METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR NOVEMBER 1948

AEROLOGICAL OBSERVATIONS

[For description of change in Table 1 and charts, see REVIEW, January 1946, p. 6]

Relative humidity data, beginning with October 1, 1948, were computed, and expressed in these tables, on the basis of the 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. Therefore, relative humidity data for the period after October 1, 1948, should not be combined with earlier data without necessary conversion.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during November 1948*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,006.7 mb.)				Albuquerque, N. Mex. (837.1 mb.)				Atlanta, Ga. (981.8 mb.)				Big Spring, Tex. (926.4 mb.)				Bismarck, N. Dak. (952.1 mb.)				Boise, Idaho (919.6 mb.)				Brownsville, Tex. (1,013.8 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	30	86	6.4	81	30	1,620	5.4	35	30	300	12.1	81	30	774	9.4	43	30	505	−0.9	80	30	868	3.8	69	30	6	18.7	80
1,000	30	141	7.0	74	30	138	(*)	----	30	145	(*)	----	30	127	(*)	----	30	109	(*)	----	30	178	(*)	----	30	123	20.0	74
950	30	566	6.1	71	30	574	(*)	----	30	578	13.0	69	30	562	(*)	----	30	524	−2.0	74	30	605	(*)	----	30	569	18.3	68
900	30	1,004	4.0	71	30	1,026	(*)	----	30	1,031	12.0	66	30	1,015	11.5	35	30	954	−.9	68	30	1,043	5.0	54	30	1,028	16.1	61
850	30	1,467	1.9	68	30	1,494	(*)	----	30	1,509	11.4	56	30	1,491	10.0	31	30	1,409	−2.6	64	30	1,507	2.3	55	30	1,513	14.6	52
800	30	1,955	.2	62	30	1,990	4.8	36	30	2,015	9.8	50	30	1,992	7.1	31	30	1,888	−4.5	58	30	1,994	−1.2	57	30	2,025	13.6	40
750	30	2,477	−1.3	52	30	2,519	1.8	39	30	2,555	7.6	46	30	2,529	4.8	30	30	2,400	−7.1	56	30	2,510	−4.4	58	30	2,574	11.8	38
700	30	3,017	−3.9	47	30	3,066	−1.5	37	30	3,114	4.9	42	30	3,079	1.8	33	30	2,928	−10.2	53	30	3,046	−7.6	62	29	3,140	9.3	37
650	30	3,605	−6.3	45	30	3,653	−5.2	41	30	3,716	1.9	41	30	3,679	−1.8	31	30	3,502	−13.5	52	30	3,622	−10.3	58	29	3,752	5.6	37
600	30	4,222	−9.6	44	30	4,275	−9.2	43	30	4,357	−1.8	----	30	4,304	−5.9	----	30	4,100	−17.2	50	30	4,232	−14.0	55	29	4,400	2.1	----
550	30	4,895	−13.2	44	30	4,944	−13.3	35	29	5,045	−5.8	----	30	4,985	−10.0	----	30	4,752	−20.6	----	30	4,890	−18.2	52	29	5,097	−2.4	----
500	30	5,609	−17.4	41	30	5,662	−17.5	----	27	5,785	−10.0	----	30	5,710	−14.6	----	30	5,448	−24.9	----	29	5,597	−22.3	----	29	5,846	−7.2	----
450	30	6,398	−22.5	----	30	6,450	−22.2	----	27	6,596	−15.4	----	30	6,504	−19.3	----	30	6,208	−30.0	----	29	6,369	−27.0	----	29	6,667	−12.5	----
400	30	7,246	−28.2	----	30	7,300	−27.8	----	27	7,469	−21.5	----	29	7,375	−24.9	----	29	7,038	−36.0	----	29	7,205	−31.9	----	29	7,545	−18.8	----
350	30	8,190	−34.9	----	30	8,247	−34.2	----	27	8,439	−28.8	----	29	8,334	−31.3	----	29	7,952	−42.4	----	29	8,134	−38.6	----	29	8,529	−25.6	----
300	30	9,249	−41.9	----	29	9,313	−40.2	----	26	9,524	−36.8	----	29	9,410	−38.2	----	29	8,979	−48.6	----	29	9,177	−45.3	----	29	9,629	−33.6	----
250	30	10,463	−49.5	----	28	10,545	−47.4	----	26	10,761	−46.0	----	29	10,643	−46.1	----	28	10,162	−52.0	----	29	10,375	−52.0	----	29	10,882	−43.1	----
200	30	11,897	−57.4	----	27	12,003	−53.2	----	25	12,209	−55.1	----	29	12,100	−53.8	----	26	11,603	−51.7	----	27	11,801	−56.7	----	29	12,348	−54.6	----
175	29	12,738	−59.9	----	26	12,862	−55.9	----	23	13,052	−59.9	----	29	12,951	−57.6	----	26	12,468	−52.0	----	23	12,634	−57.0	----	27	13,189	−60.9	----
150	28	13,686	−61.2	----	24	13,831	−59.7	----	23	14,003	−64.5	----	27	13,908	−61.5	----	25	13,468	−52.5	----	22	13,595	−57.9	----	25	14,135	−66.3	----
125	22	14,830	−62.1	----	17	14,975	−62.8	----	21	15,112	−67.8	----	22	15,032	−64.8	----	23	14,637	−53.2	----	20	14,739	−59.2	----	23	15,228	−71.1	----
100	17	16,204	−63.8	----	----	----	----	----	10	16,449	−70.4	----	14	16,363	−67.4	----	16	16,039	−53.7	----	14	16,137	−61.3	----	20	16,539	−74.5	----
80	6	17,520	−61.7	----	----	----	----	----	----	----	----	----	8	17,726	−64.7	----	----	----	----	----	7	17,496	−59.8	----	12	17,860	−72.7	----

