

Midwest and Great Plains Drought and Climate Summary

20 February 2014

Wendy Ryan

Assistant State Climatologist

Colorado Climate Center

Colorado State University

wendy.ryan@colostate.edu

970-491-8506



General Information

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

- * Collaboration with Wendy Ryan (Colorado Climate 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: March 20th, 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>

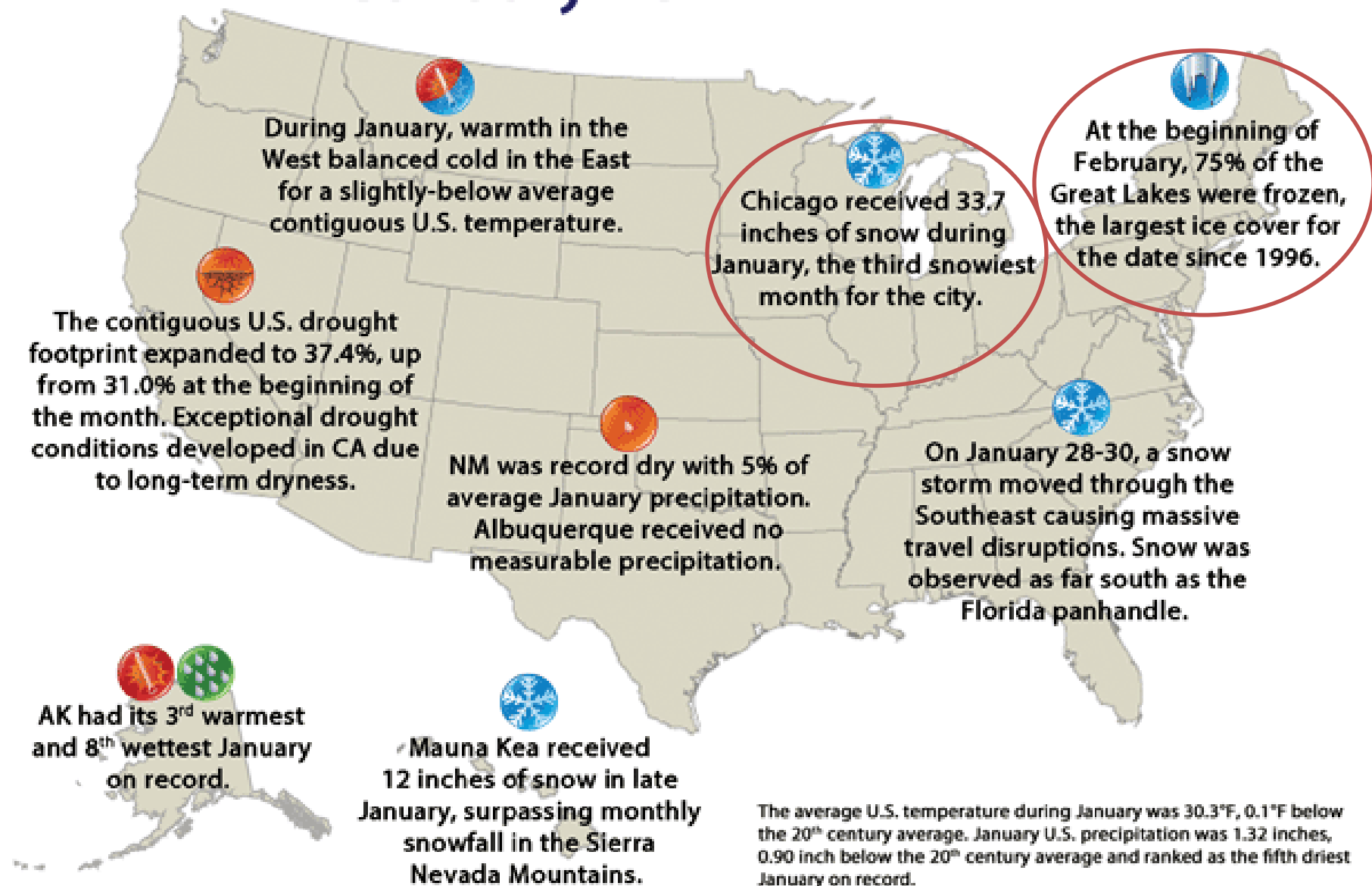
Agenda

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

Significant Events for January 2014

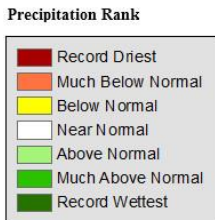
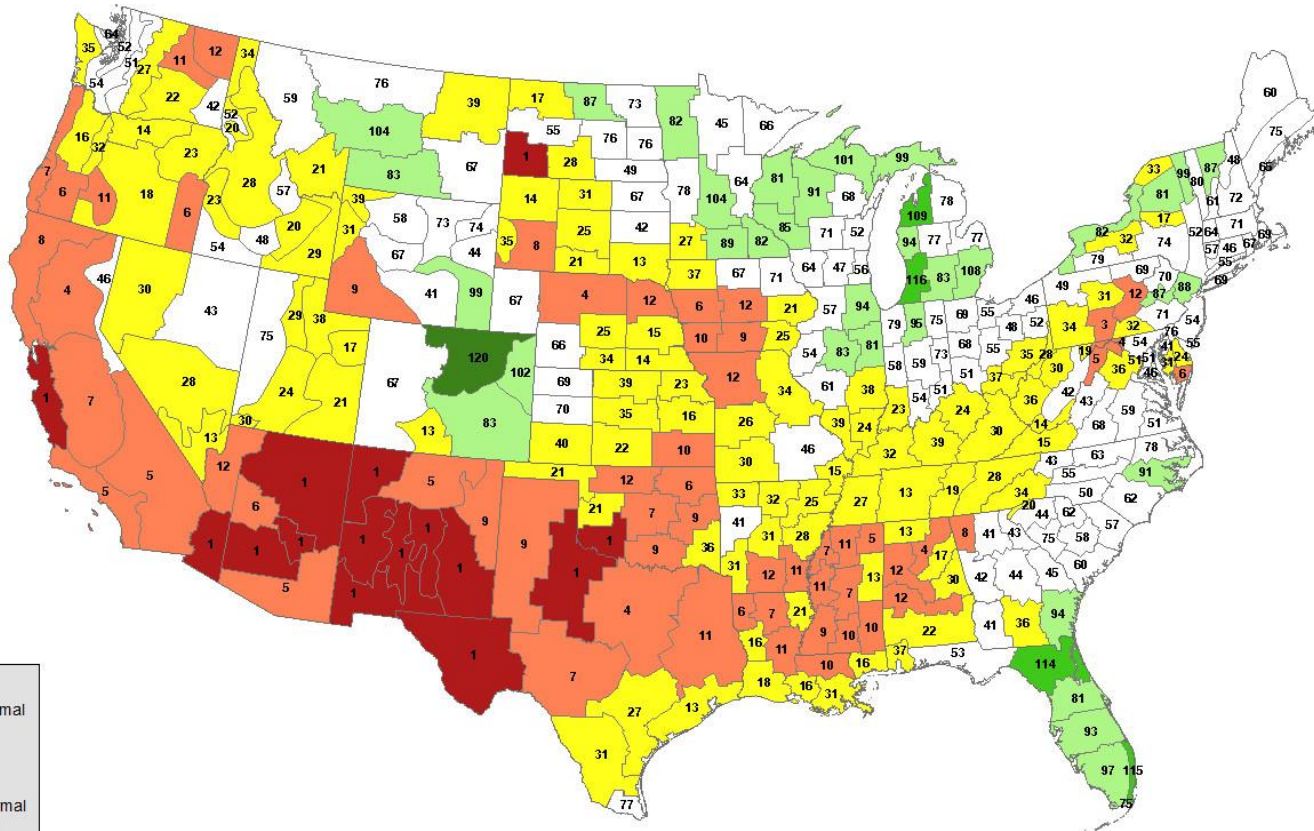


NOAA's
National Climatic Data Center



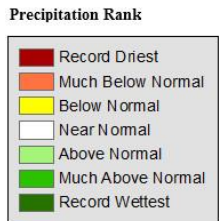
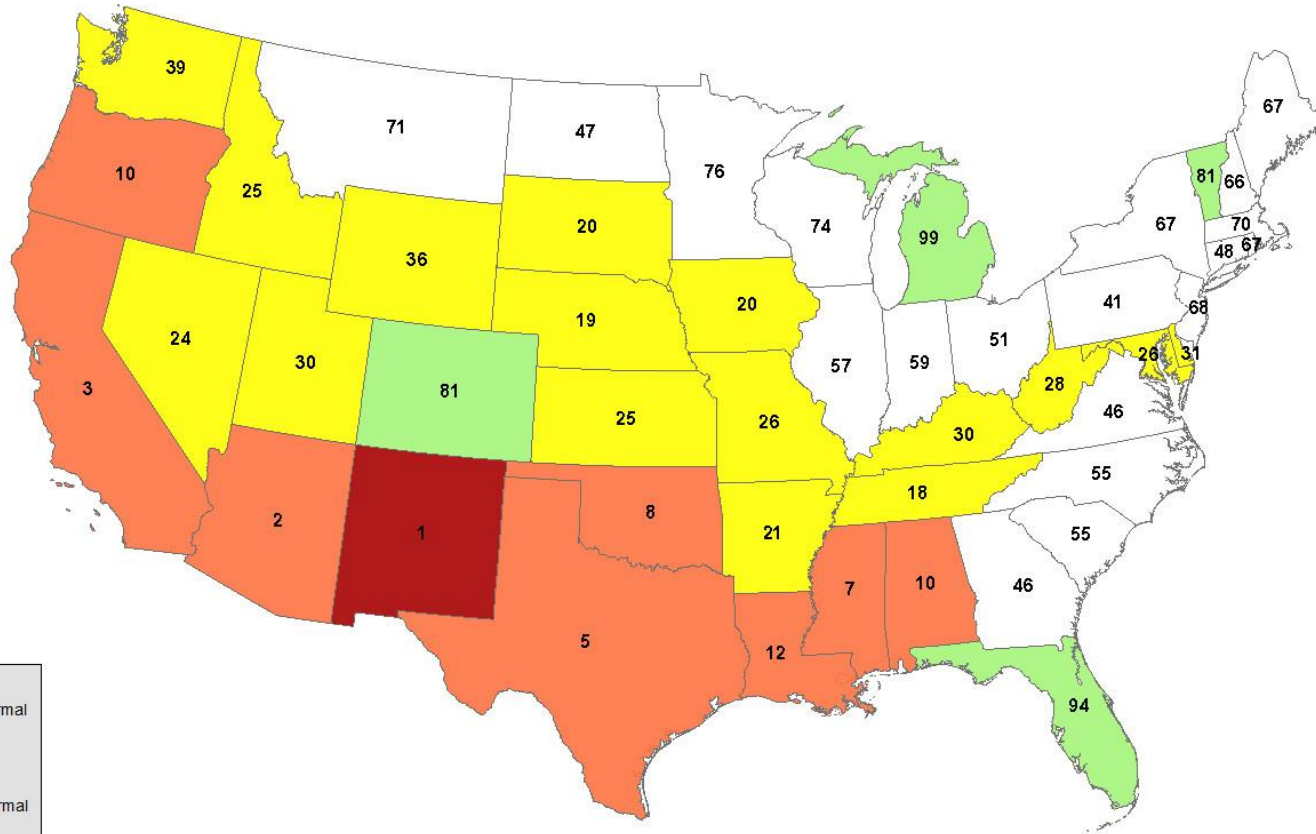
January Divisional Precipitation Rank

Divisional Precipitation Rank
January 2014



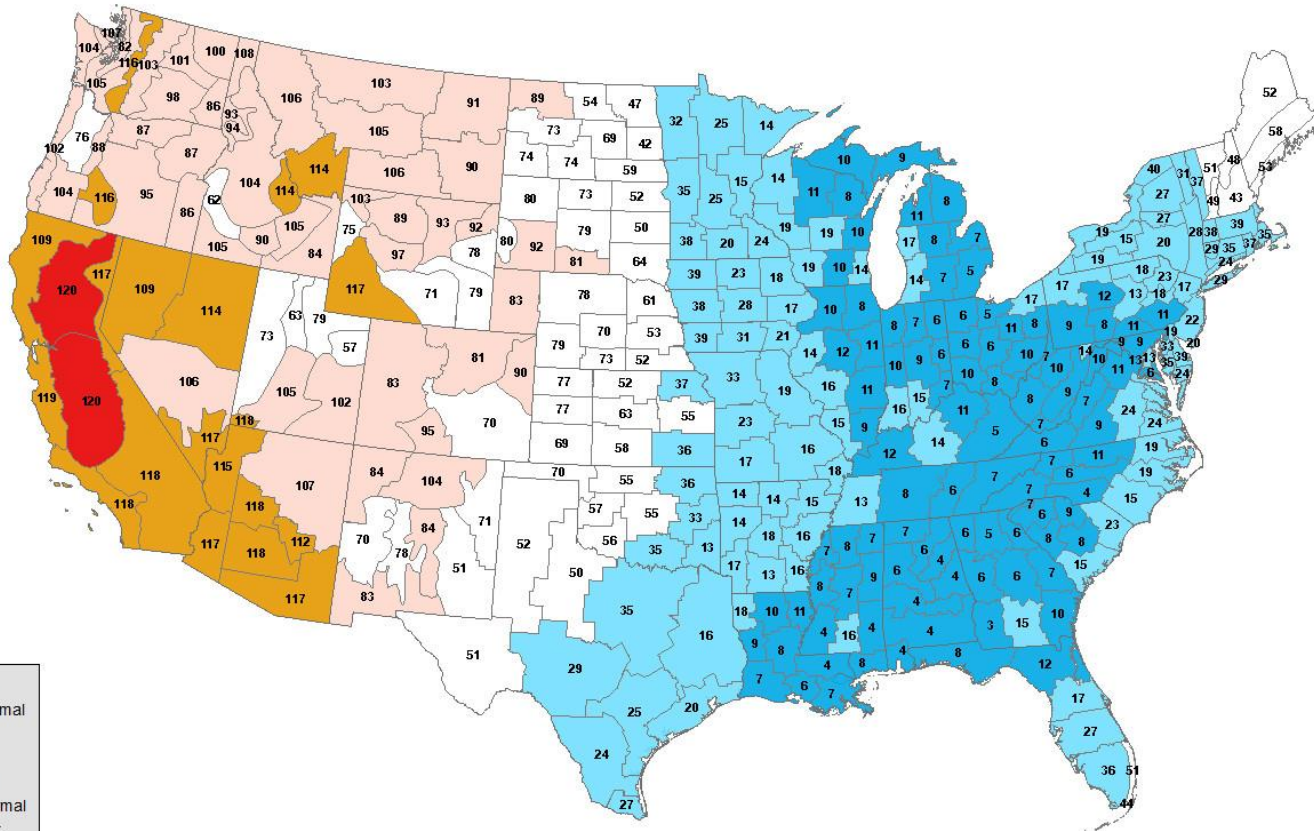
January State Precipitation Rank

Statewide Precipitation Rank
January 2014



January Divisional Temperature Rank

Divisional Temperature Rank
January 2014



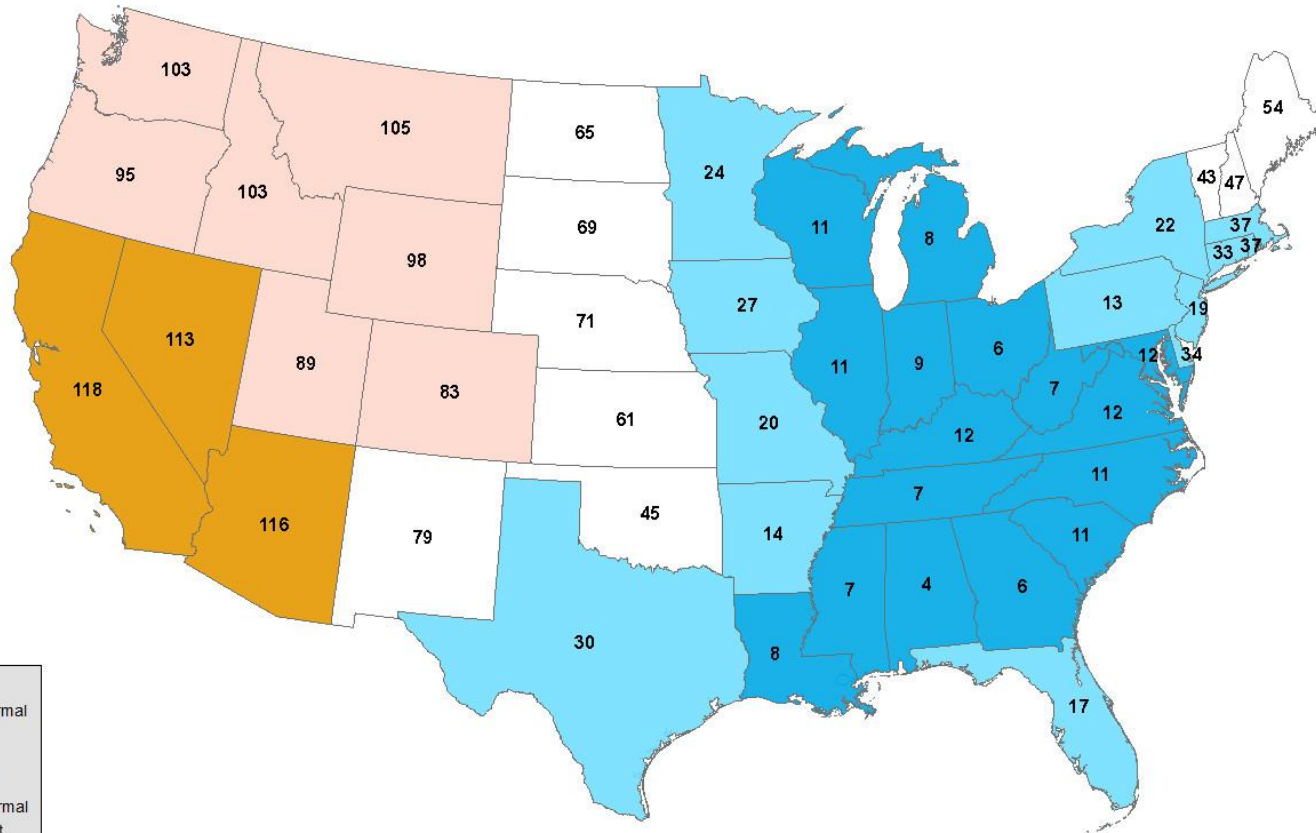
Temperature Rank

- Record Coldest
- Much Below Normal
- Below Normal
- Near Normal
- Above Normal
- Much Above Normal
- Record Warmest



