AEROLOGICAL OBSERVATIONS

[The Aerological Division, W. R. GREGG, in charge]

By L. T. SAMUELS

Free-air temperatures during the month were mostly above normal, the negative departures being of small magnitude. Relative humidity departures were small and unimportant in practically all cases. The largest positive departures occurred at Dallas.

Free-air resultant wind directions for the month were close to normal with the resultant velocities mostly below normal, especially at the southern stations.

Airplane observations were made daily throughout the month at Chicago, Cleveland, Dallas, and Omaha. The greatest mean height (5,659 meters above sea level) was obtained at Dallas, where also the highest single flight (5,967 meters) was made.

TABLE 1.—*Free-air temperatures and relative humidities during June, 1932*

TEMPERATURE

Altitude (meters) m. s. l.	Chicago, Ill. (190 meters) [1]		Cleveland, Ohio (245 meters) [1]		Dallas, Tex. (149 meters) [2]		Ellendale, N. Dak. (444 meters)		Hampton Roads, Va. (2 meters) [3]		Omaha, Nebr. (299 meters) [4]		Pensacola, Fla. (2 meters) [3]		San Diego, Calif. (9 meters) [3]		Washington, D. C. (2 meters) [3]	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface	17.4	(5)	16.4	(5)	22.5	(5)	21.4	+2.7	22.0	−0.7	18.8	(5)	25.2	−0.1	18.8	−1.6	21.1	−1.8
500	18.8	−0.5	18.2	−1.1	23.7	+0.9	20.9	+2.6	20.2	−0.8	19.6	−1.2	23.5	+0.2	15.6	−1.5	19.9	−0.2
1,000	18.1	+2.0	16.9	+0.8	22.1	+1.8	18.1	+2.8	18.3	−0.4	20.1	+2.1	21.1	+0.5	17.2	−0.7	18.3	+0.7
1,500	15.3	+2.1	13.9	+0.7	19.7	+1.7	15.0	+2.3			17.3	+1.9						
2,000	12.6	+2.0	10.4	−0.2	16.8	+1.3	12.0	+2.2	12.8	−0.2	14.5	+1.8	15.7	+0.7	16.7	+0.1	13.2	+1.2
2,500	9.8	+0.9	7.5	−0.4	13.9	+1.0	8.9	+2.0			11.2	+1.5						
3,000	6.8	+1.6	4.7	−0.5	10.8	+0.7	6.0	+1.9	7.8	+0.2	7.8	+1.1	9.8	+0.3	10.9	0	7.8	+1.4
4,000	0.9	+1.1	−1.8	−1.6	4.1	−0.3	1.4	+3.0			1.6	+1.3					2.9	+2.3
5,000	−4.8	+1.3	−8.4	−2.3	−3.0	−1.1	−4.0	+3.5			−4.8	+0.4					−2.5	+2.7

RELATIVE HUMIDITY (PER CENT)

Altitude (meters) m. s. l.	Chicago, Ill.		Cleveland, Ohio		Dallas, Tex.		Ellendale, N. Dak.		Hampton Roads, Va.		Omaha, Nebr.		Pensacola, Fla.		San Diego, Calif.		Washington, D. C.	
Surface	85	(5)	83	(5)	87	(5)	71	+1	77	+3	89	(5)	84	+4	69	+2	66	+1
500	71	+5	70	+4	76	−1	71	+2	73	+6	79	+11	78	+3	74	0	59	−3
1,000	63	−4	64	−3	68	−1	62	−5	68	+5	60	−4	74	+5	49	−4	52	−7
1,500	63	−3	65	−1	63	+4	63	−1			63	+2						
2,000	60	−2	65	+3	61	+10	62	0	63	+5	57	−1	68	+5	20	−4	52	−7
2,500	58	+1	59	+2	57	+10	59	−2			57	+1						
3,000	59	+6	51	−2	56	+13	58	+1	54	+4	57	+3	62	+10	17	+1	50	−4
4,000	50	+4	49	+3	54	+15	31	−19			48	−4					41	−6
5,000	35	−5	47	+7	52	+9	25	−25			40	−12					31	−6

[1] Temperature and humidity departures based on normals of Royal Center, Ind.
[2] Temperature departures based on normals determined by interpolating between those of Groesbeck, Tex., and Broken Arrow, Okla. Humidity departures based on normal of Groesbeck, Tex.
[3] Naval air stations.
[4] Temperature and humidity departures based on normals of Drexel, Nebr.
[5] Surface departures omitted because of difference in time between airplane observations and those of kites upon which the normals are based.

