

# Great Plains and Midwest Climate Outlook

## August 20, 2015

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Illinois State Water Survey

University of Illinois

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# General Information

- **Providing climate services to the Central Region**
  - Collaboration with Dennis Todey (South Dakota State Climatologist), Jim Angel (Illinois State Climatologist), Doug Kluck and John Eise (NOAA), State Climatologists and the Midwest Regional Climate Center, High Plains Regional Climate Center, NOAAs Climate Prediction Center, Iowa State University, National Drought Mitigation Center
- **Next Climate/Drought Outlook Webinar**
  - September 17, 2015, Laura Edwards (SDSU Extension) and Brad Rippey USDA
- **Access to Future Climate Webinars and Information**
- <http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>
- **Past recorded presentations and slides can be found here:**
- <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu/webinars.php>
- **There will be time for questions at the end**

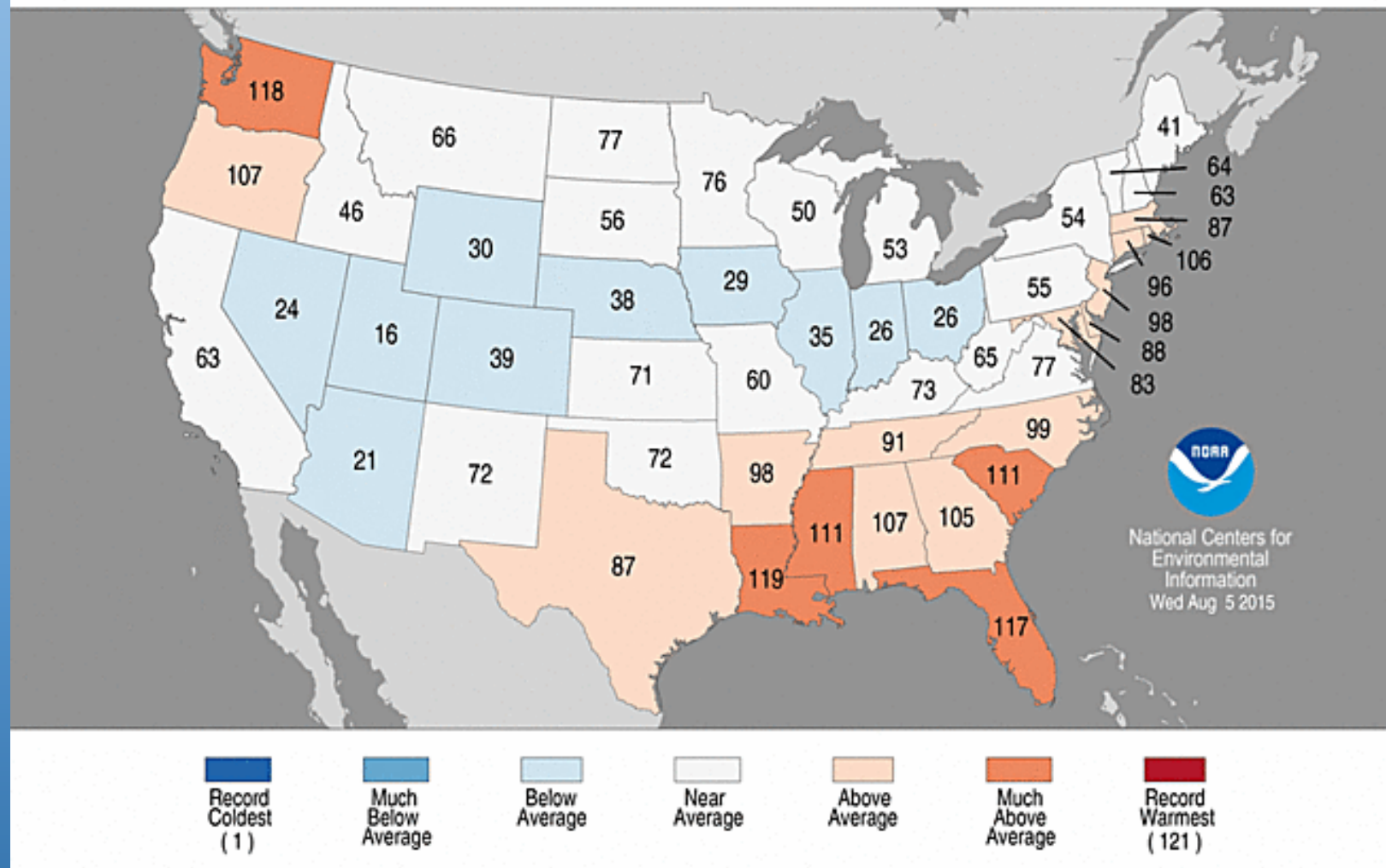
# Agenda

- July 2015
- Current conditions
- Impacts
- El Niño
- Outlooks

# Statewide Average Temperature Ranks

July 2015

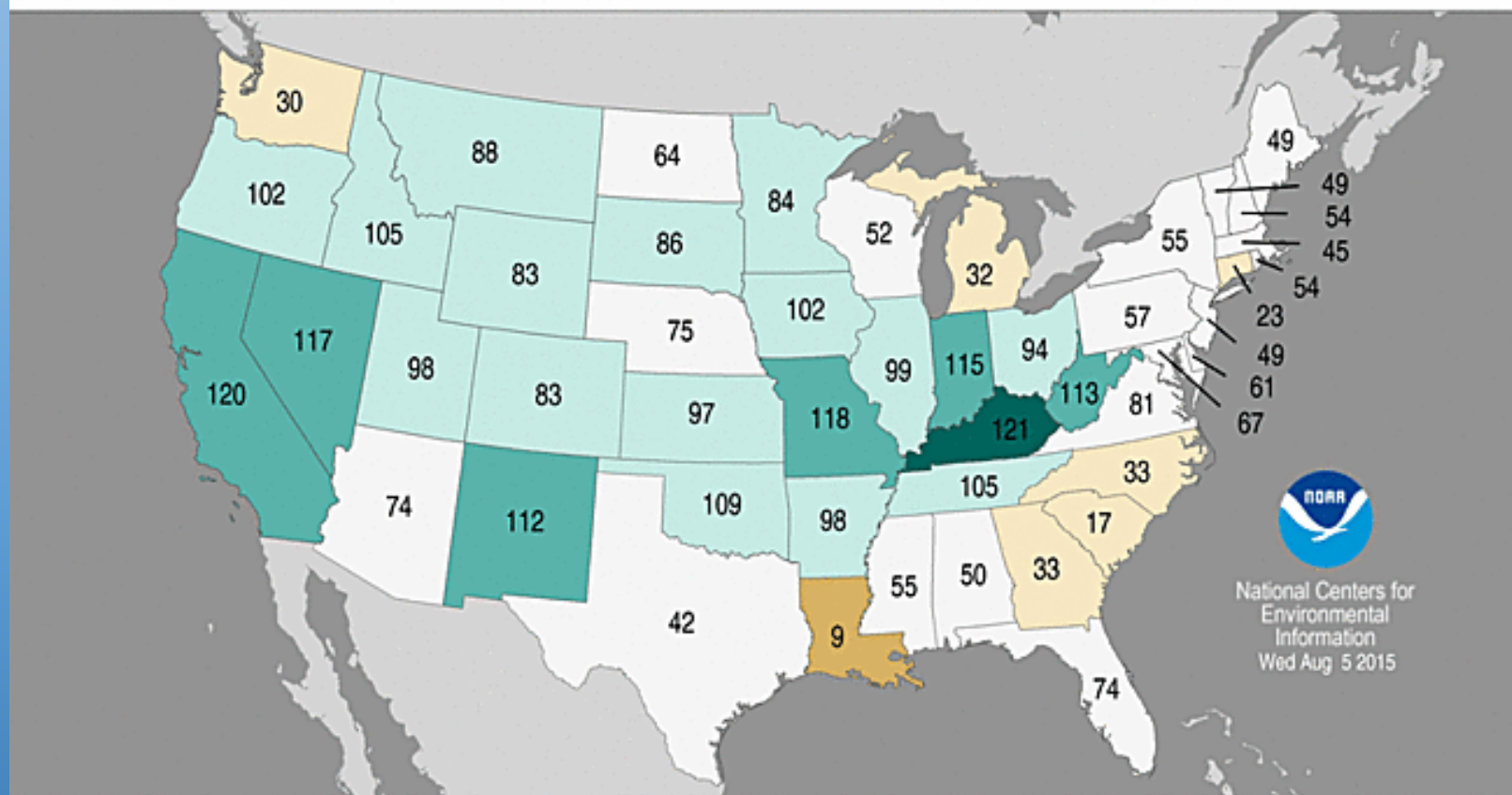
Period: 1895-2015



# Statewide Precipitation Ranks

July 2015

Period: 1895-2015



National Centers for  
Environmental  
Information  
Wed Aug 5 2015

Record  
Driest  
(1)

Much  
Below  
Average

Below  
Average

Near  
Average

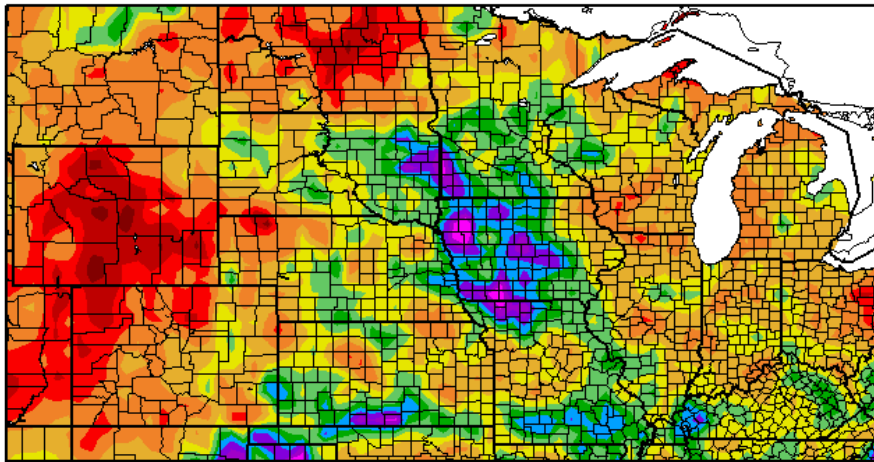
Above  
Average

Much  
Above  
Average

Record  
Wettest  
(121)

# 30-Day Precipitation

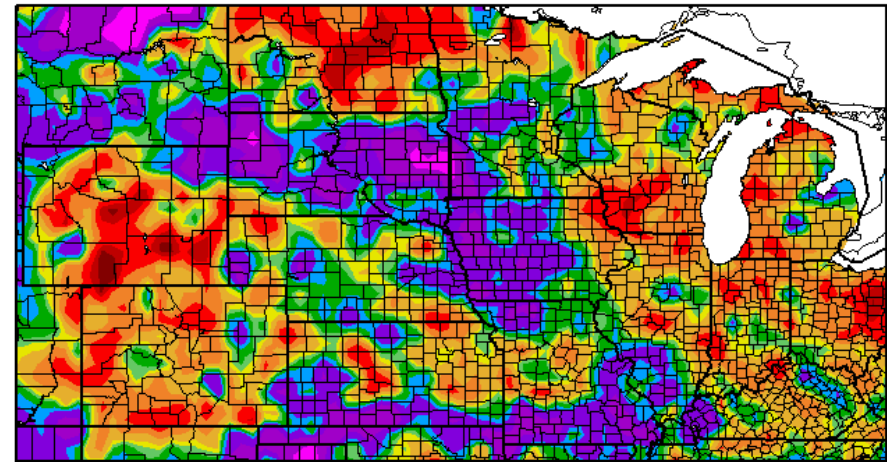
Precipitation (in)  
7/21/2015 – 8/19/2015



Generated 8/20/2015 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
7/21/2015 – 8/19/2015



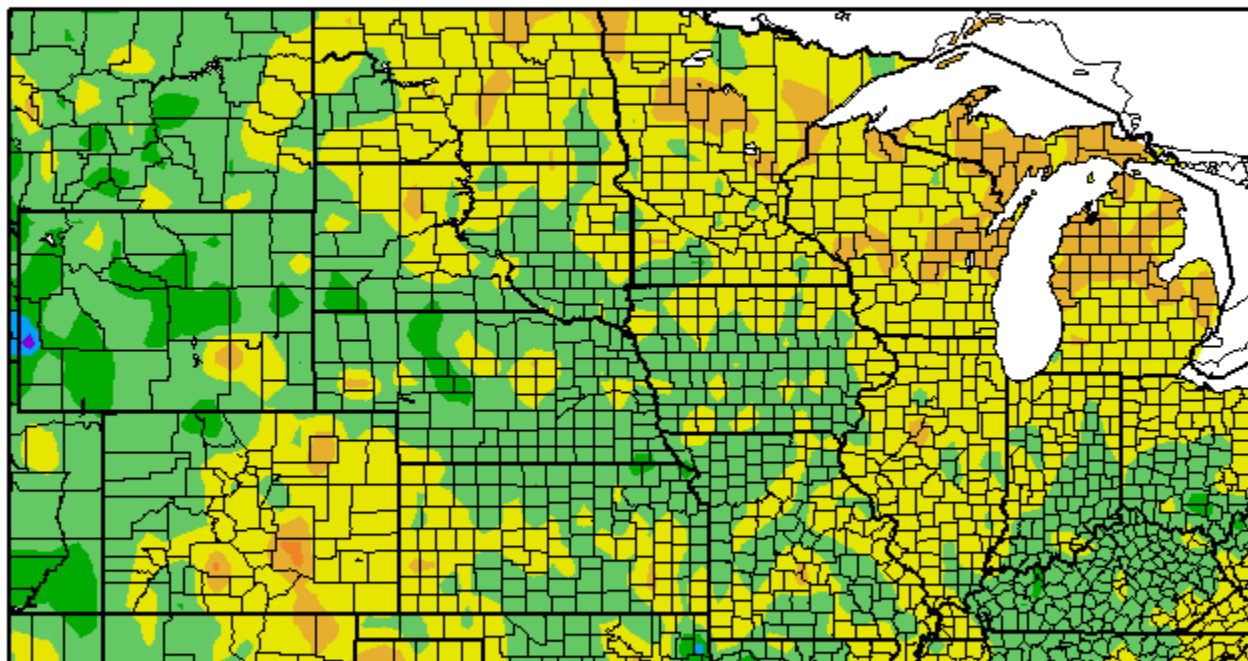
Generated 8/20/2015 at HPRCC using provisional data.

