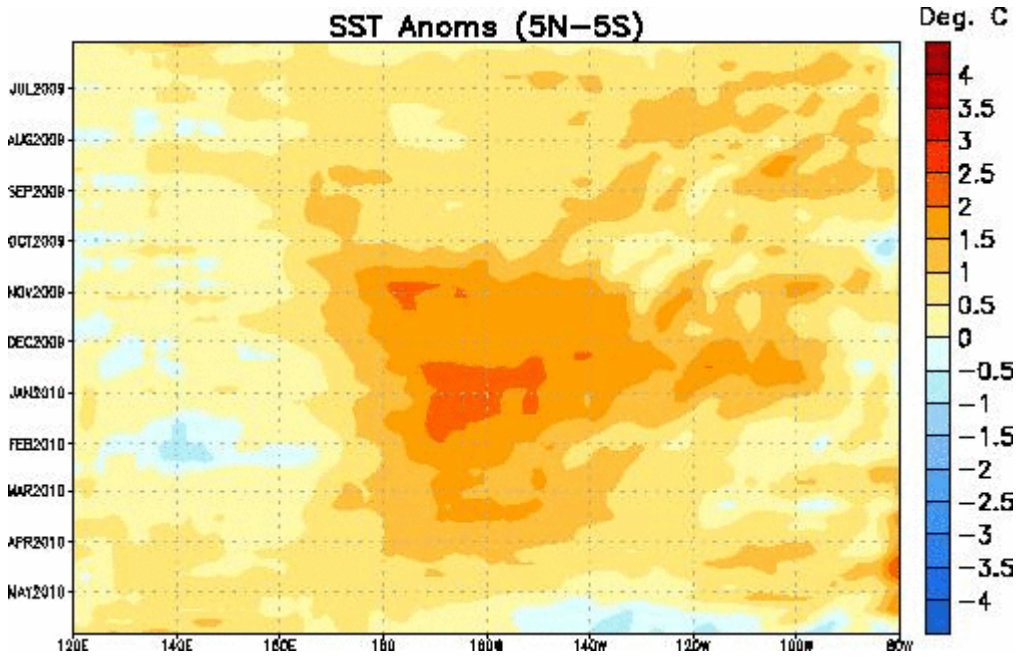
El Nino 2009/10 Over – La Nina Coming

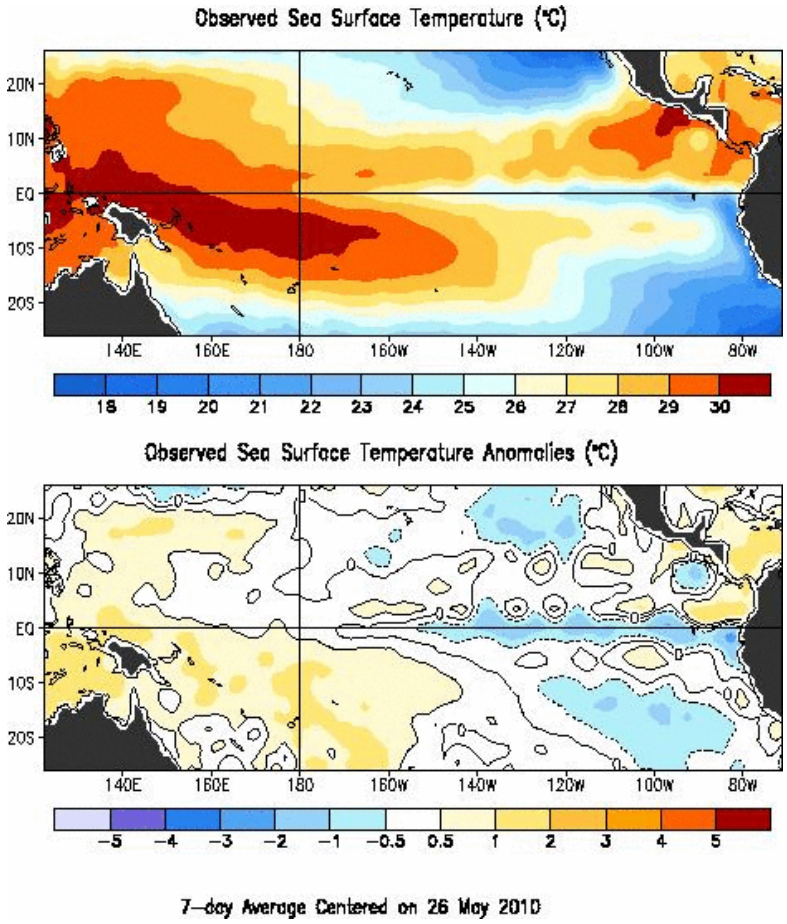
The El Nino of 2009/10 is over. Temperatures in region NINO34, the key region used for official El Nino assessment are now negative (-0.1C).

