

# Midwest and Great Plains Climate- Drought Outlook 16 April 2015

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Wildfire Wind Cave NP– Rapid City Journal

# General Information

- \* **Providing climate services to the Central Region**
  - \* Collaboration Activity Between:
    - \* State Climatologists
    - \* Doug Kluck & John Eise (NOAA)
    - \* American Association of State Climatologists
    - \* Midwest and High Plains Regional Climate Centers
    - \* National Drought Mitigation Center/USDA
  
- \* **Next Regular Climate/Drought Outlook Webinar**
  - \* May 21, 2015 (1 PM CDT)
- \* **Access to Future Climate Webinars and Information**
- \* <http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>
  
- \* <http://mrcc.isws.illinois.edu/webinars.htm>
- \* <http://www.hprcc.unl.edu/webinars.php>
- \* **Open for questions at the end**

# Agenda

- \* **Current Conditions**
- \* **Impacts**
  - \* **Corn Belt/east-west**
  - \* **Wheat Belt**
  - \* **Missouri River**
  - \* **Great Lakes**
  - \* **General Spring Ag**
- \* **Outlooks**
  - \* **El Niño**

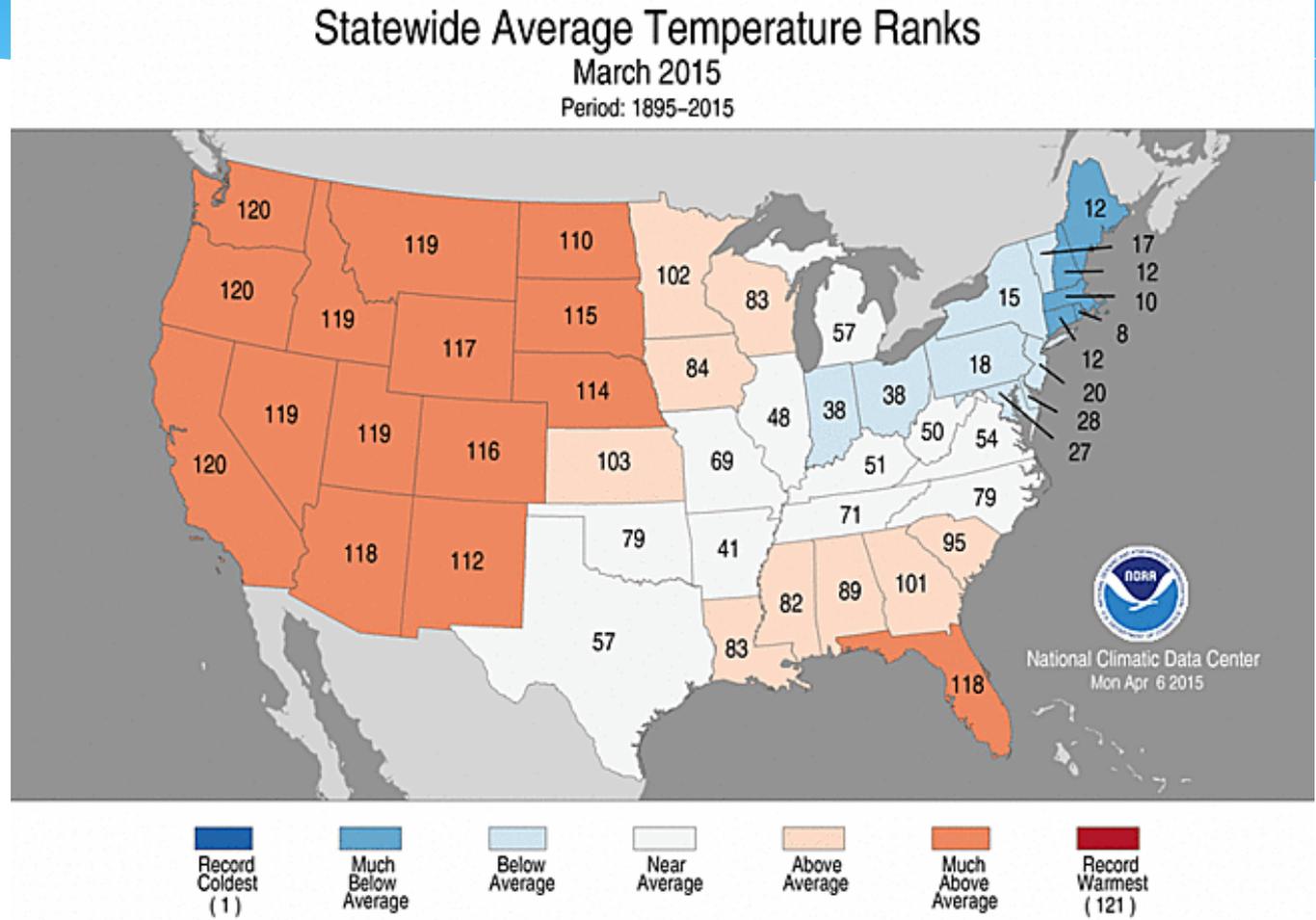


# Review/Current Conditions

# March Temperature Recap

The pattern shows a clear ridge – trough pattern across the country.

Warm to the western half of country – cold northeast US

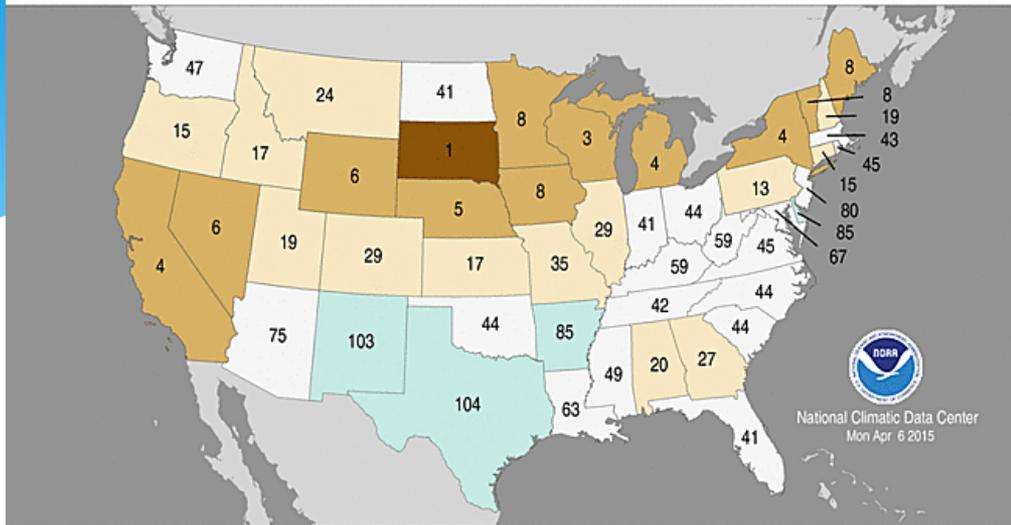




## Statewide Precipitation Ranks

January–March 2015

Period: 1895–2015

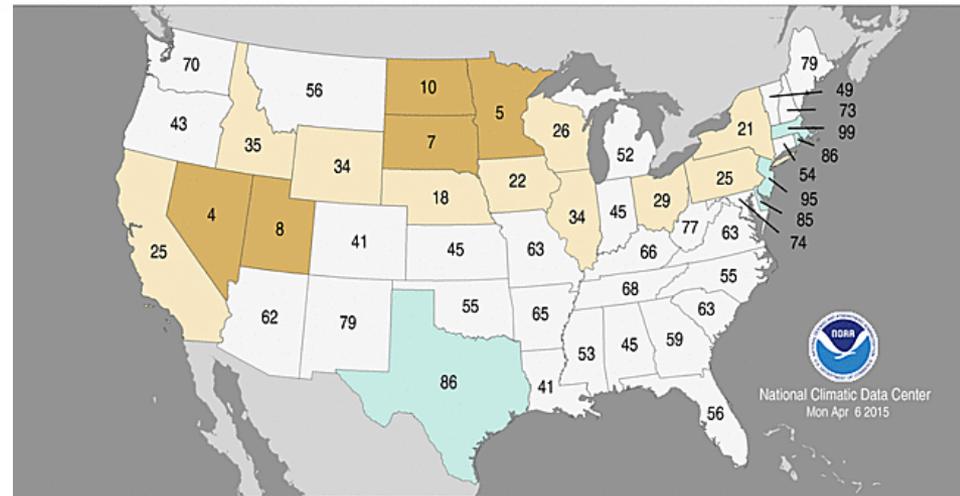


# 1 January and Water Year Precipitation

## Statewide Precipitation Ranks

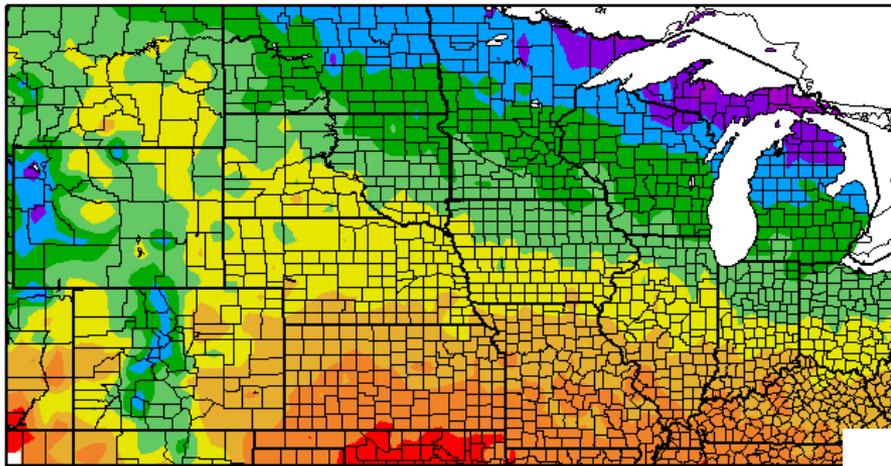
October 2014–March 2015

Period: 1895–2015

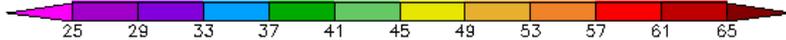


Temperature (F)  
3/15/2015 – 4/13/2015

# Most recent 30-day temperatures



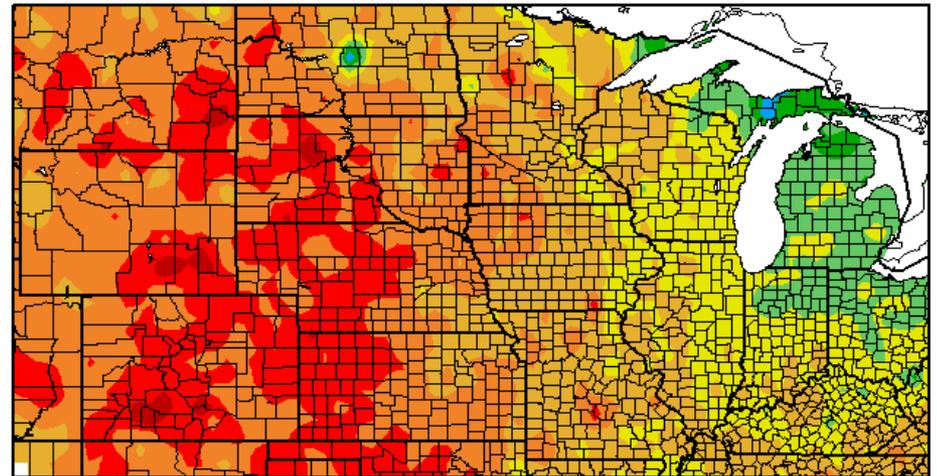
Departure from Normal Temperature (F)  
3/15/2015 – 4/13/2015



Generated 4/14/2015 at HPRCC using provisional data.

Regional Climc

**Warm overall – warmest to the west, slightly cool MI.**



Generated 4/14/2015 at HPRCC using provisional data.

