

# Too Much Water:

## A Review of 2019 & Outlook for 2020

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Illinois State Water Survey

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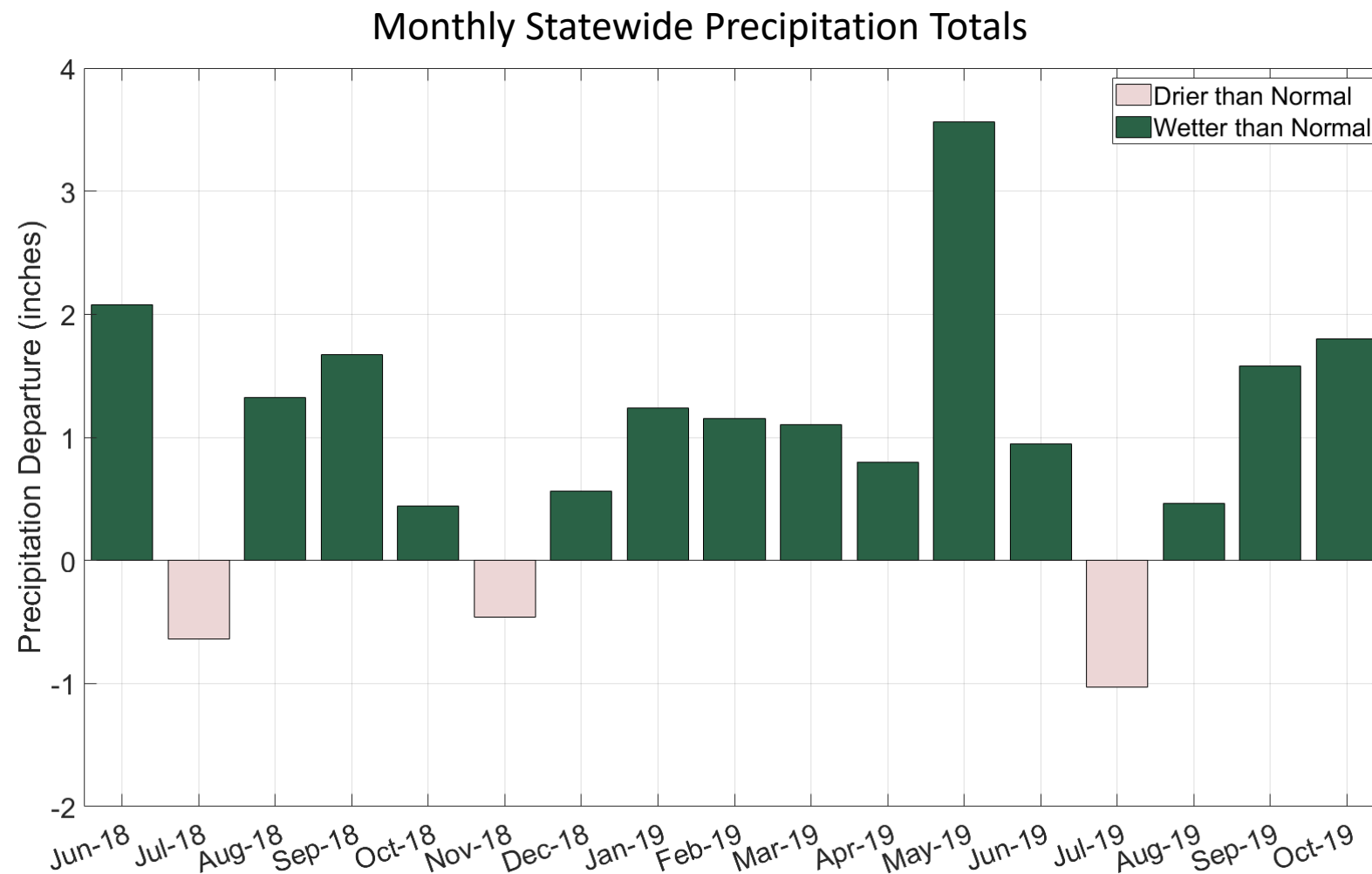
# 2019 Review

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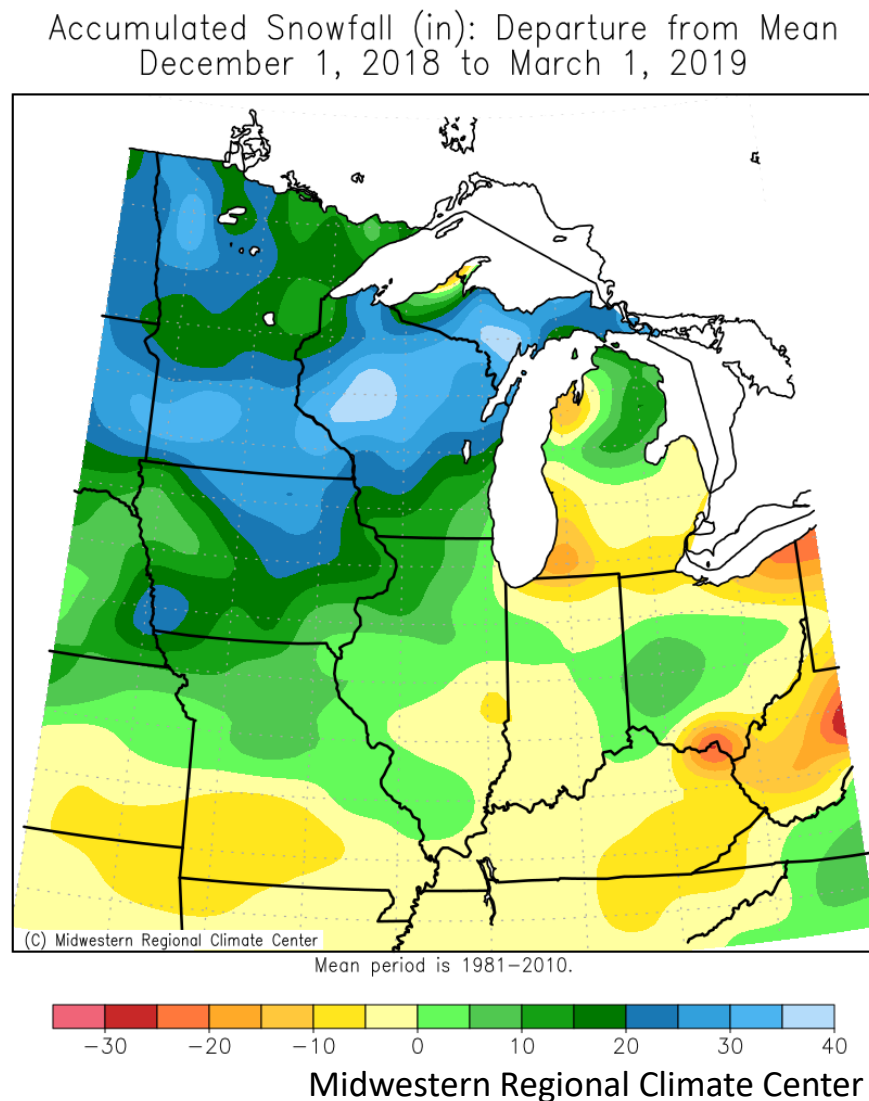
# 2019 Review: Back to 2018

- 5 of the last 7 months in 2018 were wetter than normal

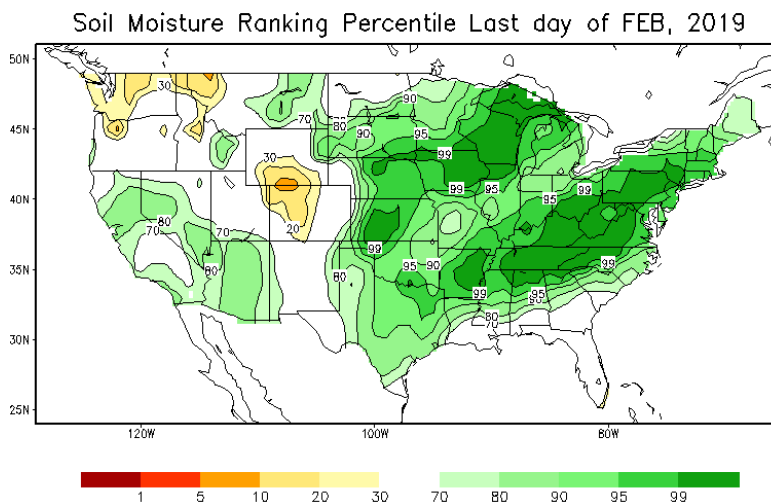
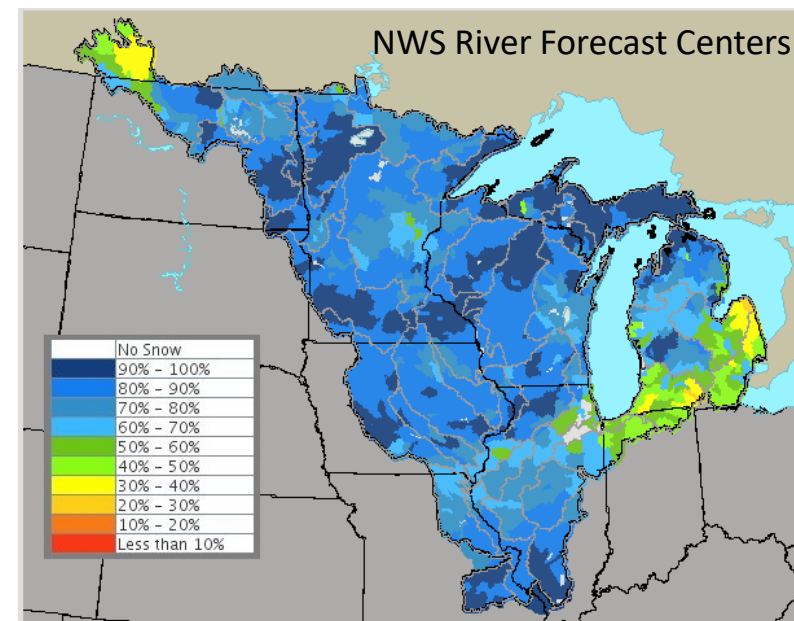


# 2019 Review: Back to 2018

- Winter 2018-19 season much snowier than normal (30 – 40” more in Upper Midwest)
- Snowpack was near record in UP, WI, MN, and northern IL coming into March 2019
- Soils at or near saturation across the eastern U.S. coming into March 2019

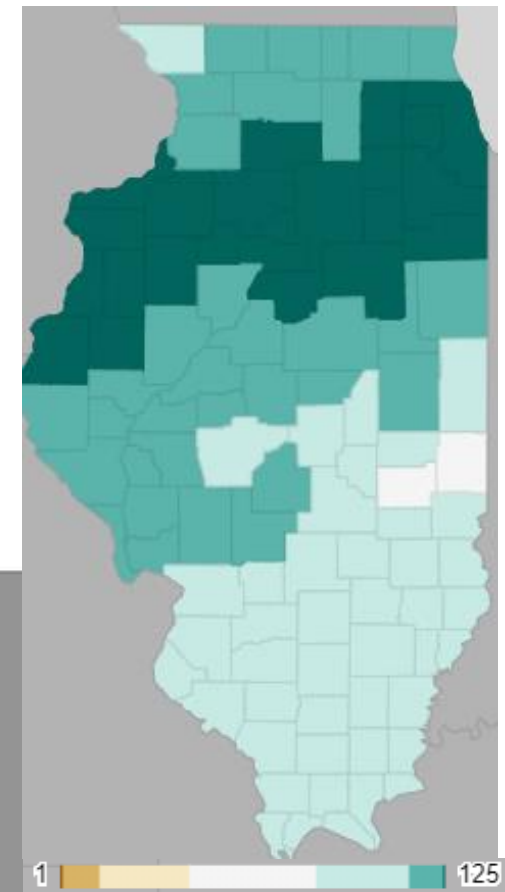
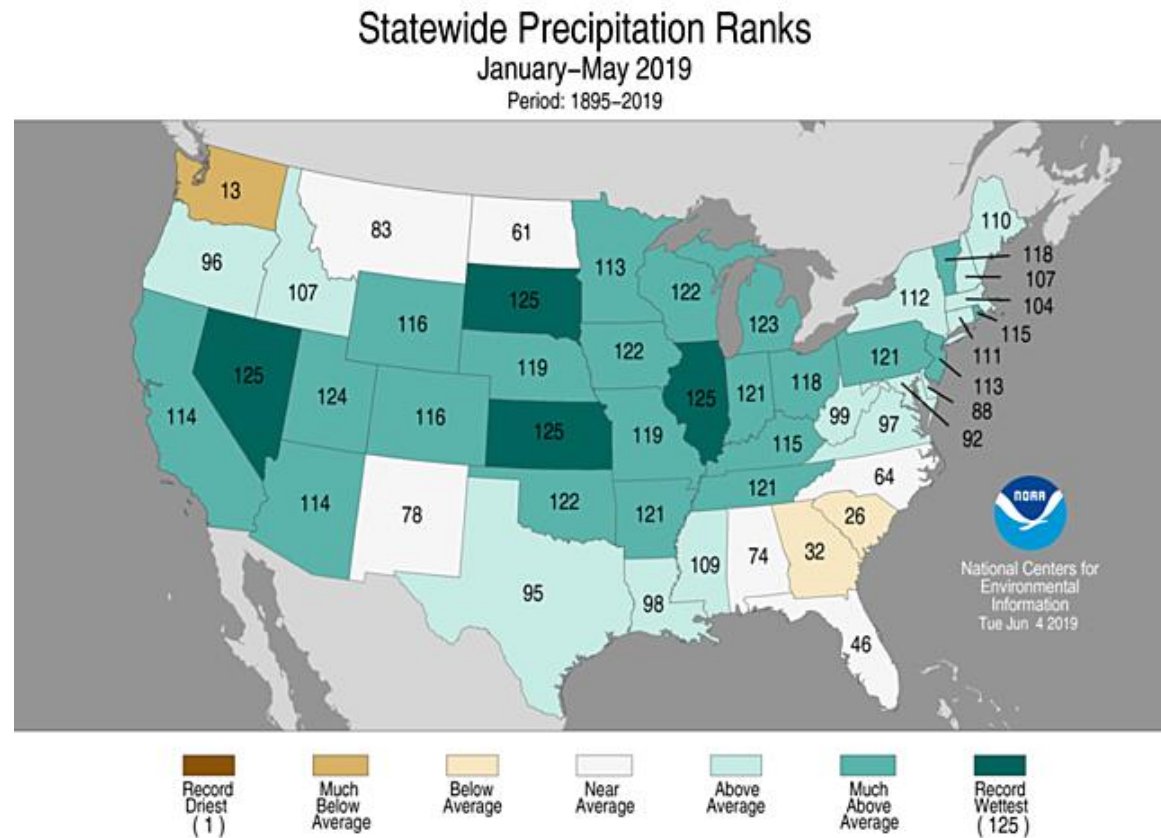