January State Temperature Rank

Statewide Temperature Rank
January 2014

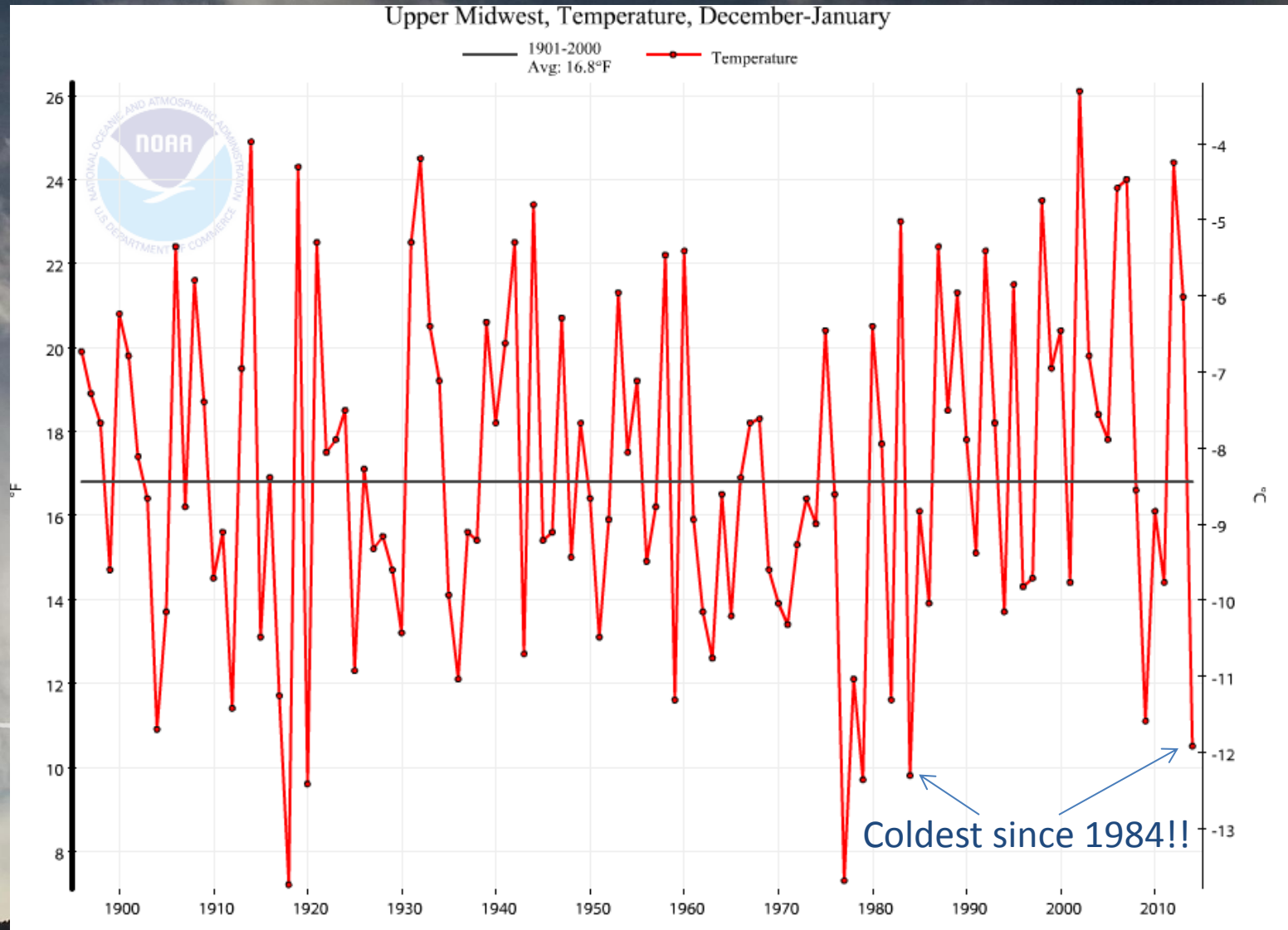


Temperature Rank

- Record Coldest
- Much Below Normal
- Below Normal
- Near Normal
- Above Normal
- Much Above Normal
- Record Warmest

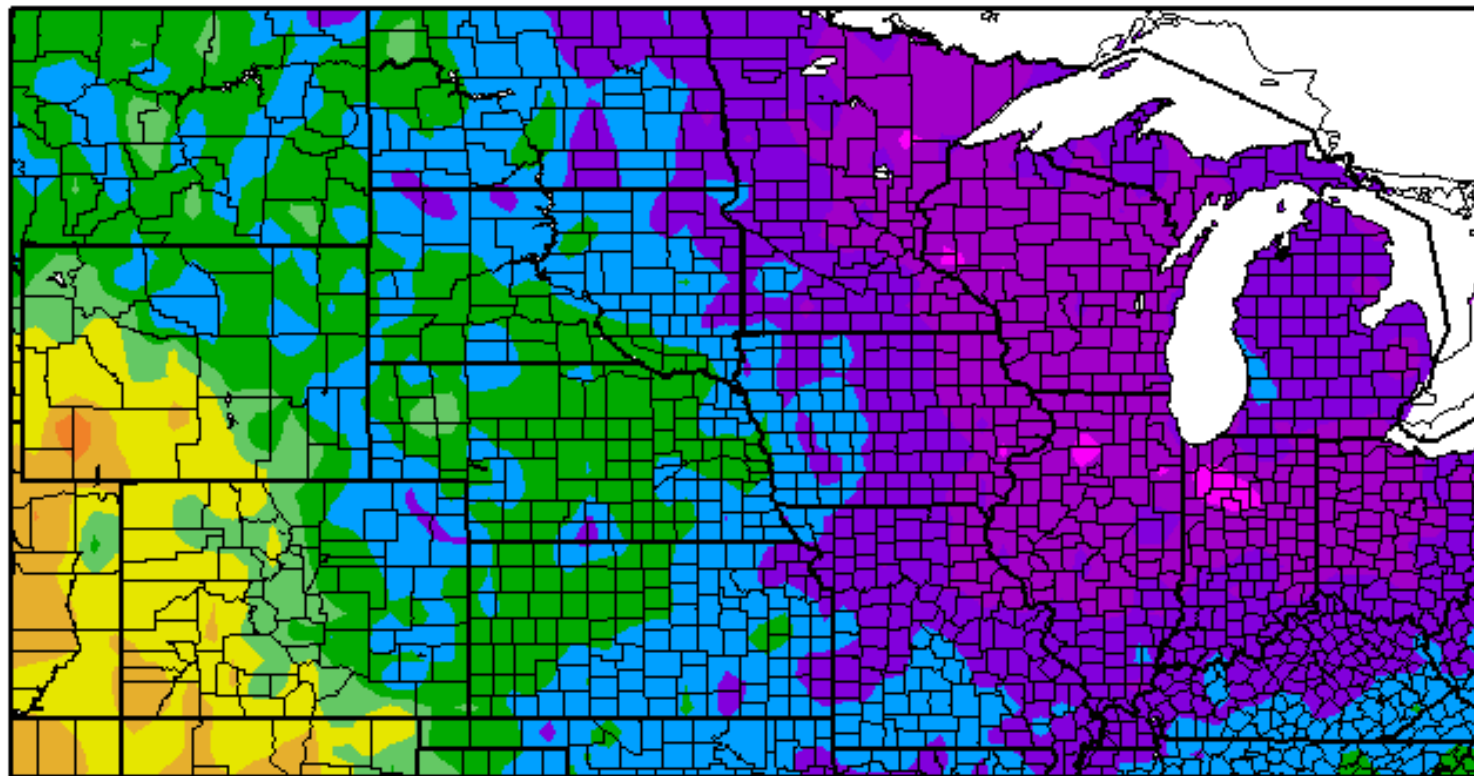


Upper Midwest (MN,IA,WI,MI) Temperature Series (Dec-Jan) 6th coldest on record (1895-2014)



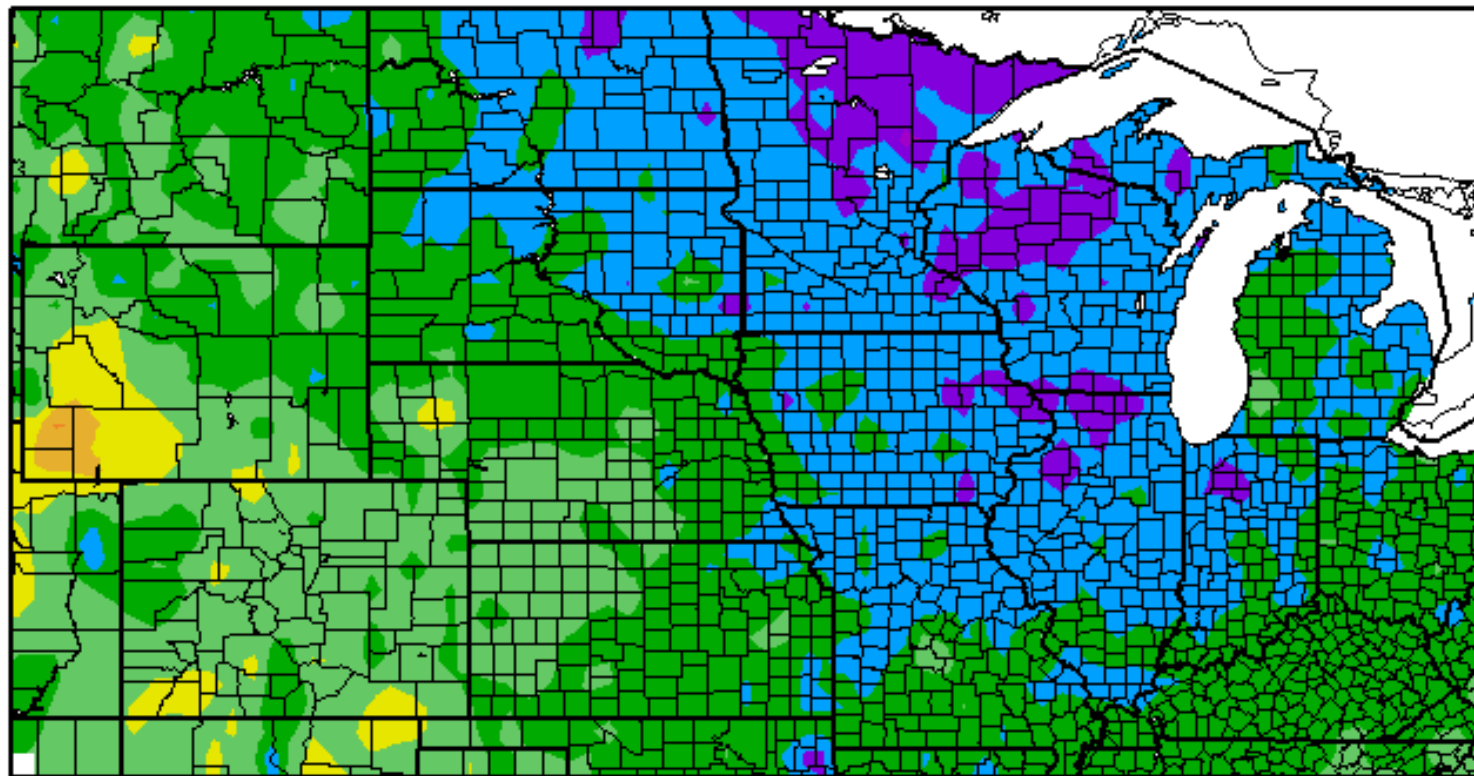
30 Day Temperature Departure

Departure from Normal Temperature (F)
1/20/2014 - 2/18/2014



Water Year Temperature Departure from Normal

Departure from Normal Temperature (F)
10/1/2013 - 2/18/2014



Generated 2/19/2014 at HPRCC using provisional data.

