# Looking Ahead To Solar Cycle 25

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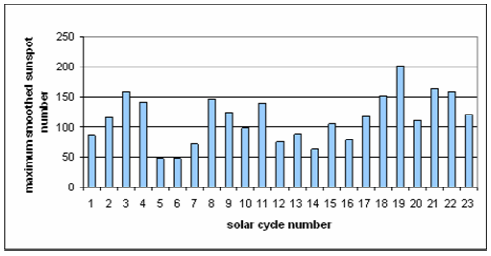
Although we haven't reached the peak of Cycle 24 yet (predicted to maximize in early 2013 with a lower than average smoothed sunspot number), it's interesting to review historical data to see if a long-term pattern emerges for the solar cycles after Cycle 24. This is prompted by recent science news articles like 'Scientists predict rare 'hibernation' of sunspots' that appeared in mid June (Staff Writers, Washington, AFP, June 14, 2011).

The figure on the right of the next paragraph plots the maximum smoothed sunspot number of all twenty-three recorded cycles.

The cycle with the highest smoothed sunspot number, Cycle 19, stands out head and shoulders above the other twenty-two cycles. The next highest cycle, in terms of its smoothed sunspot number, is Cycle 21. In fact, four of the five highest cycles (Cycles 19, 21, 22, and 18) have occurred in our lifetime.




As for patterns, we've been through three periods of high solar activity – Cycles 1-4, Cycles 8-11, and Cycles 17-23. And we've been through two periods of low solar activity – Cycles 5-8 and Cycles 12-16. Based on this cyclic nature, it sure looks like we're headed for a period of low solar activity, which will last for several solar cycles.

There is other evidence that suggests we're headed for a period of low solar activity. It comes from an article in the weekly publication EOS from the American Geophysical Union. The title of the article is 'Are Sunspots Different During This Solar Minimum?', and it appeared in Volume 90 Number 30 (28 July 2009).

The authors, W. Livingston and M. Penn, measured the maximum magnetic field strength of 1,392 sunspots from 1992 through February 2009. Their results are plotted in the figure to the right of the next paragraph.

Now the magnetic field strength needs to exceed around 1500 gauss to produce visible sunspots. Extrapolating the data says sunspots will disappear around 2016. This suggests Cycle 25 will be a low one.

Thus based on historical data and on measurements of the Sun's magnetic field around sunspots, it sure looks like Cycle 25 (and perhaps several subsequent cycles) will be low ones. Will we enter another Maunder Minimum? That's tough to predict, and is best left in the 'wait-and-see' category.