U. S. DEPARTMENT OF COMMERCE
CHARLES SAWYER, Secretary
WEATHER BUREAU
F. W. REICHELDERFER, Chief

CLIMATOLOGICAL DATA

NATIONAL SUMMARY

JANUARY 1951
Volume 2 No. 1

U. S. WEATHER BUREAU
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NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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NATIONAL SUMMARY

Volume 2 No. 1 JANUARY 1951

GENERAL SUMMARY OF WEATHER CONDITIONS

January 1951 was a rather mild month. The average temperature for the country was 33.1°, with most station averages showing slight plus departures. Stations with minus departures, all small, included those in southern Florida, northern California, a belt along the Northern Border west of the Great Lakes including Iowa, and a narrow belt immediately east of the Continental Divide extending from eastern Montana to western Texas. This departure pattern was in sharp contrast to those for January 1949 and 1950 when minus departures in the West and plus departures in the East were near record levels.

Like the preceding month of December, January was somewhat drier than usual with a nationwide average total precipitation of 1.81 inches which is 0.44 of an inch below the long-term mean. The areal distribution was very uneven, but the total area with above-normal amounts about equaled the total area with deficiencies.

There were two principal areas of heavy precipitation. The first included most of Washington and Oregon and the northern half of California where monthly totals ranged up to nearly 30 inches and the percentage of normal generally ranged from 125 to 175. The second area extended from southwestern Pennsylvania and southern Ohio southwestward into Louisiana and extreme eastern Texas where monthly totals ranged up to more than 12 inches and the percentage of normal ranged from 150 to 250.

Areas with outstanding deficiencies included the Florida Peninsula, central, southern, and western Texas, much of the lower Great Basin of the far West, and a considerable portion of the northern Great Plains. Monthly totals in these areas generally were only a few hundredths, and less than 50 percent of normal.

There were few record-breaking extremes of either precipitation or temperature, although during the closing days of the month temperatures reached unusually high levels at a number of stations in the far Southwest and were unusually low in north-central areas and the northern Rocky Mountain Region. The country's extremes of temperature ranged from 94° at Indo, Calif. on the 26th to -56° at Bondurant, Wyo. on the 30th, and average temperatures for the month ranged from 68° at Key West, Fla. to -4° at Cooperstown, N. Dak. Monthly totals of precipitation ranged from zero at 59 stations in Texas, 11 in Florida, and 2 in California up to 29.58 inches at Valsetz, Oreg. Monthly totals of precipitation amounted to only a trace in one or more stations in Kansas, Montana, Nebraska, Nevada, New Mexico, Utah and Wyoming. The greatest 1-day measurements of precipitation exceeded 6 inches at a number of stations in Louisiana.

The first of two significant cold periods during the month began in the northern Great Plains and northern Rockies on the 4th with an advance of cold air that by the 9th overspread practically the entire country. Cold waves occurred in portions of the northern Plains on the 4th and in the lower Great Plains on the 7th. On the 6th Minnesota recorded -37°; and on the 7th Wisconsin recorded -37°; Iowa, -32°; Michigan, -17°; and Missouri, -2°. On the 8th below-freezing temperatures extended over all of Texas except the Brownsville area, and temperatures at stations along the Gulf Coast fell to 28° at Lake Charles, La., 30° at New Orleans, La., and 24° at Mobile, Ala. Florida recorded its lowest temperatures of the month on the 9th, with minima ranging from 20° in the north to 32° in the southern interior.

Following this cold period there was a general trend to warmer weather, and during the third week temperatures were seasonably high over the entire country. On the 18th maximum temperatures east of the Rockies ranged in the 80's in southern Texas, in the 70's throughout most of the Southern States, and 60° or higher was registered at stations as far north as Omaha, Nebr., Des Moines, Iowa, Columbus, Ohio, and Baltimore, Md. Temperatures were above normal in the Southwest throughout the last half of the month until the final days, and rose to near-record levels during the first part of the fourth week.

The second and most severe cold wave of the month occurred during the closing days, when cold air overspread the entire nation. This cold wave was first felt in the northwestern quarter of the country, as an advance of Arctic air into that region was marked by near-blizzard conditions in the northern Rockies and northern Plains that left many roads blocked by snow drifts. The arrival of the cold air in the central and lower Great Plains caused unusually large and rapid falls in temperatures; Goodland, Kans., reported a drop of 76° in 18 hours from 79° on the 26th to 3° on the 27th. By the 30th below-zero temperatures extended southward to central Nevada in the far western interior and to northern Texas in the central interior, and below-freezing minima extended southward over the Great Plains to Brownsville, Texas and along the West Coast to northern California. Lowest temperatures in a few of the northern States were: Montana, -55°; North Dakota, Iowa, and Michigan, -43°; Minnesota, -47°; Wyoming, -56°; and Wisconsin, -53°. By the end of the month only Florida and a few stations in the extreme Southwest had escaped the extreme cold.

Precipitation was fairly well distributed through the month. During the first week light precipitation was frequent in the northern interior and moderate to heavy rains fell in the Mississippi and Ohio Valleys at the beginning and end. Heavy precipitation fell in the Northwest at the beginning of the week, and strong winds caused some damage in Washington when a deep Pacific LOW moved over the State.

The extreme Northwest received light to moderate precipitation during most of the second week, and on the 11th and 12th a storm brought light to moderate precipitation to California and mostly

light amounts to southern interior regions west of the Continental Divide. In central coastal districts of California thundersqualls and several tornadoes caused considerable property damage. From the 13th to the 16th a LOW that developed over the lower Mississippi Valley and moved northeastward resulted in precipitation that was mostly light in the Great Plains, heavy over the Ohio and south-central Mississippi Valleys, light to moderate in the Southeast, and moderate to heavy in New York and New England.

Except for heavy precipitation along the north Pacific Coast and in the Cascade and Sierra Nevada Mountains, northern Utah and Nevada, the third week was very dry. In the southern Great Plains and Southwest mild temperatures and strong winds further reduced the already low moisture supplies in those areas.

Light to moderate precipitation occurred east of the Mississippi, with some heavy amounts in the Northeast during the passage of a LOW across the northern Great Plains and Lake Region on the 23d and 24th. On the 25th a Pacific LOW attended by high winds and heavy precipitation moved inland over Washington. Precipitation caused by this storm was limited to Washington and a few surrounding areas, since the storm was prevented from moving far inland by high pressure over the northern Rockies.

Snowfall generally was above normal in the far West, and in a belt extending from the lower Lake Region southwestward to eastern Texas, but below in most of the Great Plains area, and from the Appalachians to the Atlantic Coast. In the lower Ohio and central Mississippi Valleys, eastern Arkansas, northern Louisiana, and eastern Texas monthly totals were more than 200 percent of normal. In most areas east of the Rocky Mountains the heaviest snowfall occurred during the last part of the first decade and during the closing days of the month. The ground was bare most of the month in the Great Plains as far north as South Dakota and in the Ohio Valley after the first week. By the end of the second decade snowcover in the Northeast was limited to central and northern portions of New York and New England. In Wisconsin, northern Michigan, northeastern Iowa, and eastern Minnesota, however, temperatures were persistently low enough to prevent much melting, and depths that ranged from 10 to over 20 inches at the beginning of the month ranged from 15 to 20 inches in northeastern Iowa and southern Wisconsin up to more than 40 inches in Upper Michigan at the end.

Tornadoes caused $1,500,000 damage in central California on the 11th, and another that occurred near Alexandria, La. on the 6th caused $175,000 damage. This is about five times as much damage as these storms usually cause in January. By far the most damaging meteorological element, however, was the severe icestorm (glaze) that began during the closing days of January and continued until February 1. Glaze covered a large area from Texas to New England, but was most severe in Tennessee and some surrounding areas and in Louisiana and Mississippi where damage was great. In Tennessee and surrounding areas the Bell Telephone Company alone estimated its losses from five to six million dollars. Much greater losses occurred in Mississippi and Louisiana, a report of which will appear in the February issue of this publication.

CONDENSED CLIMATOLOGICAL SUMMARY

Table I

JANUARY 1951

Section	Temperature								Precipitation					
	Average	Departure from normal	Monthly extremes						Average	Departure from normal	Monthly extremes			
			Station	Highest	Date	Station	Lowest	Date			Station	Greatest	Station	Least
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	47.9	+1.0	4 Stations	78	†13	Alexander City 6NE	13	9	4.07	-0.78	Waterloo	12.47	Clayton	1.10
Arizona	41.9	-1.4	5 Stations	86	†25	Maverick	-17	13	1.32	+0.33	Sierra Ancha	4.86	Klagetoh	0.11
Arkansas	41.5	-0.3	2 Stations	80	†18	White Rock	-2	31	5.43	+0.99	Marvell	12.96	Harrison	E1.08
California	44.4	+0.2	Indo U.S. Date Garden	94	26	Boca	-12	20	4.04	+0.06	Gasquet R.S.	21.70	2 Stations	0.00
Colorado	23.6	+0.3	2 Stations	80	26	Taylor Park	-35	7	1.10	+0.17	Wolf Creek Pass 4N	6.79	do	0.05
Connecticut	30.7	+3.7	Greenwich Waterbury	61	19	Putnam	-8	9	3.61	-0.14	Meades Res.	8.16	Stafford Springs	2.43
Delaware	37.5	+2.5	Lewes	73	19	Lewes	10	9	2.43	-1.12	Wilmington Porter Res.	3.75	Bridgeville	1.30
Florida	59.3	+0.1	Titusville 2W	86	30	Secoton	20	9	0.93	-1.80	Saint Marks	3.89	11 Stations	0.00
Georgia	48.8	+0.6	2 Stations	80	†20	Blairsville Exp. Sta.	9	9	1.72	-2.38	Noontootla Creek	4.21	Jesup	0.62
Idaho	23.4	-0.1	Grand View	62	15	2 Stations	-42	29	2.13	+0.12	Burke 2ENE	8.10	Chilly Barton Flat	0.15
Illinois	28.4	+0.7	2 Stations	70	†18	Freeport	-29	30	2.34	+0.01	Brookport Dam 52	6.30	Carlinville 4E	0.66
Indiana	30.4	+1.7	8 Stations	69	†18	Hobart	-14	30	3.36	+0.36	Jeffersonville	8.02	Hobart	E0.72
Iowa	17.9	-1.6	2 Stations	68	18	Decorah	-43	30	0.63	-0.38	Lansing	1.74	Inwood 2W	0.02
Kansas	30.1	-0.2	Ashland	83	26	Goodland WB Airport	-19	31	0.76	+0.10	Fort Scott	1.79	Medicine Lodge	T
Kentucky	37.8	+1.8	Mammoth Cave Park	76	20	2 Stations	-2	8	7.54	+2.98	Herndon	11.66	Ashcamp	2.54
Louisiana	52.2	+1.1	Covington	82	20	do	15	31	6.76	+1.87	Riverton Dam	11.70	Burrwood	1.72
Maine	21.1	+4.0	Bar Harbor	55	4	Lac Frontiere	-47	31	3.02	-0.33	Machias	5.06	Eustis	1.50
Maryland	35.4		Western Port	76	20	Hancock Fruit Lab.	-1	9	2.41		Sines Deep Creek	6.25	2 Stations	1.23
Massachusetts	30.8	+4.3	Chestnut Hill	63	20	Birch Hill Dam	-12	9	3.22	-0.45	Fall River	4.31	Springfield	2.07
Michigan	20.8	+0.7	Monroe Water Works	58	20	Kenton U.S. Forest	-46	30	1.94	+0.14	Bad Axe 5NW	4.86	Channing Sawyer Lake	0.31
Minnesota	5.3	-3.5	Winona	46	18	Itasca State Park	-47	29	0.53	-0.21	2 Stations	1.17	Tyler	0.10
Mississippi	48.5	+1.1	4 Stations	79	†14	Holly Springs	11	31	7.06	+1.80	Tupelo WB Airway	12.20	Biloxi Display	1.83
Missouri	32.6	+1.8	Waynesville	79	19	Unionville	-12	29	2.28	-0.03	Carutherseville	7.18	Oregon	0.43
Montana	14.6	-4.2	Big Timber	60	25	West Yellowstone	-55	29	0.77	+0.01	Summit	5.51	4 Stations	T
Nebraska	23.8	+0.7	Broken Bow	76	†18	Fort Robinson	-28	29	0.32	-0.23	Wahoo	0.96	3 Stations	T
Nevada	31.9	+1.2	Pahrump 2N	76	26	Jarbidge	-18	30	0.86	-0.20	Jarbidge	3.14	Dyer	T
New Hampshire	23.1	+3.9	2 Stations	60	† 4	First Conn. Lake	-29	31	2.59	-0.60	Manchester	3.78	Lancaster	1.37
New Jersey	34.6	+3.1	do	69	20	2 Stations	5	† 9	3.30	-0.31	Phillipsburg	5.28	Rutherford	1.34
New Mexico	34.3	+0.4	do	79	27	Levy	-26	31	0.61	+0.03	Zicks Ranch	2.44	6 Stations	T
New York	25.9	+2.7	3 Stations	64	19	Lawrenceville	-25	31	2.73	-0.17	Lake Ronkonkoma	6.48	Bolivar	1.07
North Carolina	42.8	+1.0	4 Stations	77	†20	Mount Mitchell	-3	8	1.54	-2.18	Clingmen's Dome	5.61	Whiteville	0.37
North Dakota	3.3	-3.6	2 Stations	50	17	3 Stations	-43	29	0.57	+0.09	Turtle Lake	1.53	Golva 1SE	0.11
Ohio	31.3	+2.2	Trenton	72	20	2 Stations	-8	9	4.12	+1.18	Peebles	8.93	Defiance	1.30
Oklahoma	38.1	-1.1	2 Stations	83	†20	3 Stations	-5	†29	1.37	-0.18	Kiamichi Tower	5.08	Frederick	0.05
Oregon	31.8	-0.1	Seaside	66	6	Austin 3S	-38	29	5.78	+1.90	Valsetz	29.58	2 Stations	0.54
Pennsylvania	30.9	-2.4	5 Stations	71	†20	Jamestown	-7	22	3.74	+0.56	Albion	8.95	Milan	1.53
Rhode Island	33.6	+4.0	Providence WB City	64	19	Greenville	0	31	4.09	+0.12	Providence WB City	4.63	Greenville	3.56
South Carolina	45.9	-0.5	Ninety Six	85	30	3 Stations	11	† 9	1.35	-2.10	Cleveland	2.78	Georgetown	0.35
South Dakota	15.6	-1.5	Armour	61	16	Britton 2N	-39	29	0.18	-0.37	Victor 5NE	0.74	Dixon	0.00
Tennessee	40.7	+1.4	Loudon	77	20	Crossville Exp. Sta.	1	9	7.70	+2.65	Savannah	12.68	Wolf Creek	1.81
Texas	46.9	+0.2	Rockport	90	19	Dalhart CAA AP	-12	31	1.02	-0.53	Jasper	9.07	59 Stations	0.00
Utah	26.2	-1.4	Zion N.P.	70	25	Woodruff	-31	31	1.09	-0.08	Alta	8.93	3 Stations	T
Vermont	21.0	-3.2	Dorset 1S	59	4	Lemington	-23	31	2.23	-0.54	Somerset	4.61	McIndoe Falls	1.36
Virginia	38.8	-2.0	Buggs Island Dam	77	4	4 Stations	3	† 8	1.77	-1.49	Big Meadows	5.45	Glen Lyn	0.34
Washington	31.0	-0.2	Everett	64	26	Winthrop 1WSW	-26	29	5.93	+1.56	Petersons Ranch	25.66	Wilbur	0.57
West Virginia	35.3	-2.3	Wardensville NM Farm	79	5	2 Stations	-6	9	3.79	+0.16	Fink Run	6.72	Princeton	0.62
Wisconsin	11.9	-2.9	Baraboo	48	17	Lone Rock CAA AP	-53	30	0.85	-0.39	West Bend	2.45	Winter Park Res.	0.18
Wyoming	17.8	1.2	Torrington Exp. Farm	64	26	Bondurant	-56	30	0.87	-0.01	Kendall 3S	5.81	4 Stations	T

† Other dates also.

CLIMATOLOGICAL DATA

Table 2

JANUARY 1951

State and station	Elevation (ground)	Pressure: Station	Pressure: Sea level	Temperature: Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F. or above	Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	No. of days: 01 inch or more	With thunderstorms	Snow, Sleet, Hail: Total	Max. depth on ground	Wind: Average hourly speed	Prevailing direction	Fastest mile: Speed	Direction	Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	998.3	1021.5	58	36	46.8	+3.9	72	20	20	†8	0	15	37	73	3.68	-1.84	0.86	12	1	T	T	8.7	S	34	SE	3	9	4	18	6.4	46
Mobile CO	10	------	------	63	43	53.3	+1.8	72	6	25	8	0	4	--	--	1.89	-2.96	.85	9	1	0.0	0	----	---	43	SE	28	--	--	--	5.7	48
Mobile	211	1013.5	1021.8	65	42	53.2	----	76	20	24	8	0	6	46	79	2.59	-----	1.17	13	2	.0	0	12.2	SSE	--	---	--	8	12	11	5.9	--
Montgomery CO	201	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	----	---	--	--	--	--	----	--
Montgomery	198	1014.2	1021.7	62	38	49.9	-1.7	76	20	21	9	0	10	40	72	3.54	-1.66	1.09	11	0	.0	0	8.1	S	38	S	14	12	7	12	5.6	59
ARIZONA																																
Flagstaff	6993	785.6	1020.4	43	14	28.7	----	58	26	-6	13	0	31	17	64	1.61	-----	1.10	4	0	17.9	12	7.2	SW	--	---	--	9	4	18	6.4	--
Payson CO	4999	848.3	1018.6	53	27	40.0	----	73	25	16	31	0	25	23	57	2.81	-----	1.95	6	0	12.0	5	4.2	S	--	---	--	13	6	12	5.1	--
Phoenix CO	1083	------	------	66	40	52.9	+1.7	83	25	29	2	0	3	--	--	1.56	+.76	1.43	4	0	.0	0	5.8	---	28	W	12	--	--	--	---	88
Phoenix	1108	977.7	1017.2	67	37	51.9	----	85	25	25	2	0	10	30	49	1.58	+.78	1.31	4	0	T	T	4.2	E	--	---	--	15	8	8	3.9	--
Prescott	5014	848.3	1018.8	52	23	37.4	----	69	26	10	7	0	28	19	54	1.47	-----	.75	4	0	6.5	2	6.9	S	33	SW	10	12	9	10	4.8	70
Tucson	2558	927.5	1017.1	64	37	50.3	+1.2	82	26	28	2	0	7	29	50	1.12	+.22	.69	3	0	2.8	2	6.8	SE	34	W	12	17	4	10	4.2	83
Winslow	4880	852.0	1018.5	51	21	35.9	+3.8	64	26	7	7	0	28	18	53	.45	-.23	.35	3	0	1.0	1	8.8	SW	*56	SW	19	10	6	15	5.8	--
Yuma	203	1012.5	1017.7	71	42	56.3	----	86	25	31	2	0	2	31	43	.39	-----	.20	3	0	.0	0	7.7	NNE	32	W	30	21	7	3	2.6	94
ARKANSAS																																
Fort Smith	458	1002.4	1019.6	52	28	39.7	+.2	76	19	9	31	0	21	27	67	3.81	+1.27	2.08	8	2	2.4	2	9.5	NE	28	SW	20	--	--	--	6.5	50
Little Rock	257	1006.8	1019.9	54	33	43.2	+1.8	76	19	12	31	0	17	33	73	4.32	-.41	1.67	10	3	3.3	3	8.3	S	33	SW	17	--	--	--	6.3	50
Texarkana	361	1000.7	1019.7	56	34	45.3	-.2	77	19	13	31	0	13	34	72	4.47	-.34	1.21	11	5	4.3	3	11.6	S	--	---	--	10	6	15	6.0	--
CALIFORNIA																																
Bakersfield	489	1003.4	1021.7	57	39	48.0	+.5	70	22	28	2	0	5	40	77	1.61	+.51	.58	10	1	T	0	3.6	NW	--	---	--	2	8	21	7.9	--
Beaumont CO	2589	927.5	1018.9	58	36	46.9	----	76	25	24	1	0	10	30	59	1.95	-----	.81	8	1	.0	0	8.4	E	*28	E	6	13	7	11	5.0	--
Bishop	4108	875.0	1018.0	55	23	39.1	----	73	24	16	8	0	31	--	--	.25	-----	.21	2	0	2.9	3	----	---	--	---	--	8	10	13	6.4	--
Blue Canyon	5280	838.8	1019.3	41	29	34.9	----	64	24	15	30	0	22	24	69	15.17	-----	3.92	14	1	63.4	34	12.1	SSE	--	---	--	4	3	24	8.2	--
Burbank	699	992.2	1018.7	64	42	53.2	----	85	24	33	2	0	0	39	63	2.79	-----	1.02	8	0	.0	0	5.0	NW	*33	NNW	1	14	5	12	4.9	--
Eureka CO	43	1017.6	1020.0	53	41	46.9	.0	62	14	28	30	0	1	--	--	8.47	+1.36	1.43	18	2	T	T	7.3	---	32	SW	†15	5	1	25	8.5	21
Fresno	331	1009.5	1021.7	54	37	45.6	+.1	63	15	28	1	0	6	42	88	1.94	+.21	.79	7	1	.0	0	5.9	SE	27	SE	18	1	6	24	8.8	48
Los Angeles CO	312	------	------	64	47	55.7	+1.1	86	25	40	12	0	0	--	--	2.80	-.30	1.00	7	0	.0	0	6.8	---	35	E	10	13	10	8	4.8	71
Los Angeles	99	1015.2	1019.0	63	45	54.1	----	86	25	38	13	0	0	44	71	2.82	-----	.99	7	0	.0	0	5.3	W	--	---	--	13	7	11	4.9	--
Mt. Shasta CO	3543	893.0	1019.9	40	25	32.1	-1.3	59	25	9	30	0	28	27	78	5.64	-.67	1.65	14	0	46.6	26	8.4	SE	--	---	--	3	5	23	8.3	--
Oakland	3	1021.0	1021.2	56	41	48.3	+1.1	63	22	31	31	0	1	41	76	4.34	+.76	1.17	14	0	.0	0	4.7	SE	--	---	--	4	1	26	8.0	--
Red Bluff	341	1007.5	1020.5	50	38	43.9	-1.9	60	1	27	31	0	3	37	81	5.10	+.34	2.09	13	0	.7	1	8.5	SSE	42	SE	16	3	4	24	8.4	31
Sacramento CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	----	---	--	--	--	--	----	--
Sacramento	17	1018.6	1021.0	52	38	45.3	-.5	59	4	27	31	0	4	41	86	1.97	-1.75	.49	11	1	T	0	10.4	SSE	49	S	11	3	1	27	8.6	27
Sandberg CO	4517	863.9	1019.2	48	33	40.8	----	67	26	22	1	0	15	26	63	.64	-----	.20	7	0	4.7	2	19.7	NNW	--	---	--	9	9	13	5.4	--
San Diego	19	1015.9	1019.1	65	47	55.7	+1.7	82	24	39	1	0	0	45	71	1.60	-.46	.73	8	0	.0	0	5.1	W	34	SW	11	19	5	7	3.9	75
San Francisco CO	52	------	------	55	46	50.3	+.4	63	22	40	30	0	0	--	--	4.41	-.13	1.06	14	0	.0	0	6.9	---	32	SW	11	5	7	19	7.2	46
San Francisco	1	1020.3	1020.9	55	43	48.7	+1.6	61	22	32	31	0	1	43	82	2.98	-1.08	.82	14	0	T	0	8.7	W	47	SW	11	3	5	23	7.9	--
Santa Catalina	1568	961.4	1018.4	59	47	53.0	----	80	25	40	30	0	0	--	--	1.61	-----	.41	8	0	.0	0	----	---	--	---	--	14	8	9	5.0	--
Santa Maria	231	1011.9	1020.4	62	39	50.9	----	82	25	28	1	0	2	42	76	1.97	-----	.58	9	0	.0	0	7.4	E	*30	NNE	23	12	6	13	5.6	--
COLORADO																																
Alamosa	7534	768.0	1020.7	40	3	21.2	----	58	22	-19	31	0	30	--	--	.03	-----	.03	1	0	1.7	1	----	---	--	---	--	10	12	9	5.2	--
Colorado Springs	6175	807.7	1019.7	39	13	25.7	----	66	26	-26	31	0	29	8	52	.59	-----	.36	8	0	7.7	4	11.8	NNW	--	---	--	10	12	9	5.5	--
Denver	5221	834.1	1018.0	39	15	26.9	-.4	68	26	-24	31	0	28	6	48	.83	+.25	.42	9	0	15.7	7	9.3	S	41	NW	3	7	9	15	6.3	68
Grand Junction	4849	860.1	1021.8	36	15	25.3	+1.3	55	28	-7	31	0	31	16	66	.78	+.18	.55	5	0	10.1	7	5.4	ESE	38	NW	19	8	5	18	6.9	49
Pueblo	4739	855.1	1018.6	43	13	28.2	-.5	74	26	-22	31	0	30	10	53	.54	+.23	.24	10	0	10.1	3	8.0	W	45	NW	22	10	10	11	5.7	58
CONNECTICUT																																
Bridgeport	7	1018.3	1019.1	41	26	33.0	----	56	19	8	31	0	26	25	74	3.10	-----	.97	13	1	4.5	2	10.5	NW	*35	NW	21	10	2	19	6.5	--
Hartford	15	1012.5	1018.5	40	22	31.0	+5.5	60	20	5	31	0	28	24	75	4.09	+.15	1.04	12	1	12.3	5	8.8	N	34	NW	21	7	4	20	7.5	47
New Haven	6	1015.9	1018.6	40	24	32.2	+4.8	57	20	7	31	0	27	--	--	4.00	+.33	1.03	12	1	6.7	4	7.5	---	25	SW	15	9	3	19	6.7	52
DELAWARE																																
Wilmington	73	1016.3	1019.5	44	24	34.2	----	66	20	14	9	0	27	25	70	3.64	-----	1.16	12	0	2.6	2	8.5	WNW	--	---	--	5	9	17	7.1	--
FLORIDA																																
Apalachicola	13	1020.7	1022.0	62	47	54.5	+.8	69	31	28	8	0	2	--	--	2.43	-1.22	1.09	6	0	.0	0	9.5	---	22	NW	7	14	11	6	3.8	79
Daytona Beach	33	1021.0	1022.4	70	46	58.0	-.5	79	†4	30	†9	0	3	49	80	.77	-1.49	.70	2	1	.0	0	9.5	NW	*24	NNW	22	13	14	4	4.3	--
Fort Myers	15	1021.3	1021.7	75	49	61.8	-2.1	83	31	33	9	0	0	51	76	.38	-1.38	.22	3	0	.0	0	7.0	E	--	---	--	19	10	2	3.1	--
Jacksonville CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	----	---	--	--	--	--	----	--
Jacksonville	16	1021.7	1022.7	68	44	55.8	+2.2	79	20	26	9	0	5	45	74	.53	-2.27	.22	6	0	.0	0	5.7	S	32	N	22	13	9	9	5.0	71
Key West CO	5	1020.0	1020.7	75	62	68.3	-1.2	81	4	47	9	0	0	--	--	1.07	-.89	.64	7	0	.0	0	8.0	---	27	NW	9	16	9	6	4.1	64
Key West	6	1020.3	1020.6	73	62	67.5	-1.2	80	4	49	9	0	0	59	78	.35	-1.60	.13	6	0	.0	0	12.3	NE	--	---	--	18	12	1	3.1	--
Lakeland	----	------	------	71	51	61.1	-1.9	80	4	32	9	0	1	--	--	.27	-2.31	.12	3	0	.0	0	----	---	--	---	--	14	17	0	3.7	--
Melbourne	22	1021.0	1022.0	71	50	60.6	-.5	81	4	34	9	0	0	52	79	.24	-2.14	.17	3	0	.0	0	7.7	NW	*21	N	8	11	16	4	4.5	--
Miami CO	180	------	------	72	59	65.7	-2.2	77	5	36	9	0	0	--	--	.24	-2.03	.18	4	0	.0	0	----	---	33	N	25	14	15	2	3.6	69
Miami	9	1020.0	1021.0	75	56	65.2	----	80	30	36	9	0	0	54	70	.04	-----	.03	2	0	.0	0	8.2	ESE	*28	N	16	18	11	2	3.4	--
Miami Beach	----	------	------	73	62	67.2	----	78	15	39	9	0	0	--	--	.10	-----	.04	4	0	.0	0	----	---	--	---	--	17	10	4	----	--
Orlando	111	1018.0	1022.4	72	48	60.0	-.8	81	30	30	9	0	2	50	75	.52	-1.93	.40	2	0	.0	0	6.5	E	*24	NW	8	12	14	5	4.3	--
Pensacola CO	13	1019.3	------	64	47	55.3	+2.8	71	19	25	8	0	3	--	--	1.99	-2.00	.57	11	1	.0	0	----	---	24	W	7	11	8	12	5.4	69
Pensacola	118	1017.3	1021.6	65	45	55.0	----	73	†4	25	8	0	4	47	--	3.00	-----	1.33	10	0	.0	0	9.9	SSE	--	---	--	--	--	--	----	--
Tallahassee	64	1020.0	1022.4	66	41	53.2	+1.5	76	†20	26	9	0	6	42	74	1.96	-2.54	1.16	6	0	.0	0	6.6	SE	--	---	--	15	8	8	4.3	--
Tampa	24	1021.0	1022.2	72	50	61.3	+.9	81	31	33	9	0	0	50	72	.54	-2.15	.28	3	0	.0	0	6.6	S	28	S	14	16	14	1	3.4	83
West Palm Beach	14	1020.3	1021.0	75	56	65.3	----	81	21	38	9	0	0	55	74	.33	-2.74	.18	7	0	.0	0	7.9	NW	--	---	--	11	14	6	4.8	--
GEORGIA																																
Albany	190	1015.6	1027.8	65	39	51.9	-.1	78	31	24	9	0	9	40	69	1.22	-2.93	.47	7	0	.0	0	5.5	SSE	*42	WSW	14	14	10	7	4.1	--
Atlanta CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	----	---	--	--	--	--	----	--
Atlanta	977	979.0	1021.9	55	36	45.3	+2.8	70	20	21	26	0	11	34	68	2.25	-2.76	.78	12	0	.0	0	10.5	NW	*33	NW	7	10	6	15	5.8	58
Athens	798	992.2	------	54	34	43.8	----	70	20	19	†9	0	13	--	--	2.85	-----	.94	13	0	.0	0	----	---	--	---	--	11	6	14	5.5	--
Augusta	426	1015.9	1022.4	60	34	46.7	-.3	76	20	19	†10	0	13	35	72	1.14	-2.71	.46	9	0	.0	0	8.3	SE	*25	WNW	15	12	4	15	5.5	--
Columbus	382	1007.8	1022.3	61	36	48.8	----	72	20	19	9	0	13	38	73	2.06	-----	.88	10	0	.0	0	8.6	S	--	---	--	11	10	10	5.3	--
Macon	354	1008.5	1019.9	62	37	49.6	----	76	20	24	†9	0	11	37	68	1.31	-----	.52	7	0	.0	0	8.5	NW	36	S	14	12	10	9	5.2	66
Rome	637	998.3	1022.2	54	30	42.3	----	69	†3	14	9	0	19	33	75	4.09	-----	1.07	16	2	T	0	8.7	N	--	---	--	8	11	12	6.0	--
Savannah	38	1020.3	1022.7	63	39	50.6	+.8	77	20	23	9	0	8	40	74	.85	-1.93	.31	6	0	.0	0	9.5	WNW	27	NW	7	11	11	9	5.2	62
Valdosta	200	1013.9	1022.5	66	39	52.8	-1.2	79	20	25	9	0	8	40	--	1.36	-2.19	.79	5	0	.0	0	8.5	S	--	---	--	13	12	6	4.8	--
IDAHO																																
Boise	1842	921.4	1020.4	36	22	29.1	+1.2	56	17	1	30	0	29	22	76	1.66	-.07	.61	12	0	10.3	3	12.5	ESE	34	SW	17	5	5	21	7.8	39
Lewiston	1413	985.5	1018.8	40	26	33.2	----	55	16	1	30	0	23	25	72	.51	-----	.26	9	0	.8	1	7.6	E	--	---	--	5	4	22	7.8	--
Pocatello	4444	862.9	1021.1	33	15	23.8	+1.5	45	15	-8	28	0	30	18	76	.44	-.90	.10	11	0	7.9	4	10.9	SW	43	SW	17	5	8	18	7.4	34
ILLINOIS																																
Cairo CO	314	1006.4	1019.6	46	30	37.9	+3.0	68	20	7	30	0	16	--	--	6.81	+3.05	2.62	13	1	11.3	5	11.4	----	34	SW	20	--	--	--	6.7	45
Chicago	618	992.6	1018.5	31	16	23.5	+1.2	53	18	-15	30	0	30	16	75	1.81	-.09	1.24	10	0	6.2	6	10.6	SSW	42	NW	20	4	5	22	7.8	44
Joliet	580	995.9	1018.6	31	15	22.5	+.1	54	18	-16	30	0	30	18	84	2.22	+.40	1.42	10	0	7.4	4	10.7	S	--	---	--	4	7	20	7.7	--
Moline	589	996.3	1020.1	29	13	20.6	+.4	57	19	-14	30	0	31	14	76	1.05	-.37	.35	9	0	7.1	4	7.2	W	36	SW	16	5	10	16	7.1	43
Peoria	659	995.9	1019.2	33	16	24.3	+.2	59	19	-11	30	0	27	19	80	1.58	-.20	1.21	8	0	4.8	2	11.7	NNW	31	S	16	5	7	19	7.3	43
Springfield CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	----	---	--	--	--	--	----	--
Springfield	598	995.3	1019.2	36	20	27.9	+3.2	64	19	-6	30	0	26	21	77	1.77	-.33	1.16	10	0	2.9	2	15.5	NW	40	S	16	--	--	--	7.0	43

See footnotes at end of table.