Regional Climate Centers

# 30-Day Temperature Departure

Departure from Normal Temperature (F)

7/21/2015 – 8/19/2015

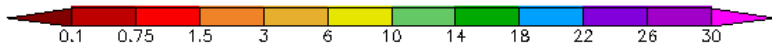
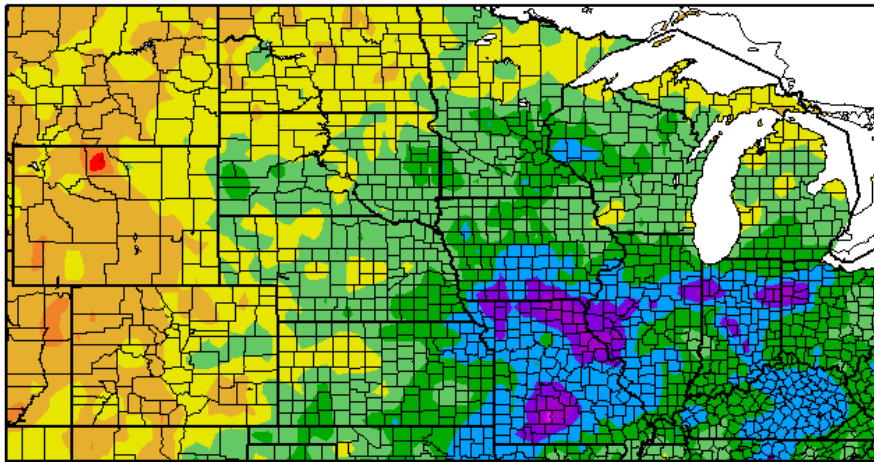


Generated 8/20/2015 at HPRCC using provisional data.

Regional Climate Centers

# 90-Day Precipitation

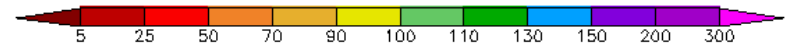
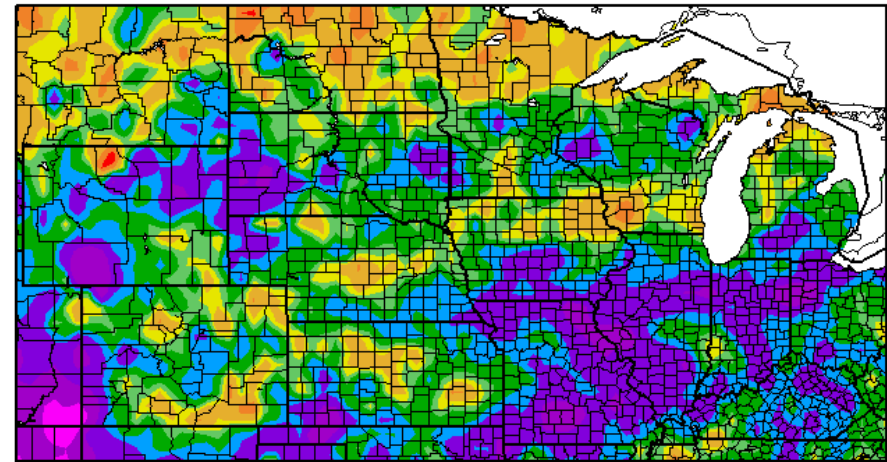
Precipitation (in)  
5/22/2015 – 8/19/2015



Generated 8/20/2015 at HPRCC using provisional data.

Regional Climate Centers

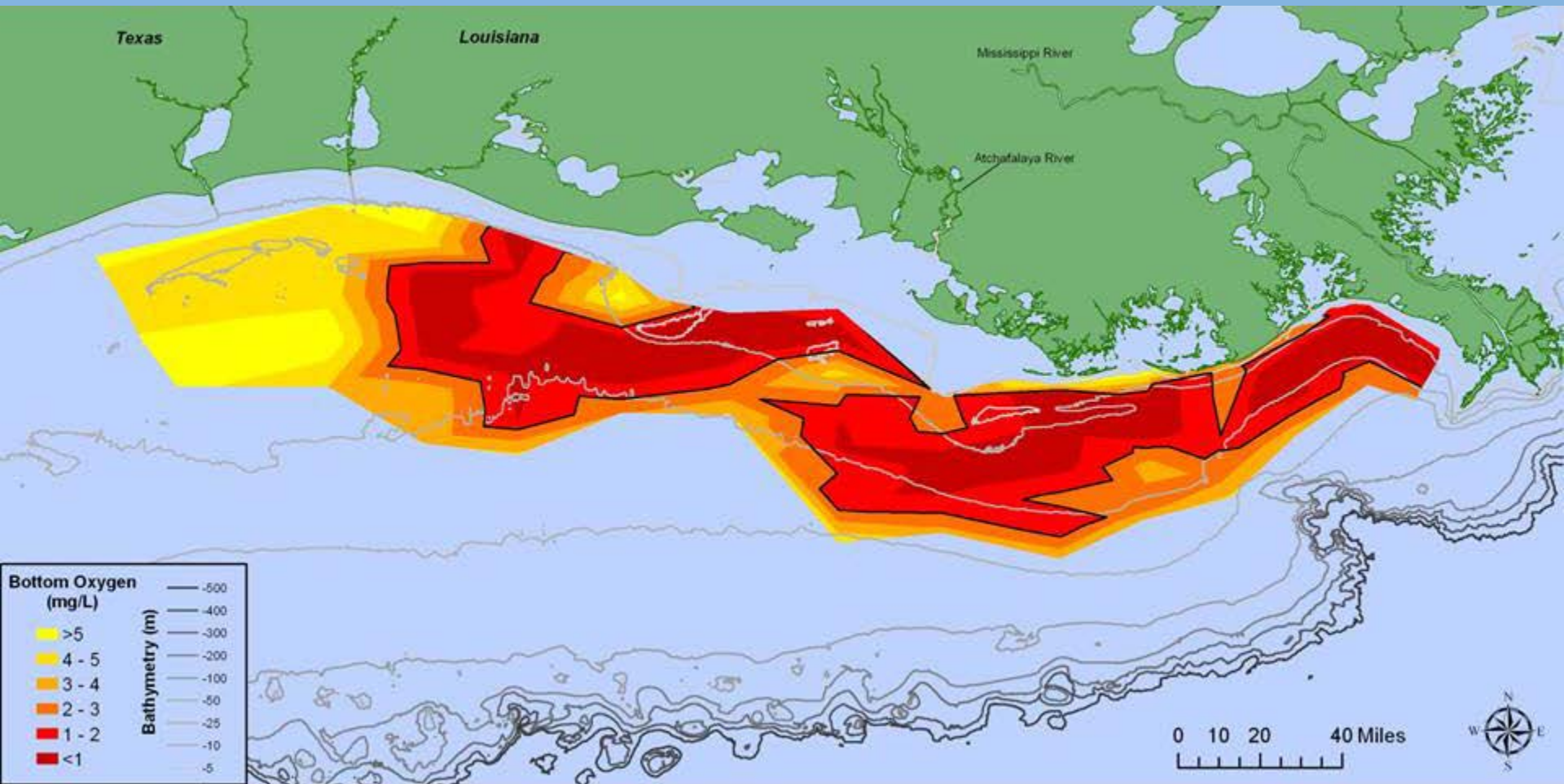
Percent of Normal Precipitation (%)  
5/22/2015 – 8/19/2015



Generated 8/20/2015 at HPRCC using provisional data.

Regional Climate Centers

# Result of June Rains - Gulf of Mexico Hypoxia



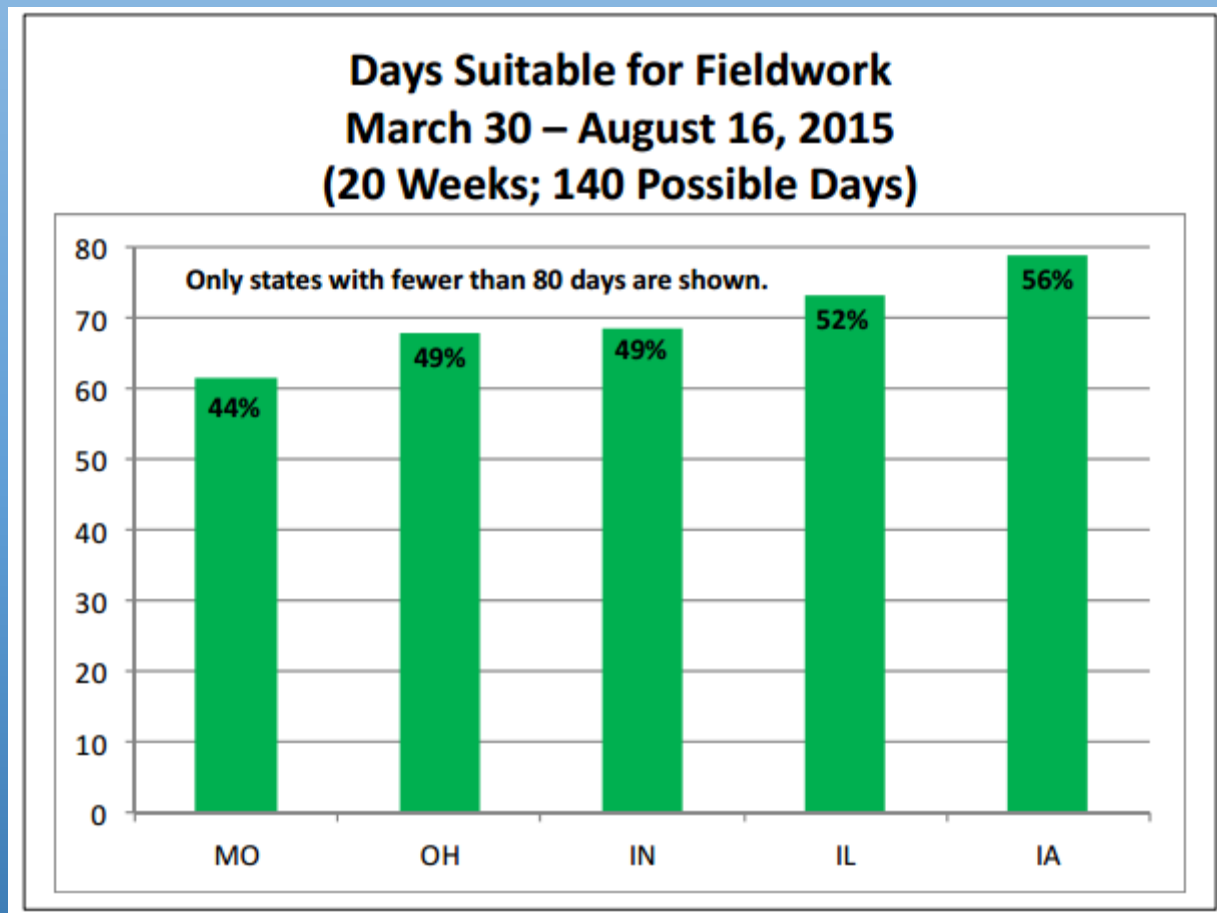
NOAA press release: 6,500 square miles and 1,000 square miles above average

# Result of Heavy Rains - Lake Erie Algae Bloom in August 2015



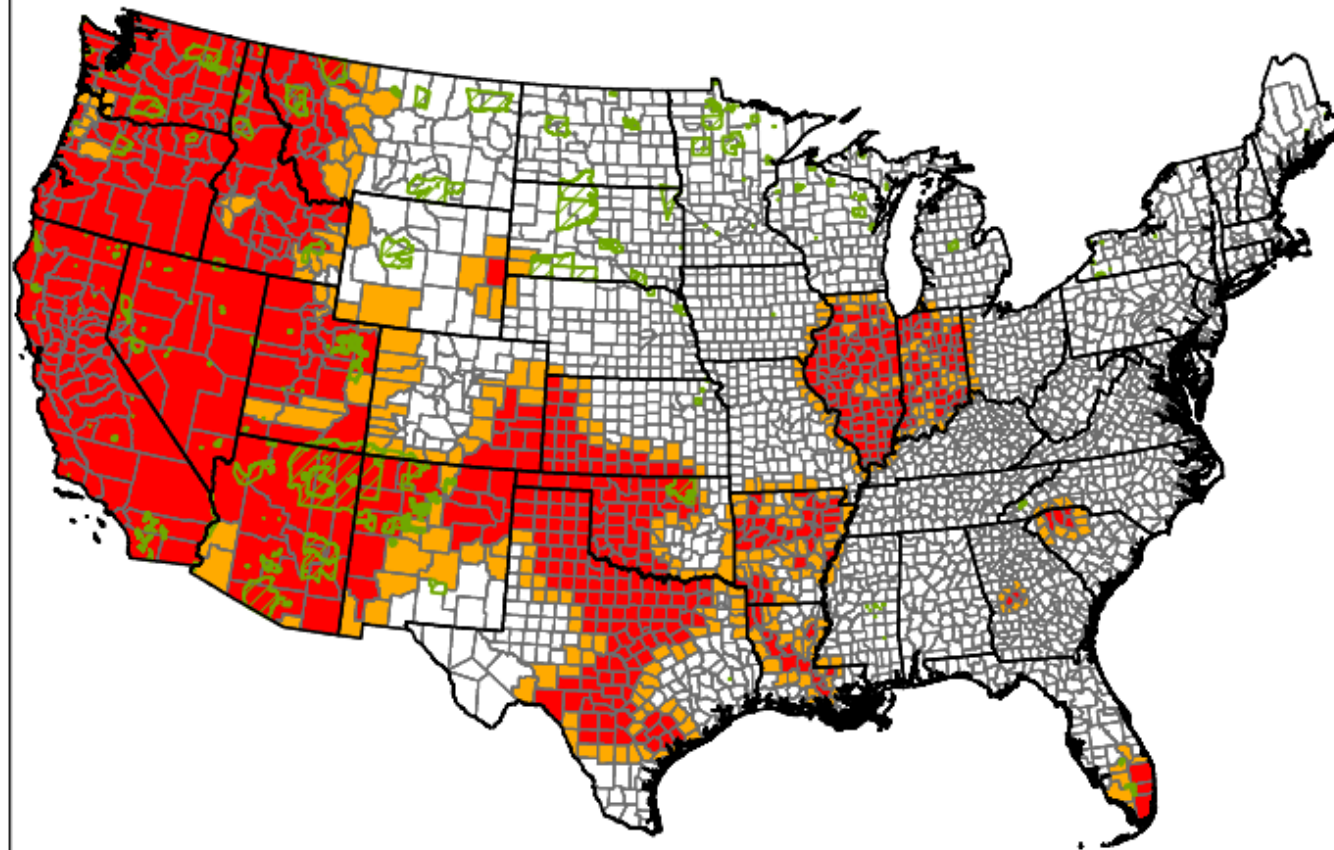
Source: <http://earthobservatory.nasa.gov/>

