SOLAR RADIATION DATA FOR AUGUST 1948

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

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, vol. 72, No. 1, January 1944, p. 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 vol. 75, No. 3, March 1947, p. 47.

TABLE 1.—*Solar radiation intensities during August 1948*

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

MADISON, WIS.

Date	Sun's zenith distance: A. M. 78.7°	75.7°	70.7°	60.0°	0.0°	P. M. 60.0°	70.7°	75.7°	78.7°	Vapor pressure 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		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
2	0.74	0.86	0.98	1.13	1.27					13.715	11.818
4	.68	.77	.94	1.11	1.37	1.02				13.206	9.076
5	.69	.81	.90	1.07	1.29	1.06	.88			11.378	9.414
6	.70	.80	.92	1.07						11.378	11.818
12	.75	.84	.99	1.14	1.30					16.458	16.458
14		.53	.91	1.01	1.29					13.206	12.258
18	.73	.83	.95	1.11						17.034	15.848
19	.64	.75	.90	1.08	1.25					14.764	15.848
20		.53	.71	.92	1.14					13.206	15.848
24		.49	.66	.88	1.19					25.906	22.588
25		.59	.74	.94	1.23					20.352	19.642
31		.76	.90	1.04	1.23					12.258	15.848
Means	.70	.71	.88	1.04	1.26	(1.04)	(.88)				
Departures	+.05	−.04	.00	−.02	−.04	−.01	−.01				

LINCOLN, NEBR.

	Air mass 4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
4					1.33					14.58	15.31
10					1.29	0.94	0.69	0.54	0.45	18.29	20.35
16					1.32	1.03	.84	.71	.60	21.07	24.18
18				1.03	1.34	1.06	.88			18.96	15.31
21					1.29	.88				16.94	17.67
23			0.69	.92	1.23	.84	.62	.48		20.35	17.67
24			.75	.97	1.24	.88	.69	.54	.43	21.81	20.35
25			.73	.92	1.15					21.81	18.96
28					1.25	1.03				23.37	22.59
30					1.26	.97	.77	.64	.52	19.64	19.64
31			.86	1.03	1.26	.90	.82	.67	.56	19.64	20.35
Means			.76	.97	1.27	.95	.76	.60	.51		
Departures			−.14	−.11	−.04	−.10	−.10	−.13	−.11		

TABLE 1.—*Solar radiation intensities during August 1948*—Con.

TABLE MOUNTAIN, CALIF.

Date	Sun's zenith distance: A. M. 78.7°	75.7°	70.7°	60.0°	0.0°	P. M. 60.0°	70.7°	75.7°	78.7°	Vapor pressure 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		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1				1.36							
5				1.45							
8				1.46							
9				1.43							
10				1.45							
11	1.16	1.25	1.35	1.48							
12				1.46							
13				1.46							
14				1.47							
15				1.46							
16				1.43							
18				1.44							
19				1.46							
23				1.46							
24				1.46							
25				1.39							
26				1.37							
27				1.42							
29				1.37							
Means	(1.16)	(1.25)	(1.35)	1.44							
Departures	+.03	+.03	+.04	+.04							

BOSTON, MASS.

	Air mass 4.96	3.96	2.97	1.98	*0.99	1.98	2.97	3.96	4.96		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
10				0.96						13.21	12.73
17				0.90						19.64	18.29
Means				(0.93)							
Departures				+.04							

BLUE HILL, MASS.

	Air mass 4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
7	0.69	(0.78)	0.92	1.08						14.9	13.1
8	.73	(.85)	1.00	1.17	1.32					12.6	12.7
9	.63	.74		1.00	1.35	.85				14.0	12.1
10	.61	.73	.86	1.06	1.36		.92			13.8	12.6
14				1.08			.86			17.7	18.0
15	(.66)	.77	.92	1.12	1.36	1.17	.96	.83	(.73)	15.3	15.3
18						.99	.84	.66	(.55)	16.1	15.8
21	.34	.44	.56	.73	1.10		.41	.28	.21	20.7	21.1
25					.99	.74	.48	.36	.26	23.0	25.1
26			.81	.99	1.18	.77	.61	.51	.37	25.2	24.7
29							.91	.81	.71	23.0	20.5
30	.70	.80								17.3	16.8
Means	.62	.73	.84	1.03	1.24	.90	.75	.57	.47		
Departures	−.02	−.04	−.04	.00	−.06	−.12	−.09	−.11	−.11		

*Extrapolated.
[1] 75th meridian time.

