

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS — SOLAR DIVISION

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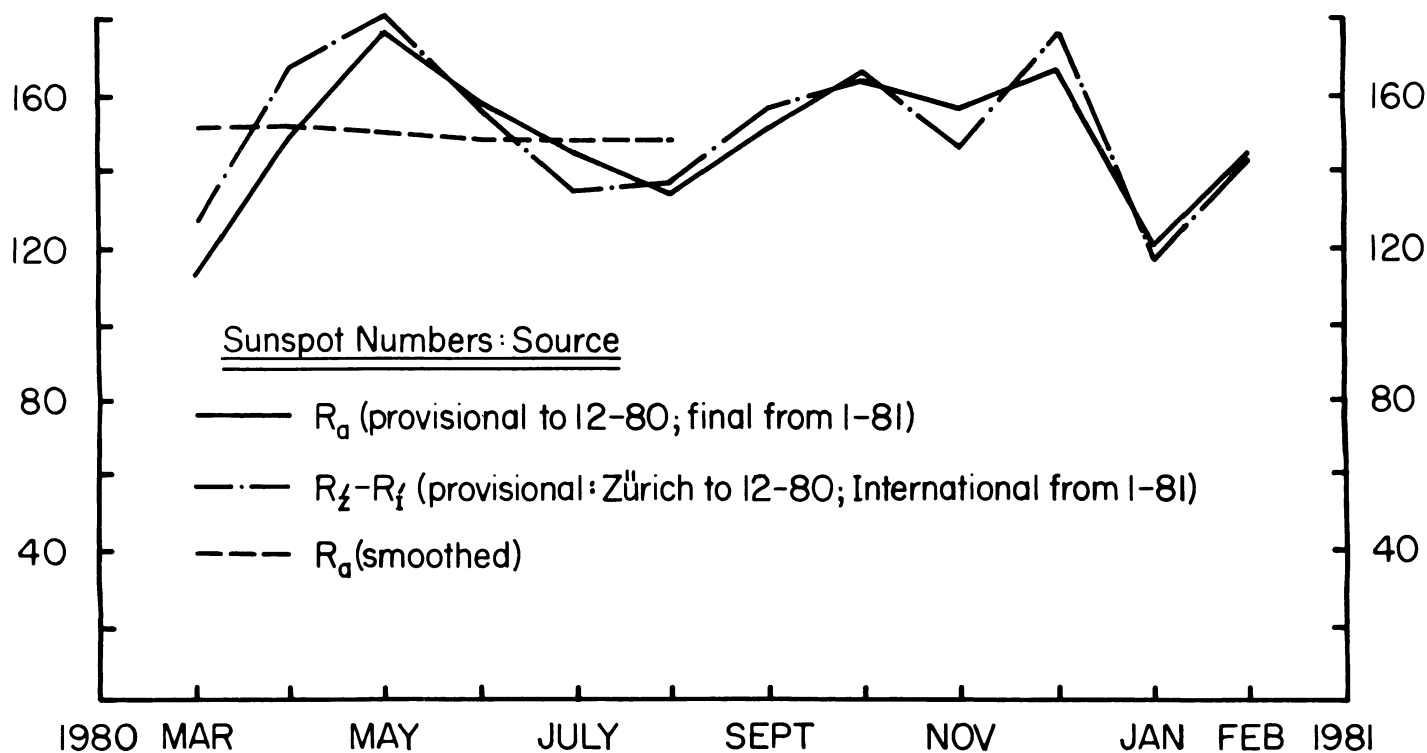
Number 2

February 1981

## SOLAR ACTIVITY DURING FEBRUARY 1981

Sunspot data are given in the summary graph at the bottom of this page, and in the table of daily numbers on page 2. The twelve-month smoothed mean of AAVSO sunspot numbers again dropped only slightly from 147.8 for July 1980 to 147.0 for August 1980. However, the monthly mean rose sharply from 115.4 for January 1981 to 143.7 for February 1981. Daily AAVSO sunspot numbers varied widely, from a low of 117 (February 23) to a high of 181 (February 27). Much of this variability was due to small, short-lived groups. Activity roughly centered in five extended regions (three in the northern hemisphere, two in the southern), whose central meridian crossing dates were approximately February 2, 9, 15, 22, and 28, and each of which contained from three to nine sunspot groups, many with persistently complex magnetic structure.

The Sudden Enhancements of Signal (SESs) detected by 18 members of the AAVSO Indirect Solar Flare Patrol are listed on page 2. The very great number of SESs (148) meeting criteria for listing suggest a combination of much-increased solar flare activity with a high ionospheric sensitivity associated in part with the time of the year. No other level of SES activity has approached that of February 1981 during the current sunspot cycle. At least one event was detected on each day of the month, with maximum numbers on February 6 (10), 7 (11), 8 (9), 20 (8), and 24 (13). Spread of activity over the month is also shown in the 17 days with four or more events and in the 11 events detected by 13 or more observers.



