

# MIDWEST AND GREAT PLAINS DROUGHT AND CLIMATE OUTLOOK

19 SEP 2013

## “UPDATE ON CLIMATOLOGICAL CONTEXT”

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# GENERAL INFORMATION

- This drought and climate outlook webinar is a collaborative effort among the following climate services providers:  
Doug Kluck and John Eise (NOAA), State Climatologists, Midwest Regional Climate Center, High Plains Regional Climate Center, NOAA's Climate Prediction Center, Iowa State University, National Drought Mitigation Center
- Next drought and climate outlook webinar  
October 17, 2013      1:00 PM CDT      Dr. Jim Angel, Illinois State Climatologist

*Registration:*

<http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>

- Access to past webinars  
<http://mrcc.isws.illinois.edu/webinars.htm>  
<http://www.hprcc.unl.edu/webinars.php>
- Operator assistance will be available for questions at the end of the presentation

# AGENDA

**Recent events**

**Current conditions highlighting recent change**

**Historical context**

**Outlooks**

# RECENT EVENTS

**NOAA Climate.gov**  
science & information for a climate-smart nation

News & Features | Maps & Data | Teaching Climate | Supporting Decisions | About

Climate news, stories, images, & video (ClimateWatch Magazine) | News | How the Climate System Works | Climate Change & Global Warming | Natural Climate Patterns

Home » News & Features » Event Tracker » **Midwest heatwave in late August 2013** »

## Midwest heatwave in late August 2013

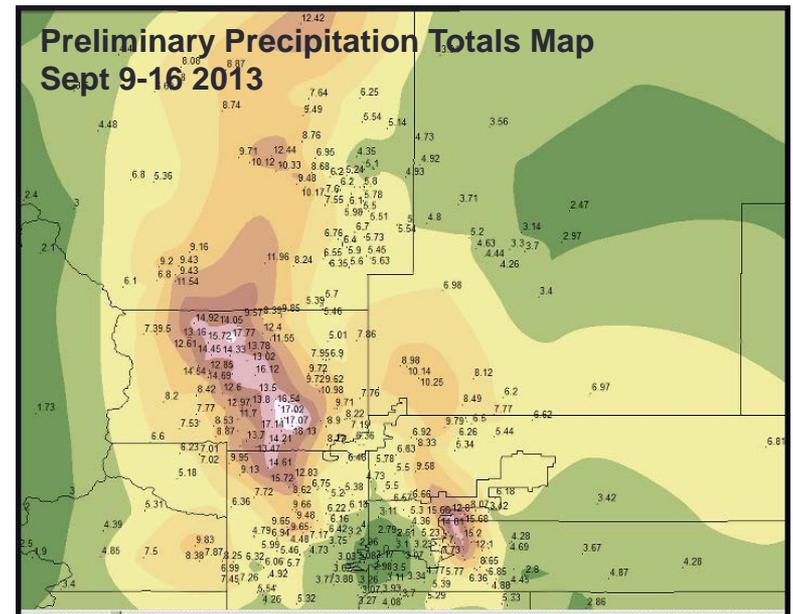
September 10, 2013

A heat wave struck the Midwest in late August and early September 2013. Daytime highs were 6 degrees above average, and nighttime lows were 11 degrees above average in late August. (In contrast, the first three weeks of the month had temperatures 2 to 8 degrees below average.) Through September 8, all-time daily record highs were tied or broken at 328 weather stations in the Midwest and High Plains.

August 25 - September 8, 2013  
Highest temperature (°F)  
75 110  
NOAA Climate.gov

<http://www.climate.gov/news-features/event-tracker/midwest-heatwave-late-august-2013>

## Flooding in Colorado

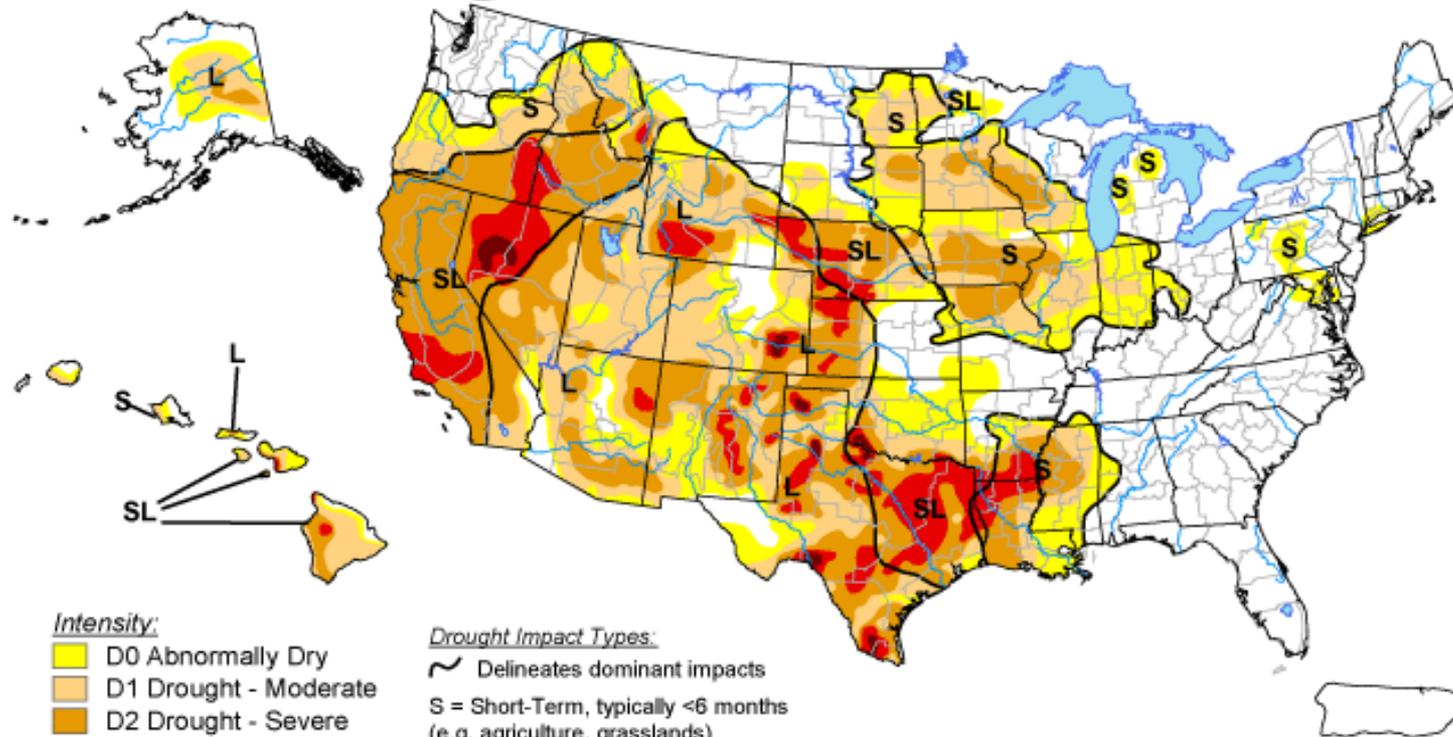


[http://www.crh.noaa.gov/bou/?n=stormtotals\\_092013](http://www.crh.noaa.gov/bou/?n=stormtotals_092013)

# U.S. Drought Monitor

September 17, 2013

Valid 7 a.m. EDT



## 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/>

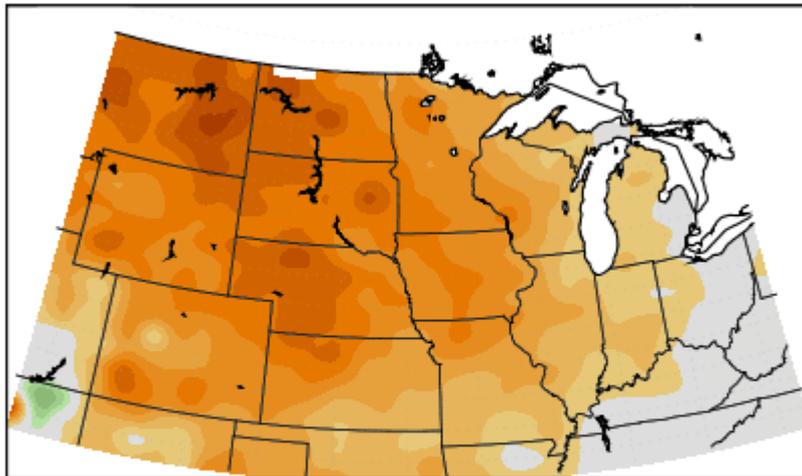


**Released Thursday, September 19, 2013**

**Author: David Miskus, NOAA/NWS/NCEP/CPC**

# A LOOK BACK THE PAST 30 DAYS

Average Temperature (°F): Departure from Mean  
August 20, 2013 to September 18, 2013

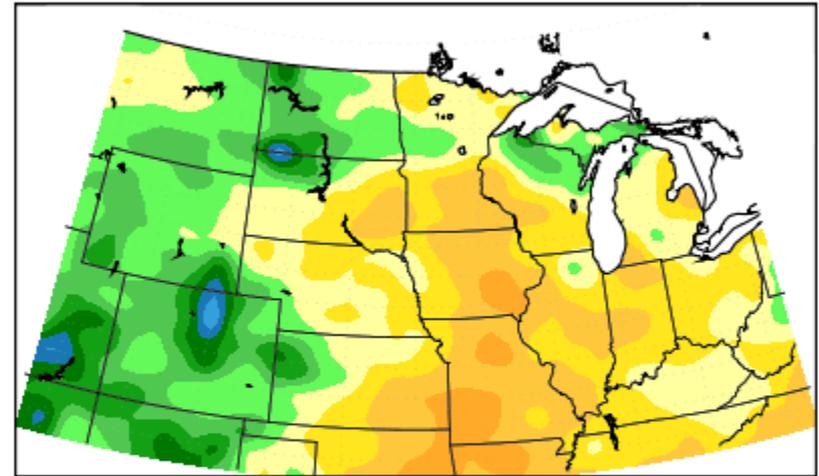


Mean period is 1981–2010.



