SOLAR RADIATION AND SUNSPOT DATA FOR JULY 1943

[Solar Radiation Investigations Section, I. F. HAND in charge]

SOLAR RADIATION OBSERVATIONS

Explanations of the tables and references to descriptions of instruments, stations, and methods of observation, and to summaries of data, are given in the January 1942 REVIEW, page 20; a list of pyrheliometric stations is also given in the REVIEW for January 1943, page 12.

TABLE 1.—*Solar radiation intensities during July 1943*

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

Madison, Wis.

Date	Sun's zenith distance										
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	75th mer. time	Air mass									Local mean solar time
		A. M.				P. M.					
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
July 2	12.7	0.58	0.64	0.80	1.01	1.24					13.2
July 6	20.4	.44	.55	.70	.90	1.21					20.4
July 8	17.6	.42	.55	.65	.79	1.16					20.4
July 9	21.1		.50	.64	.77	.97					19.0
July 14	20.4				1.22	1.41	1.19				15.3
July 15	16.5	.83	.92	1.03	1.14	1.37					13.2
July 17	24.2										16.5
July 19	19.6	.64	.79	.94	1.07	1.33					19.0
July 20	20.4	.69	.79	.90	1.10	1.41					18.3
July 21	21.8										20.4
July 22	14.8		.84	.96	1.13						17.0
July 26	23.4	.58	.69	.83	.99	1.09					24.2
July 29	17.7				1.10	1.38	1.13				17.7
Means		.60	.70	.83	1.02	1.26	(1.16)				
Departures		−.04	−.05	−.05	−.03	−.03	+.17				

Albuquerque, N. Mex.

July 1	15.9					1.40	1.05	0.86	0.73	0.64	9.8
July 3	10.5		0.95	1.04	1.19	1.50	1.30	1.15	1.04	.97	5.4
July 4	10.8						1.30	1.17	1.06	1.00	5.8
July 5	8.5	0.91	.97	1.09	1.22						9.1
July 7	13.6								.83	.74	11.5
July 8	12.9			.92	1.06	1.45					15.2
July 9	14.2			.96	1.13	1.45					9.8
July 10	13.6			.97	1.14	1.44		.99	.89		9.1
July 11	10.5	.73	.82	.89							9.1
July 12	10.5				1.09	1.41					8.8
July 21	15.2					1.37					16.6

TABLE 1.—*Solar radiation intensities during July 1943*—Continued

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

Albuquerque, N. Mex.—Continued

Date	Sun's zenith distance										
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	75th mer. time	Air mass									Local mean solar time
		A. M.				P. M.					
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
July 22	15.2		.85		1.08						12.9
July 23	14.9			.91		1.43					10.5
July 24	13.2		.63			1.46					11.8
July 26	15.2	.70	.80	.92	1.08						10.5
July 27	11.5		.69								10.2
July 28	11.8	.70	.80	.92							9.8
July 29	11.8			.92							11.5
Means		.76	.81	.95	1.12	1.43	1.22	1.04	.91	.84	
Departures		−.03	−.05	−.03	−.03	+.03	+.03	.00	+.01	+.02	

Lincoln, Nebr.

July 6	17.9					1.35	1.14	0.97	0.86	0.79	16.6
July 11	18.6					1.21	.88	.67	.58	.52	16.6
July 14	16.6					1.43	1.17	1.01	.90		11.5
July 17	20.0						1.19	.99	.86	.77	17.9
July 19	20.6					1.49	1.10	.94	.84	.73	26.0
July 20	26.0					1.34	1.10	.92	.75	.66	26.0
Means						1.36	1.10	.92	.80	.69	
Departures						+.02	+.03	+.03	+.04	+.01	

Blue Hill, Mass.

