Cyclones and gales.—Few important cyclones occurred during May, and shipping was little affected by stormy conditions; vessels reported few gales and these apparently were local. On the 3d and 4th, south gales of force 10 occurred east of Japan, associated with a cyclone central over the Japan Sea. On the 2d a whole gale was experienced near 44° N., 176° E., in connection with an Aleutian disturbance. On several days strong northwest winds were encountered off the coast of Lower California, but the highest velocity was only that of a fresh gale, on the 23d.

A small cyclone developed south of the Gulf of Tehuantepec on May 30; a fresh southwest gale was reported at 8 p.m. near 12°30′ N., 93° W.; at 1 p.m. of the 31st the American steamer *Pennsylvanian*, in 13°47′ N., 93°30′ W., had a corrected barometer reading of 29.44 inches, with a light northwest wind—the maximum velocity experienced was of force 11 from the north. The cyclone seems to have filled in rapidly on that date off the Guatemalan coast.

Fog.—Two to eight or more days with fog were experienced by ships along that part of the northern routes lying west of longitude 145° W. The most frequent and extensive fog banks of this great area occurred between the western Aleutians and the Kuril and Japanese islands. Fog was reported on 7 days off the California coast and on 3 days off Lower California and Cape Corrientes.

INTENSE HURRICANE IN THE SOUTH PACIFIC OCEAN, APRIL 6–12, 1933

By WILLIS E. HURD

The Weather Bureau has received through the Hydrographic Office at Cristobal, Canal Zone, a report of an intense hurricane in tropical waters of the South Pacific during April 1933. The report was furnished by the French steamship *Boussole;* Captain Courcet; observer Winnaert.

According to the information given by this ship, which inclosed a supplemental report from the French steamship *Bucephale*, the hurricane probably originated very early in the month to the northward of the Fiji Islands. The *Bucephale*, lying at anchor in Surrender Bay, New Hebrides, experienced moderate to fresh gales, mostly southwesterly, on the 6th and 7th. At 2 a.m. of the 8th the barometer (correction unknown) at Epi Island fell to 711 mm (27.99 inches), with an east wind of hurricane force that ruined even stone-built houses.

The *Boussole* lay at Noumea, New Caledonia, on the 9th and 10th, and experienced hurricane winds during the early hours of the 10th, lowest pressure 28.92 inches. The gale there lasted for 19 hours. A storm wave in Noumea Roads threw one steamer ashore on the rocks, and caused the loss of many lighters and small boats. The city itself experienced considerable damage.

According to a radiogram received at Noumea on the 12th from Brisbane the cyclone, still intense, was central about 400 miles southweast of Kunie Island (Isle of Pines), New Caledonia, moving in an east-southeast direction.

CLIMATOLOGICAL TABLES

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, May 1933

[For description of tables and charts, see REVIEW, January, p. 37]

Section	Temperature								Precipitation					
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount
	° F.	° F.		° F.			° F.		In.	In.		In.		In.
Alabama	76.1	+4.8	Brewton (near)	100	25	Valley Head	45	[1] 3	2.41	−1.51	Riverton	7.86	Elba	0.00
Arizona	62.6	−4.9	Quartzsite	113	29	Williams	8	11	.19	−.14	Mormon Lake	1.93	41 Stations	.00
Arkansas	71.8	+2.7	2 stations	96	[1] 19	3 stations	41	[1] 2	6.27	+1.24	Sunset	12.40	Carthage	2.30
California	55.2	−6.1	Greenland Ranch	114	29	Twin Lakes	−4	8	1.61	+.60	Crescent City (near)	12.44	5 stations	.00
Colorado	50.5	−1.5	Las Animas	99	23	Lake Moraine	−3	13	1.92	+.04	Hawthorne	4.80	Saguache	.08
Florida	78.9	+3.3	Blountstown	102	23	Glen St. Mary	52	19	2.59	−1.40	Fort Myers	6.86	Ocala	.51
Georgia	76.7	+5.0	2 stations	101	[1] 15	Clayton	42	9	2.76	−.66	Blairsville	11.10	2 stations	.68
Idaho	48.8	−3.9	Indian Cove	96	30	2 stations	11	[1] 8	1.65	−.94	Deadwood	4.31	Bakers Ranch	.40
Illinois	64.4	+2.0	2 stations	93	20	Freeport	32	4	8.02	+3.87	Anna	12.09	Pearl	4.58
Indiana	65.0	+2.9	Edwardsport	93	21	3 stations	31	4	8.14	+4.08	Princeton	12.86	Albion	3.66
Iowa	60.5	+.6	3 stations	93	[1] 18	7 stations	32	[1] 3	4.36	+.23	Burlington	10.46	Little Sioux	.33
Kansas	64.3	+.7	Ellsworth	105	19	St. Francis	32	13	3.80	+.09	Parsons	11.27	Anthony	.92
Kentucky	68.7	+5.4	Frankfort	95	25	2 stations	40	7	6.43	+2.41	Cold Spring	10.46	Lexington	3.47
Louisiana	77.9	+4.2	2 stations	97	[1] 18	Robeline	50	3	4.65	+.13	Frankliuton	9.32	Port Eads	.50
Maryland-Delaware	65.0	+2.6	Bell, Md	94	27	Oakland, Md	34	22	5.42	+2.01	Grantsville, Md	8.62	Aberdeen, Md	3.79

[1] Other dates also.

Condensed climatological summary of temperature and precipitation by sections, May 1933—Continued

Section	Temperature								Precipitation					
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount
	° F.	° F.		° F.			° F.		In.	In.		In.		In.
Michigan	56.4	+2.6	Flint	92	26	Wolverine	14	4	4.05	+.86	Ganges	7.42	Painesdale	.66
Minnesota	55.9	+1.0	Pipestone	94	18	Cambridge	19	[1] 3	3.78	+.54	Minneapolis, No. 1	8.92	Baudette	.44
Mississippi	76.5	+4.8	Crystal Springs	98	27	Water Valley	47	3	4.07	−.34	Water Valley	9.80	Stoneville	1.25
Missouri	65.9	+1.6	Macon	96	20	Harrisonville	35	1	7.53	+2.73	2 stations	12.97	Grant City	2.23
Montana	50.4	−1.0	4 stations	94	[1] 30	Lima	18	[1] 9	2.41	+.15	Philipsburg	4.84	Superior	.50
Nebraska	57.8	−1.3	McCook	98	[1] 18	2 stations	27	2	2.97	−.56	Hull (near)	6.00	Tekamah	.38
Nevada	51.1	−4.2	Clay City	105	30	Marlette Lake	4	3	.91	+.02	Marlette Lake	3.94	Lovelock	.00
New England	57.3	+2.3	Waterbury, Conn	93	27	2 stations	21	[1] 6	2.42	−.95	Gloucester, Mass	4.74	Gardiner, Maine	1.03
New Jersey	63.2	+2.8	5 stations	93	27	do	32	[1] 5	4.84	+1.11	Camden	6.98	Culvers Lake	2.56
New Mexico	57.2	−2.3	2 stations	100	[1] 20	Selsor Ranch	7	1	.68	−.44	Valmora	3.75	8 stations	.00
New York	58.9	+3.0	Lowville	96	20	2 stations	20	[1] 5	3.40	−.13	Allegany State Park	7.86	Spier Falls	1.48
North Carolina	70.7	+3.9	2 stations	99	[1] 26	Banners Elk	35	4	4.58	+.40	Brevard	10.54	Durham	1.48
North Dakota	54.7	+1.9	Max	98	31	Dunseith	19	[1] 3	3.15	+.75	Mohall	5.41	Edmore	1.43
Ohio	63.6	+3.2	3 stations	92	[1] 20	Holgate	30	4	6.44	+2.72	Greenville	12.00	Akron	2.61
Oklahoma	70.7	+2.5	Buffalo	103	19	Kenton	32	4	4.70	−.02	Sulphur	13.78	Supply	.55
Oregon	48.6	−4.4	Prairie City	95	29	3 stations	11	[1] 6	2.78	+.99	Brookings	11.35	Seneca	.15
Pennsylvania	62.2	+2.8	Ardmore	94	27	Arendtsville	24	6	5.86	+1.96	Huntingdon	10.52	Matamoras	2.17
South Carolina	74.9	+4.0	4 stations	100	[1] 14	2 stations	44	4	3.19	−.43	Caesars Head	6.71	Kingstree	.86
South Dakota	55.6	−.6	2 stations	98	31	Bellefourche	24	2	3.15	+.11	Harveys Ranch	8.22	Yankton	1.38
Tennessee	70.8	+4.0	Etowah	98	21	Elkmont	38	5	7.15	+2.93	Fayetteville	11.57	Rockwood	3.69
Texas	75.9	+2.8	Eagle Pass	107	[1] 8	Romero	32	[1] 3	3.95	+.24	Clarksville	12.97	3 stations	.00
Utah	49.6	−5.5	St. George	100	30	Soldiers Summit	7	1	1.92	+.70	Great Basin Experiment Station.	5.75	Escalante	.12
Virginia	67.9	+3.9	Clarksville	97	[1] 15	Callaville	36	19	5.30	+1.55	Danville	7.72	Norfolk	1.76
Washington	50.7	−3.6	Alpowa Ranch	92	25	Stockdill Ranch	21	6	2.72	+.73	Quinault	13.35	Cle Elum	.45
West Virginia	65.1	+3.4	New Cumberland	97	23	Bayard	34	22	6.99	+2.98	Buckhannon	11.36	Harpers Ferry	3.50
Wisconsin	56.3	+1.3	Marinette	89	20	Long Lake	16	4	5.02	+1.35	Darlington	12.31	Ashland	1.19
Wyoming	46.8	−2.4	3 stations	92	31	Foxpark	2	12	2.54	+.42	Bechler River	6.93	Lookout (near)	.42
Alaska (April)	30.7	+3.0	Porcupine Creek	60	23	Barrow	−21	1	1.40	−.10	View Cove	11.70	5 stations	T.
Hawaii	71.2	−.5	Kaanapali	90	[1] 8	Kanalohuluhulu	44	14	3.93	−1.87	Piihonua	27.59	4 stations	.00
Puerto Rico	77.4	+.2	Dorado	94	4	Guineo Reservoir	50	1	13.52	+6.97	San Cristobal	32.52	Sabana Grande	5.75