Midwestern Regional Climate Center  
Illinois State Water Survey, Prairie Research Institute  
University of Illinois at Urbana–Champaign

Accumulated Precipitation (in): Departure from Mean  
August 20, 2013 to September 18, 2013

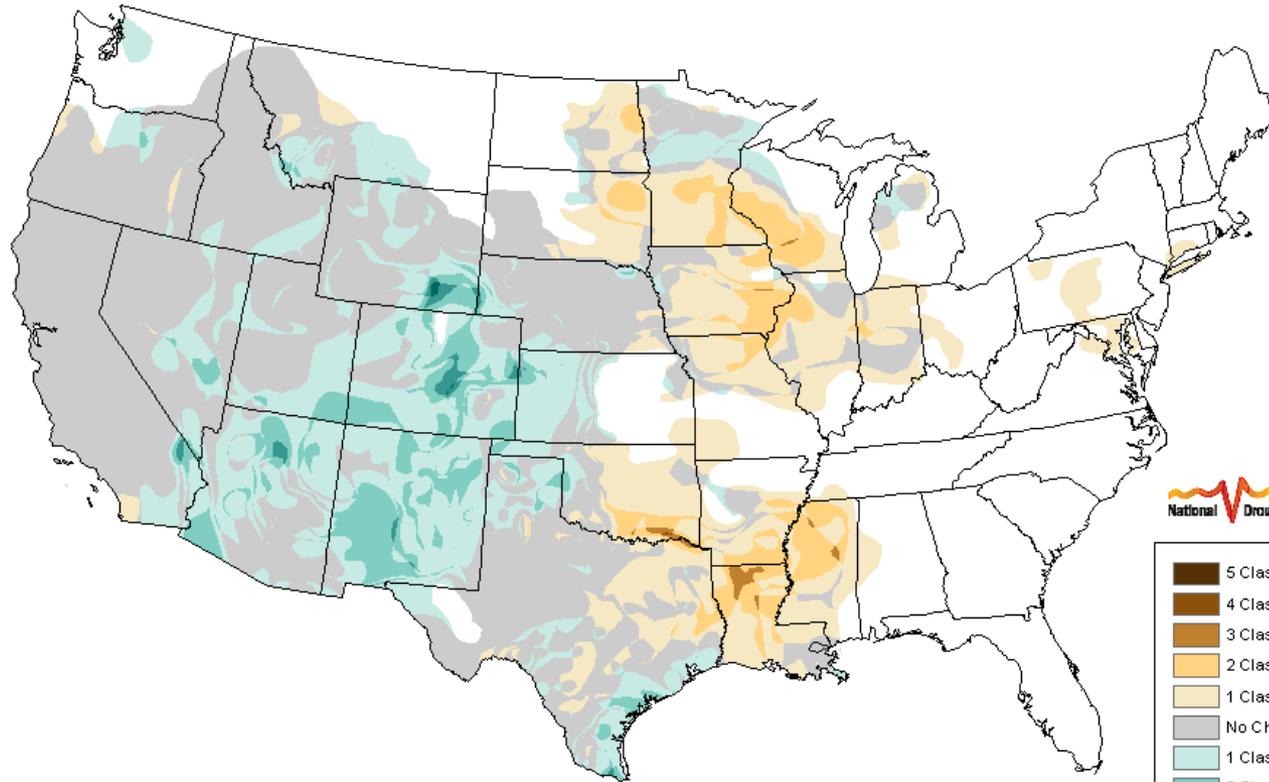


Mean period is 1981–2010.



Midwestern Regional Climate Center  
Illinois State Water Survey, Prairie Research Institute  
University of Illinois at Urbana–Champaign

## U.S. Drought Monitor Class Change 1 Month

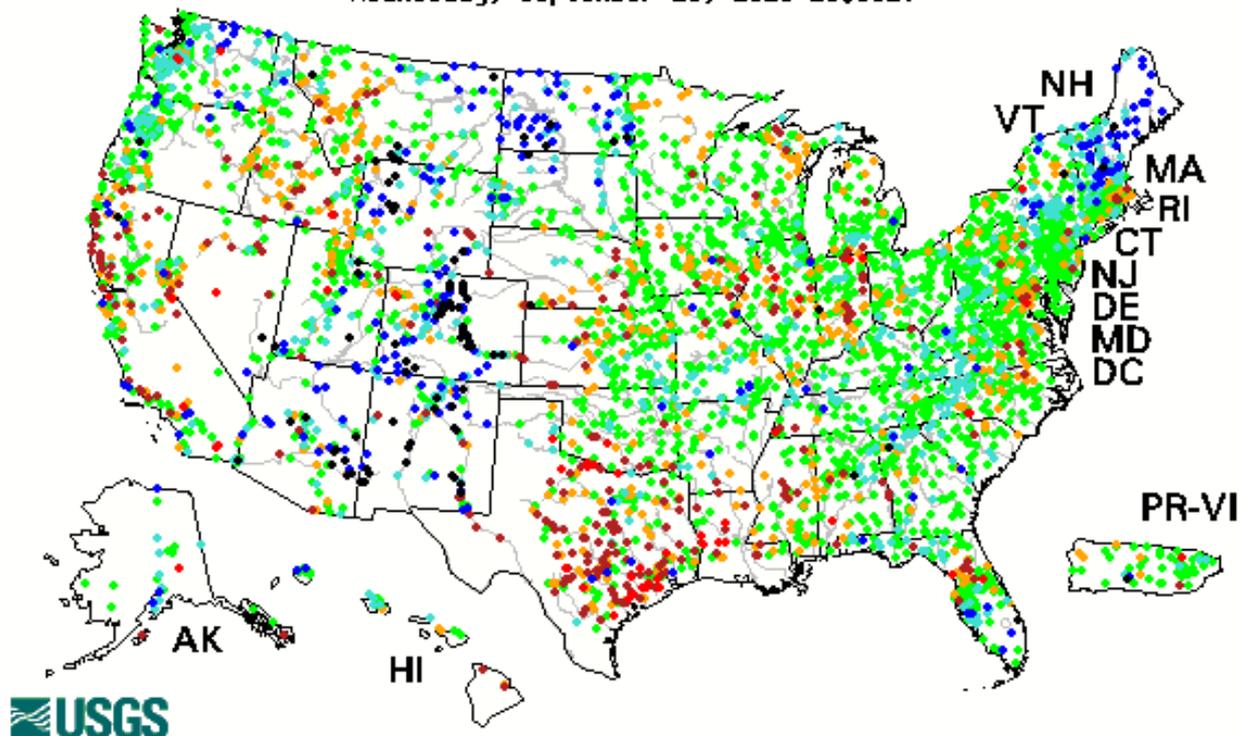


September 17, 2013  
compared to  
August 20, 2013

<http://droughtmonitor.unl.edu>

# 7-DAY AVERAGE STREAMFLOW

Wednesday, September 18, 2013 15:30ET

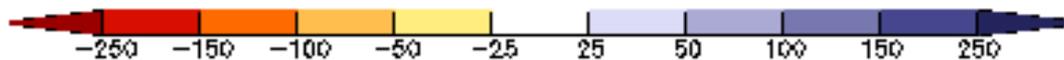
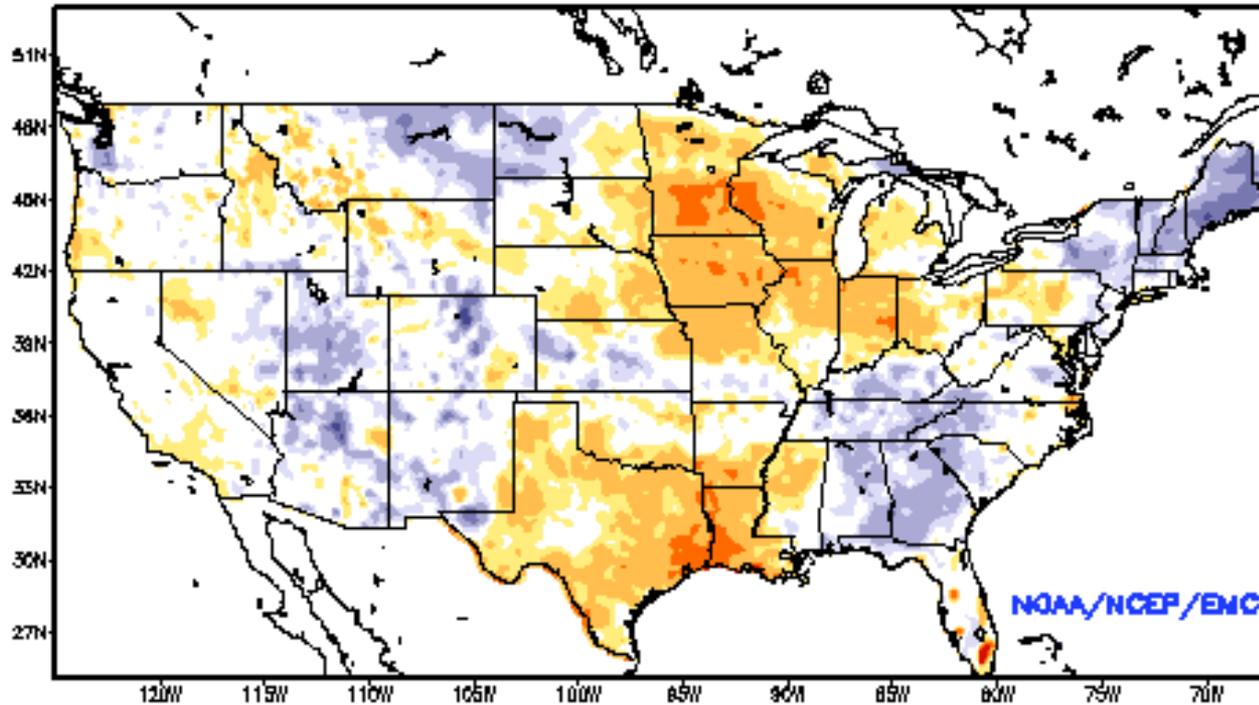


Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

[http://waterwatch.usgs.gov/?id=ww\\_current](http://waterwatch.usgs.gov/?id=ww_current)

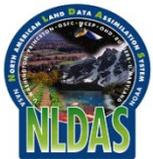
# CURRENT SOIL MOISTURE ANOMALY

Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)  
NCEP NLDAS Products \_\_\_ Valid: SEP 14, 2013



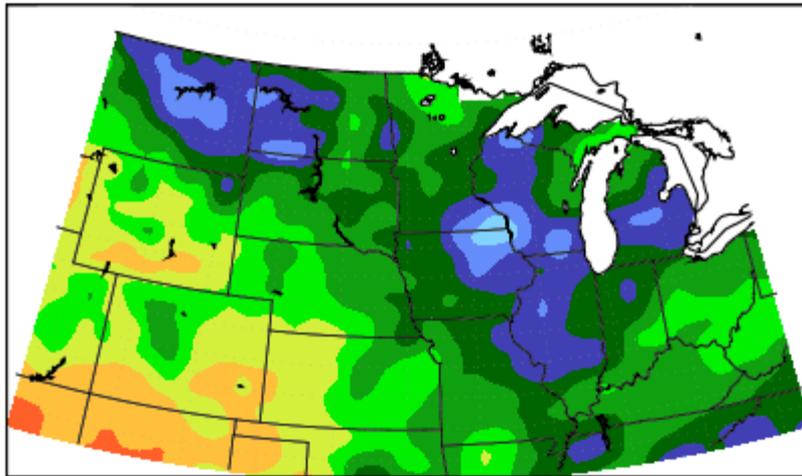
Soil Moisture Anomaly in  
millimeters

<http://www.emc.ncep.noaa.gov/mmb/nldas/drought/>



# FROM ONE EXTREME TO ANOTHER

Accumulated Precipitation: Percent of Mean  
April 1, 2013 to June 30, 2013

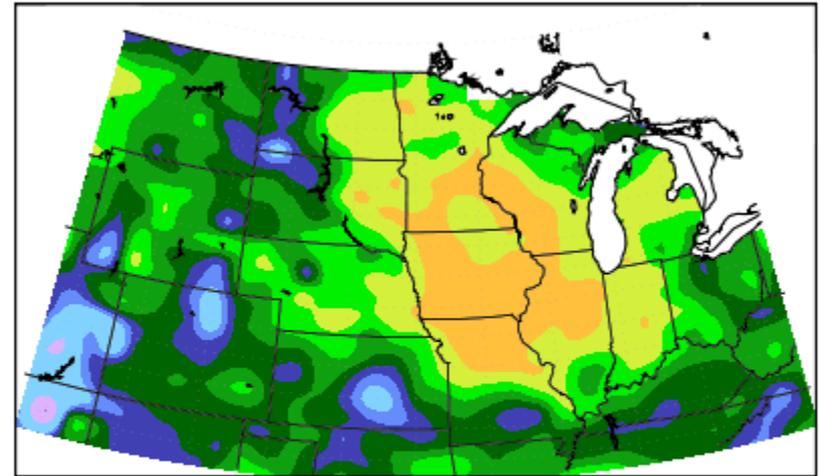


Mean period is 1981–2010.

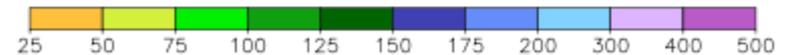


Midwestern Regional Climate Center  
Illinois State Water Survey, Prairie Research Institute  
University of Illinois at Urbana-Champaign

Accumulated Precipitation: Percent of Mean  
July 1, 2013 to September 18, 2013

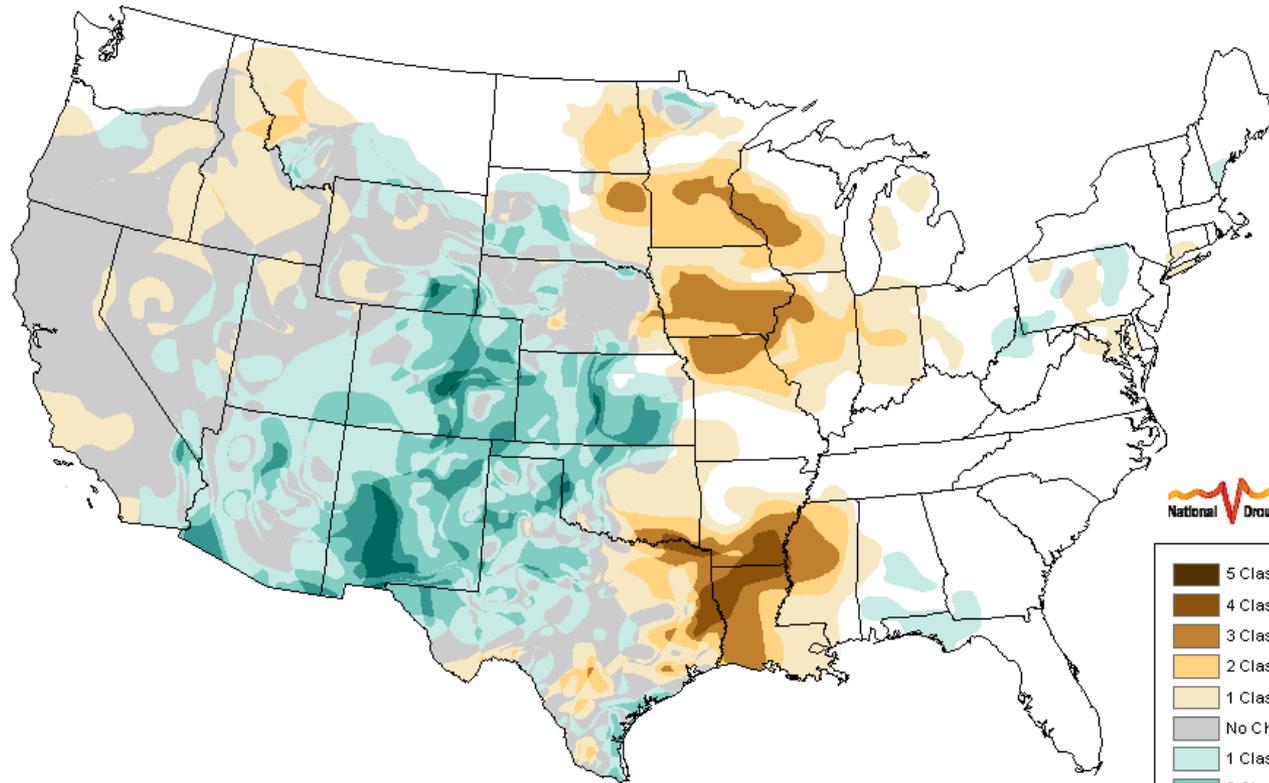


Mean period is 1981–2010.



Midwestern Regional Climate Center  
Illinois State Water Survey, Prairie Research Institute  
University of Illinois at Urbana-Champaign

