METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR DECEMBER 1949

AEROLOGICAL OBSERVATIONS

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

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during December 1949*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,013.2 mb.)				Albuquerque, N. Mex. (838.4 mb.)				Atlanta, Ga. (990.0 mb.)				Big Spring, Tex. (930.1 mb.)				Bismarck, N. Dak. (955.7 mb.)				Boise, Idaho (916.6 mb.)				Brownsville, Tex. (1,017.5 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	86	−1.7	81	31	1,620	2.3	52	31	300	6.8	75	31	774	7.7	59	31	505	−12.1	71	31	868	0.1	75	30	6	18.8	87
1,000	31	189	−1.8	76	31	167	(*)	----	31	216	(*)	----	31	167	(*)	----	31	155	(*)	----	31	162	(*)	----	30	155	19.0	85
950	31	599	−2.2	73	31	596	(*)	----	31	644	8.3	63	31	597	(*)	----	31	552	−13.0	69	31	585	(*)	----	30	601	17.2	84
900	31	1,025	−4.0	72	31	1,042	(*)	----	31	1,087	8.4	53	31	1,046	8.8	56	31	966	−9.6	67	31	1,015	1.8	64	30	1,056	15.4	75
850	31	1,476	−5.0	64	31	1,508	(*)	----	31	1,559	7.6	47	31	1,518	8.0	50	31	1,409	−8.2	61	31	1,475	.2	57	30	1,540	13.4	68
800	31	1,952	−6.0	56	31	2,000	2.7	45	31	2,057	5.6	44	31	2,017	5.8	46	31	1,879	−8.7	58	31	1,958	−2.8	56	30	2,049	11.4	60
750	31	2,462	−7.6	52	31	2,526	−.3	42	31	2,586	3.4	44	31	2,550	4.0	40	31	2,388	−9.9	56	31	2,472	−5.9	57	30	2,591	9.2	51
700	31	2,990	−9.8	50	31	3,068	−2.8	38	31	3,140	.9	41	31	3,100	1.1	36	31	2,908	−12.6	54	31	3,004	−9.2	56	30	3,155	6.1	47
650	30	3,566	−12.5	50	31	3,658	−5.9	37	31	3,736	−2.1	36	31	3,696	−2.6	32	31	3,479	−15.7	51	31	3,582	−12.5	54	30	3,761	2.1	46
600	30	4,167	−15.9	47	31	4,273	−10.0	35	31	4,364	−5.7	33	31	4,322	−6.9	----	31	4,070	−19.1	52	31	4,180	−15.8	51	30	4,400	−1.9	45
550	30	4,820	−19.8	48	31	4,940	−14.4	----	31	5,042	−10.2	----	31	4,998	−11.2	----	31	4,717	−22.9	----	31	4,838	−19.7	48	30	5,087	−6.0	39
500	30	5,518	−23.7	----	31	5,654	−19.4	----	31	5,768	−14.9	----	31	5,721	−16.0	----	31	5,405	−27.5	----	31	5,533	−24.2	----	30	5,827	−10.7	35
450	30	6,286	−29.2	----	31	6,434	−24.8	----	31	6,560	−20.4	----	31	6,511	−21.5	----	31	6,163	−32.7	----	31	6,296	−28.9	----	30	6,637	−16.2	36
400	30	7,110	−34.9	----	31	7,276	−30.9	----	31	7,417	−27.0	----	31	7,365	−27.7	----	30	6,974	−38.5	----	30	7,124	−34.9	----	30	7,505	−22.4	----
350	29	8,029	−41.0	----	30	8,209	−37.7	----	31	8,366	−33.9	----	31	8,311	−34.5	----	30	7,879	−44.8	----	29	8,036	−41.4	----	30	8,472	−29.3	----
300	29	9,062	−47.1	----	29	9,251	−45.0	----	31	9,428	41.8	----	29	9,368	−42.2	----	29	8,899	−51.3	----	27	9,074	−48.1	----	30	9,554	−37.6	----
250	28	10,242	−52.8	----	28	10,441	−51.8	----	31	10,639	−50.3	----	29	10,578	−49.9	----	27	10,074	−54.8	----	25	10,272	−53.8	----	30	10,784	−48.0	----
200	27	11,663	−56.5	----	25	11,853	−57.5	----	31	12,067	−58.1	----	29	12,012	−56.7	----	26	11,502	−53.9	----	23	11,699	−55.8	----	29	12,220	−58.2	----
175	26	12,513	−56.9	----	22	12,700	−58.5	----	31	12,902	−60.8	----	29	12,852	−59.0	----	22	12,346	−52.6	----	19	12,555	−56.0	----	29	13,050	−62.8	----
150	21	13,468	−57.2	----	19	13,661	−58.6	----	30	13,857	−62.6	----	29	13,814	−61.3	----	22	13,339	−53.3	----	16	13,526	−55.8	----	21	13,999	−65.8	----
125	12	14,601	−57.4	----	12	14,785	−59.9	----	26	14,959	−65.7	----	26	14,931	−64.7	----	12	14,527	−54.4	----	9	14,706	−56.2	----	18	15,102	−67.6	----
100	5	15,983	−55.7	----	7	16,170	−61.3	----	21	16,315	−68.4	----	18	16,291	−66.5	----	----	----	----	----	----	----	----	----	11	16,441	−71.6	----
80	----	----	----	----	----	----	----	----	12	17,624	−68.4	----	5	17,638	−66.9	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Buffalo, N. Y. (995.5 mb.)				Camaguey, Cuba [1] (---- mb.)				Caribou, Maine (995.9 mb.)				Charleston, S. C. (1,023.3 mb.)				Ciudad Victoria, Mex. (976.6 mb.)				Columbia, Mo. (991.9 mb.)				Dodge City, Kans. (925.7 mb.)			
Surface	31	221	0.1	69	----	----	----	----	31	191	−6.9	80	31	18	9.3	81	31	335	21.4	60	31	239	2.8	69	31	792	0.4	63
1,000	31	183	(*)	----	----	----	----	----	31	158	(*)	----	31	210	12.3	67	31	126	(*)	----	31	172	(*)	----	31	163	(*)	----
950	31	596	−1.4	65	----	----	----	----	31	562	−5.8	76	31	645	11.4	60	31	573	19.7	61	31	592	3.2	58	31	584	(*)	----
900	31	1,023	−3.5	66	----	----	----	----	31	983	−6.3	72	31	1,091	9.9	57	31	1,037	16.5	64	31	1,026	2.2	54	31	1,020	4.0	49
850	30	1,472	−4.8	64	----	----	----	----	31	1,429	−7.6	65	31	1,564	7.9	50	31	1,522	13.9	67	31	1,487	1.1	48	31	1,484	4.1	37
800	30	1,948	−6.3	59	----	----	----	----	31	1,899	−9.3	61	31	2,063	5.8	46	31	2,031	11.4	67	31	1,973	−.6	44	31	1,976	2.3	33
750	30	2,456	−8.3	53	----	----	----	----	31	2,400	−11.4	57	31	2,596	3.6	43	31	2,575	9.1	60	31	2,493	−2.5	41	31	2,500	−.3	32
700	30	2,984	−10.6	50	----	----	----	----	31	2,923	−13.3	48	31	3,146	1.2	36	31	3,138	6.2	57	31	3,032	−4.7	39	31	3,043	−3.5	31
650	30	3,556	−13.1	50	----	----	----	----	31	3,490	−15.9	44	31	3,746	−1.5	----	31	3,741	2.3	56	31	3,619	−7.2	38	31	3,630	−7.1	28
600	30	4,158	−16.1	47	----	----	----	----	30	4,089	−18.7	41	31	4,373	−5.2	----	29	4,389	−1.3	44	31	4,233	−10.5	34	31	4,244	−11.0	26
550	30	4,808	−19.4	43	----	----	----	----	30	4,732	−22.3	----	31	5,054	−9.4	----	29	5,076	−5.5	39	31	4,900	−14.7	35	31	4,908	−15.2	----
500	30	5,511	−23.9	----	----	----	----	----	30	5,428	−26.5	----	31	5,782	−14.5	----	29	5,819	−10.1	----	31	5,613	−19.7	35	31	5,621	−19.9	----
450	30	6,275	−29.2	----	----	----	----	----	30	6,187	−31.3	----	31	6,576	−20.1	----	29	6,629	−15.6	----	31	6,390	−25.2	----	31	6,397	−25.8	----
400	30	7,104	−34.8	----	----	----	----	----	30	7,006	−36.5	----	31	7,435	−26.6	----	29	7,502	−21.8	----	31	7,233	−31.6	----	31	7,236	−32.5	----
350	30	8,025	−40.2	----	----	----	----	----	30	7,921	−41.9	----	31	8,385	−33.4	----	29	8,471	−29.0	----	31	8,164	−38.2	----	31	8,164	−39.1	----
300	29	9,058	−46.1	----	----	----	----	----	30	8,952	−46.6	----	31	9,449	−41.3	----	28	9,552	−37.7	----	31	9,208	−45.5	----	31	9,204	−46.2	----
250	29	10,254	−51.7	----	----	----	----	----	30	10,150	−50.8	----	31	10,663	−50.2	----	28	10,781	−47.9	----	31	10,402	−53.0	----	31	10,395	−53.1	----
200	28	11,674	−55.8	----	----	----	----	----	25	11,568	−53.3	----	30	12,096	−58.4	----	27	12,219	−58.5	----	28	11,828	−57.4	----	31	11,817	−57.1	----
175	26	12,520	−56.8	----	----	----	----	----	23	12,430	−53.1	----	28	12,935	−61.2	----	26	13,048	−63.4	----	23	12,689	−59.3	----	31	12,661	−57.2	----
150	24	13,488	−56.1	----	----	----	----	----	22	13,410	−53.2	----	27	13,885	−63.3	----	26	13,986	−67.1	----	20	13,649	−59.8	----	31	13,629	−58.6	----
125	21	14,640	−57.3	----	----	----	----	----	21	14,583	−54.7	----	25	15,006	−66.4	----	21	15,086	−70.0	----	18	14,777	−62.6	----	31	14,770	−61.2	----
100	15	16,040	−59.9	----	----	----	----	----	10	16,009	−54.9	----	20	16,336	−69.4	----	19	16,396	−74.4	----	14	16,146	−63.2	----	25	16,152	−63.5	----
80	10	17,456	−60.7	----	----	----	----	----	----	----	----	----	13	17,670	−70.9	----	16	17,685	−74.8	----	8	17,504	−64.1	----	18	17,509	−62.3	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9	19,286	−61.2	----

Standard pressure surface (mb.)	El Paso, Tex. (883.3 mb.)				Ely, Nev. (807.5 mb.)				Glasgow, Mont. (938.6 mb.)				Grand Junction, Colo. (853.0 mb.)				Great Falls, Mont. (883.0 mb.)				Greensboro, N. C. (993.6 mb.)				Hatteras, N. C. (1025.5 mb.)			
Surface	31	1,195	6.9	54	31	1,908	−5.2	67	31	648	−12.2	71	31	1,474	−1.3	62	31	1,128	−6.5	64	31	273	4.3	77	31	3	11.2	77
1,000	31	157	(*)	----	31	183	(*)	----	31	158	(*)	----	31	182	(*)	----	31	144	(*)	----	31	220	(*)	----	31	213	11.4	68
950	31	593	(*)	----	31	605	(*)	----	31	558	(*)	----	31	605	(*)	----	31	555	(*)	----	31	643	7.1	61	31	646	9.1	65
900	31	1,044	(*)	----	31	1,043	(*)	----	31	969	−10.1	66	31	1,040	(*)	----	31	983	(*)	----	31	1,085	5.7	56	31	1,087	7.0	64
850	31	1,512	8.1	46	31	1,499	(*)	----	31	1,410	−8.7	63	31	1,501	(*)	----	31	1,426	−5.5	56	31	1,551	4.5	48	31	1,556	5.1	56
800	31	2,010	5.8	45	31	1,983	(*)	----	31	1,881	−8.4	60	31	1,988	.1	49	31	1,901	−6.5	56	31	2,043	2.4	50	31	2,049	3.3	48
750	31	2,543	3.7	39	31	2,504	−2.8	52	31	2,386	−10.3	59	31	2,506	−2.5	49	31	2,409	−8.9	57	31	2,567	.4	47	31	2,578	1.3	45
700	31	3,094	.4	38	31	3,040	−6.1	53	31	2,909	−13.4	58	31	3,047	−5.7	49	31	2,933	−12.3	56	31	3,115	−1.2	37	31	3,124	−1.1	40
650	31	3,686	−3.2	----	31	3,620	−9.2	51	31	3,477	−16.5	56	31	3,626	−9.3	52	31	3,502	−15.6	51	31	3,707	−4.2	38	29	3,718	−4.2	36
600	31	4,312	−7.6	----	31	4,232	−12.6	49	31	4,067	−20.1	56	31	4,238	−13.1	53	31	4,095	−19.3	48	31	4,329	−8.0	35	28	4,335	−7.7	----
550	29	4,982	−12.2	----	31	4,891	−16.9	44	30	4,707	−24.3	----	31	4,900	−17.0	51	31	4,736	−23.9	----	31	5,003	−12.2	32	28	5,010	−11.8	----
500	26	5,703	−17.2	----	31	5,600	−21.4	----	30	5,391	−29.2	----	31	5,604	−21.6	----	31	5,425	−28.6	----	31	5,723	−16.7	----	28	5,730	−15.8	----
450	24	6,505	−22.1	----	31	6,375	−26.7	----	30	6,141	−34.6	----	31	6,379	−26.8	----	31	6,181	−33.5	----	31	6,512	−22.1	----	28	6,525	−21.6	----
400	23	7,354	−28.6	----	30	7,208	−32.9	----	29	6,942	−40.1	----	31	7,212	−32.7	----	31	6,990	−39.0	----	31	7,362	−28.5	----	28	7,373	−27.7	----
350	21	8,294	−35.9	----	30	8,134	−39.8	----	27	7,846	−46.1	----	30	8,139	−39.7	----	31	7,892	−45.4	----	31	8,305	−35.2	----	28	8,319	−34.5	----
300	19	9,345	−43.6	----	30	9,171	−46.8	----	27	8,858	−51.0	----	30	9,176	−46.9	----	31	8,905	−51.6	----	31	9,362	−43.2	----	28	9,378	−42.4	----
250	14	10,576	−50.7	----	28	10,362	−53.9	----	25	10,029	−54.6	----	30	10,366	−52.4	----	28	10,071	−55.6	----	31	10,567	−51.2	----	27	10,580	−50.7	----
200	11	12,029	−56.9	----	25	11,783	−57.8	----	21	11,446	−54.8	----	30	11,795	−55.6	----	22	11,474	−54.4	----	31	11,994	−57.4	----	27	12,009	−57.2	----
175	9	12,866	−59.3	----	24	12,625	−57.5	----	21	12,301	−53.9	----	29	12,648	−55.6	----	18	12,330	−53.8	----	31	12,832	−59.7	----	26	12,854	−59.3	----
150	6	13,828	−62.6	----	19	13,608	−57.6	----	13	13,295	−52.9	----	27	13,630	−56.5	----	12	13,319	−53.9	----	29	13,795	−60.9	----	23	13,815	−60.5	----
125	5	14,925	−65.8	----	12	14,781	−60.1	----	7	14,431	−53.9	----	23	14,787	−59.0	----	5	14,460	−54.1	----	27	14,927	−63.3	----	15	14,943	−63.0	----
100	----	----	----	----	5	16,197	−62.9	----	----	----	----	----	16	16,186	−61.5	----	----	----	----	----	20	16,290	−66.0	----	10	16,305	−66.3	----
80	----	----	----	----	----	----	----	----	----	----	----	----	12	17,562	−61.7	----	----	----	----	----	6	17,638	−66.1	----	----	----	----	----