Regional Climate Centers

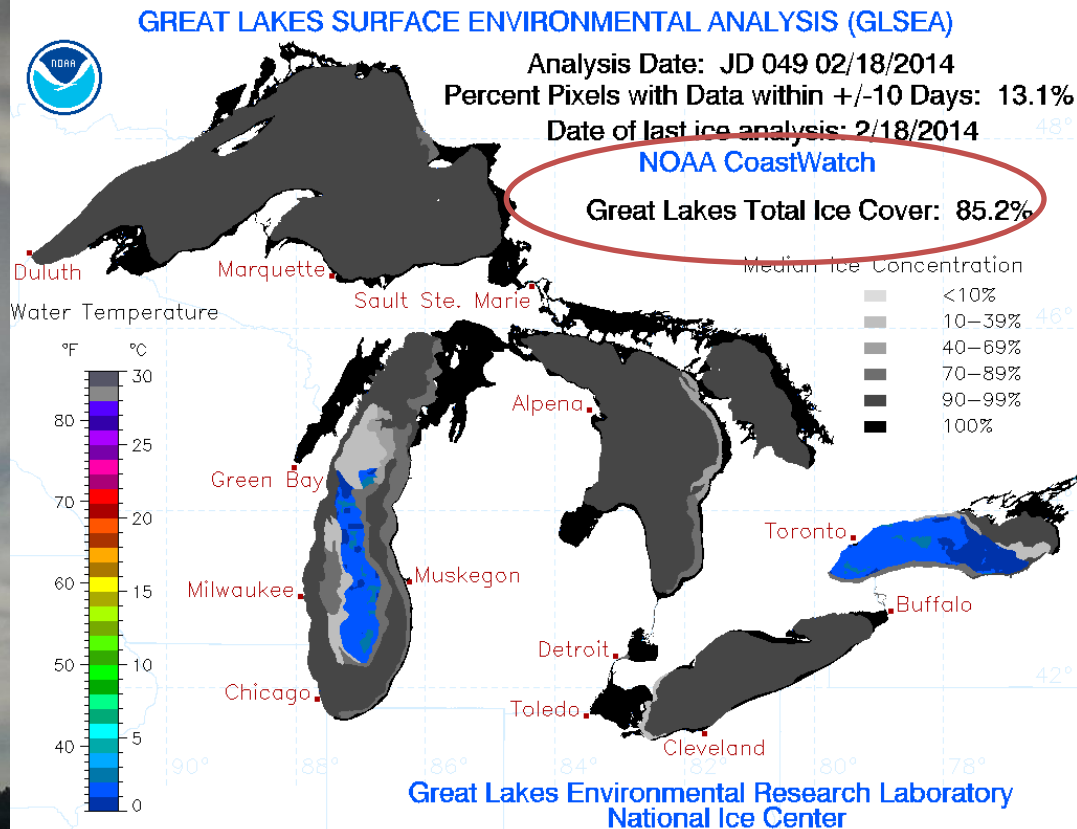
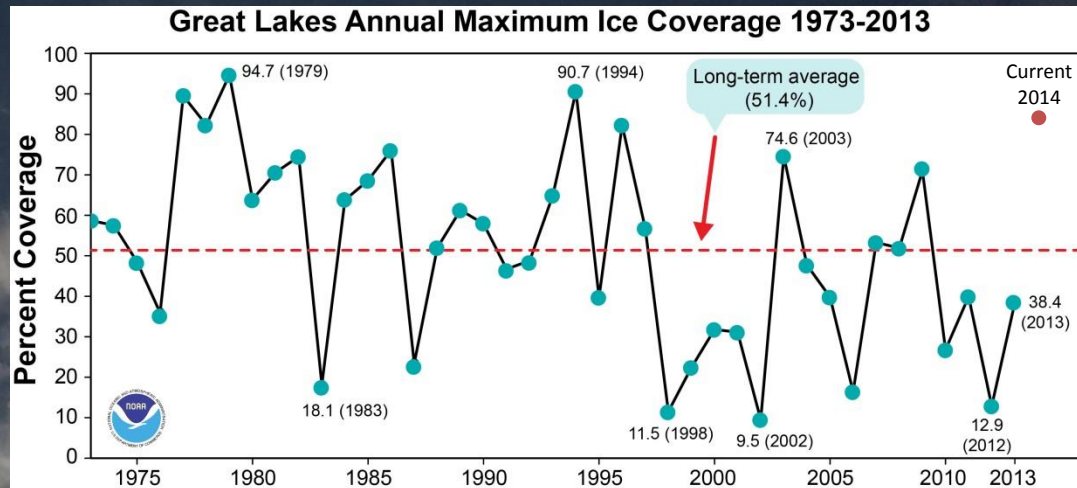
Apostle Island Ice Caves, Lake Superior

– Access for the first time since 2009.



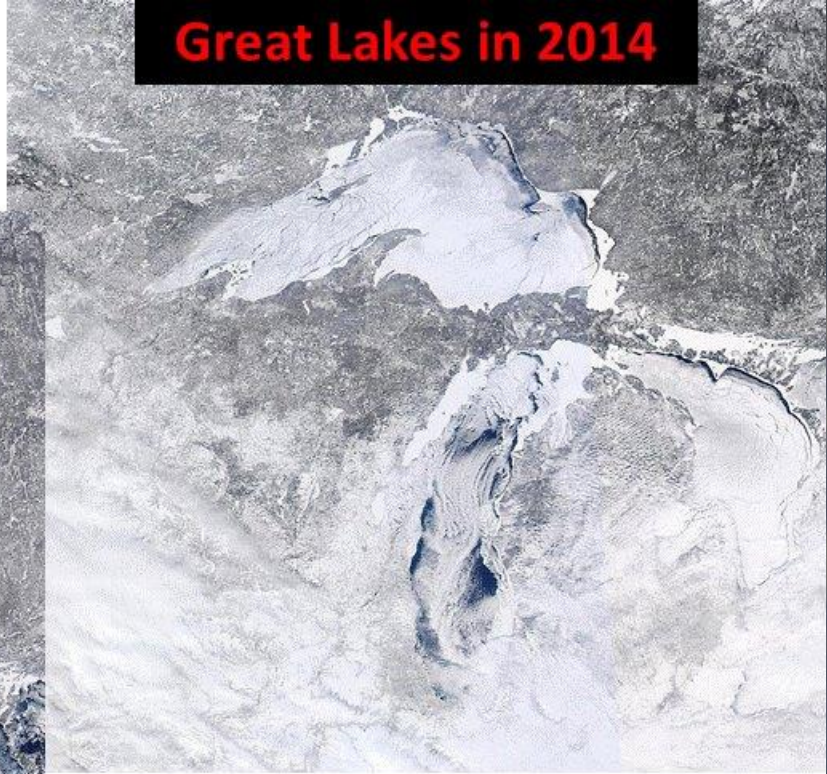
Great Lakes Ice Cover

- 2014 is currently 85.2% ice covered
- Highest coverage since 1994.
- First time in 4 years coverage exceeds the long term average.



2013 vs 2014 Great Lakes Ice

Great Lakes in 2014

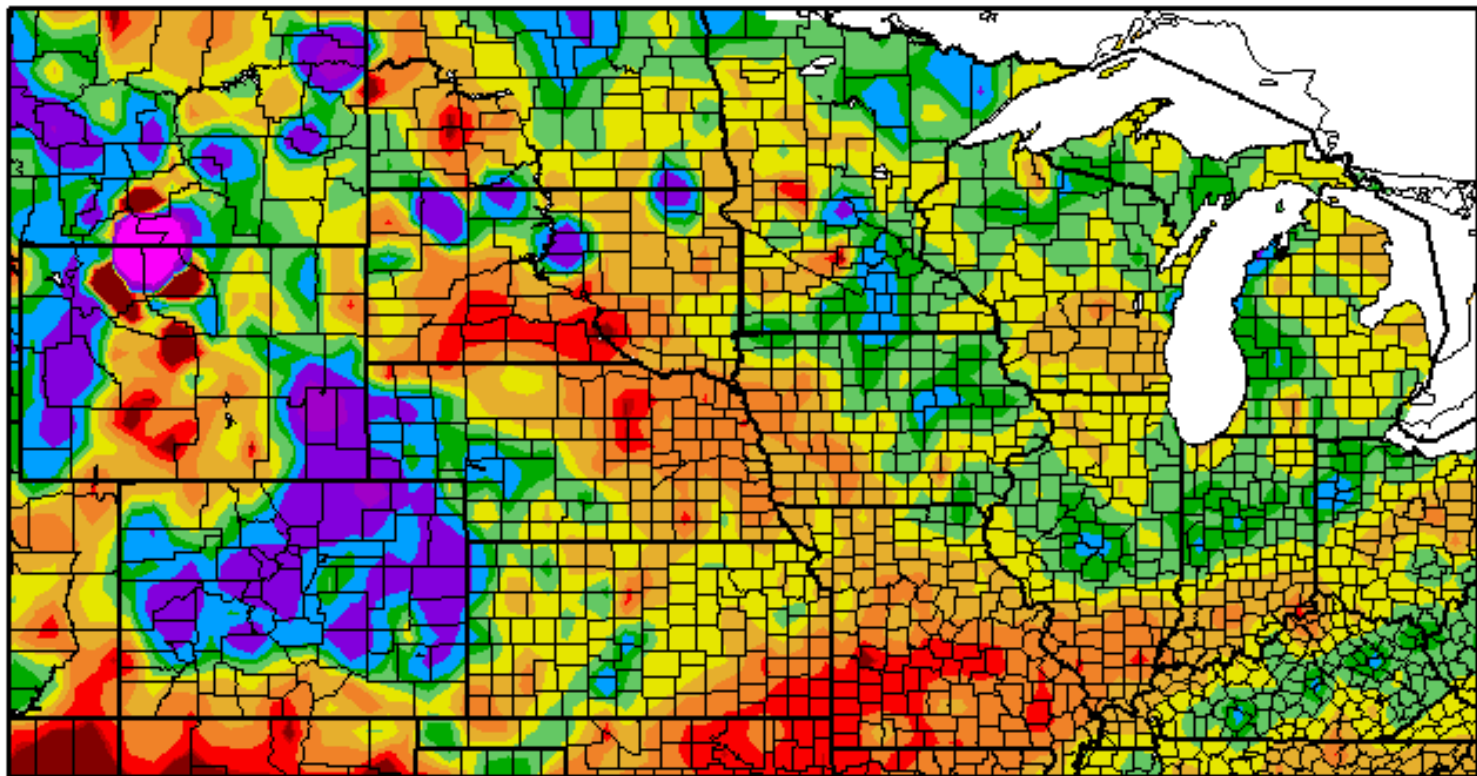


Great Lakes in 2013



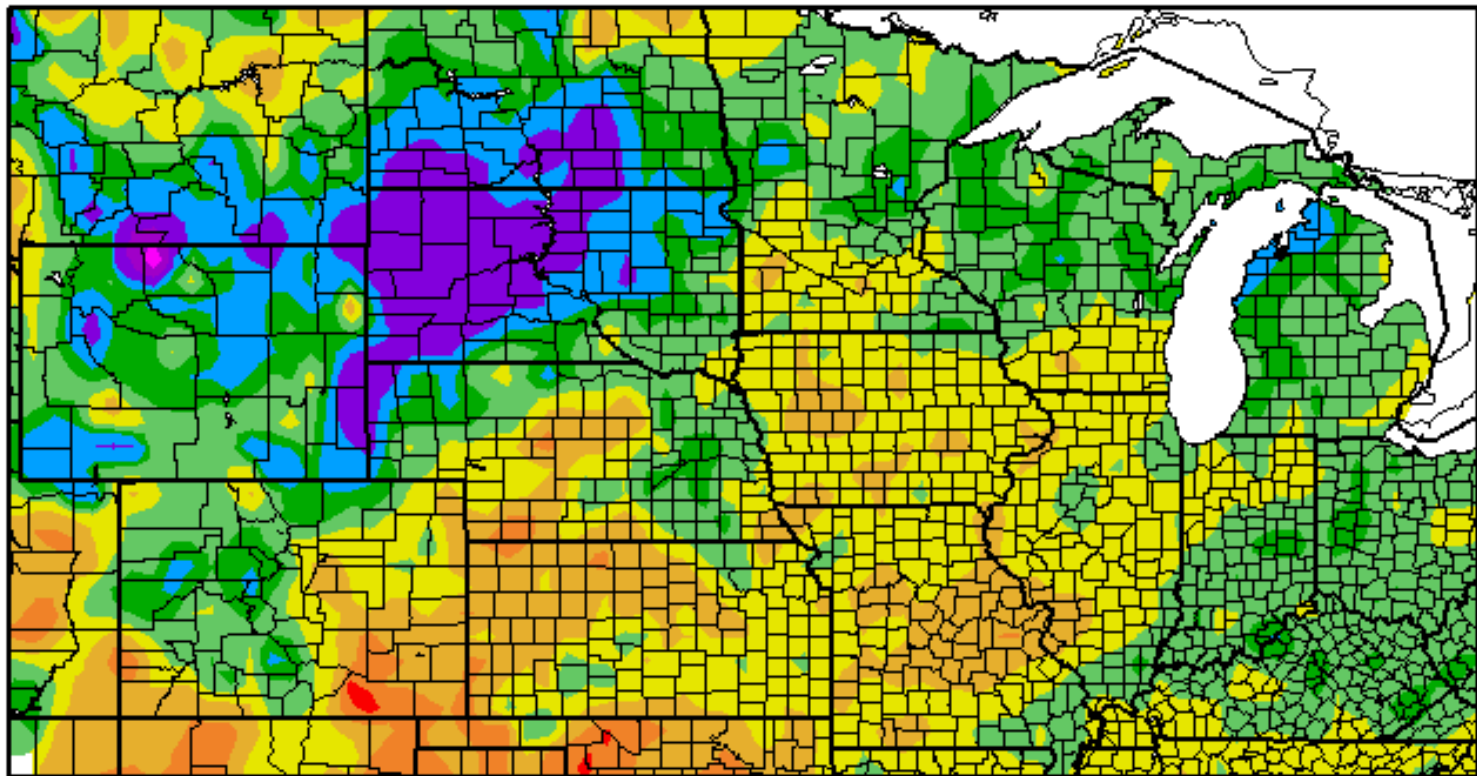
30 Day Precipitation as Percent of Normal

Percent of Normal Precipitation (%)
1/20/2014 - 2/18/2014



Water Year Precipitation as Percent of Normal

Percent of Normal Precipitation (%)
10/1/2013 – 2/18/2014

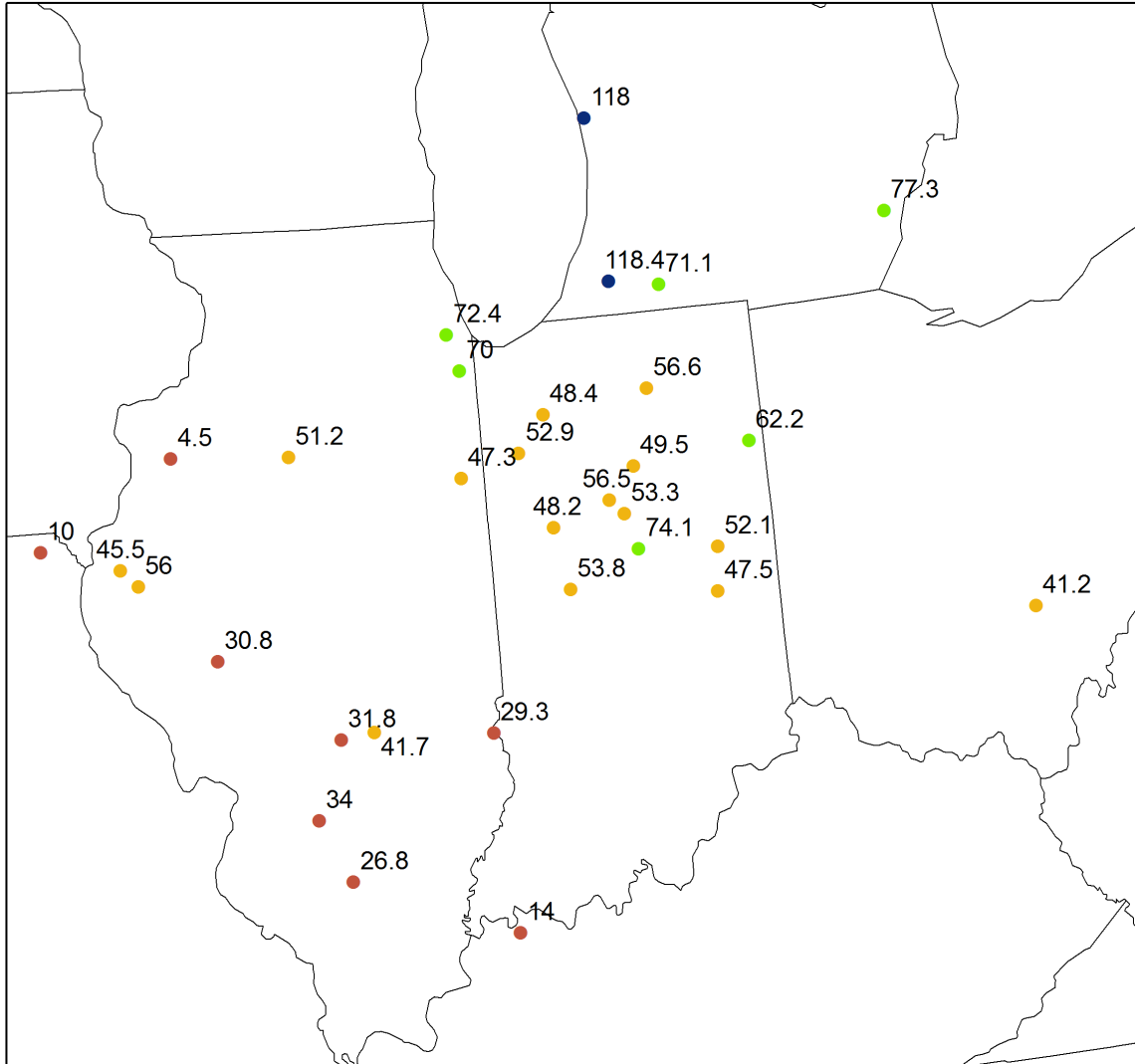


Generated 2/19/2014 at HPRCC using provisional data.

