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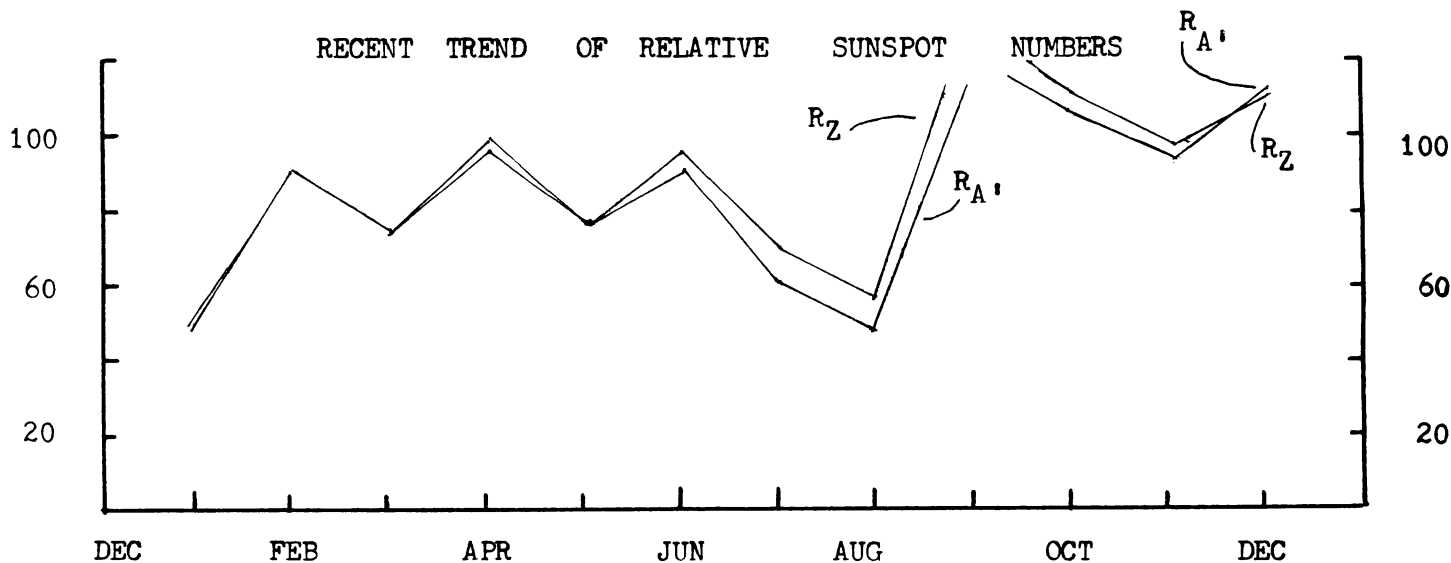
DECEMBER 1978

SUNSPOT ACTIVITY FOR DECEMBER 1978

December was a month of high sunspot activity. The mean of the American sunspot numbers rose to 121.0 after having dropped to 92.8 in November. This high mean was exceeded only once during 1978 when it rose to 128.1 in September. The two high daily numbers at the end of December were also the highest of the year.

Solar flares associated with the many sunspots of December also produced a record number of ionospheric disturbances. AAVSO observers recorded ninety-one events. This great activity has been a mixed blessing, however, for the Solar Division. The analysis of all this data and the preparation of the report for NOAA took almost forty-hours. Bruce Ammons who does this analysis for the Solar Division is finishing his fourth year of college and his studies and homework do not allow this much spare time. The outlook is that the number of events will increase in the months ahead and so he has reluctantly asked the A A V S O to find someone else to do the analysis.

The A A V S O is most grateful to Bruce for this six years of outstanding service to the Solar Division. He is by now an expert that we will find very hard to replace. We wish him success in the scientific career he will pursue and hope he will be able to look back in the years ahead and see his efforts for the Solar Division as a valuable scientific experience.



