SOLAR RADIATION DATA FOR JANUARY 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.

The order of stations listed in table 2 has been revised beginning with this issue. The new order is based upon increasing value of station latitude, starting with the lowest value.

TABLE 1.—*Solar radiation intensities during January 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		
January	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
5	0.59	0.74	1.01	------	------	------	------	------	------	2.7	3.
6	------	1.02	1.19	------	1.60	------	------	------	------	2.9	4.2
7	.80	.91	1.01	------	1.34	------	------	------	------	5.1	6.1
8	.68	.76	.91	------	1.44	------	------	------	------	5.1	5.6
12	------	.86	1.06	------	1.59	------	------	------	------	3.7	3.7
13	.76	.94	1.13	------	------	------	1.07	------	------	2.6	3.8
14	.80	.92	1.04	------	1.37	------	------	------	------	3.7	5.1
19	.81	1.01	1.19	------	1.59	------	------	------	------	1.5	1.0
22	.94	1.01	1.16	------	1.35	------	------	------	------	.5	1.2
29	.98	1.11	1.25	------	1.57	------	------	------	------	.5	.6
Means	.80	.93	1.10	------	1.47	------	(1.07)	------	------	------	------
Departures	−.09	−.09	−.07	------	−.06	------	−.07	------	------	------	------
BLUE HILL, MASS.											
	Air mass										
	4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
January	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
3	0.92	1.04	1.21	------	------	------	------	------	------	2.7	3.9
4	.93	------	------	------	------	------	------	------	------	3.7	5.1
8	.62	.77	------	------	------	------	------	.77	0.63	5.9	6.3
13	------	------	1.14	------	------	------	------	------	------	2.7	2.1
15	.97	1.09	1.15	------	------	------	------	.74	.68	1.5	1.9
20	1.02	1.13	1.27	------	------	------	------	1.16	1.06	3.3	2.4
29	.87	.99	1.13	------	------	------	------	.92	------	3.2	2.5
30	1.07	1.16	1.27	------	------	------	1.26	1.11	1.00	.9	1.4
Means	.91	1.03	1.20	------	------	------	1.26	.94	.84	------	------
Departures	−.03	−.01	+.05	------	------	------	+.09	−.09	−.08	------	------

TABLE 1.—*Solar radiation intensities during January 1949*—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]
CLIMAX, COLO.											
	Air mass										
	3.24	2.59	1.94	1.29	*0.65	1.29	1.94	2.59	3.24		
January	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
6	------	1.32	1.40	------	------	------	1.38	1.24	1.22	------	------
7	------	------	------	------	------	------	1.41	1.31	1.21	------	------
8	1.29	1.37	1.45	------	------	------	------	------	------	------	------
10	------	------	1.42	------	------	------	1.38	1.28	1.18	------	------
11	------	------	1.43	------	------	------	1.47	1.36	1.27	------	------
12	1.25	1.32	1.42	------	------	------	------	------	------	------	------
13	------	1.20	1.33	------	------	------	------	------	------	------	------
17	1.32	1.41	1.46	------	------	------	1.46	1.30	1.26	------	------
19	1.30	1.38	1.46	------	------	------	------	------	------	------	------
21	1.30	1.39	1.49	1.59	------	------	------	------	------	------	------
22	------	1.35	1.42	------	------	------	------	------	------	------	------
29	------	------	------	1.62	------	1.58	1.44	1.38	1.27	------	------
Means	1.29	1.34	1.43	(1.60)	------	(1.58)	1.42	1.31	1.24	------	------
Departures	+.01	.00	−.01	+.02	------	+.03	.00	.00	+.02	------	------
LINCOLN, NEBR.											
	Air mass										
	4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
January	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
6	0.86	0.99	1.14	------	------	------	1.16	1.03	0.96	3.66	4.40
7	.92	1.03	1.16	------	------	------	------	------	------	4.40	5.59
15	.98	1.07	1.18	------	------	------	1.16	1.01	------	6.91	7.18
19	1.00	1.13	1.24	------	------	------	------	------	------	1.03	1.15
21	------	------	------	------	------	------	1.15	.98	.83	1.15	1.03
31	------	------	------	------	------	------	1.15	1.09	.98	1.58	3.66
Means	.94	1.06	1.18	------	------	------	1.16	1.03	.92	------	------
Departures	+.01	+.01	−.01	------	------	------	−.03	−.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		
January	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
5	------	------	------	1.56	------	------	------	------	------	------	------
7	------	------	------	1.56	------	------	------	------	------	------	------
8	------	------	------	1.49	------	------	------	------	------	------	------
12	------	------	------	1.55	------	------	------	------	------	------	------
27	1.22	1.32	1.42	1.55	------	------	------	------	------	------	------
Means	(1.22)	(1.32)	(1.42)	1.54	------	------	------	------	------	------	------
Departures	+.03	+.04	+.03	+.03	------	------	------	------	------	------	------
BOSTON, MASS.											
	Air mass										
	4.96	3.96	2.97	1.98	*0.99	1.98	2.97	3.96	4.96		
January	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
3	------	0.84	------	------	------	------	------	------	------	3.5	4.0
4	------	.90	0.93	------	------	------	------	------	------	3.8	5.3
14	------	.45	.62	------	------	------	------	------	------	4.6	3.6
20	0.86	.93	------	------	------	------	------	------	------	3.5	2.5
Means	(.86)	.78	(.78)	------	------	------	------	------	------	------	------
Departures	+.09	−.06	−.19	------	------	------	------	------	------	------	------