Regional Climate Centers

Record Snowfall to Date

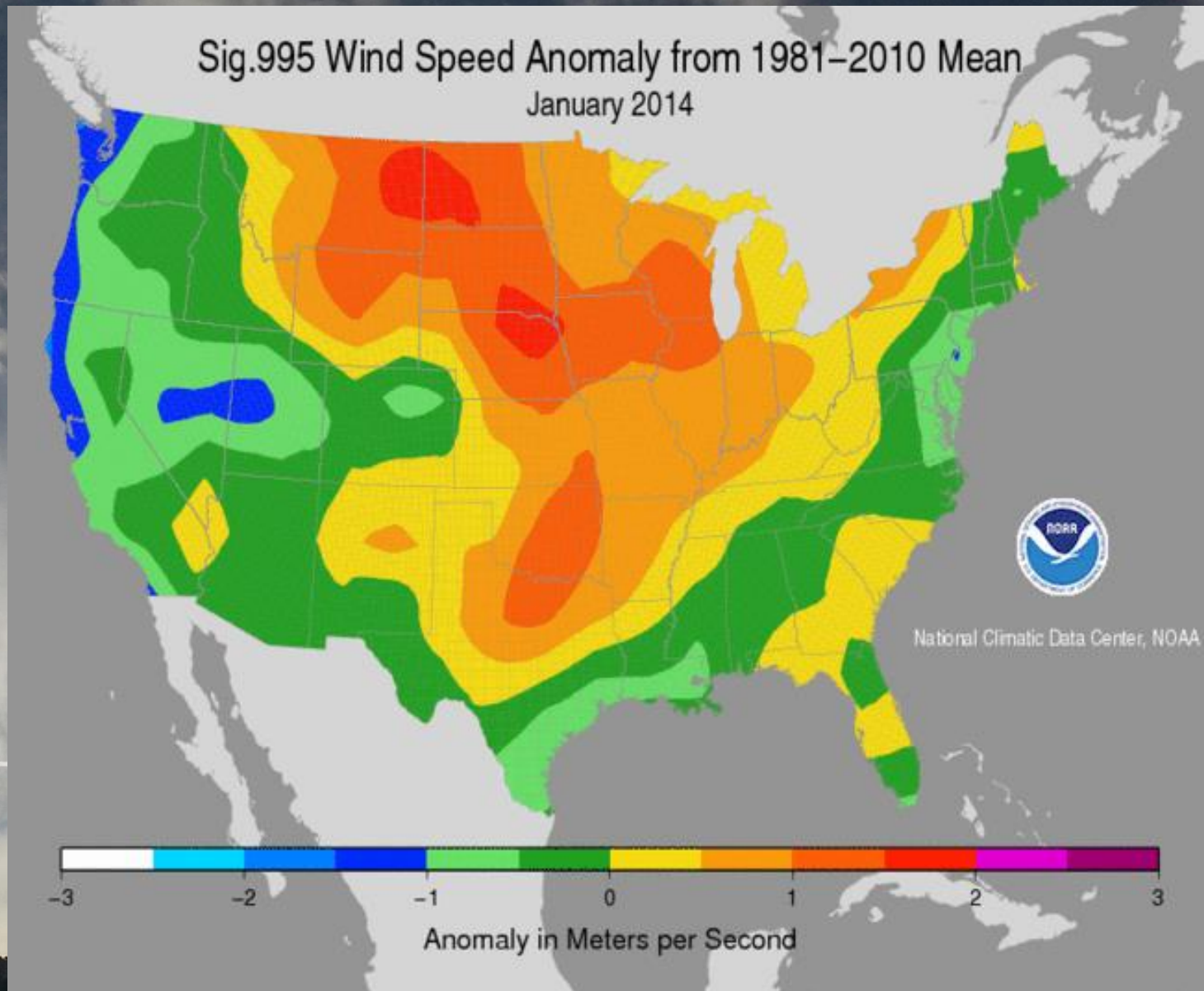
Midwest Record Seasonal Snowfall 2014 (in)



2014 Record Snowfall (in)
Snowfall

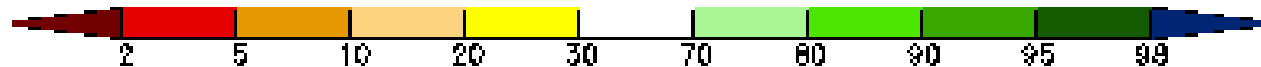
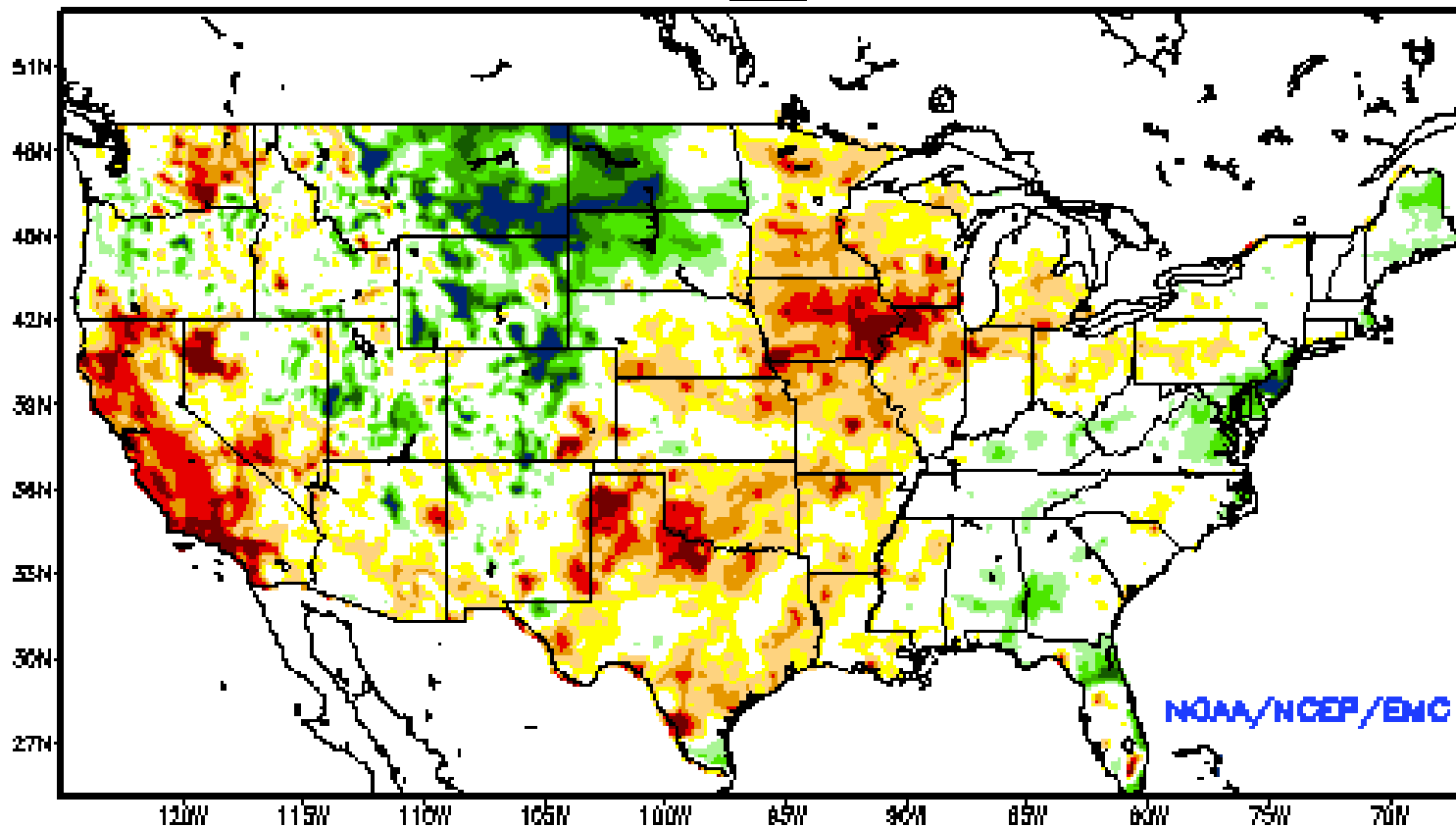
- 4.5 - 40.0
- 40.1 - 60.0
- 60.1 - 80.0
- 80.1 - 100.0
- 100.1 - 120.0

Mean Wind Speed Anomaly

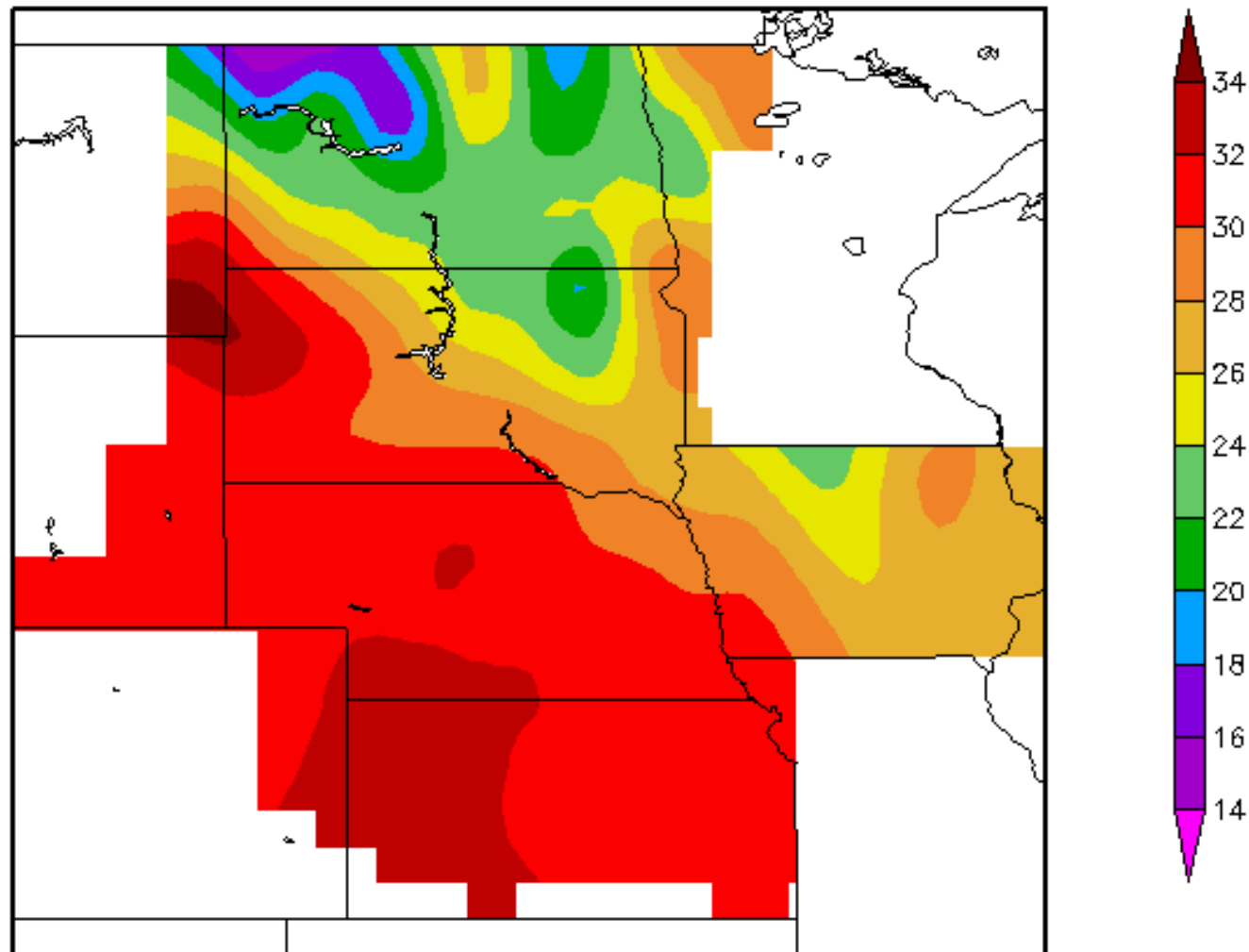


Current Soil Moisture Percentiles

Ensemble-Mean - Current Total Column Soil Moisture Percentile
NCEP NLDAS Products Valid: FEB 14, 2014



Soil Temperature (F at 4 inches) 2/12/2014 – 2/18/2014

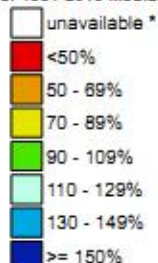


High Plains Regional Climate Center
Generated 2/19/2014 using AWDN data.

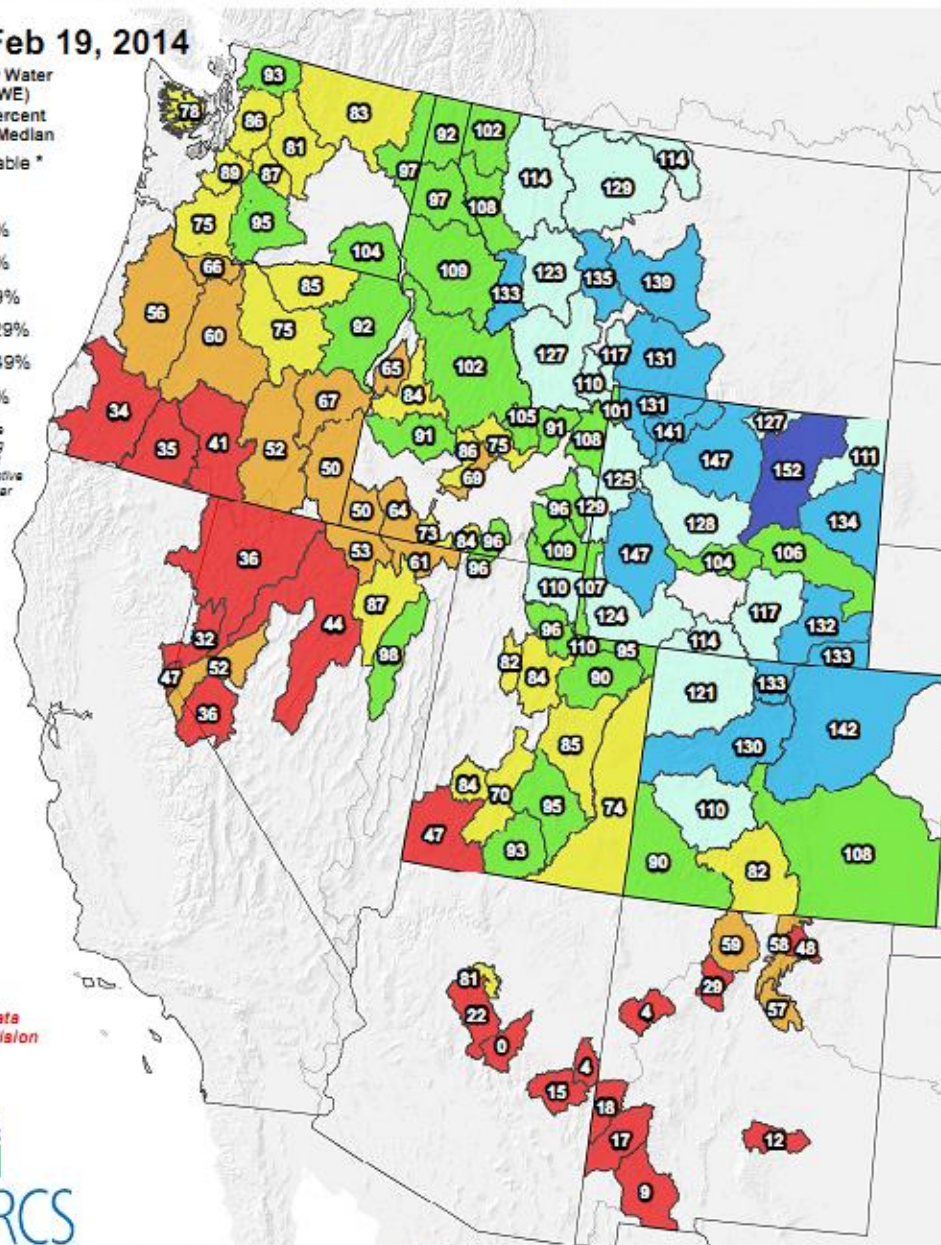
Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Feb 19, 2014

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



* Data unavailable at time of posting or measurement is not representative at this time of year



