North American Drought Briefing for November 2012 and SON 2012

Climate Prediction Center/NCEP/NOAA

http://www.cpc.ncep.noaa.gov/products/Drought

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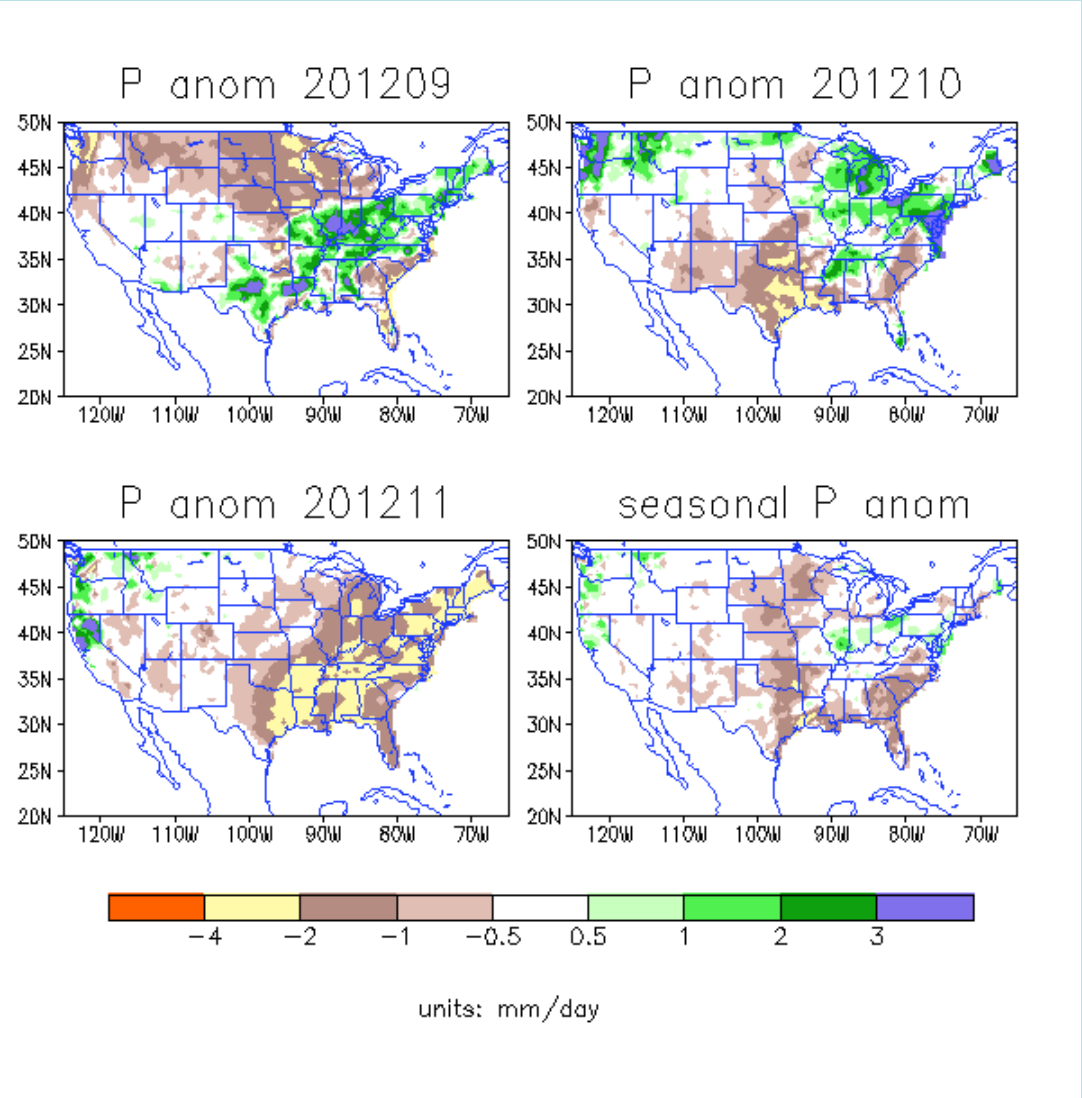
Project Funded by NOAA MAPP, TRACS & NASA

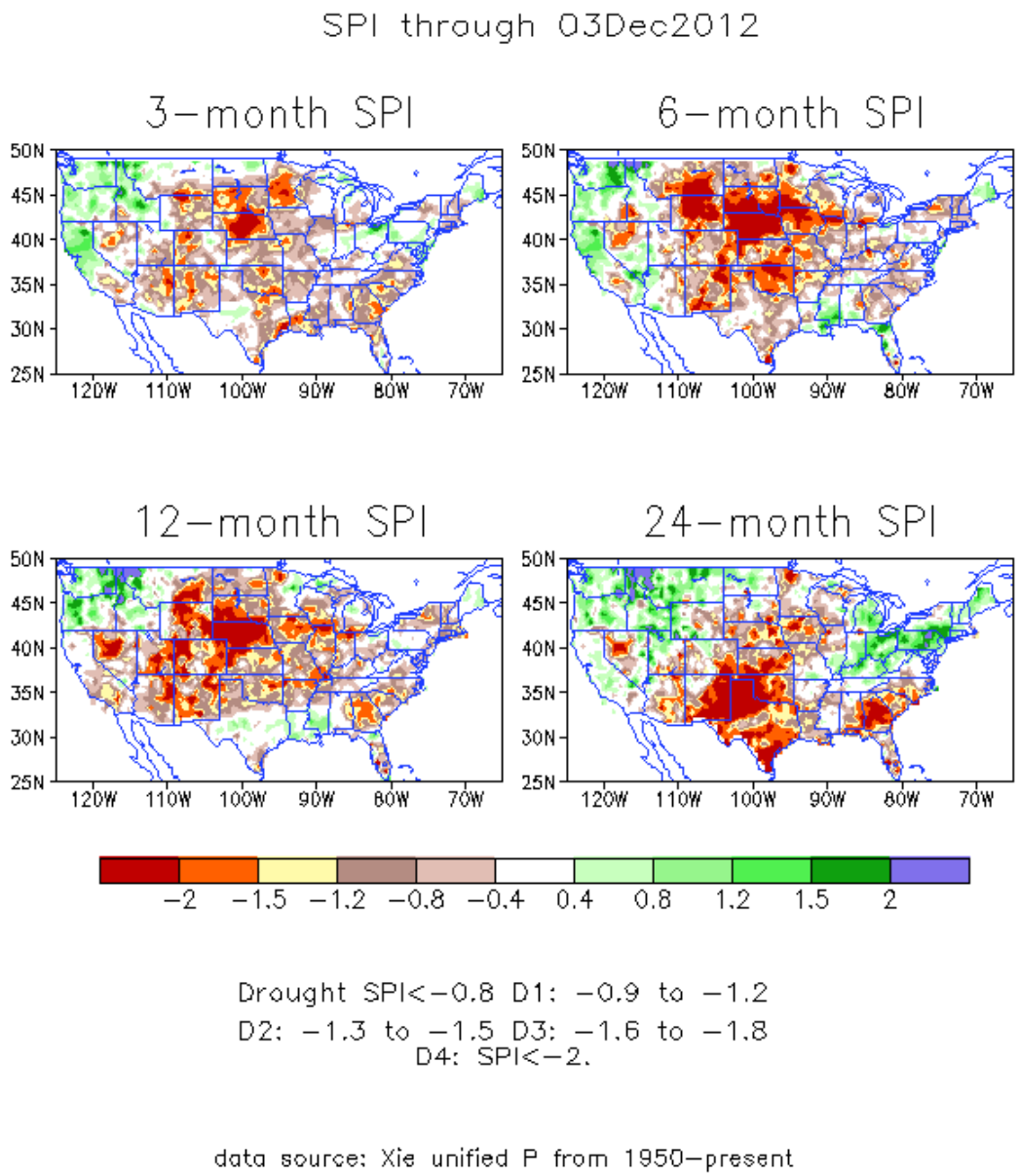
P anomalies over the United States



High lights:

November 2012

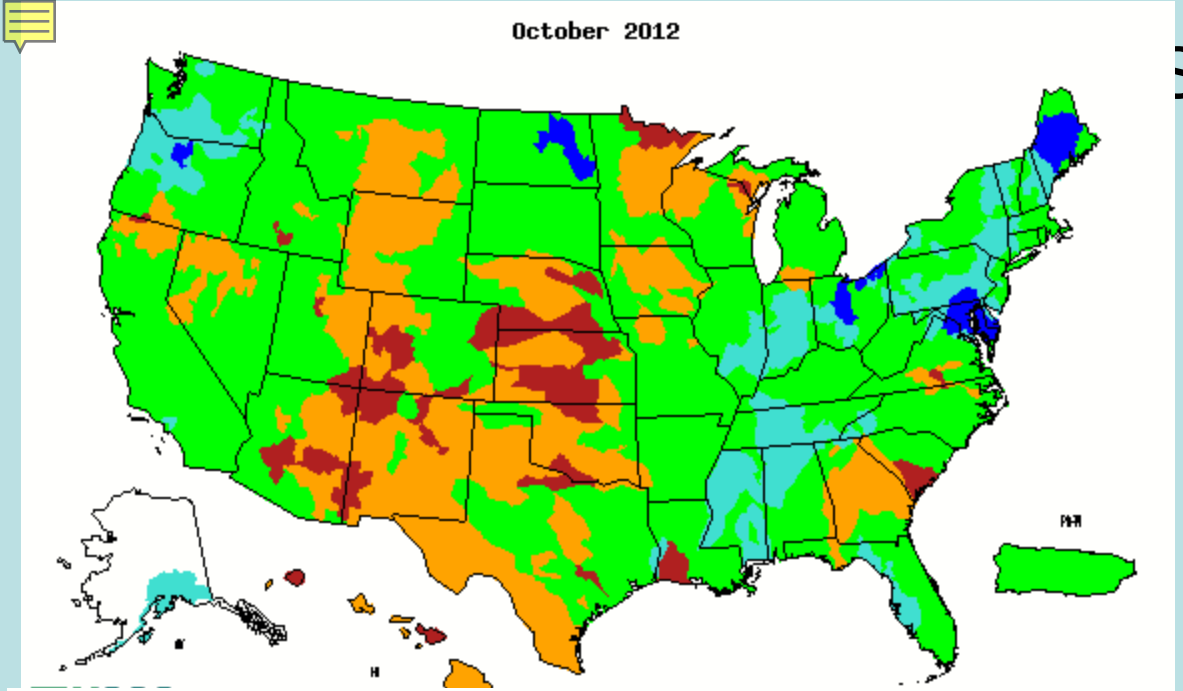
- **Dry:** Areas east of 102W .
- Areas from the eastern Texas and the Gulf states to the Northeast had rainfall deficits more than 2 mm/day.
- **Wet:** West Coast/ Pacific Northwest and California

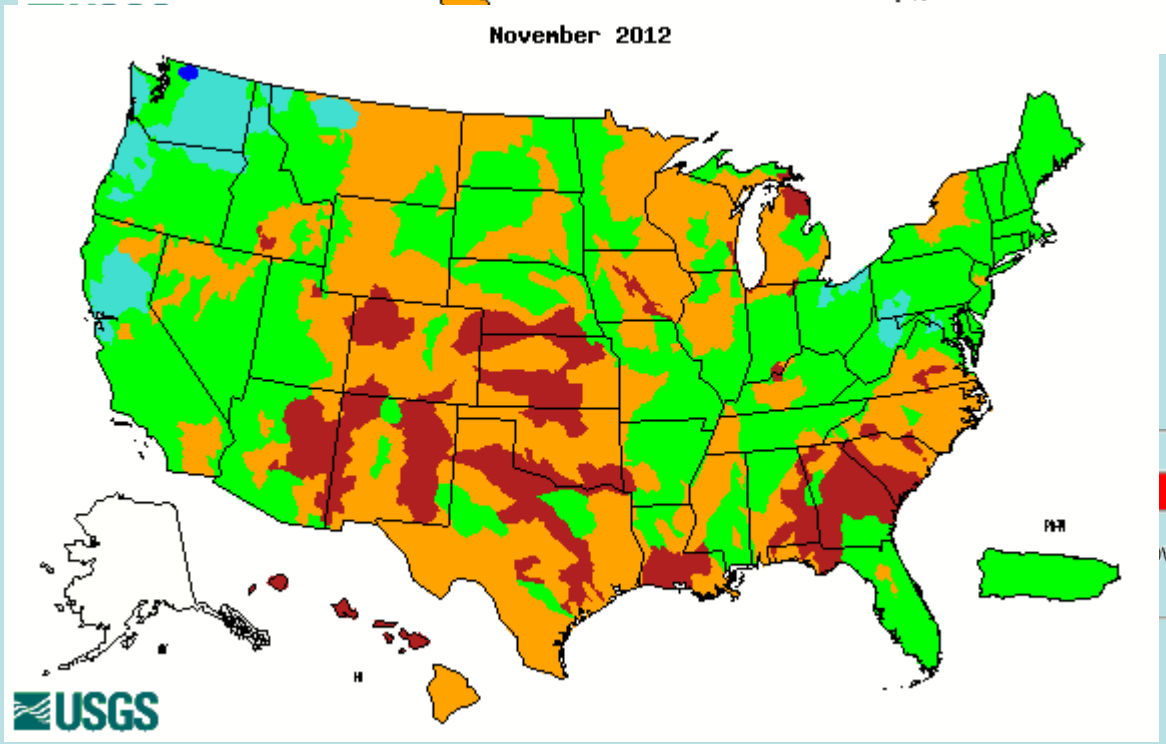


SPI

- *Dryness over the Northern Plains continues . It lasted for more than 6 months so they appeared in SPI3, SPI6 and even SPI12.*
- *For the Southeast, drought intensified somewhat (SPI3) in comparison with last month*
-

