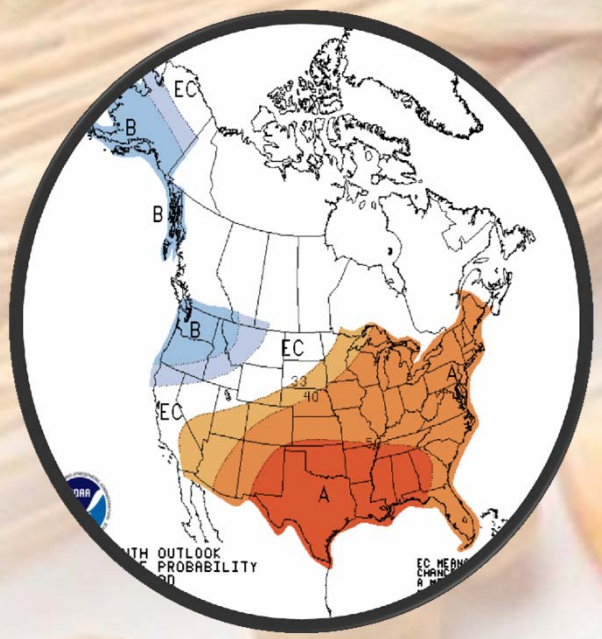
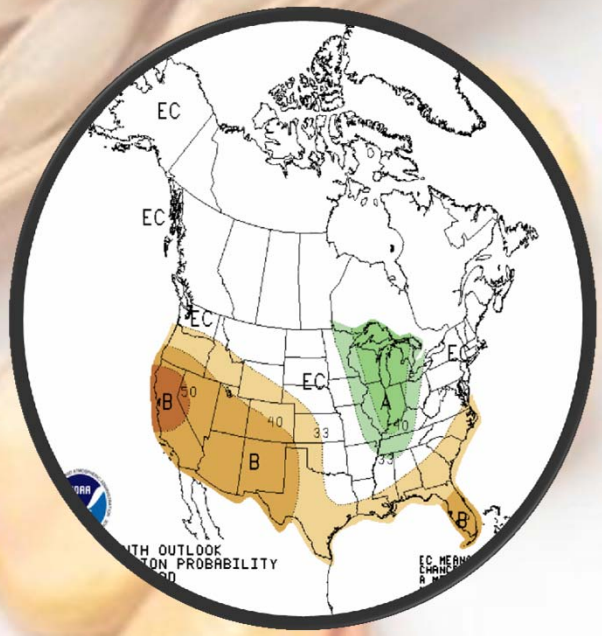
CPC Climate Outlooks For Spring & Summer 2013





Anthony Artusa
Climate Prediction Center
College Park, MD

USDA Agricultural Outlook Forum, Crystal City, VA
2/22/2013

"FLASH DROUGHT" OF 2012

Antecedent winter/spring soils insufficiently recharged

Very mild winter left little snowpack to help keep soils moist in spring

Record Heat in March coming out of a La Nina winter

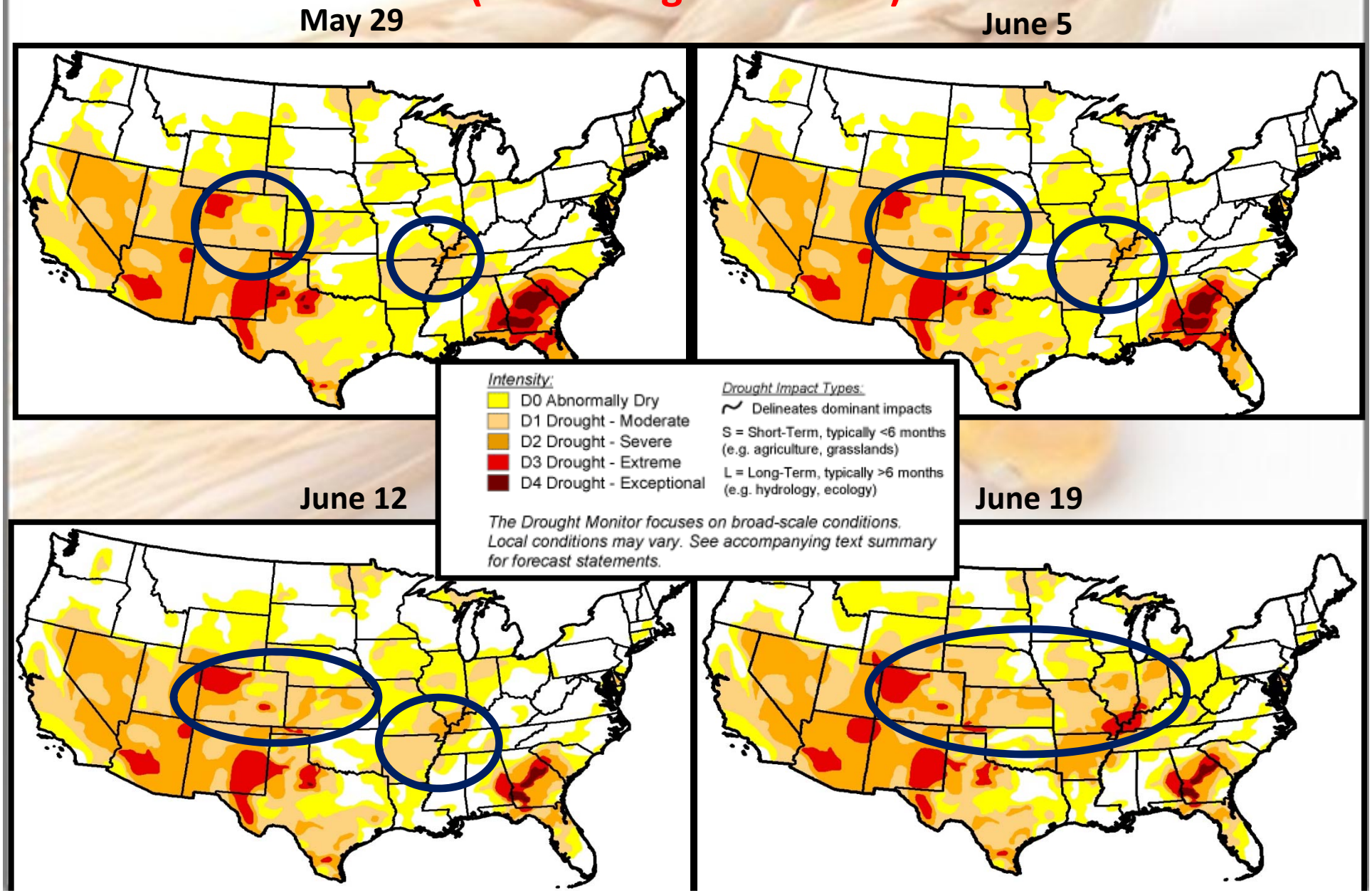
Rapid Onset of Heat in early June 2012 (bad timing)

Two origin areas: CO/KS and MO/w-KY; later merged

Most climate models did not predict it

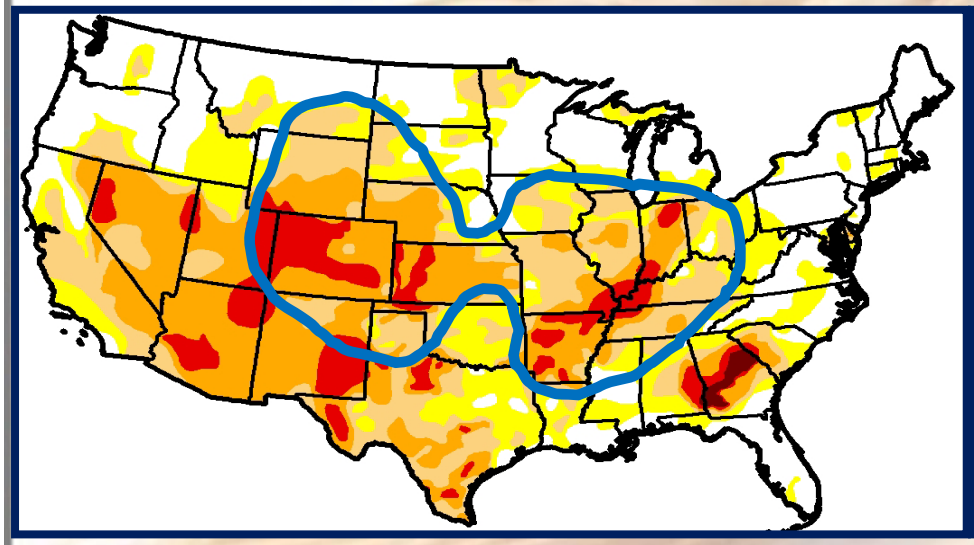
Pre-existing Drought rapidly intensifies & expands

(U.S. Drought Monitor)

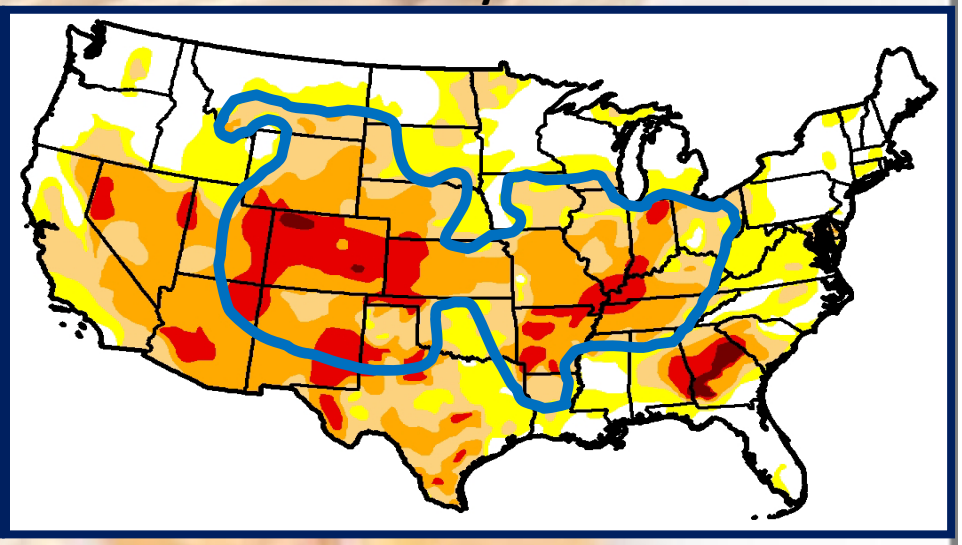


Pre-existing Drought rapidly intensifies & expands

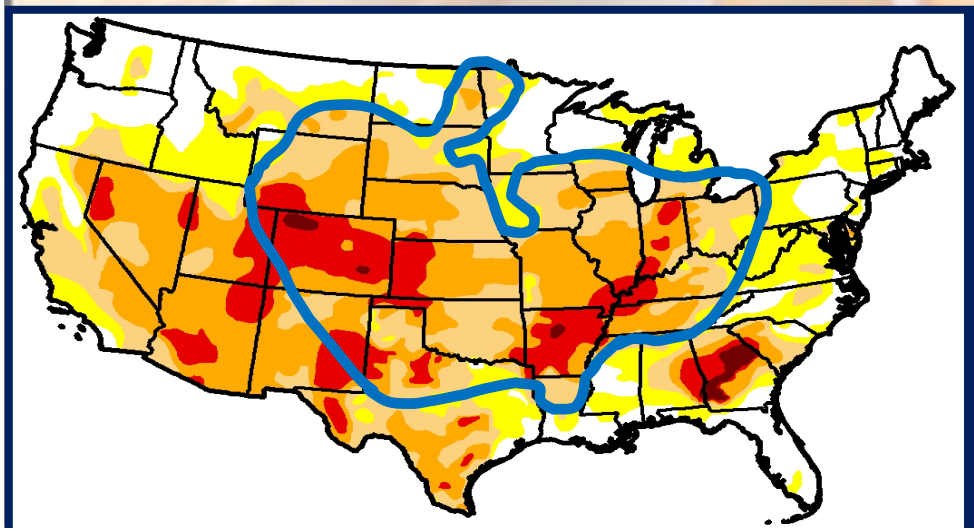
June 26



July 3



July 10



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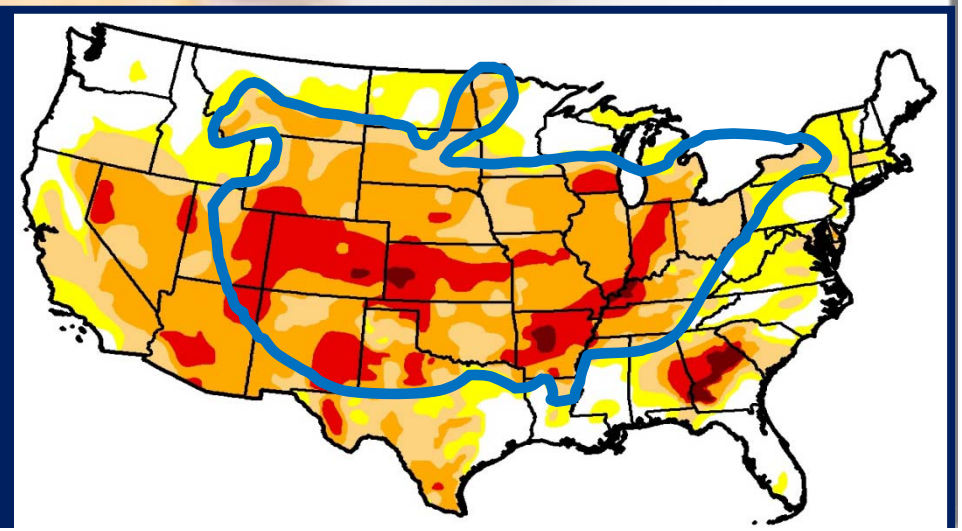
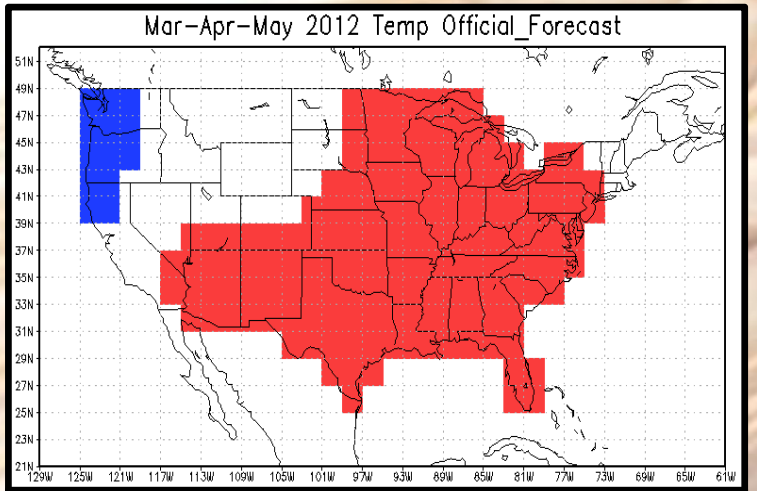


MARCH – MAY 2012

TEMPERATURE

FCST:



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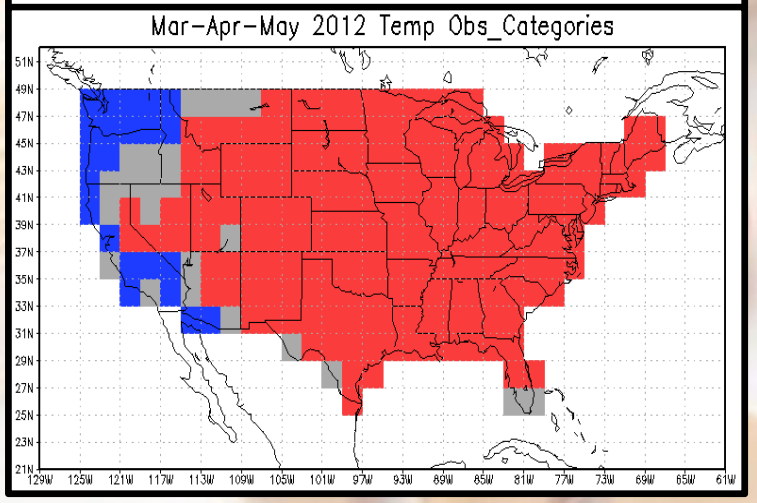

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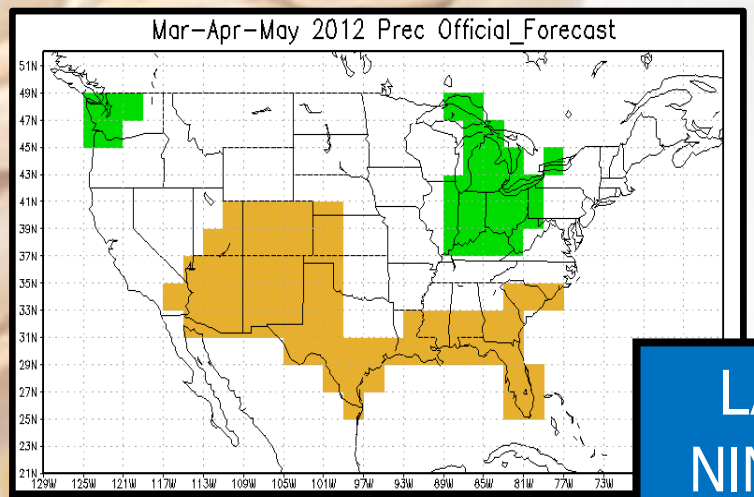
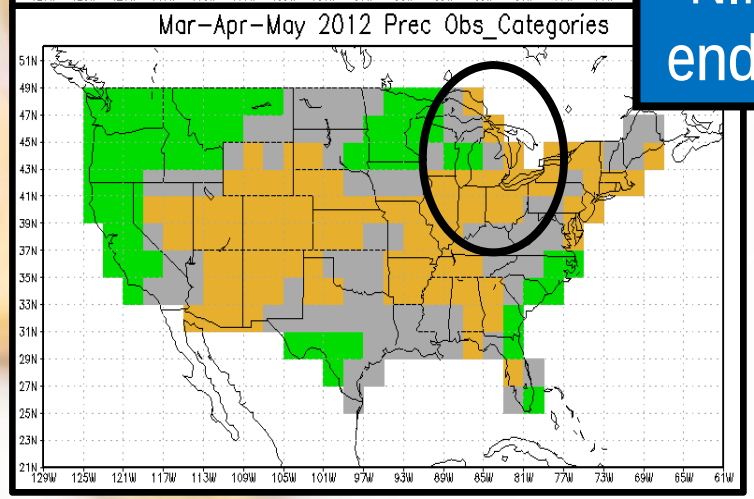
ALL: +61.85
%-COVG(NON-EC): +71.55

PRECIPITATION





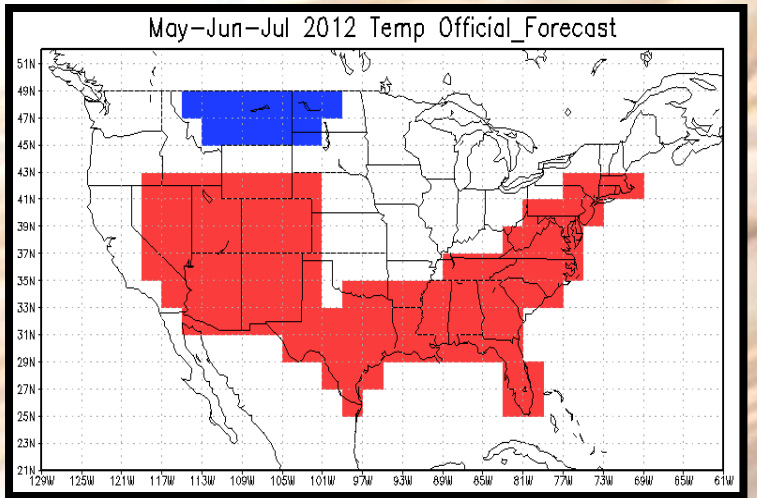
LA NINA ending

NON-EC: +12.23
ALL: +4.96
%-COVG(NON-EC): +40.52

MAY – JULY 2012

TEMPERATURE

FCST:



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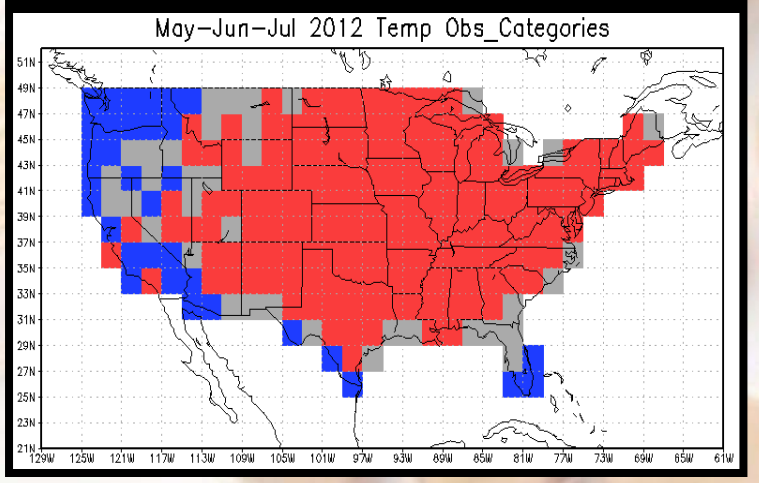
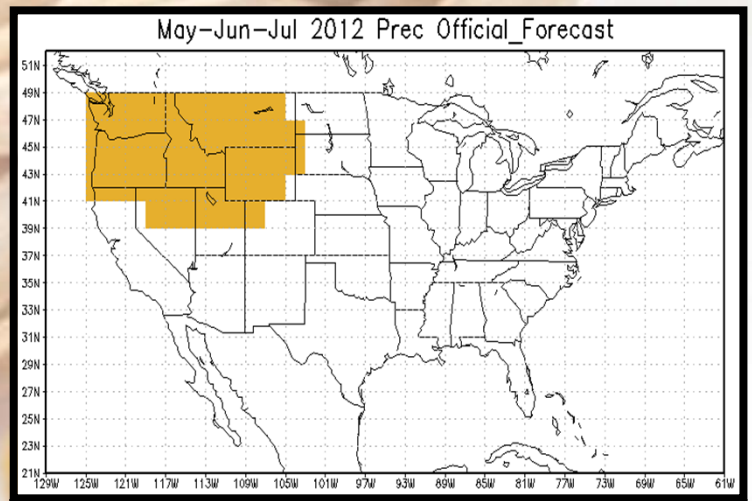
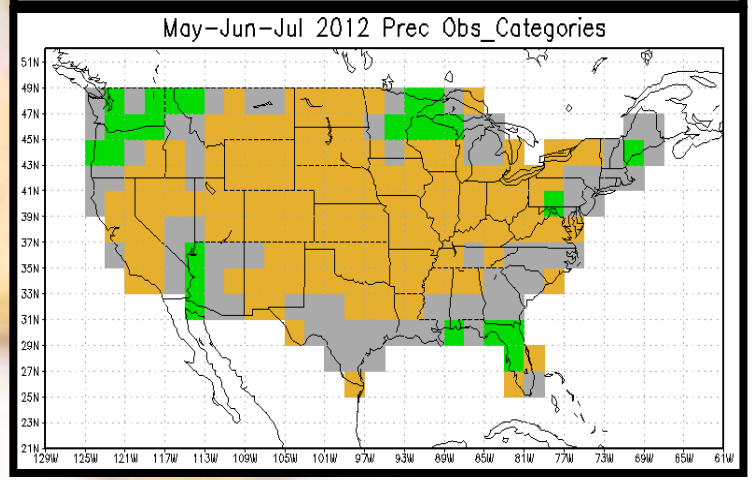


NON-EC: +42.40
ALL: +22.84
%-COVG(NON-EC): +53.88

PRECIPITATION



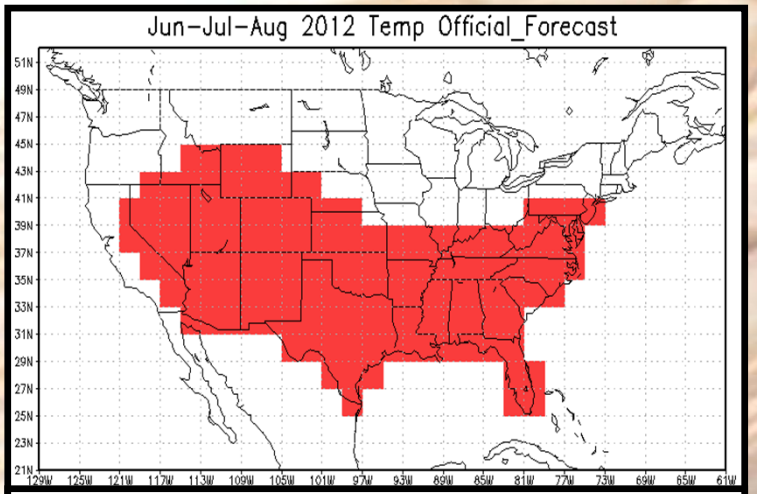


NON-EC: +31.25
ALL: +6.47
%-COVG(NON-EC): +20.69

JUNE – AUGUST 2012

TEMPERATURE

FCST:



