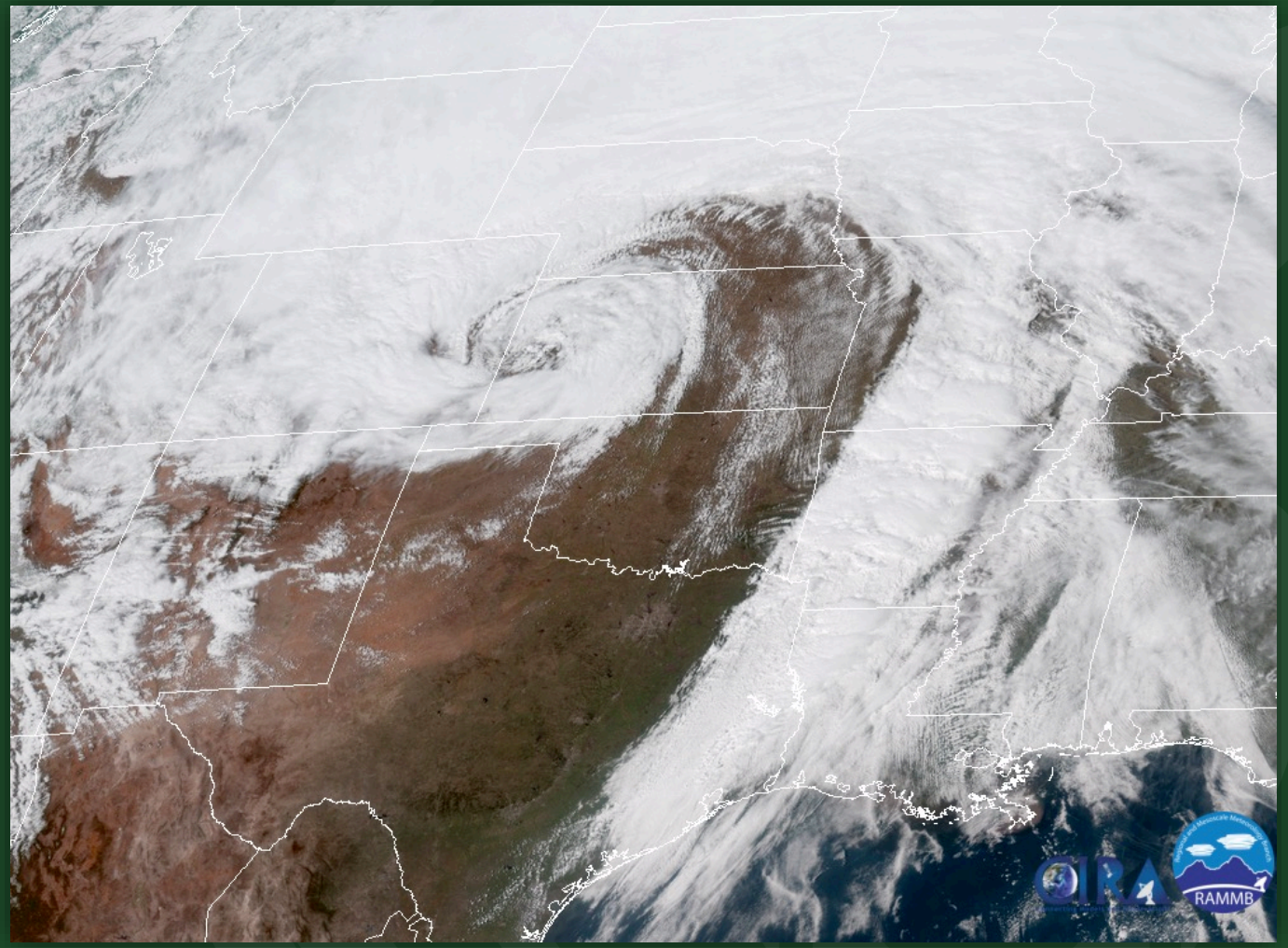
Central Region Climate & Drought Outlook

21 March 2019



March 13, 2019 Bomb Cyclone

Becky Bolinger

Assistant State Climatologist

COLORADO CLIMATE CENTER

AASC AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS

National Drought Mitigation Center

USDA United States Department of Agriculture Midwest Climate Hub

ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

General Information

- **Providing climate services to the Central Region**
  - Collaboration Activity Between:
    - State Climatologists/American Association of State Climatologists
    - NOAA NCEI/NWS/OAR/NIDIS/
    - USDA Climate Hubs
    - Midwest and High Plains Regional Climate Centers
    - National Drought Mitigation Center

- **Next Regular Climate/Drought Outlook Webinar**
  - April 18, 2019 (1 PM CST), Dennis Todey, Director USDA Midwest Climate Hub

- **Access to Future Climate Webinars and Information**
  - http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars

- **Recordings of Past Webinars**
  - https://mrcc.illinois.edu/multimedia/webinars.jsp
  - https://hprcc.unl.edu/webinars.php

- **Open for questions at the end**

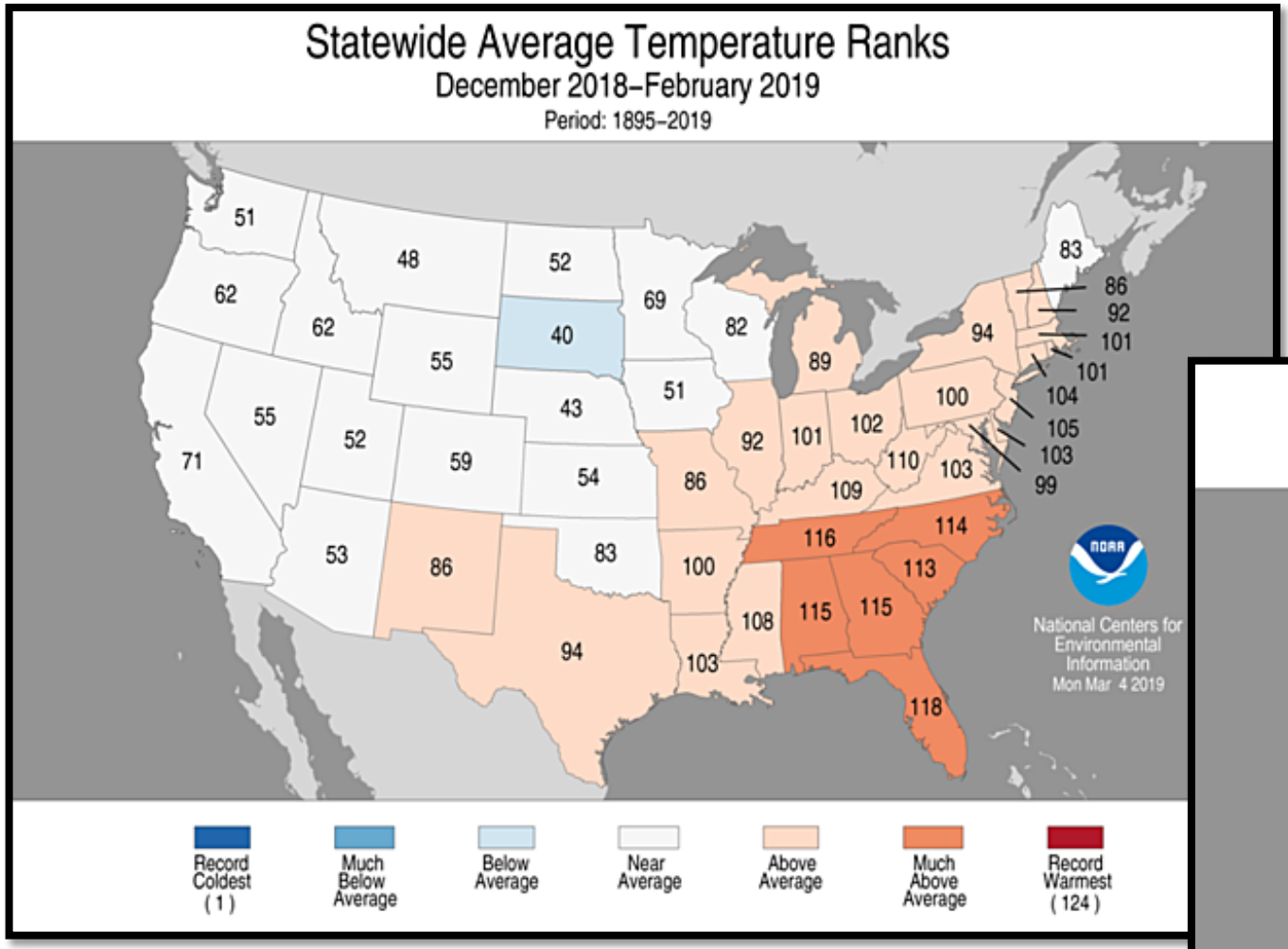
Today's Agenda

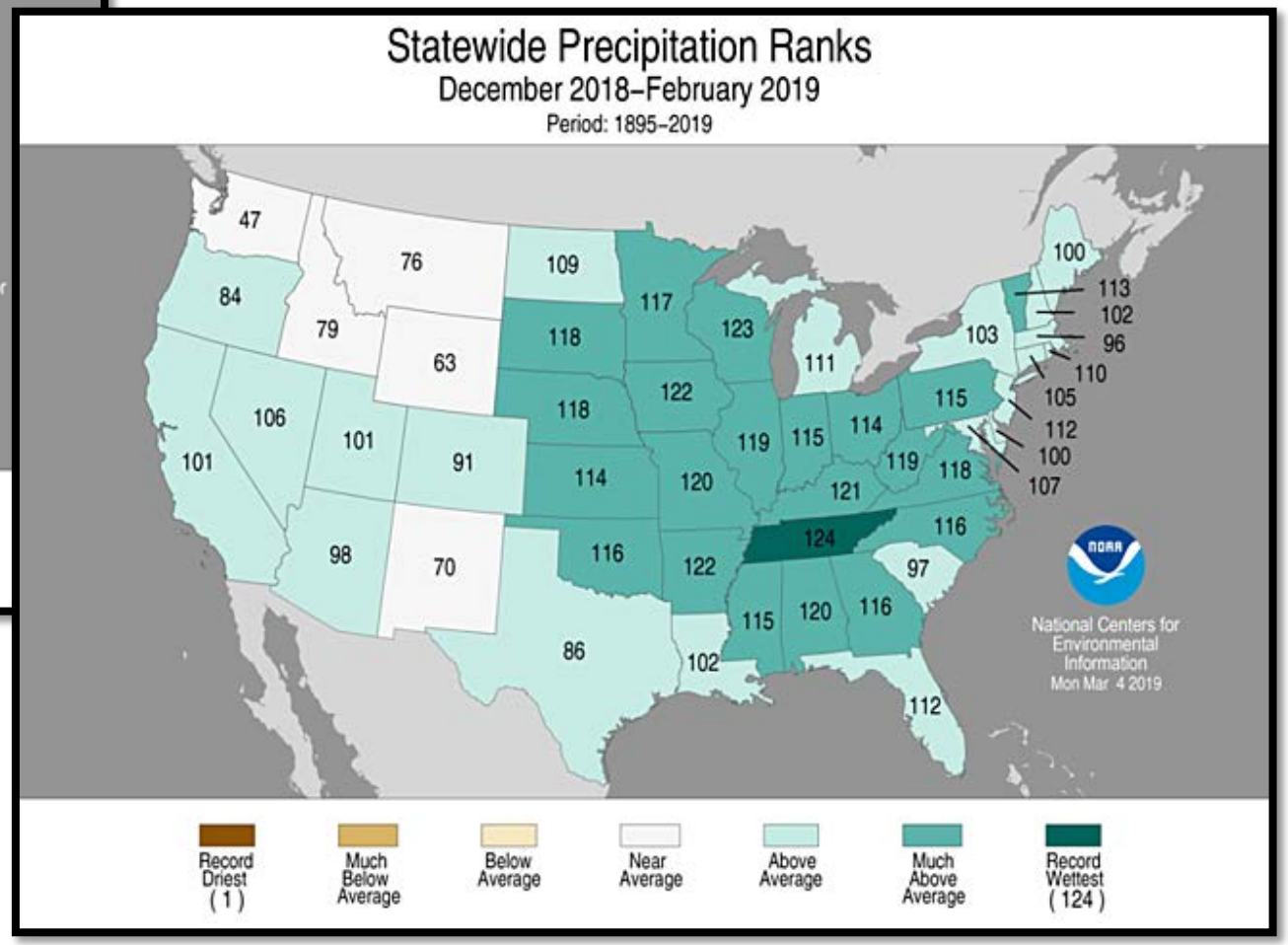
- **Recent Conditions**
  - **Winter/February ranks**
  - **Last 30 days**
  - **Snowpack, soils, streams**
- **Impacts**
  - **Snow, cold**
  - **Agriculture**
  - **Flooding**
- **Outlooks**
  - **More wet weather**
  - **El Niño Continues**
  - **Spring and Summer**
- **Spring Flood Outlook (Jim Noel)**

South Dakota snow drifts – Laura Edwards

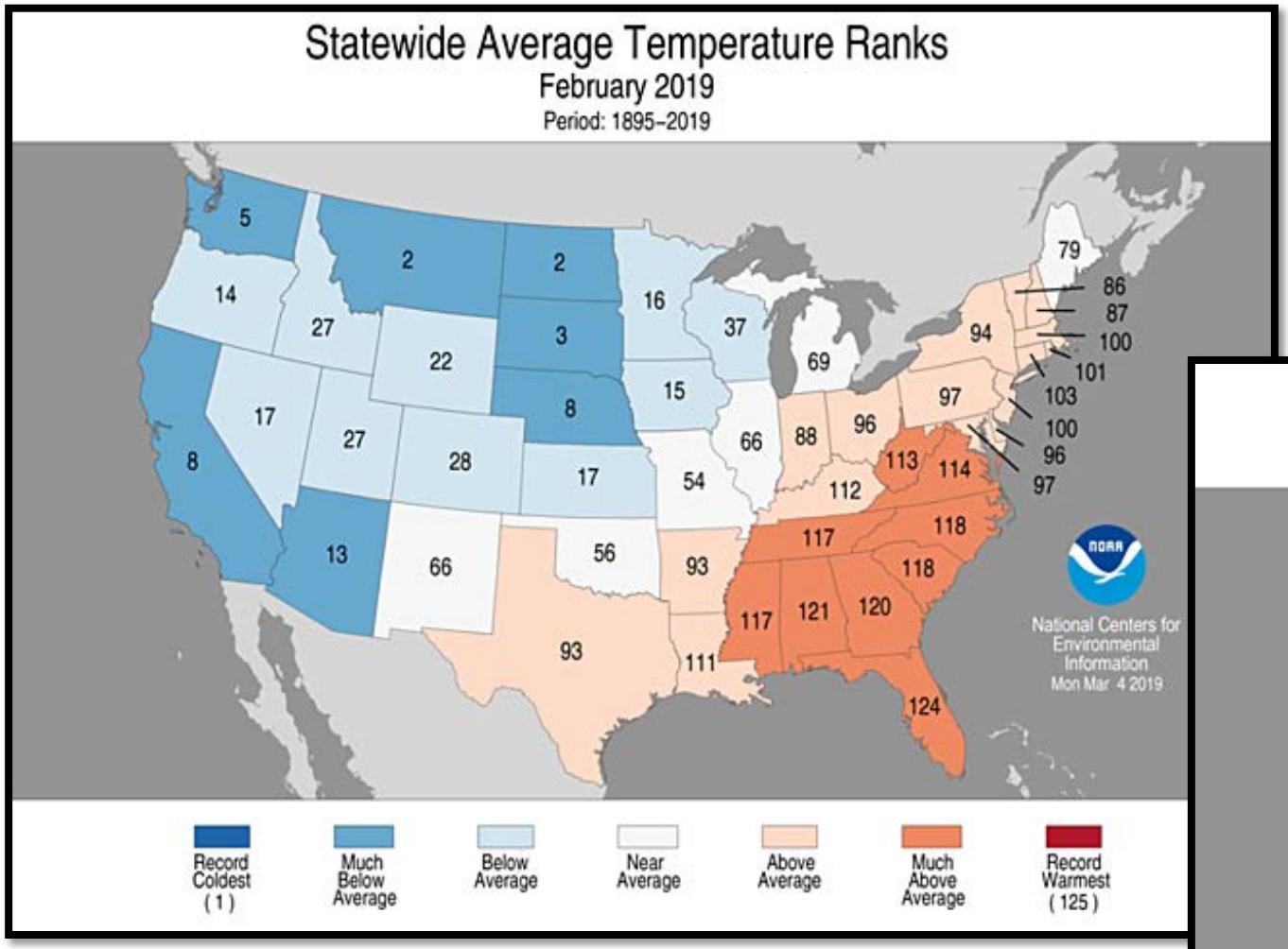
Recent Conditions…

Wettest U.S. winter in the 124-year record!