SUDDEN IONOSPHERIC DISTURBANCES (SESs) RECORDED DURING FEBRUARY 1981

Records were received from A1, 19, 26, 28, 31, 32, 37, 41, 43, 46, 48, 50, 51, 52, 54, 55, 56, 57

Day	Max	Imp	Def	Observers	Day	Max	Imp	Def	Observers	Day	Max	Imp	Def	Observers	
1	00:04	1-	5	A31,55,57	12	17:35	1	5	A1,26,31,46,48,54	23	22:06	1	5	A31,46,56,57	
1	18:55	1	5	A1,19,26,31,37,41,51	12	20:10	1	5	A1,26,28,31,46,51,55,56	24	00:17	3+	5	A31,46,55,56,57	
2	17:15	1+	5	A1,19,26,31,41,46,48,51,55,56	13	00:49	1-	5	A31,55,56	24	08:11	1	5	A31,55,56	
2	18:37	1	5	A1,19,26,31,41,48,51,55,56	13	04:21	1+	5	A31,55,56,52	24	08:25	2+	5	A31,55,56	
3	08:19	1	5	A31,56	13	06:24	2	5	A31,55,56,52	24	08:37	2+	5	A31,55,56	
3	18:20	2+	5	A1,19,31,41,46,56	13	08:01	2+	5	A31,55,56,52	24	09:48	2	5	A31,56	
4	01:26	1+	5	A31,55,56	13	14:18	1	5	A1,19,26,28,46,48,54	24	18:01	1+	5	A1,31,41,54,55,56,57	
4	16:31	1	5	A1,19,26	13	16:54	1-	5	A1,19,26,31,37,46,48,54	24	18:08	1	5	A31,41,54,55	
4	00:08	2	5	A31,55,56	13	19:45	1+	5	A1,19,26,28,31,37,46,48,50,51,54,55	24	18:25	2+	5	A1,19,31,32,37,41,46,50,54,55,56,57	
5	01:45	1-	5	A31,55,56	13	22:01	1+	5	A31,46,56	24	18:59	1-	5	A31,41,57	
5	21:24	1	5	A1,31,37,46,54,55,56	14	07:58	1+	5	A52	24	19:38	4	5	A1,19,31,32,37,41,46,48,50,54,55,56,57	
5	22:43	2	5	A31,55,56	14	18:27	2	5	A1,19,26,28,31,32,37,46,48,50,51,54,55,56	24	20:46	1	5	A1,31,41,46,54,55,56,57	
5	22:56	1	5	A31,55,56	15	00:59	1-	5	A55,56	24	21:32	1+	5	A31,41,46,55,56	
6	00:43	2	5	A31,55,56	15	15:52	1+	5	A54,55	24	23:04	1+	5	A31,41,56,57	
6	05:17	2	4	A31,55,56	15	19:07	2	5	A1,19,26,28,31,32,37,46,48,50,51,54,55,56,57	25	02:07	1+	5	A31,46,56	
6	08:06	2	5	A31,52,55	15	19:42	1-	5	A1,19,26,28,31,50,56,57	25	02:50	3	5	A31,46,55,56	
6	14:05	1	4	A1,19,26,32,46	15	21:15	1+	5	A1,19,26,31,32,46,48,50,51,55,56,57	25	15:57	2	5	A1,19,26,31,32,41,46,48,54,56,57	
6	15:53	1-	5	A1,19,32,46	16	17:24	1	5	A1,19,26,28,31,32,46,48,51,54,56,57	25	18:04	2	5	A1,19,26,31,37,41,46,48,54,56	
6	16:31	1+	5	A1,19,26,31,32,48,51,54,56	16	17:38	1+	5	A1,19,26,28,31,32,46,48,50,51,54,55,56,57	25	18:28	1-	5	A1,19,26,31,32,46,54,56	
6	17:20	1	5	A1,19,26,31,32,54,56,52	17	18:56	2+	5	A1,19,31,32,41,46,50,54,56	25	19:44	1-	5	A1,19,31,51,56	
6	18:03	2+	5	A1,19,26,31,37,46,48,50,51,54,56	17	19:14	1	5	A1,19,31,32,41,50,54,55,56	26	01:50	1+	5	A31,46,55,56	
6	21:28	2+	5	A1,31,37,46,54,55,56	17	21:56	3+	5	A1,19,31,32,41,46,50,51,54,55,56	26	14:28	2+	5	A1,19,26,31,32,46,48,50,54,55,56	
6	22:04	1-	5	A1,31,46,56	18	06:16	1+	5	A31,56,52	26	16:47	1+	5	A1,19,26,28,31,32,46,48,54,56	
7	03:35	1	5	A31,55,56,52	18	16:45	2	5	A1,19,28,31,32,41,46,48,50,51,54,55,56,57	26	18:21	1	5	A19,26,31,46,54	
7	13:50	1	5	A1,19,26,28,46,48,54	19	02:59	2+	5	A31,55,56	26	18:48	4	5	A1,19,26,28,31,46,48,54,55,56,57	
7	15:40	1	5	A1,19,26,28	19	03:43	1+	5	A31,55,56,52	26	19:54	3+	5	A1,19,26,31,32,46,48,51,54,56,57	
