



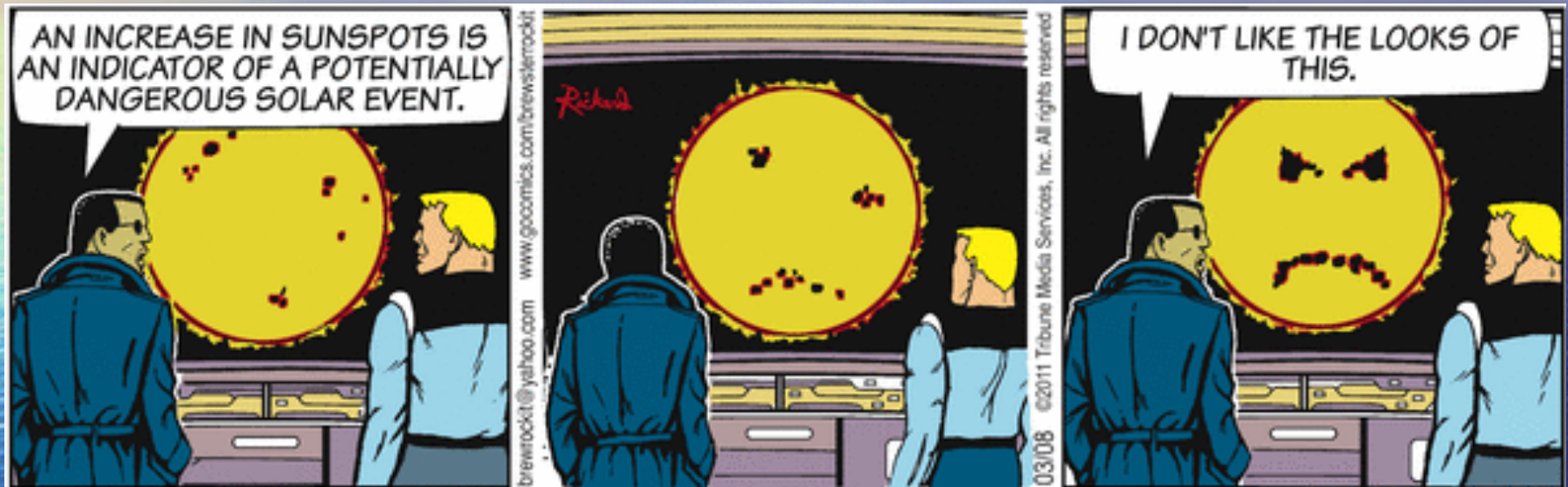
Cycle 23, Cycle 24, and Long Path on 15m/12m/10m

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Solar Storm Warning?



from Brewster Rockit comic, 8 Mar 2011

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What I'll Cover

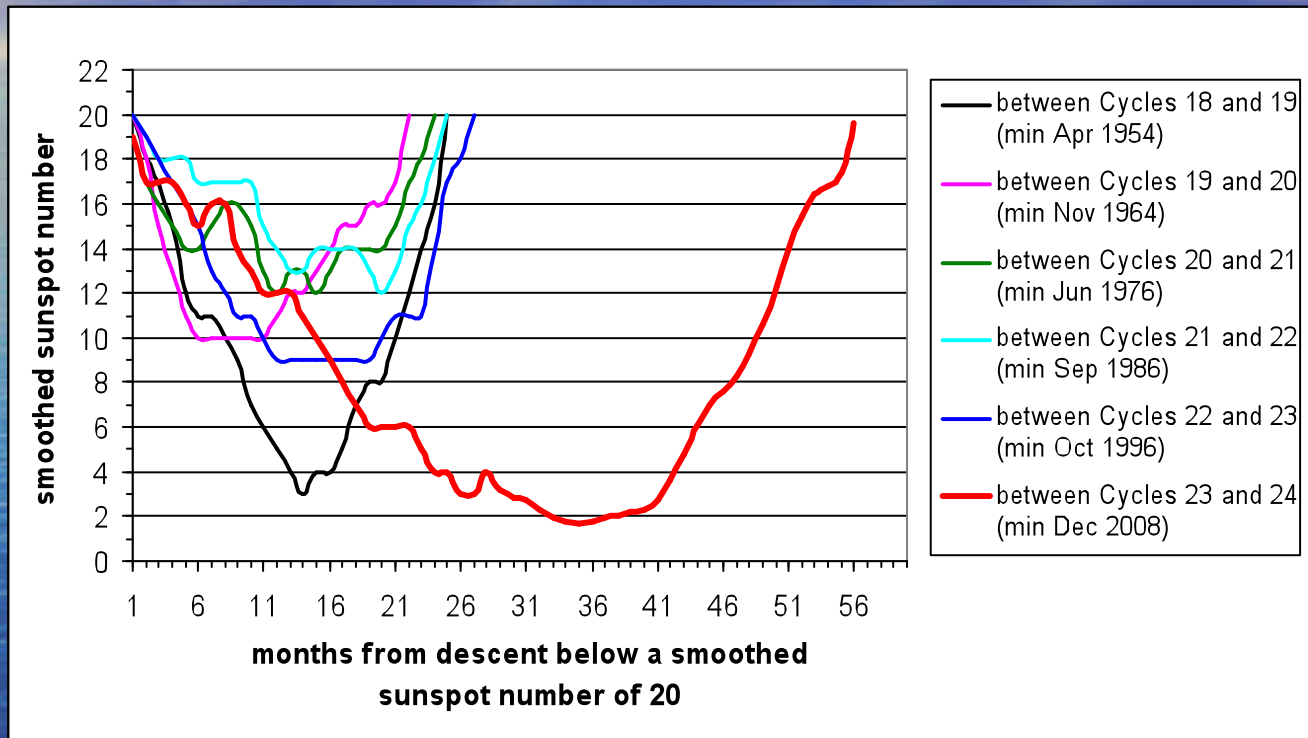
- A brief look at Cycle 23
- Status of Cycle 24 and Predictions
- Long Path on 15m/12m/10m
 - Normal long path
 - Unusual long path



Cycle 23

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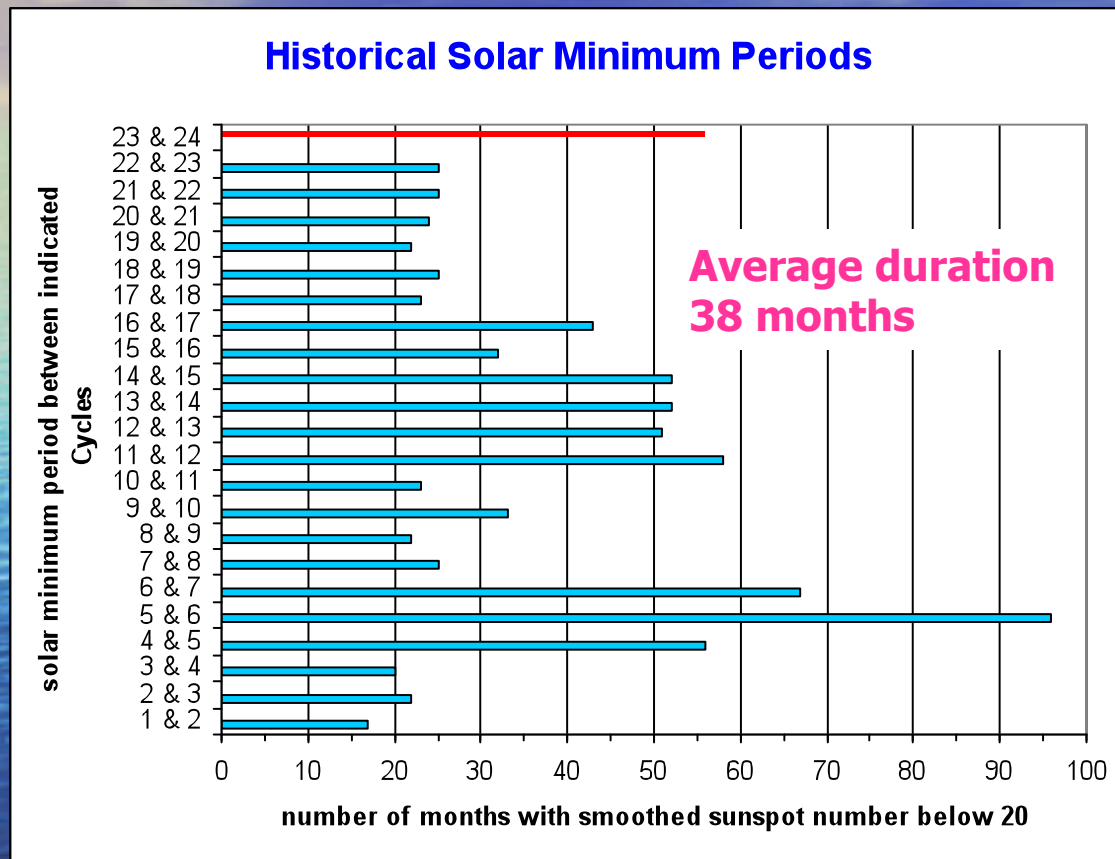
Recent Solar Minimum Periods



56 months below a smoothed sunspot number of 20

This certainly was an unusual solar minimum period, right?

