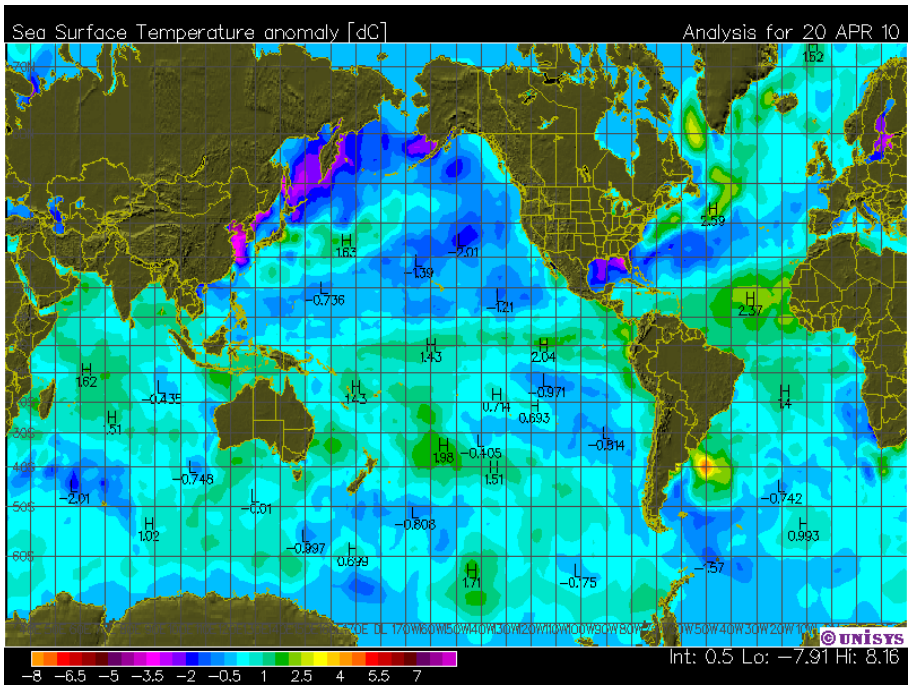
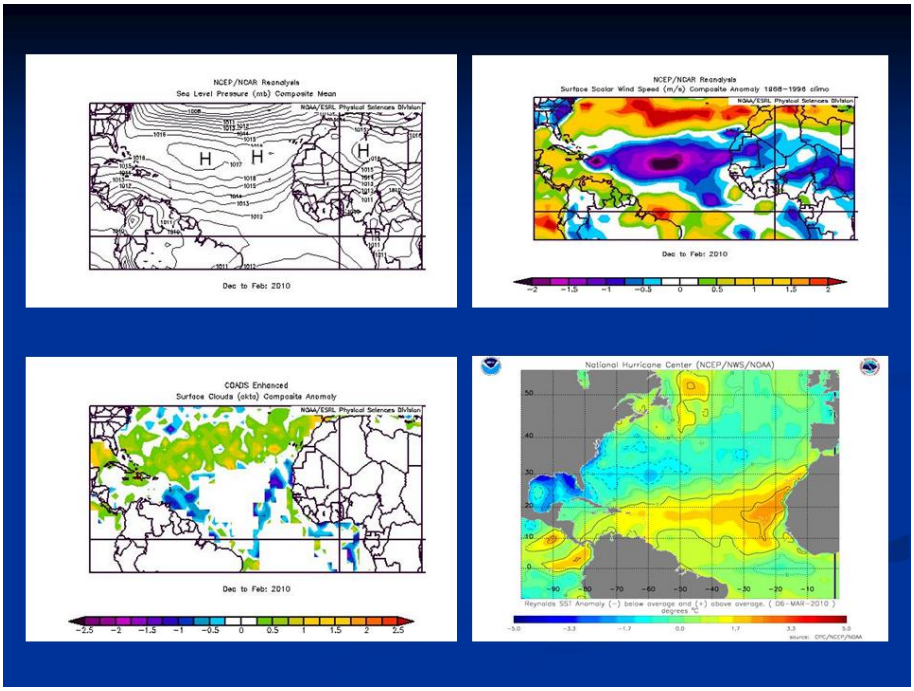
ENSO UPDATE

By Joseph D'Aleo, CCM

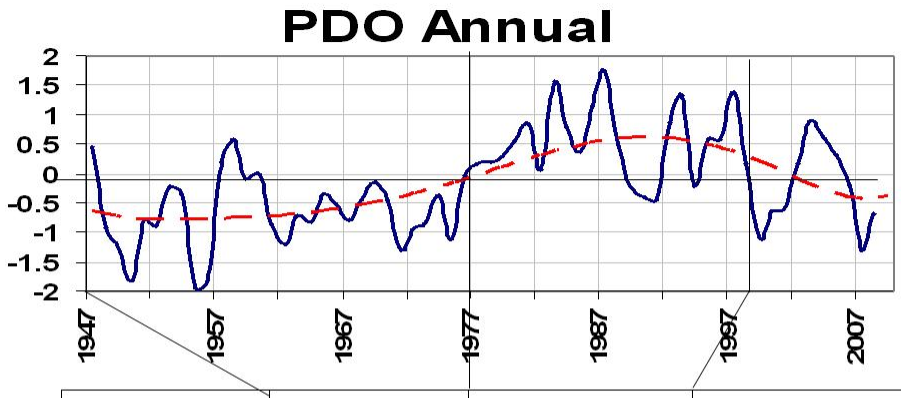
El Nino is still hanging on but likely not for very long. Warmer than normal water can still be seen along the equator in the tropical Pacific. It is even warmer in the sub-tropical North Atlantic because of the suppressed winter jet stream and subtropical high which meant lighter than normal winds and less clouds.





