

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

Peter O. Taylor, editor  
 P O Box 5685  
 Athens, GA 30604-5685 USA



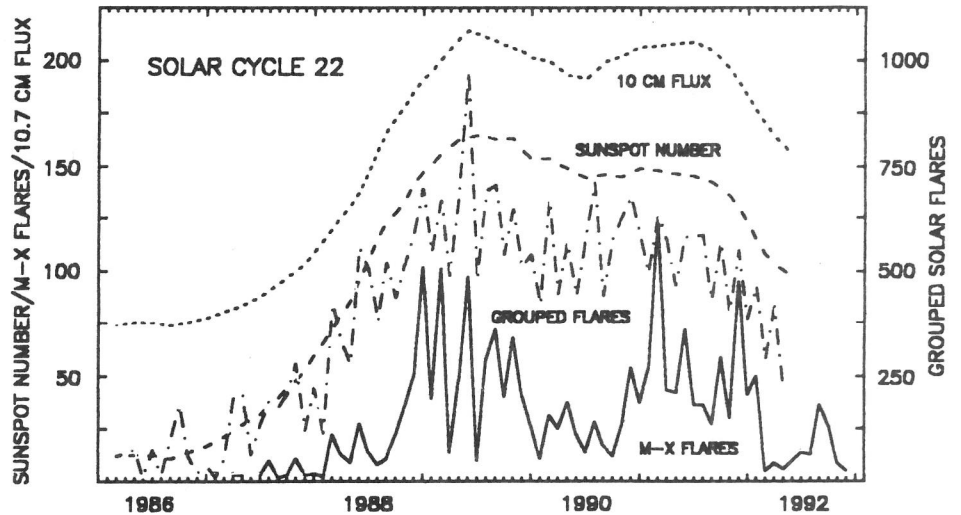
Volume 48 Number 12

December 1992

## American Relative Sunspot Numbers for December

	R <sub>a</sub> Final		
1)	67	11)	126
2)	61	12)	118
3)	58	13)	128
4)	59	14)	118
5)	49	15)	120
6)	42	16)	108
7)	31	17)	104
8)	69	18)	100
9)	88	19)	108
10)	100	20)	106
		21)	92
		22)	88
		23)	80
		24)	82
		25)	81
		26)	90
		27)	82
		28)	80
		29)	78
		30)	67
		31)	54

Mean: 85.0  
 Number of reports: 98



**December Summary:** NOAA/USAF Region 7352 (N20, L341, EAI) spawned the first three class M flares of December on the 1st [one] and 4th [two]. As it turned out, these were to be the only events to attain class M or better intensity until the 31st of December. The total number of recorded class M/X flares during December [four] tied with the March 1992 total as the lowest number to occur since February 1988. None of this month's flares were major events. The geomagnetic field became disturbed on the 1st and again on the 3rd, but otherwise conditions ranged between quiet and active.

Activity then declined to low, with occasional days at a very low level during the remainder of December. The Sun's Northern Hemisphere was spotless on the 7th, and only one northern spot-group was visible on all other days between the 6th and 17th. The geomagnetic field experienced intervals of storm conditions at high latitudes on the 7th-9th as a result of a trans-equatorial extension of a southern polar coronal hole.

A sudden impulse (19 nT at Boulder) was recorded on the 17th, and the GOES 6 spacecraft made a brief magnetopause crossing several hours later. Other events of interest included the disappearance of several sizable filaments from the Sun's central zone on the 22nd and 23rd, and from the SE limb on the 25th. The latter event did not significantly influence the terrestrial environment.

A second sudden impulse (16 nT) was observed on the 27th, followed by intervals of minor to severe geomagnetic storm conditions on the 28th and 29th. This activity probably resulted from the disappearing filaments which left the Sun on the 22nd-23rd. Then, early on the final day of 1992, Region 7376 - a small type H spot-group perched on the Sun's NW limb - produced the month's fourth and final class M flare, an event rated M2.6/SN. The smoothed mean American Relative Sunspot Number for June 1992, declined to 96.2.

The estimated mean American Relative Sunspot Number for 1-13 January is 83. Just one class M flare has been recorded during this interval; an optically uncorrelated class M1.1 event on the 2nd, which may have originated in Region 7376 when that group was over a day beyond NW limb passage.

[A portion of this information was obtained from the SELDADS data-base.]

