

SPECIAL OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING AUGUST, 1920.

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[Solar Radiation Investigations Section, Washington, Sept. 30, 1920.]

For a description of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to this REVIEW for April, 1920, 48:225.

The monthly means and departures from normal in Table 1 indicate that solar radiation intensities were below the normal values at Madison, Wis., and Lincoln, Nebr., and above normal at Santa Fe, N. Mex. At Washington, D. C., but few observations were obtained during the month on account of unusually cloudy conditions.

Table 2 shows a decided deficiency in the total radiation received on a horizontal surface at Washington. At Madison for the month as a whole about the normal amount of radiation was received, although there was a decided deficiency during the week, August 7 to 13, inclusive.

No skylight polarization measurements were obtained at Washington during the month. Measurements obtained at Madison on 12 days give a maximum of 72 per cent on the 30th, and a mean of 58 per cent. The mean in below and the maximum about equals corresponding averages for August for Madison.

TABLE 1.—Solar radiation intensities during August, 1920.

[Gram-calories per minute per square centimeter of normal surface.]

WASHINGTON, D. C.

Date.	Sun's zenith distance.										Local mean solar time.	
	Sa. m.	77.8°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	77.8°		Noon.
	75th merid-ian time.	Air mass.										
		A. M.					P. M.					
e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.		
Aug. 3.....	mm. 9.83	cal.	cal.	cal.	cal. 0.96	cal. 1.22	cal. 1.28	cal. 0.79	cal. 0.95	cal.	mm. 9.83	
26.....	12.24	.....	.....	.....	1.00	(1.25)	0.95	.....	.....	.....	10.21
30.....	17.37	.....	.....	.....	(0.98)	(1.25)	(0.87)	.....	.....	.....	17.37
Means.....	.....	.....	.....	.....	+0.98	+0.01	-0.09	.....	.....	.....	.....
Departures.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

MADISON, WIS.

Aug. 1.....	7.87	.....	.....	1.01	1.21	.....	.....	.....	.....	.....	7.57
2.....	9.83	.....	.....	.....	.....	.....	1.17	.....	.....	.....	7.29
3.....	7.57	0.65	0.76	0.89	1.09	1.30	0.97	.....	.....	.....	8.48
5.....	13.13	.....	.....	.....	.....	.....	1.08	.....	.....	.....	13.61
16.....	12.24	.....	.....	.....	.....	.....	0.96	.....	.....	.....	13.61
17.....	10.97	.....	.....	.....	0.71	0.98	0.79	.....	.....	.....	13.13
18.....	11.38	.....	.....	0.63	0.54	1.20	0.76	0.56	.....	.....	10.97
19.....	11.81	.....	.....	.....	.....	1.13	.....	.....	.....	.....	12.24
24.....	8.81	.....	.....	.....	.....	1.41	.....	1.00	0.88	0.77	6.02
25.....	9.83	.....	.....	.....	.....	1.30	.....	.....	.....	.....	9.14
26.....	8.81	.....	.....	.....	.....	1.25	1.10	0.97	.....	.....	10.59
30.....	8.48	.....	0.95	1.05	1.21	1.38	1.15	.....	.....	.....	8.81
Means.....	(0.65)	(0.56)	0.89	1.01	1.23	0.99	0.84	(0.88)	(0.77)	.....	.....
Departures.....	-0.06	+0.03	-0.03	-0.08	-0.08	-0.05	-0.02	+0.07	+0.16	.....	.....

* Extrapolated.

TABLE 1.—Solar radiation intensities during August, 1920—Continued.

LINCOLN, NEBR.