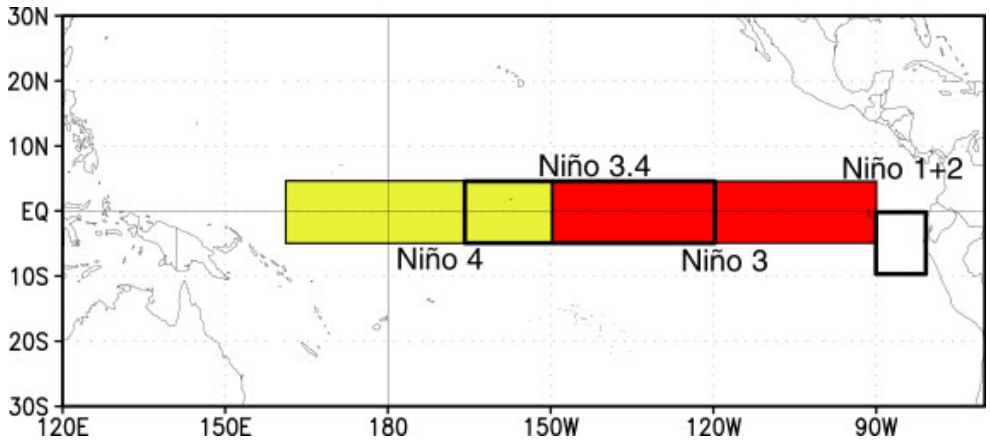
Winter average pressure is shown on the top left. High pressure is weaker and south of normal. This meant less wind top right (blues and purple in the subtropics and near South America where normal winds cause cool water upwelling). There was under high pressure less clouds (bottom left) which together with less mixing due to lighter winds and less cold water to track west with the trade winds and equatorial easterlies led to above normal ocean temperatures (bottom right).

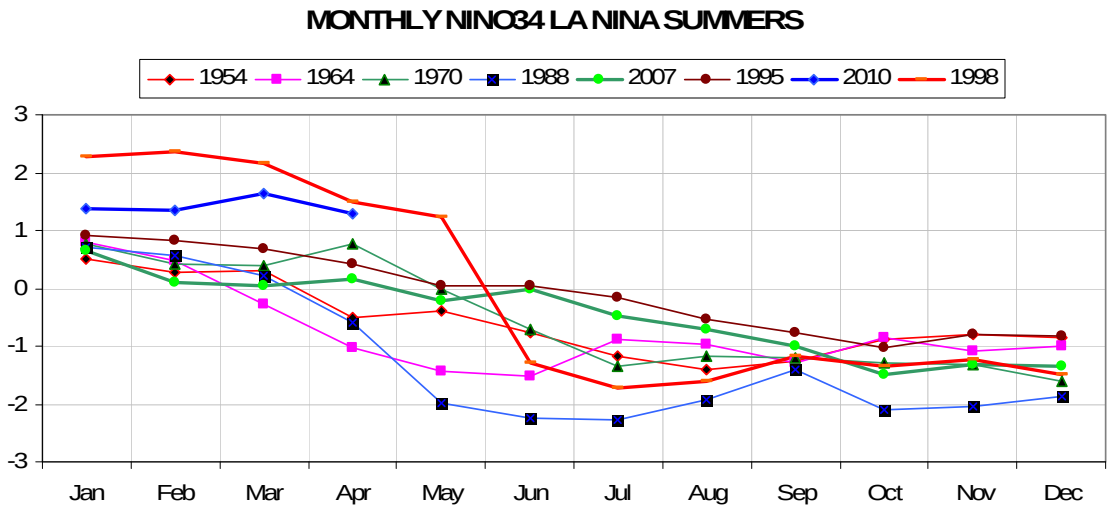
Signs of the demise of the El Nino are numerous. It is likely given the flip of the PDO which favors shorter El Ninos and stronger, more frequent and lengthy La Ninas that a moderate to strong La Nina is next in the cards this year and next.