7	15:56	1	5	A19,26,28	19	10:41	1+	5	A52	26	23:34	1+	5	A31,46,50,55,56,57	
7	16:48	2	5	A1,19,26,28,31,32,37,46,48,50,51,54,55,56	19	18:50	1-	5	A31,56	27	01:37	1	5	A31,46,55,56,57	
7	18:02	1-	5	A1,19,26,28,31,32,37,46,48,50,51,56	19	21:31	1-	5	A31,55,56	27	15:14	1+	5	A1,31,54,56	
7	18:37	2+	5	A1,19,26,28,31,32,37,46,48,50,51,54,55,56	20	00:32	2+	5	A31,56	27	16:04	1+	5	A31,54,56	
7	21:03	1	5	A1,19,26,31,37,46,48,50,54,55	20	03:40	1-	5	A31,46,55,56	27	17:17	1	5	A1,31,56	
7	22:21	1-	5	A1,31,37,46,55,56	20	06:00	2	5	A31,55,56,52	27	17:50	1+	5	A1,31,56	
7	22:32	2+	5	A1,19,31,37,46,50,55,56	20	06:48	3+	5	A31,55,56,52	27	20:19	2+	5	A1,19,31,41,46,54,56,57	
7	23:14	1-	5	A31,37,55,56	20	14:58	3+	5	A19,26,32,48,51,54,55,56	28	00:46	1	5	A31,56,43	
8	01:16	1+	5	A31,56	20	18:24	2	5	A1,31,55						
8	01:37	2	5	A31,55,56	20	20:16	2+	5	A1,19,26,31,32,41,50,54,55,56						
8	01:43	1+	5	A55,56	20	23:06	1-	5	A55,56						
8	03:32	1+	5	A31,46,55,56,52	21	17:13	3	5	A1,19,26,28,31,32,37,41,46,48,50,54,56						
8	04:23	1-	5	A31,55,56	21	19:08	1+	5	A1,19,26,28,31,32,41,46,48,50,54,56						
8	13:46	1-	5	A1,19,26,48	21	20:06	2	5	A1,19,26,28,31,32,41,46,48,50,54,55,56						
8	17:24	3	5	A19,31,37,55,56,52	22	02:55	2	5	A31,55,56						
8	18:14	2+	5	A1,19,26,31,32,37,46,48,50,51,54,55,56	22	15:58	1+	5	A1,19,26,31,32,46,48,50,51,54						
8	22:58	3	5	A31,46,56	22	18:55	1-	5	A31,37,55,56,57						
9	07:01	3	5	A31,55,56,52	22	19:09	1+	5	A19,26,31,37,56,57						
9	15:58	1	5	A1,19,26,28,48,51	22	21:20	1	5	A31,46,56,57						
9	16:53	1	5	A1,19,26,28,48,51,56	22	21:27	1	5	A1,19,26,31,41,46,50,56,57						
9	17:30	1	5	A19,26,28,56	22	22:07	1+	5	A1,31,56,57						
10	02:06	1-	5	A31,55,56	22	23:38	1	4	A31,55,56						
10	02:28	1-	5	A31,56	23	17:06	2	5	A1,26,28,31,46,48,56						
10	03:25	1-	5	A31,46,55,56	23	18:36	1-	5	A1,26,31,54,56						
10	10:38	2	5	A52	23	20:43	2+	5	A1,26,31,46,56,57						
10	17:18	1+	5	A1,19,31,46,54,56	23	21:28	2	5	A1,19,26,31,32,37,41,46,50,51,54,56,57						
10	18:35	1-	4	A31,56											
11	03:42	1	5	A31,55,56											
11	03:58	2+	5	A31,55,56											
11	16:27	2	5	A19,26,31,32,46,51,54,56											
11	17:52	2+	5	A19,31,46,54,56											
11	23:00	1	5	A1,31,37,50,55,56											
12	01:25	1+	5	A31,55,56											
12	09:37	1-	5	A52											
12	13:47	1-	5	A52											
12	15:35	1	5	A1,26,28,32,46,48,51,54											

FEBRUARY 1981		
RELATIVE SUNSPOT NUMBERS (R):		
AAVSO (a), INTERNATIONAL (I)		
Day	R <sub>a</sub> (final)	R <sub>i</sub> (prov)
1	127	148
2	126	132
3	125	154
4	132	126
5	144	133
6	167	172
7	164	158
8	138	129
9	134	124
10	159	157
11	174	178
12	167	185
13	150	153
14	141	142
15	130	124
16	133	129
17	132	120
18	135	131
19	133	138
20	156	133
21	129	142
22	134	136
23	117	98
24	136	124
25	147	137
26	147	169
27	181	175
28	165	170
Mean	143.7	143.5