Great Plains and Midwest Climate Outlook
19 March 2015

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Grass fire in SE Nebraska 13 March 2015

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

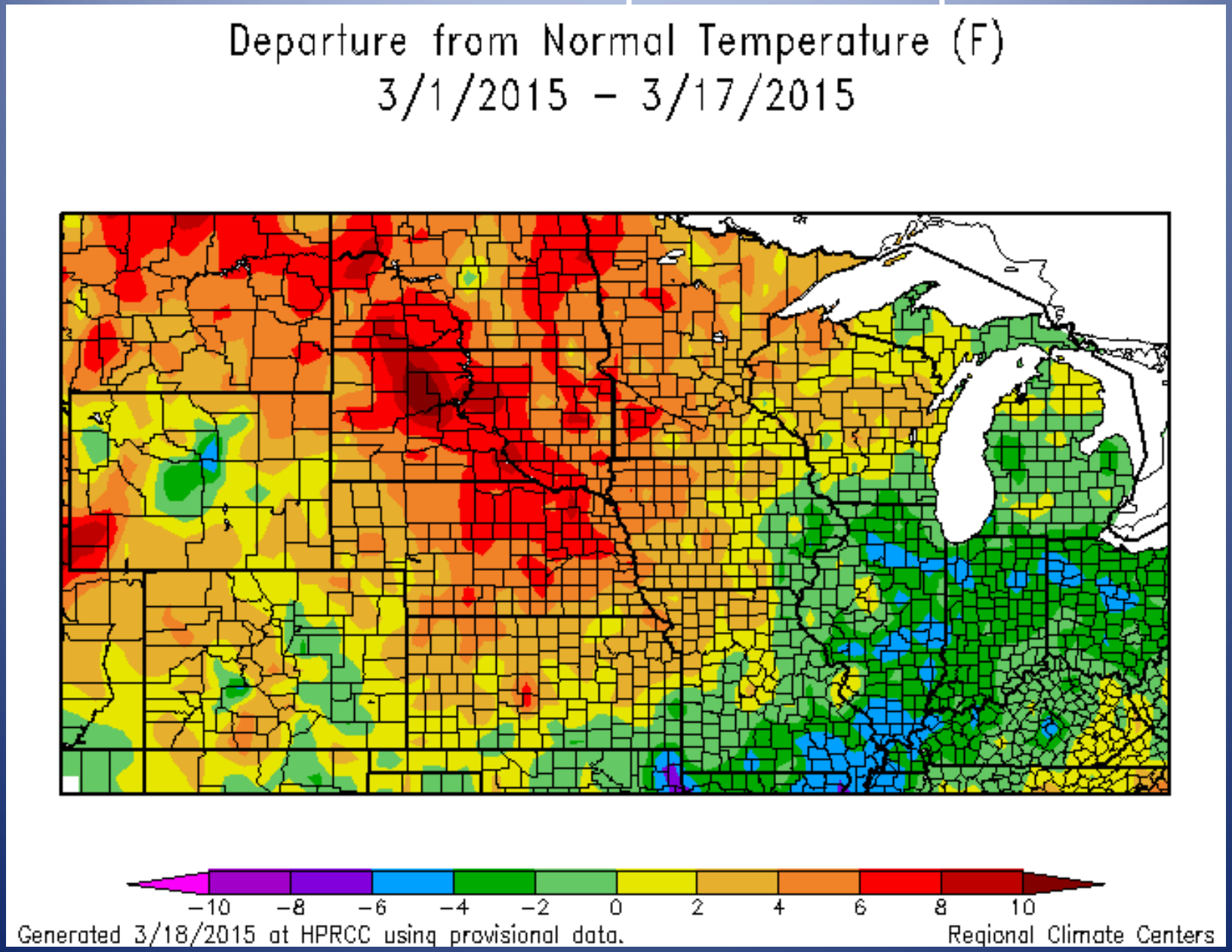
- **Next Climate/Drought Outlook Webinar**
  - **Dennis Todey – South Dakota State Climatologist**
  - **April 16, 2015**

- **Access to Future Climate Webinars and Information**
  - http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars
  - For 2015 you can sign up once to be registered for the entire year.
- **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

- Current Conditions around the Region
  - Temperature
  - Precipitation
  - Snowpack
  - Soil Moisture
- Impacts in the Region
- Outlooks

Month to Date Temperature Departure

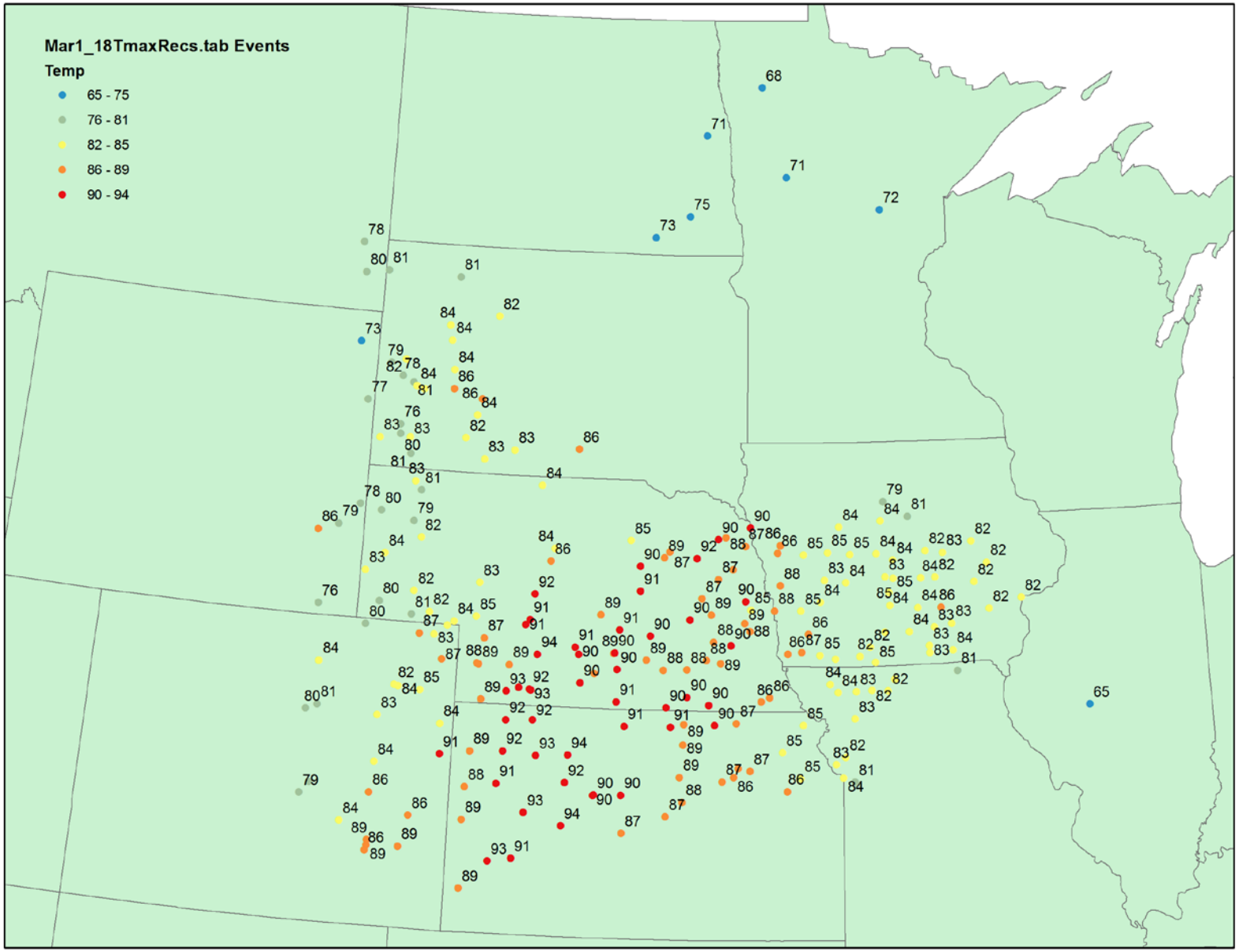


http://www.hprcc.unl.edu/

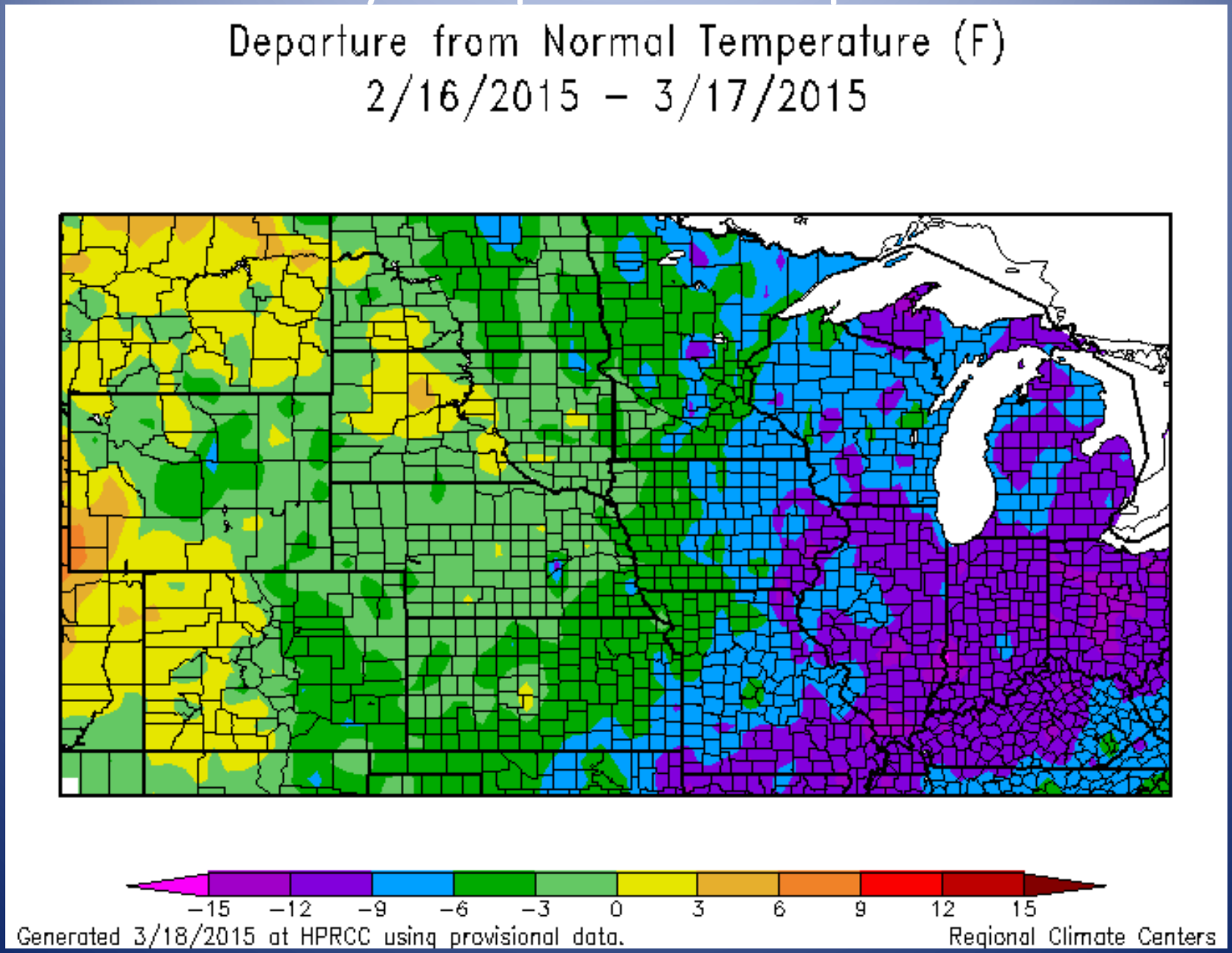
It has warmed up quickly!

- Highest all-time March temp:
  - Grand Island, NE: 90F on 3/16/15 (tied with many years)
  - Norfolk, NE: 92F on 3/16/15 (tied with 3/22/1910)
  - North Platte, NE: 91F on 3/16/15 (old record 88F on 3/31/1946)
  - Rapid City, SD: 84F on 3/15/15 (old record 83F 3/31/2012)
- Earliest 80 Degree Day set in Colorado on 3/16/15
  - Denver, Ft. Collins, Colorado Springs

