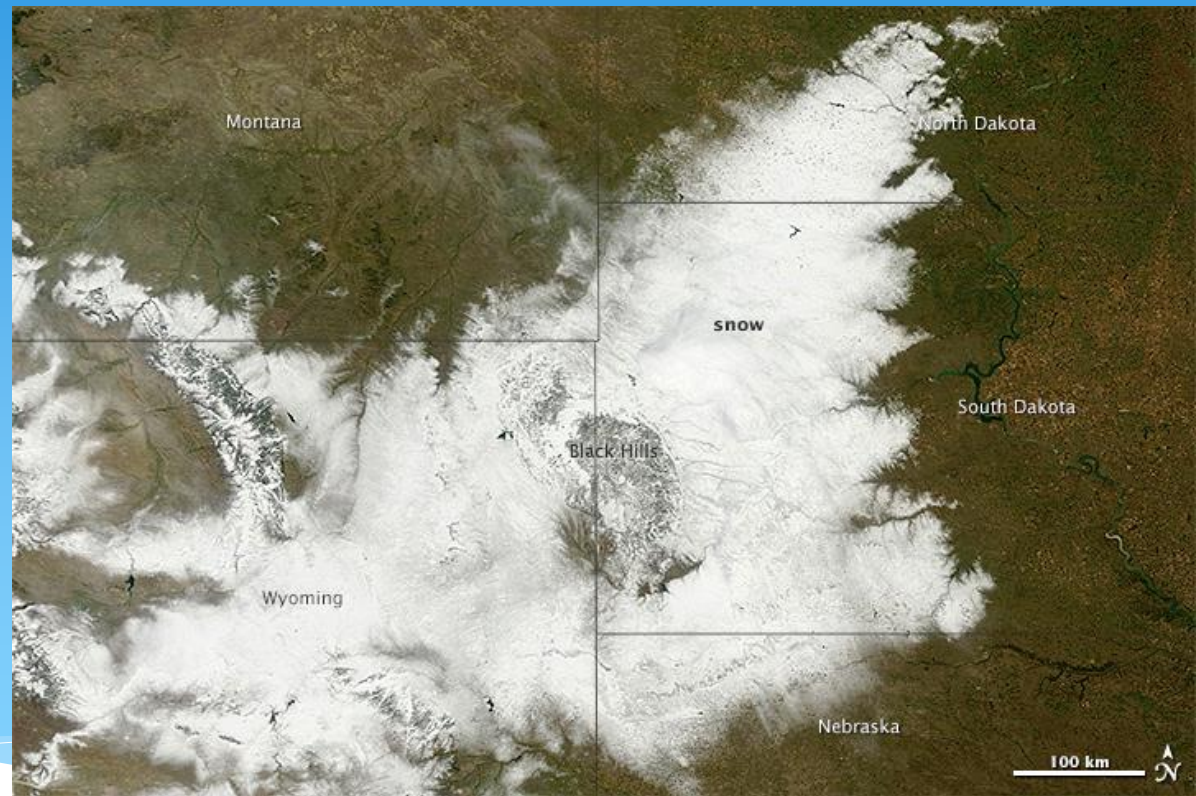


Central Region Climate Outlook

October 24, 2013

Dr. Jim Angel
State Climatologist
IL State Water Survey
University of Illinois
jimangel@illinois.edu
217-333-0729



Early Season Snowstorm in the Upper High Plains.
Source: NASA satellite image, October 6, 2013

General Information

- * **Providing climate services to the Central Region**

- * Collaboration Activity Between:

- * 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**

- * November 21, 2013

- * **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>

- * **There will be time for questions at the end**

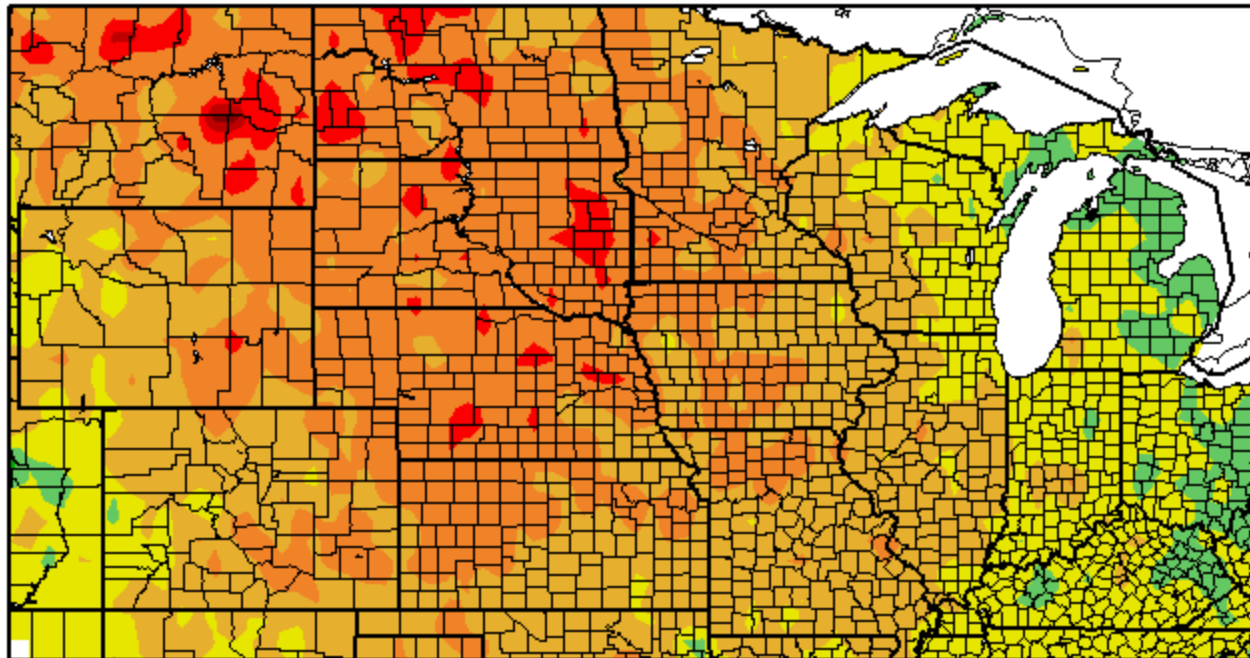
Agenda

- * **Historical context**
- * **Current conditions**
- * **Impacts**
- * **Outlooks**



September Temperature

Departure from Normal Temperature (F)
9/1/2013 - 9/30/2013

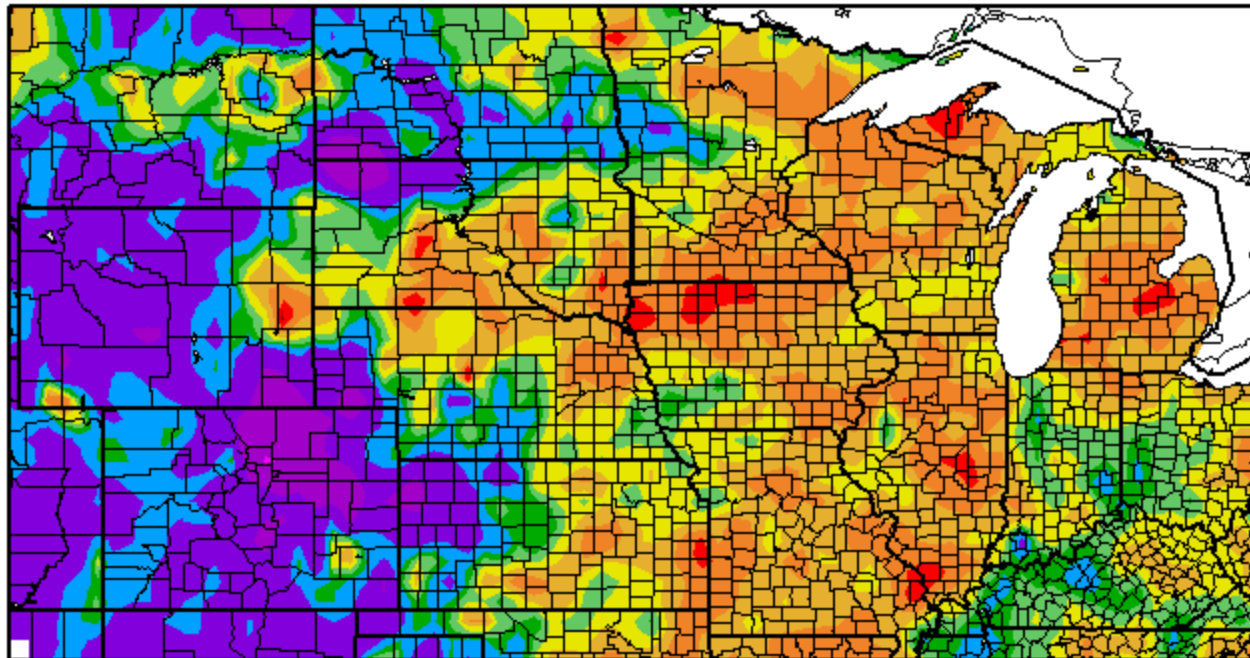


Generated 10/11/2013 at HPRCC using provisional data.

Regional Climate Centers

September Precipitation

Percent of Normal Precipitation (%)
9/1/2013 - 9/30/2013

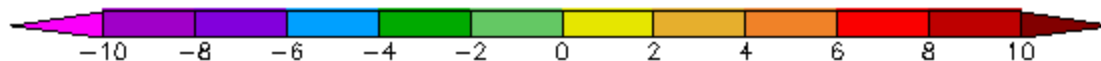
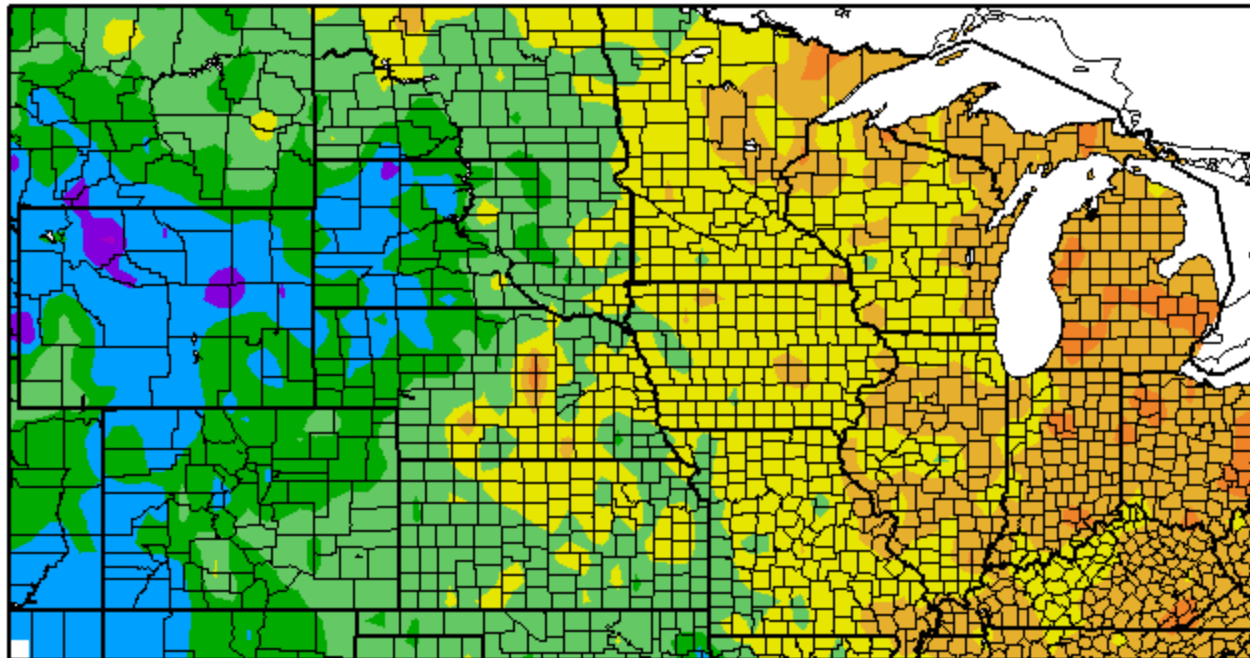


Generated 10/11/2013 at HPRCC using provisional data.

Regional Climate Centers

October Temperature

Departure from Normal Temperature (F)
10/1/2013 - 10/23/2013

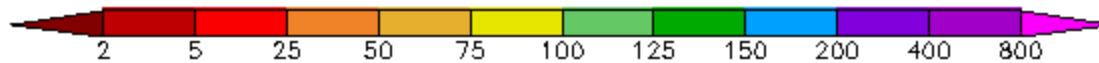
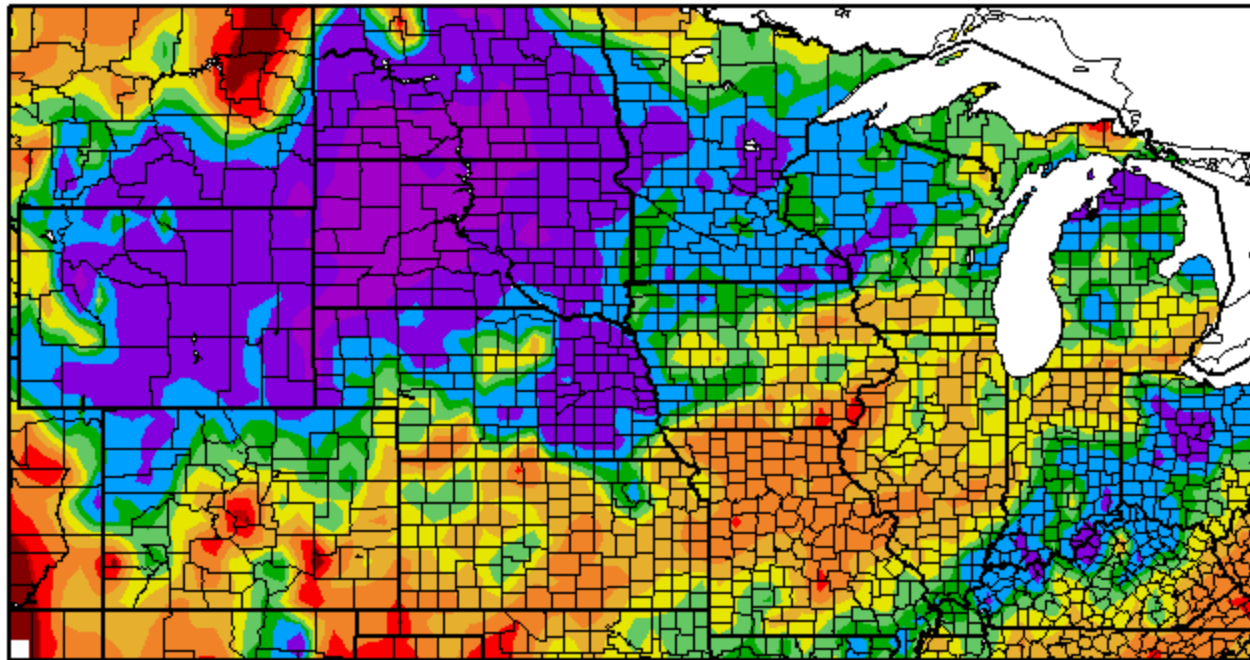


Generated 10/24/2013 at HPRCC using provisional data.

