Climate Prediction Center Outlooks

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NOAA Climate Prediction Center / NCEP / National Weather Service

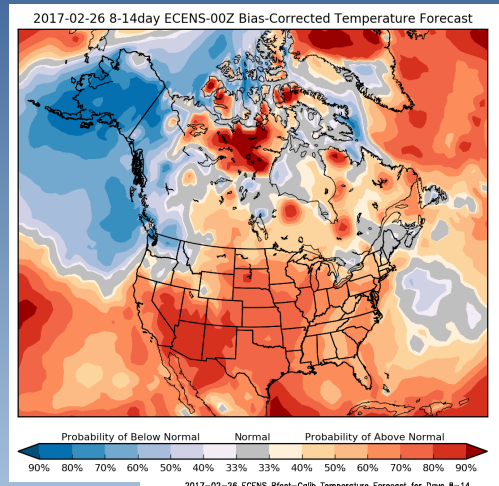
Northeast Drought Assessment, February 2017

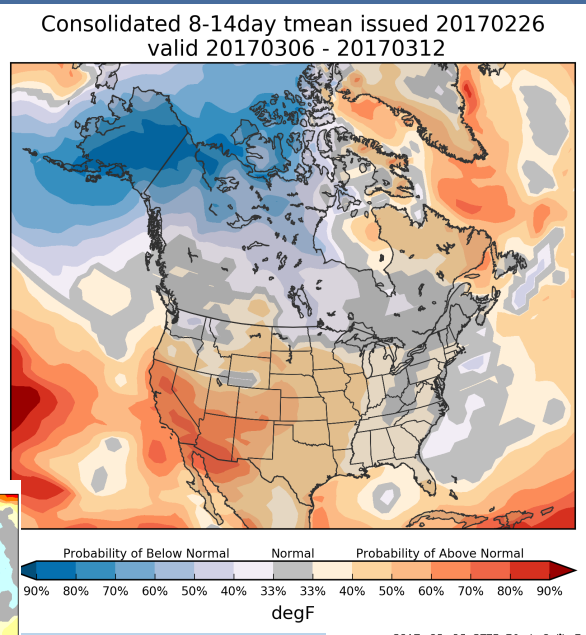
Extended Range (6-10 & 8-14 day) Operational forecasts

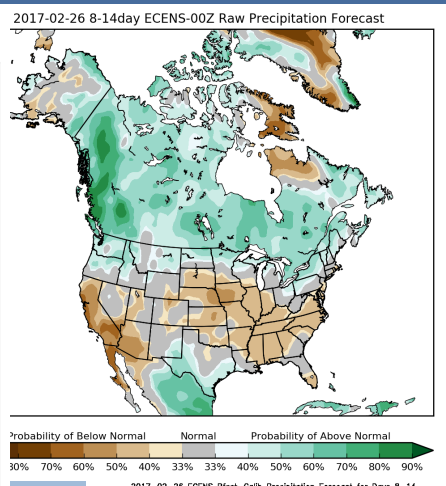
Extended Range (6-10 & 8-14 day)

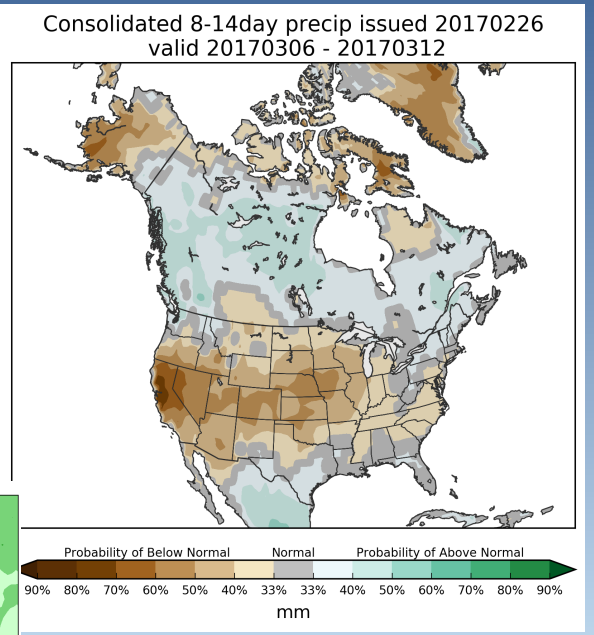
- At the interface of weather & climate
- Forecast is primarily based on dynamical model ensemble prediction systems
- Mostly automated, with quality control and adjustments by a forecaster
- Climate influences, such as ENSO (the El Nino Southern Oscillation), play a secondary role to atmospheric initial conditions

Extended Range (6-10 & 8-14 day)

