

# **Third Southern Wisconsin Spring Flood Outlook**

**Issued March 9, 2023**



**National Weather Service Milwaukee**

# Flood Outlook Summary

- **Spring flood risk:**
  - Slightly above average southwest and south central WI
  - Near average in southeast WI
  - Above average for the lower Wisconsin River
  - Additional snowpack could increase this risk – Snow tonight is included in this outlook
- **Break up ice jam risk is low**
- **Flooding is still possible, the underlying risk is not elevated much at this time**
  - Greatest risk of flooding occurs with snow melt and moderate to heavy rain



# What Has Changed

- **Increased risk for the Lower Wisconsin River**
  - Snowpack increased upstream
- **Little change elsewhere**
  - Rivers are running higher but the snowpack is lower
  - Additional snow this week, but water content closer to normal
  - Ground continues to thaw
- **Break up ice jam risk lowered further – amount of open water continues to increase**



Flood Risk Factor	Status	Risk
Snowpack	Average to Below Average	Average to Below Average Risk
Soil Moisture	Above Average	Increases Risk
Frost Depth	Lower than Average	Decreases Risk
River Levels	Above Average	Increases Risk
Spring Precipitation	Wet ?	Increases Risk
Spring Temperatures	?	?

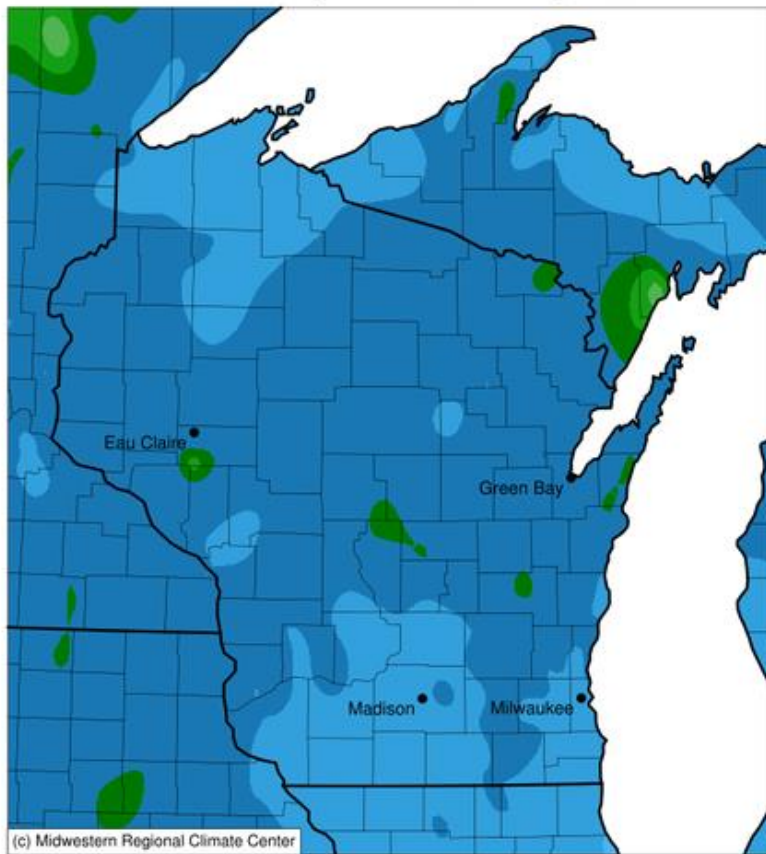




Factors Limiting Flood Risk	Factors Increasing Flood Risk
Little additional snowfall	Deeper snowpack
Dry, warm weather promoting evaporation	Significant rain on top of snow or frozen ground
Gradually warming temperatures in spring	A rapid snowmelt
No extreme cold snaps without snow cover	Very cold temperatures increasing frost depth and building river ice

Accumulated Precipitation (in)

December 01, 2022 to March 07, 2023



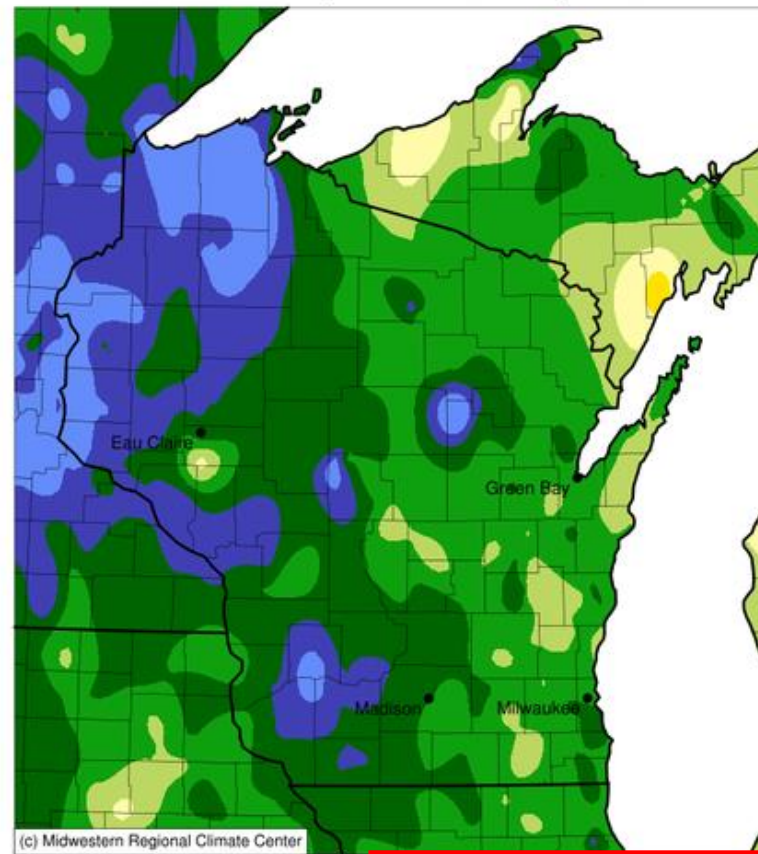
(c) Midwestern Regional Climate Center



0.01 0.1 0.5 1 1.5 2 3 4 5 7.5 10 12.5 15  
Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI,  
Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 3/8/2023 12:57:27 AM CST