The warming peaked in the central tropical Pacific in December/January. Some lingering warmth has been found in the east as cooler water has surfaced in the east central.



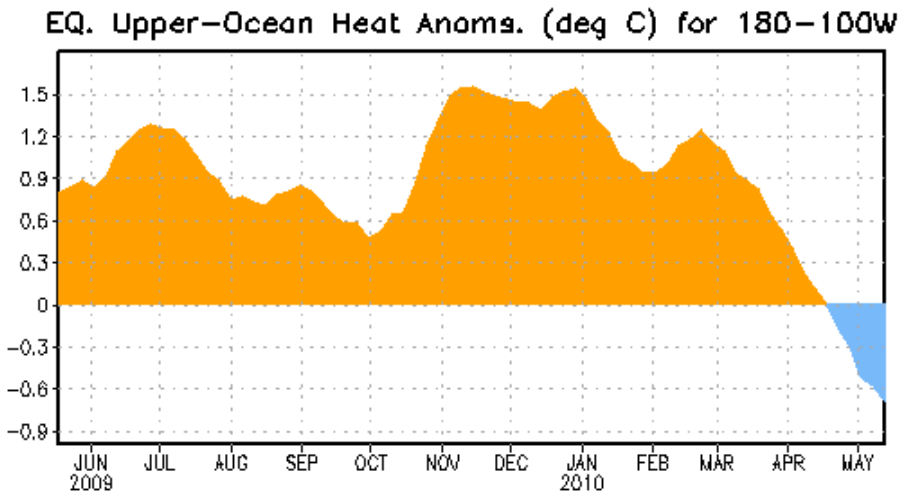
LA NINA – SISTER OF THE “EL NINO COMING ON

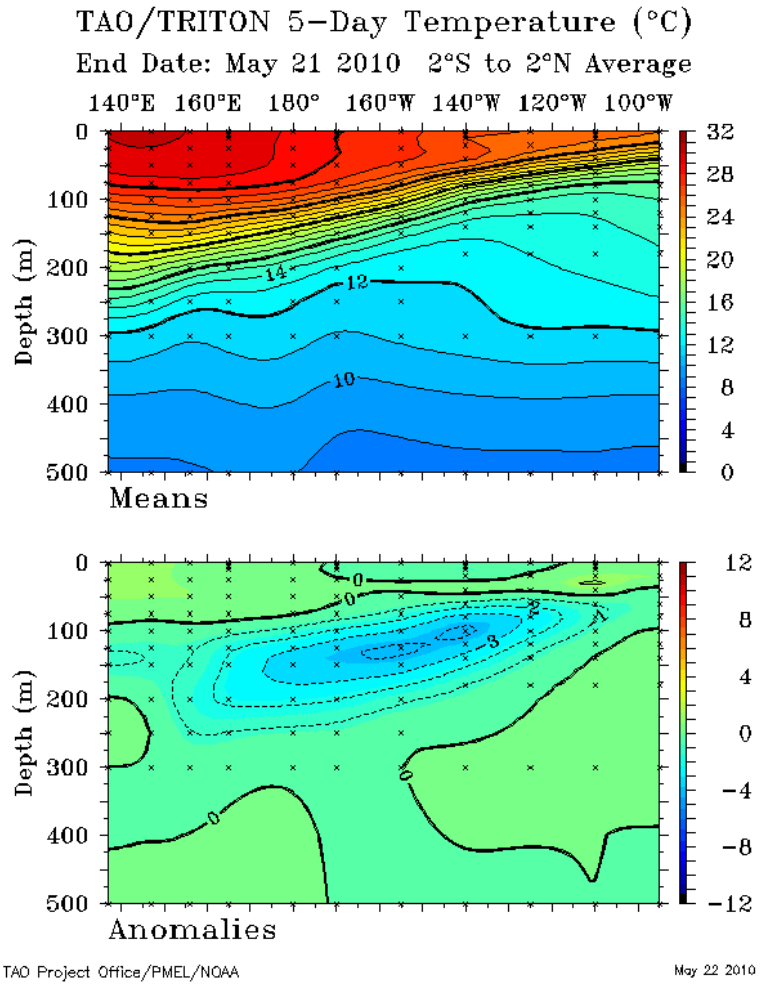
You can see the colder water emerging here in the recent weekly.