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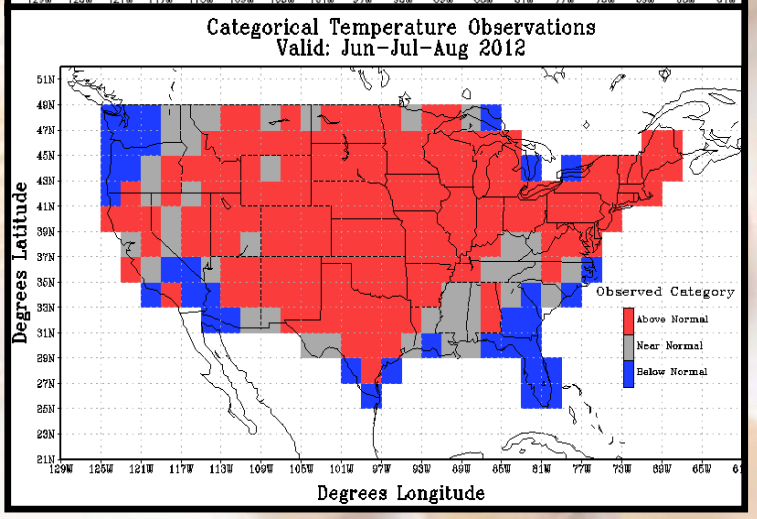
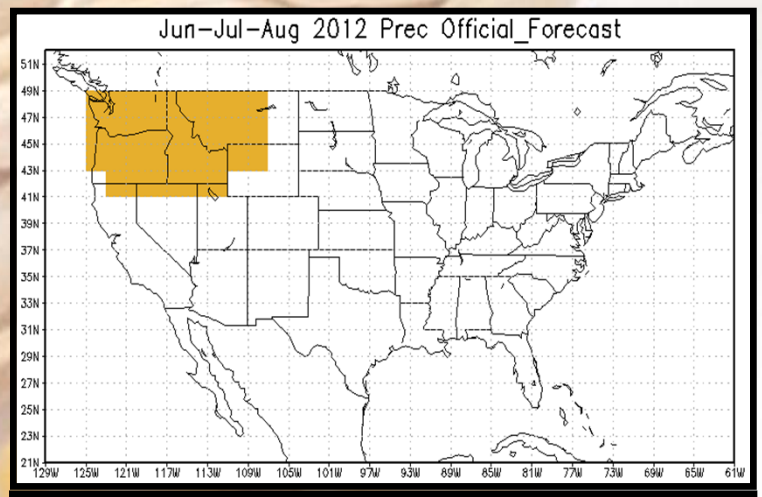


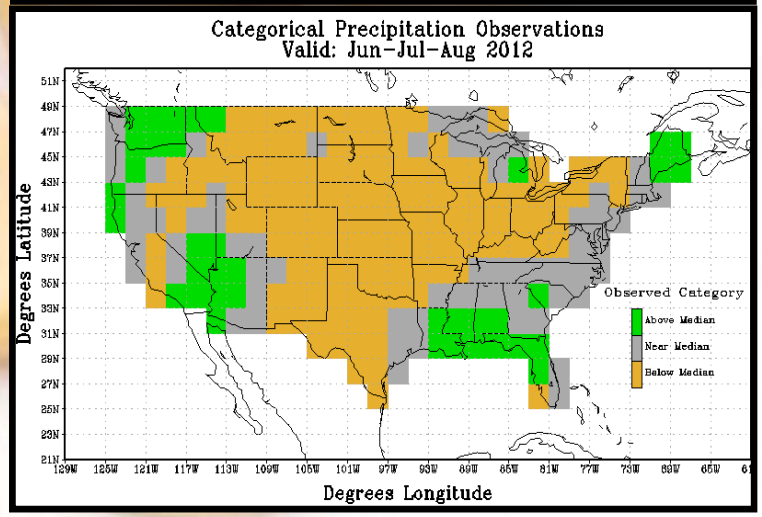
NON-EC: +45.45

ALL: +25.86

%-COVG(NON-EC): +56.90

PRECIPITATION



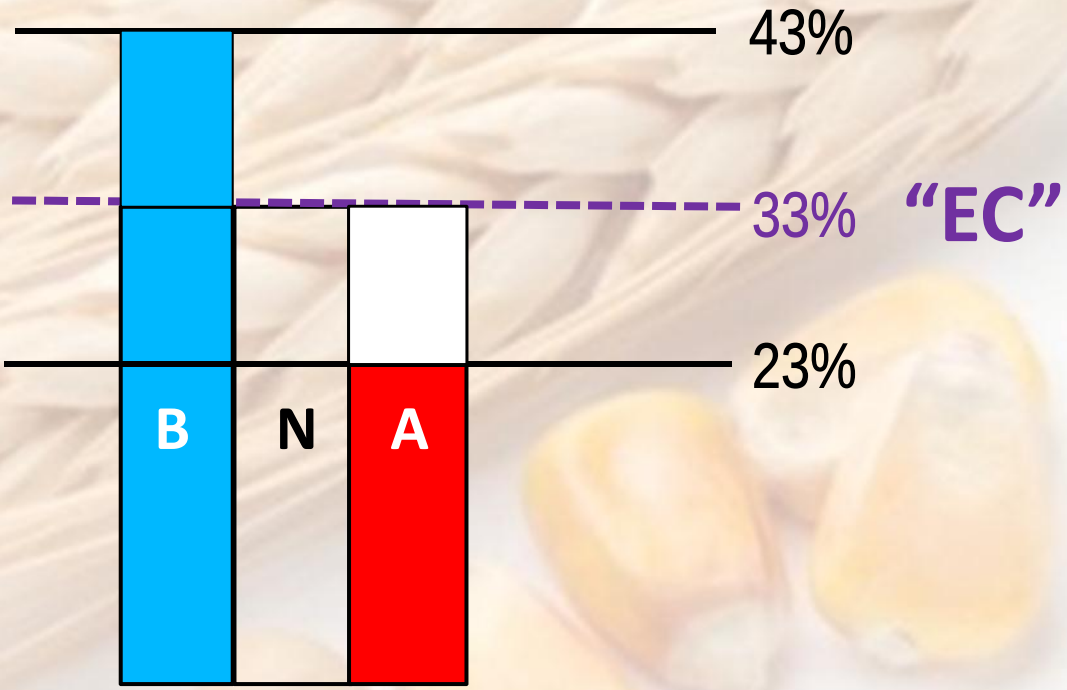


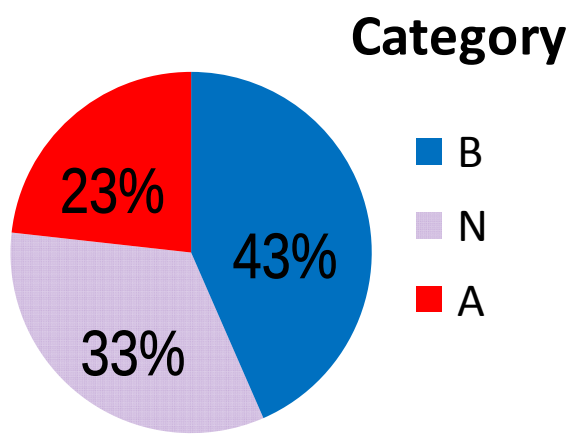
NON-EC: +27.27

ALL: +3.88

%-COVG(NON-EC): +14.22

TERCILE ADJUSTMENTS

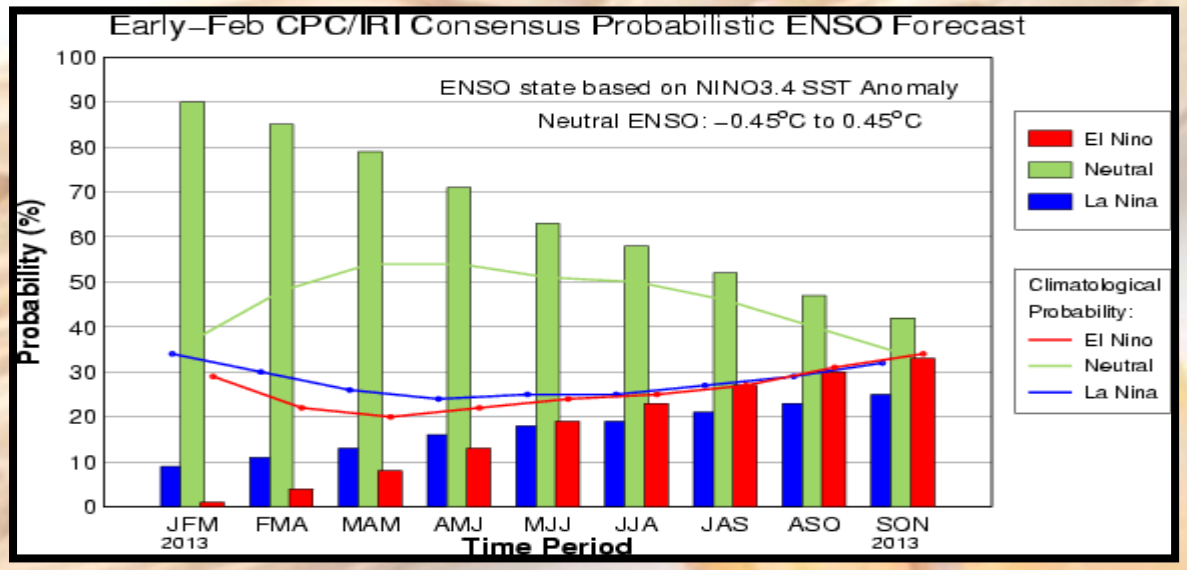




MOST LIKELY CATEGORY: BELOW NORMAL

Spring & Summer 2013 Climate Outlooks:

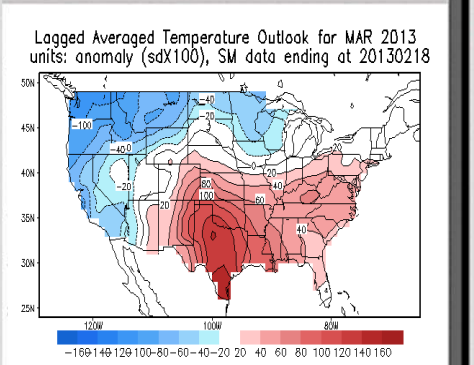
ENSO-NEUTRAL CONDITIONS FAVORED



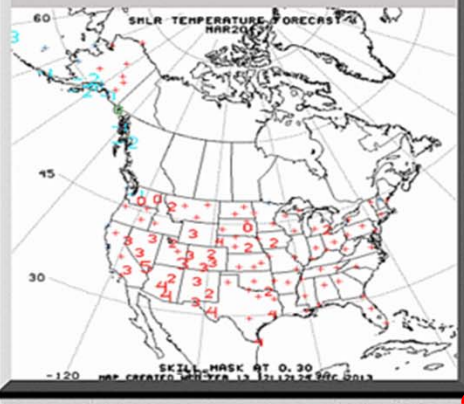
Season	La Niña	Neutral	El Niño
JFM 2013	9%	90%	1%
FMA 2013	11%	85%	4%
MAM 2013	13%	79%	8%
AMJ 2013	16%	71%	13%
MJJ 2013	18%	63%	19%
JJA 2013	19%	58%	23%
JAS 2013	21%	52%	27%
ASO 2013	23%	47%	30%
SON 2013	25%	42%	33%

MAR 2013 [Temperature]

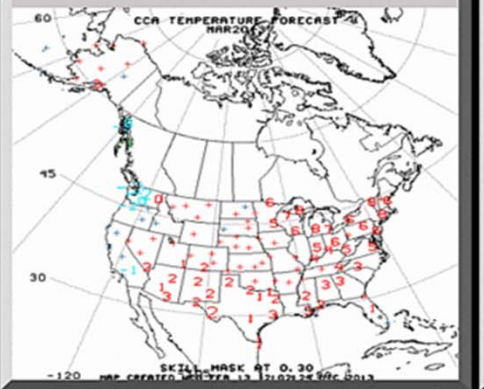
CAS



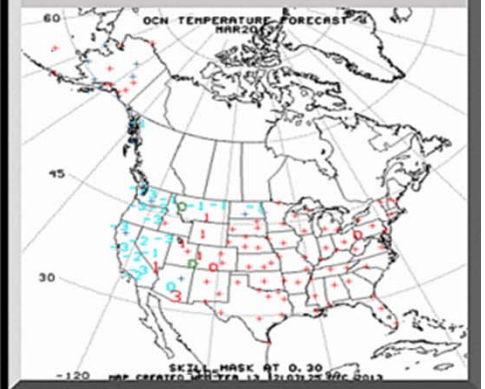
SMLR



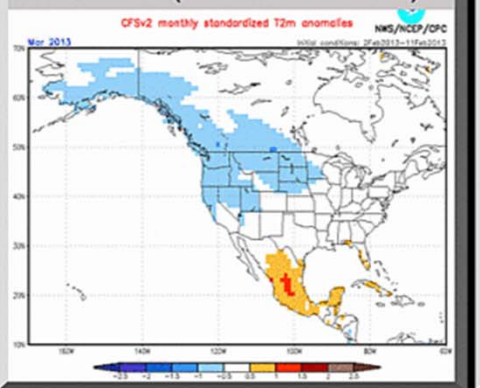
CCA



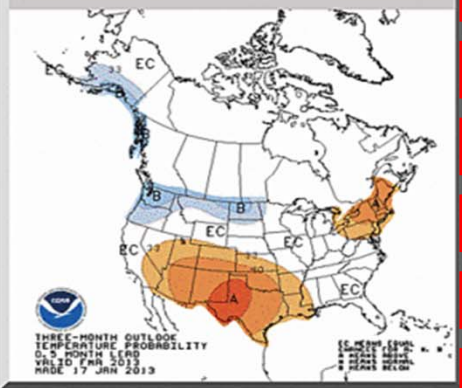
OCN



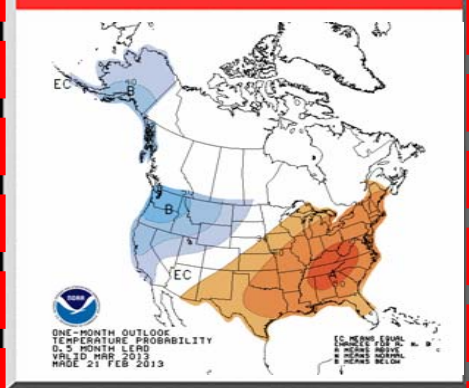
CFSv2 (Standardized)



PREV-SNL



** NEW-OTLK **



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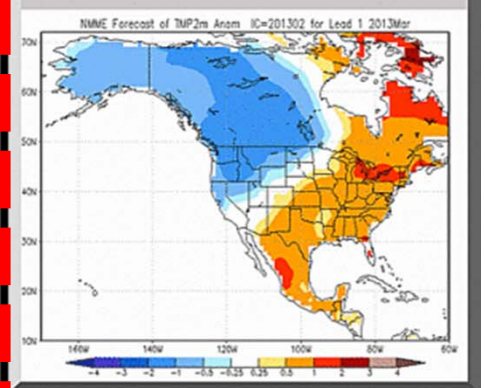
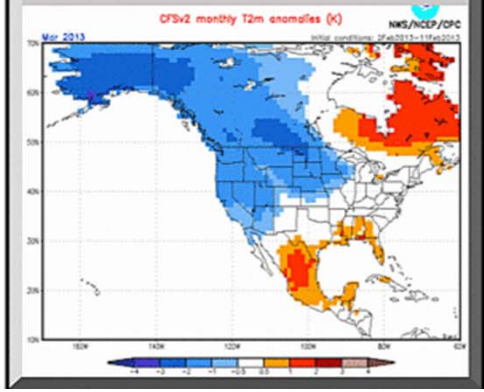
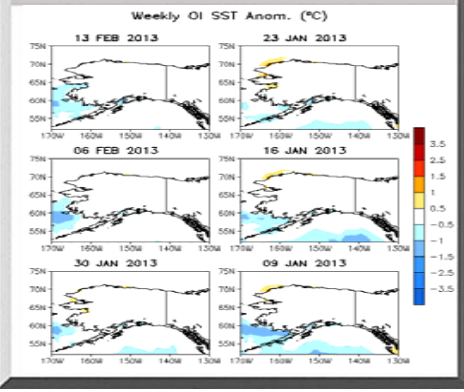


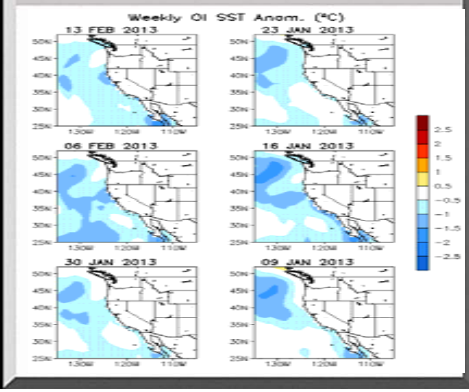
CFSv2



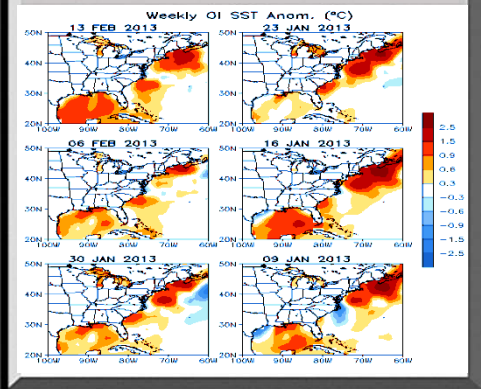
WEEKLY SSTs



WEEKLY SSTs

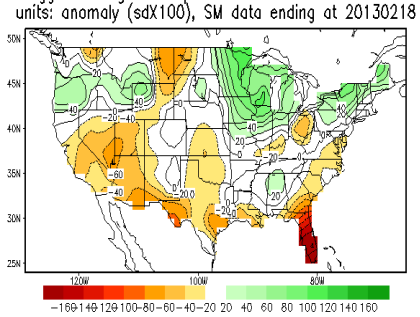


WEEKLY SSTs



MAR 2013 [Precipitation]

CAS



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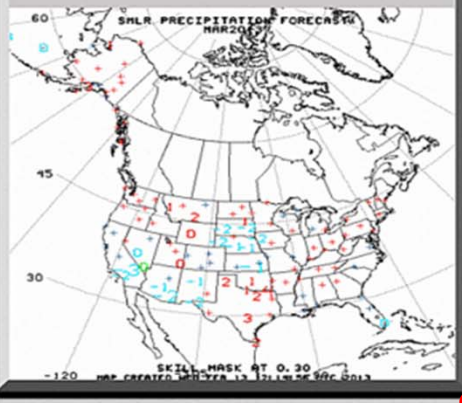
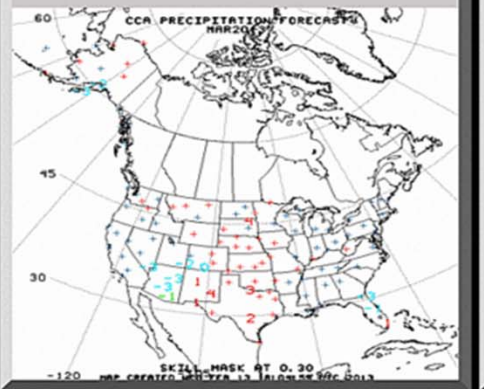
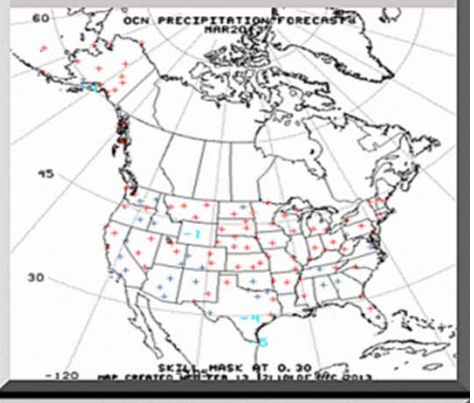


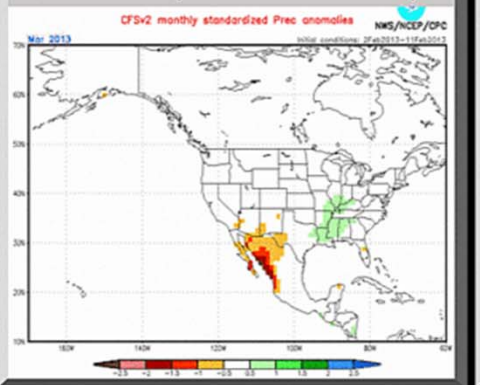
CCA



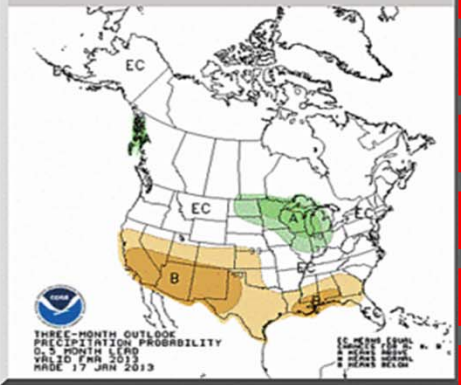
OCN



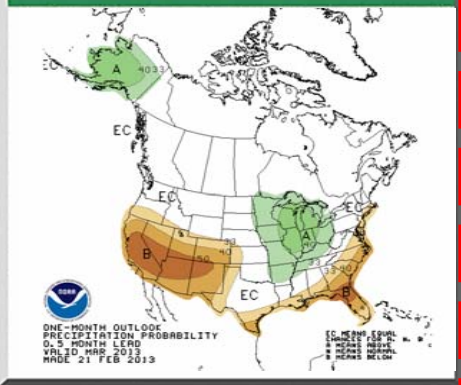
CFSv2 (Standardized)



PREV-SNL



** NEW-OTLK **



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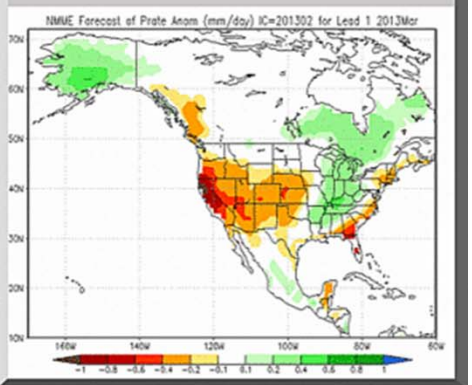

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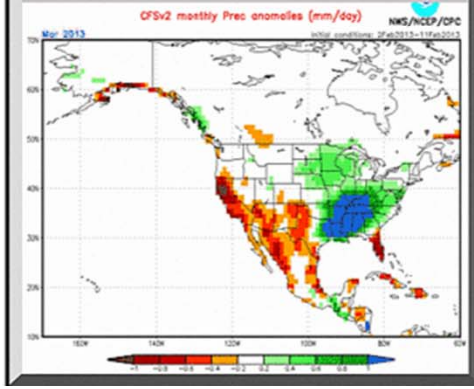
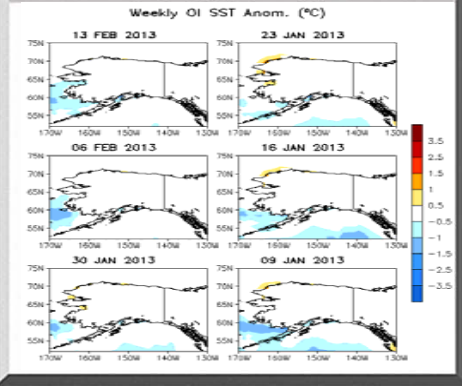
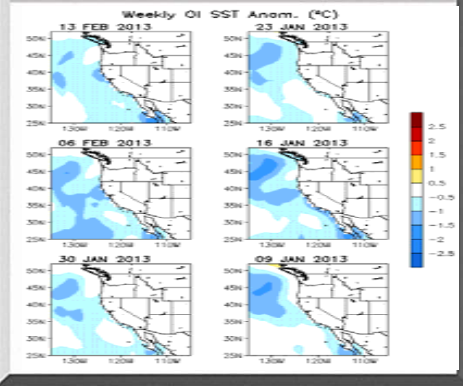


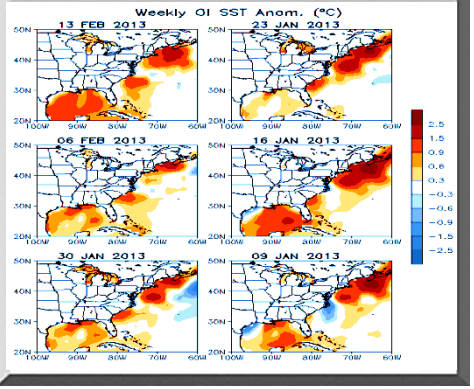
WEEKLY SSTs



WEEKLY SSTs

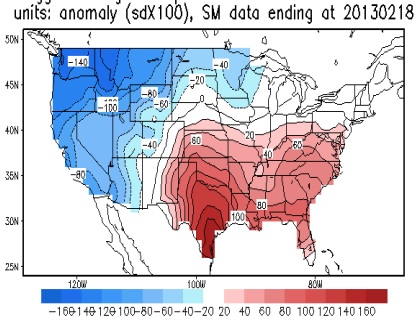


WEEKLY SSTs



MAM Season [Temperature]