[1] Other dates also.

TABLE 1.—*Climatological data for Weather Bureau stations, May 1933*

(Compiled by Annie E. Small)

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station, reduced to mean of 24 hours	Pressure: Sea level, reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max. + mean min. ÷ 2	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Mean wet thermometer	Mean temperature of the dew-point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Days with 0.01, or more	Wind: Total movement	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month
	Ft.	Ft.	Ft.	In.	In.	In.	°F.	°F.	°F.		°F.	°F.		°F.	°F.	°F.	°F.	%	In.	In.		Miles								0–10	In.	In.
New England							57.1	+2.5										74	2.39	−0.8										5.3		
Eastport	76	67	85	29.84	29.93	−0.03	48.4	+0.7	76	19	58	29	8	39	34	44	41	79	3.74	+0.7	11	8,061	sw.	27	nw.	15	10	11	10	5.2	0.0	0.0
Greenville, Maine	1,070	6	----	28.76	29.92	------	51.6	------	80	18	64	26	8	39	46	----	----	----	3.72	------	12	5,323	se.	28	------	14	10	9	12	----	T	.0
Portland, Maine	103	82	117	29.82	29.94	−.03	55.2	+1.9	82	20	63	36	8	47	29	49	44	69	2.22	−1.2	10	6,908	s.	30	nw.	4	18	7	6	4.0	.0	.0
Concord	289	70	79	29.64	29.95	−.03	57.8	+3.5	86	26	70	32	6	45	50	----	----	----	2.44	−.6	10	4,704	nw.	21	nw.	15	21	4	6	3.6	.0	.0
Burlington	403	11	48	29.51	29.94	−.03	55.8	−.7	80	19	67	29	9	45	39	----	----	----	2.16	−.7	13	7,428	s.	32	s.	1	9	7	15	6.0	.0	.0
Northfield	876	12	60	------	29.94	−.03	54.0	+1.2	82	18	67	24	8	40	52	----	----	75	2.14	−.6	11	6,337	s.	25	sw.	14	6	15	10	6.0	.0	.0
Boston	125	106	165	29.81	29.95	−.03	61.6	+4.5	90	20	71	40	8	52	31	53	47	65	2.74	−.4	9	6,416	sw.	27	nw.	4	9	15	7	5.3	.0	.0
Nantucket	12	14	90	29.94	29.95	−.04	55.6	+3.3	79	26	63	41	5	48	24	51	48	82	1.62	−1.2	7	9,768	sw.	35	s.	10	9	13	9	5.2	.0	.0
Block Island	26	11	46	29.92	29.95	−.04	55.6	+2.8	77	26	62	43	9	49	20	52	50	87	1.59	−1.9	6	9,772	s.	36	s.	10	6	11	14	6.3	.0	.0
Providence	160	215	251	29.78	29.95	−.03	60.7	+2.2	89	27	70	41	8	52	39	52	45	63	4.10	+1.1	11	7,881	se.	30	nw.	14	10	10	11	5.3	.0	.0
Hartford	159	122	----	29.77	29.94	−.04	62.2	+4.7	91	27	72	40	5	52	35	----	----	----	1.59	−2.0	10	------	s.	----	------	----	8	10	13	6.2	.0	.0
New Haven	106	74	153	29.85	29.96	−.03	61.4	+3.5	91	27	70	44	8	53	29	55	50	73	2.00	−1.7	11	6,189	s.	27	sw.	27	6	10	15	6.5	.0	.0
Middle Atlantic States							65.3	+3.0										74	4.50	+1.1										6.6		
Albany	97	107	115	29.84	29.95	−.03	62.0	+2.7	87	26	72	37	8	52	33	55	49	65	2.41	−.5	14	5,956	s.	24	se.	2	7	14	10	5.9	.0	.0
Binghamton	871	60	68	29.03	29.96	−.02	60.1	+2.7	84	20	71	32	5	50	38	----	----	----	3.32	.0	12	4,209	nw.	20	sw.	1	2	6	23	8.1	.0	.0
New York	314	414	454	29.61	29.94	−.05	62.8	+2.2	86	27	71	45	8	54	26	56	51	72	5.93	+2.7	13	9,095	sw.	51	nw.	20	5	11	15	7.0	.0	.0
Bellefonte	1,050	5	42	28.84	29.95	------	59.2	------	83	26	69	35	5	49	35	55	52	80	5.46	------	23	------	sw.	----	------	----	1	9	21	8.2	.0	.0
Harrisburg	374	94	104	29.55	29.95	−.03	64.2	+2.4	88	24	73	43	9	56	27	57	53	72	5.53	+2.1	19	5,097	w.	31	ne.	24	4	12	15	7.0	.0	.0
Philadelphia	114	123	367	29.85	29.97	−.02	66.3	+3.4	89	27	75	45	8	58	24	58	54	70	6.93	+3.7	16	8,619	sw.	68	nw.	24	4	10	17	6.8	.0	.0
Reading	323	283	304	29.61	29.96	------	64.0	+1.5	90	20	73	41	5	55	28	57	53	70	5.42	+1.8	18	7,476	nw.	70	nw.	20	5	10	16	6.8	.0	.0
Scranton	805	72	103	29.10	29.95	−.03	61.4	+2.0	85	26	72	36	5	51	35	55	50	69	3.82	+.6	16	4,705	sw.	19	nw.	20	5	12	14	6.3	.0	.0
Atlantic City	52	37	172	29.90	29.96	−.02	61.2	+3.1	87	14	67	46	9	55	26	57	55	84	4.32	+1.3	13	10,466	s.	37	s.	27	4	10	17	6.9	.0	.0
Sandy Hook	22	10	55	29.93	29.95	------	61.6	------	87	27	69	44	8	54	22	56	53	80	4.93	+1.2	15	7,914	s.	46	nw.	20	5	9	17	6.3	.0	.0
Trenton	190	159	183	29.76	29.96	------	64.2	+3.1	90	27	74	44	9	54	32	57	53	74	4.91	+1.8	15	6,246	s.	32	nw.	20	5	14	12	6.7	.0	.0
Baltimore	123	100	215	29.83	29.96	−.03	67.1	+2.7	93	24	75	46	8	59	29	60	55	70	5.17	+1.6	17	7,277	sw.	37	n.	20	3	12	16	7.0	.0	.0
Washington	112	62	85	29.84	29.96	−.04	67.2	+3.5	91	24	76	47	9	58	29	60	55	72	6.26	+2.6	18	4,670	s.	27	nw.	20	4	13	14	6.5	.0	.0
Cape Henry	18	8	54	29.94	29.96	------	68.9	+4.7	94	27	76	47	5	62	27	63	61	79	2.51	−1.1	6	8,036	se.	34	n.	30	5	18	8	5.7	.0	.0
Lynchburg	681	153	188	29.23	29.96	−.04	69.7	+2.4	93	26	80	46	19	59	33	63	60	74	4.26	+.6	10	4,619	w.	29	nw.	20	8	18	5	5.0	.0	.0
Norfolk	91	170	205	29.88	29.97	−.03	71.1	+4.9	92	26	80	50	5	62	25	63	60	74	1.76	−2.0	7	8,515	s.	31	nw.	30	2	13	16	7.0	.0	.0
Richmond	144	11	52	29.82	29.97	−.02	70.1	+3.6	93	26	81	45	19	60	35	62	59	75	4.84	+1.0	14	5,604	ne.	46	nw.	26	5	16	10	6.0	.0	.0
Wytheville	2,304	49	55	27.64	29.96	−.03	64.7	+3.3	86	25	75	45	18	54	34	58	55	75	4.26	+.6	14	4,998	w.	24	w.	14	8	14	9	5.6	.0	.0
South Atlantic States							74.8	+4.6										73	3.29	−0.2										4.4		
Asheville	2,253	89	104	27.68	29.98	−.01	67.8	+5.2	90	13	80	44	4	56	38	60	56	73	4.23	+.8	13	5,604	nw.	29	nw.	10	8	15	8	5.3	.0	.0
Charlotte	779	244	267	29.16	29.98	−.01	73.0	+4.1	92	25	83	52	4	63	27	63	59	67	2.46	−1.2	6	8,295	sw.	45	n.	10	11	14	6	4.9	.0	.0
Greensboro	886	6	56	29.04	29.98	------	70.0	------	94	25	82	45	4	58	33	63	59	73	3.38	------	10	5,899	sw.	32	nw.	30	9	15	7	5.1	.0	.0
Hatteras	11	5	50	29.96	29.97	−.04	72.4	+3.7	86	14	78	60	4	67	15	68	66	81	6.52	+2.8	12	8,798	sw.	41	w.	16	16	9	6	3.7	.0	.0
