TABLE 3.—*Total, I_m, and screened, I_y, I_r, solar radiation intensity measurements, obtained during May 1935, and determinations of the atmospheric turbidity factor, β, and water-vapor content, w=depth in millimeters, if precipitated*—Continued

Date and hour angle	Solar altitude	Air mass	I_m	I_y	I_r	$\beta_{I_{m-r}}$	$\beta_{I_{y-r}}$	β_{mean}	$\frac{I_{w-o}}{1.94}$ (Percentage of solar constant)	$\frac{I_{w-o}-I_m}{1.94}$ (Percentage of solar constant)	w	Air-mass type
May 26	° ′	*m*	*gr. cal.*	*gr. cal.*	*gr. cal.*						*mm*	
5:08 a. m.	23 20	2.52	1.139	.832	.681	.048	.062	.055	68.3	8.0	5.3	NPc
3:54 a. m.	37 01	1.66	1.318	.916	.739	.046	.062	.054	76.4	6.7	7.9	
1:46 a. m.	58 14	1.18	1.417	.964	.769	.039	.062	.050	82.4	7.5	11.0	
0:36 a. m.	67 32	1.08	1.407	.959	.762	.050	.054	.052	83.3	8.9	12.6	NPc
0:18 a. m.	68 26	1.08	1.419	.962	.777	.053	.069	.061	82.0	6.8	11.1	
2:44 p. m.	49 44	1.31	1.328	.928	.740	.058	.070	.064	81.6	11.3	10.8	
May 27												
3:22 a. m.	43 00	1.46	1.278	.901	.723	.056	.075	.066	74.5	6.9	9.3	NPc
1:05 a. m.	65 03	1.10	1.308	.913	.729	.110	.128	.119	74.8	5.6	11.5	
May 29												
2:00 a. m.	57 15	1.19	1.193	.752	.612	.066	.198	.132	70.3	7.1	11.1	TG
May 31												
1:26 p. m.	63 23	1.12	1.328	.902	.710	.059	.074	.066	78.7	8.3	12.0	NPc; TA aloft

Atmospheric conditions during solar radiation measurements. Blue Hill Observatory of Harvard University

Date and time from apparent noon	Air temperature	Wind Beaufort scale	Visibility (scale 0–10)	Sky blueness	Cloudiness and remarks
May 1935	°C.				
1; 0:27 a. m.	7.8	W 8	8–9	9	5 Cu, Frcu, no haze.
1; 2:34 p. m.	8.9	W 9	8–9	10	Few Ci, 2 Cu, light haze, pyrh. vibrating.
8; 0:42 p. m.	11.7	NW 1	8–9	9	B Cu, Stcu, light haze.
8; 2:34 p. m.	13.3	NW 4	8–9	10	3 Cu.
9; 2:28 a. m.	17.8	S 1	8–9	8	2 Cu.
9; 0:27 a. m.	18.9	SSE 2	8–9	8	Few Cu, light haze.
11; 3:29 a. m.	12.8	W 5	9	12	Few Acu, few Cu, no haze.
11; 0:22 a. m.	16.1	NW 6	9	11	Few Cu, no haze.
11; 2:32 p. m.	18.3	W 5	9	9	2 Cu, no haze.
12; 2:14 a. m.	10.7	NW 4	9	(T)4	2 Ci.
15; 5:06 a. m.	6.7	NW 5	9	10	Few Ci, few Cu, no haze, gusty.
15; 3:32 a. m.	7.2	NW 5	9	10	Few Ci, few Cu, no haze, very gusty.
15; 0:46 a. m.	10.6	NW 5	9–10	10	Few Cu, no haze, very gusty.
15; 2:31 p. m.	13.3	NW 4	9–10	11	1 Cu, no haze, gusty.
16; 3:31 a. m.	9.4	NW 3	9	11	Few Cist, light haze.
16; 0:51 a. m.	12.8	WNW 2	9	9	1 Ci, coming up fast, no haze.
17; 1:02 p. m.	13.9	NE 3	8	9	Few Ci, 5 Acu, 2 Cu, light haze.
18; 3:42 a. m.	10.0	NNW 3	9	11	Few Ci, 1 Cu, increasing, mod. smoke to N.
19; 4:16 a. m.	7.8	NW 5	9–10	9	Few Acu, 4 Cu, no haze.
19; 2:29 p. m.	13.3	WNW 6	9	9	5 Cu, Stcu, no haze.
20; 3:34 a. m.	11.1	W 5	8	8	Few Acu, 1 Cu, light haze.
20; 2:53 p. m.	17.2	WNW 6	8	8	3 Acu, 2 Cu, light haze, Cu very close.
22; 3:35 a. m.	11.1	NW 4	8–9	9	Few Acu, few Cu, light haze.
22; 0:53 a. m.	15.0	W 3 var.	8	8	Few Ci, 4 Cu, light haze.
22; 1:51 p. m.	16.7	W 3	9	9	Few Ci, 5 Cu, light haze.
23; 1:06 p. m.	11.1	SE 3	8	9	1 Acu, 6 Cu.
24; 3:37 a. m.	10.0	NW 4	8	11	Few Cu, light haze.
24; 0:47 a. m.	14.4	W 3	8–9	8	7 Cu, light water haze.
25; 4:40 a. m.	16.1	NW 3	7–8	11	4 Acu, light haze.
25; 0:56 a. m.	18.9	W 2 var.	8–9	------	Few Acu, 5 Cu.
26; 4:21 a. m.	15.6	NNE 3	8	11	0 clouds, inversion.
26; 0:45 a. m.	19.4	NE 1–2	9	9	0 clouds, light smoke N.
26; 2:25 p. m.	22.2	Var. 2	9	8	0 clouds, light haze.
27; 3:31 a. m.	22.2	SW 3	8	9	Few Ci, light haze.
27; 0:49 a. m.	26.1	W 3 var.	8	7	2 Cu, light haze.
31; 1:09 p. m.	16.7	E 4	8	8	2 Ci, few Cu, light haze, inversion, smoke E.
31; 2:22 p. m.	17.8	NE 3	8	9	3 Ci, 2 Acu, 1 Cu, inversion, fog at sea.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, U. S. Navy, 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: Diff. in longitude	Heliographic: Longitude	Heliographic: Latitude	Area: Spot	Area: Group	Total area for each day	Observatory
1935	*h m*	°	°	°				
May 1	13 32	−53.5	315.1	+21.0	108	--------	--------	U. S. Naval.
		−41.0	327.6	−22.0	31	--------	139	
May 2	13 49	−40.0	315.2	+21.0	62	--------	--------	Do.
		−28.0	327.2	−25.0	15	--------	--------	
		−20.0	335.2	−31.0	15	--------	92	