Accumulated Precipitation (in): Percent of 1991-2020 Normals

December 01, 2022 to March 07, 2023



(c) Midwestern Regional Climate Center

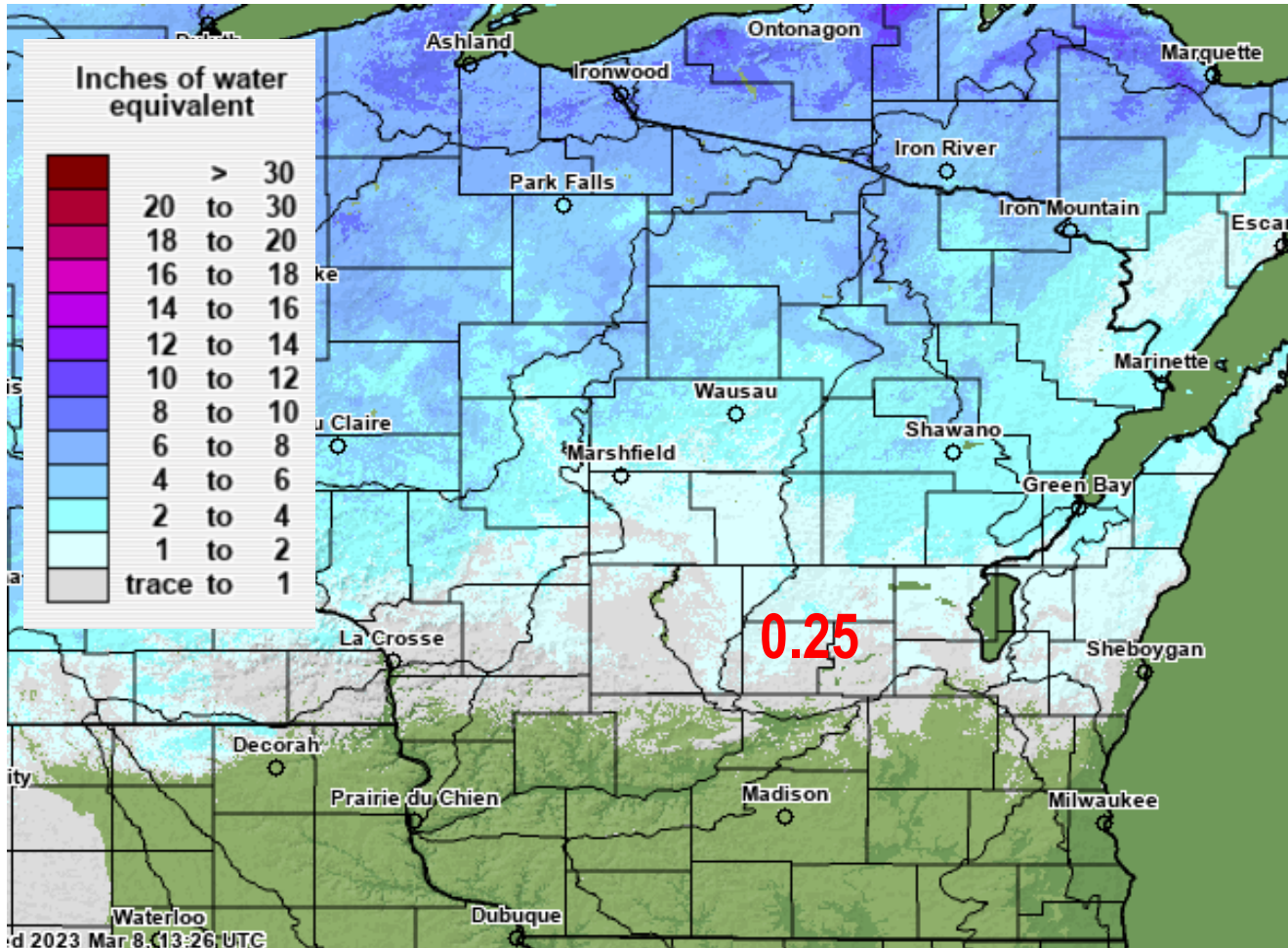


50 75 100 125 150 175 200  
Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI,  
Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
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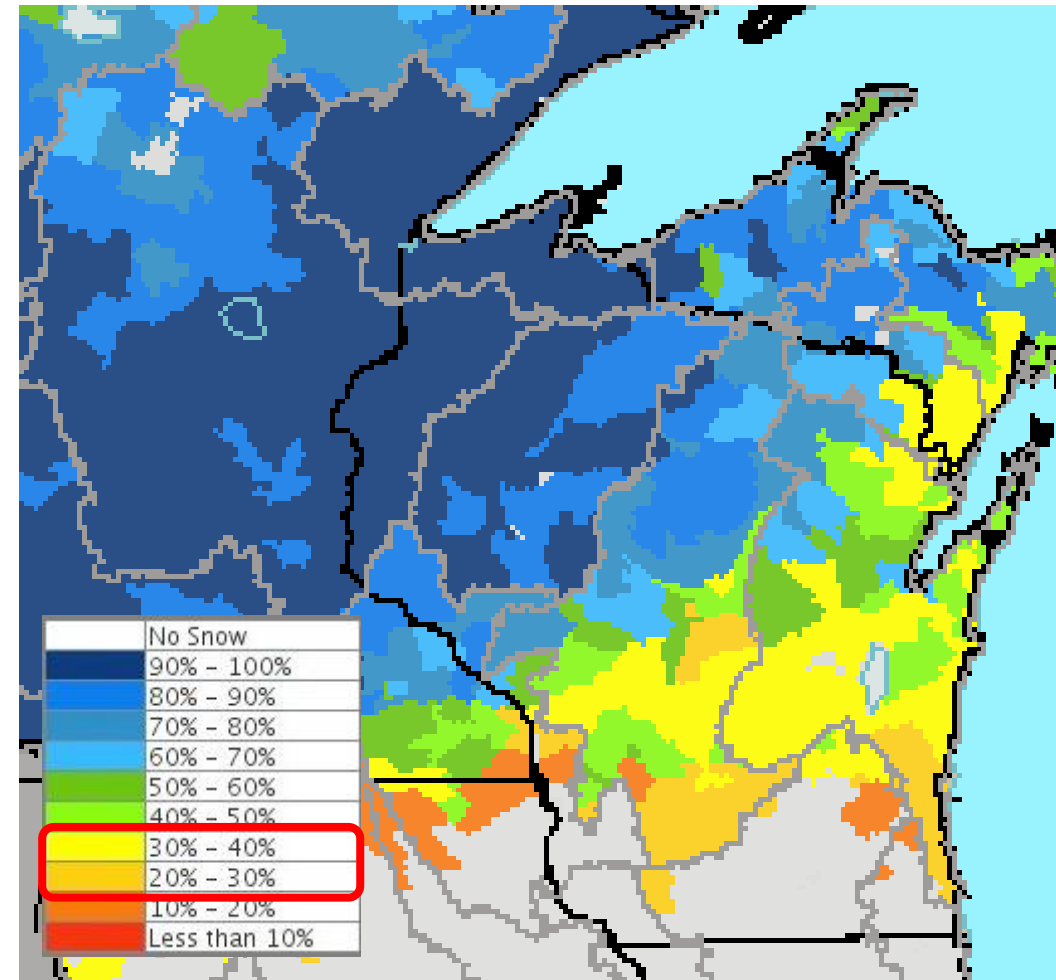
Winter was wetter than normal. Despite the lack of snow there is still a lot of water in the system.



### Snow Water Equivalent 3/8/23



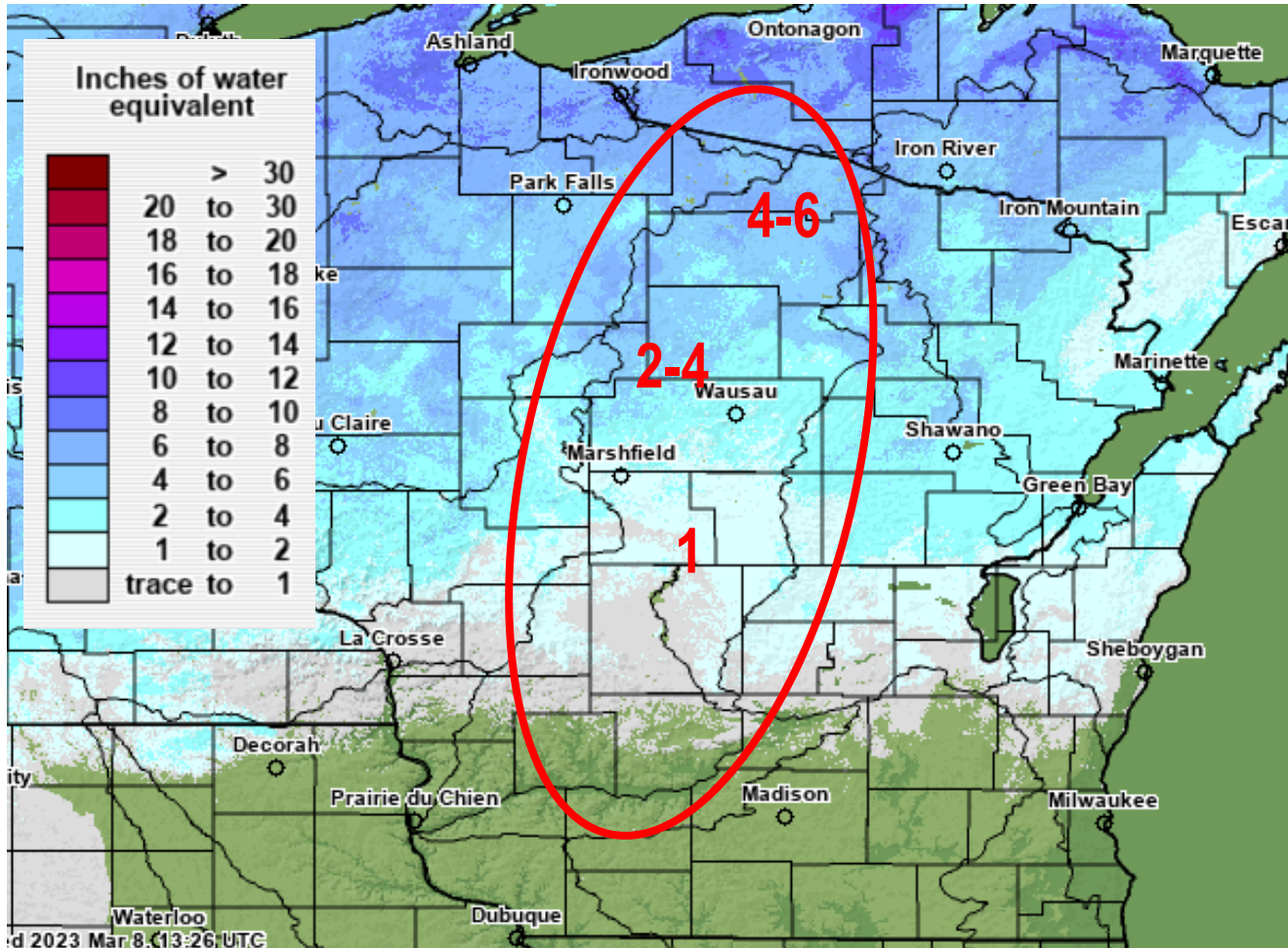
### Snow Water Equivalent Percentile 3/6/2023



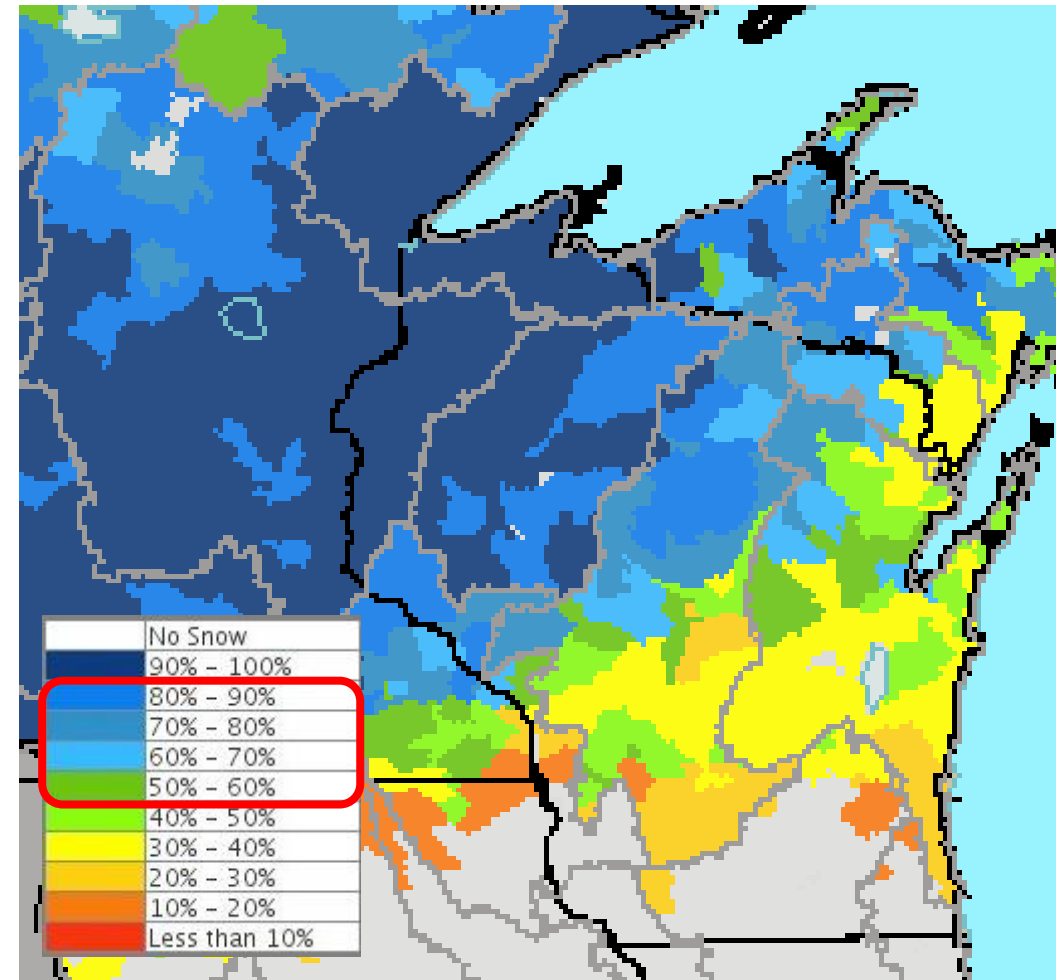
Snow water content is below normal.  
New snow 3/9-3/10 would bring it closer to normal.



