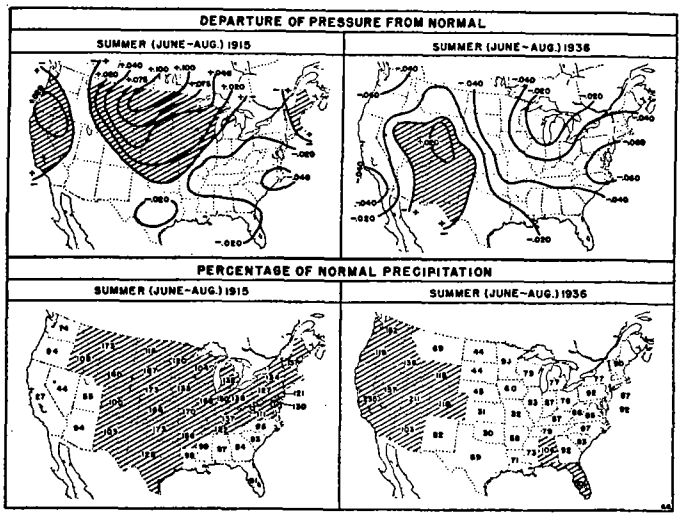

FIGURE 9.

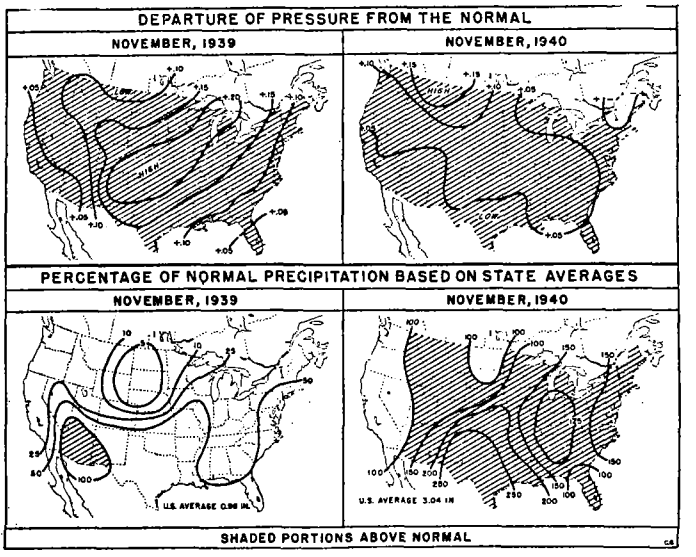

FIGURE 10.

METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR AUGUST 1941

[Climate and Crop Weather Division, J. B. KINCER in charge]

AEROLOGICAL OBSERVATIONS

By HOMER D. DYCK

For the country as a whole, mean surface temperatures for August were above normal. The temperature averaged somewhat below normal in the Appalachian Mountain sections, the eastern Lake region, and Northeast and near normal from the Rocky Mountains westward, except that the month was 2° or 3° F. warmer than normal locally in the interior of the Pacific Northwest and along the California coast. From the western Ohio, central Mississippi and lower Missouri valleys northwestward, the monthly means were from 2° to as many as 7° F. above normal.

At 1,500 meters above sea level, the 5 a. m. resultant winds for August were from directions to north of normal over the upper Mississippi valley, the Lake region, the Ohio valley and Tennessee and the north and Middle Atlantic States, and from south of normal at this level over most of the remainder of the country. At 3,000 meters, the morning resultant winds were more northerly over the Great Plains from Oklahoma northward, the upper Mississippi valley, the Lake region, the Ohio valley and the Northeast, and more southerly than normal over the rest of the country. In comparing 5 p. m. resultant winds at the 5,000-meter level with 5 a. m. resultant normal winds, it can be seen that the afternoon winds were from directions to north of the corresponding morning winds at more than half of the stations for which these data were available.

It may be noted that over the northern part of the United States east of the Rocky Mountains and the Middle and North Atlantic States where a turning to northward of resultant wind directions occurred, temperatures below July's were evident; while where a turning to southward occurred east of the Rocky Mountains, temperature values above last month's were noted. On the other hand, the turning to southward west of the Rocky Mountains was accompanied by lower temperatures this month.

At the 1,500-meter level resultant wind velocities were greater than normal over the Lake region, the Gulf region, and several stations in the Pacific Northwest; elsewhere velocities at this level were mostly below normal. At 3,000 meters resultant wind velocities were above normal east of the Mississippi and over the southern Plateau and below normal over the remainder of the country. The 5 p. m. resultant velocities were generally higher than the corresponding 5 a. m. normals at 5,000 meters.

At 1,500 meters the 5 p. m. resultant directions were to the north of the 5 a. m. resultants over the Gulf States and most of the northern Plateau region except Washington, while a turning to southward during the day was noted over the remainder of the country. On the other hand, at 3,000 meters the resultant winds turned to northward generally during the day except over the central Great Plains and the northern Plateau region where they turned southward.

The 5 p. m. resultant velocities at 1,500 meters were lower than the corresponding 5 a. m. resultant velocities at most stations except those in the Pacific Northwest, the eastern Lake region, and the Northeast, where higher p. m. resultant velocities were recorded at this level. At 3,000 meters 5 p. m. resultant velocities were lower over the Plateau region, the northern Great Plains, Georgia, and South Carolina. Elsewhere p. m. velocities were generally higher at this level.

The upper-air data discussed above are based on 5 a. m. (E. S. T.) pilot-balloon observations (charts VIII and IX) as well as observations made at 5 p. m. (table 2 and charts X and XI).

Radiosonde and airplane stations located in the southern part of the country recorded on the average the highest daily pressures at each of the several standard levels from 2,000 meters to 18,000 meters. The highest mean monthly pressure occurred over San Antonio at each of the standard levels between 2,000 and 7,000 meters, while at 8,000 meters both San Antonio and Phoenix recorded the highest. At standard levels from 9,000 to 14,000 meters,

inclusive, the highest mean monthly pressure was noted at San Antonio. At 15,000 meters, Nashville, Oklahoma City, Phoenix and San Antonio recorded the maximum. At 16,000 meters the highest pressure occurred at Phoenix and San Antonio while at 17,000 meters a number of stations, namely, Nashville, Oklahoma City, Phoenix, San Antonio, and San Diego recorded maxima. At 18,000 meters the maximum occurred over San Diego. The lowest mean monthly pressure was noted over Portland, Maine, for all standard levels from 2,000 to 11,000 meters, inclusive, and again at 13,000 and 14,000 meter levels. Seattle, which recorded the minimum pressure at 12,000 meters, also recorded minima corresponding to those over Portland, Maine, at 11,000 and 13,000 meters. Sault Ste. Marie recorded a minimum equal to that over Portland, Maine, at 14,000 meters and also recorded the lowest pressures at levels from 15,000 to 18,000 meters, inclusive. St. Paul also recorded the minimum at 18,000 meters.

In general pressures for August averaged lower than in July at nearly all levels over the Middle and North Atlantic States, the Lake region, the northern Great Plains and generally west of the Rocky Mountains excepting southern California. The decreases were more pronounced over the Northeast and over the Pacific Northwest. In the Northeast, Portland, Maine, recorded decreases from July of 4 to 6 mb. from 1,000 to 13,000 meters and in the Northwest, Medford showed decreases of from 2 to 5 mb. from 2,000 to 17,000 meters. The largest difference between the highest and the lowest mean pressures over the United States for the month was 16 mb. which was noted at 6,000, 7,000, 9,000, and 10,000 meters. Pressure gradients were steeper over the northern half of the country than in July. The steepest upper level pressure gradients for August occurred from 6,000 to 13,000 meters between Lakehurst, N. J., and Washington, D. C. At these levels there was a change of 1 mb. pressure for each 42 miles of horizontal distance between the two cities.