All Solar Minimum Periods

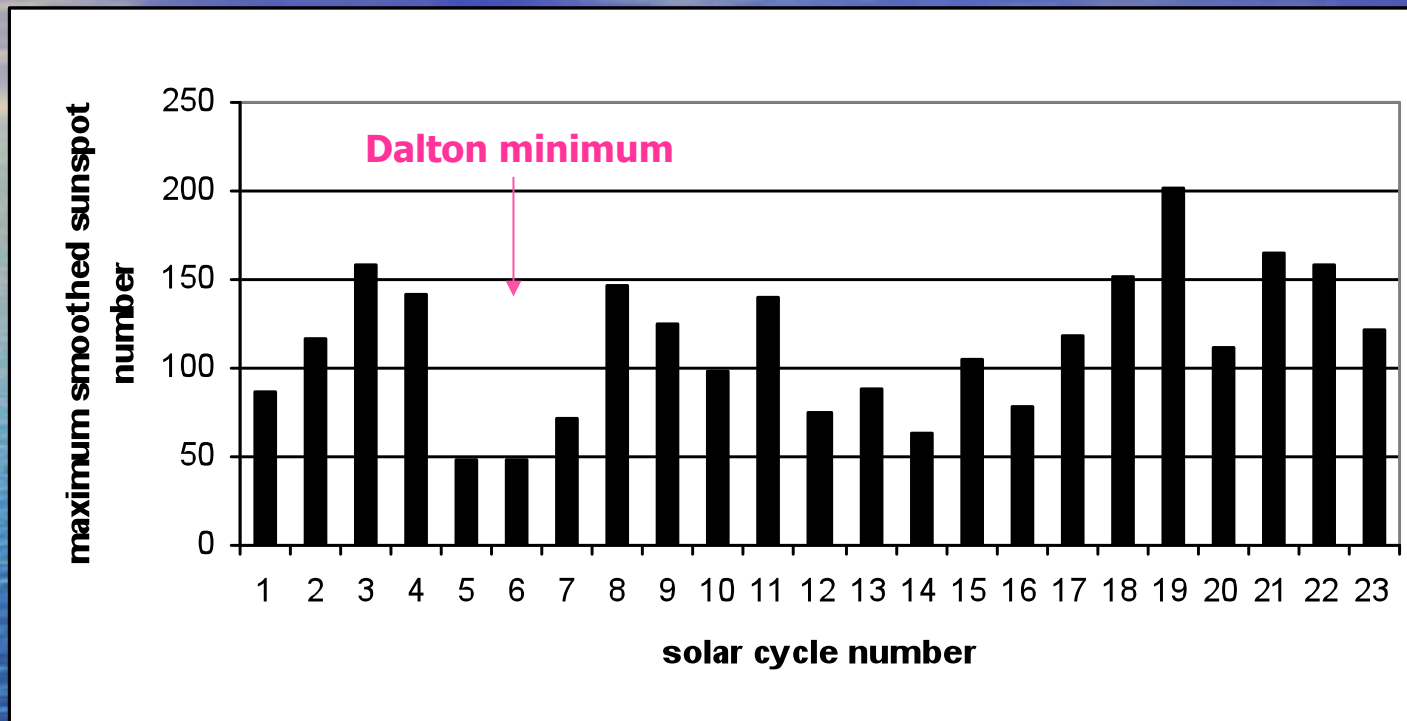


Began with three short duration periods

Note the cyclic nature of the durations

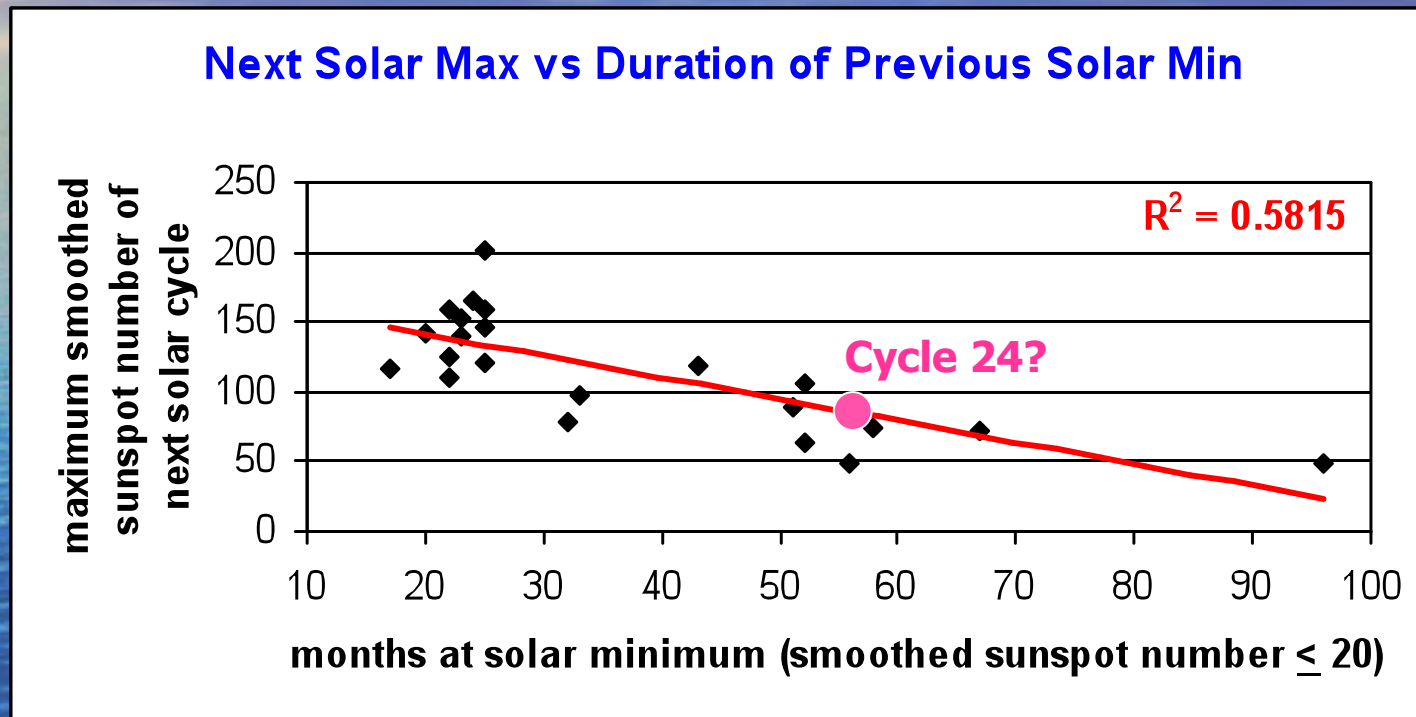
It was unusual for our lifetimes - but not for all history

