



The 2013-2014 U. S. Winter Outlook

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Outline

- **About the Seasonal Outlook**
- Review of 2012-13 U. S. Winter (DJF) Outlook
- Potential Climate Features impacting U. S. Winter
- 2013-14 U. S. Winter (DJF) Outlook

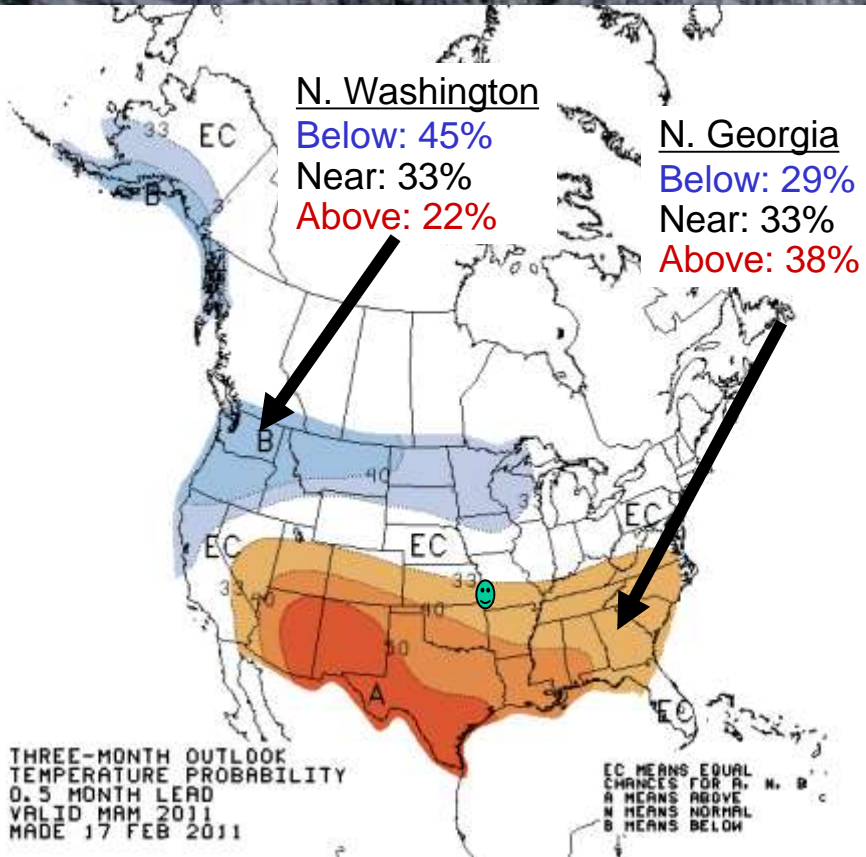


Outlook Categories and Probabilities

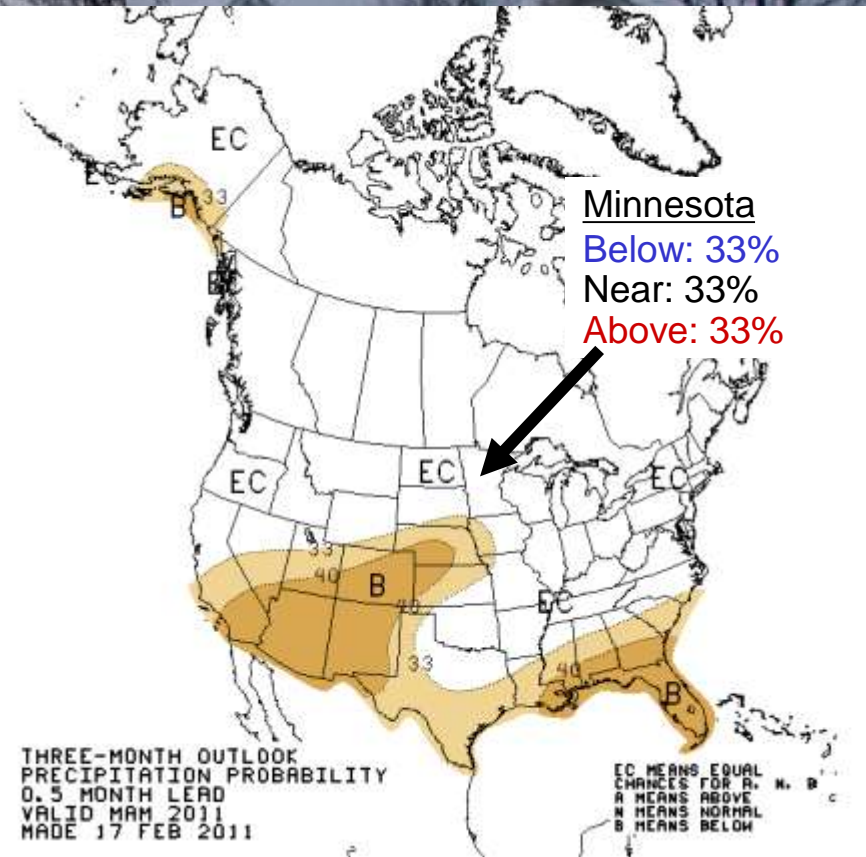
- **Seasonal outlooks are prepared for average temperature and total accumulated precipitation category**
- **Three categories are used (terciles). These are BELOW-, NEAR- and ABOVE-normal (median), for temperature (precipitation).**
- **Regions where the likelihoods of the three categories are the same (33.33...% each) are designated as “EC”, for equal chances.**
- **In non-EC regions the labels on the contours give the total probability of the dominant category.**

U. S. Seasonal Outlooks Interpretation

Temperature



Precipitation





About the Seasonal Outlook

- Each month, near mid-month CPC prepares a set of 13 outlooks for 3-month “seasons” (any set of 3 adjacent months) for lead times ranging from $\frac{1}{2}$ month, $1 \frac{1}{2}$ months, $2 \frac{1}{2}$ months, $3 \frac{1}{2}$ months, ..., $12 \frac{1}{2}$ months.

Next Outlook: October 17

Final Winter Outlook: November 21

- The outlook for each successive/prior lead time overlaps the prior/successive one by 2 months. This overlap makes for a smooth variation from one map to the next.



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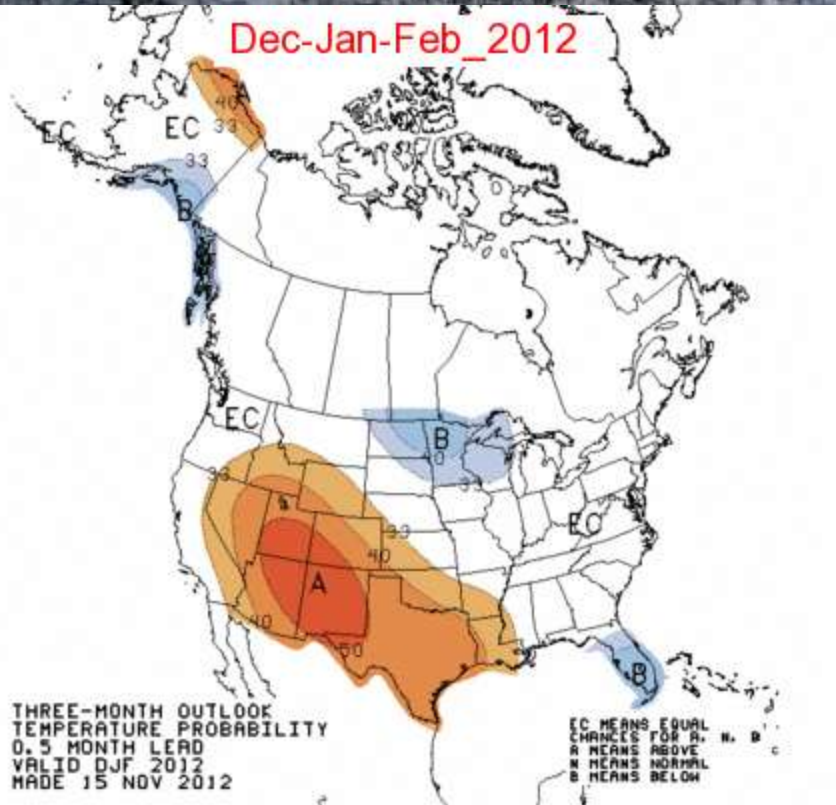
Winter 2012-13 Outlook Rationale (from Oct. 2012)

- **Borderline ENSO-neutral/ weak El Niño conditions have developed across the Pacific.**
- **El Niño conditions may strengthen during the fall.**
- **AO has been and continues to be erratic. Large swings possible in any year (e.g. DJF 2010-11).**
- **Temperature trends relative to 1981-2010 base period are now slightly negative over large parts of country; precipitation trends resemble La Niña.**
- **Forecast tilted very slightly toward El Niño impacts, but confidence is low.**

