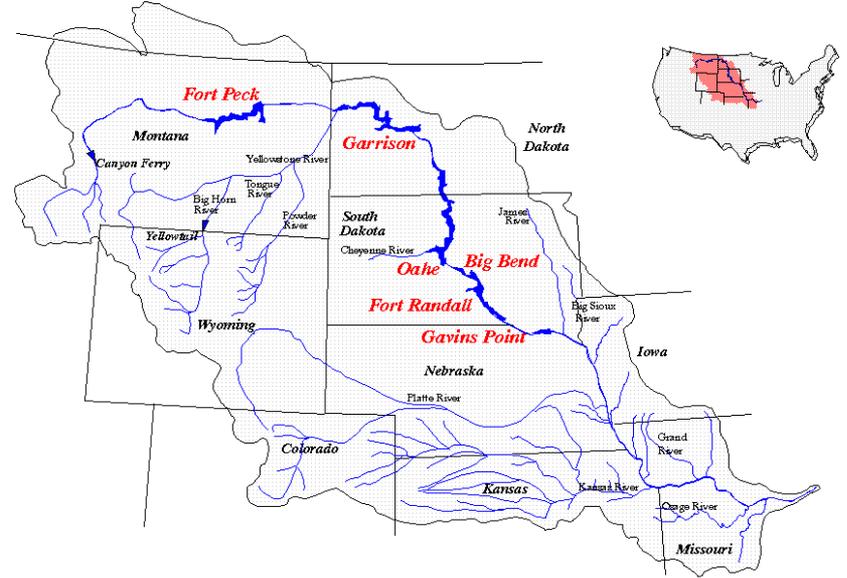


2011 Missouri River Flooding

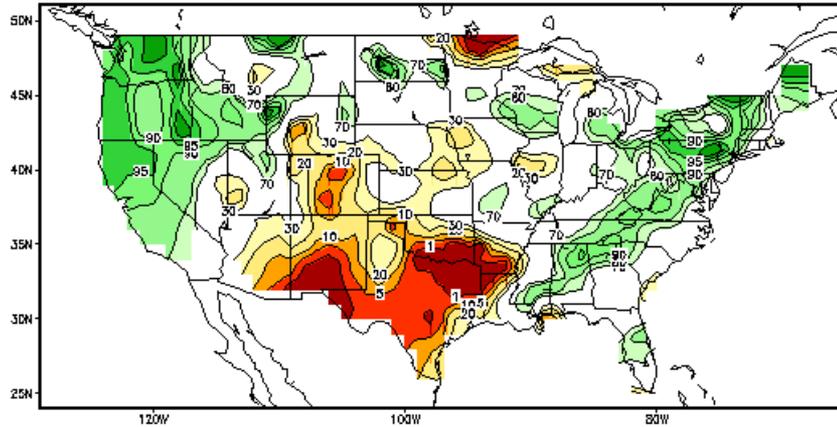
Missouri River Basin



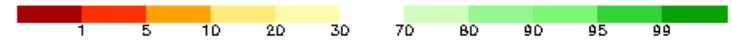
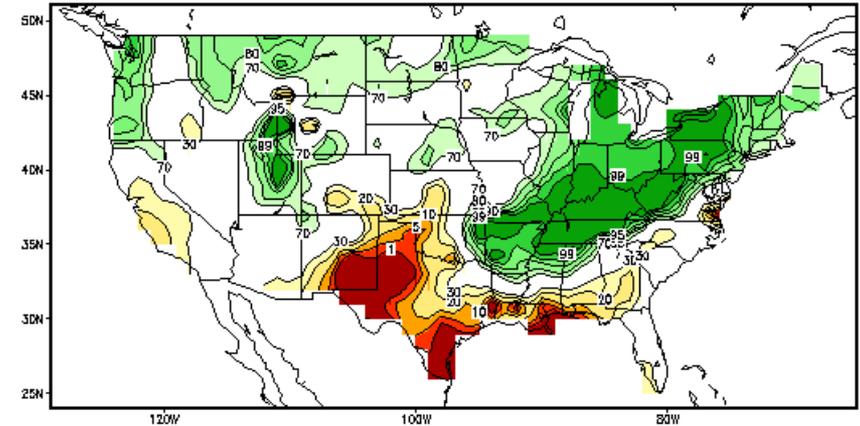
Observed Precipitation Anomaly

March, April, and May 2011 Observed Precipitation Rankings

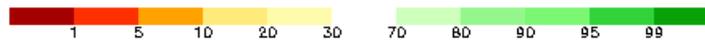
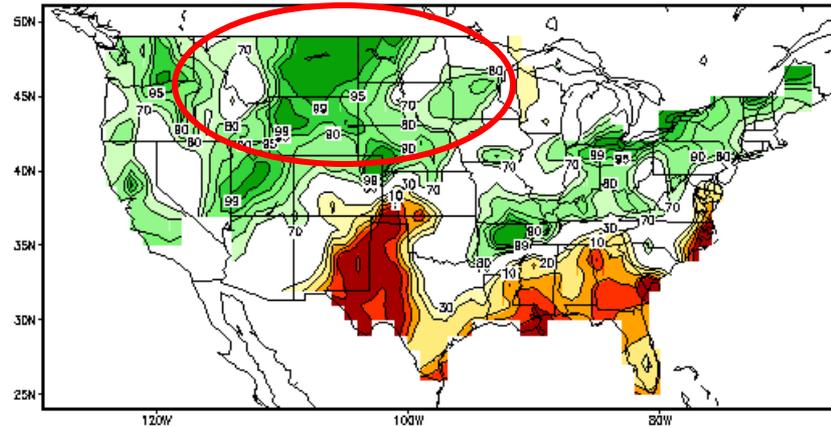
Precipitation Ranking Percentile MAR, 2011



Precipitation Ranking Percentile APR, 2011



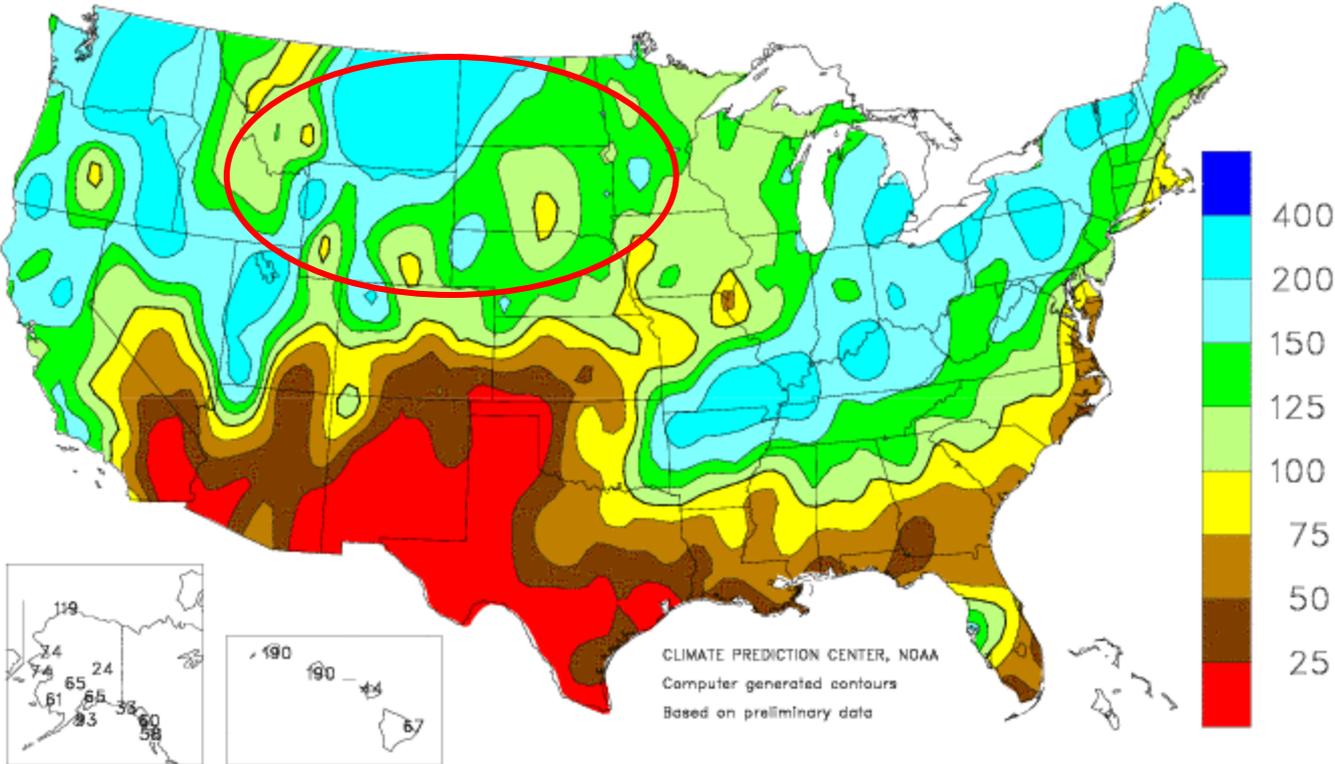
Precipitation Ranking Percentile MAY, 2011



