Atmospheric conditions during solar radiation measurements, Blue Hill Observatory of Harvard University, August 1936

Date	Time from apparent noon	Air temperature	Wind (Beaufort scale)	Visibility (0–10 scale)	Sky blueness	Cloudiness and remarks
		°C.				
1	3:39 a. m.	22.2	NW 1	8	8	3 Ci, mod. haze, thin Ci prob. on sun.
3	2:57 a. m.	27.7	S 2	7	7	Few Ci., few Acu, mod. haze.
5	2;35 a. m.	20.6	NE 3	6	4	3 Acu, dense haze, Ci near sun.
5	0:48 p. m.	21.1	NE 3	9	6	1 Ci, 2 Acu, light haze.
8	4:23 a. m.	18.6	WSW 2	7	7	Zero clouds, mod. haze.
9	3:29 a. m.	19.2	NNW 2	8	8	Few Ci, light haze.
9	0:12 a. m.	23.6	E 2	8	8	Few Ci, few Cu, light haze.
10	4:03 a. m.	19.2	SW 3	7	7	1 Ci, mod. haze.
10	0:06 a. m.	25.9	SW 4	8	5	1 Ci, mod. haze.
12	1:57 p. m.	23.3	E 3	7	5	2 Acu, mod. haze.
12	3:02 p. m.	23.4	NE 3	8	6	Few Acu, mod. haze.
13	2:03 a. m.	24.3	SW 3	6	6	Few Acu, dense haze.
13	0:19 a. m.	27.9	SW 3	6	5	1 Cu, dense haze.
14	2:48 a. m.	23.5	NE 2	6	6	1 Acu, dense haze.
14	0:41 p. m.	23.4	NNE 1	7	5	4 Ci, dense haze.
18	4:07 a. m.	15.0	NE 4	8	7	1 Acu, mod. haze.
18	0:02 a. m.	18.6	NE 2	9	8	Few Ci, 2 Cu, light haze.
19	4:34 a. m.	17.6	SSW 4	8	6	3 Ci, mod. haze.
20	2:56 p. m.	21.7	ENE 3	8	8	1 Ci, mod. haze.
24	2:17 a. m.	24.6	W 5	9	8	4 Cu, light haze.
24	2:47 p. m.	26.6	WNW 5 G.	9	8	Few Cu, light haze.
25	2:12 a. m.	22.8	W 3	8	8	2 Ci, 2 Cu, light haze.
26	0:50 p. m.	18.1	NW 3	9	8	3 Cu, light haze.
27	0:55 a. m.	18.0	NE 2	9	8	2 Ci, 2 Cu, light haze.
28	3:21 a. m.	16.4	N 2	8	8	1 Acu, few Cu, mod. haze.
28	1:38 p. m.	18.0	ENE 3	8	8	3 Stcu, mod. haze.
30	5:19 p. m.	21.9	W 4	7	7	Few Ci, few Cu, mod haze
31	2:27 a. m.	18.7	W 2	8	8	3 Ci, 3 Cu, mod. haze.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, U. S. Navy (Ret.), Superintendent U. S. Naval Observatory. Data furnished by the U. S. Naval Observatory in cooperation with Harvard and Mount Wilson Observatories. The difference in longitude is measured from the central meridian, positive west. The north latitude is positive. Areas are corrected for foreshortening and are expressed in millionths of the sun's visible hemisphere. The total area for each day includes spots and groups]

