Prospects for California Winter 2012-2012

Summary prepared by
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DRI
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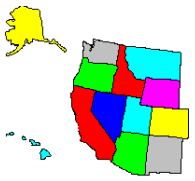
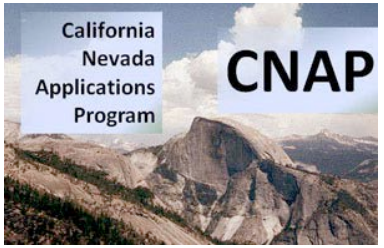


Western Regional
Climate Center



Tropical Pacific Ocean Surface Temperature

Ocean models project weak to moderate El Nino

Maximum effect approximately Dec-Jan-Feb

From history, El Nino generally leads in winter to:
Drier conditions in northern West
Wetter conditions in southern West
Dividing line typically central to northern California

Two main approaches to generate seasonal climate outlooks (1 year or less)

A. Observed statistical relationships from past 50-100 years

B. Dynamical models that solve atmosphere - ocean equations

Until recent years, Approach A better than Approach B.
Approach B has now "caught up" and has equal or slightly more skill than A.
This advantage is expected to slowly improve over time.

El Nino is not all there is ! Approach B knows this better than Approach A.
Approach B can accommodate new situations not seen in historical record.

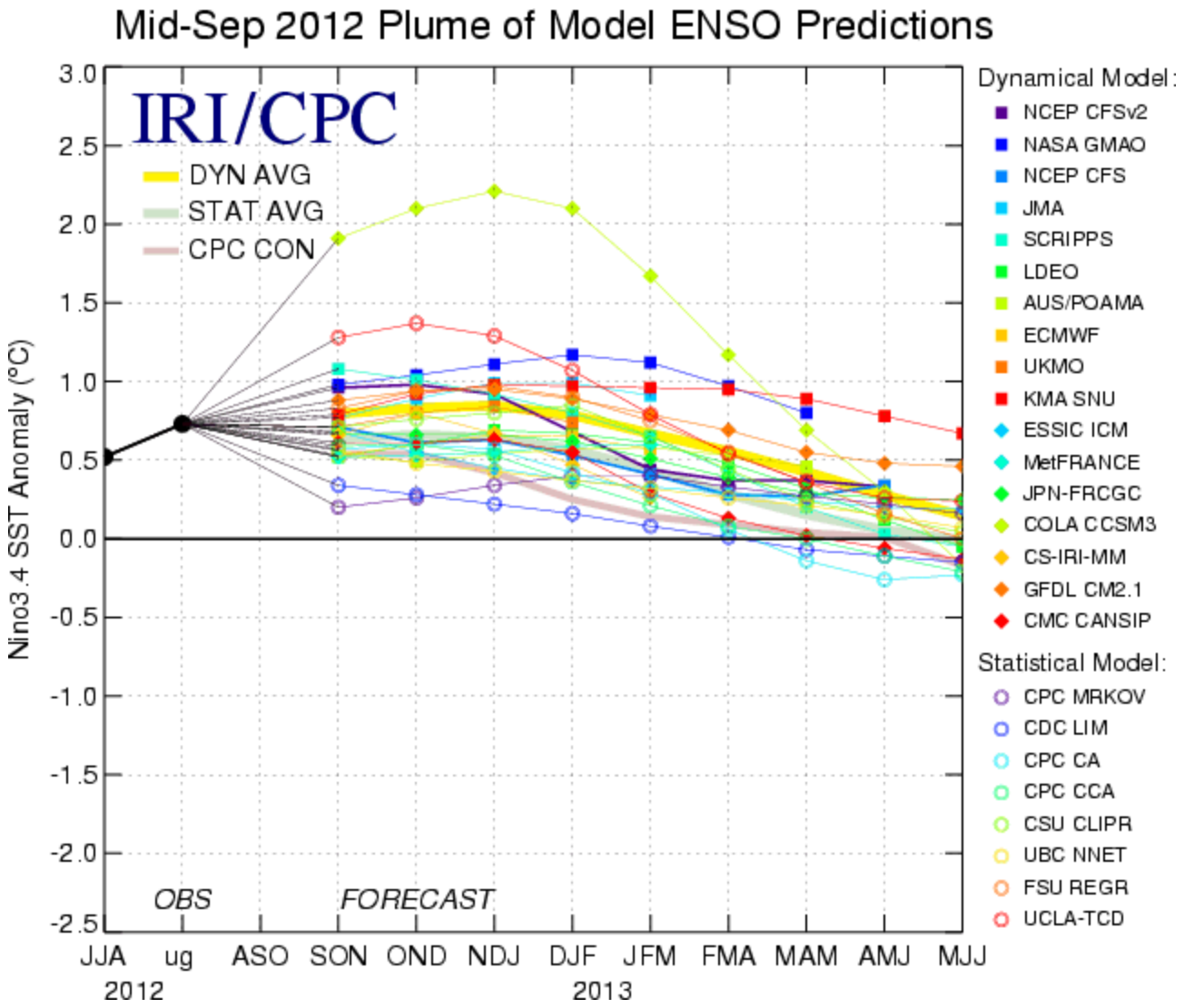
Ocean projections for Central Pacific from around the world for upcoming year:

