NOAA-CIRES Climate Diagnostics Center

CO WATF
23 June '10
Denver

Western Water Assessment

Seasonal Outlook through September 2010

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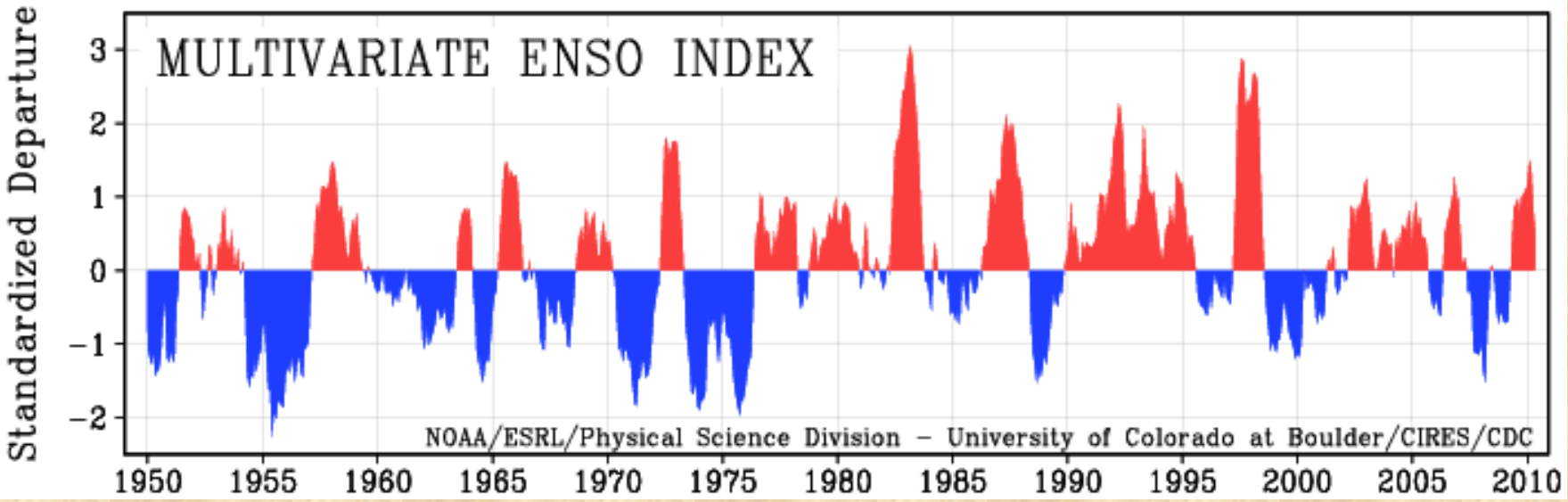
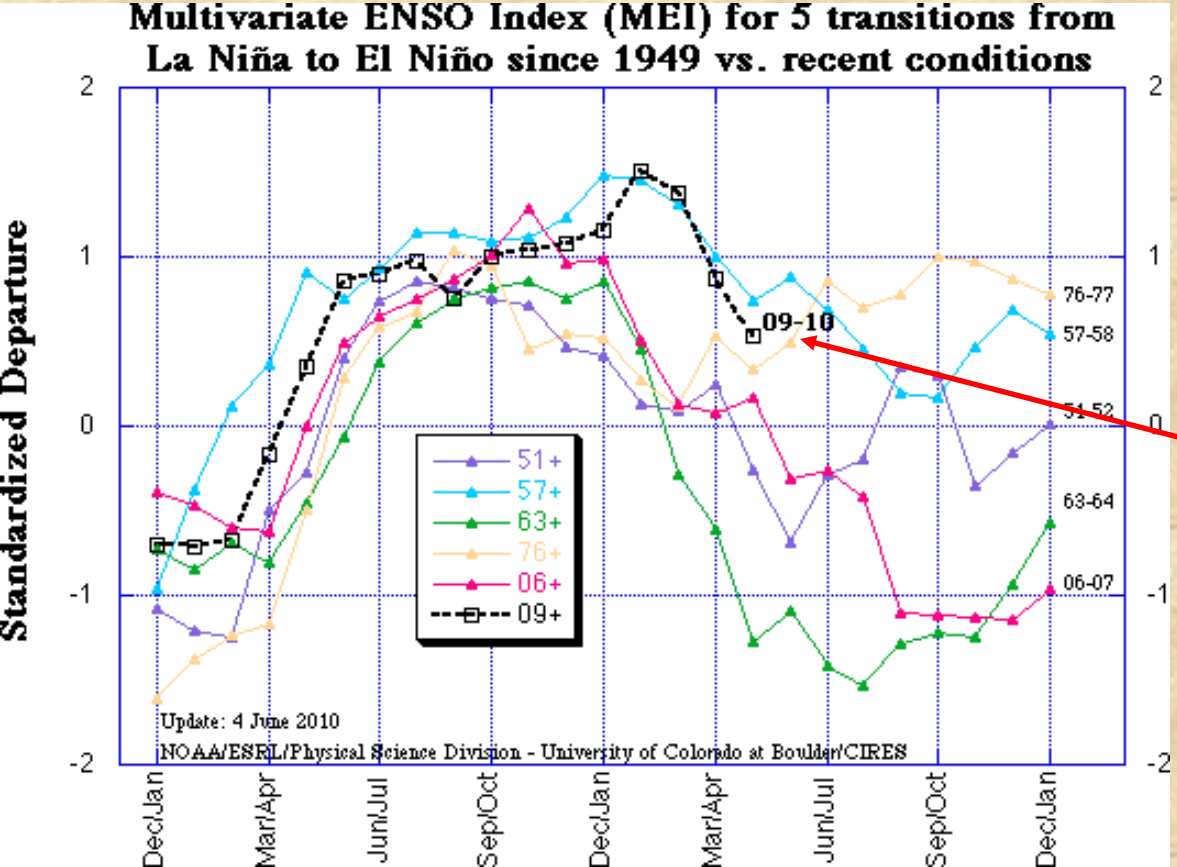
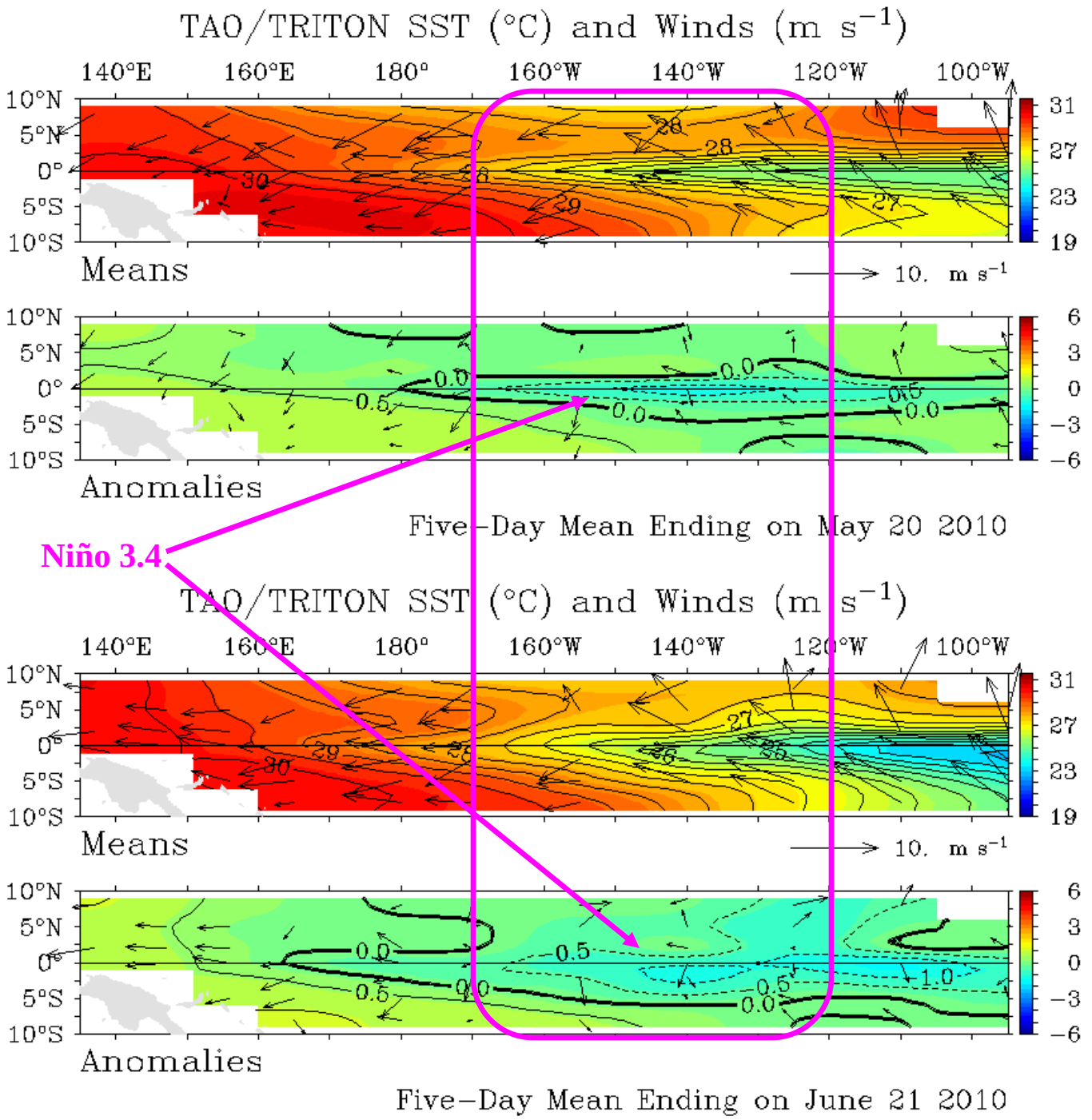
- **La Niña looks inevitable for now**
- **Recent weather & comparison with forecasts**
- **Expectations for next few weeks**
- **Experimental Seasonal Forecast Guidance**
- **CPC forecasts for June through September**
- **Executive Summary & Farewell for now**

