

Positions and areas of sun spots—Continued

Date	Eastern standard civil time		Heliographic			Area		Total area for each day
			Diff. long.	Longi-tude	Lati-tude	Spot	Group	
1929								
Aug. 27 (Naval Observa-tory).	h.	m.	°	°	°			
	11	3	-13.0	354.5	-7.0		34	
			+64.5	72.0	-5.5		123	
			+66.5	74.0	-19.5		93	250
Aug. 28 (Naval Observa-tory).	12	15	-24.0	329.7	+4.0		9	
			+1.5	355.2	-7.0		19	
			+79.0	72.7	-5.0		123	
			+82.0	75.7	-19.5		93	244
Aug. 29 (Naval Observa-tory).	11	31	-13.0	327.9	+4.5	6		
			+15.0	355.9	-7.0		46	52
Aug. 30 (Naval Observa-tory).	11	30	-26.5	301.2	-13.5	6		
			+29.0	356.7	-7.5		46	52
Aug. 31 (Naval Observa-tory).	11	20	-17.0	297.5	+2.0	6		
			-5.5	309.0	-37.5	6		
			+14.5	329.0	+4.0	6		
			+43.0	357.5	-7.0		6	24
Mean daily area for August								530

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR AUGUST, 1929¹

[Data furnished through the courtesy of Prof. W. Brunner, University of Zurich, Switzerland]

August, 1929	Relative numbers	August, 1929	Relative numbers	August, 1929	Relative numbers
1	66	11	² E 62	21	
2	² 70	12	² 74	22	² 74
3	47	13	² M 76	23	³ M 67
4	³ E 37	14	³ M 101	24	54
5	41	15	132	25	54
6	² 56	16	² 125	26	³ E 47
7	⁴ 61	17	115	27	32
8	48	18	³ W 107	28	32
9	54	19	43	29	27
10	³ M 61	20	³ E	30	28
				31	10

Mean, 29 days=62.1.

- ¹ Dependent alone on observations at Zurich and its station at Arosa.
- ² = Passage of an average-sized group through the central meridian.
- ³ = New formation of a large or average-sized center of activity—E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.
- ⁴ = Entrance of a large or average-sized center of activity on the east limb.
- ⁵ = Passage of a large group through the central meridian.

AEROLOGICAL OBSERVATIONS

By RICHMOND T. ZOCH

Free-air temperatures were above normal at all levels at Broken Arrow, Ellendale, and Groesbeck and mostly below normal at Due West, Royal Center, and Washington. (See Table 1.)

Free-air relative humidities were below normal and nearly all levels at all stations. Vapor pressures were also mostly below normal, although in a few cases the departures were small. The total precipitation for the month was below normal at all of these stations.

From the 1,000-meter level to the highest levels observed the resultant winds over the northern and eastern part of the country had a northerly component. (See Table 2.) Over the western part of the country the resultant winds were variable to the 2,000-meter level, above which a southerly component prevailed.

TABLE 1.—Free-air temperatures, relative humidities, and vapor pressures during August, 1929

Altitude m. s. l.	TEMPERATURE (°C.)													
	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)		Washington, D. C. (Naval air station) (7 meters)			
	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal
Meters														
Surface	26.5	-0.2	25.5	-0.4	21.2	+1.0	24.7	-2.1	19.0	-3.6	24.8	+0.3		
500	25.5	+0.2	23.3	+0.1	21.2	+1.2	24.4	+0.1	18.3	-2.9	20.8	-1.1		
1,000	24.0	+1.1	20.3	+0.2	19.9	+1.8	22.6	+0.4	15.9	-2.1	18.5	-0.9		
1,500	20.8	+1.0	17.4	+0.3	18.0	+2.5	20.1	+0.6	13.3	-1.8	15.9	-0.5		
2,000	17.5	+1.1	13.8	-0.3	16.1	+3.5	16.9	+0.3	10.9	-1.4	13.2	-0.4		
2,500	14.3	+1.3	10.8	-0.3	13.6	+4.0	13.7	0.0	8.3	-1.4	10.4	-0.4		
3,000	11.2	+1.4	7.7	-0.7	10.6	+4.0	11.2	+0.2	5.5	-1.4	8.2	+0.1		
4,000			-1.0	-3.7	4.0	+3.2	5.9	0.0	0.9	-0.7	3.7	+2.3		

TABLE 1.—Free-air temperatures, relative humidities, and vapor pressures during August, 1929—Continued

Altitude m. s. l.	RELATIVE HUMIDITY (%)													
	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)		Washington, D. C. (Naval air station) (7 meters)			
	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal
Meters														
Surface	60	-7	69	0	61	-5	76	+3	70	+3	65	-7		
500	57	-7	68	-3	59	-5	66	-8	64	-2	66	-3		
1,000	54	-7	69	-3	49	-9	52	-10	61	-6	62	-4		
1,500	55	-6	70	-1	46	-11	49	-11	56	-9	63	-5		
2,000	54	-9	72	+3	44	-11	54	-5	49	-12	62	-6		
2,500	54	-9	60	-7	43	-11	50	-7	52	-3	57	-8		
3,000	51	-12	59	-7	42	-12	44	-9	50	-1	52	-8		
4,000			66	-4	34	-16	40	+1	55	+9	61	-3		

Altitude m. s. l.	VAPOR PRESSURE (mo.)													
	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)		Washington, D. C. (Naval air station) (7 meters)			
	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal	Mean	De-parture from normal
Surface	20.52	-2.47	22.41	-0.34	14.81	-0.33	23.52	-1.81	16.24	-3.01	20.69	-1.68		
500	18.44	-1.99	19.24	-0.78	14.42	-0.34	19.71	-2.49	13.64	-3.16	16.64	-1.94		
1,000	15.95	-0.75	16.22	-0.55	11.08	-0.78	14.21	-2.32	11.07	-2.98	13.68	-1.48		
1,500	13.46	-0.43	13.85	+0.01	8.93	-0.86	11.38	-2.16	8.32	-2.91	11.87	-1.09		
2,000	10.73	-0.87	11.20	+0.03	7.50	-0.39	10.71	-0.48	6.41	-2.48	9.82	-0.96		
2,500	8.63	-0.70	7.56	-1.39	6.34	-0.08	8.74	-0.42	5.69	-0.96	7.49	-0.62		
3,000	6.81	-0.66	6.62	-1.31	5.25	-0.07	7.44	+0.09	4.71	-0.39	5.78	-0.46		
4,000			3.83	-1.54	2.52	-0.96	6.20	+2.01	3.75	+0.51	4.61	+1.24		

The total number of observations made during the month (see Table 3) includes 5 captive balloons and 21 limited-height sounding-balloon flights.