METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR OCTOBER 1949

AEROLOGICAL OBSERVATIONS

[For description of change 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 October 1949*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,011.4 mb.)				Albuquerque, N. Mex. (837.8 mb.)				Atlanta, Ga. (985.5 mb.)				Big Spring, Tex. (927.9 mb.)				Bismarck, N. Dak. (954.4 mb.)				Boise, Idaho (917.5 mb.)				Brownsville, Tex. (1,012.9 mb.)			
	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity
Surface	30	86	10.7	84	31	1,620	14.0	40	31	300	18.4	81	31	774	17.3	59	31	505	6.5	73	31	868	8.4	58	31	6	23.7	85
1,000	30	181	12.6	72	31	93	(*)	----	31	174	(*)	----	31	126	(*)	----	31	116	(*)	----	31	145	(*)	----	31	118	23.8	81
950	30	611	11.7	63	31	545	(*)	----	31	615	18.6	74	31	573	(*)	----	31	546	(*)	----	31	581	(*)	----	31	571	21.7	77
900	30	1,062	9.2	61	31	1,012	(*)	----	31	1,078	16.5	72	31	1,035	18.0	57	31	987	6.7	58	31	1,027	10.0	48	31	1,035	19.3	72
850	30	1,534	7.1	56	31	1,497	(*)	----	31	1,564	14.1	69	31	1,522	14.9	57	31	1,455	4.3	59	31	1,501	8.1	43	31	1,526	17.0	68
800	30	2,031	5.6	48	31	2,009	13.1	37	31	2,073	11.5	65	31	2,033	11.9	54	31	1,946	1.8	60	31	1,999	4.9	44	31	2,042	15.0	57
750	30	2,562	3.3	47	31	2,554	9.1	41	31	2,612	8.9	60	31	2,577	9.3	47	31	2,474	-.5	58	31	2,528	1.8	44	31	2,592	12.6	47
700	30	3,113	.9	44	31	3,115	4.6	46	31	3,179	5.8	59	31	3,141	6.1	43	31	3,013	-3.4	58	31	3,075	-1.1	44	31	3,162	9.7	43
650	30	3,707	-2.0	38	31	3,718	.3	50	31	3,786	2.6	57	31	3,745	2.5	42	31	3,606	-6.8	60	31	3,665	-4.4	44	31	3,778	6.6	40
600	30	4,338	-5.5	37	31	4,351	-4.3	48	31	4,426	-.8	51	31	4,386	-1.5	37	31	4,217	-10.1	59	31	4,289	-8.1	44	31	4,426	2.4	39
550	30	5,015	-9.9	34	31	5,033	-8.6	43	31	5,115	-4.7	46	30	5,076	-5.7	32	31	4,892	-14.1	54	31	4,960	-12.3	44	31	5,124	-1.8	33
500	30	5,743	-14.3	31	31	5,763	-13.3	29	31	5,859	-9.2	43	30	5,815	-10.4	34	31	5,600	-18.7	51	31	5,682	-17.0	45	31	5,876	-6.2	----
450	30	6,543	-19.3	----	30	6,564	-18.3	----	31	6,674	-14.4	39	30	6,625	-15.8	34	31	6,389	-23.9	----	31	6,471	-22.4	----	31	6,700	-11.5	----
400	30	7,400	-25.3	----	29	7,427	-24.4	----	31	7,549	-20.7	----	30	7,496	-22.1	----	31	7,228	-29.5	----	31	7,319	-28.5	----	31	7,586	-17.7	----
350	29	8,360	-32.9	----	29	8,385	-31.9	----	31	8,523	-27.4	----	29	8,465	-29.2	----	31	8,167	-36.6	----	31	8,262	-35.4	----	31	8,571	-24.4	----
300	29	9,425	-41.0	----	28	9,455	-39.8	----	31	9,613	-35.6	----	28	9,548	-37.0	----	31	9,217	-44.2	----	30	9,317	-43.0	----	29	9,677	-32.6	----
250	26	10,647	-49.6	----	27	10,676	-47.7	----	31	10,854	-45.4	----	27	10,786	-45.3	----	29	10,412	-51.5	----	29	10,536	-50.4	----	27	10,935	-42.0	----
200	23	12,104	-57.7	----	23	12,116	-54.1	----	31	12,311	-55.7	----	27	12,246	-53.9	----	29	11,843	-55.7	----	23	11,971	-56.0	----	26	12,406	-53.4	----
175	22	12,938	-60.2	----	22	12,970	-57.5	----	30	13,151	-60.7	----	22	13,098	-57.9	----	28	12,692	-56.9	----	18	12,819	-57.4	----	25	13,259	-59.6	----
150	20	13,885	-62.8	----	20	13,948	-61.4	----	30	14,097	-65.8	----	21	14,058	-62.5	----	26	13,659	-56.7	----	12	13,788	-59.0	----	25	14,209	-65.9	----
125	18	15,003	-64.5	----	18	15,064	-64.2	----	30	15,190	-70.1	----	19	15,171	-67.3	----	21	14,813	-57.7	----	6	14,954	-60.8	----	23	15,287	-72.3	----
100	12	16,365	-66.9	----	10	16,434	-65.5	----	23	16,518	-72.8	----	14	16,502	-70.2	----	13	16,218	-59.9	----	----	------	------	----	13	16,609	-76.6	----
80	5	17,755	-62.6	----	----	------	------	----	12	17,830	-70.8	----	----	------	------	----	8	17,644	-58.1	----	----	------	------	----	----	------	------	----

Standard pressure surface (mb.)	Buffalo, N. Y. (994.5 mb.)				Camaguey, Cuba [1] (—— mb.)				Caribou, Maine (997.0 mb.)				Charleston, S. C. (1,017.7 mb.)				Ciudad Victoria, Mex. (973.1 mb.)				Columbia, Mo. (989.7 mb.)				Dodge City, Kans. (924.6 mb.)			
