METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR DECEMBER 1948

AEROLOGICAL OBSERVATIONS

[For description of change in Table 1 and charts, see REVIEW, January 1946, p. 6. For change in computation of relative humidity data after October 1, 1948, see REVIEW October 1948, p. 225]

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 1948*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,007.2 mb.)				Albuquerque, N. Mex. (837.6 mb.)				Atlanta, Ga. (984.5 mb.)				Big Spring, Tex. (927.7 mb.)				Bismarck, N. Dak. (954.1 mb.)				Boise, Idaho (916.5 mb.)				Brownsville, Tex. (1,016.5 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	−1.6	80	31	1,620	4.2	43	31	300	8.0	77	30	774	8.9	45	31	505	−12.3	77	31	868	−3.8	80	31	6	18.4	82
1,000	31	142	(*)	----	31	149	(*)	----	31	171	(*)	----	30	141	(*)	----	31	140	(*)	----	31	171	(*)	----	31	146	19.6	79
950	31	557	−2.1	68	31	585	(*)	----	31	599	8.8	71	30	577	(*)	----	31	542	(*)	----	31	585	(*)	----	31	590	18.3	69
900	31	980	−3.8	66	31	1,033	(*)	----	31	1,043	8.6	67	30	1,025	11.4	38	31	955	−7.9	67	31	1,012	−2.0	69	31	1,050	16.8	58
850	31	1,430	−5.4	62	31	1,499	(*)	----	31	1,516	7.7	57	30	1,504	11.6	31	31	1,399	−7.9	60	31	1,465	−4.0	66	31	1,537	16.1	40
800	31	1,904	−7.1	58	31	1,993	4.0	44	31	2,014	6.4	51	30	2,008	9.6	31	31	1,870	−8.7	57	31	1,941	−6.2	65	31	2,051	14.2	36
750	31	2,415	−8.6	50	31	2,520	1.6	46	31	2,548	4.4	41	30	2,548	6.7	33	31	2,373	−10.7	51	31	2,448	−8.7	64	31	2,596	11.7	35
700	31	2,938	−10.5	43	31	3,068	−1.5	50	31	3,101	1.8	33	30	3,103	3.4	33	31	2,896	−13.2	45	31	2,976	−11.3	61	31	3,166	8.2	38
650	30	3,511	−13.3	43	31	3,658	−5.0	49	31	3,697	−1.1	----	30	3,703	−.4	33	31	3,464	−16.5	44	31	3,546	−14.5	59	31	3,774	4.4	34
600	30	4,111	−16.8	----	31	4,279	−8.6	39	31	4,329	−4.7	----	29	4,335	−4.7	34	31	4,054	−20.3	41	31	4,143	−18.4	56	31	4,420	.4	32
550	30	4,763	−20.4	----	31	4,952	−12.0	34	31	5,009	−8.9	----	29	5,016	−8.8	37	31	4,697	−24.3	----	31	4,788	−22.5	----	31	5,112	−4.0	30
500	30	5,460	−24.6	----	31	5,671	−16.8	36	31	5,740	−13.7	----	29	5,746	−13.9	----	31	5,382	−28.6	----	31	5,481	−26.9	----	31	5,858	−9.1	31
450	30	6,228	−29.0	----	30	6,459	−21.8	----	31	6,541	−18.8	----	29	6,544	−18.4	----	29	6,140	−33.1	----	30	6,234	−32.2	----	31	6,670	−14.7	33
400	30	7,053	−34.2	----	30	7,310	−27.8	----	31	7,401	−24.9	----	29	7,411	−24.4	----	29	6,954	−38.7	----	29	7,059	−37.7	----	31	7,546	−20.9	----
350	30	7,975	−39.9	----	29	8,254	−34.6	----	31	8,358	−32.0	----	29	8,369	−31.6	----	29	7,859	−45.2	----	28	7,966	−44.0	----	30	8,519	−28.3	----
300	30	9,013	−46.6	----	29	9,313	−42.3	----	31	9,428	−40.3	----	29	9,441	−40.1	----	29	8,872	−51.8	----	28	8,985	−50.4	----	30	9,604	−36.9	----
250	30	10,204	−53.1	----	29	10,523	−50.5	----	29	10,640	−49.9	----	27	10,656	−49.6	----	23	10,051	−55.2	----	28	10,158	−55.4	----	30	10,839	−46.7	----
200	30	11,626	−56.3	----	28	11,951	−57.7	----	28	12,065	−58.9	----	21	12,094	−57.1	----	19	11,483	−55.2	----	26	11,568	−55.6	----	23	12,282	−57.1	----
175	29	12,479	−56.5	----	25	12,796	−59.3	----	28	12,896	−62.0	----	20	12,930	−59.4	----	18	12,329	−54.0	----	20	12,408	−54.6	----	22	13,113	−61.2	----
150	27	13,454	−56.0	----	20	13,763	−58.9	----	28	13,844	−63.9	----	16	13,884	−60.9	----	11	13,345	−53.1	----	16	13,397	−54.6	----	21	14,065	−65.1	----
125	21	14,595	−57.8	----	12	14,909	−61.7	----	26	14,952	−66.1	----	10	15,035	−63.6	----	8	14,534	−52.8	----	11	14,584	−55.4	----	15	15,163	−69.4	----
100	15	15,997	−58.3	----	5	16,296	−63.2	----	22	16,299	−69.7	----	----	----	----	----	----	----	----	----	6	16,043	−56.4	----	8	16,465	−73.2	----
80	6	17,503	−62.2	----	----	----	----	----	16	17,622	−70.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
60	----	----	----	----	----	----	----	----	6	19,348	−68.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Buffalo, N. Y. (990.4 mb.)				Camaguey, Cuba (1,003.7 mb.)				Caribou, Maine (991.7 mb.)				Charleston, S. C. (1,018.3 mb.)				Ciudad Victoria, Mexico (976.3 mb.)				Columbia, Mo. (988.8 mb.)				Dodge City, Kans. (923.8 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	221	0.2	75	31	122	20.7	95	31	191	−7.4	84	31	13	10.5	88	30	335	21.1	57	31	239	2.0	72	31	792	−0.3	71
1,000	31	143	(*)	----	31	154	21.2	93	31	125	(*)	----	31	165	12.9	79	30	126	(*)	----	31	146	----	----	31	149	(*)	----
950	31	557	−.5	69	31	605	20.6	85	31	527	−6.8	76	31	599	12.0	71	30	573	20.8	55	31	566	2.7	62	31	567	(*)	----
900	31	983	−3.4	70	31	1,068	18.4	72	31	946	−8.3	71	31	1,048	10.2	68	30	1,037	18.2	56	31	999	2.0	54	31	1,001	2.4	57
850	31	1,434	−5.0	64	31	1,557	15.4	68	31	1,389	−9.8	63	31	1,522	8.7	57	30	1,525	16.1	52	31	1,460	1.3	49	31	1,464	3.1	43
800	31	1,908	−6.5	56	31	2,069	12.6	60	31	1,855	−11.3	59	31	2,022	7.0	46	30	2,038	14.5	46	31	1,946	−.6	47	31	1,954	1.8	37
750	31	2,420	−8.4	51	31	2,613	10.3	44	31	2,354	−12.6	57	31	2,559	5.3	41	30	2,585	12.0	47	31	2,466	−2.8	47	31	2,478	−.2	35
700	31	2,944	−10.2	46	31	3,180	7.4	33	31	2,874	−14.5	53	31	3,112	2.9	34	30	3,157	8.4	47	31	3,003	−5.5	48	31	3,021	−3.0	34
650	31	3,522	−12.8	44	31	3,792	4.7	23	31	3,438	−17.4	51	31	3,713	−.4	35	30	3,767	4.6	42	31	3,589	−8.6	46	31	3,608	−6.5	35
600	31	4,120	−16.0	39	30	4,435	1.0	----	31	4,028	−20.8	----	30	4,345	−4.3	34	29	4,414	.8	----	31	4,198	−11.7	40	31	4,225	−10.4	34
550	29	4,769	−20.1	37	29	5,133	−3.1	----	31	4,667	−24.6	----	30	5,029	−8.4	33	29	5,110	−3.6	----	30	4,864	−15.3	40	31	4,892	−14.6	35
500	29	5,466	−24.2	----	29	5,877	−8.0	----	31	5,354	−29.2	----	29	5,762	−13.1	33	28	5,854	−8.7	----	30	5,573	−19.9	42	31	5,605	−19.4	32
450	29	6,233	−28.9	----	28	6,698	−13.9	----	31	6,102	−34.4	----	29	6,561	−18.8	37	28	6,673	−14.1	----	30	6,351	−25.1	----	31	6,383	−25.0	----
400	25	7,076	−34.1	----	28	7,570	−20.7	----	31	6,914	−39.8	----	29	7,425	−24.7	----	28	7,550	−20.5	----	30	7,193	−31.1	----	31	7,225	−31.1	----
350	22	7,998	−40.1	----	25	8,543	−28.6	----	30	7,810	−45.4	----	28	8,383	−31.6	----	28	8,523	−28.1	----	29	8,136	−37.3	----	31	8,158	−37.6	----
300	18	9,044	−46.8	----	25	9,626	−37.6	----	30	8,827	−49.6	----	28	9,455	−39.7	----	28	9,611	−36.6	----	27	9,191	−44.0	----	31	9,205	−44.5	----
250	13	10,219	−52.3	----	22	10,858	−47.5	----	30	10,012	−52.2	----	25	10,685	−49.1	----	28	10,849	−46.3	----	23	10,415	−51.3	----	30	10,404	−51.8	----
200	12	11,665	−55.3	----	22	12,296	−58.1	----	26	11,472	−53.3	----	23	12,123	−58.2	----	27	12,298	−57.1	----	16	11,859	−57.6	----	28	11,823	−57.3	----
175	7	12,512	−54.6	----	21	13,129	−63.0	----	24	12,330	−53.6	----	19	12,951	−61.1	----	26	13,133	−62.0	----	14	12,701	−58.5	----	24	12,650	−57.4	----
150	5	13,461	−54.3	----	20	14,063	−68.3	----	20	13,342	−53.8	----	17	13,901	−62.2	----	26	14,076	−66.4	----	9	13,691	−60.6	----	21	13,617	−57.9	----
125	----	----	----	----	20	15,141	−73.7	----	12	14,467	−54.7	----	12	15,025	−65.7	----	19	15,163	−71.1	----	7	14,811	−62.7	----	16	14,746	−58.8	----
100	----	----	----	----	6	16,459	−77.8	----	----	----	----	----	7	16,361	−68.3	----	13	16,464	−74.5	----	----	----	----	----	11	16,130	−61.2	----
80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6	17,521	−61.8	----