Standard pressure surface (mb.)	Buffalo, N. Y. (988.4 mb.)				Camaguey, Cuba [2] (mb.)				Caribou, Maine (993.2 mb.)				Charleston, S. C. (1,015.9 mb.)				Ciudad Victoria, Mex. (975.2 mb.)				Columbia, Mo. (983.7 mb.)				Dodge City, Kans. (922.0 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	30	221	8.0	75	----	----	----	----	30	191	1.7	87	30	13	15.6	88	29	335	20.3	61	30	239	7.4	73	28	792	4.4	68
1,000	30	123	(*)	----	----	----	----	----	30	134	(*)	----	30	147	17.3	82	29	116	(*)	----	30	102	(*)	----	28	120	(*)	----
950	30	553	7.4	69	----	----	----	----	30	550	1.4	77	30	588	16.5	75	29	563	19.6	57	30	530	7.9	64	28	548	(*)	----
900	30	990	5.1	68	----	----	----	----	30	983	−.5	73	30	1,045	14.8	66	29	1,025	16.6	59	30	971	5.9	60	28	989	6.4	54
850	30	1,455	2.4	67	----	----	----	----	30	1,439	−1.9	71	30	1,528	13.2	62	28	1,509	14.1	61	30	1,437	3.8	57	28	1,457	5.1	44
800	30	1,942	−.2	62	----	----	----	----	30	1,919	−3.8	65	30	2,037	11.4	53	28	2,020	13.0	58	30	1,928	1.6	51	28	1,949	2.8	42
750	30	2,465	−2.0	54	----	----	----	----	30	2,431	−5.7	63	30	2,578	8.9	48	28	2,567	11.9	56	30	2,451	−1.1	48	28	2,472	.2	38
700	30	3,004	−4.3	50	----	----	----	----	30	2,966	−7.8	58	30	3,144	6.1	45	28	3,135	9.0	51	30	2,994	−3.0	44	28	3,019	−3.0	39
650	30	3,593	−6.8	49	----	----	----	----	30	3,544	−10.2	49	30	3,749	2.7	44	27	3,753	5.1	46	30	3,584	−5.6	42	28	3,606	−5.9	37
600	30	4,207	−9.8	42	----	----	----	----	30	4,154	−13.1	47	30	4,391	−.9	46	27	4,402	1.6	----	30	4,202	−9.2	43	28	4,225	−9.8	39
550	30	4,877	−13.9	41	----	----	----	----	30	4,812	−16.8	46	29	5,077	−4.9	40	27	5,101	−2.7	----	29	4,875	−13.2	39	28	4,893	−14.2	41
500	30	5,591	−18.4	39	----	----	----	----	30	5,521	−21.3	----	29	5,824	−9.3	35	26	5,847	−7.6	----	29	5,591	−17.9	38	28	5,607	−19.2	41
450	29	6,380	−23.1	----	----	----	----	----	30	6,291	−26.6	----	29	6,638	−14.6	36	26	6,668	−12.9	----	29	6,378	−23.2	----	28	6,388	−24.9	----
400	29	7,225	−28.8	----	----	----	----	----	29	7,135	−32.4	----	28	7,515	−20.7	----	26	7,548	−19.2	----	29	7,224	−28.8	----	28	7,227	−36.0	----
350	28	8,166	−35.2	----	----	----	----	----	29	8,065	−38.2	----	28	8,489	−27.3	----	26	8,528	−26.3	----	29	8,167	−34.6	----	28	8,164	−37.3	----
300	27	9,230	−41.8	----	----	----	----	----	29	9,111	−44.3	----	28	9,581	−35.3	----	26	9,625	−34.4	----	29	9,229	−40.9	----	28	9,218	−42.9	----
250	27	10,445	−49.1	----	----	----	----	----	26	10,304	−50.6	----	27	10,822	−45.3	----	26	10,874	−44.7	----	27	10,452	−47.9	----	27	10,424	−49.5	----
200	23	11,868	−54.5	----	----	----	----	----	19	11,699	−53.4	----	26	12,272	−56.3	----	26	12,328	−57.1	----	23	11,903	−53.7	----	24	11,862	−53.4	----
175	15	12,687	−56.3	----	----	----	----	----	17	12,537	−54.2	----	26	13,109	−61.5	----	26	13,160	−63.7	----	17	12,772	−56.4	----	24	12,718	−55.0	----
150	7	13,597	−56.5	----	----	----	----	----	13	13,503	−54.7	----	23	14,064	−65.9	----	24	14,092	−69.6	----	10	13,755	−57.4	----	23	13,689	−57.6	----
125	----	----	----	----	----	----	----	----	12	14,642	−56.5	----	16	15,159	−69.1	----	17	15,183	−74.5	----	5	14,950	−59.5	----	20	14,834	−61.1	----
100	----	----	----	----	----	----	----	----	5	16,033	−55.9	----	10	16,474	−71.6	----	8	16,464	−77.1	----	----	----	----	----	16	16,183	−63.0	----
80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	8	17,568	−62.5	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during November 1948*—Continued