Surface	31	221	12.3	75	----	------	------	----	31	191	6.8	80	31	18	18.6	93	31	335	26.7	57	31	239	14.8	69	31	792	13.0	69
1,000	31	174	(*)	----	----	------	------	----	31	164	(*)	----	31	170	20.4	84	31	92	(*)	----	31	150	(*)	----	31	122	(*)	----
950	31	608	13.7	59	----	------	------	----	31	592	8.9	61	31	616	19.0	77	31	548	25.1	57	31	591	15.6	60	31	562	(*)	----
900	31	1,061	11.1	54	----	------	------	----	31	1,036	7.0	57	31	1,077	16.6	72	31	1,019	20.9	62	31	1,044	12.9	61	31	1,019	14.9	56
850	31	1,536	8.4	50	----	------	------	----	31	1,504	4.5	53	31	1,563	14.1	66	31	1,511	17.3	69	31	1,523	10.8	57	31	1,502	13.4	52
800	31	2,035	5.9	45	----	------	------	----	31	1,996	2.4	49	31	2,073	11.8	61	31	2,026	13.9	76	31	2,027	8.7	51	31	2,011	11.0	48
750	30	2,566	3.8	41	----	------	------	----	31	2,520	.2	52	31	2,617	9.5	54	31	2,575	11.5	67	31	2,565	6.2	48	31	2,551	7.9	47
700	30	3,119	1.0	41	----	------	------	----	31	3,066	-2.4	48	31	3,181	6.6	48	31	3,144	9.1	53	31	3,122	3.5	41	31	3,112	4.3	45
650	29	3,711	-2.2	42	----	------	------	----	31	3,655	-5.2	43	31	3,793	3.4	44	30	3,758	5.5	43	31	3,724	.3	40	31	3,715	.8	40
600	28	4,344	-5.3	39	----	------	------	----	31	4,276	-8.5	41	31	4,432	.0	40	29	4,406	1.7	41	31	4,357	-3.3	38	30	4,349	-3.2	33
550	28	5,024	-9.0	36	----	------	------	----	31	4,948	-12.3	37	31	5,127	-3.9	38	28	5,101	-2.7	39	30	5,044	-7.3	34	30	5,033	-7.9	----
500	28	5,753	-13.7	35	----	------	------	----	31	5,669	-16.7	----	31	5,871	-8.3	37	28	5,851	-7.0	32	30	5,774	-12.0	33	30	5,766	-13.0	----
450	28	6,551	-18.9	33	----	------	------	----	30	6,456	-21.7	----	30	6,687	-13.2	35	28	6,674	-11.9	----	30	6,580	-17.6	----	30	6,564	-18.6	----
400	28	7,412	-25.5	----	----	------	------	----	30	7,306	-27.3	----	29	7,569	-19.5	32	27	7,557	-18.5	----	30	7,446	-24.0	----	30	7,428	-24.9	----
350	27	8,364	-32.5	----	----	------	------	----	30	8,255	-33.8	----	29	8,548	-26.5	----	26	8,540	-25.2	----	30	8,406	-31.2	----	30	8,385	-32.0	----
300	27	9,431	-40.3	----	----	------	------	----	30	9,319	-41.0	----	29	9,642	-34.7	----	26	9,640	-33.6	----	29	9,480	-38.9	----	29	9,454	-40.1	----
250	27	10,650	-49.2	----	----	------	------	----	30	10,537	-48.7	----	28	10,890	-44.3	----	26	10,892	-43.7	----	29	10,707	-47.2	----	29	10,675	-48.6	----
200	25	12,082	-56.7	----	----	------	------	----	30	11,982	-54.7	----	27	12,353	-54.3	----	26	12,353	-55.4	----	27	12,153	-55.1	----	29	12,116	-55.5	----
175	22	12,952	-59.3	----	----	------	------	----	30	12,832	-56.5	----	27	13,198	-59.5	----	25	13,191	-61.9	----	24	12,992	-59.0	----	27	12,963	-58.6	----
150	18	13,903	-61.7	----	----	------	------	----	29	13,800	-57.9	----	27	14,151	-64.8	----	24	14,135	-68.6	----	22	13,966	-62.7	----	26	13,930	-62.1	----
125	12	15,082	-65.9	----	----	------	------	----	25	14,942	-59.1	----	27	15,249	-69.6	----	23	15,213	-75.2	----	17	15,092	-65.8	----	25	15,042	-64.8	----
100	6	16,464	-66.9	----	----	------	------	----	18	16,321	-59.7	----	22	16,566	-71.9	----	20	16,494	-78.7	----	8	16,478	-67.2	----	24	16,402	-66.9	----
80	----	------	------	----	----	------	------	----	----	------	------	----	20	17,884	-68.9	----	14	17,796	-75.1	----	----	------	------	----	16	17,741	-63.6	----
60	----	------	------	----	----	------	------	----	----	------	------	----	10	19,641	-63.7	----	6	19,527	-67.7	----	----	------	------	----	----	------	------	----

Standard pressure surface (mb.)	El Paso, Tex. (881.4 mb.)				Ely, Nev. (809.0 mb.)				Glasgow, Mont. (938.9 mb.)				Grand Junction, Colo. (852.3 mb.)				Great Falls, Mont. (887.3 mb.)				Greensboro, N. C. (989.8 mb.)				Hatteras, N. C. (1,020.5 mb.)			
Surface	30	1,195	18.0	42	31	1,908	5.9	60	31	648	6.3	66	31	1,474	10.8	58	31	1,128	5.1	64	31	273	14.5	89	31	3	20.1	85
1,000	30	94	(*)	----	31	125	(*)	----	31	124	(*)	----	31	112	(*)	----	31	136	(*)	----	31	187	(*)	----	31	179	19.7	79
950	30	549	(*)	----	31	566	(*)	----	31	553	(*)	----	31	555	(*)	----	31	572	(*)	----	31	623	17.0	68	31	621	17.0	77
900	30	1,019	(*)	----	31	1,024	(*)	----	31	995	6.3	58	31	1,017	(*)	----	31	1,016	(*)	----	31	1,083	14.7	71	31	1,079	14.4	74
850	30	1,505	17.5	41	31	1,497	(*)	----	31	1,461	3.4	56	31	1,495	(*)	----	31	1,478	4.4	56	31	1,565	11.9	71	31	1,561	12.3	66
800	30	2,020	14.0	44	31	2,000	9.0	50	31	1,950	.5	58	31	2,004	10.6	47	31	1,969	1.4	56	31	2,071	9.7	63	31	2,068	10.1	58
750	30	2,564	10.1	47	31	2,535	5.8	49	31	2,471	-2.7	61	31	2,543	6.9	49	31	2,489	-1.5	57	31	2,609	7.7	53	31	2,606	7.8	51
700	30	3,131	5.9	50	31	3,093	2.0	51	31	3,010	-5.4	64	31	3,101	2.9	52	31	3,032	-4.8	57	31	3,171	5.2	50	31	3,169	5.2	49
650	30	3,735	1.7	47	31	3,688	-1.9	50	31	3,595	-8.2	61	31	3,699	-1.3	52	31	3,617	-8.0	56	31	3,776	2.0	47	31	3,777	2.2	42
600	30	4,375	-2.3	40	31	4,320	-5.9	52	31	4,206	-11.9	58	31	4,330	-5.9	54	31	4,228	-11.8	51	31	4,415	-1.7	44	31	4,413	-1.5	44
550	29	5,063	-6.5	36	31	4,997	-10.6	52	31	4,870	-15.9	56	31	5,008	-10.4	47	31	4,893	-16.2	48	31	5,104	-5.9	39	31	5,102	-5.5	39
500	28	5,799	-11.3	----	31	5,722	-15.6	49	31	5,579	-20.5	----	30	5,733	-14.8	39	31	5,600	-20.7	47	31	5,843	-10.2	37	31	5,843	-9.9	36
450	27	6,603	-17.1	----	31	6,514	-20.9	----	30	6,351	-25.8	----	30	6,530	-20.1	35	31	6,380	-25.6	----	31	6,652	-15.4	36	31	6,658	-15.3	----
400	27	7,473	-23.4	----	31	7,369	-27.2	----	30	7,190	-31.5	----	30	7,385	-26.6	----	31	7,216	-31.3	----	31	7,527	-21.8	----	31	7,528	-21.5	----
350	26	8,435	-30.6	----	31	8,317	-34.1	----	28	8,115	-38.5	----	29	8,331	-33.6	----	30	8,150	-38.2	----	31	8,495	-29.0	----	30	8,501	-28.5	----
300	26	9,512	-38.6	----	31	9,379	-41.9	----	28	9,157	-45.9	----	27	9,412	-41.2	----	30	9,192	-45.7	----	31	9,579	-37.1	----	30	9,586	-36.7	----
250	24	10,741	-46.3	----	31	10,591	-49.9	----	27	10,357	-51.8	----	27	10,625	-49.4	----	27	10,409	-52.9	----	31	10,815	-45.9	----	29	10,824	-45.5	----
200	19	12,182	-55.0	----	25	12,023	-55.7	----	23	11,787	-56.1	----	27	12,064	-55.3	----	22	11,810	-57.2	----	30	12,271	-55.1	----	28	12,282	-55.0	----
175	18	13,021	-59.8	----	25	12,870	-57.8	----	17	12,651	-56.7	----	25	12,926	-57.7	----	16	12,655	-57.8	----	28	13,110	-59.9	----	25	13,119	-60.1	----
150	14	13,995	-65.3	----	22	13,839	-60.0	----	7	13,629	-55.2	----	25	13,892	-60.0	----	12	13,614	-57.4	----	25	14,069	-64.7	----	19	14,090	-65.2	----
125	9	15,074	-68.2	----	18	14,954	-61.3	----	----	------	------	----	17	15,043	-62.2	----	6	14,757	-58.4	----	16	15,185	-68.4	----	16	15,196	-69.5	----
100	5	16,388	-70.8	----	15	16,324	-62.9	----	----	------	------	----	8	16,428	-65.4	----	----	------	------	----	10	16,527	-69.4	----	11	16,521	-70.7	----
80	----	------	------	----	9	17,676	-60.6	----	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	7	17,859	-67.0	----

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 October 1949*—Continued

Standard pressure surface (mb.)	Havana, Cuba [1] (—— mb.)				Honolulu, T. H. (1,014.8 mb.)				International Falls, Minn. (970.6 mb.)				Joliet, Ill. (997.4 mb.)				Lake Charles, La. (1,014.9 mb.)				Lander, Wyo. (829.3 mb.)				Las Vegas, Nev. (936.1 mb.)			