Streamflow percentile (USGS)





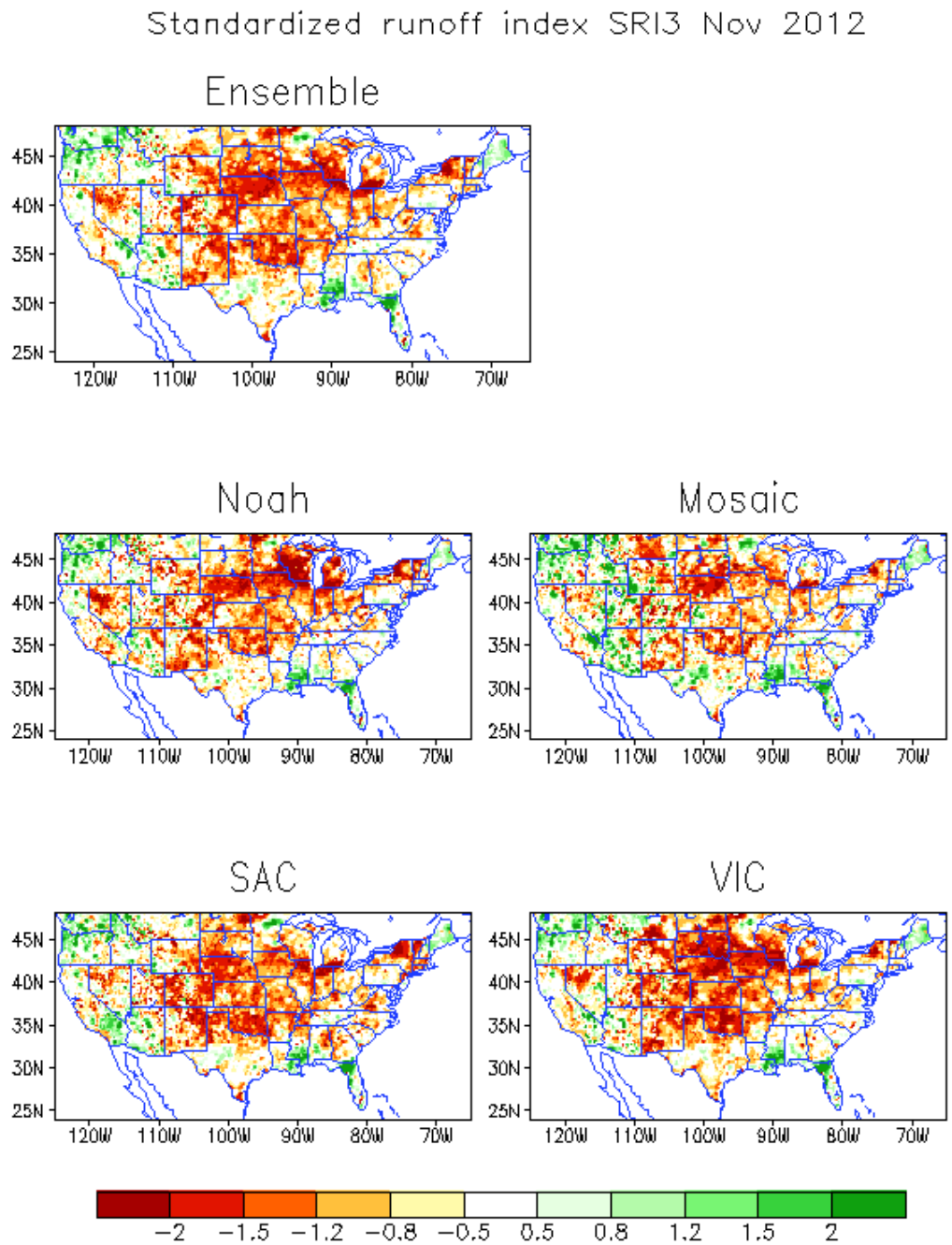
- Drought intensified over the Southeast and the Southern Plains, the Southwest and the Great Lakes

Explanation - Percentile classes

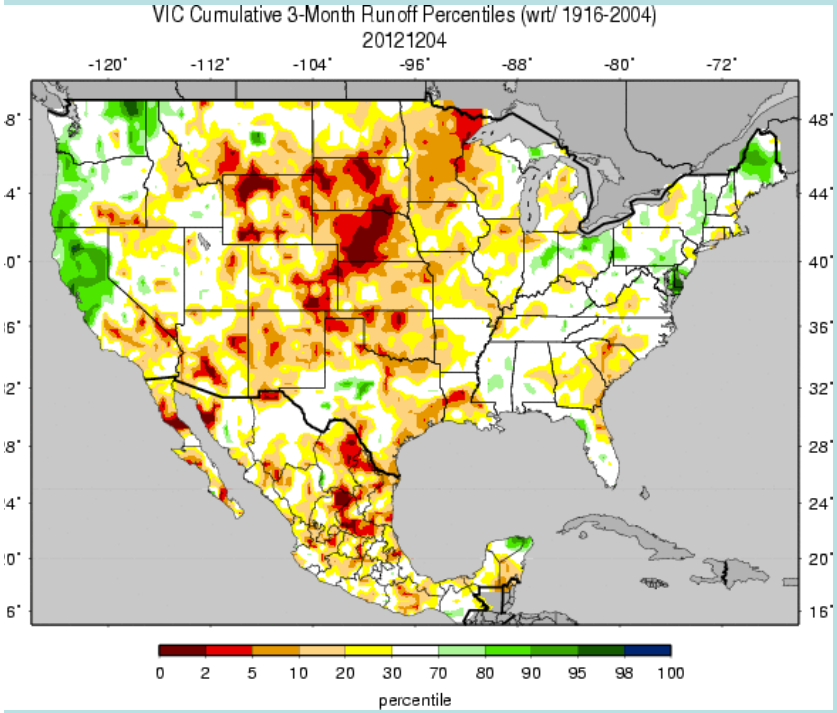
	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