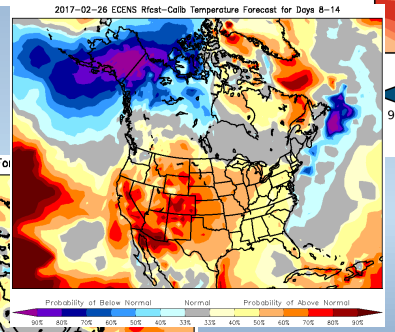


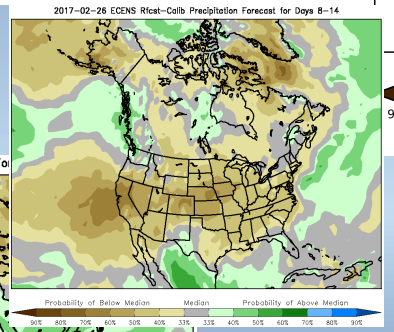




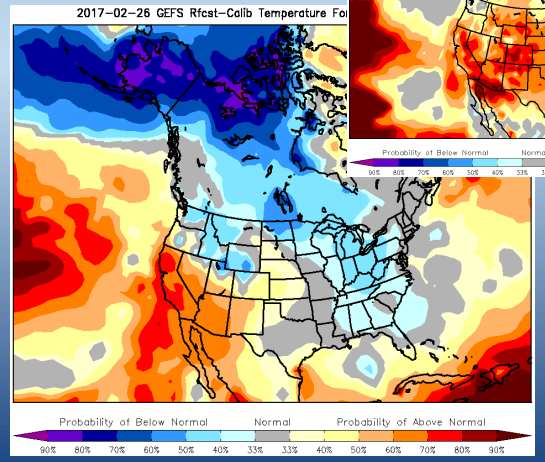


ECMWF

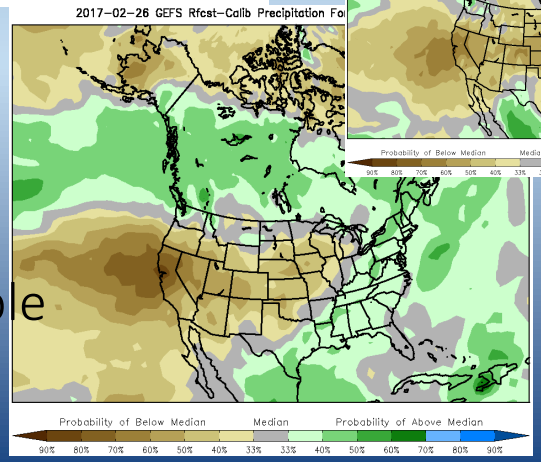




Consolidated ECMWF & NCEP temperature and precipitation



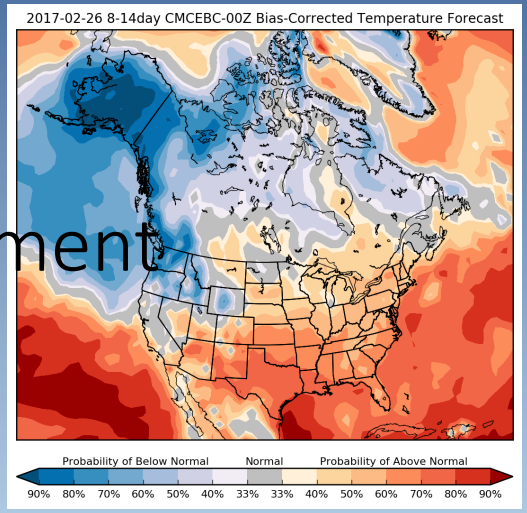
NCEP Global Ensemble



Environment Canada

Extended Range (6-10 & 8-14 day)
North American Ensemble Forecast System

Environment Canada



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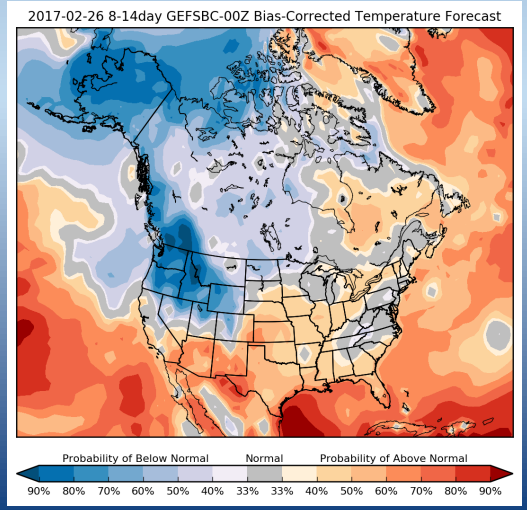
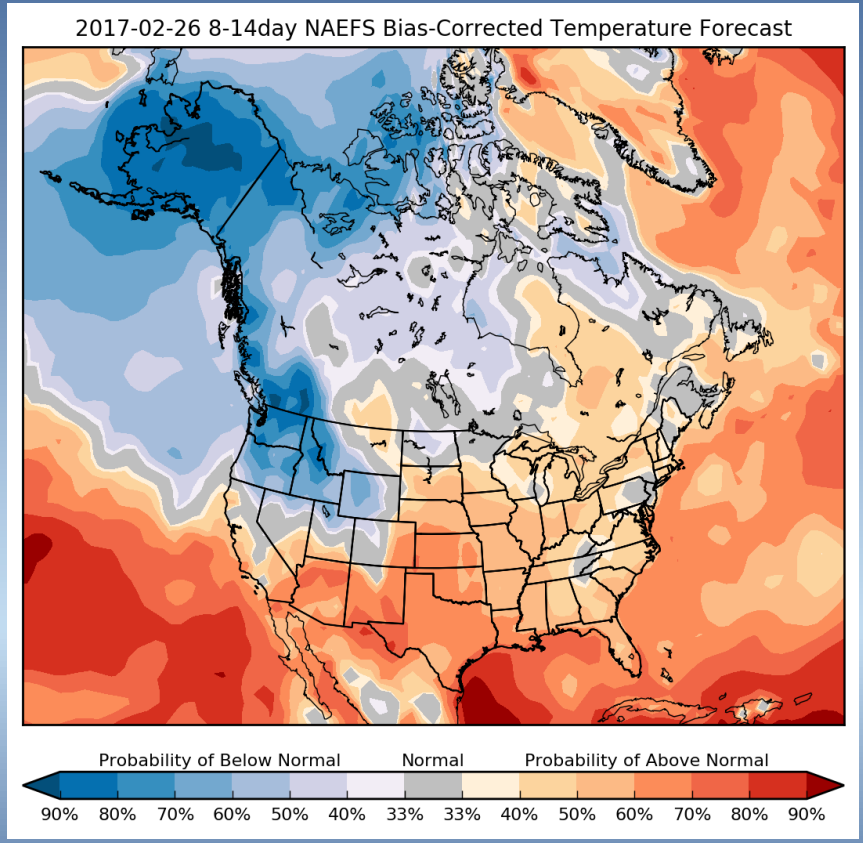


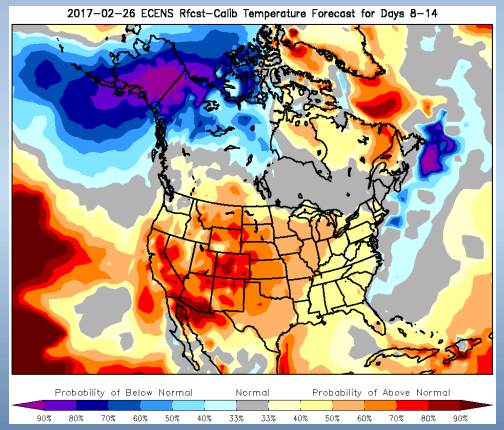
NAEFS



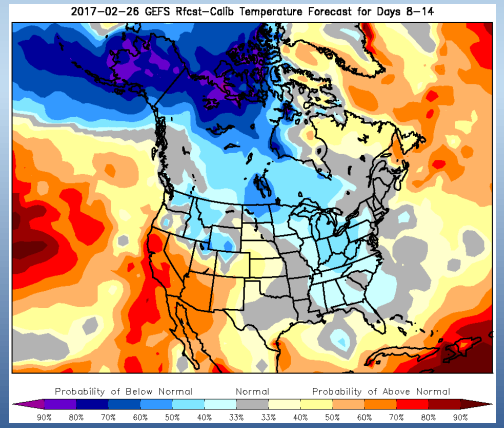
Extended Range (6-10 & 8-14 day)
Reforecasts

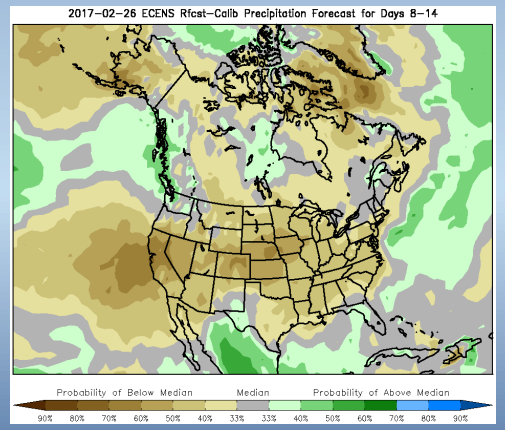
Bias-corrected and calibrated probabilities using multiple decades of hindcast data