	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity
Surface	----	----	----	----	31	3	26.7	61	31	360	5.1	79	31	178	12.2	78	31	5	21.2	89	31	1,696	4.1	65	31	660	17.7	25
1,000	----	----	----	----	31	133	24.6	64	31	113	(*)	----	31	156	(*)	----	31	134	21.8	86	31	140	(*)	----	31	87	(*)	----
950	----	----	----	----	31	581	20.8	71	31	535	6.3	72	31	590	13.9	63	31	583	19.6	84	31	575	(*)	----	31	532	(*)	----
900	----	----	----	----	31	1,047	17.3	75	31	978	4.5	67	31	1,042	11.2	63	31	1,044	17.0	82	31	1,026	(*)	----	31	1,000	20.6	23
850	----	----	----	----	31	1,533	14.1	74	31	1,442	2.8	64	31	1,518	8.7	62	31	1,531	14.9	75	31	1,492	(*)	----	31	1,489	16.6	27
800	----	----	----	----	31	2,043	12.4	57	31	1,931	.4	61	31	2,018	6.6	57	31	2,042	12.7	62	31	1,990	5.8	53	31	2,001	12.4	32
750	----	----	----	----	31	2,588	11.1	38	31	2,452	−2.0	58	31	2,550	4.5	51	31	2,590	10.3	56	31	2,521	3.1	51	31	2,543	7.9	37
700	----	----	----	----	31	3,157	8.8	25	31	2,993	−4.3	56	31	3,104	2.0	44	31	3,154	7.1	56	31	3,071	−.2	51	31	3,102	4.0	37
650	----	----	----	----	31	3,770	5.7	----	31	3,579	−7.5	56	31	3,699	−1.3	40	31	3,764	3.6	48	31	3,664	−3.7	52	31	3,705	.1	36
600	----	----	----	----	31	4,417	2.3	----	31	4,193	−11.1	52	31	4,332	−4.8	33	31	4,406	.0	45	31	4,289	−7.2	49	31	4,337	−4.1	34
550	----	----	----	----	30	5,118	−1.4	----	31	4,860	−14.9	40	31	5,009	−8.6	31	31	5,100	−4.1	40	31	4,965	−11.2	46	30	5,016	−8.2	----
500	----	----	----	----	30	5,868	−6.3	----	31	5,571	−19.5	35	31	5,744	−13.3	32	31	5,844	−8.6	38	31	5,686	−16.2	45	30	5,749	−13.4	----
450	----	----	----	----	30	6,691	−12.2	----	31	6,355	−24.7	----	31	6,542	−19.2	----	31	6,662	−13.7	38	31	6,480	−22.0	----	30	6,547	−19.5	----
400	----	----	----	----	30	7,573	−19.0	----	31	7,193	−30.5	----	31	7,403	−25.5	----	31	7,539	−19.9	39	31	7,327	−28.2	----	30	7,406	−26.2	----
350	----	----	----	----	30	8,552	−26.7	----	31	8,129	−36.7	----	31	8,357	−32.6	----	31	8,515	−27.1	----	31	8,271	−35.3	----	30	8,358	−33.3	----
300	----	----	----	----	30	9,645	−35.2	----	31	9,181	−43.4	----	31	9,425	−40.7	----	31	9,607	−35.4	----	31	9,326	−43.2	----	30	9,424	−41.0	----
250	----	----	----	----	30	10,891	−44.8	----	31	10,389	−49.8	----	31	10,643	−49.3	----	30	10,846	−45.5	----	30	10,526	−51.4	----	27	10,637	−49.1	----
200	----	----	----	----	28	12,343	−55.8	----	30	11,830	−54.9	----	29	12,090	−56.7	----	29	12,294	−56.3	----	29	11,955	−56.7	----	26	12,088	−55.5	----
175	----	----	----	----	27	13,183	−61.0	----	30	12,682	−55.2	----	28	12,936	−59.5	----	29	13,131	−61.6	----	28	12,799	−58.3	----	24	12,930	−57.8	----
150	----	----	----	----	27	14,129	−65.9	----	22	13,674	−55.7	----	27	13,884	−62.4	----	28	14,069	−67.2	----	25	13,775	−59.7	----	21	13,873	−60.3	----
125	----	----	----	----	24	15,228	−69.2	----	19	14,832	−56.7	----	26	15,016	−65.3	----	24	15,154	−72.3	----	25	14,909	−61.1	----	20	14,996	−62.5	----
100	----	----	----	----	21	16,540	−72.8	----	8	16,209	−57.4	----	22	16,374	−66.0	----	19	16,449	−75.0	----	14	16,314	−62.7	----	13	16,379	−65.1	----
80	----	----	----	----	15	17,859	−70.7	----	----	----	----	----	15	17,750	−63.9	----	14	17,746	−71.4	----	7	17,701	−61.5	----	----	----	----	----
60	----	----	----	----	7	19,590	−64.3	----	----	----	----	----	----	----	----	----	9	19,477	−65.9	----	----	----	----	----	----	----	----	----
50	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6	20,615	−61.9	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Little Rock, Ark. (1,008.6 mb.)				Mazatlan, Mex. (1,008.1 mb.)				Medford, Oreg. (972.2 mb.)				Merida, Mex. (1,009.7 mb.)				Miami, Fla. (1,015.5 mb.)				Nantucket, Mass. (1,020.9 mb.)				Nashville, Tenn. (998.6 mb.)			