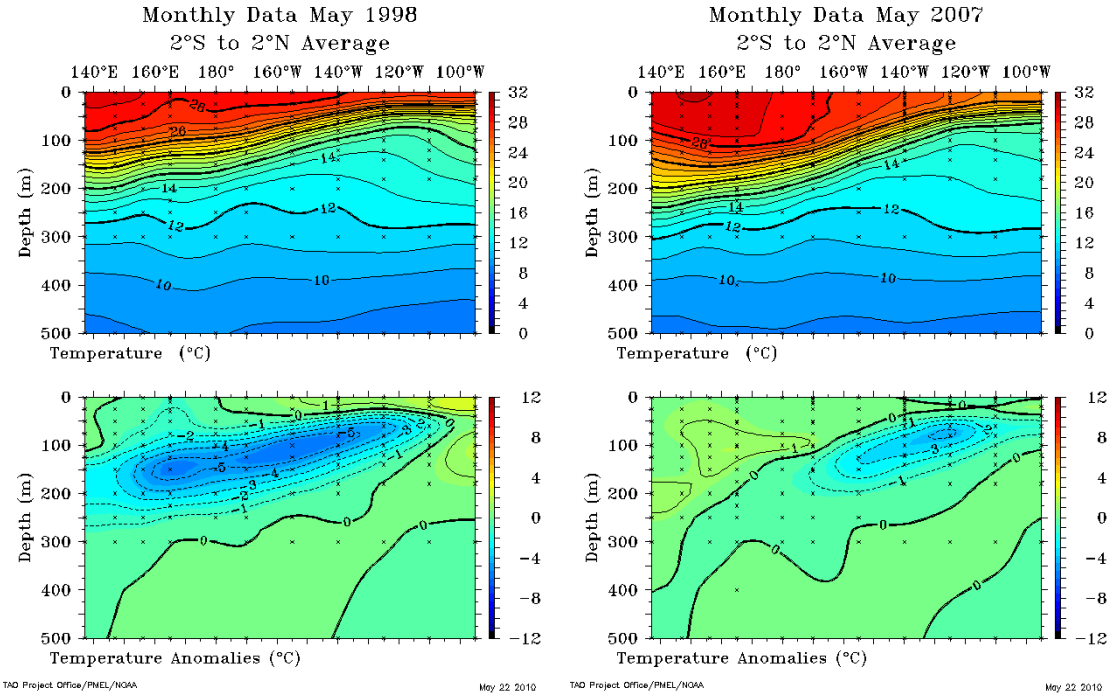
Also the warmer water is seen mixing out quickly as upwelling of cold water increased in this animation.

Ocean heat content in the tropical pacific is shown to dive, similar to what happened in 1998 and 2007.