Stations setting Tmax Records between 1 and 17 March 2015



30 Day Temperature Departure

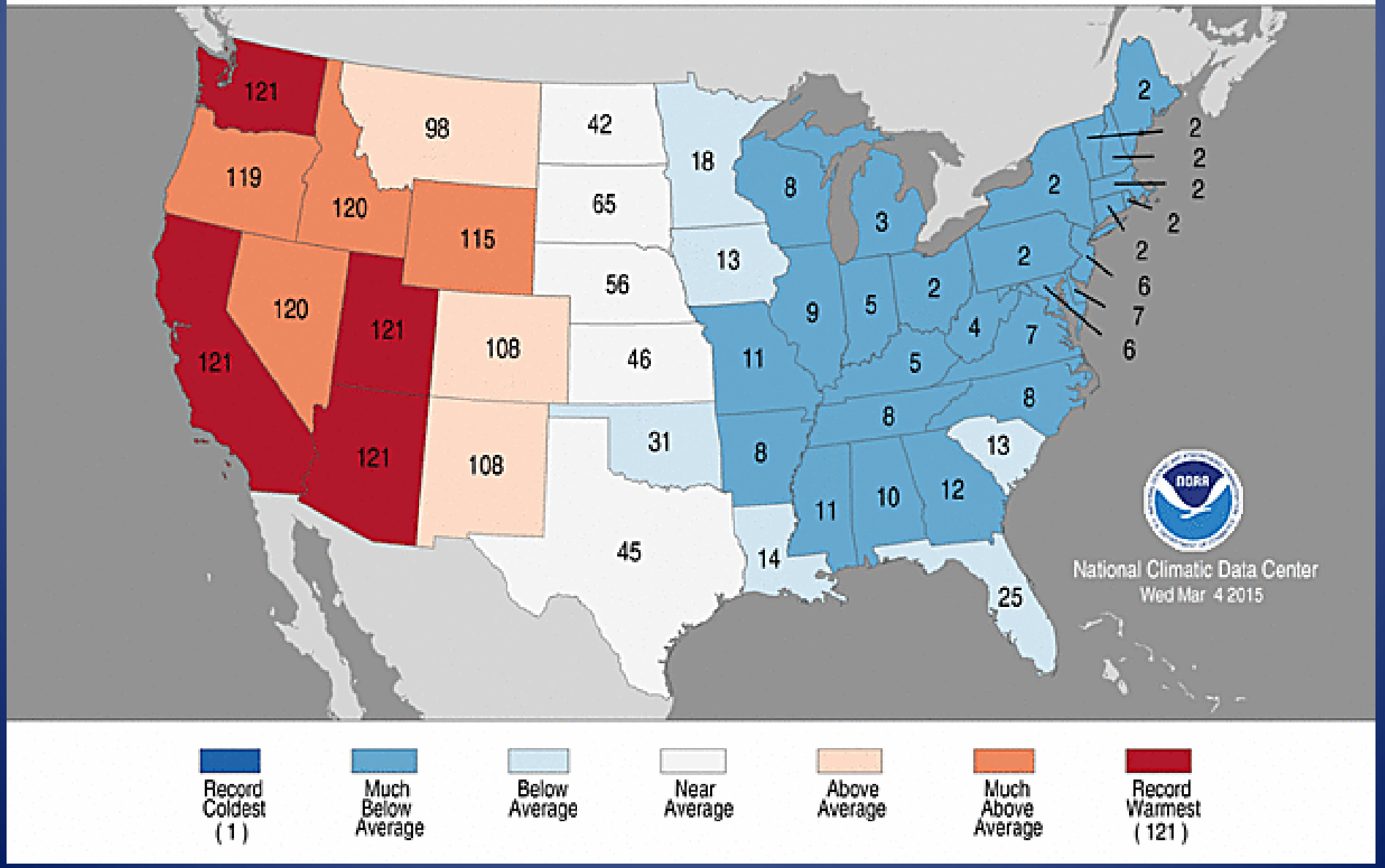


http://www.hprcc.unl.edu/

Statewide Average Temperature Ranks

February 2015

Period: 1895–2015



http://www.ncdc.noaa.gov/temp-and-precip/maps.php

Statewide Average Temperature Ranks

December 2014–February 2015

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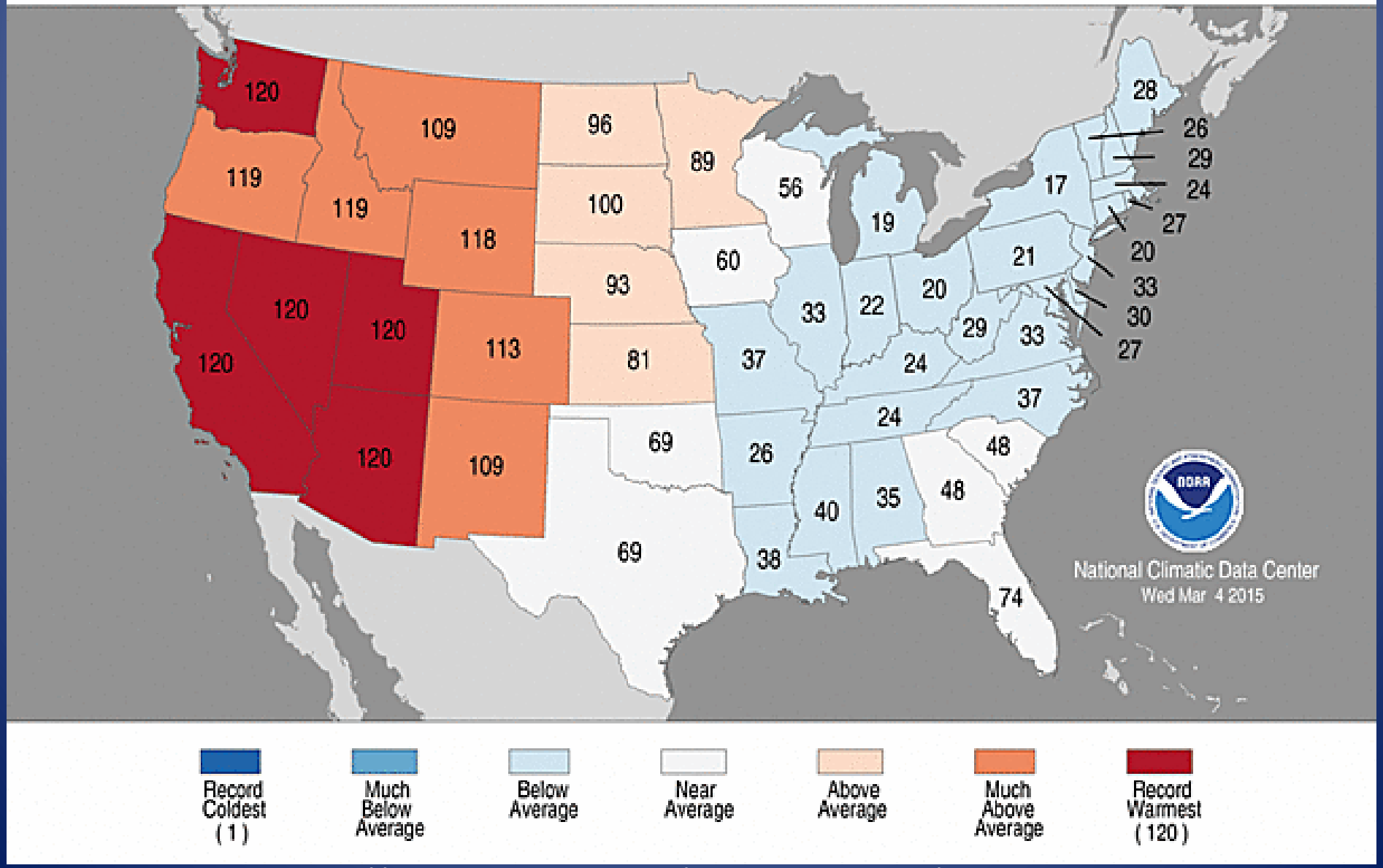
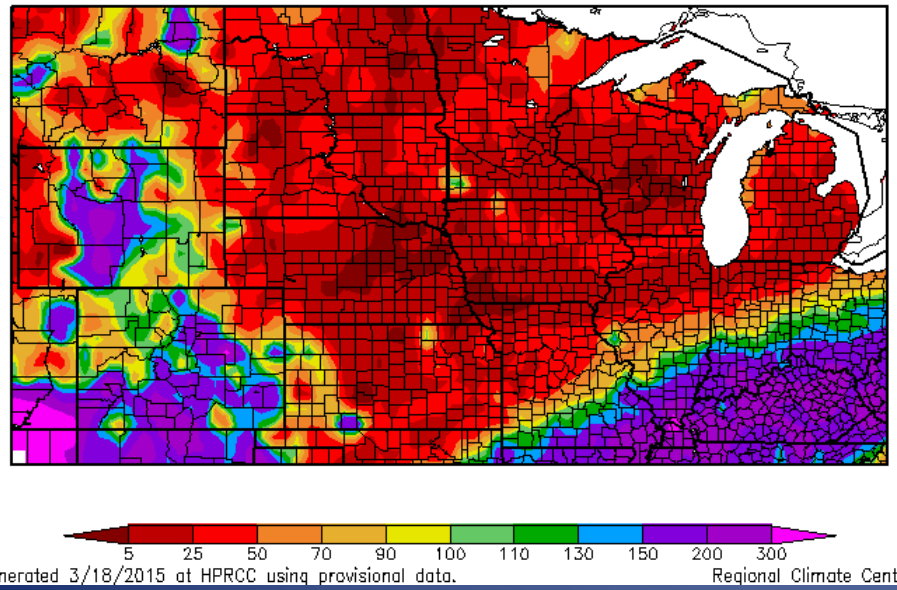
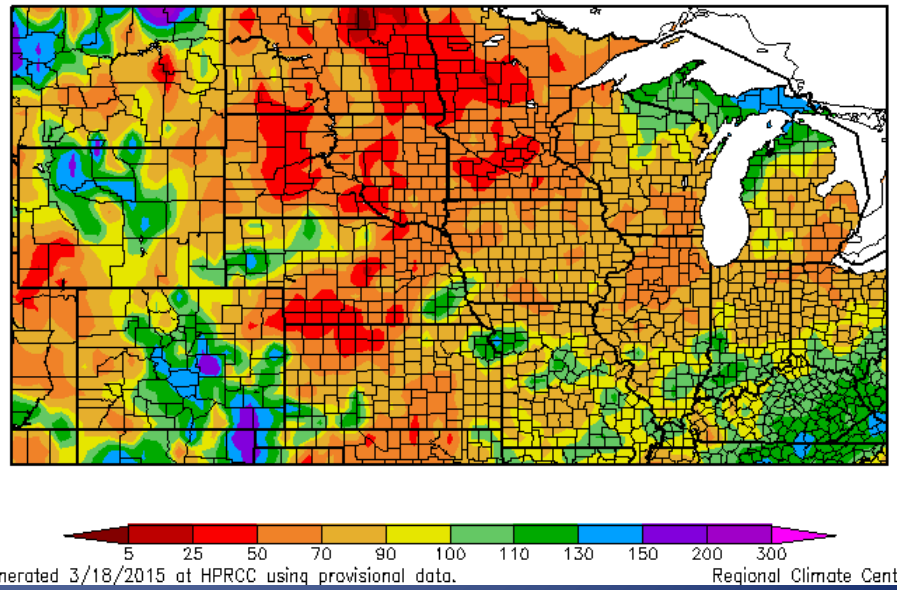


http://www.ncdc.noaa.gov/temp-and-precip/maps.php

30-Day Precipitation



Water Year Precipitation

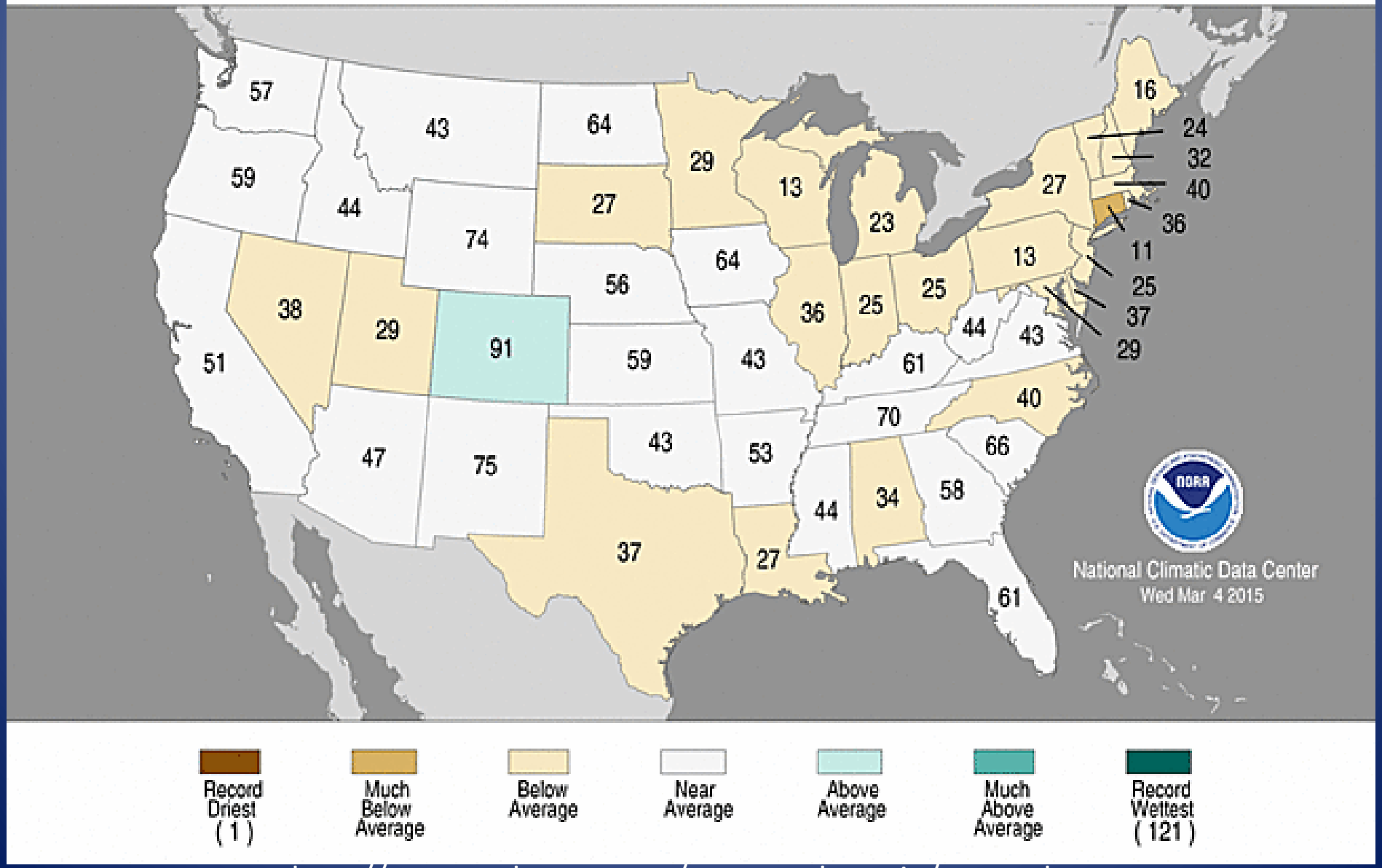


http://www.hprcc.unl.edu/

Statewide Precipitation Ranks

February 2015

Period: 1895–2015



http://www.ncdc.noaa.gov/temp-and-precip/maps.php

Statewide Precipitation Ranks

December 2014–February 2015

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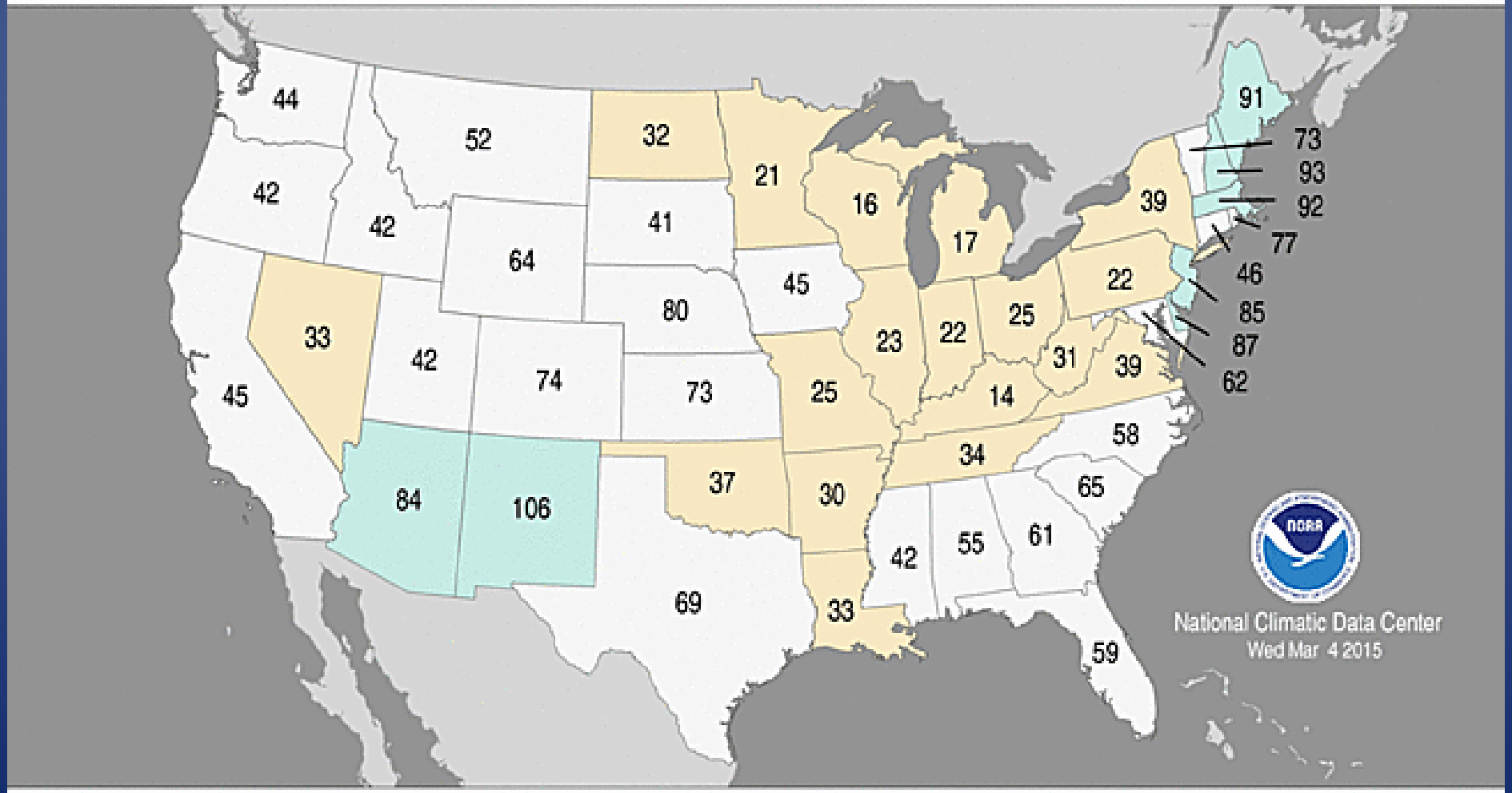
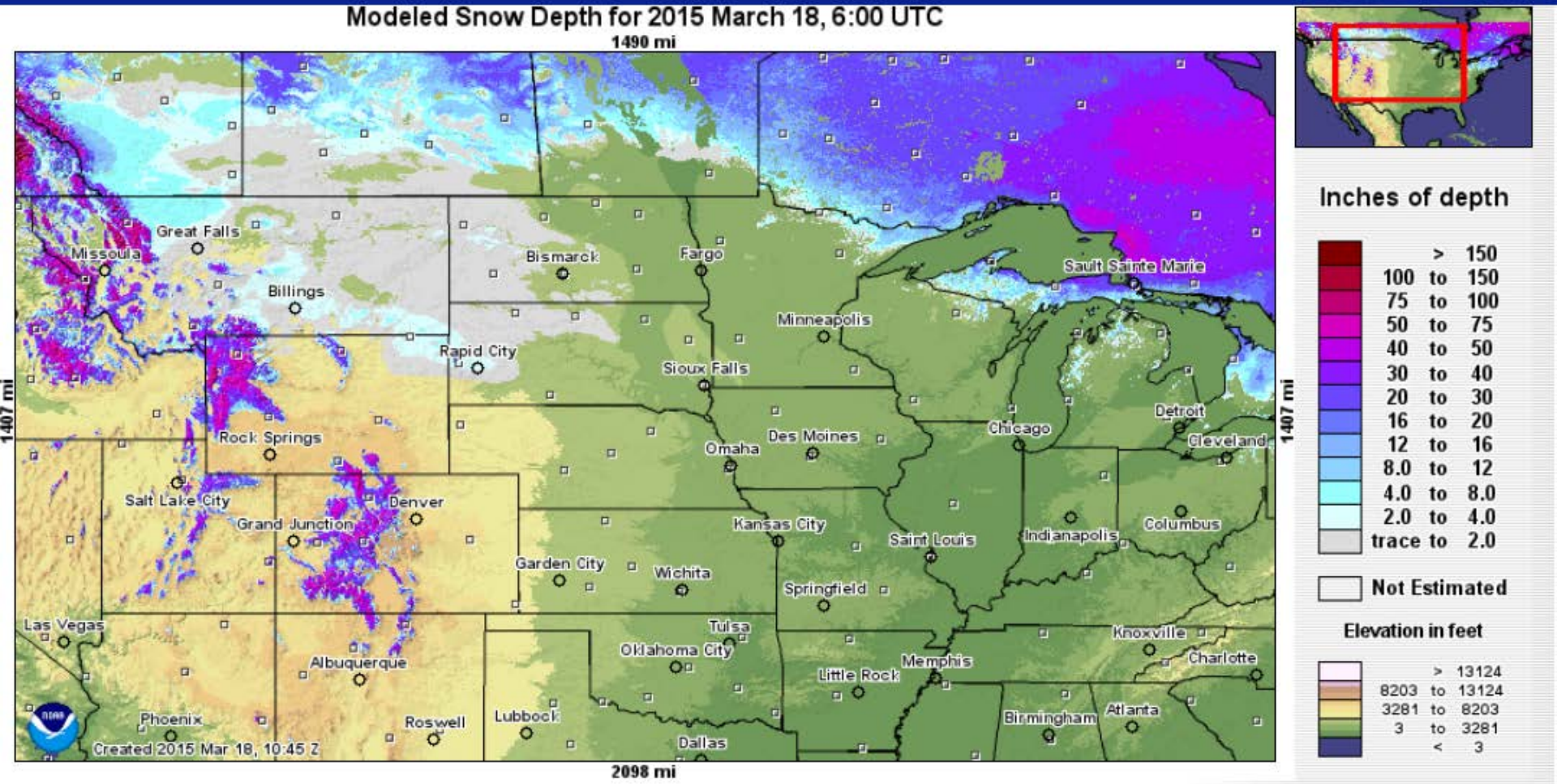