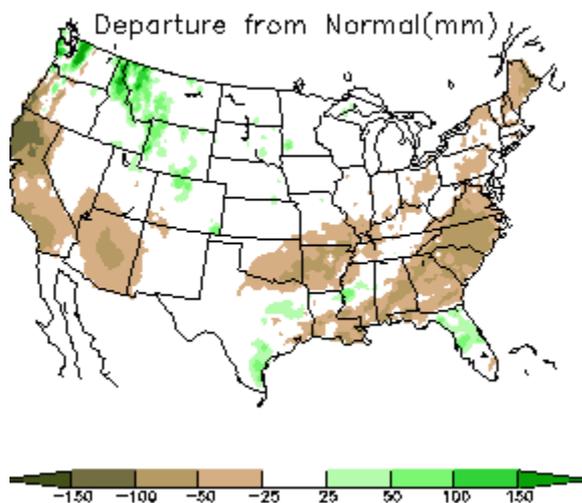
March-April-May 2011 Observed Seasonal Mean Precipitation (% of Normal)

Percent Of Normal Precipitation

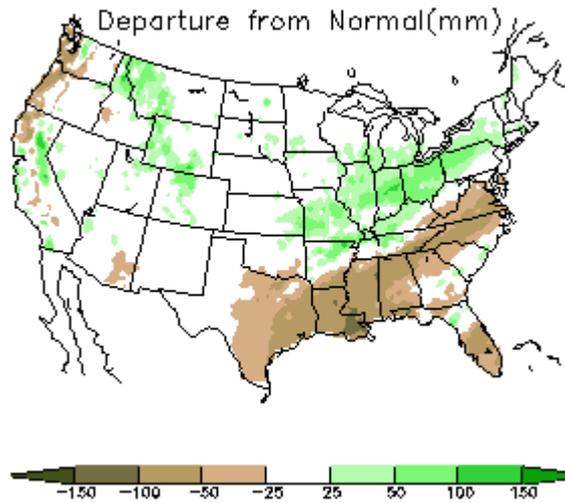
MAR - MAY 2011



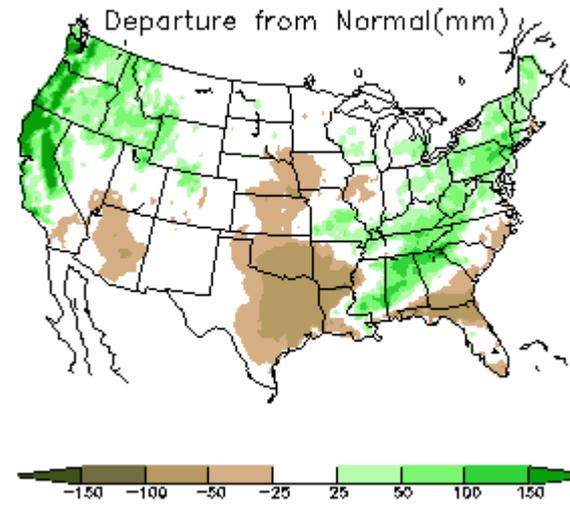
1 -- January, 2011



n -- February, 2011

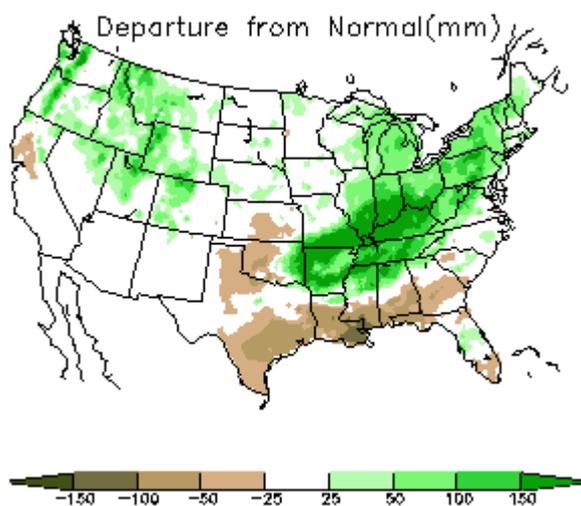


on -- March, 2011

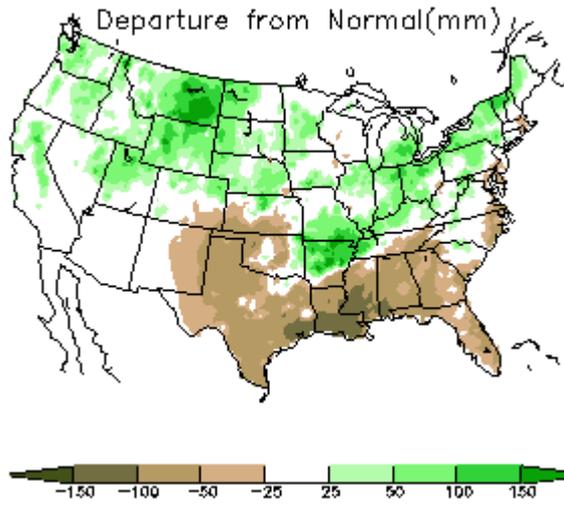


January – June 2011 Observed Precipitation (departure from normal) - mm

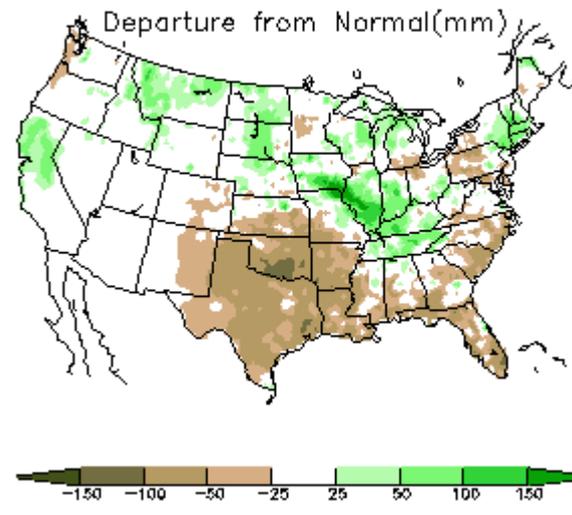
tion -- April, 2011



tion -- May, 2011

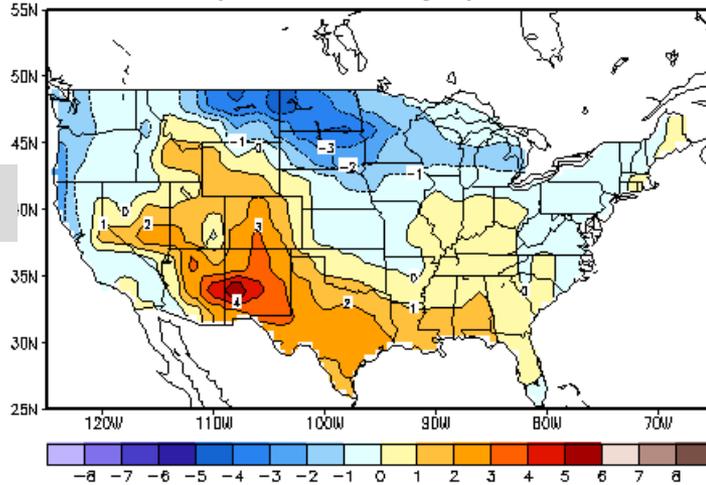


