POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR DECEMBER 1946

By LUCY T. DAY

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[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 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
1946	*h m*		°	°	°	°				
Dec. 1	12 44	8305	−77	231	−24	77	388	10	G	Mt. Wilson.
		8302	−64	244	+24	66	48	8		
		8302	−59	249	+24	61	24	6		
		8298	−32	276	−21	37	48	20		
		8298	−27	281	−19	33	121	9		
		8297	−23	285	+17	27	61	1		
		8304	−15	293	−18	24	12	3		
		8303	+3	311	+12	12	48	16		
		8295	+4	312	−17	19	97	1		
		8303	+5	313	+13	13	61	15		
		8299	+6	314	+17	16	12	3		
		(8)		(308)	(+1)		920	92		
2	10 59	8305	−69	228	−23	71	16	3	VG	Do.
		8305	−66	231	−24	69	388	10		
		8305	−63	234	−23	67	48	6		
		8302	−53	244	+24	57	12	4		
		8298	−22	275	−20	30	36	16		
		8298	−19	278	−18	27	24	10		
		8298	−15	282	−19	25	97	7		
		8297	−11	286	+18	20	61	1		
		8306	−6	291	+26	26	6	1		
		8304	−1	296	−17	18	12	2		
		8295	+15	312	−16	23	97	1		
		8303	+16	313	+13	20	242	36		
		8299	+17	314	+17	23	16	7		
		(9)		(297)	(+1)		1,055	104		
3	10 41	8307	−75	209	+37	78	97	1	P	U. S. Naval.
		8305	−54	230	−25	58	194	2		
		8305	−49	235	−24	53	218	4		
		8298	−1	283	−20	21	73	1		
		8297	+2	286	+18	16	48	1		
		8303	+27	311	+12	30	145	3		
		8295	+29	313	−17	33	61	1		
		8303	+33	317	+13	35	194	1		
		(6)		(284)	(+1)		1,030	14		
4	11 55	8312	−65	205	−8	66	12	1	F	Do.
		8307	−63	207	+37	69	121	8		
		8305	−41	229	−25	47	121	6		
		(*)	−37	233	−15	41	24	2		
		8305	−36	234	−24	42	194	12		
		8298	+12	282	−20	23	73	1		
		8297	+15	285	+19	24	48	1		
		8303	+39	309	+18	43	73	5		
		8303	+40	310	+12	41	73	7		
		8295	+42	312	−17	45	61	1		
		8303	+45	315	+13	47	194	1		
		(8)		(270)	(0)		994	45		
5	11 11	8312	−51	206	−9	52	24	1	F	Do.
		8307	−48	209	+36	57	61	1		
		8305	−28	229	−25	37	97	5		
		8311	−24	233	+31	39	36	2		
		8305	−22	235	−24	32	121	8		
		8310	+3	260	+31	31	24	4		
		8298	+26	283	−21	33	73	1		
		8297	+28	285	+19	34	48	1		
		8309	+42	299	−18	45	24	3		
		8308	+50	307	+18	52	121	4		
		8303	+51	308	+12	52	6	1		
		8295	+56	313	−17	58	48	1		
		8303	+59	316	+15	60	194	1		
		(11)		(257)	(0)		887	33		
6	11 24	8313	−80	164	−16	80	194	1	F	Do.
		8312	−39	205	−9	39	12	1		
		8307	−36	208	+36	49	48	2		
		8305	−16	228	−25	30	97	4		
		8305	−10	234	−24	26	121	6		
		8310	+18	262	+30	35	24	1		
		8298	+39	283	−21	43	73	1		
		8308	+64	308	+17	66	291	6		
		8303	+70	314	+14	71	194	1		
		(8)		(244)	(0)		1,054	23		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR DECEMBER 1946—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
1946	*h m*		°	°	°	°				
Dec. 7	10 19	8314	−80	151	+9	80	97	1	G	U. S. Naval.
		8313	−69	162	−16	70	97	4		
		8307	−24	207	+36	43	48	3		
		8305	−4	227	−26	27	61	4		
		8305	−3	228	−25	25	73	10		
		8310	+31	262	+30	42	6	1		
		8298	+51	282	−21	53	73	1		
		8309	+73	304	−20	74	194	8		
		8308	+80	311	+17	80	170	5		
		8303	+86	317	+14	86	194	2		
		(9)		(231)	(0)		1,013	39		
8	12 12	8314	−68	149	+10	69	97	1	F	Do.
