normal westerly track.

From the 6th to the 11th, Alice traveled due west. On the 8th she attained 110-kn intensity and simultaneously accelerated to a speed of 14 kn whereupon she began weakening slowly.

During the 9th, Alice began an unexpected northward movement and showed further weakening. Postanalysis of low-level synoptic data and satellite imagery indicated that an approaching frontal shear-line was the responsible agent. The

shear-line began interacting with Alice while she was southeast of Guam. As Alice neared Guam, radar data from Andersen Air Force Base and aircraft data indicated that Alice's previously well-defined wall cloud had become larger and somewhat less organized. Cooler, drier air north of the shear line probably was responsible for this weakening trend. A weakness in the subtropical ridge vertically above the shear-line apparently allowed for Alice's northward deviation.

The most unusual portion of Alice's track occurred during the final 3 days of Alice's life. Based on interpretation of computer prognoses, the subtropical ridge was expected to persist and maintain Alice in the easterlies. As a result, the JTWC forecasts indicated a westward movement until 0000 on the 12th, 18 hr after Alice had actually begun tracking northwestward. The subtropical ridge weakened in response to a long-wave trough deepening over eastern Asia. Easterly steering currents in Alice's vicinity diminished and veered in direction, permitting a more northward track. Alice reached a secondary intensity maximum of 100 kn during this period due to her slowing in speed of movement, the increased absolute vorticity of higher latitudes, and good outflow aloft.

By the 13th, Alice turned northeastward and began weakening rapidly. The subtropical ridge was now completely severed and upper air westerlies were shearing Alice significantly in the vertical. Close proximity of yet another frontal shear-line contributed to further weakening. The biggest surprise, however, came when Alice's low-level circulation turned almost 180° back toward the west at about 1200 on the 13th under the influence of strong, low-level easterlies. Alice weakened rapidly in the strong, vertical-shear environment and dissipated during the next 12 hr.

## TYPHOON BESS

Since 1959, only three typhoons have developed over the western Pacific in March. Of these, only Bess developed in the last decade with Tess developing in 1961 and Sally in 1967. Tropical-cyclone development in March is usually inhibited by a southward adjustment in the subtropical ridge axis. Although not recognized in advance, typhoon Bess' development paralleled that of typhoon Tess, which developed in the eastern Caroline Islands and reached tropical-depression strength near Woleai Atoll. Continuing northwestward between Guam and Yap, both recurved northward near 135°E before dissipating north of 20°N under the influence of a strong vertical shear.

Synoptic data at 0000 on March 16 suggested

## WESTERN NORTH PACIFIC TYPHOONS

the existence of a weak surface circulation near 3°N, 152.5°E at the base of a wave in the easterly flow. Satellite imagery at 0119 showed an ill-defined area of convection near the surface circulation. By 1109 increased upper level organization suggested development of a weak 200-mb anticyclone. Increased curvature in the midlevel convective cloud pattern hinted at the possibility of tropical cyclone formation. Continuing to pulsate, the suspect area presented a curious, but intensified, upper level convective pattern on satellite imagery on the 17th. Synoptic analysis on the 18th indicated that, in addition to the circulation near 3.5°N, 147.5°E, a secondary LOW had developed on the slow-moving wave axis near 7.1°N, 150°E, and that the earlier ill-defined convection had been associated with these two circulations. As this secondary LOW tracked northward up the wave axis, increased cyclonic shear between strong easterly flow north of the wave and weak equatorial westerlies south of the wave caused the northern circulation to become the dominant center as the initial LOW weakened. Simultaneously, the upper level anticyclone intensified, producing an excellent outflow signature on satellite imagery. Aircraft data at 0259 on the 20th found strong enhanced easterly flow of 20 to 30 kn to the northeast, but only weak cyclonic flow to the south and east. Aircraft reports finally confirmed tropical-storm strength early on the 21st, 5 days after Bess was first observed.

Sea-surface temperature (SST) plays a vital role in the development and maintenance of tropical cyclones. A study indicates that tropical cyclones which move over water cooler than 26°C are less likely to intensify due to a reduction in latent heat. The study further states that tropical cyclones which develop prior to June intensify up to 10 kn after recurvature. This intensification, if experienced, will occur within the 12 to 24 hr following recurvature. Typhoon Bess followed this recurvature pattern. The axis of recurvature was crossed at 0000 on the 23d. Slow intensification occurred over the next 18 hr with Bess reaching maximum intensity of 90 kn at 1800. She maintained 90 kn for 18 hr, then rapidly weakened and dissipated by the 25th. SST analyses during March 24 to 27 indicate that the area in which Bess weakened from 90 to 60 kn in a 6-hr period corresponds closely to the location of water cooler than 26°C. The reduction of latent heat input, coupled with increased vertical shear produced by strong westerlies aloft, literally sheared Bess apart during the final 12 to 18 hr.

### TYPHOON CECIL

Typhoon Cecil, the first tropical cyclone in the northwest Pacific given a male name, generated in mid-April from an easterly wave over the Philippine Sea. Cecil was forecast very well while on a climatological west-northwestward track toward the central Philippines. Overall, postanalysis statistics showed that mean forecast errors were better than long-term averages. Nevertheless, JTWC warnings failed to forecast the crucial recurvature point in Cecil's track. Was

there sufficient evidence to forecast this recurvature 24 to 48 hr in advance?

Postanalysis showed that recurvature occurred 36 hr after the 1200 April 15 best-track position. Satellite imagery located Cecil just south of Samar. At this time the 500-mb subtropical ridge axis was at 17°N with a small high-pressure cell over northern Luzon. The 500-mb 36-hr prognosis maintained this ridge. Steering techniques based on the synoptic situation indicated westward movement for 72 hr. Analog techniques indicated west-northwestward movement. In fact, no objective forecast technique indicated recurvature prior to entrance into the South China Sea. The climatological average location of the 500-mb ridge axis is along 15°N over the Philippines for April, and the climatological recurvature point is 15° to 17°N. Both synoptic and climatological data indicated a west-northwestward track over the Philippines with recurvature late in the forecast period in South China Sea as Cecil tracked to the vicinity of 15°N. Postanalysis however, revealed that the ridge axis east of the Philippines abruptly shifted south late on the 16th with westerly winds intruding far to the south over the South China Sea. This pattern shift caused Cecil to recurve much earlier than anticipated. Within 48 hr, Cecil was well east of Luzon. The ridge axis shift was the vital piece of information not present in any of the available prognostic tools. Thus, it appears even in postanalysis that forecasting of Cecil's recurvature 36 hr in advance was beyond the state-of-the-art capabilities.

### TYPHOON ELLIS

The tropical disturbance which later became typhoon Ellis was first noted on June 25. The surface/gradient-level analysis showed that a broad monsoon trough had developed between Guam and the Philippine Islands. At upper levels, a Tropical Upper Tropospheric Trough (TUTT) was oriented northeast-southwest between the Volcano Islands and the central Philippine Islands. This TUTT allowed excellent upper level outflow to the northeast and was expected to induce intensification of the tropical disturbance southeast of the TUTT axis. However, significant development did not occur. Reconnaissance aircraft could find only a very broad surface circulation with relatively high surface pressures. The surface circulation drifted under the TUTT, and the associated convection was suppressed.

The area was closely monitored. On the 30th satellite imagery showed increased convective development, and surface data showed decreasing pressures and increasing winds. Subsequent aircraft investigation revealed a minimum sea-level pressure of 1000 mb and surface winds in excess of 35 kn. The first warning on tropical storm Ellis was issued at 0000 July 1. Ellis was in a favorable position at that time, and steady intensification occurred over the next 2 days. For his lifetime, Ellis followed an uncomplicated, classic west-northwestward track at near



## WESTERN NORTH PACIFIC TYPHOONS

climatological speeds. Post analysis shows that Ellis moved under the influence of the east-southeasterly steering flow on the southern edge of the subtropical midtropospheric ridge. His nearly straight track was primarily because this ridge did not change in intensity or orientation during the period.

Ellis reached typhoon strength on July 2 and maximum intensity of 85 kn on the 3d. Continued intensification was anticipated, but a slow weakening trend was actually observed.

By the time Ellis reached the South China Sea, he had weakened to tropical-storm strength and was a completely exposed low-level circulation. With winds of 54 kn, Ellis made landfall on the Chinese coast on the 6th, 164 mi southwest of Hong Kong.

### SUPERTYPHOON HOPE

The disturbance which eventually developed into the first supertyphoon of 1979 became evident on July 25 on satellite imagery as a focal point of cumulus banding. Future intensification was indicated as the disturbance was situated within an area of strong upper level diffluence associated with the southern periphery of an east-west oriented TUTT.

On the 25th and 26th the depression tracked to the west-northwest, the TUTT axis shifted northward, and strong upper level northeast flow dominated the area. The resultant shear produced by this unidirectional upper level flow displaced the convective activity to the southwest of the surface circulation. By 0600 on the 27th, the center of convective activity was displaced 120 mi southwest of the low-level circulation center. Surface analyses at this time indicated the southwest monsoonal flow was being channeled principally into tropical storm Gordon about 750 mi northwest of the depression. Further weakening was expected. Aircraft investigation on the morning of the 28th showed a surface pressure of 999 mb with 45- to 50-kn winds in the heavy convective activity to the southwest of the surface center.

By the 28th tropical storm Gordon had moved into the Luzon Straits. Due to the orographic blocking of the Philippine land mass, the majority of the strong southwest monsoonal flow was diverted into the depression. This increased low-level inflow coupled with a decreasing upper level shear resulted in a much improved vertical structure with feederband activity developing in the south. On the 29th the depression was upgraded to tropical storm Hope with 35- to 45-kn winds reported in feederband activity. By 0920 a well-defined eye with a central surface pressure of 972 mb and 65- to 70-kn surface winds were reported by aircraft. At 1200 Hope was upgraded to a typhoon.

Aircraft reconnaissance at 2031 indicated a sharp decrease in surface pressure to 961 mb with the temperature/dewpoint data correlating to an equivalent potential temperature ( $O_e$ ) of 359K. An empirically derived forecast aid that relates pressure and  $O_e$  indicates that once the traces

intersect, rapid intensification can be expected within 18 to 30 hr. The intensification equates to a possible mean pressure decrease of 44 mb and a mean windspeed increase of 50 to 60 kn. Typhoon Hope verified this study 36 hr after the intersection occurred; reconnaissance aircraft reported a surface pressure of 898 mb and windspeeds of 100 to 120 kn. By 1200 on the 31st, Hope attained supertyphoon intensity of 130 kn.

Hope entered the Luzon Straits approximately 4 days after tropical storm Gordon. Her compact wind structure and a slight weakening trend were noted as Heng Chun on the southern tip of Taiwan reported sustained winds of 40 kn with gusts to 86 kn as Hope passed 45 mi south of the station. Two persons on the Batanes Islands and one person on Taiwan were killed as a result of the torrential rainfall experienced as Hope tracked through the Luzon Straits.

Typhoon Hope made landfall less than 10 mi north of Hong Kong at 0530 August 2 with maximum sustained winds of 70 kn and gusts to 110 kn. Extensive wind and rain damage, 3 deaths, and over 258 injuries were reported. In Hong Kong harbor 17 ships broke their moorings, and 8 ships collided.

After passage over Hong Kong, Hope moved into southern China and weakened. Although weakened considerably during passage over southeast Asia, Hope did maintain a satellite signature and exited into the northern Bay of Bengal 110 mi southeast of Dacca, Pakistan, on the 6th. Strengthened once again by pre-existing strong southwest monsoonal flow, Hope reintensified on the 7th with maximum sustained winds of 35 kn.

### TYPHOON IRVING

Surges in the southwest monsoon frequent the western North Pacific during the early tropical cyclone season and produce widespread convection from the Malay Peninsula to as far east as Guam. During the same period, the 500-mb monsoon trough fluctuates eastward across the South China Sea and occasionally into the Philippine Sea. By late July, an eastward extension of the midlevel monsoon trough was the main synoptic feature west of Guam. The 500-mb trough axis extended along 15°N from northern Vietnam through the central South China Sea and then eastward into a quasi-stationary low-pressure center over the Philippine Sea.

