METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR SEPTEMBER 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 meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during September 1949*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,006.7 mb.)				Albuquerque, N. Mex. (839.2 mb.)				Atlanta, Ga. (983.6 mb.)				Big Spring, Tex. (927.7 mb.)				Bismarck, N. Dak. (955.5 mb.)				Boise, Idaho (913.8 mb.)				Brownsville, Tex. (1,011.7 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	86	13.1	86	30	1,620	21.8	44	30	300	20.2	79	30	774	23.4	60	30	505	12.9	57	30	868	20.2	39	30	6	26.6	85
1,000	30	142	(*)	----	30	60	(*)	----	30	157	(*)	----	30	112	(*)	----	30	116	(*)	----	30	77	(*)	----	30	109	26.5	82
950	30	579	13.7	69	30	526	(*)	----	30	601	20.6	70	30	569	(*)	----	30	556	(*)	----	30	532	(*)	----	30	566	23.9	78
900	30	1,030	11.0	69	30	1,006	(*)	----	30	1,067	17.7	72	30	1,039	23.1	58	30	1,010	13.5	46	30	999	22.6	30	30	1,034	21.5	71
850	30	1,505	8.5	67	30	1,509	(*)	----	30	1,555	14.8	71	30	1,536	20.1	59	30	1,488	10.0	50	30	1,494	19.9	28	30	1,529	19.0	63
800	30	2,004	6.4	59	30	2,034	20.0	41	30	2,066	12.7	56	30	2,056	16.6	62	30	1,990	7.2	50	30	2,012	15.9	32	30	2,048	16.1	63
750	30	2,538	4.1	56	30	2,590	16.1	43	30	2,610	10.3	51	30	2,608	13.0	62	30	2,527	4.3	51	30	2,558	11.7	34	30	2,600	13.1	61
700	30	3,090	1.5	53	30	3,169	11.2	49	30	3,177	7.5	47	30	3,181	9.5	56	30	3,077	1.0	49	30	3,128	7.1	38	30	3,172	10.0	53
650	29	3,688	−1.6	49	30	3,785	6.2	53	30	3,789	4.4	39	30	3,798	6.0	49	30	3,676	−2.4	46	30	3,735	2.4	41	30	3,790	6.5	54
600	29	4,318	−5.7	49	30	4,433	1.1	59	30	4,431	.7	34	30	4,444	1.8	47	30	4,301	−5.9	40	30	4,374	−2.4	43	30	4,438	2.6	52
550	29	4,994	−9.9	41	30	5,130	−3.7	59	30	5,124	−3.5	34	30	5,139	−2.5	44	30	4,982	−10.0	39	30	5,060	−7.1	42	30	5,137	−1.2	48
500	29	5,723	−14.8	38	30	5,875	−8.5	58	30	5,871	−8.1	33	29	5,889	−7.4	42	30	5,706	−14.9	38	30	5,795	−11.9	39	30	5,890	−5.6	48
450	29	6,516	−20.2	----	30	6,689	−13.4	42	30	6,688	−13.4	----	29	6,708	−12.4	36	29	6,507	−20.7	----	30	6,602	−17.5	34	28	6,720	−10.8	44
400	28	7,372	−26.6	----	30	7,571	−19.5	----	30	7,568	−19.7	----	29	7,592	−18.3	33	29	7,356	−27.0	----	30	7,465	−23.8	----	28	7,604	−16.6	40
350	28	8,323	−33.0	----	30	8,548	−26.9	----	30	8,544	−26.9	----	29	8,575	−25.2	----	29	8,303	−34.4	----	29	8,424	−31.2	----	28	8,593	−23.4	----
300	28	9,390	−40.3	----	30	9,639	−35.4	----	30	9,637	−35.3	----	26	9,674	−33.5	----	29	9,363	−42.3	----	29	9,498	−39.4	----	27	9,702	−31.8	----
250	27	10,611	−48.1	----	28	10,886	−44.9	----	30	10,881	−44.7	----	25	10,930	−43.0	----	29	10,575	−49.7	----	28	10,724	−48.1	----	25	10,967	−41.5	----
200	27	12,057	−54.4	----	28	12,342	−55.0	----	30	12,337	−55.7	----	23	12,400	−53.7	----	27	12,016	−53.4	----	23	12,165	−53.7	----	23	12,441	−53.5	----
175	24	12,920	−56.8	----	23	13,195	−59.5	----	30	13,175	−61.2	----	20	13,253	−59.1	----	25	12,872	−54.9	----	20	13,021	−56.1	----	20	13,285	−60.1	----
150	20	13,885	−58.2	----	17	14,150	−64.9	----	29	14,118	−65.9	----	15	14,229	−65.2	----	24	13,848	−56.4	----	15	14,000	−57.5	----	17	14,230	−66.7	----
125	18	15,029	−58.7	----	10	15,246	−69.5	----	26	15,212	−69.3	----	9	15,319	−70.9	----	23	15,000	−57.4	----	12	15,135	−58.8	----	11	15,316	−73.0	----
100	17	16,416	−59.4	----	----	----	----	----	18	16,544	−69.6	----	----	----	----	----	14	16,393	−58.7	----	----	----	----	----	6	16,625	−76.2	----
80	9	17,810	−57.4	----	----	----	----	----	9	17,879	−65.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Buffalo, N. Y. (990.7 mb.)				Camaguey, Cuba [1] (mb.)				Caribou, Maine (992.9 mb.)				Charleston, S. C. (1,014.8 mb.)				Ciudad Victoria, Mex. (972.5 mb.)				Columbia, Mo. (989.6 mb.)				Dodge City, Kans. (926.0 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	221	13.9	77	----	----	----	----	30	191	10.9	87	30	18	21.4	91	27	335	27.6	65	30	239	16.4	72	30	792	17.8	65
1,000	30	141	(*)	----	----	----	----	----	30	130	(*)	----	30	146	22.4	82	27	86	(*)	----	30	146	(*)	----	30	125	(*)	----
950	30	581	13.5	69	----	----	----	----	30	562	11.6	73	30	597	21.2	70	27	546	26.2	64	30	589	17.5	55	30	573	(*)	----
900	30	1,081	10.5	69	----	----	----	----	30	1,011	9.5	70	30	1,060	18.3	68	27	1,017	22.5	67	30	1,045	14.7	55	30	1,037	19.0	58
850	30	1,502	7.7	68	----	----	----	----	30	1,484	7.2	64	30	1,549	15.5	67	27	1,512	18.7	72	30	1,527	12.6	50	30	1,527	17.5	54
800	30	2,000	5.4	58	----	----	----	----	30	1,981	4.9	59	30	2,062	13.0	64	27	2,030	14.7	78	30	2,034	10.9	43	30	2,043	15.4	53
750	30	2,530	3.5	48	----	----	----	----	30	2,510	2.4	58	30	2,606	10.1	59	27	2,583	11.7	75	30	2,576	8.6	43	30	2,592	12.6	50
700	30	3,083	1.0	48	----	----	----	----	30	3,060	−.6	55	30	3,174	7.6	56	27	3,149	8.7	67	30	3,138	5.4	45	30	3,164	8.9	49
650	29	3,680	−2.4	40	----	----	----	----	29	3,651	−3.6	47	30	3,785	4.4	50	26	3,767	5.6	60	30	3,745	2.2	43	30	3,777	5.3	45
600	29	4,306	−5.8	40	----	----	----	----	29	4,276	−6.8	45	30	4,430	.7	48	26	4,410	1.9	60	30	4,382	−1.5	40	30	4,422	.5	43
550	29	4,984	−10.3	38	----	----	----	----	29	4,953	−11.0	44	29	5,124	−3.4	47	23	5,109	−2.0	57	30	5,071	−5.3	33	30	5,116	−4.3	39
500	29	5,709	−15.2	39	----	----	----	----	29	5,676	−15.6	43	28	5,873	−7.8	38	21	5,860	−6.1	50	30	5,812	−9.9	32	30	5,859	−8.9	34
450	28	6,504	−20.4	----	----	----	----	----	29	6,468	−21.0	----	28	6,691	−12.9	----	21	6,685	−11.1	43	30	6,625	−15.5	----	30	6,673	−14.4	----
400	27	7,357	−26.7	----	----	----	----	----	29	7,323	−27.3	----	28	7,575	−18.7	----	21	7,572	−16.8	39	30	7,495	−22.0	----	30	7,549	−21.2	----
350	25	8,311	−33.6	----	----	----	----	----	28	8,280	−33.5	----	28	8,556	−25.5	----	20	8,562	−23.6	----	29	8,462	−29.4	----	30	8,520	−28.5	----
300	17	9,395	−40.9	----	----	----	----	----	28	9,345	−40.7	----	28	9,656	−33.6	----	20	9,669	−31.9	----	28	9,542	−37.8	----	30	9,605	−36.9	----
250	13	10,593	−48.6	----	----	----	----	----	27	10,564	−47.8	----	28	10,909	−43.2	----	19	10,931	−42.1	----	28	10,773	−46.8	----	30	10,841	−46.3	----
200	5	12,054	−55.4	----	----	----	----	----	24	12,033	−52.6	----	28	12,373	−54.6	----	16	12,392	−54.9	----	27	12,224	−55.6	----	30	12,290	−55.9	----
175	----	----	----	----	----	----	----	----	23	12,898	−54.1	----	26	13,218	−60.2	----	13	13,228	−61.9	----	25	13,067	−59.3	----	29	13,129	−59.9	----
150	----	----	----	----	----	----	----	----	22	13,893	−55.3	----	24	14,167	−65.2	----	12	14,167	−68.7	----	25	14,025	−62.3	----	29	14,082	−63.6	----
125	----	----	----	----	----	----	----	----	16	15,070	−57.0	----	21	15,267	−68.2	----	10	15,247	−75.0	----	22	15,141	−64.2	----	26	15,188	−66.8	----
100	----	----	----	----	----	----	----	----	13	16,492	−57.2	----	16	16,601	−70.1	----	8	16,518	−77.9	----	12	16,477	−64.8	----	21	16,526	−67.3	----
80	----	----	----	----	----	----	----	----	----	----	----	----	8	17,954	−67.2	----	6	17,792	−73.3	----	----	----	----	----	13	17,855	−63.9	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	7	19,658	−59.0	----

