North Central
"From the Rockies to the Great Lakes"

Climate and Drought Outlook Webinar

Thursday, May 16, 2019

Martha Shulski
Nebraska State Climatologist
University of Nebraska - Lincoln

Jim Noel
Hydrologist
NWS Ohio River Forecast Center

Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

General information

- **Providing climate services to the Central Region**
  - Collaboration between:
    - NOAA – National Centers for Environmental Information
    - American Association of State Climatologists
    - Midwestern and High Plains Regional Climate Centers
    - NOAA's Climate Prediction Center
    - National Drought Mitigation Center

- **Next Climate/Drought Outlook Webinar**
  - June 20th, 2019 by Kelsey Jensco, Montana State Climate Office

- **Access to Future Climate Webinars and Information**

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

- **Past recorded presentations and slides can be found here:**

http://mrcc.isws.illinois.edu/webinars.htm

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

- **Open for questions at the end**

Agenda for today

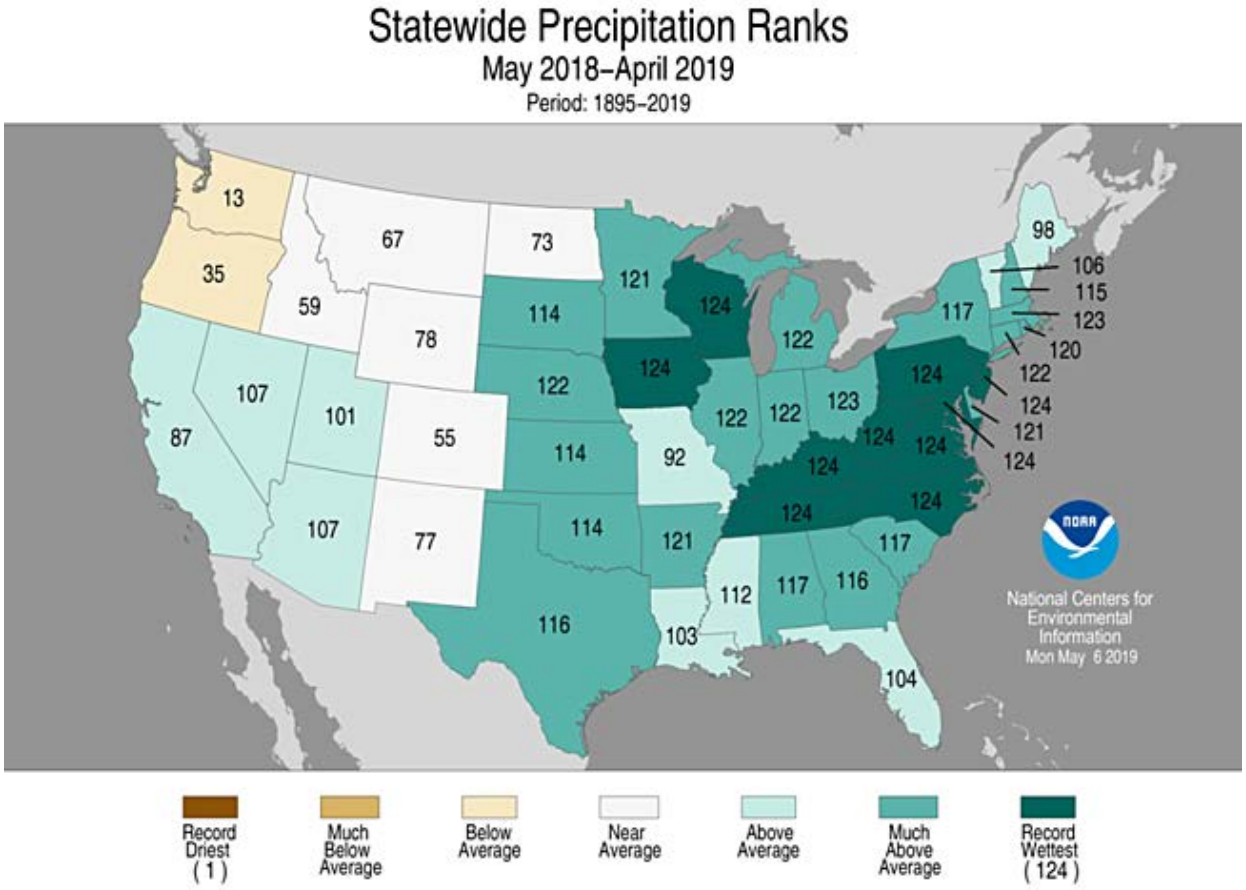
- Antecedent conditions
- Current conditions
- Impacts around the region
- Climate outlooks
- Hydrologic concerns
- Questions/Comments

Southwest Indiana
Photo courtesy Hans Schmidt

Southwest Iowa
Photo courtesy Doug Kluck

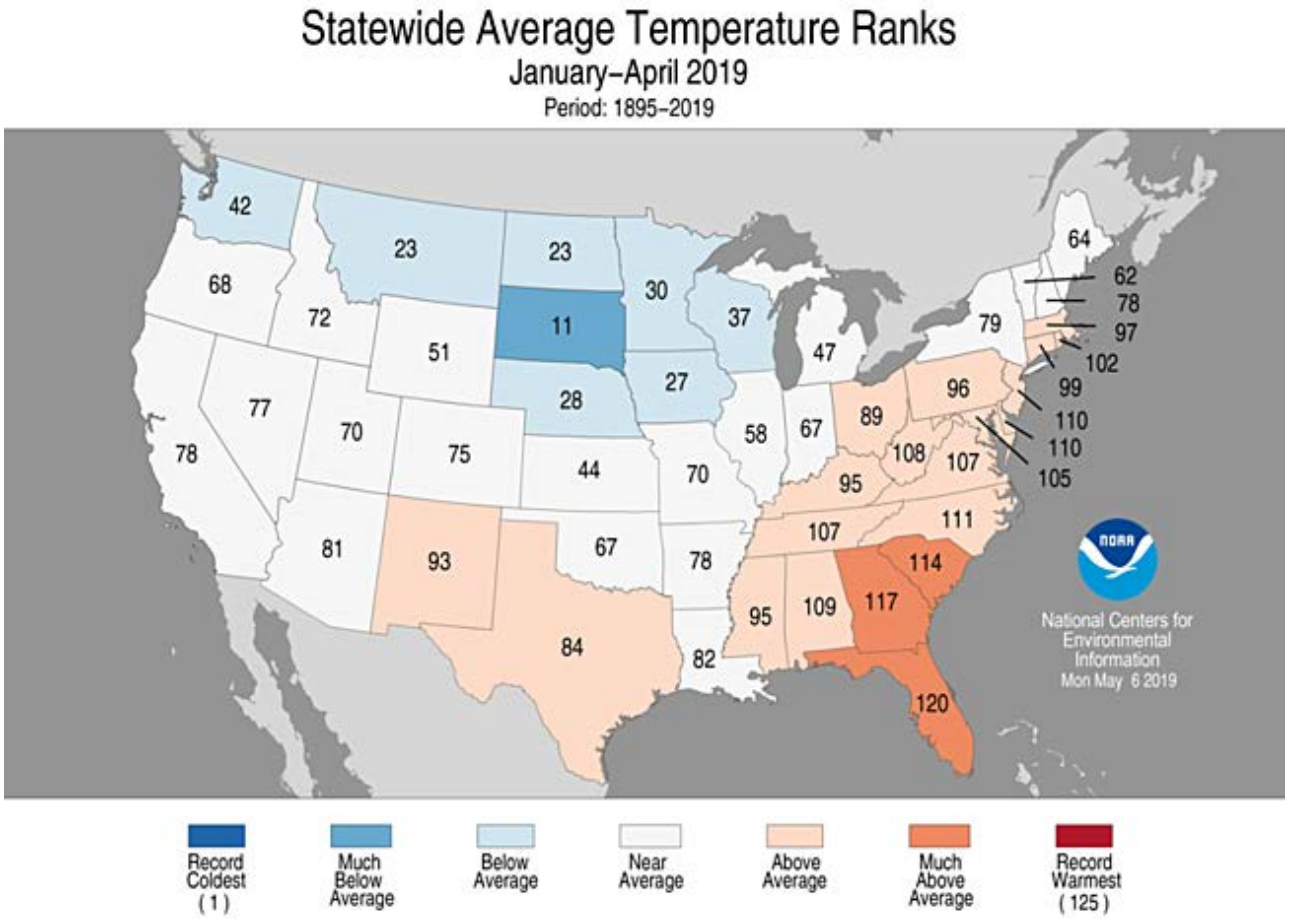
The last 12 months

- Much above average to record wettest for large part of the region.



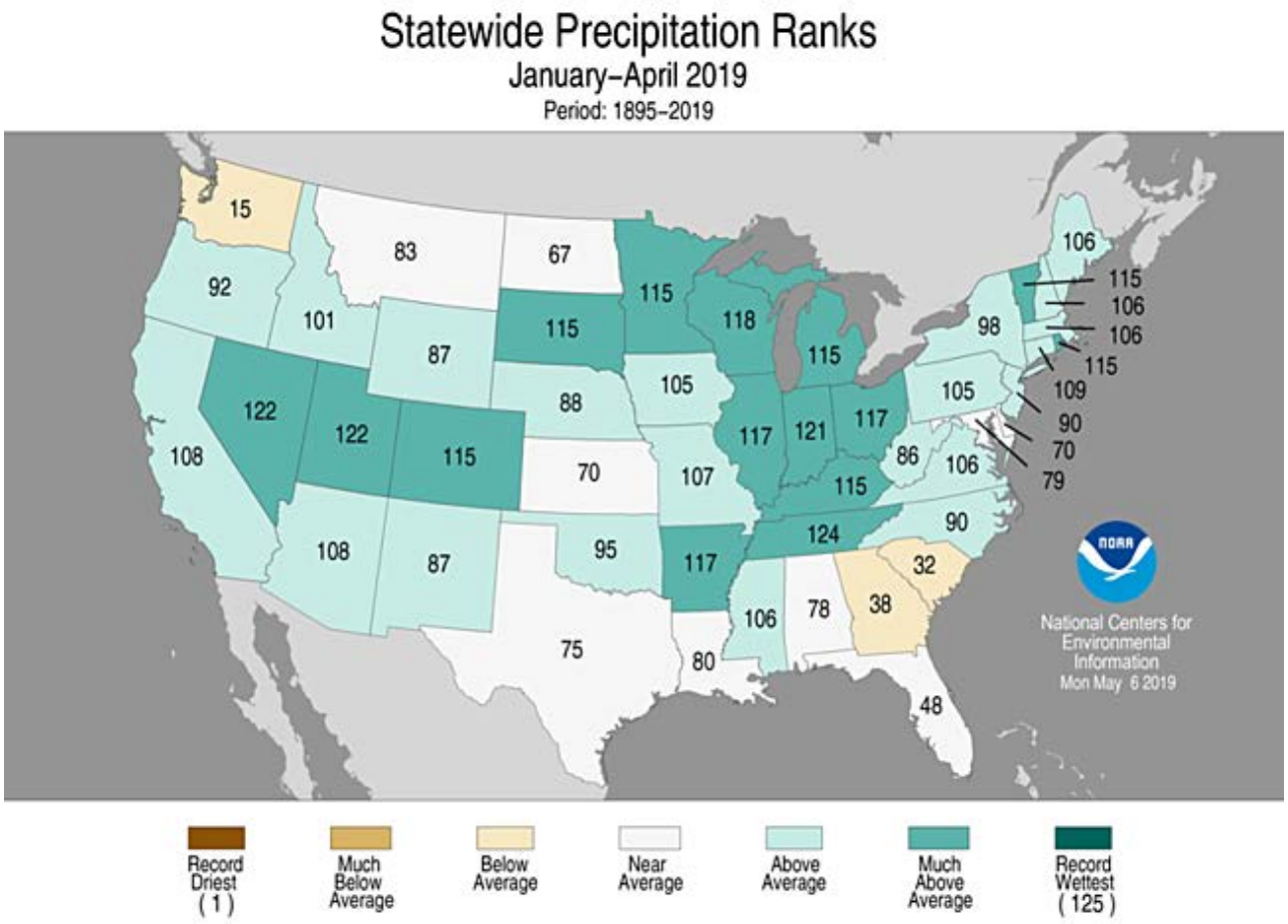
2019 Year-to-date

- Cool overall for much of north-central U.S. this year.
- SD 11th coldest.



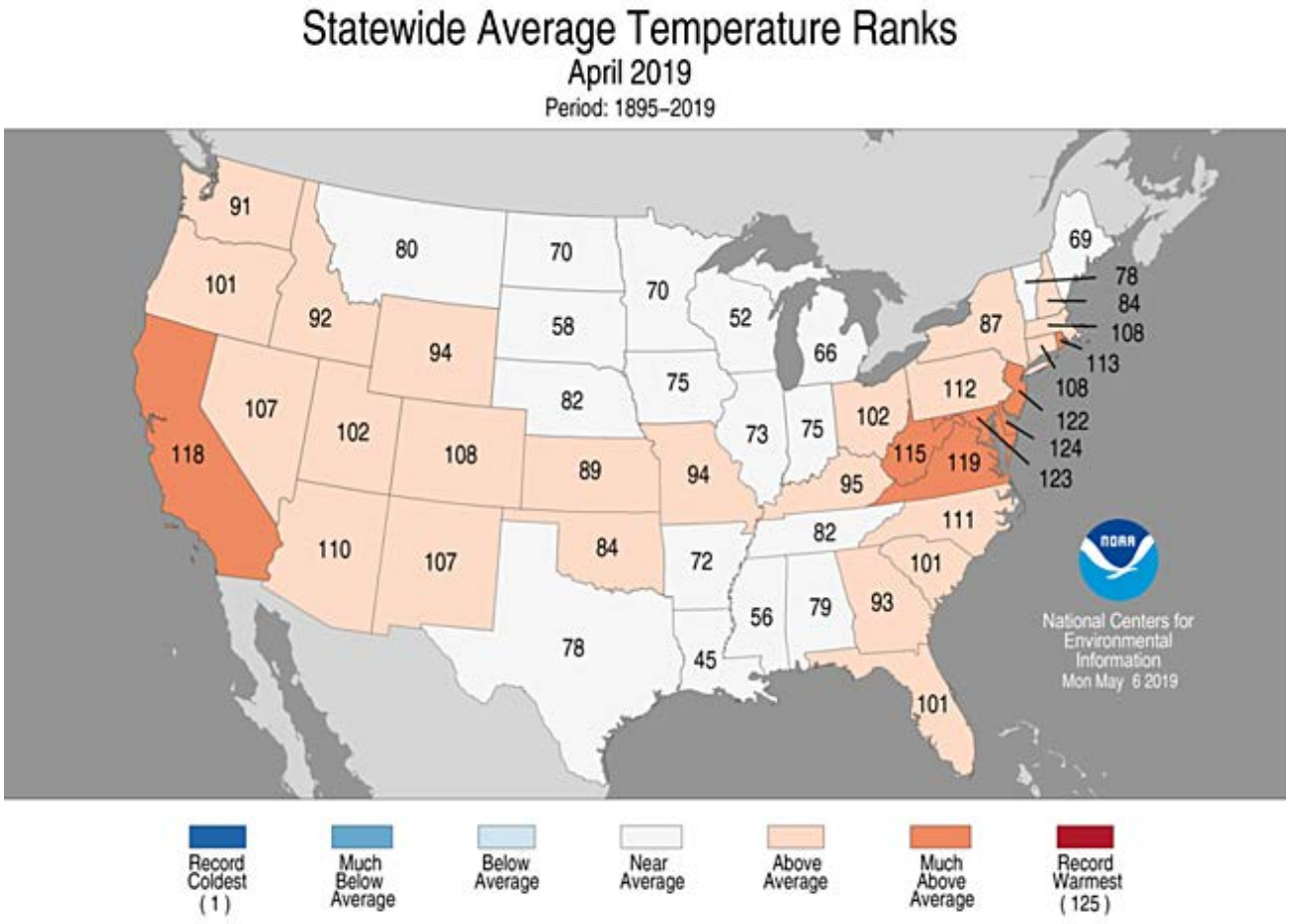
2019 Year-to-date

- Broad precipitation trend for above to much above average.
- Top 10 wettest for several states.



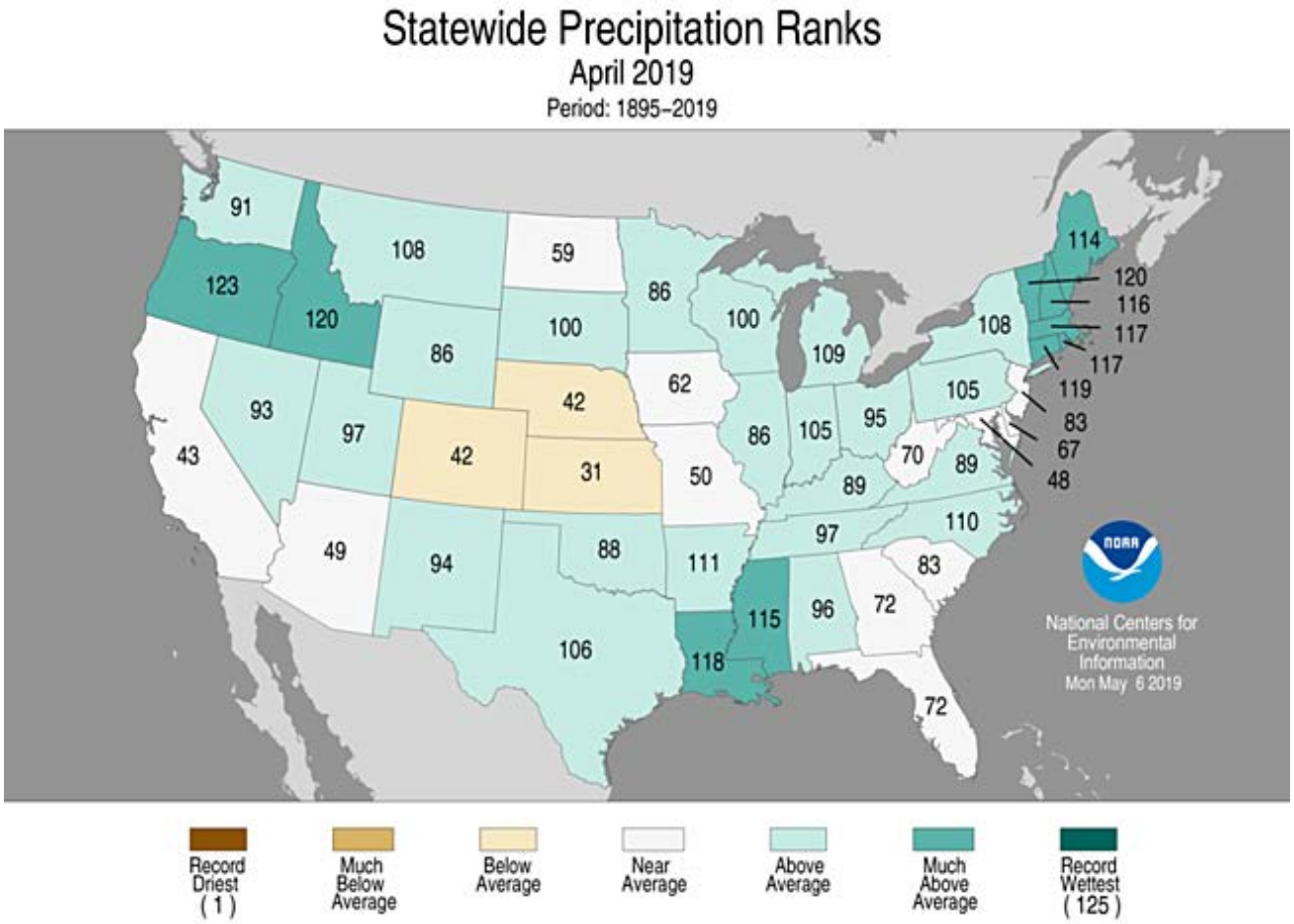
April temperatures

- Near average temperatures for much of the region.