CAS



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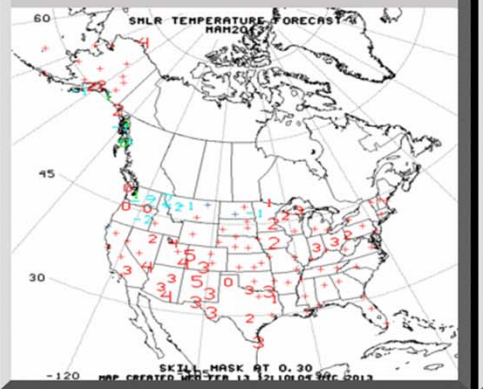

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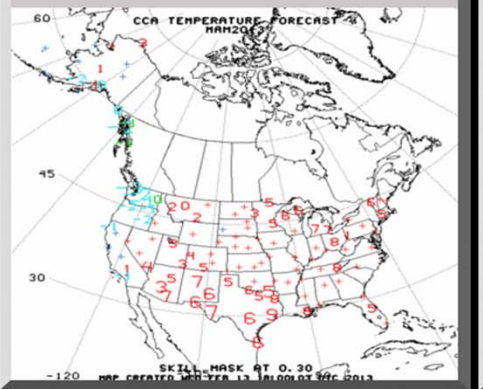
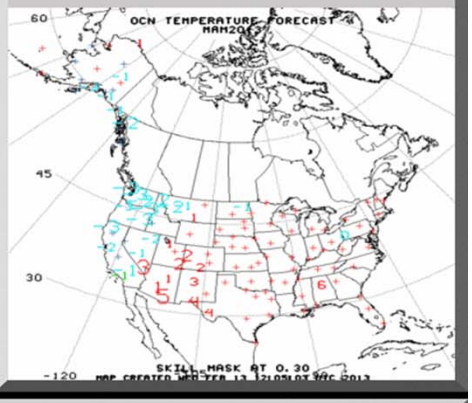
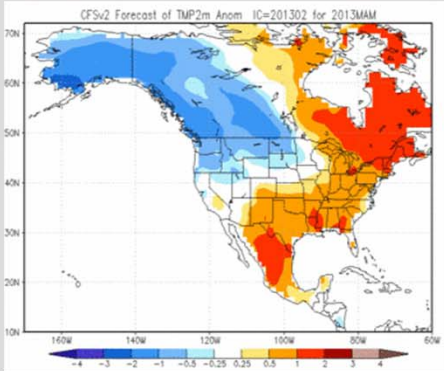


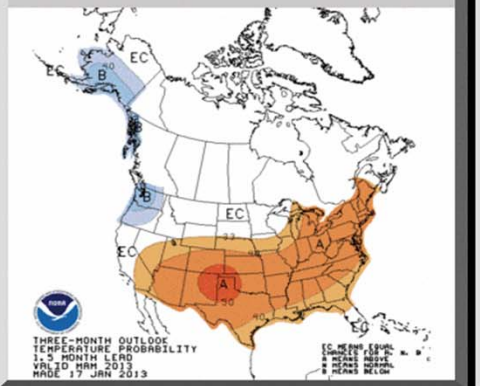
OCN



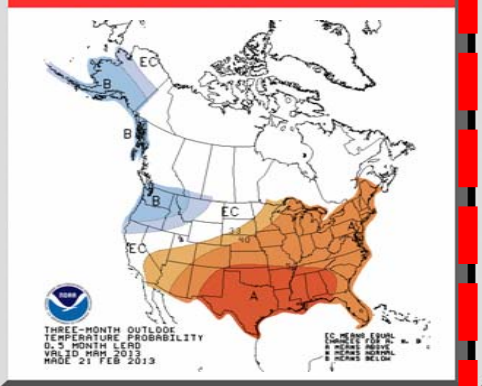
CFSv2



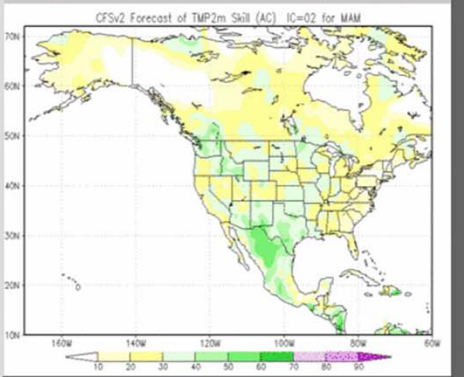
OLD OUTLOOK



** NEW OUTLOOK **



CFSv2 (skill)



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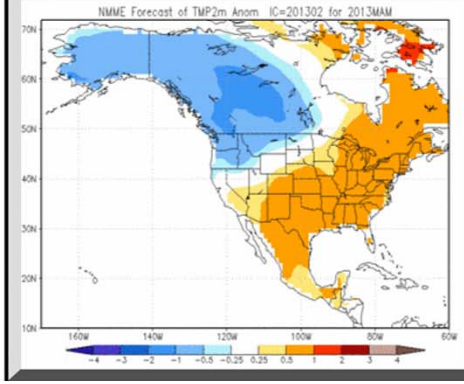

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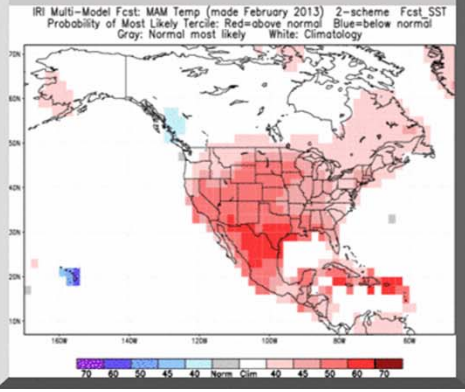
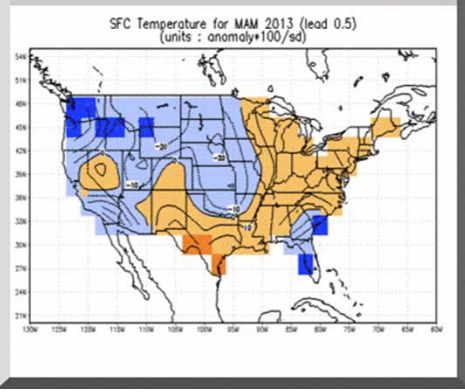
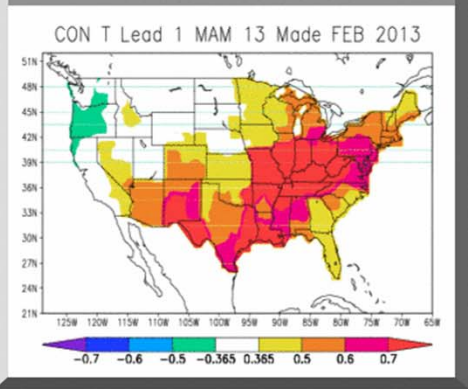


ENSEMBLE CCA (ECCA)

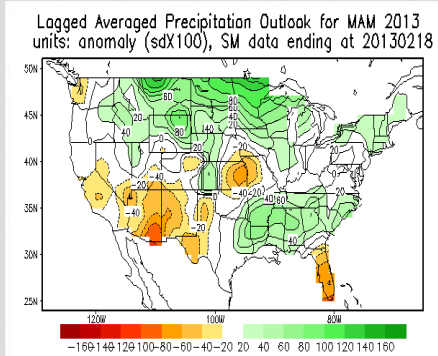


CONSOLIDATION



MAM Season [Precipitation]

CAS



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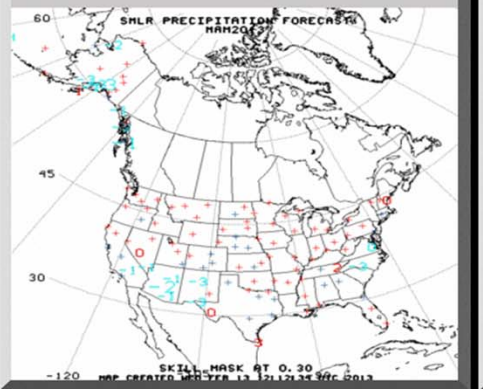

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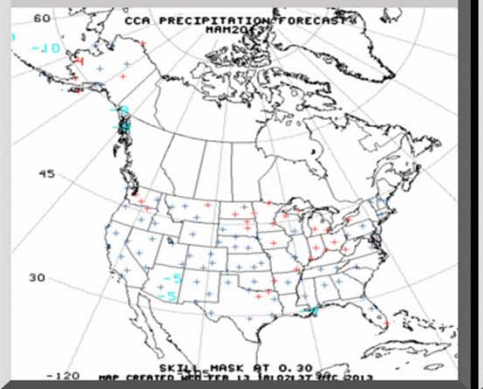

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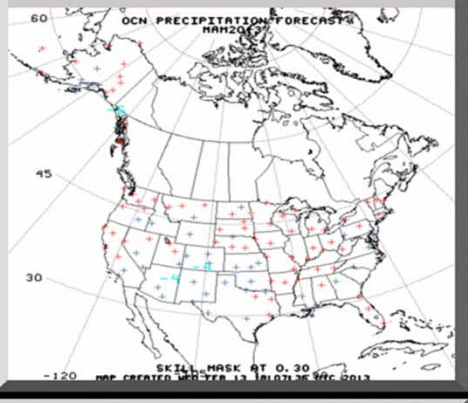
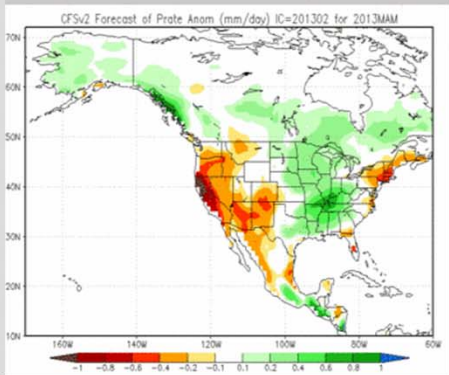


CFSv2



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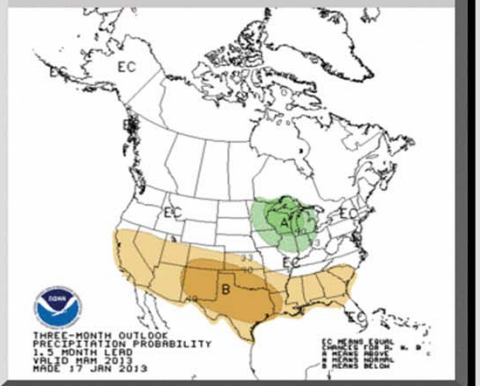

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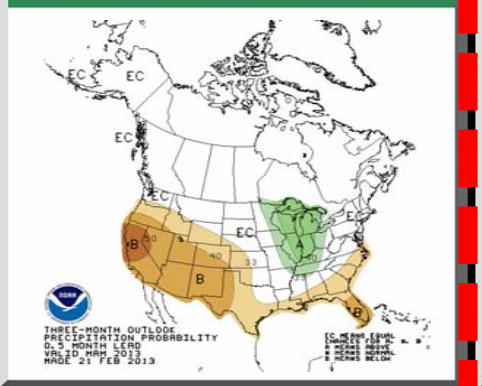

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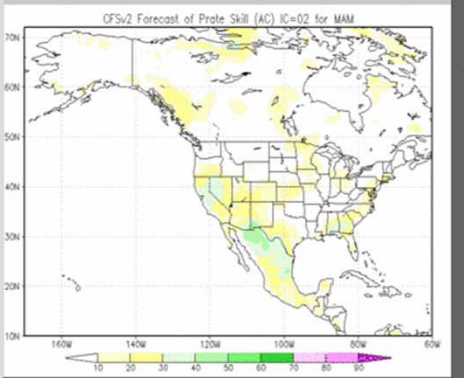

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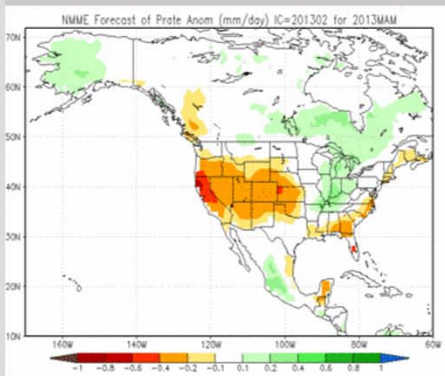

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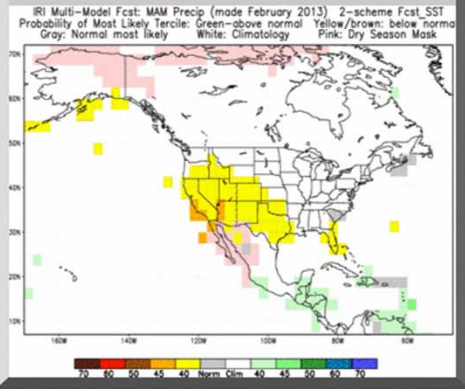

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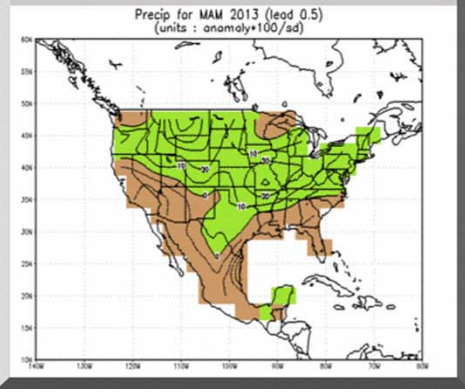
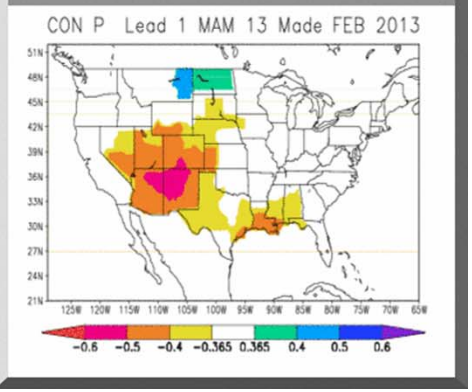
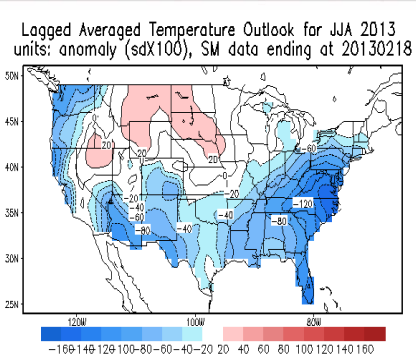


CONSOLIDATION



JJA Season [Temperature]

CAS



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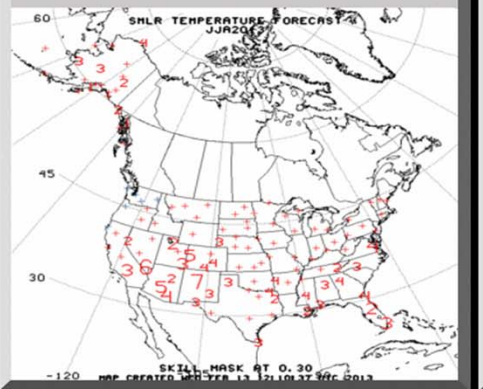

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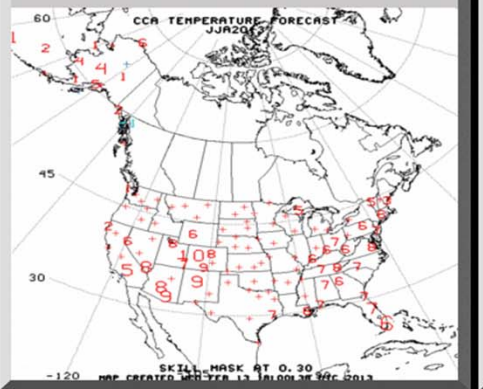

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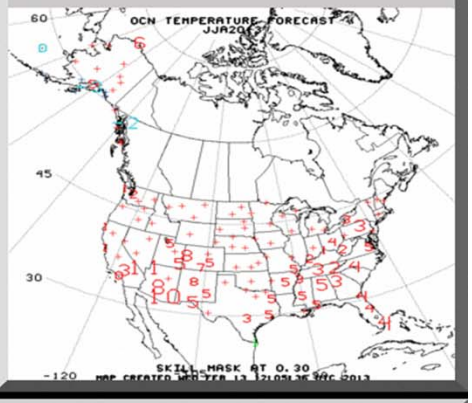

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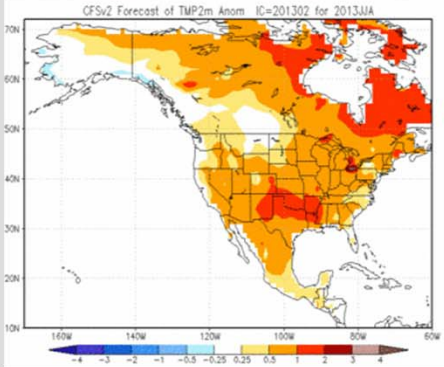

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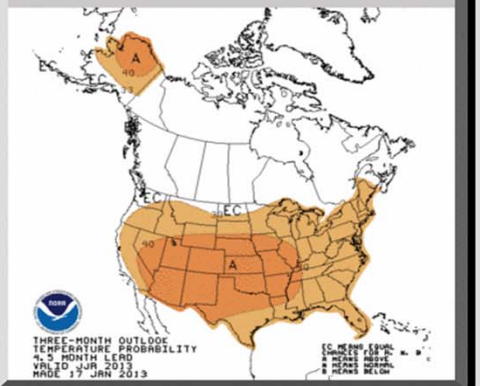
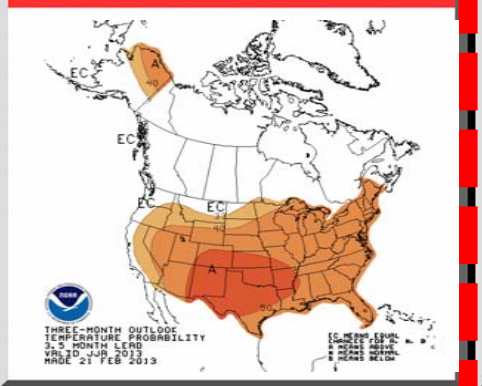


** NEW OUTLOOK **



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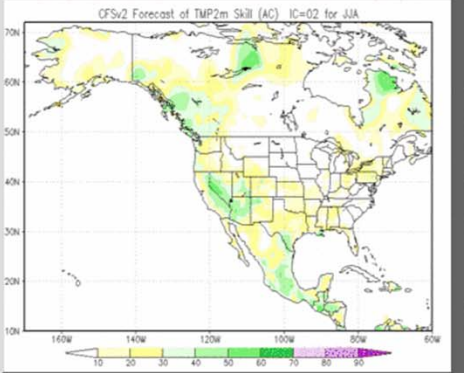

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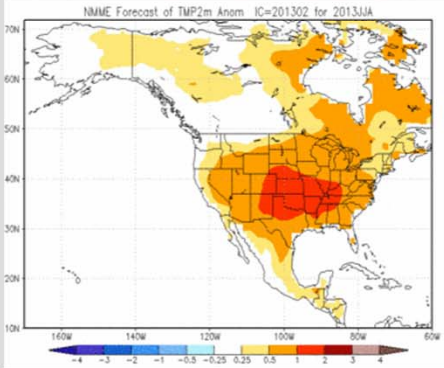

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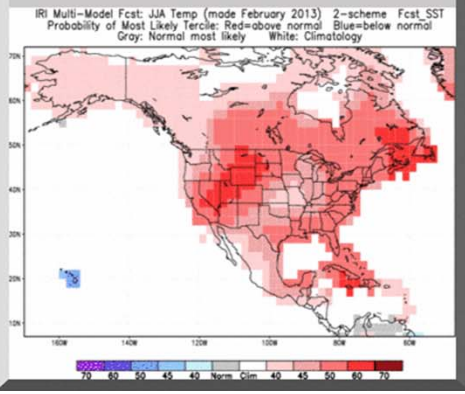

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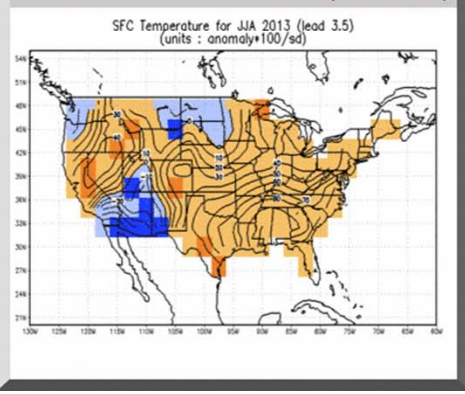
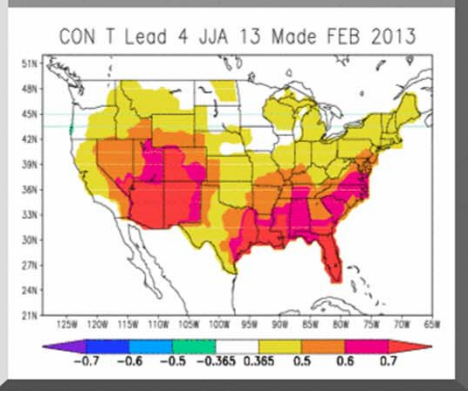
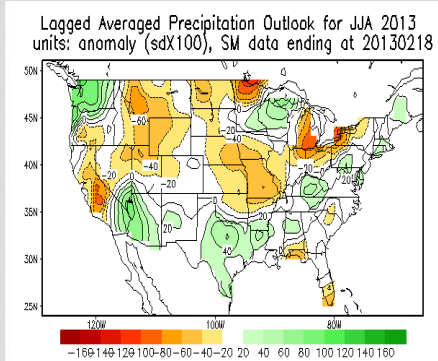


CONSOLIDATION



JJA Season [Precipitation]

CAS



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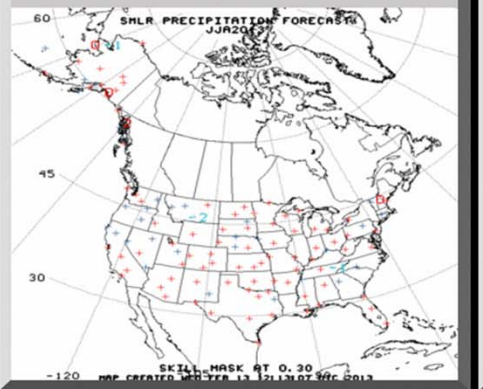

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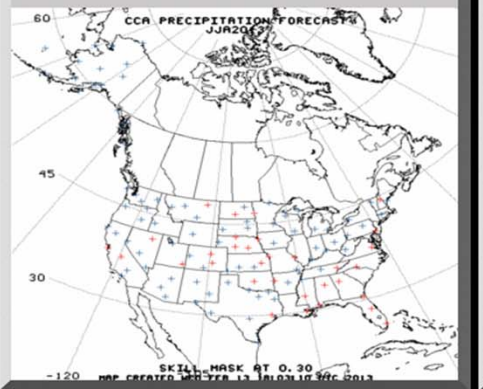

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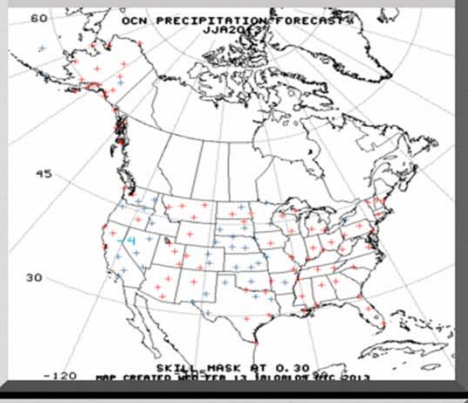

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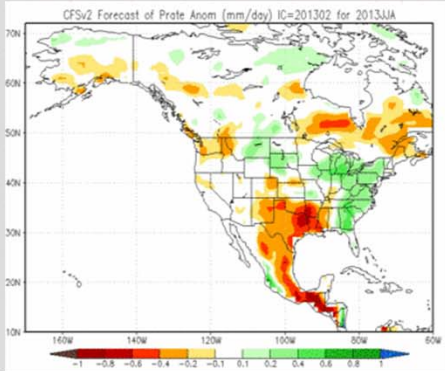
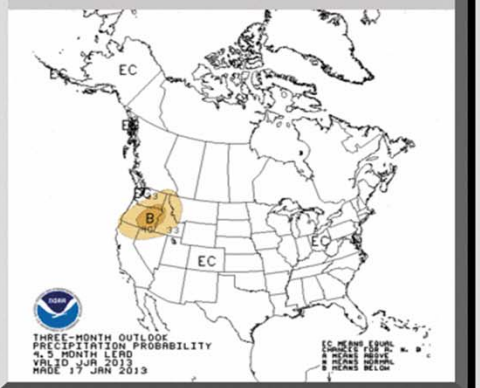
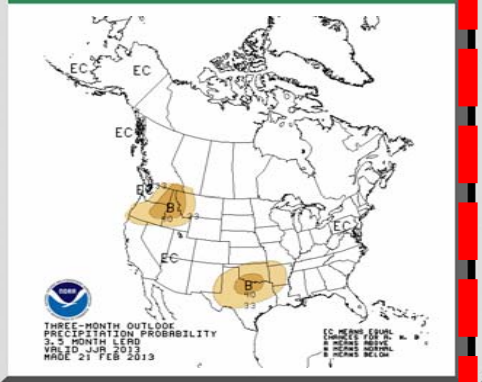


