NOAA-CIRES Climate Diagnostics Center

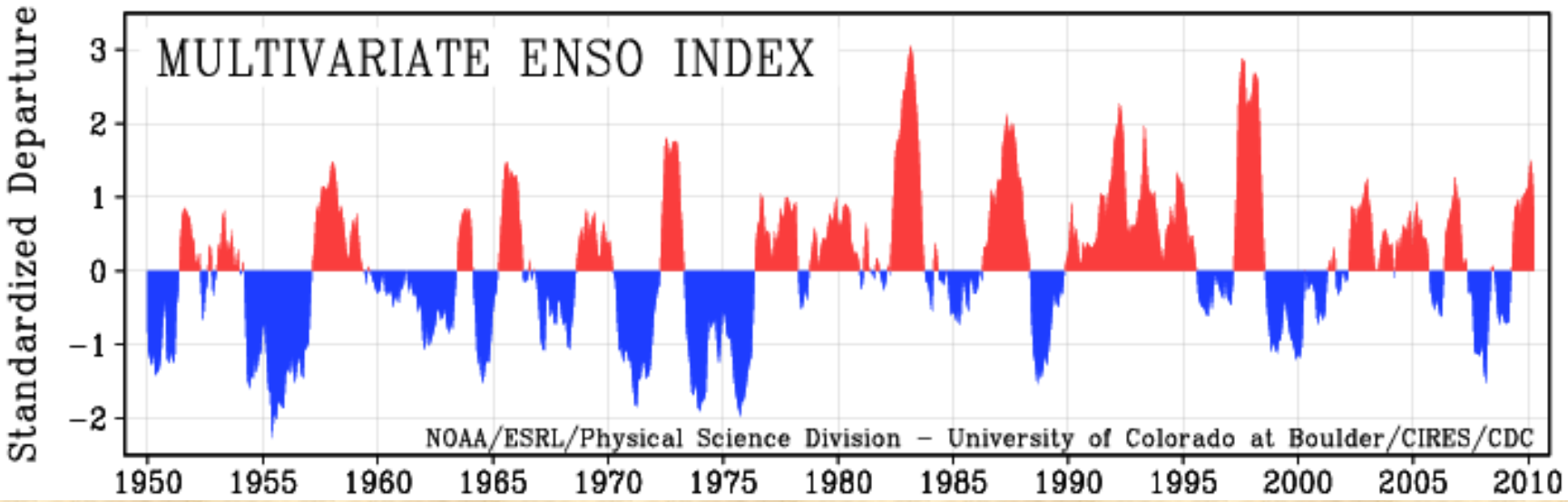
CO WATF
21 May '10
Denver

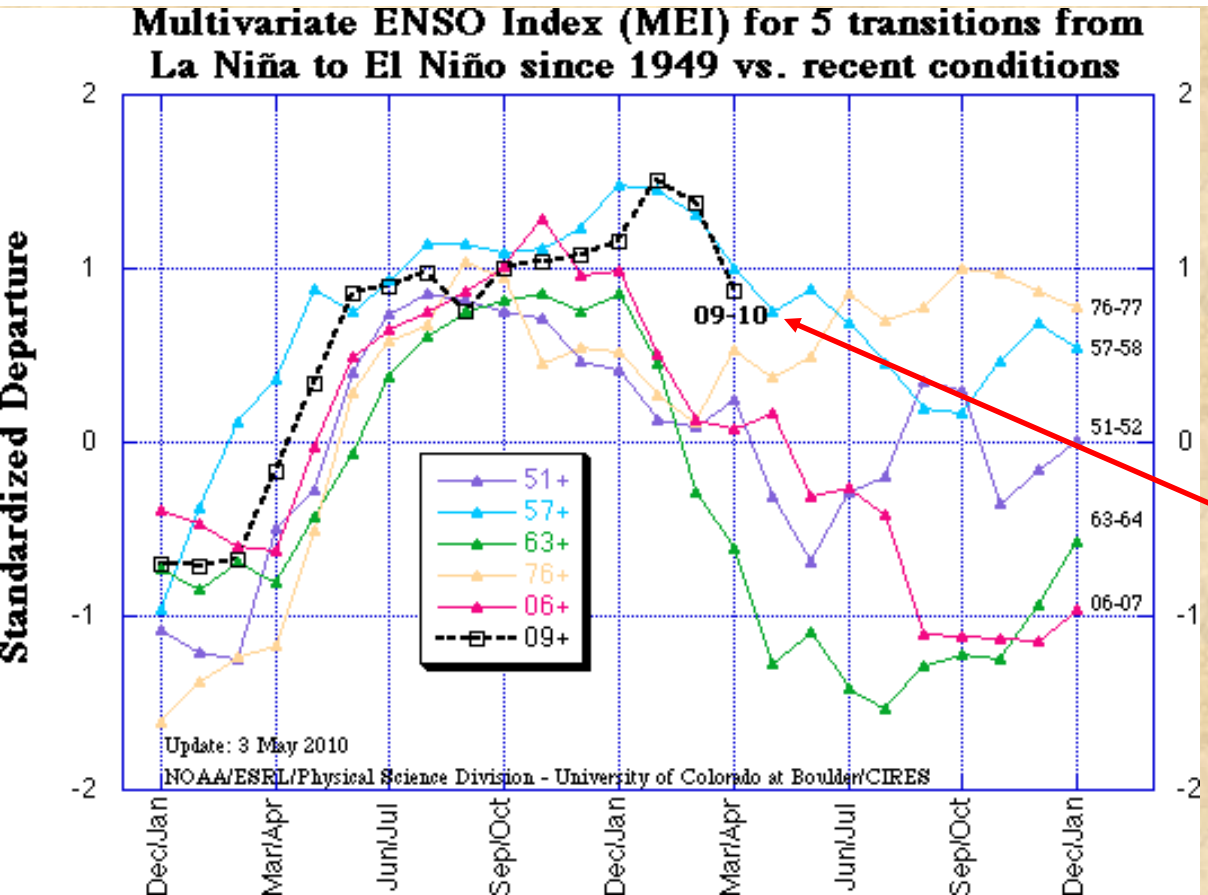
Western Water Assessment

Seasonal Outlook through September 2010

Klaus Wolter
University of Colorado, CIRES & NOAA-ESRL PSD 1, Climate Analysis Branch
klaus.wolter@noaa.gov
http://www.esrl.noaa.gov/psd/people/klaus.wolter/SWcasts/