### Snow Water Equivalent 3/8/23



### Snow Water Equivalent Percentile 3/6/2023



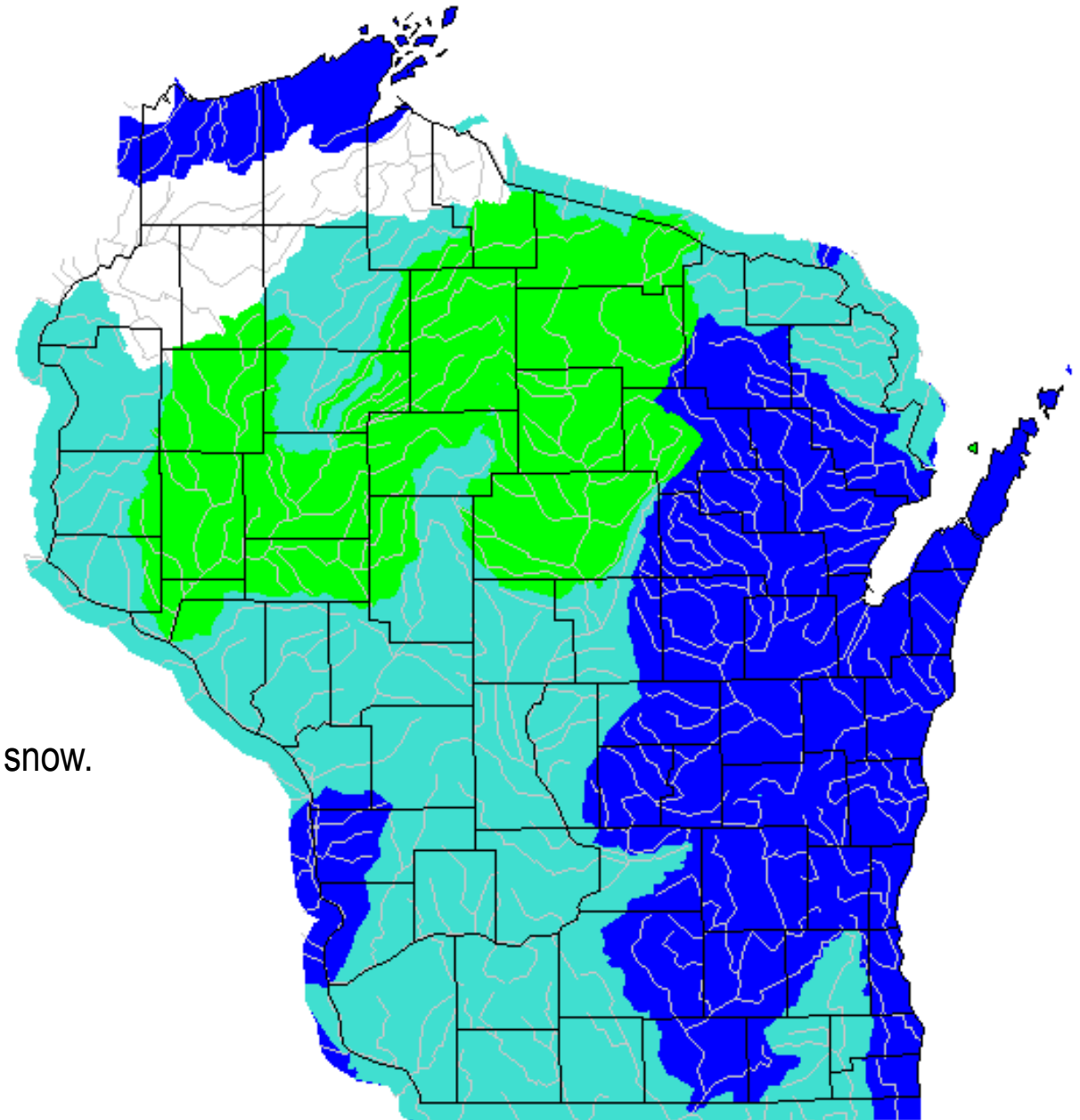
Snow water content in the upper half of the Wisconsin River valley is unusually high, contributing to the elevated risk.





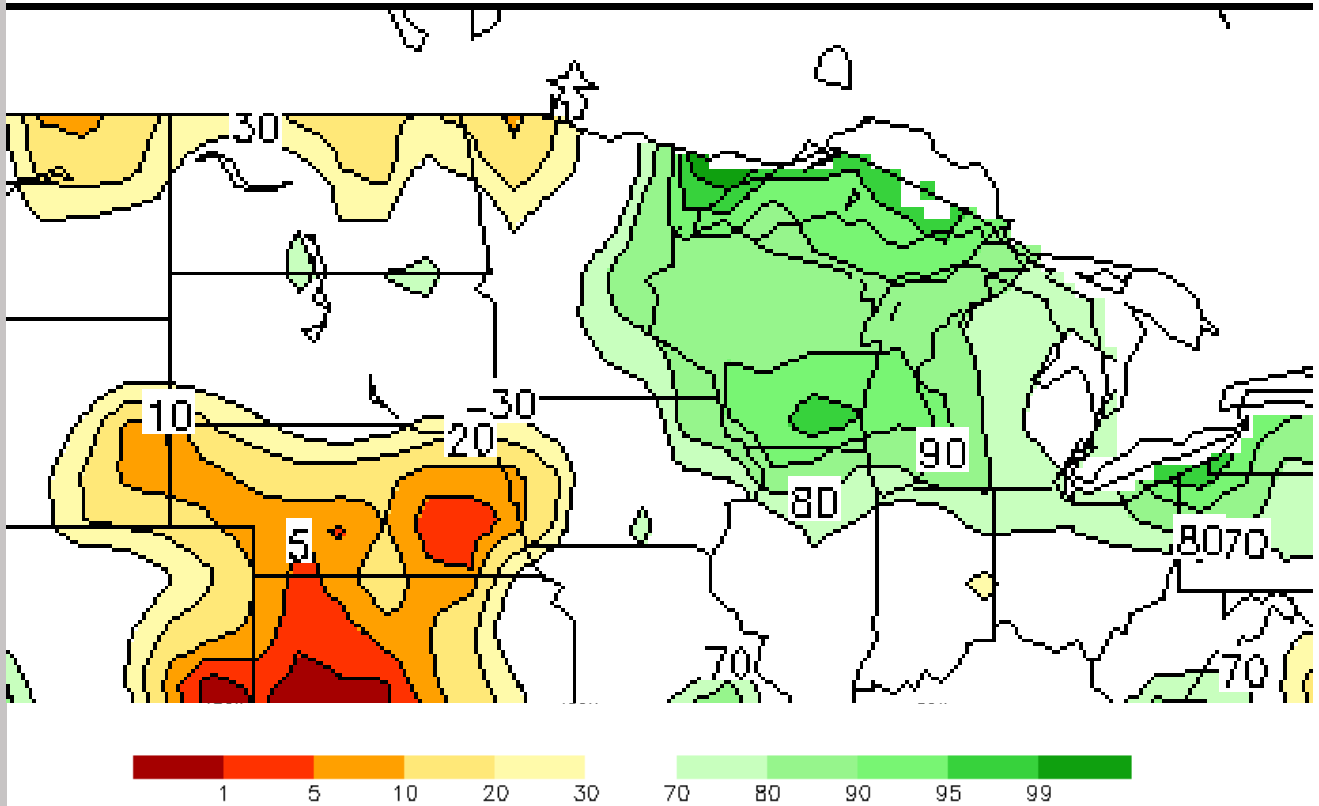
# 14 day Mean Streamflow Percentile

Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		



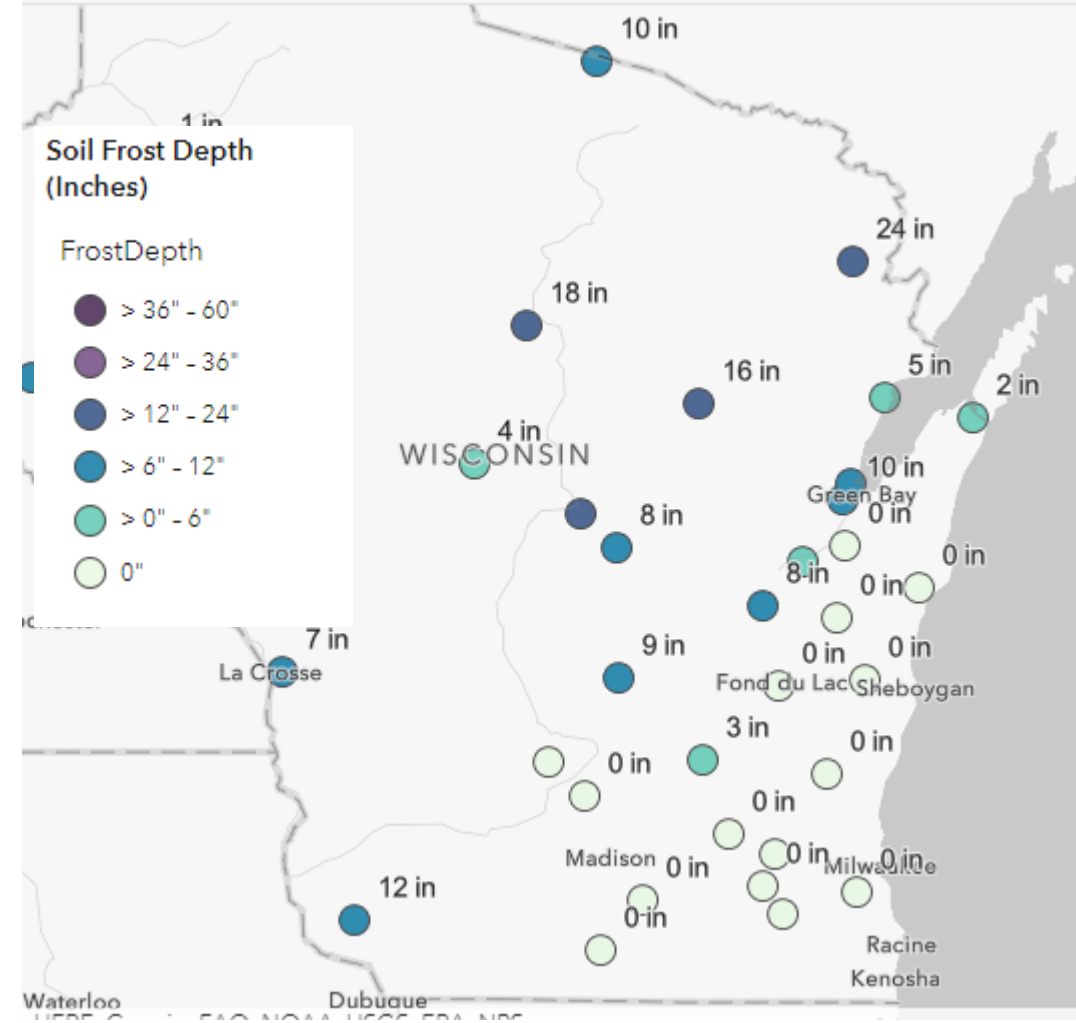
Rivers are running high due to recent rain and melting snow.  
There is less room to hold additional water.