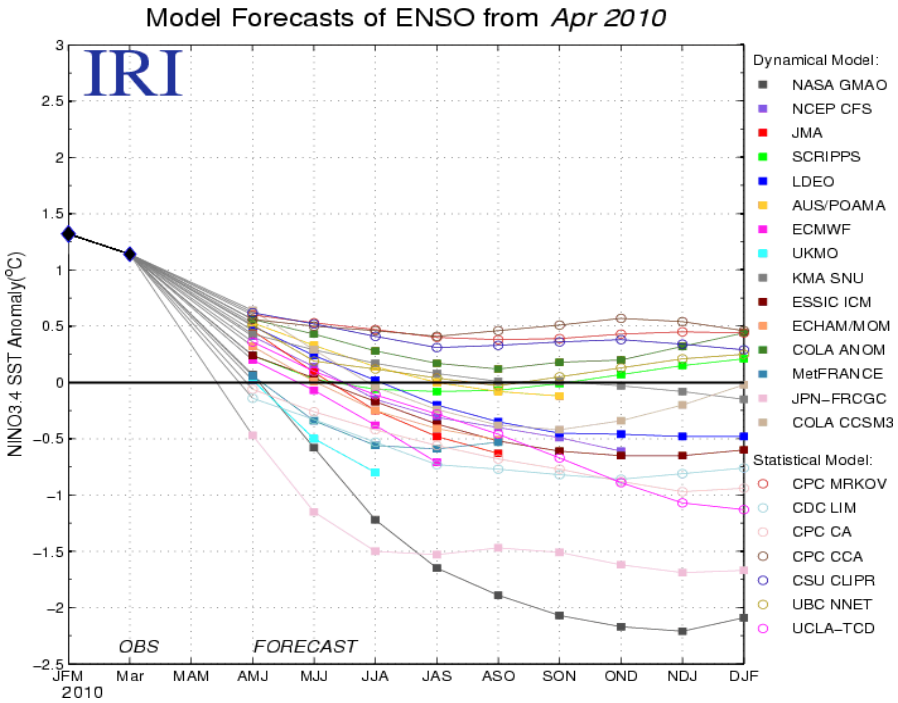
PDO	Cold	Warm	Cold
	1947-1977	1978-1998	1999-2009
El Nino	7	10	3
La Nina	14	3	5

Notice in the temperature anomaly plot for NINO region 34 (region shown on the CDC map below) how we are somewhere between 1998's super El Nino and a cluster of more moderate ones and how they declined quickly by the summer on the graph that follows.

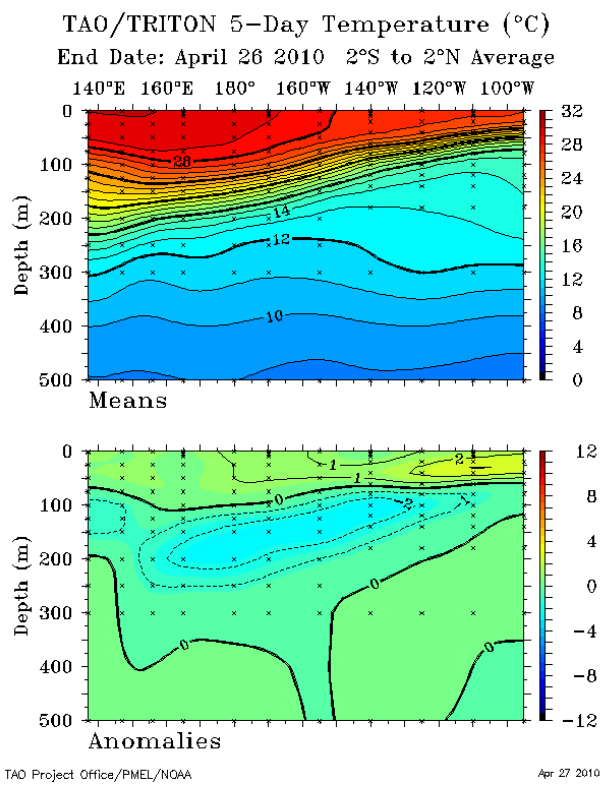




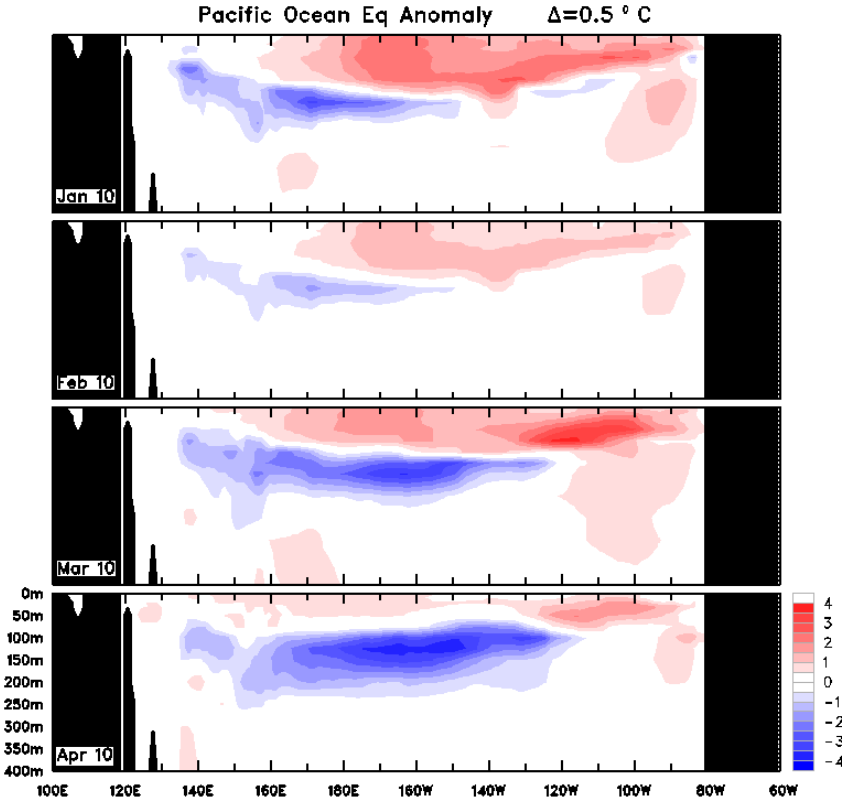
ENSO models, both dynamical (coupled air and ocean models) and statistical suggest a rapid cooling with all models dropping below threshold El Nino levels by summer (JJA – June-July-August) and perhaps half reaching La Nina values by summer or fall.



