AEROLOGICAL OBSERVATIONS

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

By L. T. SAMUELS

The mean free-air temperatures for the month were considerably above normal at most stations. (See Table 1.) The largest departures occurred at Dallas and Omaha around the 1,500 and 2,000 meter levels. Temperature departures were negative at all levels at San Diego and at the lower levels at Washington, D. C. Relative humidities were close to normal in most cases, the largest departures occurring at Cleveland, where they were negative, and at Dallas, where they were positive.

Free-air resultant wind directions for the month were close to normal, while the velocities were in general slightly above normal.

The highest airplane observation during the month was 6,610 meters above sea level and was made at Dallas on the 5th. The highest average height during the month was 5,991 meters above sea level and was obtained at Omaha.

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

TEMPERATURE (° C.)

Altitude (meters) m. s. l.	Chicago, Ill. (190 meters) [1]		Cleveland, Ohio (245 meters) [1]		Dallas, Tex. (149 meters) [2]		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Hampton Roads, Va. [3] (2 meters)		Omaha, Nebr. [4] (299 meters)		Pensacola, Fla. [3] (2 meters)		San Diego, Calif. [3] (9 meters)		Washington, D. C. [3] (2 meters)	
	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	Mean	Departure from norma
Surface	−1.4	−0.6	0.1	+0.9	10.0	+1.1	9.1	+1.1	−9.8	−0.1	7.1	+1.9	−3.4	+0.1	15.7	+3.8	12.9	−0.4	0.3	−1.6
500	−1.9	+0.8	−0.3	+2.4	11.1	+3.4	9.7	+2.3	−9.5	+0.2	5.9	+1.3	−2.8	+1.0	15.8	+3.7	11.2	−1.0	−0.2	−1.3
1,000	−1.5	+2.3	−1.8	+2.0	11.8	+4.6	9.0	+3.1	−6.5	+2.1	4.9	+1.7	−0.1	+3.3	14.1	+4.0	9.1	−1.6	−1.3	−0.7
1,500	−1.5	+3.3	−3.0	+1.8	11.3	+5.4	7.5	+3.5	−4.7	+3.4			1.6	+4.6						
2,000	−2.9	+3.4	−4.5	+1.8	9.1	+5.1	5.5	+3.4	−6.1	+3.4	2.3	+2.0	0.6	+4.9	9.2	+3.3	4.4	−1.4	−3.4	+0.1
2,500	−5.3	+2.9	−6.1	+2.1	6.2	+4.6	2.6	+2.9	−8.8	+3.0			−1.9	+4.6						
3,000	−7.7	+2.9	−8.4	+2.2	3.4	+4.3	0.3	+3.1	−11.4	+3.1	−3.4	+0.9	−4.4	+4.7	4.4	+3.1	−1.5	−2.6	−6.4	+1.2
4,000	−13.2	+3.3	−13.9	+2.6	−3.6	+2.2			−16.9	+2.9			−10.4	+4.3						
5,000			−20.4	+2.6	−11.2	+0.3							−17.2	+4.3						

RELATIVE HUMIDITY (PER CENT)

Surface	78	0	84	+6	82	+7	77	+7	84	+3	76	+3	87	+10	79	−2	66	−2	69	−2
500	76	−2	83	+5	73	+4	67	+3	83	+3	74	+10	83	+8	69	+1	64	+1	64	0
1,000	65	−6	81	+10	65	+6	59	−1	69	−1	66	+8	68	+4	70	+5	60	+4	58	−3
1,500	55	−7	72	+10	57	+5	55	−1	60	−2			58	+1						
2,000	51	−6	63	+6	54	+7	50	−3	60	+1	54	+7	54	+1	65	+7	48	+5	54	0
2,500	49	−7	55	−1	54	+10	46	−5	59	0			56	+4						
3,000	47	−10	51	−6	53	+11	43	−6	58	0	54	+11	55	+3	59	+11	41	+10	50	−1
4,000	48	−9	50	−7	53	+17			58	+3			53	+3						
5,000			52	−6	48	+16							50	0						

[1] Normals for Royal Center, Ind., used.
[2] Normals determined by interpolating between those for Groesbeck, Tex., and Broken Arrow, Okla.
[3] Naval air station.
[4] Normal for Drexel, Nebr., used.

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

[Wind from N=360°, E=90°, etc.]

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,528 meters)		Brownsville, Tex. (12 meters)		Burlington, Vt. (132 meters)		Cheyenne, Wyo. (1,873 meters)		Chicago, Ill. (198 meters)		Cleveland, Ohio (245 meters)		Dallas, Tex. (154 meters)		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 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	360	0.5	173	1.9	205	1.0	276	5.8	281	2.3	254	3.2	105	0.4	316	0.5	289	2.2	256	2.2	305	1.2	92	2.3
500			167	7.2	255	3.5			284	4.8	261	6.6	193	2.7	297	1.9	296	2.9			310	2.3	104	4.3
1,000			186	6.3	281	7.2			288	10.8	275	10.3	263	4.8	288	4.5	295	6.5	253	7.1	272	4.0	110	3.1
1,500			196	3.6	307	12.0			281	13.6	276	13.3	269	7.0	274	7.3	295	11.1	268	10.3	273	4.1	180	1.1
2,000	259	2.8	247	2.7	305	14.6	273	9.0	286	15.5	275	15.3	272	8.1	278	10.2	292	12.9	273	11.2	293	6.3	138	1.1
2,500	256	4.5	252	3.5	301	16.1	281	15.4	299	13.7	276	15.3	280	8.2	283	12.6	289	13.5	280	11.9			189	1.3
3,000	258	8.1	272	5.4			278	14.3					277	9.5	291	13.5	288	12.9	280	10.5			243	1.7
4,000	256	12.1					274	10.3					273	7.0	287	16.0								
5,000	294	7.1					288	12.0							270	14.4								

Altitude (meters) m. s. l.	Los Angeles, Calif. (127 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (85 meters)		New Orleans, La. (25 meters)		Oakland, Calif. (8 meters)		Oklahoma City, Okla. (392 meters)		Omaha, Nebr. (299 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	346	0.5	151	0.3	167	0.2	56	0.5	350	0.8	307	0.6	42	0.5	111	1.4	172	0.9	120	0.1	173	2.2	319	1.0
500	60	0.8	218	0.2	243	3.1	170	2.2	6	2.5	210	2.7	298	1.0	134	1.3			241	0.9	216	6.1	296	6.5
1,000	83	2.2	199	0.9	257	4.6	223	3.5	18	4.3	245	6.3	289	5.7	196	1.7			294	4.5	226	5.2	296	10.9
1,500	92	2.0	238	1.9	253	7.2	235	3.0	354	3.5	257	7.0	280	8.1	193	2.6	177	2.0	323	5.9	286	3.6	305	14.1
2,000	75	1.9	263	2.9	254	7.8	267	2.9	6	3.5	270	8.0	276	10.4	215	3.6	216	2.6	319	10.5	351	4.0	303	17.2
2,500	143	2.2	306	4.3	268	8.3	277	2.6	3	4.2	273	9.4	280	13.3	234	3.3	258	3.1	324	12.1	331	9.7	314	13.3
3,000	1	2.0	299	4.6	264	8.9			358	5.5	266	9.2	276	14.9	265	4.8	285	4.3	330	10.8				
4,000	309	3.4	323	7.4	251	11.1			26	4.4	271	7.2	283	16.7	275	3.9	286	5.4						
5,000															342	2.0								