		8313	−56	161	−14	57	73	3		
		8313	−53	164	−15	54	97	4		
		8316	−13	204	+17	21	24	2		
		8307	−12	205	+36	37	24	1		
		8305	+11	228	−25	27	48	2		
		8305	+15	232	−24	28	73	6		
		8298	+65	282	−22	67	97	1		
		8315	+75	292	−17	76	194	2		
		8309	+83	300	−18	84	170	1		
		(8)		(217)	(0)		897	23		
9	10 43	8317	−65	140	+27	68	24	1	F	Do.
		8314	−55	150	+10	56	73	1		
		8313	−39	166	−15	41	73	1		
		8316	−3	202	+18	19	24	1		
		8316	+1	206	+18	18	24	1		
		8307	+2	207	+36	36	24	1		
		8305	+23	228	−25	34	48	3		
		8305	+27	232	−25	37	48	5		
		8310	+55	260	+32	60	48	2		
		8298	+78	283	−22	78	97	1		
		(8)		(205)	(0)		483	17		
10	11 4	8319	−85	106	−10	85	291	3	F	Do.
		8319	−79	112	−4	79	339	1		
		8317	−49	142	+27	54	121	6		
		8314	−41	150	+10	43	48	1		
		8313	−26	165	−15	30	73	8		
		8318	−19	172	−22	29	24	2		
		8316	+14	205	+18	24	145	11		
		8307	+15	206	+37	41	16	1		
		8305	+35	226	−25	42	24	1		
		8305	+41	232	−25	47	48	3		
		8310	+69	260	+32	71	97	5		
		(9)		(191)	(0)		1,226	42		
11	14 1	8320	−76	100	−20	76	121	3	G	Do.
		8319	−75	101	−7	75	970	10		
		8319	−70	106	−10	70	582	10		
		8319	−65	111	−4	65	582	1		
		8317	−36	140	+27	43	24	2		
		8317	−30	146	+27	40	12	4		
		8314	−25	151	+9	26	48	1		
		8314	−11	165	−15	18	48	7		
		8313	−8	168	−14	15	6	1		
		8318	−5	171	−25	25	12	2		
		8316	+28	204	+17	33	242	6		
		8316	+32	208	+16	35	267	3		
		8310	+81	257	+32	81	97	2		
		(8)		(176)	(0)		3,011	52		
12	11 22	8320	−72	93	−23	73	242	11	VG	Mt. Wilson.
		8319	−70	95	−12	70	121	14		
		8320	−64	101	−20	65	145	4		
		8319	−63	102	−7	63	1,164	7		
		8319	−58	107	−12	58	630	12		
		8319	−57	108	−7	57	145	16		
		8319	−52	113	−3	52	533	1		
		8317	−24	141	+26	36	16	3		
		8314	−13	152	+9	15	48	1		
		8321	−3	162	−32	32	12	6		
		8313	0	165	−15	14	121	7		
		8313	+4	169	−13	13	97	2		
		8316	+41	206	+17	45	145	17		
		8316	+46	211	+17	48	218	5		
		8305	+71	236	−24	72	12	1		
		(8)		(165)	(−1)		3,649	107		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR DECEMBER 1946—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
1946	*h m*		°	°	°	°				
Dec. 13	10 39	8320	−61	91	−23	63	194	1	F	U. S. Naval.
		8319	−55	97	−11	56	121	5		
		8320	−50	102	−20	53	145	2		
		8319	−49	103	−6	49	1,164	12		
		8319	−43	109	−9	43	436	16		
		8319	−42	110	−4	42	145	3		
		8319	−39	113	−3	39	582	1		
		8319	−38	114	−4	38	12	1		
		8314	0	152	+9	10	24	1		
		8313	+6	158	−12	11	97	1		
		8313	+12	164	−14	16	48	5		
		8322	+35	187	+17	39	48	3		
		8316	+51	203	+17	54	194	2		
		8316	+58	210	+17	60	291	1		
		(6)		(152)	(−1)		3,501	54		
14	13 16	8324	−75	62	+13	76	291	3	G	Do.
		8320	−48	89	−23	52	170	2		
		8320	−41	96	−22	45	24	3		
		8319	−39	98	−12	41	291	7		
		8320	−37	100	−20	41	73	1		
		8319	−35	102	−7	35	970	20		
		8319	−28	109	−10	29	436	21		
		8319	−27	110	−6	27	194	8		
		8319	−24	113	−3	24	582	1		
		8314	+13	150	+10	17	24	6		
		8313	+32	169	−12	34	73	2		
		8323	+42	179	−22	45	12	3		
		8316	+67	204	+17	69	194	2		
		8316	+72	209	+17	74	194	2		
		(7)		(137)	(−1)		3,528	81		
15	10 40	8326	−78	48	+10	80	485	3	VG	Mt. Wilson.