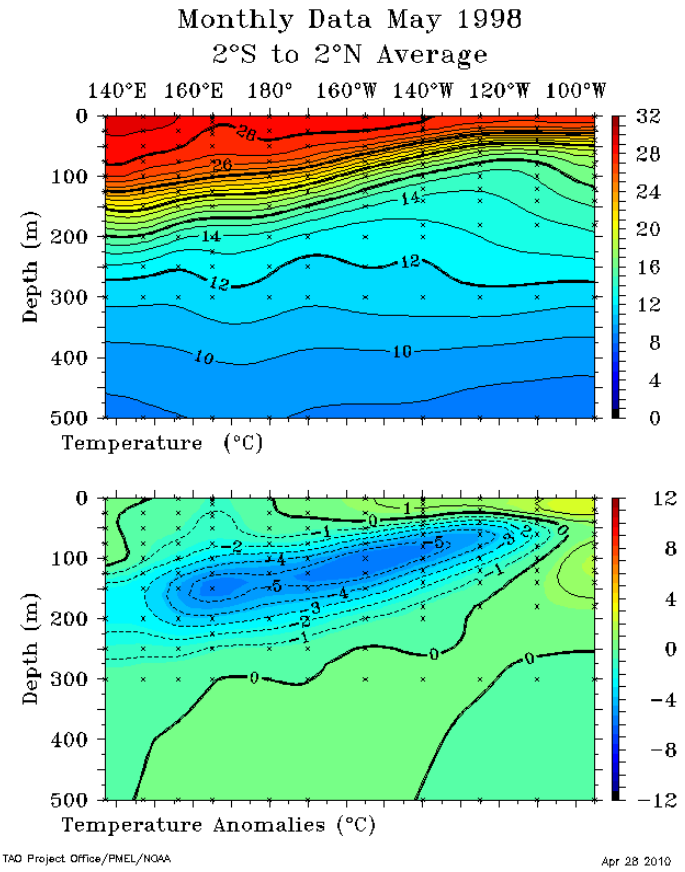
In the depth cross section across the entire tropical Pacific that is built from the TAO-Triton buoy data, we can see the warm water in the eastern top water which was 5C above normal has diminished as the water mixes with cooler surface water and the thermocline is lifted. Notice the developing strong cold pool not unlike that in 1998 at 100 meters across most of the Pacific. Notice the amazing cool down of NINO34 in 1998 from May to June in the multiyear graph above.



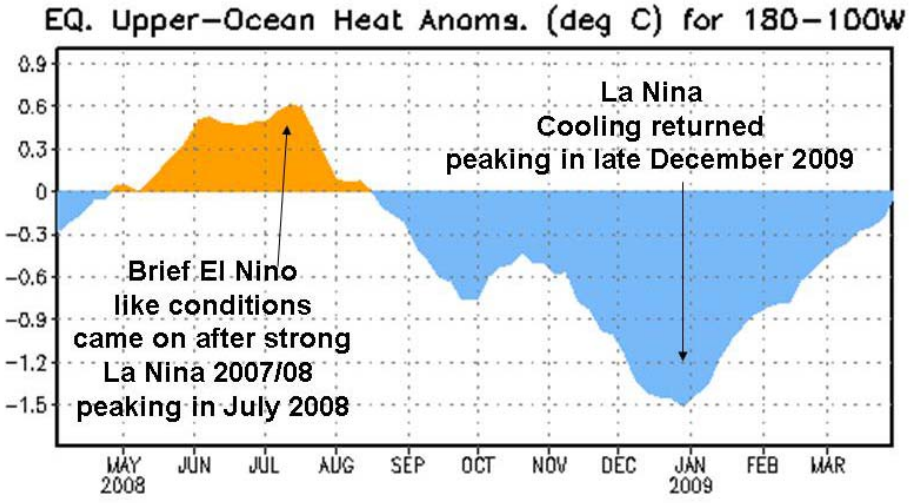
See the fade in the monthlies here.



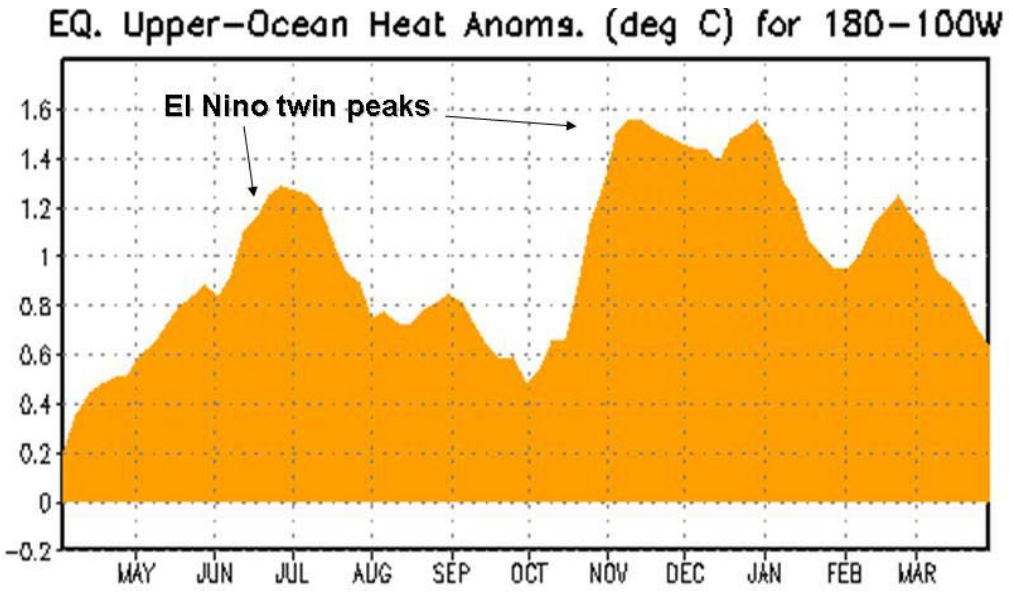
Notice the similarity to 1998 May.



