

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

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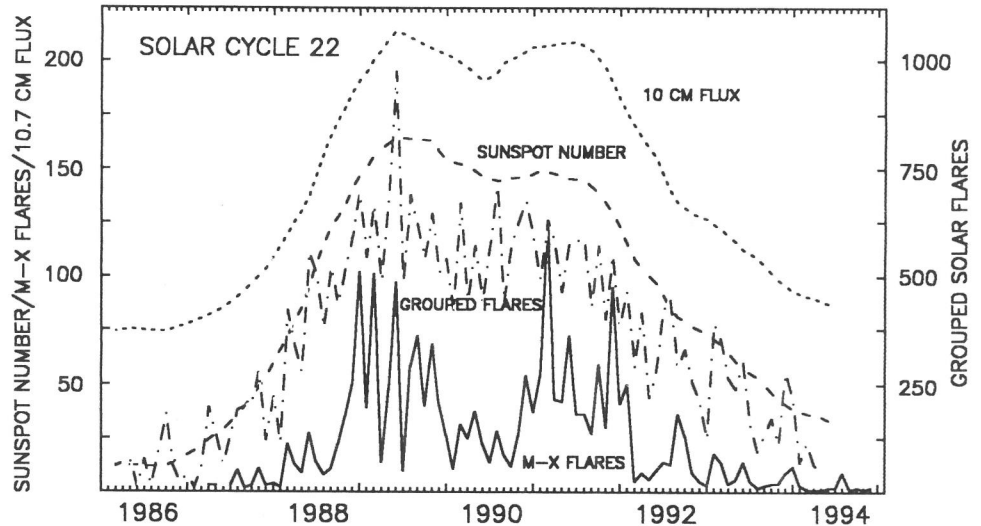
December 1994

## American Relative Sunspot Numbers for December

		R <sub>a</sub> Final			
1)	10	11)	51	21)	21
2)	8	12)	52	22)	26
3)	2	13)	40	23)	26
4)	11	14)	34	24)	28
5)	14	15)	29	25)	36
6)	12	16)	23	26)	37
7)	21	17)	34	27)	28
8)	25	18)	33	28)	19
9)	38	19)	26	29)	17
10)	40	20)	17	30)	9
				31)	0

Mean: 24.7

Number of reports: 95



**Note:** December 1994 marks the 50th Anniversary of the American Relative Sunspot Number. The editor wishes to extend his sincere appreciation to all past and present contributors to this program, without whose dedicated and expert observations this exceptional milestone could not have been attained.

**December Summary:** Solar activity was mainly very low during the first week of December (activity was low on the 4th and 5th by virtue of two separate optically-uncorrelated class C1 flares). The geomagnetic field was quiet to unsettled with minor storm levels reported by some stations on the 2nd and 6th; the latter a likely result of coronal hole effects. The > 2 MeV electron fluence continued to be moderate and high (E + 08) through the 5th, decreased to normal on the 6th, and rose again to moderate at the end of the week.

Activity was mostly in the low range throughout week two. NOAA/USAF Region 7815 (S10, L229, EK1) grew to encompass over 720 millionths of the solar hemisphere during the period, spawning a number of class C and lesser-intensity flares in the process. Then, on the 14th, Region 7815 produced the first class M flare since October, a M2.5/1N which reached maximum at 0541 UT. This event was to be the only class M flare recorded during December. The > 2 MeV electron fluence began a general decline on the 10th. The geomagnetic field was quiet to unsettled with occasional active conditions.

Solar activity varied between very low and low during the third week of December. The long string of consecutive spotless days in the Sun's Northern Hemisphere apparently ended at twenty on the 17th, when Region 7817 (L104, ESO) rotated around the eastern limb. However, this group was located very close to the solar equator. Its latitude was originally determined to be N02, but during the next few days that location gradually became more southerly, reaching S02 on the 20th. A second northern group, Region 7819 (N07, L183, AXX), appeared briefly on the 18th, but otherwise activity was confined to the south. Isolated periods of storm conditions - related to a recurrent coronal hole - occurred during the first part of the week, but for the remainder of the period the geomagnetic field varied between quiet and unsettled.