on -- June, 2011



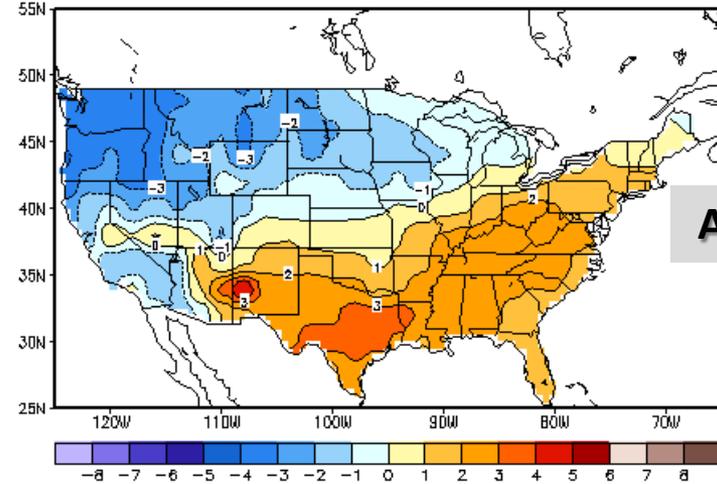
Observed Surface Temperature Anomaly

Mean Temp (C) Anomaly
30-day mean ending Apr 01 2011



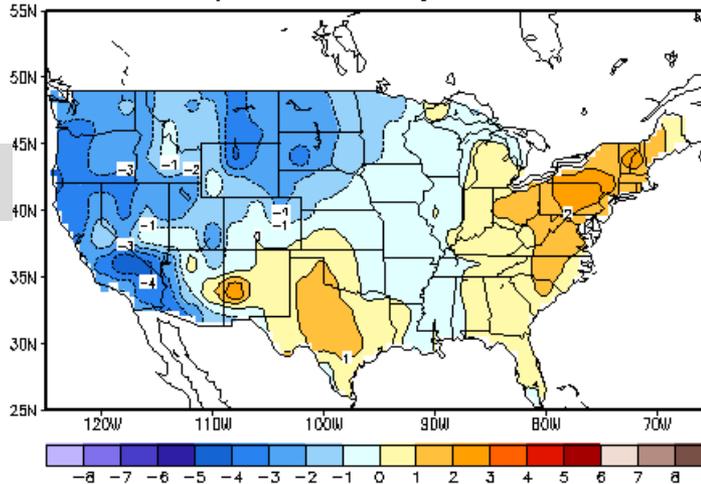
March 11

Mean Temp (C) Anomaly
30-day mean ending May 01 2011



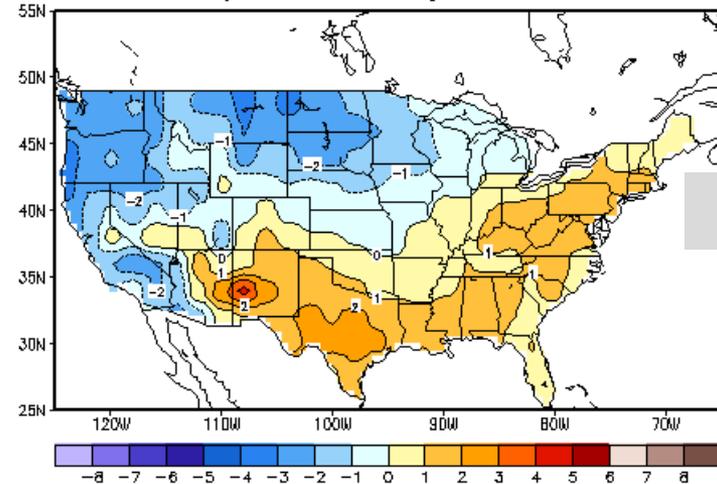
April 2011

Mean Temp (C) Anomaly
30-day mean ending Jun 01 2011



May 11

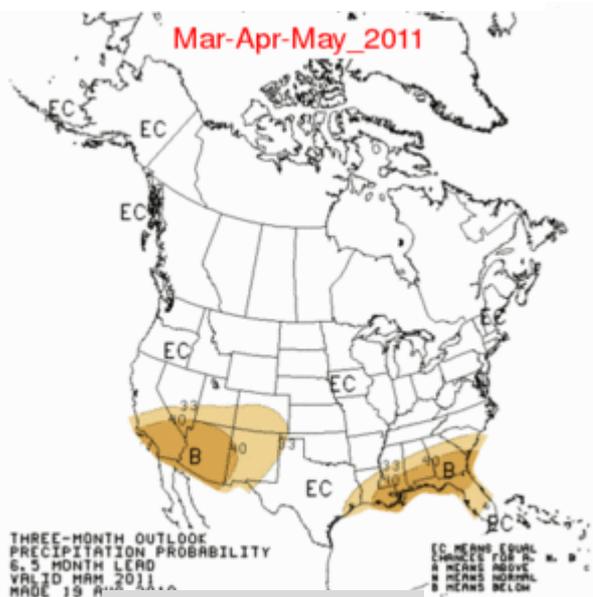
Mean Temp (C) Anomaly
90-day mean ending Jun 01 2011



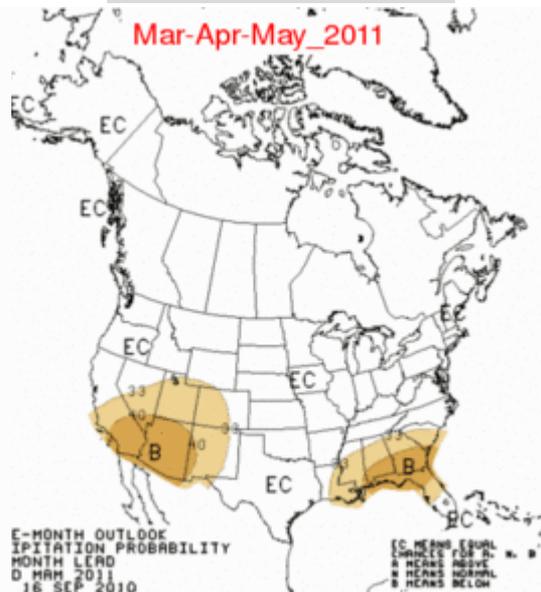
MAM 11

CPC's Precipitation Forecast for MAM 2011 (with different leads)