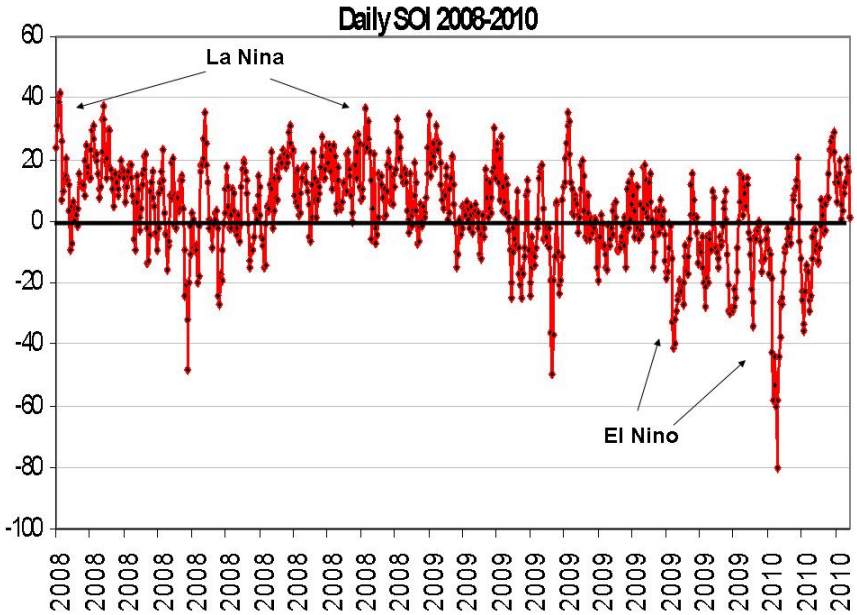
The El Nino this past year followed two years of La Nina with below normal temperatures in NINO34 and in much of the Pacific leading to below normal ocean heat content in the tropical eastern half of the Pacific. A strong La Nina in 2007/08 was followed by a summer rebound then another dip in January.



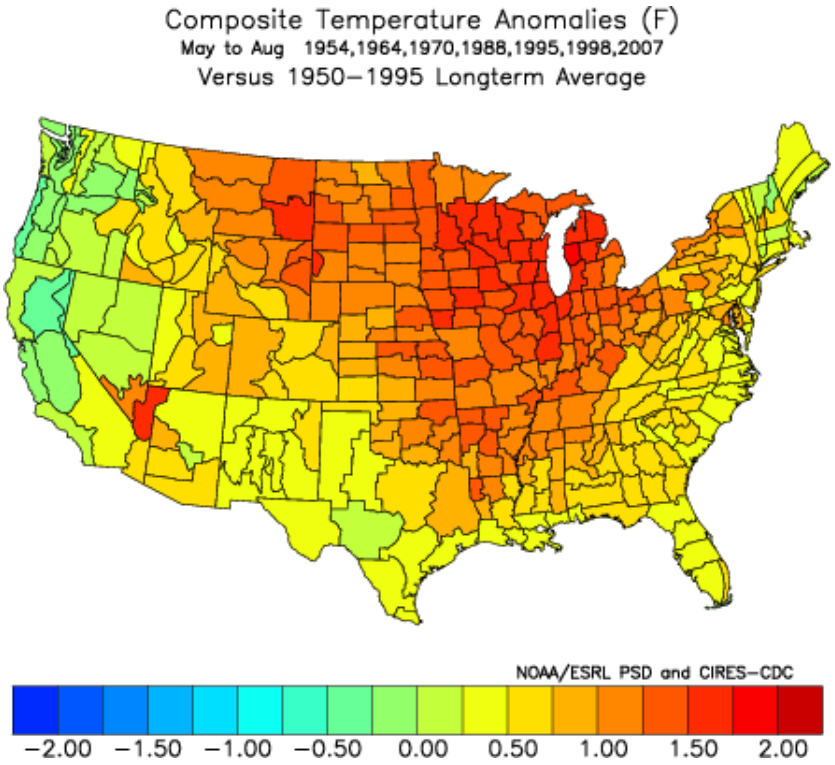
We can see in the heat content the last year, a peak last summer a fall decline and then a multi peak winter warming fed by westerly wind bursts this past winter, notice the decline as we started April.



