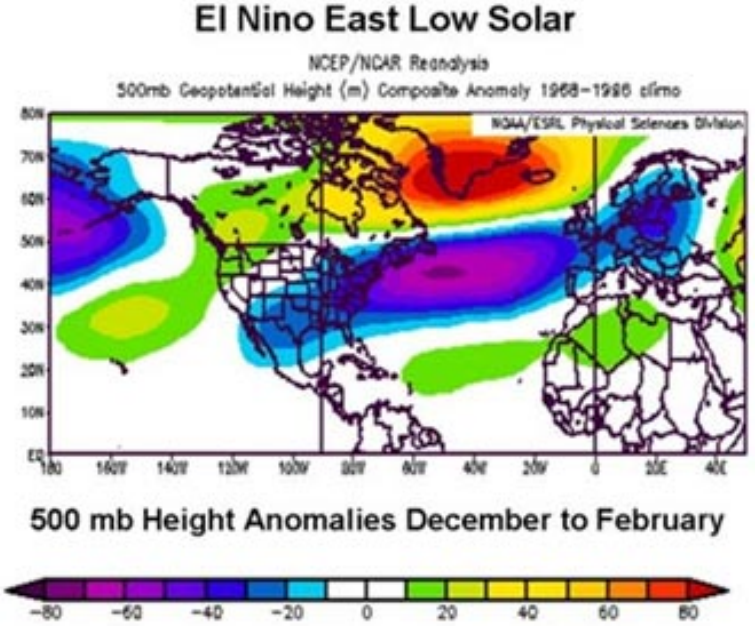
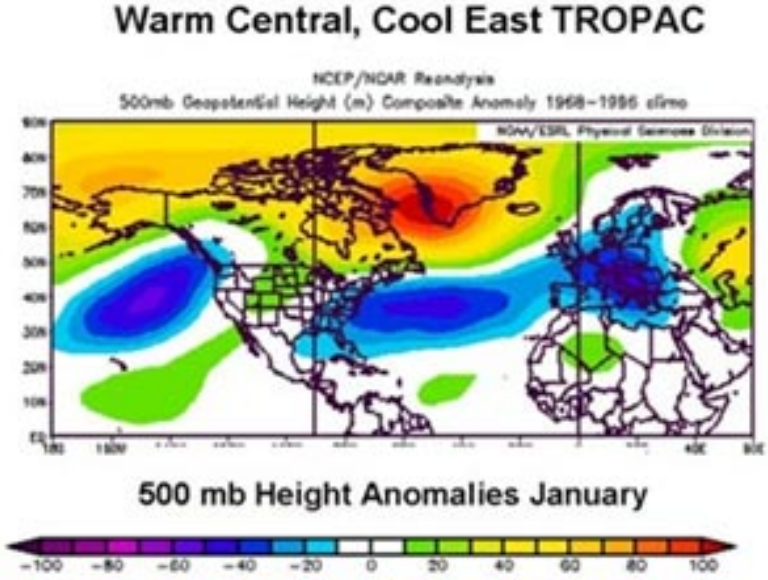
Warming after a cold winter will disappear quickly as it did in 2007

