

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS— SOLAR DIVISION

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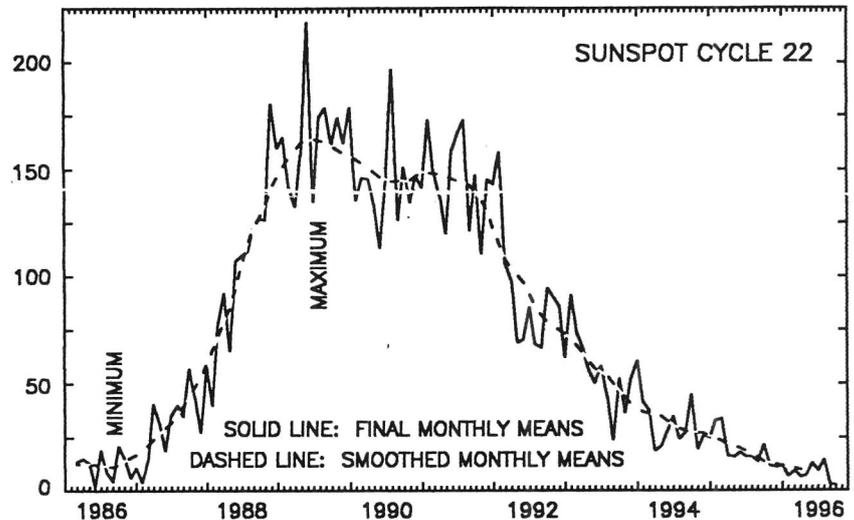
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American Relative Sunspot Numbers for October

		R _a Final			
1)	0	11)	0	21)	3
2)	0	12)	0	22)	0
3)	0	13)	0	23)	0
4)	0	14)	0	24)	0
5)	0	15)	0	25)	8
6)	0	16)	0	26)	14
7)	0	17)	0	27)	7
8)	0	18)	0	28)	4
9)	0	19)	0	29)	0
10)	0	20)	7	30)	0
				31)	0

Mean: 1.4
Number of reports: 89



October Summary: Solar activity was very low between the 1st and 10th of October. The Sun's visible hemisphere continued to be spotless throughout the period which began September 13th. The geomagnetic field was mostly quiet, with some disturbed conditions beginning on the 9th. The >2 MeV electron fluence was moderate to normal.

Activity remained at a very low level between the 11th and 17th; the long string of consecutive spotless days continued. The geomagnetic field was slightly disturbed, and the >2 MeV electron fluence was normal becoming moderate or high midway through the period.

Very low activity continued from the 18th through 24th. A large filament near the Sun's southeastern limb began to disappear on the 19th, eventually becoming an eruptive prominence which attained a height of more than a solar radius in hydrogen-alpha images. A long duration X-ray enhancement accompanied this event, leading to the conclusion that a large mass ejection took place at this time.

The thirty-seven-day-long array of consecutive spotless days ended with the emergence on the 20th of a lone spot in NOAA/USAF Region 7990 (N15, L204, AXX). (See Richard Thompson's analysis of spotless intervals on page two.) We note that at least one professional site reported a tiny, short-lived spot on the 19th, making a thirty-six day string. However, since reports of no activity far outweigh such observations, the actual spot number for the 19th will be zero. A thirty-seven day series of spotless days marks the longest such uninterrupted sequence since 1924, and the ninth longest this century. The longest -- ninety-two days -- was recorded in 1913. Slightly shorter thirty-six day series occurred in 1933 and 1944.

The geomagnetic field experienced periods of minor to major storm conditions between the 18th and 20th, attributed to a coronal hole disturbance. A brief one-day lull occurred on the 21st, followed by a second series of minor to severe conditions which have also been linked to a (separate) coronal hole wind stream. Alternatively, according to some sources, the edge of the mass ejection cloud described above passed near Earth on October 22nd-23rd and may have produced the resulting magnetic storm.

The emergence of new cycle Region 7991 (N31, L215, BXO) near the central meridian on the 25th combined with the appearance of Region 7992 (S13, L240, CRO) to spawn a short-lived "flurry" of spot activity. However, by midday on the 28th the solar disk was again spotless and remained so throughout the rest of October. The geomagnetic field was quiet to unsettled, and the daily >2 MeV electron fluence was in the moderate range as the month ended. The smoothed monthly American Relative Sunspot Number continued to decline, reaching a value of 8.6 for April 1996.

The estimated American Relative Sunspot Number for 1-17 November is 7.

[A Portion of the above information was obtained from SWO]

Sequences of Spotless Days on the Sun

During September and October, we experienced a sequence of thirty-seven consecutive days during which there were no spots observed on the Sun. This series is longer than any during recent solar minima -- consistent with the current minimum being "deeper" than those during recent solar cycles.

But how does this series compare with similar sequences from the historical record of sunspot observations? The following table makes this comparison for observations of similar and longer duration since 1900.

Year of Sequence Consecutive Spotless Days

Year of Sequence	Consecutive Spotless Days
1913	92
1901	69
1902	49
1902	45
1912	43
1901-2	40
1913	39
1924	39
1996	37
1933	36
1944	36

The table shows that the 1996 sequence, whilst impressive, is still considerably shorter than some early in this century. However, a note of caution is required because the coverage of observations was not nearly as good early this century as it is now. A sequence of spotless days can be broken by a single day on which a small spot appears. Lack of observational coverage could therefore be very important in determining the length of individual spotless sequences.

With the above qualification, the sequence in 1996 is still the longest observed in the last 70-plus years during which reasonably good observations have been available.

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Sudden Ionospheric Disturbances (SES) Recorded During October

Records were received from A9,40,50,52,61,62,63,68,69,70,71,72,73,74,75,76,77,78,80,81,82,83,84,85

The international monitoring network of the AAVSO Solar Division recorded no sudden ionospheric disturbances during October.

Analysts: J. Ellerbe; S. Hansen; M. Hayden; P. King; A. Landry; G. Rosenberg; D. Overbeek; A. Stokes; 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; 71.6.