Regional Climate Centers

October Precipitation

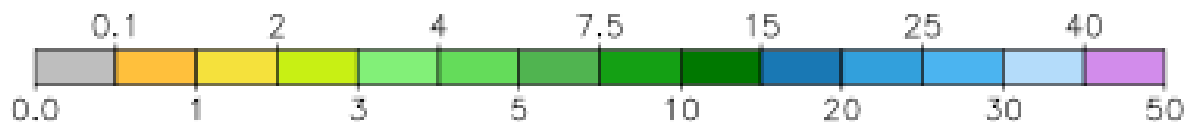
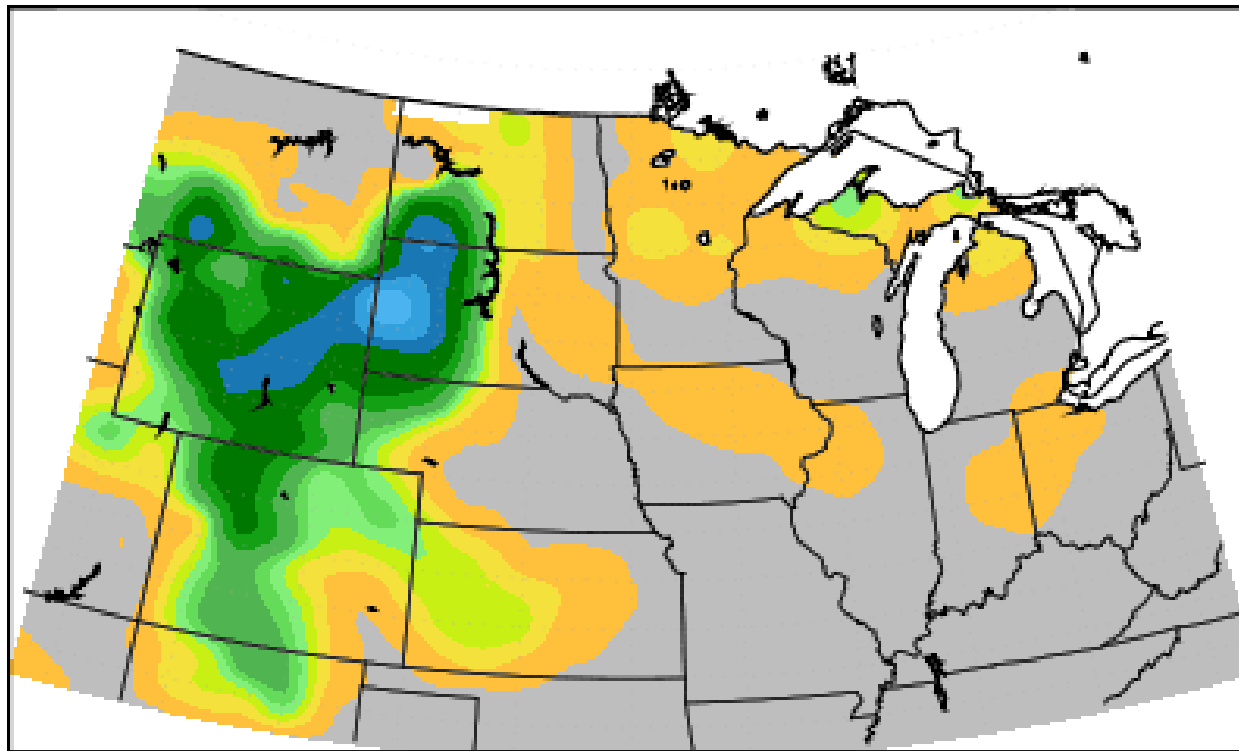
Percent of Normal Precipitation (%)
10/1/2013 - 10/23/2013



Generated 10/24/2013 at HPRCC using provisional data.

Regional Climate Centers

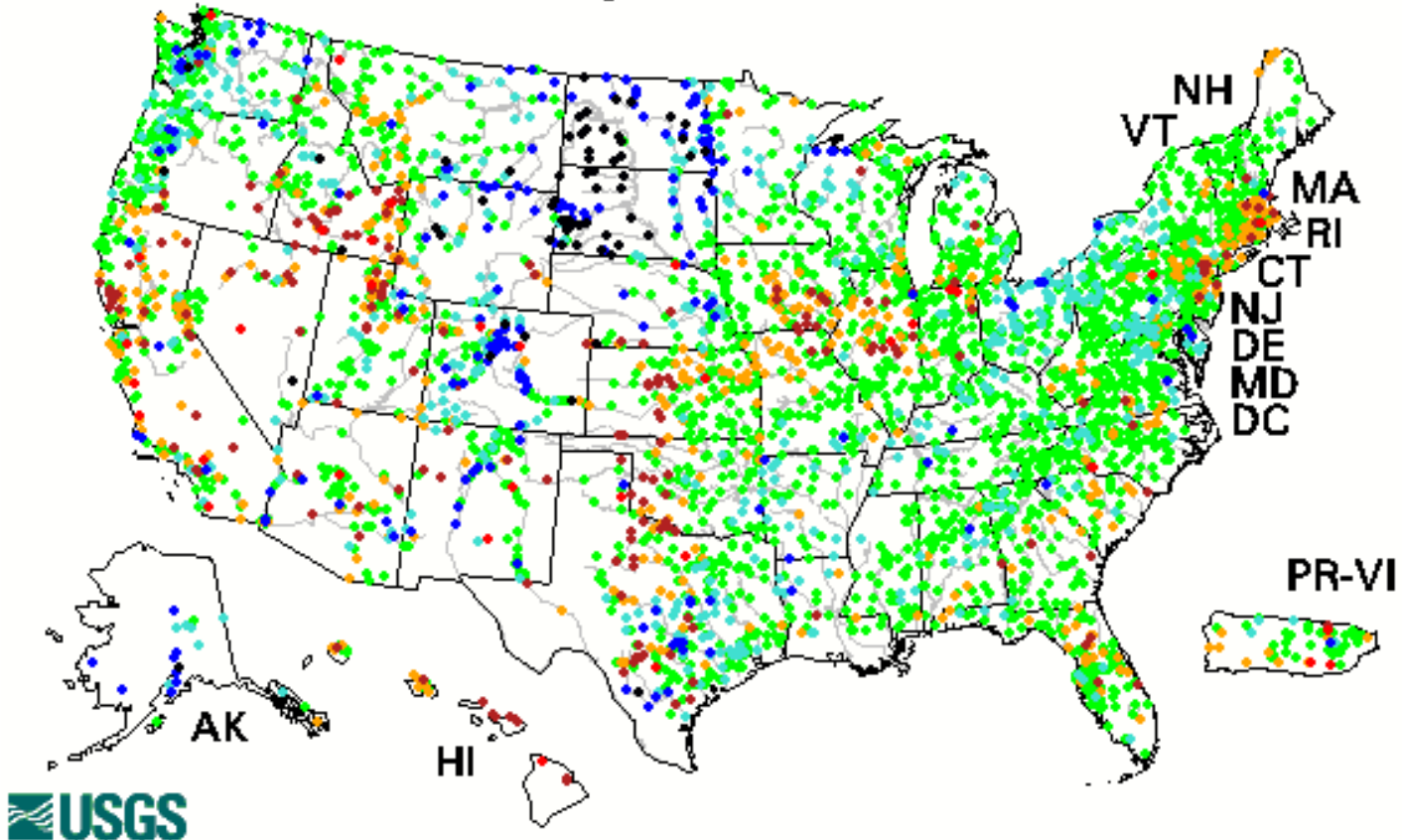
Accumulated Snowfall (in) September 1, 2013 to October 23, 2013



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 10/23/2013 10:53:08 PM CDT

7-Day Average Streamflow

Tuesday, October 22, 2013



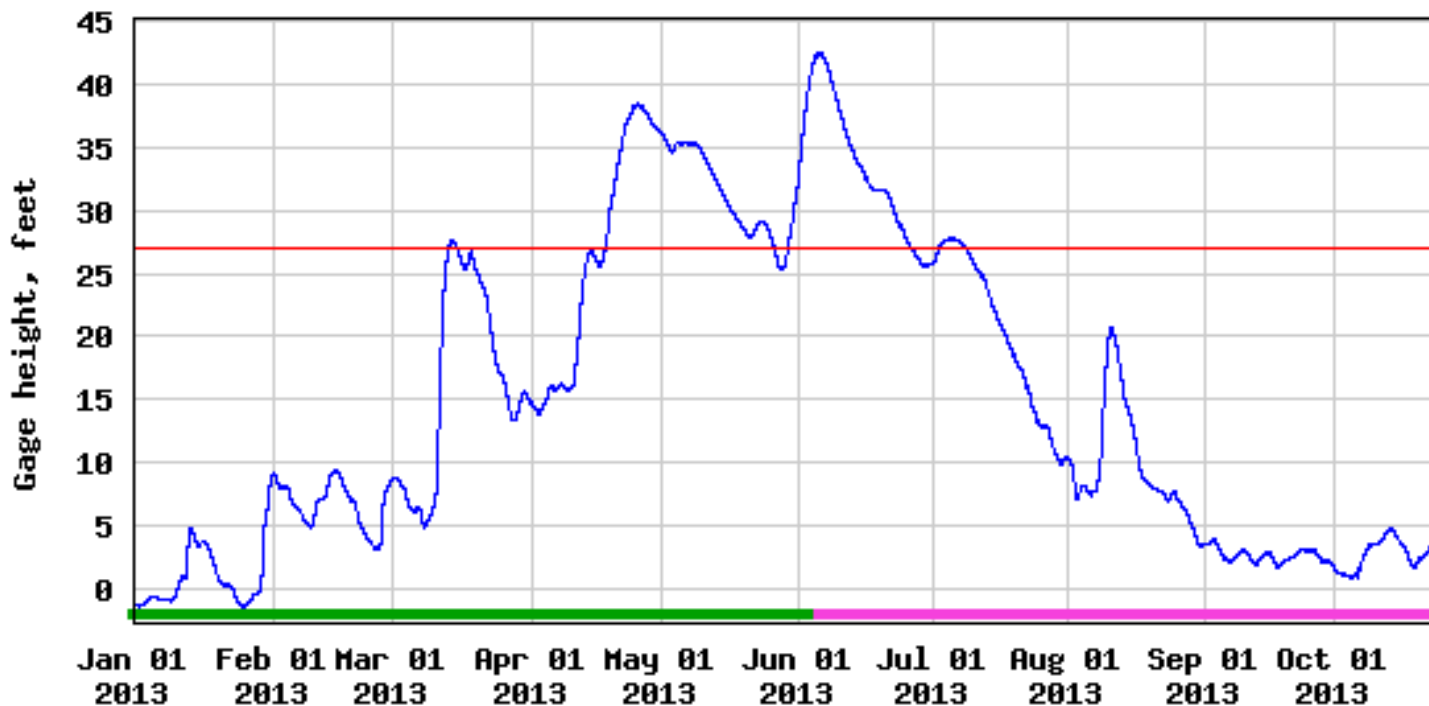
Explanation - Percentile classes						
	●	●	●	●	●	●
	<10	10-24	25-75	76-90	>90	
Low	Much below normal	Below normal	Normal	Above normal	Much above normal	High

http://waterwatch.usgs.gov/?id=ww_current

Mississippi River Below St. Louis



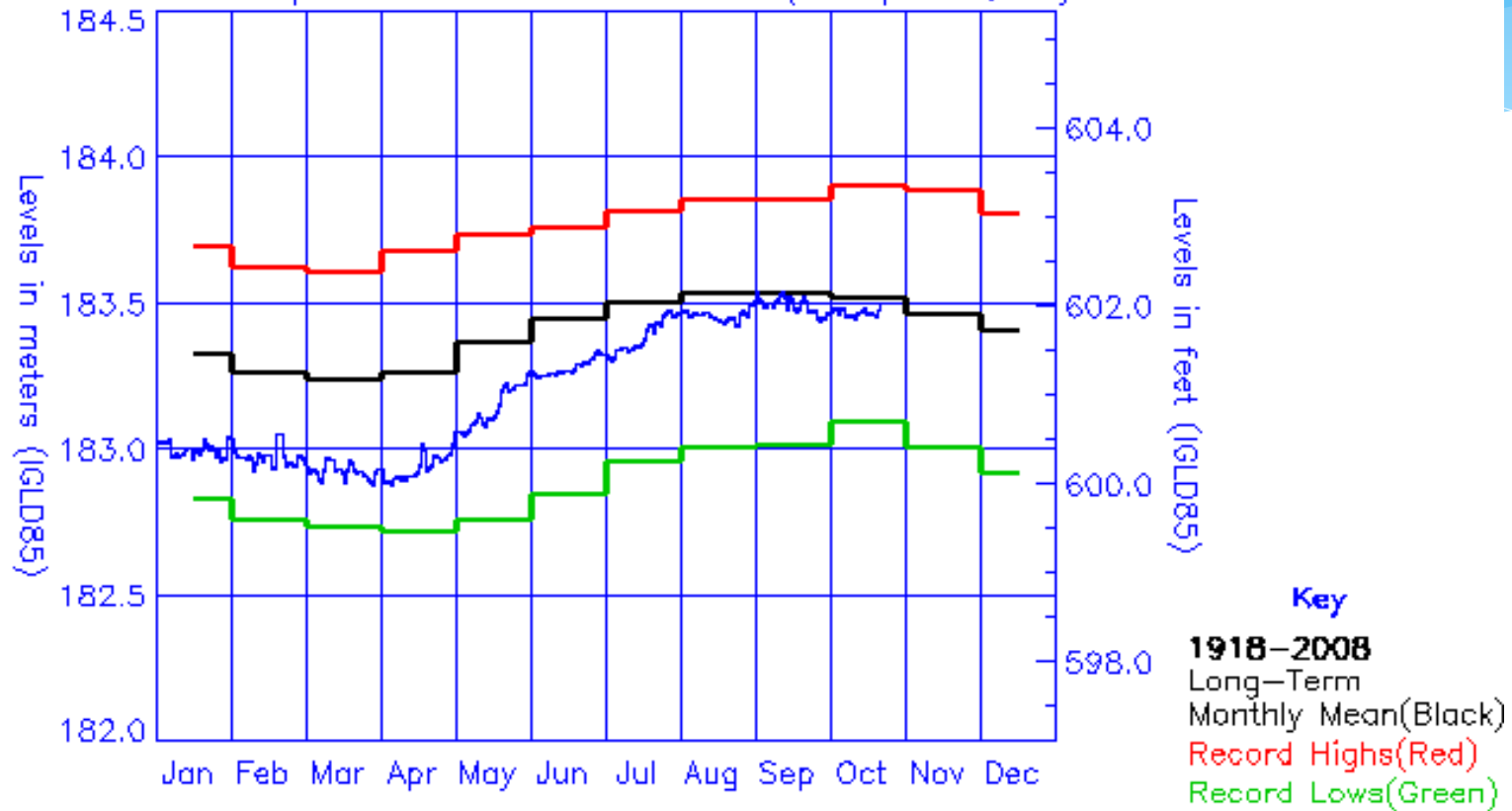
USGS 07020500 Mississippi River at Chester, IL



- Gage height
- Period of approved data
- Period of provisional data
- National Weather Service Floodstage

Lake Superior Water Levels

Long-Term Monthly Means & Record Water Levels for
Lake Superior: Station 9099018 (Marquette, MI)