# Soil Moisture Ranking Percentile MAR 07, 2023



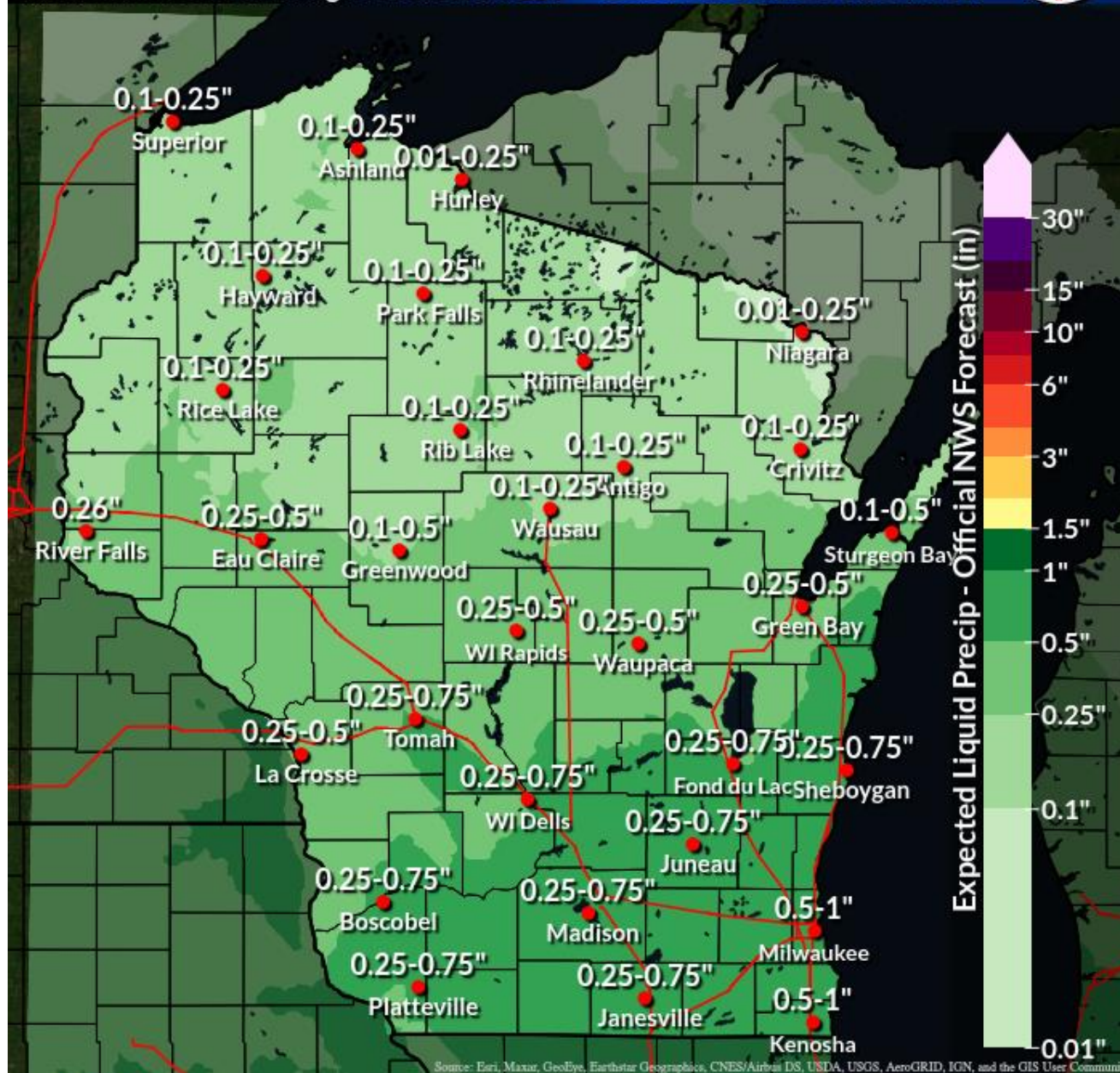
Soils are somewhat saturated from recent rain and melting snow. Less storage available to absorb additional water.

# Frost Depth 3/6/2023



Ground continues to thaw. Still somewhat frozen, especially in shaded and north facing slopes. Still runoff and ponding potential (especially since grass and vegetation is still dormant) but this is improving as ground thaws.





Precipitation included in this outlook (as snow).

If amounts end up higher the flood risk could increase.

Source: Eri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

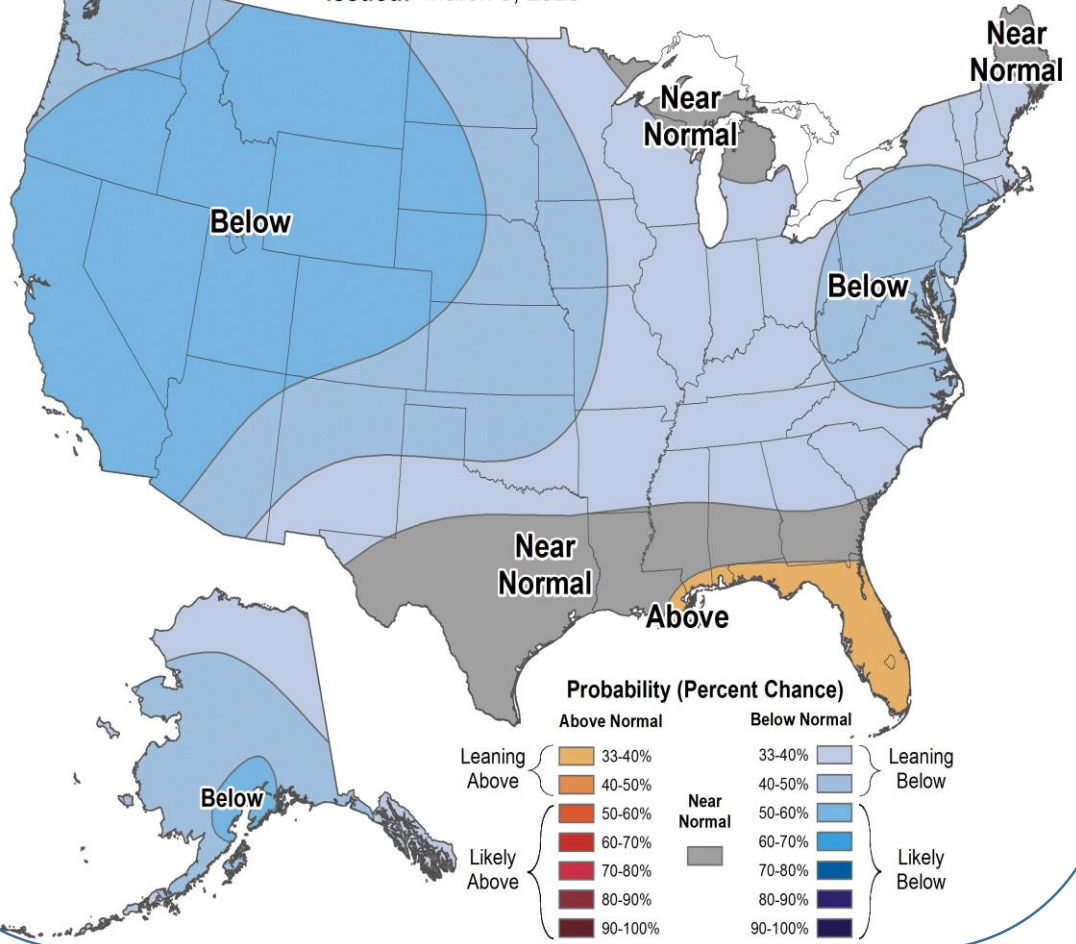




# 8-14 Day Temperature Outlook



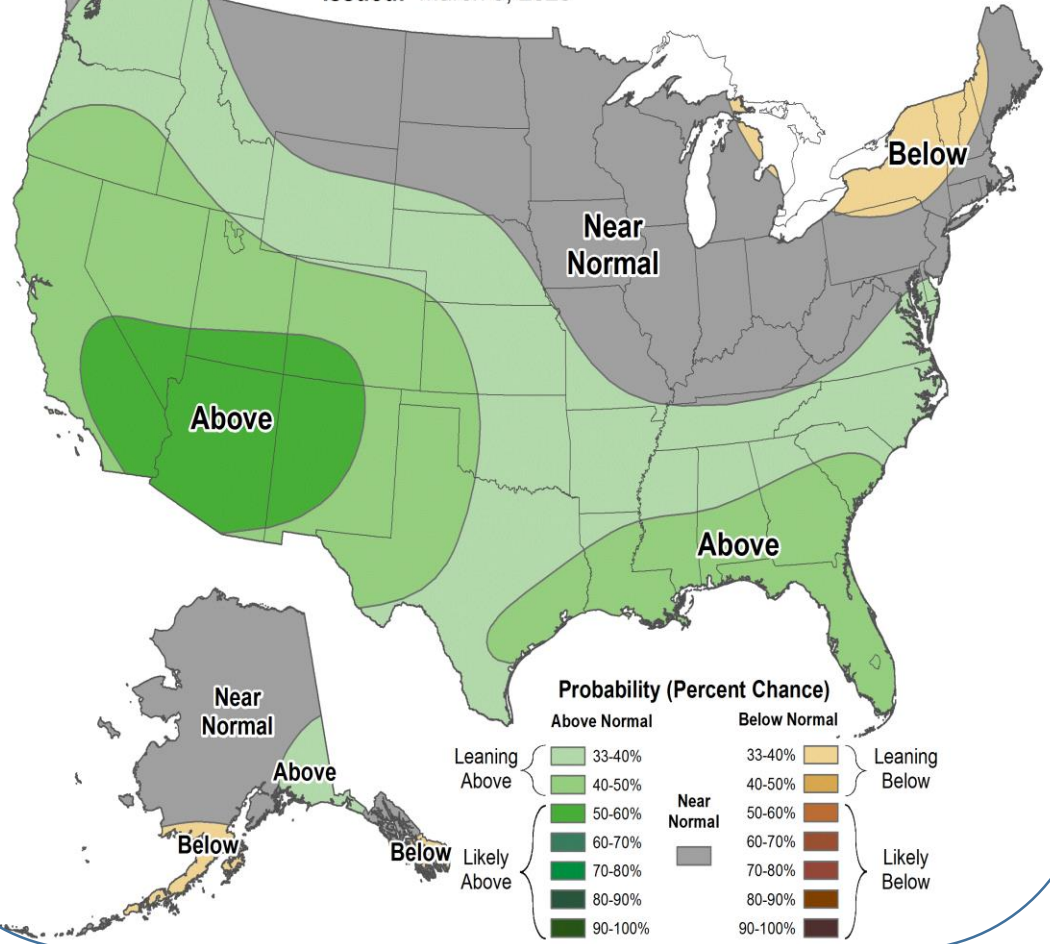
Valid: March 16 - 22, 2023  
 Issued: March 8, 2023