Standard pressure surface (mb.)	El Paso, Tex. (882.9 mb.)				Ely, Nev. (806.3 mb.)				Glasgow, Mont. (937.0 mb.)				Grand Junction, Colo. (815.8 mb.)				Great Falls, Mont. (881.5 mb.)				Greensboro, N. C. (987.4 mb.)				Hatteras, N. C. (1,019.1 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	1,195	9.6	46	31	1,908	−8.0	75	31	648	−13.3	73	31	1,474	−1.9	64	31	1,128	−6.8	61	31	273	5.2	79	31	3	11.1	81
1,000	31	145	(*)	----	31	188	(*)	----	31	145	(*)	----	31	173	(*)	----	31	131	(*)	----	31	168	(*)	----	31	160	11.7	73
950	31	586	(*)	----	31	604	(*)	----	31	545	(*)	----	31	596	(*)	----	31	543	(*)	----	31	590	7.1	64	31	594	9.5	66
900	31	1,040	(*)	----	31	1,035	(*)	----	31	958	−7.4	64	31	1,032	(*)	----	31	969	(*)	----	31	1,034	5.6	64	31	1,036	7.6	64
850	31	1,511	9.8	41	31	1,491	(*)	----	31	1,404	−6.5	58	31	1,489	(*)	----	31	1,412	−5.3	51	31	1,500	4.4	59	31	1,505	5.8	63
800	31	2,012	7.6	41	31	1,969	−5.0	71	31	1,876	−8.3	56	31	1,976	−.5	49	31	1,886	−7.3	51	31	1,993	3.5	51	31	2,000	4.1	56
750	31	2,548	5.2	42	31	2,483	−4.9	59	31	2,381	−10.7	56	31	2,495	−2.8	50	31	2,391	−9.8	53	31	2,521	1.5	49	31	2,528	2.0	47
700	31	3,101	2.1	40	31	3,018	−7.1	54	31	2,902	−13.8	56	31	3,034	−6.2	54	31	2,916	−12.6	54	31	3,068	−.6	46	31	3,078	−.1	42
650	31	3,699	−1.6	38	31	3,597	−10.3	52	31	3,469	−17.0	52	31	3,615	−9.4	54	31	3,485	−16.0	50	31	3,658	−3.7	43	31	3,671	−2.9	42
600	31	4,328	−5.4	37	31	4,204	−13.6	50	31	4,058	−20.5	52	31	4,225	−12.9	52	31	4,076	−20.1	47	31	4,286	−7.4	42	30	4,299	−6.5	----
550	31	5,007	−9.7	36	31	4,862	−17.8	43	30	4,696	−24.7	----	31	4,886	−16.9	50	31	4,718	−24.5	----	31	4,959	−11.1	41	30	4,976	−10.2	----
500	31	5,735	−14.2	37	31	5,568	−22.3	----	30	5,382	−29.4	----	31	5,592	−21.6	----	31	5,402	−29.5	----	31	5,685	−15.9	42	29	5,702	−14.6	----
450	30	6,536	−19.2	41	31	6,337	−27.8	----	30	6,132	−34.9	----	31	6,368	−26.7	----	31	6,150	−34.8	----	30	6,422	−21.1	----	29	6,497	−20.2	----
400	30	7,397	−25.0	----	31	7,171	−33.7	----	30	6,937	−40.9	----	31	7,202	−32.1	----	31	6,958	−40.6	----	30	7,338	−27.3	----	29	7,354	−26.1	----
350	28	8,357	−32.1	----	30	8,094	−40.1	----	30	7,833	−46.9	----	31	8,132	−38.4	----	28	7,863	−46.9	----	30	8,285	−34.1	----	29	8,305	−33.3	----
300	28	9,426	−40.6	----	30	9,130	−46.9	----	29	8,835	−52.8	----	30	9,179	−45.5	----	28	8,870	−52.6	----	26	9,374	−41.2	----	28	9,370	−41.4	----
250	27	10,640	−50.1	----	30	10,319	−53.7	----	26	10,000	−55.8	----	29	10,378	−52.1	----	27	10,040	−55.9	----	26	10,589	−50.1	----	27	10,584	−49.5	----
200	24	12,058	−59.0	----	28	11,726	−58.0	----	24	11,422	−54.8	----	26	11,816	−56.4	----	25	11,459	−55.8	----	22	12,013	−58.2	----	23	12,042	−57.7	----
175	23	12,884	−61.8	----	27	12,563	−57.9	----	23	12,275	−53.9	----	23	12,663	−56.1	----	24	12,309	−54.1	----	17	12,840	−59.7	----	19	12,881	−60.1	----
150	22	13,836	−63.1	----	19	13,506	−57.8	----	22	13,268	−53.8	----	15	13,635	−55.5	----	21	13,272	−54.2	----	12	13,797	−60.1	----	11	13,853	−60.8	----
125	13	14,953	−66.5	----	18	14,658	−59.2	----	15	14,462	−53.2	----	9	14,782	−56.9	----	17	14,434	−54.2	----	9	14,944	−62.4	----	8	14,980	−63.3	----
100	9	16,283	−69.7	----	10	16,041	−61.1	----	11	15,878	−55.0	----	8	16,178	−58.2	----	10	15,880	−55.2	----	----	----	----	----	----	----	----	----
80	----	----	----	----	----	----	----	----	8	17,304	−56.7	----	----	----	----	----	6	17,294	−56.3	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