Provisional data subject to revision

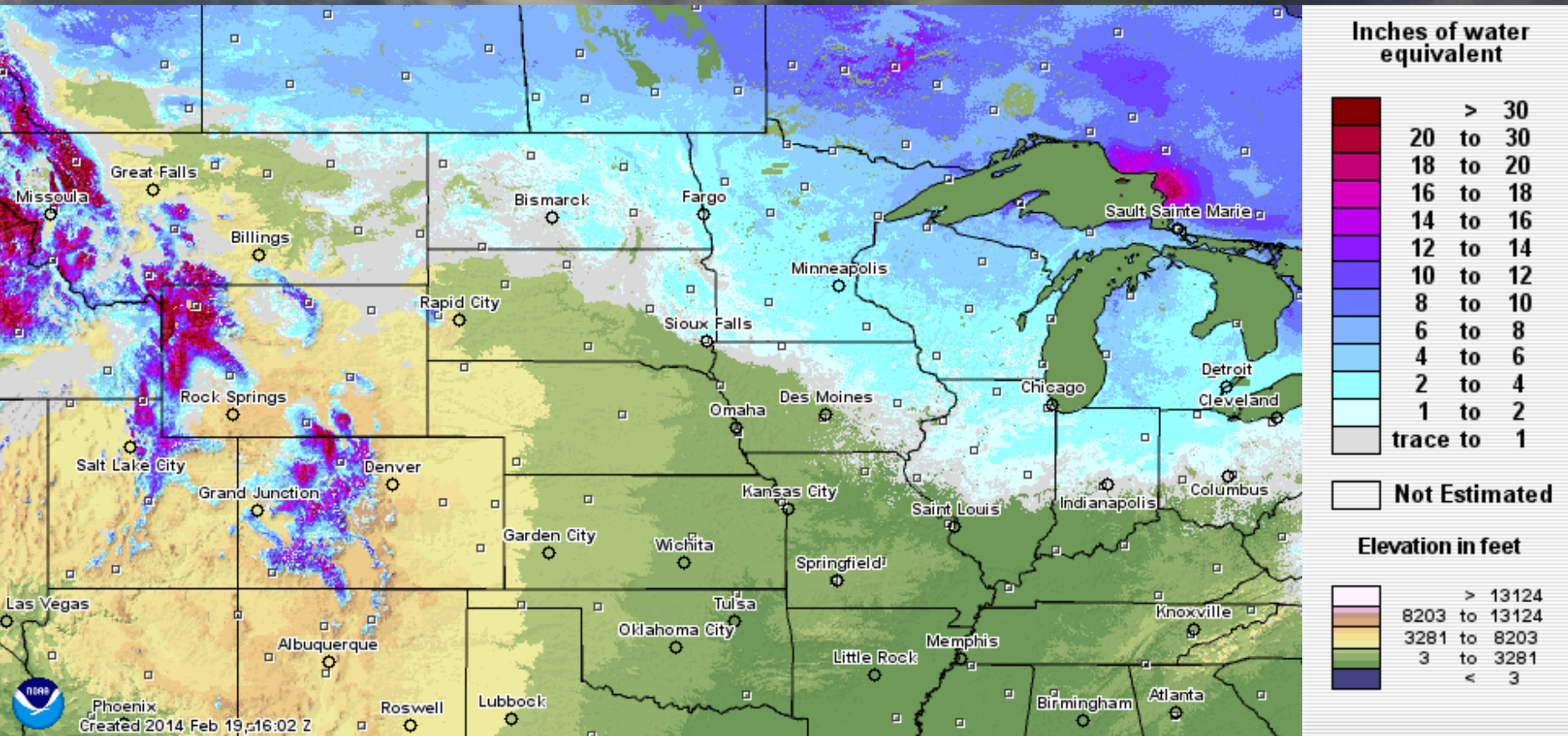


The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center, Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>. Based on data from <http://www.wcc.nrcs.usda.gov/reports/>. Science contact: Jim.Marron@por.usda.gov 503 414 3047

- Most basins are reporting above normal SWE in the Missouri basin as of Feb 19, 2014.

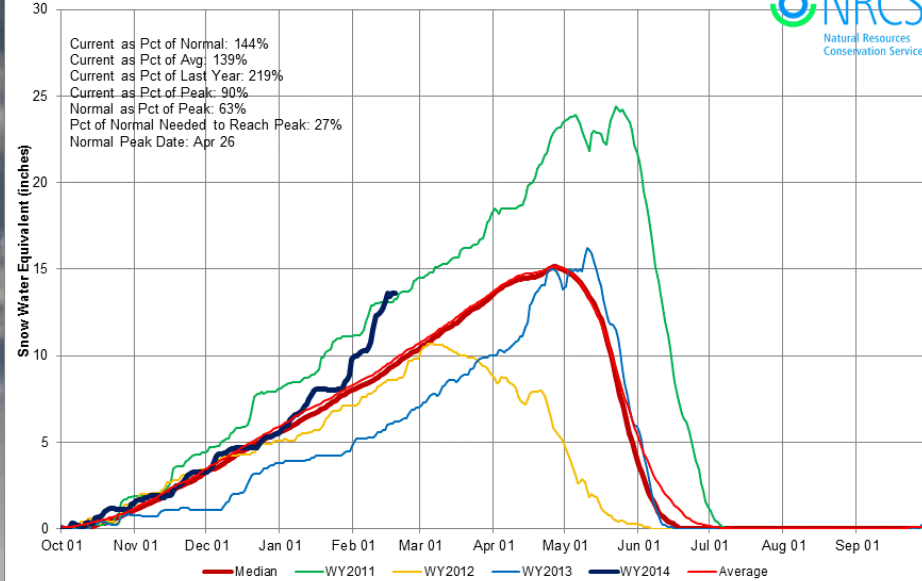
NOHRSC Snow Coverage



Southern Basin Snowpack

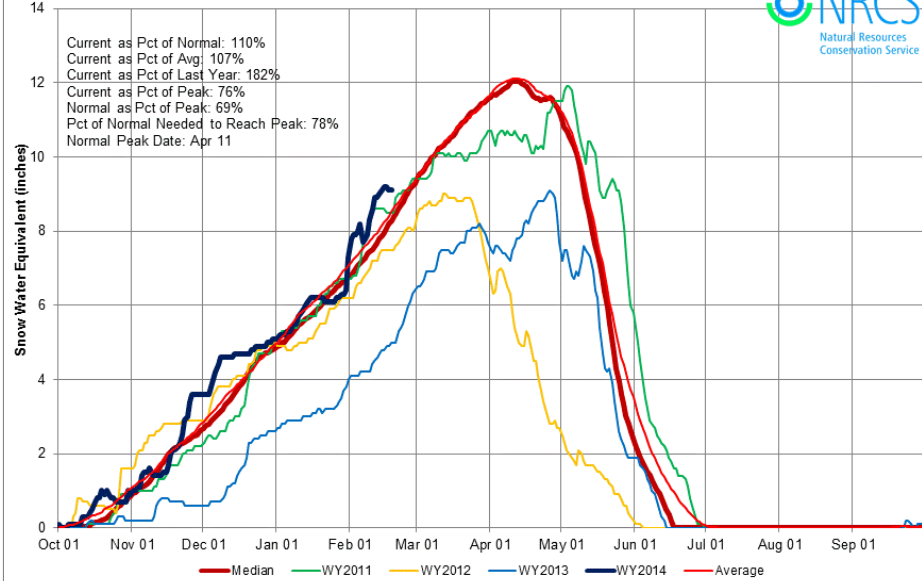
South Platte River Basin Time Series Snowpack Summary

Based on Provisional SNOTEL data as of Feb 18, 2014



Arkansas River Basin Time Series Snowpack Summary

Based on Provisional SNOTEL data as of Feb 18, 2014



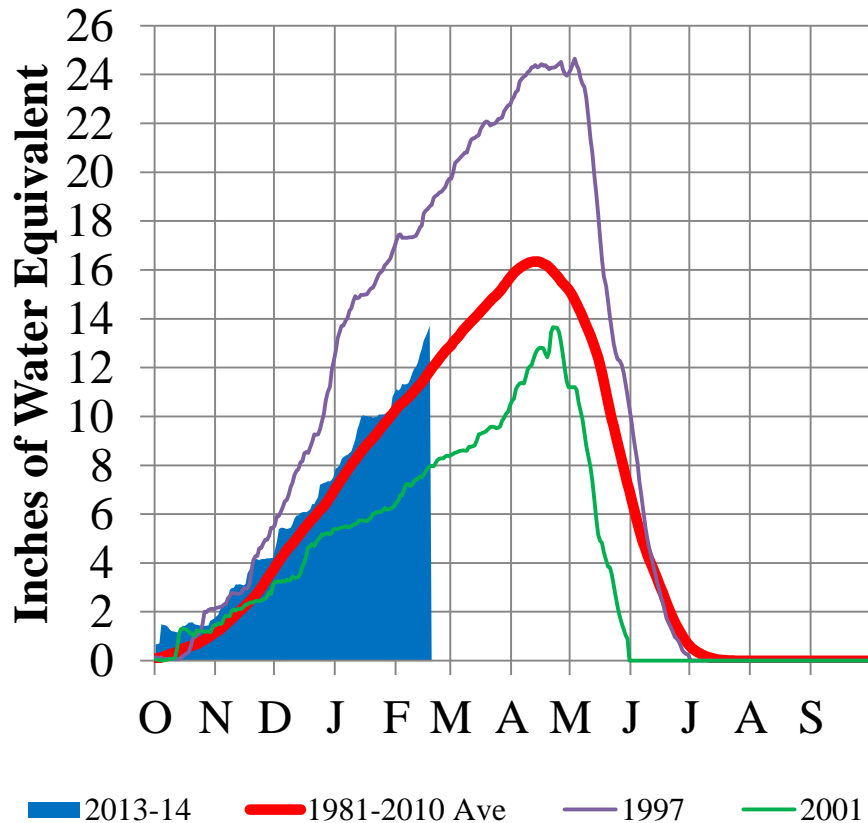
South Platte: 144% Median,
already 90% of normal April peak!

Arkansas: 110% of Median,
76% of normal April peak.

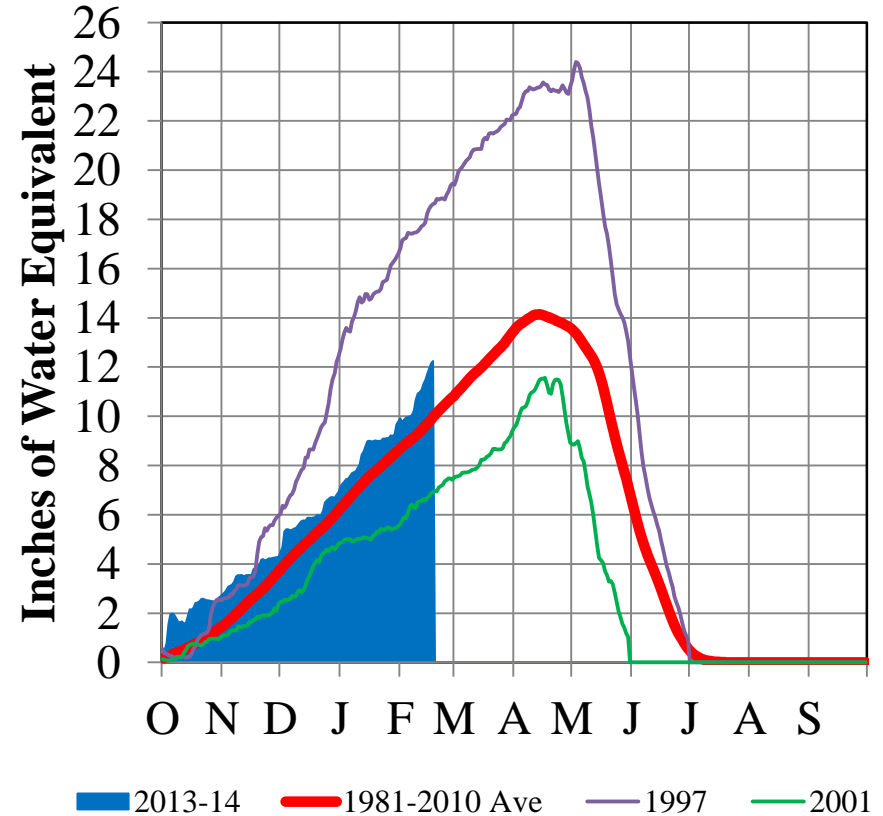
Missouri River Basin – Mountain Snowpack Water Content 2013-2014 with comparison plots from 1997* and 2001*

February 18, 2014

Total above Fort Peck



Total Fort Peck to Garrison

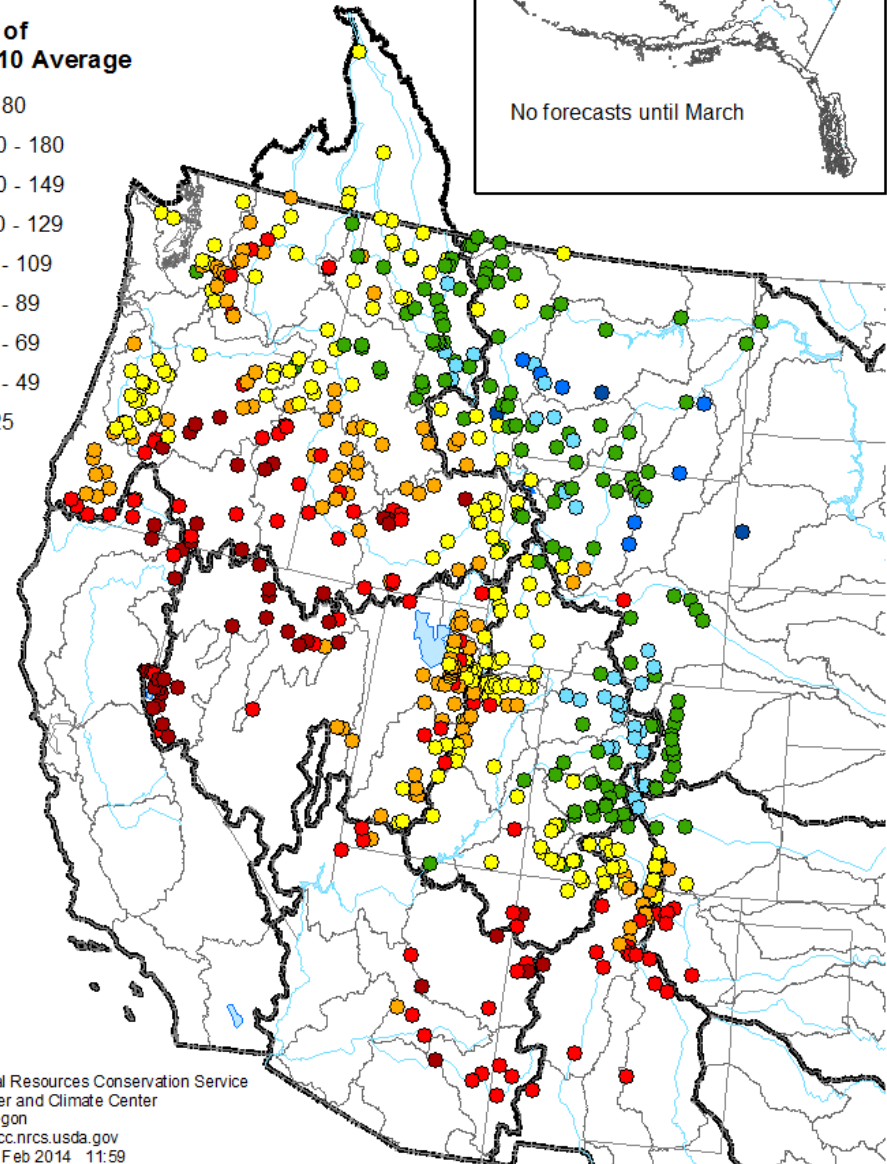


- Streamflow forecasts for the Missouri basin are above normal.
- Farther south in the lower Arkansas basin forecasts deteriorate to <50% of average.