Mean temperatures for August were higher than for July at most levels up to 11,000 meters over the southern half of the country with the exception of California and the southern Plateau region, where temperatures averaged lower than the previous month in the lower levels. Above 11,000 meters temperatures were somewhat higher than last month over the Northeast and the Pacific Northwest. Sault Ste. Marie, Mich., and Bismarck, N. Dak., were the only stations reporting lower temperatures than the previous month at all levels, while no station reported a higher temperature over the previous month at all levels.

When mean temperatures for August 1941 are compared with August 1940 it may be seen that temperatures this year were higher over most of the country east of the Rocky Mountains with the exception of the extreme northern part at almost all levels up to 11,000 meters, while temperatures were generally lower west of the Rocky Mountains up to that level. Almost the reverse was true at levels above 11,000 meters with temperatures lower than last year at most stations east of the Rocky Mountains and higher to the west.

The mean temperatures for August at 1,000 meters were below normal over the Middle and North Atlantic States, Oklahoma, and California, and slightly above normal elsewhere. At 3,000 meters temperatures were below normal generally except over the Ohio Valley and the South Atlantic and Gulf States. At 5,000 meters temperatures were below normal west of the Rocky Mountains and above normal generally east of the Rockies except in the Northeast and the northern Lake region.

At 1,000, 3,000, and 5,000 meters, relative humidities were higher than normal over most of the United States, except over the Lake region and the Middle Atlantic States where they were lower than normal. Plus departures were marked in the Northwest where Seattle recorded 23 percent above normal at 3,000 meters.

The altitude at which the mean monthly temperature of 0° C. for August occurred varied from the lowest (3,400 meters) over Portland, Maine, to the highest (5,100 meters) over Phoenix and San Antonio. The level at which freezing conditions occurred on the average was slightly higher than last month over the southern half of the country and lower over the remainder. It was 700 meters lower over Medford, Oreg., and 600 meters lower over Portland, Maine.

The lowest free-air temperature recorded during the month over the United States was −84.2° C. (−119.6° F.). This temperature occurred over Miami, Fla., on the afternoon of August 26, at an altitude of 15,100 meters (9.4 miles) above sea level. The lowest temperature for the month over San Juan was −81.8° C. (−115.2° F.) which was observed at 17,100 meters (about 10.6 miles) above sea level on August 27.

Table 3 shows the maximum free-air wind velocities and their directions for various sections of the United States during August as determined by pilot balloon observations. The highest observed wind velocity for the month was 72.6 m. p. s. (162.4 m. p. h.) observed over Buffalo, N. Y., on August 10. This wind was blowing from the northwest at an elevation of 11,220 meters (about 7.0 miles) above sea level.

The highest August wind velocity observed during the past 5 years in the free-air layer from the surface to 2,500 meters was 42.0 m. p. s., (94 m. p. h.) observed on August 7, 1940, over Casper, Wyo. Between 2,500 and 5,000 meters the highest velocity observed in the last 5 years for August was 69.8 m. p. s. (156 m. p. h.) over Havre, Mont., on August 11, 1938. The velocity of 72.6 m. p. s. observed this month at Buffalo (see table 3 and previous paragraph) was the highest observed for August above 5,000 meters during the last 5 years.

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during August 1941*

Stations with elevations in meters above sea level

Altitude (meters) m.s.l.	Albuquerque, N. M. (1620 m.)				Atlanta, Ga. (300m.)				Bismarck, N. Dak. (505 m.)				Boise, Ida. (864 m.)				Brownsville, Tex. (6 m.)				Buffalo, N. Y. (221 m.)				Charleston, S. C. (14 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	840	21.6	54	30	982	23.2	87	31	956	18.6	67	30	915	19.6	56	31	1,014	26.3	88	31	990	16.8	77	31	1,014	24.8	93
500					29	960	24.0	78									31	959	24.5	84	31	958	18.0	67	31	960	24.3	81
1,000					29	907	22.1	76	31	902	20.4	59	30	901	20.3	50	31	906	22.4	68	31	903	15.0	65	31	906	21.5	74
1,500					29	856	19.2	77	31	852	18.1	59	30	851	19.4	43	31	855	20.2	59	31	852	11.9	66	31	855	18.5	71
2,000	31	804	20.7	50	29	807	16.2	76	31	803	15.0	61	30	802	15.9	44	31	806	17.2	55	31	802	9.1	65	31	806	15.6	68
2,500	31	759	17.7	51	29	761	13.4	70	31	756	11.4	64	30	756	12.1	47	31	761	14.2	50	31	754	6.7	59	31	760	12.9	65
3,000	31	716	13.9	56	30	717	10.5	69	31	712	8.3	62	30	712	8.3	52	31	717	11.2	48	31	710	4.4	51	31	716	10.1	61
4,000	31	634	6.3	67	29	635	4.9	71	30	630	1.9	59	30	630	.7	57	31	635	5.5	47	31	627	− .5	43	31	635	4.7	60
5,000	30	561	−1.0	74	29	562	− .3	70	30	557	− 4.5	54	29	556	− 6.3	59	31	562	− .6	44	31	553	− 6.2	40	31	561	− .8	57
6,000	29	494	− 7.3	69	29	495	− 5.9	61	30	490	−10.8	50	29	489	−13.0	57	31	495	− 6.8	41	30	486	−12.3	36	31	494	− 6.5	52
7,000	29	434	−13.3	55	29	435	−12.2	55	30	430	−17.6	45	28	428	−19.7	53	31	435	−13.5	41	29	426	−19.2	35	31	434	−12.7	48
8,000	29	380	−19.9	48	29	381	−18.9	52	29	375	−24.9	44	28	374	−26.5	51	29	380	−20.6	41	29	372	−26.2	34	31	380	−19.7	45
9,000	29	331	−27.0	46	29	332	−25.9	50	27	326	−32.4	44	28	325	−34.0	51	28	332	−27.7	40	28	322	−33.2	34	30	331	−26.9	44
10,000	29	288	−34.4	45	29	289	−33.3	48	27	282	−40.2	----	25	282	−41.6	----	28	288	−35.1	39	27	279	−40.5	----	30	288	−34.3	43
11,000	20	249	−41.8	----	27	250	−40.8	----	27	243	−47.8	----	21	242	−48.5	----	28	249	−43.0	----	25	241	−47.1	----	30	249	−42.6	----
12,000	29	215	−49.2	----	27	216	−48.6	----	27	209	−53.8	----	20	208	−53.5	----	27	214	−50.7	----	23	207	−52.5	----	29	214	−51.0	----
13,000	30	184	−56.8	----	27	185	−56.5	----	28	178	−57.1	----	18	178	−55.7	----	26	183	−58.1	----	21	177	−56.5	----	28	183	−59.3	----
14,000	29	156	−63.4	----	25	157	−63.8	----	28	152	−59.6	----	17	152	−56.5	----	24	156	−64.2	----	20	151	−59.3	----	28	156	−66.7	----
15,000	29	133	−67.7	----	25	133	−69.6	----	27	130	−61.0	----	15	130	−58.2	----	21	132	−69.1	----	19	128	−60.2	----	27	132	−71.6	----
16,000	29	113	−68.8	----	25	113	−71.9	----	27	110	−61.2	----	15	111	−59.1	----	20	112	−71.5	----	16	110	−60.1	----	23	111	−72.5	----
17,000	28	95	−66.2	----	22	95	−69.3	----	25	94	−60.2	----	11	94	−59.0	----	18	94	−70.2	----	11	93	−59.0	----	18	94	−69.3	----
18,000	26	81	−63.0	----	18	80	−65.4	----	21	80	−58.4	----	9	80	−57.6	----	18	79	−67.2	----	5	80	−58.7	----	13	79	−65.0	----
19,000	17	69	−60.5	----	8	68	−62.0	----	14	68	−56.9	----	8	68	−56.0	----	14	68	−64.0	----	----	----	----	----	5	67	−61.6	----
20,000	6	59	−57.5	----	----	----	----	----	7	58	−55.2	----	----	----	----	----	9	57	−61.5	----	----	----	----	----	----	----	----	----