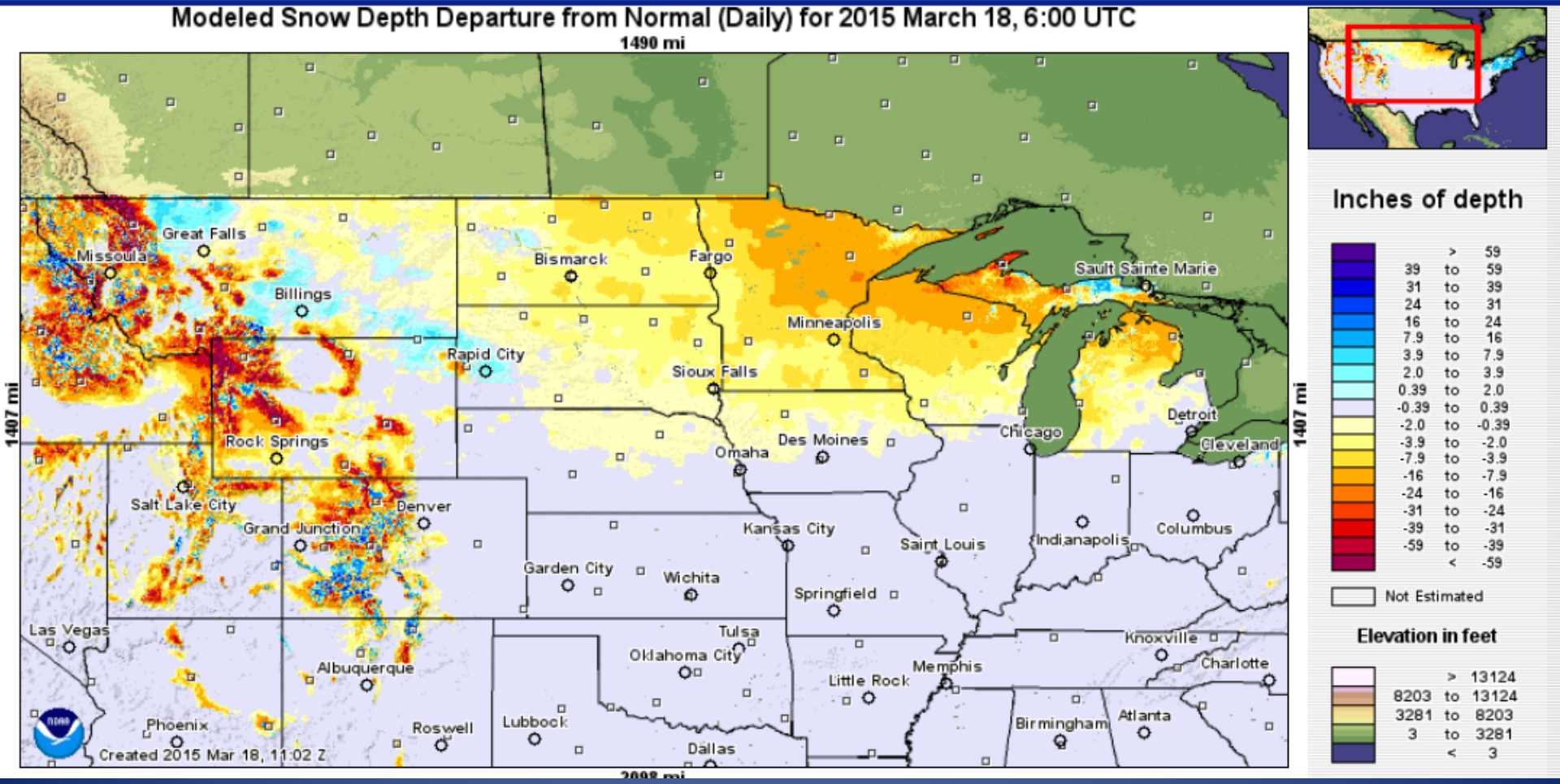
http://www.ncdc.noaa.gov/temp-and-precip/maps.php

Modeled Snow Depth

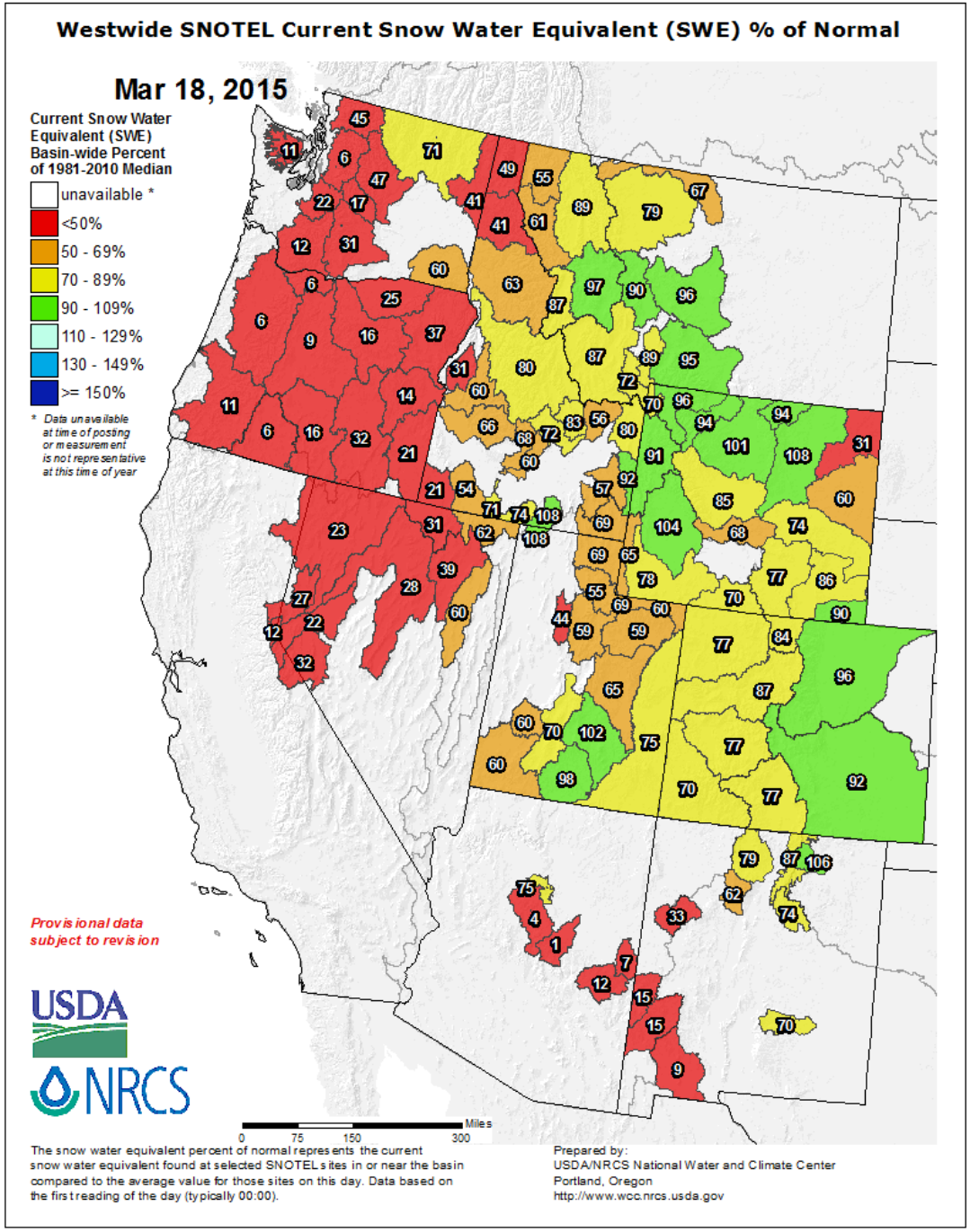


http://http://www.nohrsc.noaa.gov/interactive/html/map.html?

Modeled Snow Depth Anomaly



http://http://www.nohrsc.noaa.gov/interactive/html/map.html?



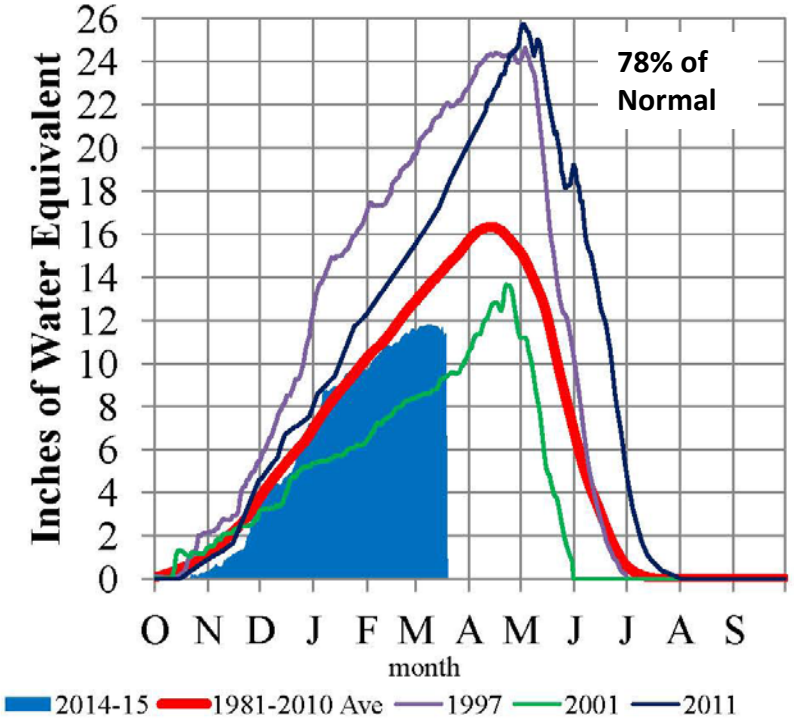
- Current western U.S. snowpack conditions

http://www.wcc.nrcs.usda.gov/ftpref/gis/images/west_swepctnormal_update.png

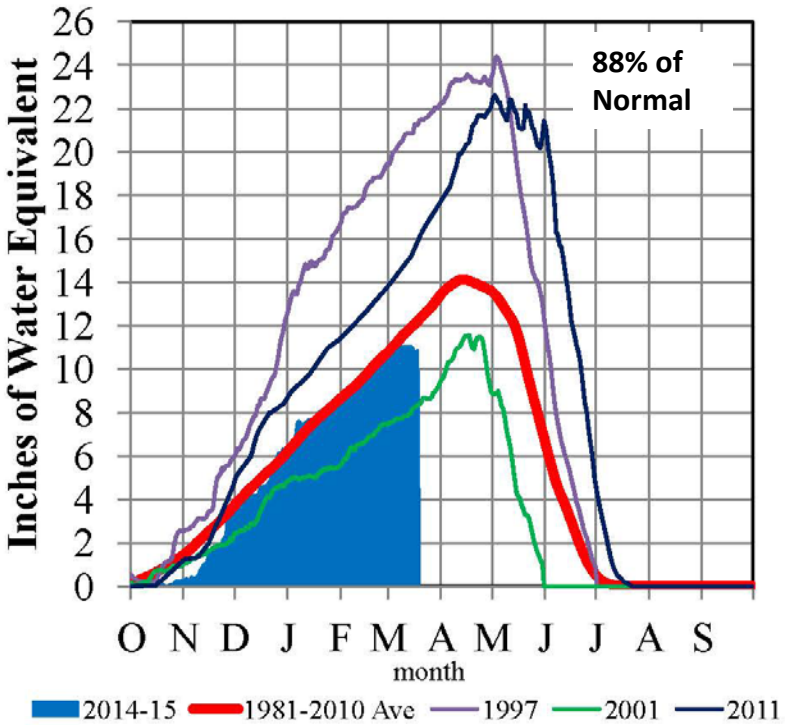
Missouri River Basin – Mountain Snowpack Water Content
2014-2015 with comparison plots from 1997*, 2001*, and 2011

March 18, 2015

Total above Fort Peck



Total Fort Peck to Garrison

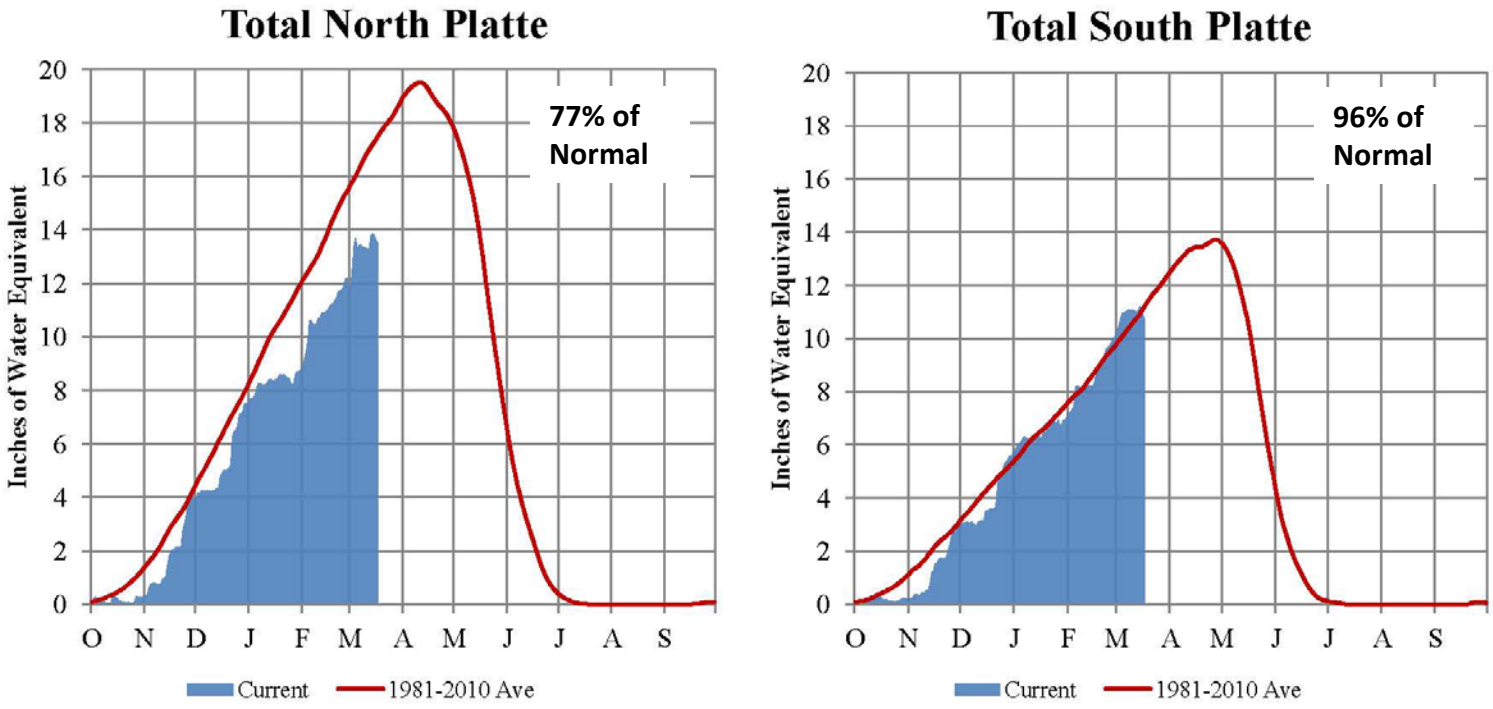


The Missouri River Basin mountain snowpack normally peaks near April 15. By March 15, normally 87% of the peak has accumulated. On March 18, 2015 the mountain snow water equivalent (SWE) in the "Total above Fort Peck" reach is currently 11.4", 78% of average. The mountain SWE in the "Total Fort Peck to Garrison" reach is currently 10.9", 88% of average.