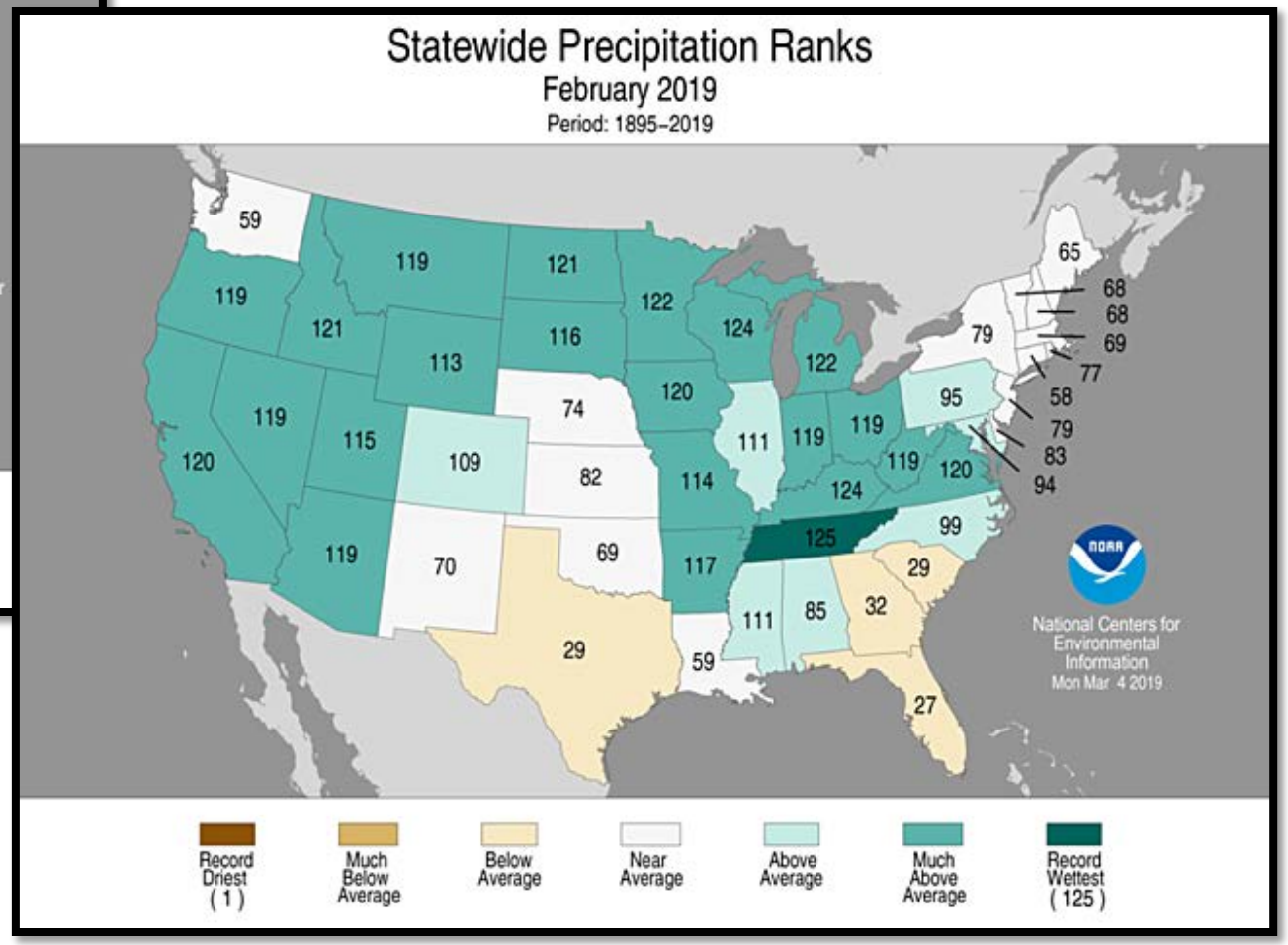




http://www.ncdc.noaa.gov/temp-and-precip/us-maps/

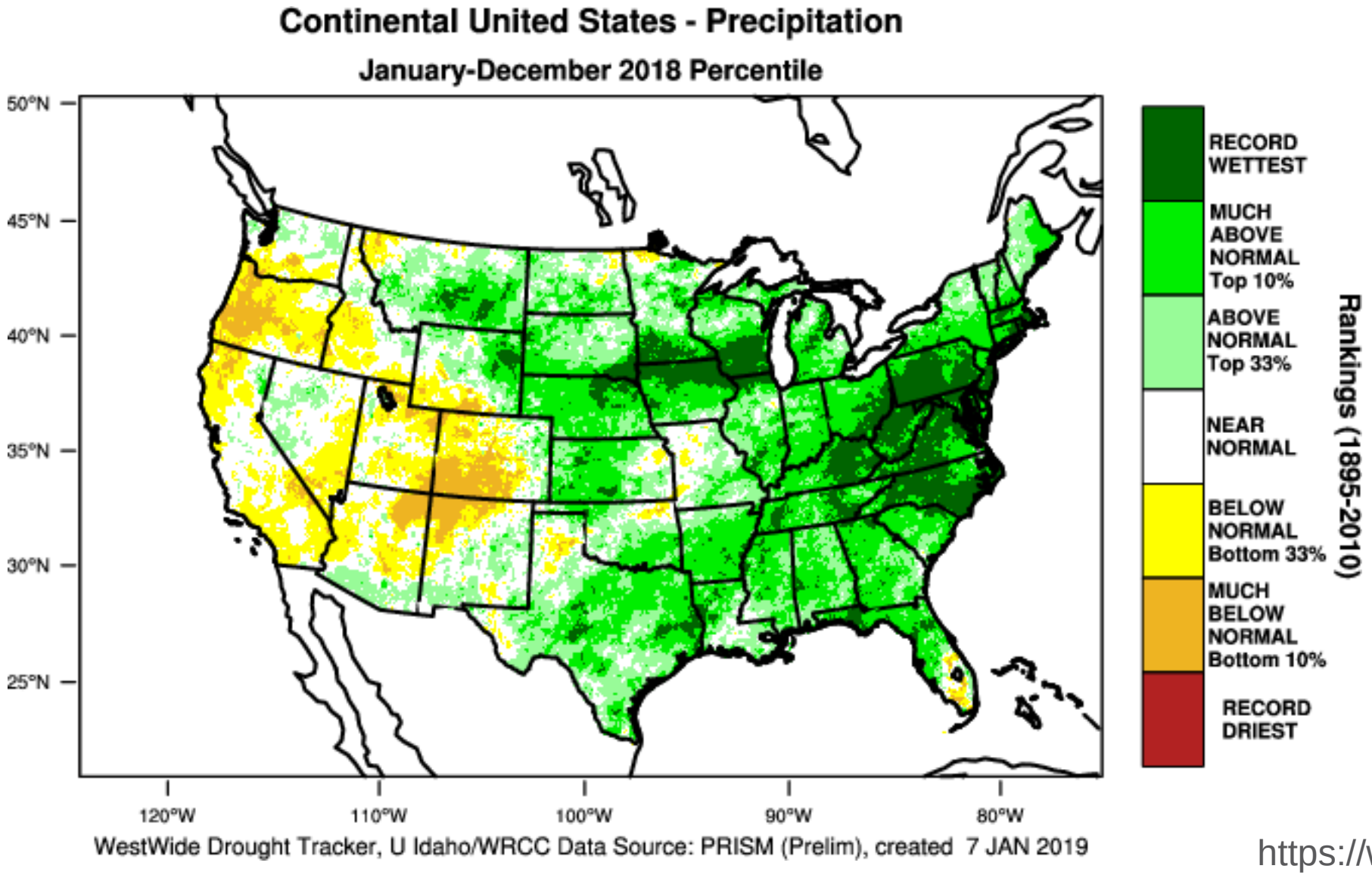


2nd wettest February on record for U.S.



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

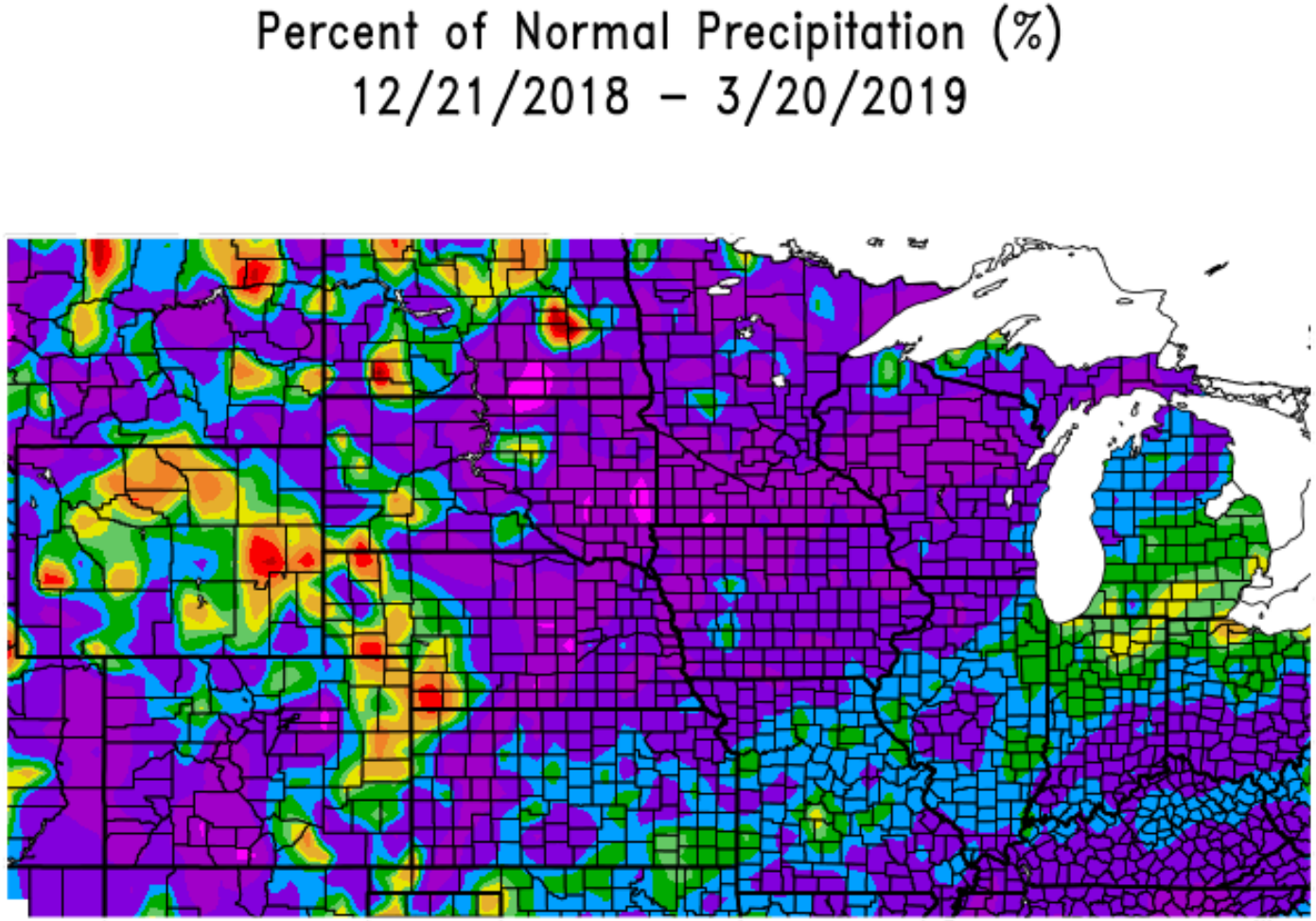
Some areas of the Central Region had their record wettest year in 2018!



https://wrcc.dri.edu/wwdt/index.php

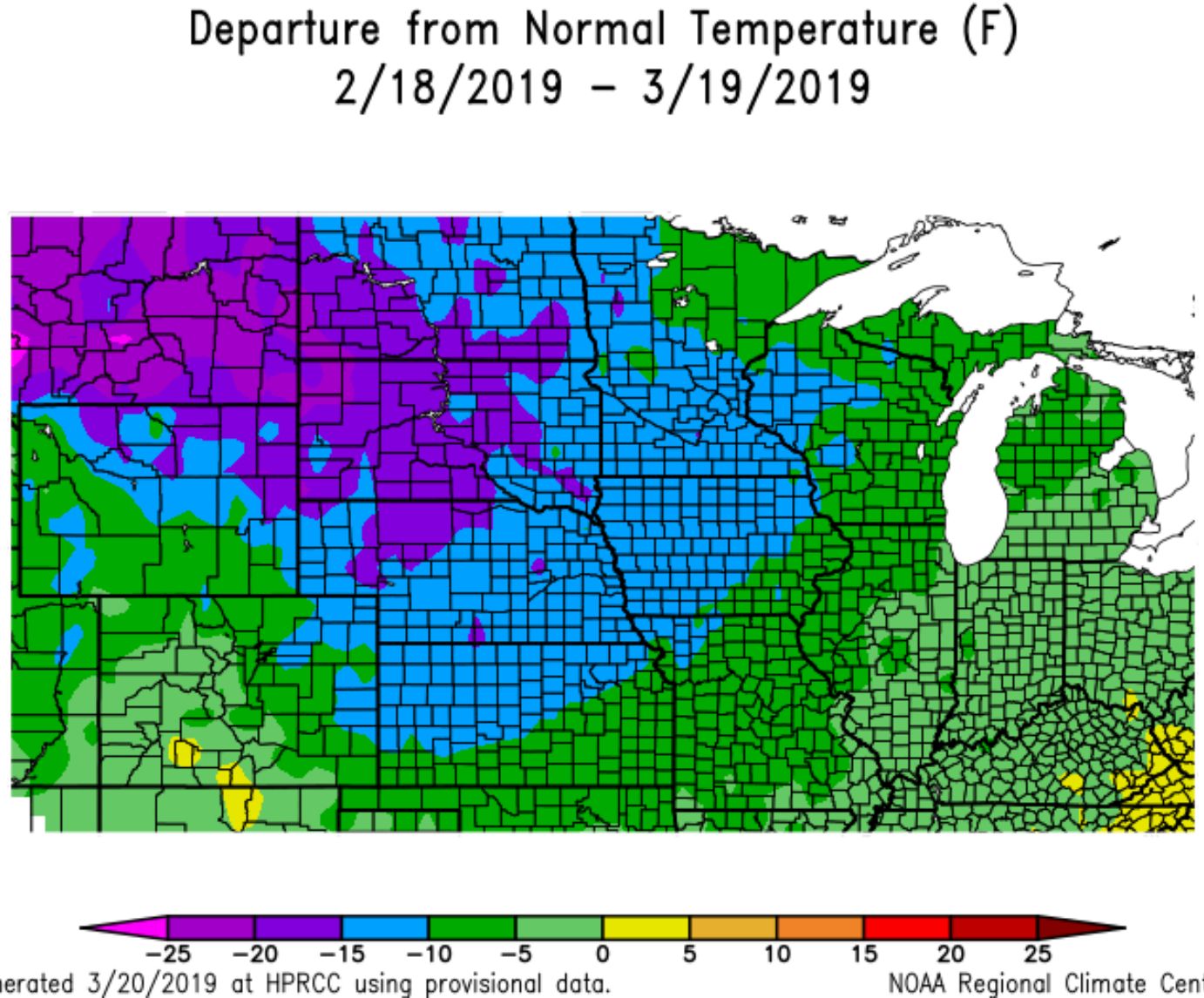
The last 90 days have been extremely wet, and cold!