# Days Suitable for Fieldwork - USDA



# Secretarial Disaster Designations - CY 2015

Primary and Contiguous Counties Designated for 2015 Crop Disaster Losses



## All Secretarial Designations as of August 19, 2015

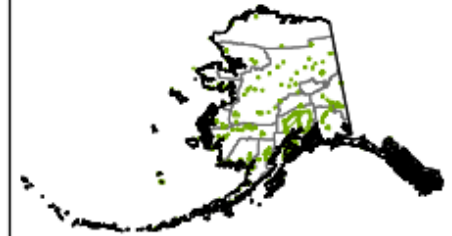
Total All Crop Approved Designations

-  State Boundary
-  County Boundary
-  Tribal Lands
-  Primary Counties: 640
-  Contiguous Counties: 375



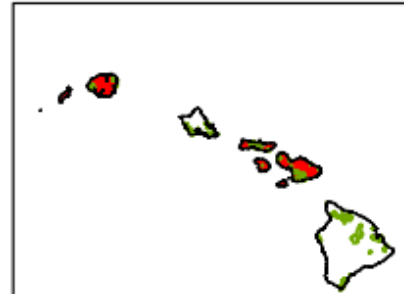
USDA Farm Service Agency  
Production, Emergencies and Compliance Division  
Washington, D.C.  
August 19, 2015

1:23,520,203



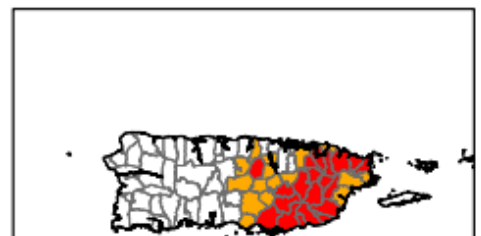
Alaska

1:58,102,399



Hawaii

1:19,740,053

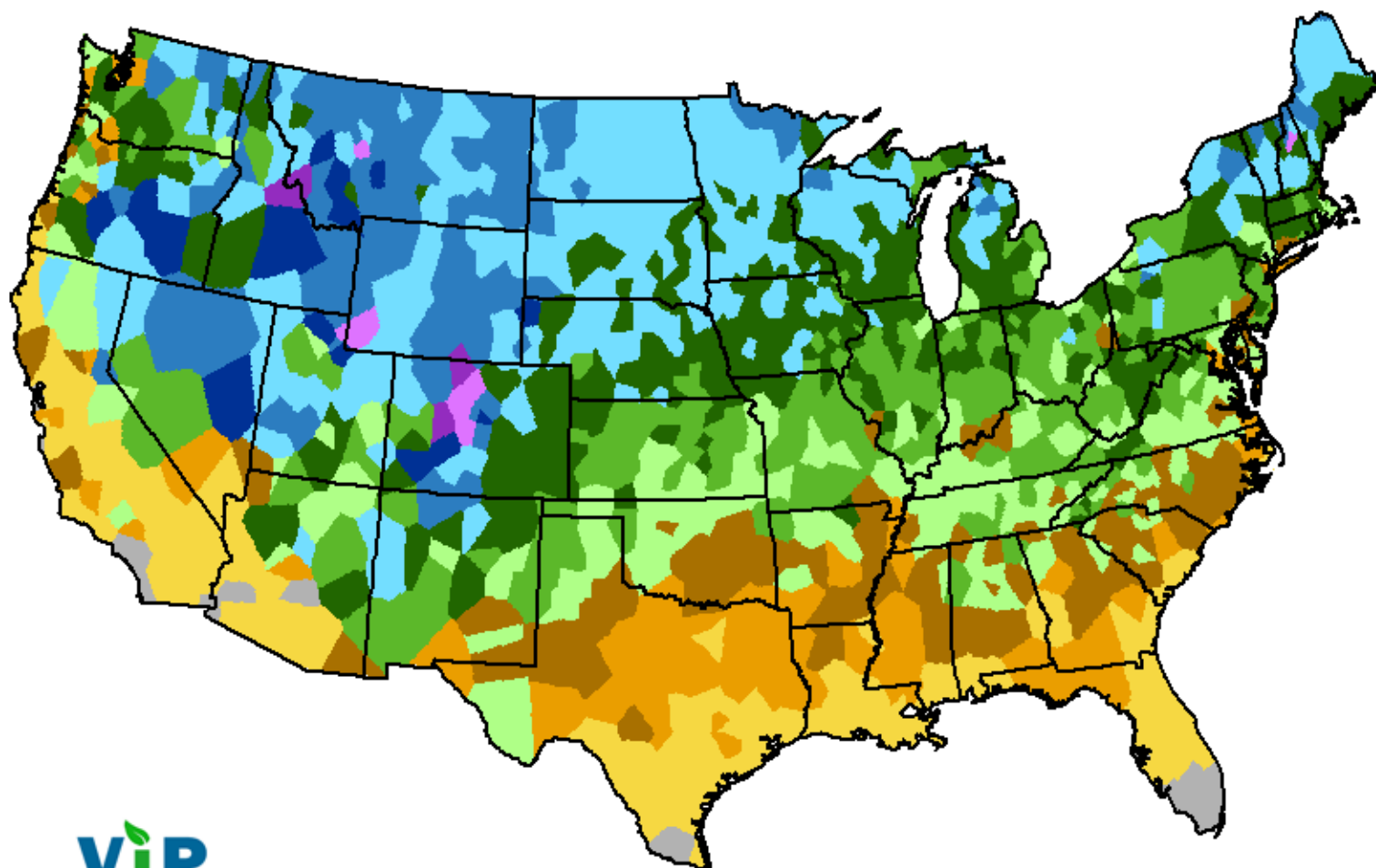
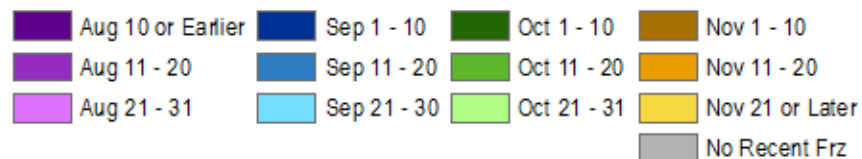


Puerto Rico

1:5,592,808

Climatological Date of Median First 32°F Freeze  
For the years from 1980-81 to 2009-10

Median Defined as 50th Percentile



# Agriculture Issues

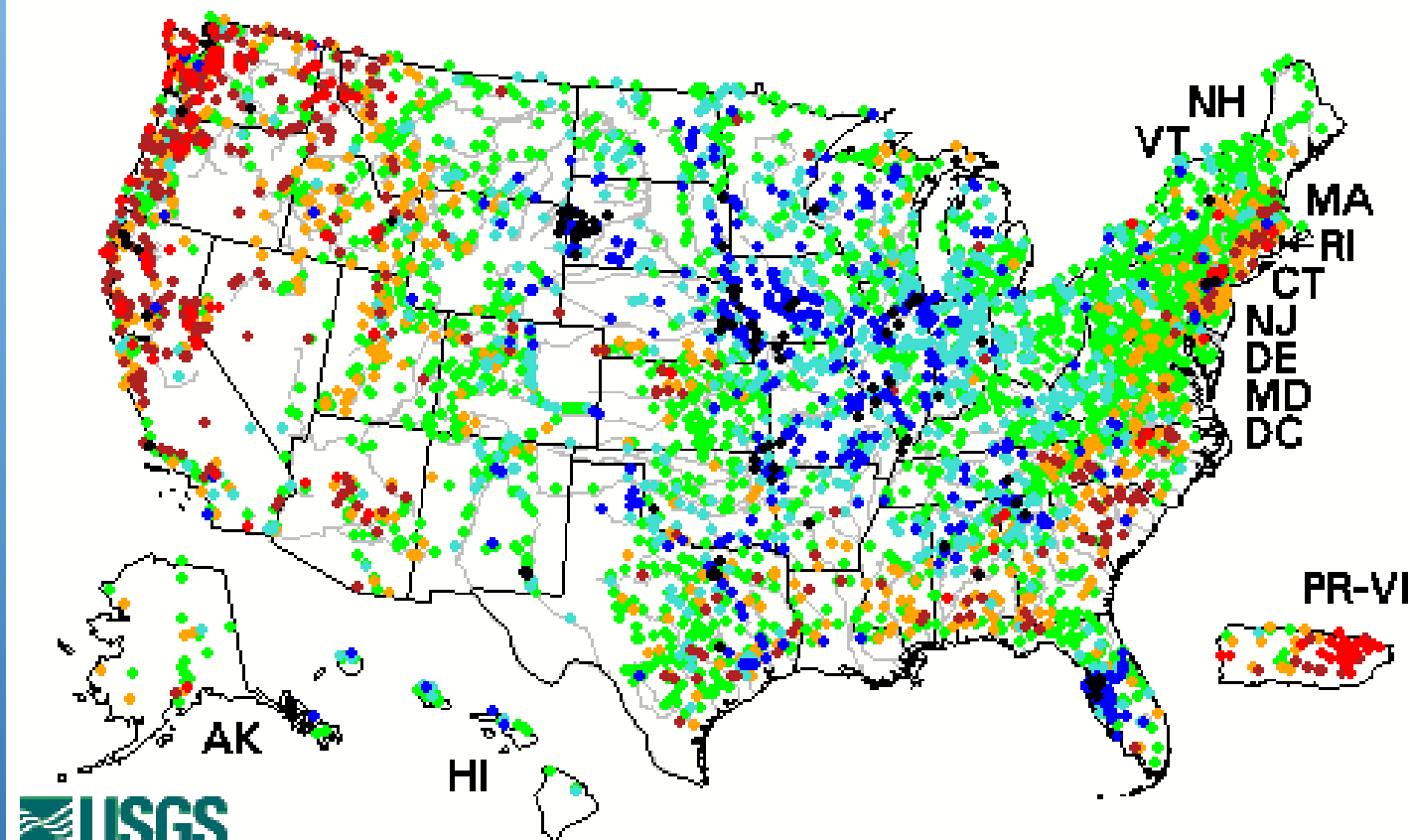
- Prevented Planting, especially soybeans
- Delayed planting
- Slow development
- Poor root development, limiting water and nutrient uptake
- Uneven yield within fields due to drainage
- Concern of a wet fall in areas where soils are unusually wet
- Concern of an early frost

# And Yet ....

- 10% of Corn Crop rated poor to very poor
- US corn yield: 168.8 bu/acre, down 2.2 bu/acre from 2014
- 11% of Soybean Crop rated poor to very poor
- US soybean yield: 46.9 bu/acre, down 0.9 bu/acre from 2014
- Winter wheat yield: 43.2 bu/acre, up 0.6 from 2014
- Numbers from the August USDA report and posted in the *Weekly Weather and Crop Bulletin*

# Stream Flow - USGS

Wednesday, August 19, 2015 16:30ET



## Explanation

- High
- > 90th percentile
- 76th - 90th percentile
- 25th - 75th percentile
- 10th - 24th percentile
- < 10th percentile
- Low
- Not ranked