SUDDEN IONOSPHERIC DISTURBANCES RECORDED DURING DECEMBER 1978

Day	Max.	SEA	SES	Def.	Observers	Day	Max.	SEA	SES	Def.	Observers
1	1451		1-	5	A-1, 3, 19, 45	12	2233		1	5	A-31
1	2000		1-	5	A-19, 31, 45	12	2315		1+	5	A-31
3	1845		1-	5	A-1, 3, 28, 31	13	1558		1-	4	A-1, 3, 26, 45
					45	13	1710	1	1	5	A-1, 3, 19, 26, 31, 45, 46
3	2037	1	1+	5	A-1, 3, 19, 26, 28, 31, 45	13	1830	1+	2	5	A-1, 3, 19, 26, 28, 31, 45, 46
4	1323		1-	5	A-3, 45, 46	13	1921		1	5	A-1, 3, 19, 26, 31, 45, 46
4	1438		1-	4	A-3, 19, 45, 46	13	2015	1+	1	5	A-1, 3, 19, 26, 31, 45, 46
4	1501		1-	5	A-19, 26, 45, 46	13	2049		1	5	A-1, 3, 19, 26, 28, 31, 45, 46
4	1511		1	5	A-1, 3, 19, 26, 45, 46	13	2337	1	1	5	A-1, 3, 19, 26, 28, 31, 45
4	1552		1	5	A-1, 3, 19, 31, 45, 46	13	2355	1	1+	5	A-43
4	1851		1+	5	A-1, 3, 19, 28, 31, 45, 46	13	0102	1	1	5	A-43
6	1902		1-	5	A-3, 26, 31	14	0227	1	1	5	A-43
6	1949		1	5	A-3, 26, 31, 45	14	0400	1	1	5	A-43
6	2113		1+	5	A-31	14	0434	1	1	5	A-43
6	2345		1-	5	A-31	14	0722	1+	1+	5	A-43
7	1957		1+	5	A-3, 31, 45	14	1413		2	5	A-1, 3, 19, 45
7	2237	1-		5	A-43	14	1542	1-	1-	5	A-1, 3, 19, 26, 31, 45, 46
7	2355	1+		5	A-43	14	1632	1	1	5	A-1, 3, 19, 26, 28, 31, 45, 46
8	0102	1		5	A-43	14	1638	1	1	5	A-1, 3, 19, 26, 28, 31, 45, 46
8	2051		1	5	A-1, 31	14	1839		1-	5	A-3, 19, 26, 31, 46
10	0212	1+		5	A-43	14	1906		1-	5	A-3, 19, 26, 31, 45, 46
10	0451	1		5	A-43	14	2020		1	5	A-3, 19, 26, 31, 45
10	0524	1		5	A-43	14	2040		1	5	A-3, 19, 26, 31, 45
10	0614	1		5	A-43	15	1701		1	5	A-3, 26, 28, 45
10	1547		1-	5	A-1, 19, 46	15	2252	1+	1+	5	A-31, 43
10	1825	1-	1	5	A-1, 3, 19, 26, 28, 31, 45, 46	16	0138	1	1	5	A-43
10	2005	1	1	5	A-1, 3, 19, 26, 28, 31	16	0400	1	1+	5	A-43
10	2355	3	1	5	A-31, 43	17	0215		1	5	A-43
11	0304	1		4	A-43	17	0354		1+	5	A-43
11	0526	1		5	A-43	17	0739		2	5	A-43
11	0632	1-		4	A-43	17	1700	1	1	5	A-1, 3, 19, 26, 31, 45, 46
11	1619		1-	5	A-1, 3, 19, 26, 28, 45, 46	17	1815	1+	2	5	A-1, 3, 19, 26, 28, 31, 45, 46
11	1810	1+	1+	5	A-1, 3, 19, 26, 28, 31, 45, 46	18	2348	1+	1+	5	A-43
11	1830	1	1-	5	A-1, 3, 26, 31, 45	21	1652	1	2	5	A-1, 3, 19, 26, 28, 31, 45, 46
11	1850	1	1	5	A-1, 3, 19, 26, 28, 31, 45, 46	22	1845	1	1+	5	A-1, 3, 19, 26, 28, 31, 45
11	1914	1+	1+	5	A-1, 3, 19, 26, 28, 31, 45, 46	23	1611	1	1	5	A-1, 3, 19, 26, 28, 31, 45
11	1930	1+	2	5	A-1, 3, 19, 28, 31, 45	23	1735	1	1	5	A-1, 3, 19, 26, 28, 31, 45, 46
11	1947	1	2	5	A-1, 3, 19, 28, 31	23	2230		1	5	A-31
12	0030	1-		5	A-43	24	2235		1+	5	A-31
12	0151	1+		5	A-43	25	1418	2	2	3	A-1, 19, 26, 28, 45
12	1421		1-	5	A-1, 19, 26, 28, 46	27	1641	2	3	5	A-1, 3, 19, 26, 28, 31, 45, 46
12	1523	3+	3	5	A-1, 3, 19, 26, 28, 31, 46	30	1616		1	5	A-1, 3, 26, 45
12	1706	1	1+	5	A-1, 3, 19, 31, 46	31	0550		1+	5	A-43
12	1814		1	5	A-1, 3, 19, 31, 46	31	1618	1	1	5	A-1, 3, 19, 26, 28, 31, 45, 46
12	1839		1	5	A-3, 19, 31, 46						
12	1930	1	1	5	A-1, 3, 19, 31, 46						
12	2020	2	2	4	A-1, 19, 31, 45						
12	2141		1	5	A-31						

AMERICAN (R_A) AND ZURICH (R_Z) RELATIVE SUNSPOT NUMBERS FOR DECEMBER 1978

DAY	R _A	R _Z
1	100	110
2	101	110
3	132	117
4	125	108
5	100	104
6	127	122
7	137	132
8	149	142
9	152	152
10	144	138
11	159	170
12	174	188
13	174	165
14	130	150
15	130	140
16	149	138
17	155	139
18	115	120
19	84	90
20	78	70
21	72	58
22	72	50
23	68	57
24	61	68
25	86	79
26	88	93
27	92	110
28	87	122
29	139	135
30	180	148
31	190	167
Mean	121.0	119.1

Charts from the following observers were received and analyzed:
A-1, 3, 19, 26, 28, 31, 43, 45, and 46

