POSITIONS, AREAS, AND COUNTS OF SUN SPOTS DURING OCTOBER 1940

[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		°	°	°	°				
Oct. 1	10	52	7001	−53	100	+5	53	97	16	G	Mt. Wilson.
			7000	+5	158	−8	16	24	8		
			6991	+56	209	−5	58	388	2		
			6999	+62	215	+14	62	24	6		
			6998	+75	228	−9	76	339	20		
					(153)	(+7)		872	52		
Oct. 2	10	37	7001	−39	101	+5	39	121	25	G	Do.
			7002	+17	157	+13	19	12	6		
			7000	+17	157	−8	24	48	13		
			6991	+69	209	−5	70	339	2		
					(140)	(+7)		520	46		
Oct. 3	12	6	7004	−76	50	+13	76	24	3	F	Do.
			7003	−62	64	+13	62	73	7		
			7001	−23	103	+5	22	121	16		
			6991	+81	207	−5	82	291	1		
					(126)	(+7)		509	27		
Oct. 4	11	20	7005	−81	32	+13	81	12	1	VG	U. S. Naval.
			7003	−48	65	+13	48	73	5		
			7006	−20	93	+13	21	24	4		
			7001	−10	103	+5	11	242	22		
					(113)	(+7)		351	32		
Oct. 5	11	6	7005	−69	31	+14	70	24	2	F	Do.
			7003	−33	67	+13	34	12	2		
			7006	−6	94	+13	10	36	3		
			7001	+3	103	+5	3	218	20		
					(100)	(+6)		290	27		
Oct. 6	10	45	7009	−83	4	+16	83	485	6	G	Mt. Wison.
			7008	−71	16	−17	76	242	10		
			7005	−55	32	+13	56	24	2		
			7007	−37	50	+17	38	24	5		
			7003	−25	62	+20	28	48	5		
			7003	−20	67	+13	21	24	2		
			7006	+9	96	+12	10	73	20		
			7001	+17	104	+5	17	218	31		
					(87)	(+6)		1,138	81		
Oct. 7	12	39	7009	−78	355	+15	78	170	2	F	U. S. Naval.
			7009	−70	3	+14	70	776	12		
			7008	−60	13	−17	64	145	10		
			7007	−23	50	+15	25	24	2		
			7003	−10	63	+13	13	48	4		
			7006	+23	96	+12	24	61	5		
			7001	+30	103	+4	31	61	7		
					(73)	(+6)		1,285	42		
Oct. 8	12	53	7009	−60	359	+15	60	1,067	24	F	Mt. Wilson.
			7008	−48	11	−17	53	145	15		
			7003	+3	62	+13	8	24	6		
			7006	+37	96	+12	37	242	16		
			7001	+44	103	+4	44	24	5		
					(59)	(+6)		1,502	66		
Oct. 9	16	7	7009	−44	0	+15	45	848	26	G	U. S. Naval.
			7008	−32	12	−17	40	242	17		
			7005	−18	26	+11	19	24	3		
			7006	+51	95	+12	51	242	8		
					(44)	(+6)		1,356	54		
Oct. 10	10	38	7011	−77	317	−9	79	533	1	G	Do.
			7009	−34	0	+15	35	558	20		
			8009	−27	7	+12	28	194	11		
			7008	−19	15	−17	30	158	12		
			7005	−3	31	+11	5	24	6		
			7006	+64	98	+13	64	194	3		
					(34)	(+6)		1,661	53		
Oct. 11	12	9	7011	−63	317	−9	65	582	1	G	Do.
			7009	−20	0	+15	21	558	25		
			7009	−15	5	+12	16	170	17		
			7008	−5	15	−17	24	194	11		
			7006	+75	95	+13	75	194	3		
					(20)	(+6)		1,698	57		