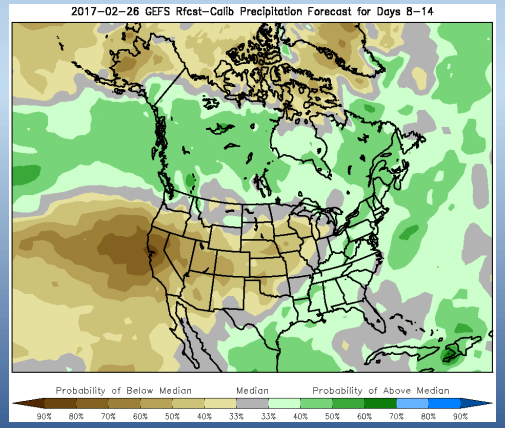
ECMWF



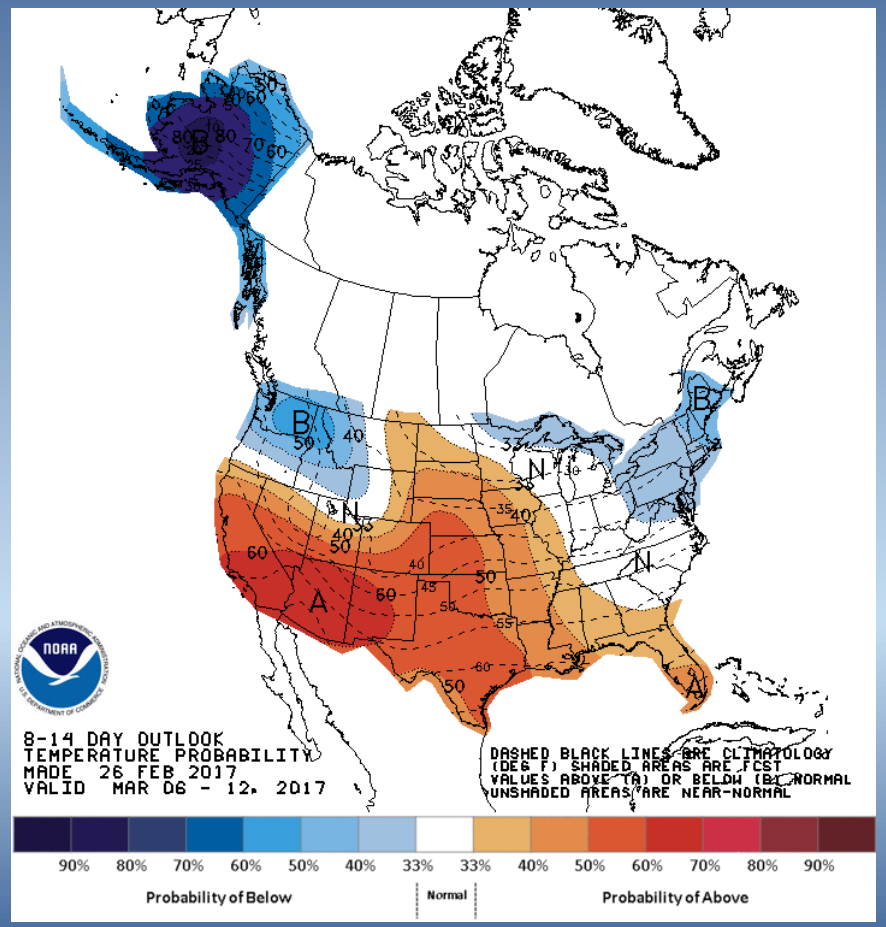
NCEP

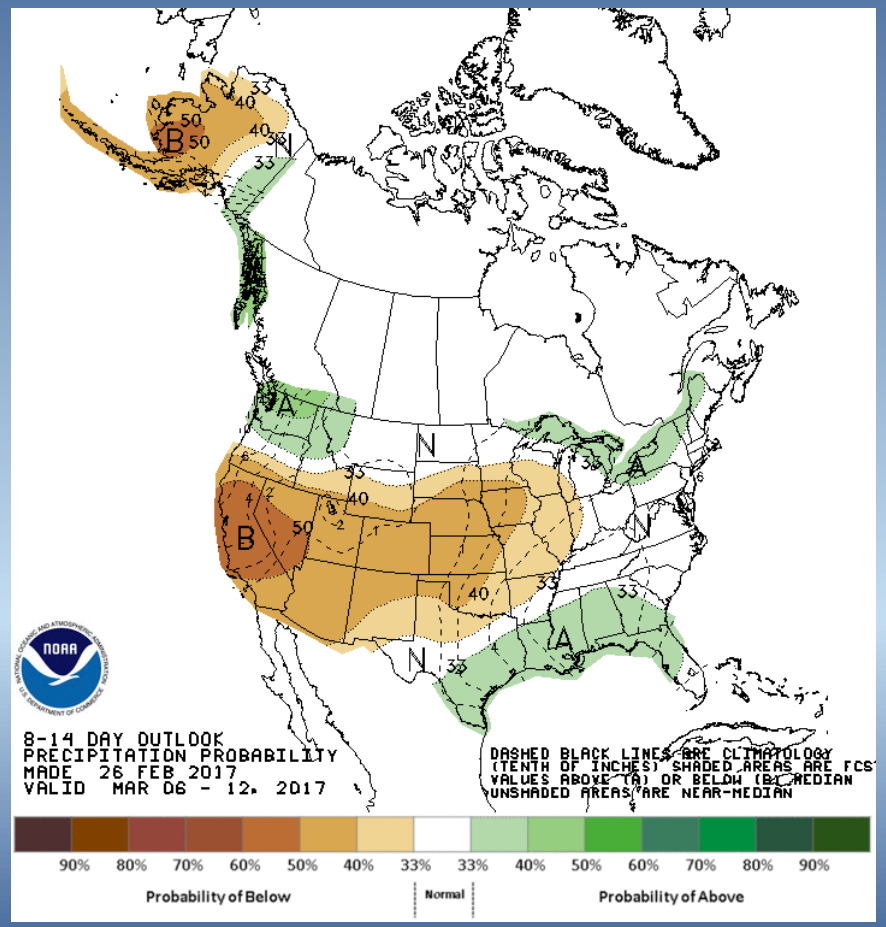






Extended Range
8-14 day Official Outlook

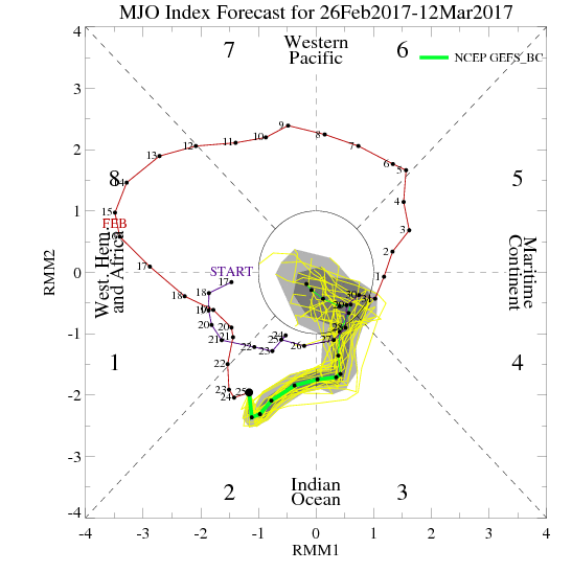


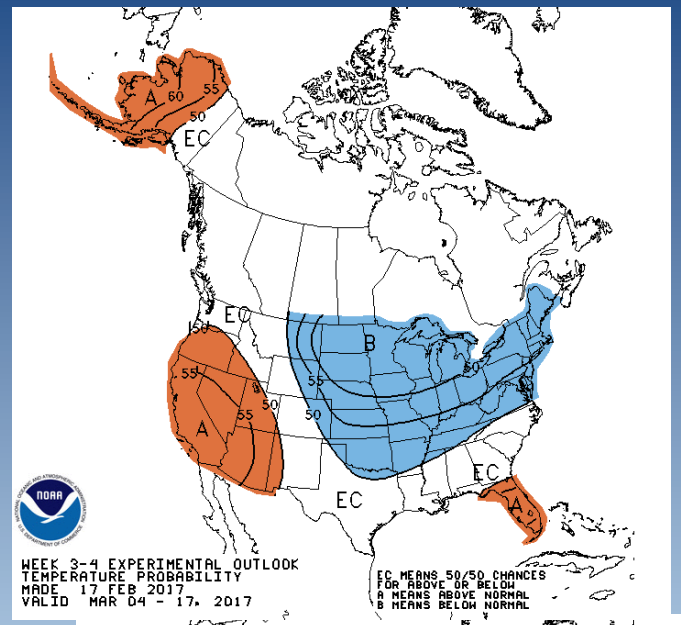


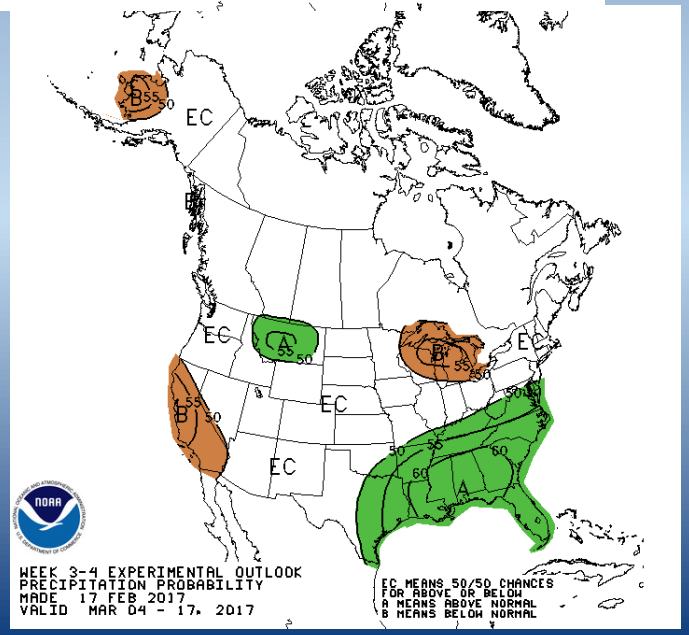
Experimental week 3/4 subseasonal forecasts