Oct 23, 2013



Great Lakes Environmental Research Laboratory/NOAA

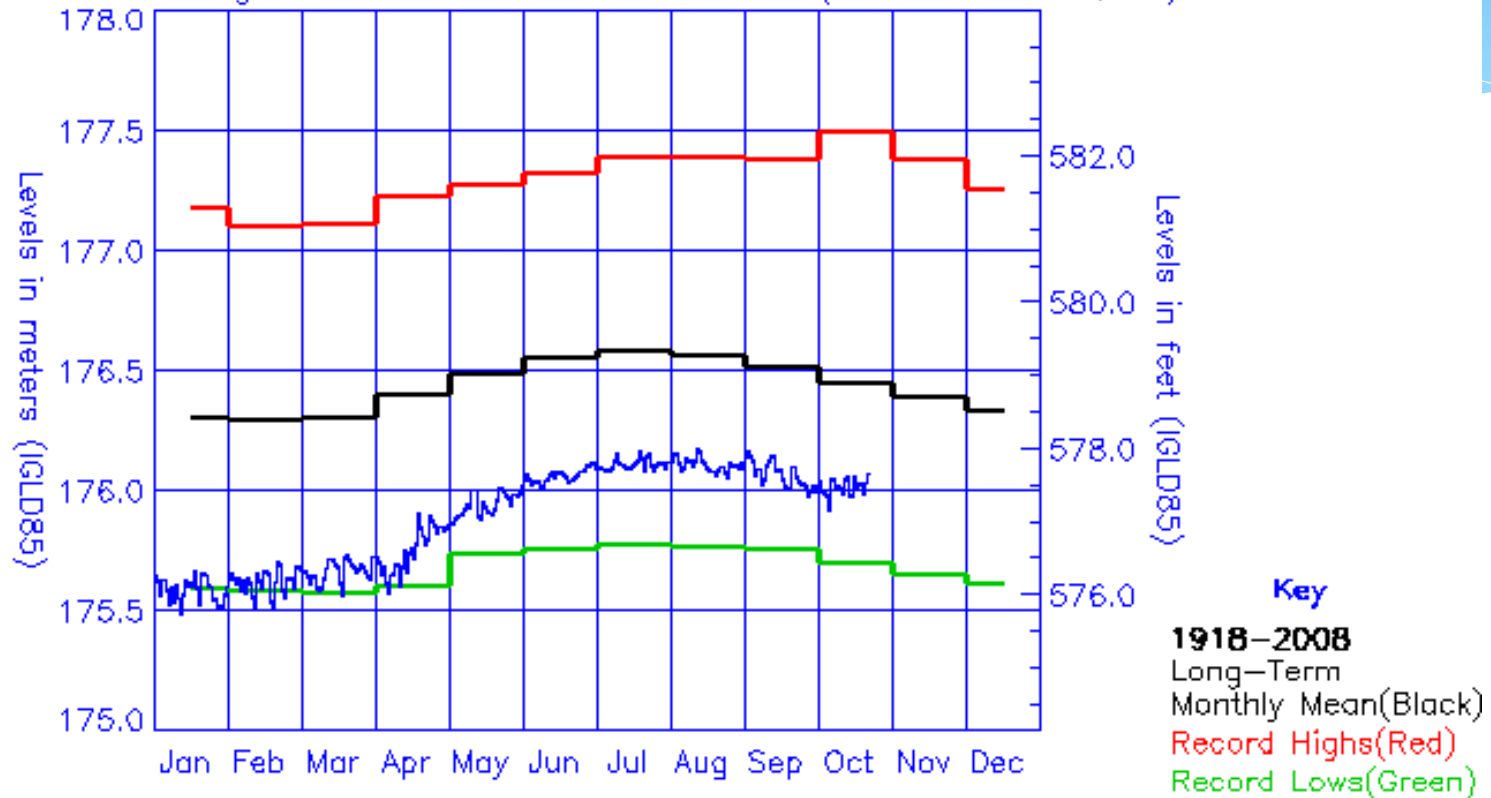
<http://www.glerl.noaa.gov/data/now/wlevels/>

Contact: Craig.Stow@noaa.gov

2013
Current Level (Blue)

Lakes Michigan-Huron

Long-Term Monthly Means & Record Water Levels for
Lakes Michigan+Huron: Station 9075014 (Harbor Beach, MI)



Oct 23, 2013



Great Lakes Environmental Research Laboratory/NOAA

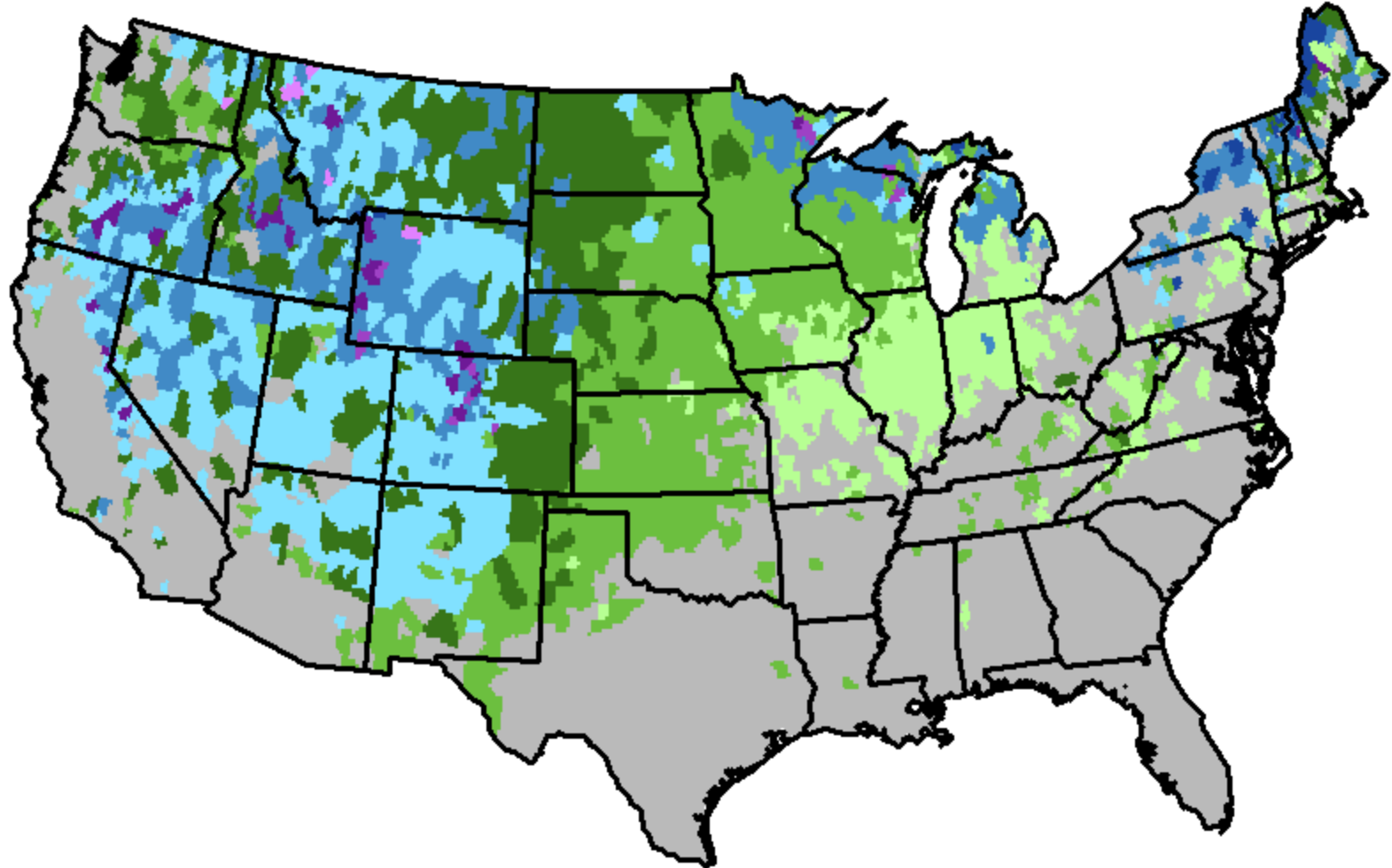
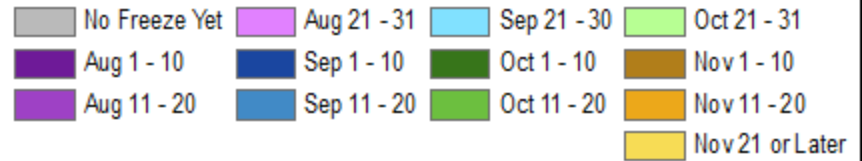
<http://www.glerl.noaa.gov/data/now/wlevels/>

Contact: Craig.Stow@noaa.gov

2013
Current Level (Blue)

Date of First 32°F Freeze

As of 10/23/2013

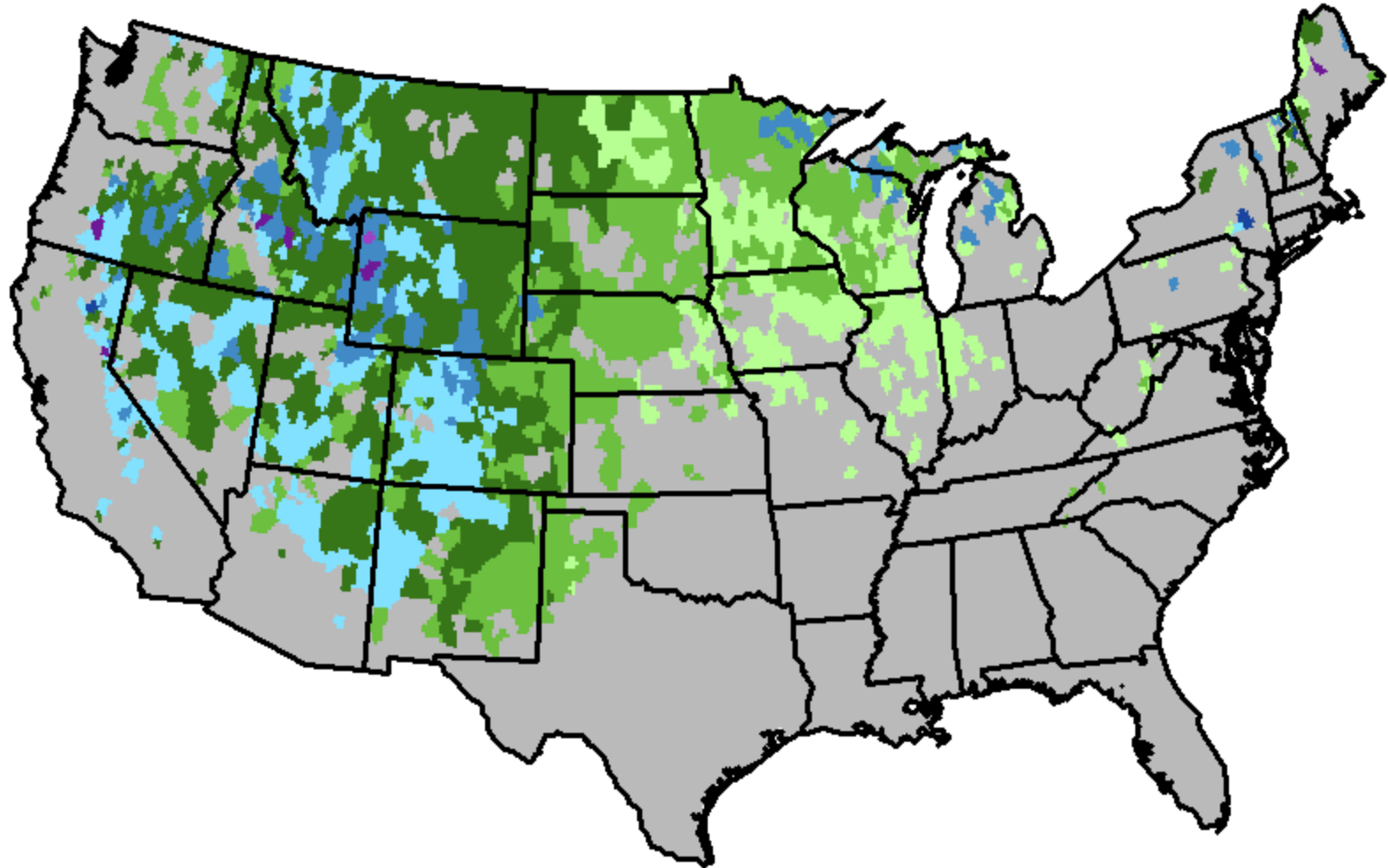
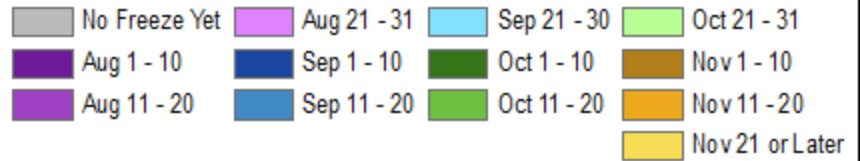


MRCC Experimental Freeze Guidance:
These experimental maps may be utilized as a guide to local and regional freeze conditions but should NOT be used by themselves for decision processes.



Date of First 28°F Freeze

As of 10/23/2013

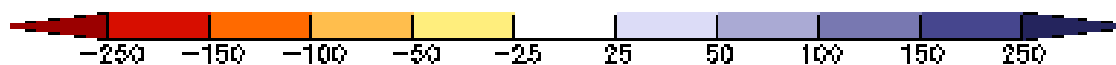
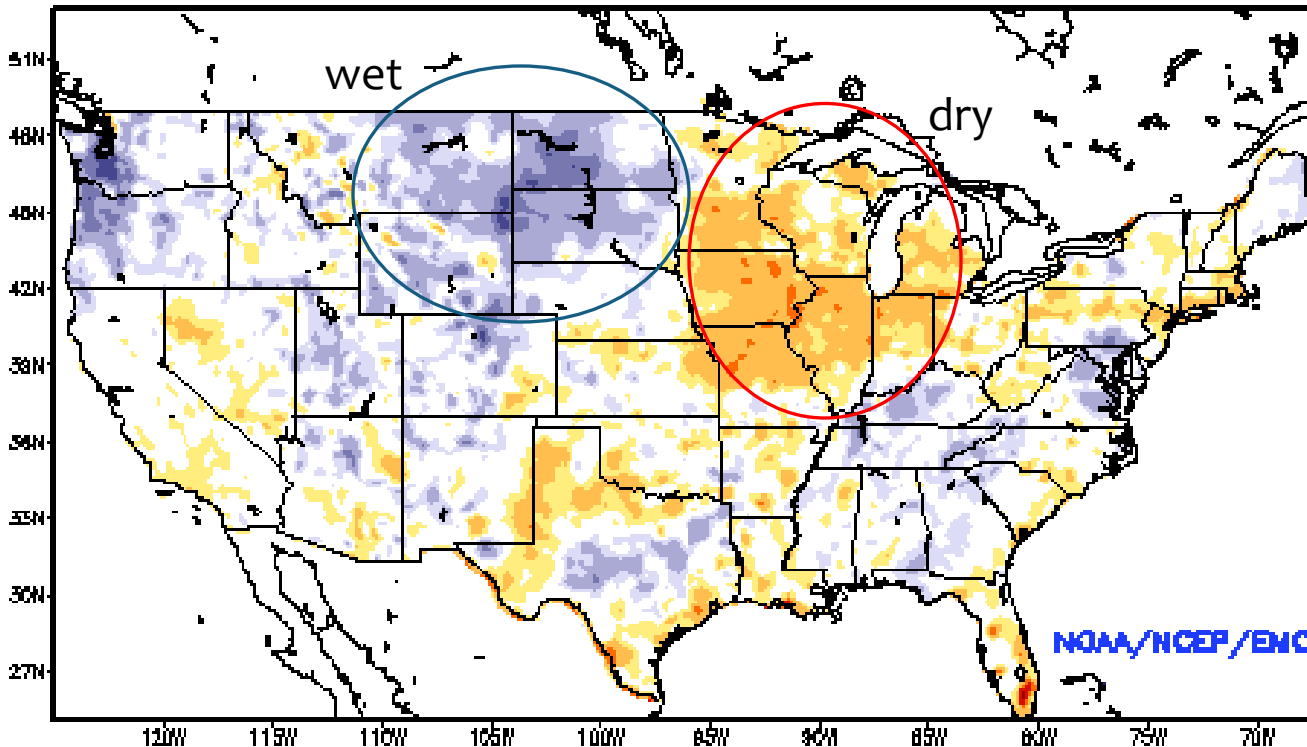


MRCC Experimental Freeze Guidance:

These experimental maps may be utilized as a guide to local and regional freeze conditions but should NOT be used by themselves for decision processes.

