

# Solar Bulletin

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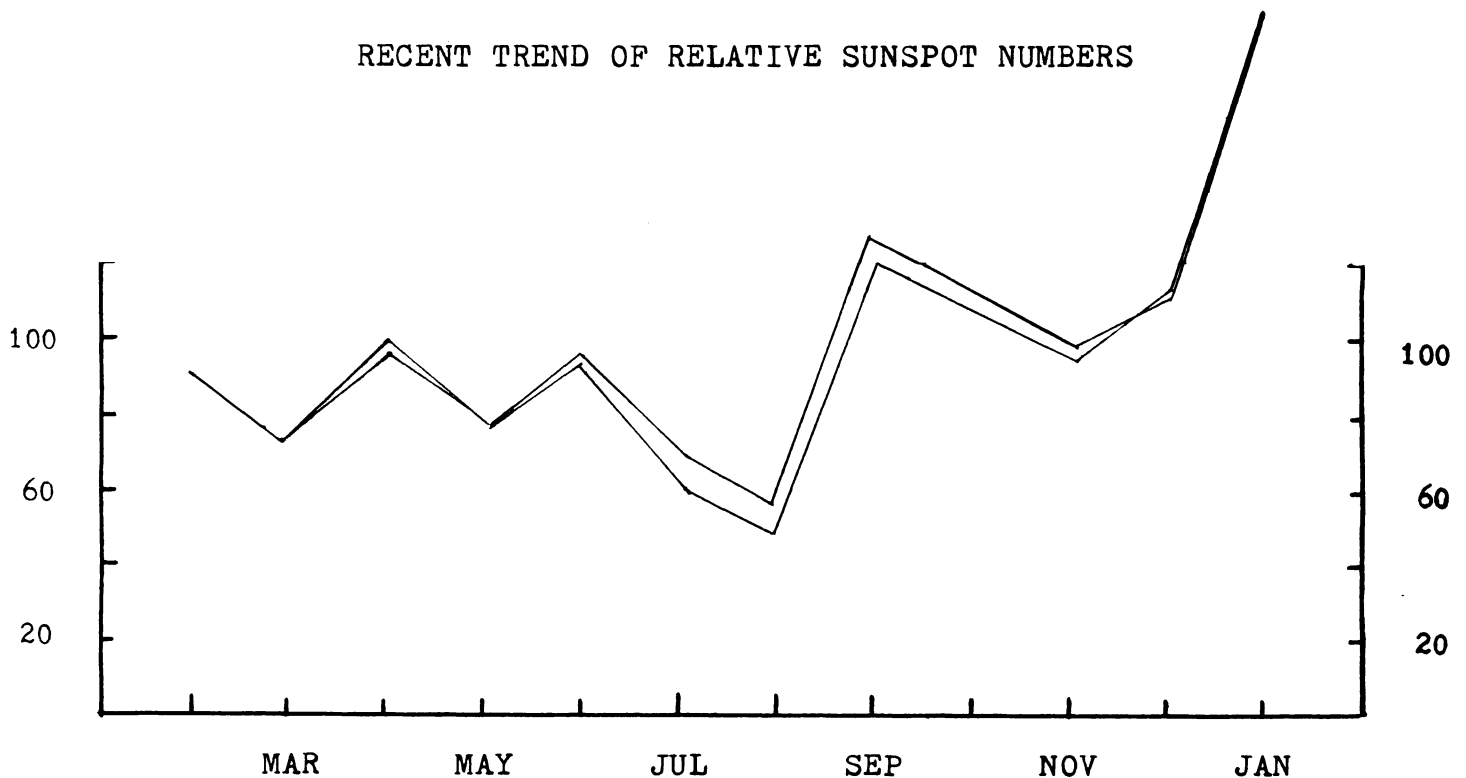
JANUARY 1979

## SUNSPOT ACTIVITY DURING JANUARY 1979

The mean of the American sunspot numbers rose to 164.4 for January, the highest monthly mean in 20 years. The last time this was exceeded was January 1959 when the mean was 199.3 during cycle 19. Cycle 20 produced its highest monthly mean of 132.2 in February 1970. January's high mean does, however, fall far short of the highest monthly means of cycles 18 and 19 which were 228.0 for February 1949 and 229.2 for October 1957.