Dynamical (Approach B) and statistical (Approach A)

El Nino

Neutral

La Nina

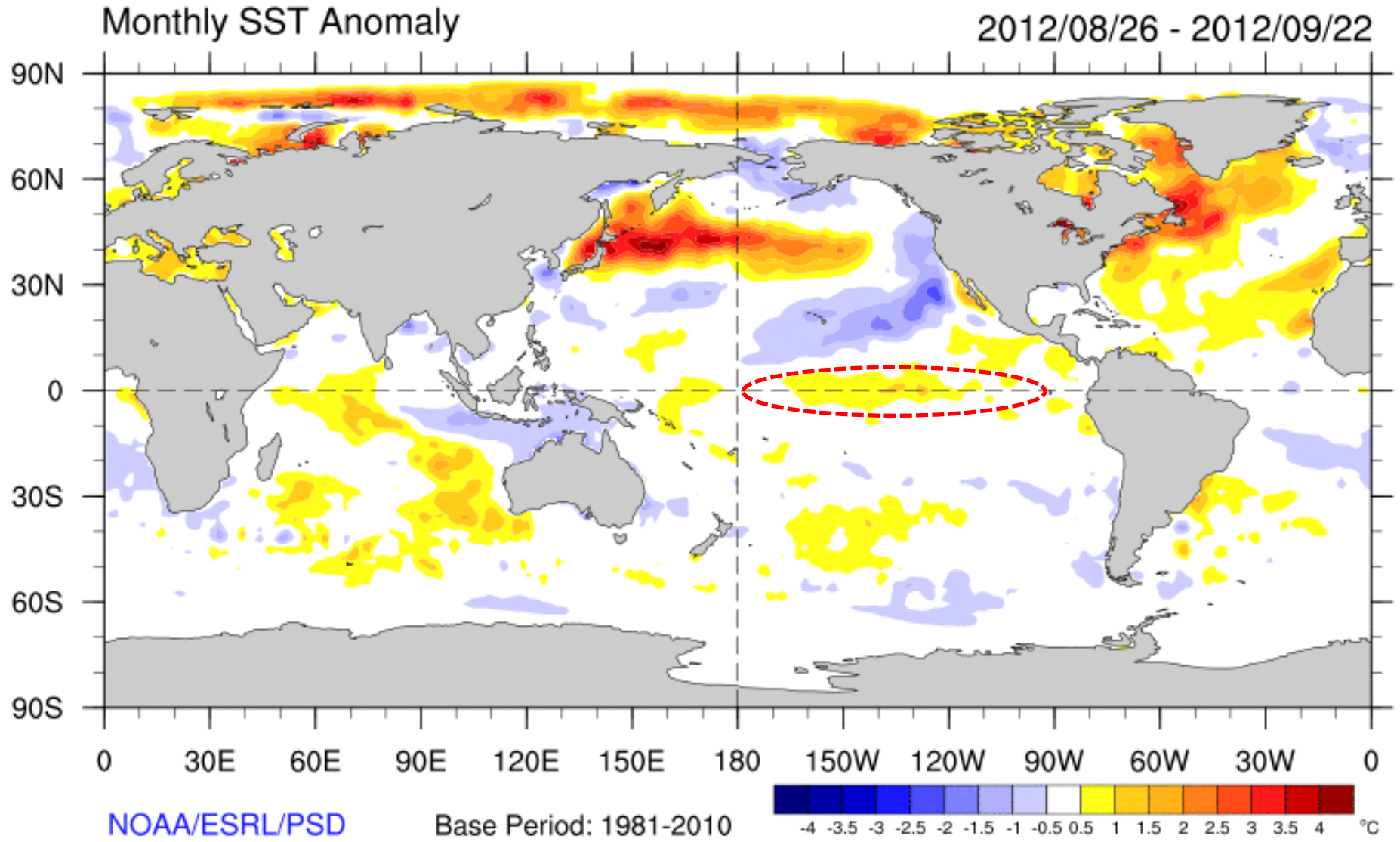


Global Ocean Temperature Departure from Average

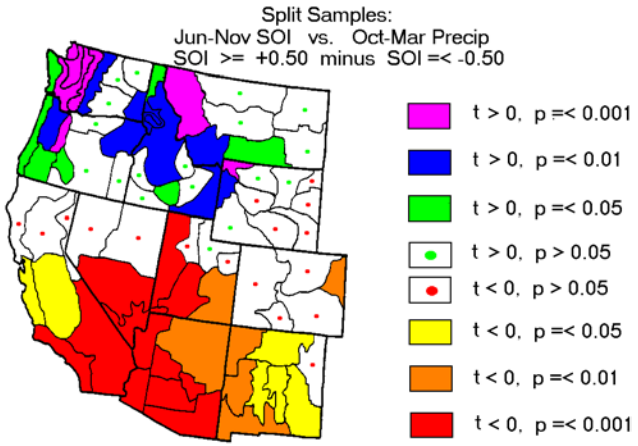
Past month (2012 Aug 26 thru Sep 22)

