SOLAR RADIATION DATA FOR MAY 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.

Beginning with this issue values of total solar and sky radiation received on a horizontal surface at Seabrook, N. J., will be included regularly in table 2. The new station located at Seabrook Farms, Seabrook, N. J., is sponsored by Dr. C. W. Thornthwaite, director of the Johns Hopkins Climatological Laboratory, and the equipment and record will be maintained by Mr. D. J. Portman, meteorologist at the Laboratory. A Brown Electronik strip recorder has been installed. The coordinates of the station are: Latitude 39°30′ N., longtitude 75°14′ W., elevation 34 meters, m. s. l. Obstructions: Two small ventilators to the northeast and southwest, neither of which will cause more than slight shading at certain seasons of the year; a 250-foot smokestack 400 yards to the southeast whose shading is inappreciable, but which creates some smoke pollution of the atmosphere for brief periods.

TABLE 1.—*Solar radiation during May 1949*

[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		
May	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
2	------	------	------	------	------	1.14	0.96	------	------	8.4	7.8
3	0.66	0.77	0.88	1.02	1.30	.98	.70	------	------	10.2	14.8
5	.33	------	.57	.69	.98	------	------	------	------	19.6	21.1
6	.47	.60	.77	.87	------	------	------	------	------	17.0	16.5
7	.69	.76	1.01	1.18	------	------	------	------	------	9.1	8.1
10	.68	.76	.88	1.06	1.28	.96	------	------	------	5.1	6.1
11	.39	.43	------	------	------	------	------	------	------	4.8	8.7
12	------	------	------	.62	1.11	------	------	------	------	10.2	9.4
13	.30	.36	.49	.71	1.06	------	------	------	------	11.4	14.2
24	------	.76	.95	1.13	1.38	------	------	------	------	7.2	3.7
26	.68	.77	.94	1.14	1.37	1.07	------	------	------	9.1	6.6
28	.75	.87	.96	1.18	1.29	------	------	------	------	7.8	7.4
Means	.55	.68	.83	.96	1.22	1.04	.83	------	------	------	------
Departures	−.07	−.10	−.11	−.10	−.14	−.01	−.05	------	------	------	------

TABLE 1.—*Solar radiation during May 1949*—Continued

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]
TABLE MOUNTAIN, CALIF.											
	Air mass										
	3.76	3.01	2.26	1.51	*0.75	1.51	2.26	3.01	3.76		
May	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1	------	------	------	------	1.51	------	------	------	------	------	------
4	------	------	------	1.37	------	------	------	------	------	------	------
6	1.01	1.13	1.24	1.38	1.58	------	------	------	------	------	------
10	------	------	------	1.35	------	------	------	------	------	------	------
13	------	------	------	1.34	------	------	------	------	------	------	------
21	1.09	1.19	1.29	1.42	1.56	------	------	------	------	------	------
Means	1.05	1.16	1.26	1.37	1.55	------	------	------	------	------	------
Departures	−.02	−.01	.02	−.01	+.03	------	------	------	------	------	------
BLUE HILL, MASS.											
	Air mass										
	4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
May	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1	------	------	------	0.80	------	------	------	------	------	11.3	13.9
4	0.75	0.85	0.99	1.14	------	------	------	------	------	9.5	9.2
8	.80	.90	1.05	1.23	1.39	1.00	0.84	0.67	0.57	6.5	6.5
14	------	.49	.63	.77	------	------	------	------	------	9.2	12.7
15	------	------	------	------	1.42	------	------	------	------	8.4	8.7
16	------	------	------	1.00	------	.71	.51	.39	.28	9.4	11.5
17	------	------	.57	.69	------	.43	.31	.21	.18	11.9	11.0
18	------	------	------	.70	------	------	------	------	------	16.8	16.9
21	------	------	------	------	1.49	1.21	1.02	.86	.74	9.6	8.6
25	------	------	------	------	1.48	------	------	------	------	14.7	7.8
26	.85	.94	------	1.20	------	------	------	------	------	6.6	9.3
29	------	------	------	------	------	------	1.00	.84	------	8.7	7.9
30	.88	.98	1.07	------	------	------	------	------	------	8.7	7.5
31	.79	.91	1.04	1.20	------	------	------	------	------	9.2	8.5
Means	.81	.84	.89	.97	1.44	.84	.74	.59	.44	------	------
Departures	+.14	+.04	−.06	−.12	+.07	−.22	−.14	−.14	−.19	------	------
LINCOLN, NEBR.											
	Air mass										
	4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
May	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
2	------	------	------	------	1.35	1.08	0.86	0.75	0.64	7.4	12.3
12	------	------	------	------	1.21	.97	.82	.69	.60	14.2	15.3
24	------	------	------	------	1.40	1.12	.92	.82	.71	8.1	7.8
25	------	------	------	------	1.31	1.08	------	------	------	12.3	16.4
26	------	------	------	------	1.32	1.08	------	------	------	11.4	13.2
Means	------	------	------	------	1.32	1.07	.87	.75	.65	------	------
Departures	------	------	------	------	−.05	−.05	−.03	−.05	−.02	------	------

[1] 75th Meridian Time.
*Extrapolated.