https://hprcc.unl.edu/maps.php?map=ACISClimateMaps



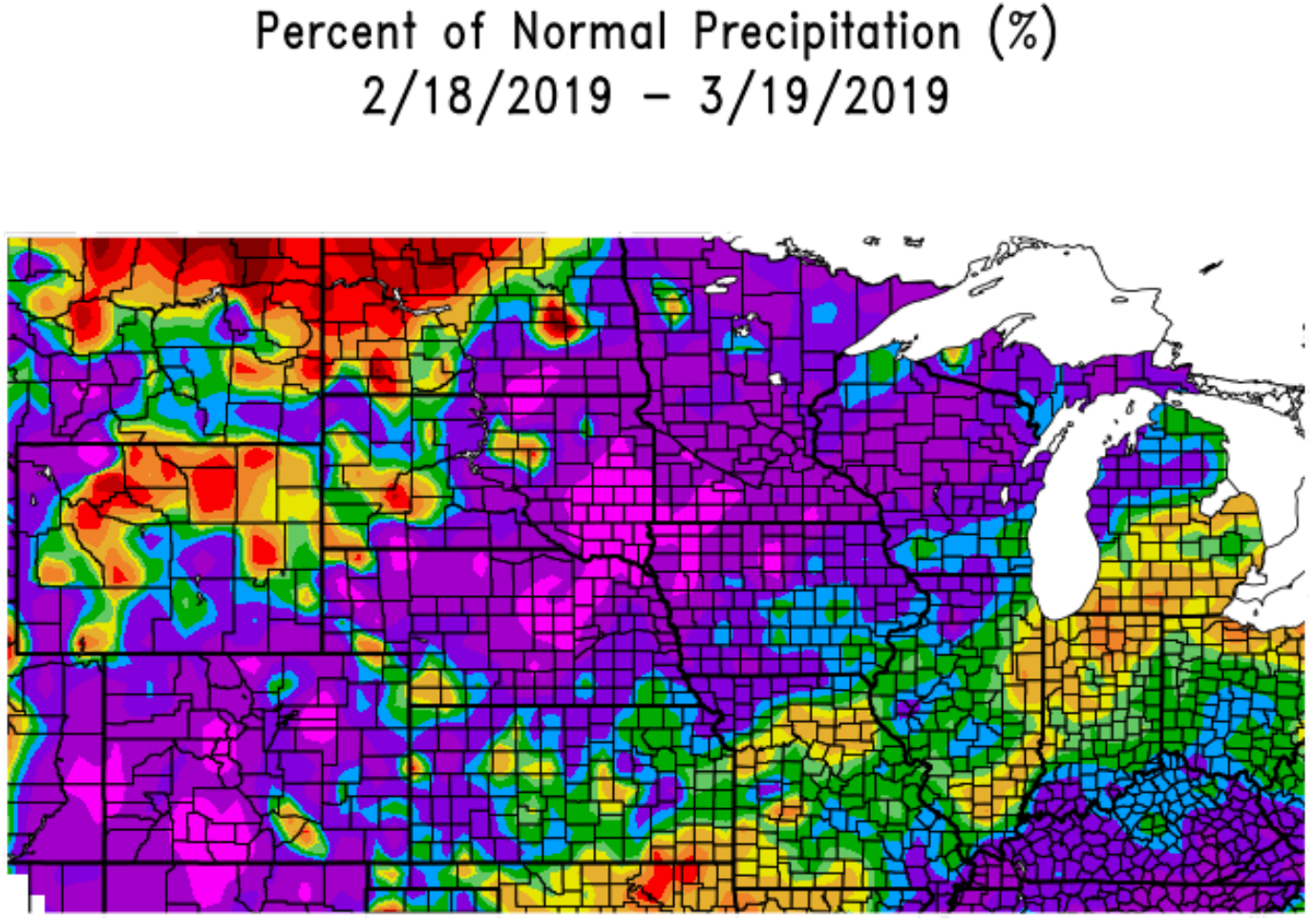
The cold and wet pattern has continued

https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

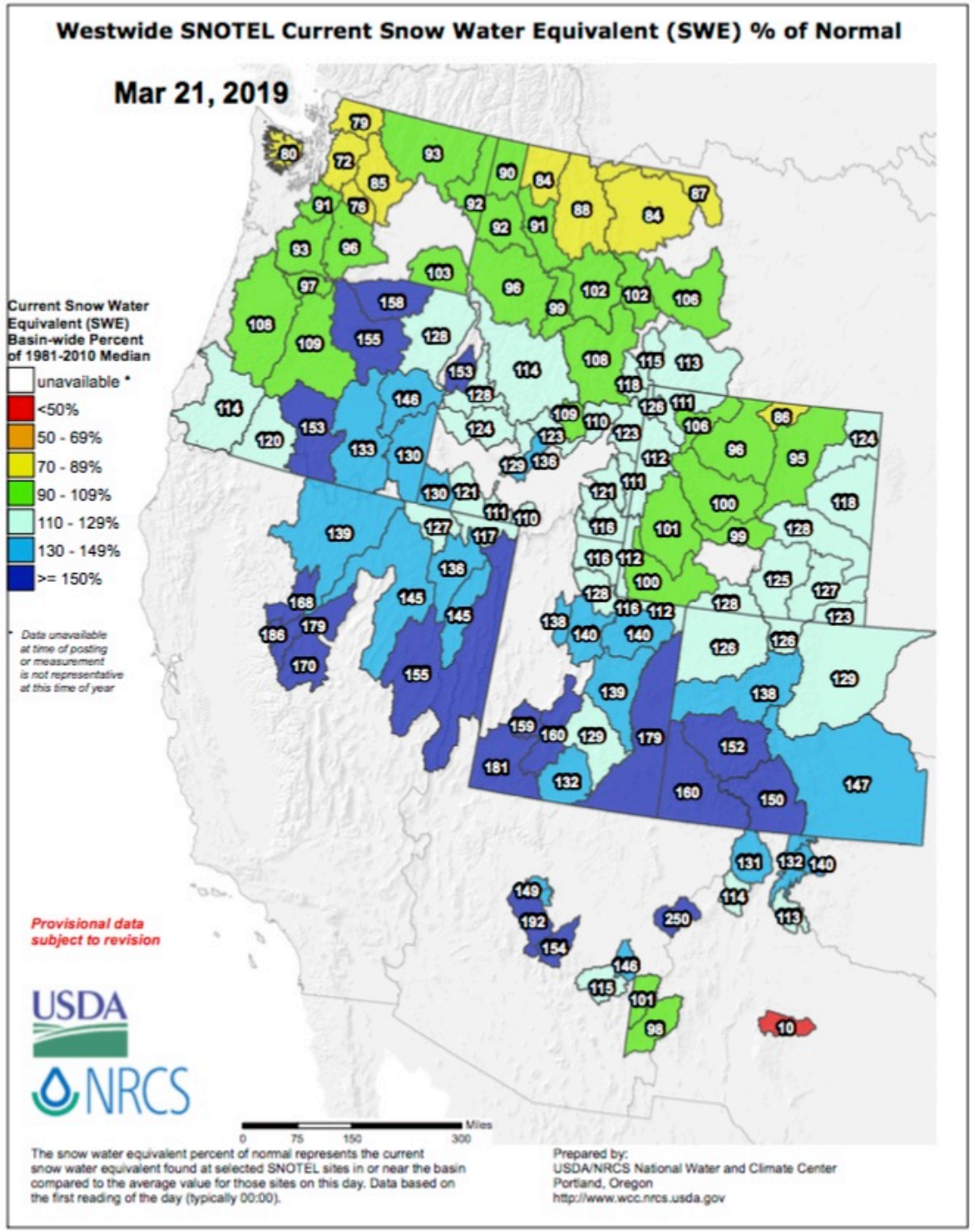


The cold and wet pattern has continued

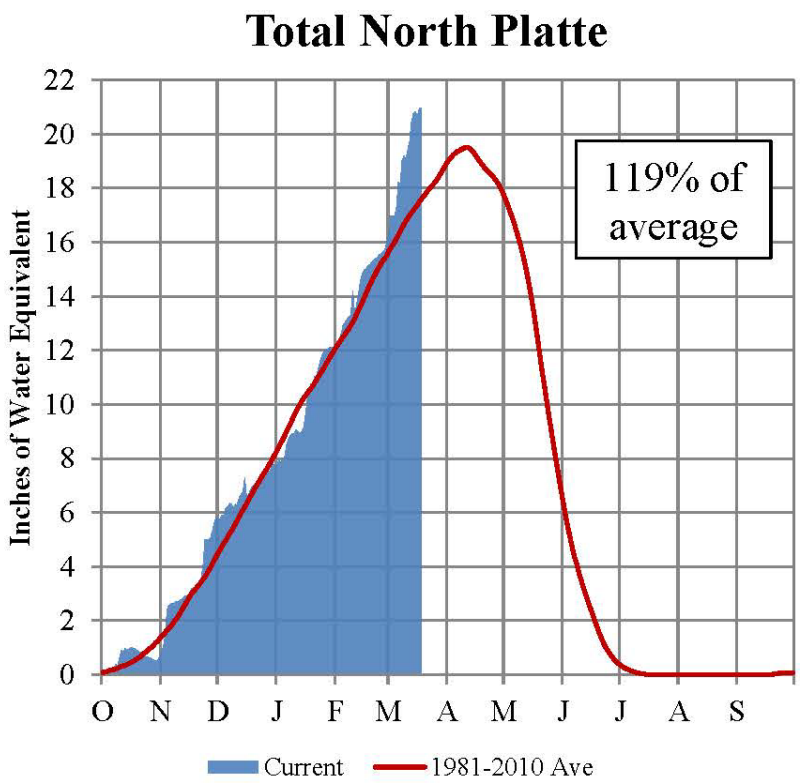
https://hprcc.unl.edu/maps.php?map=ACISClimateMaps

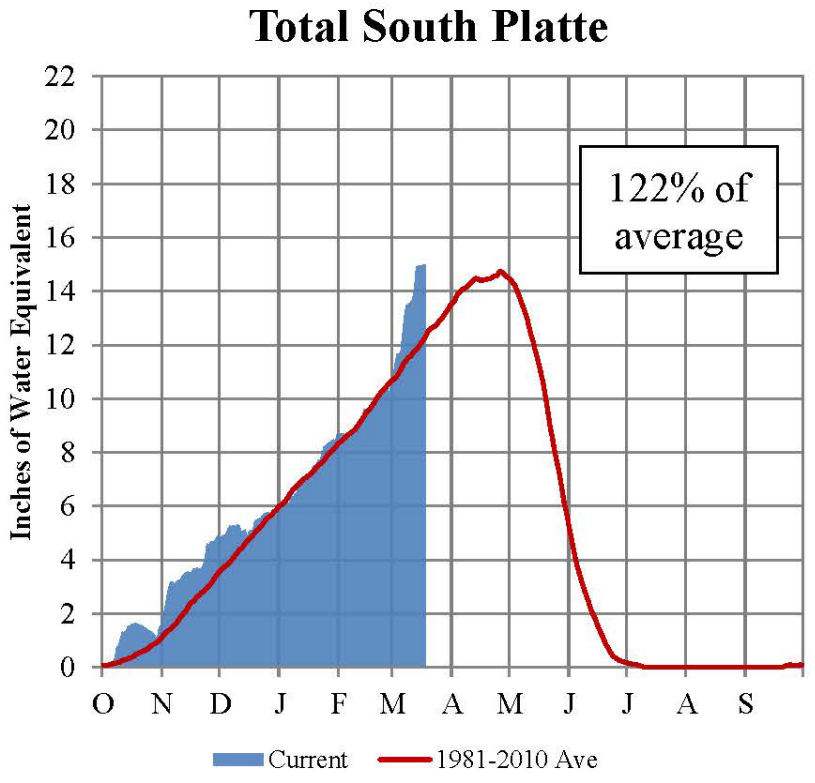


https://www.wcc.nrcs.usda.gov



Platte River Basin - Mountain Snowpack Water Content
Water Year 2018-2019
March 20, 2019



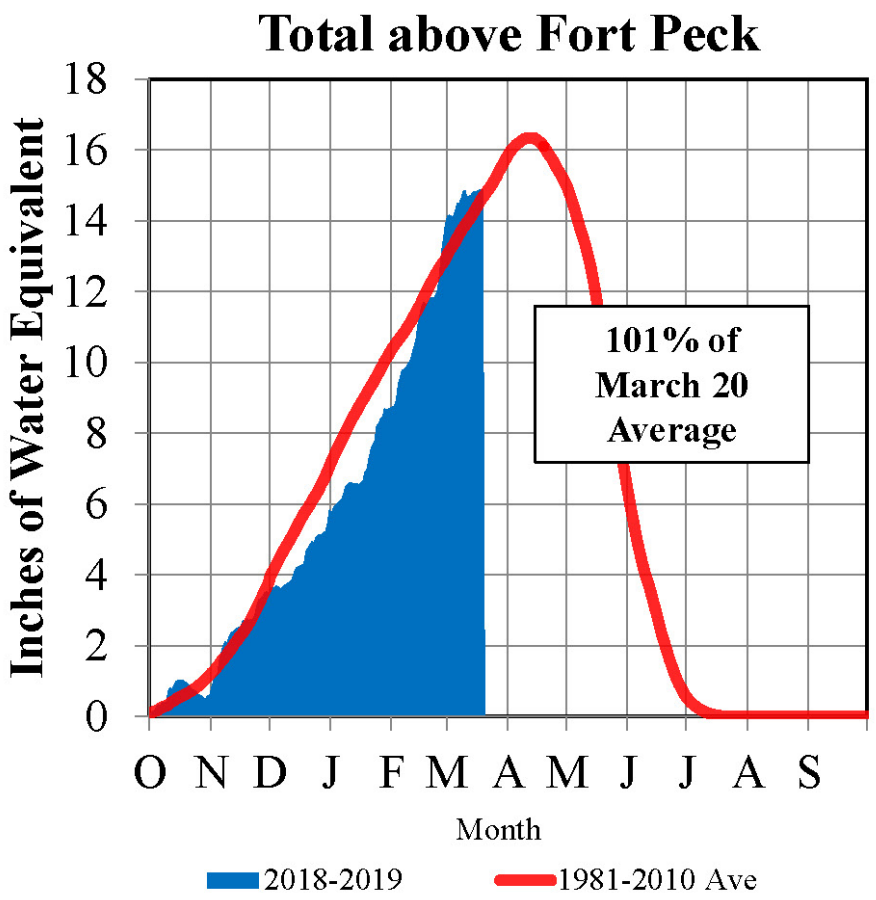


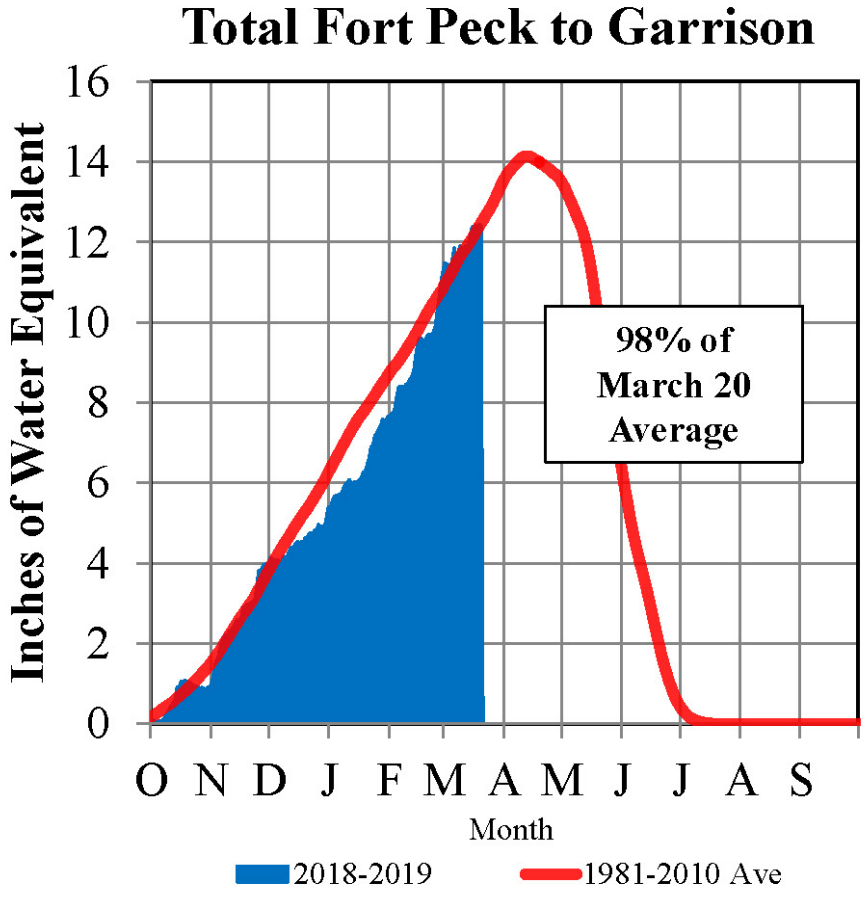
The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of March 19, 2019, the mountain snowpack SWE in the "Total North Platte" reach is currently 21.0", 119% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 15.0", 122% of average.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision

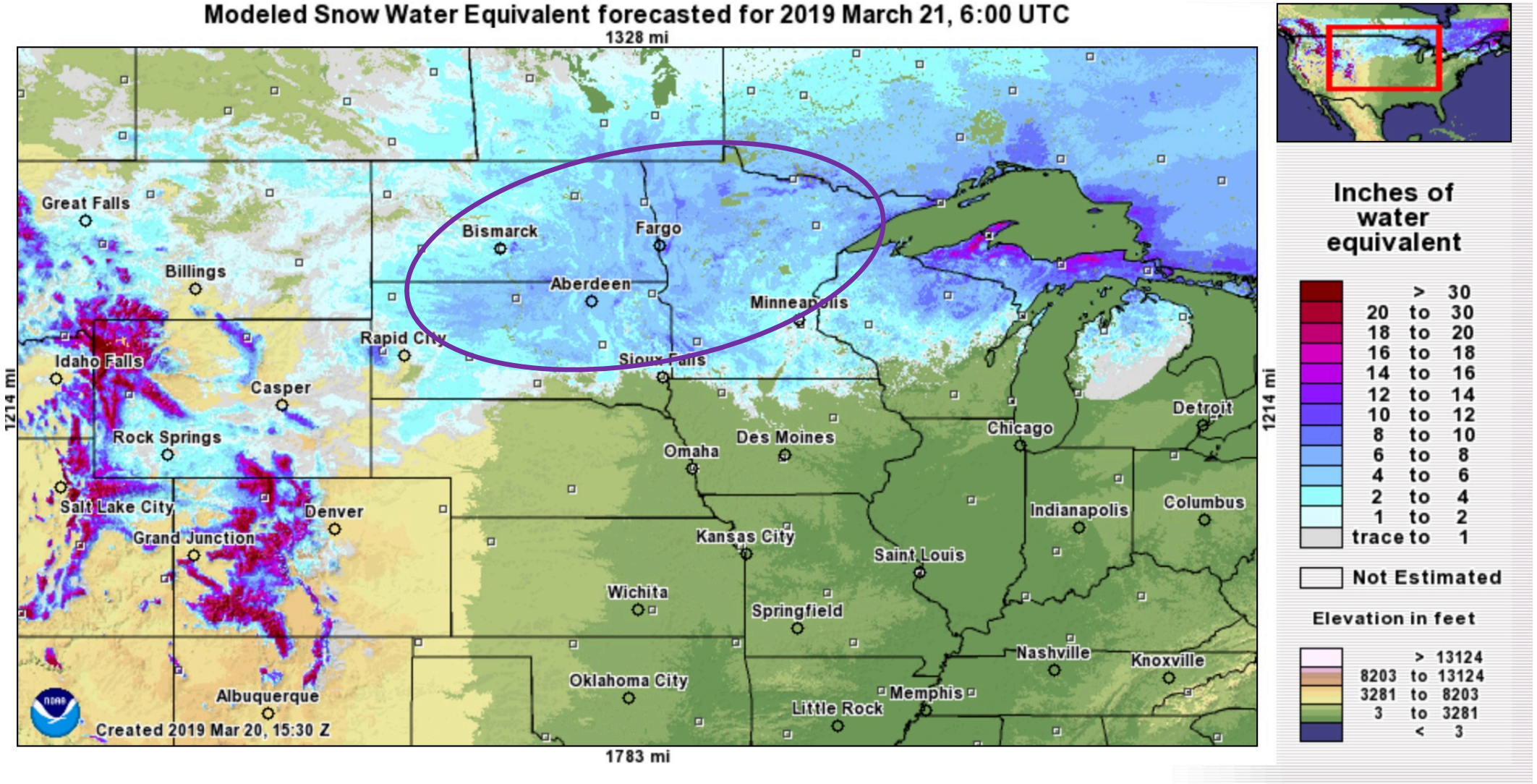
Missouri River Basin
Mountain Snowpack Water Content
March 20, 2019



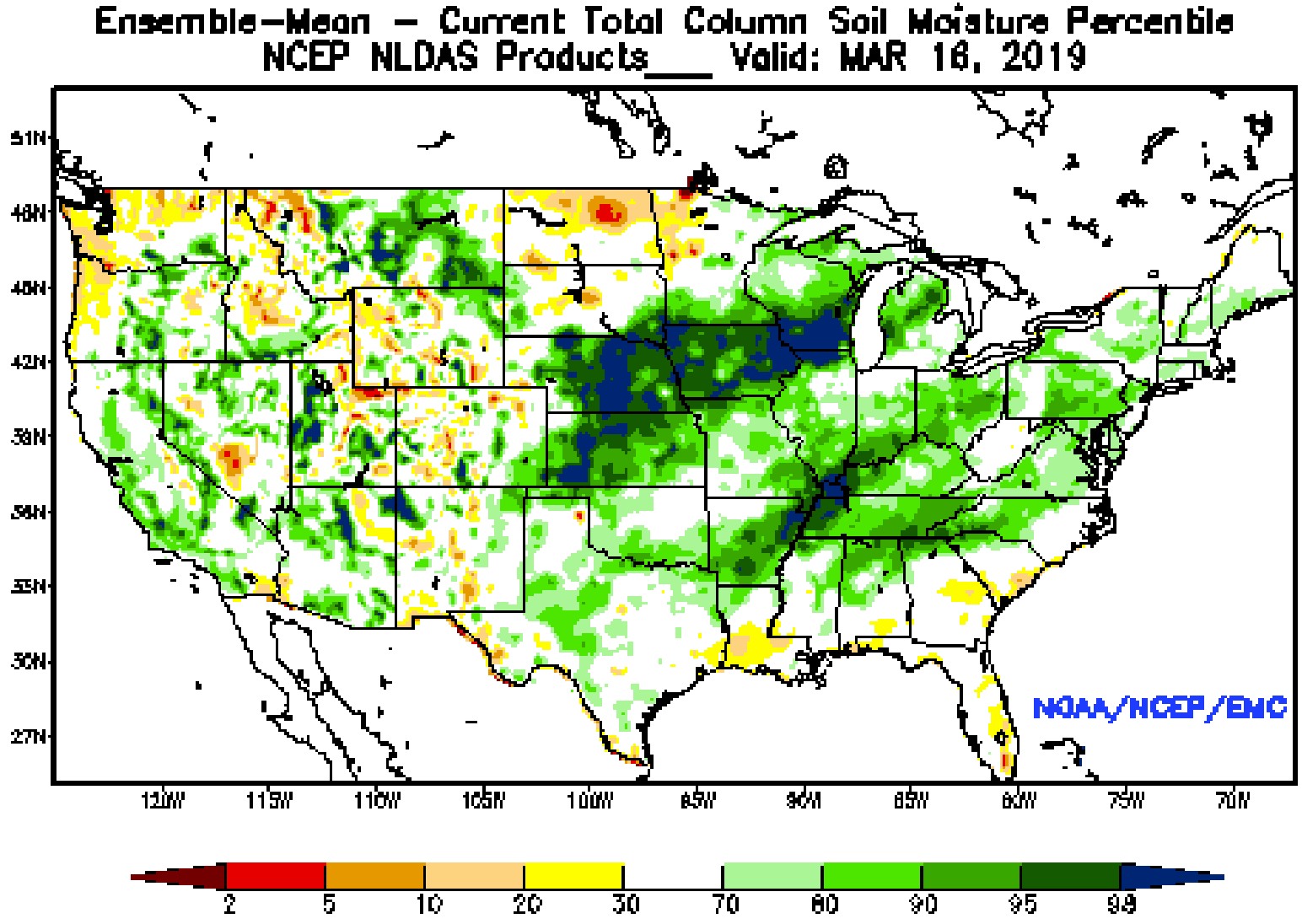


The Missouri River Basin mountain snowpack normally peaks near April 15.