Standard pressure surface (mb.)	El Paso, Tex. (881.7 mb.)				Ely, Nev. (809.3 mb.)				Glasgow, Mont. (939.3 mb.)				Grand Junction, Colo. (852.4 mb.)				Great Falls, Mont. (888.2 mb.)				Greensboro, N. C. (986.8 mb.)				Hatteras, N. C. (1,017.1 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	30	1,195	24.5	52	30	1,908	16.1	30	30	648	14.6	43	30	1,474	20.7	36	30	1,128	15.7	43	30	273	17.6	88	30	3	22.8	82
1,000	30	72	(*)	----	30	55	(*)	----	30	110	(*)	----	30	63	(*)	----	30	104	(*)	----	30	158	(*)	----	30	152	22.1	80
950	30	536	(*)	----	30	514	(*)	----	30	553	(*)	----	30	524	(*)	----	30	557	(*)	----	30	601	18.7	71	30	599	19.4	77
900	30	1,019	(*)	----	30	986	(*)	----	30	1,011	16.0	35	30	1,003	(*)	----	30	1,024	(*)	----	30	1,062	15.9	72	30	1,060	16.6	75
850	30	1,517	23.5	48	30	1,482	(*)	----	30	1,493	12.3	38	30	1,499	(*)	----	30	1,501	14.6	39	30	1,546	13.1	69	30	1,545	13.7	73
800	30	2,043	19.4	52	30	2,007	19.7	25	30	1,998	8.6	42	30	2,025	20.6	30	30	2,009	10.8	42	30	2,054	10.6	62	30	2,054	11.4	60
750	30	2,600	15.2	56	30	2,561	16.4	26	30	2,529	4.9	46	30	2,580	16.1	33	30	2,547	6.7	46	30	2,596	8.4	53	30	2,595	9.0	52
700	30	3,175	10.7	61	30	3,140	11.3	29	30	3,087	1.5	45	30	3,159	11.3	38	30	3,106	2.8	49	30	3,158	5.8	43	30	3,161	6.5	46
650	30	3,794	6.3	59	30	3,752	5.9	35	30	3,682	−2.1	41	30	3,776	6.1	43	30	3,705	−1.1	48	30	3,765	2.3	45	29	3,769	3.3	46
600	30	4,440	1.9	56	30	4,401	.1	41	30	4,311	−6.2	43	30	4,422	.7	49	30	4,336	−5.4	50	30	4,403	−1.1	42	28	4,410	−.4	48
550	30	5,140	−2.9	52	30	5,089	−5.7	48	30	4,991	−10.4	38	30	5,116	−4.5	50	30	5,018	−9.5	42	30	5,096	−5.1	38	27	5,102	−4.4	47
500	30	5,885	−7.4	48	30	5,831	−10.7	35	29	5,711	−15.5	34	30	5,858	−9.7	50	30	5,743	−14.7	42	30	5,835	−9.5	35	26	5,846	−8.7	41
450	29	6,709	−12.6	45	30	6,638	−16.1	----	28	6,496	−21.5	----	30	6,675	−15.0	41	30	6,540	−20.6	----	30	6,650	−14.8	33	25	6,661	−13.8	----
400	29	7,589	−18.7	40	30	7,510	−22.8	----	28	7,350	−27.8	----	30	7,544	−21.3	----	30	7,392	−27.3	----	30	7,524	−21.0	----	25	7,539	−20.0	----
350	29	8,571	−25.6	----	30	8,476	−30.1	----	28	8,295	−34.9	----	30	8,514	−28.9	----	30	8,338	−34.8	----	30	8,495	−28.2	----	24	8,512	−26.7	----
300	27	9,670	−33.8	----	30	9,554	−37.0	----	28	9,352	−42.8	----	30	9,597	−37.2	----	29	9,388	−43.1	----	30	9,583	−36.1	----	23	9,610	−35.0	----
250	27	10,922	−43.5	----	30	10,785	−46.8	----	28	10,561	−49.9	----	30	10,831	−46.5	----	29	10,595	−50.4	----	30	10,823	−45.1	----	23	10,855	−44.5	----
200	24	12,394	−54.4	----	28	12,238	−54.4	----	23	11,990	−53.3	----	27	12,276	−55.2	----	25	12,029	−55.0	----	29	12,287	−55.1	----	22	12,310	−55.5	----
175	22	13,236	−60.5	----	28	13,085	−58.1	----	21	12,857	−54.5	----	23	13,122	−58.0	----	22	12,890	−56.1	----	28	13,125	−59.8	----	21	13,150	−60.9	----
150	18	14,175	−67.0	----	27	14,049	−60.9	----	14	13,840	−55.9	----	21	14,086	−61.0	----	18	13,855	−57.7	----	22	14,093	−63.8	----	19	14,102	−65.5	----
125	13	15,267	−72.7	----	20	15,179	−63.8	----	9	15,019	−58.3	----	17	15,214	−63.5	----	14	15,000	−58.0	----	17	15,192	−66.4	----	12	15,223	−68.1	----
100	5	16,543	−74.5	----	17	16,535	−65.5	----	7	16,399	−58.3	----	7	16,592	−67.4	----	8	16,398	−58.3	----	10	16,548	−66.1	----	7	16,584	−68.6	----
80	----	----	----	----	13	17,914	−64.0	----	----	----	----	----	----	----	----	----	----	----	----	----	8	17,905	−62.6	----	----	----	----	----
60	----	----	----	----	7	19,687	−60.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