## U.S. Drought Monitor Class Change 3 Months



September 17, 2013  
compared to  
June 25, 2013

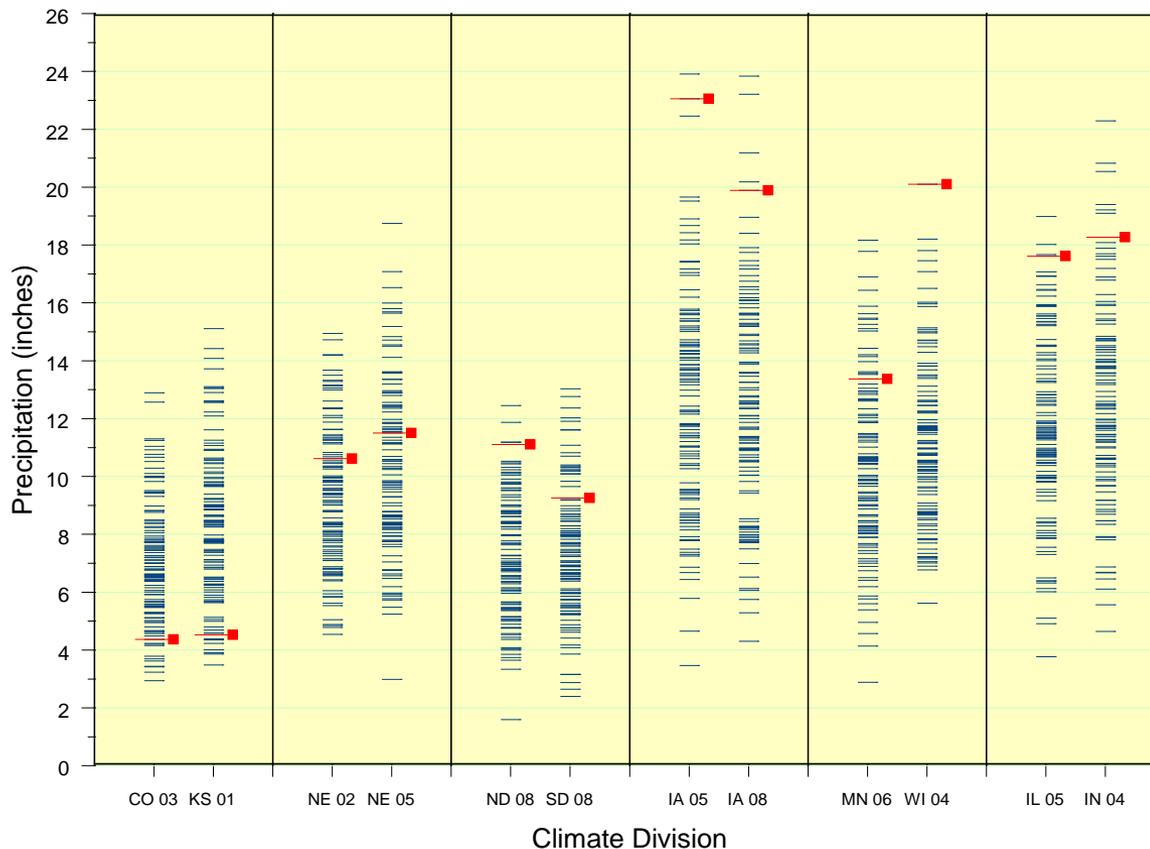
<http://droughtmonitor.unl.edu>

# A TALE OF TWO SEASONS: FROM EARLY SPRING

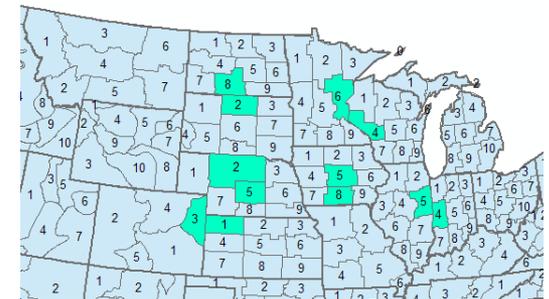
*Historical perspective from a spatial  
sample of climate divisions*

Cumulative Precipitation for April through June

Total for 2013 Relative to Years 1895-2013



- Unusually to near record wet conditions in eastern portion
- Persistence of unusually dry conditions in western portion

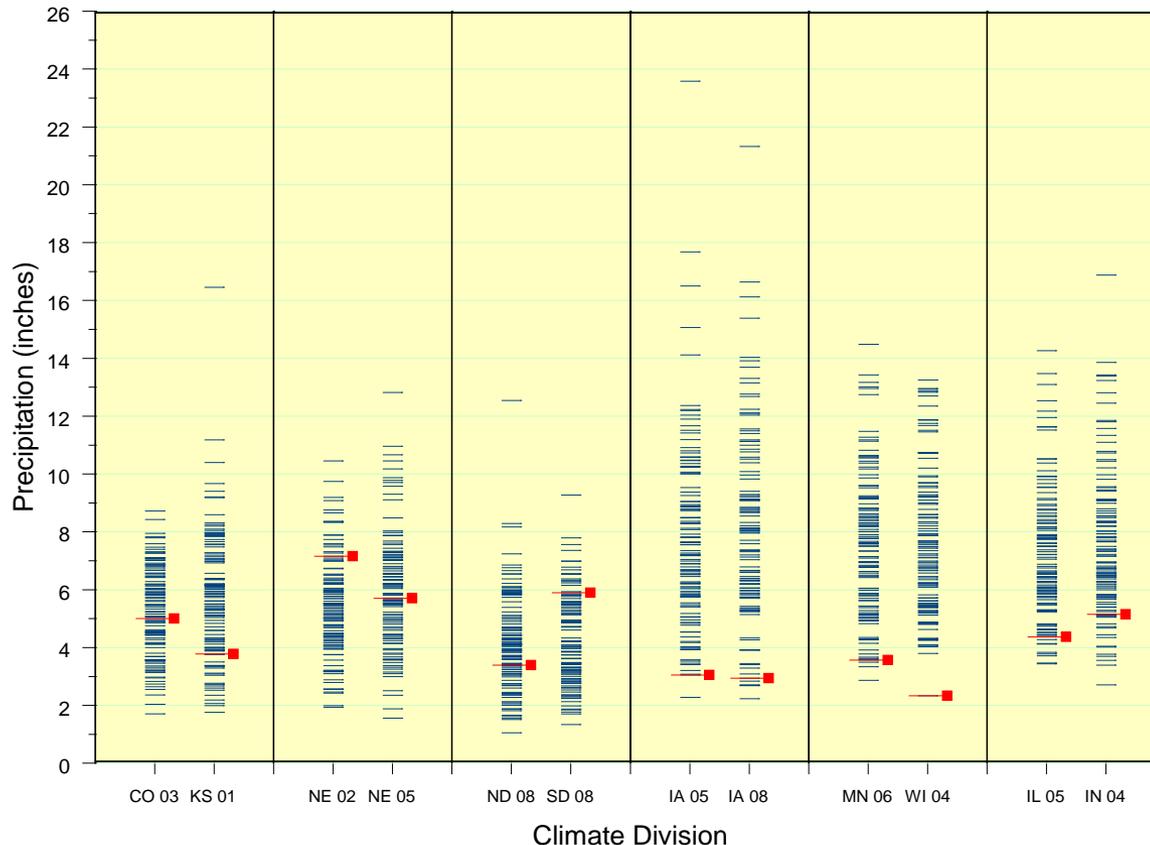


# A TALE OF TWO SEASONS: TO LATE SUMMER

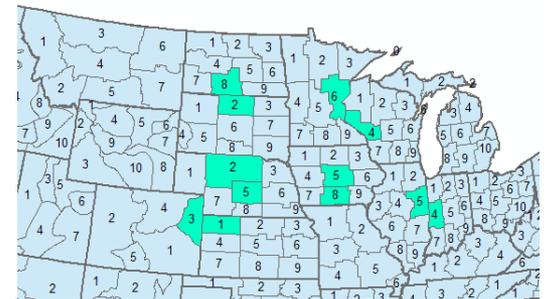
*Historical perspective from a spatial  
sample of climate divisions*

Cumulative Precipitation for July through August

Total for 2013 Relative to Years 1895-2013

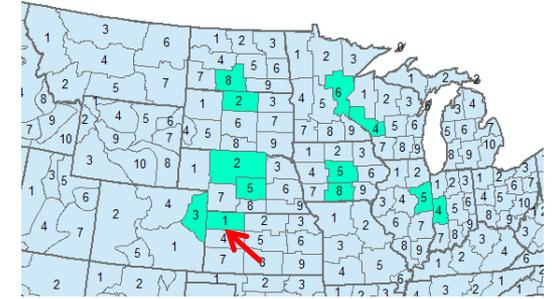
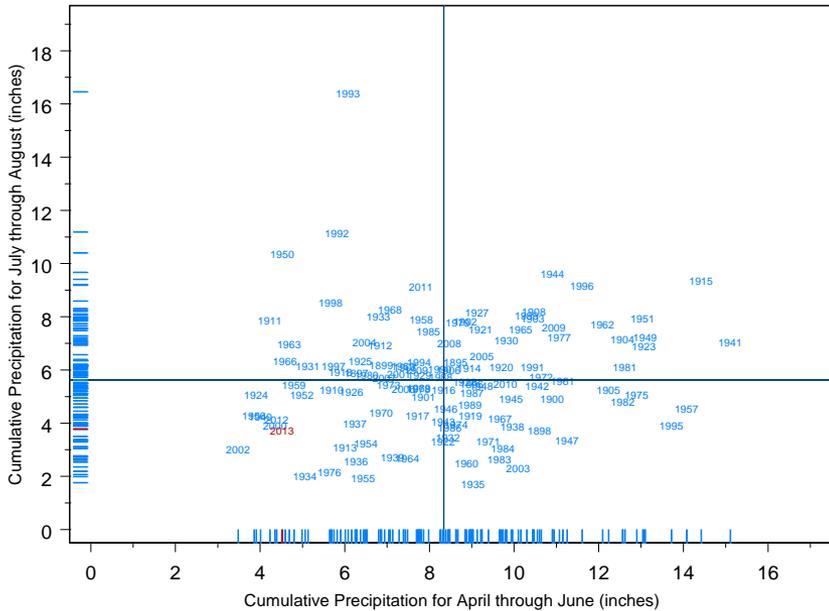


- Shift to below to near record dryness in eastern portion
- Below to near average precipitation in western portion

