Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

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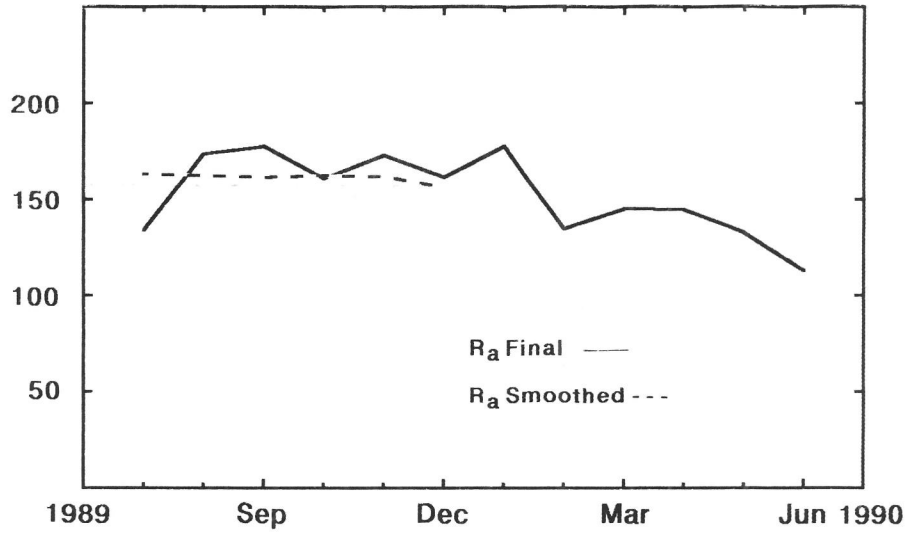
American Relative Sunspot Numbers for June

	R_a Final				
1)	94	11)	131	21)	69
2)	90	12)	130	22)	76
3)	84	13)	124	23)	73
4)	85	14)	121	24)	86
5)	81	15)	105	25)	102
6)	100	16)	109	26)	121
7)	100	17)	104	27)	151
8)	116	18)	90	28)	202
9)	103	19)	80	29)	225
10)	112	20)	74	30)	245

Mean: 112.8
Number of contributors: 103



Solar activity began the month at a low level but increased to moderate on the 6th when **SESC** Region 6093 (S18, L136, CSO on 6 June) spawned M1.0/SF and M1.9/SN solar flares. Activity continued in the moderate range on the 7th with the production of an optically un-correlated, long-duration M4.5 event which occurred from behind the southeastern limb.

Ten solar flares attained M-level status between the 8th and 14th. The strongest of these was an M6.4/2B Tenflare produced by Region 6089 (N10, L026, DAI on 12 June) on the 12th. The M-class activity which occurred during the first week of June caused the geomagnetic field to experience major storm conditions on the 11th and 12th, resulting in magnetopause crossings by both *GOES 6* and *7* satellites at geostationary orbit. Intervals of major storming also took place later in the period.

The Sun's activity level was predominantly low during the third week of June. Only one solar flare attained M-level intensity between the 15th and 21st, a M3.1/2B from Region 6106 (S31, L283, DSO on 15 June) on the 15th. Activity began week-four in the low range but increased to moderate on the 25th as sunspot numbers began to increase significantly. Six solar flares reached M-level intensity during the period. Region 6122 (S23, L122, FKI on 26 June) produced two of these, a M1.1/2B on the 25th and a M1.8/1B on the 26th. Two M-class flares also occurred in Region 6133 (N18, L052, HAX on 28 June) on the 28th, as the group was rotating onto the visible hemisphere. The latter events were rated at M2.9/SF and M2.1/1N.

Solar activity was moderate for the remainder of June, although relative sunspot numbers continued to increase dramatically. The solar 10.7 cm radio flux and background x-radiation levels were 216 and C1.1 respectively, as June ended. The generally low spot numbers which were experienced during the majority of the month caused the smoothed monthly mean for December 1989 to decline sharply to 156.6. Consequently, the July 1989 smoothed mean of 163.2 remains as the highest computed value for cycle twenty-two.

The estimated American sunspot number for 1-15 July is 160. Activity has been in the low and moderate range during this period, as relative sunspot numbers gradually declined from the high level which took place at the end of June and beginning of July. Nine solar flares have reached M-level intensity during this interval.

A portion of this information was obtained from: **SESC** PRF, Numbers 771-75 (1990).