Still around 4-8 inches of snowpack to melt out in the Dakotas and Minnesota

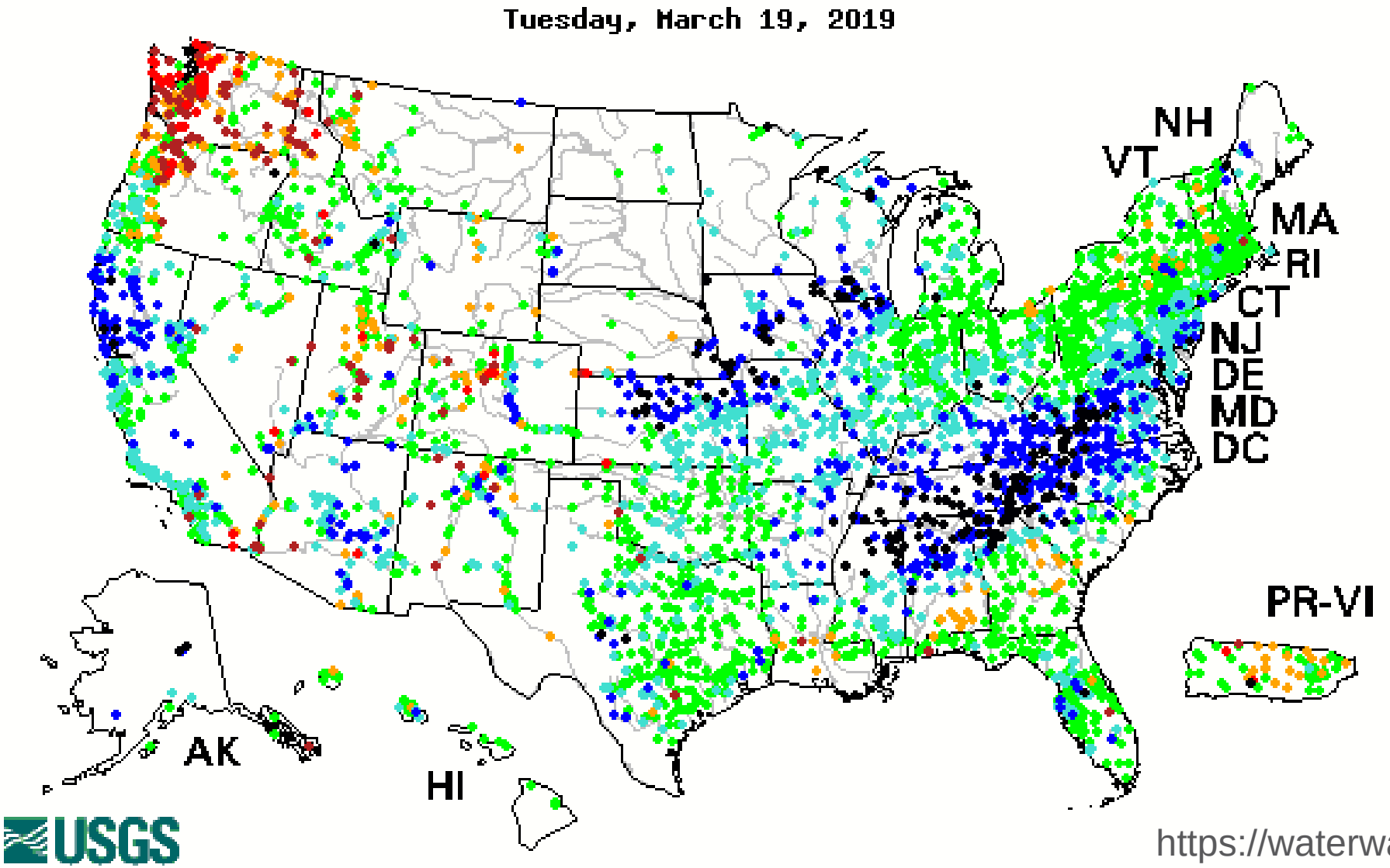


https://www.nohrsc.noaa.gov/interactive/html/map.html



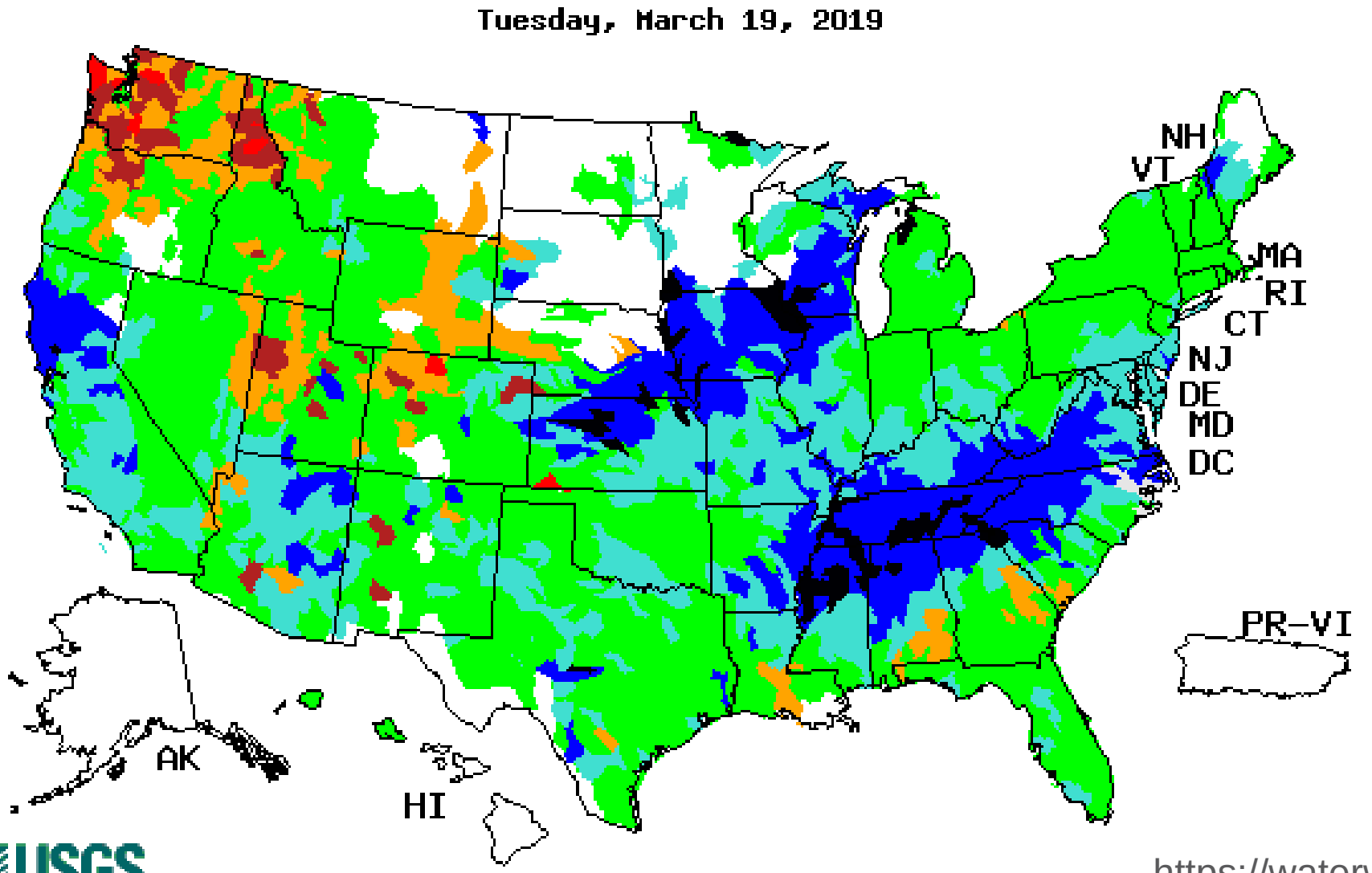
https://www.emc.ncep.noaa.gov/mmb/nldas/drought/

28-day averaged streamflow



https://waterwatch.usgs.gov

28-day averaged streamflow

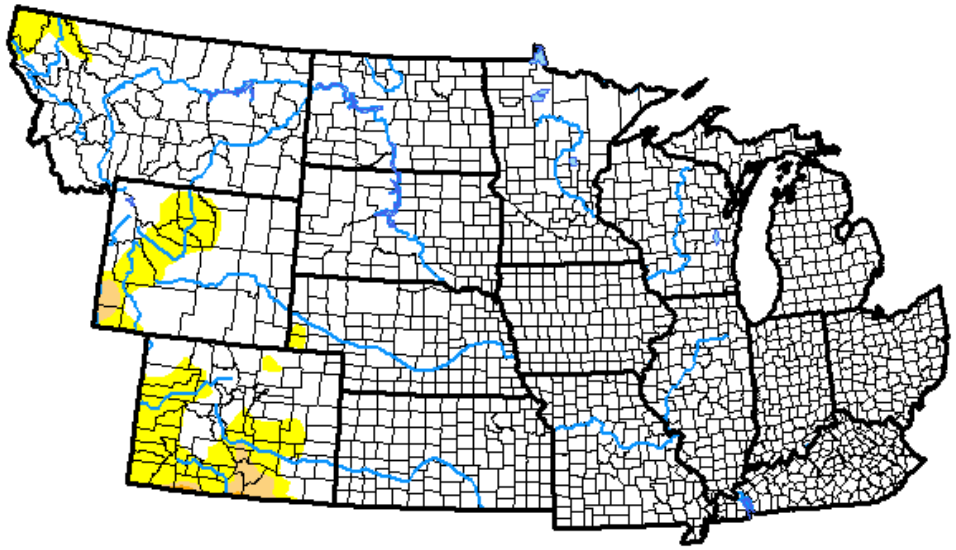


USGS

https://waterwatch.usgs.gov

U.S. Drought Monitor

NWS Central Region



March 19, 2019

(Released Thursday, Mar. 21, 2019)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	92.79	7.21	0.82	0.06	0.00	0.00
Last Week *03-12-2019*	86.32	13.68	2.54	0.56	0.05	0.00
3 Months Ago *12-18-2018*	84.39	15.61	8.49	5.22	2.44	1.01
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 *03-20-2018*	63.82	36.18	20.70	10.63	3.18	0.02

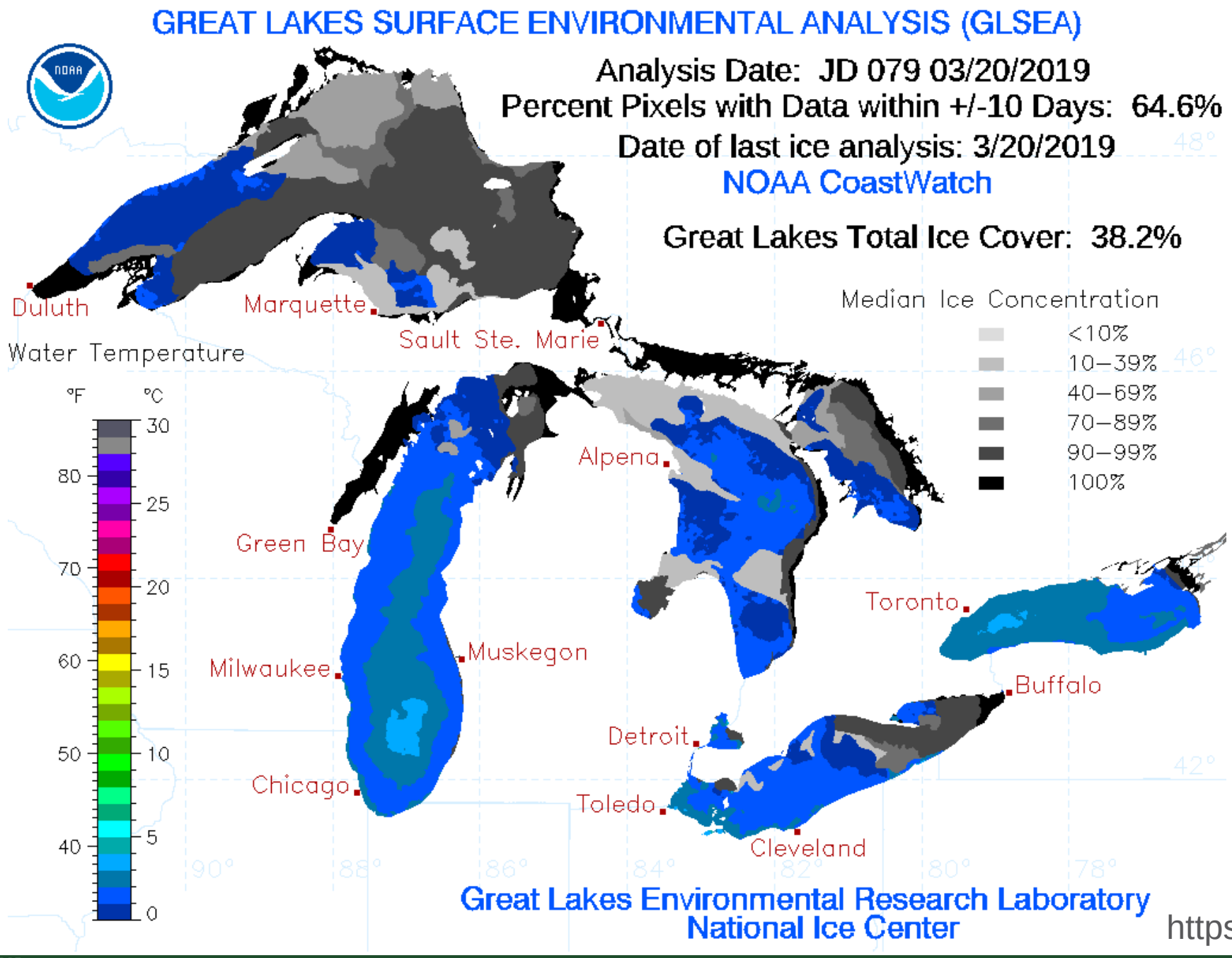
Intensity:

- 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:
Jessica Blunden
NCEI/NOAA

