



# Spring Flood Outlook #3

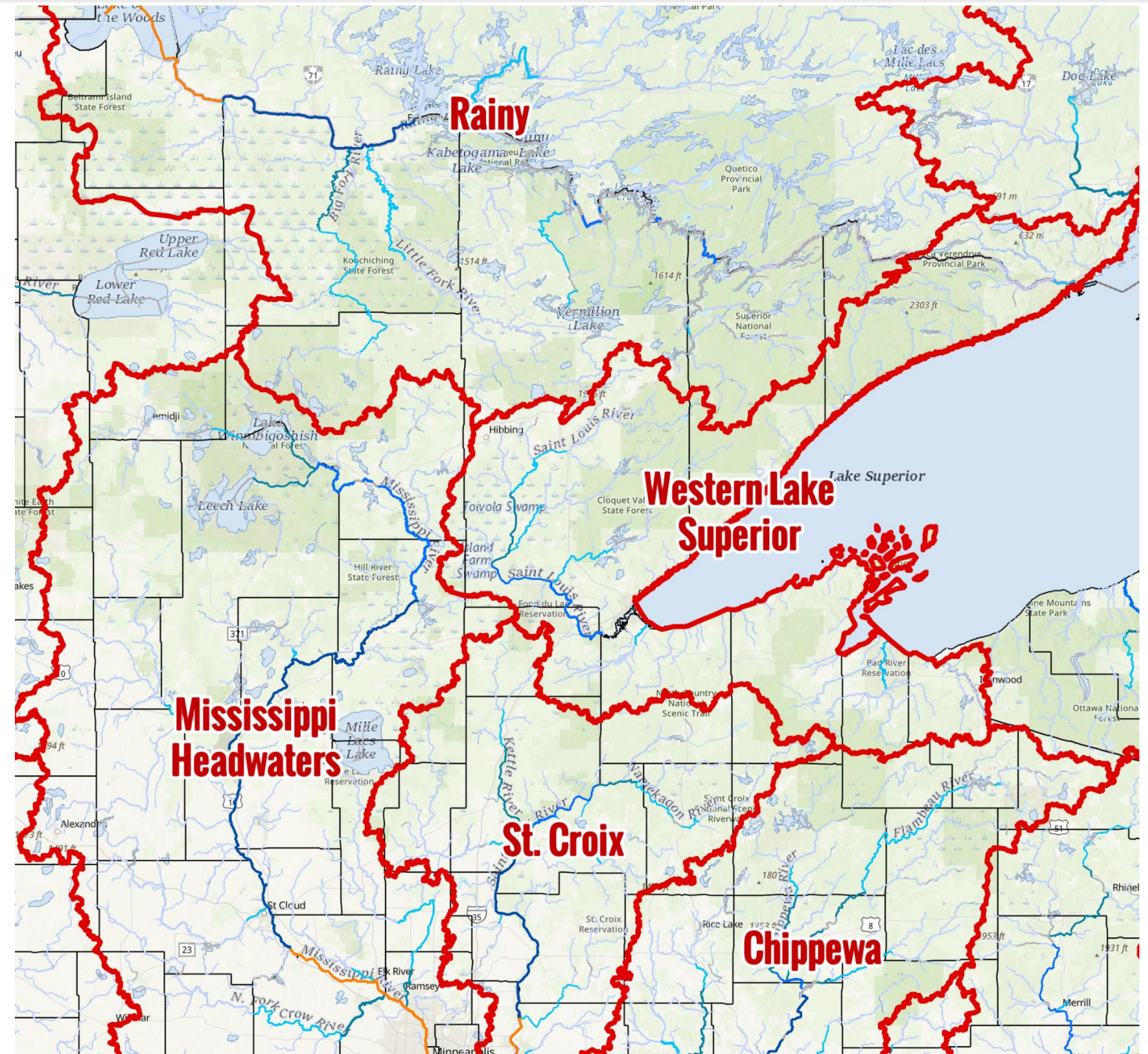
March 13, 2025

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Mid March 2025

## Key Messages

- Most river basins have a **below normal amount of water** in the snowpack.
  - Melting has led to little to snow snowpack in some areas.
- **Ground is deeply frozen** with some water contained in the soil.
- **Spring flood risk is largely below normal.**
- **Precipitation and rate of melt through spring while the ground is still frozen will be one of the most important flood risk factors.**
  - Heavy rains could lead to efficient runoff.





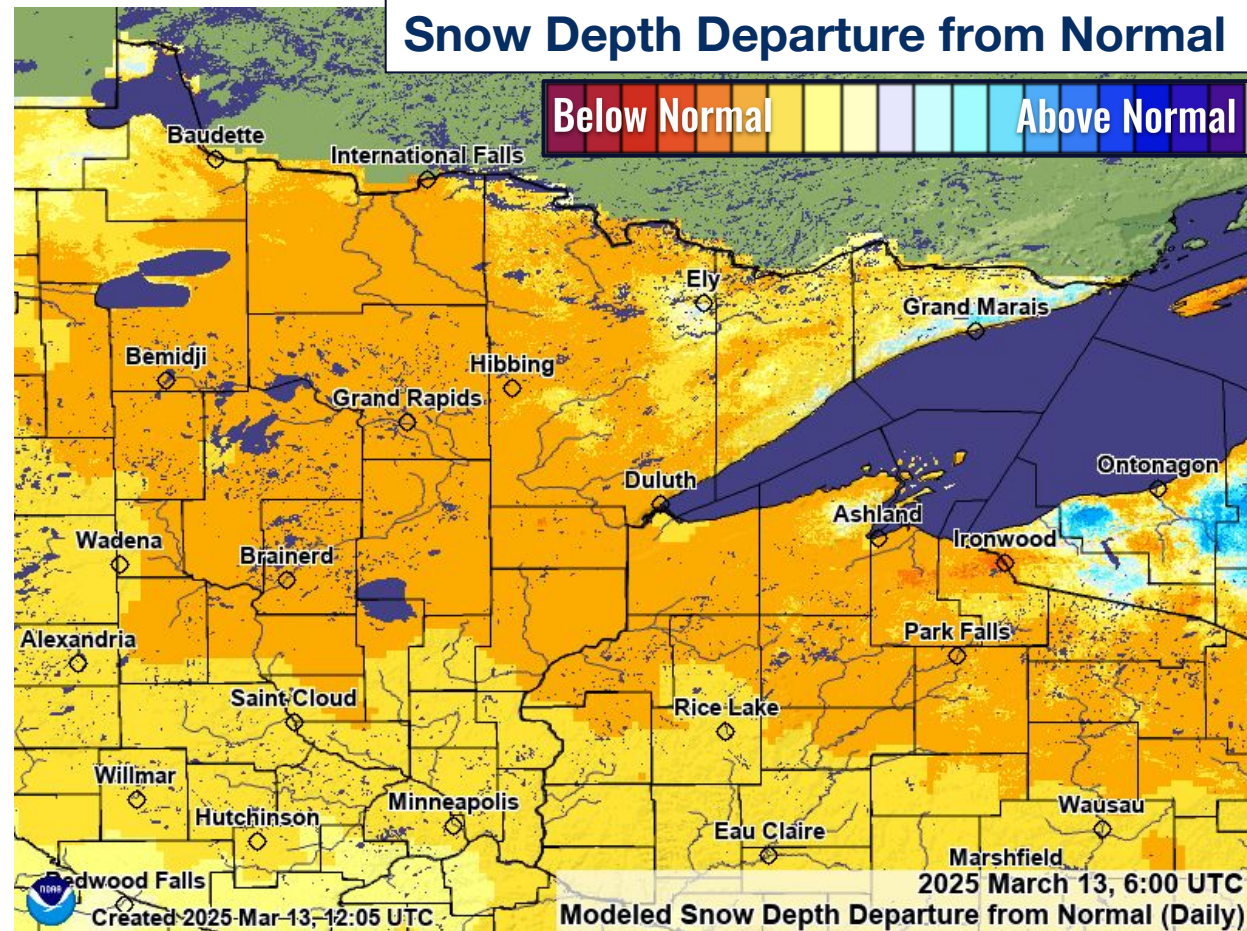
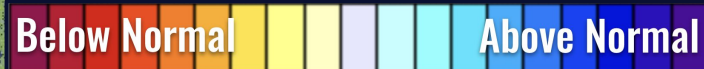
# Current Snow Depth