Two categories: Above & Below normal

- Dynamical model guidance from the NCEP CFS, ECMWF, JMA, and Environment Canada
- Utilizes statistical tools including:
  - MJO / ENSO Model
  - Constructed Analog
- Subseasonal Experiment (SubX) MME models to provide guidance, in real-time as of FY2018







Monthly & Seasonal Operational forecasts

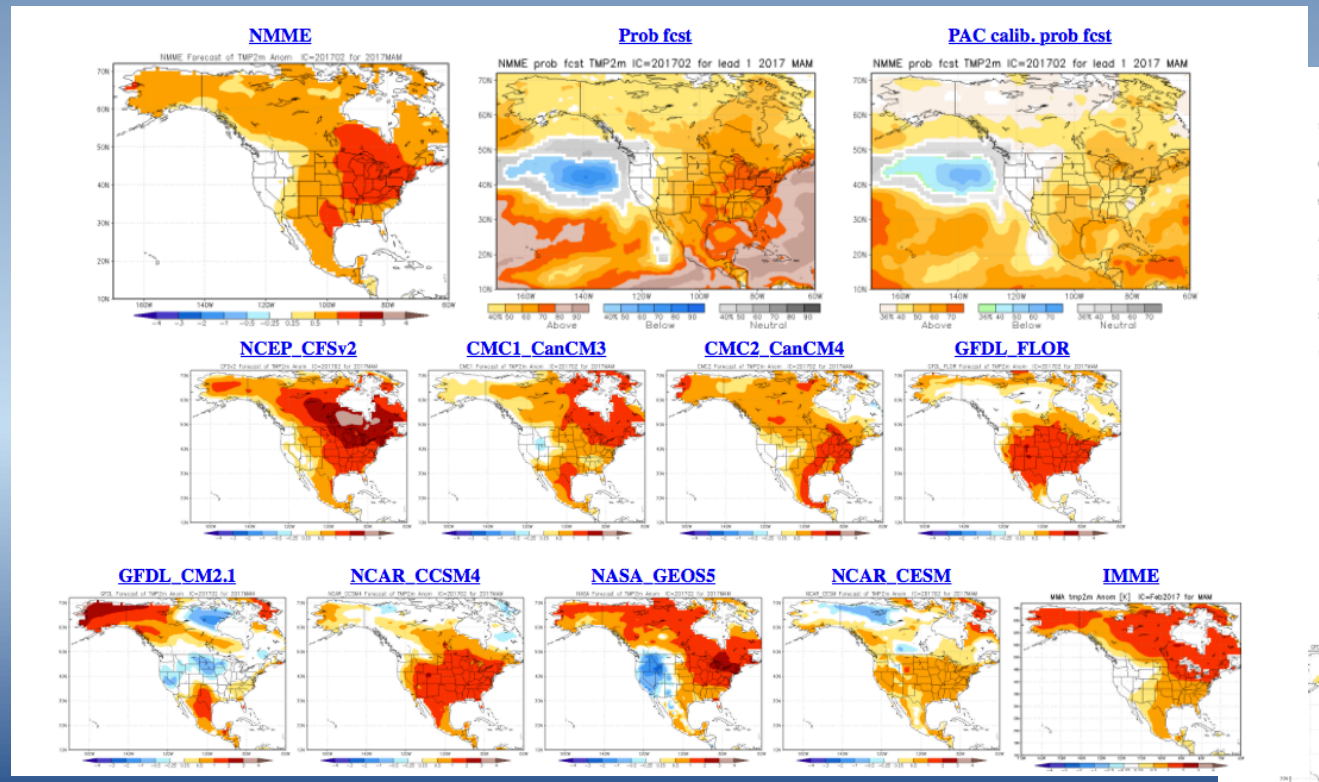
Monthly & Seasonal U.S. Temperature and Precipitation Outlooks

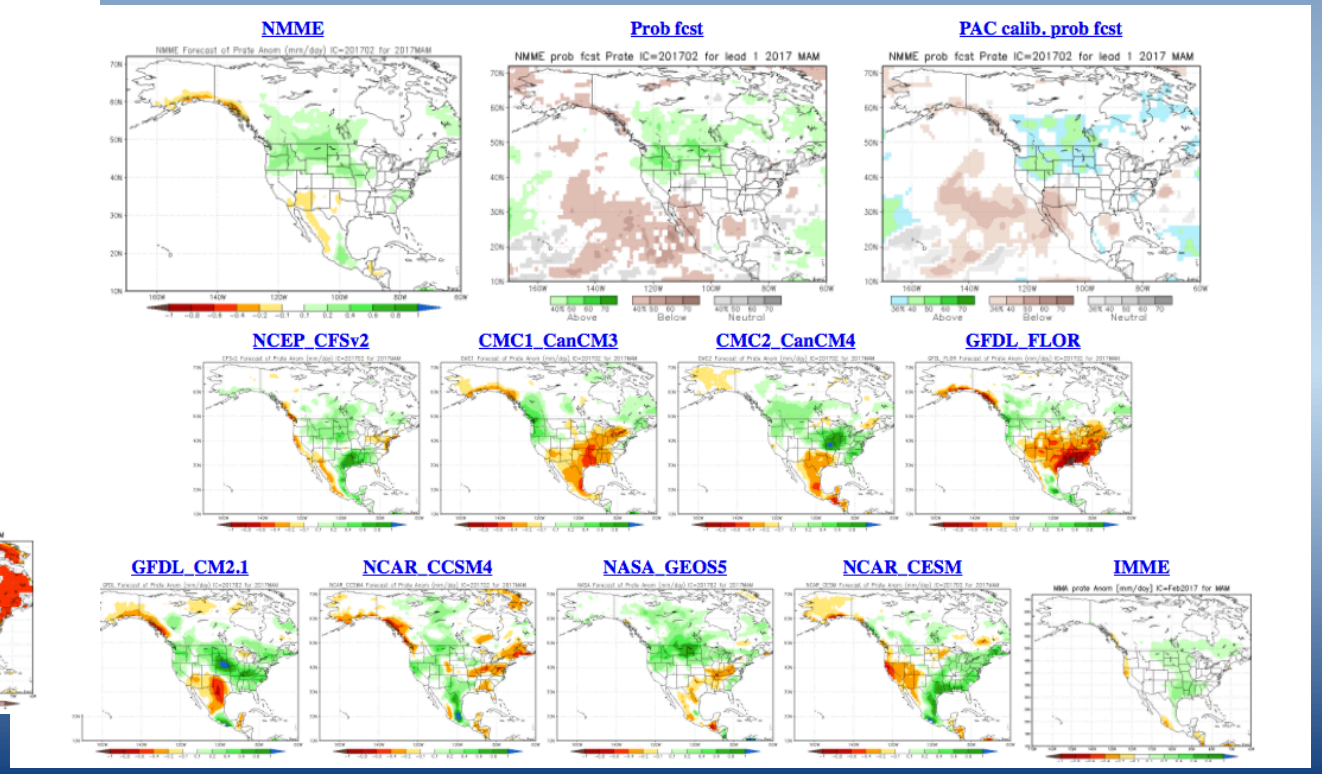
- Predictability relies on Climate Modes of variability
  - El Nino Southern Oscillation, Arctic Oscillation, Pacific Decadal Oscillation, …
- Coupled Ocean-Atmosphere Models that forecast changes in sea surface temperature boundary conditions
  - NCEP Climate Forecast System
  - North American Multi-Model Ensemble (NMME)
- Long-term trends related to climate change