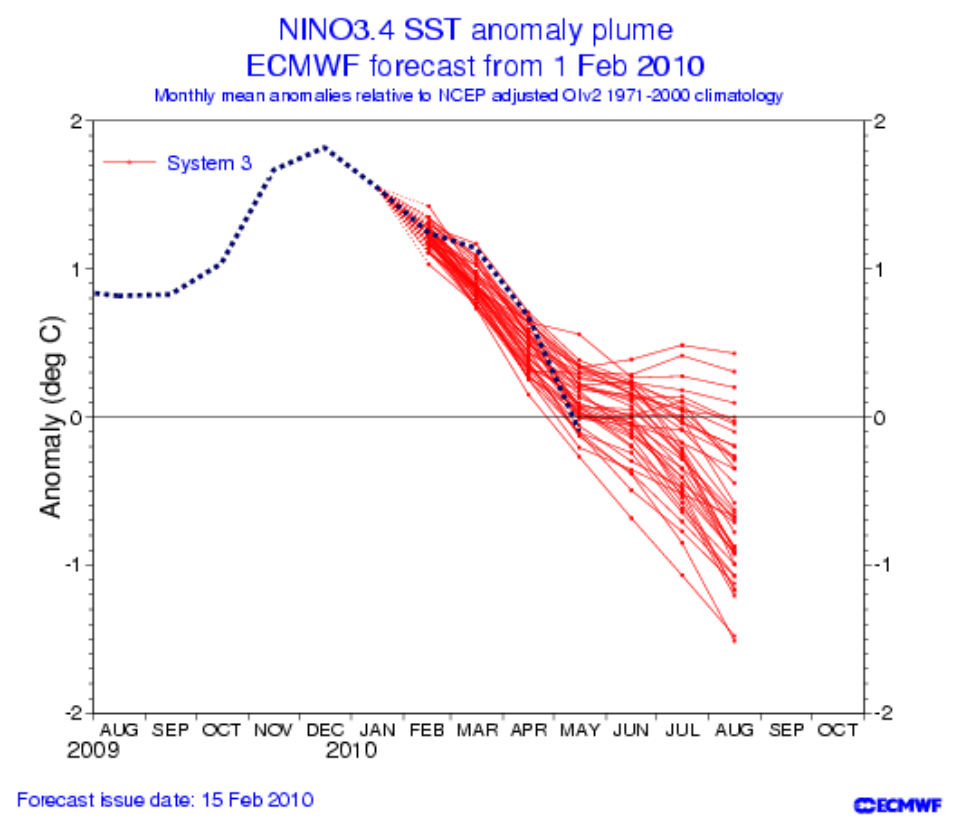




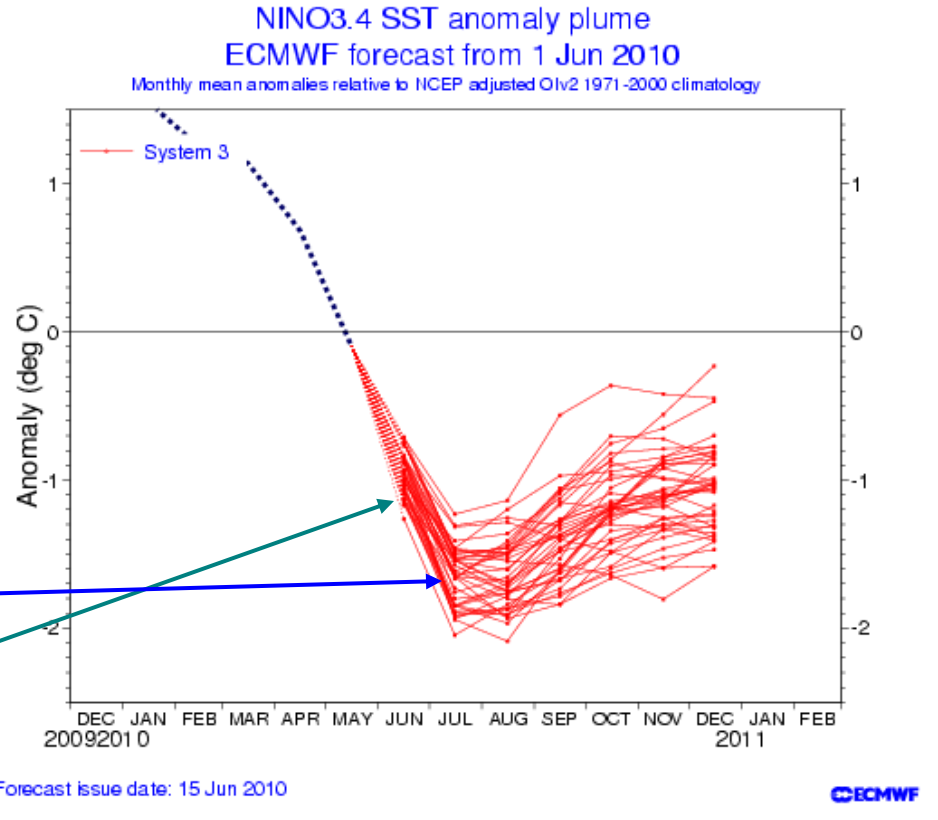
El Niño event peaked earlier this year, now on its way out, at least for the summer – expect to see ENSO-neutral by May/June.

Current state of ENSO (bottom) compared to last month (top): a fledgling La Niña is trying to establish itself in Niño 3.4 region), while easterly wind anomalies have ramped up west of the dateline, showing enhanced trade winds exactly where they typically appear wih La Niña.