<http://waterdata.usgs.gov/nwis/rt>

# Great Lakes Water Levels

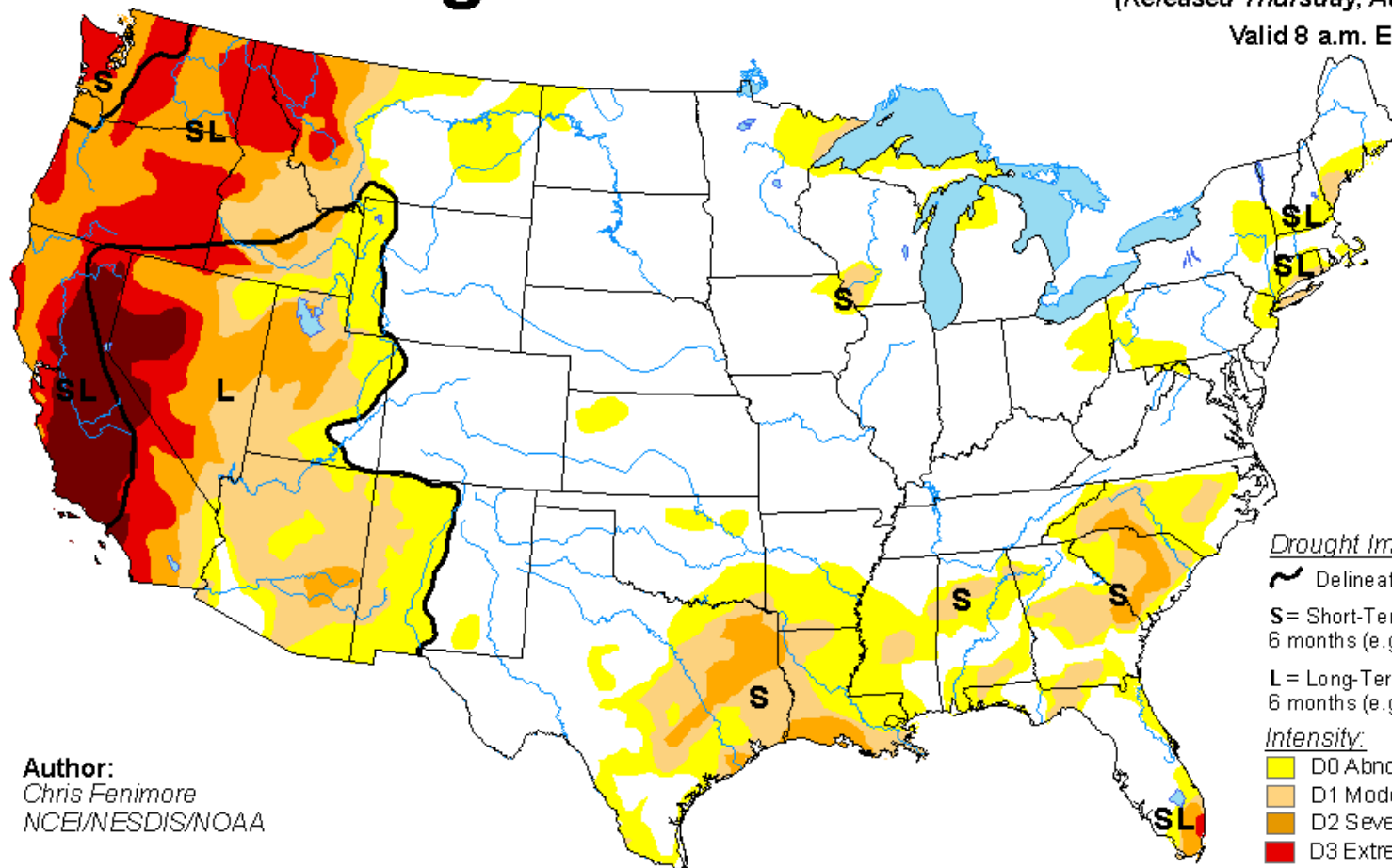
| Lake                     | Departure from long-term average for August |
|--------------------------|---------------------------------------------|
| Lake Superior            | +6 inches                                   |
| Lakes Michigan and Huron | +7 inches                                   |
| Lake St. Clair           | +15 inches                                  |
| Lake Erie                | +16 inches                                  |
| Lake Ontario             | +9 inches                                   |

# U.S. Drought Monitor

August 18, 2015

(Released Thursday, Aug. 20, 2015)

Valid 8 a.m. EDT



Author:  
Chris Fenimore  
NCE/NESDIS/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:

Yellow D0 Abnormally Dry

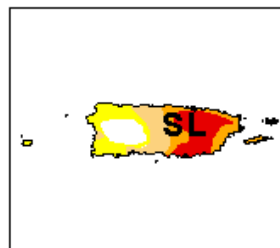
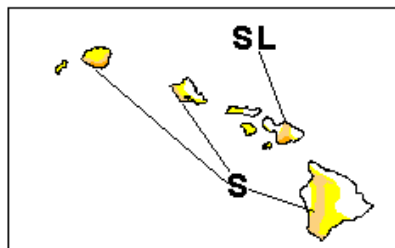
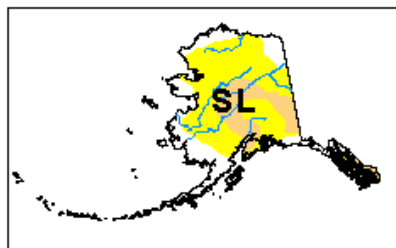
Light Orange D1 Moderate Drought

Dark Orange D2 Severe Drought

Red D3 Extreme Drought

Dark Red D4 Exceptional Drought

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

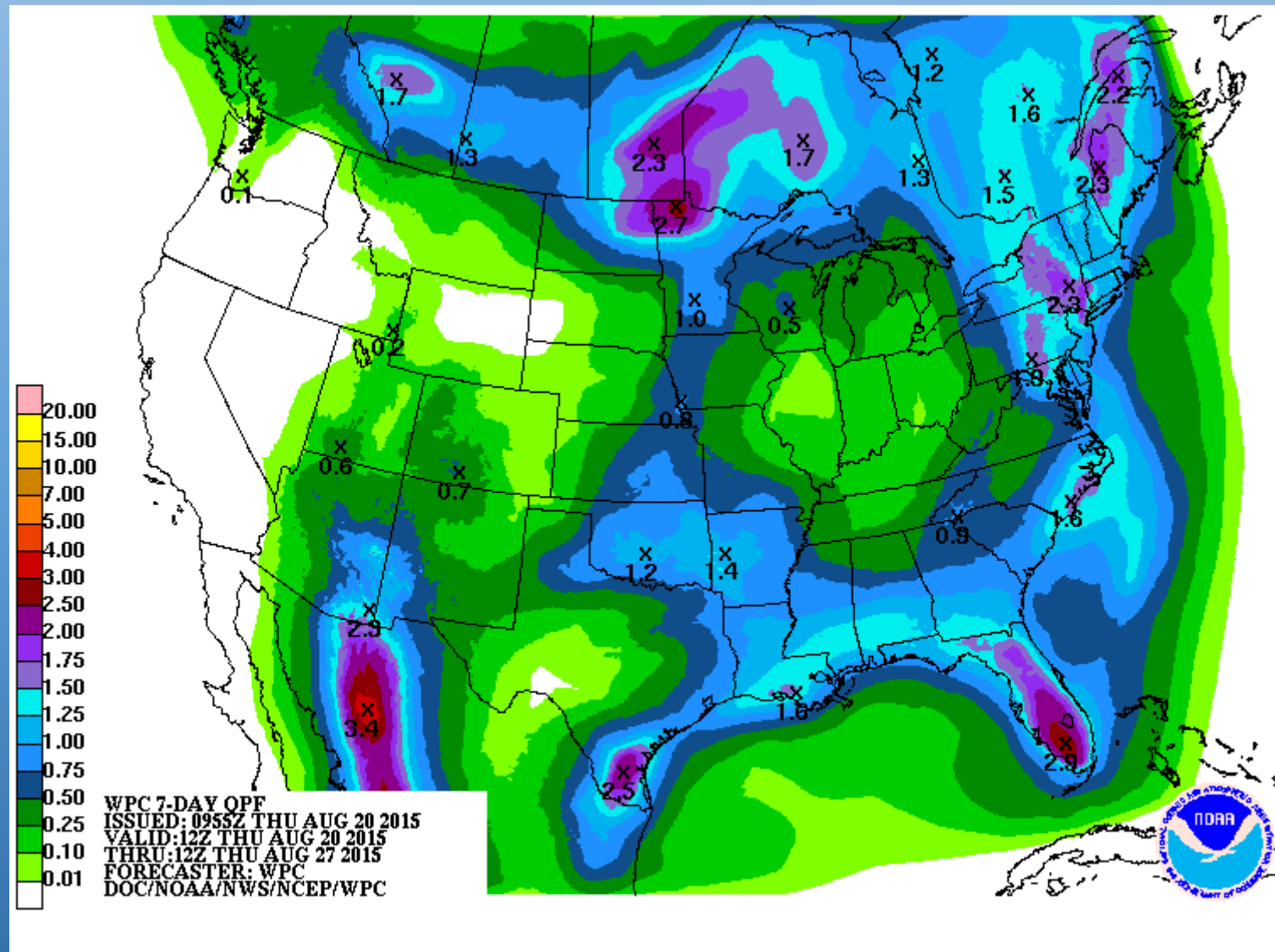


<http://droughtmonitor.unl.edu/>

# Climate Outlooks

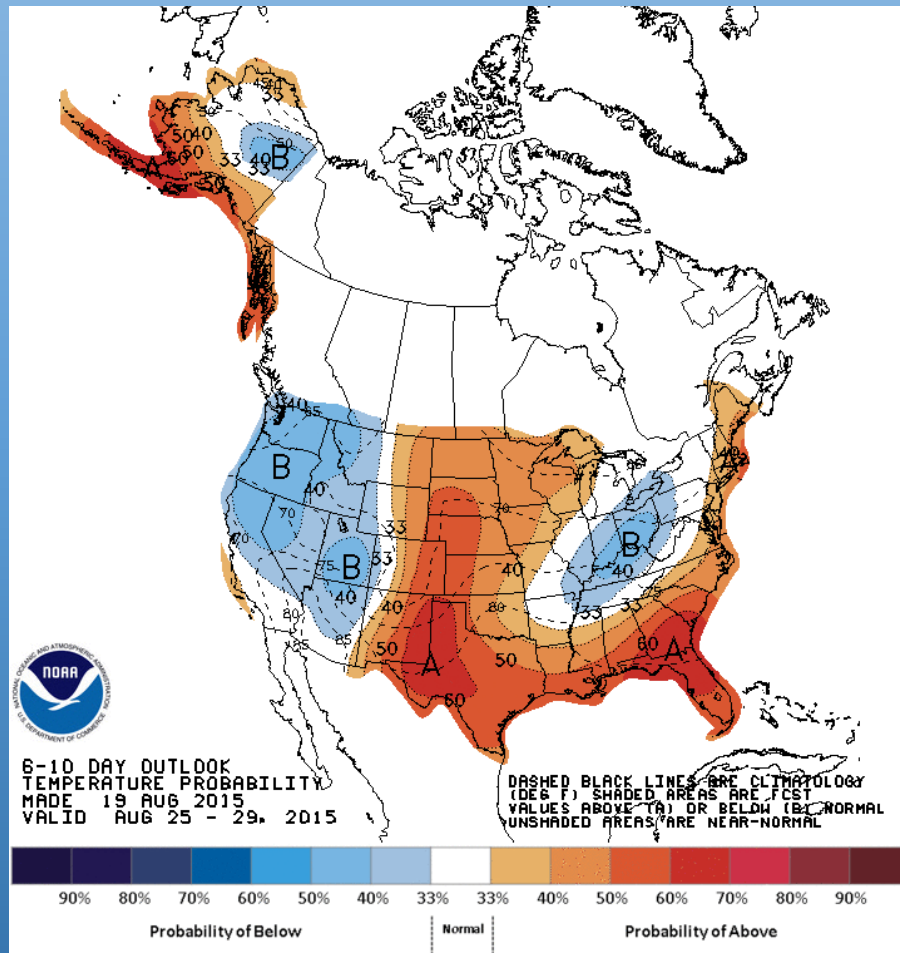
- 7-day precipitation forecast
- 6-10, 8-14 day outlook
- September
- Fall, Winter, Spring
- Drought Outlook

