



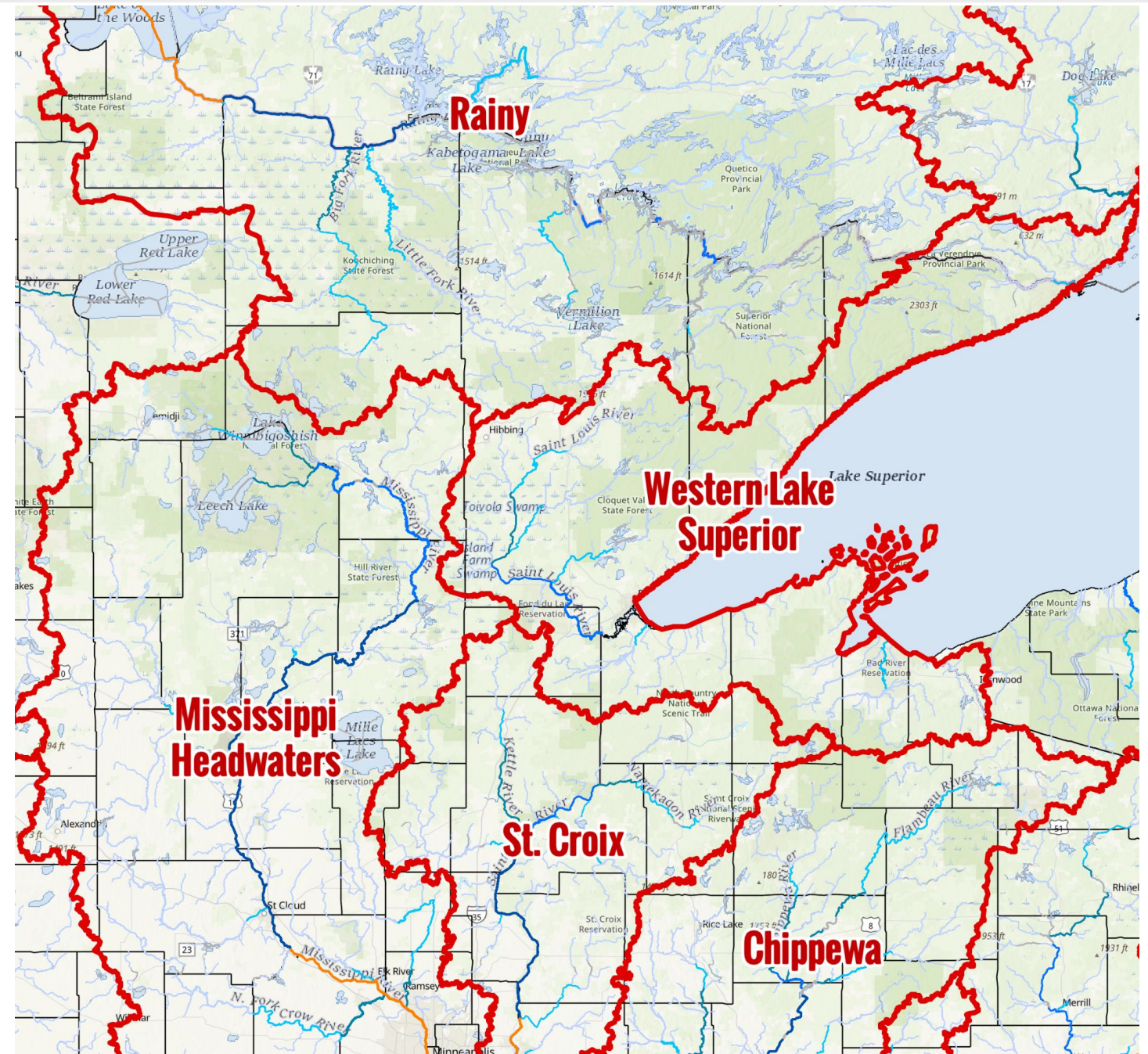
Spring Flood Outlook

March 16, 2024
8:51 AM

Early March Update

Key Messages

- Most river basins have an **historically low amount of water in the snowpack**, decreasing the risk for spring flooding.
- Most of our historically low winter snowpack has largely melted into soils (accounted for in outlook).
- Precipitation through early spring will be one of the most important flood risk factor. This outlook does **not** take it into account the risk of flash flooding.