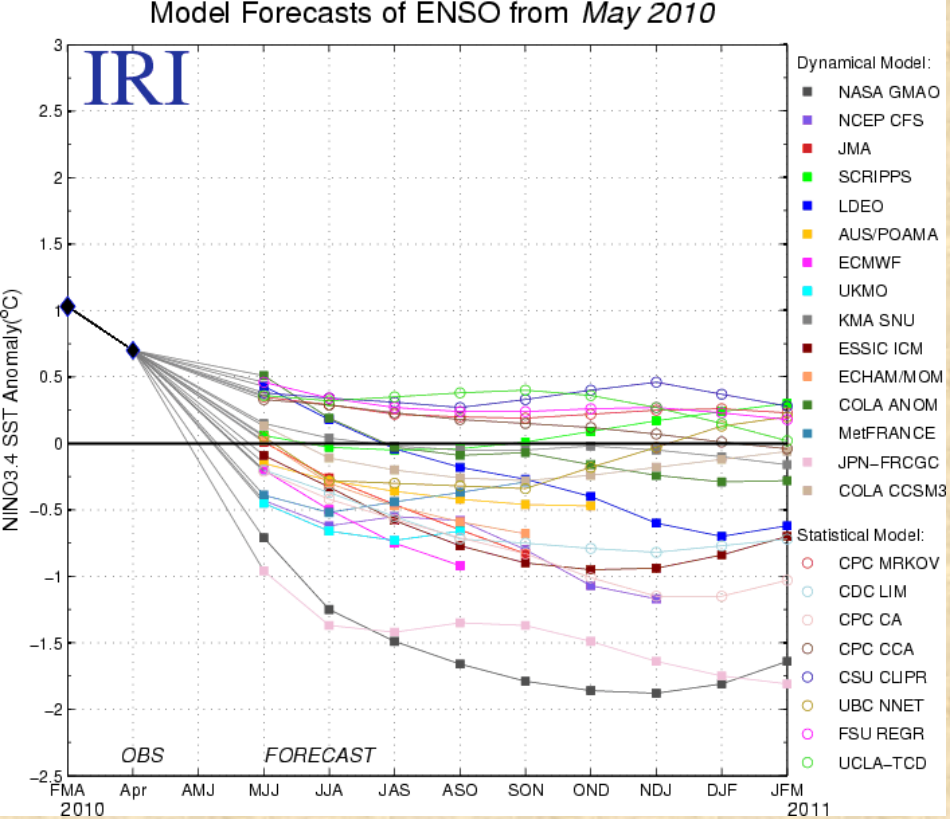




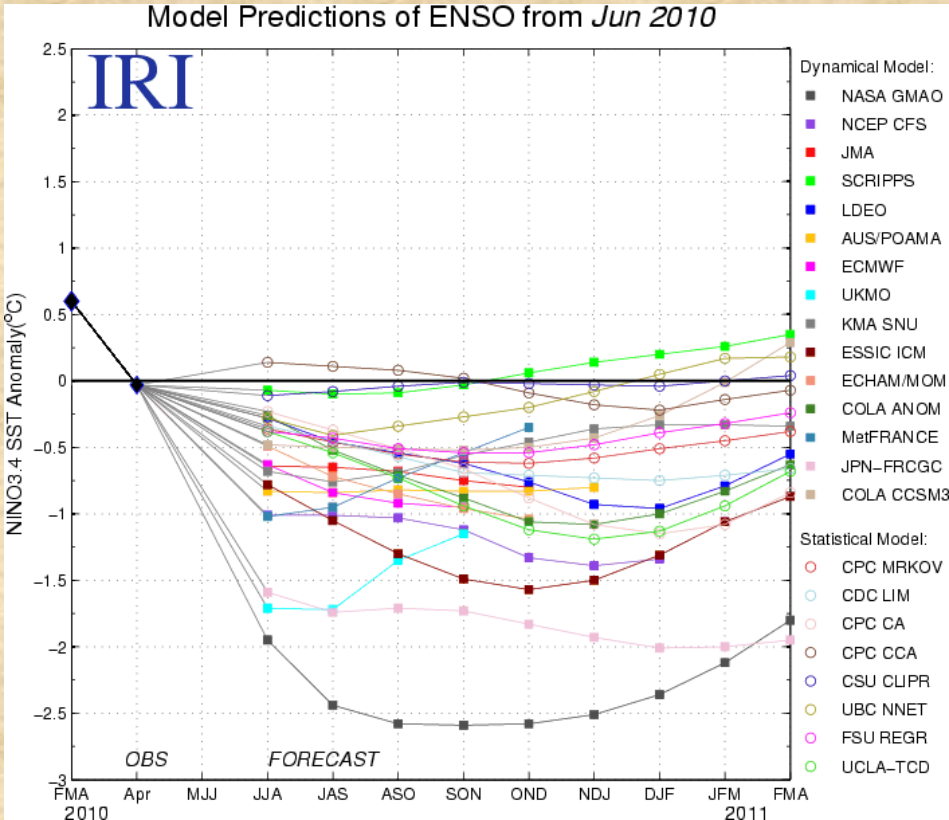
The European model's February 2010 forecast (left) had the right idea about a fairly rapid transition towards at least ENSO-neutral conditions this summer;



The most recent model has accelerated this process even further (right) to arrive at full-blown La Niña conditions by June! While earlier forecasts had a few 'dissenters' (above), this one shows every one of the 50 ensemble members below -1C by July. ***However, the observed SST this month has been closer to -0.5C than the advertized -1C (right).***

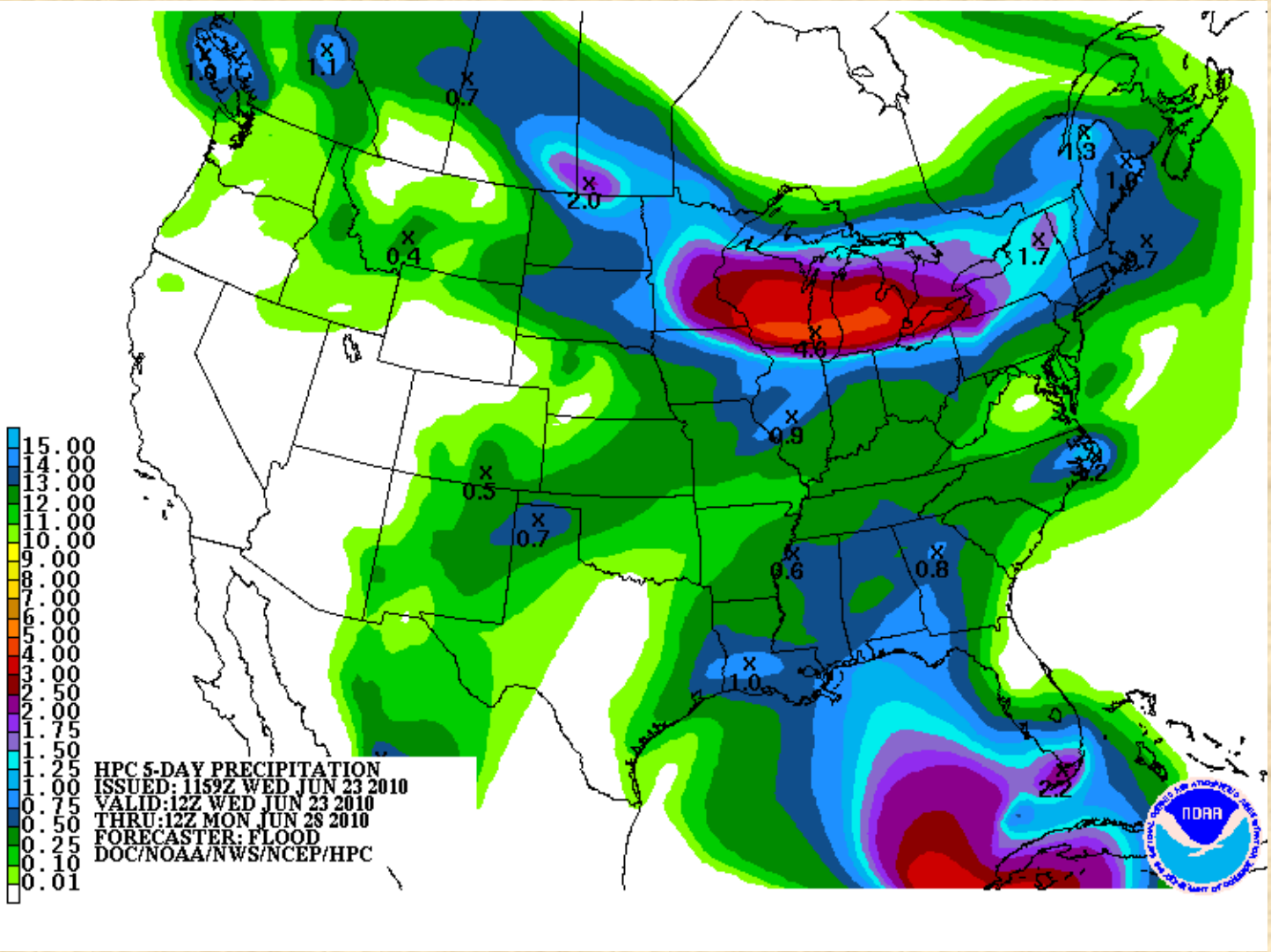


ENSO forecasts from over 20 dynamical & statistical forecast models (below) vs. last month's (left). Even the majority of statistical forecasts are now flagging La Niña conditions for the remainder of 2010, albeit weak. Many dynamical models are now going for at least a moderate La Niña (more than -1C), peaking in late fall/early winter. ***Average difference statistical vs. dynamical: +0.5C!***



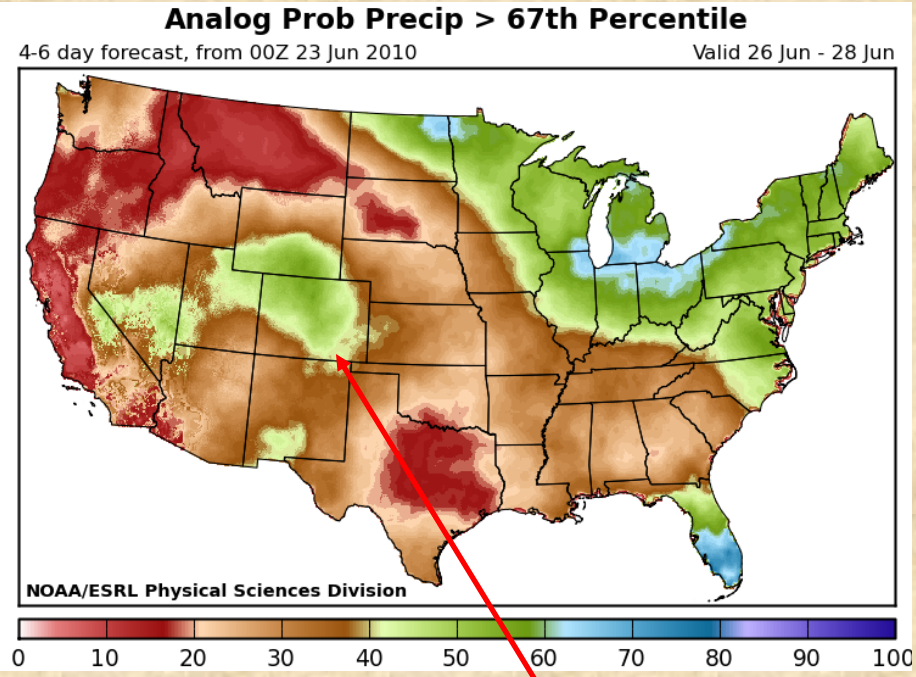
Caveat: The PDO has remained positive right through last month, thus keeping the door open for a return of El Niño this winter/early next year. The last time we saw a switch from El Niño to almost La Niña and back to El Niño in the same calendar year was in 2003…

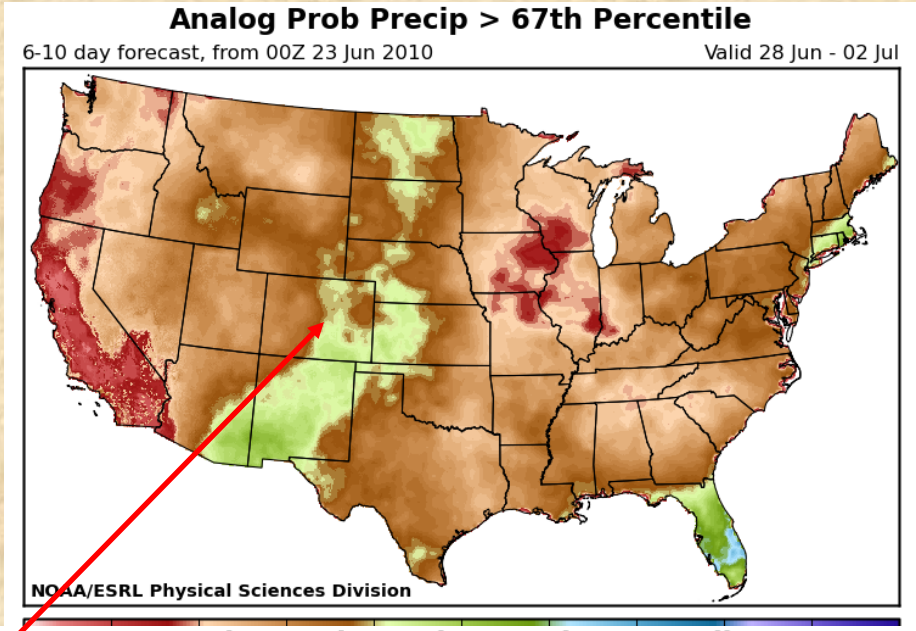
What can we expect in the next two weeks?