Stations with elevations in meters above sea level

Altitude (meters) m. s. l.	Denver, Col. (1,616 m.)				Detroit, Mich. (194 m.)				El Paso, Tex. (1,193 m.)				Ely, Nev. (1,908 m.)				Great Fall, Mont. (1.128 m.)				Huntington, W. Va. (172 m.)				Lakehurst, N. J.[1] (39 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	29	841	19.1	63	31	992	17.3	82	30	883	23.4	63	29	811	14.8	55	31	888	17.9	57	31	996	19.6	89	30	1,010	17.1	85
500					31	958	20.9	66													31	959	22.8	71	30	958	19.0	69
1,000					31	904	18.5	61													31	905	21.1	70	30	903	16.2	64
1,500					31	853	15.1	62	30	853	23.3	54					31	851	18.0	51	31	854	17.8	72	30	852	13.1	63
2,000	29	804	19.8	51	31	803	12.4	62	30	805	20.7	55	29	803	15.7	52	31	802	15.1	51	31	805	15.0	66	30	803	10.8	56
2,500	29	758	17.2	50	31	757	10.2	54	30	759	17.1	59	29	757	14.6	46	31	756	11.8	54	31	759	12.5	59	30	756	8.6	45
3,000	29	715	13.8	52	31	712	7.8	49	30	716	13.0	65	29	713	10.6	47	31	712	8.2	58	31	715	9.8	55	30	712	6.4	38
4,000	28	634	5.8	60	31	630	2.2	45	30	635	5.5	72	29	631	3.2	53	31	630	.9	67	31	633	4.2	51	30	629	1.3	32
5,000	28	560	−1.7	66	30	556	−3.3	39	30	562	−1.4	74	29	558	−4.0	58	31	555	−5.7	63	30	560	−1.0	43	29	555	−4.0	29
6,000	27	493	−8.2	63	30	489	−9.5	38	30	494	−7.4	71	29	490	−10.5	58	31	488	−12.0	54	30	493	−6.7	39	29	488	−10.0	29
7,000	27	434	−14.6	53	30	430	−15.9	36	30	435	−13.2	62	29	430	−17.1	52	31	428	−18.6	52	30	433	−13.0	37	29	428	−16.6	32
8,000	27	380	−21.8	48	30	376	−22.7	36	30	380	−19.6	56	29	376	−24.0	50	30	373	−25.7	50	30	379	−20.0	35	28	374	−23.7	30
9,000	27	330	−29.2	47	29	327	−29.9	34	30	331	−26.4	54	29	326	−31.4	48	30	324	−33.3	48	30	330	−27.3	35	28	325	−30.9	29
10,000	27	287	−37.2	45	27	284	−37.4	33	30	288	−33.8	51	29	283	−39.1	46	30	281	−40.9	----	30	287	−34.9	34	27	282	−38.1	----
11,000	26	248	−44.6	----	25	245	−44.6	----	30	249	−41.6	----	27	244	−46.7	----	30	242	−47.9	----	29	248	−42.3	----	26	243	−45.5	----
12,000	26	213	−51.7	----	23	210	−51.1	----	30	215	−49.6	----	27	209	−52.9	----	30	208	−53.5	----	28	213	−49.4	----	22	208	−52.0	----
13,000	24	182	−58.7	----	21	180	−56.4	----	29	184	−57.4	----	27	179	−57.7	----	30	178	−55.3	----	28	183	−56.1	----	22	178	−57.2	----
14,000	23	155	−64.54	----	20	154	−60.0	----	29	156	−64.4	----	26	152	−61.0	----	30	152	−56.4	----	27	156	−62.1	----	20	152	−60.9	----
15,000	22	131	−67.6	----	18	131	−62.1	----	29	133	−69.7	----	26	130	−63.4	----	30	130	−57.6	----	25	132	−66.2	----	20	129	−63.4	----
16,000	21	111	−67.9	----	17	111	−62.2	----	27	112	−70.3	----	25	110	−63.9	----	30	111	−57.7	----	24	112	−65.6	----	20	110	−63.4	----
17,000	19	94	−66.0	----	17	94	−60.9	----	25	95	−68.0	----	24	94	−62.9	----	28	94	−57.3	----	19	95	−63.9	----	19	94	−62.3	----
18,000	16	80	−63.1	----	16	80	−58.7	----	22	80	−64.3	----	18	80	−60.8	----	25	80	−56.5	----	19	81	−61.7	----	17	80	−60.2	----
19,000	8	68	−60.3	----	14	69	−56.4	----	16	68	−61.2	----	10	68	−58.7	----	18	69	−55.1	----	18	68	−58.4	----	13	68	−57.9	----
20,000	----	----	----	----	13	58	−54.2	----	7	58	−59.0	----	----	----	----	----	8	59	−53.6	----	8	58	−55.6	----	9	57	−55.4	----
21,000	----	----	----	----	10	50	−52.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	49	−53.1	----

See footnotes at end of table.

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during August 1941*—Continued