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

Standard pressure surface (mb.)	Havana, Cuba [1] (---- mb.)				Honolulu, T. H. (1,014.4 mb.)				International Falls, Minn. (970.2 mb.)				Joliet, Ill. (996.0 mb.)				Lake Charles, La. (1,014.1 mb.)				Lander, Wyo. (830.9 mb.)				Las Vegas, Nev. (932.8 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	3	27.2	58	30	360	9.3	84	29	178	13.4	76	30	5	23.8	85	30	1,696	14.8	44	30	660	28.7	16
1,000	----	----	----	----	30	129	25.3	61	30	106	(*)	----	29	143	(*)	----	30	128	25.1	77	30	90	(*)	----	30	32	(*)	----
950	----	----	----	----	30	580	21.4	68	30	537	11.4	72	29	583	15.2	58	30	581	23.2	73	30	543	(*)	----	30	497	(*)	----
900	----	----	----	----	30	1,045	17.6	73	30	986	9.8	64	29	1,035	12.3	57	30	1,050	20.3	73	30	1,015	(*)	----	30	981	31.0	16
850	----	----	----	----	30	1,532	14.9	69	30	1,459	6.6	65	29	1,512	9.4	54	30	1,542	17.3	73	30	1,501	(*)	----	30	1,488	26.8	17
800	----	----	----	----	30	2,043	12.7	57	30	1,954	3.7	67	29	2,013	7.3	51	30	2,058	14.7	69	30	2,018	15.5	38	30	2,018	21.9	20
750	----	----	----	----	30	2,593	13.0	24	30	2,482	.7	62	29	2,548	4.9	46	30	2,608	12.1	63	30	2,567	11.5	41	30	2,573	16.8	25
700	----	----	----	----	30	3,163	11.0	----	30	3,027	−1.9	55	29	3,103	2.3	40	30	3,178	9.2	54	30	3,135	7.7	42	30	3,154	11.5	29
650	----	----	----	----	28	3,780	7.6	----	30	3,621	−4.8	52	29	3,701	−1.0	39	30	3,793	5.7	48	30	3,746	3.5	43	30	3,771	6.6	31
600	----	----	----	----	27	4,431	3.9	----	30	4,239	−8.5	49	29	4,333	−4.6	36	30	4,440	1.8	48	30	4,385	−1.6	47	30	4,419	1.7	28
550	----	----	----	----	27	5,134	−.5	----	30	4,913	−12.2	41	29	5,014	−8.5	----	29	5,138	−2.2	45	30	5,073	−6.7	47	30	5,113	−3.3	----
500	----	----	----	----	27	5,887	−5.3	----	30	5,632	−16.8	35	29	5,746	−13.3	----	29	5,887	−6.6	37	30	5,809	−11.7	43	30	5,860	−8.5	----
450	----	----	----	----	26	6,711	−11.2	----	30	6,423	−22.2	----	29	6,546	−18.7	----	28	6,712	−12.0	----	30	6,616	−17.2	38	29	6,680	−14.0	----
400	----	----	----	----	25	7,598	−17.7	----	29	7,273	−28.5	----	29	7,407	−25.2	----	28	7,594	−18.4	----	30	7,480	−23.9	----	29	7,557	−20.1	----
350	----	----	----	----	24	8,582	−24.9	----	29	8,216	−35.4	----	28	8,362	−32.7	----	27	8,576	−25.3	----	29	8,440	−31.3	----	28	8,534	−27.4	----
300	----	----	----	----	24	9,683	−33.5	----	28	9,276	−42.6	----	28	9,431	−40.4	----	27	9,675	−34.0	----	29	9,513	−39.8	----	27	9,621	−36.0	----
250	----	----	----	----	23	10,937	−43.5	----	28	10,487	−49.0	----	28	10,653	−47.9	----	27	10,924	−44.0	----	29	10,734	−48.9	----	26	10,861	−44.6	----
200	----	----	----	----	22	12,397	−55.3	----	24	11,945	−52.8	----	27	12,103	−55.0	----	27	12,384	−55.3	----	29	12,174	−55.9	----	25	12,324	−53.4	----
175	----	----	----	----	22	13,237	−61.4	----	23	12,799	−53.3	----	26	12,948	−57.2	----	27	13,223	−61.3	----	28	13,016	−57.6	----	23	13,172	−57.8	----
150	----	----	----	----	21	14,182	−66.8	----	23	13,789	−54.2	----	24	13,912	−59.4	----	26	14,163	−67.3	----	27	13,987	−59.6	----	20	14,134	−62.3	----
125	----	----	----	----	19	15,273	−70.3	----	21	14,953	−55.4	----	22	15,053	−61.0	----	23	15,247	−71.8	----	25	15,115	−61.2	----	18	15,241	−66.4	----
100	----	----	----	----	16	16,598	−71.0	----	11	16,372	−56.8	----	19	16,427	−61.2	----	18	16,556	−74.4	----	22	16,495	−62.7	----	13	16,583	−68.5	----
80	----	----	----	----	12	17,929	−68.0	----	----	----	----	----	16	17,814	−59.4	----	10	17,858	−69.3	----	12	17,882	−61.2	----	8	17,937	−66.1	----