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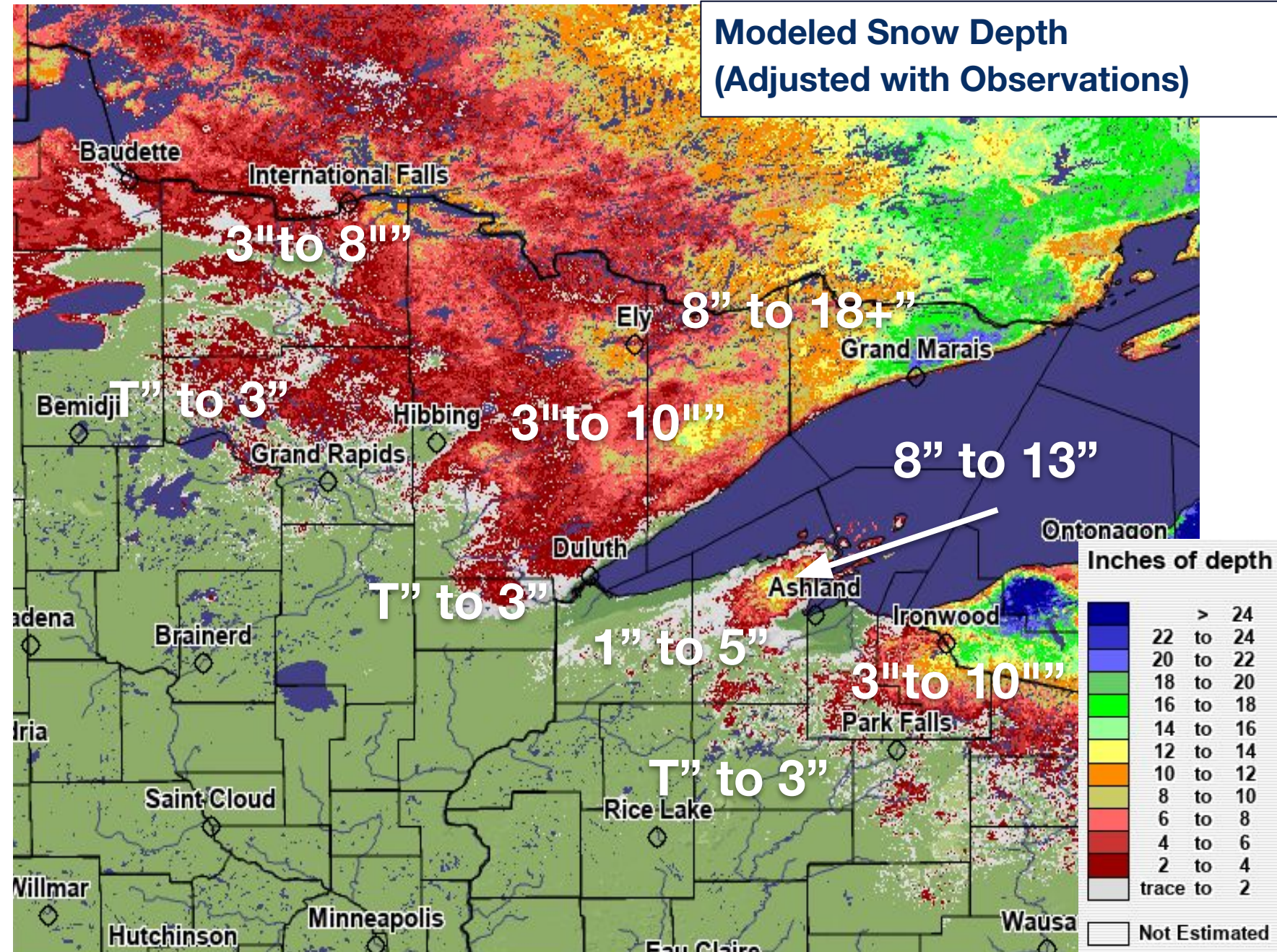
Current depth of the snow on the ground

- Current snow depth is largely below normal, with ongoing melt.
- Snow depth is 4"-24" below normal.

Snow Depth Departure from Normal



Modeled Snow Depth  
(Adjusted with Observations)





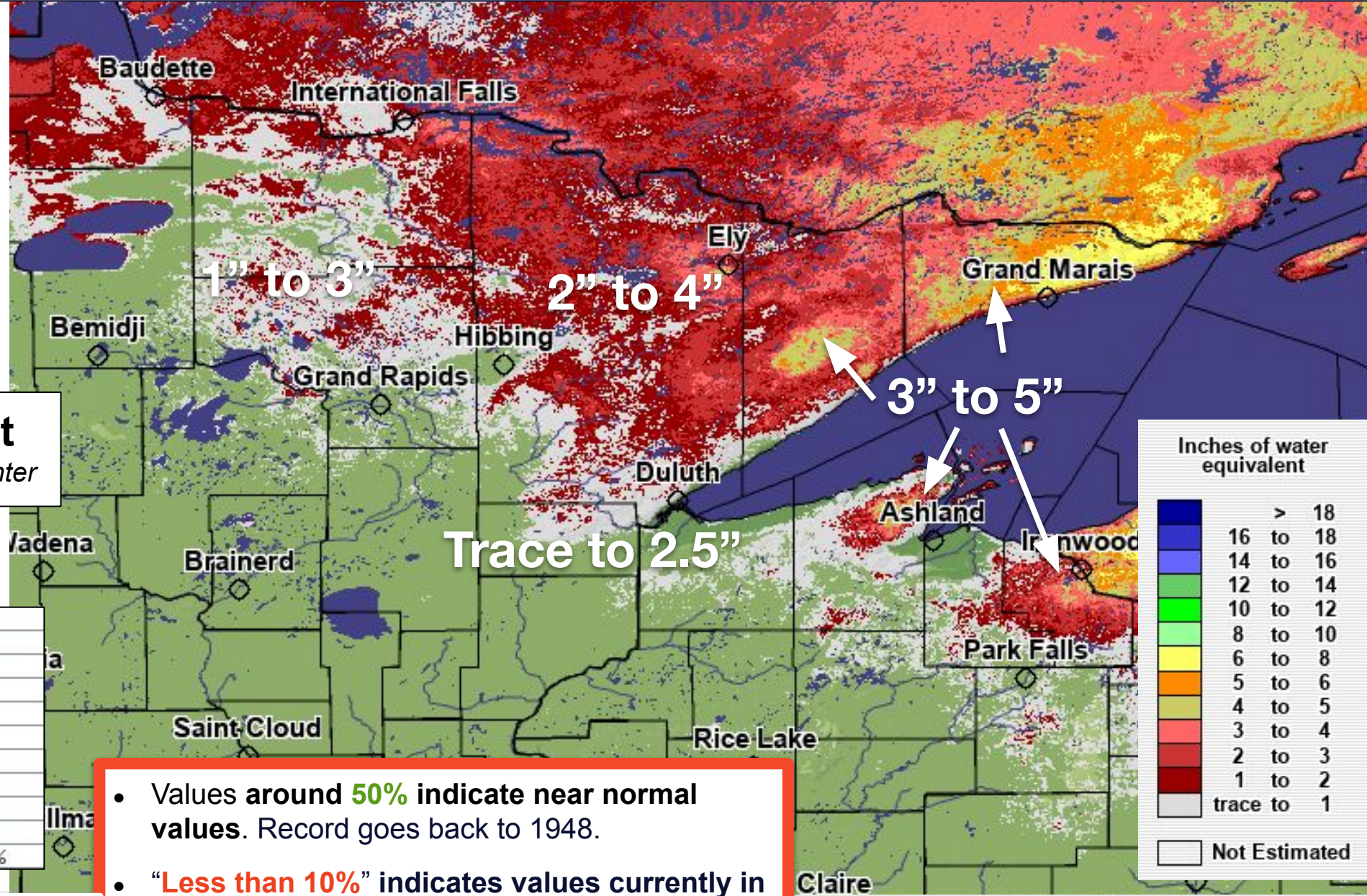
# Current Snow Water Equivalent

March 13, 2025  
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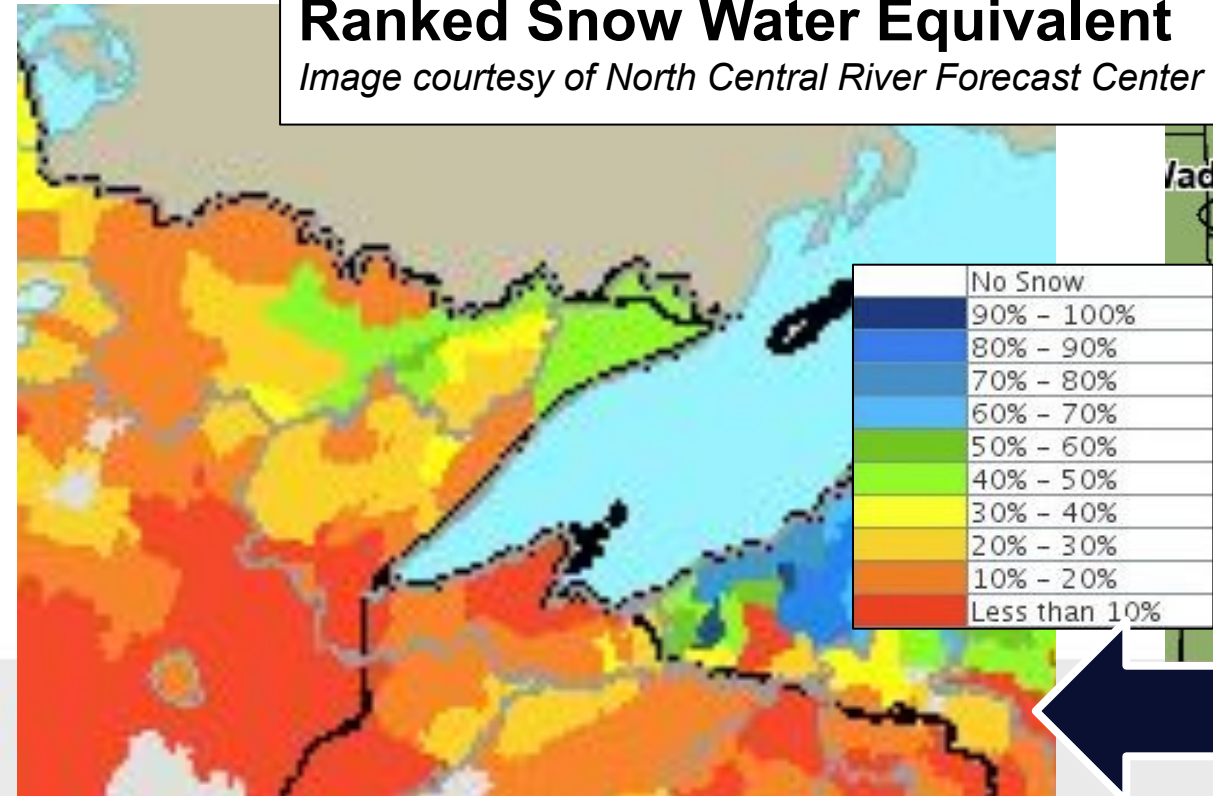
Map shows a modeled estimate of water in the snowpack

- Currently **trace-4.5"** of **water** in the remaining snowpack.
- **Some moisture is trapped in frozen soil due to freeze/thaw and early winter rains.** This is difficult to quantitatively measure.