OLD OUTLOOK



** NEW OUTLOOK **



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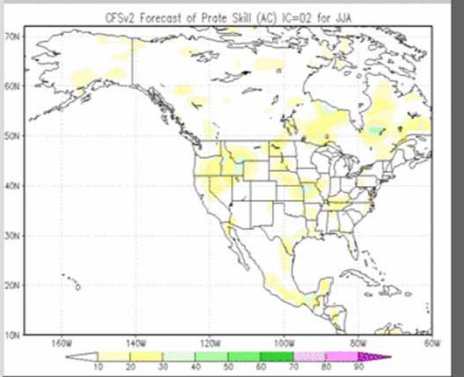

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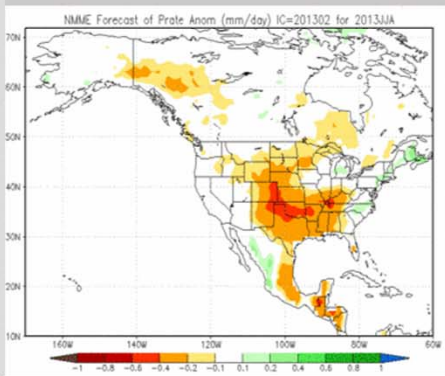

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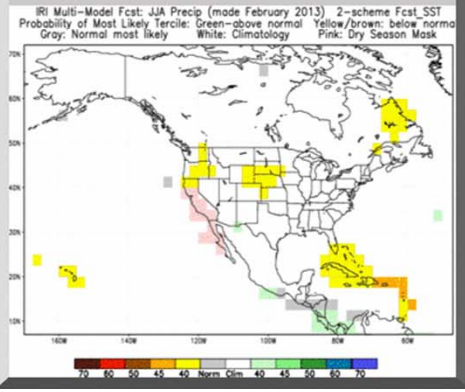

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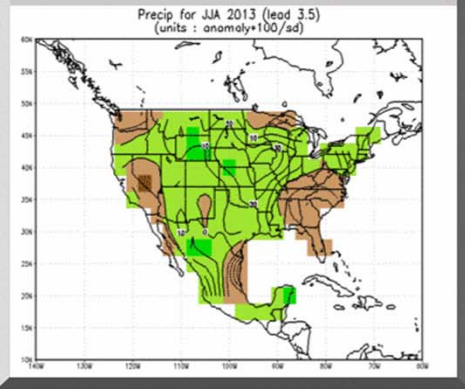
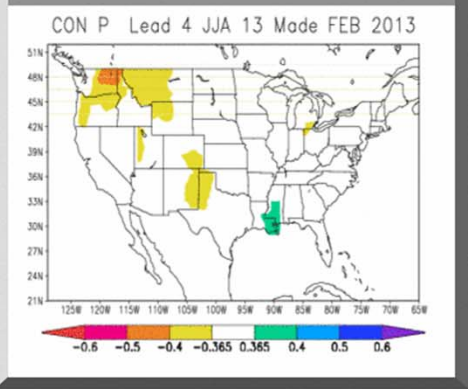
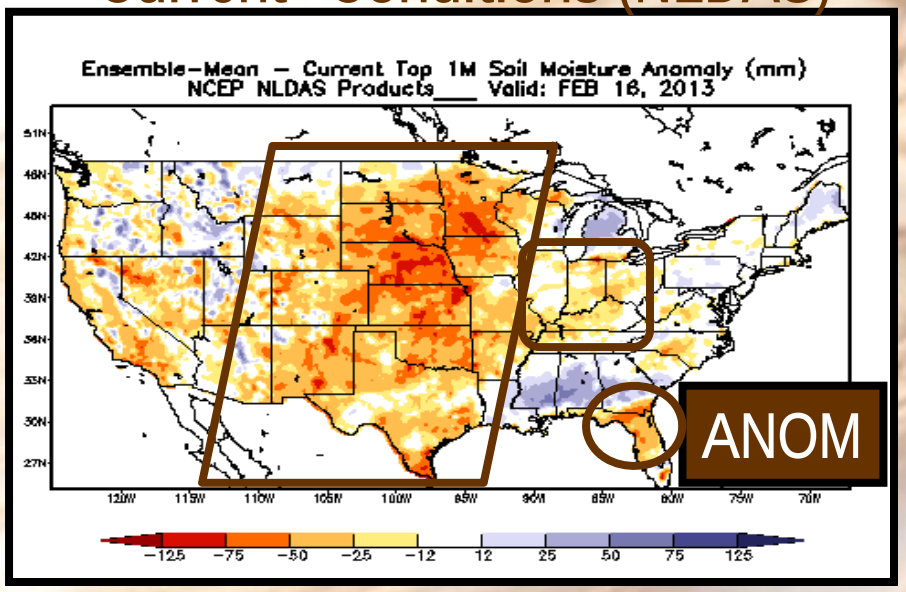


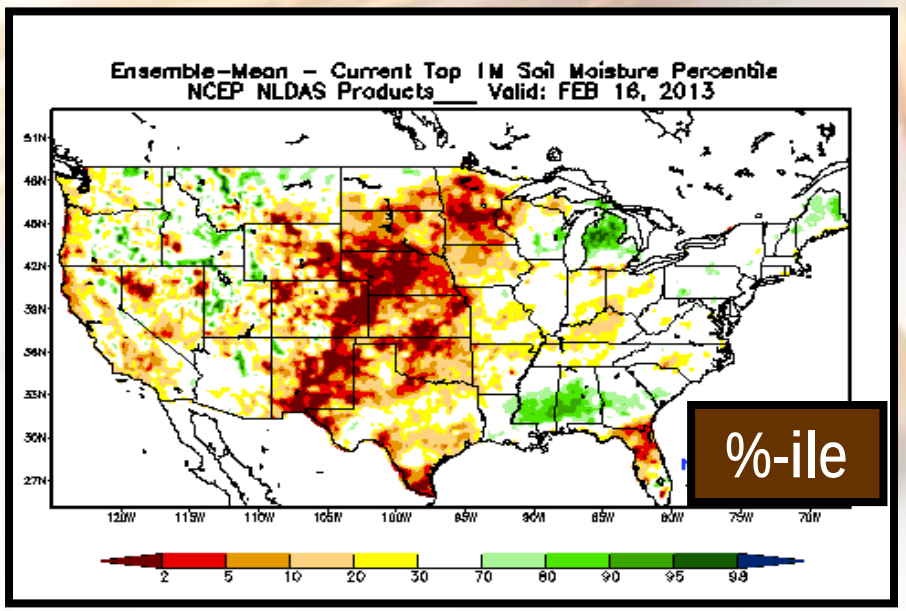
CONSOLIDATION



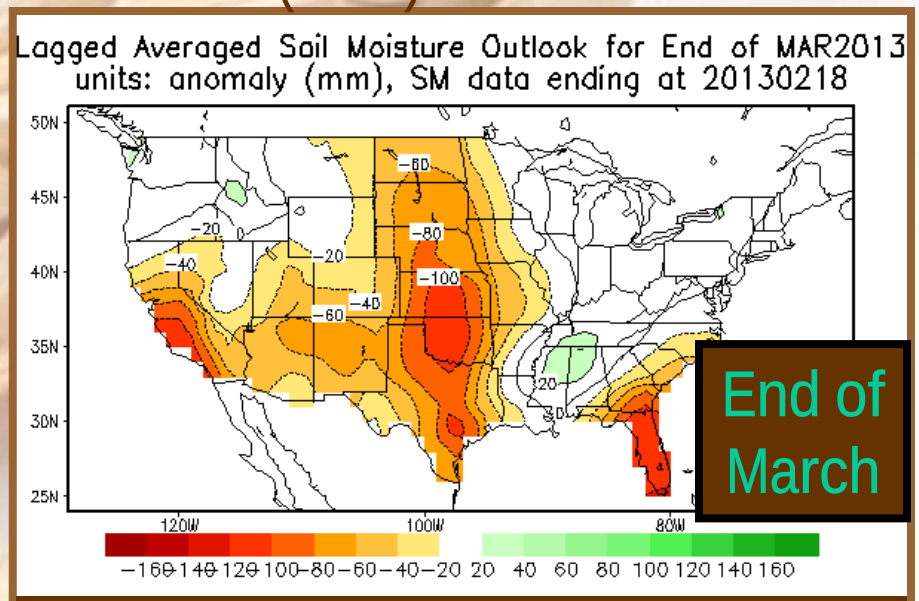
Soil Moisture

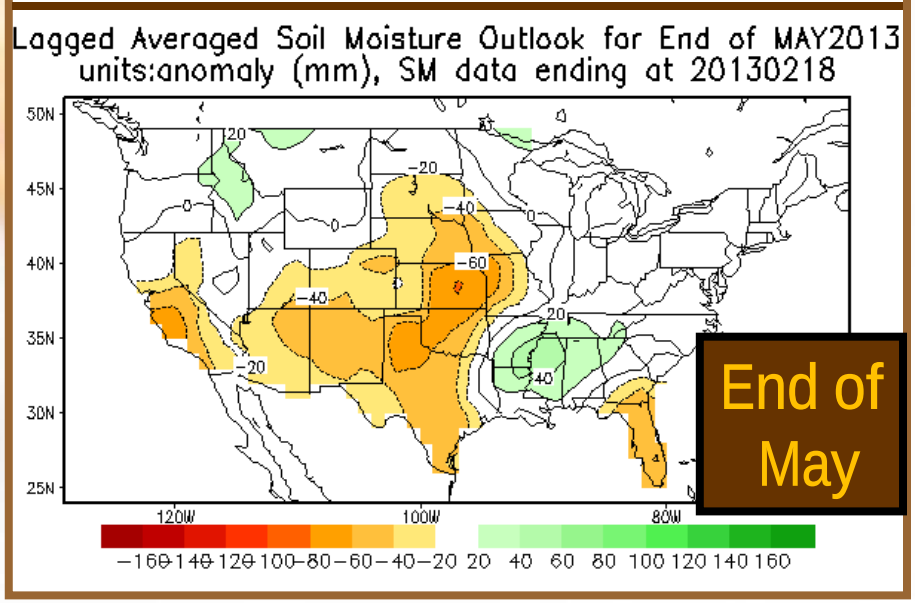
"Current" Conditions (NLDAS)





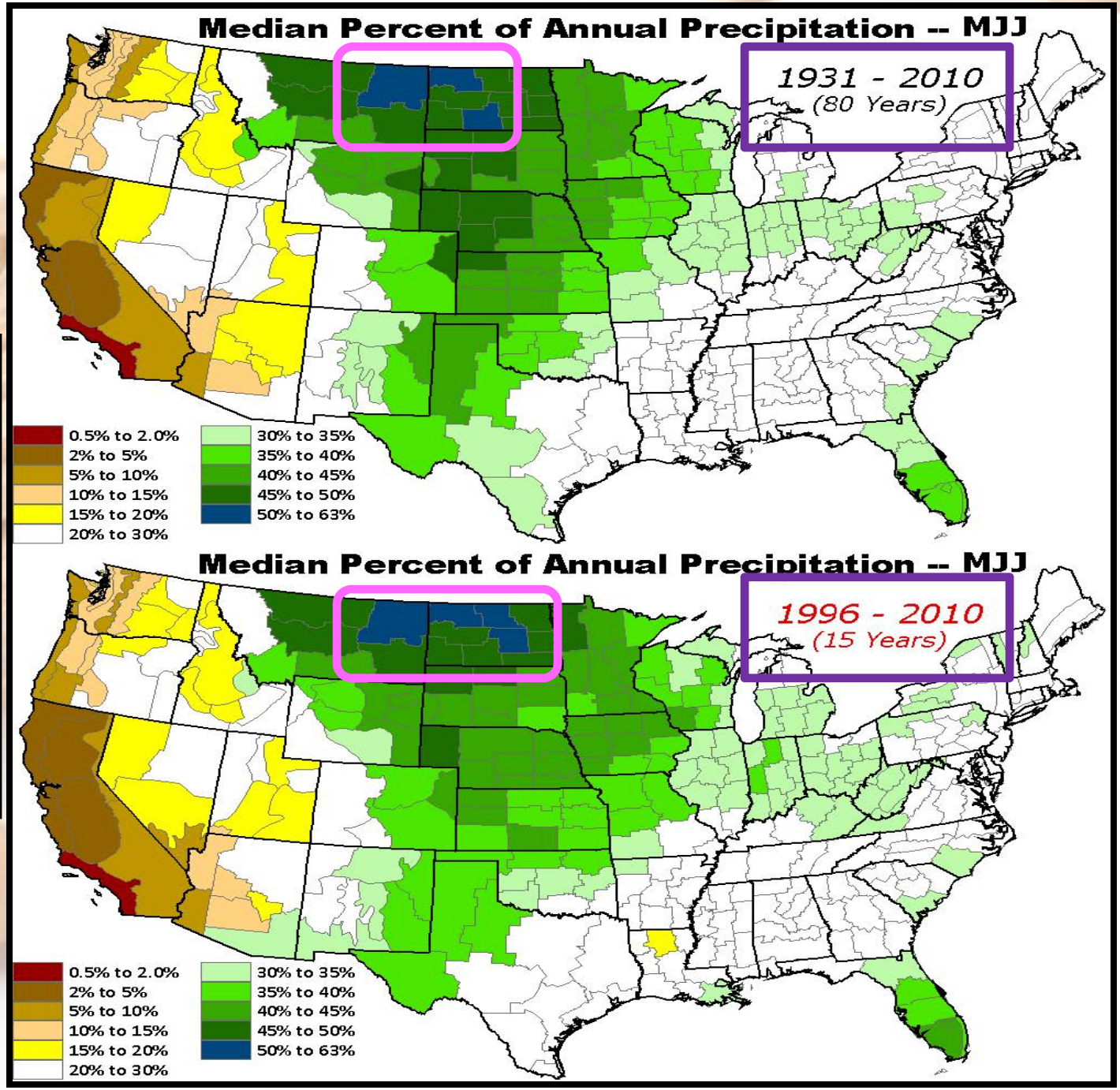
(CAS) Outlooks





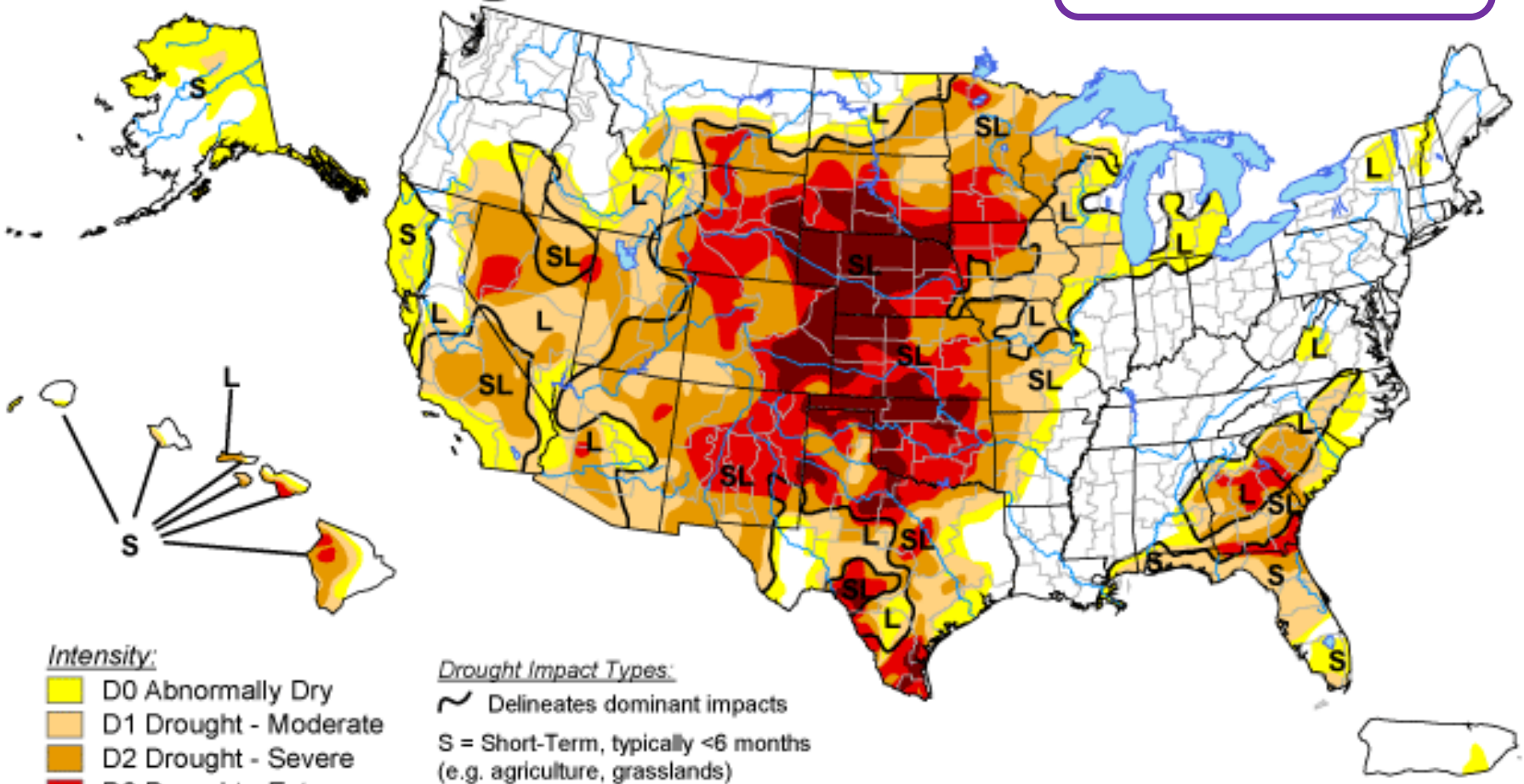
From 35%-60% of Central U.S.'s annual precipitation comes in May-June-July.

(MCS's/Fronts)



U.S. Drought Monitor

February 19, 2013
Valid 7 a.m. EST



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

Delineates dominant impacts

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu/

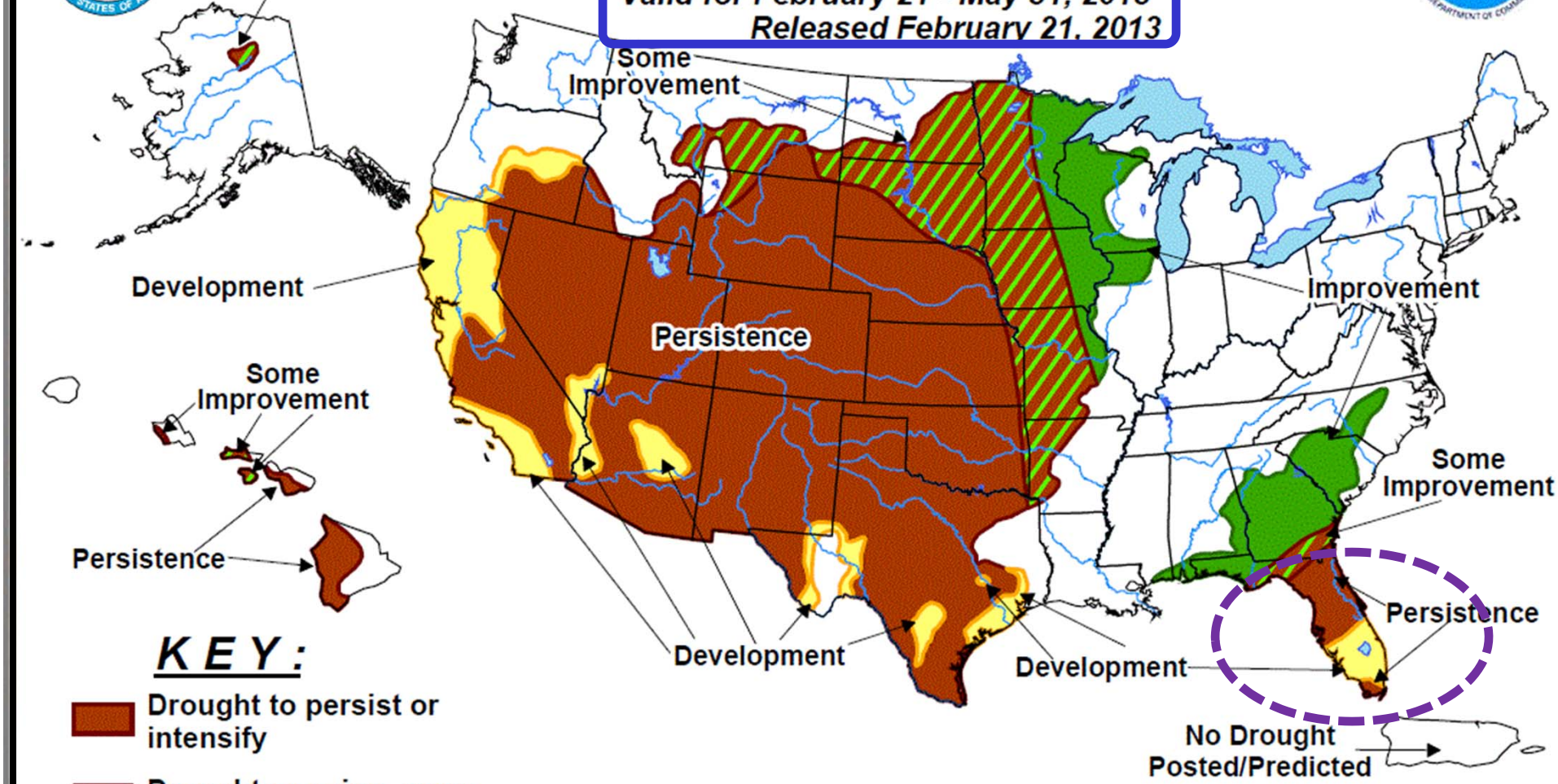
Released Thursday, February 21, 2013

Author: Brian Fuchs, National Drought Mitigation Center

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for February 21 - May 31, 2013
Released February 21, 2013



KEY:

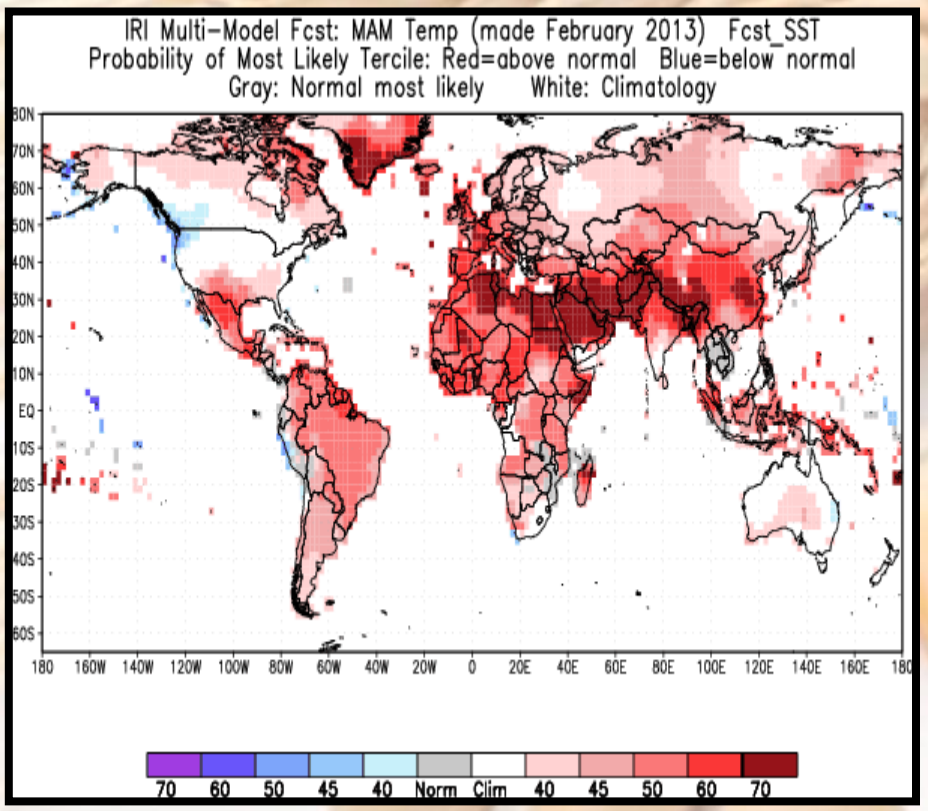
- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