Surface	31	79	16.7	86	31	14	27.8	73	31	401	10.3	71	29	27	25.9	84	31	4	24.9	82	30	14	12.4	87	31	177	17.1	81
1,000	31	152	18.7	74	31	86	27.3	73	31	165	(*)	----	29	113	25.6	83	31	139	25.3	78	30	188	13.8	75	31	166	(*)	----
950	31	595	17.4	69	31	549	25.1	68	31	598	12.3	56	29	564	23.2	81	31	592	22.3	80	30	623	12.3	64	31	608	17.1	68
900	31	1,052	14.6	70	31	1,014	22.5	71	31	1,046	10.0	56	29	1,036	20.3	80	31	1,059	19.3	78	30	1,072	10.7	53	31	1,065	14.8	68
850	31	1,535	12.8	65	31	1,510	19.6	69	31	1,519	7.2	57	29	1,527	17.2	77	31	1,549	16.4	73	30	1,547	9.3	48	31	1,547	12.3	67
800	31	2,043	10.8	64	31	2,031	16.6	64	31	2,015	4.6	57	29	2,044	14.3	74	31	2,063	14.0	65	30	2,048	7.5	45	31	2,054	10.1	61
750	21	2,584	8.4	59	31	2,586	13.6	58	31	2,548	2.6	45	29	2,591	11.6	70	31	2,609	11.7	55	30	2,582	5.3	39	31	2,594	7.8	57
700	31	3,147	5.8	54	31	3,157	10.1	57	31	3,095	.1	40	29	3,163	9.2	58	31	3,181	9.0	47	30	3,139	3.0	38	31	3,155	5.2	52
650	31	3,756	2.8	51	29	3,775	6.3	52	31	3,688	−3.1	41	29	3,778	6.1	53	31	3,792	5.6	46	30	3,738	−.1	----	31	3,763	1.9	50
600	29	4,397	−.7	44	28	4,423	1.9	50	31	4,314	−6.9	36	27	4,425	2.3	50	31	4,441	2.0	42	29	4,373	−3.2	----	31	4,399	−1.8	49
550	29	5,087	−4.8	42	28	5,124	−2.4	47	31	4,987	−11.4	33	27	5,123	−1.6	41	31	5,140	−2.1	40	29	5,056	−7.4	----	31	5,086	−5.7	46
500	29	5,830	−9.4	37	28	5,871	−6.7	38	31	5,712	−16.4	32	27	5,876	−6.3	41	31	5,890	−6.5	36	29	5,791	−11.7	----	31	5,826	−10.4	44
450	29	6,642	−15.0	33	27	6,696	−11.8	32	31	6,503	−21.8	----	26	6,698	−11.3	34	30	6,710	−11.8	34	29	6,600	−17.0	----	30	6,638	−15.8	42
400	29	7,517	−21.5	----	27	7,581	−17.7	----	31	7,355	−27.5	----	25	7,585	−17.6	----	30	7,598	−17.7	33	28	7,460	−23.5	----	30	7,509	−21.7	----
350	28	8,484	−28.9	----	27	8,566	−24.8	----	31	8,302	−34.1	----	25	8,571	−24.8	----	30	8,582	−24.8	----	28	8,423	−30.4	----	30	8,479	−28.9	----
300	28	9,569	−36.5	----	27	9,667	−33.3	----	31	9,363	−41.9	----	25	9,672	−33.3	----	30	9,683	−33.4	----	28	9,500	−38.5	----	30	9,563	−37.0	----
250	27	10,815	−44.9	----	27	10,924	−42.9	----	29	10,566	−50.6	----	25	10,926	−43.4	----	30	10,936	−43.4	----	28	10,728	−47.5	----	29	10,804	−46.0	----
200	25	12,282	−54.3	----	26	12,394	−54.4	----	27	12,002	−57.8	----	25	12,386	−55.7	----	29	12,398	−55.0	----	26	12,164	−56.1	----	28	12,251	−55.3	----
175	23	13,117	−58.8	----	26	13,237	−61.0	----	22	12,864	−60.7	----	25	13,222	−62.7	----	27	13,242	−60.8	----	24	13,007	−59.1	----	28	13,093	−59.7	----
150	19	14,076	−63.4	----	25	14,177	−68.0	----	18	13,827	−62.4	----	23	14,154	−70.2	----	22	14,195	−66.3	----	24	13,966	−61.7	----	27	14,045	−64.0	----
125	13	15,169	−68.2	----	22	15,258	−73.2	----	10	14,996	−64.7	----	18	15,209	−76.3	----	15	15,292	−71.8	----	22	15,088	−63.6	----	23	15,141	−67.5	----
100	9	16,483	−69.0	----	19	16,548	−76.7	----	----	----	----	----	13	16,491	−80.0	----	7	16,614	−74.1	----	16	16,470	−65.0	----	12	16,490	−69.1	----
80	----	----	----	----	16	17,834	−73.3	----	----	----	----	----	10	17,752	−74.8	----	----	----	----	----	7	17,824	−63.0	----	----	----	----	----
60	----	----	----	----	19	19,537	−66.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	New Orleans, La. (1,016.2 mb.)				North Platte, Nebr. (917.4 mb.)				Oakland, Calif. (1,015.1 mb.)				Oklahoma City, Okla. (971.1 mb.)				Omaha, Nebr. (980.1 mb.)				Phoenix, Ariz. (972.5 mb.)				Pittsburgh, Pa. (976.3 mb.)			
Surface	31	2	22.4	88	31	849	9.4	72	31	6	14.2	73	31	391	15.3	76	31	308	13.9	67	31	339	19.7	48	31	382	14.4	67
1,000	31	142	23.0	84	31	121	(*)	----	31	133	15.0	67	31	139	(*)	----	31	136	(*)	----	31	95	(*)	----	31	177	(*)	----
950	31	591	20.7	80	31	559	(*)	----	31	574	16.2	49	31	579	16.7	68	31	572	14.1	56	31	547	24.2	31	31	618	15.5	62
900	31	1,055	18.5	77	31	1,008	11.3	61	31	1,027	15.2	38	31	1,036	14.2	65	31	1,026	12.0	57	31	1,013	21.0	32	31	1,070	12.9	62
850	31	1,544	15.8	73	31	1,485	9.6	55	31	1,510	13.0	34	31	1,518	12.3	58	31	1,503	10.0	58	31	1,503	16.9	35	31	1,549	10.2	61
800	31	2,058	13.2	65	31	1,987	7.9	53	31	2,016	10.4	34	31	2,025	10.2	53	31	2,005	7.4	54	31	2,016	12.5	41	31	2,051	7.8	59
750	31	2,601	10.6	58	31	2,524	5.3	48	31	2,556	7.4	34	31	2,566	8.3	45	31	2,539	4.7	50	31	2,559	8.2	46	31	2,589	5.6	51
700	31	3,171	7.9	51	31	3,078	2.4	46	31	3,116	4.1	32	31	3,127	5.4	38	31	3,093	1.7	48	31	3,118	4.7	44	31	3,143	3.2	47
650	31	3,780	4.3	49	31	3,675	−1.6	45	31	3,717	.2	30	31	3,732	1.7	34	31	3,692	−1.9	44	31	3,729	.9	40	31	3,747	.3	44
600	29	4,429	1.1	46	31	4,305	−5.8	46	30	4,359	−3.2	30	31	4,369	−2.3	33	31	4,320	−5.4	39	31	4,357	−2.8	34	31	4,379	−3.5	45
550	29	5,122	−2.7	41	31	4,983	−10.1	45	30	5,041	−7.8	30	31	5,056	−6.5	30	31	4,998	−9.4	34	31	5,044	−7.2	29	31	5,066	−7.3	41
500	28	5,876	−7.1	----	31	5,712	−14.9	39	30	5,777	−12.6	28	30	5,795	−11.3	29	31	5,729	−14.3	30	31	5,776	−12.0	25	30	5,804	−11.4	36
450	28	6,698	−12.2	----	29	6,504	−20.5	----	30	6,579	−18.2	28	30	6,601	−16.9	30	31	6,527	−19.5	29	31	6,580	−17.4	----	30	6,610	−17.0	----
400	28	7,582	−18.2	----	29	7,360	−26.8	----	29	7,443	−24.6	----	30	7,469	−23.4	----	31	7,385	−26.0	----	31	7,444	−24.2	----	30	7,477	−23.3	----
