SOLAR RADIATION AND SUNSPOT DATA FOR MAY 1945

[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 observations, and to summaries of data, are given in the January 1944 REVIEW, page 43. A list of the pyrheliometric stations also is given on page 45 of the same REVIEW.

TABLE 1.—*Solar radiation intensities during May 1945*

[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									75th mer. time
		A. M.				*1.0	P. M.				
	e.	5.0	4.0	3.0	2.0		2.0	3.0	4.0	5.0	e.
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
May 1	4.6	0.53	0.69	0.71	0.81	------	------	------	------	------	4.6
May 5	5.8	.69	.79	.90	1.08	1.35	------	------	------	------	6.1
May 9	4.4	.70	.80	------	------	------	------	------	------	------	3.8
May 13	6.4	------	------	.70	.94	1.38	------	------	------	------	8.5
May 18	5.6	------	1.16	1.35	1.55	------	------	------	------	------	7.2
May 19	7.4	.42	.43	.41	.74	1.32	------	------	------	------	6.4
May 23	8.5	.73	.84	.98	1.16	1.36	------	------	------	------	7.8
May 30	8.4	.79	.88	.98	1.15	1.39	------	------	------	------	9.1
Means	------	.64	.80	.86	1.06	1.36	------	------	------	------	------
Departures	------	+.02	+.03	−.10	−.04	−.01	------	------	------	------	------

LINCOLN, NEBR.

May 4	5.8	------	------	------	------	1.40	1.11	0.94	0.77	0.66	6.6
May 5	6.4	------	------	------	1.16	1.40	1.14	.94	.79	.69	7.2
May 7	6.4	------	------	------	------	1.35	1.05	.79	.62	.52	6.6
May 17	7.2	------	------	------	------	1.40	1.13	.92	.79	.72	6.6
May 22	8.4	------	------	------	------	1.38	------	------	------	------	9.4
May 25	13.7	------	------	------	------	1.18	------	------	------	------	19.0
Means	------	------	------	------	(1.16)	1.35	1.11	.90	.74	.65	------
Departures	------	------	------	------	+.04	−.03	−.02	−.01	−.06	−.02	------

ALBUQUERQUE, N. MEX.

May 1	5.2	0.73	0.82	0.97	1.14	1.47	1.35	1.27	1.25	1.22	4.6
May 2	5.4	.82	.88	1.02	1.16	1.37	1.40	1.30	1.28	1.27	5.4
May 3	5.4	.67	.81	.88	1.05	1.39	1.23	1.19	1.14	1.12	5.8
May 4	5.0	------	------	.94	------	1.52	------	------	------	------	6.3
May 5	5.6	.63	.73	.88	1.02	1.51	1.23	1.20	------	------	7.3
May 6	4.4	.69	.77	.90	1.08	1.47	------	------	------	------	8.2
May 7	5.2	------	------	------	------	1.53	------	------	------	------	6.8
May 8	4.6	.73	.83	.93	------	------	------	------	------	------	4.4
May 9	4.4	------	------	------	1.07	1.40	1.31	1.24	1.21	1.18	3.8
May 10	4.8	------	------	------	1.10	1.41	1.27	1.25	1.20	1.16	5.4
May 11	4.4	.65	.73	.84	1.02	------	------	------	------	------	3.8

TABLE 1.—*Solar radiation intensities during May 1945*—Continued

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									75th mer. time
		A. M.				*1.0	P. M.				
	e.	5.0	4.0	3.0	2.0		2.0	3.0	4.0	5.0	e.
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
May 12	2.9	------	.84	.94	1.08	1.41	1.26	1.21	------	------	6.0
May 13	4.0	------	.78	.99	------	1.42	------	------	------	------	5.0
May 16	5.4	.83	.92	1.01	1.17	1.46	1.26	1.17	1.11	1.06	4.6
May 17	5.0	.89	.99	1.10	1.21	1.42	------	------	------	------	4.2
May 19	4.0	------	------	------	------	------	------	1.01	------	.90	4.2
May 20	3.3	------	------	.82	1.07	1.57	------	------	------	------	2.3
May 21	3.4	.78	.84	.94	1.08	------	1.12	1.05	.88	.94	3.3
May 22	4.2	.73	.79	.87	1.04	1.44	------	------	------	------	3.2
May 26	3.3	------	------	------	------	------	1.22	------	------	------	4.4
May 27	4.6	------	------	------	------	------	1.20	.96	.79	------	4.2
May 28	2.7	------	------	------	1.13	------	1.28	------	------	------	3.2
May 29	3.4	------	------	------	------	------	1.09	------	.60	.49	4.0
May 30	3.0	.86	.92	1.01	------	1.40	1.14	1.05	.95	.84	3.8
May 31	2.3	.80	.88	1.01	1.12	1.42	------	------	1.03	.97	3.2
Means	------	.75	.84	.94	1.10	1.45	1.24	1.16	1.04	1.01	------
Departures	------	−.08	−.07	−.09	−.09	−.04	+.01	+.03	+.04	+.07	------

BLUE HILL, MASS.

