SOLAR RADIATION DATA FOR APRIL 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 3 gives values of solar and sky radiation plus radiation reflected from the ground as received on a vertical surface facing south for the current month; this table was first included in the solar radiation data for the January 1948 issue of the REVIEW.

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

[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°	70.0°	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		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
3				0.98						4.6	5.1
6	0.65	0.77	0.80	1.16	1.22					5.1	9.8
8	.76	.91	1.04	1.22	1.51					4.6	4.6
14	.76	.92	1.04	1.22	1.43					5.1	4.0
15	.59	.69	.81							6.6	9.1
16	.64	.68	.77	1.06						7.4	5.8
17	.60	.76	.95	1.16	1.38					4.6	4.4
21	.66	.83	.95	1.10	1.30					5.8	6.6
24	.60	.74	.83	1.03	1.27					14.8	19.0
28										7.8	9.4
29	.76	.87	.90	1.08	1.35					6.6	8.4
30		.71	.86	1.02	1.33					7.8	7.2
Means	.67	.79	.90	1.10	1.35						
Departures	−.03	−.06	−.10	−.08	−.06						
LINCOLN, NEBR.											
	Air mass										
	4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1					1.50					4.2	4.6
5					1.48	1.20	1.05	0.96	0.83	7.4	7.8
7			0.92	1.16	1.42	1.21	1.01	.88	.77	10.2	9.4
8					1.49	1.24	1.11	1.01	.90	3.5	4.0
14				1.07	1.34					6.6	9.8
16			1.05	1.18	1.39					7.8	6.4
21				1.18						7.2	9.1
Means			(.98)	1.15	1.44	1.22	1.06	.95	.83		
Departures			+.01	−.03	−.01	+.05	+.10	+.12	+.13		
CLIMAX, COLO.											
	Air mass										
	3.24	2.59	1.94	1.29	*0.65	1.29	1.94	2.59	3.24		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1						1.47	1.34	1.21			
2				1.59							
5				1.54							
8				1.49							
13				1.54		1.42					
14				1.40							
19				1.44		1.41	1.26	1.14	1.04		
20				1.43							
28				1.39			1.26	1.14	1.07		
29				1.36							
30				1.37		1.21	.98	.81	.69		
Means				1.46		1.38	1.21	1.08	.93		
Departures				+.02		.00	−.01	−.01	−.01		

TABLE 1. *Solar radiation intensities during April 1938—Con.*

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		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
18				1.49							
19				1.39							
20				1.39							
21				1.41							
24	1.10	1.18	1.29	1.42							
25				1.45							
26	1.10	1.19	1.29	1.41							
30				1.43							
Means	(1.10)	(1.18)	(1.29)	1.42							
Departures	+.03	+.02	+.02	+.02							
BOSTON, MASS.											
	Air mass										
	4.96	3.96	2.97	1.98	*0.99	1.98	2.97	3.96	4.96		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
9		0.88	0.96	1.16						5.1	4.0
23				1.11						5.3	6.6
27				1.30						3.3	4.8
Means		(0.88)	(0.96)	1.19							
Departures		+.07	.00	+.09							
BLUE HILL, MASS.											
	Air mass										
	4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
3	0.86	0.94	1.02							4.4	2.6
4	.99	1.08	1.19	1.35						1.7	1.9
5							0.80		0.59	4.1	5.6
6	.36		.64							10.4	14.0
7	.79	.89	1.00							8.1	7.3
10	.93	1.04	1.18	1.35	1.56	1.34	1.17	1.05	.96	2.3	0.9
11	.84	.98	1.11	1.25						2.0	3.6
17				1.36	1.58	1.34	1.17	1.04	.93	3.6	2.5
18	.87	.99	1.13	1.28	1.54	1.25	1.00			2.6	3.7
22	.80	.90	1.02	1.13	1.51	1.16	1.00	.89	.80	4.8	3.8
25				1.08	1.49		1.03	.90	.77	6.1	3.5
26	.88	1.00	1.10	1.27	1.48					4.6	6.5
27	.91	.99	1.12	1.20	1.54	1.22	1.10	.96	.86	3.5	4.1
Means	.82	.98	1.05	1.25	1.53	1.26	1.04	.97	.82		
Departures	+.03	+.08	+.02	+.06	+.13	+.12	+.08	+.15	+.12		
RATIO, BOSTON/BLUE HILL ON COMPARABLE DATES											
				(1.08)							