Raleigh	376	103	146	29.58	29.96	−.03	73.3	+4.8	94	26	84	51	4	62	29	64	59	66	2.66	−1.2	11	6,417	sw.	30	nw.	30	9	15	7	5.1	.0	.0
Wilmington	72	73	106	29.92	29.99	−.02	74.3	+3.5	94	21	83	53	18	66	27	68	66	79	3.34	−.1	9	7,030	sw.	30	nw.	3	15	12	4	4.0	.0	.0
Charleston	48	11	92	29.95	30.00	−.01	77.9	+5.2	95	14	85	62	18	70	22	71	68	79	1.76	−1.2	4	8,059	sw.	26	w.	27	18	9	4	3.6	.0	.0
Columbia, S.C.	351	41	57	29.61	29.98	−.02	77.0	+5.1	96	15	88	56	4	66	28	66	61	65	5.82	+2.7	9	5,326	sw.	23	sw.	30	17	10	4	4.0	.0	.0
Greenville, S.C.	1,039	139	146	28.90	29.98	------	72.9	+5.7	92	21	83	52	4	63	27	64	59	68	3.45	−.6	10	6,517	sw.	39	sw.	27	15	9	7	4.3	.0	.0
Augusta	182	62	77	29.78	29.97	−.02	77.8	+5.4	97	21	90	60	19	66	29	67	63	66	2.08	−1.0	9	4,547	s.	24	nw.	27	12	13	6	4.5	.0	.0
Savannah	65	73	152	29.92	29.99	−.01	78.2	+4.8	96	14	88	61	19	69	26	71	69	80	.86	−2.2	5	7,651	s.	25	se.	30	13	12	6	4.5	.0	.0
Jacksonville	43	209	245	29.95	30.00	.00	78.6	+3.6	91	10	87	62	19	71	23	71	68	78	3.04	−1.0	8	7,857	s.	30	n.	29	11	17	3	4.4	.0	.0
Florida Peninsula							80.4	+3.1										77	2.48	−1.8										6.0		
Key West	22	10	64	29.94	29.96	0.01	81.8	+2.7	90	8	86	73	20	77	13	75	72	77	1.47	−2.1	13	7,957	e.	22	se.	15	10	13	8	5.2	.0	.0
Miami	25	124	168	29.97	30.00	+.01	79.8	+3.4	87	9	84	67	30	76	18	73	71	76	4.67	−1.6	10	7,942	se.	25	se.	30	8	10	13	6.1	.0	.0
Tampa	35	88	197	29.96	29.99	.00	79.6	+3.3	93	24	89	65	1	71	23	72	70	77	1.30	−1.7	6	7,395	se.	30	ne.	18	21	7	3	3.4	.0	.0
Titusville	44	5	----	29.94	29.99	------	79.4	------	93	10	88	66	31	71	24	----	----	----	3.20	------	4	------	se.	----	------	----	19	10	2	3.4	.0	.0
East Gulf States							77.0	+4.6										73	2.24	−1.6										4.5		
Atlanta	1,173	190	198	28.77	29.98	−.01	74.1	+4.2	91	21	84	53	4	65	25	64	59	64	3.22	−.2	8	6,188	w.	30	nw.	27	13	12	6	4.5	.0	.0
Macon	370	76	84	29.59	29.98	−.01	76.9	+4.6	96	15	88	54	4	66	30	68	63	67	1.98	−1.0	7	4,768	sw.	21	n.	10	13	10	8	4.4	.0	.0
Thomasville	273	49	103	29.70	29.98	−.01	78.6	+4.6	95	23	88	60	19	69	26	70	67	75	.82	−2.8	8	5,553	sw.	25	sw.	27	10	13	8	5.3	.0	.0
Apalachicola	36	11	51	29.94	29.98	------	78.2	------	88	31	84	65	2	72	22	73	71	80	.57	−2.8	5	6,334	se.	29	e.	18	10	13	8	4.6	.0	.0
Pensacola	56	149	185	29.91	29.97	−.02	77.5	+3.6	90	17	82	64	3	73	20	73	72	84	2.93	−.4	9	9,055	s.	37	se.	4	14	11	6	3.9	.0	.0
Anniston	741	9	57	------	------	------	74.3	+5.9	94	21	86	48	3	62	34	----	----	----	2.61	−1.3	5	------	w.	----	------	----	11	9	11	----	.0	.0
Birmingham	700	11	48	29.21	29.96	−.02	75.8	+4.7	93	25	86	51	3	65	26	66	61	67	3.03	−.9	9	5,428	s.	27	se.	5	19	9	3	3.6	.0	.0
Mobile	57	125	161	29.89	29.95	−.04	78.2	+3.8	92	18	85	60	3	72	26	72	69	79	1.48	−2.8	6	7,422	s.	32	se.	2	14	8	9	4.6	.0	.0
Montgomery	223	100	112	29.73	29.97	−.02	78.6	+5.2	95	21	88	58	3	69	28	68	63	65	1.76	−2.1	8	5,122	s.	28	n.	31	16	9	6	4.2	.0	.0
Corinth	469	6	----	------	------	------	74.8	------	96	21	86	50	4	64	33	----	----	----	7.30	------	10	------	s.	----	------	----	5	24	2	----	.0	.0
Meridian	375	87	95	29.55	29.93	−.05	76.8	+5.5	92	21	87	54	3	67	29	68	64	69	1.76	−2.6	8	4,692	s.	32	s.	2	13	15	3	4.3	.0	.0
Vicksburg	247	65	73	29.66	29.92	−.05	76.8	+3.9	90	19	85	57	3	68	24	69	66	74	3.66	−.7	4	5,608	s.	22	se.	1	10	12	9	5.1	.0	.0
New Orleans	53	76	84	29.88	29.93	−.04	79.8	+4.4	92	29	87	64	3	73	19	72	70	77	3.01	−1.6	8	5,328	se.	18	se.	23	8	15	8	5.2	.0	.0
West Gulf States							76.7	+3.3										73	4.09	0.0										4.9		
Shreveport	249	92	227	29.62	29.88	−.07	77.8	+4.2	93	19	87	57	2	68	26	69	65	71	3.86	−.4	10	8,014	s.	35	s.	22	13	13	5	4.5	.0	.0
Bentonville	1,303	11	44	28.50	29.84	−.09	67.5	+1.1	88	20	78	44	2	57	34	----	----	----	9.62	------	14	4,867	s.	32	s.	12	12	3	16	----	.0	.0
Fort Smith	457	79	94	29.38	29.86	−.07	71.8	+2.2	92	20	82	48	2	62	37	64	60	72	6.26	+1.4	11	6,430	e.	32	s.	23	10	10	11	5.4	.0	.0
Little Rock	357	136	153	29.53	29.89	−.06	72.2	+1.9	90	20	81	52	4	63	33	64	60	70	5.93	+1.2	15	6,293	s.	27	se.	11	9	11	11	5.8	.0	.0
Austin	605	136	148	29.21	29.83	------	78.8	+4.2	94	20	89	57	3	68	32	68	63	67	3.63	−1.0	5	6,864	se.	34	nw.	3	13	13	5	4.5	.0	.0
Brownsville	57	83	100	29.74	29.80	------	81.1	+2.5	96	1	88	65	5	74	28	75	73	83	4.85	+2.6	6	8,692	se.	29	n.	25	12	18	1	4.4	.0	.0
Corpus Christi	20	11	78	29.83	29.85	−.05	79.4	+3.2	90	4	85	63	5	74	23	74	73	83	3.69	+.5	5	9,279	se.	35	n.	25	7	14	10	6.1	.0	.0
Dallas	512	220	227	29.31	29.85	------	74.8	------	92	8	83	51	2	66	28	----	----	----	6.65	+2.2	8	9,577	se.	42	ne.	29	17	5	9	3.7	.0	.0
Fort Worth	670	106	114	29.13	29.83	−.08	75.5	+3.2	96	9	85	54	2	66	32	66	60	64	4.67	.0	9	7,616	se.	27	se.	3	14	7	10	4.9	.0	.0
Galveston	54	106	114	29.82	29.88	−.06	79.0	+4.2	92	31	83	65	4	75	20	73	71	82	1.43	−2.0	4	8,766	se.	29	n.	4	10	11	10	5.3	.0	.0
Houston	138	292	314	29.73	29.88	------	79.1	+3.6	93	17	87	60	4	71	28	----	----	----	1.83	−2.7	7	9,126	se.	38	nw.	4	10	12	9	5.4	.0	.0
Palestine	510	64	72	29.36	29.88	−.05	76.4	+3.7	91	18	85	55	3	68	28	68	65	73	5.39	+.8	6	6,151	s.	28	sw.	24	11	13	7	5.1	.0	.0
Port Arthur	34	58	66	29.84	29.88	------	80.1	------	94	31	86	60	4	74	25	----	----	----	2.48	−1.6	5	6,542	s.	28	nw.	4	10	19	2	4.4	.0	.0
San Antonio	693	242	301	29.10	29.80	−.10	79.8	+4.7	97	8	90	53	3	69	35	69	63	64	2.23	−1.0	5	9,550	se.	38	w.	3	10	15	6	5.1	.0	.0
Taylor	571	38	51	29.26	29.86	−.05	78.3	+4.0	94	8	89	57	3	68	31	----	----	----	4.42	+.4	5	7,536	s.	29	se.	13	14	10	7	4.4	.0	.0