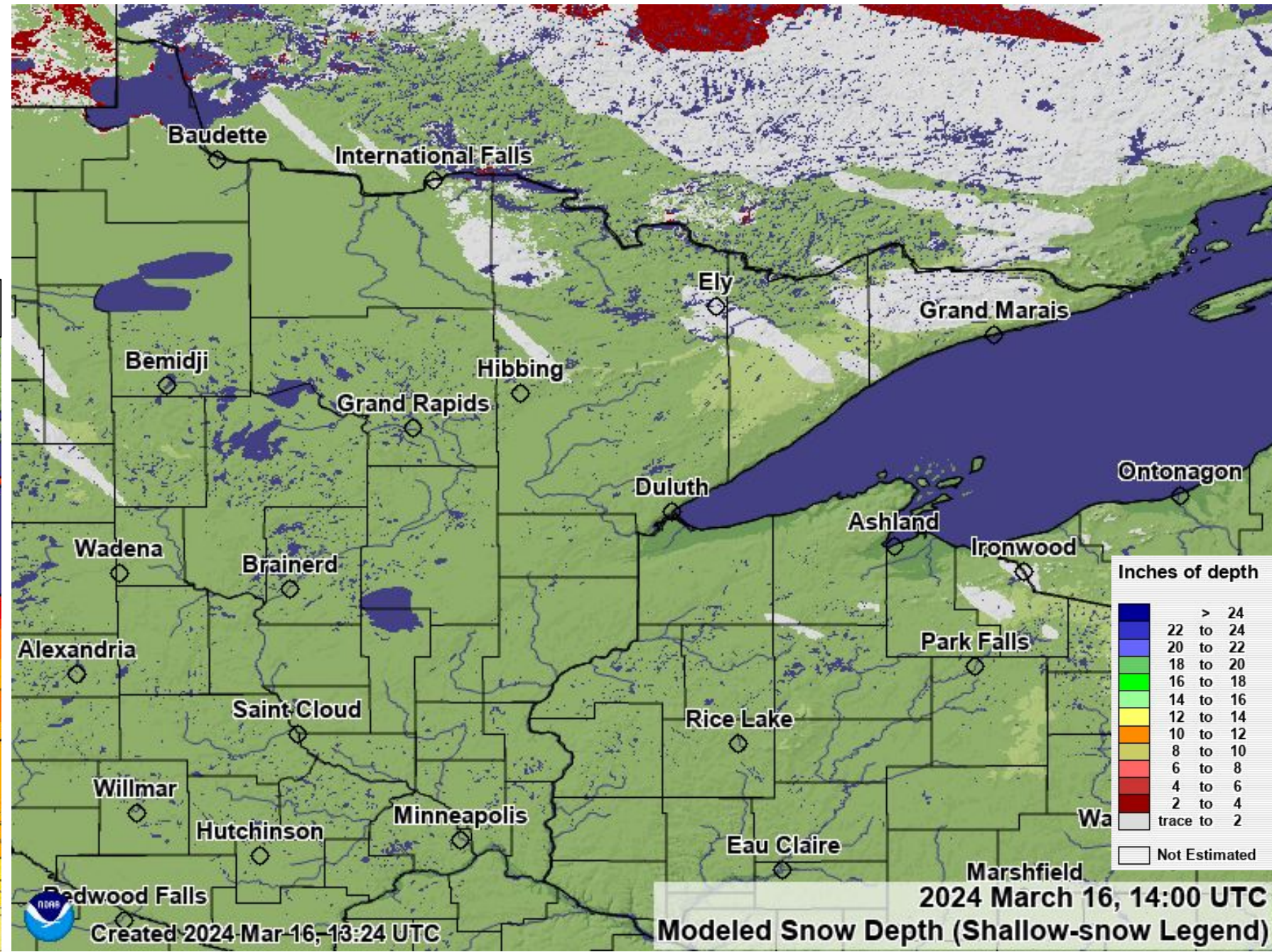
