SOLAR RADIATION DATA FOR SEPTEMBER 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, 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 September 1949*

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

MADISON, WIS.

Date	Sun's zenith distance, A. M. 78.7° (Air mass 4.81)	75.7° (3.84)	70.7° (2.88)	60.0° (1.92)	0.0° (*0.96)	P. M. 60.0° (1.92)	70.7° (2.88)	75.7° (3.84)	78.7° (4.81)	Vapor pressure 7:30 a. m.[1]	1:30 p. m.[1]
September										*mb.*	*mb.*
1	0.84	0.99	1.07	1.19	1.40	1.11				8.4	8.7
2	.76	.86	.98	1.16	1.38	1.14				8.7	9.8
8	.70	.83	.96	1.11	1.33	1.07				9.8	11.8
9	.62	.77	.90	1.11	1.36	1.07				9.4	12.3
10	.61	.75	.87	1.06						11.0	12.7
16	.59	.70	.83							11.4	12.3
19	.85	1.02	1.11	1.24						8.7	10.2
20	.79	.90	.95	1.15	1.41	1.10				7.8	10.2
23	.84	.96	1.07	1.22						7.8	8.7
24	.74	.92	1.06	1.19	1.37					6.4	7.8
26	.61	.74	.87	1.03	1.23	1.01				9.4	10.6
28			1.03	1.18						8.4	7.8
29	.90	1.03	1.15	1.33	1.48	1.26				3.7	4.8
30	.83	.92	1.04	1.21	1.45	1.21	1.04			5.6	5.6
Means	.74	.88	.99	1.17	1.38	1.12	1.04				
Departures	+.03	+.03	+.02	+.04	+.02	−.02	+.02				

TABLE MOUNTAIN, CALIF.

	Air mass 3.76	3.01	2.26	1.51	*0.75	1.51	2.26	3.01	3.76		
September										*mb.*	*mb.*
6				1.42							
13	1.18	1.26	1.36	1.48							
17				1.46							
30				1.41							
Means	1.18	1.26	1.36	1.44							
Departures	+.03	+.03	+.03	+.04							

LINCOLN, NEBR.

	Air mass 4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
September										*mb.*	*mb.*
1				1.07	1.34	1.12	0.97			8.7	9.1
2			0.77	0.90	1.18					10.2	11.4
3					1.22	0.92	0.69			18.3	21.1
13		0.98	1.07	1.22	1.37	1.20	1.05	0.92	0.79	6.6	8.4
15				1.11	1.34	1.12	0.92			9.4	11.0
19		0.96	1.03	1.18	1.33	1.12	.88			8.7	8.1
23	0.81	.90	1.01	1.16	1.28	1.10	.90	.75		7.8	7.8
24	.69	.81	.94	1.09	1.30					8.4	10.2
Means	0.75	0.91	0.96	1.10	1.30	1.10	0.90	0.84	0.79		
Departures	+.02	+.07	−.01	−.04	−.09	−.05	−.07	+.01	+.07		

BOSTON, MASS.

	Air mass 4.96	3.96	2.97	1.98	*0.99	1.98	2.97	3.96	4.96		
September										*mb.*	*mb.*
20			0.87	1.13						12.9	9.8
21			1.04	1.17						9.8	9.5
27		0.98	1.12	1.17						10.9	13.2
Means		0.98	1.01	1.16							
Departures		+.22	+.10	+.13							

BLUE HILL, MASS.

	Air mass 4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
September										*mb.*	*mb.*
2					1.42	1.24	1.08	0.95	0.86	8.8	9.3
3					1.30	1.15				11.3	12.5
4	0.70	0.80	0.93	1.10	1.27					13.3	14.6
6						1.17		.78	.68	18.3	15.0
10	.97	1.06	1.16	1.27	1.41	1.23	1.09	.96	.86	9.6	9.2
11	.92	1.02	1.14	1.28		1.25	1.06	.94	.82	12.3	12.3
12	.98	1.06	1.13							12.7	12.8
16	.50	.66		1.04		1.13	.99	.82		11.9	11.8
17	.64	.72	.90	1.11				.67	.49	11.4	12.2
19						.98	.80	.74	.66	23.0	18.2
20	.68	.83	.97	1.18						12.6	10.5
21			1.09	1.23						9.7	10.6
24								.93	.83	9.7	9.2
25	.91	1.00	1.15	1.27		1.28	1.13	1.01	.90	7.6	7.4
26	.88	.97	1.09	1.19		1.09	.98	.87	.76	7.6	10.5
27	.92	1.02	1.15							10.5	9.6
30							1.10	.98	.86	14.9	12.8
Means	0.81	0.91	1.07	1.19	1.35	1.17	1.03	.88	.77		
Departures	+.05	+.04	+.09	+.07	−.03	+.05	+.10	+.09	+.10		