Seventy-three ionospheric disturbances were recorded by the AAVSO during January. Many of these were of low intensity. Despite the high sunspot numbers, even the strongest disturbances of the month were hardly outstanding. Nine recordings are reproduced on page two which are a good cross section of the month's activity.

## RECENT TREND OF RELATIVE SUNSPOT NUMBERS



SUDDEN IONOSPHERIC DISTURBANCES RECORDED DURING JANUARY 1979

American (R<sub>A</sub>) and Zurich (R<sub>Z</sub>) relative sunspot numbers for January 1979

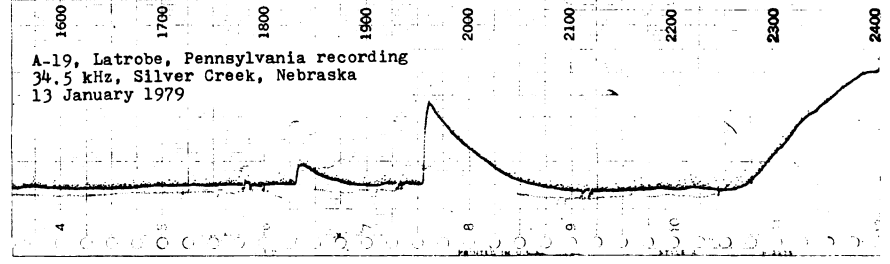
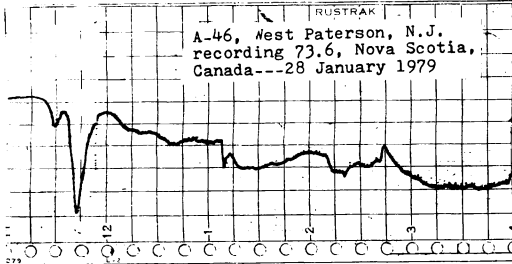
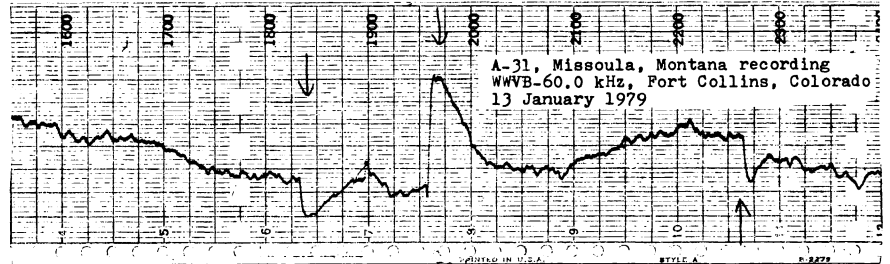
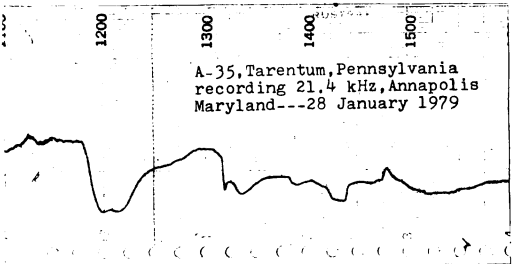
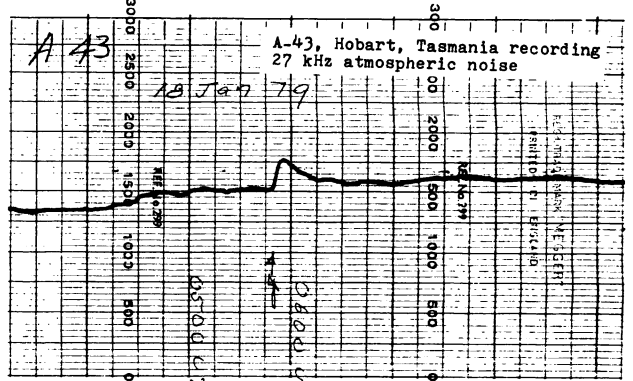
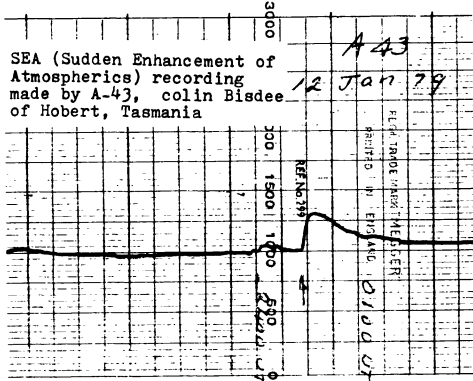
Day	R <sub>A</sub>	R <sub>Z</sub>
1	168	158
2	178	158
3	175	191
4	158	157
5	158	146
6	170	173
7	164	163
8	191	172
9	172	165
10	180	163
11	154	157
12	143	159
13	139	159
14	170	162
15	166	178
16	174	164
17	157	164
18	123	146
19	127	138
20	161	177
21	181	181
22	219	178
23	201	188
24	204	209
25	192	209
26	160	173
27	154	162
28	157	157
29	147	153
30	136	149
31	116	130
Mean	164.4	165.8