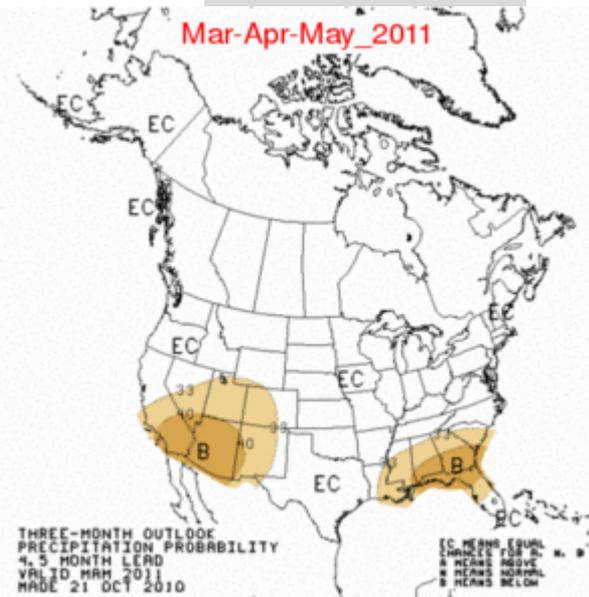
August 10



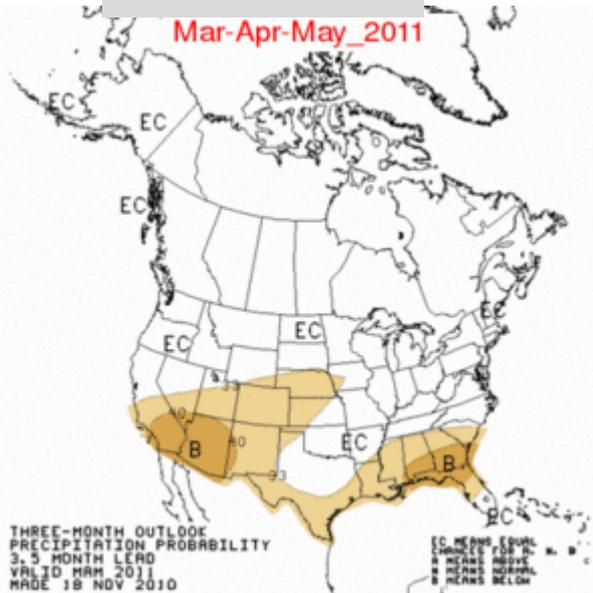
September 10



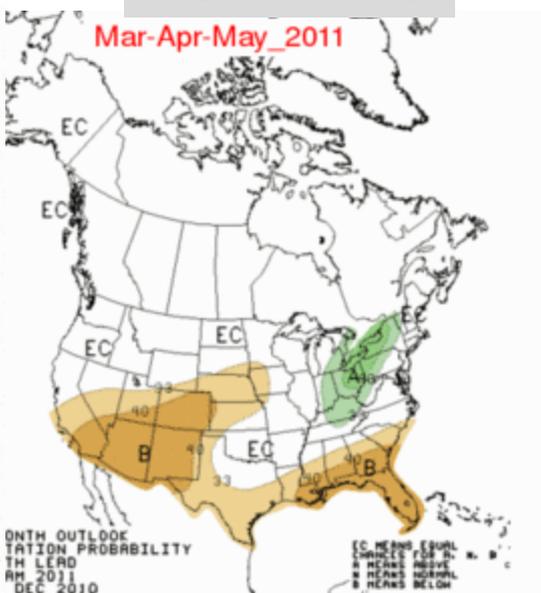
October 10



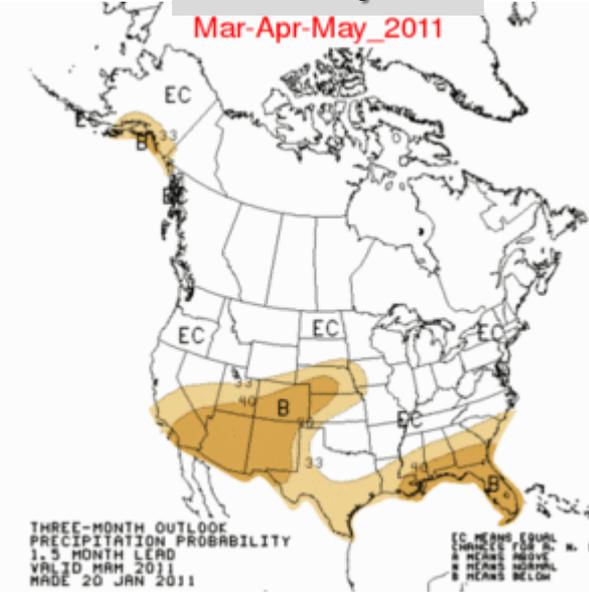
November 10



December 10



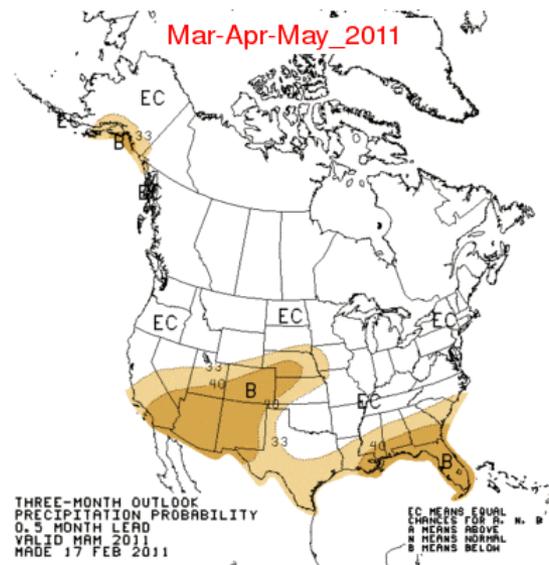
January 11



Missouri River Flooding

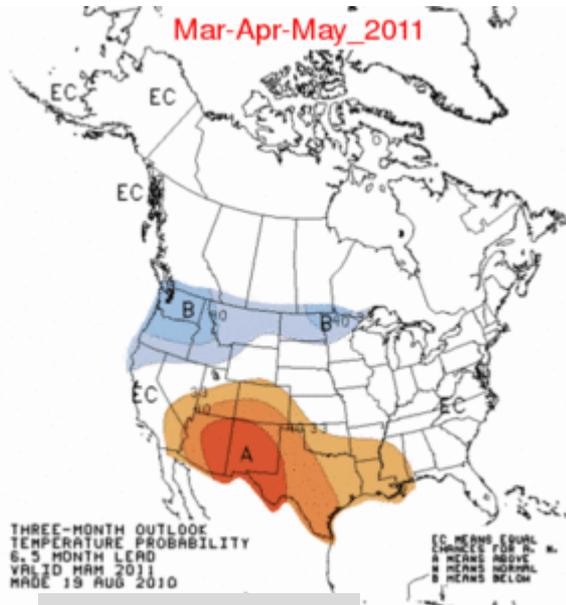
Climate Prediction Center – July 2011

February 11

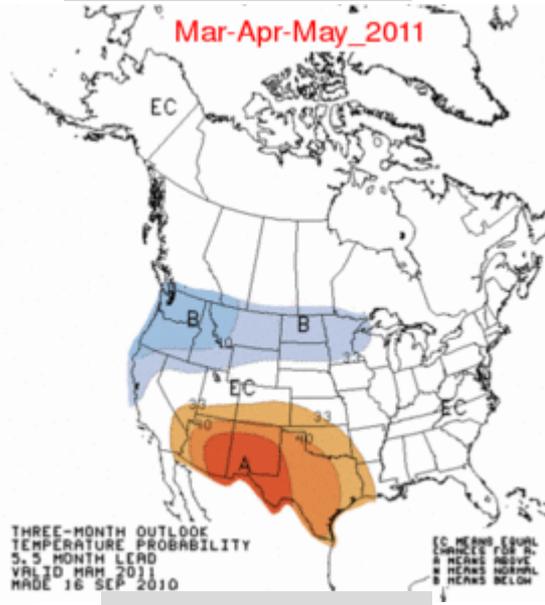


CPC's Surface Temperature Forecast for MAM 2011 (with different leads)

