Spring Flood Outlook 2023

NWS Quad Cities IA/IL *Thursday, February 23, 2023*

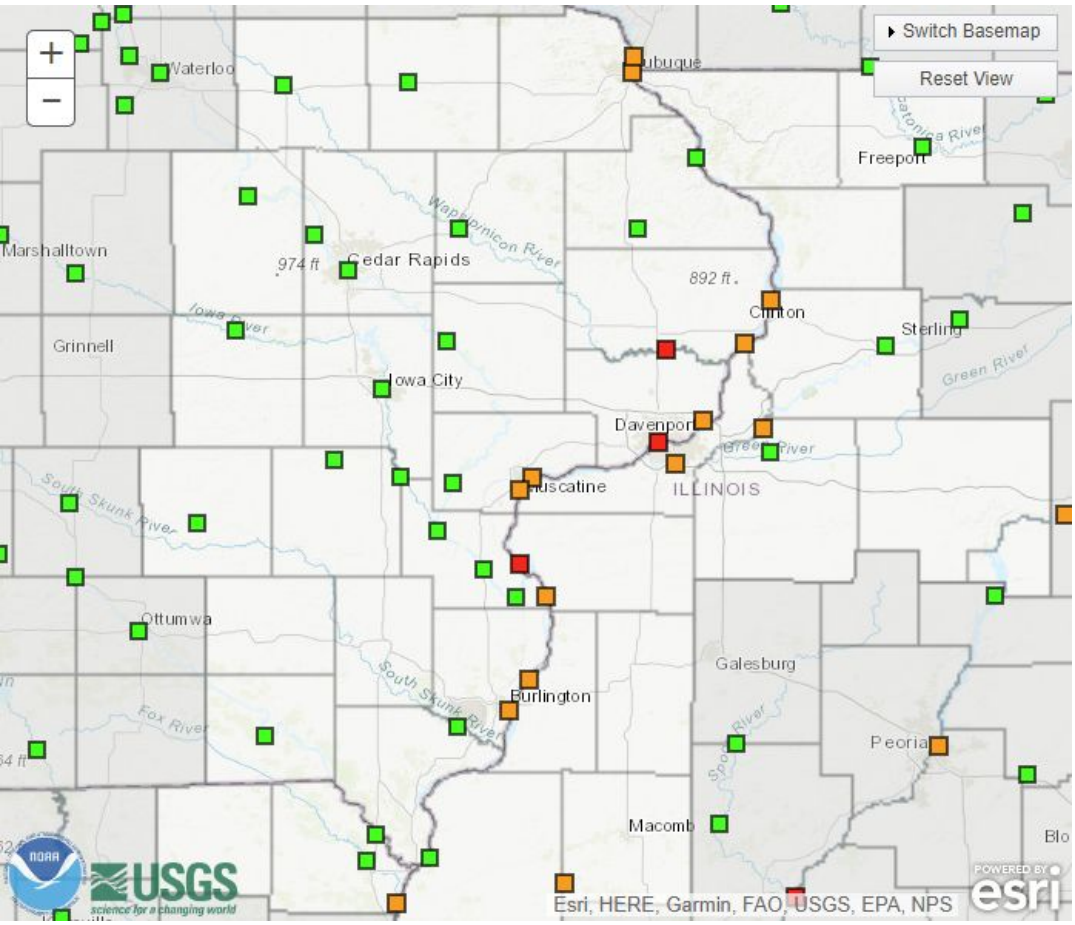
Key Messages

→ **Well Above Normal spring flood threat** for the NWS Quad Cities service area.

→ Future weather–including amount and timing of precipitation as well as rate of snowmelt–will be a big factor in the spring flood threat.

NEW Important Forecast Changes

→ Flood Chances Increased Significantly



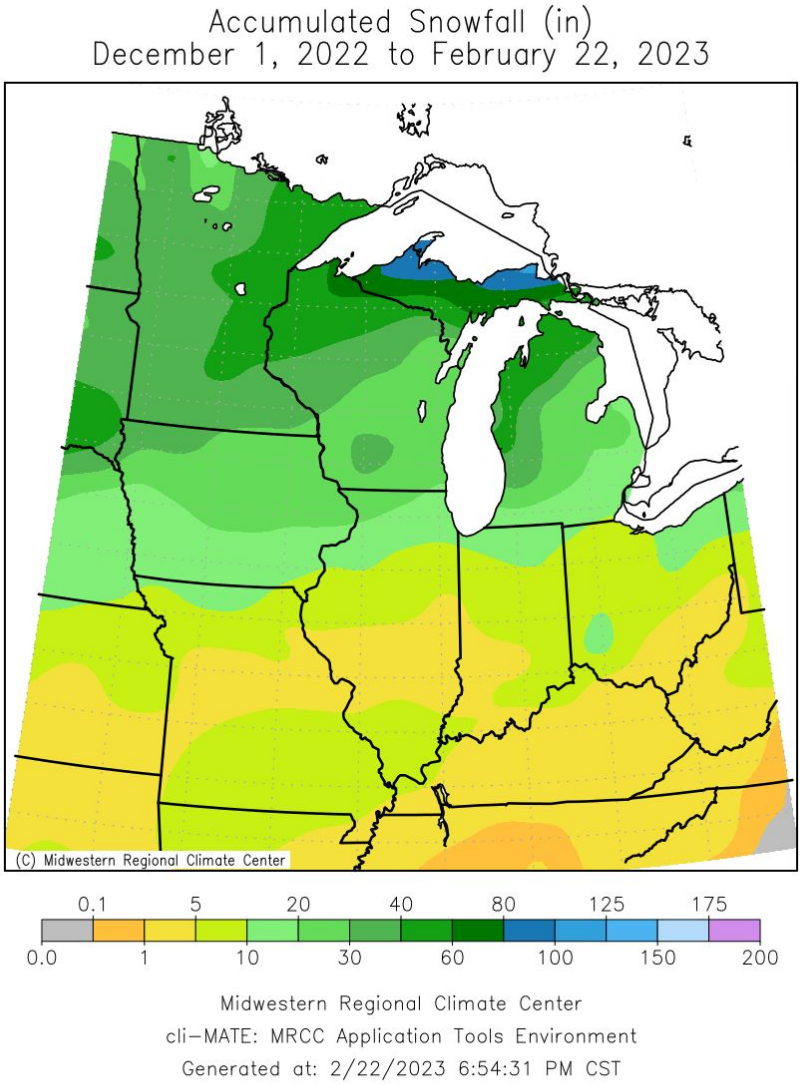
Map showing flood risk from February through April

Next Update The third spring flood outlook text product will be issued by NWS offices serving Iowa on March 9, 2023.

Factors Considered in this Outlook

2023 Spring Flood Outlook *Thursday, February 23, 2023*

- Seasonal Temperatures and Precipitation
- Snow Cover and Liquid Water Equivalent
- Frost Depth
- Soil Moisture
- Current River Streamflows
- Weather Forecasts and Outlooks



Seasonal Temperatures/Precipitation

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Average Winter Temperatures:

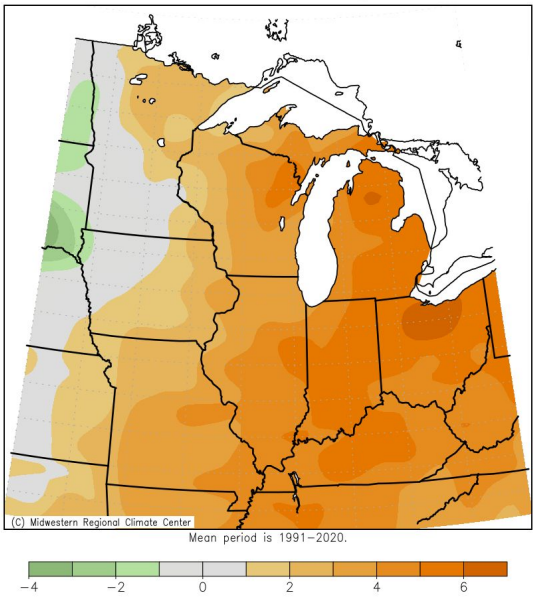
Above normal temperatures this winter, with locations averaging 2-4 degrees above normal locally.