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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 1948*—Continued

Standard pressure surface (mb.)	Havana, Cuba [1] (mb.)				Honolulu, T. H. (1,016.0 mb.)				International Falls, Minn. (969.8 mb.)				Joliet, Ill. (997.0 mb.)				Lake Charles, La. (1,018.6 mb.)				Lander, Wyo. (823.7 mb.)				Las Vegas, Nev.[2] (948.3 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					31	3	23.3	68	31	360	−11.7	80	30	178	−2.3	80	31	5	13.2	83	31	1,696	−7.8	59	17	574	7.4	25
1,000					31	142	22.1	70	31	121	(*)		30	152	(*)		31	159	14.6	75	31	156	(*)		31	150	(*)	
950					31	586	18.6	76	31	520	−10.3	77	30	564	−1.8	66	31	599	13.3	68	31	574	(*)		31	570	(*)	
900					31	1,048	15.2	80	31	934	−9.5	72	30	991	−2.4	59	31	1,046	11.8	58	31	1,002	(*)		31	1,020	7.3	34
850					31	1,531	12.4	76	31	1,375	−9.7	66	30	1,444	−2.7	49	31	1,524	11.2	45	31	1,448	(*)		31	1,488	4.5	37
800					31	2,039	10.9	53	31	1,842	−11.0	61	30	1,923	−4.0	47	31	2,030	10.3	37	31	1,924	−4.2	48	31	1,980	2.1	38
750					31	2,582	8.9	36	31	2,343	−12.9	58	30	2,438	−6.0	43	31	2,576	8.0	35	31	2,435	−5.3	43	31	2,502	.1	36
700					31	3,143	6.3		31	2,859	−15.0	55	30	2,968	−8.2	41	31	3,131	4.9	35	31	2,970	−8.6	45	31	3,049	−2.5	31
650					31	3,751	3.1		31	3,426	−17.0	55	30	3,549	−10.9	40	31	3,736	1.5	36	31	3,546	−12.0	45	31	3,637	−5.7	30
600					31	4,391	−.7		31	4,014	−20.1	55	30	4,151	−14.5	44	31	4,372	−2.8	39	31	4,150	−15.2	43	31	4,256	−9.6	31
550					31	5,081	−5.1		31	4,658	−23.9		30	4,808	−18.7	47	31	5,056	−6.8	36	31	4,802	−19.5	43	31	4,924	−13.8	33
500					31	5,823	−9.6		31	5,344	−28.4		30	5,509	−23.6		31	5,794	−11.5	33	31	5,503	−24.5		31	5,642	−18.2	
450					31	6,633	−15.5		31	6,096	−33.8		30	6,277	−28.9		31	6,605	−16.9	34	31	6,269	−30.0		31	6,422	−24.2	
400					31	7,508	−21.3		31	6,905	−39.7		30	7,104	−34.4		31	7,470	−23.1		31	7,091	−36.1		31	7,268	−30.7	
350					31	8,480	−28.2		31	7,805	−46.3		30	8,025	−40.6		30	8,436	−30.6		31	8,004	−42.9		31	8,203	−37.4	
300					31	9,569	−35.2		31	8,812	−52.6		30	9,060	−46.9		29	9,510	−39.2		31	9,027	−50.0		31	9,251	−44.9	
250					31	10,819	−42.2		31	9,980	−55.2		30	10,251	−52.8		28	10,730	−49.0		29	10,202	−54.6		30	10,449	−52.5	
200					31	12,298	−51.3		31	11,406	−54.3		29	11,679	−55.7		27	12,165	−59.2		21	11,594	−55.8		29	11,871	−59.2	
175					31	13,155	−56.6		30	12,259	−53.8		27	12,520	−56.3		25	12,996	−62.6		14	12,432	−55.3		27	12,708	−59.5	
150					31	14,118	−62.4		26	13,260	−53.1		21	13,482	−56.5		22	13,944	−65.4		8	13,394	−53.1		26	13,672	−60.5	
125					30	15,226	−67.9		23	14,425	−54.0		17	14,644	−58.9		16	15,044	−69.0		7	14,577	−55.3		20	14,808	−61.8	
100					28	16,546	−72.6		20	15,854	−54.8		9	16,056	−58.7		13	16,370	−71.7						14	16,195	−65.0	
80					22	17,841	−73.4		15	17,302	−56.4						7	17,674	−72.2						7	17,544	−65.5	
60					14	19,537	−65.5																					
50					11	20,657	−60.8																					
40					9	22,052	−56.6																					