See footnotes at end of table, p. 344.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during December 1949*—Continued

Standard pressure surface (mb.)	Havana, Cuba [1] (---- mb.)				Honolulu, T. H. (1,012.9 mb.)				International Falls, Minn. (972.9 mb.)				Joliet, Ill. (998.8 mb.)				Lake Charles, La. (1,021.4 mb.)				Lander, Wyo. (824.9 mb.)				Las Vegas, Nev. (940.1 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	----	----	----	----	31	3	24.2	69	31	360	−13.3	77	31	178	−0.5	78	31	5	12.3	84	31	1,696	−6.1	57	31	660	5.3	40
1,000	----	----	----	----	31	115	22.9	70	31	148	(*)	----	31	167	(*)	----	31	182	13.8	74	31	158	(*)	----	31	148	(*)	----
950	----	----	----	----	31	564	19.3	75	31	540	−13.0	75	31	580	−.2	66	31	620	13.1	70	31	577	(*)	----	31	573	(*)	----
900	----	----	----	----	31	1,024	15.8	79	31	952	−13.2	74	31	1,011	−1.1	59	31	1,069	11.9	66	31	1,009	(*)	----	31	1,021	8.8	32
850	----	----	----	----	31	1,507	13.0	77	31	1,388	−12.0	66	31	1,466	−2.1	55	31	1,546	9.9	62	31	1,459	(*)	----	31	1,491	6.2	33
800	----	----	----	----	31	2,016	11.3	60	31	1,853	−11.3	59	31	1,946	−3.8	52	31	2,048	8.0	54	31	1,939	−1.8	45	31	1,985	3.1	36
750	----	----	----	----	31	2,558	9.6	36	31	2,350	−12.7	50	30	2,459	−5.7	47	31	2,588	5.9	49	31	2,457	−4.3	41	31	2,513	.1	35
700	----	----	----	----	31	3,123	6.6	32	31	2,871	−15.1	43	30	2,993	−8.2	43	30	3,141	3.1	41	31	2,990	−7.6	43	31	3,055	−2.6	34
650	----	----	----	----	31	3,729	2.8	34	31	3,436	−17.9	39	30	3,568	−11.5	42	30	3,742	−.3	38	31	3,573	−10.8	43	31	3,644	−6.1	33
600	----	----	----	----	31	4,371	−.9	33	31	4,023	−20.9	----	30	4,175	−15.1	38	30	4,373	−4.1	35	31	4,174	−14.2	43	30	4,257	−10.3	33
550	----	----	----	----	31	5,061	−4.9	----	30	4,664	−24.8	----	30	4,828	−18.9	----	30	5,057	−8.5	36	31	4,833	−18.5	42	30	4,922	−14.6	----
500	----	----	----	----	31	5,804	−9.6	----	30	5,349	−29.1	----	30	5,532	−23.1	----	30	5,787	−13.2	36	31	5,532	−23.7	----	30	5,637	−19.6	----
450	----	----	----	----	31	6,615	−15.1	----	30	6,099	−34.3	----	29	6,302	−28.1	----	29	6,589	−18.8	----	31	6,298	−29.4	----	30	6,415	−25.4	----
400	----	----	----	----	31	7,490	−21.0	----	30	6,909	−39.4	----	29	7,132	−33.6	----	27	7,449	−24.9	----	31	7,123	−35.8	----	29	7,252	−32.0	----
350	----	----	----	----	30	8,463	−28.0	----	30	7,813	−44.8	----	29	8,057	−39.9	----	27	8,407	−31.8	----	31	8,036	−43.2	----	29	8,181	−38.9	----
300	----	----	----	----	30	9,550	−36.2	----	30	8,831	−49.8	----	29	9,095	−46.4	----	26	9,477	−40.0	----	31	9,057	−50.2	----	28	9,216	−46.2	----
250	----	----	----	----	29	10,792	−45.2	----	28	10,022	−52.8	----	27	10,298	−52.6	----	26	10,697	−49.1	----	31	10,230	−55.6	----	28	10,408	−53.2	----
200	----	----	----	----	29	12,246	−55.7	----	26	11,459	−52.3	----	26	11,728	−57.8	----	25	12,130	−58.9	----	30	11,642	−56.0	----	24	11,825	−57.3	----
175	----	----	----	----	28	13,087	−60.0	----	24	12,330	−52.3	----	25	12,573	−58.7	----	25	12,959	−62.6	----	30	12,492	−55.4	----	23	12,671	−58.2	----
150	----	----	----	----	25	14,050	−64.7	----	23	13,325	−52.3	----	21	13,561	−59.5	----	23	13,898	−64.9	----	29	13,478	−55.4	----	18	13,652	−58.9	----
125	----	----	----	----	22	15,150	−69.8	----	17	14,527	−53.2	----	19	14,700	−60.1	----	16	15,006	−66.7	----	25	14,645	−56.8	----	15	14,788	−60.8	----
100	----	----	----	----	16	16,467	−74.8	----	12	15,960	−53.7	----	10	16,079	−60.0	----	12	16,350	−70.0	----	21	16,051	−58.8	----	12	16,164	−63.2	----
80	----	----	----	----	10	17,762	−73.1	----	8	17,399	−54.7	----	6	17,466	−60.0	----	7	17,656	−71.8	----	13	17,449	−58.4	----	6	17,550	−60.7	----
60	----	----	----	----	5	19,478	−67.6	----	----	----	----	----	----	----	----	----	----	----	----	----	6	19,278	−58.8	----	----	----	----	----

Standard pressure surface (mb.)	Little Rock, Ark. (1,013.3 mb.)				Mazatlan, Mex. (1,011.2 mb.)				Medford, Oreg. (972.1 mb.)				Merida, Mex. (1,014.1 mb.)				Miami, Fla. (1,020.1 mb.)				Nantucket, Mass. (1,022.2 mb.)				Nashville, Tenn. (1,003.1 mb.)			
Surface	31	79	7.0	74	31	14	21.9	78	31	401	3.0	87	31	27	23.0	78	31	4	21.0	78	31	14	3.9	72	31	177	6.1	70
1,000	31	188	9.3	63	31	110	21.8	71	31	170	(*)	----	31	149	22.6	78	31	176	21.2	74	31	192	4.6	72	31	202	6.1	62
950	31	616	8.4	58	31	568	23.0	51	31	591	3.2	79	31	595	20.6	74	31	617	18.1	77	31	614	2.5	70	31	628	6.4	57
900	31	1,059	7.5	51	31	1,028	20.7	48	31	1,025	2.4	71	31	1,061	17.7	74	31	1,081	14.7	79	31	1,045	.2	65	31	1,067	5.7	45
850	31	1,528	6.4	46	31	1,519	17.6	42	31	1,485	.6	61	31	1,548	14.3	76	31	1,562	11.6	78	31	1,502	−1.0	55	31	1,543	4.5	42
800	31	2,024	5.0	46	31	2,034	14.1	42	31	1,969	−2.4	61	31	2,058	11.6	69	31	2,069	10.7	50	31	1,985	−2.4	43	31	2,026	2.6	40
750	31	2,553	2.6	46	31	2,585	10.1	47	31	2,487	−4.6	58	31	2,600	10.1	49	31	2,610	9.1	37	31	2,502	−4.2	40	31	2,533	.4	41
700	31	3,104	.2	41	31	3,145	6.0	50	31	3,020	−7.1	53	31	3,169	7.6	34	31	3,174	6.3	33	31	3,037	−6.3	35	31	3,098	−1.6	40
650	31	3,698	−2.7	----	29	3,753	2.2	50	31	3,601	−10.3	52	31	3,779	4.8	----	31	3,780	3.1	32	30	3,620	−8.7	----	30	3,689	−4.6	40
600	31	4,325	−6.7	----	29	4,392	−1.5	41	31	4,207	−13.8	50	30	4,424	1.6	----	30	4,423	−.4	----	30	4,231	−12.2	----	30	4,311	−7.9	----
550	30	5,000	−11.6	----	29	5,083	−5.8	41	31	4,868	−18.0	48	30	5,115	−2.6	----	30	5,115	−4.5	----	30	4,892	−16.4	----	30	4,984	−12.0	----
500	30	5,721	−16.1	----	28	5,819	−10.7	44	31	5,569	−22.6	----	30	5,869	−7.7	----	30	5,858	−9.3	----	30	5,599	−21.2	----	30	5,705	−16.8	----
450	30	6,513	−21.6	----	27	6,632	−16.0	45	31	6,342	−27.8	----	29	6,682	−13.8	----	28	6,669	−15.1	----	29	6,376	−26.0	----	29	6,497	−22.4	----
400	30	7,365	−27.7	----	26	7,499	−22.1	----	30	7,164	−33.9	----	29	7,563	−20.3	----	28	7,542	−21.6	----	29	7,212	−31.7	----	29	7,343	−28.7	----
350	29	8,312	−35.0	----	25	8,466	−29.1	----	29	8,094	−40.4	----	29	8,536	−28.3	----	27	8,516	−28.7	----	28	8,149	−37.6	----	29	8,285	−35.8	----
300	28	9,367	−43.0	----	25	9,550	−37.5	----	27	9,125	−48.0	----	29	9,620	−37.2	----	27	9,600	−37.1	----	28	9,197	−44.1	----	29	9,339	−43.7	----
250	26	10,576	−51.3	----	25	10,782	−47.5	----	23	10,301	−54.6	----	28	10,850	−47.3	----	26	10,833	−46.5	----	28	10,400	−51.3	----	29	10,542	−51.7	----
200	26	12,003	−57.2	----	24	12,221	−58.9	----	17	11,741	−59.3	----	27	12,291	−58.0	----	26	12,281	−56.0	----	24	11,842	−55.8	----	28	11,968	−58.1	----
175	25	12,842	−59.2	----	23	13,048	−64.0	----	11	12,608	−59.9	----	27	13,122	−63.2	----	25	13,121	−60.5	----	18	12,688	−56.5	----	27	12,799	−59.9	----
150	20	13,797	−61.6	----	21	13,996	−66.5	----	5	13,577	−59.1	----	27	14,059	−67.7	----	24	14,072	−64.5	----	13	13,677	−57.2	----	26	13,751	−61.1	----
125	13	14,918	−63.9	----	18	15,088	−69.9	----	----	----	----	----	25	15,137	−72.2	----	23	15,176	−68.4	----	8	14,810	−58.3	----	21	14,872	−63.6	----
100	6	16,292	−67.7	----	15	16,408	−72.9	----	----	----	----	----	20	16,429	−77.7	----	17	16,504	−73.6	----	----	----	----	----	11	16,252	−66.7	----
80	----	----	----	----	8	17,702	−73.8	----	----	----	----	----	11	17,702	−78.4	----	7	17,835	−75.7	----	----	----	----	----	9	17,613	−66.5	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	19,339	−64.1	----

