SOLAR RADIATION AND SUNSPOT DATA FOR JANUARY 1947

[Solar Radiation Investigations Section, I. F. Hand, in charge]

SOLAR RADIATION OBSERVATIONS

Explanations of the tables 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 also given on page 45 of the same issue.

TABLE 1.—*Solar radiation intensities during January 1947*

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

Date	Sun's zenith distance										
	7:30 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p.m.
	75th mer. time	Air mass									75th mer. time
		A. M.				*1.0	P. M.				
	e.	5.0	4.0	3.0	2.0		2.0	3.0	4.0	5.0	e.
MADISON, WIS.											
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
Jan. 4	0.7	0.94	1.13	1.18	------	1.50	------	------	------	------	1.2
Jan. 8	5.1	.99	1.10	1.25	------	1.53	------	------	------	------	3.5
Jan. 9	2.3	.95	1.08	1.22	------	1.51	------	------	------	------	2.7
Jan. 16	2.9	.79	1.02	1.25	------	1.60	------	------	------	------	2.1
Jan. 17	2.9	.61	.80	1.10	------	1.53	------	------	------	------	3.8
Jan. 18	3.7	.62	.80	.96	------	1.50	------	------	------	------	5.1
Jan. 23	3.7	.48	.62	.59	------	------	------	------	------	------	5.3
Jan. 31	2.3	.80	.95	1.11	------	1.52	------	------	------	------	2.7
Means	------	.77	.94	1.08	------	1.53	------	------	------	------	------
Departures	------	−.13	−.08	−.10	------	.00	------	------	------	------	------
LINCOLN, NEBR.											
Jan. 3	0.8	1.00	1.13	1.27	------	------	------	1.29	1.18	1.04	0.8
Jan. 7	4.2	------	.79	1.15	------	------	------	1.18	1.05	.94	5.6
Jan. 8	4.6	.89	1.02	1.14	------	------	------	------	1.05	.92	5.3
Jan. 9	4.0	.85	.94	1.09	------	------	------	1.12	.99	.88	5.8
Jan. 10	5.1	.88	.99	1.14	------	------	------	------	------	------	6.4
Jan. 14	3.5	.96	1.09	1.22	------	------	------	1.22	1.09	.96	2.6
Jan. 16	1.4	.94	1.06	1.20	------	------	------	1.20	1.11	.98	3.2
Jan. 17	2.7	.87	1.00	1.05	------	------	------	1.16	1.03	.90	4.0
Jan. 20	3.5	------	------	------	------	------	------	1.27	1.11	1.02	2.6
Jan. 21	1.2	.98	1.11	1.24	------	------	------	------	------	------	1.4
Jan. 23	4.2	.88	.99	1.14	------	------	------	1.16	1.03	.90	5.6
Jan. 24	5.1	.88	1.07	1.09	------	------	------	1.14	.99	.88	9.8
Means	------	.91	1.02	1.16	------	------	------	1.19	1.06	.94	------
Departures	------	−.01	−.03	−.03	------	------	------	.00	+.01	.00	------
BLUE HILL, MASS.											
Jan. 4	3.5	------	------	------	------	------	------	1.16	0.99	0.90	3.6
Jan. 5	2.2	1.01	1.10	1.19	------	------	------	------	------	------	2.7
Jan. 6	3.5	------	------	------	------	------	------	------	------	.94	3.3
Jan. 8	3.7	1.05	1.17	1.27	------	------	------	------	1.06	------	2.9
Jan. 9	1.3	1.04	1.09	1.29	------	------	------	1.29	1.18	1.10	0.9
Jan. 10	1.5	.99	1.06	1.15	------	------	------	------	------	------	1.7
Jan. 12	5.4	------	------	------	------	------	------	1.19	------	.99	3.5
Jan. 14	4.2	.95	1.07	1.17	------	------	------	------	------	------	6.1
Jan. 18	3.2	------	------	.92	------	------	1.18	.95	.78	.67	4.0
Jan. 19	1.1	.95	1.06	1.17	------	------	------	------	------	------	2.4
Jan. 21	6.6	.83	.96	------	------	------	1.49	------	1.12	1.02	2.8
Jan. 22	1.1	------	------	------	------	------	------	1.23	1.15	1.05	0.9
Jan. 23	1.5	.81	.96	1.08	------	------	------	------	------	------	1.7
Jan. 25	7.0	------	------	------	------	------	------	1.10	.95	.82	6.6
Jan. 26	5.9	.88	.98	1.10	------	------	------	------	------	------	6.9
Jan. 28	5.1	------	------	------	------	------	1.08	.77	.67	------	5.7
Jan. 31	12.5	------	------	------	------	------	------	------	.64	.52	8.0
Means	------	.95	1.05	1.15	------	------	1.25	1.10	.95	.89	------
Departures	------	+.01	+.01	.00	------	------	−.08	−.06	−.08	−.03	------

TABLE 1.—*Solar radiation intensities during January 1947*—Con.