TABLE 2.—*Free-air resultant winds (meters per second) based on pilot-balloon observations made near 7 a. m. (E. S. T.) during June, 1932*

[Wind from North=360°; East=90°; etc.]

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,528 meters)		Bismarck, N. Dak. (518 meters)		Brownsville, Tex. (12 meters)		Burlington, Vt. (132 meters)		Cheyenne, Wyo. (1,873 meters)		Chicago, Ill. (195 meters)		Cleveland, Ohio (245 meters)		Dallas, Tex. (154 meters)		Due West, S. C. (217 meters)		Havre, Mont. (762 meters)		Jacksonville, Fla. (14 meters)		Key West, Fla. (11 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	25	0.7	225	0.3	145	3.0	184	2.2	273	2.1	203	0.4	187	1.2	165	2.3			251	1.1	214	1.2	141	1.9
500					161	11.4	231	4.1			232	1.5	235	1.8	196	7.0					248	5.2	143	3.7
1,000			227	4.1	168	11.0	285	5.2			242	1.6	280	3.3	208	8.7			251	3.7	257	3.9	154	3.2
1,500			230	4.7	162	8.1	299	6.1			284	3.1	285	6.3	209	5.5			264	5.0	265	2.8	167	3.5
2,000	6	1.2	249	4.3	154	6.7	306	7.4	268	2.9	283	4.5	288	7.4	222	5.1			274	4.9	246	2.6	183	3.8
2,500	283	2.4	237	6.3	140	5.2	304	7.2	257	3.8	293	5.7	292	9.1	238	4.5			272	6.2	236	2.2	175	3.9
3,000	262	3.7	229	6.2	126	4.0	298	9.7	281	5.1	294	7.4	283	9.5	241	4.4			271	6.3	218	2.5	170	4.2
4,000	260	5.2	242	8.3	62	3.6	296	12.4	288	5.0	273	3.9	292	10.0	261	5.0			262	10.7	277	2.0	161	4.5
5,000	264	7.0			7	6.6			273	6.7			307	14.2	274	7.9			261	13.9	34	0.6	162	3.9

Altitude (meters) m. s. l.	Los Angeles, Calif. (217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (85 meters)		New Orleans, La. (25 meters)		Oakland, Calif. (8 meters)		Oklahoma City, Okla. (402 meters)		Omaha, Nebr. (306 meters)		Phoenix, Ariz. (356 meters)		Salt Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (198 meters)		Seattle, Wash. (14 meters)		Washington, D. C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	99	1.1	297	0.4	172	1.0	235	0.6	350	0.7	176	3.2	153	8.8	81	1.1	145	2.3	333	0.1	151	0.8	258	0.2
500	129	1.6	288	0.6	218	4.6	236	3.4	292	3.1	194	4.0	211	2.7	248	1.6			29	1.6	52	1.1	287	4.7
1,000	354	1.2	312	1.5	228	4.6	208	2.6	342	6.0	212	8.1	227	4.7	275	4.1			336	2.6	52	0.9	302	6.1
1,500	314	2.6	26	1.0	226	3.6	181	3.2	355	4.8	224	6.7	229	3.2	280	3.5	148	3.1	315	3.7	301	1.7	290	7.4
2,000	301	1.0	37	2.0	240	4.2	179	2.3	3	4.1	234	5.8	248	2.9	252	2.2	182	1.6	304	4.0	289	1.9	280	7.5
2,500	282	1.0	288	1.0	243	3.5	180	1.6	334	3.6	244	4.3	242	2.9	211	2.9	227	1.0	317	6.3	272	2.1	281	9.3
3,000	252	0.6	264	2.2	262	3.7	232	0.7	333	4.4	244	4.2	275	2.8	201	4.5	284	1.3	321	7.7	262	4.3	288	9.7
4,000			260	4.5	261	3.3	328	2.8	335	5.9	295	6.4	284	5.1	233	5.2	292	5.4	331	7.1	238	4.0	298	9.7
5,000							270	4.0	340	6.4			296	4.0					329	8.9				