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

Provisional data. Subject to revision.

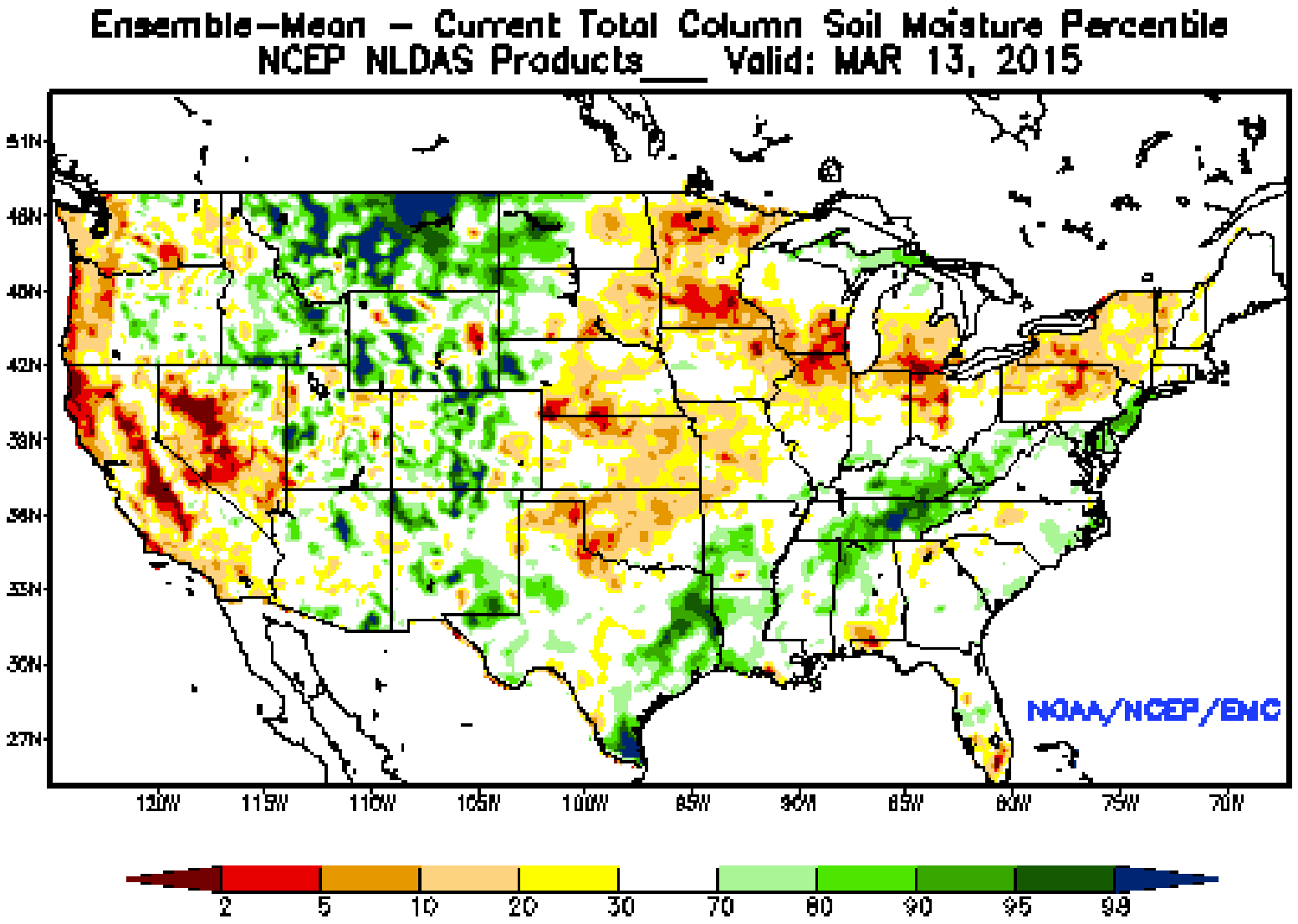
Platte River Basin - Mountain Snowpack Water Content
Water Year 2014-2015
3/18/2015



The North and South Platte River Basin mountain snowpacks normally peak near April 15. As of March 17, 2015, the mountain snowpack SWE in the "Total North Platte" reach is currently 13.5", 77% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 10.7", 96% of average.

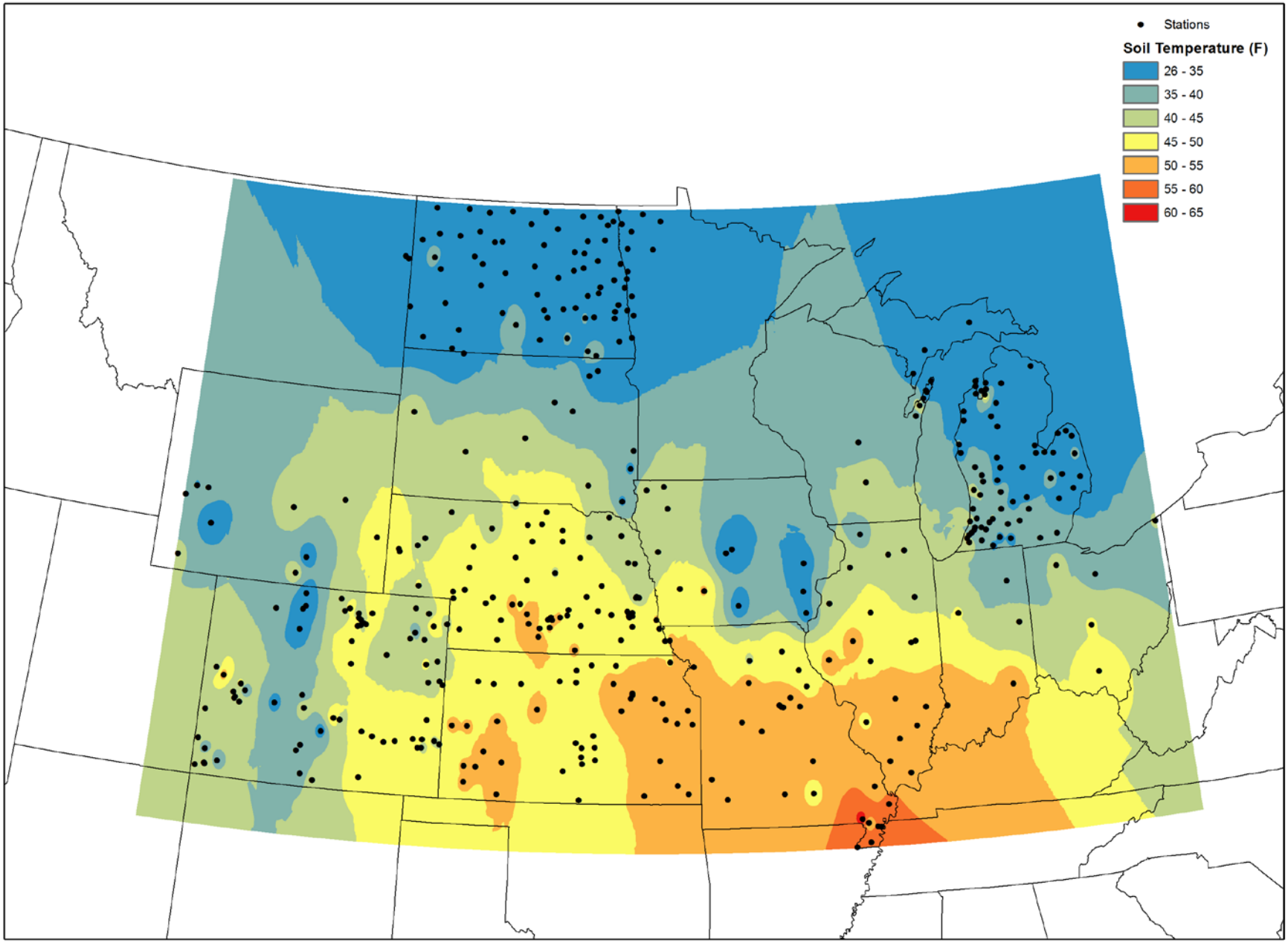
Provisional Data. Subject to Revision

Modeled Soil Moisture



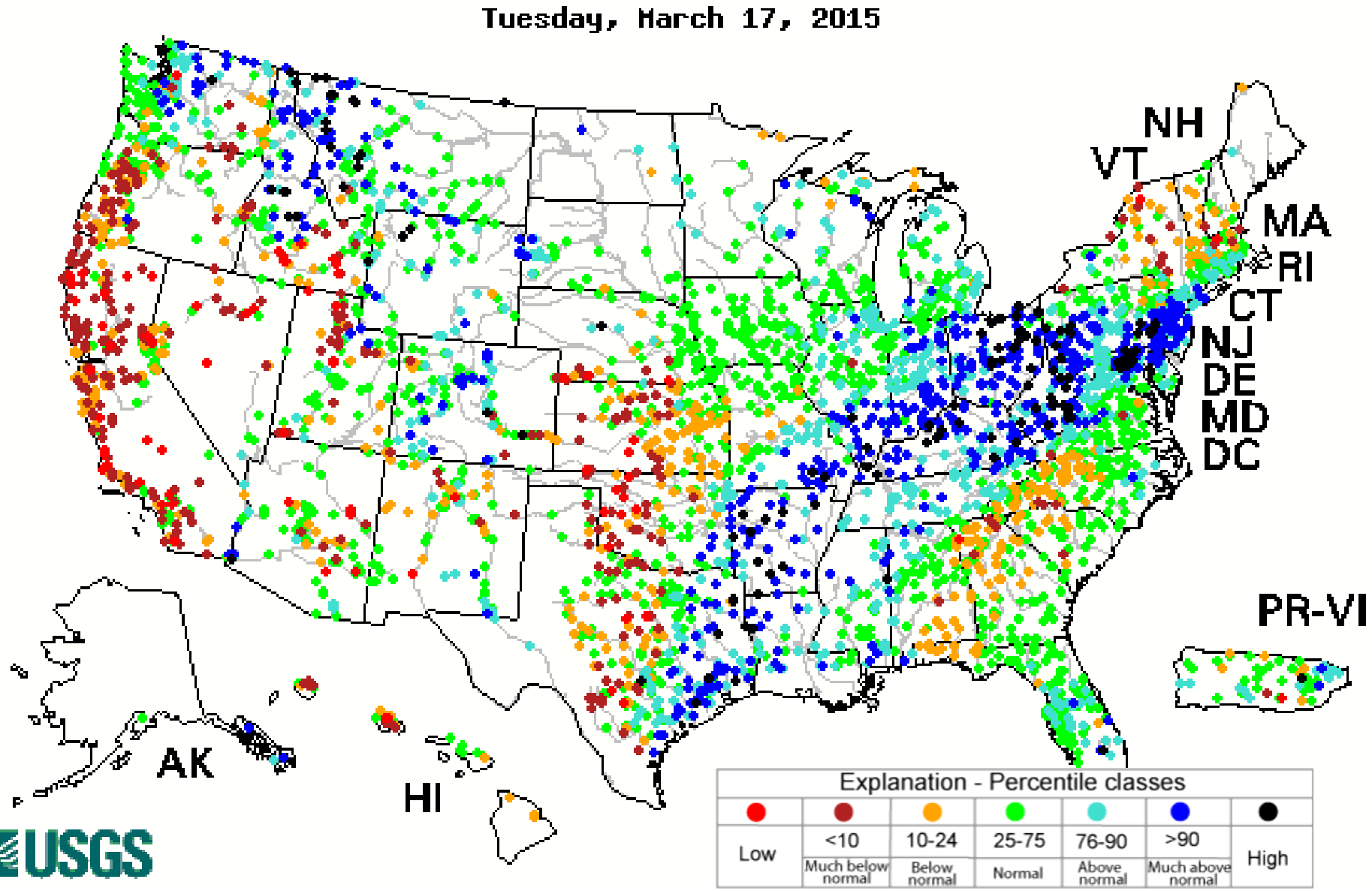
http://www.emc.ncep.noaa.gov/mmb/nldas/drought/

Soil Temperature (F) between 2 and 4"



Map produced by Colorado Climate Center utilizing data from HPRCC, MRCC, SD and CO mesonets.