Monthly & Seasonal Temperature & Precipitation

NMME

- Coupled Ocean-Atmosphere general circulation models from multiple operational and research modeling centers
- Hindcasts from 1982-2010 for correction and probability calibration





Monthly & Seasonal Temperature & Precipitation

NMME

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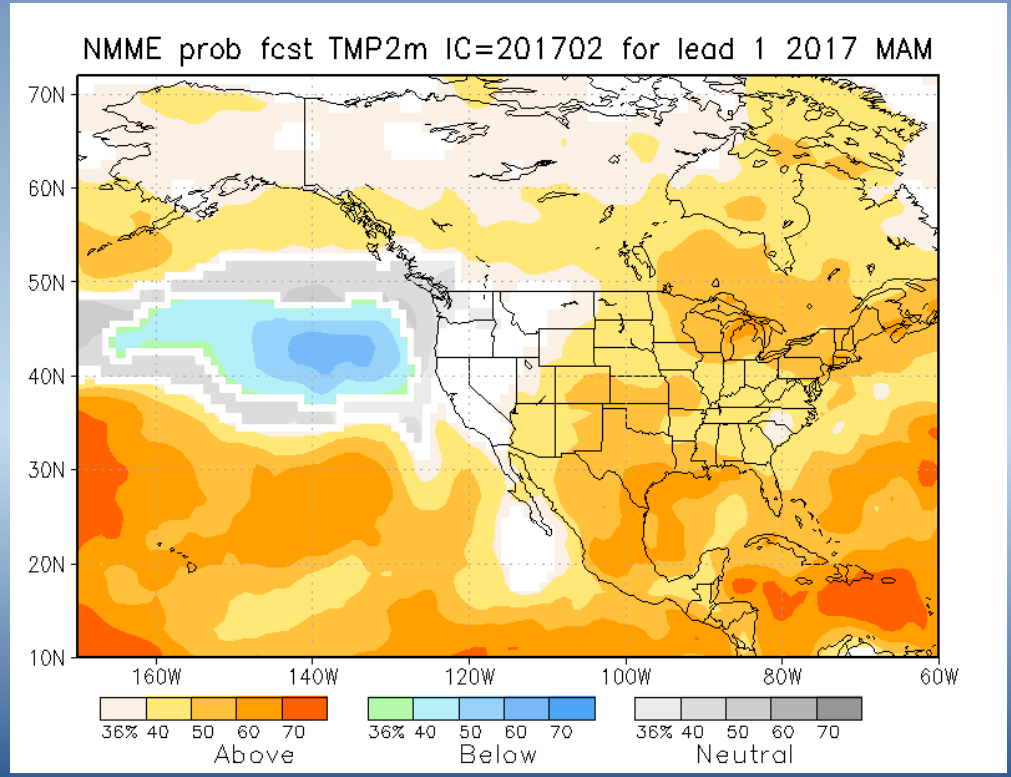
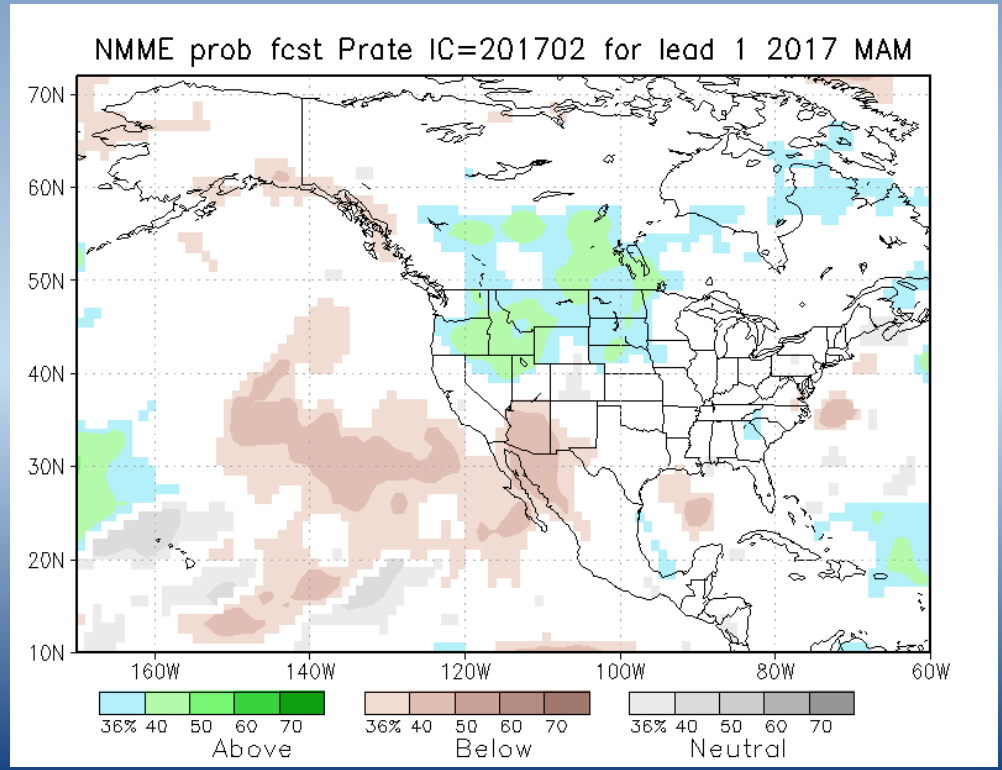
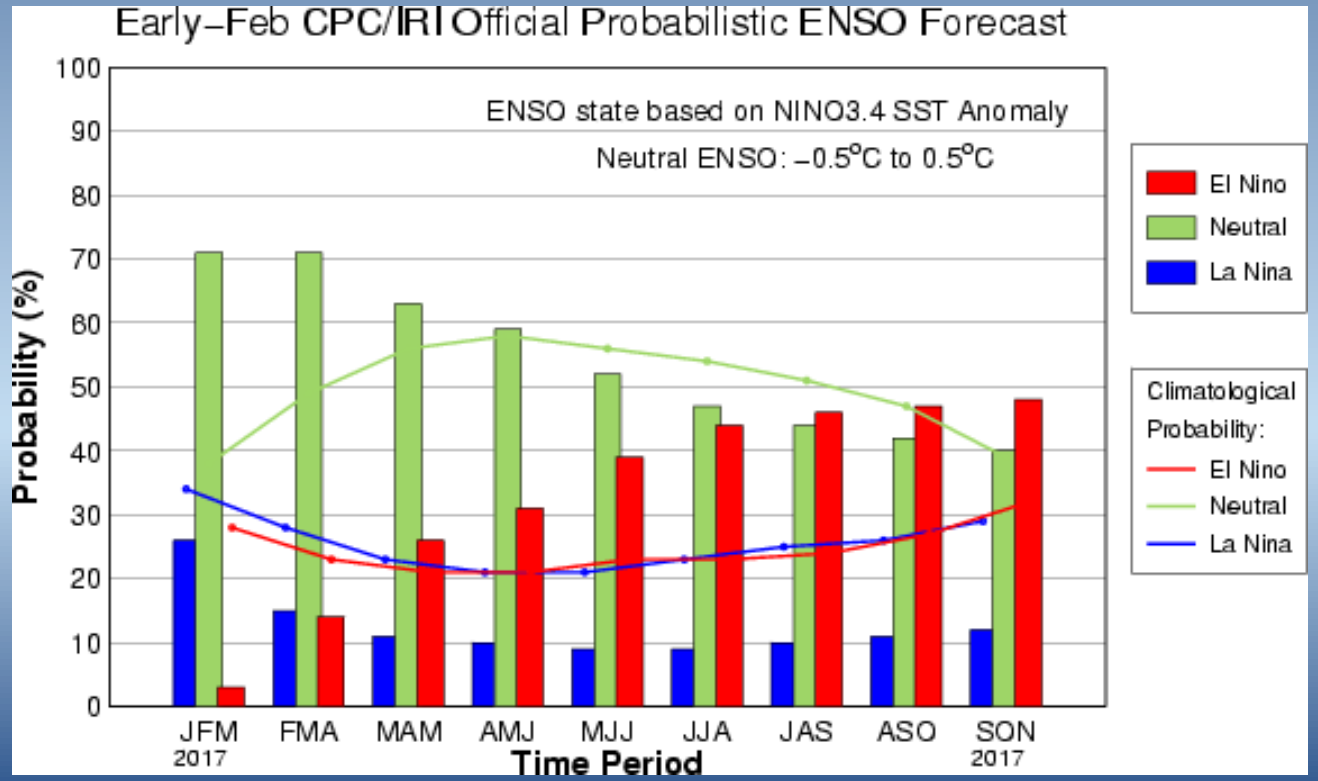
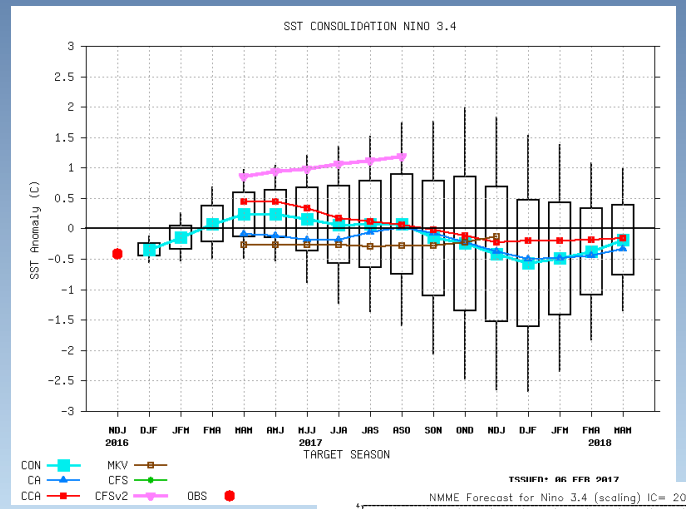