## Snowpack Anomaly – March 2019



# 2019 Review: Record Wet Spring

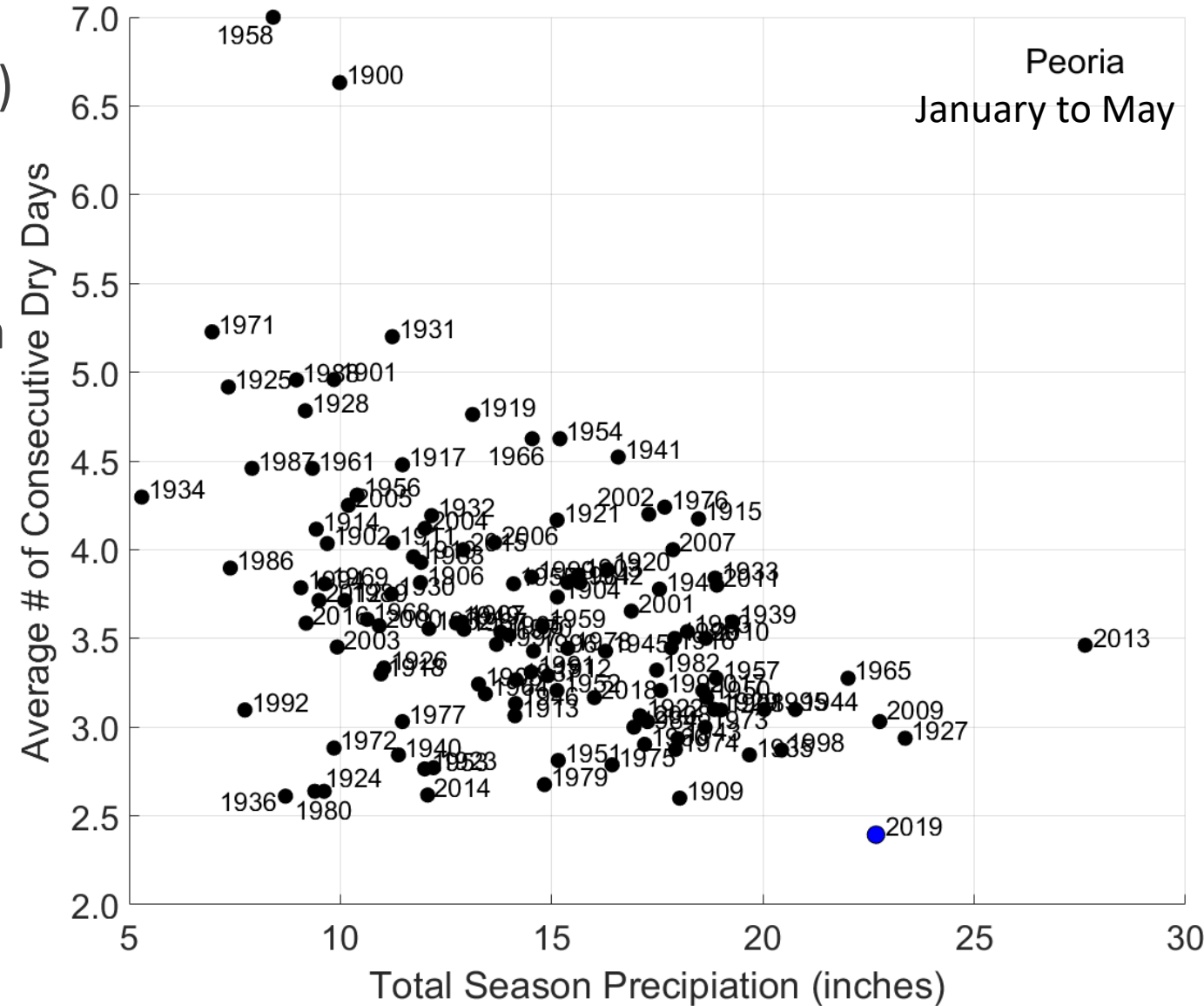
- March, April, May, & June above normal precipitation
- May statewide total (8.16") nearly twice the normal
- January to May 2019 was wettest on record statewide (since 1895)
- Top 10 wettest spring in 94 out of 102 IL counties
- Wettest May on record in 23 IL counties



NOAA National Centers for  
Environmental Information

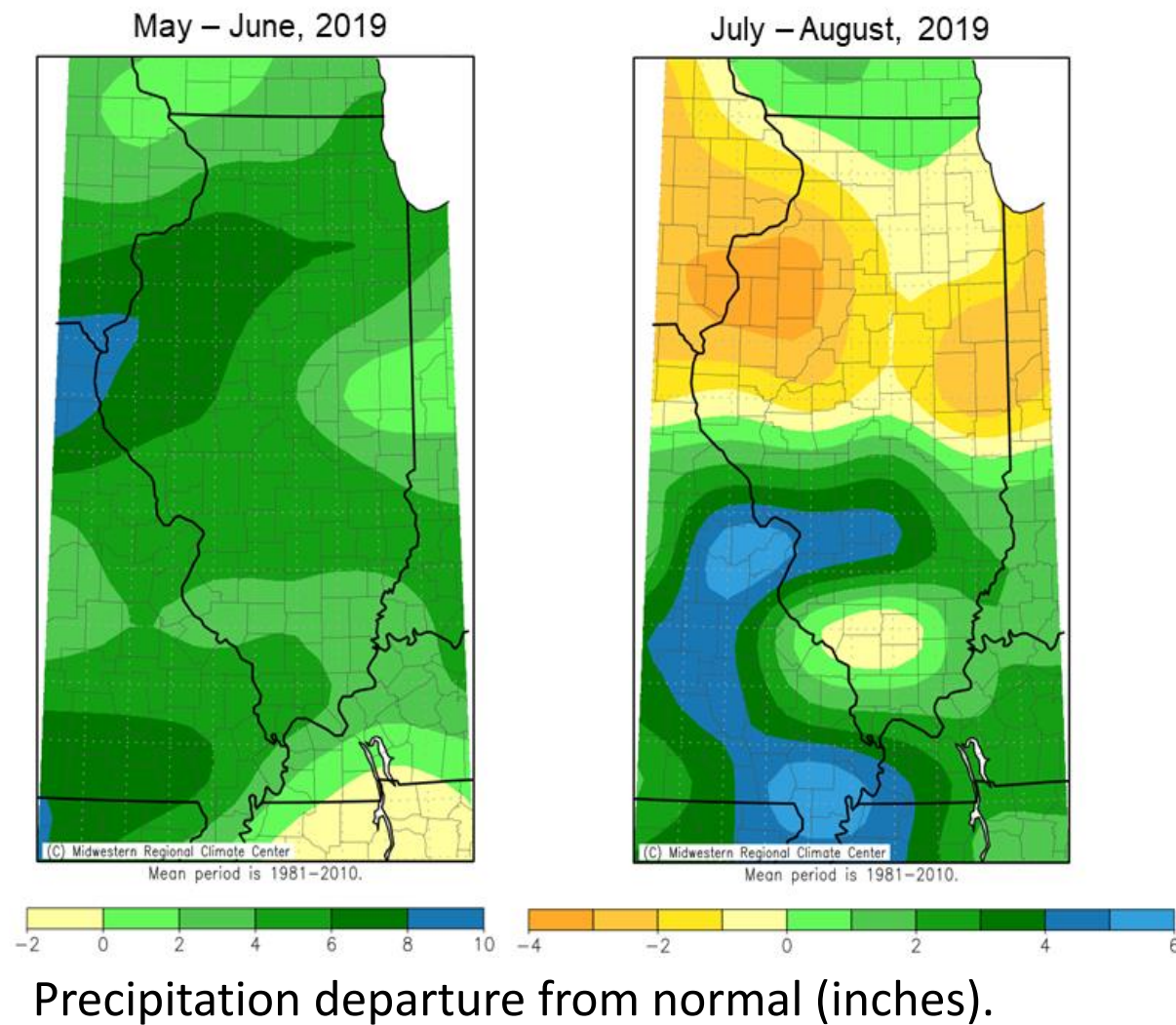
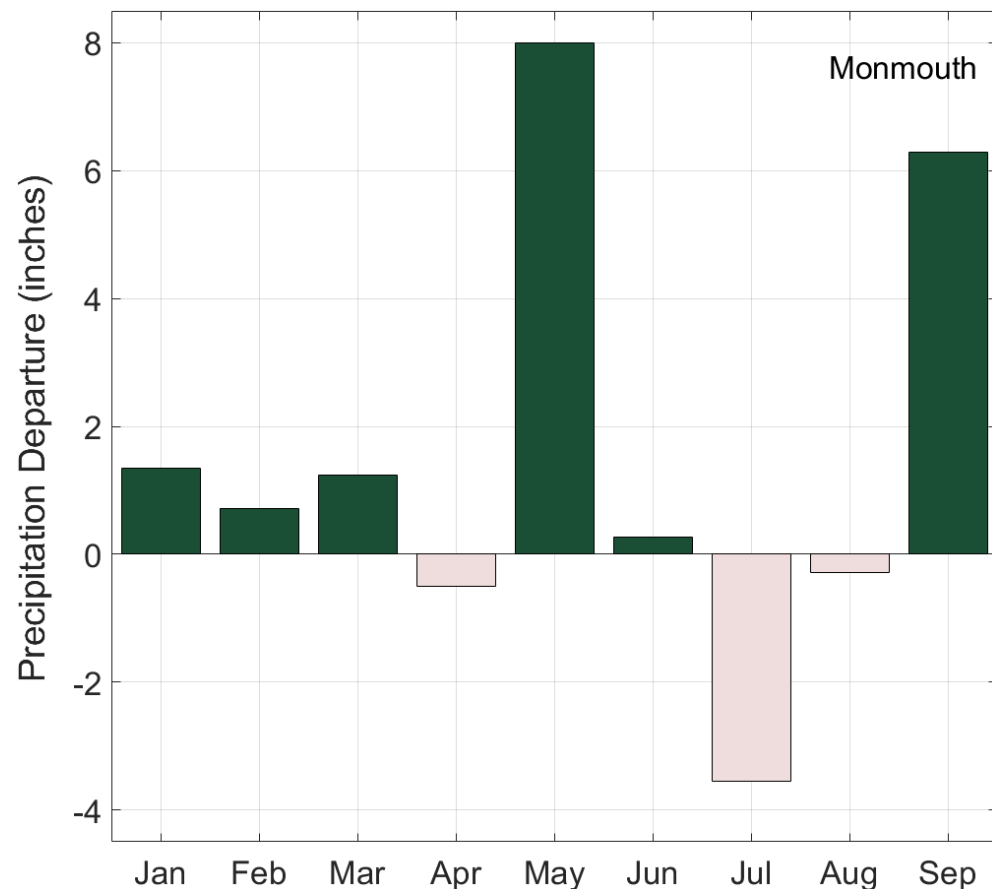
# 2019 Review: Record Wet Spring

- Highest frequency of “wet days” ( $> 0.01$ ”)
- Smallest average number of consecutive dry days on record (2.4)
- From January to May: less than 3 days on average elapsed between precipitation events



# 2019 Review: Brief Summer Reprieve

- “Swing” from extremely wet to extremely dry across I-74 corridor in July-August

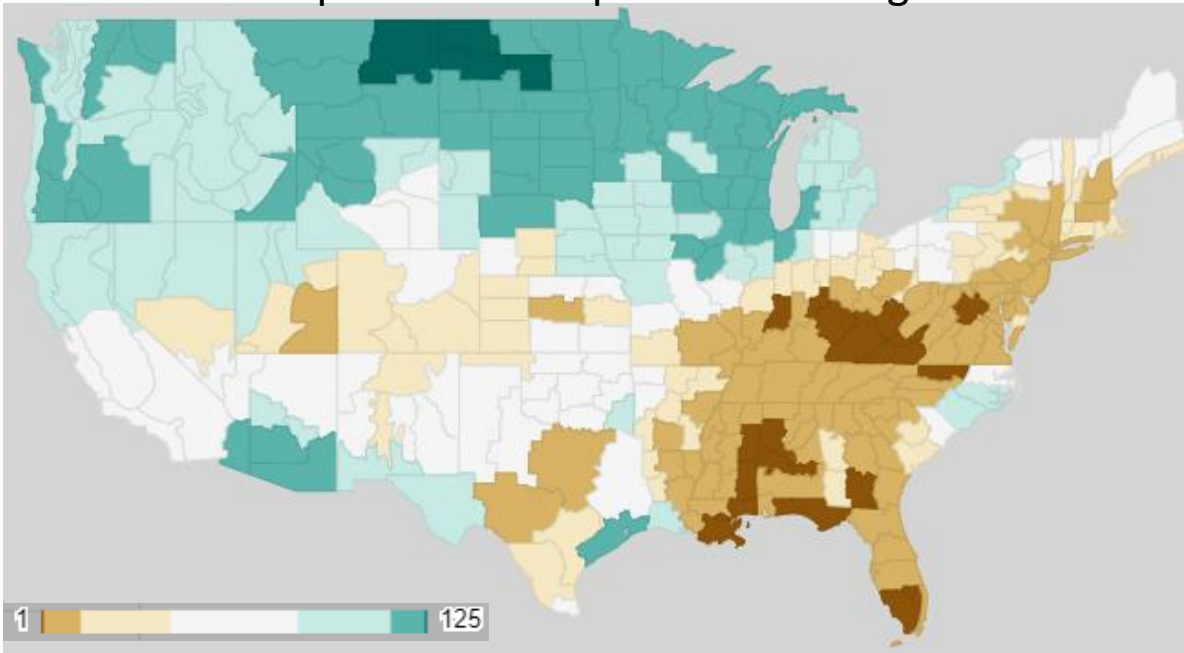




# 2019 Review: Fall Split

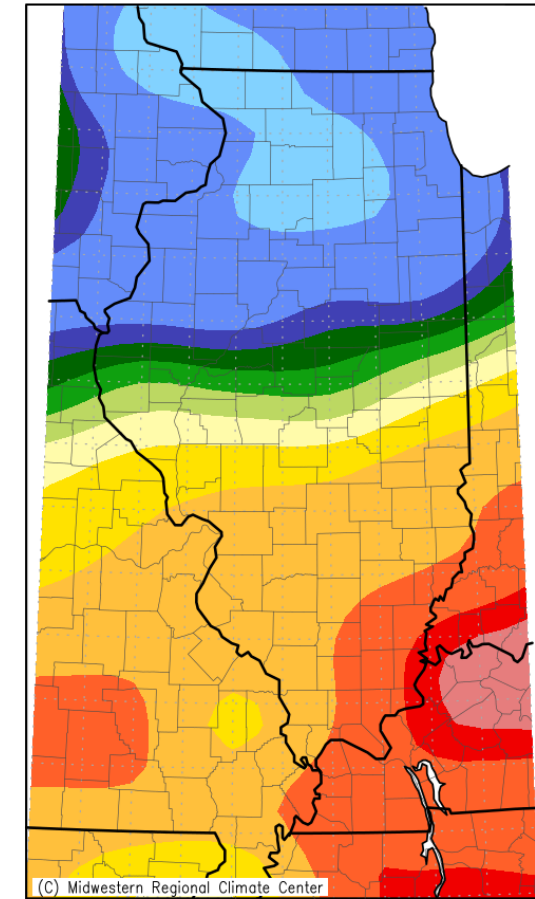
- A large upper-atmosphere ridge established over the southeast in September, shifting the jet stream north
- Illinois spanned extremely wet and extremely dry:
  - Lowest: Golconda (Pope County) at 0.00" (driest on record)
  - Highest: Seneca (La Salle County) at 16.85" (wettest on record)

