

# NOAA and Partners Midwest and Great Plains Drought Update Webinar

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Climatologist

National Drought Mitigation Center  
School of Natural Resources  
University of Nebraska-Lincoln



NOAA Webinar Series, December 19, 2013



# General Information

## \* **Providing climate services to the Central Region**

\* Collaboration with Brian Fuchs (National Drought Mitigation Center) Dennis Todey (South Dakota 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

\* **Next Climate/Drought Outlook Webinar: January 16, 2014**

## \* **Access to past Climate/Drought Webinars and information**

\* <http://mrcc.isws.illinois.edu/webinars.htm>

\* <http://www.hprcc.unl.edu/webinars.php>

\* **To sign up for the next webinar, please visit:**

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



# Agenda

- ▶ Current Conditions
- ▶ Agricultural Update
- ▶ Regional Impacts
- ▶ Outlooks
- ▶ Questions/Comments

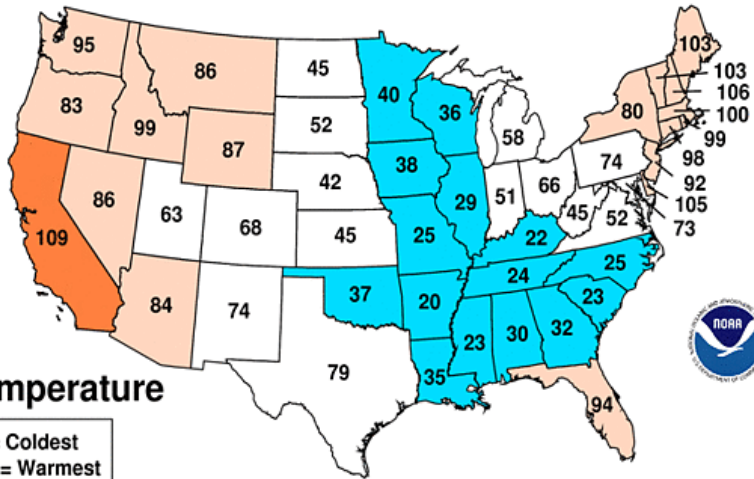




# Calendar Year to date Rankings

## January-November 2013 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



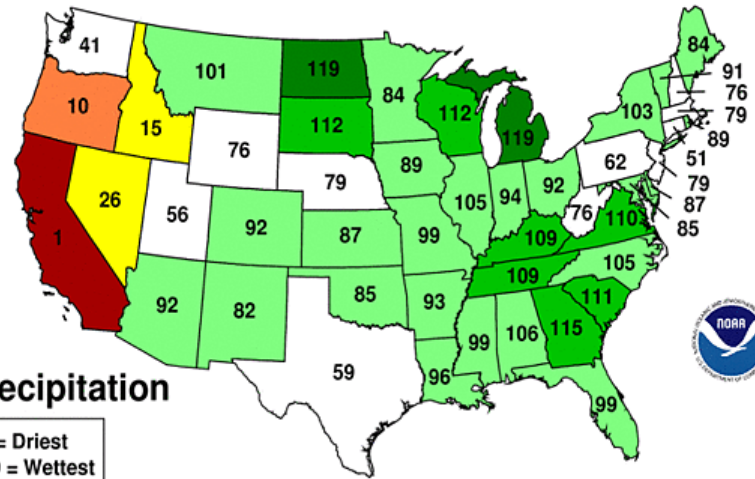
### Temperature

1 = Coldest  
119 = Warmest



## January-November 2013 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



### Precipitation

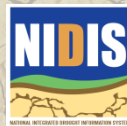
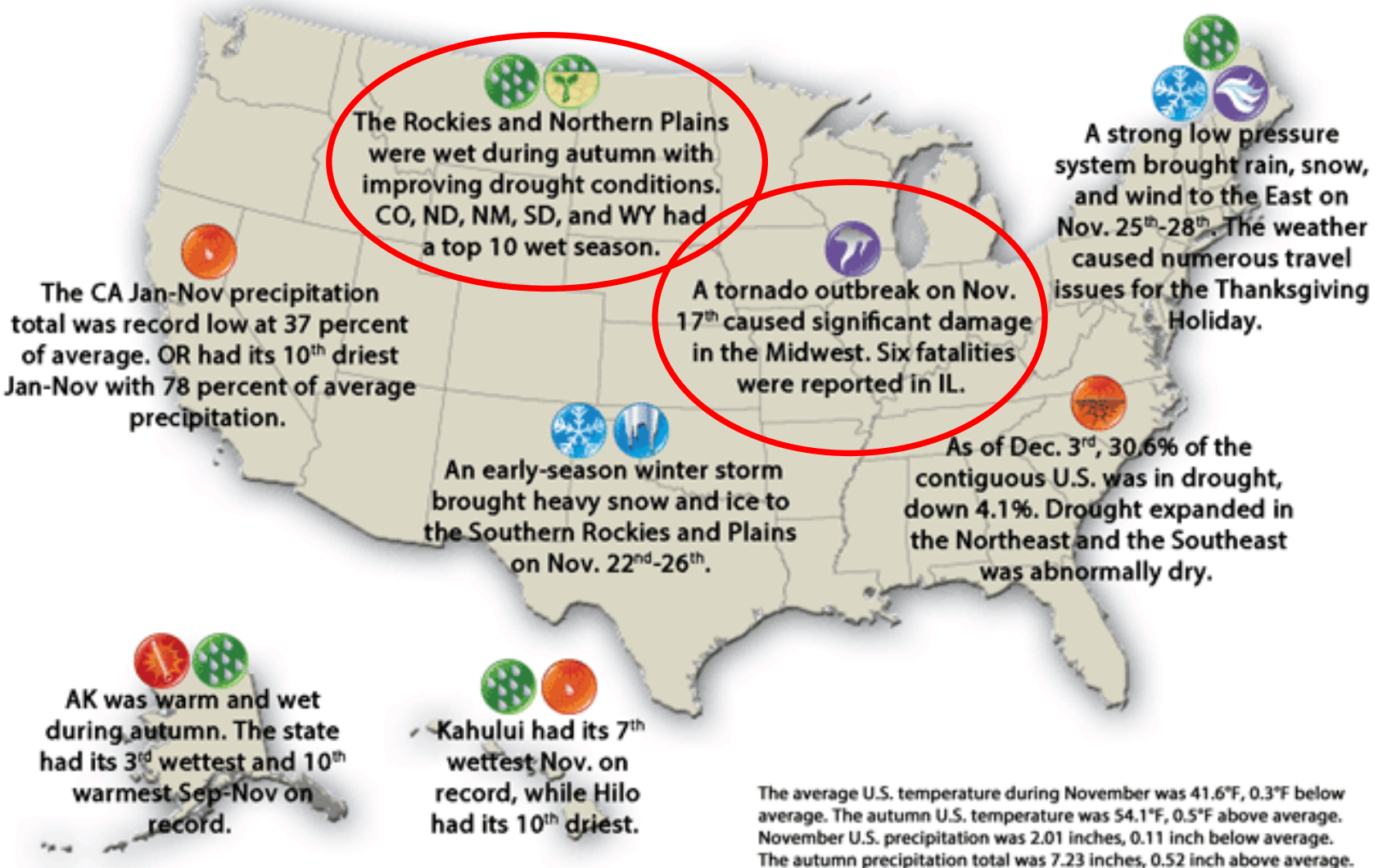
1 = Driest  
119 = Wettest



# Significant Events for November and Autumn 2013

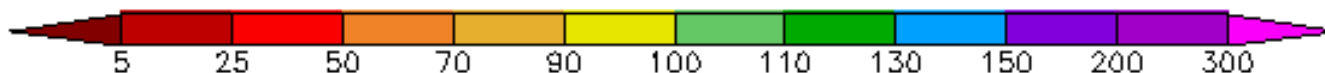
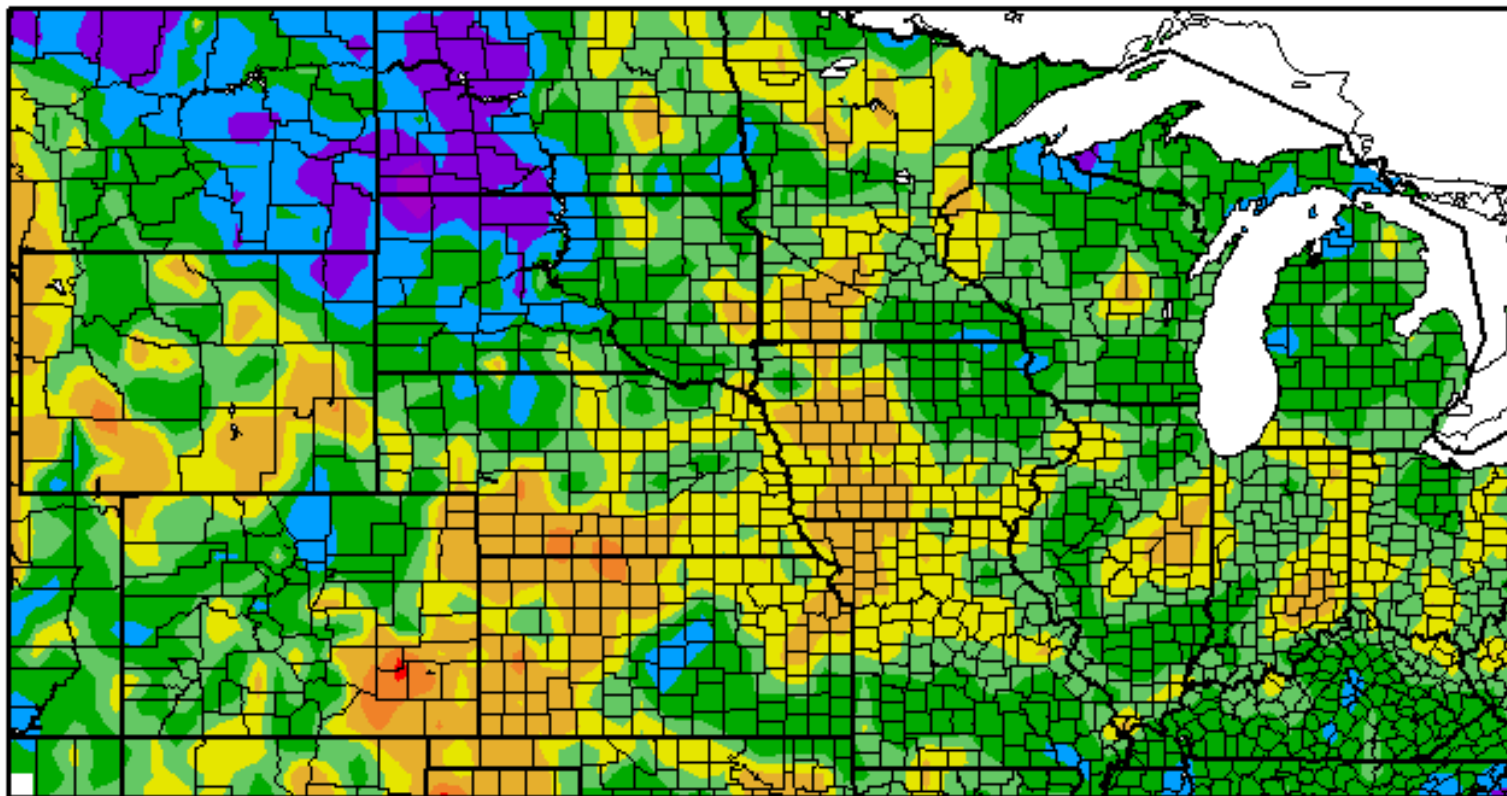