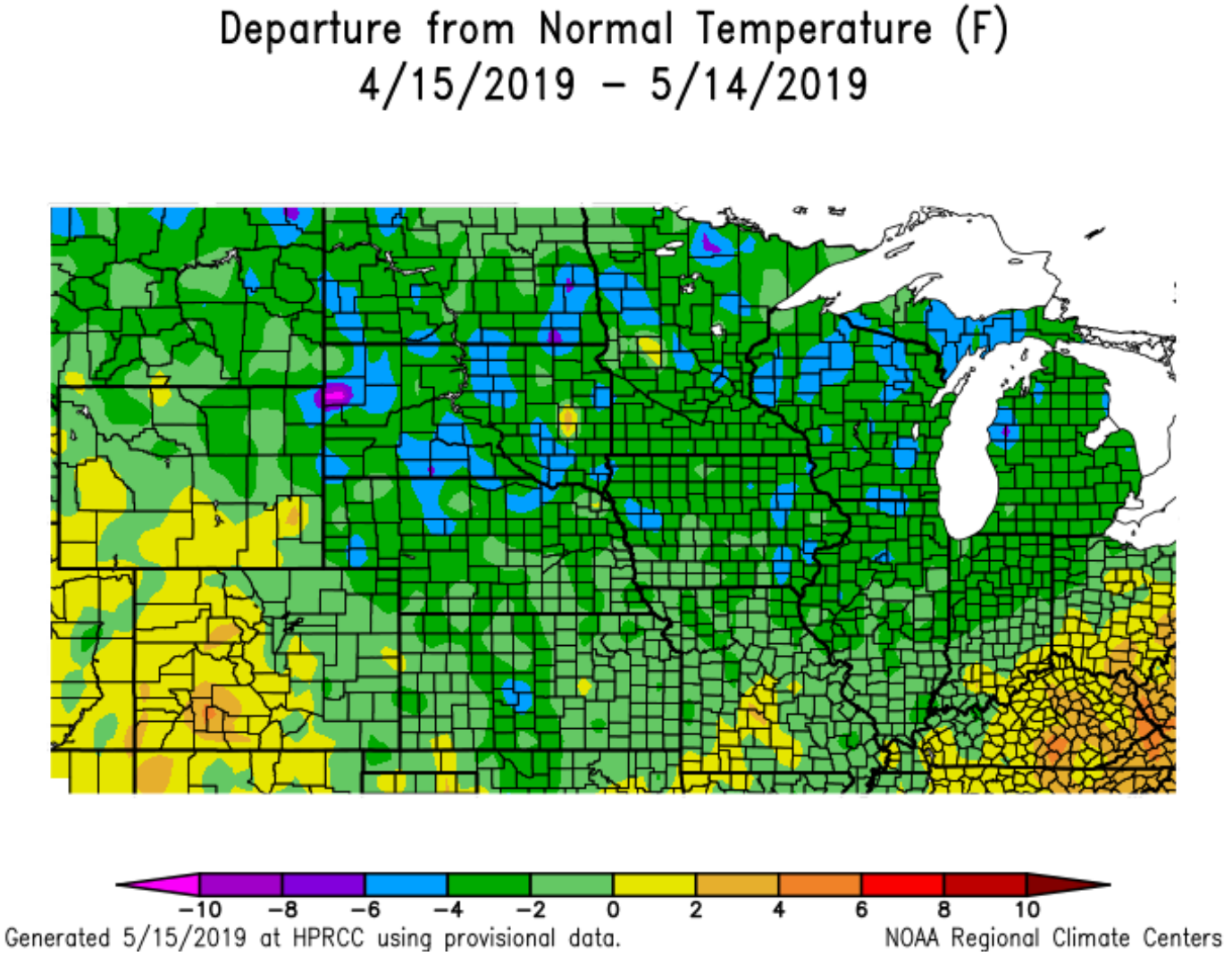
April precipitation

- Mix of conditions.



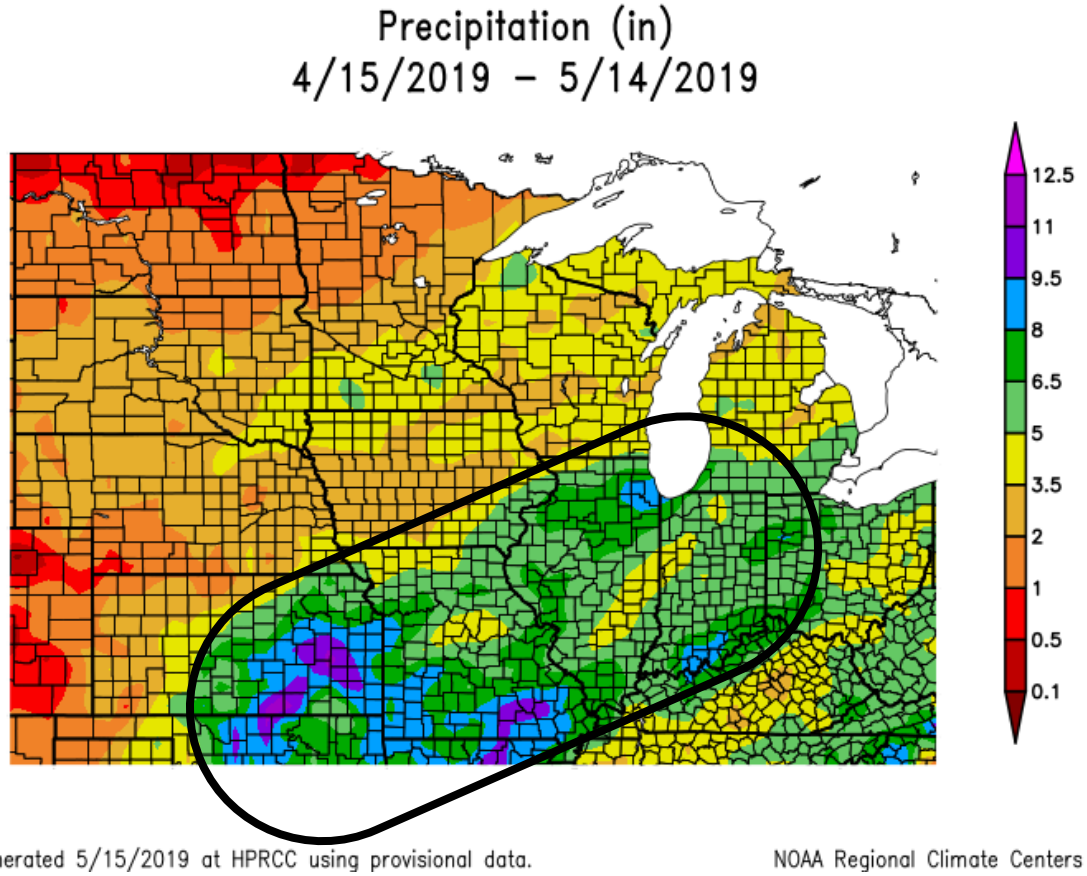
Temperature trend - last 30 days

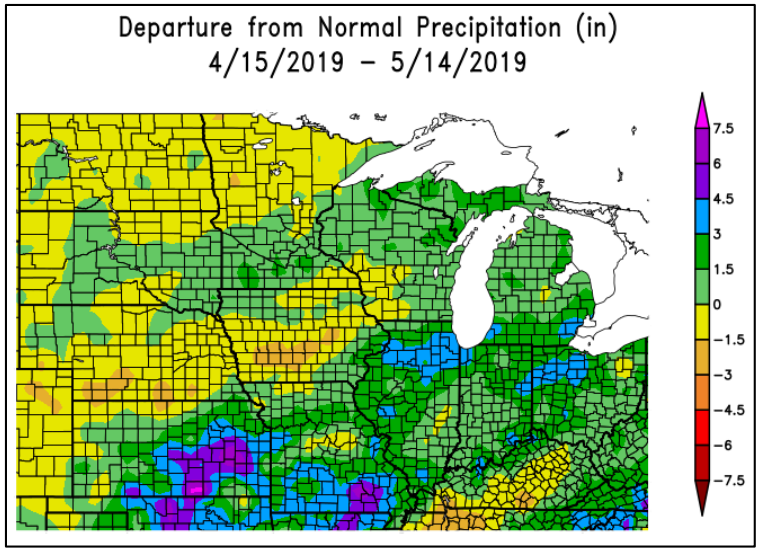
- Mostly cooler than normal by a few degrees.



Precipitation trend - last 30 days

- Wet in the southeast, ‘dry’ in the northwest.





Current Drought Monitor

U.S. Drought Monitor

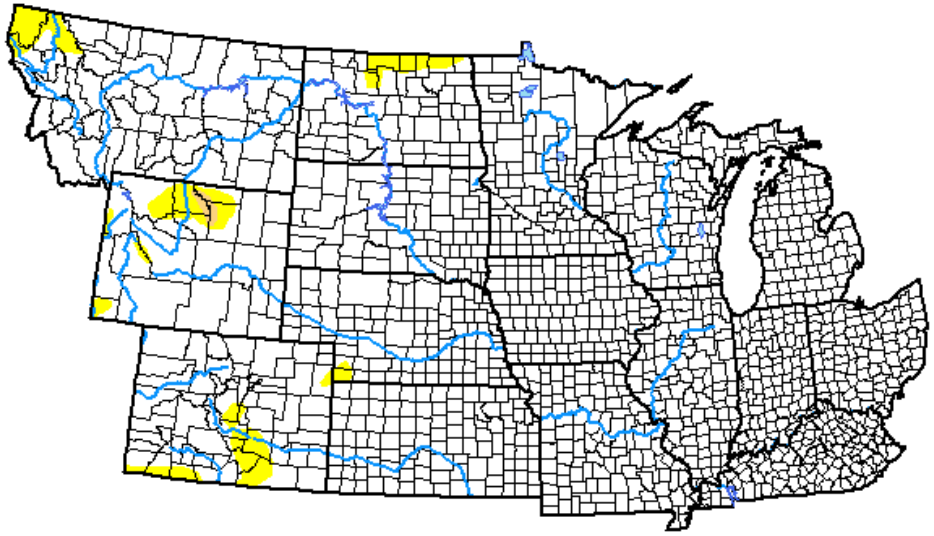
NWS Central Region

May 14, 2019

(Released Thursday, May. 16, 2019)

Valid 8 a.m. EDT

- **Historically low coverage.**
- Small pocket of drought in NC Wyoming.
- Only a couple pockets of abnormal dryness.



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	96.65	3.35	0.15	0.00	0.00	0.00
Last Week *05-07-2019*	95.95	4.05	0.20	0.00	0.00	0.00
3 Months Ago *02-12-2019*	82.98	17.02	7.59	3.58	1.97	0.01
Start of Calendar Year *01-01-2019*	85.98	14.02	8.17	5.23	2.44	1.01
Start of Water Year *09-25-2018*	64.00	36.00	17.93	9.15	5.03	1.49
One Year Ago *05-15-2018*	62.48	37.52	18.45	8.53	4.33	1.03

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

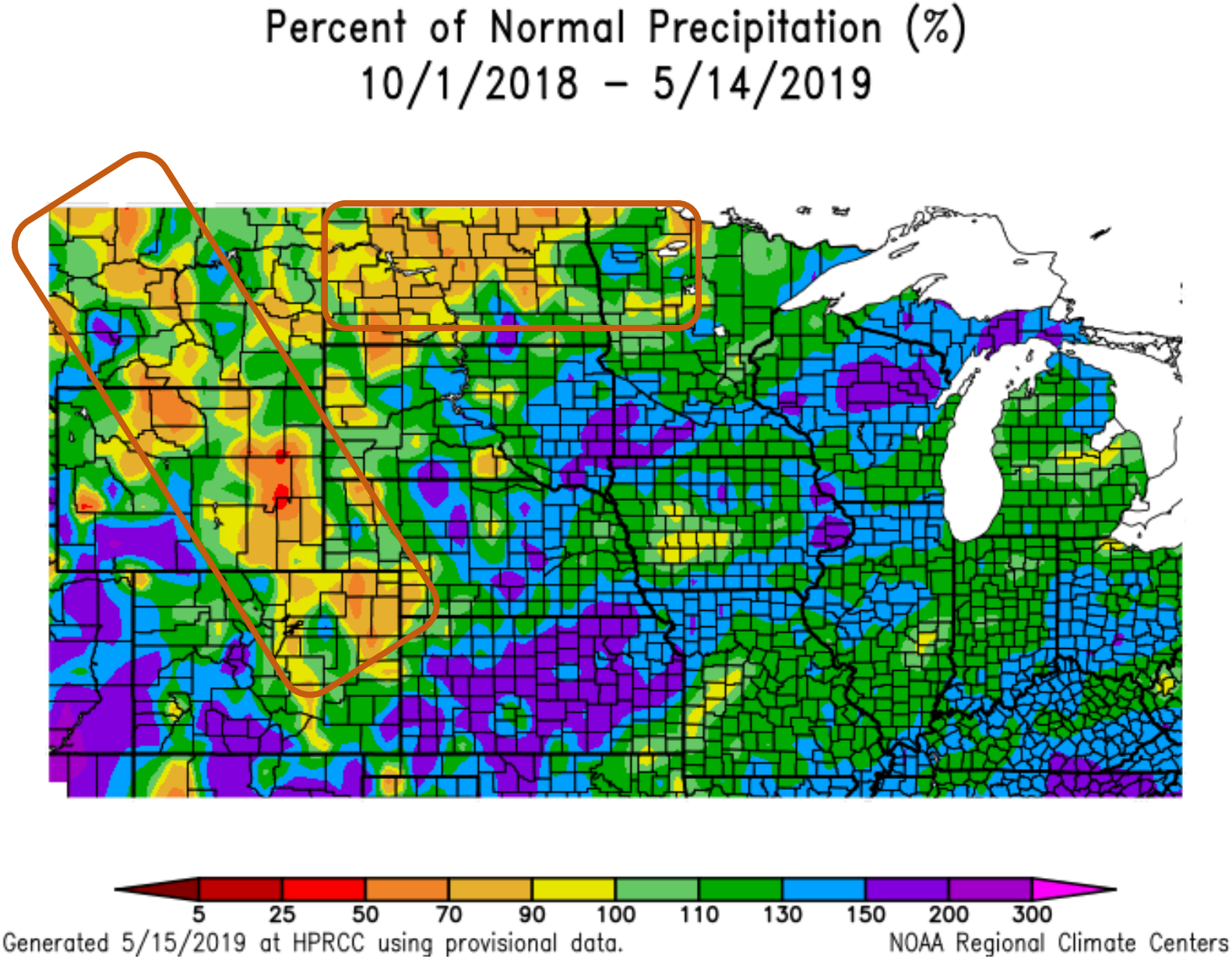
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