Standard pressure surface (mb.)	El Paso, Tex. (881.6 mb.)				Ely, Nev. (810.4 mb.)				Glasgow, Mont. (936.5 mb.)				Grand Junction, Colo. (854.0 mb.)				Great Falls, Mont. (884.0 mb.)				Greensboro, N. C. (985.8 mb.)				Hatteras, N. C. (1,017.6 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	30	1,195	9.7	29	30	1,908	−0.8	56	30	648	0.1	74	30	1,474	0.3	69	30	1,128	2.1	53	30	273	9.8	84	30	3	17.1	86
1,000	30	129	(*)	----	30	185	(*)	----	30	116	(*)	----	30	185	(*)	----	30	119	(*)	----	30	153	(*)	----	30	152	17.4	80
950	30	572	(*)	----	30	613	(*)	----	30	536	(*)	----	30	611	(*)	----	30	547	(*)	----	30	586	11.6	65	30	588	15.6	73
900	30	1,029	(*)	----	30	1,058	(*)	----	30	967	.9	65	30	1,052	(*)	----	30	986	(*)	----	30	1,034	10.2	64	30	1,046	13.3	65
850	30	1,499	10.4	26	30	1,522	(*)	----	30	1,424	−1.5	60	30	1,511	(*)	----	30	1,443	.8	50	30	1,509	8.9	64	30	1,526	11.4	56
800	30	2,001	7.4	27	30	2,012	1.9	50	30	1,904	−4.6	62	30	1,999	.0	56	30	1,927	−2.7	52	30	2,010	7.9	55	30	2,031	9.7	48
750	30	2.532	4.5	26	30	2,534	−1.2	48	30	2,413	−7.5	60	30	2,517	−2.7	58	30	2,441	−6.3	56	30	2,549	6.3	49	30	2,563	7.7	44
700	30	3,087	1.3	27	30	3,076	−4.5	51	30	2,943	−10.8	57	30	3,058	−6.1	59	30	2,971	−9.7	59	30	3,105	3.8	45	30	3,131	5.2	39
650	30	3,683	−2.2	----	30	3,660	−7.6	51	30	3,515	−13.9	52	30	3,638	−9.2	59	30	3,548	−13.2	62	29	3,705	.8	43	30	3,726	1.7	40
600	30	4,311	−6.0	----	30	4,275	−11.2	48	30	4,113	−17.2	48	30	4,250	−12.3	56	30	4,145	−17.1	61	29	4,344	−2.7	41	30	4,374	−1.7	33
550	30	4,990	−9.6	----	30	4,939	−15.1	45	30	4,764	−21.0	----	30	4,913	−15.7	48	30	4,795	−21.3	----	27	5,028	−6.7	----	30	5,055	−5.8	33
500	30	5,718	−14.0	----	29	5,652	−19.4	43	30	5,458	−25.7	----	29	5,627	−20.1	46	30	5,489	−25.8	----	27	5,766	−11.3	----	30	5,801	−10.4	----
450	30	6,517	−19.2	----	29	6,435	−23.7	----	30	6,218	−31.0	----	29	6,403	−25.1	----	30	6,251	−31.2	----	27	6,576	−16.2	----	30	6,605	−15.8	----
400	30	7,383	−25.7	----	29	7,281	−29.6	----	30	7,039	−37.3	----	29	7,246	−31.1	----	30	7,068	−36.9	----	27	7,446	−22.4	----	29	7,482	−22.0	----
350	30	8,330	−32.4	----	29	8,220	−35.9	----	30	7,949	−43.6	----	29	8,180	−37.2	----	30	7,979	−43.0	----	27	8,412	−29.5	----	28	8,448	−29.1	----
300	30	9,401	−39.4	----	28	9,274	−42.3	----	30	8,970	−49.6	----	29	9,230	−43.4	----	30	9,006	−48.4	----	25	9,499	−37.3	----	27	9,528	−37.4	----
250	28	10,625	−47.5	----	28	10,485	−49.8	----	29	10,145	−53.0	----	28	10,444	−49.9	----	30	10,193	−52.6	----	23	10,735	−46.5	----	26	10,768	−46.3	----
200	26	12,074	−55.8	----	24	11,920	−56.4	----	28	11,578	−53.1	----	26	11,871	−55.4	----	28	11,614	−54.6	----	16	12,169	−56.0	----	24	12,216	−56.5	----
175	25	12,912	−59.6	----	22	12,764	−58.3	----	26	12,429	−52.3	----	23	12,705	−56.0	----	24	12,452	−53.3	----	13	13,006	−60.6	----	22	13,056	−61.0	----
150	24	13,875	−63.5	----	18	13,738	−61.0	----	23	13,427	−52.8	----	17	13,693	−57.8	----	21	13,437	−53.3	----	11	13,944	−64.7	----	19	14,001	−64.7	----
125	21	14,987	−66.2	----	12	14,832	−62.6	----	20	14,590	−53.2	----	14	14,845	−59.6	----	19	14,604	−54.9	----	5	15,036	−66.3	----	16	15,098	−67.5	----
100	17	16,331	−69.6	----	10	16,202	−63.5	----	12	15,998	−52.9	----	9	16,231	−61.7	----	16	16,033	−55.6	----	----	----	----	----	7	16,446	−69.1	----
80	----	----	----	----	6	17,568	−61.7	----	----	----	----	----	----	----	----	----	10	17,433	−56.5	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Havana, Cuba [1] (---- mb.)				Honolulu, T. H. (1,013.6 mb.)				International Falls, Minn. (967.7 mb.)				Joliet, Ill. (990.8 mb.)				Lake Charles, La. (1,014.9 mb.)				Lander, Wyo. (826.8 mb.)				Las Vegas, Nev. (951.2 mb.)			
Surface	----	----	----	----	30	3	25.0	69	30	360	−1.6	83	30	178	5.5	81	30	5	14.6	82	30	1,696	−1.7	57	30	574	9.8	24
1,000	----	----	----	----	30	121	24.0	69	30	96	(*)	----	30	101	2.6	74	30	130	16.3	72	30	149	(*)	----	30	153	(*)	----
950	----	----	----	----	30	571	20.4	75	30	509	−1.6	83	30	528	5.5	71	30	571	14.6	68	30	573	(*)	----	30	585	(*)	----
900	----	----	----	----	30	1,033	16.8	80	30	935	−3.2	79	30	963	3.4	67	30	1,022	12.5	62	30	1,014	(*)	----	30	1,037	11.6	24
850	----	----	----	----	30	1,520	14.7	71	30	1,387	−4.2	68	30	1,426	1.5	62	30	1,500	10.7	57	30	1,473	(*)	----	30	1,513	8.7	26
800	----	----	----	----	30	2,031	13.0	56	30	1,863	−6.0	62	30	1,912	−.6	57	30	2,004	9.4	51	30	1,960	.2	49	30	2,011	5.6	30
750	----	----	----	----	30	2,577	10.6	49	30	2,374	−8.0	56	30	2,431	−2.6	49	30	2,546	8.3	46	30	2,476	−3.1	48	30	2.545	2.9	30
700	----	----	----	----	30	3,144	7.5	41	30	2,900	−10.5	54	30	2,971	−5.3	45	30	3,107	6.2	40	30	3,017	−6.6	48	30	3,041	.3	30
650	----	----	----	----	30	3,753	4.1	37	30	3,476	−13.4	55	30	3,556	−7.9	38	30	3,713	2.8	----	30	3,598	−10.2	49	30	3,685	−3.0	30
600	----	----	----	----	30	4,397	.4	36	30	4,073	−16.9	52	30	4,168	−11.3	35	30	4,354	−1.1	----	30	4,204	−14.3	49	30	4,311	−6.7	30
550	----	----	----	----	30	5,088	−3.5	----	30	4,725	−20.9	----	29	4,835	−15.1	----	30	5,042	−4.8	----	30	4,856	−18.4	46	30	4,985	−10.7	28
500	----	----	----	----	30	5,831	−8.0	----	30	5,418	−25.3	----	29	5,545	−19.4	----	28	5,786	−9.8	----	30	5,563	−23.0	----	30	5,712	−15.7	----
450	----	----	----	----	30	6,653	−13.5	----	30	6,183	−30.4	----	29	6,325	−24.3	----	28	6,600	−14.8	----	30	6,334	−28.4	----	30	6,501	−21.2	----
400	----	----	----	----	30	7,533	−20.0	----	30	7,002	−36.5	----	29	7,169	−30.0	----	28	7,474	−21.4	----	30	7,162	−34.3	----	30	7,357	−27.5	----
350	----	----	----	----	30	8,510	−26.6	----	30	7,914	−42.9	----	29	8,107	−36.3	----	28	8,444	−28.4	----	30	8,082	−40.8	----	30	8,305	−34.0	----
300	----	----	----	----	30	9,604	−34.8	----	30	8,939	−48.9	----	29	9,161	−42.7	----	28	9,533	−36.2	----	30	9,117	−46.4	----	30	9,368	−41.1	----
250	----	----	----	----	30	10,852	−43.5	----	30	10,126	−51.8	----	29	10,373	−49.4	----	27	10,775	−45.3	----	27	10,321	−51.9	----	28	10,592	−49.4	----
200	----	----	----	----	30	12,319	−53.6	----	28	11,566	−51.7	----	27	11,821	−54.3	----	27	12,228	−56.2	----	25	11,744	−55.4	----	28	12,026	−57.7	----
175	----	----	----	----	29	13,170	−58.6	----	28	12,432	−51.3	----	24	12,658	−55.4	----	27	13,065	−61.7	----	21	12,601	−56.0	----	28	12,862	−60.5	----
150	----	----	----	----	29	14,127	−63.4	----	26	13,429	−51.7	----	20	13,638	−56.2	----	26	14,005	−67.0	----	18	13,565	−56.2	----	27	13,820	−62.6	----
125	----	----	----	----	22	15,226	−67.4	----	22	14,582	−52.6	----	17	14,790	−57.8	----	24	15,095	−71.0	----	11	14,692	−56.0	----	20	14,926	−65.7	----
100	----	----	----	----	19	16,545	−71.2	----	17	16,014	−53.9	----	12	16,194	−60.1	----	14	16,412	−73.9	----	----	----	----	----	12	16,237	−66.7	----
80	----	----	----	----	17	17,867	−71.5	----	10	17,416	−54.5	----	8	17,570	−61.9	----	6	17,714	−73.2	----	----	----	----	----	----	----	----	----
60	----	----	----	----	11	19,586	−67.1	----	8	19,249	−56.5	----	----	----	----	----	5	19,436	−68.6	----	----	----	----	----	----	----	----	----
50	----	----	----	----	9	20,708	−62.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
40	----	----	----	----	7	22,109	−58.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Little Rock, Ark. (1,004.9 mb.)				Mazatlan, Mex. (1,008.5 mb.)				Medford, Oreg. (975.1 mb.)				Merida, Mex. (1,010.4 mb.)				Miami, Fla. (1,016.6 mb.)				Nantucket, Mass. (1,017.0 mb.)				Nashville, Tenn. (994.4 mb.)			
Surface	29	79	10.8	78	30	14	24.3	79	30	401	5.5	84	30	27	25.6	82	30	4	23.5	86	28	14	9.2	89	30	177	10.3	80
1,000	29	119	(*)	----	30	88	23.8	77	30	193	(*)	----	30	118	25.2	82	30	148	23.8	82	28	154	11.1	80	30	129	(*)	----
950	29	555	11.9	64	30	542	22.5	66	30	619	6.7	71	30	570	22.8	82	30	598	21.0	82	28	585	9.5	71	30	561	10.1	65
900	29	1,001	10.0	61	30	1,005	20.7	54	30	1,058	5.2	65	30	1,039	19.9	82	30	1,064	18.5	77	28	1,029	7.3	63	30	1,006	7.9	64
850	29	1,474	8.0	53	30	1,498	18.2	44	30	1,523	2.7	60	30	1,531	17.2	79	30	1,553	16.1	68	28	1,498	5.6	54	30	1,476	6.8	59
800	29	1,973	6.3	46	30	2,014	15.2	40	30	2,012	.7	55	30	2,047	14.6	72	30	2,067	13.8	59	28	1,992	3.7	49	30	1,973	5.3	55
750	29	2,507	4.3	42	30	2,566	11.7	40	30	2,533	−1.8	54	30	2,594	12.4	58	30	2,612	11.3	49	28	2,523	2.3	45	30	2,507	3.6	51
700	29	3,059	2.1	34	30	3,132	8.1	40	30	3,074	−4.0	50	30	3,168	9.7	51	30	3,184	8.4	43	28	3,070	.1	42	30	3,057	1.6	45
650	29	3,661	−.6	37	30	3,742	4.5	38	30	3,660	−7.0	46	30	3,778	6.3	45	30	3,794	5.0	36	28	3,661	−2.9	40	30	3,655	−1.5	43
600	29	4,290	−4.1	38	29	4,388	1.0	----	30	4,276	−10.4	39	30	4,431	1.9	46	30	4,441	1.2	32	27	4,293	−6.6	42	30	4,285	−4.9	42
550	29	4,972	−7.8	34	29	5,085	−3.0	----	30	4,943	−14.5	----	29	5,129	−1.9	39	30	5,137	−2.9	28	24	4,974	−10.4	42	30	4,969	−8.9	34
500	29	5,707	−12.2	30	29	5,831	−7.9	----	30	5,657	−18.6	----	29	5,881	−6.5	35	30	5,885	−7.2	----	24	5,697	−14.9	----	30	5,695	−13.6	31
450	29	6,508	−17.7	----	28	6,652	−13.3	----	30	6,441	−23.5	----	29	6,704	−11.6	----	29	6,707	−12.4	----	24	6,493	−20.1	----	28	6,490	−18.5	----
400	29	7,375	−23.7	----	28	7,530	−19.4	----	30	7,287	−29.1	----	29	7,590	−17.5	----	29	7,590	−18.6	----	23	7,344	−26.4	----	28	7,351	−24.2	----
350	29	8,338	−30.2	----	27	8,510	−26.3	----	30	8,228	−35.8	----	29	8,575	−25.0	----	27	8,570	−25.5	----	23	8,295	−33.1	----	27	8,308	−31.2	----
300	29	9,419	−37.4	----	27	9,607	−34.3	----	30	9,283	−42.7	----	29	9,675	−33.9	----	27	9,667	−34.2	----	23	9,361	−40.8	----	26	9,382	−38.5	----
250	29	10,654	−46.3	----	27	10,857	−44.1	----	30	10,491	−50.8	----	29	10,924	−44.3	----	27	10,917	−44.1	----	23	10,578	−49.4	----	24	10,626	−46.4	----
200	28	12,103	−55.1	----	26	12,318	−55.7	----	30	11,918	−57.9	----	28	12,377	−56.6	----	27	12,374	−55.6	----	21	12,000	−57.4	----	23	12,080	−55.6	----
175	26	12,946	−58.8	----	25	13,157	−62.0	----	29	12,751	−59.9	----	28	13,210	−63.5	----	27	13,212	−61.6	----	19	12,843	−59.3	----	22	12,918	−59.7	----
150	22	13,899	−62.2	----	23	14,096	−67.7	----	29	13,710	−61.4	----	27	14,137	−70.7	----	25	14,157	−67.3	----	18	13,794	−60.9	----	19	13,873	−62.6	----
125	15	15,034	−65.2	----	17	15,177	−72.2	----	24	14,840	−64.0	----	20	15,208	−75.7	----	21	15,246	−72.9	----	15	14,916	−61.9	----	16	14,982	−65.3	----
100	----	----	----	----	7	16,510	−74.9	----	18	16,223	−64.4	----	7	16,479	−80.3	----	9	16,659	−76.9	----	6	16,252	−62.6	----	10	16,336	−66.9	----
80	----	----	----	----	----	----	----	----	15	17,574	−63.5	----	----	----	----	----	----	----	----	----	----	----	----	----	5	17,647	−66.5	----
60	----	----	----	----	----	----	----	----	5	19,326	−62.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during November 1948*—Continued