**Modeled Snow Snow Water Equivalent (SWE) (Adjusted with Observations)**



**Ranked Snow Water Equivalent**  
*Image courtesy of North Central River Forecast Center*



- Values around **50%** indicate near normal values. Record goes back to 1948.
- "**Less than 10%**" indicates values currently in the bottom of the historical record for this date. Record goes back to 1948.

**National Weather Service  
Duluth, MN**



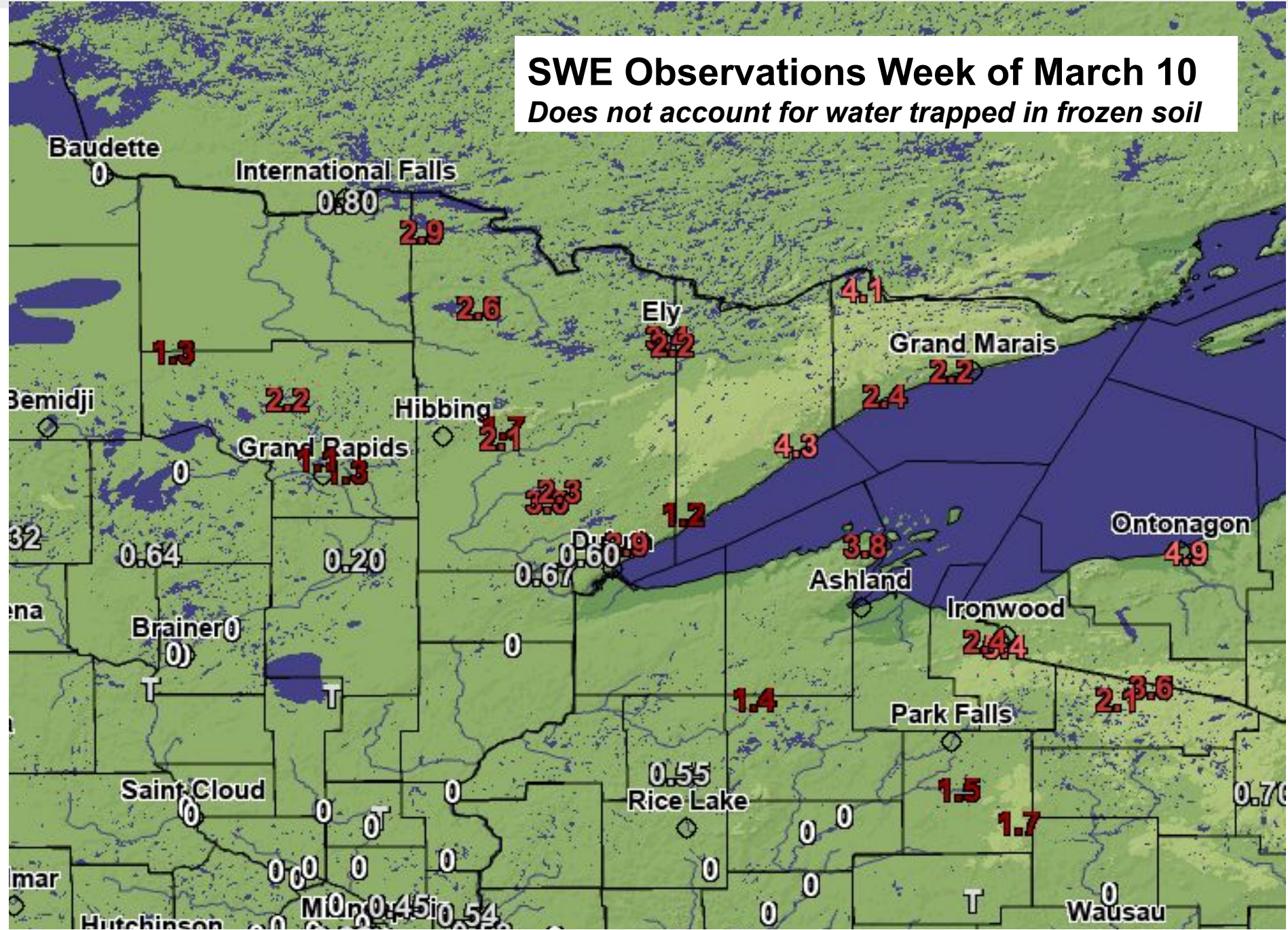
# Current Snow Water Equivalent (SWE)

March 13, 2025  
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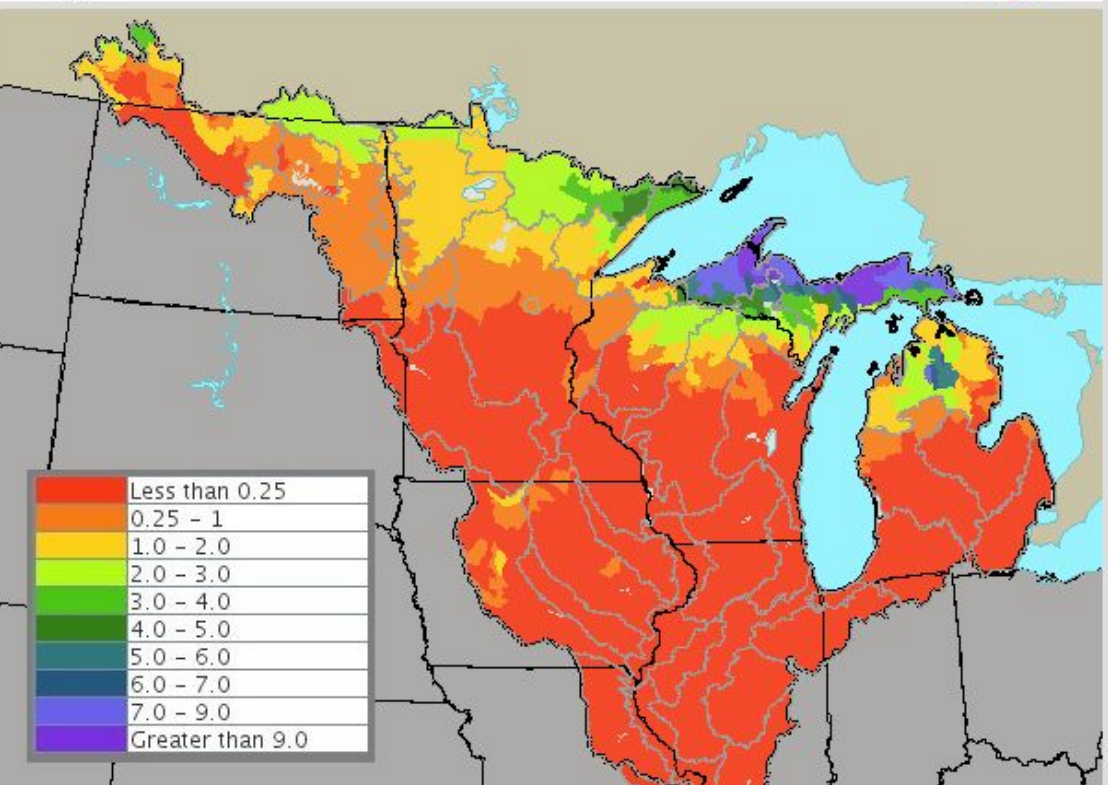
## Latest Observations and Ranked SWE

- **0.5-3.5" SWE** where snowpack remains.
  - Little to no snow from Brainerd Lakes to I-35 to Hwy 53 in NW WI.
- Locally higher amounts in excess of 4" in MN Arrowhead and in northern Iron Co.

**SWE Observations Week of March 10**  
*Does not account for water trapped in frozen soil*



North Central River Forecast Center  
Model Simulated Snow Water Equivalent  
Valid for 03/10/2025 12 GMT





# Current Regional Snow Water

March 13, 2025  
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How much water is in the snow pack right now compared to normal?