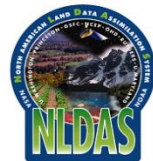
Soil Moisture Anomaly

Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: OCT 18, 2013



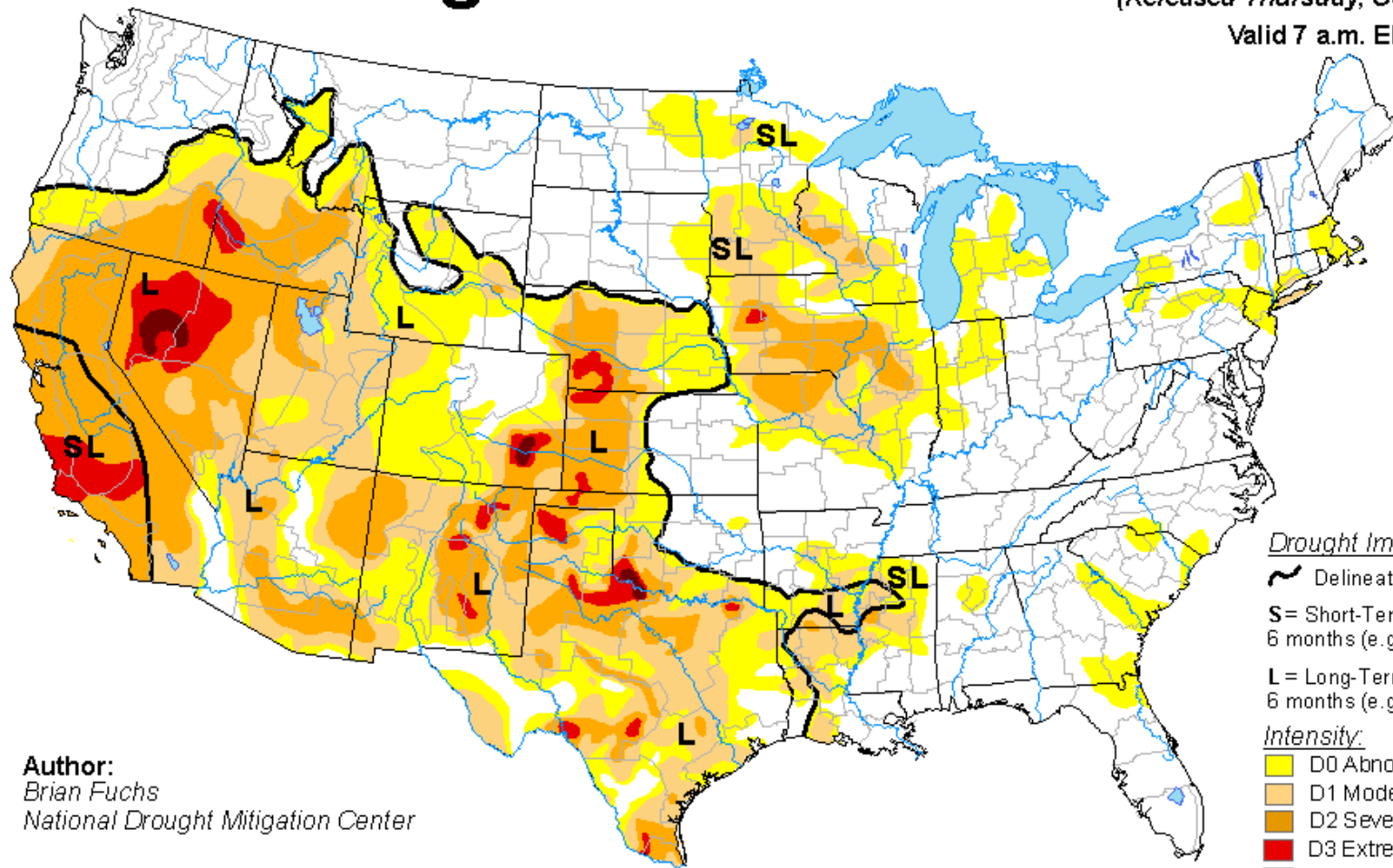
Soil Moisture Anomaly in millimeters

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



U.S. Drought Monitor

October 22, 2013
(Released Thursday, Oct. 24, 2013)
Valid 7 a.m. EDT



Author:
Brian Fuchs
National Drought Mitigation Center

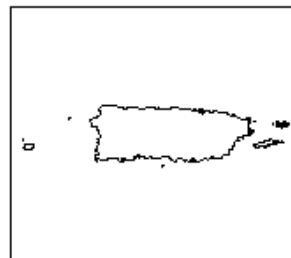
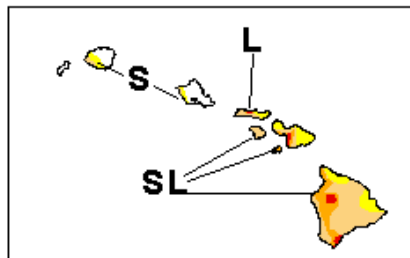
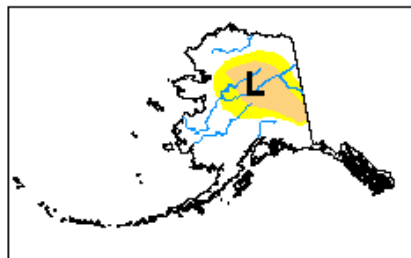
Drought Impact Types:

- ~ 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
- 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/>

U.S. Drought Monitor Midwest

October 22, 2013

(Released Thursday, Oct. 24, 2013)

Valid 7 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.43	51.57	24.14	8.49	0.20	0.00
Last Week <i>10/15/2013</i>	48.36	51.64	24.58	8.49	0.20	0.00
3 Months Ago <i>7/23/2013</i>	81.06	18.94	2.04	0.00	0.00	0.00
Start of Calendar Year <i>1/1/2013</i>	28.14	71.86	54.93	30.11	7.88	0.14
Start of Water Year <i>10/1/2013</i>	43.94	56.06	30.56	11.64	0.20	0.00
One Year Ago <i>10/23/2012</i>	17.90	82.10	62.25	32.82	13.99	0.28

Intensity:

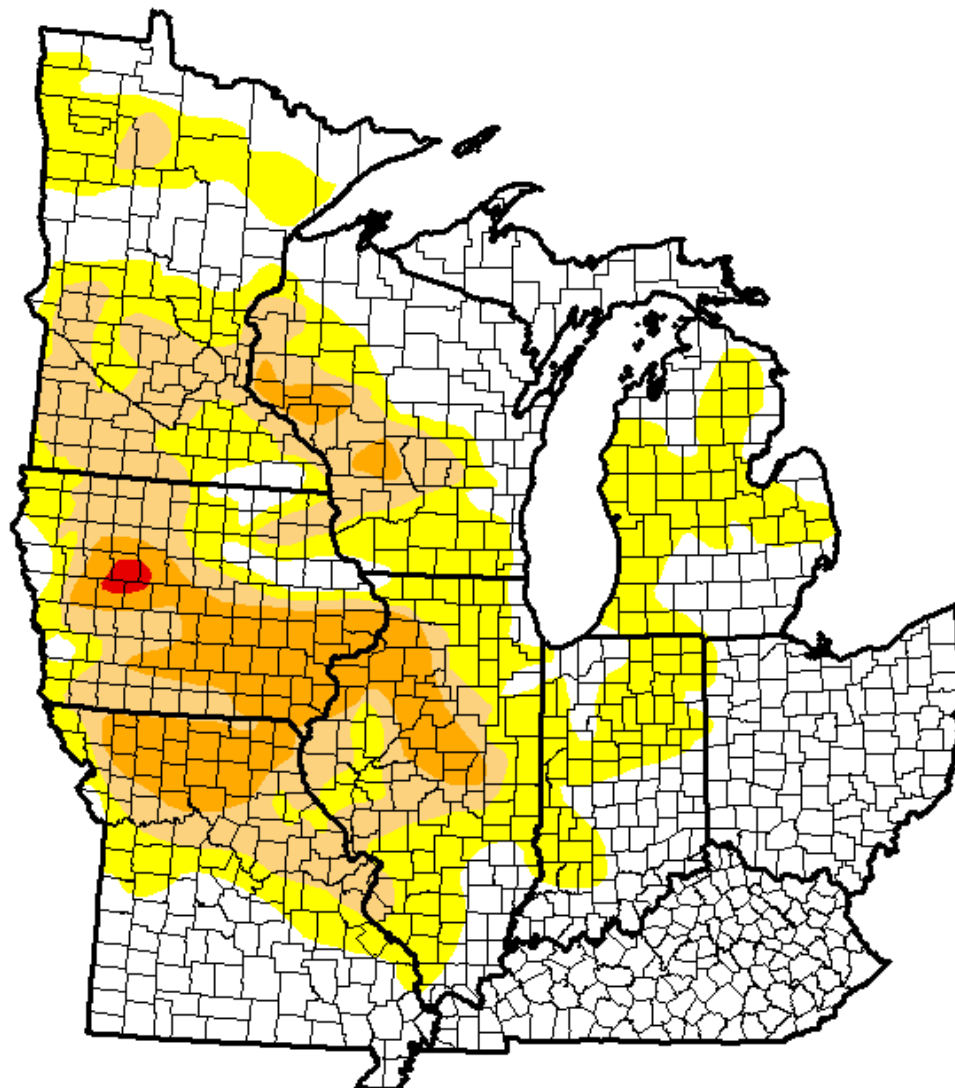


The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Brian Fuchs

National Drought Mitigation Center



U.S. Drought Monitor High Plains

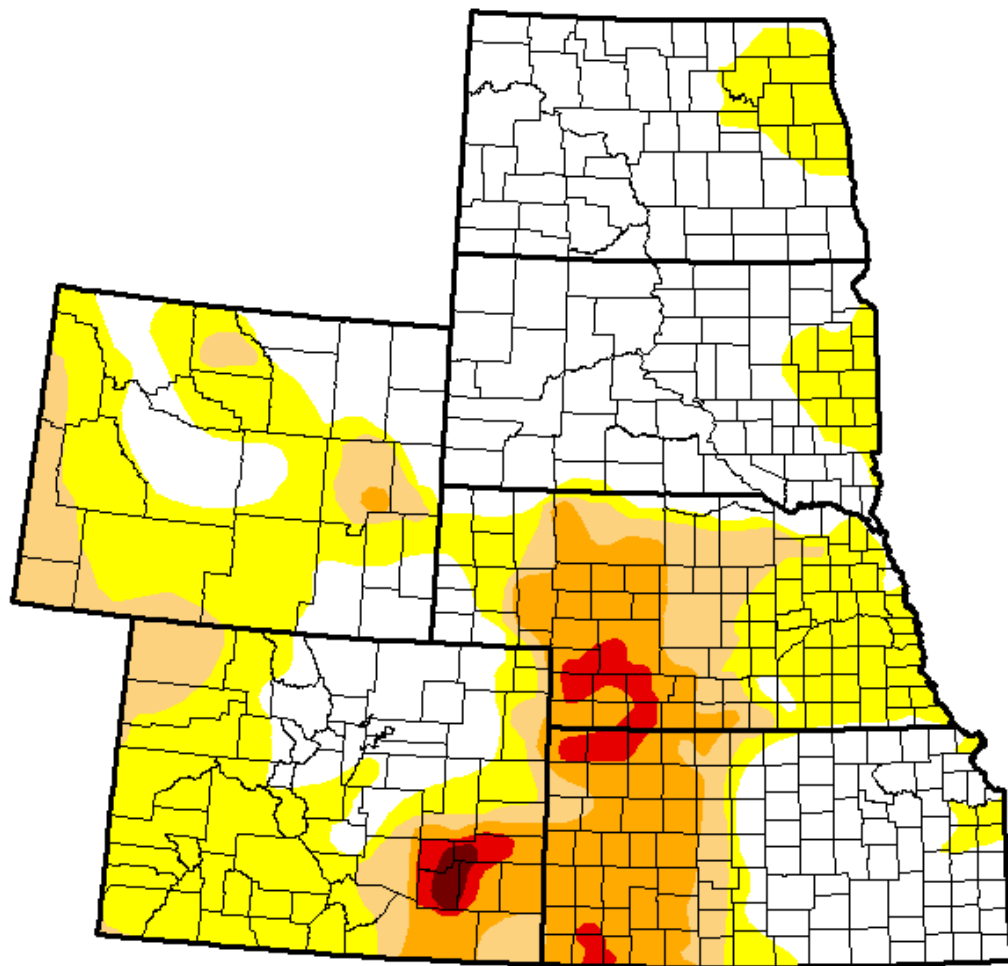
October 22, 2013

(Released Thursday, Oct. 24, 2013)

Valid 7 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.57	52.43	22.40	11.80	2.05	0.30
Last Week <i>10/15/2013</i>	45.14	54.86	29.51	12.46	2.18	0.30
3 Months Ago <i>7/23/2013</i>	19.86	80.14	66.27	47.65	22.59	8.47
Start of Calendar Year <i>1/1/2013</i>	1.54	98.46	93.01	86.20	60.25	26.99
Start of Water Year <i>10/1/2013</i>	29.87	70.13	43.21	19.50	3.01	0.30
One Year Ago <i>10/23/2012</i>	17.90	82.10	62.25	32.82	13.99	0.28



Intensity:



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

Author:

Brian Fuchs

National Drought Mitigation Center



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

Corn

- * According to the October 20 report from USDA
 - * 94 percent mature
 - * 39 percent harvested
 - * Year ago 85 percent by this date
 - * Average is 50 percent by this date
 - * Forecasted corn yield is 155.3 bu/acre (September report)

Soybeans

- * 94 percent of crop has dropped leaves
- * 63 percent harvest
- * Last year 100 percent harvested by this date
- * Average is 50 percent by this date