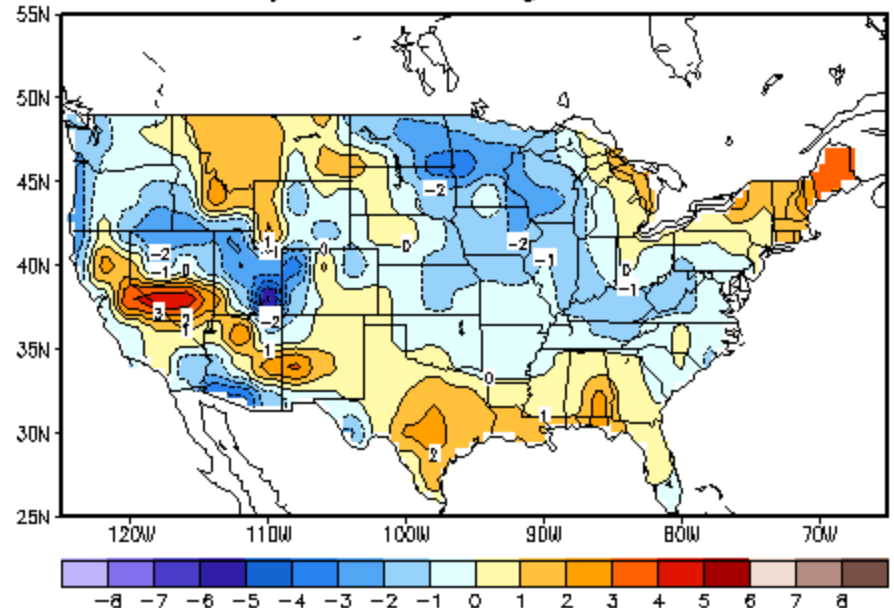


Dec 2012 – Feb 2013 Temperature

Dec-Jan-Feb_2012



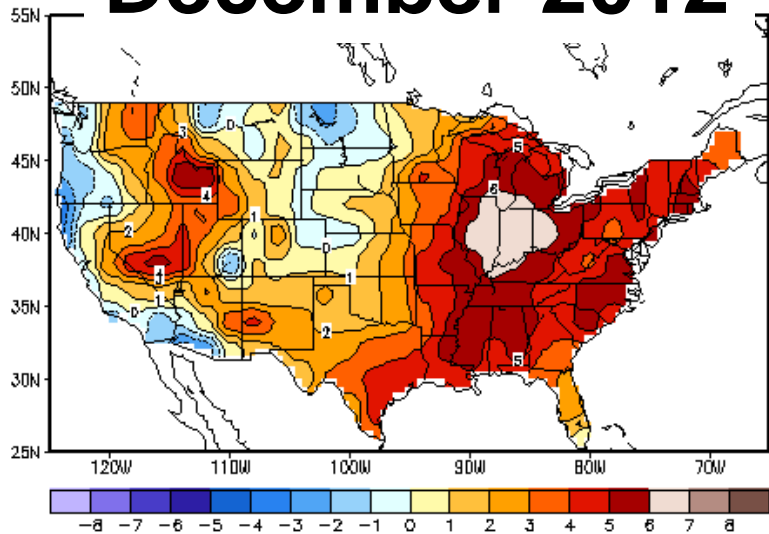
Mean Temp (F) Anomaly
90-day mean ending Mar 31 2013



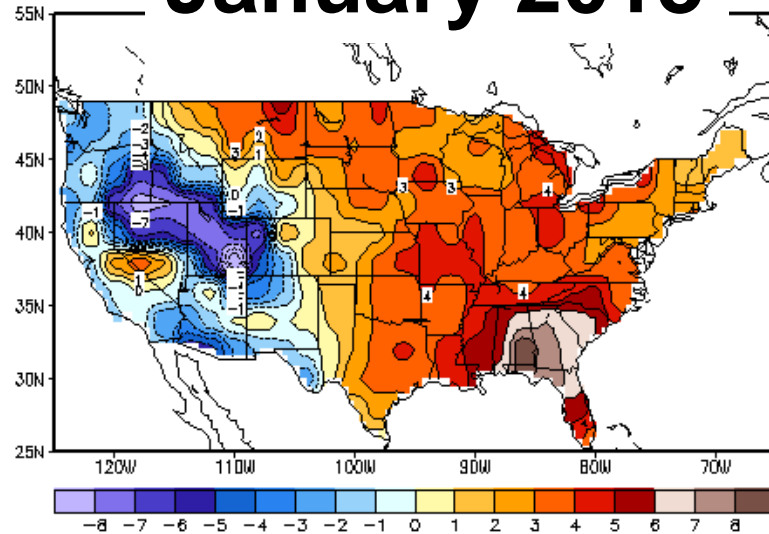
Heidke = 1.4, Coverage = 43%

Monthly Temperature Anomalies (°F)

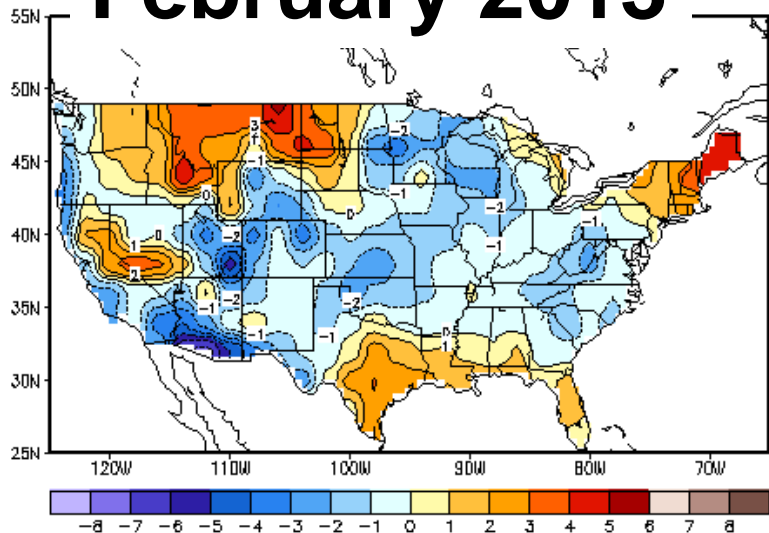
December 2012



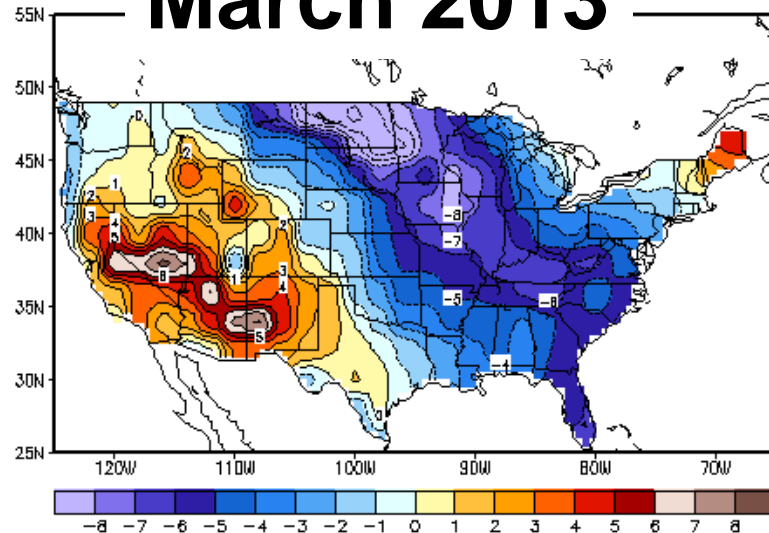
January 2013



February 2013



March 2013

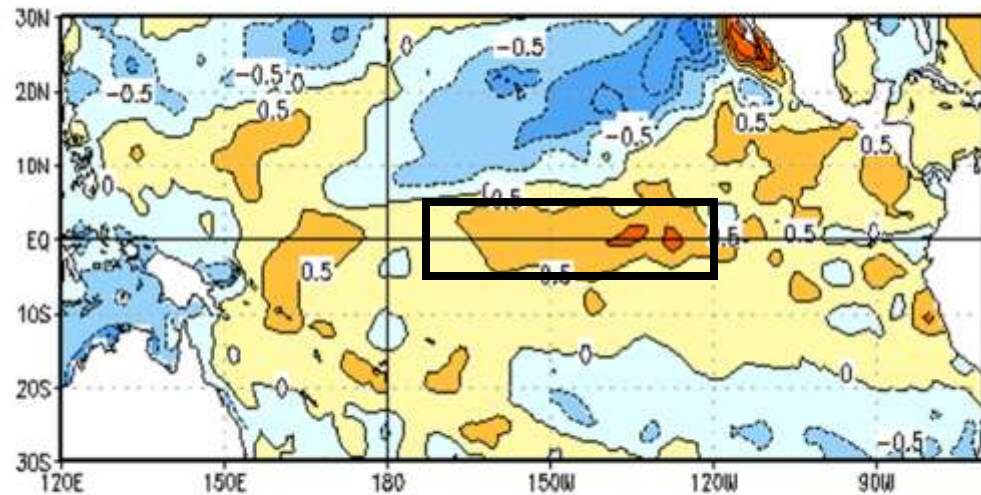




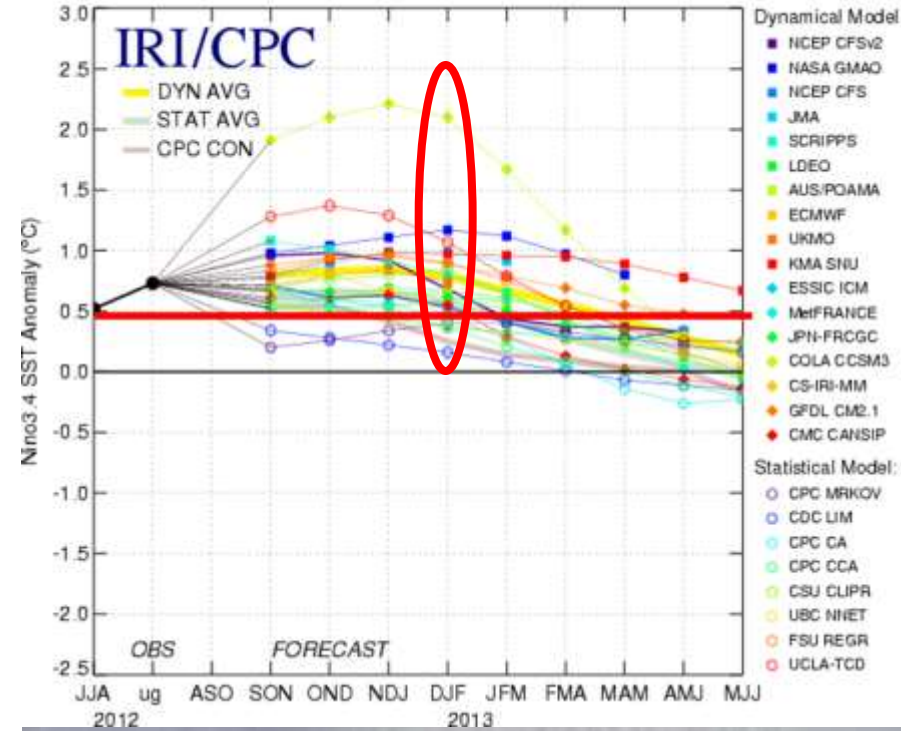
Current ENSO Status

SST Departures (°C)