Table 2—Continued

State and station	Elevation (ground)	Pressure: Station	Pressure: Sea level	Temperature: Average maximum	Temperature: Average minimum	Temperature: Average	Temperature: Departure from normal	Temperature: Highest	Temperature: Date	Temperature: Lowest	Temperature: Date	No. of days: Max. 90° F. or above	No. of days: Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	No. of days: 01 inch or more	No. of days: With thunderstorms	Snow, Sleet, Hail: Total	Snow, Sleet, Hail: Max. depth on ground	Wind: Average hourly speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	No. of days (sunrise to sunset): Clear	No. of days (sunrise to sunset): Partly cloudy	No. of days (sunrise to sunset): Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
INDIANA																																
Evansville	385	1004.1	1020.3	42	25	33.5	+1.9	69	19	-6	8	0	22	27	78	6.75	+3.01	2.50	13	0	12.3	8	10.6	NW	34	W	20	--	--	--	7.2	39
Fort Wayne	801	985.8	1018.5	34	21	27.4	+2.0	59	20	1	30	0	27	23	83	2.38	+.05	.91	14	0	10.7	5	10.4	SSW	49	SW	20	0	8	23	8.6	29
Indianapolis CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	----	----	----	----	----	----	--	--	--	----	--
Indianapolis	796	988.5	1019.2	37	21	29.1	+1.8	62	18	-1	30	0	27	24	81	2.95	.00	1.28	10	0	10.8	4	12.9	SSW	60	W	20	--	--	--	7.7	35
South Bend	768	988.2	1017.6	33	18	25.6	+1.0	52	18	-8	30	0	29	22	85	2.17	-.03	.98	14	0	12.8	6	12.6	SSW	*36	NW	20	1	4	26	9.1	--
Terre Haute	585	997.3	1019.6	38	22	29.9	+1.2	62	19	-3	30	0	27	23	77	2.62	-.08	.97	12	0	11.2	4	11.0	S	34	W	20	--	--	--	7.1	45
IOWA																																
Burlington	695	992.6	1019.2	31	14	22.4	+.3	51	19	-11	29	0	29	17	82	.80	-.51	.20	9	0	5.3	4	10.7	NNW	36	NW	20	3	8	20	7.7	48
Charles City CO	1013	981.0	1020.3	21	1	11.0	-2.7	42	16	-30	30	0	31	--	--	.64	-.25	.33	9	0	13.6	13	5.1	---	25	S	22	9	13	9	5.7	50
Davenport CO	570	996.3	------	29	14	21.4	-.4	50	19	-14	30	0	27	--	--	1.23	-.19	.36	9	0	8.2	4	----	---	--	---	--	--	--	--	----	--
Des Moines	800	987.1	1020.7	30	11	20.4	+.3	50	18	-11	29	0	31	12	72	.59	-.48	.22	3	0	4.3	2	12.1	NW	42	W	15	--	--	--	6.9	57
Dubuque CO	641	------	------	26	9	17.0	-2.1	46	18	-26	29	0	31	--	--	1.41	+.11	.44	10	0	11.8	8	----	---	--	---	--	--	--	--	----	--
Sioux City	1097	977.0	1020.3	28	6	17.1	+.8	57	18	-16	30	0	31	9	72	.21	-.53	.09	4	0	3.2	2	9.4	NW	36	NW	15	7	11	13	6.6	54
KANSAS																																
Concordia CO	1375	968.2	1020.0	37	18	27.2	+.8	66	16	-2	28	0	26	--	--	.48	-.13	.27	4	0	3.6	2	8.5	---	28	SW	16	--	--	--	5.3	64
Dodge City	2594	928.2	1019.0	40	17	28.8	-.2	78	26	-6	31	0	31	13	64	.55	+.14	.29	5	1	6.2	2	13.8	NNE	43	NE	27	10	6	15	5.6	52
Goodland	3645	887.6	1019.0	41	12	26.3	-2.4	79	26	-19	31	0	31	13	67	.28	+.02	.09	7	0	7.1	3	10.7	SW	35	NW	3	9	10	12	5.8	--
Topeka CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	--	----	---	--	---	--	--	--	--	----	--
Topeka	926	988.5	1019.9	40	18	29.0	----	71	18	-2	29	0	31	18	70	1.00	-----	.79	7	0	2.4	2	9.8	NE	42	SW	16	--	--	--	6.5	47
Wichita	1372	968.8	1018.8	43	22	32.2	+.9	69	26	-2	29	0	29	19	63	1.03	+.25	1.01	3	1	.4	T	14.8	S	45	SW	22	--	--	--	5.5	69
KENTUCKY																																
Lexington	979	983.1	1019.8	43	27	34.9	+2.0	66	19	5	8	0	23	29	78	11.15	+6.97	2.98	16	0	8.0	4	14.3	S	--	---	--	6	6	19	7.3	--
Louisville CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	--	----	---	--	---	--	--	--	--	----	--
Louisville	485	1002.7	1019.5	44	26	35.7	+2.3	66	19	8	8	0	21	30	77	7.83	+3.83	2.67	15	1	7.3	3	11.6	S	45	SW	17	5	6	20	7.6	35
LOUISIANA																																
Baton Rouge	64	1017.6	1020.5	64	43	53.4	+.3	76	18	28	9	0	5	43	75	5.50	-.02	1.33	11	5	.0	T	8.5	SE	--	---	--	--	--	--	5.6	--
Lake Charles	12	1018.6	1019.8	64	41	52.7	+1.0	77	20	24	31	0	6	46	84	7.28	+2.56	2.53	13	6	.5	T	11.6	N	--	---	--	--	--	--	5.8	--
New Orleans CO	12	1019.0	------	67	48	57.4	+3.2	78	20	36	8	0	0	--	--	5.17	+.83	2.00	10	2	.0	0	7.3	---	21	NW	14	--	--	--	5.4	49
New Orleans	12	1019.0	1020.7	67	45	55.6	----	76	20	29	9	0	2	47	78	5.49	-----	1.23	11	2	.0	0	10.3	S	*45	W	14	--	--	--	5.2	--
Shreveport	174	1020.5	1019.8	60	37	48.2	+.6	79	19	13	31	0	9	37	74	5.43	+1.50	1.87	11	6	4.4	4	12.4	SSE	35	W	14	--	--	--	5.6	59
MAINE																																
Caribou	624	991.2	1015.5	23	5	13.6	+6.7	40	4	-32	31	0	31	7	73	2.80	+.50	.79	14	0	25.4	22	13.9	W	*53	W	5	5	8	18	7.2	--
Eastport	33	1012.5	1015.6	35	19	29.6	+6.5	54	4	-14	31	0	28	--	--	4.09	+.17	1.71	12	0	15.8	7	12.1	---	36	NE	7	8	6	17	6.6	52
Portland	61	1012.5	1016.4	35	16	25.5	+5.4	52	4	-11	31	0	29	18	73	2.94	-1.03	.80	12	0	19.0	9	9.4	WNW	50	SE	24	4	10	17	6.9	59
MARYLAND																																
Baltimore CO	14	------	------	47	31	38.8	+5.0	70	20	19	31	0	20	--	--	2.85	-.05	.89	10	0	----	--	8.8	---	46	NW	21	--	--	--	----	37
Baltimore	146	1015.6	1020.1	46	25	36.9	----	71	20	15	9	0	22	26	66	2.88	-----	.88	10	0	2.5	2	11.0	S	--	---	--	4	11	16	6.9	--
Frederick	294	------	------	45	26	35.1	----	68	20	15	19	0	27	--	--	2.11	-----	.46	24	0	1.0	1	----	---	--	---	--	--	--	--	----	--
MASSACHUSETTS																																
Boston	12	1012.9	1017.5	42	26	34.0	+6.1	61	19	1	31	0	23	22	64	4.04	+.43	1.12	11	0	13.9	7	13.0	NNW	37	W	21	6	8	17	6.8	56
Nantucket	43	1017.3	1017.6	43	29	35.8	+4.5	53	4	14	25	0	20	29	78	3.48	-.29	1.16	14	1	1.0	1	13.3	NW	36	SW	15	7	4	20	7.2	33
Pittsfield	1153	973.2	1017.6	34	16	25.1	+3.4	58	20	-1	31	0	30	--	--	3.15	+.11	.75	19	0	13.1	6	9.4	---	--	---	--	3	8	20	7.6	--
MICHIGAN																																
Alpena CO	587	993.6	1016.9	28	13	20.2	+1.1	43	17	-15	30	0	35	--	--	2.63	+.74	.79	17	0	25.8	9	9.9	---	37	SE	22	2	9	20	7.6	48
Detroit	619	989.8	1017.9	34	22	27.8	+3.7	57	20	-4	30	0	26	21	80	1.91	-.16	.68	16	0	15.4	7	10.2	NW	36	N	21	--	--	--	8.5	30
Escanaba CO	594	993.9	1017.6	24	9	16.2	+.8	41	17	-22	30	0	31	--	--	.63	-.86	.28	8	0	8.1	13	10.3	---	43	N	20	--	--	--	7.0	45
Grand Rapids CO	638	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	--	----	---	--	---	--	--	--	--	----	--
Grand Rapids	638	991.2	1017.5	31	18	24.4	+2.2	50	18	-22	30	0	30	19	83	2.25	-.10	.69	15	0	18.4	10	10.2	W	31	SW	3	--	--	--	8.9	30
Lansing	858	963.7	1018.1	30	19	24.4	+2.5	46	18	-14	30	0	30	20	83	2.52	+.70	.78	17	0	11.4	8	14.7	W	34	SE	22	--	--	--	8.3	19
Marquette CO	677	988.5	1016.9	24	12	17.9	+1.6	43	18	-17	30	0	31	--	--	1.32	-1.01	.67	13	0	19.1	28	8.5	---	26	SW	18	--	--	--	8.2	32
Muskegon	627	993.2	1017.4	30	20	24.7	-.1	46	18	-6	30	0	30	20	82	2.21	+.04	.56	15	0	19.6	11	9.3	E	--	---	--	1	2	28	9.2	--
Sault Ste. Marie	721	993.2	1017.1	22	7	14.4	+2.3	42	18	-22	30	0	31	8	79	.85	-1.17	.26	11	0	15.1	23	7.8	E	30	NW	15	--	--	--	7.4	39
Ypsilanti	722	988.2	1017.6	33	21	27.1	----	55	20	-5	30	0	28	20	77	1.55	-----	.46	11	1	13.2	8	11.3	SW	26	WSW	4	1	8	22	8.5	--
MINNESOTA																																
Duluth CO	1126	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	--	----	---	--	---	--	--	--	--	----	--
Duluth	1128	997.3	1018.3	15	-5	5.1	----	33	1	-35	29	0	31	-2	74	.49	-----	.17	7	0	7.2	21	9.0	NW	34	NW	24	--	--	--	6.3	47
Intern'l Falls	1179	972.9	1019.5	11	-11	-.3	-3.4	31	1	-41	29	0	31	-6	77	.39	-.47	.13	8	0	5.0	15	----	---	--	---	--	15	6	12	5.3	--
Minneapolis	830	983.7	1019.8	19	0	9.3	-3.4	40	16	-29	30	0	31	2	76	.44	-.42	.18	8	0	7.1	14	9.7	WNW	33	SE	22	--	--	--	6.3	56
Rochester	1014	980.7	1020.2	18	-4	7.4	-4.1	41	15	-40	30	0	31	2	74	.85	-.25	.30	8	0	12.4	15	8.7	WNW	--	---	--	7	7	17	6.9	--
St. Cloud	1034	979.3	1020.0	16	-8	3.9	-6.4	37	16	-40	30	0	31	-4	72	.35	-.39	.14	10	0	5.5	11	7.6	WNW	--	---	--	9	7	15	5.9	--
St. Paul	703	991.9	1019.9	19	-1	9.0	-3.6	40	16	-32	30	0	31	2	74	.53	-.39	.21	8	0	7.9	11	10.1	NW	*28	SE	22	9	7	15	6.6	--
MISSISSIPPI																																
Jackson	315	1008.5	1020.6	60	38	49.1	+.5	75	19	22	31	0	10	40	74	6.63	+3.69	3.69	15	6	2.4	2	10.0	SSE	34	NW	6	8	10	13	5.9	53
Meridian	294	1007.5	1021.4	61	36	48.7	+3.4	75	13	19	5	0	13	40	76	4.77	-.55	1.37	10	2	T	T	7.9	SSE	--	---	--	10	9	12	5.9	--
Vicksburg	234	1012.2	------	59	40	49.8	+1.6	74	19	26	31	0	7	--	--	8.33	+2.96	2.87	11	4	1.2	1	10.1	---	26	SW	17	9	9	13	6.0	45
MISSOURI																																
Columbia	733	990.2	1019.0	40	21	30.8	+1.5	70	19	-6	29	0	25	21	75	2.30	+.38	1.90	9	1	2.4	2	11.8	S	56	NW	15	--	--	--	6.7	52
Kansas City	741	983.1	1019.3	40	22	30.7	+2.5	70	18	-2	29	0	25	18	64	1.07	-.17	.77	6	0	3.5	3	9.1	S	42	S	22	--	--	--	6.8	54
St. Joseph	809	983.1	1019.4	38	17	27.3	+1.8	69	18	-2	29	0	31	16	70	.65	-.63	.25	7	0	3.3	3	11.1	NNW	35	S	22	9	6	16	6.4	51
St. Louis CO	465	987.6	------	41	25	33.1	+2.0	70	18	-3	29	0	21	--	--	2.21	-.13	.95	10	0	4.5	4	13.0	---	40	SW	18	--	--	--	5.9	49
St. Louis	465	997.6	1018.8	42	24	32.6	+2.8	70	18	-3	29	0	25	23	73	1.67	-.59	.66	10	0	5.9	4	9.6	NW	--	---	--	--	--	--	6.5	--
Springfield	1265	989.9	1018.9	44	23	33.6	+1.3	72	19	-3	29	0	25	22	72	2.39	+.05	1.53	11	0	2.0	1	14.0	SSE	43	SW	17	7	7	17	6.7	32
MONTANA																																
Billings	3568	889.6	1018.6	30	11	20.5	-1.9	50	15	-22	28	0	31	11	70	.64	-----	.21	12	0	9.6	4	12.2	WSW	58	NW	22	9	5	17	6.4	45
Butte	5530	825.6	1022.2	24	-4	10.0	-4.4	44	25	-46	29	0	31	4	71	.92	+.52	.21	13	0	14.3	10	8.4	S	--	---	--	7	3	21	7.2	--
Glasgow CO	2000	941.1	1020.6	18	-5	6.4	-2.6	42	17	-30	28	0	31	-1	70	1.40	+.85	.76	11	0	15.0	15	----	---	--	---	--	11	4	16	6.5	--
Great Falls	3663	885.2	1018.3	27	9	18.2	-5.7	50	15	-25	27	0	31	7	63	.41	-.20	.14	8	0	5.0	5	17.1	SW	57	S	21	5	7	19	7.2	44
Havre CO	2488	925.8	1019.5	21	1	11.0	-1.9	49	15	-26	27	0	31	--	--	.39	-.34	.17	6	0	6.2	5	9.6	---	32	SW	21	8	9	14	6.4	51
Helena	3893	871.7	1020.7	26	8	16.9	-1.9	49	15	-27	29	0	31	8	69	.38	-.18	.16	12	0	5.8	4	6.3	W	45	W	2	5	5	21	7.3	61
Kalispell	2965	910.9	1018.6	28	9	18.9	----	42	25	-22	28	0	31	13	79	1.24	-----	.23	17	0	16.2	9	7.9	S	--	---	--	4	3	24	8.5	--
Miles City	2629	931.6	1019.7	26	5	15.4	----	50	17	-21	28	0	31	10	--	.08	-----	.03	6	0	3.1	1	9.1	WNW	--	---	--	9	8	14	6.2	--
Missoula	3201	901.5	1020.6	27	11	18.9	+.3	47	15	-19	29	0	31	14	81	1.08	+.23	.27	19	0	11.6	4	5.4	ESE	37	SW	15	5	6	25	8.0	23
NEBRASKA																																
Grand Island	1641	950.2	1019.2	33	10	21.4	----	65	18	-9	31	0	30	12	71	.53	-----	.37	6	0	10.9	5	12.2	NNW	--	---	--	7	8	16	6.5	--
Lincoln CO	1184	975.3	------	32	14	22.9	+.1	65	18	-5	29	0	29	--	--	.71	+.07	.24	7	0	8.3	3	8.8	---	34	NW	23	--	--	--	----	73
Lincoln	1180	975.3	1020.1	32	10	21.1	+.3	66	18	-5	29	0	31	12	73	.73	+.09	.26	5	0	8.3	4	9.2	NNW	--	---	--	--	--	--	6.6	--
Norfolk	1554	962.1	1020.6	31	8	19.1	-1.5	61	18	-13	30	0	31	10	71	.12	-.54	.09	2	0	2.1	1	13.1	NNW	--	---	--	--	--	--	6.5	--
North Platte	2783	916.0	1018.6	38	11	24.5	+1.6	69	26	-15	31	0	31	11	64	.20	-.19	.08	6	0	2.1	1	9.8	N	47	NW	26	7	8	16	6.7	46
Omaha	978	978.3	1020.3	31	10	20.3	-.6	63	18	-8	29	0	30	13	74	.66	-.04	.24	4	0	6.1	3	11.2	N	37	NW	20	--	--	--	6.6	47
Scottsbluff	3950	877.8	1019.0	36	10	24.4	-1.7	61	18	-20	31	0	31	10	60	.36	-.02	.14	8	0	8.3	6	8.8	WNW	--	---	--	8	6	17	6.7	--
Valentine CO	2581	923.5	1019.3	32	7	19.7	+.8	60	16	-19	28	0	31	--	--	.05	-.43	.04	3	0	.5	T	8.2	---	28	N	14	5	11	15	6.6	54

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: Station	Pressure: Sea level	Temperature: Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F. or above	Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	No. of days: 01 inch or more	With thunderstorms	Snow, Sleet, Hail: Total	Max. depth on ground	Wind: Average hourly speed	Prevailing direction	Fastest mile: Speed	Direction	Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0—3	4—7	8—10	0—10	%
NEVADA																																
Elko	5075	844.9	1020.4	36	13	24.4	----	50	15	-15	20	0	30	18	78	2.08	-----	1.27	9	0	22.2	14	6.9	SW	--	---	--	7	7	17	6.8	--
Ely	6257	807.7	1020.0	39	11	25.3	+2.4	68	25	-16	31	0	31	--	--	.13	-.87	.04	5	0	1.7	1	11.3	---	42	SE	15	5	8	18	7.1	42
Las Vegas	2162	940.7	1018.1	56	32	43.8	+1.6	71	24	22	31	0	17	22	45	.19	-.43	.16	2	0	T	T	6.4	W	--	---	--	9	7	15	5.7	80
Reno	4404	862.2	1018.7	46	20	33.1	+2.2	59	24	-3	20	0	28	22	66	.98	-.56	.80	6	0	10.5	8	6.2	S	52	S	15	4	8	19	7.5	53
Winnemucca	4299	870.0	1019.7	42	20	30.8	-2.2	60	25	-2	31	0	30	22	69	1.16	+.13	.51	8	0	6.3	4	9.6	---	49	W	17	5	7	19	7.2	37
NEW HAMPSHIRE																																
Concord	339	1006.5	1017.2	36	15	25.2	+6.2	58	4	-8	31	0	29	16	69	2.43	-.57	.73	11	0	12.9	7	6.0	NW	28	NW	30	5	8	18	7.2	60
Mt. Washington	6262	797.2	1018.3	18	-1	8.6	+2.6	37	14	-27	30	0	31	--	77	1.80	-4.13	.28	16	0	14.5	14	45.2	W	*114	WNW	4	2	6	23	8.3	31
NEW JERSEY																																
Atlantic City CO	8	1017.3	1019.3	45	32	38.2	+5.7	62	19	18	9	0	17	--	--	2.57	-.92	.99	9	0	.7	T	17.1	---	54	SE	15	8	7	16	6.2	62
Newark	11	1017.6	1018.9	44	27	35.4	+5.6	64	19	10	31	0	24	24	66	4.06	+.26	1.28	12	0	5.1	3	11.1	SW	45	WSW	15	6	7	18	7.0	--
Trenton CO	56	1012.2	1019.3	43	28	35.6	+5.1	65	19	13	31	0	24	--	--	3.13	-.18	1.05	11	0	2.5	1	9.8	---	34	NW	21	7	8	16	6.7	52
NEW MEXICO																																
Albuquerque	5310	848.0	1016.6	49	25	36.6	+2.5	63	27	5	31	0	27	15	43	.41	+.01	.32	3	0	6.0	3	8.9	N	40	E	29	14	7	10	4.6	75
Clayton	4969	845.9	1017.7	45	17	30.6	-3.4	77	26	-12	31	0	30	15	60	.84	+.58	.41	6	0	8.9	4	15.6	W	--	---	--	12	8	11	5.4	--
Raton	6379	801.9	1017.6	41	10	25.6	----	69	26	-13	31	0	31	10	56	.65	-----	.51	5	0	9.1	7	8.8	NE	--	---	--	7	10	14	5.9	--
Roswell	3611	891.6	1017.8	57	20	38.3	-.9	75	19	4	31	0	29	13	40	.09	-.44	.09	1	0	1.3	1	7.9	SSE	40	NE	2	17	9	5	3.6	75
NEW YORK																																
Albany	277	1014.2	1017.8	34	18	25.9	+5.8	53	20	-8	9	0	28	18	73	2.36	-.04	.75	15	0	9.9	6	9.9	WNW	52	NW	21	3	9	19	7.6	35
Bear Mountain	1300	------	------	36	23	29.5	----	60	19	-2	31	0	25	--	--	4.60	-----	2.03	14	1	8.4	4	----	---	--	---	--	6	11	14	6.3	--
Binghamton CO	858	------	------	38	21	29.5	+5.4	63	20	4	30	0	27	--	--	2.90	+.45	.80	19	0	15.4	8	----	---	26	W	14	2	3	26	8.6	32
Binghamton	828	985.8	1018.2	37	19	28.3	----	62	20	2	30	0	30	20	72	1.88	-----	.69	13	0	11.9	6	6.8	WSW	--	---	--	3	2	26	8.6	--
Buffalo	693	988.8	1017.9	35	22	28.5	+4.6	62	20	5	30	0	26	22	77	2.63	-.67	.99	24	1	13.7	4	14.9	W	57	W	21	1	4	26	8.8	31
New York CO	10	1006.8	------	44	29	36.5	+5.6	63	20	14	30	0	22	--	--	3.38	-.28	1.09	11	0	5.2	4	16.0	---	66	W	21	8	7	16	6.5	53
New York	12	1017.3	1018.9	44	30	36.8	----	64	19	11	31	0	20	26	65	4.27	-----	1.25	10	0	5.4	3	14.5	SW	47	NW	16	8	4	19	6.7	--
Oswego	292	1004.7	1017.6	35	21	27.8	+4.2	59	21	0	31	0	28	--	--	3.55	+.64	.63	21	1	25.5	10	10.9	---	35	W	21	1	6	24	8.7	18
Rochester	543	997.6	1017.5	35	20	27.4	+4.4	58	20	1	31	0	29	22	79	2.89	0	.49	23	1	27.6	8	11.2	W	57	W	21	1	8	22	8.2	17
Syracuse	399	994.9	1017.9	35	18	26.7	+3.9	61	20	-3	31	0	30	20	73	2.73	+.01	.74	22	1	21.1	8	10.1	W	45	W	21	1	7	23	8.7	24
NORTH CAROLINA																																
Asheville CO	2203	------	------	49	29	38.7	+3.3	68	20	15	9	0	22	--	--	1.07	-2.03	.35	10	0	.9	T	----	---	33	NW	7	9	5	17	6.6	48
Asheville	2093	945.8	1022.0	--	--	----	----	--	--	--	--	--	--	29	77	-----	-----	----	--	--	----	--	7.9	NNW	--	---	--	--	--	--	---	--
Charlotte CO	741	992.9	------	53	34	43.5	+2.3	66	29	21	9	0	15	--	--	1.48	-2.52	.42	9	0	.0	0	----	---	27	S	4	10	7	14	6.0	52
Charlotte	753	993.2	1021.7	53	31	42.3	+2.8	71	20	17	9	0	18	31	68	1.47	-2.53	.41	7	0	.0	0	8.4	SW	--	---	--	10	7	14	6.0	--
Greensboro	891	989.2	1021.9	51	28	39.7	-.3	70	20	11	9	0	22	29	70	1.60	-1.69	.47	10	0	T	T	9.6	SW	29	SW	20	12	3	16	6.1	54
Hatteras	4	1021.3	1021.7	55	42	48.5	+1.4	65	20	28	9	0	3	42	77	1.04	-3.38	.45	9	0	.0	0	13.7	SW	34	SW	27	10	6	15	6.2	62
Raleigh CO	400	------	------	55	33	44.1	+3.0	73	20	19	9	0	16	--	--	1.69	-1.97	1.05	8	0	T	0	7.5	---	25	SW	15	12	10	9	4.9	57
Raleigh	438	1005.4	1021.5	55	32	43.1	----	74	20	15	9	0	20	30	66	1.57	-----	.66	9	0	T	T	8.8	SW	--	---	--	12	8	11	5.3	--
Wilmington CO	6	1021.0	1022.4	58	40	49.1	+2.6	73	20	24	9	0	6	--	--	.45	-2.84	.24	5	0	.0	0	10.1	---	43	SW	15	8	11	12	5.9	50
Wilmington	30	1021.3	1022.2	--	--	----	----	--	--	--	--	--	--	40	--	-----	-----	----	--	--	----	--	6.6	SW	--	---	--	--	--	--	---	--
Winston-Salem	967	985.4	1021.7	50	31	40.4	+1.9	69	20	16	9	0	20	26	59	1.50	-1.86	.36	9	0	T	T	10.3	WSW	--	---	--	11	5	15	5.9	--
NORTH DAKOTA																																
Bismarck	1653	956.3	1021.2	14	-9	2.9	-3.4	43	17	-37	29	0	31	-4	76	.55	+.10	.18	11	0	8.4	9	8.6	WNW	47	W	22	11	5	15	5.9	75
Devils Lake CO	1471	963.1	1021.0	9	-9	-.5	-2.3	37	16	-36	29	0	31	--	--	.69	+.22	.26	11	0	9.4	13	8.8	---	31	NW	23	--	--	--	4.9	65
Fargo	895	983.1	1020.2	11	-8	1.1	-2.7	38	16	-36	29	0	31	-6	73	.45	-.22	.16	12	0	5.7	9	12.5	NNW	44	W	23	--	--	--	5.1	63
Williston CO	1877	948.2	1020.2	15	-3	5.8	-.6	42	17	-34	29	0	31	-2	72	.75	+.21	.34	8	0	7.9	9	6.8	---	35	W	22	--	--	--	6.3	55
OHIO																																
Akron	1210	972.6	1018.7	35	22	28.2	+.6	60	20	5	30	0	26	23	80	3.09	+.49	.85	17	0	13.0	5	11.2	S	--	---	--	2	3	26	8.6	--
Cincinnati CO	553	995.9	------	43	29	35.7	+3.4	65	18	10	30	0	20	--	--	6.22	+2.74	1.77	13	0	9.7	5	14.1	---	56	W	20	--	--	--	---	36
Cincinnati	871	986.5	1019.2	40	25	32.6	----	64	19	5	8	0	21	26	76	6.65	-----	1.68	15	0	12.8	4	12.6	S	--	---	--	4	6	21	7.8	--
Cleveland CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	--	---	--	--	--	--	---	--
Cleveland	787	989.5	1018.2	36	24	29.9	+5.2	62	20	5	30	0	26	24	79	3.72	+1.21	1.01	21	0	17.5	7	13.2	S	45	W	20	3	4	24	8.3	24
Columbus CO	724	------	------	39	26	32.4	+3.8	62	20	5	8	0	24	--	--	3.80	+.74	1.21	12	0	3.8	2	11.8	---	40	W	21	3	7	21	8.2	37
Columbus	815	988.2	1019.1	39	24	31.4	+4.5	62	20	3	9	0	25	25	77	4.50	+1.13	1.24	14	0	6.2	3	13.2	S	32	W	21	2	4	25	8.4	--
Dayton	1002	981.4	1018.9	36	23	29.5	+1.8	61	20	-4	8	0	26	25	81	3.88	+.65	1.26	14	0	15.1	6	14.5	S	47	SW	20	3	6	22	8.1	40
Sandusky	603	994.6	------	36	24	30.3	+4.0	63	20	5	30	0	24	--	--	2.37	+.11	.37	17	0	12.7	5	10.1	---	34	SW	20	3	5	23	8.1	35
Toledo	621	993.9	1018.0	34	22	27.8	+3.3	60	20	0	30	0	26	23	81	2.16	0	.62	12	0	12.2	4	12.4	SSW	42	NW	21	2	6	23	8.4	25
Youngstown	1178	974.3	1018.4	36	22	28.8	+2.1	61	20	4	30	0	26	22	78	2.96	+.51	.70	20	0	11.3	3	11.6	SW	*47	WSW	21	3	4	24	8.4	--
OKLAHOMA																																
Oklahoma City CO	1254	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	--	---	--	--	--	--	---	--
Oklahoma City	1254	971.2	1019.2	50	27	38.9	+2.5	73	19	3	29	0	21	22	61	1.52	+.33	1.04	5	1	2.3	1	17.8	N	47	S	22	--	--	--	5.3	--
Tulsa	672	993.9	1018.8	50	27	38.7	+3.4	75	19	4	29	0	22	23	61	2.07	+.39	1.01	6	1	1.0	1	13.7	N	41	S	26	--	--	--	5.8	57
OREGON																																
Baker	3369	------	------	--	--	----	----	--	--	--	--	--	--	18	--	-----	-----	----	--	--	----	--	----	SE	--	---	--	--	--	--	---	--
Baker CO	3446	895.4	1020.4	33	17	25.3	+.3	49	15	-14	29	0	31	--	--	1.18	-.21	.30	11	0	14.2	7	6.2	---	47	SW	2	4	7	20	7.8	32
Burns CO	4140	872.3	1019.3	34	14	23.9	-.7	47	26	-9	30	0	31	18	76	2.10	+.55	.47	13	0	28.0	11	----	---	--	---	--	7	3	21	7.4	--
Eugene	364	1004.1	1017.9	47	34	40.6	----	63	24	14	30	0	9	36	86	8.85	-----	1.62	21	0	1.4	T	10.8	S	--	---	--	2	4	25	8.5	--
Meacham	4050	874.4	1018.7	30	18	24.0	----	46	24	-11	29	0	31	20	84	4.60	-----	1.00	23	0	38.9	21	7.9	ESE	--	---	--	3	2	26	8.7	--
Medford	1314	970.9	1019.7	46	32	38.9	+1.0	55	15	15	30	0	15	33	82	4.05	+1.74	1.67	19	0	1.5	1	6.6	N	*40	SE	20	3	0	28	9.0	--
Pendleton	1489	963.8	1018.8	41	27	33.7	+2.1	59	24	-4	29	0	21	26	75	1.99	+.21	.50	13	0	3.3	3	10.3	SSE	--	---	--	2	5	24	8.4	--
Portland CO	30	------	------	45	36	40.3	+.9	58	24	18	25	0	5	--	--	9.58	+2.98	1.62	22	0	T	T	----	---	--	---	--	--	--	--	---	--
Portland	21	1016.3	1017.6	45	35	39.8	+2.3	58	24	16	30	0	7	33	78	7.71	-----	1.27	24	0	.2	T	10.9	SE	54	S	15	3	3	25	8.4	33
Roseburg CO	479	1000.0	1019.0	49	36	42.2	+1.0	63	24	16	30	0	8	--	--	6.85	+1.54	1.85	21	0	4.4	4	4.4	---	24	S	2	2	3	26	8.7	20
Salem	195	1010.2	1017.5	45	35	39.8	+.2	57	24	16	30	0	7	35	84	9.49	+4.06	1.57	22	0	.1	T	10.2	S	--	---	--	3	1	27	8.7	--
Sexton Summit CO	3836	------	------	37	27	32.1	----	49	24	12	29	0	27	--	--	6.54	-----	1.31	20	0	32.7	14	----	---	--	---	--	3	4	24	8.5	--
Troutdale	29	------	------	44	34	39.1	----	58	24	19	28	0	5	33	80	9.84	-----	1.70	25	0	.2	T	13.1	E	*45	S	15	3	2	26	8.5	--
PENNSYLVANIA																																
Allentown	381	1005.1	1019.6	39	23	31.2	+1.9	59	19	10	31	0	28	24	76	4.05	+.55	1.25	12	0	7.0	4	9.2	WNW	--	---	--	4	8	19	7.3	--
Curwensville	2215	------	------	35	18	26.7	----	60	20	4	30	0	27	21	81	5.79	-----	1.14	19	2	27.6	12	12.2	W	35	WSW	4	2	1	28	8.9	--
Erie CO	655	------	------	37	25	31.1	+4.3	63	20	8	30	0	26	--	--	3.59	+.82	1.02	20	0	18.2	6	9.9	---	33	SW	20	1	6	24	8.5	19
Harrisburg	335	1006.4	1019.9	41	26	33.5	+4.5	68	20	13	9	0	25	23	69	3.65	+.56	1.27	11	1	4.4	3	7.5	WNW	40	SW	21	4	9	18	7.3	44
Park Place	1932	------	------	35	21	27.7	----	57	20	3	31	0	28	--	--	4.05	-----	1.80	14	0	10.6	6	----	---	--	---	--	5	6	20	7.7	--
Philadelphia CO	26	------	------	45	30	37.5	+4.9	66	20	16	31	0	21	--	--	4.14	+.84	1.40	8	0	2.9	2	----	---	29	SW	15	6	11	14	6.6	53
Philadelphia	13	1018.3	1019.5	44	28	36.0	+4.9	65	20	17	31	0	25	27	70	3.83	+.53	1.38	12	0	2.4	1	10.1	WNW	45	WNW	21	5	8	18	7.2	--
Pittsburgh CO	----	------	------	43	28	35.4	+4.7	70	20	10	30	0	23	--	--	4.32	+1.27	1.17	18	--	7.3	--	----	---	--	---	--	--	--	--	---	26
Pittsburgh	1248	987.8	1018.9	40	26	33.0	+4.8	68	20	8	30	0	26	24	71	4.90	+1.85	1.42	17	0	12.4	7	11.1	S	40	SW	21	2	5	24	8.4	35
Reading CO	266	1007.1	1019.6	43	28	35.4	+4.3	68	20	14	31	0	21	--	--	3.84	+.27	1.58	12	0	4.9	3	11.7	---	45	W	21	5	6	20	7.3	47
Scranton CO	746	988.5	1018.6	39	24	31.3	+4.7	63	20	7	31	0	25	--	--	2.77	-.26	.97	13	0	8.2	5	6.8	---	31	SE	23	5	10	16	7.1	32
Williamsport	527	999.7	1019.1	38	21	29.7	+2.1	61	20	1	9	0	29	20	69	3.71	+.89	1.30	13	1	12.2	6	9.7	W	66	W	21	3	6	22	7.8	--
RHODE ISLAND																																
Block Island	26	------	------	42	29	35.7	+4.7	56	4	10	31	0	21	--	--	3.71	-.07	1.27	12	1	4.4	1	----	---	--	---	--	8	5	18	6.7	--
Providence CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	----	--	--	----	--	----	---	--	---	--	--	--	--	---	--
Providence	55	1011.9	1018.0	41	25	33.1	+7.4	62	19	4	31	0	23	24	69	4.50	+.80	1.68	11	0	7.9	3	10.3	NW	43	SW	4	8	5	18	7.0	50