# Forecast Precipitation Amounts (7 day)

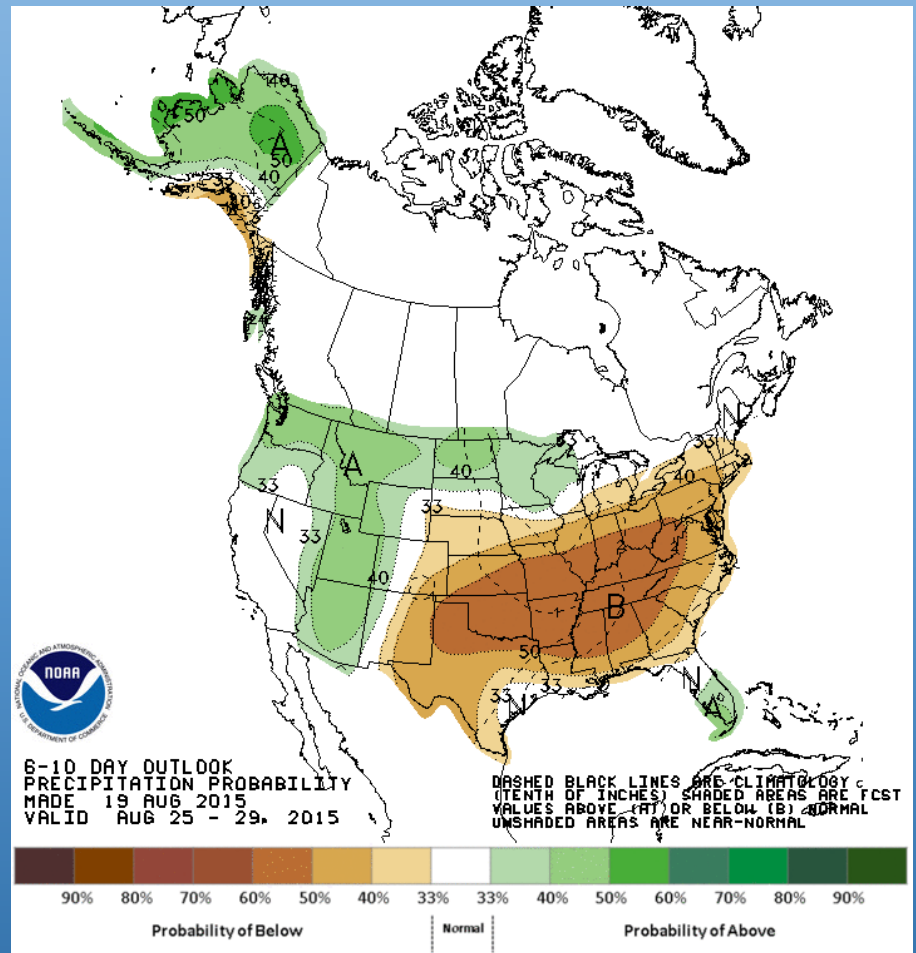


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

# 6-10 Day Forecast for Aug 25 – 29, 2015

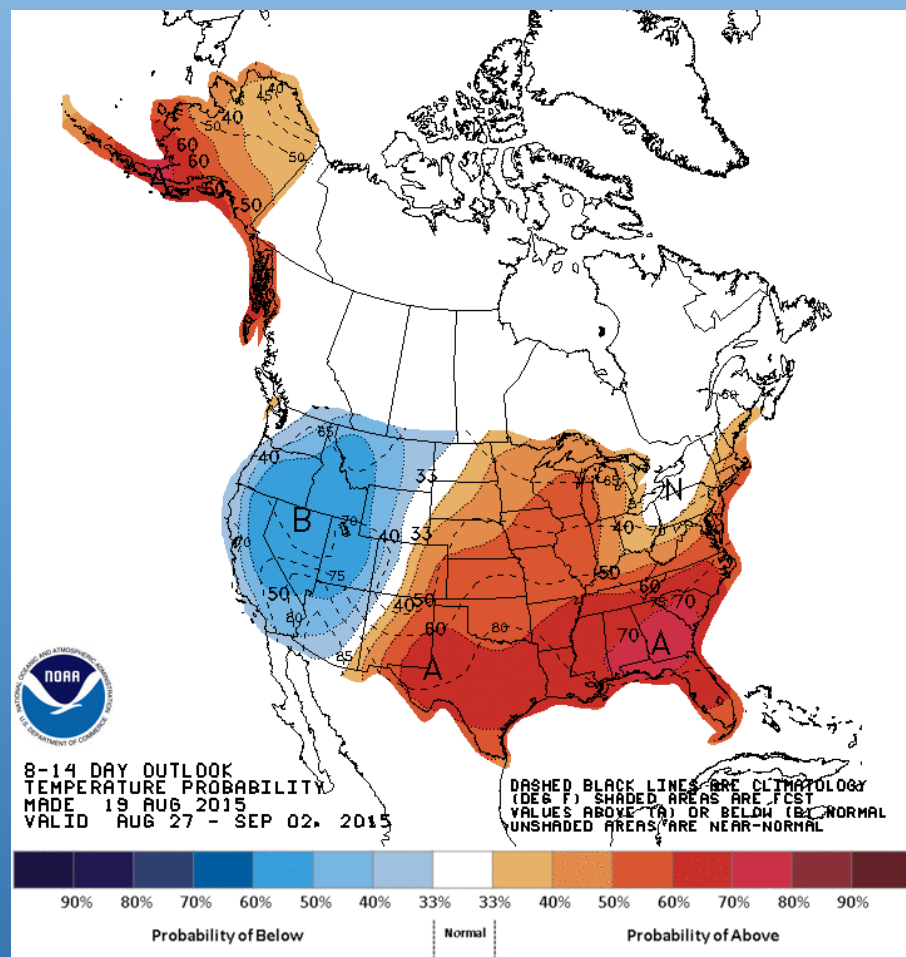


Temperature

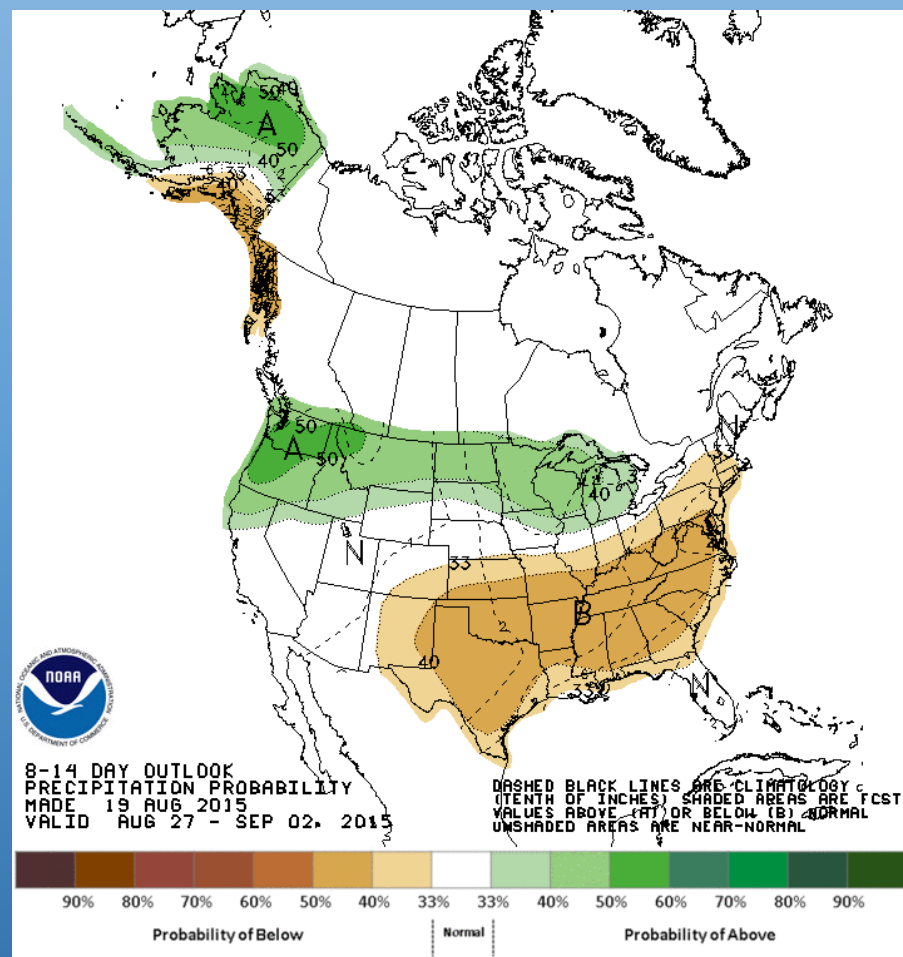


Precipitation

# 8-14 Day Forecast for Aug 27 – Sep 02, 2015



Temperature



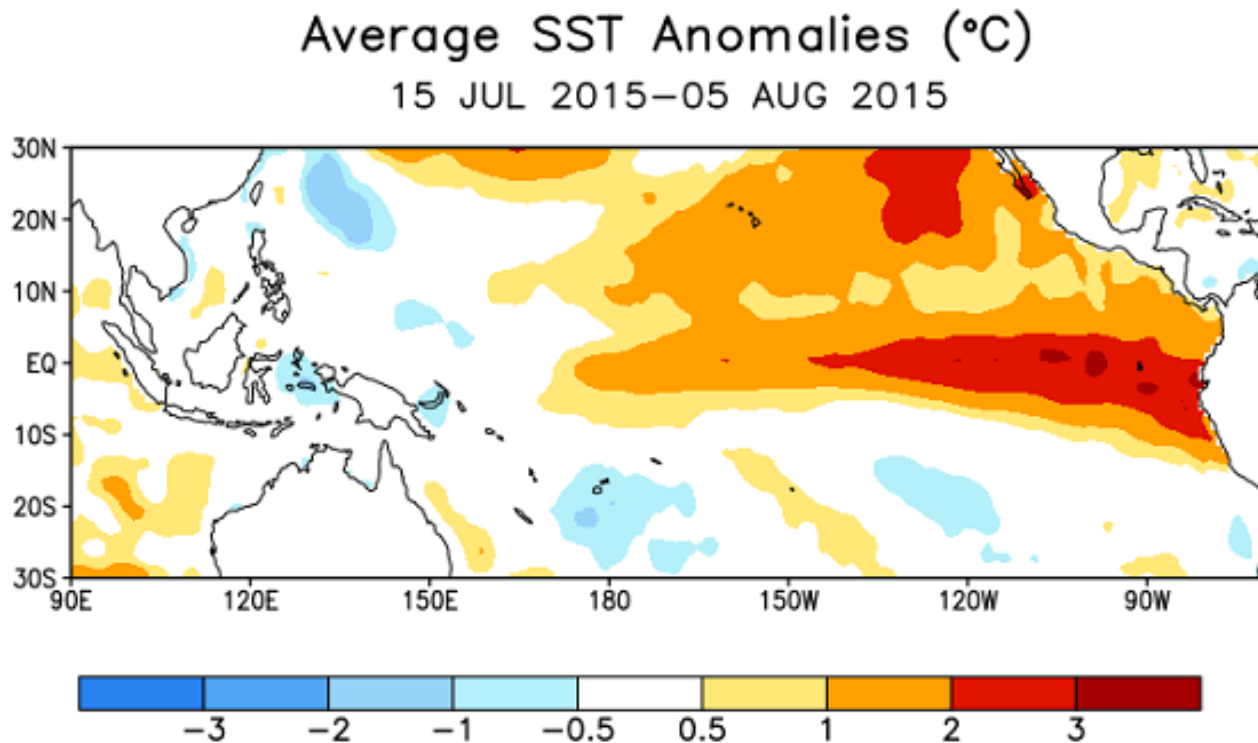
Precipitation

# El Niño

- Warmer waters in the eastern Pacific Ocean
- Life-cycle:
  - Starts spring/summer
  - Fully developed fall and winter
  - Fades by next spring/summer



# Climate.gov – ENSO Blog



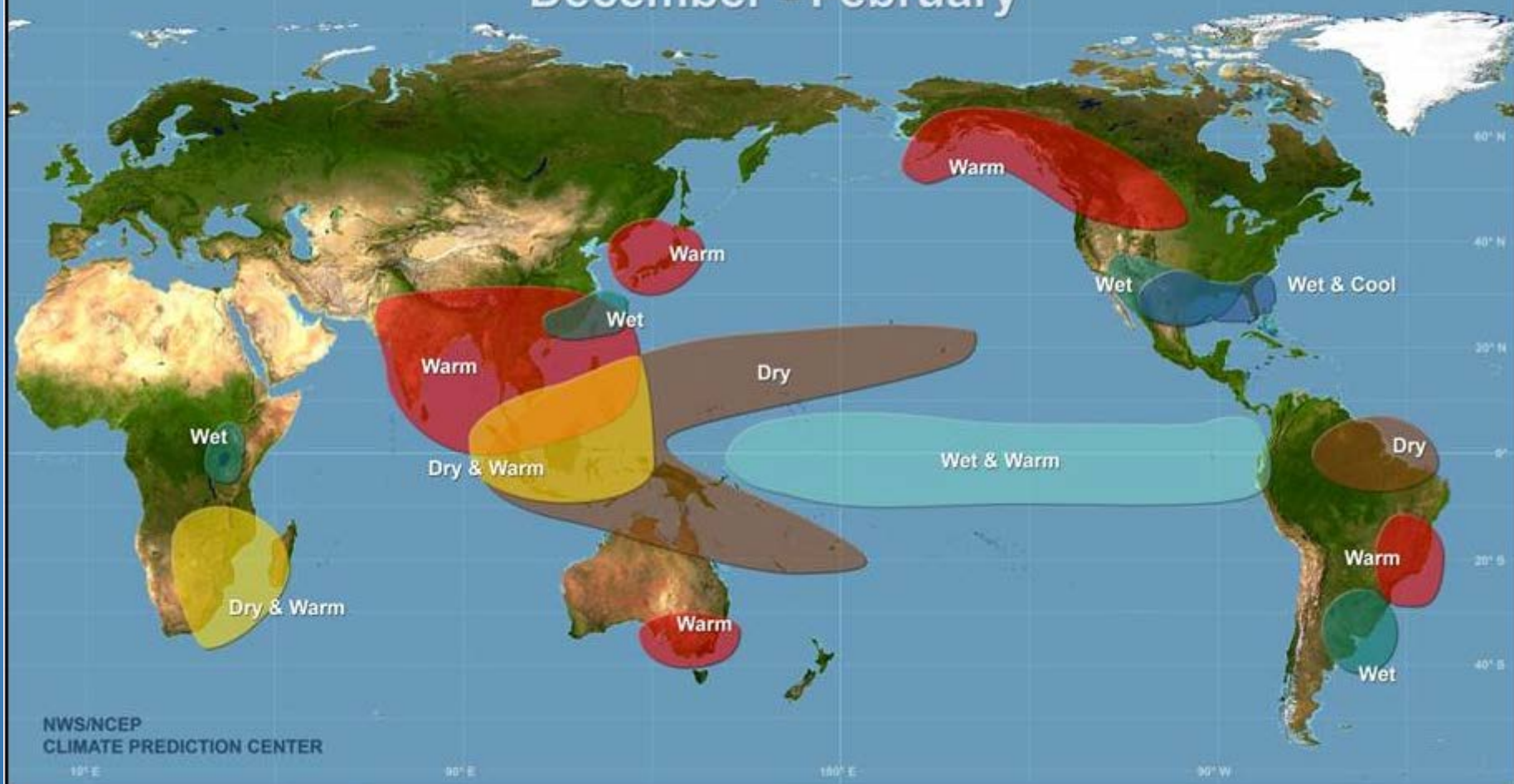
# El Niño

- El Niño – Ongoing
- >90 % chance of continuing this winter
- 85 % chance of staying next spring