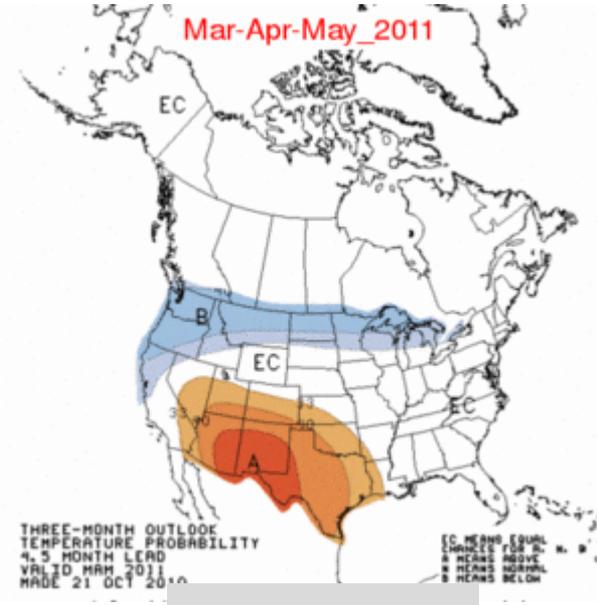
August 10



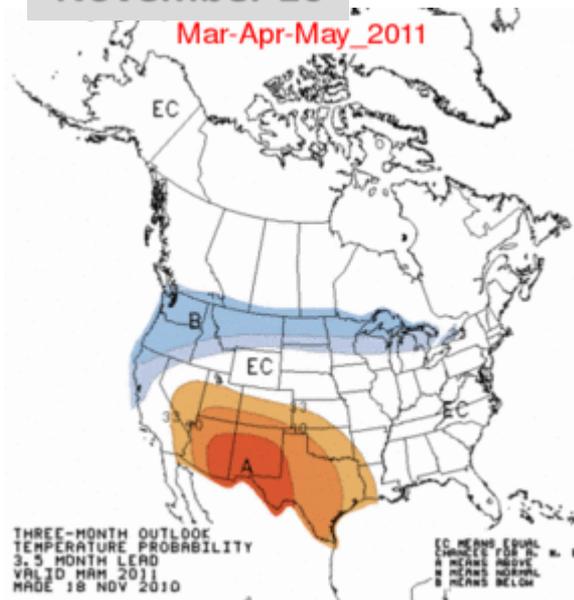
September 10



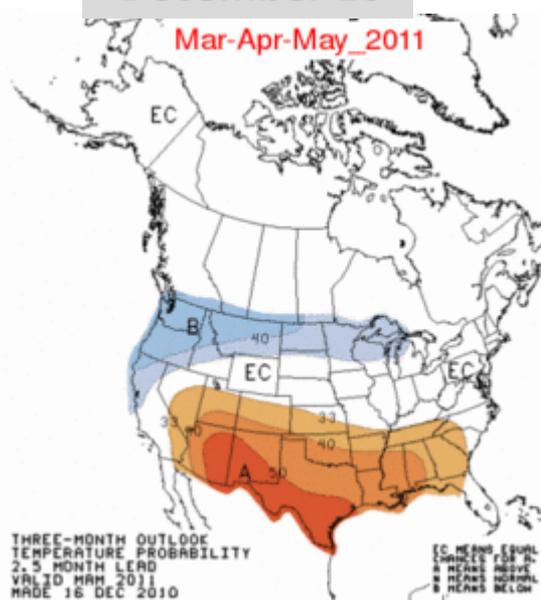
October 10



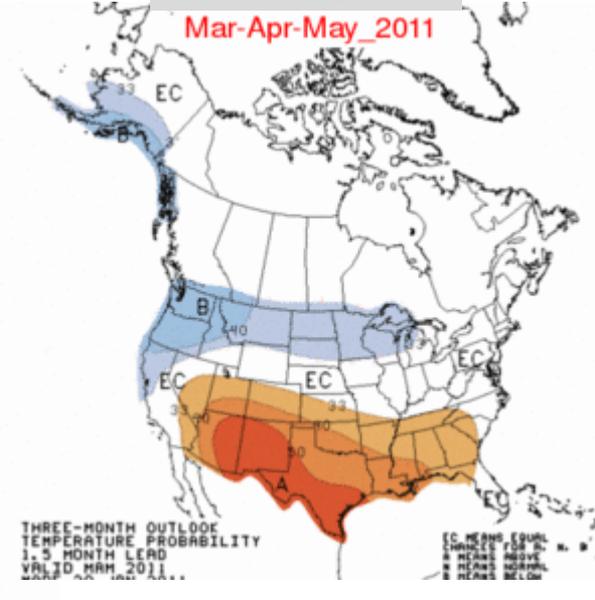
November 10



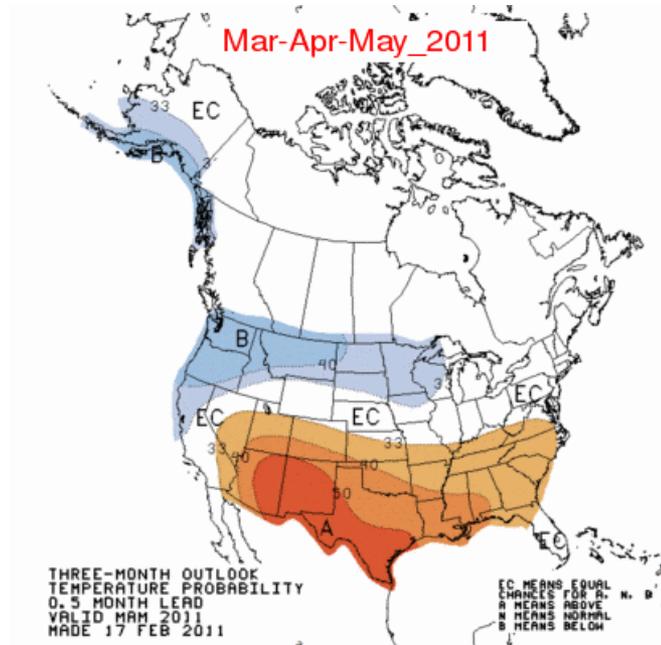
December 10



January 11



February 11



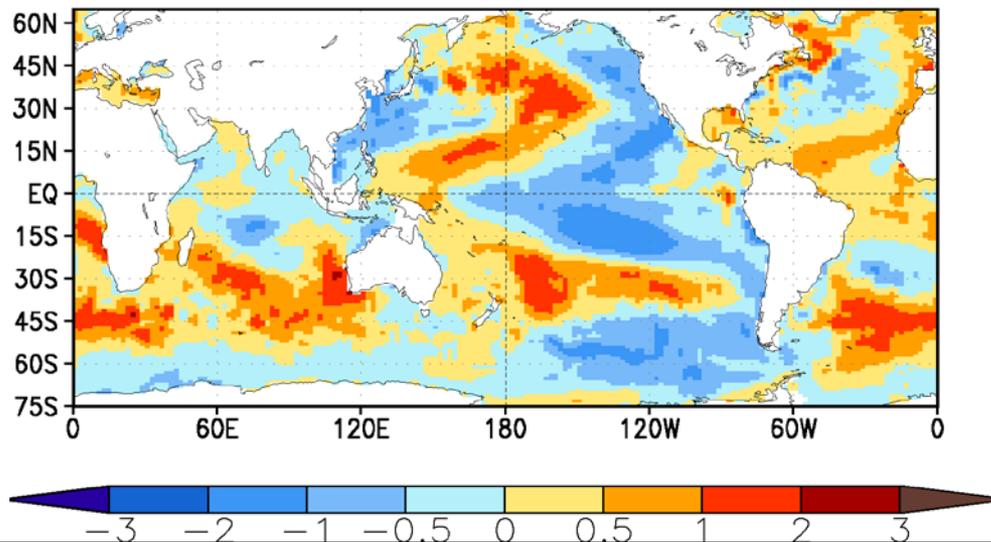
A Summary of CPC Forecasts

- Precipitation forecasts were generally for the “EC” and little indication for above normal precipitation over the Missouri river basin for MAM 2011
- Surface temperature forecasts were consistently for below normal over the Missouri river basin for MAM 2011 for different lead. Below normal temperature can lead to delayed snow melt

CFS.v1 Forecasts for MAM 2011 (with different lead)

Observed MAM 2011 SST Anomaly

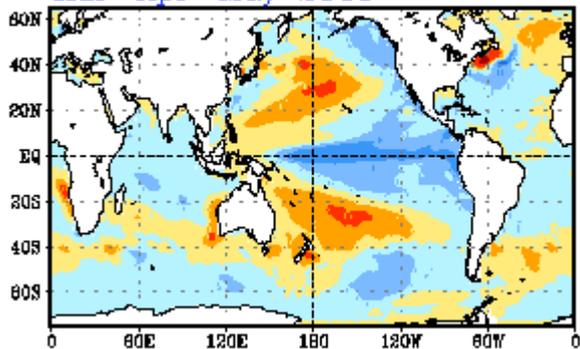
SST



CFS.v1 Predicted SST Anomaly

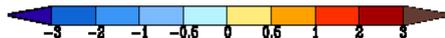
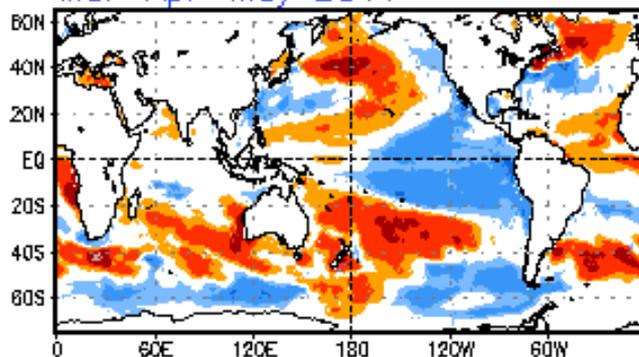
September 10