Activity was very low during the remainder of the month. December's third Northern Hemisphere group (Region 7820) made a brief appearance in the NW disk quadrant on the 22nd-23rd. SOON network observations of Region 7817 placed the group in the Southern Hemisphere for several consecutive days, although as the region neared the western limb it was again listed as a Northern Hemisphere complex. An eruptive prominence followed the group's departure early on the 29th. The geomagnetic field was quiet to active with occasional storm conditions related to coronal hole activity around mid-week. The > 2 MeV electron fluence rose briefly to moderate and high, and then declined. The smoothed-mean American Relative Sunspot Number for June 1994 is 32.1. The final yearly mean for 1994 is 31.0.

The mean estimated American Relative Sunspot Number for 1-15 January is 10.

### American Relative Sunspot Numbers for 1994

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	89	33	49	16	35	0	34	12	42	17	48	10
2	79	40	59	5	37	0	41	12	50	18	43	8
3	91	43	76	0	25	0	34	14	58	19	40	2
4	101	48	58	2	14	0	34	15	58	29	30	11
5	104	47	59	6	11	0	28	17	63	41	34	14
6	98	44	71	3	18	7	31	17	60	54	26	12
7	94	49	58	0	18	22	57	13	56	48	18	21
8	80	54	48	8	21	43	58	14	49	43	20	25
9	67	48	44	8	14	44	49	14	45	50	23	38
10	51	38	36	10	18	50	61	17	31	52	24	40
11	41	32	40	11	21	56	72	22	15	49	14	51
12	43	39	48	11	28	53	67	39	10	44	15	52
13	45	49	42	13	36	46	58	47	10	44	7	40
14	38	44	22	15	37	58	55	42	10	60	6	34
15	36	36	26	20	30	54	35	42	9	56	0	29
16	32	41	26	15	36	51	46	45	9	52	10	23
17	26	45	24	18	38	42	47	42	13	44	19	34
18	30	43	19	17	35	36	43	38	22	51	18	33
19	31	33	10	23	31	32	26	44	15	60	12	26
20	37	21	11	29	28	16	25	29	0	51	8	17
21	54	17	19	34	26	12	24	16	0	38	9	21
22	66	40	29	40	23	16	15	11	10	33	9	26
23	72	41	25	38	18	24	14	19	13	28	9	26
24	74	40	34	40	9	34	15	18	14	17	9	28
25	74	37	44	34	8	25	11	13	20	25	17	36
26	68	37	28	33	1	14	13	13	26	50	22	37
27	53	46	22	35	0	12	11	11	28	56	21	28
28	49	47	19	21	0	14	12	13	22	56	21	19
29	54		19	10	0	23	7	17	12	57	14	17
30	42		31	17	0	27	12	26	18	56	12	9
31	33		35		0		12	38		56		0
<b>Mean:</b>	59.7	40.4	36.5	17.7	19.9	27.0	33.8	23.5	26.3	43.7	18.6	24.7

Yearly Mean: 31.0

### Sudden Ionospheric Disturbances (SES) Recorded During November 1994

Records were received from A9,40,50,59,61,62,63,65,67,68,69,70,71,72,73,74,75,76,77,78,80,81,82,83,84,85

Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	De
2	1057	1	5	7	2200	1-	5	26	0930	1+	5	27	1616	1+	5
2	1555	1-	5	8	1218	1-	5	26	1648	1	5	30	1201	1-	5
3	1332	1-	5	8	1701	1	5	26	1905	1-	5	30	1230	1	5
4	0011	1-	5	8	1854	1-	5	26	2019	1-	5	30	1930	1	5
4	1245	1-	5	13	1224	2	5	27	1552	2	4	30	2009	1-	5

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Frequencies recorded (kHz): 16.8; 18.3; 19.6; 21.4; 23.4; 24.0; 24.8; 28.5; 30.6; 48.5; 51.6; 73.6; 77.15

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