*Extrapolated.

[1] 75th Meridian Time.

NOTE.—Figures in parentheses are interpolated.

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

[Gram-calories per square centimeter]

Date	Honolulu, T. H.	Pearl Harbor, T. H.	La Jolla, Calif.	Riverside, Calif.	Inyokern, Calif.	Nashville, Tenn.	Fresno, Calif.	Davis, Calif.	Washington, D. C.	Columbia, Mo.	Soda Springs, Calif.	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.
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.*
Jan. 1	480	447	148	112	-----	39	184	87	181	55	39	106	93	74	82	112	51	247	56	-----	14	43	78	110	71	66	41
Jan. 2	410	449	246	255	-----	36	284	265	117	239	261	98	150	99	220	167	68	239	70	73	74	66	165	154	142	54	117
Jan. 3	475	436	268	293	355	13	270	275	215	46	295	163	178	117	193	2	214	161	190	175	129	46	209	172	55	105	186
Jan. 4	466	364	273	217	337	44	266	275	91	53	284	107	183	136	94	200	171	28	130	155	145	96	224	22	26	72	195
Jan. 5	434	368	275	248	343	42	267	264	11	295	278	157	17	158	20	175	15	19	24	13	12	7	200	58	127	1	46
Jan. 6	267	247	261	266	334	372	245	248	238	299	(360)	283	194	149	177	242	129	70	73	112	110	114	190	143	192	71	52
Jan. 7	313	358	268	258	335	261	257	219	237	199	272	284	173	147	219	225	182	186	155	172	152	66	205	26	192	56	15
Means	406	381	249	236	341	101	253	233	156	170	241	171	141	126	144	160	118	136	100	117	91	63	182	98	115	61	92
Departures	+8	+19	+9	−13	-----	−7	+104	+78	−3	+14	+21	-----	+27	−11	+42	−10	−16	+42	−32	−17	−4	−35	+36	+8	−13	−15	−25
Jan. 8	68	85	267	199	329	77	243	262	130	188	69	243	169	79	114	192	155	221	162	185	153	74	212	140	193	93	145
Jan. 9	342	298	182	192	241	198	249	276	129	37	235	220	106	88	172	38	70	206	95	88	74	83	216	118	68	112	179
Jan. 10	300	331	183	171	250	204	304	277	128	18	306	285	72	210	56	56	59	37	59	63	42	5	100	28	80	88	192
Jan. 11	441	395	87	156	165	104	208	269	139	-----	296	294	167	64	119	68	105	79	137	158	133	73	198	41	69	64	192
Jan. 12	415	398	169	248	278	37	301	134	91	34	225	296	86	115	75	204	97	62	104	104	87	28	126	18	198	54	198
Jan. 13	492	397	90	77	223	44	216	180	234	152	273	287	196	120	144	235	226	219	207	210	187	53	133	175	205	39	205
Jan. 14	474	383	118	133	353	48	247	189	210	76	(94)	158	105	222	32	154	131	77	144	176	151	24	85	23	233	191	71
Means	362	327	156	168	248	101	252	226	152	84	214	254	129	128	102	135	121	129	130	141	118	49	153	78	149	92	169
Departures	+18	+12	−93	−82	-----	−31	+90	+30	0	−62	−6	-----	+3	−16	−35	−46	−35	−3	−25	−15	+5	−62	−5	−19	+14	+13	+25
Jan. 15	439	393	181	279	305	120	284	282	155	89	(314)	146	134	-----	135	86	241	28	169	251	186	121	156	5	35	62	168