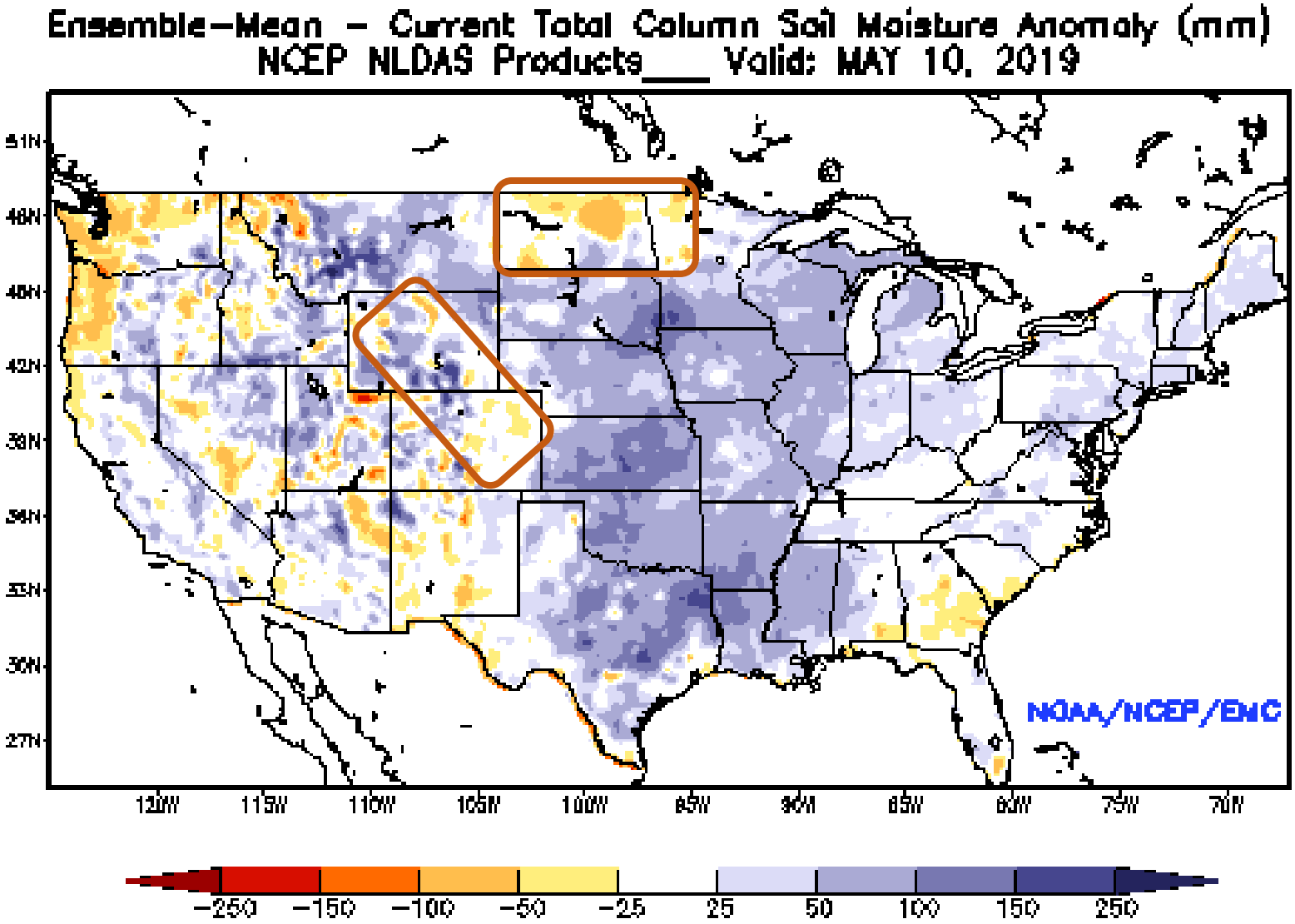
Curtis Riganti
National Drought Mitigation Center

droughtmonitor.unl.edu

Precipitation trend – Oct - present

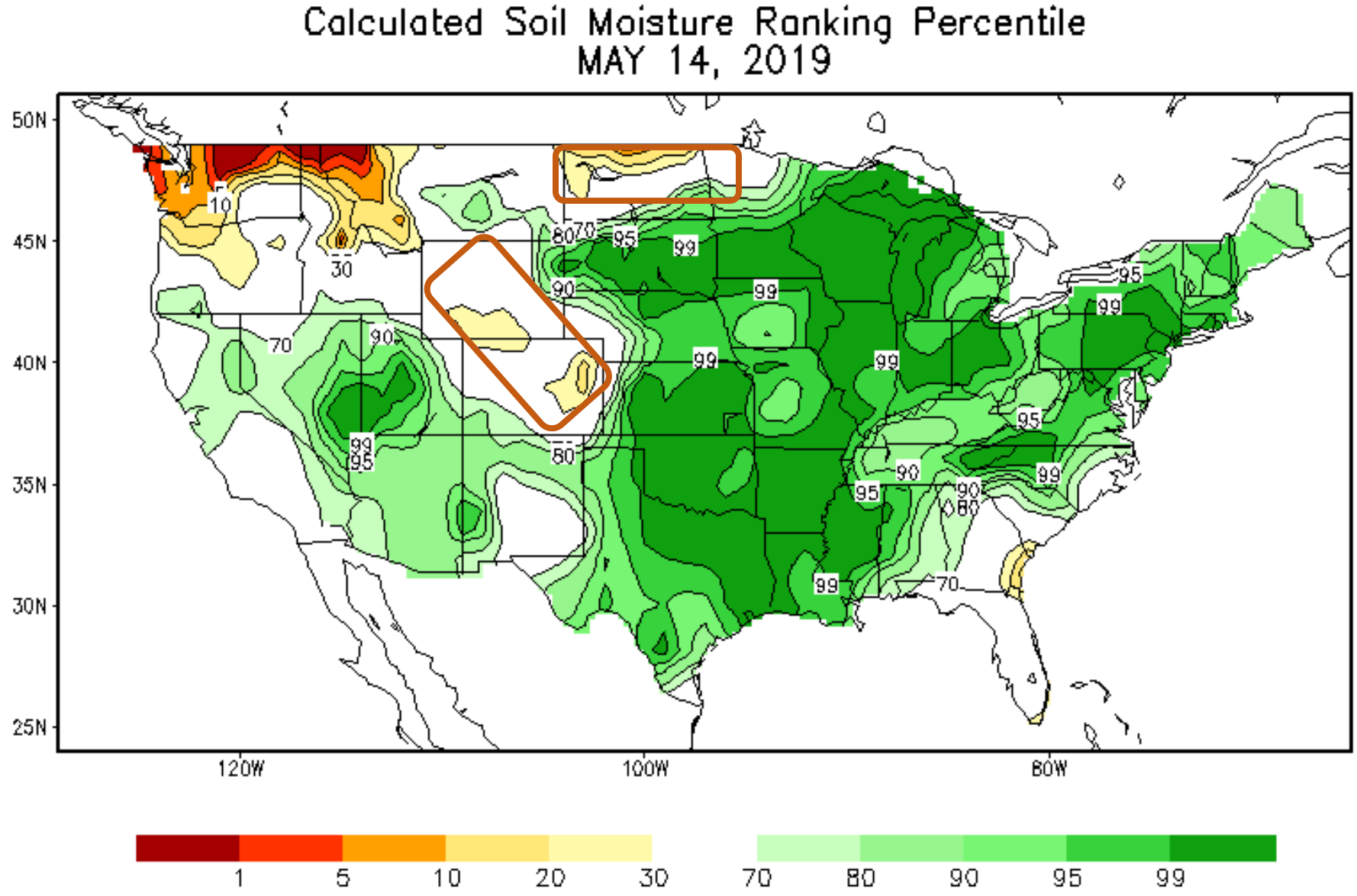


Soil water conditions



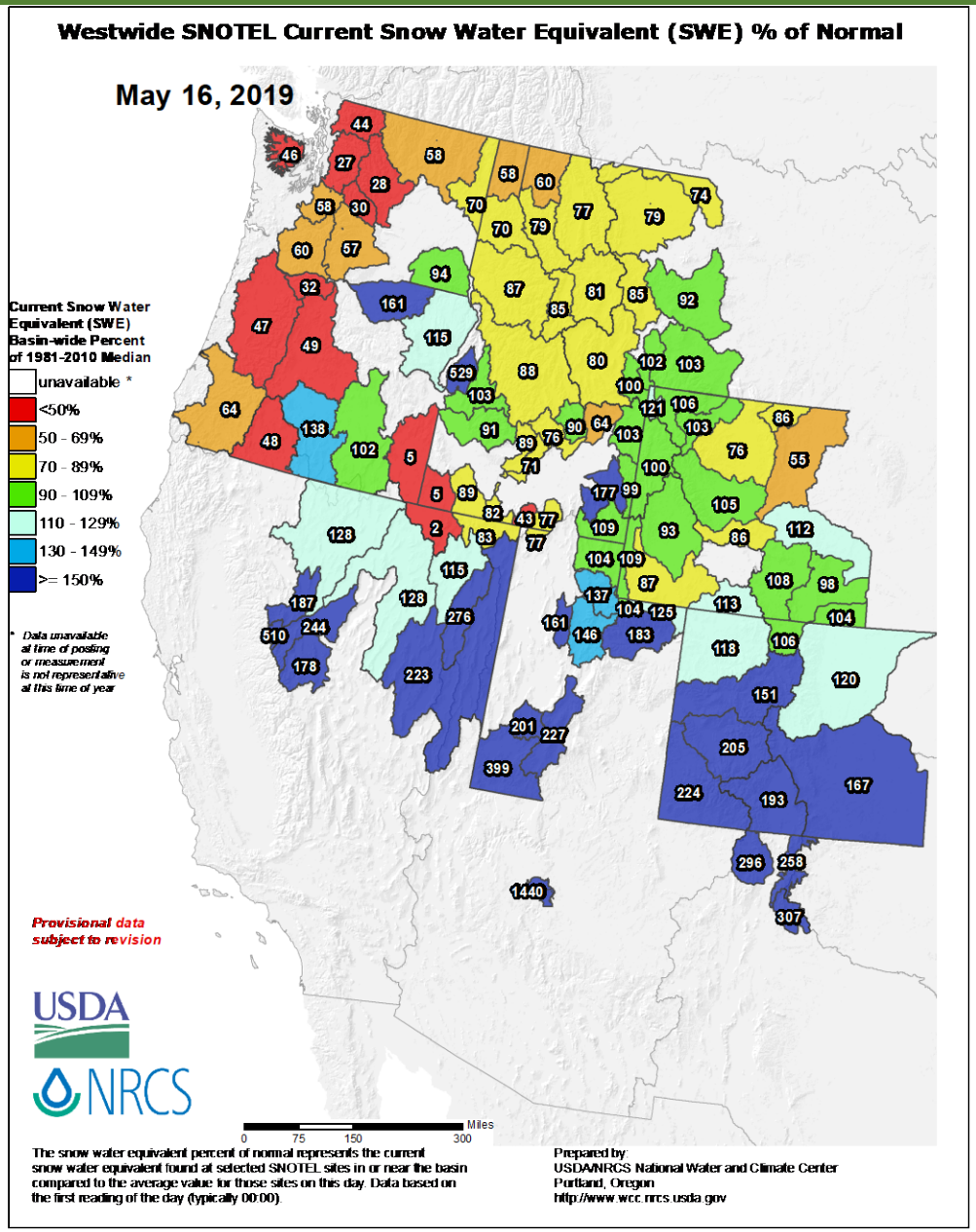
http://www.emc.ncep.noaa.gov/mmb/nldas/drought/

Soil water conditions

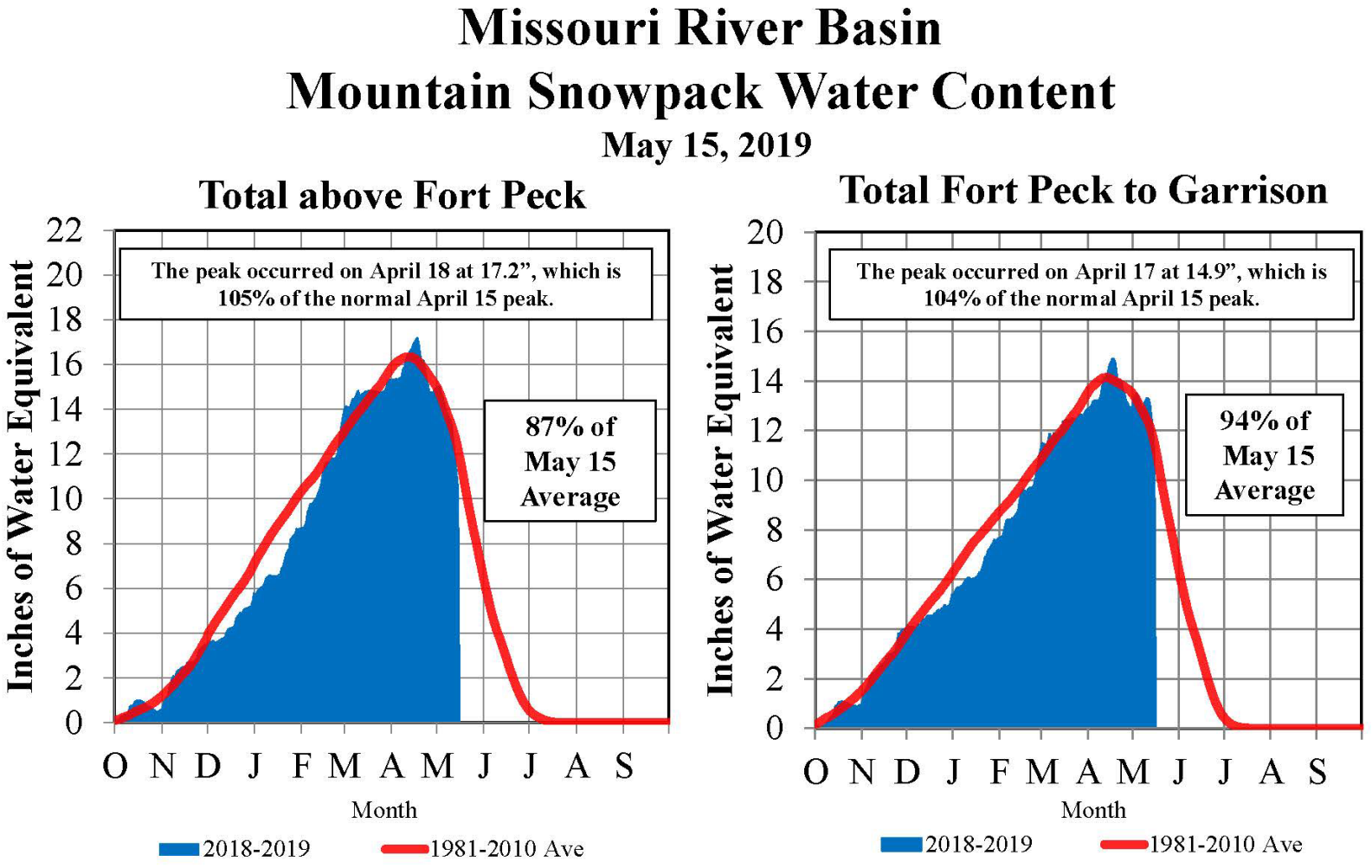


http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US /Soilmst/Soilmst.shtml#

Snowpack conditions



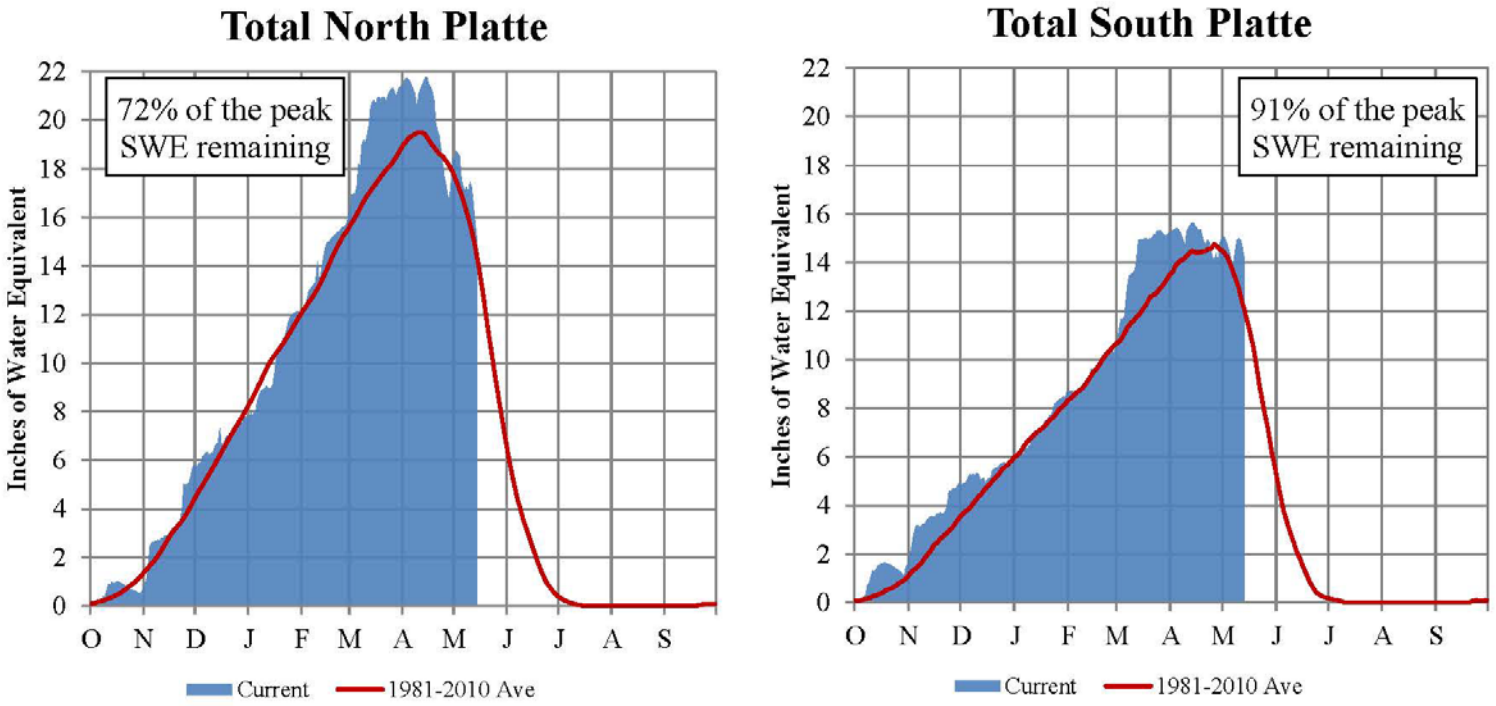
Mountain snowpack



The Missouri River Basin mountain snowpack normally peaks near April 15.

Mountain snowpack

Platte River Basin - Mountain Snowpack Water Content
Water Year 2018-2019
May 15, 2019



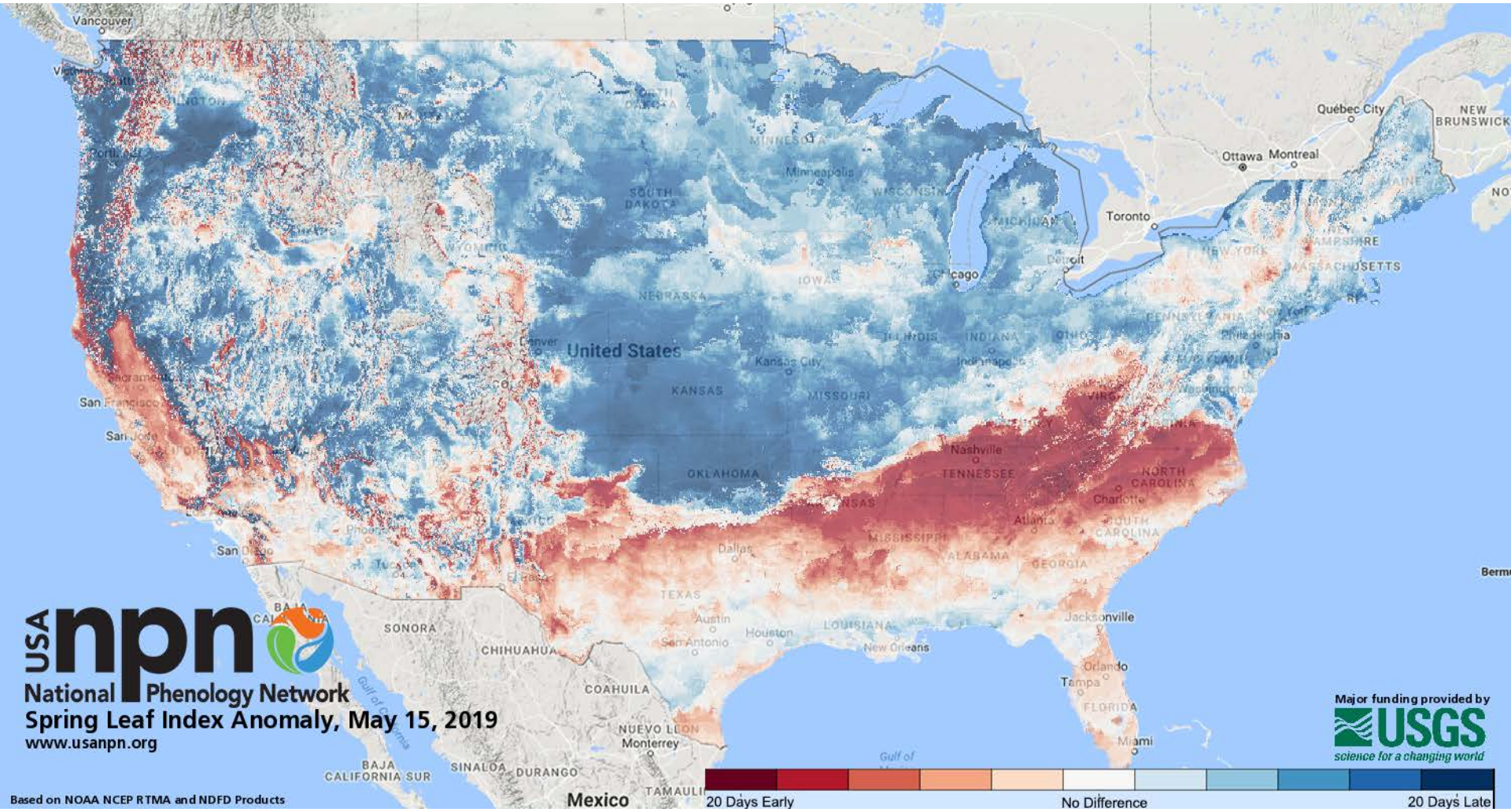
The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of May 14, 2019, the mountain snowpack SWE in the "Total North Platte" reach peaked at 21.8" and currently has 72% of the peak SWE remaining. The mountain snowpack SWE in the "Total South Platte" reach peaked at 15.7" and currently has 91% of the peak SWE remaining.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

Spring has sprung

- Leaf out was a few weeks later than average.