Date.	Sun's zenith distance.										Local mean solar time.	
	Sa. m.	77.8°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	77.8°		Noon.
	75th merid-ian time.	Air mass.										
		A. M.					P. M.					
e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.		
Aug. 2.....	mm. 9.83	cal.	cal.	cal.	cal.	cal. 1.29	cal. 1.03	cal. 0.82	cal. 0.66	cal.	mm. 9.14	
3.....	11.38	.....	.....	.....	.....	1.20	0.94	0.71	0.56	.....	13.61
4.....	13.13	.....	.....	.....	0.72	0.91	.....	.....	.....	.....	16.20
6.....	15.11	.....	.....	.....	0.67	0.87	.....	.....	.....	.....	14.10
7.....	13.13	.....	.....	0.73	0.89	1.12	1.40	.....	.....	.....	10.59
9.....	11.38	.....	.....	.....	1.01	1.29	1.06	0.87	0.71	0.61	12.24
10.....	13.13	.....	.....	0.63	0.79	1.00	.....	.....	.....	.....	14.10
13.....	9.14	.....	.....	.....	1.18	.....	.....	.....	.....	.....	13.13
14.....	10.59	.....	.....	.....	1.16	1.39	.....	.....	.....	.....	9.83
16.....	10.97	0.42	.....	.....	0.65	0.91	.....	.....	.....	.....	12.24
21.....	8.48	0.80	1.01	1.13	1.35	1.11	0.93	0.77	0.73	8.48
23.....	9.47	.....	.....	.....	0.94	1.08	.....	.....	.....	.....	12.24
25.....	10.97	.....	.....	.....	.....	.....	.....	0.99	0.78	.....	11.38
26.....	10.21	.....	.....	.....	.....	0.79	.....	.....	.....	.....	14.10
27.....	11.81	.....	.....	.....	.....	.....	.....	.....	.....	.....	13.13
Means.....	(0.42)	0.72	0.81	1.00	1.32	1.63	0.82	0.68	(0.67)	.....	.....
Departures.....	-0.28	-0.08	-0.08	-0.06	-0.02	-0.07	-0.09	-0.09	-0.04	.....	.....

SANTA FE, N. MEX.

Aug. 5.....	9.14	.....	0.87	1.05	1.21	.....	.....	.....	.....	.....	9.47
6.....	8.18	.....	0.97	1.10	1.26	.....	.....	.....	.....	.....	8.81
9.....	9.14	.....	1.02	.....	.....	1.46	.....	.....	.....	.....	9.14
10.....	9.83	0.91	1.01	1.13	1.29	1.51	.....	.....	.....	.....	9.83
11.....	9.83	.....	.....	.....	.....	1.49	.....	.....	.....	.....	6.76
14.....	7.29	0.92	1.03	1.15	1.29	.....	.....	.....	.....	.....	8.81
17.....	8.48	.....	.....	.....	.....	.....	1.25	1.07	.....	.....	8.48
18.....	7.87	0.89	0.98	1.09	1.26	1.47	.....	.....	.....	.....	7.57
20.....	8.48	0.96	1.06	1.18	1.34	.....	.....	.....	.....	.....	7.57
23.....	7.87	0.93	1.02	1.14	1.31	1.54	.....	.....	.....	.....	7.57
24.....	6.27	0.87	1.00	1.15	.....	.....	.....	.....	.....	.....	5.79
25.....	8.18	0.87	0.98	1.08	1.24	.....	.....	.....	.....	.....	7.57
28.....	3.63	1.08	1.17	1.31	1.44	1.58	.....	.....	1.24	1.12	1.02
29.....	4.17	.....	.....	.....	.....	.....	.....	1.37	1.22	1.11	1.02
Means.....	0.93	1.01	1.14	1.29	1.51	(1.31)	1.18	(1.12)	(1.02)	.....	.....
Departures.....	+0.01	+0.03	+0.04	+0.05	+0.07	+0.03	+0.01	+0.03	.....	.....	.....

TABLE 2.—Solar and sky radiation received on a horizontal surface.

[Gram-calories per square centimeter.]

Week beginning.	Average daily radiation.		Average daily departure for the week.		Excess or deficiency since first of year.	
	Wash-ington.	Madison.	Wash-ington.	Madison.	Wash-ington.	Madison.
	cal.	cal.	cal.	cal.	cal.	cal.
July 30.....	435	488	- 35	+13	+1,224	+ 835
Aug. 6.....	379	410	- 78	-49	+ 680	+ 491
13.....	362	471	- 74	+26	+ 163	+ 673
20.....	309	461	-106	+36	- 579	+ 825
27.....	418	419	+ 16	-15	- 469	+1,032

* Extrapolated.