

Oklahoma Governor's Water Conference & Research Symposium
22 October 2014

**A Quick Glimpse Into the Future:
Oklahoma Weather Patterns
Through Next Summer**

Dr. Kevin Kloesel

Director, Oklahoma Climatological Survey

University Meteorologist – OU Office of Emergency Preparedness

NCEP SREF plume for 3hrly-TMP at OUN from 20141021/15 UTC run.

Oldest Run ---> 20141020_21 20141021_03 20141021_09 20141021_15 <--- Latest Run

Forecast Parameter Selection - Hover over buttons for more information.

- 3hrly-TMP
- 3hrly-DWP
- 3h-MUCAPE
- 3h-MLCAPE
- 3h-EFFSHR
- 3hrly-QPF
- Total-QPF
- 3hrly-SNO
- Total-SNO
- Ptype-POP
- 3hr-2mRH%
- 3h-10mWND

* NOAA - National Weather Service - Storm Prediction Center *

A typical weather "forecast"

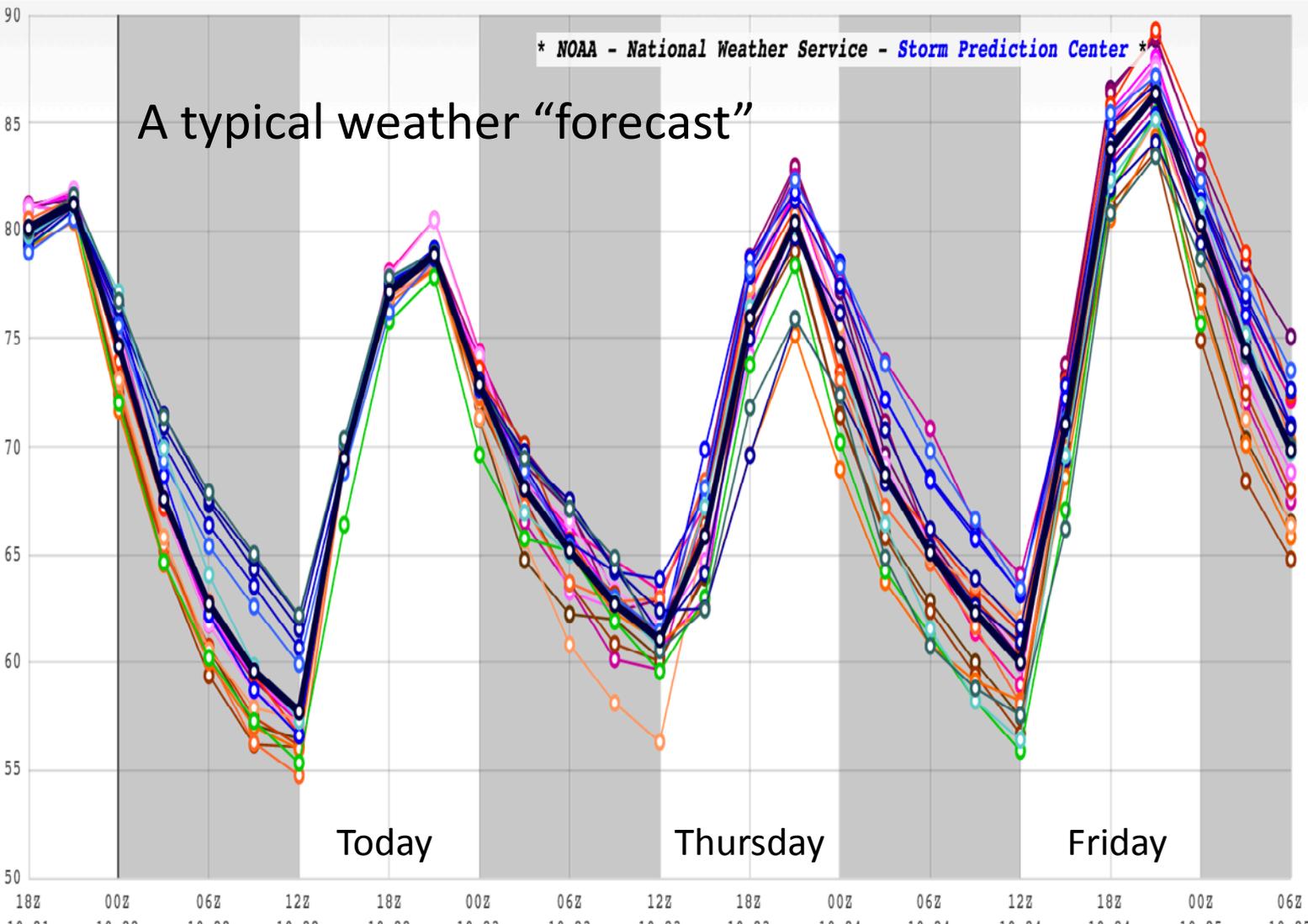
- Members Displayed
- ARWC
 - ARN1
 - ARN2
 - ARN3
 - ARP1
 - ARP2
 - ARP3
 - NMMC
 - NMN1
 - NMN2
 - NMN3
 - NMP1
 - NMP2
 - NMP3
 - MBCN
 - ONAM
 - MBN1
 - MBN2
 - MBN3
 - MBP1
 - MBP2
 - MBP3
 - Mean

- Membership Selection
- ARWC
 - ARN1
 - ARN2
 - ARN3
 - ARP1
 - ARP2
 - ARP3
 - NMMC
 - NMN1
 - NMN2
 - NMN3
 - NMP1
 - NMP2
 - NMP3
 - MBCN
 - ONAM
 - MBN1
 - MBN2
 - MBN3
 - MBP1
 - MBP2
 - MBP3
 - Mean

- Show Model Family
- ALL
 - ARW
 - NMM
 - NMB

- Remove Model Family
- ALL
 - ARW
 - NMM
 - NMB

[dProg/dt \(mean\) Last 4 Runs](#)
[Help/Credits](#) | [SREF Info](#) | [Reset](#)
[SREF Links](#) | [SPC](#) | [Feedback](#)

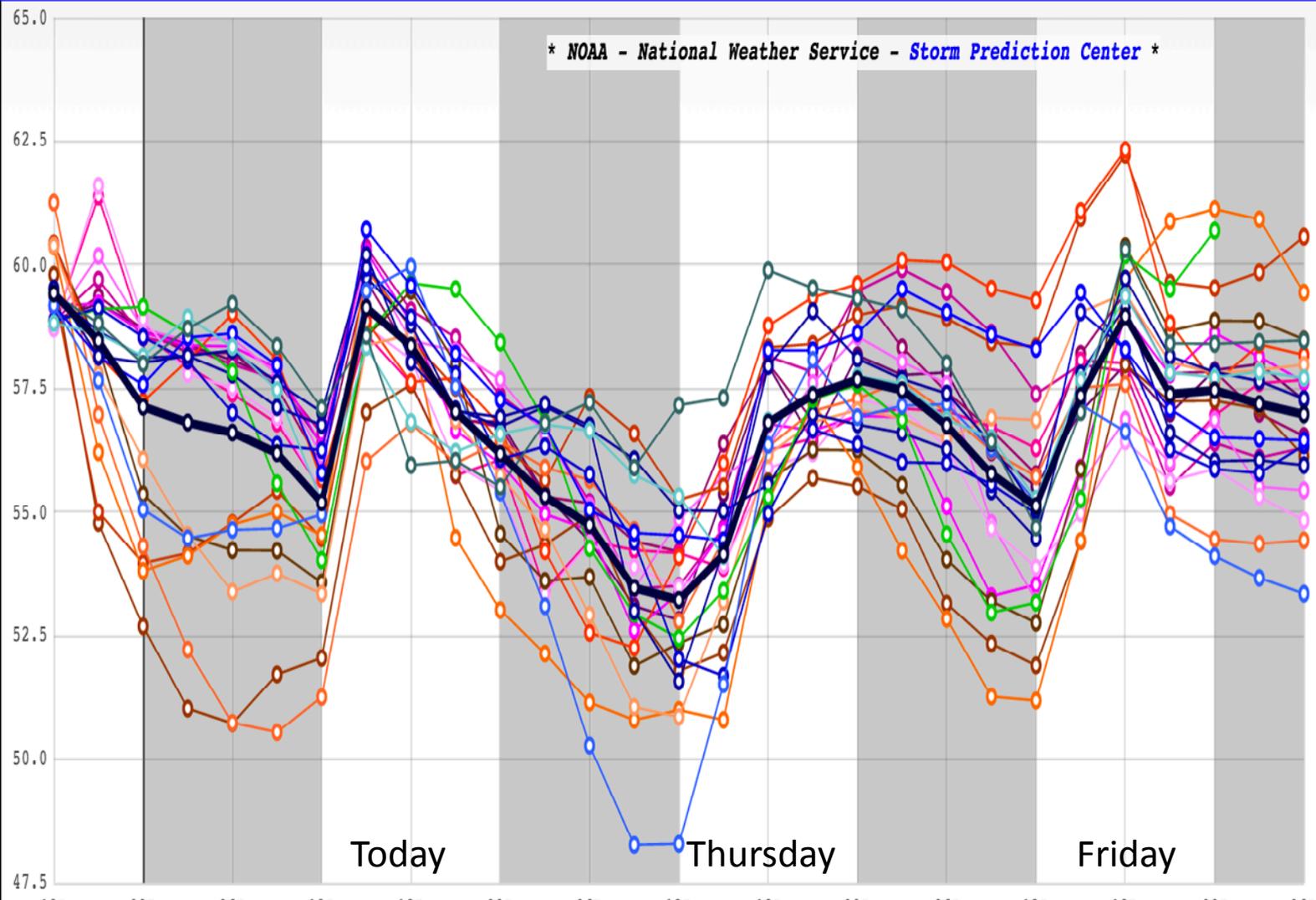


NCEP SREF plume for 3hrly-DWP at OUN from 20141021/15 UTC run.

Oldest Run ---> 20141020_21 20141021_03 20141021_09 20141021_15 <--- Latest Run

Forecast Parameter Selection - Hover over buttons for more information.

- 3hrly-TMP 3hrly-DWP 3h-MUCAPE 3h-MLCAPE 3h-EFFSHR 3hrly-QPF Total-QPF 3hrly-SNO Total-SNO Ptype-POP 3hr-2mRH% 3h-10mWND



Members Displayed

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<input checked="" type="checkbox"/> ARP1	<input checked="" type="checkbox"/> ARP2	<input checked="" type="checkbox"/> ARP3	<input checked="" type="checkbox"/> NMMC
<input checked="" type="checkbox"/> NMN1	<input checked="" type="checkbox"/> NMN2	<input checked="" type="checkbox"/> NMN3	<input checked="" type="checkbox"/> NMP1
<input checked="" type="checkbox"/> NMP2	<input checked="" type="checkbox"/> NMP3	<input checked="" type="checkbox"/> MBCN	<input checked="" type="checkbox"/> ONAM
<input checked="" type="checkbox"/> MBN1	<input checked="" type="checkbox"/> MBN2	<input checked="" type="checkbox"/> MBN3	<input checked="" type="checkbox"/> MBP1
<input checked="" type="checkbox"/> MBP2	<input checked="" type="checkbox"/> MBP3	<input checked="" type="checkbox"/> Mean	

Membership Selection

<input checked="" type="checkbox"/> ARWC	<input checked="" type="checkbox"/> ARN1	<input checked="" type="checkbox"/> ARN2	<input checked="" type="checkbox"/> ARN3
<input checked="" type="checkbox"/> ARP1	<input checked="" type="checkbox"/> ARP2	<input checked="" type="checkbox"/> ARP3	
<input checked="" type="checkbox"/> NMMC	<input checked="" type="checkbox"/> NMN1	<input checked="" type="checkbox"/> NMN2	<input checked="" type="checkbox"/> NMN3
<input checked="" type="checkbox"/> NMP1	<input checked="" type="checkbox"/> NMP2	<input checked="" type="checkbox"/> NMP3	
<input checked="" type="checkbox"/> MBCN	<input checked="" type="checkbox"/> ONAM	<input checked="" type="checkbox"/> MBN1	<input checked="" type="checkbox"/> MBN2
<input checked="" type="checkbox"/> MBN3	<input checked="" type="checkbox"/> MBP1	<input checked="" type="checkbox"/> MBP2	<input checked="" type="checkbox"/> MBP3
<input checked="" type="checkbox"/> Mean			

Show Model Family

ALL ARW NMM NMB

Remove Model Family

ALL ARW NMM NMB

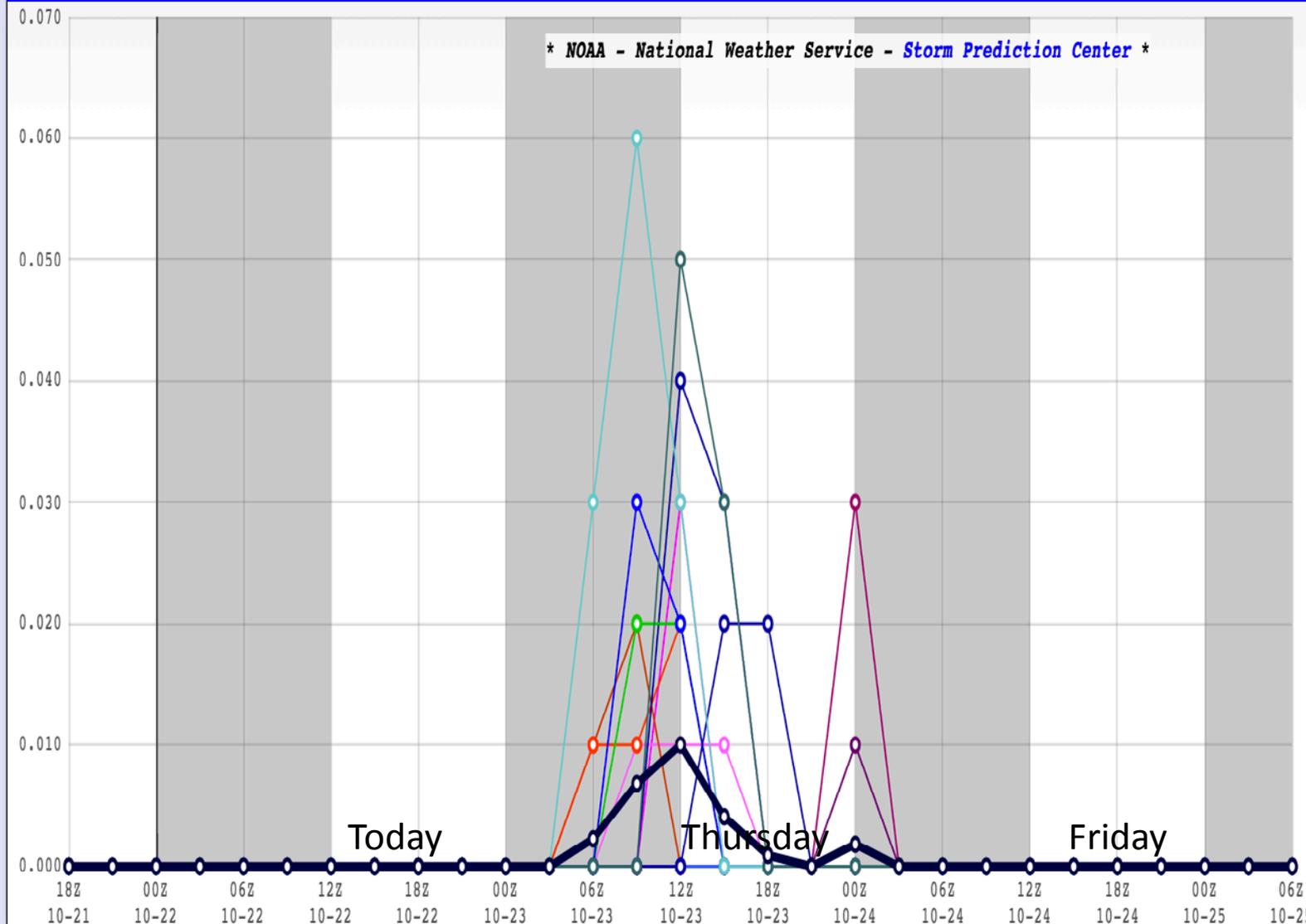
dProg/dt (mean) Last 4 Runs
[Help/Credits](#) | [SREF Info](#) | [Reset](#)
[SREF Loops](#) | [SPC](#) | [Feedback](#)

NCEP SREF plume for 3hrly-QPF at OUN from 20141021/15 UTC run.