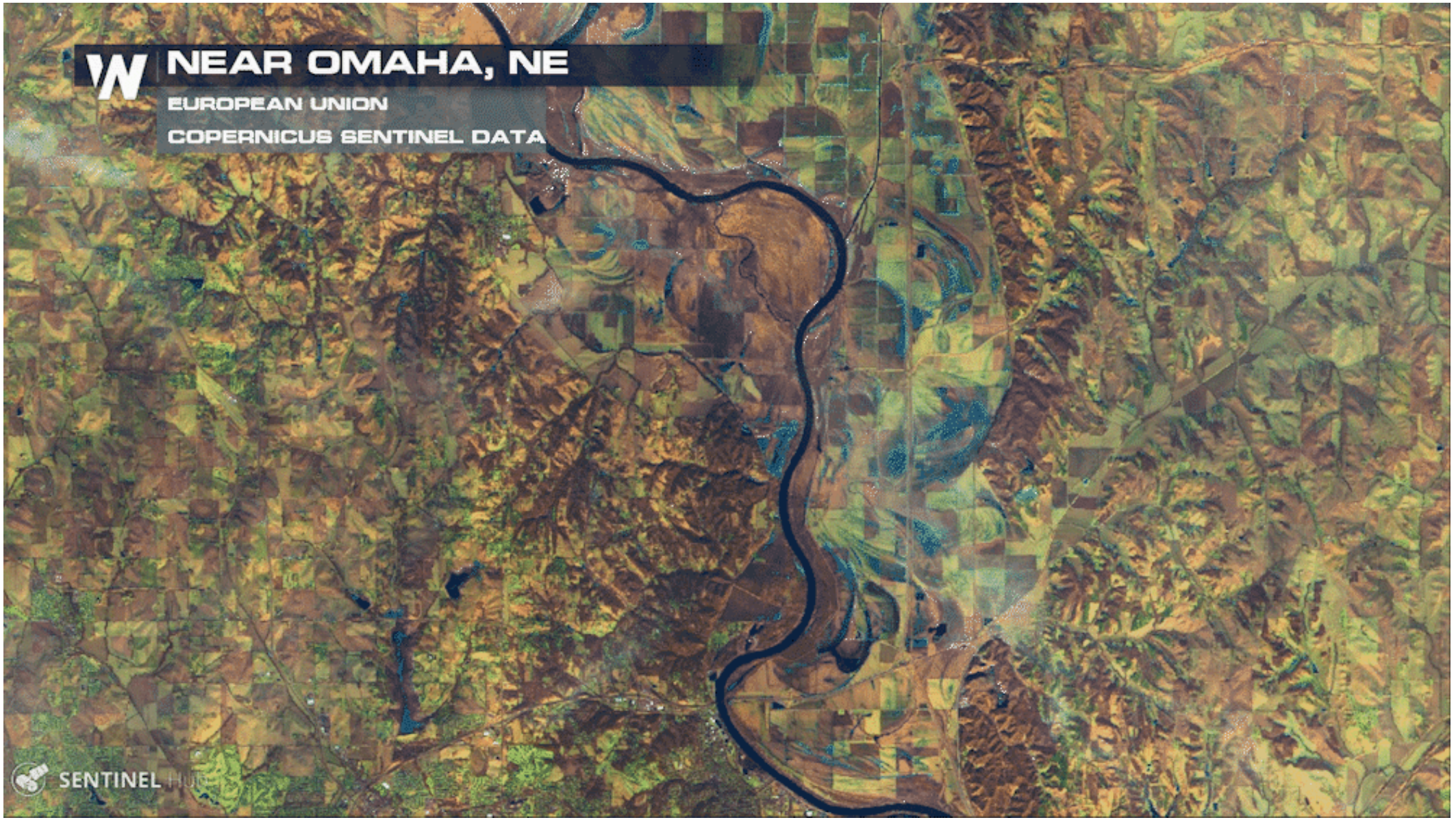
http://droughtmonitor.unl.edu/



https://www.glerl.noaa.gov/data/ice/

Impacts

http://www.weathernationtv.com/news/incredible-before-after-satellite-imagery-of-nebraska-flooding/



http://www.weathernationtv.com/news/incredible-before-after-satellite-imagery-of-nebraska-flooding/

Breached levees due to March flooding

Filter by condition

- [ ] (All)
- [ ] No Breach
- [x] Breached
- [x] Overtopping
- [x] Partial Breach

Condition

- Breached
- Partial Breach
- Overtopping

Des Moines Register: https://www.desmoinesregister.com/story/money/agriculture/2019/03/19/iowa-flooding-2019-missouri-river-weather-farming-livestock-losses-kim-reynolds-nebraska-rain-snow/3212015002/

Highway 14
near Fullerton

Nebraska
State
Patrol

Brian Fuchs
Loup River
Central Nebraska

- Heavy flooding
- Ice jams
- Damage to structures
- Damage to highways
- Damage to railroads

James Crawford
Northwest Missouri

Livestock Impacts

- Last year very wet so hay crop was harvested late, baled hay had issus with mold and poor nutritional content. Cattle eating it, but not getting nourished, so they're weak (Kentucky Extension Veterinarian).
- Cold, wet, rain switching to snow events are resulting in wet and matted coats on cattle that then freeze, so they are not staying insulated from cold. Going into distress (Kentucky, Kansas).
- Muddy fields, large snow events, cattle getting stuck and/or buried.
- Important calving season, cattle are very vulnerable. If calves are born during a blizzard and not immediately rescued, they are lost.
- A lot of livestock have been swept away in the flooding.
- Losses to pig livestock from barn damage.

Crop Impacts

- Winter Wheat
  - Damage from extreme cold with no snow cover to insulate throughout the region.
  - Hollow stem reports from Kansas are a month later than normal because of cold temperatures.
  - Melting and refreezing has damaged crops in South Dakota.
- Corn
  - Late planting is almost certain due to excessive wet conditions.
  - Eastern part of corn belt is a little better, but no talk of early field work.
- Nebraska grain storage facilities impacted by flooding.
- High risk of disease with crops if conditions stay very wet.
- Ag is hoping for some extended periods of dry weather!

Transportation Impacts

- In the Ohio-Cumberland system, barges have been unable to transport in either direction.
- Interstate and state highways in Nebraska, Iowa, and Missouri have been damaged and/or closed.
- Railroads and bridges damaged from ice jams and flooding.
- Cross country transport will be heavily impacted by this.
- In Kansas, the Kansas City-St. Louis Amtrak line is now closed.

Hydrologic Impacts

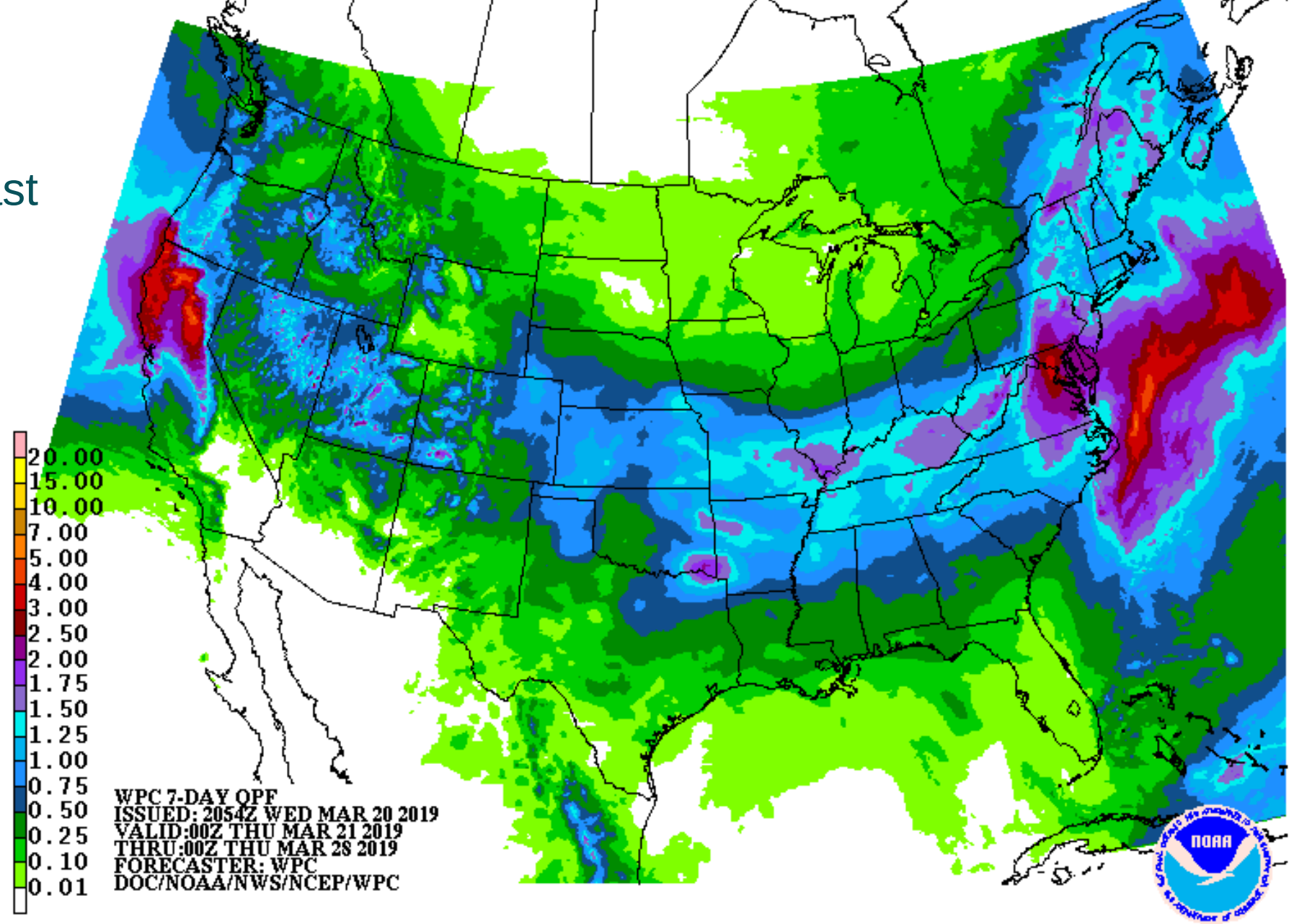
- Nebraska received excessive snowfall for the season, received an additional 1-3 inches of rain on top of snowpack. Went from winter to spring meltoff in a 24 hour period.
- Iowa, flooding is worst in the southwest corner of the state due to less than ideal melting of snowpack (rain on snow events).
- Minnesota has fared better with idea melting of snowpack, above freezing temperatures in the day and below freezing overnight.
- Minnesota and Dakotas – a lot of preparation for more flooding to come. Sandbagging, focus on levees.
- Not much from the Red River basin yet, but there is significant flood risk there. Lots of preparations.
- In Ohio, the largest flood control project east of the Mississippi at Lae Cumberland hit an all-time record crest. Five feet above the previous record. This system helps protect Kentucky and Tennessee from flooding.

Economic Impacts

- Nebraska already looking at over $1B in damage and growing
  - $400M in losses to livestock
  - $400M in row and grain crops
- In Kansas, 40 different counties have needed weather data for livestock indemnity claims and payments.
- ”Off the cuff” estimates are around $8B just to repair levees in Iowa and Missouri.
- One county in Iowa was estimating a $7M loss to yield that was being stored.