All Solar Maximums



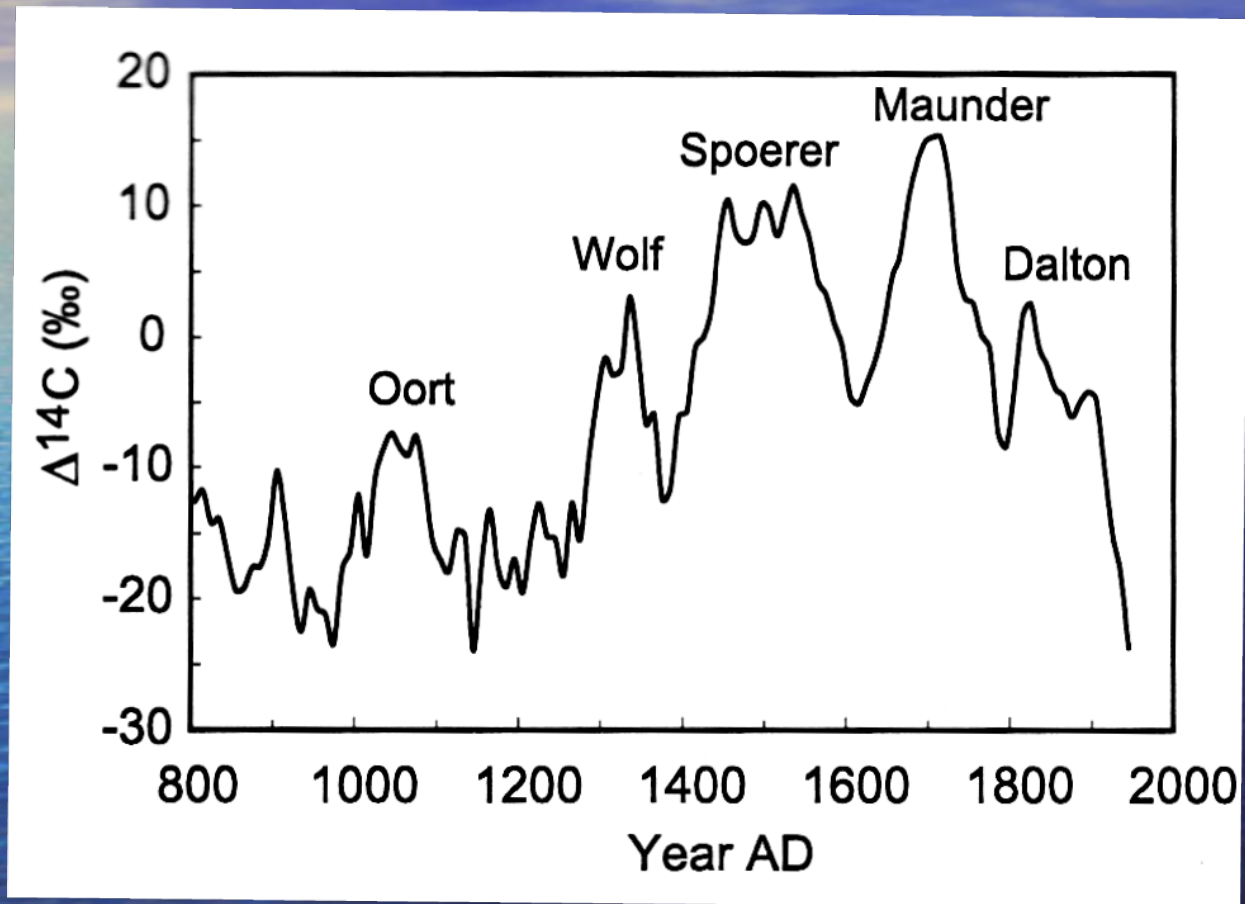
- Started with relatively high period of solar cycles
- Three maximum periods and two minimum periods
- And we appear to be headed towards another minimum period

Solar Min and Next Maximum



For the recent solar minimum period, the smoothed sunspot number was under 20 for 56 months

A Very Long Look At Solar Cycles



Solar min

Solar max

Early data from C-14 and Be-10

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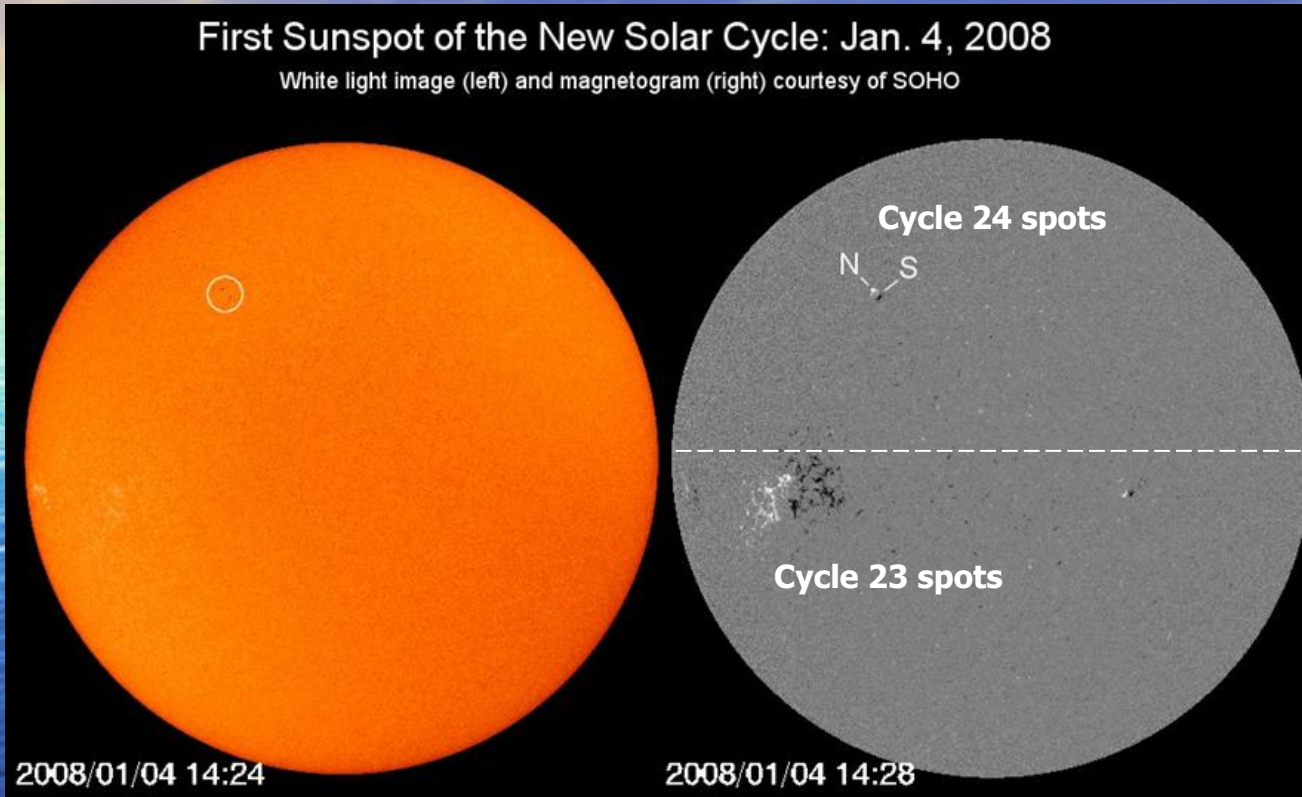
Cycle 24

