

# Solar Bulletin

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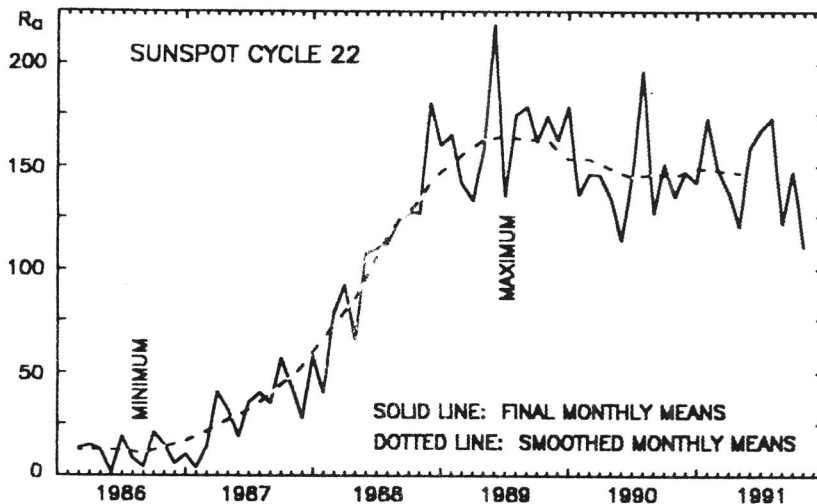
## American Relative Sunspot Numbers for November

R <sub>a</sub> Final	
1) 181	11) 128
2) 174	12) 110
3) 139	13) 100
4) 131	14) 99
5) 122	15) 91
6) 126	16) 71
7) 138	17) 80
8) 139	18) 79
9) 133	19) 97
10) 135	20) 98
21) 81	22) 72
23) 79	24) 88
25) 93	26) 102
27) 112	28) 115
29) 103	30) 81

Mean: 109.9

May 1991 smoothed mean: 145.5

Number of reports: 97



One major flare occurred during the first week of November; a M9.1/1B on the 2nd in NOAA/USAF Region 6891 (S12, L185, FK1). The geomagnetic field experienced severe storm conditions at high latitudes on the 1st and both GOES vehicles made brief magnetopause crossings. The source of this activity may have been effects from the X2 flare of 30 October and a coronal hole.

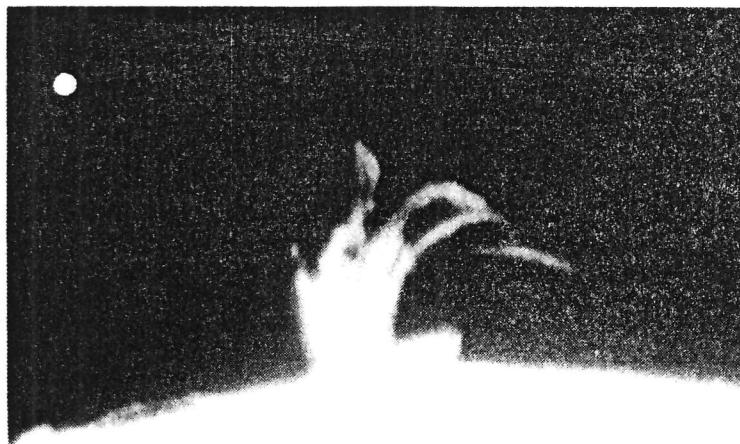
Moderate and high activity was the rule at the beginning of the second week. A sudden impulse was recorded early on the 8th, and magnetic storm conditions increased to severe. GOES instruments indicated that several magnetopause crossings occurred. SEL suggests that disappearing filament on 6 November may have caused this activity. On 8/9 November, a spectacular auroral display was viewed from mid and high-latitude sites around the world. Three major flares were recorded during the week: a X1.1/1B on the 9th in Region 6906 (S11, L087, EKO), and M6.9/1N and M7.9/1N events on the 10th in Region 6919 (S12, L316, FK1). GOES again experienced magnetopause crossings on the 11th, possibly related to the X1 flare on the 9th.

Activity was high on the 15th, due to the lone major flare during week three; a X1.5/3B Tenflare in Region 6919. Old Region 6891 returned for a fourth disk appearance on the 17th, and was numbered 6929 (S11, L199, DSO). The group was far less active than during past transits. The magnetic field was quiet to active with one period of major storming at high latitudes on the 19th that may have been caused by the X flare on the 15th. The Sun was relatively quiet between the 22nd and 29th; no solar flares occurred which exceeded class C. Then on the 30th, activity increased to high after the production of the sixth major flare during November, a M5.7/1B in Region 6946 (S08, L066 CKO). High latitudes experienced major geomagnetic storm conditions on the 22nd, probably due to coronal hole effects.

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

## Interesting Solar Chromospheric Phenomena

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The mass ejection seen in the photograph to the left was observed near heliographic location S10, L187 on 24 September 1991. This event, a good example of an eruptive prominence, began at 0755 UT and ended at 0830. At its maximum growth, the ejected material rose to a height of approximately 157,000 kilometers. The small filled circle represents the relative size of the Earth.

By the following day, a large (type FK) sunspot group NOAA/USAF Region 6850, had rotated into view very close to this location. This spot cluster was probably the site of the prominence.