TABLE 1.—*Climatological data for Weather Bureau stations, May 1933*—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station, reduced to mean of 24 hours	Pressure: Sea level, reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max. + mean min. ÷ 2	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Mean wet thermometer	Mean temperature of the dew-point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Days with 0.01, or more	Wind: Total movement	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month
	Ft.	Ft.	Ft.	In.	In.	In.	°F.	°F.	°F.		°F.	°F.		°F.	°F.	°F.	°F.	%	In.	In.		Miles								0-10	In.	In.
Ohio Valley and Tennessee							**67.7**	**+2.8**										**73**	**7.07**	**+3.3**										**6.4**		
Chattanooga	762	190	215	29.18	29.98	−0.01	72.6	+3.8	91	21	83	52	4	62	27	64	60	68	7.64	+3.8	14	5,865	sw.	34	w.	7	12	15	4	4.6	0.0	0.0
Knoxville	995	79	97	28.93	29.96	−.03	72.4	+5.2	93	25	83	50	4	62	29	63	58	67	4.45	+.7	10	5,070	s.	30	nw.	10	16	10	5	4.0	.0	.0
Memphis	399	78	86	29.49	29.91	−.06	73.4	+2.8	90	19	80	54	4	66	22	66	62	70	5.90	+1.7	10	5,858	sw.	30	sw.	22	10	7	14	5.7	.0	.0
Nashville	546	168	191	29.38	29.96	−.02	71.4	+3.2	90	25	81	52	4	62	26	64	60	72	9.94	+6.1	13	7,201	s.	47	nw.	7	9	11	11	5.8	.0	.0
Lexington	989	193	230	28.92	29.98	−.01	66.9	+2.6	86	24	75	44	4	58	28	----	----	----	3.47	−.3	15	9,436	sw.	43	nw.	28	11	11	9	5.0	.0	.0
Louisville	525	188	234	29.37	29.95	−.03	68.2	+1.6	88	20	77	47	4	60	27	62	59	76	5.98	+2.3	17	7,625	s.	58	nw.	9	5	10	16	7.0	.0	.0
Evansville	431	76	116	29.46	29.92	−.05	68.6	+1.9	89	20	77	47	3	61	25	62	58	73	6.75	+2.9	19	7,100	s.	30	sw.	5	6	9	16	6.5	.0	.0
Indianapolis	822	194	230	29.05	29.93	−.04	64.9	+2.0	86	24	73	41	4	57	25	58	54	72	7.10	+3.2	21	8,139	s.	34	w.	27	2	11	18	7.5	.0	.0
Terre Haute	573	96	129	29.30	29.91	------	66.2	------	88	20	75	43	3	58	28	60	57	76	7.93	+4.1	16	7,127	s.	29	w.	13	7	11	13	6.5	.0	.0
Cincinnati	627	11	51	29.27	29.94	−.05	66.2	+3.1	87	24	76	42	4	57	30	60	57	77	8.81	+5.1	19	5,618	sw.	29	sw.	13	3	8	20	7.3	.0	.0
Columbus	822	216	230	29.08	29.94	−.04	64.7	+2.4	85	26	73	42	3	56	26	58	54	73	6.95	+3.4	15	7,939	s.	33	s.	9	4	12	15	6.6	.0	.0
Dayton	899	137	173	28.99	29.93	------	65.1	+2.5	85	26	74	42	4	57	29	59	55	75	7.96	+4.4	18	6,673	sw.	30	w.	9	6	18	7	6.3	.0	.0
Elkins	1,947	59	67	27.97	29.98	−.02	62.6	+3.4	84	24	73	41	18	52	36	57	54	78	9.18	+5.1	23	4,611	w.	30	nw.	9	1	7	23	8.1	.0	.0
Parkersburg	637	77	82	29.32	29.98	−.01	67.0	+3.2	88	24	76	45	4	58	35	60	57	74	7.50	+4.1	18	4,595	sw.	25	w.	24	2	15	14	6.9	.0	.0
Pittsburgh	842	353	410	29.06	29.96	−.03	63.5	+1.1	85	26	72	44	4	55	30	57	52	71	6.55	+3.3	17	6,897	sw.	34	sw.	2	2	11	18	7.8	.0	.0
Lower Lake Region							**59.8**	**+2.4**										**71**	**3.76**	**+0.5**										**6.7**		
Buffalo	767	243	280	29.11	29.94	−.03	56.0	+1.4	80	26	63	37	4	49	25	51	47	75	3.00	−.1	12	9,271	sw.	42	sw.	13	4	13	14	6.9	.0	.0
Canton	448	10	61	29.44	29.92	------	57.2	+1.0	80	1	68	30	5	47	34	----	----	----	5.24	+2.2	15	6,252	sw.	35	sw.	13	8	11	12	5.8	.0	.0
Ithaca	836	74	100	29.05	29.94	------	60.6	+3.1	86	20	71	32	5	50	38	54	49	68	2.63	−.8	11	6,522	nw.	27	s.	2	5	6	20	7.6	.0	.0
Oswego	335	71	85	29.58	29.94	−.03	57.2	+2.0	80	2	66	36	5	48	28	52	47	71	2.24	−.8	14	6,418	w.	24	se.	24	5	7	19	6.9	.0	.0
Rochester	523	86	102	29.39	29.95	−.02	60.3	+3.2	81	19	69	39	5	51	29	53	47	65	2.17	−.8	11	5,963	sw.	32	sw.	13	4	17	10	6.4	.0	.0
Syracuse	596	65	79	29.32	29.96	−.02	61.0	+3.7	84	2	71	36	5	52	32	----	----	----	3.17	+.2	15	5,347	s.	21	sw.	13	7	13	11	6.4	.0	.0
Erie	714	130	166	29.18	29.94	−.04	59.7	+2.9	82	1	68	39	4	52	26	54	51	74	2.35	−1.0	15	8,383	w.	35	sw.	26	6	10	15	6.7	.0	.0
Cleveland	762	267	337	29.12	29.94	−.04	60.8	+2.9	84	1	68	39	3	53	28	54	49	71	2.86	−.3	15	8,975	w.	41	sw.	24	4	11	16	7.3	.0	.0
Sandusky	629	5	67	29.25	29.93	−.05	62.0	+2.8	88	24	71	41	4	53	27	----	----	----	5.24	+2.1	15	6,479	sw.	27	sw.	24	2	15	14	6.9	.0	.0
Toledo	628	79	87	29.26	29.93	−.04	61.3	+1.9	86	24	69	36	4	54	28	55	51	73	5.88	+2.4	16	6,977	e.	24	nw.	20	10	12	9	5.6	.0	.0
Fort Wayne	857	69	84	29.00	29.92	------	61.4	+1.2	84	23	69	36	4	54	30	56	53	74	7.06	+3.2	16	6,583	ne.	28	sw.	13	4	11	16	7.1	.0	.0
Detroit	730	218	258	29.16	29.95	−.02	60.2	+2.2	87	24	68	36	4	52	28	54	49	71	3.29	+.1	15	7,296	sw.	29	sw.	13	3	13	15	7.0	.0	.0
Upper Lake Region							**54.6**	**+1.9**										**73**	**3.95**	**+0.8**										**6.3**		
Alpena	609	13	89	29.29	29.96	−.01	52.6	+2.1	85	24	61	33	4	44	34	47	43	72	3.51	+.5	12	8,039	se.	34	w.	13	10	13	8	5.2	.0	.0
Escanaba	612	54	60	29.28	29.94	−.03	51.8	+2.2	79	24	59	32	4	44	26	47	42	71	2.39	−.5	10	7,923	s.	31	n.	2	6	14	11	6.0	.0	.0
Grand Haven	632	54	89	29.23	29.91	−.05	55.4	+.9	84	23	63	35	4	47	30	51	48	78	5.04	+1.8	17	7,823	e.	32	s.	1	4	13	14	6.9	.0	.0
Grand Rapids	707	70	244	29.16	29.93	−.04	59.7	+1.7	85	23	69	38	4	50	29	54	49	72	5.31	+1.9	18	9,027	e.	41	w.	1	3	17	11	6.7	.0	.0
Houghton	668	64	99	29.20	29.93	−.04	51.6	+2.1	81	23	61	30	3	42	32	----	----	----	1.28	−1.8	6	7,260	e.	33	e.	8	10	7	14	6.0	.0	.0
Lansing	878	6	88	28.99	29.93	------	58.1	+1.2	81	24	68	32	4	49	30	54	52	82	3.95	+.5	17	6,887	s.	25	sw.	1	6	13	12	6.2	.0	.0
Ludington	637	60	66	29.22	29.92	------	54.6	+2.4	81	23	63	32	4	46	30	50	46	76	5.88	+2.9	14	7,010	sw.	26	sw.	29	10	12	9	5.3	T	.0
Marquette	734	77	111	29.14	29.95	−.02	50.6	+1.6	83	25	59	30	4	42	37	45	39	67	2.08	−.9	8	6,565	nw.	34	sw.	13	5	12	14	6.6	.0	.0