RUNOFF percentiles

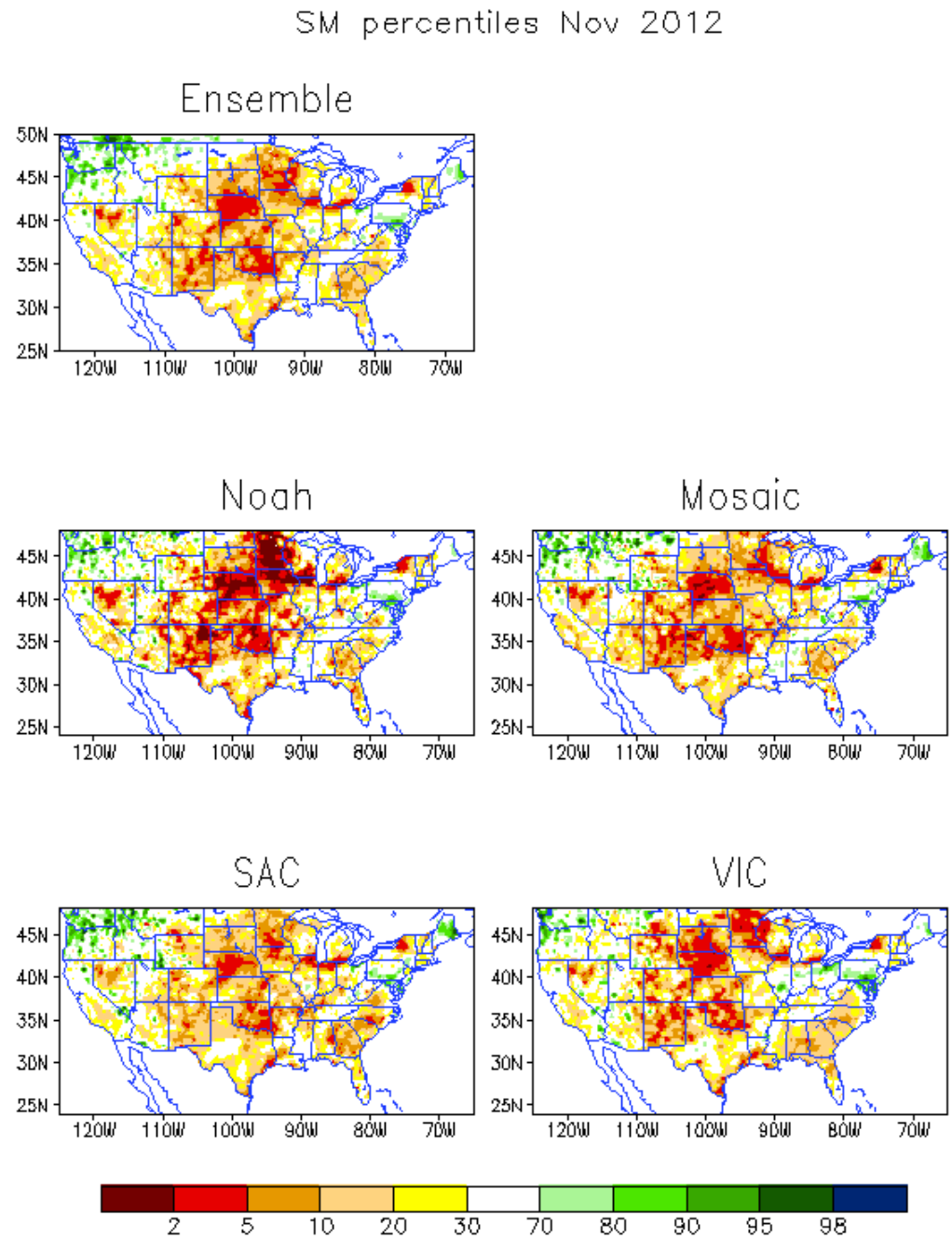
U Washington



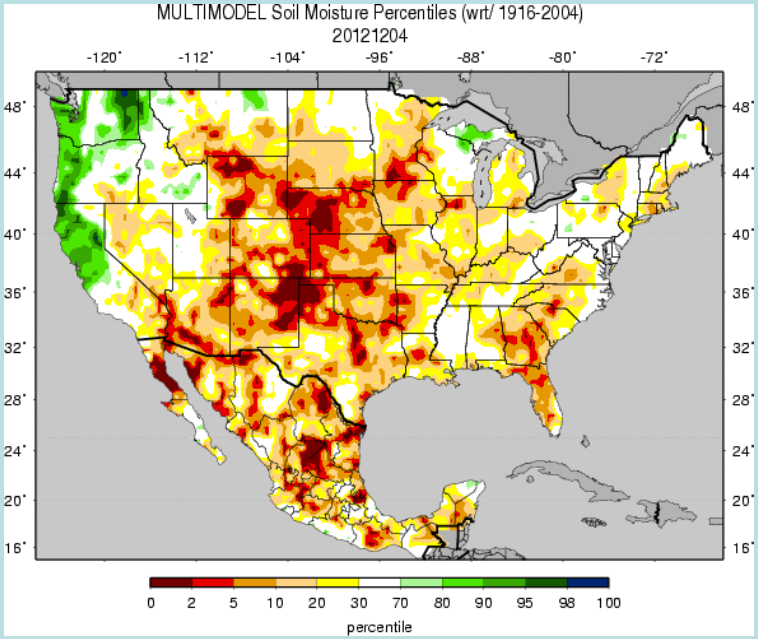
3-month accumulation



Both UW and EMC show the Central U. S. is under severe drought



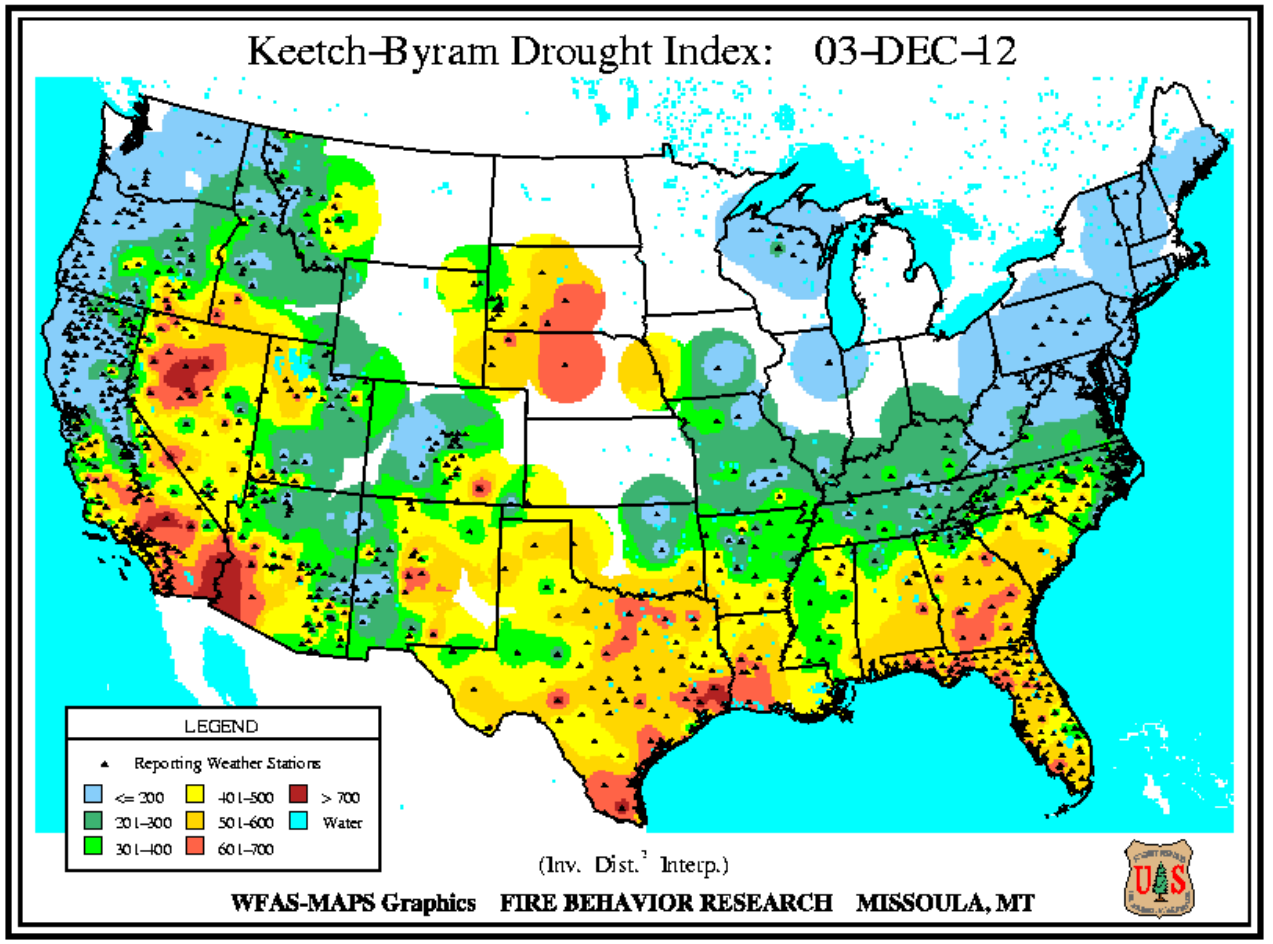
U Washington



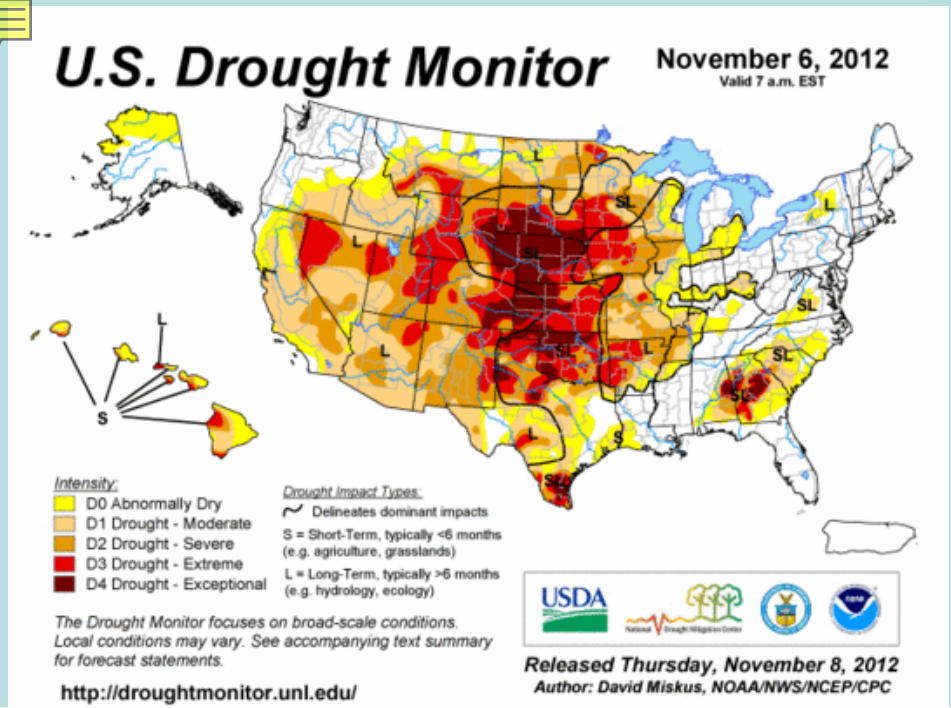
A very dry picture:
Both total soil moisture percentiles show dryness over the Central U. S.

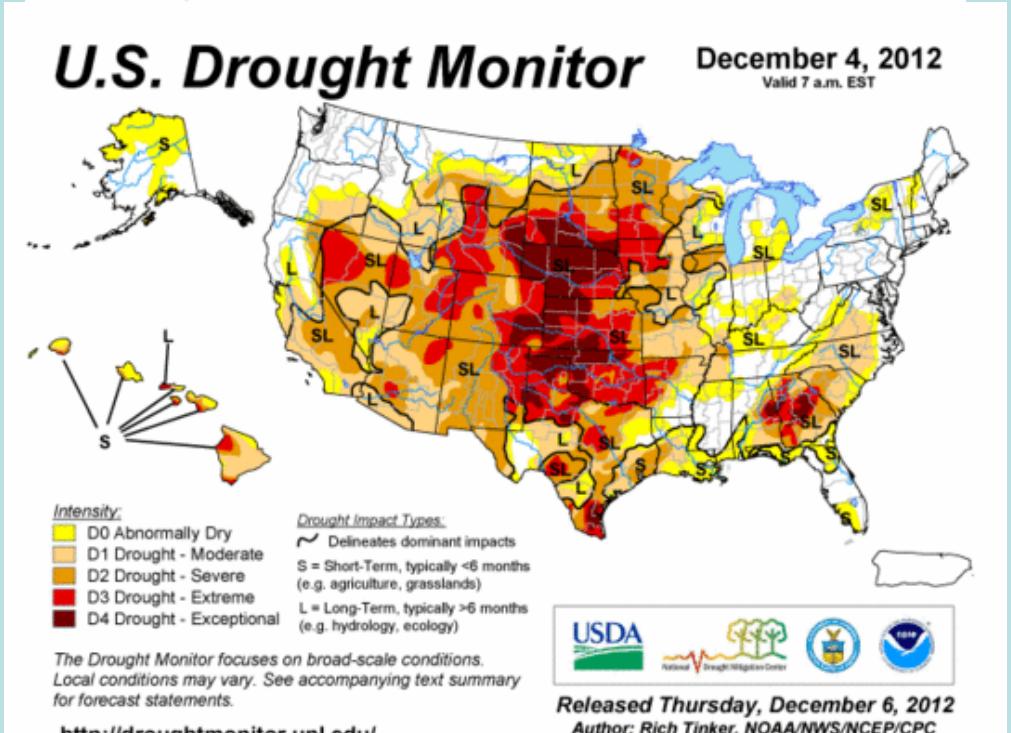
Keetch-Byram Drouught index

Please update



Drought monitor

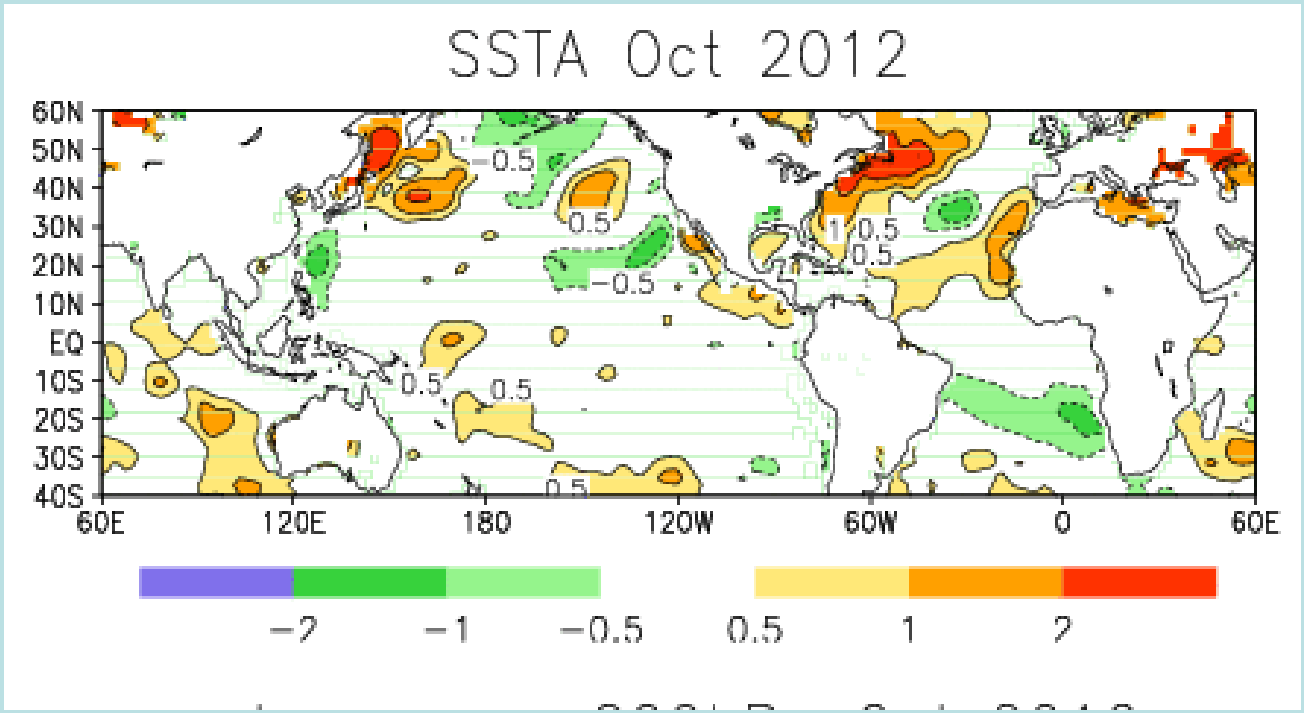




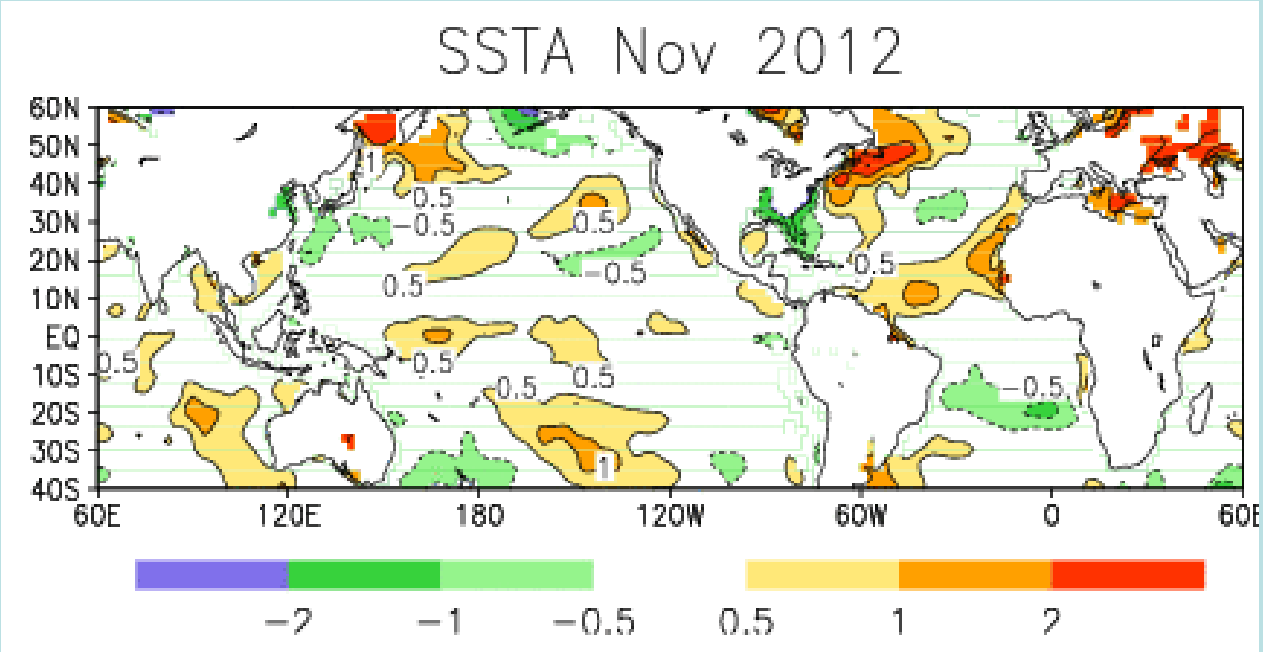
The Drought Monitor

similar to the Drought Monitor issued on Nov 6 expect drought in Texas intensified.