Date	Sun's zenith distance										
	7:30 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p.m.
	75th mer. time	Air mass									75th mer. time
		A. M.				*1.0	P. M.				
	e.	5.0	4.0	3.0	2.0		2.0	3.0	4.0	5.0	e.
TABLE MOUNTAIN, CALIF.											
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
Jan. 1	------	------	------	------	1.47	------	------	------	------	------	------
Jan. 2	------	------	------	------	1.56	------	------	------	------	------	------
Jan. 4	------	------	------	------	1.53	------	------	------	------	------	------
Jan. 6	------	------	------	------	1.49	------	------	------	------	------	------
Jan. 7	------	------	------	------	1.54	------	------	------	------	------	------
Jan. 8	------	1.21	1.29	1.40	1.52	------	------	------	------	------	------
Jan. 9	------	------	------	------	1.51	------	------	------	------	------	------
Jan. 13	------	------	------	------	1.54	------	------	------	------	------	------
Jan. 14	------	------	------	------	1.53	------	------	------	------	------	------
Jan. 15	------	------	------	------	1.55	------	------	------	------	------	------
Jan. 16	------	------	------	------	1.55	------	------	------	------	------	------
Jan. 17	------	------	------	------	1.53	------	------	------	------	------	------
Jan. 18	------	1.20	1.30	1.40	1.53	------	------	------	------	------	------
Jan. 19	------	------	------	------	1.54	------	------	------	------	------	------
Jan. 20	------	------	------	------	1.50	------	------	------	------	------	------
Jan. 21	------	------	------	------	1.51	------	------	------	------	------	------
Jan. 24	------	------	------	------	1.44	------	------	------	------	------	------
Jan. 25	------	------	------	------	1.53	------	------	------	------	------	------
Jan. 26	------	------	------	------	1.47	------	------	------	------	------	------
Jan. 27	------	------	------	------	1.51	------	------	------	------	------	------
Jan. 29	------	------	------	------	1.54	------	------	------	------	------	------
Jan. 30	------	------	------	------	1.51	------	------	------	------	------	------
Means	------	(1.20)	(1.30)	(1.40)	1.52	------	------	------	------	------	------
CLIMAX, COLO.											
Jan. 3	------	------	1.18	1.48	1.62	------	------	1.48	1.37	1.28	------
Jan. 4	------	------	------	------	------	------	1.52	1.37	1.27	1.17	------
Jan. 5	------	------	------	1.27	------	------	1.47	1.40	------	------	------
Jan. 7	------	1.28	1.40	1.48	1.57	------	------	1.40	1.26	1.16	------
Jan. 8	------	1.24	1.34	1.46	1.55	------	------	1.45	1.31	1.24	------
Jan. 9	------	1.28	1.40	1.48	1.60	------	------	1.40	1.30	1.21	------
Jan. 10	------	------	------	------	------	------	1.59	1.48	1.36	------	------
Jan. 11	------	------	------	1.44	1.59	------	------	1.45	1.34	1.26	------
Jan. 12	------	------	------	1.48	1.61	------	------	------	------	------	------
Jan. 16	------	------	1.32	1.46	1.56	------	------	1.40	1.28	1.19	------
Jan. 17	------	------	1.30	1.44	1.58	------	------	1.39	1.27	1.18	------
Jan. 20	------	------	------	1.41	1.56	------	1.56	1.36	1.28	------	------
Jan. 21	------	------	------	1.44	1.56	------	1.54	1.40	1.23	1.14	------
Jan. 22	------	1.28	1.38	1.47	1.56	------	1.54	1.45	1.34	1.25	------
Jan. 23	------	1.24	1.33	1.44	1.55	------	1.49	------	------	------	------
Jan. 25	------	------	------	------	1.53	------	------	1.31	1.30	1.19	------
Jan. 28	------	------	------	------	1.60	------	------	------	------	------	------
Means	------	1.26	1.33	1.44	1.57	------	1.53	1.41	1.30	1.21	------
BOSTON, MASS.											
Jan. 8	5.8	------	1.13	------	------	------	------	------	------	------	2.7
Jan. 9	1.3	0.72	.97	1.08	------	------	------	1.19	1.01	0.86	1.5
Jan. 13	1.6	------	.70	.83	------	------	------	------	------	------	3.1
Jan. 23	1.8	------	.70	1.00	------	------	------	------	------	------	1.7
Means	------	(.72)	.88	.97	------	------	------	(1.19)	(1.01)	(.86)	------
Departures	------	−.06	+.03	−.02	------	------	------	+.16	+.10	+.05	------
RATIO, BOSTON/BLUE HILL ON COMPARABLE DATES											
	------	(0.69)	0.91	(0.88)	------	------	------	(0.92)	(0.86)	(0.78)	------