Stations with elevations in meters above sea level

Altitude (meters) m. s. l.	Lake Charles, La. (5 m.)				Medford, Oreg. (401 m.)				Miami, Fla. (4 m.)				Nashville, Tenn. (180 m.)				Norfolk, Va.[1 2] (10 m.)				Oakland, Calif. (2 m.)				Oklahoma City, Okla. (391 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	1,014	24.9	94	31	968	20.4	58	30	1,016	24.9	91	31	995	23.4	83	30	1,017	22.4	80	31	1,015	16.2	81	31	970	24.4	77
500	31	960	26.5	66	31	957	20.7	58	30	961	24.0	91	31	959	26.0	71	30	961	22.1	67	31	958	15.0	77	31	958	25.1	72
1,000	31	907	23.5	63	31	903	17.8	60	30	907	21.3	81	31	906	23.3	72	30	907	19.1	66	31	904	18.1	48	31	905	24.5	67
1,500	31	856	20.7	58	31	852	14.4	65	30	857	18.3	79	30	856	19.9	76	30	855	16.4	66	31	852	17.1	39	31	855	21.2	69
2,000	31	807	18.0	53	31	802	11.4	69	30	808	15.4	74	30	807	16.6	75	30	806	14.1	66	31	803	14.8	35	31	806	18.0	70
2,500	31	762	15.0	50	31	755	8.6	68	30	761	12.7	69	30	761	13.6	71	30	759	11.5	63	31	757	11.6	32	31	760	14.5	68
3,000	31	718	12.1	50	31	711	5.7	64	30	717	10.0	63	30	717	11.0	65	30	715	9.4	50	31	713	8.4	31	31	717	11.0	67
4,000	29	636	6.4	47	31	628	−.5	52	30	635	4.4	55	30	635	4.8	63	29	633	3.2	47	31	631	2.1	31	31	635	4.4	70
5,000	28	562	.1	44	31	554	−6.5	46	30	562	−1.3	52	30	562	−.7	60	25	559	−3.0	39	31	556	−4.4	30	31	561	−1.3	62
6,000	28	496	−6.1	40	29	486	−12.9	43	30	495	−7.3	50	28	495	−5.9	52	----	----	----	----	31	489	−11.2	31	31	494	−6.7	54
7,000	27	436	−12.8	38	29	426	−19.8	42	30	435	−13.7	49	27	435	−12.0	47	----	----	----	----	31	429	−18.6	30	30	435	−12.6	49
8,000	26	381	−19.7	38	28	372	−26.9	42	30	380	−20.2	48	27	381	−18.8	45	----	----	----	----	30	374	−25.7	30	30	380	−19.2	46
9,000	26	332	−26.8	37	28	322	−34.3	43	30	331	−27.5	45	27	332	−25.5	44	----	----	----	----	30	325	−32.9	28	29	332	−26.0	43
10,000	24	289	−34.1	35	28	279	−41.9	----	29	288	−35.3	43	26	289	−32.7	43	----	----	----	----	30	282	−40.4	----	29	289	−33.2	42
11,000	22	250	−41.8	----	28	240	−48.9	----	28	249	−43.2	----	25	251	−40.3	----	----	----	----	----	30	243	−47.5	----	28	250	−40.8	----
12,000	18	215	−49.3	----	28	206	−53.7	----	28	214	−51.0	----	25	216	−47.7	----	----	----	----	----	30	208	−53.4	----	28	216	−48.3	----
13,000	10	184	−56.4	----	28	176	−55.4	----	28	183	−58.7	----	24	185	−55.1	----	----	----	----	----	30	178	−57.2	----	27	184	−56.0	----
14,000	----	----	----	----	28	150	−55.7	----	27	156	−65.5	----	24	158	−62.3	----	----	----	----	----	30	152	−59.0	----	26	157	−62.5	----
15,000	----	----	----	----	28	129	−56.1	----	26	132	−69.4	----	23	134	−68.2	----	----	----	----	----	30	129	−60.4	----	26	134	−67.7	----
16,000	----	----	----	----	27	110	−57.3	----	24	112	−70.8	----	22	113	−70.7	----	----	----	----	----	30	110	−61.7	----	26	113	−68.9	----
17,000	----	----	----	----	26	94	−57.8	----	22	94	−70.0	----	22	96	−69.1	----	----	----	----	----	29	94	−61.8	----	23	96	−68.1	----
18,000	----	----	----	----	18	80	−57.1	----	20	79	−66.7	----	20	81	−65.9	----	----	----	----	----	28	80	−60.6	----	23	81	−64.8	----
19,000	----	----	----	----	10	68	−56.6	----	11	68	−63.2	----	19	69	−63.0	----	----	----	----	----	25	68	−58.7	----	18	69	−61.9	----
20,000	----	----	----	----	5	58	−55.9	----	----	----	----	----	17	58	−59.4	----	----	----	----	----	16	58	−57.0	----	11	59	−58.7	----
21,000	----	----	----	----	----	----	----	----	----	----	----	----	7	50	−58.2	----	----	----	----	----	----	----	----	----	5	50	−57.1	----

Stations with elevations in meters above sea level

Altitude (meters), m. s. l.	Omaha, Nebr. (301 M.)				Pensacola, Fla.[1 2] (24 M.)				Phoenix, Ariz. (339 M.)				Portland, Maine (19 M.)				St. Louis, Mo. (171 M.)				St. Paul, Minn. (225 M.)				San Antonio, Tex. (174 M.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	980	22.9	71	26	1,016	27.7	80	29	971	27.7	51	31	1,010	13.9	87	31	995	24.0	69	31	988	19.9	79	31	995	25.7	82
500	31	958	24.4	62	26	962	26.3	79	29	954	31.1	40	31	955	16.4	70	31	959	25.1	61	31	957	20.8	66	31	959	25.3	81
1,000	31	904	22.8	59	26	909	24.1	80	29	902	29.3	36	31	900	13.6	66	31	906	22.5	63	31	903	18.7	64	31	906	24.3	69
1,500	31	854	19.6	61	26	859	21.6	79	29	853	26.0	38	31	848	10.3	68	31	855	19.3	68	31	852	15.5	65	31	856	21.8	65
2,000	31	805	16.5	63	26	810	19.3	78	29	805	22.0	44	31	798	7.5	68	31	806	16.0	70	31	803	12.5	67	31	808	18.8	62
2,500	31	759	13.5	62	26	764	16.8	77	29	759	17.9	52	31	751	4.9	66	31	760	12.8	68	31	756	9.9	64	31	762	15.8	57
3,000	31	715	10.5	59	26	720	14.2	77	29	716	13.8	58	31	706	2.3	64	31	716	9.9	64	31	712	7.0	63	31	718	13.0	51
4,000	30	634	4.1	56	23	639	9.8	69	29	635	6.9	60	31	623	−3.1	60	30	634	4.3	60	30	630	1.5	57	31	637	7.0	48
5,000	30	560	−1.6	45	19	566	5.1	65	27	562	0.9	54	31	549	−9.2	52	30	560	−1.5	55	29	556	−4.4	50	31	563	.9	48
6,000	30	493	−7.3	39	----	----	----	----	27	496	−5.4	49	30	481	−15.2	46	30	493	−6.9	44	27	489	−10.6	44	29	497	−5.2	48
7,000	30	433	−13.7	35	----	----	----	----	27	436	−11.8	42	30	421	−22.0	44	30	433	−13.3	37	25	429	−17.3	41	29	437	−11.5	47
8,000	29	379	−20.6	34	----	----	----	----	26	382	−18.6	38	30	367	−29.2	43	30	379	−19.9	36	24	374	−24.2	39	29	382	−18.2	46
9,000	27	330	−27.9	33	----	----	----	----	26	333	−25.9	36	30	318	−36.3	40	30	330	−27.1	35	24	325	−31.4	38	29	334	−25.2	45
10,000	27	287	−35.3	33	----	----	----	----	26	290	−33.5	35	30	275	−42.8	----	29	287	−34.5	35	24	282	−38.6	----	28	291	−32.3	44
11,000	25	248	−42.8	----	----	----	----	----	26	251	−41.0	----	30	237	−47.9	----	29	248	−41.9	----	23	243	−45.8	----	28	252	−40.0	----
12,000	24	214	−50.1	----	----	----	----	----	25	216	−48.7	----	29	204	−51.5	----	28	214	−49.0	----	21	209	−51.8	----	27	217	−47.8	----
13,000	22	183	−56.9	----	----	----	----	----	25	185	−56.2	----	29	174	−53.3	----	28	183	−55.7	----	20	178	−57.6	----	24	186	−55.5	----
14,000	22	156	−62.5	----	----	----	----	----	25	158	−63.0	----	28	149	−55.0	----	27	156	−60.9	----	17	152	−61.4	----	23	158	−62.8	----
15,000	22	132	−65.6	----	----	----	----	----	25	134	−67.9	----	28	128	−56.7	----	26	133	−65.2	----	16	129	−59.0	----	22	134	−68.4	----
16,000	22	112	−66.2	----	----	----	----	----	24	114	−68.8	----	22	109	−56.7	----	25	113	−66.5	----	17	109	−58.9	----	22	114	−70.8	----
17,000	20	95	−64.6	----	----	----	----	----	22	96	−67.1	----	18	93	−56.1	----	21	95	−65.5	----	13	92	−57.2	----	16	96	−69.2	----
18,000	19	81	−61.7	----	----	----	----	----	19	81	−63.8	----	15	79	−54.5	----	20	80	−62.9	----	10	78	−55.7	----	15	81	−66.9	----
19,000	12	69	−59.5	----	----	----	----	----	13	69	−60.9	----	6	68	−53.6	----	18	68	−60.0	----	----	----	----	----	9	69	−63.4	----
20,000	9	59	−57.3	----	----	----	----	----	9	58	−57.8	----	----	----	----	----	12	58	−57.5	----	----	----	----	----	----	----	----	----
21,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	10	49	−55.3	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during August 1941*—Continued