Standard pressure surface (mb.)	Little Rock, Ark. (1,007.5 mb.)				Mazatlan, Mex. (1,006.5 mb.)				Medford, Oreg. (966.8 mb.)				Merida, Mex. (1,009.0 mb.)				Miami, Fla. (1,015.0 mb.)				Nantucket, Mass. (1,015.7 mb.)				Nashville, Tenn. (997.1 mb.)			
Surface	30	79	19.6	80	30	14	28.8	78	30	401	20.3	52	30	27	26.6	82	30	4	26.5	83	30	14	15.9	86	30	177	19.1	72
1,000	30	143	21.4	70	30	72	28.3	78	30	106	(*)	----	30	107	26.2	81	30	136	26.3	79	30	148	16.7	79	30	152	(*)	----
950	30	592	21.1	61	30	534	25.1	80	30	560	21.7	46	30	560	24.3	78	30	590	23.6	78	30	592	15.2	66	30	595	18.8	61
900	30	1,056	18.0	66	30	1,003	23.0	76	30	1,019	18.7	48	30	1,033	21.5	79	30	1,059	20.9	76	30	1,041	13.1	60	30	1,056	15.7	63
850	30	1,543	15.3	62	30	1,500	20.3	73	30	1,506	15.2	50	30	1,527	18.4	79	30	1,552	18.0	73	30	1,520	10.9	56	30	1,540	13.1	60
800	30	2,056	13.8	50	30	2,023	17.5	70	30	2,017	11.9	52	30	2,046	15.2	77	30	2,070	15.1	70	30	2,023	8.7	51	30	2,048	11.0	49
750	30	2,602	11.3	48	30	2,582	14.7	67	30	2,557	8.6	49	30	2,596	12.3	74	30	2,617	12.2	64	30	2,560	6.1	52	30	2,589	8.8	41
700	30	3,171	8.3	42	30	3,154	10.9	68	30	3,121	5.5	39	30	3,168	9.5	69	30	3,190	9.0	58	30	3,117	3.0	50	30	3,153	6.1	39
650	30	3,785	4.6	43	29	3,776	7.1	71	30	3,727	1.5	36	30	3,784	6.1	64	30	3,804	5.8	52	30	3,717	0.0	39	30	3,762	2.9	40
600	29	4,428	.9	40	29	4,424	3.0	69	29	4,365	−2.3	36	30	4,433	2.3	62	29	4,453	2.1	45	30	4,350	−3.9	40	30	4,401	−.6	37
550	29	5,123	−2.6	40	29	5,127	−1.2	67	29	5,050	−6.6	33	30	5,130	−1.7	57	29	5,153	−2.0	44	30	5,035	−7.8	36	30	5,093	−4.3	30
500	29	5,873	−7.2	38	29	5,880	−5.3	65	29	5,787	−11.6	----	29	5,885	−6.0	54	29	5,902	−6.3	44	30	5,767	−12.6	34	30	5,836	−9.3	29
450	29	6,692	−12.9	36	28	6,714	−10.1	56	29	6,591	−17.1	----	28	6,710	−10.7	49	29	6,732	−11.2	41	30	6,572	−18.0	35	30	6,649	−15.1	----
400	29	7,574	−19.3	37	28	7,601	−15.8	49	28	7,460	−23.9	----	27	7,598	−16.6	46	29	7,613	−17.0	41	30	7,433	−23.7	----	30	7,523	−21.2	----
350	29	8,552	−26.5	----	28	8,594	−22.4	----	27	8,418	−31.6	----	27	8,587	−23.8	----	29	8,601	−23.7	----	30	8,392	−29.9	----	30	8,494	−28.5	----
300	29	9,647	−34.7	----	28	9,708	−30.8	----	26	9,493	−39.8	----	27	9,693	−32.3	----	29	9,708	−32.0	----	29	9,473	−37.2	----	30	9,580	−36.6	----
250	29	10,895	−43.9	----	24	10,976	−40.8	----	23	10,717	−48.1	----	26	10,951	−42.7	----	29	10,966	−42.2	----	29	10,711	−45.6	----	30	10,818	−45.8	----
200	28	12,359	−54.0	----	24	12,458	−53.2	----	22	12,165	−54.4	----	25	12,412	−55.5	----	29	12,437	−54.5	----	24	12,160	−54.7	----	28	12,264	−55.4	----
175	27	13,204	−59.1	----	23	13,303	−60.3	----	16	13,025	−56.8	----	25	13,249	−62.8	----	27	13,277	−61.0	----	24	13,007	−57.9	----	28	13,106	−59.7	----
150	25	14,156	−63.6	----	21	14,250	−67.9	----	13	14,019	−60.2	----	22	14,178	−70.2	----	27	14,219	−67.6	----	18	13,959	−61.1	----	23	14,060	−63.4	----
125	22	15,253	−67.4	----	18	15,324	−75.0	----	10	15,145	−62.2	----	15	15,242	−75.6	----	21	15,308	−72.1	----	15	15,093	−62.3	----	17	15,179	−67.3	----
100	13	16,597	−68.8	----	15	16,601	−78.8	----	----	----	----	----	5	16,537	−75.5	----	10	16,626	−72.5	----	7	16,401	−60.2	----	13	16,496	−66.2	----
80	6	17,942	−65.8	----	6	17,891	−71.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6	17,877	−64.2	----

Standard pressure surface (mb.)	New Orleans, La. (1,014.8 mb.)				North Platte, Nebr. (918.4 mb.)				Oakland, Calif. (1,011.8 mb.)				Oklahoma City, Okla. (970.6 mb.)				Omaha, Nebr. (981.0 mb.)				Phoenix, Ariz. (968.9 mb.)				Pittsburgh, Pa. (973.6 mb.)			
Surface	29	2	24.4	85	30	849	15.0	65	30	6	17.5	74	30	391	19.6	73	30	308	16.3	73	30	339	30.4	42	30	382	14.8	73
1,000	29	131	24.6	80	30	116	(*)	----	30	106	17.2	71	30	131	(*)	----	30	143	(*)	----	30	54	(*)	----	30	153	(*)	----
950	29	585	22.5	77	30	562	(*)	----	30	554	18.8	60	30	580	20.9	63	30	585	16.2	55	30	518	32.8	34	30	595	15.1	67
900	29	1,051	19.7	75	30	1,022	17.8	52	30	1,011	19.6	41	29	1,044	19.0	60	30	1,039	13.6	55	30	1,001	29.5	35	30	1,046	12.5	67
850	29	1,542	16.9	73	30	1,509	15.7	50	30	1,502	17.9	34	29	1,533	17.1	57	30	1,519	11.3	52	30	1,507	25.5	39	30	1,524	9.6	66
800	29	2,058	14.4	66	30	2,021	12.8	50	30	2,017	14.9	31	29	2,048	14.2	61	30	2,024	10.0	44	30	2,035	21.1	43	30	2,025	7.3	56
750	29	2,604	11.8	59	30	2,568	9.9	49	30	2,563	11.6	27	29	2,595	11.7	53	30	2,565	7.7	42	30	2,593	16.5	48	30	2,563	5.5	48
700	29	3,177	9.1	51	30	3,132	6.7	42	30	3,132	8.2	28	29	3,165	8.7	47	30	3,125	4.8	39	30	3,172	11.7	49	30	3,117	2.9	47
650	29	3,791	5.7	48	30	3,737	2.9	34	30	3,744	4.6	----	29	3,778	4.8	43	30	3,730	1.5	37	29	3,790	7.0	50	30	3,722	−.6	43
600	29	4,438	2.2	45	30	4,379	−1.3	31	29	4,388	.2	----	29	4,423	.6	37	30	4,366	−2.5	35	29	4,439	2.3	48	30	4,348	−4.1	38
550	27	5,136	−1.9	41	30	5,068	−6.2	32	29	5,081	−4.5	----	29	5,114	−3.6	35	30	5,052	−7.0	30	29	5,135	−2.8	45	30	5,032	−8.0	37
500	25	5,887	−6.4	41	30	5,804	−11.7	34	28	5,823	−9.7	----	29	5,862	−8.4	35	30	5,787	−11.8	26	29	5,886	−7.5	37	30	5,763	−12.8	35
450	25	6,713	−11.4	----	30	6,610	−17.3	31	28	6,634	−15.7	----	29	6,684	−13.6	32	30	6,591	−17.6	26	28	6,708	−12.6	33	30	6,567	−17.9	35
400	25	7,601	−17.5	----	30	7,475	−23.7	----	28	7,505	−22.6	----	28	7,559	−20.0	----	30	7,457	−24.2	----	28	7,588	−19.0	----	30	7,429	−24.2	----
350	25	8,582	−24.5	----	30	8,435	−31.0	----	28	8,471	−29.9	----	28	8,534	−27.5	----	30	8,416	−31.5	----	28	8,568	−26.0	----	25	8,413	−30.8	----
300	24	9,686	−32.8	----	29	9,512	−39.4	----	27	9,553	−37.5	----	27	9,623	−36.0	----	29	9,489	−39.5	----	27	9,665	−34.4	----	21	9,489	−39.4	----
250	23	10,943	−42.8	----	29	10,735	−48.2	----	26	10,792	−45.4	----	27	10,863	−45.5	----	29	10,714	−48.2	----	26	10,912	−43.7	----	17	10,744	−47.4	----
200	22	12,409	−54.2	----	28	12,178	−56.3	----	24	12,256	−52.8	----	27	12,316	−55.5	----	29	12,157	−56.2	----	25	12,378	−53.9	----	13	12,186	−55.4	----
175	21	13,255	−60.4	----	27	13,019	−59.3	----	20	13,120	−56.9	----	26	13,161	−60.3	----	28	12,998	−58.4	----	24	13,220	−59.4	----	10	13,013	−57.7	----
150	19	14,201	−65.9	----	26	13,980	−61.7	----	13	14,090	−61.0	----	25	14,111	−64.6	----	28	13,961	−60.6	----	21	14,166	−64.7	----	8	13,986	−59.9	----
125	15	15,304	−69.9	----	22	15,101	−64.5	----	7	15,215	−64.5	----	19	15,197	−68.4	----	25	15,088	−62.8	----	15	15,261	−69.0	----	5	15,105	−60.6	----
100	6	16,652	−71.0	----	20	16,466	−65.7	----	5	16,600	−68.2	----	10	16,539	−69.4	----	23	16,456	−63.4	----	12	16,585	−70.3	----	----	----	----	----
80	----	----	----	----	10	17,821	−63.8	----	----	----	----	----	----	----	----	----	21	17,837	−60.8	----	8	17,910	−66.7	----	----	----	----	----
60	----	----	----	----	5	19,602	−58.0	----	----	----	----	----	----	----	----	----	5	19,666	−58.7	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