Standard pressure surface (mb.)	New Orleans, La. (1,015.7 mb.)				North Platte, Nebr. (915.0 mb.)				Oakland, Calif. (1,019.8 mb.)				Oklahoma City, Okla. (967.4 mb.)				Omaha, Nebr. (975.4 mb.)				Phoenix, Ariz. (975.9 mb.)				Pittsburgh, Pa. (970.6 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	28	2	15.8	85	30	849	0.5	73	30	6	12.3	72	30	391	8.4	61	30	308	5.5	75	30	339	11.4	42	30	382	8.1	74
1,000	28	134	16.6	79	30	123	(*)	----	30	170	13.5	59	30	114	(*)	----	30	103	(*)	----	30	131	(*)	----	30	134	(*)	----
950	28	570	15.1	74	30	547	(*)	----	30	603	12.5	49	30	543	9.6	56	30	523	5.7	68	30	570	17.8	20	30	564	8.2	69
900	28	1,028	13.7	66	30	982	2.9	65	30	1,054	10.8	43	30	989	7.8	55	30	963	3.2	63	30	1,027	14.8	19	30	1,004	6.4	66
850	28	1,509	12.7	58	30	1,444	1.7	58	30	1,528	9.3	40	30	1,458	5.8	52	30	1,425	1.7	59	30	1,507	11.1	21	30	1,471	4.0	64
800	28	2,017	11.1	56	30	1,930	−1.0	56	30	2,029	7.5	34	30	1,953	4.1	49	30	1,912	−.5	56	30	2,009	7.9	22	30	1,963	2.5	52
750	28	2,552	9.3	47	30	2,447	−4.0	59	30	2,563	5.1	33	30	2,482	2.4	43	30	2,430	−3.2	58	30	2,547	4.5	24	30	2,488	.6	47
700	28	3,124	7.2	41	30	2,984	−6.8	58	30	3,118	2.0	30	30	3,031	−.3	41	30	2,969	−6.1	56	30	3,097	2.2	----	30	3,034	−1.5	47
650	28	3,727	4.0	----	30	3,565	−10.3	52	30	3,714	−1.4	30	30	3,624	−3.8	40	30	3,552	−9.0	53	30	3,697	−1.0	----	29	3,628	−4.2	47
600	28	4,377	−.2	----	30	4,172	−13.8	45	30	4,346	−4.1	30	30	4,248	−7.6	39	30	4,162	−11.8	45	30	4,325	−4.7	----	29	4,250	−7.5	47
550	28	5,067	−4.2	----	30	4,831	−18.2	47	30	5,027	−8.8	29	29	4,918	−11.9	32	30	4,823	−15.9	45	30	5,003	−9.4	----	29	4,926	−11.5	39
500	27	5,810	−8.9	----	30	5,533	−22.7	----	30	5,757	−13.5	30	29	5,639	−16.7	----	30	5,536	−20.8	----	30	5,732	−14.7	----	28	5,639	−15.8	38
450	27	6,625	−14.2	----	30	6,306	−28.0	----	29	6,552	−18.9	----	29	6,430	−22.2	----	30	6,313	−26.2	----	30	6,528	−20.5	----	26	6,440	−20.4	33
400	27	7,503	−20.4	----	29	7,128	−34.3	----	29	7,416	−25.3	----	29	7,280	−27.6	----	30	7,150	−31.8	----	30	7,382	−26.6	----	26	7,295	−25.9	----
350	27	8,479	−26.9	----	29	8,049	−40.6	----	29	8,371	−32.5	----	29	8,229	−33.3	----	30	8,080	−38.6	----	30	8,332	−33.4	----	25	8,247	−32.4	----
300	26	9,573	−34.9	----	28	9,090	−46.3	----	29	9,440	−40.3	----	29	9,298	−39.4	----	30	9,124	−44.8	----	30	9,399	−40.8	----	22	9,317	−39.5	----
250	26	10,819	−44.6	----	28	10,288	−51.1	----	28	10,662	−49.4	----	29	10,527	−46.3	----	30	10,328	−50.5	----	30	10,618	−48.7	----	19	10,537	−47.7	----
200	24	12,276	−55.8	----	23	11,735	−54.3	----	28	12,095	−57.5	----	27	11,993	−53.7	----	27	11,769	−53.4	----	30	12,062	−55.7	----	16	11,986	−55.0	----
175	22	13,116	−61.5	----	22	12,590	−54.4	----	28	12,931	−60.9	----	21	12,858	−56.8	----	23	12,604	−53.8	----	30	12,905	−59.2	----	13	12,829	−58.5	----
150	21	14,057	−66.1	----	15	13,552	−55.7	----	24	13,888	−63.7	----	16	13,827	−60.1	----	19	13,592	−56.0	----	28	13,860	−62.8	----	10	13,790	−61.6	----
125	15	15,151	−70.0	----	7	14,714	−61.1	----	19	14,998	−65.8	----	15	14,967	−63.8	----	10	14,774	−57.9	----	27	14,982	−66.2	----	6	14,904	−63.2	----
100	6	16,467	−72.6	----	5	16,064	−60.0	----	12	16,344	−67.0	----	12	16,341	−66.1	----	5	16,148	−60.2	----	14	16,284	−67.2	----	----	----	----	----

