

TABLE 3.—Solar radiation measurements, and determinations of atmospheric turbidity factor, β , Washington, D.C., July 1933

[Values in italics have been interpolated]

Date and solar hour angle	Solar altitude, h .	Air mass, m .	I_m	I_r	I_v	β	Blueness of sky	Atmospheric dust particles per cubic centimeter	Notes: (sky-light polarization, P.) clouds, etc.
July 6									
5:55 a.	14-55	3.84	0.881	0.652	0.504	0.035		449	
5:51 a.	15-40	3.65	.899	.655	.607	.040			
5:40 a.	17-43	3.26	.985	.700	.664	.042			
5:36 a.	18-28	3.13	1.008	.704	.568	.040			
5:06 a.	24-05	2.44	1.071	.772	.596	.055			
5:01 a.	25-01	2.35	1.108	.775	.598	.045	6		P=58.4%
0:38 a.	71-58	1.05	1.421	.828	.690	.038			
0:33 a.	72-21	1.05	1.411	.830	.690	.040			
3:24 p.	43-55	1.44	1.302	.830	.640	.035			
3:28 p.	43-08	1.46	1.304	.832	.640	.035			
3:52 p.	38-19	1.61	1.257	.754	.630	.040			
3:56 p.	37-42	1.63	1.226	.766	.628	.045			
4:26 p.	32-09	1.88	1.223	.864	.660	.055			
4:36 p.	31-30	1.91	1.192	.865	.668	.070			
July 7									
5:56 a.	14-38	3.92	.485	.284	.220	.065		905	
5:52 a.	15-27	3.72	.512	.286	.222	.070			
5:34 a.	18-50	3.08	.615	.348	.288	.065			
5:28 a.	19-58	2.92	.633	.349	.290	.070			
4:49 a.	27-24	2.17	.910	.550	.460	.072			
4:44 a.	28-21	2.10	.917	.552	.462	.075	5		P=55.7%
3:21 a.	44-28	1.43	1.147	.732	.608	.100			
3:16 a.	45-26	1.39	1.130	.734	.610	.120			
1:20 a.	66-22	1.09	1.232	.823	.680	.090			
:16 a.	67-00	1.09	1.223	.825	.626	.095			

POSITIONS AND AREAS OF SUN SPOTS

Communicated by Capt. J. F. Hellweg, Superintendent United States Naval Observatory. Data furnished by Naval Observatory, in cooperation with Harvard, Perkins, and Mount Wilson observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area, including spots and groups, is given for each day in the last column]

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longitude	Latitude	Spot	Group	
1933							
	<i>h. m.</i>	$^{\circ}$	$^{\circ}$	$^{\circ}$			
July 1 (Naval Observatory)	10 40	No spots					
July 2 (Naval Observatory)	14 8	No spots					
July 3 (Mount Wilson)	9 4	No spots					
July 4 (Naval Observatory)	10 21	No spots					
July 5 (Naval Observatory)	11 15	No spots					
July 6 (Naval Observatory)	10 5	-66.0	66.3	+6.0		31	31
July 7 (Naval Observatory)	13 24	-78.0	39.3	+6.0		12	34
		-53.0	64.3	+7.0		22	
July 8 (Naval Observatory)	10 32	-65.0	40.6	+6.5	9		28
		-40.5	65.1	+7.5		19	

AEROLOGICAL OBSERVATIONS

[Aerological Division, W. R. Gregg, in charge]

By L. T. Samuels

Free-air July temperatures averaged moderately above normal at the stations listed in table 1, except Norfolk, Pensacola, and San Diego, where negative departures predominated. Relative humidity departures were small to moderate and in most cases of opposite sign to those of the temperature.

Positions and areas of sun spots—Continued

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longitude	Latitude	Spot	Group	
1933							
	<i>h. m.</i>	$^{\circ}$	$^{\circ}$	$^{\circ}$			
July 9 (Mount Wilson)	8 30	-51.0	42.5	+7.0	3		
		-29.0	64.5	+7.0		8	11
July 10 (Mount Wilson)	8 40	-15.0	65.2	+7.0		4	4
July 11 (Perkins Observatory)	13 30	No spots					
July 12 (Naval Observatory)	13 46	-65.0	345.9	-4.0		9	
		+14.0	64.9	+7.5		15	24
July 13 (Naval Observatory)	10 29	No spots					
July 14 (Mount Wilson)	8 35	-42.0	345.2	-5.0		4	
		+38.0	65.2	+5.0		7	11
July 15 (Mount Wilson)	8 25	+52.0	66.0	+7.0	2		2
July 16 (Naval Observatory)	12 56	No spots					
July 17 (Naval Observatory)	14 45	No spots					
July 18 (Naval Observatory)	11 24	No spots					
July 19 (Naval Observatory)	11 3	No spots					
July 20 (Naval Observatory)	13 36	No spots					
July 21 (Naval Observatory)	11 32	No spots					
July 22 (Naval Observatory)	11 35	No spots					
July 23 (Naval Observatory)	12 34	No spots					
July 24 (Naval Observatory)	10 45	No spots					
July 25 (Mount Wilson)	8 38	No spots					
July 26 (Mount Wilson)	11 20	No spots					
July 27 (Mount Wilson)	9 6	No spots					
July 28 (Perkins Observatory)	12 15	No spots					
July 29 (Naval Observatory)	11 5	No spots					
July 30 (Naval Observatory)	11 10	No spots					
July 31 (Perkins Observatory)	14 5	No spots					
Mean daily area for July							5

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR JULY 1933

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

(Observations furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland)

July 1933	Relative numbers	July 1933	Relative numbers	July 1933	Relative numbers
1	0	11	8	21	0
2	0	12	7	22	0
3	0	13	0	23	0
4	0	14	0	24	0
5	0	15	0	25	0
6	<i>Ec 7</i>	16	0	26	0
7	17	17	0	27	0
8	17	18	0	28	0
9	18	19	0	29	0
10	14	20	0	30	0
				31	0

Mean: 31 days=2.8.

c =New formation of a very small center of activity; E, on the eastern part of the sun's disk.