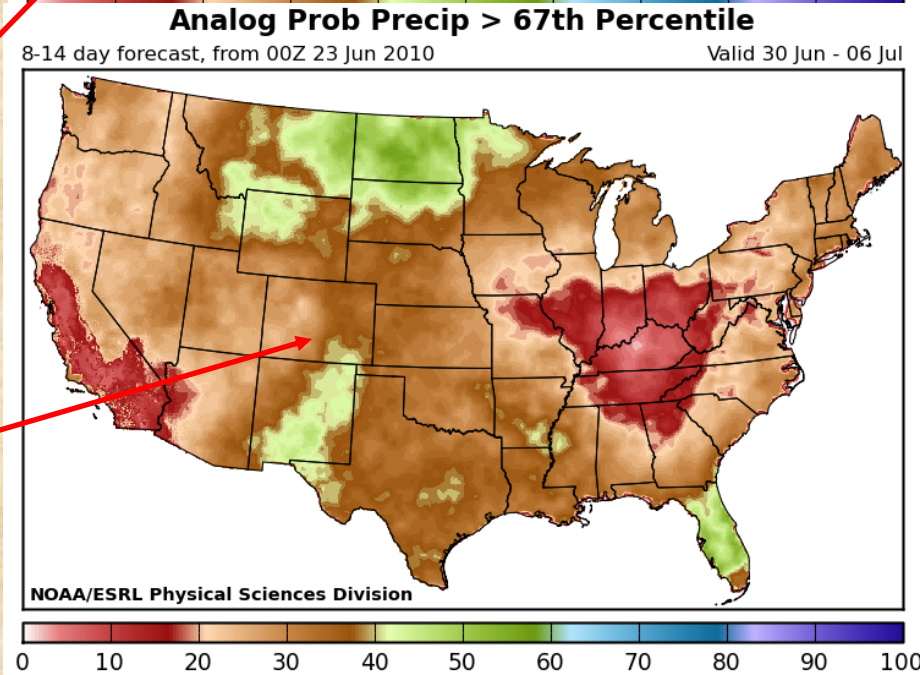


Expected total precipitation thru Sunday evening, according to the Hydrological Prediction Center (HPC): a dry spell, with a hint of an early monsoon pattern to our south!

What can we expect in the next two weeks?



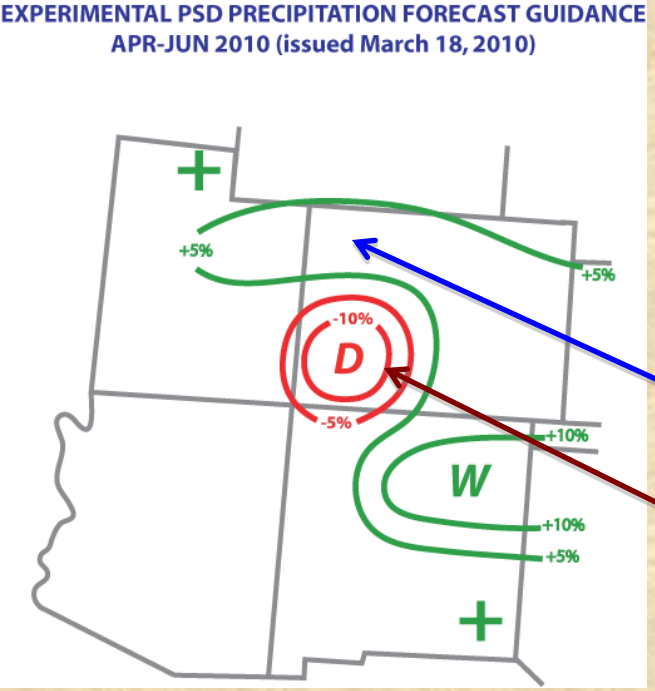


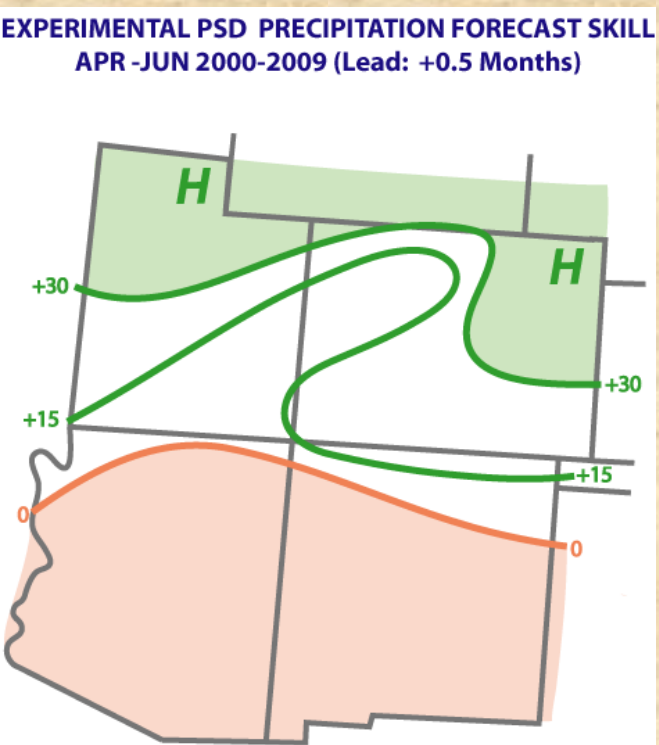


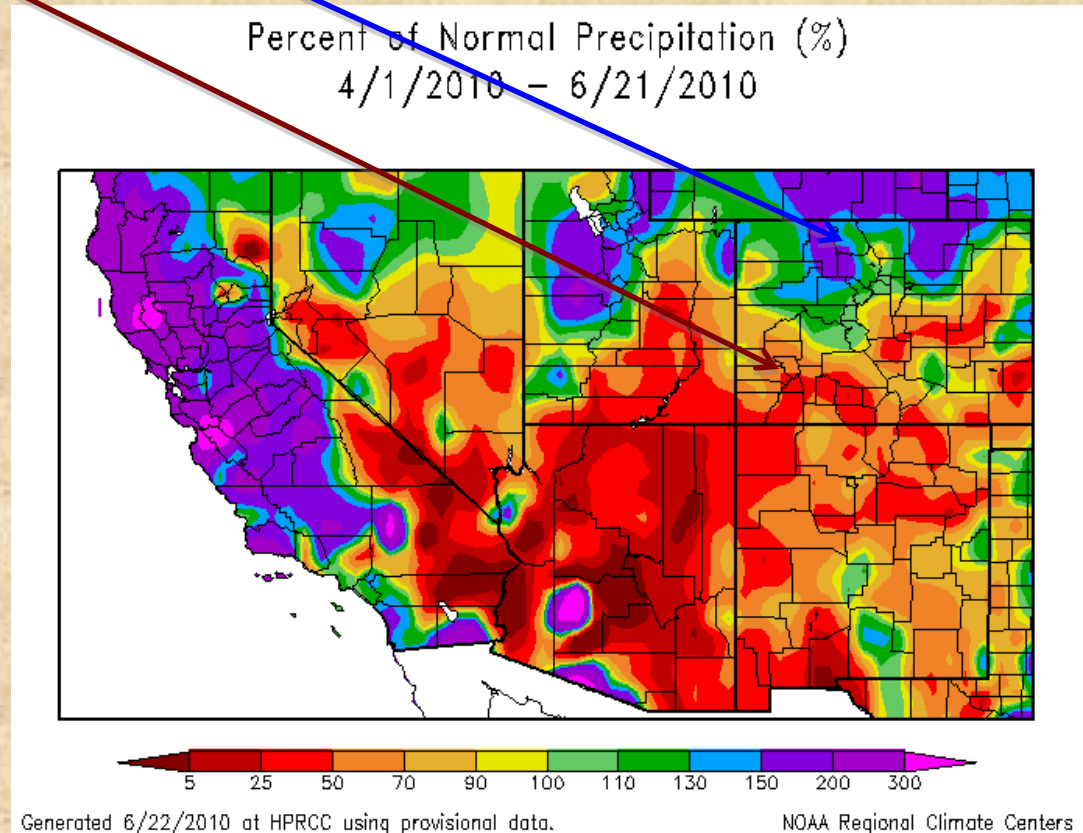
Surprisingly good chances for rain (compared to climatology) over the weekend (4-6day, top left); followed by slightly better than climatological odds in the following week (6-10day, top right; 8-14day right). This time of year, however, climatological odds are quite low to begin with.