# 8-14 Day Precipitation Outlook



Valid: March 16 - 22, 2023  
 Issued: March 8, 2023



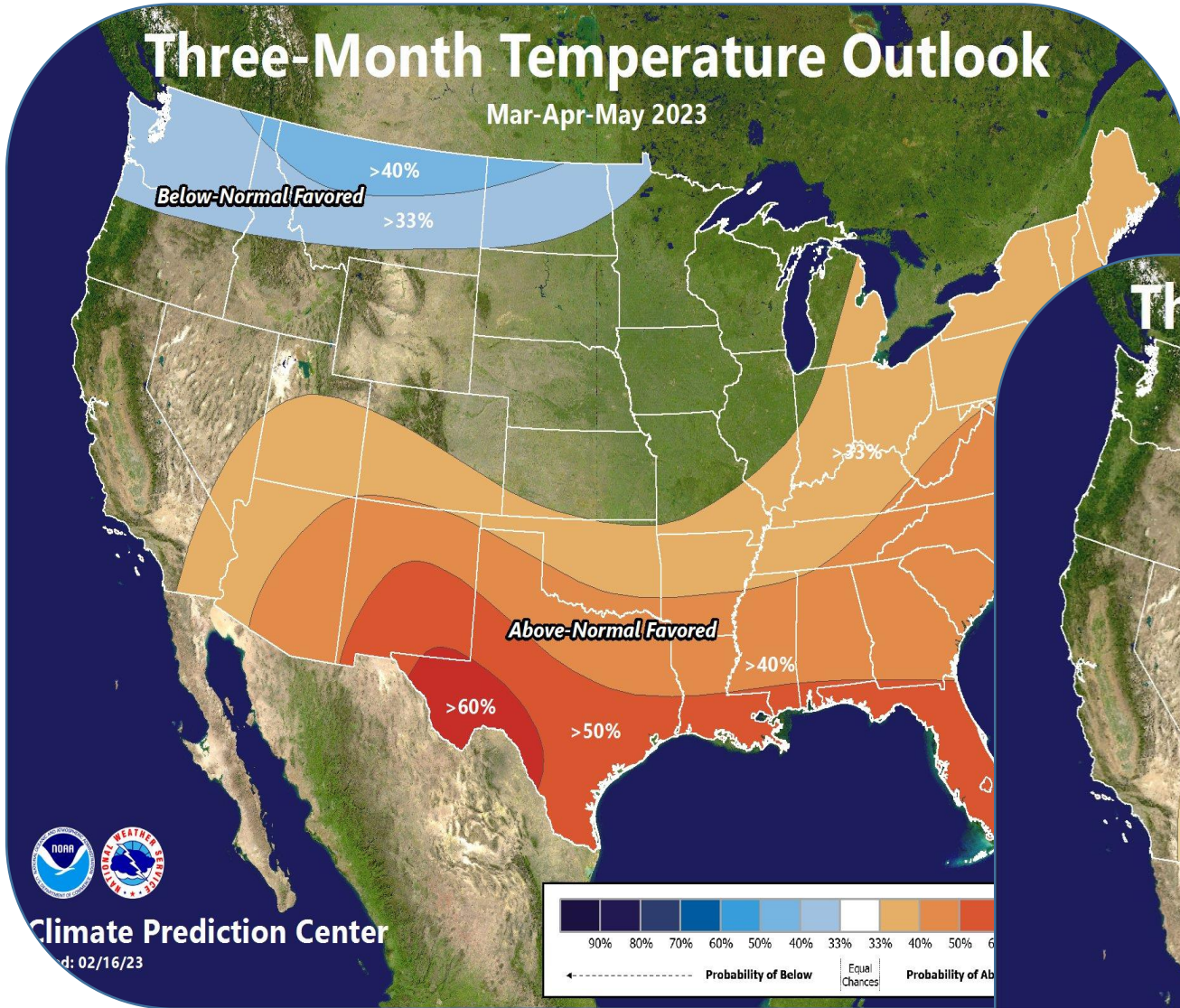
Cool temperatures could cause the snowpack to linger later in March. Holding onto snow further into spring increases the chance of a rapid snowmelt with rainfall. This could result in larger runoff, meaning flooding or ponding of water.

No big rain events in the forecast, but it only takes one event to cause problems.



# Three-Month Temperature Outlook

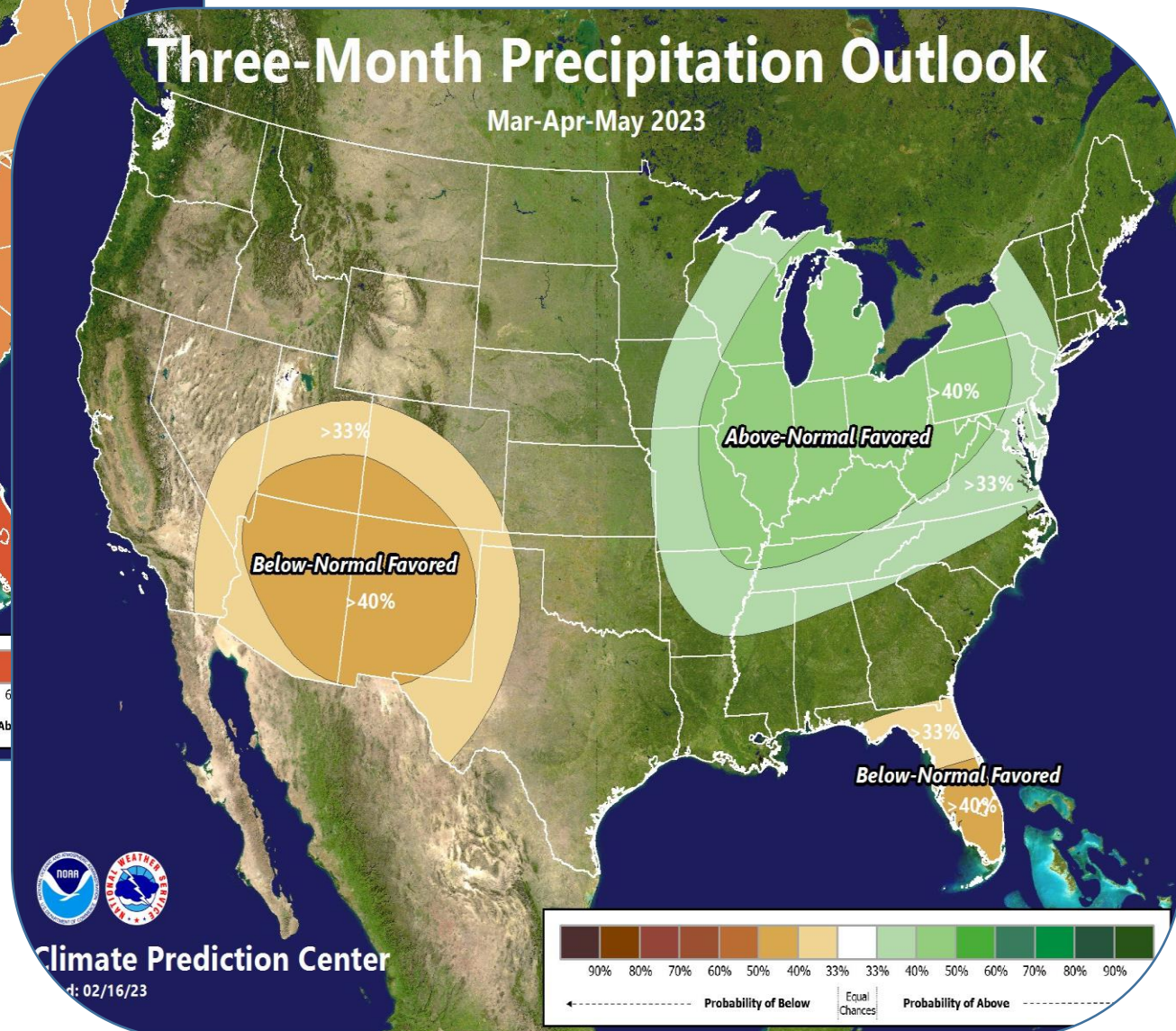
Mar-Apr-May 2023



Climate Prediction Center  
Date: 02/16/23

# Three-Month Precipitation Outlook

Mar-Apr-May 2023



Climate Prediction Center  
Date: 02/16/23



- **The following tables show the specific flood outlook probabilities for each NWS river forecast location.**
- **This is the underlying risk for the spring season as a whole based on the current conditions and forecast.**
- **The risk of flooding may be higher for a specific rain or snow melt event.**



**Probabilities of Exceedance valid 2/27/23 to 5/28/23  
Southwest WI**

Location	Outlook Minor	Historical Minor	Outlook Moderate	Historical Moderate	Outlook Major	Historical Major
Fox – Princeton	20	20	<5	<5	<5	<5
Fox-Berlin	35	26	<5	<5	<5	<5
WI - Dells	46	25	23	12	10	5
WI - Portage	94	70	82	52	43	24
Baraboo – Rock Springs	47	35	28	28	13	8
West Baraboo	16	14	8	<5	<5	<5
Baraboo	55	41	7	<5	<5	<5
Black Earth Creek	10	<5	<5	<5	<5	<5
Pecatonica – Darlington	6	<5	<5	<5	<5	<5
Blanchardville	32	21	<5	<5	<5	<5
Martintown	38	22	<5	<5	<5	<5
Sugar – Albany	<5	<5	<5	<5	<5	<5
Brodhead	38	28	7	5	<5	<5



**Probabilities of Exceedance valid 2/27/23 to 5/28/23  
South – Central WI**

<b>Location</b>	<b>Outlook Minor</b>	<b>Historical Minor</b>	<b>Outlook Moderate</b>	<b>Historical Moderate</b>	<b>Outlook Major</b>	<b>Historical Major</b>
Rock – Watertown	15	16	6	11	<5	7
Jefferson	44	39	26	28	<5	7
Fort Atkinson	14	20	9	9	<5	<5
Lake Koshkonong	>95	45	31	33	21	26
Afton	>95	44	18	18	10	10
Crawfish - Milford	32	38	7	11	<5	7
Turtle Creek – Clinton	12	14	<5	<6	<5	<5
Beloit	11	13	<5	<5	<5	<5





Probabilities of Exceedance valid 2/27/23 to 5/28/23  
Southeast WI

Location	Outlook Minor	Historical Minor	Outlook Moderate	Historical Moderate	Outlook Major	Historical Major
Sheboygan	20	32	8	10	6	68
Cedar Creek - Cedarburg	<5	6	<5	<5	<5	<5
Milwaukee R - Cedarburg	22	39	7	10	<5	6
Root R- Franklin	19	25	<5	<5	<5	<5
Raymond	22	26	5	7	<5	<5
Racine	6	9	<5	<5	<5	<5
Fox – Waukesha	11	17	7	9	<5	<5
Burlington	13	25	8	14	<5	<5
New Munster	63	55	10	23	9	15

Forecast precipitation has increased slightly in far southeast Wisconsin due to lake enhanced snow potential, so historical probabilities may better reflect the current risk.