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Cycle 24's Start

First Sunspot of the New Solar Cycle: Jan. 4, 2008

White light image (left) and magnetogram (right) courtesy of SOHO



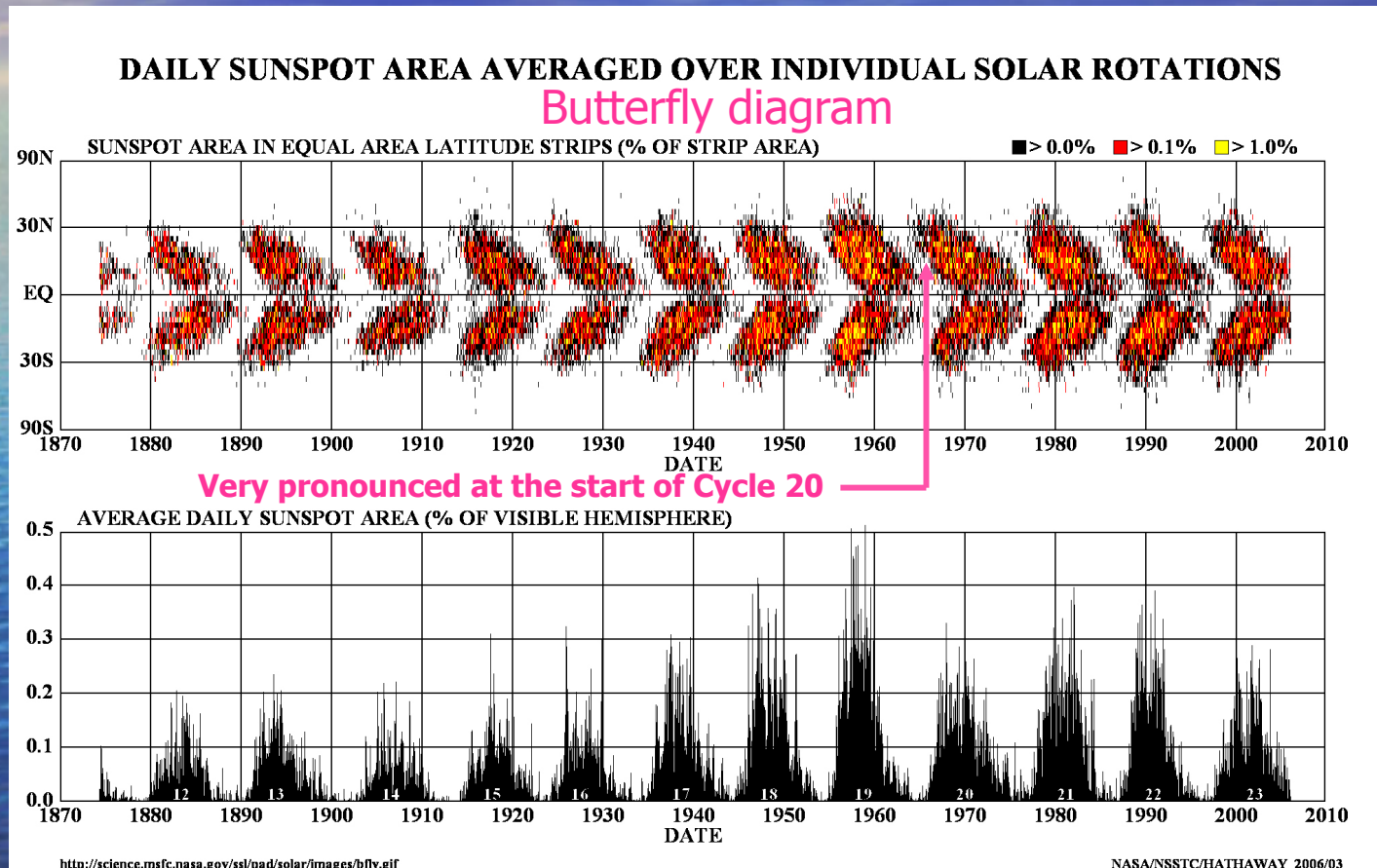
By convention, white is “outward” magnetic field line and black is “inward” magnetic field line

solar equator

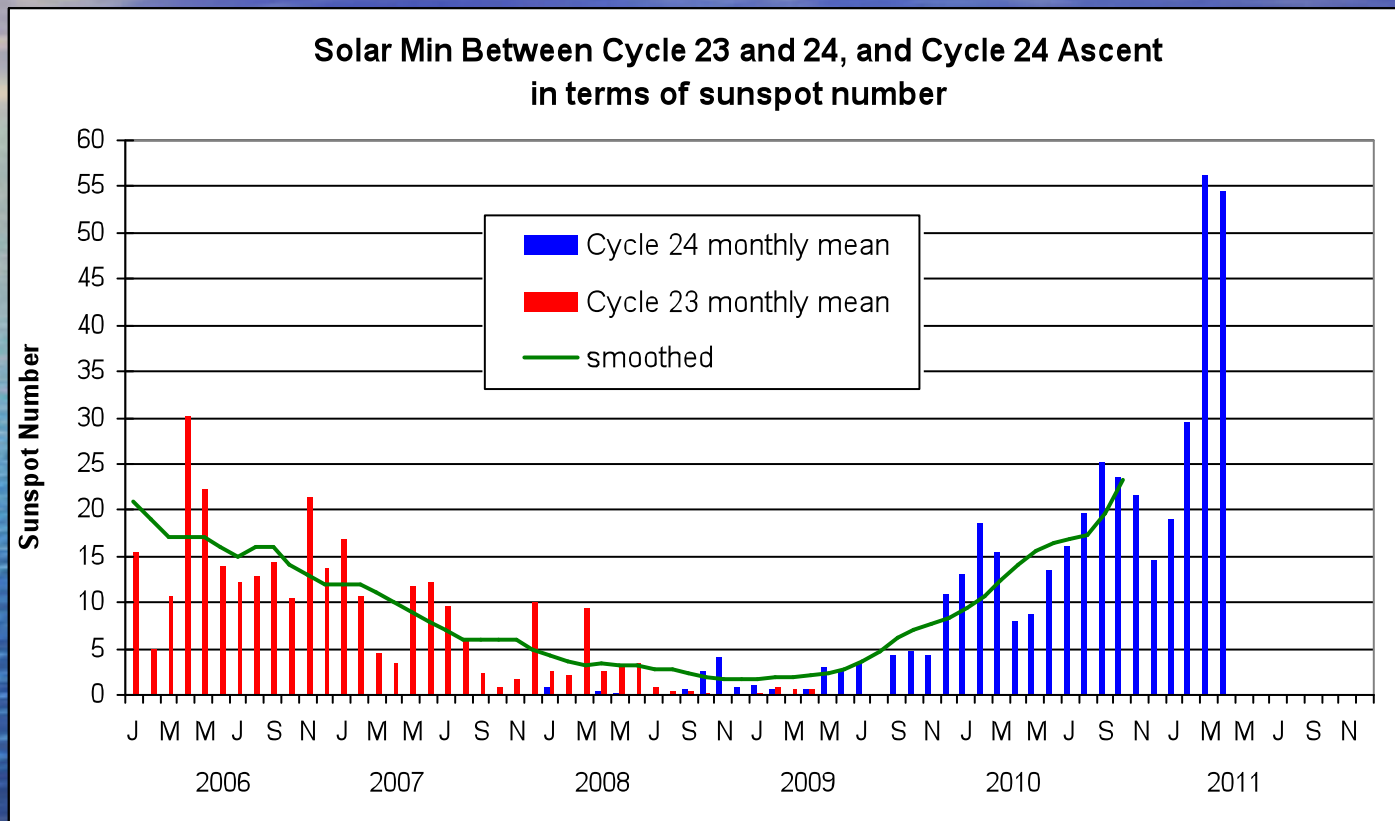
Magnetic fields are opposite from one solar cycle to the next