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic: Diff. in longitude	Heliographic: Longitude	Heliographic: Latitude	Area: Spot	Area: Group	Total area for each day	Observatory
1935	*h m*	°	°	°				
May 3	12 15	−48.0	294.9	−21.0	--------	10	--------	Mt. Wilson.
		−28.0	314.9	+21.0	94	--------	--------	
		−15.0	327.9	−25.0	--------	6	--------	
		−9.0	333.9	−31.0	--------	85	195	
May 4	9 15	−80.0	251.4	−27.0	40	--------	--------	Do.
		−15.0	316.4	+21.0	83	--------	--------	
		+5.0	336.4	−31.0	--------	233	356	
May 6	12 15	−60.0	243.2	−27.0	217	--------	--------	Do.
		−29.0	274.2	+21.0	8	--------	--------	
		−6.0	297.2	−21.0	--------	7	--------	
		+11.0	314.2	+21.0	202	--------	--------	
		+30.0	333.2	−30.0	--------	660	1094	
May 7	14 56	−50.0	238.5	−20.0	--------	100	--------	U. S. Naval.
		−49.0	239.5	−28.5	154	--------	--------	
		+25.5	314.0	+24.0	39	--------	--------	
		+44.0	332.5	−30.0	--------	401	694	
May 8	10 46	−37.0	240.6	−20.0	--------	216	--------	Do.
		−36.5	241.1	−28.5	185	--------	--------	
		+37.0	314.6	+24.0	31	--------	--------	
		+55.0	332.6	−29.5	--------	278	710	
May 9	13 18	−27.0	236.0	−20.0	--------	139	--------	Do.
		−22.5	240.5	−28.5	123	--------	--------	
		−19.5	243.5	−21.0	--------	93	--------	
		+70.0	333.0	−29.5	--------	216	571	
May 10	13 14	−13.0	236.8	−20.0	--------	123	--------	Do.
		−9.5	240.3	−28.0	123	--------	--------	
		−5.0	244.8	−20.5	--------	93	--------	
		+76.0	325.8	−29.0	123	--------	462	
May 11	11 20	−67.0	170.6	+29.5	15	--------	--------	Do.
		−0.5	237.1	−20.0	--------	108	--------	
		+2.5	240.1	−28.0	123	--------	--------	
		+7.0	244.6	−20.5	--------	77	323	
May 12	11 15	−53.5	170.9	+29.5	23	--------	--------	Do.
		+12.5	236.9	−20.0	--------	77	--------	
		+16.0	240.4	−28.5	93	--------	--------	
		+21.0	245.4	−20.0	--------	62	255	
May 13	14 55	−40.0	169.2	+29.0	--------	31	--------	Do.
		−27.0	182.2	−20.0	--------	46	--------	
		+29.0	238.2	−20.0	39	--------	--------	
		+30.0	239.2	−28.0	123	--------	--------	
		+36.5	245.7	−20.0	46	--------	285	
May 14	13 20	−27.0	169.9	+28.0	--------	7	--------	Mount Wilson.
		−15.0	181.9	−21.0	--------	8	--------	
		+44.0	240.9	−28.0	163	--------	--------	
		+45.0	241.9	+30.0	1	--------	--------	
		+49.0	245.9	−20.0	--------	109	288	
May 15	11 38	−12.0	172.6	+28.0	15	--------	--------	U. S. Naval.
		+54.0	238.6	−27.5	123	--------	--------	
		+60.0	244.6	−20.0	46	--------	184	
May 17	10 52	+79.0	237.5	−27.5	39	--------	39	Do.
May 18	11 11	No spots			--------	--------	--------	Do.
May 19	11 34	No spots			--------	--------	--------	Do.
May 20	9 10	No spots			--------	--------	--------	Mount Wilson.
May 21	11 19	No spots			--------	--------	--------	U. S. Naval.
May 22	11 21	No spots			--------	--------	--------	Do.
May 23	9 0	No spots			--------	--------	--------	Mount Wilson.
May 24	9 20	−13.0	53.8	−20.0	--------	14	--------	Do.
		+61.0	127.8	+4.0	7	--------	21	
May 25	10 58	No spots			--------	--------	--------	U. S. Naval.
May 26	11 59	−80.0	318.8	−30.0	62	--------	62	Do.
May 27	11 11	−71.0	315.0	−29.5	108	--------	108	Do.
May 28	13 13	−57.0	314.7	−29.5	154	--------	154	Do.