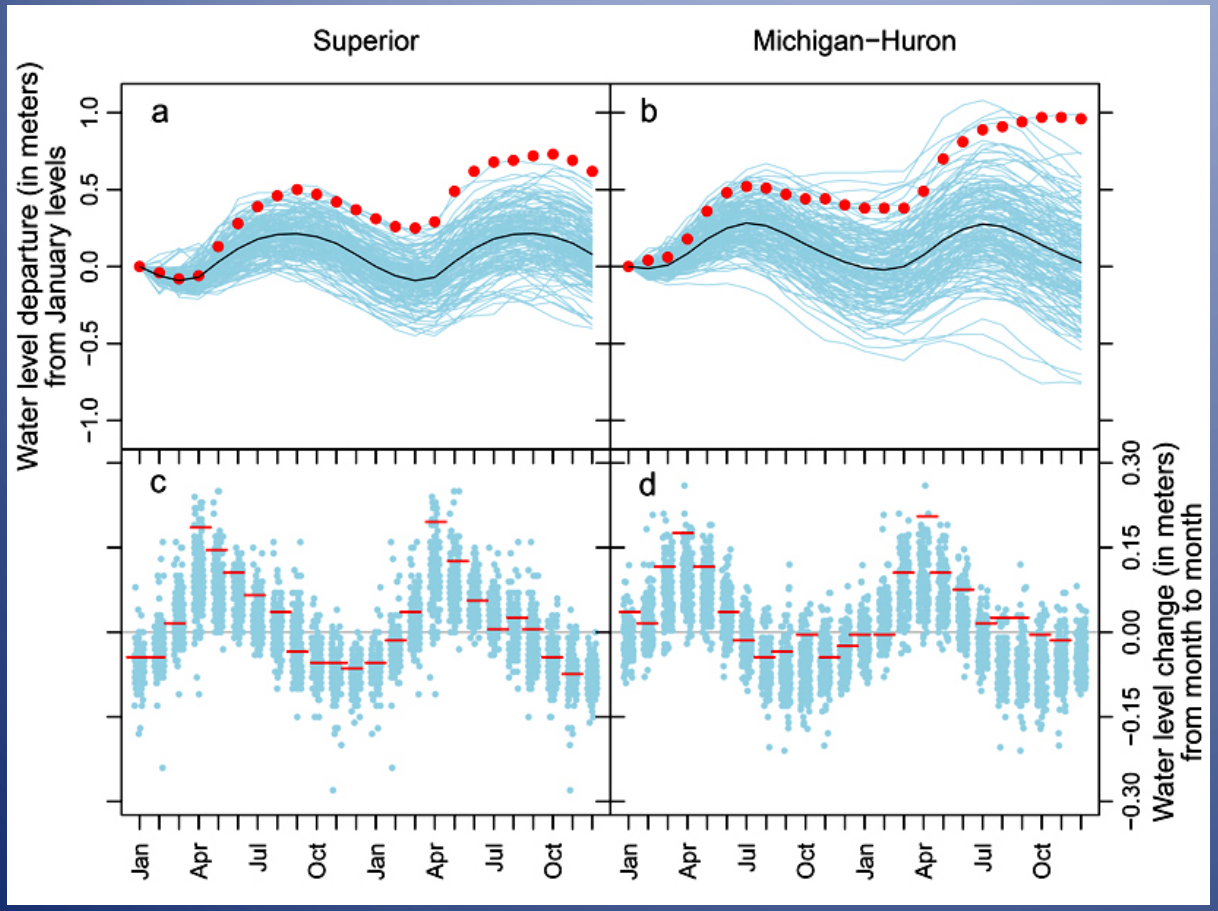
Current 7 Day Average Streamflow



USGS

http://waterwatch.usgs.gov/?id=pa07d

Great Lakes Water Levels



From Jan 2013 to Dec 2014

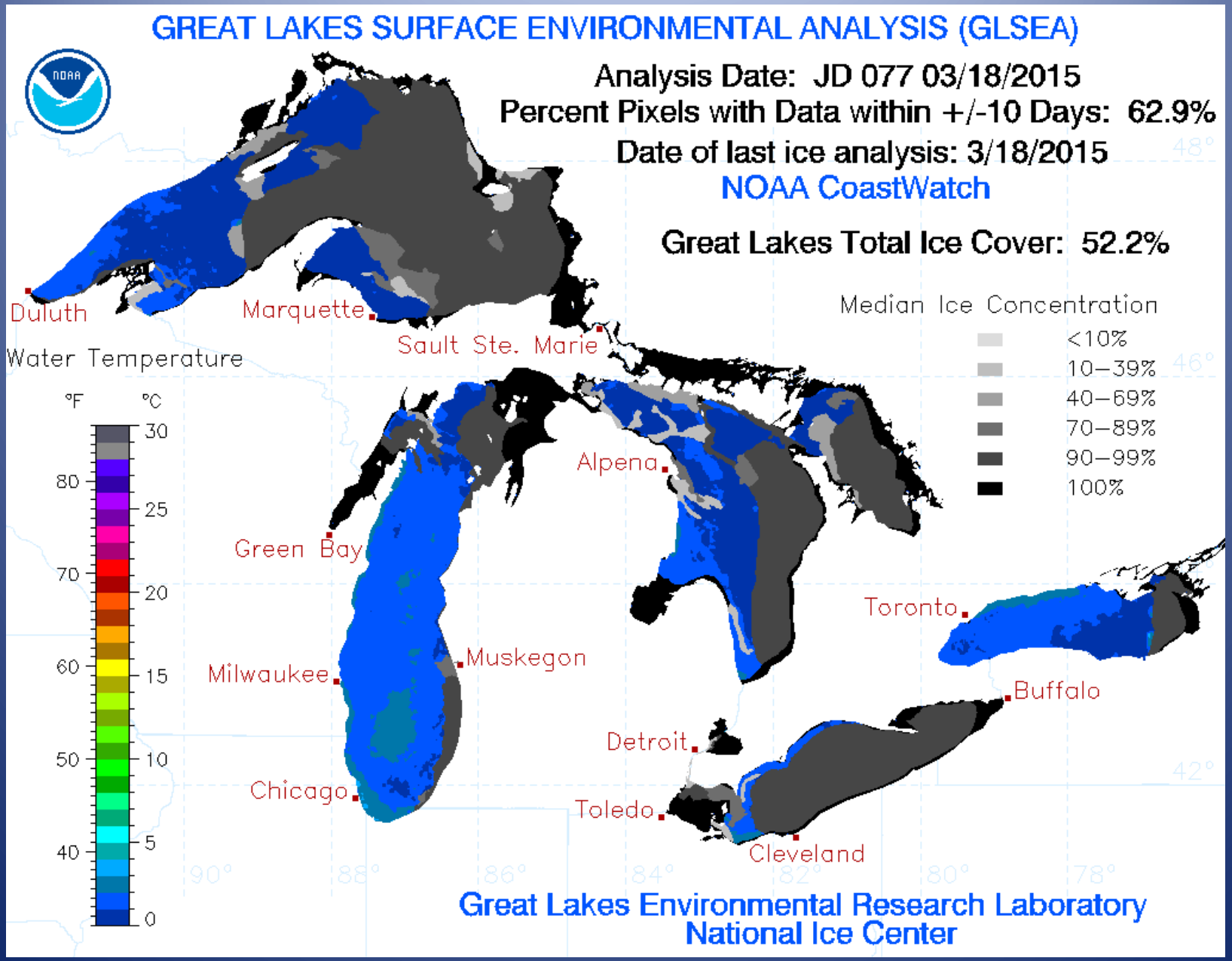
- Superior rose 0.6 meters (~2ft), highest ever for the 24 month period.
- Michigan-Huron rose 1.0m (~3.3ft), nearly equal to 1950-1951 rise

https://eos.org/project-updates/water-levels-surge-on-great-lakes
http://research.noaa.gov/News/NewsArchive/LatestNews/TabId/684/ArtMID/1768/ArticleID/10944/NOAA-and-partners-document-surge-in-Great-Lakes-water-levels-.aspx

Great Lakes Water Levels

- Abnormally high rises in water level are attributed to:
  - Superior: persistent near- to above-average rises in nearly every month, notably in spring/summer.
  - Michigan-Huron: near- to above-average rises in summer and fall months.
    - It is unusual to see water levels rise in the fall, only 11/154 years have seen levels rise from Sept to Oct.
- Impacts from high water
  - Shoreline flooding/erosion/property damage
  - Economic relief for commercial shipping, hydropower and recreation.

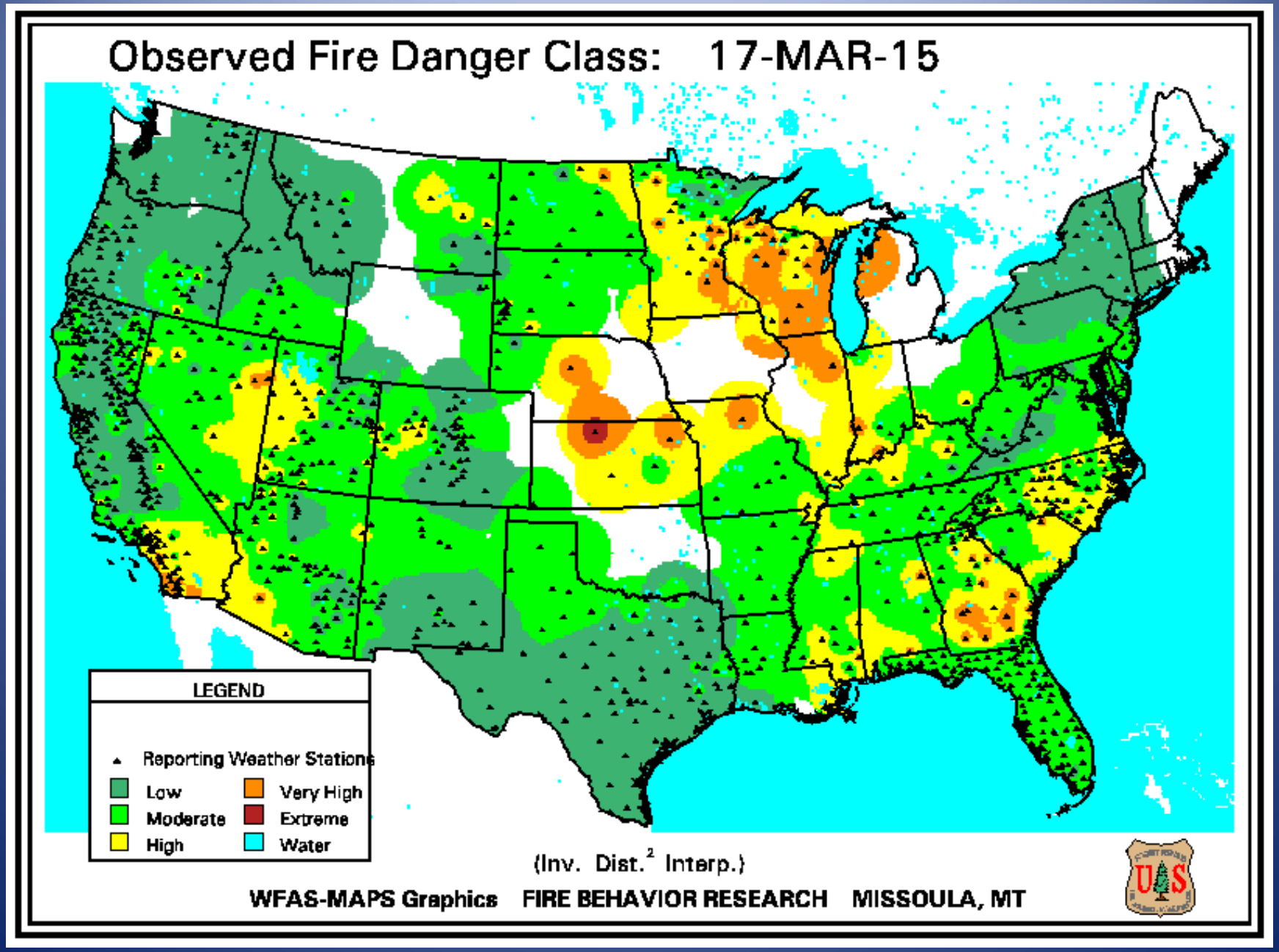
Coastal flooding on Lake Michigan, Halloween 2014
Credit: www.flickr.com/photos/joshuamellin/



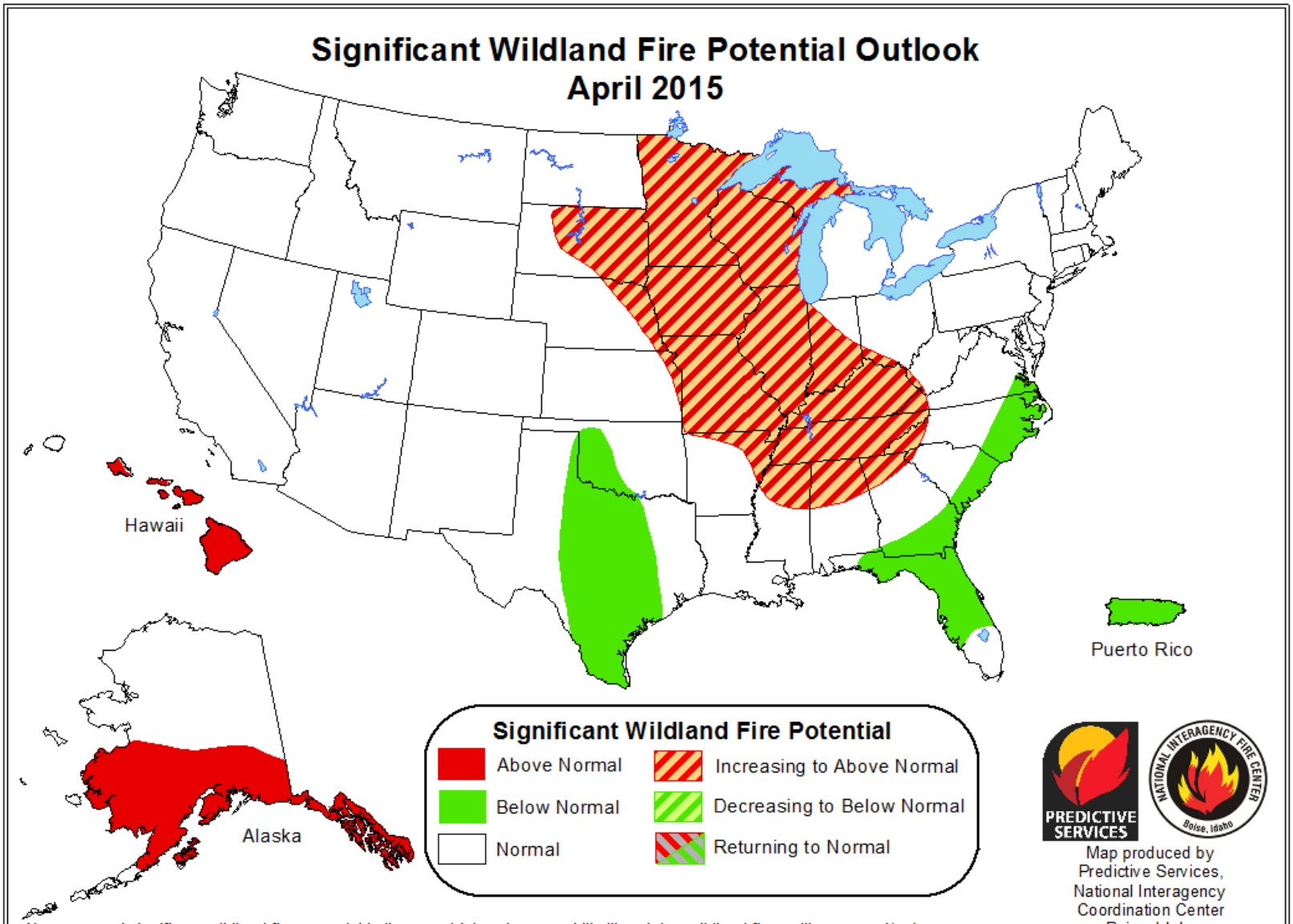
Last year at this time, ice cover was 82%

Regional Impacts

- Dry, warm and windy weather has dried out soils and grasses across NE, CO, KS and IA causing grass fires until green-up.
- Lack of snow on ground caused a rapid warm up over portions of the region (ND) and causes concerns for growing season soil moisture.
- Low stock pond levels (KS/NE)
- Lower than normal snowpack levels will likely result in lower than normal runoff and reduced reservoir storage levels.



http://www.wfas.net/images/firedanger/fd_class.png



http://www.predictiveservices.nifc.gov/outlooks/outlooks.htm

Agricultural Impacts

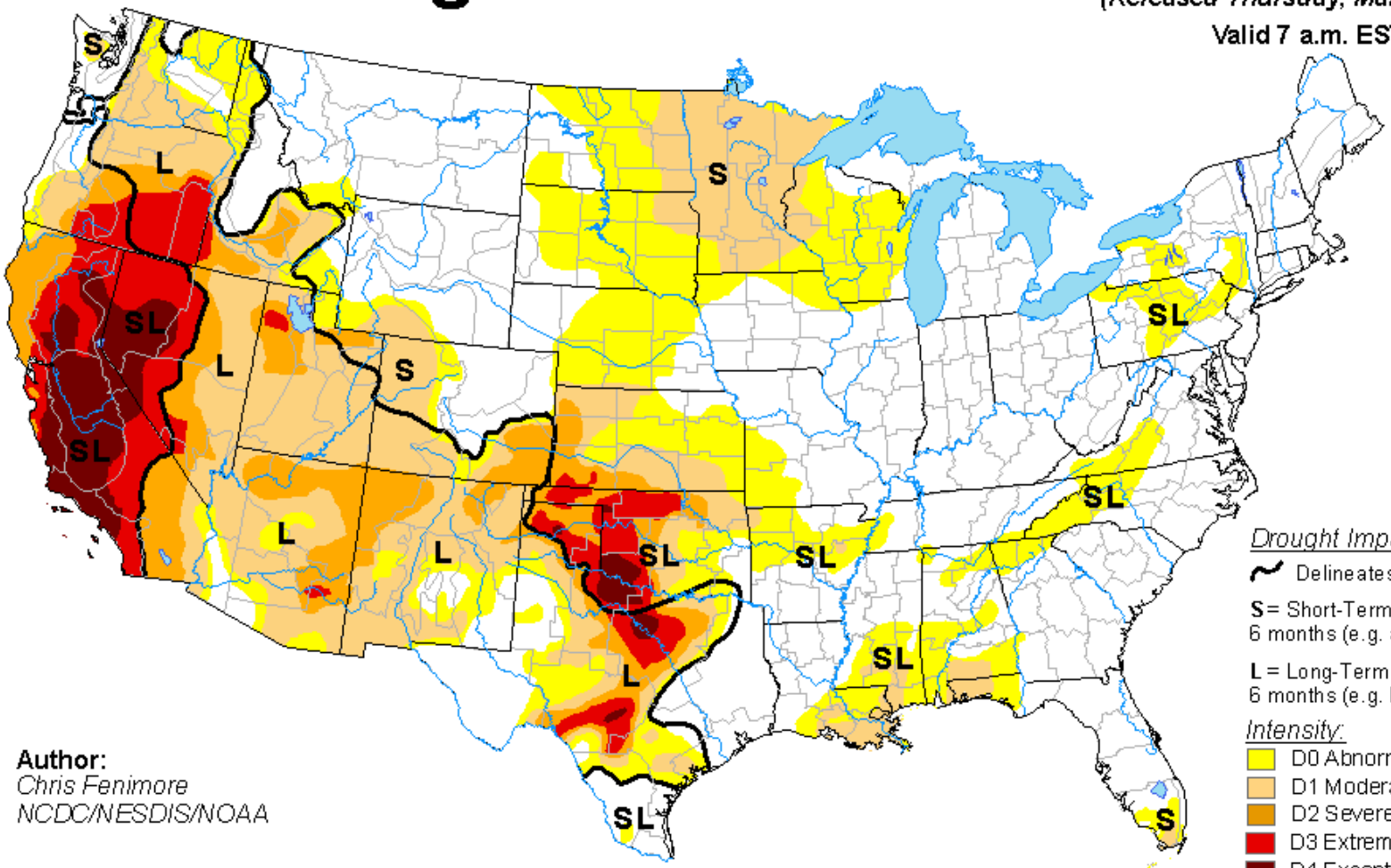
- Warmer and drier weather does have a few positive impacts…for now.
  - Good news for calving
  - Getting equipment into fields should be easier due to lack of snow on ground.
- Rangeland
  - No impacts at this time.
- Winter Wheat
  - Some wheat has emerged, drier areas are seeing damage from wind.
- Small grain planting has begun in SD.