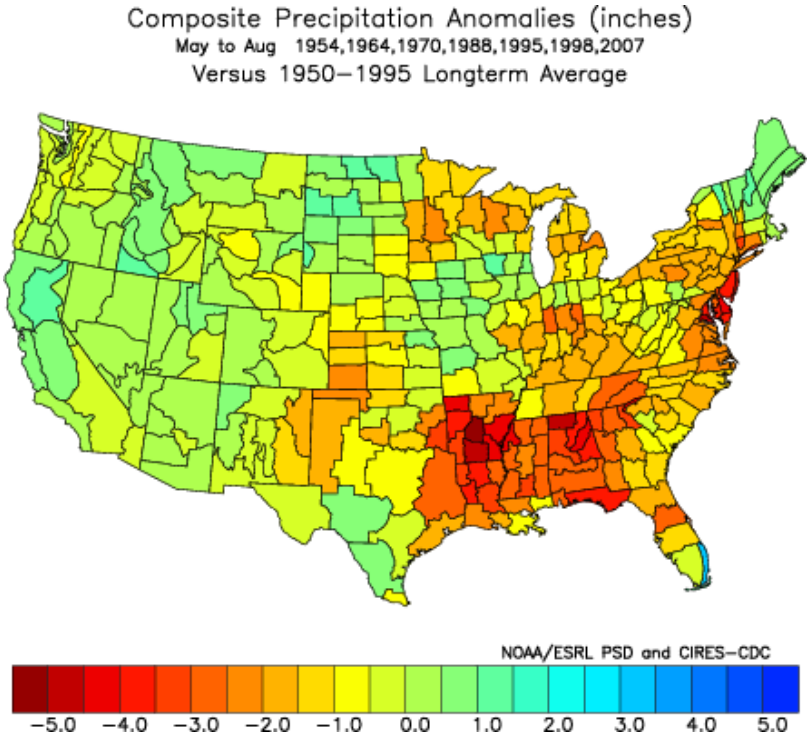
The Southern Oscillation Index which was in positive La Nina territory in 2007/08 and 2008/09 dropped into negative El Nino territory reaching an incredible 8 STS in early 2010. It has rebounded to positive and usually leads the change of ENSO state by a few months given credence to a return of La Nina.



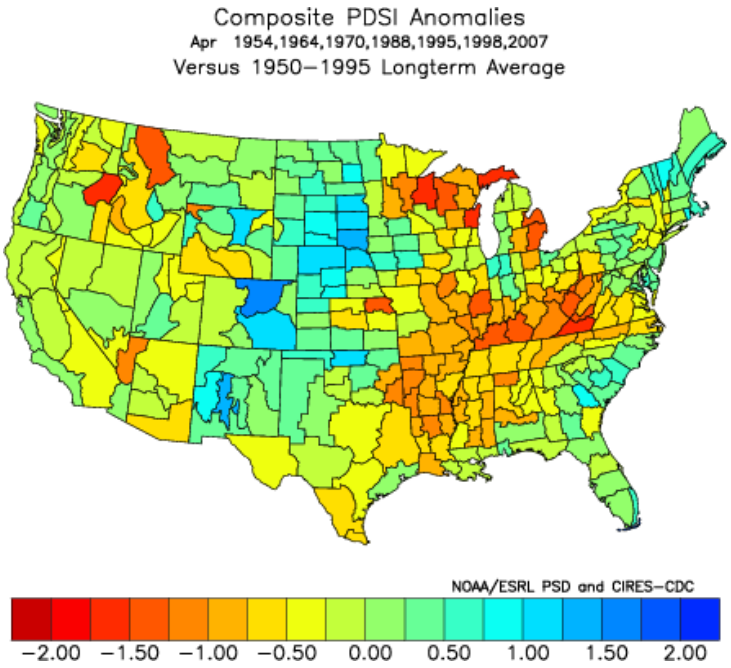
Those years above when the El Nino declined to La Nina were warm summers.



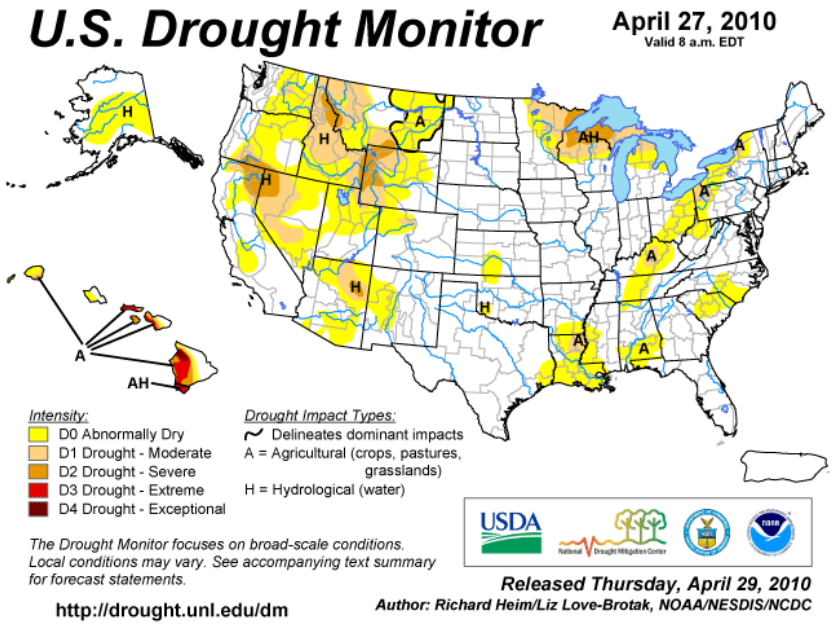
They were also dry in the south and parts of the Corn Belt.



