AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. LITTLE in charge]

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April weather was abnormally cool east of the Rocky Mountains, while surface temperatures were above normal in the far West. Over the former area the resultant-wind directions at 1.5 and 3 kilometers (charts VIII and IX) were decidedly northwesterly. These winds were more northerly than normal. At Fargo, N. Dak., for instance, the resultant direction at 1.5 kilometers was oriented 51° north, or clockwise of normal. Also, those sections of the country with large negative departures of surface temperature during April were characterized by outstanding northerly departures of resultant-wind directions from normal. However, the resultant velocities were less than normal over all but the southern portion of the United States.

In agreement with the pronounced negative departures from normal of monthly mean surface temperatures since the beginning of last winter, the upper-air resultant-wind directions have been consistently more northerly than normal over the areas where such temperature departures prevailed.

Comparison of the 5 p. m. with the 5 a. m. winds at 1.5 and 3 kilometers indicated definite diurnal variations. The afternoon resultant directions were more southerly than the early morning directions over all of the country except in the northern Rocky Mountain region at 1.5 and 3 kilometers and the South and Southeast at 1.5 kilometers. Large diurnal changes were outstanding in the Central States where the 5 p. m. winds departed in counter clockwise rotations from the 5 a. m. directions by as much as 47°, 34°, 33°, and 26° at St. Louis, Mo., Nashville, Tenn., Chicago, Ill., and Cincinnati, Ohio, respectively at 1.5 kilometers. At Brownsville, Tex., Mobile, Ala., and Miami, Fla., respectively, the 5 p. m. winds were more northerly than the 5 a. m. by 118°, 34°, and 48°. Diurnal variations were not so marked at 3 kilometers. The 5 p. m. resultant-wind velocities were lower than at 5 a. m. almost generally, except over the Southeast and far Northwest.

Mean barometric pressure during April was lowest at 5,000 feet (chart VIII) over Mount Washington, N. H. (837.1 millibars), while at all higher levels (table 1) the lowest mean pressure was centered over Sault Ste. Marie, Mich., and highest over Miami, Fla. Mean pressures were higher than during March at all radiosonde stations shown in table 1. At 8 kilometers, where maximum monthly changes took place, the largest increase of pressure over the preceding month (10 millibars) occurred at Sault Ste. Marie, Mich., and the smallest (1 millibar) over Miami, Fla., and the Pacific slope.

During April the steepest gradient between the LOW and HIGH areas over Sault Ste. Marie, Mich., and Miami, Fla., respectively, occurred at 8 kilometers. The greatest concentration of isobars existed over the East, particularly the Middle and South Atlantic States, where resultant-wind velocities were outstanding at 8 kilometers (23.9 m. p. s. from the WNW at Atlanta, Ga., and 24.6 m. p. s. from the W. at Miami, Fla., respectively).

April was warmer than March in the United States and Alaska at all levels up to 9 kilometers, and colder above at all higher levels. This situation was more pronounced over the entire Mississippi valley. However, in the Southwest and far Northwest, where surface mean temperatures were decidedly above normal, the mean temperatures at all standard levels up to an average of 18 kilometers were higher in April than during March.

At Oakland, Calif., and Washington, D. C., the mean temperatures at all levels were lower in April 1940 than during the corresponding month of 1939. The current mean temperature over Nashville, Tenn., Oklahoma City, Okla., Omaha, Nebr., and Sault Ste. Marie, Mich., was higher than in April 1939 at all levels up to 7 kilometers, and then colder above.

The surface of mean freezing temperature in the upper air sloped up toward the South from an altitude of 640 meters above mean sea level at Sault Ste. Marie, Mich., to 4,280 meters in height over Miami, Fla. At the latter place this was an increase of 200 meters over the preceding month. This surface of mean freezing temperature also was lower over the Atlantic coast than the Pacific, increasing in height from 2,330 meters at Norfolk, Va., to 3,040 meters over Oakland, Calif.

The lowest temperatures observed during the month occurred at 13 kilometers over the entire country north of the 36th parallel, and at progressively greater heights farther south, reaching a maximum altitude of 18 kilometers over Miami, Fla. The lowest minimum temperature observed in April was −78.0° C. over Miami, Fla., and the highest minimum was −66.1° C. over Minneapolis, Minn.

MEAN MONTHLY ISENTROPIC CHART [1]

The mean isentropic chart, $\theta=304°$, for April 1940 (chart XII), showed three anticyclonic eddies. One was situated over northwestern Mexico, another in the western Gulf region, and the third somewhere off the south Atlantic coast. None of these eddies was centered in the network of stations shown on the chart, but they were indicated quite clarly by the corresponding moist tongues. The two moist tongues over the Continent seemed to be responsible for the precipitation centers to the west of the Appalachians and in Montana and the Dakotas.

[1] Prepared by Division of Education and Research.

TABLE 1.—*Mean free-air barometric pressure (P.) in millibars, temperature (T.) in degrees centigrade, and relative humidities (R. H.) in percent obtained by airplanes and radiosondes during April 1940*