Dynamical models make use of all ocean temperatures around the world.

Dashed area: Typical location for El Nino.



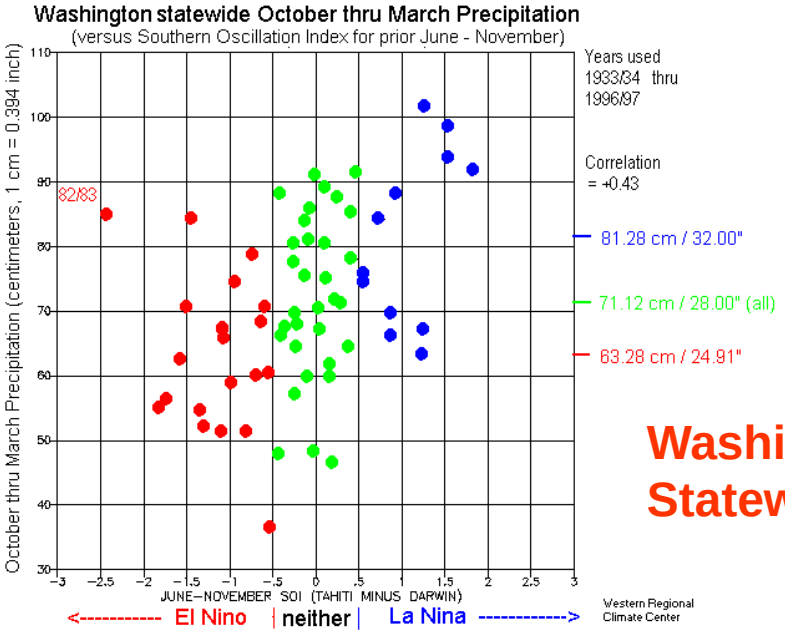
Approach A. Observed past 80 years. El Nino winters dry north, wet south.