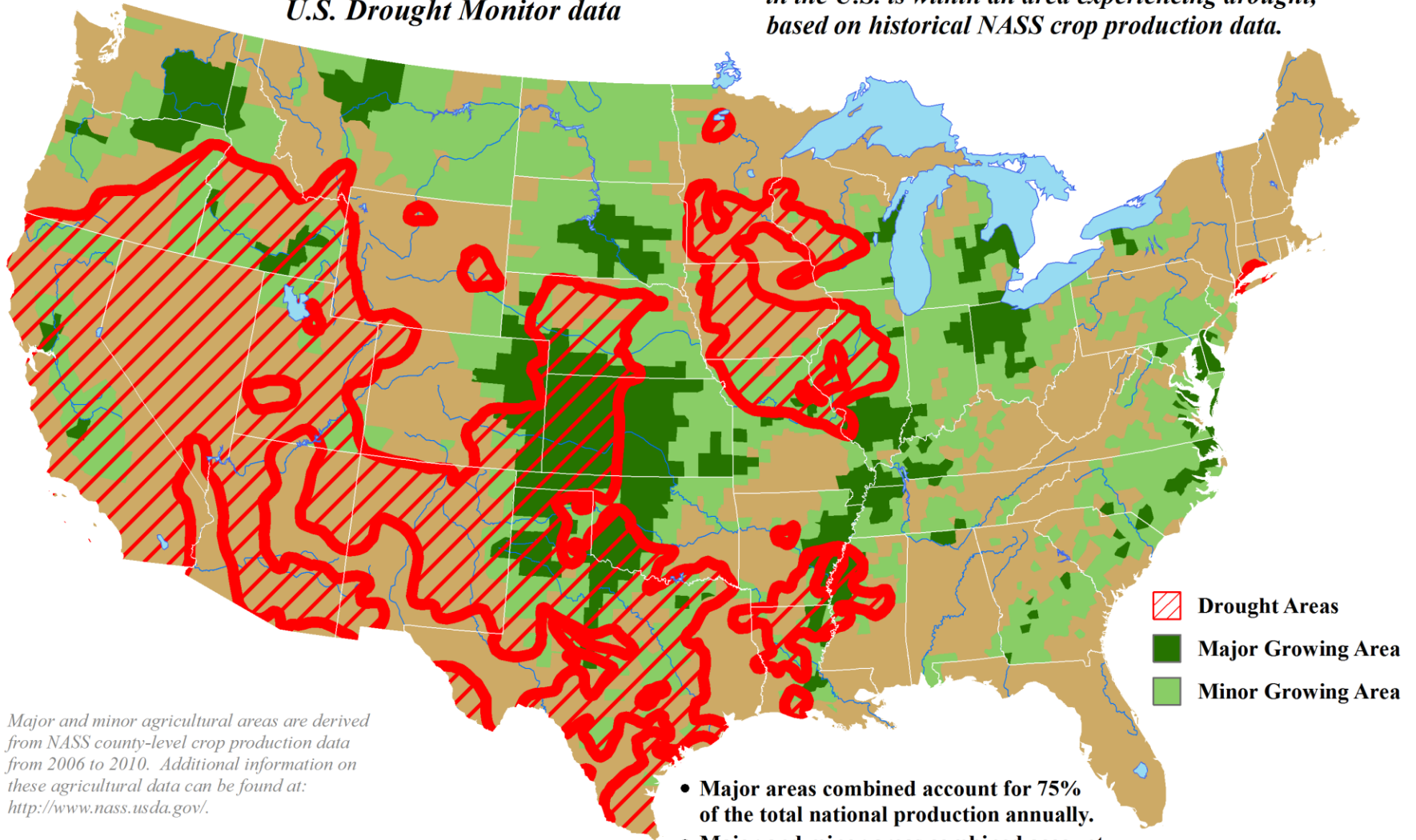
Winter Wheat

- * 79 percent sown, right at 5-year average
- * 53 percent has emerged
- * 65 percent of the winter wheat was rated as good to excellent condition

U.S. Winter Wheat Areas Experiencing Drought

Reflects October 22, 2013
U.S. Drought Monitor data

Approximately 34% of the winter wheat grown in the U.S. is within an area experiencing drought, based on historical NASS crop production data.

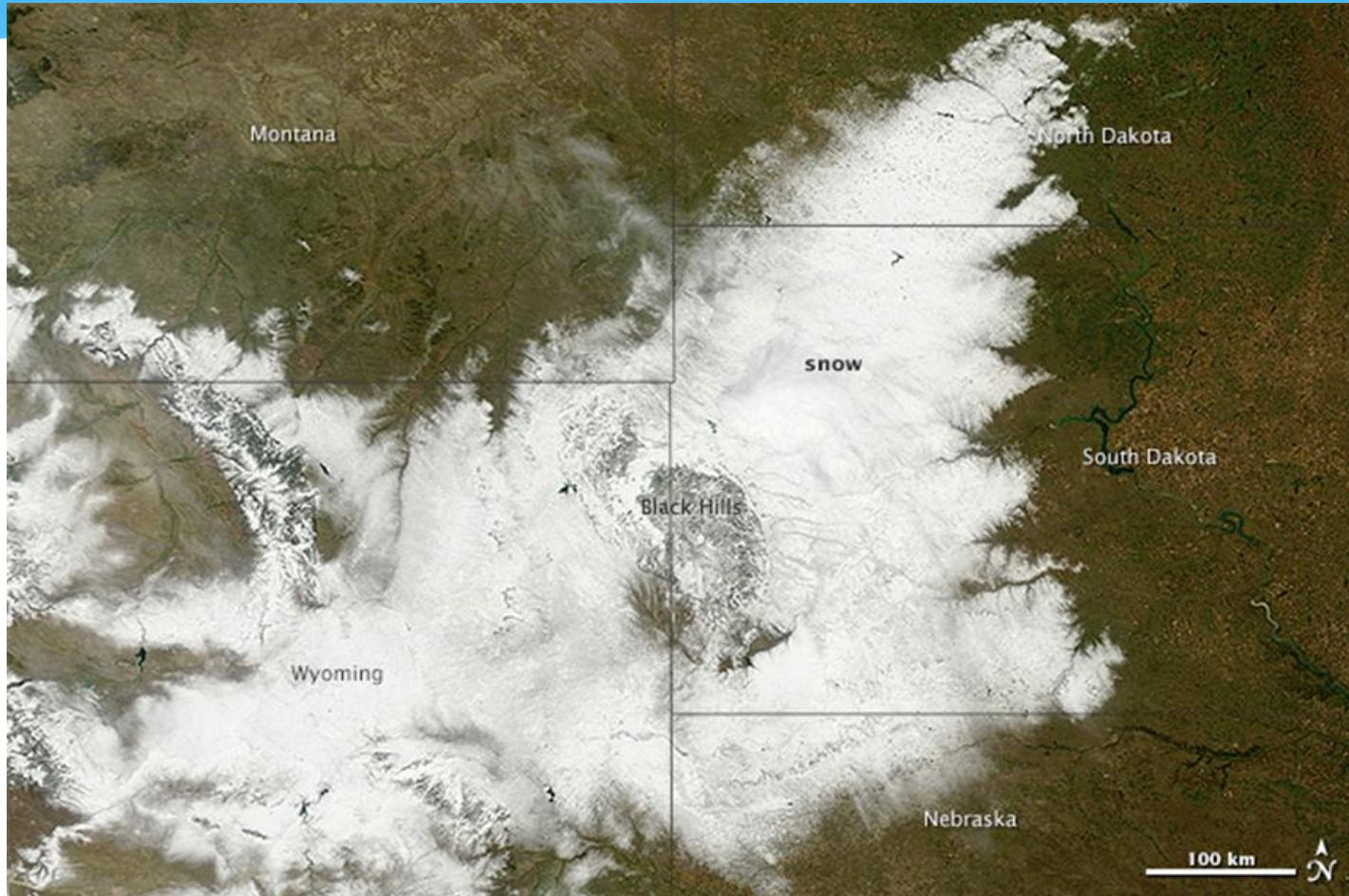


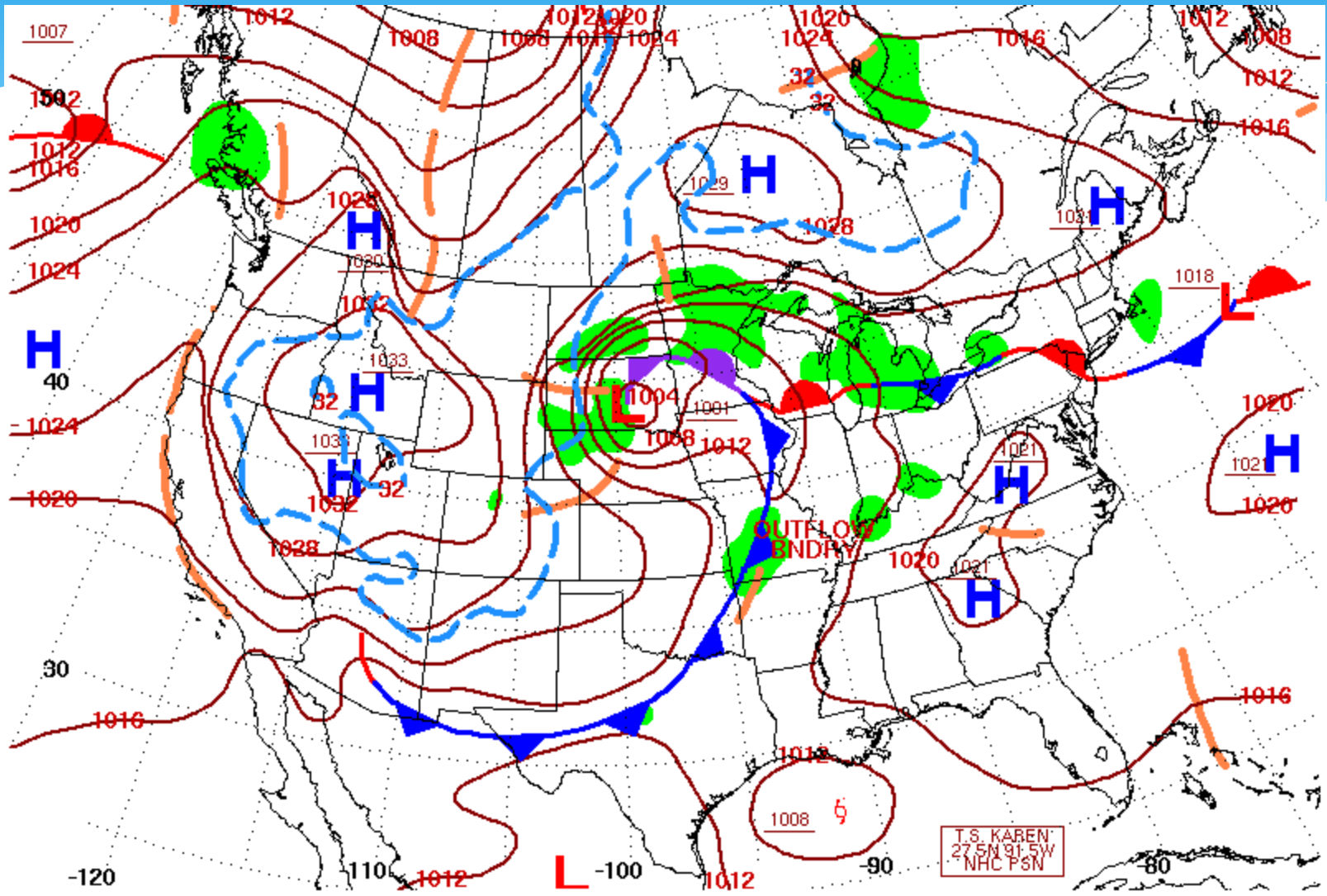
Major and minor agricultural areas are derived from NASS county-level crop production data from 2006 to 2010. Additional information on these agricultural data can be found at: <http://www.nass.usda.gov/>.

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

Northern High Plains Blizzard

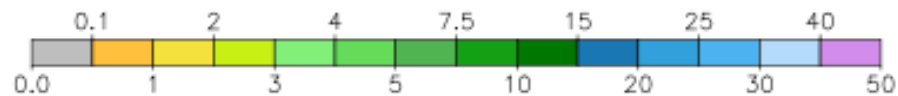
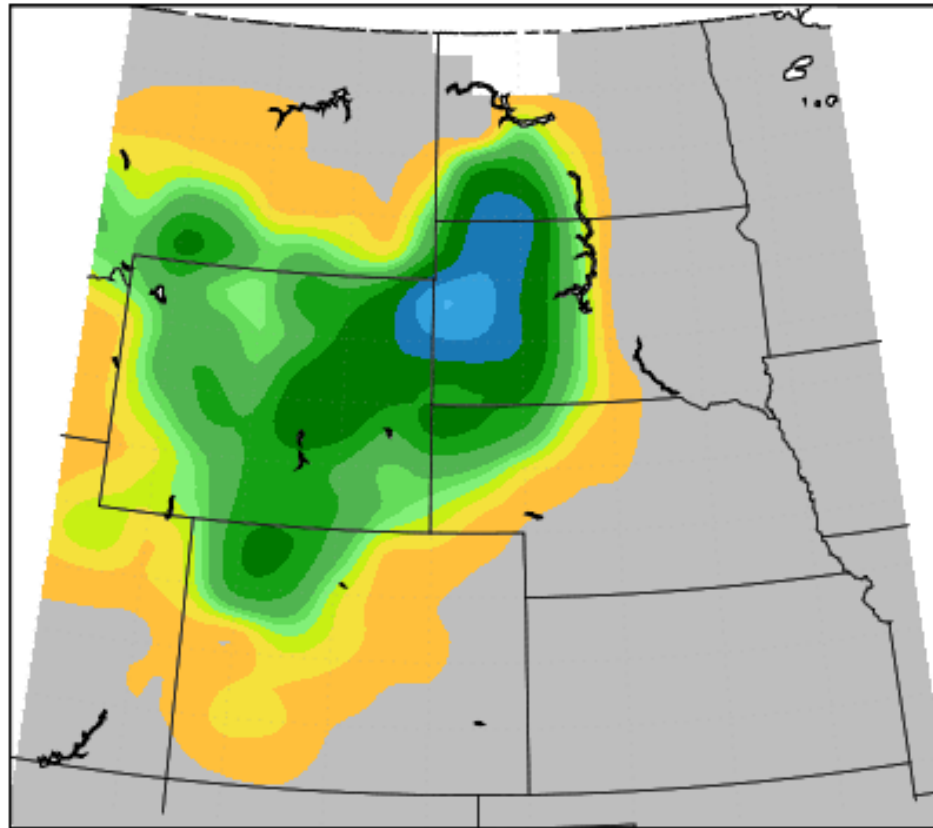




Surface Weather Map at 7:00 A.M. E.S.T.