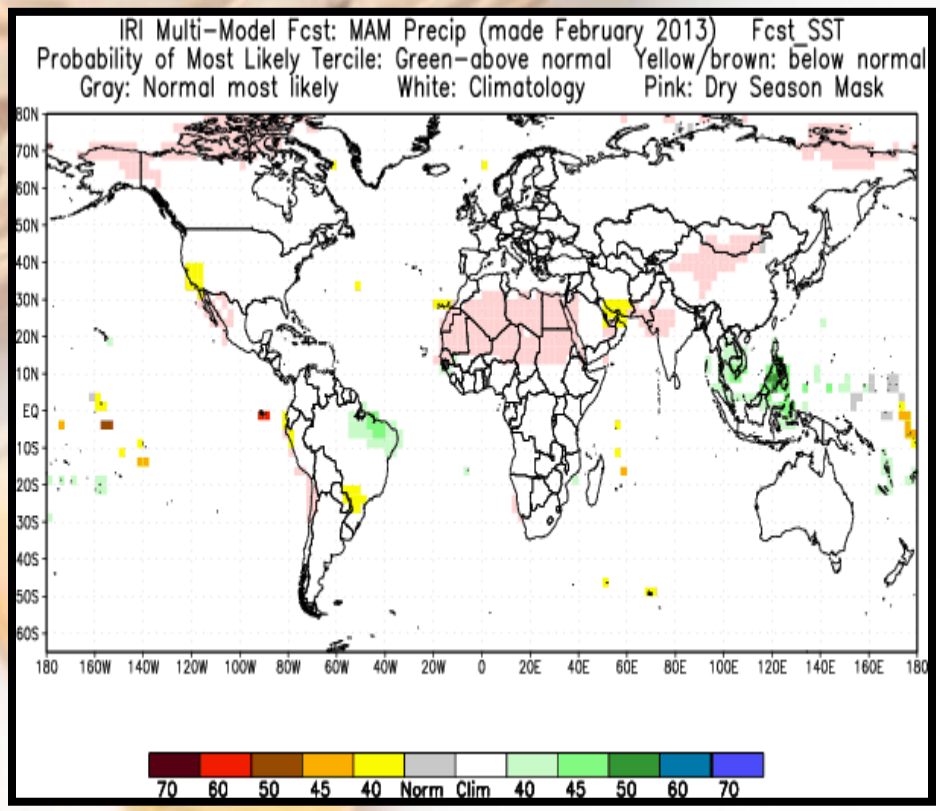
IRI* Multi-Model Forecast

SPRING

TEMPERATURE



PRECIPITATION

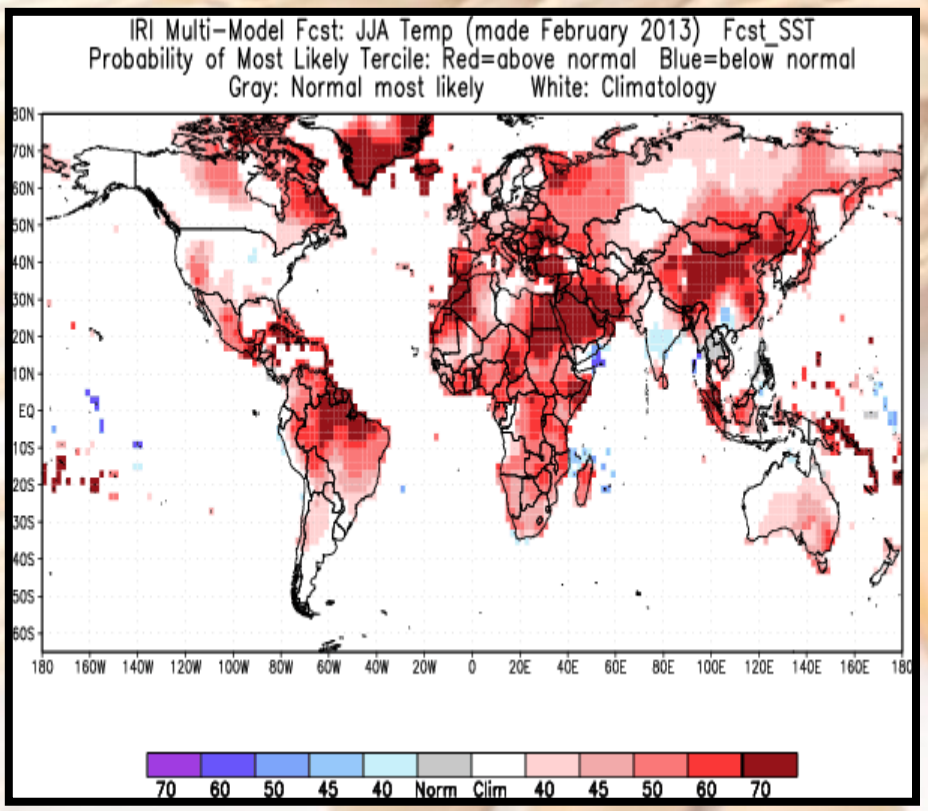


* International Research Institute for Climate and Society
(Lamont Campus, Columbia University, Palisades, NY)

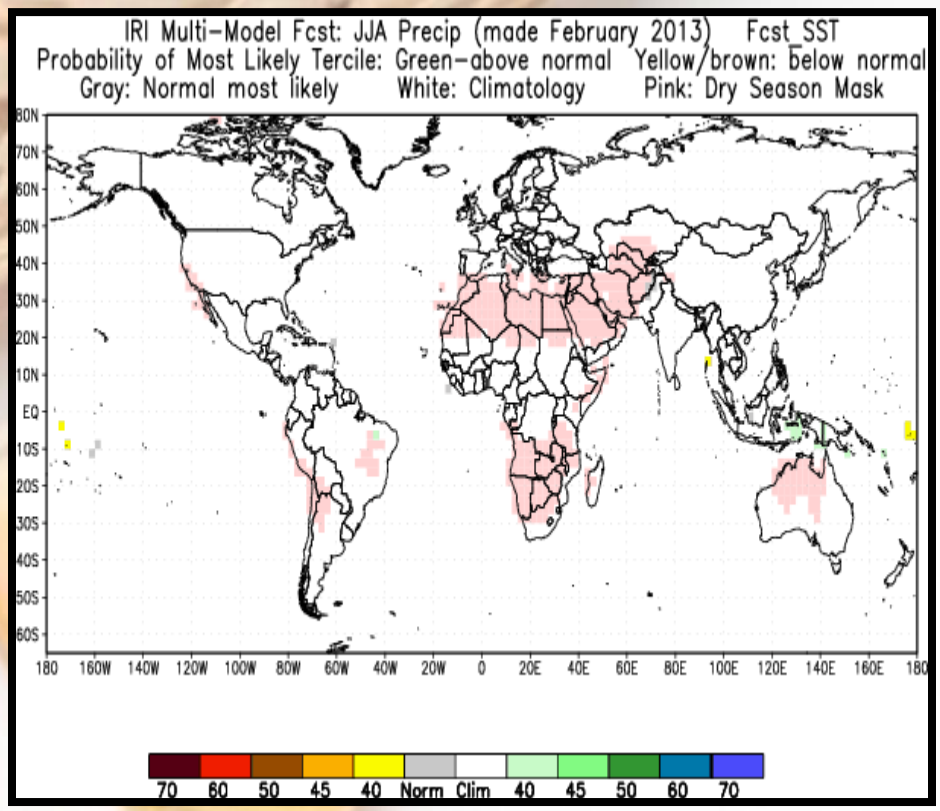
IRI* Multi-Model Forecast

SUMMER

TEMPERATURE



PRECIPITATION



* International Research Institute for Climate and Society
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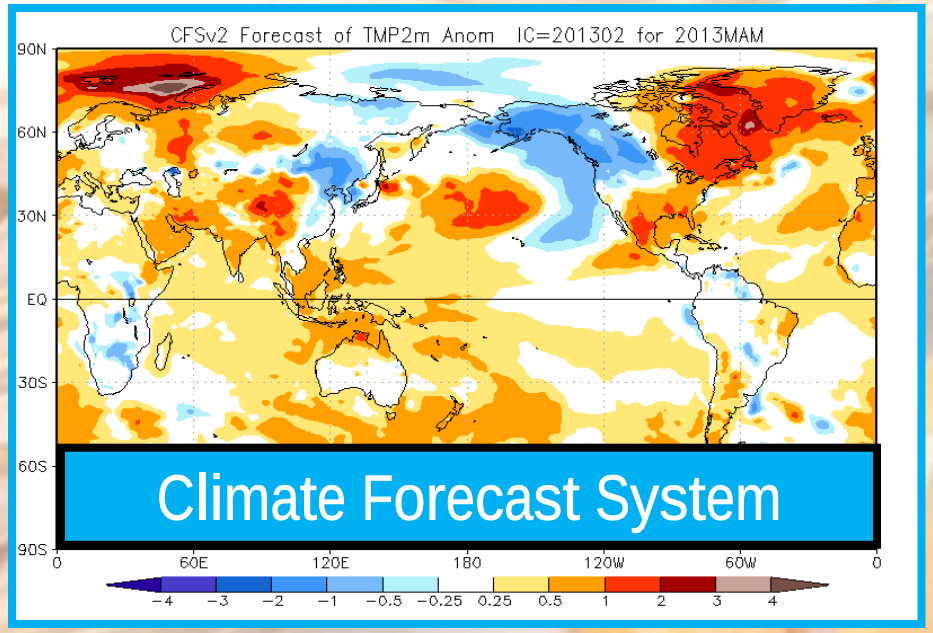
International Temperature Outlooks for MAM 2013

SPRING



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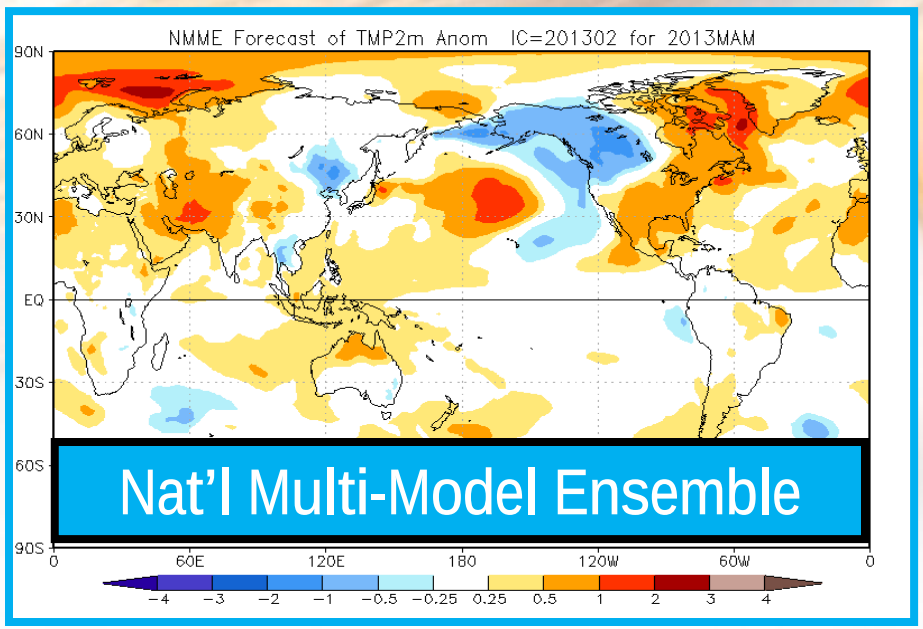
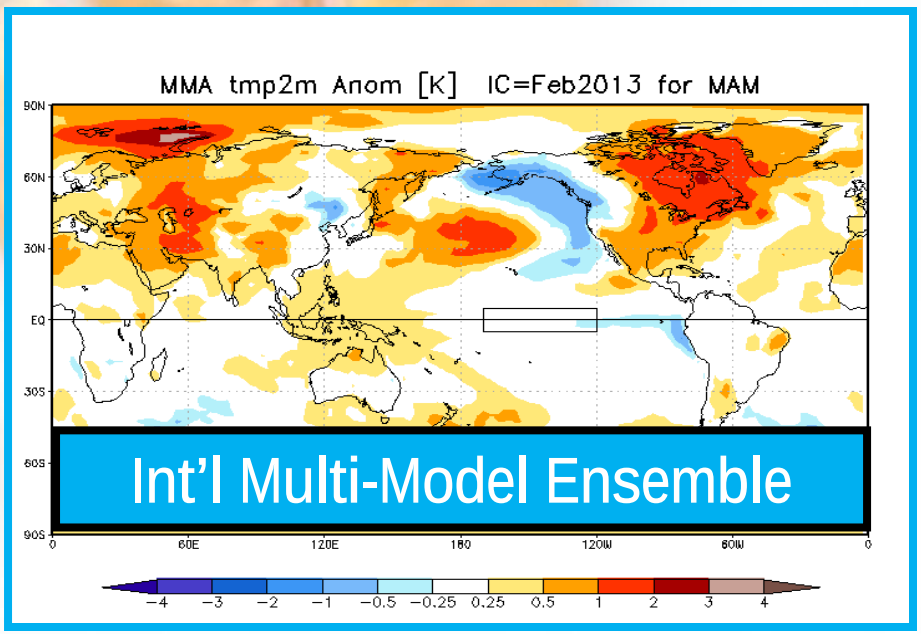
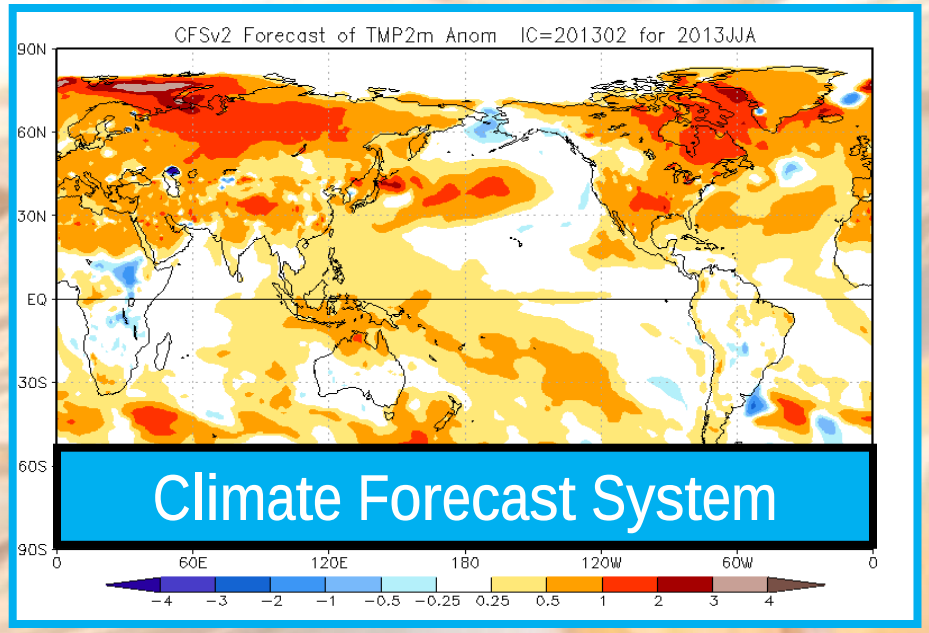


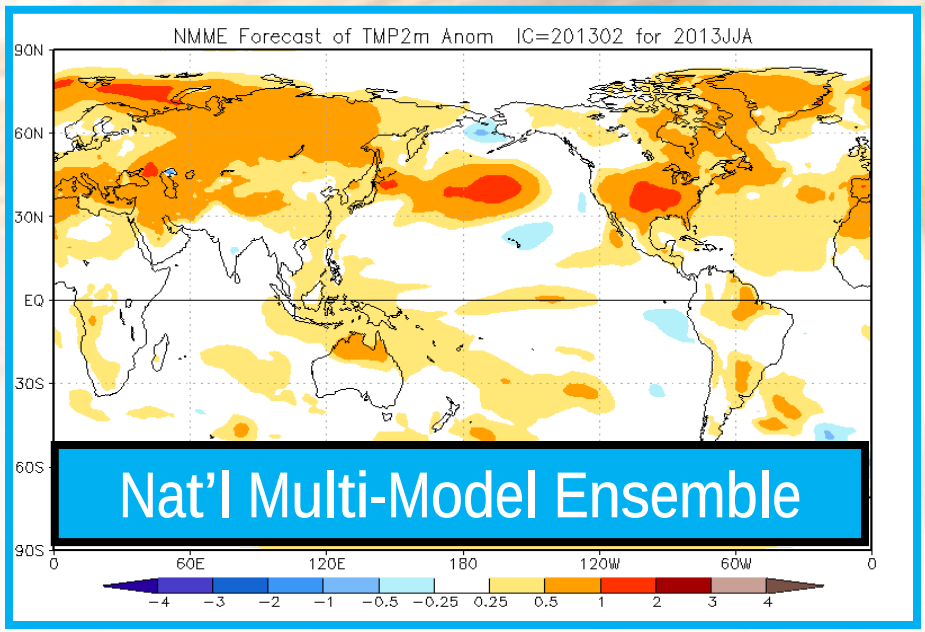


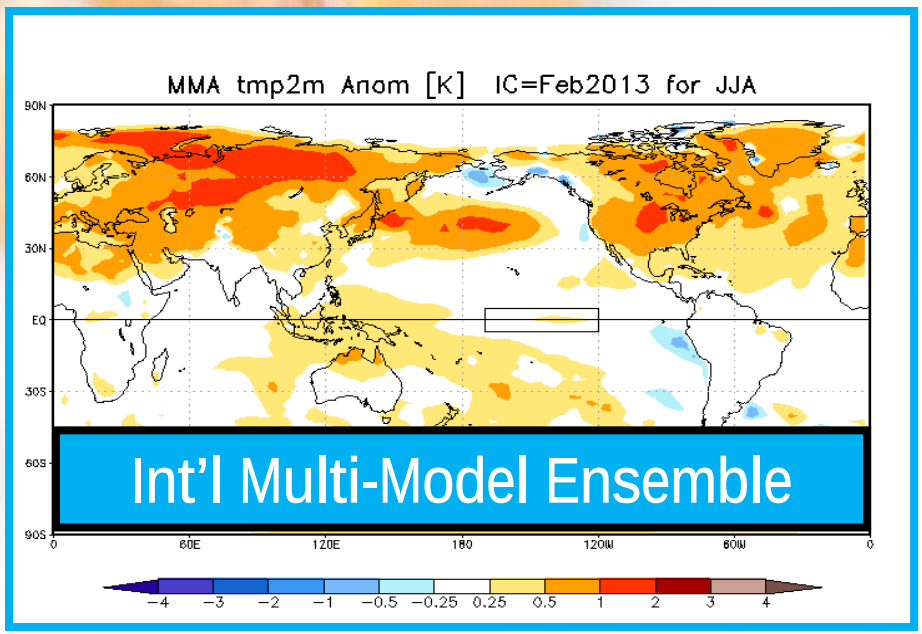
International Temperature Outlooks for JJA 2013

SUMMER



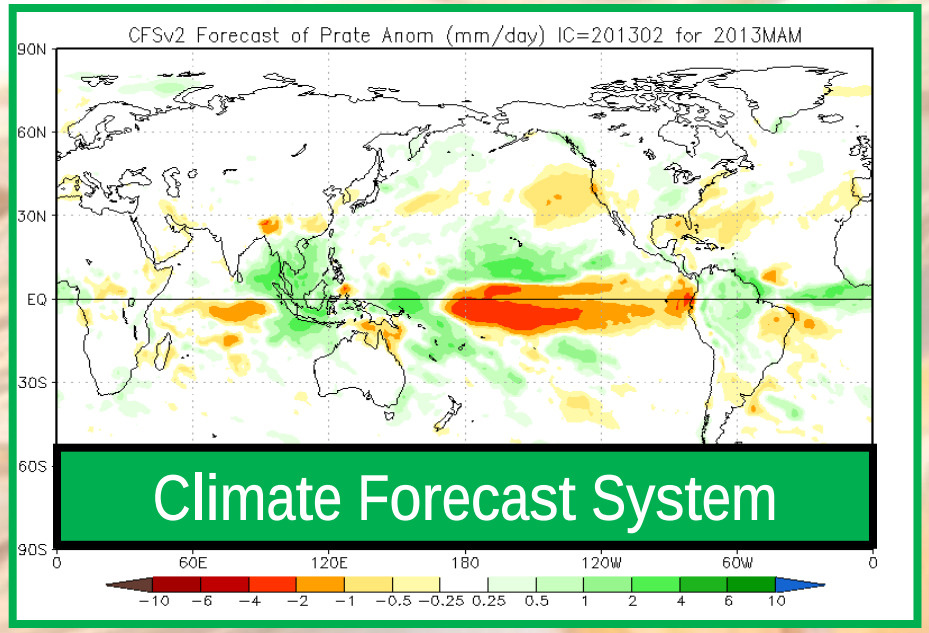
SUMMER



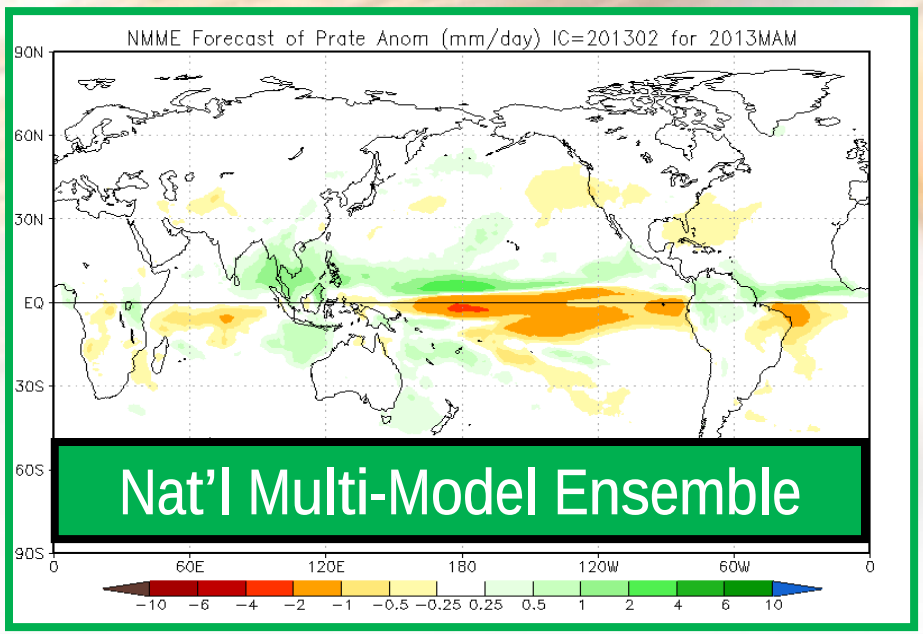


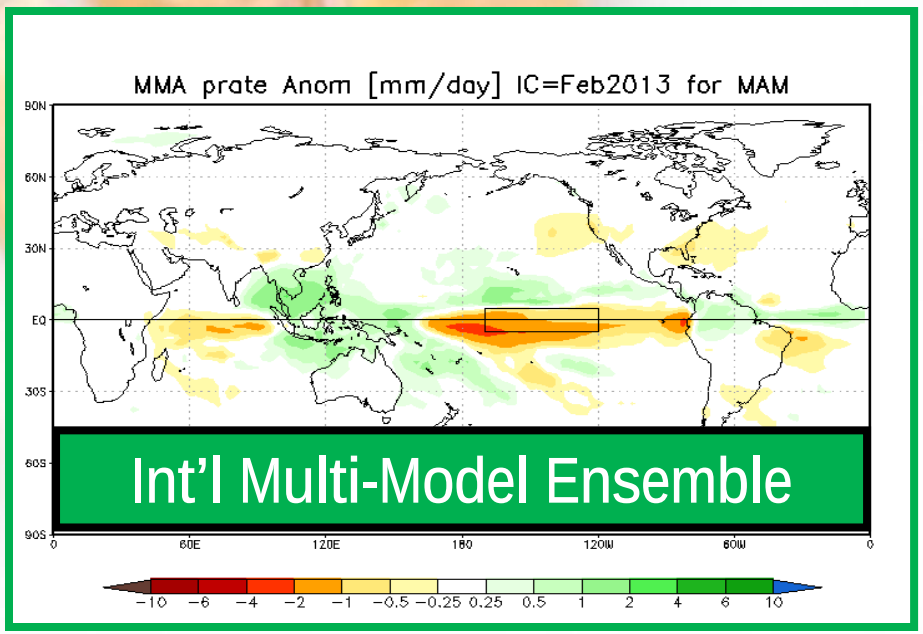
International Precipitation Outlooks for MAM 2013