July 1	10.2	0.77	0.81	0.94	1.16					(0.68)	9.1
July 2	10.2	.65	.76	.88	1.05		0.91				9.1
July 3	13.7							0.84	(0.71)	(0.61)	13.1
July 16	16.5	.58	.78	(0.98)	(1.13)	1.42	1.17	1.00	.90	(0.80)	16.5
July 17	15.4	.84	.95	(1.06)	1.22	1.38					14.8
July 18	25.8							.83	.69	.56	19.0
July 19	16.5	.78	.90	.97	1.16		1.22	1.05	.96	.78	13.2
July 20	13.2	.71	.82	.98	1.11						14.8
July 23	18.5						1.19	.79	.70	.62	18.4
July 24	20.4					1.29					14.8
July 30	18.5							.87	.73	.60	21.8
July 31	19.0		.65	.80	.94						18.4
Means		.72	.81	.94	1.11	1.36	1.12	.90	.78	.66	
Departures		+.10	+.11	+.06	+.06	+.09	+.11	+.06	+.08	.00	

*Extrapolated.

TABLE 2.—*Daily totals and weekly means of solar radiation (direct+diffuse) received on a horizontal surface*

[Gram-calories per square cemtimeter]

Date	Washington	Madison	Lincoln	East Lansing	New York	Fairbanks	Nashville	Twin Falls	La Jolla	New Orleans	Riverside	Blue Hill	Newport	State College	Put-in-Bay	East Wareham	Davis Calif.	Fresno
1943	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
July 2	-------	674	465	708	652	485	325	669	664	459	654	652	748	697	736	631	758	701
July 3	545	348	270	456	473	332	330	397	670	643	632	655	715	667	567	703	793	701
July 4	348	577	618	332	399	576	480	682	684	697	632	444	406	186	274	498	780	718
July 5	466	313	729	629	200	692	525	693	-------	754	646	70	108	583	671	118	782	698
July 6	510	189	769	322	547	664	593	697	532	743	614	640	645	490	534	663	782	691
July 7	144	715	720	572	147	504	646	593	542	602	614	281	102	426	143	133	794	696
July 8	261	667	662	469	328	635	468	701	484	266	645	474	496	148	495	523	792	697
Mean	378	498	605	498	392	555	481	633	596	595	634	459	460	457	488	467	783	700
Departure	−130	−48	+17	-------	−112	+85	−4	+27	+26	+166	+32	−88	−90	−35	−70	−31	-------	+2
July 9	244	574	663	661	252	544	399	720	432	616	636	421	421	235	668	335	774	714
July 10	403	655	694	459	309	628	549	708	601	391	614	618	529	370	222	518	778	686
July 11	464	587	677	301	266	490	404	722	597	313	622	456	656	444	441	593	768	678
July 12	472	578	666	337	328	-------	403	750	546	410	630	511	594	485	451	576	758	674
July 13	472	630	478	504	302	-------	516	728	608	683	515	333	314	459	585	284	745	634
July 14	596	739	736	480	333	528	465	616	541	534	542	425	400	516	480	404	742	647
July 15	637	683	642	666	528	551	572	703	584	659	454	518	510	679	707	474	762	672
Mean	470	635	651	487	331	548	473	707	558	515	573	469	489	456	508	455	761	672
Departure	−34	+88	+63	-------	−161	+64	+1	+89	−53	+88	−8	−42	−37	−75	−40	−22	-------	−14
July 16	693	159	537	478	675	455	601	711	662	490	622	713	734	686	597	695	757	689
July 17	511	659	662	431	576	441	614	683	510	435	590	639	684	370	398	674	715	670
July 18	446	703	559	673	548	462	412	685	565	481	495	566	461	650	726	433	718	667
July 19	676	705	616	571	694	491	531	426	459	531	580	692	722	714	667	670	744	664
July 20	580	659	668	577	479	434	560	511	640	570	589	584	701	543	644	648	687	656
July 21	596	673	672	497	453	255	666	356	654	582	625	582	660	564	529	638	730	681
July 22	593	508	681	440	294	591	577	613	664	639	618	306	255	473	360	228	719	705
Mean	580	581	628	524	531	447	566	569	593	532	588	583	602	571	560	570	724	676
Departure	+93	+48	+55	-------	+57	+12	+86	−50	+20	+107	+19	+88	+103	+31	+23	+108	-------	−3
July 23	698	484	704	620	633	518	731	629	686	679	604	374	330	691	667	308	725	689
July 24	624	368	691	458	571	540	669	605	555	599	617	652	648	603	461	608	686	706
July 25	442	635	394	354	409	346	404	442	610	548	606	405	428	380	421	426	733	713
July 26	419	519	646	560	377	468	117	620	557	165	584	402	484	518	593	372	726	706
July 27	561	605	668.	349	375	220	588	637	491	151	295	553	616	473	338	603	713	673
July 28	482	208	572	445	561	507	589	633	563	552	578	502	568	411	530	560	684	636
July 29	459	694	430	280	203	372	630	667	466	621	583	66	180	226	298	175	694	676
Mean	526	502	586	438	447	424	533	605	561	474	552	422	465	472	473	436	709	685
Departure	+38	−11	+36	-------	−6	+5	+87	+30	+47	+62	+15	−32	−23	−35	−39	−16	-------	+29
ACCUMULATED DEPARTURES ON JULY 29, 1943																		
	+2534	+1057	+3941	-------	−4564	+2093	+1729	+805	−3367	-------	−77	−2534	−658	−3248	−882	+273	-------	-------