NOAA's  
National Climatic Data Center



# Year to Date Precipitation

Percent of Normal Precipitation (%)  
1/1/2013 - 12/16/2013



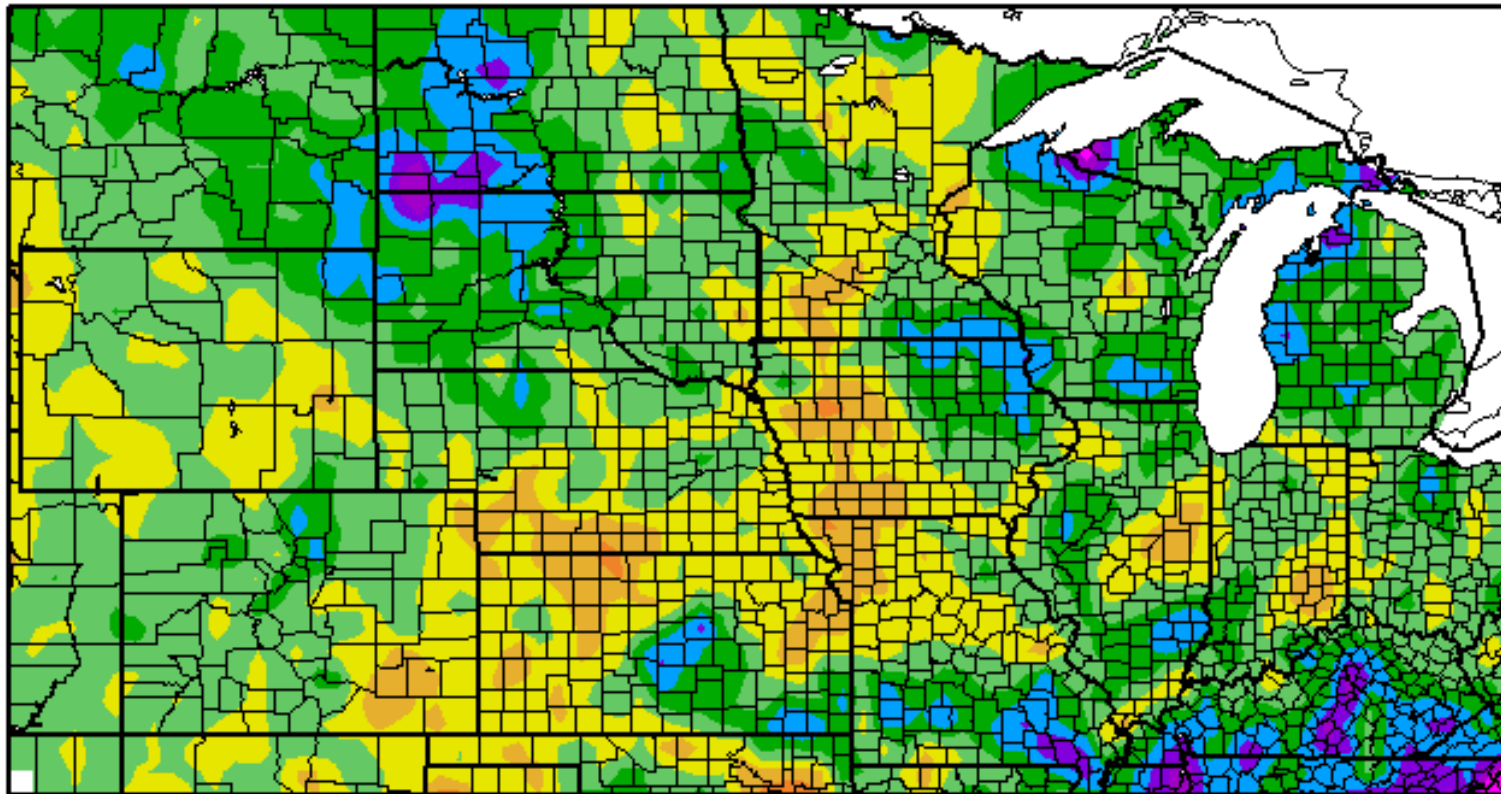
Generated 12/17/2013 at HPRCC using provisional data.

Regional Climate Centers



# 12 Month Departure from Normal

Departure from Normal Precipitation (in)  
12/17/2012 – 12/16/2013



Generated 12/17/2013 at HPRCC using provisional data.

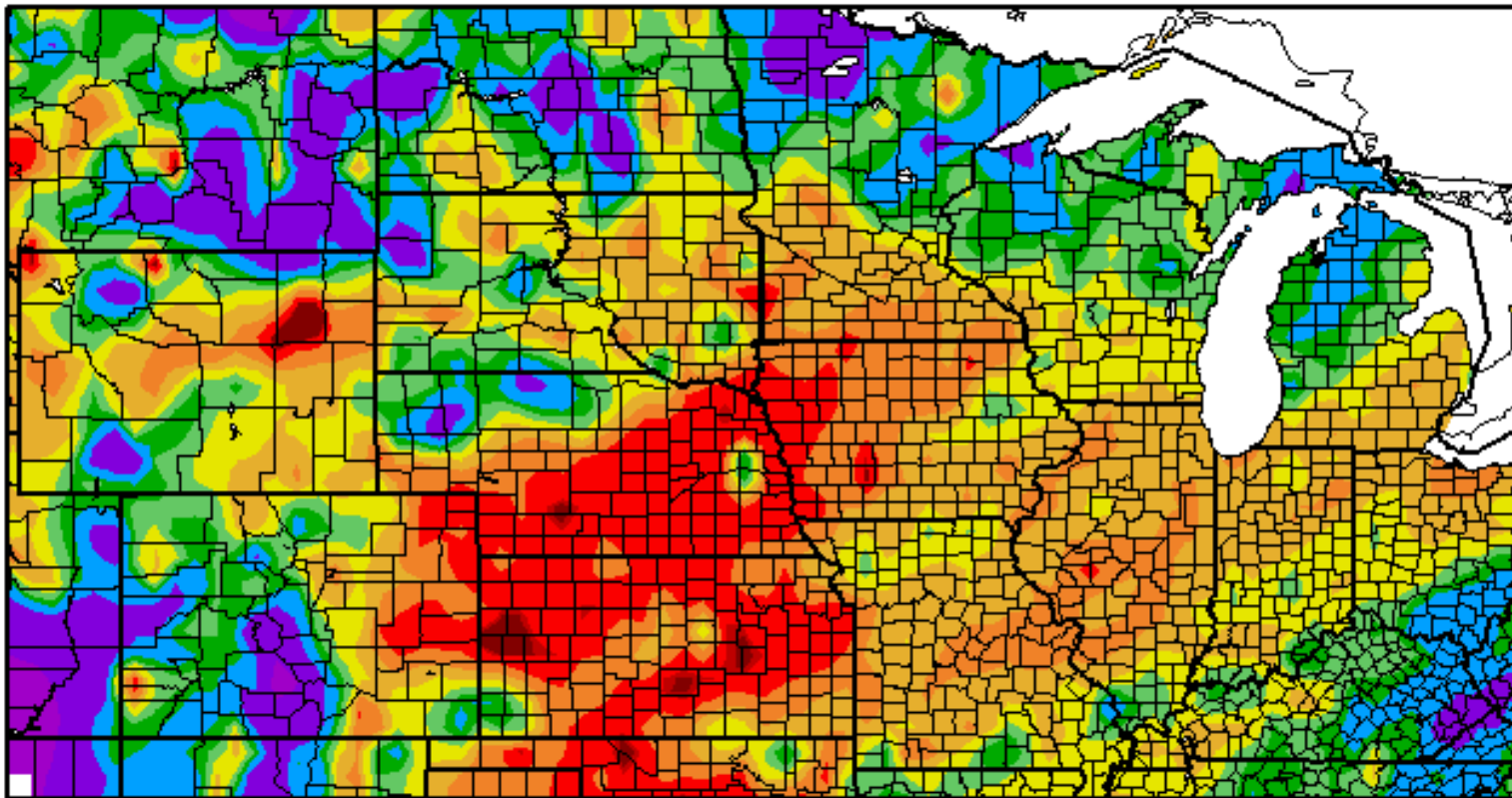
Regional Climate Centers





# Precipitation: Last 30 Days (ACIS)

Percent of Normal Precipitation (%)  
11/17/2013 - 12/16/2013



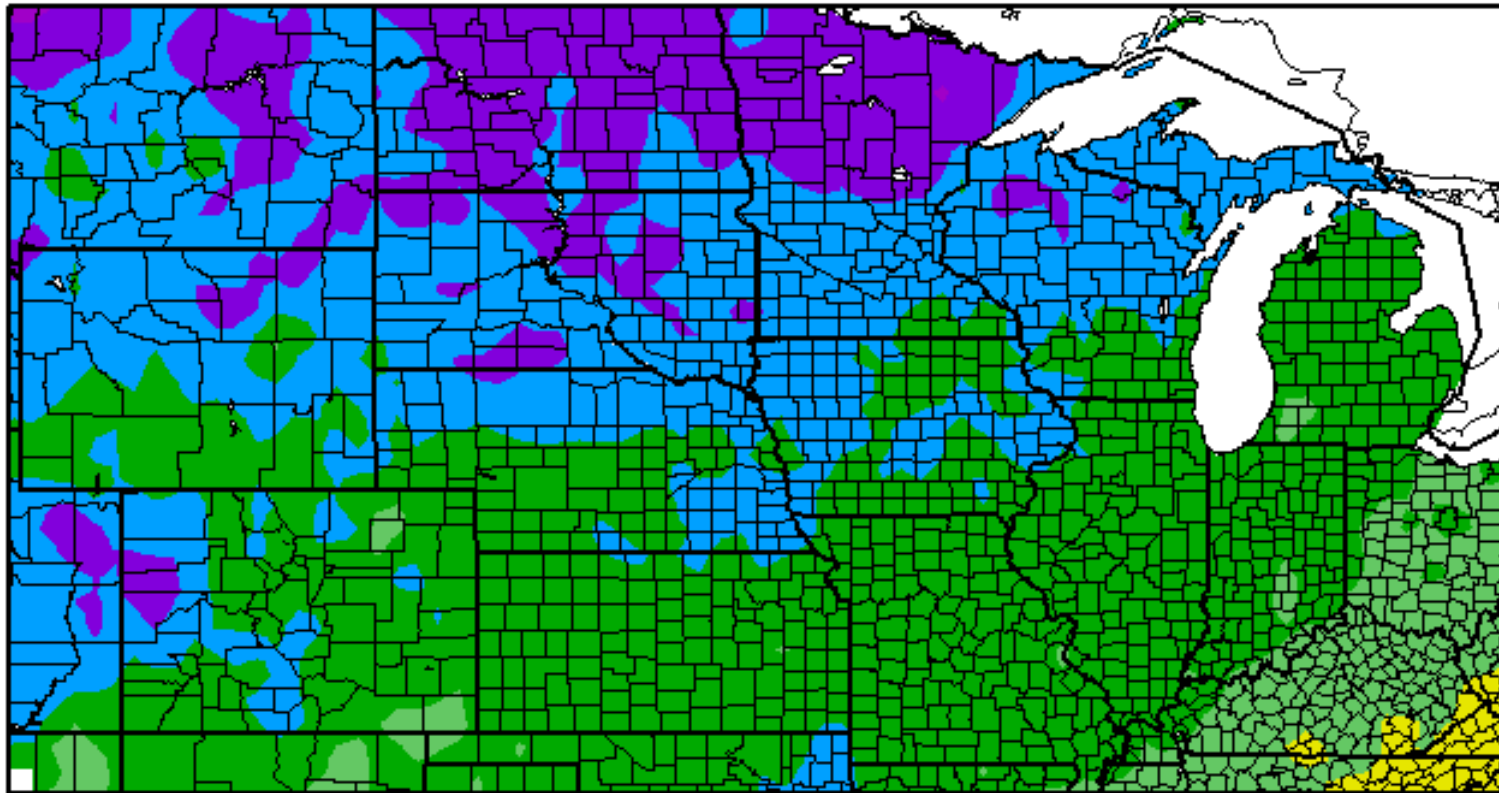
Generated 12/17/2013 at HPRCC using provisional data.

Regional Climate Centers



# Precipitation and Temperatures over the last 2 Weeks

Departure from Normal Temperature (F)  
12/3/2013 – 12/16/2013



Generated 12/17/2013 at HPRCC using provisional data.