# How to Interpret the Probability Graphics

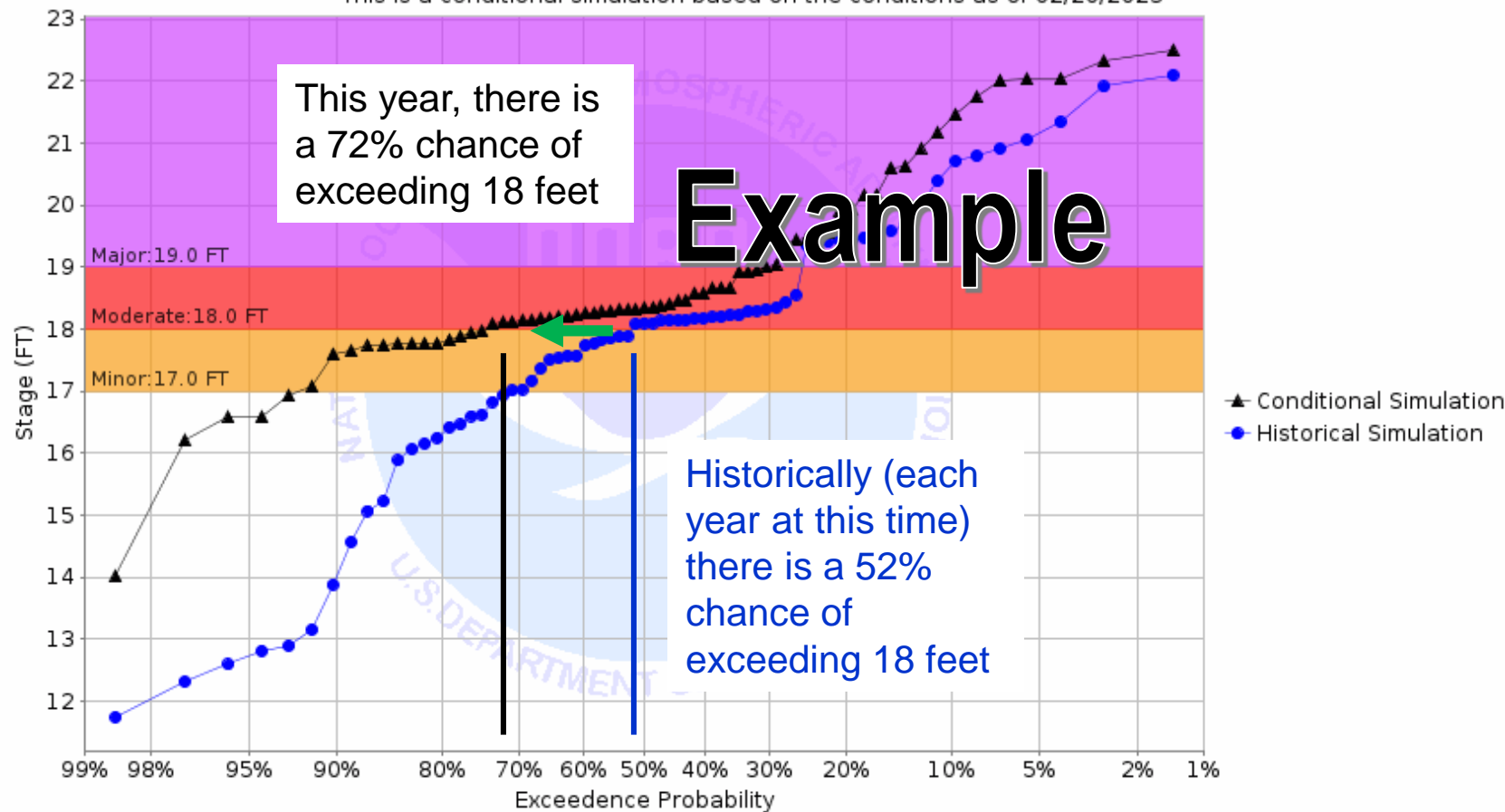
The outlook is for a 3 Month time period.

**Black line** is the **current forecast**, based on current environmental conditions and forecast temperature and precipitation

**Blue line** is the **historical (average)** probabilities

When the black line is above, or to the left of the blue line, the chances are greater. When the black line is below, or to the right of the blue line, the chances are lower.

Chance of Exceeding River Stage at Wisconsin River at Portage (PORW3)  
Forecast for the period 02/27/2023 - 05/28/2023  
This is a conditional simulation based on the conditions as of 02/20/2023



# How to Interpret the Probability Graphics

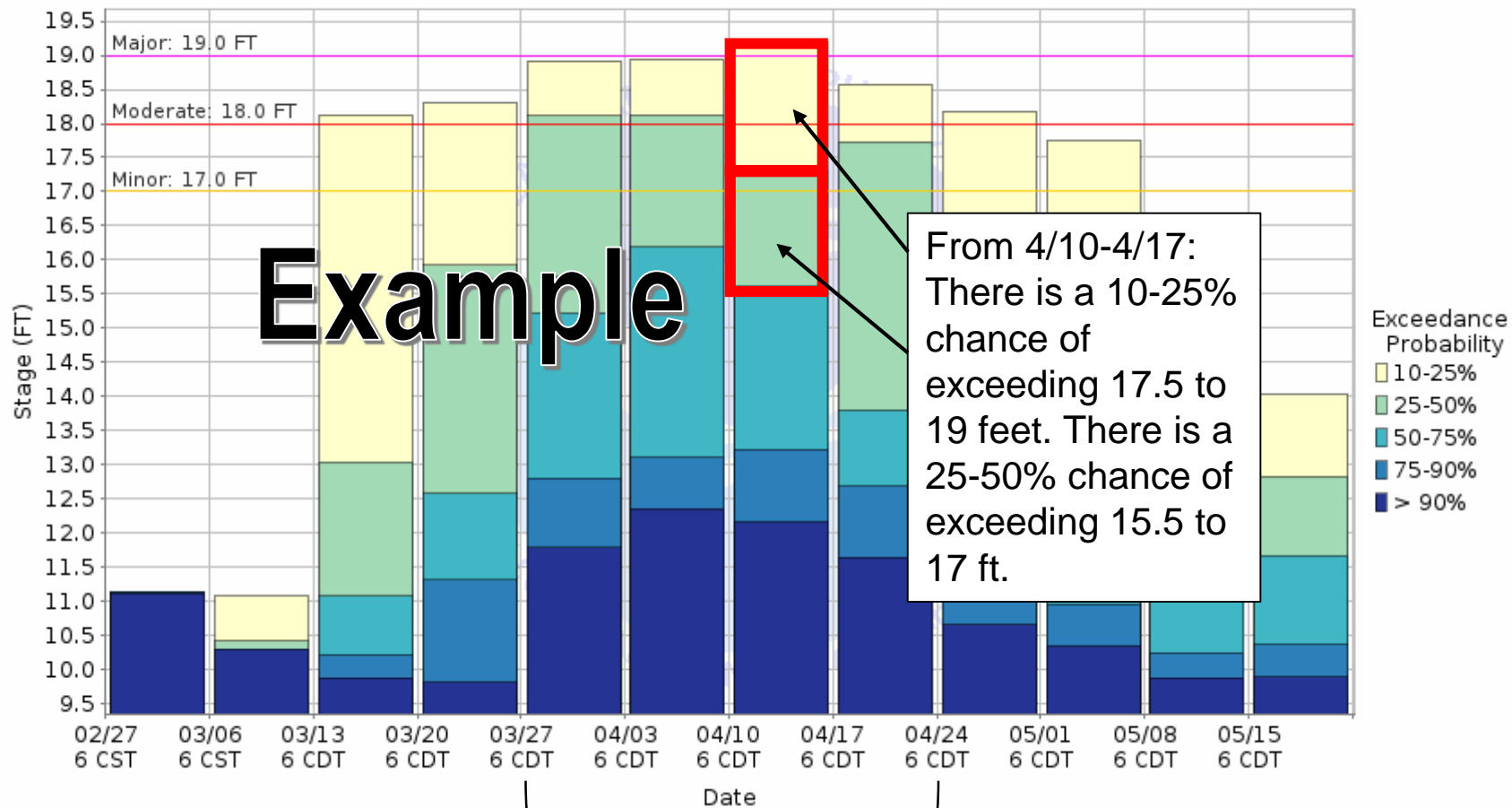
Outlook is for weekly time periods.

Colored boxes show the probability of exceeding each threshold.

Probability increases as colors become more blue.

Tallest boxes show the time frame with the highest probability of exceeding higher river levels.

Weekly Chance of Exceeding River Stage at Wisconsin River at Portage (PORW3)  
 Forecast for the period 02/27/2023 - 05/28/2023  
 This is a conditional simulation based on the conditions as of 02/20/2023



**Example**

From 4/10-4/17:  
 There is a 10-25% chance of exceeding 17.5 to 19 feet. There is a 25-50% chance of exceeding 15.5 to 17 ft.