Stations with elevations in meters above sea level

Altitude (meters) m.s.l.	San Diego, Calif.[1] (19 m.)				S. S. Marie, Mich. (221 m.)				Seattle, Wash.[1] (27 m.)				Spokane, Wash. (598 m.)				Washington, D. C. (5 m.)				Anchorage, Alaska (42 m.)				Atlantic Sta. No. 1[2] (3 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	30	1,011	19.5	85	31	989	14.0	89	31	1,013	18.0	74	31	945	18.2	62	28	1,013	21.5	78	31	1,012	16.4	73	30	1,015	23.4	78
500	30	956	18.3	81	31	958	15.1	77	31	959	16.7	70					28	959	22.1	64	31	958	15.2	72	30	957	20.4	78
1,000	30	903	20.7	54	31	902	13.1	69	31	904	14.2	70	31	902	19.9	51	28	905	19.2	67	31	903	11.7	75	30	904	17.5	80
1,500	30	852	20.2	37	31	850	9.9	67	31	852	11.9	67	31	851	16.7	52	27	854	16.0	69	31	850	8.4	78	30	853	15.4	72
2,000	30	804	18.2	32	31	800	7.5	65	31	802	9.3	66	31	802	12.7	55	27	805	13.1	69	31	800	5.0	79	30	804	13.6	61
2,500	30	757	15.3	31	31	753	5.3	57	31	755	6.1	68	31	755	8.9	59	27	758	10.9	63	31	752	1.7	79	29	757	11.3	53
3,000	30	714	12.2	33	31	708	2.6	56	31	710	3.0	66	30	710	5.5	60	27	714	8.7	55	31	707	−1.0	77	29	713	9.1	47
4,000	30	633	5.9	31	31	625	−2.3	51	31	627	−3.1	58	29	628	−1.4	61	26	632	3.4	50	31	623	−6.6	68	29	631	4.1	45
5,000	30	559	−.5	31	30	551	−8.2	46	30	551	−9.5	50	29	554	−7.8	56	26	558	−2.0	48	29	547	−12.7	62	29	558	−1.4	42
6,000	30	493	−7.3	28	28	484	−14.7	43	29	484	−16.4	45	28	486	−14.2	52	26	492	−7.9	42	27	479	−19.1	56	28	491	−7.7	43
7,000	30	434	−14.2	28	28	423	−21.5	40	29	423	−23.8	48	27	425	−21.3	50	26	432	−14.4	39	27	418	−26.3	53	28	431	−14.5	42
8,000	22	380	−21.5		27	369	−28.6	39	29	368	−31.5	52	27	371	−28.5	49	25	378	−21.0	37	26	363	−33.8	51	27	377	−21.5	44
9,000	22	330	−29.2		27	320	−35.6	38	28	319	−38.6	60	25	322	−35.8	48	24	329	−28.3	37	26	314	−41.3		24	328	−28.5	44
10,000	22	287	−36.6		26	277	−42.5		28	276	−45.1		24	278	−42.9		24	286	−35.9	38	22	270	−48.6		23	284	−36.0	41
11,000	18	248	−43.6		26	238	−48.4		28	237	−50.6		22	239	−49.4		24	247	−43.6		20	232	−53.4		23	246	−43.8	
12,000	18	214	−49.8		26	204	−52.7		28	203	−52.9		21	205	−53.8		24	212	−50.7		19	199	−53.5		23	211	−51.3	
13,000	17	183	−57.3		26	175	−55.6		28	174	−53.4		18	175	−54.9		23	182	−57.1		17	171	−51.5		22	180	−57.4	
14,000	16	156	−63.1		25	149	−57.2		26	150	−54.1		18	150	−54.7		23	155	−62.0		17	146	−50.6		22	154	−62.1	
15,000	14	133	−66.5		22	127	−58.5		26	128	−54.5		16	128	−55.4		22	132	−64.6		16	125	−50.4		22	131	−63.3	
16,000	13	113	−67.6		18	108	−58.8		24	110	−55.1		14	109	−55.7		22	112	−64.5		16	108	−50.3		20	111	−62.8	
17,000	9	96	−67.2		14	91	−57.5		20	94	−55.1		9	93	−55.8		21	95	−63.3		12	92	−50.2		20	94	−61.6	
18,000	7	82	−66.3		9	78	−55.9		17	80	−54.8						17	80	−60.8		8	79	−49.7		19	80	−59.3	
19,000									10	68	−54.1						12	69	−57.5						12	69	−57.0	
20,000																	10	59	−54.8						6	59	−54.5	

Stations with elevations in meters above sea level

Altitude (meters) M. S. L.	Atlantic, Sta. No. 2[4] (3 m.)				Bethel, Alaska (7 m.)				Coco Solo, C. Z.[1 2] (15 m.)				Fairbanks, Alaska (156 m.)				Juneau, Alaska (49 m.)				Ketchikan, Alaska (26 m.)				Nome, Alaska (14 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	24	1,019	24.9	85	31	1,016	14.3	79	22	1,012	26.3	93	31	998	17.6	59	31	1,011	16.0	72	31	1,014	16.3	78	26	1,015	12.6	86
500	24	963	22.0	88	31	958	11.4	80	22	957	24.1	85	31	958	14.8	61	31	958	14.9	70	31	959	15.1	80	26	958	11.3	81
1,000	24	910	19.3	85	31	902	9.0	80	22	904	21.6	81	31	903	10.8	65	30	903	11.4	72	31	904	12.2	80	26	903	9.6	78
1,500	24	858	15.9	80	31	849	7.0	79	22	853	18.9	81	31	850	7.1	71	30	851	7.8	75	31	851	9.1	78	26	850	7.7	75
2,000	24	809	14.7	74	31	799	4.5	77	22	804	16.1	68	31	800	3.6	75	30	800	4.4	78	31	801	6.1	74	26	799	5.5	70
2,500	24	762	12.2	66	31	751	2.0	73	22	757	13.0	63	31	752	0.5	76	30	752	1.7	75	31	753	3.2	72	26	752	3.1	69
3,000	24	718	9.4	60	30	706	−0.5	68	21	714	10.1	52	31	706	−2.4	74	29	706	−1.0	72	31	708	0.4	69	26	706	0.5	68
4,000	23	636	3.8	50	30	622	−5.6	61	13	632	3.4	51	31	622	−7.6	65	27	623	−6.5	61	31	624	−5.2	64	26	623	−4.8	57
5,000	23	562	−2.0	49	29	547	−11.2	58					30	546	−13.7	58	25	547	−12.6	56	30	549	−11.7	59	25	548	−10.9	48
6,000	23	495	−8.3	51	29	479	−17.8	53					30	478	−20.6	52	25	479	−19.3	52	30	481	−18.6	56	23	480	−17.4	44
7,000	23	434	−14.9	53	29	418	−24.7	51					29	417	−27.8	49	24	418	−26.3	51	30	420	−25.8	54	23	420	−24.5	42
8,000	22	380	−21.8	53	27	364	−32.1	49					29	362	−35.0	48	21	363	−33.8	51	27	365	−33.2	53	23	365	−31.5	43
9,000	22	330	−28.9	52	27	315	−39.0	48					27	313	−42.2		19	314	−41.4		26	315	−41.0		23	316	−38.9	43
10,000	21	286	−36.7	51	27	272	−45.7						26	270	−48.9		15	270	−48.7		25	272	−48.2		23	273	−45.1	
11,000	21	247	−44.6		27	234	−50.0						26	232	−53.4		14	232	−54.3		25	233	−53.7		22	235	−51.3	
12,000	21	212	−52.0		27	200	−52.0						22	198	−52.7		14	198	−53.4		24	199	−53.5		22	201	−53.6	
13,000	21	182	−58.4		27	172	−50.5						19	170	−50.4		14	170	−50.4		24	171	−51.2		21	172	−51.2	
14,000	19	155	−62.2		26	147	−49.6						17	146	−49.4		13	146	−49.7		20	147	−50.6		21	147	−50.1	
15,000	18	132	−63.8		26	126	−49.3						14	124	−49.2		11	125	−49.9		17	126	−50.8		21	126	−49.6	
16,000	17	112	−63.6		25	108	−48.9						11	107	−49.0		10	107	−50.2		15	108	−51.2		18	109	−49.1	
17,000	17	95	−62.2		21	93	−48.6						5	91	−49.2		8	92	−49.9		11	92	−51.6		18	93	−48.7	
18,000	15	81	−60.7		17	80	−48.3										7	79	−50.0		9	79	−51.6		17	80	−48.3	
19,000	8	69	−59.0		13	68	−48.0										5	68	−49.7		6	68	−51.6		14	69	−48.0	
20,000					8	58	−47.6																		12	59	−47.7	
21,000					6	50	−47.2																		8	51	−47.2	

See footnotes at end of table.