Outlook

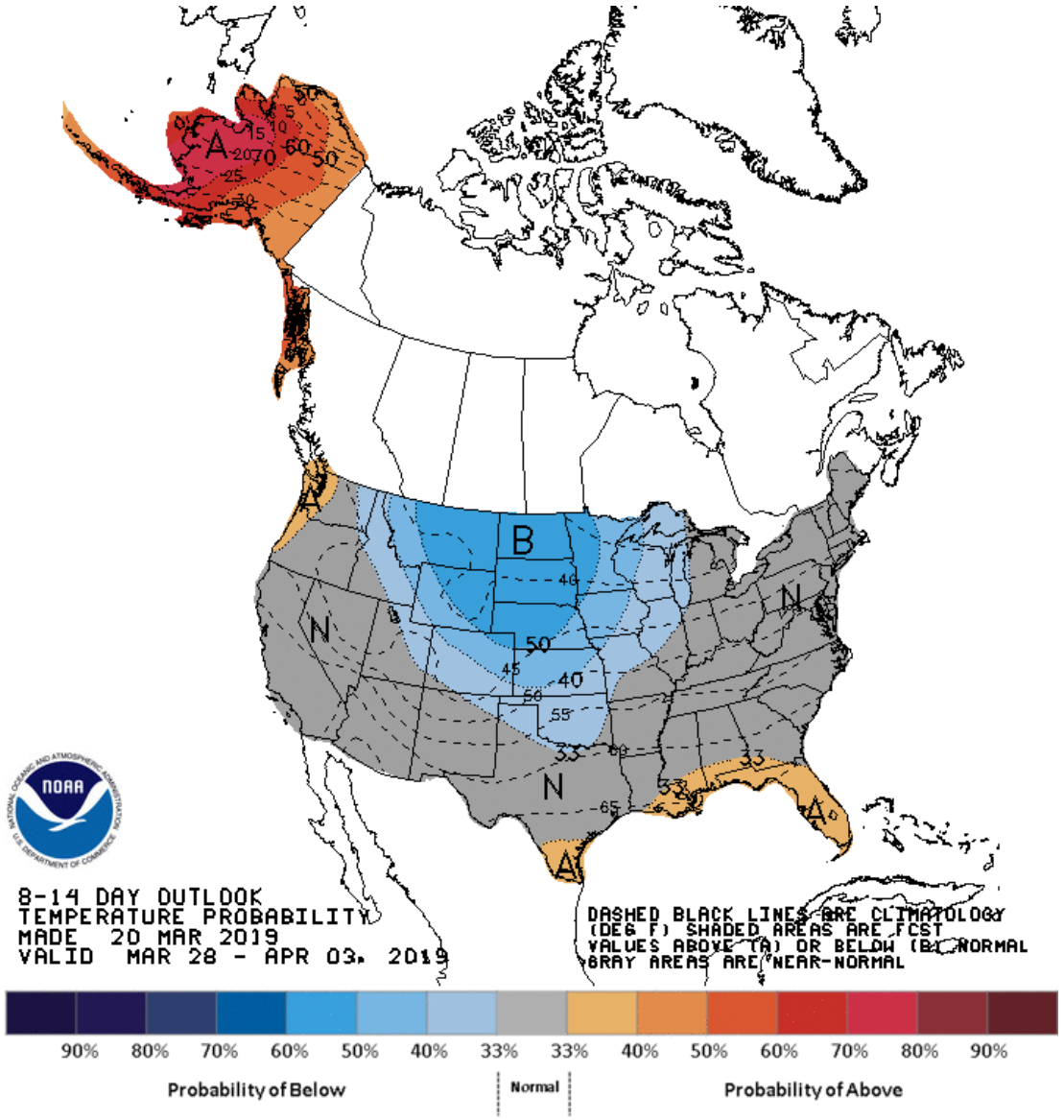
7-day Precip Forecast

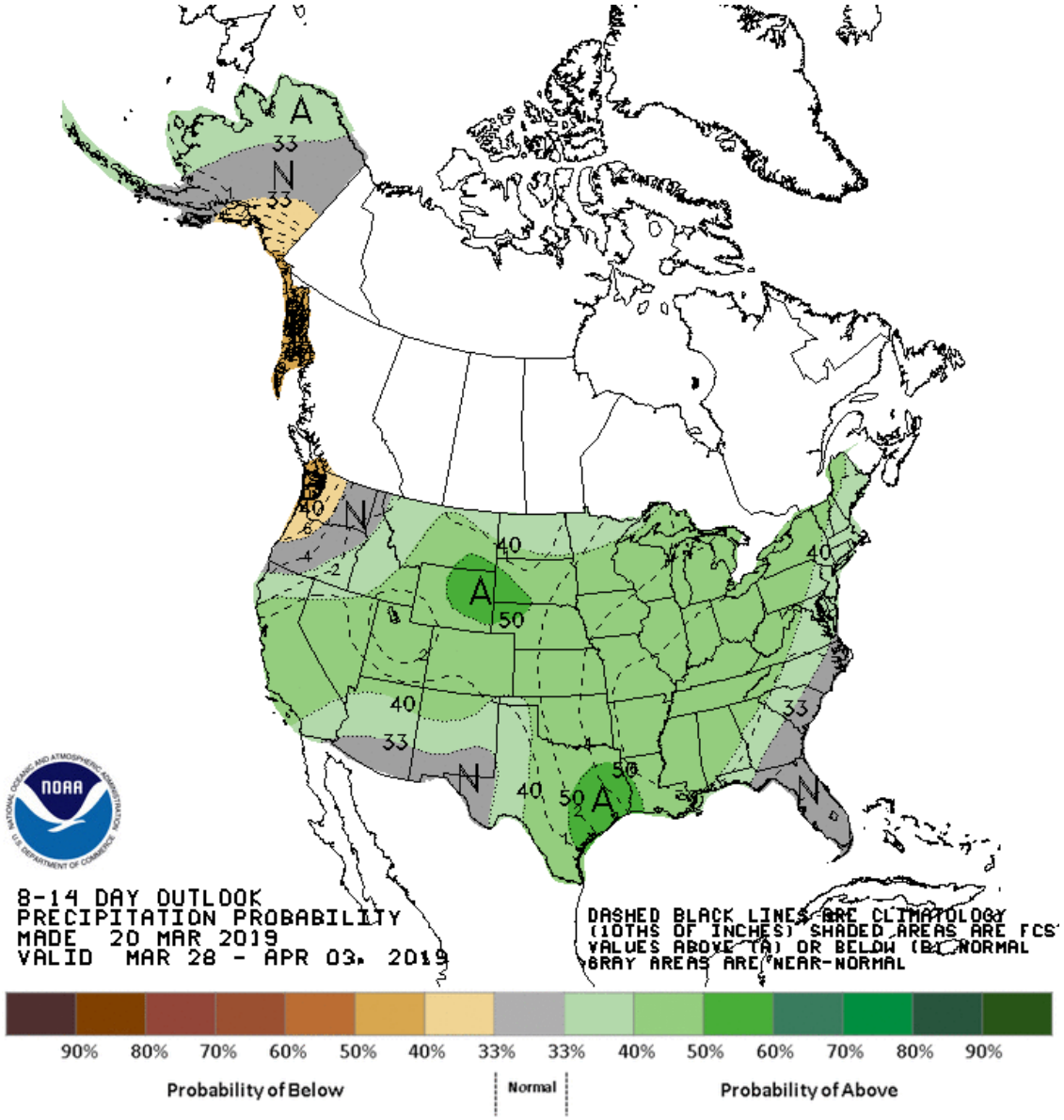


https://www.wpc.ncep.noaa.gov

8-14 Day Outlook

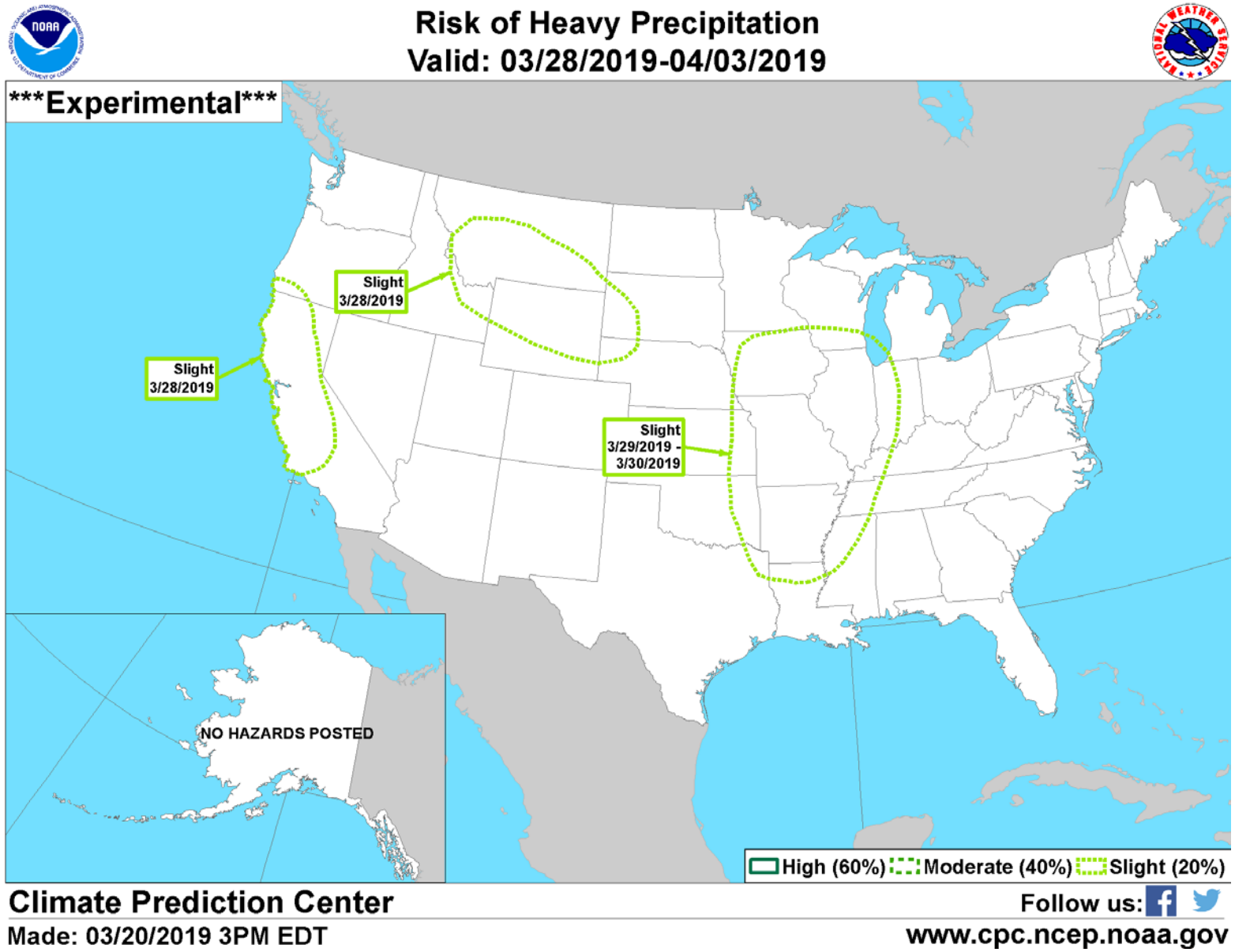
https://www.cpc.ncep.noaa.gov



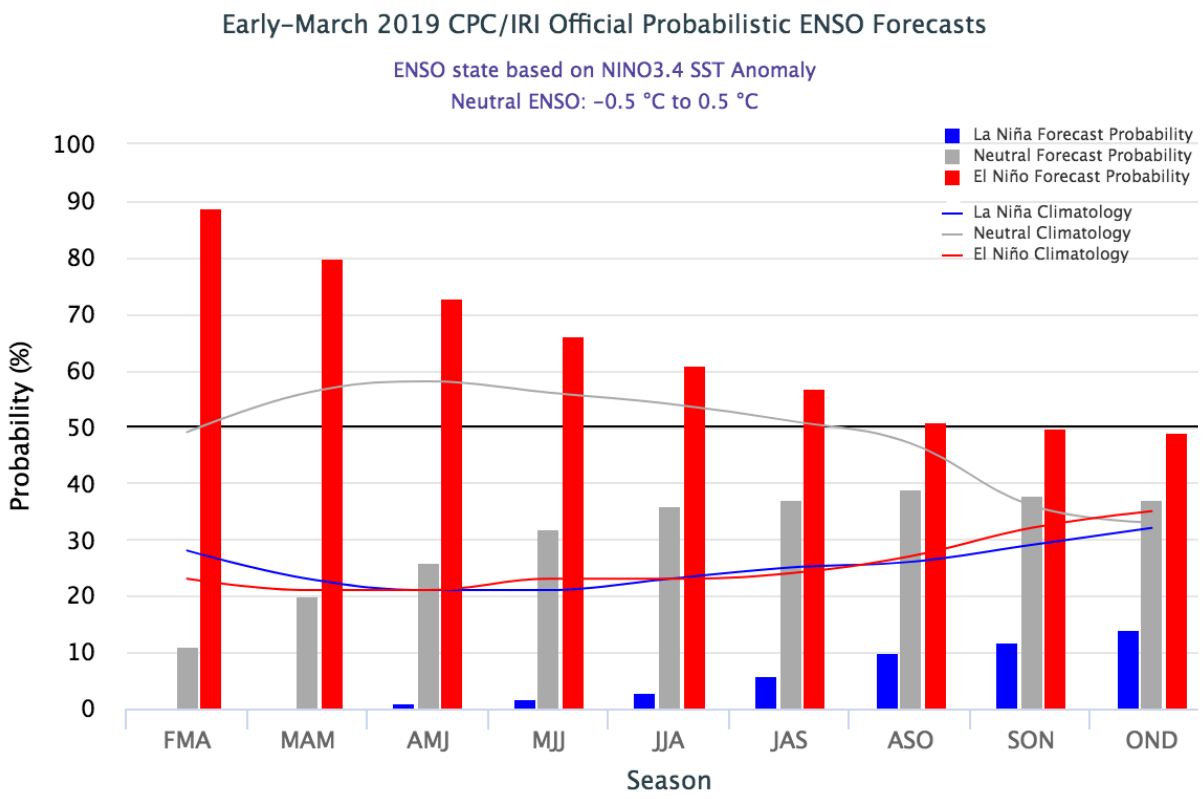


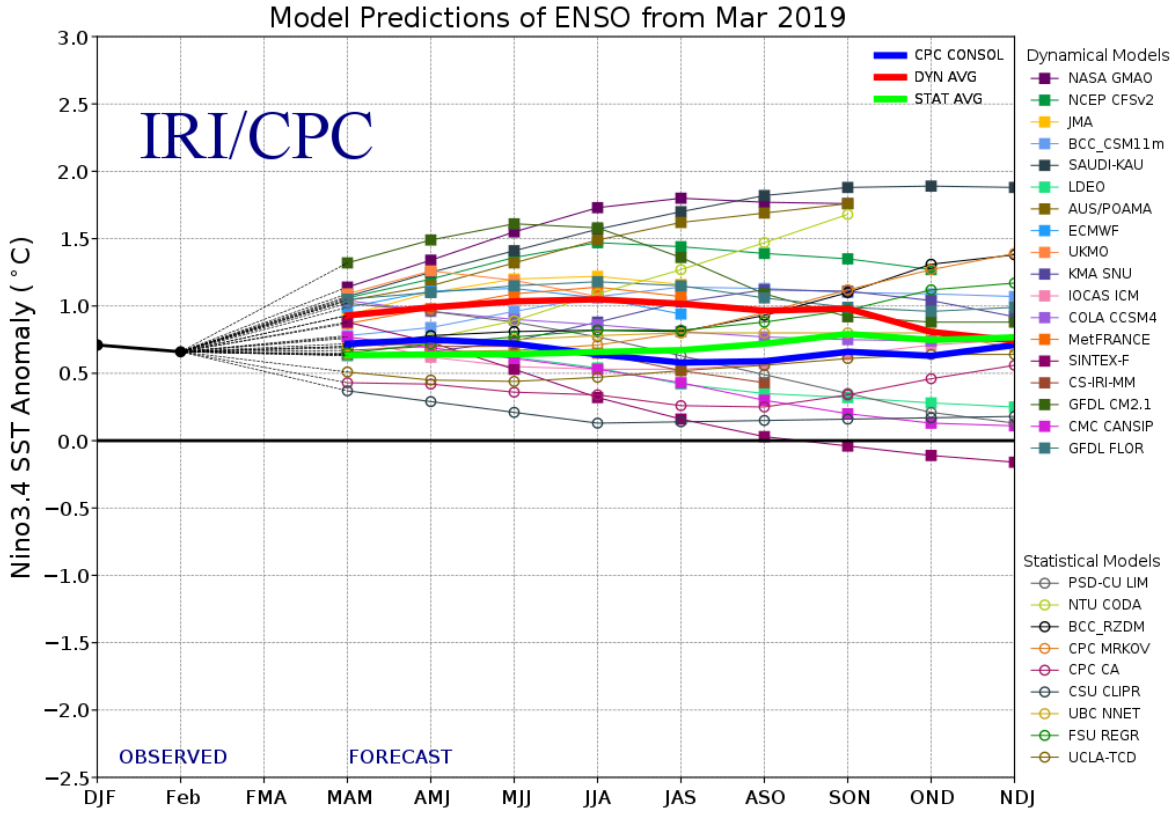
8-14 Day Outlook

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



El Niño is expected to continue into the summer…

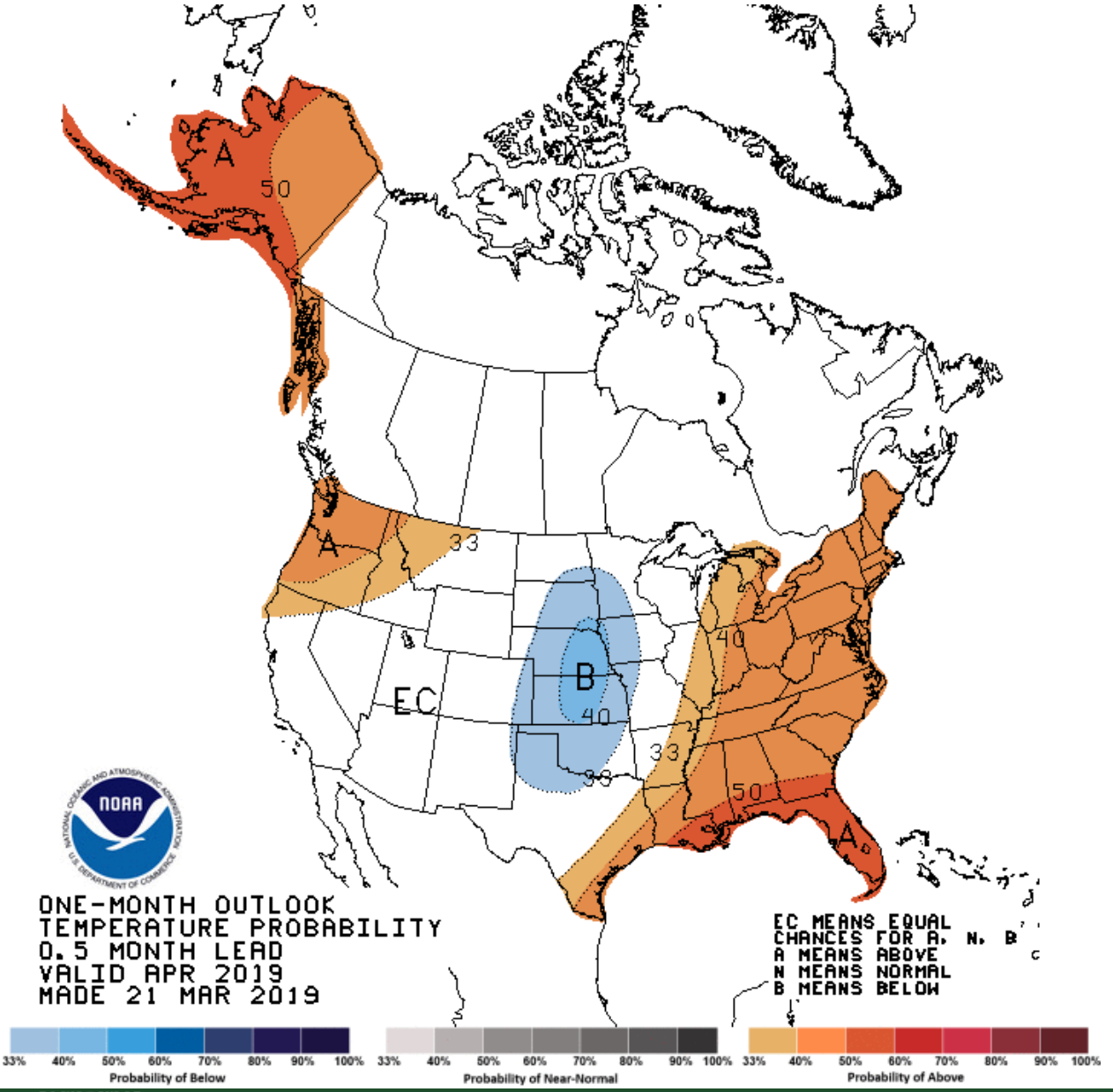


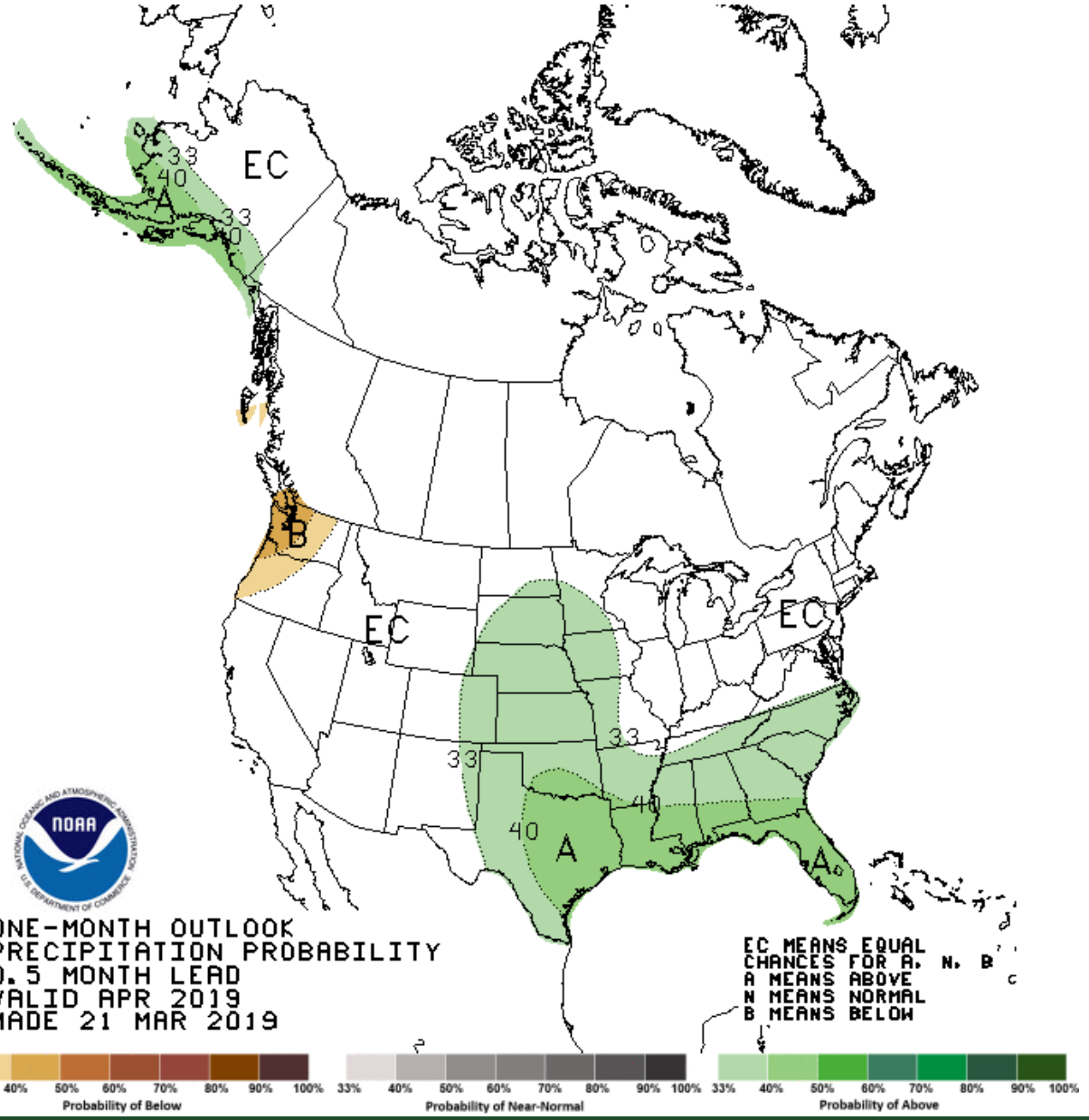


IRI/CPC ENSO Forecasts:
https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/