Standard pressure surface (mb.)	Little Rock, Ark. (1,009.3 mb.)				Mazatlan, Mexico (1,010.4 mb.)				Medford, Oreg. (971.1 mb.)				Merida, Mexico (1,013.6 mb.)				Miami, Fla. (1,018.4 mb.)				Nantucket, Mass. (1,016.8 mb.)				Nashville, Tenn. (998.2 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	79	7.4	73	31	14	21.9	83	29	401	2.2	80	31	27	23.9	81	31	4	21.2	85	30	14	3.4	75	31	177	6.2	76
1,000	31	154	8.1	67	31	104	21.5	80	29	162	(*)		31	145	24.3	80	31	162	22.0	77	30	149	3.9	67	31	161	(*)	
950	31	579	7.4	60	31	561	22.9	58	29	582	2.5	69	31	595	22.0	78	31	610	19.3	77	30	569	2.0	68	31	585	5.8	65
900	31	1,022	6.6	55	31	1,021	21.1	47	29	1,014	.9	65	31	1,064	18.9	78	31	1,071	16.5	74	30	1,000	−.1	63	31	1,024	5.1	56
850	31	1,491	6.2	56	31	1,514	18.7	42	29	1,472	−1.6	66	31	1,553	16.2	73	31	1,556	14.4	69	30	1,456	−1.9	52	31	1,490	3.9	52
800	31	1,987	5.2	48	31	2,032	15.6	40	29	1,952	−4.5	67	31	2,068	14.1	64	31	2,067	12.1	61	30	1,937	−3.5	50	31	1,983	2.7	46
750	31	2,517	3.3	45	31	2,582	11.7	44	29	2,463	−7.1	59	31	2,614	12.0	49	31	2,609	10.1	46	30	2,452	−5.5	45	30	2,507	1.0	43
700	31	3,070	1.0	43	31	3,149	8.0	44	29	2,993	−9.8	54	31	3,187	9.3	42	31	3,177	7.3	39	30	2,985	−7.5	43	30	3,055	−1.6	42
650	31	3,665	−2.2	44	31	3,760	3.9	42	29	3,567	−13.0	47	31	3,800	5.8	37	31	3,785	3.9	33	30	3,565	−10.3	41	30	3,644	−5.0	39
600	31	4,294	−6.0	43	31	4,402	−.2	41	29	4,168	−16.7	47	30	4,448	1.7	35	31	4,429	.1	31	30	4,172	−13.4	42	30	4,267	−8.5	36
550	31	4,972	−10.4	43	30	5,095	−4.2	39	29	4,817	−20.7		30	5,143	−2.5		31	5,121	−3.9	28	29	4,832	−17.4	41	30	4,938	−12.5	36
500	31	5,697	−14.8	41	30	5,838	−8.9	34	29	5,514	−25.3		30	5,893	−7.6		30	5,866	−9.0	28	29	5,536	−21.7		30	5,658	−17.0	
450	31	6,493	−19.9	39	29	6,657	−14.2	33	29	6,277	−30.7		30	6,711	−13.2		30	6,680	−14.8	26	29	6,312	−26.7		29	6,446	−22.3	
400	31	7,351	−25.8		29	7,530	−20.3	35	29	7,100	−35.7		30	7,591	−19.5		28	7,556	−21.2		29	7,146	−32.2		29	7,296	−28.2	
350	31	8,305	−32.5		29	8,505	−27.5		29	8,016	−41.9		30	8,567	−27.3		28	8,527	−28.6		28	8,092	−38.0		29	8,240	−34.6	
300	30	9,374	−40.5		29	9,595	−35.9		29	9,043	−49.0		30	9,656	−36.1		27	9,611	−37.0		28	9,138	−45.0		29	9,300	−42.1	
250	28	10,597	−49.0		29	10,835	−45.6		29	10,223	−54.6		30	10,895	−45.9		27	10,845	−46.9		26	10,341	−51.7		29	10,511	−50.7	
200	22	12,032	−56.7		29	12,285	−56.1		28	11,646	−57.2		29	12,339	−57.3		26	12,291	−57.3		24	11,762	−56.5		29	11,937	−58.1	
175	21	12,877	−58.9		26	13,128	−61.3		28	12,490	−57.2		29	13,172	−62.7		26	13,124	−61.6		18	12,575	−55.0		26	12,771	−58.9	
150	17	13,831	−61.0		23	14,078	−65.1		25	13,460	−56.7		29	14,109	−67.9		23	14,068	−65.8		15	13,548	−55.3		20	13,724	−59.8	
125	11	14,943	−62.4		19	15,188	−68.6		21	14,592	−56.4		24	15,196	−72.9		18	15,169	−69.4		12	14,706	−57.4		20	14,853	−63.0	
100					14	16,525	−73.2		15	16,029	−58.8		15	16,491	−77.8		10	16,477	−73.9		6	16,178	−59.8		10	16,196	−63.5	
80									6	17,445	−58.4														5	17,593	−66.3	

Standard pressure surface (mb.)	New Orleans, La. (1,019.3 mb.)				North Platte, Nebr. (916.5 mb.)				Oakland, Calif. (1,018.5 mb.)				Oklahoma City, Okla. (970.6 mb.)				Omaha, Nebr. (980.0 mb.)				Phoenix, Ariz. (977.2 mb.)				Pittsburgh, Pa. (972.8 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	2	13.8	86	31	849	−4.4	77	31	6	8.2	81	31	391	5.2	59	31	308	−0.8	76	31	339	9.0	56	31	382	1.0	72
1,000	30	163	14.5	83	31	150	(*)		31	157	8.4	75	31	143	(*)		31	144	(*)		31	145	(*)		31	158	(*)	
950	30	602	12.8	74	31	565	(*)		31	584	6.2	71	31	566	6.9	52	31	558	−1.0	63	31	579	13.9	36	31	575	1.2	67
900	30	1,050	12.0	60	31	992	−2.1	67	31	1,022	4.5	65	31	1,009	6.5	47	31	985	−1.3	57	31	1,030	11.5	36	31	1,007	−.3	60
850	30	1,529	11.7	43	31	1,447	−1.8	55	31	1,486	2.4	62	31	1,478	6.5	40	31	1,440	−1.7	50	31	1,505	8.3	38	31	1,463	−1.8	54
800	30	2,304	10.2	43	31	1,929	−2.7	48	31	1,974	.4	50	31	1,974	4.8	38	31	1,922	−3.3	47	31	2,003	5.4	40	31	1,944	−3.2	46
750	30	2,573	8.0		31	2,443	−5.1	45	31	2,497	−1.9	46	31	2,502	2.2	37	31	2,435	−5.4	46	31	2,534	3.1	34	31	2,459	−4.9	45
700	30	3,135	4.9		31	2,977	−8.0	46	31	3,035	−5.0	47	31	3,052	−.2	35	31	2,969	−8.3	46	31	3,085	.4	28	31	2,993	−7.2	44
650	30	3,737	1.6		31	3,557	−11.0	43	31	3,620	−8.3	45	31	3,649	−3.6	35	31	3,547	−11.1	46	31	3,679	−2.8		31	3,574	−9.8	47
600	30	4,376	−2.2		31	4,161	−14.7	42	31	4,231	−12.1	42	31	4,272	−7.4	32	30	4,148	−15.1	46	31	4,306	−7.0		31	4,181	−12.9	47
550	29	5,064	−6.3		31	4,816	−19.0	42	31	4,895	−16.3	39	31	4,948	−11.6		30	4,801	−19.3	45	31	4,984	−11.0		31	4,844	−16.7	45
500	29	5,803	−10.9		30	5,517	−23.7		30	5,609	−20.5	36	31	5,668	−16.6		30	5,502	−24.3		31	5,706	−16.1		31	5,550	−21.3	
450	29	6,616	−16.3		30	6,288	−28.9		30	6,387	−25.8		31	6,459	−22.0		30	6,269	−29.3		31	6,497	−21.7		31	6,327	−26.3	
400	28	7,482	−22.8		30	7,112	−34.6		30	7,224	−32.1		30	7,308	−28.0		30	7,096	−34.3		31	7,350	−27.8		31	7,162	−32.1	
350	28	8,447	−30.2		30	8,031	−40.9		30	8,152	−39.0		30	8,253	−34.8		30	8,018	−40.5		31	8,296	−34.8		31	8,093	−38.4	
300	28	9,524	−38.9		30	9,065	−47.3		30	9,193	−46.1		28	9,313	−42.5		30	9,054	−46.8		31	9,354	−42.5		30	9,137	−45.4	
250	26	10,745	−48.8		27	10,245	−52.6		30	10,387	−52.7		25	10,535	−51.4		30	10,247	−52.1		30	10,563	−51.5		30	10,334	−51.9	
200	25	12,178	−58.6		13	11,721	−56.7		28	11,796	−57.1		23	11,950	−59.7		25	11,687	−55.3		23	11,976	−58.9		30	11,764	−55.5	
175	22	13,008	−62.8						28	12,638	−58.0		19	12,785	−60.3		20	12,524	−56.8		19	12,797	−60.6		27	12,612	−56.1	
150	16	13,941	−65.7						26	13,611	−58.1		11	13,739	−60.7		15	13,506	−57.0		17	13,756	−61.6		22	13,593	−57.2	
125	13	15,042	−67.5						21	14,759	−58.8						6	14,616	−57.8		13	14,871	−64.0		16	14,711	−58.3	
100	7	16,382	−69.6						11	16,149	−60.7														14	16,097	−59.4	
80																									7	17,460	−60.8	

See footnotes at end of table.