September Precipitation Rankings



NOAA National Centers for Environmental Information

Accumulated Precipitation: Percent of Mean  
September 1, 2019 to September 30, 2019

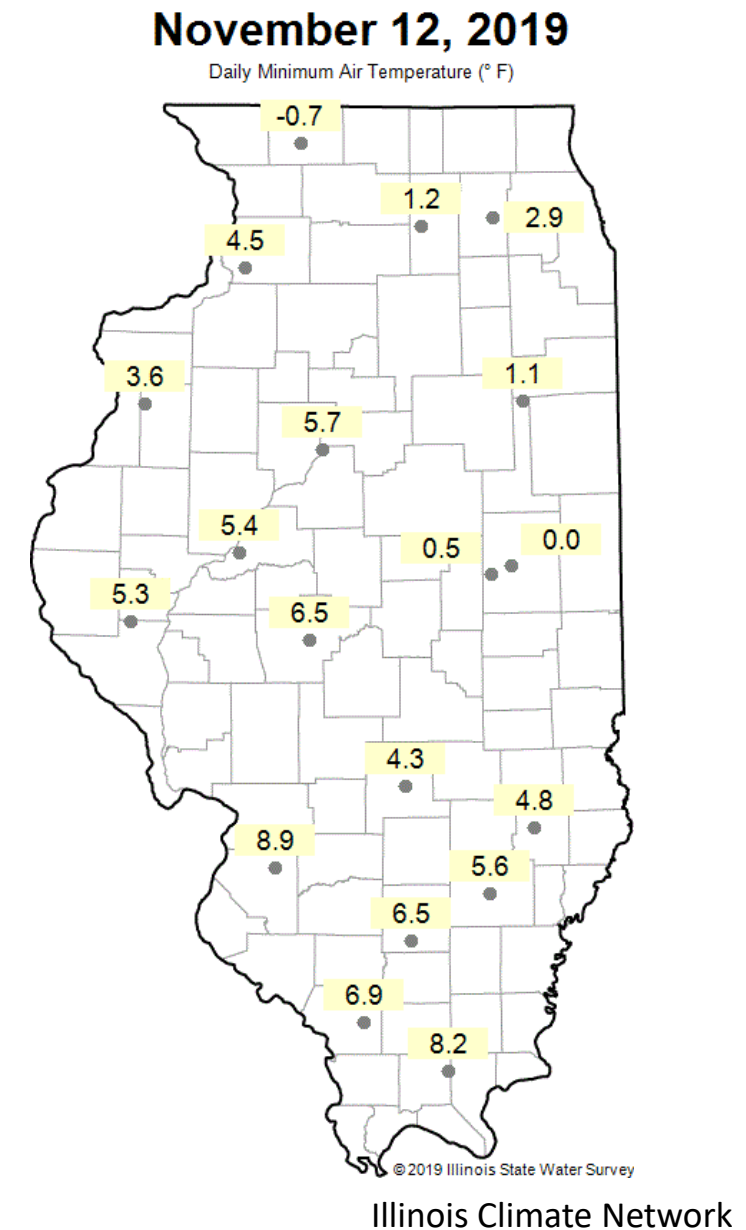
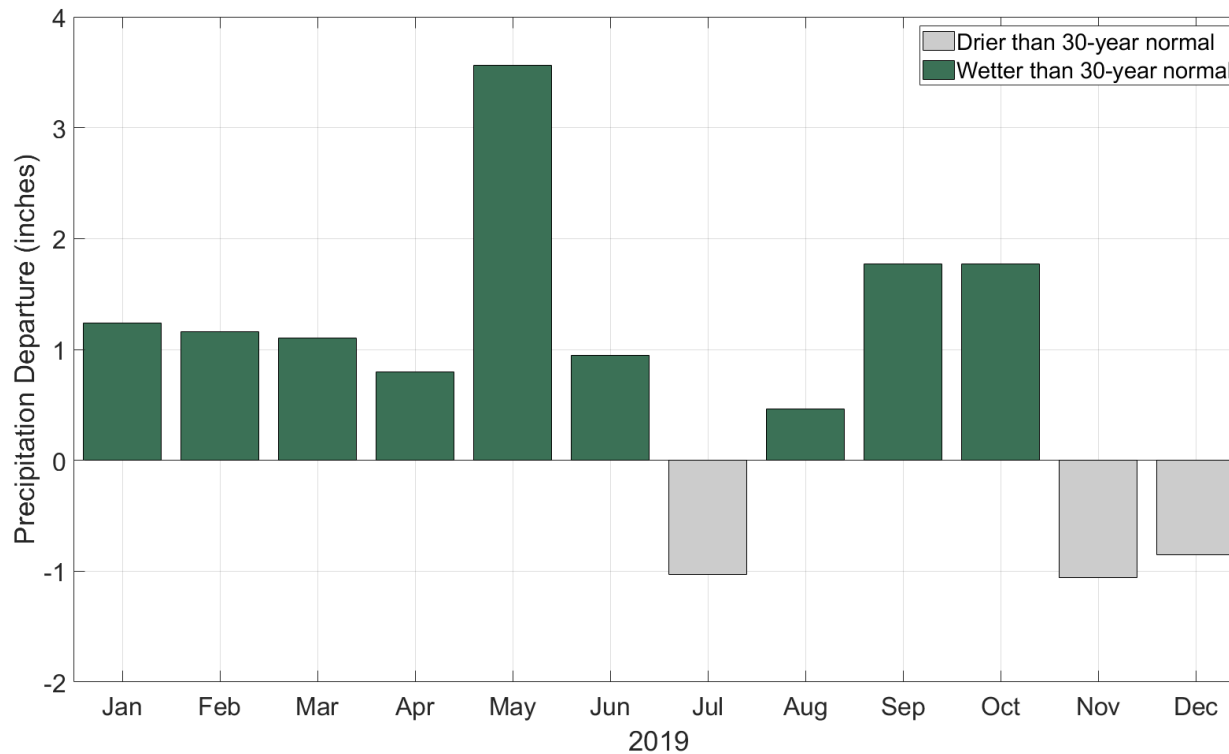




# The End – Quick Fall, The Cold & The Snow

- First half of November continued cold, snowy weather
- Measurable snow as far south as Cairo on November 12<sup>th</sup>
- Extremely cold temperatures in early November

Monthly Statewide Precipitation Totals



# 2020 So Far

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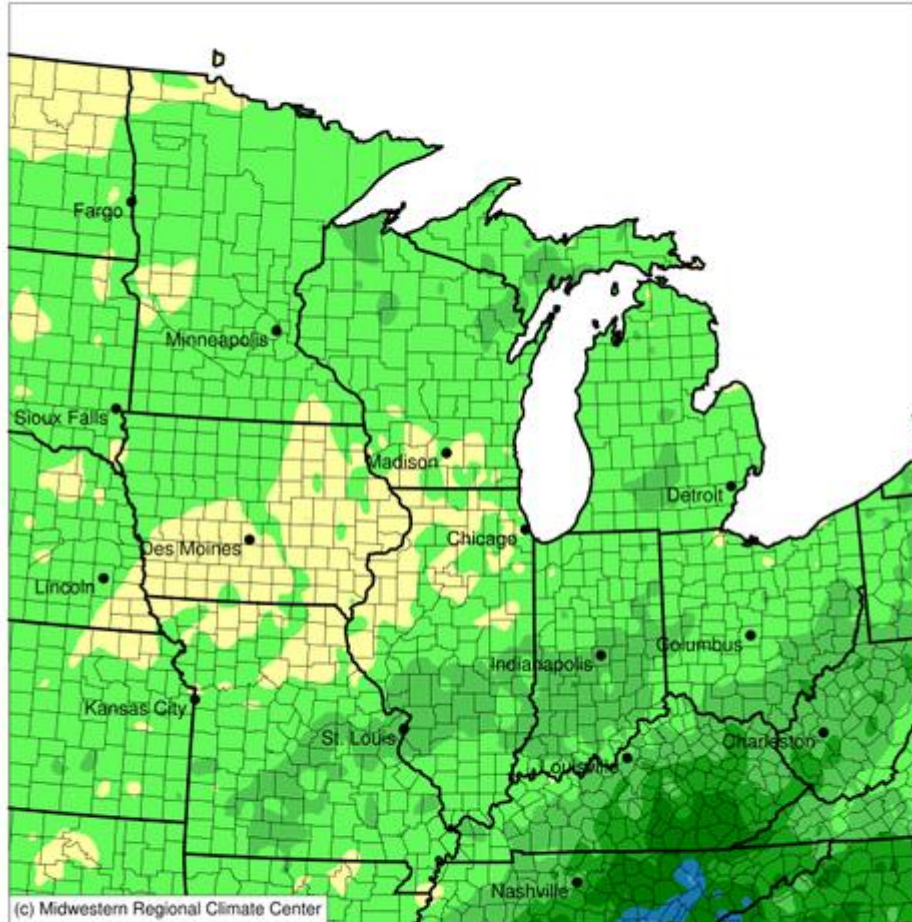


# 2019 – 2020 Winter: Precipitation

Source: MRCC, [mrcc.Illinois.edu](http://mrcc.Illinois.edu)

Accumulated Precipitation (in): Departure from 1981-2010 Normals

December 01, 2019 to February 29, 2020



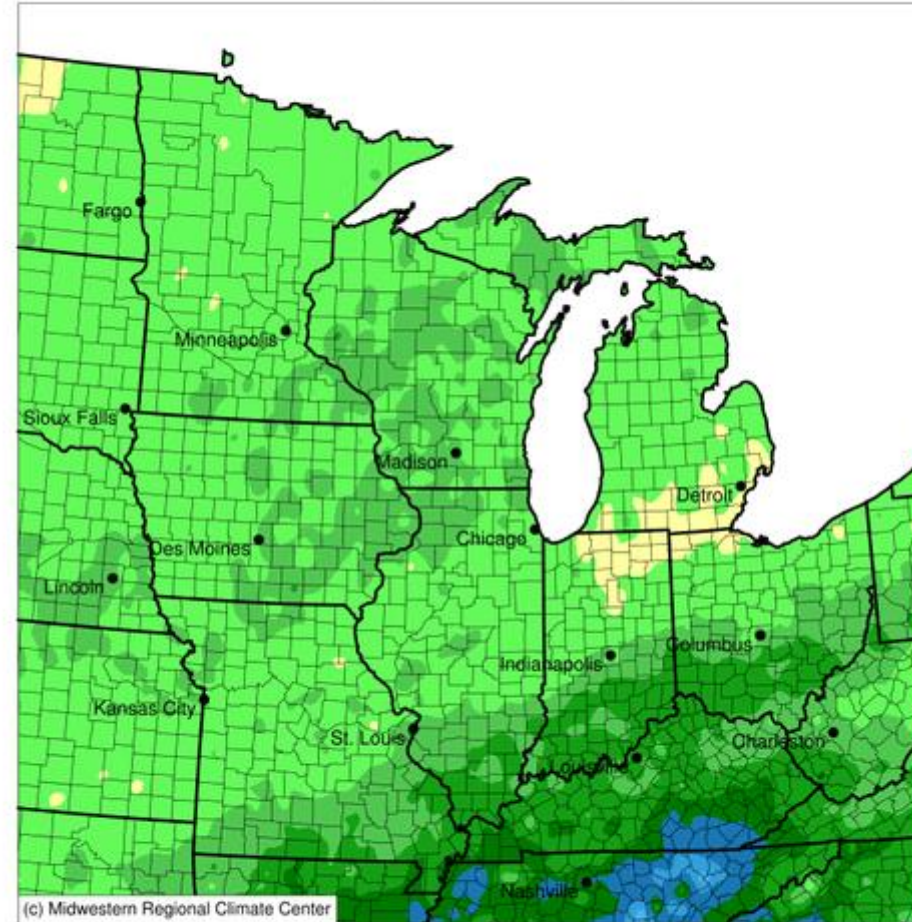
(c) Midwestern Regional Climate Center



-3 0 3 6 9 12 15 18

Accumulated Precipitation (in): Departure from 1981-2010 Normals

December 01, 2018 to February 28, 2019



(c) Midwestern Regional Climate Center



-6 -3 0 3 6 9 12 15 18

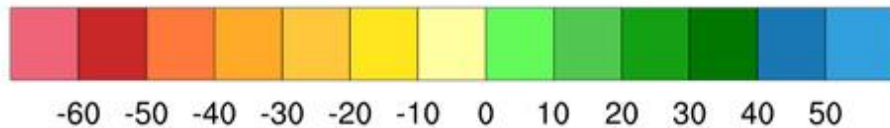
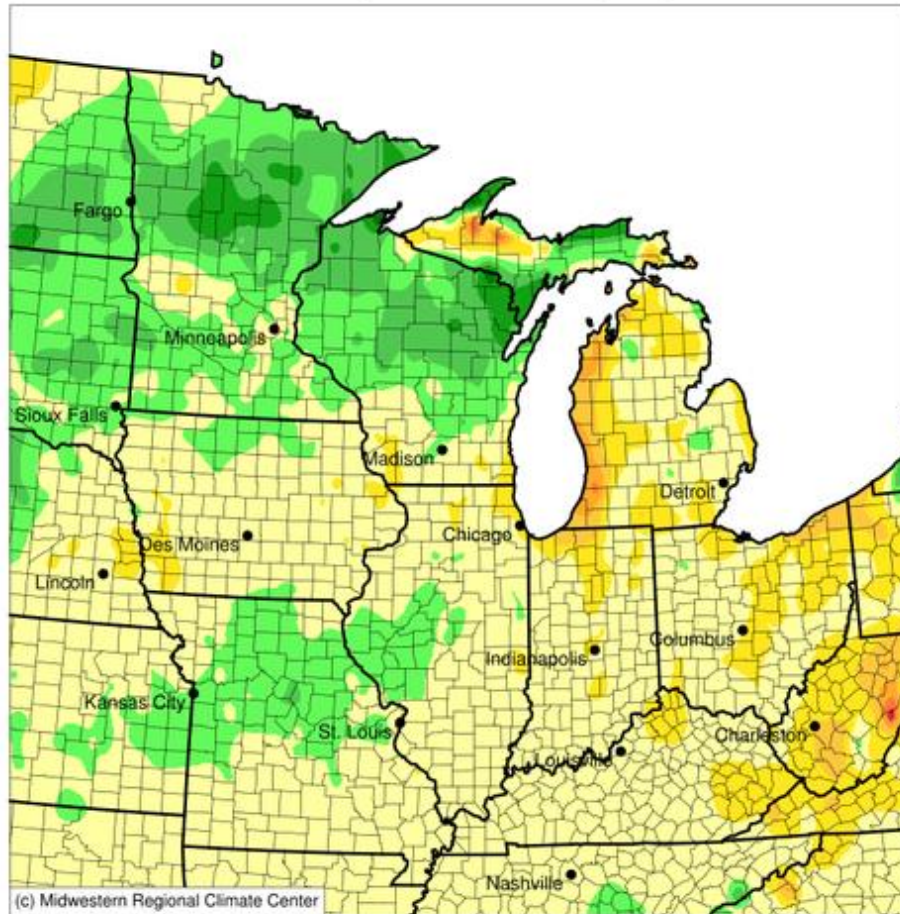