## Rainy River

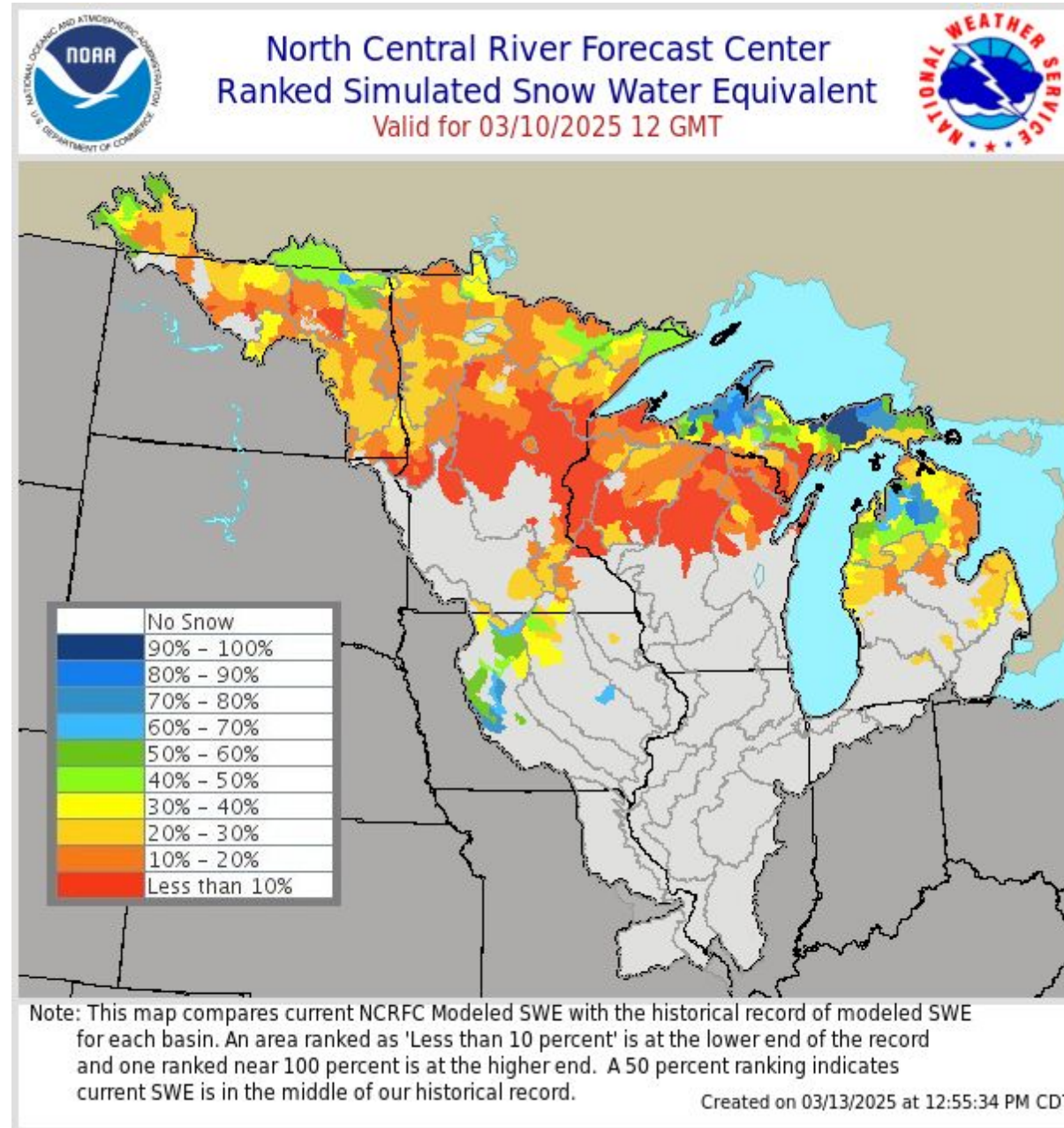
→ Normal to below normal, highest in eastern headwaters, slightly higher on Canadian side

## Mississippi Headwaters

→ Below normal, well below normal further downriver

## St Croix River

→ Well below normal



## Western Lake Superior North Shore (MN)

→ Normal to slightly below normal

## Western Lake Superior South Shore (WI)

→ Below to well below normal

## Chippewa

→ Well below normal



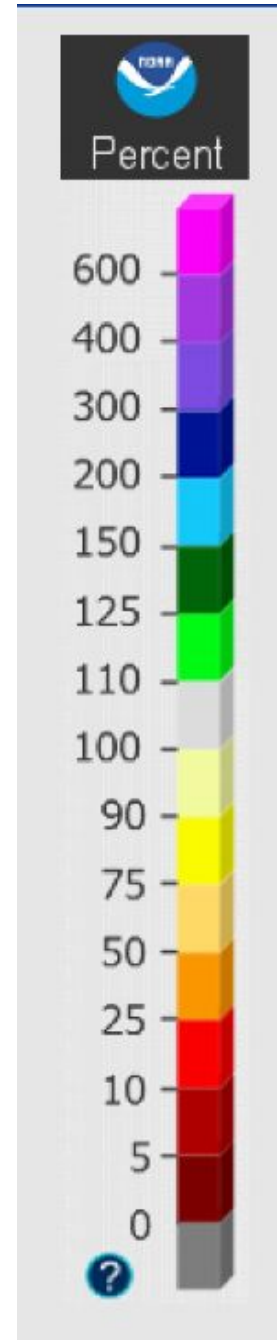
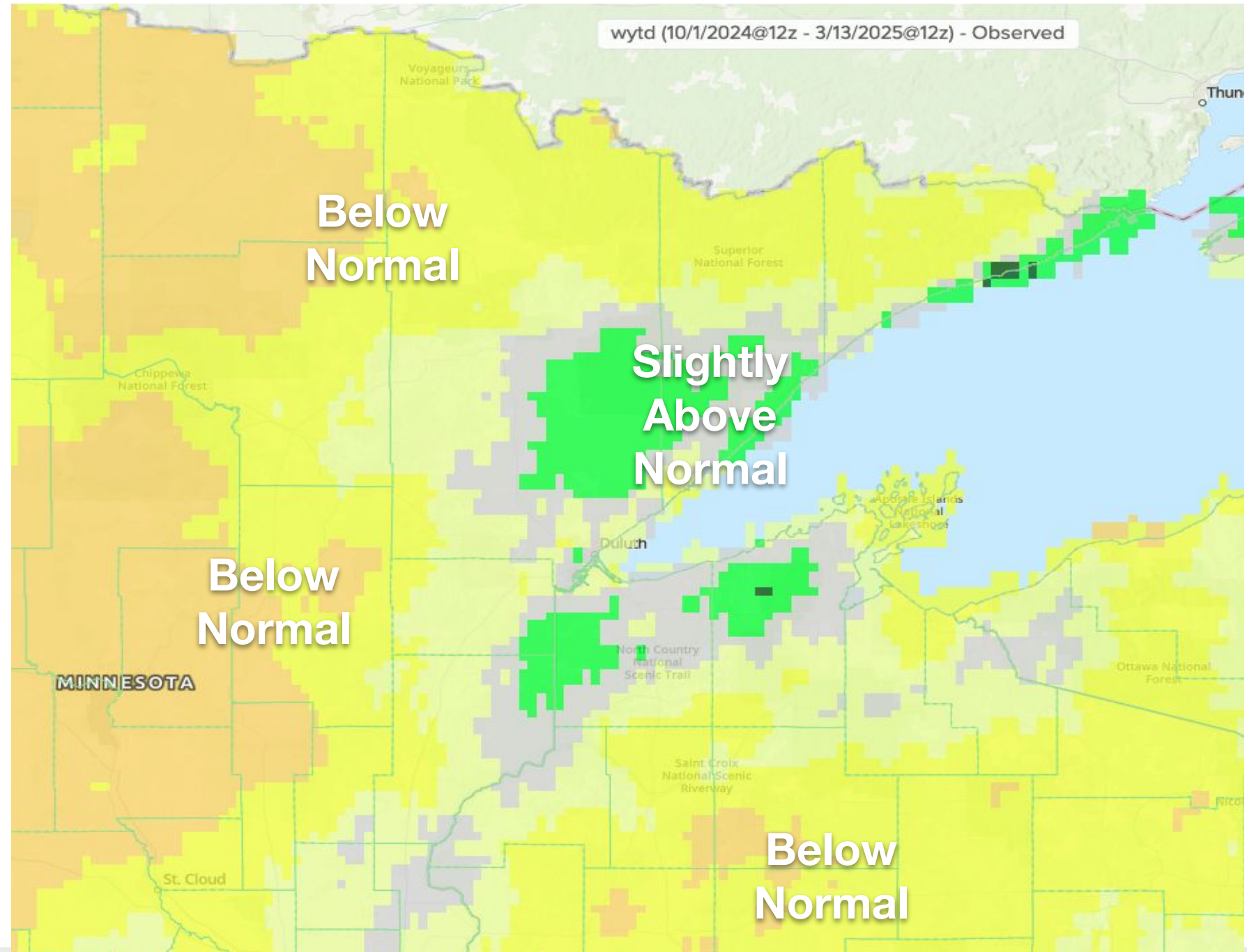


# Accumulated Precipitation (Liquid Equivalent)

March 13, 2025  
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Percent of Normal Precipitation for Current Water Year (Since Oct. 1)

- **Most snow has been very light and fluffy, with low liquid equivalent amounts** (how much water is in the snowfall if it was melted)
- Map does account for rainfall in December and March.