		8324	−67	59	+12	68	194	30		
		8324	−61	65	+12	62	291	1		
		8320	−36	90	−23	40	73	11		
		8320	−29	97	−22	33	24	9		
		8319	−27	99	−12	29	194	30		
		8320	−25	101	−20	30	73	1		
		8319	−22	104	−8	23	1,164	40		
		8319	−15	111	−7	16	291	43		
		8319	−15	111	−11	17	194	1		
		8319	−11	115	−3	11	582	1		
		8321	+38	164	−32	47	48	12		
		8313	+41	167	−15	43	24	14		
		8313	+48	174	−12	49	73	6		
		8325	+52	178	−24	55	48	4		
		8323	+57	183	−22	59	6	1		
		8316	+77	203	+15	78	291	5		
		(9)		(126)	(−1)		4,055	212		
16	11 15	8326	−64	48	+12	65	388	5	F	U. S. Naval.
		8324	−55	57	+15	57	145	10		
		8324	−47	65	+14	49	218	1		
		8320	−23	89	−22	30	73	2		
		8319	−16	96	−12	18	194	5		
		8327	−14	98	+22	27	48	2		
		8320	−11	101	−20	21	61	1		
		8319	−9	103	−7	11	970	24		
		8319	−2	110	−10	9	194	1		
		8319	−1	111	−6	5	242	22		
		8319	+2	114	−3	2	582	1		
		(*)	+45	157	+24	50	73	2		
		8321	+48	160	−32	54	61	2		
		8321	+53	165	−31	59	48	1		
		8313	+53	165	−17	55	73	6		
		8313	+60	172	−12	60	97	3		
		8325	+65	177	−23	67	73	3		
		(9)		(112)	(−1)		3,540	91		
17	10 19	8329	−80	19	+15	80	48	1	F	Do.
		8326	−50	49	+12	51	533	4		
		8324	−41	58	+15	44	291	10		
		8324	−33	66	+14	35	242	1		
		8328	−11	88	+17	21	24	2		
		8320	−10	89	−22	22	61	1		
		8319	−2	97	−12	11	194	3		
		8320	+2	101	−20	19	61	1		
		8319	+4	103	−7	7	970	13		
		8319	+11	110	−10	14	97	1		
		8319	+12	111	−6	12	291	10		
		8319	+15	114	−3	15	582	1		
		8321	+62	161	−32	65	121	2		
		8321	+68	167	−31	70	97	2		
		8313	+68	167	−17	69	97	1		
		8313	+72	171	−12	72	145	2		
		8325	+78	177	−25	79	48	3		
		(9)		(99)	(−1)		3,902	58		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR DECEMBER 1946—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
1946	*h m*		°	°	°	°				
Dec. 18	11 47	8329	−66	19	+15	67	48	1	VG	U. S. Naval.
		8326	−38	47	+12	40	606	3		
		8324	−27	58	+15	31	388	29		
		8324	−19	66	+14	25	218	1		
		8328	+2	87	+19	20	12	1		
		8320	+3	88	−22	21	12	6		
		8319	+11	96	−12	14	194	17		
		8320	+15	100	−20	23	61	1		
		8319	+18	103	−8	20	582	22		
		8319	+21	106	−7	21	291	17		
		8319	+26	111	−6	26	145	18		
		8319	+26	111	−10	27	121	1		
		8319	+29	114	−3	29	558	1		
		8321	+74	159	−32	76	145	2		
		8321	+81	166	−31	82	97	2		
		8313	+81	166	−14	81	121	2		
		(8)		(85)	(−1)		3,599	124		
19	10 50	8331	−69	4	−10	69	73	1	G	Do.
		8329	−56	17	+14	58	24	1		
		8329	−50	23	+15	52	24	1		
		8326	−28	45	+12	31	24	3		
		8326	−25	48	+11	27	727	1		
		8324	−17	56	+13	23	194	15		
		8324	−12	61	+12	17	242	18		
		8330	−11	62	+24	27	12	3		
		8324	−4	69	+12	13	242	1		
		8328	+15	88	+17	24	12	1		
		8319	+26	99	−12	28	267	16		
		8320	+28	101	−20	33	48	1		
		8319	+31	104	−8	32	533	21		
		8319	+38	111	−10	39	194	6		
		8319	+42	115	−5	42	582	1		
		(8)		(73)	(−1)		3,198	90		
20	13 18	8332	−81	337	−16	81	12	1	VG	Mt. Wilson.