350	26	8,567	−25.3	----	29	8,309	−34.2	----	29	8,400	−32.2	----	30	8,431	−30.8	----	31	8,338	−32.9	----	31	8,403	−31.7	----	25	8,453	−30.4	----
300	26	9,668	−33.4	----	29	9,368	−42.6	----	28	9,470	−40.6	----	30	9,507	−38.7	----	31	9,405	−40.6	----	30	9,475	−39.7	----	22	9,533	−38.7	----
250	26	10,924	−42.9	----	29	10,577	−50.6	----	26	10,679	−49.3	----	30	10,737	−46.9	----	31	10,625	−49.0	----	29	10,705	−47.5	----	17	10,756	−47.7	--
200	24	12,401	−53.4	----	28	12,005	−56.3	----	22	12,138	−57.0	----	30	12,188	−54.9	----	29	12,061	−56.2	----	28	12,156	−54.4	----	12	12,250	−55.1	----
175	23	13,244	−59.5	----	25	12,853	−58.5	----	22	12,976	−60.0	----	26	13,050	−59.5	----	29	12,903	−58.8	----	24	13,009	−57.9	----	9	13,124	−58.4	----
150	21	14,204	−65.4	----	24	13,808	−61.0	----	14	13,926	−62.2	----	23	14,010	−64.2	----	26	13,858	−60.9	----	22	13,977	−61.4	----	6	14,095	−63.5	----
125	14	15,305	−70.6	----	21	14,942	−63.5	----	8	15,045	−63.4	----	19	15,126	−68.1	----	25	14,982	−62.4	----	17	15,094	−64.2	----	5	15,229	−68.5	----
100	5	16,655	−74.9	----	16	16,299	−64.0	----	----	----	----	----	6	16,424	−69.2	----	23	16,346	−63.2	----	9	16,456	−67.6	----	----	----	----	----
80	----	----	----	----	5	17,690	−63.6	----	----	----	----	----	----	----	----	----	14	17,721	−61.4	----	----	----	----	----	----	----	----	----

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 October 1949*—Continued

Standard pressure surface (mb.)	Portland, Maine (1,019.3 mb.)				Rapid City, S. Dak. (902.5 mb.)				St. Cloud, Minn. (977.4 mb.)				San Antonio, Tex. (987.7 mb.)				San Juan, P. R. (1,012.3 mb.)				Santa Maria, Calif. (1,006.8 mb.)				Sault Ste. Marie, Mich. (990.7 mb.)			
	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity
Surface	31	20	9.0	84	31	980	6.6	69	31	317	9.1	74	31	240	19.8	74	31	15	25.7	84	31	71	12.4	81	31	221	8.0	85
1,000	31	179	11.9	76	31	123	(*)	----	31	126	(*)	----	31	131	(*)	----	31	122	25.5	82	31	128	13.0	76	31	143	(*)	----
950	31	613	11.2	59	31	555	(*)	----	31	559	10.0	65	31	577	19.8	70	31	576	22.9	80	31	567	15.5	55	31	574	9.5	68
900	31	1,058	8.7	59	31	1,002	(*)	----	31	1,002	8.3	63	31	1,042	17.2	71	31	1,044	19.9	79	31	1,022	16.7	37	31	1,016	7.7	64
850	31	1,529	6.9	53	31	1,475	7.5	57	31	1,472	6.0	63	31	1,529	15.0	69	31	1,535	16.9	75	31	1,507	14.1	33	31	1,485	5.4	62
800	31	2,025	4.7	48	31	1,972	5.0	57	31	1,967	3.8	59	31	2,041	13.3	59	31	2,051	14.4	67	31	2,015	11.1	31	31	1,979	3.4	55
750	31	2,558	2.8	43	31	2,502	2.5	59	31	2,494	1.1	54	31	2,589	11.7	46	31	2,599	11.8	59	31	2,556	8.2	29	31	2,505	.8	52
700	31	3,105	.2	41	31	3,052	−.5	59	31	3,042	−1.6	51	31	3,158	8.4	50	31	3,170	8.9	58	31	3,117	4.8	30	31	3,052	−2.1	49
650	31	3,701	−2.4	37	31	3,646	−4.0	56	31	3,635	−4.9	53	31	3,768	4.5	52	31	3,785	5.4	52	31	3,721	1.2	28	31	3,638	−5.4	43
600	31	4,327	−5.9	37	31	4,268	−7.8	53	31	4,254	−8.4	46	30	4,414	.5	42	30	4,431	1.7	47	31	4,356	−2.6	25	30	4,259	−8.8	39
550	31	5,007	−9.8	32	31	4,944	−11.6	48	31	4,928	−12.1	40	30	5,106	−3.4	35	30	5,128	−2.5	45	31	5,042	−7.1	----	30	4,928	−12.8	38
500	31	5,733	−14.5	31	31	5,664	−16.5	48	31	5,648	−16.3	38	29	5,855	−7.8	----	30	5,878	−6.8	39	30	5,776	−11.7	----	29	5,652	−17.4	36
450	31	6,529	−19.8	30	31	6,453	−21.9	----	31	6,439	−21.6	----	29	6,672	−13.4	----	30	6,698	−12.0	36	30	6,582	−17.4	----	28	6,444	−22.5	----
400	31	7,386	−26.1	----	31	7,304	−28.2	----	31	7,292	−27.8	----	29	7,553	−19.4	----	30	7,585	−18.0	36	30	7,447	−24.1	----	28	7,292	−28.4	----
350	30	8,344	−33.3	----	31	8,248	−35.3	----	31	8,238	−34.2	----	29	8,530	−26.7	----	30	8,569	−25.0	----	30	8,406	−31.6	----	28	8,236	−35.0	----
300	27	9,422	−41.4	----	31	9,304	−42.6	----	31	9,300	−41.4	----	28	9,623	−34.9	----	30	9,670	−33.4	----	30	9,479	−39.4	----	28	9,294	−42.7	----
250	25	10,632	−49.8	----	31	10,514	−50.3	----	29	10,505	−49.3	----	27	10,870	−43.9	----	30	10,925	−43.5	----	30	10,704	−47.7	----	25	10,494	−50.8	----
200	21	12,078	−57.5	----	31	11,948	−55.9	----	29	11,948	−55.0	----	26	12,337	−53.3	----	29	12,386	−55.6	----	29	12,156	−54.3	----	23	11,929	−56.2	----
175	18	12,907	−60.2	----	30	12,798	−57.6	----	28	12,804	−57.1	----	25	13,190	−58.7	----	29	13,224	−62.1	----	25	13,021	−58.2	----	21	12,779	−57.7	----
150	15	13,853	−61.6	----	27	13,764	−58.2	----	27	13,786	−58.8	----	23	14,152	−64.3	----	28	14,160	−69.0	----	24	13,988	−61.3	----	17	13,788	−59.2	----
125	10	14,971	−63.8	----	21	14,926	−59.3	----	23	14,934	−60.0	----	19	15,252	−69.6	----	21	15,235	−74.9	----	20	15,100	−64.1	----	11	14,938	−61.0	----
100	9	16,324	−66.2	----	10	16,315	−61.3	----	12	16,286	−59.7	----	11	16,576	−72.7	----	14	16,523	−76.7	----	16	16,463	−65.6	----	6	16,353	−61.1	----
80	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	8	17,817	−65.1	----	----	------	------	----

Standard pressure surface (mb.)	Spokane, Wash. (933.6 mb.)				Swan Island, W. I. (1011.2 mb.)				Tacubaya, Mex. (773.7 mb.)				Tampa, Fla. (1016.4 mb.)				Tatoosh Island, Wash. (1015.8 mb.)				Toledo, Ohio (997.0 mb.)				Washington, D. C. (1019.4 mb.)			