Oldest Run ---> 20141020_21 20141021_03 20141021_09 20141021_15 <--- Latest Run

Forecast Parameter Selection - Hover over buttons for more information.

- 3hrly-TMP 3hrly-DWP 3h-MUCAPE 3h-MLCAPE 3h-EFFSHR 3hrly-QPF Total-QPF 3hrly-SNO Total-SNO Ptype-POP 3hr-2mRH% 3h-10mWND

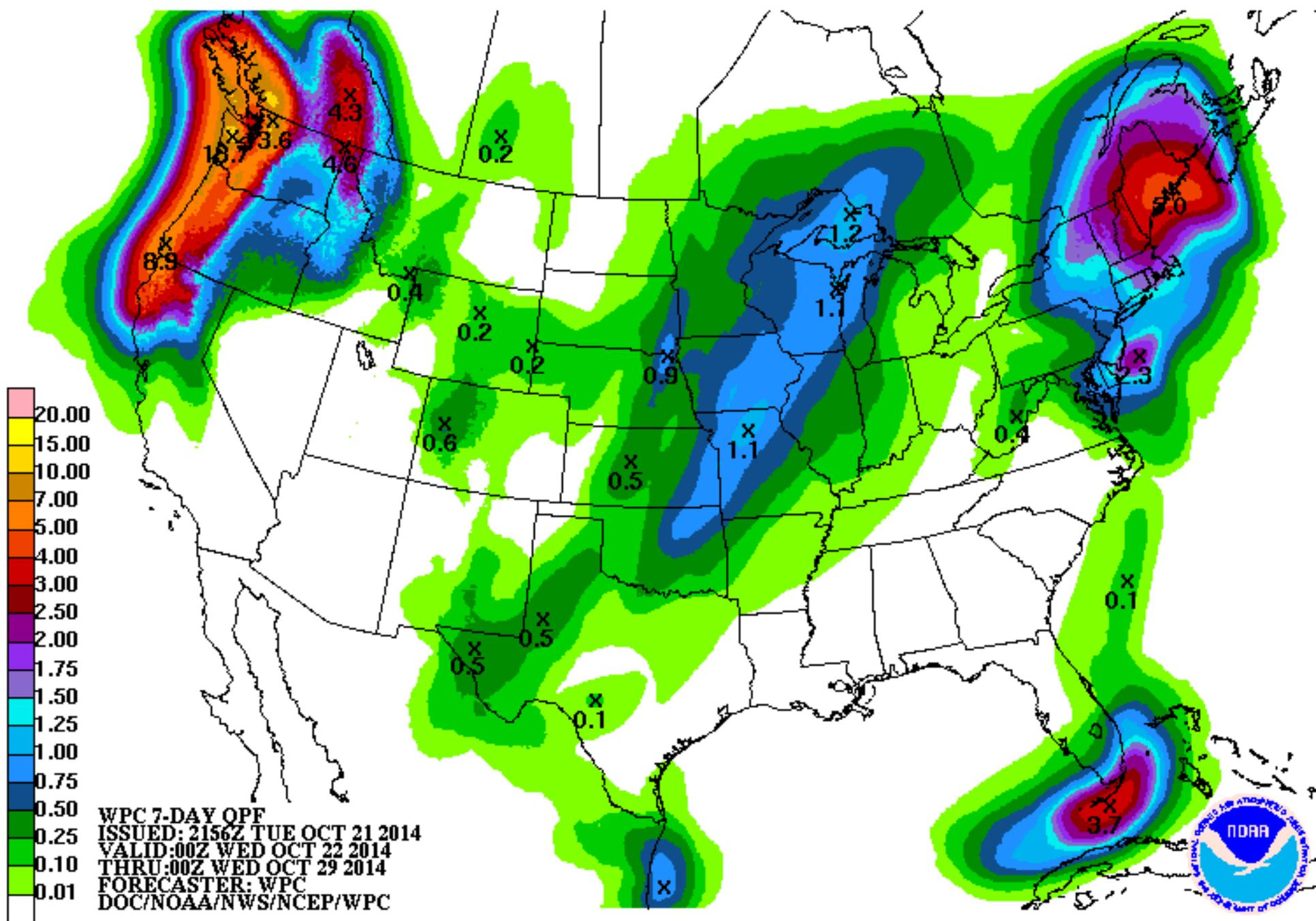


- Members Displayed
- ARWC ARN1 ARN2 ARN3
 - ARP1 ARP2 ARP3 NMMC
 - NMN1 NMN2 NMN3 NMP1
 - NMP2 NMP3 MBCN ONAM
 - MBN1 MBN2 MBN3 MBP1
 - MBP2 MBP3 Mean

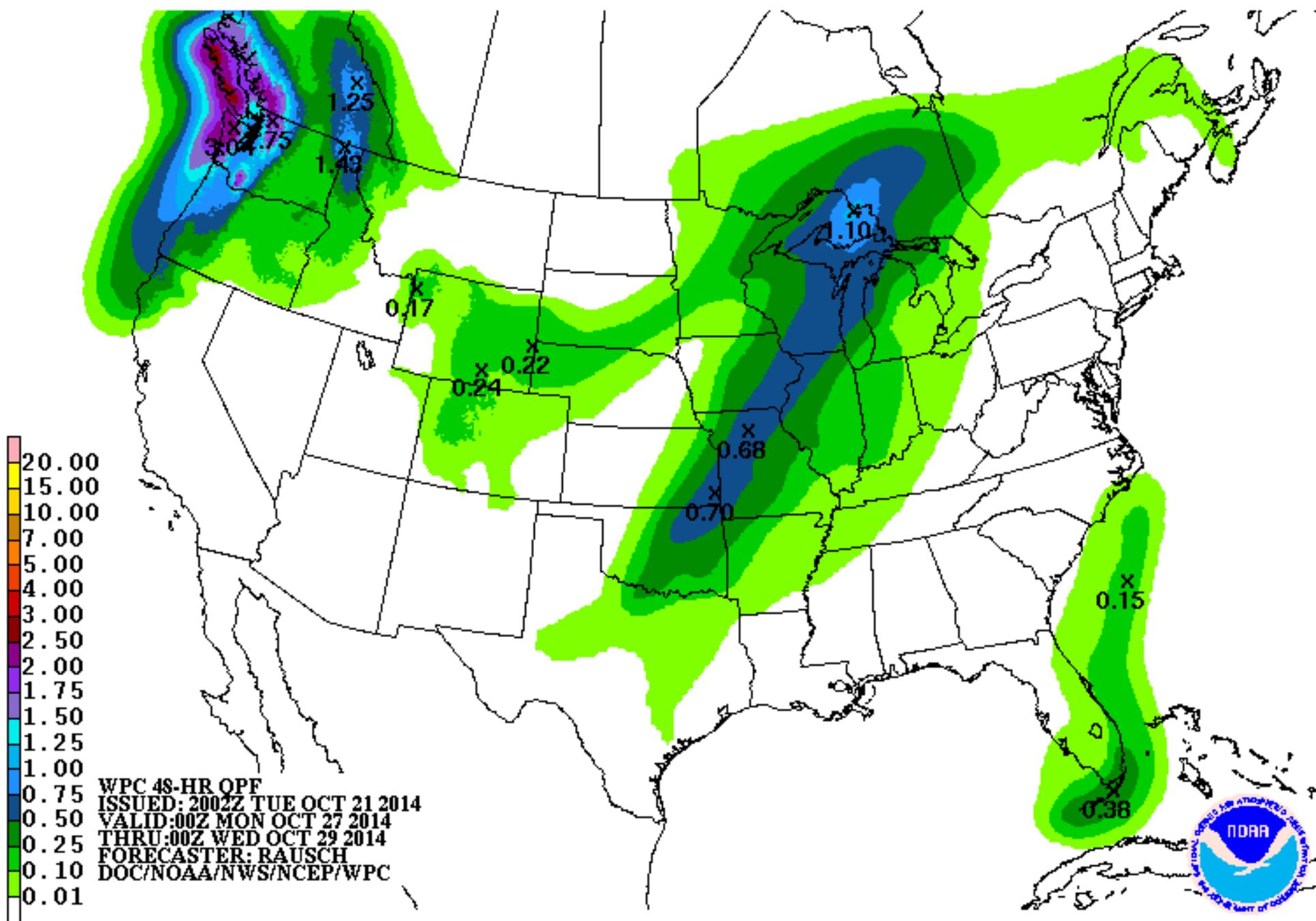
- Membership Selection
- ARWC ARN1 ARN2
 - ARN3 ARP1 ARP2 ARP3
 - NMMC NMN1 NMN2
 - NMN3 NMP1 NMP2 NMP3
 - MBCN ONAM MBN1
 - MBN2 MBN3 MBP1 MBP2
 - MBP3 Mean

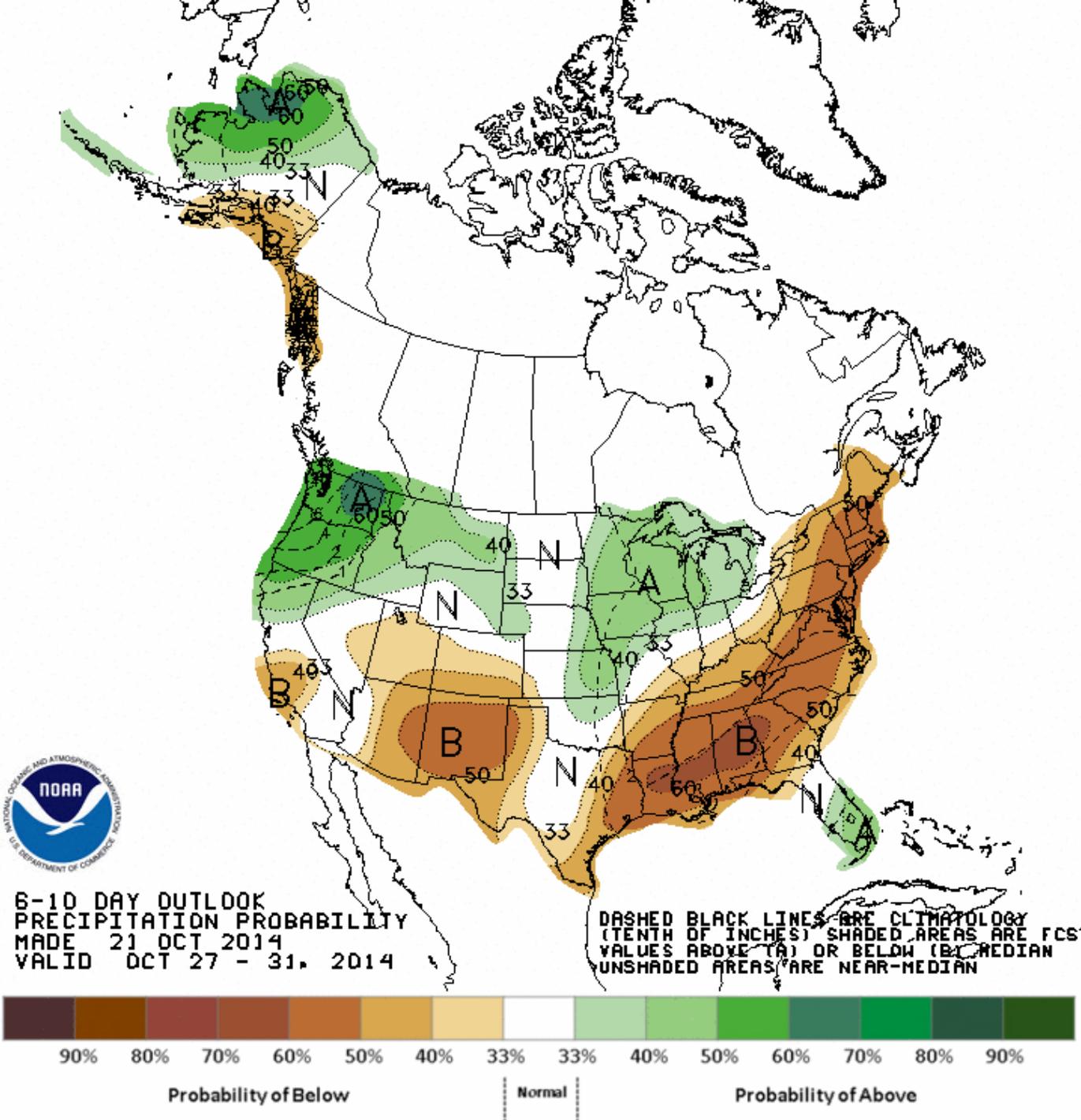
- Show Model Family
- ALL ARW NMM NMB

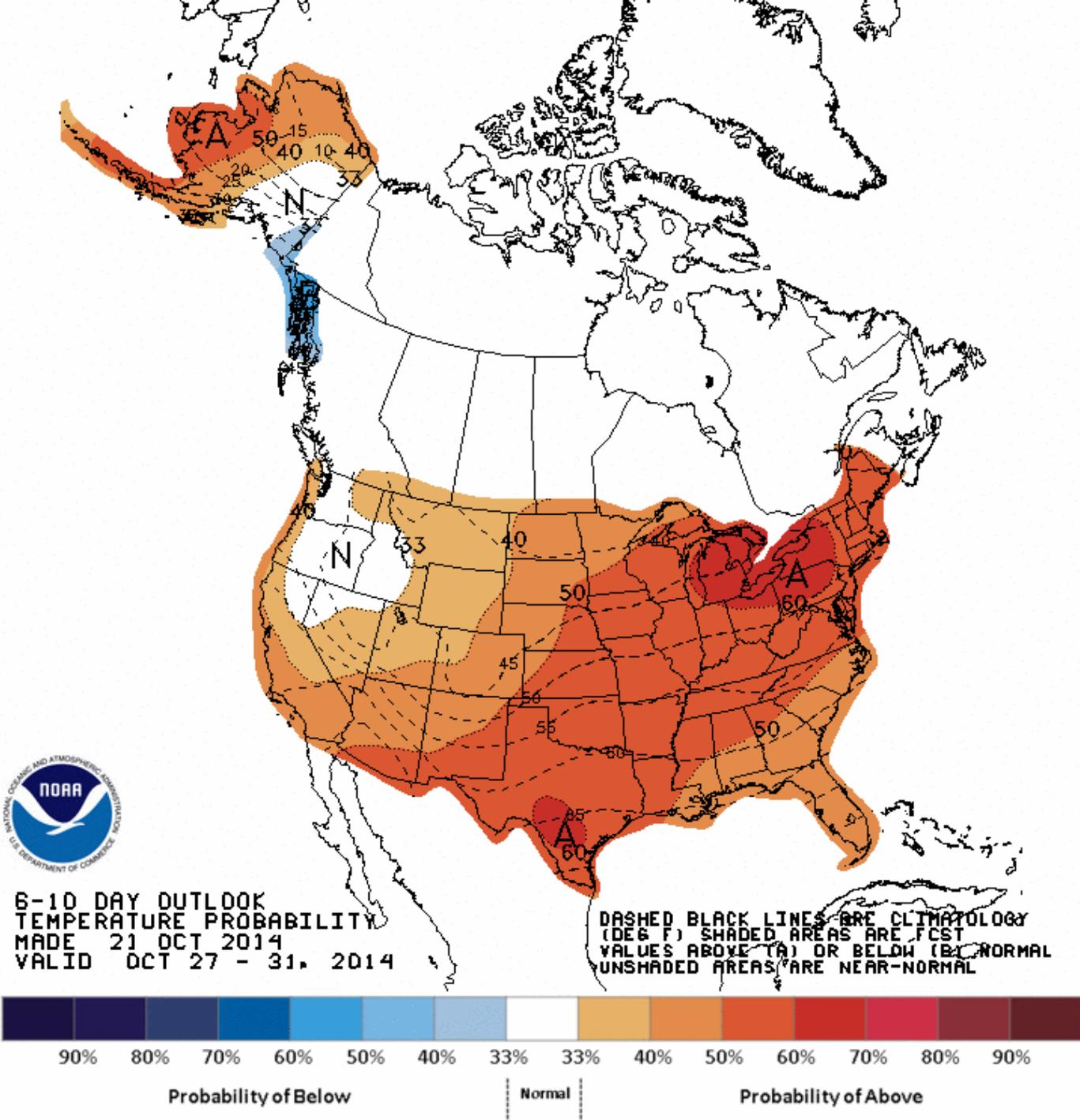
- Remove Model Family
- ALL ARW NMM NMB



Through Next Tuesday evening 28 October









8-14 DAY OUTLOOK
TEMPERATURE PROBABILITY
MADE 21 OCT 2014
VALID OCT 29 - NOV 04, 2014

DASHED BLACK LINES ARE CLIMATOLOGY (DEG F) SHADED AREAS ARE FCST VALUES ABOVE (A) OR BELOW (B) NORMAL UNSHADED AREAS ARE NEAR-NORMAL