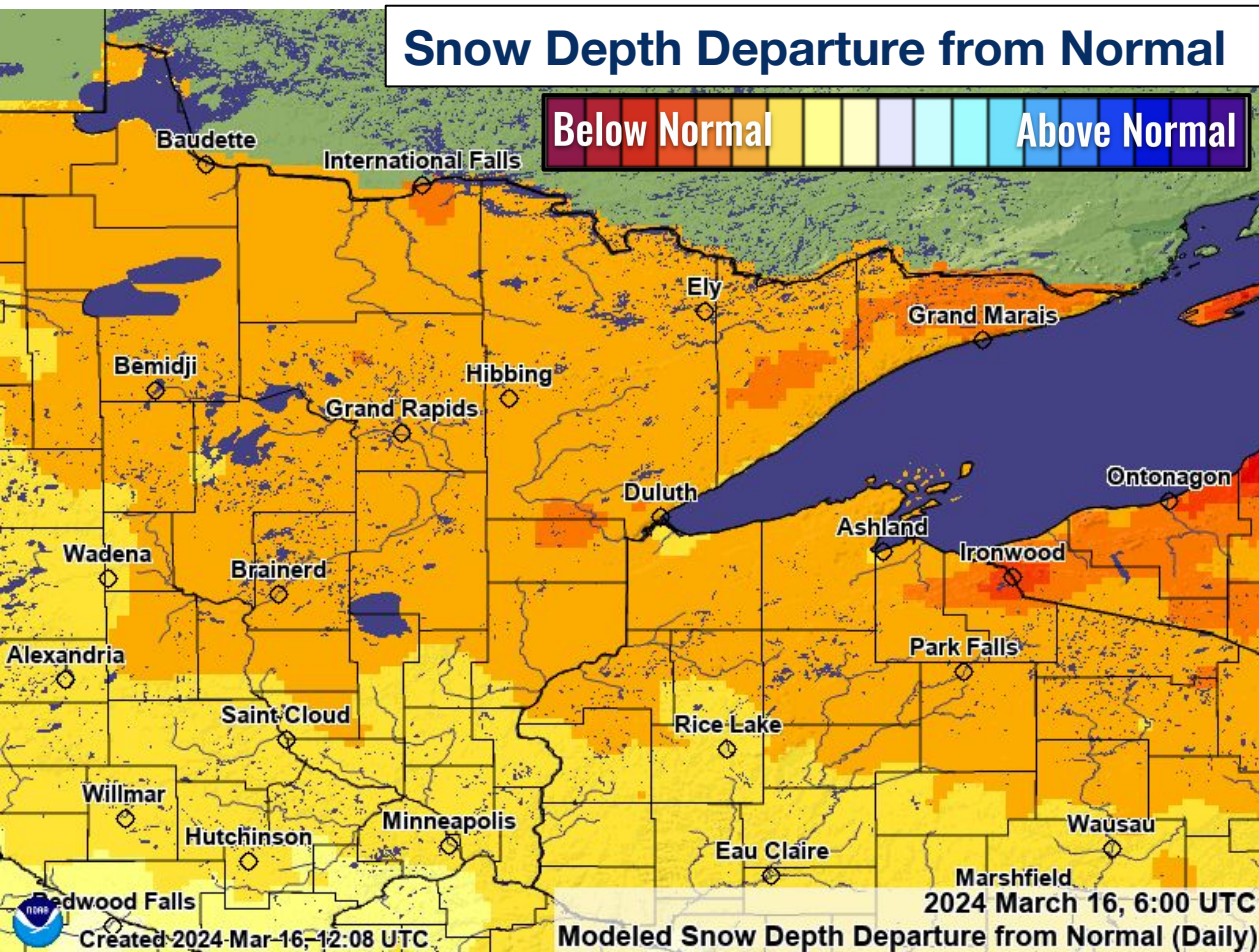