Winter Precipitation:

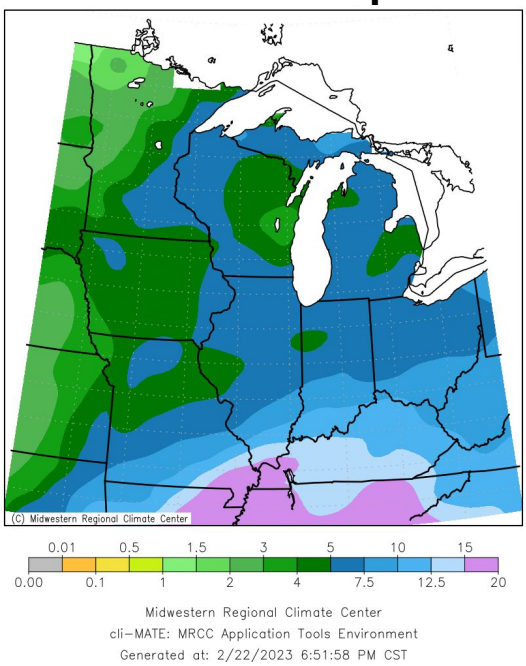
- Locally – Above normal
- Upstream (Mississippi River watershed) – **Well above normal**, especially in MN/WI.

Average Temperature Departure from Normal

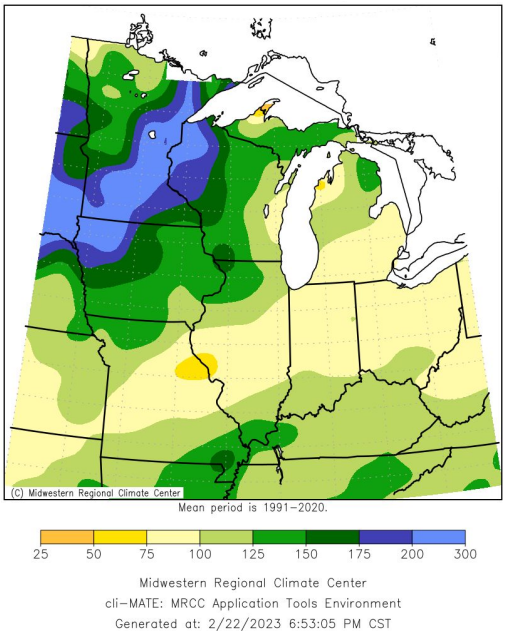
Dec 1. 2022 – Feb 21. 2023



Accumulated Precipitation



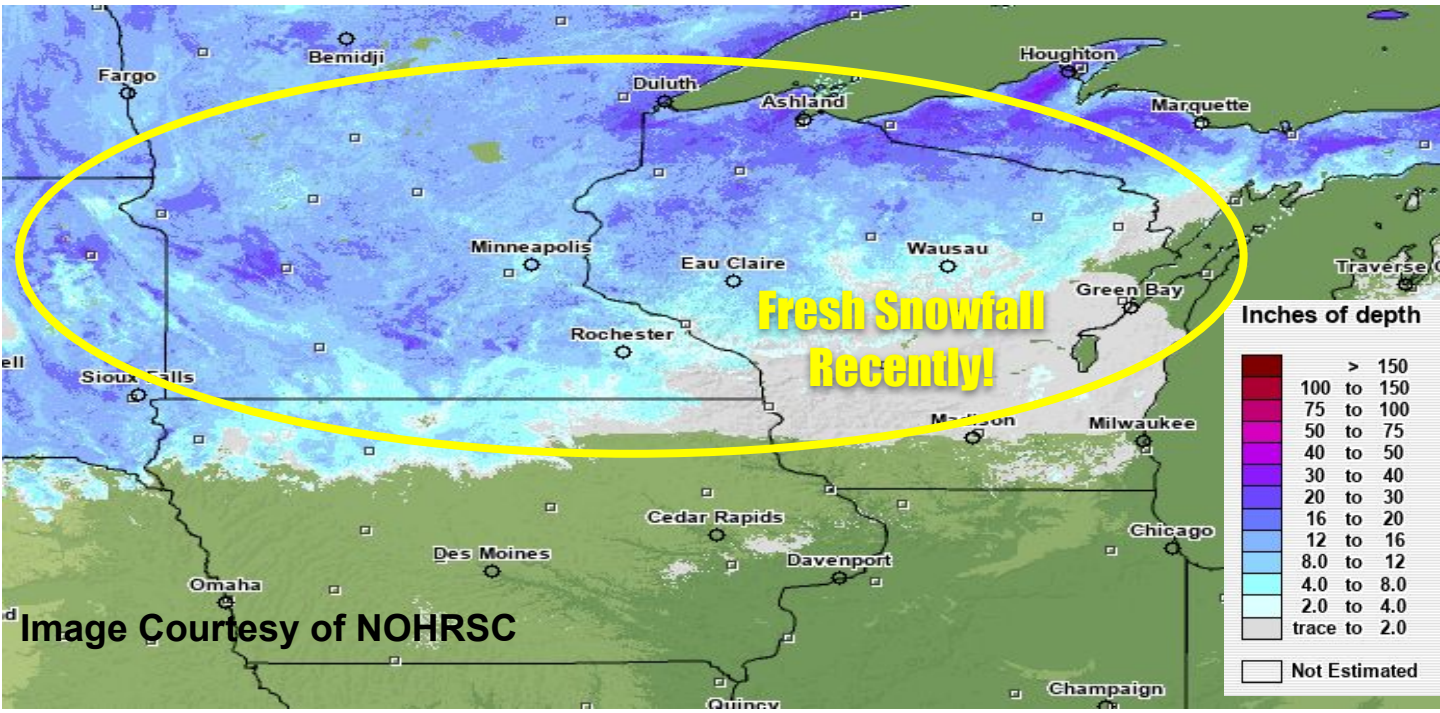
Accumulated Precipitation Percent of Mean



Snow Cover and Liquid Water Equivalent

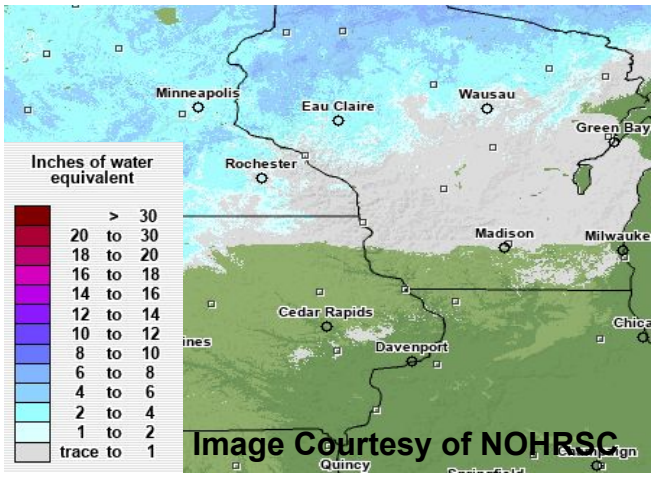
2023 Spring Flood Outlook *Thursday, February 23, 2023*

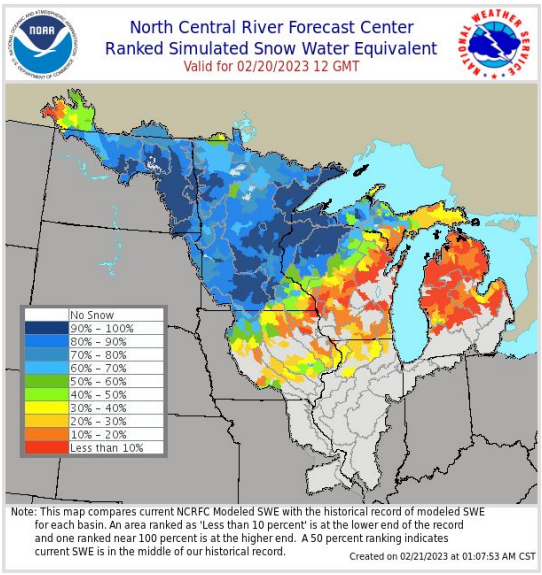
Snow Cover (as of Feb 22, 2023)



Snow Water Equivalent (SWE) as of Feb 22, 2023:

- Very little SWE of T-2”. Deepest snowpack has 4-8”+ of SWE in north.





Contribution to flood potential:

- Local snowmelt alone has a limited potential for flooding, due to below normal moisture content. Snowmelt in the north will likely pose a threat.