Average SST Anomalies
28 AUG 2012 - 22 SEP 2012

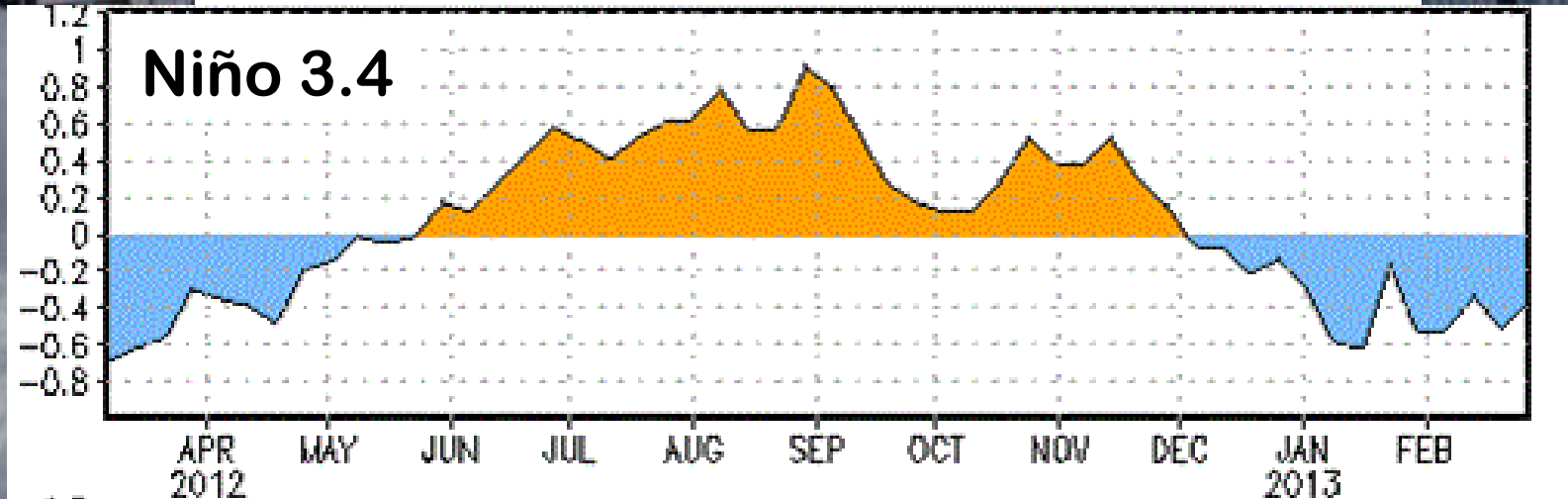
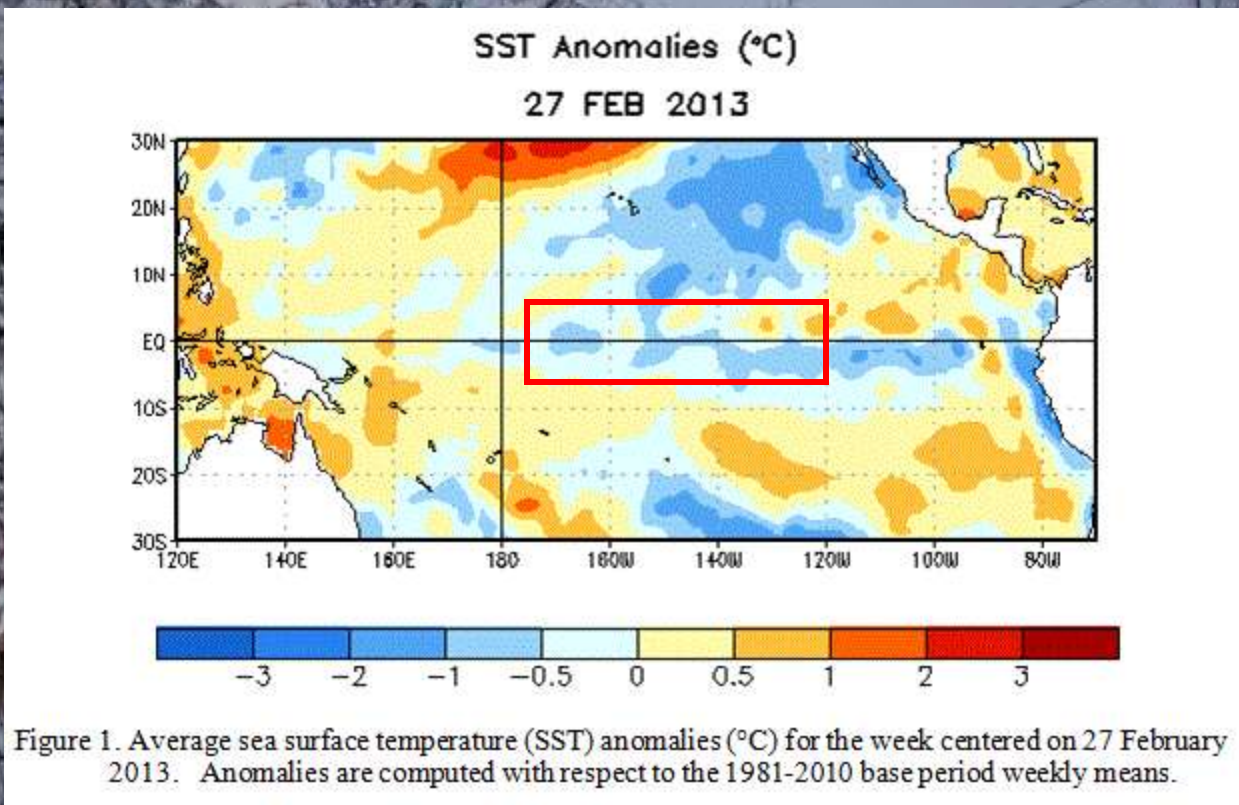


Mid-Sep 2012 Plume of Model ENSO Predictions





SST Departures (°C) February 2013

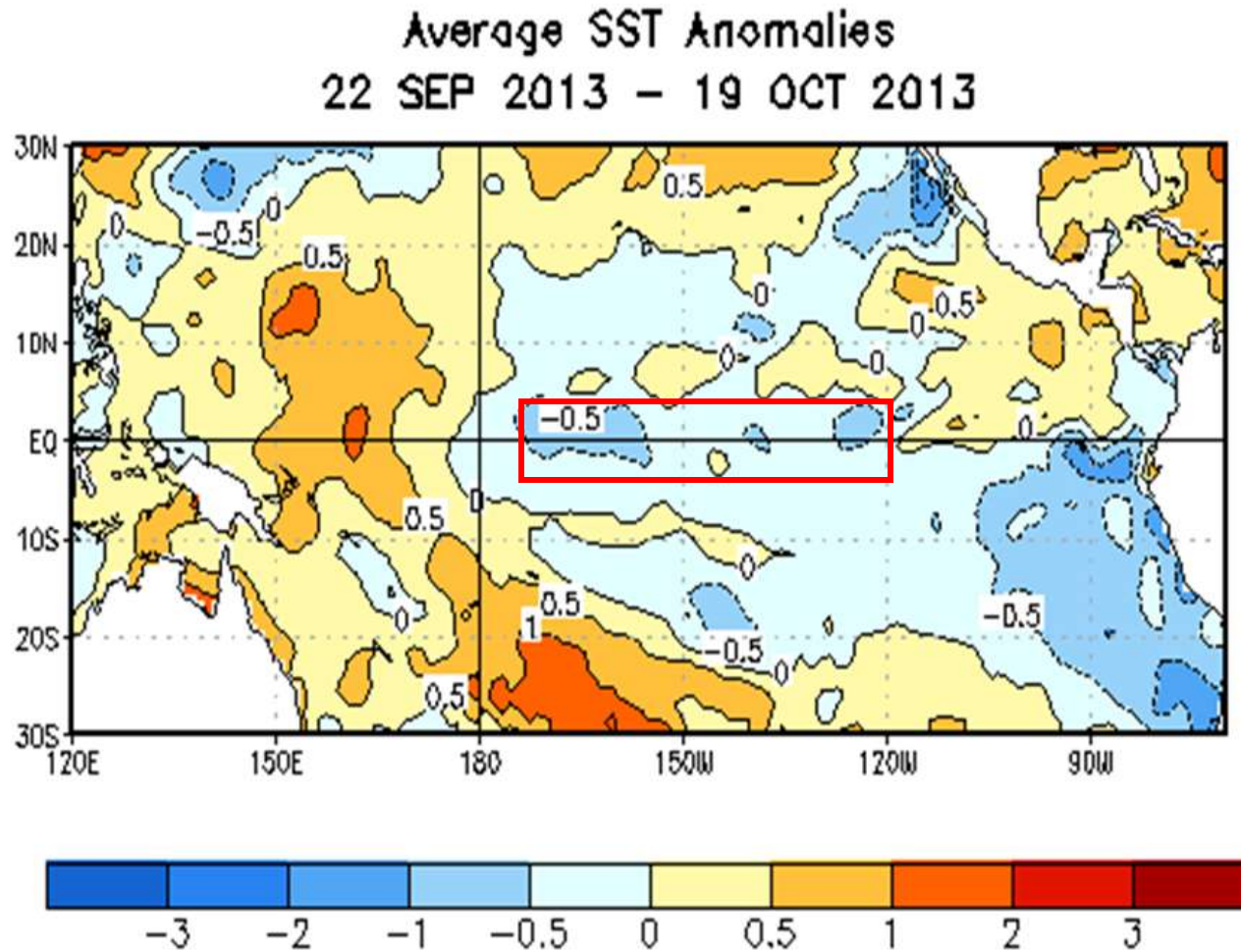


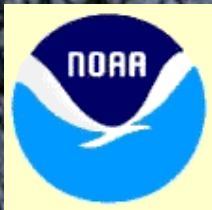


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ENSO-neutral is favored through the Northern Hemisphere winter 2013-14.