Date	Eastern standard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude	Spot	Group		
1936	h. m.	°	°	°				
Aug. 1	11 19	−25.0	56.8	−27.0		62		U. S. Naval.
		−15.0	66.8	−27.0		123		
		−14.5	67.3	−19.5		123		
		+14.0	95.8	+26.0		216	524	
Aug. 2	12 13	−10.0	58.0	−27.0		46		Do.
		−1.5	66.5	−27.0		123		
		−1.0	67.0	−19.0		123		
		+2.0	70.0	−22.0		31		
		+3.5	71.5	−18.0	8			
		+27.0	95.0	+26.0		185	516	
Aug. 3	11 2	+3.0	58.5	−27.0		31		Do.
		+10.5	66.0	−27.0		123		
		+11.0	66.5	−19.0		123		
		+16.0	71.5	−22.0		31		
		+17.0	72.5	−18.0		31		
		+21.0	76.5	−20.5	15			
		+38.0	93.5	+26.0		185	539	
Aug. 4	11 40	−80.0	321.9	+21.0	62			Do.
		−21.0	20.9	−26.5	15			
		+15.0	56.9	−27.0		31		
		+23.0	64.9	−27.0		123		
		+28.0	69.9	−19.0		340		
		+36.0	77.9	−20.5		31		
		+51.0	92.9	+26.0		154	756	
Aug. 5	11 15	−68.0	320.9	+21.0		123		Do.
		+26.0	54.9	−27.0	8			
		+32.0	60.9	+12.5		46		
		+37.0	65.9	−27.0		123		
		+42.0	70.9	−19.0		432		
		+65.0	93.9	+26.0		123	855	
Aug. 6	12 0	−73.0	302.2	−18.0	21			Mount Wilson.
		−65.0	310.2	+22.0		14		
		−64.0	311.2	−31.0		26		
		−52.0	323.2	+21.0	235			
		+40.0	55.2	−27.0	3			
		+47.0	62.2	+13.0		26		
		+51.0	66.2	−26.0	123			
		+58.0	73.2	−18.0		327		
		+64.0	79.2	−19.0		66		
		+80.0	95.2	+27.0	122		963	
Aug. 7	12 8	−60.0	302.0	−16.0	15			U. S. Naval.
		−54.0	308.0	−32.0		93		
		−53.0	309.0	+23.0		46		
		−39.5	322.5	+20.5		123		
		+58.0	60.0	+12.5		31		

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude	Spot	Group		
1936	h. m.	°	°	°				
Aug. 7		+63.0	65.0	−27.0	31			U. S. Naval.
		+70.0	72.0	−19.0		185	524	
Aug. 8	11 12	−48.0	301.3	−16.0	15			Do.
		−41.0	308.3	−32.0		247		
		−40.0	309.3	+23.0		93		
		−28.0	321.3	+25.0	15			
		−26.0	323.3	+20.5		123	493	
Aug. 9	11 4	−75.0	261.1	+19.0		46		Do.
		−55.0	281.1	−15.0		77		
		−34.0	302.1	−16.0	8			
		−28.0	308.1	−32.0		401		
		−13.0	323.1	+20.5		123		
		+55.0	31.1	+16.5	15		670	
Aug. 10	11 17	−62.0	260.8	+19.0		93		Do.
		−41.0	281.8	−15.0		77		
		−15.0	307.8	−32.0		370		
		0.0	322.8	+21.0		123		
		+41.5	4.3	+12.5		93		
		+68.0	30.8	+17.0	15		771	
Aug. 11	13 15	−77.0	231.5	+22.0		28		Mount Wilson.
		−48.0	260.5	+19.0		138		
		−32.0	276.5	+13.0	5			
		−26.0	282.5	−15.0		105		
		−22.0	286.5	+24.0	5			
		−3.0	305.5	−32.0		410		
		+15.0	323.5	+22.0		101		
		+58.0	6.5	+13.0		52		
		+80.0	28.5	+17.0	20		864	
Aug. 12	11 10	−66.0	230.4	+24.0	31			U. S. Naval.
		−34.0	262.4	+19.0		62		
		−18.0	278.4	−15.5	15			
		−11.0	285.4	−15.5	8			
		−11.0	285.4	+22.5		31		
		+3.0	299.4	−35.0		154		
		+16.0	312.4	−30.0	15			
		+26.0	322.4	+20.5	46			
		+71.0	7.4	+11.0		31	393	
Aug. 13	11 38	−60.5	222.4	+23.0	15			Do.
		−52.5	230.4	+23.0	31			
		−20.5	262.4	+19.0		216		
		−3.5	279.4	−15.0	15			
		+17.0	299.9	−35.0		123		
		+40.0	322.9	+20.5	15		415	
Aug. 14	11 2	−87.0	183.0	+30.5	93			Do.
		−47.0	223.0	+22.5		93		
		−39.5	230.5	+22.5	31			
		−7.0	263.0	+19.0		247		
		+10.0	280.0	+14.0		46		
		+30.0	300.0	−35.0		154		
		+52.0	322.0	+20.5		46	710	
Aug. 15	11 30	−72.0	184.5	+31.0		230		Mount Wilson
		−50.0	206.5	+21.0		127		
		−30.0	226.5	+24.0		75		
		+5.0	261.5	−18.0	2			
		+7.0	263.5	+20.0		121		
		+25.0	281.5	+15.0		6		
		+30.0	286.5	+25.0	2			
		+43.0	299.5	−33.0	179			
		+68.0	324.5	+21.0		8	750	
Aug. 16	12 45	−65.0	177.6	+31.0		409		Do.
		−36.0	206.6	+22.0		143		
		−32.0	210.6	−18.0		18		
		−15.0	227.6	+24.0		54		
		+19.0	261.6	+21.0		138		
		+58.0	300.6	−32.0		35	797	
Aug. 17	10 56	−67.0	163.4	+29.0	123			U. S. Naval.
		−50.0	180.4	+30.0		247		
		−24.0	206.4	+20.0		123		
		−20.0	210.4	−18.0		62		
		+29.0	259.4	+20.0		123		
		+50.0	280.4	+14.0	31		709	
Aug. 18	11 25	−53.0	164.0	+29.0	62			Do.
		−37.0	180.0	+30.0		247		
		−10.5	206.5	+20.0		154		
		−7.0	210.0	−18.0		46		
		+41.0	258.0	+19.5		62		
		+63.0	280.0	+14.0		77	648	
Aug. 19	13 5	−49.0	153.9	+20.0		6		Mount Wilson.
		−28.0	174.9	+30.0		534		
		+6.0	208.9	+22.0		190		
		+9.0	211.9	−18.0		2		
		+53.0	255.9	+20.5	10			
		+75.0	277.9	+14.0		85	827	
Aug. 20	11 51	−29.0	161.3	+28.5	46			U. S. Naval.
		−11.0	179.3	+30.0		216		
		+18.0	208.3	+21.0		185	447	
Aug. 21	11 13	−16.0	161.4	+28.5	46			Do.
		+1.0	178.4	+30.0		185		
		+30.0	207.4	+21.0		185	416	
Aug. 22	11 10	−78.0	86.2	+27.0	46			Do.
		−57.0	107.2	−10.5		93		
		−4.0	160.2	+28.0		46		
		+13.0	177.2	+30.0		185		
		+43.0	207.2	+21.0		154	524	
Aug. 23	12 6	−76.0	74.5	−22.0	62			Do.
		−64.0	86.5	+27.0	31			
		−44.0	106.5	−10.0		62		
		+9.0	159.5	+28.5		62		
		+27.0	177.5	+30.5		154		
		+59.0	209.5	+20.5		123	494	