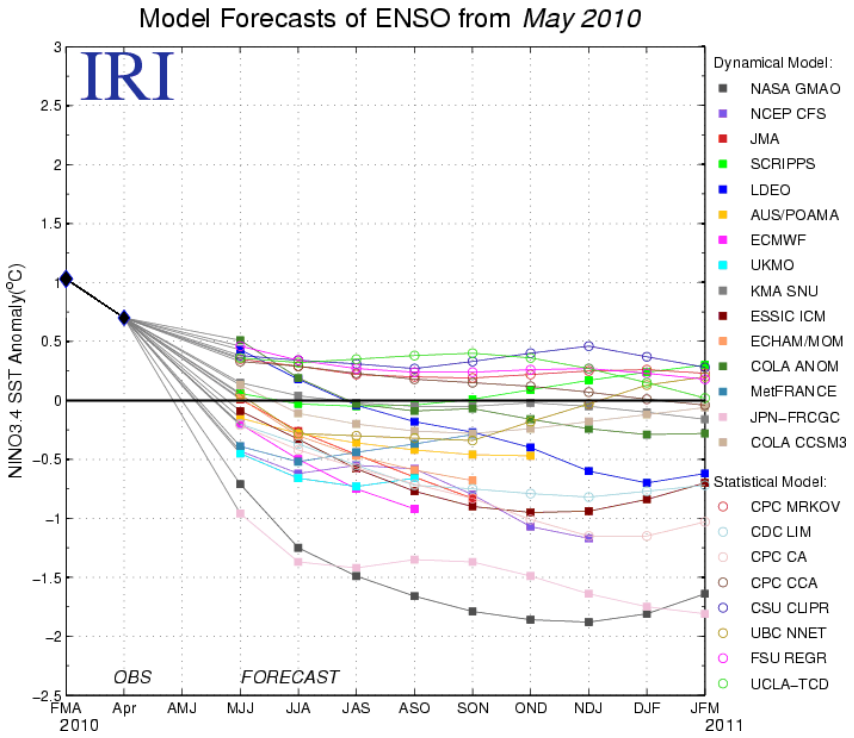




The cross section along the equatorial Pacific shows the warm water gone with a large plume of sub-surface water ready to be tapped by upwelling – the onset of La Nina. Note the similarity to May in 1998 and 2007 when El Ninos gave way to La Nina in the summer/fall.