# 2019 – 2020 Winter: Snowfall

Source: MRCC, [mrcc.Illinois.edu](http://mrcc.Illinois.edu)

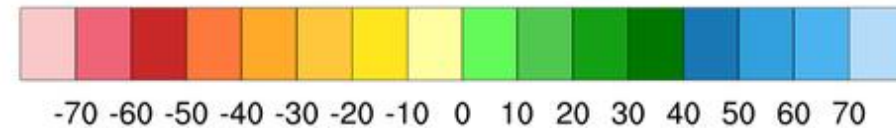
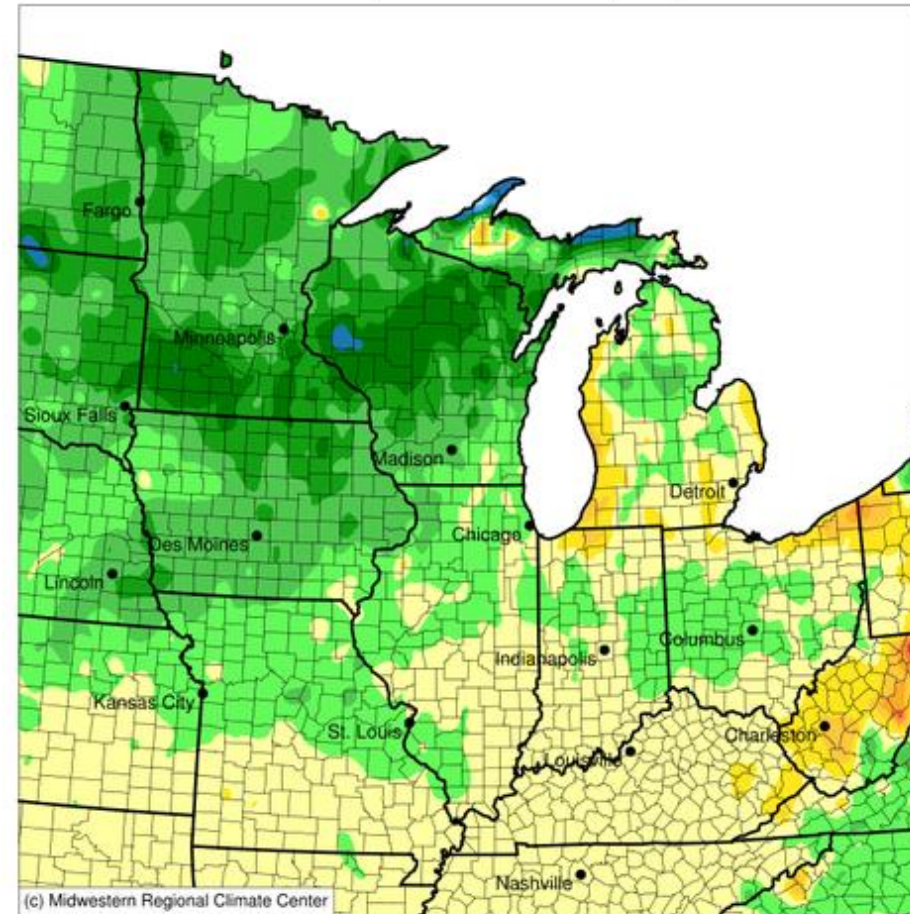
**Accumulated Snowfall (in): Departure from 1981-2010 Normals**

December 01, 2019 to February 28, 2020



**Accumulated Snowfall (in): Departure from 1981-2010 Normals**

December 01, 2018 to February 28, 2019



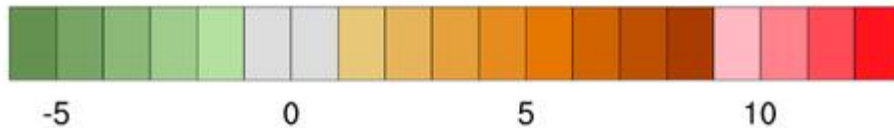
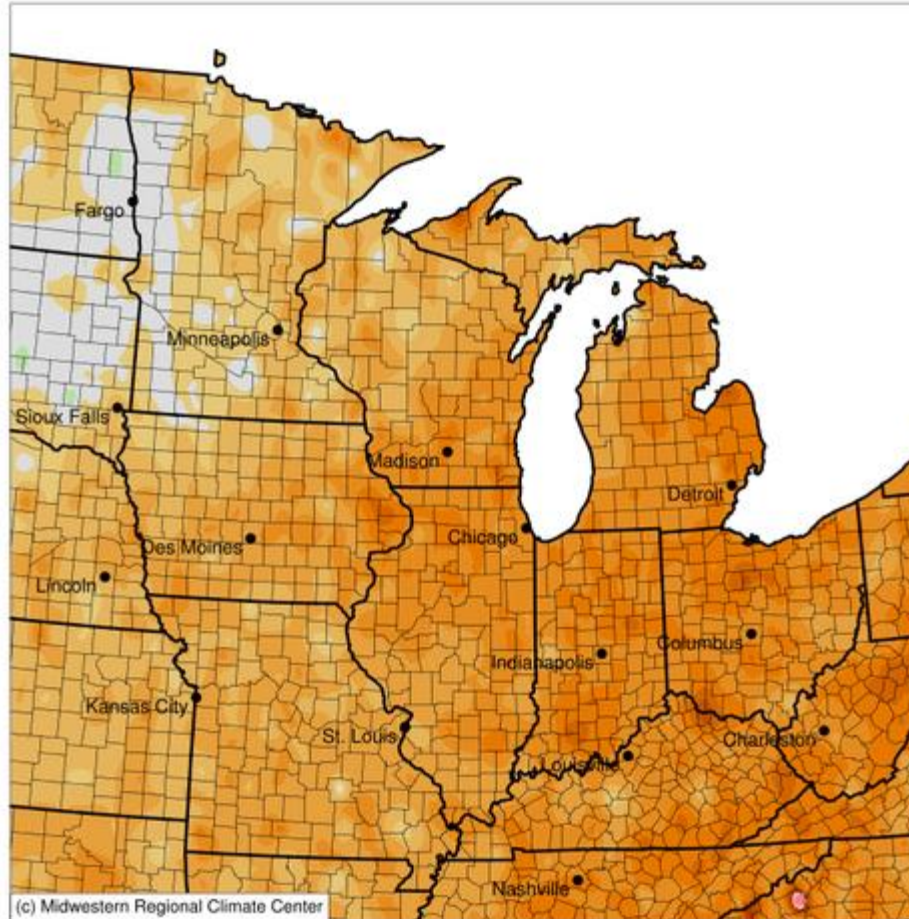


# 2019 – 2020 Winter: Temperature

Source: MRCC, [mrcc.Illinois.edu](http://mrcc.Illinois.edu)

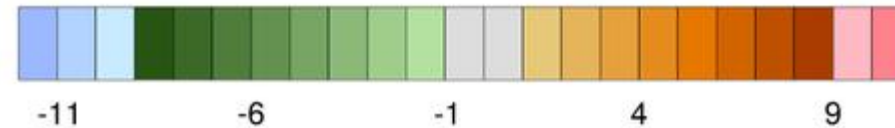
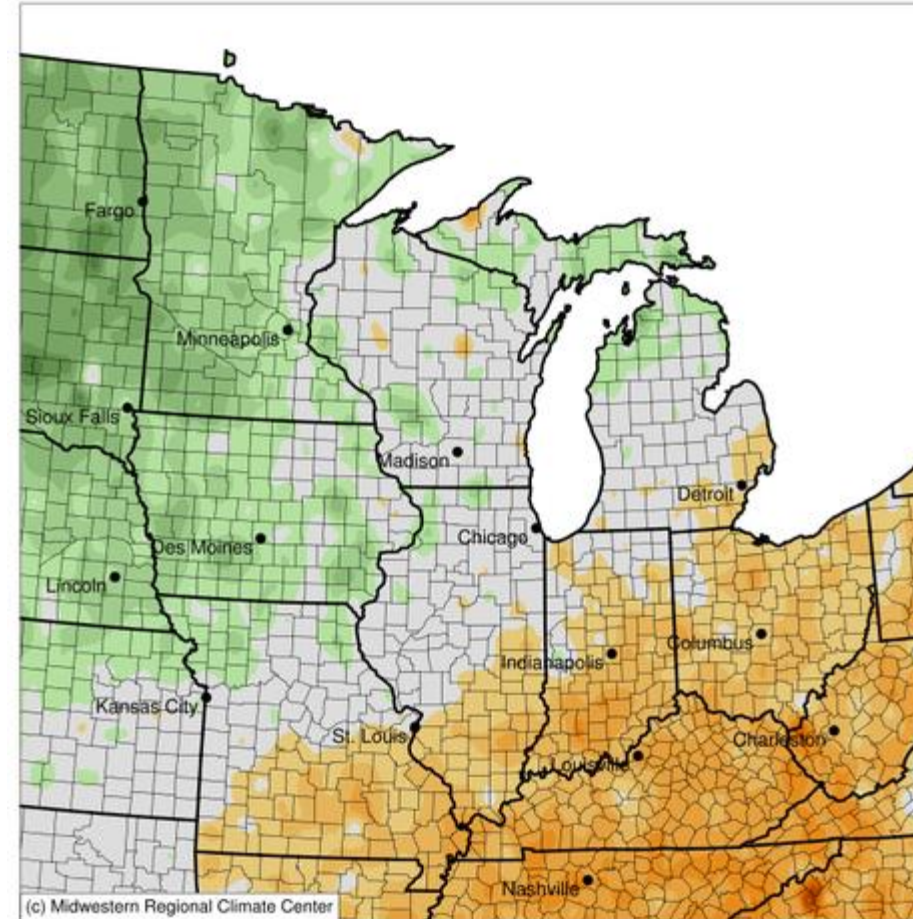
Average Temperature (°F): Departure from 1981-2010 Normals

December 01, 2019 to February 28, 2020



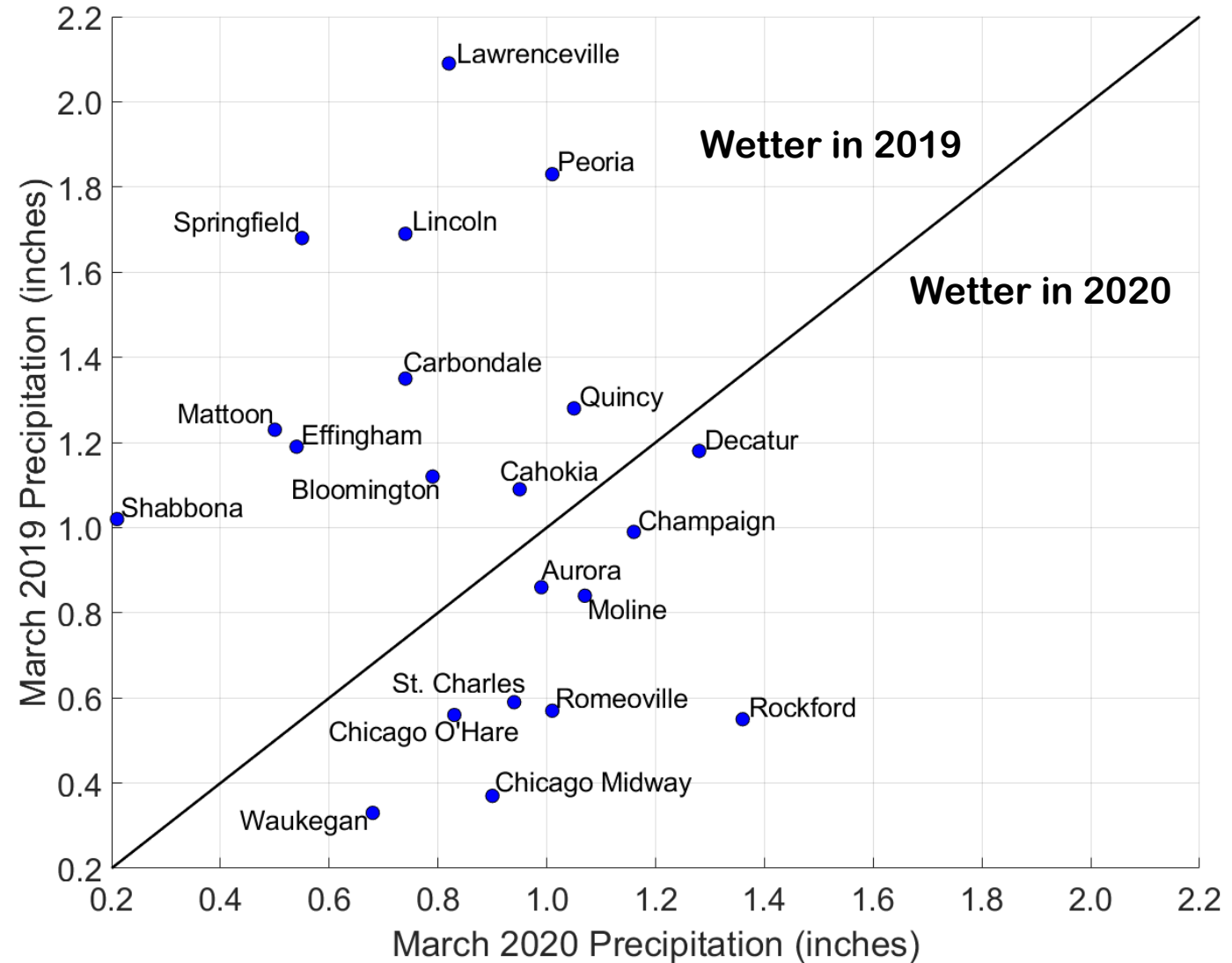
Average Temperature (°F): Departure from 1981-2010 Normals