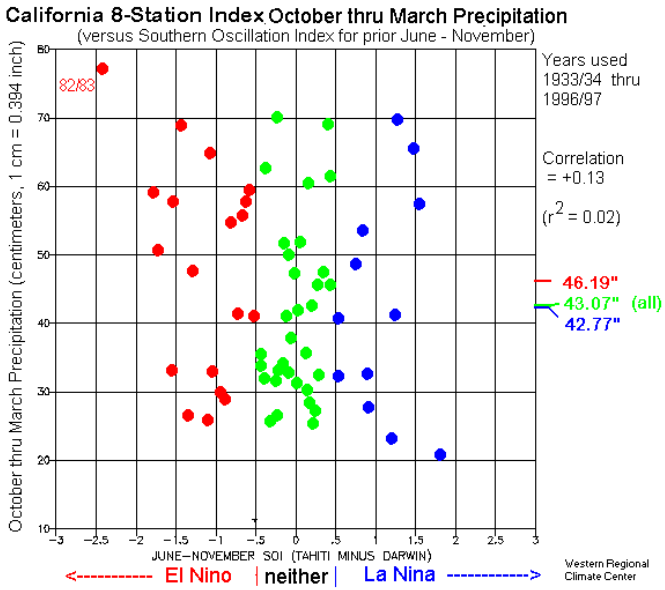
Updated from Redmond and Koch (1991). Winters of 1933/34 - 1994/95.
Reddish: Composite El Nino winters are wet, La Nina winters are dry.
Bluish/greenish: Composite El Nino winters are dry, La Nina winters are wet.

Redmond, K.T., and R.W. Koch, 1991. Surface climate and streamflow variability in the western United States and their relationship to large-scale circulation indices. Water Resources Research, 27(9), 2381-2399.

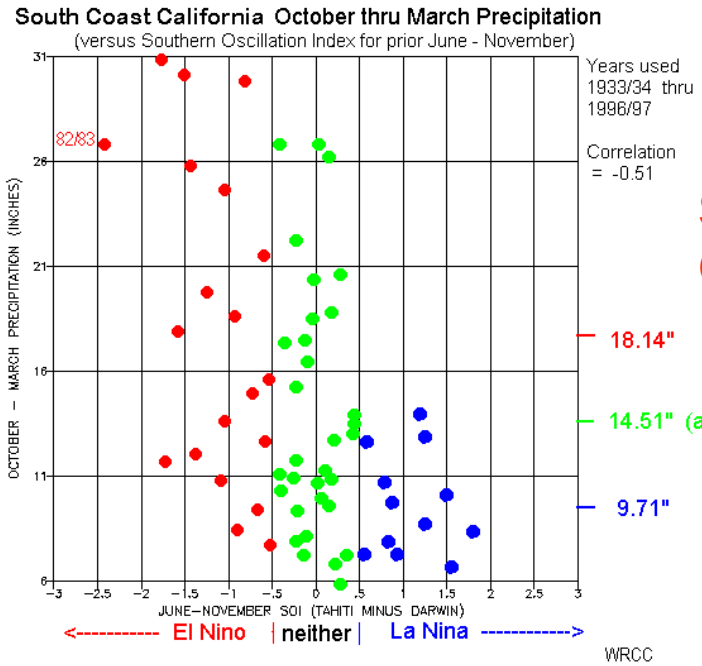
Redmond & Koch, 1991, updated thru 1997



Washington Statewide



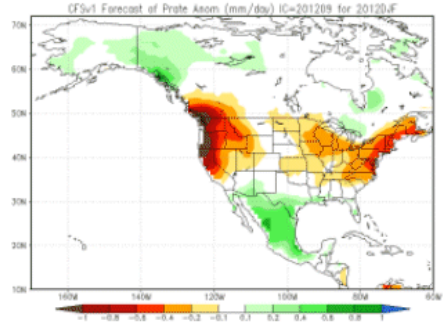
North Central Sierra



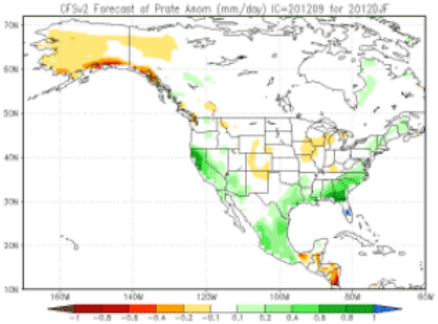
Southern California

The forecasters dilemma: This winter, dynamical models are not unanimous about California precipitation. 5 mostly dry, 2 mostly wet for Dec-Jan-Feb (maps).
NMME (National Multi-Model Ensemble) consensus is dry.
IMME (International Multi-Model Ensemble) consensus is wet.