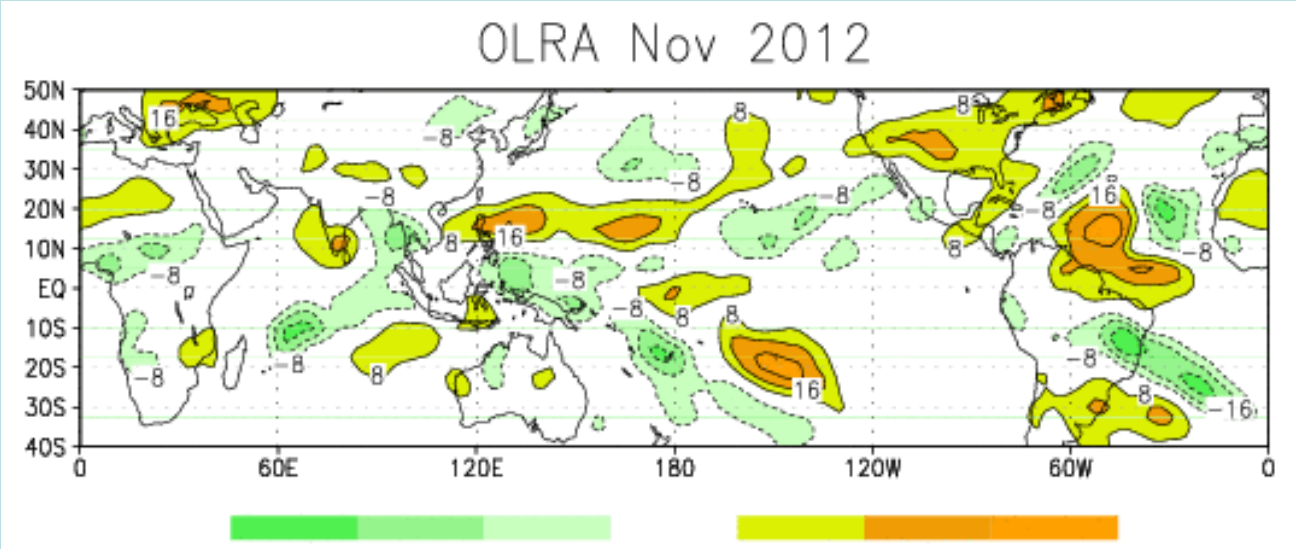
SSTA

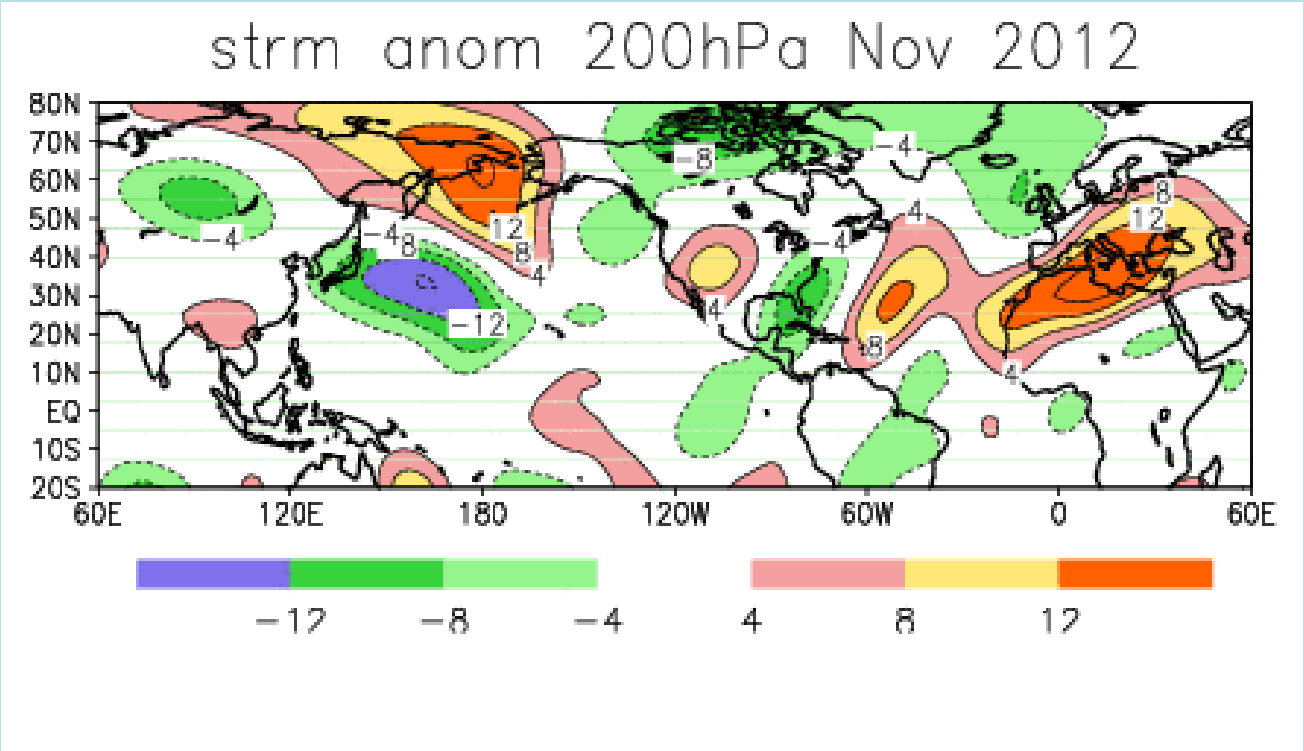


ENSO neutral condition in the Tropical Pacific, No ENSO alert



- No coherent SSTA pattern in the Pacific
- A three cell SSTA pattern in the Atlantic


OLRA Nov 2012
50N
40N
30N
20N
10N
EQ
10S
20S
30S
40S
0
60E
120E
180
120W
60W
0


strm anom 200hPa Nov 2012
80N
70N
60N
50N
40N
30N
20N
10N
EQ
10S
20S
60E
120E
180
120W
60W
0
60E
−12
−8
−4
4
8
12

Influence of the Atlantic SSTA on U. S. P anomalies

winter summer

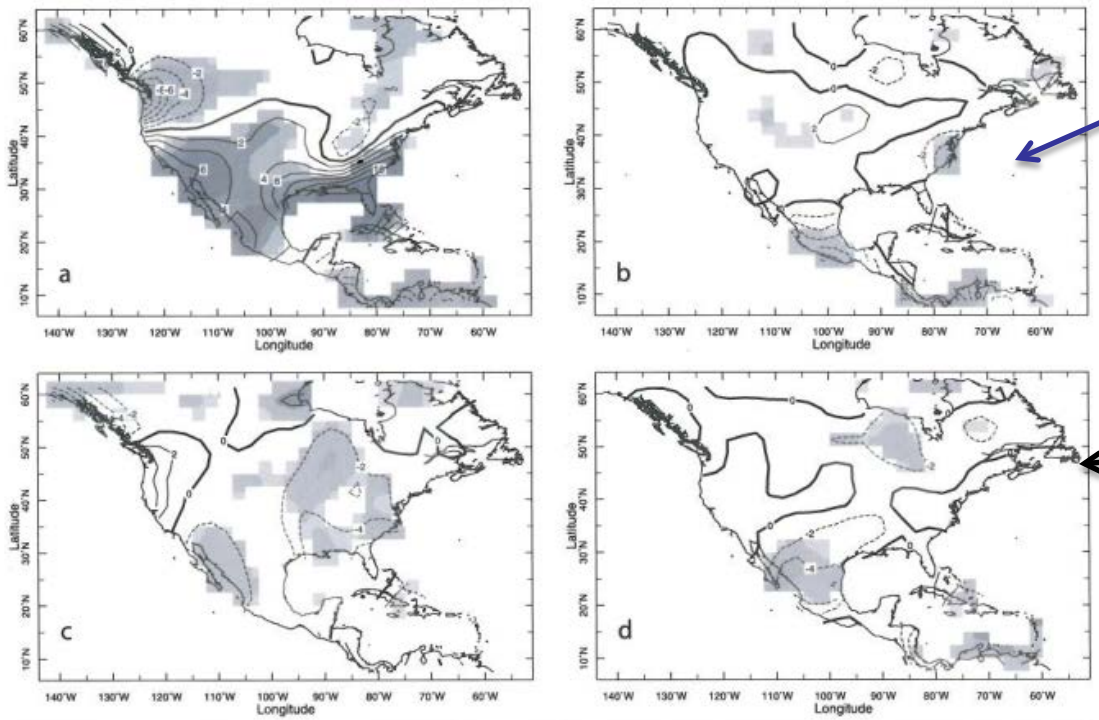


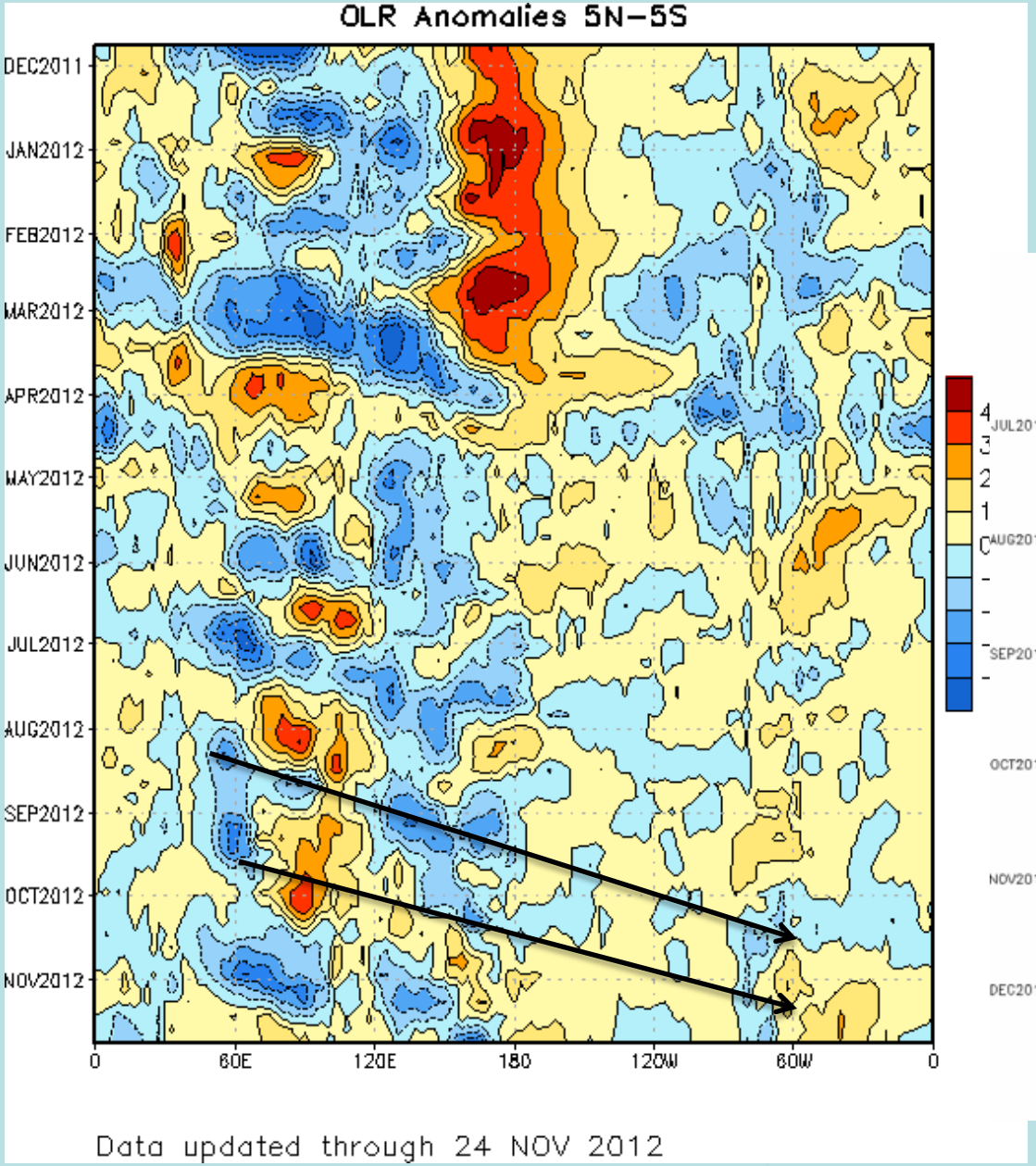
FIG. 1. Seasonal precipitation anomaly associated with concomitant variations of (a),(b) ENSO and (c),(d) tropical Atlantic SST variability, calculated using a multiple regression on the Niño-3.4 and TNA SST indices for the (a),(c) cold season (October–March) and (b),(d) warm season (April–September). Contours are drawn every 2 mm day^{-1} with positive (solid) [negative (dashed)] values and the zero contour (bold) shown. Shading is added to indicate regions where the anomalies are significant at the two-sided 10% level. Data are from NOAA/NCEP/PREC-L analysis (Chen et al. 2002) for the years from 1948 to 2007.