December 01, 2018 to February 28, 2019



# March So Far

- Most central and southern IL cities have seen a much drier start to March than last year, northern IL cities are slightly wetter
- Warmest start to March since 2000 for most of the state



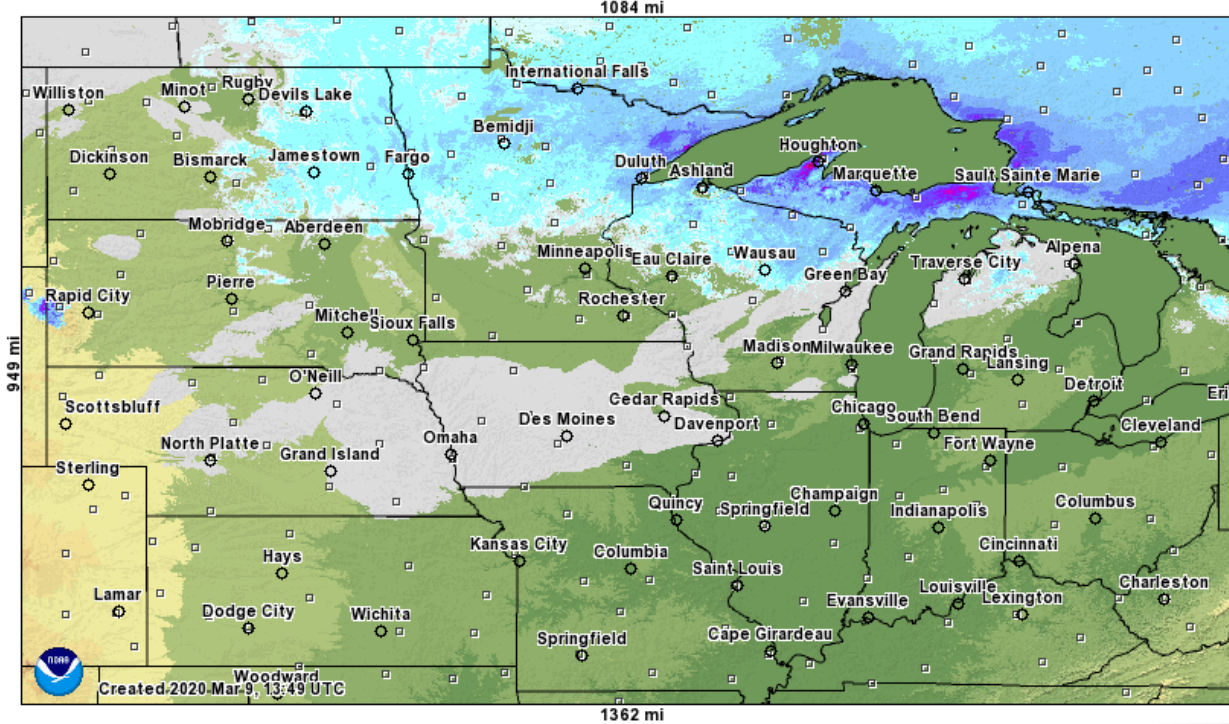


# Current Hydrology Conditions

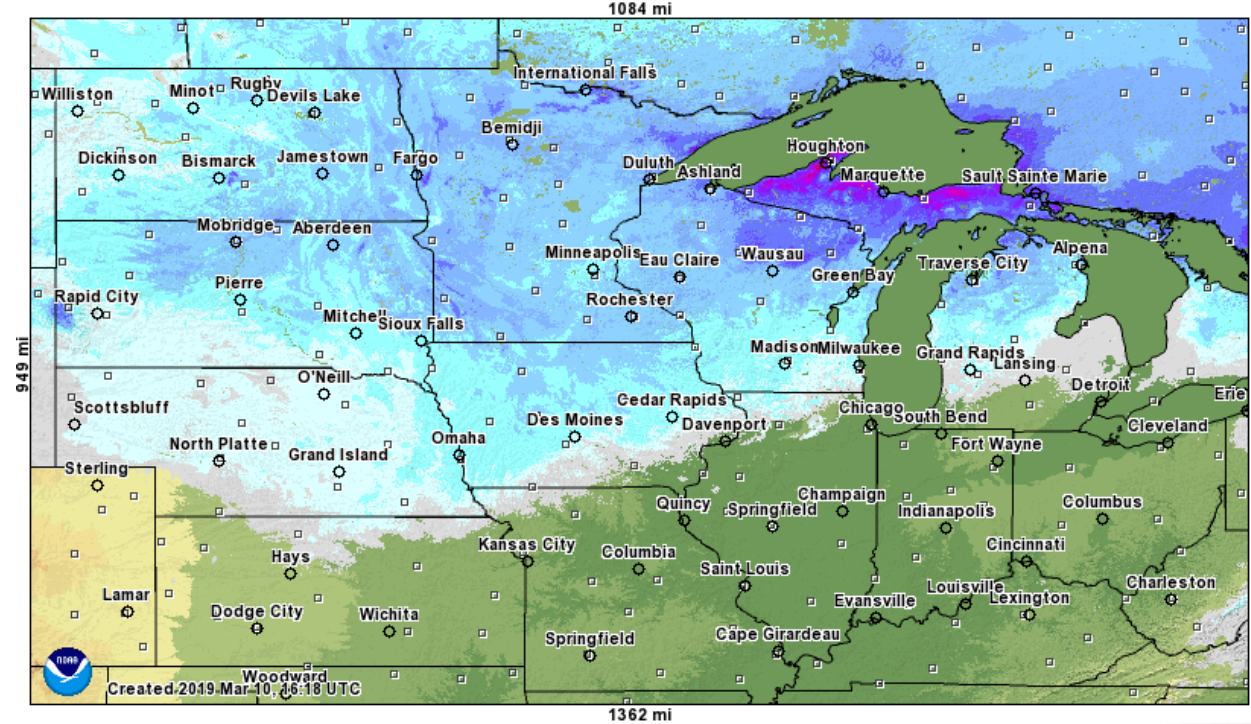


# Snowpack (snow water equivalent)

Modeled Snow Water Equivalent forecasted for 2020 March 10, 12:00 UTC

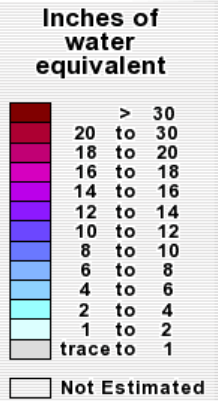


Modeled Snow Water Equivalent for 2019 March 10, 12:00 UTC



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

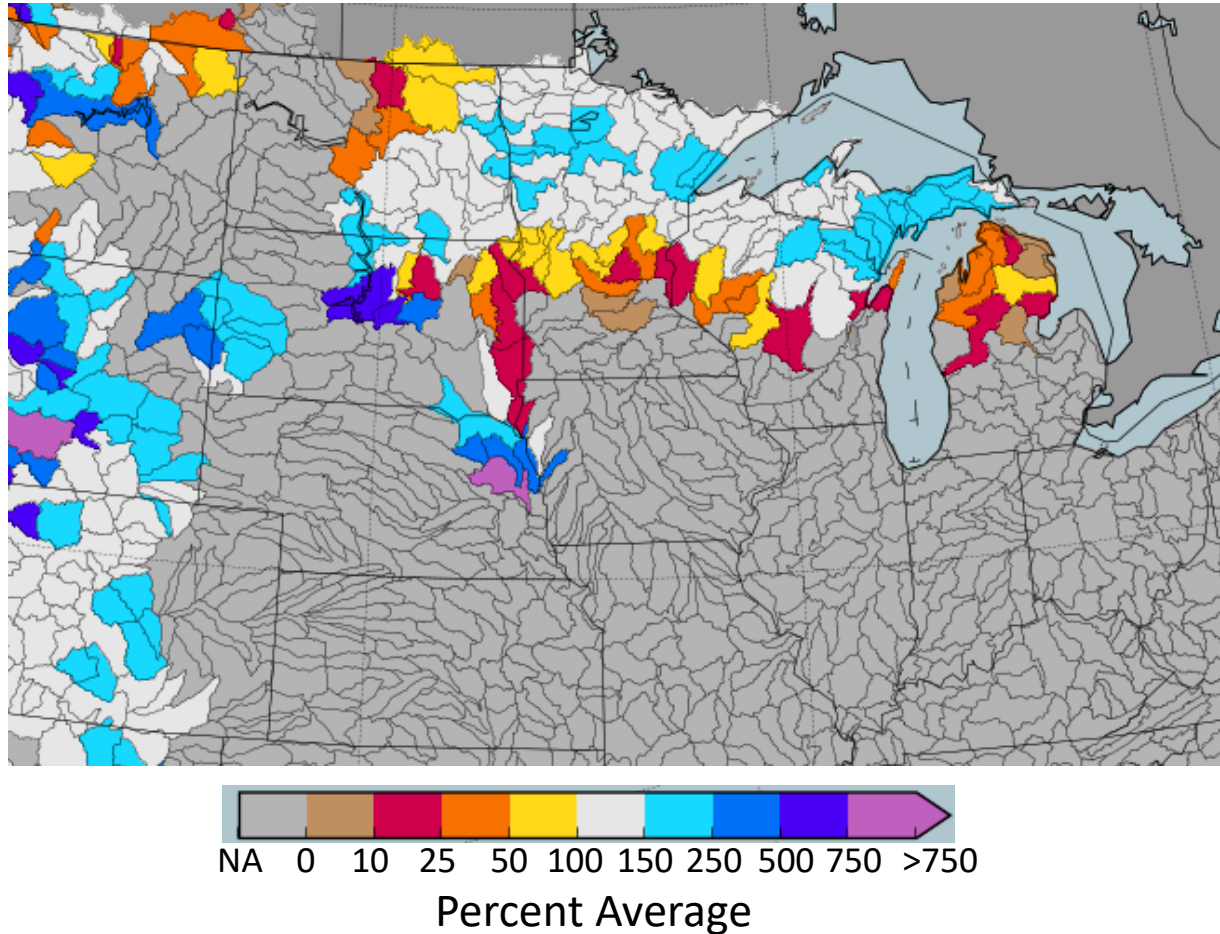
- Smaller snowpack than last year all across the Midwest and northern Plains
- Moderate start to March has helped slowly reduce snowpack





# Snowpack & Spring Flooding Risk

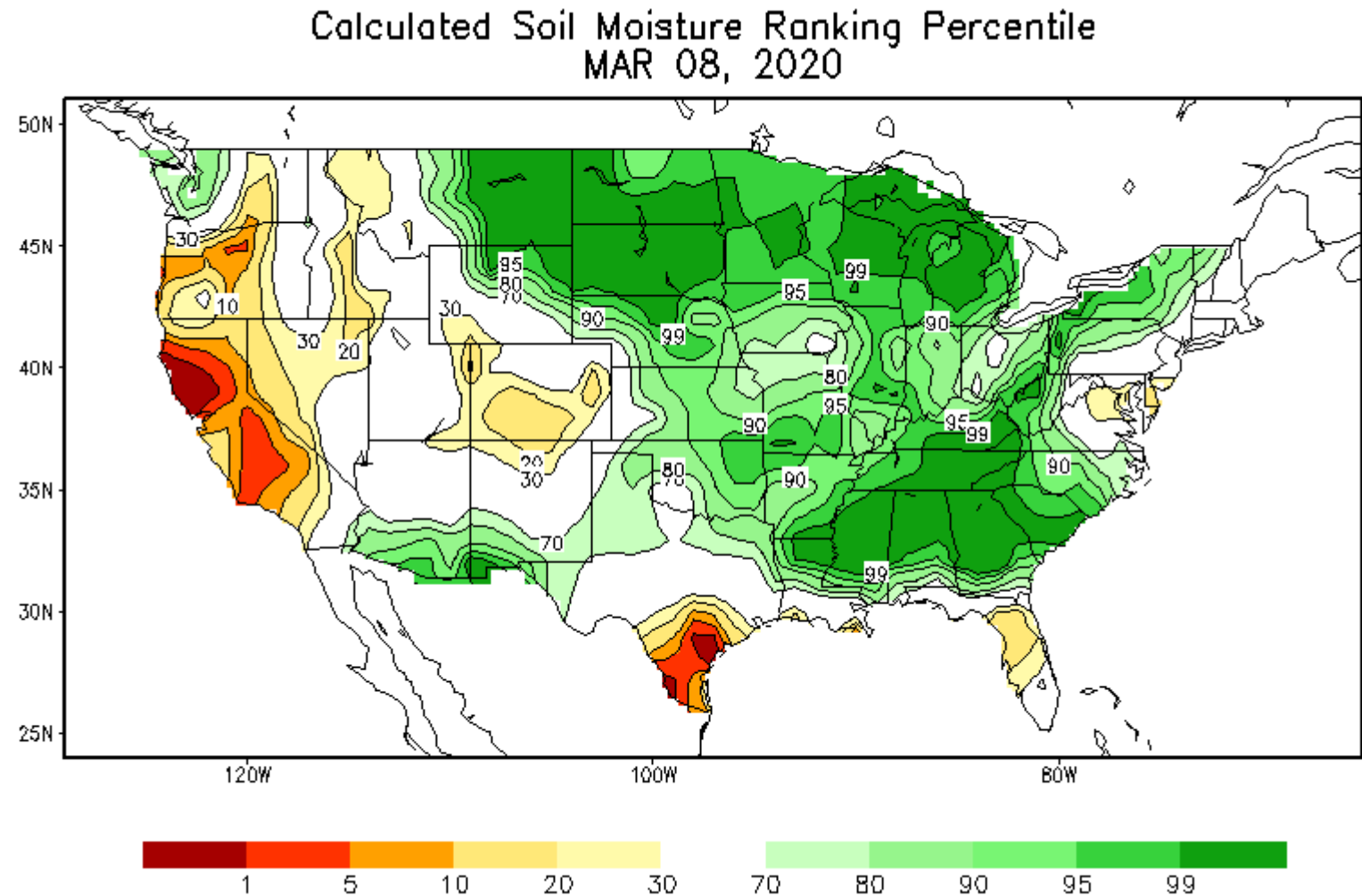
Source: <https://www.nohrsc.noaa.gov/nsa/>



