

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS — SOLAR DIVISION

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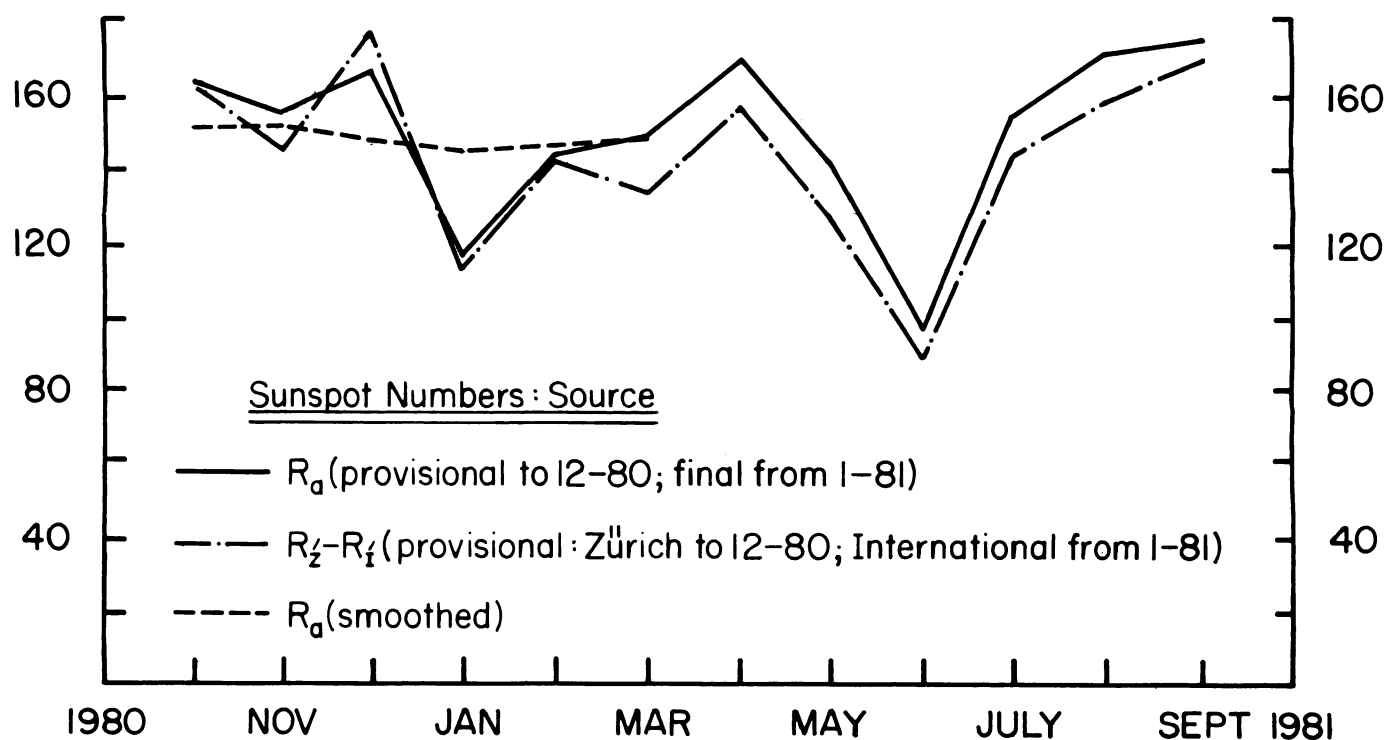
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September 1981

## SOLAR ACTIVITY DURING SEPTEMBER 1981

For sunspot data, see the graph at the bottom of this page and the table of daily numbers on page 2. Activity increased during September 1981, with the monthly mean of AAVSO sunspot numbers reaching 174.5, even greater than the previous high for the year of 170.4 in August. This continued overall increase in activity raised the smoothed mean for March 1981 to 149.2 from 146.8 in February. Final daily AAVSO numbers reached a high of 227 on the 6th, due to the appearance around the east limb of a region including 5 groups, one of which developed 80+ individual spots. At the same time, another complex group near the central meridian developed 35+ spots. The numbers then decreased to a low of 131 on the 17th, as both numbers and sizes of spot groups declined rapidly. From the 17th, activity increased irregularly, with many small groups appearing. These small groups, usually containing fewer than 5 individual spots, accounted for most of the activity visible from the 20th through the end of the month.