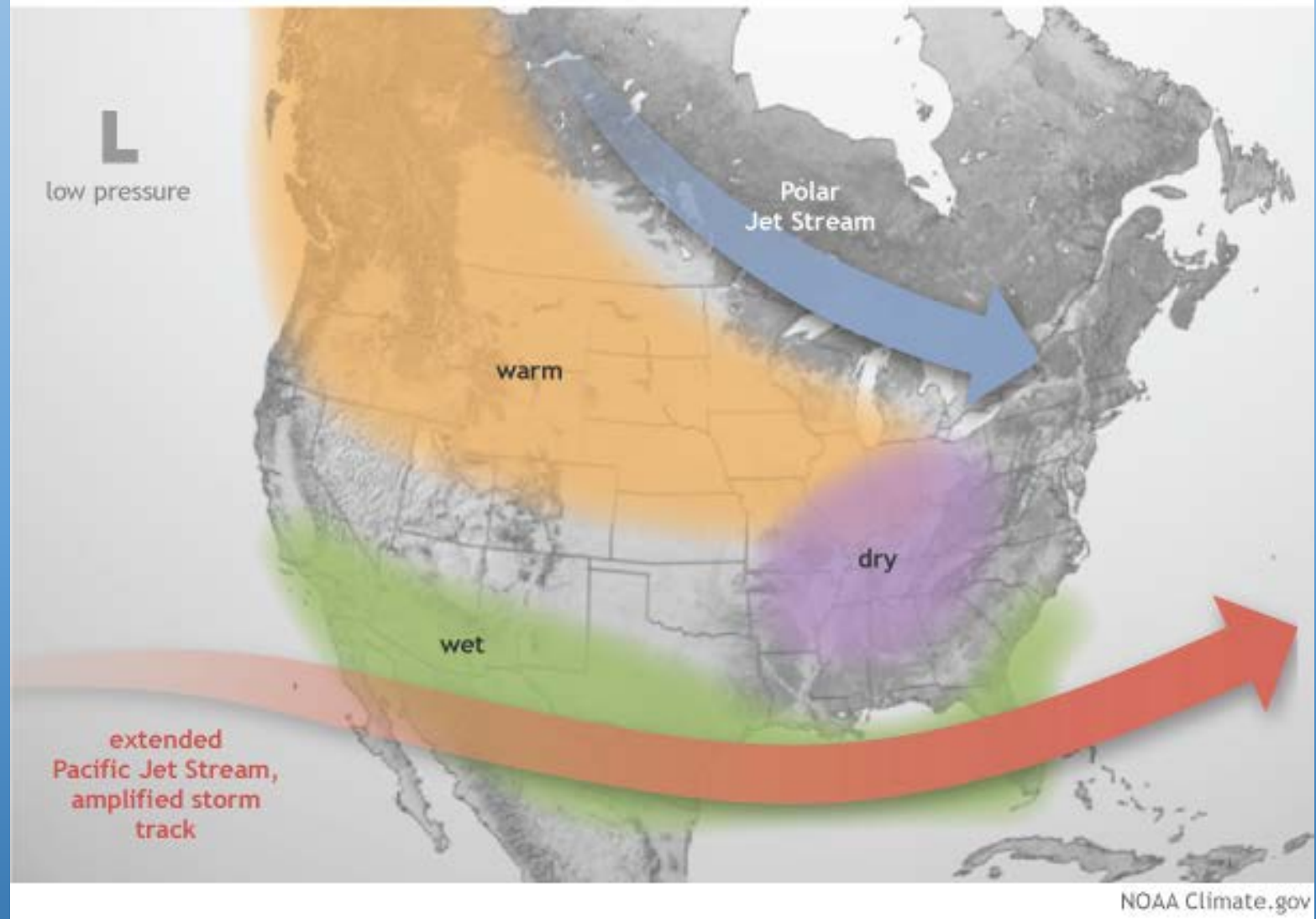


# Warm Episode Relationships

## December - February

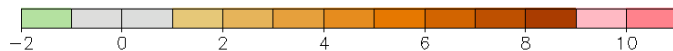
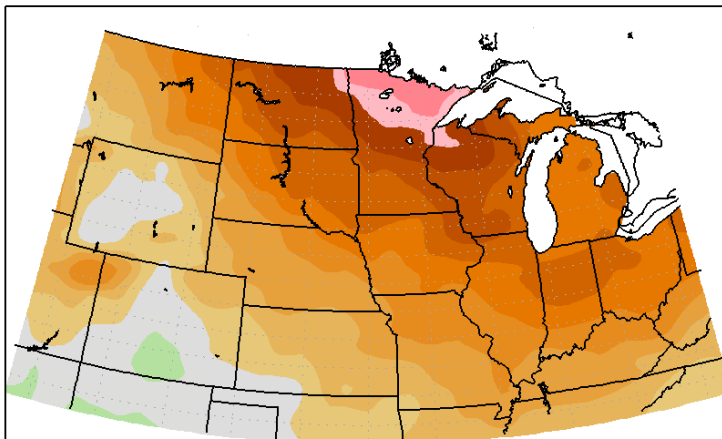


## Wintertime El Niño pattern



No two El Niño's are the same - even strong events can differ. That is why we use phrases like “tendency”, “tilts the odds”, or “increases the chances”

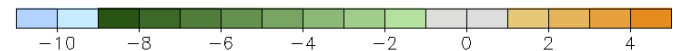
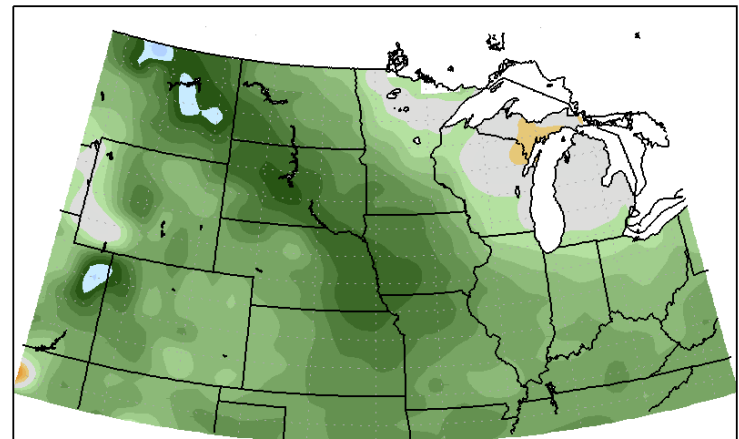
Average Temperature (°F): Departure from Mean  
December 1, 1997 to February 28, 1998



Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 8/20/2015 9:33:47 AM CDT

1997-98 El Niño, Warm Winter

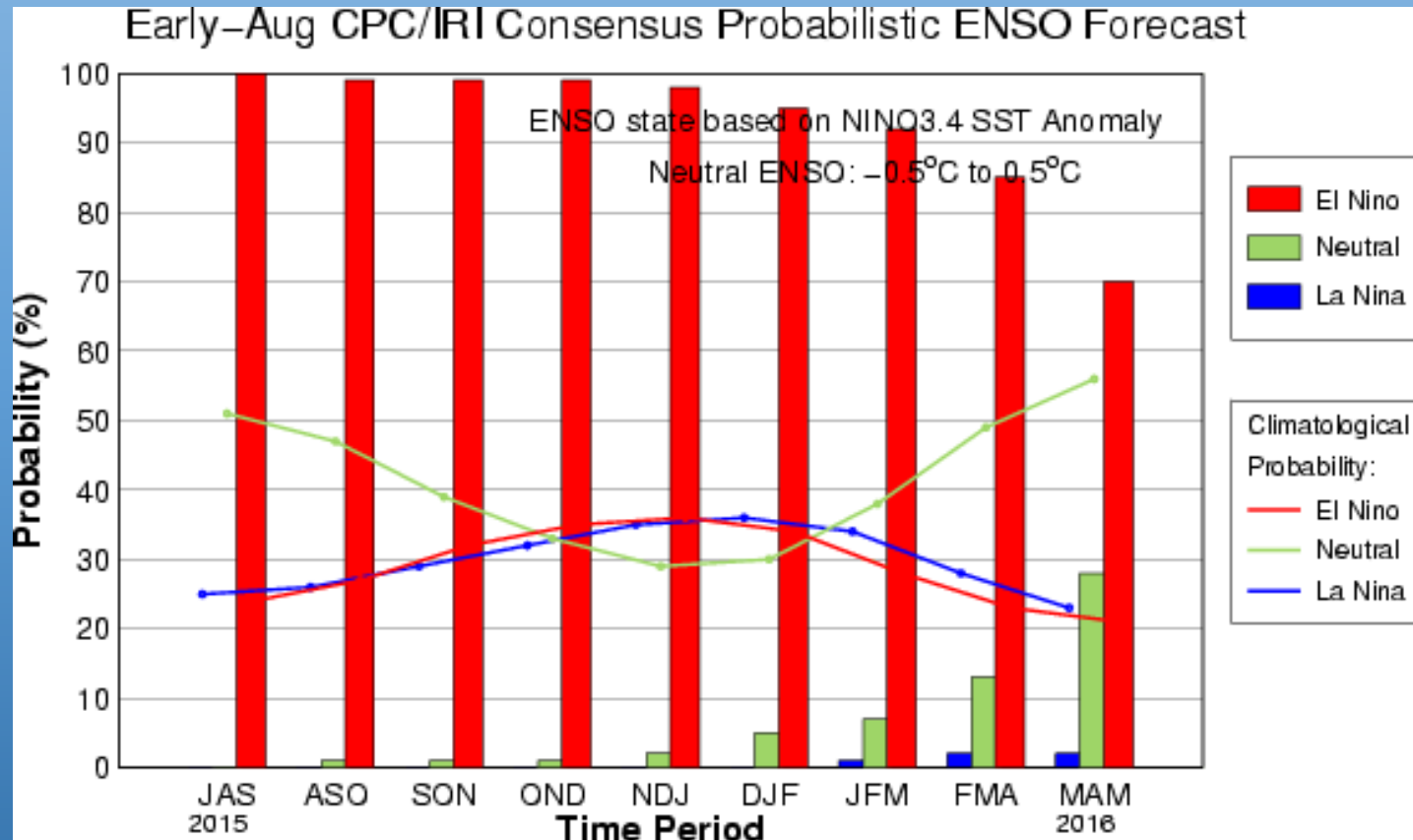
Average Temperature (°F): Departure from Mean  
December 1, 2009 to February 28, 2010



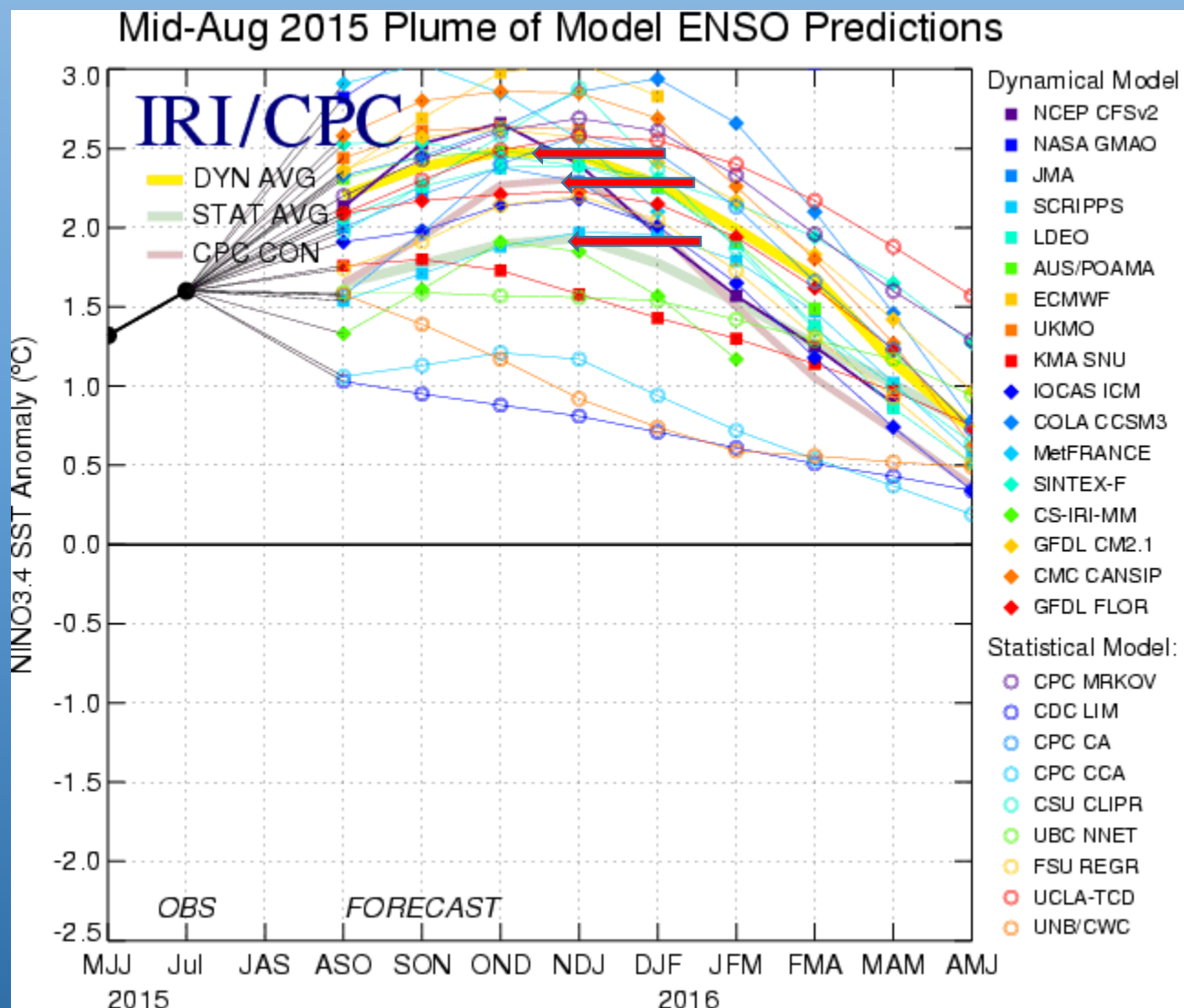
Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 8/20/2015 9:34:31 AM CDT

2009-10 El Niño, Cold Winter

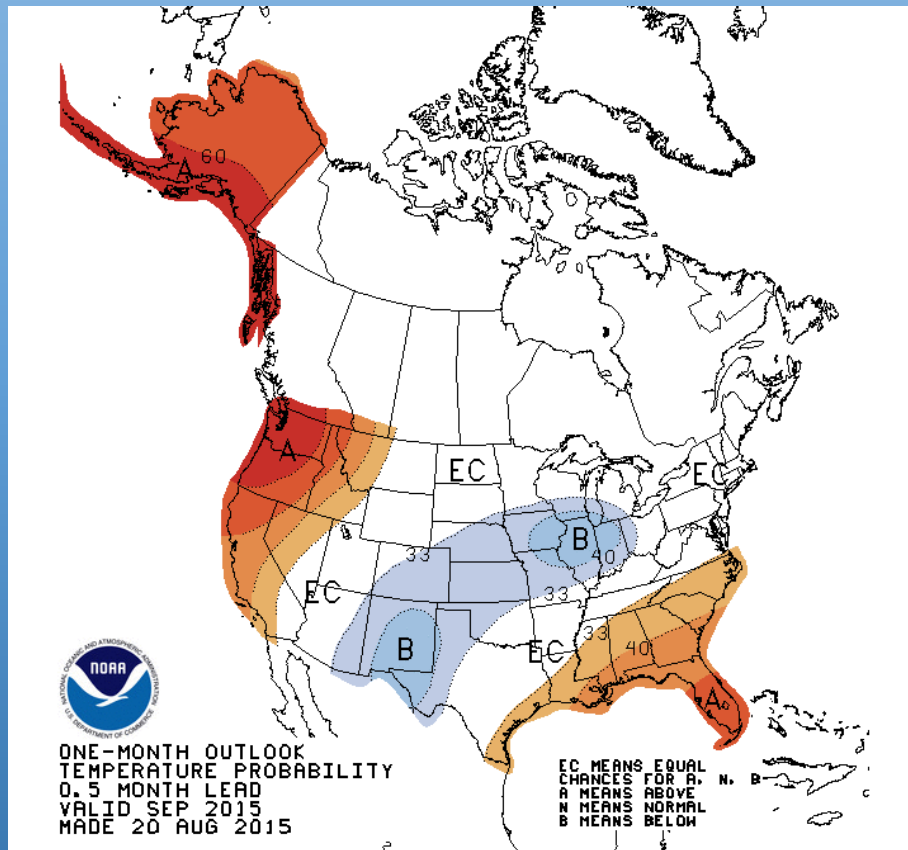
# ENSO Forecast (CPC/IRI)