Stations and elevations in meters above sea level

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,620 m.)				Atlanta, Ga. (300 m.)				Billings, Mont. (1,089 m.)				Bismarck, N. Dak. (505 m.)				Boise, Idaho (864 m.)				Buffalo, N. Y. (220 m.)				Charleston, S. C. (14 m.)			
	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.
Surface	30	836	10.7	36	30	981	12.7	72	28	891	4.4	79	30	957	2.0	84	29	915	8.3	72	28	989	2.0	81	29	1,015	13.1	80
500					30	958	13.1	67													28	955	2.6	71	29	958	14.0	65
1,000					30	902	11.2	64					30	900	2.0	79	29	900	9.5	67	28	898	0.3	69	29	903	11.7	59
1,500					30	850	8.3	62	28	846	4.5	72	30	846	−0.2	77	29	847	7.6	61	28	843	−2.4	67	29	850	8.7	56
2,000	30	798	10.2	36	30	800	6.3	58	28	795	2.3	68	30	794	−2.7	80	29	797	3.8	63	28	791	−4.8	64	29	800	6.7	53
2,500	30	751	7.1	38	30	752	4.1	55	28	747	−0.6	67	30	746	−4.0	75	29	748	0.6	65	28	742	−6.9	62	29	752	4.4	47
3,000	30	707	3.6	40	30	707	1.5	54	28	702	−4.1	69	30	700	−6.2	71	29	703	−3.4	68	28	696	−8.8	62	29	707	2.1	44
4,000	30	624	−3.9	44	30	624	−4.0	52	27	618	−10.8	70	30	615	−11.1	65	29	618	−9.9	64	28	611	−13.9	58	28	624	−3.4	41
5,000	30	549	−11.0	42	30	549	−10.2	50	27	542	−16.8	66	30	539	−17.3	64	29	543	−16.1	61	28	535	−19.7	56	28	550	−9.2	39
6,000	30	481	−17.7	37	30	481	−16.9	47	27	474	−23.7	62	29	471	−24.5	63	29	474	−22.9	60	27	467	−26.1	56	28	482	−15.7	38
7,000	29	420	−25.1	35	30	420	−24.6	44	27	412	−31.4	61	28	409	−32.6	64	29	413	−30.7	58	27	406	−33.6	54	28	422	−22.4	36
8,000	29	365	−33.1	34	30	366	−32.1	44	27	357	−39.4	59	25	355	−40.7		29	358	−38.3	57	25	352	−40.9		28	367	−30.4	36
9,000	29	316	−41.1		30	316	−39.0	42	27	308	−47.3		23	306	−48.4		28	308	−46.0		25	302	−48.3		26	318	−38.2	36
10,000	29	272	−48.8		30	273	−47.2		27	264	−54.4		22	262	−55.5		27	265	−52.7		25	259	−53.9		25	274	−45.8	
11,000	29	233	−54.8		30	234	−53.9		27	226	−59.0		21	224	−59.2		26	227	−57.1		24	222	−55.4		24	235	−52.2	
12,000	29	199	−59.4		30	200	−58.8		27	192	−58.4		20	190	−58.1		26	194	−57.7		24	190	−55.5		24	201	−57.1	
13,000	29	170	−59.6		30	171	−61.4		27	164	−56.8		18	162	−56.4		26	165	−56.3		23	162	−55.2		23	171	−59.3	
14,000	29	144	−59.2		30	145	−61.3		27	140	−55.7		17	138	−55.4		23	141	−55.6		20	138	−54.6		22	146	−60.9	
15,000	29	123	−61.0		26	123	−62.6		25	120	−56.1		12	118	−55.6		20	121	−56.0		20	118	−54.8		20	124	−62.6	
16,000	28	105	−62.6		26	105	−64.7		24	102	−56.8		12	101	−56.8		18	103	−56.7		14	102	−55.8		19	106	−63.9	
17,000	27	89	−62.9		23	89	−65.3		19	87	−57.0		10	86	−57.3		16	88	−57.0		10	87	−56.3		18	90	−64.2	
18,000	21	75	−62.6		18	76	−64.3		10	74	−57.2		7	73	−57.0		6	75	−56.9		6	74	−56.4		15	76	−63.2	
19,000	11	64	−61.3		11	64	−61.1																		5	65	−61.0	

Stations and elevations in meters above sea level

Altitude (meters) m. s. l.	(Patterson Field) Dayton, Ohio (250 m.)				Denver, Colo. (1,616 m.)				El Paso, Tex. (1,193 m.)				Ely, Nev. (1,908 m.)				Fairbanks, Alaska (153 m.)				Joliet, Ill. (178 m.)				Juneau, Alaska (49 m.)			
	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.
Surface					30	836	5.6	68	30	880	15.8	27	30	807	4.1	74	29	990	8.3	47	29	994	5.0	77	29	1,010	7.3	69
500																	29	950	7.1	46	29	955	6.6	62	29	956	5.4	68
1,000																	29	893	3.7	48	29	899	4.6	61	29	899	2.0	70
1,500									30	848	16.7	26					29	840	−.1	51	29	845	2.0	64	29	844	−1.6	72
2,000					30	797	6.4	61	30	800	13.3	27	30	798	5.1	67	29	788	−3.6	54	29	794	−.4	63	29	792	−4.9	72
2,500					30	750	3.2	58	30	753	9.7	27	30	751	3.8	60	29	740	−7.0	56	29	746	−2.7	60	29	743	−7.8	70
3,000					30	705	.1	58	30	709	5.9	28	30	706	0.0	61	28	693	−10.4	57	28	700	−4.6	58	29	697	−10.7	69
4,000					30	621	−6.5	58	30	626	−1.4	29	30	622	−6.8	61	28	608	−17.3	57	28	615	−10.0	56	29	611	−16.4	64
5,000					30	546	−13.4	58	30	552	−8.5	30	29	546	−13.4	59	28	531	−24.1	55	28	540	−15.8	57	29	534	−23.1	65
6,000					30	478	−20.0	53	30	484	−16.0	28	29	478	−20.1	57	28	462	−31.4	54	28	472	−22.9	56	26	465	−30.2	60
7,000					30	417	−27.5	50	30	423	−23.7	27	29	417	−27.9	54	28	400	−39.2	53	28	410	−30.1	54	25	403	−37.6	60
8,000					29	362	−35.4	49	29	368	−31.8	27	29	362	−35.9	53	28	345	−46.6		27	356	−37.7	50	25	348	−45.1	
9,000					29	313	−43.5		29	319	−39.8		29	313	−44.1		28	296	−52.5		27	307	−45.2		23	298	−51.7	
10,000					29	268	−51.1		29	275	−47.1		28	269	−51.5		26	253	−55.7		27	264	−52.2		22	255	−55.5	
11,000					27	230	−56.2		29	236	−53.7		27	230	−56.9		26	217	−53.5		26	226	−56.9		20	218	−54.9	
12,000					27	196	−58.3		29	201	−58.0		27	196	−60.5		24	185	−50.4		26	192	−58.6		18	187	−51.4	
13,000					24	168	−57.8		29	172	−58.9		26	167	−60.1		22	159	−48.7		23	164	−57.4		18	160	−49.7	
14,000					24	143	−56.5		29	146	−60.1		26	143	−59.1		21	137	−48.0		22	140	−57.0		17	136	−49.3	
15,000					22	122	−57.5		26	124	−62.2		25	122	−59.1		20	117	−48.0		20	119	−57.5		14	117	−49.3	
16,000					21	104	−58.5		25	106	−64.6		22	104	−60.4		12	101	−48.4		18	102	−58.1		10	100	−49.3	
17,000					16	89	−58.9		19	90	−65.9		21	88	−60.9		9	86	−48.5		13	86	−58.5		7	86	−49.1	
18,000					10	76	−59.7		10	76	−64.0		13	75	−60.4		7	74	−48.5		8	74	−58.6		5	73	−48.9	