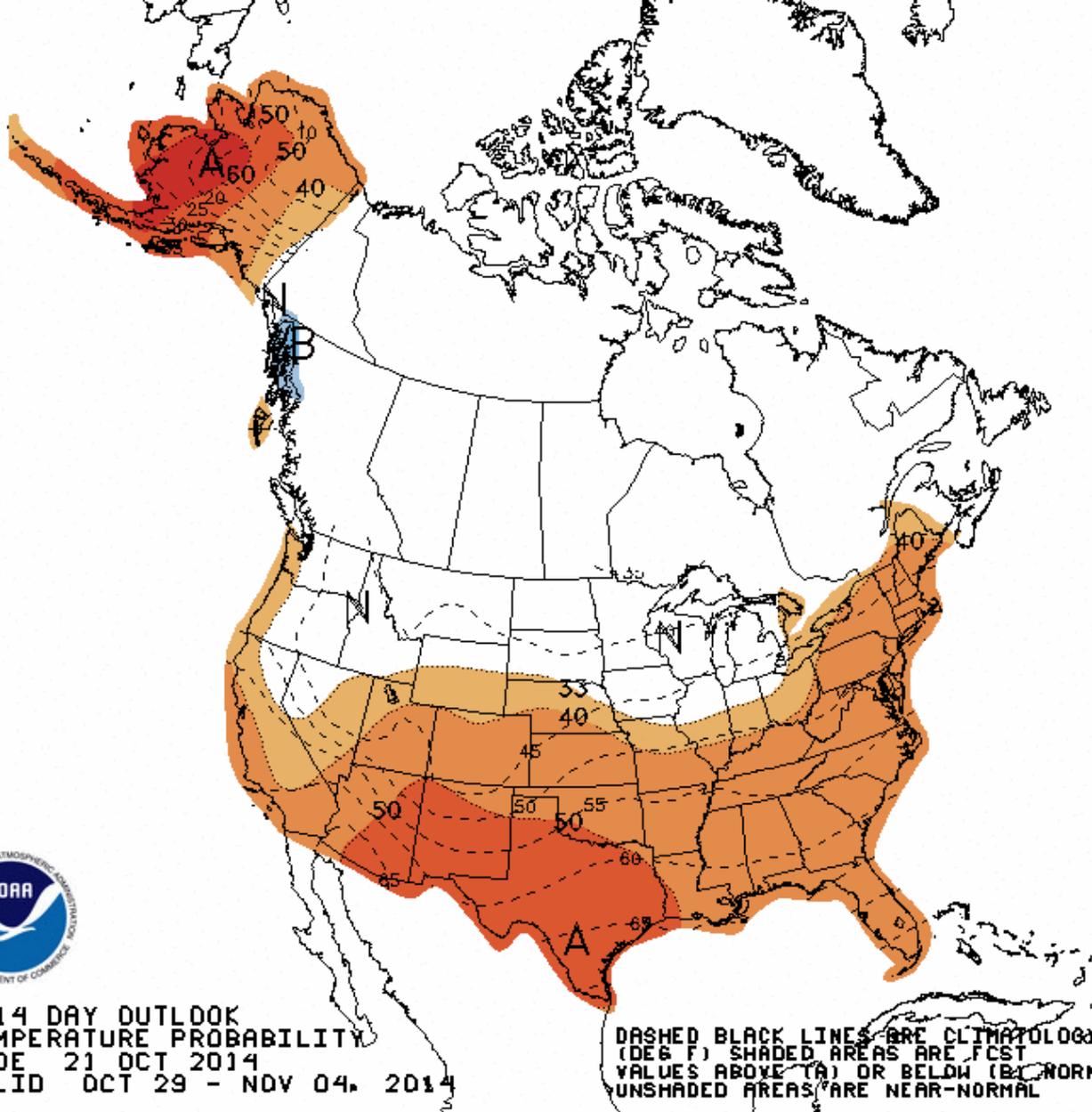


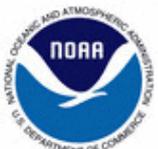
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%

Probability of Below

Normal

Probability of Above





8-14 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 21 OCT 2014
VALID OCT 29 - NOV 04, 2014

DASHED BLACK LINES ARE CLIMATOLOGY
(TENTH OF INCHES) SHADED AREAS ARE FCS
VALUES ABOVE (A) OR BELOW (B) MEDIAN
UNSHADED AREAS ARE NEAR-MEDIAN

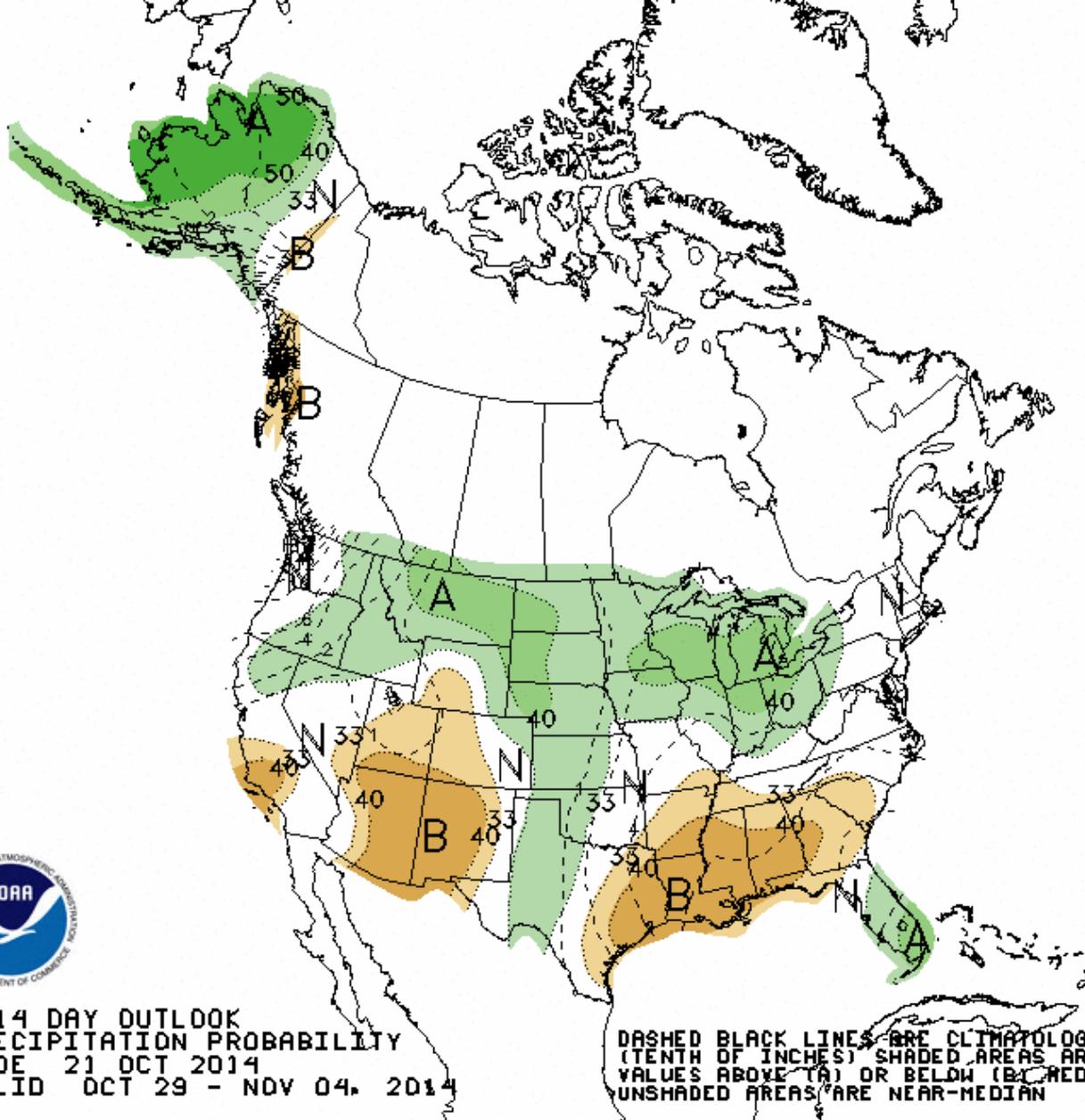


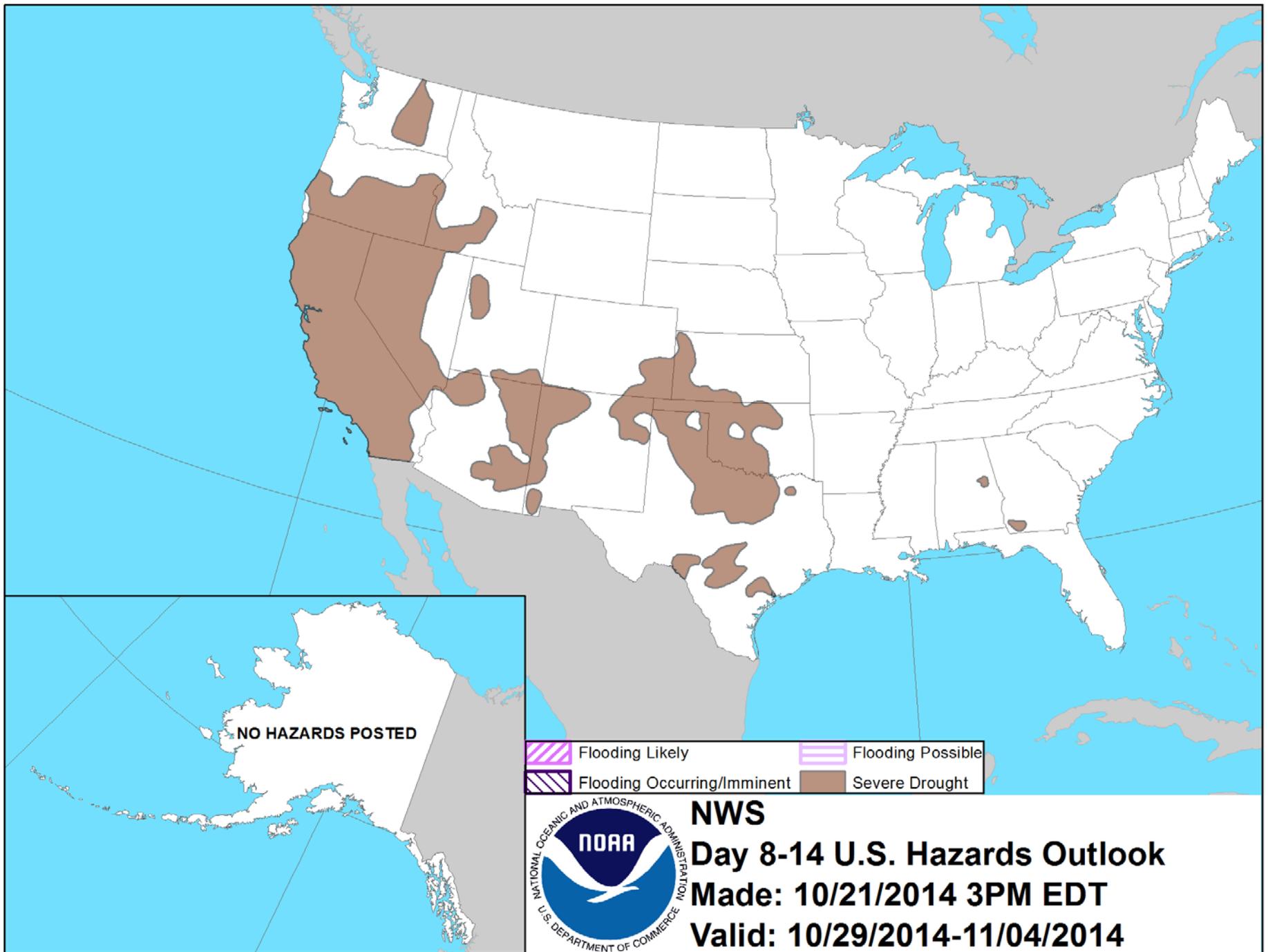
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%

Probability of Below

Normal

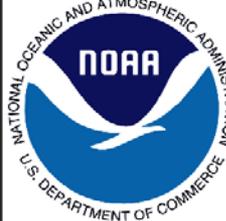
Probability of Above



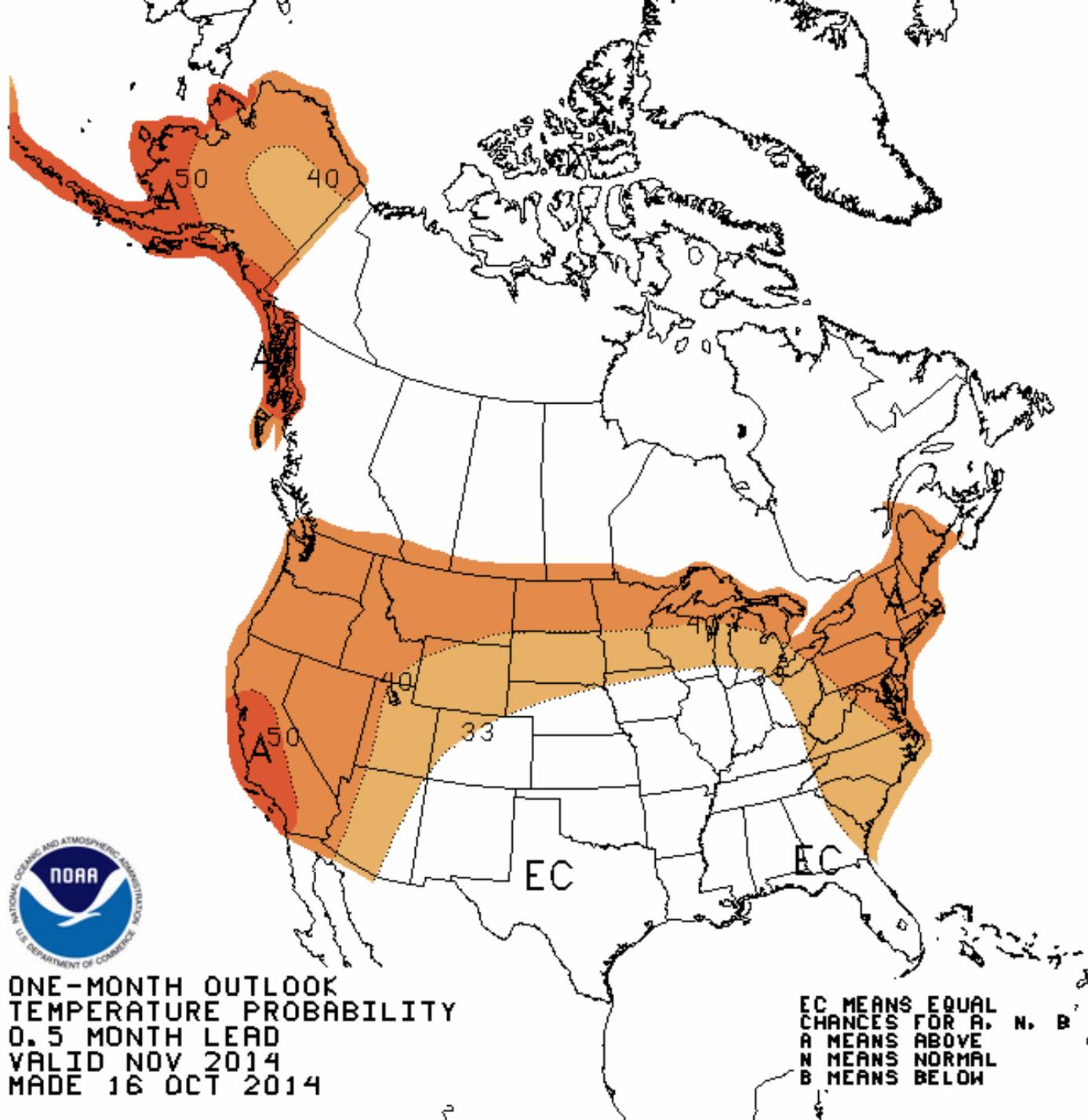


NO HAZARDS POSTED

- | | | | |
|--|-----------------------------|--|-------------------|
| | Flooding Likely | | Flooding Possible |
| | Flooding Occurring/Imminent | | Severe Drought |