SPRING



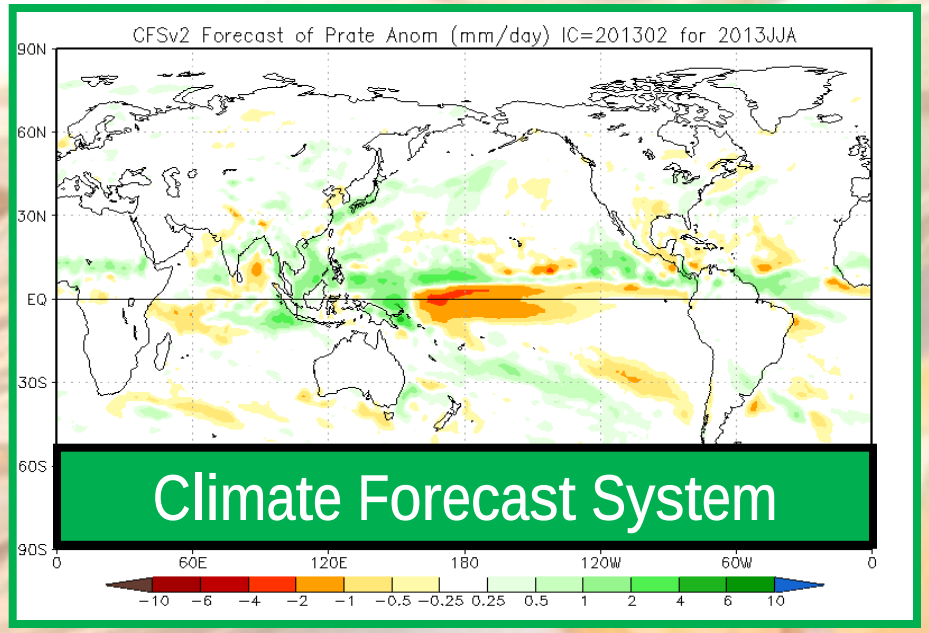
SPRING



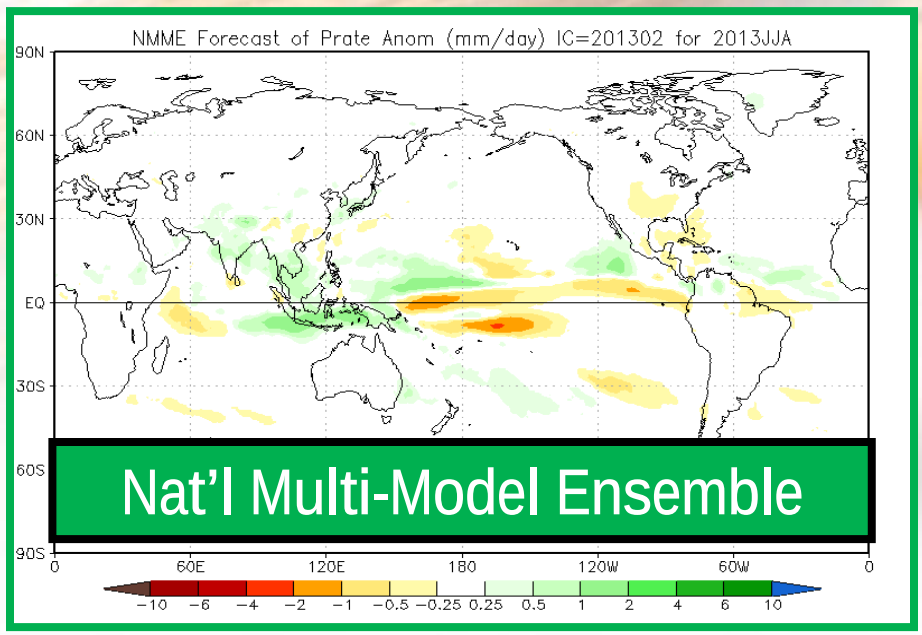


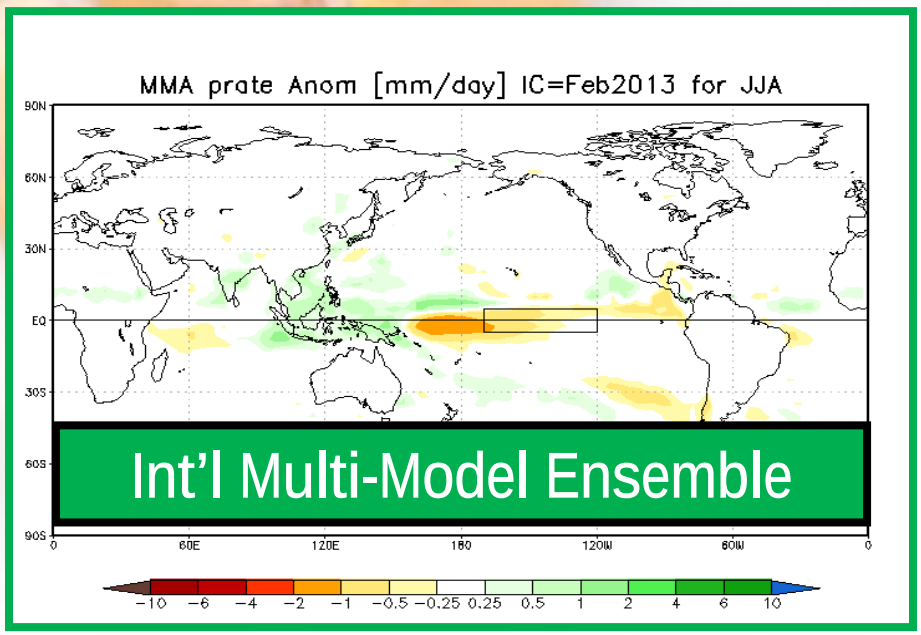
International Precipitation Outlooks for JJA 2013

SUMMER



SUMMER

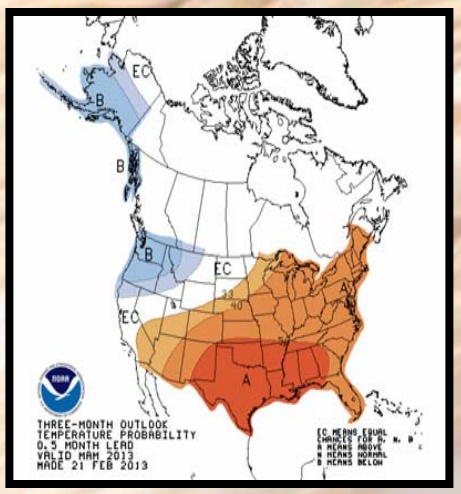


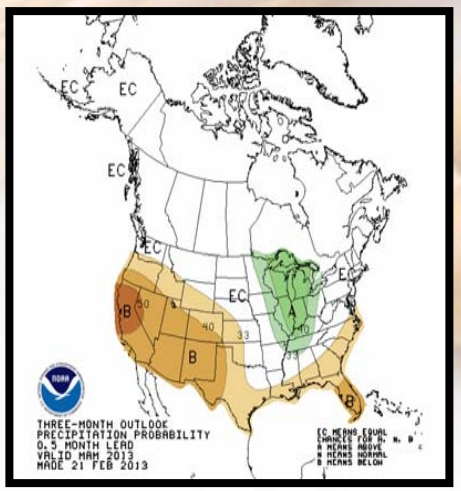


SUMMARY:

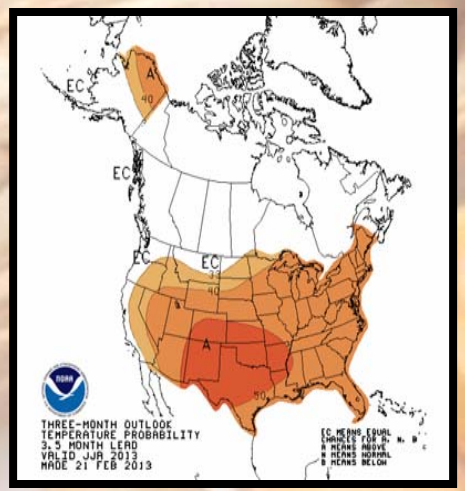
ENSO-NEUTRAL conditions expected

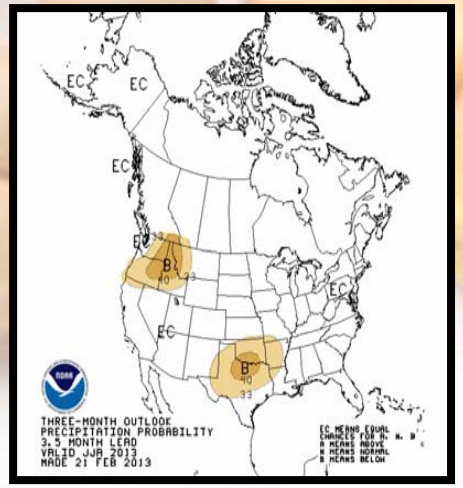
SPRING

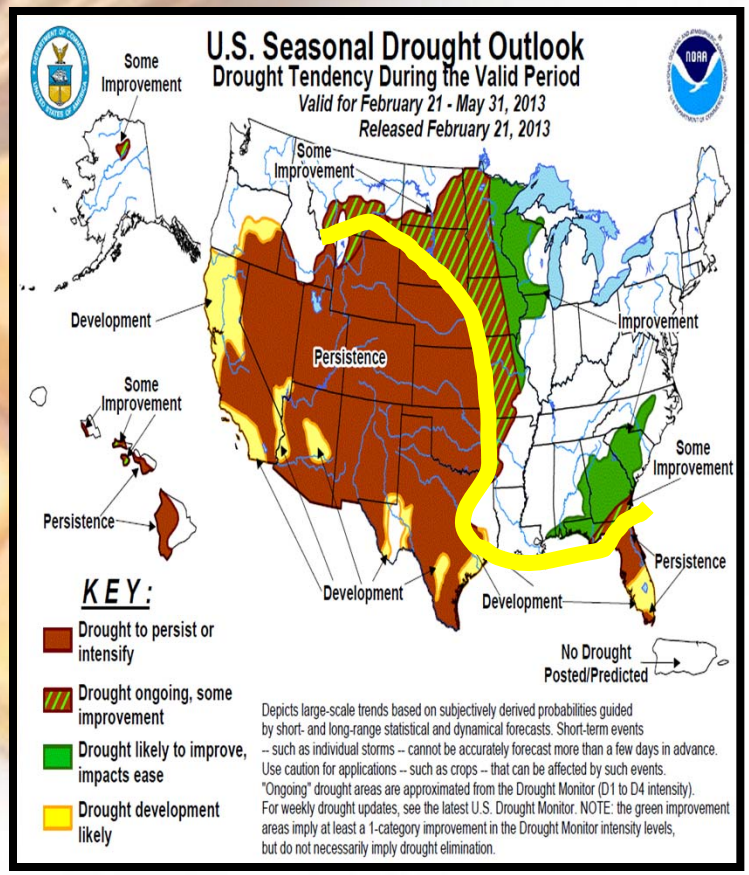




SUMMER







Pictures:

http://www.cameronhanover.com/wp-content/uploads/corn__wheat___soybeans1.jpg
http://nixahardware.com/images/alfalfa_hay_round_bales.jpg
http://www.cottonman.com/images/cotton%20pictures/cotton%20field.jpghttp://www.technikboerse.com/pictures/49007145/5983b7c4-2de5-41bc-9d78-fc2e0b42c8c8.jpg **(axial flow combine)**

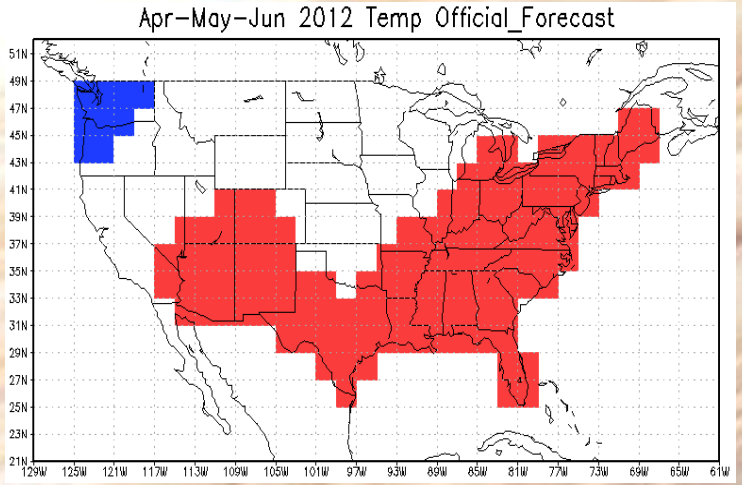
This Nov. 28, 2012 photo provided by The United States Coast Guard shows a World War II mine-sweeper on the Mississippi River near St. Louis. The lack of rain has left many rivers at low levels unseen for decades, offering a glimpse at things not normally seen. The mine-sweeper, once moored along the Mississippi River as a museum at St. Louis before it was torn away by flood-waters two decades ago, has become visible _ rusted but intact. (AP Photo/ United States Coast Guard, Colby Buchanan)

http://news.yahoo.com/low-water-rivers-offering-glimpse-history-181848393.html

APRIL – JUNE 2012

TEMPERATURE

FCST:



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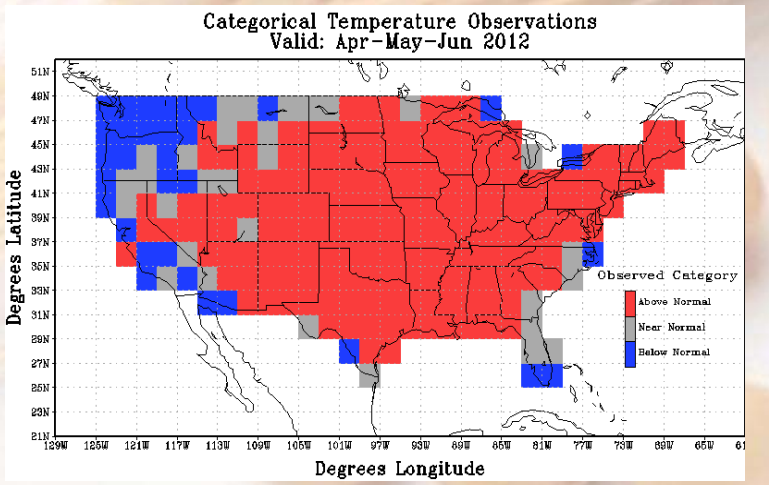

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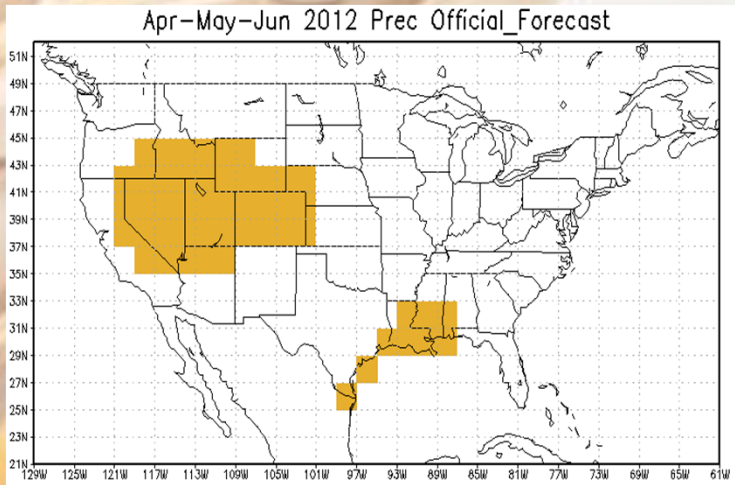
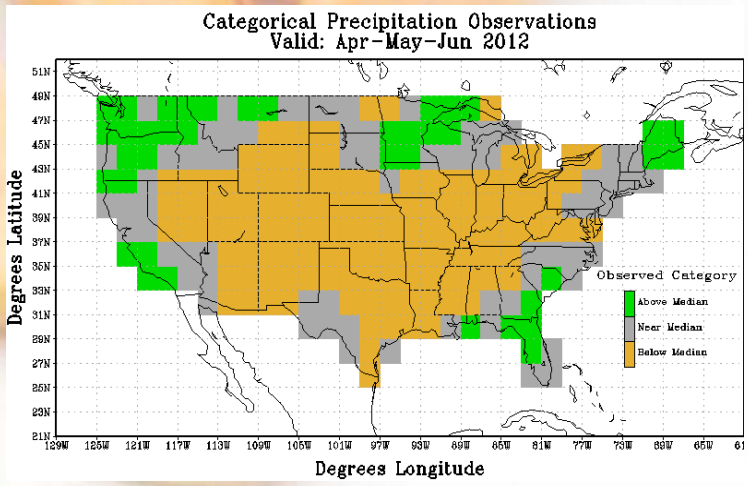
ALL: +41.81

%-COVG(NON-EC): +54.74

PRECIPITATION





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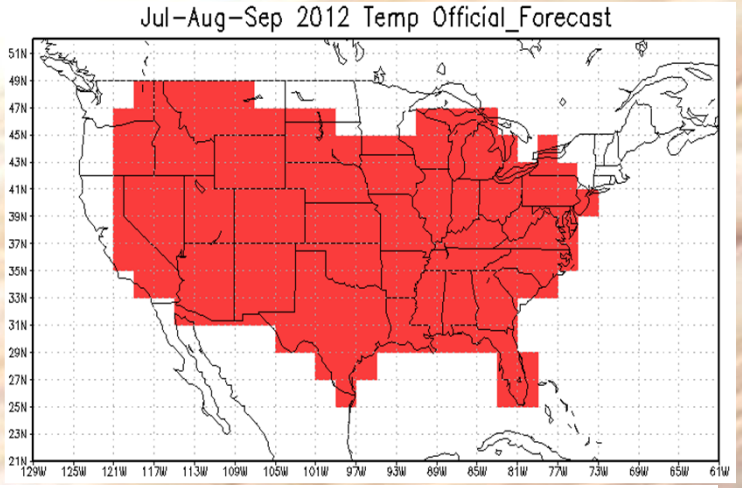
JULY – SEPTEMBER 2012

TEMPERATURE

FCST:



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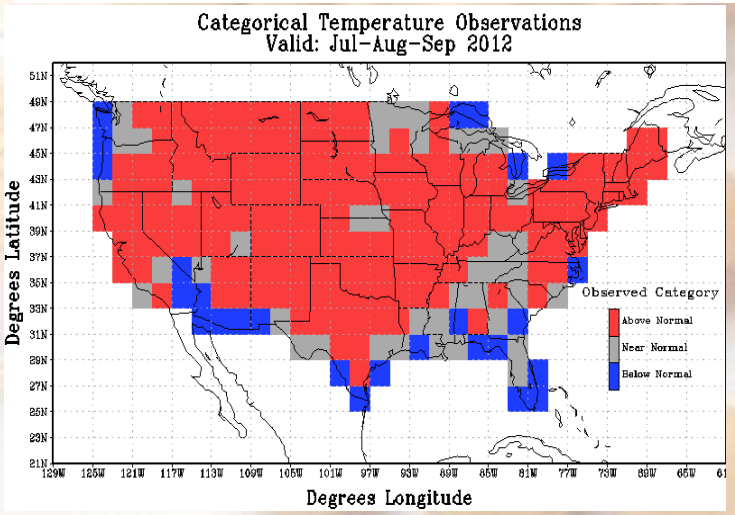

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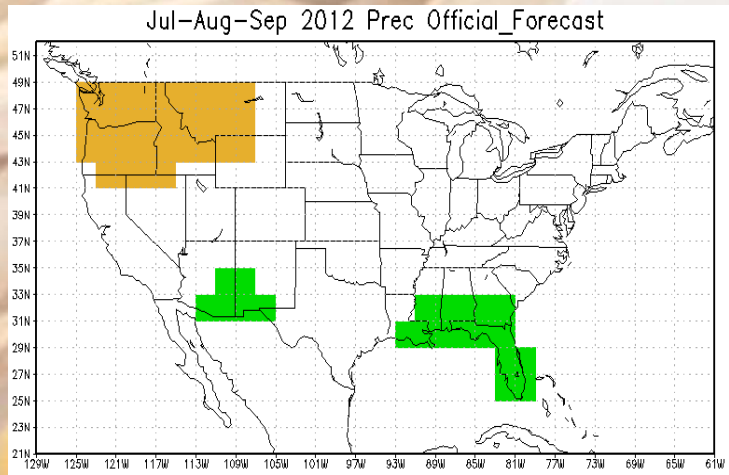
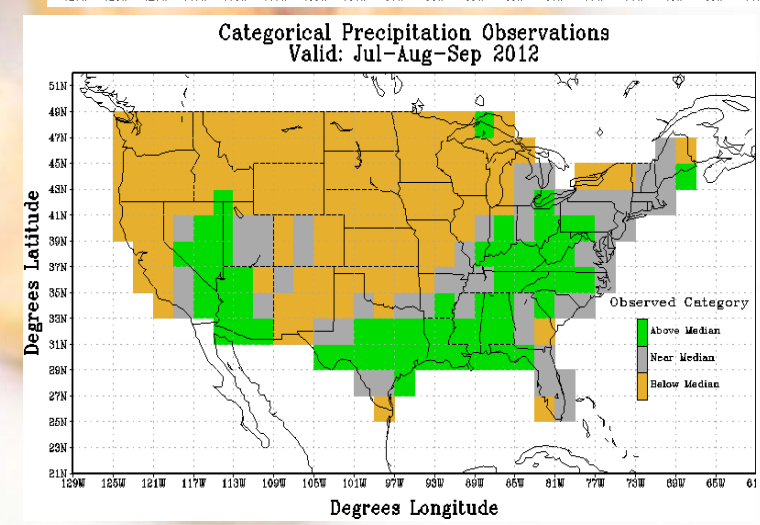
PRECIPITATION





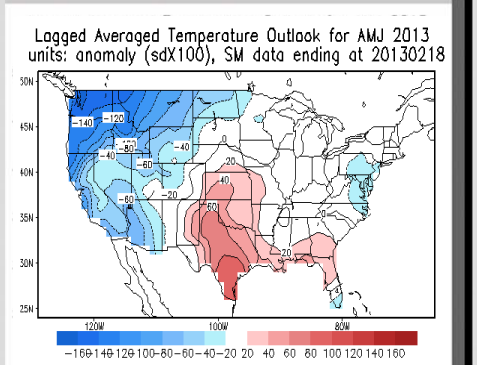
NON-EC: +68.27

ALL: +15.30

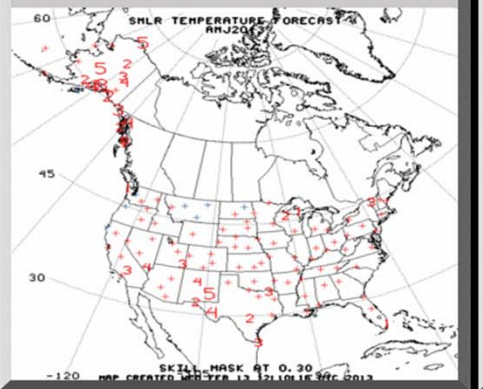
%-COVG(NON-EC): +22.41

AMJ Season [Temperature]

CAS



SMLR



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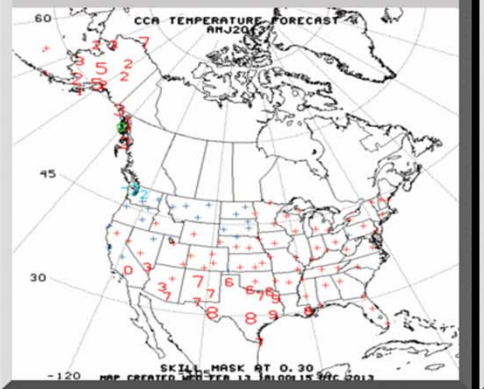
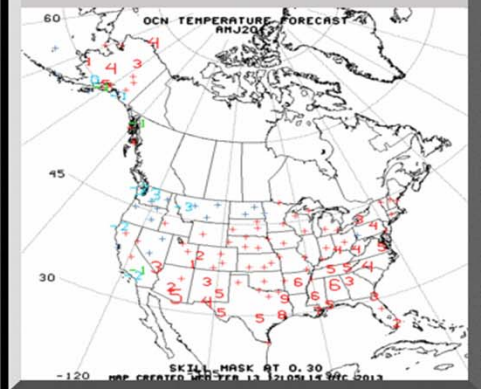
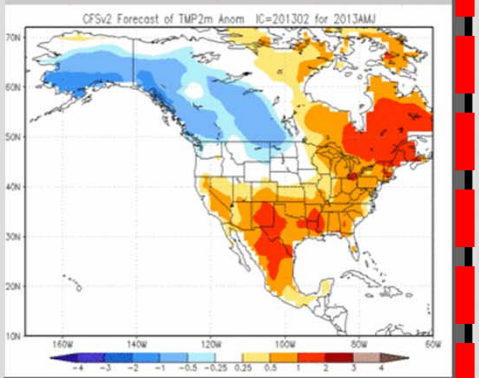