Magnetic fields are opposite in northern and southern hemisphere

Hemispherical Asymmetry

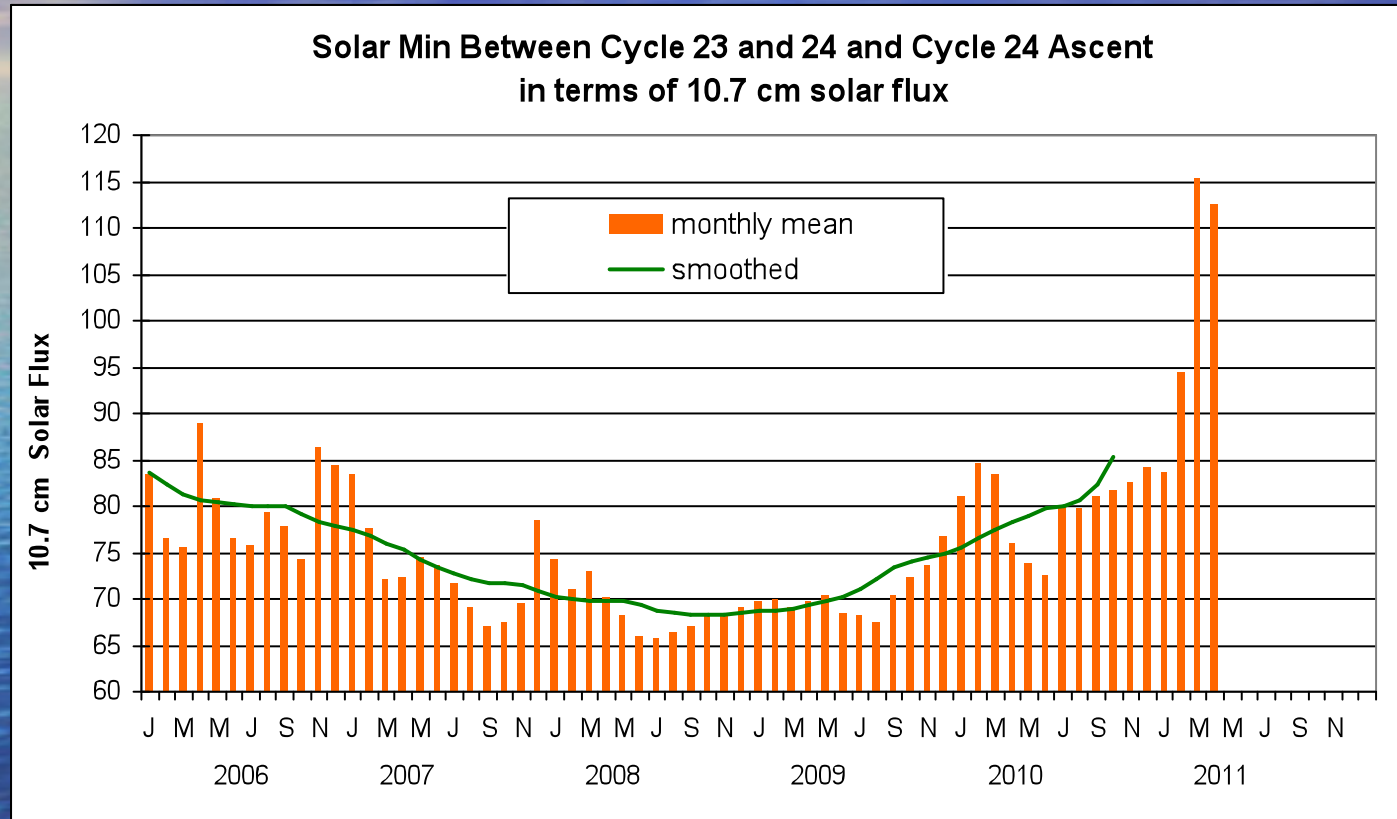


Recent Data



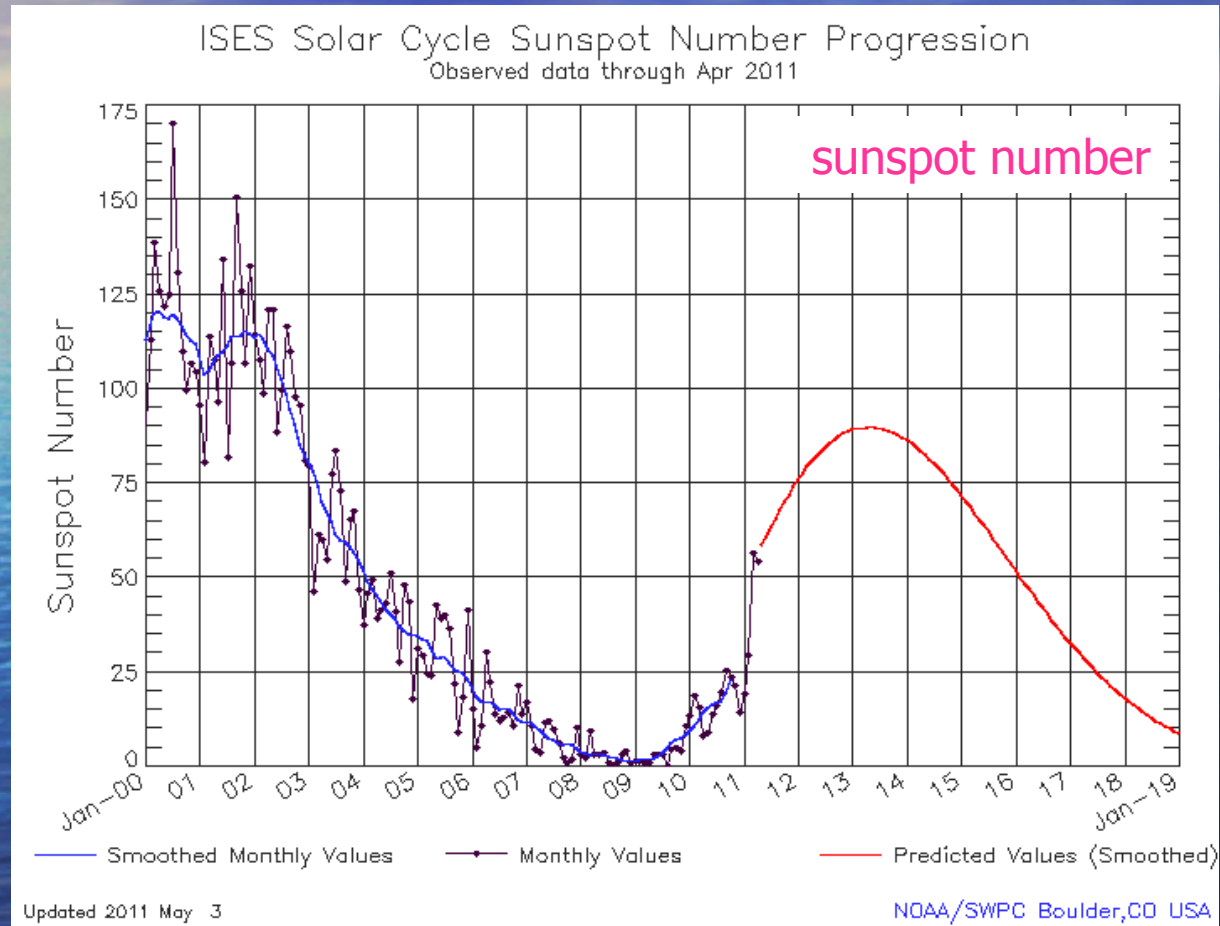
We're going to have the monthly ups-and-downs,
but the smoothed sunspot number is still rising