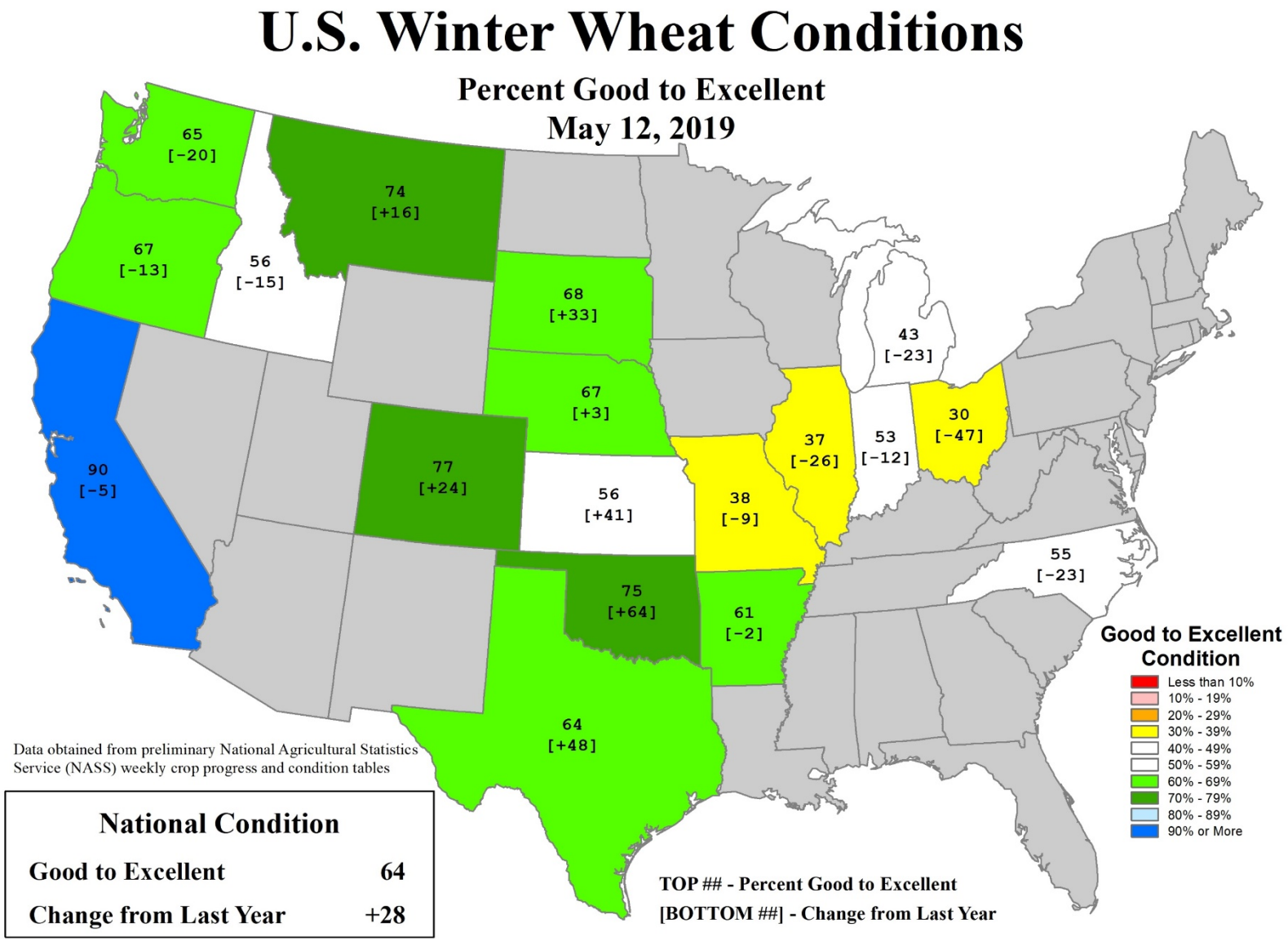
Impact highlights

- It’s wet.
- It’s really wet in a lot of places.
- Flooding remains a concern going forward.

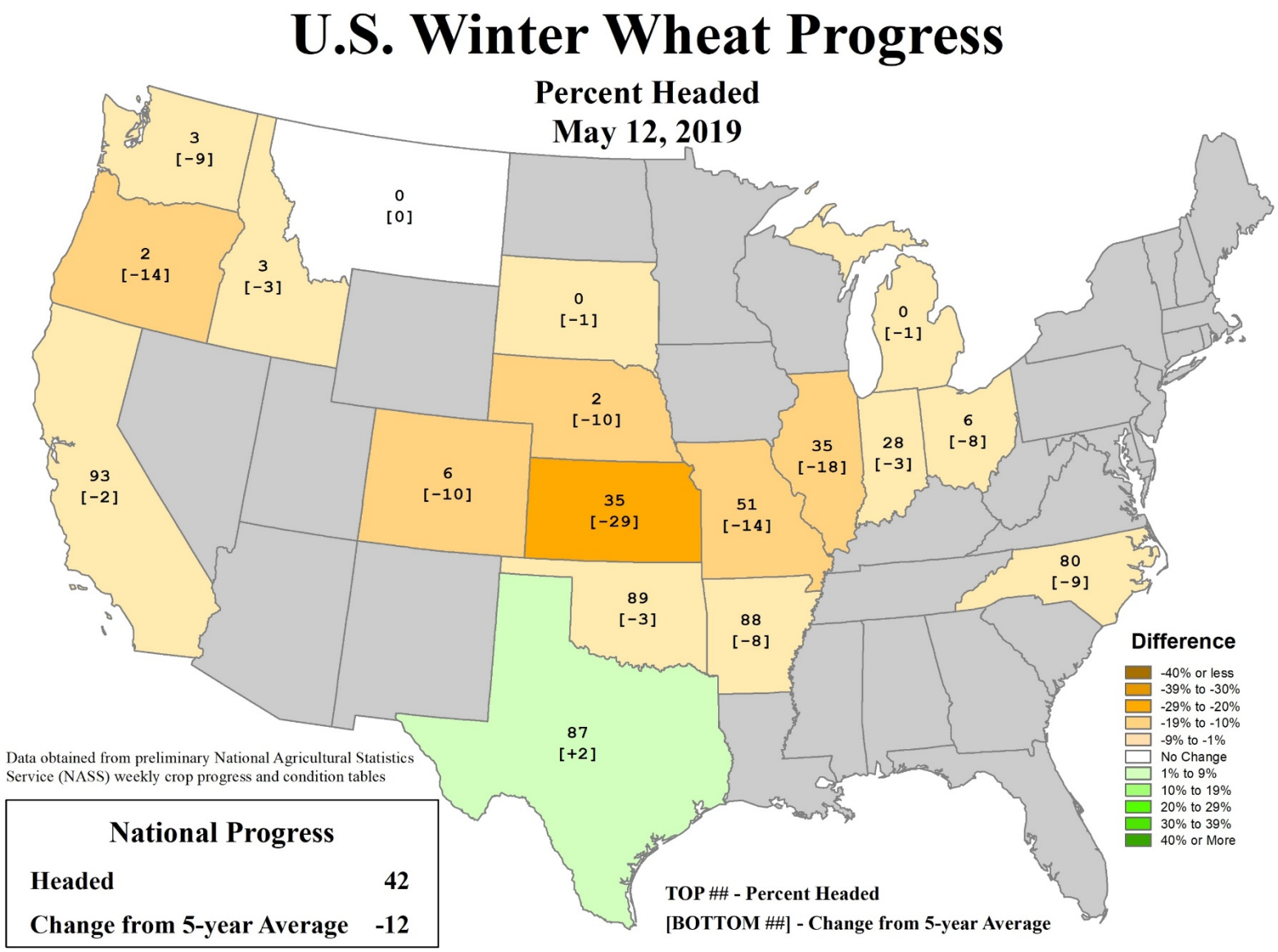
Southwest Iowa
Photo courtesy Doug Kluck

- Lake levels are high (MN, Great Lakes).
- Planting is delayed. Prevent plant is being discussed.
- Issues with low forage quantity and quality around the region.