By Joseph D'Aleo

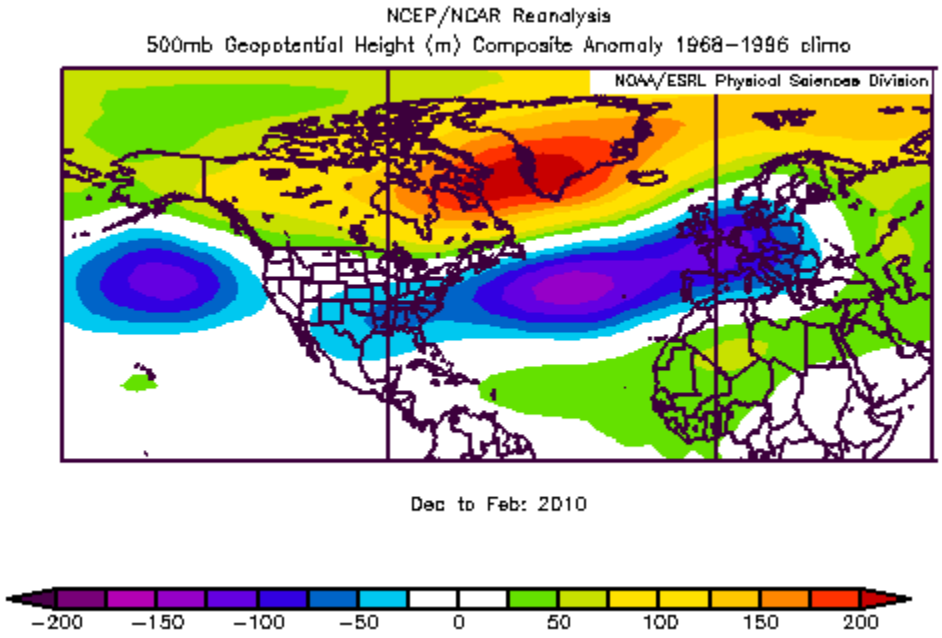
The pop in global temperatures, even the satellite, the last few months seems surprising to some in the Northern Hemisphere where the winter was hard. In Russia, it may have been the coldest on record, while across northern China, Europe and the southern and central United States, it was the coldest since the late 1970s or even the early 1960s. It was not unexpected. We showed the following upper level anomaly pattern was likely for the winter given the low solar, El Nino and developing east Quasi-Biennial Oscillation or QBO (shown in research by our own Climate Prediction Center to modulate solar and El Nino Southern Oscillation or ENSO).



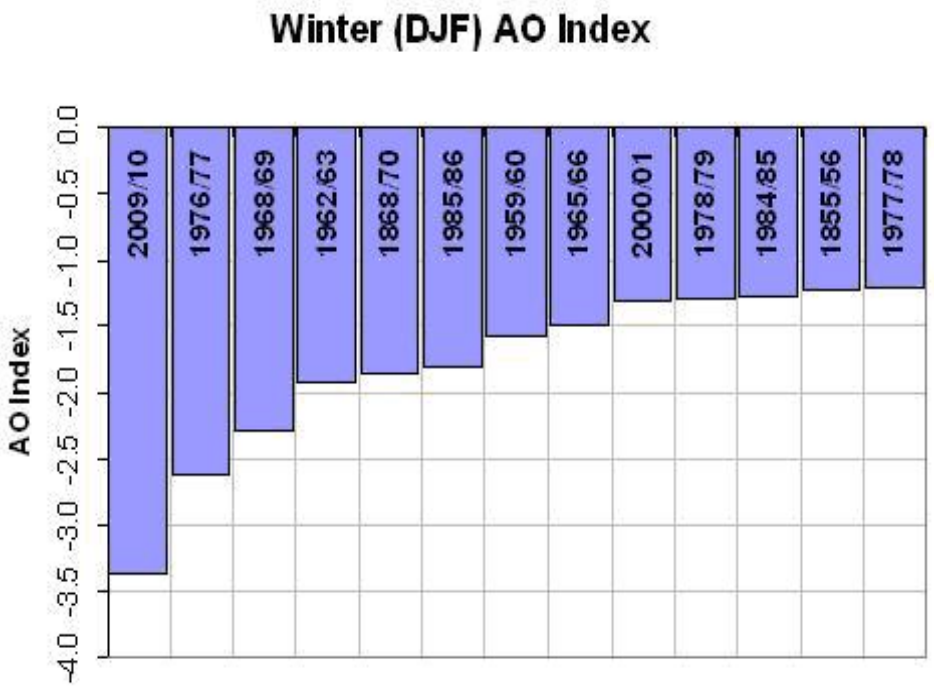
Also the warmest water in the Pacific was biased towards the central Pacific most of the winter. This pattern given the name Modoki, produces this very similar pattern in winter.