Standard pressure surface (mb.)	Portland, Maine (1,015.1 mb.)				Rapid City, S. Dak. (900.0 mb.)				St. Cloud, Minn. (972.9 mb.)				San Antonio, Tex. (986.8 mb.)				San Juan, P. R. (1,012.8 mb.)				Santa Maria, Calif. (1,010.1 mb.)				Sault Ste. Marie, (984.3 mb.) Mich.			
Surface	30	20	6.0	83	30	980	−0.4	73	30	317	0.0	86	30	240	13.3	68	30	15	25.3	84	30	71	11.4	65	30	221	3.2	90
1,000	30	142	6.7	73	30	123	(*)	----	30	95	(*)	----	30	126	(*)	----	30	127	24.9	83	30	155	12.9	61	30	91	(*)	----
950	30	566	5.1	68	30	544	(*)	----	30	517	.8	79	30	567	15.9	51	30	582	22.2	84	30	593	14.4	40	30	513	2.2	83
900	30	1,003	3.0	68	30	984	(*)	----	30	941	−.6	75	30	1,020	13.3	51	30	1,047	19.2	85	30	1,043	13.4	32	30	942	.0	81
850	30	1,464	1.0	67	30	1,440	.9	54	30	1,397	−1.9	67	30	1,498	11.1	46	30	1,537	16.4	82	30	1,522	11.2	31	30	1,399	−2.0	76
800	30	1,951	−.2	56	30	1,925	−2.0	52	30	1,878	−3.4	62	30	2,003	9.6	39	30	2,052	13.8	74	30	2,026	9.3	28	30	1,880	−4.0	73
750	30	2,473	−1.8	46	30	2,440	−5.0	54	30	2,392	−5.5	57	30	2,543	8.3	34	30	2,598	11.3	62	30	2,566	7.4	----	30	2,394	−6.0	68
700	30	3,013	−4.2	45	30	2,974	−8.1	52	30	2,925	−8.3	57	30	3,104	5.9	32	30	3,168	8.4	53	30	3,124	5.1	----	30	2,925	−8.4	64
650	29	3,603	−6.7	45	30	3,553	−11.5	50	30	3,500	−11.3	56	30	3,712	2.7	----	30	3,781	5.0	50	30	3,728	1.6	----	29	3,509	−11.3	63
600	29	4,219	−10.1	42	30	4,155	−15.1	48	30	4,107	−14.6	52	30	4,349	−1.4	----	30	4,427	1.4	48	30	4,365	−2.2	----	29	4,113	−14.0	57
550	29	4,888	−14.2	40	30	4,813	−18.8	46	30	4,761	−18.7	46	30	5,039	−5.4	----	30	5,124	−2.4	44	30	5,052	−6.4	----	29	4,773	−18.3	51
500	29	5,602	−18.6	37	30	5,513	−23.4	----	30	5,465	−23.3	----	30	5,779	−9.9	----	30	5,873	−6.9	37	30	5,788	−11.6	----	29	5,474	−22.7	----
450	29	6,388	−23.7	----	30	6,281	−28.8	----	30	6,233	−28.8	----	30	6,593	−15.2	----	30	6,696	−12.0	----	30	6,595	−17.5	----	28	6,251	−27.9	----
400	29	7,231	−29.6	----	30	7,108	−35.1	----	30	7,061	−34.6	----	30	7,464	−21.3	----	30	7,580	−18.2	----	30	7,459	−24.0	----	28	7,079	−38.8	----
350	29	8,172	−35.5	----	30	8,026	−41.7	----	29	7,978	−40.9	----	29	8,439	−28.2	----	30	8,562	−25.7	----	30	8,423	−31.1	----	27	8,003	−40.1	----
300	29	9,229	−42.6	----	30	9,056	−47.8	----	26	9,011	−46.6	----	28	9,524	−35.9	----	30	9,659	−34.2	----	30	9,494	−39.1	----	24	9,038	−46.2	----
250	29	10,438	−50.5	----	30	10,246	−51.5	----	21	10,245	−50.5	----	24	10,765	−44.5	----	30	10,909	−43.9	----	30	10,719	−48.1	----	22	10,235	−51.2	----
200	28	11,867	−56.8	----	26	11,689	−52.8	----	19	11,693	−52.7	----	20	12,229	−54.5	----	30	12,370	−55.2	----	30	12,158	−57.1	----	18	11,671	−54.0	----
175	27	12,709	−59.2	----	23	12,555	−53.0	----	18	12,557	−52.4	----	18	13,076	−59.4	----	28	13,210	−61.0	----	29	12,989	−60.7	----	12	12,532	−54.2	----
150	24	13,655	−60.1	----	18	13,549	−53.7	----	16	13,562	−53.7	----	13	14,053	−64.2	----	23	14,155	−66.8	----	26	13,944	−63.4	----	7	13,541	−55.0	----
125	16	14,768	−60.7	----	12	14,716	−54.7	----	14	14,734	−55.2	----	11	15,152	−69.1	----	20	15,244	−72.1	----	23	15,050	−66.4	----	5	14,679	−55.7	----
100	7	16,148	−60.7	----	5	16,125	−56.0	----	13	16,152	−56.3	----	----	----	----	----	5	16,566	−75.9	----	17	16,390	−68.8	----	----	----	----	----
80	6	17,529	−62.4	----	----	----	----	----	11	17,582	−57.3	----	----	----	----	----	----	----	----	----	12	17,716	−66.9	----	----	----	----	----