Stations and elevations in meters above sea level

Altitude (meters) m. s. l.	Lakehurst, N. J.[1] (39 m.)				Medford, Oreg. (401 m.)				Miami, Fla. (4 m.)				Minneapolis, Minn. (263 m.)				Nashville, Tenn. (180 m.)				Norfolk, Va. (10 m.)[1 2]				Oakland, Calif. (2 m.)			
	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.
Surface	30	1,010	3.8	81	30	970	10.6	72	30	1,017	18.2	87	29	984	5.0	67	30	993	12.3	68	27	1,018	9.4	78	30	1,017	13.3	79
500	30	954	3.7	69	30	959	10.8	68	30	960	18.3	75	29	956	5.0	66	30	956	11.9	67	27	960	9.8	63	30	958	11.4	76
1,000	30	897	1.9	67	30	902	8.8	65	30	905	15.6	70	29	899	2.5	65	30	901	9.7	67	27	903	6.9	57	30	903	10.6	62
1,500	30	843	0.0	62	30	849	5.1	70	30	853	13.2	65	29	845	.3	64	30	848	7.0	69	27	850	4.0	58	30	850	8.4	53
2,000	30	792	−2.0	61	30	798	1.9	73	30	804	11.5	57	29	794	−2.0	66	30	798	4.7	69	27	799	1.8	52	30	800	5.8	46
2,500	30	743	−4.1	60	30	750	−.9	69	30	757	9.2	50	29	746	−4.4	66	30	750	2.6	64	27	751	−.9	49	30	752	3.2	42
3,000	30	698	−6.5	60	30	704	−3.7	61	30	712	6.6	44	29	699	−6.4	65	30	705	−.1	60	26	705	−3.8	47	30	707	.3	39
4,000	30	613	−12.0	60	30	620	−9.2	50	30	630	1.5	32	29	615	−11.6	64	30	622	−5.3	58	25	620	−9.2	40	30	623	−5.7	35
5,000	30	537	−17.8	62	30	544	−15.0	45	29	556	−4.0	30	29	539	−17.2	60	30	547	−11.4	52					30	548	−12.1	34
6,000	30	469	−24.1	56	30	476	−22.2	44	29	489	−10.6	29	29	471	−24.4	57	30	479	−17.9	50					30	480	−19.4	34
7,000	30	408	−31.3	55	30	414	−29.9	43	29	428	−17.5	27	28	409	−31.8	56	30	418	−25.2	49					30	419	−27.0	34
8,000	29	354	−38.9	56	29	359	−38.0	43	29	374	−24.8	27	28	354	−39.7	55	30	364	−32.9	48					29	364	−34.8	34
9,000	28	305	−46.0		28	310	−45.2		28	325	−32.3	27	26	306	−47.0		30	314	−40.7						29	314	−42.6	
10,000	27	262	−51.9		28	266	−51.5		28	282	−40.0		25	262	−53.7		30	271	−47.7						28	270	−50.2	
11,000	25	224	−55.4		27	228	−57.0		28	243	−47.3		25	224	−58.1		28	233	−54.2						28	232	−56.6	
12,000	23	192	−57.3		25	194	−59.4		28	208	−54.1		25	191	−59.0		28	199	−58.6						28	198	−60.9	
13,000	22	164	−57.6		24	166	−58.6		28	178	−59.9		25	163	−57.9		28	169	−59.9						28	168	−61.9	
14,000	21	140	−57.5		21	141	−57.9		28	151	−64.5		23	139	−56.6		26	145	−59.4						28	143	−60.5	
15,000	20	119	−57.1		19	120	−58.1		28	128	−67.6		21	118	−56.4		26	123	−59.9						28	122	−60.8	
16,000	17	102	−57.0		16	103	−59.1		27	109	−70.4		20	101	−57.2		25	105	−61.0						25	104	−61.9	
17,000	15	87	−56.7		12	88	−59.2		23	92	−72.6		14	86	−57.8		23	89	−61.4						23	88	−62.2	
18,000	11	75	−55.9		6	75	−59.3		18	77	−72.4		13	73	−57.9		19	76	−60.6						14	74	−61.7	
19,000	7	63	−55.2						14	65	−68.8		5	62	−57.6		11	64	−59.6						5	63	−60.5	
20,000	5	53	−54.8						7	55	−63.9																	

See footnotes at end of table.