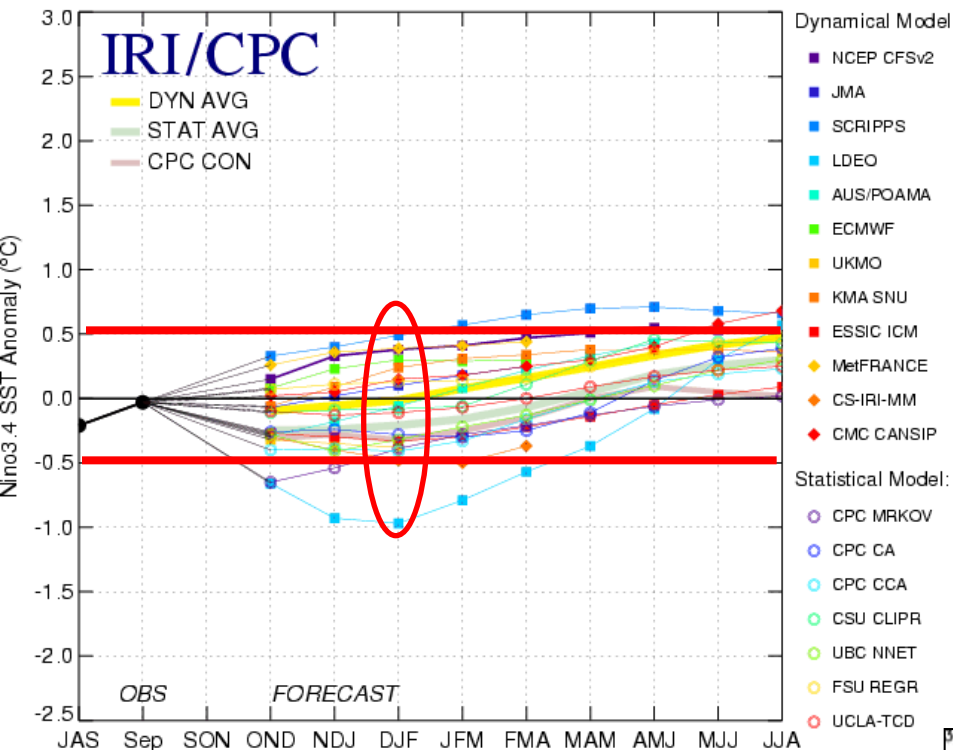




Pacific Niño 3.4 SST Outlook

Most models predict ENSO-neutral (-0.5°C to +0.5°C) continuing through Northern Hemisphere spring 2014.

Mid-Oct 2013 Plume of Model ENSO Predictions



Early-Oct CPC/IRI Consensus Probabilistic ENSO Forecast

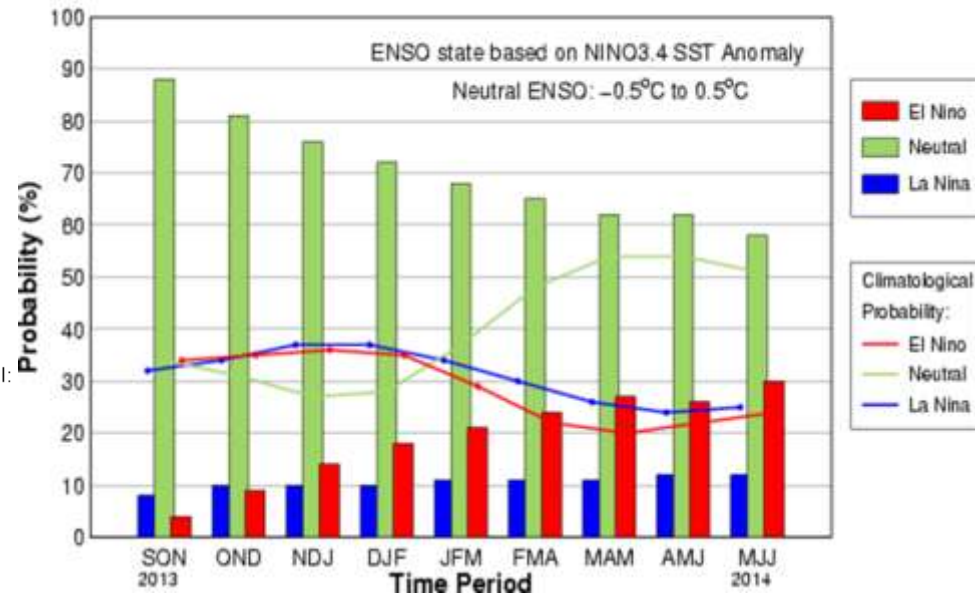
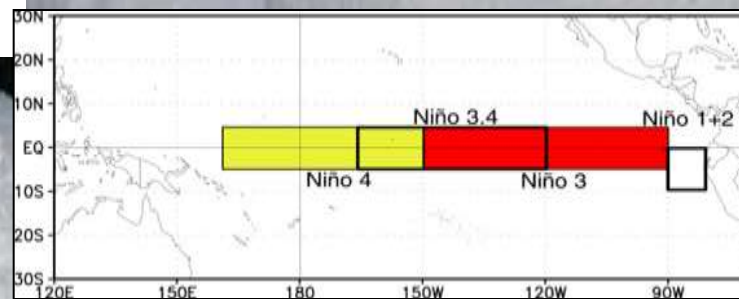


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 18 October 2013).



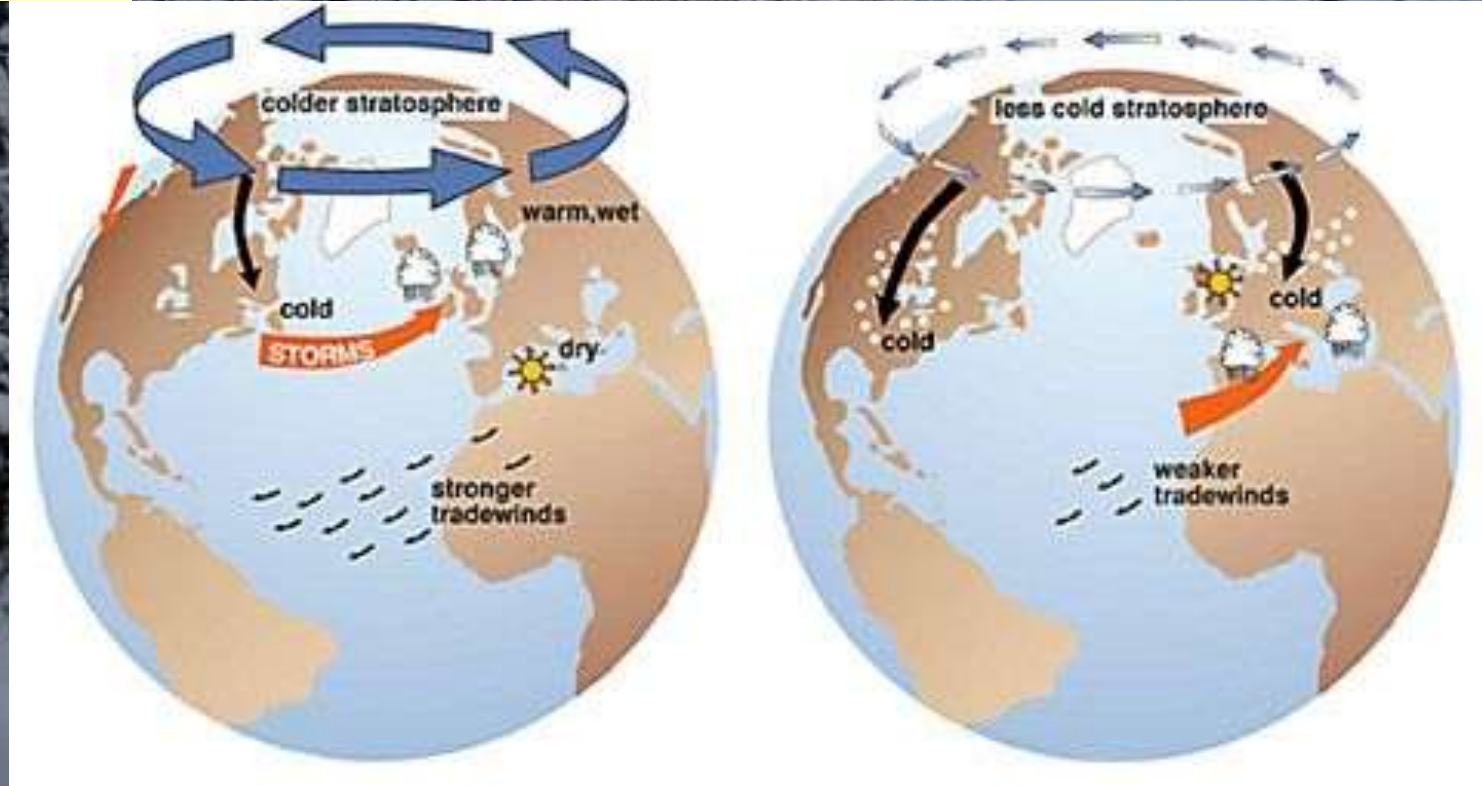


NORTH ATLANTIC OSCILLATION/ ARCTIC OSCILLATION

- **A major source of intraseasonal variability over the U. S., Atlantic and Europe during winter.**
- **Modulates the circulation pattern over the high latitudes thereby regulating the number and intensity of significant weather events affecting the U.S., such as cold air outbreaks.**
- **Currently there is no reliable capability to forecast the seasonal phase.**