Standard pressure surface (mb.)	Spokane, Wash. (932.9 mb.)				Swan Island, W. I.[1] (000.0 mb.)				Tacubaya, Mex.[1] (0,000.0 mb.)				Tampa, Fla. (1,016.2 mb.)				Tatoosh Island, Wash. (1,013.8 mb.)				Toledo, Ohio (990.5 mb.)				Washington, D. C. (1,015.5 mb.)			
Surface	30	721	1.5	82	----	----	----	----	----	----	----	----	30	9	21.3	87	30	31	7.4	82	30	191	6.9	84	30	25	10.8	76
1,000	30	156	(*)	----	----	----	----	----	----	----	----	----	30	148	22.0	80	30	144	6.6	80	30	111	(*)	----	30	153	11.0	68
950	30	576	(*)	----	----	----	----	----	----	----	----	----	30	598	19.6	76	30	565	4.1	77	30	540	7.4	71	30	582	9.1	63
900	30	1,010	1.4	72	----	----	----	----	----	----	----	----	30	1,058	16.8	75	30	1,001	1.7	73	30	978	4.8	69	30	1,026	7.5	60
850	30	1,468	−.9	66	----	----	----	----	----	----	----	----	30	1,544	14.5	67	30	1,460	.0	64	30	1,443	2.5	63	30	1,496	5.7	55
800	30	1,950	−3.6	63	----	----	----	----	----	----	----	----	29	2,055	12.4	52	30	1,944	−2.5	59	30	1,931	.7	59	30	1,991	4.6	51
750	30	2,459	−6.3	65	----	----	----	----	----	----	----	----	29	2,598	10.0	46	30	2,458	−5.2	51	30	2,452	−1.6	58	30	2,521	3.0	49
700	30	2,994	−9.3	63	----	----	----	----	----	----	----	----	29	3,165	7.2	40	30	2,992	−8.2	43	30	2,995	−3.6	53	30	3,073	.8	43
650	30	3,567	−12.3	60	----	----	----	----	----	----	----	----	29	3,776	3.8	38	30	3,570	−11.7	41	29	3,588	−6.4	45	30	3,668	−2.3	46
600	30	4,172	−16.0	60	----	----	----	----	----	----	----	----	29	4,417	.2	31	29	4,175	−15.0	47	29	4,197	−9.5	43	30	4,297	−5.5	46
550	29	4,823	−20.3	58	----	----	----	----	----	----	----	----	29	5,111	−3.9	27	29	4,832	−18.4	48	29	4,867	−13.6	41	30	4,979	−9.3	42
500	29	5,522	−24.8	----	----	----	----	----	----	----	----	----	29	5,855	−8.3	----	29	5,534	−22.7	----	29	5,583	−18.3	39	30	5,705	−14.0	41
450	29	6,286	−29.6	----	----	----	----	----	----	----	----	----	29	6,674	−13.9	----	29	6,306	−27.5	----	28	6,366	−24.1	----	30	6,502	−19.2	37
400	29	7,113	−35.0	----	----	----	----	----	----	----	----	----	29	7,550	−19.8	----	28	7,136	−33.5	----	28	7,209	−29.8	----	30	7,364	−25.0	----
350	29	8,032	−41.2	----	----	----	----	----	----	----	----	----	28	8,527	−26.9	----	28	8,061	−39.4	----	27	8,148	−35.9	----	30	8,320	−32.1	----
300	29	9,065	−47.1	----	----	----	----	----	----	----	----	----	27	9,617	−35.5	----	26	9,088	−45.4	----	27	9,204	−42.6	----	30	9,390	−40.0	----
250	29	10,255	−51.9	----	----	----	----	----	----	----	----	----	25	10,862	−45.2	----	26	10,289	−50.5	----	26	10,416	−49.6	----	29	10,619	−48.8	----
200	29	11,691	−54.3	----	----	----	----	----	----	----	----	----	23	12,313	−56.7	----	26	11,732	−53.6	----	24	11,850	−55.4	----	25	12,046	−57.7	----
175	25	12,526	−53.5	----	----	----	----	----	----	----	----	----	23	13,148	−62.7	----	23	12,551	−52.8	----	24	12,696	−57.3	----	24	12,872	−61.2	----
150	23	13,524	−53.9	----	----	----	----	----	----	----	----	----	20	14,088	−68.1	----	21	13,542	−53.6	----	23	13,667	−58.8	----	21	13,824	−63.0	----
125	19	14,686	−55.6	----	----	----	----	----	----	----	----	----	16	15,160	−72.8	----	17	14,687	−53.9	----	16	14,792	−60.2	----	16	14,928	−65.1	----
100	15	16,101	−55.3	----	----	----	----	----	----	----	----	----	7	16,456	−76.8	----	12	16,107	−54.4	----	11	16,179	−61.6	----	9	16,298	−66.2	----
80	10	17,520	−55.4	----	----	----	----	----	----	----	----	----	----	----	----	----	9	17,540	−54.6	----	----	----	----	----	5	17,649	−64.7	----

[1] Data not yet received.
[2] Insufficient observations.
*Temperature and relative humidity data for this level are not available or are available only for certain days. See note entitled "Change in Summarization of Radiosonde Data," p. 6, in the January 1946 issue of the MONTHLY WEATHER REVIEW.

NOTE.—All observations scheduled between 0300 and 0500, 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. (In a few cases temperature or humidity data may be missing for one or more standard pressure surfaces of some observations.) Relative humidity data are not published for standard pressure surfaces having a corresponding mean temperature below −20°C.

All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the values occurring below the operating range of the humidity element. For explanation of the adjustment, see article entitled "Curve Method for Obtaining Monthly Means of Relative Humidity," p. 241, MONTHLY WEATHER REVIEW, December 1944.

None of the means included in these tables are based on less than 15 observations at the surface or 5 observations at a standard pressure level.

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 2200 G. C. T., during November 1948. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