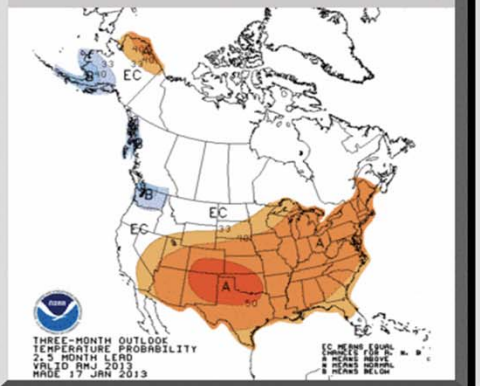
OCN



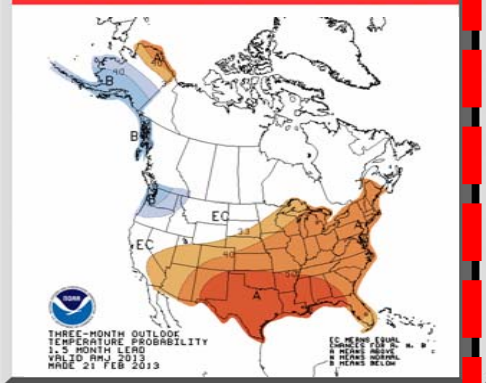
CFSv2



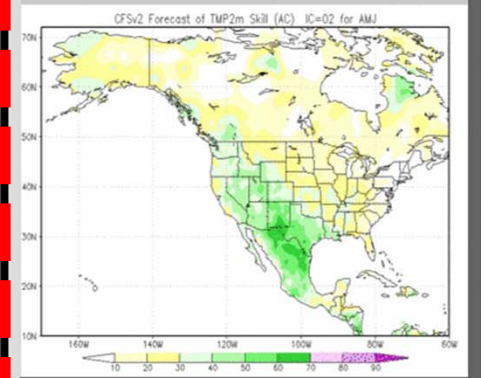
OLD OUTLOOK



** NEW OUTLOOK **



CFSv2 (skill)



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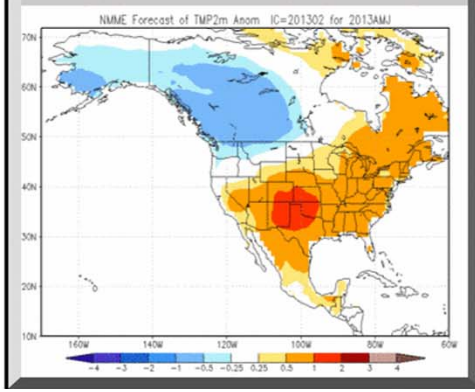

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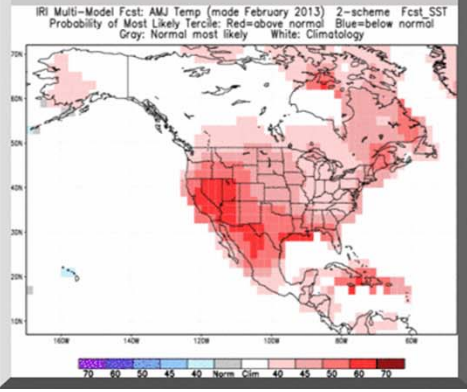
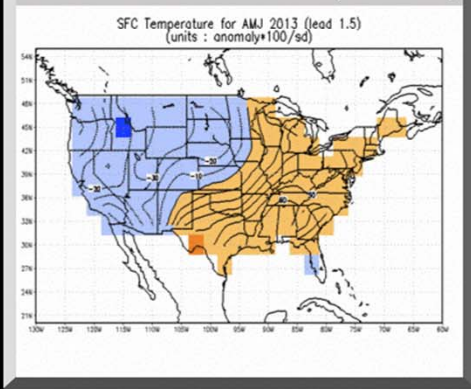
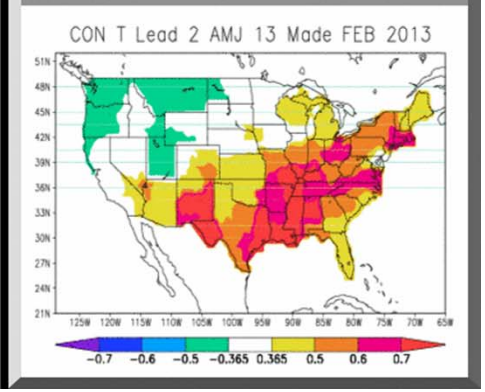


ENSEMBLE CCA (ECCA)

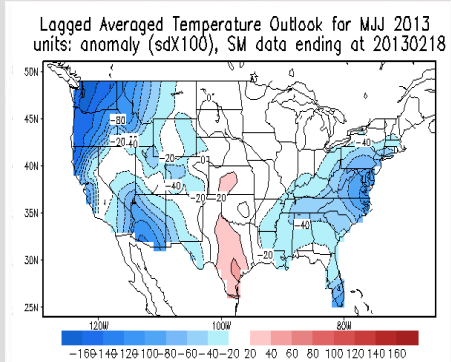


CONSOLIDATION

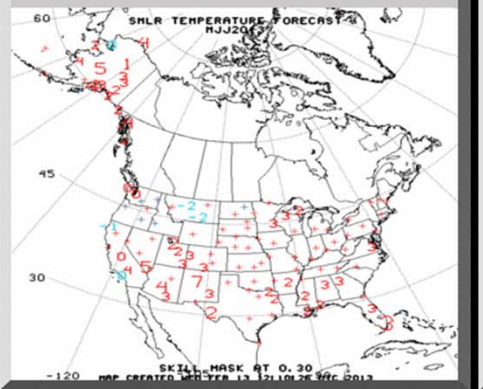


MJJ Season [Temperature]

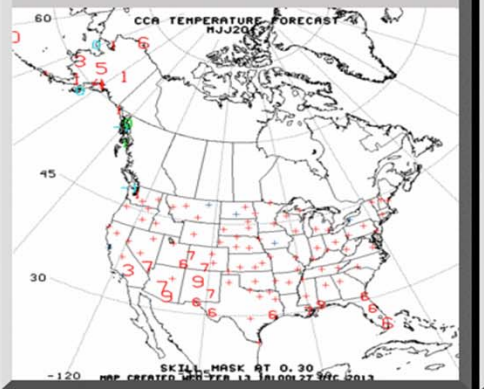
CAS



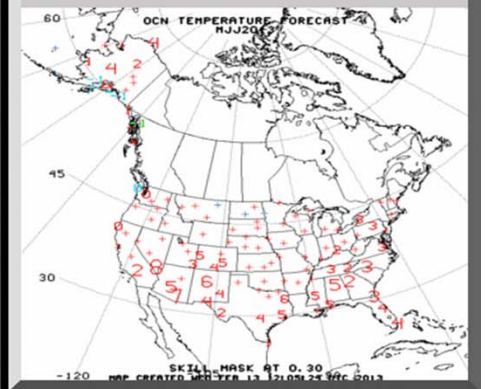
SMLR



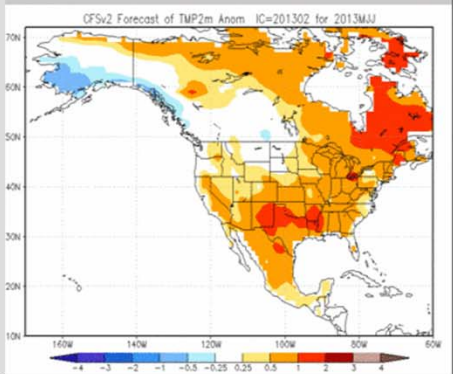
CCA



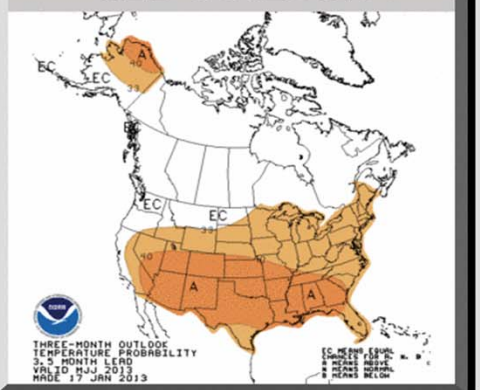
OCN



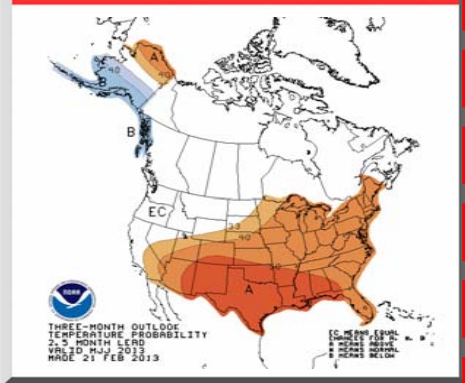
CFSv2



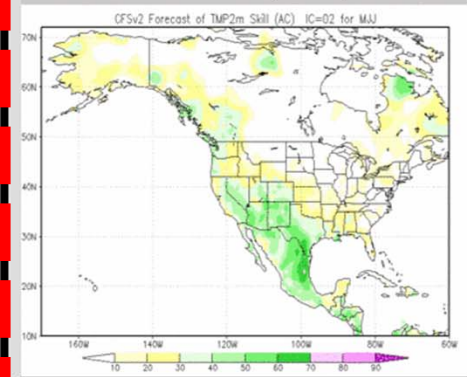
OLD OUTLOOK



** NEW OUTLOOK **



CFSv2 (skill)



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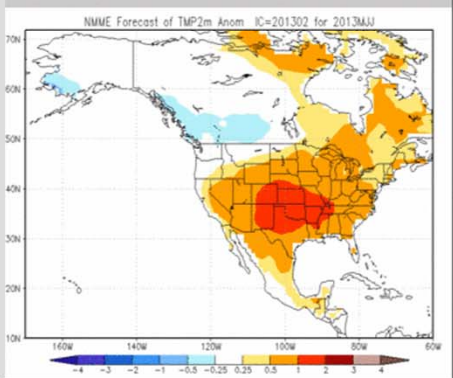
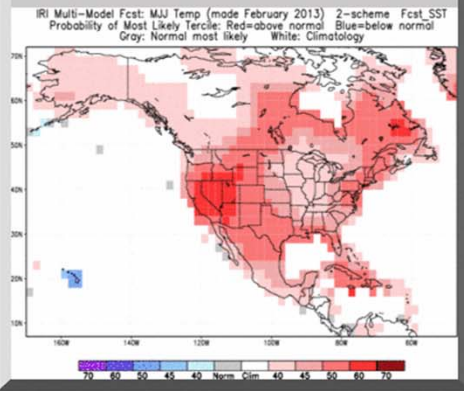
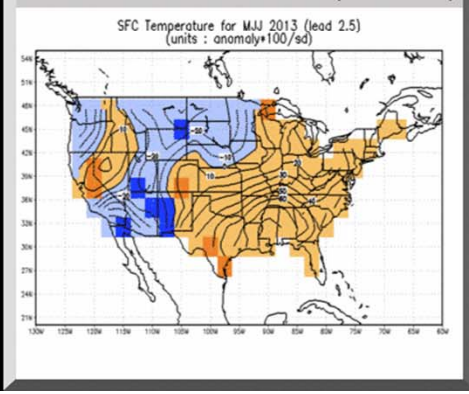


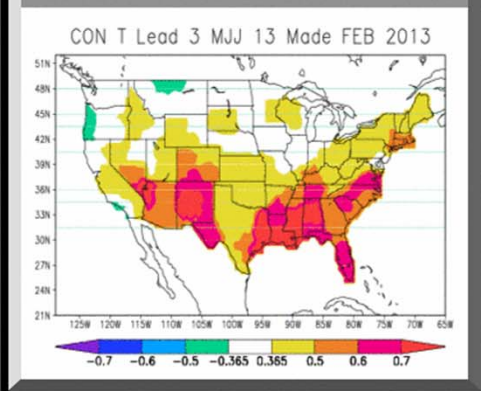
IRI



ENSEMBLE CCA (ECCA)



CONSOLIDATION

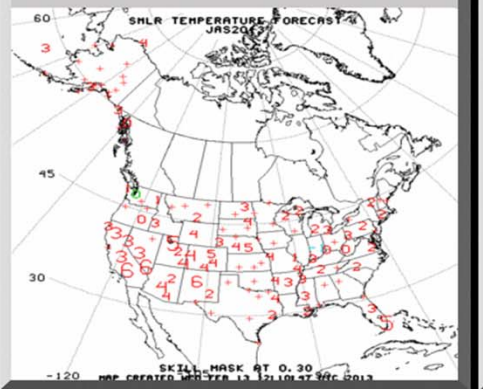


JAS Season [Temperature]

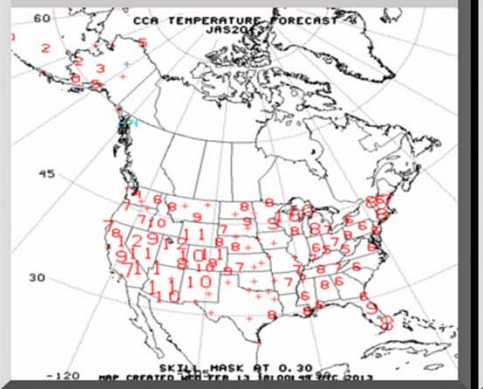
CAS

IMAGE
NOT
AVAILABLE

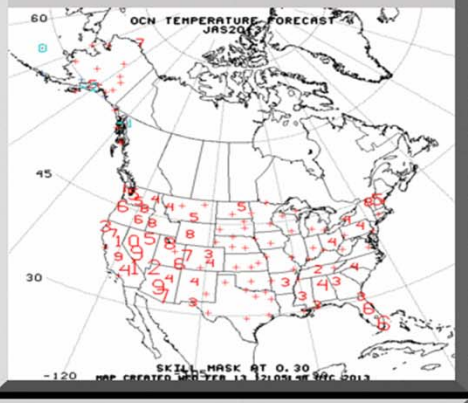
SMLR



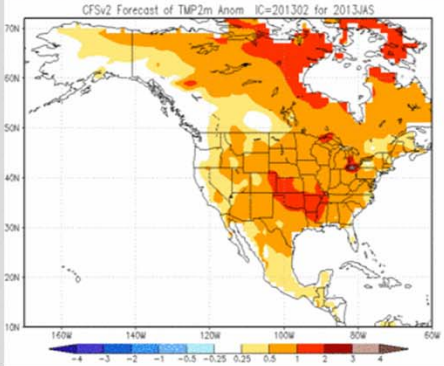
CCA



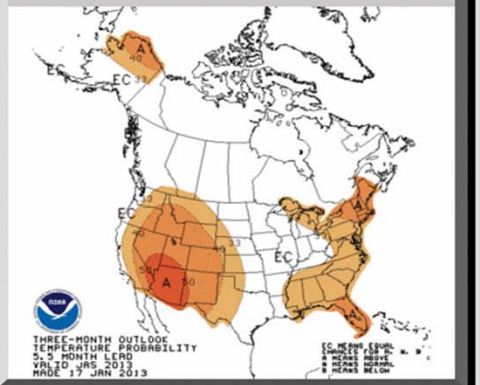
OCN



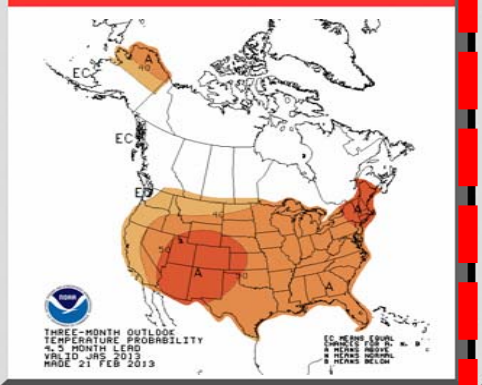
CFSv2



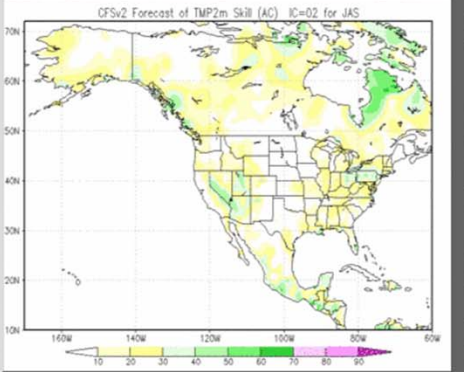
OLD OUTLOOK



** NEW OUTLOOK **



CFSv2 (skill)



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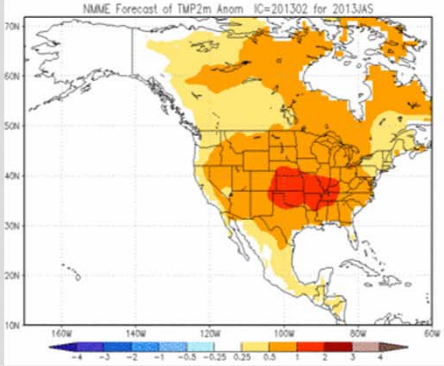
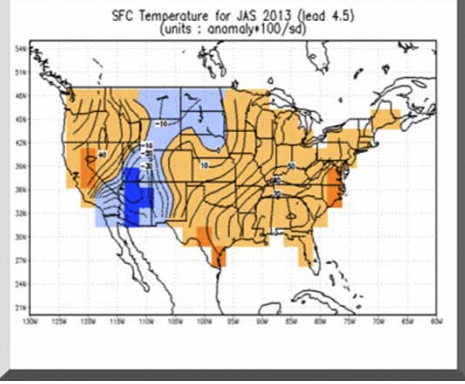


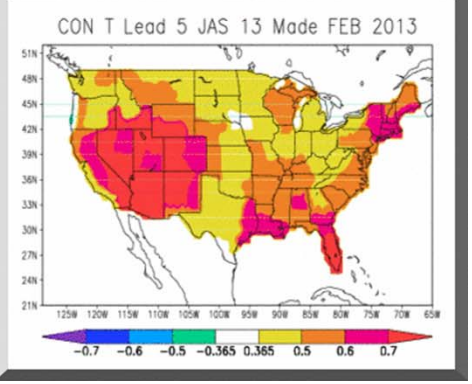
IRI

IMAGE
NOT
AVAILABLE

ENSEMBLE CCA (ECCA)

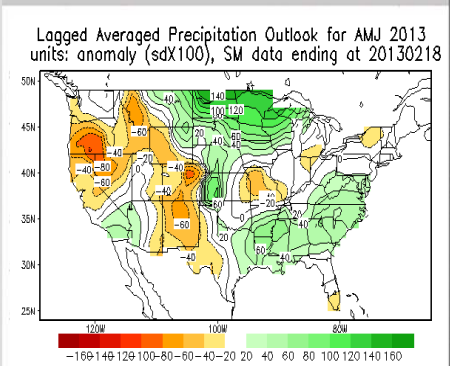


CONSOLIDATION

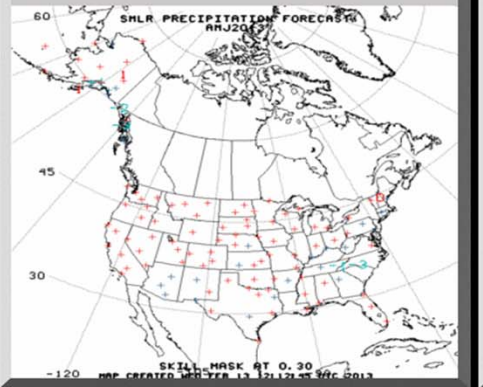


AMJ Season [Precipitation]

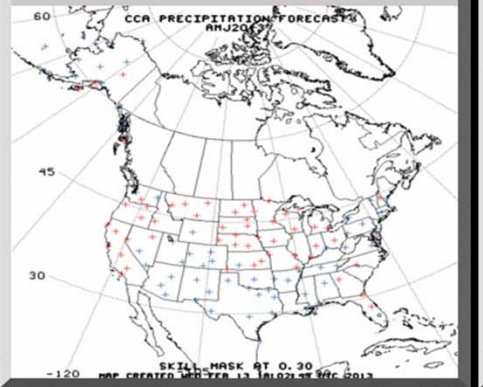
CAS



SMLR



CCA



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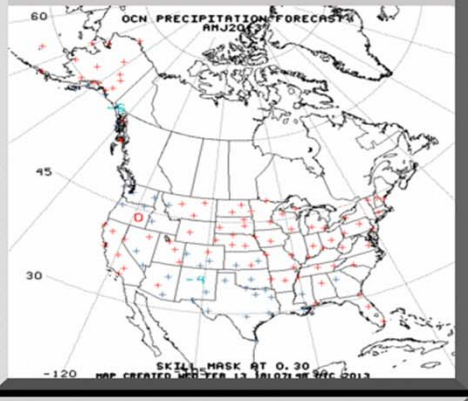
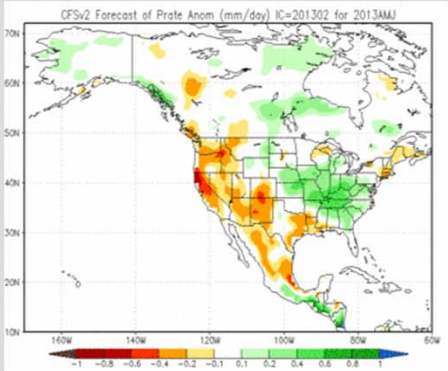
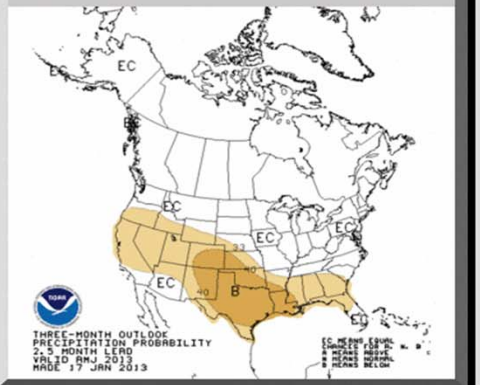


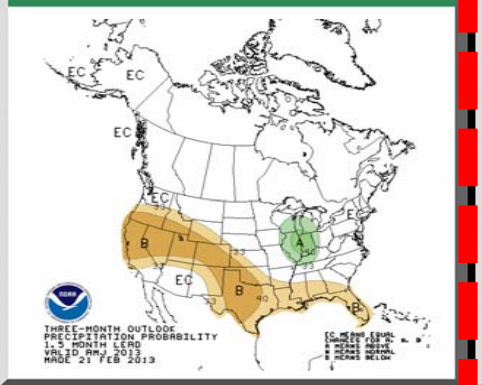
CFSv2



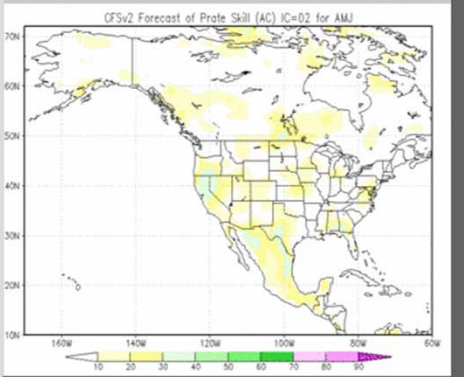
OLD OUTLOOK



** NEW OUTLOOK **



CFSv2 (skill)



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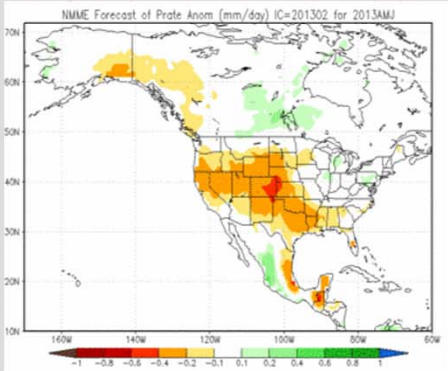

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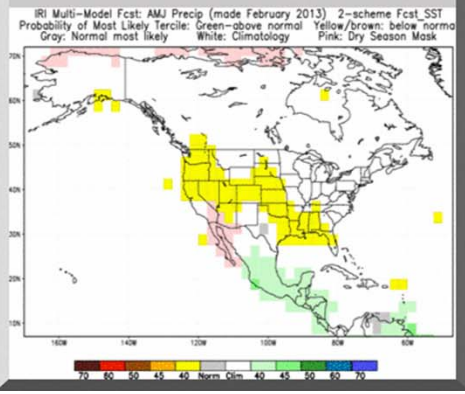
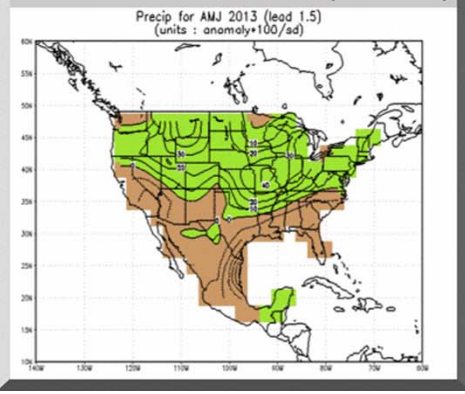
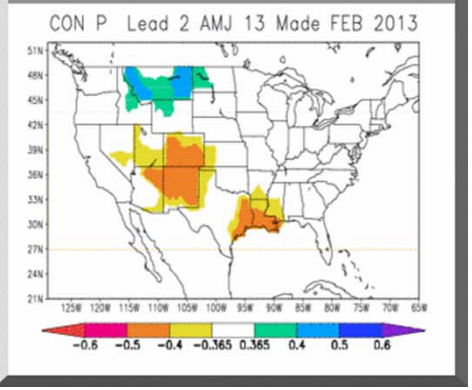