## Final Daily American Relative Sunspot Numbers for 1992

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Day
143	220	144	102	84	32	77	73	48	89	102	67	01
131	210	115	90	83	47	69	97	49	95	84	61	02
161	182	89	77	79	74	66	100	54	104	65	58	03
179	178	80	62	88	88	68	103	54	120	83	59	04
170	166	74	60	83	81	74	92	53	129	88	49	05

176	155	86	55	86	78	85	90	55	130	87	42	06
193	158	102	58	69	67	90	101	44	110	93	31	07
199	166	114	53	83	64	92	109	44	95	74	69	08
164	182	124	52	77	81	107	102	61	90	77	88	09
151	178	129	54	63	78	124	82	59	81	78	100	10
137	174	125	60	60	87	140	60	61	61	80	126	11
120	142	126	60	77	106	142	51	71	45	79	118	12
131	140	140	68	83	88	117	66	84	43	57	128	13
99	120	128	77	68	81	132	81	80	47	69	118	14
75	110	112	76	59	62	140	89	70	47	76	120	15
80	117	99	93	41	65	151	96	68	54	89	108	16
64	114	81	109	38	72	128	89	63	65	100	104	17
83	108	69	118	51	61	106	71	58	79	98	100	18
92	101	74	136	56	72	71	70	68	90	102	108	19
115	124	90	174	80	58	68	68	68	82	102	106	20
139	138	91	176	97	61	64	55	67	97	90	92	21
124	138	76	168	108	76	66	48	69	111	88	88	22
111	154	95	155	106	83	56	38	81	93	109	80	23
115	180	101	147	81	79	43	32	87	101	109	82	24
121	186	103	138	63	66	33	16	79	121	113	81	25
124	194	116	119	59	54	49	30	82	134	114	90	26
154	189	112	93	65	33	57	33	86	130	112	82	27
176	172	110	102	44	51	45	33	66	134	97	80	28
210	158	122	102	32	71	54	43	74	126	83	78	29
231		120	80	32	73	53	33	77	107	74	67	30
233		110		29		46	44		82		54	31
142.0	157.0	105.1	97.1	68.5	69.6	84.3	67.6	66.0	93.3	89.1	85.0	Mean
Yearly Mean = 93.5												

**Sudden Ionospheric Disturbances (SES) Recorded During November 1992**  
Records were received from A3,9,40,50,59,61,62,63,65,66,67,68,69,70,71,72,73,74,75,76,77,78

Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def
1	1008	1-	5	8	1547	1-	5	16	2030	1	5	24	1003	1-	5
1	1147	1+	5	9	0201	1-	5	16	2140	1+	5	24	1345	1+	5
1	1239	1-	5	9	1434	1	5	16	2306	1-	5	24	1424	1+	5
1	1529	1	5	9	1731	2	5	17	0832	1-	5	24	1558	2+	5
1	1606	1-	5	10	0954	1	5	17	1201	1-	5	24	2035	2	5
1	2042	1	5	10	1206	1-	5	18	1244	2+	5	25	1222	1-	5
2	0259	2+	5	10	1414	1	5	18	1942	3	5	25	1610	2+	5
2	1051	1-	5	10	1628	1+	5	19	0302	1	5	25	1752	1+	5
3	1730	1	5	10	1730	1-	5	19	1019	1-	5	26	1126	1+	5
3	1959	1+	5	10	1955	2	5	19	2029	2+	5	26	1156	1+	5
4	0459	2	5	11	1800	1-	5	21	1430	1-	5	26	1246	1-	5
4	1103	1	5	12	0010	2+	5	21	2000	1-	5	27	1403	1-	5
4	1512	1+	5	12	2122	2+	5	22	1141	1	5	28	1558	1-	5
4	1808	1-	5	12	2230	1	5	22	1306	1	5	28	1614	1+	5
5	0828	1-	5	13	1600	3+	5	22	1717	1	5	28	1934	1+	5
5	0911	1	5	14	1129	2	5	22	1800	1	5	28	2017	1	5
5	1325	1-	5	15	0845	1	5	23	0706	1	5	29	1232	1	5
5	1603	1-	5	15	0954	1-	5	23	0852	1	5	29	1815	1	5
5	2040	2+	5	15	1155	1	5	23	0912	1	5	29	1945	2+	4
6	1203	1-	5	15	1914	2	5	23	0944	2	5	30	0700	1-	5
6	1422	1-	5	16	1424	1	5	23	1357	1	5	30	0932	1-	5
7	1629	2+	5	16	1606	1-	5	23	1645	1	5	30	1306	1-	5
8	0853	1-	5	16	1626	1+	5	23	1745	1-	5	30	1514	1-	5
8	1313	1	5	16	1720	1-	5	23	1930	2+	5	30	1928	2	5
8	1422	1-	5	16	1741	1-	5	23	2023	1-	5	30	2026	1-	5
8	1503	1	5	16	1913	1+	5	24	0843	1+	5	30	2240	1-	5
8	1525	1-	5	16	1957	1	5								

**SID Analysts:** J. Ellerbe; S. Hansen; J. Knight; A. Okorogu; A. Stokes; M. Taylor; P. Taylor; B. Wingate  
Frequencies recorded (kHz): 19.6; 21.4; 22.3; 23.4; 24.0; 24.8; 28.5; 30.6; 48.5; 51.6; 73.6; 77.15

**DECnet:** 34367::ptaylor **INTERNET:** ptaylor%SELVAX.dnet@east.gsfc.nasa.gov **FAX:** [USA] 706-548-3553  
**NOTE:** Network contributors are urged to submit their reports via these services whenever possible.