Arctic Oscillation (AO)

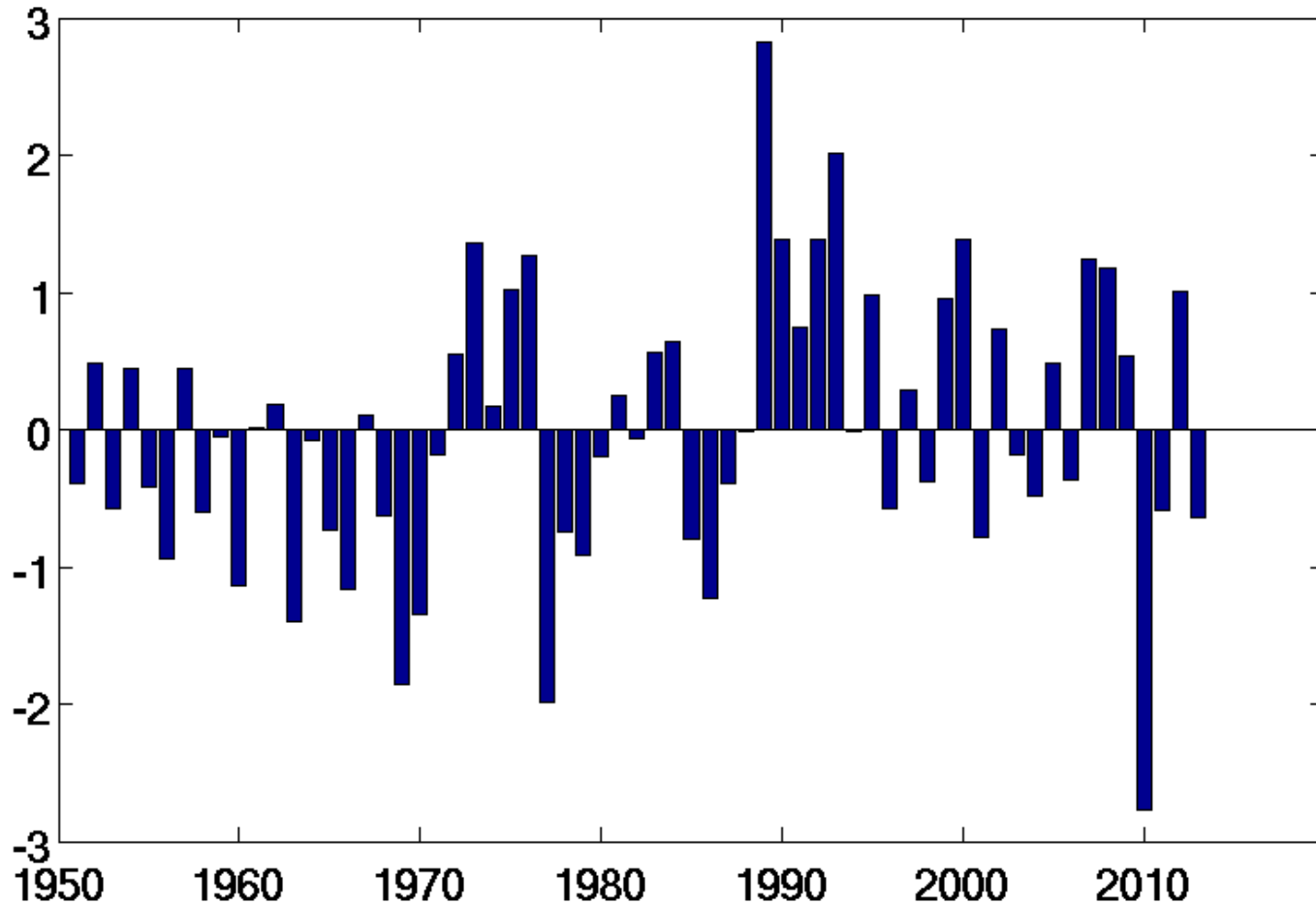


Positive Arctic Oscillation (left) and negative Arctic Oscillation (right).
Source: J. Wallace, University of Washington



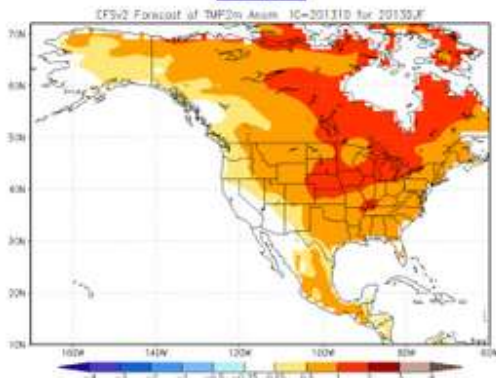
NH Winter Arctic Oscillation (AO)

Standardized DJF AO Value (base period 81-10)

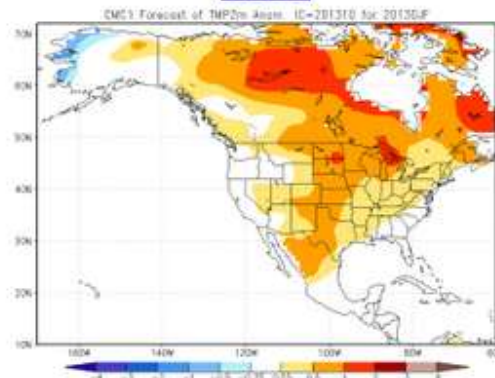


Individual Model Forecasts

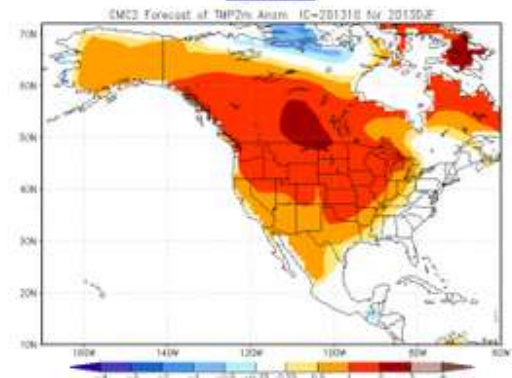
CFSv2



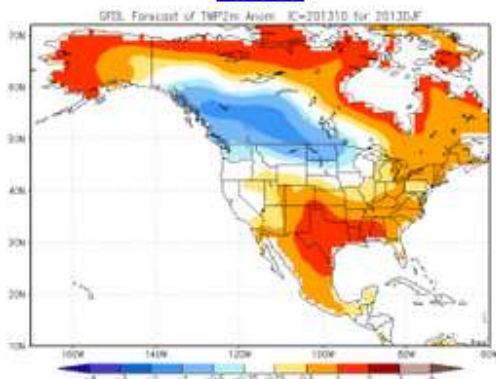
CMC1



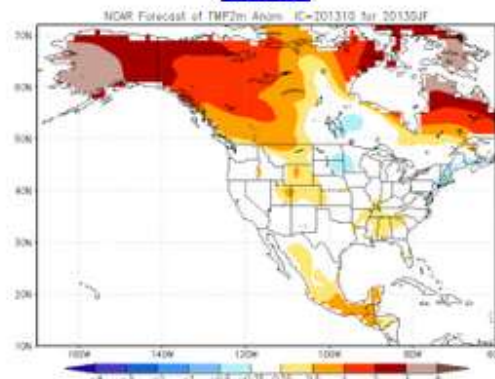
CMC2



GFDL



NCAR



NASA

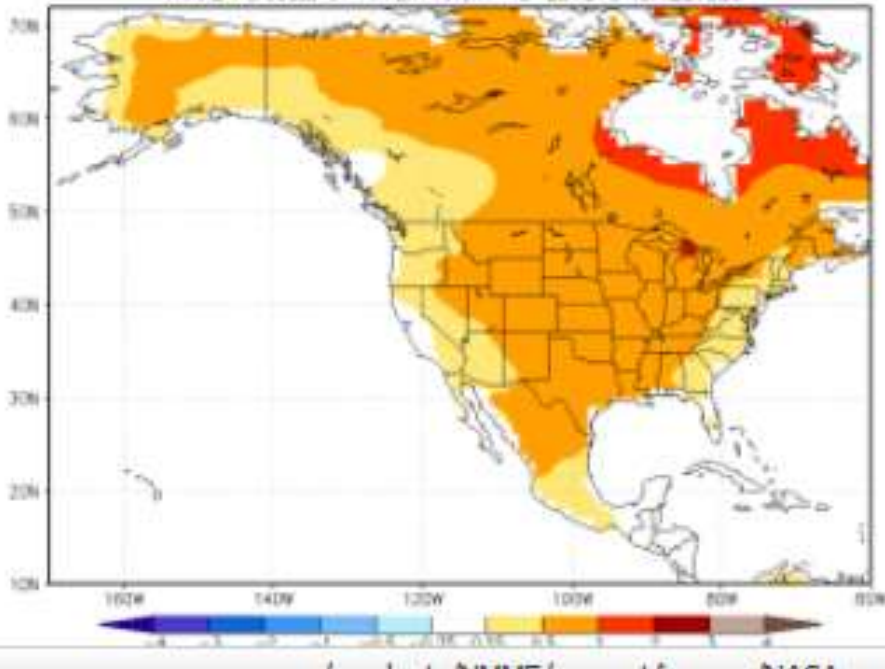
NASA Forecast of TMP2m Anom. IC=201310 for 201301F