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JULY 1943

Communicated by Capt. J. F. Hellweg, U. S. N. (Ret.), Superintendent, U. S. Naval Observatory.] All measurements and spot counts were made at the Naval Observatory from plates taken at the observatories indicated. Difference in longitude is measured from the central meridian, positive toward the west. Latitude is positive toward the north. Areas are corrected for foreshortening and expressed in millionths of Sun's hemisphere. For each day, under longitude, latitude, area of spot or group, and spot count, are included assumed longitude of center of the disk, assumed latitude of center of the disk, total area of spots and groups and total spot count.

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1943	*h m*		°	°	°	°				
July 1	9 30				No spots				G	Mt. Wilson.
2	10 57				No spots				VG	U. S. Naval.
3	11 49				No spots				G	Do.
4	8 47	*	5	193	+37	35	12	1	VG	Mt. Wilson.
				(198)	(+3)		12	1		
5	10 42				No spots				VG	U. S. Naval.
6	10 33				No spots				G	Do.
7	8 54	7589	−81	77	+13	81	242	2	G	Mt. Wilson.
				(158)	(+4)		242	2		
8	8 35	7589	−77	68	+13	77	339	8	F	Do.
		7589	−68	77	+13	68	436	5		
		7590	+10	155	+10	12	12	2		
		(*)	+28	173	+5	28	6	1		
				(145)	(+4)		793	16		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JULY 1943—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1943	*h m*		°	°	°	°				
July 9	13 31	7589	−58	71	+12	58	339	15	G	U. S. Naval.
		7589	−50	79	+13	51	388	5		
		7590	+26	155	+8	27	73	7		
		7591	+70	199	−10	70	12	1		
				(129)	(+4)		812	28		
10	11 59	7589	−47	69	+12	48	412	18	G	Do.
		7589	−36	80	+14	37	339	7		
		7590	+39	155	+8	39	24	4		
				(116)	(+4)		775	29		
11	11 8	7589	−33	71	+12	34	291	19	G	Do.
		7589	−22	82	+14	24	412	10		
		7590	+54	158	+8	54	16	3		
				(104)	(+4)		719	32		
12	11 34	7589	−19	71	+12	21	242	15	F	Do.
		7589	−8	82	+13	12	388	5		
				(90)	(+4)		630	20		
13	12 52	7589	−4	72	+12	9	242	14	G	Do.
		7589	+7	83	+14	13	388	3		
				(76)	(+4)		630	17		
14	10 38	7589	+9	73	+12	12	194	20	VG	Do.
		7589	+19	83	+14	21	364	1		
				(64)	(+4)		558	21		