TABLE 1.—*Mean free-air barometric pressure (P.) in millibars, temperature (T.) in degrees centigrade, and relative humidities (R. H.) in percent, obtained by airplanes and radiosondes during April 1940*—Continued

Altitude (meters) m. s. l.	Stations and elevations in meters above sea level																											
	Oklahoma City, Okla. (391 m.)				Omaha, Nebr. (301 m.)				Pearl Harbor, T. H. (6 m.)[1 2]				Pensacola, Fla.[2] (24 m.)				Phoenix, Ariz. (339 m.)				St. Louis, Mo. (171 m.)				San Antonio, Tex. (174 m.)			
	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.
Surface	29	967	12.7	67	30	979	8.6	66	30	1,016	21.0	86	27	1,014	16.7	78	30	972	18.6	38	30	994	10.2	70	30	993	17.5	77
500	29	954	13.3	64	30	956	8.3	65	30	960	20.2	77	27	959	15.3	66	30	954	21.3	34	30	955	10.1	64	30	956	17.4	76
1,000	29	899	12.8	56	30	899	7.0	63	30	906	16.9	79	27	904	12.8	64	30	900	19.5	31	30	899	7.7	63	30	902	16.6	66
1,500	29	847	10.1	54	30	846	4.3	64	30	854	14.0	73	27	852	10.6	55	30	848	15.5	31	30	846	5.2	66	30	850	15.1	57
2,000	29	797	8.2	49	29	796	2.2	64	30	805	11.8	66	27	802	9.0	44	30	800	11.4	34	30	796	3.0	66	30	801	13.6	49
2,500	29	750	5.8	47	29	748	−.2	62	30	758	10.1	51	27	754	6.6	40	30	753	7.4	38	30	748	.9	63	30	755	11.3	42
3,000	28	705	2.7	46	29	702	−2.6	60	30	714	9.2	34	27	709	4.2	37	30	708	3.9	38	30	702	−1.4	60	30	711	8.5	39
4,000	28	623	−3.9	45	29	618	−8.5	57	30	632	5.8	16	27	627	−1.4	35	30	625	−2.4	39	29	619	−6.9	55	30	629	1.2	36
5,000	28	548	−11.2	45	29	543	−14.9	55					26	552	−7.9	39	30	550	−9.4	37	29	544	−13.0	50	30	554	−6.1	35
6,000	28	480	−18.1	42	29	475	−21.9	52					26	485	−14.3	41	30	483	−16.8	37	29	476	−19.7	49	29	487	−13.4	35
7,000	28	419	−25.7	39	29	414	−29.6	49					26	424	−21.2	42	30	422	−24.8	36	28	415	−27.5	49	29	427	−20.7	35
8,000	28	364	−33.8	38	29	359	−37.5	47					25	369	−28.5	43	30	367	−33.2	35	28	360	−35.5	49	28	372	−28.2	35
9,000	27	315	−41.4		29	310	−45.0						25	320	−35.7	48	30	317	−41.0		25	312	−43.0		28	323	−36.0	35
10,000	26	272	−48.9		29	266	−51.7						21	277	−42.5		30	274	−48.4		22	268	−50.4		28	279	−43.5	
11,000	26	233	−55.0		28	228	−56.9						20	238	−49.6		28	235	−54.6		21	229	−57.0		27	240	−50.2	
12,000	26	199	−59.1		28	194	−58.9						18	204	−55.6		26	200	−58.3		20	195	−62.0		25	205	−55.6	
13,000	26	170	−59.6		28	166	−57.7						14	177	−60.1		24	170	−59.4		19	166	−59.9		25	175	−59.0	
14,000	25	144	−60.2		24	142	−56.9						11	148	−64.3		21	146	−59.8		17	141	−58.8		24	149	−61.6	
15,000	24	123	−62.1		21	121	−57.5						10	126	−67.5		18	123	−60.7		15	120	−59.4		24	127	−64.3	
16,000	19	104	−63.8		18	103	−58.7						7	107	−68.0		15	105	−62.3		11	102	−60.2		22	108	−67.1	
17,000	18	88	−64.4		13	88	−59.3						7	91	−69.2		12	89	−63.1		10	86	−60.5		20	91	−68.2	
18,000	14	75	−63.5		9	75	−58.8						5	77	−69.7		6	75	−61.8		8	73	−59.6		15	77	−67.8	
19,000	7	64	−62.5		5	64	−57.9																		6	65	−66.8	

TABLE 1.—*Mean free-air barometric pressure (P.) in millibars, temperature (T.) in degrees centigrade, and relative humidities (R. H.) in percent, obtained by airplanes and radiosondes during April 1940*—Continued