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.)			Denver, Colo. (1,618 m.)			El Paso, Tex. (1,198 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	266	2.8	30	281	2.7	24	205	0.6	30	283	5.5	29	308	2.6	28	312	1.5	30	130	0.5	26	223	4.2	27	217	2.5	28	182	0.9	27	213	3.6	30	342	2.5	30	281	3.6
500	---	---	---	---	---	---	24	235	.5	---	---	---	---	---	---	---	---	---	30	297	.4	26	225	6.7	27	218	5.3	28	206	3.6	27	208	5.2	---	---	---	---	---	---
1,000	30	258	5.2	---	---	---	23	239	1.4	---	---	---	29	295	5.2	28	310	1.9	26	298	2.9	24	231	9.3	25	231	6.6	27	226	5.8	24	220	6.7	---	---	---	---	---	---
1,500	30	260	5.8	---	---	---	21	257	4.2	30	280	8.4	22	283	8.1	28	288	3.7	24	291	5.5	14	230	10.5	23	252	7.8	25	236	9.0	23	237	8.5	---	---	---	30	277	4.3
2,000	29	264	9.3	30	280	3.1	20	247	9.1	30	288	9.5	18	282	9.0	28	293	6.7	21	267	5.6	12	234	12.9	18	268	8.8	23	244	9.9	19	249	8.7	30	344	3.3	30	272	4.8
2,500	28	269	10.9	30	290	5.1	17	246	11.3	29	284	9.5	17	290	10.7	26	290	8.9	19	257	6.7	---	---	---	14	275	11.3	23	250	11.6	18	250	11.4	29	311	4.9	29	262	6.8
3,000	27	266	11.8	30	294	8.0	15	252	13.3	24	286	11.2	16	291	10.7	22	302	8.4	19	247	7.6	---	---	---	13	282	12.1	22	245	12.7	17	252	14.4	28	302	6.5	29	276	8.1
4,000	25	262	15.7	29	293	11.7	12	243	18.1	21	296	13.9	15	275	11.5	15	314	12.4	19	248	9.8	---	---	---	12	273	16.3	17	245	13.8	15	255	18.6	26	305	11.7	28	282	12.7
5,000	20	259	19.7	25	298	13.9	11	247	18.4	16	310	14.3	14	276	9.3	12	316	19.4	17	259	12.4	---	---	---	11	266	18.2	16	248	14.3	14	254	20.4	22	307	14.4	25	276	15.1
6,000	16	259	28.1	24	294	15.8	11	250	21.0	12	297	16.7	12	281	16.3	10	317	22.9	17	260	17.0	---	---	---	10	266	21.2	15	243	16.6	12	254	27.4	18	300	16.3	23	279	16.1
8,000	---	---	---	24	303	19.4	---	---	---	---	---	---	---	---	---	---	---	---	15	253	21.4	---	---	---	---	---	---	---	---	---	---	---	---	16	320	20.2	19	277	22.9
10,000	---	---	---	19	298	23.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14	307	21.2	13	269	25.9
12,000	---	---	---	15	280	28.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12	267	30.9

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. (575 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	310	2.5	30	322	1.6	21	269	0.3	27	270	4.0	29	124	1.0	24	240	3.3	30	27	1.7	27	220	1.3	30	276	1.0	30	116	3.9	25	164	0.7	27	187	2.0	27	249	1.3
500	---	---	---	---	---	---	21	249	.8	---	---	---	29	189	2.2	24	217	4.4	---	---	---	27	221	2.5	30	280	1.2	30	115	4.2	25	183	1.4	27	185	4.6	27	240	3.5
1,000	---	---	---	---	---	---	21	237	1.8	27	264	7.6	26	217	5.1	23	229	5.4	30	25	2.7	25	236	4.8	29	256	2.0	30	130	3.4	20	284	2.8	24	205	5.2	26	274	4.9
1,500	---	---	---	30	322	1.7	21	263	4.2	27	274	9.8	25	233	8.3	17	240	9.6	30	8	2.5	20	258	5.8	27	260	3.3	28	149	2.5	18	286	5.8	20	219	8.3	22	272	9.1
2,000	30	304	2.3	30	308	1.8	20	260	8.2	25	280	11.5	22	237	9.3	17	239	11.2	30	298	2.5	18	256	8.6	20	284	3.7	25	158	1.7	16	270	8.0	16	244	8.6	16	272	10.5
2,500	30	293	3.4	30	264	3.2	19	256	12.0	20	284	13.2	20	238	9.1	15	232	13.3	30	307	4.1	18	261	11.4	15	329	8.0	23	183	2.0	15	254	10.5	16	246	10.6	13	270	11.8
3,000	30	296	5.2	29	273	5.0	18	250	14.1	18	284	13.7	18	237	10.1	13	252	14.7	30	315	6.8	18	257	14.0	13	329	10.2	23	200	2.4	14	252	12.7	16	255	13.9	10	269	12.4
4,000	23	311	11.5	25	298	10.4	17	255	18.6	11	297	15.5	18	236	11.1	11	251	18.7	30	317	11.3	16	259	18.8	11	323	13.2	23	242	2.4	12	257	16.9	14	258	16.2	---	---	---
5,000	22	308	16.2	20	304	12.4	14	257	18.1	10	305	18.0	17	238	13.5	---	---	---	29	312	14.5	15	263	21.9	10	320	15.0	22	245	3.7	---	---	---	12	262	20.5	---	---	---
6,000	20	306	20.9	18	300	16.1	12	260	19.7	---	---	---	14	248	12.2	---	---	---	27	312	16.8	11	274	21.6	---	---	---	20	242	5.5	---	---	---	10	251	24.9	---	---	---
8,000	11	304	19.2	12	293	22.8	---	---	---	---	---	---	10	260	14.7	---	---	---	22	297	20.9	---	---	---	---	---	---	18	247	6.6	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14	306	23.3	---	---	---	---	---	---	11	258	10.4	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	317	24.4	---	---	---	---	---	---	10	275	12.2	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	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.)			Spokane, Wash. (725 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	277	2.4	28	275	2.8	26	269	1.4	30	305	0.6	29	329	6.1	22	273	1.7	29	221	1.8	27	293	2.1	30	284	3.2	23	239	1.4	28	200	3.1	28	213	3.7	28	241	1.3
500	30	342	3.2	28	273	2.8	26	259	1.9	30	310	.8	---	---	---	22	287	2.0	29	230	3.7	27	298	1.8	30	315	3.1	23	222	2.2	28	207	6.2	---	---	---	28	220	3.1
1,000	28	353	5.4	28	268	3.4	25	261	3.5	30	346	1.0	29	328	6.2	19	294	3.4	26	241	5.2	27	291	2.2	29	352	2.2	14	243	4.7	24	218	6.9	28	217	6.4	24	239	5.4
1,500	28	348	6.7	24	249	4.7	23	263	6.3	30	360	1.1	29	321	8.1	16	287	5.1	21	242	8.0	26	284	3.9	29	9	3.0	---	---	---	17	239	6.1	27	240	8.3	23	249	8.1
2,000	27	346	8.5	22	255	8.7	19	266	7.3	30	330	2.6	28	315	8.4	15	299	6.1	20	243	10.4	25	283	6.3	29	1	3.9	---	---	---	10	272	5.9	24	250	8.8	21	257	10.5
2,500	27	337	9.7	22	263	10.6	19	275	9.6	30	328	4.7	26	311	8.6	14	302	7.1	17	255	11.8	24	273	8.5	29	348	5.9	---	---	---	---	---	---	19	265	8.5	18	260	15.3
3,000	27	334	10.4	20	268	12.1	17	277	10.9	29	309	5.7	25	301	10.0	13	305	6.1	17	251	14.1	24	263	10.5	29	336	7.1	---	---	---	---	---	---	19	278	9.7	18	255	17.0
4,000	23	334	11.7	20	271	15.7	14	275	14.6	27	314	10.6	20	293	12.2	10	294	5.8	16	255	18.1	22	259	14.5	28	329	9.5	---	---	---	---	---	---	14	294	12.2	15	259	19.3
5,000	22	322	13.7	20	266	18.9	10	280	19.9	26	307	14.3	17	299	15.2	---	---	---	13	264	20.9	22	258	18.2	27	315	10.8	---	---	---	---	---	---	12	308	16.9	14	263	22.5
6,000	21	323	14.9	20	258	22.6	10	287	24.2	25	307	16.6	12	307	19.0	---	---	---	10	264	25.5	21	255	20.3	26	318	14.0	---	---	---	---	---	---	11	313	19.2	11	266	25.5
8,000	13	323	16.6	10	253	34.6	---	---	---	18	306	17.9	---	---	---	---	---	---	---	---	---	12	251	24.4	19	321	15.3	---	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	10	298	19.1	---	---	---	---	---	---	---	---	---	---	---	---	12	328	12.3	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11	326	13.5	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T., during November 1948. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,636 m.)			Big Spring, Tex. (774 m.)			Bismarck, N. Dak. (505 m.)			Brownsville, Tex. (7 m.)			Caribou, Maine (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.)			Little Rock, Ark. (80 m.)			Miami, Fla. (12 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	359	1.4	30	190	1.5	30	312	1.6	30	158	0.7	30	250	1.7	30	126	0.2	30	177	2.6	30	10	0.6	29	65	0.4	30	90	0.5	30	306	0.6	30	222	1.0	30	85	1.9
500	---	---	---	---	---	---	---	---	---	30	147	1.6	30	262	4.3	30	194	4.2	30	208	5.1	---	---	---	28	203	.8	29	190	2.6	30	283	1.0	30	216	4.2	29	116	5.2
1,000	---	---	---	30	243	4.0	30	306	6.8	30	143	1.2	30	266	6.4	28	216	6.1	30	239	6.3	---	---	---	29	206	4.4	29	221	4.8	30	272	2.6	30	229	5.2	29	120	4.6
1,500	---	---	---	30	271	7.5	29	309	7.5	30	247	1.5	29	277	7.6	28	224	8.6	30	254	8.0	30	8	.6	29	227	7.7	28	240	6.6	30	279	4.3	30	234	7.0	29	121	3.6
2,000	30	311	4.9	30	281	9.6	29	307	8.5	30	253	3.4	28	273	8.6	28	230	9.7	30	255	9.1	30	333	.9	27	244	9.6	28	244	7.9	29	278	5.0	30	243	8.6	29	136	2.6
2,500	30	303	7.2	30	277	9.7	29	309	9.8	30	243	5.8	28	268	10.1	27	238	10.1	30	262	9.9	30	268	2.2	26	250	12.7	26	255	9.6	28	268	5.8	29	248	10.6	29	156	2.3
3,000	30	298	9.5	29	266	10.8	29	305	10.5	30	244	7.7	28	266	11.8	28	238	9.8	30	261	11.7	30	283	4.6	26	249	13.9	26	256	11.3	28	274	7.2	28	252	12.4	30	170	1.5
4,000	30	299	11.1	28	266	13.3	29	296	11.5	29	244	10.1	28	266	13.6	25	243	10.7	29	259	15.0	30	302	9.1	23	245	15.3	27	259	13.1	30	266	9.1	28	240	16.6	30	233	1.7
5,000	29	300	14.8	27	271	15.7	27	295	8.5	28	251	11.5	26	269	16.7	24	247	12.5	28	255	17.8	30	304	12.5	23	247	17.5	25	261	14.2	30	269	7.8	28	237	20.8	30	262	2.8
6,000	29	296	15.6	25	269	18.1	26	292	12.3	28	243	13.5	23	272	19.5	23	252	14.8	28	253	20.5	28	305	14.1	22	250	21.8	24	263	16.3	28	264	10.9	23	246	19.5	28	246	4.2
8,000	16	280	15.9	16	258	20.9	26	283	14.5	27	248	18.3	16	269	16.2	19	256	17.5	23	250	24.3	21	290	15.6	18	260	21.2	17	274	16.1	26	255	11.2	14	247	26.4	27	274	7.3
10,000	10	290	18.1	---	---	---	19	253	14.5	26	250	24.3	12	259	23.8	13	278	20.6	13	253	23.4	16	315	18.5	14	261	23.6	13	285	21.2	25	255	16.3	---	---	---	26	293	10.1
12,000	---	---	---	---	---	---	13	260	14.0	16	255	25.2	---	---	---	---	---	---	---	---	---	11	311	15.0	---	---	---	12	295	24.8	24	251	16.0	---	---	---	26	296	11.7
14,000	---	---	---	---	---	---	12	273	13.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	21	263	13.8	---	---	---	24	296	12.2
16,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14	245	12.7	---	---	---	11	262	8.7