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

[Gram-calories per square centimeter]

Date	Honolulu, T. H.	Pearl Harbor, T. H.	La Jolla, Calif.	Riverside, Calif.	Inyokern, Calif.	Oak Ridge, Tenn.	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.	Ithaca, N. Y.	Twin Falls, Idaho	East Lansing, Mich.	Madison, Wis.	Toronto, Canada	Summit, Mont.	Fairbanks, Alaska
1949	*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.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
April 30	470	457	549	670	701	147	115	627	632	456	392	657	630	588	586	534	593	382	644	469	589	644	578	384	597	357	529	526	300	609
May 1	578	483	555	679	718	219	106	723	601	207	492	646	305	408	260	534	137	347	545	430	606	635	576	177	289	223	178	306	378	600
May 2	580	405	266	------	740	240	604	739	360	129	667	496	283	751	327	681	360	646	463	652	492	373	316	260	622	575	676	442	147	338
May 3	706	638	368	------	728	610	695	695	646	610	------	752	500	601	452	578	677	601	206	683	163	206	164	402	403	274	665	597	(334)	503
May 4	700	497	608	576	731	689	694	759	640	610	------	777	644	532	557	336	622	438	631	595	587	639	549	383	655	460	499	498	476	446
May 5	790	708	616	625	750	650	658	731	701	600	------	(824)	617	229	495	338	469	390	608	631	578	612	527	301	622	444	615	331	657	658
May 6	750	672	636	652	761	577	646	738	712	542	------	(809)	548	453	373	533	591	162	340	624	377	334	281	389	660	515	353	486	710	640
Means	653	552	514	640	733	447	502	716	621	451	------	708	504	509	436	505	493	424	491	583	485	492	427	328	550	450	502	455	429	542
Departure	+1	−16	−46	+84	------	------	+41	+84	−11	−16	------	+60	------	−6	+7	−4	+65	−23	+23	+133	+40	+33	+40	−58	+10	+97	+59	−11	−77	+103
May 7	723	675	588	583	667	508	634	634	641	422	------	597	442	395	535	637	601	275	407	448	328	376	318	225	656	440	684	631	686	660
May 8	790	690	528	651	735	671	528	756	439	612	------	418	722	426	683	704	690	48	742	671	684	730	727	449	661	(463)	424	563	704	548
May 9	779	568	470	558	754	437	471	728	603	486	------	584	596	711	556	394	724	508	720	280	658	662	562	320	329	(126)	393	443	654	458
May 10	796	717	615	600	740	488	252	722	675	90	------	479	72	625	150	626	518	632	127	719	116	325	304	432	529	608	706	649	541	535
May 11	724	641	403	590	697	496	744	706	683	108	------	775	120	331	330	190	278	498	463	756	276	563	577	475	525	512	416	664	(711)	518
May 12	788	694	209	504	685	627	691	694	610	679	------	294	742	556	682	490	716	645	130	667	159	114	65	447	618	448	641	500	708	542
May 13	522	380	120	273	698	664	641	686	663	559	------	(526)	621	254	577	675	410	516	648	634	618	669	563	430	502	508	541	545	531	355
Means	732	624	419	537	711	556	566	704	616	422	------	524	474	471	502	531	562	446	463	596	406	491	445	397	546	444	544	571	648	517
Departures	+53	+35	−132	−10	------	------	+77	+54	−45	−56	------	−16	------	−13	+58	+40	+114	−4	−11	+158	−52	+24	+39	−12	−2	+62	+89	+42	+116	+64
May 14	676	573	332	214	482	621	640	155	377	505	------	350	598	690	488	402	313	490	606	532	602	586	497	98	257	472	567	481	578	493
May 15	578	621	324	150	------	637	651	355	390	406	------	245	428	495	590	366	466	296	641	474	634	677	664	438	529	243	274	590	573	586
May 16	548	450	166	162	------	586	458	295	666	214	------	389	485	471	558	374	376	343	669	557	502	592	546	217	406	405	394	544	291	353
May 17	631	446	167	91	256	639	686	509	714	334	------	435	493	344	486	257	476	438	649	618	590	623	538	441	674	356	487	534	190	320
May 18	748	708	474	226	706	701	644	445	451	554	------	246	514	453	538	495	628	390	465	569	520	627	564	299	358	368	430	446	(416)	555
May 19	455	519	475	208	632	662	676	520	210	547	------	(320)	604	676	434	635	445	182	600	376	544	579	542	225	289	92	112	386	302	640