Mar-Apr-May 2011



February 11

Mar-Apr-May 2011



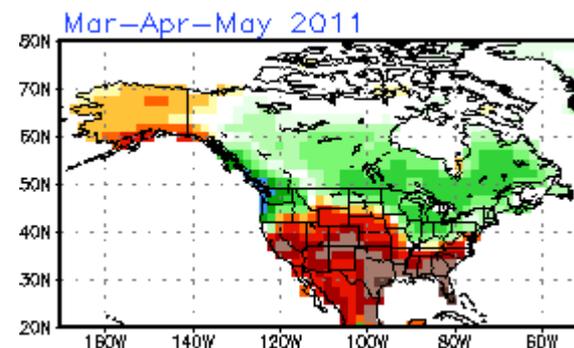
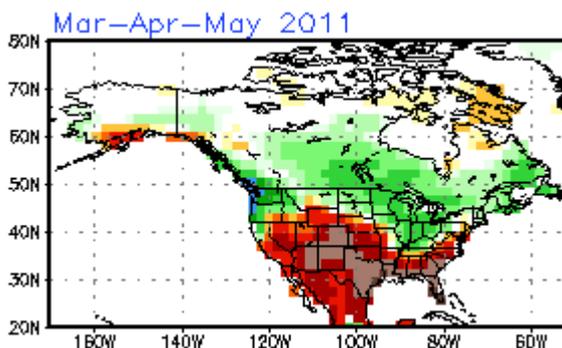
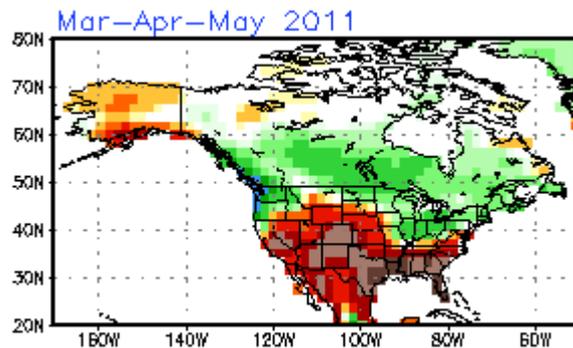
Deg. K

Precipitation

September 10

October 10

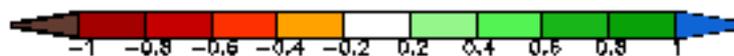
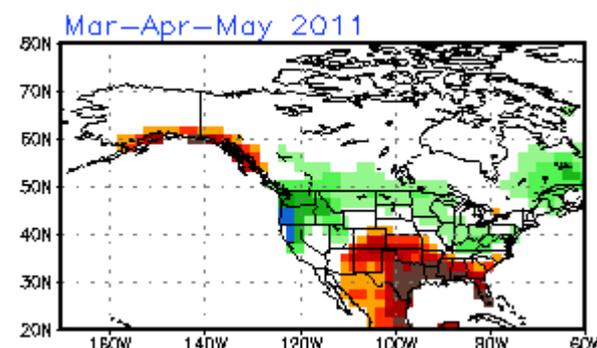
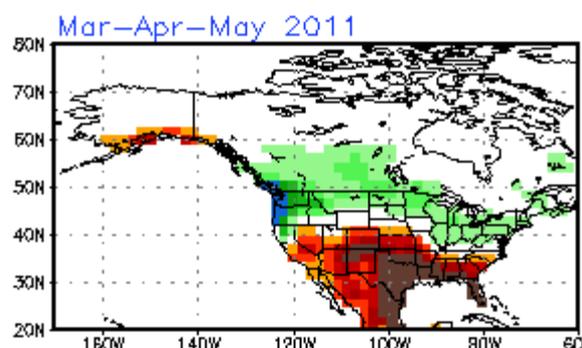
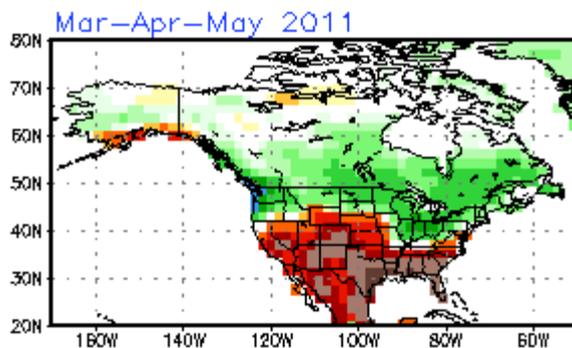
November 10