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 1948*—Continued

Standard pressure surface (mb.)	Portland, Maine (1,014.7 mb.)				Rapid City, S. Dak. (899.9 mb.)				St. Cloud, Minn. (976.6 mb.)				San Antonio, Tex. (989.8 mb.)				San Juan, P. R. (1,014.9 mb.)				Santa Maria, Calif. (1,009.9 mb.)				Sault Ste. Marie, Mich. (987.8 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	20	−1.8	74	31	980	−6.8	64	31	317	−9.1	78	31	240	12.5	69	31	15	24.1	82	31	71	8.7	78	31	221	−4.9	79
1,000	31	136	−.6	66	31	142	(*)	----	31	130	(*)	----	31	152	(*)	----	31	145	24.1	80	31	153	9.5	71	31	122	(*)	----
950	31	548	−2.3	61	31	555	(*)	----	31	537	−7.6	73	31	592	14.7	58	31	595	21.1	80	31	580	9.0	60	31	529	−5.2	77
900	31	972	−4.5	57	31	979	(*)	----	31	951	−6.3	59	31	1,043	13.3	51	31	1,061	17.9	80	31	1,025	7.1	53	31	950	−7.1	71
850	31	1,421	−5.9	55	31	1,430	−3.0	48	31	1,398	−6.3	56	31	1,523	12.4	44	31	1,549	14.7	77	31	1,493	5.3	46	31	1,394	−8.9	68
800	31	1,895	−7.8	53	31	1,908	−4.9	44	31	1,871	−7.7	58	31	2,031	11.6	38	31	2,060	12.1	68	31	1,986	3.3	41	31	1,861	−10.5	63
750	31	2,399	−9.6	49	31	2,419	−7.0	44	31	2,377	−9.5	54	31	2,574	9.0	38	31	2,603	10.0	52	31	2,515	1.1	39	31	2,362	−12.4	60
700	31	2,926	−11.3	47	31	2,948	−10.4	43	31	2,902	−11.9	49	31	3,136	5.6	38	31	3,170	7.4	42	31	3,059	−1.6	30	31	2,882	−14.1	57
650	31	3,497	−14.2	45	31	3,523	−13.4	40	31	3,472	−14.8	45	30	3,738	2.1	34	30	3,780	4.1	28	31	3,650	−4.6	29	31	3,447	−16.5	54
600	31	4,095	−18.0	42	31	4,121	−16.8	39	31	4,069	−18.0	42	30	4,378	−1.9	35	30	4,423	.2	----	31	4,271	−8.8	----	31	4,040	−19.6	51
550	31	4,741	−21.9	----	31	4,774	−20.9	----	31	4,718	−22.0	----	29	5,064	−6.3	35	30	5,115	−4.3	----	31	4,944	−13.0	----	31	4,685	−23.7	----
500	31	5,436	−26.1	----	31	5,466	−25.7	----	31	5,409	−26.7	----	29	5,802	−11.3	36	30	5,859	−9.3	----	30	5,667	−17.3	----	31	5,371	−28.3	----
450	31	6,198	−30.7	----	31	6,226	−30.7	----	31	6,165	−31.9	----	29	6,611	−16.7	41	30	6,673	−14.8	----	30	6,456	−22.8	----	31	6,128	−33.9	----
400	31	7,019	−35.7	----	31	7,047	−36.8	----	30	6,985	−37.6	----	29	7,478	−22.9	----	30	7,546	−20.9	----	30	7,302	−29.2	----	29	6,929	−39.2	----
350	31	7,936	−41.5	----	31	7,958	−43.2	----	29	7,889	−44.1	----	29	8,443	−29.9	----	29	8,520	−27.7	----	29	8,236	−36.0	----	28	7,836	−44.8	----
300	31	8,968	−47.3	----	30	8,989	−49.7	----	26	8,900	−50.0	----	29	9,522	−38.3	----	29	9,611	−35.2	----	29	9,290	−43.5	----	22	8,879	−50.5	----
250	30	10,155	−52.9	----	30	10,166	−54.6	----	19	10,066	−52.7	----	26	10,749	−48.1	----	29	10,850	−44.3	----	29	10,493	−51.6	----	13	10,087	−52.8	----
200	27	11,562	−55.2	----	25	11,589	−54.8	----	8	11,586	−54.7	----	17	12,188	−57.3	----	29	12,320	−54.6	----	28	11,921	−57.8	----	8	11,591	−55.6	----
175	26	12,408	−55.8	----	19	12,432	−54.0	----	----	-------	------	----	7	13,018	−61.1	----	29	13,162	−60.4	----	27	12,760	−58.9	----	----	-------	------	----
150	22	13,382	−55.6	----	15	13,401	−54.3	----	----	-------	------	----	----	-------	------	----	27	14,113	−66.1	----	23	13,723	−59.1	----	----	-------	------	----
125	18	14,530	−56.2	----	6	14,584	−55.2	----	----	-------	------	----	----	-------	------	----	23	15,204	−71.2	----	20	14,867	−61.5	----	----	-------	------	----
100	13	15,941	−57.5	----	----	-------	------	----	----	-------	------	----	----	-------	------	----	5	16,478	−77.1	----	15	16,258	−63.4	----	----	-------	------	----
80	5	17,349	−58.3	----	----	-------	------	----	----	-------	------	----	----	-------	------	----	----	-------	------	----	11	17,629	−63.1	----	----	-------	------	----