The photograph, a 1/2 second exposure, was taken at 0810 UT with the 12 centimeter aperture refractor and Lyot H $\alpha$  filter at the University Observatory of Istanbul by H. Çaliskan.

**Sudden Ionospheric Disturbances (SES) Recorded During October 1991**

Records were received from A1,3,9,40,50,52,59,61,62,63,64,65,66,67,68,69,70,71,72,73,74.

Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp
1	0715	1-	5	6	1347	1	5	16	1653	2+	5	27	0525	1-
1	0736	1+	5	6	1600	1-	5	17	1155	2+	5	27	0540	2+
1	0925	1+	5	6	1610	3	5	17	1240	1-	5	27	1300	2+
1	1045	1	5	6	1837	2	5	17	1253	1+	5	27	1430	1-
1	1145	1-	5	6	2346	1-	5	17	1931	1-	5	27	1450	1
1	1302	1	5	7	0003	2+	5	20	1734	2	5	27	1516	2
1	1338	1-	5	7	1014	1+	5	21	1105	1	5	27	1710	1
1	1426	1-	5	7	1530	2+	5	21	1252	1+	5	27	1736	2+
1	1506	1-	5	7	1922	1-	5	21	1336	1	5	27	2138	2
1	1515	1+	5	7	2108	1	5	21	1915	2	5	28	1234	2+
1	1752	1	5	8	0849	1-	5	21	2133	1+	5	28	1617	2+
1	1823	1	5	8	1212	1+	5	21	2235	1	5	28	1714	1-
1	1919	1-	5	8	1345	1+	5	22	0635	2	5	28	1731	1
1	1929	2+	5	8	1522	2	5	22	1256	1+	4	28	1746	2+
1	2019	1+	5	8	2320	1	5	22	1842	3	5	28	1900	2
1	2229	1+	5	9	0510	2+	5	22	2002	1	5	28	1942	2
1	2246	2+	5	9	0639	2+	5	23	0617	1-	5	28	2028	1+
2	0257	1-	4	10	0730	2+	5	23	0737	1-	5	28	2107	1
2	0310	1-	4	10	1548	1+	5	23	0900	2	5	28	2137	2+
2	0515	1+	5	10	1745	1+	5	23	0918	1+	5	28	2303	1-
2	0647	1-	5	10	2126	1	5	23	1630	1+	5	28	2343	1-
2	1035	1-	5	11	1800	1+	5	23	1800	1-	5	29	0552	1
2	1202	1-	5	11	2020	2	5	23	2048	1	5	29	0901	1
2	1359	1-	5	12	0504	1+	5	23	2224	1	5	29	0958	1
2	1459	1-	5	12	1007	1+	5	24	0120	1+	5	29	1141	1-
2	1600	1-	5	12	1703	1+	5	24	0238	2	5	29	1153	1-
2	1723	1-	5	12	1904	3	5	24	0834	1-	5	29	1508	1
2	1817	1+	5	12	2215	2+	5	24	0947	1+	5	29	1724	1+
2	2112	1-	5	12	2357	2	5	24	1108	1-	5	29	1815	1
2	2151	1-	5	13	0657	1	5	24	1242	1-	5	29	1855	3
2	2231	2+	5	13	1349	1	5	24	1322	1-	5	29	1910	2+
3	0139	2+	5	13	1812	2+	5	24	1655	1	5	29	2001	1-
3	0620	2	5	13	2014	2+	5	24	1714	2+	5	29	2126	2+
3	0931	1-	5	13	2104	2+	5	24	2105	1-	5	30	0430	1+
3	1317	2	5	14	0317	2	5	24	2240	3	5	30	0615	1
3	1536	1+	5	14	0359	2	5	25	0706	1-	5	30	1315	2
3	2037	2	5	14	0802	2+	5	25	0749	2	5	30	1416	2+
4	0906	1	5	14	0914	1	5	25	0907	2	5	30	1616	1-
4	0940	2	5	14	0936	1-	5	25	1207	1-	5	30	1745	2+
4	1353	2	5	14	1009	1	5	25	1414	1-	5	30	1915	1
4	1557	1	5	14	1053	1-	5	25	1529	1+	5	30	1949	1+
4	1756	1-	5	14	1115	1	5	25	1720	3	5	30	2020	2
4	1900	1-	5	14	1141	1+	5	25	2135	2+	5	30	2223	1
4	1928	2+	5	14	1238	1	5	25	2217	2	4	31	0805	1
4	2015	1-	5	14	1408	1	5	26	1300	2	5	31	0909	1+
4	2110	1-	5	14	1455	2	5	26	1335	1-	5	31	1409	1
5	0715	1	5	14	1737	2+	5	26	1412	1	5	31	1502	2
5	0801	1+	5	15	0705	2	5	26	1851	2+	5	31	1721	2
5	0935	2	5	15	0915	2+	5	26	1946	2+	4	31	1826	1
5	1050	2+	5	15	1455	1-	5	26	2030	3	5	31	1943	2+
5	1938	2+	5	15	1551	2+	5	26	2316	2	4	31	2131	1-
6	0720	1-	5	15	1831	1	4	27	0031	2	5	31	2259	1
6	0958	2	5	15	2000	1-	4	27	0209	1+	5	31	2328	1+

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