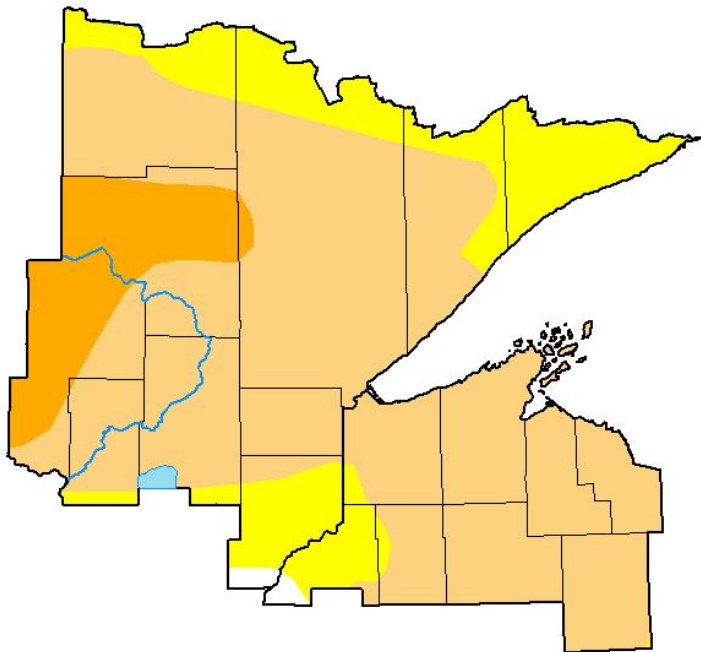


# Current Drought and Streamflow

March 13, 2025  
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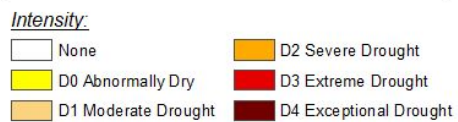
- Abnormally Dry to Severe Drought across the region.
- Streamflow is normal to below normal. Back to normal streamflow where snow has melted and ice has gone out.
  - Lots of ice on area rivers - should rapid rises occur in the spring, **ice jams could be possible.**

## U.S. Drought Monitor Duluth, MN WFO



March 11, 2025  
(Released Thursday, Mar. 13, 2025)  
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.74	99.26	79.88	10.47	0.00	0.00
Last Week 03-04-2025	0.73	99.27	79.88	10.47	0.00	0.00
3 Months Ago 12-10-2024	0.01	99.99	82.89	14.59	0.00	0.00
Start of Calendar Year 01-07-2025	0.73	99.27	79.88	10.47	0.00	0.00
Start of Water Year 10-01-2024	2.57	97.43	71.52	0.00	0.00	0.00
One Year Ago 03-12-2024	0.00	100.00	93.65	18.52	0.00	0.00



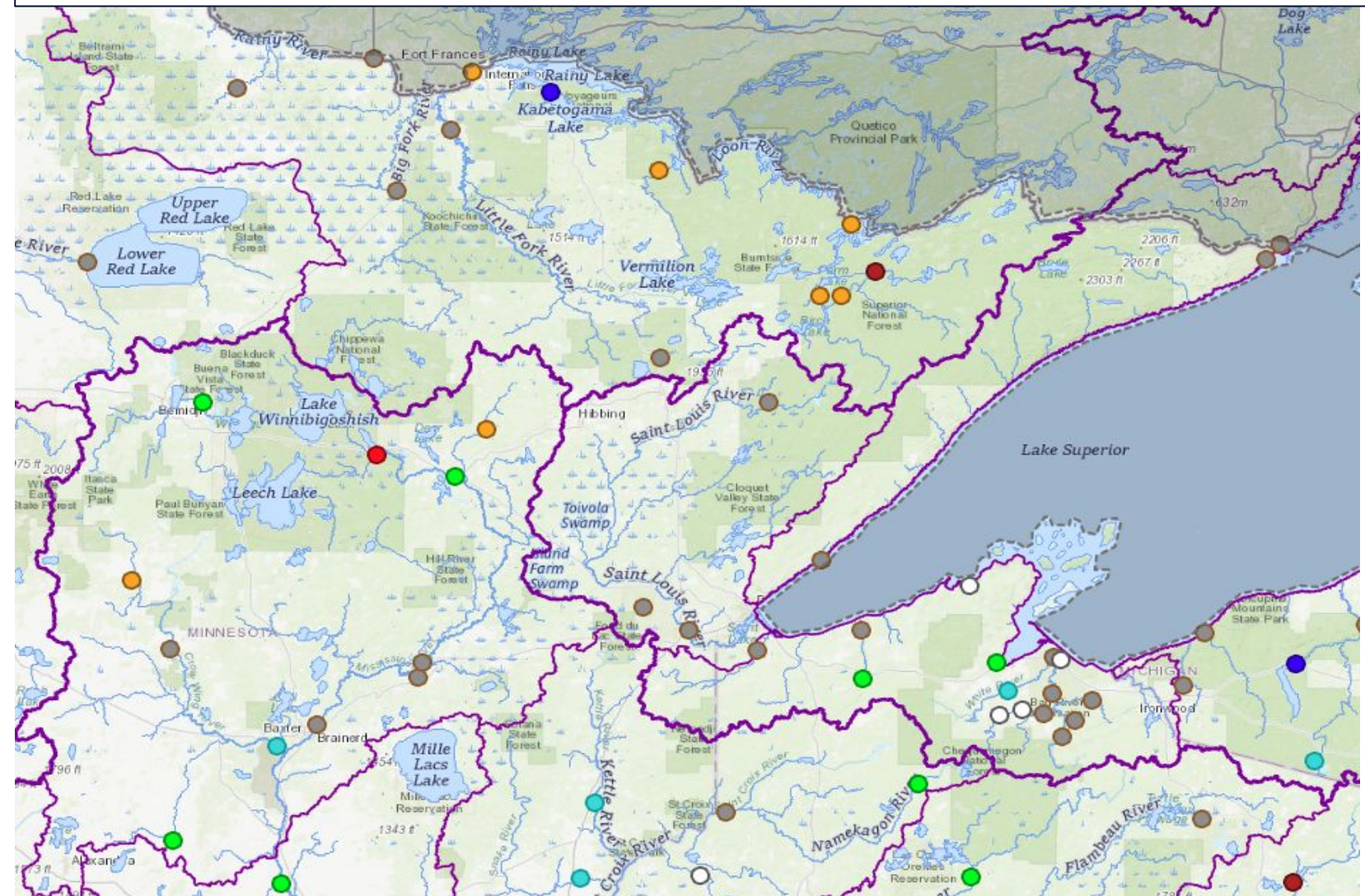
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:  
Richard Tinker  
CPC/NOAA/NWS/NCEP



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

## Current Streamflow Rankings (USGS Dashboard)



Above flood stage	Normal	25 <sup>th</sup> – 75 <sup>th</sup> percentile	Not flowing
All-time high for this day	Below normal	10 <sup>th</sup> – 24 <sup>th</sup> percentile	Not ranked
Much above normal	Much below normal	<10 <sup>th</sup> percentile	Measurement flag
Above normal	All-time low for this day	0 <sup>th</sup> percentile (minimum)	Recent measurement unavailable
76 <sup>th</sup> – 90 <sup>th</sup> percentile			