Standard pressure surface (mb.)	New Orleans, La. (1,022.6 mb.)				North Platte, Nebr. (916.8 mb.)				Oakland, Calif. (1,018.3 mb.)				Oklahoma City, Okla. (974.0 mb.)				Omaha, Nebr. (982.1 mb.)				Phoenix, Ariz. (976.7 mb.)				Pittsburgh, Pa. (977.8 mb.)			
Surface	30	2	13.8	81	31	849	−3.2	72	31	6	9.1	75	31	391	4.5	68	31	308	−0.2	63	31	339	9.7	63	31	382	1.6	68
1,000	30	191	15.1	71	31	150	(*)	----	31	156	10.1	70	31	174	(*)	----	31	161	(*)	----	31	140	(*)	----	31	199	(*)	----
950	30	629	14.1	65	31	564	(*)	----	31	585	5.8	58	31	597	6.6	58	31	575	−.8	57	31	578	14.7	37	31	620	2.2	62
900	30	1,081	12.5	59	31	996	−.1	57	31	1,029	7.6	48	31	1,038	5.9	51	31	1,004	−1.2	54	31	1,027	12.0	34	31	1,049	.6	59
850	30	1,559	10.8	56	31	1,456	.9	45	31	1,498	5.7	45	31	1,507	4.8	50	31	1,459	−1.1	51	31	1,502	8.7	36	31	1,507	−1.2	57
800	30	2,063	9.0	49	31	1,941	−1.2	42	31	1,992	3.3	42	31	1,998	3.2	46	31	1,942	−2.6	48	31	2,000	5.4	36	31	1,995	−3.1	55
750	30	2,601	6.5	42	31	2,455	−3.9	42	31	2,520	.8	37	31	2,524	1.3	38	31	2,457	−4.7	45	31	2,534	2.3	36	31	2,505	−4.8	46
700	29	3,158	3.7	39	31	2,994	−7.4	41	31	3,064	−2.4	37	31	3,072	−1.5	36	31	2,992	−7.5	41	31	3,078	−1.1	34	31	3,037	−7.2	43
650	29	3,762	.3	----	31	3,571	−10.8	42	31	3,654	−5.7	35	31	3,663	−4.6	34	31	3,572	−10.5	40	30	3,669	−4.7	30	31	3,619	−10.0	43
600	29	4,393	−3.3	----	31	4,179	−14.0	39	30	4,271	−9.5	31	31	4,285	−8.1	----	31	4,178	−13.8	38	30	4,290	−8.6	----	31	4,225	−13.1	38
550	28	5,076	−7.4	----	31	4,836	−18.2	36	30	4,941	−14.1	----	31	4,954	−12.8	----	31	4,840	−17.8	36	30	4,963	−12.8	----	31	4,889	−16.8	----
500	28	5,811	−12.2	----	31	5,539	−23.0	----	30	5,655	−19.1	----	31	5,675	−17.9	----	31	5,541	−22.2	----	30	5,679	−17.9	----	31	5,593	−21.1	----
450	28	6,614	−17.9	----	31	6,304	−28.6	----	29	6,442	−24.9	----	31	6,457	−23.2	----	31	6,314	−27.8	----	30	6,463	−23.6	----	30	6,364	−25.9	----
400	28	7,478	−24.2	----	31	7,135	−34.9	----	29	7,280	−31.3	----	31	7,307	−29.5	----	31	7,144	−34.1	----	30	7,307	−30.2	----	28	7,202	−31.5	----
350	28	8,437	−31.4	----	31	8,053	−41.5	----	29	8,211	−38.5	----	31	8,245	−36.5	----	31	8,067	−40.5	----	30	8,242	−37.3	----	28	8,135	−37.6	----
300	28	9,511	−39.5	----	31	9,083	−48.2	----	28	9,247	−46.4	----	30	9,294	−44.2	----	31	9,101	−47.7	----	30	9,289	−44.6	----	25	9,195	−45.0	----
250	28	10,731	−48.9	----	31	10,268	−53.7	----	28	10,436	−54.4	----	29	10,494	−52.2	----	31	10,288	−53.3	----	29	10,497	−51.3	----	23	10,389	−52.4	----
200	26	12,162	−57.8	----	30	11,691	−56.7	----	26	11,855	−58.2	----	27	11,921	−57.4	----	31	11,714	−55.8	----	29	11,927	−56.5	----	19	11,836	−58.7	----
175	26	12,996	−61.5	----	28	12,538	−57.1	----	24	12,702	−58.2	----	26	12,760	−57.9	----	30	12,567	−56.3	----	29	12,771	−57.5	----	16	12,672	−59.0	----
150	26	13,944	−64.3	----	28	13,511	−57.5	----	14	13,670	−58.1	----	22	13,730	−60.0	----	27	13,539	−57.0	----	28	13,744	−59.1	----	15	13,641	−59.3	----
125	23	15,047	−67.0	----	25	14,655	−58.0	----	11	14,829	−59.8	----	14	14,855	−64.0	----	27	14,689	−58.2	----	20	14,877	−62.3	----	8	14,773	−60.6	----
100	18	16,395	−70.3	----	23	16,057	−59.9	----	6	16,223	−60.9	----	7	16,180	−69.0	----	21	16,078	−60.0	----	14	16,254	−64.6	----	5	16,178	−63.5	----
80	10	17,727	−70.2	----	19	17,442	−60.7	----	----	----	----	----	----	----	----	----	17	17,476	−60.9	----	6	17,673	−64.5	----	----	----	----	----
60	----	----	----	----	12	19,237	−59.3	----	----	----	----	----	----	----	----	----	8	19,265	−59.2	----	----	----	----	----	----	----	----	----
50	----	----	----	----	5	20,372	−60.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

See footnotes at end of table, p. 344.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during December 1949*—Continued

Standard pressure surface (mb.)	Portland, Maine (1,019.8 mb.)				Rapid City, S. Dak. (900.2 mb.)				St. Cloud, Minn. (979.1 mb.)				San Antonio, Tex. (992.4 mb.)				San Juan, P. R. (1,012.1 mb.)				Santa Maria, Calif. (1,009.5 mb.)				Sault Ste. Marie, Mich. (991.2 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	20	−2.0	81	31	980	−7.1	65	31	317	−8.5	77	31	240	12.6	83	31	19	23.8	84	31	71	9.6	74	31	221	−5.1	78
1,000	31	176	−.5	72	31	147	(*)	----	31	151	(*)	----	31	174	(*)	----	31	124	23.8	79	31	149	11.3	65	31	151	(*)	----
950	31	590	−1.8	67	31	559	(*)	----	31	554	−8.5	74	31	611	13.5	73	31	573	20.6	81	31	579	11.4	49	31	556	−6.5	78
900	31	1,014	−3.2	67	31	983	(*)	----	31	969	−8.4	67	31	1,062	11.8	71	31	1,037	17.3	81	31	1,029	9.8	40	31	974	−8.3	79
850	31	1,465	−4.7	61	31	1,434	−1.9	51	31	1,413	−7.5	55	31	1,539	10.0	68	31	1,524	14.2	80	31	1,501	7.1	36	31	1,416	−9.5	73
800	31	1,941	−6.0	51	31	1,915	−3.6	51	31	1,885	−8.0	48	31	2,042	8.3	59	31	2,035	11.6	77	31	1,998	5.0	33	31	1,883	−11.0	64
750	31	2,451	−7.8	44	31	2,425	−5.7	54	31	2,391	−9.5	41	31	2,577	6.3	50	31	2,578	9.1	70	31	2,526	2.5	30	31	2,382	−12.2	58
700	31	2,979	−10.3	----	31	2,960	−9.0	53	31	2,916	−12.0	41	31	3,136	3.7	41	31	3,141	6.4	59	31	3,076	−.3	27	31	2,903	−14.2	54
650	30	3,546	−13.2	----	31	3,534	−12.3	51	31	3,489	−15.1	40	31	3,734	.3	38	31	3,751	3.2	48	31	3,672	−3.8	----	31	3,468	−16.6	53
600	30	4,147	−16.2	----	31	4,138	−15.6	49	31	4,081	−18.4	44	31	4,370	−3.9	41	31	4,392	.0	37	31	4,292	−7.8	----	31	4,060	−19.8	51
550	30	4,801	−20.0	----	31	4,791	−19.9	49	31	4,725	−22.4	----	31	5,051	−8.6	42	31	5,085	−3.6	37	30	4,964	−12.4	----	31	4,702	−23.5	----
500	30	5,498	−24.7	----	31	5,491	−24.7	----	31	5,419	−26.5	----	31	5,783	−13.5	44	31	5,831	−8.2	37	29	5,678	−17.6	----	31	5,392	−27.7	----
450	30	6,263	−30.2	----	31	6,255	−29.9	----	31	6,177	−31.3	----	31	6,585	−18.6	41	31	6,647	−13.6	----	29	6,465	−23.6	----	31	6,150	−32.7	----
400	30	7,085	−35.8	----	31	7,079	−36.0	----	31	6,999	−36.8	----	31	7,446	−25.0	----	30	7,525	−20.0	----	29	7,307	−30.3	----	31	6,964	−38.1	----
350	30	8,001	−41.5	----	31	7,993	−42.9	----	31	7,911	−42.8	----	31	8,404	−31.6	----	30	8,502	−26.6	----	29	8,242	−37.4	----	31	7,871	−43.7	----
300	29	9,032	−47.1	----	31	9,015	−49.9	----	29	8,935	−48.4	----	31	9,476	−39.5	----	29	9,599	−34.7	----	28	9,292	−45.4	----	31	8,895	−48.6	----
250	29	10,225	−52.7	----	31	10,192	−54.5	----	27	10,129	−52.8	----	29	10,701	−48.2	----	29	10,848	−44.1	----	27	10,483	−53.6	----	30	10,077	−52.7	----
200	28	11,650	−55.2	----	30	11,614	−55.0	----	26	11,563	−53.5	----	23	12,146	−57.0	----	28	12,310	−54.7	----	22	11,917	−58.5	----	27	11,509	−54.3	----
175	27	12,491	−54.7	----	26	12,453	−53.5	----	24	12,411	−53.1	----	21	12,984	−60.3	----	27	13,150	−60.6	----	14	12,778	−59.2	----	27	12,365	−54.0	----
150	24	13,453	−55.7	----	26	13,443	−53.8	----	23	13,396	−53.7	----	16	13,931	−63.6	----	25	14,098	−66.3	----	11	13,774	−60.8	----	26	13,353	−53.6	----
125	19	14,604	−57.6	----	22	14,605	−55.3	----	13	14,545	−54.6	----	10	15,058	−66.5	----	23	15,188	−71.9	----	5	14,870	−63.2	----	21	14,514	−54.5	----
100	15	16,023	−58.6	----	12	16,029	−56.1	----	8	15,984	−57.7	----	5	16,400	−70.5	----	17	16,477	−77.0	----	----	------	------	----	10	15,913	−56.0	----
80	7	17,398	−59.3	----	10	17,468	−56.6	----	----	------	------	----	----	------	------	----	10	17,742	−78.2	----	----	------	------	----	----	------	------	----

Standard pressure surface (mb.)	Spokane, Wash. (929.2 mb.)				Swan Island, W. I. (1,013.8 mb.)				Tacubaya, Mex. (774.5 mb.)				Tampa, Fla. (1,021.5 mb.)				Tatoosh Island, Wash. (1,009.3 mb.)				Toledo, Ohio (998.7 mb.)				Washington, D. C. (1,023.4 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	721	−1.5	80	31	10	25.0	79	31	2,306	14.4	47	31	9	17.1	79	31	31	5.6	80	31	191	0.2	77	31	25	5.0	66
1,000	31	131	(*)	----	31	130	24.2	79	31	82	(*)	----	31	191	18.0	72	31	106	(*)	----	31	179	(*)	----	31	213	4.8	60
950	31	546	(*)	----	31	577	21.0	81	31	542	(*)	----	31	630	16.1	69	31	524	2.9	74	31	595	.2	65	31	633	3.4	60
900	31	975	−1.3	73	31	1,045	17.8	82	31	1,019	(*)	----	31	1,088	13.6	69	31	959	.1	76	31	1,023	−1.2	61	31	1,068	2.2	56
850	31	1,429	−3.2	69	31	1,533	14.7	80	31	1,508	(*)	----	31	1,568	11.2	62	31	1,415	−2.5	76	31	1,477	−2.5	58	31	1,528	.6	51
800	31	1,907	−5.9	65	31	2,044	12.1	71	31	2,033	(*)	----	31	2,073	10.0	45	31	1,894	−4.7	69	31	1,957	−3.8	53	31	2,014	−1.2	50
750	31	2,413	−8.5	56	31	2,585	9.9	56	31	2,580	13.4	46	31	2,609	7.7	35	31	2,405	−7.1	61	31	2,468	−6.3	51	31	2,534	−2.8	46
700	31	2,942	−11.5	51	31	3,154	8.2	39	31	3,155	9.3	50	31	3,173	4.9	34	31	2,935	−10.2	61	31	3,002	−8.8	52	31	3,071	−5.3	48
650	31	3,511	−15.1	51	31	3,764	5.2	----	31	3,769	4.8	55	31	3,776	1.7	34	31	3,510	−13.3	59	31	3,581	−11.2	45	31	3,656	−7.9	42
600	31	4,107	−18.5	54	31	4,413	1.7	----	31	4,414	.5	54	31	4,414	−2.1	32	31	4,107	−16.9	55	31	4,184	−14.2	40	31	4,268	−11.6	----
550	30	4,747	−22.5	----	30	5,103	−2.4	----	31	5,111	−3.3	37	31	5,101	−6.1	31	31	4,755	−21.0	--	31	4,843	−18.4	----	31	4,935	−15.6	----
500	29	5,440	−27.1	----	30	5,857	−7.0	----	31	5,855	−7.8	----	31	5,840	−10.9	30	31	5,451	−25.4	----	31	5,543	−22.9	----	31	5,643	−20.3	----
450	29	6,196	−32.1	----	30	6,677	−12.8	----	30	6,677	−13.6	----	31	6,646	−16.5	30	31	6,211	−30.6	----	30	6,316	−28.1	----	31	6,421	−25.3	----
400	29	7,014	−37.6	----	30	7,558	−19.3	----	29	7,551	−19.9	----	31	7,516	−23.1	----	31	7,038	−35.5	----	30	7,148	−33.7	----	31	7,262	−30.4	----
350	28	7,917	−44.0	----	30	8,536	−26.8	----	27	8,530	−27.8	----	29	8,480	−30.1	----	31	7,955	−41.4	----	29	8,065	−40.2	----	31	8,197	−36.9	----
300	26	8,931	−50.4	----	30	9,628	−36.0	----	24	9,624	−36.6	----	29	9,550	−38.4	----	31	8,986	−47.7	----	29	9,101	−46.8	----	29	9,243	−44.3	----
250	25	10,101	−54.1	----	29	10,872	−45.0	----	24	10,860	−47.0	----	29	10,787	−47.7	----	31	10,173	−53.4	----	27	10,282	−53.3	----	29	10,443	−51.8	----
200	21	11,515	−53.2	----	28	12,328	−55.6	----	23	12,304	−58.4	----	26	12,232	−56.4	----	26	11,609	−53.4	----	21	11,714	−56.7	----	28	11,859	−56.8	----
175	14	12,383	−51.7	----	27	13,169	−60.8	----	22	13,136	−63.8	----	24	13,066	−60.9	----	17	12,478	−52.1	----	16	12,566	−57.3	----	28	12,701	−58.3	----
150	9	13,395	−52.4	----	27	14,115	−66.4	----	20	14,068	−68.5	----	23	14,011	−64.8	----	16	13,482	−52.5	----	14	13,541	−58.0	----	26	13,676	−59.7	----
125	6	14,583	−54.1	----	15	15,207	−72.2	----	19	15,150	−71.7	----	19	15,117	−68.8	----	10	14,610	−52.6	----	12	14,705	−60.0	----	21	14,800	−62.2	----
100	----	------	------	----	9	16,500	−77.8	----	17	16,452	−76.9	----	9	16,448	−72.7	----	----	------	------	----	9	16,095	−61.6	----	16	16,169	−63.8	----
80	----	------	------	----	----	------	------	----	6	17,729	−77.7	----	8	17,758	−73.0	----	----	------	------	----	6	17,445	−60.7	----	11	17,520	−62.5	----

[1] Data not yet received.