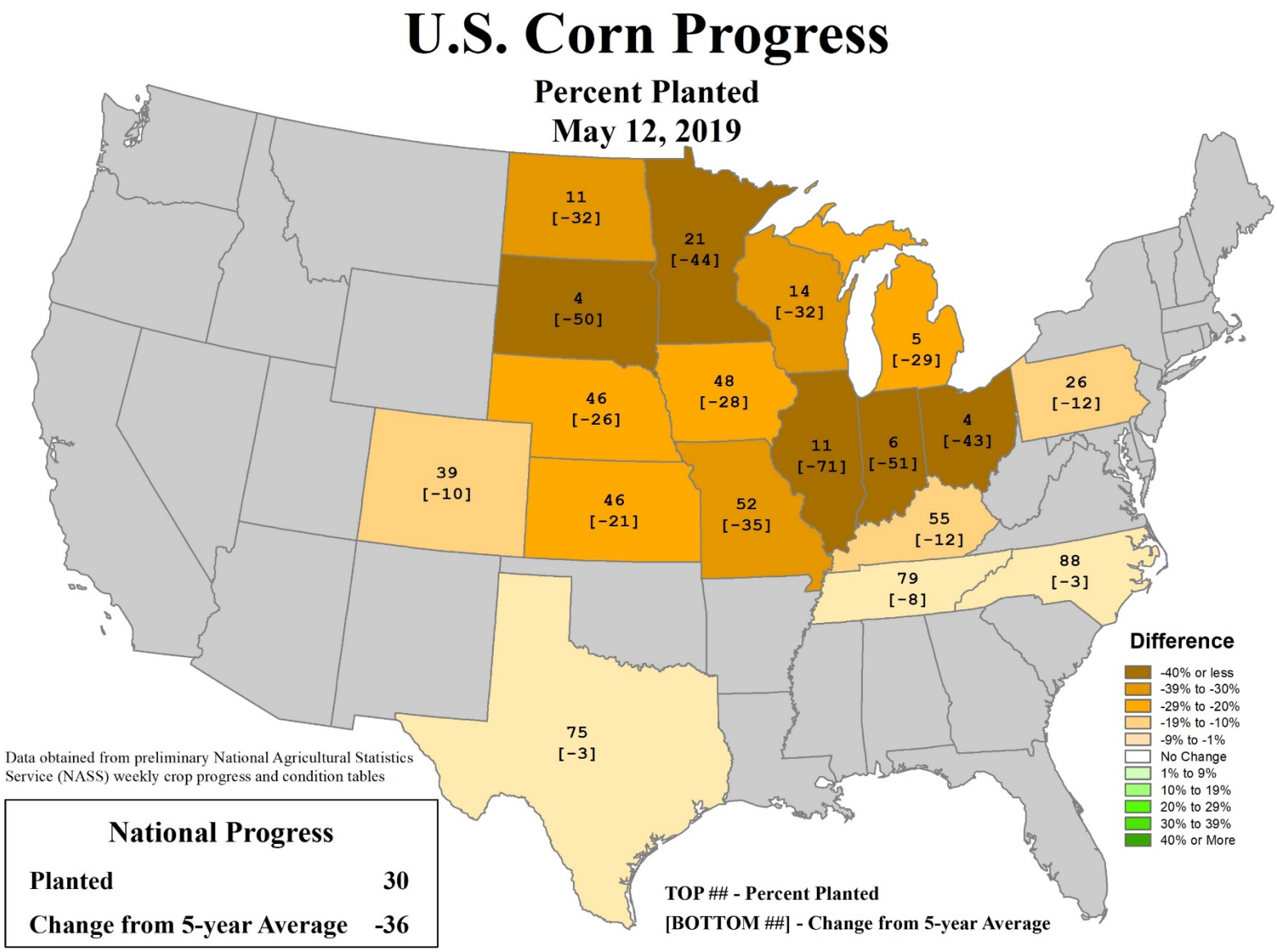
Winter Wheat condition



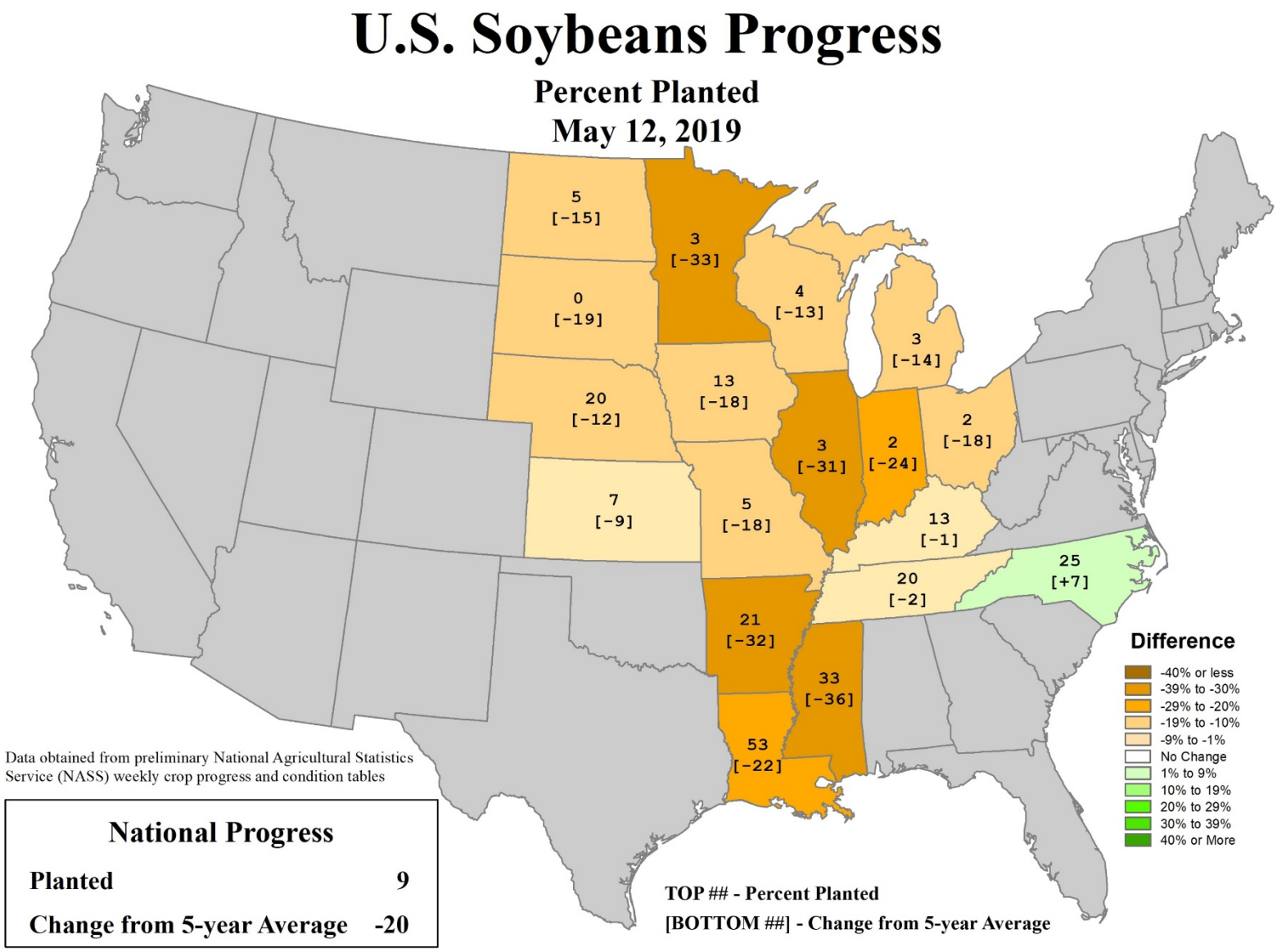
Winter Wheat progress



Planting progress – corn



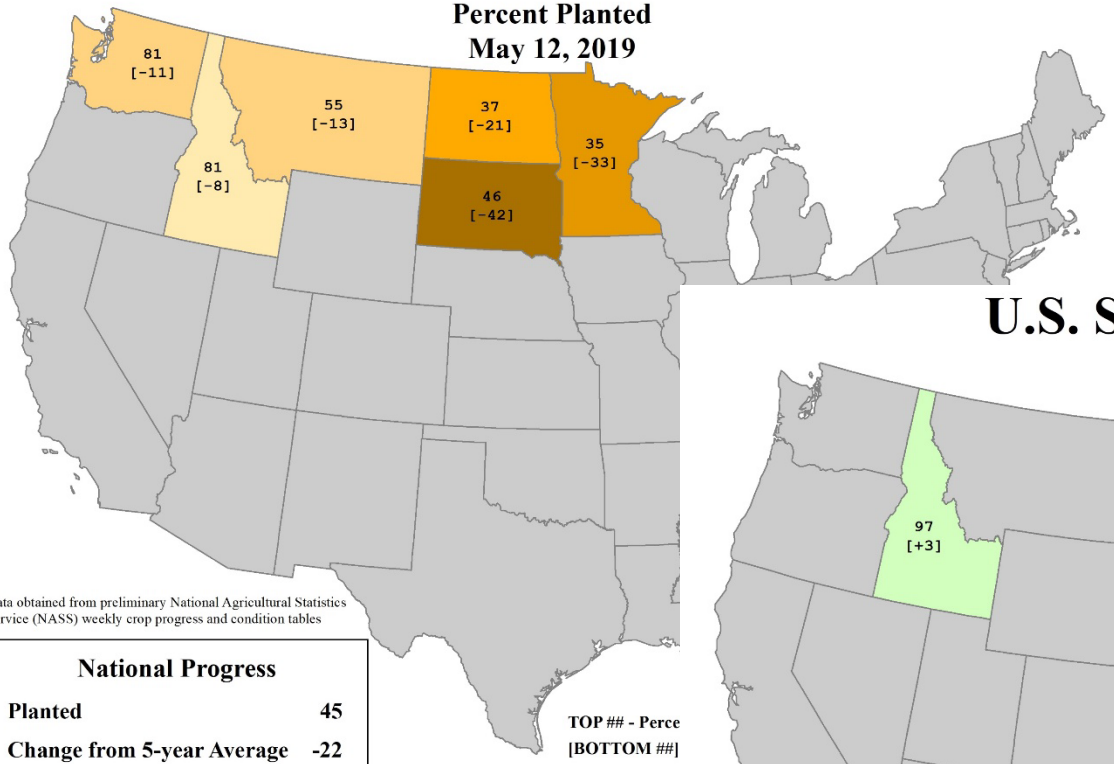
Planting progress – soybean



Planting progress

U.S. Spring Wheat Progress

Percent Planted
May 12, 2019



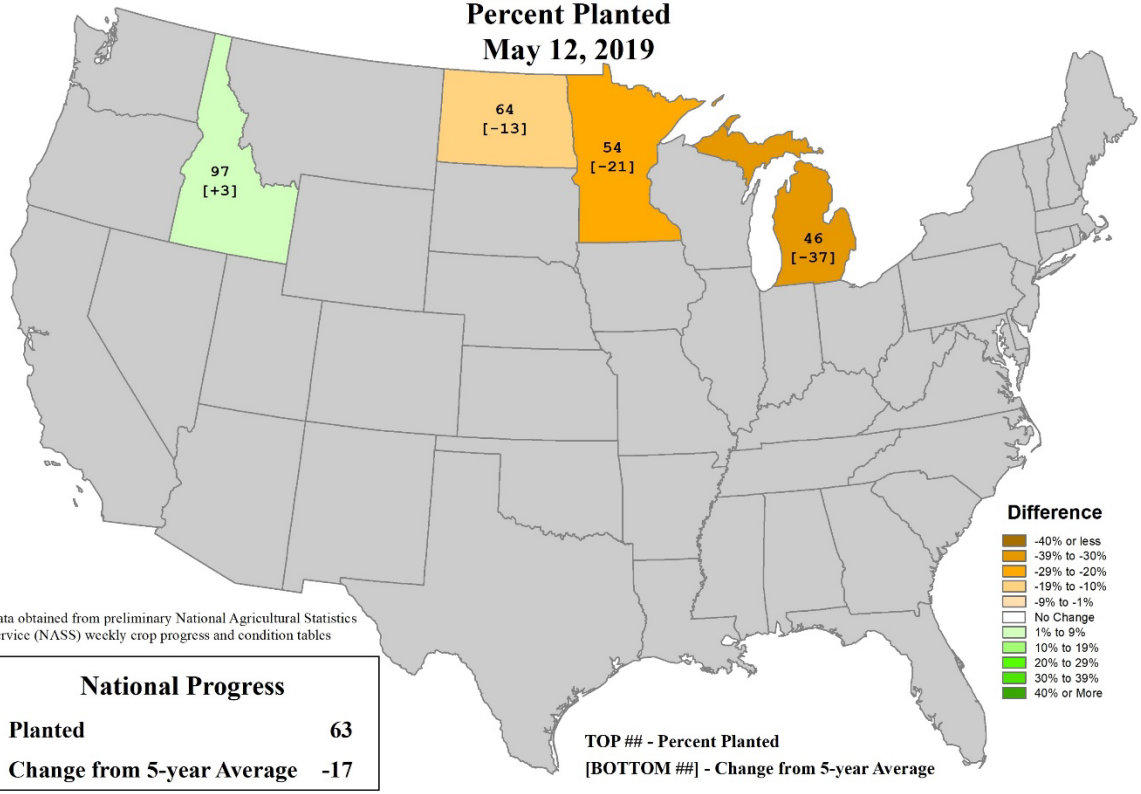
Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress	
Planted	45
Change from 5-year Average	-22

TOP ## - Perce
[BOTTOM ##]

U.S. Sugarbeets Progress

Percent Planted
May 12, 2019



Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

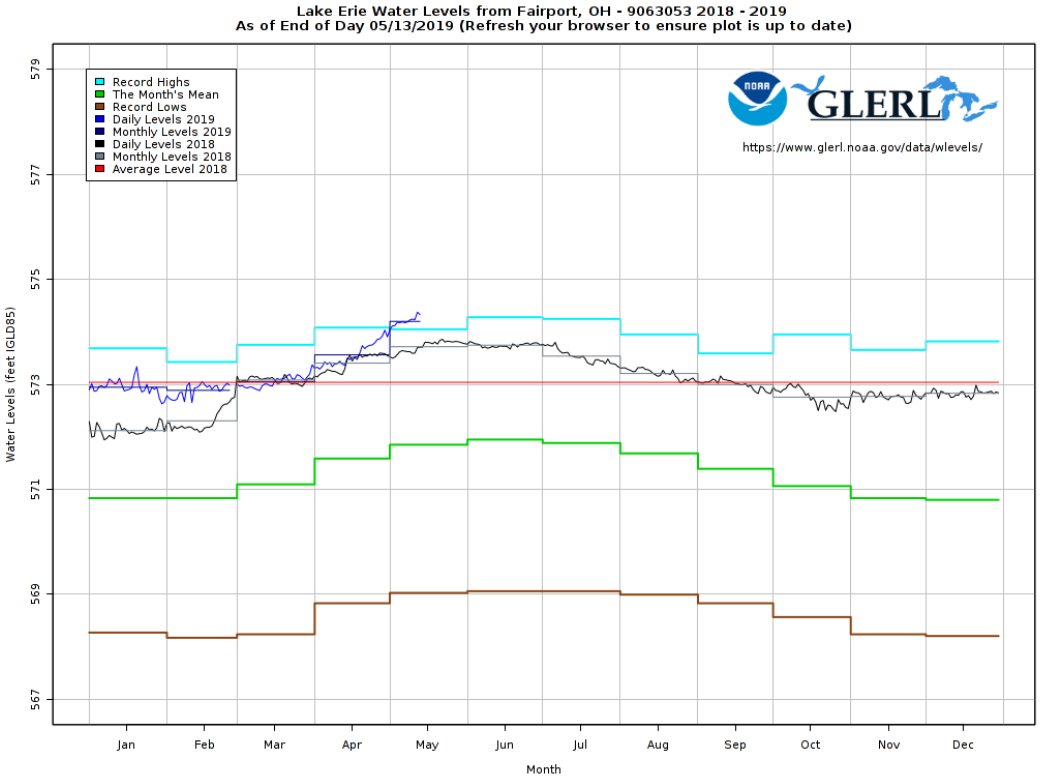
National Progress	
Planted	63
Change from 5-year Average	-17

TOP ## - Percent Planted
[BOTTOM ##] - Change from 5-year Average

Impacts around the region

Great Lakes levels are above/near record high

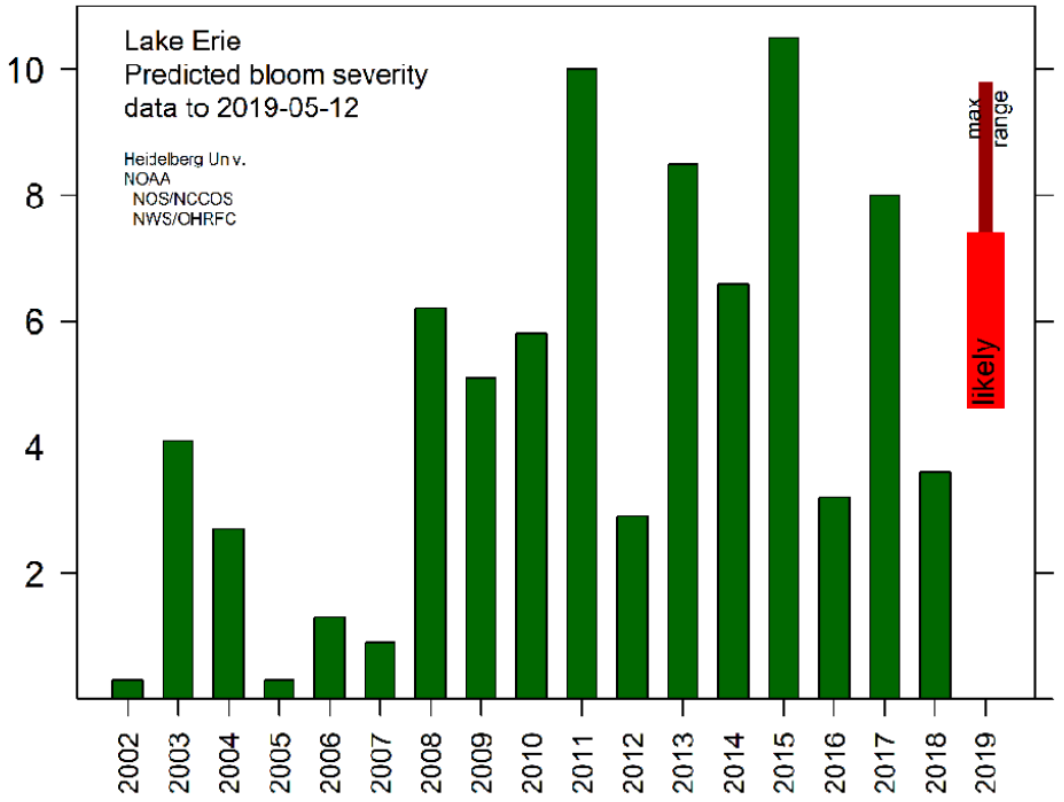
Impacts → increased flooding, erosion.



Impacts around the region

Harmful algal bloom

Heavy spring rains and large phosphorus loads projected to cause harmful algal bloom for Lake Erie.

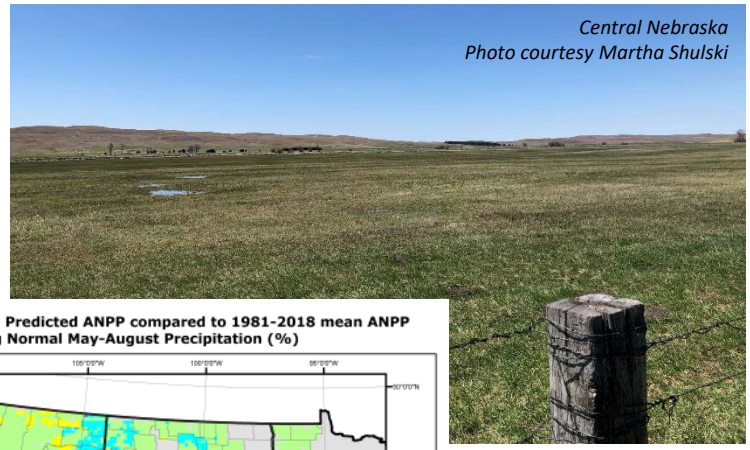


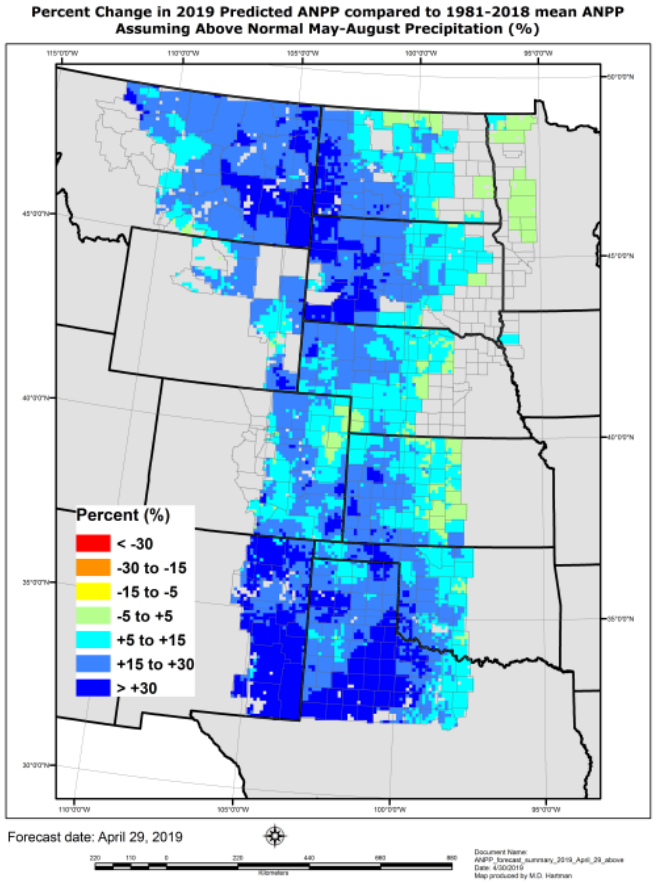
True color image taken May 14, 2019.

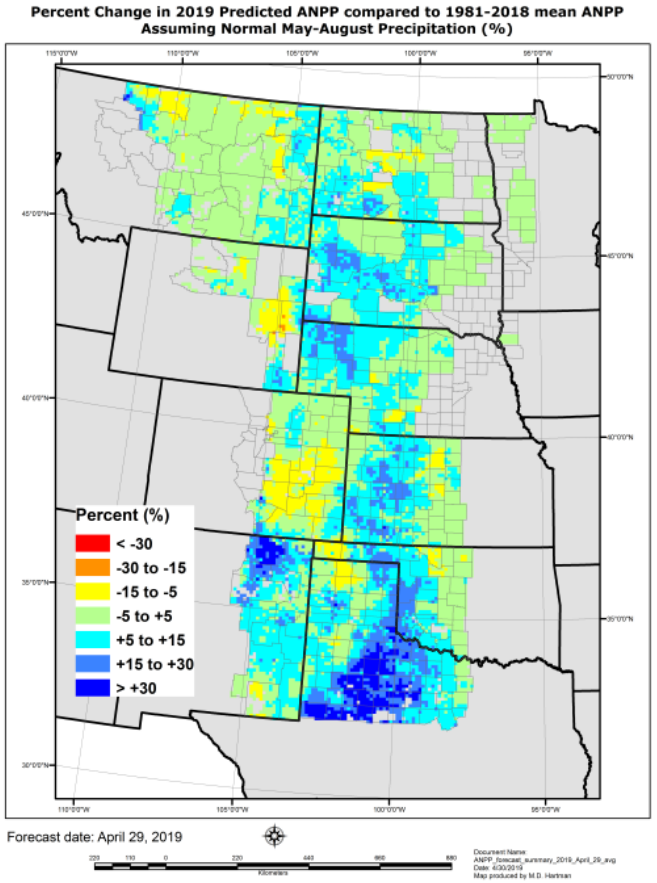
https://nccospublicstor.blob.core.windows.net/hab-data/bulletins/lake-erie/2019/

Impact highlights – the silver linings

- Grass production generally going well.
- Good Rocky Mountain snowpack that is filling reservoirs.