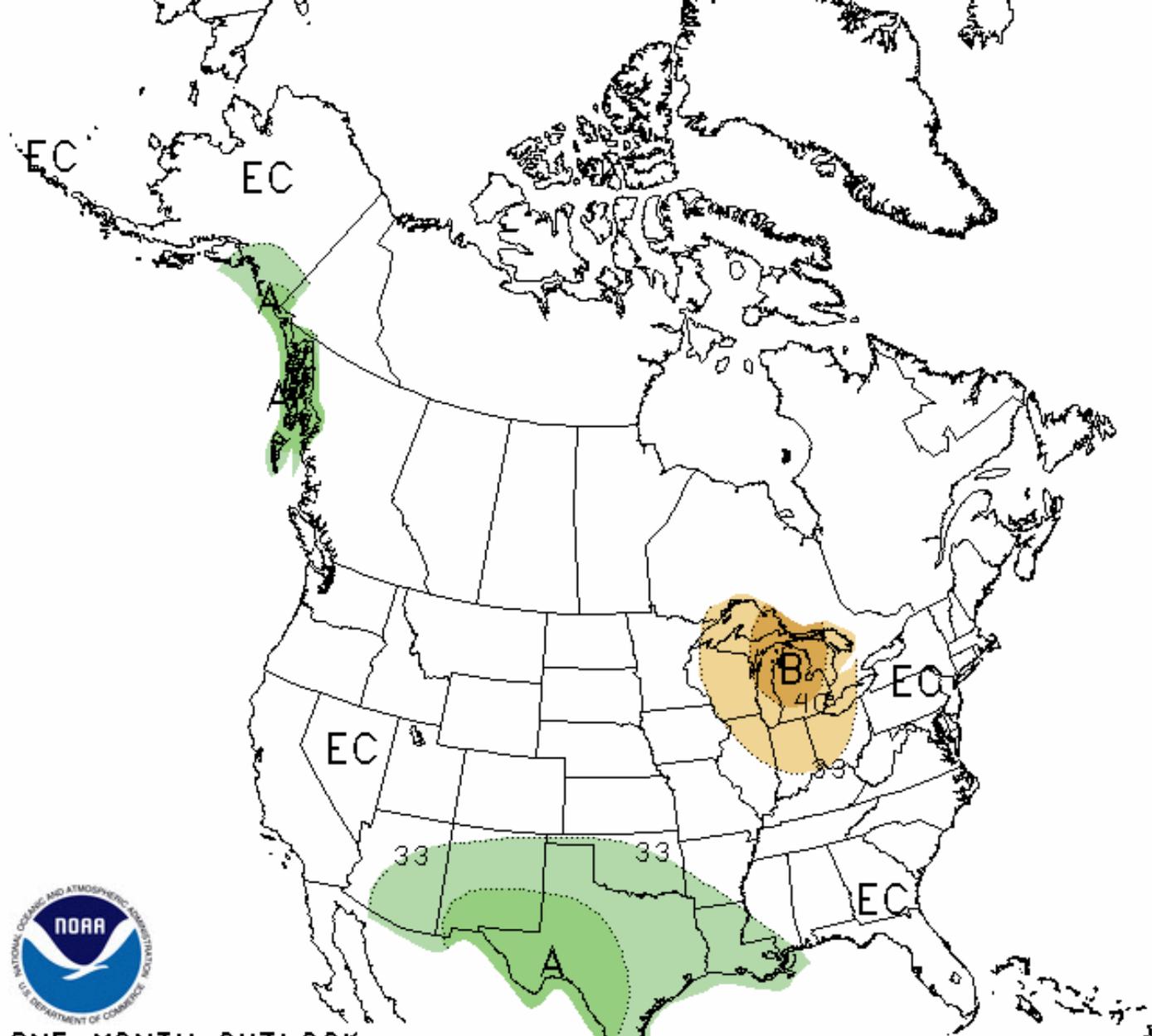


NWS
Day 8-14 U.S. Hazards Outlook
Made: 10/21/2014 3PM EDT
Valid: 10/29/2014-11/04/2014



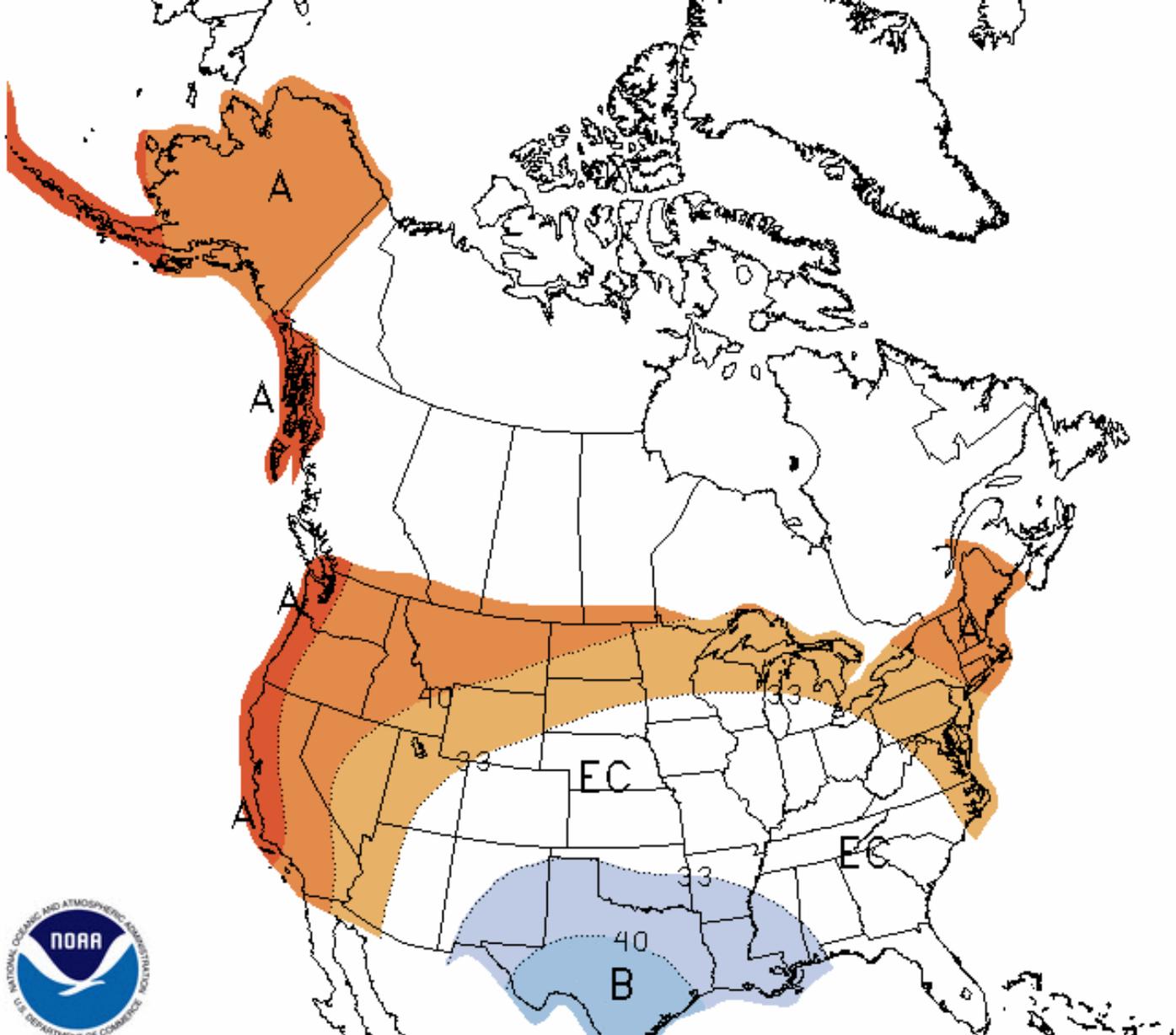
ONE-MONTH OUTLOOK
 TEMPERATURE PROBABILITY
 0.5 MONTH LEAD
 VALID NOV 2014
 MADE 16 OCT 2014

EC MEANS EQUAL
 CHANCES FOR A, N, B
 A MEANS ABOVE
 N MEANS NORMAL
 B MEANS BELOW



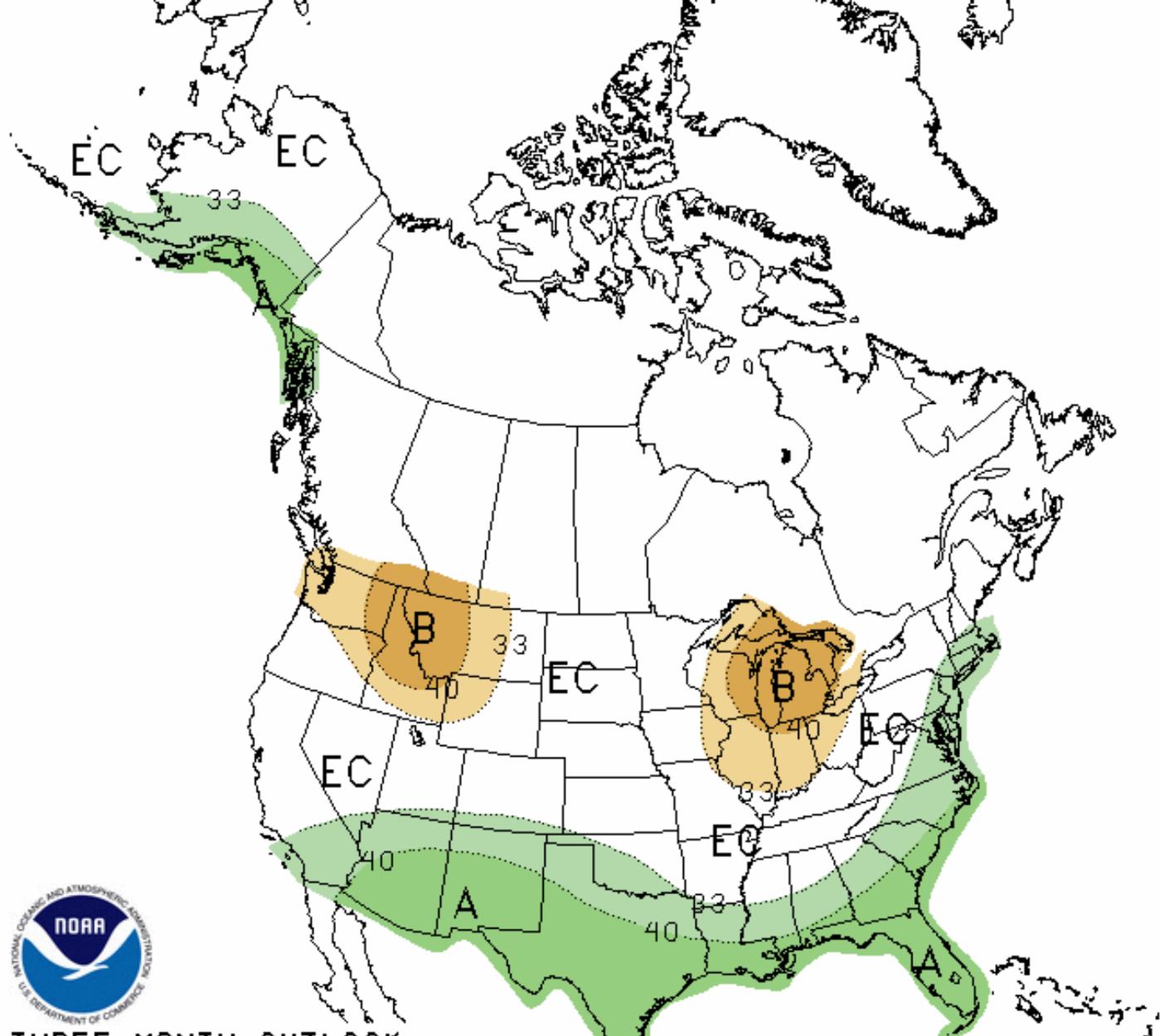
ONE-MONTH OUTLOOK
 PRECIPITATION PROBABILITY
 0.5 MONTH LEAD
 VALID NOV 2014
 MADE 16 OCT 2014