RATIO, BOSTON/BLUE HILL ON COMPARABLE DATES

		0.96	0.94	0.96							

*Extrapolated.
[1] 75th Meridian Time.

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

[Gram-calories per square centimeter]

Date	Honolulu, T. H.	Pearl Harbor T. H.	La Jolla, Calif.	Riverside, Calif.	Nashville, Tenn.	Fresno, 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	E. Wareham, Mass.	Blue Hill, Mass.	Boston, Mass.	Lynn, Mass.	Twin Falls, Idaho	E. Lansing, Mich.	Madison, Wis.	Toronto, Canada	Summit, Mont.	Fairbanks, Alaska
Sept. 3	683	612	475	482	488	616	384	452	643	478	273	459	546	570	436	507	552	470	531	520	506	560	397	186	472	307	271
Sept. 4	482	616	455	509	527	611	491	424	676	466	458	479	527	420	357	554	381	536	568	540	522	378	337	202	431	136	----
Sept. 5	623	644	415	523	249	621	497	473	672	481	512	----	512	379	367	492	548	489	473	431	384	523	209	320	343	155	----
Sept. 6	624	583	536	527	566	625	432	91	677	396	441	----	541	491	135	373	570	312	435	433	478	547	269	171	318	317	203
Sept. 7	682	634	527	502	522	615	140	435	525	219	437	297	504	210	235	398	275	377	333	300	320	555	10	164	62	551	156
Sept. 8	564	494	520	463	407	601	403	399	460	331	445	101	341	424	391	278	562	320	394	341	397	541	371	530	194	533	264
Sept. 9	538	525	515	361	622	618	584	626	658	498	436	577	280	462	532	354	572	242	176	165	173	528	444	548	510	515	352
Means	599	587	492	481	483	615	419	414	616	410	429	383	464	422	370	422	494	392	416	390	397	519	291	303	333	359	249
Departures	−1	+21	+12	−14	+86	+49	+28	−64	+30	----	−15	+21	+11	+57	−66	−1	+65	−8	+30	+14	----	+18	−48	−76	−53	+27	+37
Sept. 10	488	458	499	466	518	600	573	552	630	552	433	564	343	572	61	580	547	549	597	562	454	522	405	463	444	82	240
Sept. 11	627	645	509	528	542	600	520	50	629	474	318	391	488	546	220	571	455	525	539	576	550	440	131	114	439	247	178
Sept. 12	477	387	502	536	497	571	381	38	494	306	635	432	559	377	71	574	360	526	562	540	468	553	150	98	402	492	203
Sept. 13	550	493	501	521	286	565	237	568	495	132	238	31	234	50	576	315	75	348	160	115	190	528	89	330	402	518	317
Sept. 14	573	547	466	503	548	543	272	155	573	359	622	220	524	321	302	408	377	334	273	216	195	518	205	378	387	346	181
Sept. 15	626	632	449	486	244	548	474	158	583	379	610	372	516	200	545	153	330	203	174	138	136	479	386	472	283	145	181
Sept. 16	663	548	284	479	118	575	266	321	592	292	585	266	516	386	497	417	394	408	514	481	490	232	361	380	395	96	154
Means	572	530	459	503	394	572	389	263	571	356	491	325	454	350	324	431	363	413	403	376	368	468	247	319	343	275	208
Departures	−18	−27	+12	+33	+7	+39	+8	−153	−9	----	−1	−33	−13	−51	−94	+41	−24	+39	+31	+39	----	−4	−34	−26	−9	−45	+13
Sept. 17	597	560	261	446	438	569	494	265	596	486	569	478	530	484	90	479	394	476	511	469	446	533	348	117	419	171	131
Sept. 18	567	586	367	468	361	537	364	444	579	424	610	418	537	332	530	463	176	425	397	377	332	516	115	512	92	343	263
Sept. 19	640	588	116	444	512	507	436	591	575	424	590	472	504	376	524	330	417	215	382	368	354	498	202	403	304	293	272