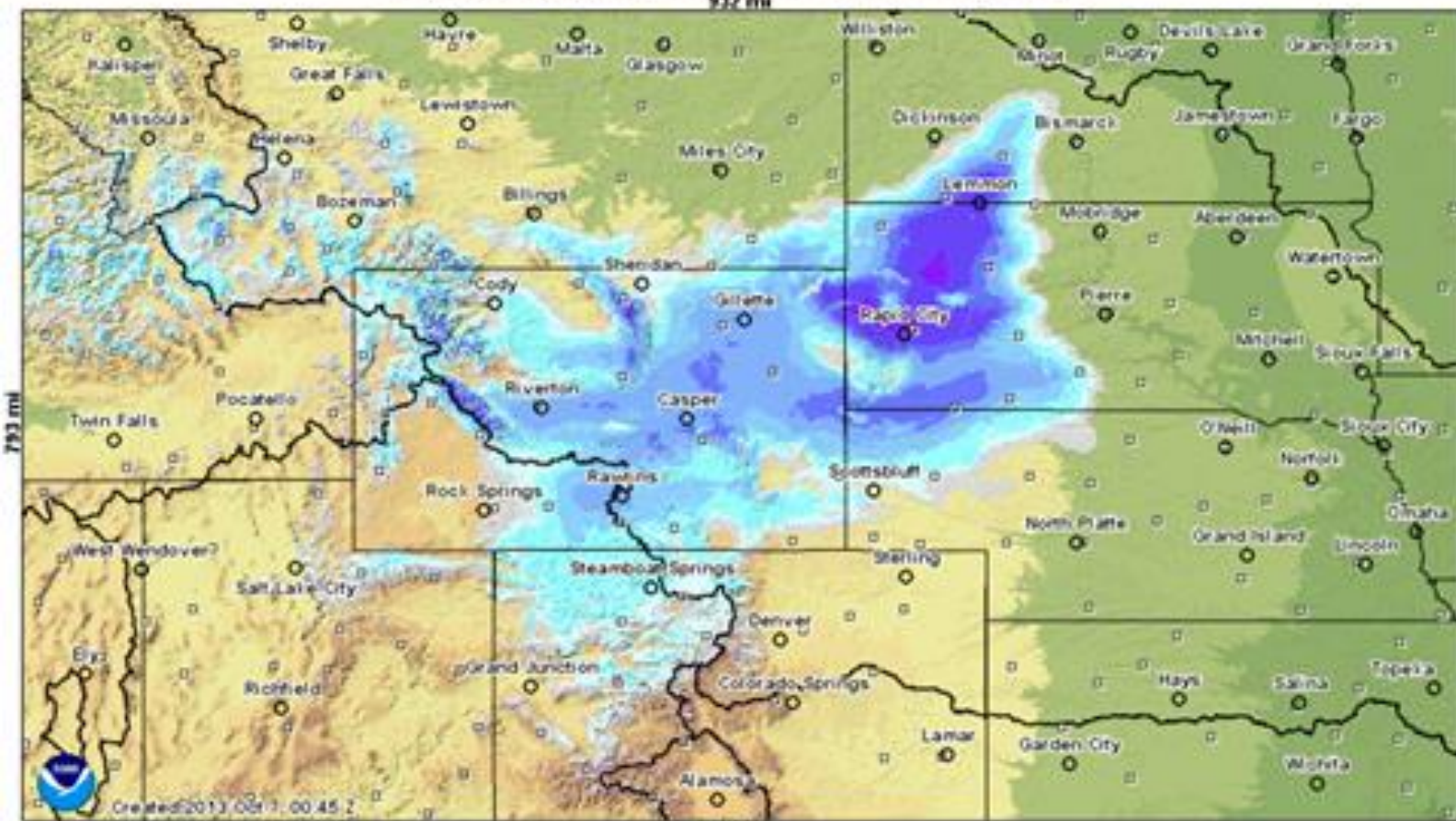
Snowfall Accumulation

Accumulated Snowfall (in)
October 1, 2013 to October 6, 2013

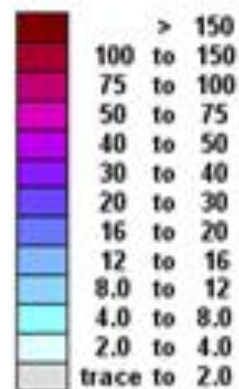


Modeled Snow Depth for 2013 October 6, 16:00 Z

932 mi



Inches of depth



Not Estimated

Elevation in feet



1125 mi

Selected Observations

- * Steamboat Springs, CO with 19.6 inches
- * Pony, MT with 32.0 inches
- * Casper, WY with 34.0 inches
- * Silver City, SD with 47.0 inches
- * Rapid City, SD with 31.0 inches
- * Wind gust of 71 mph at Ellsworth AFB

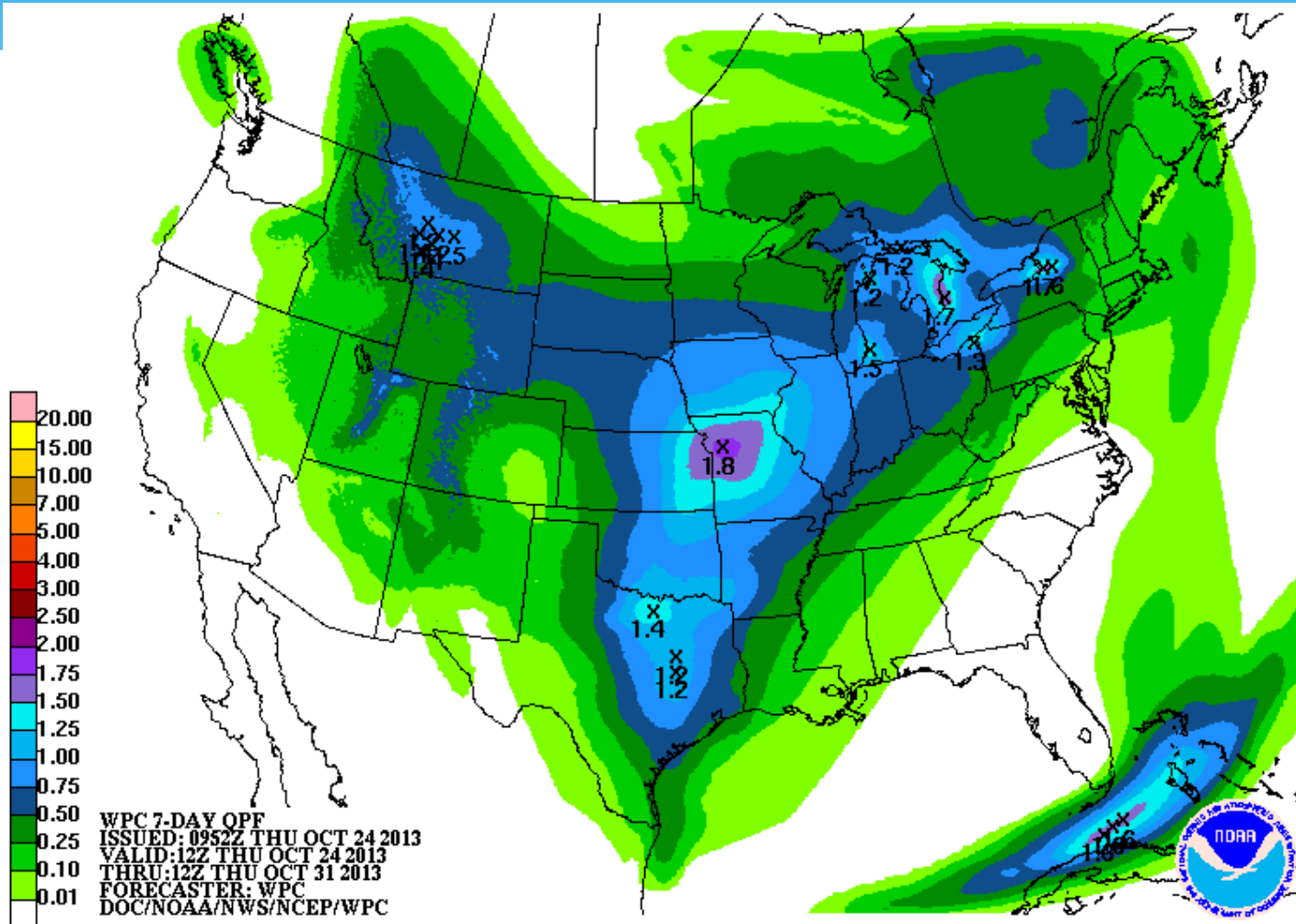
Impacts of Blizzard

- * Cattle losses in SD alone at 15-30,000 head of cattle according to the State Veterinarian with more losses in Nebraska and North Dakota.
- * Why so bad:
 1. Early season storm with rain and heavy snow, combined with falling temperatures and high winds soaked animals
 2. Open range with little shelter, not moved to winter pasture yet
 3. Cattle did not have their protective winter coat yet
- * Economic losses, direct and indirect, could be up to 1.7 billion dollars.

Climate Outlooks

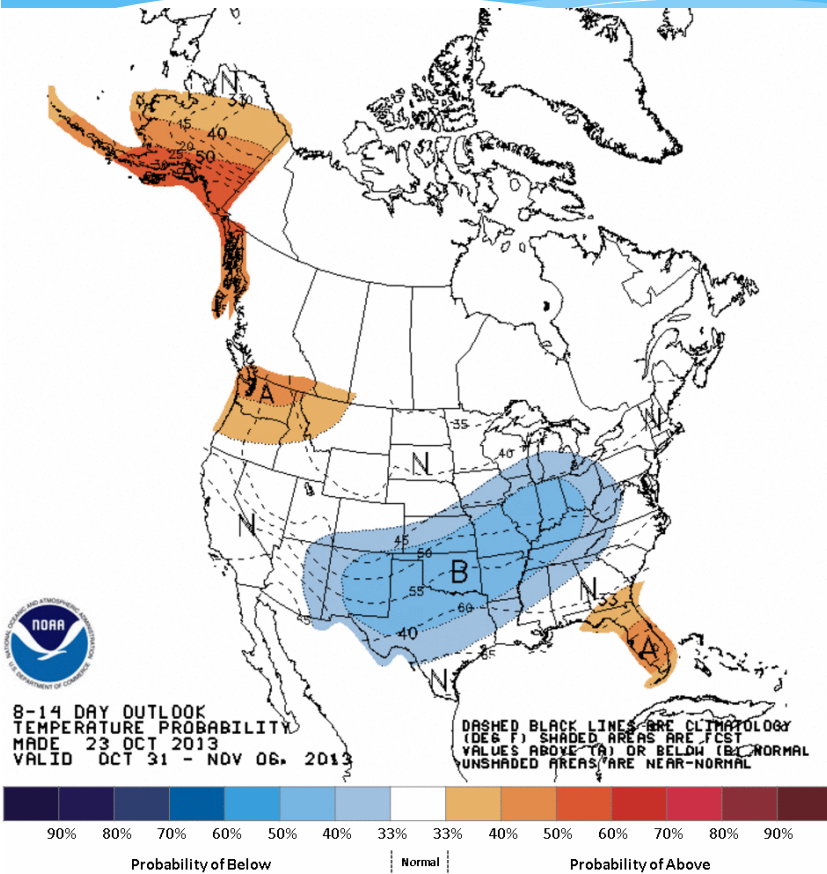
- * **7-day precipitation forecast**
- * **8-14 day outlook**
- * **November**
- * **3 Months (November - January)**
- * **Seasonal Drought Outlooks**