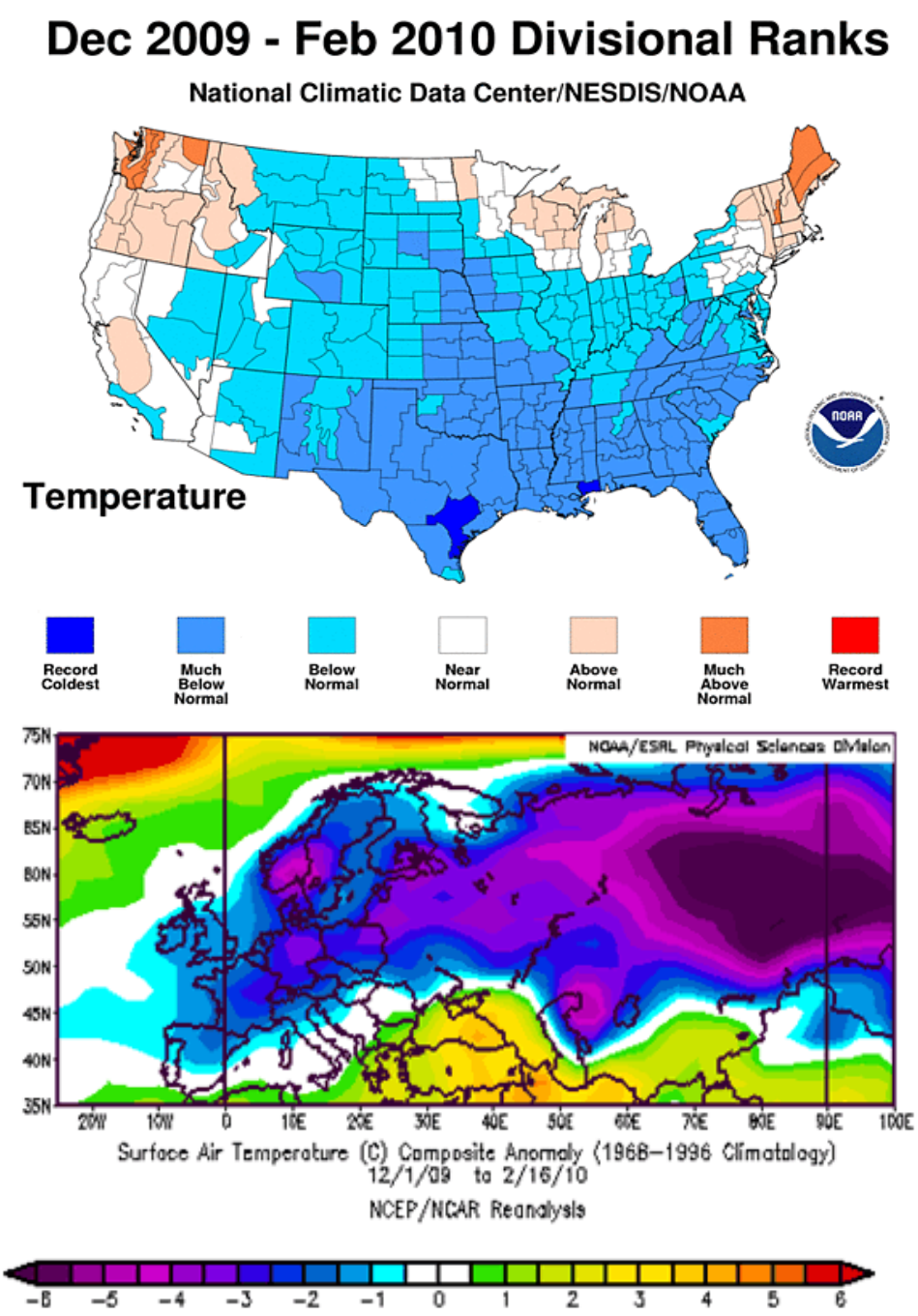
See how well the actual winter 500mb anomalies correlated to the two patterns.