National and International Multi-Model Ensemble

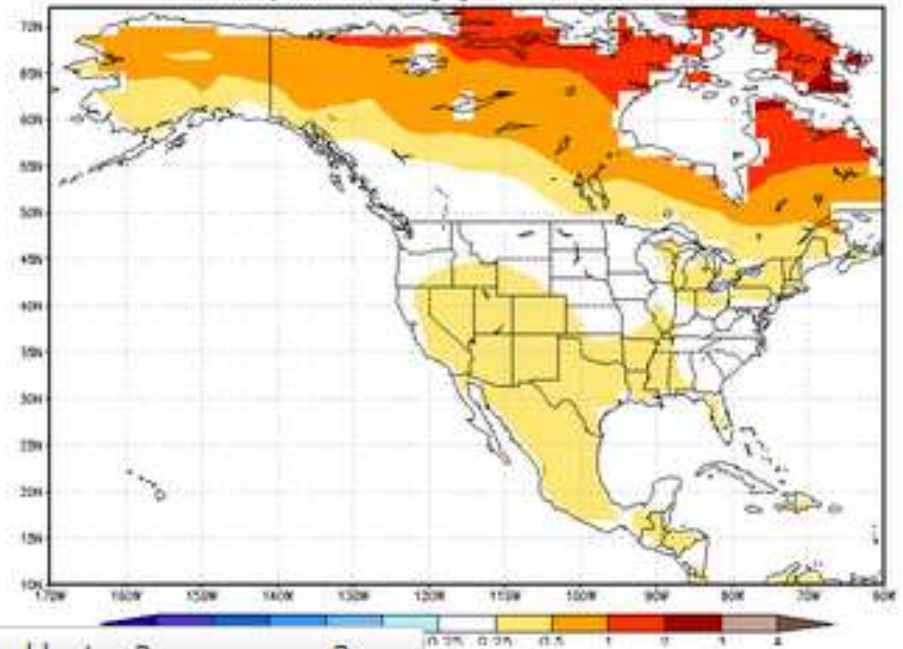
NMME

NMME Forecast of TMP2m Anom. IC=201310 for 2013DJF



IMME

MMA tmp2m Anom [K] IC=Oct2013 for DJF



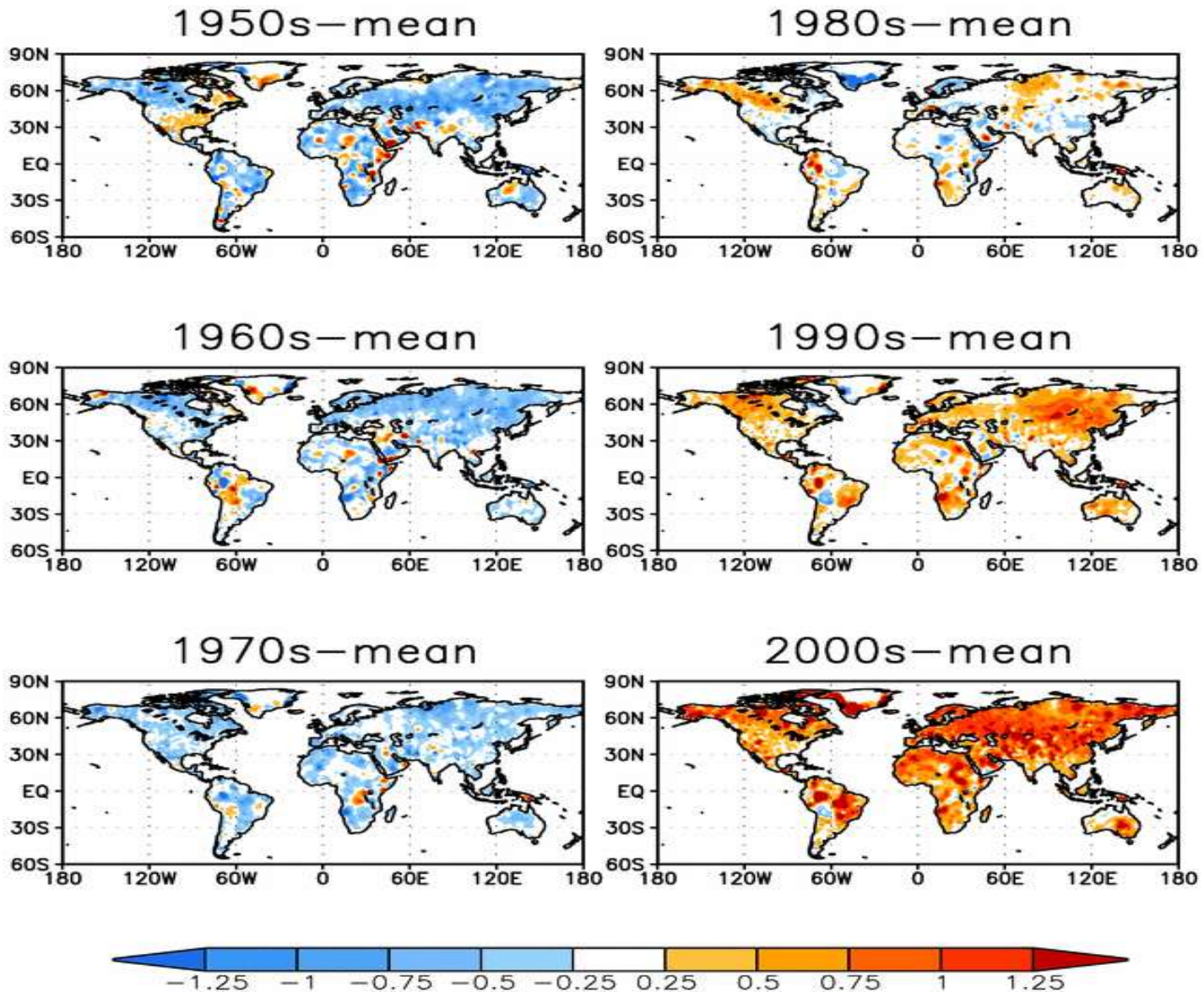
Forecast updated Oct. 9, 2013



Optimal Climate Normal (OCN)

- **OCN, as it is used as a tool at CPC is, quite simply, a measure of the trend. For a given station and season, the OCN forecast is the difference between the seasonal mean temperature during the last 10 years and the 30 year climatology.**

Global Land Decadal Trends

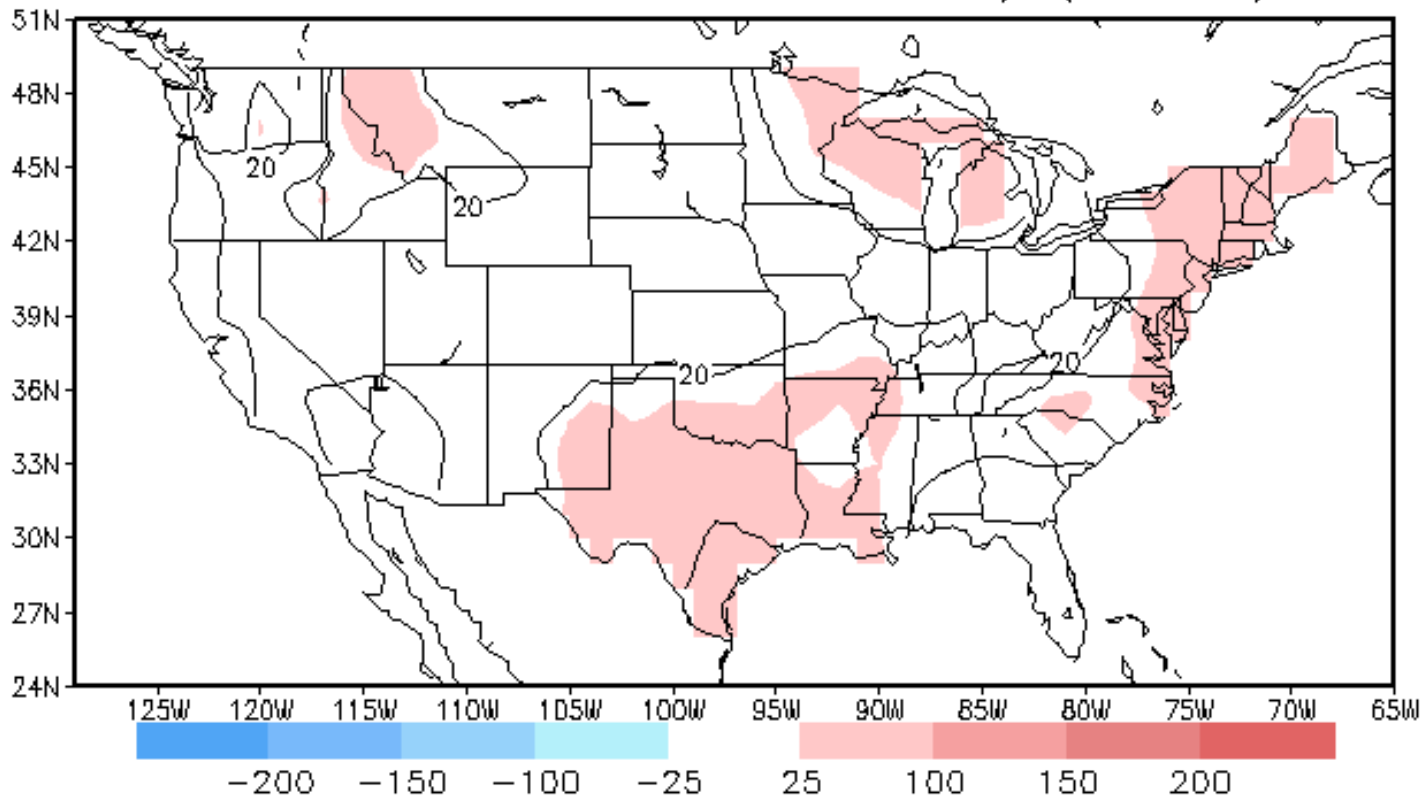




December - February OCN

1998-2012

hmgz temperature OCN (15 (15!) year) forecast for DJF
base 1981-2010; units: anomaly (sdX100)





Winter 2013-14 Outlook Rationale

- ENSO-neutral conditions across the Pacific have prevailed for over a year.
- ENSO-neutral is favored through NH winter.
- AO has been and continues to be erratic. Large swings possible in any year (e.g. DJF 2010-11).
- Temperature trends relative to 1981-2010 base period are generally small over country; precipitation trends resemble La Niña.
- Forecast consistent with trends and most model forecasts, but confidence is low.