7-day Quantitative Precipitation Forecast Valid: 12z Thu Oct 24 – 12z Thu Oct 31

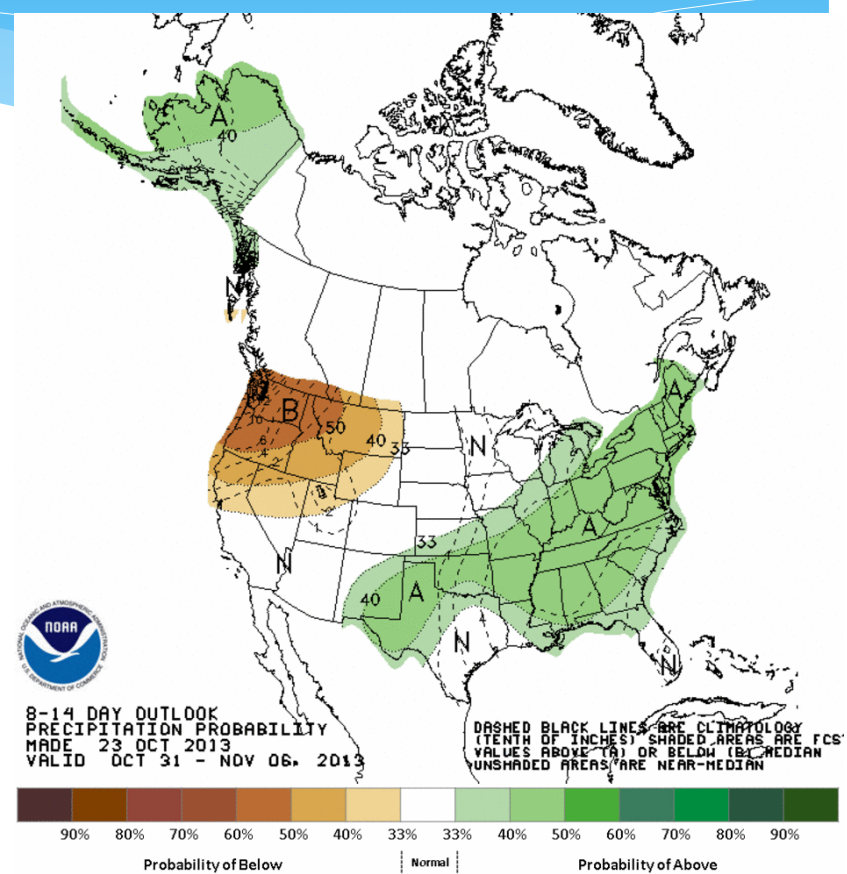


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

Temperature and Precipitation Probabilities for Oct 31 – Nov 6, 2013

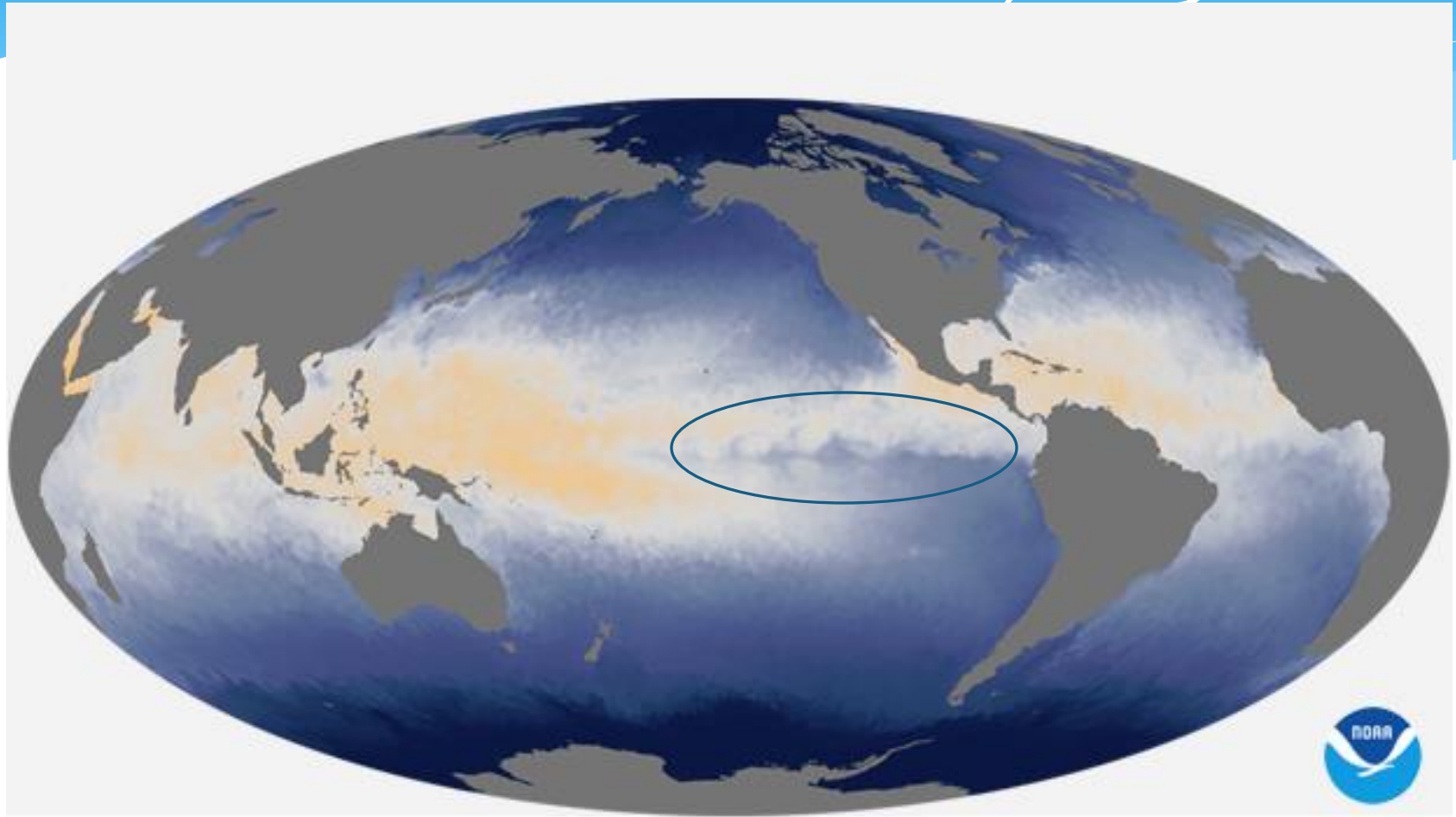


Temperature



Precipitation

Sea-Surface Temperatures in the Pacific – October 16, 2013



October 16, 2013

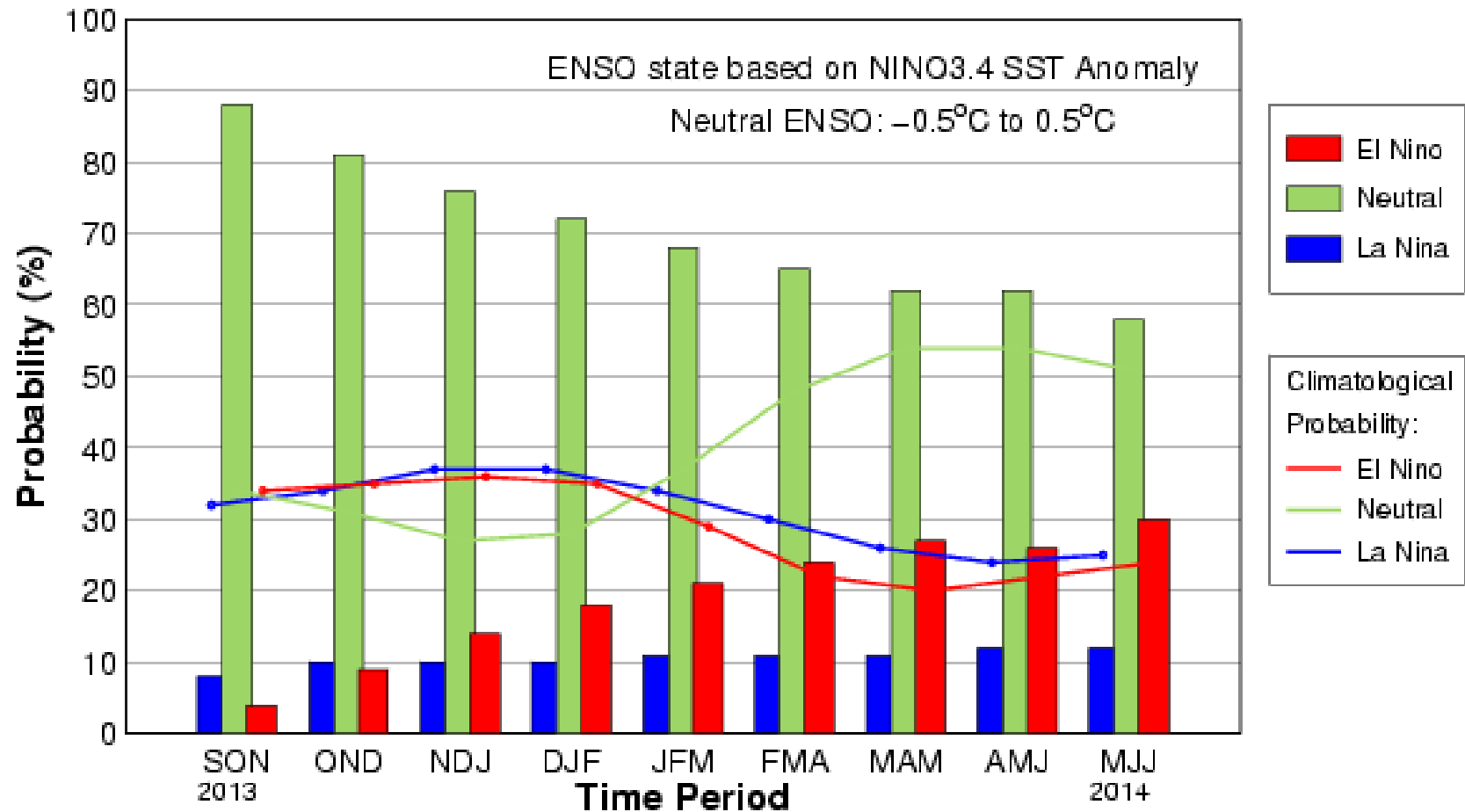
Sea surface temperature (°F)