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F. or above	No. of days: Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	No. of days: 01 inch or more	No. of days: With thunderstorms	Snow, Sleet, Hail: Total	Snow, Sleet, Hail: Max. depth on ground	Wind: Average hourly speed	Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M p. h.			0–4 3	4–8 7	8–10 10	0–10	%
SOUTH CAROLINA																																
Charleston CO	9	1020.3	------	59	42	50.8	+0.9	72	19	29	26	0	4	--	--	0.89	-2.13	0.35	8	0	0.0	0	----	---	31	S	15	11	9	11	5.2	64
Charleston	41	1021.0	1022.6	62	37	49.2	+1.5	75	20	21	10	0	10	40	74	.76	-2.26	.28	5	0	.0	0	8.5	SW	--	---	--	9	10	12	5.6	--
Columbia CO	352	1009.5	------	57	38	47.2	+1.2	73	20	24	19	0	8	--	--	1.46	-1.96	.48	7	0	.0	0	----	---	33	SW	15	12	8	11	5.1	56
Columbia	217	1013.5	1022.1	58	34	45.8	----	75	20	18	10	0	12	35	72	1.50	-----	.60	8	0	.0	0	6.9	SW	--	---	--	13	6	12	5.3	--
Florence	146	1016.3	1022.0	59	35	46.8	----	75	20	20	9	0	12	35	70	.94	-----	.30	7	0	.0	0	8.3	SSW	--	---	--	8	11	12	5.6	--
Greenville	1006	983.1	1021.4	51	33	42.3	+2.0	67	20	20	9	0	14	31	70	1.59	-3.28	.50	13	0	T	T	8.0	SW	38	SW	15	11	3	17	6.1	56
Spartanburg	801	991.2	1022.1	52	32	41.9	-0.2	69	20	18	9	0	14	32	72	1.65	-2.58	.72	10	0	T	T	9.0	SW	*48	NW	14	12	3	16	6.0	--
SOUTH DAKOTA																																
Huron	1282	970.5	1020.6	22	0	11.0	-.3	46	22	-23	29	0	31	3	75	.24	-.32	.17	5	0	4.6	4	10.6	NW	40	NW	23	7	12	12	6.3	48
Rapid City	3215	967.8	1019.3	33	9	20.8	+.8	55	16	-25	29	0	31	7	63	.12	-.33	.07	4	0	1.2	1	11.1	NNW	49	NW	14	7	8	16	5.5	61
Sioux Falls	1420	965.5	1020.4	24	2	13.1	-2.7	52	16	-20	7	0	31	4	73	.20	-.47	.18	3	0	4.6	4	10.5	NW	*38	NW	15	8	8	15	6.3	--
TENNESSEE																																
Bristol	1519	976.6	1020.9	50	28	38.7	-.2	68	3	11	9	0	23	30	73	3.24	-.41	.71	17	0	1.4	T	7.9	NE	--	---	--	3	9	19	7.4	--
Chattanooga	670	992.9	1021.4	53	32	42.4	+3.3	68	19	16	26	0	19	33	71	4.59	-.57	1.94	16	2	T	T	7.2	S	44	W	25	8	5	18	6.8	35
Knoxville	949	984.4	1021.1	52	32	41.9	+4.2	69	19	16	9	0	20	33	74	5.02	-.36	1.31	16	1	T	0	10.4	SW	38	SW	20	8	8	17	7.1	38
Memphis CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	----	----	---	--	---	--	--	--	--	----	--
Memphis	263	1005.2	1020.1	53	33	42.7	+3.0	71	19	14	30	0	17	34	73	12.21	+7.26	3.50	12	5	4.1	4	13.8	S	37	NW	15	10	2	19	6.5	44
Nashville	577	1000.0	1020.4	49	31	40.2	+1.6	69	19	15	8	0	17	33	77	10.54	+5.78	3.83	15	2	7.7	5	10.1	S	34	W	20	5	5	21	7.7	30
TEXAS																																
Abilene	1752	956.3	1018.4	58	31	44.5	+1.4	82	19	10	29	0	17	18	42	.05	-.91	.03	2	0	.5	T	16.0	S	52	S	9	12	7	12	5.1	67
Amarillo	3590	888.6	1017.3	49	21	34.8	+1.7	76	26	-7	31	0	28	17	58	.38	-.13	.15	5	0	4.3	3	13.7	NNE	43	S	11	--	--	--	4.7	66
Austin	515	997.6	1019.7	64	38	50.8	+1.3	82	18	16	30	0	8	33	58	.51	-1.56	.28	6	1	.6	1	10.4	S	38	NW	2	--	--	--	4.9	67
Big Spring	2533	928.5	1019.1	58	28	42.8	-1.7	75	19	8	29	0	19	18	43	.06	-.45	.03	2	0	.5	1	13.6	S	--	---	--	15	6	10	4.5	--
Brownsville	16	1015.9	1017.9	72	52	61.8	+2.0	83	20	25	30	0	3	50	74	.68	-1.13	.32	5	1	.0	0	13.4	SSE	40	NW	14	--	--	--	5.7	50
Corpus Christi	40	1018.6	1019.2	70	45	57.5	+3.5	84	18	22	30	0	4	47	76	.55	-1.01	.35	7	1	T	T	13.8	SSE	45	N	14	13	5	13	5.2	61
Dallas	487	1000.7	1019.3	58	34	46.3	+.9	82	19	13	29	0	12	30	59	2.00	-.39	.96	7	3	2.1	2	11.4	S	42	S	9	--	--	--	5.3	55
Del Rio CO	957	983.4	1018.3	65	39	51.9	-.4	81	19	19	30	0	5	30	48	T	-.56	T	0	0	T	T	8.3	---	38	NW	2	18	7	6	3.6	72
El Paso	3920	885.2	1016.0	58	30	44.2	+.6	70	27	18	31	0	20	16	35	.33	-.13	.32	3	0	3.8	4	10.2	S	43	W	17	--	--	--	3.7	66
Fort Worth	688	995.3	1019.9	58	34	46.0	+1.6	83	19	11	29	0	13	27	54	1.39	-.66	.48	5	3	1.8	2	15.9	S	49	WNW	13	--	--	--	5.2	--
Galveston CO	7	------	------	62	49	55.4	+1.6	72	20	21	31	0	2	--	--	3.45	+.04	1.32	12	0	T	T	14.1	---	40	NW	14	--	--	--	---	50
Galveston	7	1019.3	1019.8	62	48	55.2	+1.4	74	20	22	31	0	2	49	85	3.86	+.45	1.17	12	5	T	T	11.9	SE	--	---	--	12	8	11	5.2	--
Houston CO	41	1014.9	------	64	45	54.8	+2.1	79	18	19	31	0	4	--	--	3.55	-.15	1.62	11	3	T	T	11.7	---	36	NW	6	--	--	--	5.4	65
Houston	41	1017.6	1020.2	65	42	53.7	+1.4	81	18	19	31	0	5	43	75	5.37	+1.68	2.27	11	5	T	T	13.3	S	--	---	--	11	7	13	5.6	--
Laredo	500	1003.4	1018.2	71	45	57.9	+2.2	85	18	23	31	0	4	38	56	.08	-1.04	.04	4	1	T	T	10.6	SSE	--	---	--	--	--	--	4.8	--
Lubbock	3238	901.5	1017.8	53	22	37.5	-2.5	72	26	3	31	0	29	17	51	.32	-.17	.31	2	1	3.5	4	10.8	WSW	34	N	31	12	11	8	4.7	--
Palestine CO	491	1001.4	1019.6	59	39	48.8	+.6	77	19	15	31	0	9	--	--	3.16	-.28	2.28	4	6	2.1	2	9.4	---	26	W	14	12	7	12	5.3	57
Port Arthur CO	5	1018.3	------	63	46	54.5	+.7	75	23	21	31	0	4	--	--	5.14	+1.44	2.12	14	5	.6	1	14.6	---	37	NW	14	--	--	--	5.2	59
Port Arthur	5	1019.0	1019.5	64	42	53.1	----	78	18	22	31	0	7	46	65	5.36	-----	1.80	14	5	.8	T	11.8	SSE	--	---	--	11	16	14	5.6	--
San Angelo	1903	950.9	1019.0	50	31	45.2	-.7	80	19	10	25	0	19	19	41	.53	-.87	.02	2	0	.4	T	9.3	SSW	30	W	2	14	10	7	4.6	--
San Antonio	782	990.9	1019.3	65	36	50.5	-1.5	81	18	18	30	0	11	32	57	.25	-1.21	.12	4	2	.8	1	10.0	N	43	NW	2	--	--	--	4.8	55
Victoria	109	1015.2	1019.4	68	43	55.4	.0	83	18	23	30	0	4	41	68	1.66	-.81	1.21	7	1	T	1	10.5	SSE	51	NW	13	14	2	15	5.3	--
Waco	504	1000.3	1018.8	61	35	47.7	-.3	80	18	16	29	0	12	31	58	1.30	-.89	.83	6	5	.8	1	10.7	S	--	---	--	12	5	14	5.4	--
Wichita Falls	1027	981.4	1018.9	56	28	42.0	-.9	79	19	8	29	0	21	22	52	.35	-.77	.27	3	0	.6	1	13.1	N	29	N	6	--	--	--	5.2	--
UTAH																																
Milford	5029	846.6	1021.1	40	13	26.8	-.5	61	26	-24	31	0	30	18	70	.38	-.32	.22	3	0	10.0	7	10.6	S	--	---	--	6	7	18	6.6	--
Salt Lake City CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	----	----	---	--	---	--	--	--	--	----	--
Salt Lake City	4222	872.0	1019.9	38	21	29.6	+2.1	53	15	3	31	0	29	21	74	1.69	+.71	.81	12	0	15.7	9	7.1	SSE	41	SE	18	6	7	18	7.1	37
VERMONT																																
Burlington	398	1001.7	1017.1	31	14	22.3	+3.5	52	21	-13	30	0	29	16	73	1.72	-.04	.61	16	0	12.6	8	11.9	SSW	40	NW	21	3	6	22	8.2	21
VIRGINIA																																
Cape Henry	16	1020.0	1020.7	54	36	44.7	+4.5	74	20	25	9	0	14	--	--	1.38	-1.77	.53	9	1	1.0	1	----	---	39	NW	8	8	15	8	5.4	61
Lynchburg	947	985.8	1020.5	48	28	37.8	+2.5	68	19	10	9	0	24	26	66	1.79	-1.64	.47	11	0	1.7	2	10.6	SSW	38	S	4	9	7	15	5.9	55
Norfolk CO	11	1017.3	------	55	37	45.5	+4.9	74	20	22	9	0	11	--	--	1.61	-1.49	.80	7	1	.8	1	----	---	29	NW	16	--	--	--	----	76
Norfolk	25	1020.0	1021.3	54	34	44.2	+6.0	74	20	22	9	0	14	33	67	1.68	-1.42	.75	7	1	.7	1	12.3	S	--	---	--	9	10	12	5.8	--
Richmond CO	16	------	------	52	31	42.4	+4.5	74	20	15	9	0	19	--	--	1.20	-2.01	.48	8	--	.1	T	----	---	--	---	--	--	--	--	----	--
Richmond	160	1015.2	1020.7	52	30	40.8	----	74	20	13	9	0	21	29	66	1.08	-----	.51	7	0	T	T	8.8	SSW	29	SW	3	10	5	15	6.3	59
Roanoke	1192	977.3	1020.6	49	28	38.5	+.7	69	20	15	9	0	23	26	64	1.03	-2.07	.26	9	0	.4	T	11.8	NW	--	---	--	6	10	15	6.5	--
Urbanna	31	1020.0	1020.9	53	32	42.4	----	74	20	14	9	0	17	--	--	2.18	-----	1.10	10	0	T	T	----	---	--	---	--	8	10	13	6.0	--
Washington CO	----	------	------	48	31	39.8	+6.4	71	20	18	9	0	20	--	--	2.42	-1.13	.77	10	0	.5	T	----	---	34	NW	21	--	--	--	----	55
Wash. Nat'l. AP	14	1016.3	1020.5	48	31	39.3	+5.9	71	19	18	9	0	20	26	61	2.18	-1.37	.71	10	0	.8	1	11.8	SSW	44	NW	21	6	8	17	6.9	49
WASHINGTON																																
Ellensburg	1727	953.9	1018.5	34	18	24.5	-1.0	46	1	-15	30	0	29	21	86	2.01	+.66	.66	14	0	23.4	14	6.4	WNW	--	---	--	5	3	23	8.0	--
Kelso	17	------	------	44	33	38.5	----	55	24	31	29	0	10	--	--	2.69	-----	1.89	23	0	T	T	----	---	--	---	--	3	3	25	8.3	--
North Head CO	134	1007.1	1014.9	46	36	41.3	-.8	55	15	21	28	0	5	--	--	10.86	+2.10	1.75	25	0	.9	T	18.2	---	78	W	2	3	5	23	8.3	23
Olympia	190	1008.5	1015.9	43	31	37.2	----	56	24	9	30	0	16	34	87	10.59	-----	1.69	23	0	.9	T	6.9	S	--	---	--	2	4	25	8.6	--
Port Angeles	11	1013.9	1015.1	44	36	39.9	----	60	24	20	27	0	5	34	80	5.30	-----	1.28	16	0	T	0	10.6	WSW	--	---	--	2	5	24	8.4	--
Seattle	14	1014.9	1016.1	--	--	----	----	--	--	--	--	--	--	33	78	-----	-----	-----	--	--	----	--	10.6	S	--	---	--	--	--	--	----	--
Seattle CO	14	------	------	45	35	40.3	-.5	57	24	20	28	0	5	--	--	6.13	+1.19	1.34	19	0	T	T	13.1	---	63	SW	15	3	2	26	8.5	25
Spokane	2357	947.9	1017.9	33	22	27.1	-.4	46	15	-3	29	0	30	21	80	3.16	+1.00	.69	18	0	29.2	9	10.6	SSW	50	SW	15	5	5	21	7.5	29
Stampede Pass CO	3960	874.4	1016.7	26	18	22.0	----	41	24	-3	29	0	31	--	--	17.30	-----	3.58	25	0	121.6	122	13.1	---	61	E	28	3	0	28	8.9	--
Stevenson CO	319	------	------	41	32	36.7	----	54	24	15	29	0	13	--	--	16.38	-----	2.44	20	0	3.2	1	----	---	--	---	--	1	3	27	9.2	--
Tacoma CO	127	1009.1	1016.3	44	34	38.7	-.1	56	24	17	30	0	6	--	--	5.57	-.57	1.21	22	0	.6	T	10.6	---	52	S	15	4	5	22	8.0	29
Tatoosh CO	101	1010.5	1013.7	44	37	40.5	-.7	50	24	24	28	0	5	35	81	16.67	+4.84	3.19	23	0	.4	T	23.0	E	70	SW	16	3	3	25	8.5	25
Walla Walla	1200	------	------	--	--	----	----	--	--	--	--	--	--	27	--	-----	-----	-----	--	--	----	--	----	SSE	--	---	--	--	--	--	----	--
Walla Walla CO	949	982.1	1019.0	41	30	35.5	+2.8	61	24	4	29	0	13	--	--	1.79	-.17	.64	13	0	1.5	1	6.8	---	42	SW	15	3	5	23	8.4	21
Yakima	1058	978.0	1018.3	38	19	28.4	+1.0	51	2	-7	30	0	31	22	79	1.87	+.96	.60	12	0	13.9	6	6.0	W	--	---	--	7	4	20	7.7	--
Seattle-Tacoma AP	379	1001.0	1015.7	42	32	37.0	----	54	24	11	30	0	16	31	80	6.80	-----	1.22	22	0	5.7	1	13.6	SSW	--	---	--	2	2	27	8.8	--
WEST VIRGINIA																																
Charleston	950	983.4	1019.8	49	29	38.8	----	74	20	11	9	0	23	28	69	5.18	-----	1.57	16	0	2.5	1	9.4	WSW	*45	WSW	20	3	5	23	8.1	--
Elkins	1969	948.5	1020.4	46	21	33.3	+3.3	70	20	2	9	0	27	26	76	3.98	+.20	1.33	16	0	7.5	2	6.6	WNW	50	W	21	3	6	22	8.4	37
Huntington	565	------	------	50	31	40.6	+9.9	72	20	11	9	0	18	--	--	5.85	+1.88	1.25	15	0	7.1	2	----	---	--	---	--	--	--	--	----	--
Parkersburg CO	615	------	------	45	27	36.1	+3.6	71	20	8	9	0	24	--	--	5.81	+2.23	1.80	17	0	7.6	3	6.8	---	25	W	20	4	4	23	8.1	35
Parkersburg	837	------	1019.7	--	--	----	----	--	--	--	--	--	--	26	--	-----	-----	-----	--	--	----	--	10.4	SSW	--	---	--	--	--	--	----	--
Petersburg	1013	981.4	------	48	24	36.0	----	72	20	5	9	0	25	--	--	2.57	-----	1.18	8	0	2.6	1	----	---	--	---	--	5	7	19	7.5	--
WISCONSIN																																
Green Bay	689	991.2	1018.5	21	2	11.6	-4.1	39	18	-31	30	0	31	3	68	.87	-.67	.24	10	0	12.2	15	10.6	SW	47	SW	1	7	8	16	6.5	49
La Crosse CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	--	----	---	--	---	--	--	--	--	----	--
La Crosse	569	953.2	1019.6	21	1	11.0	-3.5	45	18	-37	30	0	31	4	75	1.05	-.03	.38	8	0	14.5	15	8.7	NW	*35	NNW	20	--	--	--	7.1	--
Madison CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	--	----	---	--	---	--	--	--	--	----	--
Madison	857	985.4	1019.1	24	4	13.7	-3.0	43	17	-37	30	0	31	7	76	1.44	+.06	.39	11	0	19.7	17	11.4	NW	33	N	20	--	--	--	7.3	45
Milwaukee	674	991.2	1018.1	26	11	18.6	-.8	43	17	-24	30	0	31	13	77	2.38	+.60	.52	12	0	27.1	22	12.2	WNW	39	S	22	6	4	21	7.5	35
Milwaukee CO	----	------	------	--	--	----	----	--	--	--	--	--	--	--	--	-----	-----	-----	--	--	----	--	----	---	--	---	--	--	--	--	----	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: Station	Pressure: Sea level	Temperature: Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F. or above	Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	No. of days: .01 inch or more	With thunderstorms	Snow, Sleet, Hail: Total	Max. depth on ground	Wind: Average hourly speed	Prevailing direction	Fastest mile: Speed	Direction	Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
WYOMING																																
Casper	5322	833.7	1017.5	31	10	20.5	-5.5	50	26	-23	28	0	30	8	61	.27	-.33	.09	7	0	6.2	5	15.5	SW	--	---	--	7	8	16	6.2	--
Cheyenne	6139	807.0	1018.1	33	12	22.6	-2.9	57	26	-27	31	0	30	7	53	.69	+.27	.36	8	0	9.6	6	15.6	W	54	W	21	7	8	16	6.5	55
Lander	5563	832.4	1019.0	33	8	20.5	+2.2	57	25	-20	29	0	31	6	56	.18	-.38	.06	6	0	3.2	2	7.6	---	59	SW	15	9	12	10	5.5	58
Rock Springs	6741	790.7	1021.1	27	8	17.8	+.4	44	25	-18	31	0	31	10	71	.58	+.13	.27	11	0	11.0	5	17.7	W	*51	W	14	2	16	13	6.9	--
Sheridan	3942	882.5	1019.6	32	7	19.5	+.2	54	15	-30	29	0	31	9	67	.55	-.30	.19	9	0	11.3	4	8.4	NW	50	NW	14	8	8	15	6.2	54
PACIFIC AREA																																
Canton Island	12	1008.5	1009.1	88	78	82.8	----	92	19	75	3	8	0	74	79	2.40	-----	1.99	11	0	.0	0	----	---	--	---	--	8	20	3	4.8	--
Hilo	26	1016.3	1017.6	78	63	70.8	----	84	21	60	25	0	0	64	82	9.33	-----	1.38	18	0	.0	0	5.2	SW	22	ENE	16	5	11	15	6.9	53
Honolulu CO	12	------	------	77	68	72.5	+1.6	80	4	62	26	0	0	--	--	1.75	-2.03	.77	12	0	.0	0	9.4	---	52	NE	14	15	11	5	4.0	78
Honolulu	7	1017.3	1018.0	79	67	73.0	----	82	3	60	26	0	0	63	74	1.21	-----	.50	8	0	.0	0	10.7	ENE	---	---	--	19	6	6	4.1	--
Lihue	115	1012.5	1017.6	77	65	70.9	----	80	29	55	24	0	0	64	80	3.02	-----	1.04	17	0	.0	0	10.7	W	--	---	--	6	17	8	5.7	54
Wake Island	11	1014.6	1014.9	81	73	77.0	----	83	9	69	29	0	0	70	78	2.16	-----	.67	16	0	.0	0	10.9	E	--	---	--	14	11	6	4.5	--
PUERTO RICO																																
San Juan	9	1013.9	1016.4	80	69	74.6	----	86	16	65	13	0	0	67	76	3.29	-----	1.25	17	0	.0	0	11.3	ESE	32	E	21	5	19	7	5.4	43
ALASKA												‡																				
Anchorage	134	1002.0	1007.1	14	-4	5.1	-6.5	37	1	-32	18	0	31	-1	66	.71	-.13	.29	7	0	12.2	18	5.0	NE	56	S	8	12	4	15	5.8	46
Annette Island	110	1005.3	1009.4	36	27	31.8	-2.4	45	7	15	27	0	25	25	75	8.56	-.85	1.50	20	0	18.8	8	13.2	ESE	--	---	--	3	3	25	8.5	--
Barrow	22	1021.0	1021.7	-20	-35	-27.8	-11.7	7	27	-53	15	0	31	-38	53	T	-.16	T	0	0	T	9	9.2	SE	29	SE	21	22	7	2	2.5	--
Bethel	21	1008.5	1010.2	4	-1	1.6	-5.5	38	28	-45	14	0	31	-8	77	.77	-.12	.42	9	0	8.0	10	8.9	N	*28	NNE	24	9	5	17	6.4	--
Cordova	40	1002.7	1004.4	25	9	17.0	-8.8	41	5	-18	15	0	28	15	84	6.55	-1.71	2.47	14	0	46.2	31	3.2	E	--	---	--	4	5	22	8.0	--
Fairbanks	436	997.6	1016.6	-17	-30	-23.2	-13.5	11	6	-54	19	0	31	-28	75	.57	-.41	.40	6	0	6.7	33	----	N	6	W	31	5	7	19	7.4	29
Galena	120	1011.2	1016.3	-16	-31	-23.9	-14.1	12	27	-64	15	0	31	-29	65	.81	+.14	.27	9	0	10.6	25	3.2	N	*35	ESE	26	15	3	13	5.0	--
Gambell	25	1015.9	1016.9	6	-5	.5	-3.6	30	28	-20	11	0	31	-4	82	.42	-.49	.32	4	0	4.2	5	22.4	NNE	50	N	7	14	3	14	5.3	--
Juneau	15	1009.7	1010.6	24	13	18.5	-6.7	40	6	-8	28	0	29	14	78	2.09	-1.97	.60	16	0	9.5	7	----	N	38	SE	12	3	2	26	8.4	27
Kotzebue	10	1017.8	1018.3	-11	-22	-16.4	-9.2	23	28	-40	17	0	31	-23	73	.25	-.24	.17	4	0	2.5	16	16.3	SSW	--	---	--	26	4	1	3.1	--
McGrath	334	1000.0	1013.9	-10	-24	-16.9	-10.2	17	2	-58	18	0	31	-19	80	.89	-.29	.28	13	0	27.6	26	2.4	NW	*25	NNW	13	10	4	17	6.3	--
Nome	13	1014.9	1015.6	1	-15	-6.7	-10.1	30	30	-31	12	0	31	-12	75	.13	-.96	.10	4	0	1.3	15	----	N	47	E	31	17	5	9	4.1	--
Northway	1713	949.9	1018.6	-20	-35	-27.4	-13.0	4	5	-56	15	0	31	-33	68	.13	-.47	.11	3	0	1.7	10	----	NW	--	---	--	7	3	21	6.9	--
St. Paul Island	22	1004.7	1005.8	28	20	24.3	.2	38	29	2	12	0	27	20	80	1.78	-.35	----	23	0	11.4	6	----	---	--	---	--	1	2	28	9.4	--
Umiat	337	1011.2	1029.8	-29	-45	-37.3	-19.3	13	26	-62	16	0	31	-41	70	.18	-.04	.05	7	0	1.8	16	6.4	W	--	---	--	©11	©3	©3	#3.2	--
Wales	9	1018.6	1019.3	-2	-14	-8.3	-8.6	19	23	-27	15	0	31	--	--	.04	-.71	.04	2	0	1.0	25	----	---	--	---	--	17	10	10	5.1	--
Yakutat	28	1005.1	1006.3	39	16	22.6	-5.8	40	6	-4	28	0	29	15	72	4.76	-6.80	1.35	17	0	44.9	23	9.4	E	*45	ESE	12	4	4	23	7.9	--

Data from airport unless otherwise specified. CO indicates data from city office.
* Data entered in column headed "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
† Other dates also.
‡ Number of days Max. 70°F. or above for Alaskan Stations.
© Sun below horizon until January 15.
\# 24 hr. average.

HEATING DEGREE DAYS

Table 3 (Base 65°F) JANUARY 1951

State and station	Current season: This month	Current season: Period July through this month	Long term mean July through this month
ALABAMA			
Birmingham	557	1908	1647
Mobile (CO)	354	1142	1022
Mobile	359	1194	
Montgomery (CO)	424	1471	1332
Montgomery	459	1596	1332
ARIZONA			
Flagstaff	1121	3572	4055
Payson (CO)	770	1686	
Phoenix (CO)	370	610	970
Phoenix	399	697	
Prescott	849	2017	
Tucson	448	762	
Winslow	893	2286	
Yuma	273	387	746
ARKANSAS			
Ft. Smith	778	2198	2030
Little Rock	671	2035	1886
Texarkana	603	1706	
CALIFORNIA			
Bakersfield	522	1075	
Beaumont (CO)	554	1089	
Bishop	797	2050	
Blue Canyon	928	2643	
Burbank	367	691	
Eureka (CO)	552	2235	2638
Fresno	598	1288	1526
Los Angeles (CO)	298	518	656
Los Angeles	340	735	
Mt. Shasta (CO)	1012	3000	
Oakland	510	1315	
Red Bluff	647	1506	1647
Sacramento (CO)	579	1308	1625
Sacramento	602	1383	
Sandberg (CO)	751	1802	
San Diego	287	571	770
San Francisco (CO)	450	1541	1756
San Francisco	500	1408	
San Jose	460	1086	
Santa Catalina	381	872	
Santa Maria	434	1243	
COLORADO			
Alamosa	1351	4617	
Colorado Springs	1215	3434	
Denver	1175	3179	3297
Grand Junction	1220	3026	
Pueblo	1139	3103	3289
CONNECTICUT			
Bridgeport	986	2917	
Hartford	1046	3180	3408
New Haven	1011	3011	3227
DELAWARE			
Wilmington	948	2895	
DIST. OF COLUMBIA			
Washington (CO)	774	2407	2648
Washington	790	2416	
FLORIDA			
Apalachicola	318	947	801
Daytona Beach	220	707	
Fort Myers	125	370	
Jacksonville (CO)	244	871	765
Jacksonville	269	932	
Key West (CO)	31	52	37
Key West	32	61	
Melbourne	151	481	
Miami (CO)	85	213	109
Int. Airport, Hialeah	79	193	
Orlando	175	544	
Pensacola (CO)	292	1011	821
Tallahassee	362	1110	
Tampa	146	481	372
West Palm Beach	80	232	
GEORGIA			
Albany	398	1345	1074
Atlanta (CO)	620	1997	1836
Atlanta	602	1921	
Athens	649	1983	
Augusta	561	1753	1463
Columbus	498	1692	
Macon	471	1566	1488
Rome	696	2205	
Savannah	443	1382	1037
Valdosta	374	1220	
IDAHO			
Boise	1107	3075	3366
Lewiston	975	2864	
Pocatello	1271	3696	3888
ILLINOIS			
Cairo (CO)	837	2535	2401
Chicago (CO)	1196	3549	3484
Chicago	1283	3907	
Chicago University	1218	3691	
Joliet	1308	4138	
Moline	1372	4050	
Peoria	1254	3816	3537
Springfield (CO)	1100	3380	3225
Springfield	1142	3607	
INDIANA			
Evansville	969	2984	2627
Ft. Wayne	1161	3806	3554
Indianapolis (CO)	1048	3296	3162
Indianapolis	1105	3532	
South Bend	1209	3886	
Terre Haute	1080	3491	
IOWA			
Burlington	1315	3946	
Charles City (CO)	1670	4770	4479
Davenport (CO)	1346	3880	3658
Des Moines	1380	3999	3862
Dubuque	1483	4205	3977
Keokuk (CO)	1235	3606	3326
Sioux City	1480	4237	4063
KANSAS			
Concordia (CO)	1163	3167	3234
Dodge City	1117	2973	3023
Goodland	1201	3366	
Topeka (CO)	1072	2976	3044
Topeka	1109	3139	
Wichita	1010	2756	2802
KENTUCKY			
Lexington	926	3003	2791
Louisville (CO)	881	2749	2614
Louisville	900	2854	
Pikeville (CO)	749	2414	
LOUISIANA			
Baton Rouge	365	1126	989
Lake Charles	378	1020	
New Orleans (CO)	236	813	795
New Orleans	262	933	
Int. Airport, Moisant	298	949	
Shreveport	513	1471	1387
MAINE			
Caribou	1589	5097	
Eastport	1176	3932	4518
Greenville (CO)	1521	4936	5241
Portland	1220	3882	4009
MARYLAND			
Baltimore (CO)	806	2405	2563
Baltimore	862	2700	
Frederick	921	2860	
MASSACHUSETTS			
Boston	953	2804	3221
Milton	1060	3370	
Nantucket	898	2773	2936
Pittsfield	1229	4084	
MICHIGAN			
Alpena (CO)	1383	4415	4415
Detroit	1148	3630	3624
Escanaba (CO)	1506	4939	4721
Grand Rapids (CO)	1197	3702	3726
Grand Rapids	1252	3993	
Iron Mountain	1579	5211	
Lansing	1250	4043	
Marquette (CO)	1455	4924	4695
Muskegon	1242	3983	
Sault Ste. Marie	1563	5264	5018
Traverse City	1356	4360	
Ypsilanti	1169	3750	
MINNESOTA			
Duluth (CO)	1804	5901	5419
Duluth	1855	6150	
International Falls	2025	6567	
Minneapolis	1721	4973	4623
Rochester	1781	5151	
St. Cloud	1892	5603	5107
St. Paul	1732	4962	
MISSISSIPPI			
Jackson	486	1532	1396
Meridian	500	1642	1491
Vicksburg	477	1482	1334
MISSOURI			
Columbia	1053	3215	3028
Kansas City	1057	2988	2960
St. Joseph	1158	3308	
St. Louis (CO)	981	2967	2735
St. Louis	996	3064	
Springfield	964	2900	2723
MONTANA			
Billings	1376	4142	4212
Butte	1698	5686	
Glasgow (CO)	1811	5439	
Great Falls	1449	4341	
Havre (CO)	1672	4978	4868
Helena	1487	4848	4539
Kalispell	1423	4604	4678
Missoula	1424	4561	4491
NEBRASKA			
Grand Island	1346	3764	
Lincoln (CO)	1300	3584	3534
Lincoln	1354	3778	
Norfolk	1417	4073	
North Platte	1251	3683	3743
Omaha	1380	3807	3606
Valentine (CO)	1398	4118	4145
NEVADA			
Elko	1253	3709	
Ely	1221	3756	
Las Vegas	650	1322	1726
Reno	980	2948	3236
Tonopah	1044	3427	3303
Winnemucca	1050	3183	3734
NEW HAMPSHIRE			
Concord	1229	3830	4149
Mt. Washington Obs.	1746	7414	
NEW JERSEY			
Atlantic City	822	2409	2648
Newark	910	2748	3055
Trenton	902	2760	2965
NEW MEXICO			
Albuquerque	874	2113	2799
Clayton	1060	2771	
Roswell	820	2000	2283
Raton	1214	3316	
NEW YORK			
Albany	1204	3748	3714
Bear Mountain (CO)	1097	3536	
Binghamton (CO)	1093	3605	3788
Binghamton	1135	3861	
Buffalo	1124	3581	3659
New York (CO)	877	2581	2889
La Guardia Field	862	2541	
Oswego	1146	3602	
Rochester	1158	3650	3692
Schenectady (CO)	1198	3642	
Syracuse	1182	3720	3790
NORTH CAROLINA			
Asheville (CO)	807	2592	2515
Asheville	848	2783	
Charlotte (CO)	662	2019	1970
Charlotte	698	2137	
Greensboro	777	2464	
Hatteras (CO)	504	1450	1405
Raleigh (CO)	642	2013	1969
Raleigh	671	2169	
Wilmington (CO)	485	1574	1452
Winston-Salem	756	2367	
NORTH DAKOTA			
Bismarck	1925	5668	5185
Devils Lake (CO)	2029	6236	5868
Fargo	1981	6870	
Grand Forks	2015	6067	5765
Williston (CO)	1835	5632	5393
OHIO			
Akron	1135	3816	
Cincinnati (CO)	902	2847	2909
Cincinnati	994	3240	
Cleveland (CO)	1061	3324	3340
Cleveland	1080	3482	
Columbus (CO)	1003	3241	3160
Columbus	1035	3448	
Dayton	1093	3533	3119
Sandusky (CO)	1068	3370	3357
Toledo	1146	3723	3492
Youngstown	1116	3764	
OKLAHOMA			
Oklahoma City (CO)	775	2127	2268
Oklahoma City	803	2175	
Tulsa	808	2269	
OREGON			
Baker (CO)	1224	3688	4150
Baker	1290	3932	
Burns (CO)	1265	3744	
Eugene	749	2323	
Meacham	1267	4051	
Medford	799	2402	2774
Pendleton	966	2935	
Portland (CO)	757	2249	2491
Portland	776	2435	
Roseburg (CO)	699	2001	2466
Salem	774	2413	
Sexton Summit (CO)	1912	3238	
Troutdale	795	2513	
PENNSYLVANIA			
Allentown	1041	3262	
Curwensville	1184	4254	
Erie (CO)	1046	3296	3393
Harrisburg	973	3088	3088
Park Place	1155	3845	
Philadelphia (CO)	848	2518	2663
Philadelphia	890	2652	
Pittsburgh (CO)	911	3011	3025
Pittsburgh	989	3294	3253
Reading (CO)	911	2829	2977
Scranton (CO)	1037	3312	3498
Williamsport	1089	3495	3450
RHODE ISLAND			
Block Island	901	2630	2958
Providence (CO)	929	2794	3275
Providence	978	2991	
SOUTH CAROLINA			
Charleston (CO)	431	1351	1153
Charleston	485	1506	
Columbia (CO)	544	1688	1556
Columbia	585	1822	
Florence	558	1770	
Greenville	697	2096	1885
Spartanburg	723	2137	
SOUTH DAKOTA			
Huron	1671	4893	4634
Pierre	1474	4306	4253
Rapid City	1367	4120	4030
Sioux Falls	1607	4714	
TENNESSEE			
Bristol	809	2731	
Chattanooga	695	2206	1997
Knoxville	708	2367	2237
Memphis	682	2140	1913
Nashville	763	2472	2195
TEXAS			
Abilene	632	1628	1660
Amarillo	923	2342	2529
Austin	433	1036	1128
Big Spring	681	1626	
Brownsville	173	394	440
Corpus Christi	269	578	650
Dallas	572	1495	1543
Del Rio (CO)	407	963	1066
El Paso	634	1413	1690
Ft. Worth	583	1500	1508
Galveston (CO)	295	684	761
Galveston	300	711	
Houston (CO)	327	777	
Houston	358	872	880
Laredo	246	559	
Lubbock	844	2153	
Palestine (CO)	495	1268	1340
Port Arthur (CO)	325	848	908
Port Arthur	369	992	
San Angelo	606	1459	
San Antonio	443	1044	959
Victoria	311	716	
Wichita Falls	706	1867	
Waco	531	1332	
UTAH			
Milford	1181	3311	
Salt Lake City (CO)	1045	2877	3298
Salt Lake City	1092	3064	3542
VERMONT			
Burlington	1316	4079	4463
VIRGINIA			
Cape Henry	621	1892	1937
Lynchburg	835	2613	2419
Norfolk (CO)	596	1834	1910
Norfolk	638	2009	
Richmond (CO)	722	2263	2304
Richmond	719	2335	
Roanoke	817	2641	
Urbanna	692	2212	
WASHINGTON			
Ellensburg	1247	3920	
Kelso	815	2739	
North Head (CO)	731	2879	2915
Olympia	853	2955	
Port Angeles	773	3296	
Seattle (CO)	758	2378	2688
Seattle	866	2934	
Spokane	1168	3733	3738
Stampede Pass (CO)	1329	5062	
Stevenson (CO)	869	2748	
Tacoma (CO)	810	2623	
Tatoosh Island (CO)	753	3278	3246
Walla Walla (CO)	905	2701	2973
Yakima	1127	3497	3497
WEST VIRGINIA			
Elkins	975	3503	3314
Huntington	749	2515	
Parkersburg (CO)	889	2939	2870
Petersburg	894	3060	
Charleston	803	2674	
WISCONSIN			
Green Bay	1651	5112	4439
La Crosse (CO)	1591	4511	4335
La Crosse	1670	4875	
Madison (CO)	1528	4464	4229
Madison	1585	4641	
Milwaukee (CO)	1375	4122	3883
Milwaukee	1434	4351	
WYOMING			
Casper	1374	4111	
Cheyenne	1308	3995	4131
Lander	1375	4252	4806
Rock Springs (CO)	1328	4020	
Rock Springs	1458	4391	
Sheridan	1409	4261	
ALASKA			
Anchorage	1855	6998	
Annette Island	1022	4206	
Barrow	2882	10592	
Bethel	2124	7336	
Cordova	1480	6036	
Fairbanks	2743	9130	
Galena	2760	8780	
Gambell	2000	7323	
Juneau	1423	5635	
Kotzebue	2528	8311	
McGrath	2544	8634	
Nome	2226	7365	
Northway	2874	9923	
St. Paul	1262	5755	
Yakutat	1305	5500	
Umiat	3178	10600	
Wales	2276	7740	

Data from airport unless otherwise specified. CO indicates data from city office.