POSITIONS, AREAS, AND COUNTS OF SUN SPOTS DURING OCTOBER 1940—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
1940	h	m		°	°	°	°				
Oct. 12	10	54	7012	−76	292	−8	77	145	1	F	U. S. Naval.
			7011	−50	318	−9	53	606	4		
			(*)	−22	346	+12	23	6	4		
			7009	−7	1	+15	10	630	27		
			7009	−2	6	+12	6	218	11		
			7008	+8	16	−17	25	158	14		
					(8)	(+6)		1,763	61		
Oct. 13	13	40	7012	−61	292	−9	63	133	1	VG	Do.
			7011	−35	318	−10	39	533	5		
			(*)	−7	346	+12	9	6	3		
			7009	+10	3	+15	13	679	45		
			7009	+12	5	+12	13	170	14		
			7008	+23	16	−17	32	170	5		
			7013	+75	68	+14	75	61	2		
					(353)	(+6)		1,752	75		
Oct. 14	11	1	7012	−48	293	−8	50	194	5	G	Do.
			7011	−23	318	−10	28	485	5		
			(*)	+4	345	−15	21	12	4		
			7009	+21	2	+15	22	582	40		
			7009	+26	7	+12	27	48	4		
			7008	+35	16	−16	41	194	5		
					(341)	(+6)		1,515	63		
Oct. 15	11	3	7014	−75	253	−17	78	242	5	G	U. S. Naval.
			7012	−35	293	−7	38	145	3		
			7011	−11	317	−10	19	582	11		
			7009	+34	2	+16	35	388	20		
			7009	+41	9	+12	42	48	5		
			7008	+48	16	−16	54	145	5		
					(328)	(+6)		1,550	49		
Oct. 16	9	23	7014	−63	253	−17	67	315	17	VG	Mt. Wilson.
			7012	−21	295	−7	25	121	11		
			7011	+2	318	−10	16	485	4		
			7009	+48	4	+16	49	194	20		
			7009	+53	9	+12	53	48	8		
			7008	+60	16	−17	64	242	7		
					(316)	(+6)		1,405	67		
Oct. 17	11	7	7014	−50	252	−17	56	424	24	G	U. S. Naval.
			7012	−7	295	−7	15	73	6		
			7012	−7	295	−9	16	12	1		
			7011	+17	319	−9	23	485	3		
			7009	+63	5	+16	63	73	8		
			7009	+68	10	+12	68	24	1		
			7008	+75	17	−17	78	194	4		
					(302)	(+6)		1,285	47		
Oct. 18	11	1	7017	−80	208	−6	80	242	1	G	Do.
			7016	−75	213	−7	78	121	3		
			7014	−43	245	−18	50	121	14		
			7014	−33	255	−17	41	291	24		
			7015	−12	276	−5	16	12	1		
			7012	+7	295	−6	14	48	4		
			7011	+30	318	−9	34	485	8		
			7009	+77	5	+16	77	73	3		
					(288)	(+6)		1,393	58		
Oct. 19	9	49	7017	−68	208	−6	69	194	1	G	Mt. Wilson.
			7016	−61	215	−7	62	97	7		
			7014	−30	246	−18	38	145	20		
			7014	−20	256	−17	30	315	21		
			7015	+2	278	−5	10	24	3		
			7012	+19	295	−7	22	48	6		
			7011	+43	319	−9	45	485	12		
					(276)	(+6)		1,308	70		
Oct. 20	11	28	7017	−54	208	−7	56	194	1	G	U. S. Naval.
			7016	−48	214	−8	50	97	7		
			7014	−16	246	−19	28	73	11		
			7014	−6	256	−19	25	364	10		
			7015	+17	279	−5	20	12	1		
			7012	+34	296	−5	36	12	2		
			7011	+57	319	−9	59	485	4		
			7011	+57	319	−14	60	24	2		
					(262)	(+5)		1,261	38		
Oct. 21	12	1	7018	−79	169	−9	79	6	1	F	Do.
			7017	−40	208	−7	42	170	1		
			7016	−33	215	−8	35	218	18		
			(*)	−20	228	+24	28	48	6		
			7014	−1	247	−18	23	73	16		
			7014	+8	256	−18	25	485	15		
			7015	+30	278	−4	32	6	1		
			7012	+47	295	−7	49	24	4		
			7011	+70	318	−9	72	485	4		
			7011	+70	318	−14	73	48	2		
					(248)	(+5)		1,563	68		