Jan. 16	30	20	295	323	380	178	286	288	223	51	319	274	158	262	91	196	186	54	151	182	136	13	229	44	107	50	146
Jan. 17	159	146	293	316	354	29	303	215	57	237	(167)	316	80	115	80	271	71	72	48	29	11	19	153	7	151	116	87
Jan. 18	80	79	139	176	280	136	160	119	51	33	171	258	140	240	12	44	38	16	54	36	19	41	235	T	51	35	134
Jan. 19	267	230	36	45	127	52	30	18	36	277	48	320	31	162	77	255	48	88	40	51	49	60	196	44	260	47	178
Jan. 20	350	323	96	104	188	286	251	92	262	114	(366)	127	266	252	273	45	256	149	236	297	216	104	250	118	108	142	186
Jan. 21	412	376	103	113	464	27	225	306	17	55	87	314	66	127	20	249	107	27	91	116	55	48	109	43	106	44	107
Means	248	224	163	194	300	118	220	188	114	122	210	251	125	193	98	164	135	62	113	137	96	58	190	37	117	71	144
Departures	−76	−81	−97	−88	-----	−29	+26	−40	−42	−43	−28	-----	+1	+16	−33	−23	−25	−72	−31	−21	−16	−56	+13	−84	−37	−1	−15
Jan. 22	428	455	100	58	335	99	249	204	235	84	235	237	221	101	225	32	200	238	179	256	180	86	174	179	260	133	218
Jan. 23	457	482	286	204	383	88	179	256	26	41	236	150	200	161	37	29	167	79	134	251	184	110	164	38	44	14	198
Jan. 24	429	460	124	280	324	170	213	316	103	56	333	340	45	191	34	150	25	79	19	49	13	10	295	14	143	5	237
Jan. 25	374	364	241	280	82	43	368	320	31	33	361	394	105	220	32	105	36	29	29	32	8	18	263	7	83	80	155
Jan. 26	463	491	307	333	358	41	364	270	9	93	(321)	298	23	256	19	145	53	34	62	70	21	20	251	46	65	45	86
Jan. 27	392	413	233	313	372	107	318	306	39	21	314	260	80	129	37	46	121	44	85	122	48	92	104	50	32	99	109
Jan. 28	508	440	308	360	425	61	315	332	132	150	372	217	19	298	209	269	14	36	16	27	7	42	238	41	199	14	246
Means	436	444	228	261	326	87	286	286	82	68	310	271	99	194	85	111	88	77	75	115	66	54	213	54	118	56	179
Departures	+58	+55	−34	+4	-----	−84	+70	+42	−94	−132	+38	-----	−56	−3	−73	−107	−80	−83	−78	−60	−69	−77	+31	−72	−62	−29	+19
ACCUMULATED DEPARTURES ON JANUARY 28, 1949																											
	+56	+35	−1405	−1253	-----	−1057	+2030	+770	−973	−1561	+175	-----	−175	−98	−693	−1302	−1092	−812	−1162	−791	−588	−1610	+525	−1169	−686	−224	+28

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 January 1949*

Date	1	2	3	4	5	6	7	Mean	8	9	10	11	12	13	14	Mean	15	16	17	18	19	20	21	Mean
Gm cal/cm²	8	89	415	347	13	289	445	229	540	137	89	431	164	417	296	296	489	262	11	13	22	542	52	199
Date	22	23	24	25	26	27	28	Mean	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Gm cal/cm²	368	318	16	8	25	57	38	119	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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