		8332	−78	340	−17	78	97	1		
		8331	−60	358	−10	60	48	10		
		8331	−55	3	−12	56	36	3		
		8329	−44	14	+13	46	97	7		
		8329	−39	19	+15	42	97	5		
		8326	−12	46	+12	18	727	10		
		8324	0	58	+13	15	242	69		
		8330	+2	60	+24	26	6	1		
		8324	+10	68	+12	16	242	1		
		8319	+40	98	−11	41	242	40		
		8320	+42	100	−19	44	48	1		
		8319	+45	103	−8	45	242	35		
		8319	+45	103	−7	45	291	1		
		8319	+51	109	−8	51	170	15		
		8319	+56	114	−4	56	533	1		
		(8)		(58)	(−2)		3,130	201		
22	11 14	8336	−82	311	−15	82	121	1	F	U. S. Naval.
		8335	−69	324	+20	75	291	4		
		(*)	−61	332	−6	61	12	1		
		8332	−54	339	−16	56	48	2		
		8332	−49	344	−17	51	121	2		
		8333	−33	0	+27	42	97	7		
		8331	−30	3	−9	31	61	4		
		8329	−17	16	+15	24	194	1		
		8329	−11	22	+16	21	97	9		
		8326	+17	50	+12	22	727	8		
		8324	+26	59	+14	30	194	20		
		8324	+39	72	+13	42	242	1		
		8319	+61	94	−9	61	6	1		
		8320	+66	99	−19	68	24	1		
		8319	+70	103	−8	70	339	4		
		8319	+78	111	−9	78	97	1		
		8319	+82	115	−4	82	388	1		
		(11)		(33)	(−2)		3,059	68		
23	12 12	8336	−71	308	−15	72	24	1	F	Do.
		8336	−69	310	−16	69	194	2		
		8335	−60	319	+20	62	73	2		
		8334	−58	321	−17	61	73	1		
		8335	−57	322	+19	60	436	2		
		8334	−53	326	−17	55	97	2		
		8332	−40	339	−16	42	48	4		
		8332	−37	342	−17	40	61	1		
		8333	−21	358	+27	36	242	9		
		8333	−18	1	+27	35	315	1		
		8329	−5	14	+15	18	194	3		
		8329	+2	21	+16	18	145	5		
		8326	+29	48	+12	32	970	3		
		8326	+41	60	+14	44	194	6		
		8324	+50	69	+13	52	388	1		
		(8)		(19)	(−2)		3,454	43		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR DECEMBER 1946—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
1946	*h m*		°	°	°	°				
Dec. 24	10 27	8337	−78	289	−19	78	97	4	G	U. S. Naval.
		8336	−58	309	−15	59	194	2		
		8335	−49	318	+21	52	73	7		
		8334	−45	322	−17	47	61	5		
		8335	−43	324	+19	47	339	3		
		8334	−40	327	−17	42	97	2		
		8332	−29	338	−16	32	48	4		
		8332	−24	343	−17	28	73	1		
		8333	−9	358	+27	31	388	16		
		8333	−4	3	+27	30	436	1		
		8329	+8	15	+15	19	194	2		
		8329	+11	18	+15	21	12	1		
		8329	+17	24	+16	25	97	4		
		8326	+40	47	+12	42	873	4		
		8326	+48	55	+13	50	121	8		
		8326	+59	66	+15	61	24	1		
		8324	+61	68	+12	62	291	1		
		(9)		(7)	(−2)		3,418	66		
26	11 0	8338	−80	261	+17	80	242	2	G	Do.
		8337	−50	291	−21	52	61	8		
		8337	−43	298	−19	45	97	3		
		8336	−30	311	−18	33	73	6		
		8334	−19	322	−19	25	48	3		
		8335	−18	323	+19	28	24	4		
		8335	−16	325	+17	24	388	2		
		8334	−14	327	−18	21	6	1		
		8334	−10	331	−19	20	121	1		
		8332	0	341	−17	15	61	9		
		8332	+4	345	−18	16	48	1		
		8333	+13	354	+26	30	533	3		
		8333	+19	0	+26	33	145	2		
		8333	+25	6	+26	31	436	2		
		8329	+34	15	+14	38	121	10		
		8329	+42	23	+15	45	97	4		
		8326	+69	50	+12	70	582	1		
		(9)		(341)	(−2)		3,083	62		
27	11 12	8338	−69	258	+19	70	145	1	F	Do.