Regional Climate Centers

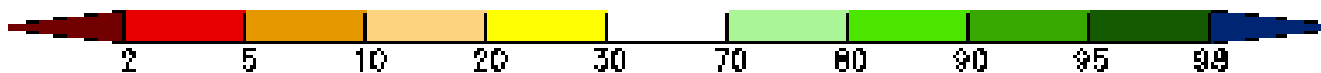
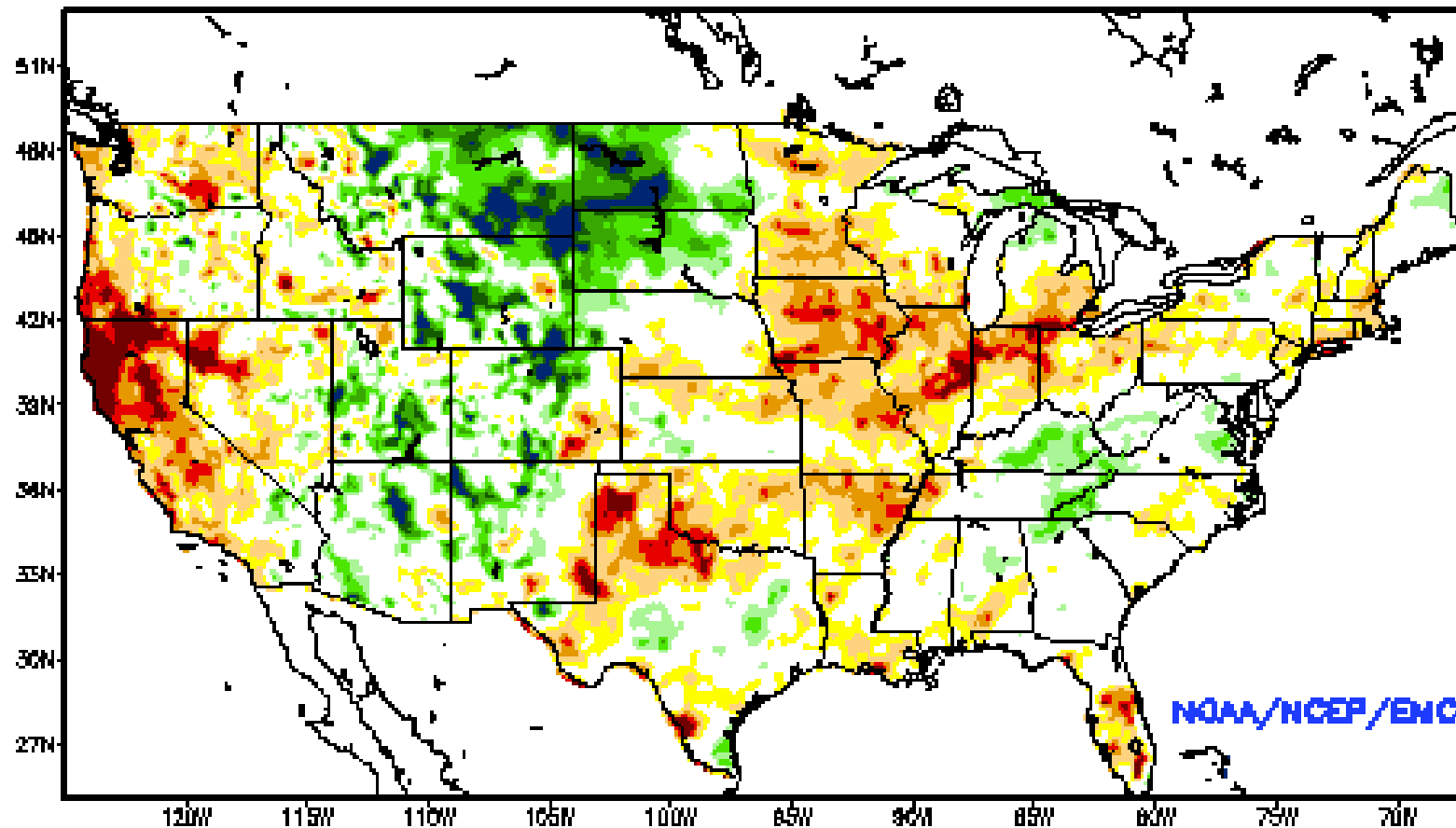




# Current Soil Moisture

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

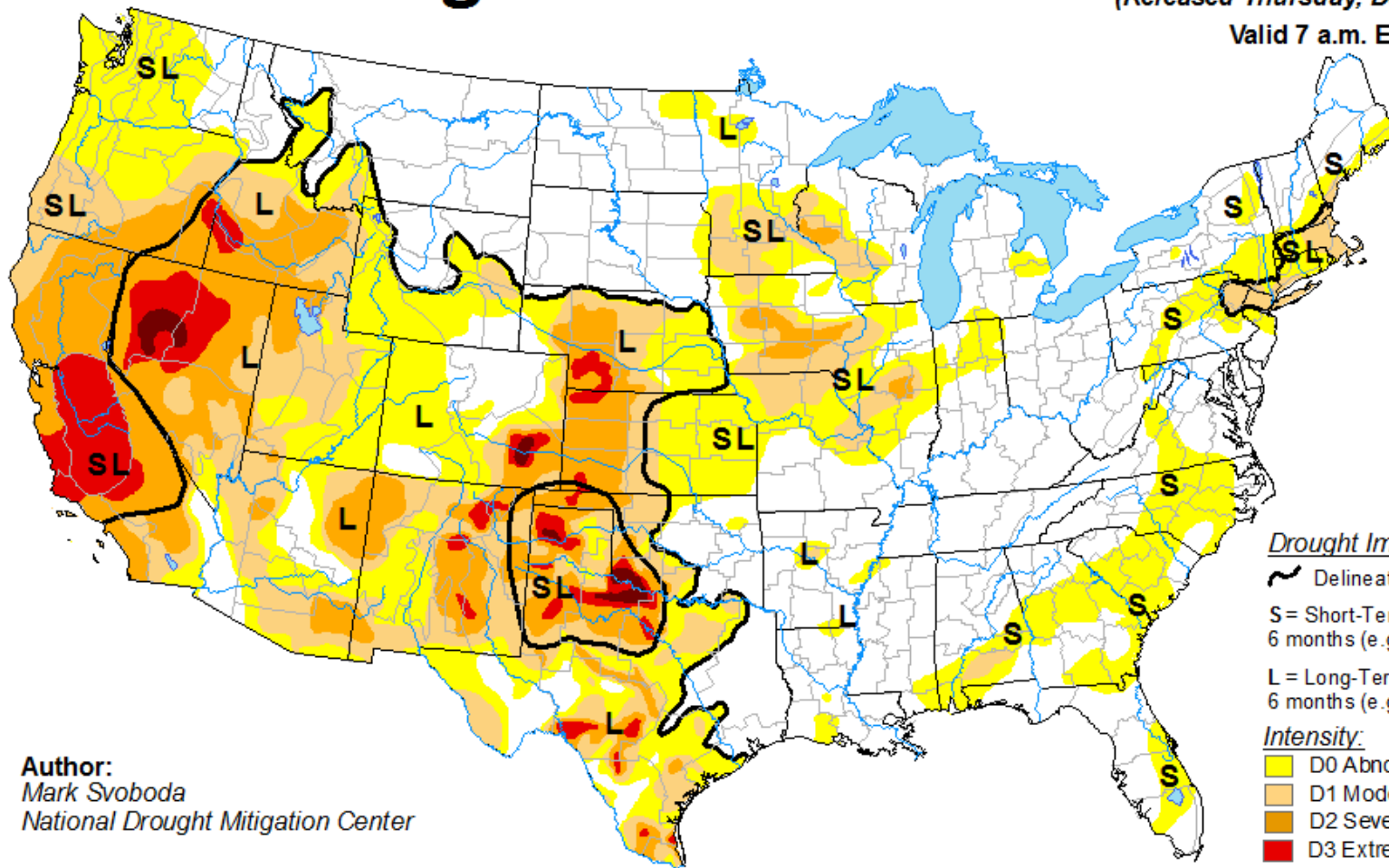
**Ensemble-Mean - Current Total Column Soil Moisture Percentile  
NCEP NLDAS Products Valid: DEC 13, 2013**



# U.S. Drought Monitor

December 17, 2013  
(Released Thursday, Dec. 19, 2013)

Valid 7 a.m. EST



Author:  
Mark Svoboda  
National Drought Mitigation Center

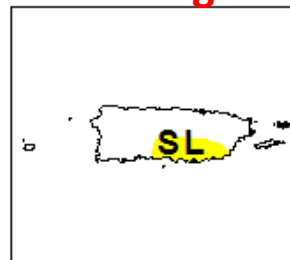
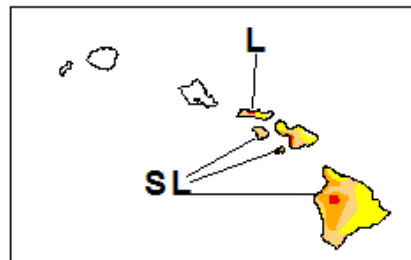
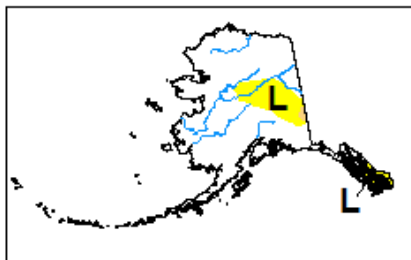
### Drought Impact Types:

- ~ 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

**31.50 % of the CONUS is in Drought**



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



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

# U.S. Drought Monitor NWS Central Region

**December 17, 2013**  
(Released Thursday, Dec. 19, 2013)  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

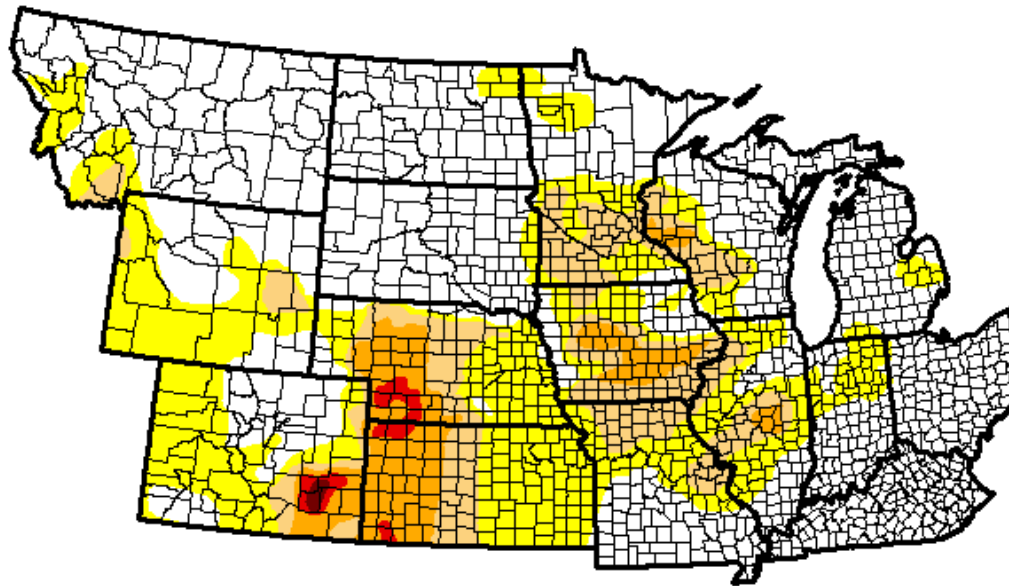
	None	D0	D1	D2	D3	D4
<b>Current</b>	56.68	25.94	10.76	5.72	0.77	0.13
<b>Last Week</b> <i>12/10/2013</i>	56.68	26.67	10.08	5.67	0.77	0.13
<b>3 Months Ago</b> <i>9/17/2013</i>	37.85	22.33	22.90	13.51	3.28	0.13
<b>Start of Calendar Year</b> <i>1/1/2013</i>	19.52	11.43	15.63	22.57	18.89	11.96
<b>Start of Water Year</b> <i>10/1/2013</i>	42.76	24.39	19.10	12.34	1.28	0.13
<b>One Year Ago</b> <i>12/18/2012</i>	19.44	11.51	15.62	22.23	19.24	11.96

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.*

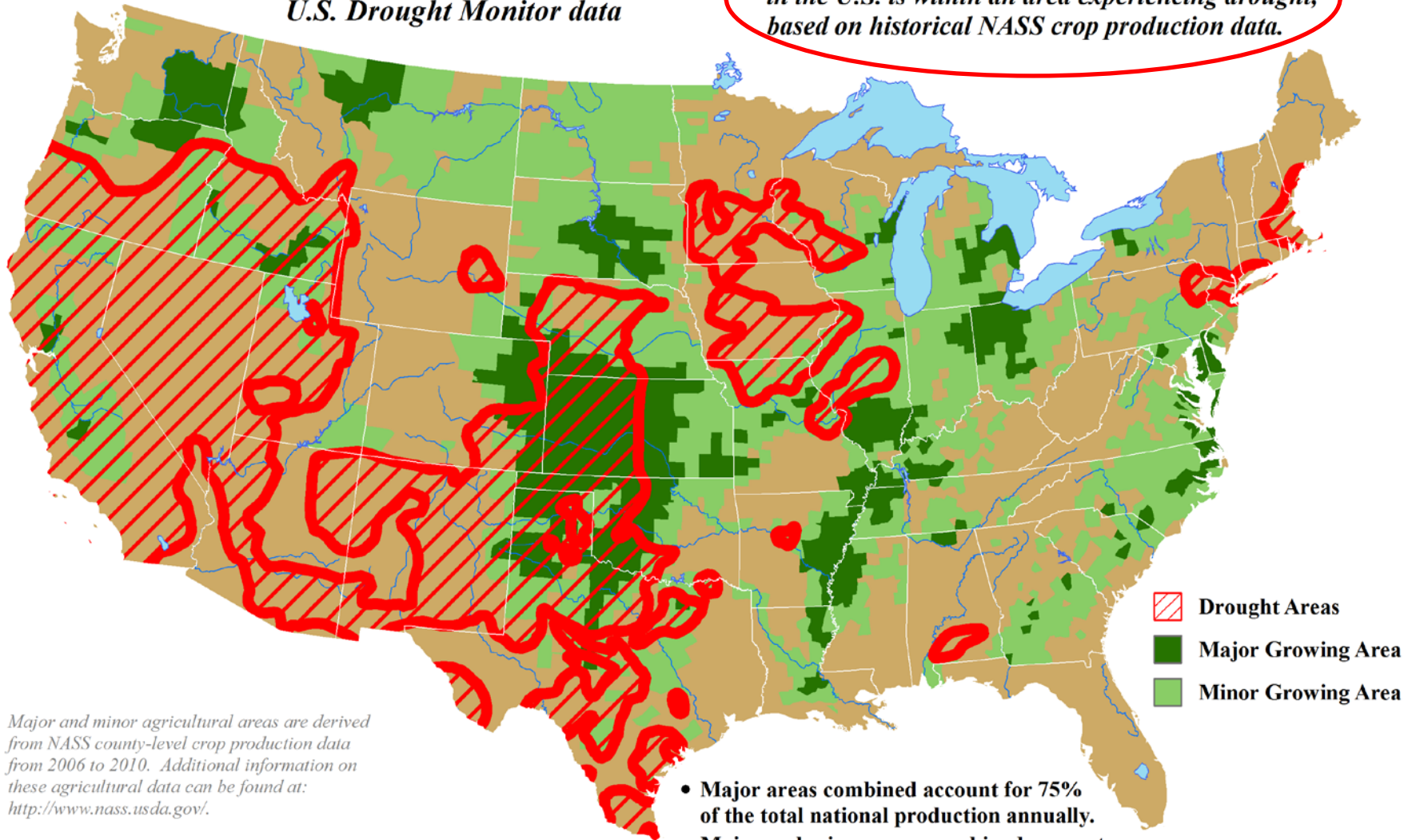
**Author:**  
Mark Svoboda  
National Drought Mitigation Center