*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, 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	St. College, Pa.	Davis, Calif.	Toronto, Canada	Ithaca, N. Y.	Boulder, Colo.	East Wareham, Mass.	Honolulu, T. H.	Pearl Harbor, Hawaii	East Lansing, Mich.	Summit, Mont.	Soda Springs, Calif.	Grand Lake, Colo.
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.*	*cal.*
Apr. 1	246	341	565	73	546	38	632	26	190	481	406	450	37	44	530	146	345	463	184	267	523	72	371	361	66	376	609	286
Apr. 2	287	333	539	98	163	136	649	45	566	158	276	112	86	233	359	472	230	151	251	51	557	238	558	593	287	208	164	642
Apr. 3	568	481	501	464	452	138	611	437	539	221	287	178	374	476	344	586	534	470	600	235	572	584	654	617	426	236	331	623
Apr. 4	593	488	496	586	426	281	470	581	559	359	533	474	608	623	349	504	548	352	473	431	464	600	418	606	423	439	126	436
Apr. 5	501	312	534	465	422	140	310	388	196	370	583	280	455	490	502	454	380	416	367	312	511	452	628	621	211	464	178	623
Apr. 6	350	486	312	152	607	239	399	204	332	312	612	525	286	372	205	342	133	523	542	91	545	397	368	341	411	195	420	585
Apr. 7	152	156	612	512	638	62	621	527	258	421	622	634	596	579	624	262	37	554	299	323	638	560	240	240	250	390	519	636
Means	385	371	508	336	465	148	528	316	377	332	474	379	349	402	416	395	315	418	388	244	544	414	462	483	301	330	335	547
Departures	+9	+2	+118	−10	−35	−180	+71	−22	−42	−92	−24	−85	−36	−3	−6	+44	−48	−63	+68	−29	+83	+28	−64	−31	+8	----	−81	----
Apr. 8	238	149	635	53	419	128	622	96	369	472	447	492	157	152	444	586	264	133	480	352	539	191	541	579	359	470	228	617
Apr. 9	482	541	422	378	124	36	476	465	643	328	584	592	501	513	494	364	268	124	490	115	494	533	612	542	312	188	128	544
Apr. 10	629	415	237	622	386	232	338	580	105	347	438	223	655	671	143	555	593	496	579	450	430	626	612	547	414	322	533	249
Apr. 11	78	506	398	195	465	156	538	295	364	463	399	295	360	363	411	92	36	658	22	92	149	370	434	376	129	201	664	245
Apr. 12	290	380	206	116	694	134	49	104	396	448	631	661	123	105	411	226	206	707	511	280	630	103	679	620	219	397	733	536
Apr. 13	123	379	482	100	338	73	82	183	175	488	618	607	198	158	593	89	27	222	173	82	638	197	652	451	119	287	456	723
Apr. 14	46	598	568	40	370	191	679	34	88	314	566	602	73	48	358	68	37	181	23	44	425	60	620	583	41	493	370	614
Means	270	424	421	215	400	136	398	251	306	409	526	496	295	287	407	283	204	360	325	202	472	297	593	528	228	337	445	504
Departures	−128	+20	+11	−138	−145	−216	+45	−89	−67	−43	+3	+21	−74	−117	−43	−85	−182	−185	−31	−93	+25	−92	+15	−8	−105	----	−65	----
Apr. 15	437	378	564	249	415	404	531	186	683	375	573	469	271	369	504	613	379	573	476	124	486	238	718	456	472	290	312	514
Apr. 16	562	522	622	454	530	412	677	461	615	490	594	658	548	492	507	542	460	115	266	309	449	442	552	370	466	368	154	608
Apr. 17	697	563	593	681	697	501	675	607	661	382	610	642	694	688	382	703	657	742	624	490	529	630	733	662	594	223	489	669
Apr. 18	626	321	483	634	694	516	639	606	622	547	480	668	686	690	495	314	560	804	367	457	590	639	711	631	101	544	758	664
Apr. 19	586	233	568	318	640	423	321	418	601	625	236	646	539	436	631	456	343	698	187	199	676	523	688	570	372	530	725	730
Apr. 20	577	183	349	294	705	502	433	220	505	504	292	286	310	318	556	357	411	675	255	114	631	318	684	614	434	666	760	818
Apr. 21	429	609	607	289	510	437	670	108	562	361	266	311	178	176	524	566	139	200	562	75	471	167	578	590	593	636	441	560
Means	559	401	541	417	599	456	564	372	607	469	436	526	461	460	514	507	421	544	391	252	547	422	666	556	433	465	520	652
Departures	+139	−4	+97	+30	+14	+73	+113	−7	+145	−13	−65	+18	+70	+43	+41	+78	+17	−32	−14	−45	+69	+12	+66	+8	+48	----	−41	----
Apr. 22	512	218	180	635	513	534	478	580	571	406	481	330	682	698	176	596	649	499	576	474	397	641	483	573	489	269	361	459
Apr. 23	632	407	230	357	751	590	559	515	537	525	511	592	574	559	577	267	310	686	340	316	343	545	632	552	194	449	732	570
Apr. 24	446	388	358	279	708	585	518	518	434	569	643	707	417	572	689	328	313	676	133	144	17	------	663	544	202	328	697	207
Apr. 25	543	525	326	507	726	578	447	618	610	635	643	680	703	654	410	628	354	664	365	403	563	648	650	608	603	260	733	280
Apr. 26	552	243	260	529	711	193	508	551	491	385	614	668	534	710	369	434	377	375	621	450	607	657	581	510	427	544	177	515
Apr. 27	216	354	561	519	718	284	711	612	532	498	566	650	713	734	586	314	97	311	167	410	642	670	684	634	265	481	366	760
Apr. 28	76	593	661	251	397	544	761	453	549	339	411	292	520	513	661	518	103	114	632	261	653	604	720	689	335	579	266	697
Means	425	390	368	440	646	473	569	549	532	480	553	560	592	634	495	441	315	475	405	351	460	628	631	587	359	416	476	498
Departures	−23	−46	−56	−4	+70	+95	+135	+183	+106	−26	+33	+84	+150	+171	−40	+28	−96	−71	+5	−29	−42	+176	+46	+44	−1	----	−121	----

ACCUMULATED DEPARTURES ON APRIL 28, 1948

−847	+994	+1442	−1792	+4039	−1750	+3150	−1022	−91	----	−371	+3310	−854	−287	−1750	+2709	−1484	−1610	+1708	−3934	−25	−287	----	----	+1281	----	−2681	----

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 March 1948*

Date	1	2	3		5	6	7	Mean	8	9	10	11	12	13	14	Mean
Gm. cal/cm²	16	49	250	434	305	183	418	236	76	329	427	214	75	81	21	175

Date	15	16	17	18	19	20	21	Mean	22	23	24	25	26	27	28	Mean
Gm. cal/cm²	136	330	398	385	314	156	77	257	358	304	321	356	340	336	251	324