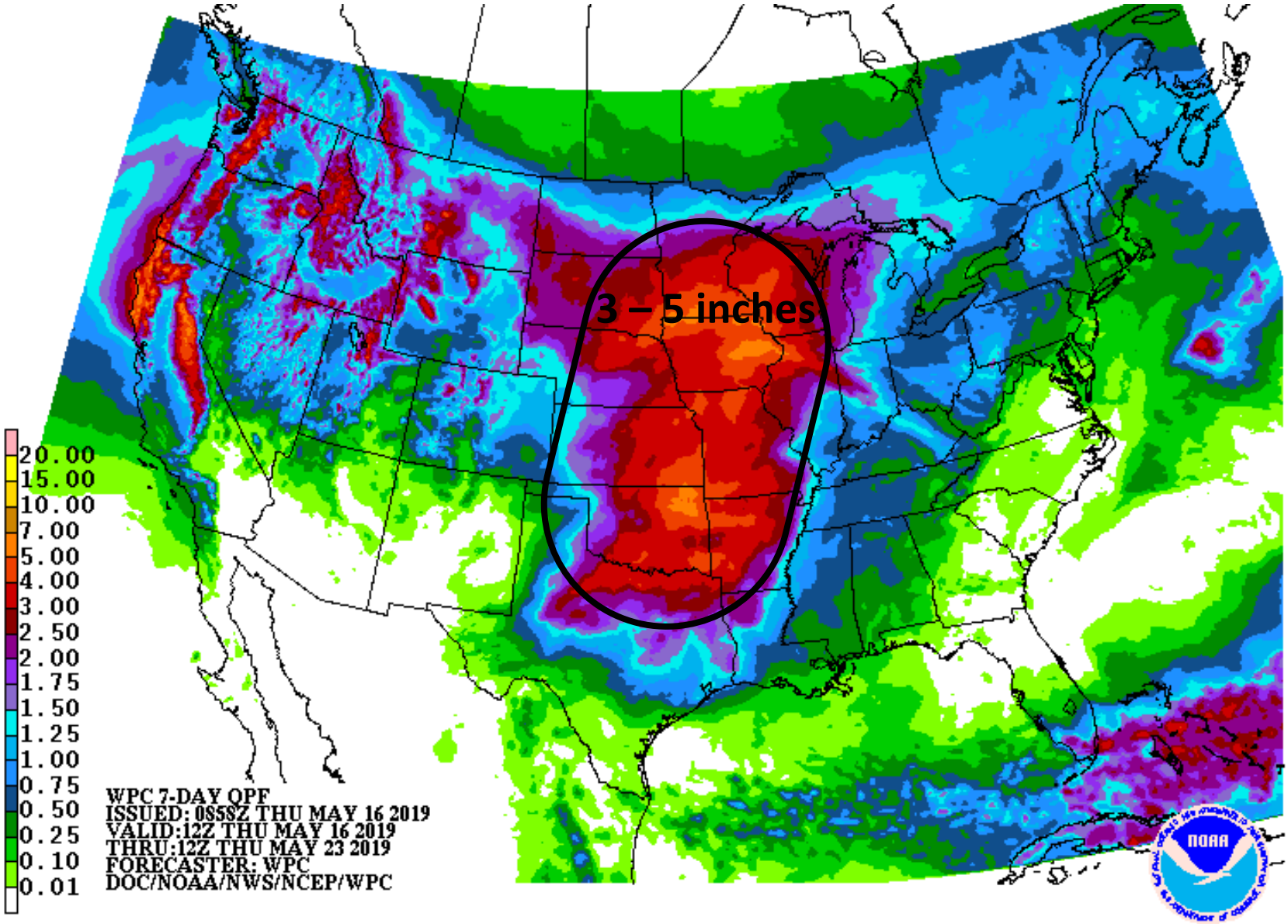






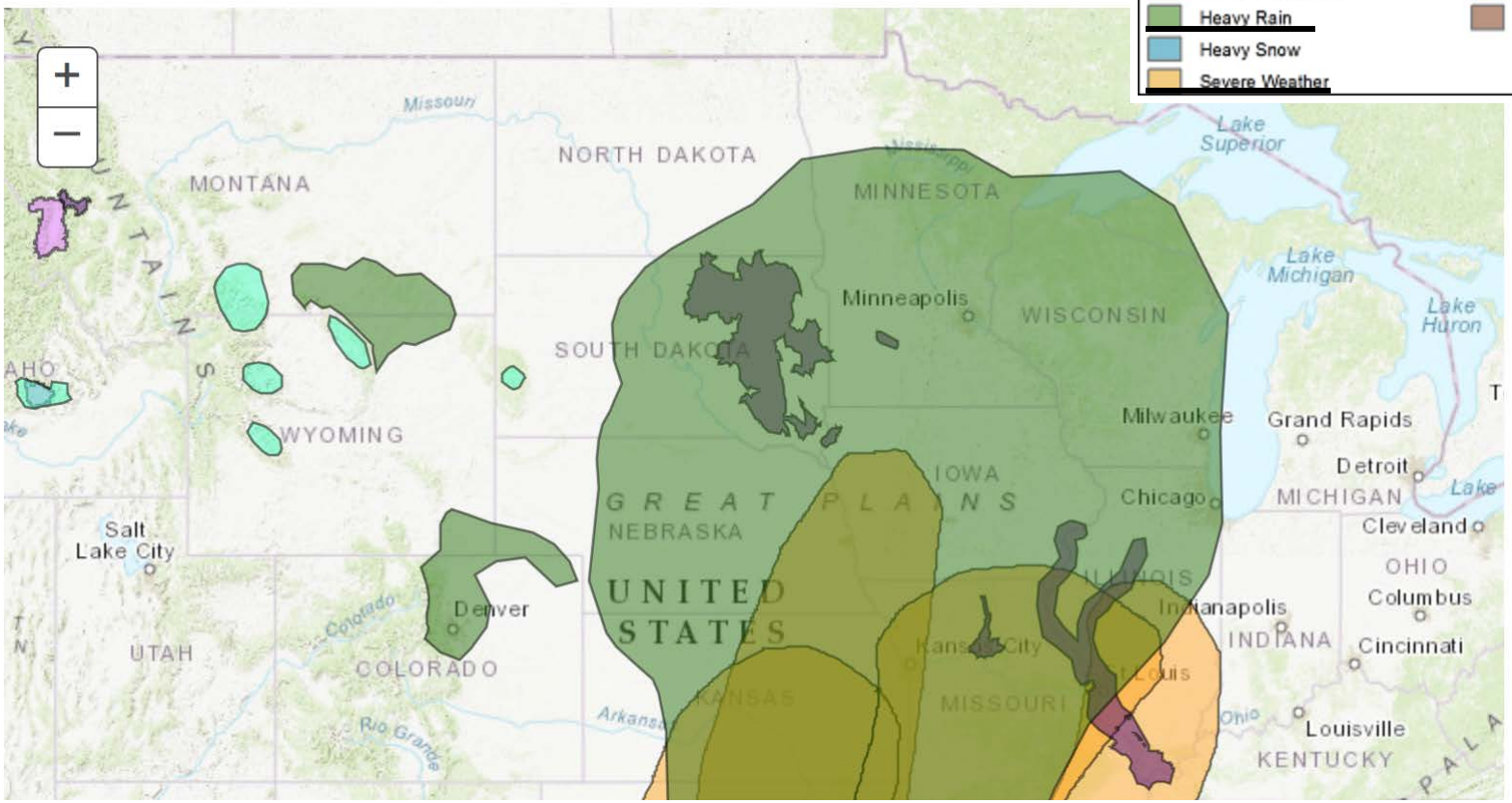
http://grasscast.agsci.colostate.edu/

Precipitation forecast for the next week



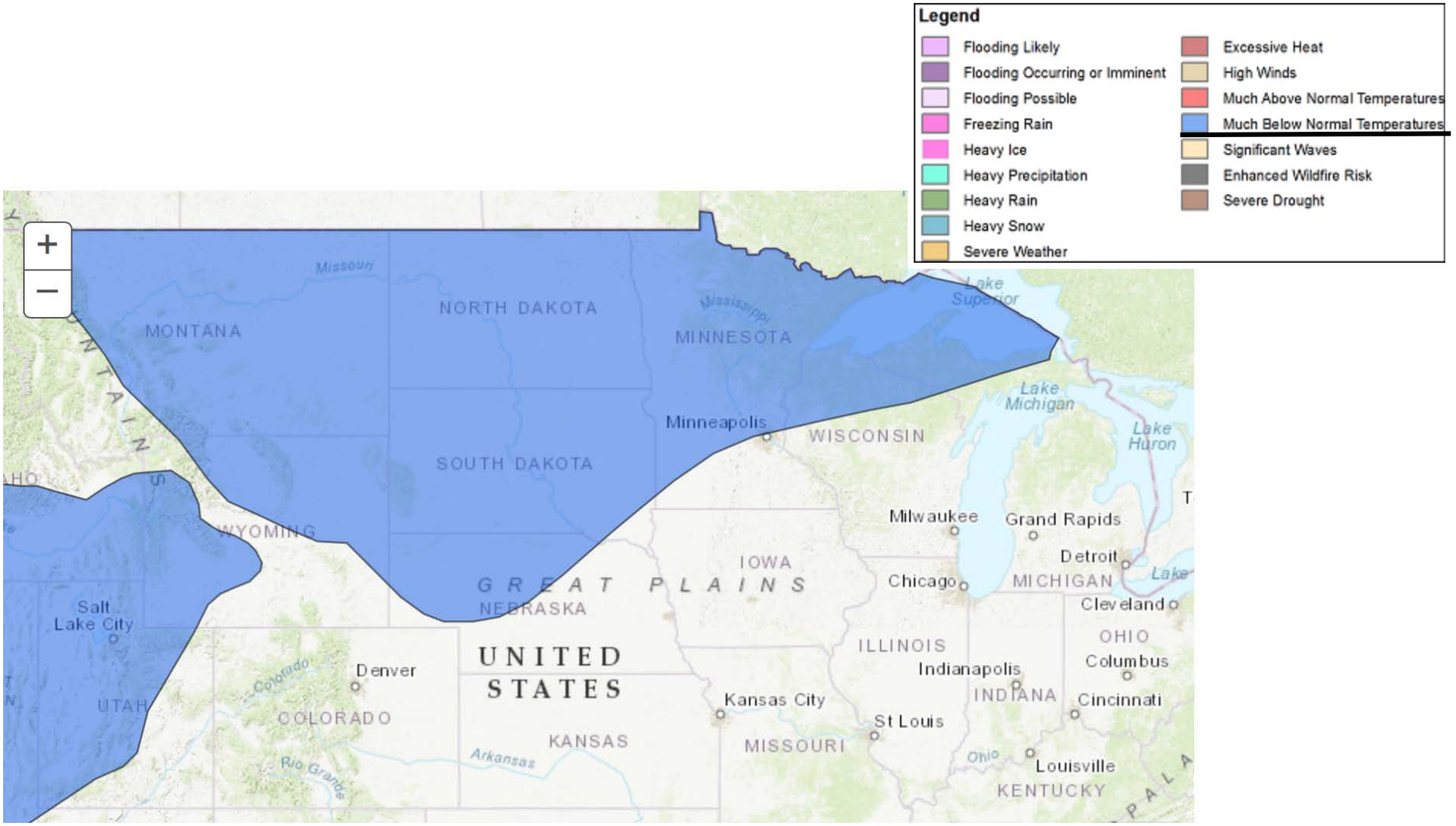
http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml

Hazards outlook, May 18-22



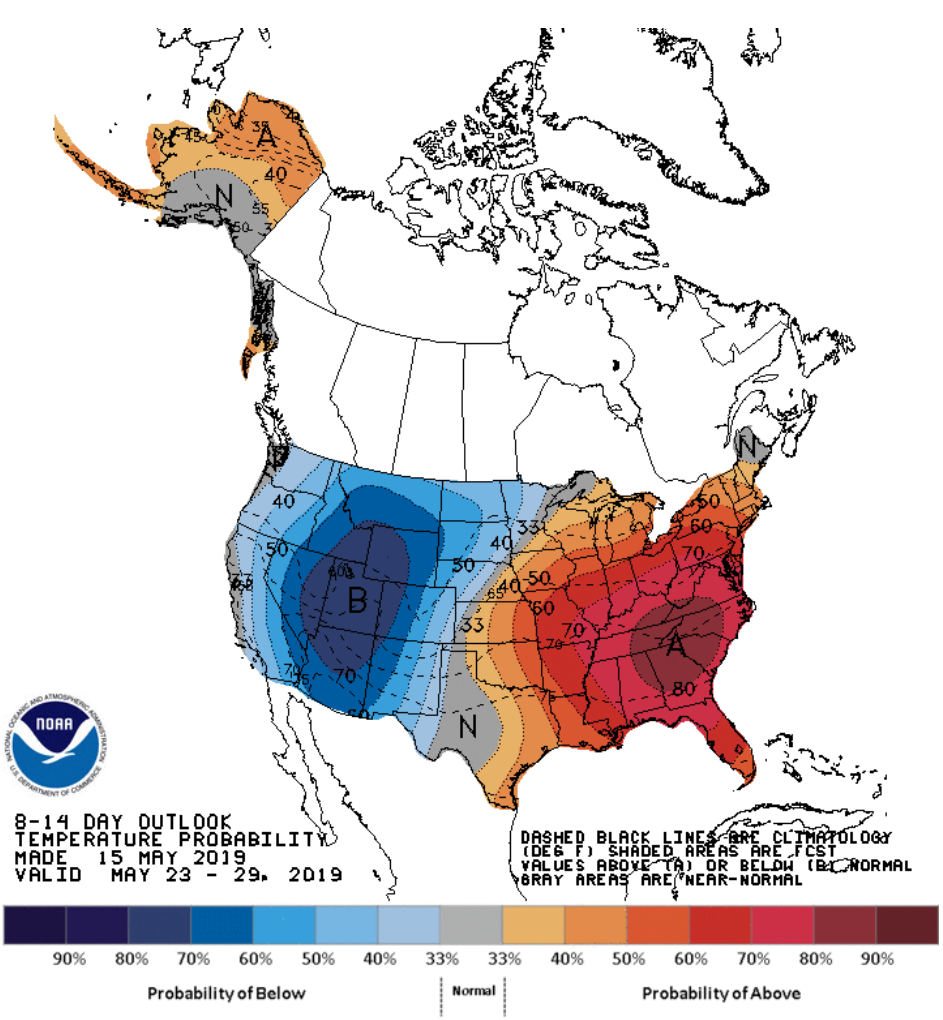
https://www.wpc.ncep.noaa.gov/threats/threats.php