Standard pressure surface (mb.)	Spokane, Wash. (929.8 mb.)				Swan Island, W. I.[1] (mb.)				Tacubaya, Mexico (774.9 mb.)				Tampa, Fla. (1,018.6 mb.)				Tatoosh Island, Wash. (1,008.7 mb.)				Toledo, Ohio (994.9 mb.)				Washington, D. C. (1,016.7 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	721	−5.9	84	----	-------	------	----	31	2,306	15.1	50	31	9	18.5	89	31	31	4.1	87	31	191	−0.7	80	31	25	4.3	69
1,000	30	146	(*)	----	----	-------	------	----	31	79	(*)	----	31	167	19.1	81	31	101	(*)	----	31	149	(*)	----	31	159	4.5	59
950	30	549	(*)	----	----	-------	------	----	31	540	(*)	----	31	608	17.1	73	31	517	1.3	78	31	565	−1.3	69	31	580	3.3	55
900	30	976	−4.4	80	----	-------	------	----	31	1,012	(*)	----	31	1,068	14.7	67	31	950	−1.2	76	31	990	−1.9	58	31	1,013	1.7	54
850	30	1,425	−5.7	71	----	-------	------	----	31	1,509	(*)	----	31	1,549	12.2	65	31	1,403	−3.9	71	31	1,444	−2.9	49	31	1,473	.2	48
800	30	1,899	−8.1	65	----	-------	------	----	31	2,032	(*)	----	31	2,056	10.2	58	31	1,879	−6.7	66	31	1,923	−4.2	45	31	1,957	−1.3	45
750	30	2,401	−10.8	63	----	-------	------	----	31	2,582	14.2	48	31	2,594	8.3	47	31	2,385	−9.6	63	31	2,434	−6.1	44	31	2,479	−2.7	44
700	30	2,924	−14.2	61	----	-------	------	----	31	3,162	9.9	54	31	3,159	6.2	33	31	2,910	−12.8	61	31	2,968	−8.3	43	31	3,015	−5.1	43
650	30	3,439	−17.8	58	----	-------	------	----	31	3,776	5.2	60	31	3,764	2.7	29	30	3,474	−16.7	57	31	3,547	−11.3	44	31	3,603	−7.8	44
600	30	4,077	−21.4	----	----	-------	------	----	31	4,423	.3	60	31	4,406	−1.2	27	30	4,065	−20.3	53	30	4,147	−14.7	44	31	4,212	−11.4	43
550	30	4,715	−25.5	----	----	-------	------	----	31	5,118	−4.2	48	31	5,092	−5.3	----	30	4,702	−24.6	----	30	4,803	−18.6	45	31	4,879	−15.4	47
500	30	5,397	−30.2	----	----	-------	------	----	31	5,861	−8.3	----	31	5,836	−10.4	----	30	5,391	−28.8	----	30	5,505	−23.0	----	31	5,588	−19.9	47
450	30	6,139	−35.3	----	----	-------	------	----	31	6,684	−13.8	----	31	6,644	−15.8	----	30	6,139	−33.7	----	30	6,276	−28.3	----	31	6,367	−24.7	----
400	29	6,950	−41.1	----	----	-------	------	----	31	7,557	−20.3	----	31	7,516	−22.3	----	29	6,952	−39.2	----	30	7,104	−34.1	----	31	7,210	−30.3	----
350	29	7,845	−47.3	----	----	-------	------	----	30	8,531	−28.0	----	31	8,482	−29.8	----	29	7,856	−44.8	----	30	8,026	−40.5	----	31	8,147	−36.7	----
300	28	8,858	−52.1	----	----	-------	------	----	29	9,619	−36.5	----	30	9,566	−38.3	----	29	8,875	−49.9	----	30	9,060	−47.2	----	31	9,197	−44.4	----
250	27	10,029	−55.5	----	----	-------	------	----	29	10,857	−45.9	----	28	10,791	−48.5	----	29	10,054	−54.1	----	30	10,248	−53.2	----	29	10,390	−52.0	----
200	25	11,452	−54.2	----	----	-------	------	----	27	12,304	−57.3	----	24	12,221	−59.1	----	27	11,479	−54.0	----	29	11,676	−56.4	----	28	11,810	−57.9	----
175	23	12,309	−53.6	----	----	-------	------	----	23	13,134	−62.9	----	22	13,049	−63.1	----	21	12,331	−52.9	----	29	12,522	−56.7	----	28	12,648	−59.3	----
150	22	13,291	−53.6	----	----	-------	------	----	15	14,084	−68.0	----	20	13,989	−66.4	----	18	13,328	−52.7	----	28	13,492	−57.5	----	27	13,611	−60.3	----
125	17	14,464	−53.6	----	----	-------	------	----	5	15,151	−71.6	----	16	15,078	−70.8	----	13	14,499	−52.6	----	23	14,625	−58.5	----	26	14,744	−61.9	----
100	16	15,895	−54.6	----	----	-------	------	----	----	-------	------	----	11	16,387	−74.7	----	10	15,916	−53.3	----	20	16,017	−60.4	----	15	16,136	−62.9	----
80	10	17,334	−56.6	----	----	-------	------	----	----	-------	------	----	8	17,688	−73.9	----	6	17,410	−52.4	----	10	17,411	−61.2	----	11	17,521	−65.1	----
60	----	-------	------	----	----	-------	------	----	----	-------	------	----	----	-------	------	----	----	-------	------	----	5	19,209	−62.7	----	----	-------	------	----

See footnotes at end of table.

LATE REPORTS OF AEROLOGICAL DATA FOR NOVEMBER 1948

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 November 1948*—Continued

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Tacubaya, Mexico (773.5 mb.)				Swan Island, W. I. (1,011.5 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	2,306	16.0	62	30	10	26.7	81
1,000	30	58	(*)	----	30	112	26.9	79
950	30	521	(*)	----	30	571	23.5	81
900	30	997	(*)	----	30	1,036	20.3	79
850	30	1,492	(*)	----	30	1,528	17.5	72
800	30	2,014	(*)	----	30	2,045	14.9	63
750	30	2,568	14.8	60	30	2,595	12.1	51
700	30	3,148	10.6	64	30	3,165	9.2	47
650	30	3,766	5.9	72	30	3,783	5.7	41
600	30	4,414	1.1	76	30	4,426	2.3	37
550	30	5,110	−3.3	67	30	5,130	−1.8	----
500	30	5,859	−7.4	49	30	5,877	−6.1	----
450	30	6,684	−12.2	43	30	6,710	−10.8	----
400	29	7,564	−17.8	34	29	7,591	−16.6	----
350	29	8,548	−25.4	----	28	8,579	−24.0	----
300	29	9,647	−33.9	----	28	9,685	−32.4	----
250	28	10,896	−44.4	----	28	10,944	−42.6	----
200	27	12,353	−56.5	----	27	12,413	−54.5	----
175	25	13,188	−63.1	----	27	13,254	−61.4	----
150	15	14,116	−69.7	----	25	14,192	−68.6	----
125	9	15,188	−74.8	----	23	15,264	−76.1	----
100	7	16,481	−77.9	----	17	16,540	−80.1	----

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

[1] Data not yet received.

[2] Station elevation changed from 574 m. to 660 m., Dec. 18, 1948.

NOTE.—All observations scheduled between 0300 and 0500, G. C. T. except at Ciudad Victoria, Mazatlan, and Merida, where they are taken near 0200, G. C. T. "Number of observations" refers to those of dynamic height only. (In a few cases temperature or humidity data may be missing for one or more standard pressure surfaces of some observations.) Relative humidity data are not published for standard pressure surfaces having a corresponding mean temperature below −20° C.