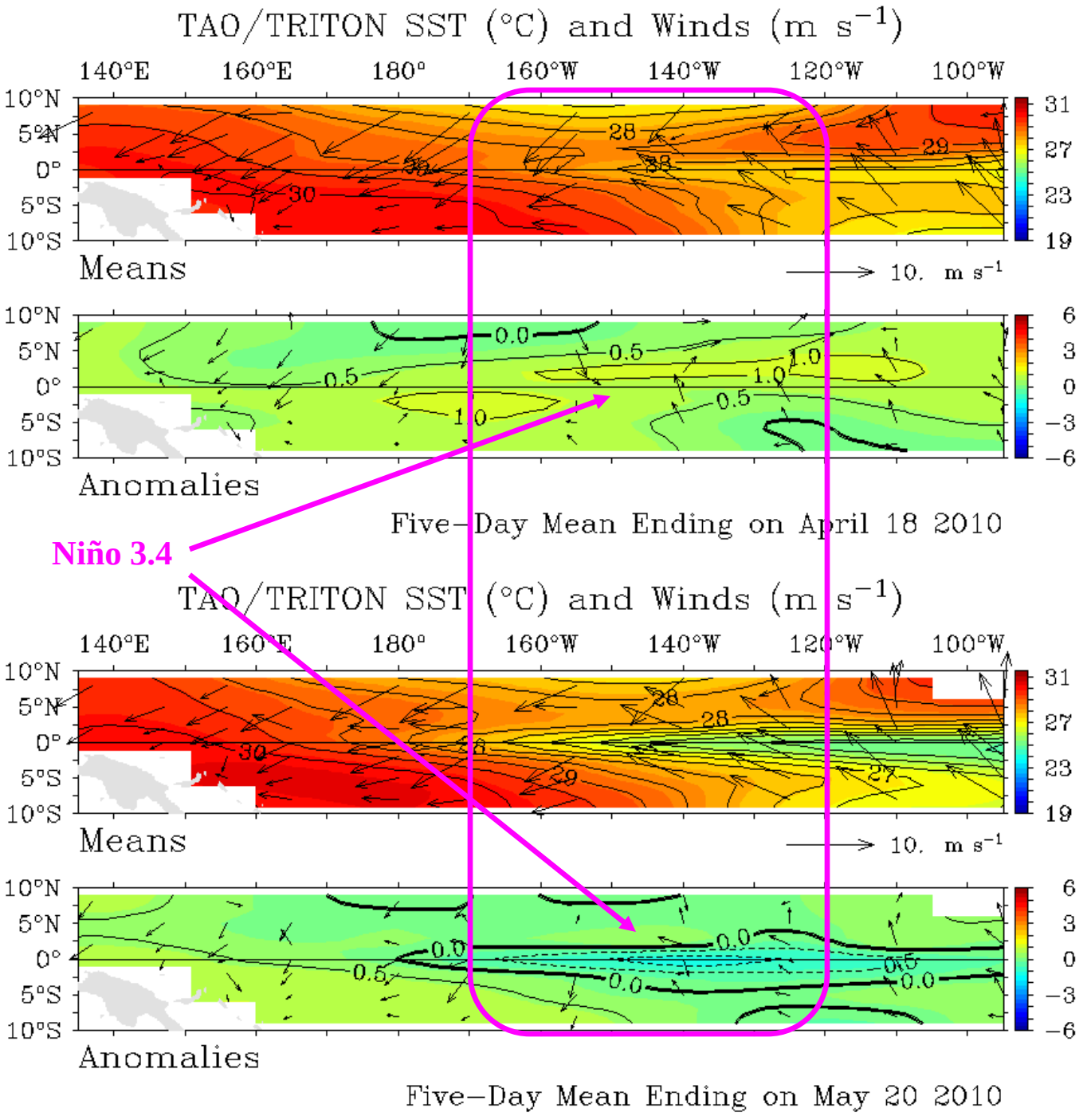
- **Good-bye El Niño, hello La Niña?**
- **Recent weather & comparison with forecasts**
- **Expectations for next few weeks**
- **Experimental Seasonal Forecast Guidance**
- **CPC forecasts for June through September**
- **Executive Summary**

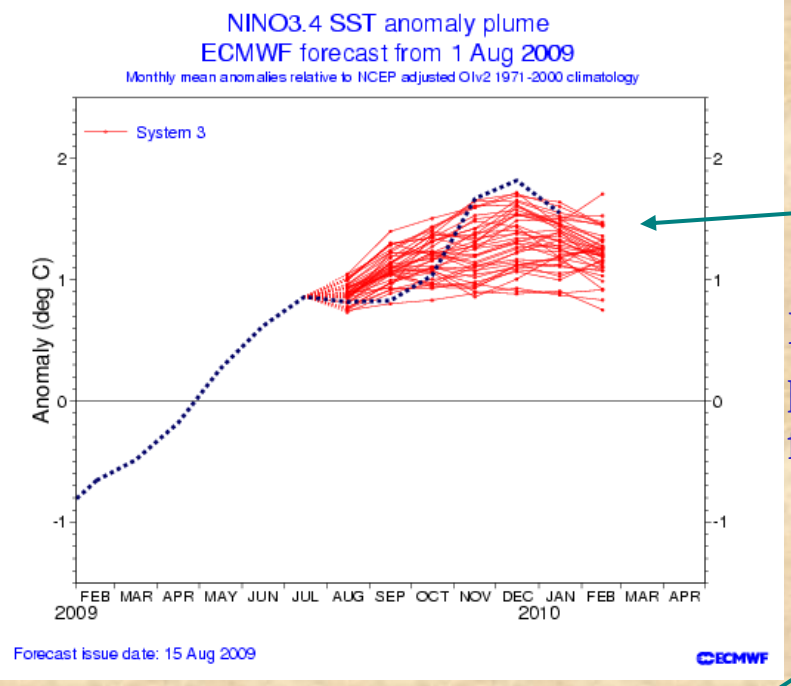




El Niño event peaked earlier this year, now on its way out, at least for the summer

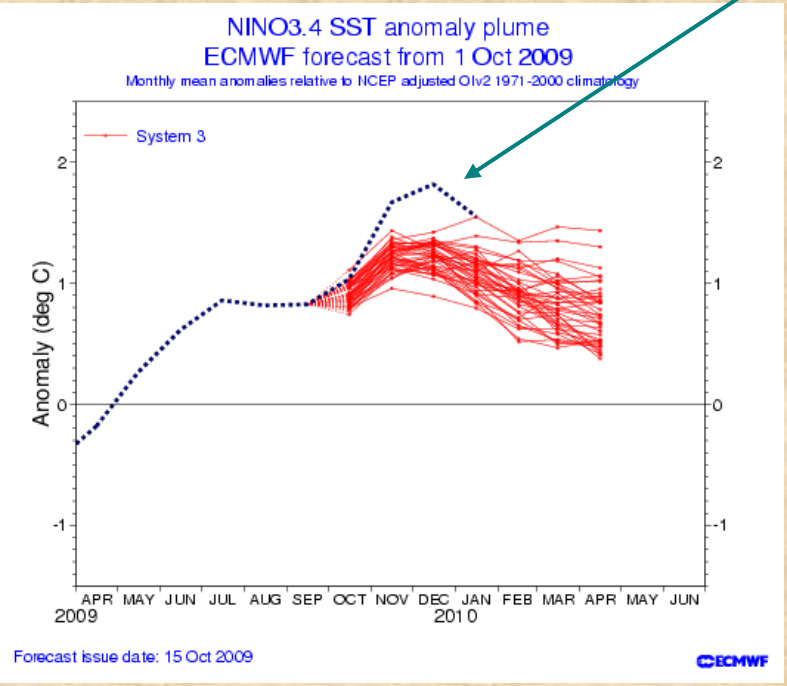
Current state of ENSO (bottom) compared to last month (top): warm event has mostly disappeared (even replaced by negative anomalies in Niño 3.4), but eastern-most tropical Pacific remains warm; wind anomalies are mostly weak, and indicate mostly enhanced trade winds.