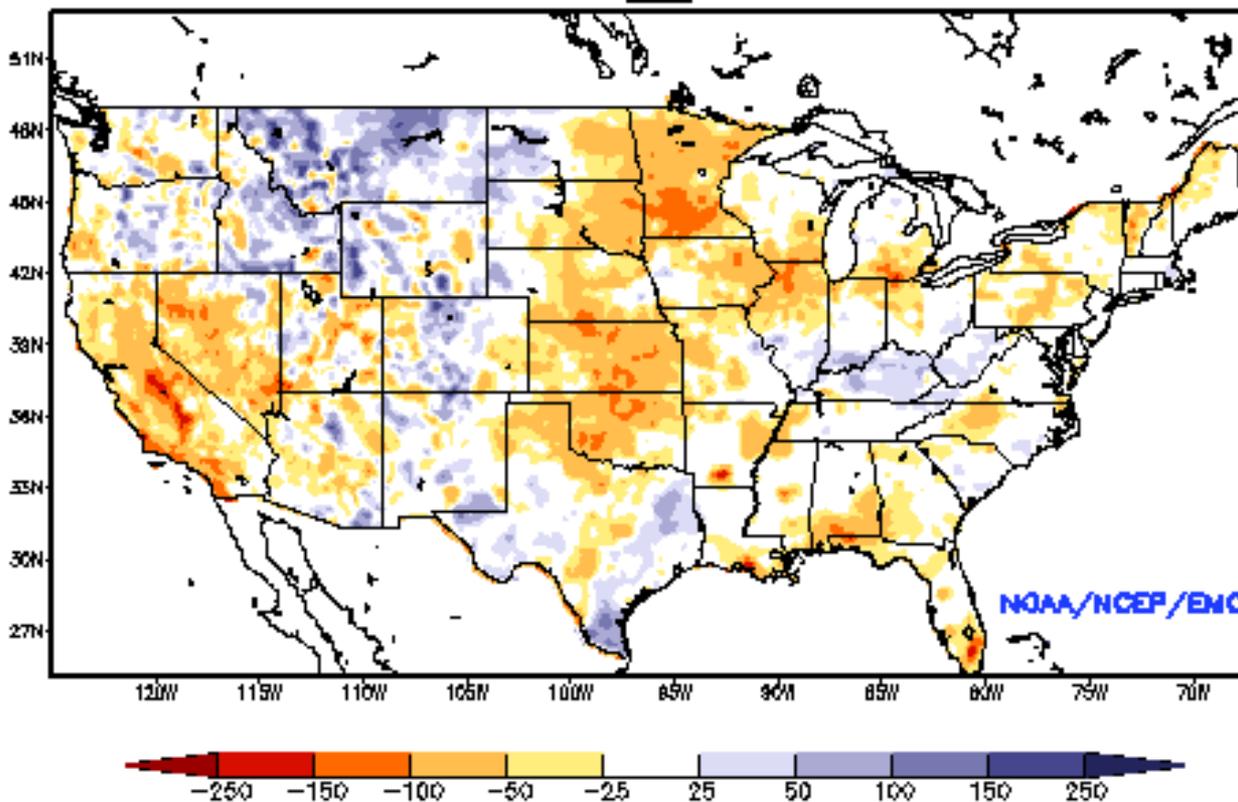
Regional Climate Centers

<http://www.hprcc.unl.edu/maps/current/>

**HPRCC – Regional Climate Centers**

# Soil Moisture

Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)  
NCEP NLDAS Products \_\_\_ Valid: APR 10, 2015

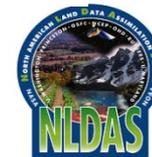


Wet area in the northern Plains deeper soil moisture

Central Corn Belt and Winter wheat belt drier

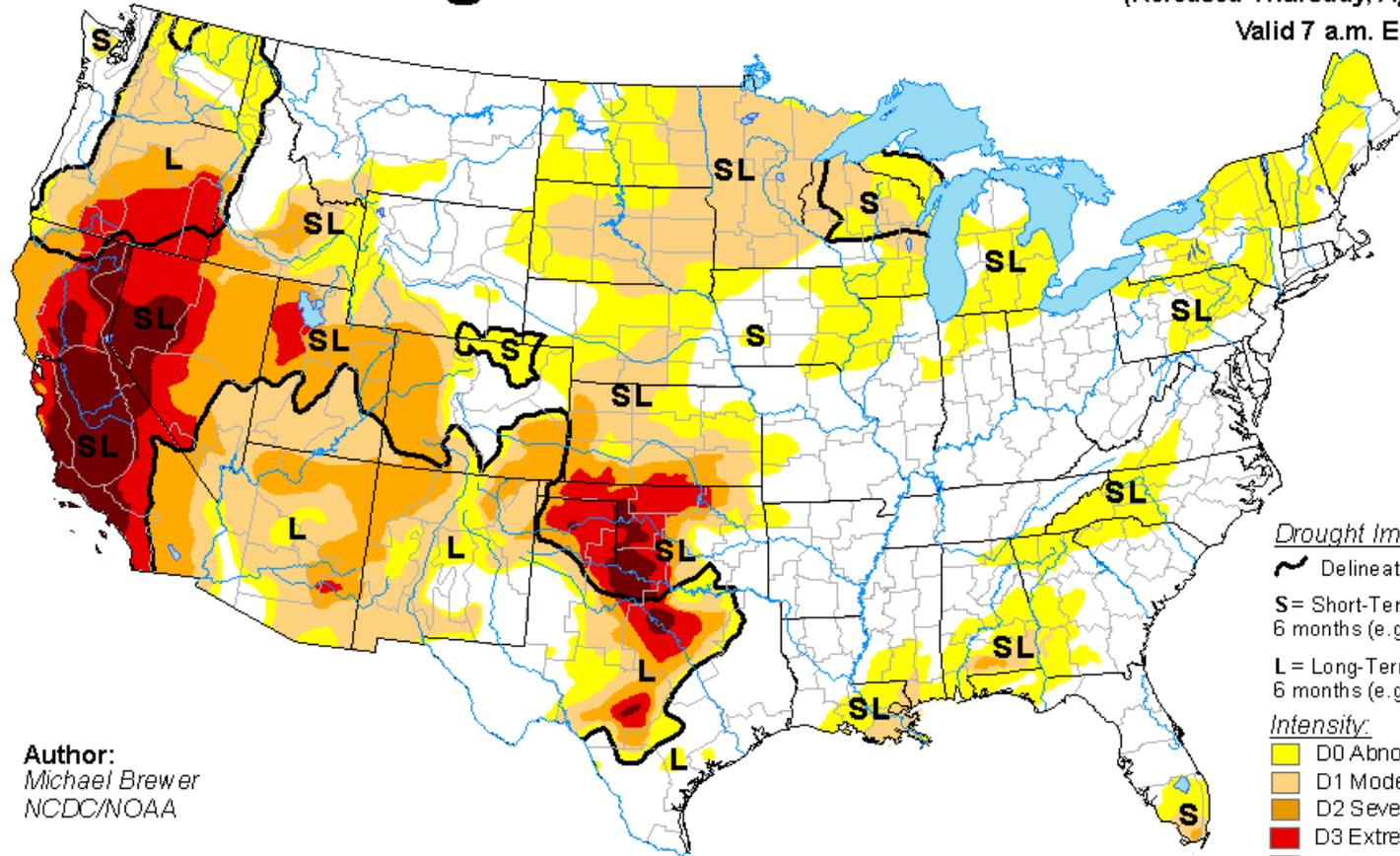
Southeast corn belt wetter

Soil Moisture Anomaly in millimeters



# U.S. Drought Monitor

April 14, 2015  
(Released Thursday, Apr. 16, 2015)  
Valid 7 a.m. EST



Author:  
Michael Brewer  
NCDC/NOAA

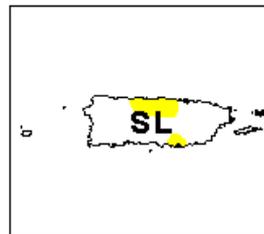
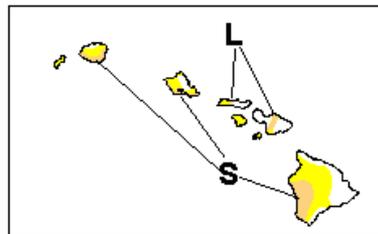
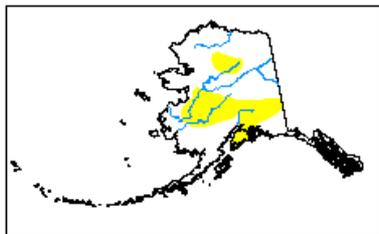
### Drought Impact Types:

- ~ Delineates dominant impacts
- S= Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L= Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

### Intensity:

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

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



<http://droughtmonitor.unl.edu/>

# Impacts

The image features a solid blue background with a white wavy line at the bottom. The word "Impacts" is centered in white text.

Impacts

Fire

# Fire Issues

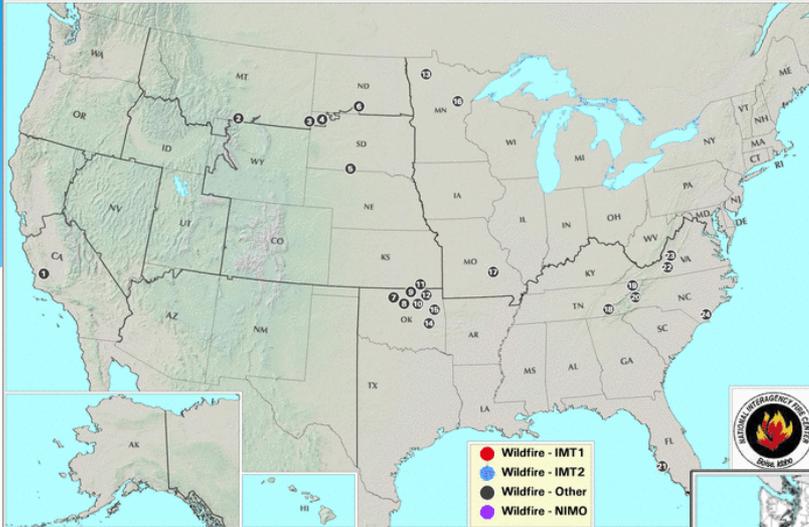
- \* Fires not uncommon in spring
- \* Complicated issues – what is the problem this year?
  - \* Dry surfaces
  - \* Good growth for several years
  - \* Lack of snow to knock down vegetation
- \* Numerous red flag warnings
- \* Rapidly spreading/burning areas
- \* Part I-29 in ND closed yesterday (smoke and dust)