Snow Water Equivalent Change This Week

2023 Spring Flood Outlook *Thursday, February 23, 2023*

72-Hour Snowmelt

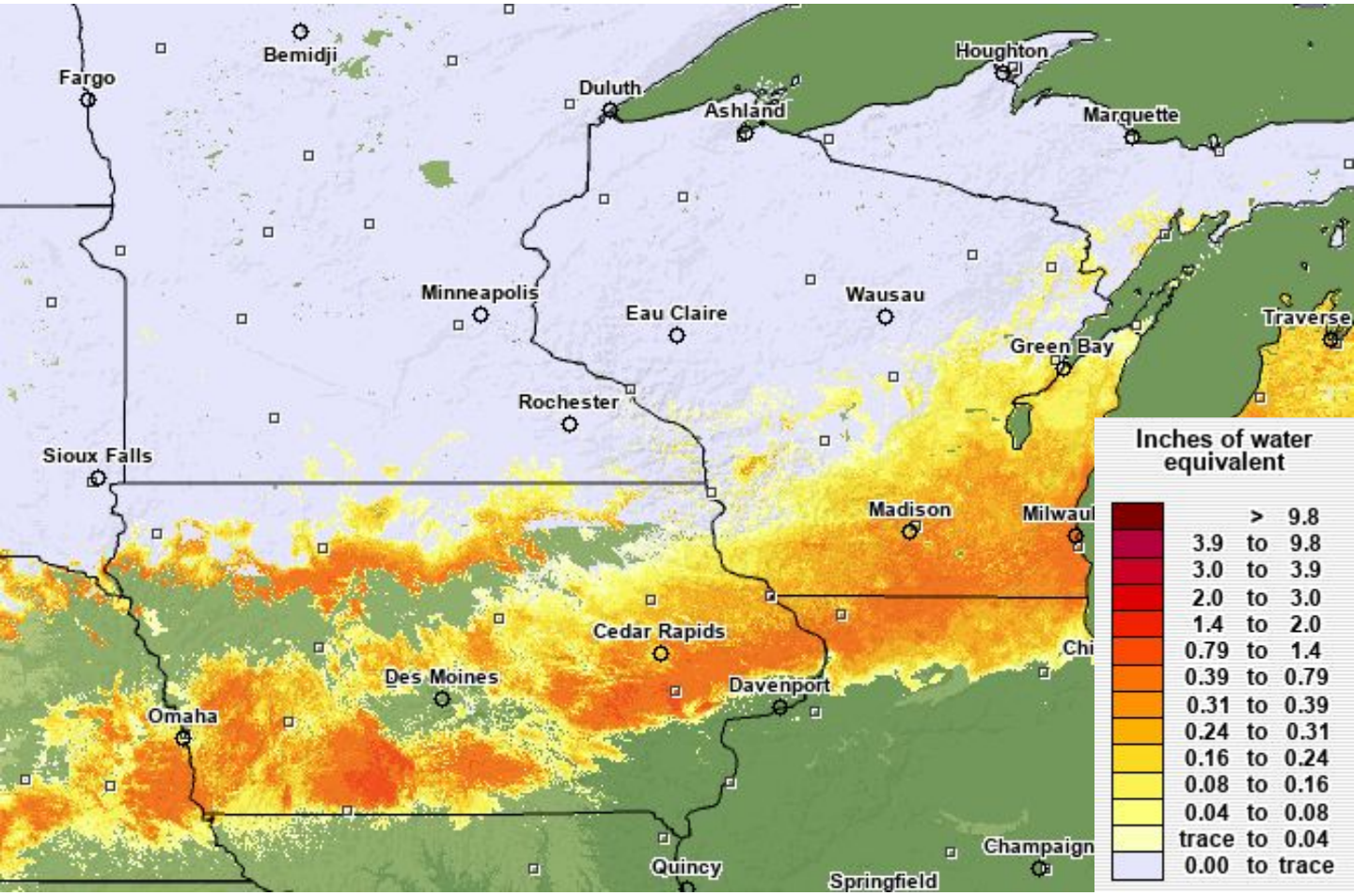


Image Courtesy of NOHRSC

Contribution to flood potential:

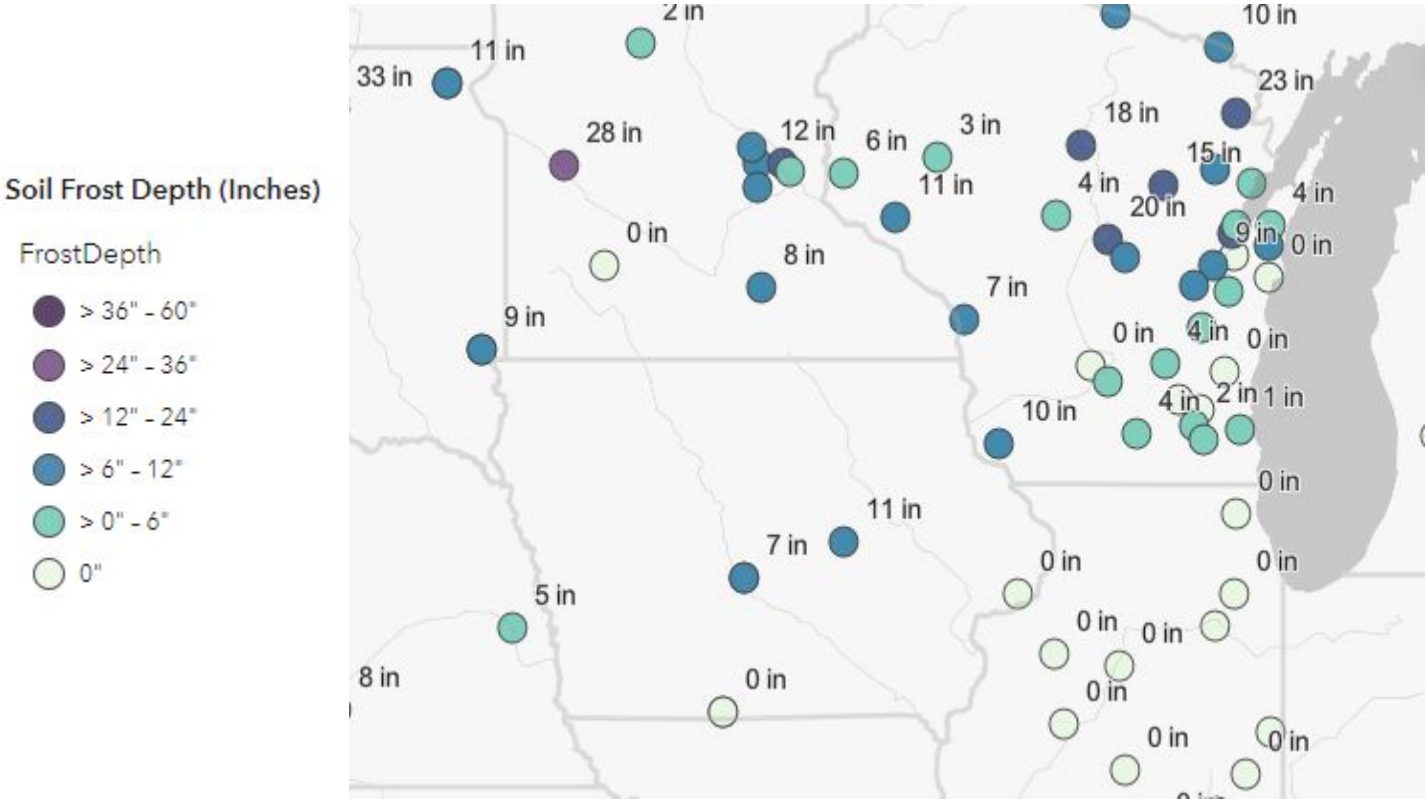
- With mild temperatures seen lately, we have started to see a large reduction in local snowpack. In the north, deep snowpack exists over frozen grounds (with a fresh 12 inch snowfall on top of it not depicted), leading to likely impacts along the Mississippi River.
- Local snowpack won't have much of an impact on flood risk, but any new snowfall can impact this in the future.

Frost Depth

2023 Spring Flood Outlook *Thursday, February 23, 2023*

Frozen ground

- Frost depths range from little to no frost in our south, to near 12 inches in the north, locally. Deeper frost depth in northern Mississippi River Valley, ranging 10 to 30 inches for some.