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during August 1941*—Continued

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level							
	Pearl Harbor, T. H.[1] (7 m.)				San Juan, P. R. (15 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	15	1,014	24.5	78	29	1,014	25.8	89
500	15	959	20.9	83	29	960	24.4	89
1,000	15	906	18.1	83	29	906	21.4	87
1,500	15	854	15.8	83	29	856	18.5	81
2,000	15	805	13.9	73	29	807	15.9	76
2,500	15	758	11.9	59	29	760	13.6	66
3,000	15	714	10.1	44	29	717	10.9	59
4,000	15	633	5.1	35	29	635	5.4	50
5,000	15	559	−1.5	39	27	562	−.2	46
6,000	14	492	−8.2	42	27	495	−6.2	38
7,000	14	432	−14.6	49	26	435	−13.1	34
8,000	14	378	−21.4	47	26	380	−20.5	32
9,000	14	329	−28.8	46	26	332	−28.0	33
10,000	13	286	−35.9		26	288	−36.1	32
11,000	13	247	−43.6		26	249	−44.3	
12,000	13	213	−51.2		26	214	−52.5	
13,000	12	182	−57.8		26	183	−60.0	
14,000	11	155	−64.3		26	156	−66.0	
15,000	11	132	−68.8		26	132	−70.8	
16,000	8	112	−70.7		26	111	−73.9	
17,000	6	94	−69.7		24	94	−74.4	
18,000	5	80	−66.7		22	79	−70.6	
19,000					19	67	−66.6	
20,000					12	57	−63.2	
21,000					6	48	−60.1	

[1] U. S. Navy.
[2] Airplane observations.
[3] Observations made on Coast Guard vessels in or near the 5° square.
Lat. 35°00′ N. to 40°00′ N.
Long. 55°00′ W. to 60°00′ W.
[4] Observations made on Coast Guard vessels in or near the 5° square.
Lat. 35°00′ N. to 40°00′ N.
Long. 45°00′ W. to 50°00′ W.

NOTE: All observations taken at 12:30 a. m. 75th meridian time, except at Lakehurst, N. J., where they are taken near 4 a. m. E. S. T., and at Norfolk, Va., where they are taken at about 6 a. m. and at Pearl Harbor, T. H. at 7 a. m.

None of the means included in this table are based on less than 15 surface or 5 standard level observations.

Number of observations refers to pressure only as temperature and humidity data are missing occasionally for some observations at certain levels; also, the humidity data are not used in daily observations when the temperature is below −40.° C.

LATE REPORTS

Altitude (Meters) M. S. L.	Stations with elevations in meters above sea level																			
	JULY 1941												JUNE 1941				MAY 1941			
	Barrow, Alaska (6 m.)				Bethel, Alaska (7 m.)				Swan Island, West Indies (10 m.)				Bethel, Alaska (7 m.)				Bethel, Alaska (7 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	1,010	1.7	92	31	1,011	13.5	76	31	1,013	27.0	84	30	1,009	15.3	67	31	1,007	6.1	78
500	31	950	3.1	87	31	953	9.5	82	31	958	24.1	87	30	952	11.9	65	31	948	2.3	79
1,000	31	894	2.5	78	31	897	6.5	85	31	906	21.5	81	30	896	8.2	68	31	891	−1.1	83
1,500	31	840	1.2	70	31	844	4.5	80	31	855	18.7	74	30	843	4.7	71	31	836	−4.2	82
2,000	31	789	−1.0	68	31	793	2.0	80	31	806	16.2	65	30	792	1.4	70	31	785	−7.3	81
2,500	31	741	−3.2	68	31	745	−0.4	80	31	760	13.7	56	30	744	−1.7	72	31	735	−10.3	76
3,000	31	695	−5.8	66	30	700	−2.8	74	31	716	10.8	50	30	699	−4.6	73	30	689	−13.3	69
4,000	31	611	−11.3	59	30	616	−8.2	66	31	634	5.2	47	30	615	−10.5	70	29	603	−19.4	61
5,000	30	536	−17.9	57	30	541	−14.4	62	31	561	−0.5	45	29	539	−17.2	62	29	526	−25.9	58
6,000	30	468	−24.7	54	30	473	−20.9	60	31	494	−6.9	46	29	471	−24.0	58	29	458	−32.7	56
7,000	30	407	−31.9	51	30	413	−27.4	57	31	434	−13.0	46	29	410	−30.9	56	28	396	−39.4	57
8,000	29	352	−39.0	49	30	358	−34.5	57	31	380	−19.6	44	29	355	−38.3	55	28	342	−45.9	
9,000	29	304	−45.0		30	310	−41.6		31	331	−26.6	40	29	306	−44.7		26	293	−49.4	
10,000	29	262	−47.1		29	267	−47.4		31	288	−34.1	38	28	264	−49.2		24	252	−48.6	
11,000	28	226	−45.5		29	230	−49.3		31	249	−42.2		28	227	−49.8		23	217	−46.2	
12,000	27	194	−43.3		29	197	−46.7		30	214	−50.4		27	195	−46.3		22	187	−44.6	
13,000	27	167	−43.1		29	170	−45.1		30	184	−58.6		27	167	−44.6		22	161	−44.7	
14,000	27	144	−43.4		29	146	−44.6		30	156	−66.2		26	144	−44.4		22	139	−45.3	
15,000	27	124	−43.6		28	126	−44.4		29	132	−72.3		25	124	−44.4		22	110	−45.9	
16,000	26	107	−43.6		28	108	−44.3		28	112	−74.2		25	107	−44.3		22	104	−46.3	
17,000	25	92	−43.5		25	93	−44.3		26	94	−74.1		24	92	−44.2		15	89	−46.5	
18,000	22	79	−43.4		22	80	−44.3		24	79	−72.4		22	79	−44.3		10	77	−46.7	
19,000	20	69	−43.2		20	69	−44.4		19	67	−68.7		20	68	−44.4		6	66	−46.6	
20,000	15	59	−42.9		14	59	−44.3		12	56	−65.3		11	59	−44.4					
21,000	9	51	−42.8		8	51	−43.9						5	51	−44.3					

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 5 p. m. (75th meridian time) during August 1941. Directions given in degrees from North (N=360°, E=90°, S=180°, W=270°)—Velocities in meters per second*