Spring and Summer Streamflow Forecasts as of February 1, 2014

Percent of 1981-2010 Average

- > 180
- 150 - 180
- 130 - 149
- 110 - 129
- 90 - 109
- 70 - 89
- 50 - 69
- 25 - 49
- < 25

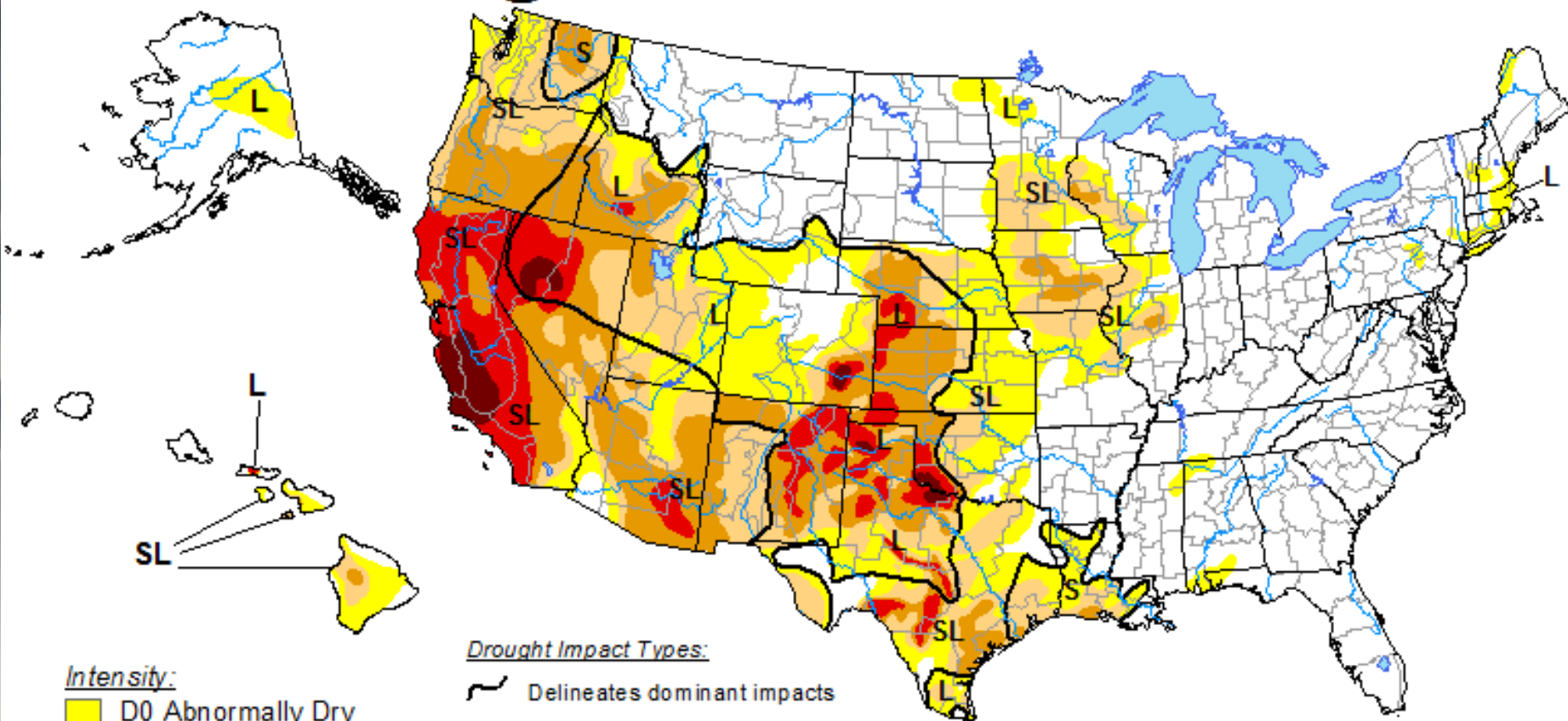


Prepared by:
USDA Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>
Created: 11 Feb 2014 11:59

U.S. Drought Monitor

February 18, 2014

Valid 7 a.m. EST



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, February 20, 2014

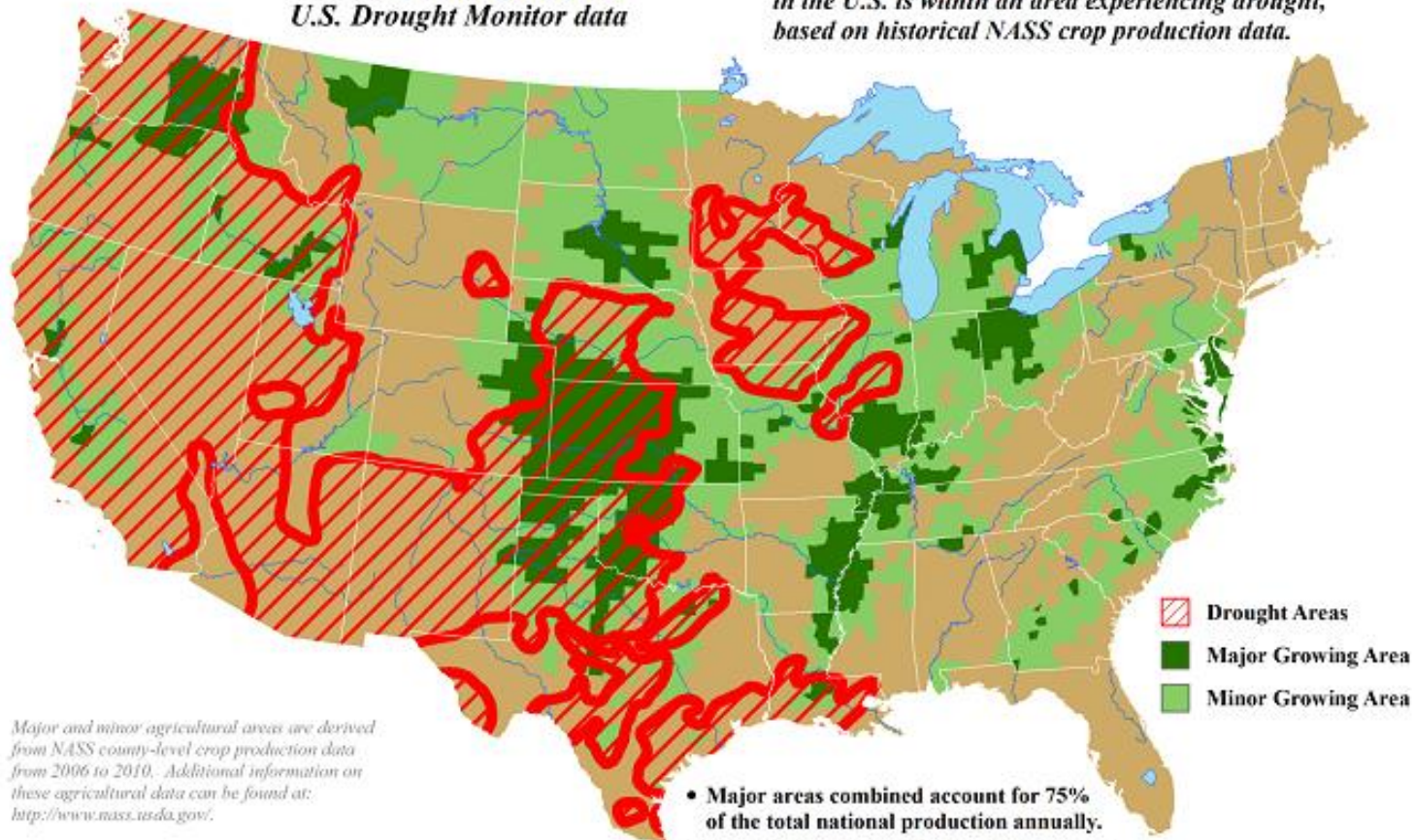
Author: David Miskus, NOAA/NWS/NCEP/CPC

Winter Wheat in Drought – 47%

U.S. Winter Wheat Areas Experiencing Drought

*Reflects February 11, 2014
U.S. Drought Monitor data*

*Approximately 47% 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/>.

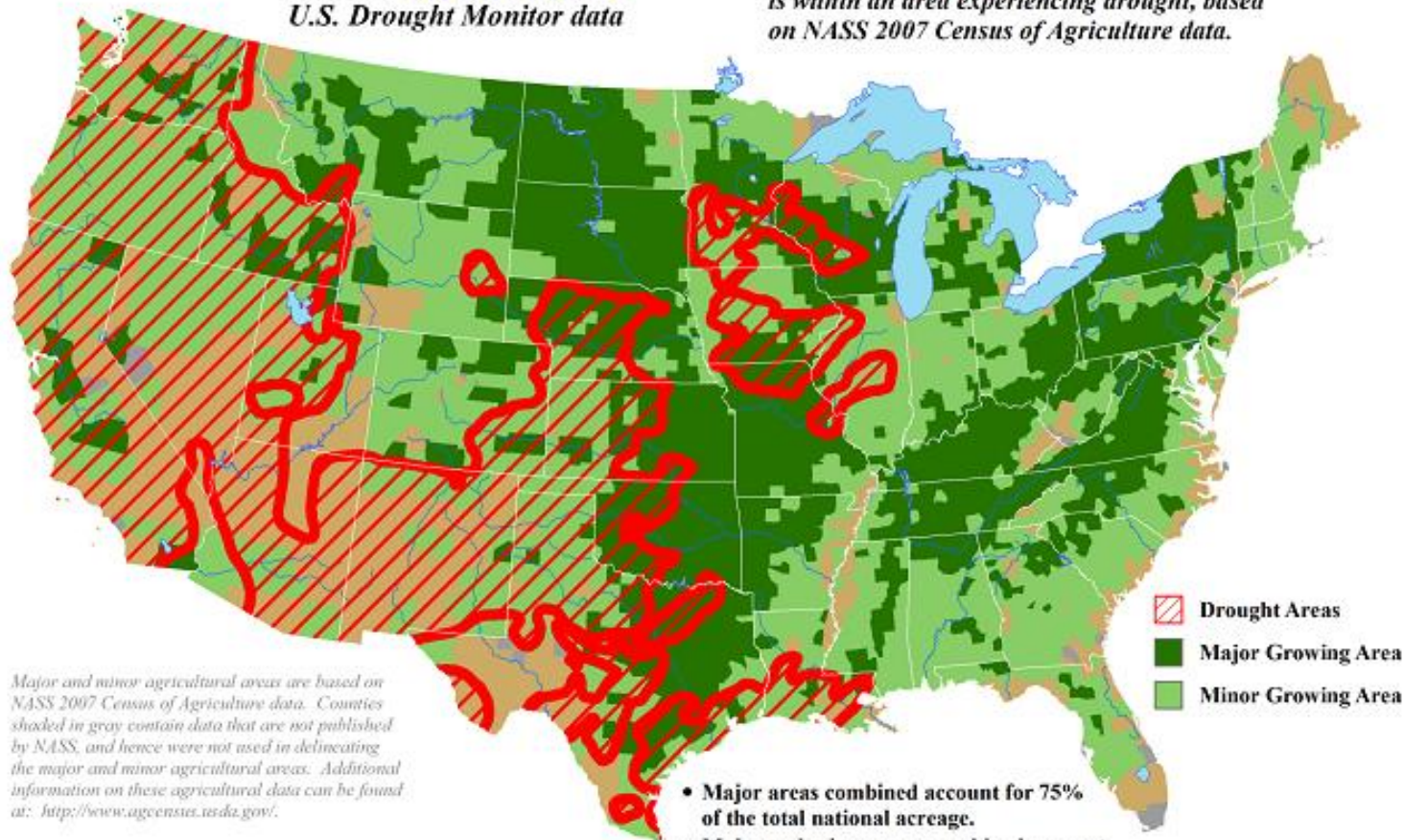
- Major areas combined account for 75% of the total national production annually.
- Major and minor areas combined account for 99% of the total national production annually.

Hay in Drought – 25%

U.S. Hay Areas Experiencing Drought

*Reflects February 11, 2014
U.S. Drought Monitor data*

*Approximately 25% 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/>.

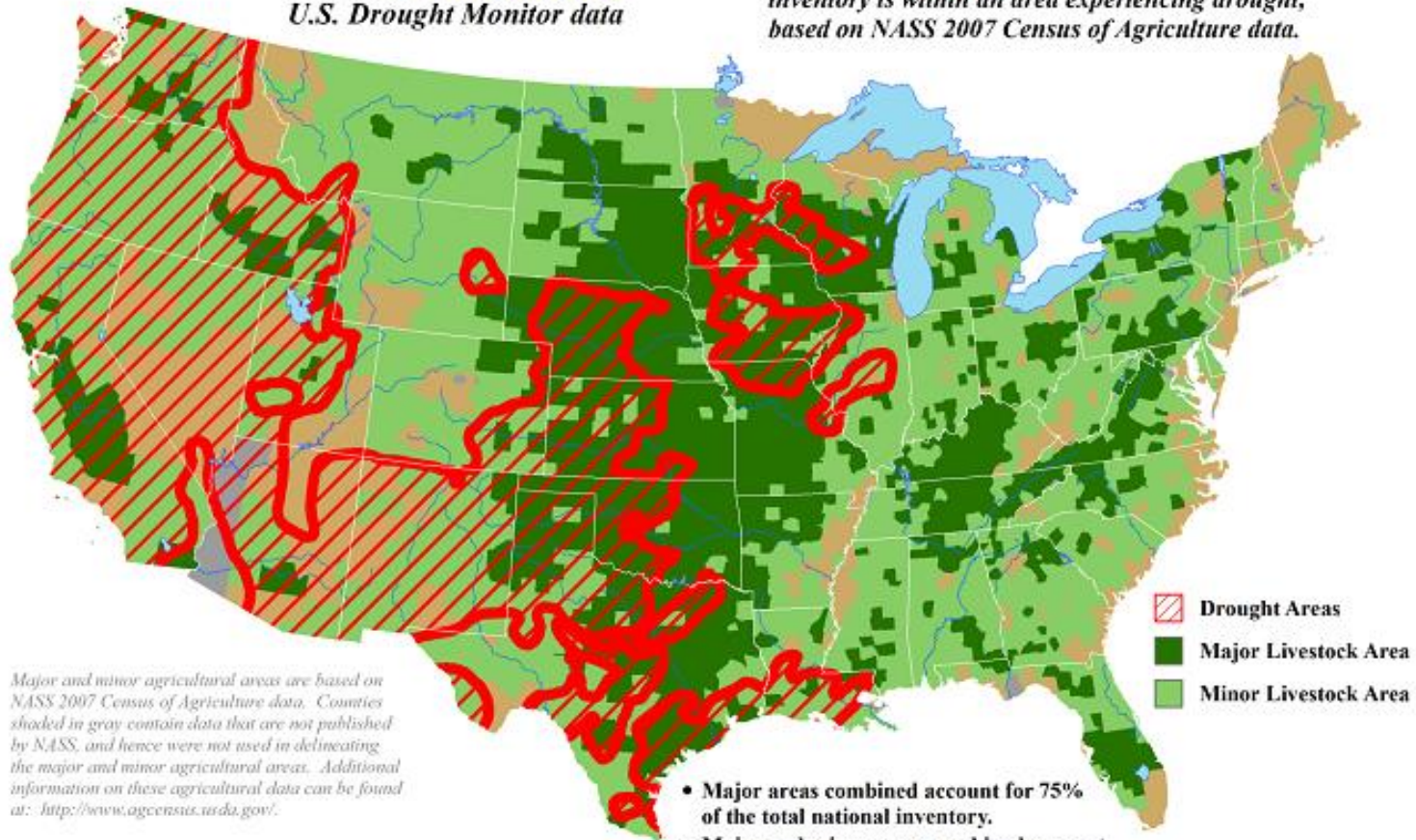
- Major areas combined account for 75% of the total national acreage.
- Major and minor areas combined account for 99% of the total national acreage.

Cattle Area in Drought – 39%

U.S. Cattle Areas Experiencing Drought

*Reflects February 11, 2014
U.S. Drought Monitor data*

*Approximately 39% of the domestic cattle
inventory 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 inventory.
- Major and minor areas combined account for 99% of the total national inventory.