On August 7 a developing surface circulation was observed at the eastern end of the monsoon trough near 14.1°N, 137.7°E. This weak circulation tracked cyclonically around the eastern periphery of the broad 500-mb low-pressure center in the Philippine Sea. Taking on the characteristics of a monsoon depression, Irving was described in aircraft reconnaissance data received from August 9 to 11 as a weak depression with poor vertical alignment and maximum surface winds 150 to 180 mi west of the surface center. Ship synoptic data during this period indicated that 25- to 35-kn winds extended outward 120 mi south of the surface center.

By the 11th the monsoon surge had weakened and receded westward, leaving a cut-off 500-mb LOW

## WESTERN NORTH PACIFIC TYPHOONS

over the Philippine Sea in the vicinity of Irving's surface circulation. The vertical alignment between the surface and the 500-mb center improved, and Irving intensified to a tropical storm. Simultaneously, a break developed in the 500-mb subtropical ridge to the north and Irving tracked north-northwestward towards the Ryukyu Islands while intensifying to typhoon strength. Strengthening of the 500-mb ridge southeast of Japan caused typhoon Irving to track over the western East China Sea and accelerate north-northeastward across Korea before merging with an extratropical frontal boundary north of Japan.

Aircraft and synoptic data between the 9th and the 12th indicated that Irving's maximum wind band actually existed 150 to 200 mi west of the large, calm-wind surface center. Irving never became a tight, well-developed tropical cyclone.

Typhoon Irving was the first tropical cyclone to strike Korea this year. Rapidly weakening as he made landfall, Irving spared southern Korea from the destructive typhoon-force winds he had maintained through most of the East China Sea. Korea, however, did receive torrential rains which produced widespread flooding. The hardest hit area was the island of Cheju Do, where 4.3 in. of rain was reported at Cheju. Official estimates reported 150 dead or missing, 1,000 to 2,000 homeless, and approximately \$10 to \$20 million damage to food and agriculture. Some 30 fishing and other small vessels, many of which were anchored in Gamchun Bay near Pusan, were severely damaged by collision, grounding, and capsizing.

### SUPERTYPHOON JUDY

Of all the typhoons of 1979, Judy's significance was only surpassed by supertyphoon Tip. Judy eventually developed into the year's second supertyphoon, but more importantly, she served as a reminder of how rapidly a minor tropical disturbance can develop into a dangerous tropical cyclone.

Surface synoptic data from the beginning to the middle of August showed that the area south and east of Guam was fairly inactive. By August 15, however, synoptic and satellite data revealed a tropical disturbance about 120 mi east-northeast of Truk, which was eventually to become typhoon Judy. No significant pressure falls were observed over the area as the disturbance drifted slowly west-northwestward.

Rapid intensification was not expected, but at 1635 on August 16, less than 10 hr after an aircraft investigation, weather radar at Andersen Air Force Base, Guam, located a well-defined circulation center moving west-northwest toward Guam at 15 kn. The disturbance continued tracking toward Guam and at 1800 the center passed over the Naval Oceanography Command Center on Nimitz Hill, which reported a mean sea-level pressure of 1001 mb and a wind gust of 51 kn. Based on this firsthand information, JTWC issued the first warning on tropical storm Judy at 1900.

Judy intensified steadily while following a nearly climatological west-northwestward track at 10 to 12 kn for the next 24 hr. She reached

typhoon strength at approximately 0300 on the 18th. During the next 36 hr after reaching typhoon strength, Judy's central pressure dropped 69 mb, and she attained supertyphoon intensity by 0000 on the 20th. Her lowest central pressure of 887 mb was measured by reconnaissance aircraft at 2145 on the 19th. Three distinct, concentric wall clouds were also noted at that time. Supertyphoon intensity was maintained until 1500 on the 20th, with gradual weakening thereafter. Judy passed south of Okinawa before beginning to recurve into the East China Sea.

A rapidly intensifying ridge was expected to drive Judy into the Asian mainland south of Shanghai, but just off the Chinese coast she recurved to the northeast. As Judy recurved, she was downgraded to tropical-storm strength, based on land synoptic data. Transition to an extratropical system occurred at 1200 on the 26th, while Judy passed through the Korea Strait.

Judy was still relatively weak while passing over Guam, and damage there was insignificant. Damage to Okinawa was also minimal, even though sustained winds of 40 kn were experienced for 28 hr. Southern Korea did not fare as well; 111 people were killed, over 8,000 homes were inundated, 57 vessels were destroyed, and many thousands of acres of crops were ruined by Judy's torrential rains and strong winds.

### TYPHOON LOLA

Tropical storm Ken and typhoon Lola developed almost concurrently. Satellite imagery on September 1 showed a number of disturbances organized into a line of convection from north of Kadena to south of Marcus. Ken developed from a disturbance just east of Kadena. At this same time, the disturbance which developed into Lola was south of Marcus and appeared quite weak. The largest and most menacing disturbance northwest of Guam did not develop.

During the next 48 hr, the tropical upper tropospheric trough deepened southwestward over the middle disturbance and suppressed its convection. At the same time, it divided the convective line into the two distinct systems, Ken and Lola.

After forming, Ken and Lola began to move in similar recurvature tracks. Ken tracked northward into the Sea of Japan reaching a maximum intensity of 60 kn. Lola intensified into a typhoon and eventually transitioned into an extratropical system over the cooler waters east of Japan.

### TYPHOON MAC

Typhoon Mac developed from a weak surface circulation northeast of Yap during September. This circulation tracked westward, reaching tropical-storm intensity by the 16th. Mac followed the climatological intensification rate for tropical cyclones approaching the Philippines and reached typhoon intensity prior to making landfall. Frictional effects caused the storm to weaken as it tracked across southern Luzon towards the South China Sea. The unexpected development of tropical storm Nancy east of Hai-nan Island influenced Mac's track in the South China Sea.



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Real-time forecasts do not always reflect the actual intensity of a tropical cyclone. Rapid intensification or weakening, peripheral data unavailable due to geographical restrictions, and tight maximum wind bands, which are not initially detected, all reduce the accuracy of intensity estimates provided in tropical-cyclone warnings. These discrepancies often are not recognized until post-analysis, as in the case of typhoon Mac.

Reanalysis of aircraft reconnaissance data for September 16 to 18 shows that most probably Mac reached typhoon intensity by 1800 on the 16th. Aircraft reconnaissance at 0503 on the 16th reported 68 kn at 1,500 ft and 60 kn at the surface. Reconnaissance data at 0810 on the 17th confirmed typhoon intensity by locating 80- to 90-kn surface winds in a 10-mi-wide band tucked under a strong eastern feederband. Mac made landfall prior to the next scheduled aircraft fix with geographical constraints severely reducing peripheral data collection.

Although real-time data were available which indicated Mac had possibly reached typhoon intensity, the isolated reports of strong winds were dismissed as gusts associated with lower velocity sustained winds. Reanalysis of the period between 1800 on the 15th and 0000 on the 18th shows that Mac reached typhoon intensity before weakening from frictional effects over Catanduanes Island on September 18.

The unexpected development of a second tropical cyclone in the South China Sea produced a series of track and intensity modifications in typhoon Mac. On exiting the Philippines, Mac was originally forecast to track west-northwestward into the South China Sea, but instead he began a Fujiwhara interaction with the rapidly developing tropical storm Nancy located near Hai-nan Island. Mac tracked toward the north-northwest, skirting Cubi Point Naval Air Station in the Philippines on his new track toward Hong Kong. Strong anticyclonic outflow from Nancy sheared Mac's convection towards the southwest with aircraft reconnaissance reporting an exposed low-level circulation of 30- to 35-kn intensity on the 20th.

Weak steering currents allowed Nancy to take a cyclonic track across southern Hai-nan Island before heading southwestward into Vietnam. Nancy's southwestward track forced Mac farther north. Mac eventually passed just south of Hong Kong. Ironically, Nancy's development, which caused Mac to track towards Hong Kong, also helped to spare Hong Kong from potential typhoon-force winds. Nancy's upper level outflow, which dominated the South China Sea from September 19 to 23, produced strong vertical shear over Mac and slowed his rate of intensification. Typhoon Mac reached only minimal tropical-storm intensity prior to landfall west of Hong Kong.

### TYPHOON OWEN

Typhoon Owen developed from a disturbance which tracked south of Guam on September 20. Two days later, satellite imagery showed that the system was organizing at the same time that aircraft reconnaissance data indicated a definite surface circulation with a 1000-mb central

pressure.

The system moved on a generally westward track until the 23rd, at which time it unexpectedly turned sharply to the north. Postanalysis revealed a possible reason for this movement. An upper level trough was evident on the 200-mb analysis just west of the cyclone. Southerly winds of 50 kn were observed on the eastern periphery of the trough. Considerable vertical shear existed in the layer from 500 mb to 200 mb. It appeared that the steering and depth of this upper level trough rather than the 500-mb steering was the dominant feature in Owen's movement. Under its influence, Owen tracked generally northward throughout his lifetime, although undergoing major changes in speed. He slowed to a barely perceptible 1-kn movement just northeast of Okinawa (at the latitude of the subtropical ridge axis) and then dramatically accelerated to 24 kn 36 hr later under vertically consistent westerly steering. At this time, Owen made landfall near Osaka, Japan, and began weakening in intensity while still accelerating to 47 kn. Eventually, he transitioned into an extratropical system but not before reaching a maximum intensity of 110 kn on the 26th.

### TYPHOON SARAH

Typhoon Sarah was spawned in the monsoonal trough during late September. During the last few days of the month, the circulation meandered slowly toward Luzon under the influence of the southwest monsoon, then looped over Luzon during the first 3 days of October as a midtropospheric short-wave trough moved eastward north of Luzon. Once the short-wave trough had moved east of the circulation, the northeasterly flow intensified and became more of an influence as the circulation finished its loop and began a south-southwestward track.

Sarah intensified to typhoon strength while tracking southward, which is quite unusual for a tropical cyclone. Several aircraft reconnaissance flights reported that Sarah had attained typhoon strength, even though her cloud structure was not well organized.

During the first several days of October, when Sarah was slowly developing to typhoon strength and moving south, Palawan Island and the central Philippines were battered by high winds and rain. These areas were inundated by flooding and landslides, which caused massive crop damage and death. Many villages were cut off from any source of food, fresh water, and other necessities for survival. Four deaths were attributed to Sarah. On the 8th, Sarah finally began to track westward, and the weather cleared over Palawan Island and the central Philippines. Aircraft reconnaissance early on the 9th reported that Sarah's structure had become better organized. Previous reports had shown that Sarah was not vertically aligned, but on the 9th the midlevel center had become vertically aligned with the surface center, upper level outflow improved, and Sarah's intensity increased to 110 kn. In contrast to her unusual origin, Sarah had become a most impressive storm.



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Sarah reached peak intensity early on the 10th, then began to weaken slowly as she tracked west-northwestward. She continued on a west-northwestward track until dissipation over Vietnam on the 17th. After 20 days, she dissipated within 300 mi of her origin as a monsoon depression on October 28.

### SUPERTYPHOON TIP

Supertyphoon Tip was the most significant typhoon of the 1979 season and possibly the most significant tropical cyclone this century. Forty aircraft reconnaissance missions were flown on Tip, which produced 60 fixes, and thus made it one of the most closely watched cyclones in recent memory. Aircraft and synoptic data showed that Tip achieved the lowest sea-level pressure ever observed in a tropical cyclone (870 mb) and also had the largest circulation pattern on record (nearly 1,200 mi in diameter).

Satellite and synoptic data during the early part of October revealed an active monsoon trough that extended from the Marshall Islands through the Caroline Islands to Luzon. Three distinct circulations developed in this trough: one near Manila, which would become typhoon Sarah; another southwest of Guam, which would become tropical storm Roger; and the last between Truk and Ponape, which was destined to become supertyphoon Tip.