Hazards outlook, May 18-22

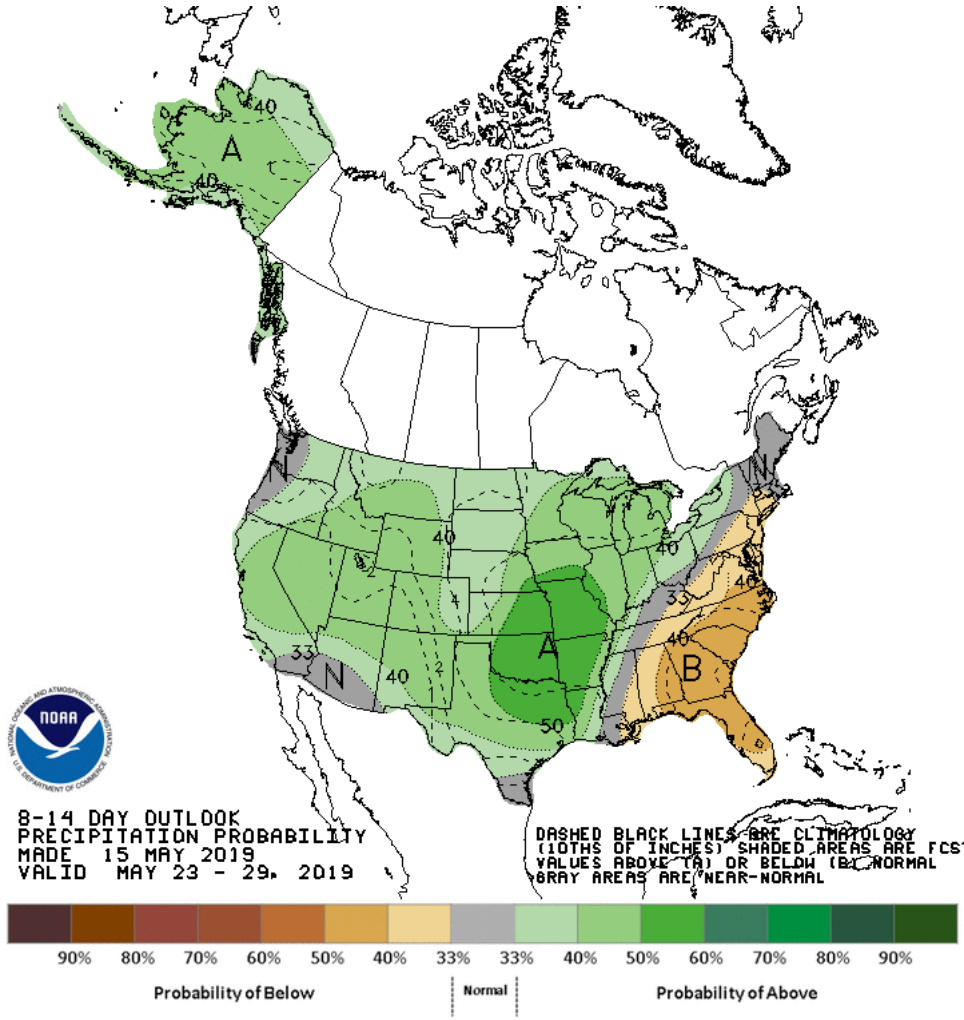


https://www.wpc.ncep.noaa.gov/threats/threats.php

8-14 Day outlook for May 23-29



Temperature

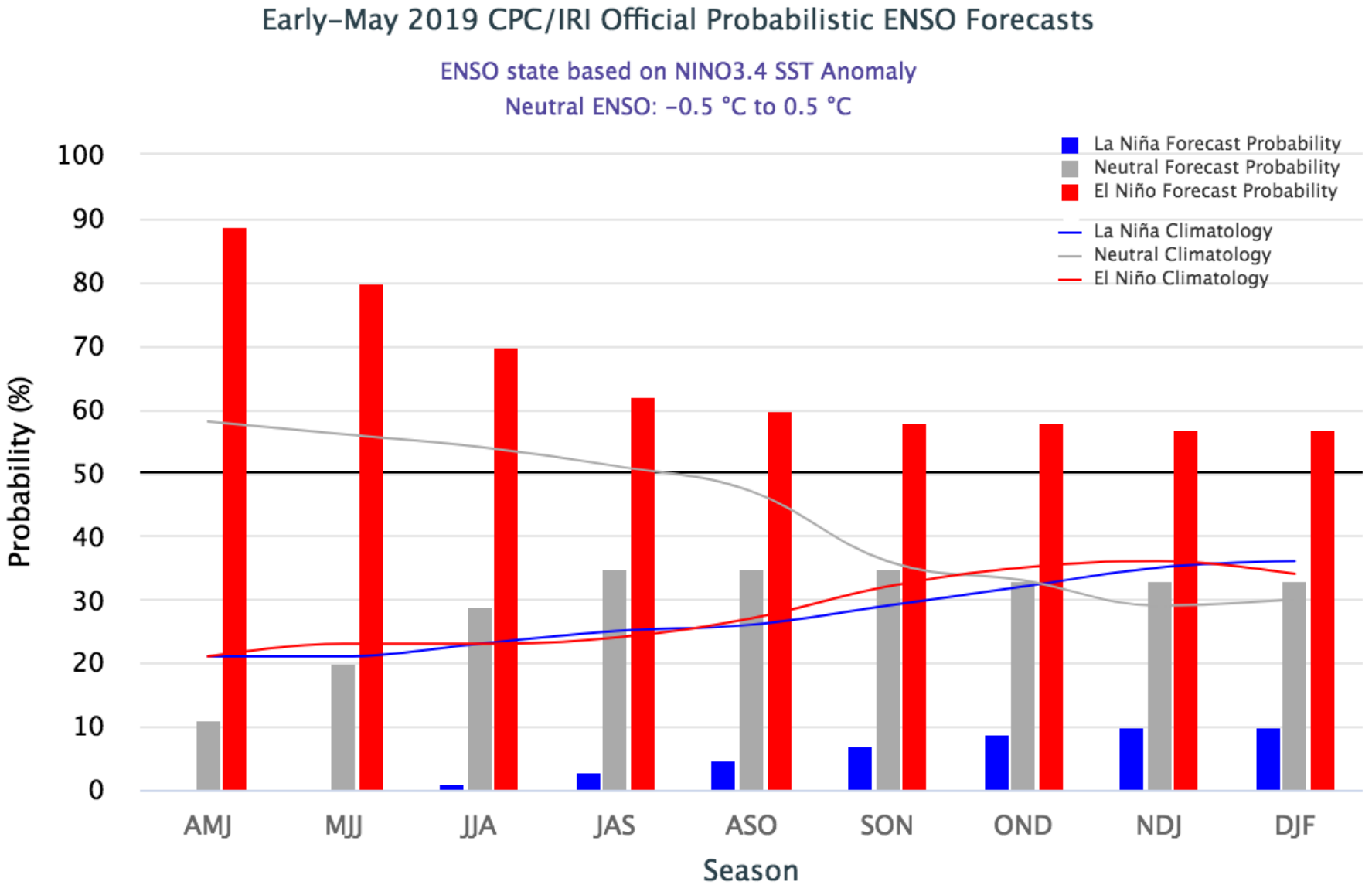


Precipitation

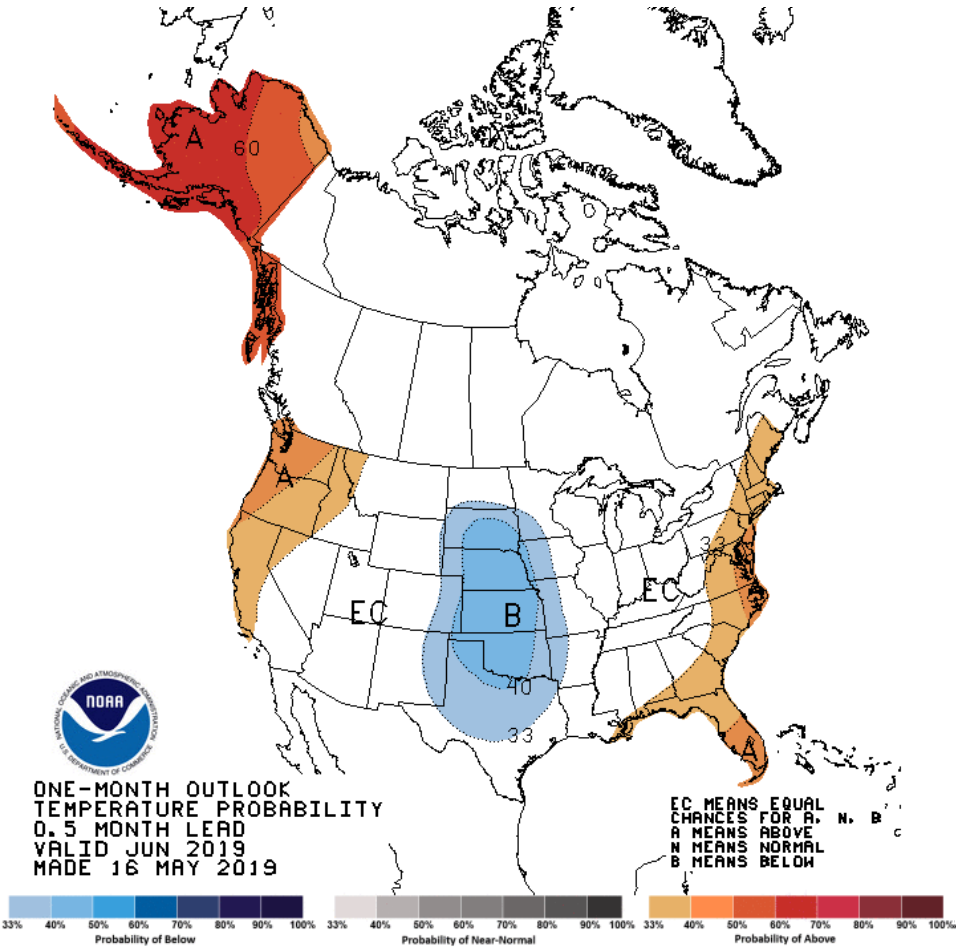
http://www.cpc.ncep.noaa.gov/

El Niño

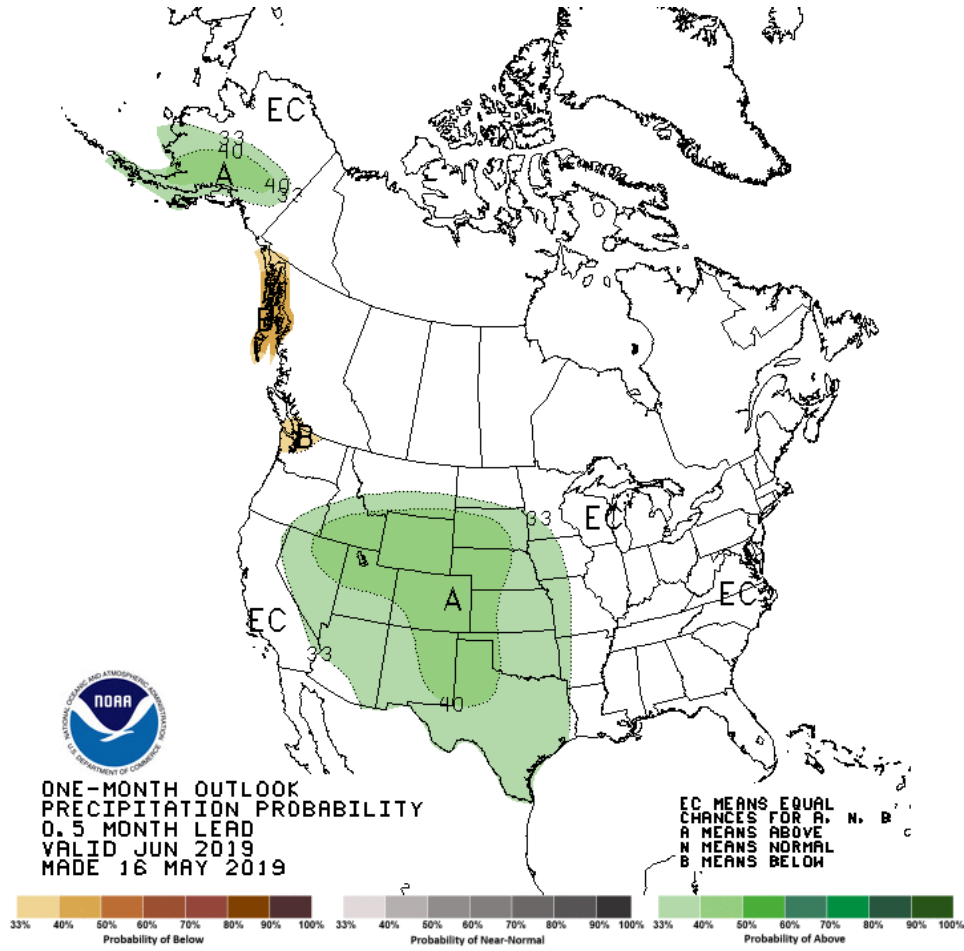
- El Niño is most likely to continue through winter.



June outlook



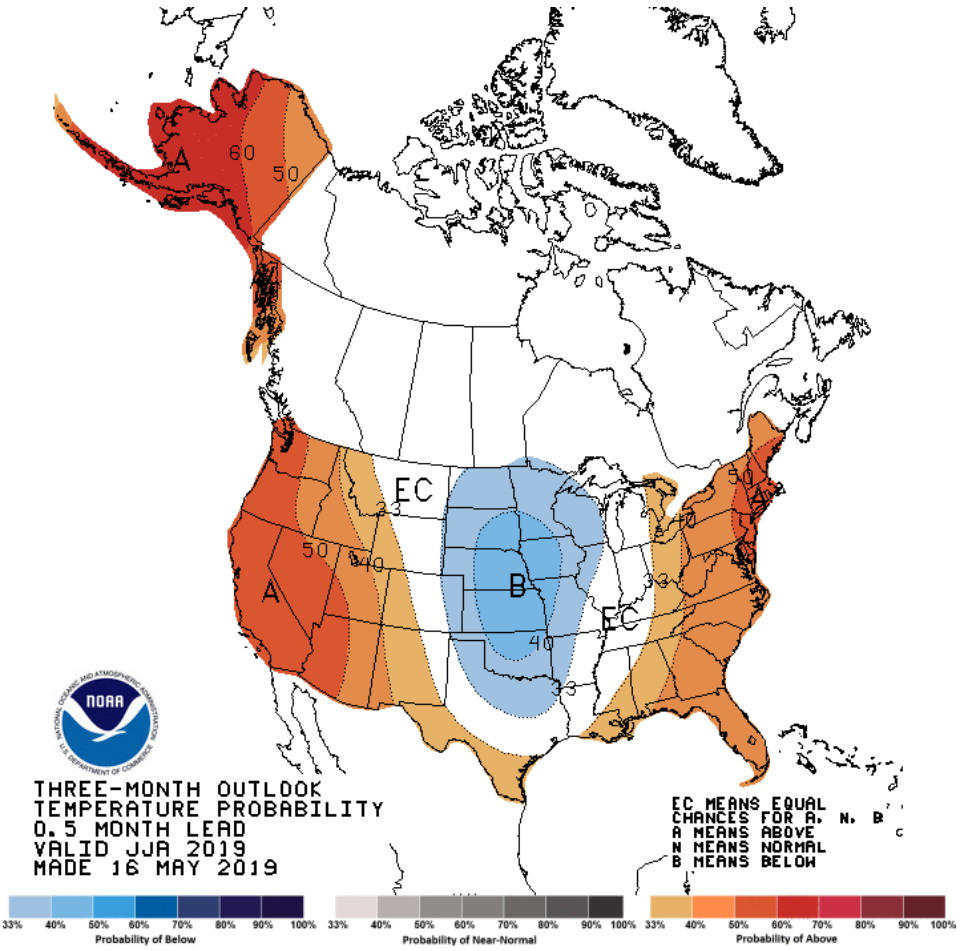
Temperature



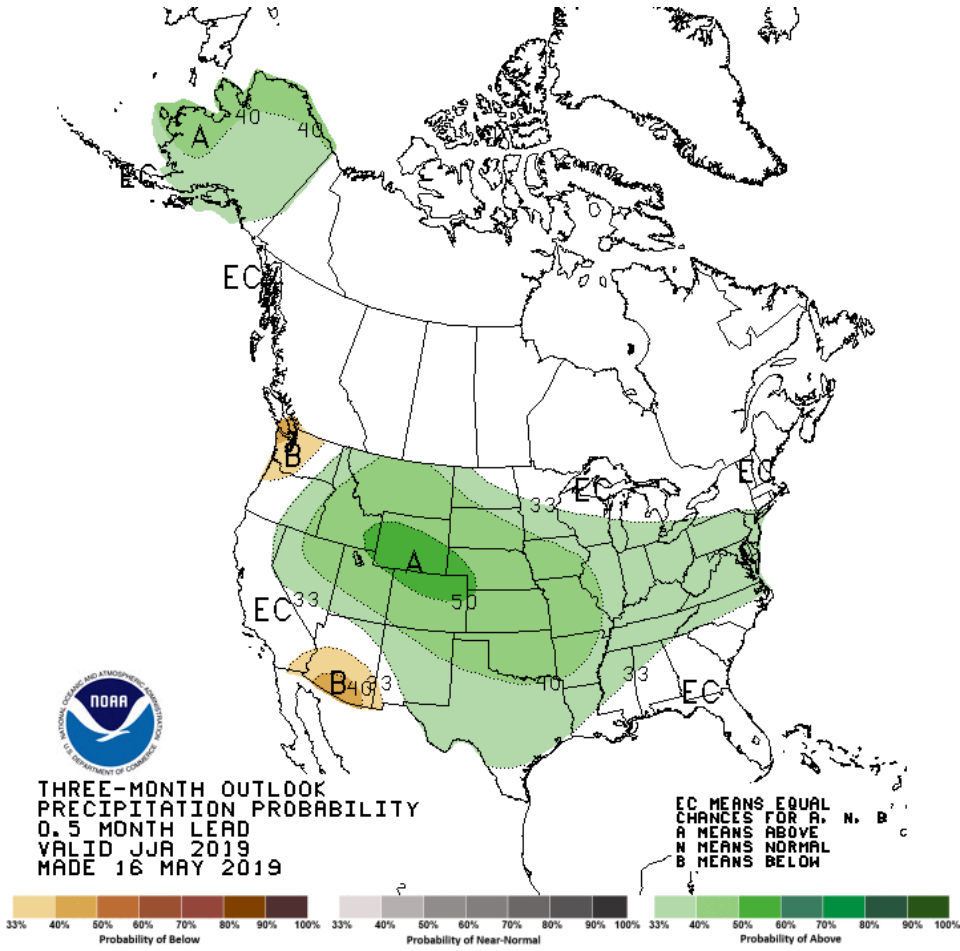
Precipitation

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

Jun-Jul-Aug outlook



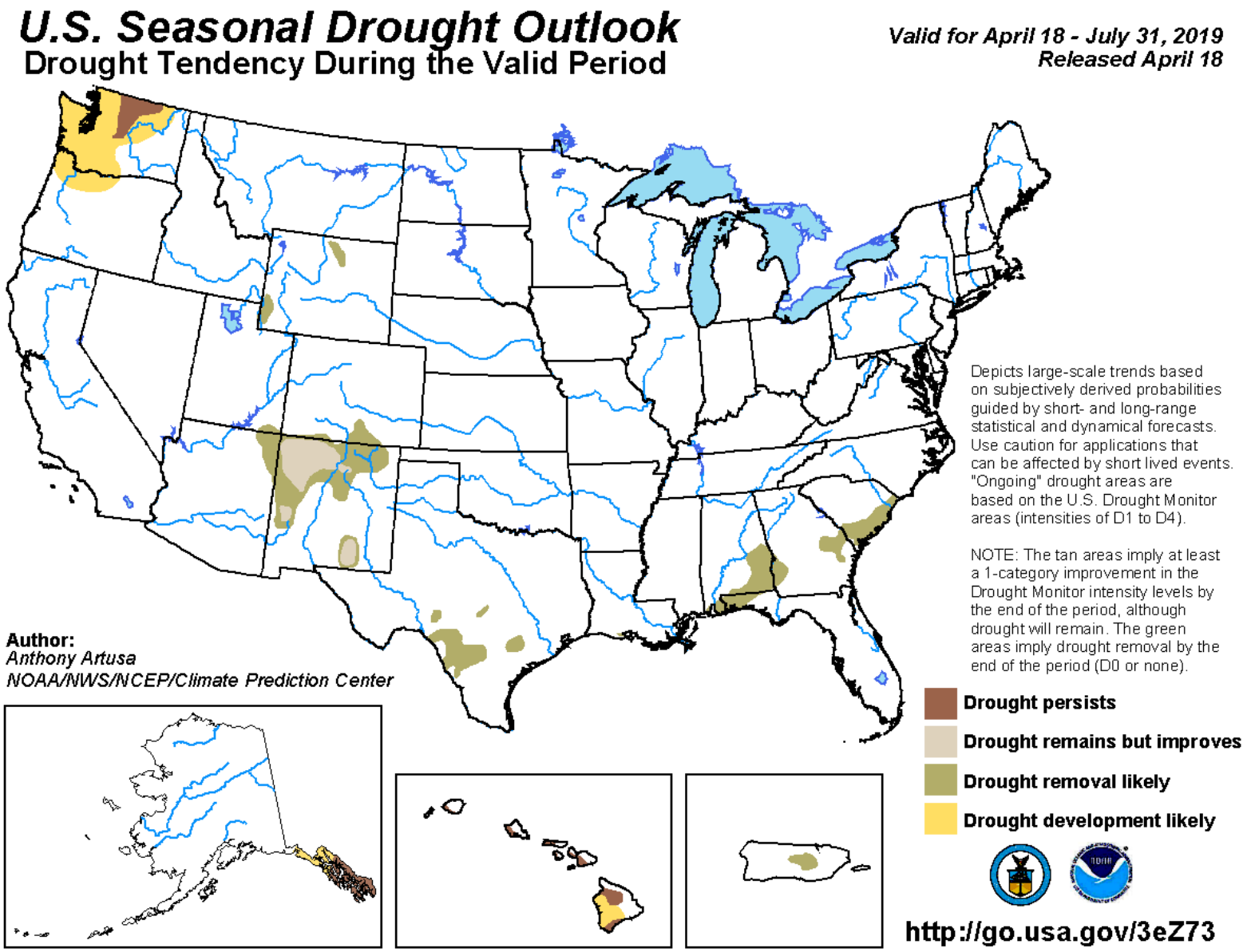
Temperature



Precipitation

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

Drought outlook



Summary

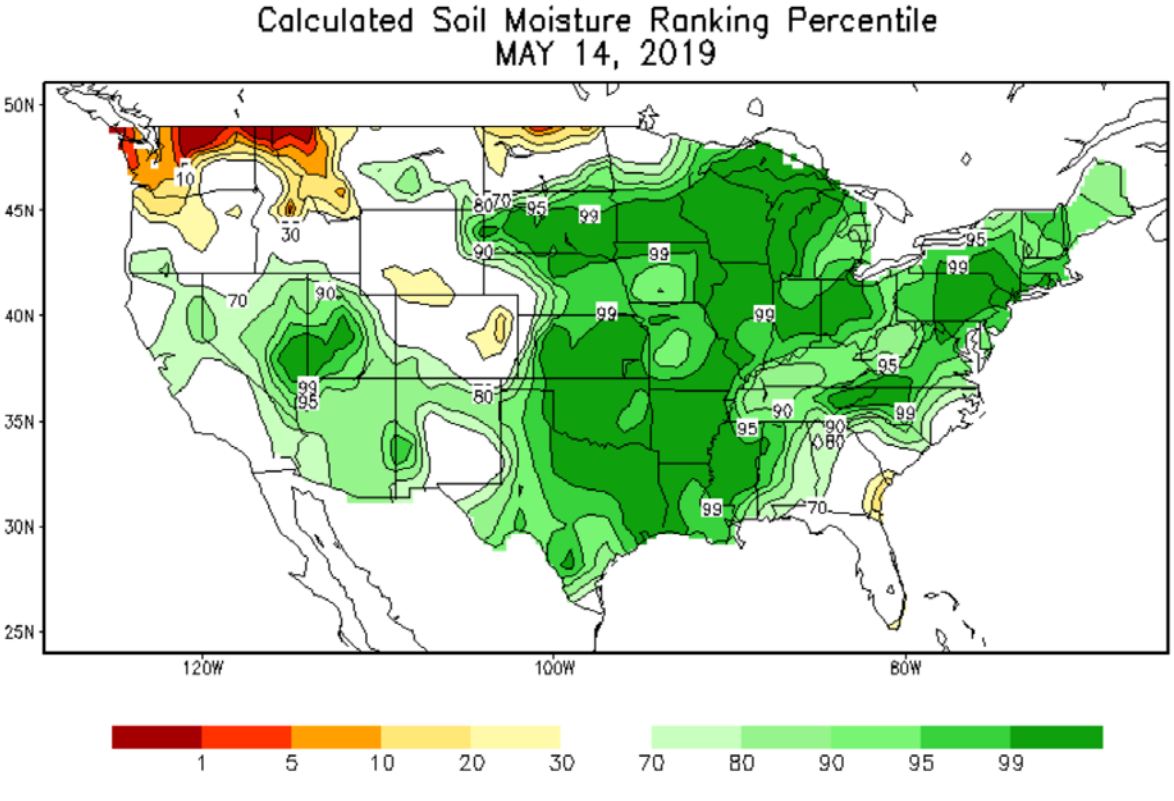
- Planting and development is well behind schedule for all crops.