ENSO

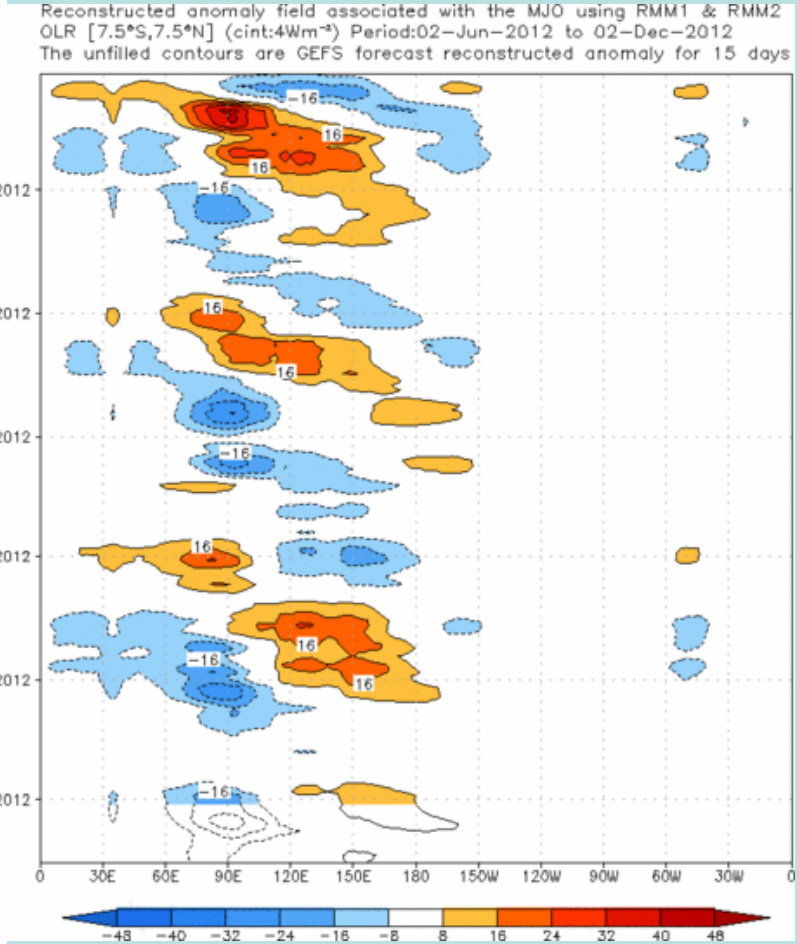
Atlantic SSTA Weaker than ENSO

J. Climate

Outgoing Longwave Radiation (OL R) Anomalies

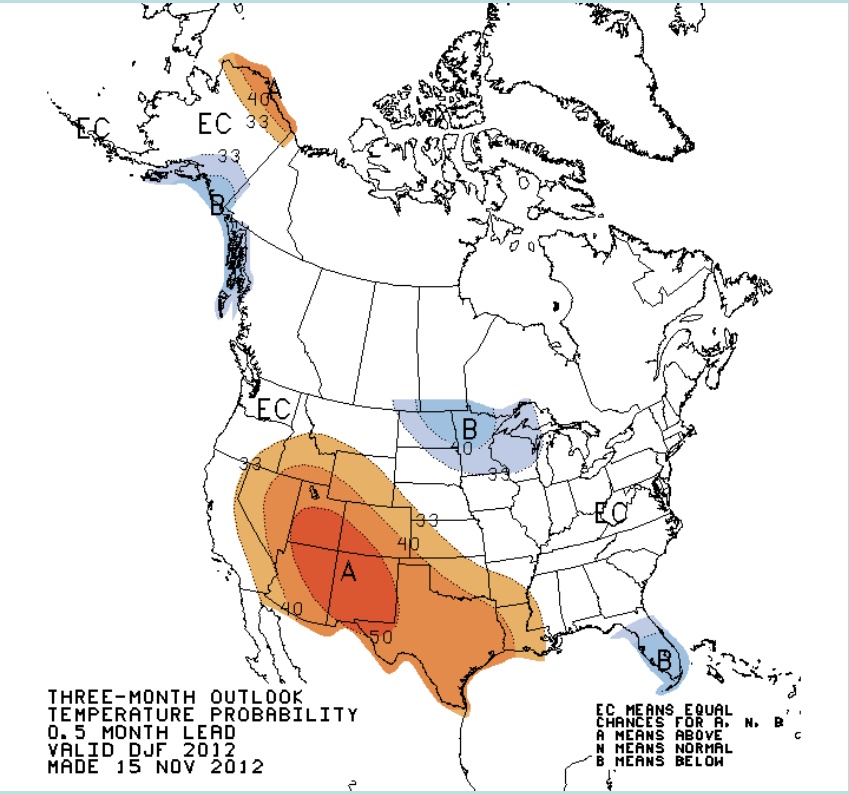


forecast

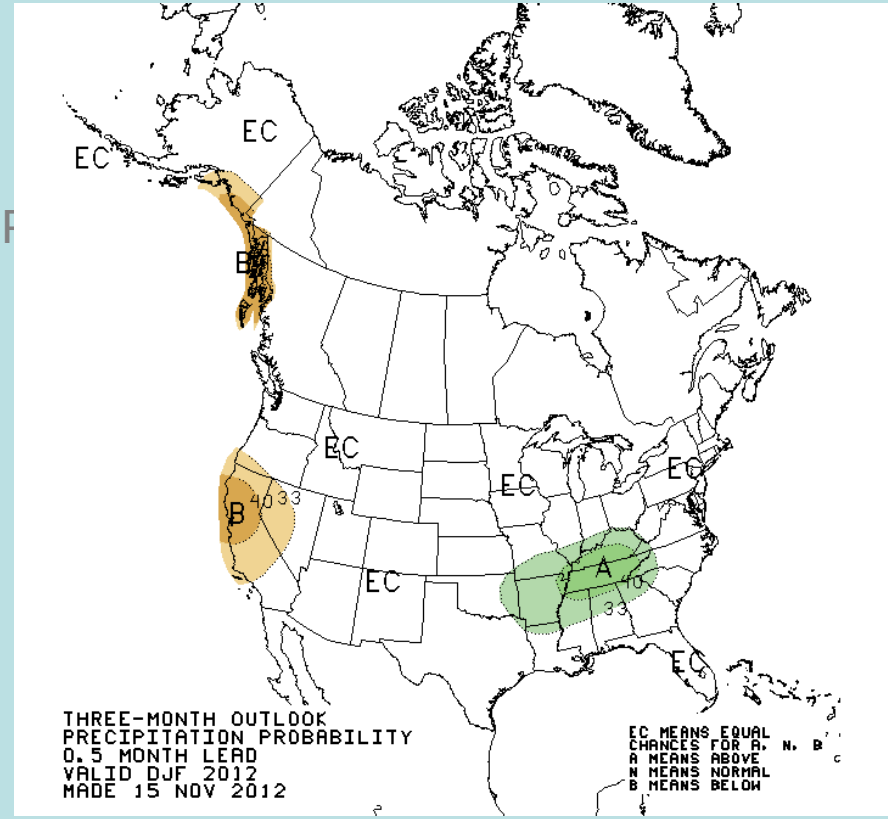


T and P fcsts for DJF 2012

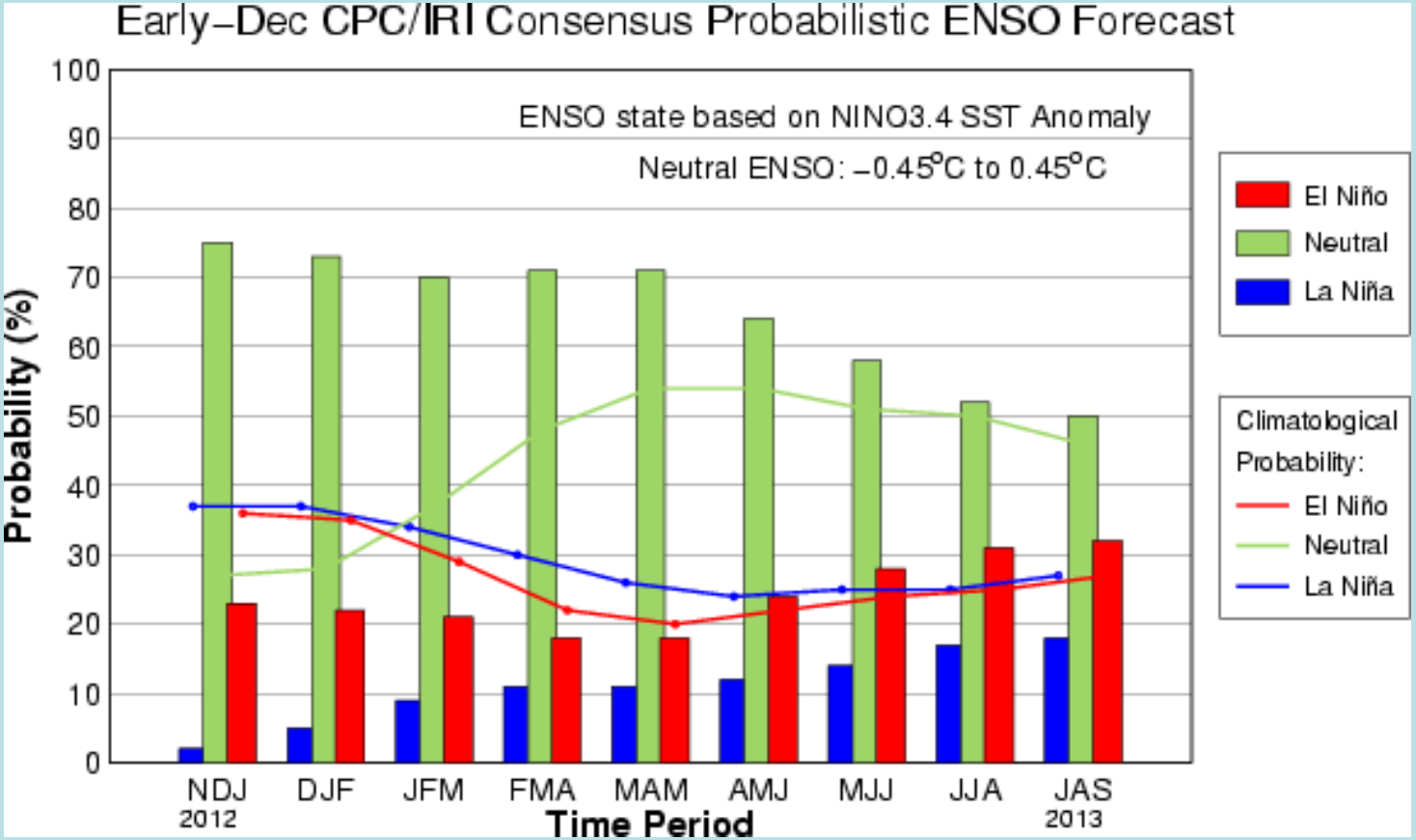
Temp



precip



ENSO probabilistic fcst



ENSO-Neutral conditions through winter and spring 2013

NMME

6 Models in operation

Model	members	leads(months)
CFSv2	24	0-9
GFDL	10	0-11
NASA	11	0-8
CCSM3	6	0-11
CMC1	10	0-11
CMC2	10	0-11

SPI-NMME

- 6 models monthly mean precipitation fcsts from 0-8 months
- For each lead and each grid point, a Bias Correction and Spatial Downscaling (BCSD) error correction scheme is applied to correct errors
- The corrected P forecasts are appended to the observed P to compute SPI for each model
- Ensemble mean SPI is the equally weighted mean of 6 models
-