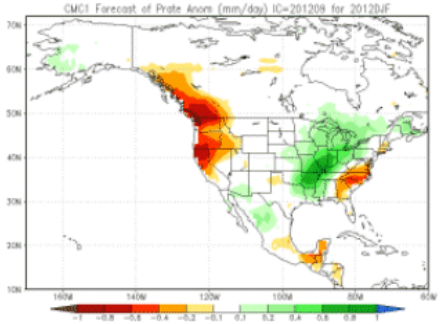
CFSv1



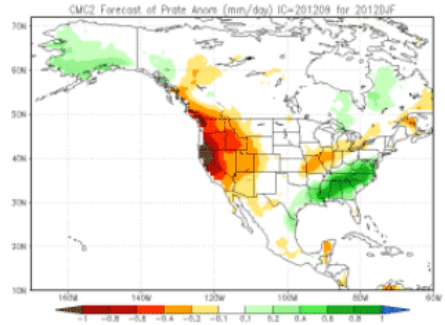
CFSv2



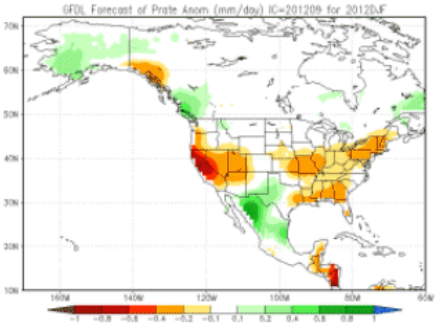
CMC1



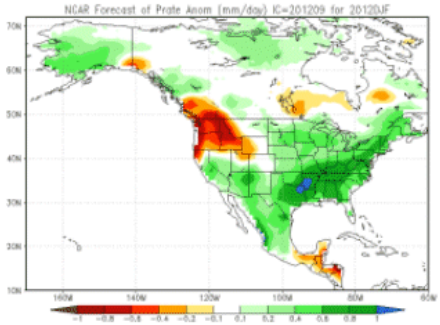
CMC2



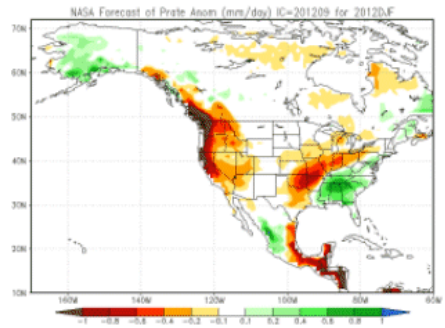
GFDL



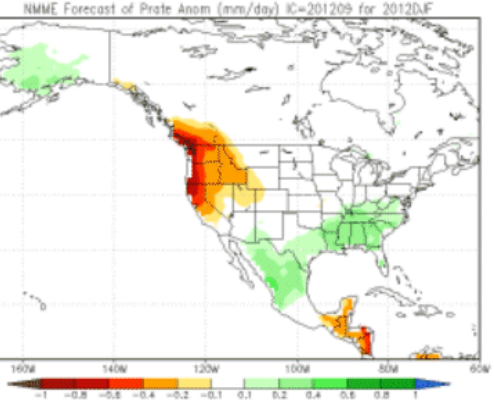
NCAR



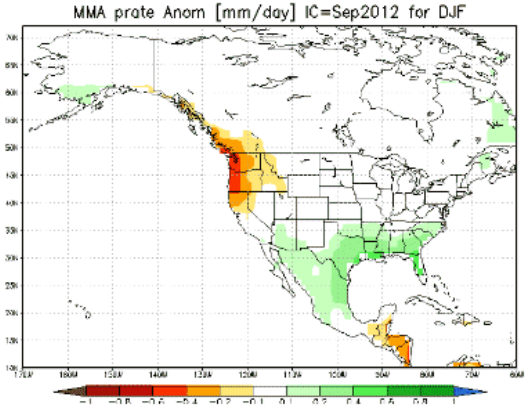
NASA



NMME



IMME



Approach B.