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

Standard pressure surface (mb.)	Portland, Maine (1,014.3 mb.)				Rapid City, S. Dak. (904.1 mb.)				St. Cloud, Minn. (977.4 mb.)				San Antonio, Tex. (986.3 mb.)				San Juan, P. R. (1,012.9 mb.)				Santa Maria, Calif. (1,003.8 mb.)				Sault Ste. Marie, Mich. (987.7 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	20	12.6	90	30	980	13.4	53	30	317	11.9	74	30	240	25.6	66	30	15	26.1	84	30	71	15.2	87	30	221	10.4	84
1,000	30	139	14.6	80	30	113	(*)	----	30	123	(*)	----	30	117	(*)	----	30	128	25.8	82	30	103	15.0	86	30	117	(*)	----
950	30	577	13.5	69	30	557	(*)	----	30	558	13.9	56	30	577	25.7	61	30	582	23.0	81	30	550	19.5	59	30	551	11.0	72
900	30	1,027	11.0	68	30	1,019	(*)	----	30	1,010	11.3	56	30	1,046	22.4	66	30	1,050	20.2	78	30	1,009	21.8	34	30	996	8.4	70
850	30	1,502	8.6	63	30	1,504	14.9	43	30	1,485	8.2	58	30	1,542	19.1	70	30	1,542	17.4	75	30	1,502	19.8	28	30	1,466	5.3	72
800	30	2,002	6.7	56	30	2,014	11.6	46	30	1,983	5.6	57	30	2,061	15.5	74	30	2,059	14.8	68	30	2,021	16.9	25	30	1,959	2.6	70
750	30	2,535	4.0	54	30	2,554	8.5	48	30	2,514	3.2	49	30	2,609	12.4	68	30	2,610	12.1	62	30	2,574	13.4	25	30	2,485	−.1	62
700	30	3,088	1.1	54	30	3,118	5.3	46	30	3,066	.2	46	30	3,183	9.8	54	30	3,180	8.8	59	30	3,144	9.7	26	30	3,029	−2.6	54
650	30	3,685	−2.0	50	30	3,722	1.5	45	30	3,662	−2.5	42	30	3,799	6.2	49	30	3,790	5.1	55	28	3,757	5.5	----	30	3,618	−5.6	52
600	29	4,319	−5.3	48	30	4,360	−2.7	45	29	4,291	−5.9	40	29	4,448	2.5	48	28	4,440	1.2	53	28	4,402	1.4	----	30	4,238	−8.9	45
550	28	5,009	−9.1	45	30	5,043	−7.4	46	29	4,970	−9.8	36	29	5,150	−1.6	45	28	5,133	−2.7	49	28	5,098	−3.1	----	30	4,908	−13.1	47
500	27	5,734	−13.9	45	30	5,779	−12.6	43	29	5,698	−14.2	34	29	5,900	−6.2	41	27	5,885	−7.4	47	28	5,844	−8.0	----	29	5,624	−18.2	45
450	27	6,539	−19.5	45	30	6,581	−18.0	37	29	6,493	−19.6	37	29	6,728	−11.4	37	27	6,709	−12.5	39	27	6,666	−13.6	----	29	6,414	−23.6	----
400	27	7,392	−25.6	----	30	7,446	−24.2	----	29	7,354	−25.9	----	28	7,610	−17.2	36	27	7,589	−18.5	35	27	7,540	−20.2	----	29	7,255	−29.7	----
350	27	8,346	−32.8	----	30	8,405	−31.6	----	29	8,307	−32.9	----	27	8,597	−24.2	----	27	8,571	−25.7	----	27	8,515	−27.0	----	29	8,193	−36.5	----
300	26	9,430	−39.8	----	29	9,477	−39.6	----	29	9,374	−40.6	----	27	9,702	−32.5	----	27	9,669	−34.2	----	26	9,613	−34.9	----	27	9,249	−43.8	----
250	24	10,660	−48.0	----	28	10,702	−48.3	----	29	10,592	−48.9	----	26	10,959	−42.2	----	27	10,920	−44.2	----	25	10,860	−43.2	----	27	10,454	−50.4	----
200	22	12,100	−56.0	----	23	12,148	−53.8	----	28	12,035	−54.2	----	24	12,429	−53.1	----	27	12,377	−56.1	----	24	12,331	−52.4	----	27	11,902	−52.6	----
175	19	12,958	−58.5	----	18	13,005	−56.1	----	28	12,890	−54.8	----	24	13,278	−59.0	----	25	13,216	−62.4	----	23	13,184	−56.9	----	24	12,764	−53.0	----
150	16	13,925	−60.3	----	13	13,984	−58.1	----	26	13,871	−55.7	----	20	14,231	−65.0	----	25	14,153	−68.2	----	22	14,149	−61.6	----	21	13,745	−53.8	----
125	8	15,080	−61.1	----	11	15,122	−60.6	----	23	15,023	−56.6	----	18	15,322	−70.5	----	19	15,240	−74.4	----	16	15,260	−65.4	----	17	14,905	−54.8	----
100	----	----	----	----	----	----	----	----	14	16,429	−57.0	----	11	16,629	−73.3	----	16	16,530	−74.4	----	12	16,603	−68.2	----	9	16,321	−55.8	----
80	----	----	----	----	----	----	----	----	5	17,852	−55.9	----	5	17,923	−69.2	----	7	17,854	−70.6	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Spokane, Wash. (931.8 mb.)				Swan Island, W. I. (1,010.9 mb.)				Tacubaya, Mexico (773.8 mb.)				Tampa, Fla. (1,015.2 mb.)				Tatoosh Island, Wash. (1,012.0 mb.)				Toledo, Ohio (994.6 mb.)				Washington, D. C. (1,015.5 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	30	721	17.8	45	29	10	27.0	83	29	2,306	16.1	74	30	9	24.8	88	30	31	12.4	89	30	191	13.2	82	30	25	18.6	74
1,000	30	108	(*)	----	29	106	26.4	83	29	60	(*)	----	30	142	24.9	82	30	131	13.3	82	30	144	(*)	----	30	157	18.5	70
950	30	556	(*)	----	29	560	23.6	82	29	520	(*)	----	30	593	22.9	77	30	570	15.4	62	30	582	14.2	59	30	602	16.5	68
900	30	1,018	18.0	39	29	1,030	21.3	76	29	996	(*)	----	30	1,063	20.3	74	30	1,022	13.8	55	30	1,034	11.2	60	30	1,056	13.8	68
850	30	1,504	14.6	41	29	1,524	18.7	70	29	1,493	(*)	----	30	1,555	17.2	73	30	1,502	11.2	52	30	1,509	8.7	54	30	1,536	11.3	66
800	30	2,013	10.9	41	29	2,043	15.9	66	29	2,019	(*)	----	30	2,071	14.2	71	30	2,005	8.4	53	30	2,008	6.4	49	30	2,041	8.8	63
750	30	2,552	7.2	43	29	2,594	12.8	65	29	2,571	14.3	73	30	2,616	11.1	68	30	2,539	5.7	49	30	2,542	3.9	47	30	2,580	6.4	56
700	30	3,112	3.4	46	29	3,167	9.6	60	29	3,150	10.2	78	29	3,187	8.4	59	30	3,097	2.4	42	30	3,100	1.2	46	30	3,137	3.7	49
650	30	3,711	−.6	47	29	3,783	6.0	57	29	3,768	5.9	82	29	3,800	5.2	53	30	3,692	−1.1	37	30	3,690	−2.1	44	30	3,743	.5	45
600	30	4,343	−4.7	48	29	4,431	2.3	58	29	4,417	2.0	83	29	4,446	1.5	51	30	4,326	−4.9	31	30	4,318	−5.5	42	30	4,374	−3.2	43
550	30	5,022	−9.1	47	29	5,131	−1.9	57	29	5,117	−1.9	81	29	5,143	−2.2	45	30	5,004	−9.0	36	29	4,996	−9.7	39	30	5,061	−6.9	38
500	30	5,754	−13.9	43	29	5,881	−6.6	54	29	5,869	−5.9	72	29	5,894	−6.7	47	30	5,737	−13.8	33	29	5,722	−14.6	37	30	5,795	−11.4	33
450	30	6,554	−19.7	40	28	6,705	−11.6	50	28	6,698	−10.4	58	29	6,717	−11.8	43	30	6,530	−19.2	----	29	6,518	−20.0	34	30	6,602	−16.9	29
400	30	7,410	−26.2	----	27	7,591	−17.3	49	28	7,586	−16.2	54	28	7,604	−17.4	44	30	7,395	−25.4	----	29	7,377	−26.2	----	30	7,469	−23.0	----
350	29	8,363	−33.7	----	26	8,578	−23.8	----	28	8,577	−23.3	----	28	8,589	−24.7	----	30	8,350	−32.2	----	27	8,318	−33.8	----	30	8,434	−30.0	----
300	28	9,436	−41.4	----	26	9,684	−32.1	----	28	9,687	−31.7	----	27	9,691	−33.2	----	28	9,428	−40.0	----	27	9,381	−41.0	----	29	9,510	−37.4	----
250	25	10,656	−49.6	----	26	10,945	−42.0	----	28	10,949	−42.0	----	24	10,947	−43.5	----	28	10,650	−48.0	----	27	10,600	−48.4	----	29	10,746	−45.7	----
200	24	12,099	−54.1	----	24	12,416	−54.1	----	25	12,421	−54.7	----	19	12,409	−55.7	----	24	12,097	−53.6	----	26	12,054	−55.2	----	29	12,200	−55.1	----
175	23	12,953	−56.0	----	24	13,259	−60.7	----	24	13,261	−61.8	----	15	13,254	−62.8	----	22	12,936	−55.1	----	24	12,888	−56.7	----	29	13,044	−58.9	----
150	21	13,925	−56.7	----	24	14,202	−67.4	----	23	14,199	−69.0	----	14	14,190	−69.4	----	16	13,892	−56.8	----	18	13,867	−59.0	----	28	14,007	−61.7	----
125	15	15,070	−57.5	----	22	15,287	−73.8	----	17	15,273	−75.4	----	13	15,258	−74.0	----	12	15,007	−57.2	----	15	15,002	−60.0	----	24	15,129	−63.6	----
100	8	16,481	−59.6	----	18	16,575	−75.9	----	10	16,563	−76.4	----	10	16,575	−72.4	----	6	16,401	−56.8	----	8	16,381	−60.7	----	17	16,496	−64.0	----
80	----	----	----	----	11	17,878	−72.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	12	17,868	−61.2	----
60	----	----	----	----	8	19,592	−65.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

