

AEROLOGICAL OBSERVATIONS FOR THE YEAR 1928

By L. T. SAMUELS

The most striking feature of Table 1 is the preponderance of negative departures for all elements, viz, temperature, relative humidity, and vapor pressure. As is usually the case with yearly departures, they are of relatively small magnitude.

Free-air resultant wind directions were northerly instead of southerly at Due West and Groesbeck in February, at Due West and Royal Center in March, at Ellendale in May and September, at Groesbeck in September, and at Due West in December.

A marked lack of southerly component occurred at most stations in April and at Broken Arrow and Royal Center in September, an excess of northerly component at Washington in May, and a southerly instead of the normal northerly component at Due West in October.

The resultant velocities at practically all stations were considerably above normal in January; also at Washington and Ellendale in April, at Due West, Groesbeck, and Washington in June, at Ellendale in September, and at Groesbeck in October.

A total of 1,505 kite flights were made during the year at the five aerological stations and the average altitude was 2,693 meters above sea level. The highest flight of the year (6,000 meters) was made at Royal Center, Ind., on April 18.

One hundred and seventy-one airplane observations were made at the naval air station, Anacostia, D. C.

TABLE 1.—Free-air temperatures, relative humidities, and vapor pressures during the year of 1928

TEMPERATURE (°C.)

Altitude m. s. l. (meters)	Broken Arrow, Okla. (233 meters)		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Groesbeck, Tex. (141 meters)		Royal Center, Ind. (225 meters)		Washing- ton, D. C. (7 meters)*	
	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal
Surface..	15.1	-0.4	15.4	-1.4	6.1	+0.5	16.9	-1.2	10.2	-0.8	15.0	+1.8
250.....	16.0	-0.4	15.2	-1.3	.....	.....	16.5	-1.0	10.0	-0.8	13.0	+1.1
500.....	13.9	-0.2	13.9	-0.9	5.9	+0.4	15.5	-0.8	8.4	-0.6	11.6	+0.7
750.....	12.9	-0.2	13.0	-0.6	5.4	+0.4	14.6	-0.8	7.2	-0.6	10.3	+0.5
1,000.....	12.1	-0.2	11.9	-0.6	4.7	+0.1	14.0	-0.7	6.1	-0.7	8.9	+0.3
1,250.....	11.3	-0.1	10.7	-0.6	3.8	-0.2	13.4	-0.5	5.1	-0.7	7.5	+0.1
1,500.....	10.4	-0.1	9.5	-0.6	2.8	-0.4	12.6	-0.4	4.0	-0.8	6.1	-0.2
2,000.....	8.3	0.0	7.2	-0.5	0.4	-0.6	10.3	-0.6	1.8	-0.9	3.8	-0.5
2,500.....	5.8	+0.1	4.8	-0.5	-2.3	-0.7	7.7	-0.8	-0.5	-0.9	1.6	-0.5
3,000.....	3.0	+0.1	2.3	-0.5	-5.1	-0.7	4.9	-1.0	-2.7	-0.6	-0.9	-0.5
3,500.....	0.4	+0.3	-0.2	-0.3	-7.9	-0.7	1.9	-1.3	-5.3	-0.6	-3.9	-0.6
4,000.....	-2.3	+0.5	-2.9	-0.2	-10.5	-0.5	-1.0	-1.4	-7.9	-0.6	.....	.....
4,500.....	-5.3	+0.3	-6.1	-0.6	-13.1	-0.2	-3.8	-1.5	-10.7	-0.6	.....	.....
5,000.....	-7.7	+0.7	-8.5	-0.3	-17.3	-1.6	-5.2	-0.1	-13.5	-0.2	.....	.....

TABLE 1.—Free-air temperature, relative humidities, and vapor pressures during the year of 1928—Continued

RELATIVE HUMIDITY (%)