May 20	562	577	659	560	777	537	446	727	658	413	494	132	314	282	43	253	192	185	49	487	66	46	60	165	514	583	330	642	460	460
Means	600	556	371	230	571	626	600	430	495	425	------	302	491	487	448	397	414	332	526	516	494	533	488	269	447	360	371	518	401	487
Departures	−34	+2	−164	−289	------	------	+124	−212	−120	−44	------	−182	------	−14	00	−96	+4	−174	+45	+110	+56	+57	+115	−129	−143	+18	−96	+12	−84	+22
May 21	734	632	675	662	760	524	556	779	724	340	554	(806)	721	366	683	614	344	188	778	581	738	787	735	484	718	362	160	657	172	418
May 22	763	636	644	664	755	302	656	782	685	316	608	809	233	440	62	630	281	522	166	370	249	222	159	91	614	107	491	161	125	109
May 23	568	514	621	666	752	532	482	779	748	602	619	818	513	480	454	740	546	480	575	656	544	478	430	252	702	477	317	490	(425)	411
May 24	506	346	644	628	702	278	200	778	745	632	767	808	641	549	367	733	313	715	622	305	684	608	487	255	719	416	759	319	574	540
May 25	760	424	540	588	760	749	761	762	739	746	642	818	770	811	750	733	802	681	578	550	575	606	515	352	717	223	337	501	733	187
May 26	558	516	420	535	733	541	686	786	725	293	538	815	264	823	214	649	261	693	553	670	581	623	555	121	380	500	773	443	737	336
May 27	353	280	407	467	740	599	388	730	686	611	524	772	643	440	666	433	498	622	97	365	108	37	32	204	446	263	660	340	670	------
Means	606	478	564	602	743	504	533	771	722	506	607	806	541	558	456	647	435	557	481	499	497	480	416	251	614	336	500	416	491	334
Departures	+11	−32	+57	+56	------	------	+16	+105	+77	+8	+61	+178	------	+15	−2	+86	−37	+16	+33	−6	+29	+26	+8	−189	+14	−50	+3	−71	+55	−108
May 28	373	271	446	476	520	707	725	714	652	682	425	718	629	495	424	577	495	598	444	697	383	409	332	396	299	604	755	358	448	647
May 29	612	556	654	510	775	635	591	746	566	734	564	(293)	701	704	458	741	547	261	568	756	524	540	555	267	528	597	732	603	(250)	703
May 30	550	447	668	618	781	142	294	707	692	731	698	273	727	690	589	598	768	486	532	684	519	503	465	430	333	464	713	579	362	715
May 31	498	518	625	585	788	547	506	777	658	625	636	432	696	601	526	259	693	432	713	695	710	709	660	474	268	560	617	702	297	658
June 1	652	627	698	669	798	662	546	804	778	651	------	836	514	429	605	605	758	352	629	690	618	712	696	498	762	526	483	719	261	453
June 2	608	594	676	654	770	657	702	798	753	684	------	786	710	648	541	534	737	722	750	678	699	730	652	442	704	487	345	681	415	539
June 3	681	683	676	------	785	672	688	817	720	734	------	835	775	423	631	557	756	386	765	673	729	763	691	451	599	337	628	546	489	611
Means	568	528	635	585	745	575	579	766	688	692	------	596	679	570	539	553	679	462	629	696	598	624	579	422	499	511	610	598	360	618
Departures	−28	+7	+46	+55	------	------	+66	+94	+105	+174	------	−43	------	−35	+47	−39	+180	−58	+105	+128	+105	+102	+123	−44	−67	+81	+111	+67	−60	+119
ACCUMULATED DEPARTURES ON JUNE 3, 1949																														
	+77	+42	−5,768	−665	------	------	+3,360	+5,152	+1,134	−630	------	+413	------	------	------	−266	+4,165	−3,423	+1,526	+5,873	+308	+2,135	+2,709	−11,123	+980	+553	+3,115	+497	−14	------

NOTE.—Values 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 May 1949.*

Date	30	1	2	3	4	5	6	*Mean*	7	8	9	10	11	12	13	*Mean*	14	15	16	17	18	19	20	*Mean*
Gm cal/cm²	286	282	180	72	272	262	141	*214*	144	283	268	135	243	36	262	*196*	247	282	232	253	254	236	13	*217*
Date	21	22	23	24	25	26	27	*Mean*	28	29	30	31	1	2	3	*Mean*	------	------	------	------	------	------	------	------
Gm cal/cm²	262	95	194	222	215	220	8	*174*	190	205	189	256	269	264	263	*234*	------	------	------	------	------	------	------	------

U. S. GOVERNMENT PRINTING OFFICE: 1949