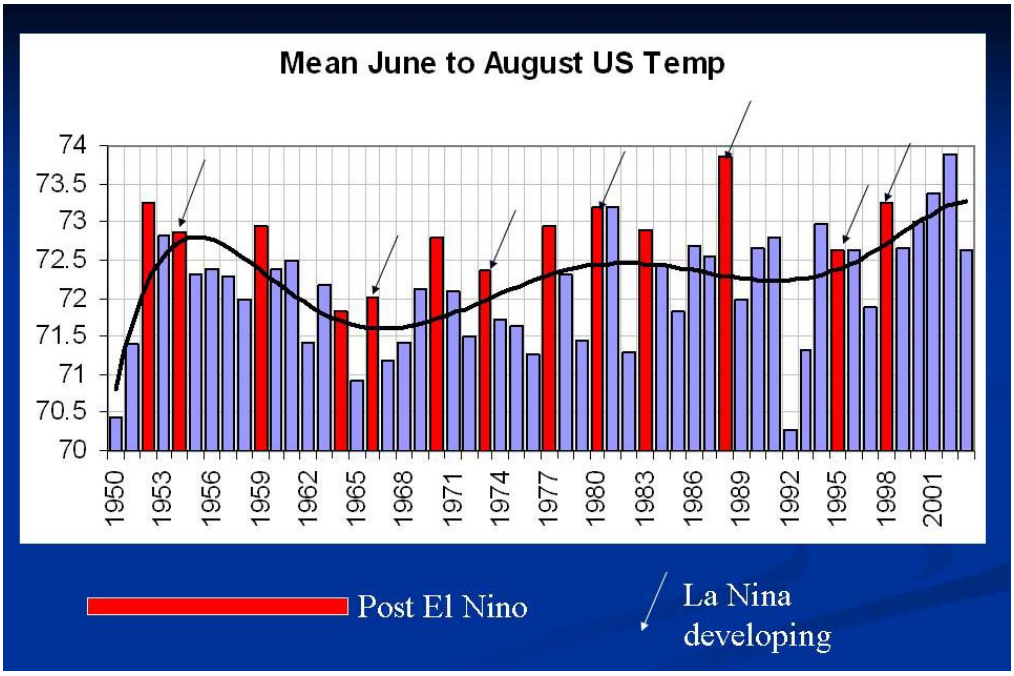


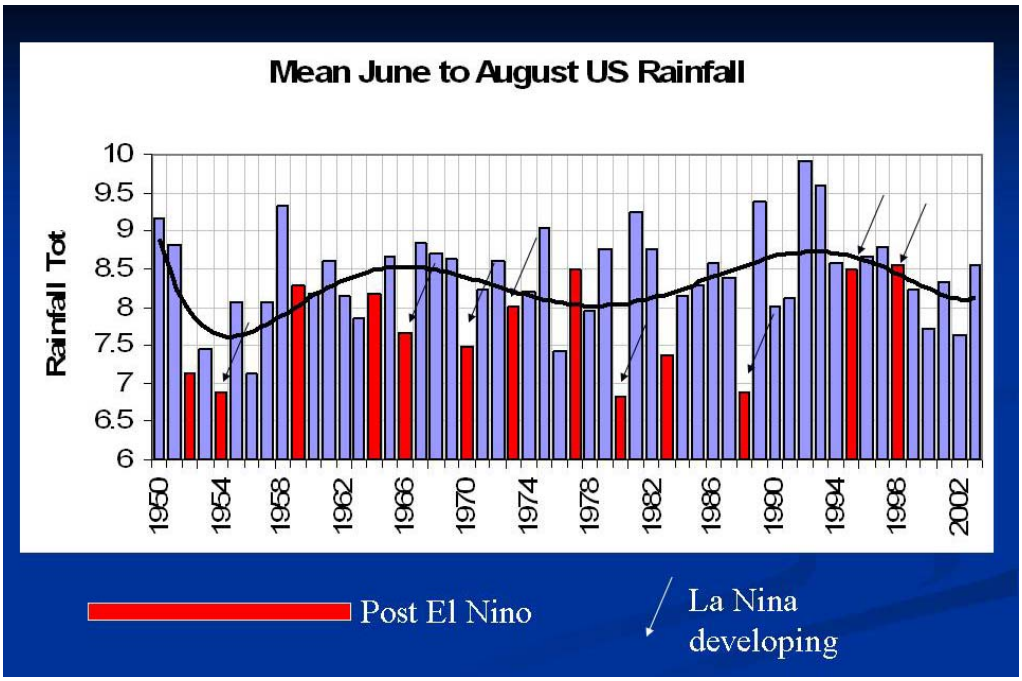
Most ENSO models indicate La Nina is likely. All dynamical models show negative anomalies. Some statistical models show La Nada (neutral) conditions.



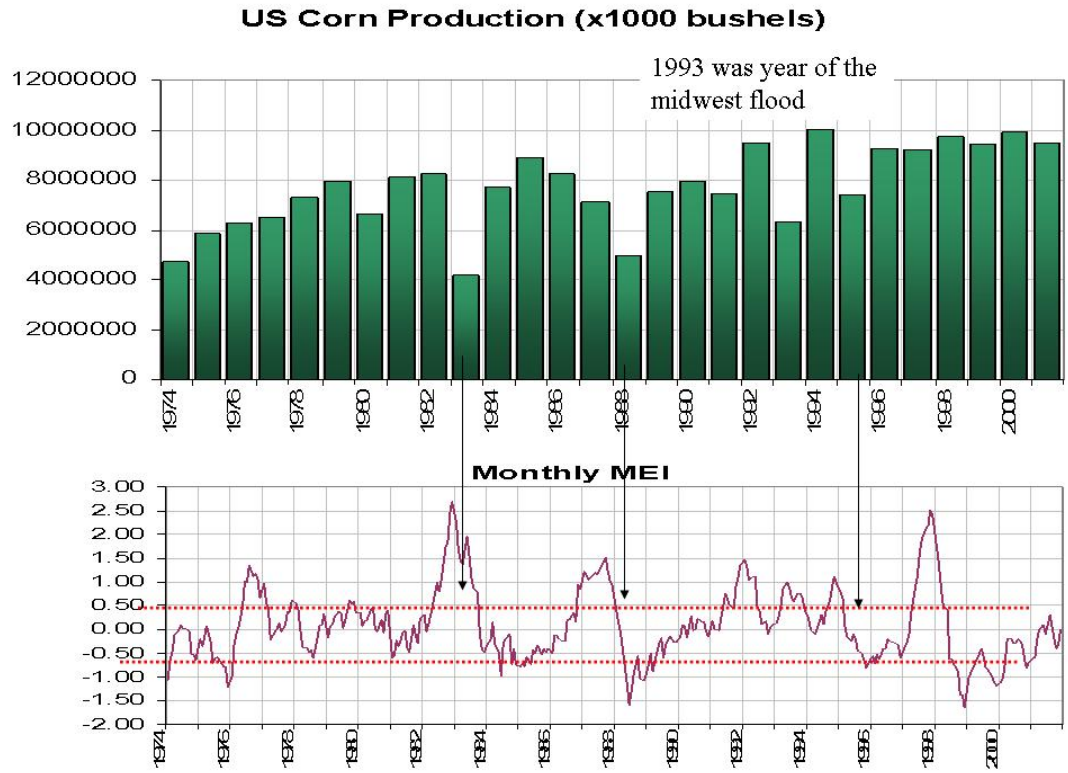
EL NINOS TRANSITIONING TO LA NINAS TEND TO LEAD TO WARM DROUGHTY CORN BELT SUMMERS AND DEVELOPING DROUGHT ISSUES

These maps are for the Corn Belt.