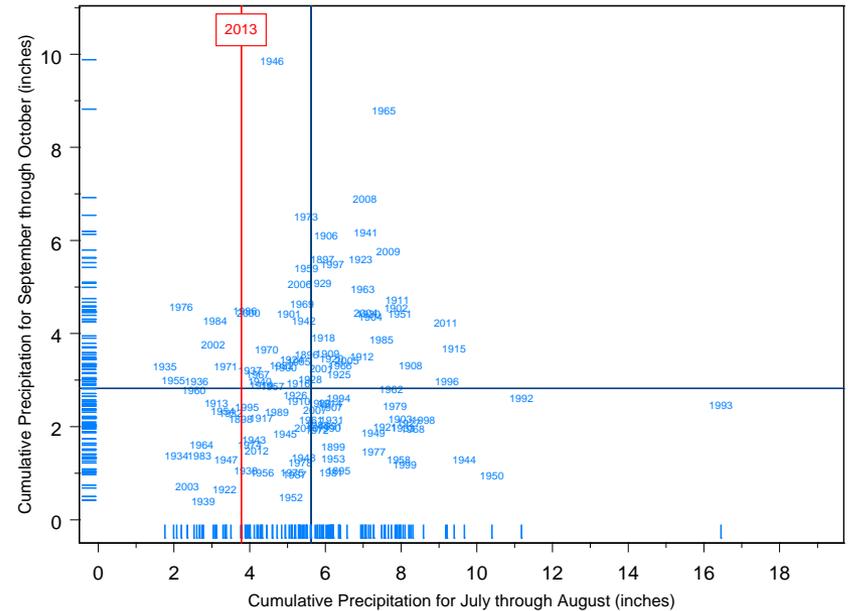


# BEFORE AND AFTER KANSAS, NORTHWEST DIVISION

Historical Persistence of the Precipitation Pattern, AMJ and JA  
Kansas Northwest (01) Climate Division



Historical Persistence of the Precipitation Pattern, JA and SO  
Kansas Northwest (01) Climate Division

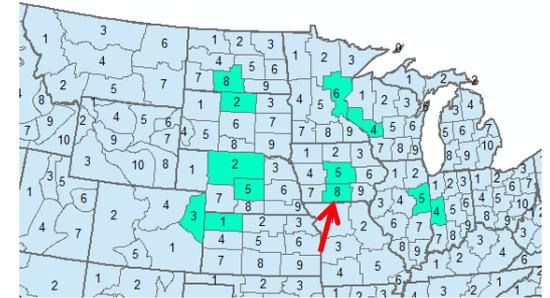
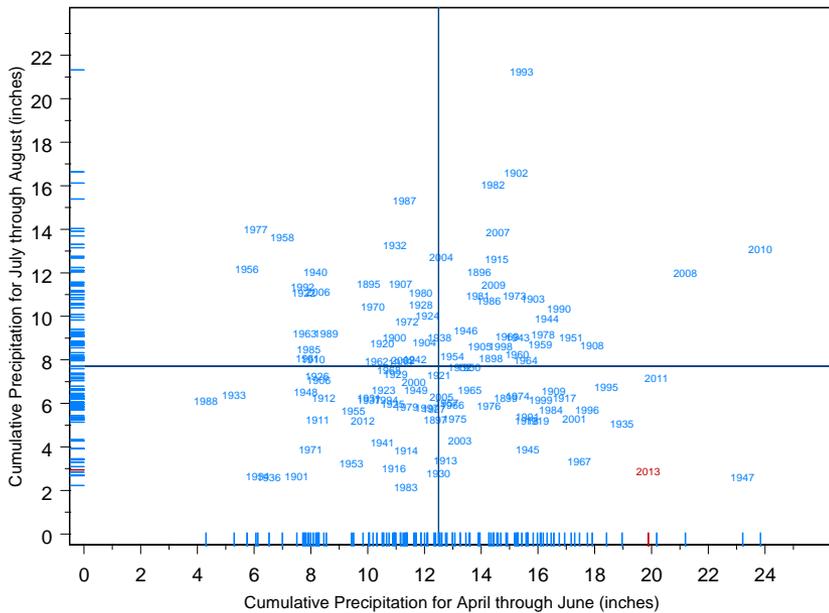


- AMJ-JA period is distinctive for persistent dryness relative to climatology
- Dryness during JA is not an effective predictor of SO precipitation, but may indicate reduced probability of extreme wetness

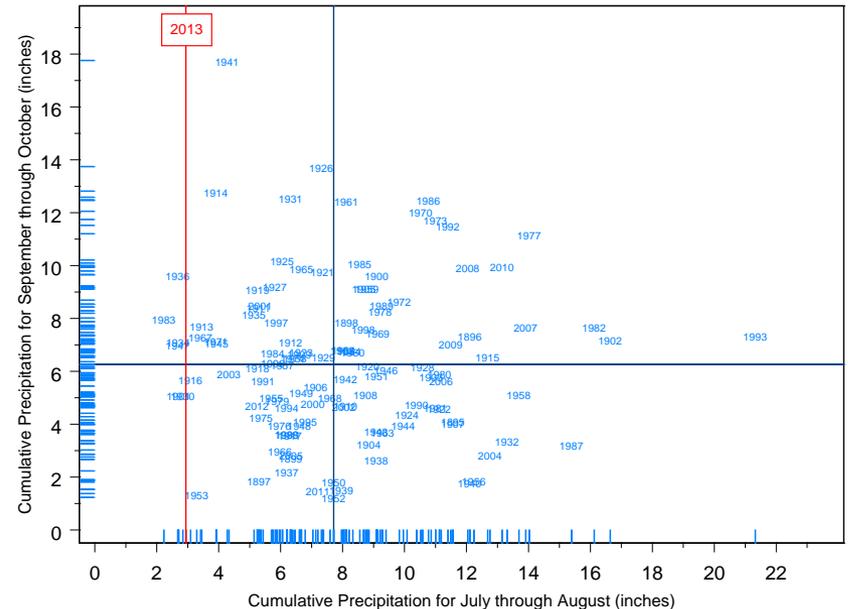
# BEFORE AND AFTER

# IOWA, SOUTH CENTRAL DIVISION

Historical Persistence of the Precipitation Pattern, AMJ and JA  
Iowa South Central (08) Climate Division



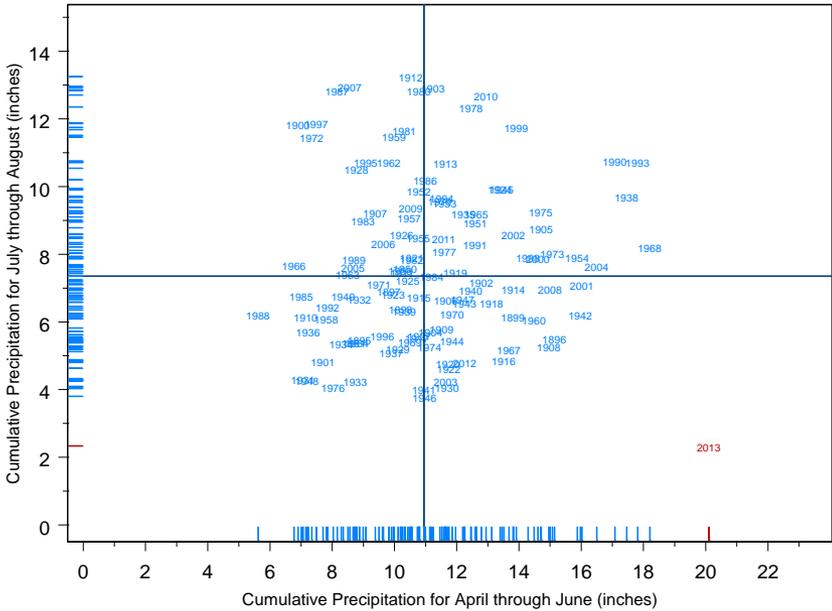
Historical Persistence of the Precipitation Pattern, JA and SO  
Iowa South Central (08) Climate Division



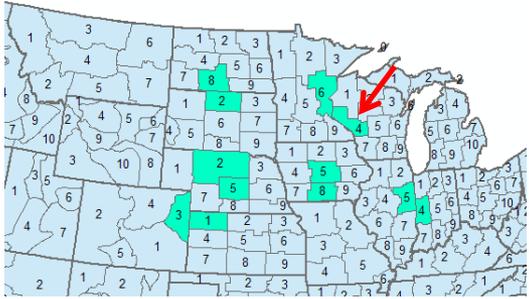
- AMJ-JA shows transition from extreme wetness to extreme dryness
- Dryness during JA is not an effective predictor of SO precipitation

# BEFORE AND AFTER WISCONSIN, WEST CENTRAL DIVISION

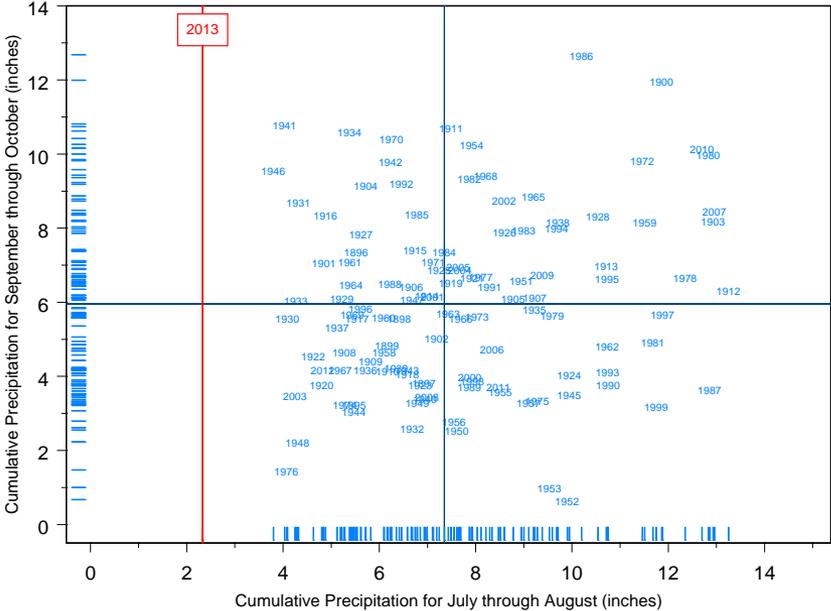
Historical Persistence of the Precipitation Pattern, AMJ and JA  
Wisconsin West Central (04) Climate Division