Contribution to flood potential:

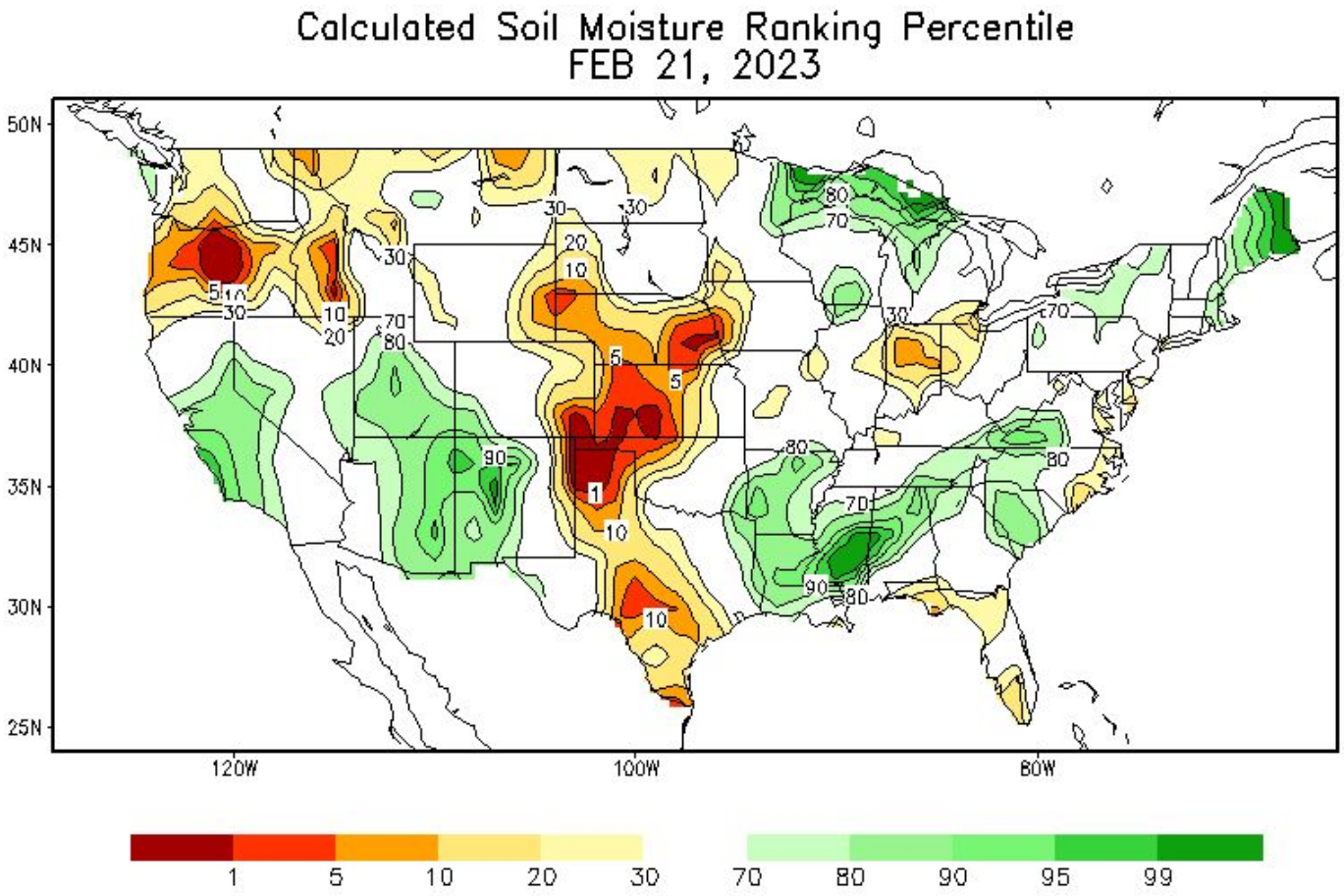
- Shallow frost (less than 1 foot for much of the local area) has potential to thaw early in the season, allowing snowmelt and rain to infiltrate into the ground, limiting runoff. Deep frost in the north may allow for increased runoff.

Soil Moisture

2023 Spring Flood Outlook *Thursday, February 23, 2023*

Dryer Soils, with some under Severe Drought Conditions:

- Near normal soil moisture locally.
- Regionally, soil moisture is near normal, with above normal conditions in the upper Mississippi River Valley and below normal south and east.



Contribution to flood potential:

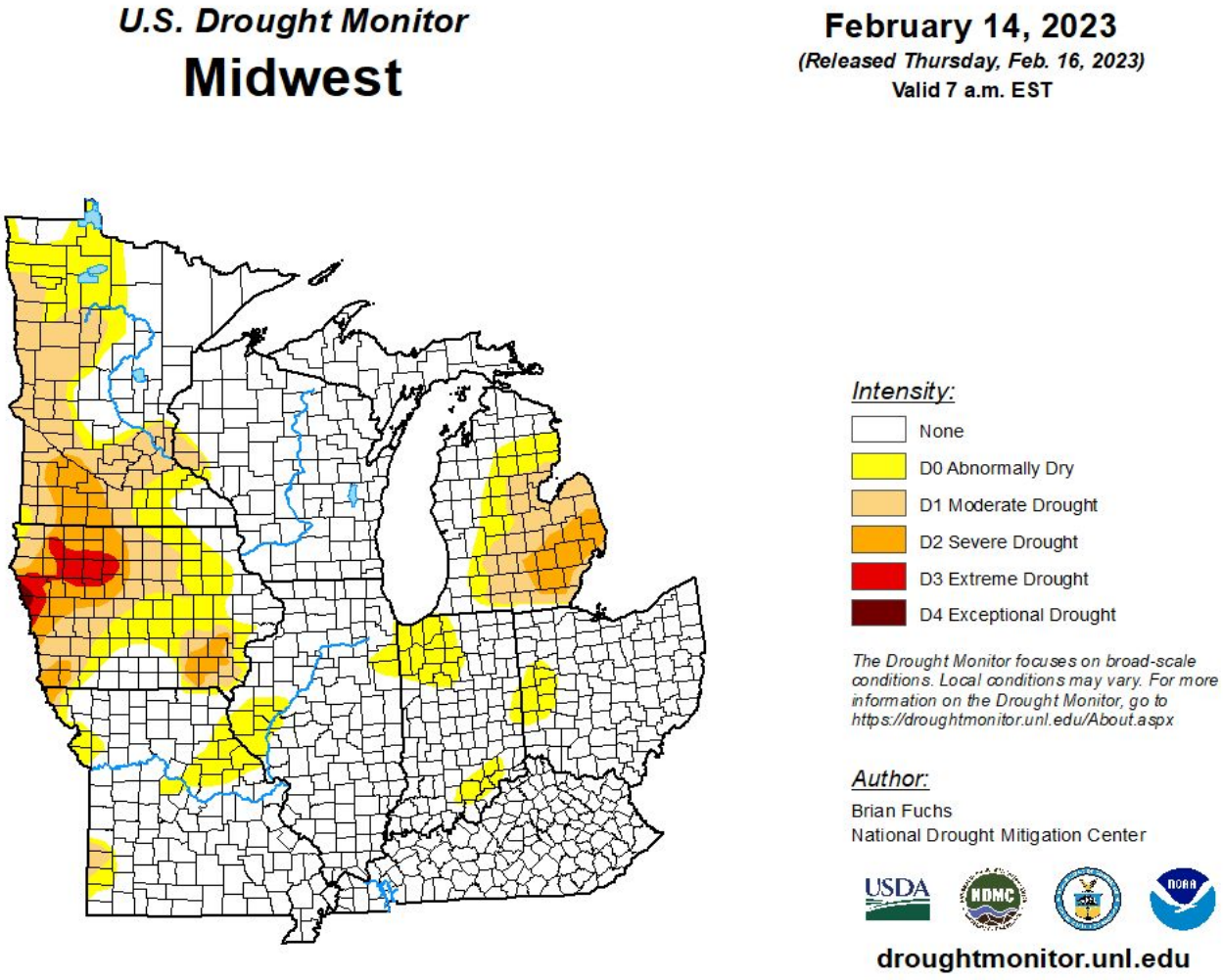
- With near normal soil moisture, snowmelt or rainfall will have some capacity to infiltrate into the ground after the frost melts. Some areas may start to trend towards more saturation, due to increased snowmelt, which can lead to a lesser amount of infiltration. Although, a lighter snowpack may not have much of an impact, locally.

Current Drought Conditions

2023 Spring Flood Outlook *Thursday, February 23, 2023*

Dryer Soils, with some under Severe Drought Conditions:

- Locally, we are seeing Abnormally Dry to Severe Drought conditions.