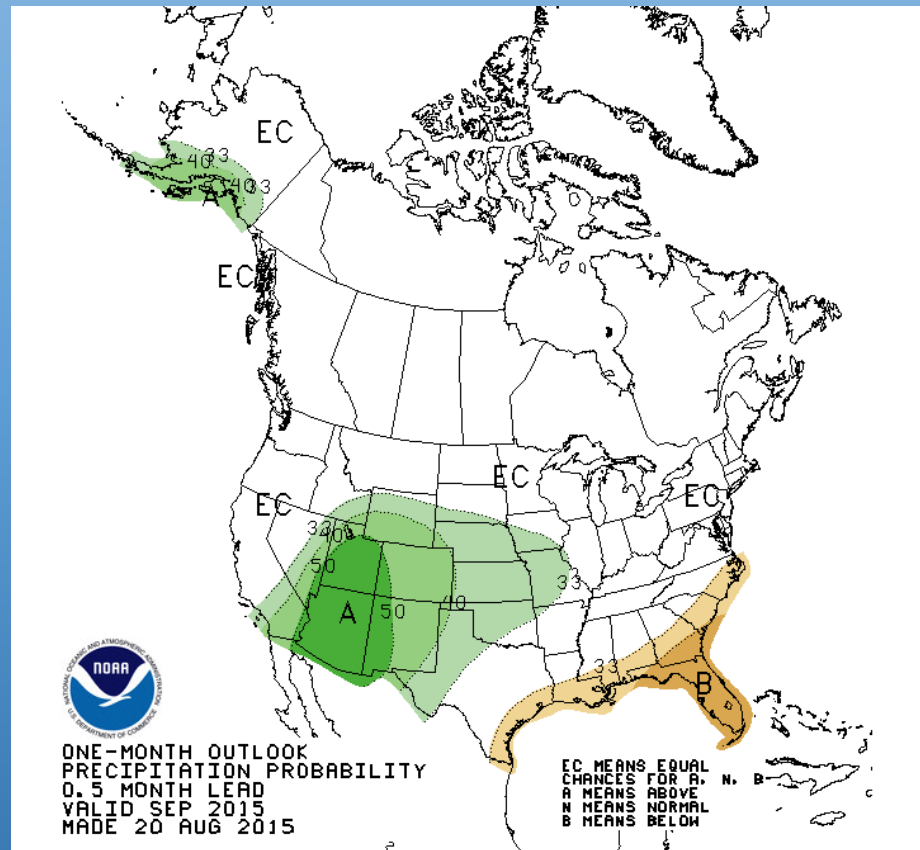
# Forecast Plume for ENSO



# September Outlook

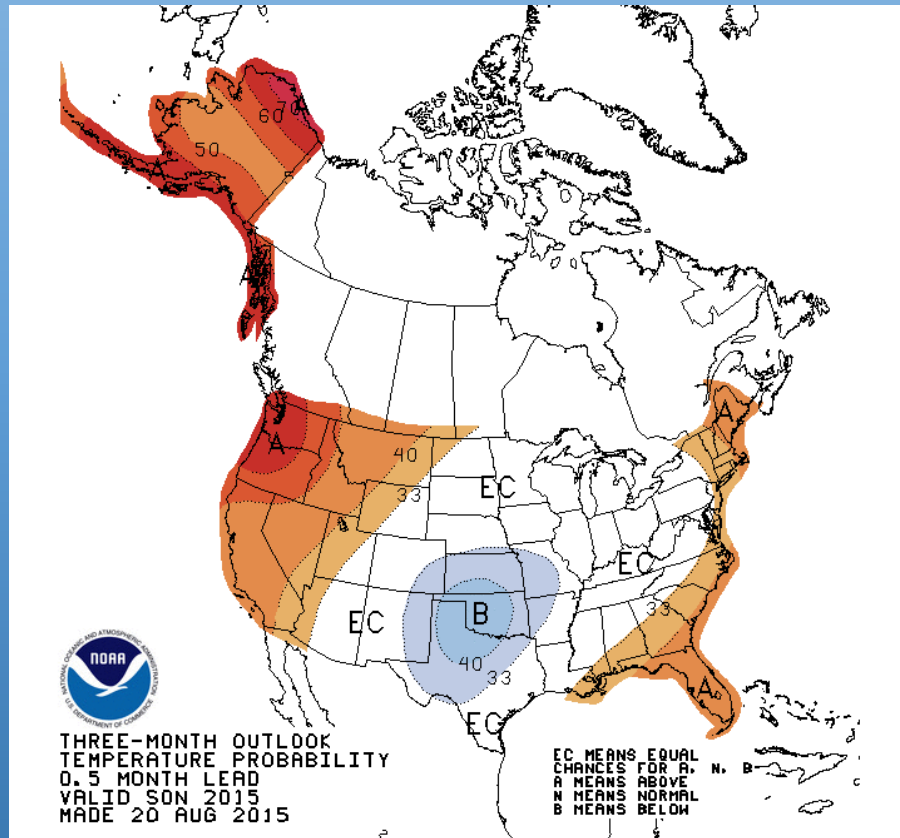


Temperature

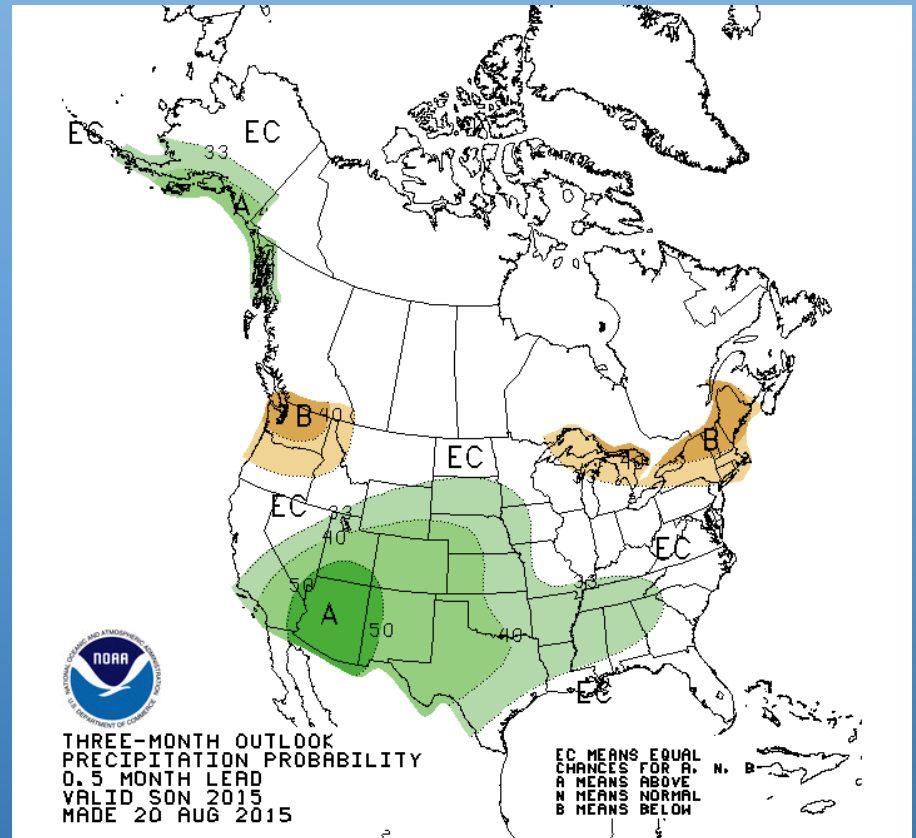


Precipitation

# September - November Outlook

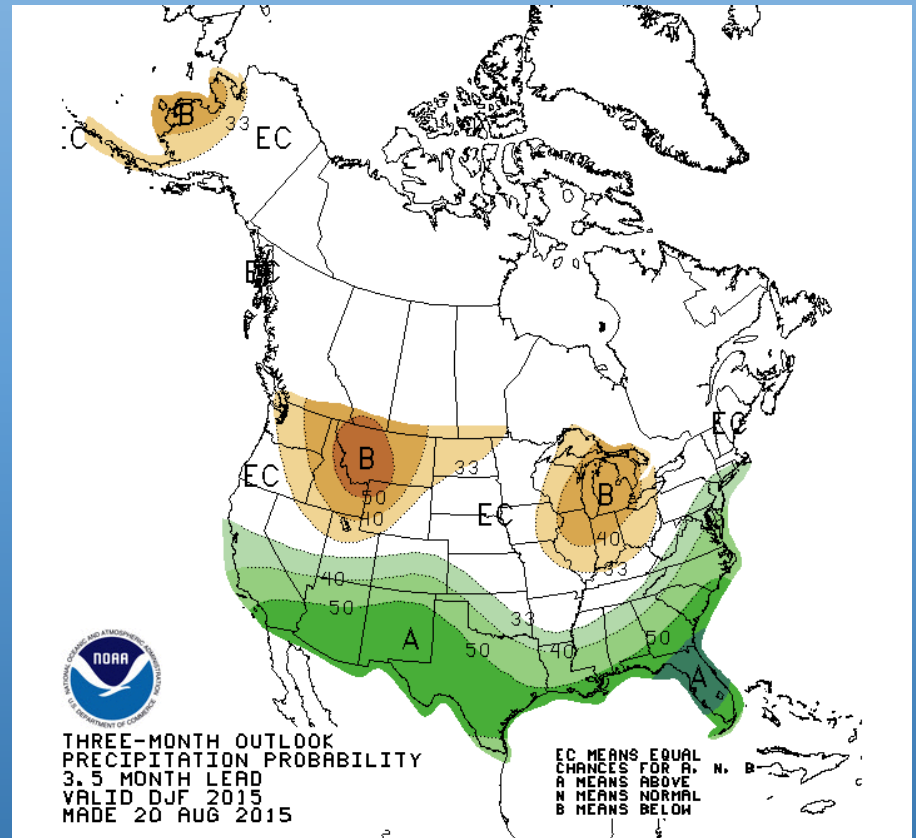
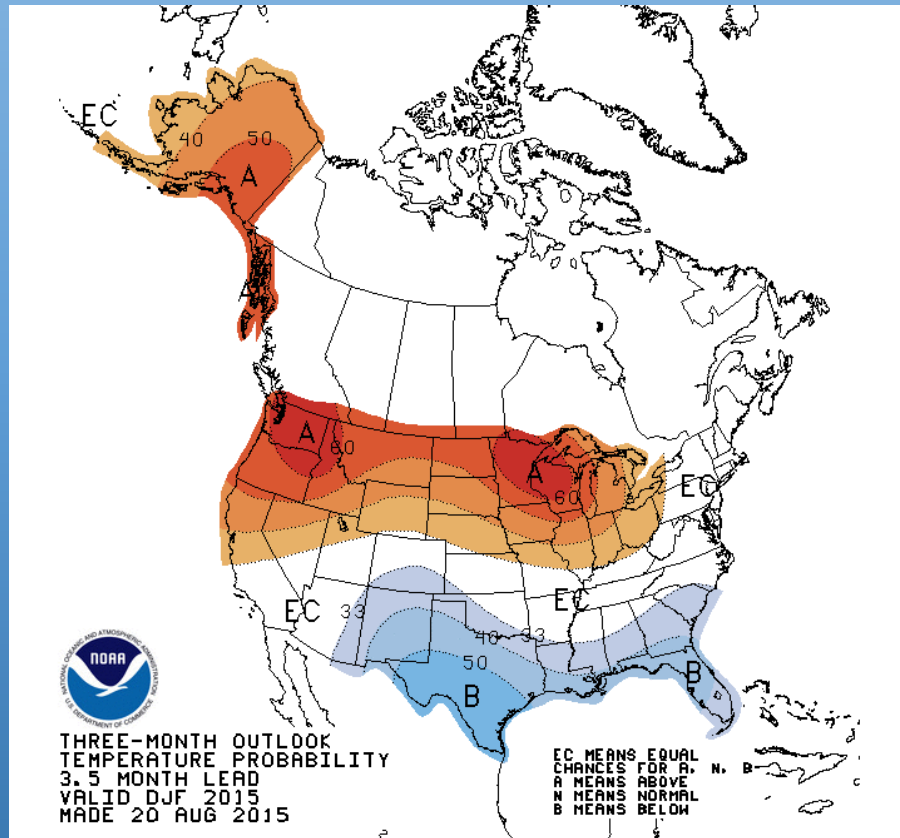


