POSITIONS, AREAS, AND COUNTS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, U. S. Navy (Ret.), 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 longitude, latitude, area of spot or group, and spot count, are included assumed longitude of center of the disk, assumed latitude of center of the disk, total area 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
1940	h	m		°	°	°	°				
Dec. 1	10	51	7062	+3	71	+14	13	218	9	VG	Mt. Wilson.
			7063	+74	142	+13	74	291	10		
			7064	+74	142	+11	74	145	4		
					(68)	(+1)		654	23		
Dec. 2	11	19	7066	−79	336	+8	79	12	1	VG	Do.
			7065	−77	338	+2	77	24	2		
			7062	+17	72	+14	22	206	4		
			(*)	+56	111	+14	57	6	2		
					(55)	(+1)		248	9		
Dec. 3	10	15	7067	−74	328	+8	74	48	2	G	U. S. Naval.
			7066	−69	333	+8	69	73	1		
			7065	−62	340	+2	62	97	4		
			7062	+30	72	+14	33	218	4		
					(42)	(+1)		436	11		
Dec. 4	11	10	7069	−86	303	+18	86	121	1	F	Do.
			7068	−63	326	−12	64	97	4		
			7067	−60	329	+8	61	97	7		
			7066	−56	333	+7	57	48	1		
			7065	−50	339	+2	50	109	4		
			7062	+42	71	+14	44	218	2		
					(29)	(0)		690	19		
Dec. 5	14	33	7069	−71	303	+18	72	170	1	G	Do.
			7068	−50	324	−11	51	170	6		
			7067	−49	325	+8	50	170	7		
			7066	−40	334	+7	41	73	1		
			7065	−33	341	+2	33	145	7		
			7062	+58	72	+14	60	145	1		
					(14)	(0)		873	23		
Dec. 6	10	50	7071	−85	278	−14	85	48	1	VG	Do.
			7069	−59	304	+18	60	73	1		
			7067	−40	323	+8	41	97	6		
			7068	−39	324	−11	40	267	10		
			7067	−36	327	+6	37	97	7		
			7066	−30	333	+6	31	48	1		
			7065	−21	342	+2	21	121	10		
			7070	−6	357	−16	18	12	2		
			7062	+69	72	+14	70	145	1		
					(3)	(0)		908	39		
Dec. 7	11	13	7072	−84	265	−7	84	24	1	VG	Mt. Wilson.
			7071	−71	278	−14	72	48	1		
			7069	−48	301	+20	51	73	1		
			7069	−47	302	+19	50	6	1		
			7067	−27	322	+9	29	121	14		
			7068	−25	324	−11	27	339	22		
			7067	−23	326	+7	25	97	7		
			7066	−15	334	+7	16	61	1		
			7065	−8	341	+3	9	12	1		
			7065	−8	341	+2	9	145	23		
			7070	+7	356	−17	19	12	5		
			7062	+83	72	+14	83	145	1		
					(349)	(0)		1,083	78		
Dec. 8	11	38	7074	−78	258	−10	79	485	1	G	U. S. Naval.
			7072	−69	267	−7	69	48	1		
			7071	−57	279	−14	58	73	1		
			7069	−35	301	+19	40	6	1		
			7069	−33	303	+19	38	73	1		
			7067	−13	323	+9	15	97	12		
			7068	−11	325	−11	16	339	15		
			7067	−8	328	+8	12	97	4		
			7066	−2	334	+8	8	48	1		
			7065	+7	343	+3	7	73	4		
			7070	+20	356	−17	26	12	4		
			7073	+22	358	−7	23	12	3		
					(336)	(0)		1,363	48		

POSITIONS, AREAS, AND COUNTS OF SUN SPOTS—Con.

