SOLAR RADIATION AND SUNSPOT DATA FOR JULY 1947

[Solar Radiation Investigation Section, I. F. HAND in Charge]

SOLAR RADIATION OBSERVATIONS

TABLE 1.—*Solar radiation intensities during July 1947*

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

Date	Sun's zenith distance									Vapor pressure	
	A. M.				0.0	P. M.					
	78.7	75.7	70.7	60.0		60.0	70.7	75.7	78.7	7:30 a. m.[1]	1:30 p. m.[1]
MADISON, WIS.											
	Air mass										
	4.81	3.84	2.88	1.92	0.96*	1.92	2.88	3.84	4.81		
July	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal*	*cal*	*cal*	*mb*	*mb*
1	0.83	0.91	1.03	1.16	1.39					15.8	12.5
2	.80	.91	1.03	1.19	1.41					11.8	11.0
3	.74	.83	.94	1.06						14.2	14.2
7	.66	.84	.95	1.14	1.34					12.3	11.8
8	.70	.81	.95	1.08	1.31					13.7	13.7
9	.59	.70	.83	1.03	1.24					12.7	12.5
10	.49	.59	.71	.88	1.17					15.3	15.3
12	.40	.50	.64							17.7	19.6
14	.59	.69	.81	1.03						21.1	22.6
17		.35	.48	.65						21.1	23.4
19	.77	.88	.98	1.14	1.36					12.3	10.6
21	.71	.83	.95	1.15						11.0	9.8
22	.59	.66	.81	1.07	1.36					10.6	10.2
23	.61	.71	.84	1.04						11.4	11.8
24					1.17					13.2	12.5
25	.55	.68	.81	.98	1.15					13.7	15.3
26				.80						21.1	25.0
28	.66	.73	.84	1.01	1.31					19.0	21.1
29	.62	.74	.84	.98	1.12					20.4	21.8
30				.72						25.0	29.6
31	.62	.74	.86							15.3	13.7
Means	.64	.73	.85	1.01	1.28						
Departures	+.01	−.01	−.02	−.03	.00						
LINCOLN, NEBR.											
	Air mass										
	4.77	3.81	2.86	1.91	0.95*	1.91	2.86	3.81	4.77		
July	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1					1.41	1.19	1.06	0.94	0.88	14.2	11.0
2					1.36	1.10	.90	.75	.67	15.8	14.2
3					1.26	.92	.75	.62	.52	17.7	21.8
14					1.29	1.10				21.1	23.4
18					1.35	1.17	.99			15.3	15.3
28					1.21	.90	.75			22.6	24.2
29					1.28	.90	.69			21.1	23.4
Means					1.31	1.04	.86	.77	.69		
Departures					−.02	−.02	−.02	+.02	+.02		
BLUE HILL, MASS.											
	Air mass										
	4.86	3.89	2.92	1.94	0.97*	1.94	2.92	3.89	4.86		
July	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
2					1.48	1.20	1.04	0.94	0.81	13.7	14.6
3	0.85	0.94	1.06	1.22						14.0	12.5
4						.95	.73	.64	.54	15.1	17.7
5	.69	.75	.84	.96	1.27		.96			13.6	15.2
9							.87	.74	.63	23.2	25.7
13				.69				.43	.34	18.9	19.3
14				.63						21.3	21.7
21	.50	.56								18.4	17.4
24					1.39	1.02	.83	.71	.61	14.3	14.3
25	.66	.76	.89	1.05	1.31					16.4	16.9
26		.73	.81	.99						18.0	18.8
29				1.02				.74	.59	21.2	21.3
30	.66	.74	.85	1.01				.63	.50	19.7	21.2
Means	.67	.75	.89	.95	1.36	1.06	.89	.69	.57		
Departures	+.04	+.03	+.02	−.09	+.08	+.05	+.06	.00	−.05		