	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity	Number of observations	Height	Temperature	Relative humidity
Surface	31	721	7.1	60	31	10	27.0	81	30	2,306	17.4	57	31	9	23.2	86	31	31	9.2	88	31	191	12.6	81	31	25	16.3	76
1,000	31	150	(*)	----	31	109	26.5	81	30	51	(*)	----	31	151	23.6	79	31	161	9.4	83	31	164	(*)	----	31	188	16.7	68
950	31	579	(*)	----	31	560	23.5	82	30	513	(*)	----	31	599	21.3	76	31	589	7.8	78	31	602	14.2	60	31	628	14.9	65
900	31	1,024	7.7	52	31	1,033	20.9	78	30	994	(*)	----	31	1,067	18.4	75	31	1,030	6.0	72	31	1,054	11.7	57	31	1,081	12.2	68
850	31	1,492	4.6	53	31	1,526	18.1	77	30	1,491	(*)	----	31	1,555	15.5	71	31	1,497	3.7	69	31	1,531	9.3	54	31	1,559	10.4	61
800	31	1,984	1.5	54	31	2,045	15.2	75	30	2,020	(*)	----	31	2,068	13.2	61	31	1,987	1.5	63	31	2,031	7.1	52	31	2,062	8.4	55
750	31	2,505	−1.6	57	31	2,593	12.2	70	30	2,575	15.8	57	31	2,612	10.6	56	31	2,512	−1.2	57	31	2,564	4.9	48	31	2,600	6.2	51
700	31	3,047	−4.4	52	31	3,166	9.5	63	30	3,154	11.5	64	31	3,181	7.8	50	31	3,053	−3.7	53	31	3,121	2.2	45	31	3,156	3.6	52
650	31	3,632	−7.6	50	31	3,781	6.2	55	30	3,773	6.8	68	30	3,791	4.5	50	31	3,641	−6.9	48	31	3,719	−1.2	45	31	3,760	.5	50
600	31	4,246	−11.3	49	31	4,432	2.6	53	30	4,423	2.1	71	30	4,437	.8	47	31	4,254	−10.8	47	31	4,350	−4.9	44	31	4,393	−2.9	44
550	30	4,916	−15.1	44	31	5,134	−1.3	49	30	5,123	−2.1	61	30	5,130	−3.2	44	31	4,923	−14.7	45	30	5,039	−8.6	36	31	5,080	−7.2	43
500	30	5,628	−19.7	40	31	5,886	−5.6	46	30	5,875	−6.0	42	30	5,879	−7.7	41	31	5,634	−18.8	44	30	5,758	−13.3	34	31	5,814	−11.5	35
450	28	6,414	−24.6	----	31	6,710	−10.9	43	29	6,702	−11.0	37	29	6,699	−12.8	41	31	6,418	−23.8	----	30	6,556	−19.1	33	30	6,621	−16.9	36
400	28	7,254	−30.6	----	30	7,601	−16.8	38	29	7,588	−17.0	36	29	7,581	−18.8	37	30	7,262	−29.8	----	30	7,419	−25.2	----	30	7,487	−23.4	----
350	28	8,189	−36.9	----	29	8,590	−23.9	----	29	8,575	−24.3	----	29	8,560	−26.5	----	30	8,202	−35.5	----	30	8,374	−32.5	----	30	8,449	−30.4	----
300	26	9,259	−43.6	----	29	9,697	−32.4	----	29	9,679	−32.9	----	28	9,653	−35.0	----	29	9,266	−42.4	----	30	9,442	−40.7	----	30	9,527	−38.4	----
250	23	10,468	−51.0	----	28	10,955	−42.4	----	29	10,936	−43.2	----	28	10,898	−44.8	----	28	10,486	−49.5	----	30	10,659	−49.4	----	29	10,755	−47.7	----
200	16	11,889	−56.7	----	26	12,423	−54.4	----	28	12,400	−55.5	----	25	12,348	−55.8	----	24	11,957	−57.0	----	30	12,094	−56.9	----	28	12,200	−56.1	----
175	11	12,740	−59.3	----	25	13,267	−60.9	----	28	13,237	−62.4	----	23	13,189	−61.5	----	22	12,796	−58.1	----	29	12,939	−60.2	----	28	13,039	−60.4	----
150	8	13,711	−60.0	----	24	14,208	−67.7	----	25	14,174	−69.4	----	20	14,133	−66.9	----	17	13,769	−59.2	----	23	13,885	−62.7	----	28	13,991	−63.7	----
125	----	------	------	----	18	15,299	−74.3	----	21	15,244	−75.5	----	20	15,218	−72.2	----	16	14,908	−59.7	----	20	14,987	−65.1	----	22	15,110	−67.3	----
100	----	------	------	----	12	16,578	−79.1	----	12	16,526	−78.6	----	15	16,531	−76.0	----	9	16,339	−59.9	----	13	16,318	−65.7	----	22	16,446	−68.6	----
80	----	------	------	----	----	------	------	----	----	------	------	----	5	17,854	−72.0	----	----	------	------	----	9	17,696	−63.9	----	14	17,795	−66.6	----
60	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	7	19,541	−63.1	----

[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 the vapor pressure over water. Upper air values of relative humidity at levels with temperatures less than 0° C, have formerly been computed and expressed on the basis of the vapor pressure over ice. 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 October 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	144	1.5	31	195	2.6	29	86	1.4	27	261	4.2	29	273	3.1	30	320	3.6	29	99	3.0	30	248	1.8	31	221	1.7	30	82	2.1	30	212	0.8	31	215	1.4
500	---	---	---	---	---	---	29	80	1.8	---	---	---	---	---	---	---	---	---	29	99	2.8	30	248	3.3	31	225	3.7	30	78	3.7	30	205	1.6	---	---	---
1,000	29	152	1.8	---	---	---	27	137	1.9	---	---	---	29	272	5.1	30	315	3.2	26	133	1.6	30	228	5.2	30	244	5.0	27	79	3.4	29	203	2.6	---	---	---
1,500	27	197	2.5	---	---	---	25	158	1.8	27	271	6.8	26	272	6.6	30	302	2.6	18	196	.4	27	239	6.2	26	264	5.6	25	70	1.9	29	219	3.6	31	213	1.7
2,000	25	213	2.7	31	204	4.3	23	217	1.6	26	281	8.1	22	270	8.9	30	298	3.5	15	252	1.3	27	248	7.3	24	269	7.0	20	41	1.5	26	239	5.4	31	216	2.2
2,500	23	234	3.5	31	223	4.3	21	254	2.6	25	286	10.2	21	275	11.3	30	291	4.9	12	307	2.8	23	254	7.9	24	276	8.3	19	355	1.8	25	252	6.9	29	231	3.3
3,000	21	244	4.7	30	229	4.6	20	254	3.3	25	282	11.2	20	272	12.1	30	290	5.7	12	311	3.7	23	260	9.0	23	274	10.2	18	340	2.7	22	257	6.2	28	237	4.5
4,000	21	235	7.6	29	259	6.5	18	261	4.7	19	285	15.5	17	277	15.5	27	292	7.1	11	322	2.8	21	257	9.1	21	279	11.0	16	330	3.3	18	272	7.5	25	253	7.7
5,000	16	237	7.9	26	273	7.8	18	268	6.6	15	301	17.5	14	272	17.6	22	299	8.0	11	277	4.6	18	262	9.2	19	278	13.7	12	327	4.6	17	265	9.7	24	254	10.3
6,000	14	248	9.0	26	278	8.2	16	285	7.4	12	289	19.8	12	274	19.1	21	301	10.6	---	---	---	15	260	12.7	15	273	16.0	11	315	4.5	13	265	14.7	20	259	9.9
8,000	12	239	14.6	20	280	9.1	---	---	---	---	---	---	---	---	---	13	308	13.0	---	---	---	10	271	14.0	---	---	---	---	---	---	---	---	---	19	254	14.0
10,000	---	---	---	20	275	13.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16	250	19.2
12,000	---	---	---	12	264	11.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14	253	25.1

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.)		