[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 September 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.)			Denver,[1] 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	119	2.1	30	218	2.5	30	27	1.3	29	255	0.4	30	272	2.1	30	312	4.2	30	88	4.3	30	248	4.9	30	211	2.1	29	126	1.5	30	238	1.3	---	---	---	30	147	1.8
500	---	---	---	---	---	---	30	32	1.6	---	---	---	---	---	---	---	---	---	30	92	4.7	30	250	6.9	30	225	4.3	29	100	1.3	30	252	2.0	---	---	---	---	---	---
1,000	30	146	3.2	---	---	---	30	46	1.0	---	---	---	30	279	3.8	30	306	3.7	28	101	3.8	28	248	7.6	30	239	5.5	26	313	.8	30	252	2.8	---	---	---	---	---	---
1,500	27	187	2.6	---	---	---	28	320	.6	29	276	1.7	28	273	4.6	30	295	2.1	25	96	3.2	25	251	7.9	28	248	6.6	25	296	2.2	30	261	4.4	---	---	---	30	133	1.9
2,000	25	186	1.1	30	233	2.3	25	257	1.5	28	269	3.1	28	285	6.0	30	257	1.6	24	95	2.3	21	253	8.2	21	249	8.1	22	282	3.8	28	262	6.0	---	---	---	30	80	1.1
2,500	23	204	2.3	30	231	2.9	25	255	3.3	27	281	5.3	27	292	7.1	30	247	2.6	20	103	2.7	15	254	8.8	15	247	10.4	21	276	5.4	25	264	8.1	---	---	---	29	108	1.7
3,000	23	237	2.2	30	248	1.3	25	267	4.7	27	285	7.0	25	295	8.1	29	244	3.9	19	93	3.2	11	259	10.4	15	255	11.5	20	277	5.8	22	263	10.3	---	---	---	29	73	1.0
4,000	21	294	2.0	28	283	2.9	21	272	5.3	24	288	9.4	24	293	10.6	29	244	5.8	15	91	4.0	---	---	---	12	262	13.6	19	264	6.6	19	272	11.7	---	---	---	28	98	1.5
5,000	19	236	3.9	28	286	5.1	18	276	6.7	22	293	13.2	21	300	12.9	29	248	8.1	13	65	2.7	---	---	---	---	---	---	18	266	7.8	18	274	13.7	---	---	---	25	279	.8
6,000	18	302	4.2	26	248	5.8	17	278	7.6	19	291	13.4	17	308	10.6	26	258	11.3	10	120	1.6	---	---	---	---	---	---	16	277	7.7	16	277	15.0	---	---	---	25	245	3.7
8,000	13	274	6.5	22	290	9.5	13	274	11.6	---	---	---	---	---	---	19	266	12.3	---	---	---	---	---	---	---	---	---	12	277	10.6	11	268	15.3	---	---	---	19	274	7.2
10,000	---	---	---	18	289	13.4	10	270	14.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	17	298	12.0
12,000	---	---	---	15	277	16.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11	273	19.8