Experimental Forecast Guidance

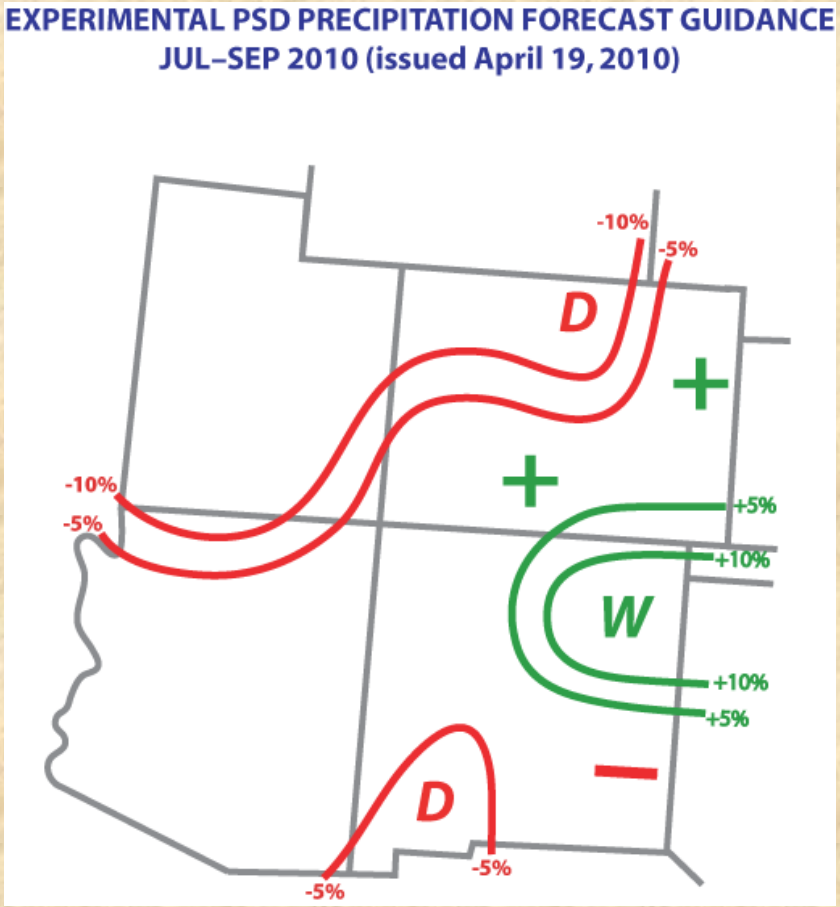
Forecasts for April-June 2010 from March (left) showed increased chances of above-average moisture for northern and eastern Colorado, in contrast to dry conditions in southwestern Colorado – looks like the forecast wetness verified better to our north and northwest than southeast of here, while the dryness was more widespread than expected, possibly related to the rather fast onset of La Niña-like conditions?!

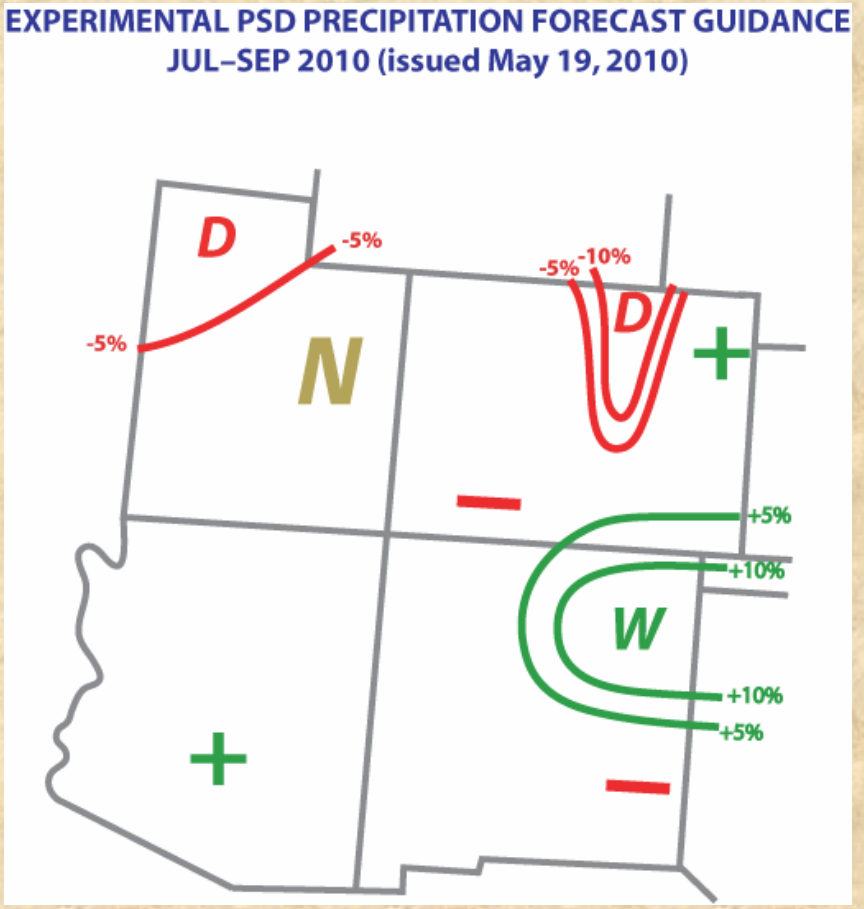






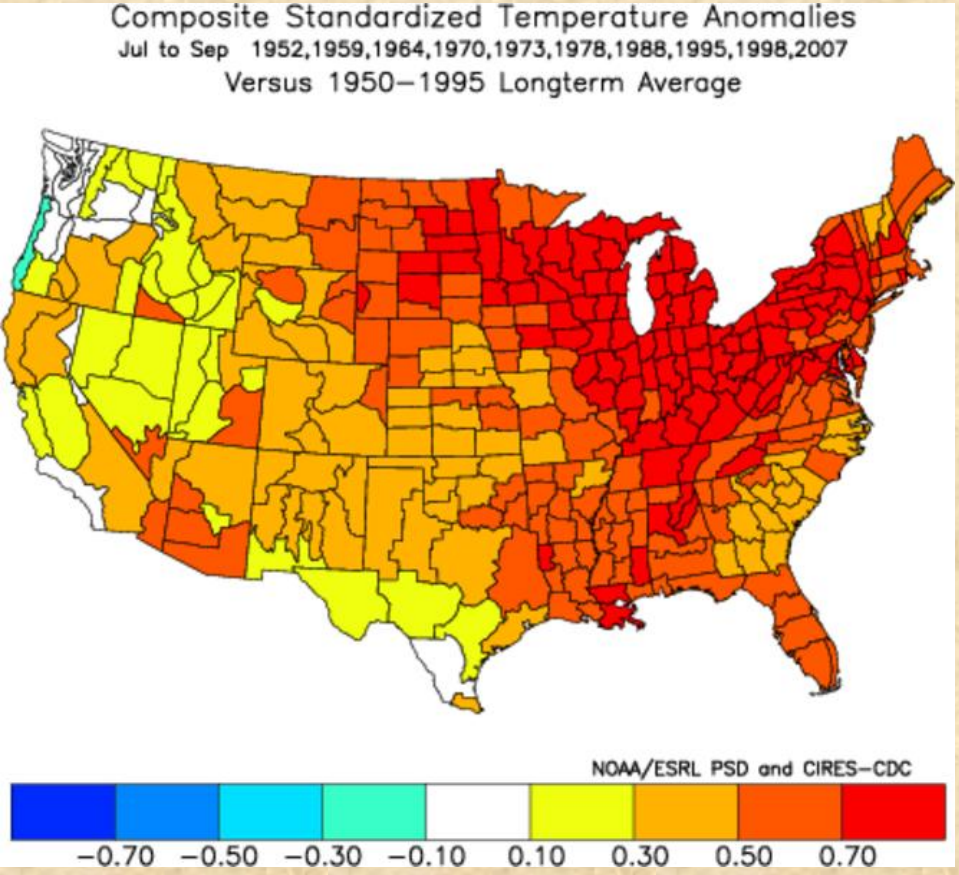
Experimental Forecast Guidance for Jul-Sep'10