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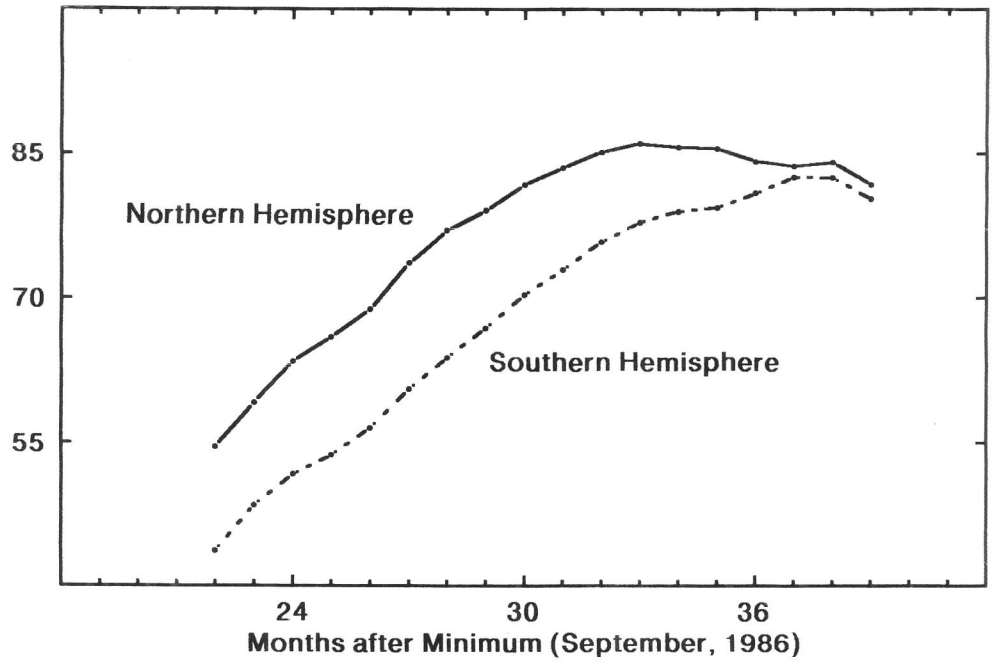
(**Note:** Network collaborators should utilize these reporting facilities whenever possible.)



The Sun's Northern and Southern Hemispheres often reach their peak spot development at separate times and intensities. The figure shows this activity for the preceding eighteen months of cycle 22, using data obtained from PRF, Numbers 695-774. The vertical scale indicates the approximate equivalent (smoothed) American Relative Sunspot Number for the monthly SESC data. According to this information, the more active Northern Hemisphere reached a first-maximum during June 1989, while in southern regions the first-peak was delayed until October.

Sudden Ionospheric Disturbances Recorded During May 1990

Records were received from A1,3,9,19,40,46,50,52,61,62,63,64,65,66,67,68,69.

Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def
2	1150	1-	5	11	1354	2+	5	16	1157	1	5	21	2218	2+	5
2	1517	1-	5	11	1509	1	5	16	1620	2	5	22	0835	1+	5
2	2006	2+	5	11	1628	2	5	16	1755	1+	5	22	0945	1	3
3	2225	1-	5	11	1817	2+	5	16	1838	1	5	23	0410	3	5
4	0000	1-	5	11	2000	1-	5	17	0316	1-	5	23	0741	2	5
4	1105	1	5	11	2101	2+	5	17	0324	1-	5	23	0812	2	5
4	1714	2+	5	12	0442	2	5	17	1015	2+	4	23	0850	1+	5
4	2002	2+	5	12	1135	2+	5	17	1120	2	4	23	1648	1+	5
4	2254	1-	5	12	1817	1+	4	17	1234	2	5	23	1808	1	5
5	1800	1-	5	13	0557	2+	5	17	1443	2+	5	24	0601	2	5
7	1436	1	5	13	0840	2	5	17	1910	1+	5	24	0840	3	5
7	1912	1-	5	13	0958	2+	5	17	2101	1	5	24	1424	1+	5
8	1101	2+	4	13	1244	2+	5	19	0627	2	5	24	1633	1	5
8	1651	1	5	13	1544	1-	5	19	0810	2+	5	24	1943	2+	5
8	1811	1-	5	13	1628	1	5	19	1255	2+	5	24	2051	2+	5
8	1853	2	5	13	1705	1+	5	19	1346	2	5	25	1137	1-	4
9	0412	1	5	13	1737	1+	5	19	1726	2+	5	25	1550	1	5
9	0625	1	3	13	1942	2+	5	20	0119	1	5	25	2053	2+	5
9	1115	2	5	13	2343	1-	4	20	0421	1+	5	26	0532	2	5
9	1329	2	5	14	0542	1+	5	20	1135	1	4	26	0735	2+	3
9	1351	1+	5	14	0918	1-	4	20	1240	1+	4	26	1005	1-	3
9	1432	1+	5	14	1055	1+	5	20	1517	1-	5	26	1728	1	5
9	1801	1	5	14	1414	2	5	20	1853	1	5	26	1751	2+	5
9	1945	1-	5	14	1455	2+	5	21	0515	1+	4	26	2055	2+	5
10	1005	2	4	14	1646	1+	5	21	0658	2	3	27	0320	1+	3
10	1115	2+	5	14	1747	1+	5	21	0802	2	5	27	0652	2+	5
10	1306	2+	5	15	0300	1+	5	21	1220	2+	5	27	0816	2	4
10	1434	2	5	15	1158	1+	4	21	1419	1-	5	27	1559	2+	5
10	1538	2+	5	15	1308	3	5	21	1535	1+	5	28	0521	1+	5
10	1930	2+	5	15	1745	1	5	21	1814	2	5	28	1508	1+	5
10	2256	2+	5	15	1929	2	5	21	1923	1	5	28	1812	1+	5
10	2359	2	5	16	0518	1+	5	21	2115	1-	5	28	1933	1+	4
11	0545	2	5	16	0709	2	5								

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