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

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

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

Altitude (meters) m. s. l.	Abilene, Tex. (534 m.)			Albuquerque, N. Mex. (1,627 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (505 m.)			Boise, Idaho (868 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (100 m.)			Charleston, S. C. (16 m.)			Cincinnati, Ohio (273 m.)			Denver, Colo. (1,618 m.)			El Paso, Tex. (1,198 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	230	2.8	30	263	1.7	28	292	2.1	29	268	3.4	30	304	2.5	28	115	2.1	31	68	1.7	25	235	3.9	30	250	1.4	27	297	1.2	29	243	2.1	30	314	2.9	28	244	2.9
500							28	289	2.5										29	161	5.5	25	238	6.3	30	240	3.9	27	270	2.4	29	243	3.0						
1,000	30	236	5.1				26	279	4.9				30	276	5.6	28	123	1.9	27	182	3.9	22	244	9.8	28	270	5.4	25	252	3.7	23	269	4.7						
1,500	29	253	7.6				20	268	7.0	29	259	8.8	29	275	7.9	28	226	1.9	26	203	2.7	16	258	9.9	22	273	7.9	21	277	7.7	23	279	7.9				28	254	3.9
2,000	27	264	10.4	30	252	2.9	19	268	10.1	28	270	10.6	26	281	10.6	26	248	3.4	21	235	3.6	13	263	11.6	14	269	9.5	21	269	10.7	22	284	10.0	30	287	4.3	28	260	6.1
2,500	27	255	13.0	30	262	6.9	17	269	12.0	27	273	11.0	25	281	11.8	24	257	5.0	20	246	5.3				11	273	11.7	18	274	11.4	22	278	11.8	30	276	6.4	27	265	9.9
3,000	27	257	16.0	30	269	11.1	15	266	13.0	25	280	12.2	24	280	13.1	23	262	8.1	19	259	6.0				10	278	14.0	18	271	13.7	22	271	14.1	29	278	9.0	27	269	12.9
4,000	26	258	16.5	26	275	16.7	12	272	18.6	20	293	13.8	22	276	14.9	15	264	6.0	18	254	8.2				10	274	17.3	18	272	16.3	20	274	18.7	28	276	13.6	25	266	14.5
5,000	23	259	19.5	22	275	22.5				18	288	15.8	20	275	16.2	12	277	9.7	17	255	11.2							15	282	18.3	17	280	23.5	27	279	21.4	22	273	17.4
6,000	21	262	21.4	20	274	28.7				12	295	18.4	18	274	18.2	12	276	11.7	13	258	12.3							13	286	22.4	11	280	24.8	26	276	24.6	21	269	21.5
8,000				17	275	31.0							12	276	25.4				10	260	14.7													17	269	31.0	14	267	27.2
10,000				11	280	34.8																																	

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,475 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (575 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	29	177	1.5	31	270	1.2	26	277	1.0	29	243	2.7	31	45	0.5	27	242	3.9	31	246	1.0	27	252	0.4	27	332	0.7	31	122	1.9	30	00	0.0	29	258	1.0	25	292	4.1
500							26	261	2.0				31	269	2.1	27	249	5.1				27	236	2.1	27	346	.3	31	121	1.2	30	265	1.2	29	219	2.0	25	283	6.5
1,000							26	260	4.6	29	247	6.8	28	258	5.1	26	262	7.2	31	82	.2	24	221	4.0	27	175	1.6	31	245	.5	21	257	4.0	27	240	3.4	25	284	7.5
1,500				31	272	1.3	24	269	8.0	29	265	8.8	25	257	8.1	25	267	9.5	31	243	.4	22	245	6.2	24	211	3.3	28	264	1.9	18	272	7.6	20	241	6.1	22	294	10.1
2,000	29	183	1.7	31	235	2.9	23	277	10.9	29	270	9.1	21	255	9.1	22	273	12.4	30	240	3.1	20	258	9.6	21	238	3.3	25	250	3.4	17	275	9.6	17	262	8.1	21	284	13.6
2,500	29	214	4.0	31	225	5.4	22	276	13.3	26	275	10.1	17	254	10.9	21	274	14.8	28	259	5.7	19	269	12.2	16	250	3.0	22	258	4.1	14	276	10.8	16	270	10.8	19	281	16.2
3,000	25	247	6.8	31	240	7.7	22	273	14.7	23	279	10.2	17	259	11.7	19	275	16.7	27	268	8.1	15	267	13.8	13	304	3.5	20	260	4.5	13	280	12.4	16	269	13.4	15	276	16.2
4,000	21	267	11.3	22	269	12.5	20	281	19.6	13	279	12.4	14	270	11.4	18	271	20.6	27	271	13.8	11	269	20.3	10	297	3.3	18	274	5.5	13	275	16.2	16	268	17.7			
5,000	19	278	15.8	16	274	17.6	16	278	22.4				11	274	14.9	16	269	22.9	26	276	17.1				10	269	5.7	14	275	6.2	10	274	20.1	16	280	23.2			
6,000	18	269	18.5	12	281	21.2	14	278	25.2							13	265	24.5	24	277	21.1							13	283	5.4				13	283	26.9			
8,000	11	294	20.3																19	272	23.3							12	278	11.1									
10,000																												11	284	12.9									

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

Altitude (meters) m. s. l.	Oakland, Calif. (8 m.)			Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Cloud, Minn. (318 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (13 m.)			Sault Ste. Marie, Mich. (221 m.)			Seattle, Wash. (116 m.)			Spokane, Wash. (725 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	27	226	1.2	29	216	2.4	27	250	1.2	31	245	0.9	28	307	3.8	28	232	2.0	29	225	0.9	30	192	0.3	30	264	2.5	29	261	2.4	28	206	2.5	27	204	3.0	28	276	2.0
500	27	276	.7	29	214	2.8	27	231	1.5	31	240	1.0	---	---	---	28	226	3.0	29	228	3.2	30	205	.8	30	242	1.6	29	248	3.9	28	209	5.0	---	---	---	28	269	4.5
1,000	24	307	2.5	29	216	4.8	25	245	5.5	31	239	1.4	28	307	3.9	27	242	5.1	26	242	6.3	28	234	2.0	29	193	2.3	21	277	5.2	22	225	6.7	26	203	4.8	26	274	7.4
1,500	20	318	4.6	27	244	8.4	24	250	8.3	29	241	2.4	28	300	6.2	24	255	6.5	23	253	8.3	26	250	4.5	29	197	2.4	13	292	5.7	20	229	7.4	19	225	5.6	24	283	10.7
2,000	19	323	5.3	26	259	10.4	23	256	10.2	28	264	4.0	28	287	7.6	21	271	8.1	20	264	10.4	22	255	8.0	26	259	2.9	12	306	7.3	16	230	6.6	15	234	5.9	23	279	13.2
2,500	19	311	6.7	26	261	13.8	22	259	11.6	25	267	6.2	27	289	9.8	21	271	9.7	20	266	12.3	20	261	10.5	24	267	3.5	10	315	8.9	14	256	5.6	13	237	6.5	20	279	15.3
3,000	18	313	8.5	26	263	16.2	22	261	13.0	24	268	8.7	25	290	11.7	20	275	12.1	19	267	13.6	20	266	12.6	24	279	6.0	10	317	11.3	13	252	4.9	12	241	6.4	20	276	18.5
4,000	17	298	10.6	22	270	19.4	19	266	15.6	22	274	12.4	24	280	14.8	19	278	15.4	18	264	19.0	19	269	15.6	21	278	10.4	---	---	---	10	263	5.2	---	---	---	17	280	20.0
5,000	14	304	11.5	16	277	23.4	15	273	16.9	18	276	14.4	22	280	17.3	17	281	19.3	14	268	18.5	15	267	17.3	19	278	11.8	---	---	---	10	268	6.7	---	---	---	12	288	22.0
6,000	12	290	12.2	12	285	24.5	15	273	20.4	13	277	15.0	18	291	20.7	15	282	25.2	10	276	17.2	12	272	20.6	16	279	13.2	---	---	---	---	---	---	---	---	---	11	290	22.0
8,000	---	---	---	---	---	---	---	---	---	---	---	---	14	286	27.3	---	---	---	---	---	---	---	---	---	13	270	18.5	---	---	---	---	---	---	---	---	---	---	---	---