Current Snow Depth

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Current depth of the snowpack

- Current snow depth is record low, with **bare ground across much of the Northland.**
- **Snow depth is 1-3 feet below normal**, with many areas having lowest snow depth on record for early March.



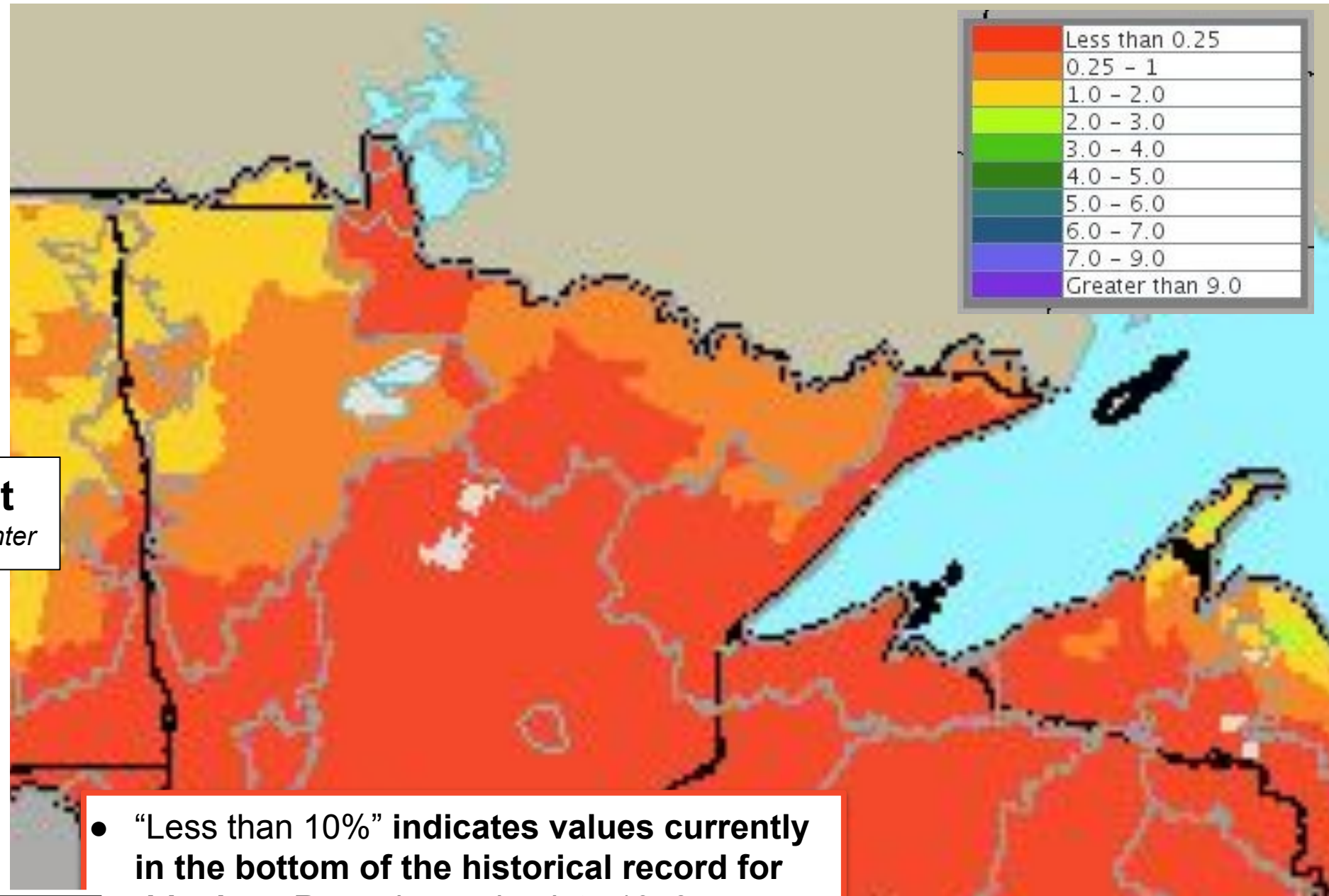


Current Snow Water Equivalent

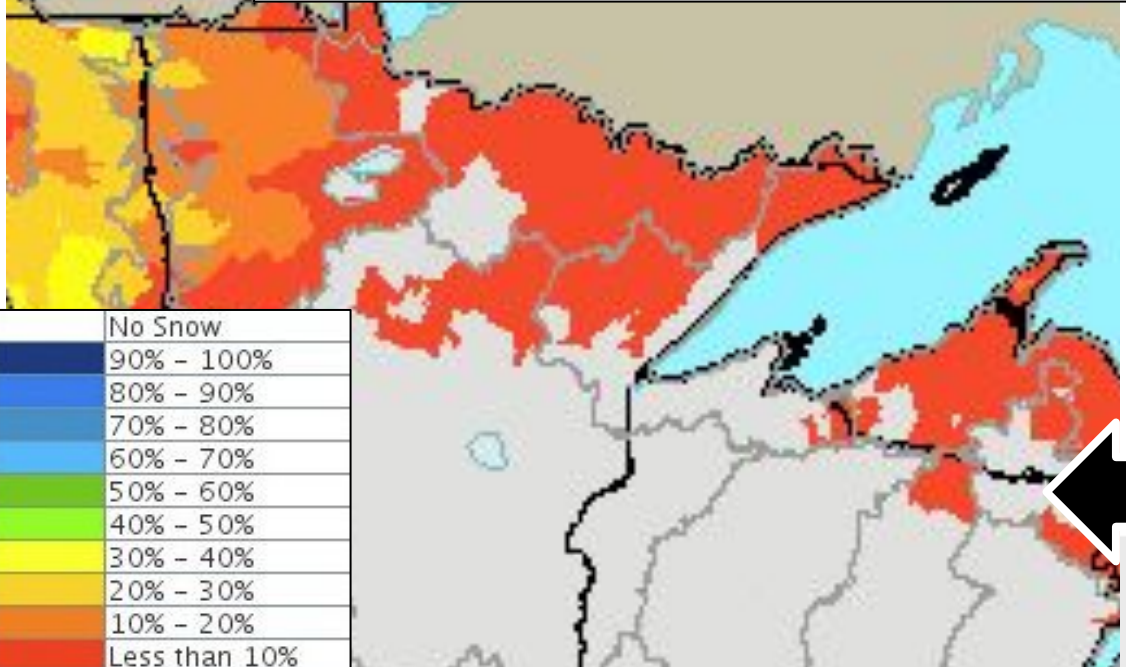
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Map shows a modeled estimate of water in the snowpack

- Currently **Trace to 1" of water in the snowpack** for areas that still have snow on the ground.