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
	h	m		°	°	°	°				
Dec. 9	13	23	7074	−65	257	−10	67	533	6	VG	U. S. Naval.
			7072	−60	262	−6	61	73	2		
			7072	−54	268	−7	55	121	7		
			7071	−44	278	−14	46	48	2		
			7069	−20	302	+20	27	97	4		
			7076	−18	304	+1	18	48	4		
			(*)	+1	323	+10	10	48	3		
			7068	+3	325	−11	12	485	15		
			7067	+8	330	+9	13	97	5		
			7066	+12	334	+8	15	48	1		
			7075	+19	341	+19	27	97	7		
			7065	+22	344	+2	22	73	1		
					(322)	(0)		1,768	57		
Dec. 10	12	54	7077	−70	239	+13	71	24	1	VG	Do.
			7077	−70	239	+11	70	97	6		
			7074	−52	257	−11	53	436	11		
			7072	−47	262	−6	48	121	7		
			7072	−41	268	−7	42	121	13		
			7071	−30	279	−14	34	48	3		
			7069	−7	302	+20	22	97	9		
			7076	−5	304	+1	5	121	12		
			(*)	+13	322	+10	16	24	4		
			7068	+16	325	−11	20	436	20		
			7067	+22	331	+9	23	145	11		
			7066	+26	335	+8	28	36	1		
			7075	+32	341	+19	37	194	14		
			7065	+35	344	+1	35	73	7		
			7073	+51	0	−7	52	73	5		
					(309)	(0)		2,046	124		
Dec. 11	13	21	7077	−57	238	+10	58	145	8	G	Do.
			7074	−39	256	−11	40	388	3		
			7072	−30	265	−7	32	145	9		
			7071	−17	278	−14	22	24	1		
			7079	−4	291	−5	6	12	1		
			7069	+7	302	+19	21	61	1		
			7076	+9	304	+1	9	145	8		
			7078	+9	304	−2	9	24	1		
			7068	+29	324	−11	31	291	10		
			7067	+37	332	+9	38	170	13		
			7066	+39	334	+8	40	24	1		
			7075	+46	341	+20	50	315	5		
			7065	+48	343	+1	48	73	3		
			7073	+63	358	−7	64	12	1		
					(295)	(0)		1,829	65		
Dec. 12	14	0	7077	−43	239	+10	44	194	14	G	Do.
			7074	−31	251	−10	32	12	1		
			7074	−25	257	−10	26	315	3		
			7072	−17	265	−7	19	121	9		
			7069	+21	303	+18	28	48	1		
			7076	+23	305	+1	23	194	15		
			7078	+23	305	−3	23	48	4		
			7068	+43	325	−12	44	218	7		
			7067	+50	332	+9	51	170	6		
			7075	+60	342	+19	63	315	8		
			7065	+62	344	+1	62	12	1		
					(282)	(−1)		1,647	69		
Dec. 15	14	51	7082	−59	183	−11	59	97	2	F	Mt. Wilson.
			7081	−48	194	+12	50	73	5		
			7077	−4	238	+11	13	194	35		
			7077	+3	245	+12	13	194	15		
			7084	+14	256	−20	23	6	1		
			7074	+17	259	−10	20	267	2		
			7083	+21	263	+13	25	6	2		
			7072	+29	271	−8	30	12	4		
			7071	+38	280	−12	40	61	11		
			7076	+67	309	+3	67	194	21		
			7078	+69	311	−5	69	24	1		
			7080	+86	328	+3	86	97	1		
					(242)	(−1)		1,225	90		
Dec. 17	11	43	7082	−32	185	−11	33	97	4	F	U. S. Naval.
			7081	−22	195	+11	25	48	1		
			7077	+23	240	+11	26	73	7		
			7077	+28	245	+12	31	194	4		
			7074	+41	258	−10	42	242	2		
			7084	+41	258	−18	44	24	3		
			(*)	+50	267	+11	52	48	4		
			7071	+63	280	−11	63	48	3		
					(217)	(−1)		774	28		

