

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS — SOLAR DIVISION

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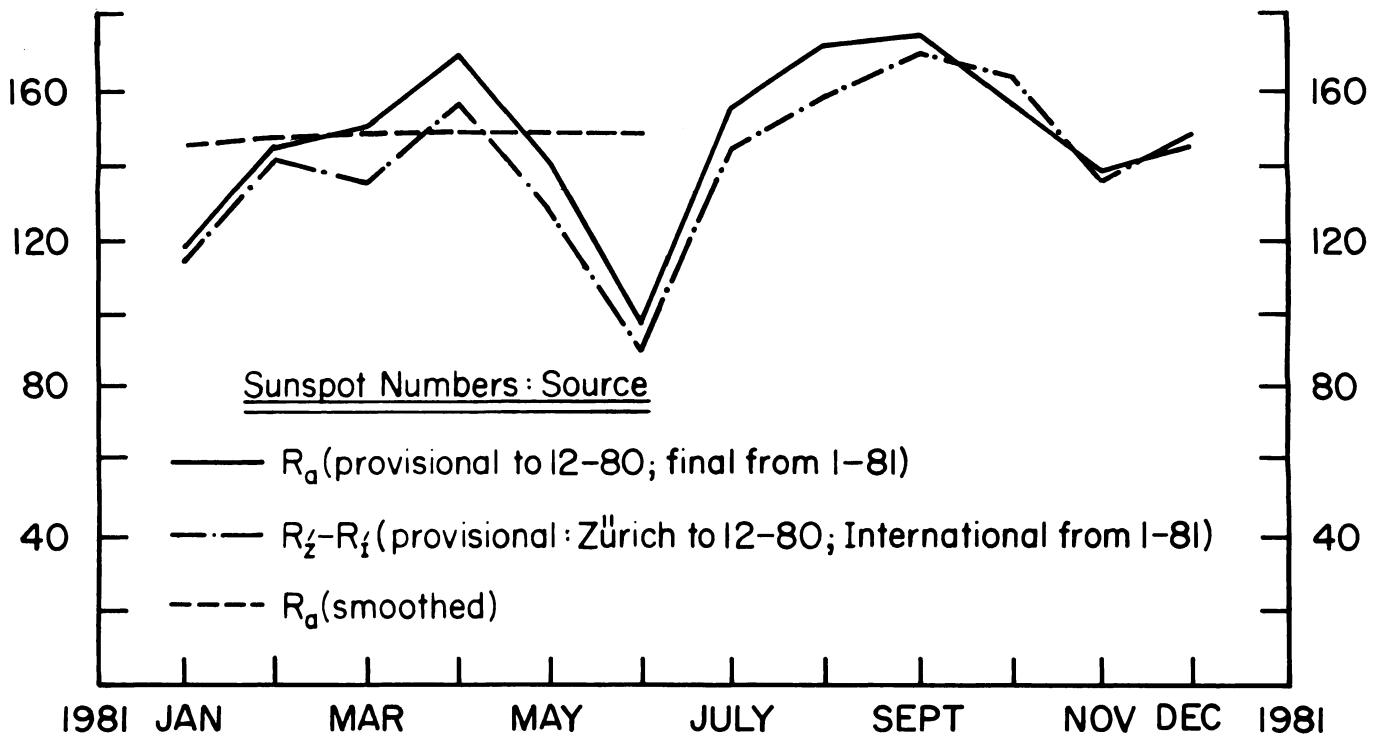
Number 12

December 1981

SOLAR ACTIVITY DURING DECEMBER 1981

Sunspot number data are given in the graph at the bottom of this page and in the table of daily values on page 2. Overall activity increased slightly during December 1981, with the monthly mean for final AAVSO sunspot numbers rising to 145.0 from 138.8 in November. The smoothed mean continued its decrease, from 149.0 for May 1981 to 147.4 for June 1981. There was a large range of daily sunspot numbers, from a high of 266 on the 10th to a low of 50 on the 20th, as activity continued to be concentrated in one "longitudinal hemisphere," with a few scattered groups elsewhere. Daily R_a numbers started high and increased steadily through the 10th, at which time the active hemisphere was centered on the disc, with 20 groups, including 3 with 15+ individual spots. Sunspot numbers first decreased rapidly to the 20th, with only a few small groups visible, then began a gradual, irregular increase through the end of the month as the leading groups of the active hemisphere appeared around the limb.

Only 80 Sudden Enhancements of VLF Signals (SEs) were detected during December by observers in the AAVSO Indirect Solar Flare Patrol, as given on page 2. Most (66) occurred in the first fifteen days of the month, with greatest frequency (8) on the 9th. Only 5 SEs of Importance 3 were noted, and none of Importance 4. Thus both total number and importance of SEs were much lower than in November. Two records are included, one contributed by A48 with a "textbook" SES on 21.4 kHz, and one by A52 showing an apparent inference-wave sequence on the 21.4 kHz path from North America to South Africa. This series of "waves" appears quite similar to those recorded frequently on the 22.3 kHz path from Australia to North America.