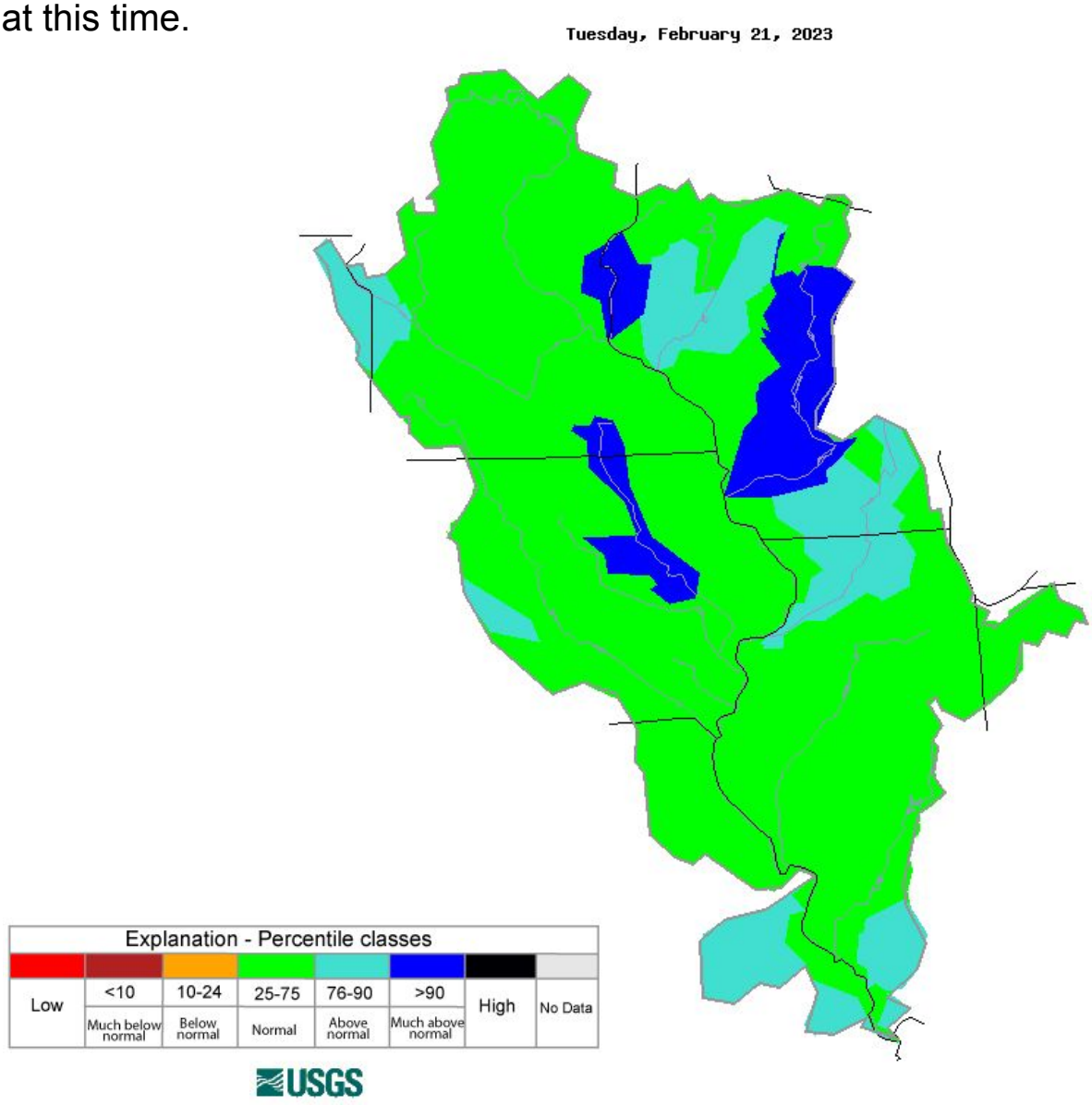
Contribution to flood potential:

- With the Abnormally Dry conditions, snowmelt or rainfall will have some capacity to infiltrate into the ground after the frost melts. Some areas may start to trend towards more saturation, due to increased snowmelt and rainfall, which can lead to a lesser amount of infiltration. These conditions have persisted for months now, but some change may come.

Streamflows

2023 Spring Flood Outlook *Thursday, February 23, 2023*

Streamflows are generally near normal across IA, IL, and MO, with a few watersheds observing above/well above normal streamflows. Above normal temperatures are expected, which can inhibit further ice development on the rivers at this time.



Contribution to flood potential:

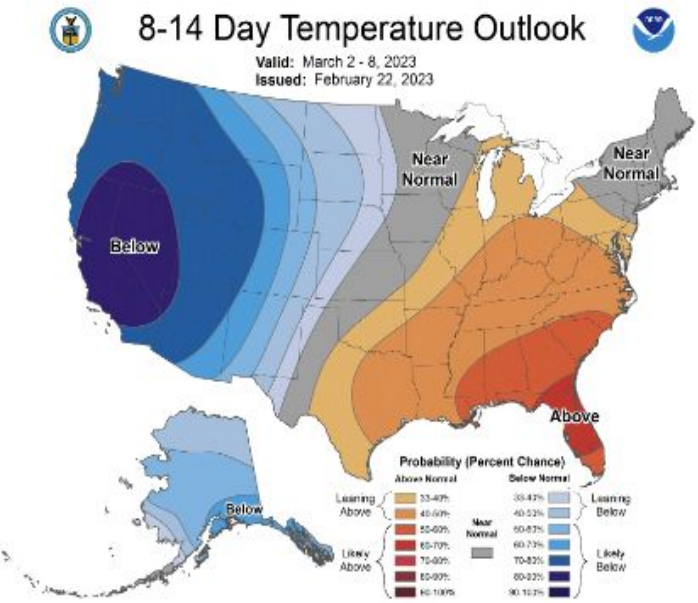
- Rivers near normal levels indicate there is capacity in the rivers for runoff from snowmelt water and spring rains.

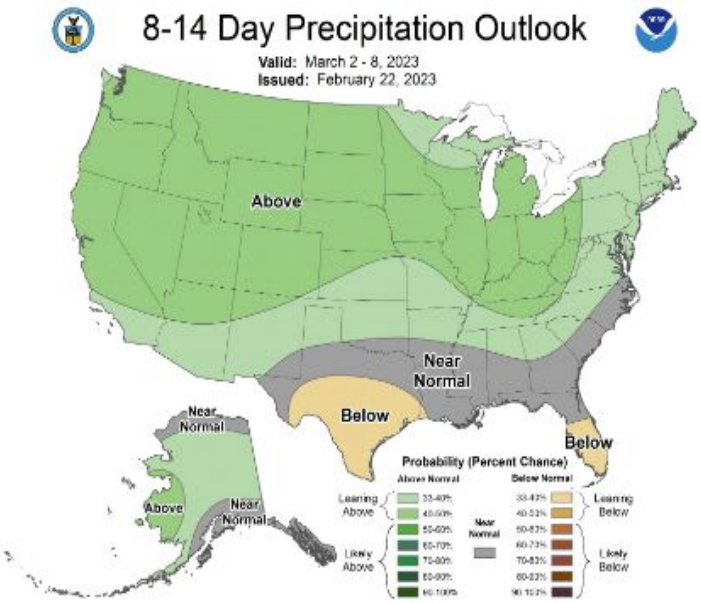
Weather Outlooks

2023 Spring Flood Outlook *Thursday, February 23, 2023*

Week 2 Temperature and Precipitation Outlooks (3/2-3/8):

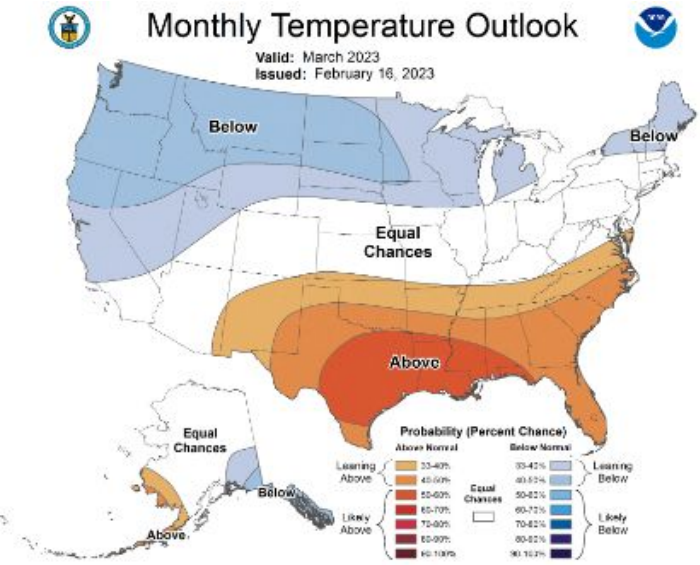
- Near normal temperatures are expected, with indication of increased precipitation potential in the next two weeks.