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

[Gram calories per square centimeter]

Date	Washington	Madison	Lincoln	New York	Fresno	Fairbanks	Columbia	Boston	Nashville	Twin Falls	La Jolla	Riverside	Blue Hill	Newport	Salt Lake City	State College	Davis	Toronto	Ithaca	Boulder	E. Wareham	Honolulu	Pearl Harbor	E. Lansing	Summit	Soda Springs	Grand Lake
1948	*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.*
July 30	560	713	724	402	727	----	649	578	587	659	610	713	646	594	691	545	660	228	346	640	604	772	599	484	----	----	752
July 31	342	719	616	303	720	----	763	569	----	537	540	695	615	504	660	642	668	651	453	567	466	806	664	586	----	----	598
August 1	71	699	697	113	720	----	649	224	738	612	540	663	203	135	660	629	636	554	488	547	174	682	649	497	----	----	506
August 2	453	556	68	488	720	----	690	434	605	641	493	596	489	542	676	563	674	340	452	495	541	594	448	438	----	----	487
August 3	286	173	159	202	680	----	347	420	432	614	508	640	428	272	509	443	674	342	455	399	394	482	436	237	----	----	535
August 4	105	664	648	149	730	----	410	330	559	537	361	618	316	224	498	427	663	360	417	84	258	166	150	170	----	----	252
August 5	412	698	554	74	720	----	663	409	404	633	287	676	408	381	541	70	657	271	27	344	333	613	634	568	----	----	246
Means	318	603	495	247	717	----	596	423	475	605	477	657	444	379	605	474	662	392	377	440	396	588	511	426	----	----	482
Departures	−161	+119	−26	−204	+47	----	+17	−10	+20	+36	−63	+91	−56	−129	+4	+11	−8	−37	−104	−31	−92	−42	−45	−5	----	----	----
August 6	694	544	89	162	720	----	563	138	622	634	466	652	204	483	557	564	653	475	349	466	511	541	581	488	243	743	600
August 7	465	325	426	618	699	----	322	456	492	620	531	662	577	635	528	475	655	511	440	514	578	718	684	408	327	662	649
August 8	540	361	557	560	739	----	578	581	292	451	609	698	640	652	580	595	625	463	414	485	616	521	643	388	603	733	587
August 9	478	487	465	586	728	----	508	468	574	447	609	692	583	495	678	603	641	548	489	571	429	701	601	506	545	734	492
August 10	483	379	651	568	702	----	618	506	256	601	604	685	585	646	669	687	644	556	488	536	450	620	513	333	412	727	633
August 11	262	402	520	418	702	----	644	485	334	562	514	692	554	642	676	343	641	417	261	447	604	603	481	280	450	726	522
August 12	222	648	538	184	697	----	496	144	461	570	577	679	162	270	660	557	633	421	322	514	253	661	509	363	392	721	548
Means	449	449	464	442	712	----	533	397	432	555	559	680	472	546	621	546	642	484	395	505	492	624	573	395	424	721	576
Departures	−6	−26	−33	+22	+73	----	−7	−9	−23	+4	+38	+136	−11	+54	+1	+72	−10	+44	−55	+16	+28	0	+7	−39	----	----	----
August 13	510	634	566	385	702	----	358	204	356	565	524	619	203	378	649	462	623	346	201	380	322	710	686	290	615	716	451
August 14	534	622	450	596	696	----	405	441	239	606	539	658	574	563	662	543	621	616	366	413	532	714	634	485	613	716	517
August 15	585	591	530	654	688	----	551	590	379	610	598	654	624	651	648	634	646	575	394	635	579	630	583	434	536	721	643
August 16	442	543	650	420	684	----	558	538	582	609	566	646	562	614	646	485	650	541	455	516	572	613	499	443	644	703	462
August 17	340	237	597	282	624	----	645	417	413	612	432	636	474	429	585	533	616	329	287	530	467	613	569	389	609	716	478
August 18	459	603	628	354	672	----	638	482	413	601	380	650	516	592	594	227	627	127	97	324	416	704	628	351	641	709	448