Port Huron	638	79	120	29.24	29.94	−.03	56.2	+1.0	86	24	64	37	5	48	28	51	47	74	3.88	+.9	14	7,783	n.	30	w.	13	5	10	16	7.0	.0	.0
Sault Sainte Marie	614	11	52	29.27	29.97	+.02	52.2	+3.2	81	25	63	29	4	41	38	45	39	66	2.85	−.2	8	5,815	se.	30	nw.	13	10	9	12	5.6	.0	.0
Chicago	673	7	131	29.18	29.91	−.05	60.0	+2.5	86	23	67	40	3	53	27	54	50	76	5.03	+1.5	18	8,067	e.	35	sw.	12	4	15	12	6.8	.0	.0
Green Bay	617	109	141	29.24	29.90	−.05	57.2	+2.3	83	25	66	33	10	48	28	51	46	70	2.40	−1.1	11	8,965	ne.	35	ne.	2	3	12	16	7.1	T	.0
Milwaukee	681	97	221	29.17	29.91	−.05	55.1	+1.0	83	25	62	37	9	48	36	50	47	76	9.56	+6.2	16	10,081	n.	43	n.	2	5	12	14	6.8	.0	.0
Duluth	1,133	5	47	28.69	29.91	−.05	49.6	+2.3	76	25	59	29	10	40	33	44	39	71	2.15	−1.1	10	9,282	ne.	41	w.	13	9	7	15	6.2	.6	.0
North Dakota							**55.6**	**+1.6**										**63**	**2.51**	**+0.2**										**6.4**		
Moorhead	940	50	58	28.85	29.86	−.08	56.8	+1.7	87	17	67	32	9	46	39	49	42	63	1.93	−1.0	9	6,840	s.	26	e.	22	7	6	18	7.0	.0	.0
Bismarck	1,674	8	57	28.08	29.85	−.07	55.6	+1.1	91	31	66	30	2	45	38	48	41	62	2.38	+.1	8	7,527	se.	28	w.	24	4	13	14	6.8	.0	.0
Devils Lake	1,478	11	44	28.30	29.86	−.08	55.0	+2.4	85	31	66	29	9	44	38	47	39	62	2.22	+.2	10	7,546	se.	31	e.	8	7	9	15	6.8	.0	.0
Ellendale	1,457	10	56	------	------	------	------	------	----	----	----	----	----	----	----	----	----	----	------	------	----	------	----	----	----	----	----	----	----	----	----	----
Grand Forks	833	12	67	------	------	------	57.1	------	88	17	69	28	2	45	44	49	----	----	2.81	------	9	------	nw.	31	se.	23	3	13	15	----	.0	.0
Williston	1,878	41	48	27.89	29.86	−.07	55.2	+1.2	93	31	66	31	10	45	33	47	41	65	3.52	+1.5	11	7,156	se.	31	nw.	23	11	11	9	5.2	.0	.0
Upper Mississippi Valley							**62.4**	**+0.9**										**75**	**6.80**	**+2.8**										**6.8**		
Minneapolis	918	102	208	28.88	29.85	------	58.8	+1.1	84	17	68	34	3	49	27	----	----	----	7.87	+4.2	11	9,148	e.	37	e.	7	5	9	17	7.1	.0	.0
St. Paul	837	114	149	28.96	29.86	−.08	59.1	+1.2	84	17	68	36	8	50	28	----	----	----	7.75	+4.5	12	7,478	se.	35	sw.	23	7	9	15	6.7	.0	.0
La Crosse	714	11	48	29.10	29.86	−.08	59.9	+.6	87	19	70	36	4	50	30	53	48	71	4.43	+.7	16	4,373	se.	17	e.	7	4	10	17	7.3	.0	.0
Madison	974	70	78	28.85	29.89	−.07	57.9	+.3	84	19	66	33	4	50	25	52	48	75	9.35	+5.5	18	7,285	ne.	30	ne.	1	3	11	17	7.1	.0	.0
Wausau	1,247	4	62	28.57	29.89	------	57.2	------	85	19	68	30	10	47	32	----	----	----	2.60	−1.1	12	6,028	e.	26	e.	7	8	12	11	5.5	.1	.0
Charles City	1,015	10	51	28.80	29.87	−.07	59.0	+1.2	83	23	69	35	3	49	30	52	48	71	3.95	−.4	12	5,907	se.	30	sw.	23	7	9	15	6.5	.0	.0
Davenport	606	118	143	29.23	29.88	−.07	62.2	+.9	84	23	71	36	4	54	27	56	52	72	6.31	+2.4	21	8,433	ne.	38	s.	12	2	14	15	7.1	.0	.0
Des Moines	861	5	99	28.96	29.86	−.07	61.8	+.5	87	19	71	40	4	53	30	55	50	69	2.65	−1.9	16	7,648	se.	35	s.	23	3	14	14	6.8	.0	.0
Dubuque	700	81	96	29.13	29.88	−.07	60.7	+.4	84	25	69	36	4	53	26	54	50	73	7.24	+3.0	18	5,637	s.	28	nw.	19	3	13	15	7.2	.0	.0
Keokuk	614	64	78	29.21	29.88	−.06	63.7	−.1	87	20	72	38	4	55	30	58	54	74	8.43	+4.5	16	5,982	sw.	26	sw.	12	5	7	19	7.2	.0	.0
Cairo	358	87	93	29.52	29.90	−.06	70.3	+1.9	88	20	78	51	3	63	25	66	64	84	9.02	+5.3	19	6,430	s.	40	se.	7	5	8	18	6.8	.0	.0
Peoria	609	11	45	29.24	29.90	−.06	62.8	+1.1	86	23	72	37	4	54	28	58	55	80	7.97	+3.9	19	5,284	s.	27	sw.	1	5	12	14	6.7	.0	.0
Springfield, Ill.	636	5	191	29.21	29.88	−.07	65.2	+2.0	88	23	74	38	4	56	27	59	57	78	8.69	+4.3	18	8,447	s.	41	sw.	20	6	7	18	7.1	.0	.0
Hannibal	534	74	109	29.29	29.86	−.08	65.3	+1.7	88	19	74	44	4	57	29	----	----	----	7.08	+2.7	14	6,963	sw.	40	sw.	1	6	5	20	7.1	.0	.0
St. Louis	568	265	303	29.28	29.88	−.07	67.2	+.3	93	20	76	45	3	58	32	61	59	78	8.59	+4.2	16	9,345	s.	50	s.	1	8	8	15	6.1	.0	.0
Missouri Valley							**61.9**	**+0.4**										**67**	**3.53**	**−0.4**										**5.6**		
Columbia, Mo.	784	6	84	29.03	29.86	−0.08	65.4	+1.1	89	19	74	42	6	56	31	----	----	----	7.30	+2.8	14	6,212	s.	32	sw.	1	9	14	8	4.8	.0	.0
Kansas City	963	10	86	28.83	29.85	−.07	65.4	+.6	90	19	74	43	6	57	29	58	53	68	6.94	+2.3	12	7,372	sw.	38	sw.	7	11	8	12	5.6	.0	.0
St. Joseph	967	11	49	28.82	29.85	------	64.2	------	90	19	74	41	6	55	29	56	52	70	3.49	−.8	14	6,496	se.	30	s.	17	12	9	10	5.3	.0	.0
Springfield, Mo.	1,324	98	104	28.49	29.87	−.06	65.8	+1.3	87	19	75	44	2	57	32	60	56	74	6.79	+1.6	11	7,607	s.	29	w.	1	15	9	7	3.9	.0	.0
Iola	984	11	50	28.80	29.82	−.10	67.5	+2.3	89	20	79	42	6	56	42	----	----	----	5.18	+.5	9	------	s.	----	----	----	11	7	13	----	.0	.0
Topeka	987	92	107	------	------	------	65.3	+1.0	93	19	76	44	3	55	36	----	----	----	2.55	−1.9	12	7,158	s.	26	sw.	18	14	7	10	4.9	.0	.0
Lincoln	1,189	11	81	28.59	29.84	−.07	61.2	−.5	93	19	71	39	6	51	38	54	49	68	1.58	−2.5	8	7,626	s.	35	sw.	23	9	8	14	6.2	.0	.0
Omaha	1,105	115	122	28.69	29.85	−.07	62.0	−.4	92	19	71	40	6	53	31	54	47	62	.73	−3.0	8	6,552	nw.	30	nw.	28	11	8	12	5.7	.0	.0
Valentine	2,598	47	54	27.18	29.88	−.02	55.3	−.9	92	31	66	32	10	45	39	48	42	69	4.74	+1.9	14	7,764	w.	56	sw.	22	6	10	15	6.5	.3	.0
Sioux City	1,135	94	164	28.64	29.84	−.08	60.4	.0	90	18	70	36	6	50	33	52	45	64	1.51	−2.5	8	8,992	nw.	41	s.	22	6	10	15	6.8	.0	.0
Huron	1,306	59	74	28.47	29.86	−.06	57.4	+1.0	91	18	68	35	9	47	41	51	45	67	1.55	−1.4	13	7,940	w.	38	w.	24	13	8	10	5.2	.0	.0
Pierre	1,572	70	75	28.19	29.85	−.06	57.6	−.4	94	31	68	34	9	48	39	50	43	64	2.16	−.3	12	7,482	nw.	50	s.	22	8	10	13	6.3	T	.0
Yankton	1,233	49	57	28.55	29.86	−.06	59.4	.0	91	31	69	36	6	50	37	----	----	----	1.38	−2.5	9	6,893	w.	30	s.	23	6	10	15	6.3	.0	.0