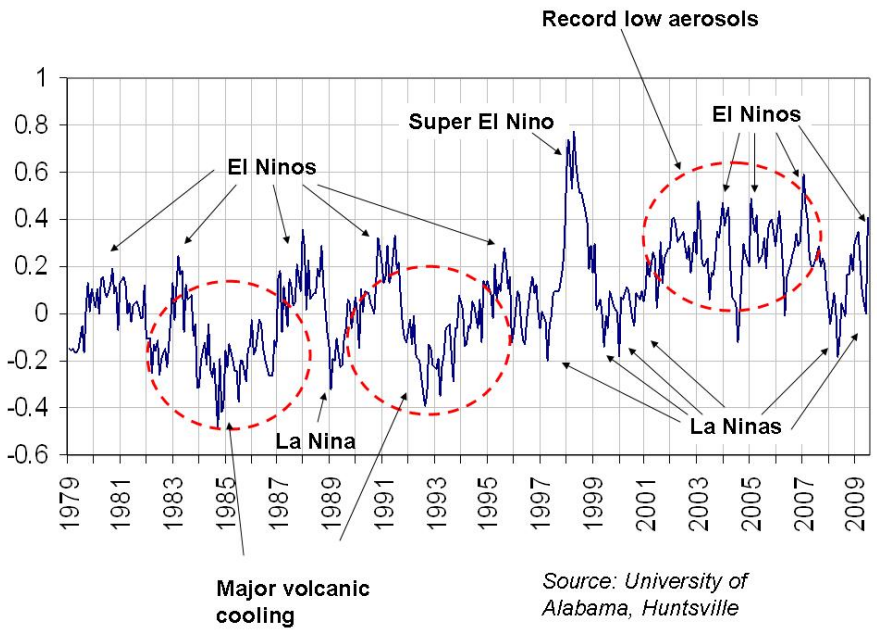
Both had a very strong high latitude blocking signal (above normal heights in polar regions). This high latitude blocking is reflected in the negative arctic oscillation state, a record since 1950.



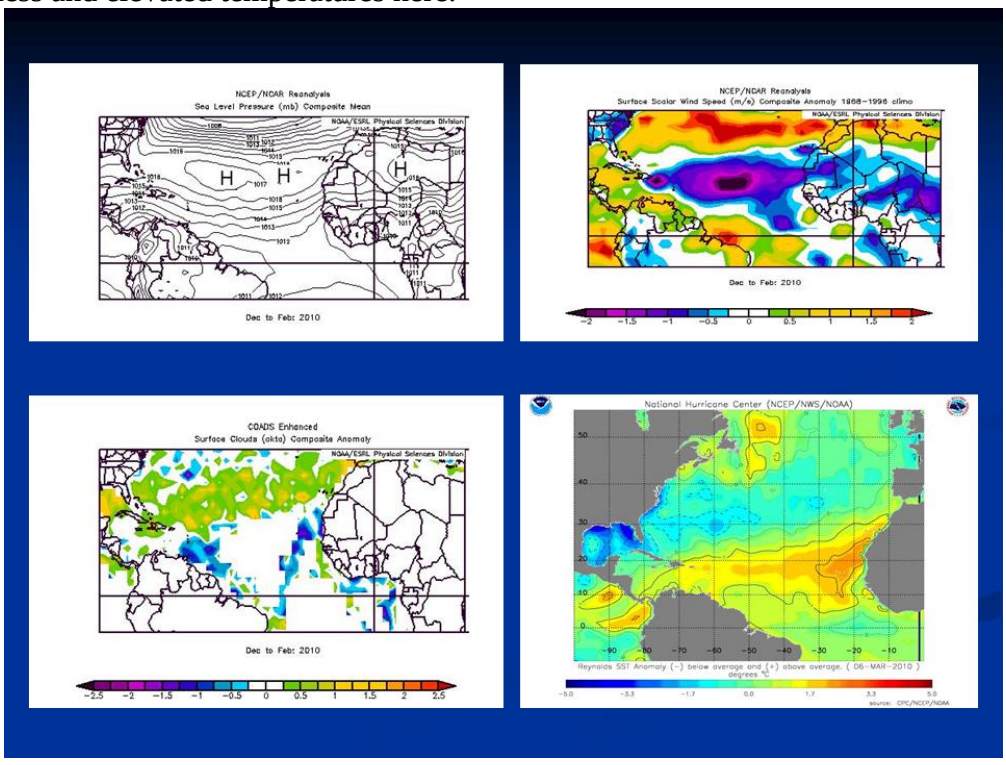
The effect on the surface has been a cold winter as discussed in the US and across Eurasia.