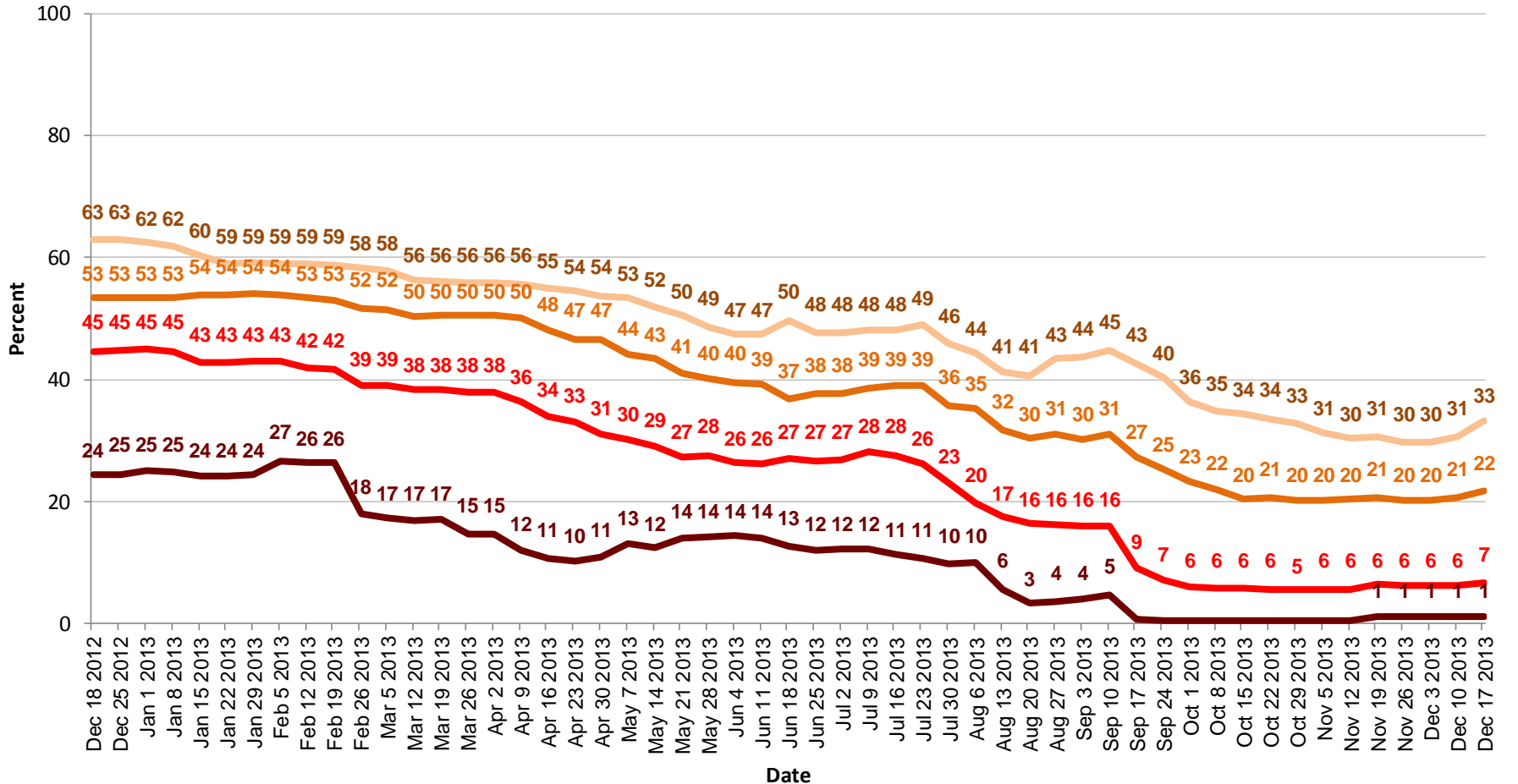
# U.S. Winter Wheat Areas Experiencing Drought

Reflects December 17, 2013  
U.S. Drought Monitor data

Approximately 33% of the winter wheat grown in the U.S. is within an area experiencing drought, based on historical NASS crop production data.



# United States Winter Wheat Areas Located in Drought



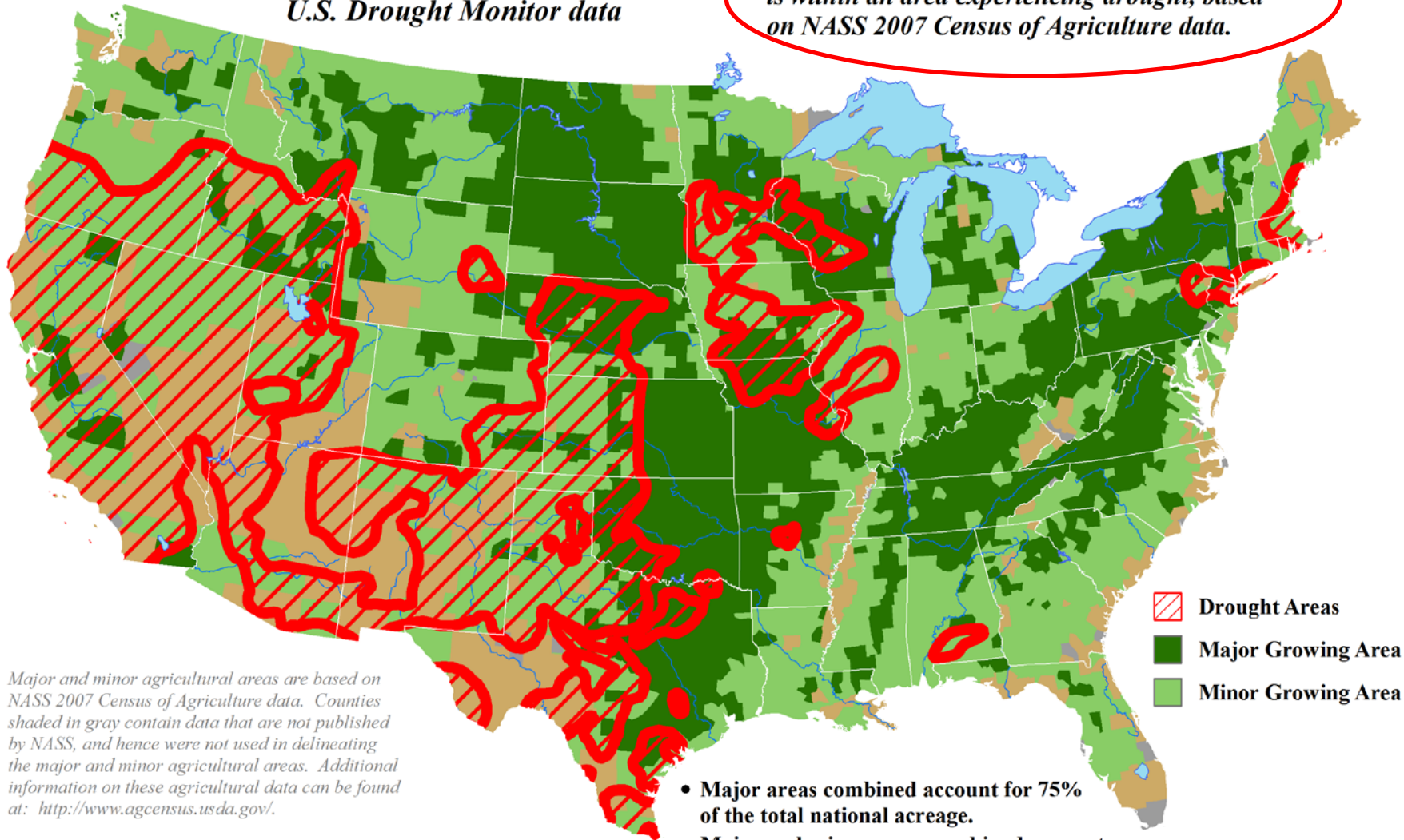
- Moderate or more intense drought (D1+)
- Severe or more intense drought (D2+)
- Extreme or more intense drought (D3+)
- Exceptional drought (D4)



# U.S. Hay Areas Experiencing Drought

Reflects December 17, 2013  
U.S. Drought Monitor data

Approximately 22% of the domestic hay acreage is within an area experiencing drought, based on NASS 2007 Census of Agriculture data.



Major and minor agricultural areas are based on NASS 2007 Census of Agriculture data. Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: <http://www.agcensus.usda.gov/>.

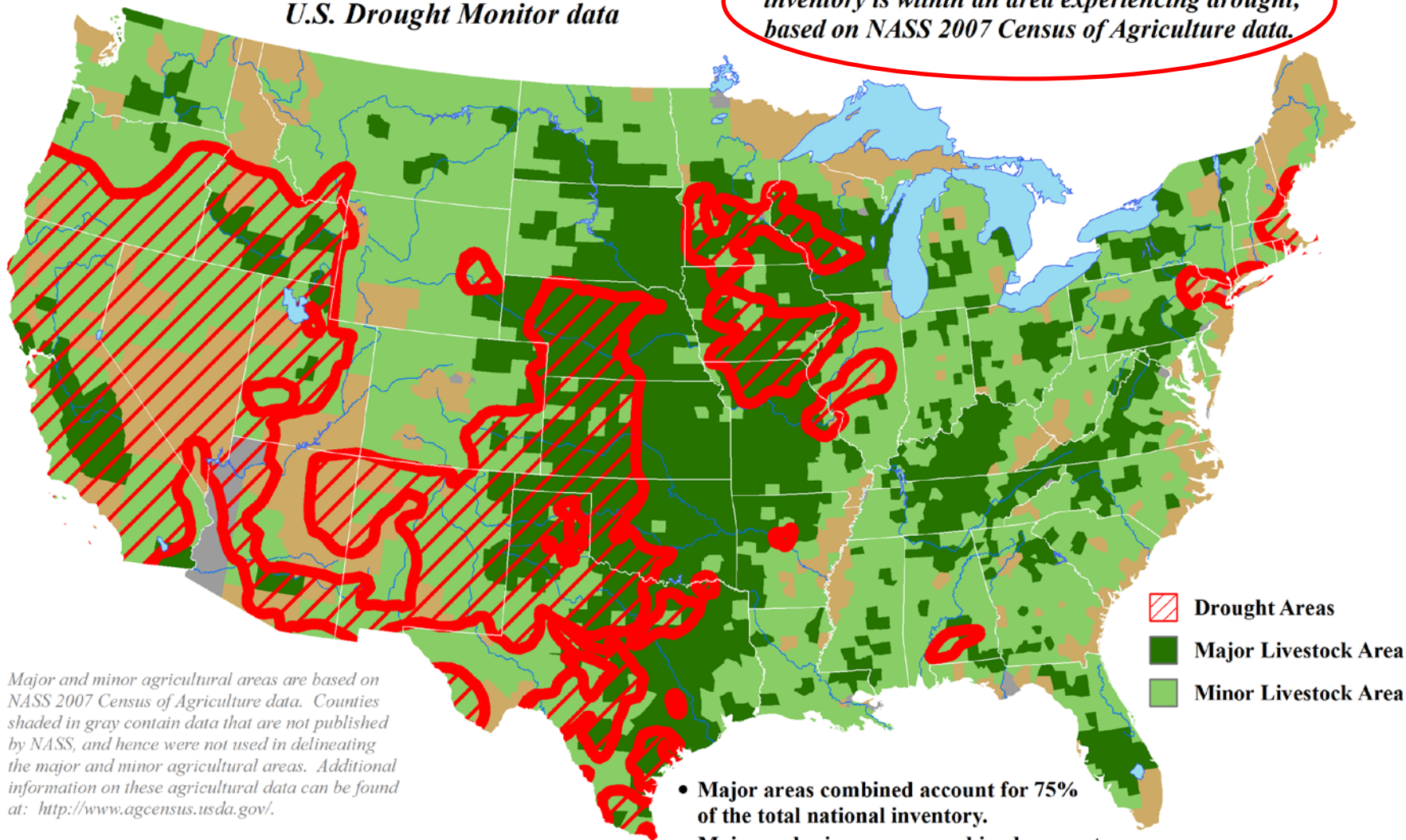
Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: <http://droughtmonitor.unl.edu/>.