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude	Spot	Group		
1936	h. m.	°	°	°				
Aug. 24	11 34	−70.0	67.6	−23.0	15			U. S. Naval.
		−62.0	75.6	−22.0	62			
		−59.0	78.6	+30.0		62		
		−51.0	86.6	+27.0	46			
		−29.0	108.6	−10.0		62		
		+21.0	158.6	+29.0		46		
		+39.5	177.1	+30.5		77		
		+70.0	207.6	+20.0		31	401	
Aug. 25	11 27	−68.0	56.4	−27.0		216		Do.
		−49.0	75.4	−23.0	77			
		−39.0	85.4	+27.0	31			
		−11.0	113.4	−10.0	31			
		+34.0	158.4	+29.0		31		
		+50.5	174.9	+30.5	93			
		+78.0	202.4	+14.0		31	510	
Aug. 26	14 37	−53.0	56.5	−27.0		216		Do.
		−33.0	76.5	−23.0	93			
		−25.0	84.5	+27.0	31			
		−5.0	104.5	−17.0		123		
		+3.0	112.5	−9.0	31			
		+49.0	158.5	+29.5		46		
		+65.0	174.5	+30.0	62		602	
Aug. 27	11 10	−62.0	36.1	+17.0		7		Mount Wilson.
		−40.0	58.1	−28.0		438		
		−22.0	76.1	−21.0	134			
		−13.0	85.1	+28.0		48		
		+7.0	105.1	−17.0		213		
		+11.0	109.1	−11.0		2		
		+16.0	114.1	−8.0		77		
		+75.0	173.1	+32.0		87	1,006	
Aug. 28	12 35	−47.0	37.2	+15.0		8		Do.
		−25.0	59.2	−27.0		715		
		−7.0	77.2	−23.0	107			
		−2.0	82.2	+27.0		17		
		+6.0	90.2	−10.0		6		
		+23.0	107.2	−16.0		191		
		+27.0	111.2	−11.0		2		
		+30.0	114.2	−7.0	30		1,076	
Aug. 29	12 45	−37.0	33.9	+18.0		106		Do.
		−15.0	55.9	−27.0		1,036		
		+5.0	75.9	−22.0		88		
		+12.0	82.9	+28.0		18		
		+20.0	90.9	−11.0		10		
		+37.0	107.9	−17.0		144		
		+44.0	114.9	−8.0	28			
		+50.0	120.9	−22.0	10		1,440	
Aug. 30	12 7	−23.0	35.0	+18.0		31		U. S. Naval.
		−3.0	55.0	−27.0		679		
		+18.0	76.0	−22.0	15			
		+26.0	84.0	+27.0		46		
		+34.0	92.0	−10.5		93		
		+50.0	108.0	−17.0	31			
		+53.0	111.0	−10.0		31	926	
Aug. 31	11 26	−71.0	334.2	+14.0	15			Do.
		−9.0	36.2	+18.0		31		
		+10.0	55.2	−27.0		617		
		+30.5	75.7	−33.0	31			
		+47.0	92.2	−12.0		123		
		+61.0	106.2	−17.5	15			
		+66.0	111.2	−10.0		15	847	