- AMJ-JA shows transition from *record wetness* to *record dryness*
- Dryness during JA is not an effective predictor of SO precipitation

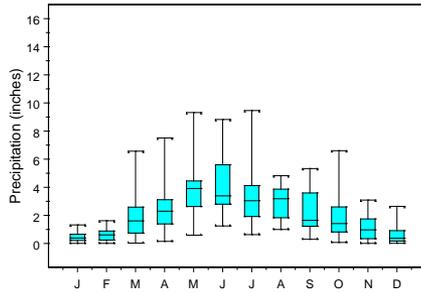


Historical Persistence of the Precipitation Pattern, JA and SO  
Wisconsin West Central (04) Climate Division

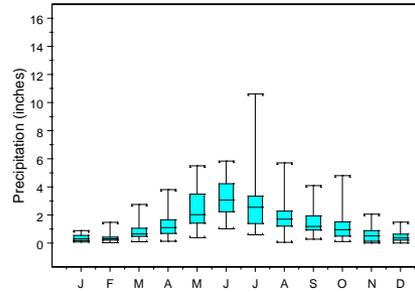


# MONTHLY PRECIPITATION CLIMATOLOGY

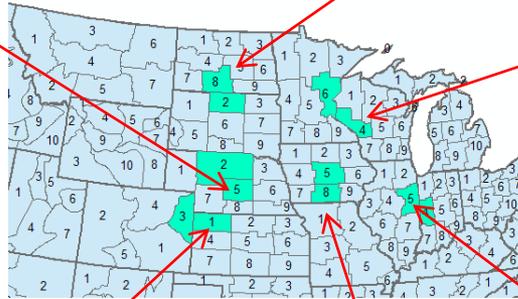
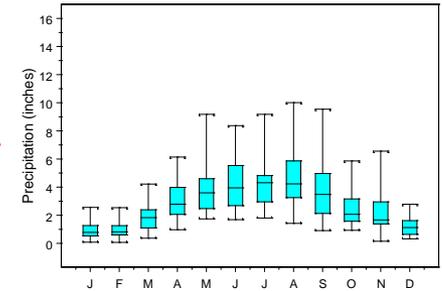
Nebraska Central Division (05)  
1981-2010



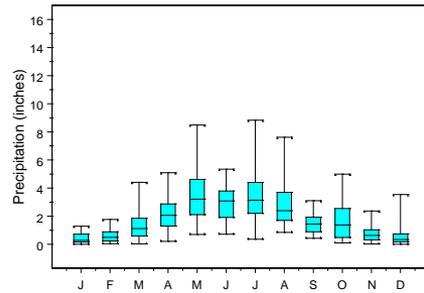
North Dakota South Central Division (08)  
1981-2010



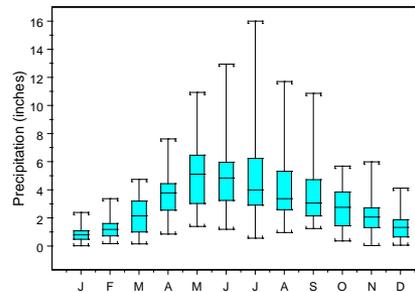
Wisconsin West Central Division (04)  
1981-2010



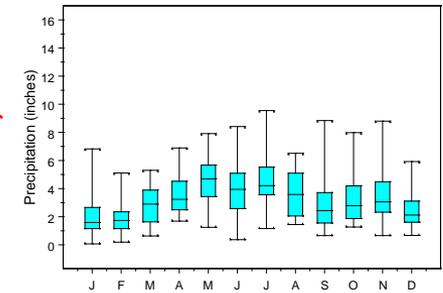
Kansas Northwest Division (01)  
1981-2010



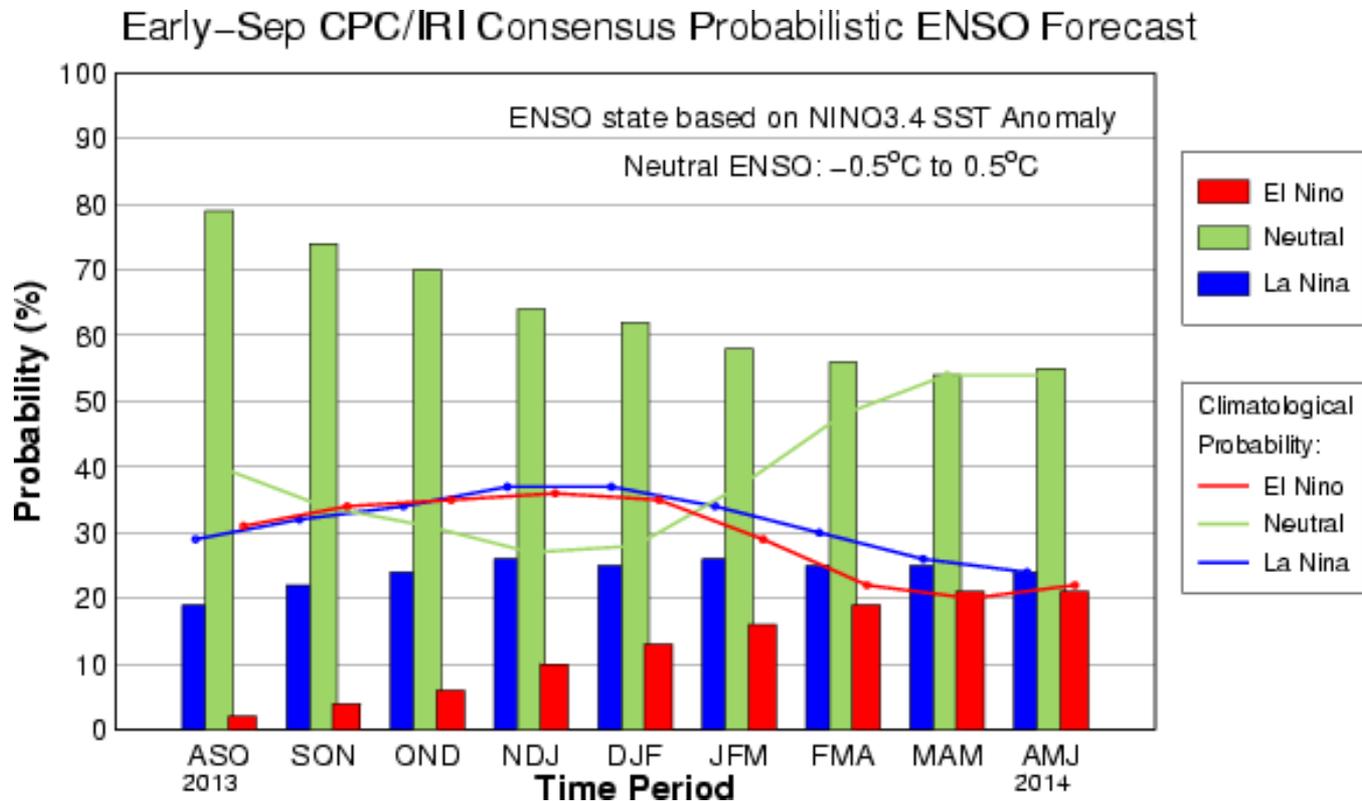
Iowa South Central Division (08)  
1981-2010