So why the satellite temperature blip upwards? First of all the temperatures always spike up in El Ninos and down in La Ninas.

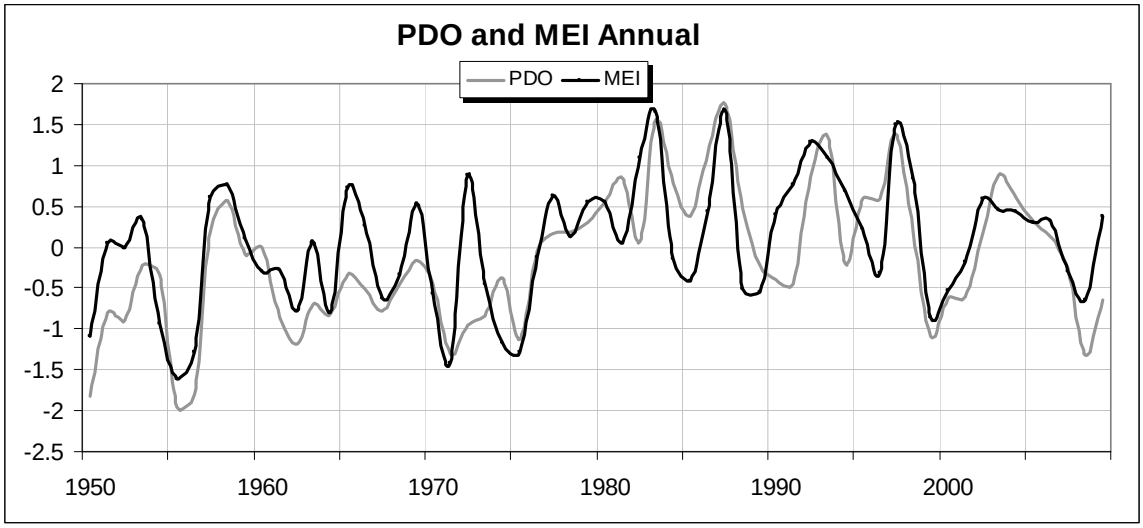


This is because El Ninos translate into warm tropics and subtropics. When the AO is strongly negative the subtropical jet stream is depressed south and the subtropical high pushed south and weakens. This results in weakened trade winds and easterlies. The high pressure causes increased subsidence which results in less cloudiness. Both of these factors lead to warmer water in both the tropics and subtropics. Since these latitude bands have the largest areas (the earth's circumference is greatest at the equator), they contribute to the global blip. You can see the suppressed subtropical high, winds, cloudiness and elevated temperatures here.