The surface analysis for 0000 on the 3rd showed the three circulations in the monsoon trough with strong cross-equatorial flow, most of which was feeding into tropical storm Roger. This situation was enhanced by an extratropical trough north of Roger over southern Japan. The split in the surface flow pattern near Guam tended to keep Tip from developing rapidly while southeast of Guam. The satellite signature of the tropical disturbance near Truk continued to show improvement despite an initially unfavorable upper air pattern. At 0900 on the 4th reconnaissance aircraft found a closed surface circulation about 120 mi southeast of Truk with a mean sea-level pressure of 1003.9 mb and a maximum observed surface wind of 25 kn.

On the 5th reconnaissance aircraft fixed the disturbance about 100 mi southeast of the previous position. Although the surface pressure had not dropped significantly, the observed surface winds had increased, and as a result the tropical depression was upgraded to tropical storm Tip at 0000 on the 6th.

Tip moved erratically until the 8th. He first executed a cyclonic loop southeast of Truk, then accelerated to the northwest, only to stall and meander to a position south of Truk. It was difficult to keep track of the surface position during this period. The best track is based almost entirely on aircraft surface positions, because the satellite fixes were based on upper level outflow centers, and even the 700-mb center, as observed by aircraft reconnaissance, was considerably displaced from the surface center. Changes in the surface wind direction reported by Truk assisted JTWC in monitoring tropical storm Tip during this period of erratic behavior.

On the 8th the expected northwesterly

movement began. Roger was far to the north becoming extratropical, and the southerly winds that had been flowing north began to veer toward Tip. The upper air outflow channel improved. The 0208 aircraft fix confirmed that Tip was heading toward Guam at approximately 13 kn. The minimum sea-level pressure had dropped to 995 mb, and the surface winds were 40 kn.

Tip continued to intensify and accelerate toward Guam. Six hours before expected landfall, however, reconnaissance aircraft and radar positions from Andersen Air Force Base showed that he had turned westward. Tip actually passed south of Guam, reaching the closest point of approach about 25 mi south of southern end of the island at 1015 on the 9th. Maximum winds of 48 kn with gusts to 64 kn were recorded at the Naval Oceanography Command Center on Nimitz Hill. Andersen Air Force Base recorded a total of 9.1 in of rain.

Shortly after passing Guam, Tip reached typhoon strength and continued on a basic west-northwestward track. The analyses over the next few days showed that typhoon Tip was moving into an area of strong upper level divergence which covered most of the western Pacific. Rapid intensification was forecast, but it was much more rapid than expected as the pressure between the 9th and 11th dropped 98 mb to 898 mb. Tip reached supertyphoon strength at that time with maximum winds of 130 kn reported by aircraft reconnaissance. The circulation pattern associated with typhoon Tip had increased to a diameter of 1,200 mi, which exceeds the previous record of 720 mi set by typhoon Marge in August 1951.

Supertyphoon Tip intensified still further, and at 0353 on the 12th a reconnaissance aircraft recorded the lowest sea-level pressure ever observed in a tropical cyclone: 870 mb. This was 6 mb lower than the previous record set by supertyphoon June in November 1975. The 700-mb height was 1,944 m, and the 700-mb temperature within the eye was an exceptionally high 30°C. The Aerial Reconnaissance Weather Officer (ARWO) reported that an unusual feature was the spiral striations on the wall cloud. It looked like a double helix spiraling from the base of the wall cloud to the top, making about two revolutions in climbing. Tip maintained supertyphoon strength for the next 54 hr while moving northwestward at 3 to 7 kn. An estimated maximum wind of 165 kn was reached at 0600 on the 12th.

From the 13th to the 17th, the radius of surface and gradient-level 30-kn or greater winds extended over 600 mi from Tip's center. The radius of over 50-kn winds was over 150 mi. Aircraft reconnaissance data likewise showed that 700-mb winds of 105 kn existed more than 120 mi from Tip's center during this period.

After the 17th Tip began to weaken as the large circulation pattern began to shrink and turned northward. By the 18th Tip was accelerating to the northeast. During recurvature, Tip passed within 35 mi of Kadena Air Base on Okinawa, which reported maximum sustained winds of 38 kn with gusts to 61 kn.

## WESTERN NORTH PACIFIC TYPHOONS

Early on the 19th Tip made landfall on the Japanese island of Honshu, about 60 mi south of Osaka, with maximum winds of 70 kn. Synoptic and radar data from stations on the island showed that Tip had a speed over 45 kn as he passed to the north of Tokyo and eastward into the Pacific Ocean. Tip became extratropical over Honshu.

The extratropical low-pressure center maintained winds of storm force (48 kn) until the 21st, when it moved to a position east of Kamchatka and finally began to fill rapidly.

The majority of the severe damage occurred in Japan, where the agricultural and fishing industries sustained losses into the millions of dollars. Flooding from Tip's rains also breached a fuel retaining wall at Camp Fuji, west-northwest of Yokosuka. The fuel caught fire causing 68 casualties, including 11 deaths, among the U.S. Marines stationed there.

Considering the size and strength of supertyphoon Tip, the western Pacific fared well. Luckily, maximum intensity was reached while the system was still far from any inhabited areas, but the potential for mass destruction was always there. From a strictly meteorological standpoint, Tip was also a thing of great beauty. Another ARWO stated upon returning from a mission that the second penetration was beyond description. This is unquestionably the most awe-inspiring storm I have ever observed...The moon had risen sufficiently to shine into the eye through an 8-mi clear area at the top of the eyewall. To say it was spectacular is totally inadequate...'awesome' is a little closer.

### SUPERTYPHOON VERA

Vera, the fourth and final supertyphoon of the season, originated in an active near-equatorial trough which extended through the Caroline and Marshall Islands. Vera was first analyzed as a weak surface circulation 100 mi southeast of Ponape on October 27.

Synoptic data on the 30th indicated that low-level inflow was now concentrated into the developing cyclone. The convective activity increased rapidly on the 31st. On November 1 aircraft reconnaissance found an ill-defined circulation center with a central pressure of 1004 mb. On November 2 rapid intensification occurred, and Vera was upgraded to a tropical storm. She reached typhoon strength by the 3rd, while 190 mi south-southeast of Yap.

From the first warning until her approach to the Philippines northeast of Samar, Vera moved on a virtually straight west-northwest track. She continued to intensify during her west-northwestward acceleration and reached supertyphoon intensity only 18 hr after being upgraded to a typhoon. Reconnaissance aircraft reports indicated Vera maintained supertyphoon intensity for over 24 hr before weakening as she approached Catanduanes Island. The peak wind reported on Catanduanes Island was 50 kn at 1200 on the 5th as Vera passed just off the coast. Vera made landfall north of Tarigtig Point packing winds of 90 kn.

After landfall, the onset of enhanced

low-level northeasterly flow over the Taiwan Straits coupled with strong upper-level southwesterlies over the Philippines resulted in vertical disorganization and rapid weakening of Vera. Radar and aircraft reports indicated the low-level circulation continued to track to the northwest over the Cagayan River Valley and exited into the South China Sea near Culili Point south of Laoag. The upper level circulation sheared off near Tuguegarao and was tracked using satellite imagery northward over Aparri then east-northeastward into the Philippine Sea. Surface synoptic and ship reports at 0000 on the 7th showed a secondary surface center near Bagulo. At the same time, the primary center was crossing the Cordillera central mountain range 95 mi to the north.

After exiting into the South China Sea, the strong northeast monsoon flow accelerated Vera southwestward, and on the 7th she was downgraded to a tropical depression.

### TYPHOON ABBY

Abby, the last typhoon of the season, developed over the Marshall Islands during early December. Abby proved to be an unusual cyclone in several ways. Throughout much of her existence, she was not vertically aligned. Aircraft reconnaissance located the midlevel circulation center displaced as much as 55 mi from the surface center. At one point, two centers were identified. In addition, Abby fluctuated between tropical-depression and tropical-storm strength several times before reaching typhoon strength 10 days after formation.

On the 2nd aircraft reconnaissance observed surface winds of 45 kn and a sea-level pressure of 996 mb. The surface and 700-mb centers were displaced by 12 mi, but Abby continued to intensify to 60 kn on the 4th, while increasing the displacement between the surface and 700-mb centers.

All available information indicated continued intensification as Abby tracked towards Guam. However, the opposite occurred. As Abby moved west of Truk, she weakened to less than tropical-storm strength. By the 7th Abby reintensified to minimum tropical-storm strength as she moved westward. During the 8th Abby once again weakened to less than tropical-storm strength and increased her forward speed of movement.

Abby was not vertically aligned from the 1st through the 9th. On the 9th aircraft reconnaissance observed that Abby possessed multiple 700-mb centers, but a few hours later only one well-organized, intensifying center was found. The following is a storm mission summary by the ARWO, who made the double penetration into Abby: "This mission started out as a normal fix but ended up being unusual. On our way inbound for the supplemental fix, there was no problem reading winds at flight level or on the surface. Winds were 20 to 25 kn the entire way. An area of thunderstorm activity became visible ahead of us. As we neared it, the doppler indicated that the 700-mb center was in the middle of the

## WESTERN NORTH PACIFIC TYPHOONS

thunderstorm. Not eager to go find this out, we went back to find the surface center. Enroute, we saw surface winds in excess of 35 kn which led us to a fairly disorganized surface center just east of the main thunderstorm. Over it was a fairly small light and variable wind center. Radar showed little curvature in the shower pattern, but the surface winds did indicate a weak circulation existed at this first position. No weather existed to the east of our first fix, and this position was right on the JTWC forecast track. On the second fix, things had changed. As we came in the second time, we encountered considerable precipitation. Doppler and search radar indicated a center with a possible wall cloud forming considerably west of our first fix. Winds were stronger at flight level and we penetrated a wall cloud of about 80-percent coverage. When we broke through, we encountered our strongest winds at flight level. The surface center was under the eastern wall cloud with a small light and variable wind center at 700 mb centered in the eye. Lightning started in the eastern wall cloud and spread around the eye. Our drop was made as close to the surface center as was possible and indicated a good 988-mb sea-level pressure. The

700-mb height was down 72 m from the first fix. The positions were 85 mi apart causing me to believe that two centers existed for a short time with the latter becoming the predominant one. The pressure profile seems to indicate this theory...."

Satellite imagery at 0144 on the 9th also indicated the possible existence of multiple outflow centers. While Abby was reorganizing into a single center, she began to reintensify to tropical-storm intensity, which made her the last typhoon of the decade.

Typically, recurving typhoons have their maximum intensities either before or less than 12 hr after recurvature. Abby, however, did not reach maximum intensity until 36 hr after recurvature. By the 13th Abby reached maximum intensity of 110 kn with a minimum sea-level pressure of 951 mb. As she continued toward the east-northeast, Abby approached a regime of very strong westerlies in the middle and upper troposphere. The strong westerlies induced Abby's acceleration and rapid weakening. Abby dissipated on the 14th due to strong vertical shear between the surface and middle levels.