EC MEANS EQUAL
 CHANCES FOR A, N, B
 A MEANS ABOVE
 N MEANS NORMAL
 B MEANS BELOW



THREE-MONTH OUTLOOK
 TEMPERATURE PROBABILITY
 0.5 MONTH LEAD
 VALID NDJ 2014
 MADE 16 OCT 2014

EC MEANS EQUAL
 CHANCES FOR A, N, B
 A MEANS ABOVE
 N MEANS NORMAL
 B MEANS BELOW

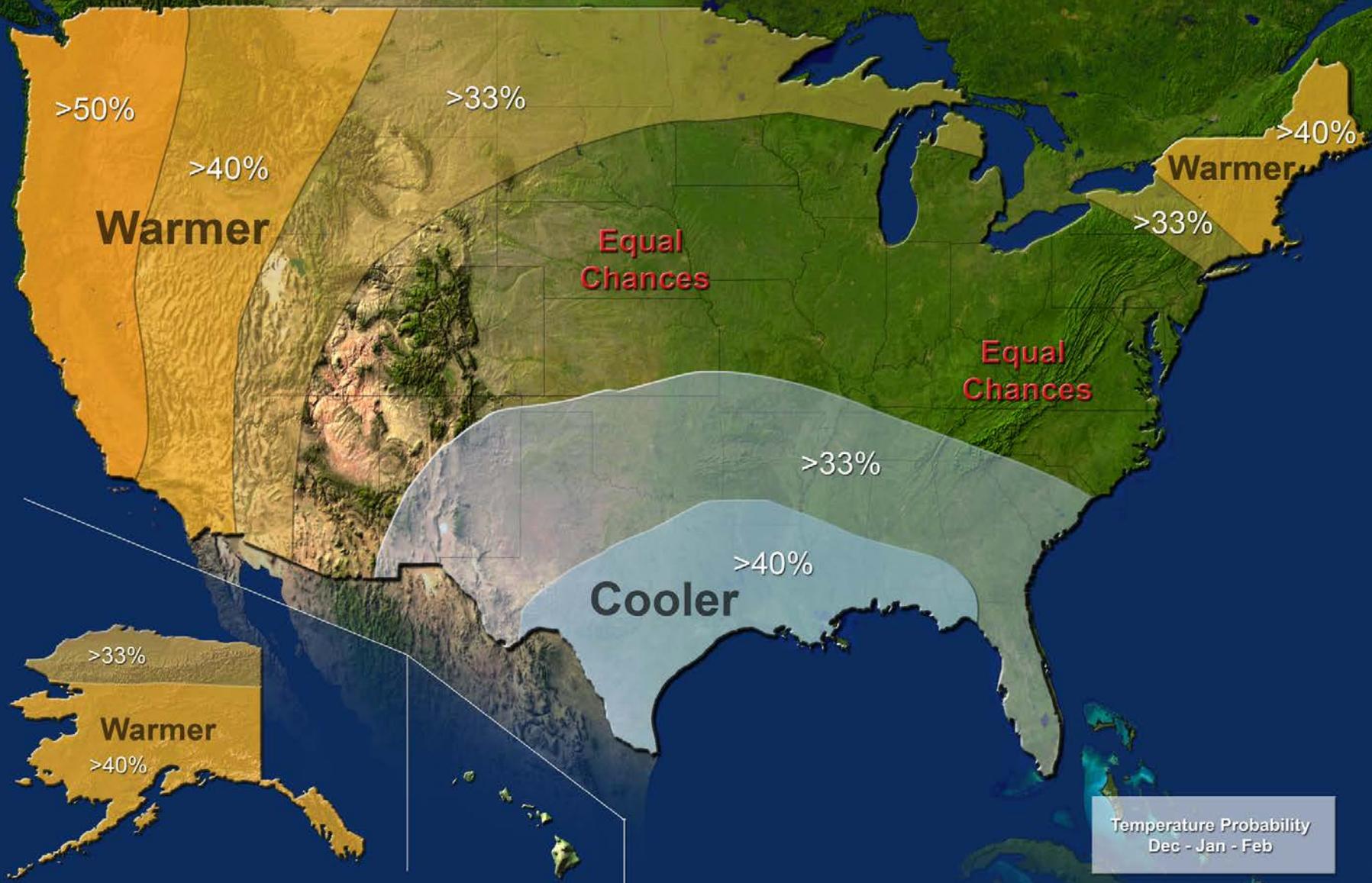


THREE-MONTH OUTLOOK
 PRECIPITATION PROBABILITY
 0.5 MONTH LEAD
 VALID NDJ 2014
 MADE 16 OCT 2014

EC MEANS EQUAL
 CHANCES FOR A, N, B
 A MEANS ABOVE
 N MEANS NORMAL
 B MEANS BELOW

U.S. Winter Outlook

Temperature



Temperature Probability
Dec - Jan - Feb

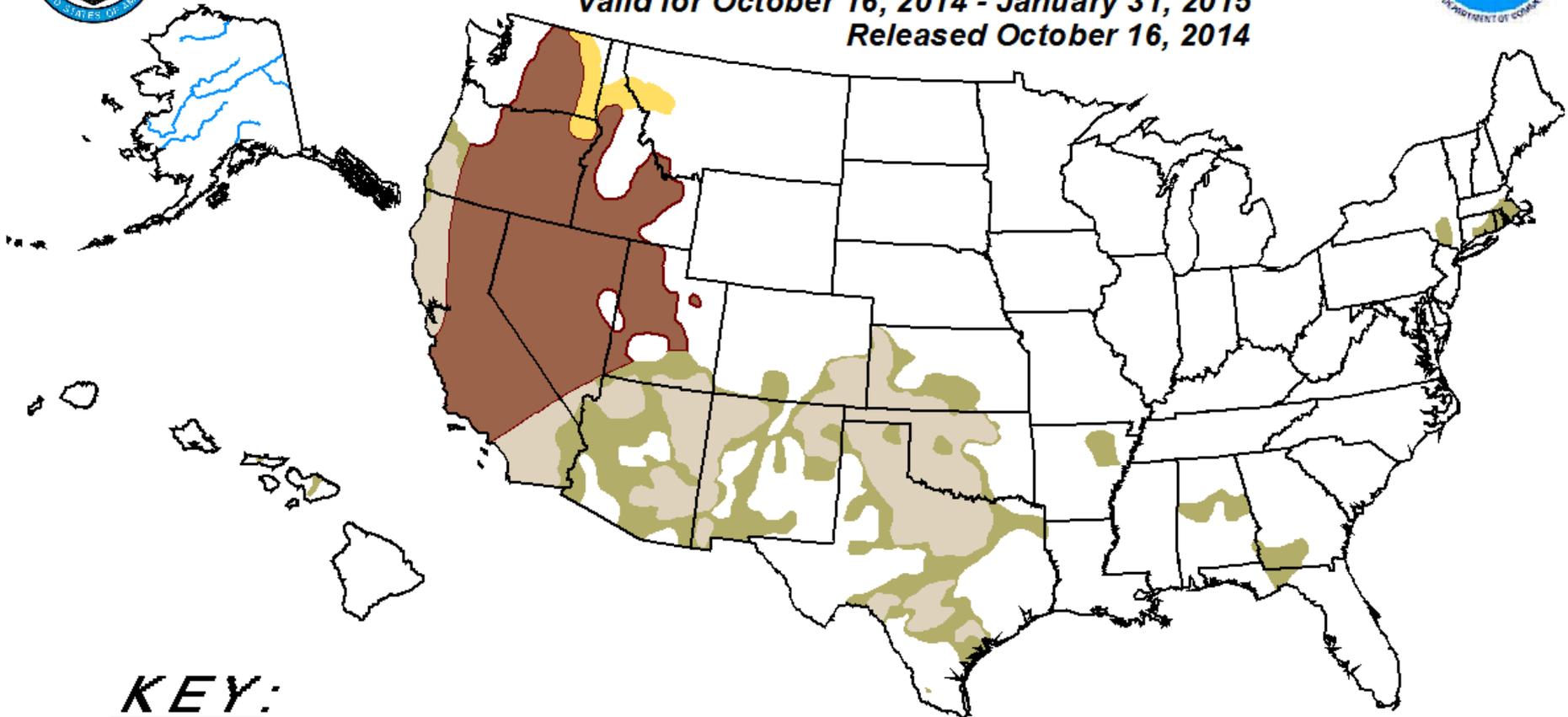


U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for October 16, 2014 - January 31, 2015

Released October 16, 2014



KEY:

-  Drought persists or intensifies
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely

Author: Brad Pugh, Climate Prediction Center, NOAA

http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.html

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.

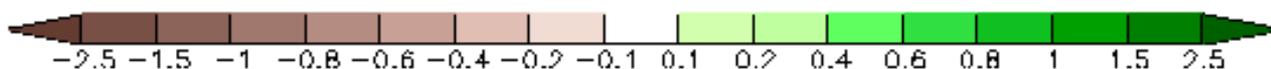
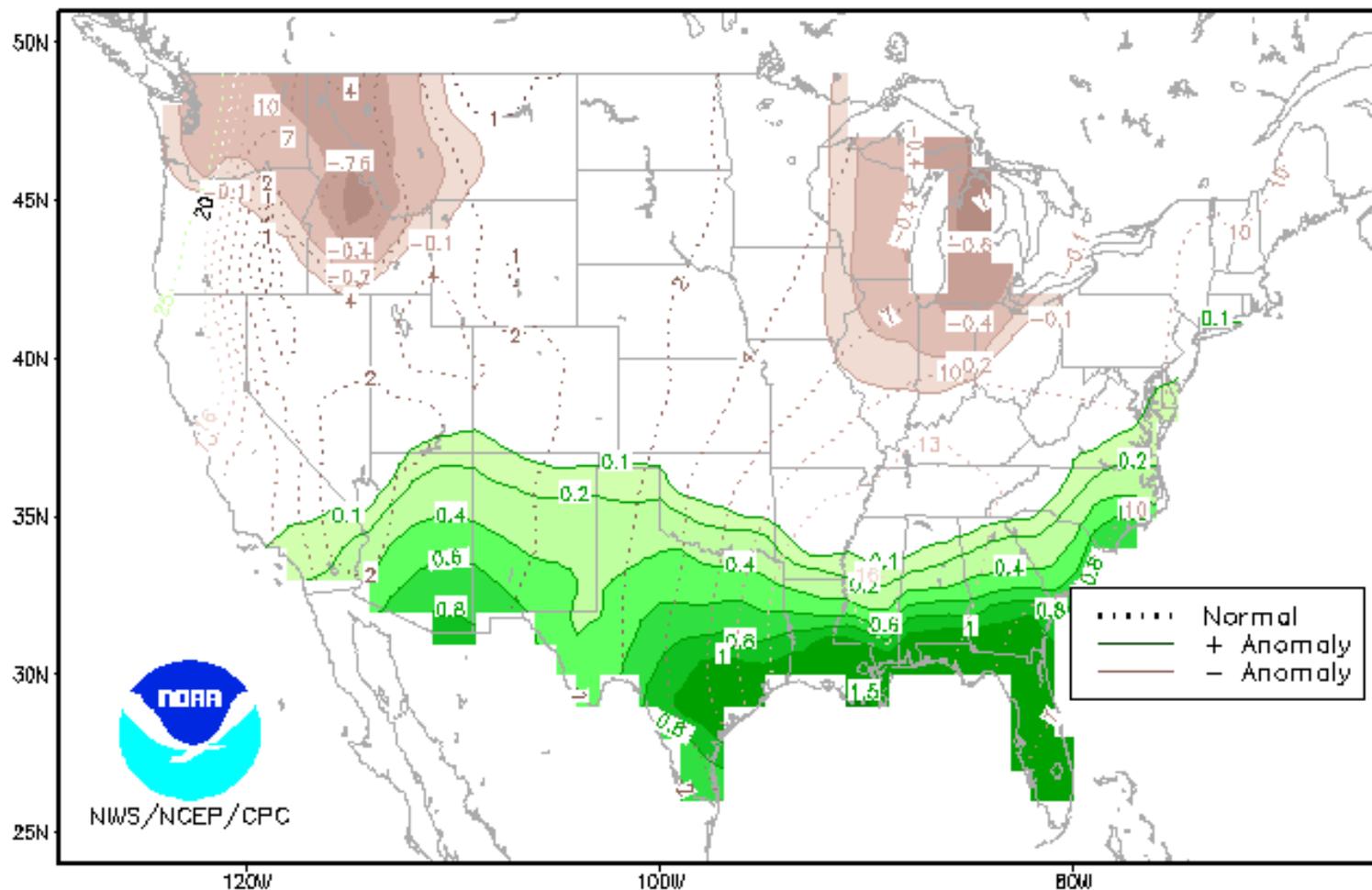
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain.

The Green areas imply drought removal by the end of the period (D0 or none)

Precipitation anomalies - NOV-DEC-JAN

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for NDJ 2014-15

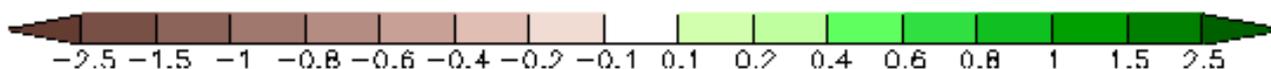
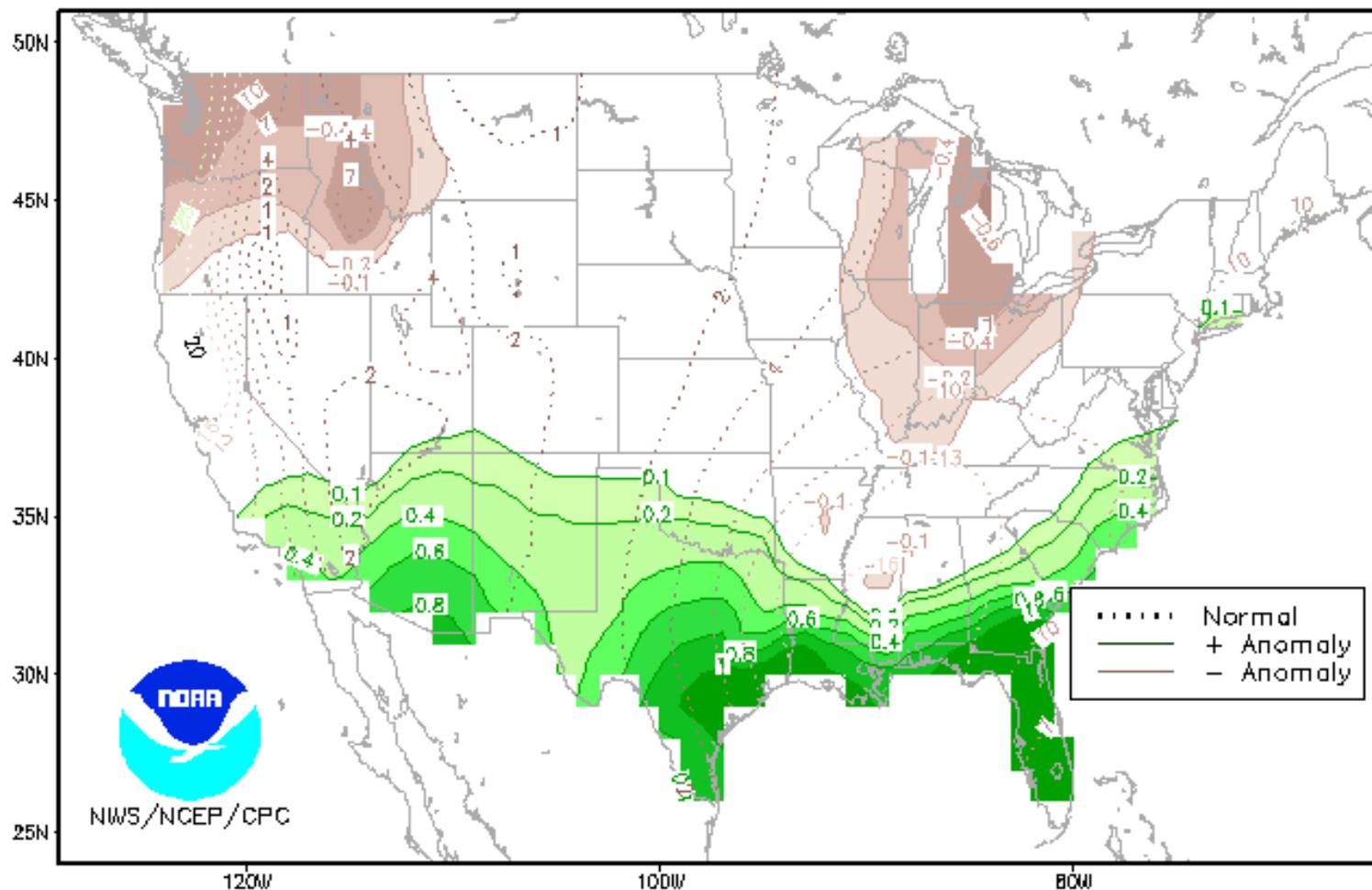
Dashed lines are the median 3-month precipitation (inches) based on observations from 1981-2010. Shaded areas indicate whether the anomaly of the mid-value is positive (green) or negative (brown) compared to the 1981-2010 average. Non-shaded regions indicate that the absolute value of the anomaly of the mid-value is less than 0.1. For a given location, the mid-value of the outlook may be found by adding the anomaly value to the 1981-2010 average. There is an equal 50-50 chance that actual conditions will be above or below the mid-value. Please note that this product is a limited representation of the official forecast, showing the anomaly of the mid-value, but not the width of the range of possibilities. For more comprehensive forecast information, please see our additional forecast products.



Precipitation anomalies - DEC-JAN-FEB

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for DJF 2014-15

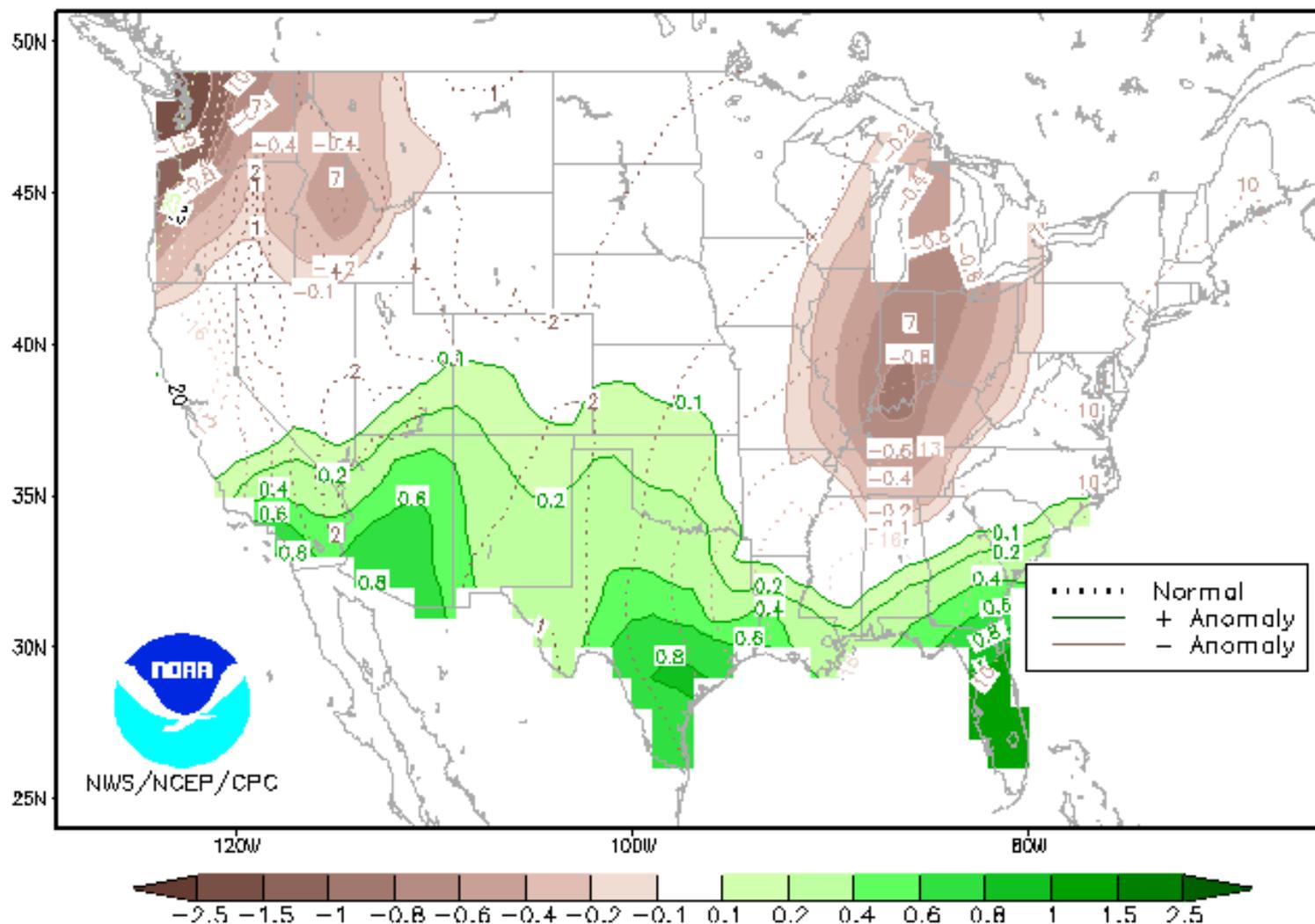
Dashed lines are the median 3-month precipitation (inches) based on observations from 1981-2010. Shaded areas indicate whether the anomaly of the mid-value is positive (green) or negative (brown) compared to the 1981-2010 average. Non-shaded regions indicate that the absolute value of the anomaly of the mid-value is less than 0.1. For a given location, the mid-value of the outlook may be found by adding the anomaly value to the 1981-2010 average. There is an equal 50-50 chance that actual conditions will be above or below the mid-value. Please note that this product is a limited representation of the official forecast, showing the anomaly of the mid-value, but not the width of the range of possibilities. For more comprehensive forecast information, please see our additional forecast products.