Altitude (meters) m. s. l.	Stations and elevations in meters above sea level																							
	San Diego, Calif.[1] (19 m.)				Sault Ste. Marie, Mich. (221 m.)				Seattle, Wash.[1] (27 m.)				(Barksdale Field), Shreveport, La. (51 m.)				Spokane, Wash. (598 m.)				Washington, D. C.[1] (7 m.)			
	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.	Number of observations	P.	T.	R. H.
Surface	29	1,013	15.8	76	30	990	0.2	79	24	1,014	11.0	76					30	944	8.6	74	29	1,015	7.2	73
500	29	958	13.7	73	30	956	.6	75	24	958	9.0	66									29	955	6.9	62
1,000	29	903	12.1	65	30	898	−1.6	71	24	902	6.1	65					30	899	8.1	66	29	899	4.8	60
1,500	29	849	10.1	58	30	843	−4.7	69	24	848	2.7	70					30	846	4.8	66	29	845	2.1	59
2,000	29	800	8.7	43	30	791	−6.9	67	24	797	−.7	78					30	796	1.0	69	29	794	.5	54
2,500	29	752	6.2	39	30	742	−8.9	65	24	748	−3.8	76					30	747	−2.6	73	29	746	−1.9	54
3,000	29	707	2.8	38	30	695	−11.5	63	24	702	−6.4	67					30	702	−6.0	75	29	700	−4.7	55
4,000	29	624	−2.9	35	30	609	−16.5	60	24	617	−11.6	60					29	617	−12.0	73	29	616	−10.0	58
5,000	29	549	−9.5	36	30	533	−22.4	58	24	540	−18.0	63					29	541	−18.4	66	29	540	−15.4	54
6,000	28	482	−16.4	41	30	464	−29.4	57	24	472	−24.3	61					29	472	−25.6	63	29	473	−21.7	50
7,000	27	422	−24.1	45	30	402	−36.4	53	24	411	−31.9	66					29	410	−33.2	62	29	412	−29.2	53
8,000	27	367	−31.7	49	30	348	−43.2		21	356	−39.5	68					29	355	−40.6	61	25	358	−36.4	
9,000	27	317	−39.2		30	299	−49.3		20	307	−46.8						29	306	−47.8		22	308	−43.8	
10,000	27	274	−47.0		30	257	−54.2		20	264	−52.6						28	262	−53.5		19	265	−50.9	
11,000	26	235	−54.1		28	220	−56.1		18	226	−56.1						28	225	−56.0		15	227	−57.3	
12,000	25	200	−58.4		28	188	−55.7		15	193	−56.5						28	192	−55.7		9	193	−61.5	
13,000	23	171	−59.5		28	160	−54.9		14	165	−55.6						27	164	−54.4		6	165	−61.5	
14,000	21	146	−60.0		27	137	−54.9		13	141	−54.4						26	140	−54.0		5	140	−60.7	
15,000	20	124	−61.2		23	116	−55.2		12	121	−53.3						23	120	−54.3					
16,000	15	106	−62.2		16	99	−55.8		8	103	−53.1						20	103	−54.7					
17,000	13	90	−62.6		10	85	−56.2										12	88	−55.3					
18,000	10	77	−62.0		6	72	−55.8																	
19,000	7	65	−61.0																					

[1] U. S. Navy.
[2] Airplane observations.

NOTE.—All observations taken at 1 a. m., 75th meridian time, except those at Washington, D. C., Lakehurst, N. J., Norfolk, Va., and Pensacola, Fla., where they are taken before 5 a. m., 75th meridian time. At Pearl Harbor, T. H., observations are taken after sunrise.

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 for some observations at certain levels; also, the humidity data are not used in daily observations when the temperature is below −40.0° C.

TABLE 2.—*Free-air resultant winds based on pilot-balloon observations made near 5 p. m. (75th meridian time) during April 1490*

[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 (870 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (132 m.)			Charleston, S. C. (18 m.)			Chicago, Ill. (192 m.)			Cincinnati, Ohio (157 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	30	309	2.1	30	263	3.8	29	241	2.7	27	2	1.4	26	9	1.4	28	326	3.8	29	125	4.5	29	322	1.9	28	300	0.9	30	212	2.2	28	17	1.5	27	277	0.9	28	7	0.6
500							29	245	3.3										29	150	4.5	29	294	2.5	28	268	1.8	30	221	4.4	28	20	2.1	27	230	1.1			
1,000	29	240	2.5				28	248	4.9				25	2	1.1	28	323	4.0	24	197	1.8	28	299	3.3	27	256	3.9	29	243	5.4	26	267	0.5	26	226	3.3			
1,500	28	241	3.2				26	255	6.2	27	320	1.7	23	322	.9	28	321	4.5	19	314	2.0	23	291	5.6	22	291	4.2	29	260	7.1	23	267	1.5	22	252	5.0			
2,000	26	243	5.5	30	265	3.7	24	264	7.9	22	298	3.2	20	333	2.3	27	308	4.8	19	286	4.3	21	284	6.7	17	288	6.1	25	268	8.2	21	277	3.0	19	255	7.3	28	345	0.8
2,500	24	261	7.0	28	261	4.5	19	282	9.1	19	285	6.7	16	309	2.8	25	286	4.4	18	277	5.0	18	292	8.6	12	301	7.7	21	276	8.9	18	283	3.9	16	273	9.0	28	328	1.8
3,000	22	268	9.0	27	266	4.6	17	286	11.4	18	287	7.9	14	311	5.9	23	275	5.8	18	272	6.4	15	300	9.8	10	300	7.6	18	280	9.9	17	295	6.0	14	287	11.5	27	300	3.4
4,000	21	274	12.1	24	276	8.9	16	287	15.4	13	287	10.2	11	323	8.9	16	276	8.3	14	273	10.8							12	282	11.2	10	308	9.8				23	283	7.7
5,000	20	279	15.6	20	276	13.0	15	290	18.3	10	304	12.0				14	278	9.7	11	279	14.0															18	284	11.0
6,000	18	279	21.1	16	284	16.4	13	283	19.4							10	284	13.8																		14	283	14.7
8,000	13	284	21.6	11	289	18.0	10	284	23.9																														
10,000				10	290	18.7																																	