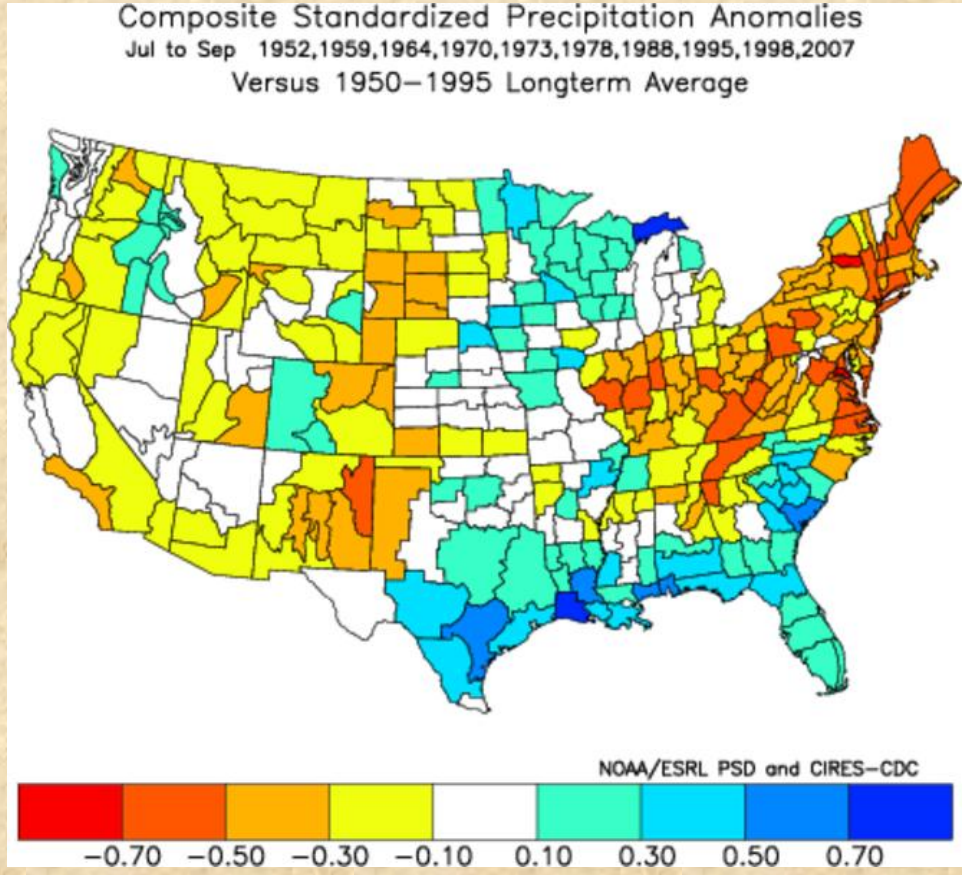




Forecast for July-September 2010 in April (left) showed increased chances of above-average moisture over SE Colorado, juxtaposed with a good chance for below-normal moisture over NW Colorado. Last month's update (right) reduced the threat of dryness over NW Colorado, but kept it along the urban corridor, while holding out for above-average chances of moisture over SE Colorado. Still working on updating this forecast (by early next week).

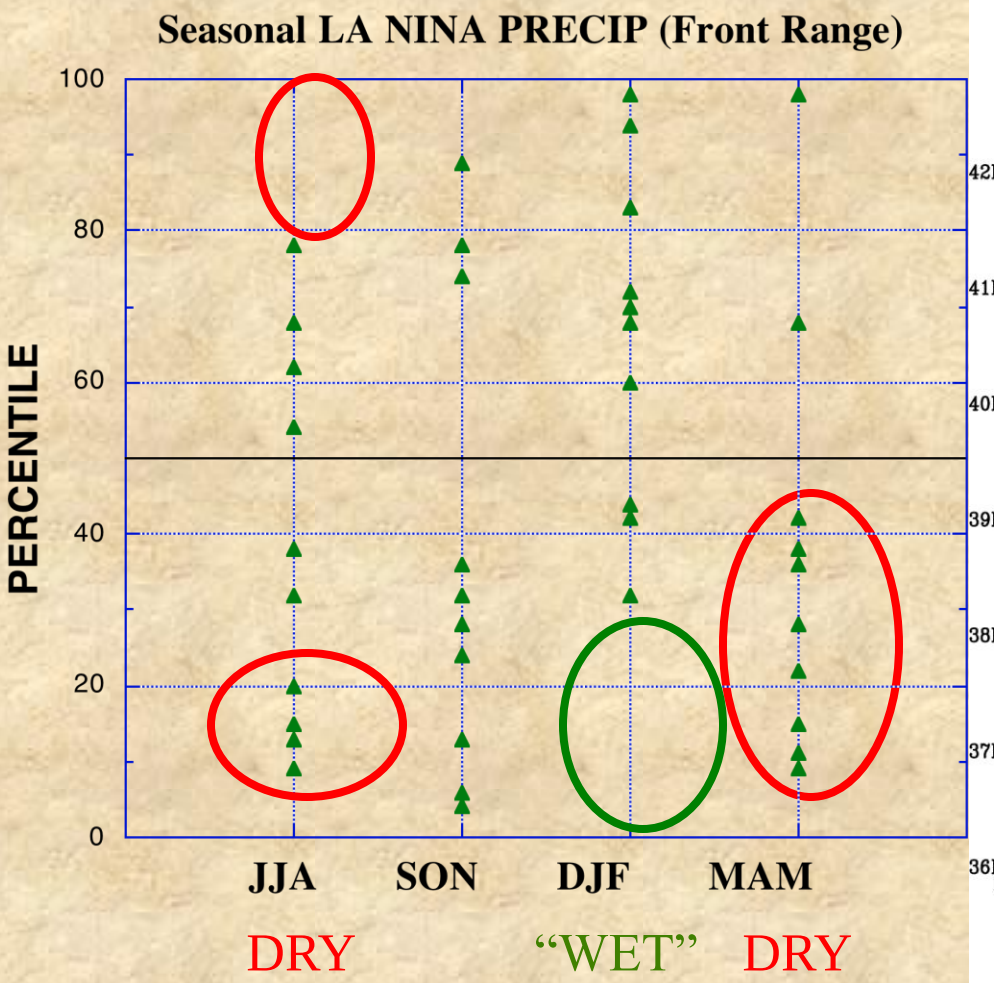
La Niña summers after El Niño winters

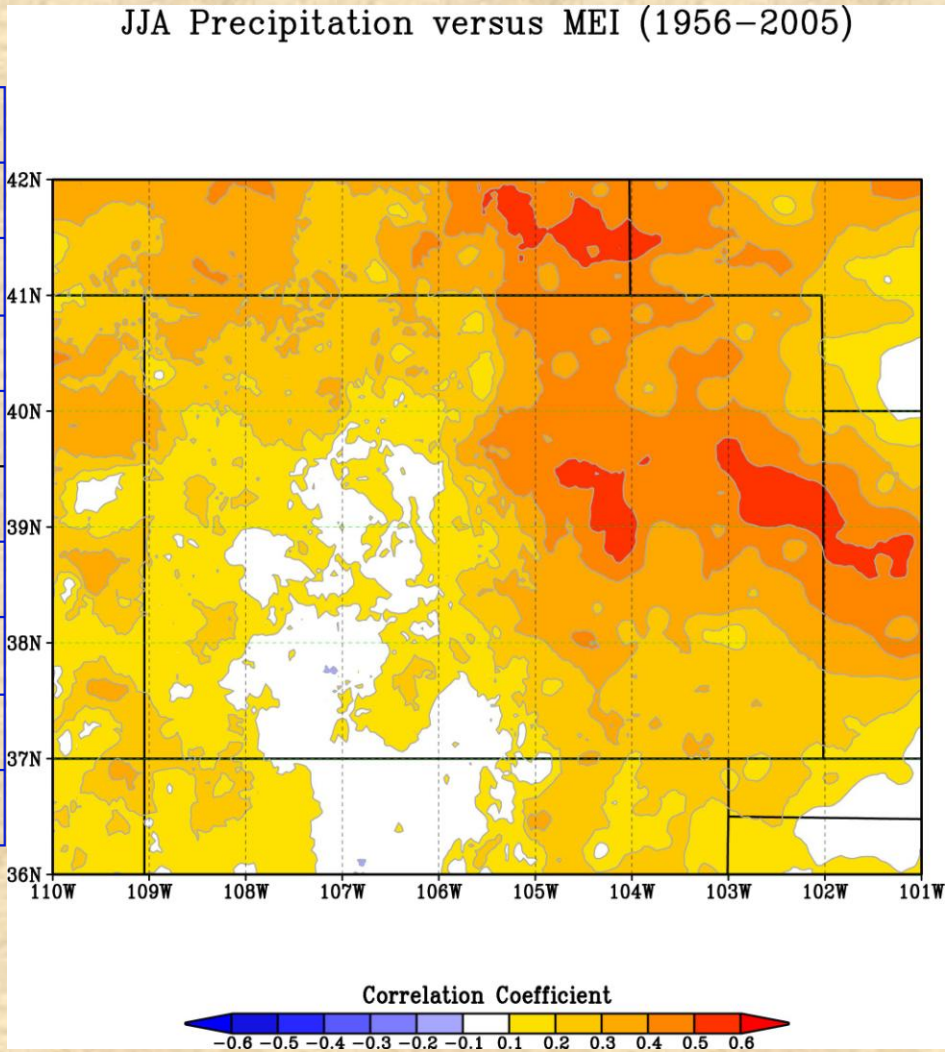




Composite temperature (left) and precipitation (right) anomalies in La Niña summers following El Niño winters, using 1950-95 as the base period. Anomalies of 0.5 standard deviations or higher are considered significant (such as the warmth in easternmost Colorado, or the dryness in eastermost New Mexico). Looks like a warm summer with better chances for rain west rather than east of the divide.