112 gauges with 90% or greater chance of flooding during March – May

# Soil Moisture

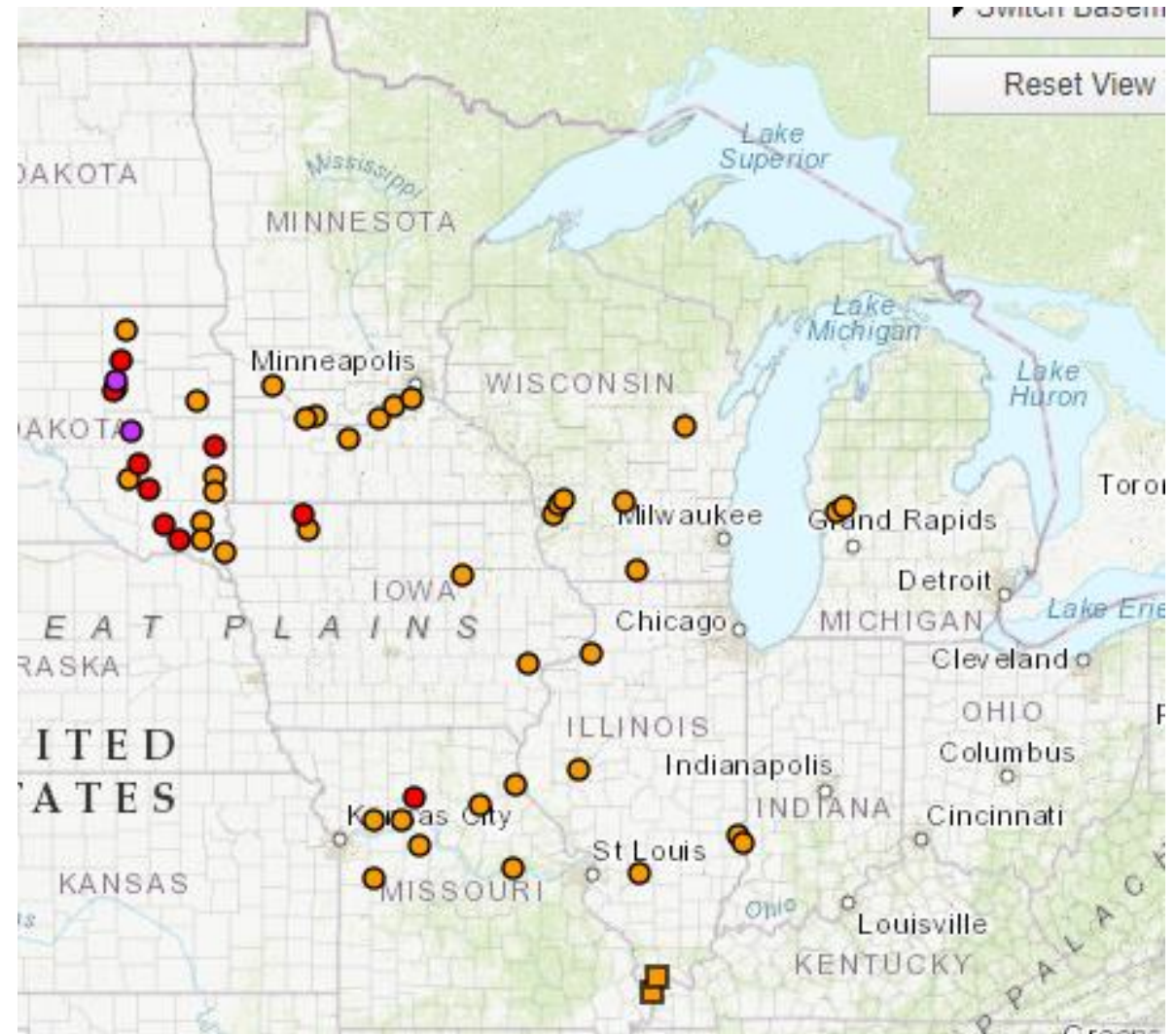
- Soils are saturated down to 1 m across Upper Midwest and northern Plains
- Still mostly wet across Illinois



Source: [cpc.ncep.noaa.gov/products/Soilmst\\_Monitoring/US/Soilmst/Soilmst.shtml#](https://cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#)

# Streamflow

- 51 gauges in upper MS basin currently in flood
- Snowmelt in eastern SD combined with pre-existing flood stage on James River
- Otherwise all streams in IL are trending downward



Source: <https://www.weather.gov/ncrfc/>

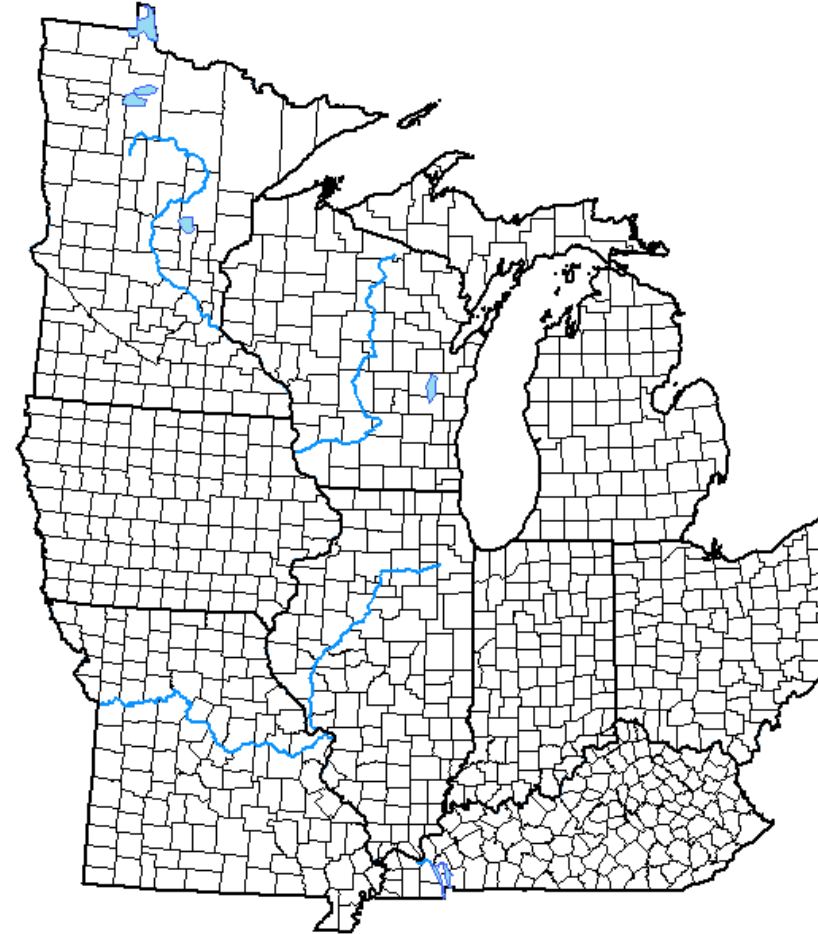


# Drought

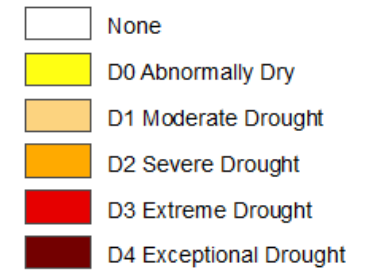
- No drought in the region
- Little risk of drought developing this spring
- Outlooks show no indication of elevated drought risk this summer

## U.S. Drought Monitor Midwest

**March 3, 2020**  
(Released Thursday, Mar. 5, 2020)  
Valid 7 a.m. EST



### Intensity:



*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>*

### Author:

Adam Hartman  
NOAA/NWS/NCEP/CPC



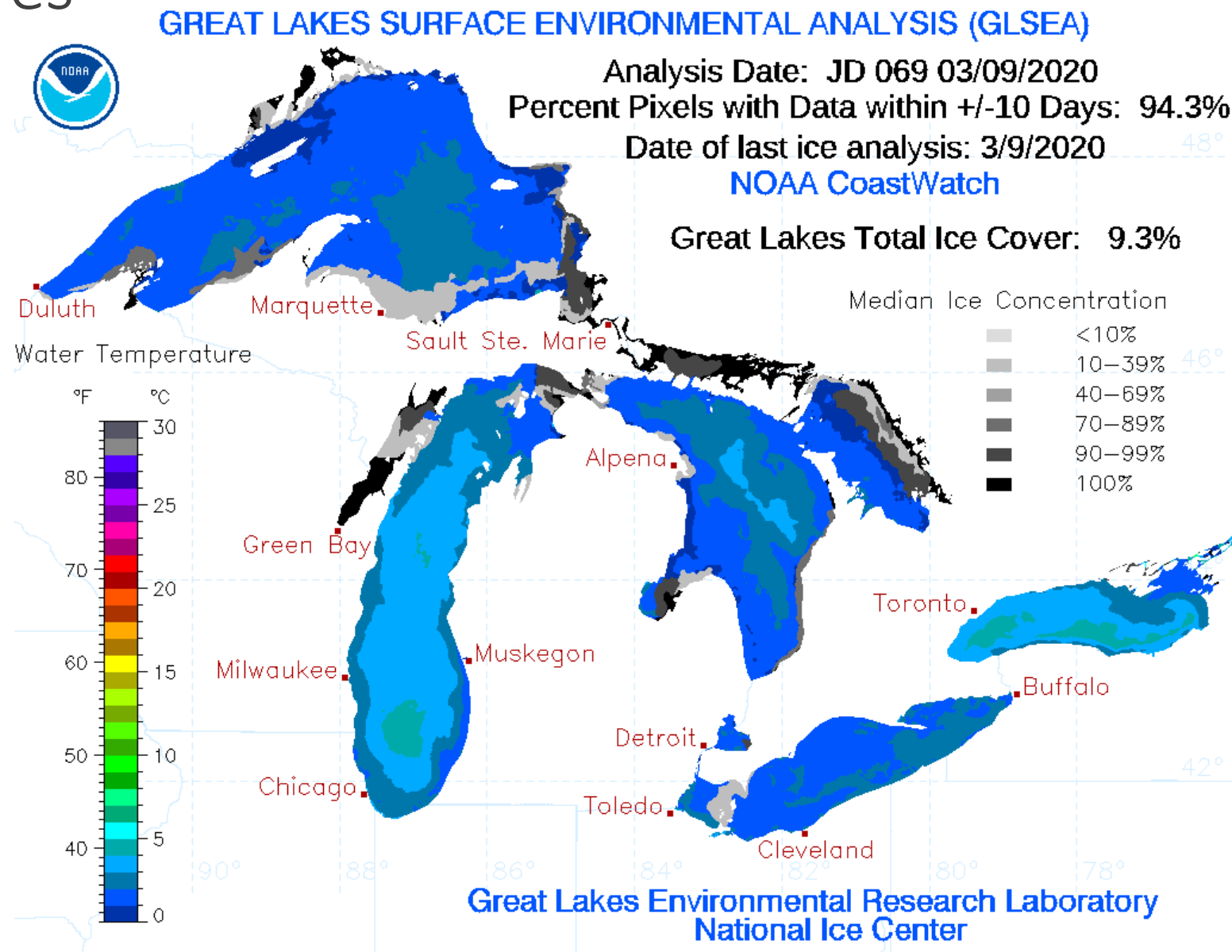
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# Great Lakes Temperatures

- Great Lakes temperatures remain above normal in response to warm winter
- Total 9.3% ice cover – 71% this time last year, 26% in 2018
- Less ice allows for more lake evaporation, removes buffer for lakeshore damage

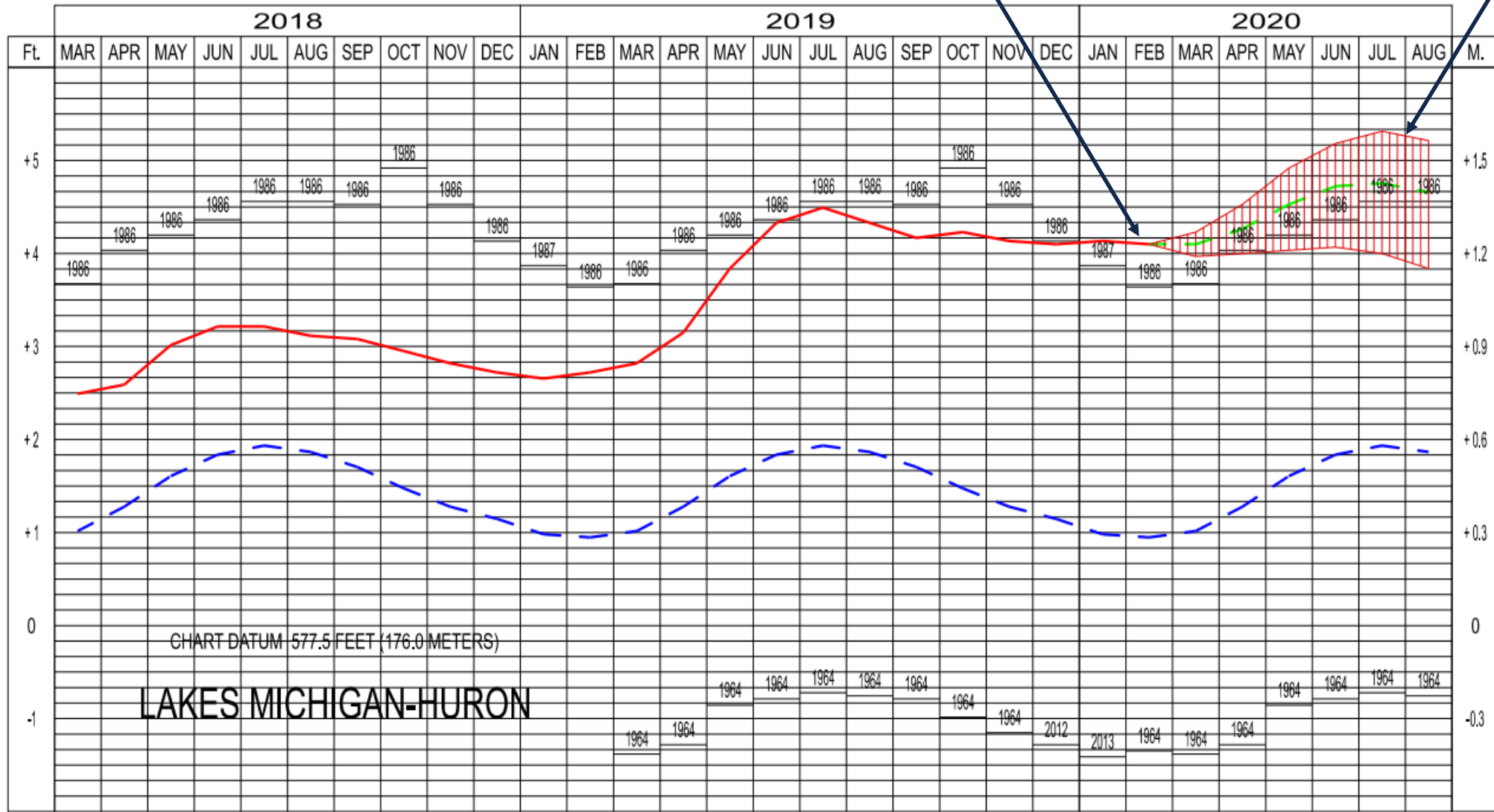
Source: <https://www.glerl.noaa.gov/data/ice/>