In September, 17 observers in the AAVSO Indirect Solar Flare Patrol detected 149 high-certainty Sudden Enhancements of VLF radio Signal (SESs), as summarized on page 2. This number represented a marked decrease from the 188 listed in August. Level of activity was still high early in the month, but declined to only 19 events in the last 10 days. Daily frequencies varied enormously, from 16 (5th) and 15 (7th) to zero (25th). 14 of the total 17 Importance 3 and 4 events were observed in the first 10 days of the month!



SUDDEN IONOSPHERIC DISTURBANCES (SESs) RECORDED DURING SEPTEMBER 1981

Records were received from Al, 9, 19, 26, 28, 31, 37, 40, 43, 46, 48, 50, 51, 52, 54, 55, 57

Day	Max	Imp	Def	Observers	Day	Max	Imp	Def	Observers	Day	Max	Imp	Def	Observers
1	01:40	1+	5	A31,43,56	8	15:41	1+	5	A1,19,31,37,50,54,56	23	18:06	1-	5	A9,19,31,37,46,54,56
1	05:47	2	5	A43	8	17:08	4	5	A1,19,31,50,54,56	24	05:30	1-	5	A31
1	14:21	1-	5	A54,56	9	01:18	1-	5	A31,43,56	26	18:45	1	5	A1,19,26,31,46,50,54
1	16:58	1	5	A1,31,37,50,54,56	9	07:34	1	5	A52	26	10:26	2	5	A52
2	06:22	1+	5	A43,52	9	11:52	2	5	A52	27	01:30	1-	5	A43
2	08:49	1-	5	A52	9	13:38	3+	5	A1,19,26,48,51,52	27	18:45	1	5	A1,19,26,31,46,50,54
3	15:22	2	5	A1,19,26,48,50,54	9	16:07	1	5	A9,19,31,37,48,50	28	23:56	1	5	A43,56
3	16:45	1+	5	A1,9,19,26,31,48,51,54,56	9	16:23	1+	5	A1,9,19,48,50	29	01:27	1-	5	A43
3	17:13	1-	5	A19,31,48,56	9	20:00	1	5	A19,31,48,51,54,56	29	05:42	1+	5	A43,52
3	19:17	1	5	A1,9,19,26,31,46,48,51,54,56	9	20:39	1-	5	A19,50,54,56	29	14:31	3+	5	A1,19,50,54,56
3	21:21	1-	5	A9,26,31,46,54,56	9	22:18	3+	5	A1,9,19,26,31,37,50,51,56	30	00:55	2	5	A31,43,56
3	23:14	3+	5	A9,19,26,31,37,43,46,50,51,56	10	04:39	2+	5	A43,52	30	05:28	1-	5	A52
4	08:37	1	5	A52	10	06:48	1-	5	A52	30	17:30	1+	5	A1,9,19,26,28,31,37,46,50,51,56,57
4	09:10	1-	5	A52	10	07:30	3	5	A52					
4	16:06	2	5	A9,19,26,31,37,46,48,50,51,54,56	10	08:21	4	5	A52					
4	18:03	2	5	A19,31,48	10	09:42	4	5	A52					
4	00:16	2	5	A31	10	17:32	2+	5	A1,9,19,26,31,46,48,51,54,56					
5	01:12	1-	5	A31	10	18:23	1-	5	A1,19,48					
5	05:45	1-	5	A43,52	11	03:26	2	5	A31,43,52,56					
5	06:37	1-	5	A52	11	10:18	2	5	A52					
5	07:10	1-	5	A52	11	17:11	1-	5	A1,19,31,37,46,48,50,51,56					
5	07:52	2	5	A52	11	17:53	2+	5	A1,9,19,26,31,37,46,48,50,51,54,56					
5	08:33	4+	5	A52	11	23:17	2	5	A9,19,31,43,46,50,56					
5	09:58	1	5	A52	12	00:54	1-	5	A56					
5	10:37	3+	5	A52	12	05:13	1	5	A52					
5	14:52	1-	5	A19,48	12	05:32	1+	5	A52					
5	16:00	1-	5	A19,48	12	18:07	1-	5	A1,31,37,46,48,50,51,54,56					
5	16:13	1-	5	A1,9,48	12	22:29	1-	5	A37,46,50,56					
5	17:20	1	5	A1,19,48	13	10:06	1+	5	A52					
5	18:14	1-	5	A19,26,28,31,46,48,50,51,54,56	13	19:57	1-	5	A1,19,26,31,46,48,54,56,57					