April Outlook

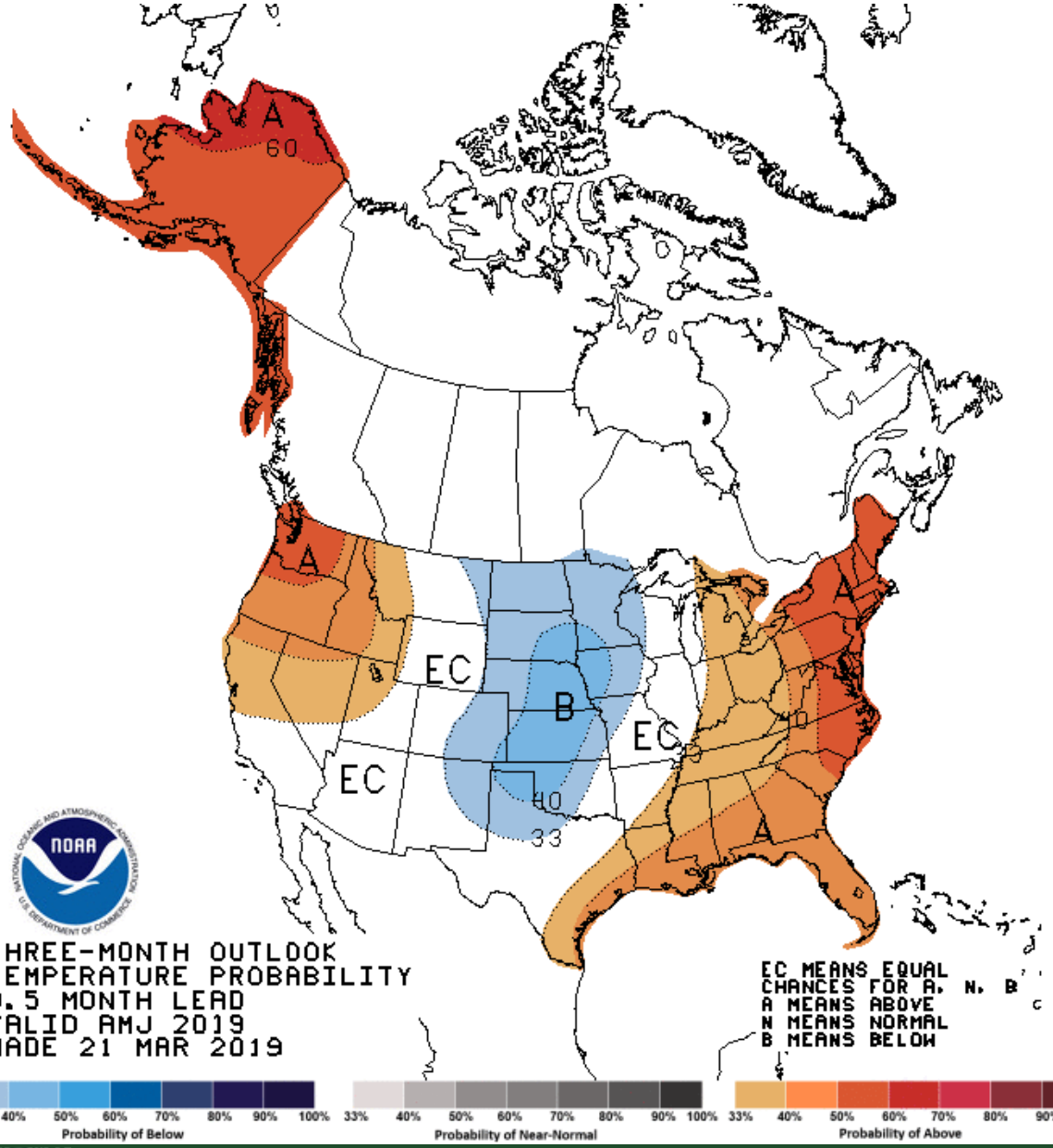
https://www.cpc.ncep.noaa.gov

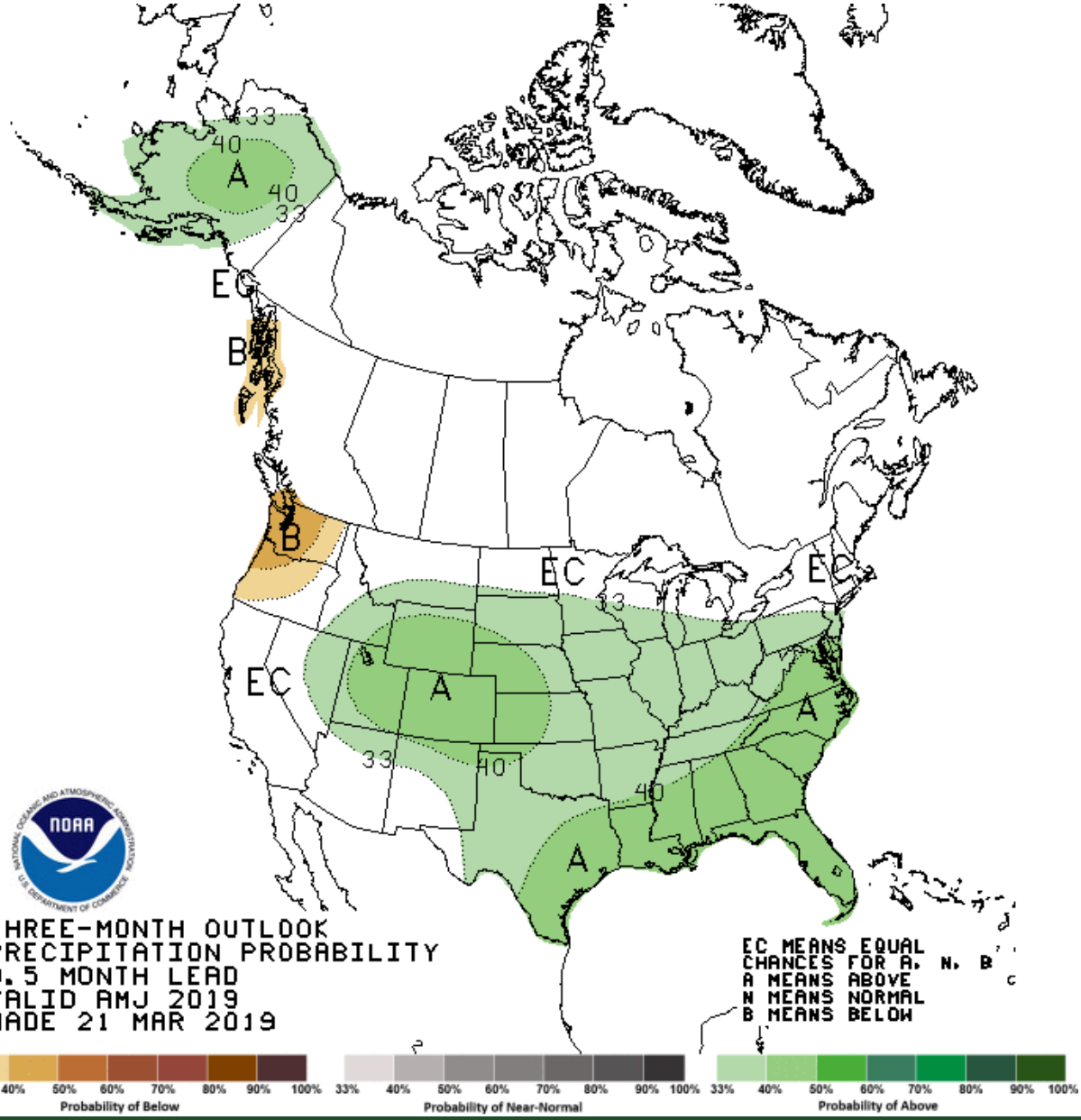




Seasonal Outlook – AMJ

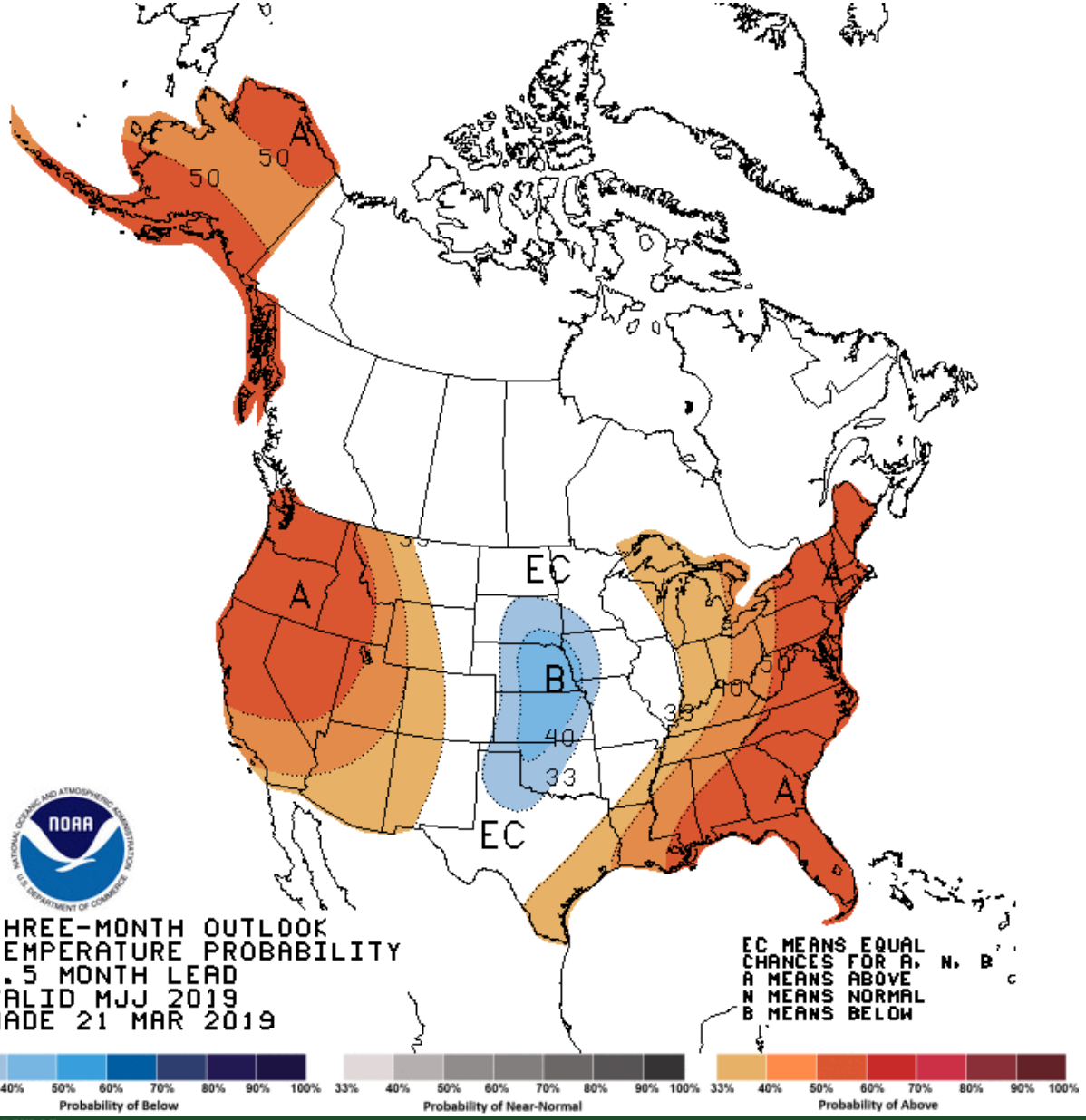
https://www.cpc.ncep.noaa.gov

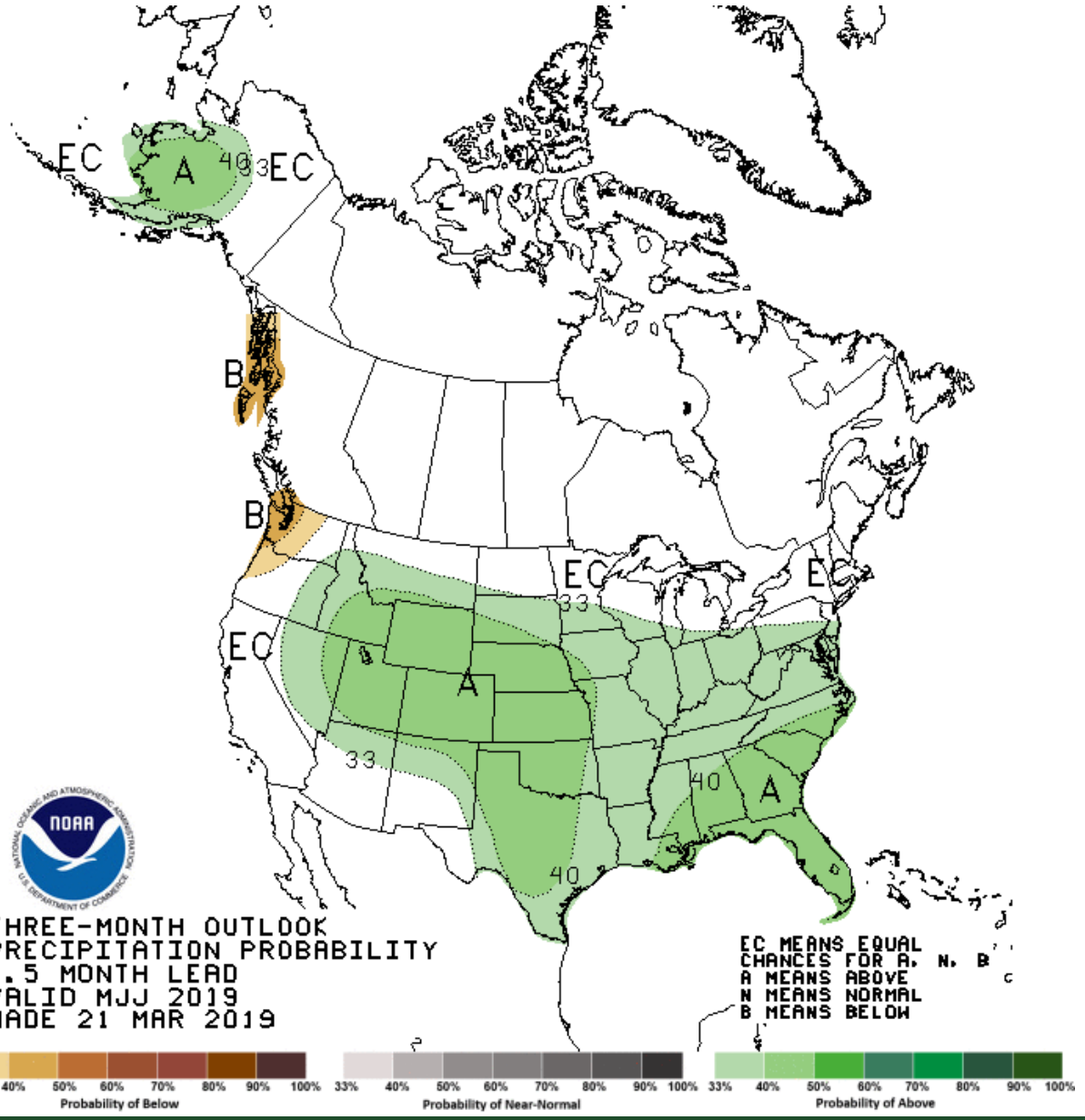




Seasonal Outlook – MJJ

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





Further Information - Partners

- **Today's and Past Recorded Presentations:**
  - https://mrcc.illinois.edu/multimedia/webinars.jsp
  - https://hprcc.unl.edu/webinars.php
- NOAA's National Centers for Environmental Information: 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: https://drought.unl.edu/
- State climatologists: https://www.stateclimate.org
- Regional climate centers
  - https://mrcc.illinois.edu
  - https://hprcc.unl.edu

- **Climate**
  - Becky Bolinger: becky.bolinger@colostate.edu, 970-491-8506
  - 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 (drought)

- **Weather**
  - chroc@noaa.gov

Thank you

COLORADO CLIMATE CENTER

ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

2019 March Midwest Climate Call
Spring Flood Potential

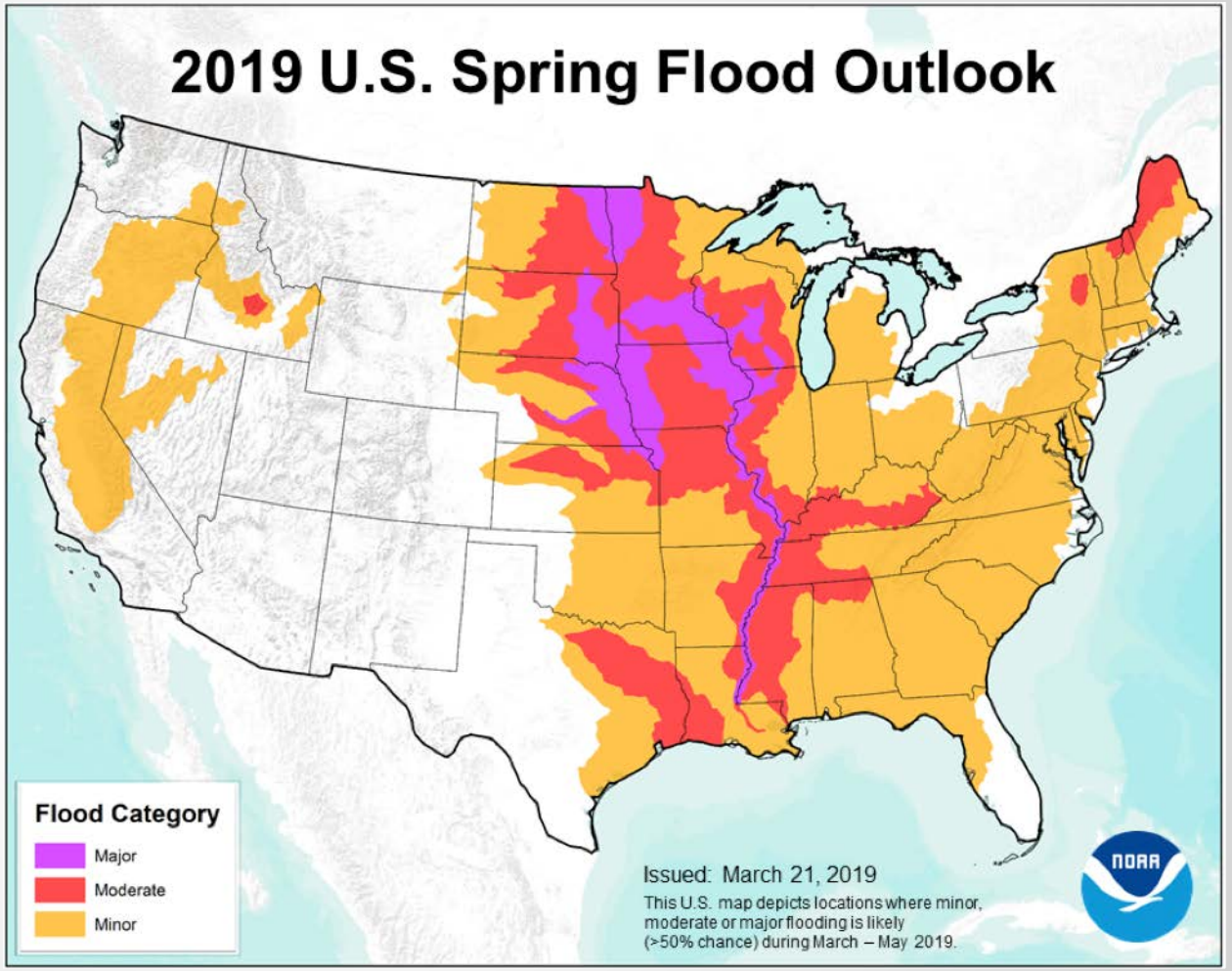
Spring Flood Outlook for the Midwest

- **Lead Presenter** — **Jim Noel – OHRFC**
- **Technical Experts** — **Corey Loveland – NCRFC (Upper Mississippi/Red River basin)**
  Kevin Low – MBRFC (Missouri basin)
  Jim Noel – OHRFC (Ohio River basin)