*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. Relative humidity data beginning with October 1, 1948, were computed, and expressed in these tables, on the basis of vapor pressure over water. Upper air values of relative humidity at levels with temperatures less than 0° C. have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element. 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 December 1949. 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.)			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
Surface	29	212	2.8	31	200	1.5	24	99	0.8	28	248	3.7	28	308	1.2	29	18	0.7	28	148	2.8	28	245	3.7	29	202	2.8	28	48	0.9	28	218	2.3	31	304	0.9
500	---	---	---	---	---	---	24	66	.8	---	---	---	---	---	---	---	---	---	28	157	5.0	28	247	6.5	29	213	6.5	28	117	.7	28	216	4.4	---	---	---
1,000	29	211	4.1	---	---	---	21	272	1.4	---	---	---	28	283	3.3	29	16	.5	22	155	4.2	23	244	10.2	27	246	7.6	27	225	2.3	26	238	7.1	---	---	---
1,500	27	233	5.3	---	---	---	18	283	3.3	28	247	10.0	24	277	7.3	28	254	2.4	17	179	3.4	15	265	10.8	20	262	9.9	26	247	3.2	25	252	9.7	31	273	1.4
2,000	26	241	7.7	31	225	2.1	18	281	6.0	28	270	11.8	24	276	10.0	28	270	5.2	14	231	4.0	13	273	12.8	16	268	12.6	22	268	5.3	23	268	12.1	31	249	4.1
2,500	24	243	9.7	31	264	4.5	17	285	7.9	28	278	12.9	23	280	10.8	25	268	8.1	12	230	4.9	11	278	16.7	12	290	12.5	22	277	7.4	21	269	14.3	29	257	7.2
3,000	22	244	11.6	31	273	7.6	17	278	8.9	25	276	14.7	23	283	12.1	22	266	10.2	11	234	5.1	10	281	18.7	11	295	17.5	19	274	7.7	18	273	15.6	29	257	7.7
4,000	20	247	14.6	28	274	11.8	17	275	11.9	22	275	16.3	21	284	15.6	18	262	12.9	---	---	---	---	---	---	---	---	---	16	264	8.6	16	277	18.7	26	259	13.0
5,000	16	257	13.1	27	273	14.8	14	287	15.5	17	278	22.0	13	276	16.6	13	257	13.4	---	---	---	---	---	---	---	---	---	16	263	11.3	14	283	22.7	23	256	14.4
6,000	14	257	17.7	26	265	17.5	14	284	17.2	---	---	---	10	285	17.7	---	---	---	---	---	---	---	---	---	---	---	---	15	268	15.1	14	276	26.6	22	262	14.5
8,000	---	---	---	22	264	19.1	12	281	24.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	277	25.7	20	256	21.4
10,000	---	---	---	14	274	17.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16	251	21.9
12,000	---	---	---	11	276	17.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	266	27.5

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,475 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (663 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)			New York, N. Y. (15 m.)		
Surface	30	210	1.5	31	284	1.2	27	310	0.6	28	264	1.4	27	59	3.4	24	206	3.2	31	349	0.7	27	146	0.8	27	349	1.8	31	69	5.4	27	72	2.5	30	197	0.7	28	307	3.3
500	---	---	---	---	---	---	27	247	1.5	---	---	---	27	77	3.6	24	218	6.3	---	---	---	27	179	1.7	26	323	1.2	31	73	8.0	26	108	3.0	30	200	2.6	28	273	4.7
1,000	---	---	---	---	---	---	26	252	2.9	28	254	4.6	24	129	1.7	20	246	10.0	31	337	.7	24	216	2.7	26	257	1.2	31	73	6.9	21	132	2.7	25	202	4.1	23	287	6.8
1,500	---	---	---	31	282	1.3	23	278	5.6	26	265	9.3	24	197	.9	19	263	11.5	31	298	1.6	20	225	4.7	24	235	4.0	27	80	5.6	20	164	1.3	24	238	6.9	21	291	9.4
2,000	30	208	1.4	31	212	1.6	20	290	8.0	24	275	12.2	21	287	1.8	18	265	12.7	31	263	3.0	19	243	6.0	22	270	5.5	23	80	5.6	18	272	2.0	24	252	9.0	19	297	13.0
2,500	29	236	2.4	29	221	3.5	18	288	12.1	22	283	13.7	19	291	2.9	16	273	14.4	30	265	3.0	18	250	9.8	16	280	6.8	19	74	3.3	17	251	2.9	23	265	10.7	18	292	14.4
3,000	28	268	4.0	28	236	6.5	17	285	14.3	12	287	15.3	19	291	3.7	14	279	16.8	29	274	4.4	18	261	11.1	11	287	8.3	17	76	2.0	15	266	4.9	21	267	12.3	13	301	15.7
4,000	25	286	9.2	24	274	9.5	15	283	17.1	---	---	---	19	269	7.3	12	276	22.3	24	290	6.6	14	277	14.0	---	---	---	13	290	2.0	13	273	7.4	19	270	15.9	---	---	---
5,000	22	279	10.5	22	281	10.9	14	287	19.1	---	---	---	17	276	9.4	12	278	26.5	22	306	8.5	14	279	16.3	---	---	---	12	288	5.9	12	283	10.7	17	276	20.1	---	---	---
6,000	20	286	14.6	18	285	13.1	14	286	22.2	---	---	---	15	276	13.7	---	---	---	20	313	11.2	13	275	17.6	---	---	---	12	275	9.5	10	281	11.7	15	273	21.8	---	---	---
8,000	13	300	16.1	16	292	15.1	---	---	---	---	---	---	12	281	18.0	---	---	---	17	308	13.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	12	296	20.7	---	---	---	---	---	---	11	278	24.7	---	---	---	15	290	15.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11	281	18.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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.)		
Surface	29	292	1.6	25	197	3.2	29	253	1.7	31	164	0.5	31	309	1.9	26	275	1.3	26	210	2.6	26	72	1.6	30	288	2.7	26	222	1.5	28	192	2.7	28	199	3.5	27	281	2.4
500	29	349	2.1	25	199	3.6	29	240	2.9	31	148	.3	---	---	---	26	248	1.6	26	222	4.8	26	109	1.7	30	294	.9	26	214	2.6	28	207	4.1	---	---	---	27	262	3.8
1,000	26	321	2.3	24	216	5.6	26	244	4.5	31	139	1.0	31	303	2.1	22	264	3.3	25	233	8.6	25	167	2.3	29	139	.4	17	228	7.0	23	223	5.7	27	213	7.4	27	264	6.9
1,500	24	306	2.9	23	234	8.2	24	260	8.1	31	164	1.1	30	284	5.0	20	274	6.0	23	250	10.7	17	221	2.7	28	319	.4	---	---	---	17	229	5.9	22	232	11.1	25	272	9.0
2,000	23	324	4.9	23	242	9.8	23	271	10.4	31	234	2.2	28	282	6.7	16	278	8.8	20	263	11.8	15	243	4.0	28	293	1.6	---	---	---	16	249	6.2	19	242	10.0	19	289	10.5
2,500	23	321	6.3	23	252	11.8	22	276	12.4	29	244	3.5	27	288	8.5	16	278	10.3	17	270	14.1	13	245	6.3	27	303	2.9	---	---	---	14	250	6.6	18	250	9.1	17	293	12.4
3,000	23	315	7.7	22	253	13.0	21	280	14.0	28	248	3.8	26	292	10.6	15	273	12.2	16	275	16.5	13	252	8.3	26	301	5.2	---	---	---	14	250	7.7	18	262	9.4	16	283	14.4
4,000	22	317	11.8	21	254	16.8	20	281	18.7	27	260	6.3	24	285	14.1	12	288	18.3	16	273	20.5	11	260	13.1	25	303	7.2	---	---	---	---	---	---	16	269	12.5	15	278	20.0
5,000	21	322	14.8	20	259	16.5	17	279	21.0	25	259	10.4	20	281	16.9	10	284	21.6	15	275	24.0	10	266	17.5	24	307	9.4	---	---	---	---	---	---	13	283	18.8	12	278	21.2
6,000	21	316	17.3	18	264	18.6	13	280	21.9	24	266	12.2	18	285	22.6	---	---	---	12	270	27.3	---	---	---	21	311	9.8	---	---	---	---	---	---	---	---	---	12	277	25.0
8,000	15	319	19.7	11	264	26.3	---	---	---	20	278	12.4	13	296	24.8	---	---	---	---	---	---	---	---	---	19	295	11.0	---	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	12	272	12.7	---	---	---	---	---	---	---	---	---	---	---	---	18	279	11.5	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	10	268	17.2	---	---	---	---	---	---	---	---	---	---	---	---	16	261	14.3	---	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	274	17.6	---	---	---	---	---	---	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T., during December 1949. 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.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	31	128	0.9	31	156	3.3	31	348	1.3	31	90	0.8	31	266	2.5	31	36	1.1	31	183	2.2
500	---	---	---	---	---	---	---	---	---	31	134	4.5	31	252	6.1	31	110	1.8	31	213	6.1
1,000	---	---	---	31	181	5.8	31	280	4.1	31	143	4.0	31	264	9.3	31	185	2.1	30	244	9.1
1,500	---	---	---	31	219	6.4	29	273	6.2	30	172	3.4	30	263	10.9	31	227	2.9	30	255	11.7
2,000	31	266	3.4	31	236	6.8	29	278	8.0	30	191	3.8	30	257	12.5	31	238	3.8	30	264	13.5
2,500	31	271	5.4	31	242	8.5	29	281	10.0	30	204	4.4	28	259	13.7	31	253	5.6	30	263	14.5
3,000	31	268	6.7	31	247	9.4	29	287	11.2	30	214	5.0	28	253	15.6	31	257	7.5	29	263	15.5
4,000	31	270	9.5	31	252	12.2	29	286	15.1	30	239	7.1	25	260	19.8	29	266	10.4	28	267	19.3
5,000	30	264	11.5	31	253	14.8	29	280	17.5	30	240	8.8	23	268	19.7	27	267	12.1	26	259	21.5
6,000	27	268	13.5	28	253	15.4	28	280	19.4	30	242	13.4	20	269	18.1	24	266	14.2	25	266	24.0
8,000	17	282	14.1	24	252	21.1	21	273	21.8	27	249	20.0	18	271	21.0	18	276	18.5	18	261	26.1
10,000	11	278	15.2	17	258	26.5	13	259	19.5	24	248	24.2	15	262	24.6	13	278	26.0	11	260	30.9
12,000	---	---	---	14	252	30.6	---	---	---	16	257	25.9	---	---	---	---	---	---	---	---	---
14,000	---	---	---	10	263	26.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	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.)			Medford, Oreg. (401 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	31	176	0.5	31	49	0.3	31	330	1.4	31	247	1.9	31	198	0.6	31	229	0.3
500	---	---	---	30	232	1.0	31	346	1.4	31	247	2.8	31	185	3.1	31	240	.5
1,000	---	---	---	30	252	4.4	30	248	1.6	31	271	4.7	31	212	5.2	31	208	1.5
1,500	31	177	.5	31	259	6.5	30	256	4.2	31	268	6.3	31	222	6.3	31	226	3.2
2,000	31	202	2.1	31	261	9.0	29	271	6.6	31	272	7.7	30	241	7.5	30	263	5.2
2,500	31	217	3.9	31	262	11.1	28	271	7.6	31	276	9.1	30	242	9.8	29	277	7.5
3,000	31	233	6.4	31	267	13.0	28	274	9.0	31	278	10.6	29	244	12.0	29	282	9.4
4,000	31	256	8.9	30	265	14.8	26	274	13.2	30	275	13.6	27	252	13.8	29	287	11.7
5,000	29	266	10.8	28	264	17.0	24	274	16.4	28	271	16.0	26	245	15.7	29	290	14.6
6,000	28	275	13.1	25	271	20.1	21	279	18.4	26	271	17.0	25	256	17.8	26	283	15.8
8,000	21	276	15.2	23	261	23.4	19	283	20.4	23	269	19.2	23	248	24.1	18	275	16.9
10,000	13	293	16.8	16	275	27.6	14	295	26.5	19	262	19.5	18	254	27.9	10	296	12.3
12,000	---	---	---	15	284	33.5	---	---	---	15	260	24.6	12	260	36.7	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Miami, Fla. (12 m.)			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.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	31	50	3.0	30	280	2.0	31	182	1.0	30	72	3.4	31	21	0.3	29	178	2.4	31	289	2.1
500	31	71	7.8	30	262	6.4	31	197	4.4	30	100	4.0	31	340	1.4	25	185	3.5	---	---	---
1,000	31	77	8.1	30	265	7.9	30	216	7.2	30	132	2.6	31	340	1.9	24	224	6.2	28	261	1.6
1,500	31	77	7.4	30	266	9.8	28	235	6.5	30	168	2.3	31	316	2.8	25	243	7.7	29	286	7.2
2,000	31	88	6.1	30	271	11.8	27	260	8.1	30	207	2.9	31	305	3.6	25	253	9.2	29	291	9.2
2,500	31	86	4.3	29	271	13.6	27	262	10.4	29	225	4.7	31	306	5.4	24	252	9.9	31	296	11.1
3,000	31	62	2.9	29	273	14.7	27	259	13.2	27	230	6.1	31	309	7.6	23	264	11.5	30	292	11.9
4,000	30	242	1.5	26	275	17.7	26	261	18.1	27	241	10.1	30	300	8.9	24	257	14.5	30	285	14.0
5,000	29	303	4.9	24	274	21.2	25	267	20.9	27	248	12.5	29	305	10.0	24	256	16.2	28	279	15.5
6,000	29	298	7.2	21	272	22.0	23	266	22.1	27	249	15.4	28	302	11.8	24	254	19.1	26	274	17.6
8,000	25	291	13.5	14	263	24.8	17	266	30.0	23	251	22.0	24	288	12.5	18	259	24.7	24	264	18.5
10,000	24	281	17.0	---	---	---	---	---	---	22	261	31.1	14	319	15.9	14	271	26.8	24	263	22.3
12,000	24	271	22.0	---	---	---	---	---	---	17	261	36.0	---	---	---	10	269	28.3	17	264	22.6
14,000	20	270	24.3	---	---	---	---	---	---	10	244	26.3	---	---	---	---	---	---	10	258	15.5
16,000	15	257	14.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	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.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	31	56	2.6	31	68	1.7	30	270	0.8	31	73	1.8	31	228	0.4	31	191	3.6
500	31	94	3.9	31	67	5.4	30	261	2.2	31	41	2.2	31	225	3.2	---	---	---
1,000	31	151	4.4	31	71	5.8	30	256	4.4	31	29	1.6	30	258	6.3	31	210	6.2
1,500	31	189	5.3	31	63	5.4	26	266	6.7	31	359	2.2	30	265	8.7	31	230	8.1
2,000	31	215	6.4	31	60	4.8	25	277	8.3	30	342	4.4	28	267	9.9	31	243	8.9
2,500	31	233	8.6	31	61	4.1	24	283	10.5	30	329	6.1	28	266	11.9	29	260	9.3
3,000	31	241	10.5	31	55	2.8	24	282	12.7	30	320	6.8	28	268	13.7	27	271	9.4
4,000	31	245	13.3	30	3	3.1	23	282	15.2	30	319	8.5	28	268	17.3	26	282	11.4
5,000	30	247	15.8	30	325	4.2	22	284	16.7	29	310	9.8	22	277	18.0	24	288	15.0
6,000	28	251	19.2	30	315	5.1	22	282	20.1	27	300	11.2	19	277	20.7	23	291	16.5
8,000	23	251	26.5	28	304	12.0	19	274	22.8	24	294	13.0	10	279	23.5	16	285	20.8
10,000	12	268	34.4	27	286	20.0	13	266	25.1	18	277	14.6	---	---	---	11	306	16.5
12,000	---	---	---	25	274	22.6	---	---	---	14	269	16.6	---	---	---	---	---	---
14,000	---	---	---	24	269	19.8	---	---	---	---	---	---	---	---	---	---	---	---
16,000	---	---	---	20	299	12.1	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Tatoosh Island, Wash. (33 m.)		
	Observations	Direction	Speed
Surface	28	207	0.5
500	26	260	2.2
1,000	26	263	4.4
1,500	26	265	6.3
2,000	27	273	7.7
2,500	26	279	9.0
3,000	26	274	9.5
4,000	24	276	11.5
5,000	22	294	11.7
6,000	20	287	13.0
8,000	17	297	16.4
10,000	12	289	18.7

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 III in the June 1948 issue of the MONTHLY WEATHER REVIEW.