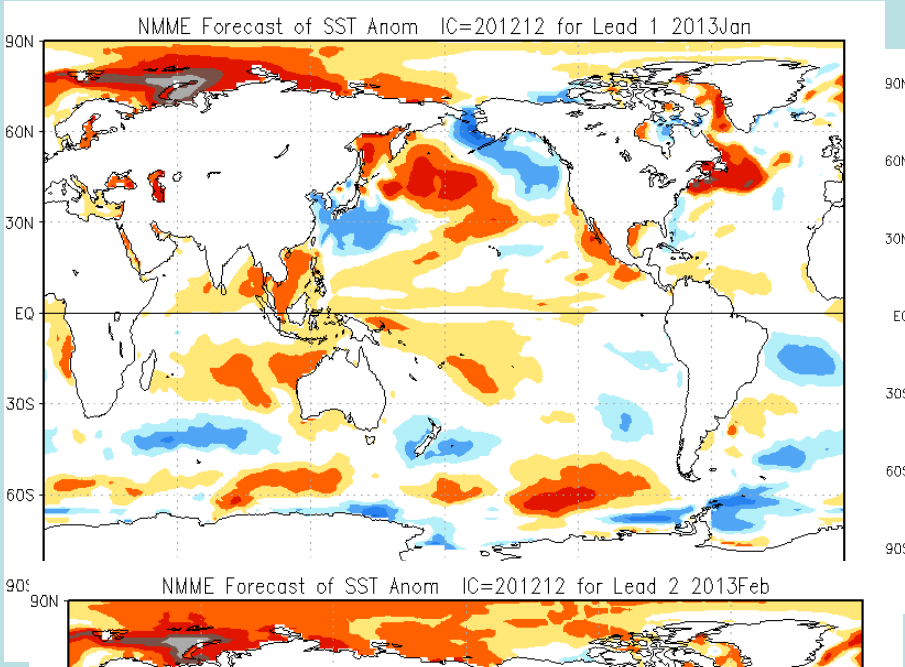
Schedule

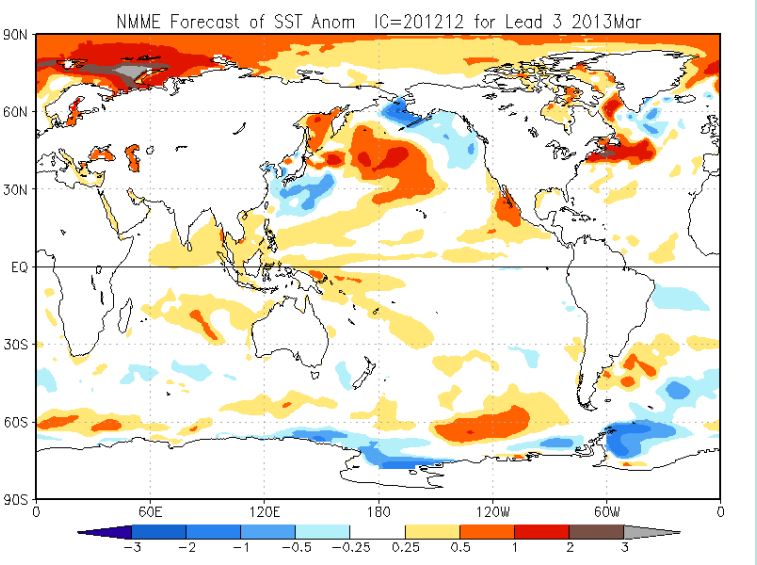
- Hindcasts will be available by 7th each month
- Forecasts will be available by 8th each month
- SPI forecasts will be available by 10-11th each month for drought briefing
- Skill and hindcast evaluation will be available by 20th each month (we may do Cfsv2 and CCSM3 early)
- Thanks: Qin Zhang for her wonderful archive

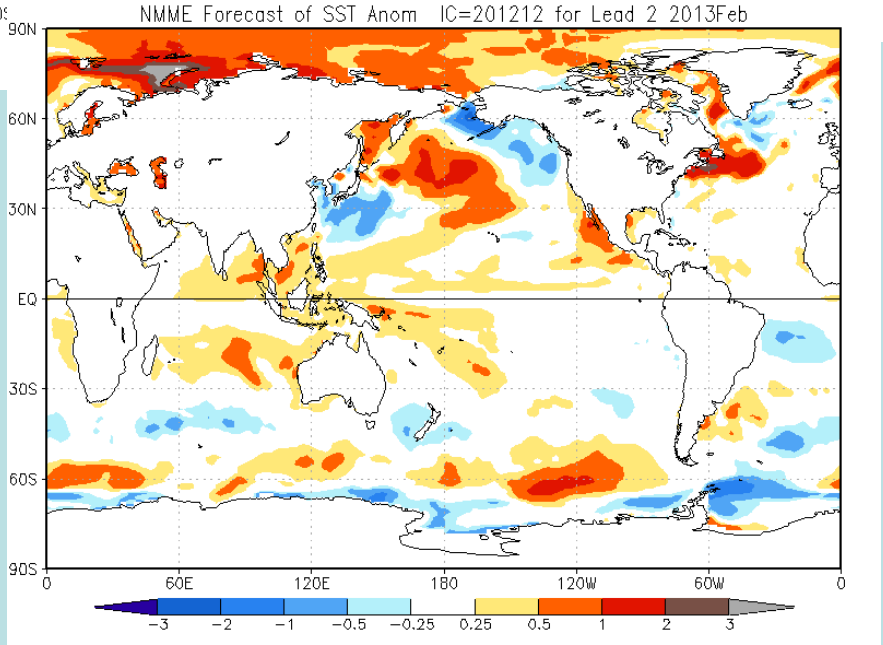
Web site and news letter

- http://www.cpc.ncep.noaa.gov/products/NMME
- To get news letter
- Click join the NMME mailing list

NMME fcsts for SSTA

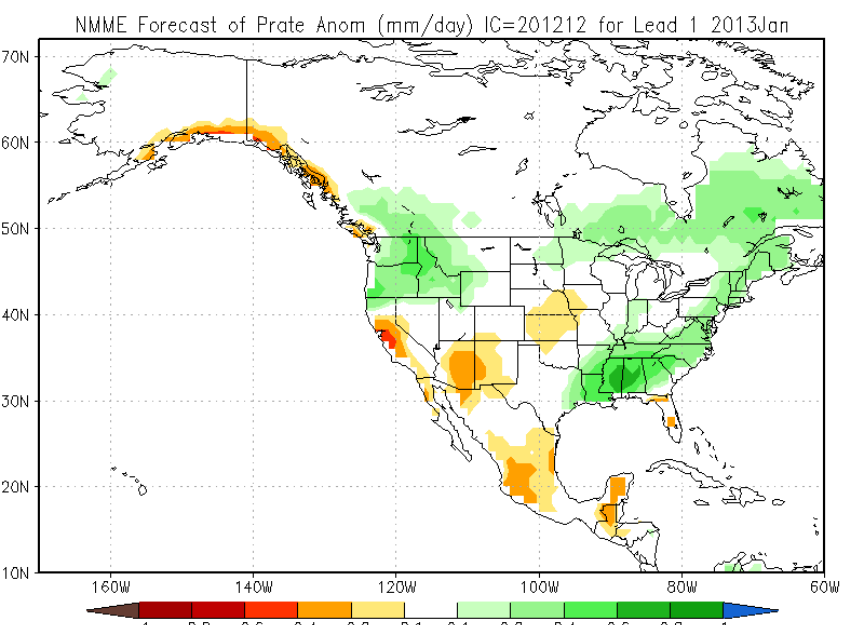


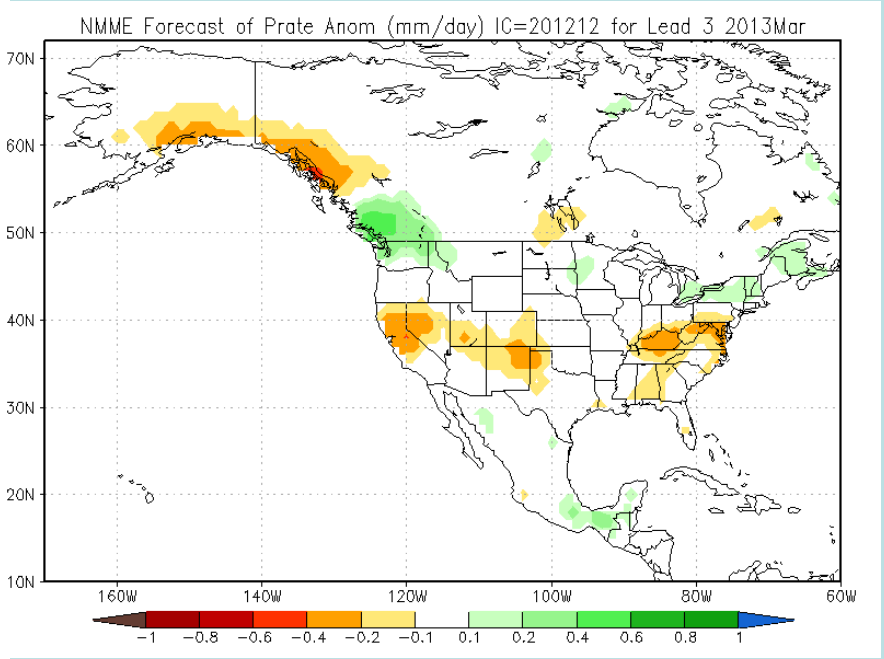


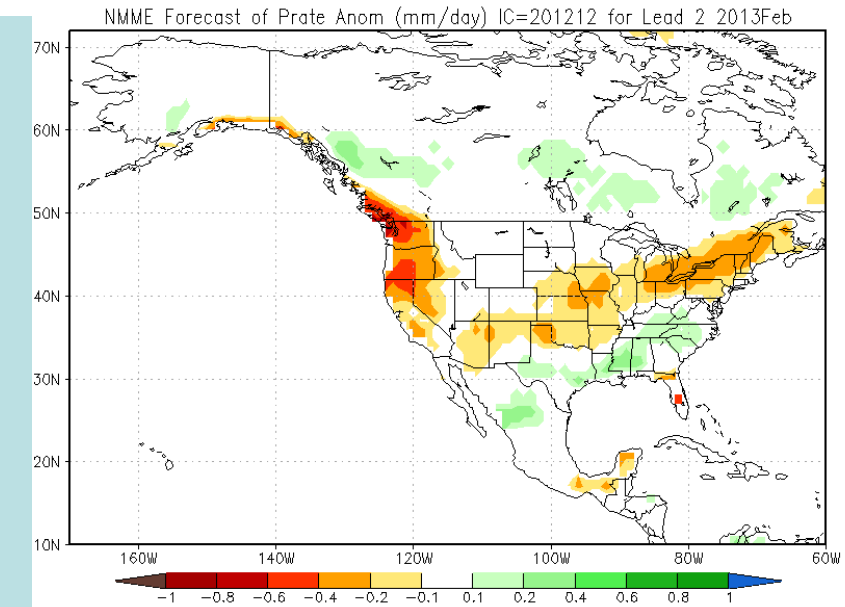


1. Neutral ENSO conditions through winter
2. Warm SSTAs in the North Pacific and cold SSTAs near Alaska and WARM SSTAs along the West coast(not exactly PDO)
3. Spread is not very large except the CFSv2 model that indicates a possible cold event