*Extrapolated.

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.	East Lansing, Mich.	New York, N. Y.	Fresno, Calif.	Columbia, Mo.	Boston, Mass.	Nashville, Tenn.	Twin Falls, Idaho	La Jolla, Calif.	Riverside, Calif.	Blue Hill, Mass.	Newport, R. I.	State College, Pa.	Put-in-Bay, Ohio	Salt Lake City, Utah	Davis, Calif.	Tooele, Utah	Toronto, Canada	Ithaca, N. Y.	Boulder, Colo.	Soda Springs, Calif.
1947	*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	35	105	170	78	37	56	67	100	12	83	291	272	103	95	40	60	182	253	246	35	167	206	250
Jan. 2	76	50	68	30	19	166	33	20	26	192	284	333	42	48	43	8	246	262	266	12	50	139	280
Jan. 3	37	151	267	64	20	78	145	5	26	209	281	304	17	14	51	29	207	257	322	23	42	265	283
Jan. 4	146	233	303	148	201	58	254	158	20	213	276	309	169	159	158	203	184	102	324	162	142	200	271
Jan. 5	46	65	259	177	65	41	277	167	29	176	278	289	208	166	148	79	140	54	261	99	196	228	209
Jan. 6	228	186	218	55	189	23	234	140	169	109	168	290	176	203	184	59	106	212	148	119	140	97	267
Jan. 7	77	101	255	24	31	99	193	70	20	211	280	316	84	75	72	25	174	53	260	33	76	242	262
Means	92	127	220	82	80	74	172	94	43	171	266	302	114	109	99	66	177	170	261	69	116	197	260
Departures	−69	−1	+51	+2	−34	−65	+35	−14	−49	+23	+19	+52	−26	−32	−3	−30	------	+23	+51	−4	+11	+3	------
Jan. 8	236	225	247	112	167	65	266	192	150	207	285	299	208	213	126	65	141	163	281	81	146	240	228
Jan. 9	228	218	263	151	209	74	273	201	194	223	279	300	245	234	154	169	126	60	287	95	191	241	266
Jan. 10	179	130	242	62	150	63	255	155	250	144	292	288	193	237	158	69	121	69	240	61	193	221	208
Jan. 11	250	101	200	34	98	61	39	45	174	182	240	289	87	87	197	65	107	43	235	58	204	243	281
Jan. 12	185	124	36	190	168	87	26	144	76	72	102	116	187	145	200	264	130	119	138	191	195	272	52
Jan. 13	68	18	98	26	123	137	101	164	50	175	159	238	228	205	46	44	176	168	320	50	119	206	111
Jan. 14	28	198	269	3	15	268	166	15	35	156	243	221	41	26	19	70	146	276	185	56	124	136	188
Means	168	145	194	82	133	108	161	131	133	166	228	250	170	164	128	106	135	128	241	85	167	223	191
Departures	+16	+10	+12	−13	+8	−47	+7	+15	+1	+10	−29	−3	+11	+2	−16	−15	------	−50	−3	+7	+49	+19	------
Jan. 15	17	92	76	118	7	282	53	20	76	230	286	354	81	58	17	84	220	280	317	67	34	225	295
Jan. 16	34	228	296	68	26	267	226	12	8	184	292	353	45	50	39	60	227	280	317	60	39	263	294
Jan. 17	138	219	270	155	174	282	184	176	36	229	290	350	211	174	127	171	214	267	312	156	217	266	296
Jan. 18	161	222	277	173	156	282	230	168	39	258	302	------	210	197	131	221	186	258	305	158	56	251	293
Jan. 19	86	224	254	189	115	266	92	140	37	185	309	------	206	184	98	188	141	248	242	133	190	199	254
Jan. 20	48	87	288	29	25	264	142	10	69	193	295	334	24	25	29	14	234	244	293	18	54	251	294
Jan. 21	267	241	250	161	222	272	316	159	284	223	305	339	194	151	129	94	232	279	300	114	155	281	312
Means	107	188	244	128	104	274	178	98	79	214	297	346	139	120	82	119	208	265	298	101	106	248	291
Departures	−49	+34	+57	−3	−20	+85	+5	−28	−66	+37	+33	+61	−20	−43	−49	−23	------	+36	+53	+1	−12	+31	------
Jan. 22	291	184	242	182	220	234	286	227	294	239	311	344	255	253	226	253	218	238	334	207	202	286	294
Jan. 23	221	211	281	96	113	242	254	147	210	124	282	328	178	205	195	91	89	244	276	37	145	167	290
Jan. 24	265	210	279	33	164	263	236	151	45	108	314	326	150	166	69	85	172	193	226	23	102	183	303
Jan. 25	271	136	211	75	210	272	177	156	185	124	338	332	188	171	224	136	235	225	255	121	239	178	254
Jan. 26	39	126	258	191	105	249	249	156	275	140	323	333	212	209	30	229	148	271	183	43	48	217	265
Jan. 27	273	151	289	159	238	128	334	46	304	138	137	324	63	68	243	153	71	251	131	168	262	166	51
Jan. 28	263	56	20	119	159	264	76	179	146	108	122	116	229	234	231	214	125	205	159	199	263	281	157
Means	232	153	226	122	173	236	230	152	208	140	261	300	182	187	174	166	151	232	223	114	180	211	230
Departures	+53	−27	+5	−3	+16	+28	+29	−2	+20	−38	−8	+46	+1	+12	+8	+11	------	+6	−1	−10	+38	−20	------
ACCUMULATED DEPARTURES ON JAN 28, 1947																							
	−343	+112	+875	−119	−210	+7	+532	−203	−658	+224	+105	+1,092	−238	−427	+420	−399	------	+105	+700	−112	+602	+231	------