TABLE 1.—*Climatological data for Weather Bureau stations, May 1933*—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station, reduced to mean of 24 hours	Pressure: Sea level, reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max. + mean min. ÷ 2	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Mean wet thermometer	Mean temperature of the dew-point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Days with 0.01, or more	Wind: Total movement	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month
	Ft.	Ft.	Ft.	In.	In.	In.	°F.	°F.	°F.		°F.	°F.	°F.	°F.	°F.	%	°F.	%	In.	In.		Miles								0-10	In.	In.
Northern Slope							51.2	−1.5										62	2.81	+0.4										5.9		
Billings	3,140	5					54.8		94	30	69	30	12	40	53				2.63		12		nw.				7	9	15		0.0	0.0
Havre	2,505	11	67	27.25	29.86	−0.04	54.4	+1.0	92	30	66	32	10	43	42	45	37	60	2.26	+0.2	13	6,901	sw.	27	w.	15	6	12	13	6.3	.0	.0
Helena	4,124	89	113	25.71	29.88	−.05	49.6	−2.0	87	30	60	30	7	39	39	41	32	58	1.41	−.9	11	7,319	sw.	31	sw.	16	2	16	13	6.9	.2	.0
Kalispell	2,973	48	56	26.87	29.92	+.04	48.9	−2.5	78	29	60	30	7	38	38	43	39	72	2.51	+1.0	12	4,999	w.	22	w.	25	5	16	10	5.8	7.4	.0
Miles City	2,371	48	55	27.36	29.89	−.02	55.8	−.9	92	30	66	36	9	46	36	47	40	62	1.69	−.6	17	5,787	se.	34	nw.	23	11	12	8	5.5	.0	.0
Rapid City	3,259	50	58	26.50	29.90	.00	53.0	−1.0	92	31	62	33	10	44	41	46	40	66	6.51	+3.0	17	6,835	w.	34	nw.	23	7	10	14	6.1	T	.0
Cheyenne	6,088	84	101	23.91	29.84	−.01	48.3	−2.0	81	31	59	26	12	38	39	40	31	59	3.44	+1.0	12	9,070	w.	51	w.	22	5	16	10	6.4	16.9	.0
Lander	5,372	60	68	24.54	29.85	−.03	49.8	−1.4	85	31	62	25	13	38	42	40	31	57	3.78	+1.5	8	4,798	sw.	33	sw.	31	14	12	5	4.0	29.5	.0
Sheridan	3,790	10	47	25.99	29.86		51.6		90	31	64	39	13	40	46	44	37	64	2.75	+.1	14	5,313	nw.	31	nw.	23	10	10	11	5.7	.2	.0
Yellowstone Park	6,241	11	48		29.90	−.01	43.2	−4.2	77	30	54	22	12	32	39			61	1.15	−1.1	12	6,493	sw.	32	sw.	26	3	12	16		1.5	.0
North Platte	2,821	11	51	26.94	29.84	−.04	57.8	−.9	90	18	69	36	8	46	43	49	42	66	2.61	−.2	10	6,575	e.	35	w.	23	8	10	13	6.2	.0	.0
Middle Slope							63.3	+0.8											562.64	−0.7										4.7		
Denver	5,292	106	113	24.62	29.82	−.02	55.2	−1.0	86	31	66	32	11	45	32	43	30	49	2.34	+.1	9	6,343	s.	38	w.	22	9	13	9	5.4	3.2	.0
Pueblo	4,685	80	86	25.17	29.79	−.04	59.0	−.2	89	19	71	38	5	47	38	45	30	43	2.55	+1.0	3	6,254	e.	41	w.	22	15	11	5	4.6	.0	.0
Concordia	1,392	50	58	28.41	29.86	−.05	63.0	−.2	99	19	73	43	6	53	35	55	48	63	1.55	−2.6	8	6,900	n.	28	nw.	7	7	12	12	5.9	.0	.0
Dodge City	2,509	10	86	27.27	29.83	−.04	64.2	+.7	98	19	77	39	2	52	37	53	44	58	3.16	+.3	11	9,668	s.	49	se.	22	17	10	4	3.5	.0	.0
Wichita	1,358	85	93	28.41	29.82	−.08	67.8	+2.7	97	19	78	40	2	57	34	57	50	60	2.29	−2.2	7	8,730	s.	38	sw.	22	12	10	9	4.8	.0	.0
Oklahoma City	1,214	10	47	28.56	29.82	−.07	70.7	+3.0	93	10	81	46	2	61	33	61	56	66	3.98	−.9	9	7,650	s.	31	s.	11	15	11	5	4.1	.0	.0
Southern Slope							72.0	+1.3											482.78	0.0												
Abilene	1,738	10	52	28.04	29.81	−.06	74.4	+2.4	98	11	86	48	5	62	37	62	53	57	7.85	+3.9	7	7,818	s.	32	se.	3	16	9	6	4.0	.0	.0
Amarillo	3,676	10	49	26.14	29.80	−.04	66.5	+2.4	95	19	80	40	5	53	39	51	38	47	2.01	−.8	7	8,429	s.	37	ne.	20	17	13	1	3.0	.0	.0
Big Spring	2,537	5	62	27.24	29.80		73.0		97	22	88	42	5	58	41	57	45	46	.46		3		s.				16	12	3	3.3	.0	.0
Del Rio	944	64	71	28.79	29.74	−.11	80.0	+3.0	102	8	92	55	5	68	41	66	58	56	.29	−2.6	5	7,753	se.	40	se.	23	13	11	7	4.6	.0	.0
Roswell	3,566	75	85	26.24	29.78	−.04	66.9	−2.5	95	19	83	37	5	51	46	49	32	35	.50	−.6	3	7,564	sw.	32	sw.	6	23	7	1	2.1	.0	.0
Southern Plateau							62.4	−2.9											330.21	−0.2										2.1		
El Paso	3,778	152	175	26.07	29.77	−.01	70.6	−.9	96	31	84	44	13	57	36	49	24	22	.04	−.3	2	9,567	w.	44	w.	4	27	4	0	1.3	.0	.0
Albuquerque	4,972	51	66	24.94	29.74		59.8		89	27	76	33	15	43	45	42	22	30	.23		2	8,415	w.	49	w.	22	16	13	2	3.4	.0	.0
Santa Fe	7,013	38	53	23.17	29.77	−.04	53.5	−2.2	78	31	66	29	14	41	31	39	22	35	.99	−.3	4	5,770	sw.	30	sw.	6	15	13	3	3.5	2.8	.0
Flagstaff	6,907	10	59	23.27	29.80	+.02	46.0	−4.7	79	30	61	16	11	31	44	35		52	.66		6	7,834	sw.	33	sw.	9	8	19	4		T	.0
Phoenix	1,108	10	107	28.67	29.81	+.03	72.6	−2.4	107	29	88	49	12	58	40	51	30	26	T.	−.1	0	5,240	w.	43	sw.	2	25	5	1	1.5	.0	.0
Yuma	141	9	54	29.69	29.84	+.05	72.9	−3.3	106	29	89	45	11	57	41	54	37	35	.01	.0	1	5,660	w.	35	sw.	21	29	2	0	.7	.0	.0
Independence	3,957	6	27	25.90	29.90	+.06	59.0	−4.0	93	29	74	33	12	44	37	42			.00	−.2	0		nw.				23	4	4		.0	.0
Middle Plateau							51.9	−4.0											471.22	+0.2										4.9		
Reno	4,532	74	81	25.42	29.93	+.02	50.1	−3.5	89	29	62	27	3	38	41	39	28	47	.66	.0	6	6,899	w.	32	sw.	16	11	15	5	4.8	0.1	0.0