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. (766 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. (261 m.)			Mobile, Ala. (10 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	30	257	4.0	28	284	1.4	29	303	1.8		255	2.3	22	7	0.9	29	151	1.3	30	206	1.9	29	166	1.0	28	316	1.9	30	126	2.5	27	19	0.7	27	187	2.3	29	228	2.5
500										27	242	4.0				29	219	1.9				28	212	2.9	28	315	2.4	30	127	2.5	27	77	1.1	27	202	3.9	29	223	3.3
1,000										27	241	5.7	22	27	1.0	27	253	5.0	30	217	1.7	27	211	5.1	28	292	2.3	30	206	0.9	26	210	0.7	20	262	4.9	29	230	5.4
1,500	30	261	4.8				29	291	1.9	26	249	6.4	22	275	1.5	25	266	7.0	30	216	2.1	27	235	6.1	28	258	2.1	29	277	2.7	25	240	1.0	19	289	6.8	25	241	6.2
2,000	30	263	5.8	28	281	1.7	29	261	2.8	24	264	8.5	22	279	4.3	23	277	6.7	30	245	2.6	25	249	7.7	27	243	2.6	27	280	4.1	23	254	2.8	17	300	8.4	22	268	7.6
2,500	29	264	7.5	28	276	2.2	29	266	3.5	19	278	9.1	18	278	7.6	22	279	7.7	30	257	3.4	20	267	10.0	25	241	3.3	26	276	5.3	18	241	4.3	16	297	10.1	17	277	9.0
3,000	28	260	8.4	26	269	3.4	27	261	4.1	13	293	8.5	13	289	6.8	21	284	8.8	30	259	3.6	17	278	10.9	23	252	4.7	26	272	6.5	12	300	6.8	16	289	12.3	16	288	9.7
4,000	24	270	9.4	22	275	5.6	21	267	5.2	11	298	13.5	10	295	9.0	19	289	12.3	28	270	4.8	14	294	15.7	21	273	7.4	25	282	8.9				12	291	13.4	10	300	13.5
5,000	17	274	11.6	17	282	8.4	19	292	8.7							16	283	15.4	25	278	8.0				17	268	10.4	23	279	11.6				11	286	15.2			
6,000	15	269	12.5	14	295	11.1	13	295	10.6							15	279	17.4	24	274	10.5				15	266	14.0	21	280	15.5									
8,000				11	298	16.4										12	284	21.4	22	273	12.7				12	273	16.4	18	275	24.6									
10,000																			16	282	12.8							11	282	34.2									
12,000																			14	293	12.0																		
14,000																			11	268	14.4																		

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. (344 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (183 m.)			San Diego, Calif. (15 m.)			Sault Ste. Marie, Mich. (230 m.)			Seattle, Wash. (14 m.)			Spokane, Wash. (603 m.)			Washington, D. C. (10 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	27	288	2.7	30	257	4.8	29	98	1.3	28	340	1.2	30	252	2.6	27	345	4.0	26	107	0.7	30	105	1.3	28	264	4.2	29	311	4.5	26	258	1.8	29	231	3.0	26	293	7.8
500	27	281	3.9	30	284	4.0	29	102	1.4	28	360	1.2	30	256	3.0				26	33	0.7	30	108	1.7	28	273	3.5	29	311	5.3	26	229	1.3				26	276	2.8
1,000	24	289	5.7	29	298	3.3	28	167	0.5	26	86	0.6	30	253	3.4	27	342	4.1	25	264	0.6	29	182	1.6	28	267	2.0	27	306	4.7	25	215	2.8	29	230	3.3	24	271	4.5
1,500	23	284	8.0	27	308	3.4	28	243	1.8	24	264	1.6	30	246	3.1	27	329	4.7	22	245	2.3	26	255	3.1	25	269	1.1	27	328	3.9	23	207	3.9	28	239	4.2	22	278	7.8
2,000	15	297	8.6	26	308	3.9	27	262	4.7	20	271	4.2	29	239	2.9	19	310	5.6	21	262	5.6	25	258	5.8	20	294	0.9	24	347	5.5	19	205	4.2	23	237	4.4	20	282	9.6
2,500				24	310	4.4	25	261	6.7	18	286	8.2	29	239	2.8	16	309	8.3	18	286	7.4	24	257	7.0	19	307	1.0	21	336	6.0	15	220	4.6	17	250	4.4	19	286	11.6
3,000				23	298	5.1	25	263	8.8	17	283	8.9	27	253	3.4	16	305	8.9	12	292	8.8	20	264	9.3	17	295	2.2	20	320	7.5	13	217	5.8	15	244	5.0	14	284	11.4
4,000				19	283	7.1	20	263	13.1	14	286	14.8	24	264	4.4	13	297	9.8				18	276	13.9	13	293	6.7	17	315	10.4									
5,000				16	282	7.5	17	274	12.4	10	285	16.1	20	286	7.4	10	276	11.7				16	281	16.1	11	289	6.7	12	307	14.5									
6,000				11	281	7.0	13	286	15.9	10	290	17.3	18	291	9.4							15	279	18.9															
8,000													11	306	4.0							15	276	22.9															
10,000																																							

TABLE 3.—*Maximum free air wind velocities (m. p. s.), for different sections of the United States*

[Based on pilot balloon observations during April 1940]