Altitude m. s. l. (meters)	Broken Arrow, Okla. (233 meters)		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Groesbeck, Tex. (141 meters)		Royal Center, Ind. (225 meters)		Washing- ton, D. C. (7 meters)*	
	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal
Surface..	68	0	70	+4	67	-5	75	+1	71	+1	63	-6
250.....	68	0	70	+4	.....	.....	74	+1	70	0	63	-5
500.....	65	0	67	+2	66	-5	71	0	67	-1	61	-5
750.....	63	0	64	0	61	-6	66	-2	67	-1	59	-5
1,000.....	61	0	63	-1	58	-6	59	-4	65	-1	59	-4
1,250.....	58	-1	62	-2	56	-5	53	-6	62	-2	58	-5
1,500.....	56	-1	61	-2	54	-5	49	-6	60	-2	58	-5
2,000.....	52	-1	58	-2	50	-7	44	-5	54	-4	56	-5
2,500.....	49	-1	56	-1	49	-7	39	-6	50	-4	52	-5
3,000.....	47	-2	51	-3	48	-7	36	-6	45	-7	45	-6
3,500.....	44	-4	47	-5	46	-8	36	-4	43	-7	49	-3
4,000.....	41	-5	47	-4	41	-12	34	-5	44	-4	.....	.....
4,500.....	35	-9	47	-4	39	-13	31	-6	45	-3	.....	.....
5,000.....	24	-19	29	-17	51	+1	27	-10	43	-4	.....	.....

VAPOR PRESSURE (mb.)

Altitude m. s. l. (meters)	Broken Arrow, Okla. (233 meters)		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Groesbeck, Tex. (141 meters)		Royal Center, Ind. (225 meters)		Washing- ton, D. C. (7 meters)*	
	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal	Mean	De- part- ure from nor- mal
Surface..	13.61	-0.15	14.04	+0.04	7.67	-0.40	16.15	-0.63	10.52	-0.26	12.87	+0.37
250.....	13.48	-0.17	13.81	+0.02	.....	.....	15.88	-0.58	10.37	-0.26	11.40	+0.04
500.....	12.04	-0.12	12.35	-0.02	7.43	-0.43	14.10	-0.57	9.15	-0.21	9.99	-0.22
750.....	10.82	-0.13	11.18	-0.15	6.51	-0.50	12.30	-0.86	8.27	-0.23	8.87	-0.38
1,000.....	9.75	-0.22	10.20	-0.25	5.87	-0.51	10.53	-1.07	7.47	-0.28	8.00	-0.43
1,250.....	8.75	-0.25	9.21	-0.35	5.33	-0.49	9.08	-1.14	6.67	-0.33	7.33	-0.43
1,500.....	7.88	-0.17	8.27	-0.37	4.79	-0.48	7.89	-1.09	5.90	-0.37	6.63	-0.51
2,000.....	6.20	-0.14	6.61	-0.27	3.75	-0.56	6.04	-0.89	4.51	-0.51	5.35	-0.53
2,500.....	4.88	-0.08	5.30	-0.13	3.00	-0.53	4.47	-1.01	3.48	-0.38	4.19	-0.43
3,000.....	3.89	-0.04	4.18	-0.13	2.89	-0.45	3.46	-0.92	2.62	-0.41	2.98	-0.58
3,500.....	2.99	-0.16	3.37	-0.10	1.84	-0.44	2.88	-0.66	2.09	-0.29	2.52	-0.13
4,000.....	2.35	-0.10	2.84	+0.02	1.33	-0.44	2.31	-0.57	1.74	-0.10	.....	.....
4,500.....	1.61	-0.30	2.23	-0.14	1.03	-0.45	1.91	-0.43	1.56	+0.02	.....	.....
5,000.....	1.03	-0.50	1.41	-0.39	0.90	-0.28	1.51	-0.56	1.28	-0.03	.....	.....

* Naval air station.

THE WEATHER IN THE UNITED STATES

THE WEATHER ELEMENTS

By P. C. DAY

GENERAL CONDITIONS

December, 1928, was notable for the wide extent of the precipitation shortage, the few days with extensive precipitation either rain or snow, and the preponderance of days having weather favorable for outdoor occupations.

PRESSURE AND WINDS

The month opened with cloudy weather and local rains over the Atlantic and Gulf coasts and similar

conditions prevailed in the far Northwest, with a low-pressure area developing over the upper Missouri Valley. This low-pressure area advanced southeastward to the Dakotas by the morning of the 2d, attended by light snow over the northern plains and the near-by Canadian Provinces, and extended during the following 24 hours to the vicinity of Lake Michigan with increased intensity, the precipitation area being still confined to the immediate vicinity of the storm center. The storm diminished rapidly after crossing the Lakes and apparently dissipated during the following day in the region to northward of Lake Superior though light snow extended eastward to New York and New England. By the following day,