Sept. 20	637	624	115	305	574	520	448	563	569	426	590	361	486	341	488	493	374	468	422	420	382	497	290	494	479	465	259
Sept. 21	643	618	176	451	566	513	508	461	544	514	485	463	500	488	468	495	238	408	470	392	392	498	143	447	69	413	120
Sept. 22	631	507	180	394	488	528	472	547	540	417	568	248	468	95	511	375	226	260	194	182	158	494	149	222	300	452	177
Sept. 23	620	591	424	455	554	498	383	568	540	346	477	254	440	232	497	139	331	136	82	70	66	469	247	299	248	446	224
Means	619	582	234	423	499	524	443	491	563	434	555	385	495	335	444	396	308	341	351	325	304	501	213	356	273	369	207
Departures	+22	+28	−157	−31	+112	+30	+78	+49	+22	----	+50	+54	+49	+3	+36	+41	−30	+15	00	+37	----	+73	−70	+2	+3	+32	+38
Sept. 24	605	567	279	447	555	510	448	549	570	427	472	337	336	340	496	465	391	408	359	344	345	268	276	469	329	393	74
Sept. 25	567	465	388	431	359	527	492	538	482	496	509	574	365	489	483	510	464	477	508	484	431	438	334	460	198	344	79
Sept. 26	474	522	442	469	500	495	481	523	441	456	322	430	402	482	362	488	474	464	469	434	411	443	349	443	376	389	67
Sept. 27	596	471	464	459	468	465	93	474	326	366	518	215	424	140	352	346	276	353	364	416	435	364	(242)	274	217	438	54
Sept. 28	617	579	446	453	420	468	282	(542)	446	366	527	211	341	232	496	79	157	55	50	455	35	271	198	274	145	427	174
Sept. 29	553	455	436	452	515	486	85	529	486	34	338	57	221	106	494	118	381	104	93	105	77	325	357	475	201	292	216
Sept. 30	639	601	400	433	550	466	464	532	515	450	257	412	304	466	433	218	461	199	255	278	314	309	364	445	396	64	178
Means	579	523	408	449	481	488	335	527	467	371	420	320	342	322	447	318	372	294	300	301	297	346	303	406	266	335	120
Departures	−16	−7	+30	+6	+126	+25	−9	+156	−6	----	−3	+8	−29	−19	+86	−21	+32	−49	−41	+2	----	−77	+25	+102	−42	+13	−14
ACCUMULATED DEPARTURES ON SEPT. 30, 1949																											
	+266	+413	−10255	----	+7056	+9793	−1232	----	+917	----	----	----	−1029	+7021	−3465	+6013	+9107	+3259	+6531	+10255	----	+4256	−4263	+8526	−49	+644	----

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 Sept. 1949*

Date	3	4	5	6	7	8	9	*Mean*	10	11	12	13	14	15	16	*Mean*	17	18	19	20	21	22	23	*Mean*
Gm cal cm⁻²	344	376	312	281	196	249	115	*267*	412	395	400	80	172	102	413	*282*	413	303	310	344	376	115	51	*275*
Date	24	25	26	27	28	29	30	*Mean*																
Gm cal cm⁻²	279	460	444	342	21	44	208	*257*																

TABLE 4.—*Daily totals and weekly means of solar and sky radiation plus the radiation reflected from the ground, as received on a vertical surface facing north at Blue Hill, Mass., during Sept. 1949*

Date	3	4	5	6	7	8	9	*Mean*	10	11	12	13	14	15	16	*Mean*	17	18	19	20	21	22	23	*Mean*
Gm cal cm⁻²	78	77	88	87	99	95	50	*82*	67	67	88	67	86	61	66	*72*	66	81	69	69	75	65	32	*65*
Date	24	25	26	27	28	29	30	*Mean*																
Gm cal cm⁻²	76	64	58	71	20	45	62	*57*																

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