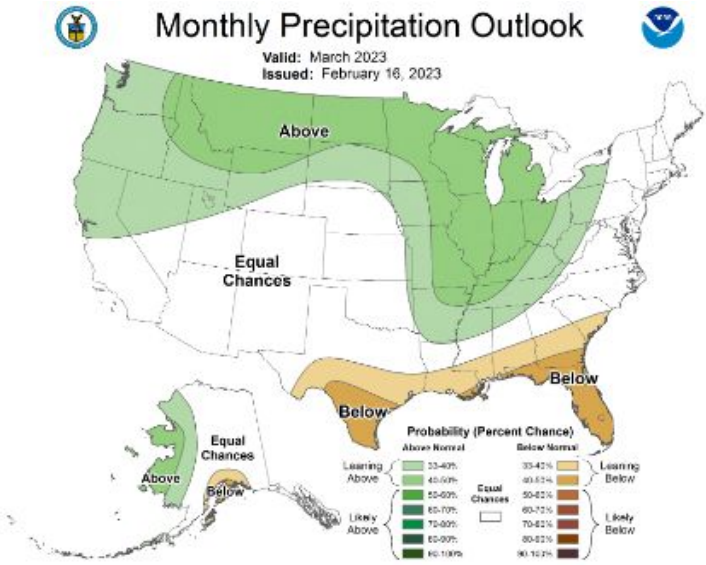




February Outlook:

- Looking ahead at March, near normal temperatures can be expected, with a chance for above normal precipitation.



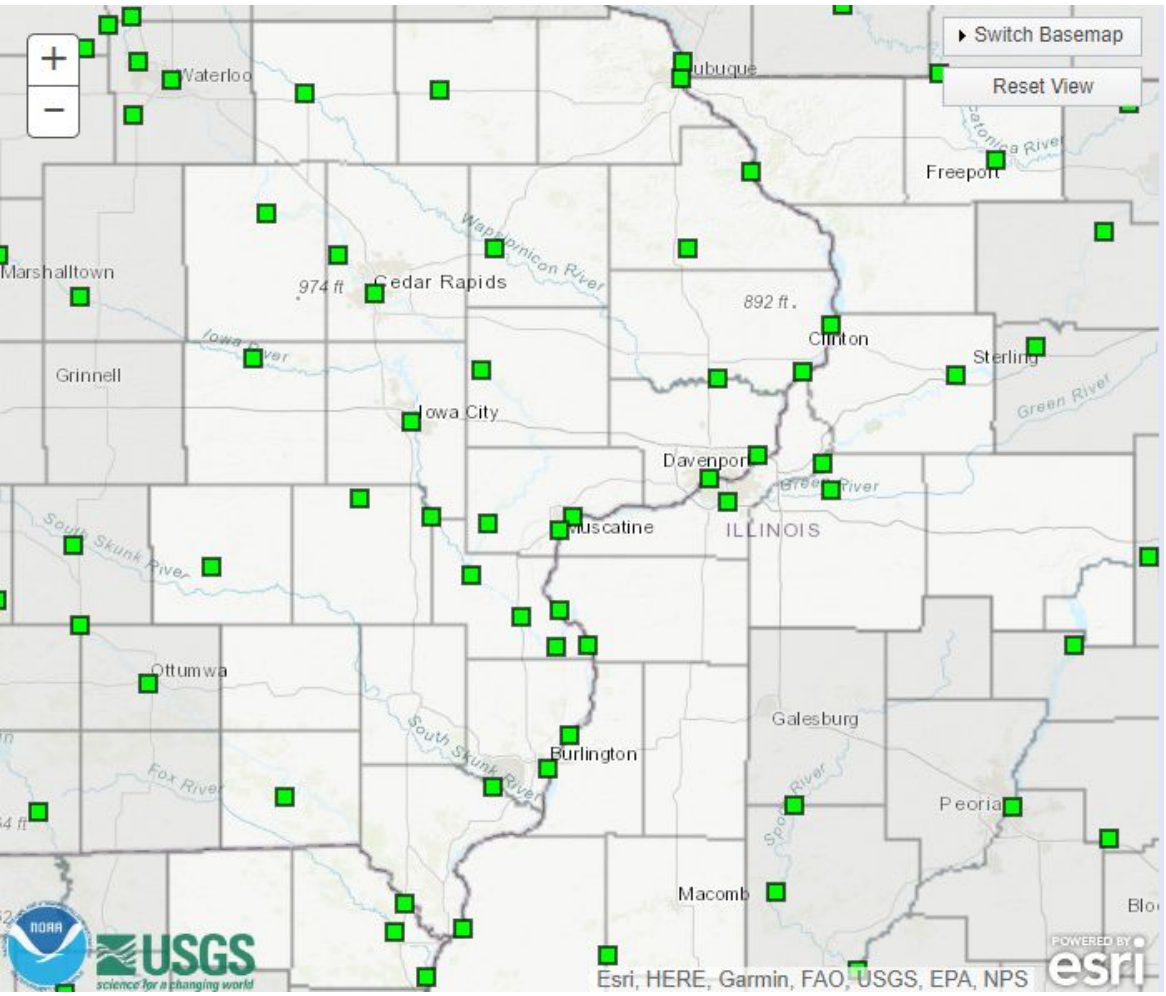


Forecast/Outlooks: High Probabilities

2023 Spring Flood Outlook *Thursday, February 23, 2023*

No locations with high chances for flooding:

- Greater than 95% chance to reach the labeled flood stage



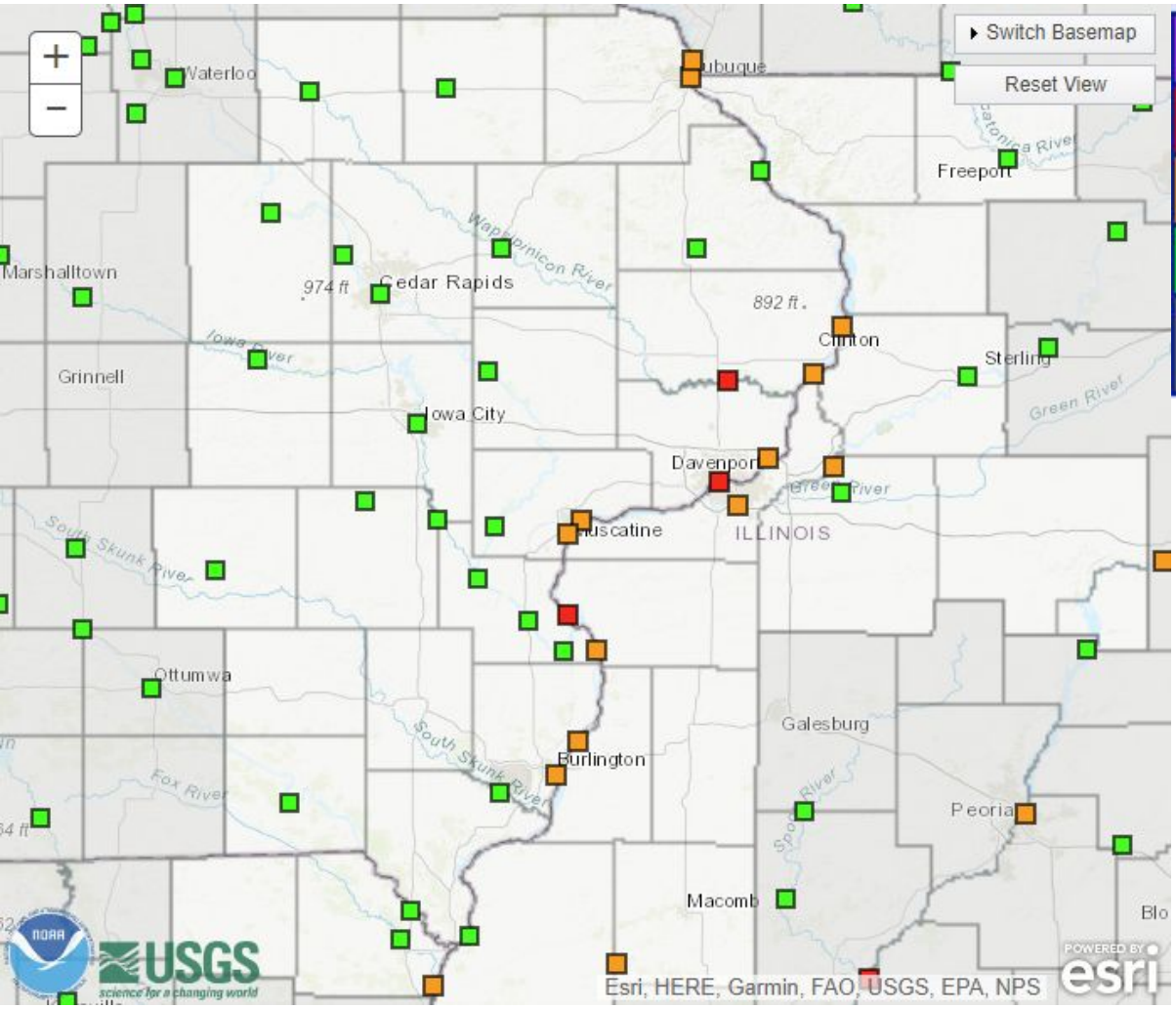
- High-end chances (>95%) are low all around at the moment. With continued snow melt and spring precipitation, these chances may fluctuate on future outlooks.