	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	292	1.5	31	265	1.4	28	77	1.8	28	265	3.9	31	80	4.4	30	200	2.7	31	223	0.7	25	113	1.0	31	307	1.3	30	68	4.0	29	123	1.9	29	165	0.6	31	172	1.0
500	---	---	---	---	---	---	28	82	1.7	---	---	---	31	78	4.8	30	208	3.7	---	---	---	25	135	1.2	31	316	1.3	30	75	6.2	29	131	2.5	29	174	1.6	31	242	1.7
1,000	---	---	---	---	---	---	27	139	1.6	28	269	6.4	31	82	3.4	27	226	4.7	31	225	.5	24	263	.3	31	301	.6	30	75	5.4	24	131	2.3	27	180	2.8	29	282	3.0
1,500	---	---	---	31	262	1.4	24	207	2.3	28	277	9.0	23	84	1.2	25	237	4.8	31	272	.8	23	234	1.7	30	227	.7	29	71	4.4	22	168	1.3	24	200	4.3	26	287	3.3
2,000	29	279	1.5	31	259	1.7	23	241	2.8	27	275	9.4	22	43	.9	23	253	6.2	31	271	2.0	21	233	4.3	29	313	.6	27	73	2.6	18	163	1.1	21	217	4.9	24	296	4.6
2,500	29	264	2.3	31	247	2.8	22	254	3.6	25	290	10.4	18	287	1.2	23	260	7.0	30	274	2.2	20	235	5.7	26	347	2.1	26	66	2.3	13	221	2.2	20	232	5.7	20	288	5.9
3,000	29	281	2.5	29	248	3.8	21	271	4.9	20	296	13.0	14	323	2.5	21	261	7.7	29	299	2.0	19	241	6.7	25	318	4.0	24	67	2.6	12	237	2.5	16	244	6.6	18	277	6.1
4,000	25	288	4.0	25	270	5.2	20	258	6.8	---	---	---	11	307	4.5	19	267	9.5	27	310	3.9	13	249	8.1	20	300	4.7	17	28	2.4	---	---	---	14	248	8.0	16	276	7.9
5,000	22	281	7.4	18	296	7.0	17	257	7.9	---	---	---	---	---	---	15	275	10.7	25	309	6.9	11	258	7.1	19	300	7.8	12	4	2.3	---	---	---	11	260	9.2	---	---	---
6,000	20	283	9.1	17	289	6.4	14	275	7.6	---	---	---	---	---	---	11	283	12.6	24	313	6.7	---	---	---	16	283	8.1	11	340	4.5	---	---	---	---	---	---	---	---	---
8,000	12	296	11.3	16	281	7.1	---	---	---	---	---	---	---	---	---	---	---	---	18	329	8.3	---	---	---	13	277	14.9	10	316	7.3	---	---	---	---	---	---	---	---	---
10,000	---	---	---	10	292	6.4	---	---	---	---	---	---	---	---	---	---	---	---	12	342	12.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	323	7.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

	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	31	277	4.2	29	165	3.3	30	206	2.5	31	221	0.7	28	289	2.0	28	240	3.4	29	180	1.3	30	75	1.3	30	270	3.6	28	237	2.2	28	259	1.1	30	231	2.3	28	214	1.0
500	31	331	2.7	29	170	3.7	30	204	3.4	31	226	.8	---	---	---	28	241	4.5	29	177	2.2	30	91	1.6	30	259	2.9	28	226	4.2	28	248	1.7	---	---	---	28	263	1.5
1,000	31	336	2.3	29	182	3.4	30	207	4.5	31	213	1.0	28	289	1.9	28	239	5.4	29	211	3.1	30	106	1.8	25	253	1.4	25	240	7.2	23	269	1.8	30	233	3.9	27	261	1.9
1,500	30	326	2.5	28	201	3.0	29	232	6.0	31	186	.6	28	279	3.4	25	250	8.0	29	234	3.7	27	141	1.1	23	21	.6	22	247	9.3	23	267	2.5	30	249	4.7	26	276	2.9
2,000	30	333	3.0	26	232	2.8	27	244	8.0	31	206	1.0	25	267	5.7	21	252	11.5	26	259	4.2	25	205	1.8	23	19	1.7	20	252	11.0	21	302	3.5	29	259	5.7	24	276	3.9
2,500	30	324	3.4	25	245	4.8	25	255	9.4	30	235	.7	24	269	7.5	19	253	12.6	24	262	4.6	23	235	3.4	21	31	2.4	17	255	12.4	17	310	5.2	27	280	5.9	22	275	5.0
3,000	29	326	4.1	23	257	4.7	25	260	9.6	29	236	1.7	24	272	9.4	18	260	13.4	23	275	4.4	21	269	4.1	20	360	2.6	17	260	12.6	15	309	8.0	24	296	6.7	22	273	6.8
4,000	28	330	5.0	21	269	6.2	22	269	12.0	24	289	2.1	20	276	11.6	17	263	16.9	20	260	4.2	19	261	6.1	17	326	3.3	15	261	14.3	14	304	12.3	22	293	8.9	18	268	8.0
5,000	26	330	5.9	20	267	6.9	20	268	12.6	21	304	4.6	13	285	13.5	14	274	19.4	19	273	7.3	15	262	10.2	12	317	3.7	12	264	14.7	11	317	15.1	17	302	13.4	16	267	10.6
6,000	22	325	5.2	19	259	8.9	20	268	14.4	20	292	6.3	10	272	15.6	13	278	18.9	16	275	7.8	10	263	10.6	12	316	5.6	---	---	---	---	---	---	11	293	15.2	14	278	8.9
8,000	18	298	4.2	15	267	8.3	16	264	17.0	19	271	7.6	---	---	---	---	---	---	14	269	11.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10,000	11	241	1.7	---	---	---	---	---	---	14	280	8.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	11	270	13.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T. during October 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. (305 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	31	134	2.2	31	150	2.7	30	283	0.8	31	66	1.0	31	238	2.3	31	49	1.4	30	124	1.8	31	18	0.2	31	62	1.5	31	356	2.6	31	213	2.0	31	88	1.1	31	275	0.7
500	---	---	---	---	---	---	---	---	---	30	97	3.5	31	255	6.0	31	83	4.8	30	169	4.4	---	---	---	31	107	2.2	31	61	3.6	31	220	3.6	31	115	3.7	31	295	1.0
1,000	---	---	---	31	156	4.6	30	269	4.4	30	109	3.0	31	271	8.0	31	94	4.3	30	195	4.7	---	---	---	31	167	2.8	31	73	3.3	31	241	7.9	31	146	3.2	31	326	1.5
1,500	---	---	---	31	179	4.4	30	274	5.6	29	153	2.3	31	270	8.6	31	100	2.6	30	222	3.8	31	27	.2	31	199	2.7	31	86	1.9	29	258	9.2	31	172	4.3	31	336	1.3