Tonopah	6,090	12	20				49.3		82	30	60	22	3	38	29	37	24	43	.24		3		nw.									
Winnemucca	4,341	18	56	25.55	29.93	+.02	50.1	−3.8	91	29	64	27	9	36	51	38	27	50	.50	−.4	4	6,258	sw.	40	w.	7	10	13	8	5.2	.2	.0
Modena	5,473	10	46	24.51	29.82	.00	49.0	−4.5	86	30	64	24	1	34	45	37	24	48	1.13	+.3	10	8,096	sw.	43	sw.	7	12	9	10	5.6	4.3	.0
Salt Lake City	4,360	163	203	25.52	29.86	.00	53.1	−4.3	89	30	64	33	9	42	36	43	32	52	3.25	+1.3	13	6,159	nw.	29	nw.	7	10	10	11	5.4	.3	.0
Grand Junction	4,602	60	68	25.25	29.79	−.04	57.4	−3.7	89	30	70	35	23	45	36	43	27	40	.54	−.3	10	5,726	se.	32	s.	5	11	12	7	4.3	T	.0
Northern Plateau							53.3	−3.3										56	1.40	0.6										6.0		
Baker	3,471	48	53	26.39	29.98	+.02	47.6	−4.1	82	29	59	29	6	37	39	40	32	63	1.59	.0	14	5,287	se.	21	n.	25	8	13	10	5.7	1.2	.0
Boise	2,739	79	87	27.09	29.94	.00	54.0	−3.1	90	30	65	31	8	43	39	44	34	53	1.54	+.1	9	4,783	nw.	21	nw.	2	9	10	12	5.7	.1	.0
Lewiston	757	46	48	29.16	29.97	+.01	56.6	−2.9	92	25	68	36	6	45	41				1.50	−.1	10	3,395	e.	28	nw.	25	5	11	15	6.7	.0	.0
Pocatello	4,477	60	63	25.38	29.88	−.01	51.0	−2.8	86	30	62	29	9	40	38	40	30	54	1.46	−.1	13	6,934	se.	31	sw.	15	8	11	12	5.8	1.0	.0
Spokane	1,929	101	110	29.90	29.95	−.01	52.5	−3.0	86	25	63	36	19	42	36	43	34	57	.59	−.8	7	5,836	s.	25	w.	25	6	12	13	6.4	T	.0
Walla Walla	991	57	65	28.90	29.97	+.01	56.2	−3.4	86	29	66	36	7	46	31	47	37	54	2.13	+.5	13	4,669	s.	21	w.	25	9	11	11	5.6	.0	.0
Yakima	1,076	58	67	28.80	29.95		54.9	−4.1	82	28	66	33	2	44	34	45	35	54	1.08	+.4	11	5,193	nw.	23	w.	25	5	16	10	6.2	.0	.0
North Pacific Coast Region							51.6	−2.1										74	2.99	+0.8										7.8		
North Head	211	11	56	29.80	30.03	.00	48.8	−2.1	60	24	52	39	7	45	13	46	44	85	5.27	+2.3	22	11,067	s.	49	s.	6	1	11	19	7.5	.0	.0
Port Angeles	29	8	53		30.02		49.2		63	28	56	35	6	43	21				1.45	+.3	15	5,058	s.	26	w.	25	1	19	20		.0	.0
Seattle	125	215	250	29.86	29.99	−.02	53.4	−1.1	73	28	60	43	5	47	24	47	41	68	2.63	+.8	12	7,238	s.	32	s.	25	1	12	18	7.6	.0	.0
Tacoma	194	172	201	29.82	30.03	+.01	52.4	−1.7	77	28	60	40	5	43	30				2.84	+.7	16	6,291	sw.	27	w.	17	0	13	18	7.9	.0	.0
Tatoosh Island	86	9	53	29.90	29.99	−.02	48.8	−.8	59	19	52	41	5	46	15	46	43	84	3.61	−.4	23	8,373	sw.	33	s.	19	0	5	26	8.7	.0	.0
Medford	1,329	29	58	28.61	30.02		51.8		89	28	63	32	6	40	45	45	39	69	1.41	+.2	14	5,199	nw.	20	se.	1	7	1	23	7.2	.0	.0
Portland, Oreg.	153	68	106	29.87	30.03	.00	53.9	−3.0	80	28	61	43	7	47	28	48	43	70	3.59	+1.4	20	5,031	s.	21	sw.	19	2	1	28	8.4	.0	.0
Roseburg	510	75	99	29.50	30.06	+.03	52.2	−3.8	84	28	61	36	18	43	38	46	41	70	3.15	+1.2	19	4,328	n.	23	s.	6	3	8	20	7.3	.0	.0
Middle Pacific Coast Region							57.1	−2.7										69	1.42	+0.4										4.9		
Eureka	62	73	89	30.06	30.13	+.08	51.0	−1.0	64	24	55	41	9	47	15	49	47	89	4.23	+2.4	16	6,791	n.	26	se.	6	3	7	21	7.4	.0	.0
Red Bluff	330	5	58	29.63	29.98	+.03	63.0	−3.3	104	28	76	40	6	51	35	51	40	53	.86	−.3	9	5,582	se.	28	se.	1	10	8	13	5.3	.0	.0
Sacramento	69	106	117	29.93	30.00	+.06	59.6	−3.7	100	28	72	39	6	48	38	50	42	60	.30	−.5	4	6,690	s.	21	sw.	20	22	7	2	2.8	.0	.0
San Francisco	155	208	243	29.89	30.06	+.07	55.2	−1.6	85	27	61	47	14	49	30	49	45	74	1.36	+.6	7	7,455	w.	28	nw.	21	13	11	7	4.5	.0	.0
San Jose	141	12	110	29.93	30.08		56.6	−4.1	91	28	67	39	8	46	42				.37	−.2	6	5,750	nw.	24	nw.	2	13	16	8	4.6	.0	.0
South Pacific Coast Region							60.5	−2.9										64	0.36	0.0										4.0		
Fresno	327	89	98	29.64	30.00	+.08	62.8	−4.3	103	29	76	39	8	50	37	51	39	51	.34	−.1	6	7,359	nw.	23	nw.	9	15	11	5	3.8	.0	.0
Los Angeles	338	159	191	29.64	30.00	+.05	60.4	−1.8	85	24	69	45	11	52	26	52	46	66	.21	−.2	2	4,910	sw.	21	nw.	2	16	12	3	3.5	.0	.0
San Diego	87	62	70	29.91	30.00	+.05	58.2	−2.6	74	24	64	48	10	53	19	53	49	76	.53	+.2	6	5,512	w.	22	w.	21	13	10	8	4.7	.0	.0
West Indies																																
San Juan, P. R.	82	9	54	29.89	29.98		79.4	+.8	90	4	84	71	1	75	16				10.35	+5.1	14	8,778	e.	27	ne.	28	4	17	10	6.1	.0	.0
Panama Canal																																
Balboa Heights	118	6	97		[1] 29.83	+.01	80.4	−.3	94	1	86	71	2	75	22			[1] 85	7.96	.0	16	4,001	nw.	32	s.	13	1	13	17	7.3	.0	.0
Cristobal	36	6	97		[1] 29.84	.00	82.4	+1.7	92	4	88	74	10	77	16	76	75	[1] 81	8.12	−4.4	14	4,758	se.	27	ne.	12	3	11	17	7.4	.0	.0
Alaska																																
Fairbanks	455	11	44	[2] 29.32	[2] 29.83		46.3		76	26	57	26	22	36	35	39	30	59	.82	+.2	11	4,155	s.	22	ne.	28	6	5	20	7.1	T	.0
Juneau	80	11	50	[2] 29.79	[2] 29.88		48.2		69	25	56	35	6	40	28	43	37	70	4.65		16	4,462	s.	24	se.	20	4	7	20	7.4	.0	.0
Hawaiian Islands																																
Honolulu	38	86	100	[2] 30.05	[2] 30.09		73.8	−1.0	80	14	78	67	13	70	11	67	63	70	.58	−1.2	11	7,626	e.	27	e.	21	11	17	3	4.7	.0	.0