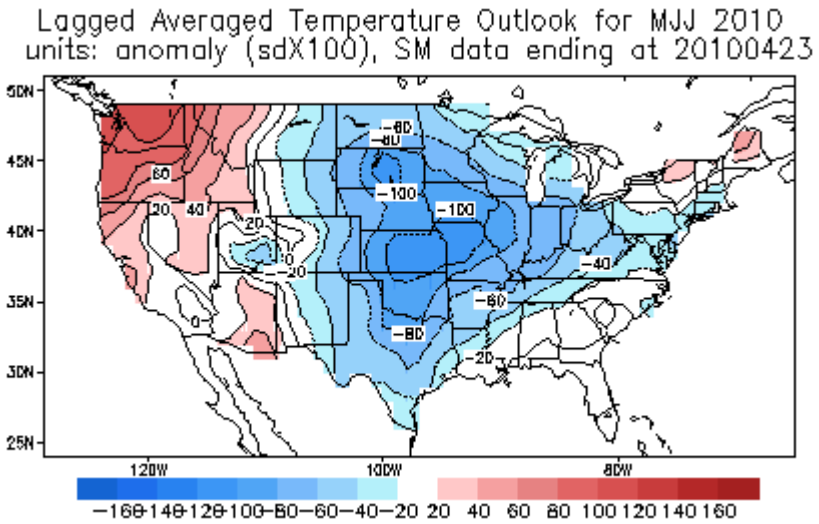
However April was showing dryness already in the composite of those years.

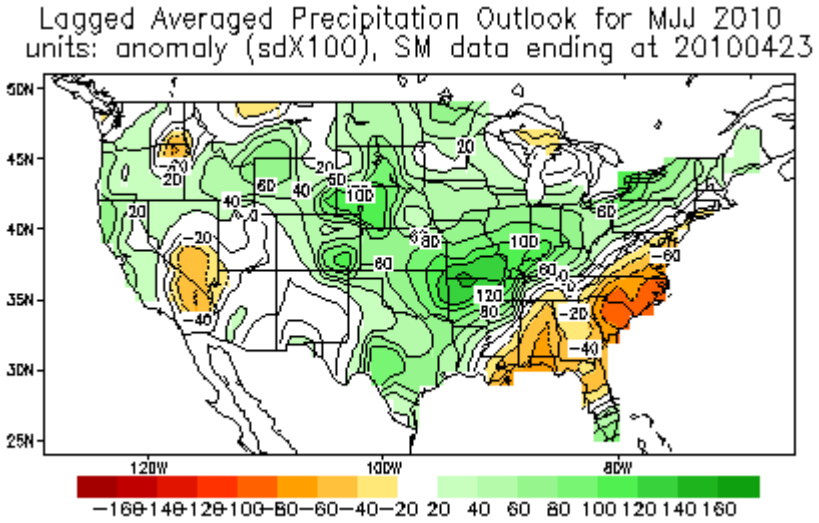


The drought index after two wet La Nina years and an atypically wet El Nino even into the western Corn Belt is wetter this year though there are hints in the northern ande eastn Corn Belt of some dryness issues developing.

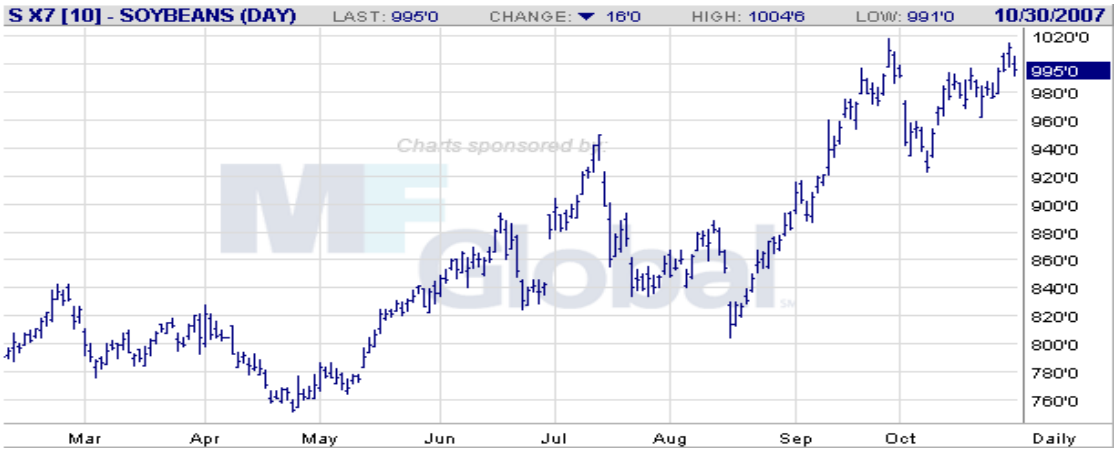


Reflecting the soil moisture, the soil moisture model suggests a cooler and wetter early summer (May-July).