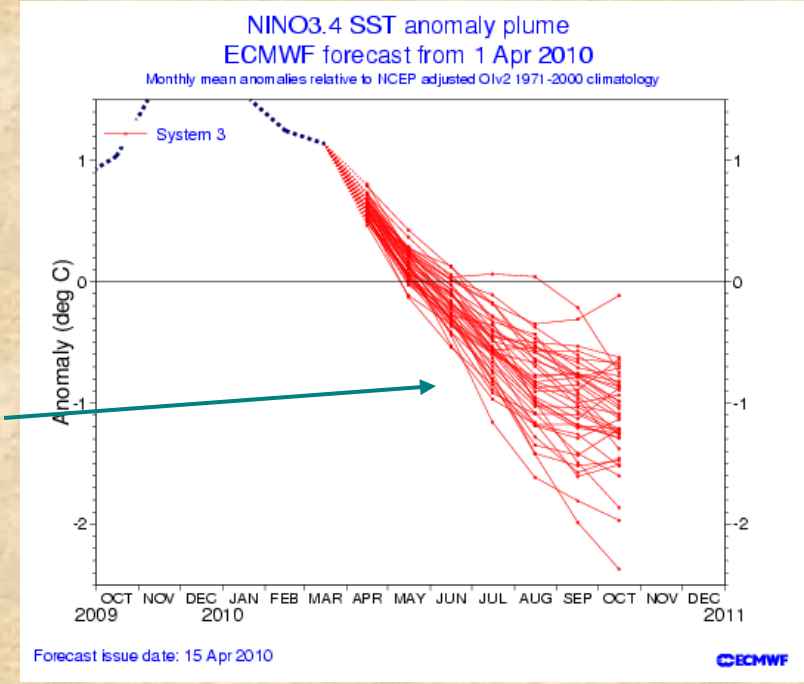


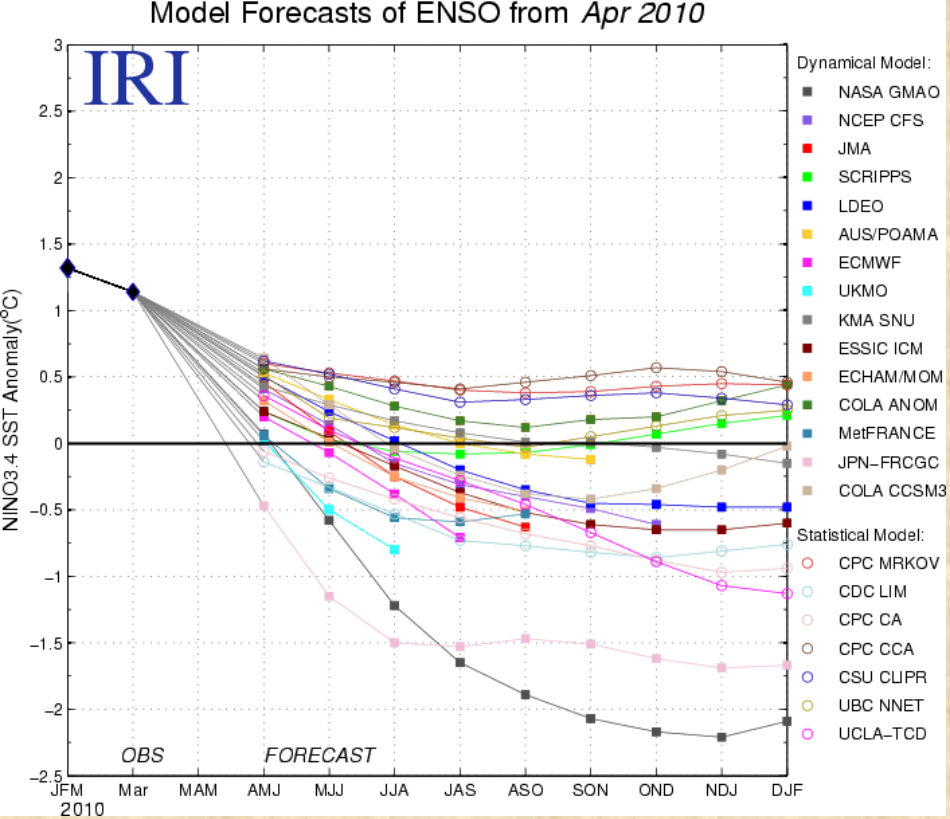
The European model's August '09 forecast (left) had the right idea about a moderate-sized El Niño event;

It did not get all the details right (bottom left) – in particular the two growth spurts in early summer and fall;

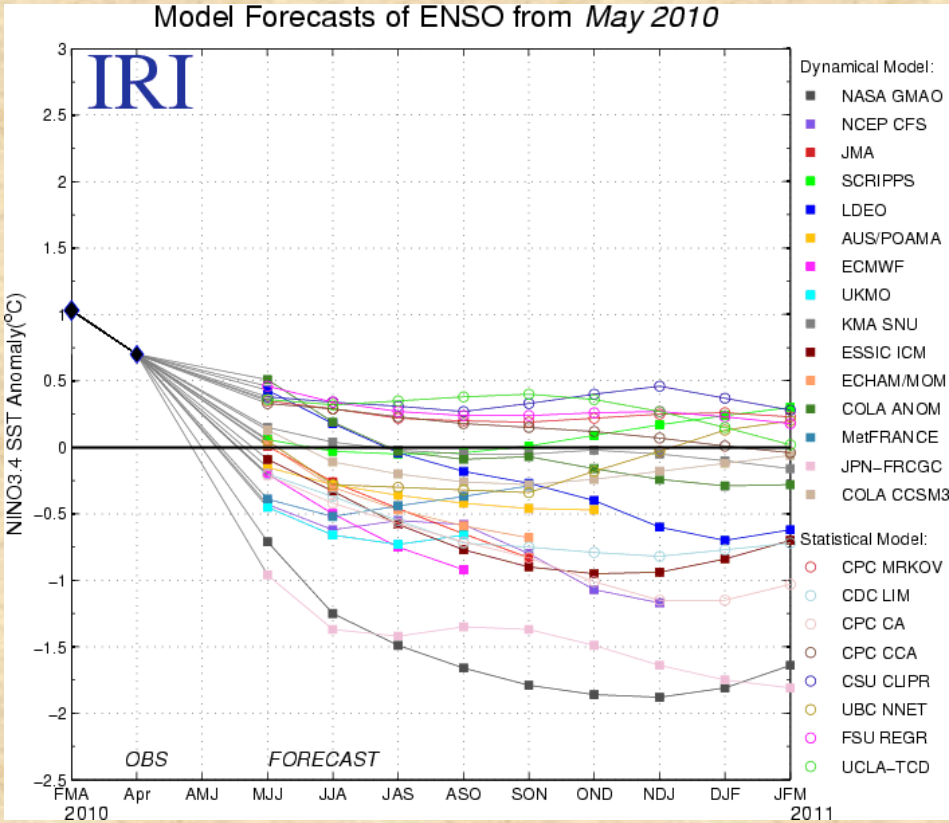


After January's peak, this model goes for a rapid transition into La Niña by the summer (only 2 out of 50 dissent).



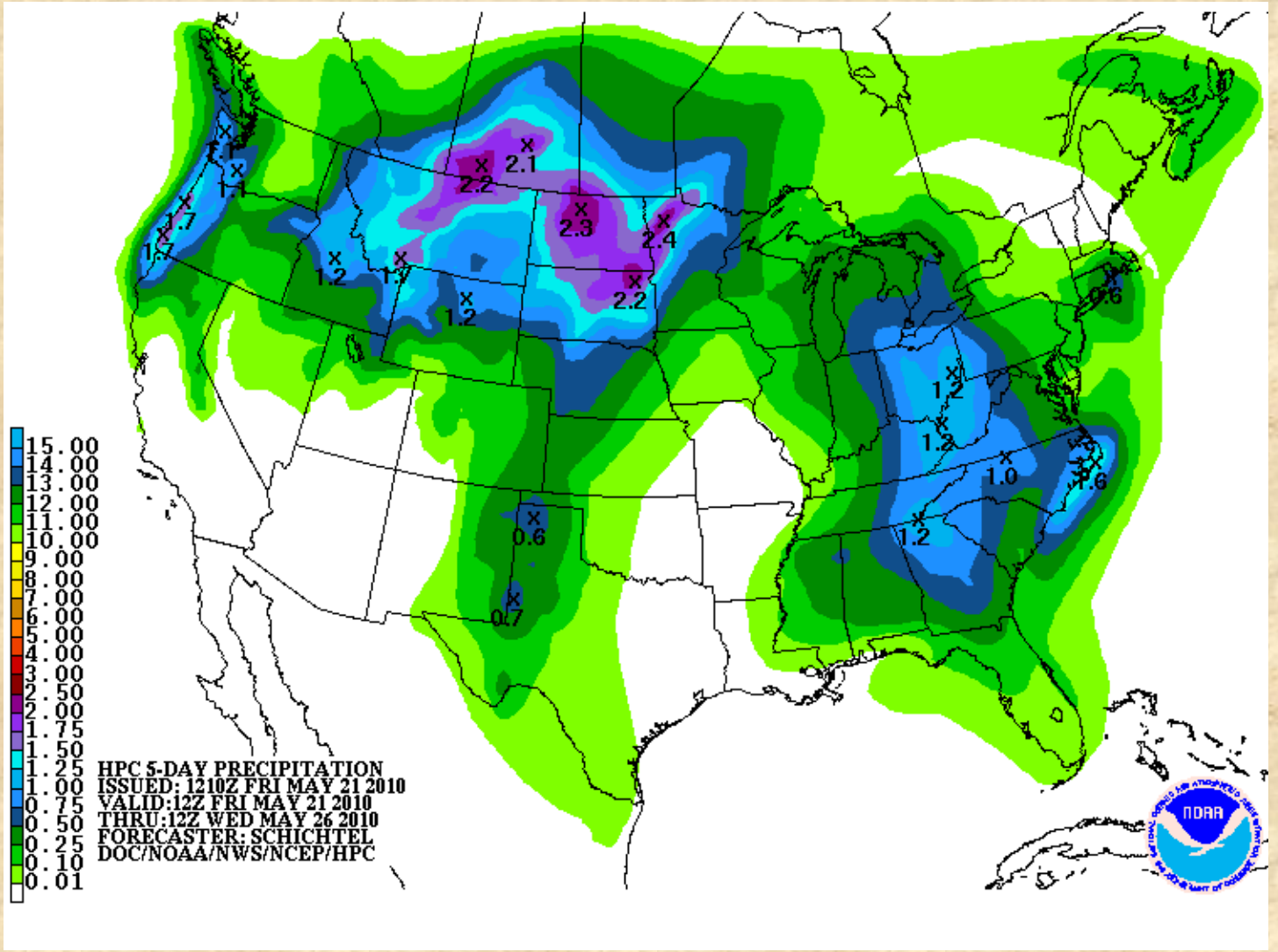


ENSO forecasts from over 20 dynamical & statistical forecast models (below) vs. last month's (left). While most statistical forecast try to hang on to neutral conditions for the next 6-9 months, the clear majority of dynamical models are now going for a La Niña (last year's 'bias' of statistical vs. dynamical models has returned, now around 0.5C).