Forecast/Outlooks: 50% Chance

2023 Spring Flood Outlook *Thursday, February 23, 2023*

Locations with chances for flooding:

- Greater than 50% chance to reach the labeled flood stage



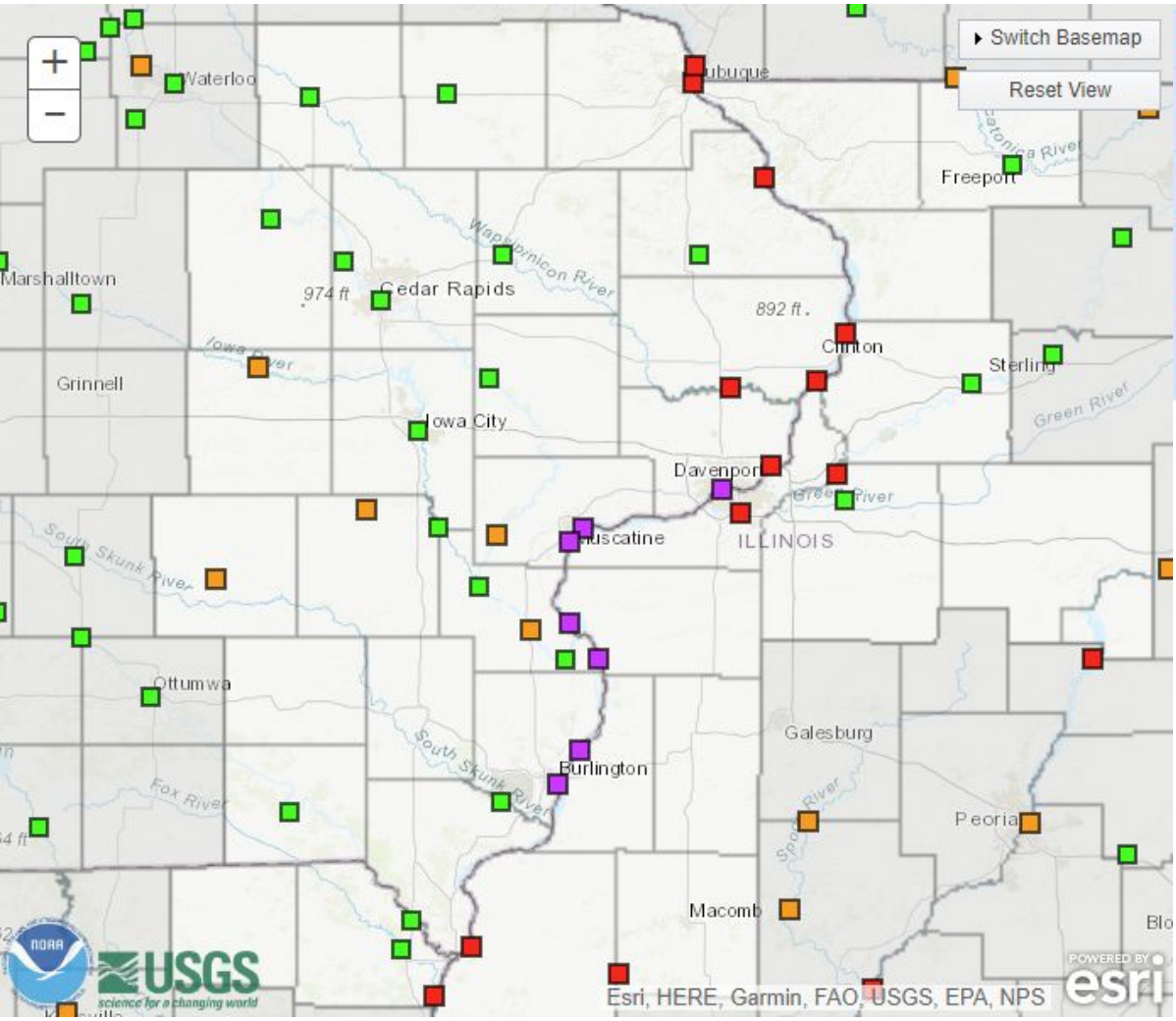
•The Mississippi River will have a 50% or higher chance for reaching minor to moderate flood stage, especially near and downstream of the Quad Cities.
•Some local rivers have greater than a 50% probability of reaching minor to moderate flooding. The lower Wapsipinicon and Rock Rivers also have an increased chance for minor and moderate flooding.

Forecast/Outlooks: Lower Probabilities

2023 Spring Flood Outlook *Thursday, February 23, 2023*

Locations with chances for flooding:

- Greater than 25% chance to reach the labeled flood stage



•This graphic shows that the many rivers in the local area have at least a small (25%) chance of reaching flood stage, with all along the Mississippi showing at least a low probability of rising to moderate or major flood levels.

Comparison To Normal

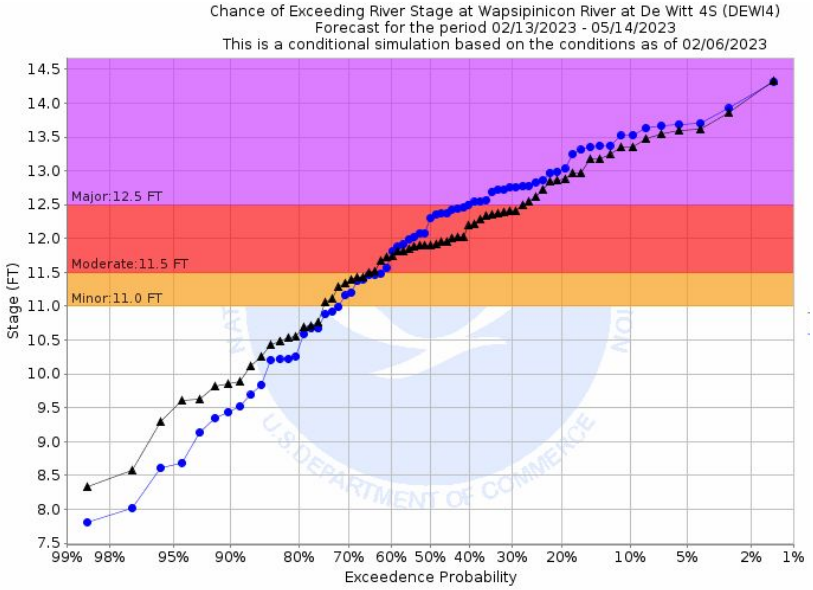
2023 Spring Flood Outlook *Thursday, February 23, 2023*

How far outside of normal is the flood risk?

Closer the lines are together the closer to normal the flood threat is.