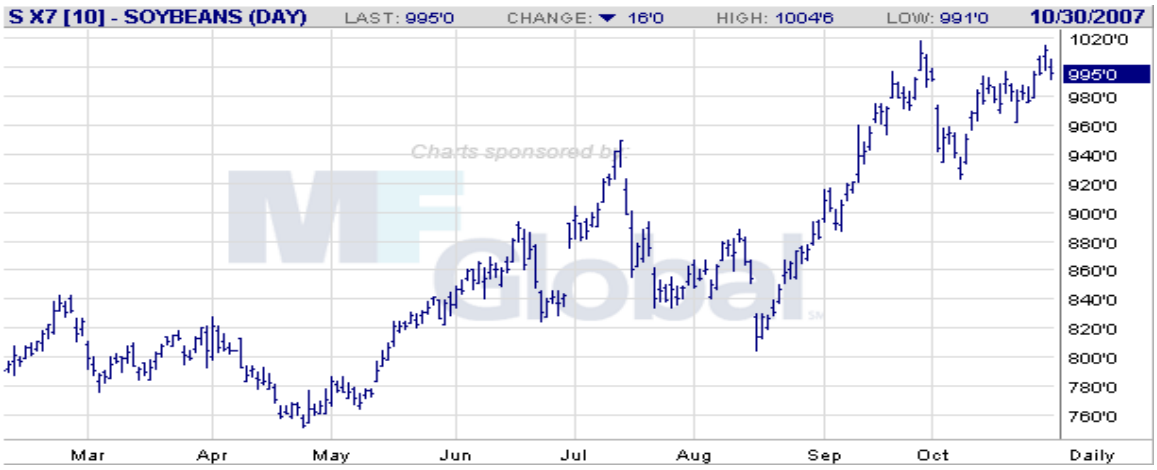




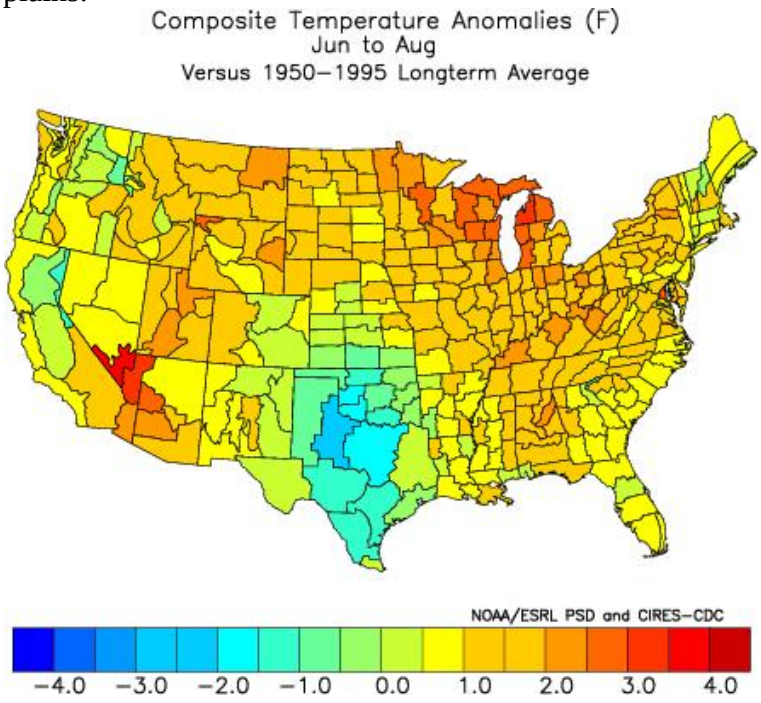
Rapidly falling ENSO indices have led to lowered corn production in 1983, 1988, 1995. 1998 did not see such a decline. Warm water lingered in the eastern TROPAC that year.