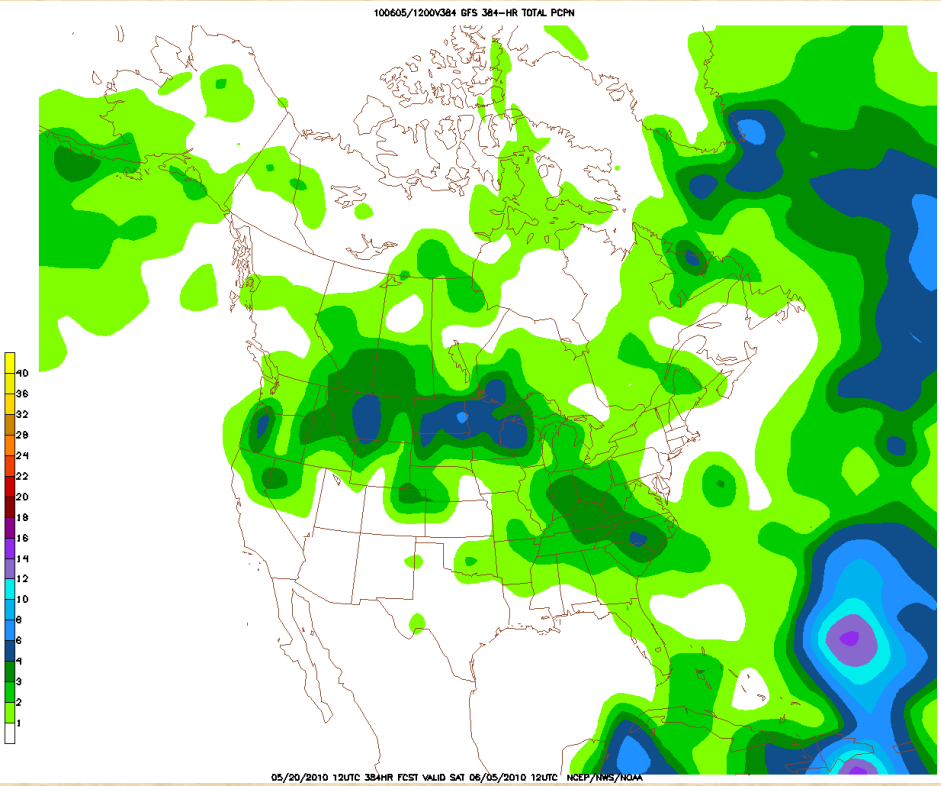
Caveat: The PDO has remained positive right through last month, thus keeping the door open for a two-year El Niño event. The last time we saw a switch from El Niño to almost La Niña and back to El Niño in the same calendar year was in 2003…

What can we expect in the next two weeks?

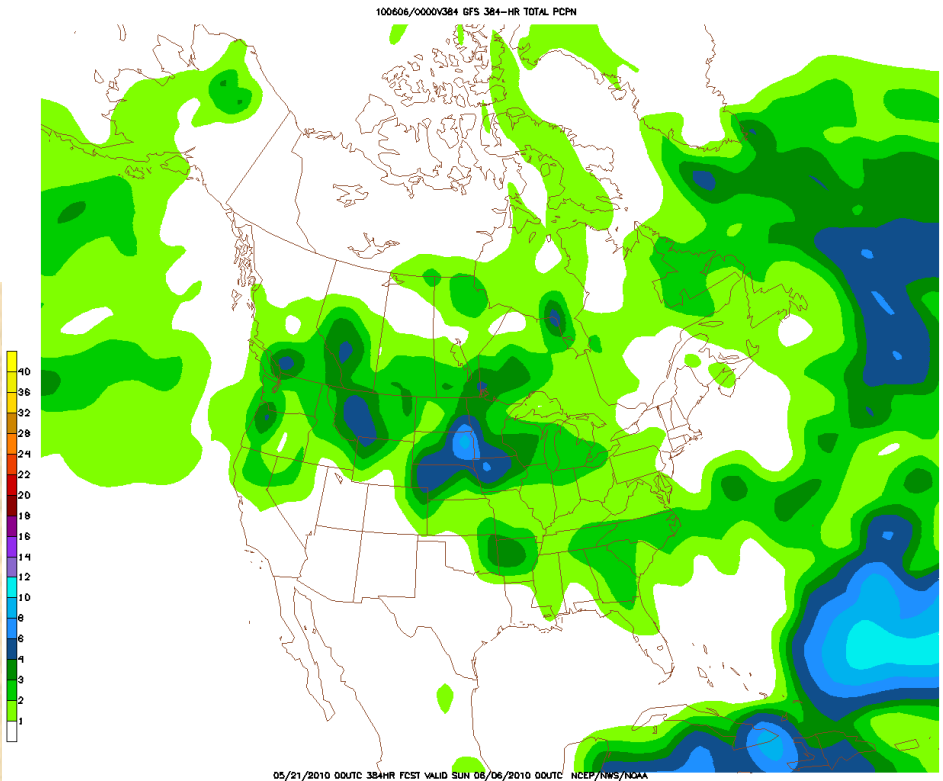


Expected total precipitation thru Wednesday morning, according to the Hydrological Prediction Center (HPC): a dry spell, in stark contrast to last week (or month)… Enjoy our belated spring!

What can we expect in the next two weeks?



GFS Control runs from last morning (left) and last evening (bottom)

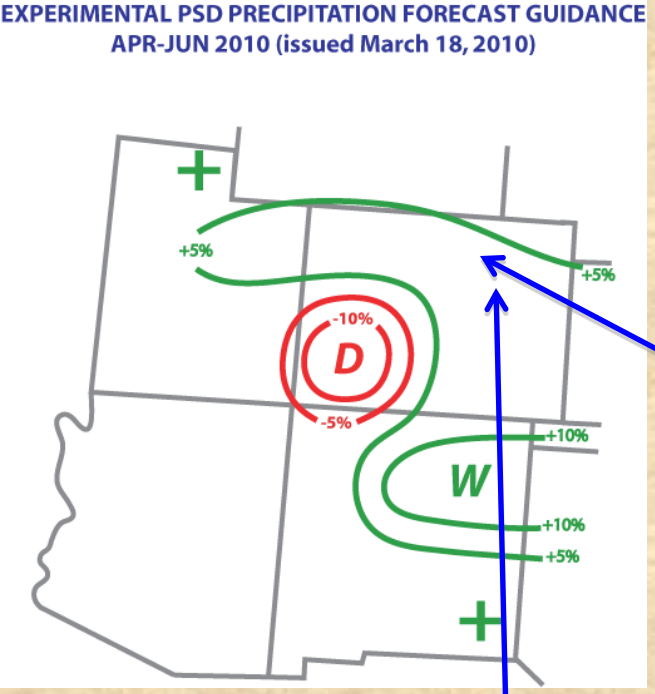


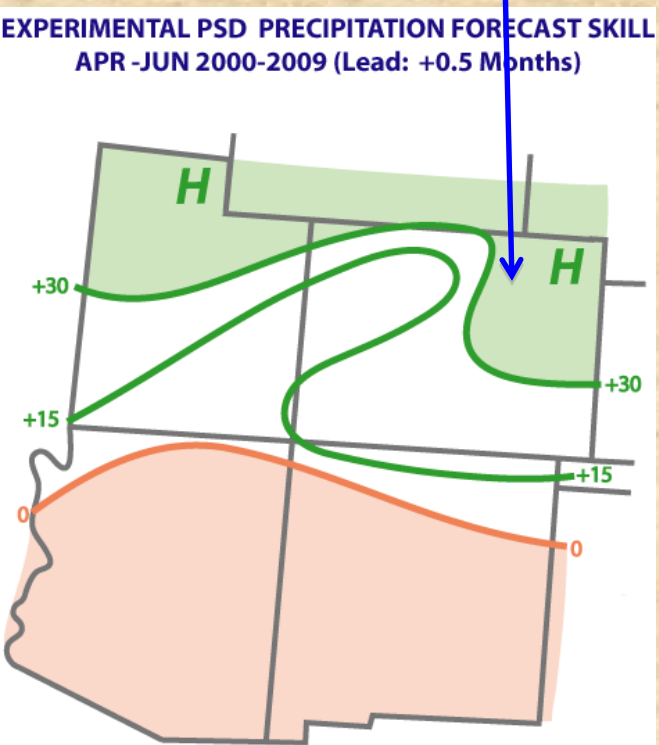
<u>Bottomline</u>: the GFS 'promises' new moisture to the northeast corner of the state by the 2nd week, but not really for the rest of our state. Run-to-run variability has been high this week, but not in the last day or so.