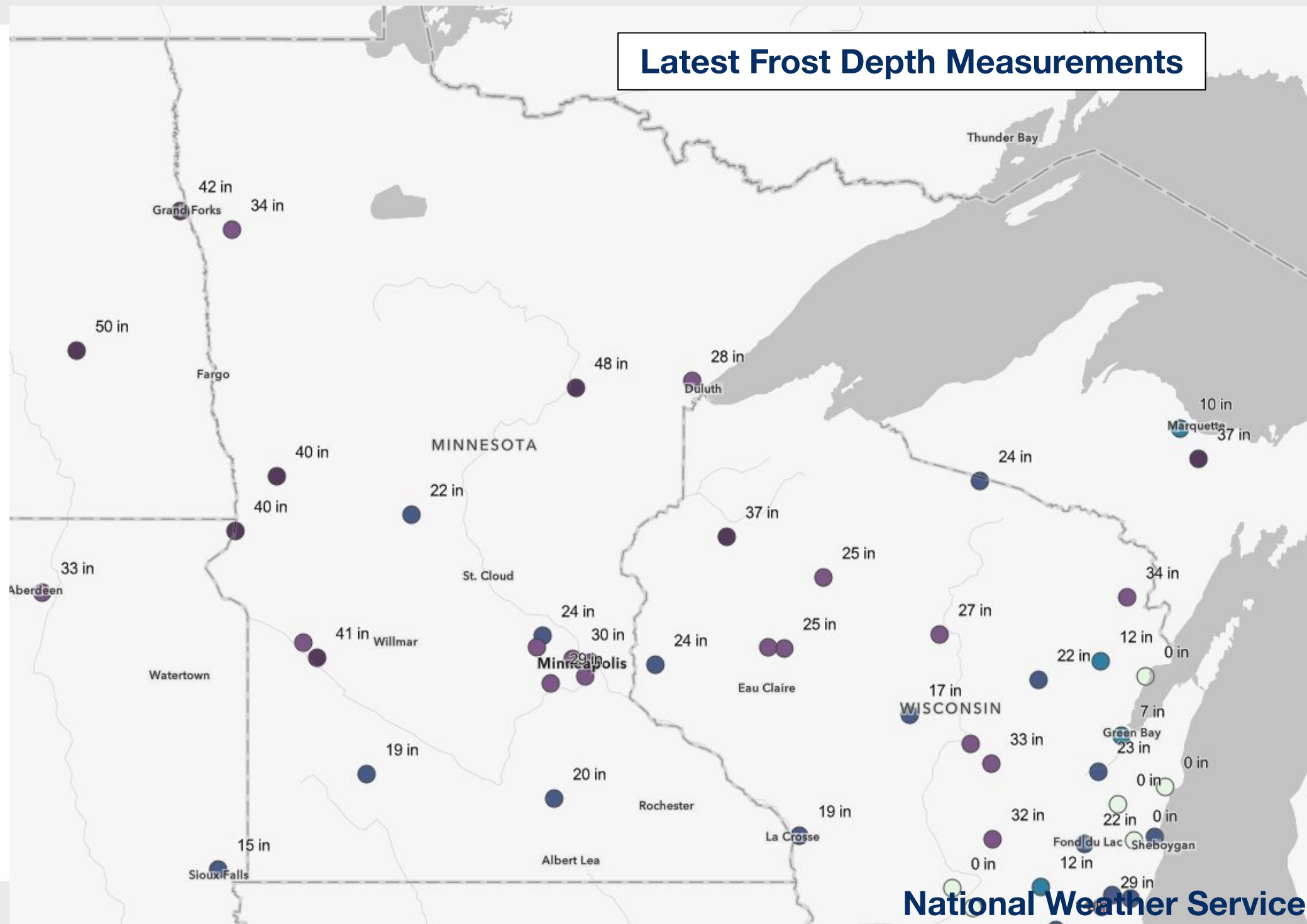


# Soil and Frost Conditions

March 13, 2025  
1:44 PM

- Latest frost measurements:
  - NWS Duluth: 28"
  - Spooner: 37"
  - Big Sandy Lake: 48"
- Ground is deeply frozen
  - Deep frost could lead to poor infiltration and efficient runoff if snow melts quickly or heavy rains falls while the ground is still frozen in spring
- Frost depth can be viewed from the NCRFC [here](#).

Latest Frost Depth Measurements





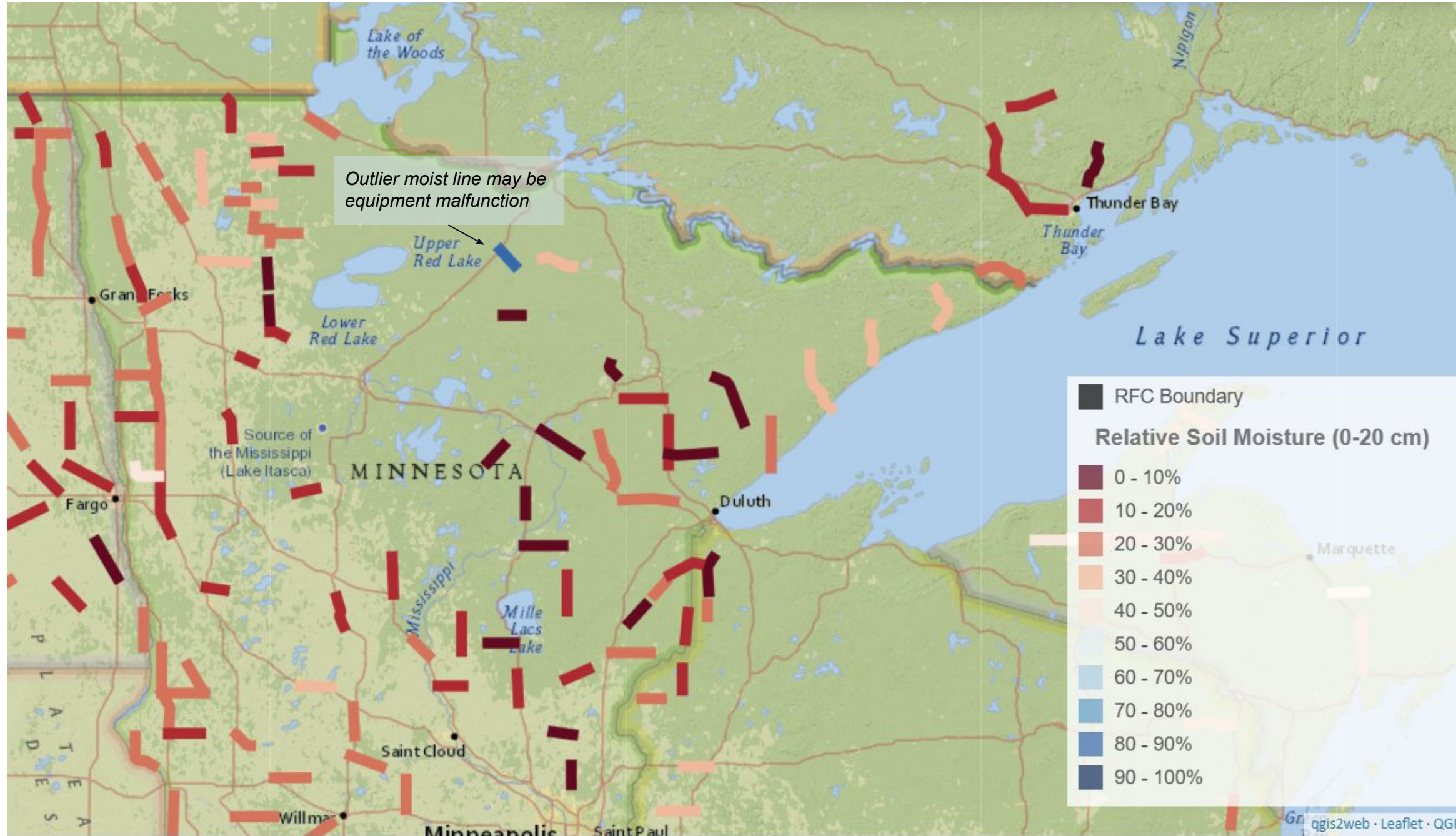


# Fall Airborne Survey Soil Moisture

March 13, 2025  
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## National Water Center Airborne Soil Moisture Survey

- Most lines flown between Sep 25 - Oct 18, 2024.
- **Fall soil moisture was very low** due to dry weather in the late summer into mid fall.
- Map does not account for moisture trapped in soil during freeze/thaw and rain in late fall and early winter.





# Rainy Basin Outlook

March 13, 2025  
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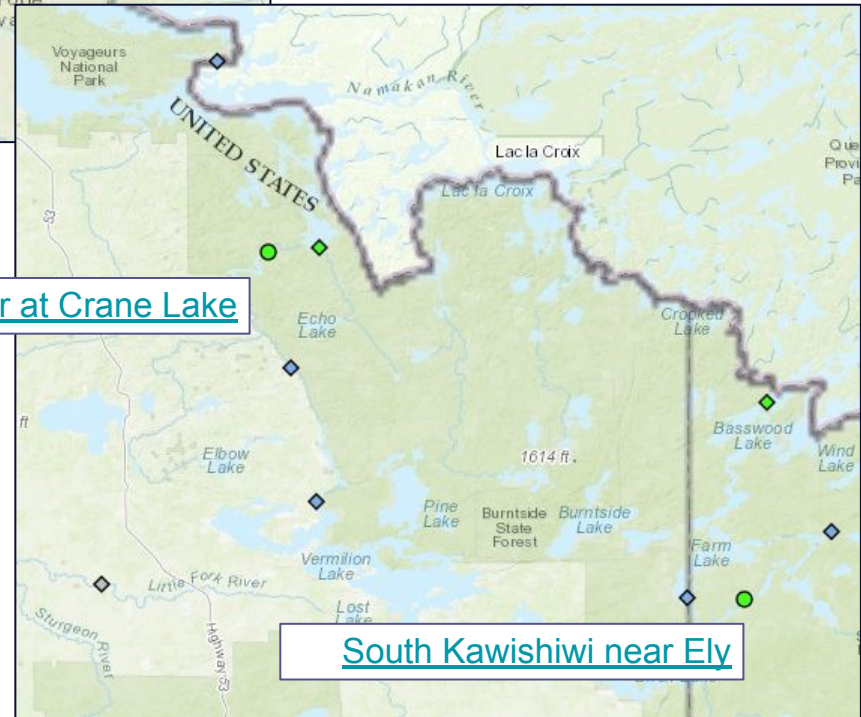
## Spring Flood Outlook

Point	Flood Stage	Chance of Minor Flood	Chance of Moderate Flood
Littlefork at Littlefork	22 ft.	<5%	<5%
S. Kawishiwi nr Ely	6.5 ft.	5%	<5%
Vermilion River at Crane Lake	14 ft.	6%	<5%

**NOTE: Probabilities are valid for current and forecast conditions through May 18th, 2025, and do not account for ice jam flooding potential**

### View Interactive Map:

- [River Observations](#)
- [Short-Term River Forecasts](#)
- [Long-Range River Flood Risk](#)

