Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

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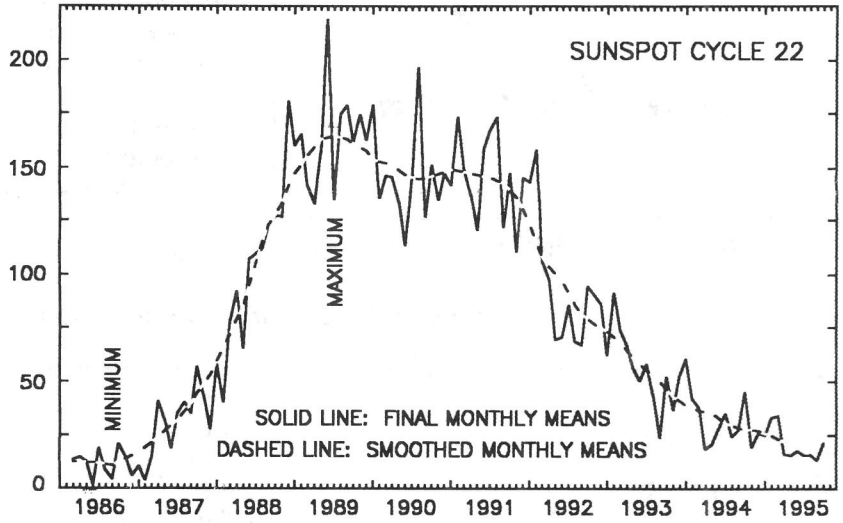
American Relative Sunspot Numbers for October

		R_a Final			
1)	0	11)	46	21)	26
2)	0	12)	57	22)	28
3)	0	13)	54	23)	25
4)	0	14)	52	24)	24
5)	0	15)	33	25)	23
6)	0	16)	40	26)	17
7)	9	17)	36	27)	12
8)	13	18)	24	28)	10
9)	23	19)	20	29)	8
10)	30	20)	20	30)	0
				31)	0

Mean: 20.3
Number of reports: 95



October Summary: October began with solar activity at a very low level. The Sun's visible hemisphere was spotless during the first six days, and little noteworthy activity occurred. The geomagnetic field was quiet to active until the 3rd/4th when mid-latitude storm levels gradually rose into the minor to major disturbance range. A recurrent coronal hole is the suspected source of these conditions. The >2 MeV electron fluence was at background levels during most of the period, becoming moderate and high after the 4th.

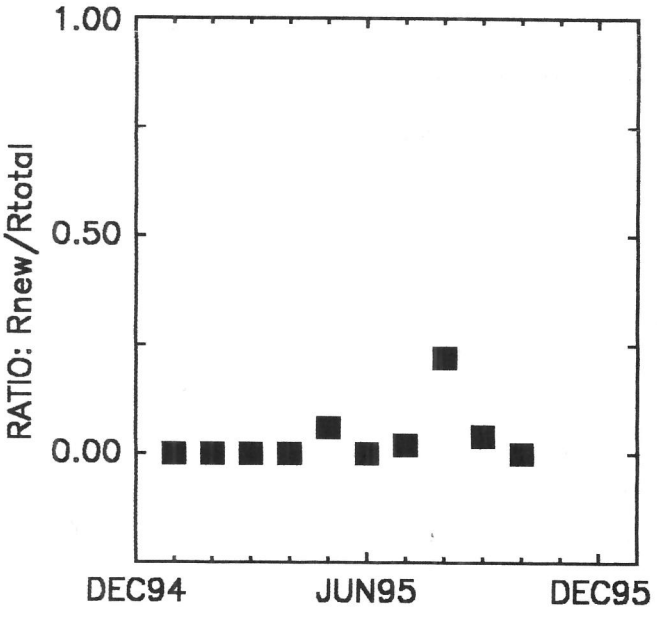
Activity continued to be very low until the 10th, when a series of class C flare eruptions began. A total of five such events occurred on the 11th, most without optical correlation. Then -- early on the 12th -- activity increased to moderate after NOAA/USAF Region 7912 (S10, L144, EHO) spawned the first class-M flare since April 1995, a M1.5/SF with associated Type II sweep. According to *Big Bear Solar Observatory*, Region 7912 (BBSO 3629) was either a reversed polarity group from Cycle 22 or a member of the new cycle. The high-level of activity from this region argues for the former, as well as its relatively low latitude. The geomagnetic field was at minor to severe storm levels until the 10th when the disturbance subsided, although a minor storm re-occurred at mid-latitudes on the 12th. The >2 MeV electron fluence was high until the 11th, and moderate thereafter.

Region 7912 produced its second class M flare on the 13th, an M4.8\1F Tenflare with Type II radio sweep. Following this two day foray into the moderate range, solar activity declined to low with the eruption of several class C flares on the 14th (also in Region 7912), and then very low for the remainder of the week. The geomagnetic field was quiet to unsettled until the 18th when conditions changed drastically. Three sudden impulses were recorded on the 18th, 19th and 22nd, and we received numerous reports of aurorae observations from sites as low as Denver, Colorado. Data from **NASA's** ***Wind*** spacecraft (patrolling interplanetary space 662,000 miles from Earth) for the 18th indicate an abrupt change in solar wind density and magnetic field direction (a shift to nearly due South) after a giant mass of magnetic fields and electrified particles ejected from the solar corona was encountered. By that time, the massive cloud had grown to over 65 million miles in diameter, and was speeding towards Earth at 2.1 million miles per hour.