Table 1.--Western North Pacific significant tropical cyclones, 1979

<u>CYCLONE</u>	<u>TYPE</u>	<u>NAME</u>	<u>PERIOD OF WARNING</u>	<u>CALENDAR DAYS OF WARNING</u>	<u>MAX SFC WIND</u>	<u>MIN OBS SLP</u>	<u>NUMBER OF WARNINGS</u>	<u>DISTANCE TRAVELLED</u>
01	TY	ALICE	01 JAN-14 JAN	14	110	930	51	2597
02	TY	BESS	20 MAR-25 MAR	6	90	958	21	1804
03	TY	CECIL	11 APR-20 APR	10	80	965	40	2535
04	TS	DOT	10 MAY-16 MAY	7	40	984	24	2876
05	TD	TD-05	23 MAY-24 MAY	2	30	998	6	2170
06	TY	ELLIS	01 JUL-06 JUL	6	85	955	22	1612
07	TS	FAYE	01 JUL-06 JUL	6	40	998	20	1837
08	TD	TD-08	24 JUL-25 JUL	2	20	1004	5	1264
09	ST	HOPE	27 JUL-03 AUG	10	130	898	33	3928
10	TS	GORDON	26 JUL-29 JUL	4	60	980	13	1058
11	TD	TD-11	03 AUG-06 AUG	4	25	997	14	1088
12	TY	IRVING	09 AUG-18 AUG	10	90	954	38	2732
13	ST	JUDY	16 AUG-26 AUG	11	135	887	39	2502
14	TD	TD-14	18 AUG-20 AUG	3	20	1006	9	605
15	TS	KEN	01 SEP-04 SEP	5	60	985	13	1418
16	TY	LOLA	02 SEP-08 SEP	7	90	950	23	1298
17	TY	MAC	15 SEP-24 SEP	10	70	984	35	1831
18	TS	NANCY	19 SEP-22 SEP	4	45	993	14	528
19	TY	OWEN	22 SEP-01 OCT	10	110	918	37	2151
20	TS	PAMELA	25 SEP-26 SEP	3	45	1002	6	984
21	TS	ROGER	03 OCT-07 OCT	6	45	985	16	1920
22	TY	SARAH	04 OCT-15 OCT	12	110	929	43	1194
23	ST	TIP	05 OCT-19 OCT	16	165	870	60	3972
24	ST	VERA	02 NOV-07 NOV	6	140	915	23	1868
25	TS	WAYNE	08 NOV-13 NOV	6	50	990	22	1559
26	TD	TD-26	01 DEC-02 DEC	2	30	998	6	1070
27	TY	ABBY	01 DEC-14 DEC	14	110	951	52	4044
28	TS	BEN	21 DEC-23 DEC	3	60	990	10	2245
1979 TOTALS				149*			695	

\*OVERLAPPING DAYS INCLUDED ONLY ONCE IN SUM.

Table 2. --Frequency of typhoons by month and year

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
AVERAGE (1945-58)	0.4	0.1	0.3	0.4	0.7	1.1	2.0	2.9	3.2	2.4	2.0	0.9	16.3
1959	0	0	0	1	0	0	1	5	3	3	2	2	17
1960	0	0	0	1	0	2	2	8	0	4	1	1	19
1961	0	0	1	0	2	1	3	3	5	3	1	1	25
1962	0	0	0	1	2	0	5	7	2	4	3	0	24
1963	0	0	0	1	1	2	3	3	3	4	0	2	19
1964	0	0	0	0	2	2	6	3	5	3	4	1	26
1965	1	0	0	1	2	2	4	3	5	2	1	0	21
1966	0	0	0	1	2	1	3	6	4	2	0	1	26
1967	0	0	1	1	0	1	3	4	4	3	3	0	23
1968	0	0	0	1	1	1	1	4	3	5	4	0	25
1969	1	0	0	1	0	0	2	3	2	3	1	0	13
1970	0	1	0	0	0	1	0	4	2	3	1	0	12
1971	0	0	0	3	1	2	6	3	5	3	1	0	24
1972	1	0	0	0	1	1	4	4	3	4	2	2	22
1973	0	0	0	0	0	0	4	2	2	4	0	0	12
1974	0	0	0	0	1	2	1	2	3	4	2	0	14
1975	1	0	0	0	0	0	1	3	4	3	2	0	15
1976	1	0	0	1	2	2	2	1	4	1	1	0	15
1977	0	0	0	0	0	0	3	0	2	3	2	1	11
1978	0	0	0	1	0	0	3	2	4	3	2	0	15
1979	1	0	1	1	0	0	2	2	2	2	1	1	13
AVERAGE (1959-78)	0.25	0.05	0.10	0.70	0.85	0.95	2.85	3.55	3.25	3.20	1.65	0.55	17.95

JTWC

Table 3. --Frequency of tropical storms and typhoons by month and year

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
AVERAGE (1945-58)	0.4	0.1	0.4	0.5	0.8	1.3	3.0	3.9	4.1	3.3	2.7	1.1	21.6
1959	0	1	1	1	0	0	3	6	6	4	2	2	26
1960	0	0	0	1	1	3	3	10	3	4	1	1	27
1961	1	1	1	1	3	2	5	4	6	5	1	1	31
1962	0	1	0	1	2	0	6	7	3	5	3	2	30
1963	0	0	0	1	1	3	4	3	5	5	0	3	25
1964	0	0	0	0	2	2	7	9	7	6	6	1	40
1965	2	2	1	1	2	3	5	6	7	2	2	1	34
1966	0	0	0	1	2	1	5	8	7	3	2	1	30
1967	1	0	2	1	1	1	6	8	7	4	3	1	35
1968	0	0	0	1	1	1	3	8	3	6	4	0	27
1969	1	0	1	1	0	0	3	4	3	3	2	1	19
1970	0	1	0	0	0	2	2	6	4	5	4	0	24
1971	1	0	1	3	4	2	8	4	6	4	2	0	35
1972	1	0	0	0	1	3	6	5	4	5	2	3	30
1973	0	0	0	0	0	0	7	5	2	4	3	0	21
1974	1	0	1	1	1	4	4	5	5	4	4	2	32
1975	1	0	0	0	0	0	2	4	5	5	3	0	20
1976	1	1	0	2	2	2	4	4	5	1	1	2	25
1977	0	0	1	0	0	1	4	1	5	4	2	1	19
1978	1	0	0	1	0	3	4	7	5	4	3	0	28
1979	1	0	1	1	1	0	4	2	6	3	2	2	23
AVERAGE (1959-78)	0.55	0.35	0.45	0.85	1.15	1.65	4.55	5.70	4.90	4.15	2.50	1.10	27.90

JTWC

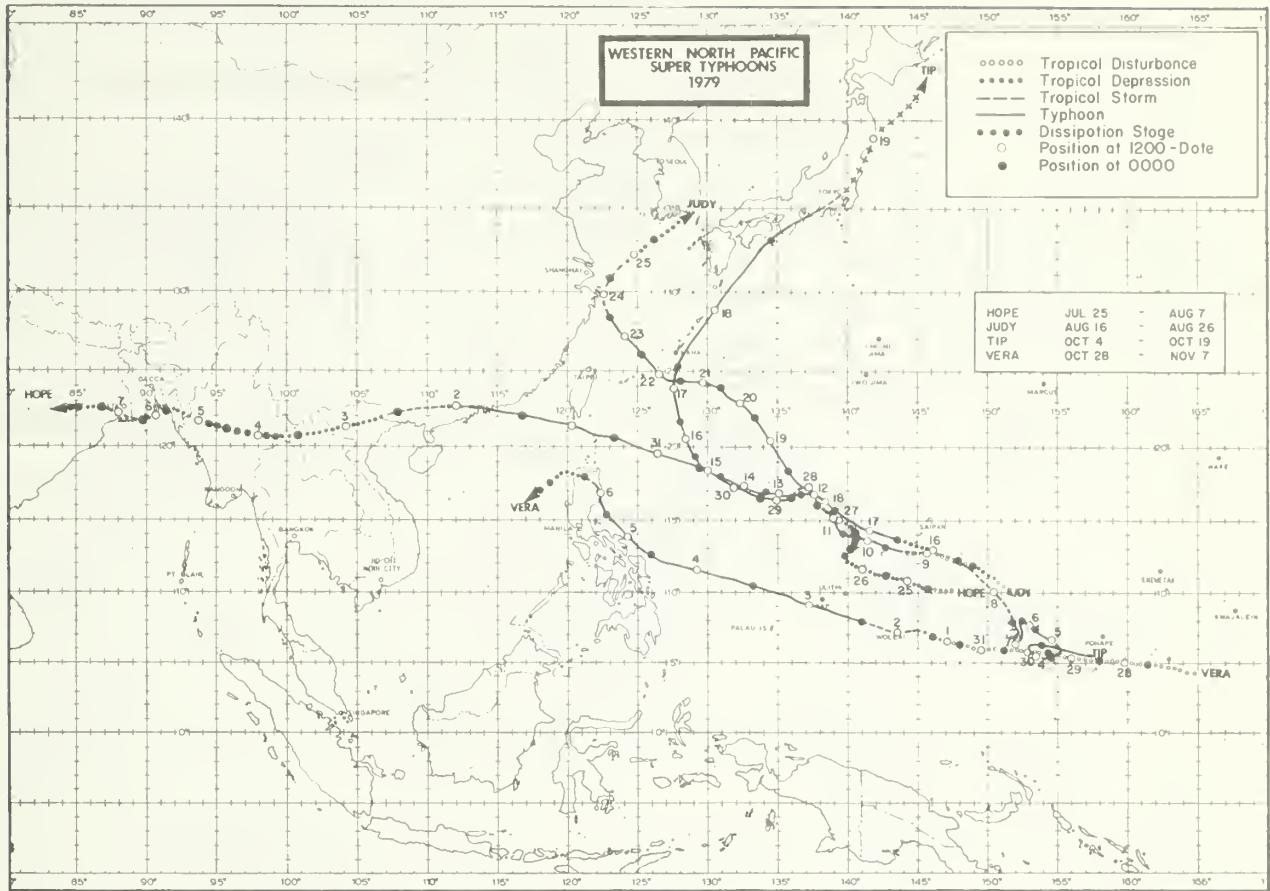


Figure 1. ---Tracks of western North Pacific supertyphoons, 1979.



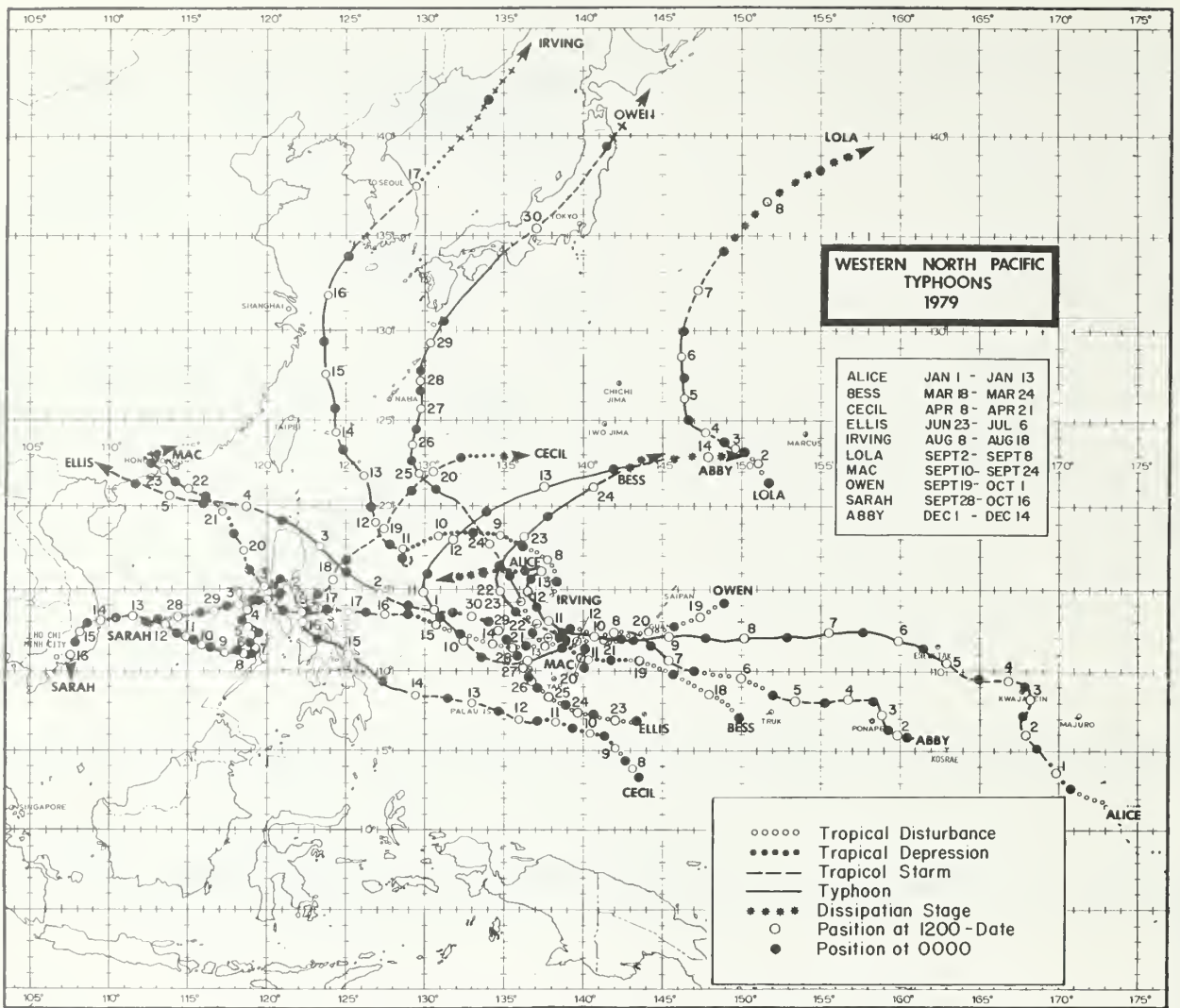


Figure 2. ---Tracks of western North Pacific typhoons, 1979.