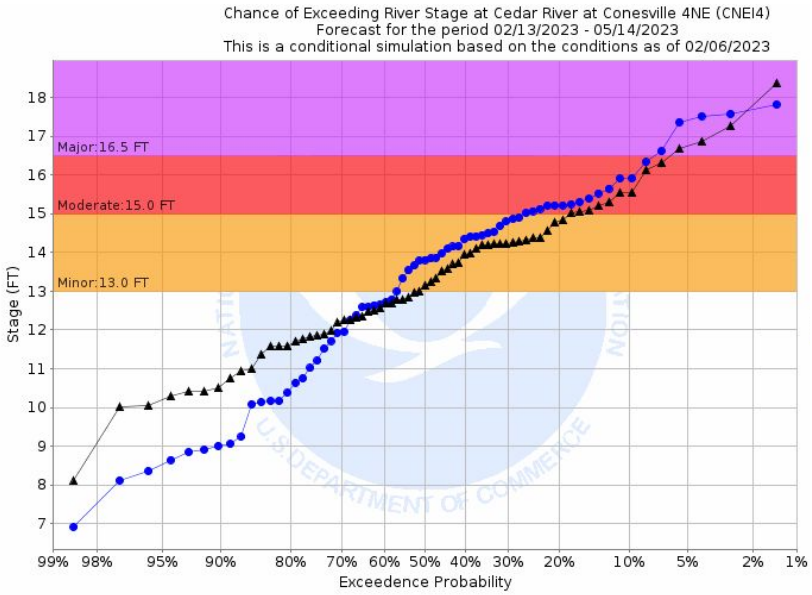
Conditional Simulation
Historical Simulation

Example of higher risk Wapsipinicon River locations: DeWitt, IA (DEWI4)



This graphic shows the probability of the Wapsipinicon River at DeWitt reaching Major Flood stage (12.5 ft) this year is roughly around 28%. In a normal year, this gage has around a 40% chance of reaching 12.5 ft.

Example of lower risk locations - most local rivers: Conesville, IA (CNEI4)



For the Cedar River at Conesville, the risk for reaching Major Flood Stage (16.5 ft) this year is 6%. In a normal year, this gage has around a 8% chance of reaching 16.5 ft. There is also a low chance for reaching Moderate Flood Stage, 15.0 ft (about 18%).

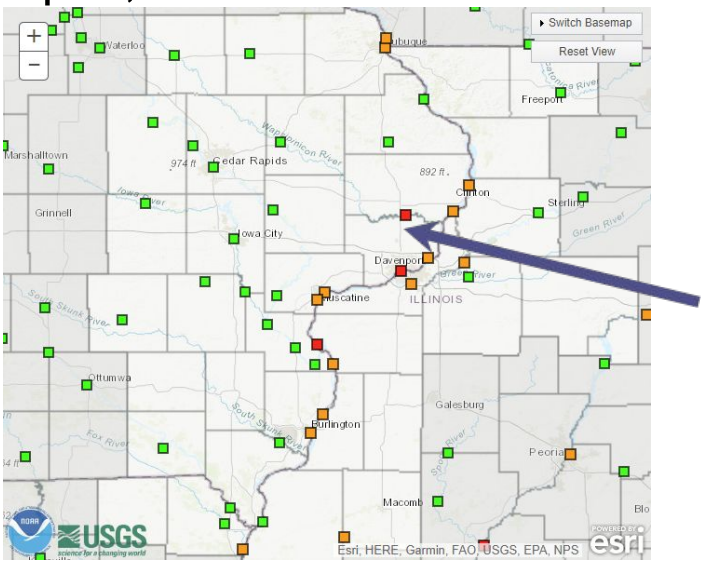
Probabilistic Outlook Information

2023 Spring Flood Outlook *Thursday, February 23, 2023*

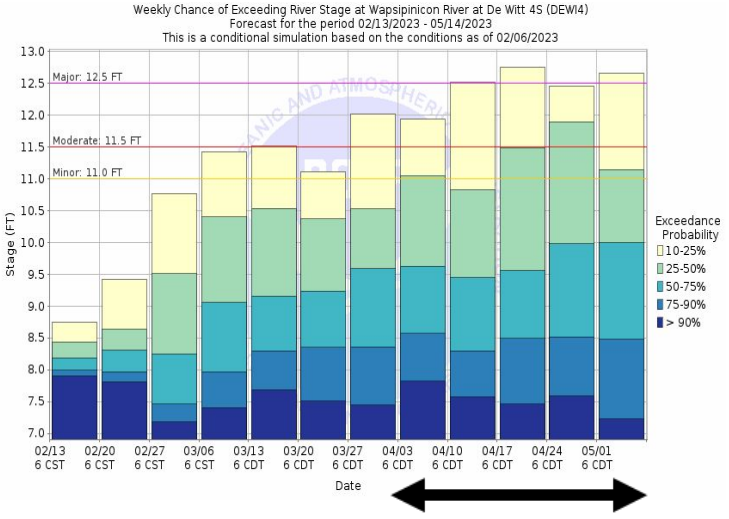
Where to find the information:

https://water.weather.gov/ahps2/long_range.php?wfo=dvn

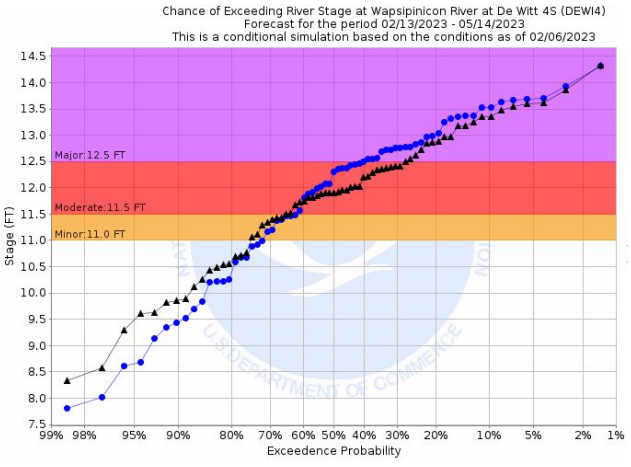
- To see the graphs, choose a location from the map.



- Choosing the Probability Information Tab will get you to the graphical analysis of the probabilities.



This graph shows the most likely timing of high river levels.



This graph shows the probability compared to normal of reaching particular river levels through the entire 3 month period.

•Quad Cities WFO Forecast Discussions (technical weather and hydrology discussion) - forecast.weather.gov/product.php?site=DVN&issuedby=DVN&product=AFD

•Advanced Hydrological Prediction Service (AHPS) – water.weather.gov/ahps

•North Central River Forecast Center – www.weather.gov/ncrfc

•Probabilistic Information - https://water.weather.gov/ahps2/long_range.php?wfo=dvn

•Midwest Regional Climate Center (MRCC) – http://mrcc.isws.illinois.edu/

•US Geological Survey (USGS) WaterWatch page – http://waterwatch.usgs.gov

•National Operational Hydrologic Remote Sensing Center (NOHRSC) – www.nohrsc.noaa.gov

•NOAA Climate Prediction Center – www.cpc.ncep.noaa.gov

•NOAA Weather Prediction Center – www.wpc.ncep.noaa.gov

•US Drought Monitor – droughtmonitor.unl.edu

The Spring Flood Outlook will be updated
March 9, 2023

Summary

2023 Spring Flood Outlook *Thursday, February 23, 2023*

- **The threat for spring flooding across the region will be driven by the amounts, location, and frequency of spring rains, and the pace of the snowmelt in the north, as there is a deep snowpack in place.**
- **Local snow cover and snow water equivalent are below normal across much of the area, which decreases the overall flood threat. However, the northern reaches of the Mississippi River basin are well above normal. A rapid snowmelt occurring over still frozen ground would increase the flood threat on the Mississippi River this spring. A slow, steady melt would decrease the threat.**
- **Abnormally Dry to Severe drought conditions and near normal soil moisture will reduce the flood risk in areas, as well as reduce the risk for long term flooding. Once the soil is frost-free, there will be more storage available in the soil to handle spring rains.**
- **River levels in the upper Mississippi watershed are currently running near normal, providing some capacity to handle heavy spring rains.**

Flood Quick Facts and Preparedness:

Quick facts you should know about flooding:

•Flooding can be caused by heavy rain, rapid snow melt, coastal storms, storm surge, waterway overflow, ice jamming, levee overtopping, dam failure, or from wastewater systems.
•Flooding has occurred in every U.S. state and territory.
•It only takes 6 inches of fast-moving water to knock you off your feet.
•A car can be moved in as little as 2 feet of water.
•90% of all U.S. natural disasters declared by the President involve flooding.

Preparedness:

Know your risk: Are you in a flood-prone area? Know your zone: **www.fema.gov/flood-zones**
-You must purchase separate flood insurance for your home. There is a 30 day wait period between when you buy a flood insurance policy and when it goes into effect. Plan ahead!
-A **Flood Watch** is issued when conditions are favorable for flooding. *Time to prepare*!
-A **Flood Warning** is issued when flooding is imminent or occurring. *Time to act!*

Never drive into flood waters! Turn around, don't drown!

Find out more information at: www.weather.gov/dvn/2023_springfloodoutlook
Follow us on Facebook and Twitter for more up to date information:

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