December 10

January 11

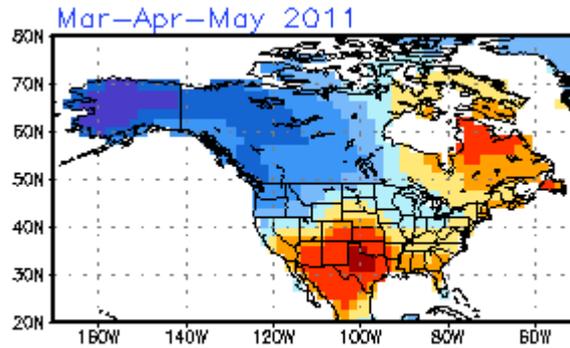
February 11



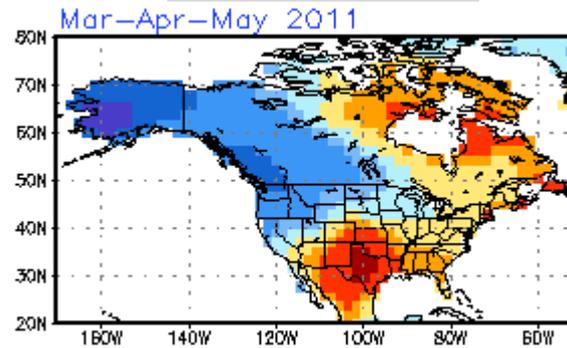
mm/day

Surface Temperature

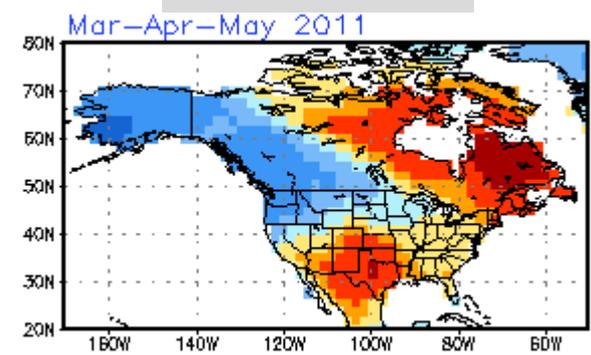
September 10



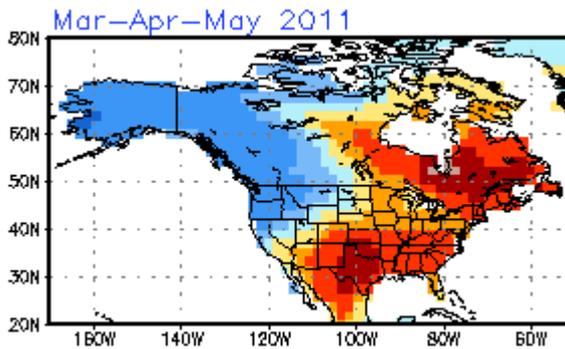
October 10



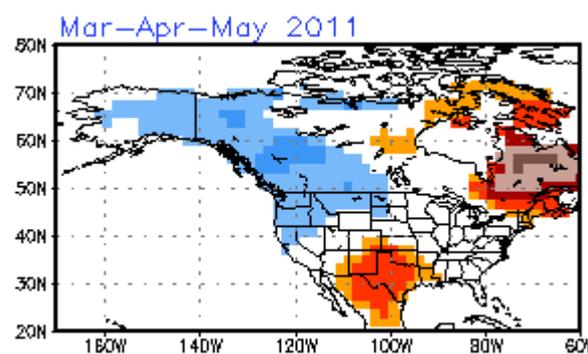
November 10



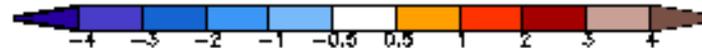
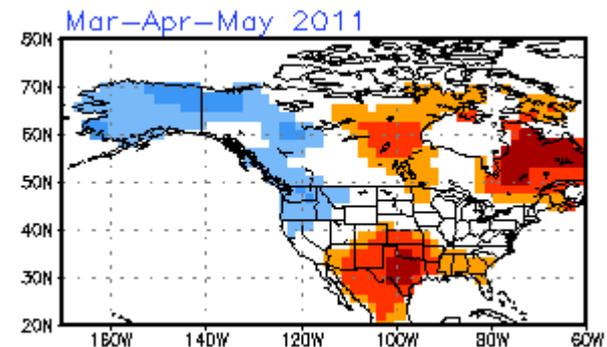
December 10



January 11



February 11



A Summary of CFS.v1 Forecasts

- Fairly good prediction of MAM 2011 SST (La Nina) from September 2010 (longest lead forecast) onwards
- A general indication for above (below) normal precipitation (surface temperature) over parts of the Missouri river basin
- Above normal precipitation anomaly over the northern parts of the Missouri river basin for longer lead, with above normal precipitation covering southern parts also for shorter lead
- Skill based on hindcasts is small and how to use skill masks for specific conditions remains an outstanding issue

Response to MAM 2011 SST Anomaly based on Model Simulations

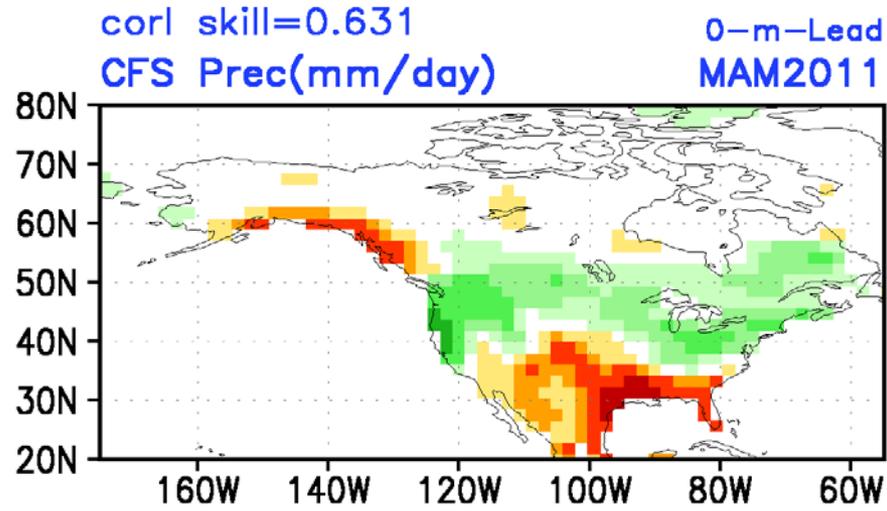
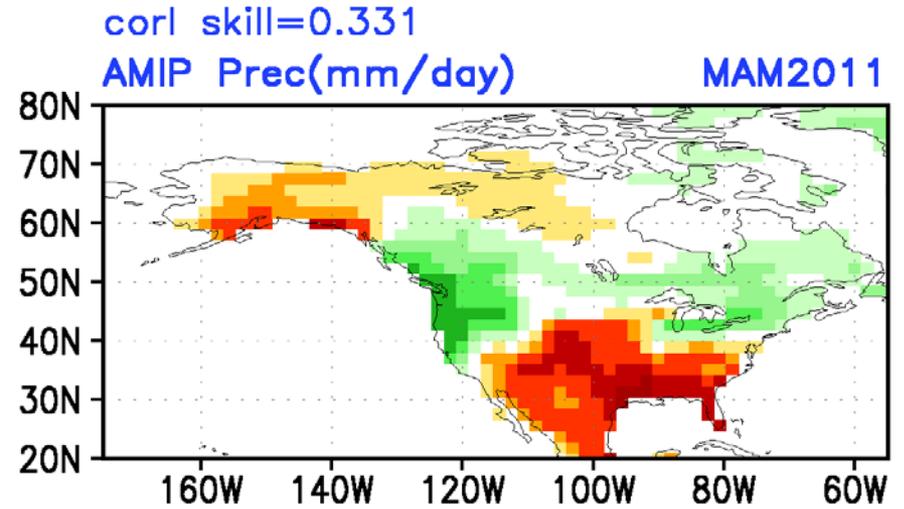
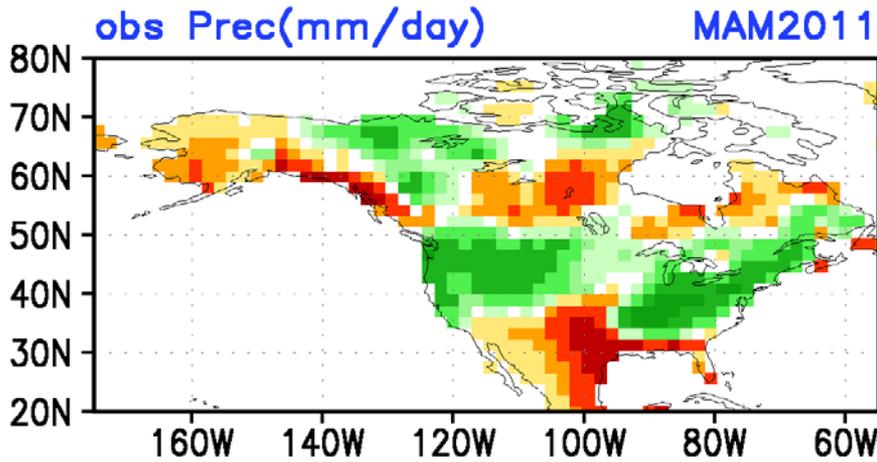
Layout of Slides 17-18