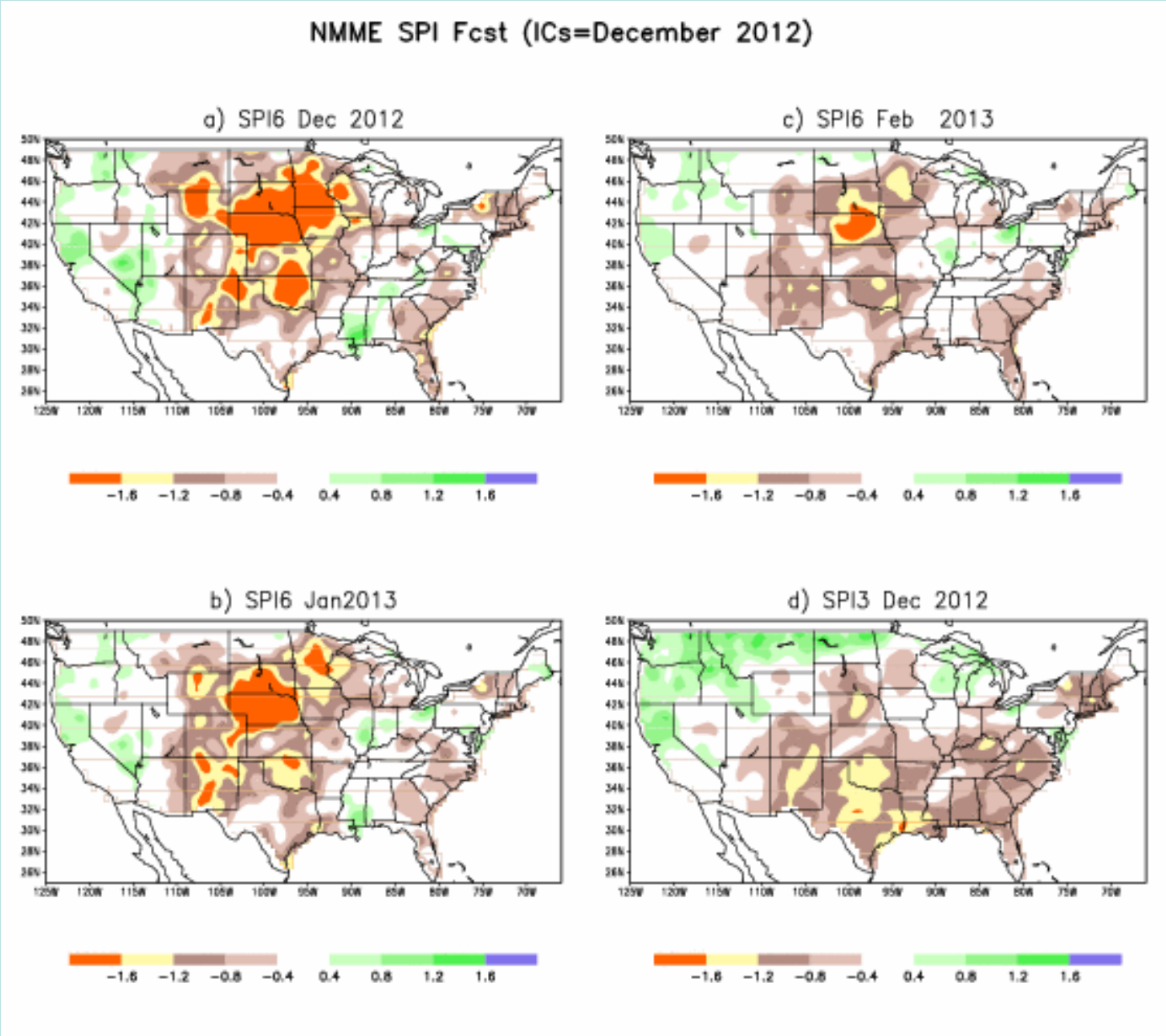
NMME P fcsts

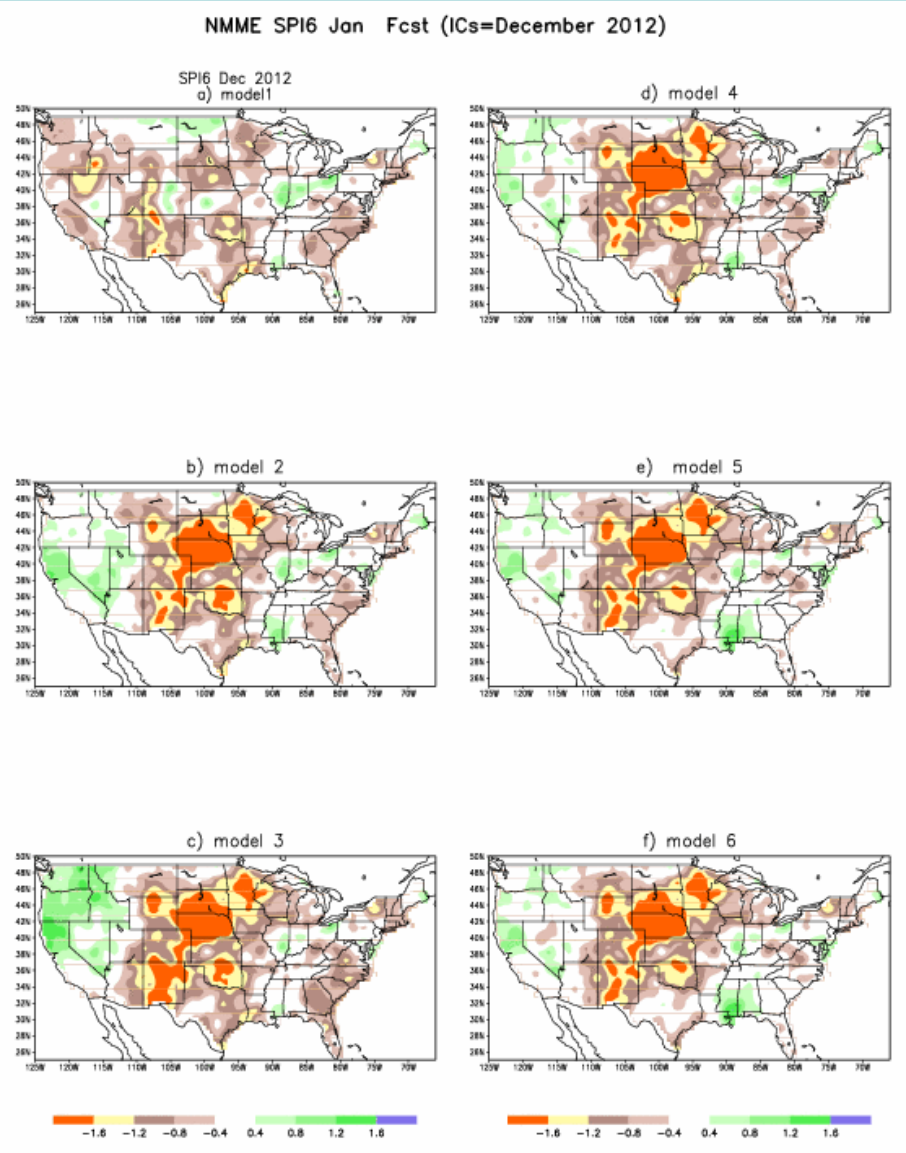






1. Spreads among models for P are much larger so the ensemble means are weak.
2. For Jan, 4 models show wetness over the Southeast, two models show otherwise
3. Not much signal over the central U. S. (less than 0.4 mm/day)

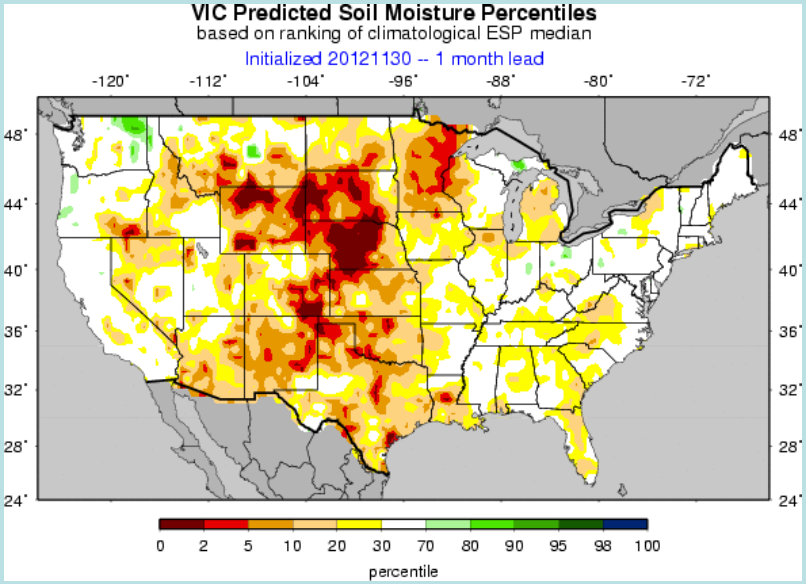

NMME SPI Fcst (ICs=December 2012)
a) SPI6 Dec 2012
c) SPI6 Feb 2013
b) SPI6 Jan2013
d) SPI3 Dec 2012
−1.6 −1.2 −0.8 −0.4 0.4 0.8 1.2 1.6



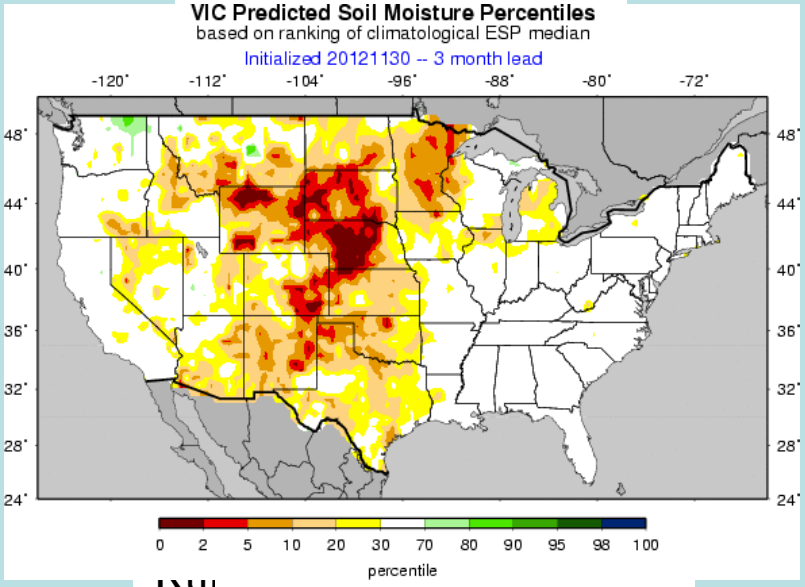
SPI6 Jan FCST from
Each model
Except model 1, the spread is not very large. They all show severe drought over the central U. S.