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic: Diff. in longitude	Heliographic: Longitude	Heliographic: Latitude	Area: Spot	Area: Group	Total area for each day	Observatory
May 29	11 20	−80.0	279.5	+26.5	46			U. S. Naval.
		−60.0	299.5	+17.0	46			
		−47.0	312.5	−29.5		93	185	
May 30	9 20	−70.0	277.5	+27.0	57			Mount Wilson.
		−48.0	299.5	+17.0		21		
		−33.0	314.5	−27.0	157		235	
May 31	13 14	−56.0	276.0	+26.5		116		U. S. Naval.
		−19.0	313.0	−30.0		154	270	

Mean daily area for 29 days, 232.

PROVISIONAL SUN-SPOT RELATIVE NUMBERS, MAY 1935

(Dependent alone on observations at Zurich and its station at Arosa)

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

May 1935	Relative numbers	May 1935	Relative numbers	May 1935	Relative numbers
1	17	11	*aa* 46	21	0
2	26	12	41	22	0
3	*Mc* 46	13	41	23	0
4	*b* 56	14	49	24	17
5	*de* 56	15	32	25	7?
6	56	16		26	*d* 8
7	*Ec* 56	17	8	27	8
8	62	18	0	28	8
9	54	19	0	29	*d* 17
10	41	20	0	30	30
				31	38

Mean, 30 days=27.3.

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 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

At those stations with a sufficient period of record for the determination of approximate normals, free-air temperatures during May averaged below normal, except at Pensacola and in the higher levels at Sunnyvale and San Diego. (See table 1.) As during April, mean free-air temperatures for May at Seattle and Spokane were higher than those at Boston at and below the 3,000-meter level, but above this level the temperatures at Boston were increasingly the higher.

Free-air relative humidities averaged slightly above normal at most stations, with the largest departures at Omaha. The free-air relative humidities averaged highest over the northern Plateau region.

The resultant winds for the month were in general as follows (see table 2): At the 1,000-meter level the directions contained a greater northerly component than normal over the northeastern section and Lake region, with velocities mostly below normal; elsewhere the directions were mostly close to normal, with velocities preponderantly above normal over the southeastern section. At the 4,000-meter level the directions were generally close to normal, with a slight excess of northerly components at most of the northern stations and on the Pacific coast; velocities were mostly above normal.

TABLE 1.—*Mean free-air temperatures and relative humidities obtained by airplanes during May 1935*

TEMPERATURE (° C.)