Fire at University of Mary  
Bismarck, ND – Bismarck  
Tribune

# Current Large Incidents

April 10, 2015

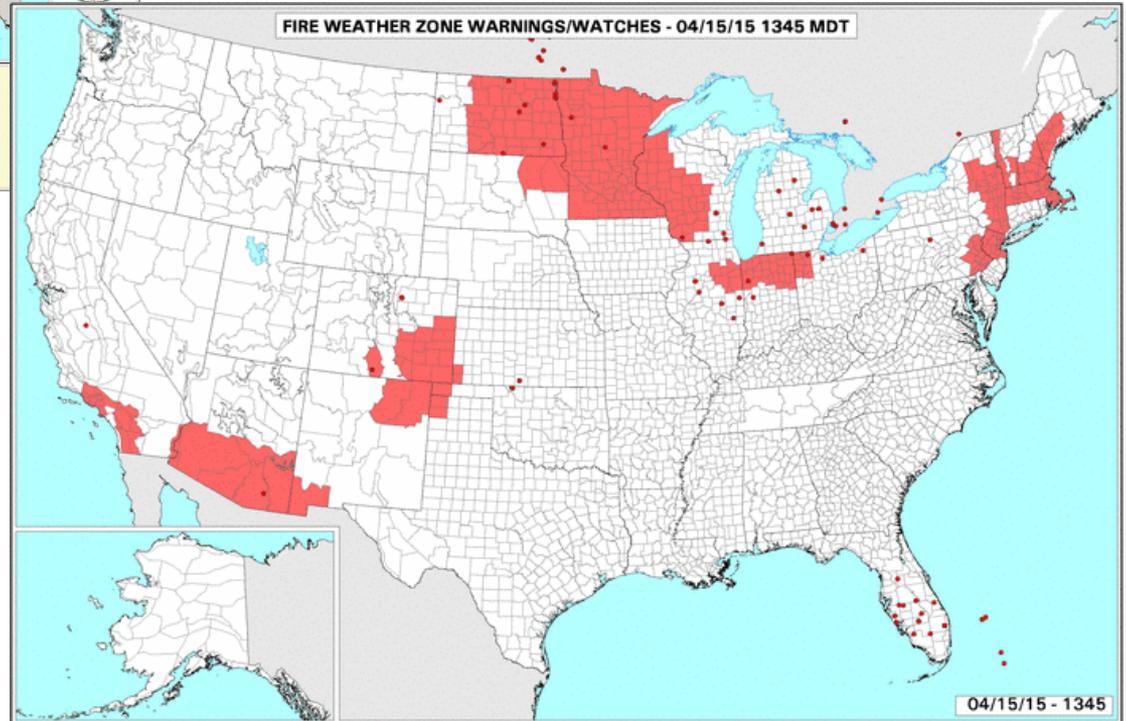


- Wildfire - IMT1
- Wildfire - IMT2
- Wildfire - Other
- Wildfire - NIMO

- |                  |              |               |                         |
|------------------|--------------|---------------|-------------------------|
| 1 FRYING PAN     | 8 BROKEY     | 16 FENCE      | 22 CLEARWATER           |
| 2 WEST FORK ROAD | 9 WYNONA     | 17 TAMARACK   | 23 SHORT HILLS MOUNTAIN |
| 3 SHEEP DRAW     | 10 WEBSTER   | 18 BEARCLAW   | 24 COMPASS POINT        |
| 4 MOONSHINE      | 11 Z BAR 7   | 19 HAMPTON    |                         |
| 5 ASHES          | 12 2230 ROAD | 20 POPLAR     |                         |
| 6 BIG LAKE       | 13 STAR      | 21 WEED LANE  |                         |
| 7 ARCHULETA      | 14 DUMP      | 25 QUAIL ROAD |                         |



# Fire Activity



FIRE WEATHER ZONE WARNINGS/WATCHES - 04/15/15 1345 MDT

04/15/15 - 1345

USDA Forest Service

<http://activefiremaps.fs.fed.us/current.php>

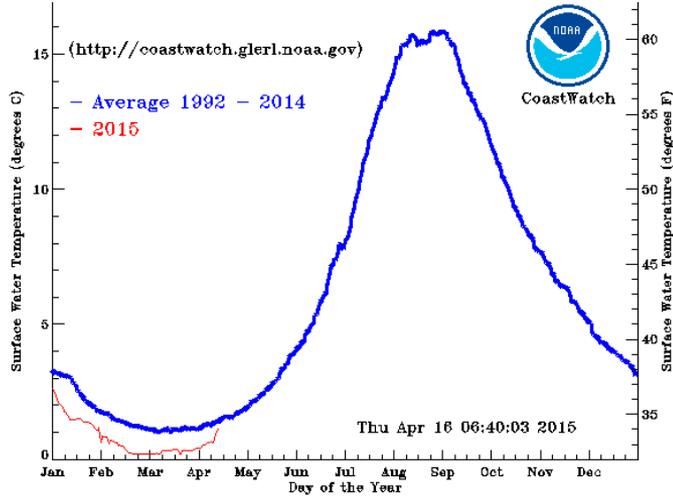
Impacts

# Great Lakes

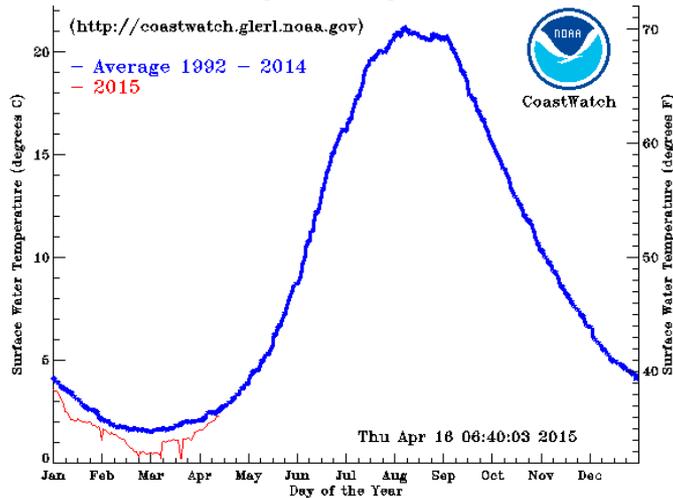
# Great Lakes

- 20% Ice coverage on lakes
- Somewhat above avg.
- Warmer than last year
- Will impact air temps for a period of time.
- First ships passing through

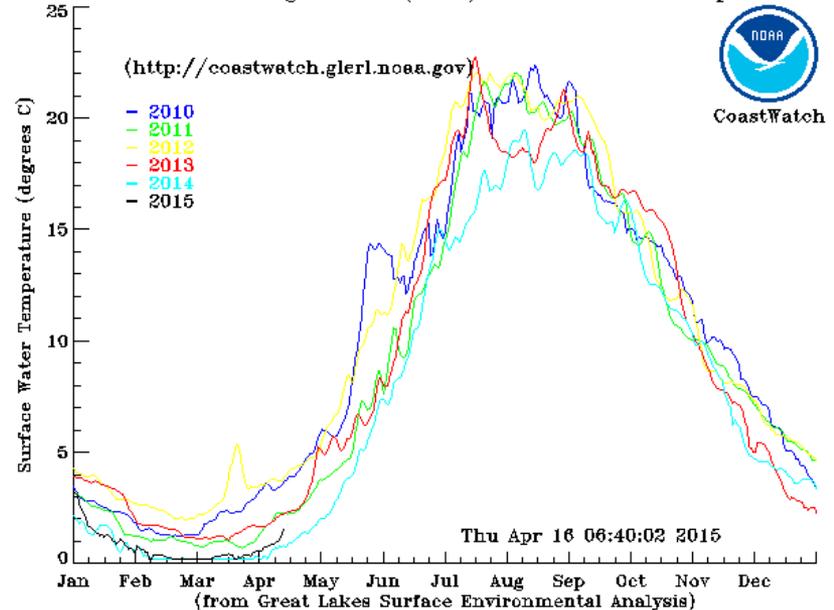
Lake Superior Average Great Lakes Surface Environmental Analysis (GLSEA)  
Surface Water Temperature Compared to Current Year



Lake Michigan Average Great Lakes Surface Environmental Analysis (GLSEA)  
Surface Water Temperature Compared to Current Year



Lake Huron Average GLSEA (1024) Surface Water Temperature

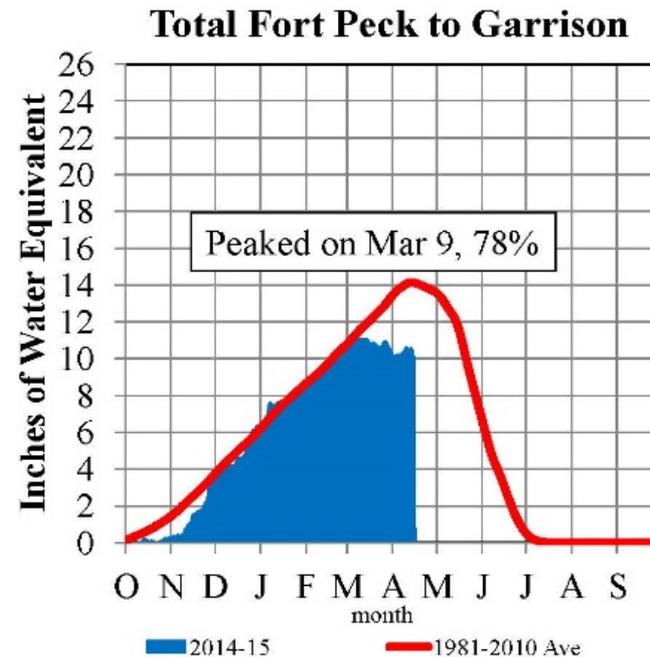
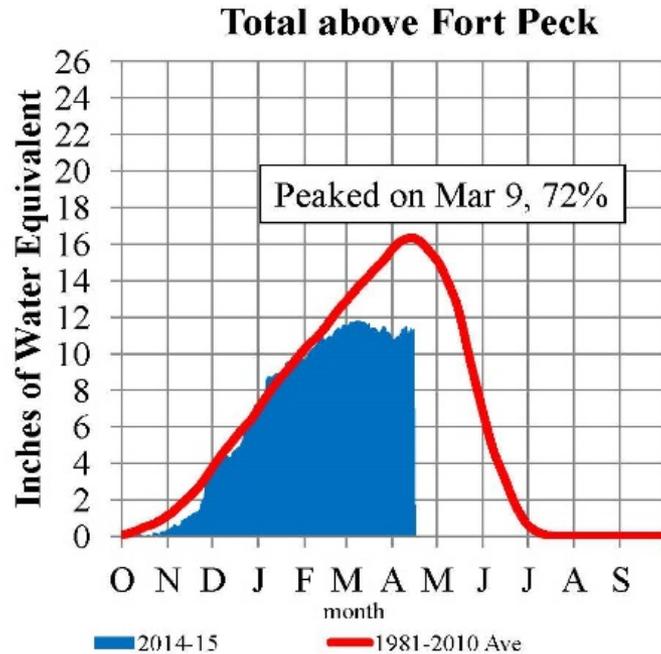


Impacts

# Missouri River/Streams

# Missouri River Basin – Mountain Snowpack Water Content

April 15, 2015

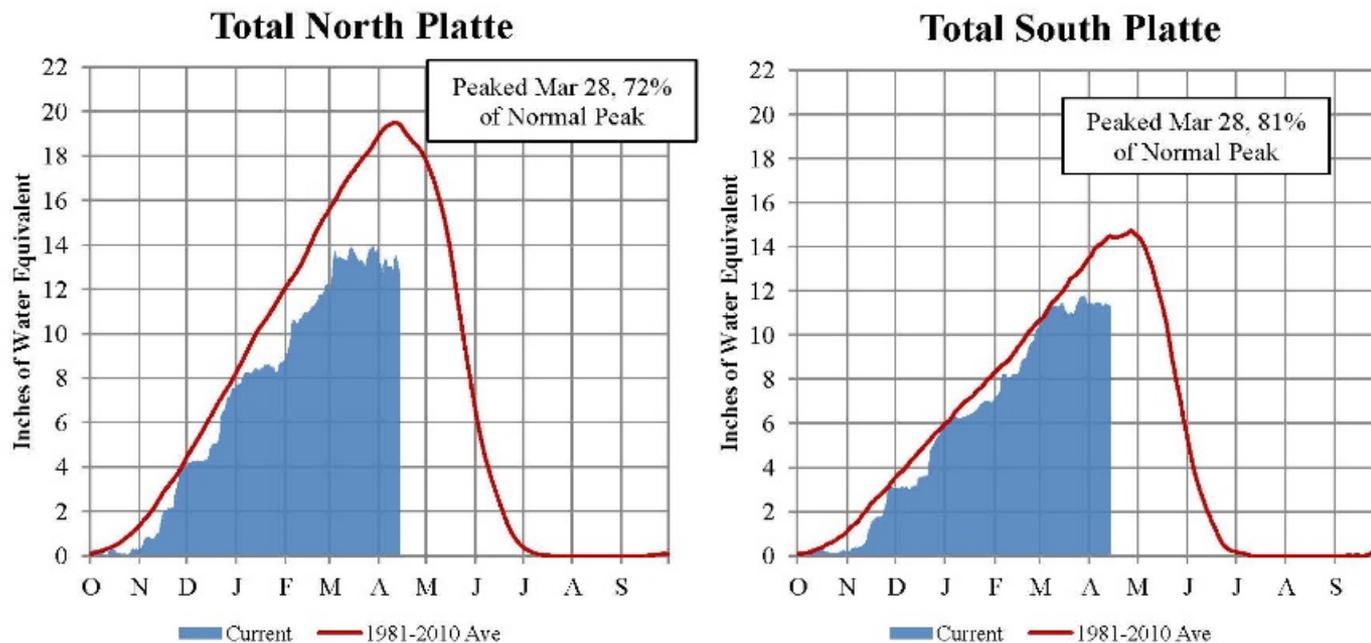


The Missouri River Basin mountain snowpack normally peaks near April 15. On April 15 the mountain snow water equivalent (SWE) in the “Total above Fort Peck” reach is currently 11.4”, 70% of average. The mountain SWE in the “Total Fort Peck to Garrison” reach is currently 10.1”, 72% of average. It appears the snowpack in both reaches has peaked.