Altitude (meters) m. s. l.	Abilene, Tex. (537 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (866 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m)			Burlington, Vt. (132 m.)			Charleston, S. C. (17 m.)			Chicago, Ill. (192 m.)			Cincinnati, Ohio (152 m.)			Denver, Colo. (1,627 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	192	2.0	31	209	1.1	31	248	0.8	31	13	1.5	31	31	0.2	31	313	3.5	31	135	5.9	31	276	3.5	30	224	0.6	30	146	1.4	31	285	0.4	31	18	0.9	31	49	1.5
500	---	---	---	---	---	---	31	283	0.8	---	---	---	---	---	---	---	---	---	31	141	6.7	31	273	5.2	30	264	2.7	30	170	2.2	31	200	0.4	31	324	0.9	---	---	---
1,000	31	181	3.1	---	---	---	31	270	0.6	---	---	---	31	360	0.6	31	320	3.4	31	151	6.2	30	272	6.1	27	287	5.8	30	223	1.6	30	249	2.3	31	272	2.0	---	---	---
1,500	31	181	3.7	---	---	---	31	237	0.8	31	24	1.0	31	205	0.5	31	319	2.9	30	152	5.1	27	274	7.1	27	284	8.2	28	259	2.2	28	255	3.4	31	290	3.2	---	---	---
2,000	31	182	3.2	31	227	1.7	30	259	1.2	31	119	0.5	31	248	2.0	31	288	1.8	29	143	4.4	24	286	7.7	26	286	8.7	27	271	3.2	23	277	3.7	31	291	4.7	31	31	2.5
2,500	29	155	2.7	31	238	2.0	29	250	1.9	31	207	1.2	29	270	4.4	30	258	2.7	26	138	3.7	23	290	8.6	19	293	9.7	27	264	3.3	22	284	4.9	25	297	6.0	31	62	1.6
3,000	28	231	1.9	31	233	1.7	28	258	1.2	27	244	2.6	27	269	6.7	30	246	5.3	25	123	3.1	23	296	10.3	16	299	10.6	26	264	3.6	22	290	6.3	25	291	7.5	30	131	1.2
4,000	26	298	2.1	30	254	2.1	28	273	2.7	22	253	6.1	22	275	9.8	30	236	7.3	22	114	2.4	16	304	14.7	---	---	---	21	267	4.3	16	285	8.0	22	290	8.6	30	270	2.4
5,000	23	288	2.9	28	274	2.4	25	270	4.3	19	260	8.7	18	282	12.6	24	232	9.3	19	127	2.8	12	303	18.8	---	---	---	17	279	4.9	13	295	9.0	16	296	7.5	26	269	6.9
6,000	21	290	2.2	26	262	3.2	23	264	5.7	16	251	10.1	15	283	15.6	22	229	10.6	18	124	2.5	---	---	---	---	---	---	12	257	5.0	13	293	10.8	13	280	7.8	22	274	7.2
8,000	18	246	3.1	17	255	6.4	21	258	6.8	11	248	14.3	13	287	18.8	15	227	12.1	16	118	1.9	---	---	---	---	---	---	---	---	---	11	288	13.1	13	271	8.4	16	271	9.6
10,000	14	239	5.6	16	250	9.5	16	258	9.2	---	---	---	10	283	22.8	---	---	---	12	118	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13	254	12.2
12,000	11	288	5.0	---	---	---	11	249	9.5	---	---	---	---	---	---	---	---	---	10	111	5.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14,000	10	262	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	El Paso, Tex. (1,196 m.)			Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,413 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (14 m.)			Las Vegas, Nev. (570 m.)			Little Rock Ark. (79 m.)			Medford, Oreg. (410 m.)			Miami, Fla. (10 m.)			Minneapolis, Minn. (265 m.)			Mobile, Ala. (8 m.)			Nashville, Tenn. (194 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	135	1.0	31	203	4.0	31	302	1.7	31	221	0.7	31	338	0.6	30	138	1.8	31	164	2.4	31	180	0.5	31	318	2.0	31	113	2.9	31	247	1.5	31	184	1.5	31	324	0.1
500	---	---	---	---	---	---	---	---	---	31	226	.8	---	---	---	30	208	2.2	---	---	---	31	223	1.7	31	320	2.1	31	131	4.0	31	238	2.3	31	227	1.9	31	302	.9
1,000	---	---	---	---	---	---	---	---	---	31	230	1.9	31	311	1.1	30	238	2.8	31	178	2.4	31	234	2.7	31	309	2.0	31	127	2.1	30	249	2.7	31	303	1.2	31	283	1.7
1,500	31	125	1.1	---	---	---	---	---	---	31	253	3.0	30	274	1.4	28	260	3.0	31	192	2.7	29	252	2.9	31	249	1.7	30	95	1.3	29	258	3.6	30	337	2.5	30	269	2.4
2,000	31	147	.8	31	201	4.4	31	280	1.9	30	284	3.9	28	225	1.7	22	268	3.2	31	198	4.0	27	262	3.4	31	217	3.0	29	96	1.5	26	280	4.3	29	330	2.2	28	273	2.5
2,500	30	170	.8	31	201	4.3	31	255	2.7	28	300	4.7	27	243	3.0	21	269	4.1	31	205	4.5	26	267	4.1	29	210	4.4	28	89	1.7	22	300	6.8	26	308	3.2	25	273	3.8
3,000	29	195	1.1	31	204	4.1	31	240	3.4	27	305	6.4	26	263	4.8	21	271	4.3	31	216	5.1	25	268	3.9	28	207	4.4	28	93	1.8	19	300	8.2	25	311	2.9	25	286	4.7
4,000	27	203	1.4	29	211	5.3	30	224	5.3	23	305	8.4	19	267	8.7	20	265	2.7	29	220	7.7	23	292	4.4	27	218	6.7	26	106	1.5	17	305	10.3	21	289	2.9	21	305	3.5
5,000	21	263	.8	24	219	8.1	27	229	5.5	19	300	8.9	14	256	11.7	18	246	2.4	28	218	7.9	18	292	4.6	22	213	9.2	27	112	1.8	13	311	12.2	14	255	3.9	17	297	5.4
6,000	16	275	1.5	19	229	10.6	23	236	7.5	18	286	10.9	11	247	13.9	19	234	2.1	27	220	9.2	16	286	5.6	21	212	9.9	26	115	2.7	11	312	11.7	11	213	1.8	14	295	6.1
8,000	10	254	4.0	14	235	18.9	916	238	6.9	16	279	11.8	---	---	---	15	231	.3	23	227	11.4	14	261	8.0	17	211	10.7	24	104	4.6	---	---	---	---	---	---	---	---	---
10,000	---	---	---	11	226	25.4	---	---	---	16	280	12.9	---	---	---	11	109	1.2	21	232	15.9	---	---	---	15	215	13.0	20	87	7.0	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	18	233	22.0	---	---	---	13	207	15.7	18	98	9.5	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	248	19.3	---	---	---	12	216	12.4	12	89	12.2	---	---	---	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	78	3.3	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	New York, N. Y. (15 m.)			Oakland, Calif. (8 m.)			Oklahoma City, Okla. (402 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (180 m.)			San Diego, Calif. (15 m.)			Sault St. Marie, Mich. (230 m.)			Seattle, Wash. (12 m.)			Spokane, Wash. (603 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	258	1.7	31	261	5.8	31	180	3.9	31	137	1.3	31	242	1.5	30	22	0.5	31	195	0.1	31	126	4.4	30	267	4.0	28	308	3.7	29	294	1.7	31	195	0.3	30	266	1.9
500	31	275	3.8	31	267	4.4	31	180	4.5	31	160	1.7	31	234	1.4	---	---	---	31	240	0.5	31	132	5.2	30	283	2.4	28	308	4.6	29	291	.9	---	---	---	30	272	2.6
1,000	31	280	5.5	29	263	3.6	31	183	3.8	31	169	2.5	31	232	2.2	30	2	.6	31	230	1.1	31	138	4.9	30	271	.6	28	302	6.1	26	239	.7	31	190	0.9	30	271	3.7
1,500	31	285	6.5	28	241	3.1	30	206	3.4	31	186	2.0	31	214	1.9	30	286	.4	31	254	1.4	31	135	4.0	29	250	1.1	26	308	6.7	22	209	1.4	30	220	1.2	29	292	5.1
2,000	27	290	8.2	28	240	2.9	29	222	3.6	31	226	3.7	31	206	2.3	30	272	.7	31	266	3.2	27	143	3.2	28	229	1.4	23	309	7.0	22	192	3.0	27	230	1.5	29	306	7.8
2,500	23	298	9.2	28	220	3.8	29	240	4.2	31	256	4.0	31	194	3.4	27	262	1.9	28	272	3.9	24	141	1.9	27	229	1.9	18	319	8.4	21	199	3.9	22	254	2.3	29	304	9.2
3,000	18	296	10.0	27	223	3.9	28	248	3.8	28	285	4.8	31	195	3.7	27	271	3.8	24	284	5.0	23	111	1.3	25	241	2.8	17	315	9.1	17	193	3.9	22	249	3.3	28	301	10.5
4,000	11	300	13.1	26	220	5.5	25	291	3.7	27	297	7.3	31	186	4.0	25	273	7.2	22	279	6.3	19	176	1.4	21	225	4.5	14	321	11.1	13	228	3.8	22	244	4.3	24	300	12.2
5,000	---	---	---	23	227	7.3	20	289	4.0	21	310	7.5	31	183	4.4	22	272	7.4	16	287	8.4	17	177	1.5	17	234	4.0	13	322	13.5	12	226	4.2	17	249	7.9	21	298	14.7
6,000	---	---	---	21	229	8.6	18	281	5.0	20	292	7.8	28	183	3.9	20	263	8.2	13	290	9.6	17	221	1.3	15	224	3.7	11	323	15.0	11	248	5.7	14	248	6.8	17	299	16.6
8,000	---	---	---	19	236	11.3	11	260	5.2	15	278	10.3	25	207	6.4	19	265	10.6	---	---	---	14	182	1.8	---	---	---	---	---	---	---	---	---	12	246	11.1	13	300	19.2
10,000	---	---	---	14	247	12.7	---	---	---	---	---	---	22	231	9.6	14	266	12.4	---	---	---	11	148	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	11	226	18.1	---	---	---	---	---	---	18	234	11.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	11	221	9.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Maximum free-air wind velocities (m. p. s.) for different sections of the United States, based on pilot-balloon observations during August 1941*

