

Solar Sunspot Location Shifts and Hot Summers in US

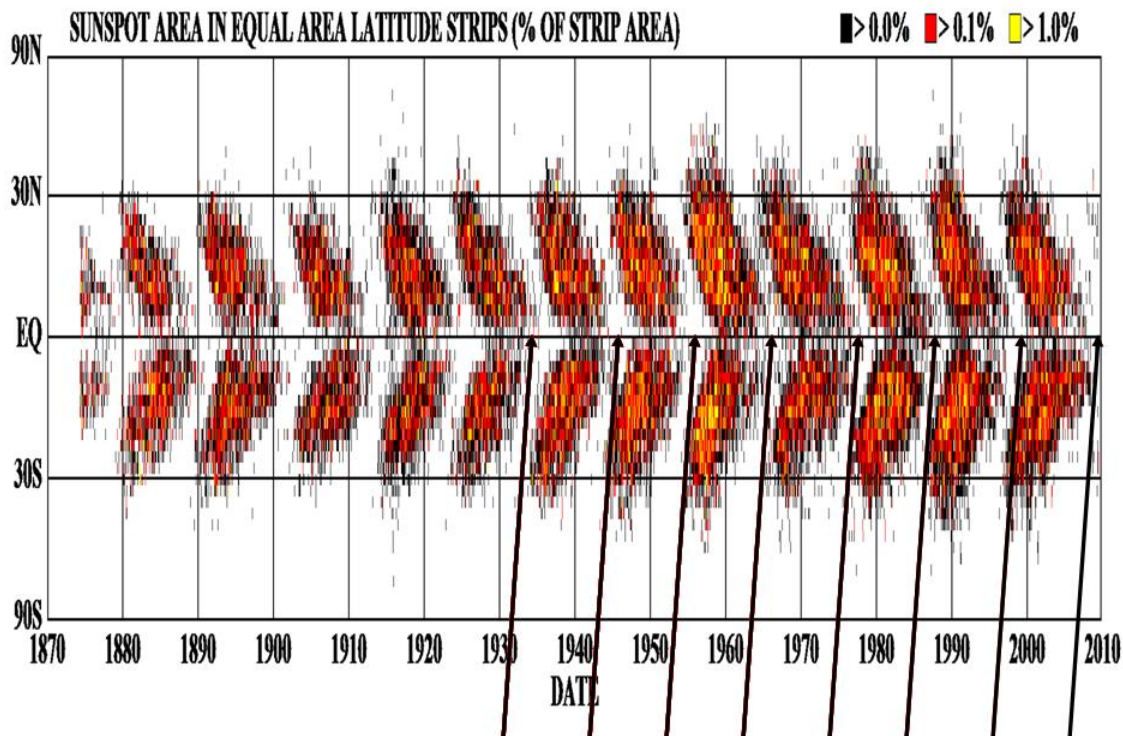
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We have seen hot weather in summers in 1933, 1944, 1955, 1966, 1977, 1988, 1999, 2010. Notice a pattern? The years are 11 years apart.

This 11 year cycle may be a coincidence but if so a 1 in 256 chance one. In some years the heat was concentrated in one month (1966 it was July), in others it was throughout.

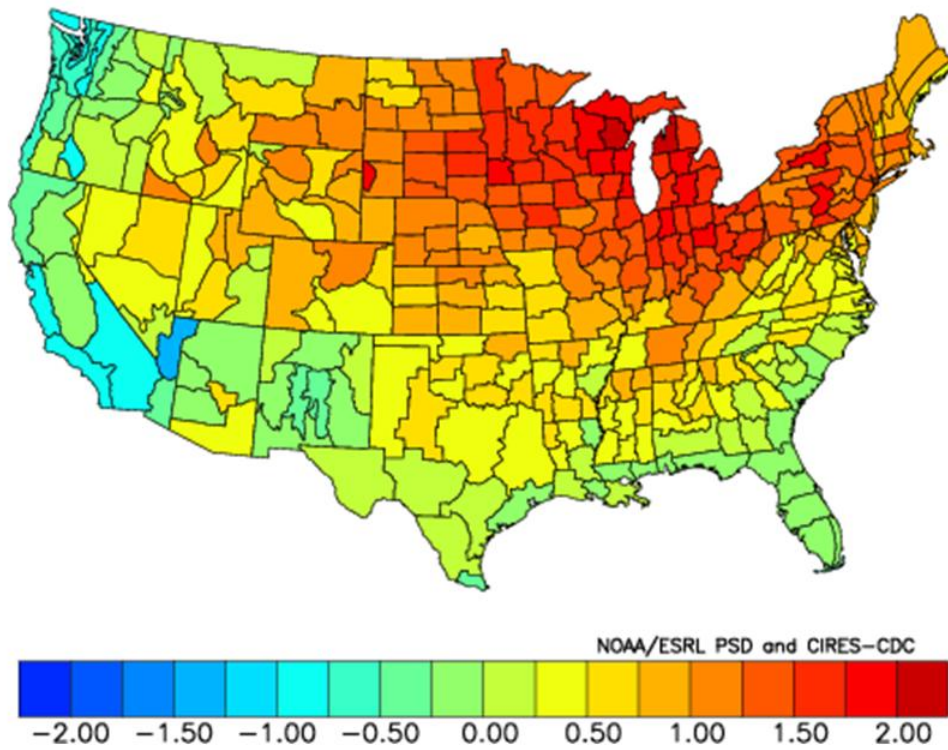
The solar cycles average 11 years. When new solar cycles begin the new spots are in higher solar latitudes and gradually move equatorward. During transitions you typically have old cycle spots near the equator and new cycle spots at higher latitudes.