2,000	31	209	4.0	31	211	3.8	30	274	7.0	29	171	1.7	31	273	9.2	31	87	1.4	29	241	3.4	31	228	1.4	30	215	2.4	30	49	1.3	29	265	9.6	30	206	5.8	31	329	1.9
2,500	31	227	4.1	31	232	3.5	30	274	8.6	30	181	1.4	31	269	11.1	30	11	.7	29	245	3.9	31	233	2.6	30	235	2.1	30	286	.6	28	269	10.8	30	218	7.3	30	322	3.6
3,000	31	248	4.4	31	243	4.6	30	275	10.3	28	212	1.3	31	266	12.6	30	300	1.1	29	249	4.8	31	241	3.6	30	254	2.6	30	275	1.5	27	270	11.9	30	226	7.9	29	321	5.2
4,000	31	261	5.4	31	251	5.8	29	274	14.6	27	240	2.1	31	268	15.3	29	246	1.5	28	246	6.3	31	251	5.4	30	257	5.0	30	297	2.4	25	269	15.9	29	232	8.6	23	315	7.4
5,000	30	263	6.4	29	254	8.7	28	271	15.6	28	243	4.7	31	268	16.6	29	259	3.0	27	245	8.1	31	260	5.8	30	261	6.2	30	286	4.4	23	267	19.9	28	243	9.1	26	317	9.4
6,000	27	281	6.7	29	252	10.1	27	270	17.6	27	241	6.2	30	267	20.1	29	268	3.9	26	246	10.5	30	273	7.9	30	261	8.2	30	279	5.9	21	268	20.7	28	245	11.0	25	315	11.7
8,000	23	269	8.3	27	241	14.1	22	253	21.0	29	242	9.7	27	274	20.0	27	268	6.7	25	252	12.3	25	313	10.3	29	263	12.0	27	285	6.9	18	266	24.6	28	238	17.1	19	292	13.1
10,000	18	294	10.5	20	254	17.1	14	244	21.1	26	238	11.8	22	271	24.4	26	292	9.0	23	243	22.7	19	294	8.6	25	273	14.3	26	295	11.0	14	270	25.5	26	242	19.9	13	302	12.0
12,000	12	305	11.4	17	254	22.0	13	243	21.4	23	256	12.1	14	280	23.8	24	286	13.1	19	245	26.2	18	264	12.6	21	287	19.3	20	311	13.7	10	268	31.8	19	245	24.0	11	236	13.8
14,000	---	---	---	11	253	18.6	---	---	---	20	248	10.7	11	281	24.9	21	285	12.1	12	252	23.4	15	269	14.5	16	285	16.1	14	314	14.0	---	---	---	---	---	---	---	---	---
16,000	---	---	---	11	255	13.0	---	---	---	10	205	6.5	---	---	---	18	276	7.6	---	---	---	---	---	---	---	---	---	11	318	8.9	---	---	---	---	---	---	---	---	---
18,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12	8	2.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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.)			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.)		
Surface	31	51	2.2	31	74	0.6	31	124	1.0	31	102	2.0	31	304	2.5	29	141	4.0	31	297	1.1	31	74	2.8	31	143	1.1	31	191	0.8	31	273	0.7	31	197	0.4	30	189	1.9
500	30	81	6.9	31	300	1.7	31	148	3.5	31	118	5.2	31	322	3.4	20	126	3.4	---	---	---	31	93	4.5	31	107	4.3	31	201	2.4	30	335	3.3	31	208	3.7	---	---	---
1,000	30	83	7.0	31	316	3.2	31	166	4.1	31	129	4.4	31	334	2.9	19	156	2.9	31	301	1.1	31	110	4.3	31	109	4.5	30	238	6.4	31	351	3.7	31	235	7.7	29	229	3.5
1,500	30	85	5.7	31	296	3.3	31	196	4.3	31	143	4.1	31	348	3.1	23	205	2.1	31	294	4.7	31	131	2.2	30	92	4.1	30	245	8.8	30	7	3.2	31	248	9.7	29	255	4.4
2,000	30	91	4.8	31	287	4.8	31	218	5.4	31	162	3.8	31	353	3.2	24	228	3.6	30	288	5.5	31	179	1.6	30	99	4.2	28	251	9.5	30	359	3.3	29	258	9.9	29	269	4.4
2,500	31	92	4.1	31	277	5.4	31	223	6.7	31	183	2.6	31	349	3.4	25	229	4.1	29	284	6.5	31	220	2.0	30	102	3.7	28	254	10.8	30	353	3.4	28	230	10.9	30	288	5.3
3,000	31	92	3.4	31	277	6.6	31	229	7.6	31	204	3.8	31	343	3.7	24	232	5.3	29	279	8.9	31	241	3.1	29	105	3.8	29	254	12.5	30	344	3.5	27	253	11.8	30	290	6.6
4,000	31	89	2.7	29	275	7.7	31	241	9.2	30	236	5.3	30	332	5.6	25	255	6.4	29	278	11.7	31	249	6.0	30	100	3.5	27	256	14.0	30	337	5.0	25	257	14.8	30	294	9.5
5,000	31	84	1.8	29	266	8.5	31	245	10.2	28	244	6.5	30	325	7.7	26	245	8.8	28	266	12.0	30	256	8.3	30	109	2.2	24	254	14.1	30	324	6.3	24	258	18.2	30	292	11.7
6,000	31	34	1.6	28	273	9.4	31	243	10.5	27	249	6.9	30	322	9.2	26	254	9.7	28	266	13.0	29	251	12.6	30	123	2.4	24	255	15.8	29	320	7.5	18	264	15.1	28	282	14.9
8,000	30	311	2.9	21	256	11.2	29	253	14.6	27	263	10.6	27	321	10.1	26	249	12.6	24	254	16.0	28	247	19.1	30	185	3.1	20	265	17.9	26	320	5.5	16	274	20.2	22	279	15.5
10,000	30	337	5.0	14	247	12.8	29	258	22.3	26	233	15.0	22	315	9.5	24	252	16.4	21	252	15.4	25	247	25.9	30	213	3.5	19	258	19.7	26	318	8.9	11	285	23.2	15	324	13.3
12,000	29	328	8.5	---	---	---	22	257	24.3	23	260	18.1	14	285	8.1	18	246	19.7	16	265	18.3	18	242	27.8	30	248	6.9	15	254	20.7	22	297	9.0	---	---	---	---	---	---
14,000	25	335	10.0	---	---	---	18	259	21.6	17	276	13.3	---	---	---	11	247	20.1	13	271	18.2	10	238	23.1	29	255	7.2	12	248	19.0	19	286	12.5	---	---	---	---	---	---
16,000	12	14	9.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	15	297	2.5	---	---	---	13	280	8.7	---	---	---	---	---	---

Altitude (meters) m. s. l.	Tatoosh Island, Wash. (33 m.)		
	Observations	Direction	Speed
Surface	29	77	1.2
500	28	220	1.7
1,000	27	265	2.9
1,500	27	289	3.9
2,000	26	295	4.6
2,500	26	294	5.4
3,000	26	299	7.4
4,500	27	297	10.0
5,000	26	294	12.1
6,000	25	293	14.5
8,000	20	307	19.0
10,000	12	301	19.4

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.