- Areas without snow on the ground have **some moisture trapped in frozen soil**. This is difficult to quantitatively measure.



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



- “Less than 10%” indicates values currently in the bottom of the historical record for this date. Record goes back to 1948.
- Values around 50% would be indicative of near normal values.

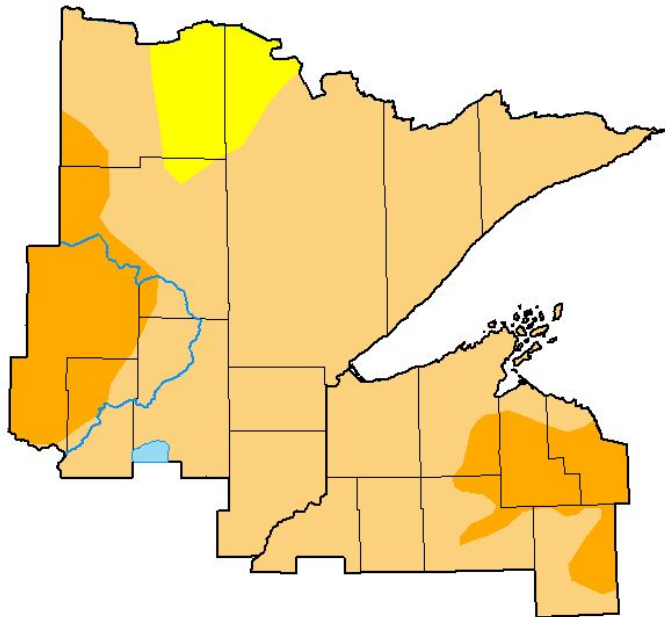


Current Drought and Streamflow

March 16, 2024
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- Moderate and Severe Drought across the region - drought slowly expanding over the last month. Drought could continue to worsen.
- Most streamflow is still normal to below normal.