AEROLOGICAL OBSERVATIONS FOR THE YEAR 1949

TABLE 1A.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during the year 1949*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,006.8 mb.)				Albuquerque, N. Mex (837.5 mb.)				Atlanta, Ga. (984.2 mb.)				Big Springs, Tex. (927.3 mb.)				Bismarck, N. Dak. (954.8 mb.)				Boise, Idaho (915.3 mb.)				Brownsville, Tex. (1,013.9 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	362	86	8.6	77	365	1,620	14.3	41	365	300	16.1	74	365	774	16.1	56	364	505	5.1	67	365	868	11.6	53	363	6	22.3	84
1,000	362	141	(*)	----	365	88	(*)	----	365	163	(*)	----	365	120	(*)	----	364	121	(*)	----	365	117	(*)	----	363	126	22.3	82
950	362	570	8.3	65	365	540	(*)	----	365	603	16.6	65	365	568	(*)	----	364	548	(*)	----	365	557	(*)	----	363	576	20.3	77
900	362	1,012	6.0	66	365	1,008	(*)	----	365	1,061	14.5	63	365	1,029	17.6	52	364	988	5.6	57	365	1,008	12.8	44	363	1,038	18.8	64
850	362	1,479	3.8	65	365	1,494	(*)	----	365	1,542	12.1	62	365	1,515	15.3	50	364	1,454	4.1	55	365	1,486	10.3	41	361	1,528	16.7	57
800	362	1,970	1.7	60	365	2,006	13.1	38	365	2,049	9.7	57	365	2,027	12.4	49	364	1,946	2.0	54	365	1,988	7.0	43	361	2,043	14.5	50
750	362	2,493	−.5	55	365	2,550	9.2	40	365	2,586	7.1	53	363	2,570	9.3	47	364	2,471	−.5	53	365	2,518	3.2	45	361	2,590	11.8	44
700	361	3,037	−3.0	52	365	3,112	4.9	44	365	3,147	4.2	50	363	3,134	5.7	45	364	3,013	−3.5	51	365	3,070	−.7	47	360	3,160	8.6	41
650	357	3,625	−6.0	49	365	3,717	.4	47	365	3,750	.9	46	362	3,740	1.7	43	364	3,603	−7.0	50	365	3,660	−4.8	48	359	3,771	4.7	41
600	357	4,244	−9.3	46	365	4,349	−4.3	49	365	4,386	−2.7	42	361	4,377	−2.6	----	364	4,216	−10.7	48	364	4,282	−9.0	46	359	4,416	.6	42
550	356	4,914	−13.2	45	364	5,031	−9.2	54	363	5,070	−6.9	----	357	5,062	−7.1	----	363	4,883	−14.9	46	363	4,952	−13.5	45	356	5,109	−3.8	39
500	353	5,631	−17.7	45	364	5,758	−14.3	50	362	5,808	−11.5	----	355	5,799	−11.9	----	360	5,594	−19.6	44	362	5,667	−18.5	45	354	5,856	−8.6	----
450	352	6,419	−22.9	44	361	6,556	−19.6	----	359	6,614	−16.8	----	355	6,604	−17.2	----	358	6,376	−25.1	43	361	6,450	−23.9	43	350	6,671	−14.0	----
400	350	7,265	−29.0	----	358	7,414	−25.6	----	359	7,482	−22.9	----	354	7,471	−23.5	----	354	7,214	−31.2	42	358	7,294	−30.0	40	350	7,548	−20.2	----
350	346	8,207	−35.6	----	355	8,369	−32.6	----	359	8,446	−30.0	----	353	8,434	−30.4	----	350	8,139	−38.2	----	351	8,231	−36.9	----	348	8,523	−27.2	----
300	342	9,289	−43.0	----	351	9,353	−40.3	----	357	9,525	−38.1	----	345	9,511	−38.4	----	344	9,190	−45.4	----	344	9,280	−44.4	----	340	9,615	−35.5	----
250	331	10,470	−50.2	----	338	10,656	−48.3	----	351	10,754	−47.5	----	339	10,741	−47.1	----	325	10,388	−51.9	----	332	10,485	−51.6	----	325	10,858	−44.9	----
200	308	11,906	−55.7	----	321	12,097	−55.5	----	342	12,196	−57.0	----	322	12,192	−55.3	----	289	11,822	−55.3	----	309	11,915	−55.4	----	304	12,314	−55.2	----
175	291	12,750	−57.0	----	286	12,944	−58.0	----	326	13,035	−60.8	----	305	13,037	−58.6	----	252	12,674	−55.4	----	278	12,764	−55.6	----	286	13,158	−60.2	----
150	259	13,716	−58.1	----	243	13,908	−60.1	----	299	13,987	−63.6	----	288	14,002	−61.9	----	223	13,658	−55.6	----	239	13,741	−56.2	----	247	14,111	−64.6	----
125	217	14,855	−58.9	----	175	15,032	−62.8	----	244	15,101	−66.3	----	235	15,121	−65.4	----	170	14,843	−56.6	----	180	14,898	−57.6	----	190	15,218	−68.7	----
100	141	16,250	−60.1	----	86	16,384	−64.2	----	179	16,447	−68.4	----	150	16,450	−67.0	----	----	----	----	----	----	----	----	----	102	16,532	−72.6	----

Standard pressure surface (mb.)	Buffalo, N. Y. (991.4 mb.)				Caribou, Maine (992.0 mb.)				Charleston, S. C.[1] (1,017.0 mb.)				Ciudad Victoria, Mex. (974.0 mb.)				Columbia, Mo. (988.4 mb.)				Dodge City, Kans. (924.7 mb.)				El Paso, Tex. (880.2 mb.)			
Surface	364	221	9.0	74	365	191	3.1	80	365	18	16.8	86	343	335	25.6	55	363	239	12.2	73	365	792	11.3	69	363	1,195	18.1	40
1,000	364	141	(*)	----	365	124	(*)	----	365	158	18.5	78	343	100	(*)	----	363	139	(*)	----	365	128	(*)	----	363	91	(*)	----
950	364	572	8.9	64	365	546	4.0	68	365	601	17.2	68	343	555	24.0	56	363	574	12.7	62	365	565	(*)	----	363	547	(*)	----
900	364	1,014	6.5	64	365	982	2.3	66	365	1,059	14.8	65	343	1,024	20.5	60	363	1,024	10.7	61	365	1,019	12.9	59	363	1,017	(*)	----
850	363	1,481	4.1	63	365	1,442	.2	64	365	1,541	12.4	61	343	1,516	17.0	65	363	1,499	8.7	57	364	1,498	11.7	54	363	1,502	17.8	37
800	363	1,972	1.8	60	365	1,926	−1.9	61	365	2,048	10.0	56	343	2,031	13.9	68	363	1,999	6.5	54	364	2,004	9.6	51	363	2,017	14.2	39
750	362	2,496	−.5	54	365	2,442	−4.2	59	365	2,588	7.5	51	343	2,578	11.0	63	363	2,532	4.1	50	364	2,541	6.7	48	363	2,562	10.2	41
700	362	3,040	−3.1	52	365	2,979	−6.5	54	364	3,149	4.6	46	343	3,146	8.1	54	363	3,085	1.4	46	364	3,100	3.2	45	363	3,128	6.0	43
650	359	3,628	−6.0	48	362	3,559	−9.3	50	363	3,753	1.3	----	336	3,758	4.5	48	363	3,684	−1.8	44	363	3,701	−.5	42	363	3,732	1.6	47
600	358	4,246	−9.3	45	360	4,171	−12.5	48	362	4,390	−2.4	----	330	4,404	.6	47	363	4,311	−5.5	42	362	4,332	−4.8	41	362	4,370	−3.1	----
550	351	4,916	−13.1	42	357	4,832	−16.3	45	356	5,077	−6.5	----	322	5,097	−3.8	44	362	4,991	−9.6	40	361	5,012	−9.4	----	357	5,054	−7.8	----
500	343	5,634	−17.6	41	357	5,542	−20.7	44	355	5,815	−11.1	----	310	5,843	−8.4	----	362	5,718	−14.3	36	359	5,741	−14.3	----	348	5,787	−12.8	----
450	339	6,419	−22.9	40	353	6,319	−25.8	41	351	6,623	−16.5	----	307	6,663	−13.6	----	358	6,516	−19.9	----	358	6,537	−19.8	----	343	6,592	−18.1	----
400	331	7,267	−28.9	----	353	7,158	−31.5	----	347	7,493	−22.6	----	304	7,540	−19.7	----	355	7,374	−26.1	----	355	7,396	−26.3	----	329	7,455	−24.2	----
350	323	8,209	−35.6	----	351	8,092	−37.7	----	344	8,460	−29.6	----	295	8,518	−26.9	----	352	8,325	−33.2	----	352	8,348	−33.4	----	320	8,414	−31.3	----
300	302	9,266	−42.7	----	341	9,140	−44.2	----	339	9,542	−37.7	----	290	9,611	−35.3	----	345	9,391	−41.0	----	345	9,411	−41.1	----	305	9,489	−39.3	----
250	276	10,478	−50.1	----	332	10,344	−50.0	----	330	10,774	−47.0	----	284	10,855	−45.3	----	327	10,614	−49.1	----	340	10,628	−49.2	----	286	10,715	−47.9	----
200	227	11,923	−55.6	----	296	11,788	−53.5	----	307	12,223	−56.5	----	269	12,308	−56.3	----	266	12,074	−55.6	----	318	12,069	−56.1	----	244	12,163	−56.0	----
175	184	12,771	−57.3	----	270	12,640	−53.9	----	284	13,063	−60.3	----	248	13,145	−61.9	----	234	12,919	−58.4	----	303	12,915	−58.3	----	217	13,050	−59.2	----
150	144	13,773	−58.8	----	225	13,634	−54.4	----	243	14,022	−63.4	----	197	14,091	−66.9	----	199	13,888	−60.3	----	271	13,881	−60.4	----	177	13,966	−62.8	----
125	----	----	----	----	163	14,807	−55.8	----	199	15,136	−66.5	----	----	----	----	----	----	----	----	----	234	15,011	−62.8	----	120	15,075	−66.1	----
100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	169	16,399	−64.8	----	----	----	----	----

Standard pressure surface (mb.)	Ely, Nev. (808.4 mb.)				Glasgow, Mont. (938.4 mb.)				Grand Junction, Colo. (852.1 mb.)				Great Falls, Mont. (885.8 mb.)				Greensboro, N. C. (987.1 mb.)				Hatteras, N. C. (1,018.5 mb.)				Honolulu, T. H. (1,015.3 mb.)			
Surface	364	1,908	6.1	54	365	648	6.1	54	365	1,474	10.8	51	364	1,128	7.6	51	364	273	13.5	81	365	3	17.4	82	365	3	25.3	63
1,000	364	117	(*)	----	365	118	(*)	----	365	112	(*)	----	364	113	(*)	----	364	162	(*)	----	365	160	17.5	77	365	136	23.4	65
950	364	558	(*)	----	365	548	(*)	----	365	556	(*)	----	364	551	(*)	----	364	598	15.0	65	365	602	15.4	69	365	583	19.6	72
900	364	1,014	(*)	----	365	990	7.3	48	365	1,016	(*)	----	364	1,002	(*)	----	364	1,054	12.7	64	365	1,055	13.0	65	365	1,045	16.1	77
850	364	1,490	(*)	----	365	1,459	5.2	47	365	1,494	(*)	----	364	1,468	7.0	45	364	1,532	10.1	63	365	1,534	10.6	61	365	1,530	13.2	74
800	364	1,995	(*)	----	365	1,951	2.5	49	365	2,002	10.9	42	364	1,963	3.8	46	364	2,035	7.7	61	365	2,037	8.3	55	365	2,039	11.8	55
750	364	2,531	6.4	42	365	2,474	−.7	51	365	2,540	7.3	44	364	2,489	.4	50	363	2,569	5.2	56	364	2,572	6.0	50	365	2,583	10.5	35
700	364	3,089	2.3	44	365	3,018	−4.1	52	365	3,101	3.1	48	364	3,034	−3.2	52	363	3,126	2.6	51	363	3,130	3.1	46	365	3,150	8.0	31
650	364	3,655	−2.1	45	365	3,603	−7.6	51	365	3,699	−1.3	51	363	3,621	−7.2	51	360	3,725	−.6	48	356	3,730	−.1	44	361	3,760	4.6	----
600	364	4,313	−6.7	47	364	4,217	−11.6	50	365	4,329	−5.9	53	363	4,235	−11.4	50	358	4,357	−4.2	45	353	4,364	−3.8	43	360	4,405	.9	----
550	364	4,987	−11.7	48	362	4,880	−15.9	47	365	5,007	−10.3	52	363	4,899	−15.9	49	357	5,040	−8.2	40	350	5,047	−7.8	----	359	5,098	−3.3	----
500	364	5,711	−16.7	49	358	5,591	−20.7	47	364	5,731	−15.7	48	362	5,608	−20.8	45	356	5,772	−12.8	----	349	5,781	−12.3	----	358	5,846	−8.4	----
450	364	6,499	−22.1	----	353	6,365	−26.3	41	363	6,525	−21.1	43	361	6,387	−26.7	----	355	6,574	−18.1	----	345	6,585	−17.7	----	357	6,661	−14.1	----
400	362	7,349	−28.4	----	348	7,201	−32.4	----	360	7,377	−27.3	41	360	7,219	−32.5	----	352	7,438	−24.3	----	340	7,451	−23.8	----	356	7,539	−20.6	----
350	360	8,292	−35.5	----	341	8,129	−39.2	----	356	8,325	−34.3	----	359	8,146	−39.3	----	347	8,398	−31.2	----	332	8,412	−30.8	----	354	8,512	−28.0	----
300	352	9,348	−43.0	----	333	9,171	−46.4	----	344	9,383	−42.1	----	355	9,187	−46.7	----	344	9,473	−39.1	----	324	9,488	−38.7	----	353	9,600	−36.1	----
250	345	10,556	−50.6	----	316	10,358	−52.9	----	328	10,598	−49.5	----	341	10,381	−53.1	----	334	10,700	−47.8	----	312	10,799	−47.7	----	347	10,843	−45.1	----
200	313	11,989	−55.5	----	275	11,781	−55.4	----	295	12,042	−55.0	----	303	11,803	−56.0	----	311	12,146	−56.2	----	287	12,162	−56.4	----	341	12,299	−55.3	----
175	294	12,835	−56.8	----	250	12,634	−55.0	----	263	12,894	−56.6	----	274	12,651	−55.5	----	288	12,991	−59.2	----	252	13,001	−59.5	----	337	13,141	−60.2	----
150	264	13,806	−58.4	----	200	13,618	−55.0	----	231	13,867	−58.1	----	236	13,629	−55.3	----	234	13,955	−61.6	----	208	13,971	−62.2	----	327	14,093	−64.4	----
125	204	14,948	−60.5	----	147	14,782	−56.0	----	170	15,009	−60.0	----	196	14,784	−56.4	----	----	----	----	----	139	15,094	−64.7	----	312	15,197	−68.0	----
100	139	16,334	−62.1	----	----	----	----	----	----	----	----	----	127	16,239	−57.0	----	----	----	----	----	----	----	----	----	279	16,527	−70.9	----
80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	234	17,850	−69.8	----

See footnotes at end of table, p. 349.