Regional Impacts

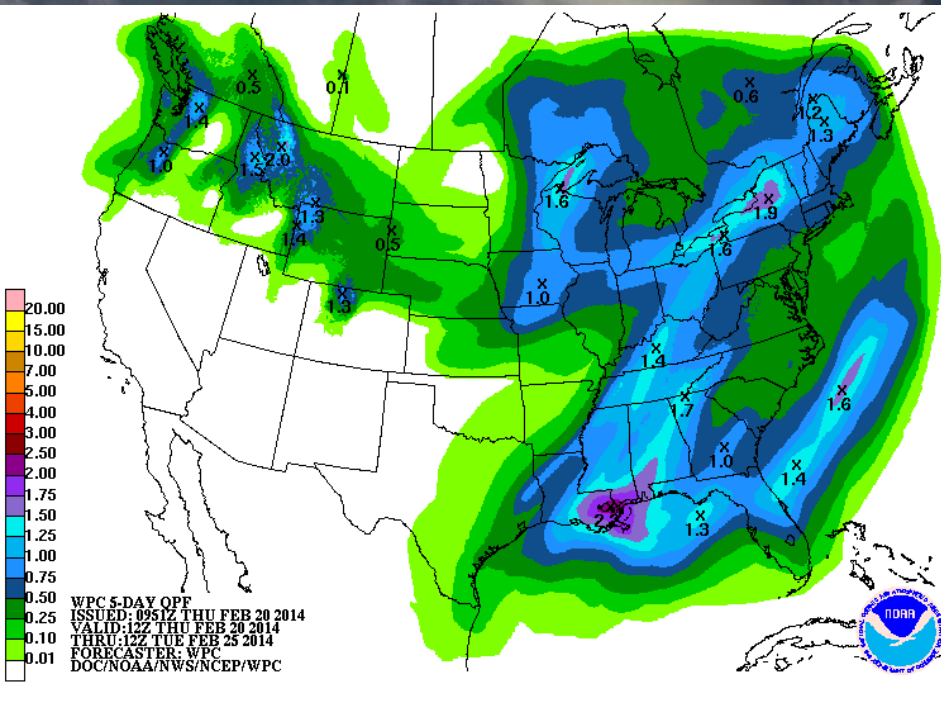
- COLD!
 - Potential winter wheat kill due to high winds, extreme cold and lack of protective snow cover.
 - Deep frost depths (up to 4 feet in some areas) can potentially enhance runoff due to lack of infiltration.
- Flooding?
 - Will depend on the nature in which snow melts and soils thaw. Spring temperatures, precipitation and snowmelt will be closely monitored.
 - Spring weather dominates snowpack runoff behavior in the lower MO basin (Platte).

Regional Impacts

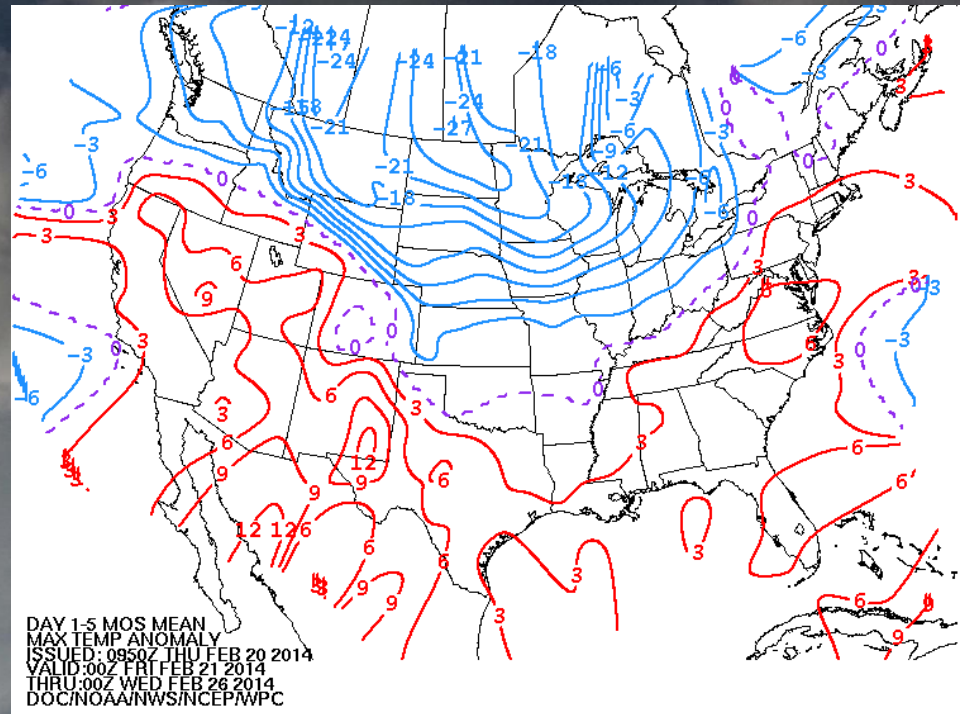
- Tumbleweed bumper crop in SE Colorado
- Late summer moisture grew thistle (native grasses in bad shape)
- No cattle to graze on emerging thistle led rapid growth.
- County roads and irrigation ditches are FULL of tumbleweeds.