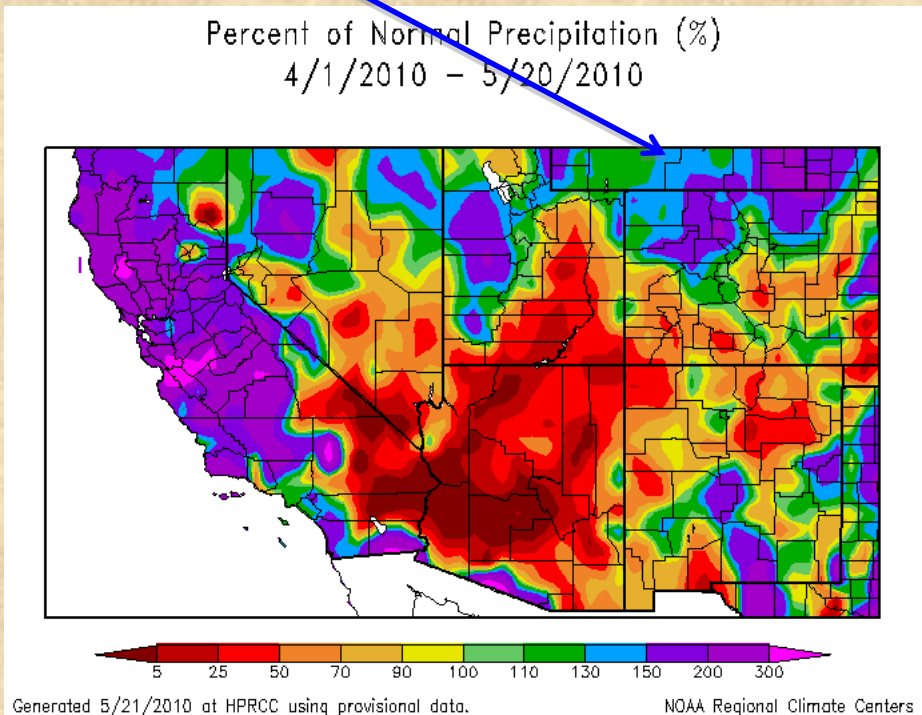
<P.S.: 6z run shows similar pattern>

Experimental Forecast Guidance

Forecasts for April-June 2010 from March (left) showed increased chances of above-average moisture for northern and eastern Colorado – *this is also the best season for verified forecast skill in our state (bottom left)!*



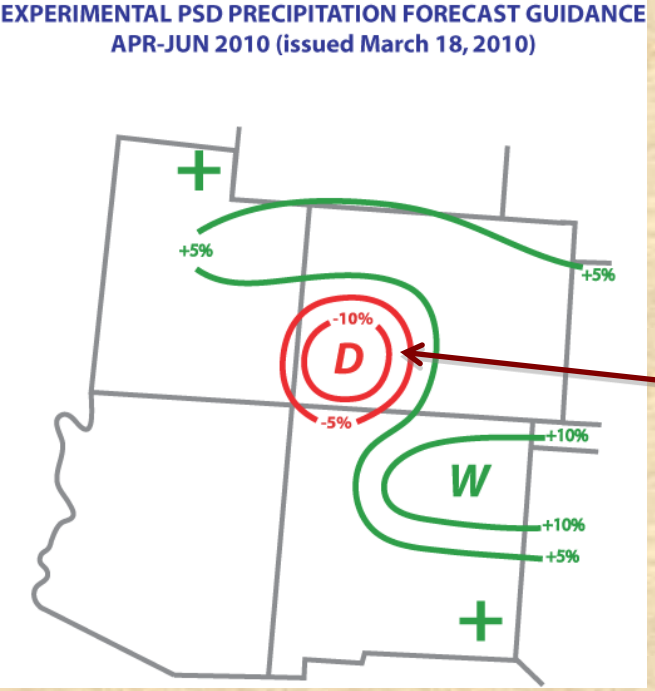


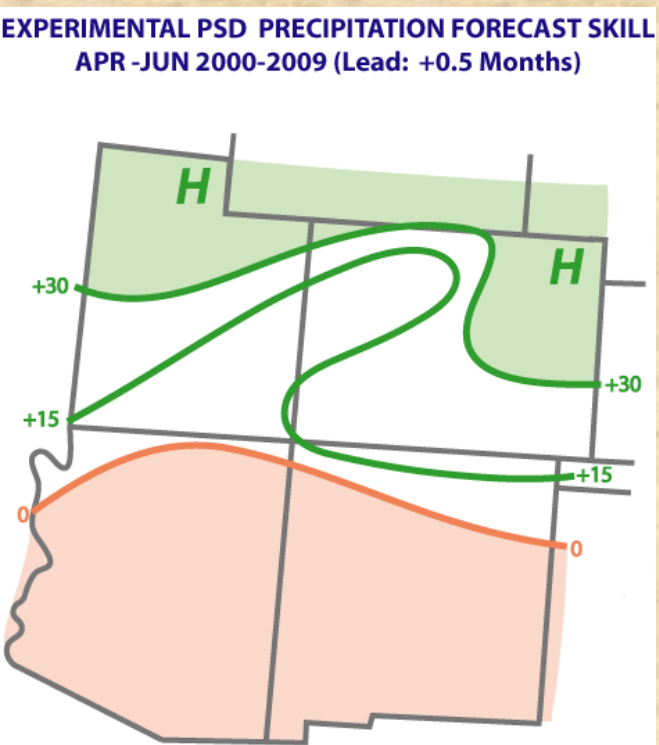


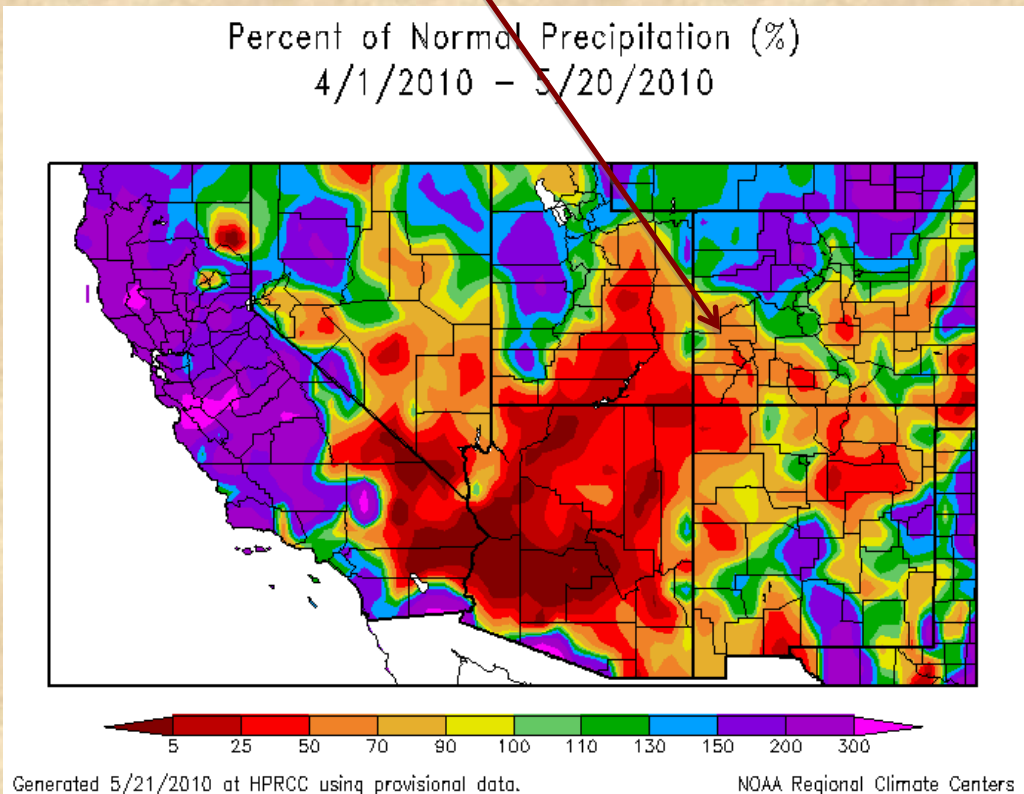
Experimental Forecast Guidance

Forecasts for April-June 2010 from March (left) show increased chances of above-average moisture for most of Colorado – *this is also the best season for verified forecast skill in our state (bottom left)!*