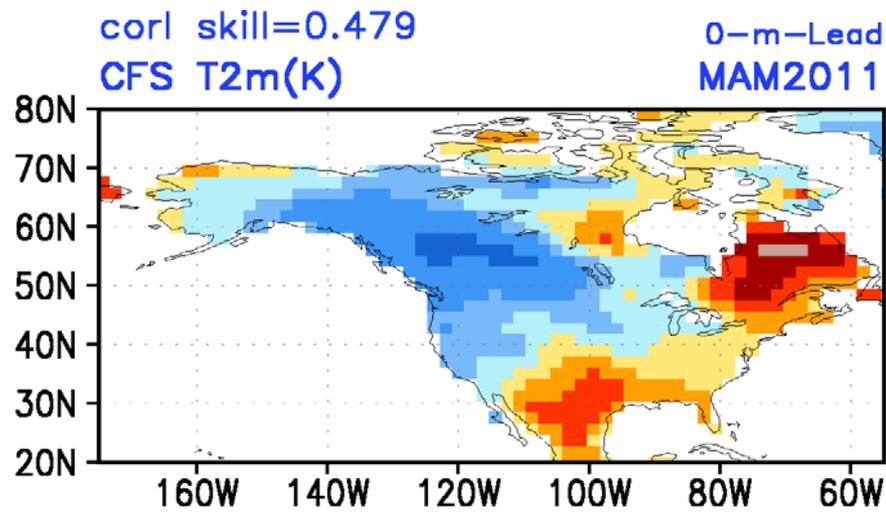
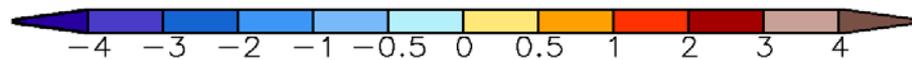
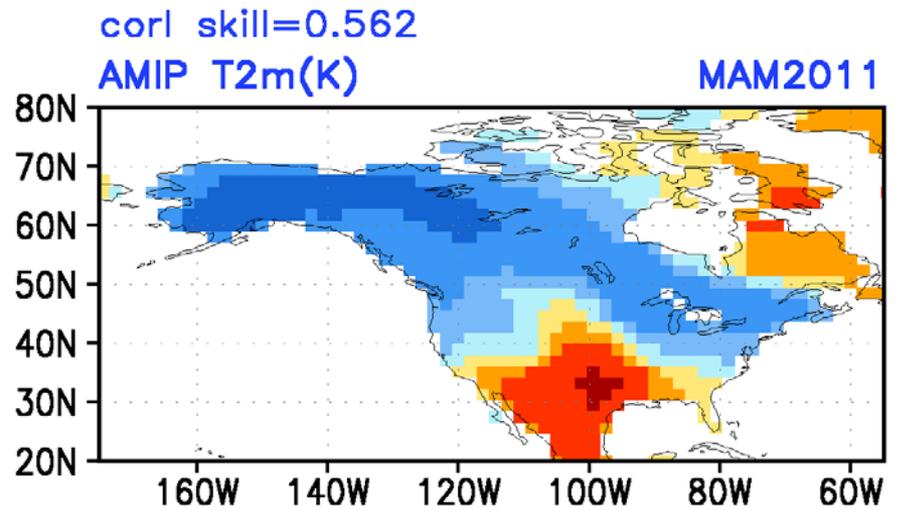
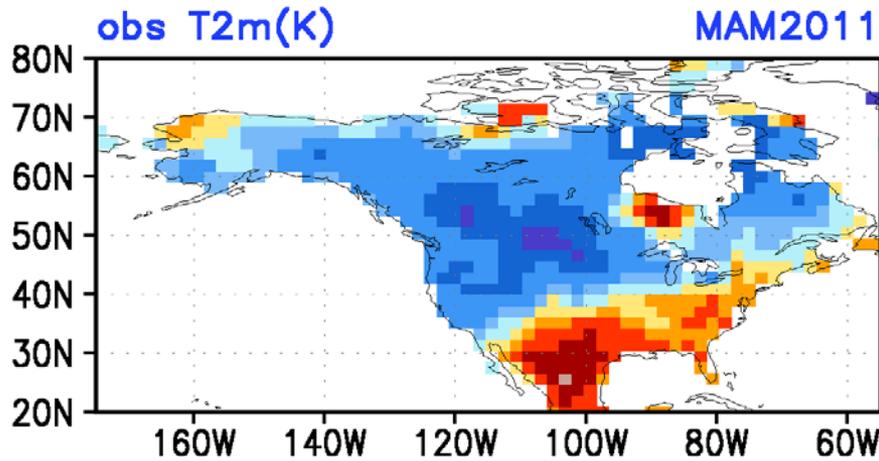
Observed MAM 2011 Anomaly

Anomaly from AMIP Simulation

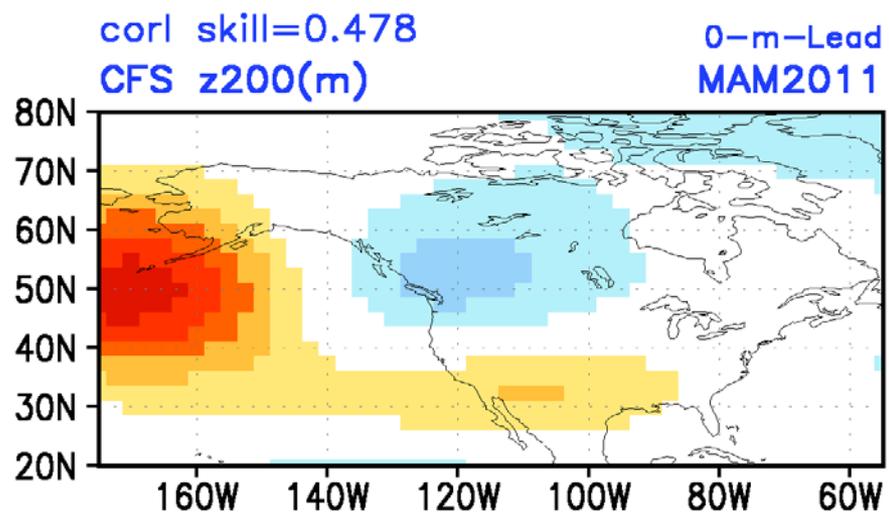
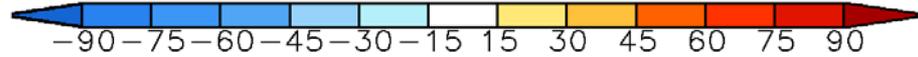
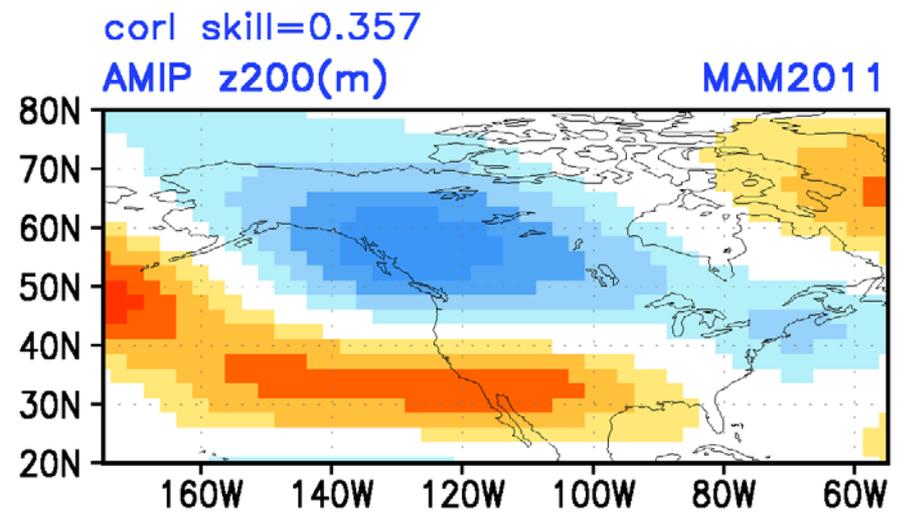
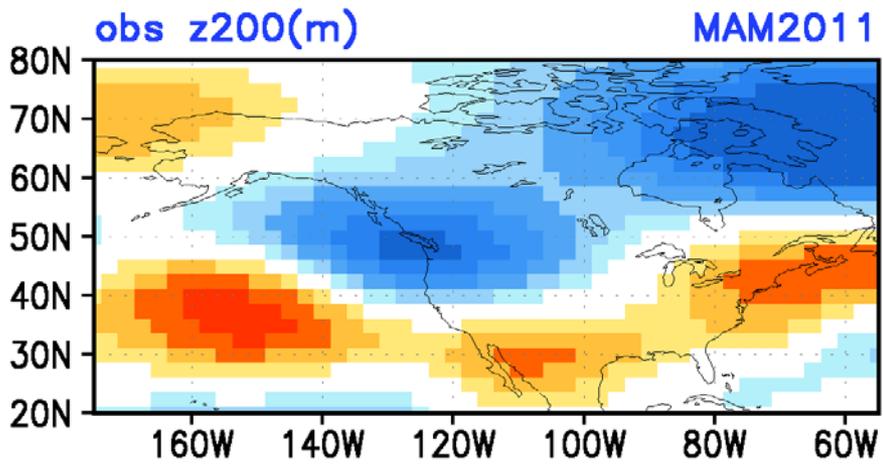
CFSv1 Seasonal Prediction with shortest lead

MAM 2011 Precipitation





MAM 2011 200-mb Height



A Summary from the Predictability Perspective

- From AMIP simulation there is some indication that given the SST forcing, above (below)normal precipitation (surface temperature) anomalies over the Missouri river basin for MAM 2011 were predictable
- Generally good prediction of SST by the CFSv1, and prediction of MAM 2011 precipitation/surface temperature anomalies was consistent with the results from the AMIP simulations