[1] Observations taken bihourly.

[2] Pressure not reduced to mean of 24 hours.

TABLE 2.—*Data furnished by the Canadian Meteorological Service, May 1933*

Stations	Altitude above mean sea level Jan. 1, 1919	Pressure: Station reduced to mean of 24 hours	Pressure: Sea level reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max. + mean min. ÷2	Temperature of the air: Departure from normal	Temperature of the air: Mean maximum	Temperature of the air: Mean minimum	Temperature of the air: Highest	Temperature of the air: Lowest	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Total snowfall
	Feet	*In.*	*In.*	*In.*	*° F.*	*° F.*	*° F.*	*° F.*	*° F.*	*° F.*	*In.*	*In.*	*In.*
Cape Race, N.F	99							31.7		23	3.26		0.0
Sydney, C.B.I	48	29.82	29.87	−0.10	46.7	+1.5	58.3	35.1	74	26	1.84	−1.93	.0
Halifax, N.S	88	29.80	29.91	−.07	49.3	+.9	60.5	38.1	78	29	3.89	−.37	1.0
Yarmouth, N.S	65	29.82	29.89	−.09	47.6	.0	54.9	40.4	71	32	3.87	+.30	T
Charlottetown, P.E.I	38	29.80	29.84	−.12	47.6	+.7	56.7	38.6	71	30	1.67	−1.24	.0
Chatham, N.B	28	29.75	29.78	−.17	48.6	+.1	61.1	36.0	80	28	2.31	−.90	.0
Father Point, Que	20	29.84	29.86	−.07	44.6	+.6	53.2	35.9	67	28	3.80	+1.22	3.0
Quebec, Que	296	29.58	29.90	−.04	52.3	+2.4	62.9	41.7	80	31	3.43	+.35	.0
Doucet, Que	1,236				45.0		59.0	31.0	77	15	2.47		T
Montreal, Que	187	29.69	29.89	−.05	57.1	+2.4	65.9	48.3	80	32	7.24	+4.34	.0
Ottawa, Ont	236	29.66	29.92	−.02	56.3	+1.4	66.2	46.4	83	32	3.63	+1.04	.0
Kingston, Ont	285	29.63	29.94	−.02	54.6	+1.7	63.1	46.1	78	34	1.22	−1.46	.0
Toronto, Ont	379	29.53	29.93	−.05	57.4	+4.2	66.8	48.0	83	36	1.12	−1.92	.0
Cochrane, Ont	930				47.3		59.7	35.0	80	17	1.93		.0
White River, Ont	1,244	28.65	29.97	+.02	47.3	+1.6	59.9	34.6	77	18	2.25	+.30	.0
London, Ont	808				56.2		65.9	46.5	84	32	1.94		.0
Southampton, Ont	656	29.23	29.95	−.01	52.6	+1.9	62.1	43.0	76	31	4.04	+1.60	.0
Parry Sound, Ont	688	29.24	29.94	+.01	53.9	+2.8	64.7	43.1	75	31	2.92	−.01	.0
Port Arthur, Ont	644	29.24	29.95	−.01	49.3	+3.4	57.4	41.1	73	30	1.90	−.25	.0
Winnipeg, Man	760	29.06	29.89	−.07	54.7	+3.1	67.0	42.4	84	27	5.27	+2.99	.0
Minnedosa, Man	1,690	28.09	29.89	−.07	52.6	+4.2	64.5	40.7	85	27	3.46	+2.01	.0
Le Pas, Man	860				49.8		62.5	37.2	78	26	.12		.0
Qu'Appelle, Sask	2,115	27.60	29.83	−.11	52.6	+2.8	63.5	41.7	83	24	3.90	+2.25	.0
Moose Jaw, Sask	1,759				53.8		65.2	42.5	88	30	5.22		.0
Swift Current, Sask	2,392	27.30	29.80	−.12	53.4	+2.7	64.9	41.8	94	28	2.20	+.44	.0
Medicine Hat, Alb	2,365	27.33	29.80	−.09	53.2	−.9	63.8	42.6	85	29	2.14	+.83	.0
Calgary, Alb	3,540	26.17	29.83	−.05	48.5	−.5	58.9	38.0	74	29	2.08	+.31	4.4
Banff, Alb	4,521												
Prince Albert, Sask	1,450	28.36	29.93	−.02	53.5	+5.9	64.7	42.2	78	28	3.25	+1.99	.0
Battleford, Sask	1,592	28.15	29.88	−.04	53.3	+2.3	65.0	41.7	87	27	1.43	−.19	.0
Edmonton, Alb	2,150	27.59	29.86	−.02	51.8	+1.0	64.0	39.7	77	30	1.98	+.43	5.5
Kamloops, B.C	1,262	28.57	29.85	−.04	54.9	−4.2	65.1	44.8	78	39	1.04	−.20	.0
Victoria, B.C	230												
Barkerville, B.C	4,180												
Estevan Point, B.C	20				46.9		51.4	42.5	55	38	10.47		.0
Prince Rupert, B.C	170				48.2		55.5	40.9	63	36	5.23		.0
Hamilton, Ber	151	29.92	30.08	+.02	71.9	+2.5	77.0	66.7	83	62	2.74	−1.92	.0

LATE REPORTS FOR APRIL 1933

Qu'Appelle, Sask	2,115	27.67	29.96	−.03	35.2	−2.2	44.5	25.9	69	8	2.10	+1.05	19.5
Swift Current, Sask	2,392	27.38	29.93	−.03	39.0	−2.3	49.5	28.5	75	16	1.05	+.12	6.7
Battleford, Sask	1,592	28.25	30.02	+.05	37.7	+.5	48.0	27.4	75	17	1.30	+.83	11.6
Edmonton, Alb	2,150	27.68	29.99	+.10	38.6	−1.3	49.3	27.9	69	15	.72	−.16	3.9
Kamloops, B.C	1,262	28.66	29.96	+.03	47.6	−1.3	58.6	36.6	75	26	.22	−.17	.0
Estevan Point, B.C	20				44.6		50.1	39.0	60	30	4.50		.0
Prince Rupert, B.C	170				41.9		48.7	35.1	56	29.	7.44		2.0
Hamilton, Ber	151	29.86	30.02	−.03	66.5	+2.6	71.4	61.6	76	55	7.28	+3.10	.0

SEVERE LOCAL STORMS, MAY 1933

[Compiled by Mary O. Souder]

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the Annual Report of the Chief of Bureau]

Place	Date	Time	Width of path (yards)	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Salem, Ark., vicinity of, northeastward to the Missouri line.	1	1:30–2:30 p.m.	200–867	3	$30,000	2 tornadoes	17 persons injured; property damaged	Official, U.S. Weather Bureau.
Oregon County, Mo., Southwestern portion.	1	2:15 p.m.			70,000	Tornado	22 persons injured; damage to property and crops.	Do.
Aurora, Joliet, Payson, Camp Point, Baylis, Golden, Liberty, and Timewell, Ill.	1	2:30–4 p.m.			10,000	Hail	Poles down, buildings damaged	Do.
Carrollton, Greenfield, Roodhouse, White Hall and vicinity, Ill.	1	3 p.m.			5,000	Wind and hail	Poles and trees blown down; buildings damaged; minor garden losses.	Do.
Fulton and Peoria Counties, Ill.	1	3:30 p.m.	300	4	1,025,000	Tornado and hail	30 persons injured; property damaged; path 12 miles long.	Do.
Calhoun, Ark., 6 miles southeast.	1	4 p.m.	19	6	5,000	Tornado	2 persons injured; property damaged	Do.
Arcadia, La	1	do	880	6	200,000	do	50 persons injured; 98 homes damaged and 60 demolished; path 5 miles long.	Do.
Minden, La., 4 miles west-southwest.	1	do	440–880	23	1,250,000	do	400 persons injured, and 1200 homeless; 500 or more homes destroyed; path 6 miles long.	Do.
Peru, La Salle, Tonica, Granville and vicinity, Ill.	1	4:45 p.m.			2,000	Wind and hail	Poles down and buildings damaged	Do.