Precipitation anomalies - JAN-FEB-MAR 2015

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for JFM 2015

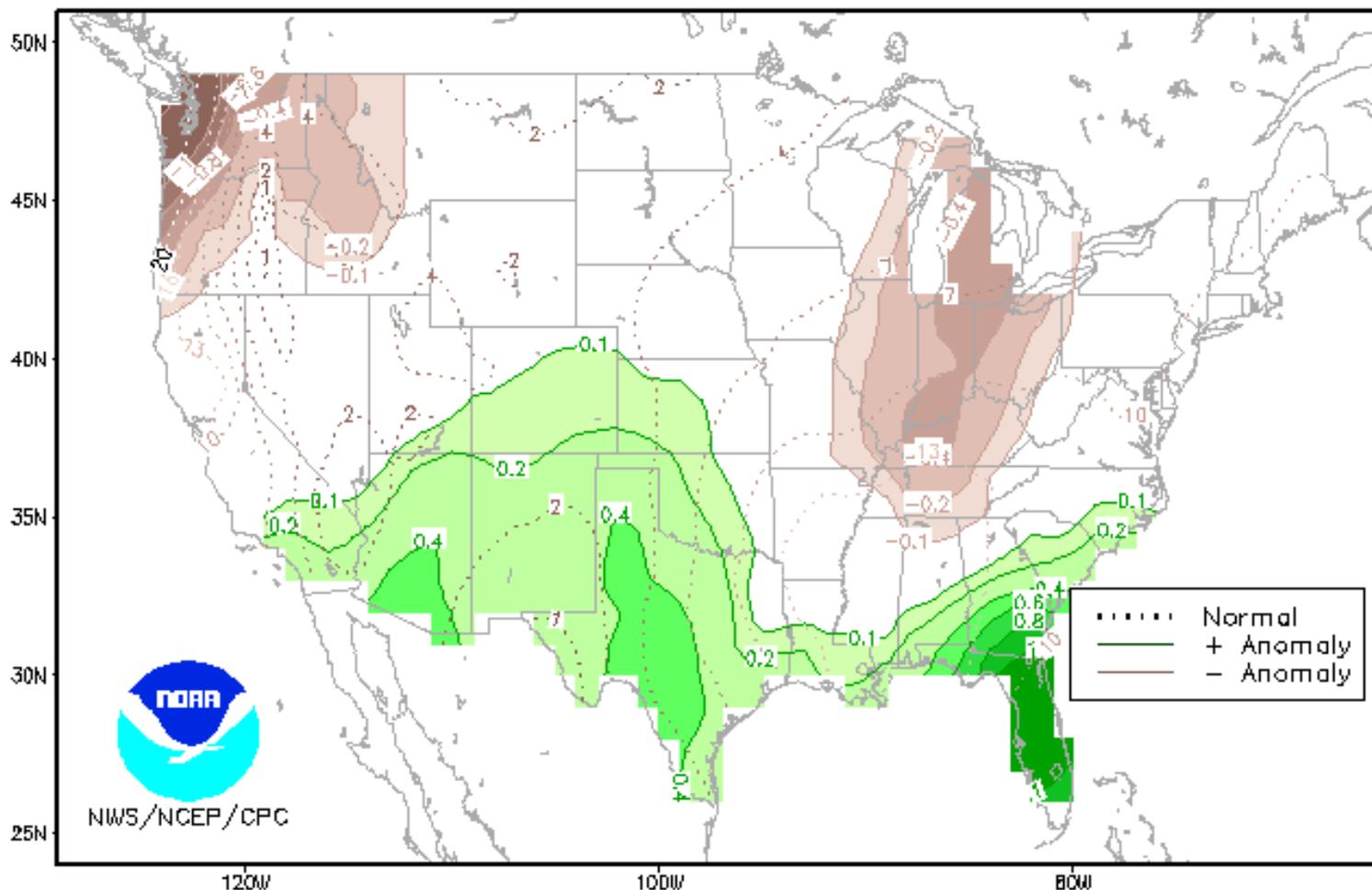
Dashed lines are the median 3-month precipitation (inches) based on observations from 1981-2010. Shaded areas indicate whether the anomaly of the mid-value is positive (green) or negative (brown) compared to the 1981-2010 average. Non-shaded regions indicate that the absolute value of the anomaly of the mid-value is less than 0.1. For a given location, the mid-value of the outlook may be found by adding the anomaly value to the 1981-2010 average. There is an equal 50-50 chance that actual conditions will be above or below the mid-value. Please note that this product is a limited representation of the official forecast, showing the anomaly of the mid-value, but not the width of the range of possibilities. For more comprehensive forecast information, please see our additional forecast products.



Precipitation anomalies - FEB-MAR-APR 2015

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for FMA 2015

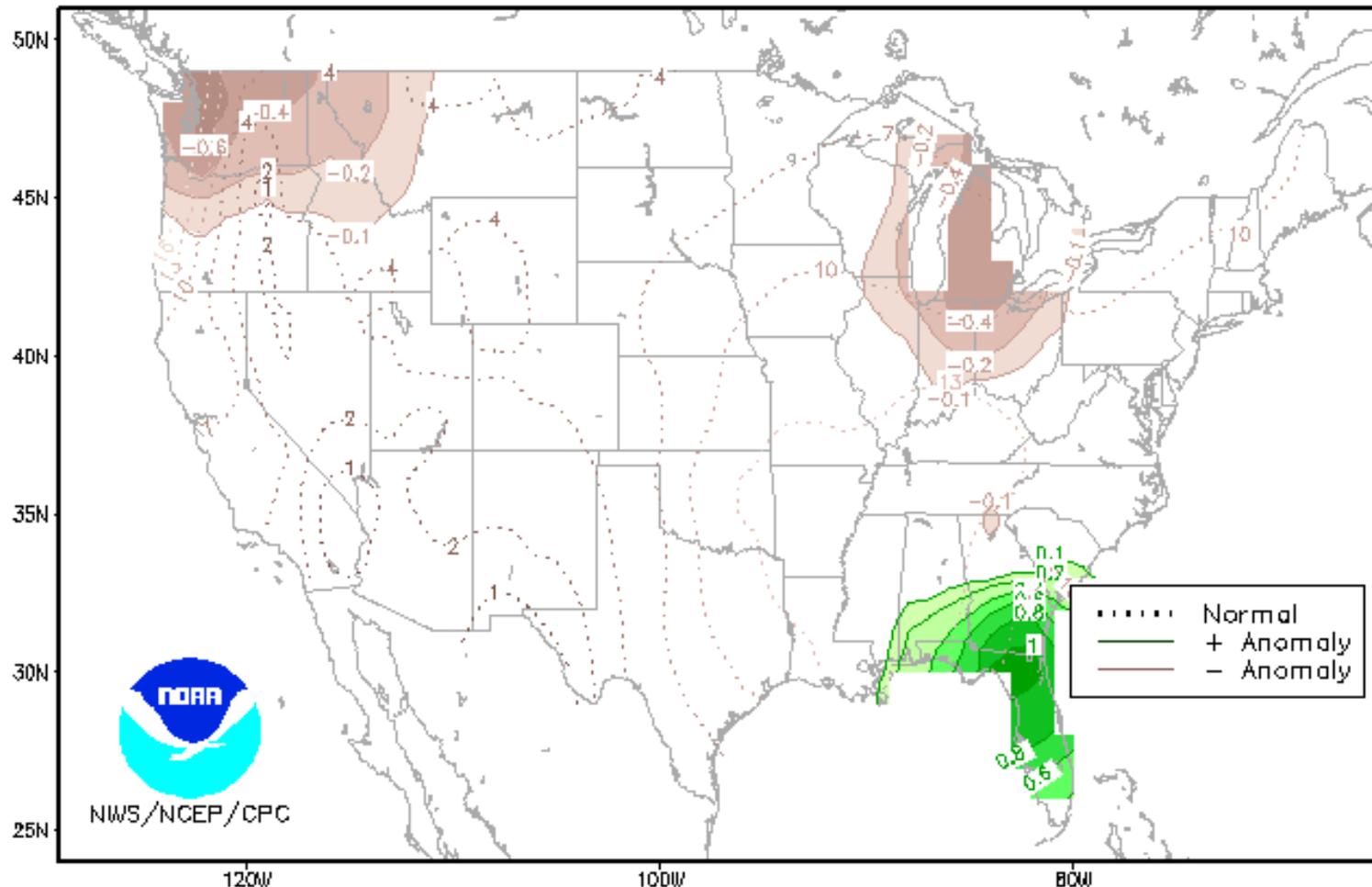
Dashed lines are the median 3-month precipitation (inches) based on observations from 1981–2010. Shaded areas indicate whether the anomaly of the mid-value is positive (green) or negative (brown) compared to the 1981–2010 average. Non-shaded regions indicate that the absolute value of the anomaly of the mid-value is less than 0.1. For a given location, the mid-value of the outlook may be found by adding the anomaly value to the 1981–2010 average. There is an equal 50–50 chance that actual conditions will be above or below the mid-value. Please note that this product is a limited representation of the official forecast, showing the anomaly of the mid-value, but not the width of the range of possibilities. For more comprehensive forecast information, please see our additional forecast products.



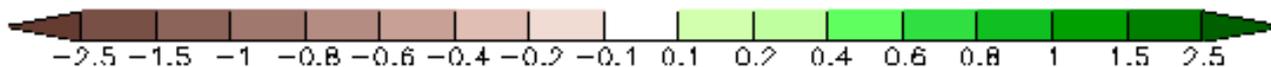
Precipitation anomalies - MAR-APR-MAY 2015

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for MAM 2015

Dashed lines are the median 3-month precipitation (inches) based on observations from 1981-2010. Shaded areas indicate whether the anomaly of the mid-value is positive (green) or negative (brown) compared to the 1981-2010 average. Non-shaded regions indicate that the absolute value of the anomaly of the mid-value is less than 0.1. For a given location, the mid-value of the outlook may be found by adding the anomaly value to the 1981-2010 average. There is an equal 50-50 chance that actual conditions will be above or below the mid-value. Please note that this product is a limited representation of the official forecast, showing the anomaly of the mid-value, but not the width of the range of possibilities. For more comprehensive forecast information, please see our additional forecast products.



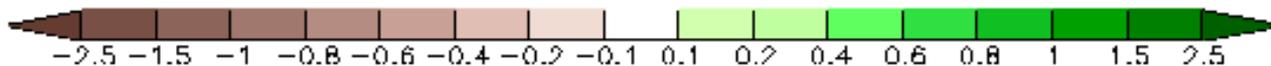
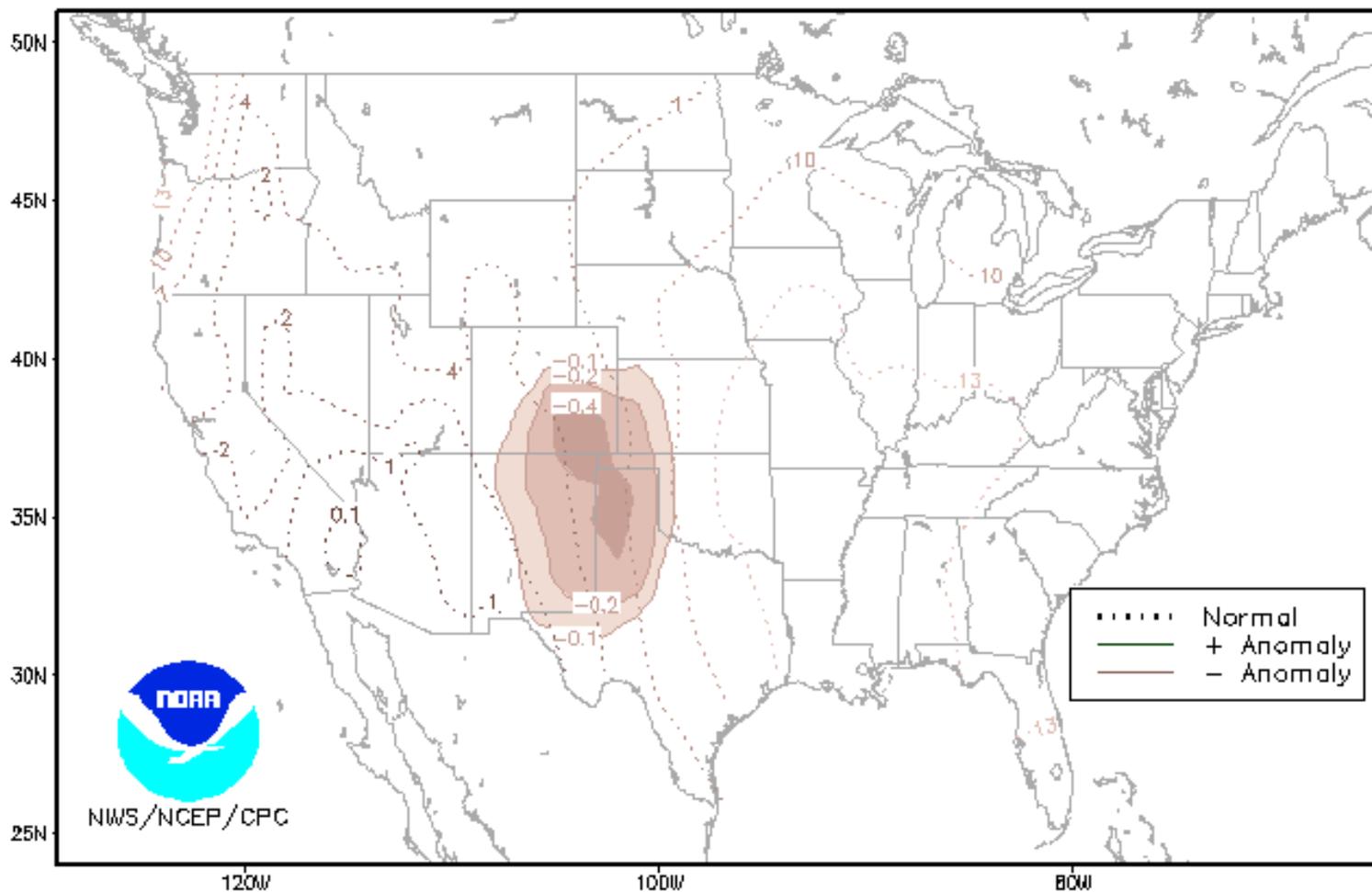
NWS/NCEP/CPC