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

# U.S. Cattle Areas Experiencing Drought

Reflects December 17, 2013  
U.S. Drought Monitor data

Approximately 35% of the domestic cattle inventory is within an area experiencing drought, based on NASS 2007 Census of Agriculture data.



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/>.

# Regional Climatic Impacts



Nation



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**Nebraska**  
Lincoln



# Missouri River Basin

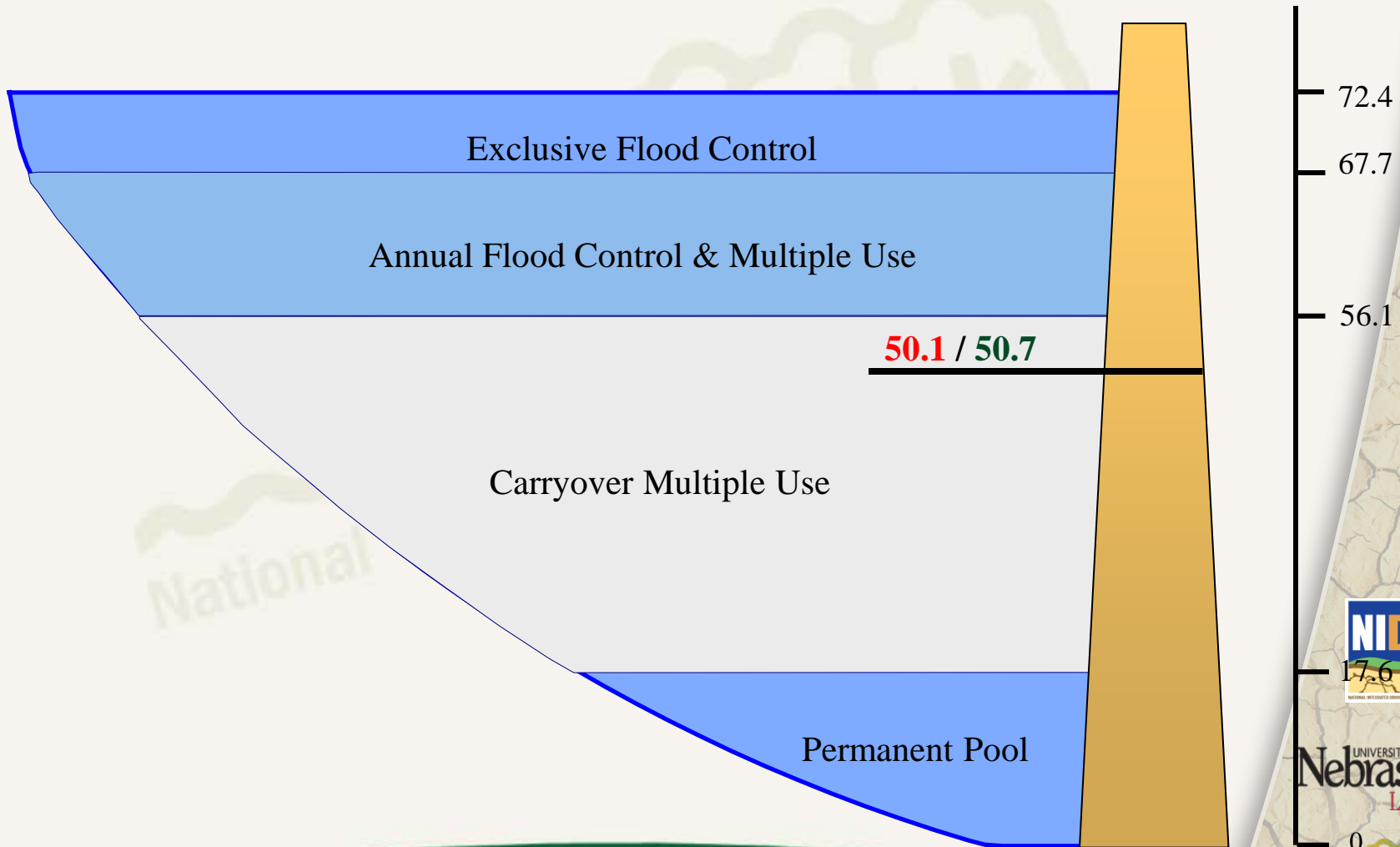
(via Kevin Low)

- ▶ Above normal soil moisture in the upper basin has likely allowed for soils to freeze and could enhance spring runoff potential
- ▶ Early ice jams on several rivers due to above normal flows this fall and the early cold snap
- ▶ Water going into ice has impacted power plant water intake on the Yellowstone River



# Missouri River Mainstem Reservoir System Current and Forecast Reservoir Levels December 18, 2013 and March 1, 2014

System Storage  
million acre feet (MAF)



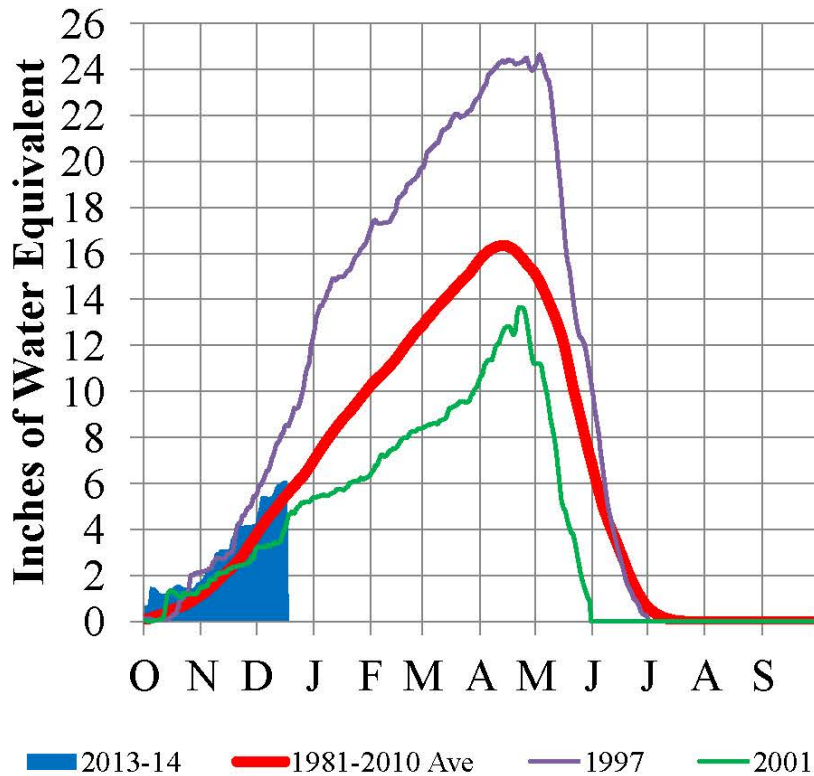
6.0 / 5.4 MAF into Carryover Multiple Use Zone



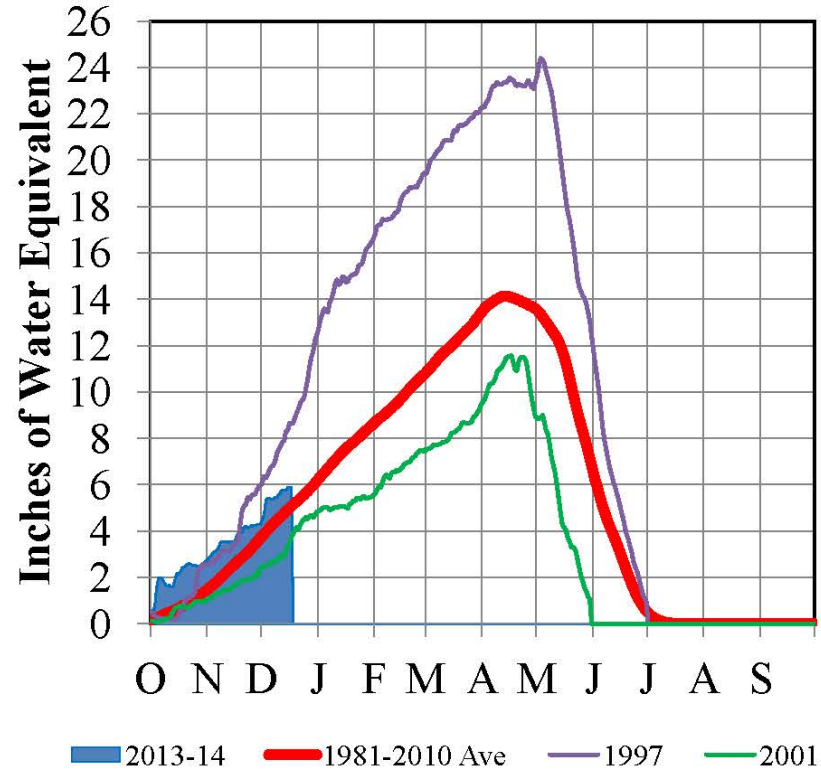
# Missouri River Basin – Mountain Snowpack Water Content 2013-2014 with comparison plots from 1997\* and 2001\*

December 17, 2013

## Total above Fort Peck



## Total Fort Peck to Garrison



The Missouri River basin mountain snowpack normally peaks near April 15. By December 15 normally 34% of the peak has accumulated. On December 17, 2013 the mountain snowpack in the “Total above Fort Peck” reach is currently 6.1”, 109% of the 1981-2010 30-year average. The mountain snowpack in the “Total Fort Peck to Garrison” reach is currently 5.9”, 114% of the 1981-2010 30-year average.

\*Generally considered the high and low year of the last 20-year period.

Provisional data. Subject to revision.



# Cold throughout the region

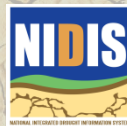
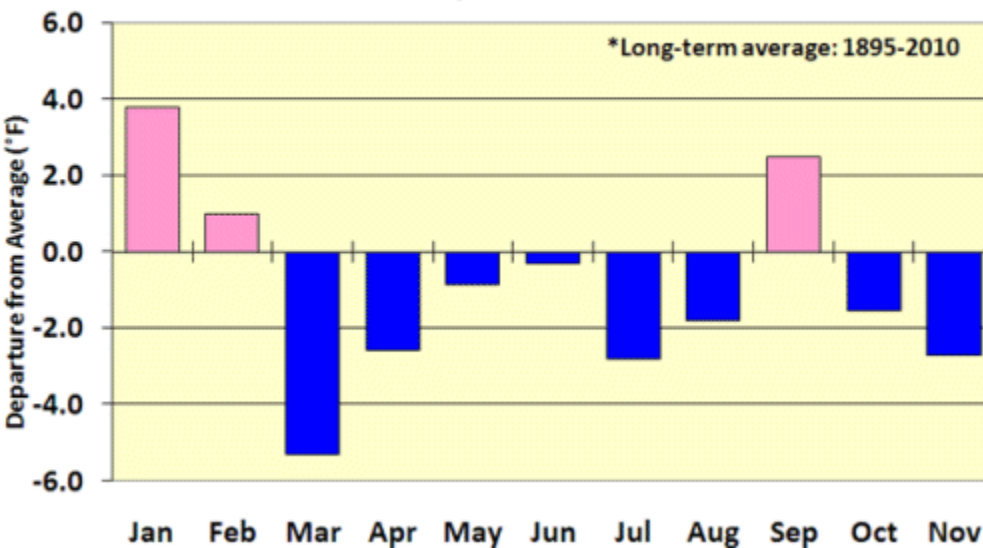
Minnesota: Nov. 2013