Provisional data. Subject to revision.

# Platte River Basin - Mountain Snowpack Water Content Water Year 2014-2015

4/15/2015



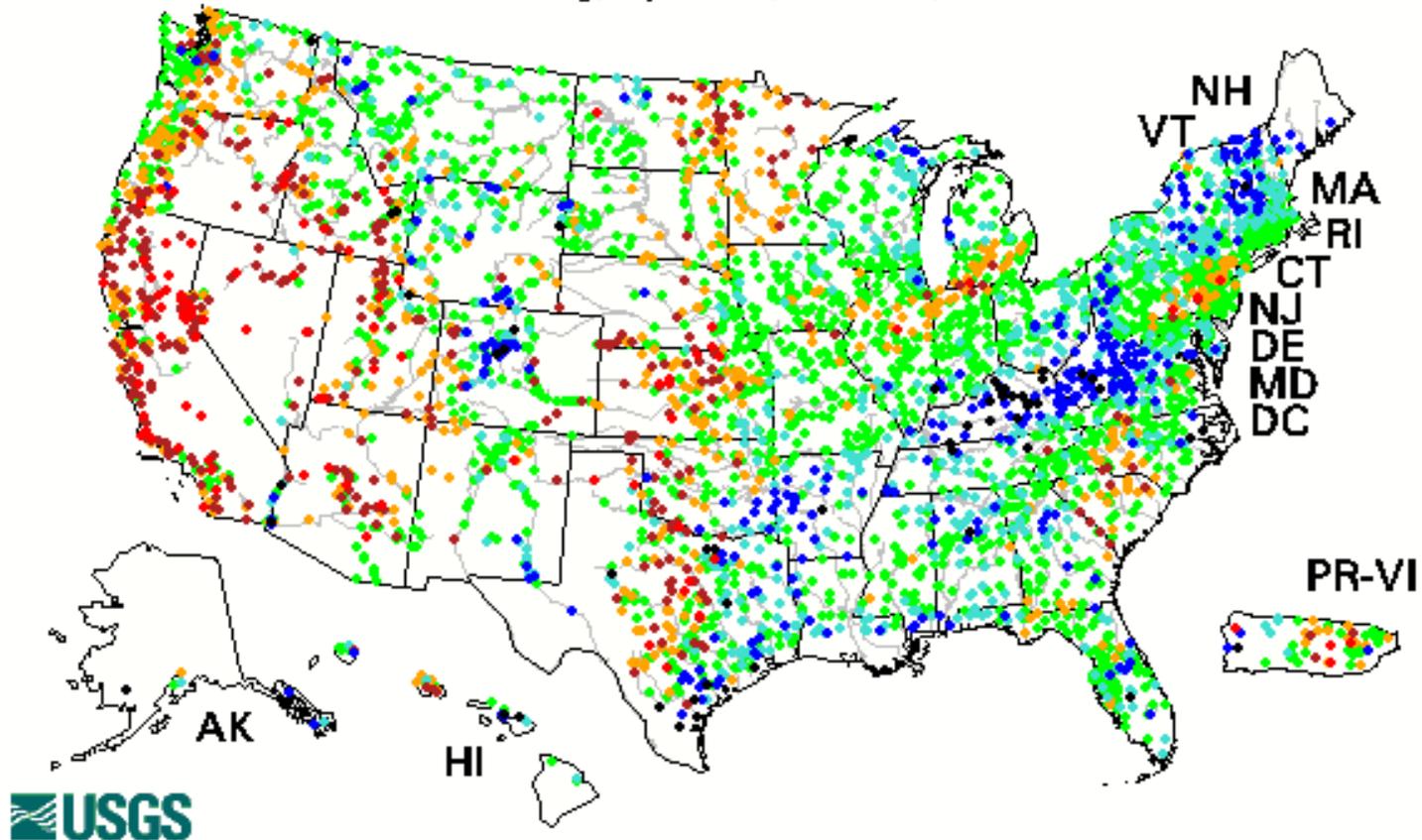
The North and South Platte River Basin mountain snowpacks normally peak near April 15. As of April 14, 2015, the mountain snowpack SWE in the "Total North Platte" reach is currently 12.6", 65% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 11.2", 77% of average.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

# 7-Day Average Streamflow

Wednesday, April 15, 2015 09:30ET



Wednesday, 15 Apr. 2015

Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

Impacts

# Wheat Belt

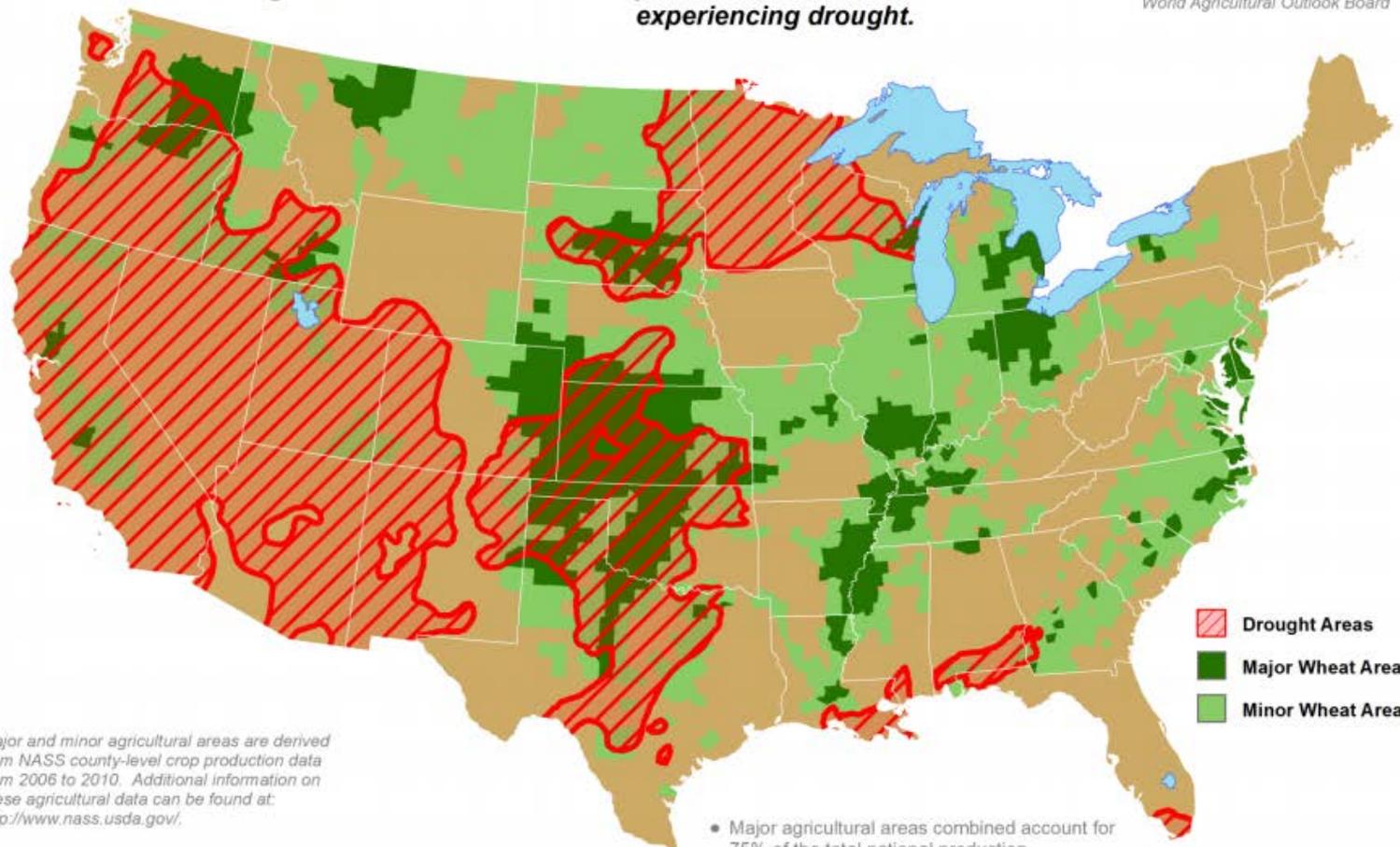
# U.S. Winter Wheat Areas Experiencing Drought



Reflects **April 7, 2015**  
U.S. Drought Monitor data

Approximately **43%** of winter wheat production is within an area experiencing drought.

This product was prepared by the  
USDA Office of the Chief Economist  
World Agricultural Outlook Board



- Drought Areas
- Major Wheat Area
- Minor Wheat Area

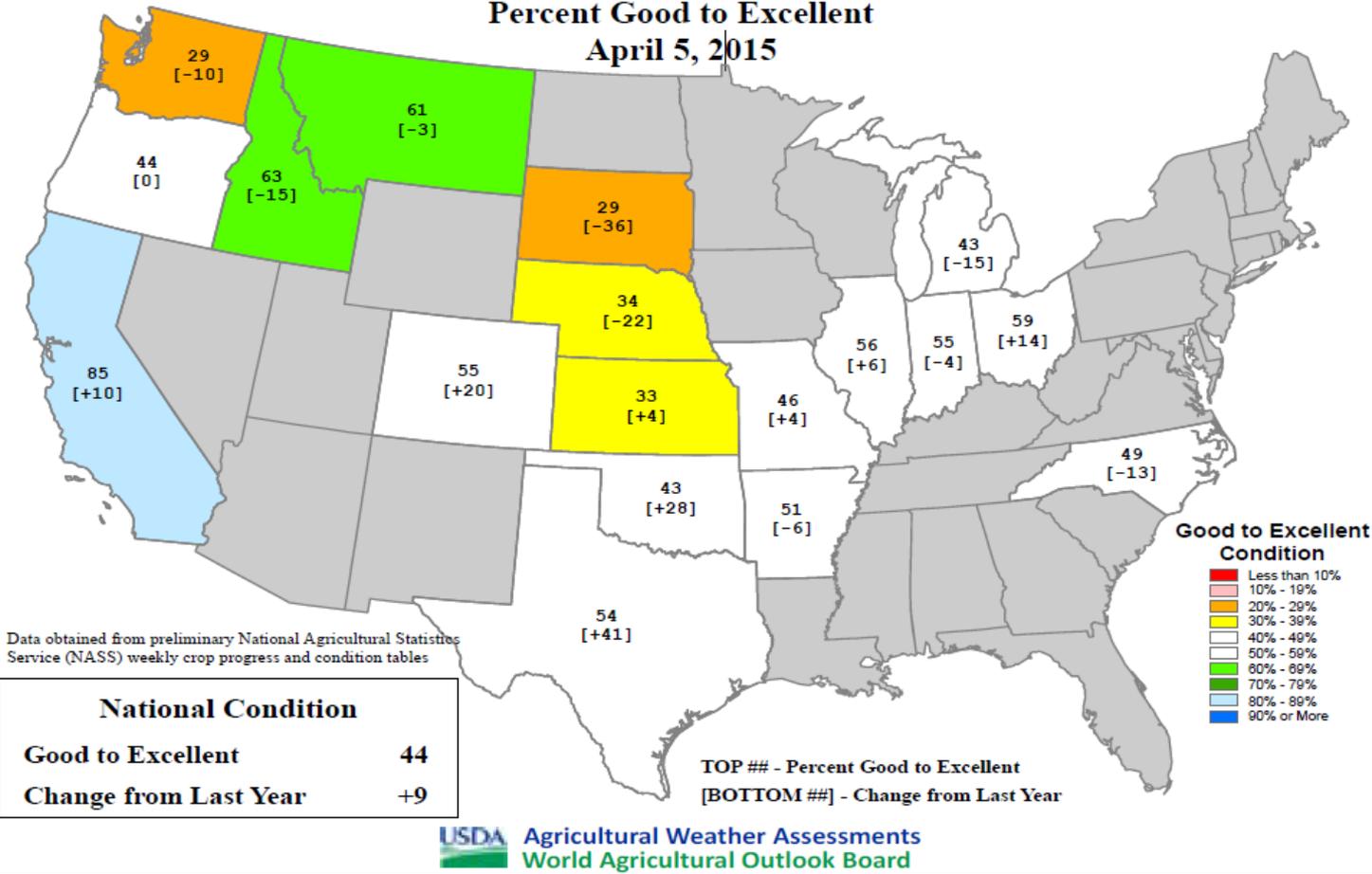
Major and minor agricultural areas are derived from NASS county-level crop production data from 2006 to 2010. Additional information on these agricultural data can be found at: <http://www.nass.usda.gov/>.

Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: <http://droughtmonitor.unl.edu/>.

- Major agricultural areas combined account for 75% of the total national production.
- Major and minor agricultural areas combined account for 99% of the total national production.

## Figure 2 U.S. Winter Wheat Conditions

Percent Good to Excellent  
April 5, 2015

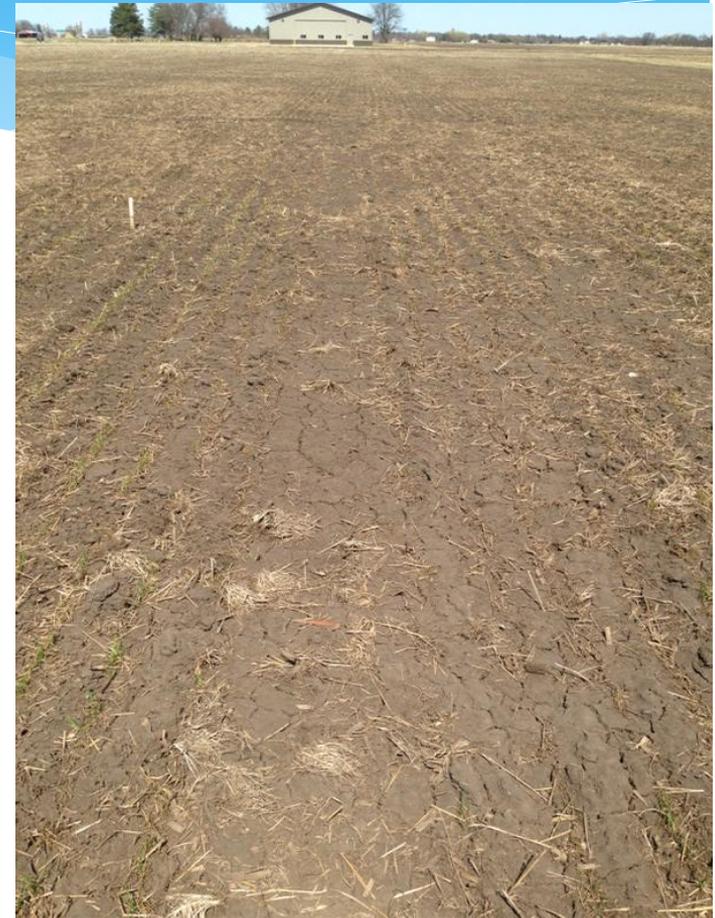


- \* April – 12 Percent Poor – Very poor
- \* NE – 30%, KS – 28%, SD – 27%, OK – 26%

- Multiple wheat issues
- Overall actually better than last year

# Winter wheat

- \* Multiple issues
- \* Dryness from fall on – no emergence some places in SD
- \* Delayed planting in NE
- \* November cold
- \* Some winterkill, dormancy break
- \* Dry spring
- \* Freeze damage in KS Easter
- \* Varietal differences
- \* Yield loss, thousands of acres in SD zeroed. Other places likely, too.



Winter wheat plot Volga, SD –  
Emmanuel Byamukama SDSU

Impacts

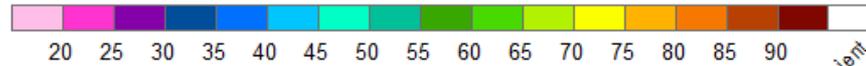
# Spring Ag Activity

# Midwestern Ag Issues

- \* Wetter eastern Corn Belt/dry plains northern Midwest
- \* Wetter areas planting activity slowed (S. IN, S. IL)
- \* Drier areas more activity
  - \* Drier soils
  - \* Field access
  - \* Earlier planting than avg. (particularly small grains, NE, SD)
  - \* Earlier field work (fertilizer, etc.)
- \* Some winter kill specialty crops in Michigan (peach, blueberry and vinifera-grape)
- \* Corn planting 2% - 5% avg.

# Soil temperatures

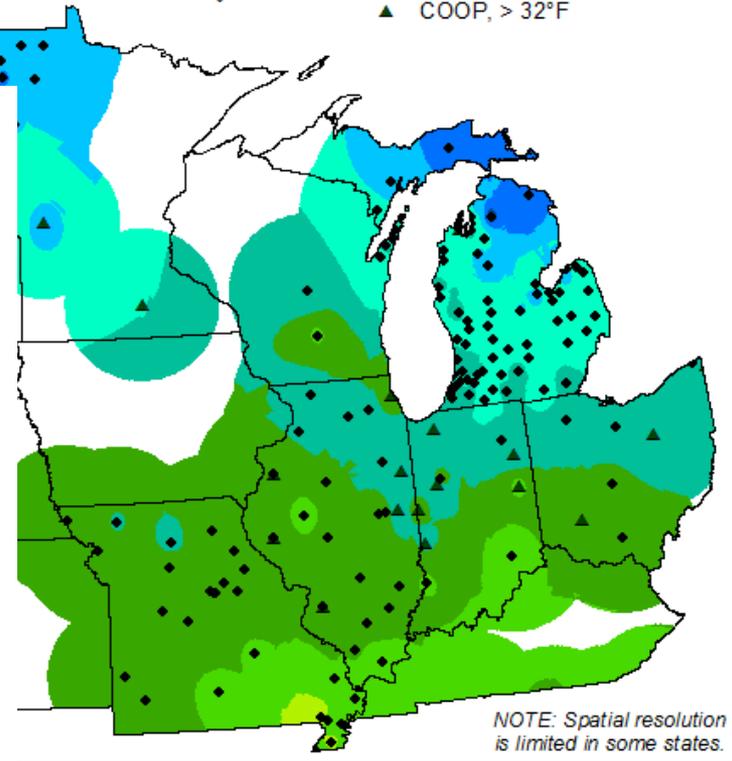
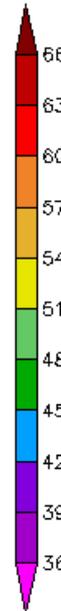
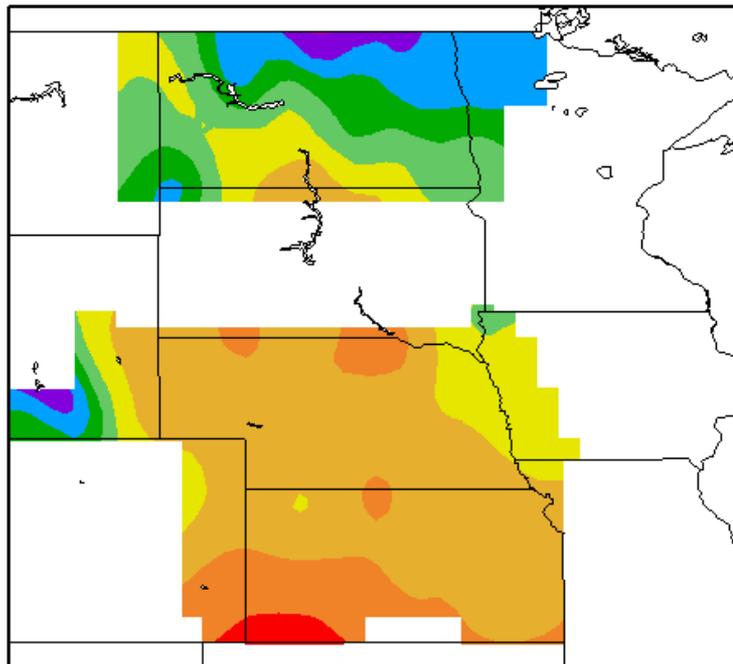
4" Soil Temperature (°F) (Bare)



24-Hour Period Through 4/13/2015

- ◇ Mesonets, <= 32°F
- ◆ Mesonets, > 32°F
- △ COOP, <= 32°F
- ▲ COOP, > 32°F

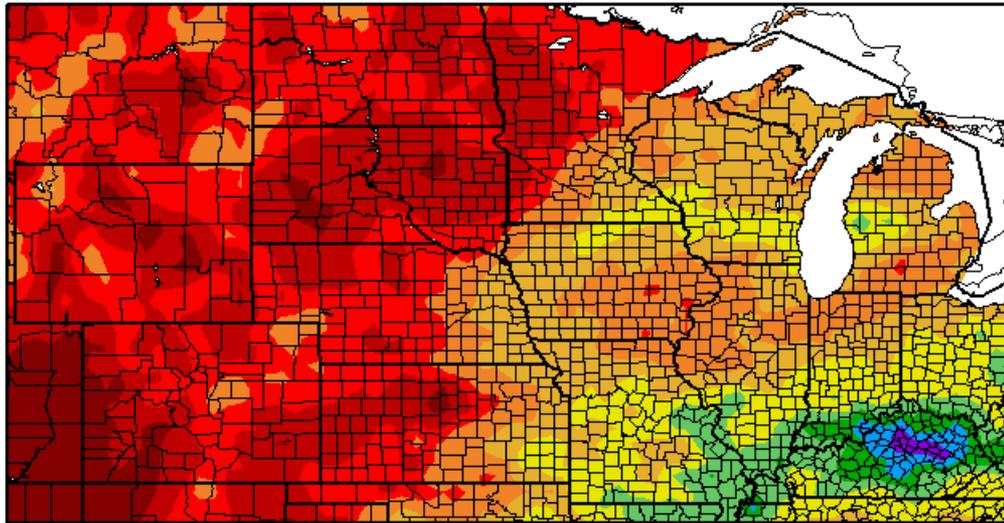
Soil Temperature (F at 4 inches)  
4/14/2015 - 4/14/2015



NOTE: Spatial resolution is limited in some states.

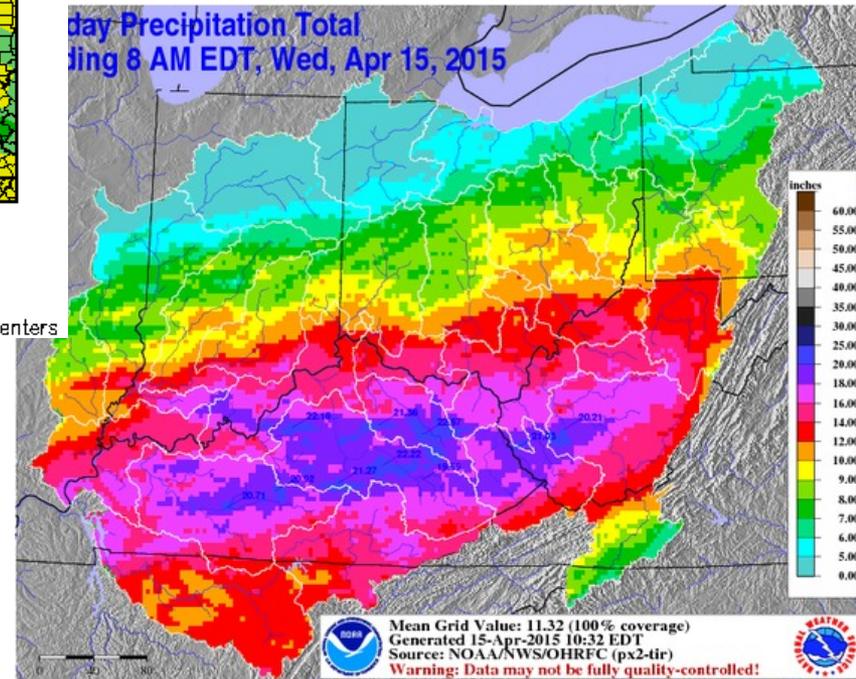
# Last 30-60 day precipitation

Precipitation (in)  
3/17/2015 - 4/15/2015



Generated 4/16/2015 at HPRCC using provisional data.