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. (663 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (11 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	220	2.3	30	279	1.7	28	350	1.0	30	287	2.8	26	59	3.1	29	237	2.5	30	202	2.4	27	74	2.1	29	318	1.7	30	110	3.3	29	80	1.8	29	311	0.7	28	307	1.7
500	---	---	---	---	---	---	28	328	1.4	---	---	---	26	66	3.2	29	235	4.2	---	---	---	27	53	2.6	28	319	1.7	30	116	4.1	29	103	1.4	29	332	.5	28	273	2.5
1,000	---	---	---	---	---	---	28	304	1.3	30	289	3.7	25	92	1.3	28	241	5.5	30	196	3.6	26	351	.7	28	286	.5	30	126	3.8	25	119	1.1	28	309	1.0	28	284	3.9
1,500	---	---	---	30	278	1.8	28	285	1.5	30	282	4.3	19	263	2.1	28	257	6.2	30	204	4.2	24	4	1.3	27	201	1.3	28	123	3.1	23	163	.6	26	253	1.2	25	280	5.9
2,000	30	226	2.6	30	280	2.7	26	287	2.6	30	287	5.0	17	258	4.1	26	262	8.0	30	210	4.8	23	6	.9	26	208	2.7	28	125	2.6	19	225	.6	25	261	1.8	23	287	7.8
2,500	30	225	3.4	30	273	3.1	24	286	4.9	27	293	5.9	16	254	4.4	24	273	9.7	30	213	4.7	21	13	2.4	25	225	3.8	26	143	1.5	13	335	1.4	24	275	3.6	21	285	7.5
3,000	30	221	4.1	30	260	4.5	23	283	6.2	23	290	6.2	15	250	3.8	22	278	10.2	30	222	5.6	21	316	4.2	24	230	4.4	26	139	2.0	10	308	2.3	22	288	5.5	19	281	8.4
4,000	29	227	5.4	28	257	7.0	21	285	7.8	20	288	7.5	---	---	---	20	281	12.3	30	232	6.9	17	333	5.6	21	251	4.6	22	165	2.5	---	---	---	19	280	9.3	10	277	8.9
5,000	24	241	5.7	27	264	8.5	17	285	9.4	16	293	10.4	---	---	---	16	283	13.8	29	247	7.6	15	306	8.4	21	246	5.8	17	187	2.4	---	---	---	16	272	9.8	---	---	---
6,000	20	250	9.6	23	266	9.4	16	286	11.9	12	295	7.3	---	---	---	10	277	19.0	26	241	10.0	12	342	8.8	20	256	8.5	16	208	1.5	---	---	---	15	274	11.8	---	---	---
8,000	15	266	12.6	15	278	12.7	---	---	---	---	---	---	---	---	---	---	---	---	24	245	12.5	---	---	---	15	293	8.1	---	---	---	---	---	---	10	283	17.6	---	---	---
10,000	12	268	15.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16	266	15.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	275	16.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Oakland, Calif. (8m.)			Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Cloud, Minn. (318 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (13 m.)			Sault Ste. Marie, Mich. (221 m.)			Seattle, Wash. (116 m.)			Spokane, Wash. (725 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	280	4.5	29	157	2.8	29	231	1.5	30	191	0.5	29	335	2.0	27	254	3.0	30	270	0.6	30	130	3.3	29	270	3.2	30	272	3.4	29	326	1.5	30	244	0.9	30	278	1.0
500	30	270	2.9	29	161	3.7	29	231	2.3	30	203	.8	---	---	---	27	261	3.9	30	278	1.4	30	95	2.8	29	275	2.2	30	264	4.7	29	276	.7	---	---	---	30	314	1.3
1,000	27	232	2.4	28	159	4.8	28	241	3.3	30	178	.9	29	333	1.9	27	276	5.3	28	270	2.3	30	94	2.4	28	244	1.8	29	262	6.6	29	207	1.5	30	238	1.7	29	296	2.2
1,500	26	203	2.2	27	147	4.9	26	250	4.7	30	188	1.0	29	292	.9	25	272	6.7	27	277	4.1	30	136	3.3	27	237	2.2	26	265	7.4	27	156	1.2	29	243	1.8	27	282	3.3
2,000	26	212	2.1	26	339	3.4	24	272	6.5	30	198	1.1	28	276	3.1	22	283	9.4	25	274	5.9	29	135	3.1	26	227	3.1	22	268	10.1	23	126	.6	28	250	2.7	25	269	5.1
2,500	26	216	2.8	26	244	3.9	22	287	8.7	28	214	1.1	28	274	5.6	18	286	10.5	23	275	7.2	25	125	2.7	26	217	3.5	17	277	10.3	21	34	.3	27	252	2.7	22	274	7.1
3,000	26	224	2.7	26	248	2.9	21	293	10.2	27	182	1.0	28	282	8.0	18	287	11.1	23	275	8.8	21	170	1.6	26	211	4.1	12	295	11.5	20	360	.6	26	259	3.9	22	275	8.4
4,000	24	259	3.3	23	292	4.3	20	305	13.2	26	208	1.5	24	292	10.8	17	291	14.0	20	294	11.7	19	180	.1	21	213	6.5	11	299	15.4	17	319	1.3	22	259	7.5	19	276	12.0
5,000	22	265	5.1	21	299	6.5	18	303	15.2	25	234	2.8	21	288	13.0	16	292	15.8	18	299	13.7	15	338	1.1	19	233	8.7	---	---	---	16	309	2.6	20	268	8.6	18	279	14.6
6,000	20	258	6.0	---	---	---	14	296	14.9	24	256	3.8	18	293	16.8	14	283	14.8	17	290	15.0	10	227	1.6	18	232	8.5	---	---	---	15	313	4.9	18	271	8.3	18	274	16.2
8,000	15	247	6.8	---	---	---	12	296	18.5	20	269	5.4	11	292	17.0	---	---	---	11	282	17.3	---	---	---	14	255	10.5	---	---	---	---	---	---	---	---	---	13	303	7.5	11	270	16.8
10,000	12	244	12.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11	257	12.9	---	---	---	---	---	---	---	---	---	---	---	---

[1] Weather Bureau pilot balloon observations discontinued at Denver, Colorado.

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T., during September 1949. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,636 m.)			Big Spring, Tex. (774 m.)			Bismarck, N. Dak. (505 m.)			Brownsville, Tex. (7 m.)			Caribou, Maine (191 m.)			Charleston, S. C. (13 m.)			Columbia, Mo. (237 m.)			Grand Junction, Colo. (1,473 m.)			Greensboro, N. C. (275 m.)			Hatteras, N. C. (3 m.)			International Falls, Minn. (358 m.)			Little Rock, Ark. (80 m.)			Medford, Oreg. (401 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	129	3.1	30	121	3.3	30	326	0.7	29	46	2.9	30	223	1.2	30	342	0.2	30	120	1.3	30	56	1.0	30	17	1.2	30	90	0.5	30	254	1.1	30	65	1.1	30	336	2.0
500	---	---	---	---	---	---	---	---	---	28	93	6.0	30	235	4.7	30	85	1.1	30	177	2.0	---	---	---	30	17	1.7	30	169	1.1	30	262	3.2	30	94	3.4	30	332	2.3
1,000	---	---	---	30	130	5.9	29	303	3.2	29	100	5.4	30	249	6.2	30	67	1.1	30	236	1.6	---	---	---	30	338	1.3	30	215	2.2	30	284	7.7	30	63	2.7	30	319	3.2
1,500	---	---	---	30	141	6.6	29	299	6.0	30	86	3.8	29	255	7.2	30	298	.8	30	273	3.5	30	64	.9	30	280	2.2	29	228	3.2	30	292	9.2	30	90	1.4	30	300	2.0
2,000	30	174	3.4	30	172	4.2	29	302	7.8	29	77	3.4	28	259	7.2	30	281	2.4	30	281	5.5	30	252	.1	30	264	3.2	29	238	3.8	30	299	9.7	30	172	1.5	30	260	1.7
2,500	30	216	4.2	30	205	3.0	29	306	8.7	29	70	3.3	28	256	8.3	30	264	2.7	30	289	7.6	30	272	1.6	30	252	4.3	29	247	4.7	29	296	10.0	29	281	2.7	30	238	2.9
3,000	30	239	3.2	30	229	1.5	29	304	9.1	28	71	3.3	28	251	9.4	30	270	3.6	30	291	9.2	30	263	3.0	30	258	5.8	29	247	5.9	29	304	11.1	29	288	3.9	30	232	3.5
4,000	30	285	2.6	30	314	1.4	27	299	10.4	28	81	3.1	27	249	10.2	30	271	5.3	30	297	10.9	30	264	4.8	30	264	6.9	27	249	8.6	28	305	13.6	29	315	7.8	30	260	5.2
5,000	30	299	6.1	30	8	2.0	27	297	12.9	29	86	3.3	27	248	13.3	29	274	5.9	29	295	12.5	30	269	6.8	30	265	9.6	26	251	9.6	26	298	13.8	28	294	8.0	28	263	6.7
6,000	30	296	6.8	29	330	2.3	27	300	14.3	29	53	2.4	27	251	14.4	28	278	7.8	29	292	14.4	30	266	8.6	29	265	11.0	23	252	9.9	26	294	15.2	28	300	9.6	26	279	6.6
8,000	29	288	6.7	29	305	6.7	21	290	15.1	27	338	.4	26	247	19.3	26	284	9.7	24	276	17.9	29	268	12.1	26	269	13.9	21	252	12.9	22	299	18.3	28	273	12.3	24	273	9.7
10,000	28	280	10.1	25	277	11.1	19	284	17.5	24	269	3.8	23	246	24.0	24	274	11.5	22	274	23.7	23	269	14.7	25	268	17.0	16	248	18.2	18	304	24.3	27	251	17.0	19	253	8.4
12,000	22	265	13.9	23	251	16.6	19	281	18.8	24	250	6.2	17	252	23.9	21	267	16.0	19	274	27.6	19	270	18.7	22	269	22.5	12	264	20.0	11	293	21.8	25	253	19.4	16	253	13.2
14,000	13	262	13.8	18	267	17.5	14	295	14.4	17	347	2.9	15	256	15.2	16	275	13.0	10	271	24.3	10	273	16.5	12	279	17.5	10	267	15.3	---	---	---	21	280	20.4	---	---	---
16,000	---	---	---	---	---	---	11	290	12.7	---	---	---	---	---	---	10	291	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14	273	20.5	---	---	---