Region 7912 spawned its third class M flare (M1.5/SF) early on the 20th. This event was accompanied by a significant amount of radio activity including Type II and IV radio sweeps, a 2695 MHz radio burst, and a >10 MeV proton event that began, reached maximum (63 p.f.u.), and ended on the 20th. The latter activity was the first such event to be recorded in one year (to the day). A Polar Cap Absorption with similar timing and duration also occurred. The >2 MeV electron fluence was moderate and high, then declined on the 23rd along with the general disturbance. A series of isolated disturbances began on the 30th/31st. The smoothed mean American Relative Sunspot Number for April 1995 is 21.1.

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

Countdown to Minimum

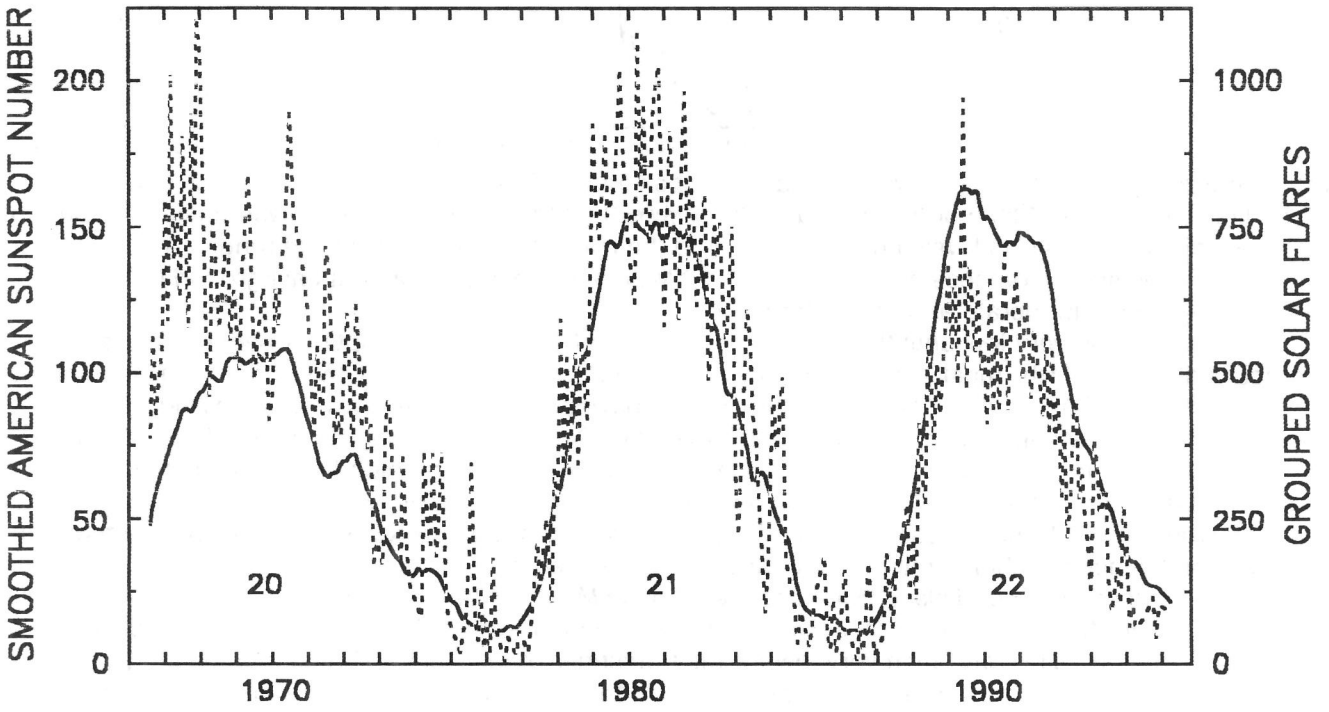


Rnew/Rtotal: Rnew is a total of each daily R value for projected Cycle 23 sunspot groups, and Rtotal is the cumulative daily R value for all groups -- including those from both the current and new cycle -- for each month. These parameters are determined by Learmonth and *Culgoora Observatories* in Australia, and are provided through the courtesy of Dr. Richard Thompson (*IPS Radio and Space Services*) and Dr. John Kennewell (*Learmonth Observatory*). The single exception occurred with the first new cycle group which appeared in May and was not observed at Culgoora because of inclement weather[1].

The minimum of Cycle 22, and onset of Cycle 23, is expected to occur between June and December 1996. These data will be updated at regular intervals.

[1]Rnew/Rtotal ratio calculated from SESC/SWO reports.

Grouped Solar Flare Counts -- Solar Cycles 20-22



The term 'grouped' means observations of the same flare by different sites are lumped together and counted as one event. Dashed line: grouped monthly solar flare count (Source: Solar-Geophysical Data). Solid line: smoothed monthly-mean **American Relative Sunspot Number**.

Sudden Ionospheric Disturbances (SES) Recorded During September 1995

Records were received from A5,9,40,50,61,62,63,65,68,69,70,71,72,73,74,75,76,77,78,80,81,82,83,84,85

Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	Def	Day	Max	Imp	De
4	1148	1-	4	4	1535	1-	5	5	1555	1-	5	17	1749	1+	4
4	1417	1	4	5	0055	1+	5	5	1708	1-	5	20	1056	1+	5
												20	1848	1-	5

Analysts: J. Ellerbe; S. Hansen; M. Hayden; P. King; A. Landry; R. Papp; G. Rosenberg; A. Stokes; M. Taylor; P. Taylor; L. Witkowski
Frequencies recorded (kHz): 16.8; 18.3; 19.6; 20.3; 21.4; 23.4; 24.0; 24.8; 30.6; 48.5; 51.6.