

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

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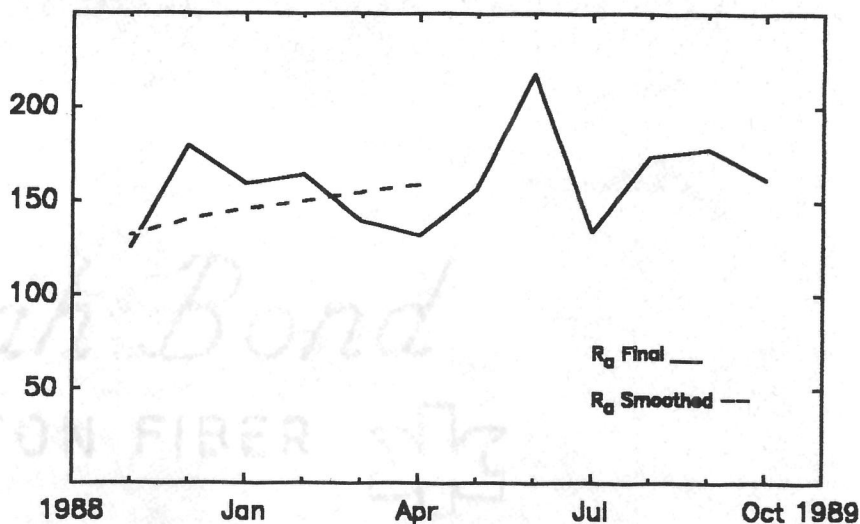


Volume 45 Number 10

October 1989

American Relative Sunspot Numbers for October

R _a Final		
1) 144	11) 191	21) 167
2) 146	12) 161	22) 149
3) 161	13) 157	23) 141
4) 186	14) 177	24) 133
5) 190	15) 188	25) 104
6) 193	16) 209	26) 98
7) 201	17) 195	27) 102
8) 177	18) 180	28) 123
9) 190	19) 160	29) 138
10) 196	20) 142	30) 152
		31) 141
Mean = 161.0		



The smoothed-mean American Relative Sunspot Number for April 1989 is 158.4. One-hundred seven members of the international network of **American Sunspot Program** contributors submitted reports for October. Solar activity was at a low level during the first half of the month. However, old SESC Region 5698 returned on the 14th as Region 5747 (S27, L211, DKO on 15 October) and activity increased considerably. A total of five X-class, and thirty-five M-level solar flares occurred during October. Region 5747 yielded all of the X-class flares and twenty-three of the M-level events. The most powerful of these was the X13/4B flare which occurred on the 19th. This event was followed by severe geomagnetic storm conditions on 20-22 October. Reports of auroral activity and intense magnetic disturbances were received from a number of low-latitude locations in both Northern and Southern Hemispheres. Region 5747 yielded the remaining X-level events on the 22nd (see page 2); 23rd (X1.5/2B); 24th (X5.7/3B) and 27th (X1.0/1N). The solar 10.7 centimeter radio flux and x-ray background levels were at 206 and C1.6, respectively, on 31 October.

The *estimated* American Sunspot Number for 1-16 November is 184. Sunspot and solar flare activity continued to be quite high during this period. Four X-level, and forty-four M-class x-ray solar flares have occurred thus far during November; thus the number of M-class events has already exceeded that recorded during October. Region 5783 (N18, L295, FKI on 12 November) produced the first X-level event, a X1.5/SN flare on the 12th. Region 5786 (N13, L251, FKI on 15 November) yielded two of the remaining X-level events on 15 November, and the third on the 16th. These were rated at X3.2/3B, X1.8/2B and X1.1/2B, respectively.

References: SESC PRF, Numbers 735-41, (1989); SESC SDF, Numbers 318-20, (1989).