TABLE 1.—*Solar radiation intensities during July 1947*—Continued

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

Date	Sun's zenith distance									Vapor pressure	
	A. M.				0.0	P. M.					
	78.7	75.7	70.7	60.0		60.0	70.7	75.7	78.7	7:30 a. m.[1]	1:30 p. m.[1]
CLIMAX, COLO.											
	Air mass										
	3.24	2.59	1.94	1.29	0.65*	1.29	1.94	2.59	3.24		
July	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1				1.43	1.61	1.38	1.25	1.10	1.02		
2			1.27	1.38	1.53						
4				1.29	1.47						
8			1.19	1.36							
9			1.26	1.37	1.53	1.35	1.22	1.10	1.03		
10			1.30	1.42	1.55	1.37	1.25	1.14	1.02		
12		1.26	1.34	1.46	1.57						
15			1.19	1.32							
17				1.35	1.51	1.32	1.16	1.06	.96		
18				1.26	1.50	1.34	1.24	1.14	1.03		
19			1.29	1.42	1.50	1.31	1.19	1.10	1.01		
24				1.40	1.52	1.34	1.15	1.03	.95		
25			1.21	1.35	1.50	1.33	1.23	1.10	1.02		
26				1.37	1.46						
27				1.31							
28			1.12	1.26	1.45						
29		1.10	1.18	1.31	1.47						
30		1.01	1.13	1.30							
31			1.12	1.28							
Means		1.12	1.22	1.35	1.51	1.34	1.21	1.10	1.00		
Departures		.00	+.02	+.03	+.03	+.04	+.02	+.04	+.04		
TABLE MOUNTAIN, CALIF.											
	Air mass										
	3.76	3.01	2.26	1.51	0.75*	1.51	2.26	3.01	3.76		
July	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1				1.40							
2				1.37							
3				1.35							
4				1.43							
5				1.42							
8				1.39							
9				1.43							
10	1.12	1.20	1.30	1.42	1.55						
11				1.41							
12				1.42							
13				1.43							
14				1.43							
15				1.39							
16				1.38							
17				1.32							
18				1.34							
19				1.42							
22				1.35							
23				1.43							
24	1.12	1.20	1.30	1.43	1.55						
25				1.36							
26				1.38							
27				1.34							
31				1.32							
Means	(1.12)	(1.20)	(1.30)	1.39	(1.55)						
Departures	+.01	.00	.00	+.01	+.02						

* Extrapolated. [1] 75th meridian time.

Explanations of the tables and references to descriptions of instruments, stations, methods of observation, and summaries of data are given in the Monthly Weather Review, vol. 72, page 43, January 1944. A list of pyrheliometric stations is given on page 45 of the same Review. An explanation of the formula used in computing the air mass values for each station will be found in vol. 75, page 47, March 1947.