POSITIONS, AREAS, AND COUNTS OF SUN SPOTS DURING OCTOBER 1940—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
1940	h m		°	°	°	°				
Oct. 22	11 26	7018	−55	180	−10	57	24	4	F	U. S. Naval.
		7017	−27	208	−7	30	145	1		
		7016	−20	215	−8	24	242	13		
		7014	+11	246	−18	25	24	5		
		7014	+20	255	−19	31	485	3		
		7012	+61	296	−7	65	24	7		
		7011	+84	319	−9	84	436	4		
				(235)	(+5)		1,380	37		
Oct. 23	11 8	(*)	−51	171	−13	54	12	4	VG	Do.
		7019	−44	178	−4	46	36	6		
		7018	−41	181	−10	44	24	5		
		7017	−16	206	−3	18	12	2		
		7017	−13	209	−7	17	145	1		
		(*)	−13	209	−12	20	6	4		
		7016	−8	214	−8	15	145	7		
		7014	+24	246	−19	34	12	5		
		7014	+32	254	−19	40	388	7		
		7012	+70	292	−7	72	6	3		
				(222)	(+5)		786	44		
Oct. 24	11 21	(*)	−68	141	−11	70	24	2	VG	Do.
		7019	−31	178	−4	33	48	8		
		7018	−27	182	−10	32	12	2		
		7020	0	209	−12	17	36	11		
		7017	0	209	−7	12	145	1		
		7016	+6	215	−8	15	145	8		
		7014	+38	247	−19	44	24	5		
		7014	+46	255	−19	51	388	2		
				(209)	(+5)		822	39		
Oct. 25	11 27	(*)	−55	141	−10	58	24	5	VG	Do.
		7019	−17	179	−4	20	48	10		
		7018	−15	181	−10	21	12	2		
		7020	+12	208	−12	20	73	10		
		7017	+13	209	−7	18	145	1		
		7016	+21	217	−8	24	170	16		
		7014	+50	246	−19	55	12	5		
		7014	+60	256	−19	64	436	2		
				(196)	(+5)		920	51		
Oct. 26	10 36	(*)	−52	131	+9	52	12	2	F	Do.
		7019	−3	180	−4	10	145	22		
		7020	+25	208	−11	30	73	10		
		7017	+26	209	−7	30	145	1		
		7016	+35	218	−7	37	170	13		
		7014	+63	246	−19	67	12	3		
		7014	+73	256	−19	76	436	1		
				(183)	(+5)		993	52		
Oct. 27	11 19	7021	−70	100	+15	70	6	2	VG	Mt. Wilson.
		7019	+11	181	−4	14	242	27		
		7020	+39	209	−11	43	145	14		
		7017	+40	210	−7	42	121	2		
		7016	+50	220	−8	52	145	10		
				(170)	(+5)		659	55		
Oct. 28	10 55	7021	−57	100	+15	58	97	11	VG	Do.
		7019	+24	181	−3	26	291	33		
		7020	+53	210	−11	55	170	14		
		7017	+54	211	−7	56	121	2		
		7016	+63	220	−8	65	97	5		
				(157)	(+5)		776	65		

POSITIONS, AREAS, AND COUNTS OF SUN SPOTS DURING OCTOBER 1940—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
1940	h m		°	°	°	°				
Oct. 29	12 35	7022	−80	63	+14	80	97	1	F	Mt. Wilson.
		7021	−43	100	+15	44	97	11		
		7019	+38	181	−3	40	194	15		
		7020	+67	210	−11	69	73	7		
		7017	+68	211	−7	69	73	1		
		7016	+75	218	−7	77	48	2		
				(143)	(+5)		582	37		
Oct. 30	14 30	7022	−70	58	+12	70	145	12	G	U. S. Naval.
		7023	−58	70	−8	60	24	9		
		7021	−28	100	+13	30	97	12		
		(*)	−23	105	−7	26	12	3		
		7019	+55	183	−3	56	97	12		
		7017	+75	203	−7	76	12	1		
		7020	+80	208	−11	80	48	7		
		7017	+85	213	−7	85	97	1		
				(128)	(+5)		532	57		
Oct. 31	10 36	7022	−58	59	+12	58	194	9	F	Do.
		7025	−53	64	−9	55	6	2		
		7023	−46	71	−9	48	24	5		
		7021	−16	101	+12	18	73	5		
		7024	+61	178	−9	62	73	6		
		7019	+68	185	−3	68	97	3		
				(117)	(+4)		467	30		

Mean daily area for 31 days=1,093.

*=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]

September 1940	Relative numbers	September 1940	Relative numbers	September 1940	Relative numbers
1	*Eabc* 130	11	----------	21	*d* 106
2	110	12	*a* 38	22	93
3	125	13	*Ec* 37	23	66
4	*aa* 95	14	41	24	----------
5	*Wac* 91	15	*Mc* 32	25	----------
6	*a* 89	16	*a* 50	26	----------
7	*Ec* 68	17	*Ecd* 56	27	*a* 26
8	62	18	79	28	37
9	42	19	*bd* 100	29	38
10	----------	20	98	30	----------

Mean, 24 days=71.2

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-sized 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.