Precipitation anomalies - APR-MAY-JUN 2015

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for AMJ 2015

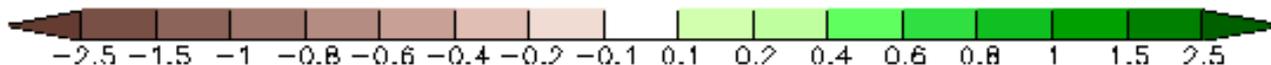
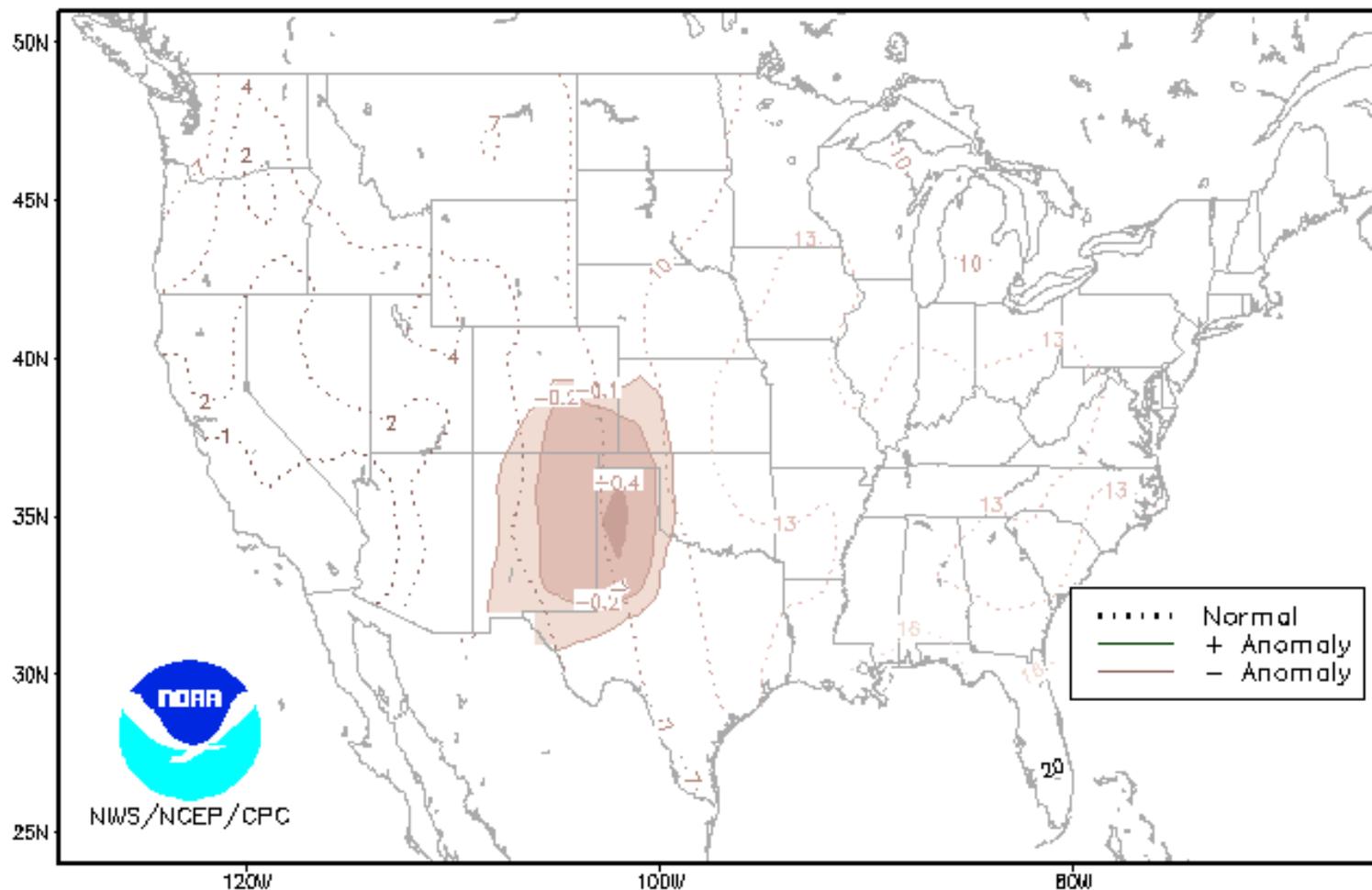
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Precipitation anomalies - MAY-JUN-JUL 2015

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for MJJ 2015

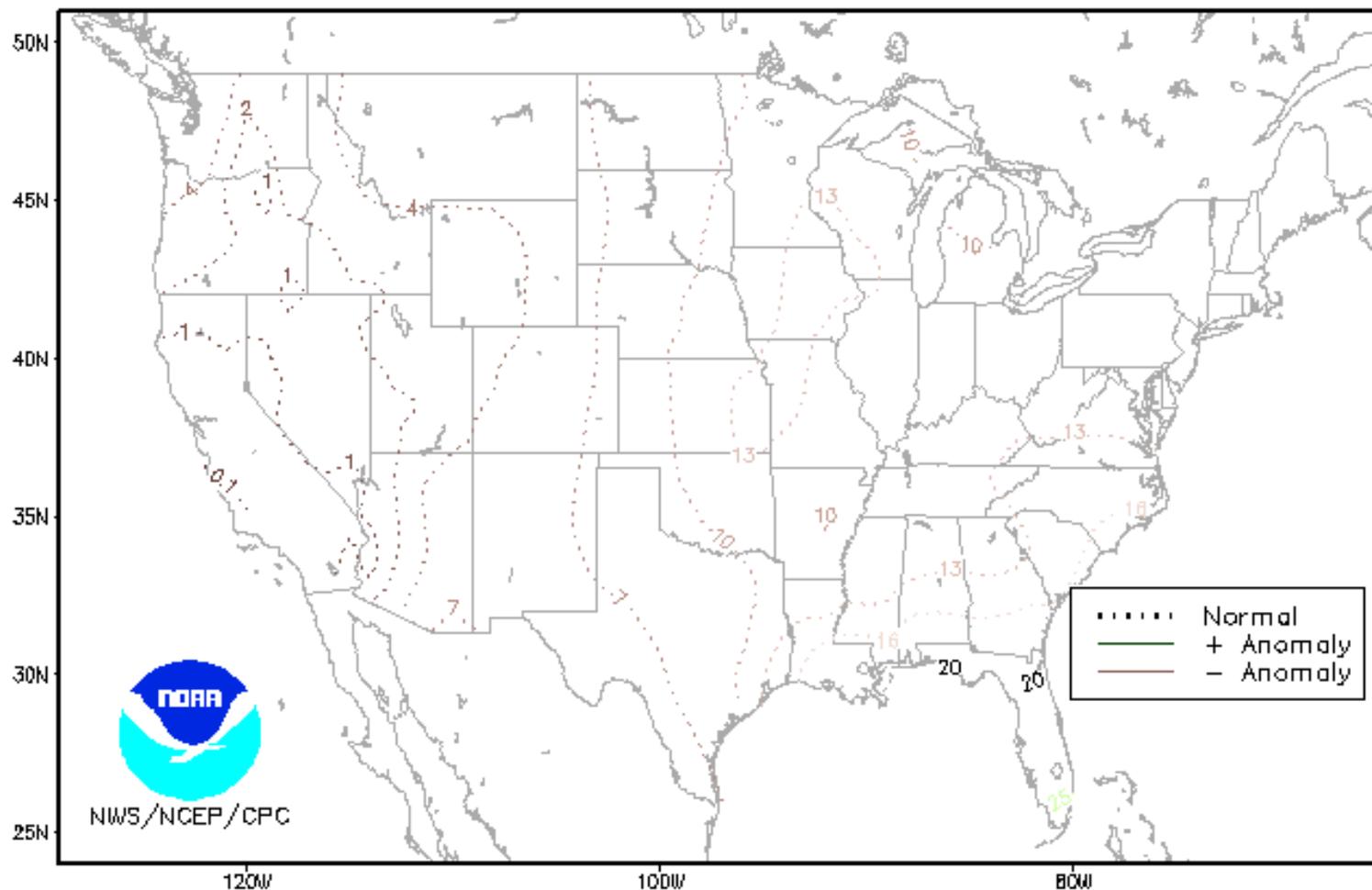
Dashed lines are the median 3-month precipitation (inches) based on observations from 1981-2010. Shaded areas indicate whether the anomaly of the mid-value is positive (green) or negative (brown) compared to the 1981-2010 average. Non-shaded regions indicate that the absolute value of the anomaly of the mid-value is less than 0.1. For a given location, the mid-value of the outlook may be found by adding the anomaly value to the 1981-2010 average. There is an equal 50-50 chance that actual conditions will be above or below the mid-value. Please note that this product is a limited representation of the official forecast, showing the anomaly of the mid-value, but not the width of the range of possibilities. For more comprehensive forecast information, please see our additional forecast products.



Precipitation anomalies - JUN-JUL-AUG 2015

Anomaly (inches) of the Mid-value of the 3-Month Precipitation Outlook Distribution for JJA 2015

Dashed lines are the median 3-month precipitation (inches) based on observations from 1981–2010. Shaded areas indicate whether the anomaly of the mid-value is positive (green) or negative (brown) compared to the 1981–2010 average. Non-shaded regions indicate that the absolute value of the anomaly of the mid-value is less than 0.1. For a given location, the mid-value of the outlook may be found by adding the anomaly value to the 1981–2010 average. There is an equal 50–50 chance that actual conditions will be above or below the mid-value. Please note that this product is a limited representation of the official forecast, showing the anomaly of the mid-value, but not the width of the range of possibilities. For more comprehensive forecast information, please see our additional forecast products.



Meteorologists/Climatologists love reading the paper!

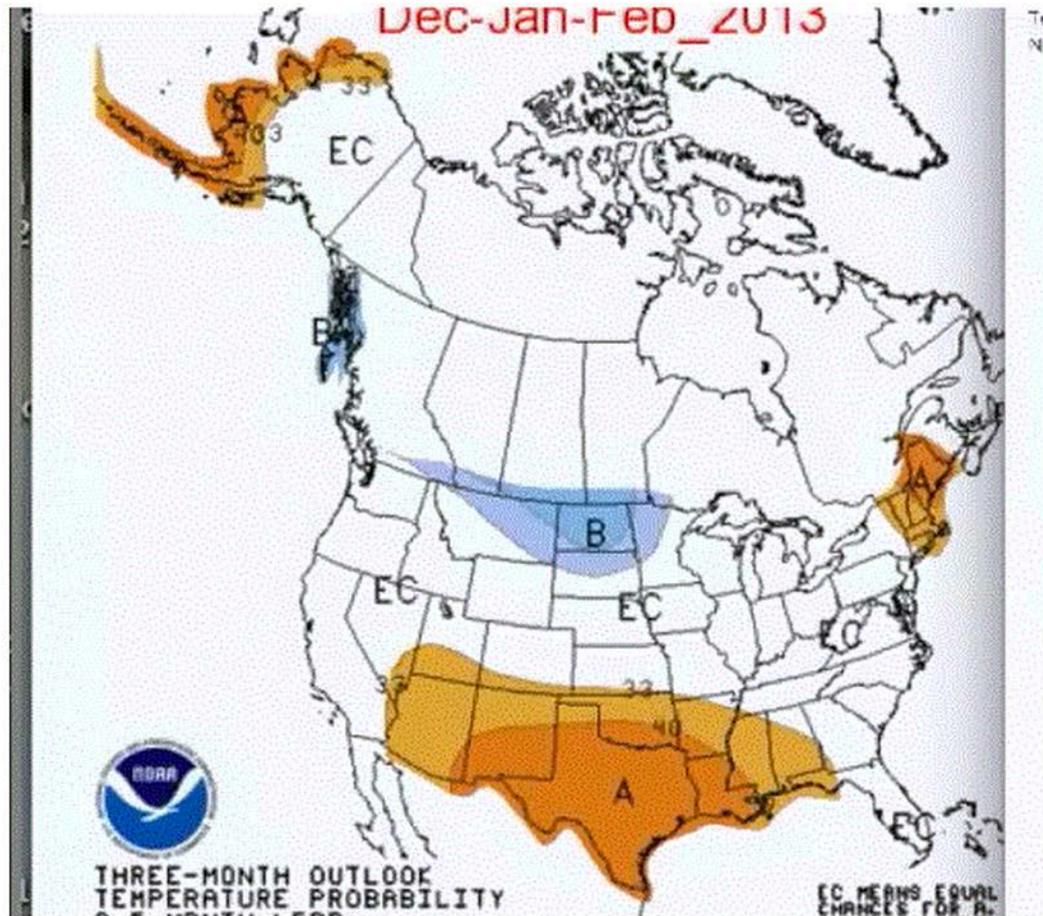
Another Failed Outlook: NOAA/NCEP Totally Botch 2013-2014 Winter Outlooks For USA and Europe – Exact Opposite Occurs!

By P Gosselin on 8. Februar 2014

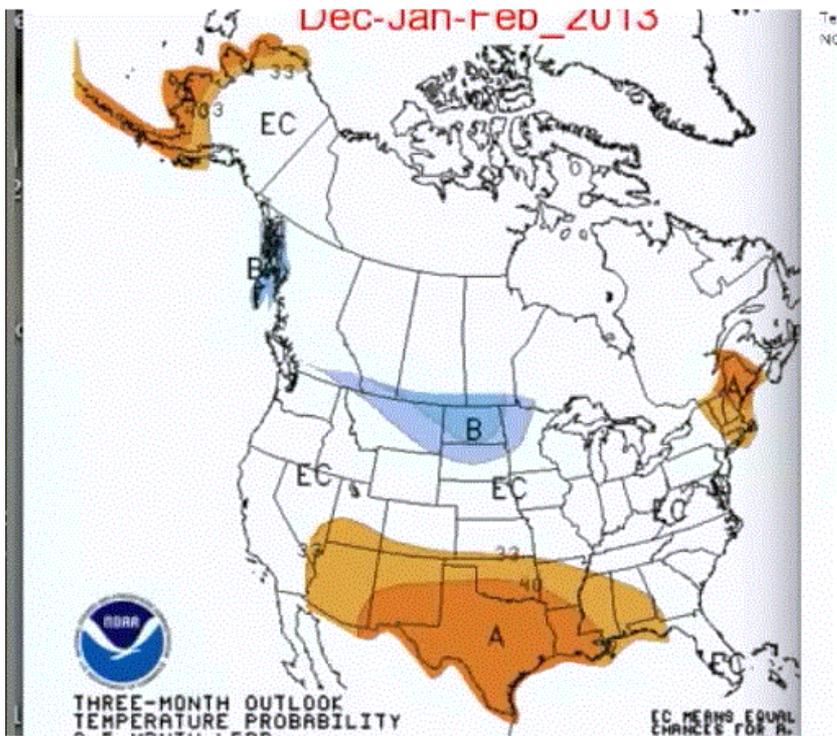
If you think it just couldn't be possible for any weather outfit to perform as poorly as the UK's Met Office in long-term outlooks (13 out of 14 wrong), think again. It appears the US national weather services are right on their heels when it comes to who can make the all-time least accurate outlooks.

And we're supposed to believe these people when it comes to their climate forecasting?

Here's what their outlook called for:



Note how they said the chances for normal temperatures were about even for much of the country and warm down south. Averaging it out: a moderately warmer than normal winter. Today we see that the Midwest is having one of its harshest winters in decades and that the Great Lakes are almost completely frozen over.



“Averaging it out it means a warmer winter?”

**No! These products don’t get averaged out.
These are simply probabilities at each location.**

Wait... and what was the forecast for the Great Lakes???