	District Averages			
	Avg. Temp.	Dept. from Norm.	Avg. Prec.	Dept. from Norm.
1 (NorthWest)	26.0	-.4	.47	-.59
2 (North Central)	25.3	-1.6	.90	-.60
3 (NorthEast)	28.1	-.9	.99	-.66
4 (West Central)	29.0	-1.0	.12	-1.11
5 (Central)	28.9	-2.1	.42	-1.05
6 (East Central)	30.8	-.8	.50	-1.24
7 (SouthWest)	30.7	-1.2	.46	-.96
8 (South Central)	30.5	-2.5	.69	-1.21
9 (SouthEast)	32.0	-1.9	1.17	-.83
Statewide Average	29.0	-1.4	.64	-.92

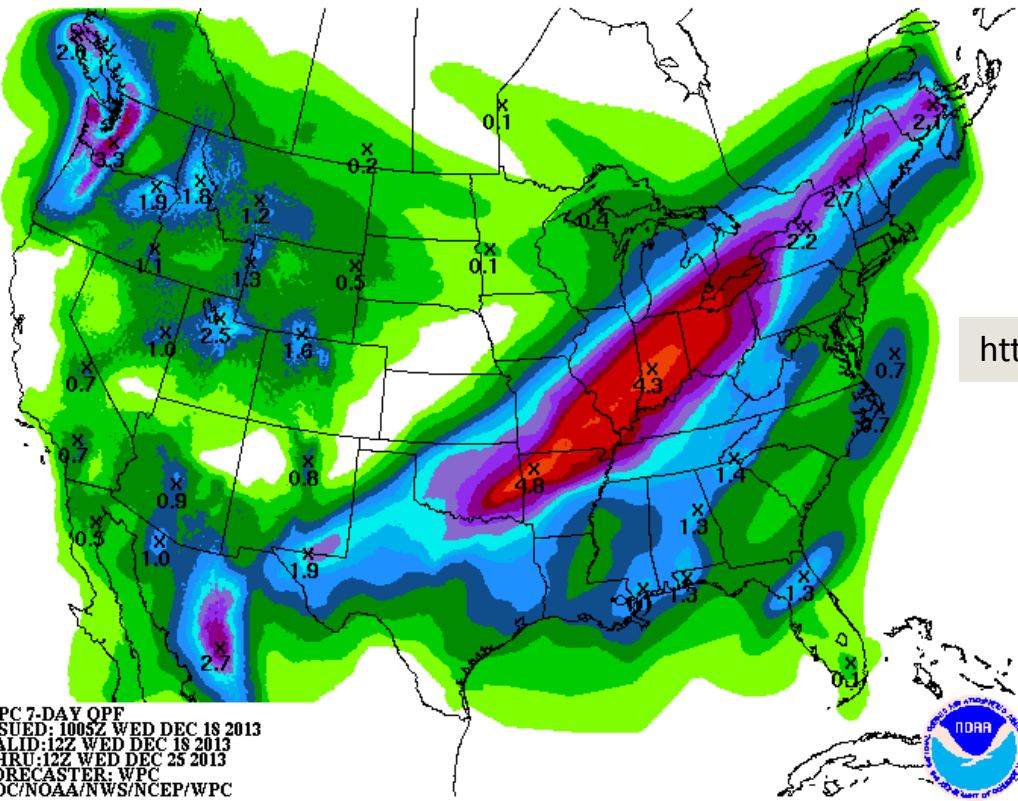
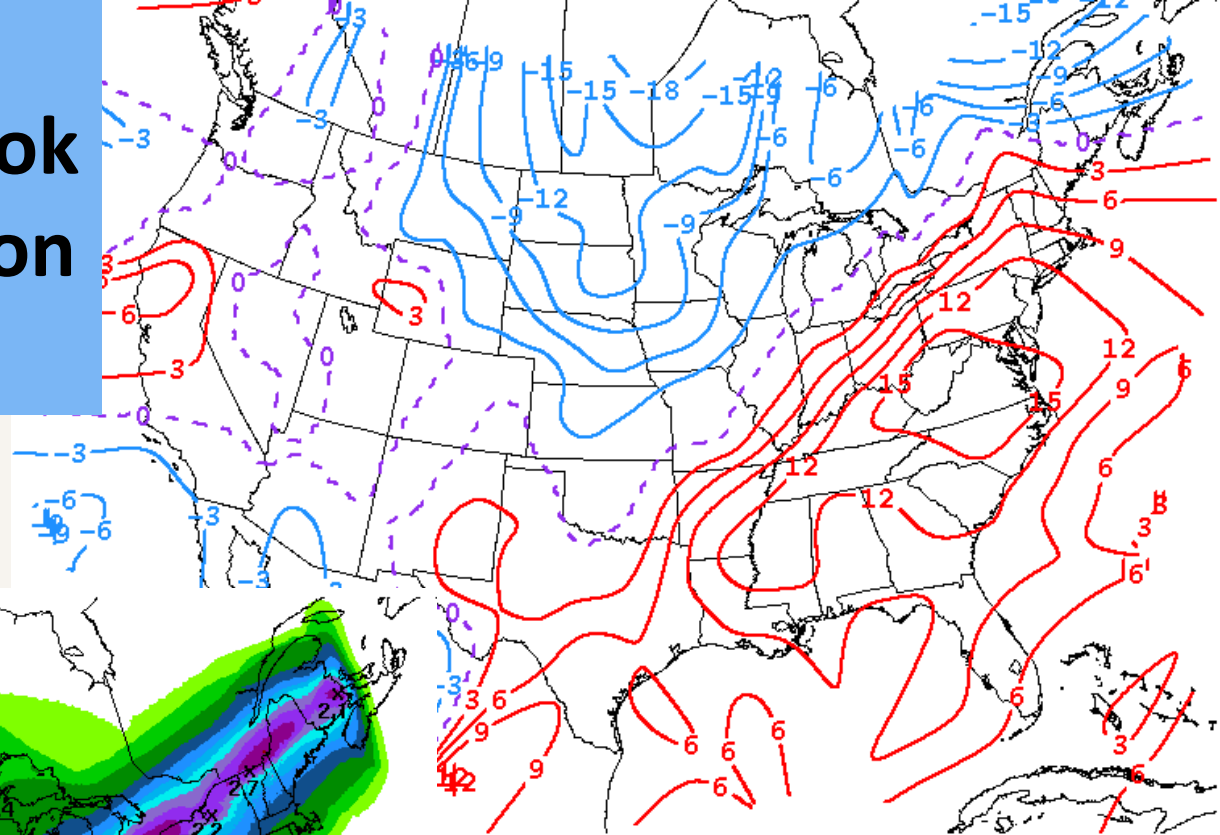
Iowa: Nov. 2013

DISTRICT	TEMPERATURE (F)	
	November 2013 Average Departure*	
Northwest	31.7	-1.9
North Central	31.1	-2.7
Northeast	32.1	-3.4
West Central	33.2	-2.6
Central	33.7	-2.8
East Central	34.8	-3.4
Southwest	36.0	-2.4
South Central	35.8	-2.9
Southeast	36.8	-3.4
STATE	33.7	-2.9

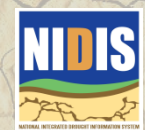
Missouri Monthly Temperature Departure from Average\*  
January - November 2013



# HPC 5-Day Temperature Outlook & 7-Day Precipitation Outlook



<http://www.cpc.ncep.noaa.gov/products/forecasts/>

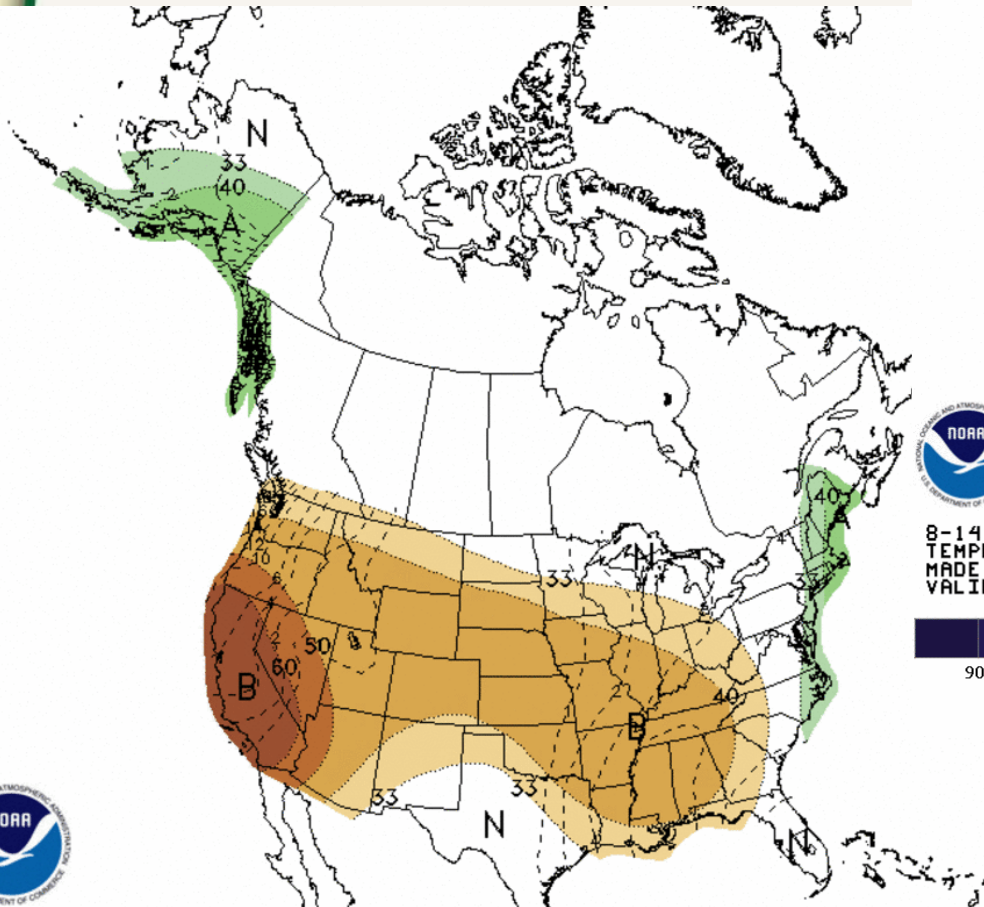


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**Nebraska**  
Lincoln



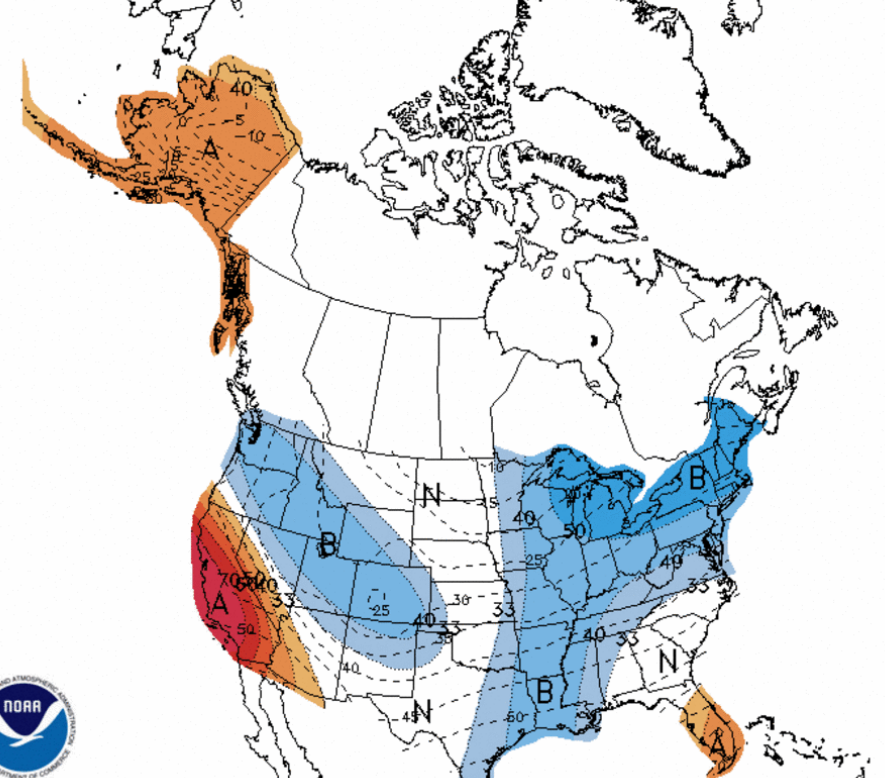
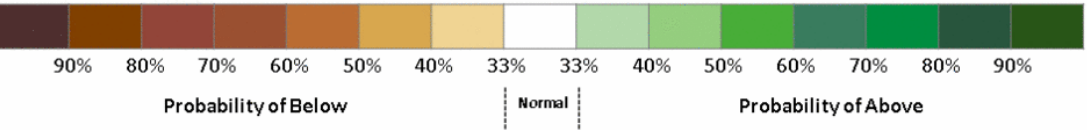