Section	Surface to 2,500 meters (m. s. l.)					Between 2,500 and 5,000 meters (m. s. l.)					Above 5,000 meters (m. s. l.)				
	Maximum velocity	Direction	Altitude (m) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m) m. s. l.	Date	Station
Northeast [1]	40.0	WNW	2,080	13	Boston, Mass	46.4	WNW	4,970	24	Caribou, Maine	72.6	NW	11,220	10	Buffalo, N. Y.
East-Central [2]	27.8	NW	2,500	27	Washington, D. C	31.2	NW	2,630	27	Washington, D. C	44.8	W	9,870	27	Washington, D. C.
Southeast [3]	20.8	WSW	1,960	25	Spartanburg, S. C	17.0	W	4,840	25	Spartanburg, S. C	42.0	SSE	21,900	13	Tampa, Fla.
North-Central [4]	33.8	W	1,910	11	Detroit, Mich	29.0	NW	4,250	12	Detroit, Mich	66.8	WNW	12,400	15	Bismarck, N. Dak.
Central [5]	37.0	SSW	2,500	5	North Platte, Nebr	42.0	W	4,600	25	Moline, Ill	48.0	WNW	12,470 13,960	20 20	Wichita, Kan.
South-Central [6]	25.5	SSW	1,010	24	Tulsa, Okla	24.0	SW	3,170	10	Amarillo, Tex	30.8	W	8,270	20	Little Rock, Ark.
Northwest [7]	30.0	SSW	1,770	29	Pocatello, Idaho	33.3	WSW	3,390	2	Spokane, Wash	56.0	SW	9,700	27	Medford, Oreg.
West-Central [8]	26.6	W	2,480	30	Cheyenne, Wyo	37.0	SSW	5,000	29	Ely, Nev	71.0	SW	12,190	31	Ely, Nev.
Southwest [9]	22.0	NW	1,990	25	Sandberg, Calif	26.2	SSW	3,900	29	Las Vegas, Nev	62.5	WSW	19,860	27	Albuquerque, N. Mex.

[1] Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and northern Ohio.
[2] Delaware, Maryland, Virginia, West Virginia, southern Ohio, Kentucky, eastern Tennessee, and North Carolina.
[3] South Carolina, Georgia, Florida, and Alabama.
[4] Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
[5] Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.
[6] Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except El Paso), and western Tennessee.
[7] Montana, Idaho, Washington, and Oregon.
[8] Wyoming, Colorado, Utah, Northern Nevada, and northern California.
[9] Southern California, southern Nevada, Arizona, New Mexico, and extreme west Texas.

WEATHER ON THE NORTH ATLANTIC OCEAN

By H. C. HUNTER

Atmospheric pressure.—The pressure during August averaged considerably lower than normal in the vicinity of the Maritime Provinces and New England, but a little higher than normal over the northeastern Gulf of Mexico and near the Azores.

The extremes of pressure noted in the available vessel reports were 1031.2 and 1002.0 millibars (30.45 and 29.59 inches). The high mark was recorded late in the evening of the 14th, near 38° N., 34° W.; the low, soon after noon of the 12th near the eastern end of Long Island. The monthly range indicated by these figures is unusually small. However, in Table 1 there are three land-station readings mentioned which are lower than the lowest vessel reading.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, August 1941*

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	*Millibars*	*Millibars*		*Millibars*	
Horta, Azores	1,023.7	+1.0	1,029	1	1,012	23
Belle Isle, Newfoundland [1]			1,020	1	984	18
Halifax, Nova Scotia	1,011.7	−4.6	1,023	15	998	17
Nantucket	1,013.2	−2.4	1,028	29	999	12
Hatteras	1,015.9	0.0	1,026	29	1,005	12
Turks Island	1,017.0	−0.3	1,018	[2] 6	1,016	[2] 13
Key West	1,016.3	+1.1	1,020	15	1,014	22
New Orleans	1,015.9	+0.7	1,020	15	1,012	5

[1] For 22 days. [2] Also many later dates.

NOTE.—All data based on available observations, departures compiled from best available normals related to times of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Cyclones and gales.—As far as information has reached this office, the month was among the quietest in recent years in the matter of storm activity over the North Atlantic. The accompanying table of ocean gales and storms shows three items, all within the 3-day period, 10th to 12th. Near the 37th parallel two fresh gales were met, one near the 63d meridian and the other much closer to the United States coast, namely, near the 74th meridian About the same time an intensified trade wind, of force 6, was noted by a vessel traversing the southwestern Caribbean Sea.

As during the preceding summer months of this year there was no report of any true cyclonic disturbance of tropical origin from the North Atlantic waters.

Fog.—The reports at hand indicate far less fog than had occurred during the preceding July, and over the waters adjacent to New England much less than August usually brings.

The leading 5°-square for fog occurrence was that from 35° to 40° N., 70° to 75° W., where there were 6 foggy days, a number greater than the August normal for this square. The square immediately to northward, 40° to 45° N., 70° to 75° W., reported 4 days with fog, and the area 40° to 45° N., 65° to 70° W., likewise had 4 days; in this latter square the normal number of foggy days in August is no less than 17, no other North Atlantic area normally having so many.

In a few other North Atlantic squares, widely scattered in location, fog was noted on one or two days. Rather unusual was the occurrence a short distance to the eastward of northern Florida on the 6th.

No report of fog encountered this month anywhere to the eastward of the 45th meridian has yet been received.