Regional Climate Centers



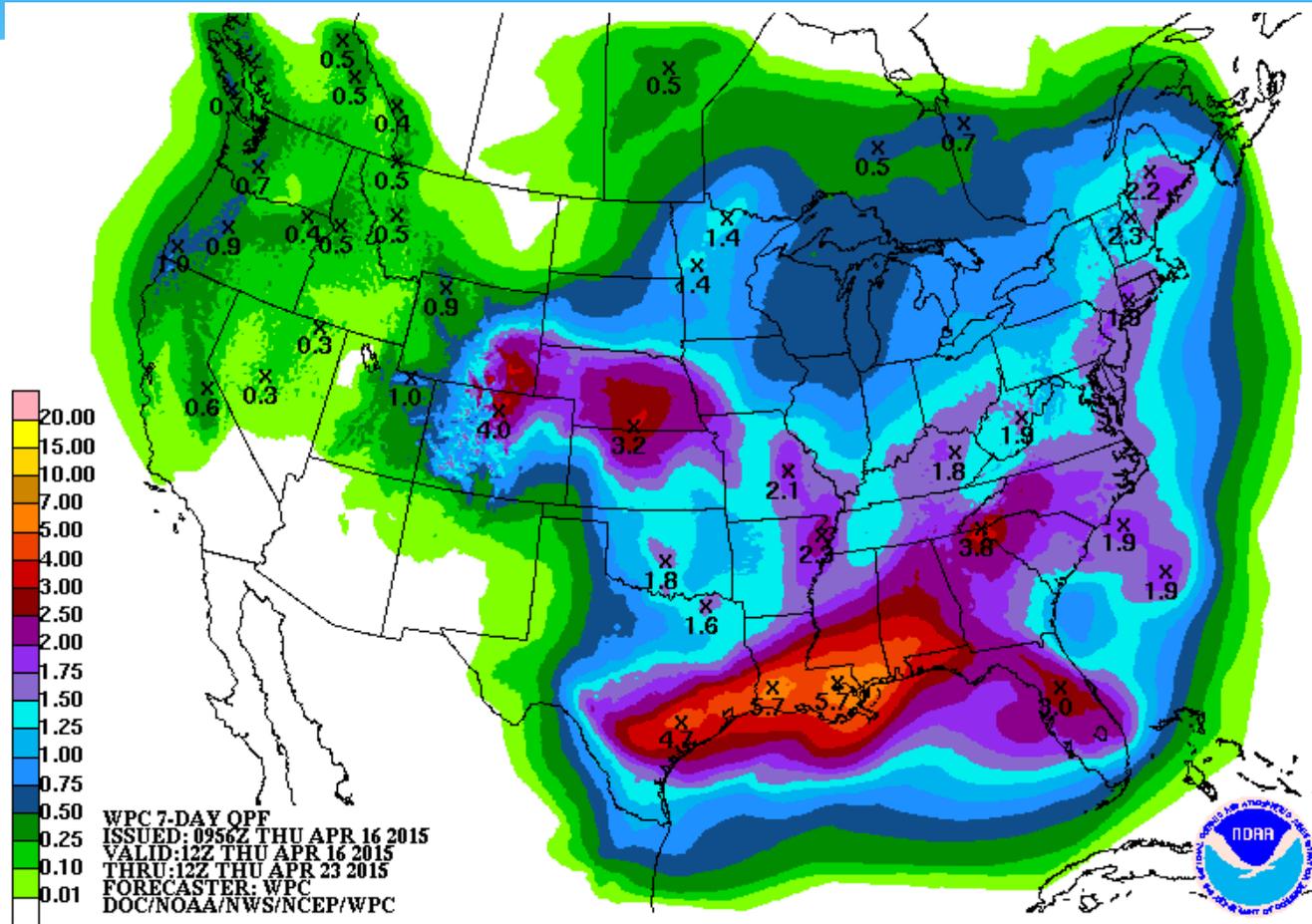
# Outlooks

# Climate Outlooks

- \* **7-day precipitation forecast**
- \* **8-14 day outlook**
- \* **May**
- \* **3 Months (May-July)**
- \* **Seasonal Drought Outlooks**
- \* **El Nino**

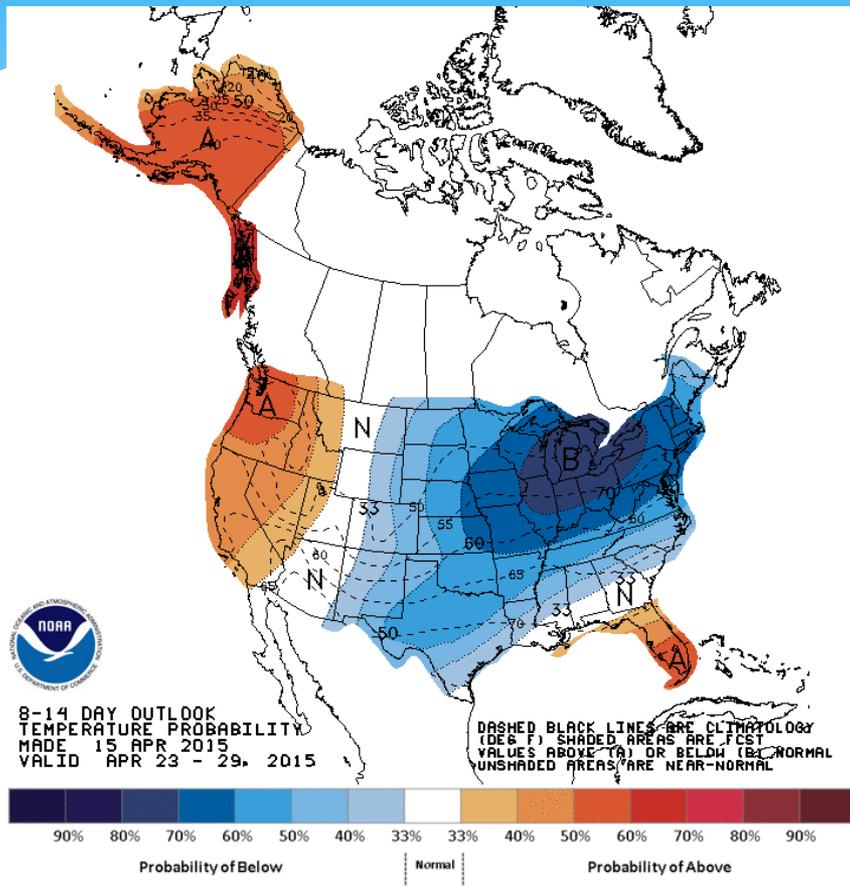
# 7-day Quantitative Precipitation Forecast