TABLE 1A.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during the year 1949*—Continued

Standard pressure surface (mb.)	International Falls, Minn. (971.5 mb.)				Joliet, Ill. (995.5 mb.)				Lake Charles, La. (1,016.3 mb.)				Lander, Wyo. (828.0 mb.)				Las Vegas, Nev. (936.1 mb.)				Little Rock, Ark. (1,007.9 mb.)				Mazatlan, Mex. (1,009.3 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	364	360	2.2	77	363	178	9.1	77	364	5	19.1	85	365	1,696	6.2	53	364	660	18.6	31	364	79	16.0	77	353	14	25.0	75
1,000	364	123	(*)	----	363	139	(*)	----	364	144	19.9	77	365	114	(*)	----	364	84	(*)	----	364	145	16.0	65	353	95	24.4	73
950	364	543	3.6	69	363	570	9.9	64	364	589	18.2	71	365	554	(*)	----	364	532	(*)	----	364	586	16.3	64	353	553	23.6	55
900	364	979	2.0	66	363	1,015	8.0	61	364	1,048	16.2	67	365	1,007	(*)	----	364	998	19.8	27	364	1,042	14.0	64	353	1,017	21.8	50
850	364	1,439	.5	64	363	1,485	5.9	58	364	1,534	14.0	60	365	1,479	(*)	----	364	1,486	16.0	29	364	1,523	12.0	59	353	1,511	18.9	50
800	364	1,924	−1.3	60	363	1,980	3.8	54	364	2,043	11.7	53	365	1,981	8.1	43	364	1,997	11.9	32	364	2,029	9.8	54	352	2,029	15.8	48
750	364	2,443	−3.5	56	361	2,509	1.6	49	363	2,588	9.2	48	365	2,516	4.9	42	363	2,536	7.7	35	364	2,568	7.3	51	352	2,582	12.5	46
700	364	2,980	−6.0	53	361	3,057	−1.1	45	361	3,151	6.1	44	365	3,069	1.0	44	363	3,097	3.4	36	364	3,128	4.2	48	352	3,149	8.7	47
650	364	3,564	−9.0	50	361	3,650	−4.3	42	358	3,757	2.5	45	365	3,666	−3.1	47	363	3,697	−1.0	36	363	3,731	.8	----	346	3,763	4.8	----
600	363	4,173	−12.5	48	361	4,271	−8.0	39	358	4,397	−1.5	----	365	4,290	−7.6	48	359	4,327	−5.4	36	358	4,367	−3.0	----	342	4,407	.6	----
550	359	4,836	−16.4	46	361	4,944	−12.0	36	354	5,086	−5.7	----	364	4,963	−12.3	47	358	5,005	−9.9	----	355	5,051	−7.2	----	338	5,102	−3.7	----
500	357	5,543	−20.9	42	360	5,665	−16.6	----	351	5,825	−10.6	----	364	5,683	−17.5	44	357	5,732	−15.0	----	353	5,787	−11.9	----	335	5,848	−8.4	----
450	356	6,320	−26.2	41	359	6,455	−22.0	----	348	6,636	−16.0	----	364	6,471	−23.2	42	356	6,527	−20.8	----	350	6,592	−17.4	----	326	6,668	−13.5	----
400	351	7,156	−32.0	----	359	7,305	−28.1	----	345	7,506	−22.2	----	364	7,315	−29.6	40	356	7,381	−27.3	----	349	7,458	−23.6	----	322	7,545	−19.5	----
350	348	8,063	−38.5	----	356	8,250	−35.0	----	340	8,472	−29.4	----	362	8,228	−36.8	----	354	8,329	−34.4	----	341	8,421	−30.6	----	313	8,523	−26.7	----
300	341	9,127	−45.5	----	354	9,309	−42.4	----	337	9,553	−37.7	----	360	9,301	−44.7	----	350	9,389	−42.0	----	337	9,497	−38.6	----	309	9,617	−35.0	----
250	326	10,325	−51.4	----	351	10,520	−50.0	----	333	10,784	−47.2	----	349	10,501	−52.1	----	343	10,601	−49.6	----	328	10,727	−47.4	----	296	10,864	−44.7	----
200	289	11,763	−54.0	----	335	11,959	−55.7	----	325	12,227	−57.1	----	319	11,928	−56.4	----	324	12,039	−55.7	----	307	12,176	−55.7	----	289	12,322	−55.7	----
175	261	12,618	−54.1	----	322	12,808	−57.4	----	315	13,063	−61.4	----	290	12,778	−56.8	----	309	12,884	−57.4	----	292	13,016	−58.6	----	279	13,161	−61.0	----
150	228	13,602	−54.2	----	289	13,775	−59.0	----	301	14,009	−64.9	----	260	13,755	−57.7	----	283	13,853	−59.7	----	252	13,974	−61.3	----	262	14,111	−65.8	----
125	164	14,790	−55.2	----	253	14,916	−60.7	----	254	15,111	−68.5	----	204	14,928	−60.0	----	246	14,981	−62.4	----	193	15,092	−64.1	----	215	15,206	−70.4	----
100	----	----	----	----	174	16,312	−61.4	----	192	16,440	−71.1	----	140	16,318	−60.9	----	185	16,353	−63.9	----	120	16,476	−66.6	----	160	16,517	−73.9	----
80	----	----	----	----	113	17,710	−60.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	97	17,821	−73.5	----

Standard pressure surface (mb.)	Medford, Oreg. (969.5 mb.)				Merida, Mex. (1,011.5 mb.)				Miami, Fla. (1,017.5 mb.)				Nantucket, Mass. (1,016.0 mb.)				Nashville, Tenn. (997.2 mb.)				New Orleans, La. (1,017.3 mb.)				North Platte, Nebr. (917.2 mb.)			
Surface	364	401	13.2	61	355	27	25.9	73	365	4	23.2	79	360	14	9.8	86	365	177	15.0	76	363	2	16.6	84	363	849	8.3	72
1,000	364	138	(*)	----	355	128	25.4	73	365	156	23.3	75	360	146	10.9	78	365	153	(*)	----	363	150	20.5	77	363	123	(*)	----
950	364	575	13.8	53	355	579	23.2	71	365	604	20.6	74	360	577	9.9	68	365	591	14.7	63	363	596	18.6	70	363	558	(*)	----
900	364	1,025	11.3	52	355	1,050	20.2	71	365	1,069	17.8	71	360	1,022	7.9	63	365	1,044	12.4	62	363	1,056	16.4	66	363	1,006	10.3	60
850	364	1,500	8.1	54	355	1,541	17.0	72	365	1,556	15.0	66	360	1,492	5.9	58	365	1,522	10.0	60	363	1,541	14.2	61	363	1,482	9.1	54
800	364	1,997	4.6	57	355	2,056	13.8	69	365	2,068	12.7	56	360	1,986	3.9	53	365	2,025	7.7	56	362	2,051	11.9	55	363	1,982	6.9	52
750	364	2,525	1.6	54	355	2,602	11.2	60	365	2,611	10.3	50	360	2,513	1.6	48	365	2,559	5.2	53	361	2,593	9.2	49	362	2,515	4.2	50
700	364	3,074	−1.4	48	355	3,173	8.7	50	363	3,179	7.5	----	360	3,062	−1.0	46	365	3,116	2.4	50	359	3,158	6.3	46	362	3,069	.9	48
650	364	3,663	−4.9	45	355	3,785	5.6	----	362	3,788	4.2	----	358	3,653	−4.0	44	363	3,716	−.9	48	355	3,764	2.7	46	362	3,664	−2.9	47
600	363	4,285	−8.7	40	349	4,432	1.9	----	359	4,432	.5	----	355	4,278	−7.5	42	361	4,323	−4.5	45	350	4,406	−1.0	----	360	4,290	−7.0	46
550	363	4,955	−13.0	38	347	5,129	−2.2	----	357	5,128	−3.6	----	353	4,951	−11.5	----	359	5,028	−8.6	41	346	5,095	−5.2	----	357	4,966	−11.6	44
500	363	5,674	−17.7	37	345	5,880	−6.9	----	356	5,872	−8.2	----	349	5,673	−16.2	----	357	5,759	−13.2	39	340	5,837	−10.0	----	354	5,688	−16.4	41
450	360	6,459	−23.1	----	342	6,699	−12.4	----	353	6,691	−13.7	----	343	6,466	−21.4	----	353	6,560	−18.6	----	335	6,650	−15.3	----	347	6,478	−22.0	----
400	357	7,306	−29.9	----	340	7,583	−18.8	----	349	7,568	−19.9	----	341	7,318	−27.3	----	350	7,422	−24.6	----	335	7,523	−21.5	----	344	7,328	−27.9	----
350	352	8,246	−36.4	----	336	8,562	−26.4	----	343	8,544	−27.1	----	331	8,265	−33.9	----	350	8,380	−31.6	----	324	8,492	−28.6	----	336	8,273	−35.4	----
300	342	9,297	−44.1	----	336	9,656	−35.0	----	339	9,637	−35.9	----	328	9,328	−41.4	----	344	9,451	−39.5	----	317	9,578	−36.8	----	328	9,330	−43.1	----
250	324	10,498	−51.6	----	332	10,900	−45.0	----	334	10,878	−45.2	----	315	10,546	−49.1	----	339	10,678	−48.3	----	306	10,815	−46.3	----	314	10,541	−50.8	----
200	301	11,931	−56.5	----	326	12,352	−56.5	----	309	12,331	−55.9	----	277	11,983	−55.7	----	317	12,120	−56.4	----	287	12,266	−56.2	----	295	11,967	−56.6	----
175	261	12,782	−67.0	----	323	13,187	−62.5	----	290	13,160	−60.9	----	251	12,827	−57.3	----	296	12,961	−59.3	----	266	13,106	−60.7	----	264	12,834	−58.1	----
150	209	13,758	−57.5	----	305	14,123	−67.9	----	249	14,117	−65.4	----	219	13,800	−58.5	----	249	13,922	−61.9	----	239	14,057	−64.3	----	233	13,806	−59.7	----
125	150	14,928	−58.5	----	256	15,198	−73.2	----	176	15,222	−69.5	----	171	14,928	−60.1	----	185	15,037	−64.0	----	181	15,164	−67.6	----	184	15,213	−61.9	----
100	----	----	----	----	151	16,493	−76.4	----	100	16,546	−72.4	----	102	16,329	−60.6	----	----	----	----	----	----	----	----	----	----	----	----	----

See footnotes at end of table, p. 349.

TABLE 1A.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during the year 1949*—Continued