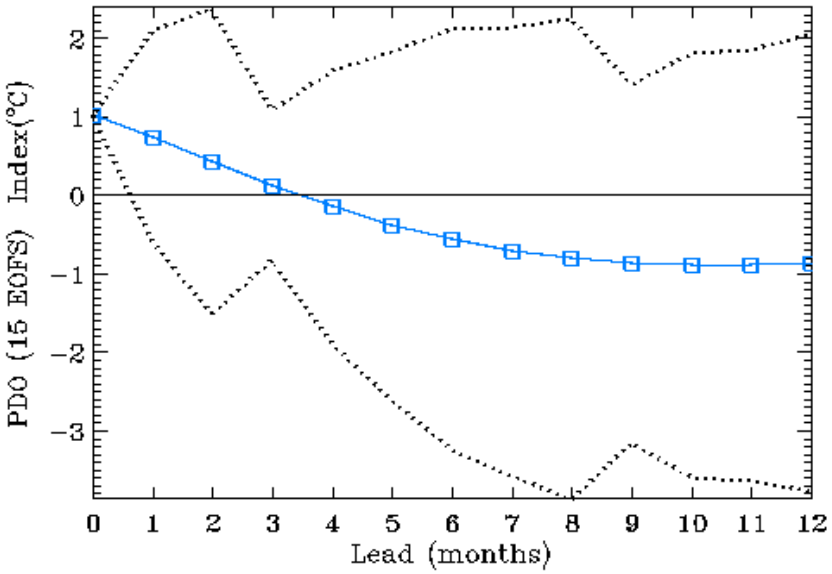


THE PDO POPS BUT WILL DECLINE

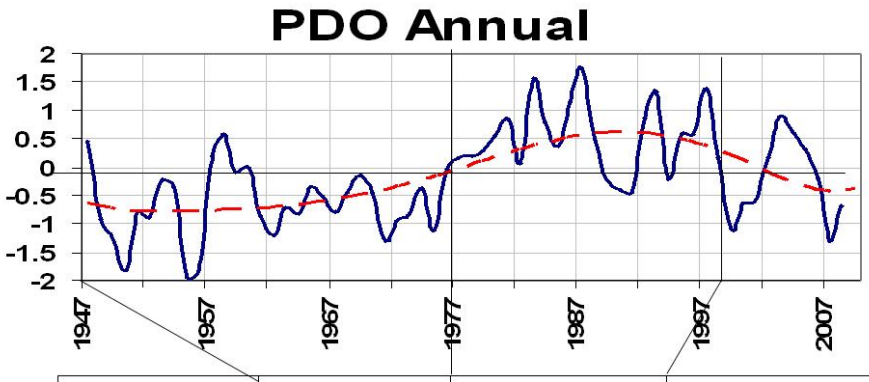
The PDO also popped slightly positive. It usually tracks with El Nino and La Nina. Here we see how it tracks with one El Nino measure, the Multivariate ENSO Index (MEI) of NOAA CDC's Klaus Wolter.



But if indeed we are in the cold PDO multidecadal mode, it should quickly decline as La Nina return quickly. NOAA's Climate Diagnostic Center's PDO forecast agrees.

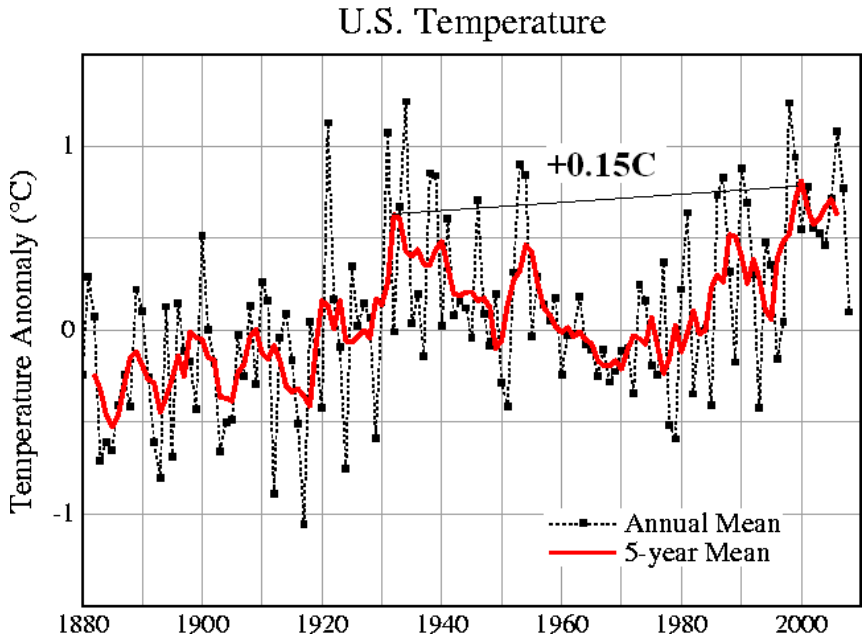


The PDO exhibits a 60 year multidecadal cycle. Notice La Ninas are more frequent, stronger and longer lasting in the cold modes and El Ninos briefer. The opposite is true for the warm mode. In both case, the ratio is 2 or 3 to 1.