Recent Data

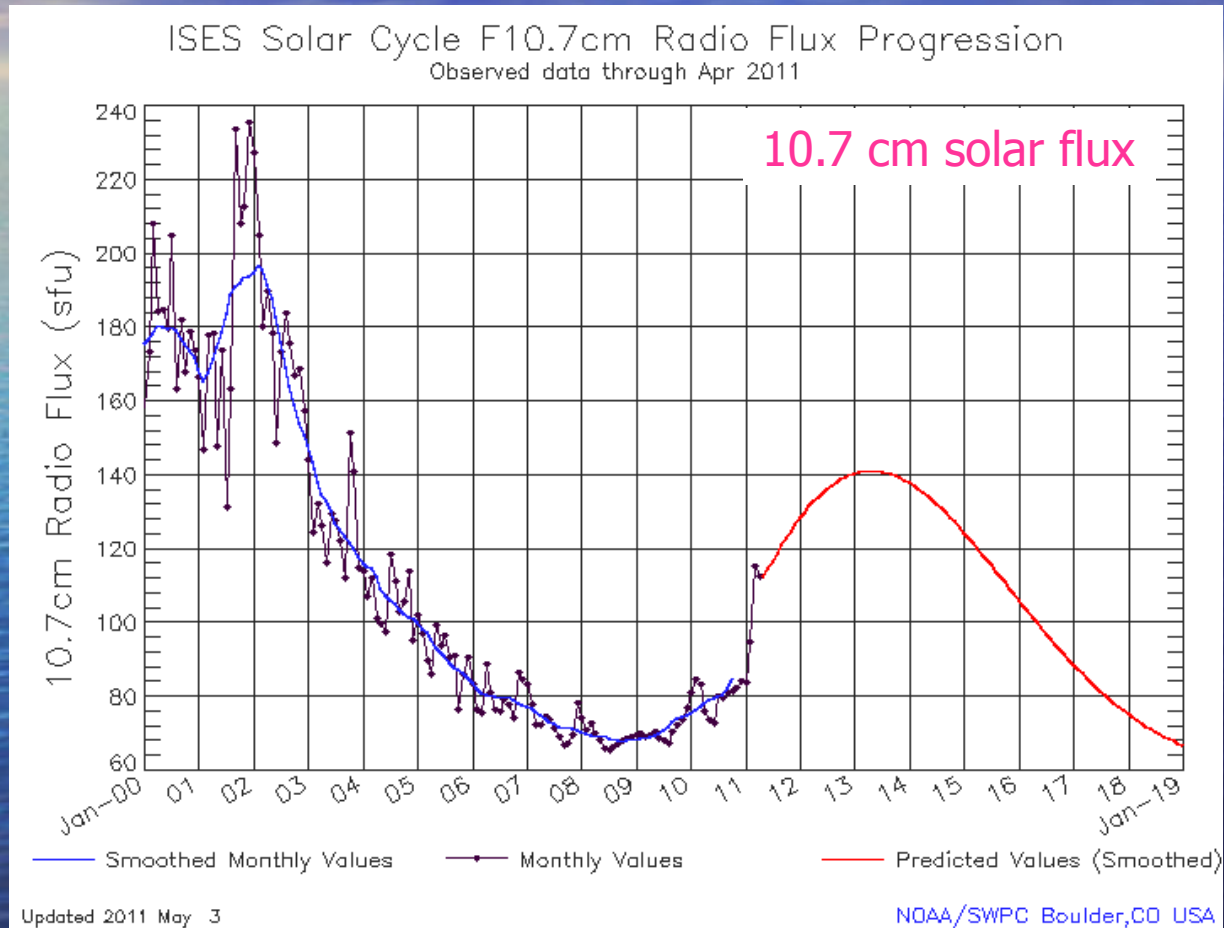


Smoothed 10.7 cm solar flux is still rising, too

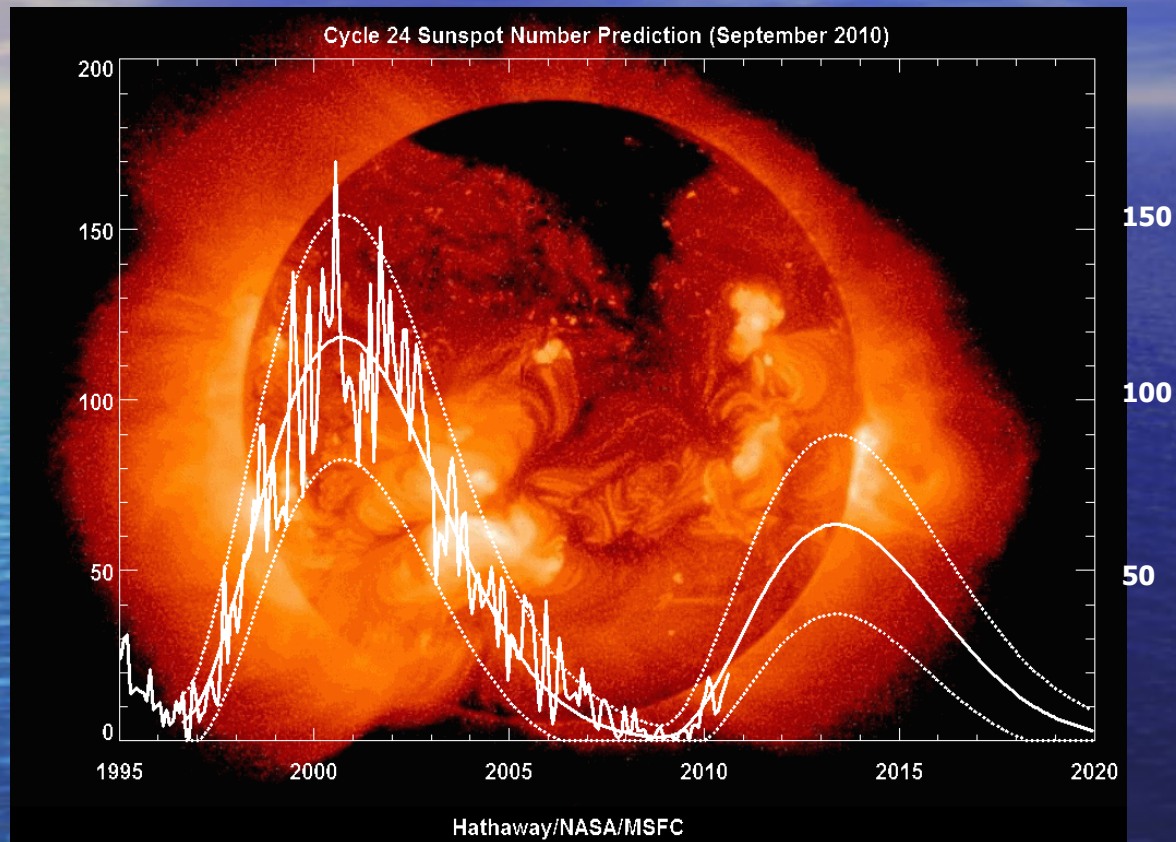
Latest Prediction - ISES



Latest Prediction - ISES



Latest Prediction - MSFC

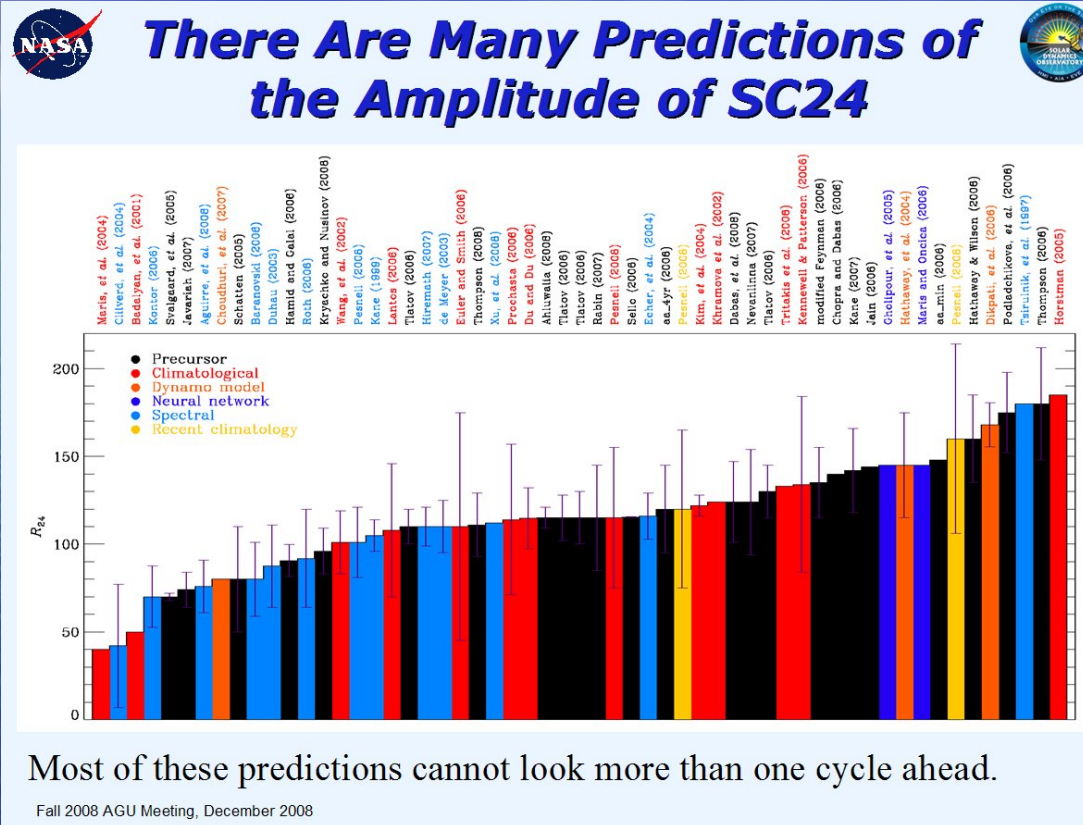


Max of ~ 65

And many more (over 60, in fact) ranging from a smoothed sunspot number of 40 to 185