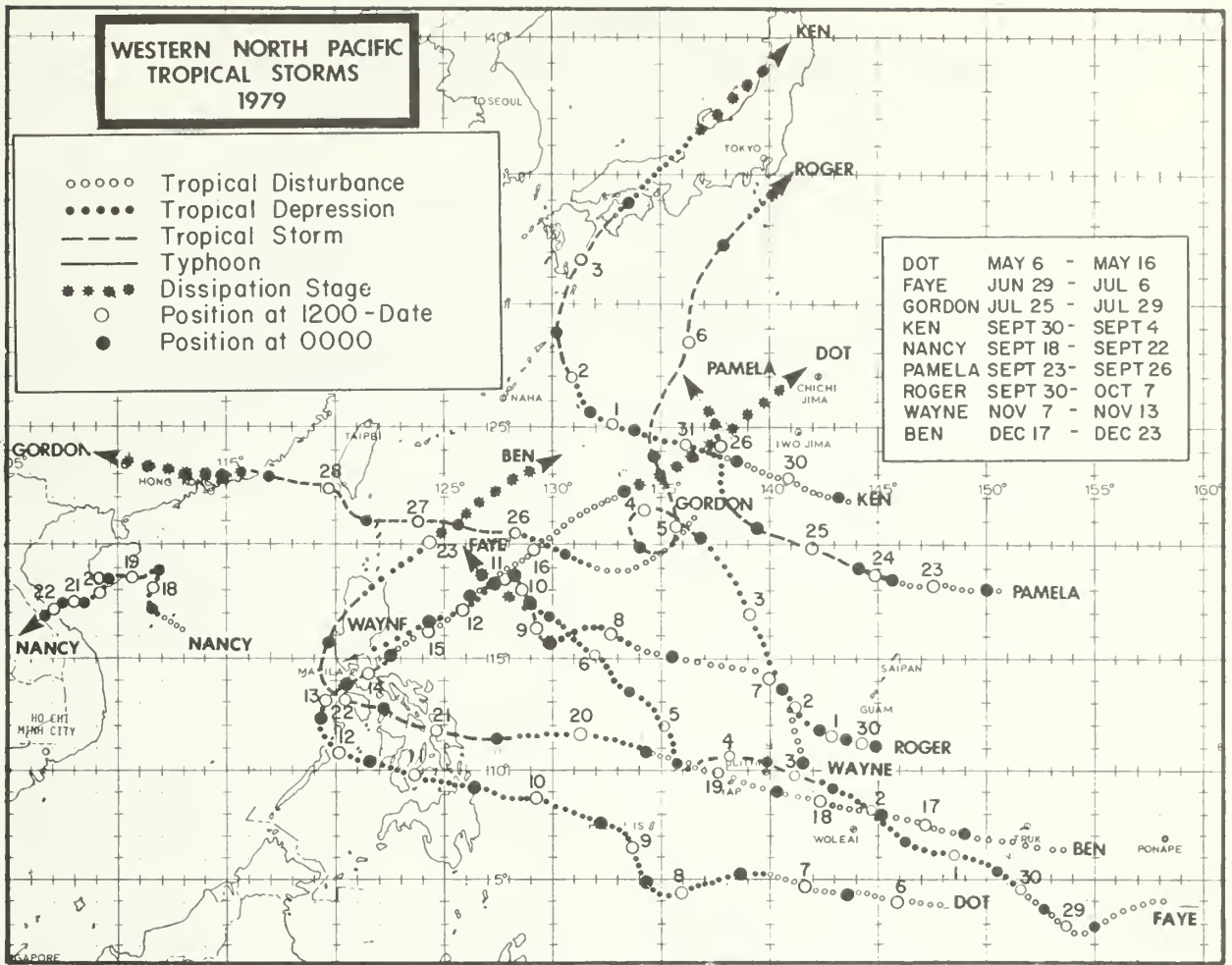


Figure 3. ---Tracks of western North Pacific tropical cyclones, 1979.

# LATE REPORTS

## GENERAL SUMMARY OF NATIONAL FLOOD EVENTS

YEAR 1978

Jose O. Marrero, Office of Hydrology

The total flood-related losses for the year were estimated to be near \$1 billion, and at least 120 lives lost.

The remnants of tropical storm Amelia brought great flooding and rainfall to central Texas during July 31 to August 4. Damage estimates were expected to be near \$100 million. Thirty-three lives were lost as a result of flash flooding, ranking the central Texas flooding as the top event for 1978 flood year.

In California some 20 lives were lost due to flash flooding in the Big Tunjunga Canyon area -- monetary losses around \$80 million.

A total of 10 lives were lost and damages estimated at \$25 million in Arkansas.

### JANUARY

January was a fairly normal month rainfall-wise in the eastern Gulf Basin, until the middle of the fourth week. Heavy rain occurred from the 24th through the morning of the 26th. During this period the rainfall pattern ranged from over 9 inches in the immediate Gulf Coast area with a fairly rapid gradient northward to near 1 to 2 inches in the Tupelo area of Mississippi.

Severe flooding occurred in a small area in southwestern Georgia between Columbus and Bainbridge, where the flow on several streams was reported by the U. S. Geological Survey to be equal to that of a 25-year flood.

Flooding occurred near month end in southern Alabama and in the adjacent area of northwestern Florida. In the Conecuh River Basin in southeastern Alabama, monthly mean flow at the index station at Brontley increased sharply and was 3 times the average for the month.

In extreme northwestern Florida, where rainfall amounts as high as 10 inches were reported from Pensacola, rapid runoff resulted in flooding along many streams. Losses were estimated to be near \$3.3 million.

In West Virginia, in the Ohio Basin area, rapid runoff from rain and melting snow on the 27th and 28th caused many streams throughout the state to reach or slightly exceed flood stages. The most serious flooding occurred along the Kanawha and Lower Lug Fork rivers. Total damage along the Little Kanawha will exceed \$700,000.

In South Carolina, as a result of 2 to 3 times the normal monthly rainfall, flooding occurred at 17 of the 21 river stage reporting stations. Moderate flooding occurred at lower Broad River and Congaree River below Columbia. Flooding of lowlands and swamp-

land developed along the Pee Dee River in northeastern South Carolina. On the Saluda River, Lake Greenwood did not fill but flooding was reported. Damage was estimated near \$60,000, however, savings were estimated at half a million dollars due to excellent warnings.

Precipitation in January was much above normal over most of West Virginia. Most of the precipitation occurred in the form of snow over the northern half of the area. Monthly totals ranged up to near 89.5 inches at Snowshoe, WV. A record 24-hour snowfall of 15.8 inches was established at Charlestown, WV, where the January monthly total of 39.5 inches exceeded the January record of 22.2 inches set in 1977. Streamflow was near normal until the last week of the month when heavy rain and snowmelt brought streamflow to much above normal. On the 19th and 20th heavy snow fell over most of West Virginia, resulting in a snowcover of 1 to 3 feet. The most significant period of precipitation occurred when rain began during the afternoon of the 24th and continued until the very early hours of the 26th. The heaviest rain fell during the early morning hours of the 25th and again during the late afternoon and evening hours. Runoff was slow to begin as the rain fell on the heavy snowcover, but temperatures rose rapidly into the low to mid 50's accompanied by strong winds. This caused a rapid increase in snowmelt which resulted in ten rivers exceeding flood stage. However, a surge of Arctic air moved rapidly over the area bringing a halt to snowmelt. The most serious flooding occurred along the Little Kanawha and Lower Tug Fork Rivers. No death or injuries due to flooding were reported.

In New York a giant ice jam formed at Prattsville on the Schoharie Creek, resulting in the second highest stage of record, 17.7 feet, at least, and the village was inundated by 3 feet of water. Other minor flood problems occurred, mostly due to ice jams on streams and rivers.

Locally heavy rains fell in the Tucson, AZ area, creating a rise on rivers. Two deaths were attributed to a minor rise on the Rillito Creek, apparently as the result of unsafe actions.

Major flooding was experienced on the San Lorenzo River in Santa Cruz County, California. Damage reported by the county was estimated at \$1.6 million and one death reported.

Minor flooding was reported from the Atlantic Drainage to the Pacific and Alaska, mostly due to ice jamming in the colder regions. Flood losses for the month of January total just over \$6.5 million with 3 fatalities reported.



# LATE REPORTS

## GENERAL SUMMARY OF NATIONAL FLOOD EVENTS

### FEBRUARY

In California, the heavy rains that began in mid-December continued through February, causing more floods and mudslides, great amounts of highway and property damage, and considerable loss of life.

On the 10th, a flash flood in Big Tujunga Canyon in Angeles National Forest, 50 miles north of Los Angeles, destroyed the hamlet of Hidden Springs and damaged three nearby camping areas. Twenty persons were reported dead as a result of that flood. About 1,200 persons were reported to have been evacuated because of the flooding and mudslides in the Los Angeles area and in the San Joaquin Valley.

Major flooding occurred along the Salinas and Pajaro Rivers with damage estimates in excess of \$20 million. Some limited evacuation was reported, but the heaviest damage was to agricultural areas. A crest of 15.1 feet at Arsojo Seco and 18.6 feet was recorded on the Serbinas River. Flood stage at both locations is 11 feet.

In northern Florida, mean flow in Suwanee River at Branford increased seasonally as a result of runoff from midmonth's rains, and was above the normal range. Extensive flooding was reported along the Chipola River, mainly in the lakes area which rose 7 feet above the flood stage of 12 feet at Dead Lake. Losses were estimated at \$423,823.

Surface soil conditions in southeastern Texas continued wet during the month. Rainfall was reported almost daily the first three weeks of the month. The greatest daily amounts fell from the 7th to the 8th.

However, on the 8th there was widespread rainfall across the entire southeast area with amounts from .5 to 2 inches reported. Village Creek was out of banks from the 2d to the 20th with a peak of 13.86 feet on the 6th; flood stage is 12 feet at Kauntze; Pine Island Bayou was out of banks from the 1st to the 6th at Sour Lake with a peak stage of 24.7 feet on the 1st. (flood stage 22 feet). This rise was due to rainfall from previous month. A second rise occurred from the 7th to the 22d with a peak stage of 23.86 feet on the 15th.

### MARCH

Major flooding occurred in parts of central and eastern Nebraska from the 12th through the 26th. The most serious flooding hit the Platte River Basin between North Bend to Ashland. Specifically, the Union Dike break near Valley, NE, in extreme northwestern Douglas County turned the flooding into a major state and federal disaster.

One life was lost and estimated damages were reported to be as high as \$240 million.

Steady rains on the 11th and 12th coupled with temperatures in the upper 30's and 40's began to melt the heavy snowcover and started the rapid runoff into the streams and rivers. Flooding aggravated by ice jamming hit the South Loup, the Lower Mid Loup and

the North Loup Rivers and around St. Paul shortly thereafter. Extensive overflows resulted along these rivers; at some areas the highest stages recorded since the great floods of the late 60's and late 40's.