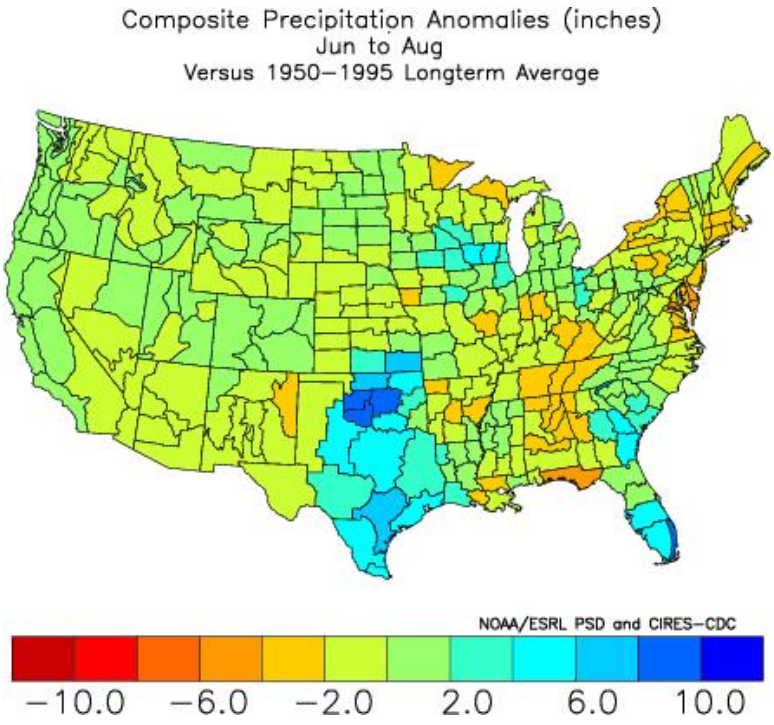


In 2007, slow movement west of the cold water led to late season issues, affecting mainly beans.

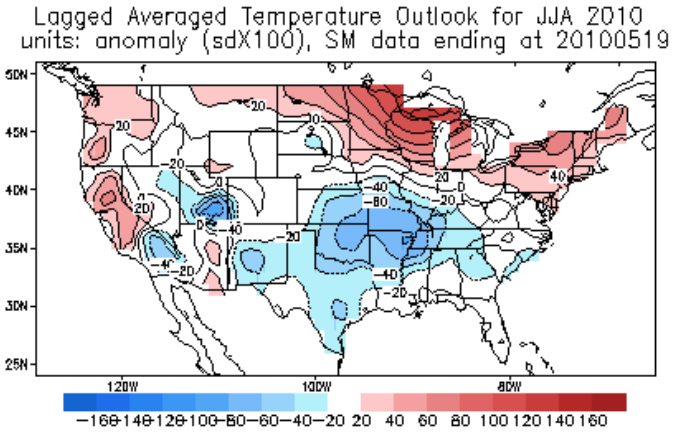


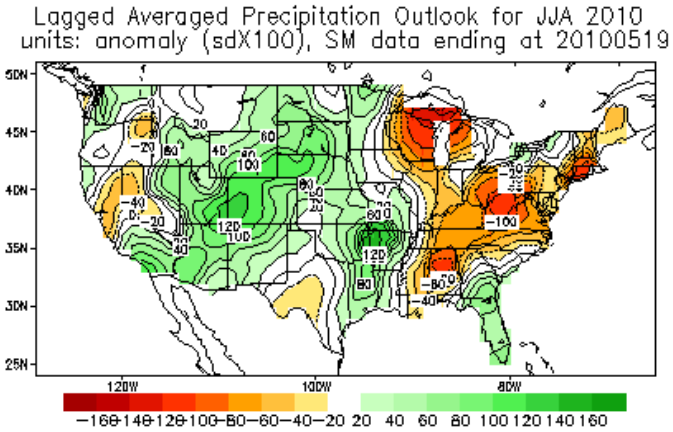
The best analogs suggest a warm summer though cooler than normal and wet conditions in the southern plains.