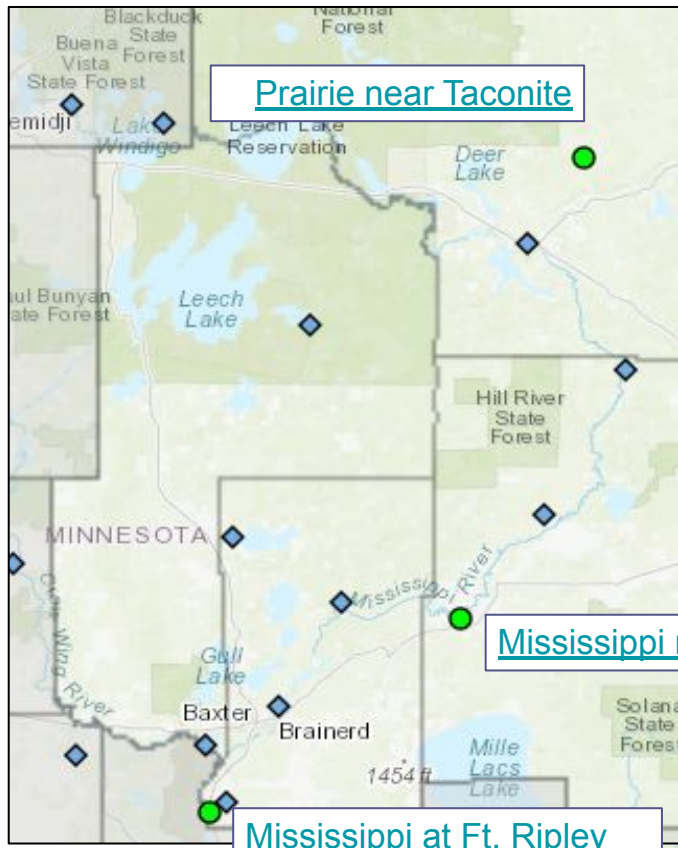




# Upper Mississippi Basin Outlook

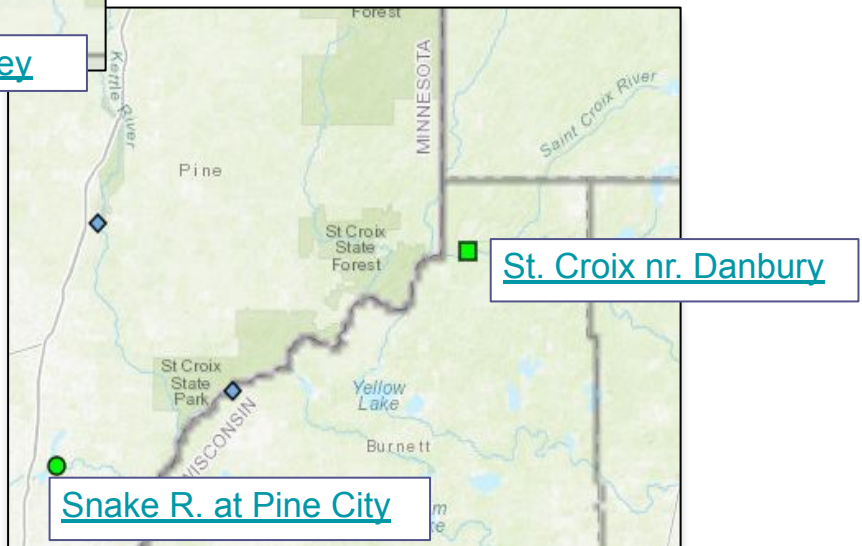
March 13, 2025  
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## Spring Flood Outlook



Point	Flood Stage	Chance of Minor Flood	Chance of Moderate Flood
St. Croix nr. Danbury	7 ft.	<5%	<5%
Snake at Pine City	9 ft.	<5%	<5%
Prairie near Taconite	10 ft.	<5%	<5%
Mississippi near Aitkin	13 ft.	<b>12%</b>	<5%
Mississippi at Ft. Ripley	10.5 ft.	<b>12%</b>	<5%

**NOTE:** Probabilities are valid for current and forecast conditions through May 18th, 2025, and do not account for ice jam flooding potential



### View Interactive Map:

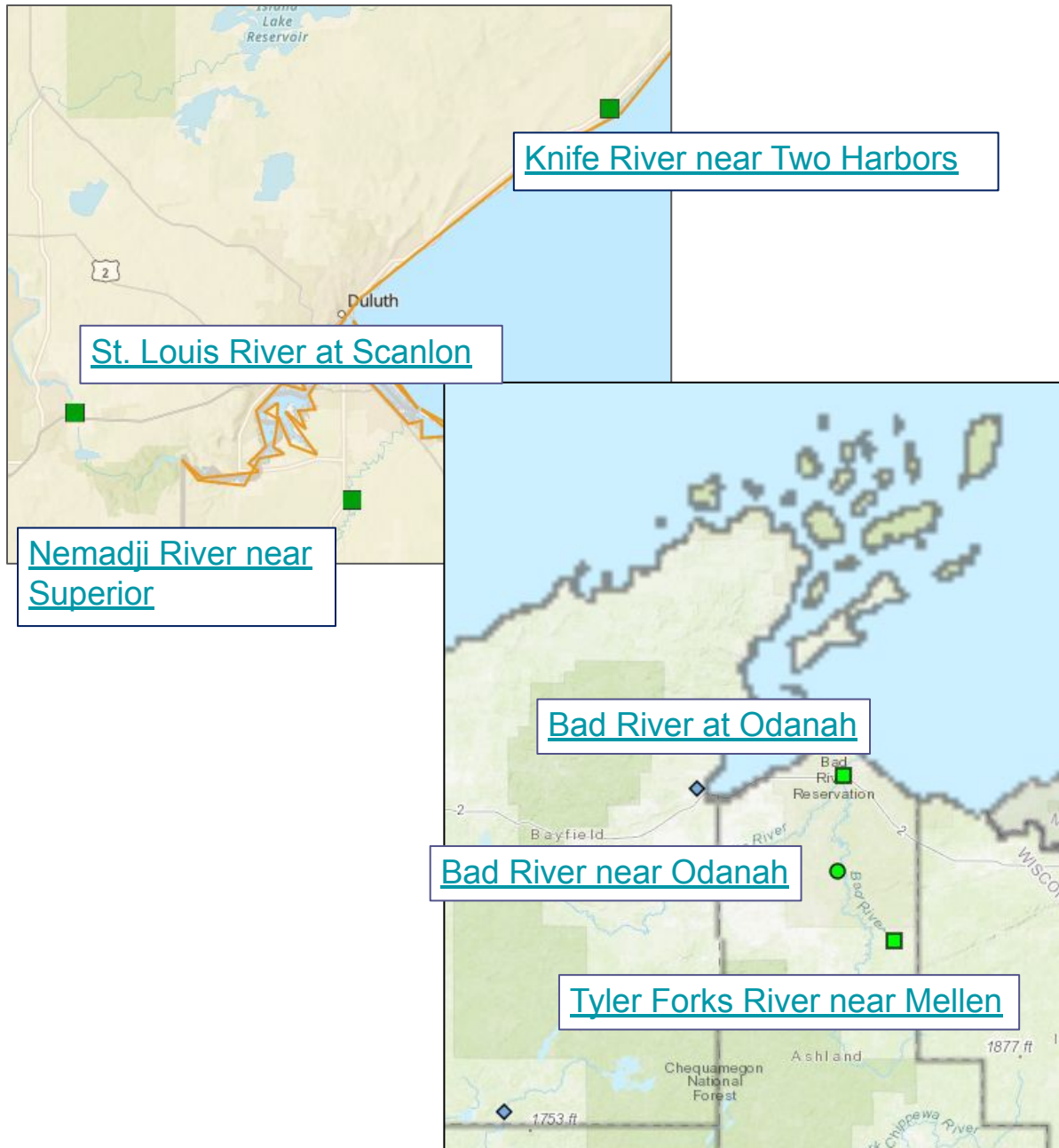
- [River Observations](#)
- [Short-Term River Forecasts](#)
- [Long-Range River Flood Risk](#)



# W. Lake Superior Basin Outlook

March 13, 2025  
1:44 PM

## Spring Flood Outlook



Point	Flood Stage	Chance of Minor Flood	Chance of Moderate Flood
St. Louis at Scanlon	10.5 ft.	<5%	<5%
Knife River nr. Two Harbors	33.0 ft.	<5%	<5%
Bad River nr. Odanah	16.0 ft.	<5%	<5%
Bad River at Odanah	8.5 ft.	<5%	<5%
Tyler Forks River nr. Mellen	9.0 ft.	<b>20%</b>	<b>12%</b>
Nemadji River nr. Superior	24.0 ft.	<5%	<5%

### View Interactive Map:

- [River Observations](#)
- [Short-Term River Forecasts](#)
- [Long-Range River Flood Risk](#)

**NOTE:** Probabilities are valid for current and forecast conditions through May 18th, 2025, and do not account for ice jam flooding potential