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]	39.2	W	2,500	4	Columbus, Ohio	42.5	NW	4,930	6	Kylertown, Pa	45.6	NNW	9,610	27	Kylertown, Pa.
East-Central [2]	43.0	WNW	2,340	5	Greensboro, N. C	43.0	WNW	3,740	1	Richmond, Va	46.5	NW	5,761	14	Greensboro, N.C.
Southeast [3]	29.8	SSW	1,550	11	Birmingham, Ala	42.8	WNW	5,000	13	Atlanta, Ga	69.5	NW	13,340	11	Jacksonville, Fla.
North-Central [4]	41.3	SSW	1,594	27	Rapid City, S. Dak.	42.6	NNW	4,970	5	Detroit, Mich	46.0	NNW	9,410	17	Fargo, N. Dak.
												NW	8,840	26	Milwaukee, Wis.
Central [5]	37.2	SSE	1,120	6	Springfield, Mo	44.3	W	3,690	3	Springfield, Ill	60.0	WNW	11,400	20	Omaha, Nebr.
South-Central [6]	38.0	S	2,440	21	Brownsville, Tex	44.0	SW	4,630	28	Amarillo, Tex	67.2	WNW	12,230	14	Houston, Tex.
Northwest [7]	27.4	W	1,510	12	Billings, Mont	30.0	NNW	4,460	15	Medford, Oreg	62.8	N	8,540	11	Billings, Mont.
West-Central [8]	36.5	NNW	2,480	22	Cheyenne, Wyo	48.4	SSW	3,200	26	Modena, Utah	85.0	SW	14,670	22	Redding, Calif.
Southwest [9]	39.0	WSW	2,500	15	El Paso, Tex	42.0	SSW	5,000	1	Albuquerque, N. Mex.	61.0	N	8,418	17	Winslow, 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.

TABLE 4.—*Mean altitudes and temperatures of significant points identifiable as tropopauses during March 1940, classified according to the potential temperatures (10° intervals between 290° and 409° A.) with which they are identified (based on radiosonde observations)*

Potential temperatures °A.	Albuquerque, N. Mex.			Atlanta, Ga.			Billings, Mont.			Bismarck, N. Dak.			Boise, Idaho			Buffalo, N. Y.			Charleston, S. C.		
	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.
290-299							1	6.8	40.0	1	8.0	55.0				3	6.7	46.3			
300-309	1	6.1	26.0							2	7.4	39.0	1	8.4	50.0	8	7.9	48.1			
310-319	4	8.8	47.5	8	8.2	40.5	10	9.8	56.9	17	9.7	55.9	12	9.3	52.6	17	9.5	55.0	1	7.7	40.0
320-329	15	10.6	55.0	15	10.1	50.1	22	10.9	60.4	13	10.8	60.2	17	10.7	58.1	19	10.4	57.7	10	10.6	55.0
330-339	19	11.8	61.1	19	11.6	58.7	10	11.8	61.5	8	11.5	61.4	16	11.5	59.1	9	11.2	59.1	11	11.6	58.9
340-349	10	12.4	61.4	15	12.7	64.5	1	20.0	56.1	1	10.9	50.0	3	12.1	61.0	5	12.1	63.8	9	12.8	63.9
350-359	1	13.6	65.0	6	13.4	64.0	1	12.9	62.0	1	11.4	52.0	1	13.0	63.0	3	13.2	67.0	2	13.9	67.0
360-369				1	13.2	57.0				1	13.2	58.0				2	13.0	59.0	2	14.3	67.5
370-379				1	14.8	68.0							1	13.8	56.0						
380-389	2	15.3	67.0	3	15.4	68.3										3	13.8	53.7	5	15.5	65.8
390-399	8	15.6	63.4	4	15.9	66.2	1	15.3	60.0										2	16.0	67.0
400-409	4	16.2	63.0	6	16.2	64.0	2	15.7	60.0				3	15.5	57.0	1	14.9	52.0	4	16.0	64.2
Weighted means		12.2	58.9		12.1	57.9		11.3	59.3		10.3	57.2		11.0	57.1		10.4	56.3		12.8	61.0
Mean potential temperature ° A (weighted)	345.5			345.1			330.4			323.0			331.7			326.5			350.0		
Number days with observations	29			30			27			20			27			28			23		

Potential temperatures, ° A	Denver, Colo.			El Paso, Tex.			Ely, Nev.			Fairbanks, Alaska			Joliet, Ill.			Juneau, Alaska			Lakehurst, N. J.		
	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C
290-299										3	7.3	49.3				1	7.7	51.1			
300-309							1	9.6	60.0	14	8.2	51.2	1	7.7	47.0	3	8.5	54.3	2	8.2	50.5
310-319	9	9.2	49.3	4	9.0	46.8	9	9.7	56.6	26	9.6	57.5	12	9.3	51.7	21	9.4	54.9	9	9.3	53.3
320-329	21	10.6	58.0	14	10.5	53.6	11	11.2	61.0	11	10.3	57.7	22	10.4	56.0	11	10.5	59.5	17	10.4	56.4
330-339	15	11.8	62.2	21	11.6	58.5	15	12.0	63.3	1	11.0	57.0	17	11.5	60.2	2	10.2	54.0	9	11.7	61.8
340-349	4	12.5	61.8	10	12.4	61.0	7	12.9	65.0				6	12.2	59.2				4	12.7	65.2
350-359	2	12.6	58.0	6	13.4	63.3							2	13.2	63.5				2	13.5	68.0
360-369				3	13.9	62.7															
370-379	2	13.6	57.5	1	15.7	72.0	3	13.8	57.7										2	13.8	59.5
380-389	1	14.1	55.0	2	15.3	66.0	1	14.0	56.0				1	13.4	53.0				1	14.3	59.0
390-399	1	14.8	59.0	5	16.2	68.6	1	16.0	67.0	1	13.9	48.0				1	14.2	51.0	4	16.0	58.5
400-409	5	15.5	57.8	7	16.3	64.3	4	15.9	61.0	1	14.4	48.0	1	15.4	60.0	1	16.5	52.0			
Weighted means		11.5	58.0		12.5	59.5		12.0	61.2		9.5	55.2		10.8	56.7		10.0	55.8		11.3	58.1
Mean potential temperature ° A (weighted)	337.8			348.4			339.6			316.3			330.3			338.0			334.6		
Number days with observations	27			29			27			27			28			21			25		