# CPC 8-14-Day Outlooks



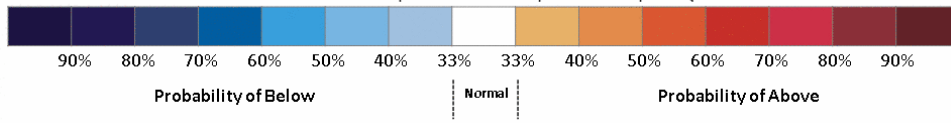
8-14 DAY OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 18 DEC 2013  
VALID DEC 26, 2013 - JAN 01, 2014

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

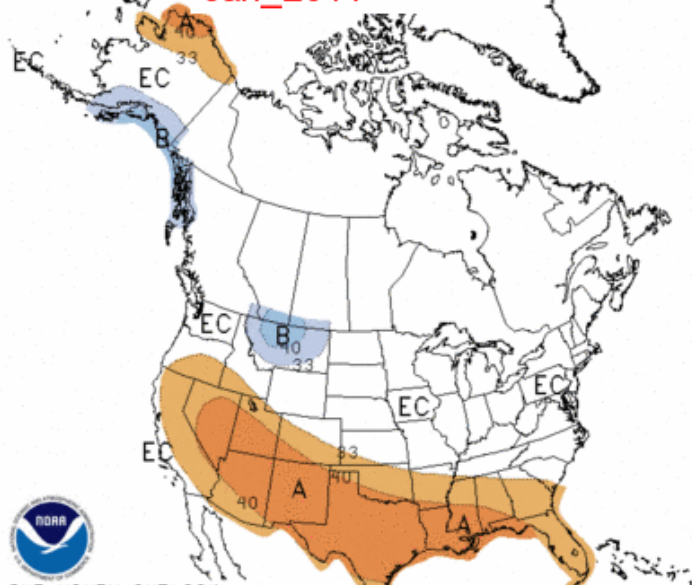


8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 18 DEC 2013  
VALID DEC 26, 2013 - JAN 01, 2014

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



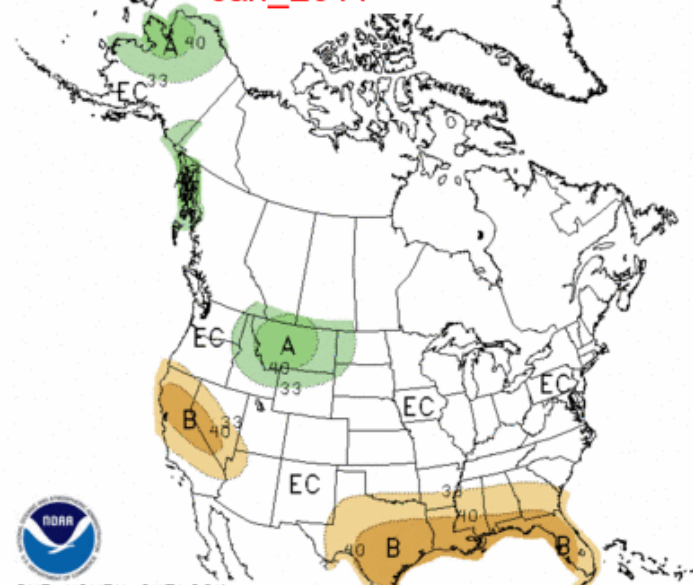
Jan\_2014



ONE-MONTH OUTLOOK  
TEMPERATURE PROBABILITY  
0.5 MONTH LEAD  
VALID JAN 2014  
MADE 19 DEC 2013

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

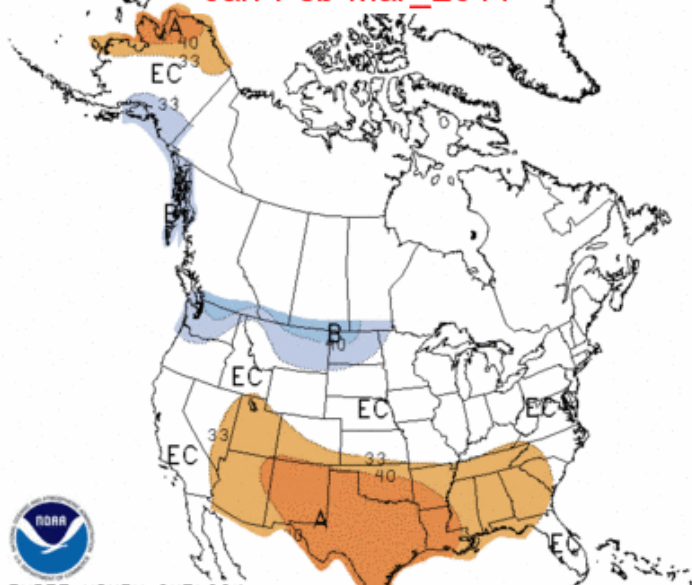
Jan\_2014



ONE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
0.5 MONTH LEAD  
VALID JAN 2014  
MADE 19 DEC 2013

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

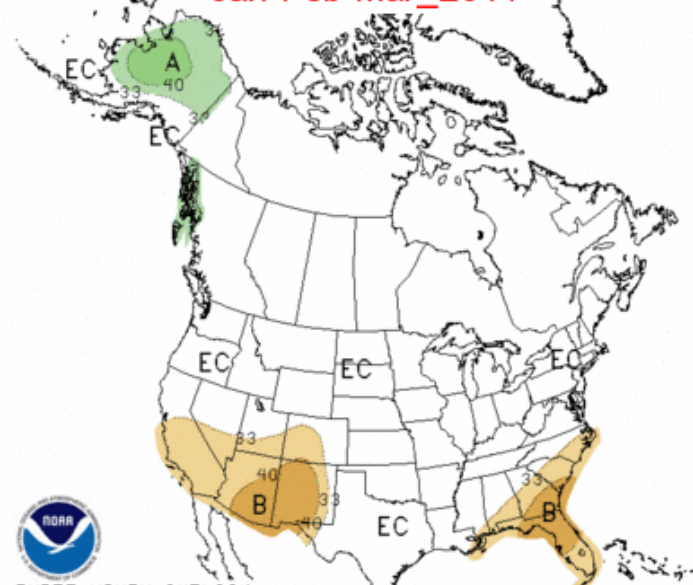
Jan-Feb-Mar\_2014



THREE-MONTH OUTLOOK  
TEMPERATURE PROBABILITY  
0.5 MONTH LEAD  
VALID JFM 2014  
MADE 19 DEC 2013

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

Jan-Feb-Mar\_2014



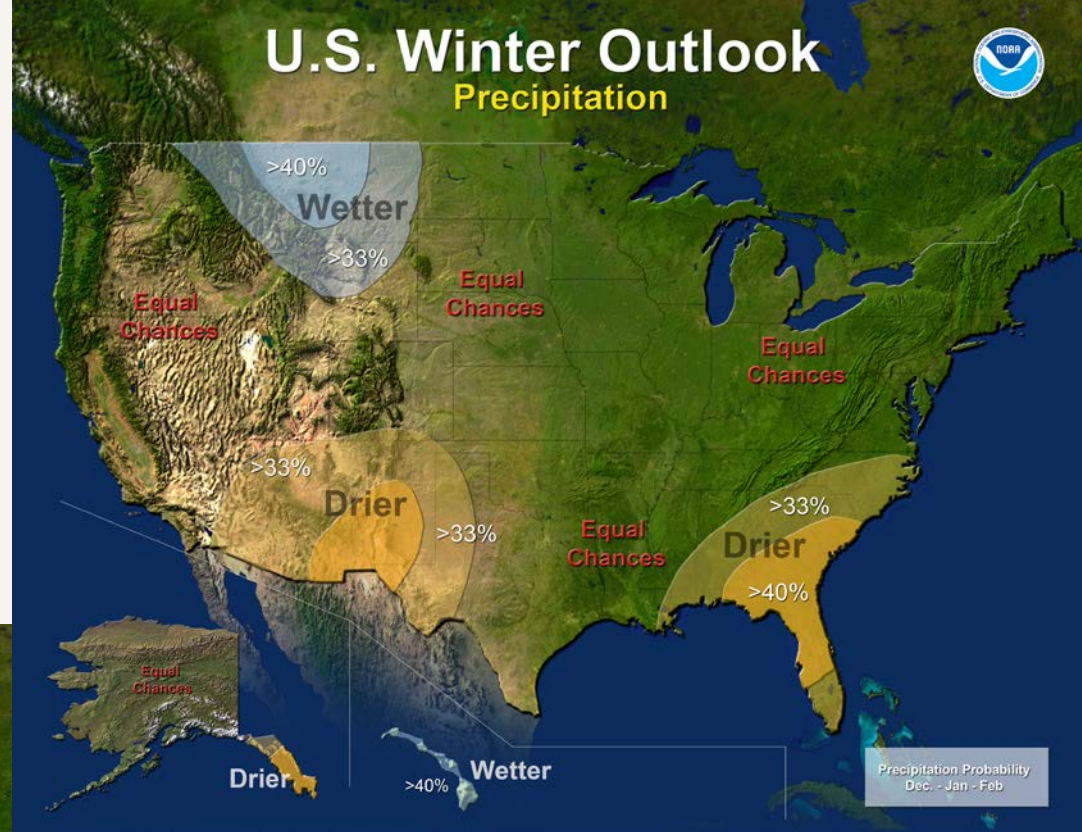
THREE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
0.5 MONTH LEAD  
VALID JFM 2014  
MADE 19 DEC 2013

EC MEANS EQUAL  
CHANCES FOR A, N, B  
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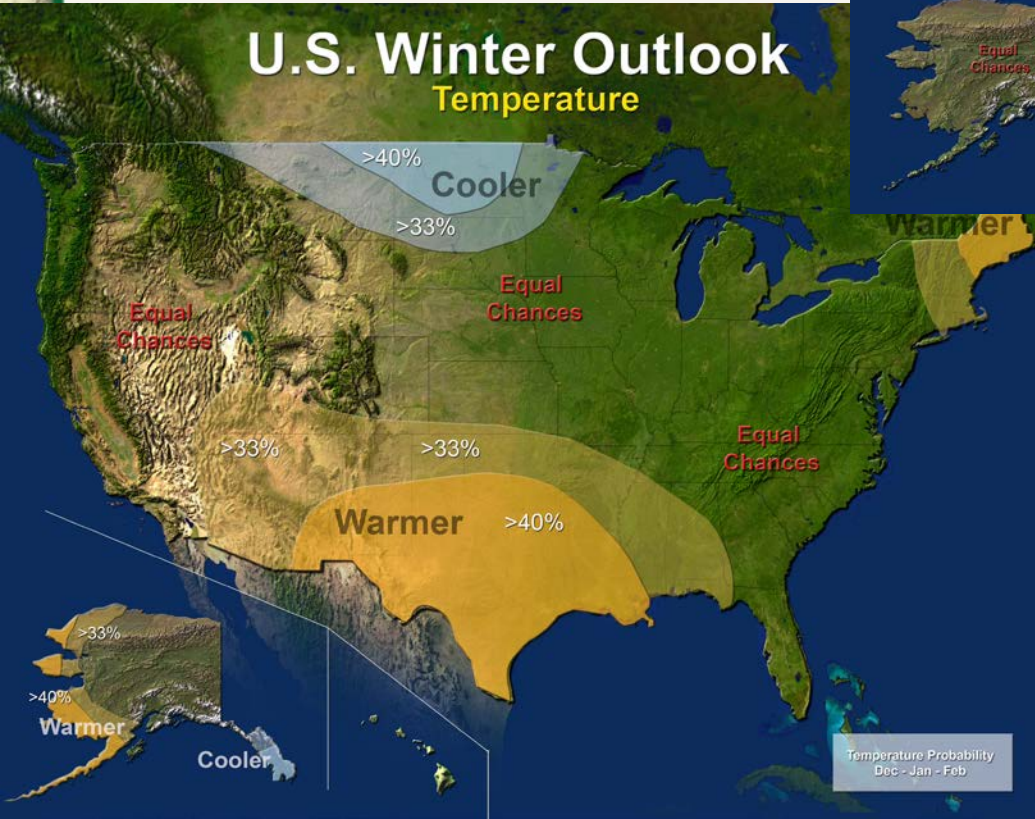