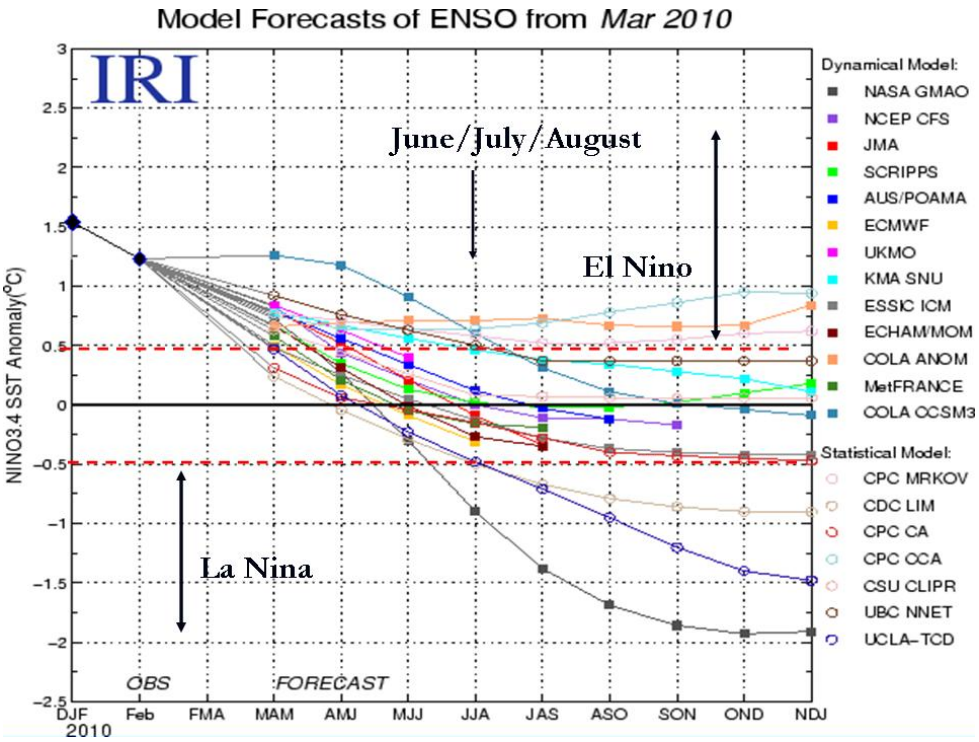


PDO	Cold	Warm	Cold
	1947-1977	1978-1998	1999-2009
El Nino	7	10	3
La Nina	14	3	5

Since the El Ninos lead to warming and La Ninas cooling, this factor alone can explain the 60 year cycle in temperatures we have observed. The slight blip up may reflect urbanization, land use changes / increasingly bad siting.