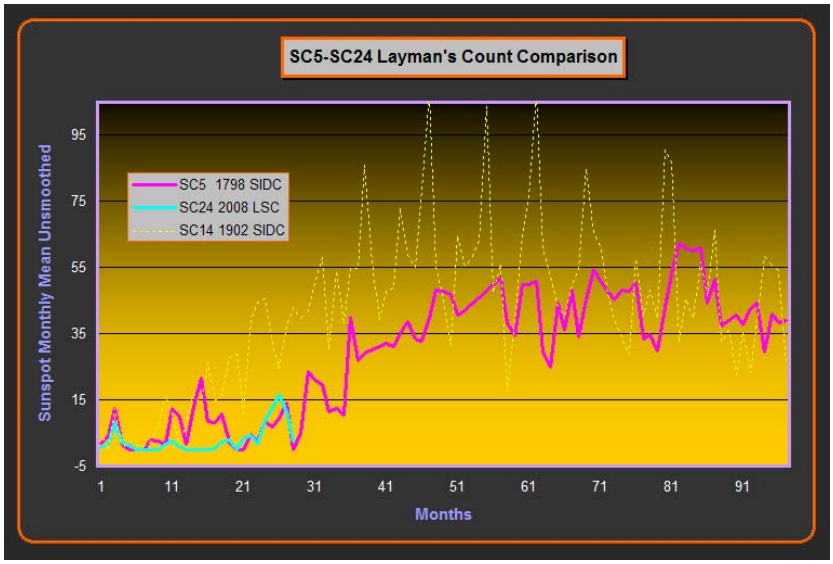
Soil moisture models have been coming around to this thinking.



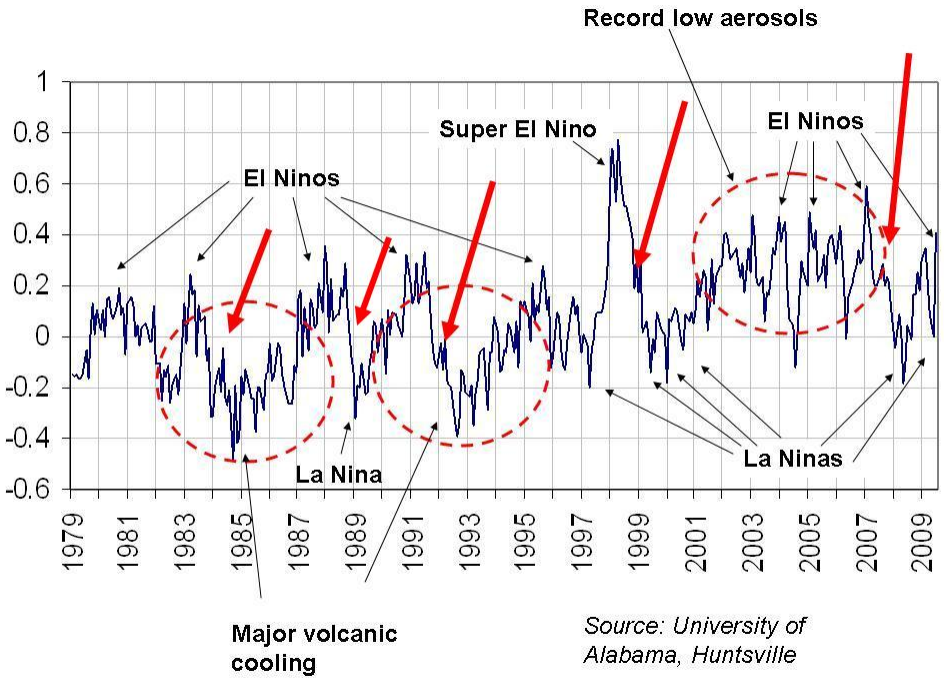


WILCARDS – SOLAR SLUMBER AND VOLCANIC ERUPTIONS

One of the wildcards is the sun, which returned to a quiet state in late April and early May with two extended strings of spotless days and a return of solar flux to solar minimum levels. We continue to track close to the cycle 5 in the Dalton Minimum 200+ years ago.



Unprecedented solar levels and long period of quiet solar may enhance the global cooling effect as La Nina comes on. Note the rapid global temperature (MSU satellite lower atmospheric temperatures shown) declines in prior La Nina episodes post strong El Ninos (red arrows). Note similarity of sunspot activity to cycle 5 at the start of the Dalton Minimum. Cycle 14 a century ago is also shown and has been regarded by some as another possible analog/ Note the more rapid recovery that cycle. That was also a cold period though not as cold as the Dalton.



Also Eyjafjallajokull continues to erupt. Though most days the ash and aerosols remain below the stratosphere, occasional eruptions are more explosive. Much more dangerous Katla historically has been triggered by Eyjafjallajokull eruption periods which often last for long periods. A major eruption would change the weather picture globally quickly by affecting the AO and ash and aerosols could affect crops in Europe.