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.	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.	Newport, R. I.	Salt Lake City, Utah	Put-in-Bay, Ohio	State College, Pa.	Davis, Calif.	East Wareham, Mass.	New Orleans, La.	Toronto, Canada.	Ithaca, N. Y.	Boulder, Colo.	Pearl Harbor, Hawaii	Honolulu, Hawaii
1947	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
July 2	739	745	766	718	798	----	741	615	762	707	683	724	727	655	764	658	688	793	606	698	553	349	670	672	550
July 3	775	660	729	668	800	----	748	547	710	702	670	697	675	622	676	722	579	797	599	----	518	346	439	623	622
July 4	664	563	476	726	809	610	655	419	719	684	629	717	496	496	779	611	475	755	446	692	663	394	622	594	592
July 5	679	323	539	621	794	494	166	548	464	682	686	717	686	666	780	517	569	775	600	642	386	319	552	698	706
July 6	544	456	769	570	784	257	616	496	357	630	----	690	591	552	418	251	490	747	560	456	333	349	531	419	648
July 7	246	723	745	618	771	212	757	603	478	618	----	674	670	696	794	439	84	782	622	----	458	33	532	574	585
July 8	500	721	641	45	780	271	801	245	533	539	593	695	271	219	----	417	174	776	198	----	292	94	567	604	664
Means	592	599	666	567	791	369	641	496	575	652	652	702	588	558	702	517	437	775	519	622	458	269	559	598	624
Departures	+76	+47	+76	+57	+91	−101	+23	−6	+89	+42	+87	+86	+27	+1	----	−76	−76	+51	−13	+181	−87	−270	−7	----	----
July 9	552	729	710	359	776	297	725	288	433	579	682	715	349	641	----	195	275	745	669	665	447	265	458	518	586
July 10	433	589	614	160	786	623	643	385	403	665	684	725	546	492	----	331	498	770	608	----	580	230	635	541	651
July 11	466	655	547	254	792	669	608	445	494	697	651	696	408	430	----	531	439	746	531	609	578	326	712	697	638
July 12	506	429	721	572	787	674	695	470	580	690	647	692	517	625	----	669	416	751	425	----	419	259	741	621	695
July 13	619	567	739	447	801	667	655	488	460	693	668	693	622	458	----	337	440	724	511	----	556	402	547	649	686
July 14	495	448	705	396	764	595	492	462	484	560	354	673	557	625	----	347	415	752	594	518	558	358	462	641	642
July 15	321	394	726	277	770	556	742	574	520	529	474	673	631	378	----	292	420	761	489	509	341	404	488	674	687
Means	485	544	680	352	782	583	651	445	482	630	595	695	519	521	----	386	415	750	547	575	497	321	577	620	662
Departures	−14	−6	+88	−127	+89	+86	+24	−23	−18	+13	−5	+98	+7	+4	----	−132	−130	+58	+38	+142	−21	−188	+39	----	----
July 16	504	621	472	239	754	559	709	418	471	548	550	667	399	331	----	282	251	729	398	417	454	239	286	549	604
July 17	419	535	176	318	749	409	541	411	531	668	513	658	474	306	----	582	357	702	466	502	287	256	176	648	643
July 18	555	440	750	398	733	255	712	493	234	517	461	643	516	410	----	269	422	742	378	443	335	313	715	629	622
July 19	315	731	662	149	720	484	754	175	491	654	574	639	181	144	----	170	459	745	162	257	234	100	725	610	565
July 20	720	351	670	521	707	586	597	372	639	561	560	551	338	362	----	658	547	706	334	----	658	278	494	540	558
July 21	----	720	687	406	734	477	780	365	572	549	590	642	439	437	----	547	346	744	405	----	267	209	517	590	630
July 22	536	707	636	176	778	549	801	168	696	610	556	650	178	204	----	359	248	691	200	668	104	197	361	515	541
Means	512	586	579	315	739	474	699	343	519	586	544	636	361	314	----	410	376	723	335	458	334	227	468	583	595
Departures	+25	+50	+4	−146	+59	+42	+92	−85	−2	−30	−7	+59	−125	−162	----	−127	−112	+35	−126	+30	−136	−279	−47	----	----
July 23	691	562	633	649	785	554	592	307	700	635	670	676	373	501	----	711	477	717	498	669	233	245	372	607	699
July 24	666	590	117	635	768	492	669	624	308	600	658	656	654	707	----	644	579	721	653	487	619	386	683	603	702
July 25	651	591	478	597	755	242	416	560	578	653	589	646	568	607	----	651	614	727	556	377	584	356	552	623	556
July 26	628	586	674	554	743	159	682	524	506	654	654	655	602	632	----	418	459	720	556	557	477	313	516	578	638
July 27	606	536	653	488	728	228	571	494	568	641	653	----	581	590	----	491	462	693	562	----	67	315	597	635	668
July 28	410	655	665	230	735	437	247	340	356	646	640	622	368	309	----	530	525	707	439	655	504	191	601	558	603
July 29	586	602	688	553	713	334	703	432	654	633	648	619	590	605	----	626	599	714	481	----	610	328	418	681	715
Means	606	589	558	529	747	349	554	469	524	638	644	646	533	564	----	582	530	714	535	549	442	305	534	612	654
Departures	+113	+71	+7	+82	+84	−58	−12	+49	+40	+62	+128	+93	+71	+76	----	+36	+45	+59	+78	+117	+16	−159	+25	----	----
ACCUMULATED DEPARTURES ON JULY 29, 1947																									
	+7,091	−1,757	−3,598	−3,703	+5,929	----	----	−1,778	−1,883	+763	−4,501	+6,734	−693	−4,718	----	----	−2,674	+2,107	----	----	−4,158	−18,879	+1,099	----	----