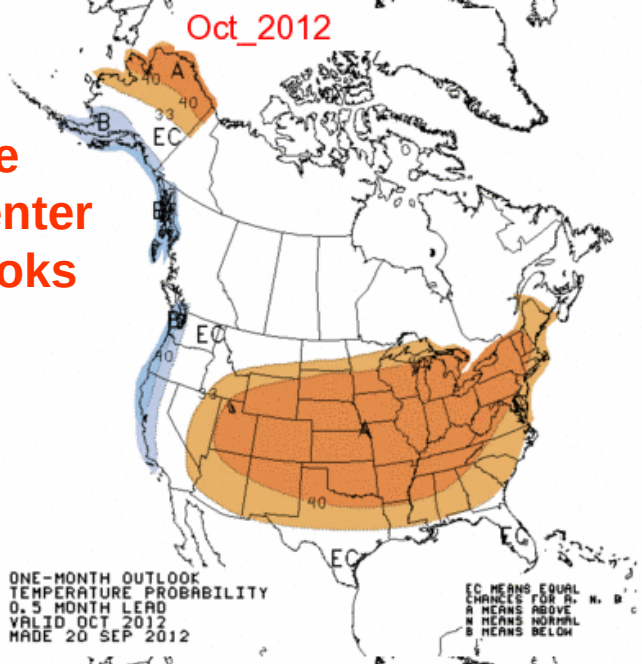
Participating Dynamical Models.

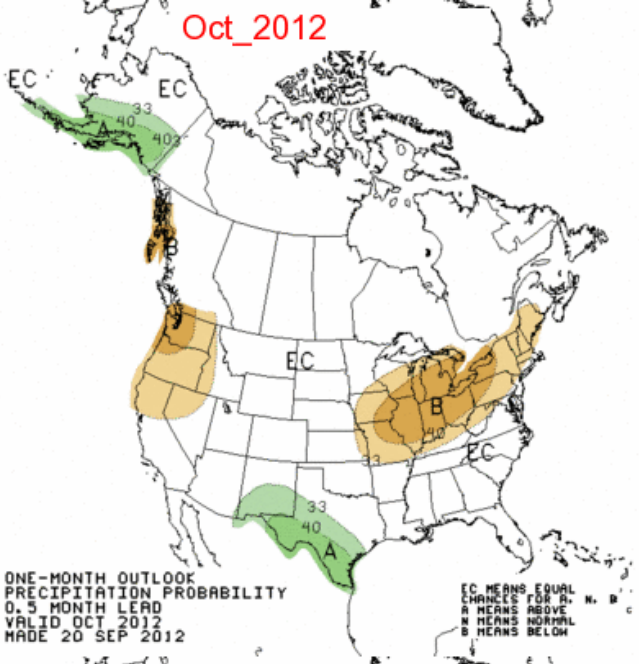
CFSv1: US Climate Forecasting System version 1
CFSv2: US Climate Forecasting System version 2
CMC1: Canadian Meteorological Center version 1
CMC2: Canadian Meteorological Center version 2
NCAR: US National Center for Atmospheric Research
NASA: US National Aeronautics and Space Administration
NMME: National Multi-Model Ensemble
IMME: International Multi-Model Ensemble

September 2012.

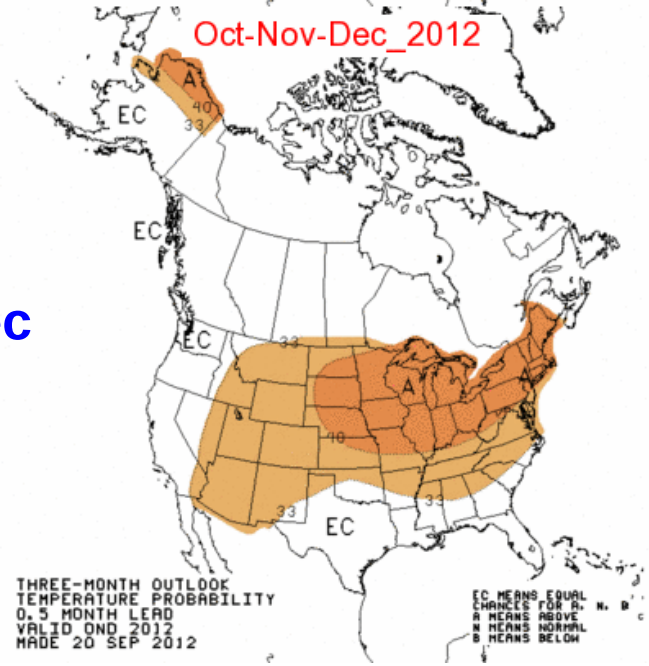
Early Winter 2012-13 NOAA Climate Prediction Center Official Outlooks