# Great Lakes Levels

February level 4" higher  
than previous record

## Forecasts call for near-record levels through August



<https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Monthly-Bulletin-of-Great-Lakes-Water-Levels/>

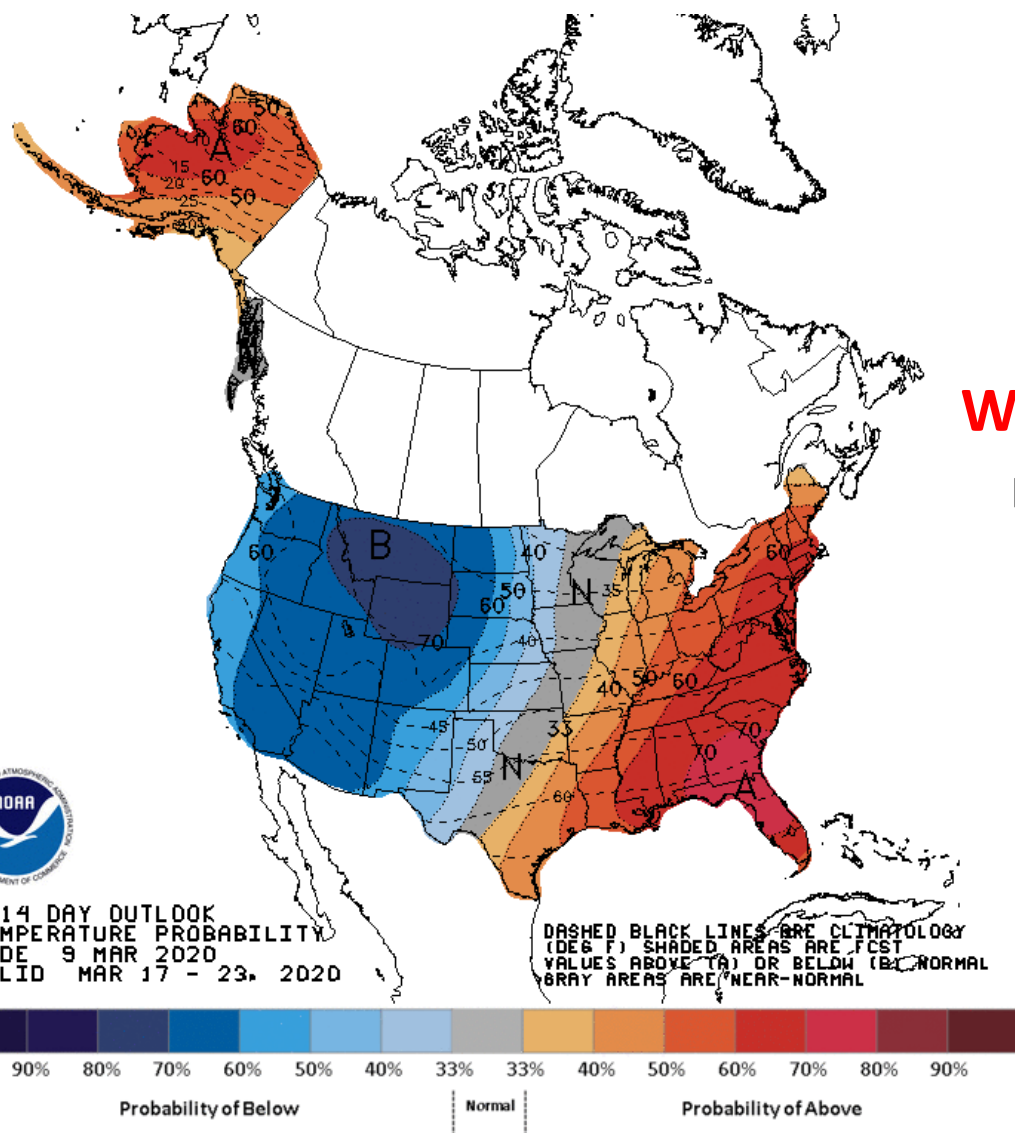
# Outlooks

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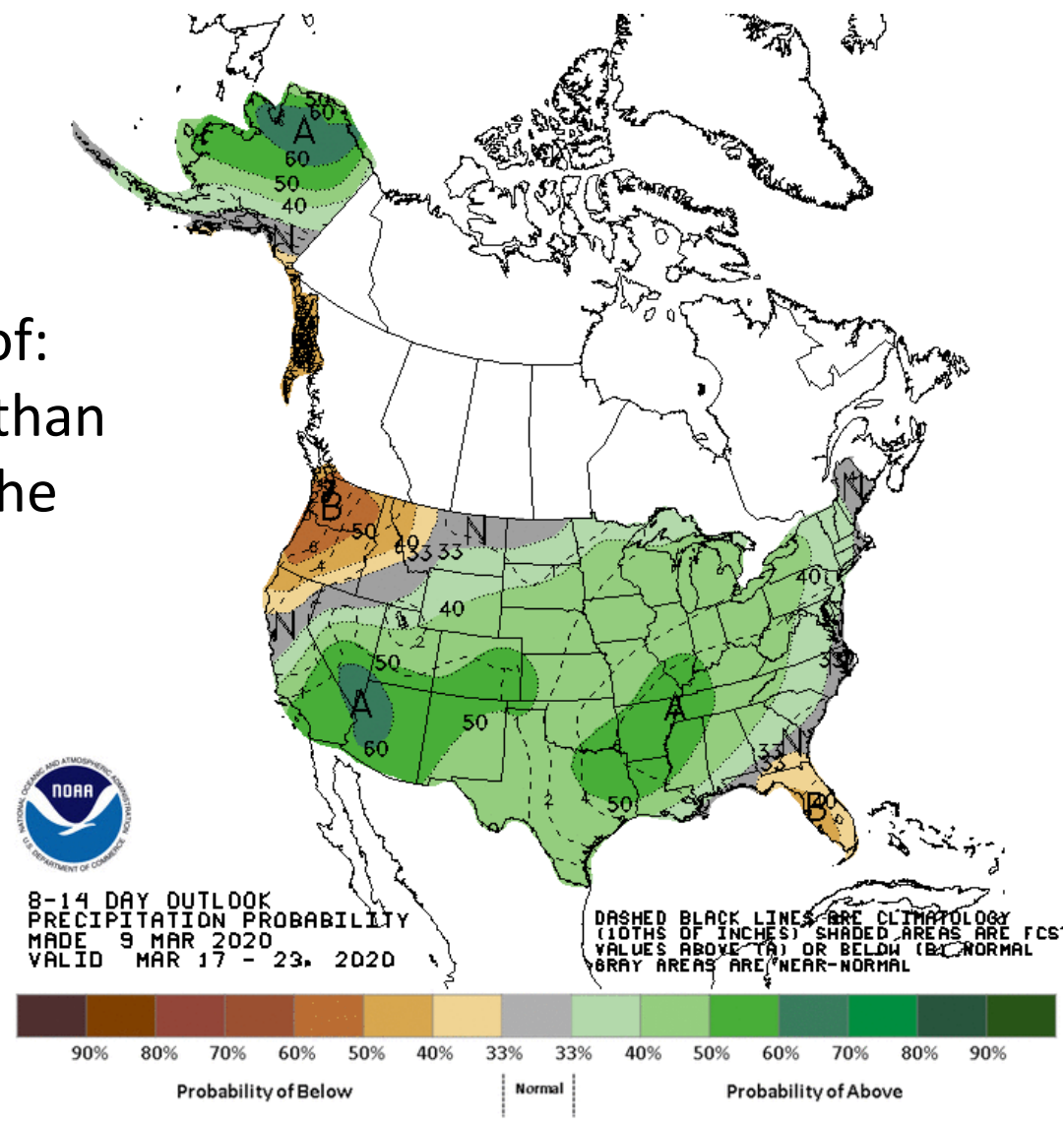


# 8-14 Day Outlooks

Source: [cpc.ncep.noaa.gov/products/predictions/814day/](https://cpc.ncep.noaa.gov/products/predictions/814day/)

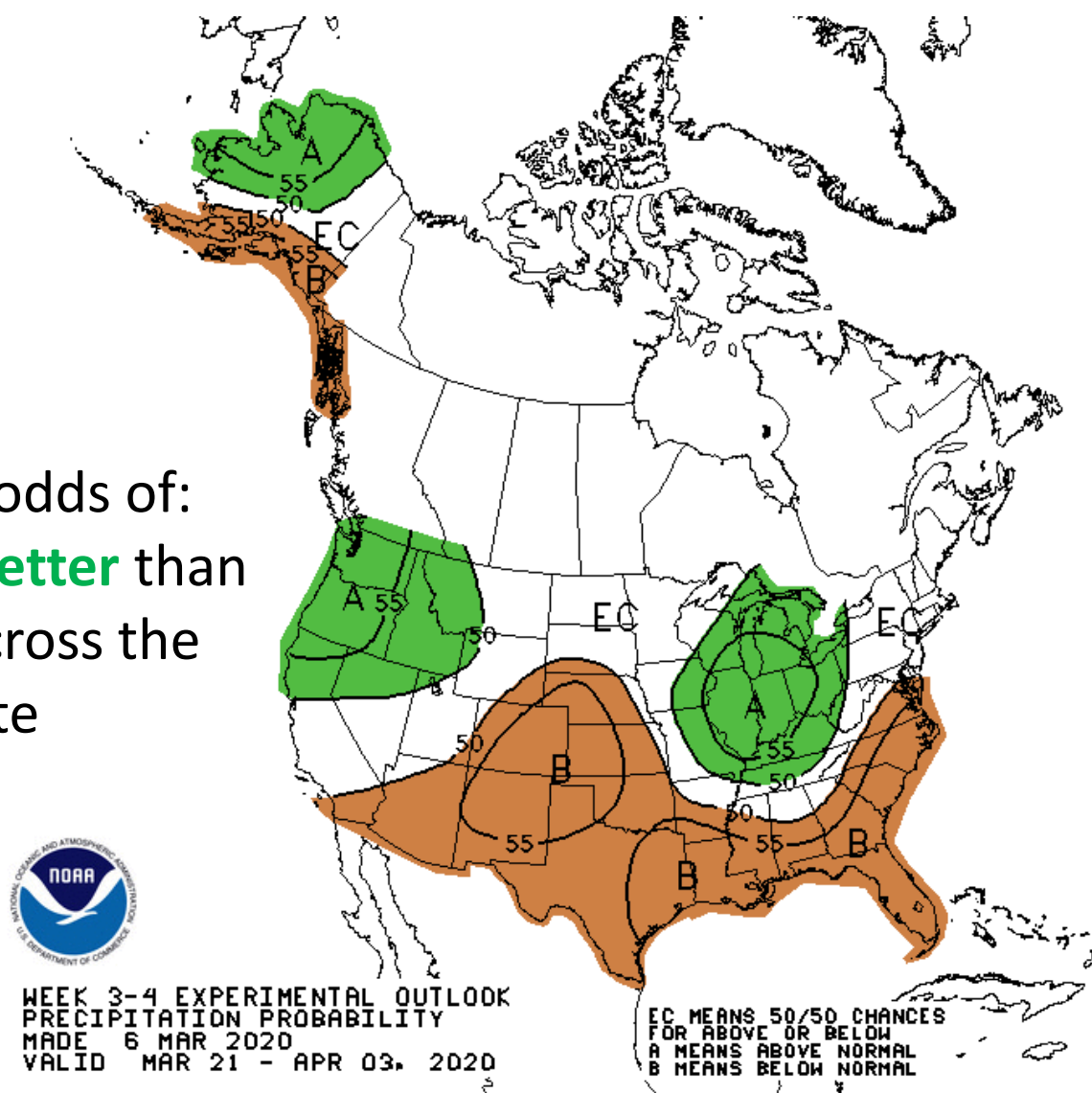
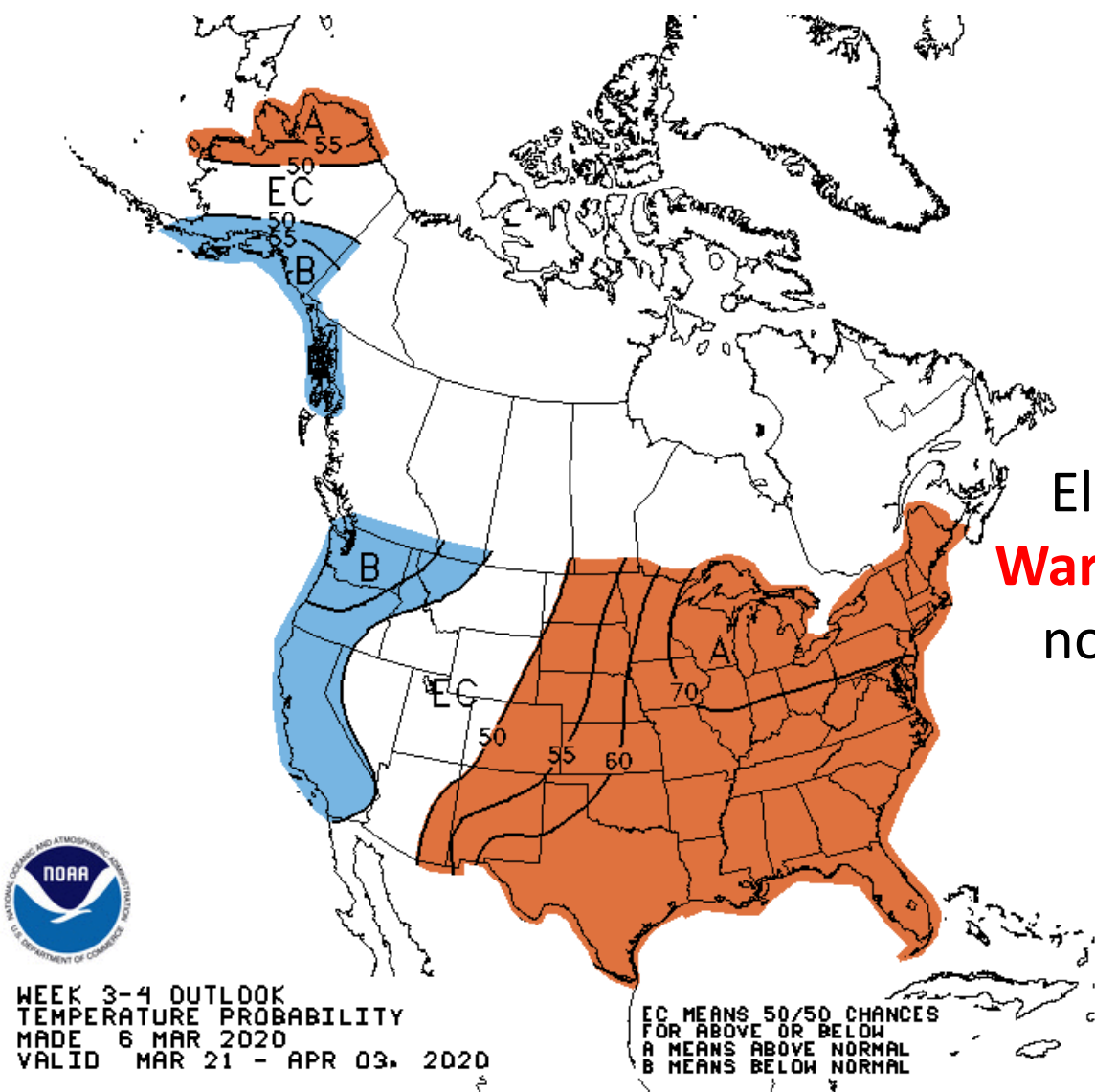