Climate.gov
Data: CDR

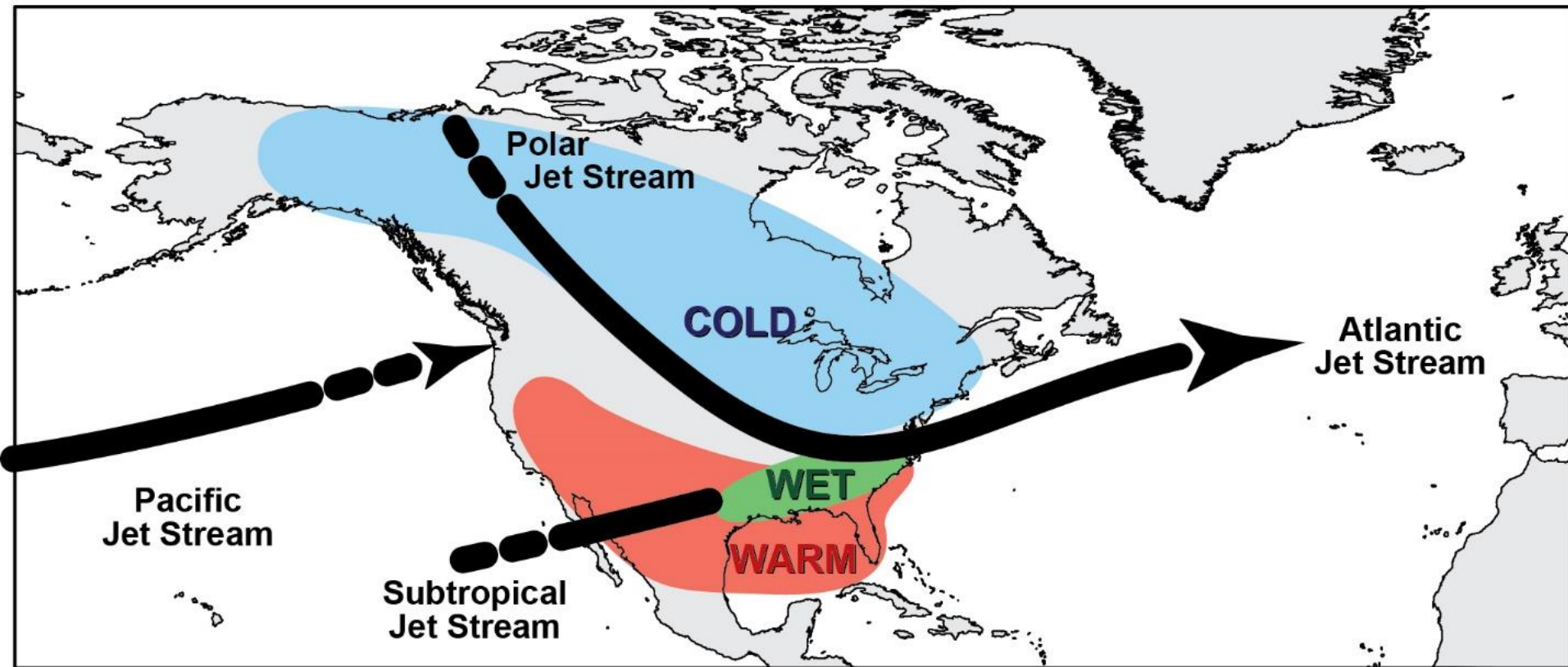
El Nino/La Nina Forecast

Early-Oct CPC/IRI Consensus Probabilistic ENSO Forecast

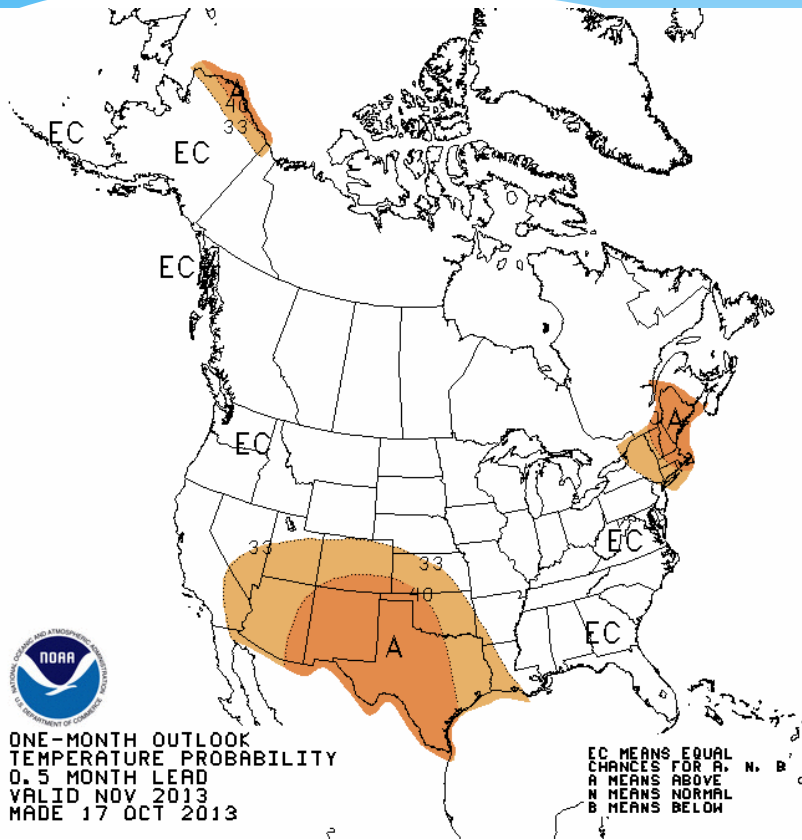


ENSO-Neutral Winter Pattern

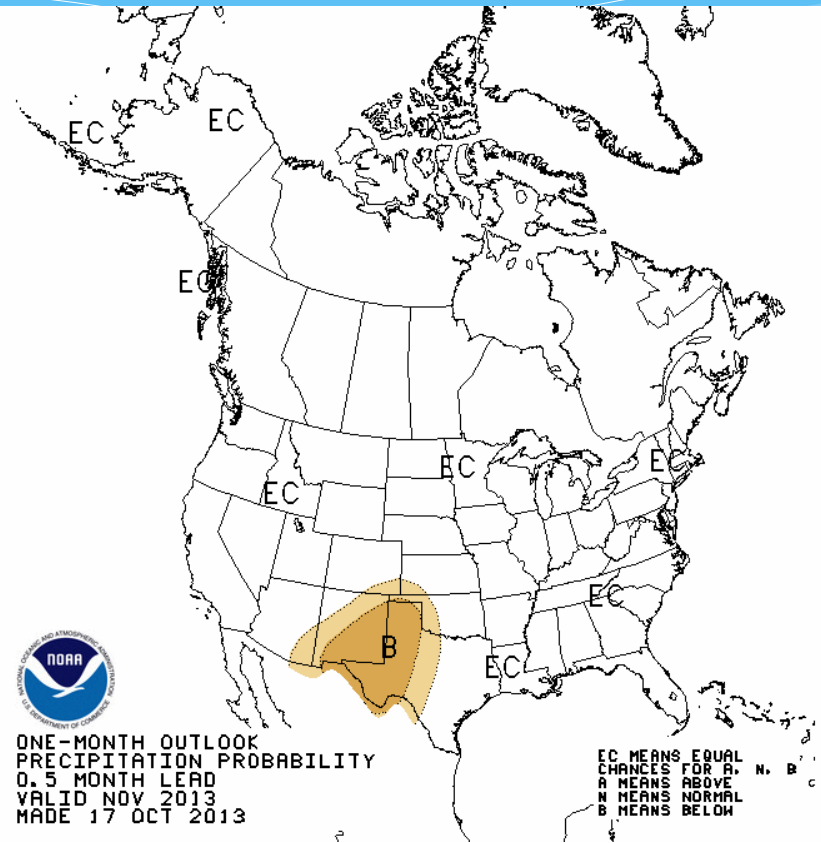
ENSO-Neutral Winter Pattern



November Temperature and Precipitation Probabilities

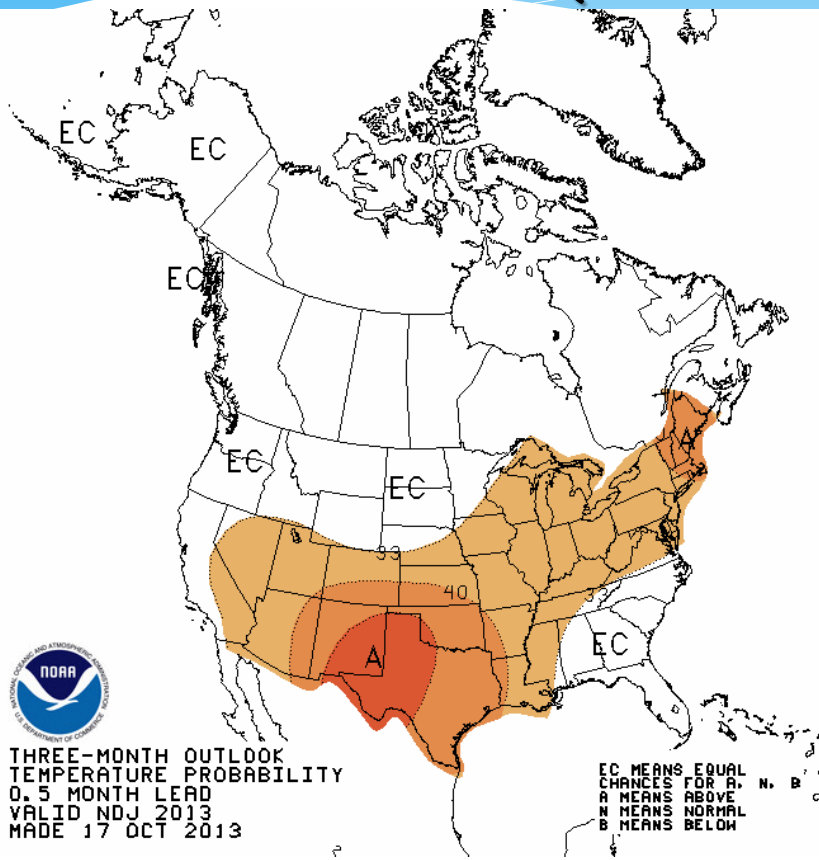


Temperature

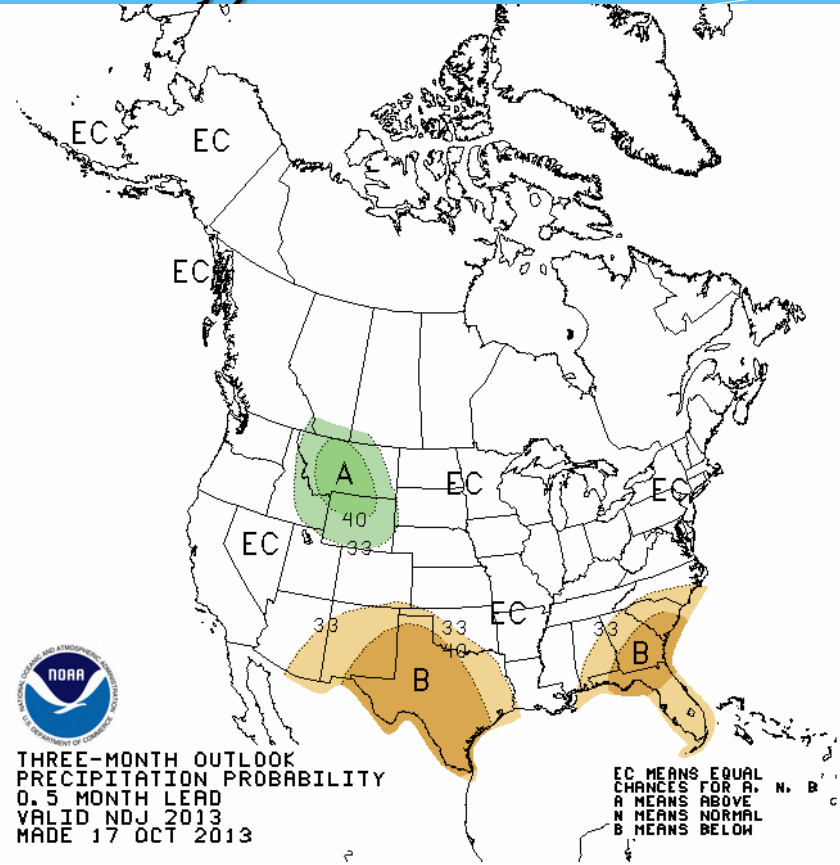


Precipitation

3 Month Temperature and Precipitation Probabilities (November-January)



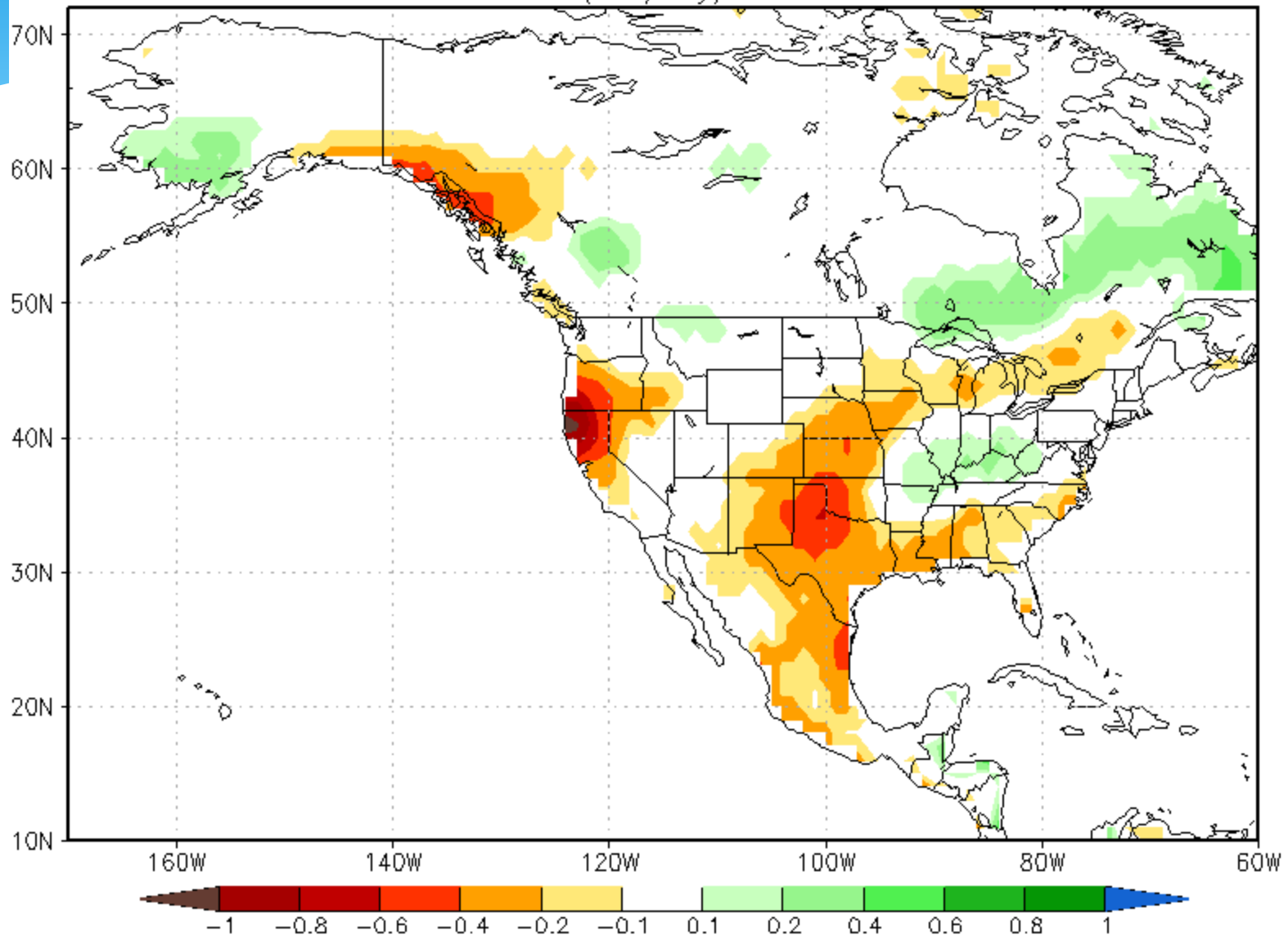
Temperature



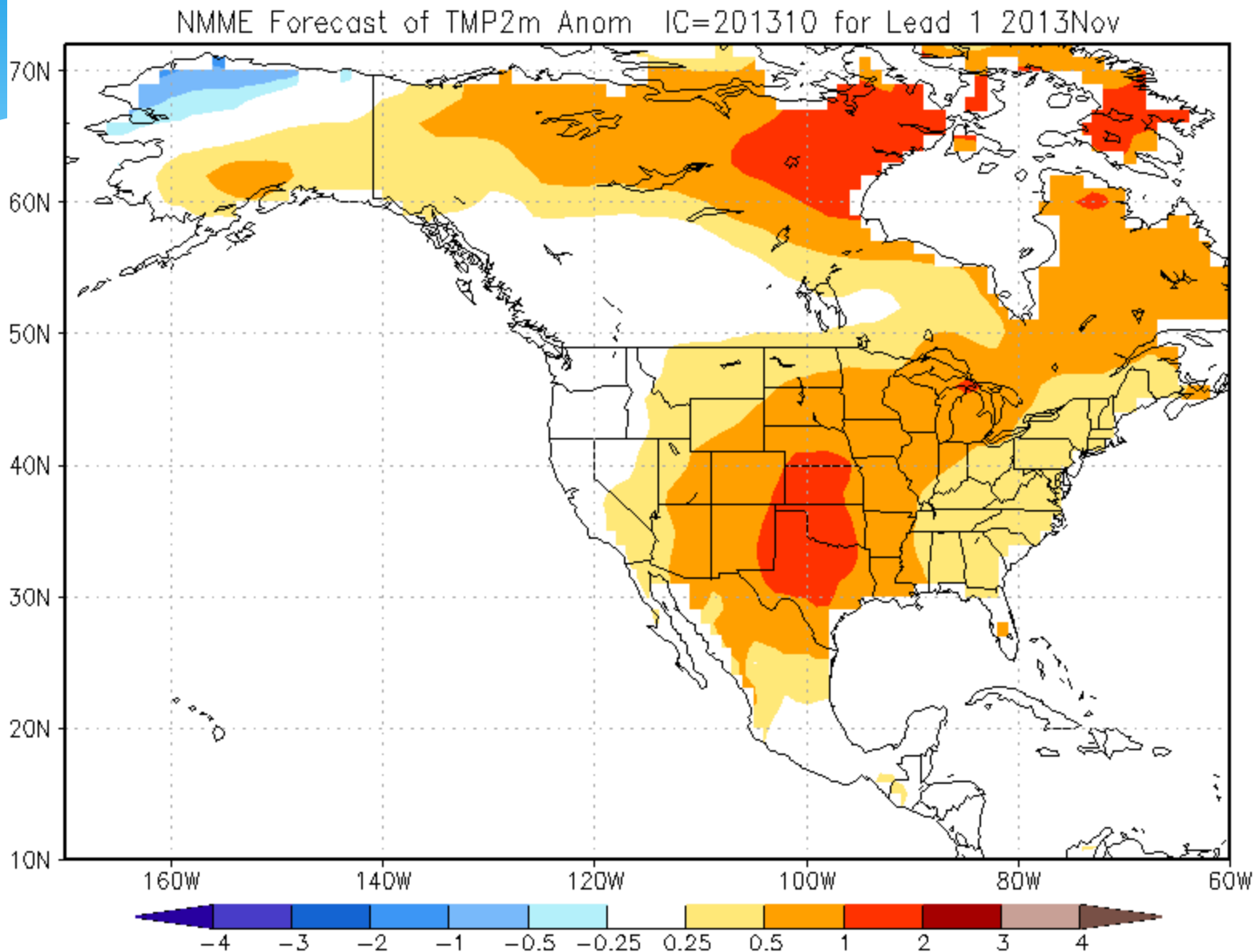
Precipitation

November Precipitation - Ensemble

NMME Forecast of Prate Anom (mm/day) IC=201310 for Lead 1 2013Nov



November Temperature - Ensemble



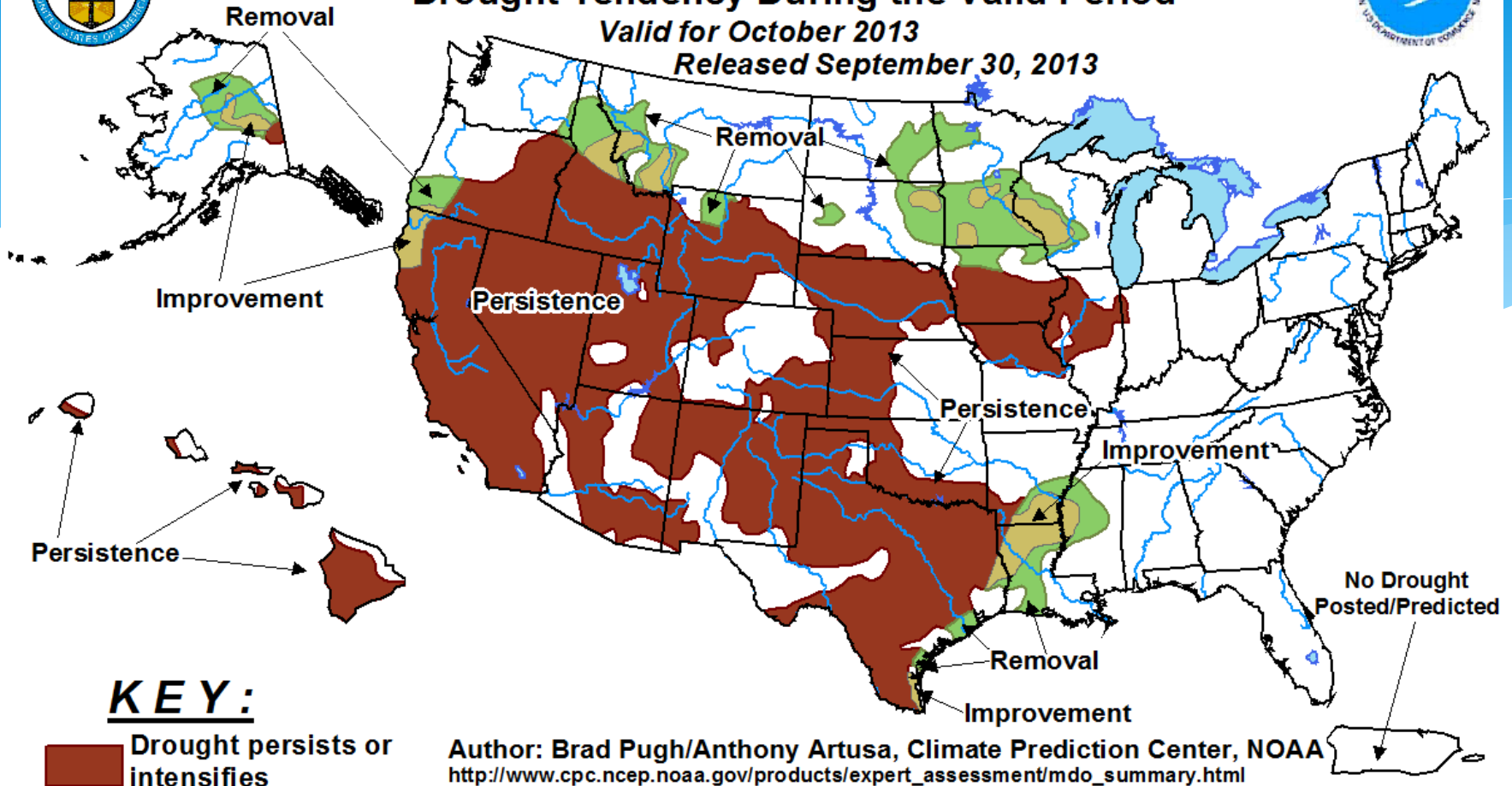


U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for October 2013

Released September 30, 2013



KEY:

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

Author: Brad Pugh/Anthony Artusa, Climate Prediction Center, NOAA
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

* **Recent Conditions**

- * Wet in the Dakotas
- * Some dryness across Kansas, Missouri, Iowa, and Illinois.
- * Drought still in place in the central High Plains and parts of the Midwest.
- * Corn and soybean harvest are well underway, winter wheat planting and emergence close to average
- * Catastrophic early season blizzard in the northern High Plains led to major cattle loss

Summary

* Outlooks

- * ENSO neutral conditions through Spring 2014
- * Drought conditions are expected to linger in some of the Plains states (NE, KS, CO), as well as parts of the Midwest (MO, IL, IA, MN, WI)
- * Next 2 weeks cooler and wetter, especially in the southern and eastern parts of the region.
- * Frost has arrived in many areas, more on the way.

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
 - Monthly climate reports (U.S. & Global):
www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.gov
- U.S. Drought Portal: 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, 217-333-0729

- * Dennis Todey: dennis.todey@sdstate.edu , 605-688-5141

- * Doug Kluck: doug.kluck@noaa.gov, 816-994-3008

- * John Eise: john.eise@noaa.gov, 816-268-3144

- * Mike Timlin: mtimlin@illinois.edu; 217-333-8506

- * Natalie Umphlett: numphlett2@unl.edu ; 402 472-6764

- * Brian Fuchs: bfuchs2@unl.edu 402 472-6775

- * **Weather:**

- * crhroc@noaa.gov