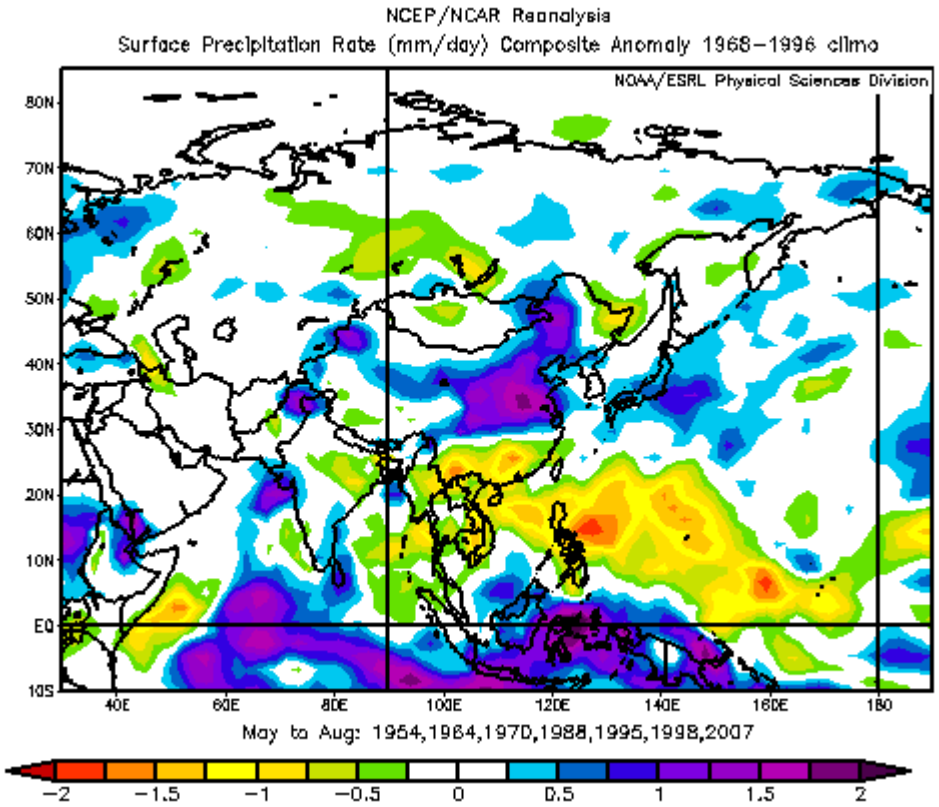




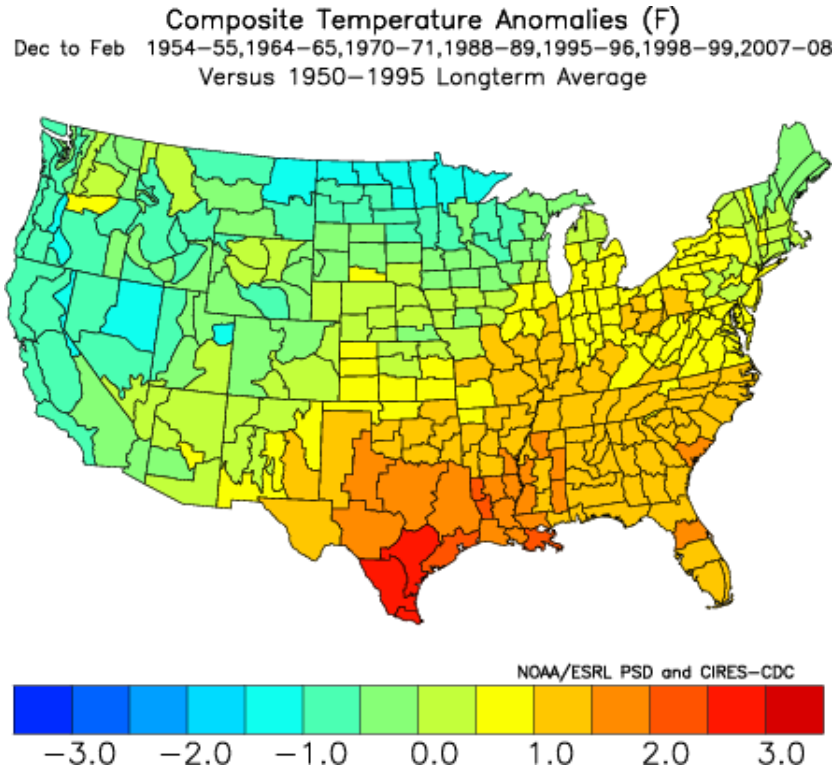
Antecedent conditions can override or delay any teleconnection driven anomaly (example might be 2007 when the La Nina really did not reach region 34 till August/September). A late summer warm and dry period did have some effect on bean prices. August is key month for beans. Prices normally drop during harvest. They rose.



Looking to Asia, the years were drier than normal across southeast Asia north to southern China and east to the Philippines. The rest of Indonesia was west.



Looking ahead to next winter, one might expect a winter like 2007/08 with more cold and heavy snow across the northwest, north central and northeast and a break for the Mid-Atlantic and southeast after a record setting winter.



All of this excludes the wildcards of the solar should it continue low and more explosive Icelandic volcanoes both of which would favor more high latitude blocking (a negative NAO/AO again) which would suppress the jet stream further south.