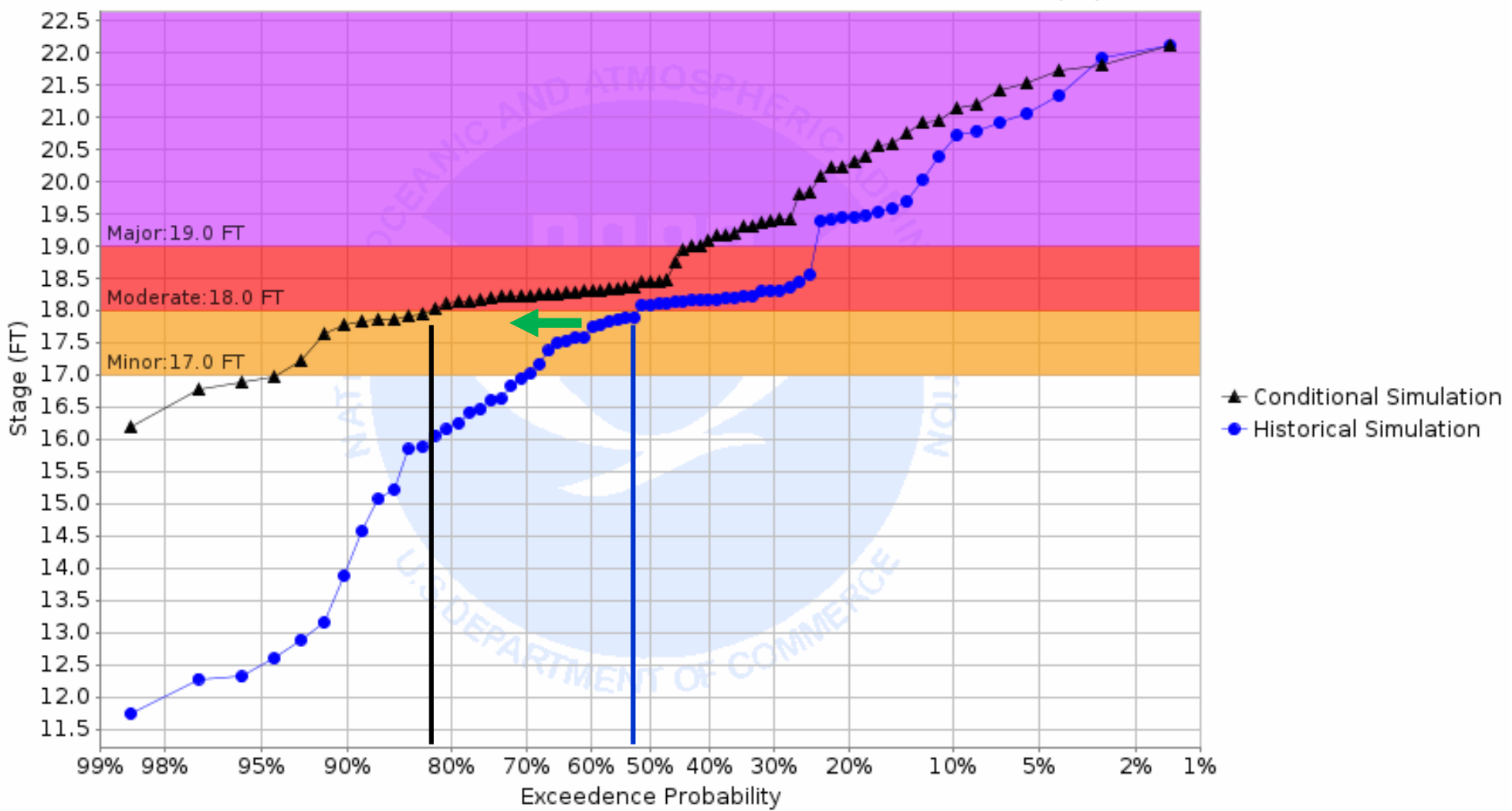
Time frame with highest probabilities



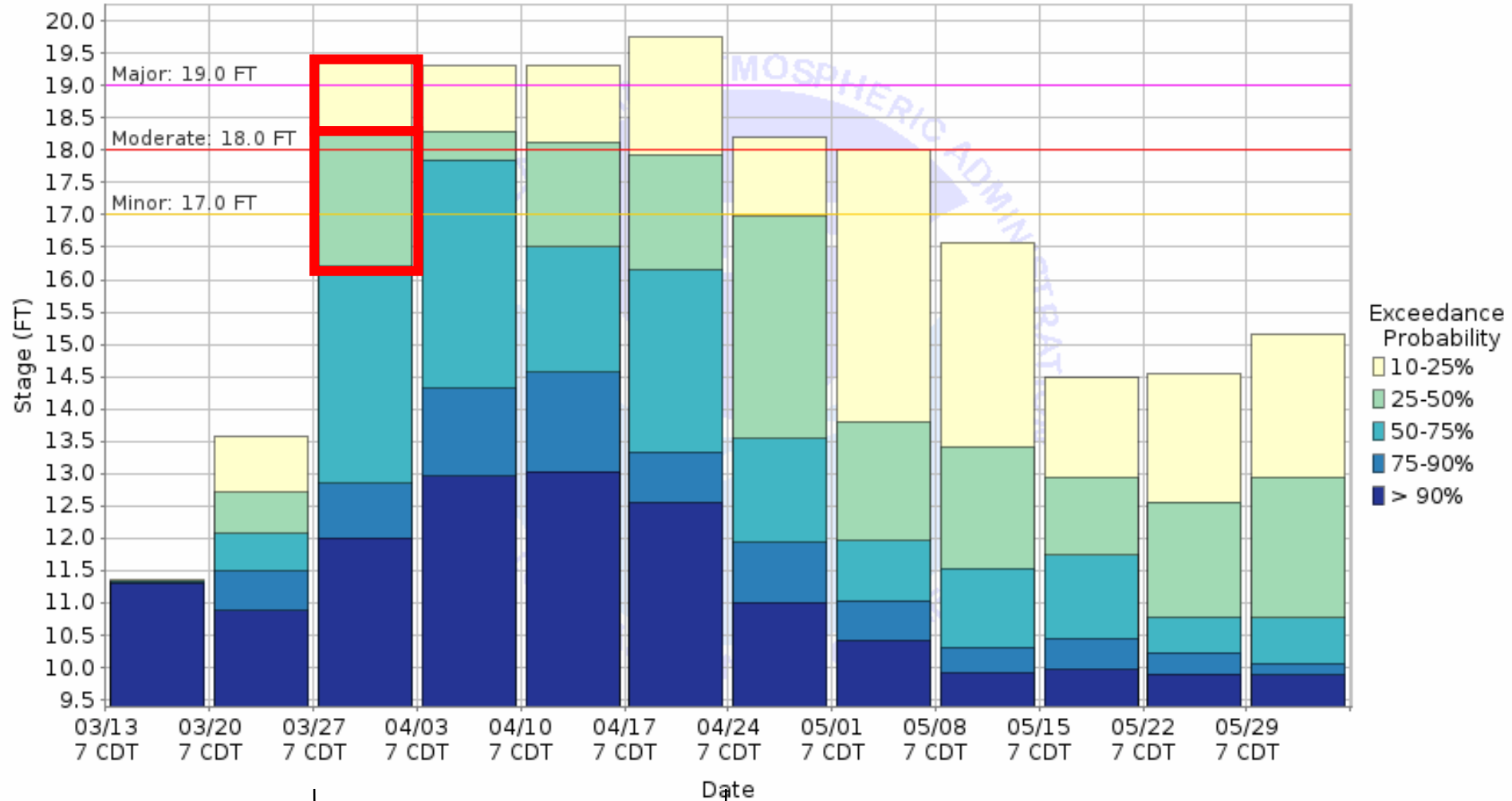


Elevated chance of exceeding all river stage values due to the deep snowpack up north.

Chance of Exceeding River Stage at Wisconsin River at Portage (PORW3)  
 Forecast for the period 03/13/2023 - 06/11/2023  
 This is a conditional simulation based on the conditions as of 03/06/2023



Weekly Chance of Exceeding River Stage at Wisconsin River at Portage (PORW3)  
 Forecast for the period 03/13/2023 - 06/11/2023  
 This is a conditional simulation based on the conditions as of 03/06/2023

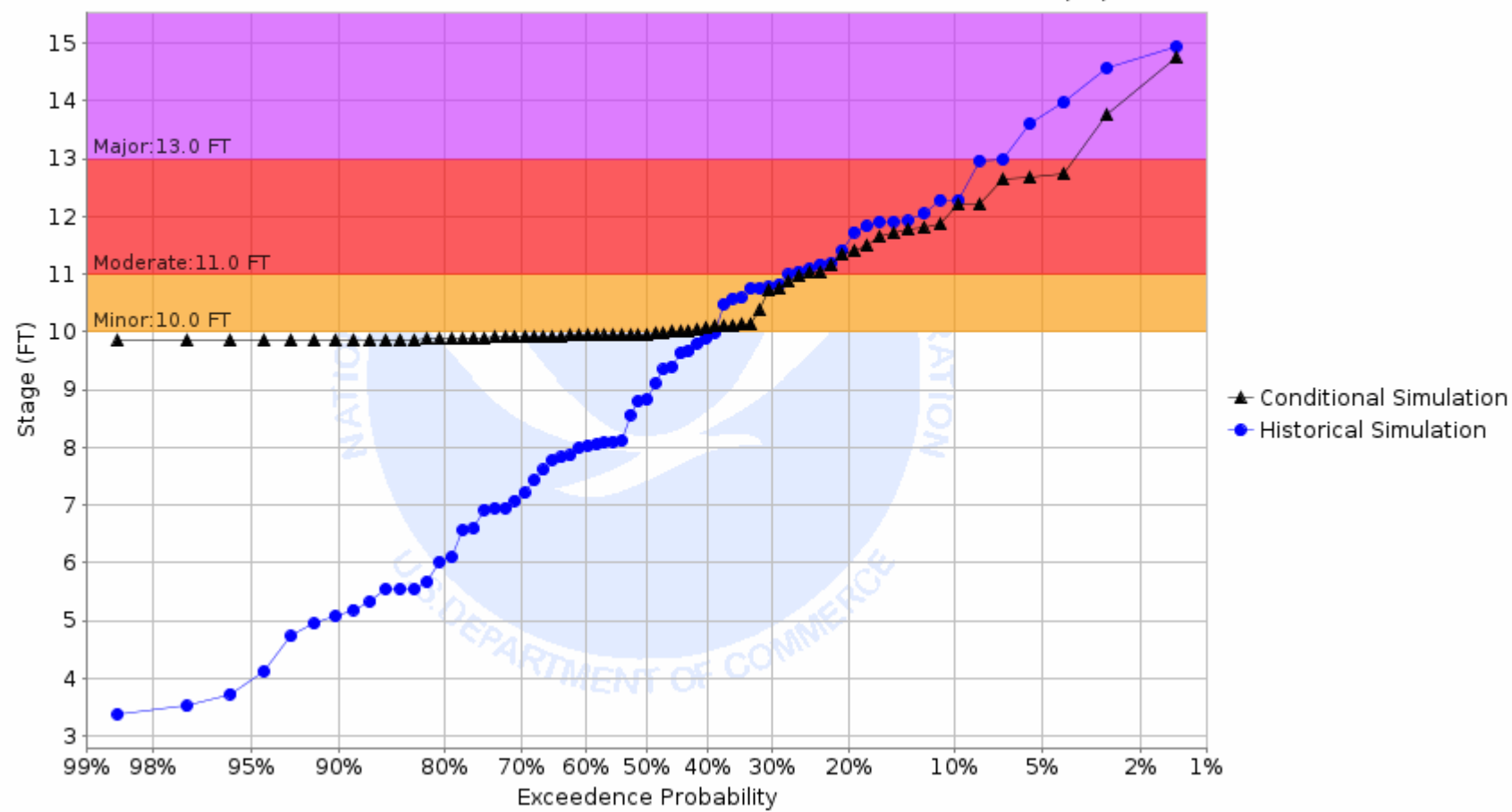


Most likely time frame of higher river stages.