Valid: 7 AM Thu 16 Apr– 7 AM Thu 23 Apr

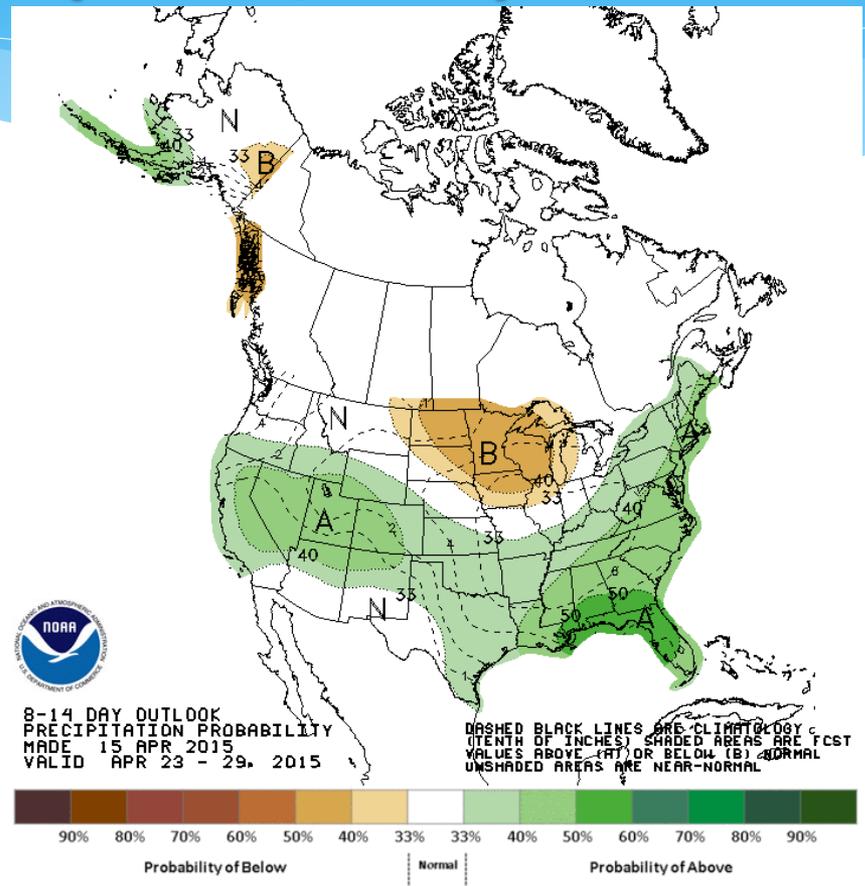


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

# Temperature and Precipitation Probabilities for 24 Apr. – 30 Apr. 2014



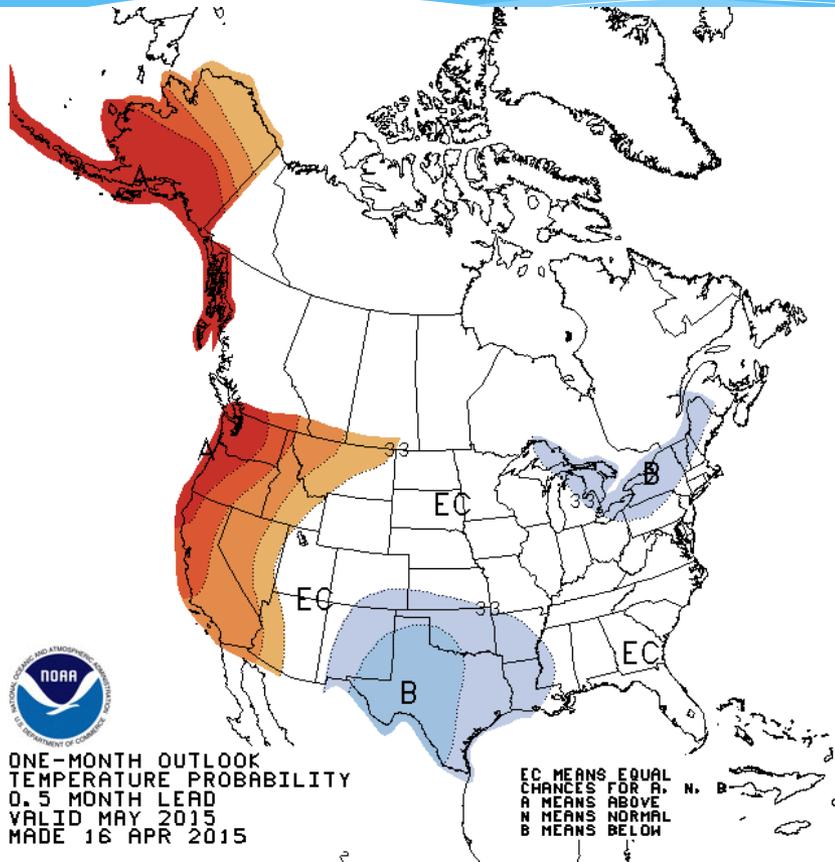
Temperature



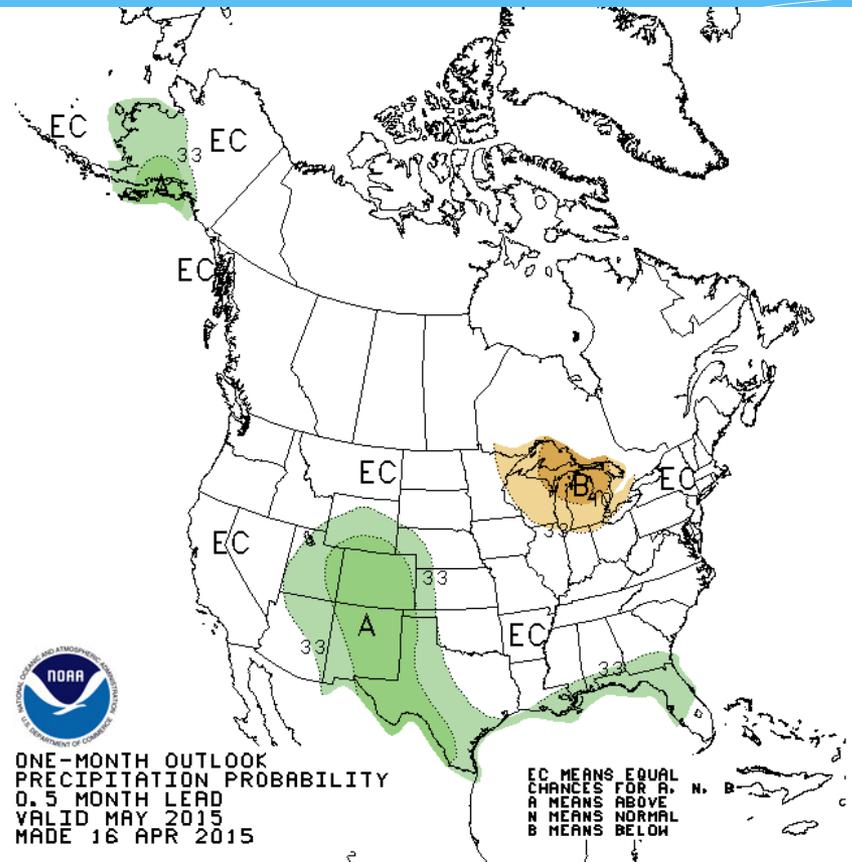
Precipitation

<http://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php>

# May Temperature and Precipitation Probabilities



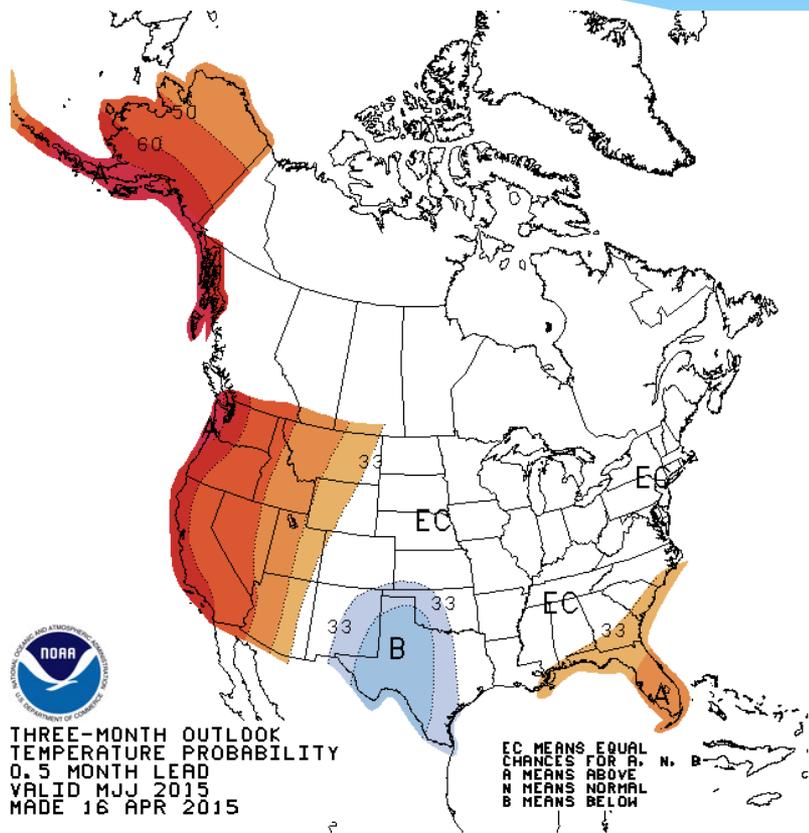
Temperature



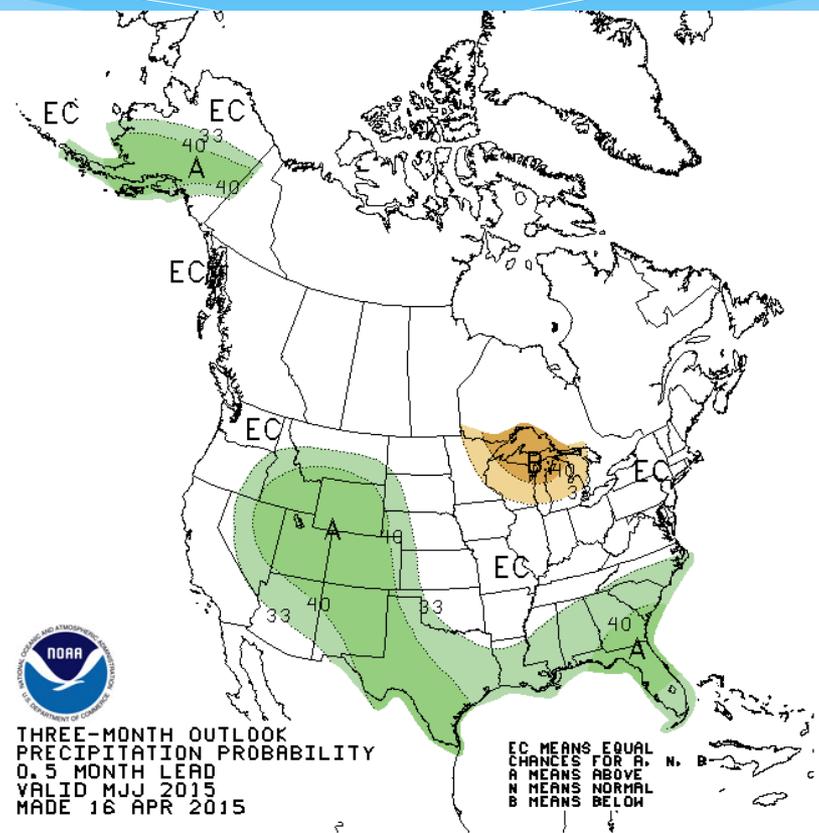
Precipitation

<http://www.cpc.ncep.noaa.gov/products/predictions/30day/>

# 3 Month Temperature and Precipitation Probabilities (May – July)

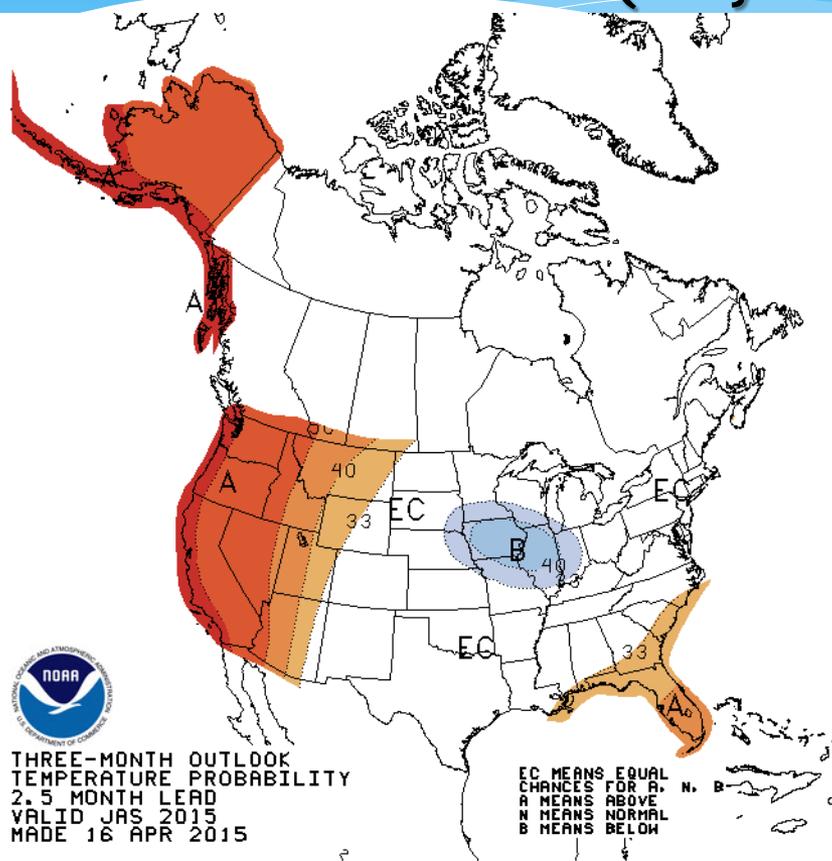


Temperature

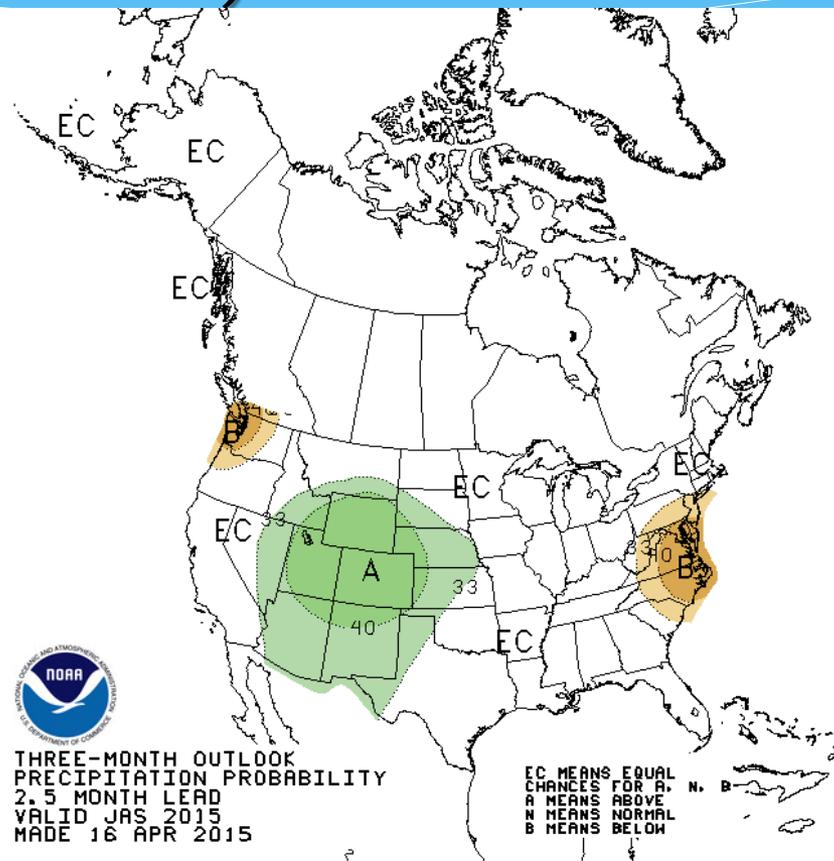


Precipitation

# 3 Month Temperature and Precipitation Probabilities (July – September)



Temperature

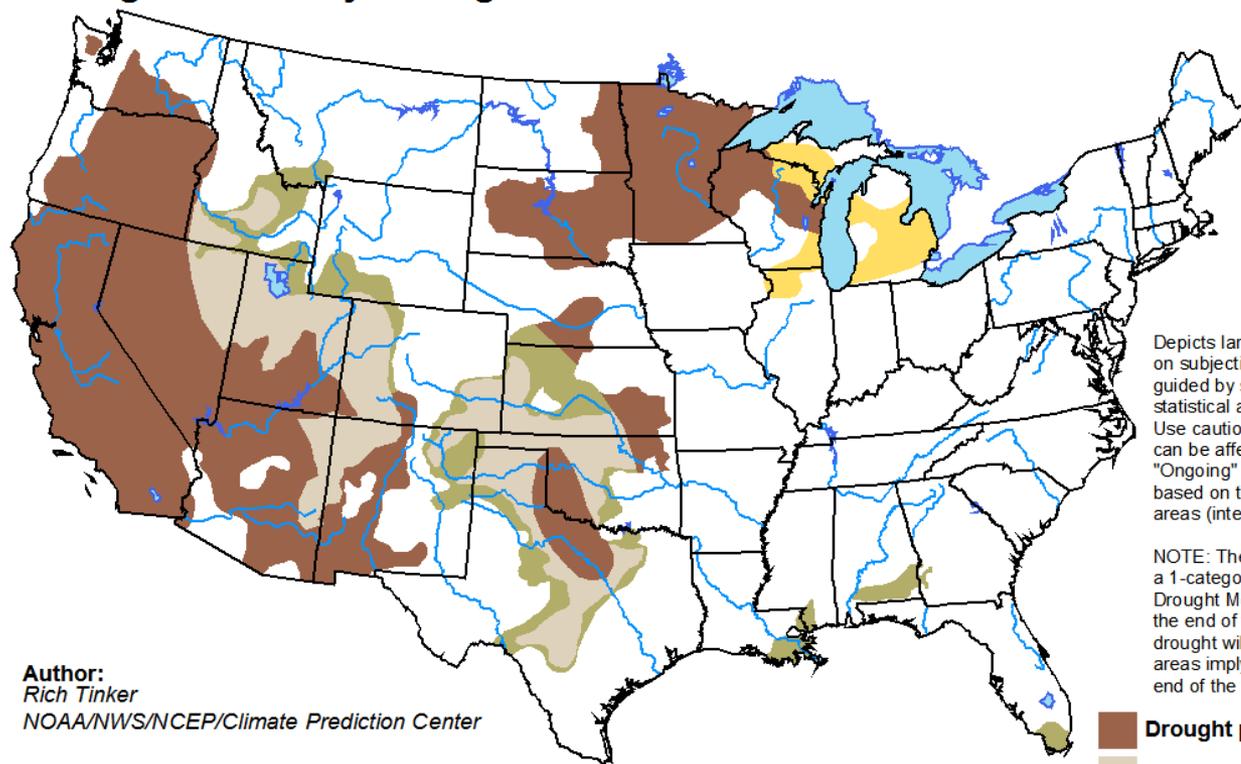


Precipitation

# Drought Outlook through 31 July

## **U.S. Seasonal Drought Outlook** Drought Tendency During the Valid Period

Valid for April 16 - July 31, 2015  
Released April 16, 2015

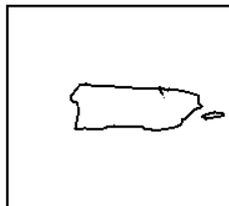
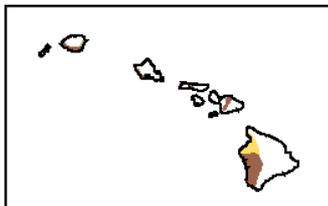
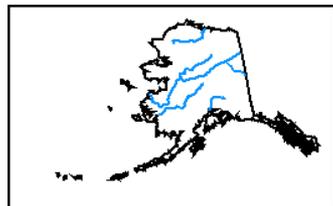


Author:  
Rich Tinker  
NOAA/NWS/NCEP/Climate Prediction Center

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

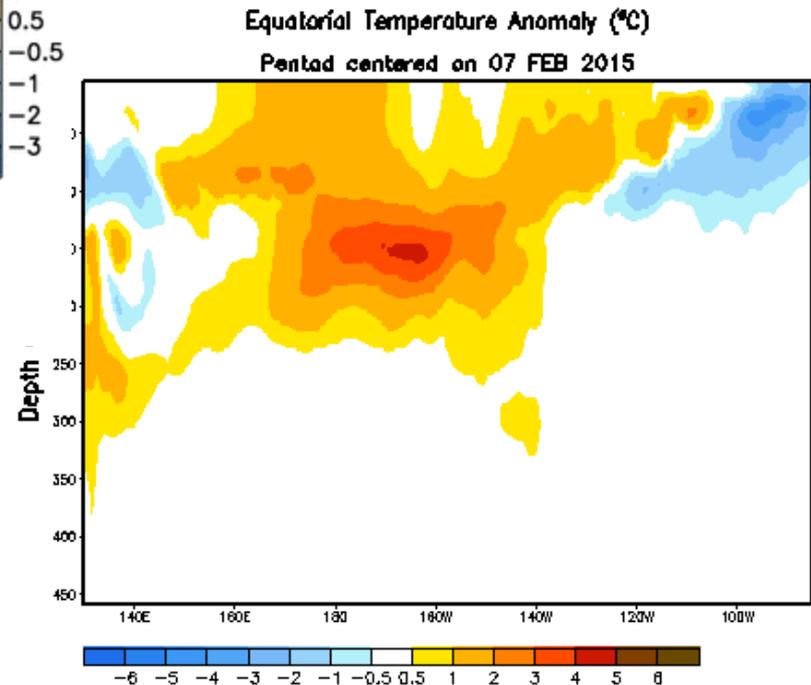
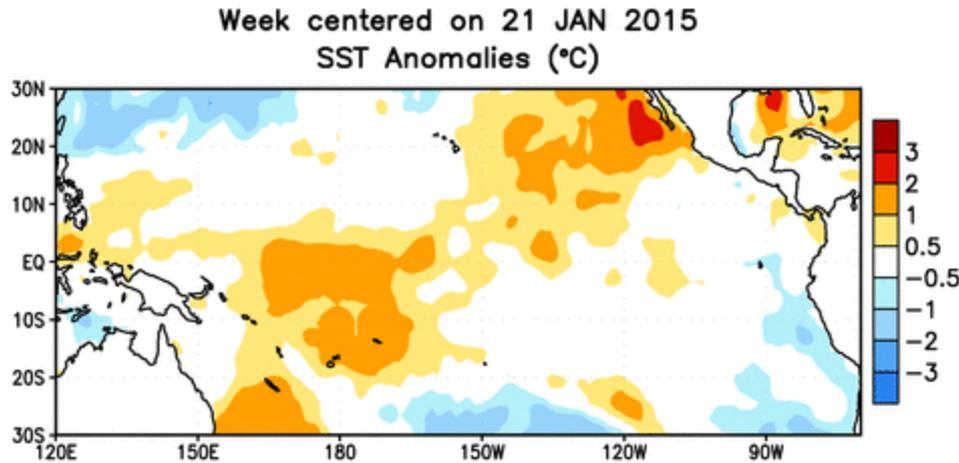
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

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



<http://go.usa.gov/hHTe>

# Warm water progression in Pacific



ENSO Alert System Status: El Niño Advisory

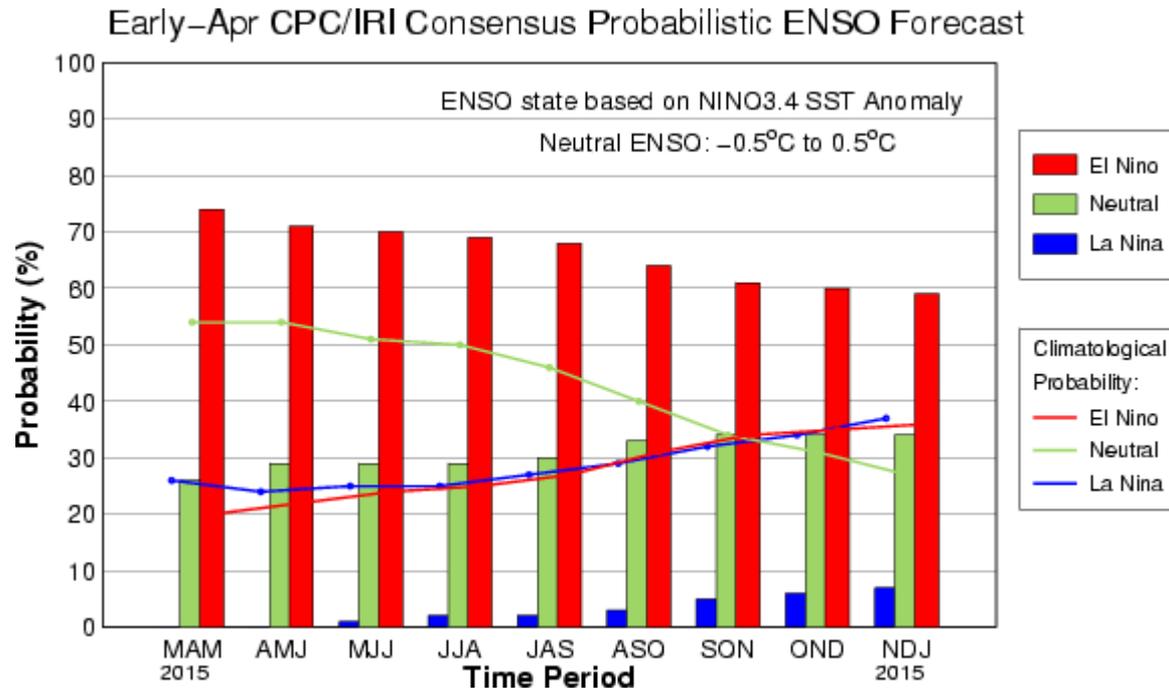
Large amount of warm water sub-surface  
Likely to continue.

CPC – Atmosphere acting like El Niño now

# CPC/IRI Probabilistic ENSO Outlook

Updated: 9 April 2015

The chance of El Niño is approximately 60-70% through 2015.





# Summary - Conditions

- \* Mostly warmer (except MI) recently
  - \* Generally drier conditions west/north - wetter (S. IL, IN, KY)
  - \* Soil temperature generally good
  - \* Soil moisture dry – surface particular except (S. IL, IN, KY)