Table 4

JANUARY 1951

Place	Date	Time	Width of path, yards	Length of path, miles	Number of persons: Killed	Number of persons: Injured	Estimated damage: Property (exclusive of crops)	Estimated damage: Crops	Character of storm	Remarks
Iowa, southern and eastern portions	2	Morning			2	12	$5,000		Ice (freezing rain, sleet, and snow	Especially heavy accumulations of glaze and ice in Davenport-Moline area. Icing conditions made driving hazardous. Ice-covered pavement was contributing factor in two deaths, one in Scott County and one in Cedar County. Glaze of 1/8 to 3/16 inch on telephone wires caused only minor breaks; interruption in service was at a minimum.
Washington, western portion	2	10 a.m. - midnight				2	50,000		Wind	Southwest to west gale winds covered much of State, but with destruction reported west of Cascade Mountains only, and there largely on immediate Pacific Coast and inland along Puget Sound south to Columbia River. Extreme speeds in miles per hour reported as follows: North Head Weather Bureau, 78 from west; Seattle Weather Bureau City Office, 58 from southwest. Damage largely to communication and power lines, trees, plate-glass windows, dock facilities and small boats. Estimated damage at Longview $10,000, with several thousands additional at Port Angeles, Seattle, and other points on inland waters, and considerable sporadic, unestimated damage over larger area.
Beaumont, Jefferson County, Tex.	2	8:30 p.m.					500		do	Leveled a wood and sheet metal lumber storage building
Oregon, along Columbia River and adjacent areas and in Baker area.	2-3	Late evening of 2d and early morning of 3d	†Several			1	50,000		do	Wind speeds of 45 to 65 m.p.h. observed at Baker Airport. Baker Weather Bureau Office recorded fastest speed of 42 m.p.h. Destruction largely in Moro and Baker areas; however, minor damages caused to power lines and outdoor signs in several areas along Columbia River and in northeastern Oregon. At Moro a large warehouse blown down, resulting in $12,000 loss. In City of Baker many power and telephone lines damaged, numerous outdoor signs partially or totally destroyed, roofs blown off, and quite a number of windows broken. Several trees blown over. An estimated $25,000 damage caused in this area alone. No serious losses to crops or livestock.
Wisconsin, southern half	2-3					See remarks	10,000		Ice (glaze) and snow	Highway traffic badly disrupted because of freezing rain followed by snow. Inter-city bus service halted due to road conditions. A number of autos damaged because of collisions or skidding. Several persons injured by falling on slippery walks and streets.
Denver, Colo.	3	10:45 a.m. - 2:15 p.m.	†20	20		1	4,000		Wind	Wind varying in intensity from fresh to gale force prevailed in Denver and vicinity, with peak speed of 43 m.p.h. at 1 p.m. Trees broken and uprooted, and nearby automobiles damaged. A woman suffered fractured hip when wind caught door of telephone building, as she was leaving the structure.
Wallace and vicinity, Idaho	3						See remarks		Snow	Reports indicate "heavy" damage to power lines.
Alexandria-Pineville, La.	6	5:30 p.m.	300	15	0	11	175,000	0	Tornado	High winds extended outward several miles from tornado. Developed on squall line and moved almost due northward to vicinity of Pollock, La. Two homes and 4 stores destroyed, while 42 homes and 11 other buildings damaged. Fifty families directly affected by tornado. Center passed over business district of Alexandria, and brick front of a store hurtled down on parked automobiles.
Jefferson County, Ky.	6-7				3	4			Snow	Three inches of snow caused streets to become slippery and dangerous. Several accidents reported. Deaths and injuries indirectly due to storm.
New England, entire section	7-8	Early morning of 7th to forenoon 8th			4	See remarks			do	First general substantial snowstorm, 4 to 9 inch accumulation, except near south coast. Hazardous highway conditions caused many skidding accidents which hospitalized uncounted numbers of persons.
Pennsylvania, most of State	7-8				1	6			Snow and ice (glaze)	Mixed rain and snow in southeastern sections and snow in mountains and western portion, with slowly falling temperatures, created slippery highways that resulted in frequent accidents. One person killed in Lancaster County and six injured near Greencastle.

See footnotes at end of table.

Table 4—Continued

Place	Date	Time	Width of path yards	Length of path miles	Number of persons: Killed	Number of persons: Injured	Estimated damage: Property (exclusive of crops)	Estimated damage: Crops	Character of storm	Remarks
Los Altos - Sunnyvale district, Santa Clara County, Calif.	11	8:25 - 8:30 a.m.	1000	3 to 4	0	0	$1,500,000	0	Tornado	First struck Los Altos residential area, then skipped about 3 miles and came down in an orchard near El Camino Real and proceeded through a portion of Sunnyvale business district. Southern Pacific Railroad Depot at Sunnyvale and plants of Westinghouse and Woolridge hard hit by storm. No evidence to indicate that storm reached as far east as Bayshore Highway. Throughout path of storm, flimsy buildings demolished; other buildings sustained lesser damage, such as windows blown out or roofs blown off, etc; some orchard trees uprooted or twisted off above ground; many ornamental and shade trees twisted off or uprooted; power lines broken; some power poles downed or snapped; television antennae twisted and snapped; some automobiles damaged; some houses shifted on their foundations in a counterclockwise direction. This storm was associated with a very severe cold front over northern California moving southeastward. Gusts at San Francisco Airport reached 78 m.p.h. at 7:43 a.m. on 11th (wind shift occurred at same time). At Moffett Field wind shift occurred at 8:12 a.m.
San Jose district, Santa Clara County, Calif.	11	8:15 a.m.	100	2 to 3	0	0	50,000	0	do	Losses due to this storm included havoc wrecked on homes and business properties as tornado struck in vicinity of Delmas Avenue and West San Fernando Street and continued in an eastward direction, passing near City Hall, and finally dissipated near eastern foothills. Roofs ripped off homes; trees forced down; structures and other property also damaged.
Torrance district, Los Angeles County, Calif.	11	3:40 - 3:50 p.m.	25	2			100,000		Winds (possibly tornadic)	Area damaged was in Torrance, near 236th Street, and mostly between Pennsylvania and Vermont Avenues. Several persons narrowly escaped death when oil well derricks toppled on an occupied home and automobile. A total of about 15 wooden structure oil well derricks blown down and completely demolished. One derrick fell across power lines and caught fire; also, caused shorting of power lines which blew fuses and damaged radio and television sets in immediate vicinity. Storm path estimated at 25 yards in width and length of damage area was about 2 miles in a nearly straight east-west line. Storm apparently traveled at an average height of about 500 feet above ground, although roofs were lifted from about 3 buildings on open flat ground. The oil well derricks were on a slight ridge. All towers fell toward the east, with one exception, and this fell toward the north-northeast, probably due to guy wires or variance in strength of tower structure. Witnesses said storm had a circular motion. No funnel-shaped cloud observed. Moderate rain falling at time of wind damage. Strong westerly winds prevailed over entire area all afternoon.
Kentucky	13-14								Rain	Numerous roads closed because of high water due to heavy rain. About 25 families in Hopkinsville had to be moved from their homes as a result of flooding, caused by 4 1/2 inches of rain in 18 hours. Some streets in Louisville flooded.
Baltimore, Md.	14	P.m.				1			Ice (glaze)	Stalled and wrecked motor vehicles lined Baltimore streets and roads leading into city after a light rain froze and formed a thin sheet of ice on pavements. On a 12-mile stretch of Pulaski Highway from city line to near White March more than 30 trucks and automobiles ditched. Ritchie Highway likewise was cluttered with stalled vehicles, many with smashed fenders and bumpers. City police reported minor accidents, but apparently only one person seriously injuried.
Michigan, southern portion	14				3	15	3,000		Ice	Glazed roads caused injuries and deaths.
Oregon, along coast and across northern half of State	14-15	Most of 14th and morning of 15th	†100				150,000		Wind	Winds at height of storm averaged 40 to 55 m.p.h., with gusts up to 65 and 70 m.p.h. Damage to buildings, power lines, outdoor signs, trees, roofs, and windows. No significant loss of livestock or crops.
Tyler, Pleasants, Wood, Jackson, Mason, Ritchie, Wirt, and Roane Counties, W.Va.	14-15						See remarks		Rain	Heavy rains, averaging about 2 inches, caused local flash floods in smaller streams which resulted in minor landslides and briefly inundated highways. In lower sections of Parkersburg water, backing up from overtaxed sewers, flooded some basements.

See footnotes at end of table.

Table 4—Continued

Place	Date	Time	Width of path, yards	Length of path, miles	Number of persons: Killed	Number of persons: Injured	Estimated damage: Property (exclusive of crops)	Estimated damage: Crops	Character of storm	Remarks
Town of Lahaina and vicinity, Island of Maui, Hawaii	14-15					1	$250,000	See remarks	Wind	Church demolished. National Guard Armory heavily damaged. Damage included 62 residences and 6 business establishments. About 8,000 acres of growing cane adversely affected. Said to have been worst storm in area for 30 years.
Idaho, northern portion	15				1		See remarks		do	Man killed by falling tree at Coeur d'Alene. Trees blown down at numerous places, blocking roads and damaging power and telephone lines, particularly in vicinity of Wallace.
Washington, entire State	15-16	2 a.m. to near midnight				6	400,000		do	Gale winds, mostly from southwest, in storm of marine origin, covered all parts of State. Principal damage in western inland waters and along Pacific Coast. Extreme speeds in miles per hour were as follows: - 63 at Seattle City, 73 at North Head Weather Bureau, and 50 at Spokane Weather Bureau. In western area, extensive damage to electric and communication lines, many trees blown down: occasional damage to structures, including wharves and bulkheads, barges, and small boats. Two small airplanes destroyed and two damaged at Boeing Airport, Seattle. Damage in eastern Washington was sporadic and relatively light, although Spokane damage placed at several thousand dollars, alone. Eastern counties' loss, included in totals, will probably not exceed $50,000.
Port Angeles and vicinity, Wash.	20	11:30 a.m. -9:30 p.m.				2			Wind and snow	Strong east winds, accompanying snowstorm, with gusts to 45 m.p.h. at Weather Bureau. Storm damage localized to area from Port Angeles to a distance of 30 miles east, but not reaching Port Townsend. Considerable disruption of communication lines and interruption of highway travel. Traffic accident on highway near area, due to storm, injured two men severely.
Fort Wayne Airport, Ind.	20	3:10 p.m.	†1			1	9,000		Wind	Six aircraft damaged.
Wisconsin, eastern and southeastern portions	20	Day				See remarks	15,000		Snow and wind	Freezing drizzle followed by several inches of snow and considerable drifting due to strong winds temporarily halted highway travel in some parts of eastern and southeastern Wisconsin. Several persons injured in accidents attributed to storm. More than 100 autos suffered damage in traffic accidents, due to road conditions and reduced visibility.
Florence and Colleton Counties, S.C.	20-21	Day and night						$18,000	Forest fires	Spread by dry, windy weather.
Great Falls, Mont.	21	Morning							Wind	Sudden gust of wind toppled a false store front upon two parked cars.
Port Angeles, Wash.	27-28	3:30 p.m. 27th - 11:30p.m. 28th					10,000		do	Strong, long-continued northeast winds with gusts above 35 m.p.h. sank a 35-foot work boat and damaged docks at Port Angeles, with considerable lumber loss.
Indiana, central and southern portions	28								Ice (glaze)	Roads and walks icy. Exposed objects ice-coated.
Massachusetts, Rhode Island, and Connecticut	28-29	6:p.m. 28th to early afternoon 29th			3	See remarks			do	Freezing rain coated all exposed surfaces, wires, trees, and roads with 1/2 to 1 inch of ice, producing extremely dangerous conditions for vehicular and pedestrian travel. Scores of minor accidents. Some wire damage. Uncounted numbers of persons hospitalized.
Pennsylvania, most of State	28-29				6	600			do	Ice-coated streets and highways in western counties caused the deaths and injuries, with 270 injuries treated by Pittsburgh Hospitals. Highway travel nearly at a standstill in many sections, due to thick coating of glaze.
Texas, Louisiana, and Mississippi	Jan.29 - Feb.2								Ice(glaze), rain, sleet, and snow	These reports will be published in the February "Severe Storm Data".
Maryland, east of Washington County	30-31	All day				1			Snow and ice	Autos and trucks skidded dangerously, and traffic was snarled in many parts of Baltimore and the State, as roads became sheathed in ice under the influence of a driving snowstorm. Literally hundreds of automobiles stalled along roads for hours. Street car schedules delayed as much as 3 hours on some lines in city. Man injured rather seriously when he stumbled over a wooden platform the was covered with snow.

See footnotes at end of table.

Table 4—Continued

Place	Date	Time	Width of path, yards	Length of path, miles	Number of persons: Killed	Number of persons: Injured	Estimated damage: Property (exclusive of crops)	Estimated damage: Crops	Character of storm	Remarks
Virginia, central and southwestern portions	30-31					See remarks			Ice (glaze)	Transportation of all kinds slowed and in some instances at standstill. Schools in Amherst, Appomattox, Bedford, and Campbell Counties closed for 2 days because of lack of transportation. Numerous automobile accidents. Many minor injuries.
New England, entire section	31	5 a.m.				See remarks			Snow and ice (freezing rain)	A 1- to 4-inch snowfall on already iced surfaces was further aggravated by freezing rain, as temperatures fell rapidly to near or below zero. Skidding collisions and slippery sidewalks hospitalized uncounted numbers of people.
Kentucky	31					2			Sleet and snow	Two to 6 inches of snow and sleet covered all of Kentucky. All roads slick and hazardous and many closed. Transportation in many areas halted. Schools in most areas forced to close.
Tennessee, western and middle portions, especially in Nashville area	Jan. 31 and Feb. 1	All day 31st to afternoon of 1st					See remarks		Rain, ice, (freezing rain), sleet and snow	It is believed that never before in recorded history did winter hit this area with such a devastating force. Complex transportation systems of area held immovable for a period of 2 days. An estimate of 16,000 homes without electricity in Nashville area alone. Approximately 2,500 telephones out of order. Property damage ran to an unestimated millions of dollars. Damage suffered by Western Union Telegraph and Telephone Co., in Tennessee, $100,000; Nashville Electric Service, $350,000; Southern Bell Telephone and Telegraph Co., in Tennessee, $1,000,000. Over 2,500 poles and 2,200 cross arms required replacement, and over 16,000 miles of wire of all kinds had to be reinstalled. Southern Coach Lines operating in Nashville estimated property damage at $100,000. Damage to city and county streets, roads, and highways estimated at $500,000. Loss of revenue by business which was at a complete standstill for 3 days will easily exceed one million dollars. (Survey by Southern Bell Telephone Co. of all other affected cities and towns in 5-State area which extended from Louisiana, north-central Mississippi, northwestern Alabama, western and middle Tennessee and approximately the entire State of Kentucky estimated the damage to its property from five to six million dollars.)

PRELIMINARY TOTALS BY STORM TYPES FOR JANUARY 1951

Type	Deaths	Injuries	Damage
Tornado		11	$1,725,000
Wind	1	12	1,023,000
Ice and freezing rain	15	636	1,568,000
Snow	7	7	515,000
Forest Fires			18,000
Total	23	666	$4,849,000

† Miles instead of yards.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

JANUARY 1951

Floods during January were mostly minor with no serious damages being reported in any of the drainage areas. This is quite a contrast to January 1950 when serious floods with record to near record stages were reported in several river systems of the country.

The most important flooding this month was in the Ohio Basin and along the Pacific coast where the Eel River reached its highest crest since 1943 at Fernbridge, Calif. It was the fourth consecutive month with light to moderate flooding in many streams in the Columbia Basin in northwest Oregon and southwest Washington.

ST. LAWRENCE DRAINAGE.--Minor flooding occurred in the Lake Michigan drainage along the Red Cedar River at East Lansing, Mich., between the 4th and 6th due to heavy rain on the 2d and 3d averaging 1.3 inches. No damage was reported.

Ice jams caused minor overflow along the Grand River in the suburban sections of Grand Rapids, Mich., on the 7th and 8th below Pearl Street gage.

Minor flooding occurred between the 2d and 8th in the Lake Erie drainage in the Maumee River and tributaries from rains on the 2d and 3d and snow melt. The Chagrin River topped bank-full stage at Willoughby Dam, Ohio, by 1 foot on the 4th due to moderate rains and snow melt.

ATLANTIC SLOPE DRAINAGE.--Snow surveys at the end of the month in the Merrimack River Basin showed the water content of the snow cover above Concord, N. H., to average about 2 inches. This is about 50 percent of normal for January.

There was some flooding in the headwaters of the Chenango River at Sherburne, N. Y., and in the Susquehanna at Oneonta, N. Y., on the 4th due to moderately heavy rains on the 3d and 4th. No damage resulted.

EAST GULF OF MEXICO DRAINAGE.--Some flooding resulted along the Tombigbee River from the heavy rain on the 3d and 4th. Rainfall in the extreme upper portion of the basin averaged around 4 inches. Additional rainfall later in the month prolonged the period of high water. No serious overflows occurred at any of the stations and no damage resulted.

Heavy showers on the 1st, 2d and 3d over the headwaters of the Pearl River produced sharp rises to above flood stage at Jackson, Miss., on the 7th and to near flood stage over headwater areas above Jackson. Damage was negligible.

MISSOURI BASIN.--Ice freezing in the Beaverhead River near Dillon, Mont., forced the river out of its banks in the surrounding lowlands. Several families had to leave their homes due to rising waters. Damages were light. A similar flood due to ice occurred in this area in 1937.

OHIO BASIN.--Precipitation was above normal over most of the basin during January and occurred rather frequently as rain, freezing rain, sleet and snow. There was some runoff from snow melt during periods of mild temperatures.

Two pronounced rises occurred in most streams in the Ohio Basin during the month. A third rise developed towards the end of the month which continued into February.

The first rise occurred between Jan. 2-4 from rain averaging 3 to 3.5 inches over the lower Cumberland and Green Basins. In the central portion of the Ohio Basin the rainfall averaged 2.5 inches and over the northern tributary headwaters and the upper Ohio Basin it averaged 1 inch or less. Light to moderate flooding resulted in several tributary streams. Mild weather also caused considerable snow melt and helped to produce slight flooding in the headwaters and near the mouth of the Allegheny River. Several ice jams formed as the mild temperatures and the rise in the river broke up the ice sheet of 3-4 inches in the upper and middle reaches of the Allegheny River. The Ohio River rose sharply but crests were well below flood stage, except at Midland, Pa., and Dam 50.

The second rise resulted from heavy rainfall between Jan. 13-15. Storm totals up to 4.5 inches were reported over the lower Ohio Basin; over the middle reaches and the upper portion of the basin, storm totals between 2 and 2.5 inches were reported, except in the upper half of the northern tributaries where amounts were generally less than an inch. Light to moderate flooding resulted in several tributaries. The rise on the Ohio River was more pronounced than during the first rise. Flooding, however, was confined to the lower portion with the river rising to a stage of 11 feet above flood stage at Dam 50.

Beginning on the 30th another period of rainfall, combined with considerable freezing rain, produced storm totals exceeding 3.5 inches over the southern portion of the basin, resulting in floods or rather high stages on all southern tributaries and near flood conditions in the middle and lower main stem of the Ohio River.

No serious damage resulted from the flooding. There was some damage to corn in the fields. Damage to highways and bridges was minor.

WHITE AND RED BASINS.--Moderate to heavy rains on the 11th, 12th and 13th caused generally light flooding along the White, Black and Little Red Rivers in the White Basin during the last half of the month and along the Ouachita and Little Missouri Rivers in the Red Basin between the 14th and 24th. The rainfall averaged 2 to 2.5 inches in the White Basin and 2.5 to 3 inches over the Red Basin.

LOWER MISSISSIPPI BASIN.--There were two significant rises in the St. Francis River Basin during January. The first resulted from rainfall on the 3d which averaged about 2 inches in the lower half and 1 inch in the upper half. The river reached near bank-full stage at Fisk, Mo., and St. Francis, Ark., but no flooding occurred. The second rise resulted from rainfall between the 13th and 15th which averaged about 2 inches in the upper portion. In the middle portion rainfall totals up to nearly 4 inches were reported. Minor flooding resulted but there were no damages.

Rather intense rainfall with amounts of 4-5 inches occurred over the Coldwater and Tallahatchie River Basins in Mississippi on the 1st and 2d. The rain produced sharp rises in the rivers with the Coldwater at Sarah, Miss., exceeding bank-full stage on the 3d and the Tallahatchie at Swan Lake on the 5th. A 5-day rainy period between the 10th and 14th produced general rains over the Tallahatchie-Yazoo Basin with amounts ranging from around an inch over the southern portion at Yazoo City to as much as 4 inches in the northern portion. These rains were instrumental in maintaining above flood stage readings at Swan Lake through the rest of the month and the Coldwater to exceed flood stage again between the 13th and 16th. The Yazoo River rose to above flood stage on the 22d and was still rising on the 31st.

ATCHAFALAYA BASIN.--Frequent heavy rains over the Ohio Basin during the first half of the month caused a gradual rise along the Atchafalaya to above flood stage at Atchafalaya, La., on the 22d. No damage

resulted from the light overflow.

CALIFORNIA COAST DRAINAGE.--During the last half of December 1950 and the first nine days of January 1951, precipitation in the Central Valleys of California was light. Temperatures continued to be above normal at most stations and by the 9th, only 7 inches of snow was on the ground at Norden, Calif., in the Central Sierras as compared to a normal of 51 inches. On the 10th the pressure systems of the eastern Pacific Ocean had developed into a westerly weather type and a series of cold fronts brought moderate to heavy precipitation at all levels in northern and central California during the next two weeks. Precipitation from the 24th of the month to the 31st was again light and widely scattered. The monthly precipitation for Sacramento, Calif., was actually 1.27 inches below the normal for January.

Precipitation that began as rain to high levels on the 9th turned to snow above 3,500 feet on the 11th. The runoff was therefore limited but sharp moderate rises were experienced on all tributary rivers and streams in the Central Valleys. Some minor flooding occurred on some of the Valley creeks and streams but with very little damage or inconvenience. A moderate crest on the Sacramento River resulted in about one-half foot overflow on the Tisdale Weir into the Sutter Bypass.

On Jan. 17 moderate to heavy rain to high levels again began to fall over the Central Valleys resulting in new rises on all rivers and streams. This rise caused flow over the Tisdale Weir again and over the Fremont Weir into the Yolo Bypass. Following the frontal passage, which had been nearly stationary across northern California on the 17th, another front brought heavy rain on the 21st and 22d. The 24-hourly precipitation during the height of the storm averaged 6 to 8 percent of the seasonal normal in the Sierra Nevada Range and at least 8 percent of the normal in the Coastal Range. The peak flow on the Sacramento River resulted in near danger stages in the Knights Landing area and flow over all of the weirs on the river. The depth of the flow over the weirs averaged 3 to 4 feet. Flow over the Tisdale Weir continued until the 29th and over the Fremont Weir into the Yolo Bypass until the 31st. The county road between Sacramento and Woodland was closed during this period. The flow in the Yolo Bypass reached near the danger level but no new flooding occurred. While the rise on the American River caused widespread concern, the levees had been plugged and no flow over or through the old breaks occurred.

Minor flooding occurred in the upper reaches of the Russian River on the 21st and 22d from rainfall averaging 2.1 inches on the 21st. In the headwaters the rainfall totalled nearly 5 inches. The river at Hopland, Calif., rose rapidly from a stage of 9 feet on the morning of the 21st to a crest of 25.6 feet at 9:20 p.m. Except at Hopland, January stages did not equal those of the storm of Dec. 3-5, 1950, and little new damage resulted. Near and above Hopland the new flood was much higher than that of December and there was again some erosion of river banks and deposit of silt. Near Calpella a few houses and a sawmill were inundated.

Heavy rain (5 inches) on the 21st caused the Eel River to rise to a crest of 23.3 feet at Fernbridge, Calif., by 10:30 a.m. on the 22d. Flood stage was exceeded by 4 p.m. on the 21st. The crest at this point was the highest since 1943. Many thousands of acres of farm and dairyland were under water at the height of the flood. Damages were light.

COLUMBIA BASIN.--January was the fourth consecutive month with slight to moderate flooding in many streams of northwest Oregon and southwest Washington, and moderately high stages in most other rivers where bank-full stages did not occur. The principal freshet occurred during the period from the 17th to the 20th but there were several other small floods of lesser importance. There were five distinct and separate times when minor flooding occurred in the Santiam at Jefferson, Oreg.

Mean river levels for January this year have been generally higher than those for several years. Usually the high monthly average stages were caused by one distinctly high flood. Freshets this year have been the result of generally wet weather since the fall rains began last October. January 1951 was the wettest at Portland, Oreg., since 1914. It is believed that this condition is generally reflected at most river and climatological stations in northwestern Oregon. Rainfall in southwestern Washington, a few miles north of Portland, was not as heavy as at Portland. The reverse is generally true. The flood of the 17th to the 20th was the result of just moderate rains accompanied by mild temperatures and some snow melt in both the coast range and Cascade Mountains west of the Divide.

There was no material damage except the usual erosion that occurs with all freshets, and closing of the locks at Oregon City, Oreg., to up-river barge service and to the downstream towing of log rafts.

FLOOD STAGE DATA

(All dates in January unless otherwise specified)

River and station	Flood stage	Above flood stages -dates From—	To—	Crest* Stage	Date
	Ft.			Ft.	
ST. LAWRENCE DRAINAGE					
Lake Michigan					
Red Cedar: East Lansing, Mich.	8	4	6	8.8	4
Lake Erie					
St. Marys: Decatur, Ind.	13	2	5	13.4	2-3
St. Joseph: Montpelier, Ohio	10	4	8	12.7	6
Maumee: Fort Wayne, Ind.	15	4	5	15.4	4
Sandusky: Upper Sandusky, Ohio	13	5	5	13.3	5
ATLANTIC SLOPE DRAINAGE					
Chenango: Sherburne, N. Y.	8	4	4	8.4	4
Susquehanna: Oneonta, N. Y.	12	5	6	13.3	5
EAST GULF OF MEXICO DRAINAGE					
Tombigbee:					
Aberdeen, Miss.	34	5	9	38.5	6
Lock No. 4, Demopolis, Ala.	39	6	19	40.6	18
Lock No. 3	33	6	23	42.8	19
Lock No. 1	31	19	22	31.7	21
Pearl: Jackson, Miss.	18	6	24	23.8	13
MISSISSIPPI SYSTEM					
Ohio Basin					
French Creek: Meadville, Pa.	57	5	5	58.4	5
Allegheny:					
Olean, N. Y.	10	4	4	10.1	4
Lock No. 5, Schenley, Pa.: Upper gage	21	4	5	22.3	4
Lock No. 4, Natrona, Pa.: Upper gage	20	4	5	20.9	4
Lock No. 3, Acmetonia, Pa.: Upper gage	20	4	5	21.2	4
Hocking:					
Enterprise, Ohio	12	4 15	4 16	12.8 14.2	4 15
Athens, Ohio	17	5 15	5 17	17.5 21.2	5 16
Olentangy: Delaware, Ohio	9	4	5	9.4	4
Paint Creek: Bourneville, Ohio	10	4 15	5 16	14.8 15.6	4 15
Scioto:					
La Rue, Ohio	11	4	5	12.6	4
Prospect, Ohio	10	5	6	10.7	5
Circleville, Ohio	14	4 16	6 17	19.0 17.1	5 16
Chillicothe, Ohio	16	5 17	7 17	19.8 16.2	6 17
Piketon, Ohio	15	4 15	8 18	21.3 23.9	7 16
Little Miami:					
Kings Mills, Ohio	17	14	14	17.8	14
Milford, Ohio	12	14	15	12.2	15
Licking: Falmouth, Ky.	28	15	15	28.5	15
Brushears Creek: Taylorsville, Ky.	24	4 14	4 15	24.2 27.2	4 15
Barren: Bowling Green, Ky.	28	5	6	28.4	5
Dough: Dundee, Ky.	25	4 14	5 23	27.2 28.*	5 16
Green:					
Munfordville, Ky.	28	5 15	7 17	30.8 30.6	6 16
Lock No. 6, Brownsville, Ky.	28	5 15	8 19	32.3 37.0	6 17
Lock No. 4, Woodbury, Ky.	33	4 14	10 22	39.6 42.6	7 18
Lock No. 2, Rumsey, Ky.	34	6	31	42.8	22
West Fork:					
Anderson, Ind.	10	4	4	10.0	4
Spencer, Ind.	--	--	--	16.2	16
Elliston, Ind.	18	6 15	6 20	18.0 21.3	6 17
Newberry, Ind.	--	--	--	15.8	18
Edwardsport, Ind.	12	4 14	10 25	16.0 18.7	7 19
MISSISSIPPI SYSTEM (Cont'd.)					
Ohio Basin (Cont'd.)					
East Fork:					
Seymour, Ind.	14	4 15	4 17	14.2 16.3	4 15
Bedford, Ind.	--	--	--	23.8	19
Williams, Ind.	10	19	21	11.5	19
White: Petersburg, Ind.	16	7 15	12 25	17.8 21.8	9 21
Wabash:					
Wabash, Ind.	12	3 19	6 20	16.2 12.4	4 19
La Fayette, Ind.	11	4	8	17.2	5
Covington, Ind.	16	4 21	9 21	20.2 16.0	6 21
Montezuma, Ind.	--	--	--	19.3	7
Terre Haute, Ind.	14	4	11	16.4	9-11
Hutsonville, Ill.	--	--	--	19.7	10
Riverton, Ind.	--	--	--	17.2	11
Mount Carmel, Ill.	17	10 16	13 26	17.4 19.7	11-12 23
New Harmony, Ind.	15	20	26	15.7	24
Cumberland: Lock F, Eddyville, Ky.	50	15	19	53.1	17
Tennessee: Gilbertsville, Ky.	34	3	21	37.7	18-19
Ohio:					
Dam No. 7, Midland, Pa.	30	4	5	30.9	5
Tell City, Ind.	38	16	23	41.6	20
Dam No. 47, Newburgh, Ind.	38	14	26	43.8	20
Dam No. 48, near Henderson, Ky.	38	15	27	43.4	21
Mount Vernon, Ind.	35	14	28	41.0	22
Dam No. 49, Uniontown, Ky.	37	14	29	42.5	23
Shawneetown, Ill.	33	10	31	42.7	23
Dam No. 50, Fords Ferry, Ky.	34	9	31	45.1	23
Dam No. 51, Golconda, Ill.	40	17	26	41.4	21-23
Paducah, Ky.	39	16	19	39.8	17
Dam No. 52, Brookport, Ill.	37	14	27	41.5	17
Dam No. 53, near Mound City, Ill.	42	15	23	45.1	17
Cairo, Ill.	40	16	21	41.3	17
White Basin					
Black: Black Rock, Ark.	14	15	19	17.8	15
Little Red: Judsonia, Ark.	30	16	16	32.1	16
White:					
Clarendon, Ark.	26	22	27	26.2	24
St. Charles, Ark.	25	26	31	25.1	29
Red Basin					
Little Missouri: Boughton, Ark.	20	16	16	20.5	16
Ouachita:					
Arkadelphia, Ark.	17	14	17	21.3	15
Camden, Ark.	26	16	24	34.3	20
Lower Mississippi Basin					
St. Francis:					
Fisk, Mo.	20	16	21	21.4	18
St. Francis, Ark.	18	14	28	19.1	21-22
Coldwater: Sarah, Miss.	18	3 13	4 16	20.1 20.0	3 14
Tallahatchie: Swan Lake, Miss.	26	5	†	28.4 29.1	10 16-17
Yazoo: Yazoo City, Miss.	29	22	†	----	--
Atchafalaya Basin					
Atchafalaya: Atchafalaya, La.	25	22	†	25.8	Feb. 1-3
PACIFIC SLOPE DRAINAGE					
Sacramento Basin					
Sacramento: Fremont Weir, Calif.	33.5	20	31	34.4 36.2	20 24
Russian Basin					
Russian:					
Hopland, Calif.	21	21	22	25.6	21
Guerneville, Calif.	29	22	23	33.6	23

FLOOD STAGE DATA

(All dates in January unless otherwise specified)

Table 5—Continued

River and station	Flood stage	Above flood stages —dates		Crest *	
		From—	To—	Stage	Date
PACIFIC SLOPE DRAINAGE (Cont'd.)	Ft.			Ft.	
Eel Basin					
Eel: Fernbridge, Calif.	17.5	21	23	23.3	22
Columbia Basin					
McKenzie:					
Leaburg, Oreg.	12	17	17	13.0	17
		24	24	13.4	24
Coburg Bridge, Oreg.	11	18	18	11.1	18
Santiam: Jefferson, Oreg.	13	3	3	13.3	3
		14	15	13.6	14
		17	18	15.6	17
		21	22	14.5	21
		24	26	16.0	24
Willamette:					
Harrisburg, Oreg.	12	18	18	15.0	18
		24	25	14.2	24
Albany, Oreg.	20	19	19	20.5	19
Oregon City, Oreg.	12	19	28	12.7	20
				13.0	26

* Provisional.
† Continued at end of month.