A series of major storms in late February and early March caused severe flooding in the Phoenix and Flagstaff areas in Arizona.

Approximately \$18 million damage was reported and 1 life lost. The President declared 8 counties disaster areas. Record flow at Littlefield in northwestern Arizona, was reported in the Virgin River, which was the highest for March in 49 years.

Flooding occurred on the White, Black, Cache, and St. Francis Rivers in March following above normal rainfall across northern Arkansas and southern Missouri.

Flooding in Indiana was widespread during March. The most serious flooding was along the St. Mary's and Maumee Rivers in Adams and Allen Counties. Estimated damage of nearly \$35 million was reported. The river stage at Decatur was the highest since 1959, while at Fort Wayne it was the second highest on record. The St. Mary's at Decatur and Maumee River at Fort Wayne were above flood stage for more than two weeks.

Flooding along the Elkhart River at Goshen was the greatest since 1954. The Elkhart River remained above flood stage over one week.

Flooding along the Kankakee River was greater than in 1976. Estimated damage reported at \$1 million. Extensive lowland flooding occurred in the Wabash River Basin.

Mild temperatures the second week of March caused rapid snowmelt along the White River in south central South Dakota. An ice jam developed near the mouth of the river on the 13th and 14th causing rapid rises at the gage near Oacoma, SD.

Minimal property loss resulted because only agricultural land was flooded. At Oacoma, the White River crested at about 23 feet, which is a flood record.

Minor flooding occurred in eastern and central parts of Kansas, in the lower half of the Skunk River Basin of Iowa, in South Dakota along the Bad River Basin, and along the Cannonball River in southwestern North Dakota, as a result of either runoff from rain and melting ice and snow, or both.

### APRIL

The flooding which began near the end of March in the Red River of the North near West Fargo, ND continued downstream in April, and expanded to include tributaries in Minnesota. The flood along the Red River from Wahpeton, ND to Breckenridge, MN northward through Fargo/Moorhead metropolitan area to Halstad, MN, was determined to be the third highest of record. The President declared the Red River Valley a major

## LATE REPORTS

# GENERAL SUMMARY OF NATIONAL FLOOD EVENTS

federal disaster area, which included ten Minnesota counties and six North Dakota counties. However, in the greater Grand Fork metropolitan area the event became the flood of the century, exceeding all but the historical floods of 1882 and 1897. Further downstream at Oslo, MN, the Red River exceeded all known flooding, including the flood of 1897. At Drayton, ND, it also exceeded the flood of 1897. Major flooding became widespread over almost all of the basin and a number of tributaries reached record or near record levels. Estimated damages to private and public property was \$13 million and 2 lives lost, however, accurate flood forecast prevented nearly \$30 million in damages.

Severe flooding along the Roanoke River in Virginia near the end of the month forced many residents to evacuate their homes. The flooding in the upper Roanoke Valley was the worst since the record Hurricane Agnes flood of 1972, and about \$10 million in damage was reported. The river at Roanoke crested about 0.5 foot below the record.

Flooding in Indiana occurred along the Wabash, White, Kankakee, Elkhart, Maumee, and St. Mary's Rivers. The most serious flooding occurred along the Kankakee River in the Shelby/Schneider area. Approximately 40 families were evacuated from the Schneider area because of levee failures. Lowland flooding continued along the Wabash River and minor flooding occurred along the St. Mary's, Maumee, and Elkhart Rivers. Little immediate damage occurred from this flooding, however, the long delays in planting of agricultural lands caused reduced yields of crops.

Flooding continued on the Milk River which began in late March and continued into April. Total damage was estimated at \$1.5 million.

There were two periods of flooding in Iowa during April; one around the 10th and the other from the 17th to 21st. The flooding was due to a series of rains which produced 2 to 3 inches of rainfall from southwest across central Des Moines River Basin into the upper Iowa and Cedar Basins. Flood crests were generally 1 to 3 feet above flood stages, although the estimated crest near Hamburg during the second period was 7 feet above the flood stage. Flood damages were minor, affecting mostly agricultural land.

The St. Joseph River at Montpelier, OH, and the Tiffin River at Stryker, OH, continued over bankfull from March. A few localized thunderstorms put the Blanchard River near Flood stage at Findlay in the second week of April. Two drownings were reported.

### MAY

Rainfall over Louisiana varied from below normal over southwest to above normal over north and southeast. Amounts of rainfall ranged from 14.16 inches at Abita Springs to .08 inches at Lake Arthur.

On the 3d, the New Orleans metropolitan area experienced widespread severe urban flooding. Actual losses

were near \$100 million. Four persons were killed; 3 drownings and one electrocution. Areas of major damages reported included Orleans, Jefferson, and St. Bernard Parishes.

During the 6th-7th, urban flooding was reported at a number of communities across northern Louisiana following heavy rainfall. One life was lost due to drowning in the Shreveport area. Evacuations were required in portions of Mooretown, where the water was reported to be window high of homes. Areas of greatest damage included Caddo, Bossier, Bienville, Union, and Morehouse Parishes. Damages estimated in the several millions. Most of the area received between 4 and 6 inches of rain during the 17th-19th. Extreme rainfall amounts were reported at Joliet, 6.6 inches, and Lame Deer with 7.6 inches.

Severe flooding occurred in southeastern Montana. Flooding began on the tributaries of the Bighorn and Little Bighorn Rivers on the 18th. By the 19th major flooding was noted along the entire Bighorn and Little Bighorn Rivers, as well as the upper reaches of the Tongue and Powder Rivers in Montana. The floods were the result of unusually heavy rainfall on well saturated soils. Most of the damage was to northern Cheyenne and Crow Indian Reservations of southern Montana. People from the towns of Crow Agency and Lodge Grass as well as the sabre Indian School at Ashland were evacuated as the waters rose and isolated the areas. Many bridges and approaches to the bridges were washed out in Yellowstone, Rosebud, Big Horn, and Powder River Counties. Major damage was to agricultural lands and roads, with total damage estimated at \$50 million, and 2 fatalities.

Severe flooding occurred in southeastern Montana along the Yellowstone and Cheyenne Rivers and their tributaries during the 17th-23d. The floods were the result of unusually heavy rainfall and well saturated soils, with much damage.

### JUNE

Thunderstorms on 3 consecutive days caused very heavy rains and flash flooding to sections of southwest and south central lower Michigan. On the 25th about 4 inches of rain fell over Cass and Berrien Counties. On the 26th heavy thunderstorms passed over a 50-70 mile swath from Allegan County southeastward across Kalamazoo, Calhoun, Branch, Hilldale, and Lenawee Counties. Rainfall amounts ranged from 5 to 8.62 inches. Serious flash flooding occurred in Allegan County with less serious flooding on a localized scale in the other counties. On the 27th localized flooding was reported in Berrien, Cass, St. Joseph, and Hilldale Counties, but on a minor scale.

A state of local emergency was declared over Allegan County by local officials. The town of Hopkins had approximately 6 inches of water over the whole town. Damage estimates were not available.

On the evening of the 19th, water poured off the White



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Mountains in New Hampshire faster than the Ammonoosuc, the Wild Ammonoosuc Rivers, and nearby streams could handle. This produced some of the few true flash floods that are experienced in New Hampshire. Most of the damage occurred in northwest Grafton County, along the Route #302 corridor from Woodsville to Littleton with high streams cutting roads by the dozen. In Bath 30 families were stranded where 3.25 inches of rain occurred in one hour. Damage estimates of \$900,000 were reported.

Major damage occurred near mid-month in southwestern Wisconsin. In the Pecatonica River Basin area, which was the hardest hit, the river crested about 3 feet over flood stage at most points. Widespread flooding was reported elsewhere, but at a lesser scale. Total estimated damage approached \$1 million.

On the 25th, the Minneapolis/St. Paul metropolitan area incurred significant urban flooding. This was the result of a 1 to 3-hour storm which dropped 4 inches of rainfall in southern Minneapolis. The soil was so saturated with moisture that basement collapses were numerous. The Hasting area reported 60 homes with this or related damages. Losses were near \$5 million.

Two heavy rain events occurred in Indiana. The first storm occurred on the 18th, with unofficial reports of 4 inches of rain reported in Osgood and about 5 miles south of Liberty. Street Flooding was reported in Jasper, where 3.5 inches of rain fell. The second storm hit on the 25th. Total damage from flash flooding was in the 3-4 million dollar range. Unofficial rainfall in excess of 6 inches were quite common from Lafayette to Shelbyville.

In Texas very heavy rains fell on the 2d in the southern portion of Big Bend National Park, causing a sharp rise on the Rio Grande. One fatality occurred due to flash flooding within the park. A man was asleep in a dry creek bed; he became tangled in his sleeping bag and was swept away. The Rio Grande crested at 14 feet; one foot above the flood stage at Boquillas, TX.

### JULY

This was the most severe month for flooding since 1951. In fact, several of the 1951 records, as well as a few of 1965, crest stages were surpassed by a significant margin. Severe flooding occurred in parts of southeastern Minnesota as a result of rapid runoff from intense thunderstorm rainfall. The stage at the official gaging station in Rochester, MN., rose from a little over 4 feet early on the evening of the 5th, to a record stage of 23.36 feet at noon the following day. The flood stage is 12 feet. This surpassed the old record by 4.24 feet (March 1, 1965). Five people died that night but only one as a direct cause from the flood waters. The other four died when a power failure at a nursing home caused an elevator to fall to the flooded basement. Damage is estimated near \$60 million. The storm hit hardest in Goodhue, Wabash, Winona and Houston Counties in Minne-

sota. Red Wing reported 7.78 inches of rain. Mud slides and bridge or road washouts were numerous. Three deaths were attributed to the storm in the above counties. A driver in a pickup truck drove into a flooded area near a bridge and was swept away just 2.5 miles east of White Rock in Goodhue County. An elderly man in White Rock was swept away while trying to retrieve personal belongings. In Lewiston, Winona County, a man was electrocuted in his flooded basement. The staff at the White Water State Park near Elba, MN, on the Whitewater River evacuated 600 campers. Their flash flood alarm system functioned normally and the town of Elba was evacuated also. Estimated damages reported for the four counties were over the \$10 million mark.

By the end of June, the soil had been "set up" for a potential disaster. Precipitation departures for the two previous months period ran from 2 inches to as high as 6 inch range for the Kickapoo River Basin and adjacent areas. In Ontario, WI, the extreme headwater area, rainfall was about 8 inches above the normal for the same period. Southwestern Wisconsin reported heavy losses, mostly in the Kickapoo River Valley. Record stages were set at each gaging station. By the morning of the 2d, the 72-hour rainfall total ranged from nearly 7.75 inches at the head to 2.75 inches near Steuben, WI, at the mouth of the Kickapoo. No towns along the river were spared damage. Flood waters came fast and even broke through the dike at Soldiers Grove, WI.

An elderly woman in La Crosse, WI, was killed when she went to her basement to check for damage; the concrete walls collapsed on her, and a young man was swept away in the Mississippi River the following day due to swift current from tributary discharge.

Moderate to severe flooding occurred along several streams in eastern Iowa. Rapid runoff from the intense rainfall on the 2d resulted in severe flooding along Waterloo Creek in and near Dorchester, in the upper Iowa River Basin.

A brief downpour over metropolitan St. Louis, MO, caused flash flooding along River Des Peres in University City. Property damage from this was estimated to be near \$2 million.

The finale to July's flooding came on the 19th to Ceustin, MN, at a time when people were cleaning up from the previous flood of the 9th.

Intense thunderstorms moved southeast along the east side of the Cedar River Basin in Minnesota. Around 8 inches of rain was recorded near Brownsdale, northeast of Austin. The record surge of water that hit Austin came mostly from creeks flowing in from the east. The headwaters of the Cedar did not contribute much to the crest. The peak stage at the Sewage Plant was 21.9.