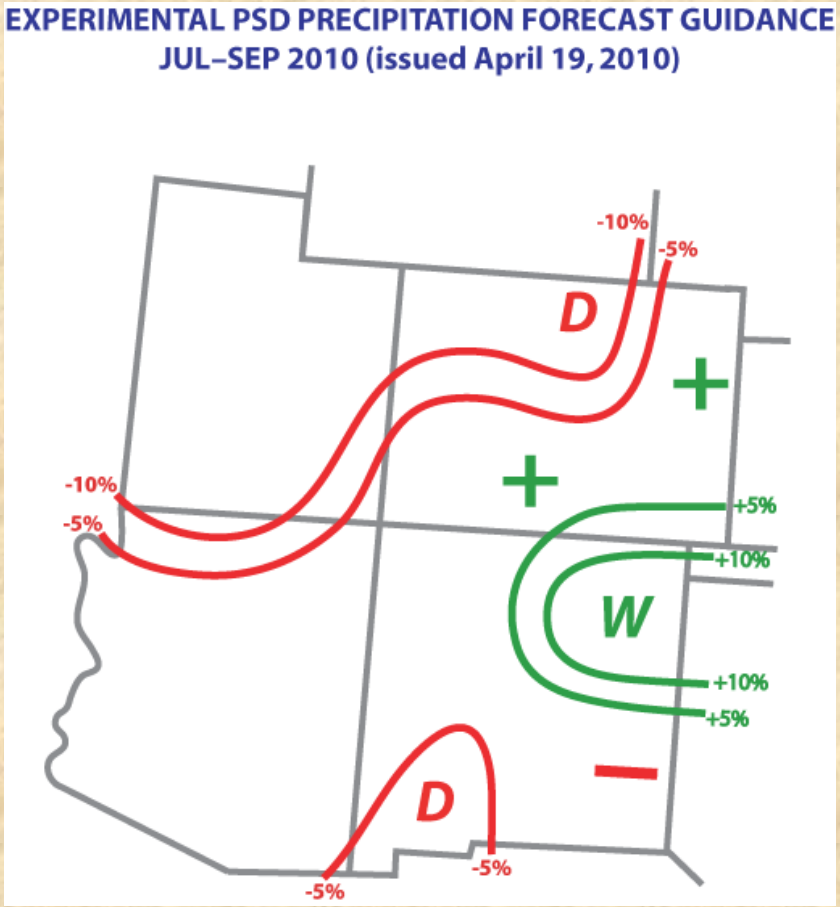
Area of concern: Southwestern Colorado, but they enjoyed a good snowpack this year, and don't depend as much on the spring season as the Front Range!

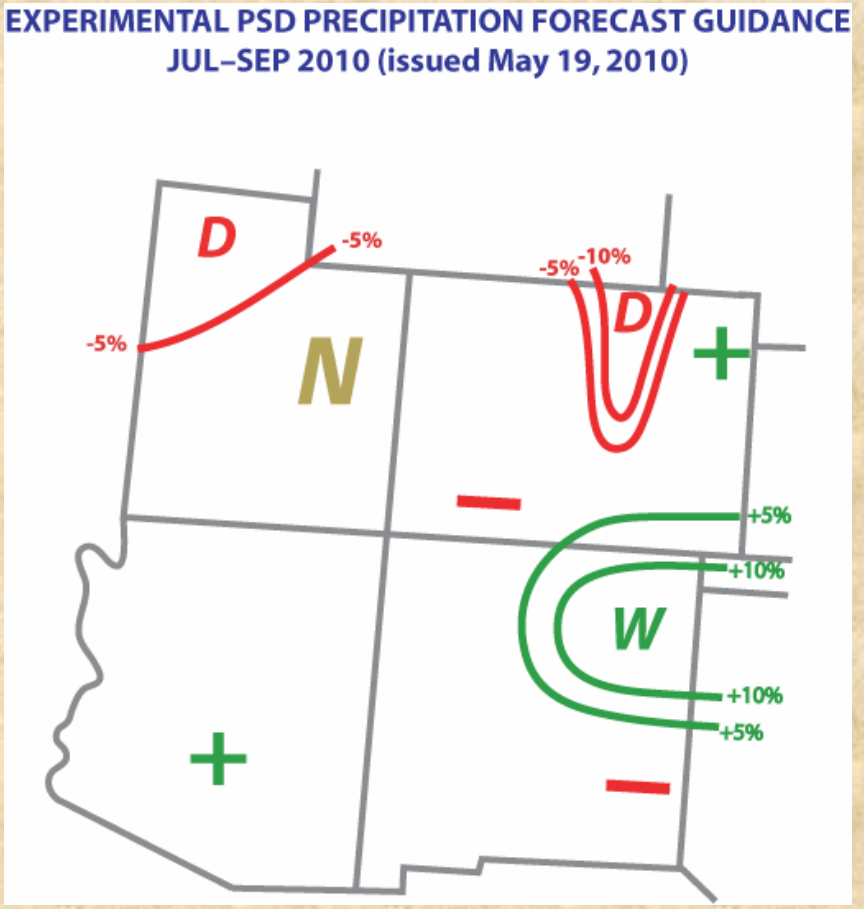






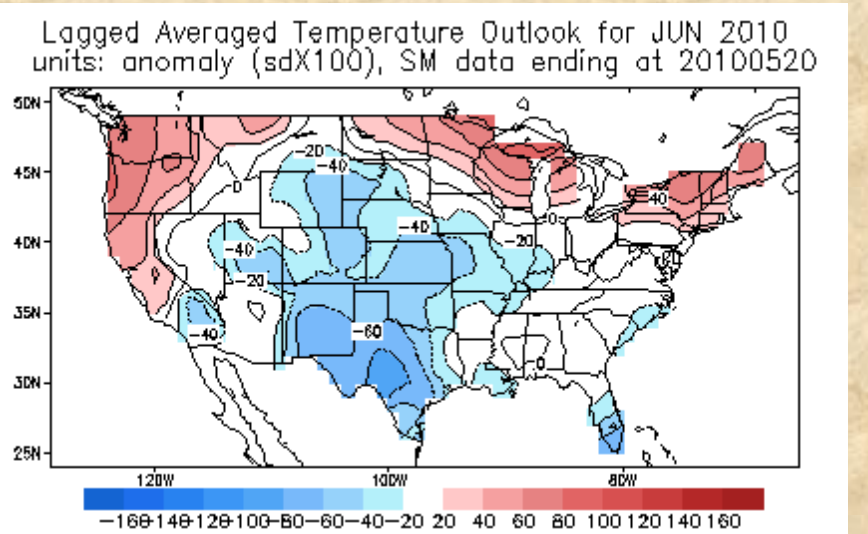
Experimental Forecast Guidance for Jul-Sep'10

