Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

Peter O. Taylor, editor
4523 Thurston Lane, #5
Madison, WI 53711-4738 USA

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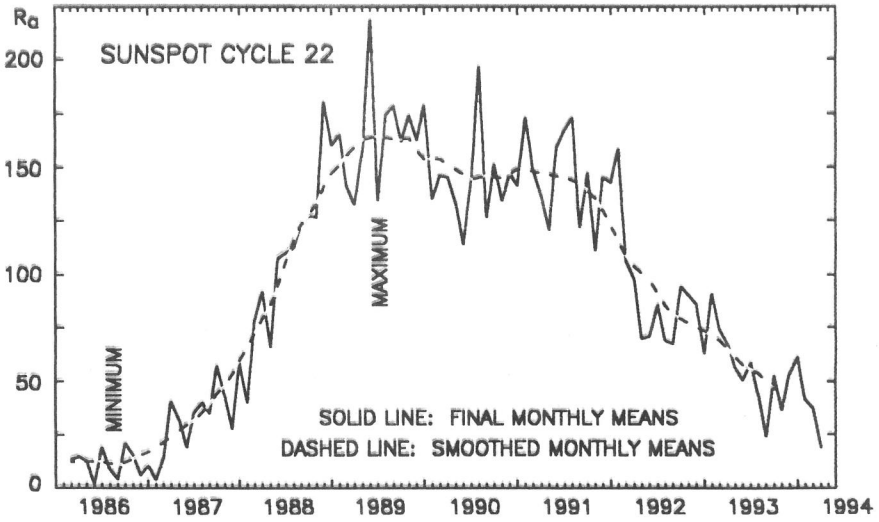
American Relative Sunspot Numbers for April

	R_a Final				
1)	16	11)	11	21)	34
2)	5	12)	11	22)	40
3)	0	13)	13	23)	38
4)	2	14)	15	24)	40
5)	6	15)	20	25)	34
6)	3	16)	15	26)	33
7)	0	17)	18	27)	35
8)	8	18)	17	28)	21
9)	8	19)	23	29)	10
10)	10	20)	29	30)	17

Mean: 17.7
Number of reports: 99



April Summary: April began with yet another indication of the decline of Solar Cycle 22; a total absence of sunspot activity on the 3rd and 7th, and only brief spot-appearances on the 4th and 6th. These were the first spotless days to occur since September 1993. Likewise, flare output remained at a low level. Notwithstanding the depressed level of activity, the recurrent coronal hole system which has dramatically influenced the terrestrial environment during the last few months, returned again as a geoeffective phenomenon. Daily >2 MeV electron fluence climbed into the high (E+09) range, and geomagnetic field storm conditions worsened, becoming major to severe on the 3rd. Reports of aurorae from mid-latitudes increased accordingly.

Solar activity continued to be very low during the second week of April. Just one spot-group was present on the visible hemisphere during all but the final day, when a second group appeared in the Northern Hemisphere. A large-scale coronal mass ejection was observed by the Japanese Yohkoh X-ray satellite early on the 14th. The >2 MeV electron fluence - associated with the persistent southern polar coronal hole that has been geoeffective during each of appearances beginning in January - remained high during the period.

Auroral activity associated with the coronal mass ejection which occurred on the 14th reached a peak on the 16/17th. In North America, aurorae were observed northward of a mid-latitude line running from Otis Air Force Base in Massachusetts, through Toledo, Ohio, Scottsbluff, Nebraska, and westward. The geomagnetic field felt the initial effects of the CME late on the 16th. Conditions intensified sharply during the first half of the 17th, with K-values of 9 reported at some high-latitude stations. Thereafter, the disturbance declined rapidly, becoming quiet or unsettled later in the day. Note that no significant flare activity accompanied this mass ejection.