The U. S. Geological Survey showed a crest of 20.35 feet, a new record for the city of Austin.

In Alabama severe flooding occurred on the 26th in and near Fairhope, a few miles southeast of Mobile on the eastern shore of Mobile Bay. The National Weather



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# GENERAL SUMMARY OF NATIONAL FLOOD EVENTS

Service Cooperative Observer reported 15.46 inches of rain at Fairhope during the first 11 hours of that date, exceeding the record rainfall of 13.36 inches in 24-hours for the period 1891 to date at that site, and also exceeding the 100-year 12-hour rainfall of 12 inches for the Mobile area. One death was attributed to the massive torrential downpour, due to a road washout. Estimated damages were \$2 million, mostly to roads and agriculture.

Severe flooding occurred in the Kickapoo River Basin in west central and southwestern Wisconsin early in July. Sixteen counties were reported to have been declared eligible for Federal Disaster Assistance. Total losses were estimated by local officials to be \$53 million.

### AUGUST

The remnants of Tropical Storm Amelia brought great flooding and rainfall from July 31 to August 4. Ironically, most parts of central Texas were seeking relief from a prolonged drought period. Rainfall recorded on the 3d and 4th exceeded the normal annual precipitation for a large area of western Texas. This probably was the greatest storm in recorded history in terms of widespread heavy rainfall and runoff over Texas.

The storm extended from the south coastal plains, northwest to the hill country, and then northward into north central Texas. Record flooding occurred in and along the Guadalupe, Brazos and Medina Rivers of Texas. Widespread flooding was reported along the Sabinal, Pedernales, Llano, and San Saba Rivers. Moderate flooding occurred along the Frio, Neuces, Atascosa, San Antonio Rivers and Hondo and Seco Creeks. Twenty-seven people died in southern Texas and 6 more in the north central portion for a total of 33 deaths.

The heaviest point rainfall recorded was northwest of Albany, TX, in Shackelford County, where 32.5 inches fell. Damages in Shackelford County were estimated at \$20 million. The city of Albany reported 6 persons drowned and over \$3 million in damages. In Throckmorton and Haskell Counties nearly 15 inches of rain fell during the same period. Throckmorton County reported an estimated \$12 million in damages and Haskell \$30 million. Record rises occurred on the Brazos River in Haskell and Shackelford Counties.

In the Northeast, August began and ended wet with a 2-week dry spell inbetween. The dry spell broke on the morning of the 28th when heavy thunderstorms dumped 3-5 inches of rain over Chester and Delaware Counties in Pennsylvania and Camden and Burlington Counties in New Jersey. Severe highway flooding was reported in Camden County with many major highways closed during the morning rush hour due to standing water and mud slides. Several roads remained closed for 18 hours.

The evening of the 31st saw a flash flood hit portions of Burlington and Ocean Counties in New Jersey, along

Crosswicks Creek. Hardest hit was the town of New Egypt, where damage was estimated at \$2.5 million. No deaths or injuries were reported. From 1 p.m. August 31, to 1 a.m. September 1, McGuire Air Force Base recorded 6.89 inches of rain and estimates made from the Fort Dix Forest Fire Tower of 9 to 9.5 inches during the same period. Evacuation of 50 people was necessary. Electric, gas, and phone services were disrupted; the municipal water supply was contaminated and unusable for several days.

A flash flood which roared out of the Oregon Mountains in New Mexico claimed 5 lives on the White Sand Missile Range and destroyed millions of dollars worth of technical equipment. The five victims were swept to their deaths when a 12-foot wall of water caught their vehicles on a bridge across a normally dry arroyo. An unofficial 10 inches of rain was measured during a 4-hour period on the 19th at a nearby ranch.

A large flood occurred on the Rio Grande from Presidio, TX, downstream to Lake Amistad on the 5th-8th. The flood was caused by rains estimated in excess of 12 inches, which fell on the night of the 4th on the Rio Conchos watershed in northern Mexico. Damage was estimated at \$100,000 in the Presidio area.

A flash flood killed 2 persons on Caesars Creek near Friendship, IN on August 18.

During the afternoon and night of the 26th, thunderstorms dumped up to 11 inches of rain northeast of Watertown, SD. Damages were estimated at greater than \$250,000.

The month of August was both costly in terms of lost dollars and lives.

### SEPTEMBER

Heavy rains developed in the Benton area of Arkansas in the early morning of the 13th. At 7:00 AM measurements by the Benton observer was 2.7 inches; by noon an additional 9.75 inches was measured, making a total of 12.45 inches at Benton in 8 or 9 hours. At an industrial plant just east of Benton area, an unofficial measurement of 15.37 inches was reported during the same period.

The heavy rains caused severe flash flooding in Pulaski and Saline Counties. The flooding of Rock and Fourche Creeks in Little Rock and McNeil and Salt Creeks in Benton took a total of 10 lives. Most of the lives lost were children. One characteristic feature of flash flooding during 1978 was that the young and old accounted for a large percentage of the lives lost. The Saline River reached a crest of 22.1 feet; flood stage is 18 feet at Benton. Damage was estimated at \$25 million.

Considerable urban flooding was reported in West Monroe, LA, where maximum rainfall estimated at about 12.5 inches fell during late on the 14th into early on the 15th. Estimated damages occurred of \$18-20 million to some 2-4,000 homes; \$2-3 million to public

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# GENERAL SUMMARY OF NATIONAL FLOOD EVENTS

facilities and \$3-5 million in agricultural for a total of \$25 million. No fatalities or injuries were reported.

Several significant floods occurred in western Texas. All of these were in the Rio Grande Drainage Basin. During the 24th, heavy rains of the Terlingua Creek watershed and Big Bend National Park caused a sharp rise on the Rio Grande. A crest of 11 feet was reported at Boquillas, TX. A flash flood occurred on the 26th at Pecos, TX. Cottonwood Draw, which flows through the northern part of Pecos, caused major damage to an estimated 70 homes. Rainfall of 4 to 5 inches were recorded. During the same period heavy rains south of Ojinaga in Mexico caused water to be released from a diversion dam about 20 miles south of Ojinaga, into the Rio Conchos River. In addition, rains of 3 to 5 inches fell on the Cibolo Creek watershed in southwestern Texas; the result was a crest of 25.6 feet in the Presidio area; flood stage is 14.5. A crest of 6-7 feet above flood stage was recorded at Boquilla and Lajitas, TX. The final flood occurred on the 28th-30th. Extremely heavy rains on the Rio Conchos Basin in Mexico, just upstream from Luis Lean Reservoir, caused an unprecedented flow into the reservoir. This was released into the Rio Conchos which caused the second largest flood in history on the Rio Grande at Presidio, (largest was recorded in 1904). Losses were mainly agricultural.

### OCTOBER

Flooding continued into October on the Rio Grande from Presidio to the mouth of the Pecos. Damage was estimated at \$1.75 million, with most of the damage to farm lands and the levee system at Presidio.

Intermittent rains, occasionally heavy at times during a five day period, drenched Puerto Rico during the 22d-27th. Although no major rivers or streams went into flood stage, there was considerable flooding of small creeks with heavy runoff and flooding of low-lying areas. The highest 24-hour total was reported at Humacao with 8.32 inches. The heaviest rain for the 5-day period was concentrated along the southern and eastern section of Puerto Rico, with totals ranging from 10 to 18 inches. All three flash flood alarms were activated. Although no actual river flooding occurred, the alarm warned of significant rains in the area. Damages were mainly to roads and agriculture with some small businesses and homes affected in low-lying areas. Flood losses were estimated at around \$5 million in the Ponce area and 2 lives lost.

### NOVEMBER

Heavy rains of up to 4 inches caused flash flooding and mainstem flooding along rivers in New Mexico and Arizona.

Major flooding occurred during the 24th-26th on the Blue, San Francisco and Gila Rivers of Arizona and

southwest of New Mexico. Most of the damage occurred in Arizona where an estimated \$8 million in damage was reported in Graham and Greenlee Counties.

One fatality was reported near Reserve, NM. The San Francisco and Gila Rivers reached the high water mark of the 1972 flood event in southwest New Mexico.

Unofficial rainfall reports of 4.5 to 12 inches in the Kirbyville area of southeastern Texas during the 15th caused local flash flood problems. Trout Creek, which runs through Kirbyville, flooded and some 200 people had to evacuate their homes. A total of 19 homes, 13 mobile homes, and 11 small business buildings were flooded. Only 1 fatality occurred, a 57 year old man was trying to save property along the creek; drove his tractor into the water and drowned. Dollar damage was unavailable.

Torrential downpours fell over the Rio Grande watershed in both the United States and Mexico during the night of the 4th and into early morning of the 5th. Rainfall on the mainstem was estimated at 20 to 25 inches. The resultant flood on the Rio Grande broke all the previous records at the Foster Ranch Gauging Station, located upstream from Lake Amistad. The river crested at a stage of 61.5 feet at around 5 AM CST on the 5th. At 10 PM CST on November 4, the stage at this same location was only 7.5 feet. The maximum flow during the flood was 200,000 cfs. Losses as a result of the flood were estimated at approximately \$100,000, mainly to several fishing camps and vehicles.

During the early morning of the 5th, a flash flood struck Sanderson, TX, just northwest of Dryden. Sanderson Creek crested at a stage of 9.0 feet, or just 1.5 feet above flood stage. However, during the flood, a railroad bridge spanning the creek collected considerable debris causing a damming problem. Water backed around through the town, causing an estimated \$1.5 million in damage.

### DECEMBER

Flooding occurred in many parts of Kentucky as a result of rapid runoff from rainfall amounts of 3 to 8 inches during the 8th through the 10th. The most significant flooding was in the Kentucky River Basin in the north central portion of the state. Severe damage was reported in Frankfort and other cities situated on the flood plains. Record flooding occurred at Frankfort on the Kentucky River. A crest of 48.4 feet was recorded on the 10th, exceeding the previous record of 47.5 feet set in January 1937. A record crest was also recorded at Clay City on the Red River. According to the Geological Survey's report, peak discharges at several stream-gaging stations in the state were greater than those of a 100-year flood. Near Bowling Green 2 persons were drowned in an automobile, when the driver failed to see a "road washed out" sign. Estimated damages are not available, however losses exceeded \$100 million.

Flooding occurred in portions of western West Virginia,

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as a result of heavy rainfall on the 8th through the 10th. Parts of West Virginia reported record precipitation with monthly totals 2 to 3 times the normal occurring at many locations. Monthly totals ranged from a minimum of 2.35 inches at Speedwell, VA, to a maximum of 11.74 inches at Dunlow, WV.

The most significant flooding occurred in the Twelvepole Creek Basin. The greatest flood since records began was recorded near Dunlow, WV, on the East Fork Twelvepole Creek. The flood was greater than that of a 100-year flood, according to Geological Survey reports.

Approximately 1,600 people left their homes. Damage to roads in a 5-county area (Lincoln, Cabell, Wayne, Jackson and Mingo), was estimated at \$2.2 million. There were additional minor damages in the neighboring counties and some evacuations required. Two small dams were threatened during this event.

Severe flooding also occurred in portions of western New Mexico as a result of high elevation rainfall of up to 8 inches during a 2-day period. Also the wet snow pack of 1 to 2 feet caused extremely high runoff.

Many of the reporting stations failed in southwestern New Mexico. Flood losses exceeded \$3 million, but only 1 fatality was reported.

The Arizona storm of the 10th-20th resulted in the most extensive flooding ever to hit the state. Except for the extreme northern and western parts of the state, rainfall amounts generally were in excess of 2 inches with higher elevations receiving 4-6 inches or more. Complicating the situation was the wet snowpack of 1 to 2 feet.

During the storm, almost every major river in Arizona overflowed its banks. Considerable flood damage occurred along the Gila River and its tributaries above Safford, and the Little Colorado and its tributaries above Winslow. Also, the Verde, Agua Fria and Salt Rivers caused millions of dollars in flood damages in and near Phoenix. Flood losses were estimated to be \$55.2 million, with 10 counties declared disaster areas.