Mean daily area for 31 days, 691.

PROVISIONAL SUN-SPOT RELATIVE NUMBERS, JULY 1936

[Data dependent alone on observations at Zurich and its station at Arosa]

[Furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

July 1936	Relative numbers	July 1936	Relative numbers	July 1936	Relative numbers
1	*MEcc* 79	11	*Ec* 49	21	28
2	74	12	67	22	*a* 27
3	44	13	67	23	*Mc* 30
4	50	14	*b* 76	24	36
5	*Mac* 52	15	67	25	42
6	37	16	*d* 69	26	49
7	30	17	67	27	38
8	*d* 47	18	53	28	*d* --
9	43	19	49	29	*WEcc* 59
10	47	20	43	30	61
				31	*b* 93

Mean, 30 days = 52.4.

a = Passage of an average-sized group through the central meridian.
b = Passage of a large group or spot through the central meridian.
c = New formation of a center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the center circle zone.
d = Entrance of a large or average-sized center of activity on the east limb.

PROVISIONAL SUN-SPOT RELATIVE NUMBERS, AUGUST 1936

[Data dependent alone on observations at Zurich and its station at Arosa]

[Furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

August 1936	Relative numbers	August 1936	Relative numbers	August 1936	Relative numbers
1	64	11	*a* 83	21	*a* 71
2	*ab* 64	12	*a* 76	22	*Eac* 64
3	74	13	*Mc* 90	23	*ad* 64
4	*d* 65	14	103	24	*d* 63
5	*Mc* 87	15	*acd* 123	25	*Ec* 91
6	86	16	93	26	*a* 76
7	89	17	105	27	*a* 87
8	*Ec* 89	18	115	28	91
9	107	19	*a* 90	29	*Macd* 106
10	*Wac* 89	20	65	30	*b* 125
				31	120

Mean, 31 days = 87.6.

a = Passage of an average-sized group through the central meridian.
b = Passage of a large group or spot through the central meridian.
c = New formation of a center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central circle zone.
d = Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

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

By L. T. SAMUELS

Attention is invited to the note at the foot of table 1, regarding the data on which the normals are based.

The super-normal surface temperatures for August over the central portion of the country, shown on chart I of this REVIEW, extended to considerable heights (see table 1). The largest free-air temperature departures occurred over Omaha at the 1,500- and 2,000-meter levels. Above these levels the departures decreased generally with altitude, in some cases becoming negative at the more southern stations.

The free-air relative humidity departures were mostly of opposite sign to those of temperature, with the largest negative departures occurring over Omaha at the 2,000-meter level. At 5,000 meters, however, the region of maximum negative relative humidity departures was displaced to the southeastern portion of the country. From chart V (inset) in this REVIEW it is seen that the monthly precipitation was deficient over the same general region where the greatest negative free-air relative humidity departures occurred.

Although the period of record at El Paso is only 2 years, it is evident that the average relative humidity during the warm season increases appreciably with elevation and results in higher mean relative humidity at 4,000 meters than at any other station. The relation of this condition to the general circulation and upper air pressure distribution over the United States and adjacent regions presents an interesting problem for investigation.

The resultant free-air wind direction for August was in most cases close to normal, with resultant velocities generally above normal. Principal exceptions occurred over the southeastern region where a pronounced easterly component prevailed at 3,000 and 4,000 meters as compared to the normal westerly component at those levels, and over the more eastern stations above 1,000 meters where the resultant velocities were below normal.