Temperature

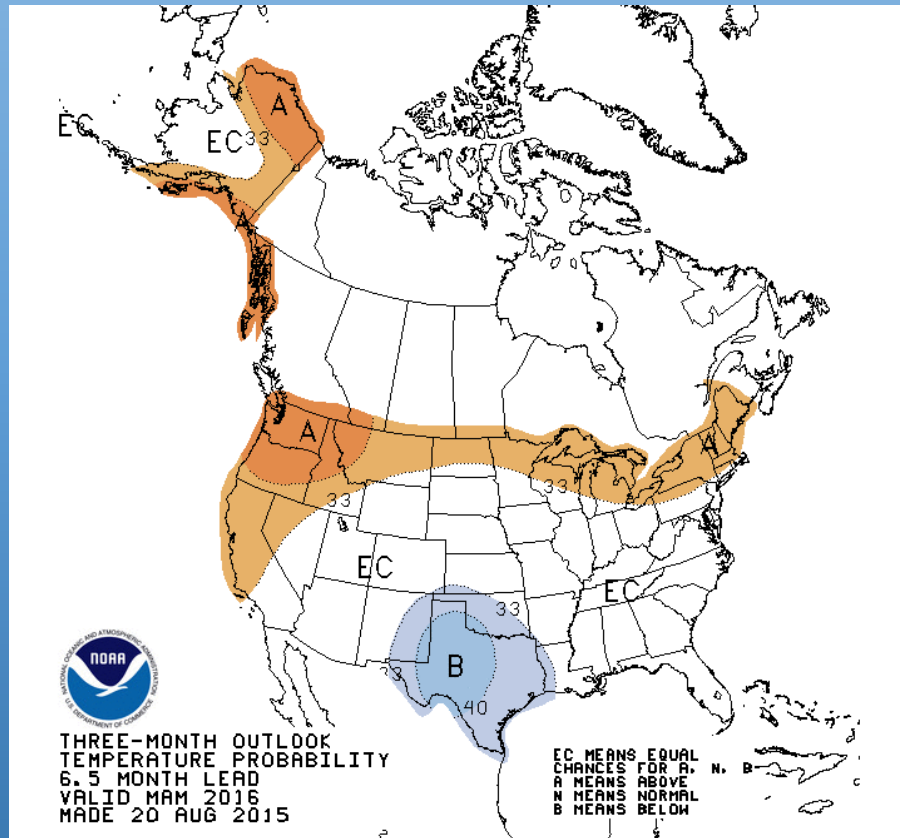


Precipitation

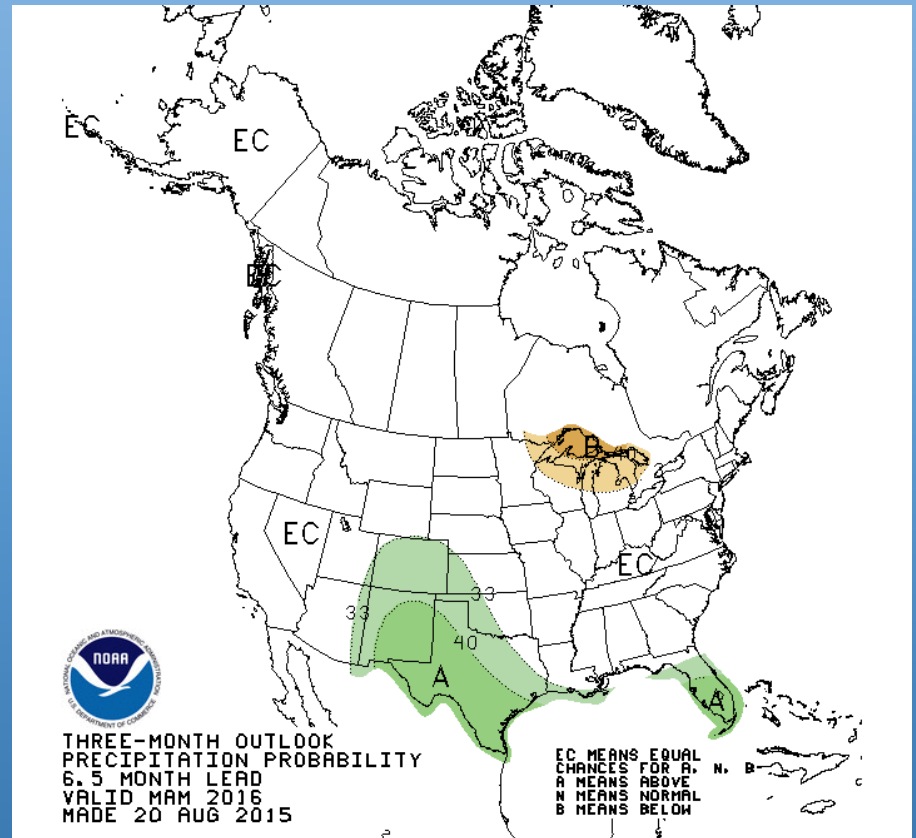
# December – February Outlook



# March – May Outlook

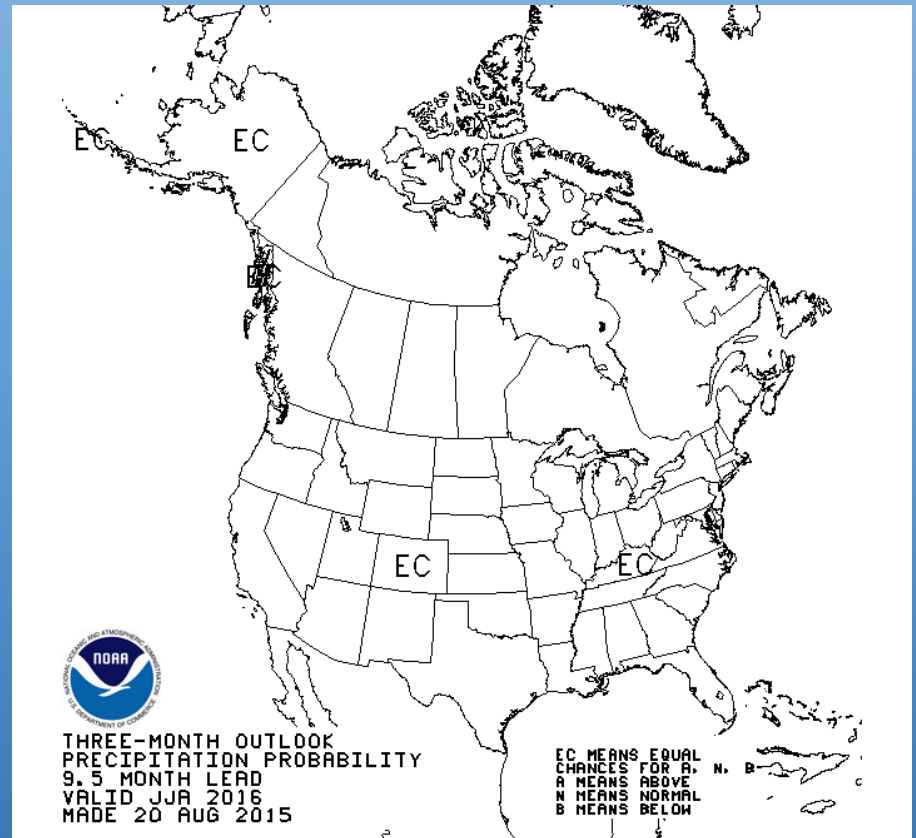
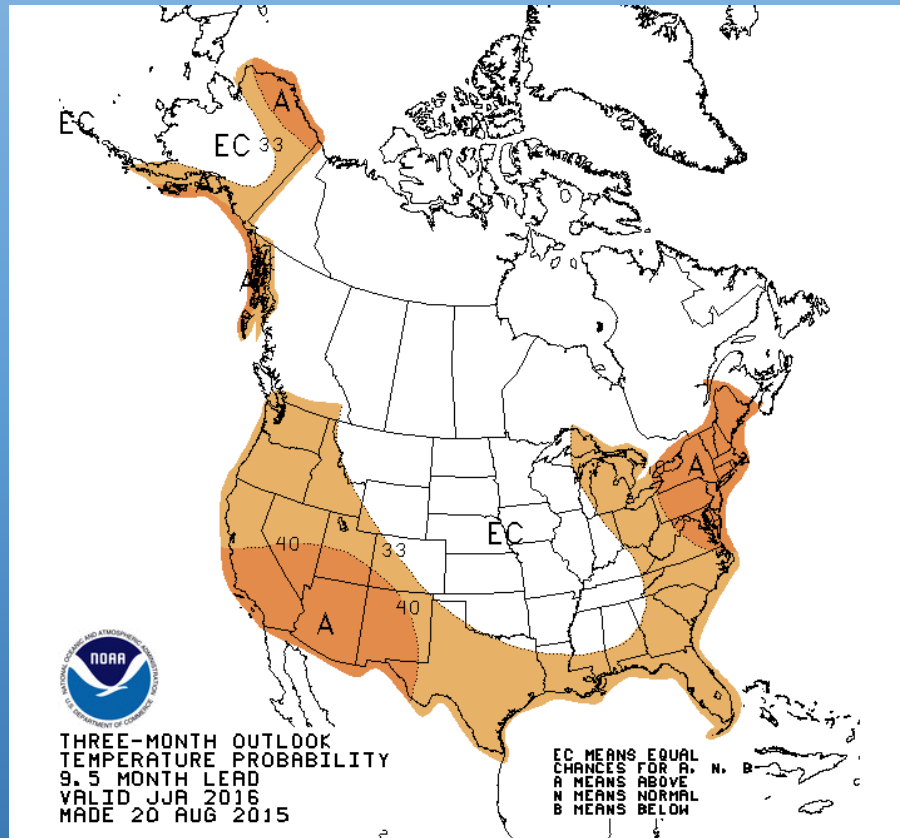


Temperature



Precipitation

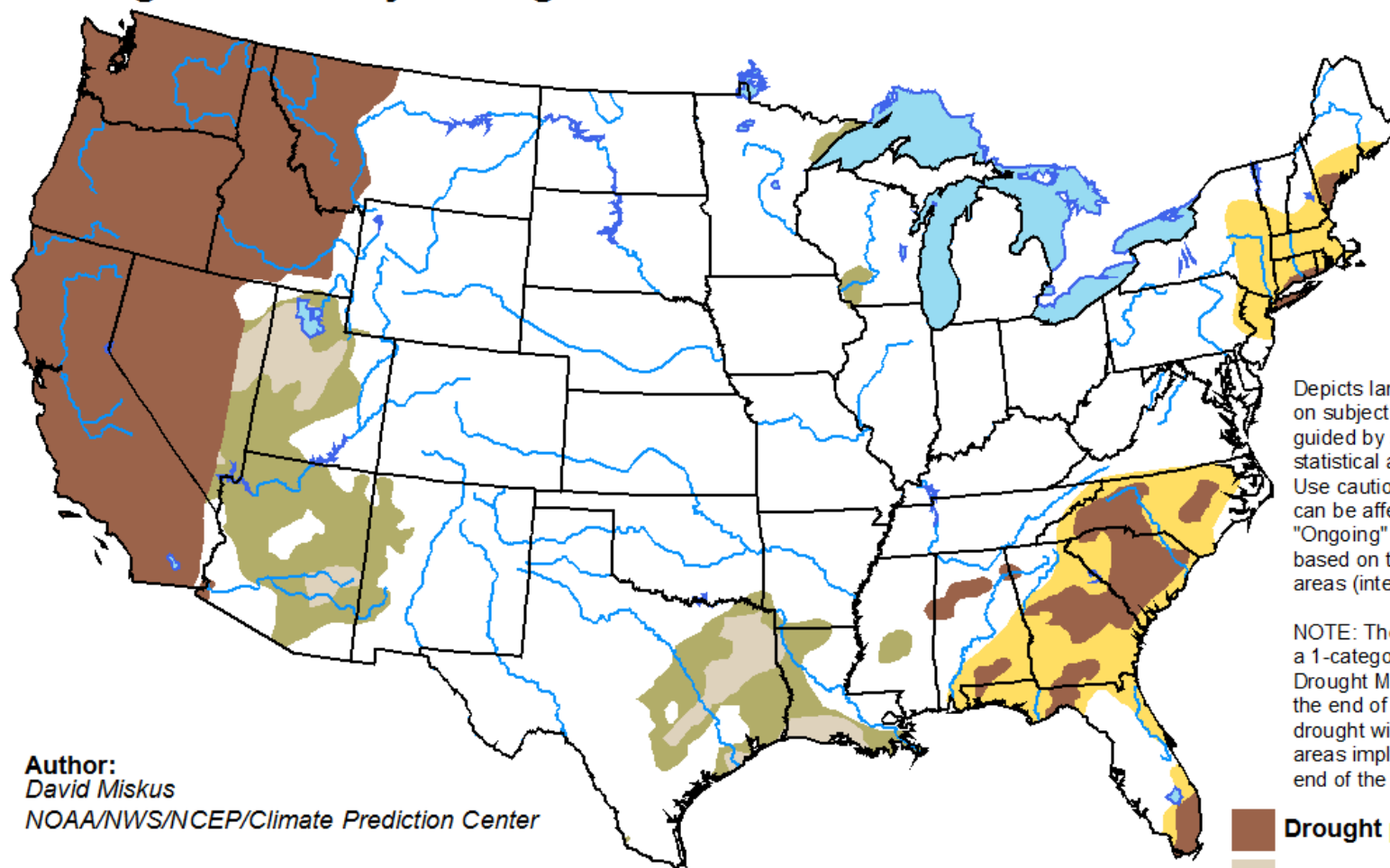
# June – August Outlook



# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

Valid for August 20 - November 30, 2015  
Released August 20, 2015

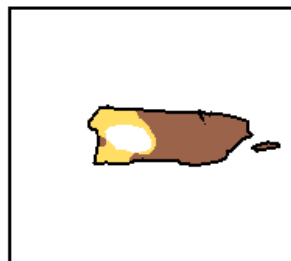
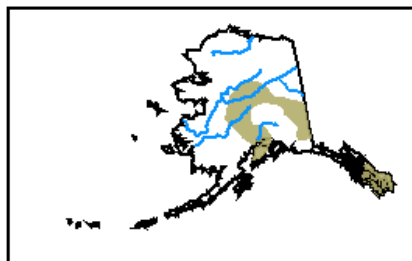


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

**Author:**  
David Miskus  
NOAA/NWS/NCEP/Climate Prediction Center

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



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

# Summary – Current Conditions

- Frequent, heavy rains in spring and summer have had a negative impact on agriculture with prevented planting, delayed planting, shallow roots, etc.
- Increased spring runoff has produced water quality issues on Lake Erie and the Gulf of Mexico.

# Summary - Forecast

- El Niño
- Fall – increased chance of cooler, wetter than average conditions in the southwest portion of the central US
- Winter – increased chance of warmer than average conditions across most of the central US. Potential dry areas centered on Montana and the Great Lakes.

## 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:**

- Jim Angel: [jimangel@illinois.edu](mailto:jimangel@illinois.edu), 217-333-0729
    - 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)