March 21, 2019

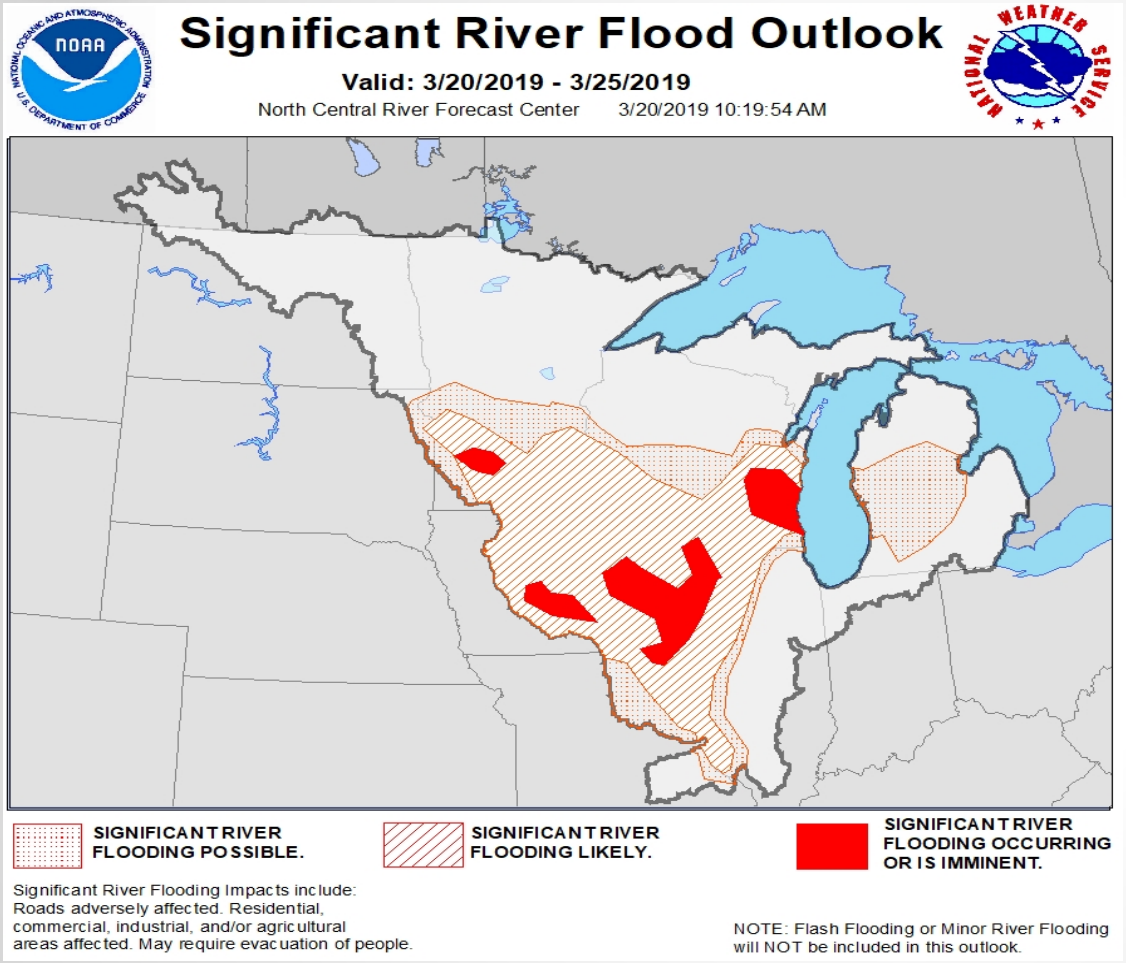
Spring Flood Outlook

- Significant flooding ongoing or expected to develop especially across north-central U.S. This includes eastern Missouri, upper Mississippi and Red River of the North
- Additional or renewed flooding expected in mid-Mississippi to Ohio River Valley into spring



https://www.nws.noaa.gov/oh/2019NHA.html

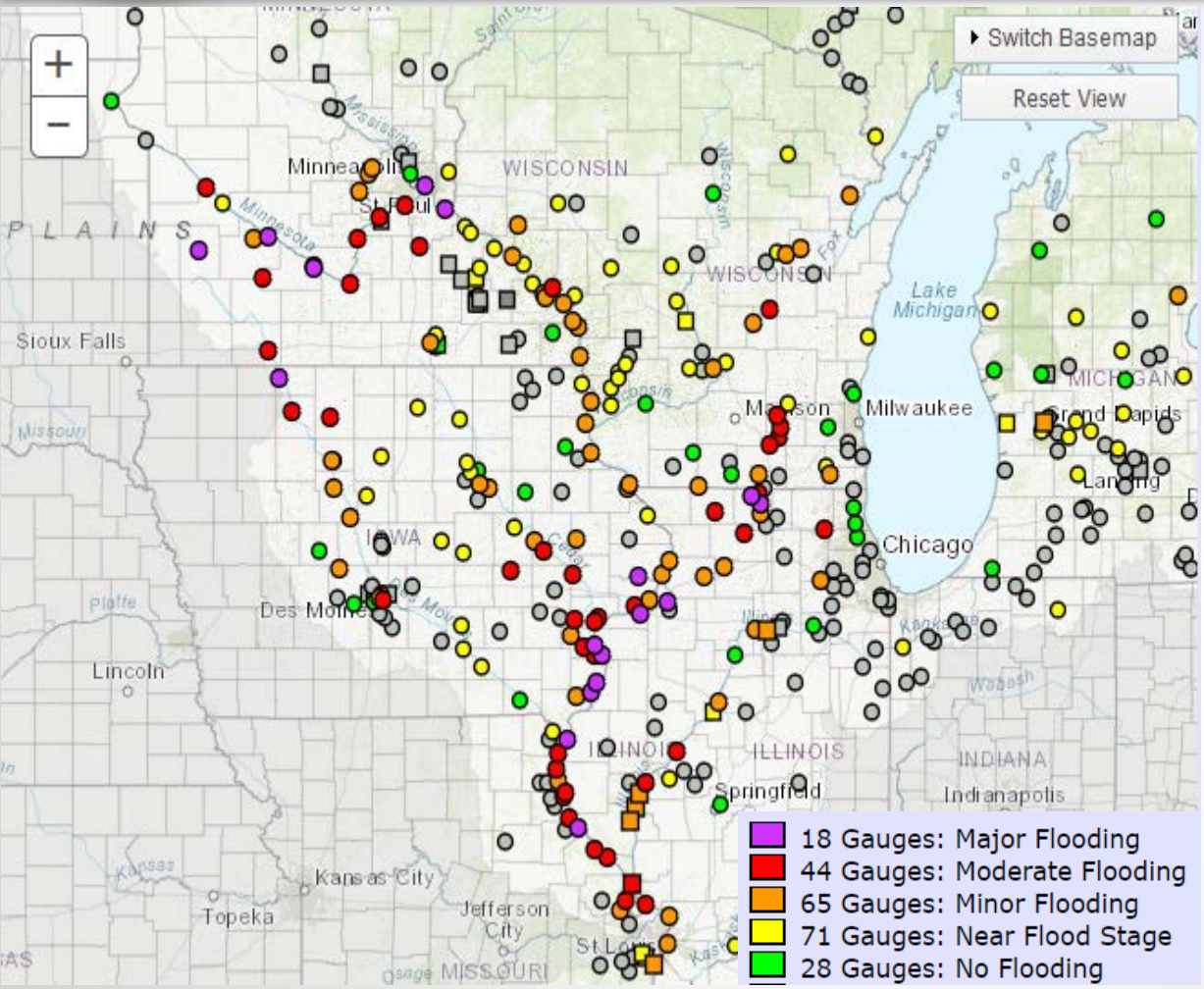
Upper Mississippi River Basin
Next 5 days



- Significant Minor to Major Flooding will continue for weeks
- Considerable amounts of ice and ice jams still remain

https://www.weather.gov/ncrfc/lmi_fop_summary

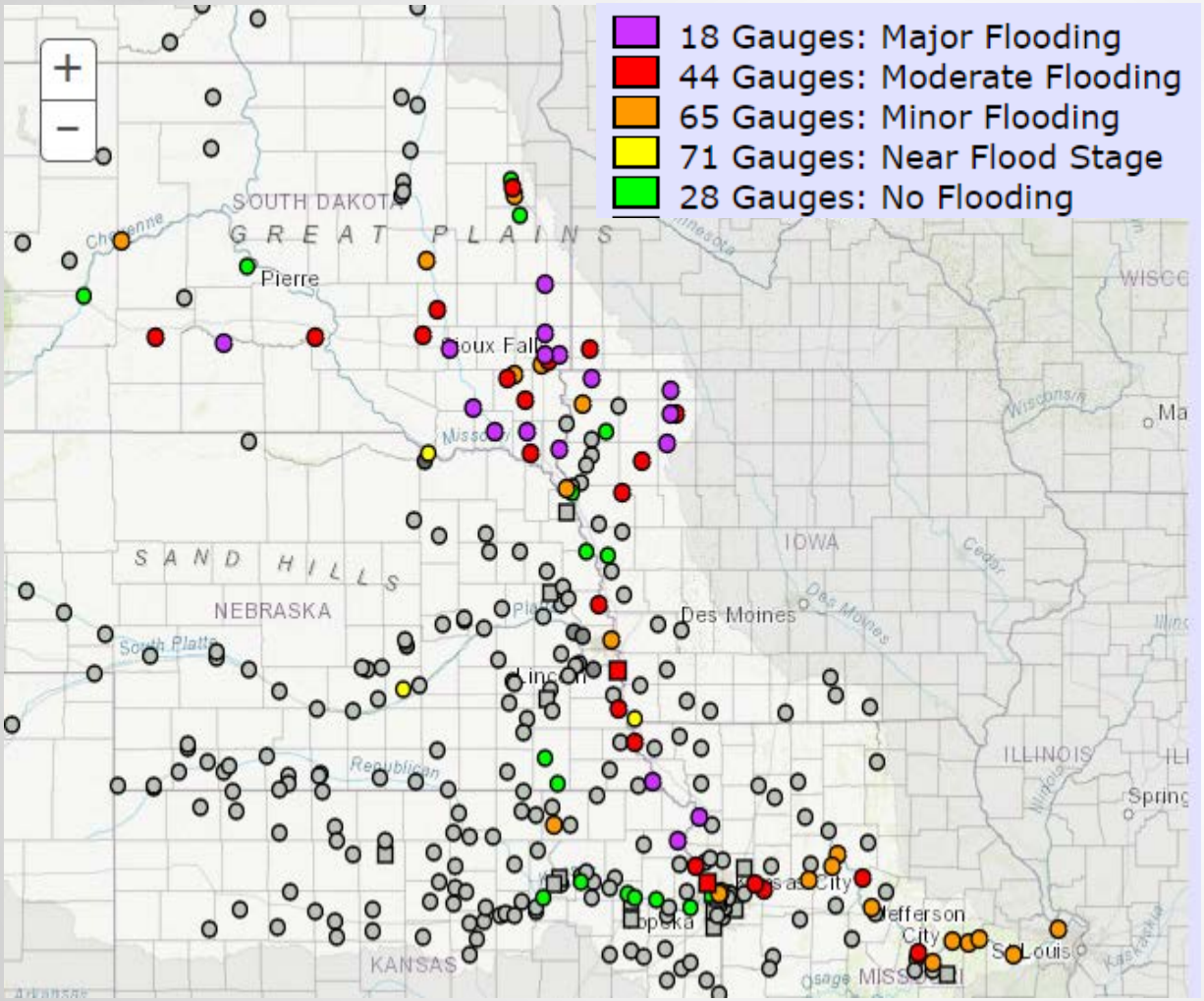
Upper Mississippi River Basin over Next Week



- Future warm ups and precipitation will bring additional rises on the river as snow continues to melt
- Timing of Melt: late March to mid-to-late April
- Crest Levels, timing and flood impacts dependent on spring temperatures and precipitation

https://www.weather.gov/ncrfc/

Missouri River Basin over Next Week



https://www.weather.gov/mbrfc/

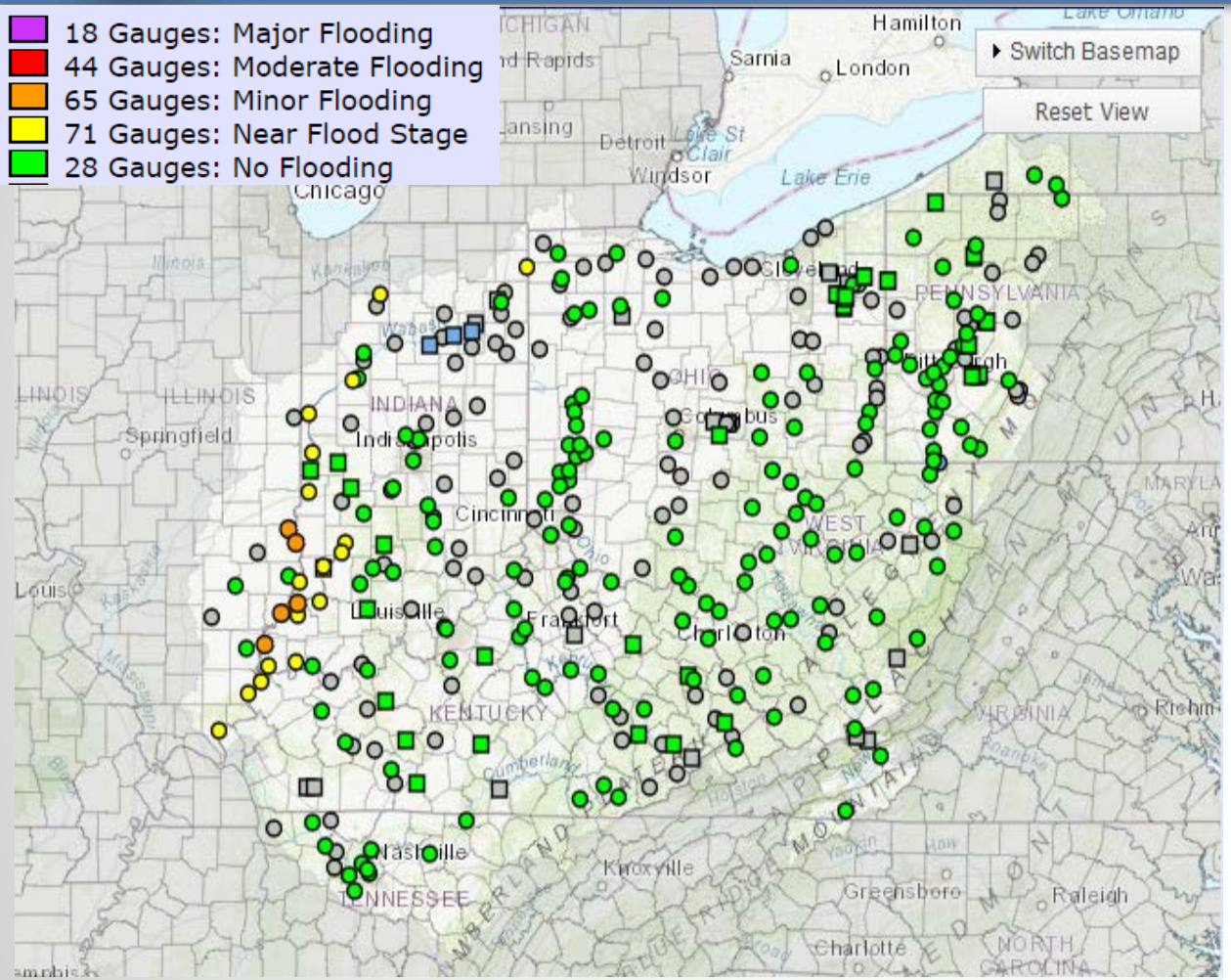
- Significant flooding continues in eastern areas of the Missouri River basin. At least 30 new records in the basin
- Additional Crest Levels, Timing and Flood impacts are dependent on spring temperatures and precipitation
- Please continue to monitor your National Weather Service Forecast Offices and River Forecast Centers for updates

MISSOURI BASIN RIVER FORECAST CENTER

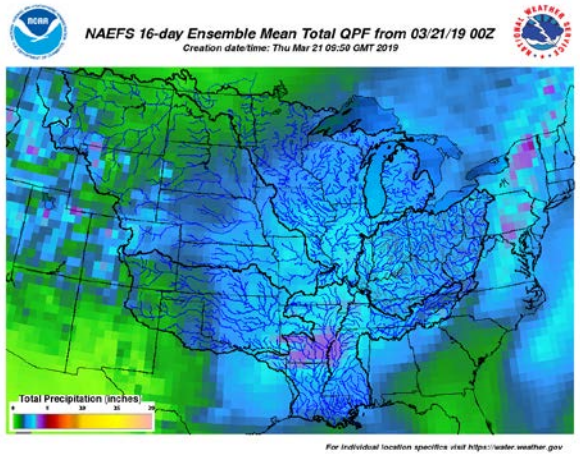
Summary Points

- **Mountain snowpack about normal for the mountainous west. We are about 90% through the accumulation period. Significant flooding due to mountain snowmelt alone is not likely. Potential for ice-jam flooding along lower Yellowstone in very near term.**
- **Heavy plains snowpack (3-to-5+ SWE) exists across eastern North Dakota and northern South Dakota. Soils are wetter than normal, and they are frozen. Meltout expected by mid-April….many places much sooner.**
- **Moderate-to-major flooding already occurring along James, Vermillion, White and Big Sioux Rivers in South Dakota. Many rivers will crest in next 2 weeks.**
- **Last week's rain-on-snow event led to 30+ records in NE, SD, IA. Missouri River broke 3 records, full length in flood.**
- **Moving forward, concern will translate to Springtime thunderstorm activity on already saturated ground. Long flood season ahead.**

Ohio River Basin over Next Week



- Flooding has relaxed in the Ohio River basin for now
- Rainfall will begin to enhance again in 1-3 weeks from now which could lead to renewed flooding



https://www.weather.gov/ohrfc/

NWS
Contact Information

Detailed questions: Please refer to your local National Weather Service Forecast offices – https://www.weather.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