

THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management

Checking in on Solar Cycle 24

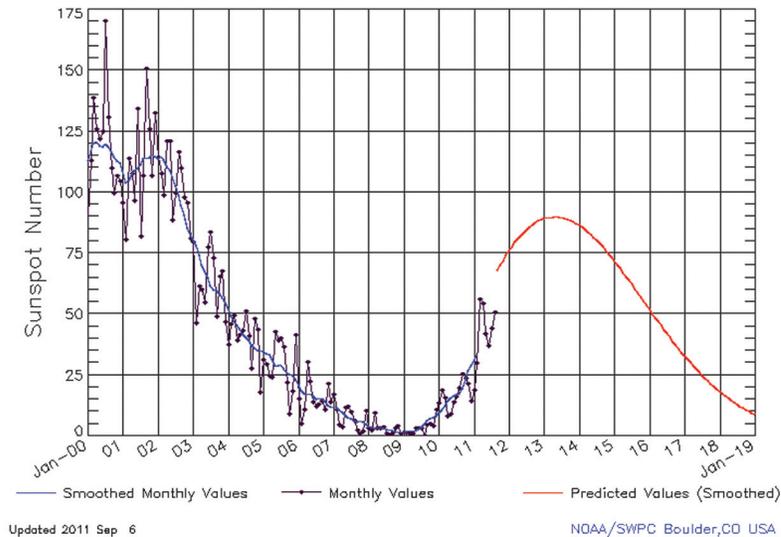
By Darin Langerud

Ever since Galileo, among others, first observed and correctly explained sunspots in the year 1612, this solar phenomenon has been an area of keen interest. The habitability of our planet is directly related to the sun, so understanding solar processes is an important issue.

The current solar cycle officially began in January of 2008, when sunspot activity from the prior cycle had completely diminished. This is the 24th cycle catalogued since 1755 when recording officially began. A solar cycle typically begins with new sunspots that increase and then decrease in number over an 11-year period. Increasing sunspot activity can lead to more frequent Aurora Borealis (Northern Lights) and in extreme cases, geomagnetic storms that can interfere with satellite communications and power grids. Cycle 24 is expected to peak in 2013 and then slowly diminish until its end around 2019.

Solar Cycle 24 has been unusual thus far; the latest prediction that it will produce only about half of the sunspots as the previous cycle. If this forecast is realized, it would make

ISES Solar Cycle Sunspot Number Progression
Observed data through Aug 2011



Updated 2011 Sep 6

NOAA/SWPC Boulder, CO USA

Solar Cycle 24 the least active since Solar Cycle 6, which ended in 1823. Recently reported research indicates that several of the precursors of Solar Cycle 25 have not yet begun. This, combined with the diminished current cycle, is causing some solar physicists to speculate that the next cycle may be further reduced, or even stranger, to not occur at all.

While an interruption of the solar cycle is unusual, it is not without precedent. From the period of 1645 to 1715, sunspots almost completely disappeared. This event, known as the Maunder Minimum, also corresponded with the "Little Ice Age", a period of global cooling of as much as one degree Celsius in parts of Europe. Other more moderate periods of low sunspot activity have been observed, and though all have corresponded with cooler global

temperatures, it has not been proven that sunspot activity was the absolute cause.

So, if a change in solar activity is coming, what effects could we expect to see as a result? Some of the major impacts would be positive; for example, a reduced risk for volatile solar weather wreaking havoc with hundreds of Earth-

orbiting satellites, and a lower risk of a major solar event that could disrupt the power grid. Another effect could be slight global cooling as has been associated with previously observed sunspot minima.

Of course, much of this is speculation. Forecasting solar cycles, just like the weather, is an imperfect science. But, rest assured that the twists and turns of our nearest star will be closely watched.

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