RADIOSONDE DATA

Average monthly values

Table 20 — JANUARY 1951

Standard pressure surface (mb.)	ALBANY, N. Y. (1007 MB.)				ALBUQUERQUE, N. MEX. (837 MB.)				ATLANTA, GA. (985 MB.)				BIG SPRING, TEX. (927 MB.)				BISMARCK, N. DAK. (957 MB.)				BOISE, IDAHO (917 MB.)				BROWNSVILLE, TEX. (1018 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	86	- 3.1	74	31	1,620	4.0	79	31	307	6.7	69	31	784	5.8	38	31	505	-16.2	77	31	868	- 1.6	74	31	6	16.3	78
1,000--	31	142			31	142			31	184			31	153			31	166			31	170			31	154	17.0	74
950----	31	551	- 2.6	63	31	577			31	611	7.8	61	31	578			31	557			31	585			31	594	15.1	71
900----	31	976	- 4.3	63	31	1,025			31	1,053	6.3	60	31	1,028	- 8.7	29	31	970	-11.2	69	31	1,018	- 0.2	70	31	1,047	14.0	60
850----	31	1,426	- 5.9	62	31	1,492			31	1,521	4.9	54	31	1,499	7.5	27	31	1,410	-10.4	64	31	1,474	- 1.8	67	31	1,528	12.6	53
800----	31	1,900	- 6.5	56	31	1,987	4.1	33	31	2,014	3.6	46	31	1,997	6.4	27	31	1,876	-10.5	58	31	1,955	- 4.2	65	31	2,036	11.2	41
750----	31	2,405	- 8.3	55	31	2,512	1.0	36	31	2,547	1.8	43	31	2,528	3.8	25	31	2,379	-12.3	55	31	2,465	- 6.9	64	31	2,580	8.5	31
700----	31	2,936	-10.2	51	31	3,060	- 2.3	37	31	3,090	0.7	41	31	3,081	0.7	24	31	2,896	-14.7	51	31	2,996	-10.1	62	31	3,138	5.2	31
650----	31	3,508	-13.2	44	31	3,646	- 6.1	35	30	3,681	- 4.3	42	31	3,680	- 2.9		31	3,465	-17.6	46	31	3,568	-12.9	57	31	3,740	1.1	31
600----	31	4,109	-16.7	45	31	4,265	- 9.9	35	28	4,308	- 8.0	39	31	4,301	- 7.3		31	4,048	-21.3	44	31	4,170	-16.3	51	31	4,378	- 3.0	31
550----	31	4,758	-20.8	46	30	4,929	-14.2	37	28	4,980	-12.4		31	4,978	-12.1		31	4,694	-25.3	43	31	4,824	-20.0	49	30	5,063	- 7.3	
500----	31	5,455	-25.0	43	30	5,643	-19.2	37	28	5,700	-17.0	34	31	5,694	-17.2		31	5,370	-30.0	43	30	5,523	-24.3	49	30	5,798	-11.9	
450----	31	6,215	-30.1	43	30	6,419	-24.6	37	28	6,487	-22.4		31	6,477	-22.6		31	6,116	-35.4	47	30	6,286	-29.0	48	30	6,601	-17.5	33
400----	30	7,052	-35.5	46	30	7,267	-30.7	37	28	7,337	-28.7		29	7,338	-28.9		31	6,922	-41.1		30	7,116	-34.8	47	30	7,469	-23.9	35
350----	29	7,972	-42.0		29	8,193	-37.9		28	8,280	-35.5		28	8,263	-35.5		31	7,817	-47.1		30	8,035	-41.7		30	8,428	-31.3	36
300----	29	8,999	-48.8		29	9,239	-45.1		28	9,335	-43.4		26	9,339	-43.2		30	8,828	-51.9		30	9,062	-49.2		30	9,500	-39.8	
250----	24	10,185	-54.5		29	10,435	-53.0		27	10,536	-52.2		24	10,533	-51.8		30	10,002	-53.6		30	10,239	-55.5		30	10,719	-49.7	
200----	22	11,612	-56.8		28	11,859	-58.9		26	11,957	-57.5		18	11,963	-58.1		27	11,437	-52.4		30	11,649	-57.8		30	12,153	-56.7	
175----	21	12,458	-56.0		26	12,699	-59.9		26	12,797	-58.3		15	12,791	-59.9		27	12,301	-51.7		30	12,493	-56.2		29	12,993	-59.5	
150----	19	13,450	-55.6		25	13,659	-60.1		25	13,763	-59.6		12	13,749	-61.1		25	13,302	-51.4		29	13,468	-55.1		29	13,849	-62.9	
125----	17	14,609	-57.7		23	14,800	-61.2		22	14,876	-62.8		11	14,870	-64.2		23	14,474	-52.4		26	14,630	-56.1		29	15,060	-66.8	
100----	8	16,024	-58.4		22	16,177	-64.0		21	16,235	-65.8		10	16,227	-67.6		19	15,920	-54.1		25	16,051	-57.5		29	16,393	-70.7	
80-----					21	17,535	-65.7		17	17,588	-66.4		8	17,566	-67.8		16	17,347	-54.4		21	17,455	-58.4		23	17,702	-71.0	
60-----					15	19,295	-62.2		9	19,341	-64.4		7	19,303	-64.4		8	19,193	-55.3		14	19,272	-58.2		18	19,407	-66.6	
50-----					8	20,444	-62.9		7	20,465	-60.9		5	20,416	-63.5						8	20,440	-57.8		12	20,515	-63.6	
40-----					5	21,818	-60.9		5	21,867	-58.7														7	21,893	-60.2	
30-----																												
20-----																												

Standard pressure surface (mb.)	BUFFALO, N. Y. (991 MB.)				BURRWOOD, LA. (1021 MB.)				CAMAGUEY, CUBA (1005 MB.)				CARIBOU, MAINE (991 MB.)				CHARLESTON, S. C. (1022 MB.)				CIUDAD VICTORIA, MEX. (977 MB.)				COLUMBIA, MO. (990 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	221	- 1.9	76	31	3	13.9	87	30	122	17.0	92	31	191	- 9.3	75	31	13	7.5	80	31	335	21.9	37	30	239	- 0.6	67
1,000--	31	147			31	179	15.7	71	30	166	18.1	86	31	116			31	190	11.4	65	31	134			30	152		
950----	31	558	- 2.7	71	31	614	13.1	67	30	612	17.8	79	31	517	- 8.6	71	31	622	9.8	56	31	583	20.0	41	30	567	- 0.3	56
900----	31	983	- 4.9	70	31	1,066	10.9	58	30	1,068	14.8	76	31	932	- 9.7	67	31	1,066	8.0	52	31	1,043	16.4	47	30	995	- 0.8	51
850----	31	1,431	- 6.1	68	31	1,542	9.5	48	30	1,547	12.4	69	31	1,372	-10.5	66	31	1,536	6.1	47	31	1,527	13.7	50	30	1,451	- 1.2	44
800----	31	1,904	- 7.7	63	31	2,043	7.7	41	30	2,059	11.6	39	31	1,839	-11.0	63	31	2,032	4.9	38	31	2,036	11.2	47	30	1,933	- 2.9	43
750----	31	2,413	- 9.4	57	31	2,579	5.3	36	30	2,602	9.1		31	2,340	-12.4	58	31	2,566	3.0	34	31	2,581	9.1	42	30	2,447	- 4.2	41
700----	31	2,936	-11.2	56	31	3,133	2.8	30	30	3,165	6.2		31	2,859	-14.0	54	31	3,113	0.3	30	31	3,142	5.7	41	30	2,985	- 6.4	40
650----	31	3,511	-14.0	60	31	3,732	- 0.6		30	3,777	3.3		31	3,426	-16.8	56	31	3,708	- 3.3		31	3,746	1.7	40	30	3,567	- 9.5	43
600----	31	4,106	-17.3	59	31	4,365	- 4.5		30	4,414	- 0.3		31	4,016	-19.6	52	31	4,332	- 6.7		30	4,384	- 2.0	33	30	4,175	-13.1	
550----	31	4,759	-20.9	57	31	5,046	- 8.7		30	5,109	- 3.9		31	4,664	-23.3	48	31	5,010	-10.8		30	5,075	- 6.0	30	29	4,835	-17.3	39
500----	30	5,451	-25.3	52	31	5,777	-13.5		29	5,851	- 8.9		31	5,349	-27.6	45	31	5,733	-15.6		29	5,813	-10.7	31	29	5,539	-22.2	40
450----	30	6,208	-30.4	52	31	6,571	-19.2		29	6,666	-14.7		31	6,103	-32.4	47	31	6,522	-21.4		29	6,619	-16.4	32	29	6,309	-27.8	37
400----	29	7,040	-36.0	50	31	7,435	-25.6		28	7,540	-21.6		31	6,921	-37.7	51	31	7,378	-27.5		29	7,493	-23.1		29	7,142	-33.4	
350----	29	7,956	-42.2		31	8,388	-33.2		27	8,510	-29.1		31	7,830	-43.5		31	8,325	-34.4		27	8,461	-30.3		29	8,066	-39.6	
300----	26	8,968	-48.7		31	9,453	-41.5		27	9,594	-37.2		31	8,853	-49.0		30	9,396	-42.3		27	9,539	-38.6		29	9,104	-46.3	
250----	21	10,133	-52.9		31	10,665	-50.3		27	10,832	-45.5		31	10,038	-52.6		28	10,599	-51.1		27	10,764	-48.8		29	10,297	-53.0	
200----	10	11,511	-52.9		31	12,096	-57.1		26	12,294	-54.3		30	11,477	-52.5		25	12,030	-56.5		27	12,198	-57.4		27	11,711	-57.0	
175----	6	12,298	-49.2		29	12,936	-59.6		26	13,141	-59.3		28	12,336	-57.1		25	12,874	-57.8		27	13,035	-60.5		26	12,549	-56.5	
150----	5	13,277	-48.8		26	13,901	-62.5		25	14,095	-64.6		26	13,344	-52.0		22	13,848	-59.6		27	13,986	-64.3		25	13,534	-55.9	
125----					26	15,015	-66.4		24	15,202	-70.7		23	14,522	-52.8		22	14,978	-63.5		25	15,092	-68.1		25	14,687	-58.1	
100----					23	16,349	-70.9		18	16,502	-76.0		19	15,965	-54.5		21	16,332	-66.9		22	16,420	-73.6		25	16,084	-60.4	
80-----					17	17,671	-71.8		13	17,804	-78.1		14	17,399	-55.8		15	17,657	-67.5		19	17,725	-72.8		19	17,473	-59.6	
60-----					6	19,345	-65.6		7	19,476	-71.7		8	19,230	-55.8		5	19,375	-64.9		13	19,445	-68.1		10	19,276	-60.1	
50-----									5	20,569	-66.4										7	20,570	-65.3		9	20,412	-59.7	

Standard pressure surface (mb.)	DODGE CITY, KANS. (925 MB.)				EL PASO, TEX. (882 MB.)				ELY, NEV. (808 MB.)				GLASGOW, MONT. (939 MB.)				GRAND JUNCTION, COLO. (852 MB.)				GREAT FALLS, MONT. (884 MB.)				GREENSBORO, N. C. (989 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	792	- 1.8	63	31	1,195	8.8	30	31	1,908	- 4.0	67	31	648	-13.7	73	31	1,474	- 3.1	69	31	1,128	- 8.0	56	31	273	3.1	74
1,000--	31	159			31	138			31	178			31	164			31	185			31	156			31	182	-	
950----	31	575			31	576			31	601			31	562			31	606			31	567			31	605	3.2	56
900----	31	1,007	2.1	48	31	1,030			31	1,038			31	972	- 9.9	63	31	1,040			31	990			31	1,041	3.7	53
850----	31	1,468	1.3	40	31	1,504	9.7	28	31	1,498			31	1,414	- 9.6	58	31	1,494			31	1,434	- 7.3	55	31	1,505	2.6	48
800----	31	1,955	- 0.2	38	31	2,004	6.7	28	31	1,984	- 1.3	55	31	1,881	-10.7	59	31	1,978	- 1.6	51	31	1,905	- 8.6	55	31	1,993	1.2	44
750----	31	2,473	- 2.1	38	31	2,535	4.0	31	31	2,503	- 2.6	50	31	2,379	-12.9	56	31	2,498	- 3.8	50	31	2,407	-11.5	58	31	2,517	- 0.5	40
700----	31	3,016	- 3.7	36	31	3,088	0.7	32	31	3,042	- 6.0	53	31	2,899	-15.1	54	31	3,031	- 6.6	51	31	2,929	-14.3	61	31	3,060	- 2.9	35
650----	31	3,602	- 7.0	36	31	3,684	- 3.2	29	31	3,621	- 9.3	52	31	3,461	-18.5	51	31	3,616	-10.0	53	31	3,495	-17.7	61	31	3,652	- 6.2	32
600----	31	4,217	-11.1	36	31	4,307	- 7.1		31	4,234	-12.9	48	31	4,048	-22.3	50	31	4,220	-13.6	54	31	4,082	-21.1	55	31	4,266	- 9.6	29
550----	31	4,882	-15.3	35	31	4,982	-11.8		31	4,896	-16.8	43	31	4,687	-26.3	47	31	4,885	-17.7	50	31	4,725	-24.9	51	31	4,938	-13.8	32
500----	31	5,595	-20.3	34	30	5,700	-16.8		31	5,602	-21.1	43	31	5,364	-30.9	46	31	5,583	-22.3	46	31	5,406	-29.5	48	31	5,650	-18.9	35
450----	30	6,369	-25.6		30	6,484	-22.5		31	6,375	-26.6	40	31	6,108	-36.0	44	31	6,355	-27.7	43	31	6,155	-34.7	48	31	6,432	-24.3	
400----	30	7,210	-31.9		30	7,337	-28.9		30	7,212	-32.9		31	6,913	-41.3		31	7,184	-33.8	42	31	6,964	-40.3		31	7,276	-30.3	
350----	30	8,139	-38.8		29	8,283	-35.7		30	8,136	-39.7		31	7,808	-47.1		31	8,107	-40.6		31	7,862	-46.4		31	8,212	-37.1	
300----	30	9,179	-46.6		28	9,332	-43.3		30	9,174	-47.3		31	8,816	-52.2		31	9,139	-47.9		31	8,871	-52.2		30	9,259	-44.5	
250----	28	10,361	-54.0		27	10,536	-51.3		30	10,358	-54.9		29	9,984	-54.0		30	10,326	-54.9		29	10,037	-55.0		30	10,458	-52.1	
200----	28	11,775	-57.7		24	11,956	-58.5		30	11,768	-58.6		29	11,417	-52.5		29	11,737	-57.9		28	11,459	-54.1		30	11,884	-56.9	
175----	27	12,619	-57.0		22	12,804	-60.7		29	12,604	-58.6		29	12,282	-51.3		29	12,578	-58.1		21	12,312	-52.6		30	12,728	-57.4	
150----	26	13,595	-57.0		22	13,760	-61.1		28	13,565	-57.3		29	13,283	-51.1		29	13,550	-57.3		20	13,306	-51.7		27	13,689	-58.6	
125----	25	14,746	-58.9		20	14,888	-63.0		26	14,709	-58.5		29	14,465	-52.2		28	14,698	-58.1		16	14,478	-53.1		22	14,828	-61.8	
100----	21	16,142	-61.7		19	16,252	-66.3		24	16,112	-60.6		27	15,914	-54.1		27	16,093	-61.1		15	15,900	-54.9		21	16,197	-63.7	
80-----	16	17,513	-63.4		18	17,599	-67.4		21	17,487	-61.5		24	17,345	-54.5		25	17,467	-61.6		13	17,332	-55.7		21	17,560	-64.7	
60-----	12	19,279	-62.6		13	19,333	-64.3		14	19,279	-60.2		13	19,171	-55.7		15	19,255	-60.4		10	19,175	-55.5		13	19,314	-62.7	
50-----	9	20,405	-60.9		9	20,439	-61.8		7	20,423	-59.9		7	20,323	-56.1		5	20,395	-60.5		6	20,342	-54.6		7	20,439	-61.4	
40-----	5	21,773	-60.4		6	21,839	-58.3																					

These average values for standard pressure surfaces were obtained by radiosondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature, in degrees centigrade and relative humidity in percent.

RADIOSONDE DATA

Average monthly values

Table 20—Continued

Standard pressure surface (mb)	HATTERAS, N. C. (1022 MB.)				HILO, T. H. (1016 MB.)				INTERNAT. FALLS, MINN. (972 MB.)				JOLIET, ILL. (996 MB.)				LAKE CHARLES, LA. (1019 MB.)				LANDER, WYO. (825 MB)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	3	9.3	77	31	9	23.3	75	31	361	-16.8	77	31	178	- 4.9	79	31	5	10.5	82	31	1,696	- 6.2	48
1,000	31	179	9.8	67	31	143	22.2	76	31	145			31	145			31	166	12.0	71	31	161		
950	31	610	8.1	60	31	588	18.8	79	31	533			31	533			31	599	11.2	64	31	578		
900	31	1,050	6.0	56	31	1,051	15.5	80	31	942	-14.3	71	31	974	- 4.7	64	31	1,040	10.2	62	31	1,011		
850	31	1,516	3.9	49	31	1,534	12.6	80	31	1,377	-13.5	66	31	1,423	- 5.5	60	31	1,521	8.8	57	31	1,463		
800	31	2,007	2.1	47	31	2,042	10.2	71	31	1,837	-13.9	59	31	1,898	- 6.7	55	31	2,021	7.1	52	31	1,942	- 4.0	41
750	31	2,536	0.4	43	31	2,583	8.4	55	31	2,334	-15.1	55	31	2,409	- 7.9	47	31	2,560	5.1	45	31	2,455	- 6.7	39
700	31	3,077	- 1.8	38	31	3,145	5.7	45	31	2,845	-17.7	52	31	2,935	- 9.8	45	31	3,110	1.7	47	31	2,984	- 9.7	41
650	31	3,669	- 5.0	35	31	3,752	2.9	35	31	3,406	-20.7	47	31	3,515	-12.5	46	31	3,706	- 1.8	41	31	3,560	-12.9	44
600	31	4,288	- 8.5	32	31	4,393	- 0.7		31	3,984	-24.0	47	31	4,112	-16.1	47	31	4,335	- 5.9	36	31	4,159	-16.4	44
550	31	4,959	-12.6	32	31	5,082	- 4.9		31	4,621	-27.8	46	31	4,767	-20.1	46	31	5,015	-10.4		31	4,810	-20.5	41
500	31	5,679	-17.2		31	5,825	- 9.6		31	5,292	-31.7	48	31	5,462	-24.7	44	31	5,737	-15.2		31	5,505	-25.4	44
450	31	6,465	-22.6		31	6,638	-15.2		30	6,035	-36.5	47	31	6,225	-29.9	45	31	6,530	-20.7		31	6,265	-30.8	43
400	31	7,315	-28.8		31	7,511	-21.6		30	6,838	-42.0		30	7,051	-35.8	48	31	7,385	-26.8		31	7,086	-36.8	44
350	31	8,257	-35.4		31	8,483	-27.9		30	7,728	-48.2		29	7,974	-42.2		30	8,335	-33.5		31	7,997	-43.3	
300	31	9,313	-43.0		31	9,573	-35.2		28	8,734	-52.8		28	8,997	-49.0		30	9,399	-41.2		31	9,019	-50.0	
250	31	10,517	-51.2		31	10,822	-43.3		27	9,901	-53.0		27	10,178	-54.5		30	10,612	-50.4		30	10,192	-55.1	
200	30	11,948	-56.0		31	12,292	-53.1		26	11,345	-50.8		22	11,575	-54.9		29	12,039	-57.6		29	11,608	-56.9	
175	30	12,794	-56.9		29	13,141	-58.6		24	12,216	-49.7		22	12,429	-54.3		29	12,878	-59.1		29	12,456	-55.3	
150	29	13,766	-58.2		27	14,096	-64.9		22	13,222	-49.8		22	13,417	-54.3		29	13,838	-61.5		29	13,439	-54.7	
125	28	14,913	-60.8		19	15,194	-70.7		21	14,409	-51.1		20	14,587	-55.5		27	14,963	-64.9		24	14,609	-55.3	
100	27	16,286	-63.4		11	16,488	-76.8		15	15,857	-52.7		18	16,001	-57.6		23	16,317	-68.5		24	16,025	-57.8	
80	22	17,655	-65.1		6	17,786	-79.1		11	17,297	-53.2		16	17,400	-58.4		20	17,644	-69.1		21	17,421	-58.3	
60	7	19,437	-62.2						6	19,161	-55.6		13	19,202	-58.3		14	19,377	-66.7		14	19,232	-58.1	
50													7	20,342	-58.0		10	20,495	-64.0		8	20,352	-57.9	
40																	6	21,883	-60.3					

Standard pressure surface (mb)	LAS VEGAS, NEV. (940 MB.)				LITTLE ROCK, ARK. (1010 MB.)				MAZATLAN, MEXICO (1013 MB.)				MEDFORD, ORE. (971 MB.)				MERIDA, MEXICO (1015 MB.)				MIAMI, FLA. (1021 MB.)				NANTUCKET, MASS. (1016 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	660	6.4	46	31	79	5.8	68	31	14	20.8	76	31	401	4.0	82	31	27	22.8	69	31	4	17.2	73	31	14	1.9	81
1,000	31	146			31	160	6.5	62	31	123	20.1	70	31	162			31	158	22.1	67	31	184	18.3	67	31	138	2.5	73
950	31	574			31	586	6.0	59	31	573	20.8	42	31	583	4.2	73	31	604	19.9	64	31	623	15.2	69	31	553	1.2	67
900	31	1,020	9.1	37	31	1,024	4.8	58	31	1,033	19.0	35	31	1,019	2.3	70	31	1,067	16.9	66	31	1,078	12.1	65	31	887	- 0.4	60
850	31	1,491	6.5	38	31	1,490	4.1	53	31	1,521	16.1	32	31	1,479	0.0	67	31	1,553	13.5	69	31	1,555	10.1	53	31	1,443	- 2.0	59
800	31	1,986	3.9	41	31	1,982	2.9	47	31	2,033	12.9	29	31	1,963	- 2.3	65	31	2,061	11.3	57	31	2,058	9.2	37	31	1,924	- 3.2	52
750	31	2,515	1.2	39	31	2,509	1.0	48	31	2,574	9.6		31	2,480	- 4.4	61	31	2,604	9.4	41	31	2,595	7.5	26	31	2,436	- 5.2	49
700	31	3,060	- 1.6	33	31	3,055	- 1.8	49	31	3,140	5.9		31	3,014	- 6.7	55	31	3,168	6.5	39	31	3,157	5.5		31	2,972	- 7.7	46
650	31	3,650	- 5.4	34	31	3,646	- 5.0	44	31	3,740	2.0		31	3,595	- 9.8	46	31	3,781	3.5	31	31	3,764	2.2		31	3,548	-10.7	45
600	31	4,269	- 9.4	33	30	4,263	- 8.3	38	31	4,382	- 2.2		31	4,203	-13.2	42	31	4,418	- 0.2	27	31	4,401	- 1.6		31	4,156	-14.4	45
550	31	4,939	-13.8	30	30	4,936	-13.4	37	31	5,065	- 6.7		31	4,866	-16.9	42	31	5,110	- 4.2		31	5,090	- 5.8		31	4,814	-18.2	42
500	31	5,653	-19.1		30	5,649	-18.4		29	5,807	-11.8	39	31	5,569	-21.8	43	31	5,853	- 9.4		31	5,828	-10.5		31	5,517	-22.6	41
450	31	6,432	-24.8		30	6,431	-23.8		29	6,611	-17.2	37	30	6,352	-26.9	43	31	6,664	-15.0		31	6,634	-16.4		31	6,289	-27.6	40
400	31	7,275	-31.5		30	7,277	-30.0		29	7,479	-23.4	39	30	7,185	-33.0	43	31	7,540	-21.8		31	7,506	-23.0		31	7,120	-33.4	40
350	30	8,208	-38.3		30	8,214	-36.8		28	8,440	-30.8		29	8,109	-40.2		31	8,507	-29.5		31	8,470	-30.3		31	8,045	-39.7	
300	30	9,252	-45.5		30	9,265	-43.8		26	9,518	-39.3		29	9,143	-47.8		31	9,587	-37.7		31	9,547	-38.6		31	9,082	-46.7	
250	30	10,445	-53.1		30	10,466	-52.0		26	10,738	-49.0		29	10,324	-55.6		31	10,817	-47.6		31	10,775	-47.2		31	10,272	-53.1	
200	30	11,863	-58.4		25	11,898	-57.6		25	12,165	-59.2		29	11,727	-60.0		31	12,259	-56.5		28	12,222	-55.0		30	11,692	-56.1	
175	28	12,702	-58.4		23	12,740	-58.1		25	12,995	-62.0		29	12,561	-59.0		31	13,095	-61.5		21	13,061	-58.0		27	12,513	-55.1	
150	28	13,670	-59.0		23	13,705	-60.2		23	13,946	-66.1		29	13,532	-57.3		29	14,032	-66.7		20	14,007	-63.6		23	13,493	-54.7	
125	28	14,809	-60.4		21	14,830	-62.0		16	15,042	-66.0		27	14,694	-58.4		23	15,112	-72.0		20	15,114	-67.7		22	14,652	-56.0	
100	27	16,198	-63.2		19	16,197	-64.2		12	16,369	-71.0		27	16,068	-61.0		14	16,419	-76.7		20	16,440	-72.5		18	16,053	-58.0	
80	26	17,566	-64.1		18	17,558	-65.1		9	17,670	-73.0		24	17,472	-61.9		9	17,697	-77.6		17	17,743	-72.0		11	17,445	-58.2	
60	19	19,341	-62.4		12	19,306	-63.7		6	19,364	-69.9		18	19,259	-60.7						9	19,158	-66.7		8	19,255	-58.6	
50	16	20,475	-61.5		9	20,433	-61.7						14	20,387	-59.9						5	20,511	-65.5					
40	5	21,861	-60.7										5	21,758	-58.6													

Standard pressure surface (mb)	NASHVILLE, TENN. (999 MB.)				NORTH PLATTE, NEBR. (917 MB.)				OAKLAND, CALIF. (1020 MB.)				OKLAHOMA CITY, OKLA. (972 MB.)				OMAHA, NEBR. (982 MB.)				PHOENIX, ARIZ. (977 MB.)				PITTSBURGH, PA. (973 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	177	4.5	74	31	849	- 4.4	65	31	6	9.4	77	30	391	3.0	59	30	308	- 5.6	73	31	338	10.1	55	31	382	- 0.3	72
1,000	31	166			31	151			31	170	9.6	74	30	155			30	163			31	138			31	157	[illegible]	
950	31	589	3.9	63	31	566			31	601	8.3	69	30	577	5.1	49	30	573	- 4.5	60	31	574	14.1	38	31	573	0.3	65
900	31	1,024	3.3	58	31	995	- 2.1	53	31	1,042	6.9	58	30	1,014	4.2	43	30	994	- 3.7	53	31	1,024	11.4	37	31	1,001	- 1.3	63
850	31	1,486	2.6	53	31	1,449	- 2.8	47	31	1,510	4.8	52	30	1,478	3.5	41	30	1,444	- 4.0	50	31	1,498	8.3	39	31	1,455	- 3.1	62
800	31	1,975	0.9	48	31	1,928	- 4.1	46	31	2,002	2.2	52	30	1,970	3.3	38	30	1,921	- 5.6	46	31	1,996	5.4	38	31	1,934	- 4.6	57
750	31	2,498	- 1.6	45	31	2,441	- 6.6	44	31	2,527	- 0.4	49	30	2,497	1.6	35	30	2,432	- 6.9	44	31	2,525	2.8	35	31	2,449	- 5.9	57
700	31	3,038	- 3.9	43	31	2,972	- 8.8	46	31	3,070	- 2.9	43	30	3,044	- 1.2	27	30	2,962	- 9.0	44	31	3,075	- 0.5	35	31	2,979	- 7.9	56
650	31	3,627	- 7.2	41	31	3,551	-11.8	45	30	3,660	- 6.1	36	30	3,638	- 4.8		30	3,542	-11.8	45	31	3,666	- 4.3	34	31	3,562	-10.8	55
600	31	4,239	-10.7	36	31	4,152	-15.1	47	30	4,277	- 9.7	37	30	4,255	- 8.8	28	30	4,142	-15.1	46	31	4,290	- 8.2	33	31	4,163	-14.5	49
550	31	4,908	-14.8	37	31	4,810	-19.3	48	30	4,945	-14.1	40	30	4,930	-13.3		30	4,802	-19.4	51	31	4,960	-13.0	33	31	4,823	-18.0	44
500	31	5,617	-19.5	34	30	5,505	-23.7	44	30	5,660	-19.2	41	30	5,642	-18.2		30	5,497	-24.1	49	31	5,678	-18.3	32	31	5,524	-22.4	41
450	31	6,383	-24.9		29	6,274	-28.9	40	30	6,437	-24.9	42	29	6,427	-23.8		30	6,260	-29.4	46	31	6,458	-24.1	31	31	6,293	-27.8	40
400	30	7,235	-31.3		29	7,100	-35.1	40	30	7,281	-31.3	44	29	7,272	-30.1		30	7,089	-35.6		31	7,304	-30.7	33	31	7,126	-33.7	41
350	29	8,164	-37.8		29	8,016	-42.2		30	8,212	-38.4	43	26	8,219	-37.2		30	8,004	-42.4		31	8,238	-37.4		30	8,044	-40.4	
300	29	9,210	-44.9		29	9,041	-49.9		29	9,258	-46.2		26	9,265	-44.9		30	9,030	-49.4		31	9,286	-44.7		30	9,080	-47.1	
250	28	10,414	-52.8		23	10,217	-55.1		29	10,447	-54.4		25	10,463	-53.2		30	10,208	-54.5		31	10,485	-51.8		29	10,262	-53.1	
200	27	11,833	-57.5		23	11,633	-56.8		28	11,863	-60.0		25	11,875	-59.0		30	11,629	-55.9		28	11,909	-58.2		25	11,682	-56.0	
175	27	12,673	-58.1		22	12,476	-55.0		28	12,694	-60.2		25	12,711	-59.4		29	12,478	-54.7		26	12,740	-60.0		25	12,531	-55.8	
150	25	13,642	-59.1		21	13,458	-54.7		26	13,867	-58.9		25	13,674	-60.1		29	13,464	-54.6		25	13,702	-59.5		21	13,510	-56.0	
125	25	14,778	-61.3		20	14,821	-56.4		24	14,810	-60.2		24	14,802	-61.4		26	14,617	-56.2		22	14,835	-61.0		20	14,664	-57.2	
100	22	16,141	-63.3		16	16,041	-58.8		21	16,213	-64.0		24	16,177	-63.7		23	16,019	-58.0		20	16,211	-64.5		15	16,066	-58.9	
80	21	17,504	-64.4		14	17,437	-60.1		21	17,576	-64.3		22	17,542	-64.4		19	17,423	-58.3		14	17,564	-65.4		11	17,473	-60.6	
60	16	19,276	-62.9		9	19,248	-59.4		10	19,343	-62.7		13	19,315	-62.2		12	19,229	-58.3		10	19,305	-63.0					
50	14	20,392	-62.2		5	20,406	-59.3		8	20,470	-62.4		6	20,445	-61.5		9	20,375	-57.8		9	20,423	-62.0					
40	8	21,778	-59.8																									

These average values for standard pressure surfaces were obtained by radiosondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees centigrade and relative humidity in percent.

RADIOSONDE DATA

Average monthly values

Table 20—Continued

JANUARY 1951

Standard pressure surface (mb)	PORTLAND, MAINE. (1014 MB.)				RAPID CITY, S. DAK. (903 MB.)				ST. CLOUD, MINN. (979 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	20	- 3.4	76	23	966	- 7.8	64	31	317	-15.0	73
1,000---	31	128	- 2.0	68	23	159			31	152		
950----	31	537	- 2.4	64	23	571			31	550	-12.3	72
900----	31	964	- 4.1	64	23	994			31	959	- 9.4	62
850----	31	1,413	- 5.3	62	23	1,442	- 4.6	52	31	1,401	- 9.4	56
800----	31	1,888	- 6.2	57	23	1,918	- 6.1	50	31	1,868	-10.6	51
750----	31	2,398	- 7.7	53	23	2,424	- 8.8	47	31	2,369	-12.5	46
700----	31	2,926	-10.0	48	23	2,951	-11.8	48	31	2,887	-14.7	41
650----	31	3,499	-12.9	49	23	3,524	-14.9	47	31	3,457	-17.2	42
600----	31	4,101	-16.2	46	23	4,117	-18.2	45	31	4,042	-20.5	43
550----	31	4,753	-20.2	46	23	4,766	-22.5	46	31	4,684	-24.4	46
500----	31	5,451	-25.0	47	23	5,455	-27.0	49	31	5,370	-28.6	45
450----	31	6,210	-30.1	45	23	6,204	-32.1	48	31	6,118	-33.4	43
400----	30	7,038	-36.1	44	23	7,028	-37.9		31	6,935	-39.2	
350----	30	7,952	-42.4		23	7,935	-44.4		31	7,837	-45.6	
300----	30	8,980	-48.7		23	8,952	-50.8		31	8,851	-51.2	
250----	29	10,165	-53.5		22	10,132	-54.3		31	10,028	-53.6	
200----	23	11,601	-54.7		21	11,556	-54.7		31	11,465	-52.0	
175----	23	12,455	-54.2		20	12,415	-52.8		31	12,332	-51.1	
150----	17	13,458	-55.3		19	13,409	-53.3		31	13,334	-51.1	
125----	13	14,628	-56.7		17	14,578	-55.1		30	14,517	-52.6	
100----	10	16,026	-57.3		16	16,010	-56.9		27	15,957	-54.6	
80-----	7	17,406	-58.7		14	17,418	-56.9		23	17,384	-55.2	
60-----	5	19,211	-58.1		9	19,213	-57.9		17	19,221	-56.4	
50-----					9	20,361	-57.8		10	20,351	-57.4	
40-----									6	21,753	-56.6	

Standard pressure surface (mb)	SAN ANTONIO, TEX. (991 MB.)				SAN JUAN, P. R. (1015 MB.)				SANTA MARIA, CALIF. (1011 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	30	240	10.5	53	31	19	23.2	81	31	71	9.2	83
1,000---	30	163			31	149	22.9	77	31	165	10.6	74
950----	30	597	11.6	48	31	595	19.7	78	31	602	10.8	60
900----	30	1,046	11.0	50	31	1,058	16.2	81	31	1,043	9.2	50
850----	30	1,522	9.8	49	31	1,543	13.3	78	31	1,515	6.9	46
800----	30	2,024	8.5	36	31	2,052	11.0	70	31	2,010	4.4	44
750----	30	2,559	6.2	30	31	2,597	9.5	50	31	2,540	2.2	38
700----	30	3,116	3.0		31	3,159	7.3	35	31	3,088	- 0.7	34
650----	30	3,713	- 0.7		31	3,773	4.8		31	3,681	- 4.3	29
600----	30	4,347	- 4.8		31	4,413	1.3		31	4,303	- 8.0	29
550----	30	5,027	- 9.1		31	5,113	- 2.9		31	4,977	-12.3	33
500----	30	5,757	-14.1		30	5,854	- 7.8		30	5,702	-17.2	34
450----	30	6,550	-19.5		30	6,672	-13.6		30	6,488	-23.0	34
400----	29	7,414	-25.5		29	7,549	-20.0		30	7,336	-29.5	32
350----	29	8,366	-33.0		28	8,525	-27.2		30	8,274	-36.6	
300----	29	9,432	-41.0		28	9,618	-35.0		30	9,325	-44.4	
250----	27	10,645	-49.7		27	10,869	-43.1		26	10,532	-52.7	
200----	21	12,079	-57.4		25	12,342	-53.9		25	11,943	-59.5	
175----	21	12,917	-60.1		23	13,192	-59.9		25	12,774	-60.3	
150----	21	13,874	-61.2		23	14,140	-66.5		25	13,735	-59.7	
125----	20	14,998	-63.8		21	15,227	-73.1		25	14,871	-61.5	
100----	18	16,361	-66.8		17	16,519	-78.0		24	16,250	-64.7	
80-----	13	17,709	-69.6		14	17,781	-79.3		21	17,599	-65.2	
60-----	10	19,433	-67.4		6	19,419	-72.5		15	19,357	-64.4	
50-----	9	20,529	-65.5						5	20,505	-63.5	
40-----	5	21,891	-63.8									

Standard pressure surface (mb)	S. STE. MARIE, MICH. (988 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	30	221	- 9.2	80
1,000---	30	126		
950----	30	529	- 6.7	77
900----	30	942	-10.2	75
850----	30	1,382	-11.3	69
800----	30	1,846	-12.6	63
750----	30	2,343	-14.0	61
700----	30	2,858	-16.0	58
650----	30	3,419	-18.8	55
600----	30	4,005	-22.2	54
550----	30	4,647	-26.3	52
500----	30	5,323	-30.3	53
450----	30	6,070	-35.0	53
400----	30	6,879	-40.2	
350----	30	7,778	-45.9	
300----	30	8,790	-51.1	
250----	29	9,971	-53.8	
200----	28	11,398	-51.9	
175----	28	12,264	-51.2	
150----	28	13,264	-51.4	
125----	27	14,446	-52.7	
100----	25	15,872	-55.0	
80-----	21	17,296	-55.9	
60-----	14	19,106	-57.1	
50-----	10	20,265	-57.6	
40-----				

Standard pressure surface (mb)	SPOKANE, WASH. (931 MB.)				SWAN ISLAND, W. I. (1016 MB.)				TACUBAYA, MEXICO (774 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	722	- 2.5	80	31	10	23.8	77	31	2,306	15.0	38
1,000---	31	147			31	152	23.3	77	31	73		
950----	31	558			31	603	19.9	82	31	679		
900----	31	988	- 2.6	74	31	1,063	16.7	82	31	1,009		
850----	31	1,440	- 4.9	68	31	1,548	13.7	79	31	1,500		
800----	31	1,914	- 7.3	63	30	2,058	11.6	67	31	2,028		
750----	31	2,420	- 9.8	61	30	2,602	9.7	47	31	2,580	14.2	35
700----	31	2,945	-12.6	58	30	3,167	7.4	34	31	3,151	10.1	38
650----	31	3,512	-16.1	58	30	3,781	4.5		31	3,767	5.0	45
600----	31	4,105	-19.8	57	30	4,421	1.1		31	4,410	- 0.2	47
550----	31	4,748	-23.6	51	30	5,117	- 3.0		31	5,103	- 4.9	42
500----	31	5,436	-28.1	50	29	5,861	- 7.7		31	5,844	- 9.3	34
450----	31	6,188	-33.1	47	28	6,675	-13.0		30	6,660	-14.5	
400----	31	7,003	-38.7		27	7,558	-19.9		27	7,531	-21.2	
350----	30	7,910	-44.4		26	8,532	-27.4		21	8,499	-29.4	
300----	29	8,932	-50.8		25	9,619	-36.5		18	9,581	-38.2	
250----	26	10,114	-55.5		25	10,856	-45.9		14	10,802	-48.5	
200----	24	11,545	-55.6		25	12,309	-55.3		13	12,239	-58.8	
175----	23	12,388	-54.6		24	13,150	-60.7		11	13,075	-63.1	
150----	23	13,379	-53.3		24	14,095	-66.5		8	14,002	-68.6	
125----	20	14,553	-54.6		23	15,178	-72.2		6	15,088	-71.4	
100----	16	15,979	-55.9		23	16,470	-78.1					
80-----	12	17,371	-55.9		21	17,741	-78.2					
60-----	9	19,193	-55.9		19	19,404	-71.6					
50-----	6	20,344	-55.3		18	20,490	-67.6					
40-----					15	21,838	-63.0					
30-----					9	23,618	-57.3					

Standard pressure surface (mb)	TAMPA, FLA. (1022 MB.)				TATOOSH ISLAND, WASH. (1009 MB.)				TOLEDO, OHIO (994 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	9	14.1	79	31	31	5.0	81	31	191	- 2.0	81
1,000---	31	192	15.5	69	31	106			31	140		
950----	31	628	13.7	63	31	523	1.9	79	31	549	- 3.0	74
900----	31	1,081	10.7	61	31	956	- 0.8	78	31	976	- 3.7	68
850----	31	1,556	8.6	60	31	1,410	- 3.7	78	31	1,426	- 5.1	65
800----	31	2,056	7.0	45	31	1,887	- 5.9	72	31	1,901	- 6.4	61
750----	31	2,586	5.3	31	31	2,394	- 8.6	68	31	2,411	- 7.8	57
700----	31	3,145	3.2		31	2,921	-11.9	63	31	2,939	- 9.8	55
650----	30	3,744	- 0.2		31	3,492	-15.4	61	31	3,517	-12.5	51
600----	30	4,377	- 3.6		31	4,086	-18.9	57	31	4,116	-15.6	48
550----	30	5,058	- 7.7		31	4,734	-22.7	53	31	4,772	-19.7	48
500----	30	5,793	-12.6		31	5,423	-26.6	52	30	5,465	-24.6	46
450----	30	6,592	-18.2		31	6,177	-31.9	49	30	6,227	-29.7	46
400----	30	7,458	-24.6		31	6,999	-37.5	47	30	7,055	-35.4	46
350----	28	8,410	-32.1		31	7,907	-43.8		30	7,972	-41.7	
300----	28	9,479	-40.4		31	8,927	-50.1		30	9,002	-48.0	
250----	28	10,697	-49.2		29	10,092	-54.5		29	10,183	-53.7	
200----	28	12,134	-55.9		26	11,496	-54.6		28	11,617	-55.0	
175----	28	12,978	-58.7		20	12,384	-54.2		28	12,472	-54.3	
150----	27	13,934	-62.1		20	13,373	-54.0		26	13,445	-54.4	
125----	25	15,045	-66.6		15	14,550	-54.6		22	14,612	-57.0	
100----	23	16,376	-71.6		12	15,982	-56.0		14	16,023	-59.4	
80-----	18	17,694	-71.4		10	17,408	-56.9		8	17,406	-59.9	
60-----	16	19,412	-67.2		7	19,250	-56.5					
50-----	10	20,516	-64.0									
40-----	9	21,902	-58.7									