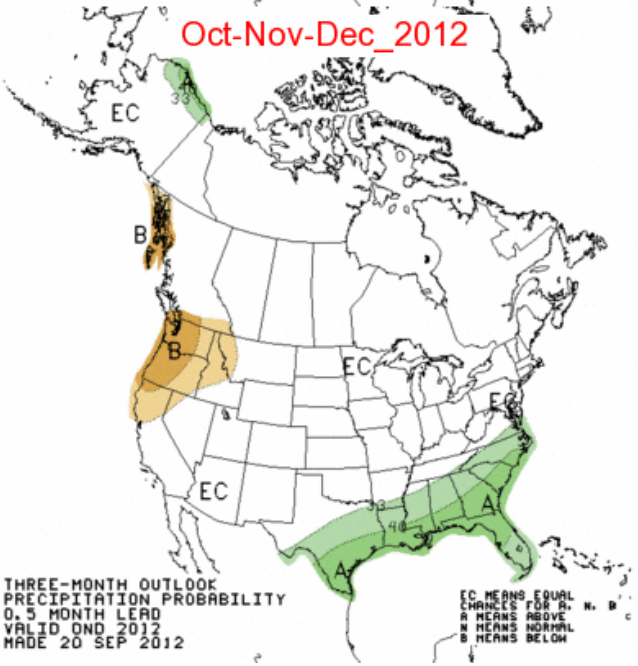
October





Oct-Nov-Dec

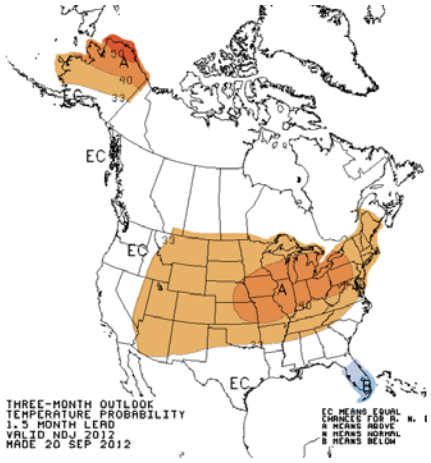




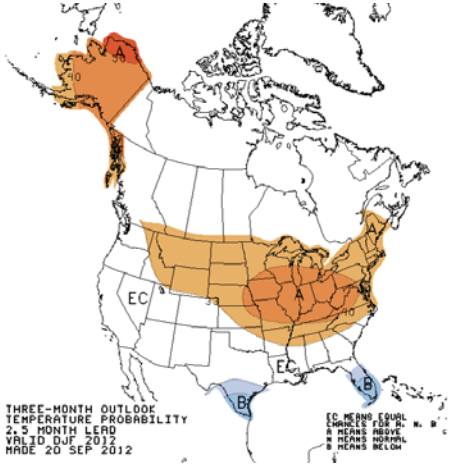
Temperature **Precipitation**

Temperature
Official Outlooks
Overlapping Three-Month Intervals

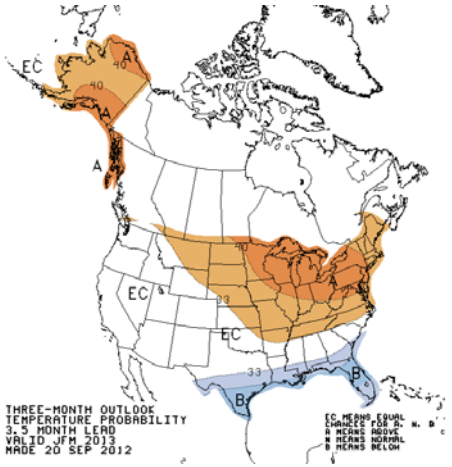
Nov-Dec-Jan



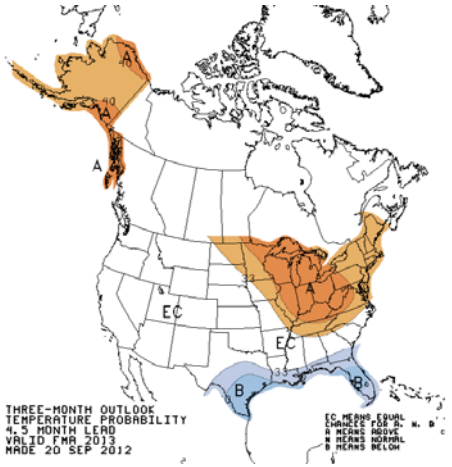
Dec-Jan-Feb



Jan-Feb-Mar



Feb-Mar-Apr



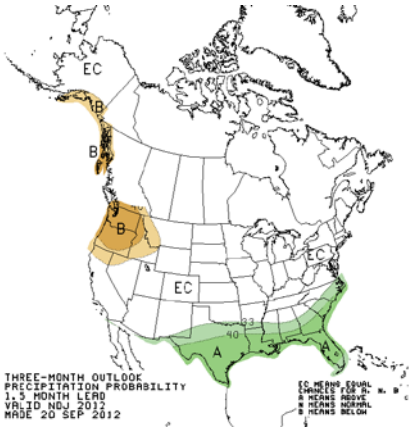
Orange / Red - Higher likelihood of warmer than usual