An estimated 8,000 people were left homeless, and 10 persons drowned. Six died when the bridge on I-17 near Black Canyon City was washed out in floodwaters of the Agua Fria River.



Chart I. Departure from Normal of Annual Temperature ( $^{\circ}$ F) at Surface, 1979.

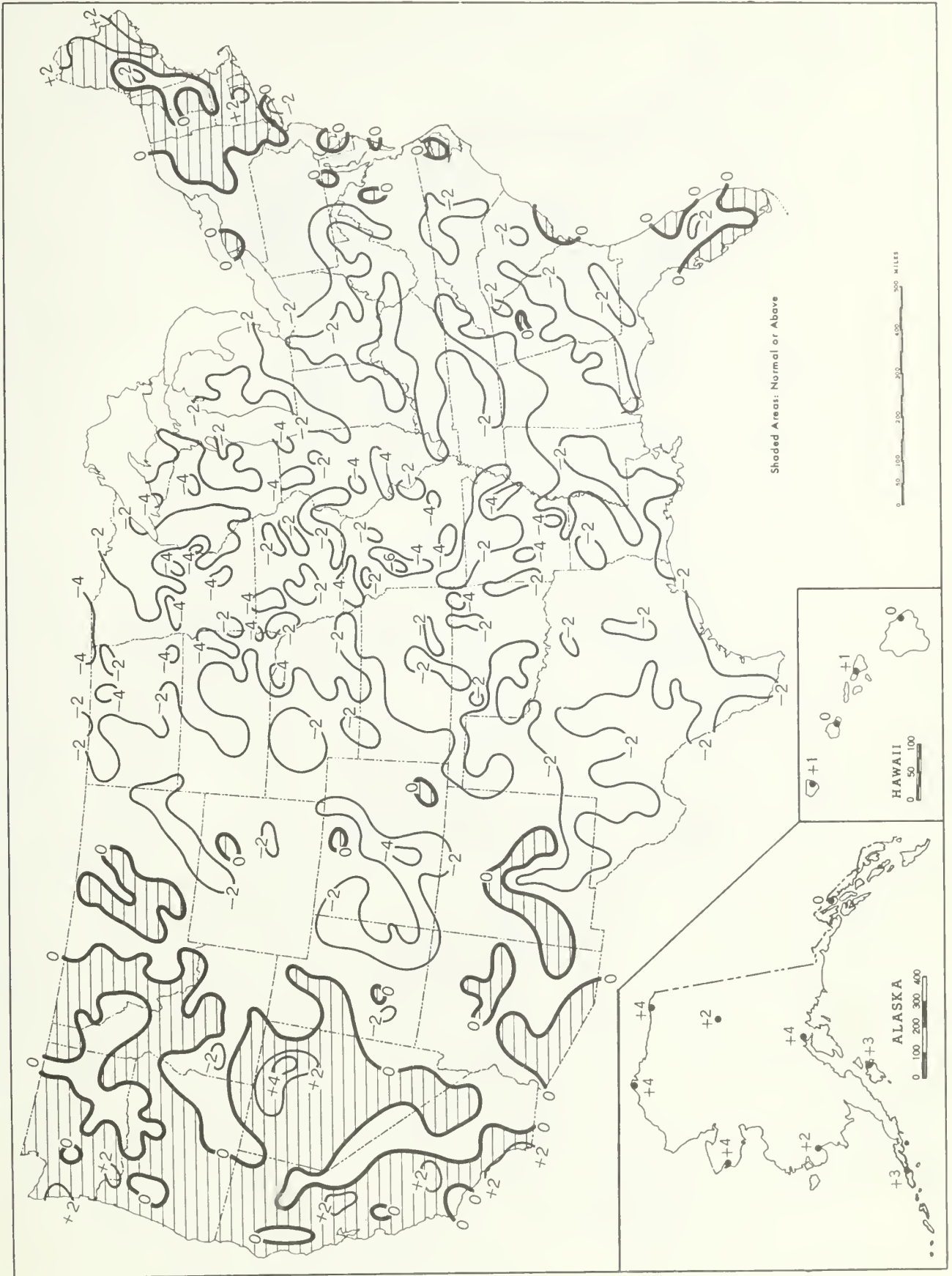


Chart II. Total Annual Precipitation (inches), 1979.

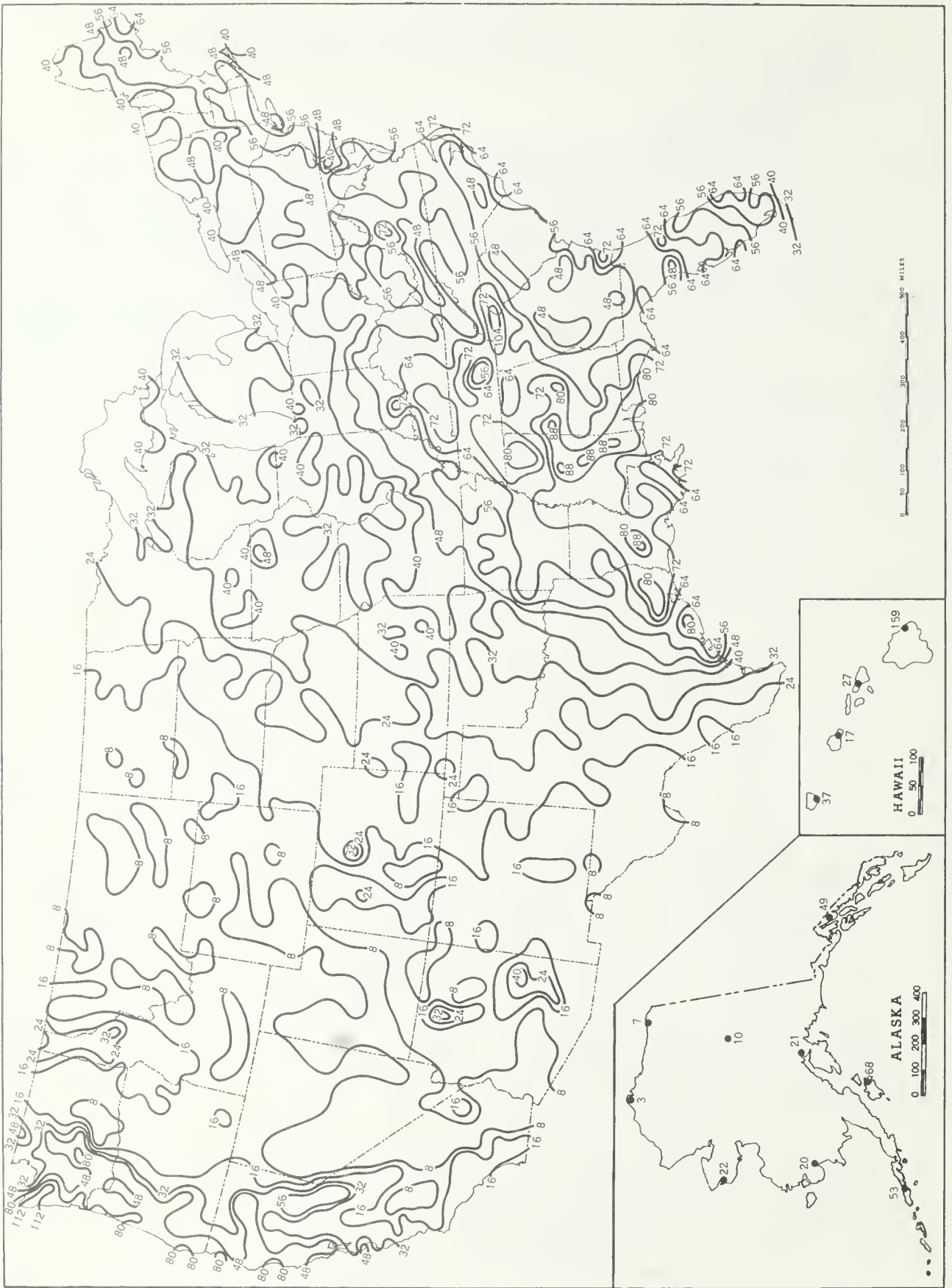
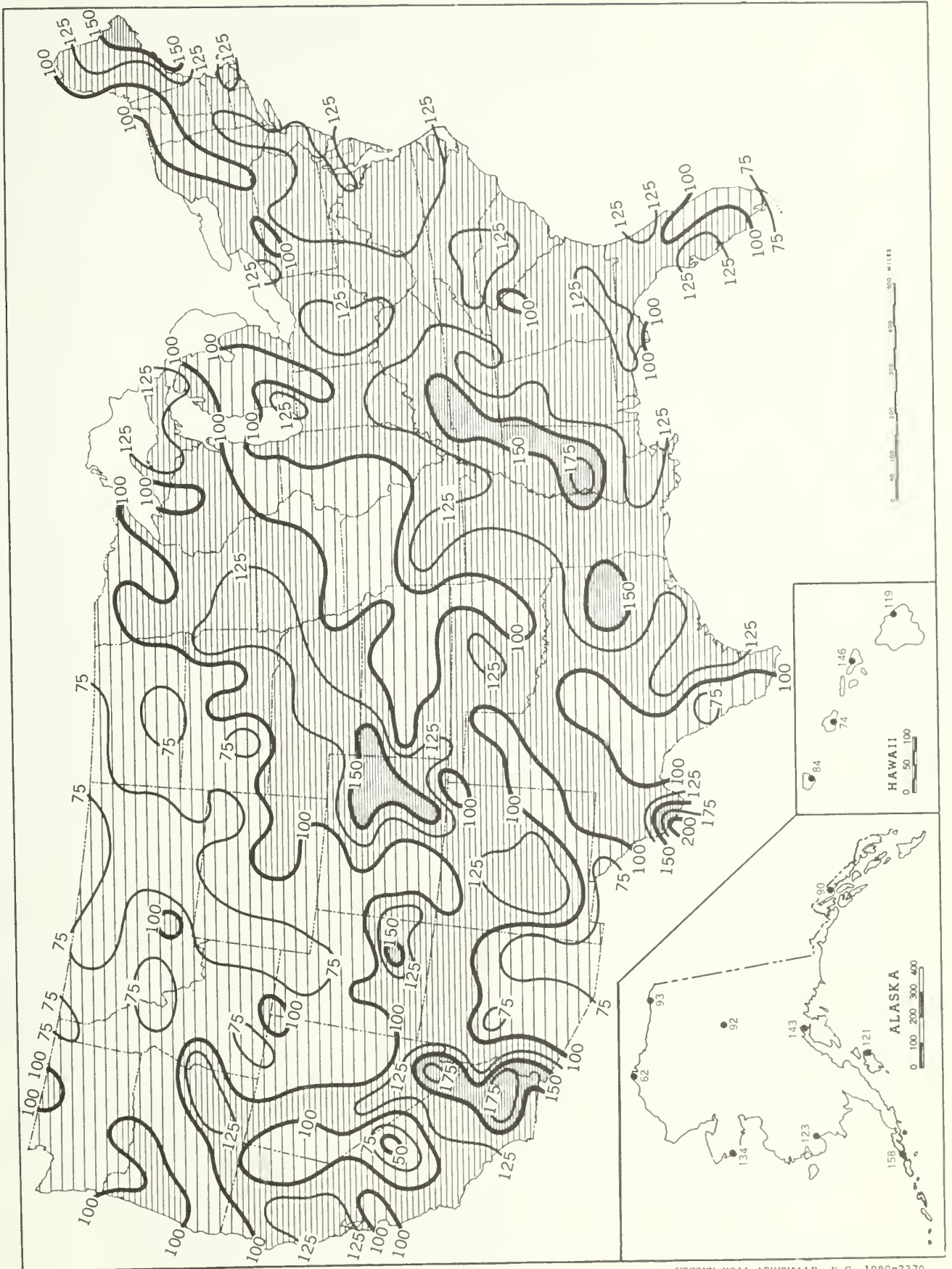


Chart III. Percentage of Normal Annual Precipitation, 1979.









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