Standard pressure surface (mb)	WASHINGTON, D. C. (1010 MB.)			
	Number of observations	Dynamic height	Temperature	Relative humidity
SURFACE	31	88	3.2	64
1,000---	31	168	3.9	59
950----	31	587	2.6	58
900----	31	1,020	0.7	57
850----	31	1,478	- 0.5	52
800----	31	1,962	- 1.7	44
750----	31	2,482	- 3.2	40
700----	31	3,017	- 6.0	41
650----	31	3,599	- 8.8	40
600----	31	4,210	-12.7	41
550----	31	4,873	-16.8	37
500----	31	5,577	-21.6	38
450----	31	6,350	-26.8	38
400----	31	7,186	-32.2	35
350----	31	8,115	-38.9	
300----	31	9,155	-46.3	
250----	31	10,346	-53.2	
200----	31	11,764	-57.5	
175----	31	12,606	-57.7	
150----	30	13,578	-57.0	
125----	29	14,724	-58.8	
100----	27	16,119	-61.6	
80-----	24	17,485	-62.0	
60-----	21	19,254	-61.1	
50-----	18	20,382	-59.6	
40-----	7	21,769	-57.6	

Note: All observations scheduled at 0300, G.C.T. except at Ciudad Victoria, Mazatlan and Merida, where they are taken near 0200 G.C.T. "Number of observations" refers to those of dynamic height only. Temperature and humidity data may be missing for one or more pressure surfaces of some observations. The temperature values are based on 15 or more observations at the surface or 5 observations at a standard pressure level. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

These average values for standard pressure surfaces were obtained by radiosondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees centigrade and relative humidity in percent.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

PILOT BALLOON DATA

Average monthly resultant winds

Table 21 — JANUARY 1951

Altitude (meters) m.s.l.	Abilene, Tex. (534 m.)			Albuquerque, N. Mex. (1,627 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (505 m.)			Boise, Idaho (868 m.)			Brownsville, Tex. (7 m.)			Buffalo, N.Y. (220 m.)			Burlington, Vt. (100 m.)			Charleston, S.C. (16 m.)			Cincinnati, Ohio (273 m.)			El Paso, Tex. (1,198 m.)		
	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed
Surface	31	262	2.2	31	262	1.1	29	250	1.1	30	251	2.4	28	293	1.7	28	48	0.4	27	154	5.0	30	246	3.3	28	229	2.0	29	241	1.7	25	216	2.7	31	252	2.9
500	--	---	----	--	---	----	29	248	1.9	--	---	----	28	287	5.5	--	---	----	27	169	7.0	30	242	5.4	28	228	4.3	29	235	3.5	25	217	4.6	--	---	----
1,000	31	252	4.3	--	---	----	26	234	5.0	--	---	----	26	290	8.1	28	160	.5	25	190	5.2	17	237	10.8	24	254	7.3	28	248	4.6	19	228	8.6	--	---	----
1,500	27	242	7.1	--	---	----	21	265	7.2	30	256	6.8	24	296	11.3	28	239	2.7	20	227	4.8	13	242	14.8	15	272	9.9	24	271	7.7	16	246	10.0	31	257	4.0
2,000	26	251	9.1	31	258	2.4	20	277	8.9	29	275	9.9	20	296	13.6	28	257	5.5	15	247	5.9				10	282	14.1	22	273	10.1	14	265	12.1	31	269	5.6
2,500	26	259	10.4	30	277	5.2	18	283	12.7	26	280	12.4	20	295	14.7	24	267	7.8	12	265	5.2							22	272	11.4	13	278	13.8	30	273	7.3
3,000	25	269	12.4	28	292	8.4	18	276	15.2	22	288	12.3	20	296	15.2	20	268	8.8	12	267	6.2							20	275	13.9	11	287	16.8	28	274	10.0
4,000	25	264	15.2	24	294	14.1	17	278	16.3	17	290	15.0	17	298	18.6	13	287	13.7	11	274	10.0							19	273	17.4				28	275	12.4
5,000	23	272	16.5	24	290	15.9	13	271	19.5	17	296	18.7	14	292	22.0	12	293	19.1	10	276	11.6							18	273	18.1				26	273	13.4
6,000	22	277	18.5	24	288	19.3	12	266	22.8	14	305	21.7				10	307	20.4										16	271	21.8				24	274	16.2
8,000	18	277	24.9	21	292	21.8																						10	285	25.7				20	286	21.3
10,000				18	290	26.8																												17	285	22.3
12,000				10	284	31.0																												14	294	25.1
14,000																																		11	281	30.0

Altitude (meters) m.s.l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,475 m.)			Greensboro, N.C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (663 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)		
	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed
Surface	30	196	1.1	31	305	1.6	27	248	3.4	29	277	2.1	31	83	0.5	25	246	1.4	31	27	0.4	24	226	2.4	27	262	0.3	31	93	2.8	28	164	2.1	25	220	2.9
500	--	---	----	--	---	----	27	246	4.9	--	---	----	31	215	1.9	25	246	2.9	--	---	----	24	233	4.6	27	264	.4	31	99	4.0	27	188	3.6	25	213	5.7
1,000	--	---	----	--	---	----	27	248	7.6	29	262	6.1	30	227	3.8	18	256	5.9	31	346	.7	22	241	6.0	26	180	2.1	30	104	3.5	22	260	3.6	21	233	7.9
1,500	--	---	----	31	310	1.7	26	261	10.9	25	271	10.4	28	243	4.9	18	261	8.2	31	274	1.9	20	263	9.8	22	201	5.0	28	83	2.7	16	301	7.0	16	254	9.2
2,000	30	225	1.1	31	318	2.0	21	271	12.7	24	277	11.9	24	268	6.0	18	268	10.4	31	280	3.6	19	271	11.5	17	215	5.9	24	304	.8	15	300	8.9	13	276	11.1
2,500	30	255	2.6	29	250	3.2	19	273	14.0	18	286	13.1	23	276	7.7	16	273	11.2	29	284	5.2	19	279	13.2	12	234	5.0	24	277	1.4	15	297	10.4	12	277	12.3
3,000	28	280	5.7	28	260	6.9	17	280	17.3	17	290	12.9	23	275	9.3	15	278	12.7	28	284	7.0	19	278	14.8	10	271	6.1	24	277	2.5	14	278	12.3	12	279	15.4
4,000	22	296	12.2	26	287	11.2	17	275	18.7	17	292	13.5	21	274	10.9	12	284	17.1	26	297	9.7	17	281	18.5				20	287	5.3	12	281	15.6	10	278	19.6
5,000	17	301	17.4	21	294	14.1	11	275	22.3	15	294	14.2	20	268	15.6	10	292	17.1	25	306	12.0	16	283	21.5				20	278	9.1	11	281	17.7			
6,000	15	301	16.9	20	301	18.6				11	303	15.0	17	274	17.7				22	290	14.7	13	284	22.8				18	278	11.8						
8,000				14	309	23.9							12	276	22.9				16	294	19.4							17	273	19.9						
10,000																			10	291	17.1															

Altitude (meters) m.s.l.	New York, N.Y. (15 m.)			Oakland, Calif. (8 m.)			Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Cloud, Minn. (318 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (13 m.)			Sault Ste. Marie, Mich. (221 m.)			Seattle, Wash. (116 m.)		
	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed
Surface	26	277	4.4	31	237	1.1	28	280	2.6	31	320	2.5	31	141	0.7	30	334	2.8	29	293	2.8	28	242	2.2	30	261	0.4	28	265	2.8	28	249	0.8	26	190	2.4
500	26	262	6.5	31	273	2.2	28	279	2.7	31	304	3.0	31	151	.7	--	---	----	29	298	4.1	28	246	4.4	30	281	1.2	28	304	2.4	28	263	1.9	26	198	4.3
1,000	26	272	8.8	23	310	2.9	27	262	3.5	31	305	5.3	31	146	.5	30	332	2.9	27	309	5.8	21	246	7.3	26	269	2.5	26	336	1.8	23	275	4.6	21	219	5.8
1,500	21	278	10.7	20	309	5.6	26	263	8.5	29	307	8.2	31	192	.6	30	310	5.6	26	299	7.2	20	258	10.7	25	262	4.8	24	343	2.8	20	278	6.2	16	215	3.7
2,000	18	281	13.3	16	315	5.8	26	270	10.9	29	300	9.7	30	257	1.2	27	302	8.1	26	298	9.3	19	265	13.5	24	264	6.8	21	345	5.0	18	279	8.1	15	208	3.8
2,500	11	277	13.3	15	316	6.5	25	269	13.6	27	298	11.5	30	273	2.9	25	294	9.4	25	294	11.5	18	267	15.5	24	265	8.7	21	336	5.7	16	279	9.8	10	208	1.7
3,000				15	309	7.2	25	273	16.0	25	285	14.1	28	289	4.6	22	294	10.0	24	288	14.2	16	272	17.3	21	268	10.1	21	338	7.3	11	281	10.9			
4,000				13	309	10.3	23	279	18.1	23	276	16.9	26	285	8.1	17	300	12.9	23	290	16.9	16	283	21.0	21	263	13.3	20	326	8.2	10	280	17.0			
5,000							20	276	19.5	19	280	19.4	25	289	10.2	15	305	17.8	22	293	20.2	14	280	22.6	20	266	15.7	19	315	9.9						
6,000							19	281	21.9	16	289	24.5	20	297	11.2	11	293	20.1	19	296	22.8	14	273	25.2	18	271	18.0	19	305	11.0						
8,000							12	289	26.8				12	275	13.7										14	271	23.5	16	288	11.8						
10,000																									10	290	27.0	10	279	12.8						

Altitude (meters) m.s.l.	Spokane, Wash. (725 m.)			Washington, D.C. (24 m.)		
Surface	24	193	2.4	26	273	2.0
500	--	---	----	26	255	5.7
1,000	24	209	4.0	26	262	8.7
1,500	23	230	5.5	24	266	11.7
2,000	19	242	4.9	22	263	12.7
2,500	17	255	5.8	22	269	13.8
3,000	12	294	3.6	20	274	15.2
4,000				18	174	20.5
5,000				10	272	22.9
6,000						
8,000						
10,000						

These free air resultant winds are based on pilot balloon observations made near 2100 G.C.T.; directions in degrees from north (N = 360°, E = 90°, S = 180°; W = 270°); speeds in meters per second.

RAWIN DATA

Average monthly resultant winds

Table 22 — JANUARY 1951

Altitude (meters) m.a.l.	Albuquerque, N. Mex. (1,636 m.)			Big Spring, Tex. (774 m.)			Bismarck, N. Dak. (505 m.)			Brownsville, Tex. (7 m.)			Burrwood La. (3 m.)			Caribou, Me. (191 m.)			Charleston, S.C. (13 m.)			Columbia, Mo. (237 m.)			Grand Junction, Colo. (1,473 m.)			Greensboro, N.C. (275 m.)			Hatteras, N.C. (3 m.)			International Falls, Minn. (358 m.)		
	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed
Surface	31	56	1.6	31	141	2.6	31	331	0.8	31	137	2.1	31	100	1.2	31	266	3.5	31	233	1.2	31	299	0.4	31	50	1.0	27	248	3.4	31	278	2.2	31	269	1.7
500	--	---	----	--	---	----	--	---	----	31	154	6.0	31	181	3.7	31	275	6.8	29	230	4.5	31	260	6.1	--	---	----	27	246	4.9	30	259	5.2	29	272	3.1
1,000	--	---	----	31	196	5.1	31	297	5.3	31	173	5.0	30	218	3.5	31	284	7.9	29	244	6.6	31	269	8.5	--	---	----	27	248	7.6	29	258	6.6	29	281	4.7
1,500	--	---	----	31	241	6.9	31	296	7.1	31	201	4.9	29	248	4.9	31	282	10.3	29	259	7.3	31	273	9.7	31	50	1.0	26	261	10.9	28	265	7.9	29	286	6.6
2,000	31	287	3.9	31	264	8.2	31	295	8.9	31	224	4.8	29	251	7.0	31	278	12.2	29	262	9.1	31	274	10.4	31	194	.9	21	271	12.7	27	267	9.0	28	295	7.3
2,500	31	283	6.8	31	266	8.1	31	294	10.5	30	236	5.9	29	251	8.1	30	273	14.3	29	266	10.2	30	272	11.5	31	224	3.4	19	273	14.0	27	268	11.3	29	294	8.8
3,000	31	279	8.7	31	271	9.8	31	289	12.1	30	247	7.7	29	254	9.0	30	267	17.1	29	269	11.2	30	271	15.9	31	255	6.1	17	280	17.3	28	270	12.4	29	294	10.5
4,000	30	282	11.2	30	273	12.3	30	291	14.0	30	255	9.6	28	261	11.8	29	261	20.3	28	271	14.4	30	267	19.0	31	281	11.4	17	275	18.7	28	266	16.5	29	293	12.8
5,000	29	280	15.9	30	278	15.9	29	289	15.5	29	202	12.5	28	262	14.5	26	259	21.7	27	274	17.2	27	263	21.5	30	285	14.3	11	275	22.3	25	267	18.2	28	289	14.8
6,000	26	278	17.0	26	277	19.1	29	285	18.6	27	264	16.0	28	267	18.4	23	260	22.6	25	276	18.7	19	264	25.7	27	285	17.1				24	265	19.2	27	289	17.2
8,000	16	301	18.2	18	277	23.8	24	282	22.9	22	271	18.9	24	268	22.9	14	249	20.2	23	273	24.3				18	280	17.2				16	266	25.0	21	277	21.4
10,000	10	298	21.7	11	287	26.9	17	276	22.0	18	270	22.2	22	267	31.2	10	242	25.4	17	280	28.0				10	280	18.5				12	272	26.4	13	270	18.2
12,000							12	273	16.4	13	263	27.0	15	266	30.7				13	282	36.1															

Altitude (meters) m.a.l.	Little Rock, Ark. (80 m.)			Medford, Oreg. (401 m.)			Miami, Fla. (12 m.)			Nantucket, Mass. (14 m.)			Nashville, Tenn. (180 m.)			Oakland, Calif. (8 m.)			Oklahoma City, Okla. (392 m.)			Rapid City, S. Dak. (980 m.)			San Antonio, Tex. (242 m.)			San Juan, P.R. (28 m.)			St. Cloud, Minn. (318 m.)			Santa Maria, Calif. (72 m.)		
	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed
Surface	31	326	0.2	31	171	1.2	31	55	1.4	31	301	2.3	29	213	1.8	31	207	0.1	29	97	0.9	31	330	1.9	31	39	1.0	31	89	2.8	31	287	1.3	31	350	0.9
500	31	216	4.2	30	174	1.6	31	94	3.5	31	270	7.9	29	219	5.9	31	285	2.1	27	300	0.3	--	---	----	31	130	1.2	30	62	6.5	31	283	3.1	31	2	3.8
1,000	30	239	6.4	30	187	2.8	31	99	3.5	30	276	9.2	29	231	9.5	31	292	3.5	27	250	3.2	31	326	2.0	31	210	2.1	30	62	6.4	31	297	5.2	31	353	4.4
1,500	29	249	8.8	30	222	5.8	31	99	1.7	29	270	11.3	27	249	11.6	31	290	5.2	26	272	5.9	31	299	7.1	31	243	5.2	30	62	5.3	31	291	7.3	31	345	5.6
2,000	27	256	10.9	30	240	8.7	31	330	.5	27	268	13.3	27	258	13.2	31	291	6.6	26	272	8.1	30	302	9.3	31	251	7.6	31	55	4.3	31	291	9.4	31	333	6.6
2,500	26	267	13.1	30	260	10.7	30	286	1.3	24	270	15.3	27	258	14.2	31	292	7.7	28	274	11.7	29	305	10.4	29	251	8.8	31	42	3.7	31	288	11.5	31	324	7.3
3,000	26	267	14.8	30	275	13.5	30	264	3.6	23	268	17.6	27	259	15.5	30	303	10.0	29	271	13.5	28	299	10.9	29	246	9.4	31	38	3.0	31	288	14.5	31	317	8.4
4,000	23	271	18.1	26	291	15.9	30	266	6.4	20	270	20.5	27	261	17.6	28	303	12.7	27	260	14.9	23	289	15.3	29	259	12.4	31	02	3.0	30	288	17.1	31	308	11.1
5,000	20	275	20.4	22	294	18.6	30	268	9.1	15	263	22.9	25	263	21.0	27	301	13.7	25	266	17.4	23	289	18.8	27	262	13.3	31	338	4.2	29	283	20.1	26	303	12.1
6,000	20	273	24.7	16	280	19.7	30	270	11.4	11	271	22.9	22	262	23.0	25	288	16.9	23	274	19.8	23	287	22.0	25	264	17.2	30	319	5.6	24	271	21.7	25	296	13.4
8,000	14	263	33.0	13	290	22.6	27	280	16.5				16	258	29.7	19	282	19.2	17	270	22.6	16	283	25.8	18	267	21.3	28	297	10.6	17	274	28.0	22	286	15.6
10,000							26	280	24.5				11	265	31.4	14	277	20.1	10	266	27.8	11	267	27.3	11	281	23.2	28	293	20.8	11	258	30.0	20	276	18.1
12,000							24	275	34.7																			25	281	23.6				16	279	17.9
14,000							13	267	26.3																			22	283	17.3				14	284	18.8
16,000							12	259	17.9																			17	290	10.0				12	289	13.2
18,000																												14	337	3.5				11	275	10.0

Altitude (meters) m.a.l.	Sault Ste. Marie, Mich. (221 m.)			Spokane, Wash. (726 m.)			Tatoosh Island, Wash. (33 m.)		
	No. of observations	Direction	Speed	No. of observations	Direction	Speed	No. of observations	Direction	Speed
Surface	30	71	0.6	29	189	2.3	28	140	3.2
500	30	243	2.1	--	---	----	28	175	4.4
1,000	30	269	4.2	26	210	4.1	26	185	4.2
1,500	30	270	5.9	28	233	6.1	24	203	3.0
2,000	29	271	7.8	25	254	6.0	24	231	2.7
2,500	28	266	9.5	23	259	5.6	24	242	3.9
3,000	27	263	11.2	22	269	5.0	24	261	4.8
4,000	25	265	14.2	22	292	10.0	24	273	9.2
5,000	23	261	17.3	21	292	12.8	23	280	14.4
6,000	19	260	15.9	20	289	17.5	22	285	18.8
8,000	13	254	18.4	13	290	21.6	17	284	19.2
10,000							11	282	17.3

These free-air resultant winds are based on rawin observations made near 0300 G.C.T.; directions in degrees from north (N = 360°, E = 90°, S = 180°, W = 270°); speeds in meters per second.

Note: Resultants prepared from rawins at high altitudes are biased toward lower wind speeds. Values appearing in this table should therefore be used with caution when the number of observations missing is greater than three.

See note following table 3 in the January 1950 issue of the CLIMATOLOGICAL DATA, National Summary.

SOLAR RADIATION DATA

Table 30.-Solar radiation intensities, tabulated in langleys per minute. JANUARY 1951

TABLE MOUNTAIN, CALIF.

Date	Sun's zenith distance: A. M. 78.7°	75.7°	70.7°	60.0°	0.0°	P. M. 60.0°	70.7°	75.7°	78.7°	Vapor pressure, E.S.T. 7:30 a. m.	1:30 p. m.
	Air mass 3.86	3.01	2.26	1.51	*0.75	1.51	2.26	3.01	3.76		
										Mb.	Mb.
January											
5	----	----	----	1.53	----	----	----	----	----		
6	----	----	----	1.53	----	----	----	----	----		
7	1.27	1.36	1.47	1.59	----	----	----	----	----		
9	----	----	----	1.58	----	----	----	----	----		
23	1.17	1.26	1.37	1.50	----	----	----	----	----		
24	----	----	----	1.53	----	----	----	----	----		
25	1.24	1.33	1.44	1.55	----	----	----	----	----		
Averages	1.23	1.32	1.43	1.55	----	----	----	----	----		
Departures	.00	.00	+.02	+.01	----	----	----	----	----		

LINCOLN, NEBR.

	Air mass 4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
										Mb.	Mb.
January											
6	----	----	----	----	----	----	1.13	1.02	0.92	1.0	1.4
8	----	----	----	----	----	----	1.22	1.14	1.06	1.1	3.2
10	----	----	----	----	----	----	1.24	1.11	.98	2.9	3.3
12	0.66	0.79	0.94	----	----	----	.94	.81	.64	3.2	4.2
17	----	----	----	----	----	----	1.14	1.01	.86	4.2	4.4
18	----	----	----	----	----	----	1.09	1.01	.88	4.4	5.1
23	.92	1.02	1.13	----	----	----	----	1.01	.92	3.7	3.8
24	----	----	----	----	----	1.24	1.09	.96	.59	2.5	2.6
Averages	.79	.91	1.04	----	----	1.24	1.12	1.01	.89		
Departures	-.14	-.13	-.14	----	----	-.15	-.06	-.04	-.04		

MADISON, WIS.

	Air mass 4.81	3.84	2.88	1.92	*0.96	1.92	2.88	3.84	4.81		
										Mb.	Mb.
January											
8	0.92	1.04	1.16	----	----	----	----	----	----	0.8	1.6
11	.96	1.07	1.22	----	----	----	1.19	----	----	1.8	3.0
30	.91	1.04	----	----	----	----	----	----	----	.1	.3
Averages	.93	1.05	1.19	----	----	----	1.19	----	----		
Departures	+.05	+.04	+.02	----	----	----	+.04	----	----		

BOSTON, MASS.

	Air mass 4.96	3.96	2.97	1.98	*0.99	1.98	2.97	3.96	4.96		
										Mb.	Mb.
January											
5	1.03	1.14	1.25	----	----	----	1.18	1.01	0.86		
9	.28	.85	1.09	----	----	----	1.22	1.01	.90		
10	.68	.81	1.01	----	----	----	----	----	----		
22	.88	.98	1.19	----	----	----	1.30	1.16	1.02		
Averages	.84	.94	1.14	----	----	----	1.23	1.08	.93		
Departures	+.05	+.05	+.14	----	----	----	+.20	+.14	+.13		

* Extrapolated

TACUBAYA, D. F., MEXICO

Date	Sun's zenith distance: A. M. 78.7°	75.7°	70.7°	60.0°	0.0°	P. M. 60.0°	70.7°	75.7°	78.7°	Vapor pressure, E.S.T. 7:30 a. m.	1:30 p. m.
	Air mass 3.83	3.07	2.31	1.53	*0.77	1.53	2.31	3.07	3.83		
										Mb.	Mb.
January											
1	----	----	0.85	----	----	0.84	----	0.83	----	3.3	6.4
2	----	----	----	0.94	----	----	0.93	.82	0.63	3.4	7.1
3	0.74	0.69	.84	.98	----	.88	----	----	----	3.8	6.1
4	----	----	----	.91	----	.59	.46	.28	.24	3.9	5.2
5	.06	.45	.50	.57	----	.32	.33	.18	.04	3.4	6.7
6	.33	.41	.53	.85	----	----	.47	----	----	7.6	8.5
8	.22	.28	.45	.67	----	.68	----	----	----	7.1	9.3
9	.50	.56	.73	.91	----	----	----	----	----	7.3	9.6
10	.46	.45	.57	.78	----	.73	.43	.21	----	7.4	9.1
11	.47	.55	.67	1.05	----	----	----	----	----	7.2	8.8
12	.75	.82	1.10	.76	----	----	----	----	----	7.1	9.3
13	.41	.73	.77	.88	----	.81	.55	.59	.60	6.7	5.6
15	----	----	----	.97	----	.99	.75	.61	.45	6.9	4.5
16	.61	.45	.66	.91	----	.68	.45	.39	.15	4.1	5.4
17	.46	.65	.79	.96	----	.72	.38	.14	.09	6.1	6.3
18	.59	.72	.84	.82	----	.94	.36	----	.12	6.0	6.3
19	.22	.65	.87	1.00	----	1.12	----	----	----	6.4	6.3
20	.60	.65	.77	1.07	----	.75	.54	.35	.13	6.1	6.4
22	.60	.59	.79	.83	----	1.01	.70	----	----	6.0	9.9
23	.42	.43	.60	.84	----	----	----	----	----	7.7	7.7
24	.23	.91	.82	.95	----	.93	.86	----	----	5.7	8.4
25	----	----	----	1.04	----	----	.69	----	----	8.0	8.4
26	.65	.76	.86	1.10	----	1.11	.90	.68	.65	5.9	5.7
27	.53	.50	.55	.95	----	.72	----	----	----	6.1	8.5
29	.51	.74	.72	1.14	----	----	----	----	----	7.3	8.8
30	.44	.46	.66	.82	----	.71	.48	.42	.32	7.1	8.3
31	.62	.78	.96	1.20	----	.88	.83	----	.77	7.8	7.6
Averages	.45	.60	.75	.92	----	.80	.60	.42	.35		
Departures	----	----	----	----	----	----	----	----	----		

BLUE HILL, MASS.

	Air mass 4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
										Mb.	Mb.
January											
1	0.91	1.01	1.13	----	----	----	1.12	1.01	0.91	2.9	3.5
5	1.06	1.15	1.28	----	----	----	1.26	1.12	1.01	2.3	2.0
9	1.03	1.12	1.22	----	----	----	1.19	1.05	.94	1.1	2.1
10	.79	.91	1.05	----	----	----	----	----	----	2.3	3.3
12	----	----	.77	----	----	----	----	----	----	5.0	3.5
13	.96	1.08	1.20	----	----	----	1.29	1.24	1.08	3.1	2.0
14	1.08	1.16	----	----	----	----	----	----	----	2.1	2.5
16	.71	----	----	----	----	----	----	----	----	3.5	3.0
18	.70	.84	1.00	----	----	----	----	----	----	4.0	5.4
19	----	----	----	----	----	----	.88	.74	.42	5.4	8.0
22	1.08	1.15	1.27	----	----	----	1.27	1.16	1.05	1.5	.9
30	.82	.75	----	----	----	----	----	----	----	2.4	2.3
Averages	.89	1.02	1.17	----	----	----	1.17	1.05	.94		
Departures	-.05	-.02	-.03	----	----	----	.00	+.02	+.01		

RATIOS, BOSTON/BLUE HILL OF COMPARABLE DATES

	0.85	0.87	0.94	----	----	----	0.99	0.95	0.93

ALBUQUERQUE, NEW MEXICO

	Air mass 4.08	3.26	2.44	1.63	*0.815	1.63	2.44	3.26	4.08

Recorder inoperative.

Solar radiation intensities are expressed in gram-calories per minute per square centimeter of normal surface.

An explanation of Tables 30 and 33 and references to descriptions of instruments, stations, and methods of observation, and to summaries of data, are given in the Monthly Weather Review, vol. 72, No. 1, January 1944, p. 43. A list of pyrheliometric stations is given on page 48 of that issue. An explanation of the formula used in computing the air mass values for each station listed in Table 30 appears in volume 75, No. 3, March 1947, p. 47.

ERRATUM: In Monthly Weather Review of March 1947, in Table 1, under "Solar Radiation and Sunspot Data for March 1947", the data appearing under Table Mountain, California, are those for Climax, Colorado, and the data under Climax, Colorado, are those for Table Mountain, California.

SOLAR RADIATION DATA

Table 31a.-Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

Date	1	2	3	4	5	6	7	Average	8	9	10	11	12	13	14	Average	15	16	17	18	19	20	21	Average
Langleys	510	341	33	28	537	111	25	226	314	582	479	133	293	559	296	379	39	262	156	334	373	416	92	239
Date	22	23	24	25	26	27	28	Average																
Langleys	593	213	26	53	113	116	130	178																

Table 31b*.-Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing north at Blue Hill, Mass. during the month

Date	1	2	3	4	5	6	7	Average	8	9	10	11	12	13	14	Average	15	16	17	18	19	20	21	Average
Langleys	60	47	22	7	42	43	17	34	65	86	59	56	63	59	70	62	16	51	51	37	39	41	29	38
Date	22	23	24	25	26	27	28	Average																
Langleys	43	49	10	30	38	43	33	35																

Table 31c.-Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

Date	1	2	3	4	5	6	7	Average	8	9	10	11	12	13	14	Average	15	16	17	18	19	20	21	Average
Langleys	56	74	47	32	44	100	23	54	94	49	57	90	91	48	110	77	32	106	117	69	68	72	67	76
Date	22	23	24	25	26	27	28	Average																
Langleys	46	110	24	72	111	113	89	81																

Note.-Langley is the unit used to denote one gram calorie per square centimeter.
*Beginning with January 1951, Table 32 has been changed to Table 31b.

Beginning with this issue, a new table (No. 31c), "Daily Totals and Average Daily Totals by Weeks of Diffuse (Sky) Radiation Received on a Horizontal Surface at Blue Hill, Mass", is being added. This table will show the values of diffuse (sky) radiation only. In the recording of these data, the direct solar radiation is shaded from the receiving surface of the pyrheliometer by an occulting ring having a radius of twenty inches. This ring is so mounted that its plane is in the plane of the apparent path of the sun in its diurnal march across the sky. The ring is adjusted, without changing the position of its plane in space, at intervals varying from 2 to 7 or 8 days, to allow for the seasonal change in the sun's declination and is checked daily to make certain that it is shading properly. The pipe, of which the ring is constructed, has a diameter of 2 inches, thus the distance/diameter ratio (10 to 1) generally used in previous diffuse radiation measurements is maintained.

Diffuse radiation values have been recorded at Blue Hill since 1945 and it is planned to publish a paper containing these data for the period 1945 through 1950 in the near future.

SOLAR RADIATION DATA

Table 33.--Daily totals and average daily totals by weeks of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. JANUARY 1951

1951	Aklavik, Mackenzie	Albany, N.Y.	Albuquerque, N.Mex.	Amherst, Mass.	Apalachicola, Fla.	Atlanta, Ga.	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Texas	Canton Island, Pacific Area	Caribou, Me.	Charleston, S.C.	Cleveland, Ohio	Davis, Calif.	E. Lansing, Mich.	E. Wareham, Mass.	Edmonton, Alberta	El Paso, Texas	Ely, Nevada	Fairbanks, Alaska	Ft. Worth, Texas	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Lake, Colo.	Great Falls, Mont.	Griffin, Ga.	Hatteras, N.C.	Honolulu, T.H.	Indianapolis, Ind.	Inyokern, Calif.	Ithaca, N.Y.	Lake Charles, La.
January 1----	1		92	239	345	284		223	45	164	(306)	637		(172)	227	208	132	221	59	219		7	60	217	270	115			266	262	356		---	---	40
January 2----	2		299	131	283	30		155	23	141	209	478		275	58	93	12	148	40	148		5	162	215	239	157			121	285	366		---	107	86
January 3----	1		332	52	160	129		52	133	38	425	59		91	26	46	2	74	57	357		5	358	99	194	117			120	153	239		181	25	244
January 4----	1		329	29	286	339		35	67	40	395	715		209	41	189	62	41	119	364		4	341	140	101	124			338	120	327		312	57	(349)
January 5----	1		329	225	(254)	327		228	144	220	364	670		327	115	168	24	227	120	369		5	334	181	252	161			332	304	404		313	73	364
January 6----	2		347	74	(245)	248		117	219	85	195	677		101	20	254	25	92	94	375		3	158	186	263	159			236	232	463		327	25	(244)
January 7----	1		345	37	154	62		25	189	17	383	702		147	112	178	106	12	72	384		(3)	377	113	230	182			60	97	474		327	37	364
Averages------	1		296	112	(247)	203		119	117	101	325	562		(189)	85	162	52	117	80	317		(5)	256	164	221	145			210	208	376		280	54	241
Departures----	00		+3	-18	-17	---		-10	+15	+12	---	---		---	---	00	-28	-2	-1	-18		-1	-7	+12	-34	---			---	---	-3		-4	-44	+6
January 8----	T		333	202	393	340		178	66	147	438	665		333	110	64	120	126	99	296		6	379	43	371	162			350	238	501		323	148	378
January 9----	1		332	216	384	326		242	162	207	353	586		351	224	38	153	233	108	385		7	240	39	---	173			337	298	483		270	197	244
January 10----	2		330	197	367	250		219	112	188	298	649		343	80	99	73	210	96	395		(5)	375	132	331	177			287	324	445		156	131	243
January 11----	1		165	60	387	330		127	100	78	192	665		233	45	153	84	83	80	373		9	311	69	228	177			343	175	453		200	32	300
January 12----	1		160	159	332	159		187	75	150	222	669		314	104	259	175	172	114	370		6	170	211	353	190			226	274	383		205	139	255
January 13----	1		303	---	339	78		253	107	212	353	602		201	86	225	55	227	114	317		9	(143)	270	344	178			166	287	434		336	76	92
January 14----	1		350	---	252	165		186	52	143	302	689		207	30	198	3	171	86	404		11	199	275	357	170			193	98	286		340	65	205
Averages------	1		285	167	351	235		199	96	161	308	646		283	97	148	95	174	100	363		(8)	(260)	148	331	175			272	242	426		261	113	245
Departures----	-1		-18	+20	+28	---		+42	-17	+40	---	---		---	---	-39	-4	+19	+5	+2		-1	-28	-16	+49	---			---	---	+8		-19	-3	-19
January 15----	4		294	---	369	338		40	128	40	449	604		(332)	73	45	90	28	34	394		14	377	201	281	127			346	182	374		321	40	387
January 16----	3		319	---	412	368		178	149	175	439	648		370	157	147	115	197	80	363		9	383	247	---	182			369	308	467		286	111	389
January 17----	4		349	137	345	315		147	202	117	407	668		355	200	82	86	156	100	405		9	328	216	382	101			331	326	461		329	165	277
January 18----	6		363	131	362	149		189	142	153	442	696		286	189	112	88	156	123	407		16	379	89	369	96			201	203	382		318	44	345
January 19----	6		356	168	224	197		205	109	158	401	636		255	137	227	141	181	125	404		16	385	259	357	134			202	295	500		357	139	355
January 20----	6		359	147	381	266		227	193	193	364	726		348	86	230	2	162	134	406		14	388	263	270	131			310	314	509		319	186	200
January 21----	14		365	119	303	372		89	79	88	157	715		307	124	61	156	106	96	413		15	344	261	322	147			345	246	462		299	46	316
Averages------	6		344	140	342	286		154	143	132	380	670		(322)	138	129	97	141	99	399		13	369	220	331	131			301	268	451		319	104	324
Departures----	-4		+19	-7	+6	---		-5	+8	+12	---	---		---	---	-78	-18	-5	+1	+13		00	+41	+25	+67	---			---	---	+13		+8	-15	+18
January 22----	18		301	272	384	---		284	98	249	167	688		280	190	101	86	277	97	413		13	291	195	195	155			356	309	145		268	181	394
January 23----	23		358	87	123	116		169	52	136	361	(665)		72	54	65	21	180	92	398		12	326	147	---	200			116	301	388		341	77	230
January 24----	22		340	20	42	360		28	141	32	411	672		92	267	83	127	22	69	418		(31)	386	179	185	118			333	267	431		359	156	401
January 25----	23		362	177	370	383		81	126	66	434	713		358	137	73	65	39	74	410		40	355	82	331	101			381	42	479		370	115	370
January 26----	28		373	208	421	387		145	236	121	421	714		382	215	104	121	60	76	403		38	395	29	393	116			390	311	513		353	112	399
January 27----	29		333	110	416	381		159	229	117	296	654		386	128	86	150	99	131	286		35	354	95	364	249			373	357	505		342	95	327
January 28----	33		230	103	401	252		135	219	110	217	(705)		341	30	119	82	129	115	360		16	82	233	---	264			284	316	509		373	35	206
Averages------	25		328	140	308	313		143	157	119	269	(687)		273	146	90	93	115	93	384		(26)	313	137	294	172			319	272	424		344	110	332
Departures----	+7		+2	+1	-12	---		-27	-18	-8	---	---		---	---	-135	-24	-27	-16	-8		+3	+36	-76	---	---			---	---	-18		-2	-25	+13

