

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

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



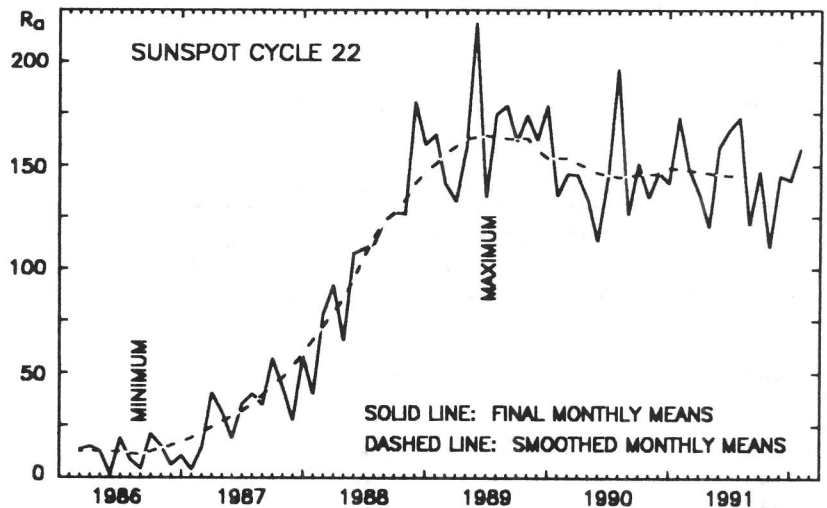
Volume 48 Number 2

February 1992

American Relative Sunspot Numbers for February

R _a Final	
1) 220	11) 174
2) 210	12) 142
3) 182	13) 140
4) 178	14) 120
5) 166	15) 110
6) 155	16) 117
7) 158	17) 114
8) 166	18) 108
9) 182	19) 101
10) 178	20) 124
21) 138	
22) 138	
23) 154	
24) 180	
25) 186	
26) 194	
27) 189	
28) 172	
29) 158	

Mean: 157.0
 Number of reports: 97

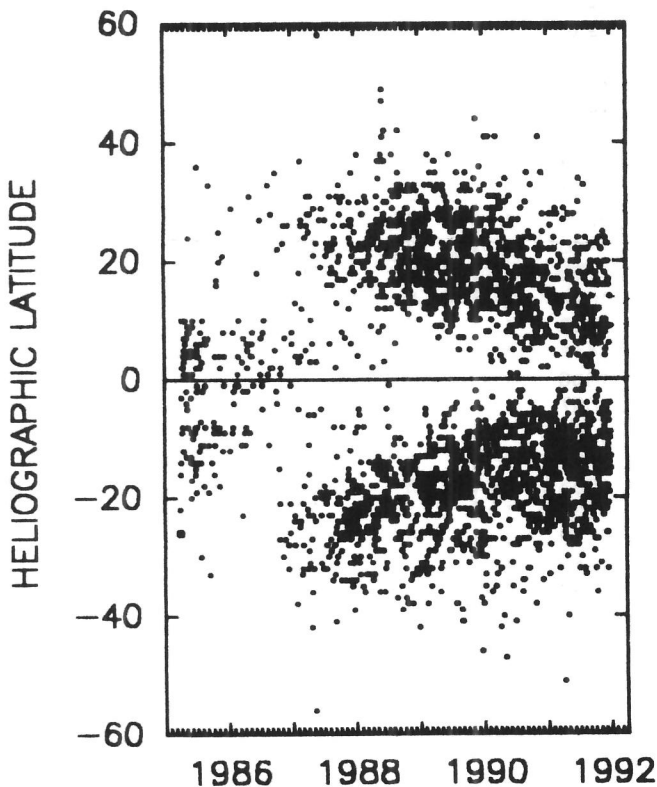


Solar activity was moderate and high during the first week of February. Seventeen class M flares took place, two of which were major events. These included a M7.6/SN in NOAA/USAF Region 7030 (N07, L024, DKO) and M6.6/1B in Region 7039 (S15, L330, FK1), both on the 6th. Region 7042 (S12, L304, FK1) also spawned a long duration class M4 Tenflare on the 6th, which, coupled with the major flare activity, increased geomagnetic storm levels at mid and high-latitudes on 8/9 February.

Otherwise, a magnetic disturbance - probably initiated by flare activity on 30 January - began on the 1st and extended through the 4th. Minor storm conditions were recorded at all latitudes and strong sub-storms occurred in some nighttime sectors. Sudden impulses (SI) were recorded on the 2nd, 3rd and 4th (two), and a small proton event began on the 7th and ended on the 8th.

Activity was moderate and low between the 8th and 13th. Four class M flares were recorded; none were major events. However, the geomagnetic field ranged from quiet to severe storm levels. As predicted, a sudden storm commencement occurred on the 8th, and GOES-7 experienced a brief magnetopause crossing. Scattered reports of aurorae, down to about latitude forty degrees, were received. Minor to major storm conditions occurred intermittently throughout the first half of the period, declining to active or unsettled thereafter.

Moderate and high activity prevailed between the 14th and 20th. One class X, and nineteen class M solar flares were recorded. Three of these were major events, and occurred in Region 7056 (S12, L181, EK1). They included a M7.0/2B on the 14th, a M5.5/1B Tenflare on the 15th, and a X1.4/2B Tenflare on the 16th. Region 7056 also spawned a long-duration M4.2/2N flare on the 17th which was probably the source of an enhanced proton level later that day. A SI was recorded on the 17th, followed by a brief period of major geomagnetic storming at high-latitudes. That occurrence appears to be linked to the M5



Cycle 22 sunspot group emergence through December 1991

flare outlined above. The field then returned to quiet or unsettled until a second SI was recorded on the 20th, and minor storming ensued. The latter conditions may have resulted from the M4 flare and/or coronal hole activity.