U.S. Drought Monitor

March 17, 2015

(Released Thursday, Mar. 19, 2015)

Valid 7 a.m. EST



Author:
Chris Fenimore
NCDC/NESDIS/NOAA

Drought Impact Types:

Delineates dominant impacts

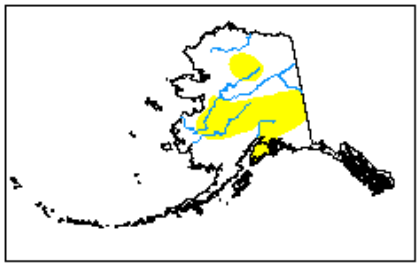
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

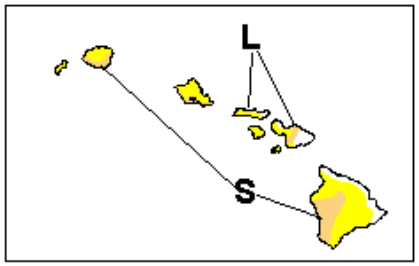
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

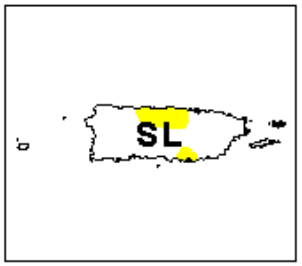
Intensity:

- 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.

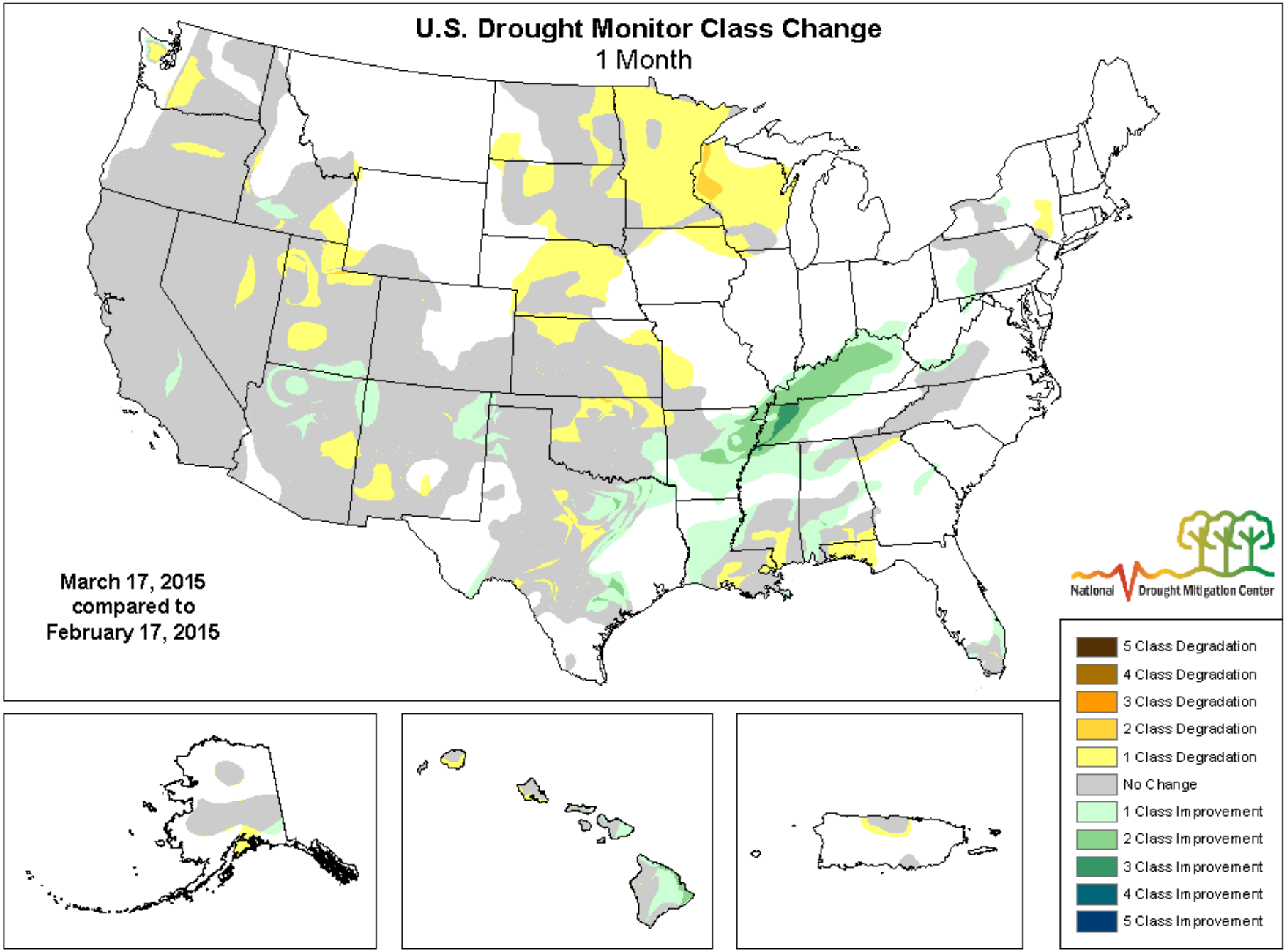






USDA National Drought Mitigation Center

http://droughtmonitor.unl.edu/

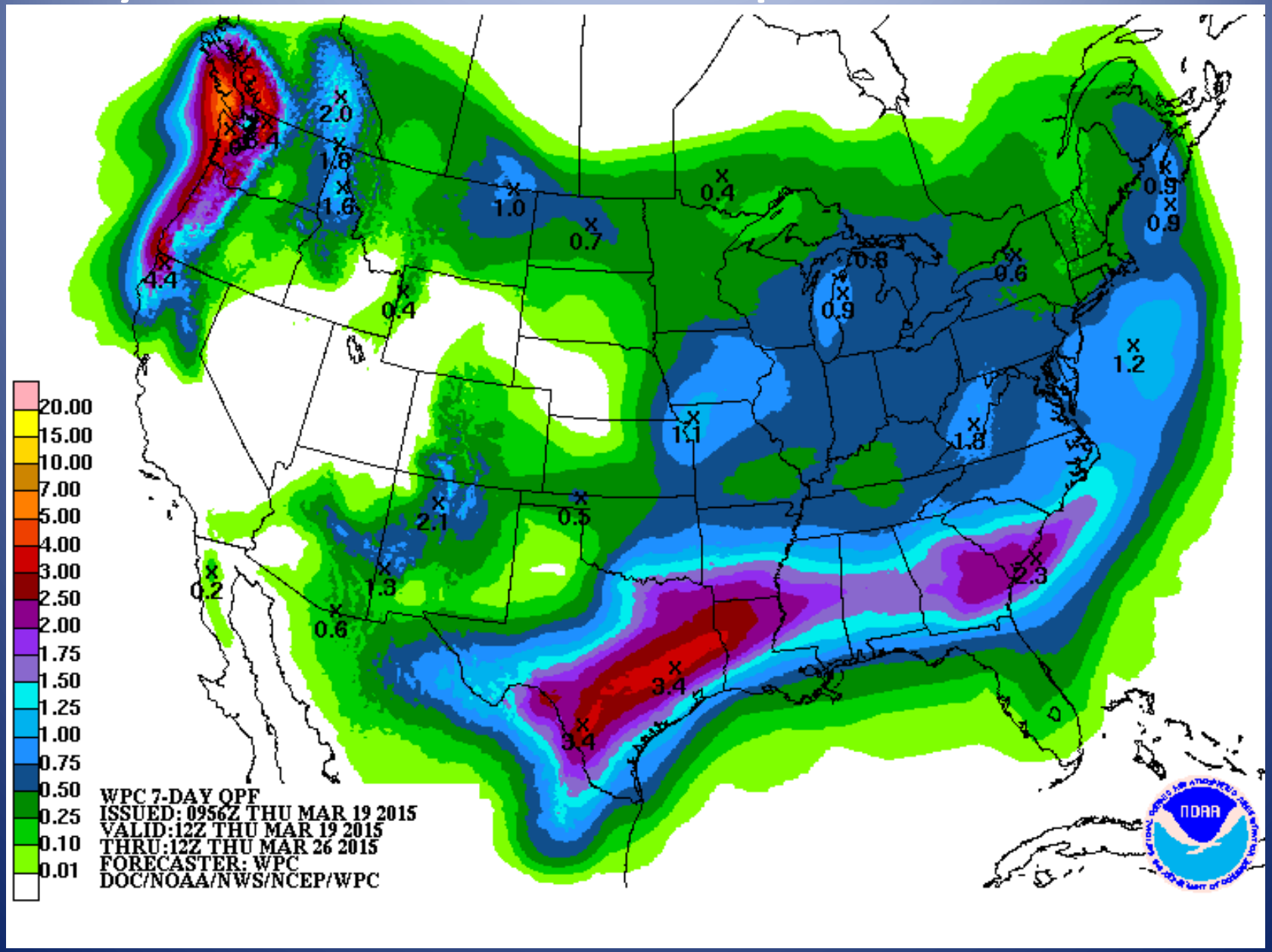


http://droughtmonitor.unl.edu

Climate Outlooks

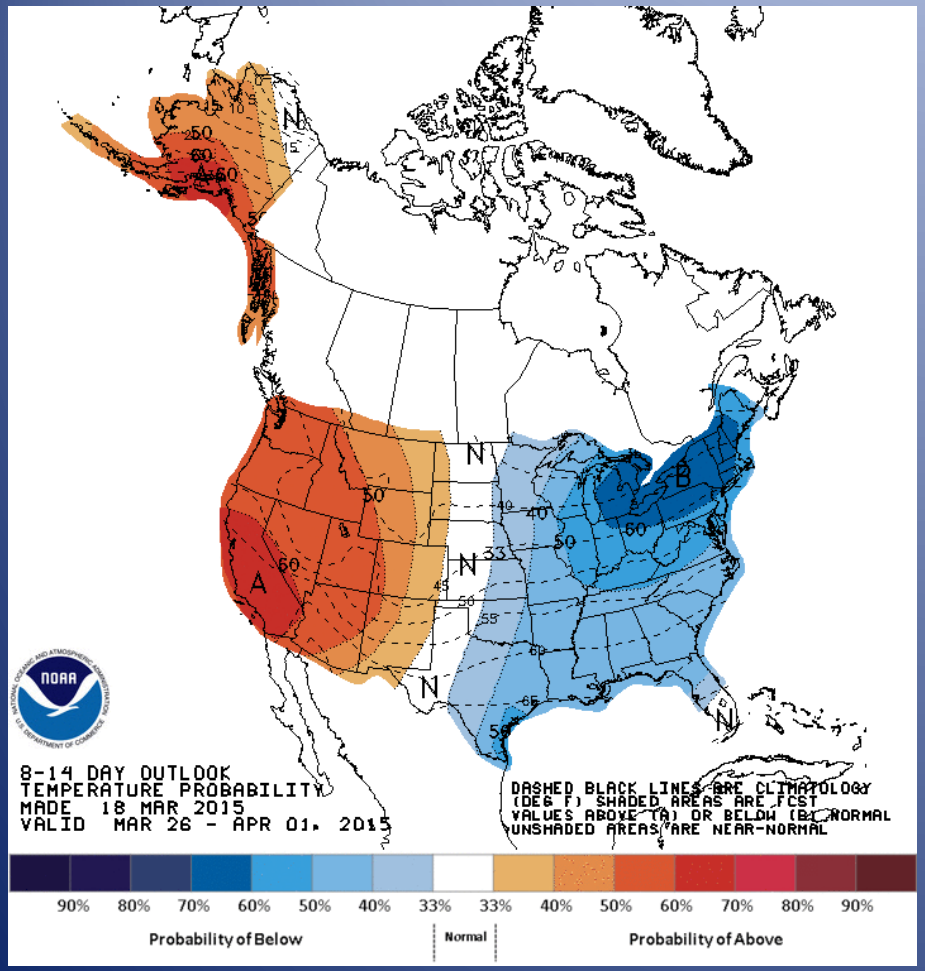
- **7-day precipitation forecast**
- **8-14 day outlook**
- **April**
- **Spring Outlook**
- **Summer Outlook**
- **Seasonal Drought Outlooks**