Elevated odds of:  
**Warmer, Wetter** than  
normal across the  
state

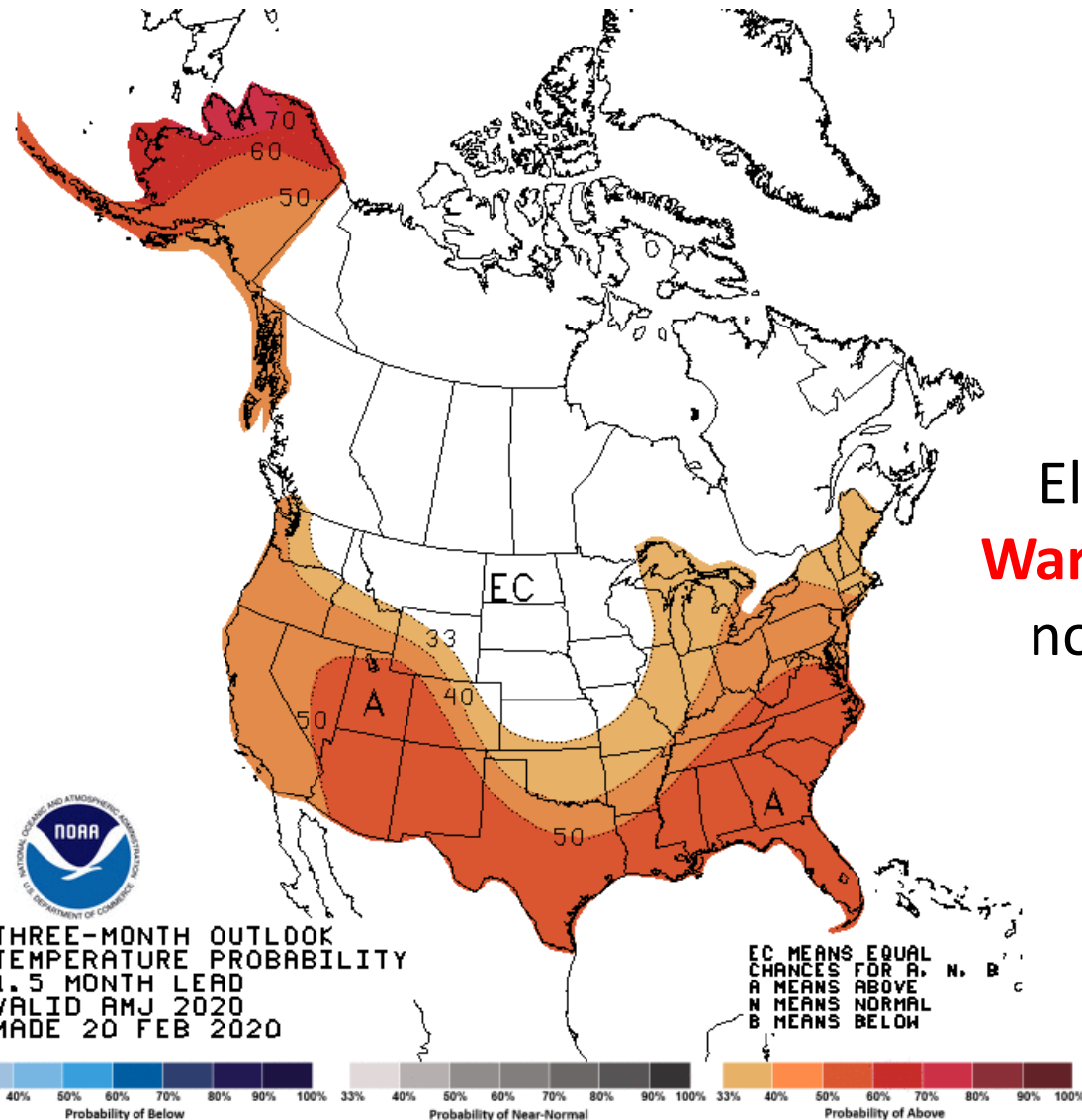


# Week 3-4 Outlooks

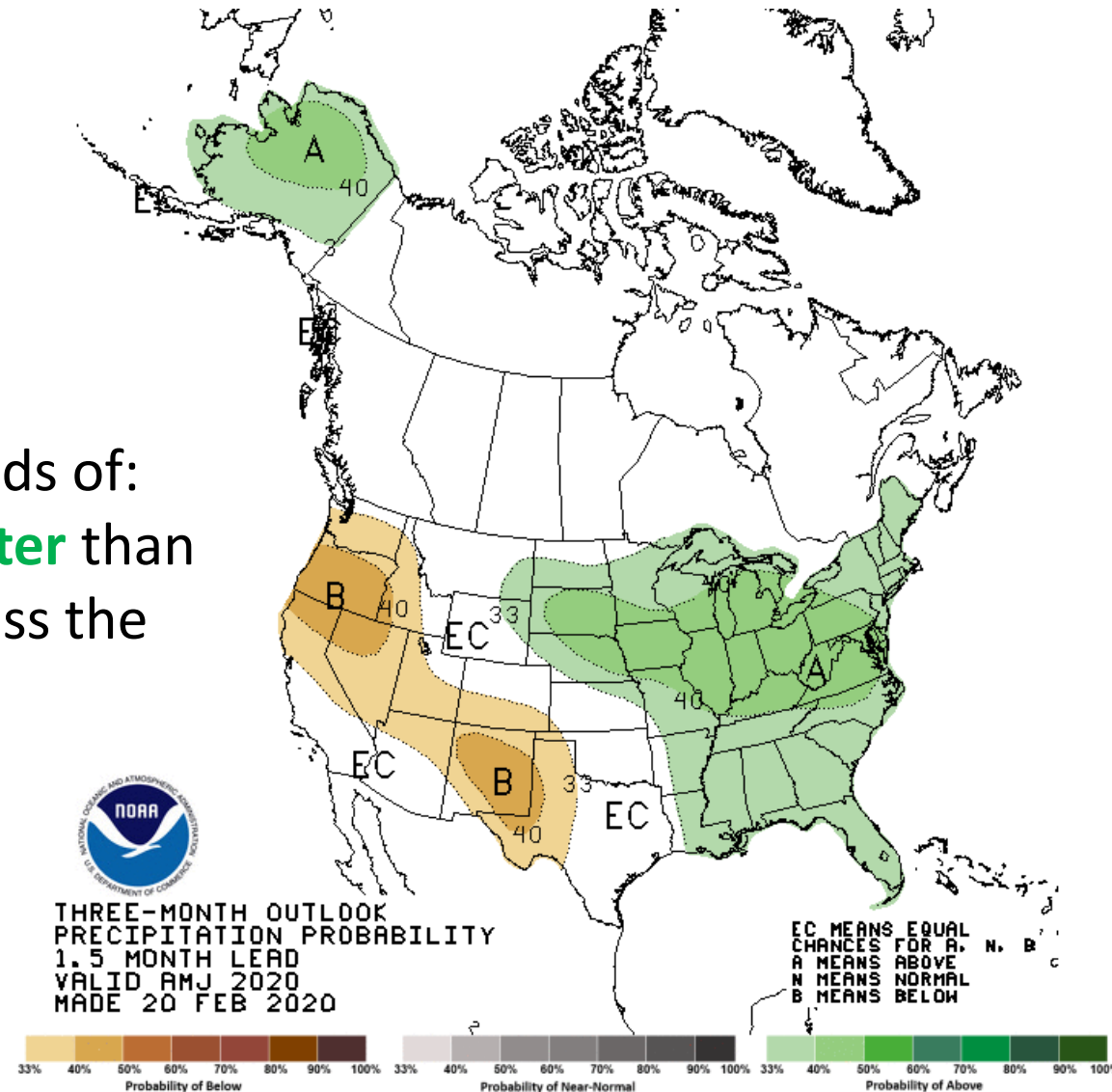
Source: <https://www.cpc.ncep.noaa.gov/products/predictions/WK34/>



# Seasonal Outlook – AMJ



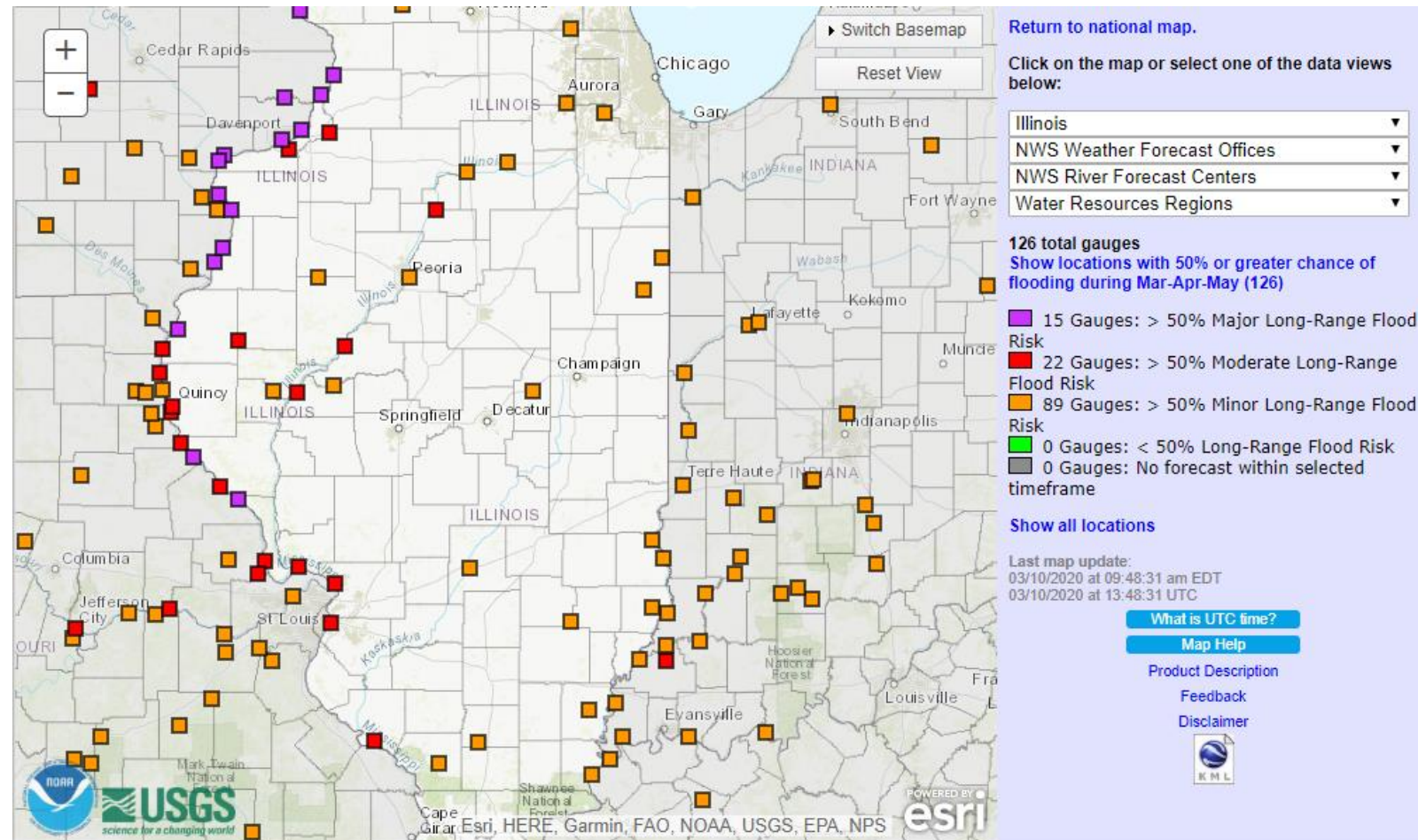
Elevated odds of:  
**Warmer, Wetter** than  
normal across the  
state





# NWS River Forecast Center Spring Flood Outlooks – Upper Mississippi

- Risk of widespread minor flooding is ***above normal*** across the region, including along the IL River
- Risk of major flooding on the MS River is ***much above normal***



# Summary: So, what are we looking at?

- Winter was wet, very warm – spring outlooks call for much of the same
- Soils are **very** wet – this will be an issue moving into spring, but has been buffered by warm, (somewhat) dry start to march
- There remains an elevated spring flood risk in the upper MS basin
- The wettest part of 2019 (relative to climatology) was March through June; it is unlikely we will see conditions similar to 2019 over the next three months....
- However, we will likely see excess water, flooding issues between now and June; magnitude is dependent on rainfall frequency and intensity

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