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

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,636 m.)			Big Spring, Tex. (774 m.)			Bismarck, N. Dak. (505 m.)			Brownsville, Tex. (7 m.)			Caribou, Maine (191 m.)			Charleston, S. C. (13 m.)			Columbia, Mo. (237 m.)			Grand Junction, Colo. (1,473 m.)			Greensboro, N. C. (275 m.)			Hatteras, N. C. (3 m.)			International Falls, Minn. (358 m.)			Little Rock, Ark. (80 m.)			Miami, Fla. (12 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	31	107	0.3	30	183	3.2	31	301	1.4	31	137	1.3	31	276	2.0	31	315	0.5	31	126	1.2	31	133	0.4	31	270	0.8	31	346	2.0	31	215	1.1	31	300	0.3	31	72	1.1
500	---	---	---	---	---	---	---	---	---	31	154	4.7	31	275	4.4	30	250	2.3	31	208	3.4	---	---	---	31	262	2.1	31	302	2.3	31	233	1.8	31	207	3.0	31	112	2.2
1,000	---	---	---	30	216	6.8	29	286	5.8	31	171	4.0	31	282	5.5	28	264	4.0	31	244	6.5	---	---	---	31	262	4.3	31	282	3.3	31	254	4.1	31	229	5.8	31	132	1.6
1,500	---	---	---	30	243	10.0	29	291	7.9	31	179	2.9	31	280	7.1	28	268	6.2	31	256	8.6	31	144	.5	31	267	6.9	31	263	7.2	30	278	6.1	31	243	8.5	31	193	.9
2,000	31	260	4.1	30	261	11.8	29	286	9.9	31	238	2.8	30	283	8.9	27	271	8.8	31	259	9.7	31	222	2.7	31	272	9.0	31	266	8.7	29	285	6.9	31	247	11.0	31	232	1.9
2,500	31	267	7.4	30	263	12.3	29	288	11.0	31	246	4.8	30	274	10.5	27	269	12.0	31	263	11.9	31	222	5.5	31	265	10.8	30	270	9.7	30	286	8.1	31	251	12.5	31	247	2.9
3,000	31	267	10.4	30	262	13.1	30	285	11.8	31	246	5.7	29	269	12.2	26	271	14.0	31	265	14.3	31	236	9.1	30	275	13.0	30	270	12.8	30	289	9.0	31	255	14.7	31	258	3.3
4,000	30	269	14.4	29	262	15.2	30	283	13.6	31	256	8.1	27	273	13.8	26	273	15.5	30	271	18.3	31	265	13.1	28	273	17.6	28	274	15.5	30	284	12.8	29	259	19.5	31	279	5.3
5,000	29	277	18.1	27	259	20.5	30	282	14.6	31	262	9.8	27	272	17.1	25	276	18.7	27	264	20.3	29	273	17.3	27	268	21.9	26	268	18.1	28	269	13.1	29	260	23.9	30	281	7.2
6,000	27	270	21.7	23	264	21.2	30	286	17.6	31	265	11.6	26	264	18.6	22	276	20.6	24	267	23.8	25	277	16.7	26	272	25.0	24	268	20.4	26	267	13.4	27	259	24.6	28	282	8.7
8,000	15	261	22.6	11	248	25.1	23	279	18.2	28	253	15.1	16	252	21.4	18	284	27.2	17	271	32.0	15	289	23.6	16	286	26.6	15	276	23.2	20	249	12.7	18	261	28.7	28	282	13.8
10,000	---	---	---	---	---	---	15	275	18.9	27	259	16.8	12	265	22.1	11	285	29.3	---	---	---	---	---	---	10	290	34.5	10	278	27.8	16	270	19.0	11	262	32.8	24	280	15.3
12,000	---	---	---	---	---	---	---	---	---	21	258	24.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13	267	17.6	---	---	---	22	283	18.9
14,000	---	---	---	---	---	---	---	---	---	12	258	26.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16	283	19.7

Altitude (meters) m. s. l.	Nantucket, Mass. (13 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.)			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.)			Tatoosh Island, Wash. (33 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	29	312	2.4	31	207	0.4	30	16	0.2	31	151	0.4	30	153	0.3	31	267	2.2	31	251	1.3	31	85	0.7	31	111	2.4	31	72	0.9	30	257	2.0	28	200	2.3	28	147	2.5
500	29	281	4.9	30	205	3.4	30	196	2.1	30	280	1.3	27	260	.4	---	---	---	28	255	2.4	31	166	1.8	31	90	7.3	30	4	2.5	30	261	3.6	---	---	---	25	222	3.2
1,000	28	272	5.4	30	235	6.1	29	226	3.5	30	302	2.5	25	263	3.5	31	268	2.3	28	270	5.0	31	214	2.9	31	94	7.6	30	336	3.5	29	277	6.1	28	218	4.3	24	240	5.1
1,500	28	269	8.6	30	246	7.8	29	250	6.2	30	297	3.7	24	280	6.1	31	290	5.6	27	282	6.3	31	242	4.9	31	94	7.2	29	335	4.1	28	288	7.2	28	240	6.3	24	254	5.8
2,000	28	264	12.1	30	257	9.9	29	255	9.2	30	292	5.3	25	273	8.8	31	295	8.0	27	282	9.0	31	255	7.6	30	95	6.9	29	324	5.8	27	283	7.4	27	249	6.1	24	262	5.3
2,500	28	272	13.0	30	264	12.0	29	260	11.0	30	288	7.2	26	277	11.6	31	289	9.1	27	277	10.6	31	253	9.6	29	93	6.4	29	317	6.7	27	281	9.8	25	255	6.4	24	271	5.8
3,000	28	271	15.3	30	261	15.6	29	262	12.7	31	284	8.5	27	272	13.0	31	285	10.3	28	276	11.2	31	255	11.3	26	93	4.9	29	301	8.3	25	278	12.1	23	264	6.6	25	265	6.7
4,000	26	273	19.2	28	261	18.9	27	265	15.5	31	282	12.1	27	272	17.7	31	285	13.2	28	273	13.4	29	257	14.4	24	87	2.8	29	289	11.1	25	274	16.8	20	276	9.7	25	281	8.4
5,000	20	270	22.5	20	263	18.5	27	266	19.0	28	291	14.8	25	277	20.3	30	282	15.9	26	276	13.6	26	262	16.5	22	92	2.8	28	283	14.0	20	276	16.5	16	274	9.9	22	297	8.7
6,000	13	268	23.4	19	260	22.3	25	265	21.4	23	287	18.7	24	268	23.9	26	285	18.8	24	274	15.6	21	258	17.2	23	78	2.6	26	274	15.2	19	274	19.4	15	270	12.3	21	302	9.1
8,000	---	---	---	13	264	32.6	19	267	25.1	20	276	21.4	16	275	28.8	22	282	20.3	16	270	13.3	17	254	21.9	22	3	3.1	22	263	18.4	11	271	22.9	---	---	---	16	321	10.8
10,000	---	---	---	---	---	---	16	262	27.9	10	264	25.9	11	270	33.4	16	283	23.8	12	278	15.6	13	261	25.8	22	279	9.7	14	258	22.6	---	---	---	---	---	---	12	324	13.8
12,000	---	---	---	---	---	---	11	271	29.8	---	---	---	---	---	---	11	268	27.8	---	---	---	---	---	---	22	276	18.5	11	265	25.2	---	---	---	---	---	---	11	304	14.2
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19	282	15.5	---	---	---	---	---	---	---	---	---	---	---	---

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.