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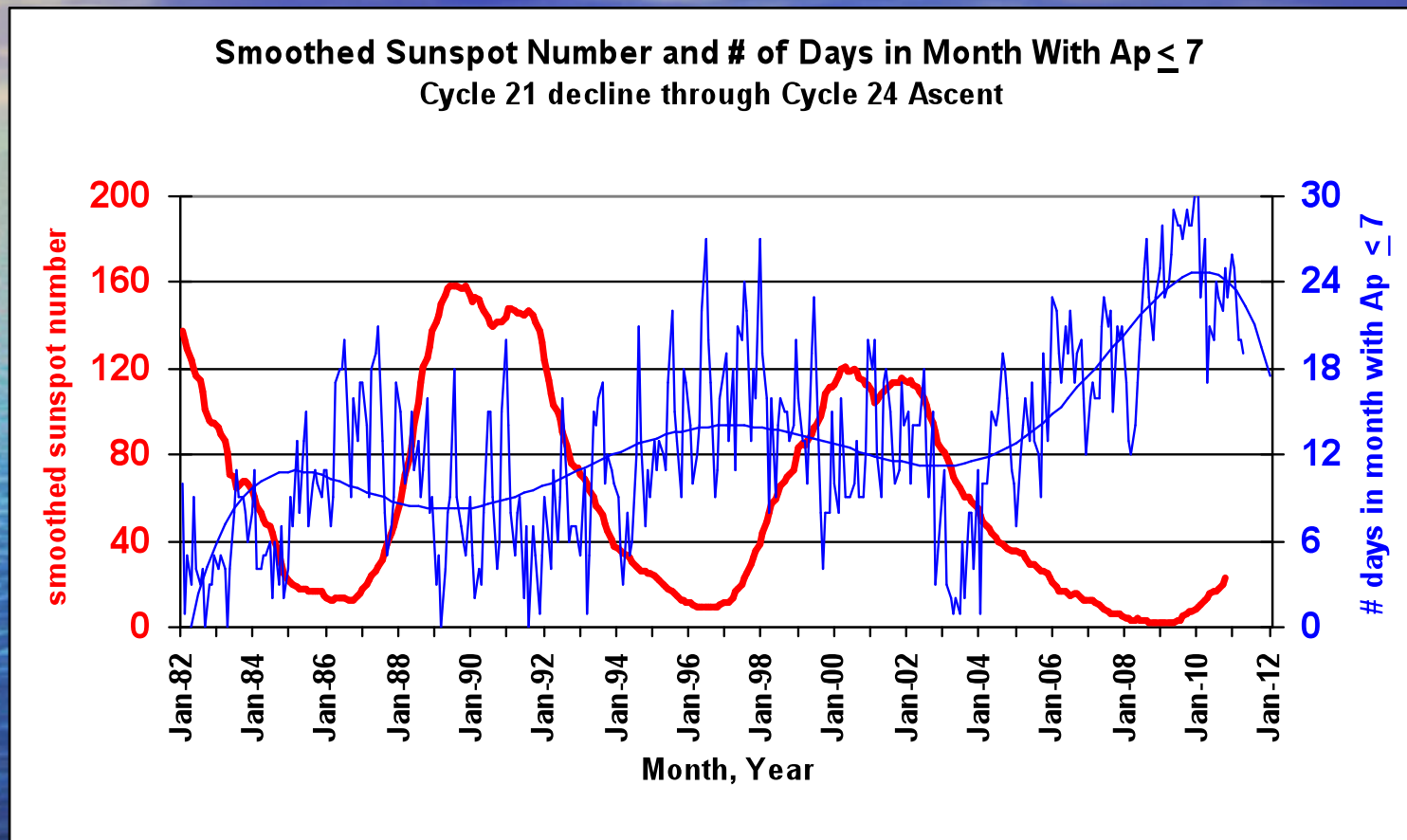
Take Your Pick



Someone is going to be right!

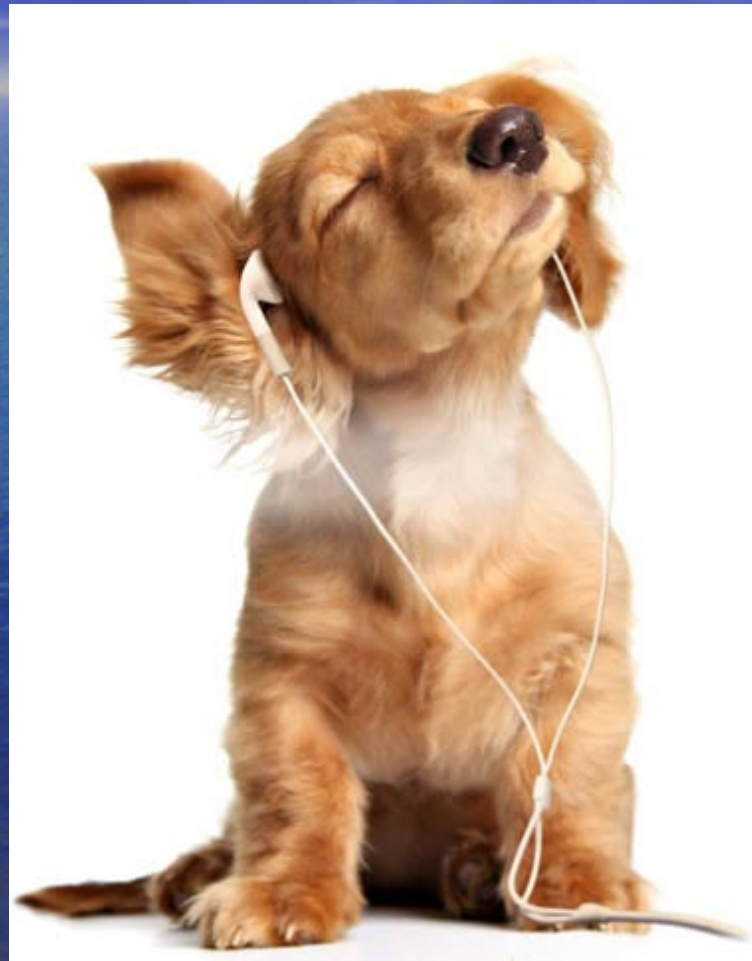
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Geomagnetic Field Activity



should still have good high-latitude low band openings this fall

A Real CW Enthusiast



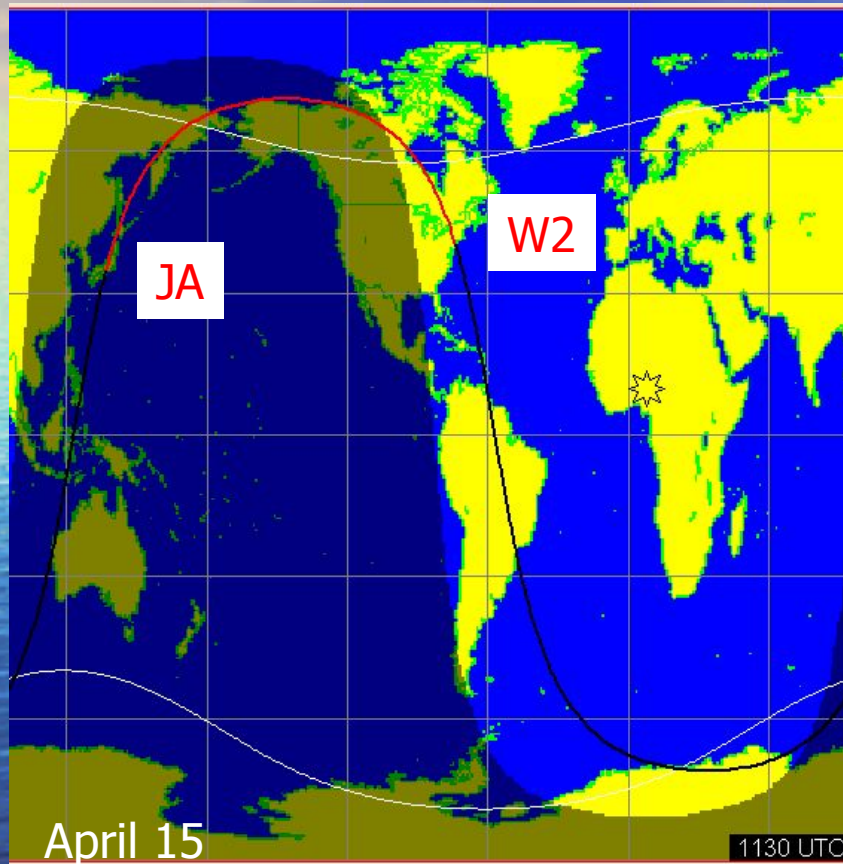
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Long Path on 15m/12m/10m