Looking Ahead-5 Days

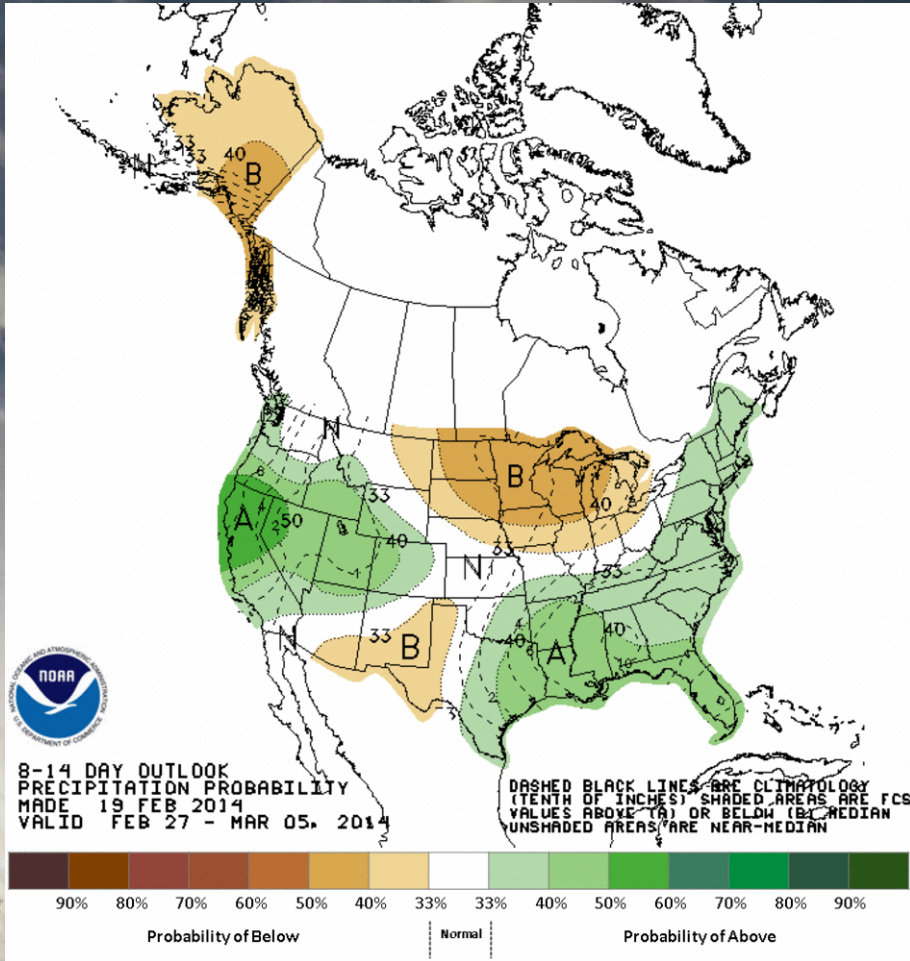


Precipitation

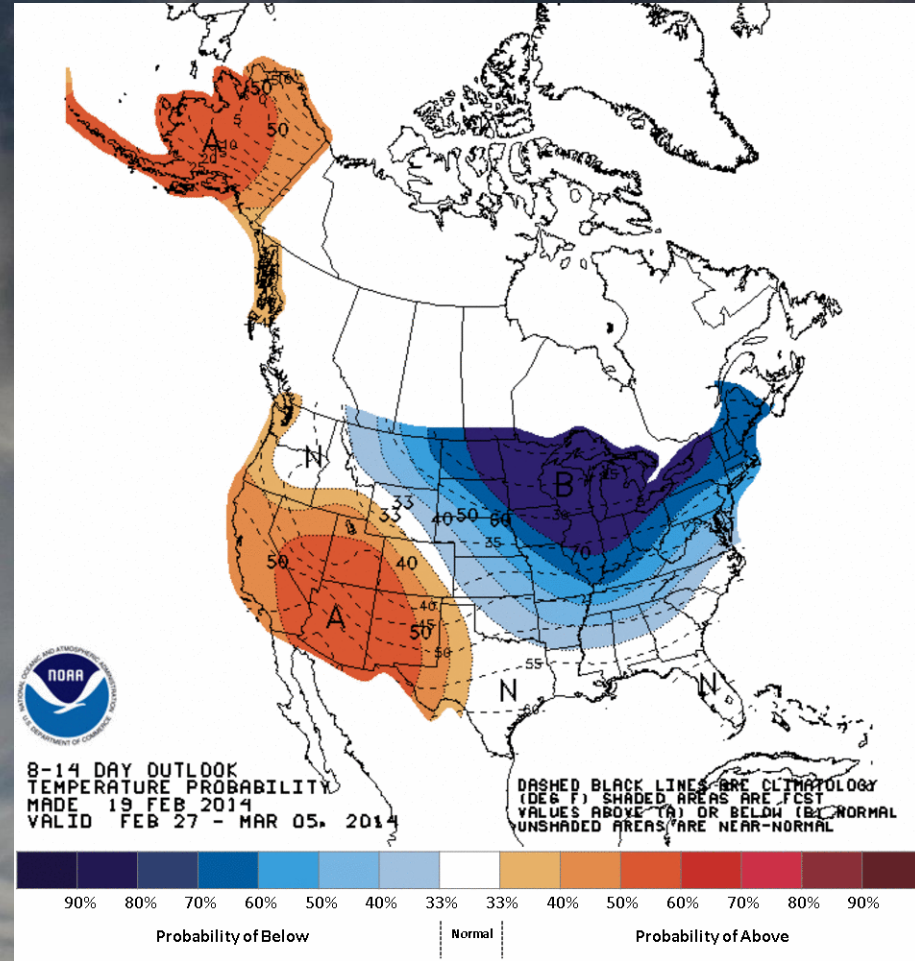


Temperature

8-14 Day Outlooks

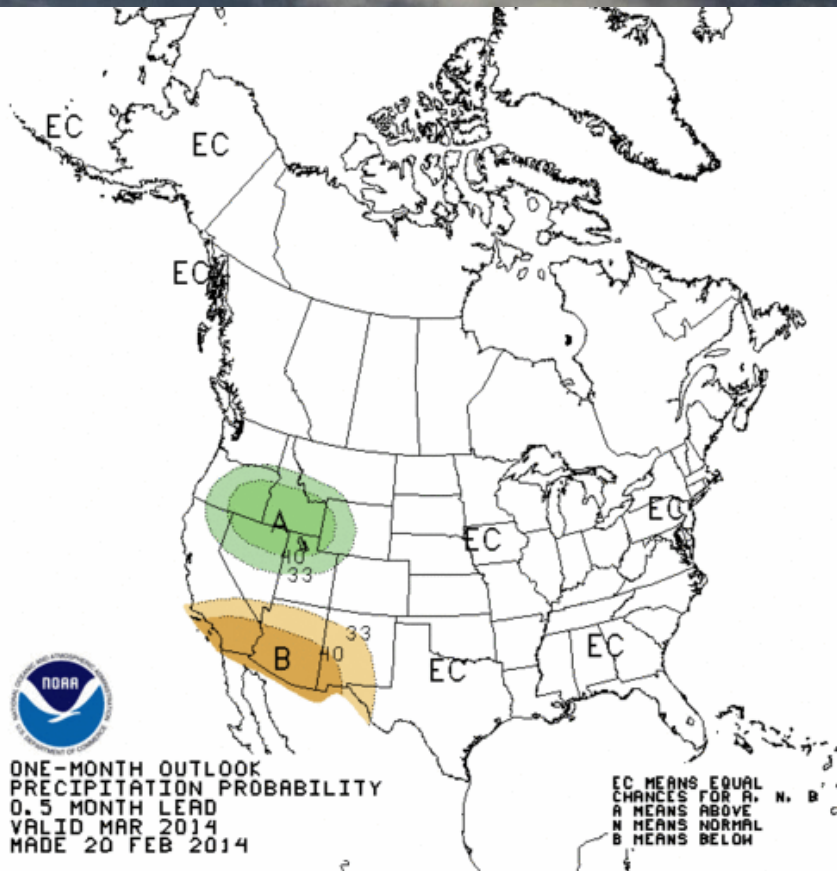


Precipitation

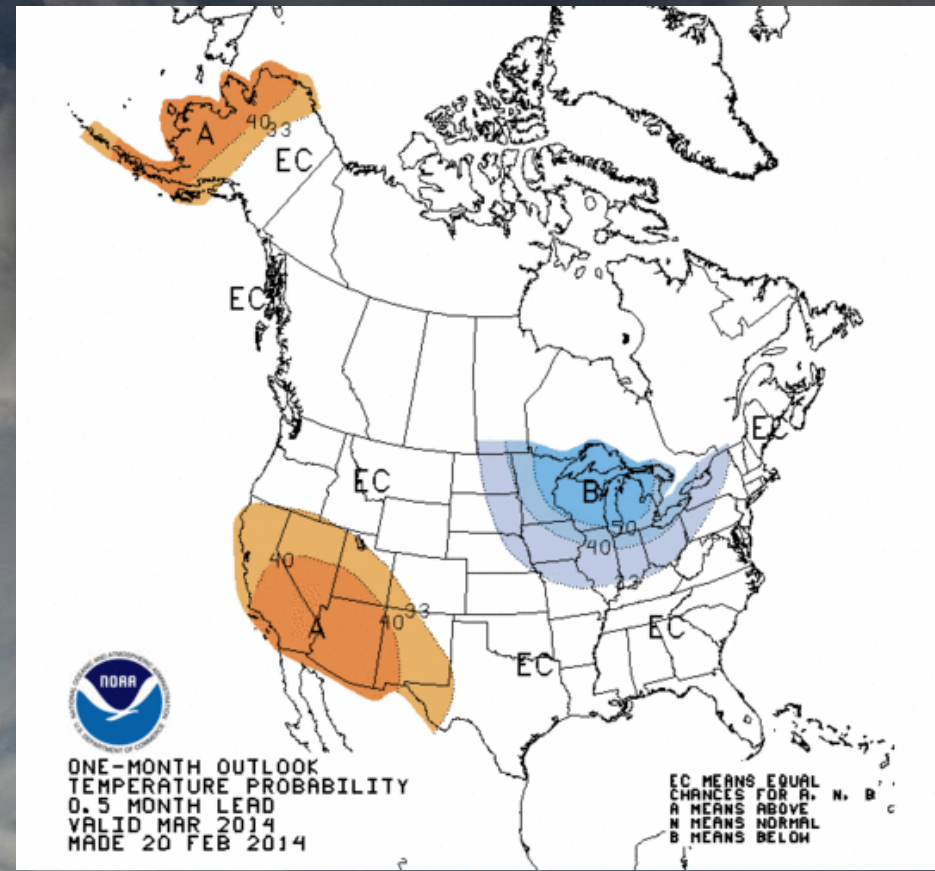


Temperature

One Month Outlook

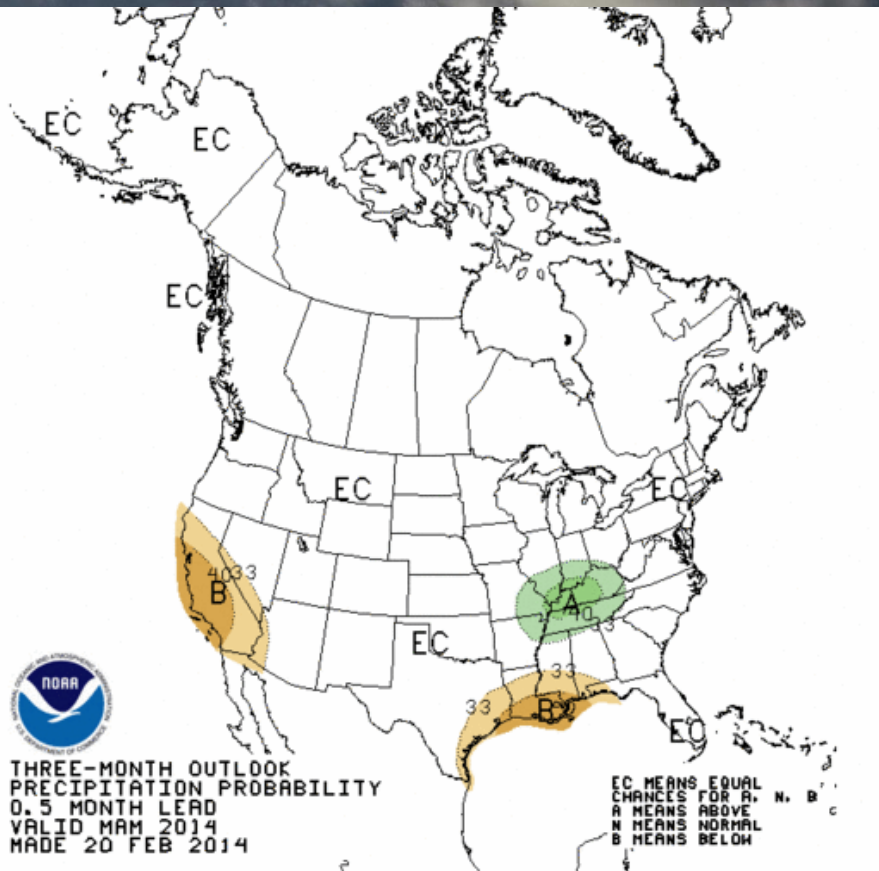


Precipitation

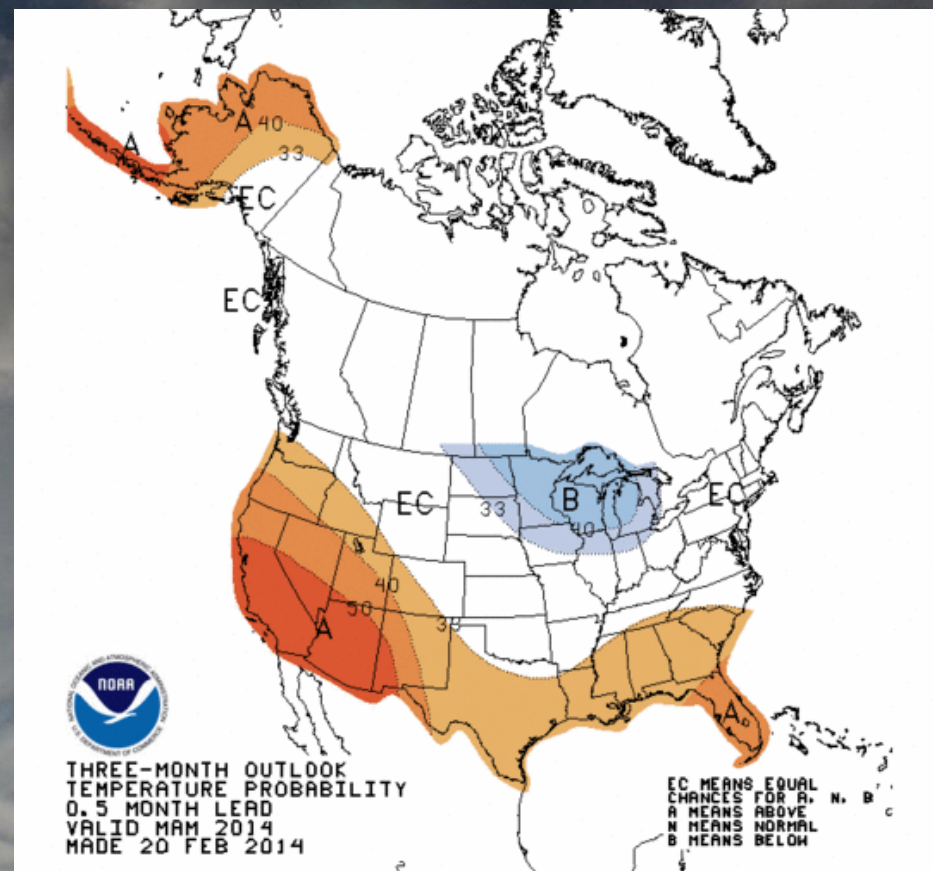


Temperature

3 Month Outlook



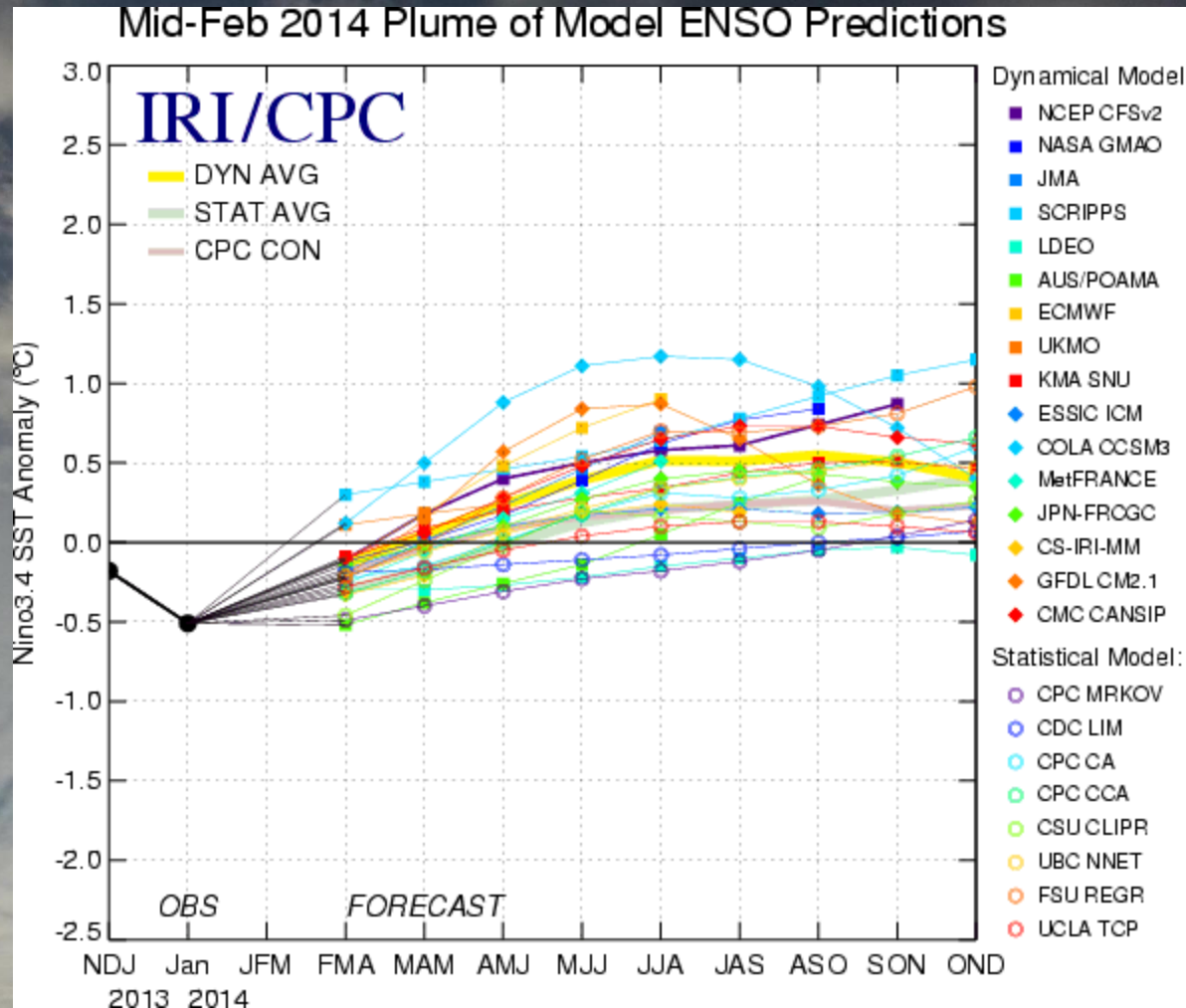
Precipitation



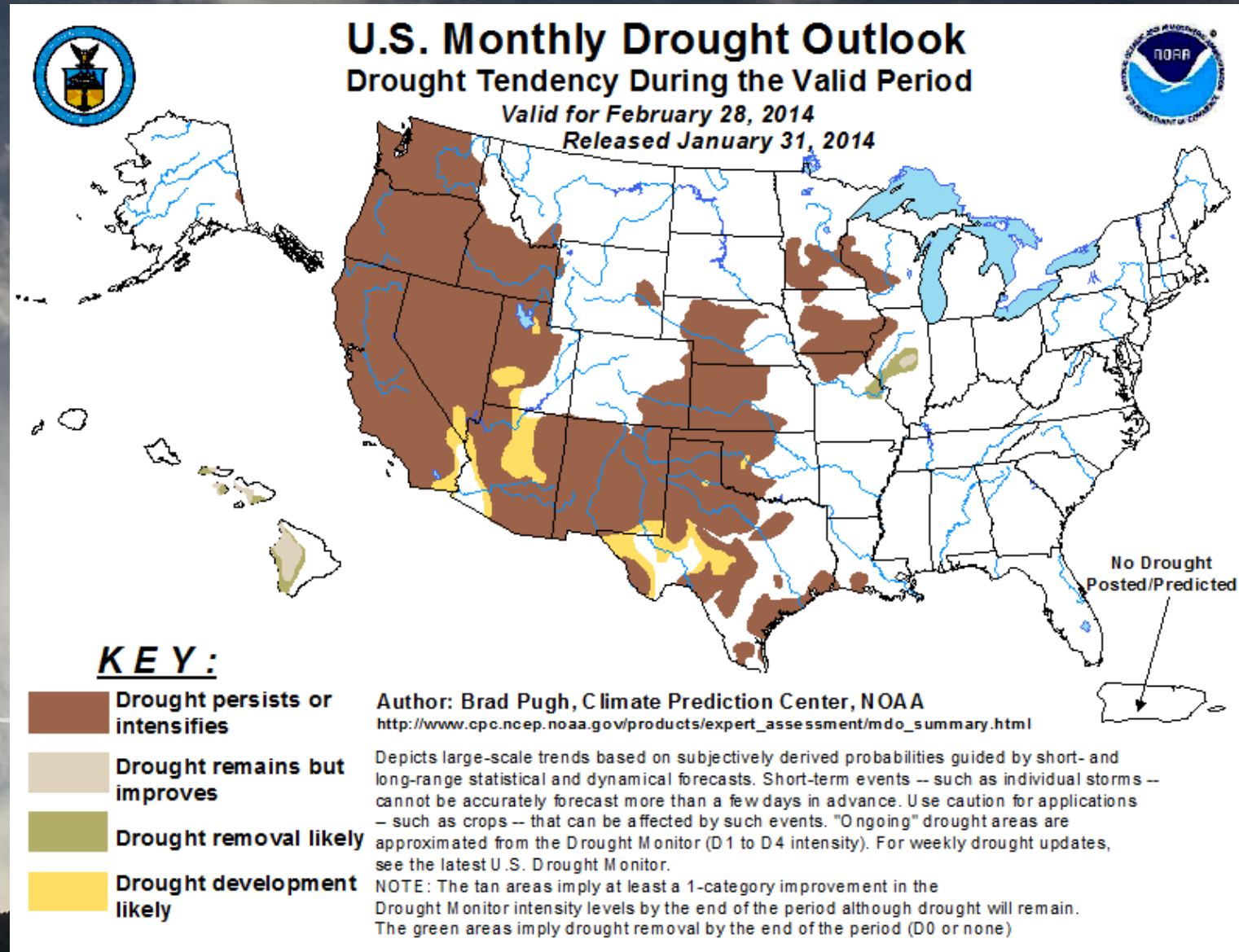
Temperature

ENSO Forecast

- A weak El Nino is looking more likely by summer.
- El Nino *tends* to bring productive growing years.



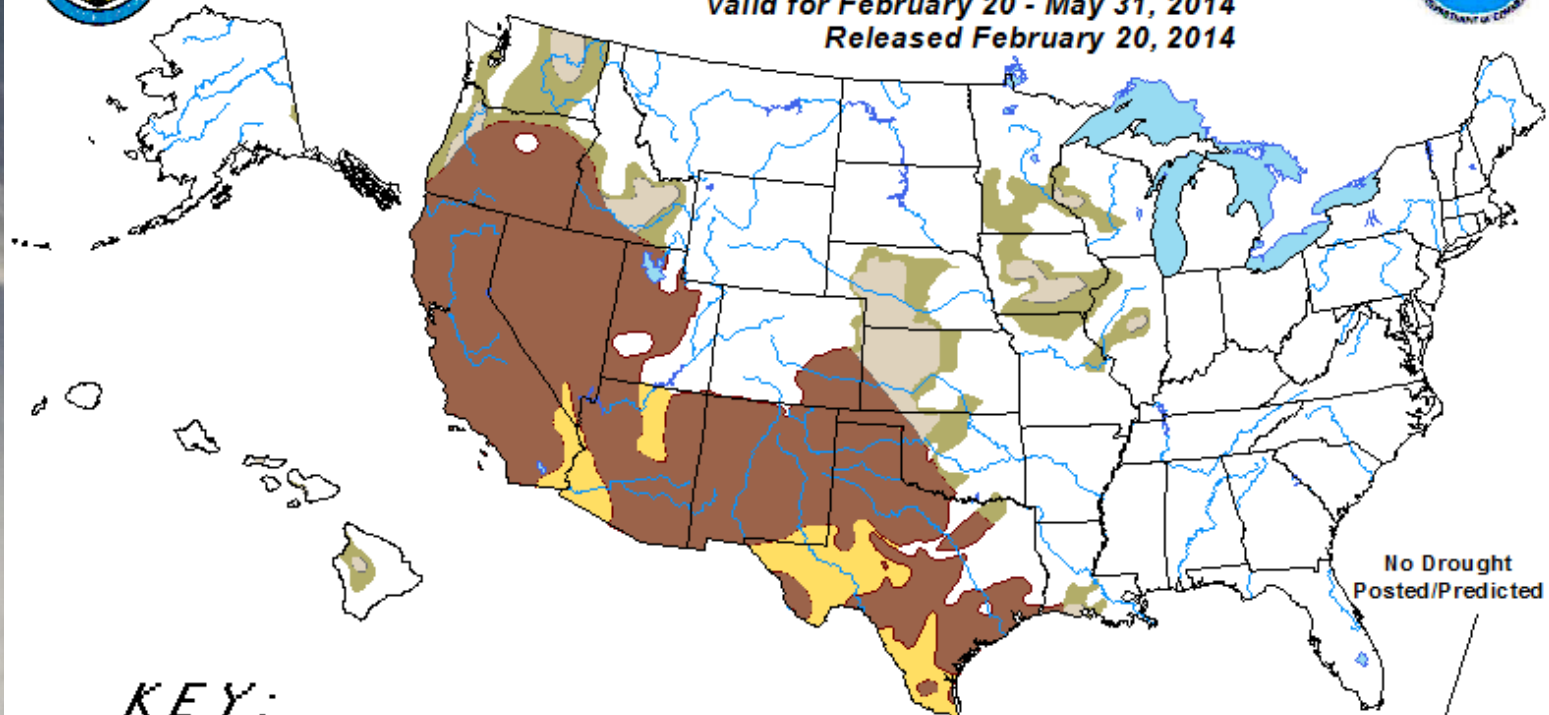
Monthly Drought Outlook







Seasonal Drought Outlook



U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period Valid for February 20 - May 31, 2014 Released February 20, 2014



KEY:

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

Author: Adam Allgood, Climate Prediction Center, NOAA

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)

Summary

- Above normal mountain snowpack throughout the region forecast to yield normal to above runoff.
- Frozen soils from cold temperatures and lack of snowcover throughout the region.
 - This can lead to enhanced runoff with Spring rains.
 - Temperatures will control timing of snowmelt and potential for runoff vs. infiltration into soils.
 - Frost heaving causing problems with broken water lines and road damage.
- Ice jams are a real threat on Midwest rivers due to the cold temperatures.

Summary

- Extensive ice cover on the Great Lakes may keep temperatures near the lakes below normal through early Summer.
- Winter wheat conditions won't be fully known until it emerges from dormancy.

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

Contact Information:

Wendy Ryan

Assistant State Climatologist

Colorado Climate Center

Colorado State University

wendy.ryan@colostate.edu

970-491-8506