- Missouri River Basin runoff in upper reaches predicted to be third highest in 120 years.

- Short and long-term outlook are not favorable for alleviating the current agricultural and hydrological impacts.
  - Significant precipitation is expected in the upcoming week and will fall on wet/saturated soils.
  - Likelihood for cooler, wetter summer and possible impacts to late planted crops, prevent plant scenario, seed adjustments.

Current Soil Conditions
As of late May 15th

- **Much of the region is in the top 1-10 percent rank**
- **This makes the region vulnerable to future heavy rainfall and runoff conditions**
- **Studies indicate rainfall recycling plays an important role in the warm season. This is where rainfall evaporates and re-rains on itself**



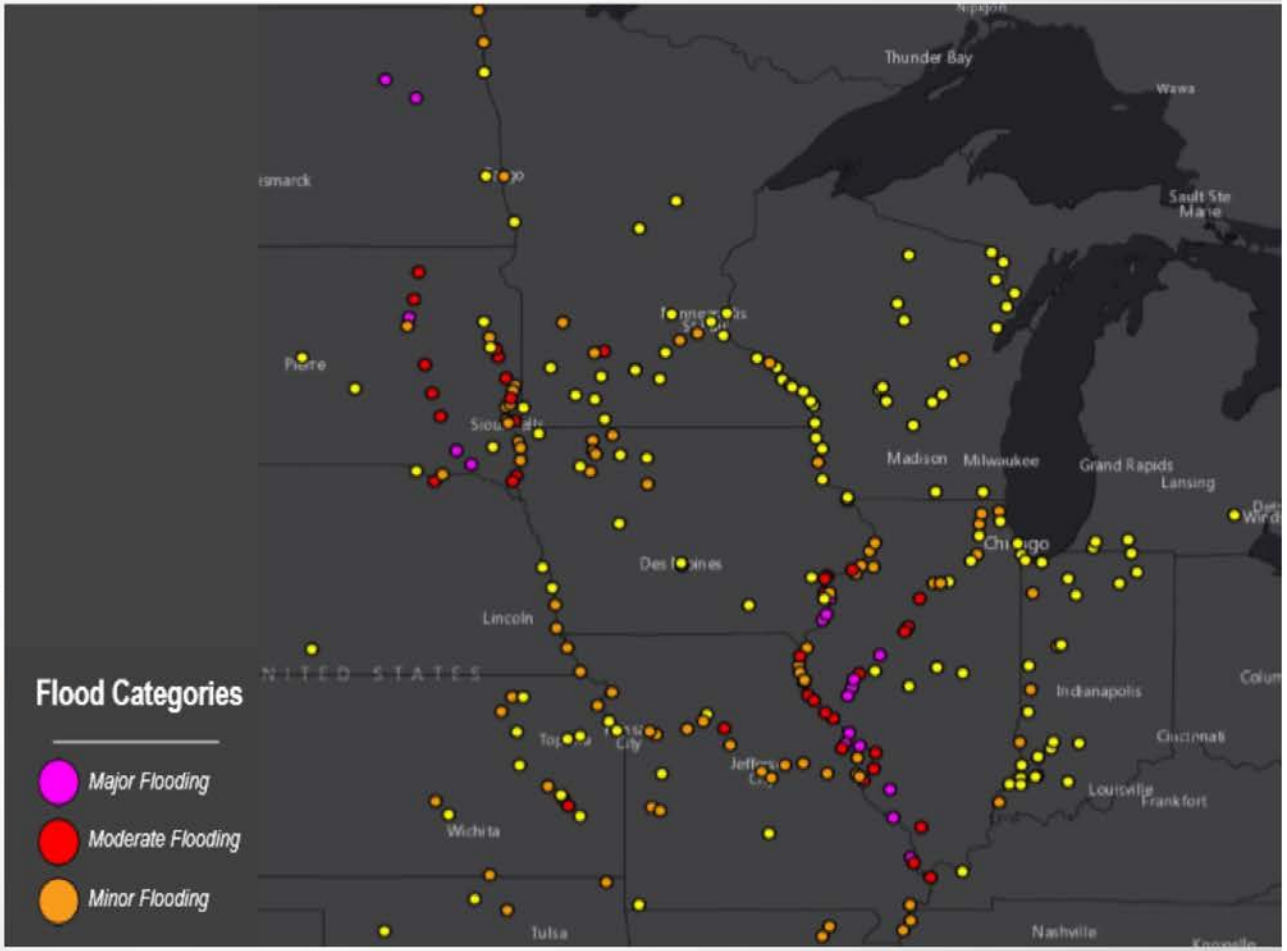
https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#

Current Flood Forecasts
As of late May 15th

- **Moderate to Major** flooding lingers in parts of the Big Sioux and James Rivers in South Dakota of the Missouri Basin

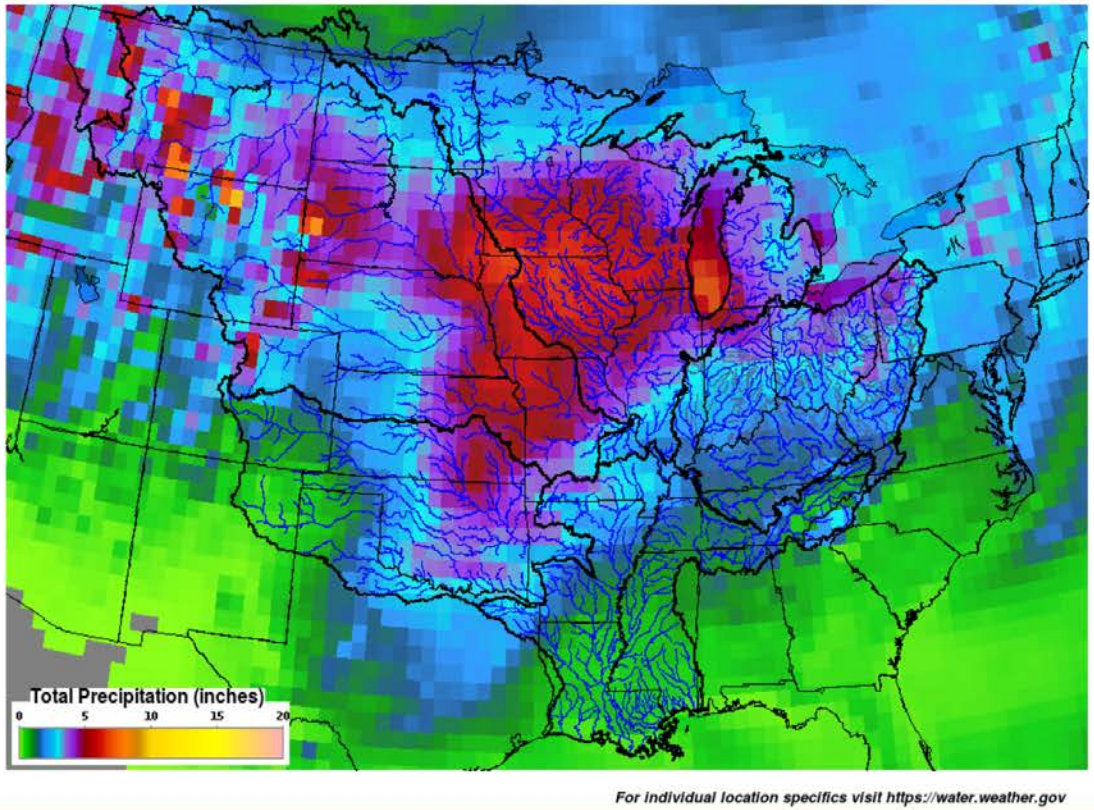
- **Moderate to Major** flooding lingers in parts of the Mississippi River from the Quad Cities and below. This also includes parts of the Illinois River

- Elsewhere, some minor to isolated minor flooding



https://water.weather.gov/ahps/forecasts.php

Midwest Heavy Rain Risk Outlook



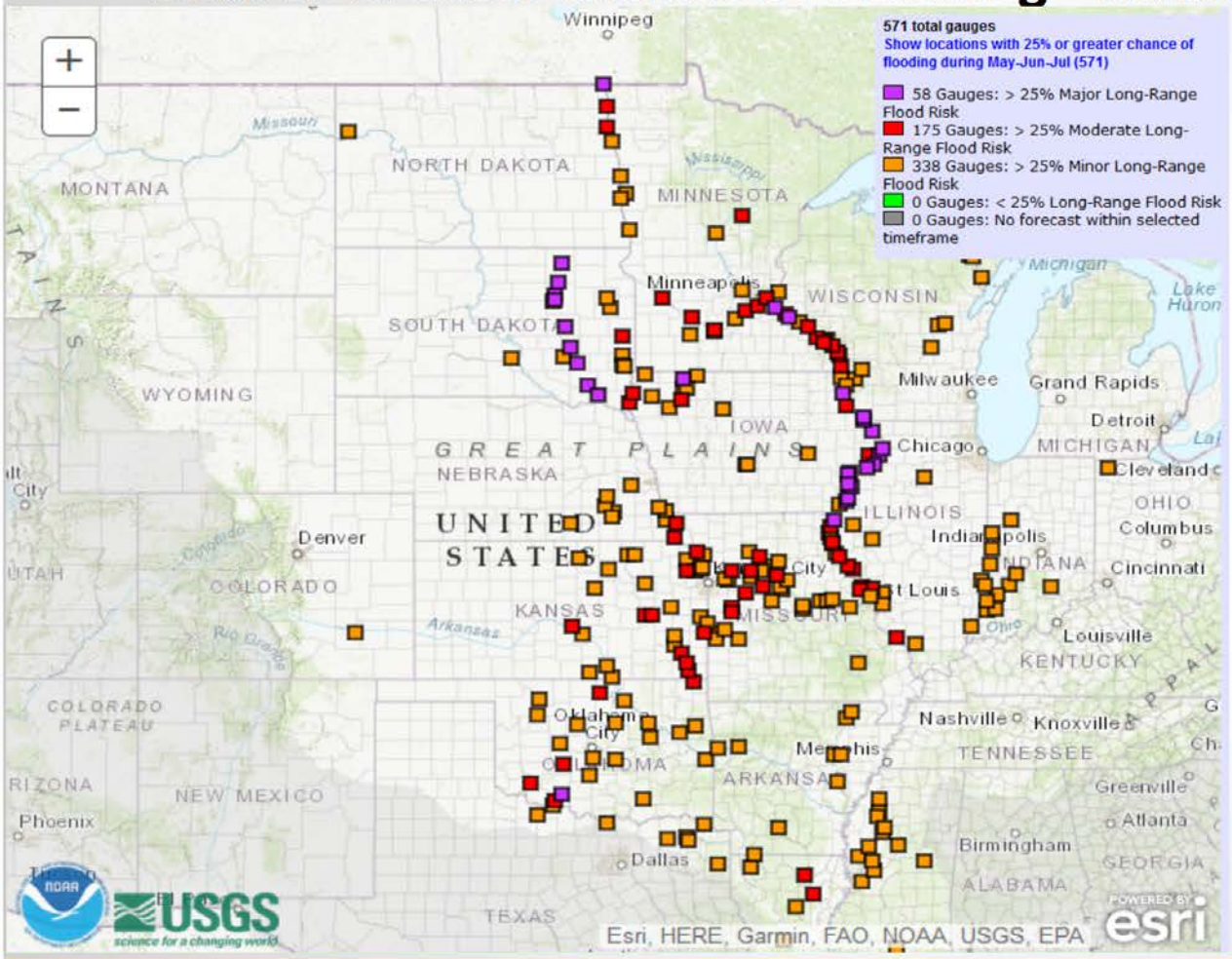
16-Day Rainfall Outlook calls for heavy rain potential in parts of Missouri, upper Mississippi River basins and Great Lakes

Areas in red are above 5 inches of rain over the next 16-days. Normal is 1.5-2.5 inches in this time-frame

https://www.weather.gov/images/ohrfc/dynamic/NAEFS16.apcp.mean.total.png

Midwest Long-Range Flood Risk Outlook

50% or Greater Chance of Flooding - Valid through July 2019



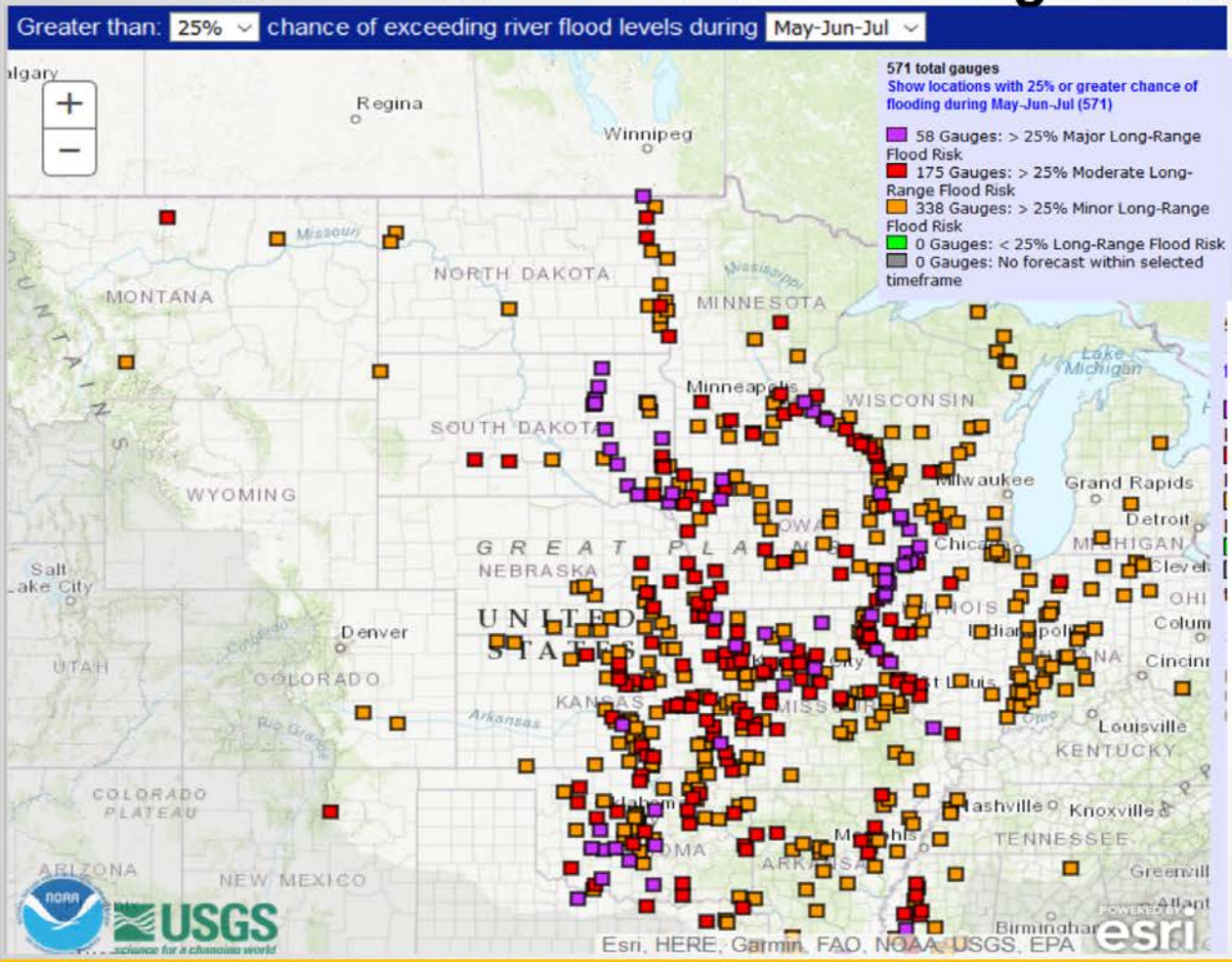
Future Rainfall will likely create renewed flooding in parts of the Missouri, Mississippi and western Ohio River drainage systems in the coming weeks.

This map shows general areas with at least a 50% chance of different flood levels

https://water.weather.gov/ahps/region_long_range.php?rfc=mvrfc&percent=50

Midwest Long-Range Flood Risk Outlook

25% or Greater Chance of Flooding - Valid through July 2019



Future Rainfall will likely create renewed flooding in parts of the Missouri, Mississippi and western Ohio River drainage systems in the coming weeks.

This map shows general areas with at least a 25% chance of different flood levels

https://water.weather.gov/ahps/region_long_range.php?rfc=mvrfc&percent=50

Flood Outlook Summary

Due to current very wet and/or high water content conditions, the region is vulnerable to future storm systems and temperature rapid warm ups.

- Flooding has been receding in most areas
- The active weather pattern will renew in the coming days and week and this could lead to more flooding in parts of the Missouri, Mississippi and western Ohio River systems
- There is at least a 50% chance of renewed flooding in parts of the Missouri and upper Mississippi into western Ohio River basins
- There is at least a 25% chance of significant flooding in parts of the Missouri and upper Mississippi basins
- PLEASE MONITOR FUTURE FORECASTS AND OUTLOOKS

- NOAA/National Weather Service will continue to monitor the flood risk.

NWS RFC
Contact Information

OHRFC – Ohio River – James.Noel@noaa.gov
NCRFC – Upper Mississippi River/ Red of North - Corey.Loveland@noaa.gov
MBRFC – Missouri River - Kevin.Low@noaa.gov
ABRFC – Arkansas/Red River - James.Paul@noaa.gov
LMRFC – Lower Mississippi River - Jeffrey.Graschel@noaa.gov

Long-Range River Outlook can be found at:

http://water.weather.gov/ahps/region_long_range.php?rfc=mvrfc&percent=50

Real-time AHPS River Forecasts are at:

http://water.weather.gov/ahps/forecasts.php

http://www.weather.gov

Further information - Partners

- **Today's Recorded Presentations and :**
- http://mrcc.isws.illinois.edu/webinars.htm
- http://www.hprcc.unl.edu
- NOAA's National Centers for Environmental Information: https://www.ncdc.noaa.gov/news/national-centers-environmental-information
- Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Current Weather Forecasts: www.weather.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:**
  - Martha Shulski: mshulski3@unl.edu, 402-472-6711
  - Dennis Todey: Dennis.Todey@ars.usda.gov , 515-294-2013
  - Doug Kluck: doug.kluck@noaa.gov, 816-994-3008
  - 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