Accumulated Departures January 1 to 28, 1951

	+14		+42	-28	+35	---		00	-84	+392	---	---		---	---	-1764	-518	-105	-77	-77		+7	+308	-385	---	---			---	---	-14		-119	-609	+126

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Table 33.--Daily totals and average daily totals by weeks of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. (Continued) JANUARY 1951

1951	Lander, Wyo.	Las Vegas, Nev.	Lincoln, Nebr.	Lynn, Mass.	Madison, Wis.	Medford, Ore.	Nashville, Tenn.	Newport, R.I.	New York, N.Y.	North Head, Wash.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Pearl Harbor, T.H.	Phoenix, Ariz.	Portland, Me.	Put-in-Bay, Ohio	Raleigh, N.C.	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	Salt Lake City, Utah	Santa Maria, Calif.	Sault Ste. Marie, Mich.	Sayville, N.Y.	Seabrook, N.J.	Seattle (U. of W.), Wash.	Spokane, Wash.	State College, Pa.	Stillwater, Okla.	Toronto, Ontario	Upton, N.Y.	Washington, D.C.	Winnipeg, Manitoba
January 1---		281	100	195	143	150	154	206	186	58	220		121	388	333		224	236	217	284	121	225	317		235	218	26	90	232	39	122	230	(227)	106
January 2---		211	142	140	39	58	33	152	146	---	63		23	351	357		47	259	213	180	97	149	316		184	192	50	58	99	43	16	177	140	107
January 3---		213	200	56	48	159	19	96	102	34	86		32	304	335		38	136	118	254	117	152	248		116	135	28	116	52	307	3	135	134	90
January 4---		251	270	32	114	83	282	45	79	96	298		33	384	344		127	271	104	178	117	91	82		63	117	29	107	65	277	40	51	192	138
January 5---		274	129	189	82	116	276	213	142	170	267		131	325	343		134	317	198	262	187	135	325		179	229	68	70	85	272	97	167	238	134
January 6---		297	226	84	232	197	237	106	171	174	(166)		94	449	366		46	172	250	281	248	255	327		160	184	145	165	73	251	40	148	222	148
January 7---		298	219	22	246	64	68	10	24	36	53		143	469	383		113	38	215	298	228	245	314		7	31	37	150	25	308	73	7	32	146
Averages-----		261	184	104	126	118	153	118	122	95	(165)		82	382	352		104	204	188	248	159	179	276		135	158	55	108	90	214	56	131	(169)	124
Departures---		+6	+14	-15	-2	+16	+45	-10	+9	---	-23		-23	-1	+20		+14	---	+19	+2	-2	+27	-5		-10	00	---	+10	-6	---	-10	-14	+11	+3
January 8---		258	290	217	248	105	245	192	258	128	296		234	412	369		216	350	179	283	216	102	290		235	211	85	59	168	302	119	(189)	205	143
January 9---		---	191	193	207	95	284	235	169	51	304		128	459	367		242	353	156	277	170	126	249		230	247	52	107	229	207	136	218	269	142
January 10---		194	263	163	215	136	17	213	172	59	108		93	467	371		71	318	202	76	219	126	284		231	233	58	71	212	308	91	199	(220)	154
January 11---		224	193	85	256	110	246	96	76	72	269		51	444	247		154	268	122	102	245	171	126		89	81	67	125	41	146	62	(73)	99	154
January 12---		183	248	126	214	123	49	225	255	66	48		147	372	226		205	171	226	243	213	219	345		244	205	32	66	176	248	112	218	213	135
January 13---		304	134	207	63	84	20	241	220	31	7		136	411	309		93	213	88	290	92	124	327		235	224	66	81	194	69	126	204	222	74
January 14---		305	264	134	147	121	38	162	85	20	25		100	280	375		29	49	159	295	97	194	335		113	47	28	92	31	229	28	106	20	166
Averages-----		245	226	161	193	111	128	195	176	61	151		127	406	323		144	246	162	224	179	152	280		196	178	56	86	150	216	96	(172)	(178)	138
Departures---		-8	+44	+22	+56	+4	-5	+37	+48	---	-15		+8	+9	-21		+7	---	-4	-25	+5	+11	-1		+21	-4	---	-19	+12	---	+8	+15	+26	+1
January 15---		285	277	34	134	123	141	47	140	---	138		94	175	388		148	272	163	300	161	82	328		100	205	108	131	99	301	127	60	248	161
January 16---		174	228	170	180	61	289	193	184	25	294		216	469	334		175	304	92	139	130	100	357		221	202	23	69	162	194	194	213	220	114
January 17---		281	258	119	173	22	199	183	193	---	245		78	391	381		235	318	94	303	217	155	154		214	253	72	187	234	186	130	(202)	228	92
January 18---		307	266	168	161	104	150	132	97	51	36		212	354	384		195	202	221	105	186	167	177		107	98	---	190	107	304	32	95	(203)	173
January 19---		240	153	149	177	199	253	194	162	147	201		121	494	381		99	306	94	298	111	148	337		175	253	---	140	201	319	139	160	253	129
January 20---		256	186	181	37	55	183	112	---	21	247		44	484	379		135	313	226	307	184	---	361		232	256	57	178	230	319	23	214	288	186
January 21---		280	293	89	267	52	141	167	173	140	222		200	388	388		138	303	175	252	256	93	307		145	221	86	95	63	366	208	130	235	182
Averages-----		262	237	131	161	88	194	147	158	77	198		138	394	378		161	288	152	243	178	124	289		171	212	69	141	157	284	122	(153)	(238)	148
Departures---		-9	+48	-5	+7	-16	+43	-8	+32	---	+13		-10	-13	+13		+22	---	-14	-36	-8	-45	-9		+6	+23	---	+5	-21	---	+19	+6	+80	+3
January 22---		288	308	238	70	117	242	281	261	116	327		239	186	369		194	353	153	248	143	78	348		(291)	300	108	222	275	264	487	270	292	45
January 23---		316	273	142	201	108	23	134	75	68	104		78	437	388		40	123	250	308	187	142	366		(86)	153	21	133	64	318	73	90	86	138
January 24---		319	287	26	208	56	252	20	64	79	275		139	418	396		230	54	233	308	239	176	374		41	97	82	103	174	265	194	45	124	137
January 25---		332	180	70	265	126	90	36	146	23	229		216	510	407		146	335	234	314	254	263	365		87	145	25	88	157	301	125	62	137	132
January 26---		322	238	133	124	116	237	102	(187)	143	340		181	496	355		231	341	76	259	112	106	372		242	181	132	172	128	313	135	210	202	125
January 27---		308	249	125	238	168	32	87	(41)	187	21		273	504	348		159	311	161	84	225	218	201		39	109	154	256	93	122	148	(31)	145	191
January 28---		327	256	124	162	220	18	109	45	245	50		182	495	398		68	274	274	62	290	251	313		54	78	220	261	17	192	110	54	140	238
Averages-----		318	239	122	181	130	128	110	(117)	123	192		187	435	380		153	256	197	226	207	176	334		(120)	152	106	176	130	254	131	(109)	161	144
Departures---		+12	+21	-11	+2	-14	-36	-50	-34	---	+20		+15	+6	+14		-2	---	-10	-29	-12	+13	+12		-12	-13	---	-6	-23	---	+16	-16	-15	-21

Accumulated Departures January 1 to 28, 1951

	+7	+889	-63	+441	-70	+329	-217	+385	---	-35		-70	+7	+182		+287	---	-63	-616	-119	+42	-21		+35	+42	---	-70	+28	---	+231	-63	+714	-98

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

Beginning with this issue, two new stations are being added to Table 33:

1. Atlanta, Georgia: Latitude 33° 39' N; longitude 84° 25' W; elevation 303 meters; Eppley pyrheliometer and a Brown integrating potentiometer; exposure is excellent; smoke from industrial portion of Atlanta 8 miles to north causes slight atmospheric pollution; equipment located at Weather Bureau Office, Municipal Airport, Atlanta.

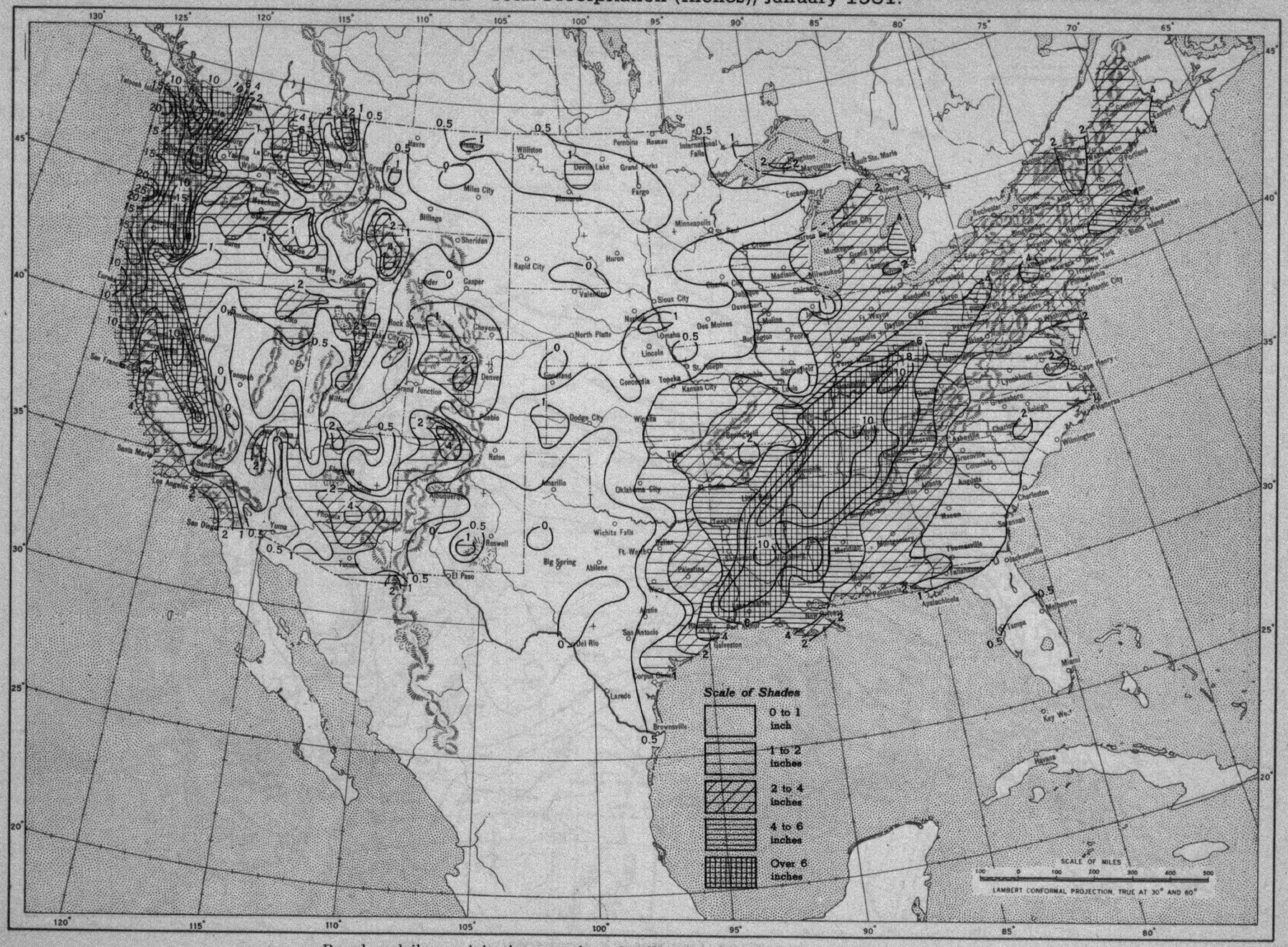
2. Canton Island, Pacific Area (Phoenix Group): Latitude 2° 46' S; longitude 171° 43' W; elevation 8 meters; operated by Weather Bureau. This is the southernmost station in our solar radiation network.

W.B.O., Washington, D.C.---5/18/51---2200

Chart I. Average Temperature (°F.) at Surface, January 1951. Inset: Departure of Average Temperature from Normal (°F.), January 1951.

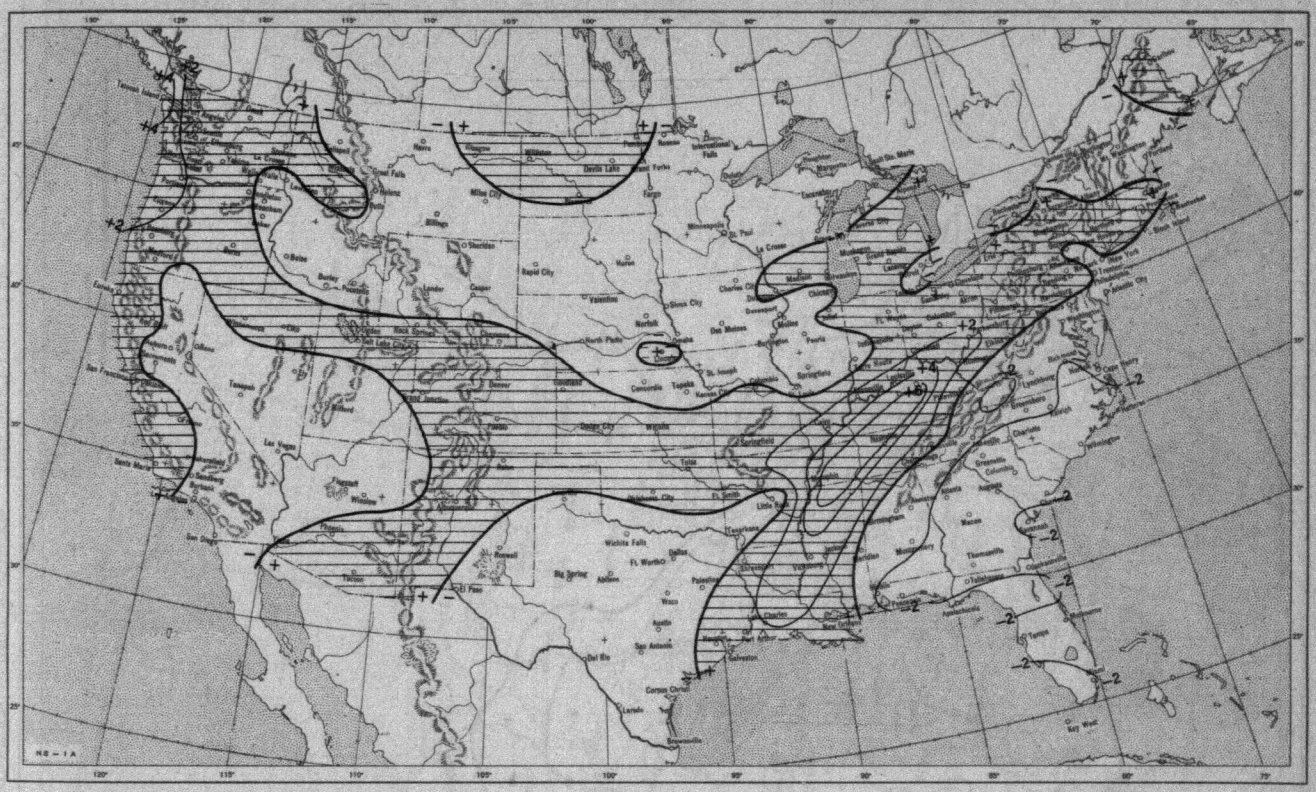
Based on reports from 800 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively. Normal average monthly temperatures are computed for Weather Bureau stations having at least 10 years of record.

Chart II. Total Precipitation (Inches), January 1951.

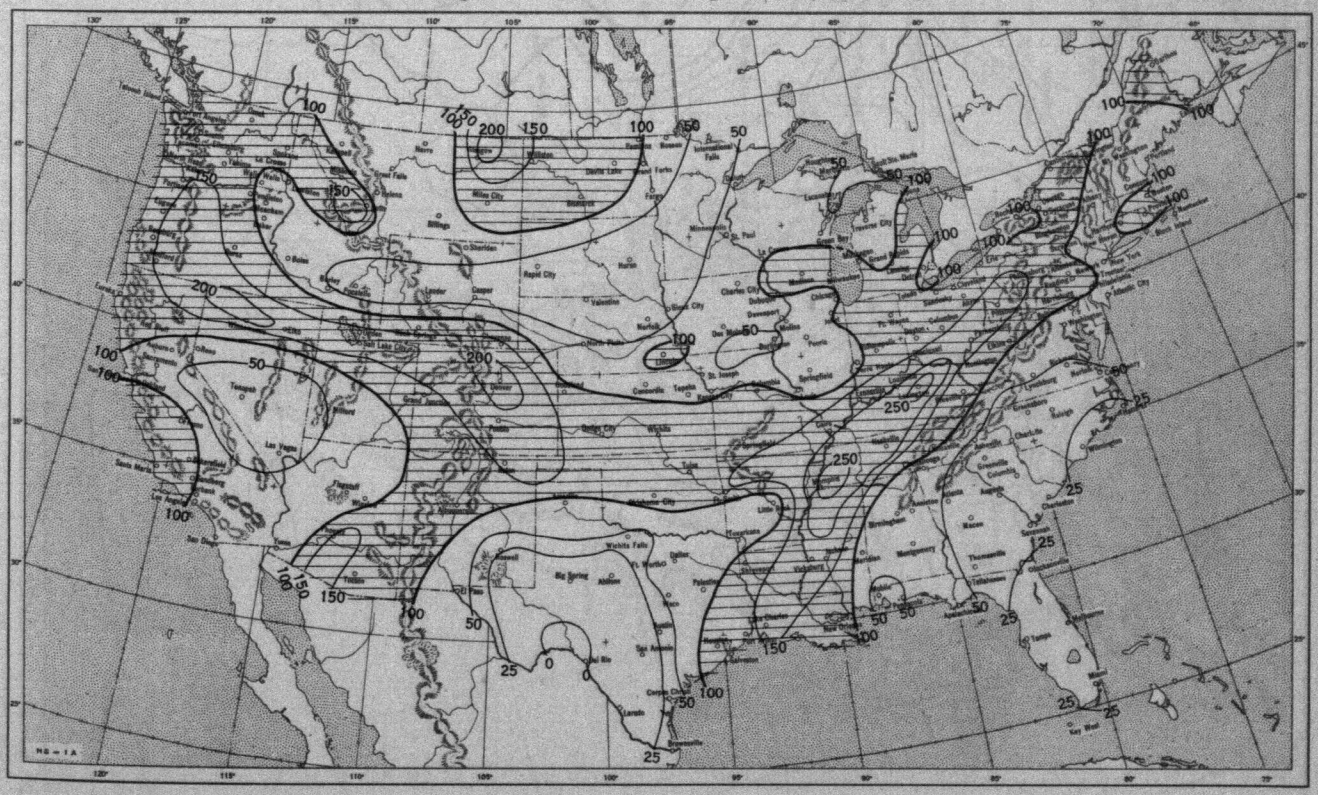


Based on daily precipitation records at 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), January 1951.

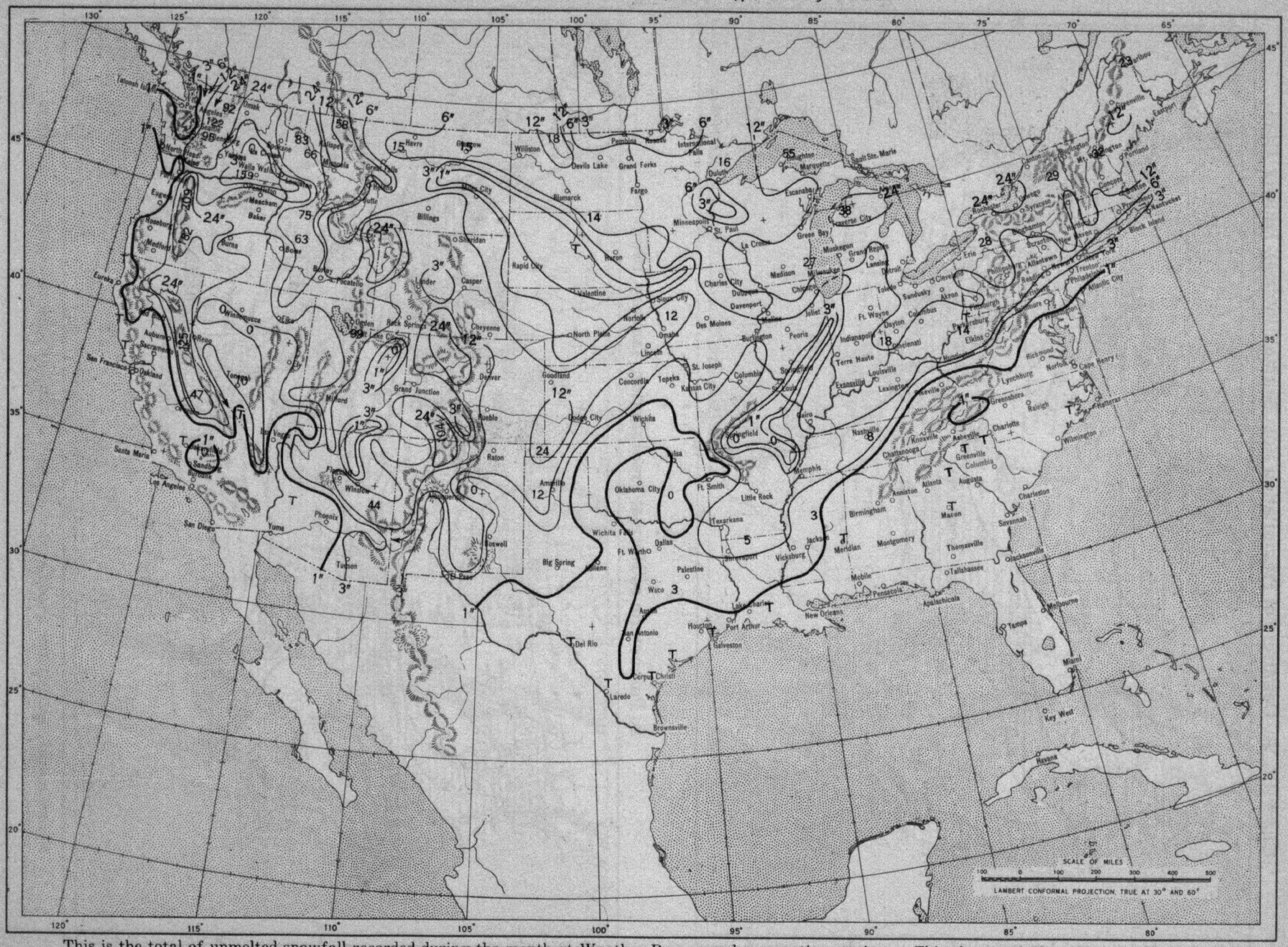


B. Percentage of Normal Precipitation, January 1951.



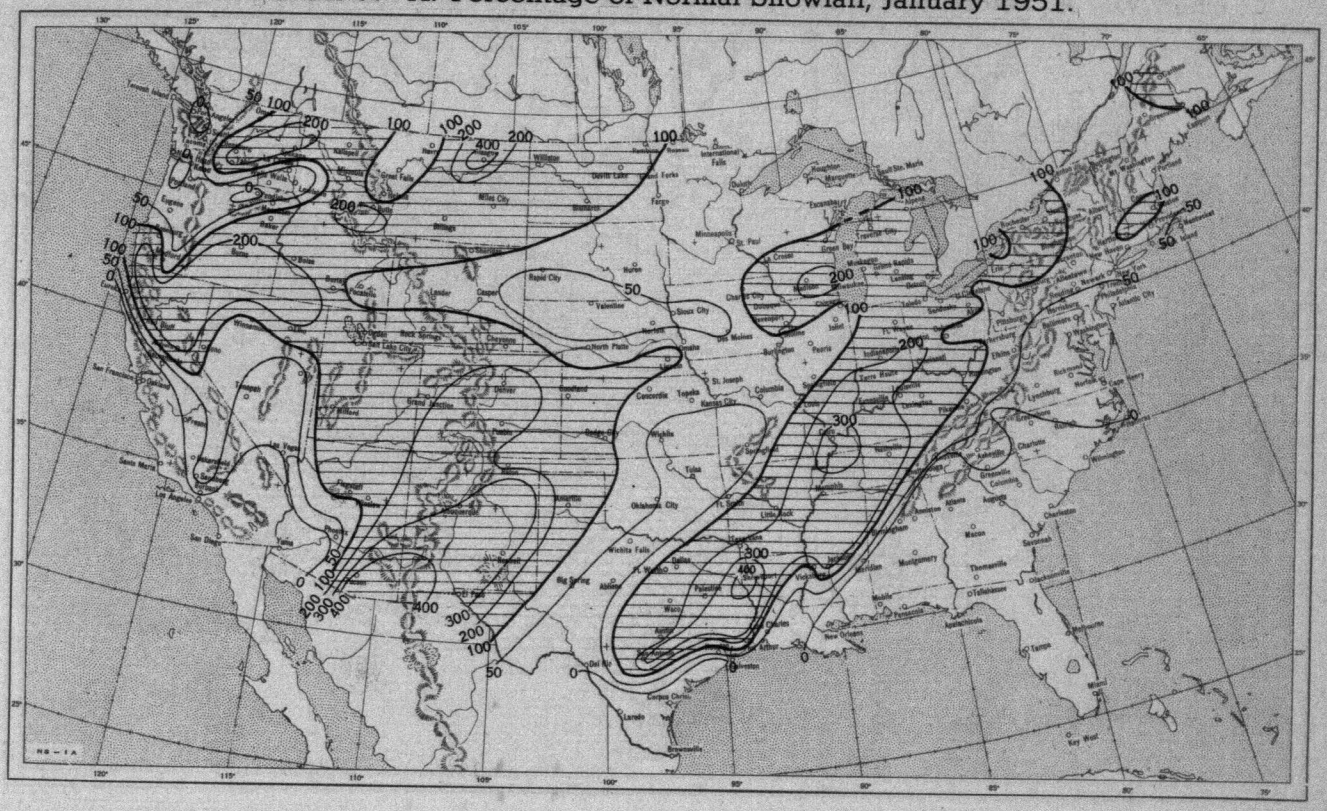
Normal monthly precipitation amounts are computed for stations having at least 10 years of record.

Chart IV. Total Snowfall (Inches), January 1951.

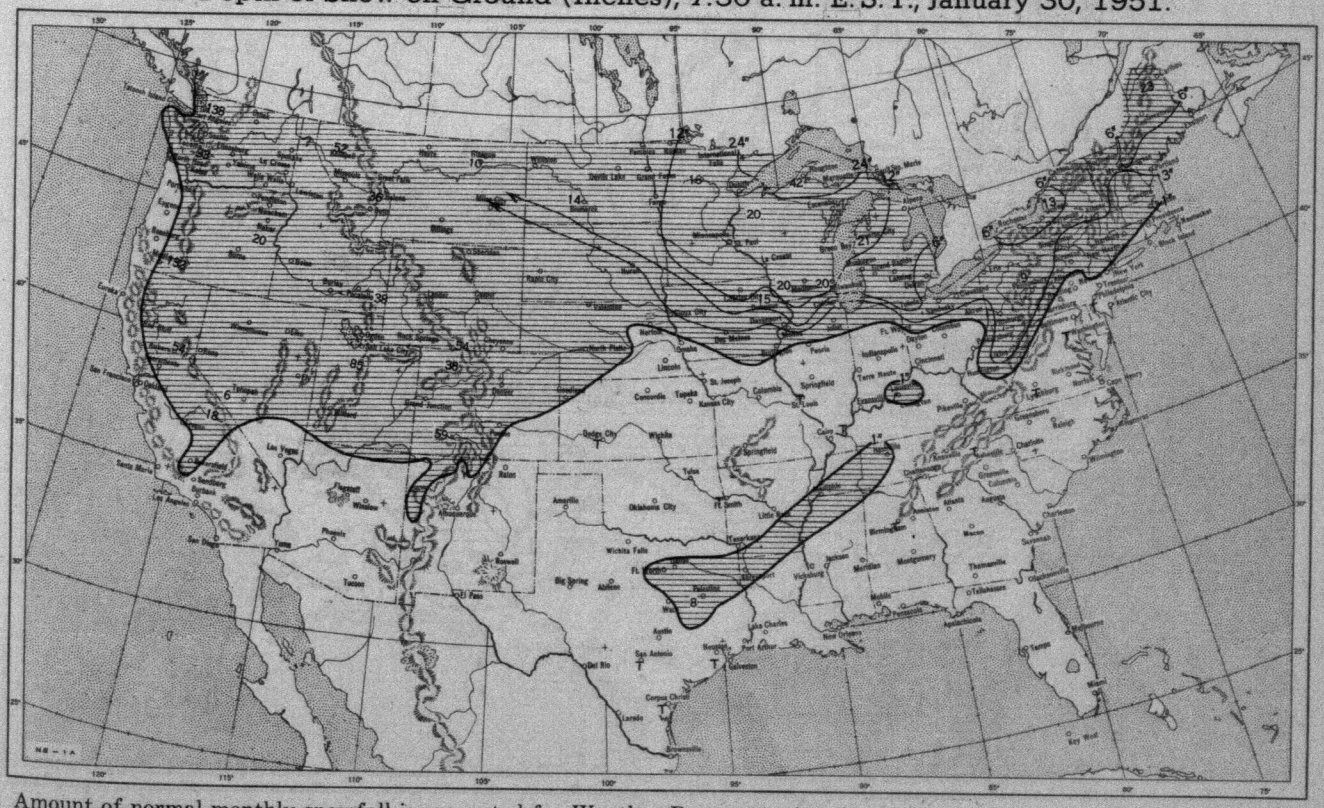


This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, January 1951.

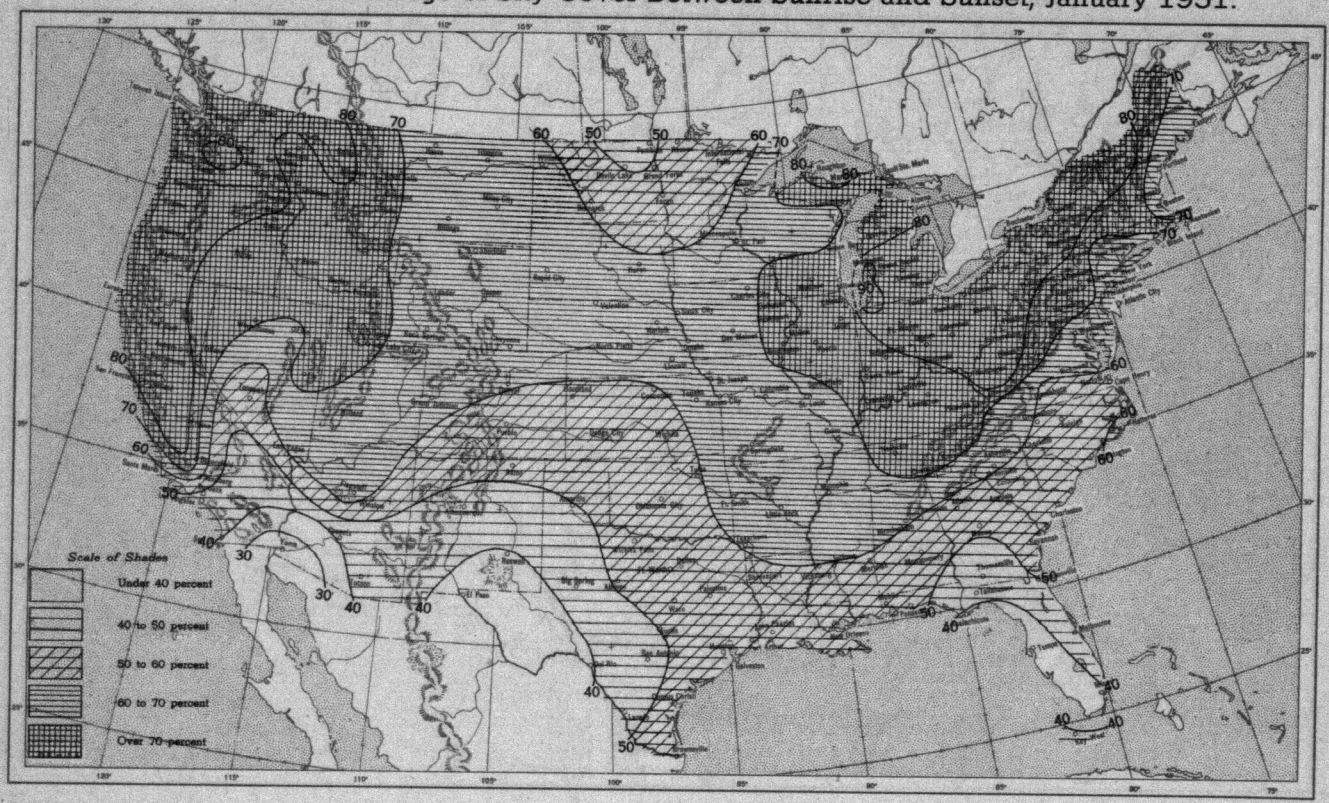


B. Depth of Snow on Ground (Inches), 7:30 a. m. E. S. T., January 30, 1951.

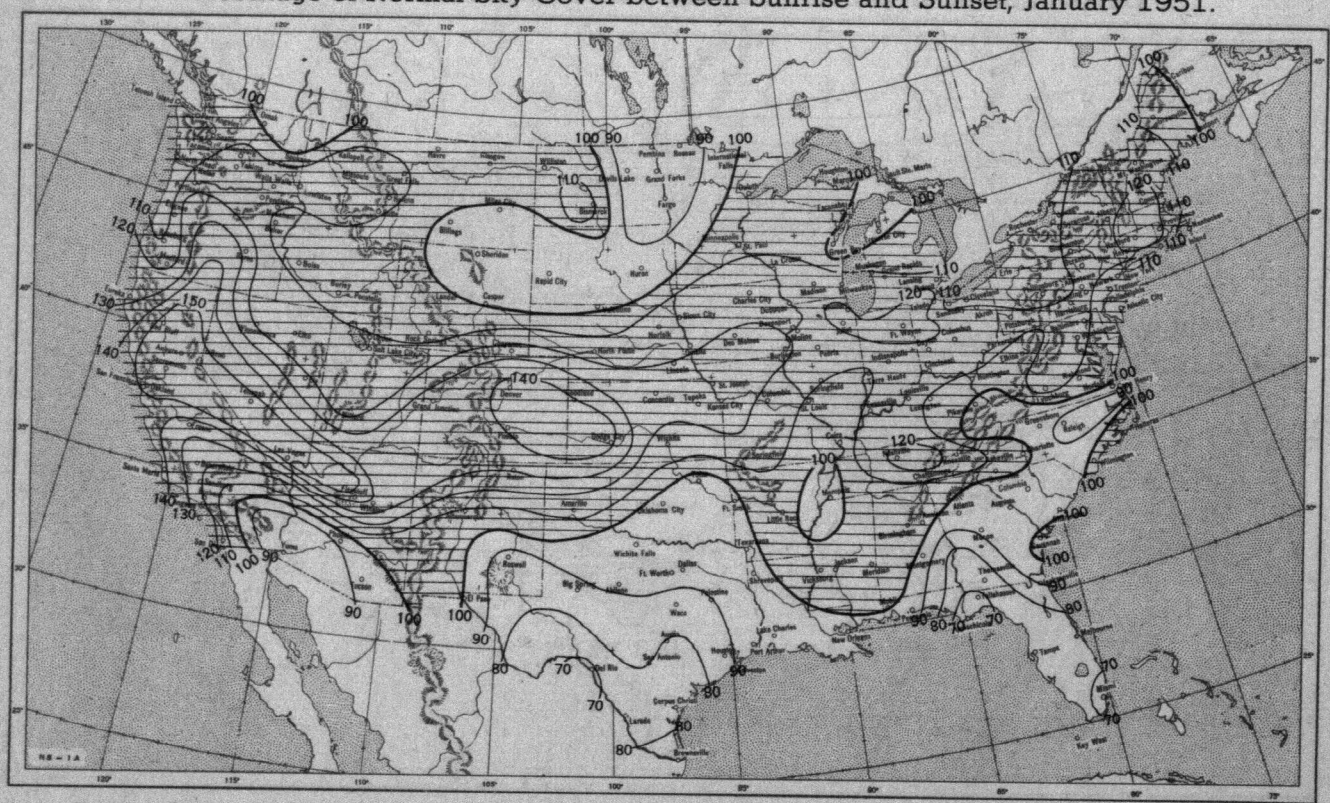


A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record. B. shows depth currently on ground at 7:30 a.m. E.S.T., of the Tuesday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, January 1951.

