SOLAR RADIATION DATA FOR JUNE 1949

Explanation of tables 1 and 2 and references to descriptions of instruments, stations, and methods of observation, and to summaries of data, are given in the MONTHLY WEATHER REVIEW, volume 72, No. 1, January 1944, page 43. A list of pyrheliometric stations is given on page 45 of that issue. An explanation of the formula used in computing the air mass values for each station listed in table 1 appears in volume 75, No. 3, March 1947, page 47.

A new solar radiation station has been established at the weather station of the Thomson Laboratory, General Electric Co., 920 Western Avenue, West Lynn, Mass. The station is sponsored by the General Electric Company and is under the supervision of Mr. A. E. Spaulding. An Eppley 180° pyrheliometer and Brown strip-chart potentiometer are used. The coordinates of the station are: latitude 42°27′; longitude 70°58′; elevation 23 meters above m. s. l. Observations to the horizon are unusually free of any important obstructions. Beginning with this issue, daily totals and weekly means of total solar and sky radiation received on a horizontal surface will appear regularly in table 2. The station will be designated in the table as "Lynn, Mass."

Values of data in table 2 for Ithaca, N. Y., appear to be too low and publication of data for that station is being temporarily discontinued until an inspection and instrumental check-up can be made.

It has been decided to withhold or discontinue publication of data from a number of newly established stations until official inspection will have been made. Therefore, beginning with this issue, stations located at San Antonio, Tex., Fort Worth, Tex., Santa Maria, Calif., Las Vegas, Nev., Albany, N. Y., and Portland, Maine are temporarily dropped from the list in table 2.

TABLE 1.—*Solar radiation intensities during June 1949*

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

MADISON, WIS.

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]
	Air mass										
	4.81	3.84	2.88	1.92	*0.96	1.92	2.88	3.84	4.81		
June	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
6	0.75	0.79	0.84	1.06	1.30	1.06				14.8	8.7
7	.80	.90	1.02	1.15	1.36	.13				8.7	7.4
9	.41	.58	.74	.90						9.4	8.7
11	.38	.48	.64	.53	.77					14.8	14.2
16	.49	.59	.74	.88	1.22					15.8	13.7
18	.31	.41	.44	.76	.96					21.8	22.6
19				.84		.79				18.3	22.6
22	.65	.75	.87	1.04	1.20					16.5	12.3
27	.66	.76	.86	1.06	1.16					19.0	19.0
29	.65	.74	.83	.95	1.17	.94				19.0	21.8
30	.33	.44	.58	.77	.99					20.4	28.6
Means	.54	.64	.76	.90	1.13	.98					
Departures	−.08	−.12	−.13	−.13	−.18	−.09					

TABLE 1.—*Solar radiation intensities during June 1949*—Continued

TABLE MOUNTAIN, CALIF.

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]
	Air mass										
	3.76	3.01	2.26	1.51	*0.75	1.51	2.26	3.01	3.76		
June	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
2	1.05	1.13	1.24	1.37							
7	.91	1.01	1.14	1.29							
9				1.30							
13				1.27							
24	1.03	1.12	1.22	1.36							
26				1.41							
27				1.40							
29	1.15	1.23	1.33	1.44							
30				1.45							
Means	1.04	1.12	1.23	1.37							
Departures	+.01	.00	.00	+.01							

BLUE HILL, MASS.

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]
	Air mass										
	4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
June	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
2		0.77	0.90	1.09						11.5	10.9
3	0.50	.61	.78	.99	1.32	1.18	1.01	0.90		9.8	8.4
4			.72	.99	1.43	1.15	.99	.85		14.9	13.7
5				.91						19.4	22.9
6		.96	1.09	1.24		1.12	1.03	.88	.78	13.0	10.5
7						1.07				12.5	9.9
8				1.22		1.23	1.07	.94	.83	6.7	8.3
9							.97			9.6	9.6
13	.43	.52	.64	.86	1.19	.96	.77	.65	.55	21.0	20.7
15						1.08	.85	.77	.67	20.9	19.4
16							.99	.84	.75	21.2	18.1
17						1.03	.92			23.4	24.5
18							.93	.83	.73	23.7	22.4
23				1.07		1.16	1.00	.87	.76	15.1	12.8
26				.98		1.06	.95			26.6	20.6
Means	.46	.72	.83	1.04	1.31	1.10	.96	.84	.72		
Departures	−.19	−.03	−.06	.00	.00	+.05	+.11	+.14	+.13		

LINCOLN, NEBR.