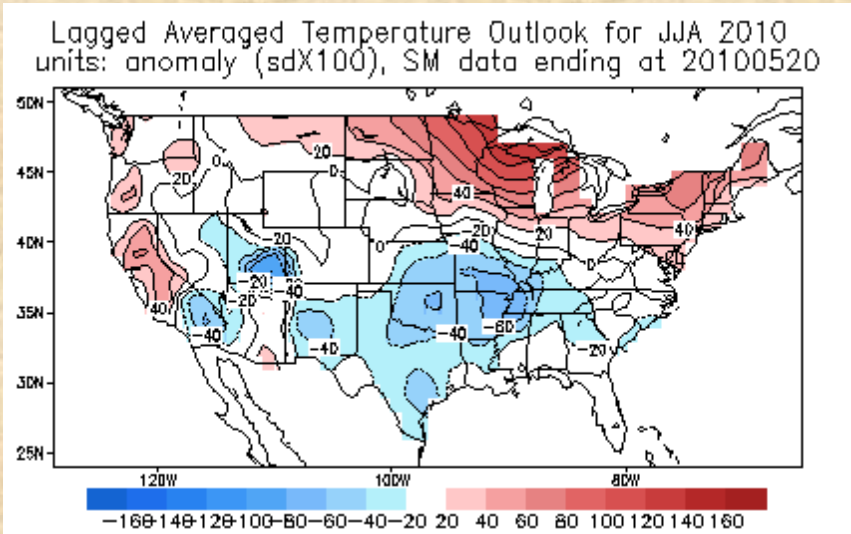


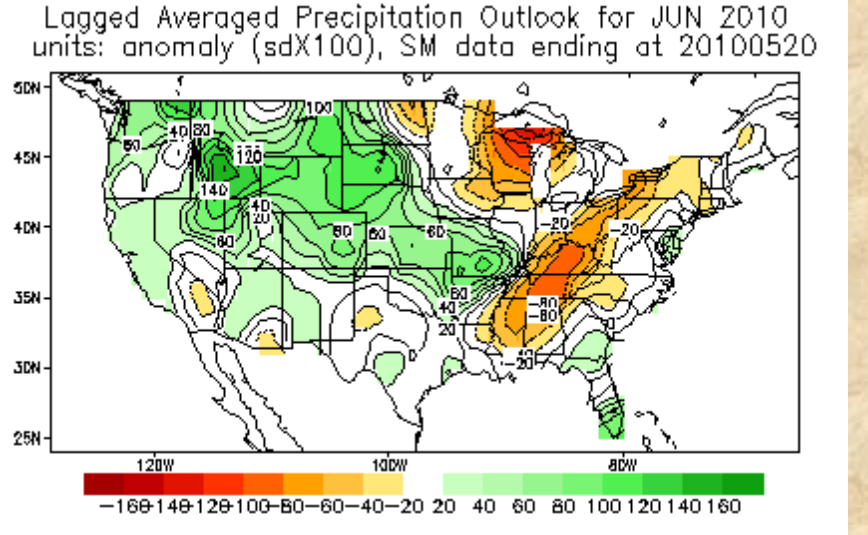


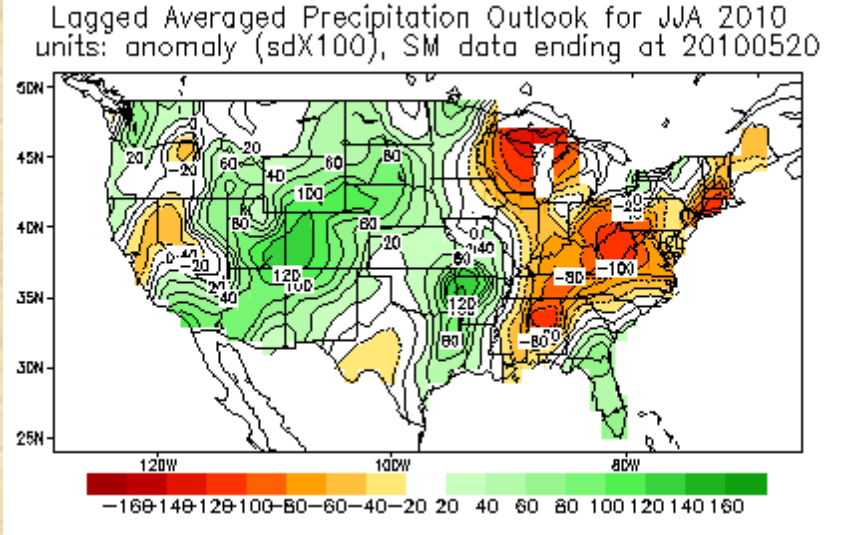
Forecast for July-September 2010 in April (left) showed increased chances of above-average moisture over SE Colorado, juxtaposed with a good chance for below-normal moisture over NW Colorado. This month's update (right) reduces the threat of dryness over NW Colorado, but maintains it along the urban corridor, while maintaining above-average chances of moisture over SE Colorado. In May, verified forecast skill is highest for Utah and New Mexico rather than our state…