7-Day Quantitative Precipitation Forecast

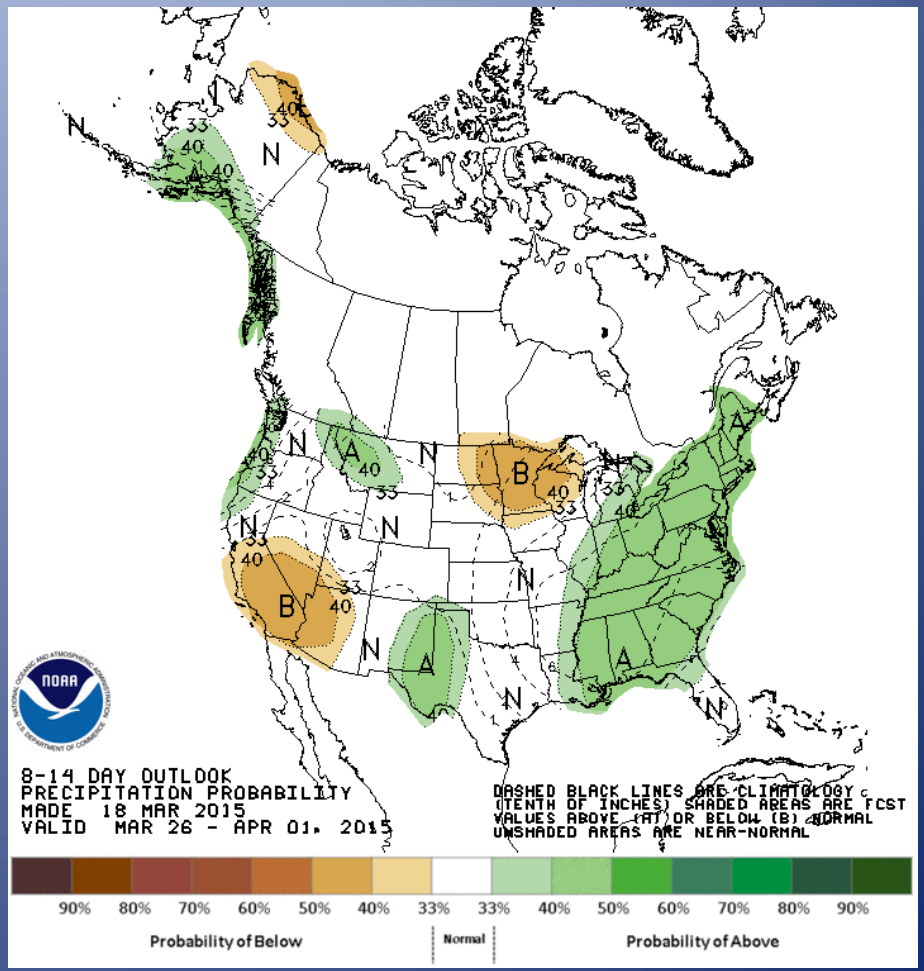


http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml

8-14 Day Outlook: 26 Mar – 1Apr 2015



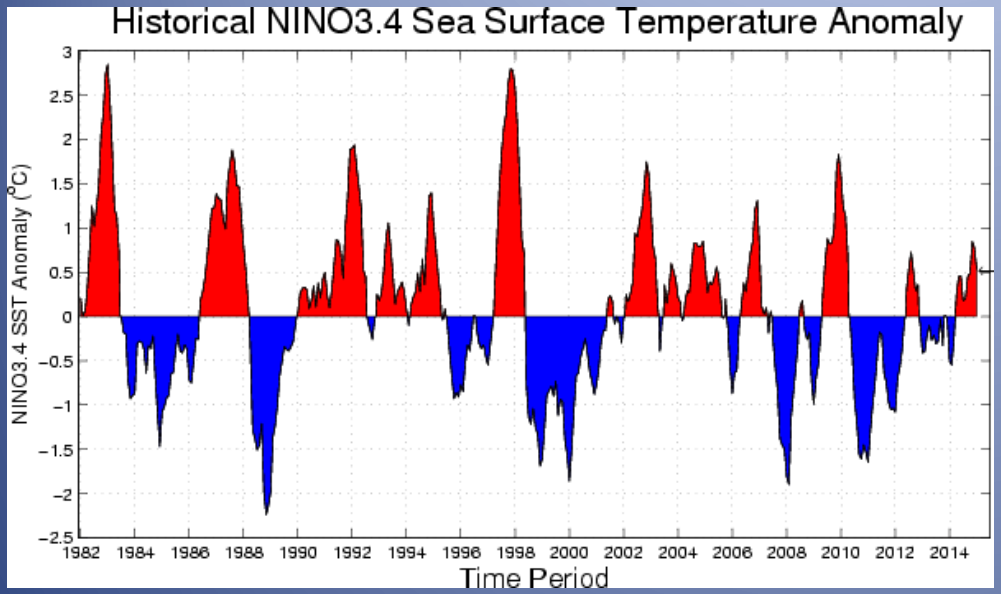
Temperature

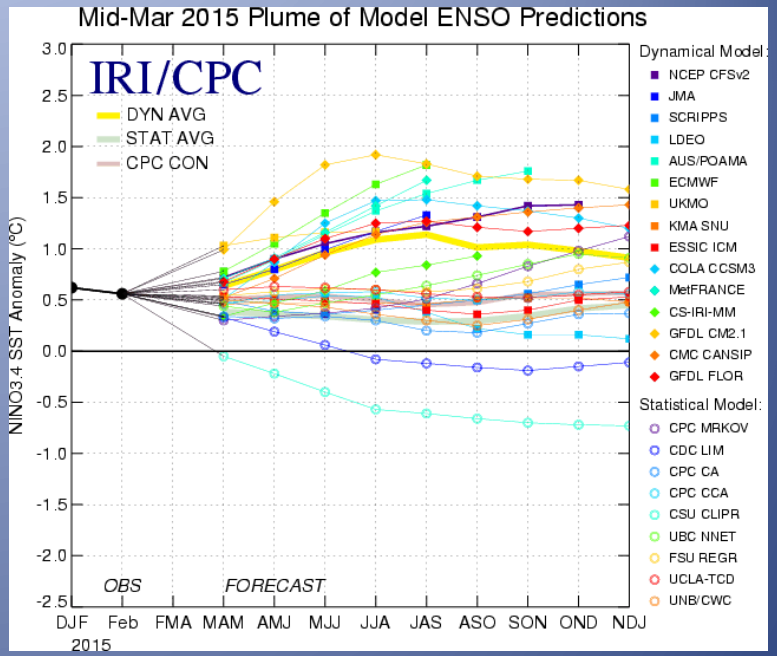


Precipitation

http://www.cpc.ncep.noaa.gov/

El Nino Update

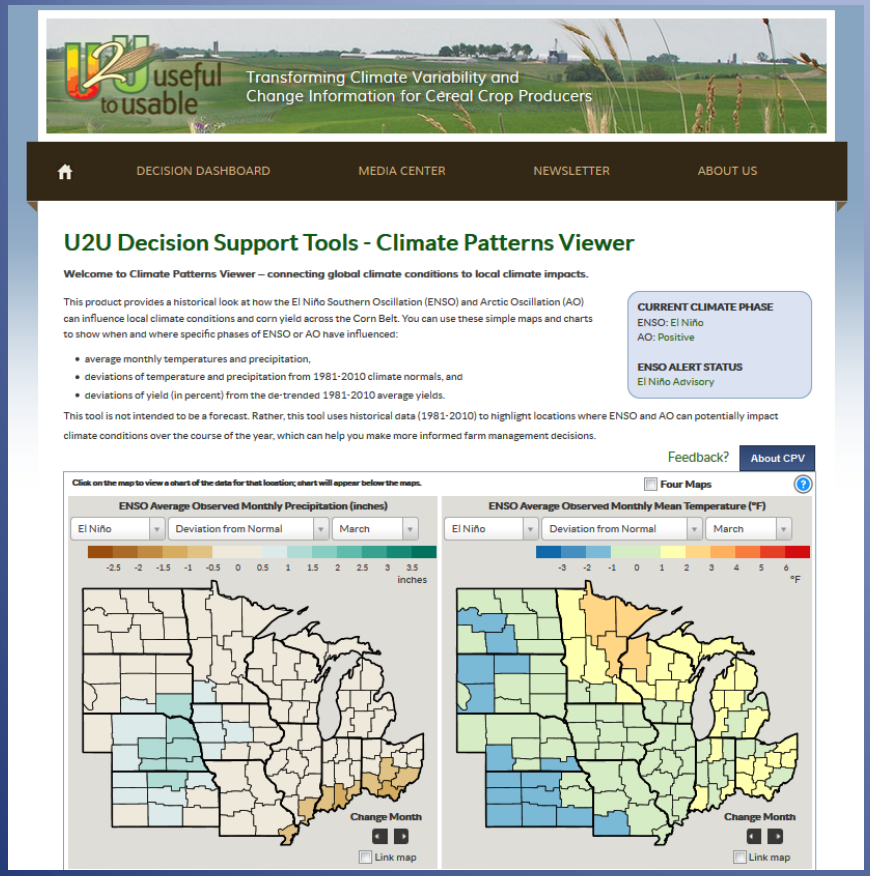




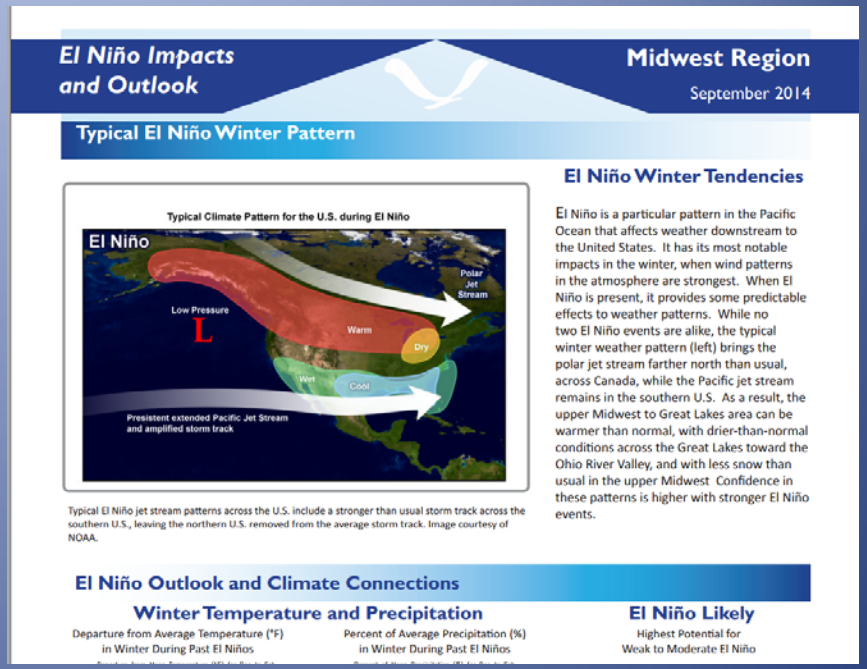
- El Nino has been officially declared, but it is weak and developing at an abnormal time of year.
  - Relationships are stronger in fall/winter
- Statistical and dynamical models in disagreement about future SST's.
- El Nino events can suppress tornado activity.
  - There is a **slight** tendency for El Nino years to have less extremes across this region
- True impacts for summer are complicated and still be discussed.

http://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/
http://www.wfaa.com/story/weather/2015/03/16/el-nino-la-nina-tornadoes/24853273/

El Nino Resources



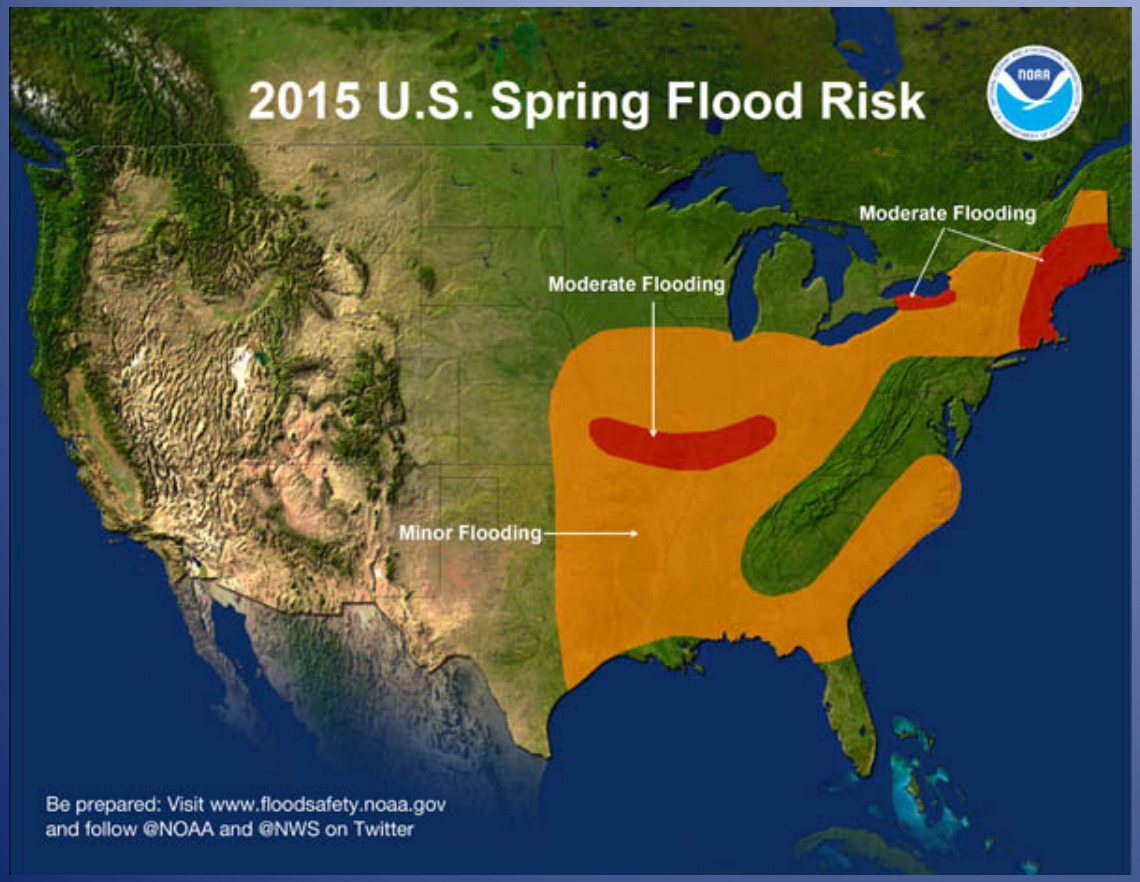
https://mygeohub.org/groups/u2u/cpv



http://mrcc.isws.illinois.edu/pubs/pubsElNino.jsp

- The above resources inform what El Nino (and other patterns) mean for your part of the country.

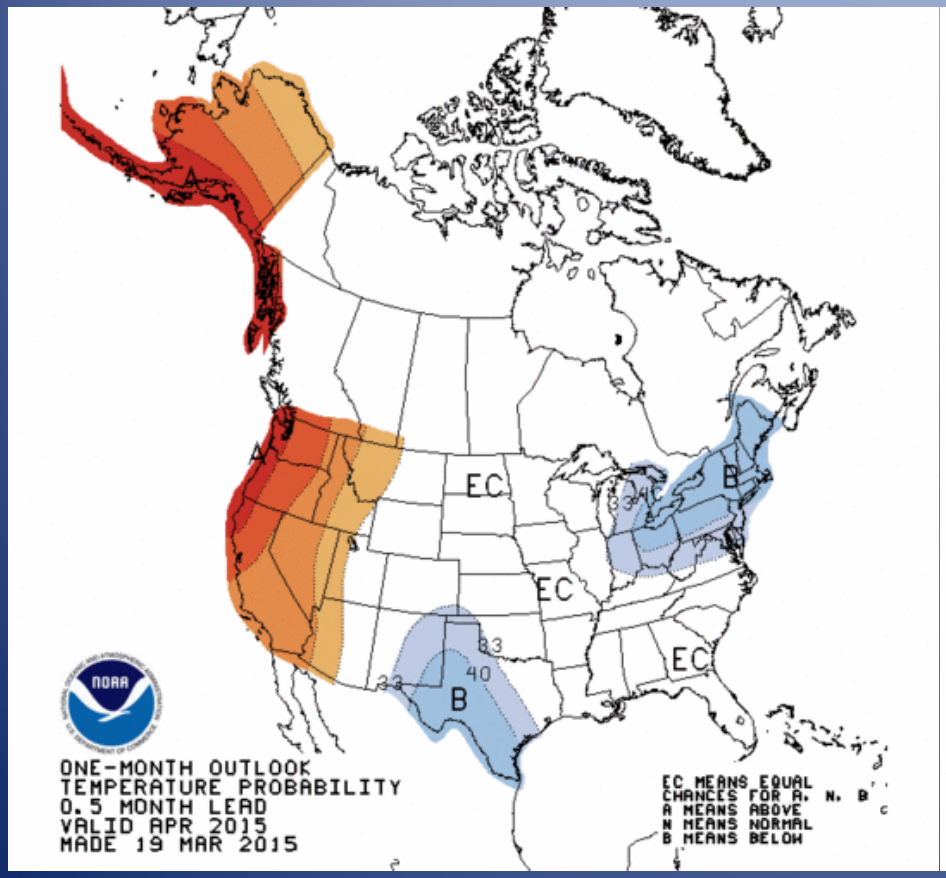
Spring Flood Outlook



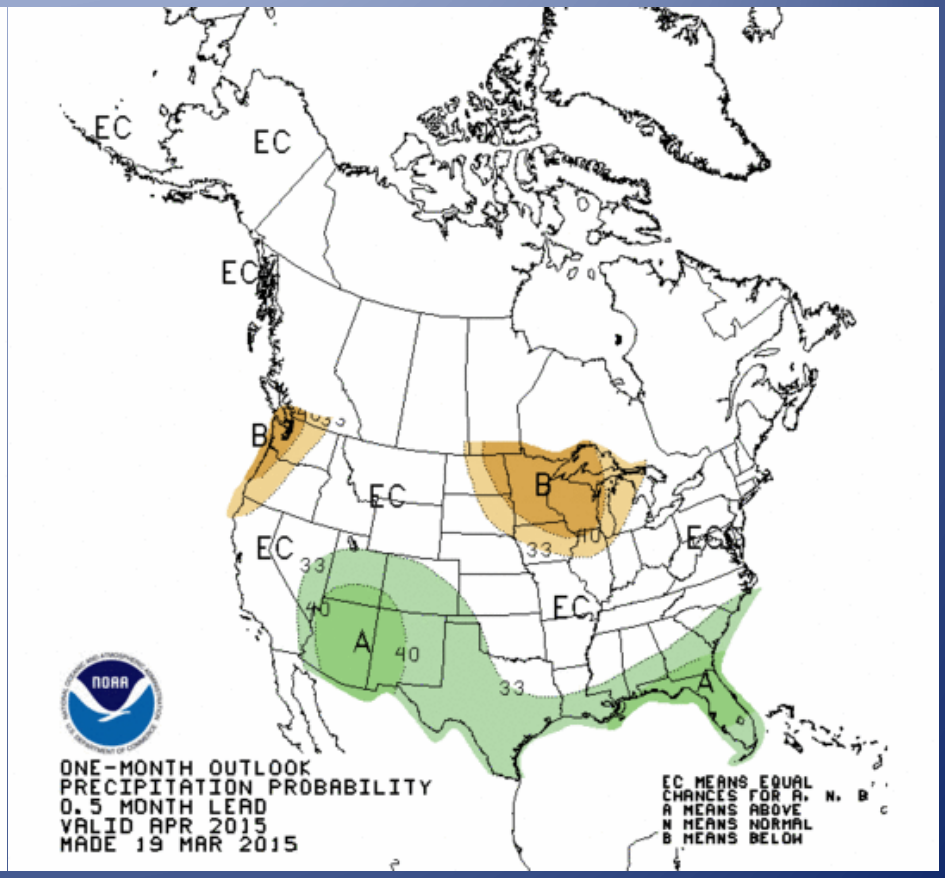
- 50% chance of exceeding moderate flood levels Eastern Kansas and Missouri
  - Rain/T-storm driven
  - These streams typically receive minor spring flooding from T-storms
- Moderate flooding expected in lower Ohio River basin from melting snow and heavy rains.
  - Primed soils and streams for flood risk to persist in Kentucky, southern IL and SW IN.