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]
	Air mass										
	4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
June	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
15					1.15	0.90				15.3	16.4
16					1.26	.94	0.77	0.64	0.54	15.3	19.6
17					1.22	.88	.64	.50	.37	18.3	21.8
21					1.33	1.08	.90	.79	.69	22.6	19.0
28					1.36	1.14	.99	.86	.77	21.8	19.6
30					1.24	.88	.71			23.4	26.8
Means					1.26	0.97	0.80	0.70	0.59		
Departures					−.09	−.12	−.10	−.07	−.07		

*Extrapolated.
[1] 75th meridian time.

TABLE 2.—*Daily totals and weekly means of solar radiation (direct + diffuse) received on a horizontal surface during June 1949*

[Gram-calories per square centimeter]

Date	Honolulu, T. H.	Pearl Harbor, T. H.	La Jolla, Calif.	Riverside, Calif.	Nashville, Tenn.	Fresno, Calif.	Davis, Calif.	Washington, D. C.	Columbia, Mo.	Soda Springs, Calif.	Seabrook, N. J.	Grand Lake, Colo.	New York, N. Y.	Salt Lake City, Utah	State College, Pa.	Lincoln, Nebr.	Newport, R. I.	Put-in-Bay, Ohio	East Wareham, Mass.	Blue Hill, Mass.	Boston, Mass.	Lynn, Mass.	Twin Falls, Idaho	East Lansing, Mich.	Madison, Wis.	Toronto, Canada	Summit, Mont.	Fairbanks, Alaska
1949																												
June 4	734	622	667	-----	563	763	782	647	615	838	651	292	652	329	771	244	785	690	728	774	703	719	745	-----	722	461	747	342
June 5	755	685	654	-----	525	755	718	458	566	678	540	618	494	500	628	263	426	754	540	608	502	520	700	-----	744	708	748	411
June 6	797	710	648	-----	714	576	728	699	524	506	696	273	624	365	763	528	777	685	710	793	724	720	687	-----	769	530	700	564
June 7	581	690	615	-----	715	779	717	454	720	779	585	418	676	652	798	269	728	776	696	682	632	659	688	-----	795	735	756	570
June 8	706	659	647	-----	713	798	746	763	390	816	762	337	757	664	829	323	708	753	656	728	649	603	597	-----	682	712	(762)	390
June 9	705	686	596	664	567	778	741	678	404	811	656	378	699	725	773	288	718	710	686	723	688	642	713	-----	721	705	561	654
June 10	774	606	331	498	419	749	701	517	290	820	595	535	568	726	648	348	767	626	712	688	612	566	662	-----	638	583	734	616
Means	722	666	594	-----	602	743	733	602	502	750	641	407	638	566	744	323	701	713	675	714	644	633	684	-----	724	633	715	507
Departures	+80	+78	+54	-----	+45	+60	+73	+86	−67	+26	-----	−87	+146	−26	+220	−186	+154	+147	+157	+192	+171	-----	+106	-----	+210	+29	+115	+1
June 11	541	466	238	538	429	796	749	514	638	838	387	540	593	491	536	604	678	651	640	701	624	625	708	-----	687	580	776	415
June 12	486	346	528	560	447	799	745	614	-----	808	733	435	615	740	713	428	676	574	574	547	552	547	743	-----	664	609	621	702
June 13	311	320	252	585	337	773	733	470	356	810	613	437	434	766	738	128	663	569	655	722	654	653	746	-----	249	573	788	626
June 14	648	584	317	568	103	744	723	670	267	806	729	614	468	725	445	471	714	504	704	520	530	406	718	-----	131	515	730	214
June 15	652	423	253	607	130	783	727	489	776	819	655	696	668	739	590	700	776	374	706	632	620	544	735	-----	563	633	477	634
June 16	671	655	340	626	345	771	728	354	783	830	573	784	590	611	420	684	765	347	679	695	593	634	733	-----	755	529	493	-----
June 17	572	654	634	647	607	786	662	138	800	(706)	472	636	324	724	143	706	743	200	690	590	615	577	585	-----	618	414	370	354