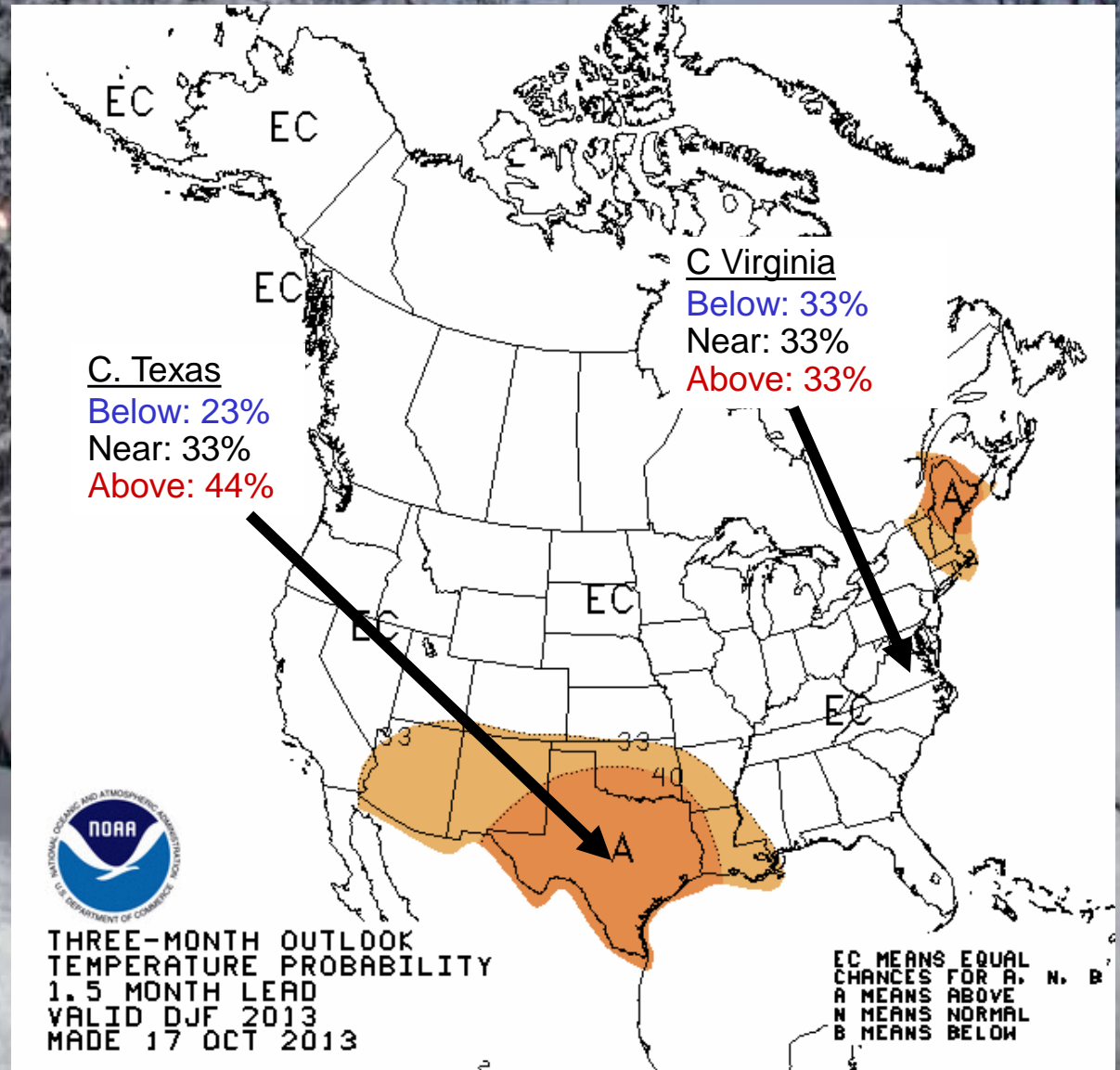


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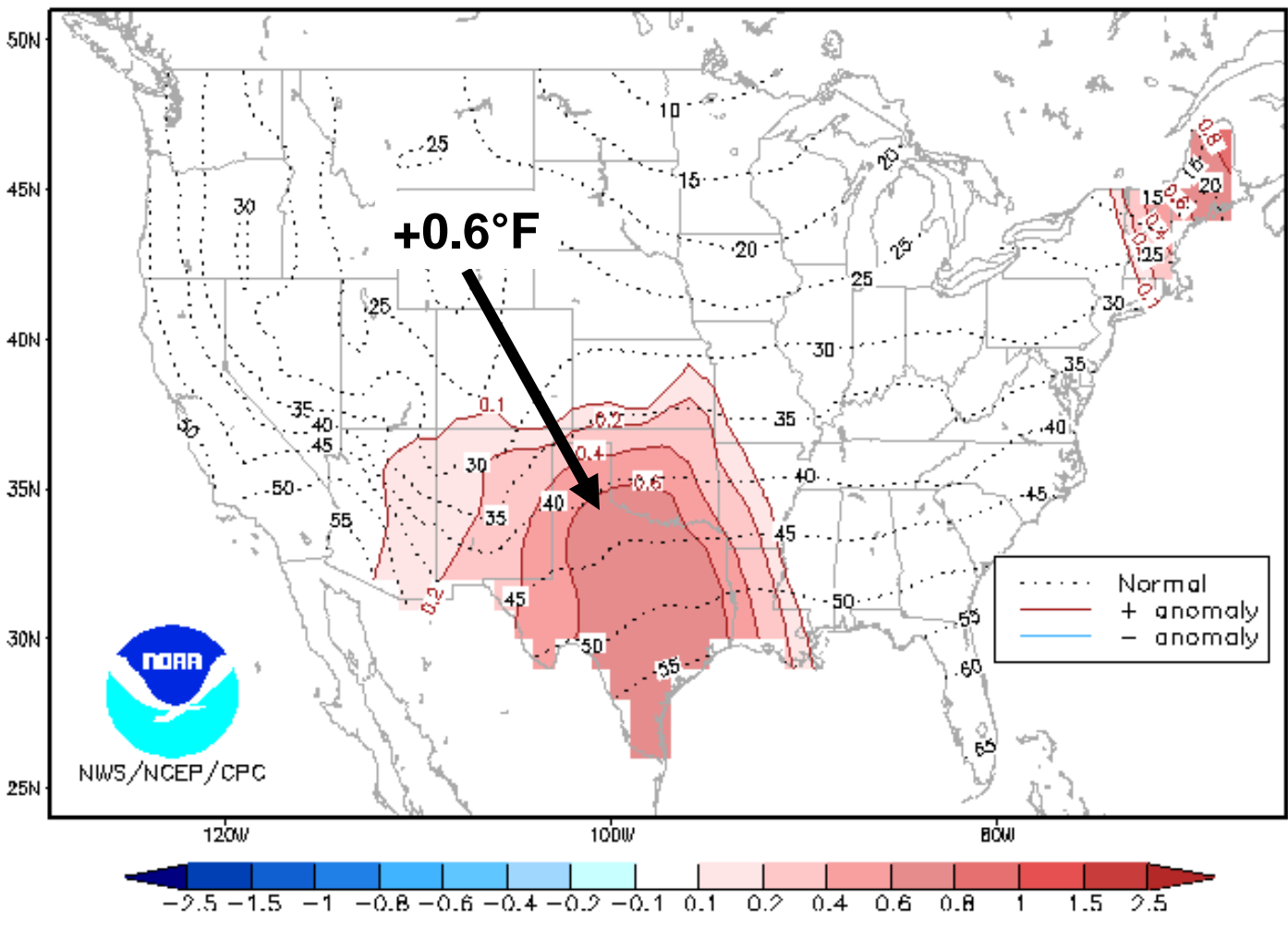