TABLE 4.—*Mean altitudes and temperatures of significant points identifiable as tropopauses during March 1940, etc.*—Continued

Potential temperatures, ° A.	Medford, Oreg.			Miami, Fla.			Minneapolis, Minn.			Nashville, Tenn.			Oakland, Calif.			Oklahoma City, Okla.			Omaha, Nebr.		
	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.
290-299							2	7.2	49.5										1	7.3	46.0
300-309	4	8.0	49.0				2	7.8	44.5				4	7.4	40.2				2	8.0	46.5
310-319	7	9.5	55.9				11	9.0	49.7	3	8.9	47.3	6	8.6	45.8	3	7.9	38.0	9	9.0	49.1
320-329	17	10.8	59.4	1	10.3	48.0	18	10.4	57.1	9	10.7	56.1	24	10.6	56.5	12	10.4	54.6	20	10.7	57.4
330-339	16	11.8	61.8	11	11.1	50.6	15	11.6	61.4	18	11.8	60.5	17	12.2	64.8	19	11.7	60.6	20	11.6	60.6
340-349	5	12.6	65.6	18	12.5	58.2	4	12.8	64.5	7	12.7	64.6	8	13.1	67.6	6	12.6	63.8	4	12.2	60.0
350-359				11	13.7	64.2	2	12.6	57.5	6	12.9	60.5				2	14.0	68.5	3	12.4	56.0
360-369				10	14.6	67.6				1	14.5	69.0	1	12.8	54.0	1	13.1	55.0	1	12.7	55.0
370-379	1	13.4	57.0	2	15.8	72.5				2	14.2	60.0				1	13.5	56.0			
380-389	2	14.4	57.5	7	16.3	73.0	1	14.1	54.0				3	14.9	61.0	1	15.6	68.0	1	13.6	52.0
390-399	2	15.1	59.5	6	17.1	75.3				4	15.6	63.5	1	15.3	62.0	5	16.1	67.0	2	14.8	58.5
400-409	1	16.0	63.0	7	17.5	74.0				2	16.4	65.5	8	15.9	62.0	3	16.3	65.3	3	15.4	58.3
Weighted means		11.3	59.4		14.0	63.8		10.6	56.6		12.3	60.1		11.8	58.7		12.2	59.4		11.2	56.8
Mean potential temperature ° A. (weighted)	332.9			361.8			326.7			344.6			339.8			344.5			335.0		
Number days with observations	27			28			26			28			28			25			28		

Potential temperatures, ° A.	Phoenix, Ariz.			St. Louis, Mo.			San Antonio, Tex.			San Diego, Calif.			Sault Ste Marie, Mich.			Seattle, Wash.			Spokane, Wash.		
	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.
290-299													2	6.9	48.0						
300-309	1	8.2	47.0							1	7.1	36.0	17	7.6	45.2	2	7.6	43.0	4	8.1	47.2
310-319	4	8.1	41.2	5	8.5	42.2				2	8.0	42.0	14	9.4	54.9	4	9.6	56.8	15	9.5	54.5
320-329	16	10.8	56.8	15	10.7	56.3	8	9.9	45.4	11	10.3	52.3	17	10.5	58.1	7	10.5	58.4	22	10.5	57.5
330-339	13	11.6	59.2	14	11.8	61.5	14	11.0	52.6	14	11.7	60.6	9	11.5	61.2	3	11.6	61.3	9	11.1	57.1
340-349	10	12.8	63.5	8	12.4	62.0	13	12.3	56.8	7	12.8	63.7	1	11.2	54.0	4	12.2	61.2	5	12.2	62.0
350-359	2	12.7	58.5	2	13.5	66.0	9	13.2	60.0	1	11.5	50.0	2	13.0	60.5				2	11.7	51.5
360-369	1	13.1	54.0				6	14.1	62.0				1	12.0	51.1						
370-379	2	14.2	61.5	2	13.4	57.5	2	14.6	63.0				1	13.0	53.0						
380-389							8	15.9	68.4	3	14.8	61.0	2	13.6	54.0						
390-399	1	14.8	54.0	2	14.8	56.5	2	15.7	63.0	3	16.1	66.0	1	14.5	56.0				1	15.1	58.0
400-409	3	16.6	68.7				5	16.7	67.6	2	16.4	63.5	3	14.6	54.3				1	15.6	59.0
Weighted means		11.8	58.1		11.5	57.8		12.9	58.0		12.0	57.9		10.1	53.9		10.6	57.6		10.5	56.2
Mean potential temperature ° A (weighted)	339.0			335.7			354.7			342.7			326.2			326.0			327.0		
Number days with observations	27			19			26			24			30			16			27		

Potential temperatures, °A.	Washington, D. C.			Atlantic Sta. 1, approx. lat. 36, long. 53			Atlantic Sta. 2, approx. lat. 42, long. 38		
	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature ° C.
300-309	1	7.9	48.0	2	7.5	41.0	2	7.4	39.0
310-319	5	8.9	48.2	5	8.5	44.2	3	9.0	49.3
320-329	6	10.3	54.8	17	10.8	58.8	10	10.5	56.2
330-339	7	11.5	59.9	11	11.6	58.9	10	12.1	62.5
340-349	1	13.6	68.0	7	12.3	60.4	7	13.2	68.4
350-359				2	13.6	65.0	4	13.6	66.2
360-369							2	13.8	61.0
370-379				2	14.5	62.5			
380-389				3	14.3	57.7	1	14.0	56.0
390-399							1	14.6	56.0
400-409				2	15.6	57.0	1	16.3	64.0
Weighted means		10.4	55.2		11.5	57.2		11.9	59.9
Mean potential temperature °A (weighted)	326.0			337.9			338.4		
Number days with observations	15			25			23		