May 2	8.7	------	------	------	------	------	------	------	0.66	------	9.4
May 7	10.2	------	------	------	------	------	0.94	------	.60	------	7.2
May 9	6.4	0.32	0.44	0.60	0.91	------	1.02	------	.68	0.56	4.6
May 11	6.9	------	------	------	------	------	1.13	------	.87	------	4.4
May 12	7.2	------	.87	.99	1.14	------	------	------	------	------	5.1
May 14	11.8	.49	.59	.75	------	------	------	------	------	------	11.0
May 20	7.2	.83	.94	1.04	1.19	1.45	------	1.00	------	.77	5.6
May 23	10.2	.71	.82	.95	1.12	------	------	------	------	------	9.8
May 24	9.1	.70	.79	------	------	------	1.13	.97	.73	.61	5.6
May 26	11.4	.60	.69	.83	1.03	------	.87	.66	.49	.38	11.4
May 28	12.3	------	------	------	------	1.36	------	------	------	------	9.8
May 30	11.4	------	------	------	------	------	1.18	------	.88	.76	8.4
May 31	7.2	.72	------	1.01	------	------	1.24	1.05	.94	.85	4.6
Means	------	.62	.73	.88	1.08	(1.40)	1.07	.92	.73	.66	------
Departures	------	−.01	−.04	−.07	−.01	+.04	+.01	+.05	.00	+.02	------

BOSTON, MASS.

May 9	6.1	------	------	------	0.91	1.42	------	------	------	------	7.4
May 14	11.0	0.44	0.50	0.67	.88	------	------	------	------	------	9.4
Means	------	(.44)	(.50)	(.67)	(.90)	(1.42)	------	------	------	------	------

RATIO, BOSTON/BLUE HILL, ON COMPARABLE DATES

		(0.90)	(0.85)	(0.89)	(1.00)	------	------	------	------	------	------

*Extrapolated.

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

[Gram calories per square centimeter]