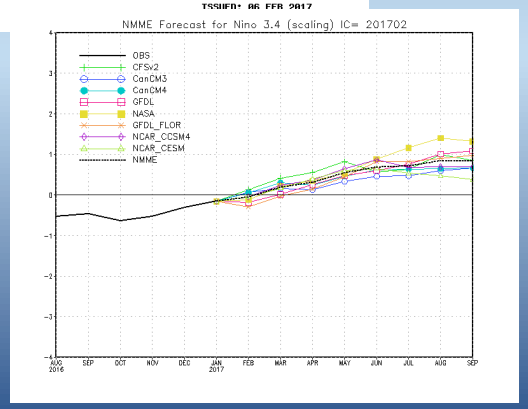
Monthly & Seasonal Temperature & Precipitation
ENSO forecast guidance

Consensus of team of forecasters, based on both dynamical & statistical tools





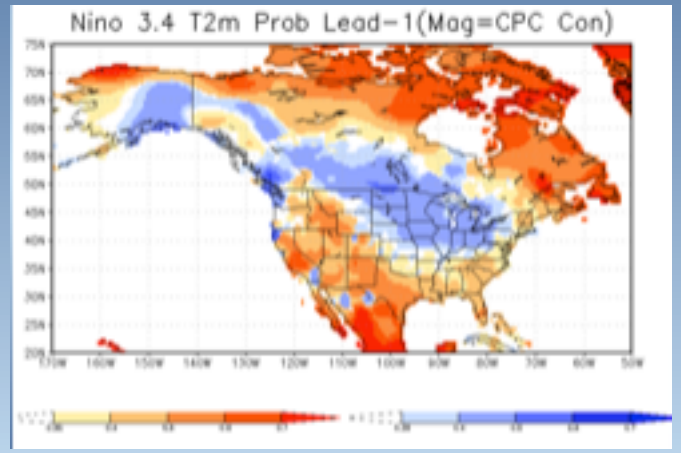
CPC consolidation



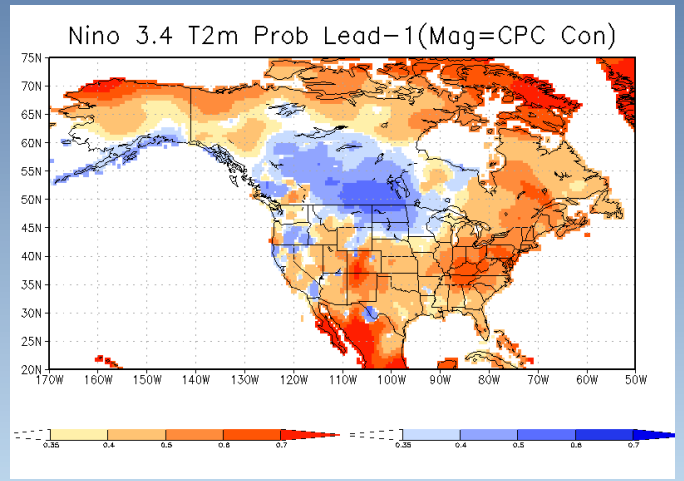
NMME

Monthly & Seasonal Temperature & Precipitation
ENSO forecast guidance

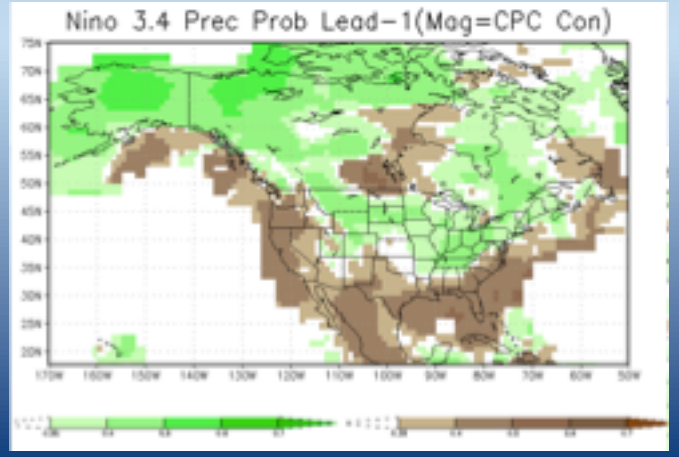
Dynamical model guidance is combined with statistical guidance from ENSO