5	18:27	3	5	A1,9,19,26,28,31,37,46,48,50,51,54,56	13	23:45	1-	5	A37,46,57					
5	19:08	3+	5	A1,19,26,28,31,37,46,48,50,51,54,56	14	15:45	1-	5	A19,48					
5	23:34	1-	5	A43,46,50	14	16:42	2	5	A19,48					
6	00:03	2	5	A46,50	14	18:28	2	5	A1,19,26,28,31,46,48,51,54,56,57					
6	05:51	1	5	A43,52	14	18:51	1-	5	A9,19,31,46,48,51,56					
6	06:51	1+	5	A52	14	23:01	1-	5	A31,37,56,57					
6	07:37	1	5	A52	15	00:55	1+	5	A31,43,52,56					
6	08:00	3	5	A52	15	09:08	1-	5	A52					
6	08:47	1+	5	A52,56	15	13:52	1+	5	A1,19,52,54					
6	15:38	1-	5	A1,19,26,28,37,48,50	15	18:51	1-	4	A31,46,50,54					
6	16:57	1	5	A1,9,19,26,28,31,37,46,48,50,51,54	15	21:06	1-	4	A31,46					
6	18:03	1+	5	A31	15	21:20	2+	5	A1,9,19,26,31,37,46,50,51,54,56,57					
6	19:42	1-	5	A1,9,19,26,31,46,48,50,51,54,56	16	13:37	1-	5	A1,19,26,31,48,51,52					
6	21:19	3+	5	A1,9,19,26,28,31,37,43,46,48,50,51,54,56	16	13:46	2	5	A1,19,48,51,52					
6	21:46	1-	5	A1,19,26,31,46,48,50,51,54,56	16	16:15	1-	5	A19,48					
7	00:14	2	5	A31,46	16	18:00	2	5	A1,9,19,26,28,31,46,48,50,51,56,57					
7	09:16	1	5	A52	16	21:37	1-	5	A1,19,26,31,37,46,48,50,51					
7	10:46	1	5	A52	17	06:20	4	5	A52					
7	11:57	2	4	A52	17	06:56	1	5	A52					
7	12:22	1-	5	A1,19,26,28,48,51,52	17	17:05	1-	5	A1,19,31,48,50					
7	13:34	1+	5	A1,19,26,28,48,51,52	17	18:30	2	5	A1,19,26,28,31,46,48,50,51,56,57					
7	14:18	1-	5	A1,19,48	17	23:34	1	5	A31,37,46,50,56,57					
7	14:52	1+	5	A1,19,26,28,31,48,50,51	18	01:43	1-	5	A31,56					
7	16:54	2	5	A1,19,31,37,48,50,54	18	14:23	1	5	A1,19,26,48					
7	17:06	1	5	A1,19,31,48,50	18	17:38	1	5	A1,19,26,31,48,51,57					
7	18:22	2+	5	A1,9,19,26,31,46,48,50,51,54,56	18	17:53	1	5	A1,19,31,48,57					
7	18:44	2+	5	A1,19,26,31,46,48,50,51,54,56	18	21:51	1-	5	A31					
7	20:09	3+	5	A1,9,19,26,31,37,46,48,50,51,54,56	19	03:40	1	5	A43					
7	21:00	1	5	A1,9,19,26,31,46,48,50,51,56	19	04:19	1-	5	A43,52					
7	22:28	2+	5	A1,9,19,26,31,43,46,50,51,56	19	05:56	2	5	A31,43,52,56					
8	03:45	1	5	A43	19	16:53	1	5	A1,9,19,26,28,31,46,48,50,51,56					
8	04:15	1+	5	A43,52	20	08:25	1-	5	A52					
8	05:06	2	5	A43,52	20	16:45	1-	5	A19					
8	05:45	1-	5	A43,52	21	11:03	1-	5	A52					
8	06:38	1	5	A52	22	08:53	4	5	A52					
8	14:28	1-	5	A54	23	06:08	1-	5	A52					
					23	06:21	1-	5	A52					
					23	07:23	1+	5	A43,52					
					23	14:30	1	5	A1,19,48					

September 1981		
RELATIVE SUNSPOT NUMBERS (R):		
AAVSO (a), INTERNATIONAL (I)		
Day	R <sub>a</sub> (final)	R <sub>I</sub> (prov)
1	214	219
2	180	183
3	169	160
4	177	170
5	197	195
6	227	220
7	225	205
8	224	208
9	210	190
10	201	202
11	176	164
12	156	138
13	149	132
14	164	148
15	151	129
16	138	138
17	131	129
18	148	145
19	151	169
20	134	134
21	159	175
22	153	172
23	146	137
24	140	148
25	148	142
26	162	171
27	201	181
28	215	195
29	185	191
30	203	190
Mean	174.5	169.3