Illinois East Division (05)  
1981-2010



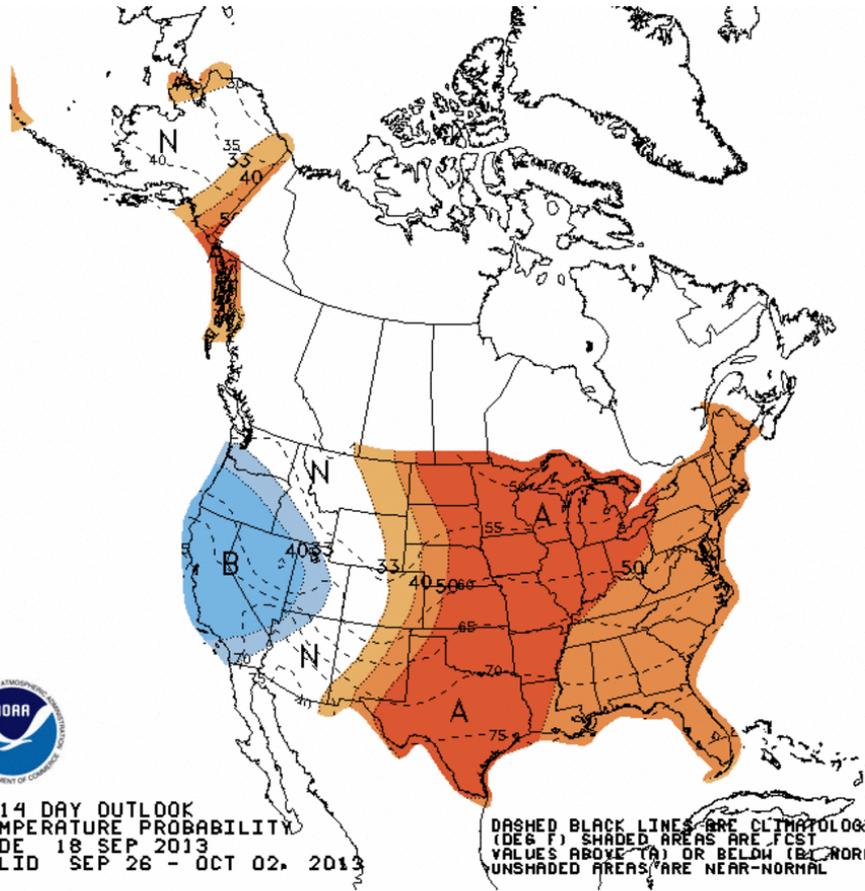
# ENSO OUTLOOK



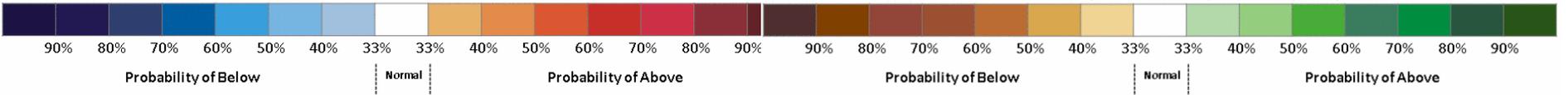
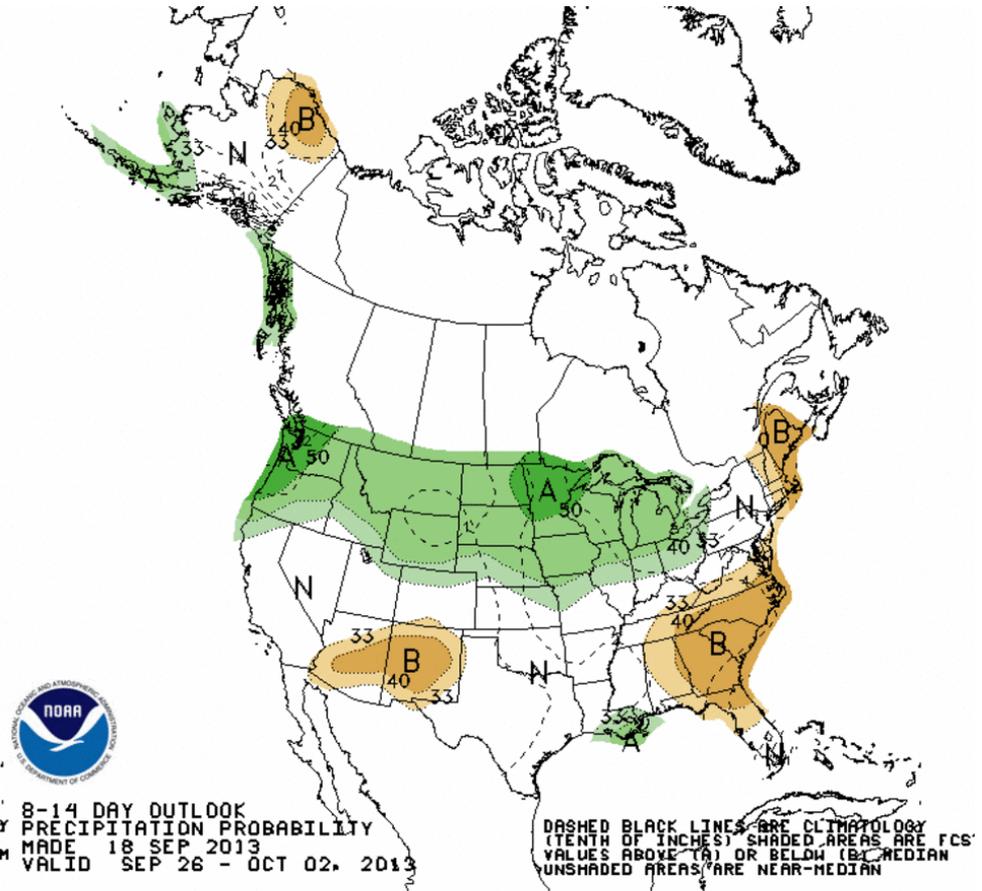
<http://iri.columbia.edu/climate/ENSO/currentinfo/figure1.html>