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	h m		°	°	°	°				
Dec. 18	11 17	7085	−81	123	−13	81	24	1	G	U. S. Naval.
		7082	−19	185	−11	21	61	1		
		7081	−10	194	+11	16	48	4		
		7077	+36	240	+11	38	73	8		
		7077	+42	246	+12	44	218	1		
		7074	+55	259	−10	55	242	4		
		7084	+55	259	−17	56	12	1		
		(*)	+63	267	+11	65	73	5		
				(204)	(−1)		751	25		
Dec. 19	12 56	7085	−68	122	−13	69	97	4	G	Do.
		7082	−11	179	−3	11	12	1		
		7082	−6	184	−10	10	61	1		
		7077	+50	240	+11	52	24	8		
		7077	+57	247	+12	59	291	3		
		7074	+69	259	−9	69	218	3		
		(*)	+75	265	+11	77	18	1		
				(190)	(−2)		721	21		
Dec. 20	13 22	7085	−54	123	−13	55	194	12	G	Do.
		7082	+8	185	−10	12	48	1		
		7077	+57	234	+12	59	291	4		
		7074	+81	258	−9	81	145	2		
				(177)	(−2)		678	19		
Dec. 21	12 35	7087	−75	89	+8	76	48	1	G	Do.
		7085	−41	123	−13	42	339	13		
		7082	+21	185	−10	22	48	1		
		7086	+57	221	−11	58	24	3		
		7077	+81	245	+12	82	48	1		
				(164)	(−2)		507	19		
Dec. 22	11 33	7087	−61	90	+8	62	73	1	F	Do.
		7085	−27	124	−13	30	339	13		
		7082	+33	184	−10	34	24	1		
				(151)	(−2)		436	15		
Dec. 23	11 6	7087	−48	90	+8	49	73	2	F	Do.
		7085	−14	124	−13	18	388	21		
		7089	+15	153	+9	19	48	6		
		7088	+70	208	+13	72	24	1		
				(138)	(−2)		533	30		
Dec. 24	11 52	7087	−35	90	+8	37	48	1	F	Do.
		7085	−1	124	−13	11	242	15		
		7089	+26	151	+9	29	48	7		
		7088	+84	209	+13	86	97	1		
				(125)	(−2)		435	24		
Dec. 25	11 22	7087	−21	91	+8	24	48	2	F	Do.
		7085	+12	124	−13	16	218	12		
		7089	+38	150	+10	40	48	2		
		7090	+48	160	+13	50	97	5		
				(112)	(−2)		411	21		
Dec. 26	11 35	7091	−35	64	+14	39	12	3	VG	Mt. Wilson.
		7087	−7	92	+8	13	61	5		
		7085	+25	124	−13	26	218	14		
		7089	+51	150	+8	52	24	4		
		7090	+63	162	+12	65	194	5		
				(99)	(−2)		509	31		
Dec. 27	11 1	7087	+6	92	+7	11	61	12	VG	Mt. Wilson.
		7085	+38	124	−14	40	339	33		
		7090	+76	162	+12	77	194	5		
				(86)	(−2)		594	50		
Dec. 29	13 43	7095	−84	334	+7	84	145	1	F	U. S. Naval.
		7093	−78	340	+18	79	48	1		
		7094	−76	342	+12	77	48	1		
		7092	−57	1	−9	58	145	5		
		7087	+37	95	+8	39	48	4		
		7085	+68	126	−13	69	145	4		
				(58)	(−3)		579	16		
Dec. 30	13 45	7095	−69	336	+8	69	145	2	F	Do.
		7093	−64	341	+18	67	48	1		
		7094	−63	342	+12	65	48	1		
		7092	−43	2	−9	43	170	5		
		7087	+49	94	+7	50	48	4		
		7085	+79	124	−13	79	48	3		
				(45)	(−3)		507	16		
Dec. 31	12 57	7095	−56	336	+7	57	121	5	G	Do.
		7093	−52	340	+18	56	48	1		
		7094	−50	342	+12	53	48	1		
		7092	−29	3	−9	25	242	9		
		7087	+62	94	+7	63	12	3		
				(32)	(−3)		471	19		

Mean daily area for 27 days.....=840.

*=Not numbered.
VG=very good; G=good; F=fair; P=poor.

PROVISIONAL RELATIVE SUNSPOT NUMBERS

Dependent on observations at Zurich only. Data furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich]

November 1940	Relative numbers	November 1940	Relative numbers	November 1940	Relative numbers
1	*38	11	60	21	34
2	41	12	*a* 66	22	16
3	**Ec* 64	13	*Mc* 99	23	**Eac* 27
4	*a* 61	14	*Eac* 70	24	**Mc* 36
5	67	15	.....	25	*d* 56
6	43	16	*a* 100	26	53
7	56	17	88	27	*Mc* 52
8	*Eac* 67	18	87	28	*54
9	76	19	65	29	42
10	.....	20	47	30	31

Mean, 28 days=57.0

*=Observed at Locarno.
a=Passage of an average-sized group through the central meridian.
b=Passage of a large group through the central meridian.
c=New formation of a group developing into a middle-size or large center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central circle zone.
d=Entrance of a large or average-sized center of activity on the east limb.