# Spring Weather Outlook

March 13, 2025  
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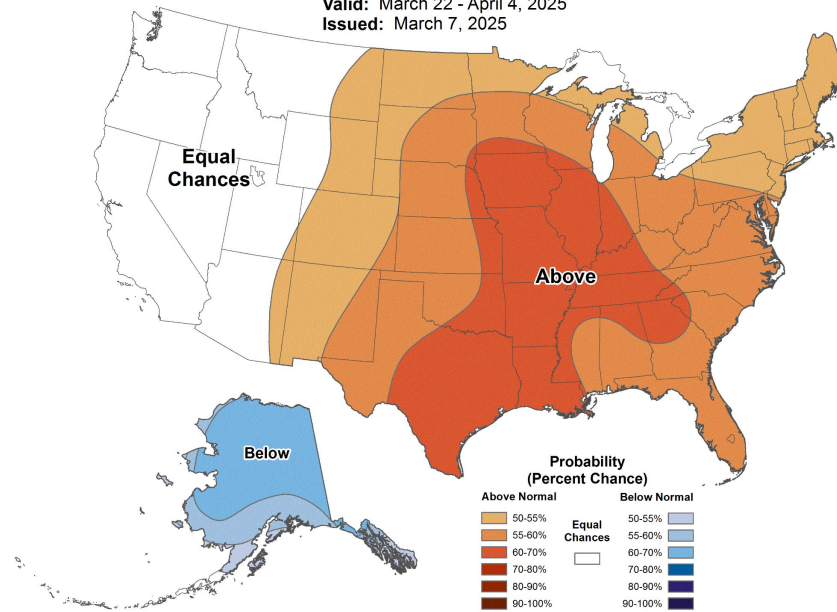
These are general outlooks that depict broad trends for the weeks and months ahead

## This Month (March)

- **50-60% chance of above normal temperatures.** Could lead to additional melting.
- **30-40% chance above normal precipitation.** Could add to marginal snowpack or bring rain.
- Impact to Spring Flooding: **Neutral to Negative** (more runoff potential)

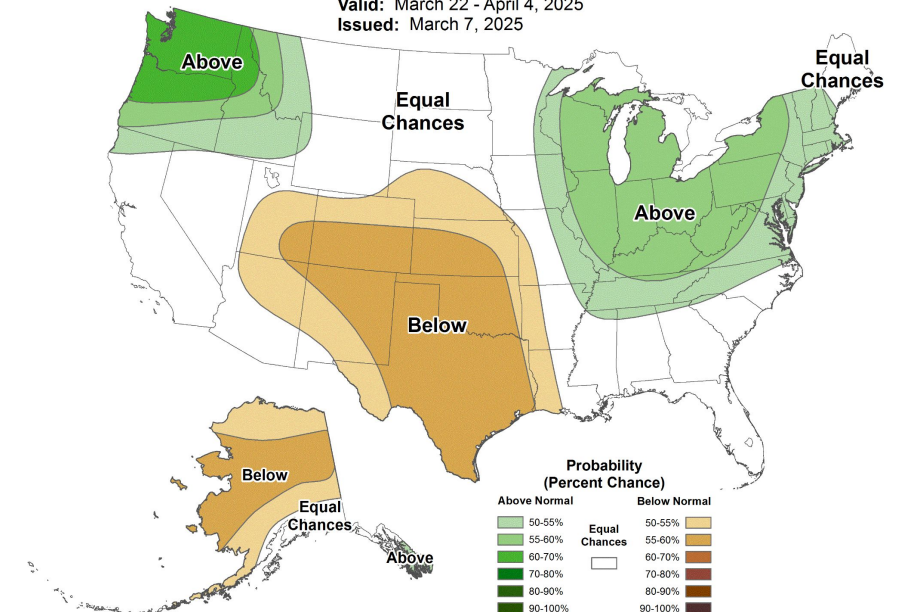
Weeks 3-4 Temperature Outlook

Valid: March 22 - April 4, 2025  
Issued: March 7, 2025



Weeks 3-4 Precipitation Outlook

Valid: March 22 - April 4, 2025  
Issued: March 7, 2025

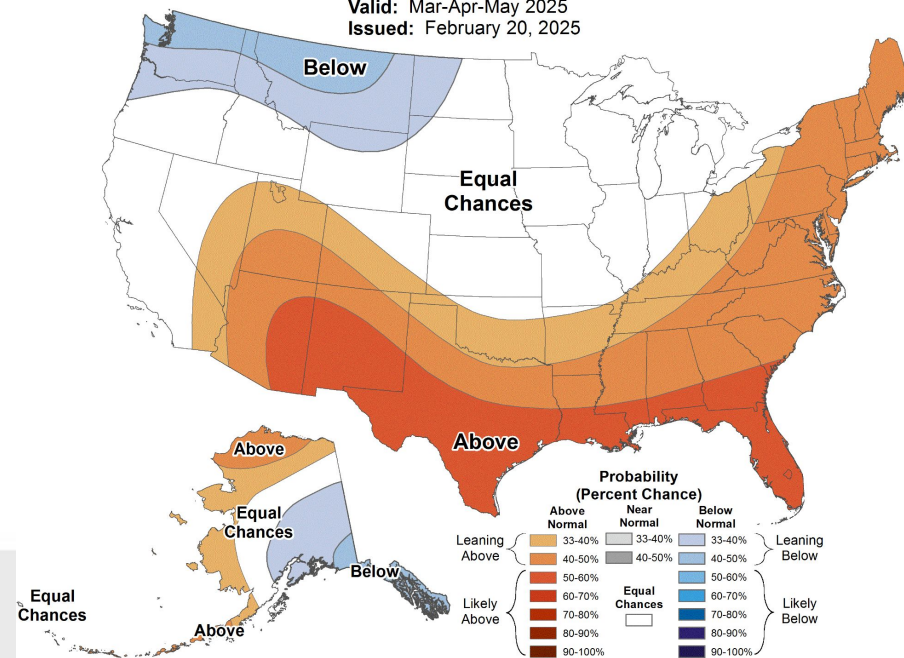


## Seasonal Outlook (March-April-May)

- Equal chance of above, below, or near normal temperatures.
- Equal chance of above, below, or near normal precipitation.
- Impact to Spring Flooding: **Neutral**

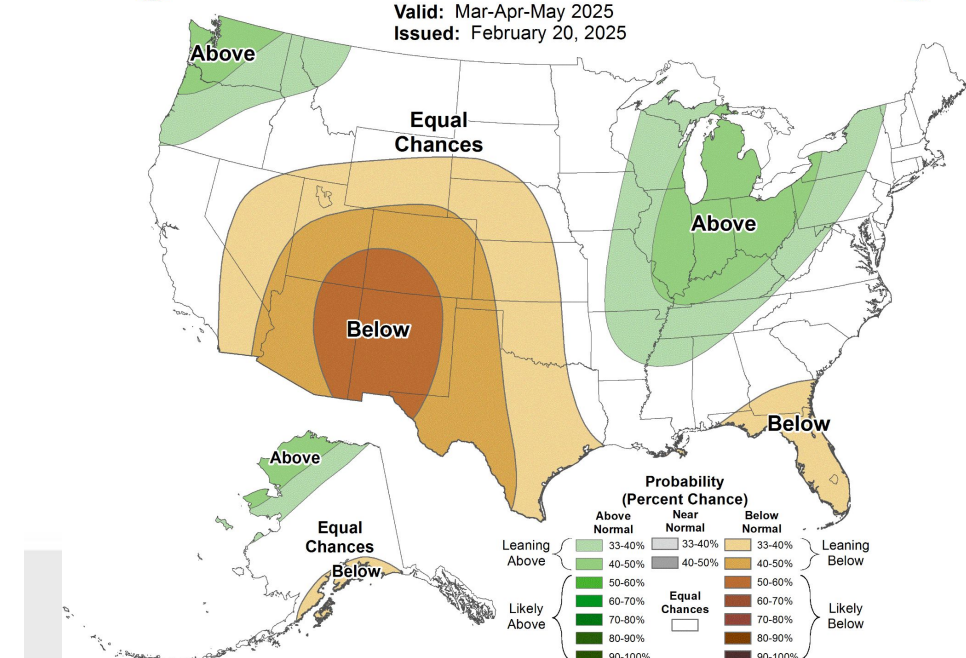
Seasonal Temperature Outlook

Valid: Mar-Apr-May 2025  
Issued: February 20, 2025



Seasonal Precipitation Outlook

Valid: Mar-Apr-May 2025  
Issued: February 20, 2025





# Spring Flood Outlook

March 13, 2025  
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## Potential for Spring Flooding Low across NE MN and NW WI

### Key Messages

- The spring flooding potential across the Northland is normal to below normal.
- Largely <5% chance of reaching minor flood stage at most forecast points.
- ◆ Only four locations with a greater than 5% chance of minor flooding.
- Deep frost could lead to poor infiltration and efficient runoff of snowmelt and rain.

### Next Scheduled Briefings

- This is the final briefing.

Threat	How Current and Forecast Conditions Impact Flood Potential	Link to Image(s)
High river levels	<b>Lower</b>	<a href="#">USGS WaterWatch MN WI</a>
High soil moisture	<b>Normal to Below Normal</b>	<a href="#">CPC Soil Moisture</a>
Winter Precipitation	<b>Normal to Below Normal</b>	<a href="#">Climate Prediction Center 6 to 10 Day</a> <a href="#">8 - 14 Day</a>
Snowpack/ Liquid Equivalent	<b>Normal to Below Normal</b>	<a href="#">Snow Analysis</a> <a href="#">Snow Depth Ranking</a>
Rate of Snowmelt	<b>Normal to TBD</b>	<b>24, 48, &amp; 72</b> hr <a href="#">Snowmelt</a>
Frost Depth	<b>Higher</b>	<a href="#">Frost Depth Map</a>
Spring Precipitation	<b>TBD</b>	<a href="#">Precip Forecast (3-Month)</a>