CPC Analog Forecasts



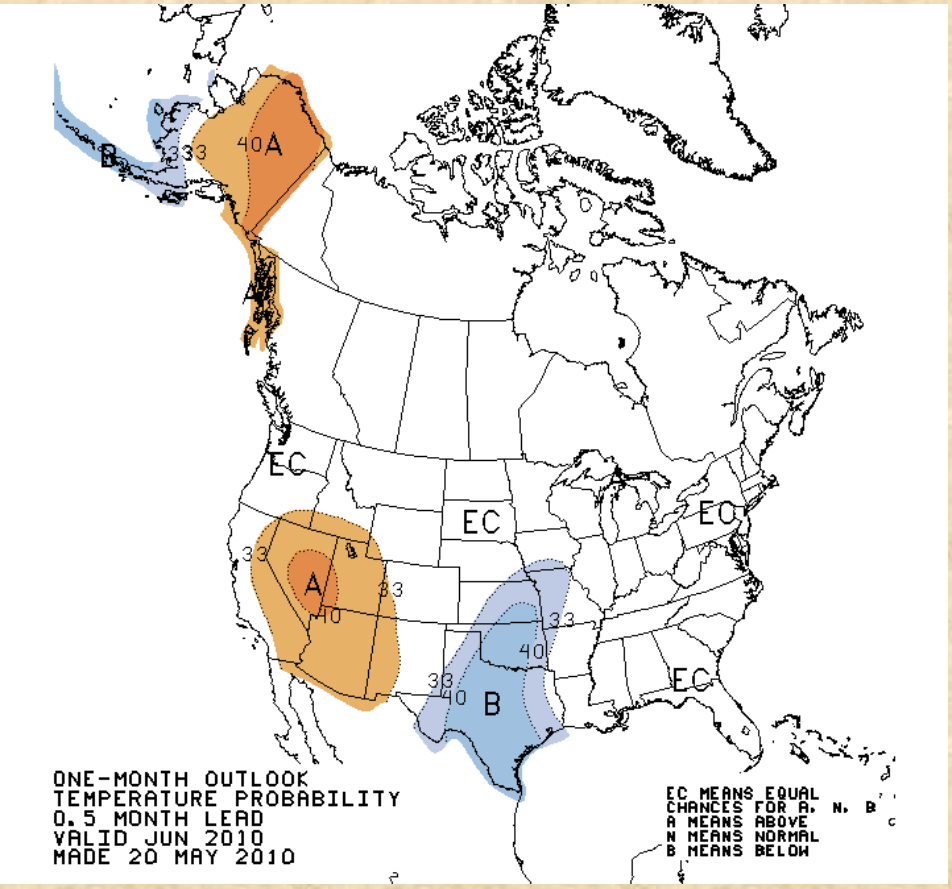


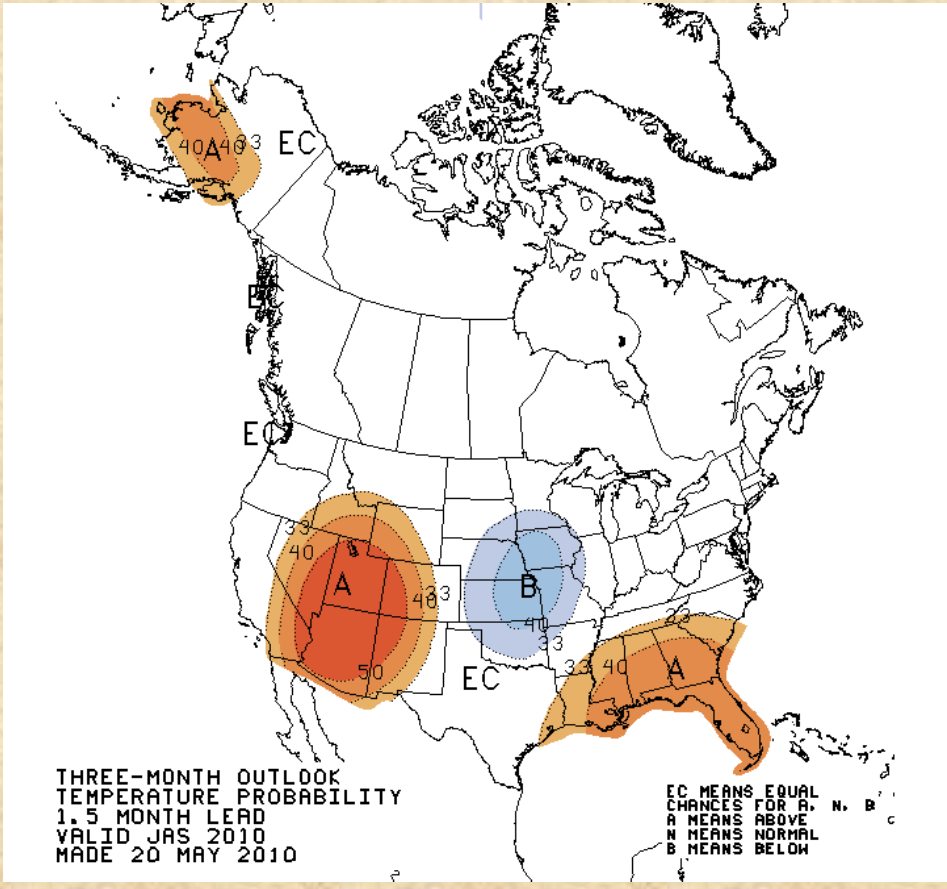




According to CPC's latest soil-moisture analog forecast, JUN(left) and JUL-SEP (right) start out cool and wet for Colorado, continuing into the summer (the temperature forecast has backed off on heat). **Source**: ***http://www.cpc.noaa.gov/soilmst/cas.shtml***

CPC Temperature Forecasts

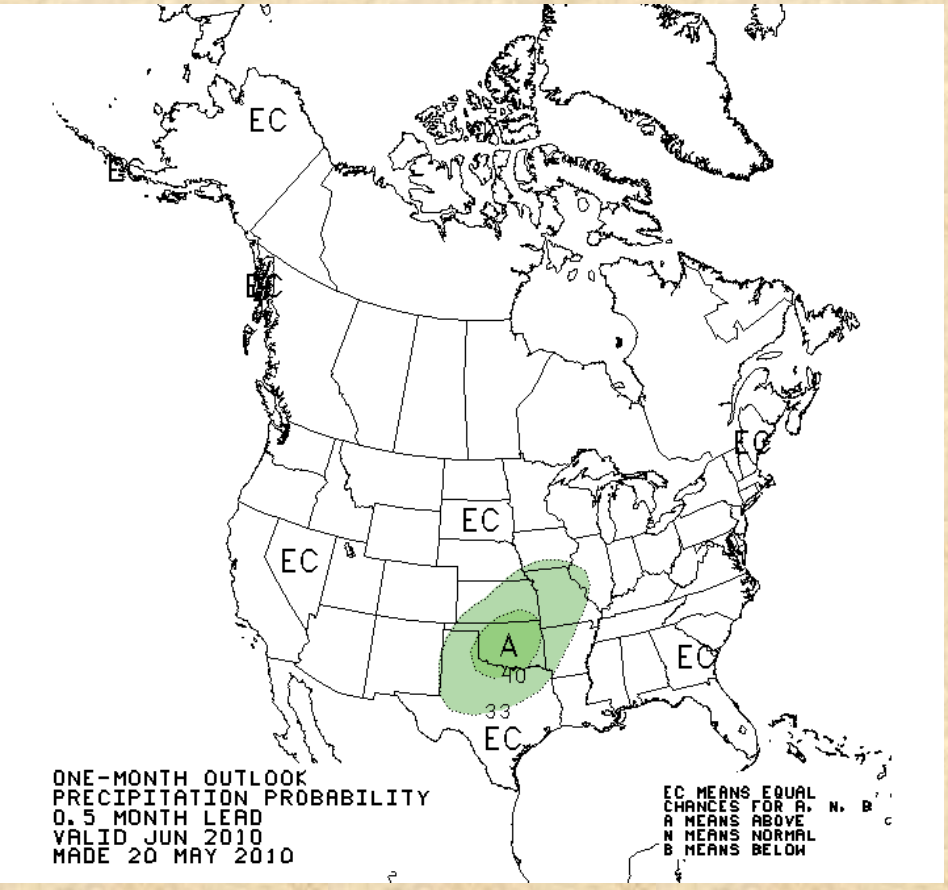


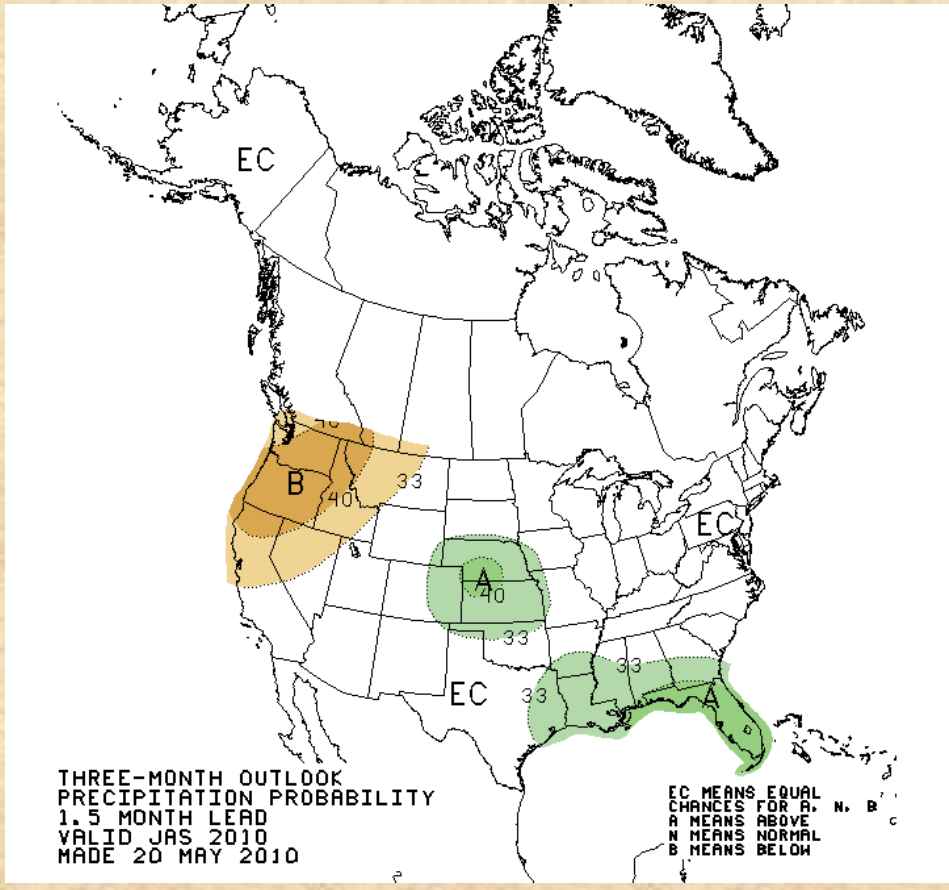


According to CPC's latest forecast, June (left) and July-September (right) temperature forecasts reflect long-term warming trends, as well as recent high soil moisture east of here. ENSO was not a factor for these forecast seasons.

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

CPC Precipitation Forecasts





According to CPC's latest forecast, June (left) and July-September (right) precipitation forecasts cover the eastern plains of Colorado with above-normal moisture chances later this summer, while the rest of the state is 'EC' – this is thought to come about from 'recycled moisture' and long-term trends in this region. **Source**: ***http://www.cpc.ncep.noaa.gov/products/predictions/***

Draft Executive Summary (21 May 2010)

1. **The El Niño event of 2009-10 appears to be on its way out the door, although I would not exclude the possibility of a return later this year. The next few months should see either ENSO-neutral, or a developing La Niña (50/50 instead of 30% chance for that).**
2. **The last month has seen an active stormtrack hitting northern Colorado, giving a last-minute boost to our snowpack. The next two weeks look much less favorable, along with warmer, if not exactly 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.**
4. **Bottomline: The moderate El Niño of 2009-10 shifted the main stormtrack southwards as expected, suppressing snowfall amounts over northern CO and northern UT, while dropping above-average moisture over much of AZ and NM. During spring, this stormtrack has moved northwards as expected to benefit the dry holdouts of this winter. While this may not be sufficient to make up for all of the 'lost ground' in northern UT and CO, runoff in these regions should end up a fair bit higher than officially predicted earlier.**

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