August 19	241	612	591	96	670	----	598	438	457	601	447	634	368	631	639	305	609	255	307	403	537	637	639	442	213	702	483
Means	444	549	573	398	677	----	536	444	406	601	498	642	474	551	632	456	628	399	301	457	489	660	606	405	553	712	497
Departures	0	+90	+80	+13	+52	----	+33	+56	−19	+77	+5	+101	+9	+100	+18	+32	+15	−33	−123	−6	+48	+31	+43	−18	----	----	----
August 20	344	566	510	84	662	----	610	276	585	611	370	698	377	542	622	288	618	480	322	42	549	650	538	502	290	700	685
August 21	386	445	619	532	652	----	447	443	622	593	509	540	540	603	520	457	626	539	319	451	553	628	572	479	575	697	586
August 22	326	550	578	251	651	----	----	420	618	560	590	635	465	544	499	455	564	353	306	455	476	555	527	445	569	412	540
August 23	341	545	595	401	659	----	580	420	488	577	586	666	372	462	559	453	614	453	371	413	412	614	377	385	510	629	324
August 24	479	574	594	366	667	----	620	422	481	587	487	681	474	508	600	452	610	339	329	313	466	306	300	422	165	658	481
August 25	460	579	582	431	640	----	515	424	466	580	445	641	469	491	611	528	580	490	363	380	465	647	508	452	177	665	516
August 26	499	476	394	509	629	----	288	463	406	547	487	500	501	552	600	566	594	467	389	492	512	594	458	330	543	671	463
Means	405	534	553	363	651	----	510	410	524	579	496	623	457	529	573	457	601	446	343	364	490	571	468	431	404	633	514
Departures	−22	+86	+83	−5	+46	----	+66	+40	+64	+54	−5	+94	−15	+71	−9	+28	0	+26	−94	−24	+37	−25	−51	+28	----	----	----
August 27	505	304	438	492	632	----	351	444	549	552	349	586	481	551	606	512	592	317	332	486	454	447	379	350	645	664	527
August 28	520	495	586	405	648	201	469	375	570	509	256	597	380	464	603	493	584	382	284	428	411	612	557	347	601	657	652
August 29	457	439	584	485	623	196	561	482	477	552	224	563	468	540	587	494	526	501	347	494	483	678	614	454	560	612	567
August 30	492	562	538	549	629	199	412	418	384	520	454	558	413	500	449	522	582	161	226	555	427	591	521	314	529	659	659
August 31	327	543	564	431	609	156	572	197	550	477	477	551	196	211	539	507	572	568	265	257	224	596	617	416	580	653	525
September 1	583	270	496	605	602	190	----	554	507	541	339	541	576	617	545	624	579	471	399	260	582	524	463	290	538	655	363
September 2	524	438	466	412	595	173	----	414	543	542	442	553	423	456	535	534	573	339	187	412	439	640	589	280	572	656	530
Means	487	436	525	483	620	----	----	412	511	528	363	564	420	477	552	526	572	391	292	413	431	584	534	350	575	651	546
Departures	+61	+21	+83	+125	+43	----	----	+43	+62	+36	−123	+62	+15	+58	+21	+88	0	−27	−138	−25	+12	+24	+33	−7	----	----	----
ACCUMULATED DEPARTURES ON SEPTEMBER 2, 1948																											
	−2520	+5481	+5194	−6671	+11228	----	----	−3941	----	−903	−3395	+13755	−4949	−1400	−602	−2058	−3689	+1939	−19201	----	−2891	----	----	+147	----	----	----

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 August 1948*

Date	30	31	1	2	3	4	5	Mean	6	7	8	9	10	11	12	Mean	13	14	15	16	17	18	19	Mean
Gm cal/cm²	269	273	100	254	228	171	235	219	110	281	300	288	286	296	92	236	122	311	326	326	282	313	228	272
Date	20	21	22	23	24	25	26	Mean	27	28	29	30	31	1	2	Mean	------	------	------	------	------	------	------	--------
Gm cal/cm²	228	338	302	255	330	308	324	298	316	251	320	273	127	380	291	280	------	------	------	------	------	------	------	--------