- 
- \* Winter wheat better than last year still losses
  - \* Early progress on small grains
  - \* Corn a little slower than expected progress – getting ready to roll

# Summary - Outlooks

- \* El Nino – advisory. Impacts summer outlook
- \* Temps warmer likely far west, cooler late summer IA-IL
- \* Wetter conditions likely most of plains – equal chances elsewhere – dry Great Lakes
- \* Drought conditions will likely slightly worsen over plains before evening out or improving
- \* Begin improving central plains – develop in Great Lakes
- \* Limited spring flood potential west – convective only. Still some potential in the east
- \* Missouri River inflows dropping

## Further Information - Partners

- \* **Today's and Past Recorded Presentations and :**
- \* <http://mrcc.isws.illinois.edu/webinars.htm>
- \* <http://www.hprcc.unl.edu>
- NOAA's National Climatic Data Center: [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)
  - Monthly climate reports (U.S. & Global):  
[www.ncdc.noaa.gov/sotc/](http://www.ncdc.noaa.gov/sotc/)
- NOAA's Climate Prediction Center: [www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)
- Climate Portal: [www.climate.gov](http://www.climate.gov)
- U.S. Drought Portal: [www.drought.gov](http://www.drought.gov)
- National Drought Mitigation Center: <http://drought.unl.edu/>
- State climatologists
  - \* <http://www.stateclimate.org>
- Regional climate centers
  - \* <http://mrcc.isws.illinois.edu>
  - \* <http://www.hprcc.unl.edu>

# Thank You and Questions?

- \* Questions:

- \* **Climate:**

- \* Dennis Todey: [dennis.todey@sdstate.edu](mailto:dennis.todey@sdstate.edu) , 605-688-5141

- \* Doug Kluck: [doug.kluck@noaa.gov](mailto:doug.kluck@noaa.gov), 816-994-3008

- \* John Eise: [john.eise@noaa.gov](mailto:john.eise@noaa.gov), 816-268-3144

- \* Mike Timlin: [mtimlin@illinois.edu](mailto:mtimlin@illinois.edu); 217-333-8506

- \* Natalie Umphlett: [numphlett2@unl.edu](mailto:numphlett2@unl.edu) ; 402 472-6764

- \* Brian Fuchs: [bfuchs2@unl.edu](mailto:bfuchs2@unl.edu) 402 472-6775

- \* **Weather:**

- \* [crhroc@noaa.gov](mailto:crhroc@noaa.gov)