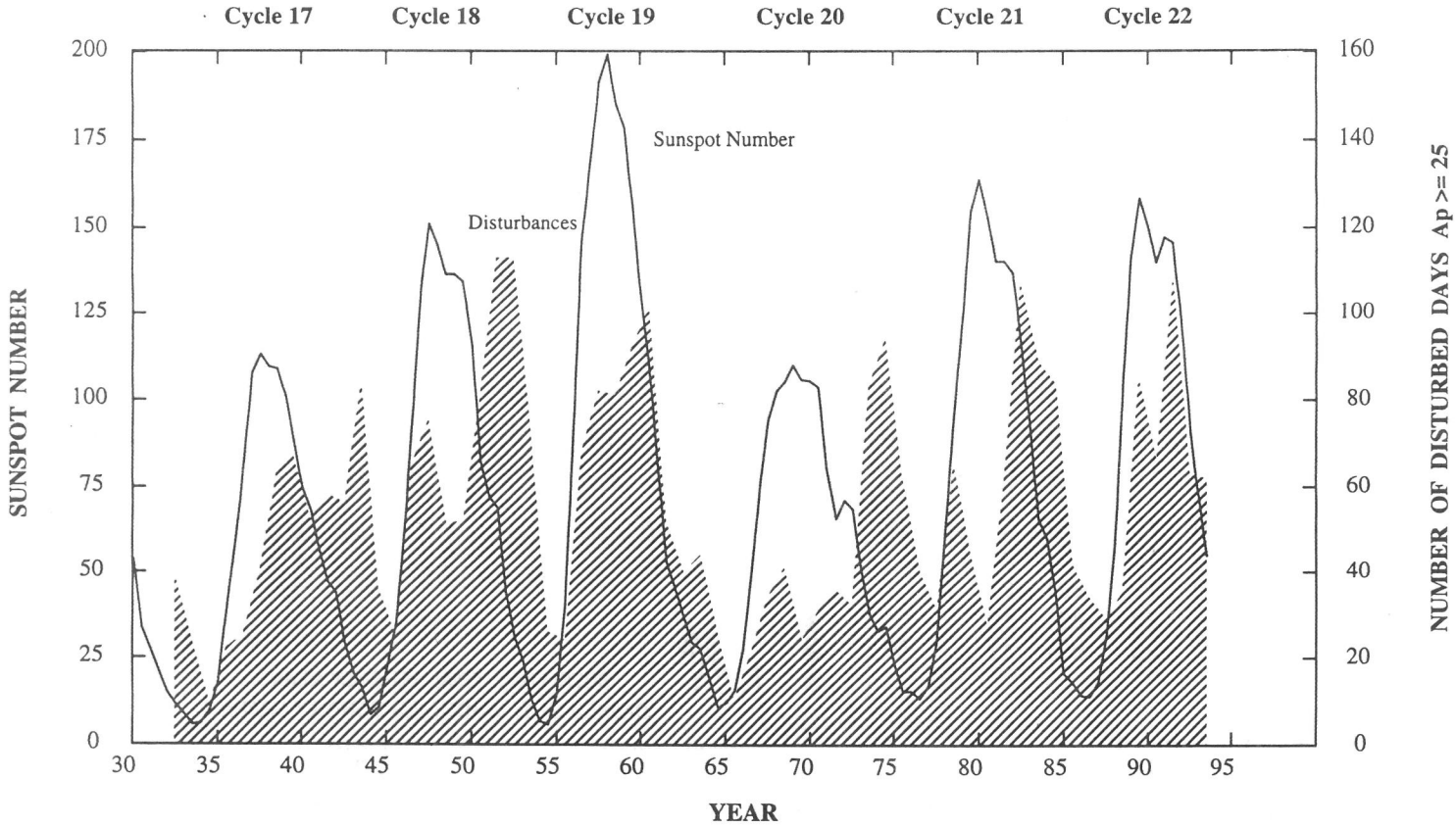
With the passage of the long-lived southern polar coronal hole, the >2 MeV electron fluence returned to normal (E+07) on the 17th. Other activity of note during the third week included the disappearance of a 13-degree filament from the Sun's SW hemisphere on the 17/18th, and a loop prominence associated with a class C2 flare on the 19th in NOAA/USAF Region 7704 (N09, L050, HRX).

Solar activity was low and very low throughout the remainder of the month. For the second month in a row, no class M or greater-intensity solar flares were recorded during April. The geomagnetic field was mostly quiet. The smoothed-mean American Relative Sunspot Number for October 1993 declined to 45.4.

The mean estimated American Relative Sunspot Number for 1-15 May is 28. Solar activity has been very low thus far during May. No class M or greater intensity solar flares have been recorded during this interval.

[A portion of the above information was obtained from **SELDADS**]

Geomagnetic Disturbances and Sunspot Number



The variation of the yearly-averaged relative sunspot number since 1930 (solid line), and the variation in the number of geomagnetically disturbed days per year when the planetary magnetic disturbance index (Ap) was greater than or equal to 25, since 1932 (shaded area). Note that the number of such storms typically peaks twice: first, around sunspot maximum (there is some tendency for the amplitude of this peak to correlate with the amplitude of the solar cycle), and a second peak several years after sunspot maximum - the so-called 'precursor' peak.

Dr. Richard J. Thompson, IPS Radio & Space Services, Sidney, Australia, supplied the diagram and comments which appear above.

Sudden Ionospheric Disturbances (SES) Recorded During March 1994

Records were received from A9,40,50,59,61,62,63,65,66,67,68,69,70,71,72,73,74,75,76,77,78,80,81,82

Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def
1	1954	1	5	3	2014	1-	5	4	2052	1	5	10	0906	1	5
1	2226	2+	5	3	2104	1+	5	4	2120	1-	5	10	2245	1	5
2	2207	1-	5	3	2217	1-	5	4	2253	1-	5	12	0743	1-	5
2	2305	1-	5	4	0834	1-	5	6	0816	1-	5	13	1325	1-	4
3	1138U	1	5	4	0924	1	5	6	1235	1-	5	24	1700	2	5
3	1238	1-	5	4	1504	1-	5	6	1601	1+	5	24	2216	1+	5
3	1309	1-	5	4	1622	1-	5	7	2115	1-	5	26	1500	2	5
3	1432	1-	5	4	1801	2+	5	7	2130	2	5	30	0811	1-	5
3	1615	1-	5	4	1853	2+	5	9	1859	1	5	30	1745	1+	3
3	1815	1	5	4	1903	1-	5	9	2138	1	5	31	1332	1	5

Analysts: J. Ellerbe; S. Hansen; M. Hayden; J. Knight; A. Landry; R. Papp; C. Ranft; A. Stokes; M. Taylor; P. Taylor; L. Witkowski

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

DECnet: 34367::ptaylor **INTERNET:** ptaylor@selvax.sel.bldrdoc.gov **FAX:** [USA] 608-231-2385
TELEX: [3762848] TO: EASYPLEX:74270,1516; **COMPUSERVE:** 74270,1516
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