Blue - Higher likelihood of cooler than usual

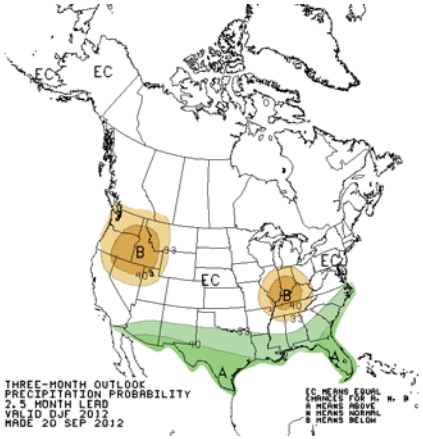
NOAA Climate Prediction Center

Precipitation
Official Outlooks
Overlapping Three-Month Intervals

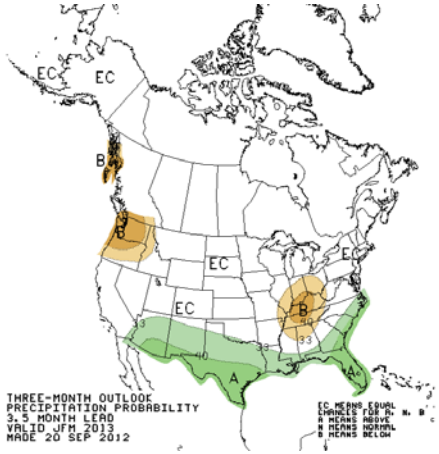
Nov-Dec-Jan



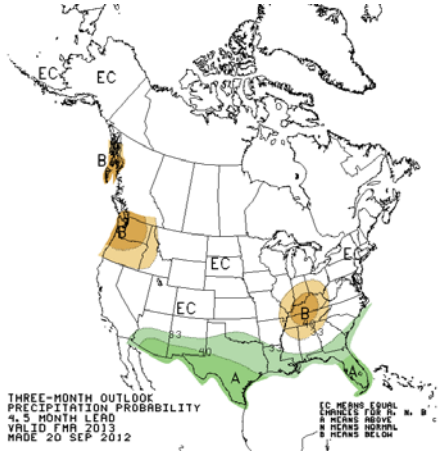
Dec-Jan-Feb



Jan-Feb-Mar



Feb-Mar-Apr



Orange / Red - Higher likelihood of drier than usual

Green - Higher likelihood of wetter than usual

NOAA Climate Prediction Center