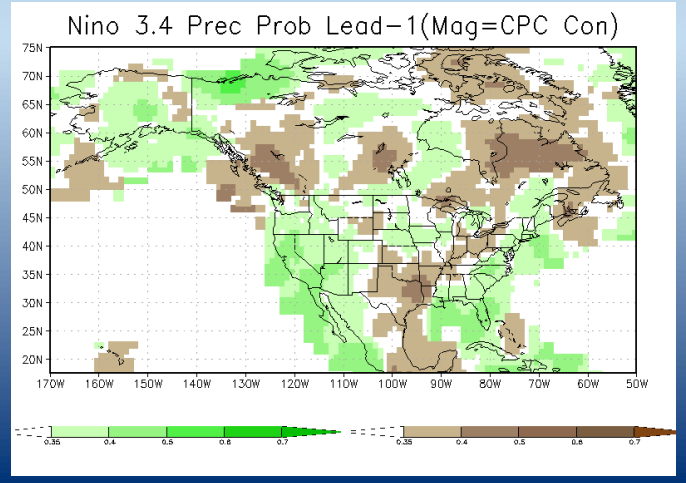


DJF



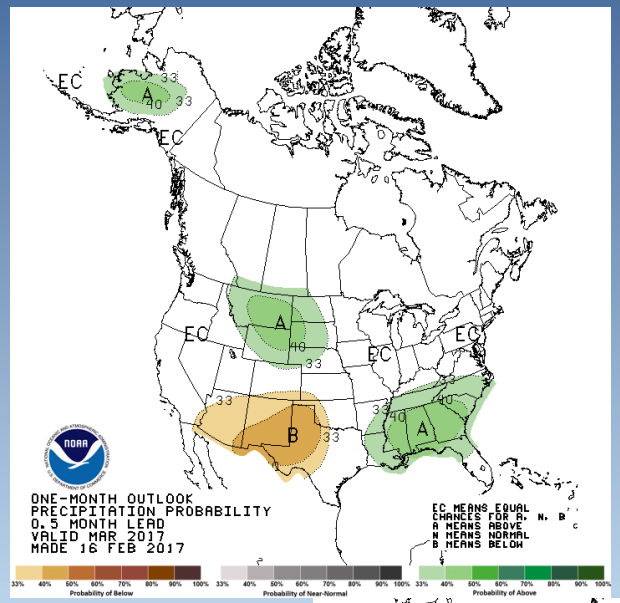
MAM



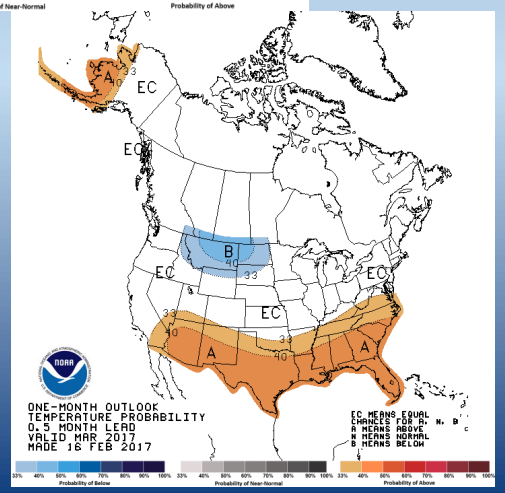


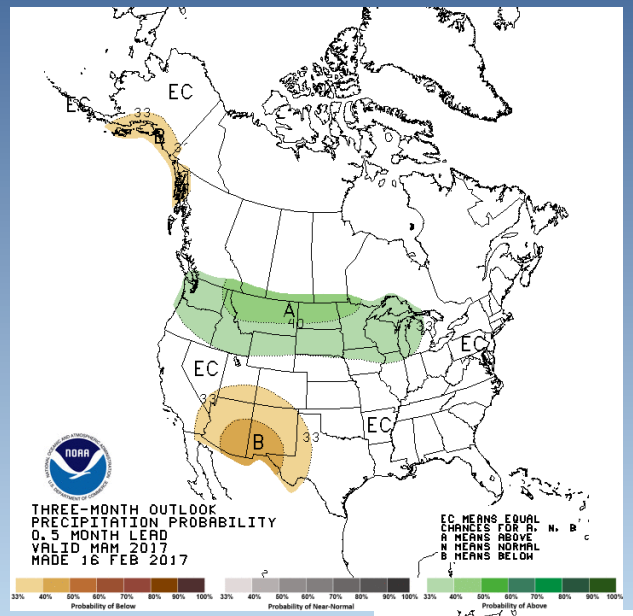
Monthly & Seasonal Temperature & Precipitation

Official Outlook

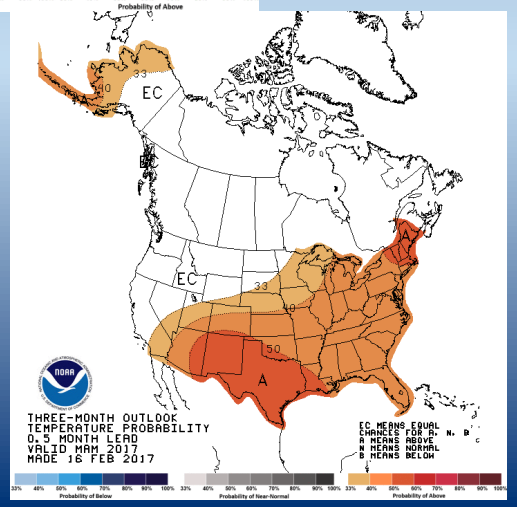


March Monthly





MAM Seasonal



Monthly & Seasonal Drought Outlook

- References the current National Drought Monitor

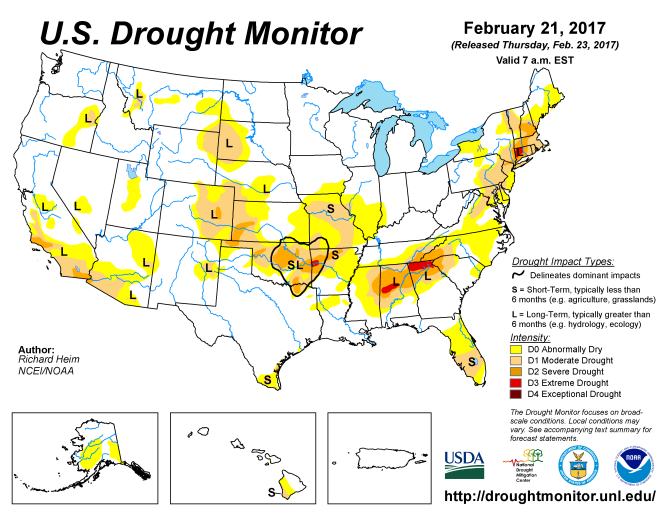
- Forecasts of tendency of drought for a month or season:

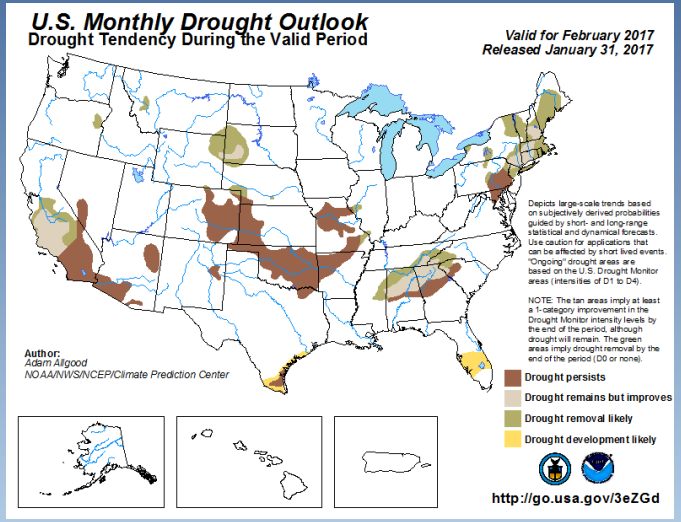
  persistence, improvement & development

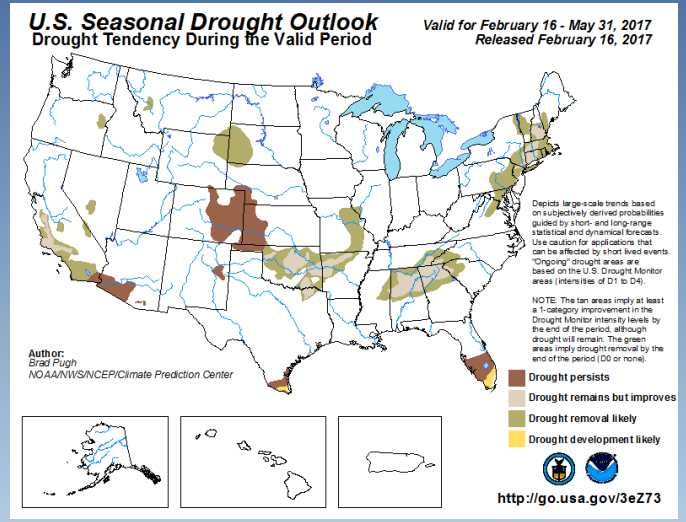
- Relies on short term to seasonal precipitation and temperature outlooks