Standard pressure surface (mb.)	Oakland, Calif. (1,015.8 mb.)				Oklahoma City, Okla. (970.5 mb.)				Omaha, Nebr. (979.8 mb.)				Phoenix, Ariz. (972.3 mb.)				Pittsburgh, Pa. (973.0 mb.)				Portland, Maine (1,014.1 mb.)				Rapid City, S. Dak. (902.0 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	364	6	13.1	74	364	391	14.3	70	364	308	11.1	69	364	339	21.3	41	355	382	11.2	70	365	20	6.9	82	360	980	6.3	62
1,000	364	137	13.0	71	364	134	(*)	----	364	135	(*)	----	364	92	(*)	----	355	150	(*)	----	365	135	8.0	55	360	118	(*)	----
950	364	574	13.1	59	364	573	15.5	63	364	567	10.5	60	364	543	24.1	30	355	587	11.4	65	365	563	7.6	63	360	552	(*)	----
900	364	1,023	12.8	45	363	1,029	14.0	60	364	1,014	9.0	60	364	1,010	20.7	30	355	1,032	9.1	64	365	1,003	5.4	62	360	999	(*)	----
850	364	1,501	10.9	40	363	1,510	12.0	57	364	1,487	7.5	57	364	1,500	16.8	32	354	1,504	6.6	62	365	1,469	3.3	60	360	1,471	8.4	49
800	364	2,004	8.2	37	363	2,016	9.6	52	364	1,984	5.6	53	364	2,013	12.7	36	354	2,000	4.1	59	365	1,959	1.1	56	360	1,970	5.9	50
750	364	2,539	5.3	35	363	2,554	7.1	47	364	2,516	3.1	49	364	2,556	8.5	38	354	2,529	1.7	53	365	2,482	−1.2	51	360	2,501	2.9	51
700	364	3,094	2.0	34	363	3,114	4.0	44	364	3,066	.1	46	364	3,116	4.4	39	354	3,076	−.9	51	365	3,023	−3.7	49	359	3,052	−.4	51
650	362	3,692	−1.6	35	362	3,715	.2	42	364	3,661	−3.5	43	362	3,721	.2	40	353	3,672	−4.0	49	361	3,616	−6.6	45	359	3,645	−4.1	50
600	359	4,322	−5.6	34	362	4,349	−3.8	----	364	4,285	−7.3	42	362	4,352	−4.1	----	352	4,292	−7.4	45	360	4,227	−10.1	43	357	4,267	−9.0	49
550	357	5,000	−10.1	----	360	5,033	−8.2	----	363	4,956	−11.5	39	362	5,034	−8.7	----	351	4,968	−11.4	42	357	4,897	−13.9	----	355	4,940	−12.6	47
500	355	5,726	−15.2	----	359	5,765	−13.1	----	361	5,683	−16.2	37	361	5,764	−13.7	----	349	5,689	−15.8	38	351	5,611	−18.6	----	355	5,659	−17.6	44
450	352	6,521	−20.9	----	357	6,567	−18.6	----	359	6,475	−21.7	----	359	6,565	−19.2	----	346	6,484	−21.0	----	347	6,395	−23.9	----	355	6,446	−23.0	42
400	351	7,375	−27.5	----	351	7,429	−24.9	----	358	7,326	−27.9	----	357	7,423	−25.6	----	343	7,336	−27.1	----	344	7,240	−29.8	----	352	7,292	−29.3	----
350	351	8,321	−34.6	----	345	8,386	−31.9	----	355	8,271	−34.8	----	357	8,377	−32.7	----	327	8,287	−33.8	----	339	8,330	−36.5	----	349	8,233	−36.3	----
300	344	9,380	−42.4	----	334	9,458	−39.9	----	352	9,330	−42.5	----	352	9,444	−40.5	----	310	9,352	−41.3	----	326	9,235	−43.6	----	341	9,285	−44.0	----
250	335	10,589	−50.4	----	322	10,679	−48.6	----	348	10,541	−50.3	----	338	10,665	−48.5	----	278	10,577	−49.1	----	310	10,443	−50.8	----	331	10,491	−51.0	----
200	322	12,026	−56.2	----	294	12,116	−56.0	----	320	11,973	−55.9	----	316	12,105	−55.5	----	231	12,032	−55.7	----	279	11,884	−55.9	----	302	11,926	−55.5	----
175	305	12,870	−57.3	----	264	12,962	−58.6	----	302	12,822	−57.5	----	299	12,950	−58.0	----	196	12,877	−57.6	----	248	12,729	−57.2	----	265	12,773	−55.7	----
150	268	13,841	−58.7	----	231	13,921	−61.3	----	266	13,794	−58.8	----	276	13,916	−60.8	----	153	13,867	−60.0	----	211	13,698	−58.3	----	230	13,752	−56.5	----
125	237	14,982	−60.6	----	155	15,048	−64.4	----	226	14,933	−60.7	----	227	15,034	−63.6	----	107	15,021	−62.2	----	157	14,847	−59.5	----	170	14,927	−58.3	----
100	182	16,362	−62.0	----	----	----	----	----	163	16,355	−62.3	----	162	16,398	−65.4	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	St. Cloud, Minn. (977.3 mb.)				San Antonio, Tex. (987.8 mb.)				San Juan, P. R.[2] (1,014.5 mb.)				Santa Maria, Calif. (1,007.6 mb.)				Sault Ste. Marie, Mich. (989.1 mb.)				Spokane, Wash. (931.4 mb.)				Swan Island, W. I. (1,013.2 mb.)			
Surface	365	317	5.5	75	365	240	19.1	73	363	19	24.8	82	365	71	12.2	80	364	221	4.2	79	362	721	9.3	57	360	10	26.0	80
1,000	365	126	(*)	----	365	133	(*)	----	363	142	24.3	80	365	135	12.4	76	364	130	(*)	----	362	125	(*)	----	360	126	25.3	80
950	365	553	6.5	65	365	580	19.4	66	363	592	21.1	81	365	572	13.6	61	364	553	4.7	69	362	557	(*)	----	360	579	22.2	82
900	365	992	5.2	62	365	1,041	17.1	67	363	1,057	17.9	80	365	1,022	14.2	43	364	989	3.2	67	362	1,006	9.5	51	360	1,054	19.4	78
850	365	1,457	3.6	59	365	1,527	14.9	64	363	1,545	15.1	76	365	1,503	12.2	39	364	1,451	1.1	65	362	1,477	6.5	51	360	1,536	16.6	72
800	365	1,948	1.7	54	365	2,039	12.6	56	363	2,057	12.7	67	365	2,008	9.5	36	364	1,937	−1.0	61	362	1,972	3.1	52	360	2,051	14.0	64
750	365	2,472	−.5	50	365	2,582	10.2	47	363	2,603	10.8	56	365	2,546	6.7	29	364	2,456	−3.1	56	362	2,495	.4	53	360	2,597	11.4	53
700	365	3,016	−3.3	48	365	3,150	7.1	41	362	3,171	8.1	----	365	3,104	3.4	31	364	2,994	−5.7	54	362	3,040	−3.8	52	360	3,168	8.9	----
650	364	3,604	−6.5	46	363	3,757	3.4	39	361	4,232	4.8	----	363	3,704	−.3	----	364	3,577	−8.6	50	361	3,625	−7.5	50	359	3,781	5.8	----
600	360	4,221	−10.0	44	358	4,400	−.8	40	356	4,428	1.2	----	363	4,336	−4.3	----	362	4,188	−12.0	46	361	4,240	−11.4	49	357	4,429	2.2	----
550	358	4,888	−14.1	42	357	5,090	−5.3	38	352	5,123	−2.9	----	361	5,017	−9.5	----	360	4,851	−15.9	46	359	4,904	−15.5	46	353	5,126	−1.8	----
500	357	5,605	−18.6	----	354	5,831	−10.2	----	348	5,871	−7.5	----	359	5,748	−13.7	----	355	5,561	−20.5	----	358	5,615	−20.3	44	353	5,880	−6.4	----
450	357	6,387	−23.9	----	349	6,642	−15.6	----	343	6,690	−13.0	----	358	6,548	−19.4	----	348	6,341	−25.7	----	354	6,393	−25.7	43	351	6,702	−11.7	----
400	357	7,233	−29.9	----	347	7,514	−21.8	----	340	7,571	−19.3	----	358	7,405	−26.0	----	341	7,183	−31.6	----	353	7,231	−31.8	----	346	7,588	−17.9	----
350	354	8,170	−36.6	----	341	8,483	−28.8	----	338	8,550	−26.4	----	356	8,356	−33.1	----	335	8,112	−38.1	----	350	8,161	−38.6	----	342	8,572	−25.2	----
300	350	9,221	−43.7	----	331	9,569	−36.9	----	336	9,645	−34.8	----	348	9,424	−41.0	----	313	9,161	−45.0	----	335	9,205	−45.7	----	341	9,672	−33.7	----
250	338	10,426	−50.6	----	308	10,808	−45.9	----	325	10,893	−44.5	----	344	10,642	−49.2	----	269	10,376	−51.3	----	311	10,401	−52.0	----	336	10,925	−43.5	----
200	306	11,862	−54.6	----	267	12,261	−55.1	----	311	12,350	−55.8	----	325	12,084	−55.6	----	212	11,822	−54.7	----	258	11,831	−54.7	----	330	12,388	−54.8	----
175	281	12,749	−55.4	----	237	13,102	−58.9	----	292	13,189	−61.8	----	302	12,930	−57.5	----	----	----	----	----	217	12,686	−54.4	----	321	13,229	−60.9	----
150	267	13,729	−56.2	----	196	14,077	−63.0	----	274	14,130	−67.6	----	291	14,238	−59.7	----	----	----	----	----	165	13,672	−54.5	----	288	14,173	−66.9	----
125	226	14,881	−57.3	----	147	15,194	−66.8	----	225	15,214	−72.6	----	248	15,032	−62.0	----	----	----	----	----	115	14,842	−54.8	----	213	15,260	−72.4	----
100	170	16,290	−58.2	----	79	16,524	−69.8	----	164	16,514	−75.8	----	202	16,418	−64.1	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Tacubaya, Mex. (773.9 mb.)				Tampa, Fla. (1,017.6 mb.)				Tatoosh Island, Wash. (1,013.2 mb.)				Toledo, Ohio (994.2 mb.)				Washington, D. C. (1,015.8 mb.)			
Surface	358	2,306	16.6	52	362	9	21.2	82	364	31	8.9	85	365	191	9.7	78	364	25	14.1	70
1,000	358	57	(*)	----	362	160	21.6	75	364	139	8.7	80	365	141	(*)	----	364	157	14.0	66
950	358	521	(*)	----	362	606	19.5	70	364	567	7.6	72	365	573	10.1	65	364	592	12.2	63
900	358	999	(*)	----	362	1,069	16.9	66	364	1,007	5.8	66	365	1,018	7.8	62	364	1,040	9.8	64
850	358	1,494	(*)	----	362	1,555	14.2	63	364	1,473	3.4	64	365	1,487	5.7	58	364	1,514	7.5	62
800	358	2,023	(*)	----	362	2,065	11.8	55	364	1,963	1.0	60	365	1,982	3.5	54	364	2,012	5.1	59
750	358	2,575	15.0	51	362	2,607	9.1	49	364	2,485	−1.7	56	365	2,510	1.1	50	364	2,541	2.8	56
700	358	3,153	10.7	56	361	3,172	6.3	----	363	3,025	−4.7	53	365	3,057	−1.6	47	364	3,093	.2	52
650	358	3,771	6.1	61	360	3,780	3.0	----	363	3,609	−7.9	50	365	3,650	−4.7	44	363	3,688	−3.0	48
600	357	4,418	1.5	63	358	4,420	−.8	----	363	4,223	−11.6	48	363	4,269	−8.3	42	362	4,314	−6.5	46
550	353	5,117	−2.8	63	358	5,110	−4.9	----	360	4,888	−15.6	45	360	4,942	−12.3	38	362	4,991	−10.5	42
500	352	5,865	−7.2	----	358	5,853	−9.5	----	358	5,598	−20.2	44	358	5,661	−17.1	----	362	5,716	−15.1	38
450	347	6,690	−12.3	----	356	6,665	−14.9	----	358	6,375	−25.4	45	356	6,450	−22.5	----	358	6,511	−20.3	----
400	344	7,570	−18.4	----	354	7,540	−21.1	----	354	7,217	−31.3	43	353	7,299	−28.5	----	358	7,450	−26.3	----
350	335	8,552	−26.0	----	346	8,513	−28.3	----	352	8,149	−37.8	----	346	8,241	−35.8	----	358	8,318	−33.1	----
300	321	9,649	−34.6	----	339	9,598	−36.7	----	345	9,199	−44.7	----	341	9,300	−42.7	----	353	9,385	−40.6	----
250	314	10,897	−40.9	----	322	10,835	−46.6	----	334	10,400	−51.1	----	334	10,509	−50.2	----	351	10,604	−48.6	----
200	294	12,355	−56.0	----	295	12,282	−56.9	----	303	11,925	−54.4	----	314	11,944	−56.0	----	346	12,045	−58.4	----
175	267	13,194	−62.0	----	272	13,120	−61.8	----	277	12,693	−53.9	----	298	12,787	−57.6	----	337	12,889	−58.4	----
150	198	14,130	−67.5	----	255	14,066	−66.0	----	245	13,680	−53.8	----	258	13,758	−59.4	----	314	13,851	−60.2	----
125	----	----	----	----	223	16,160	−70.0	----	204	14,846	−54.5	----	210	14,896	−61.2	----	266	14,979	−62.3	----
100	----	----	----	----	163	16,482	−72.3	----	----	----	----	----	142	16,270	−61.8	----	210	16,348	−63.2	----
80	----	----	----	----	84	17,778	−71.5	----	----	----	----	----	74	17,608	−60.7	----	----	----	----	----

[1] Station elevation changed from 13 meters to 18 meters, August 17, 1949.
[2] Station elevation changed from 15 meters to 19 meters, November 8, 1949.
*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. Relative humidity data beginning with Oct. 1, 1948, were computed, and expressed in these tables, on the basis of vapor pressure over water. Upper air values of relative humidity at levels with temperatures less than 0° C. have formerly been computed and expressed on the basis of the vapor pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the values occurring below the operating range of the humidity element. For explantation 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 2A.—*Free-air resultant winds based on pilot balloon observations made near 2200 G. C. T., during the year 1949. 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.)			El Paso, Tex. (1,198 m.)			Ely, Nev. (1,910 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	348	170	1.9	365	222	1.5	341	280	0.8	352	268	1.7	350	283	1.6	356	324	2.4	346	124	4.3	343	250	3.1	350	238	1.2	351	202	1.1	348	243	1.8	364	224	1.7	355	223	1.5
500	---	---	---	---	---	---	341	272	1.0	---	---	---	---	---	---	---	---	---	346	134	5.0	343	249	4.9	350	236	3.2	351	209	2.0	348	240	2.7	---	---	---	---	---	---
1,000	348	184	2.7	---	---	---	328	259	1.8	---	---	---	348	281	3.1	356	319	2.2	304	155	4.3	305	248	6.5	337	254	4.9	319	244	3.0	328	242	4.1	---	---	---	---	---	---
1,500	327	205	3.5	---	---	---	299	271	3.0	352	264	3.8	324	280	4.5	355	295	1.9	254	171	2.7	268	255	7.5	300	265	6.7	306	266	4.3	316	251	5.4	364	234	2.1	---	---	---
2,000	308	227	4.4	364	226	2.6	281	281	4.7	345	275	5.3	306	281	6.2	354	277	2.7	---	---	---	229	260	8.1	254	272	8.6	274	276	5.6	289	260	6.7	360	239	2.5	355	226	1.6
2,500	291	237	5.1	364	244	3.3	255	283	6.1	332	277	6.7	289	283	7.8	338	266	3.7	---	---	---	---	---	---	218	275	9.9	261	280	6.9	259	266	8.0	347	246	3.2	353	231	2.4
3,000	277	251	5.6	342	255	4.4	242	284	7.1	316	276	8.3	278	284	9.2	323	263	4.6	---	---	---	---	---	---	194	281	11.1	250	279	8.0	223	272	9.0	340	251	4.2	344	238	2.9
4,000	261	257	7.9	334	265	6.5	211	280	9.5	282	279	10.6	253	286	12.0	293	259	6.0	---	---	---	---	---	---	---	---	---	224	275	9.4	183	279	10.3	319	256	6.5	301	254	4.4
5,000	220	265	9.4	307	267	8.4	166	282	11.6	239	283	12.6	201	283	13.0	261	263	7.4	---	---	---	---	---	---	---	---	---	192	274	10.3	136	280	11.6	297	257	8.3	257	259	6.2
6,000	177	273	9.9	289	266	9.8	131	281	13.4	182	232	12.2	141	285	14.0	208	269	8.0	---	---	---	---	---	---	---	---	---	164	277	11.8	---	---	---	267	259	9.8	224	268	8.6
8,000	---	---	---	239	266	12.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	187	263	13.6	---	---	---
10,000	---	---	---	164	271	12.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Grand Junction, Colo. (1,475 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (663 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)			New York, N. Y. (15 m.)			Oakland, Calif. (8 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	361	277	1.3	329	263	0.8	350	273	2.3	334	87	1.5	342	234	2.0	364	213	1.3	335	186	0.5	355	306	1.4	359	106	3.0	331	155	0.8	345	249	0.8	349	269	1.3	357	271	3.9
500	---	---	---	329	255	1.6	---	---	---	334	131	.6	342	240	3.0	---	---	---	335	213	1.2	353	305	1.4	358	107	3.6	328	182	1.1	345	228	1.6	349	258	3.2	357	288	2.6
1,000	---	---	---	324	252	2.9	350	267	4.0	325	232	1.4	305	246	4.4	364	204	1.6	316	238	2.2	353	277	.9	356	106	2.5	279	271	.9	327	232	2.7	323	277	5.0	331	286	1.8
1,500	361	277	1.5	307	265	4.4	347	270	5.9	297	256	3.0	277	255	5.8	363	221	1.9	297	256	3.5	344	233	1.7	340	94	1.1	251	295	1.9	301	256	4.2	300	283	6.7	317	282	1.7
2,000	361	267	2.1	293	280	6.1	334	276	6.7	274	272	4.1	254	263	7.2	358	230	2.6	271	267	4.7	323	234	2.2	318	79	.3	207	294	3.5	282	259	5.6	264	287	8.2	308	294	1.8
2,500	358	248	2.6	271	284	7.9	309	278	7.5	258	274	5.0	226	269	8.2	351	234	3.0	250	271	6.3	288	236	2.1	286	278	.4	176	290	4.7	260	264	6.7	239	288	9.5	298	295	2.3
3,000	345	248	3.8	256	285	9.3	260	279	8.2	237	275	6.1	202	276	9.0	345	240	3.6	215	279	7.0	265	252	2.7	268	267	.9	154	280	6.1	244	272	8.0	197	290	9.6	290	292	3.1
4,000	310	263	5.4	220	284	11.0	---	---	---	182	281	8.0	154	279	10.7	327	255	4.6	153	281	9.9	---	---	---	235	263	2.8	---	---	---	206	275	10.3	---	---	---	272	292	4.4
5,000	274	275	7.3	188	284	12.5	---	---	---	---	---	---	---	---	---	312	265	5.6	---	---	---	---	---	---	181	269	4.6	---	---	---	172	277	12.2	---	---	---	253	293	6.0
6,000	236	278	9.0	---	---	---	---	---	---	---	---	---	---	---	---	282	269	7.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	229	289	7.1
8,000	169	282	12.3	---	---	---	---	---	---	---	---	---	---	---	---	225	272	8.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	181	281	8.4