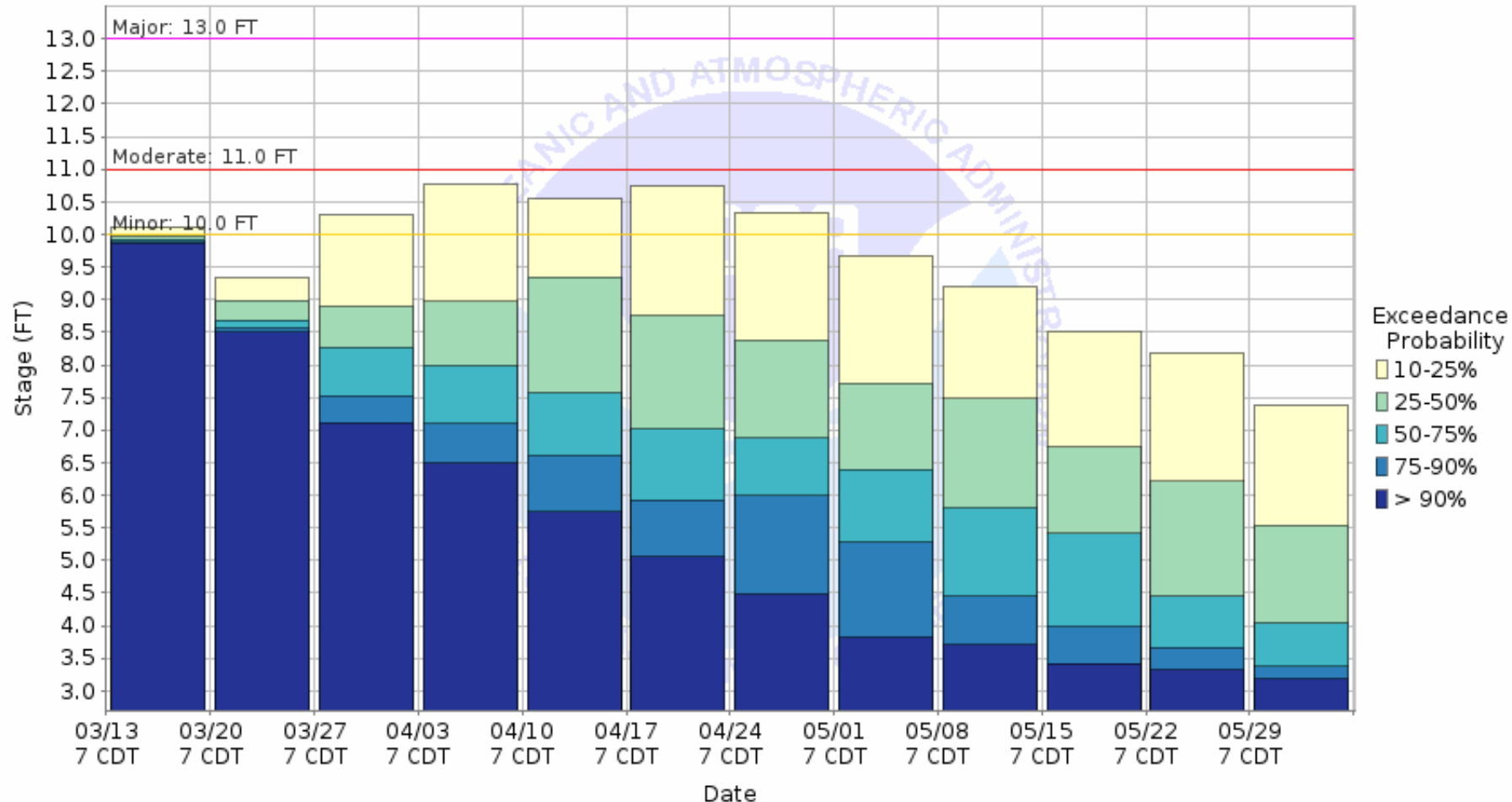
Chance of Exceeding River Stage at Rock River at Jefferson (JFFW3)  
Forecast for the period 03/13/2023 - 06/11/2023  
This is a conditional simulation based on the conditions as of 03/06/2023



High probability of exceeding minor flood stage. River is still rising from recent rain and snow melt and there is a high chance it will reach flood stage in the 1-2 weeks.



Weekly Chance of Exceeding River Stage at Rock River at Jefferson (JFFW3)  
 Forecast for the period 03/13/2023 - 06/11/2023  
 This is a conditional simulation based on the conditions as of 03/06/2023



High probability of exceeding minor flood stage. River is still rising from recent rain and snow melt and there is a high chance it will reach flood stage in the 1-2 weeks.

# How To Find River Probability Info

## NWS Forecast Office Milwaukee/Sullivan, WI

[Weather.gov](https://www.weather.gov/milwaukee) > Milwaukee/Sullivan, WI

## Milwaukee/Sullivan, WI

Weather Forecast Office

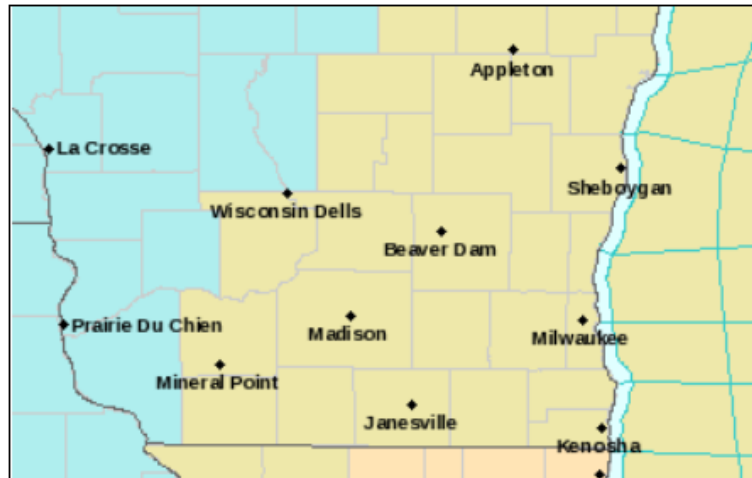
- [Current Hazards](#)
- [Current Conditions](#)
- [Radar](#)
- [Forecasts](#)
- [Rivers and Lakes](#)**
- [Climate and Past Weather](#)
- [Local Programs](#)



### RADAR UPDATE 7:25 AM

Snow starting to end from west to east. However, road morning commute. Only minor additional accumulation expected this morning.

Click a location below for detailed forecast.



[Watches, Warnings & Advisories](#)

[Wind Chill Advisory](#)

[Special Weather Statement](#)

[Hazardous Weather Outlook](#)

River Observations | River Forecasts | **Long-Range Flood Risk** | Precipitation | Download | Other Information

Auto Refresh: OFF [Refresh]

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Greater than: 50% chance of exceeding river flood levels during Feb-Mar-Apr

Legend:

- > 50% Major Flooding
- > 50% Moderate Flooding
- > 50% Minor Flooding
- < 50% Chance of Flooding
- Long-Range Flood Risk Not Calculated

Last map update: 02/24/2022 at 12:15:49 pm CST  
 02/24/2022 at 18:15:49 UTC

[What is UTC time?](#)  
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# How To Find River Probability Info

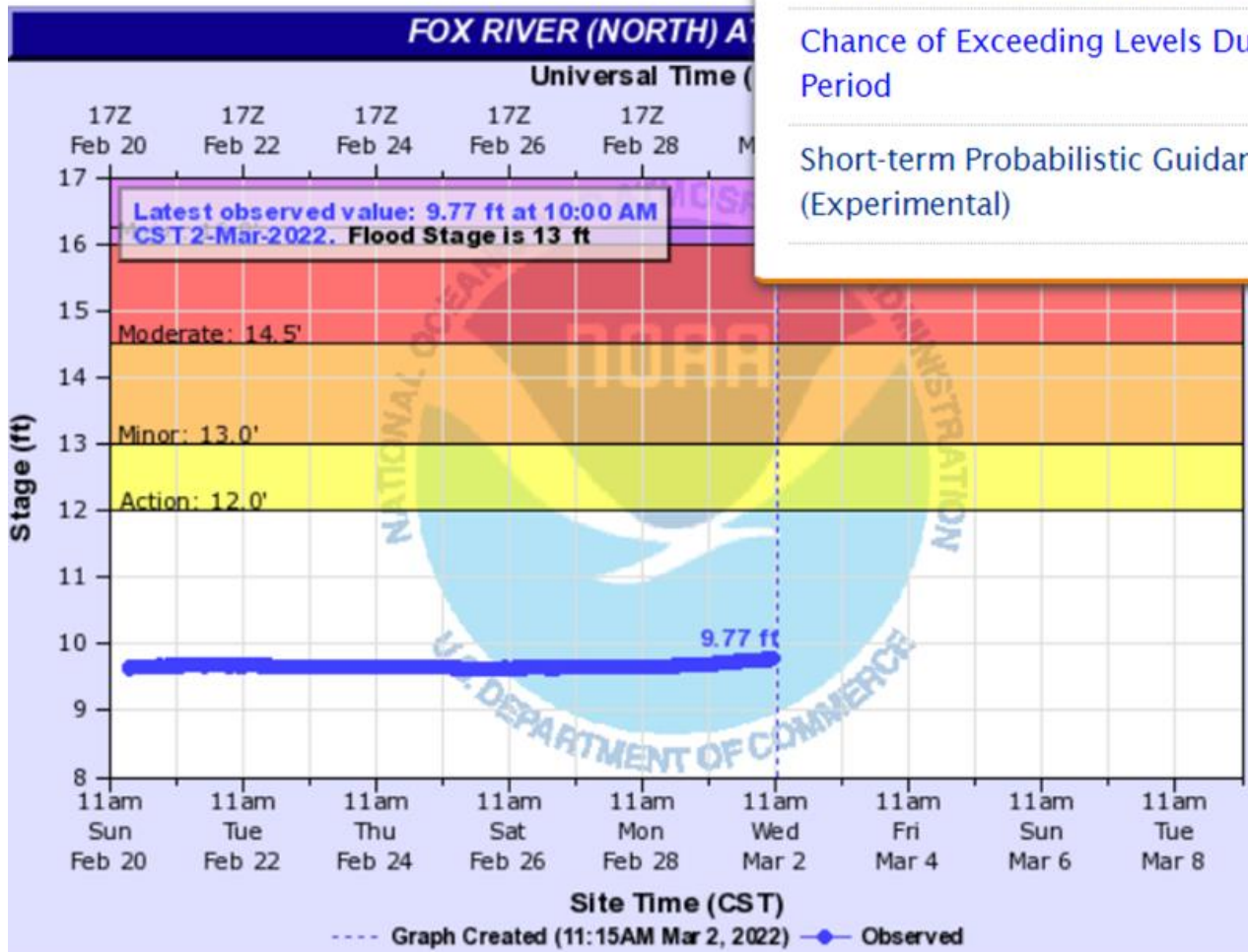
Weather Forecast Office Milwaukee/Sullivan, WI

North Central River Forecast Center

- Hydrograph
- River at a Glance
- Download
- Probability Information**

Auto Refresh: OFF 

- Weekly Chance of Exceeding Levels
- Chance of Exceeding Levels During Entire Period
- Short-term Probabilistic Guidance (Experimental)



BERW3(plotting HGIRP) "Gage 0" Datum: 744.82'

Observations courtesy of US Geological Survey



# Questions?

**Sarah Marquardt, Senior Service Hydrologist**  
**NWS Milwaukee/Sullivan**  
**[Sarah.Marquardt@noaa.gov](mailto:Sarah.Marquardt@noaa.gov)**