Solar activity was moderate and low between the 21st and 26th and again at the end of the month, but increased to high on the 27th after Region 7070 (N07, L023, EKI) spawned the month's second class X flare, a X3.3/3B Tenflare. In addition, seven class M solar flares were recorded during the interval, bringing the total number of energetic events for February to forty-nine. Region 7070 also produced a long-duration M4.9/2B event late on the 24th.

Several stations reported K-indices as high as 8 during the first twelve hours of the 21st, and the geomagnetic field ranged between active and severe disturbance levels. A 31-degree-long portion of filament disappeared on 21/22 February, leading to minor to major storm levels on the 25th. These conditions were repeated at all latitudes on the 26th, probably due to effects from the M4 flare mentioned above. Both GOES spacecraft crossed the magnetopause for several hours, and an enhanced proton flux was also recorded which was later intensified by the X3 flare. A sudden storm commencement, again fostered by this event, occurred on the 29th followed by a brief magnetopause crossing by GOES-7 and several hours of minor to severe storm conditions. Additional SIs were recorded on the 24th and 26th, along with a Forbush decrease of approximately 9%. The smoothed monthly-mean American Relative Sunspot Number for August 1991 is 143.9.

The estimated mean American Relative Sunspot Number for 1-14 March is 114. Activity has been low during this interval.

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

Sudden Ionospheric Disturbances (SES) Recorded During January 1992

Records were received from A3,9,40,50,52,59,61,62,63,64,65,66,67,68,69,70,71,72,73,74.

Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	De
1	0911	1	5	5	1659	1-	5	15	1437	2+	5	26	0000	2	5
1	1131	1+	5	5	1705	1+	5	15	1550	2+	5	26	0811	1-	5
1	1204	2	5	5	1840	2	5	15	1901	2+	5	26	0814	1-	5
1	1251	1+	5	5	2001	2+	5	16	1750	1	5	26	1220	1	5
1	1548	1	5	5	2030	1+	5	17	1136	1+	5	26	1315	2+	5
1	1629	1	5	5	2218	2	4	17	2237	1	5	26	1445	1-	5
1	1740	1-	5	6	1436	1+	5	18	0830	1-	5	26	1529	2+	5
1	1945	1	5	6	2308	2	5	18	1539	1	5	26	1646	2	5
1	2004	1-	5	7	0046	1-	5	18	2123	2	5	26	2155	1+	5
1	2022	1-	5	7	0826	1	5	18	2205	1-	5	27	0855	1	5
1	2034	1	5	7	1345	1+	5	18	2222	1	5	27	1744	1	5
1	2051	2	5	7	1436	2	5	19	1247	1-	5	28	1710	2	5
1	2143	1-	5	7	1455	1	5	19	1543	1	5	28	1832	1-	5
2	1222	2	5	7	1616	1	5	20	0812	2	5	28	2103	1+	5
2	1433	2+	5	7	2025	1+	5	20	1436	1-	5	29	0745	2	5
2	1646	1+	5	8	0844	2	5	20	2113	1-	5	29	1002	2	5
2	1730	1-	5	8	1137	1-	5	21	1506	1	5	29	1446	2+	5
2	1752	1-	5	8	1300	1	5	21	1616	1-	5	29	1543	2+	5
2	1802	1	5	8	1422	1-	5	21	1903	1	5	29	1721	2	5
2	1839	2	5	8	1608	1	5	21	1944	2+	5	29	1945	2	5
2	1929	2	5	8	1830	1+	4	21	2044	1-	5	29	2236	2	5
2	2107	2	5	8	1930	1	5	22	0955	1-	5	30	0848	1-	5
2	2143	2	5	9	0314	1-	5	22	1746	1-	5	30	0940	2	5
3	0939	1+	5	9	1244	2	5	22	1759	1-	5	30	1016	1-	5
3	1045	1-	5	9	1957	1+	5	22	2027	1-	5	30	1130	1-	5
3	1345	1+	5	10	1253	1+	3	23	1223	1	5	30	1400	1+	5
3	1716	2+	5	11	1322	2	4	23	1448	1-	5	30	1424	1	5
3	1903	2	5	11	1952	1-	4	23	1530	1+	5	30	1544	1-	5
3	2141	2	5	12	1159	1+	5	23	1607	1-	5	30	1600	1+	5
3	2228	2	5	12	1454	2	5	24	1253	1-	5	30	1710	2+	5
3	2314	1+	5	12	1737	1-	5	24	1456	1-	5	30	1737	1+	5
4	1116	2+	5	13	1732	2+	5	24	1533	2+	5	30	1815	1	5
4	1345	1	5	13	1909	2+	5	25	0830	1	5	30	1954	3	5
4	1620	1+	5	13	2305	2	5	25	0954	1-	5	30	2101	2+	5
4	1647	1	5	14	1313	1-	5	25	1253	1-	5	31	1234	1	5
4	1836	2+	5	14	1635	1	5	25	1333	1+	5	31	1502	2	5
5	0834	1+	5	14	1927	2+	5	25	1805	2	5	31	1810	2	5
5	0956	2	5	14	2141	2+	5	25	1946	1	5	31	1902	1+	5
5	1321	1+	5	15	0907	1+	5	25	2216	1+	5	31	1917	2+	5
5	1345	1-	5	15	1416	1	5	25	2302	2	5				

SID Analysts: J. Ellerbe; S. Hansen; J. Knight; G. Miller; D. Overbeek; A. Stokes; M. Taylor; P. Taylor; A. Voorvelt; B. Wingate

DECnet: 9555::ptaylor INTERNET: ptaylor%SELVAX.dnet@east.gsfc.nasa.gov FAX: [USA] 706-353-2336

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