Day	IDI	Time of Maximum	Observers
1	0		
2	14	1832	
3	41	1607-1724-1815-2151	A-31-46-1
4	49	1851	A-46-31-35-19
5	92	1455-1525-1649-1750-1822	A-1-3-5-45-19-31-46
		1838-1931	A-3-1-45-46-34-31
6	13	1642-1848	A-3-45-46-5
7	13	1452-1943	A-5-19-3-46-1-45
8	15	1411-1446-2027-2206	A-3-19-1-5-45
9	9	1912	A-45-46-1-31-3
10	13	1622-2103	A-3-45-1-5
11	35	1137-1245-1702-1742	A-42
12	31	0031-1625	A-43-3-1-45-5
13	97	1200-1339-1823-1937-2243	A-42-34-46-26-31-(5)
14	70	1200-1303-2310	A-42-43-31
15	197	0133-0646-0716-1108-1343	A-43-42-28-34-26-19
		2015-2242	46-45-1-31-3-5

Day	IDI	Time of Maximum	Observers
16	43	0738-1802-1900	A-43-1-31
17	4	1616	A-1-3-45
18	38	0553-1445-1530-	A-43-45-31-46-1-5
19	44	0440-2017-1343	A-31-5-1-46-3
20	0		
21	25	1319-1514	A-42-3-46-1
22	23	0150-1518-1830	A-31-19-45-5
23	17	1935-2010	A-31-45-19-1-46
24	49	1228	A-42
25	6	1419	A-19-46-3-45
26	0		
27	6	1852	A-46-19-31-45-3-5
28	33	1313-1426-1445-1601	A-46-45-1-5-19-31
29	11	1606-1654	A-19-46-45-5
30	0		
31	9	1452-1619	A-1-3-5-45

The daily ionospheric disturbance index, IDI, is equal to:  $(t_1)^2 + (t_2)^2 + (t_3)^2 + \dots + (t_n)^2$  where "t" is the duration in minutes of each disturbance and "n" is the number of disturbances each day.

January 1979 = 32.2 monthly mean =  $\frac{100}{32.2}$



The two charts above show a very similar pattern but each each was produced by a different VLF signal recorded at different locations over 600Km apart. Both start with an inverted response to a disturbance starting at 1309 UT and end with a sharp peak at 1445 UT. Such a complicated response of the ionosphere would seem doubtful if recorded by a single station but because it occurs in the recordings of widely separated stations tuned to different frequencies there is little doubt that it shows the response of the ionosphere to several solar flares, probably four in all.