Date	Washington, D. C.	Madison, Wis.	Lincoln, Nebr.	E. Lansing, Mich.	New York, N. Y.	Fresno, Calif.	Fairbanks, Alaska	Columbia, Mo.	Boston, Mass.	Nashville, Tenn.	Twin Falls, Idaho	La Jolla, Calif.	Riverside, Calif.	Blue Hill, Mass.	Ithaca, N. Y.	State College, Pa.	Put-in-Bay, Ohio	E. Wareham, Mass.	Davis, Calif.	Boulder, Colo.	Tooele, Utah
1945	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Apr. 30	508	700	593	348	304	656	402	688	120	489	579	556	576	102	335	491	506	254	720	567	638
May 1	410	526	218	389	59	652	325	143	267	486	596	578	536	277	131	334	682	465	714	667	825
May 2	594	76	423	271	205	644	359	365	492	234	624	449	632	507	472	634	497	606	701	575	798
May 3	64	385	563	40	125	634	588	224	490	188	634	492	606	471	201	66	80	472	693	700	819
May 4	354	670	697	136	45	575	513	741	24	177	449	496	628	120	236	211	97	100	703	586	551
May 5	392	752	710	162	368	646	581	732	307	518	584	466	584	595	206	279	246	499	442	442	647
May 6	363	664	492	559	283	630	599	624	415	666	663	602	597	392	110	214	625	632	706	260	547
Mean	383	539	528	272	198	634	481	502	302	394	589	520	594	352	242	319	390	433	668	542	691
Departure	−93	+95	+76	−53	−247	+14	+53	+92	−79	−49	+57	−40	+65	−115	−163	−135	−4	−26	+26	------	------
May 7	692	296	647	211	478	596	455	252	378	258	667	457	514	437	665	580	473	444	674	187	831
May 8	391	707	225	494	122	654	536	398	324	682	618	299	376	384	403	572	670	494	638	96	786
May 9	694	413	49	511	625	684	504	176	598	410	614	527	515	686	504	679	543	640	667	578	782
May 10	71	677	347	316	54	610	618	422	86	178	236	396	601	116	62	74	152	123	700	647	414
May 11	705	270	235	491	753	698	423	582	393	424	437	184	476	392	660	743	679	466	724	444	792
May 12	683	379	511	194	562	528	391	579	498	160	361	152	264	513	468	620	200	596	176	594	616
May 13	493	619	240	520	268	457	456	692	112	593	379	524	452	129	185	350	561	121	565	519	790
Mean	533	480	322	391	409	604	483	443	341	386	473	363	457	380	421	517	468	412	592	438	716
Departure	+65	+29	−124	+61	−31	−32	+33	−8	−75	−80	−92	−200	−87	−91	−22	+60	+71	−57	−85	------	------
May 14	680	163	71	39	591	522	559	392	541	544	428	518	586	618	281	625	268	689	483	99	591
May 15	582	594	509	179	461	711	613	68	524	388	529	573	638	613	304	517	155	361	747	99	755
May 16	654	293	417	68	453	671	584	51	241	414	227	574	676	322	217	522	52	424	610	299	736
May 17	374	265	759	52	449	731	624	70	105	126	475	480	662	199	291	200	65	282	675	445	678
May 18	542	767	396	276	297	643	617	741	74	108	435	566	698	124	273	407	125	154	648	764	765
May 19	543	704	438	682	85	613	612	505	74	636	392	570	664	100	319	598	743	224	782	686	767
May 20	753	232	664	382	724	733	619	645	669	682	312	599	702	726	714	746	574	791	720	156	588
Mean	590	431	465	240	437	661	604	353	318	414	400	554	661	386	343	516	283	418	667	364	697
Departure	+111	−38	−44	−91	−28	+13	+147	−122	−120	−74	−192	−7	+114	−116	−117	+58	−127	−62	−23	------	------
May 21	692	315	127	559	496	513	421	412	220	632	477	635	698	261	427	679	670	352	634	411	684
May 22	593	478	759	79	562	600	315	780	573	656	359	652	711	638	485	514	201	673	696	488	529
May 23	650	757	588	565	618	719	412	474	489	704	267	640	714	540	159	525	752	642	715	527	641
May 24	745	565	578	566	526	741	581	101	576	642	314	686	733	604	742	736	756	571	755	673	857
May 25	652	352	714	211	608	706	413	554	538	314	507	687	711	534	710	677	399	616	728	616	753
May 26	104	595	234	286	556	726	282	598	582	620	529	617	728	670	562	228	547	707	681	686	555
May 27	118	177	275	445	88	742	496	450	307	655	595	556	716	368	96	209	602	456	636	344	833
Mean	508	463	468	388	494	678	417	481	469	603	436	639	716	517	454	510	561	574	692	535	693
Departure	+15	−28	−71	+32	+30	+11	−35	+13	−3	+89	−169	+129	+162	+57	−26	+56	+94	+72	+20	------	------
May 28	415	575	708	353	285	724	328	99	163	556	400	634	546	190	272	363	694	392	725	322	827
May 29	649	647	459	407	736	448	292	394	604	276	397	431	430	628	634	712	542	590	480	101	817
May 30	749	807	658	658	769	318	372	580	539	452	304	616	118	528	600	813	787	665	294	543	685
May 31	670	290	532	368	764	579	299	715	596	600	532	485	311	707	682	797	435	712	480	612	764
June 1	596	174	708	133	265	707	398	------	628	640	680	473	676	703	338	241	280	649	757	470	850
June 2	521	147	207	235	235	645	501	------	379	439	576	212	566	329	204	349	395	280	418	450	678
June 3	723	287	446	63	71	610	457	------	274	412	374	557	398	257	73	304	59	368	514	357	366
Mean	618	418	531	317	446	576	378	424	455	482	466	487	435	478	400	511	456	522	524	408	713
Departure	+106	−72	+5	−71	−53	−92	−103	−57	−72	−55	−113	−54	−91	−60	−92	+48	−51	−26	−128	------	------
ACCUMULATED DEPARTURES ON JUNE 3, 1945																					
	+1,603	+3,031	−3,899	−2,128	−2,303	+735	+154	+280	−280	−3,332	−5,838	−5,257	+5,341	−3,507	−2,653	+4,004	+1,029	−147	−154	------	------

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR MAY 1945

By LUCY T. DAY

[Equatorial Division, U. S. Naval Observatory]

[Communicated by Commodore 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, areas 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
1945	*h m*		°	°	°	°				
May 1	10 26	7744	−63	332	−25	64	145	1	F	U. S. Naval.
		7743	−49	346	−19	50	12	1		
		7741	−3	32	−20	17	97	10		
		7741	0	35	−18	15	242	10		
		7741	+2	37	−18	14	218	3		
		7741	+4	39	−19	15	97	1		
		7740	+40	75	−20	42	6	2		
		7739	+73	108	−32	73	97	5		
				(35)	(−4)		914	33		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR MAY 1945—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
1945	*h m*		°	°	°	°				
May 2	10 46	7744	−50	332	−25	53	109	1	G	U. S. Naval.
		7745	−46	336	+22	51	6	1		
		7743	−36	346	−18	38	12	3		
		7741	+8	30	−20	18	61	12		
		7741	+12	34	−18	19	218	15		
		7741	+14	36	−18	20	170	3		
		7741	+16	38	−19	22	97	1		
		7740	+57	79	−17	58	6	1		
		7739	+85	107	−32	85	48	1		
				(22)	(−4)		727	38		
3	9 33	7746	−40	329	+22	48	12	1	VG	Mt. Wilson.
		7744	−38	331	−26	43	97	1		
		7743	−24	345	−17	27	24	5		
		7741	+22	31	−19	26	73	10		
		7741	+27	36	−18	30	218	3		
		7741	+28	37	−18	31	194	4		
		7741	+29	38	−18	32	109	1		
		7740	+68	77	−18	68	6	2		
				(9)	(−4)		733	27		

See footnotes at end of table.