- Considers changes in the seasonal climatology of precipitation compared to annual precipitation

Monthly & Seasonal Drought Outlook

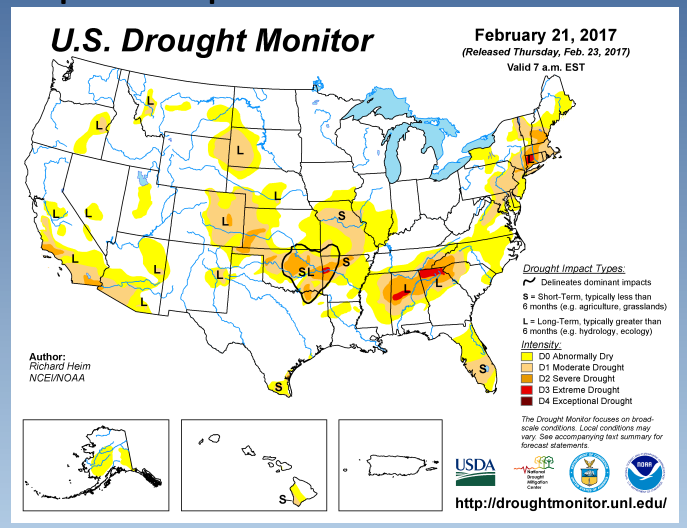


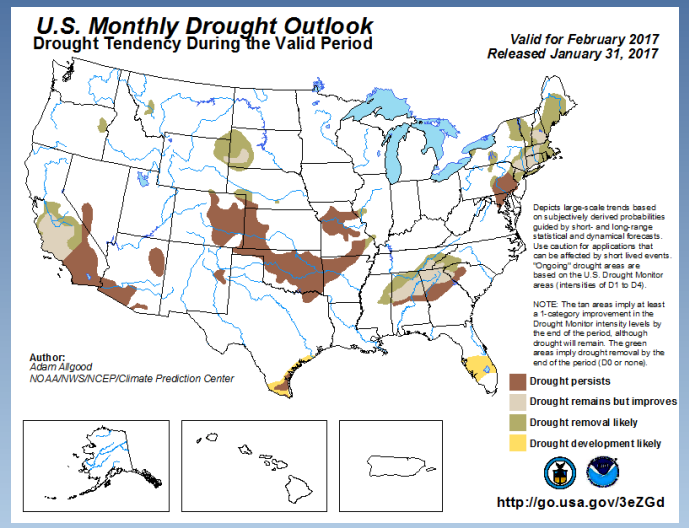


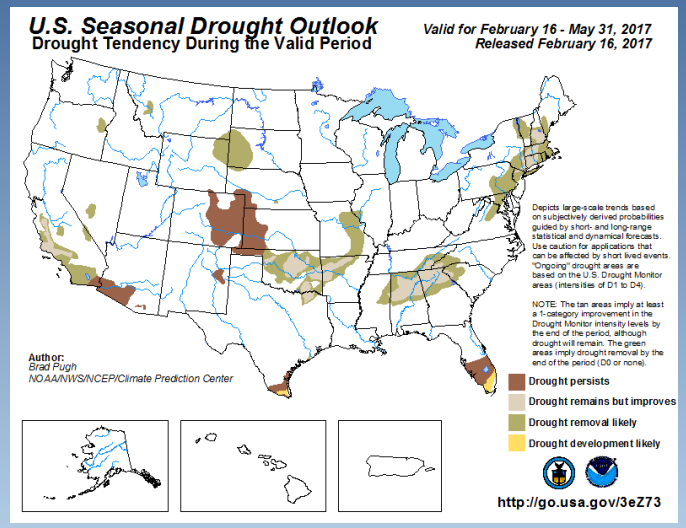


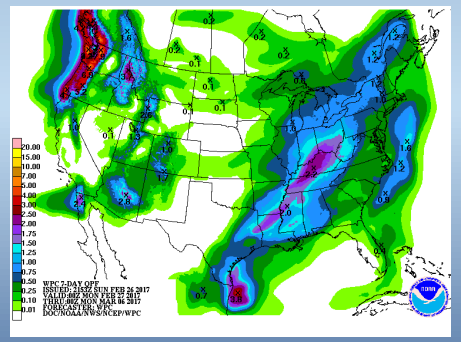
Monthly & Seasonal Drought Outlook

Precipitation & Temperature Outlooks and changes in seasonal precipitation Climatology

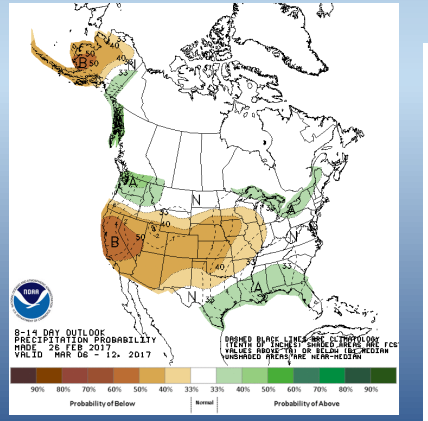






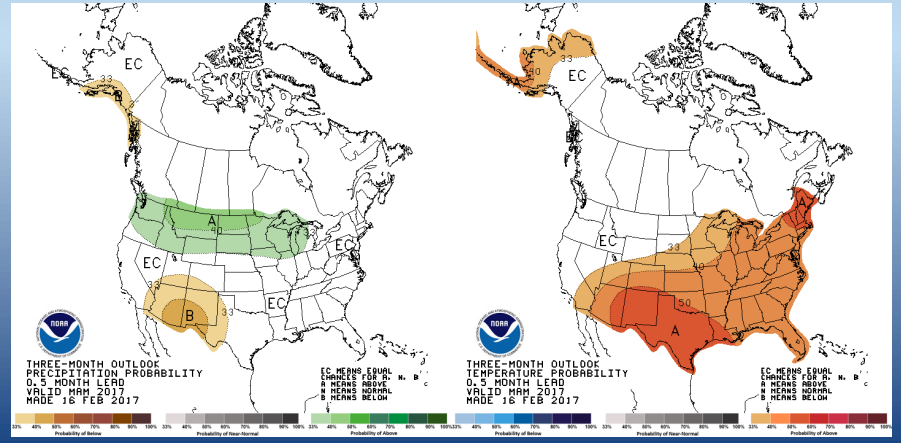


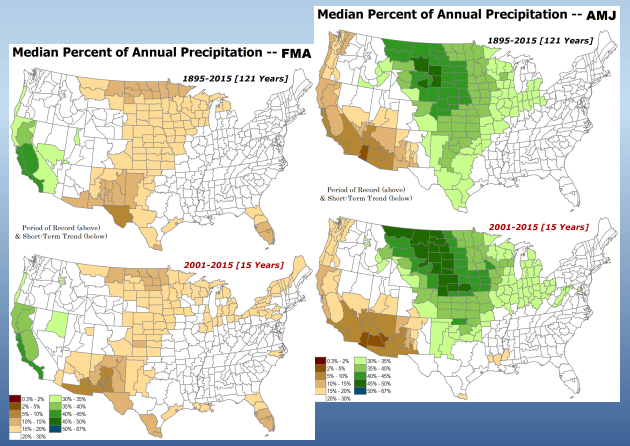
7 day precipitation



Week 2 forecast

Seasonal forecast





Climatology

Thanks