Stations	Altitude (meters) m. s. l.: Surface Mean	Surface Departure from normal	500 Mean	500 Departure from normal	1,000 Mean	1,000 Departure from normal	1,500 Mean	1,500 Departure from normal	2,000 Mean	2,000 Departure from normal	2,500 Mean	2,500 Departure from normal	3,000 Mean	3,000 Departure from normal	4,000 Mean	4,000 Departure from normal	5,000 Mean	5,000 Departure from normal	Number of observations
Billings, Mont.[1] (1,088 m)	6.7						7.9		5.6		2.0		−1.6		−8.2		−15.0		31
Boston, Mass.[2] (6 m)	9.4	−4.1	7.5	−3.9	4.5	−4.5	1.6	−4.7	−0.5	−4.5	−2.3	−4.1	−4.4	−3.6	−8.9	−2.9	−14.8	−2.7	15
Cheyenne, Wyo.[1] (1,873 m)	4.1								3.8		2.2		−0.4		−6.7		−13.4		29
Fargo, N. Dak.[1] (274 m)	5.8		8.9		7.2		4.1		0.9		−2.0		−4.3		−9.0		−15.0		31
Kelly Field (San Antonio), Tex.[3] (206 m)	18.7		19.0		19.0		18.0		15.4		12.9		10.0		3.2		−4.2		26
Lakehurst, N. J.[4] (3 m)	8.8		10.0		7.9		5.5		3.0		0.8		−1.2		−5.1		−10.0		26
Maxwell Field (Montgomery), Ala.[3] (52 m)	19.8		20.6		17.5		14.1		11.6		8.9		5.7		−0.8		−7.0		30
Mitchel Field (Hempstead, L. I.), N. Y.[3] (29 m)	10.3		11.7		8.7		5.8		3.6		1.2		−0.9		−6.0		−12.3		29
Murfreesboro, Tenn.[1] (174 m)	14.8		16.2		15.3		12.3		10.1		7.5		4.5		−1.7		−8.0		31
Norfolk, Va.[4] (10 m)	15.2	−2.7	15.2	−1.9	13.2	−2.0	11.0	−1.5	8.4	−1.3	5.8	−1.1	3.6	−0.5	−1.6	−0.5	−7.3	−0.5	28
Oklahoma City, Okla.[1] (391 m)	15.5		15.3		14.9		13.7		11.8		8.8		5.2		−2.8		−10.9		29
Omaha, Nebr.[1] (300 m)	10.0	−2.9	10.6	−3.1	10.2	−3.5	8.1	−3.5	5.7	−3.6	3.3	−3.2	0.9	−2.6	−4.7	−1.4	−11.4	−1.1	31
Pearl Harbor, Territory of Hawaii[4] (6 m)																			
Pensacola, Fla.[4] (24 m)	23.2	+0.6	21.6	+0.8	18.8	+0.6	16.3	+0.3	13.8	+0.9	11.3	+1.0	9.1	+1.4	3.6	+1.6	−2.4	+2.1	30
San Diego, Calif.[4] (10 m)	15.2	−2.4	12.2	−1.8	11.5	−2.2	10.8	−1.7	11.0	−0.4	8.9	+0.1	6.0	0.0	−0.1	+0.1	−6.7	+0.1	30
Scott Field (Belleville), Ill.[3] (135 m)	12.0		14.8		13.0		10.2		7.6		5.6		3.1		−2.8		−9.1		22
Seattle, Wash.[4] (25 m)	8.1	−5.0	7.4	−2.8	6.4	−1.6	4.1	−1.3	1.3	−1.3	−1.3	−1.2	−3.7	−1.0	−9.3	−0.7	−15.3	−0.7	28
Selfridge Field (Mount Clemens), Mich.[3] (177 m)	6.9		9.6		7.2		5.0		3.0		1.2		−0.8		−6.5		−13.4		31
Spokane, Wash.[5] (596 m)	13.5				10.8		7.8		4.1		0.4		−3.4		−9.8		−17.0		31
Sunnyvale, Calif.[4] (10 m)	14.4	−1.5	10.8	−1.3	10.2	−0.4	11.0	+1.1	8.8	+1.1	6.0	+1.2	3.1	+1.3	−3.5	+1.7	−11.3	+1.7	25
Washington, D. C.[4] (13 m)	10.9	−5.7	10.9	−4.0	9.8	−3.2	7.4	−3.1	5.4	−2.7	3.4	−2.1	1.2	−1.7	−3.4	−1.0	−9.7	−1.0	27
Wright Field (Dayton), Ohio[3] (244 m)	9.5		11.6		11.0		8.7		6.3		3.7		1.0		−4.2		−10.6		29

[1] Weather Bureau. [2] Massachusetts Institute of Technology. [3] Army. [4] Navy. [5] National Guard.