December 2013 – February 2014 Temperature Outlook





Average Departure of Mid-Value Temperature Outlook Distribution

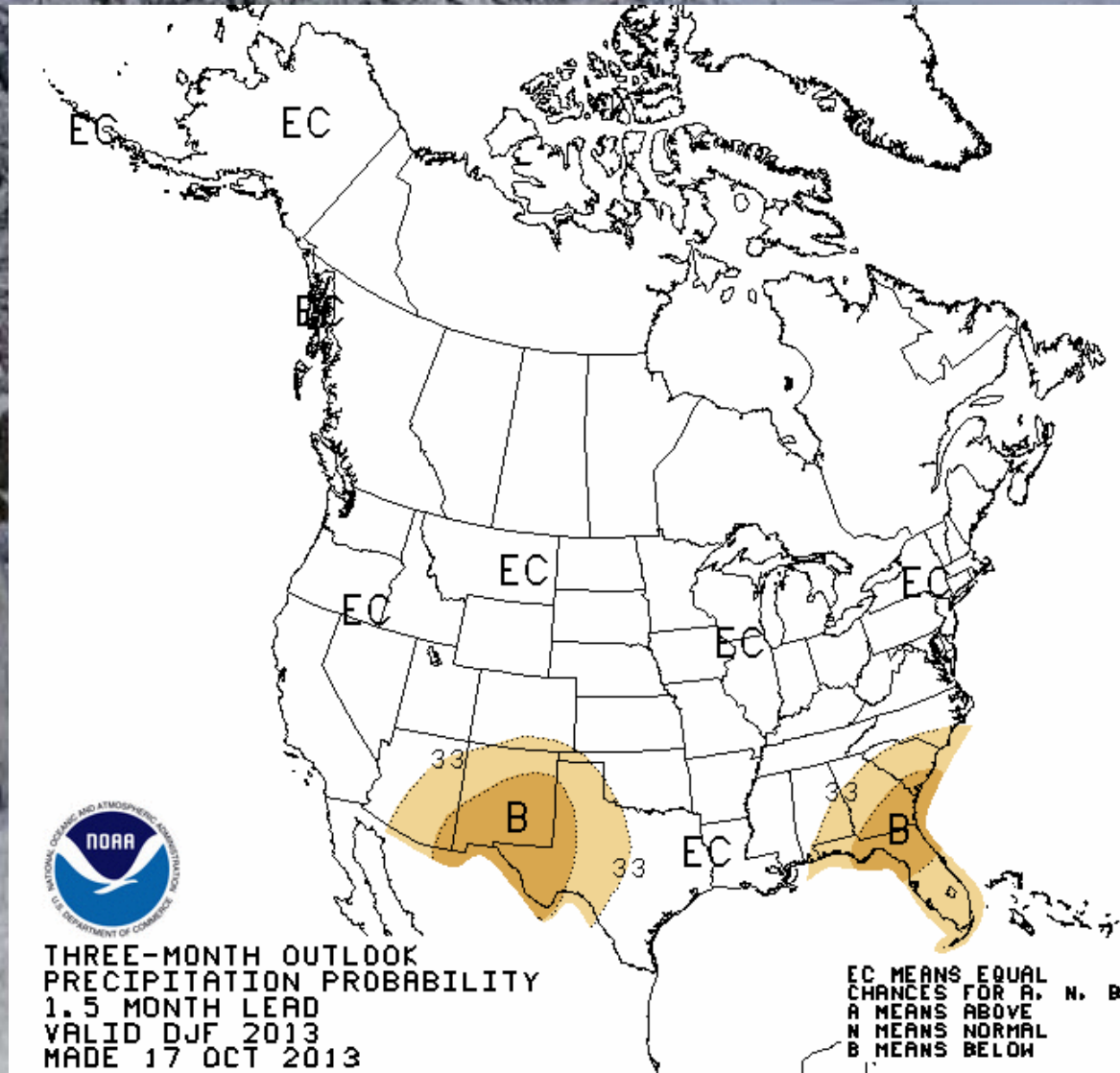


**HDD
Projections:
~1% less than
1981-2010

~3% more
than 2012-13**

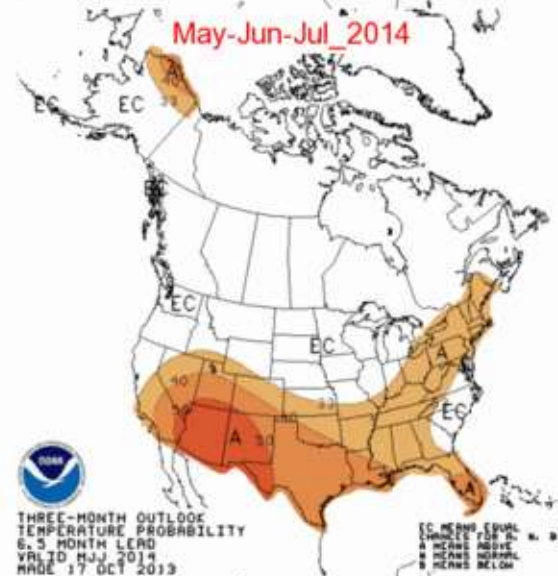
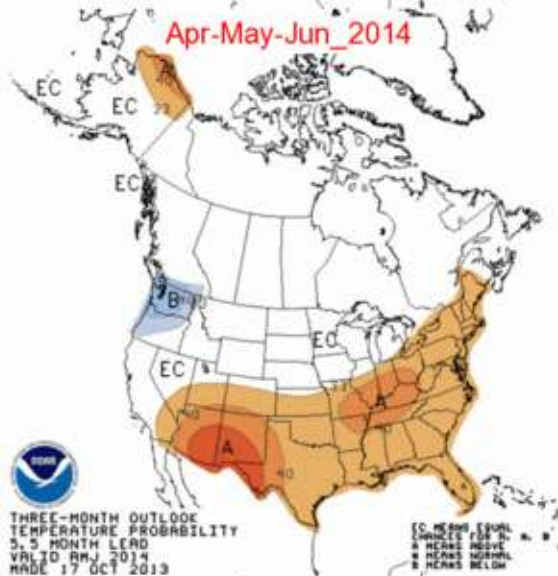
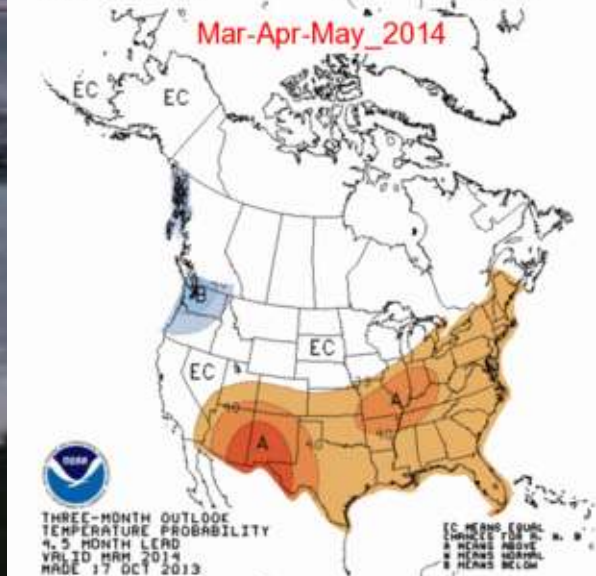
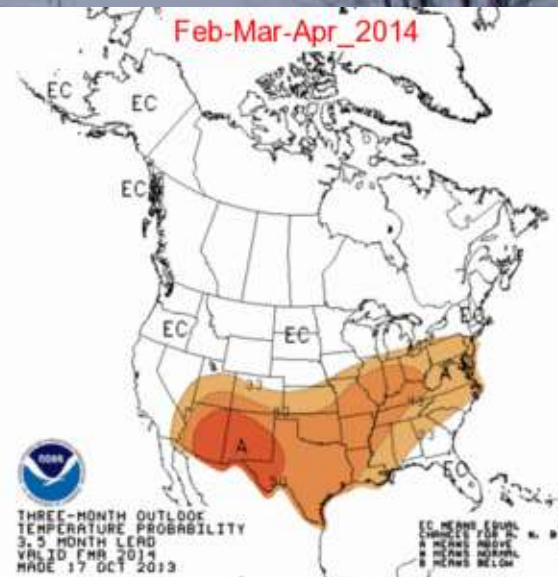
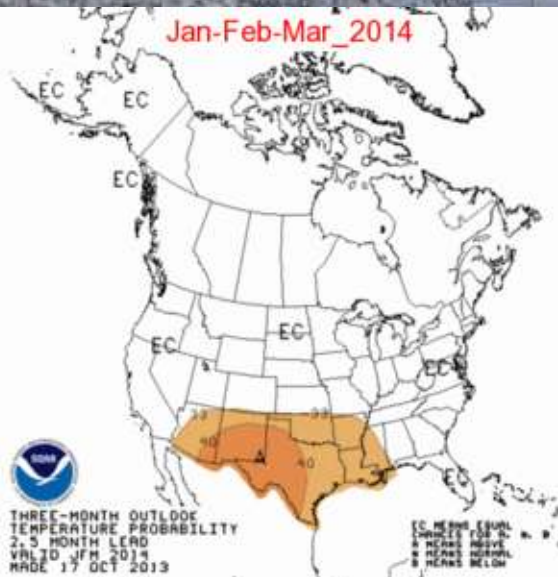
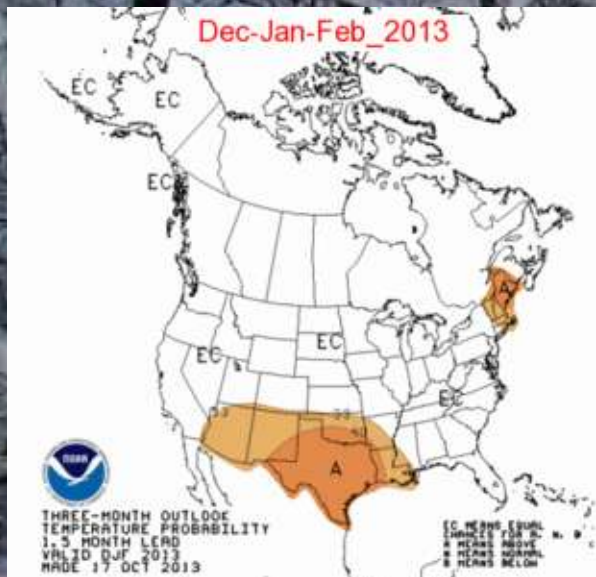


December 2013 – February 2014 Precipitation Outlook





Seasonal Temperature Outlooks DJF 2013 – MJJ 2014





U. S. Winter 2013-14 Outlook: Forecast Summary

Odds slightly favor:

- Warmer than average across the southwestern, south central, and extreme northeastern portions of the nation**
- No regions favored to be colder than average**
- Drier than average in parts of the Southeast and Southwest**