Means	554	493	366	590	343	779	724	464	603	802	595	592	527	685	512	532	716	460	664	630	598	570	710	-----	524	550	608	491
Departures	−60	−49	−156	−3	−160	+71	−4	−38	+40	+23	-----	+38	+49	+40	+47	−7	+202	−64	+142	+136	+126	-----	+97	-----	+25	−12	−6	−21
June 18	664	573	549	650	314	350	413	103	665	357	219	327	494	510	212	159	759	636	691	572	485	661	549	-----	661	474	691	408
June 19	667	527	673	648	584	770	732	305	681	810	493	708	440	653	314	304	701	684	615	508	529	508	362	-----	630	628	590	162
June 20	342	356	700	688	507	796	695	408	605	825	533	716	407	732	647	665	725	694	613	577	501	534	742	-----	701	520	667	234
June 21	568	389	588	614	504	784	727	629	557	838	614	801	545	766	618	740	642	606	585	599	559	533	741	-----	551	331	560	624
June 22	704	647	611	627	645	714	728	529	785	831	497	690	486	704	667	642	451	751	348	387	394	408	736	-----	707	725	(508)	245
June 23	703	663	643	625	744	811	720	717	644	851	776	383	776	440	772	555	789	670	687	775	735	737	719	-----	506	512	404	615
June 24	723	460	441	624	601	798	686	634	470	822	701	756	591	696	710	294	757	663	663	682	611	579	733	-----	353	431	245	279
Means	624	516	601	640	557	718	672	475	629	762	547	626	534	643	563	480	689	672	600	586	545	566	655	-----	587	517	523	367
Departures	+22	−10	+38	+36	+11	00	−29	−27	+66	−24	-----	−23	+47	−4	+29	−85	+134	+74	+90	+48	+91	-----	+1	-----	+53	−1	−33	−156
June 25	530	600	514	500	510	777	806	368	651	786	569	804	482	663	560	769	406	530	369	577	531	464	737	-----	512	166	605	276
June 26	562	504	232	346	564	810	696	622	432	838	535	632	667	434	419	732	726	340	673	764	698	726	710	-----	601	661	423	395
June 27	538	487	362	494	340	818	720	535	621	835	490	771	411	713	307	415	456	625	330	376	386	426	738	-----	707	645	543	234
June 28	590	624	497	449	360	808	690	152	528	835	162	791	507	707	466	741	466	690	581	603	702	739	522	-----	393	597	568	372
June 29	687	614	460	685	642	812	696	167	624	758	479	859	653	675	207	632	746	609	707	745	678	706	658	-----	702	201	281	516
June 30	641	585	441	662	668	793	718	272	776	833	433	737	329	572	518	718	427	629	538	600	548	565	736	-----	646	563	(802)	578
July 1	692	641	308	406	664	770	677	361	-----	848	451	669	553	559	740	621	735	665	509	650	638	632	725	-----	491	582	762	286
Means	606	579	402	506	536	798	715	354	605	819	446	752	515	618	459	661	566	584	530	616	597	608	689	-----	579	488	569	380
Departures	−11	+11	−107	−85	−1	+85	−10	−172	+20	+30	-----	+57	+30	−28	−60	+66	+17	−2	+26	+101	+109	-----	+55	-----	+32	−16	−23	−74
ACCUMULATED DEPARTURES ON JULY 1, 1949	+294	+252	{− 6965}	----	{+ 2625}	+ 6664	+ 1344	− 1687	----	+798	-----	-----	-----	−392	{+ 5817}	− 4907	+ 5075	+ 6958	+ 3213	+ 5474	+ 6188	----	{+ 2793}	----	{+ 5355}	+497	+357	----

NOTE.—Data in parentheses are interpolated.

TABLE 3.—*Daily totals and weekly means of solar and sky radiation plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during June 1949*

Date	4	5	6	7	8	9	10	Mean	11	12	13	14	15	16	17	Mean	18	19	20	21	22	23	24	Mean
Gm cal cm⁻²	273	266	266	271	258	241	256	262	254	200	248	206	218	225	202	222	212	180	217	224	140	232	233	206
Date	25	26	27	28	29	30	1	Mean	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Gm cal cm⁻²	224	235	166	228	253	248	251	229	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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