Altitude (meters) m. s. l.	Nantucket, Mass. (14 m.)			Nashville, Tenn. (180 m.)			New Orleans, La. (6 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.)			Sault Ste. Marie, Mich. (221 m.)			Spokane, Wash. (726 m.)			Tatoosh Island, Wash. (33 m.)		
Surface	28	270	0.1	30	181	1.3	29	149	0.6	30	290	1.0	29	250	1.2	29	304	4.0	30	10	1.0	30	109	2.9	30	285	0.9	30	5	2.2	30	140	1.6	28	198	2.9	29	209	2.5
500	28	252	3.3	30	198	4.8	27	198	1.6	29	324	3.5	26	265	1.7	---	---	---	30	176	.4	30	95	6.6	27	299	.8	29	13	5.0	30	108	2.8	---	---	---	29	229	4.5
1,000	28	250	4.2	30	214	6.5	26	248	2.0	29	344	4.4	25	252	3.5	29	305	4.4	30	230	1.9	30	100	7.3	27	287	2.5	29	16	5.7	29	213	4.9	28	218	5.7	28	263	5.7
1,500	28	255	6.6	27	239	6.8	26	251	5.1	29	344	5.2	27	256	6.1	29	318	8.3	30	262	3.2	30	99	7.0	27	287	3.8	29	6	6.1	28	233	7.2	27	243	7.1	28	273	7.4
2,000	28	256	8.6	27	243	8.7	26	247	6.9	30	343	6.7	27	263	7.9	29	320	10.2	30	262	6.0	30	95	6.5	26	282	4.6	29	348	7.9	27	249	8.8	26	259	7.2	28	272	8.5
2,500	26	261	10.2	27	240	11.4	26	244	11.0	30	333	8.4	27	264	9.2	29	319	10.5	30	260	7.8	30	93	6.1	26	286	5.7	29	338	9.5	24	254	8.6	24	285	7.8	27	283	9.7
3,000	25	259	13.4	27	241	13.9	26	243	12.2	30	328	10.2	27	262	10.6	29	312	10.9	30	255	9.6	30	93	5.8	26	286	7.0	29	338	10.7	24	253	10.1	23	283	8.7	26	286	11.5
4,000	24	262	14.6	25	250	16.8	25	247	14.0	30	319	13.8	27	263	14.3	28	306	11.8	30	251	12.9	30	84	4.2	28	275	8.2	28	330	12.4	20	259	12.4	23	288	12.2	23	297	14.5
5,000	22	260	19.1	23	247	19.6	23	257	14.2	30	311	16.4	27	262	17.7	28	307	12.8	30	251	16.1	30	88	3.5	28	267	7.4	27	319	12.5	20	257	9.3	22	297	13.3	19	297	17.4
6,000	19	263	18.1	19	249	23.6	22	254	17.7	27	312	18.8	26	258	20.2	27	297	13.8	27	254	18.2	30	75	2.5	27	258	12.2	25	316	12.6	18	273	12.6	19	288	14.2	15	292	17.7
8,000	12	265	21.4	14	254	32.0	20	249	24.2	21	305	18.6	20	250	25.3	24	288	15.7	19	254	19.9	30	97	.7	23	261	15.6	22	315	13.2	15	263	18.5	14	304	23.4	---	---	---
10,000	---	---	---	---	---	---	15	258	28.6	13	312	17.8	15	250	34.1	20	281	17.9	10	247	24.6	30	254	3.6	14	239	15.7	18	309	13.4	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	12	257	32.0	12	306	20.3	---	---	---	17	275	19.5	---	---	---	30	272	7.9	11	252	17.7	14	305	12.3	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23	284	8.5	---	---	---	10	276	16.2	---	---	---	---	---	---	---	---	---

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 June 1948 issue of the MONTHLY WEATHER REVIEW.