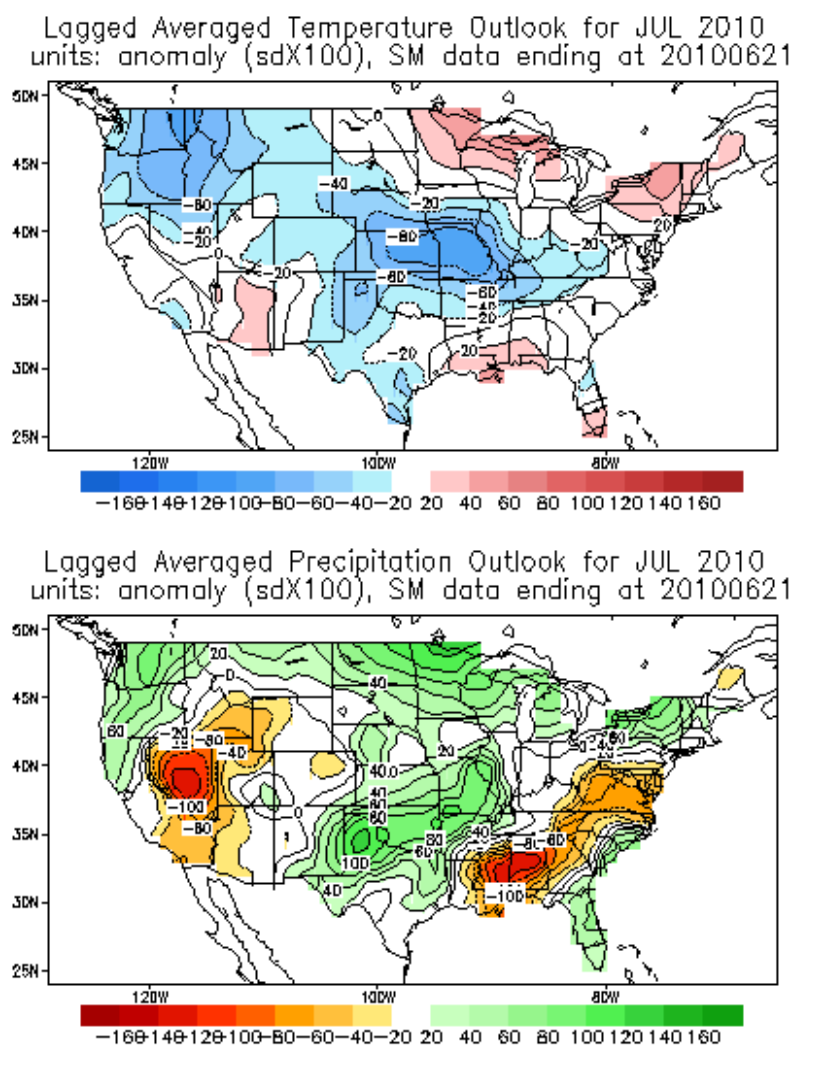
Seasonal precipitation impacts in CO (La Niña)