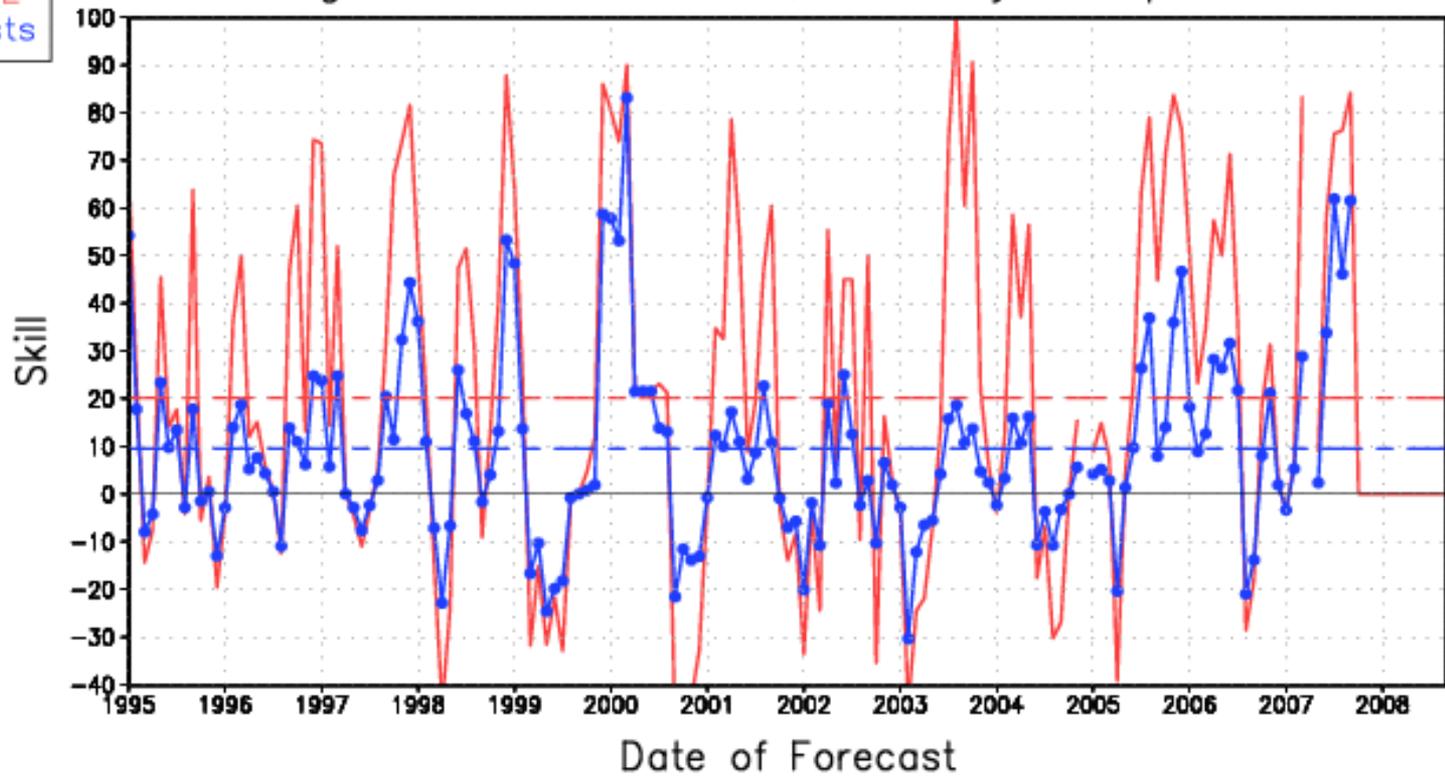
Remember... EC means what?

Chance of above normal = 33.3% Chance of below normal = 33.3% Chance of normal = 33.3%

(Think West Virginia versus Oklahoma State this Saturday... a “pick em” game doesn’t mean the game will be close! But, it might be!)

Long-lead Heidke skill, 90-day Temperature

non-CL
All Fcsts



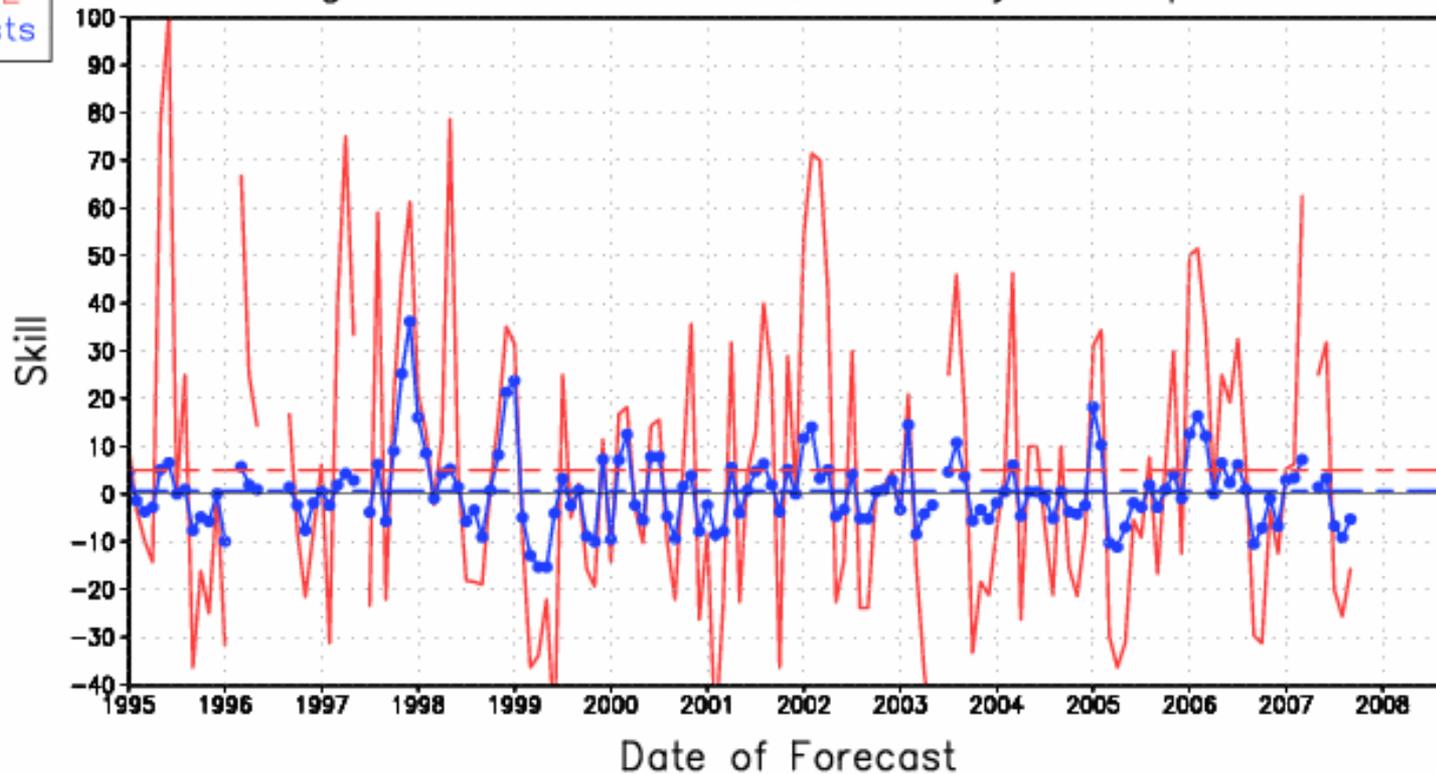
Percent Coverage



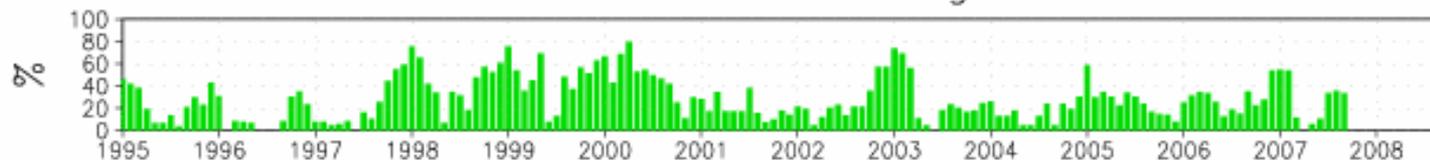
0.5 mn lead
full POR

Long-lead Heidke skill, 90-day Precipitation

non-CL
All Fcsts



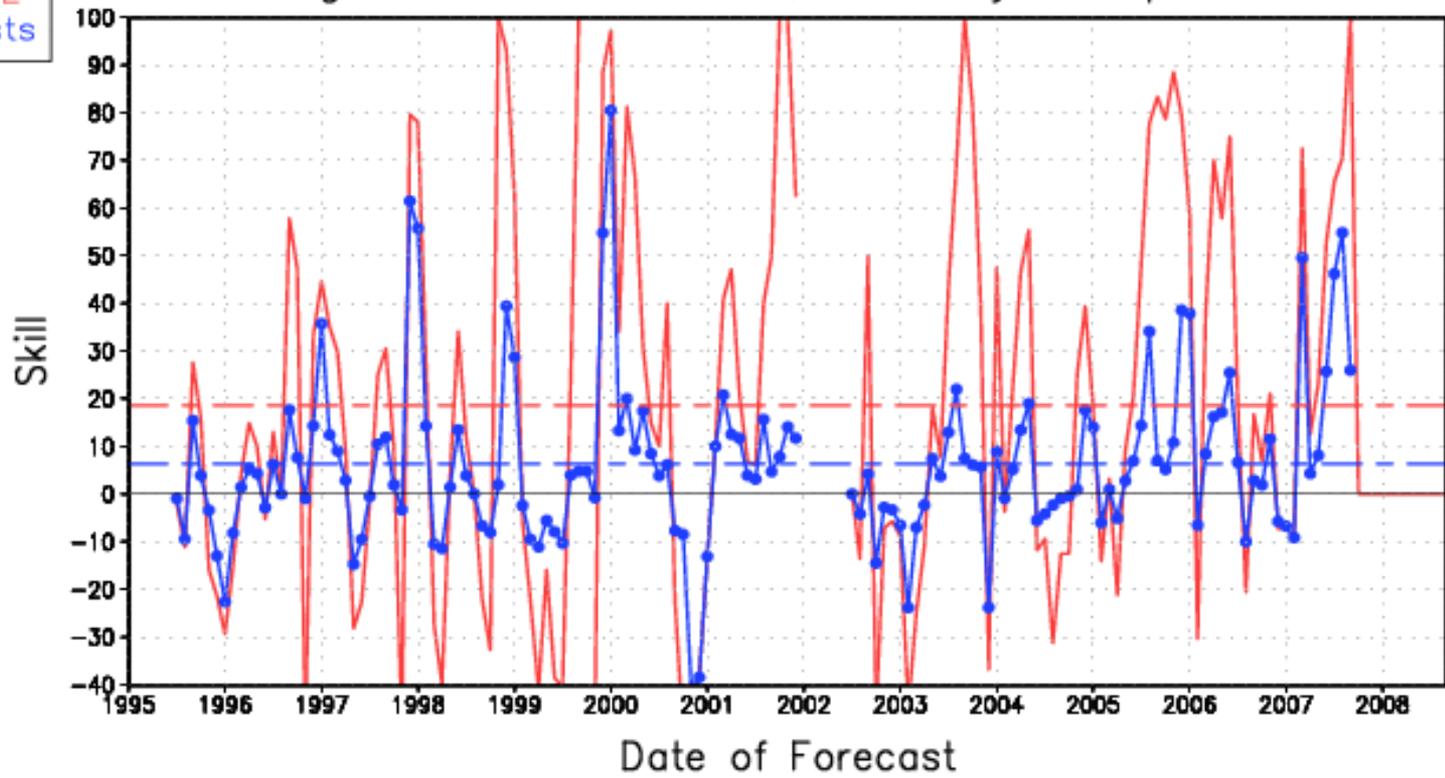
Percent Coverage



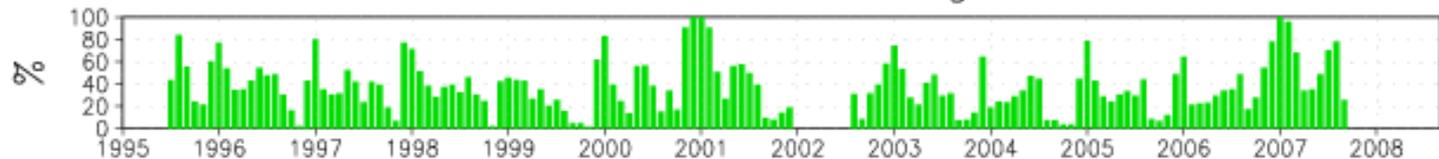
0.5 mn lead
full POR

Long-lead Heidke skill, 90-day Temperature

non-CL
All Fcsts



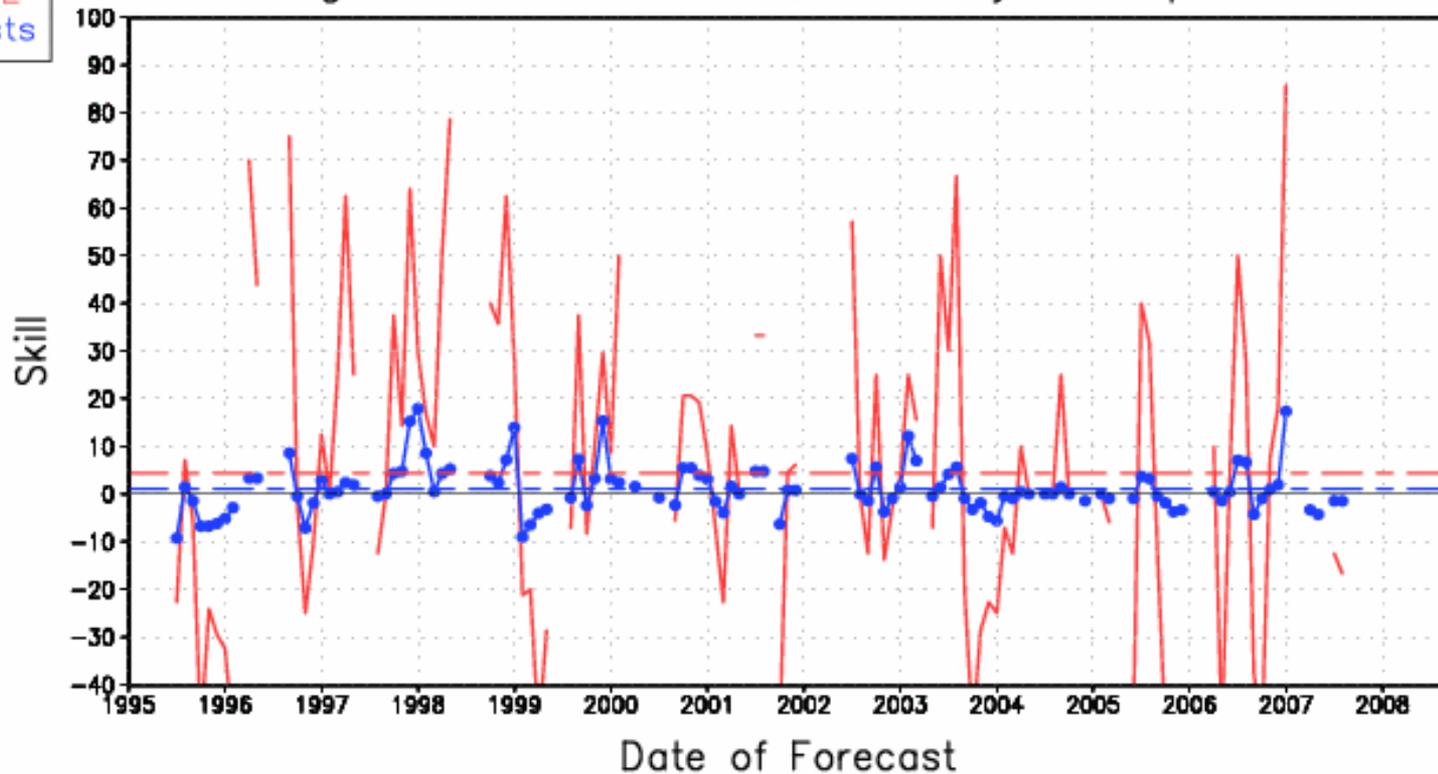
Percent Coverage



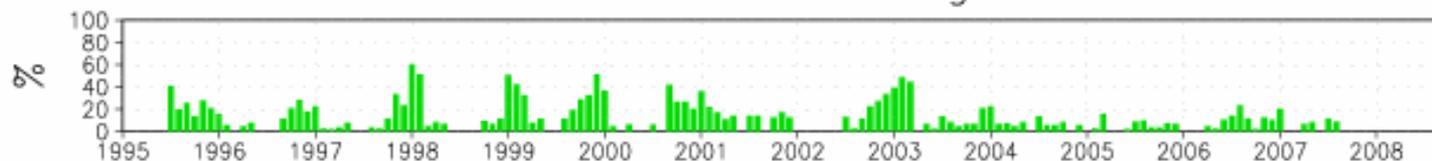
6.5 mn lead
full POR

Long-lead Heidke skill, 90-day Precipitation

non-CL
All Fcsts



Percent Coverage



6.5 mn lead
full POR

Challenges:

The meteorologist has to decipher an ensemble of output (maybe) for a clientele needing 'deterministic' (yes or no) answers.

The outlooks operate on the same principles that you would experience in a casino. Except in the case of these outlooks, if you stick with them year in and year out, you will be right more often than wrong.

The results yield that we we do miraculously well in some years, and expectedly poor in others. (Again - the overall results are positive.)

Temperature patterns are a whole lot easier to get correctly than rainfall patterns. (Think "it's raining on one side of the street but not the other.")

Don't ever hesitate to call...

**Dr. Kevin Kloesel
405-397-9652
Longhorn@OU.edu
@TexasEmbassy**

**Climate.ok.gov
Mesonet.org**