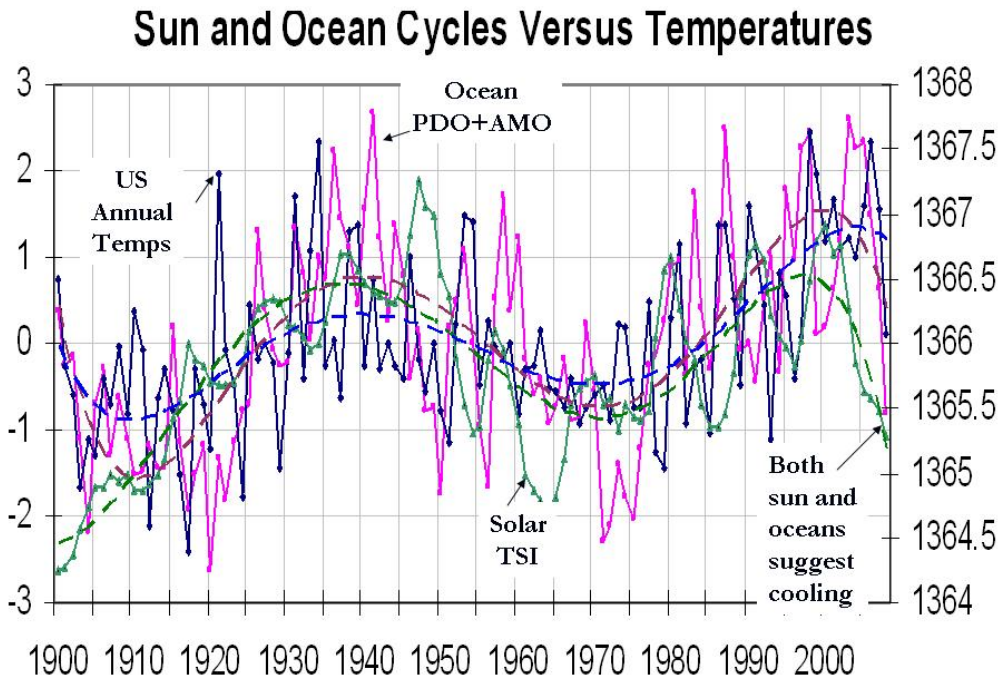


As discussed in a recent ICECAP link, most ENSO models see a quick demise to this El Nino. Some have La Nina returning as early as this summer. This may mean a hot late summer for the central US but a return to cold across Alaska, Canada and the northern US this next winter.

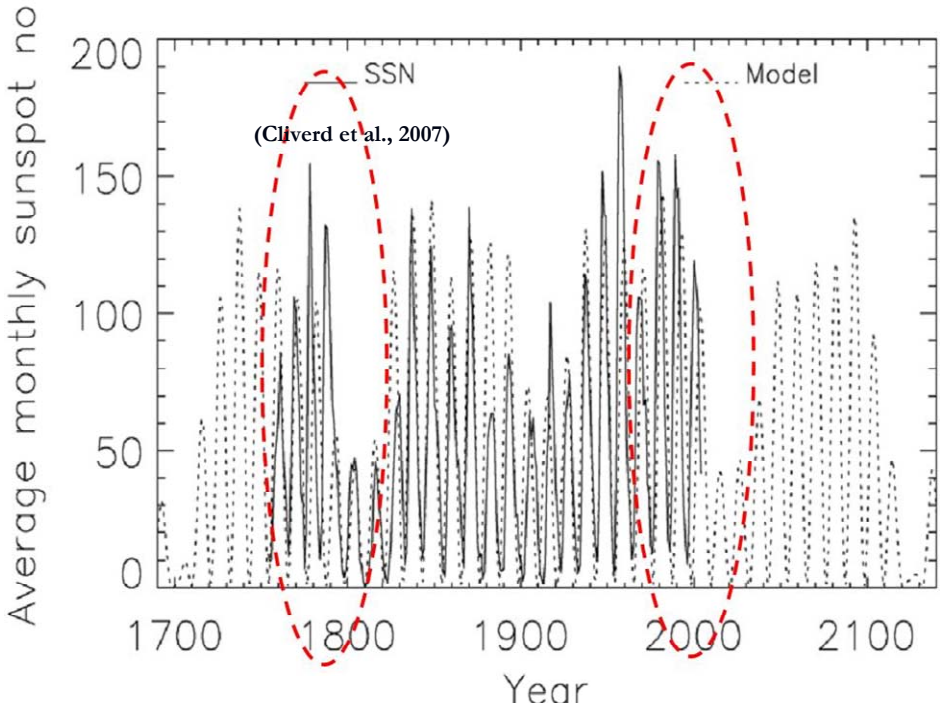


So with a cooler La Nina and return to the negative PDO, temperatures should dip again much as they did in 2007 when we started the year with El Nino and ended with a strong La Nina.

You can see how well the temperatures correlate with the ocean multidecadal cycles and the solar irradiance (Hoyt/Schatten/Willson). They suggested the weather would be more like the late 1950s, 1960s to 1970s in recent years even in El Ninos, which has been the case.



Clilverd's statistical model predicts the sun will in the early 2000s be like the early 1800s, the Dalton Minimum. Indeed cycle 23 was an ultra-long 12.7 years with 776 spotless days.



The Dalton minimum was the time of Dickens and frequent winter snow in London. This has been true the last few years.

The Russian Pulkovo Observatory scientists believe it could become a Maunder like Minimum. Time will tell.

Habibullo Abdussamatov, Dr. Sc. Head of the Pulkovo Observatory