The 11 years above have been during these transitions. A coincidence? We'll leave it to our solar expert readers to speculate whether this is solar driven and possible mechanisms. The following butterfly diagram shows the position of the sunspots on the sun's surface.

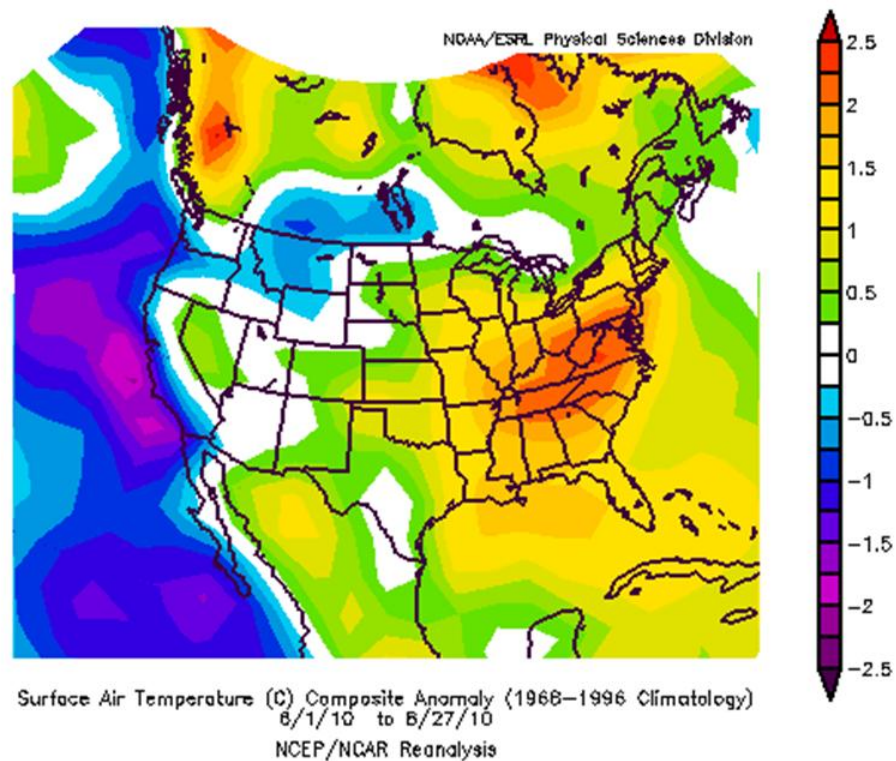


Compositing those years gives you this warm summer signal.

Composite Temperature Anomalies (F)
Jun to Aug 1933,1944,1955,1966,1977,1988,1999
Versus 1950–1995 Longterm Average

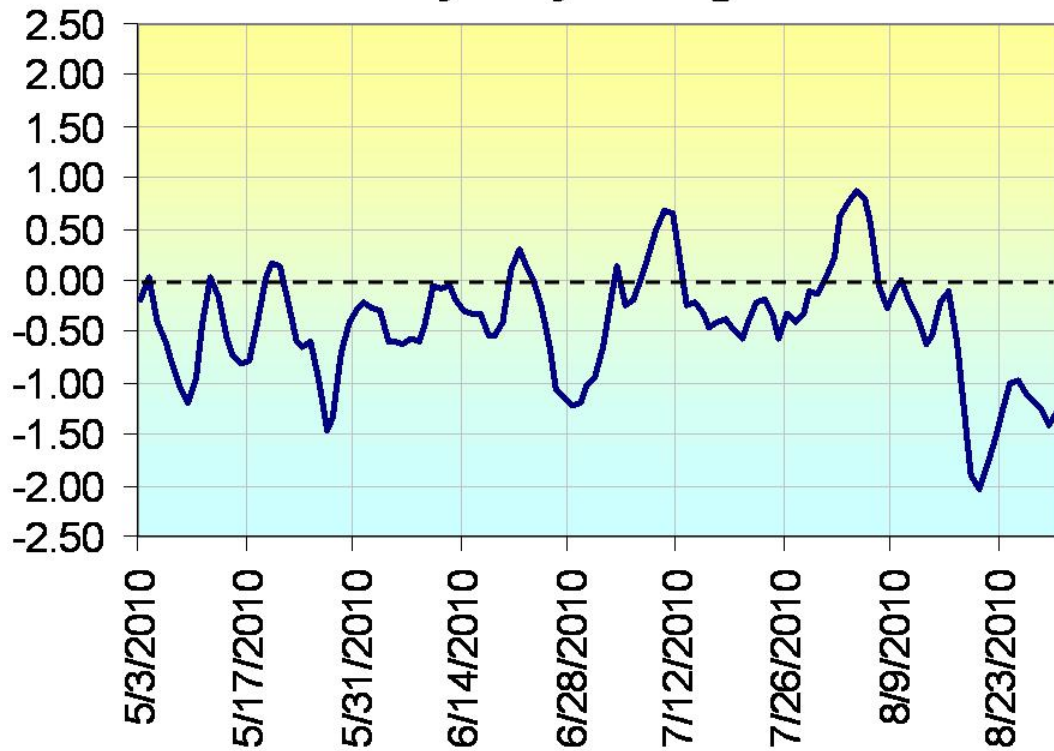


The actual anomalies through August 30 showed the warmth further south. This may be because of a continuation of strong high latitude blocking (negative NAO) as evidenced by the warmth in northeast Canada.



Indeed a plot of the daily NAO as obtained from NOAA CPC shows a predominant negative NAO. This forces everything else further south in North America and the Atlantic.

NAO Daily May 3-August 30



In July, a negative NAO means a hot southeast. By winter, it means cold.

A continuation of this blocking may make the upcoming La Nina winter more interesting. The winters tend to be cold in the west and north, warmer in the southeast.