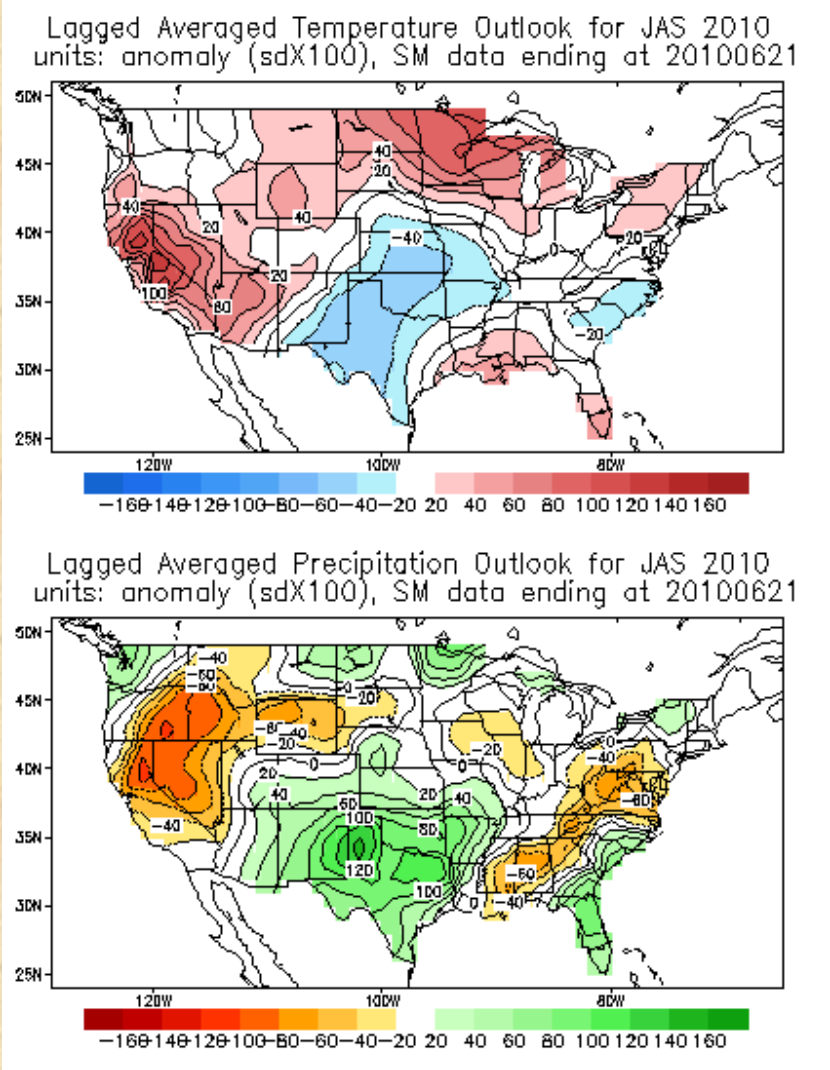




La Niña summers tend to be dry in EASTERN CO

CPC Analog Forecasts

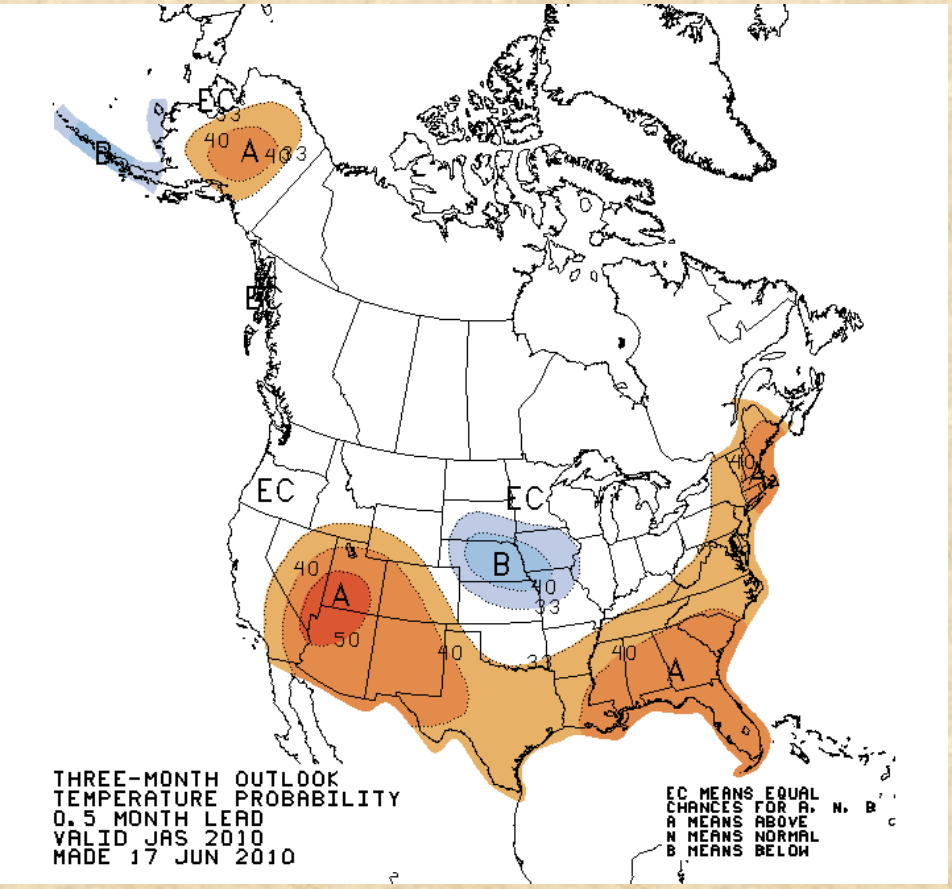


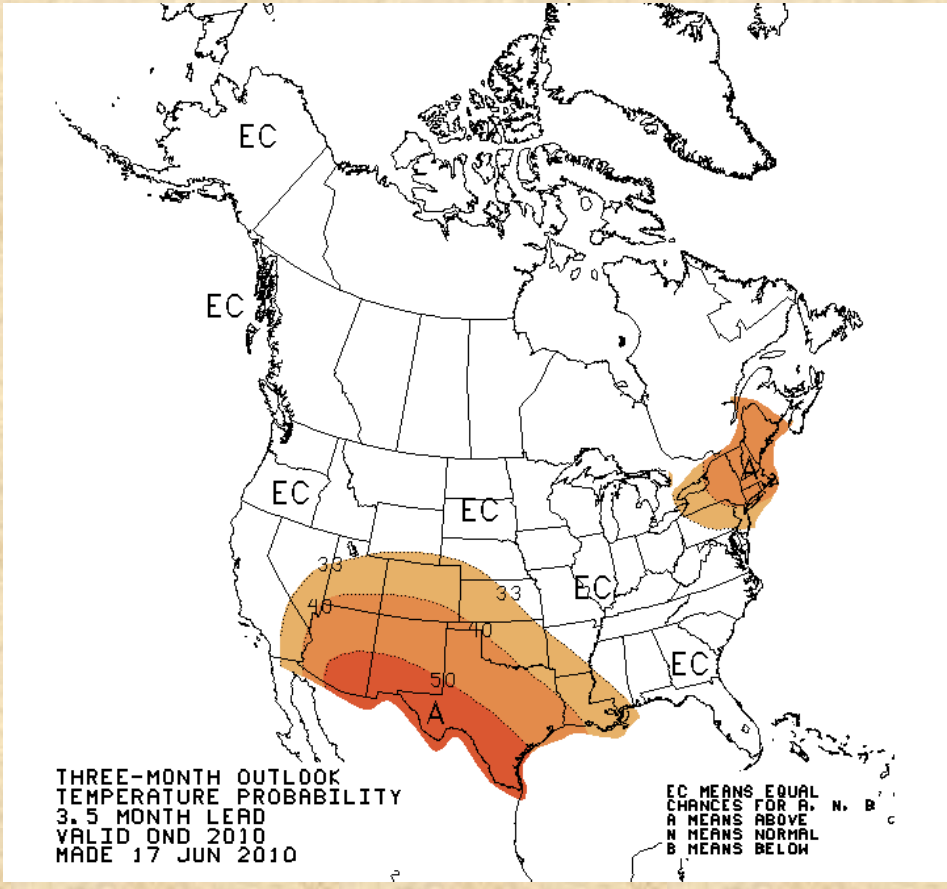


According to CPC's latest soil-moisture analog forecast, JUL (left) and JUL-SEP (right) start out close to normal for Colorado, with a hint of a wet monsoon to our south, while keeping the heat more to our northwest.

Source: ***http://www.cpc.noaa.gov/soilmst/cas.shtml***

CPC Temperature Forecasts

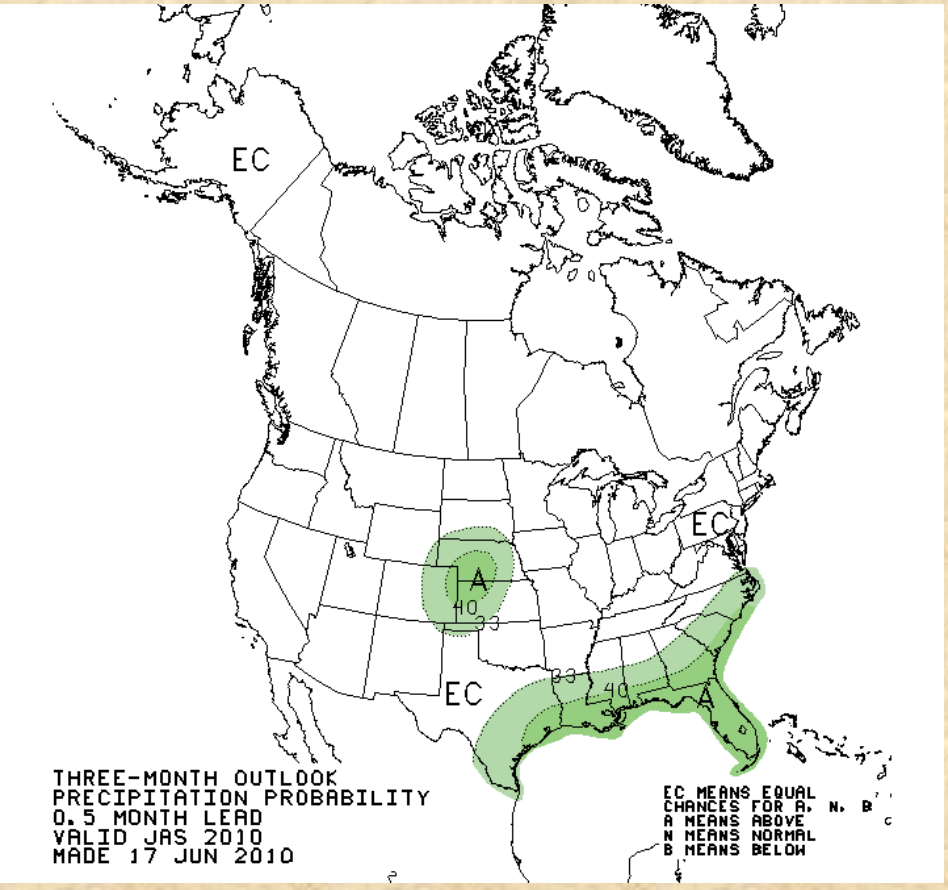


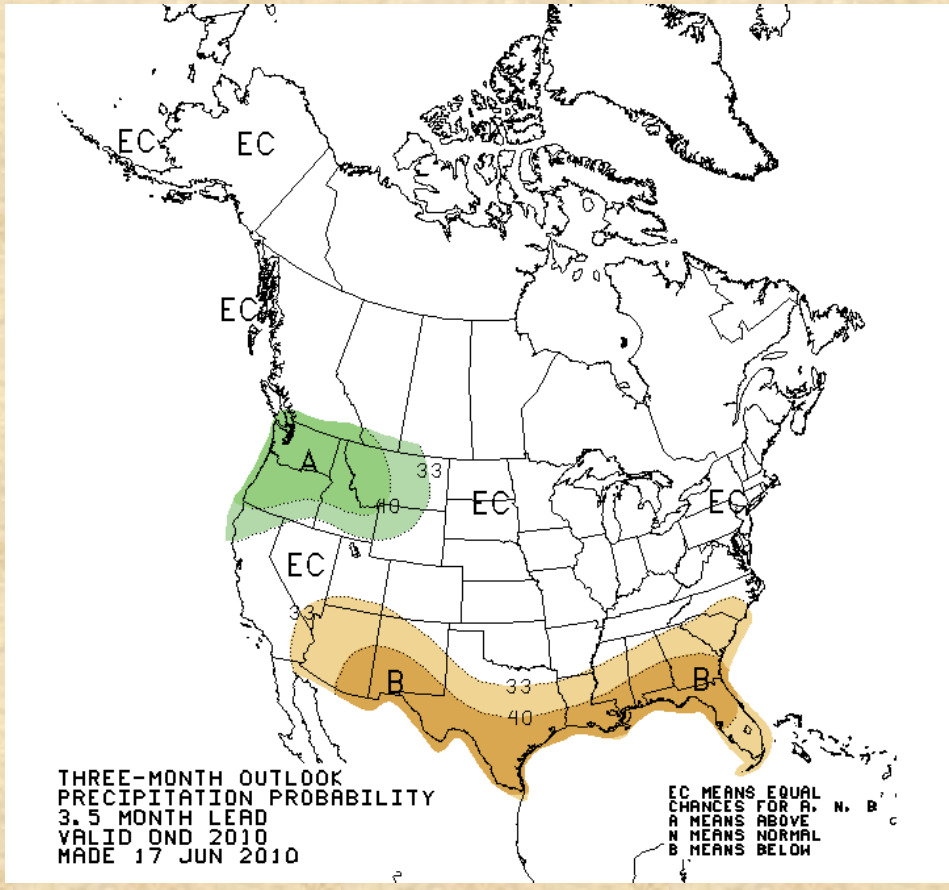


According to CPC's latest forecast, JUL-SEP (left) and OCT-DEC (right) temperature forecasts reflect long-term warming trends, as well as recent high soil moisture east of here. La Niña was factored in for late fall (actually from NDJ onwards).

Source: ***http://www.cpc.ncep.noaa.gov/products/predictions/***

CPC Precipitation Forecasts





According to CPC's latest forecast, JUL-SEP (left) and OCT-DEC (right) precipitation forecasts cover the eastern plains of Colorado with above-normal moisture chances this summer, while the rest of the state is 'EC'. Fall indications are 'EC' as well, with a developing La Niña footprint in U.S.

Source: ***http://www.cpc.ncep.noaa.gov/products/predictions/***

Draft Executive Summary (23 June 2010)

1. **The El Niño event of 2009-10 is history. A new La Niña appears to be on its way, but of unknown duration and strength.**
2. **The active stormtrack of this spring continued to hit northern Colorado and Wyoming much more than further south in the last month. The next two weeks look seasonably dry (with the best shot at rain over the weekend), with above-average temperatures.**
3. **My experimental forecast guidance for the late summer season (July-September) shows a potential for a suppressed monsoon in northwestern Utah and along the Colorado Front Range, while the southeastern plains of our state (and eastern New Mexico) have a decent shot at yet another wet summer <to be updated by next week>**
4. **Bottomline: The spring season behaved as expected, resulting in runoff in northern Colorado and adjacent areas higher than officially predicted earlier. We appear to be transitioning to a La Niña, which translates into low moisture expectations for most of Colorado into the fall season.**
5. ***As some of you may already know, I will discontinue 'SWcasts' after this month. Funding has been anemic at best, and I want to take a hard look at the cost-benefit ratio of such an effort. If you would like to see an effort of this type continued, please send me an e-mail that I can forward to the 'powers that be'. If I make another forecast (say, for this winter), you will be among the first to know. It has been an interesting decade, to say the least. Best wishes to WATF!***

Source: ***http://www.esrl.noaa.gov/people/klaus.wolter/SWcasts/***