		8338	−68	259	+17	70	145	1		
		8337	−38	289	−21	41	73	3		
		8337	−29	298	−18	33	48	4		
		8336	−18	309	−17	23	97	1		
		8334	−7	320	−19	18	12	1		
		8335	−7	320	+20	22	73	4		
		8335	−1	326	+18	20	339	2		
		8334	+2	329	−18	16	85	1		
		8332	+14	341	−17	21	97	2		
		8333	+27	354	+26	38	485	1		
		8333	+31	358	+25	40	97	7		
		8333	+38	5	+26	45	242	2		
		8329	+50	17	+16	52	97	5		
		8329	+59	26	+16	61	73	1		
		8326	+83	50	+12	83	582	1		
		(9)		(327)	(−2)		2,690	37		
28	10 21	8339	−70	244	+35	74	145	1	F	Do.
		8339	−65	349	+34	70	61	1		
		8339	−58	256	+31	64	48	1		
		8338	−55	259	+18	59	145	1		
		8338	−53	261	+17	56	194	1		
		8337	−25	289	−21	31	48	6		
		8337	−15	299	−18	22	61	5		
		8336	−5	309	−17	16	73	3		
		8335	−4	310	+20	23	12	3		
		8335	+6	320	+20	24	12	2		
		8334	+6	320	−18	18	12	1		
		8335	+10	324	+18	23	339	6		
		8334	+15	329	−17	21	97	1		
		8332	+26	340	−16	28	170	10		
		8333	+38	352	+26	46	485	5		
		8331	+48	2	−12	49	12	2		
		8333	+51	5	+26	58	291	4		
		8329	+65	19	+16	68	97	2		
		8329	+70	24	+17	71	73	1		
		(10)		(314)	(−3)		2,375	56		
29	11 12	8339	−56	245	+35	65	97	3	F	Mt. Wilson.
		8339	−50	251	+32	60	73	1		
		8339	−41	260	+29	50	48	2		
		8338	−39	262	+17	43	242	2		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR DECEMBER 1946—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
1946	*h m*		°	°	°	°				
Dec. 29	11 12	8337	−1	300	−19	17	121	7	F	Mt. Wilson.
		8336	+9	310	−18	18	48	4		
		8335	+24	325	+16	30	339	4		
		8334	+29	330	−18	33	97	1		
		8332	+41	342	−17	43	61	1		
		8333	+51	352	+25	57	339	1		
		8333	+59	0	+25	63	121	2		
		8331	+62	3	−13	63	16	5		
		8333	+64	5	+25	68	291	1		
		8329	+70	11	+15	71	48	4		
		(10)		(301)	(−3)		1,941	38		
30	10 7	8339	−46	242	+35	58	145	1	F	U. S. Naval.
		8339	−43	245	+34	56	12	1		
		8339	−39	249	+32	51	170	5		
		8338	−34	254	+20	41	24	4		
		8339	−32	256	+31	46	24	1		
		8338	−29	259	+18	37	97	1		
		8338	−28	260	+17	35	121	1		
		8337	+10	298	−20	21	48	1		
		8337	+15	303	−19	22	36	1		
		8336	+21	309	−18	25	48	1		
		8335	+38	326	+16	42	73	5		
		8335	+39	327	+17	44	339	1		
		8334	+40	328	−16	42	97	1		
		8332	+53	341	−17	54	73	4		
		8333	+62	350	+26	67	485	2		
		8333	+70	358	+26	72	242	3		
		8333	+81	9	+26	82	242	1		
		(8)		(288)	(−3)		2,276	34		
31	12 23	8339	−32	241	+34	48	97	2	P	Mt. Wilson.
		8339	−24	249	+32	41	145	1		
		8338	−14	259	+18	26	61	1		
		8338	−12	261	+17	24	97	1		
		8340	−8	265	−21	20	12	1		
		8337	+29	302	−18	32	48	1		
		8335	+52	325	+16	55	291	1		
		8334	+55	328	−17	57	61	1		
		(6)		(273)	(−3)		812	9		

Mean daily area for 29 days=2,337
Mean 10 g+s for 29 days=150.2

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

PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR DECEMBER 1946

[Dependent on observations at Zurich Observatory and its stations at Locarno and Arosa.]

December 1946	Relative numbers	December 1946	Relative numbers	December 1946	Relative numbers
1	84	11	119	21	126
2	88	12	127	22	138
3	79	13	99	23	147
4	104	14	116	24	152
5	102	15	165	25	148
6	93	16	150	26	145
7	111	17	143	27	144
8	87	18	143	28	154
9	73	19	141	29	132
10	103	20	145	30	116
				31	98

Mean, 31 days=121.7
Mean for the year 1946=92.4