# 8-14 DAY CLIMATE OUTLOOK

## Temperature

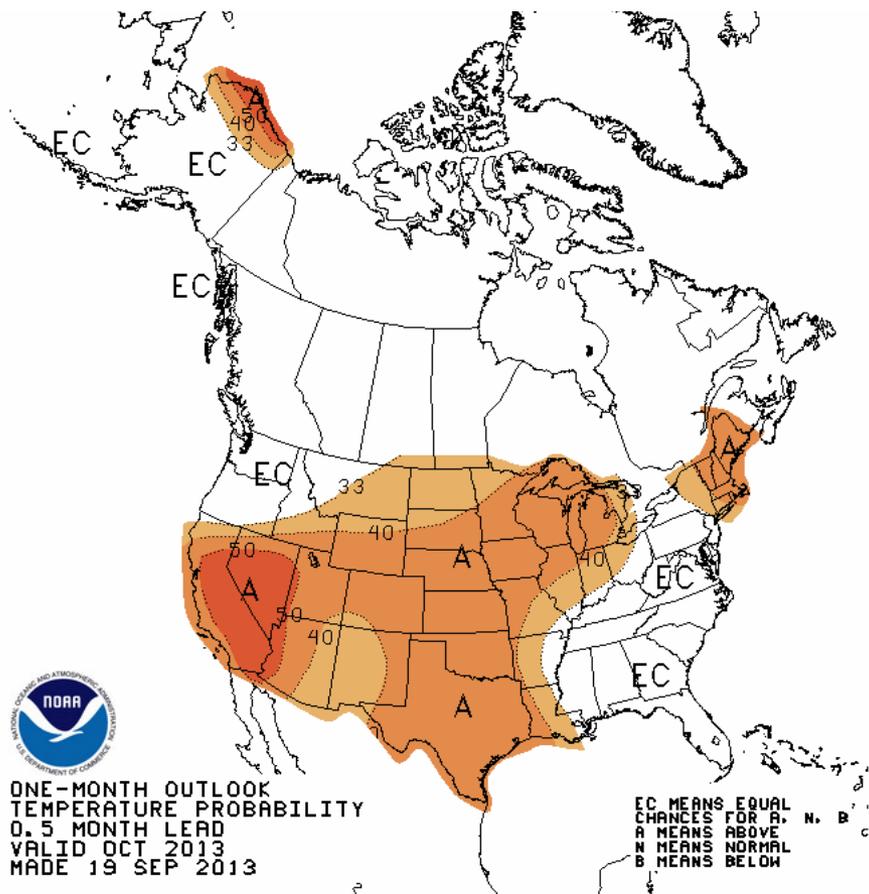


## Precipitation

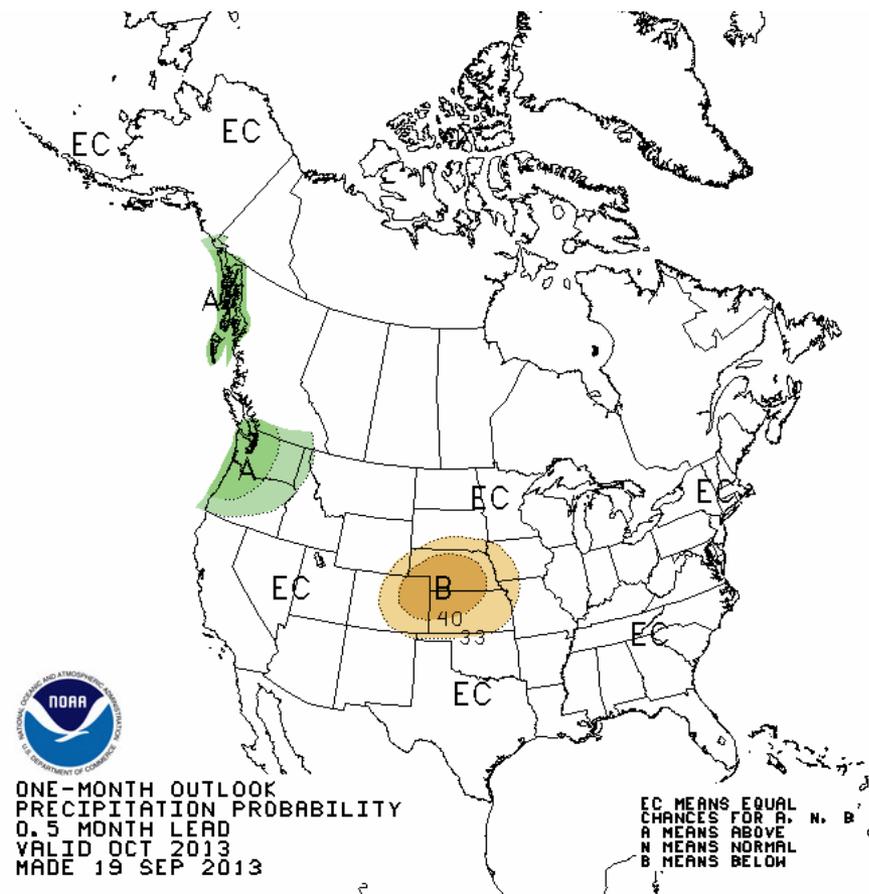


# OCTOBER CLIMATE OUTLOOK

## Temperature



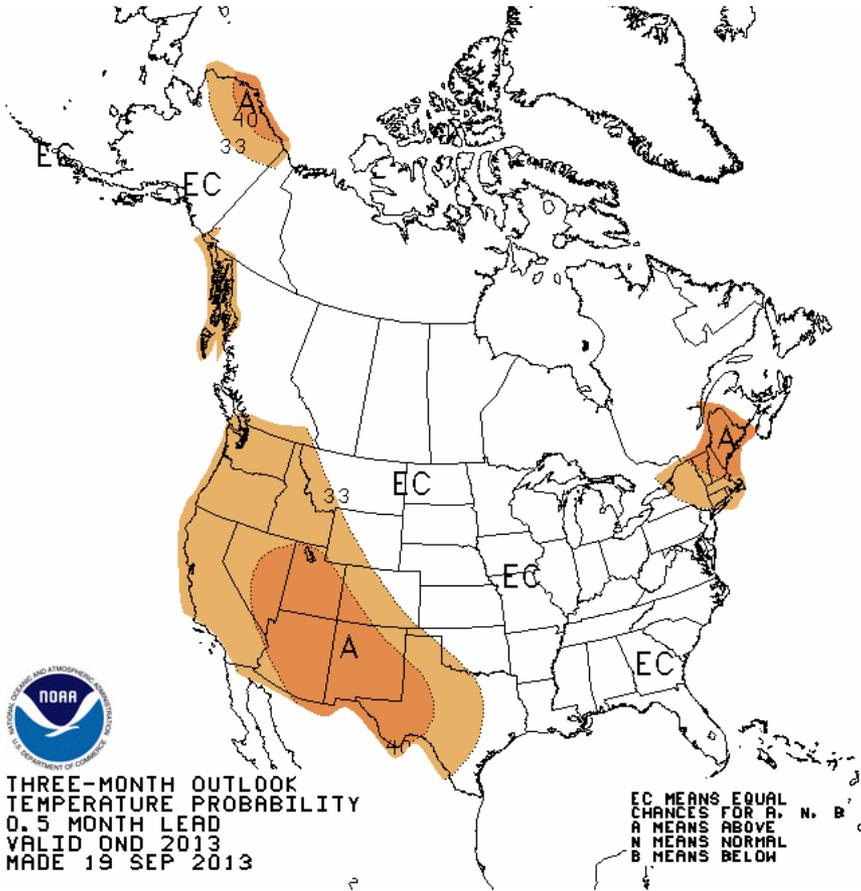
## Precipitation



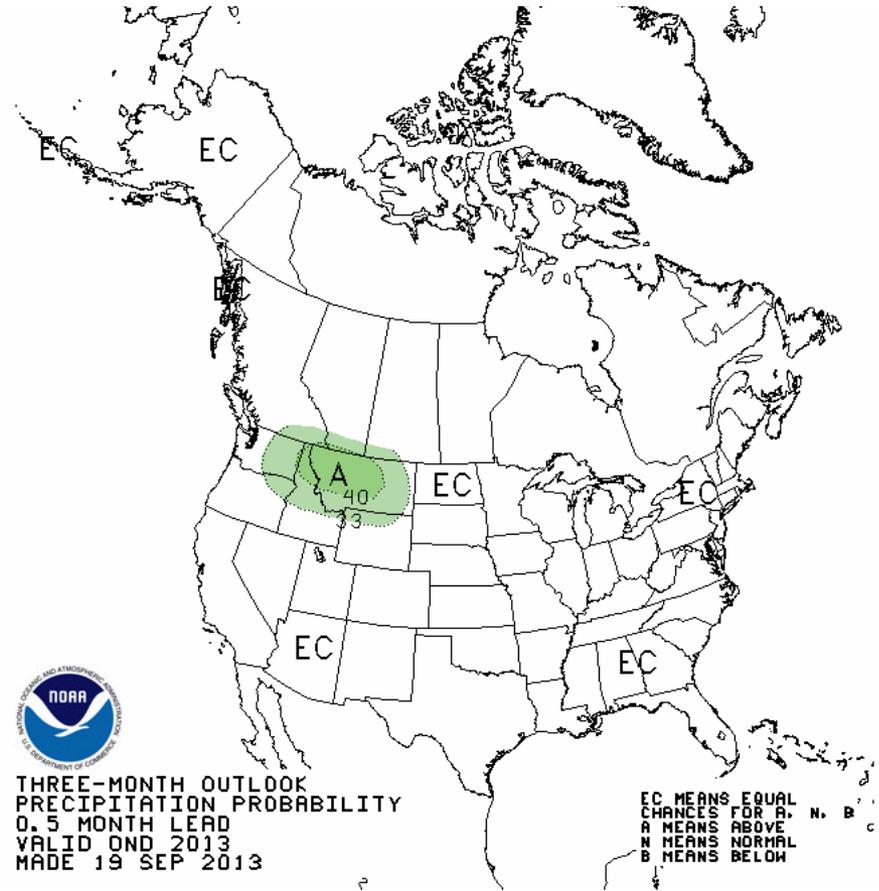
# SEASONAL CLIMATE OUTLOOK

OCTOBER - DECEMBER

## Temperature



## Precipitation

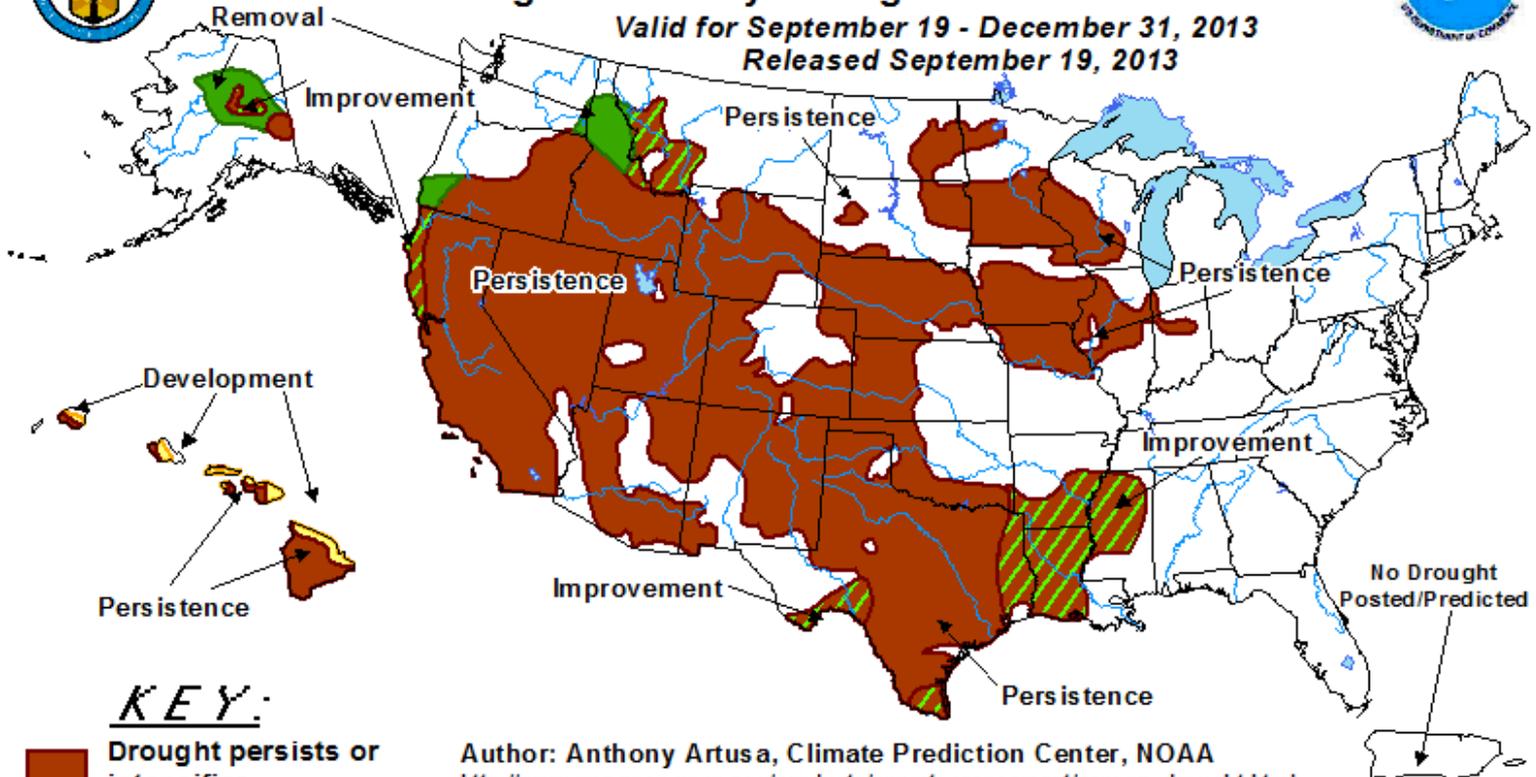




# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

Valid for September 19 - December 31, 2013  
Released September 19, 2013



### KEY:

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

Author: Anthony Artusa, Climate Prediction Center, NOAA  
[http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/season\\_drought.html](http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.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 Green and Brown hatched 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)

# SUMMARY

- \* Recent Conditions

- \* Dryness in Midwest rapidly intensifying
- \* Wetness in portions of Great Plains easing drought conditions in limited areas

- \* Outlook

- \* Climatology

- \* The recent past is a poor predictor of the near future
- \* Upcoming fall and winter months are relatively dry  
*(but precipitation is critical for groundwater/soil moisture recharge)*

- \* Models

- \* ENSO is expected to remain in a neutral phase into the fall and winter months
- \* Climate outlooks currently provide minimal guidance beyond climatology
- \* Drought conditions expected to persist through the end of the year with improvement on a small scale in some areas

## 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/>

### •American Association of State Climatologists

- <http://www.stateclimate.org>

### •Regional climate centers

- <http://mrcc.isws.illinois.edu>
- <http://www.hprcc.unl.edu>

# IF YOU HAVE QUESTIONS

## Climate:

- Stuart Foster: [stuart.foster@wku.edu](mailto:stuart.foster@wku.edu), 270-745-5983
- 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)