http://www.nws.noaa.gov/hic/nho/

1 Month Outlook: April 2015



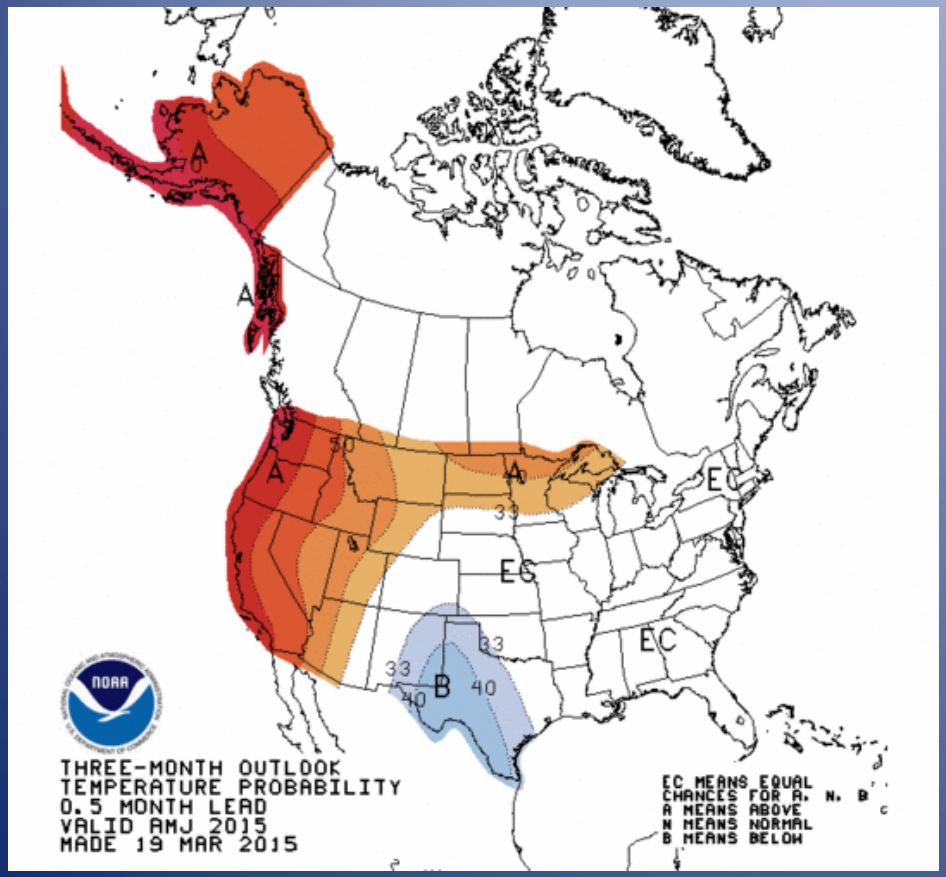
Temperature



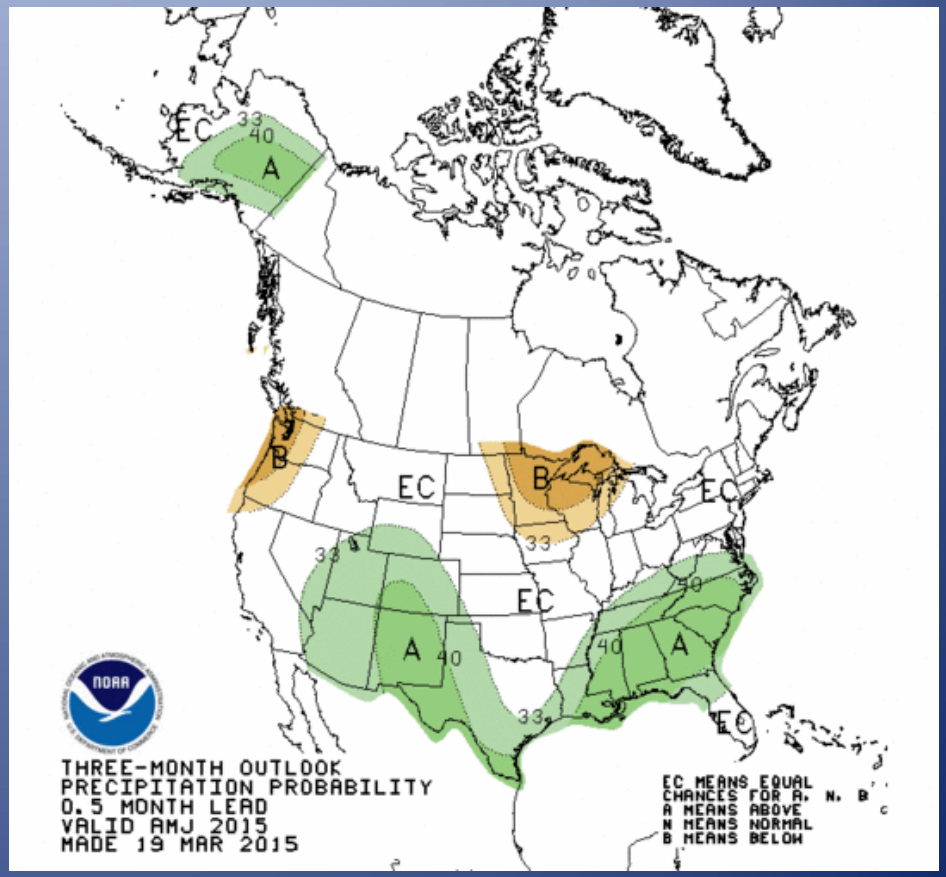
Precipitation

http://www.cpc.ncep.noaa.gov/

3 Month Outlook: AMJ 2015



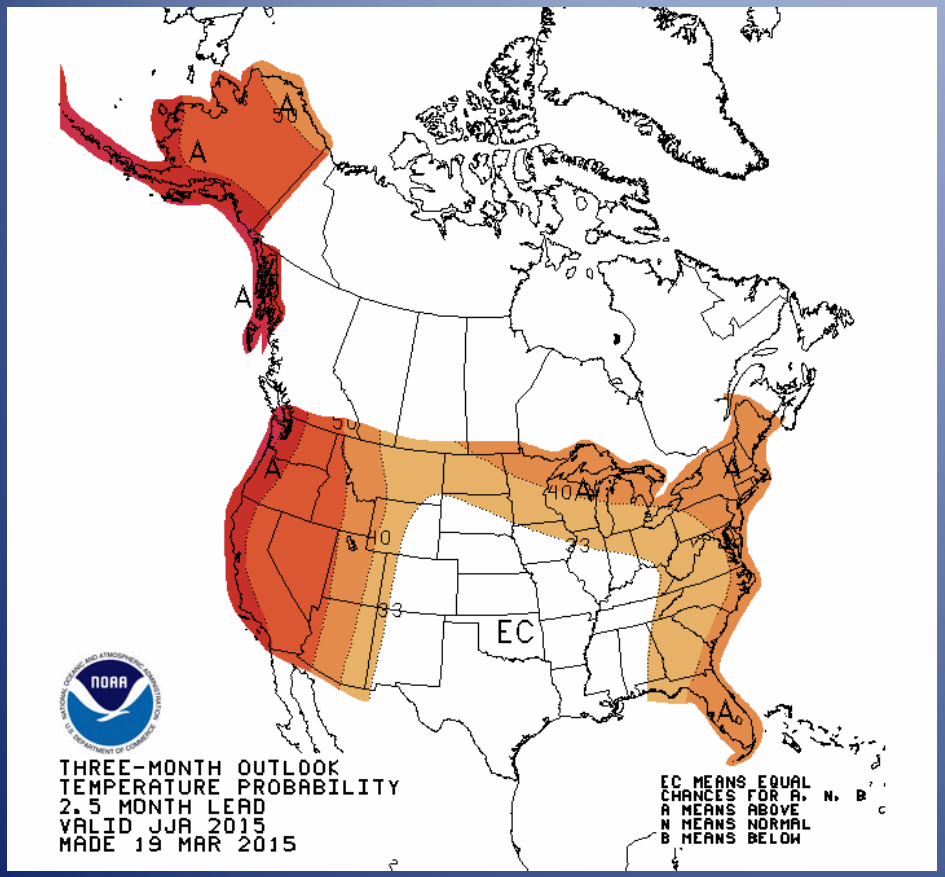
Temperature

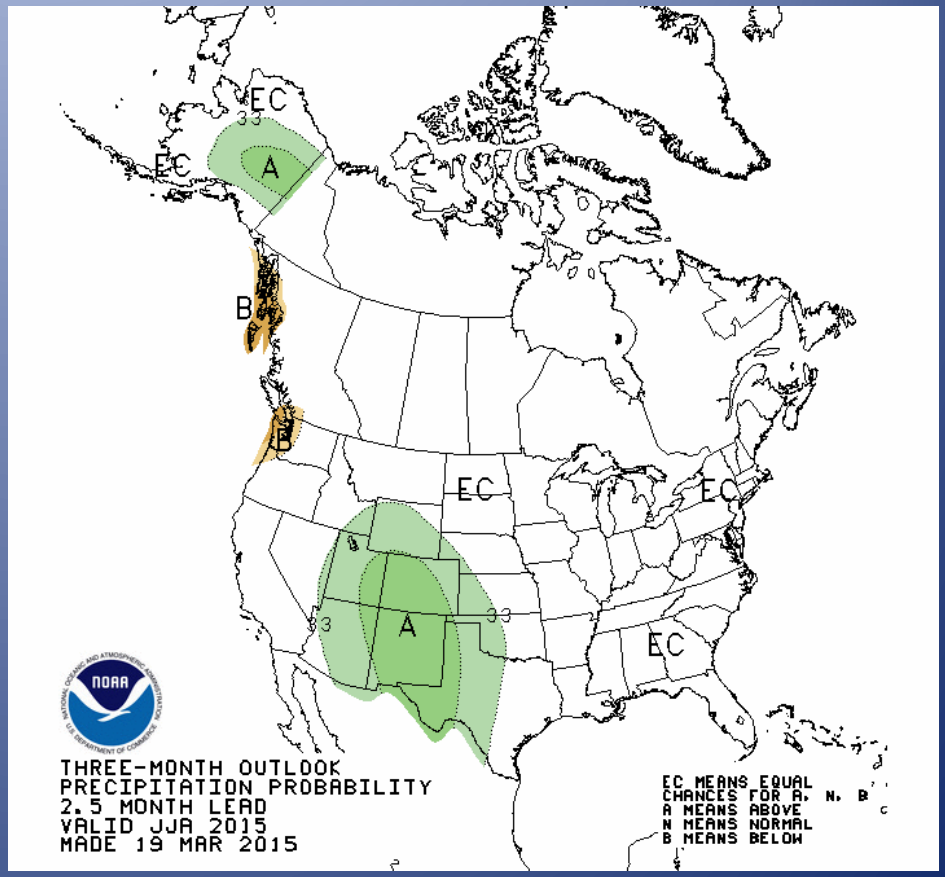


Precipitation

http://www.cpc.ncep.noaa.gov/

JJA 2015 Outlook





Temperature

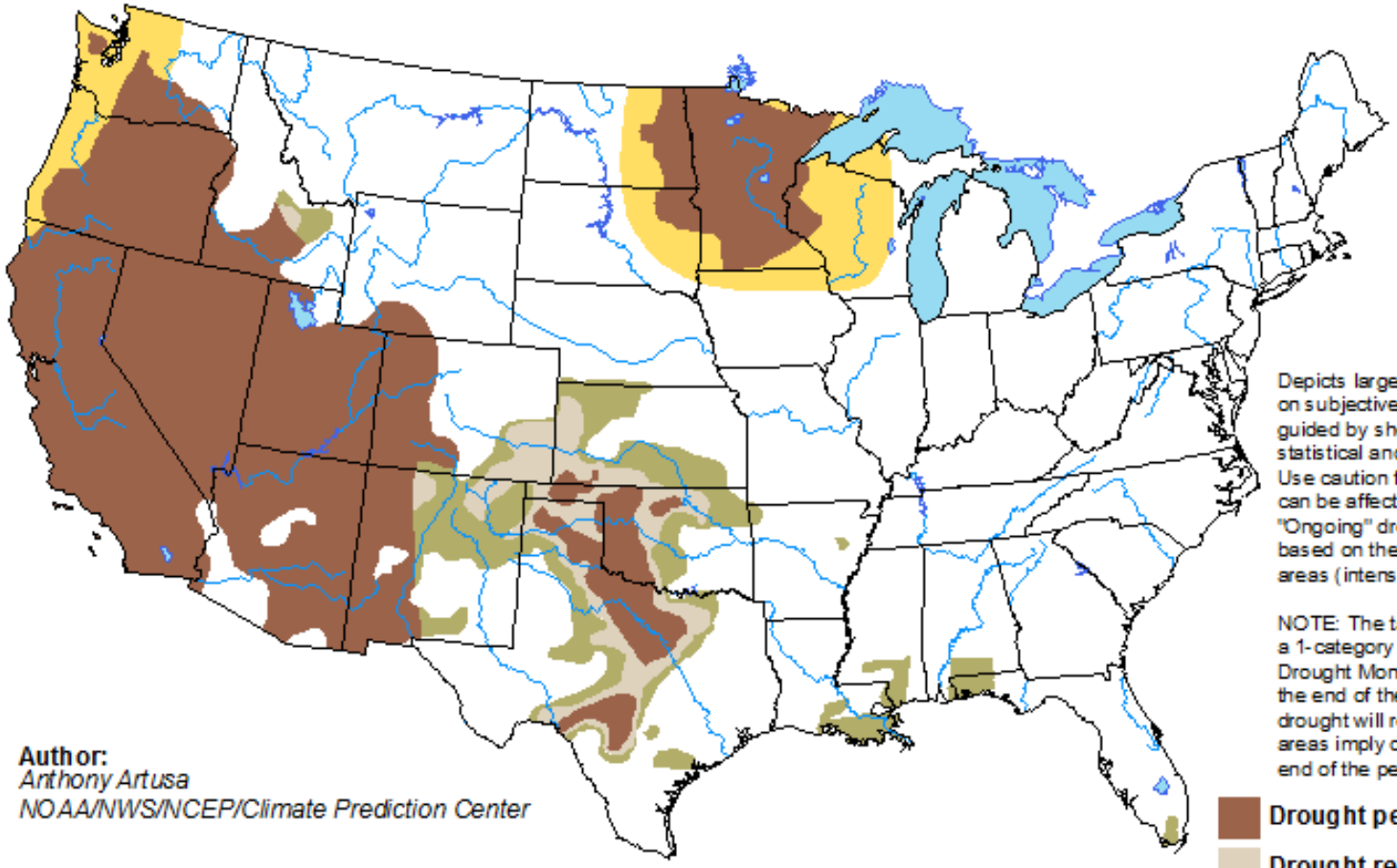
Precipitation

http://www.cpc.ncep.noaa.gov/

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for March 19 - June 30, 2015
Released March 19, 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).

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

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http://go.usa.gov/hHTe

http://www.cpc.ncep.noaa.gov/

Summary of Recent Conditions

- Recent warm and dry across much of the region is still short lived.
  - Still time to recover with some spring storms.
  - Fire danger will persist until green-up.
- Lack of snow cover on the plains from warm temperatures melting off snow quickly.
  - USACE noted mid-winter runoff from plains snowmelt.
- Below normal snowpack will likely result in below normal runoff season.

Summary - Outlooks

- El Nino declared
  - Higher chances for warm and dry conditions are forecast over the northern portion of the region.
    - Drought in this area (newly added) is expected to persist and potentially expand.
  - Colorado and Wyoming have highest chances for above average moisture through the summer.
    - Drought in SE Colorado and Kansas is expected to improve.
    - Drought west of the divide in CO expected to persist/intensify.
  - Spring flood potential highest in the lower MO river basin and lower Ohio River valley.

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?

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