ESP FCST UW ICs=1130

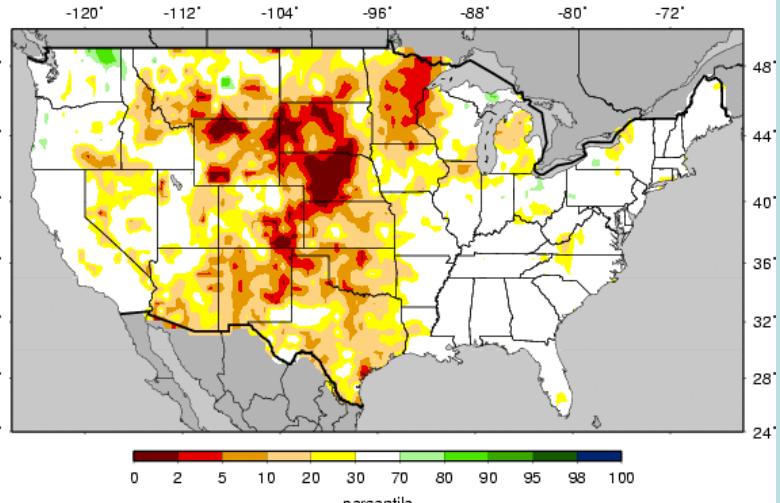
Dec 2012



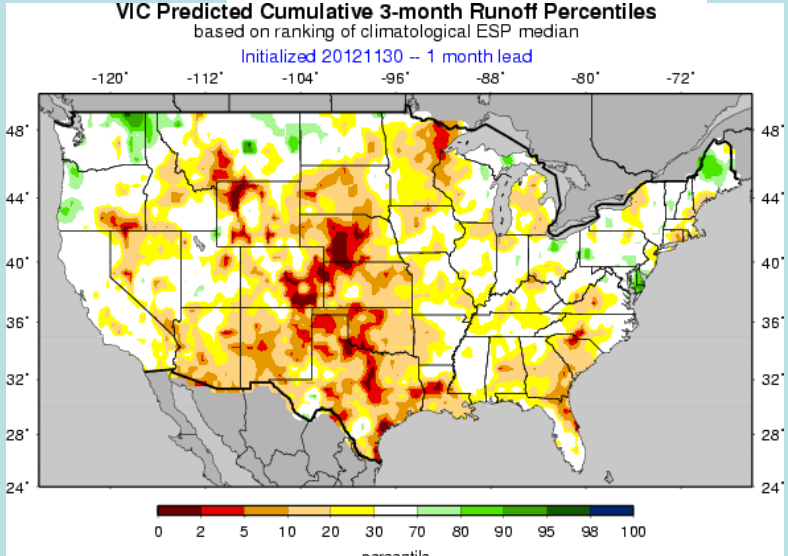
Feb 2013



Jan 2013

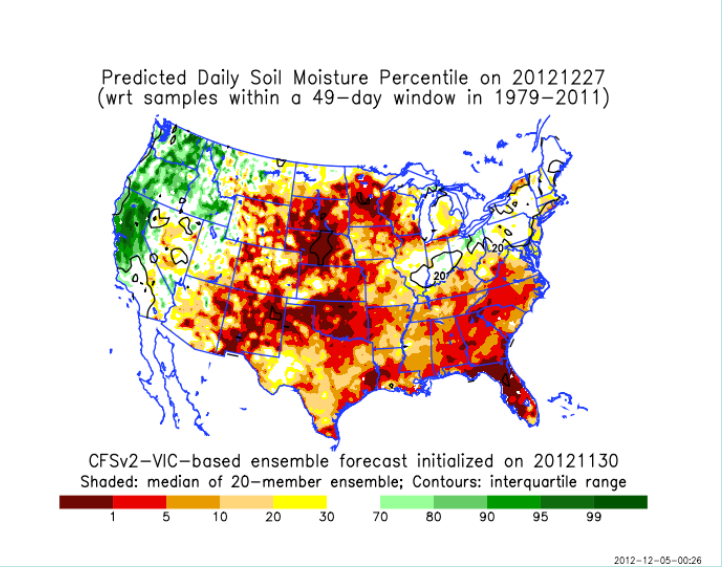


Runoff Dec



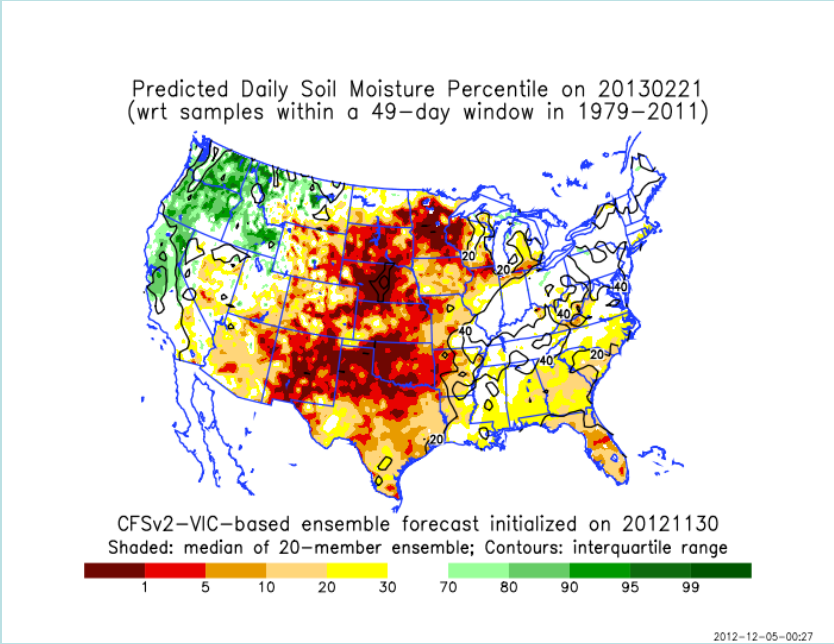
SM fcsts from MSU (Lifeng Luo)

12/27/2012(4-week lead)

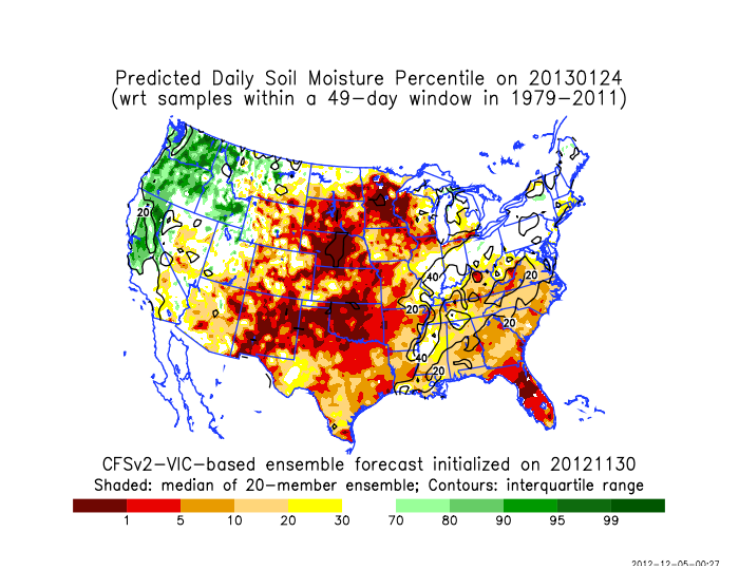


Princeton-MSU Fcst
from 11/30//2012

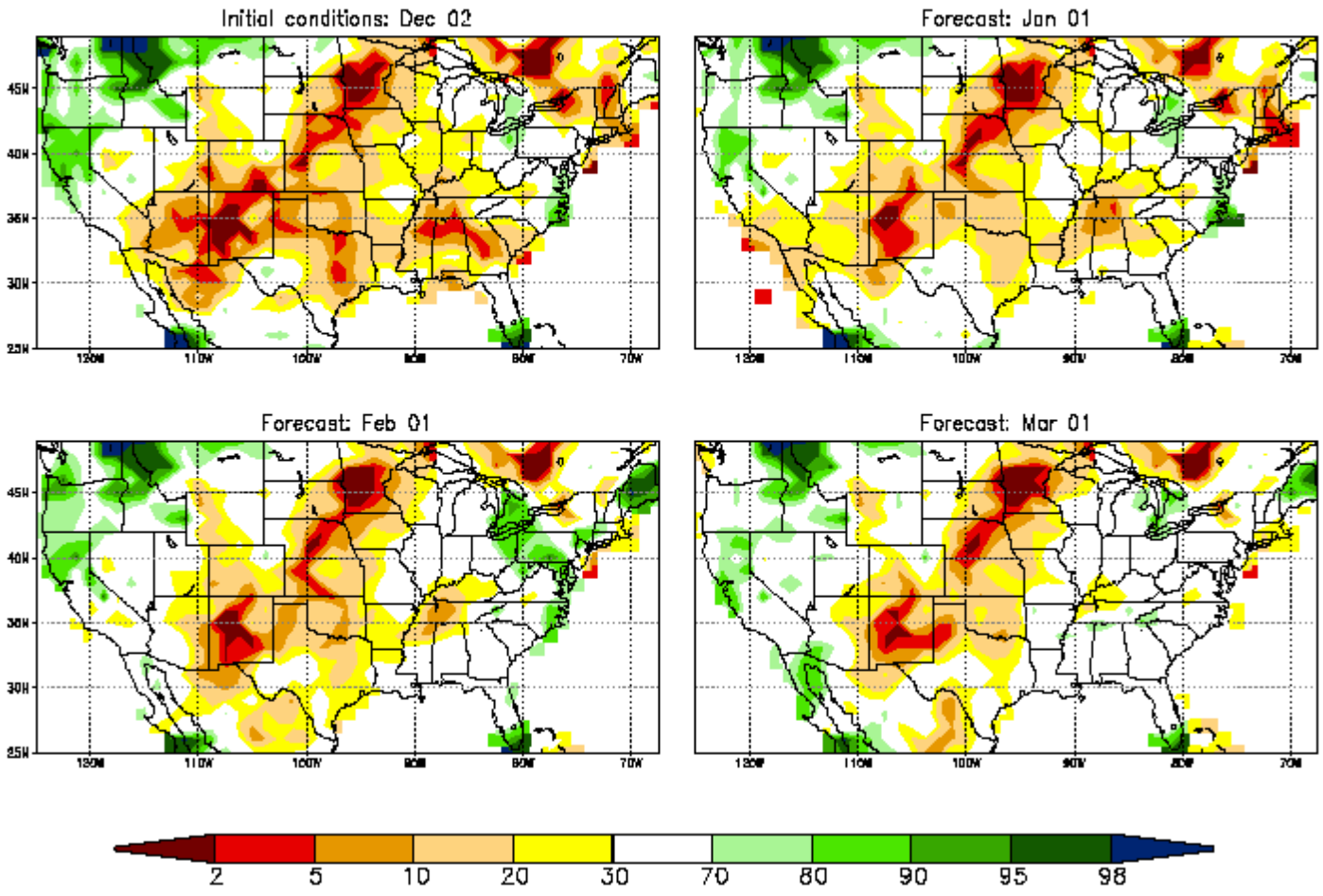
2/21/2013 (12-week lead



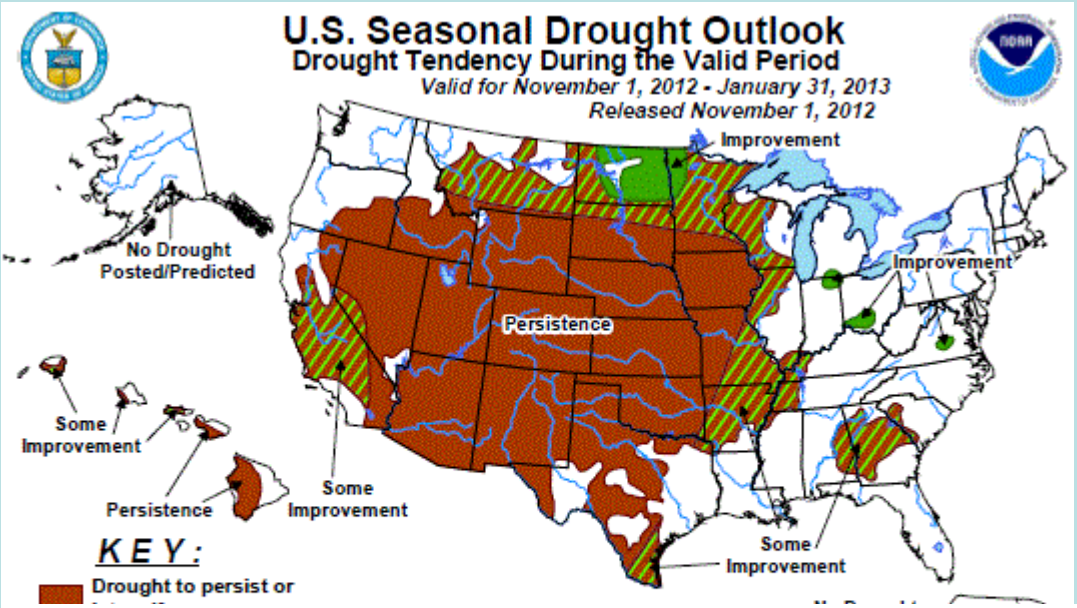
1/24/2013 8- week lead

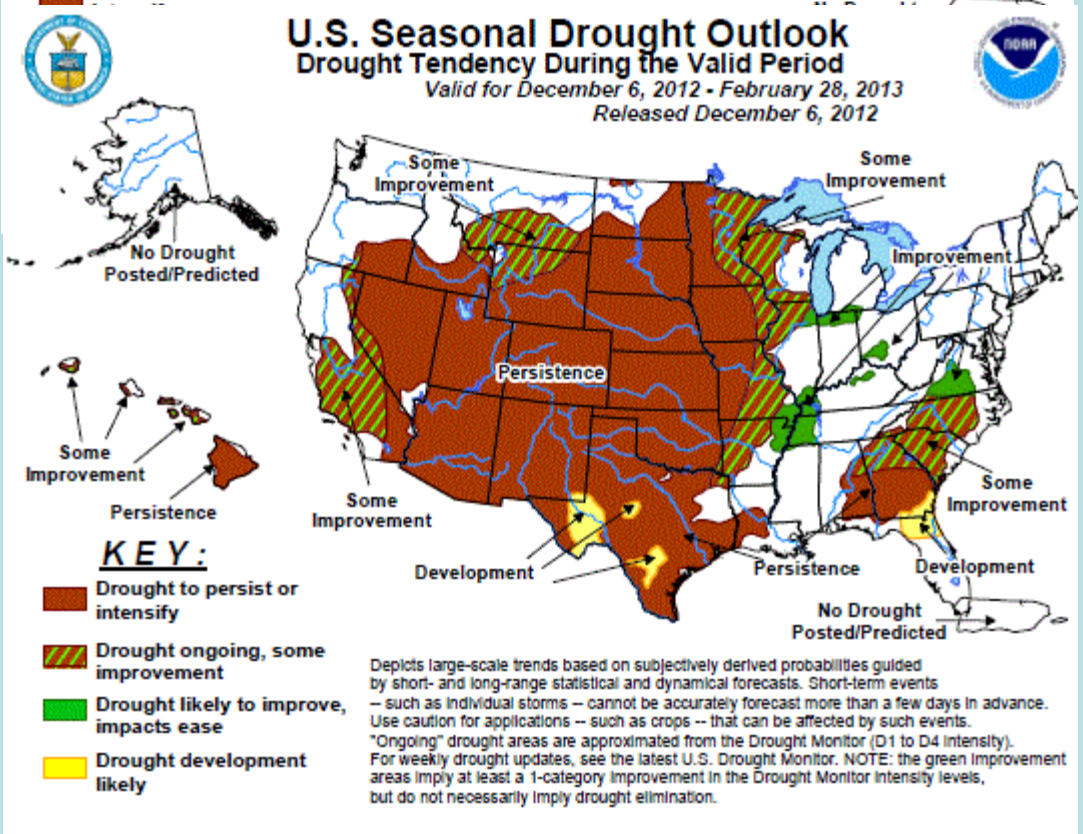


Soil moisture percentile from NASA GEOS-5 forecast system



seasonal Drought outlook





Dec 6 release

Conclusions

Ocean conditions :

ENSO : Neutral

No PDO

With warm SSTAs in the Atlantic coast and tropical north Atlantic

Current conditions:

Drought continues over most United States with the center located over the Great plains .

Drought over the Southeast and Texas intensified somewhat

Prediction

- Oceanic conditions
- ENSO normal
- Warm SSTAs along the Atlantic coast
- Drought
- All forecasts indicate that drought over the Central United States will continue for 2-3 months.

Merry Christmas and
Happy New Year
Thanks for your support