ENSEMBLE CCA (ECCA)

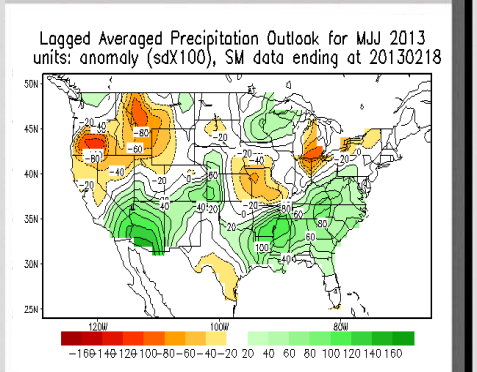


CONSOLIDATION



MJJ Season [Precipitation]

CAS



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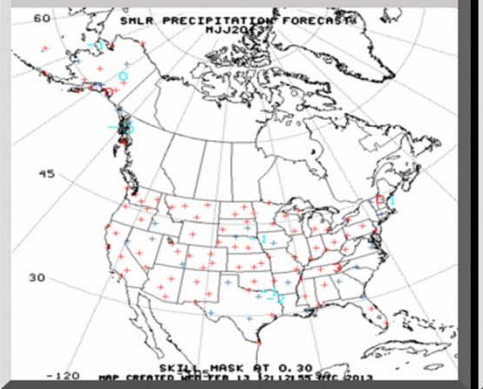
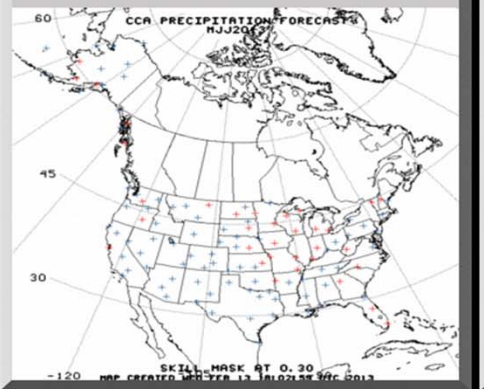


CCA



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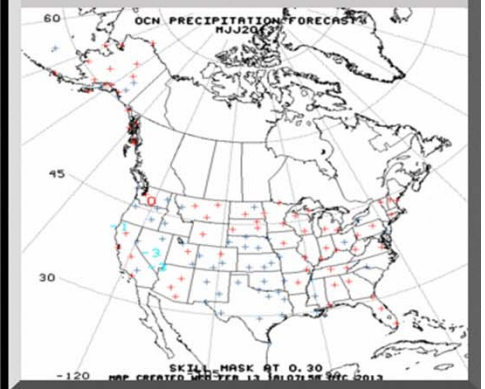

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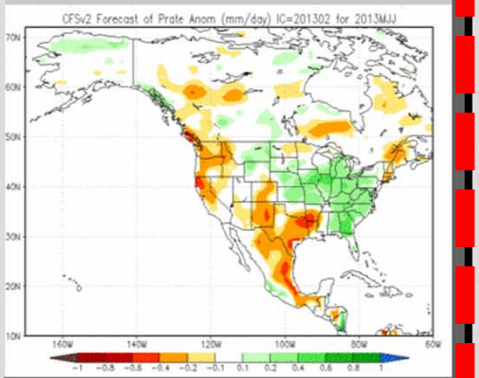
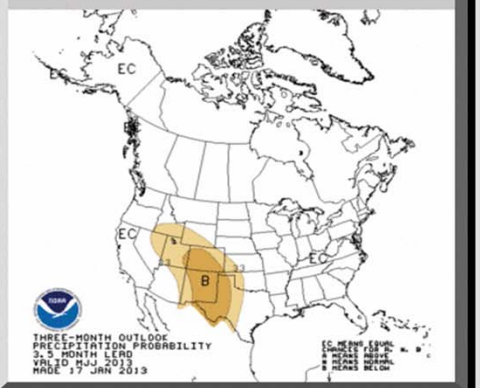
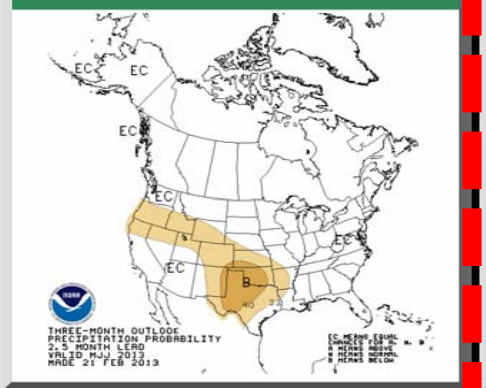


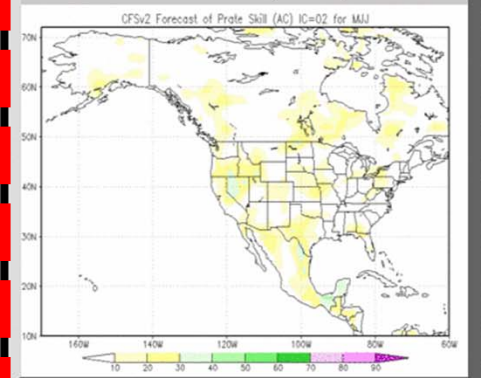
OLD OUTLOOK



** NEW OUTLOOK **



CFSv2 (skill)



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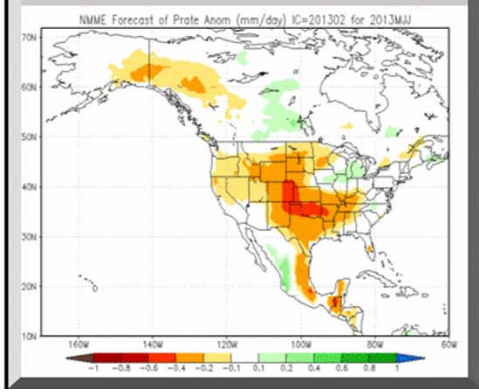

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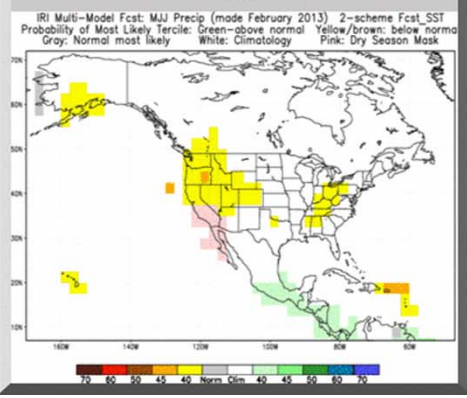
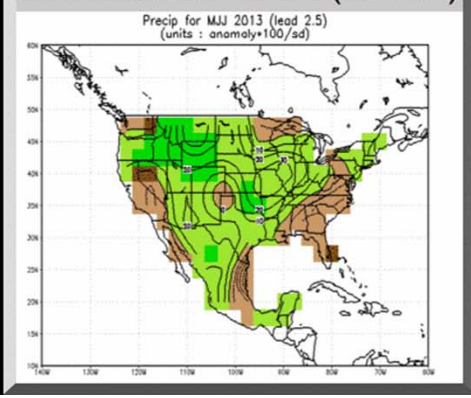
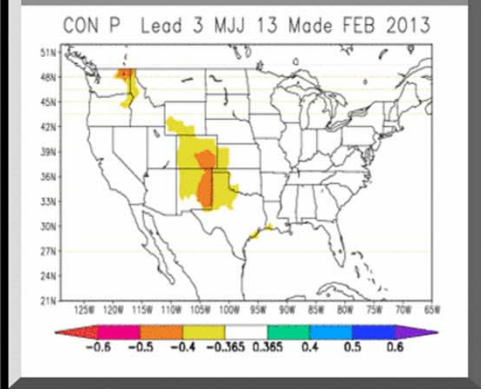


ENSEMBLE CCA (ECCA)



CONSOLIDATION

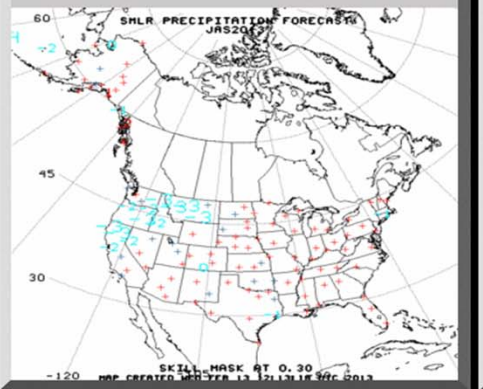


JAS Season [Precipitation]

CAS

IMAGE
NOT
AVAILABLE

SMLR



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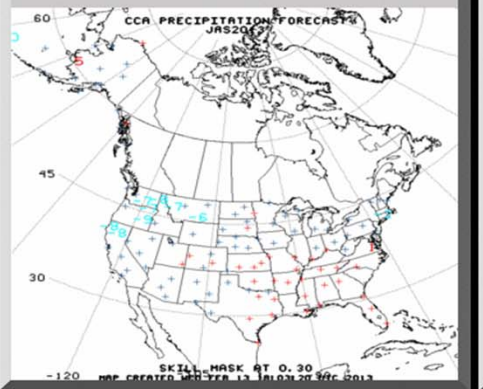

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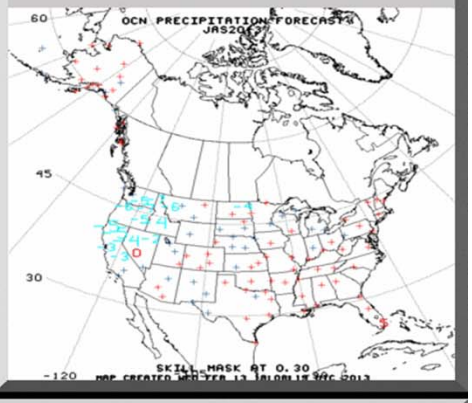
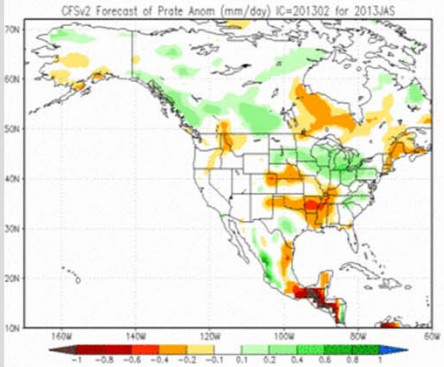
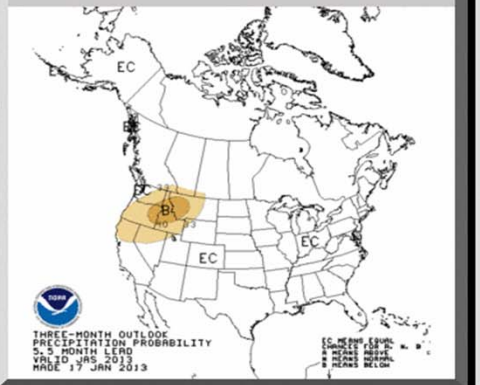


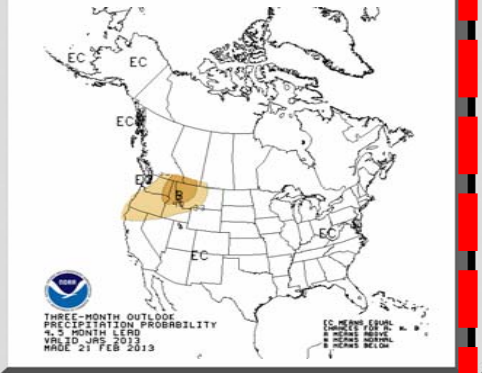
CFSv2



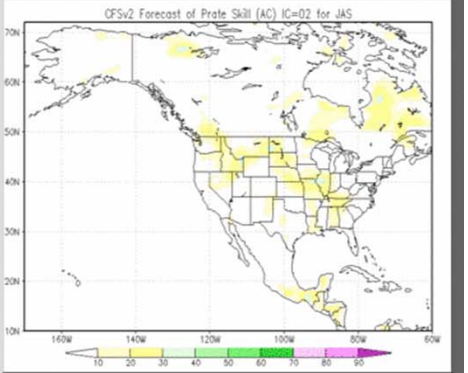
OLD OUTLOOK



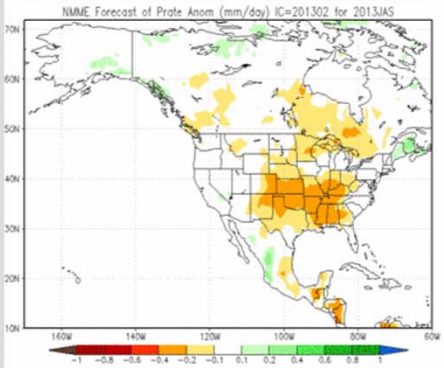
** NEW OUTLOOK **



CFSv2 (skill)



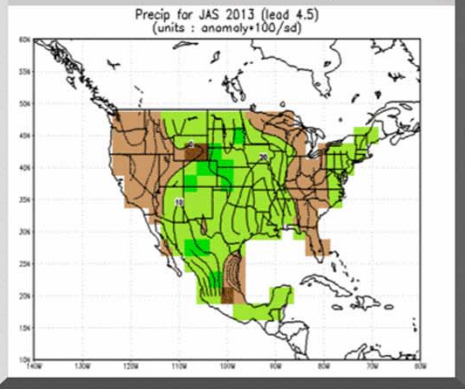
NMME



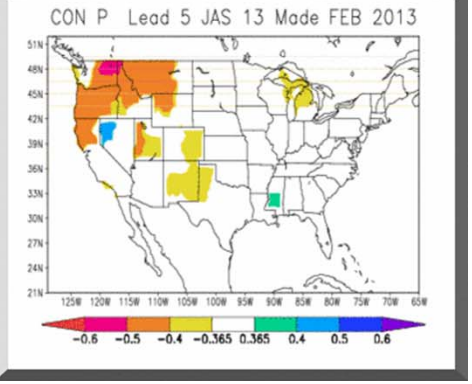
IRI

IMAGE
NOT
AVAILABLE

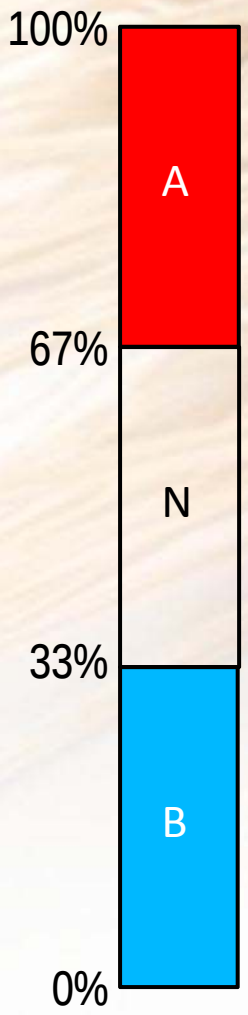
ENSEMBLE CCA (ECCA)

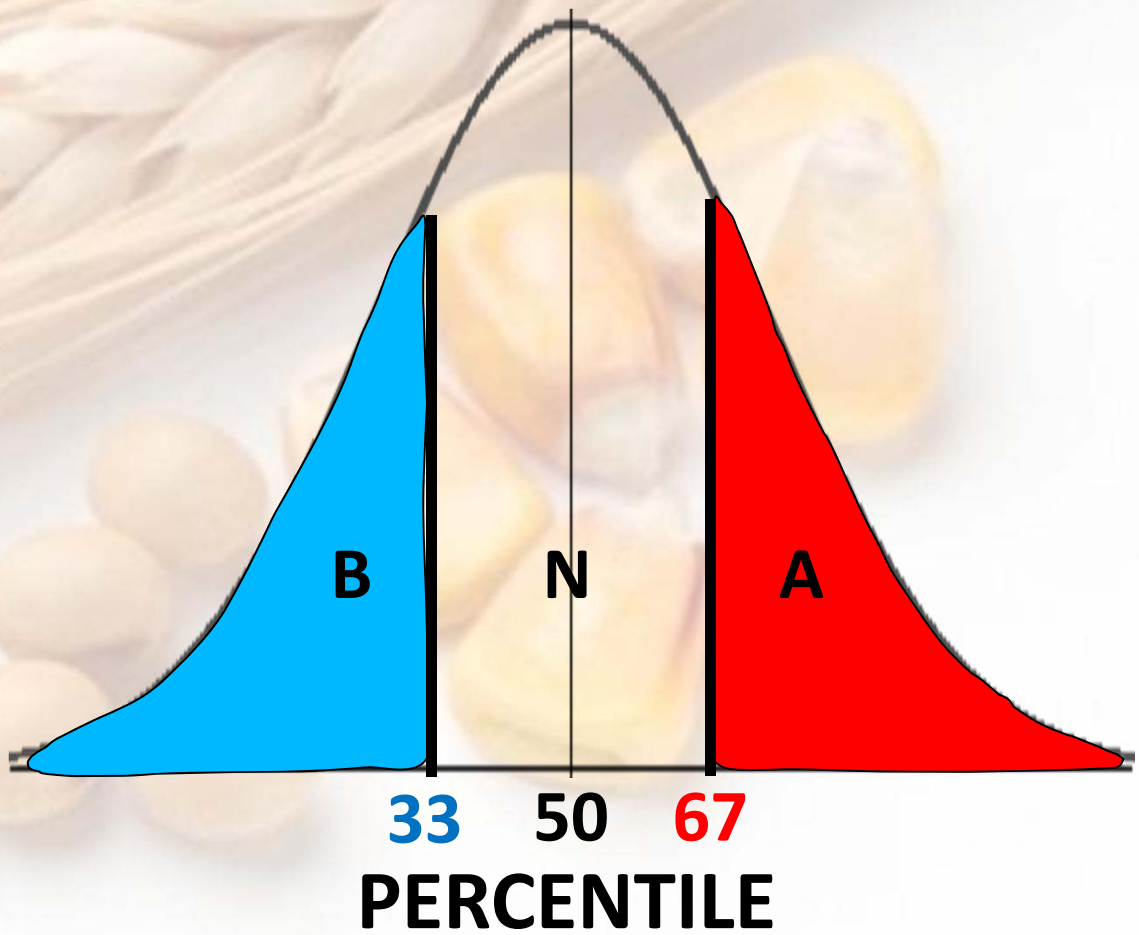


CONSOLIDATION



CLIMATOLOGICAL CATEGORIES/TERCILES
(1981-2010 Temp / Prcp Historical Observations)





Verification of several Climate Outlooks (2012)

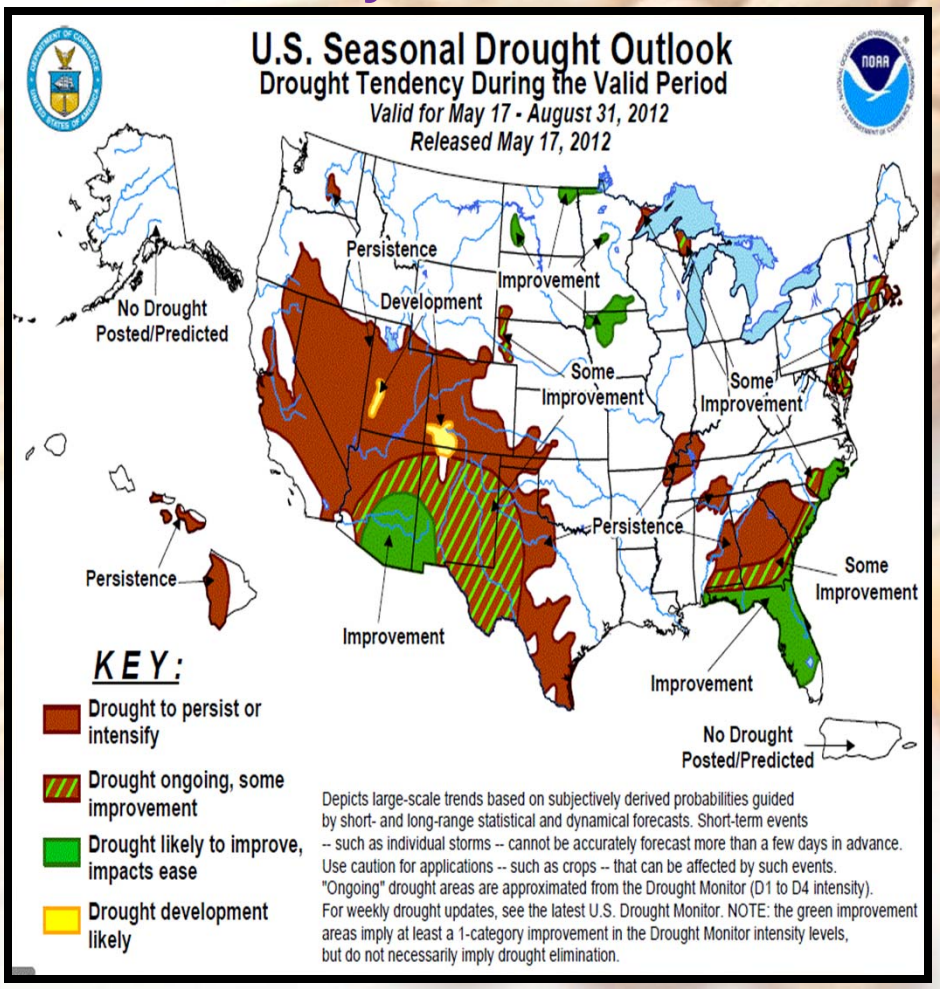
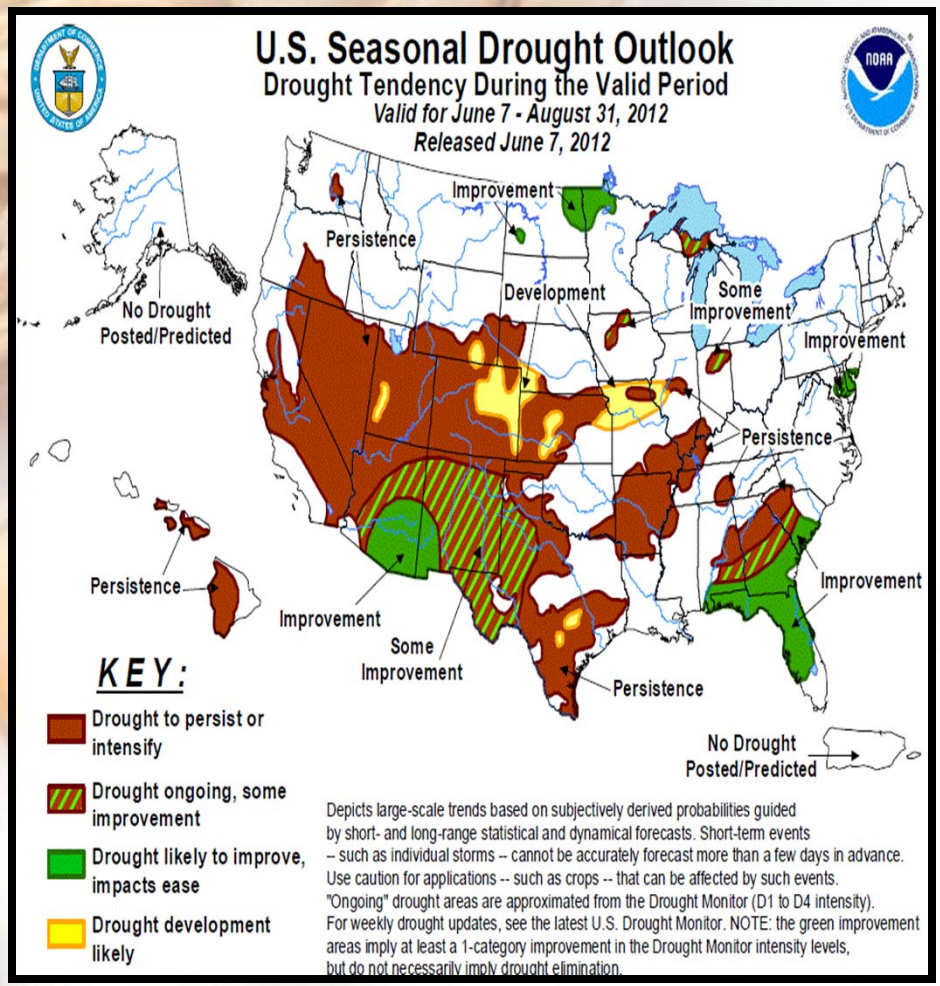
Heidke Skill Score (HSS):

$$HSS = \frac{C - E}{T - E} (100)$$

C: number of stations Correctly forecast
E: number of stations Expected Correct by random chance (=1/3)
T: Total number of stations

U.S. Seasonal Drought Outlooks

May 17, 2012



June 7, 2012