# NOAA Winter Outlook

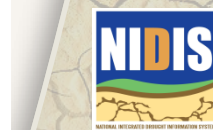
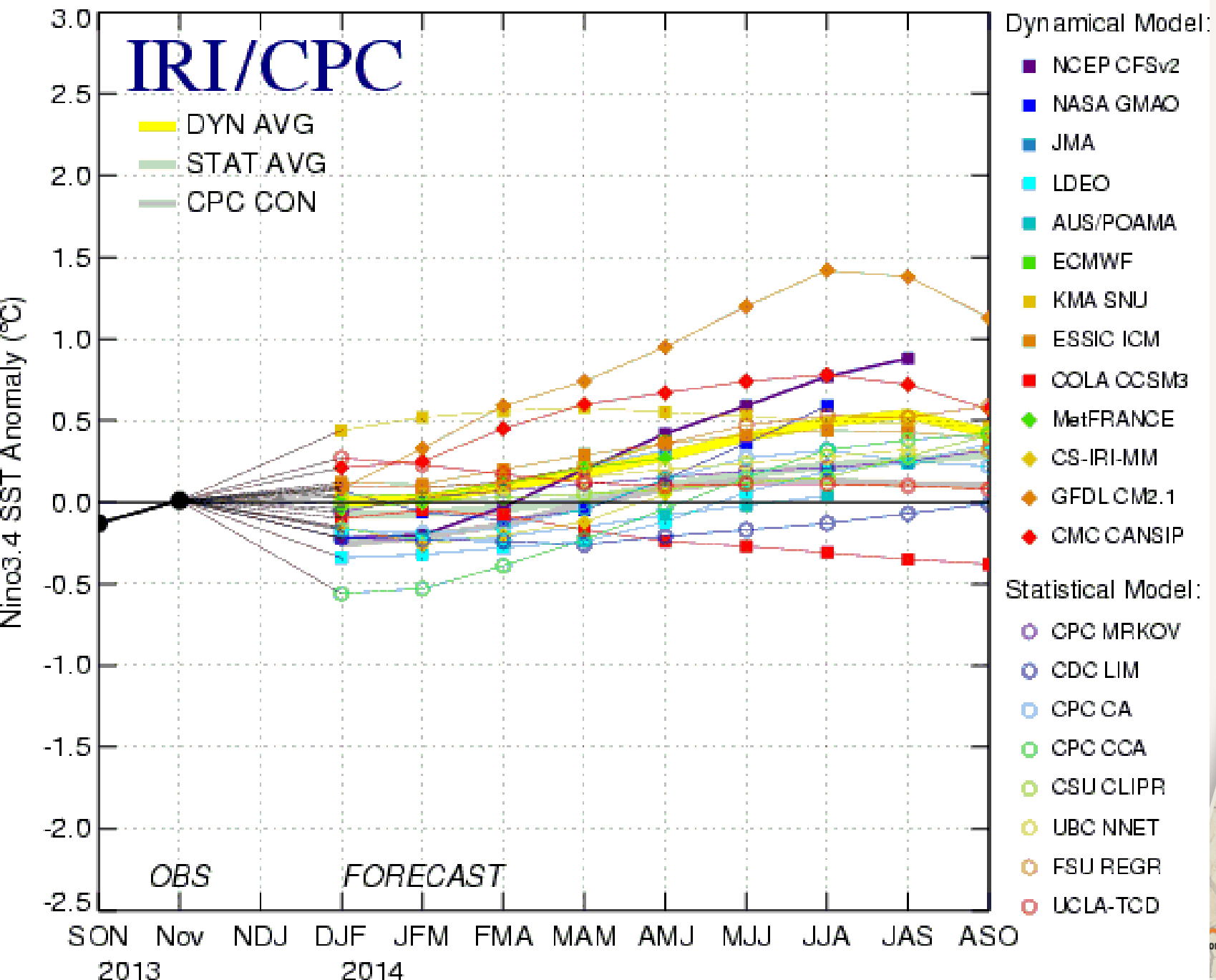
## U.S. Winter Outlook Precipitation



## U.S. Winter Outlook Temperature



# Mid-Dec 2013 Plume of Model ENSO Predictions



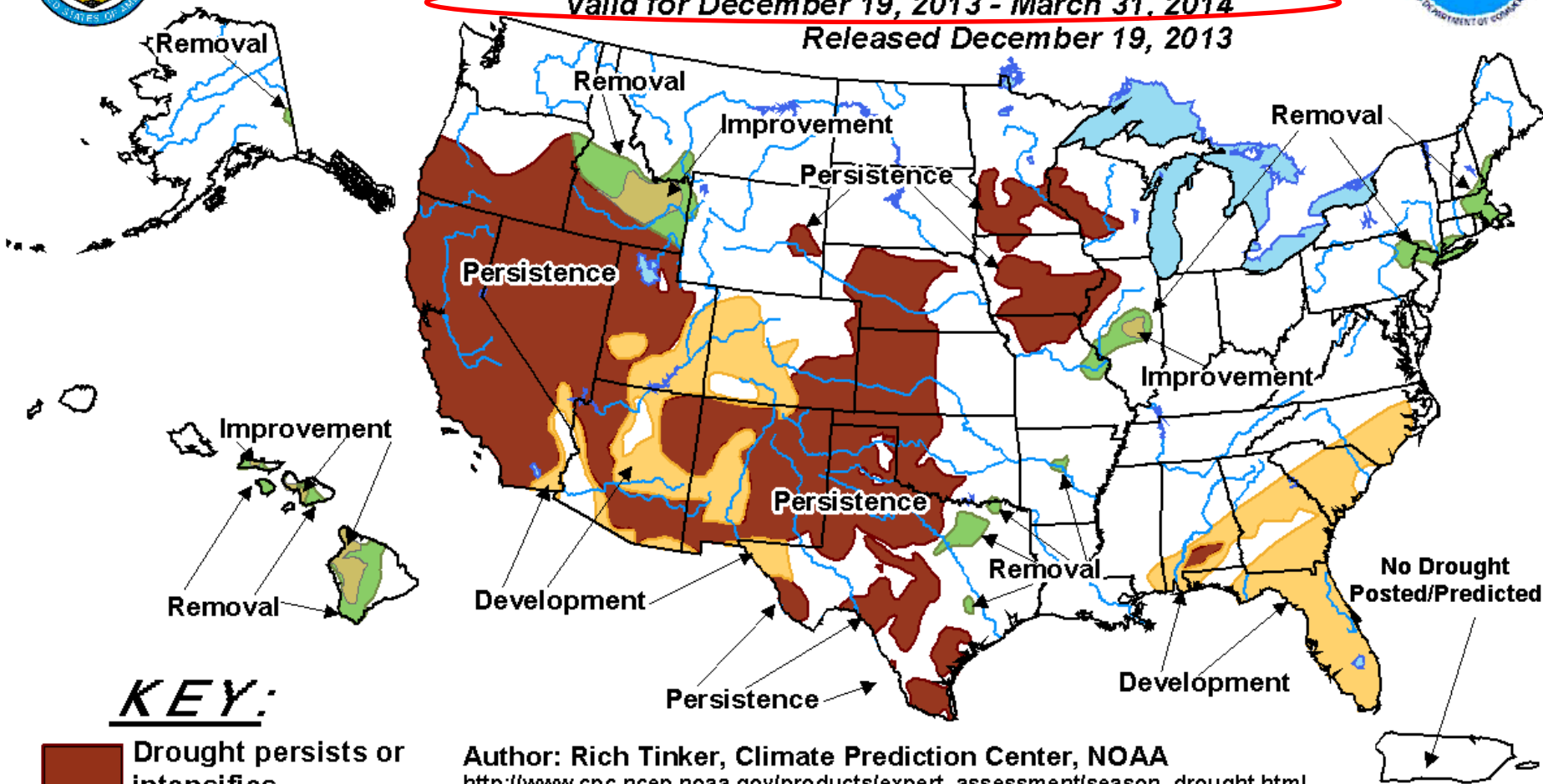


# U.S. Seasonal Drought Outlook





## Drought Tendency During the Valid Period

*Valid for December 19, 2013 - March 31, 2014*

*Released December 19, 2013*



### KEY:

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

Author: Rich Tinker, 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 tan area 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)

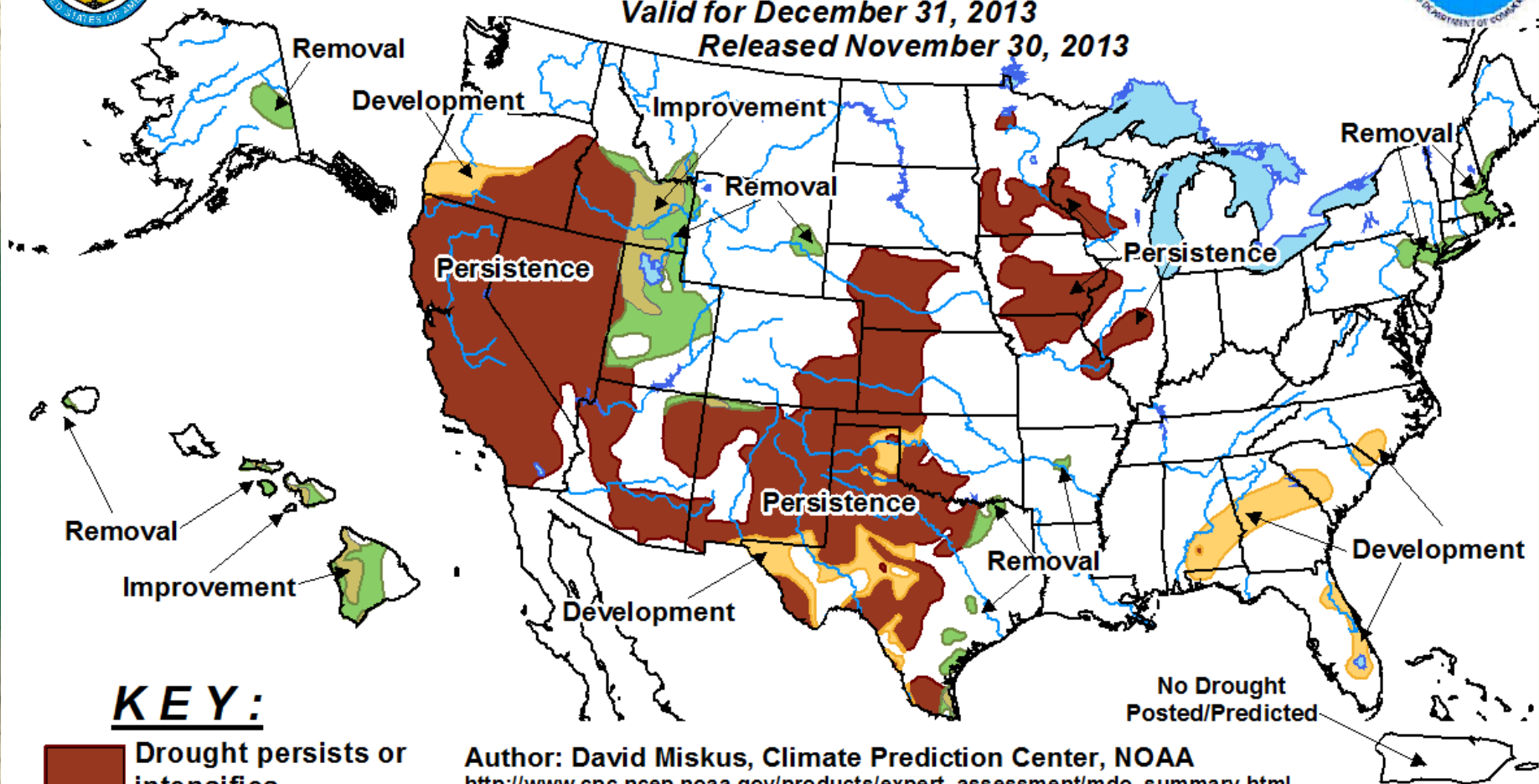


# U.S. Monthly Drought Outlook





## Drought Tendency During the Valid Period

Valid for December 31, 2013

Released November 30, 2013



### KEY:

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

Author: David Miskus, Climate Prediction Center, NOAA

[http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/mdo\\_summary.html](http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_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)

# Summary

- ❖ Most of the region will record a wetter than normal year in 2013 in contrast to 2012.
- ❖ Normal to cooler than normal temperatures dominated the region in 2013.
- ❖ Decent recharge of the soil moisture, especially in the top 18 inches of the profile helped ease drought in the region.



# Further Information

## Today's Recorded Presentation:

- <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 Monitor: [www.droughtmonitor.unl.edu](http://www.droughtmonitor.unl.edu)
- National Drought Mitigation Center: [www.drought.unl.edu](http://www.drought.unl.edu)
- Drought Impact Reporter: [www.droughtreporter.unl.edu](http://www.droughtreporter.unl.edu)
- NIDIS Drought Portal: [www.drought.gov](http://www.drought.gov)
- State climatologists
  - <http://www.stateclimate.org>
- Regional climate centers
  - <http://mrcc.isws.illinois.edu>
  - <http://www.hprcc.unl.edu>





# Contact Information:

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402-472-6775

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School of Natural Resources  
University of Nebraska-Lincoln





# Happy Holidays