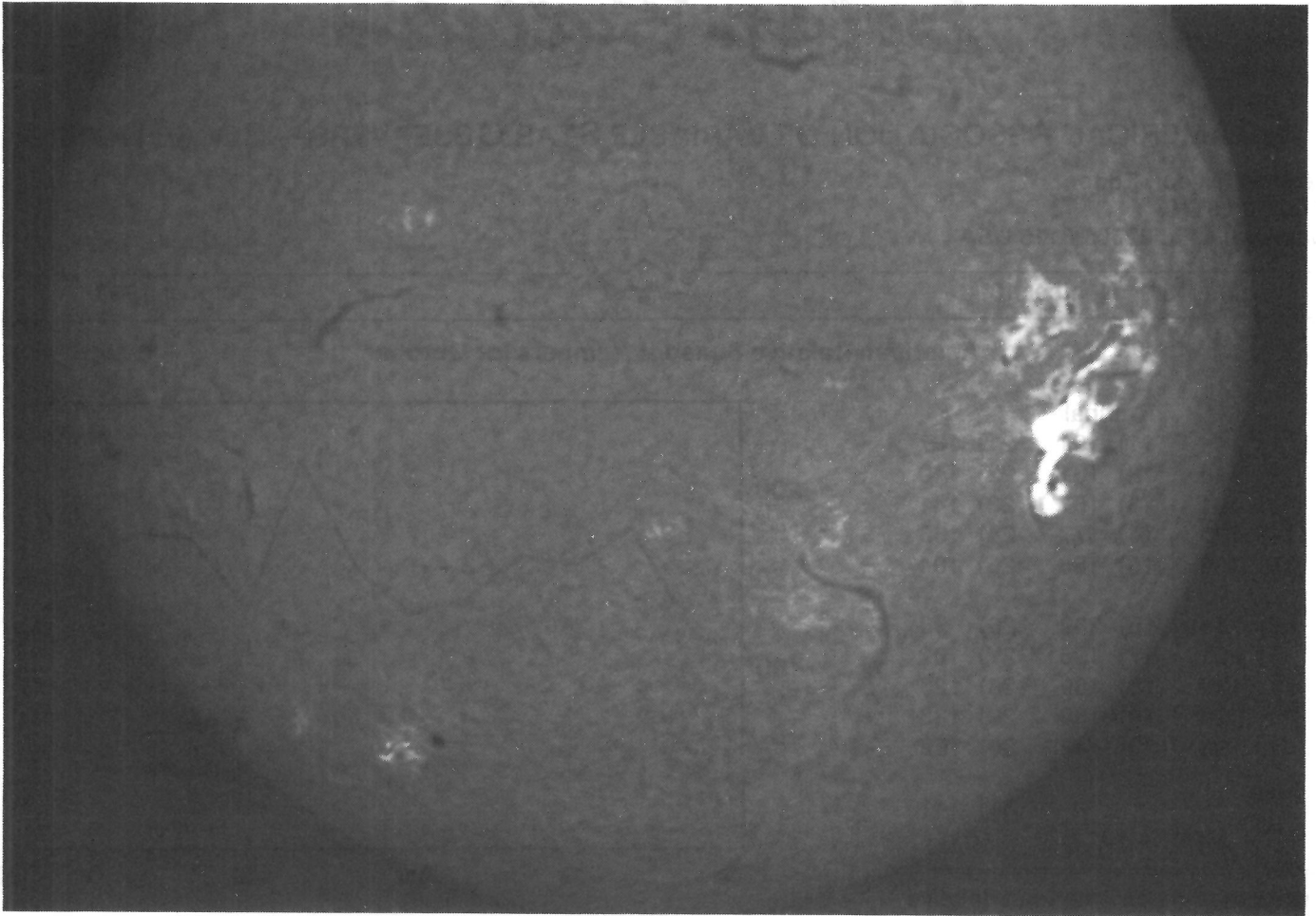
Predicted Smoothed Relative Sunspot Numbers McNish - Lincoln Method:

May 165 (11); June 171 (14); July 173 (19); August 176 (24); September 183 (27); October 188 (30).

Solar-Geophysical Data, 541, I, 14.

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



Major Solar Flare

This photograph shows a major solar flare from SESC Region 5747 (see page 1) at 18:00 Universal Time on 22 October. This event, rated X2.9/2B, reached its maximum x-ray intensity only a few minutes after this photograph was taken by American Sunspot Program collaborator, Gordon W. Garcia. This strong flare was accompanied by major type II and IV sweeps, and major discrete bursts including a 22,000 s.f.u. tenflare. Mr. Garcia took the photograph from the mid-western United States, using an $f/32$ Schmidt-Cassegrain telescope and a narrow-band hydrogen-alpha filter.

Reference: SESC PRF, Number 738, (1989).

Sudden Ionospheric Disturbances Recorded During September

Records were received from A1,3,9,19,46,50,52,61,62,63,64,65.

Day	Max	Imp	Day	Max	Imp	Day	Max	Imp	Day	Max	Imp	Day	Max	Imp
1	15:05	2	4	15:29	2	8	18:06	2+	14	23:58	1	23	22:36	1+
1	15:46	2	4	16:15	1+	8	20:31	1	15	13:28	1	24	13:19	2+
1	17:18	1+	4	19:13	2	8	21:28	2+	15	13:44	1-	24	15:42	1+
2	11:43	2+	4	21:13	2	9	15:34	1+	16	16:30	2	24	17:08	1
2	13:18	1-	5	13:43	2	9	18:56	2	16	18:50	1	24	17:59	2+
2	17:20	2	5	14:27	2	9	19:34	2	17	18:40	2+	24	20:46	2
2	18:22	2	5	16:10	2+	10	12:59	1+	18	15:48	1	25	19:30	2
2	19:45	2+	5	19:58	1+	10	13:33	1+	18	16:14	2	25	21:30	2
2	21:10	2+	5	21:30	2+	10	14:58	1-	18	18:59	2+	26	14:45	2+
2	22:32	2+	5	22:22	1+	10	15:12	1-	18	20:30	1+	26	16:50	3
3	14:32	2	6	16:59	1	11	16:58	1	19	16:04	2	26	19:02	2+
3	15:03	2	6	17:55	1+	11	19:44	1	19	19:46	2	27	17:05	2
3*	15:15	2	7	15:36	1+	11	21:06	2+	20	18:05	2	28	13:48	1+
3	18:46	1+	7	19:03	2	11	23:49	1+	21	16:00	2	29	11:30	2+
4	10:00	2	7	21:12	2+	14	17:36	1	21	17:33	2	29	15:16	2+
4	13:06	1+	8	15:10	2+	14	18:32	2	22	17:10	2	29	18:28	2

*Def = 4. Def = 5 for all other events. SID Analyst: Bruce R. Wingate