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Normal Long Path



- Short path is 11,000 km
 - High northern latitudes in darkness a long time
- Long path is 29,000 km
 - Two transits across the robust equatorial ionosphere
 - High southern latitudes in daylight
 - Need sunrise at W2
 - Critical end of path
 - JA can be past sunset, but not too long past sunset
 - Recombination after sunset is much slower than ionization at sunrise
- Long path goes over VK6

a bit after sunrise on one end, not too far past sunset on the other end

When and Where to Look

- Best months are March through October
- East Coast
 - After sunrise to JA and SE Asia
 - After sunset to VU area – but lack of ops on this end
- West Coast
 - After sunset to Mideast and EU
 - After sunrise to VU area – but lack of ops on this end
- Texas
 - After sunrise to JA and SE Asia
 - After sunset to Mideast and EU
- Bands
 - 15m should be happening now
 - 12m should get better this summer (per Cycle 24's ascent so far)
 - 10m should get better this fall (per Cycle's 24 ascent so far)

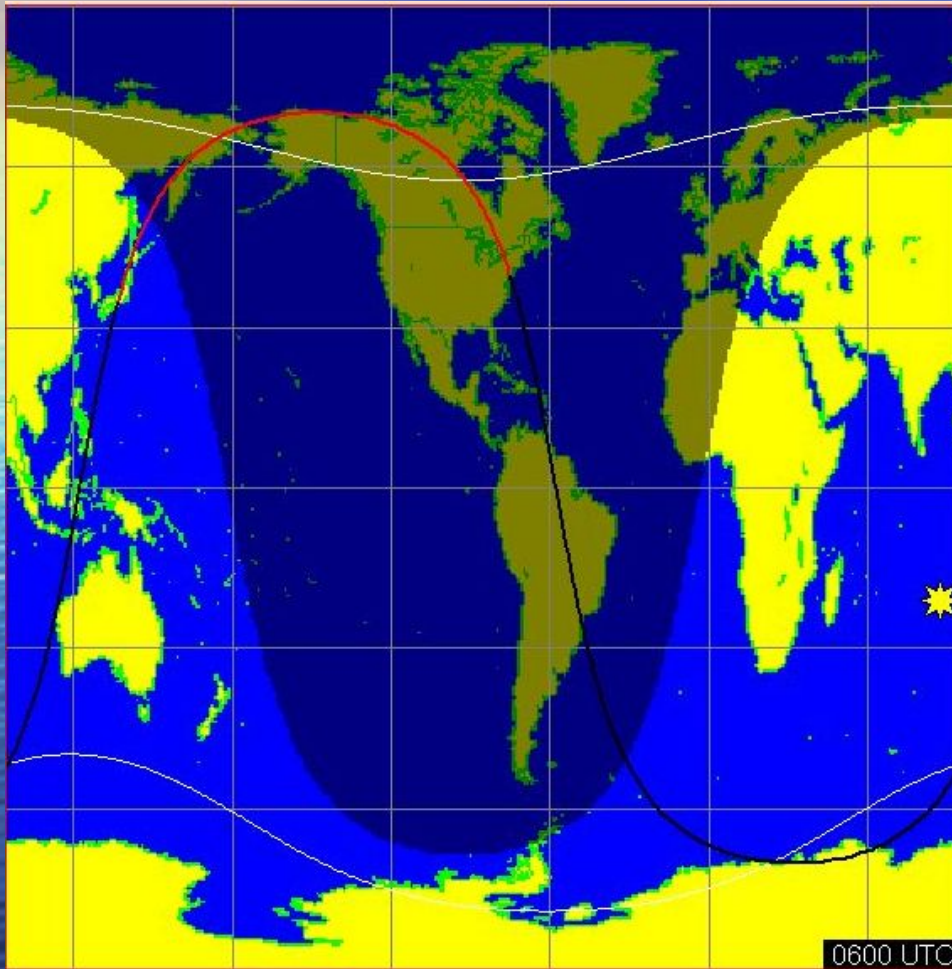
Details in my May 10,
2011 PVRC webinar

Unusual Long Path

- Everything so far was for the normal morning and evening long path
- 2009 CQ WW CW
 - W3LPL and K3LR worked JA, HL, SE Asia on 15m long path from 0500 – 0600 UTC (midnight to 1AM local)
 - Long path out of W3 is to the southeast

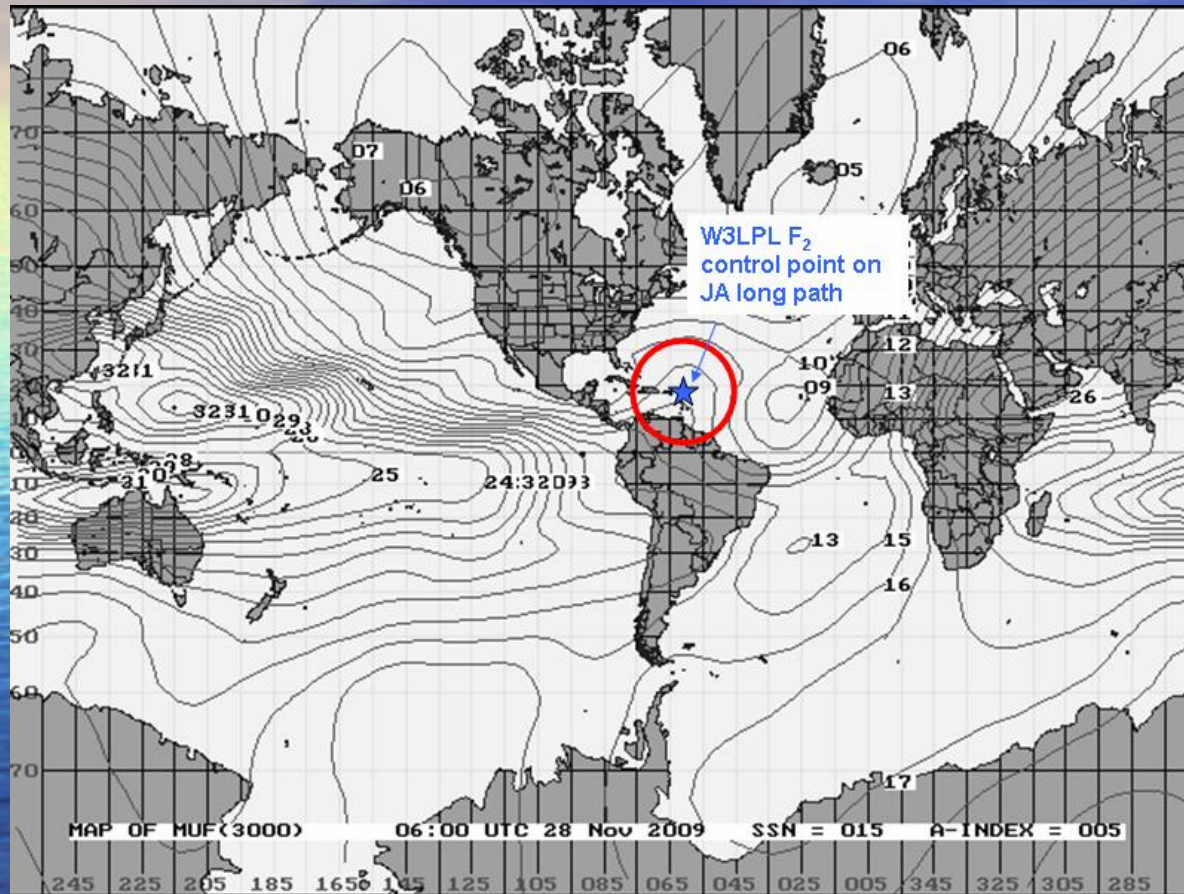
**Details in the March 2010
issue of WorldRadio Online**

Unusual Long Path



- Just like normal long path, the critical part of this path is ~ 2000 km southeast of W3
- If the MUF (maximum useable frequency) isn't high enough there, then more than likely the path won't be available
- But it was available for 2009 CQ WW CW

What May Have Happened



- Per our model of the ionosphere, around 0600 UTC an area of higher ionization passes through this critical area
- Very low probability – one day a month
- Hasn't happened since
- Another explanation is a single-day enhancement of ionization

The bands are open more than we think – just need to be there

Summary

- Solar minimum is behind us
 - Yay!
- Cycle 24 is on the rise
 - Another yay!
- If you had to bet, bet on a small Cycle 24
 - Not a yay if you like the higher bands
 - Another yay if you're a topbander
- Watch for more consistent normal long path on 15m and 12m right now, and on 10m this fall
- East Coast - watch for unusual long path in the wee hours of the night in the fall



Q & A

<http://mysite.ncnetwork.net/k9la>

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