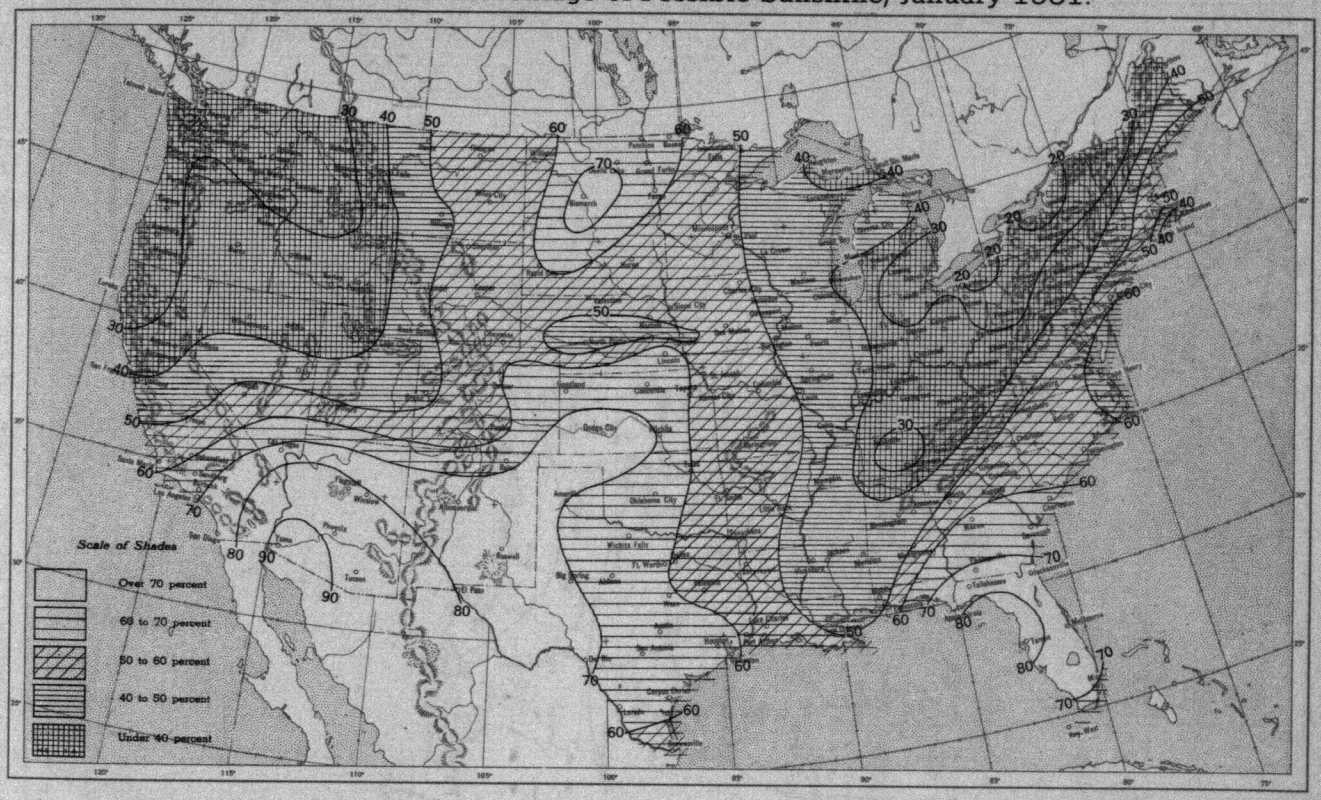


B. Percentage of Normal Sky Cover between Sunrise and Sunset, January 1951.

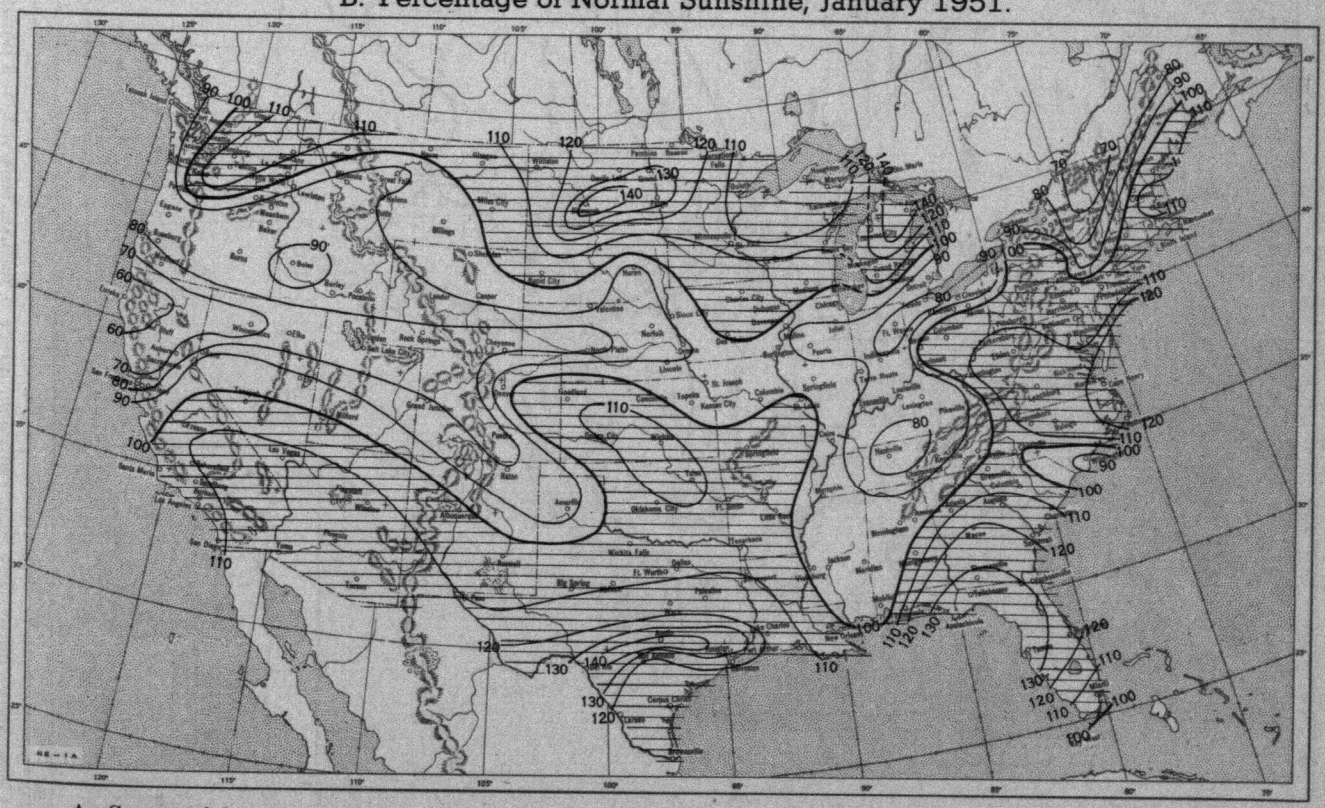


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, January 1951.



B. Percentage of Normal Sunshine, January 1951.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, January 1951. Inset: Percentage of Normal Average Daily Solar Radiation, January 1951.

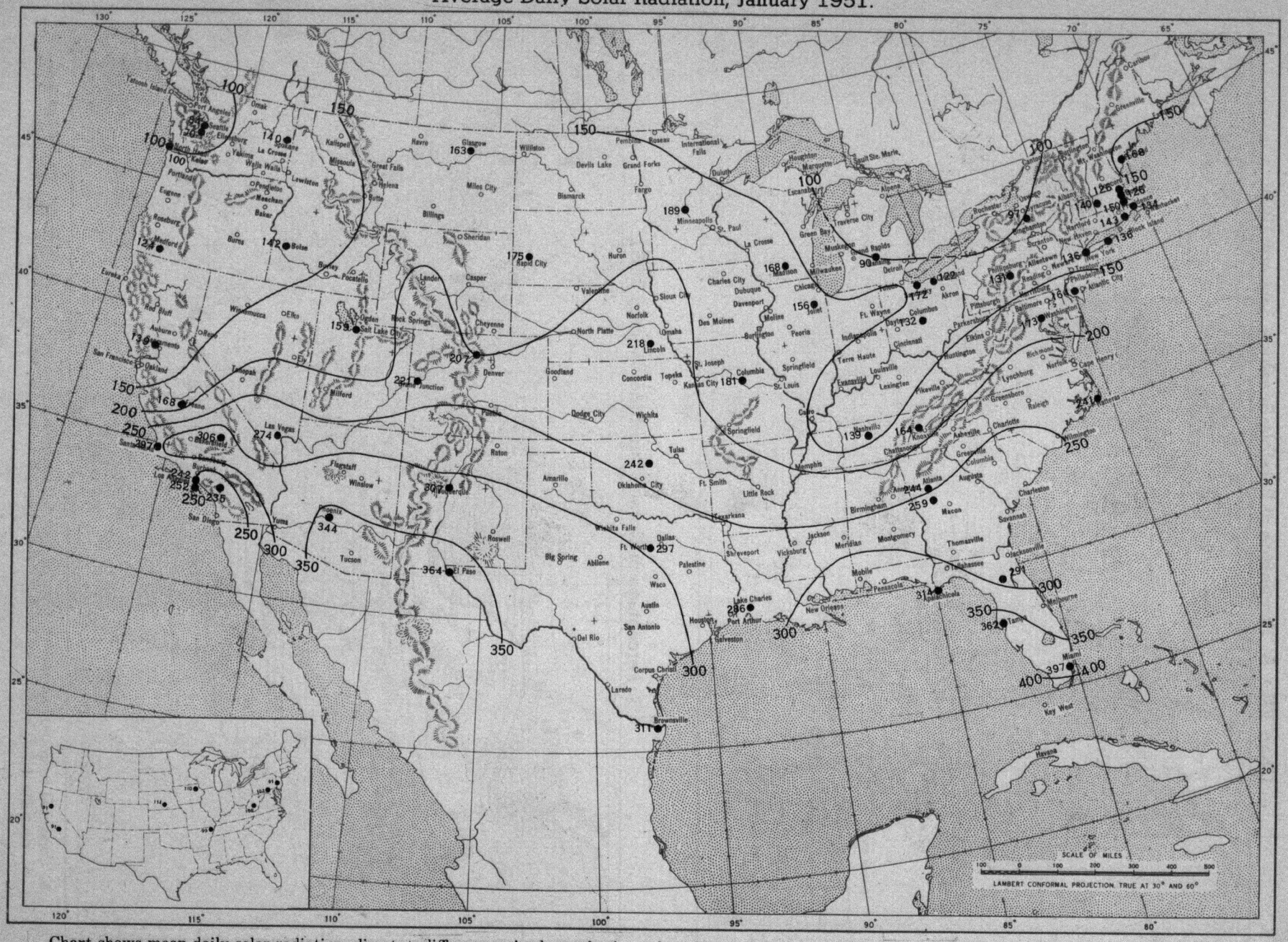
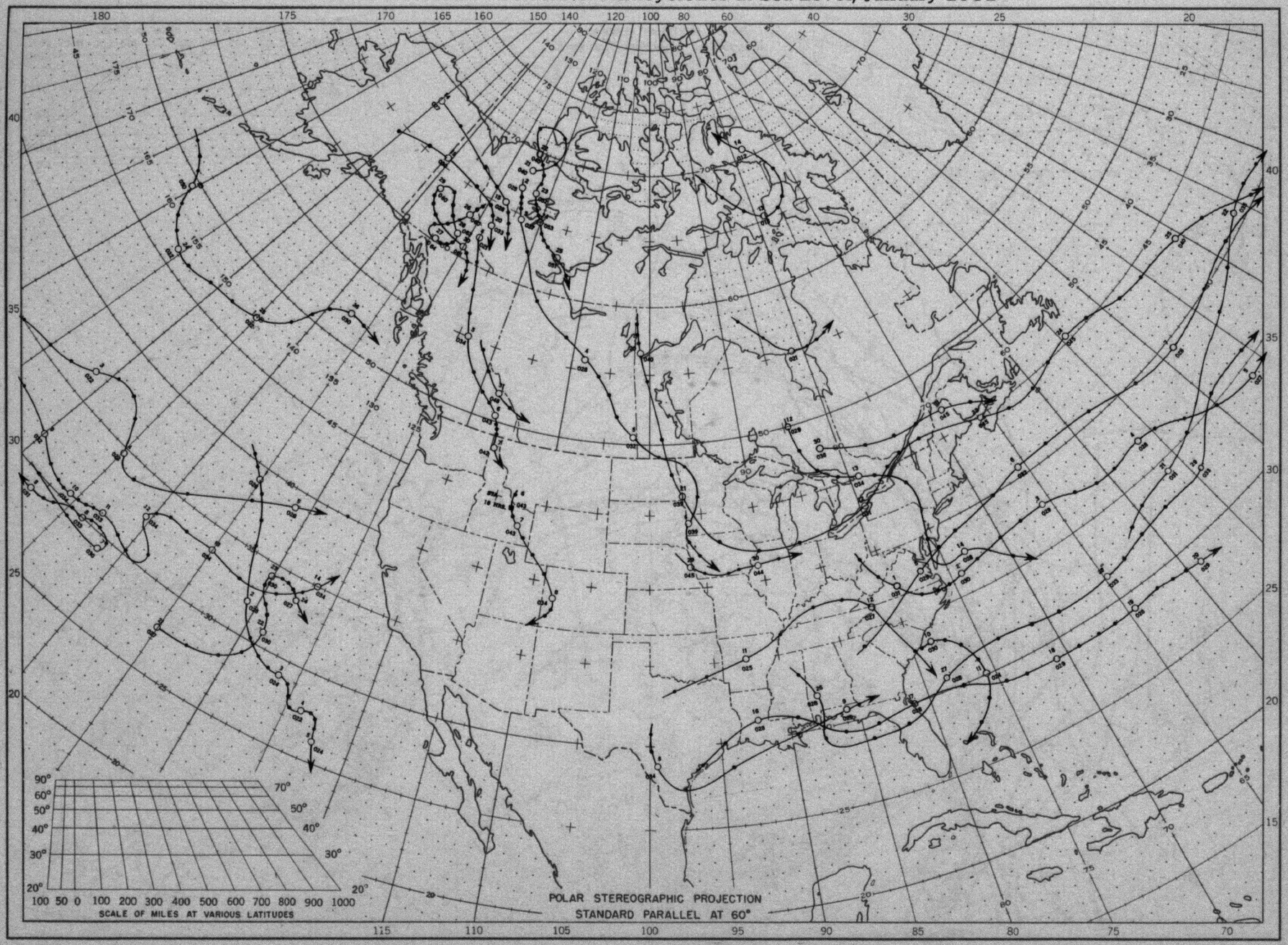


Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm. $^{-2}$). Basic data for isolines are shown on chart. Further estimates obtained from supplementary data for which limits of accuracy are wider than for those data shown. Normals are computed for stations having at least 9 years of record.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, January 1951

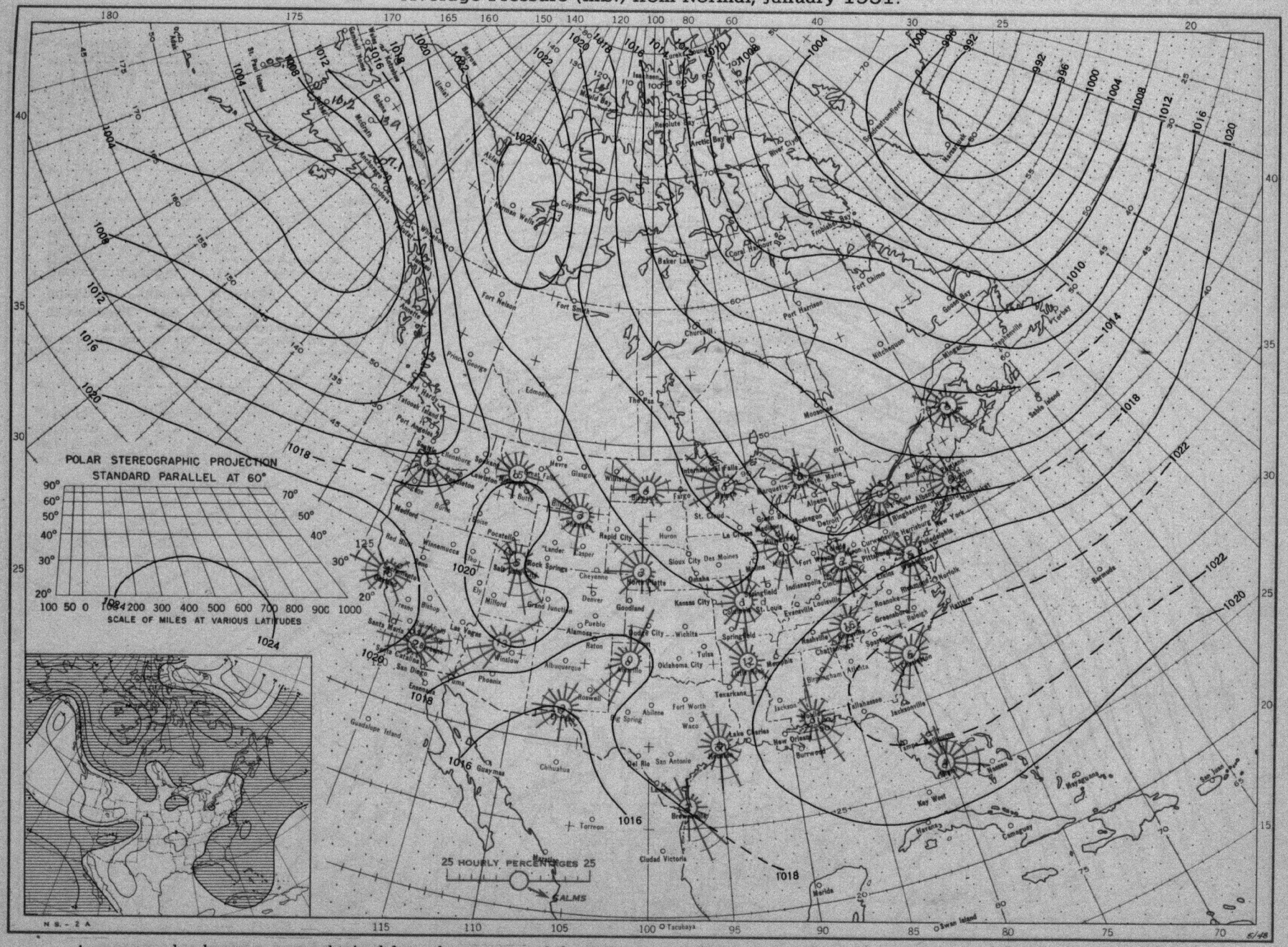


Circle indicates position of center at 7:30 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, January, 1951.

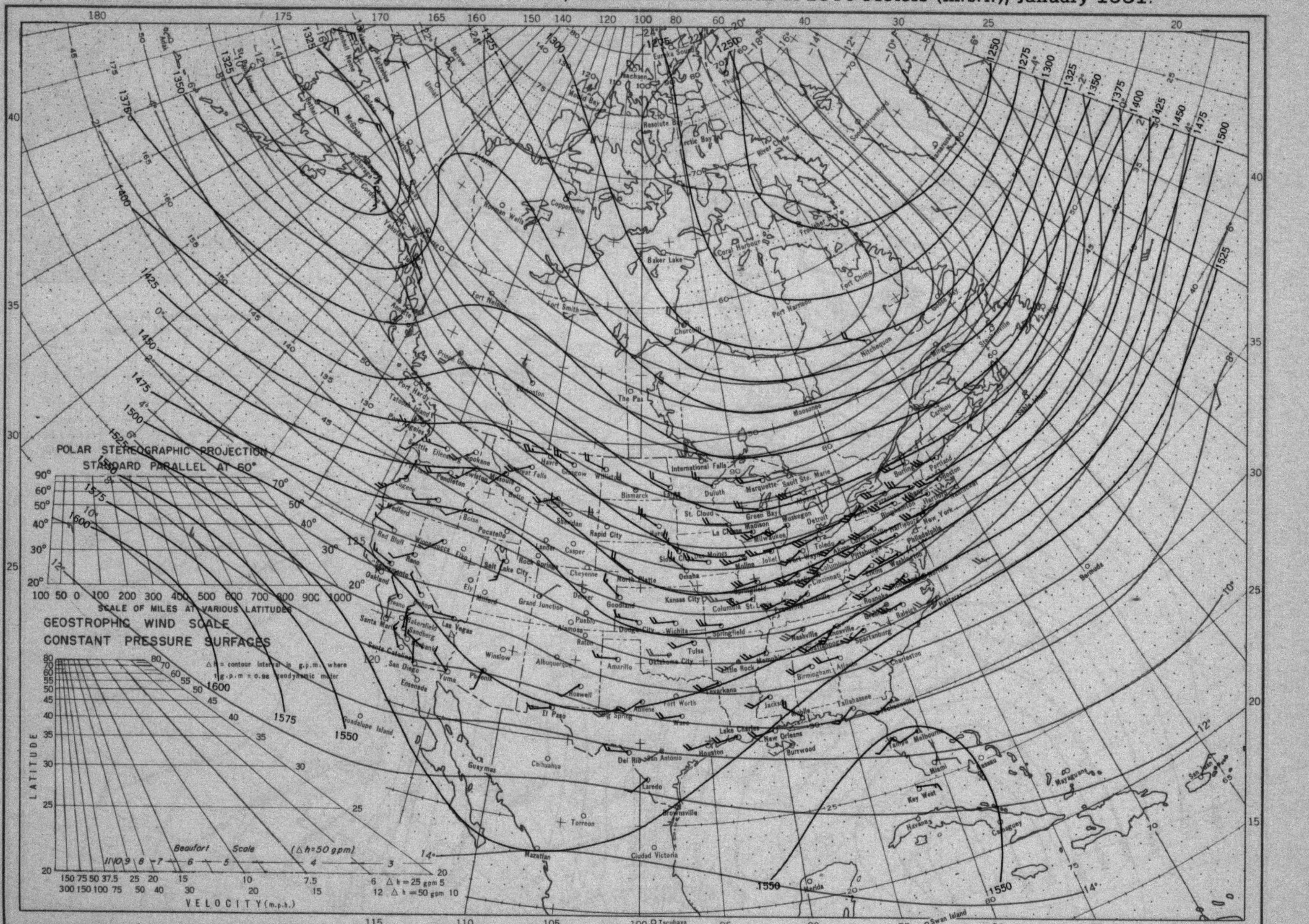
Circle indicates position of center at 7:30 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, January 1951. Inset: Departure of Average Pressure (mb.) from Normal, January 1951.



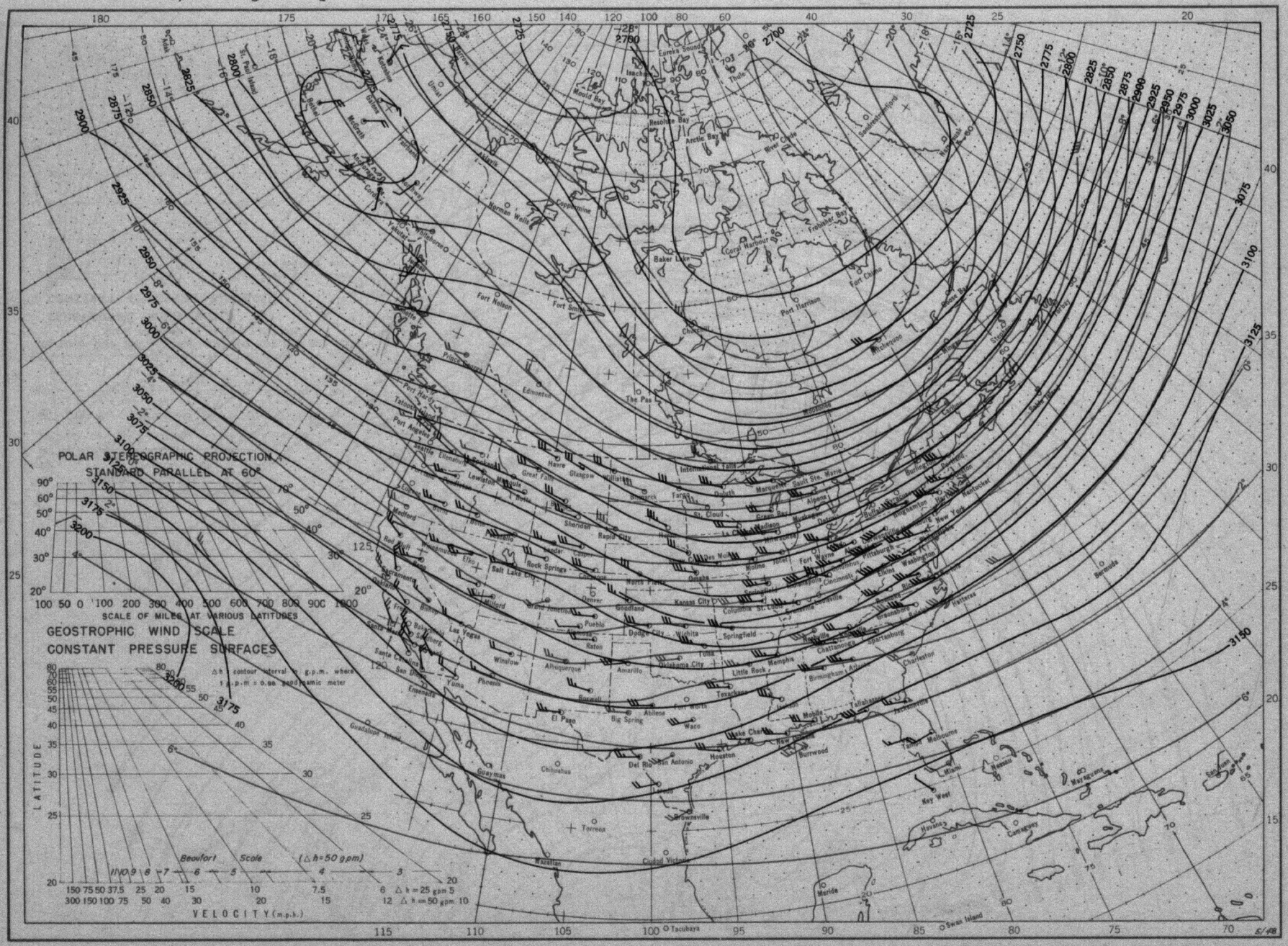
Average sea level pressures are obtained from the averages of the 7:30 a. m. and 7:30 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid from map readings for 20 years of the Historical Weather Maps, 1899–1939.

Chart XII. Average Dynamic Height in Geopotential Meters (1 g.p.m. = 0.98 dynamic meters) of the 850-mb. Pressure Surface, Average Temperature in °C. at 850 mb., and Resultant Winds at 1500 Meters (m.s.l.), January 1951.



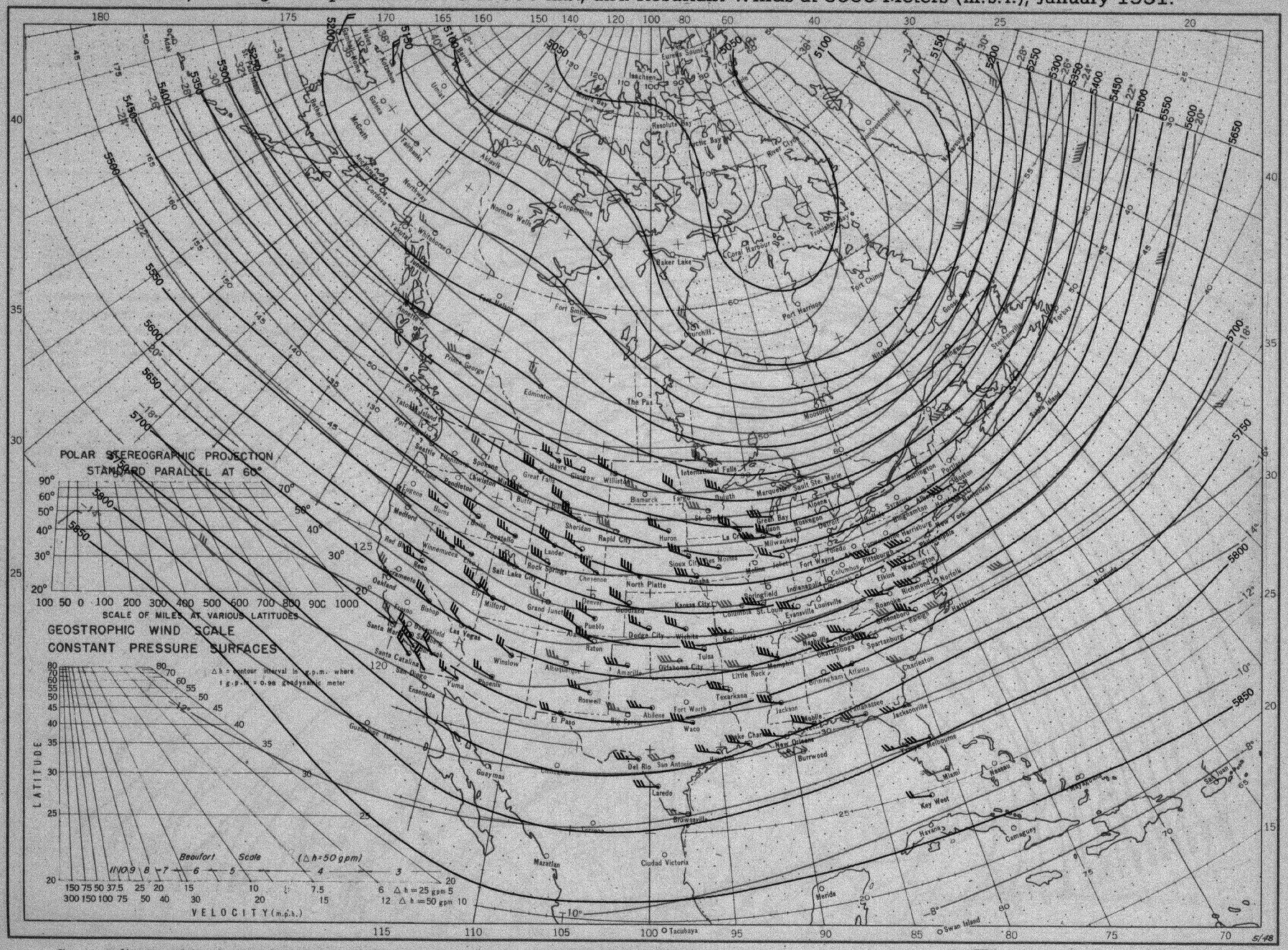
Contour lines and isotherms based on radiosonde observations at 0300 G. M. T. Winds shown in black are based on pilot balloon observations at 2100 G. M. T.; those shown in red are based on rawins taken at 0300 G. M. T.

Chart XIII. Average Dynamic Height in Geopotential Meters (1 g.p.m.. = 0.98 dynamic meters) of the 700-mb. Pressure Surface, Average Temperature in °C. at 700 mb., and Resultant Winds at 3000 Meters (m.s.l.), January 1951.



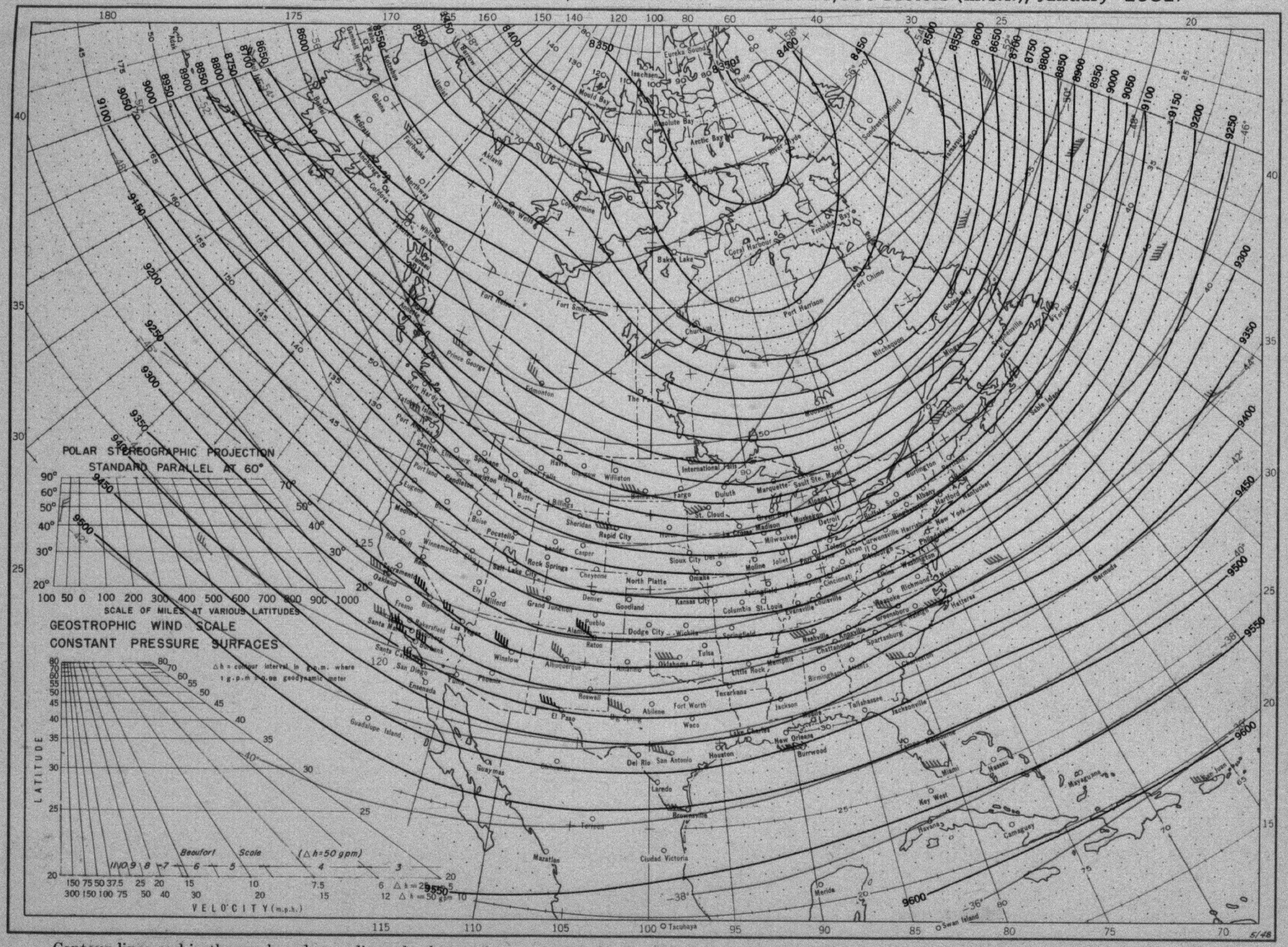
Contour lines and isotherms based on radiosonde observations at 0300 G. M. T. Winds shown in black are based on pilot balloon observations at 2100 G. M. T.; those shown in red are based on rawins taken at 0300 G. M. T.

Chart XIV. Average Dynamic Height in Geopotential Meters (1 g.p.m. = 0.98 dynamic meters) of the 500-mb. Pressure Surface, Average Temperature in °C at 500 mb., and Resultant Winds at 5000 Meters (m.s.l.), January 1951.



Contour lines and isotherms based on radiosonde observations at 0300 G. M. T. Winds shown in black are based on pilot balloon observations at 2100 G. M. T.; those shown in red are based on rawins at 0300 G. M. T.

Chart XV. Average Dynamic Height in Geopotential Meters (1 g.p.m. = 0.98 dynamic meters) of the 300-mb. Pressure Surface, Average Temperature in °C. at 300 mb., and Resultant Winds at 10,000 Meters (m.s.l.), January 1951.



Contour lines and isotherms based on radiosonde observations at 0300 G. M. T. Winds shown in black are based on pilot balloon observations at 2100 G. M. T.; those shown in red are based on rawins at 0300 G. M. T.