SUDDEN IONOSPHERIC DISTURBANCES (SESs) RECORDED DURING DECEMBER 1981

Records were received from A1, 9, 19, 26, 28, 31, 37, 43, 46, 48, 50, 51, 52, 55, 56, 57

Day	Max	Imp	Def	Observers	Day	Max	Imp	Def	Observers
1	01:09	1+	5	A31,43,55,56	9	15:06	1-	5	A1,19,28,31,48,51,52
1	06:00	1+	5	A31,43,55	9	17:20	1	5	A1,19,26,28,31,50,51,55,56,R.M.
1	08:03	1	4	A31,55,56	9	18:45	1	5	A1,19,26,28,31,37,48,50,51,55,56,R.M.
1	08:47	1+	5	A31,55	9	19:15	3+	5	A1,19,26,28,31,37,48,50,51,55,56,R.M.
1	14:45	1	4	A31	10	05:30	1-	5	A43,52
1	15:15	2	5	A31	10	06:43	1-	5	A52
1	17:12	3	5	A1,9,19,31,37,46,50,55,56,57,R.M.	10	15:36	1-	5	A1,19,26,28,31,48,51
2	03:56	1+	5	A31,43,55,56	10	16:40	1-	5	A1,19,26,31
2	17:11	1	5	A26,55,56	10	17:13	1-	5	A1,19,28,31,50,51,55
2	18:05	1-	5	A26,55,56	10	18:27	1+	5	A1,19,26,28,31,46,50,51,55,56,57
2	20:39	1	5	A19,26,28,31,37,50,55,56	10	21:58	2	5	A31,37,43,50,55,56,57
3	07:58	1+	5	A31,56	11	04:47	1	5	A43,52,56
3	17:45	1+	5	A1,19,26,28,31,43,46,48,51,55,56,57	11	07:52	1-	5	A43,52
4	03:22	1	5	A43,52	11	20:21	1-	5	A1,31,48,50,57,R.M.
4	08:41	2	5	A43	12	01:47	1-	5	A56
4	14:30	2+	5	A31,55,56	12	03:33	2+	5	A31,43,52,55,56
4	16:21	1-	5	A31	12	04:30	1-	5	A43
4	17:34	1+	5	A1,19,26,28,31,46,48,51,55,56,57,R.M.	12	17:01	3	5	A1,19,26,28,31,37,46,48,50,51,57,R.M.
5	00:38	1	5	A43	13	11:06	1+	5	A52
5	15:56	1	5	A19,26,48	13	19:06	1+	5	A1,19,26,31,37,46,48,50,51,56,57,R.M.
5	19:40	1	5	A31,50	13	21:35	2+	5	A1,31,37,43,46,50,55,56,57
6	17:16	1-	5	A1,31,48,50,51,55,56,R.M.	15	00:53	1-	5	A43
6	19:02	1+	5	A1,19,26,28,31,37,46,48,50,51,55,56,57,R.M.	15	19:54	3	5	A1,26,31,46,50,51,55,56,57,R.M.
6	20:04	1-	5	A31,37,50,55,56,57	15	23:41	1-	5	A43
6	21:33	1+	5	A31,37,50,55,56,57	16	16:24	2+	5	A1,9,19,26,28,31,48,50,51,55,R.M.
7	13:38	1-	5	A1,46,52	17	08:26	2	5	A52
7	14:13	1-	5	A1,19,48,51	17	08:24	1	5	A43
7	14:54	1+	5	A1,19,26,28,31,46,48,51,52	19	07:58	2	5	A31,56
7	15:15	1-	5	A19,26,28,48,51	21	18:24	1-	4	A55
7	16:45	1-	5	A1,19,28,31,48,51	21	21:19	1-	5	A52
7	19:08	1	5	A1,19,26,28,31,37,46,48,50,51,56,57	24	18:43	1-	5	A1,19,26,31,51,56
7	20:32	1-	5	A1,31,37,50,57	25	17:34	1-	5	A1,R.M.
8	15:29	1	5	A1,50,56	27	09:28	1-	5	A52
8	17:17	1-	5	A19,31,37,55,R.M.	28	10:36	1+	5	A52
8	17:38	1-	4	A31	28	18:11	1+	5	A1,26,28,31,51,55,56
8	18:04	1-	5	A1,19,28,31,46,55,56,57,R.M.	28	18:33	1-	5	A31,46,51,55
8	18:38	2	5	A1,26,28,31,37,46,51,55,56,57,R.M.	31	01:12	2	5	A31
8	22:45	1	5	A31,37,43,55,56,57	31	19:32	1+	5	A1,26,31,46,48
9	01:50	1+	5	A43,55,56					
9	03:53	2+	5	A31,43,52,55,56					
9	05:18	1-	5	A52					
9	06:53	3	5	A32,43,52,55,56					

December 1981		
RELATIVE SUNSPOT NUMBERS (R):		
AAVSO (a), INTERNATIONAL (I)		
Day	R _a (final)	R _I ' (prov)
1	185	162
2	187	197
3	198	212
4	208	201
5	213	200
6	230	232
7	235	244
8	247	249
9	250	247
10	266	271
11	232	249
12	214	209
13	190	185
14	153	159
15	111	113
16	66	66
17	76	80
18	78	79
19	71	74
20	50	57
21	64	72
22	77	73
23	77	86
24	67	76
25	79	62
26	94	100
27	104	104
28	129	136
29	120	122
30	108	102
31	115	140
Mean	145.0	147.1