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1947

By LUCY T. DAY

[Equatorial Division, U. S. Naval Observatory]

[Communicated by the Superintendent, U. S. Naval Observatory.] All measurements and spot counts were made at the Naval Observatory from plates taken at the observatories indicated. Difference in longitude is measured from the central meridian, positive toward the west. Latitude is positive toward the north. Areas are corrected for foreshortening and expressed in millionths of Sun's hemisphere. For each day under Mount Wilson group number, longitude, latitude, area of spot or group, and spot count, are included respectively: number of groups, assumed longitude of center of the disk, assumed latitude of center of the disk, total areas of spots and groups, and total spot count.

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	*h m*		°	°	°	°				
Jan. 1	11 43	8344	−82	179	−22	82	121	1	F	Mt. Wilson.
		8339	−20	241	+33	41	97	8		
		8339	−10	251	+32	36	145	2		
		8338	−2	259	+17	20	48	1		
		8338	+1	262	+15	18	97	1		
		8343	+30	291	−21	34	24	4		
		8337	+42	303	−18	44	12	1		
		8342	+49	310	+16	51	12	1		
		8341	+50	311	+26	57	12	1		
		8335	+65	326	+16	67	242	1		
		8334	+67	328	−19	68	24	1		
		(9)		(261)	(−3)		834	22		

Footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1947—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	*h m*		°	°	°	°				
Jan. 2	15 22	8344	−69	177	−22	70	121	1	P	Mt. Wilson.
		8339	+4	250	+32	35	145	1		
		8338	+14	260	+17	24	145	2		
		(3)		(246)	(−3)		411	4		
3	10 52	8344	−57	178	−23	60	145	2	F	Do.
		8339	+10	245	+33	36	24	4		
		8339	+17	252	+33	40	121	7		
		8338	+25	260	+19	34	12	1		
		8338	+27	262	+17	33	145	1		
		8346	+46	281	−25	49	24	2		
		8345	+53	288	+17	56	36	4		
		(5)		(235)	(−3)		507	21		
4	10 36	8347	−70	152	+41	78	24	1	F	U. S. Naval.
		8344	−57	165	−23	60	24	3		
		8344	−45	177	−22	47	291	1		
		8339	+23	245	+34	42	24	1		
		8339	+31	253	+33	47	121	1		
		8338	+40	262	+18	44	145	1		
		8346	+58	280	−24	61	36	2		
		(5)		(222)	(−3)		665	10		