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T., during September 1949. 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.	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	30	100	1.7	30	250	0.9	30	248	0.4	30	124	2.5	30	280	3.6	30	113	2.7	30	350	0.9	30	103	3.1	29	112	2.1	30	273	0.6	30	271	2.0	30	267	0.6	30	195	0.9
500	30	116	4.7	30	242	3.4	30	102	.5	29	93	3.6	29	278	3.7	28	118	3.1	---	---	---	30	113	5.3	29	100	5.9	30	254	2.3	30	328	3.0	30	246	4.0	---	---	---
1,000	30	120	4.6	30	247	4.7	30	202	1.6	29	84	3.8	29	280	3.3	28	154	4.7	30	350	.9	30	109	4.9	29	98	6.2	30	271	5.9	30	340	2.6	30	258	7.3	30	205	.6
1,500	30	122	3.6	30	239	5.8	30	246	2.4	29	69	3.4	29	278	2.1	28	161	3.2	30	313	1.7	30	96	3.5	29	98	6.0	29	283	8.2	30	16	1.2	28	265	8.3	30	260	1.4
2,000	30	126	3.2	30	245	7.5	30	271	3.9	29	66	1.9	29	251	1.5	30	229	3.6	30	293	3.5	30	99	2.1	29	95	5.6	29	292	8.4	30	41	.3	28	272	9.3	30	265	1.7
2,500	30	133	3.4	30	248	7.9	30	279	4.9	29	50	.9	29	250	2.2	30	250	3.3	30	286	5.9	30	87	1.4	29	93	5.6	29	288	8.7	30	254	1.6	28	273	10.2	29	278	2.1
3,000	30	129	3.6	30	248	8.9	30	274	6.1	29	32	.9	29	249	2.5	30	272	3.2	30	284	8.0	30	27	.6	29	93	5.6	29	291	9.8	30	246	3.3	28	274	11.1	29	276	3.2
4,000	30	128	3.0	29	243	10.5	30	285	8.3	28	273	2.0	29	262	2.4	29	310	4.5	30	288	12.0	30	60	1.3	29	89	4.9	28	292	11.9	28	246	5.9	28	277	13.2	29	267	5.4
5,000	29	124	2.3	28	243	12.1	30	285	10.7	27	307	4.5	28	260	3.8	29	309	5.6	29	293	12.7	29	277	.3	28	89	3.4	27	291	13.8	28	249	7.6	28	276	14.3	28	277	5.9
6,000	29	89	1.6	27	243	13.2	29	280	11.8	26	301	4.0	26	253	6.5	29	303	8.0	28	295	16.3	28	233	1.9	27	103	3.4	26	289	15.4	28	247	9.1	26	277	15.3	28	285	6.6
8,000	28	34	1.7	21	246	19.2	29	278	16.0	24	278	6.4	24	265	10.7	27	298	12.0	24	281	16.6	27	270	4.8	27	125	2.2	22	290	17.1	27	257	14.2	25	280	19.5	24	310	4.9
10,000	28	11	3.0	---	---	---	29	277	21.9	23	242	11.6	22	263	12.4	26	260	16.5	18	278	17.0	26	288	7.5	27	135	.2	20	283	18.0	23	255	18.8	18	285	20.2	21	307	2.8
12,000	28	329	5.3	---	---	---	26	276	25.5	22	261	12.5	18	265	16.5	24	248	19.2	15	273	19.0	24	264	11.8	26	332	1.9	16	284	18.7	16	258	18.9	14	289	19.2	17	293	7.3
14,000	24	336	6.6	---	---	---	13	281	28.9	16	285	13.3	---	---	---	17	253	16.0	11	272	15.3	17	296	15.3	22	332	1.2	12	300	17.3	14	263	16.8	---	---	---	13	295	7.5
16,000	13	14	2.9	---	---	---	---	---	---	11	272	8.5	---	---	---	---	---	---	---	---	---	10	266	10.7	18	66	3.8	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Tatoosh Island, Wash. (33 m.)		
	Observations	Direction	Speed
Surface	30	186	2.0
500	30	266	1.4
1,000	30	261	1.5
1,500	30	247	1.5
2,000	30	265	2.0
2,500	29	274	2.5
3,000	28	286	3.0
4,000	28	283	4.1
5,000	28	284	4.4
6,000	26	288	4.5
8,000	25	300	4.1
10,000	21	288	5.5
12,000	16	273	4.4

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

LATE REPORT FOR AUGUST 1949

TABLE 1

Standard pressure surface (mb.)	Swan Island, W. I. (1,013.0 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	10	27.4	81
1,000	31	124	26.6	82
950	31	580	23.6	82
900	31	1,049	20.8	80
850	31	1,542	18.0	73
800	31	2,060	15.2	65
750	31	2,609	12.3	55
700	31	3,181	9.3	54
650	31	3,796	5.8	52
600	31	4,443	2.1	49
550	31	5,141	−1.8	45
500	31	5,893	−6.2	42
450	31	6,719	−11.4	37
400	31	7,603	−17.7	39
350	31	8,588	−24.6	----
300	31	9,691	−32.7	----
250	31	10,949	−42.4	----
200	31	12,419	−54.2	----
175	29	13,261	−60.5	----
150	24	14,201	−66.5	----
125	19	15,298	−71.5	----
100	16	16,611	−73.0	----
80	6	17,931	−70.6	----

RIVER STAGES AND FLOODS FOR SEPTEMBER 1949

No major floods occurred during September. Most of the flooding was due to flash rises in several areas resulting from heavy showers. The most destructive of these occurred in Bernalillo, N. Mex., during the early morning hours of the 30th. These floods were not as destructive as those which occurred during June but were more destructive and numerous than one year ago.

Atlantic slope drainage.—Heavy rains (2 to 3 inches) during the latter part of the first week in the headwaters caused light flooding on the Saluda at Pelzer and Chappells, S. C., and on the Broad River at Blairs, S. C. No damages resulted.

East Gulf of Mexico drainage.—Very heavy rains (up to 5 inches or more) in the headwater streams of the Chattahoochee River, caused widespread flooding from Norcross, Ga., northeastward on the 5th and 6th. Most of the tributaries and the main channel of the Chattahoochee above Norcross reached flash flood proportions shortly after the rains. No important high water occurred below Norcross on the Chattahoochee or at other points on major streams. Considerable damage resulted from these flash floods.

Heavy rains over the headwater areas during the 24-hour period ending at 7 a. m. on the 6th caused moderate to sharp rises over the Etowah, Oostanaula and upper Coosa Rivers, with light flooding on the Etowah River at Canton, Ga. No damages resulted from the high water.