Altitude (meters) m. s. l.	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.)		
Surface	334	188	2.5	347	227	1.1	365	227	0.8	354	332	1.8	340	261	1.9	338	221	1.1	338	119	1.7	356	271	3.3	335	280	2.1	342	242	1.6	346	223	2.2	343	248	1.5
500	334	189	2.7	347	221	1.7	365	236	1.1	---	---	---	340	259	2.4	338	237	2.0	338	132	2.0	354	273	2.3	335	267	2.9	342	229	2.4	---	---	---	343	256	2.8
1,000	328	203	3.5	329	231	2.9	364	230	1.4	354	330	1.8	330	261	3.6	322	243	3.7	332	150	2.0	327	272	1.2	299	262	4.2	314	226	2.9	345	223	3.4	332	263	4.3
1,500	311	225	4.4	306	249	4.7	361	220	1.8	353	303	3.2	302	267	5.3	298	258	5.3	303	185	1.7	303	276	.8	250	269	5.1	283	223	3.1	333	232	4.4	320	271	5.7
2,000	295	244	5.5	282	262	6.1	355	226	2.4	332	289	4.5	266	274	7.4	271	269	6.6	287	216	2.5	295	272	1.2	232	275	6.5	259	233	3.0	308	243	4.5	289	278	7.3
2,500	281	254	6.8	259	274	7.3	343	231	2.7	320	285	6.1	243	276	8.7	241	275	7.6	256	242	3.1	280	274	1.5	187	282	7.9	223	240	3.2	287	253	4.7	262	281	8.7
3,000	265	262	7.7	249	282	8.3	335	235	3.3	307	287	7.8	228	283	10.0	219	281	8.7	239	260	3.8	274	271	2.5	---	---	---	188	251	3.9	258	257	5.1	250	282	10.0
4,000	241	271	9.3	210	288	11.2	320	246	4.5	262	284	10.3	193	281	12.3	189	283	10.6	214	269	5.7	252	272	4.3	---	---	---	---	---	---	224	264	6.9	215	279	12.6
5,000	212	279	9.6	---	---	---	290	252	5.6	217	280	11.9	154	284	14.8	---	---	---	173	270	8.1	227	271	5.8	---	---	---	---	---	---	181	271	8.9	186	282	13.7
6,000	167	286	10.6	---	---	---	263	257	7.0	174	282	13.6	---	---	---	---	---	---	---	---	---	212	267	6.7	---	---	---	---	---	---	---	---	---	145	285	14.2
8,000	---	---	---	---	---	---	184	266	8.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3A.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T., during the year 1949. 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.)			Medford, Oreg. (401 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	365	131	1.2	362	141	3.1	363	16	0.8	361	118	2.5	365	267	1.5	365	210	0.4	364	145	0.7	365	60	0.2	364	282	0.3	365	245	0.7	365	246	0.7	365	218	0.4	364	323	1.6
500	---	---	---	---	---	---	---	---	---	355	130	5.9	365	265	4.4	363	219	2.0	364	198	2.6	---	---	---	361	243	1.6	363	241	2.5	362	238	1.8	360	174	2.1	360	320	2.0
1,000	---	---	---	361	159	4.9	358	300	2.1	354	140	5.2	365	274	6.1	361	236	2.5	361	234	4.0	---	---	---	360	251	3.6	360	250	3.3	362	263	4.1	359	214	3.1	359	305	2.3
1,500	---	---	---	361	185	5.0	356	291	4.2	353	152	3.8	360	275	7.2	360	254	3.3	360	252	5.3	363	60	.2	358	261	4.7	353	261	4.1	359	281	5.3	356	233	4.1	357	276	2.1
2,000	364	242	2.1	360	214	4.7	353	299	6.0	354	172	2.8	355	275	8.3	360	263	4.1	358	264	6.4	363	230	1.1	357	266	5.6	347	268	5.0	359	281	6.5	353	245	5.1	355	260	2.6
2,500	364	254	3.6	360	234	5.0	351	293	7.5	354	193	2.5	348	274	9.7	357	268	5.1	355	270	7.3	363	235	2.4	356	270	6.8	343	267	6.0	356	285	7.7	345	251	6.1	348	259	3.8
3,000	362	259	4.7	360	248	5.6	350	293	8.8	351	213	2.7	346	271	11.1	353	268	6.0	351	274	8.1	364	245	3.6	354	269	7.9	337	268	7.0	356	288	9.0	342	255	7.3	347	256	4.5
4,000	361	265	6.5	358	262	6.8	344	291	11.1	349	242	3.9	336	270	13.4	344	268	7.4	342	279	9.6	362	260	5.3	346	269	9.7	322	268	9.2	343	283	11.4	332	259	9.0	342	267	6.0
5,000	354	269	7.6	348	263	8.3	338	287	12.4	352	247	5.5	320	268	15.1	329	268	8.6	330	278	11.6	357	265	7.2	340	270	11.4	312	271	10.7	330	281	13.9	323	262	10.1	328	272	7.9
6,000	344	272	8.8	332	260	8.8	330	282	14.1	347	251	7.1	305	268	16.8	311	270	9.5	316	277	12.9	351	269	9.0	321	273	12.7	292	273	11.8	319	276	15.4	307	260	11.3	304	272	8.8
8,000	300	273	10.1	309	261	11.9	289	271	16.3	335	255	10.8	256	268	18.8	265	276	10.5	270	271	14.9	305	272	11.4	291	272	15.4	249	277	13.0	278	273	18.1	274	254	14.3	241	258	10.9
10,000	256	274	12.3	---	---	---	243	264	17.3	296	261	13.6	---	---	---	223	281	11.5	---	---	---	236	271	12.8	237	274	16.6	182	282	12.1	221	274	20.1	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	216	270	12.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	142	273	22.1	---	---	---	---	---	---

Altitude (meters) m. s. l.	Miami, Fla. (12 m.)			Nantucket, Mass. (13 m.)			Nashville, Tenn. (180 m.)			New Orleans, La. (6 m.)			Oakland, Calif. (8 m.)			Oklahoma City, Okla. (392 m.)			RapidCity, S. Dak. (980 m.)			St. Cloud, Minn. (318 m.)			San Antonio, Tex. (242 m.)			San Juan, P. R. (28 m.)			Santa Maria, Calif. (72 m.)			Sault Ste. Marie, Mich. (221 m.)			Spokane, Wash. (726 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	365	80	1.2	352	257	1.2	365	208	0.5	363	113	0.8	365	277	3.0	353	138	2.0	359	295	0.9	362	322	0.4	364	93	2.6	364	98	2.9	365	281	1.6	362	306	0.6	357	205	1.7
500	364	105	3.5	349	262	4.7	363	207	2.2	360	144	1.9	364	288	3.1	330	150	2.6	---	---	---	359	238	1.1	364	119	4.2	361	90	6.4	363	331	2.7	362	250	1.8	---	---	---
1,000	364	105	3.2	347	274	5.4	362	228	3.8	357	170	1.3	364	289	2.8	325	192	4.0	356	290	.8	358	256	3.3	364	143	4.5	359	90	6.6	364	337	2.6	358	259	4.4	354	222	3.1
1,500	364	99	2.4	346	274	6.3	356	249	4.6	358	208	1.3	363	292	2.3	329	226	4.4	357	291	3.0	349	267	5.1	364	174	3.4	355	89	6.0	363	351	2.1	351	268	5.9	349	241	4.2
2,000	364	105	1.7	340	273	8.0	354	259	6.0	359	238	2.3	363	294	2.1	333	248	5.1	355	290	4.5	344	273	6.3	364	210	3.1	355	87	5.5	362	341	2.1	346	278	7.0	348	251	4.7
2,500	365	127	1.1	337	271	9.2	353	263	7.2	352	248	3.5	363	294	2.6	335	255	5.9	354	288	6-2	339	286	7.1	362	235	3.9	353	87	5.2	361	319	2.8	340	281	8.3	339	260	4.8
3,000	365	169	.6	333	270	10.3	350	267	8.8	351	254	4.5	361	291	3.3	334	262	6.8	345	287	7.6	341	285	8.5	357	248	4.5	352	85	4.8	361	304	3.7	335	276	9.5	334	267	5.6
4,000	360	248	1.5	322	269	12.3	342	271	10.7	344	259	7.0	356	290	4.6	330	269	7.7	322	284	9.9	333	282	10.6	356	256	6.4	349	80	3.8	357	293	5.4	321	279	12.0	326	269	7.7
5,000	356	269	3.3	304	268	14.1	329	270	12.1	335	261	9.2	346	289	5.9	325	269	8.6	309	283	11.2	324	278	12.6	347	259	8.3	344	66	2.5	351	284	7.0	301	282	13.4	314	272	9.8
6,000	354	274	4.8	283	269	15.0	309	270	12.8	322	262	11.0	332	290	7.7	320	271	10.3	299	280	13.0	309	278	13.3	332	260	10.0	336	48	2.0	341	285	8.2	273	279	14.6	293	272	10.6
8,000	341	279	8.6	178	272	17.5	257	268	14.6	278	263	13.3	295	280	9.7	275	271	12.3	258	257	9.5	269	276	15.9	294	264	13.1	322	299	3.5	316	280	9.7	---	---	---	230	266	11.6
10,000	321	281	9.7	---	---	---	---	---	---	230	265	14.9	246	278	11.4	243	271	14.0	---	---	---	225	273	17.7	---	---	---	315	285	9.3	279	266	12.6	---	---	---	---	---	---
12,000	280	282	11.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	298	280	14.4	227	263	13.9	---	---	---	---	---	---
14,000	203	297	9.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	249	282	12.2	179	264	12.4	---	---	---	---	---	---

Altitude (meters) m. s. l.	Tatoosh Island, Wash. (33 m.)		
Surface	351	166	1.5
500	344	229	2.2
1,000	338	236	2.9
1,500	337	239	3.4
2,000	338	249	4.1
2,500	336	257	4.9
3,000	331	262	5.9
4,000	321	264	7.8
5,000	307	268	9.0
6,000	289	269	10.1
8,000	245	272	12.2
10,000	189	266	12.2
12,000	---	---	---
14,000	---	---	---
16,000	---	---	---

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.

RIVER STAGES AND FLOODS FOR DECEMBER 1949

The highest crests since 1937 occurred along the Green River in Kentucky during December. Flooding elsewhere was mostly light except along the Wabash River where overflows were moderate. A serious flood threat was averted in the Puget Sound drainage by the onset of colder weather.

Atlantic Slope drainage.—Precipitation averaged mostly below normal along the Atlantic Slope drainage during the last 3 months of 1949 except in Pennsylvania. Despite the deficient rainfall, rivers in the northern portion of the New England States were slightly higher at the end of the month than in the beginning due mostly to runoff from snowmelt. By the 31st most of the snow cover in the headwater areas had disappeared.

General rains over the upper reaches of the Delaware River, together with some melting of the snow cover caused a sharp rise at Port Jervis, N. Y., and Trenton, N. J., on the 14th and 15th but flood stages were not reached. Light flooding occurred in the Graters Ford area for a few hours on the 27th due to heavy local rains over Perkiomen Creek.

Mississippi System.—Upper Mississippi Basin.—Slight flooding occurred along the Illinois River at Morris, Ill., and along the Meramec in Missouri from the heavy rains which averaged slightly over 3 inches in the Illinois Basin and 1.75 inches in the Meramec Basin on the 21st and 22d. No damage resulted.

The Upper Mississippi River at and above Dam 10 remained at near normal pool stage throughout December. The river was officially closed to navigation at LaCrosse, Wisc., on the 14th when it froze over from shore to shore. Upper pools No. 7 and 8 were frozen over with a thin coating of ice as early as the 9th.

Ohio Basin.—A general rain beginning on the 10th and continuing through the 14th caused moderate to heavy rises in streams in the basin with the highest crests since 1937 on the Green River in Kentucky. The rainfall over the Green and Barren basins during this period averaged between 6 and 7 inches with one station reporting a total of 9.24 inches. Both streams were overflowing before the rainfall ceased and crested 8 to 13 feet above bankfull stage. Nearly an additional inch of rain