

SOLAR OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING JANUARY, 1922.

By HERBERT H. KIMBALL, Meteorologist.

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.

From Table 1 it is seen that direct solar radiation intensities averaged slightly above the normal for January at Washington, D. C., and Santa Fe, N. Mex., were close to normal at Madison, Wis., and decidedly below normal at Lincoln, Nebr.

Table 2 shows that the total solar and sky radiation received on a horizontal surface was generally above normal at Madison; at Washington there was a decided deficiency during the week beginning with January 15.

Skylight polarization measurements made on four days at Washington give a mean of 57 per cent, with a maximum of 62 per cent on the 25th. These are slightly below the average January Washington values. At Madison no measurements were obtained, as the ground was covered with snow during the entire month.

TABLE 1.—Solar radiation intensities during January, 1922. Washington, D. C.¹

¹(Gram-calories per minute per square centimeter of normal surface.)

Date.	Sun's zenith distance.										Local mean solar time.	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		Noon.
	75th meridian 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.		
Jan. 7	mm. 2.49	cal. 0.85	cal. 1.02	cal. 1.12	cal. 1.22	cal. 1.31	cal. 1.36	cal. 1.41	cal. 1.46	cal. 1.51	mm. 1.88	
9	3.81	0.85	1.02	1.12	1.22	1.31	1.36	1.41	1.46	1.51	4.57	
14	2.26	0.70	0.82	0.97	1.22	1.23	1.11	0.99	0.87	0.75	2.06	
25	0.96	0.93	1.05	1.19	1.34	1.51	1.29	1.12	0.95	0.78	1.12	
26	0.86	0.77	0.88	1.05	1.26	1.32	1.24	1.12	0.99	0.87	1.12	
30	1.88	0.77	0.88	1.05	1.31	1.20	1.00	0.99	0.95	0.95	4.75	
Means	0.80	0.92	1.08	1.28	1.22	1.05	0.94	0.91	0.91	0.91		
Departures	+0.03	+0.04	+0.06	+0.05	-0.01	+0.01	+0.06	+0.11				

Madison, Wis.

Jan. 9	2.62	0.90	0.99	1.10	1.14	0.99	0.89	0.78	0.68	3.15
11	1.78	1.08	1.16	1.21	1.32	1.16	1.01	0.87	0.75	1.78
12	0.79	0.79	1.16	1.21	1.32	1.16	1.01	0.87	0.75	1.37
16	1.32	1.07	1.16	1.21	1.32	1.16	1.01	0.87	0.75	1.68
19	1.07	1.07	1.16	1.21	1.32	1.16	1.01	0.87	0.75	0.71
20	1.19	0.91	1.03	1.20	1.35	1.60	1.48	1.35	1.22	1.52
21	1.78	1.05	1.02	1.18	1.22	1.48	1.65	1.52	1.39	2.62
24	0.46	1.05	1.13	1.32	1.48	1.65	1.52	1.39	1.26	C. 28
Means	0.98	1.08	1.22	1.48	1.22	1.08	0.98	0.91	0.87	
Departures	+0.03	-0.01	-0.03	+0.07	-0.02	-0.04				

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The average pressure for the month was slightly below the normal at land stations on the east coast of Newfoundland and in the south of England and Ireland, while the departures were small on the Atlantic and Gulf coasts of the United States, as well as in the Bermudas. The monthly average at Horta, Azores, was somewhat above the average, the unusually high barometric readings that prevailed from the 1st to the 21st being partially overcome by the period of low pressure during the last decade of the month.

Comparatively few fog reports were received from vessels, although fog was observed on 8 days at the 1 p. m. observation at stations on the British Isles.

TABLE 1.—Solar radiation intensities during January, 1922—Contd.

Lincoln, Nebr.

Date.	Sun's zenith distance.										Local mean solar time.	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		Noon.
	75th meridian 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.		
Jan. 2	mm. 3.15	cal. 0.85	cal. 1.02	cal. 1.12	cal. 1.22	cal. 1.31	cal. 1.36	cal. 1.41	cal. 1.46	cal. 1.51	mm. 2.06	
3	2.87	0.85	1.02	1.12	1.22	1.31	1.36	1.41	1.46	1.51	3.63	
5	0.79	0.97	1.06	1.22	1.23	1.11	0.99	0.87	0.75	0.63	1.24	
6	1.45	0.87	1.04	1.14	1.24	1.14	1.01	0.91	0.81	0.71	3.00	
7	2.49	0.74	0.86	1.03	1.16	1.39	1.10	0.97	0.86	0.75	3.63	
9	3.15	0.59	0.89	1.07	1.16	1.39	1.10	0.97	0.86	0.75	3.63	
22	0.74	0.84	1.00	1.15	1.24	1.12	1.14	0.97	0.86	0.75	1.07	
24	0.96	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.78	
27	3.15	0.87	1.14	1.24	1.24	1.24	1.24	1.24	1.24	1.24	3.30	
Means	0.80	0.95	1.06	1.15	1.15	1.15	1.06	0.84	0.68	0.68		
Departures	-0.11	-0.08	-0.10	-0.20	-0.04	-0.13	-0.20	-0.25				

Santa Fe, N. Mex.

Jan. 10	2.62	1.34	1.55	1.50	1.38	1.24	1.28	3.15
11	2.16	1.36	1.48	1.50	1.38	1.24	1.28	2.16
12	1.68	1.31	1.55	1.50	1.38	1.24	1.28	1.68
13	1.60	1.34	1.51	1.50	1.38	1.24	1.28	2.30
21	1.32	1.34	1.52	1.50	1.38	1.24	1.28	1.88
Means	1.34	1.52	1.50	1.44	1.33	1.23	1.23	
Departures	-0.04	+0.01	+0.02	+0.06	+0.05	+0.21		

* Extrapolated.

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

Week beginning.	Average daily radiation.			Average daily departure for the week.			Excess or deficiency since first of year.		
	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.
	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Jan. 1	167	134	134	+8	-11	0	+53	-76	0
8	184	175	175	+18	+20	0	+182	+62	0
15	102	207	207	-73	+37	0	-311	+324	0
22	191	215	215	+2	+26	0	-318	+504	0

MEASUREMENTS OF THE SOLAR CONSTANT OR RADIATION AT CALMA, CHILE.

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NOTE.—Owing to delay in transmission, the data from South America will be included in the next issue of the REVIEW.—EDITOR.

January is normally the stormiest month of the year, and, taking it as a whole, the month under discussion lived up to its reputation, although the number of days on which winds of gale force were reported varied considerably in different sections of the ocean when compared to the normal as shown on the Pilot Chart.

On the 1st a HIGH with a crest of over 30.5 inches was over Kansas and strong northerly winds accompanied by comparatively high barometric readings prevailed in the western part of the Gulf of Mexico, as shown by following storm log:

American S. S. Virginia:

Gale began on the 1st, wind N. Lowest barometer 30.14 inches on the 1st, wind N., in latitude 24° 44' N., longitude 96° 06' W. End on the 1st, wind N. Highest force of wind 9, N.; shifts NNE.-N.