U.S. Drought Monitor Duluth, MN WFO



March 12, 2024
(Released Thursday, Mar. 14, 2024)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	93.65	18.52	0.00	0.00
Last Week 03-05-2024	0.00	100.00	72.91	18.52	0.00	0.00
3 Months Ago 12-12-2023	0.00	100.00	53.70	22.75	0.00	0.00
Start of Calendar Year 01-02-2024	0.00	100.00	49.28	18.52	0.00	0.00
Start of Water Year 09-26-2023	0.00	100.00	78.51	46.15	4.13	0.00
One Year Ago 03-14-2023	97.41	2.59	0.00	0.00	0.00	0.00

Intensity

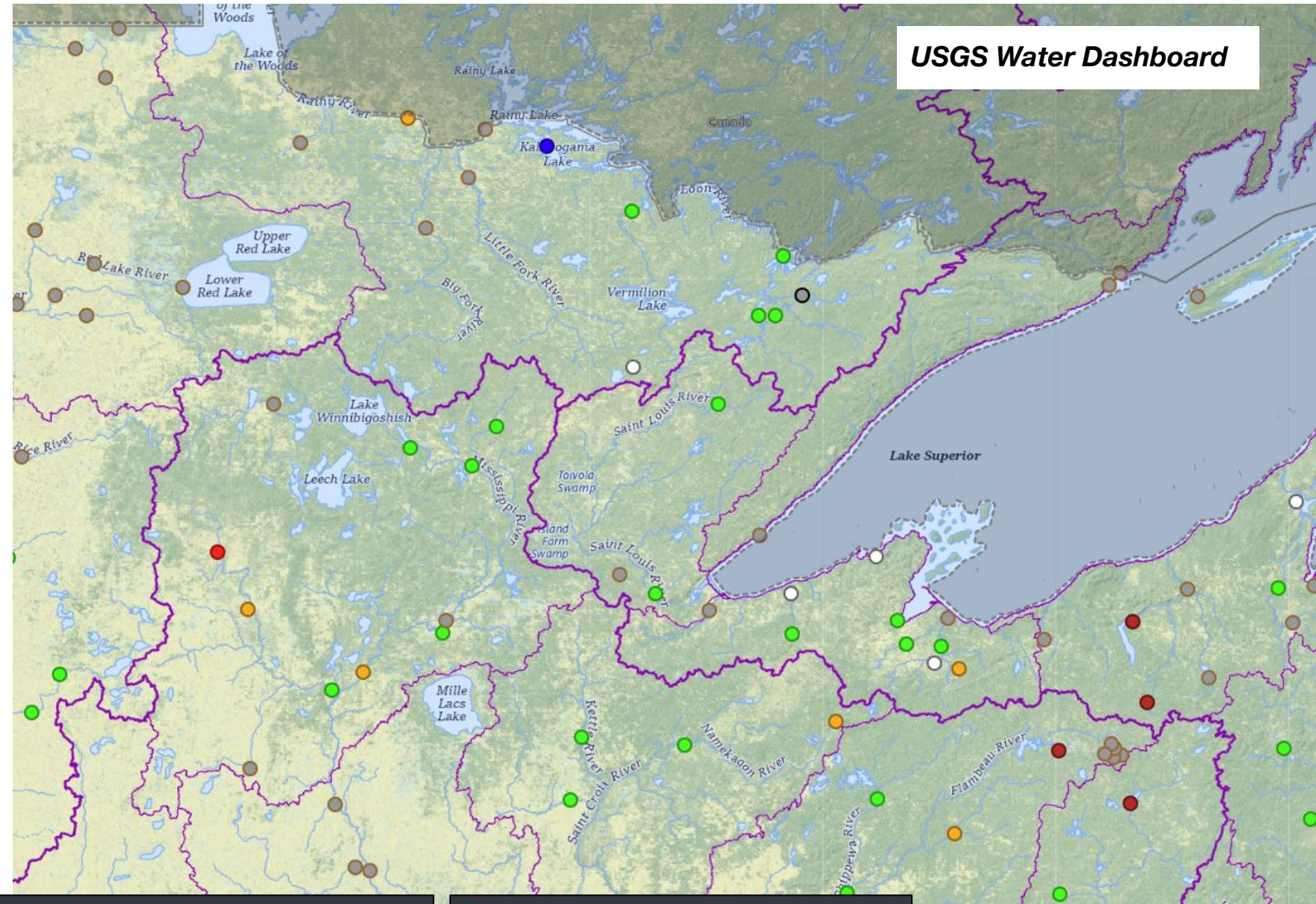
None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

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:
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National Drought Mitigation Center



droughtmonitor.unl.edu



USGS Water Dashboard

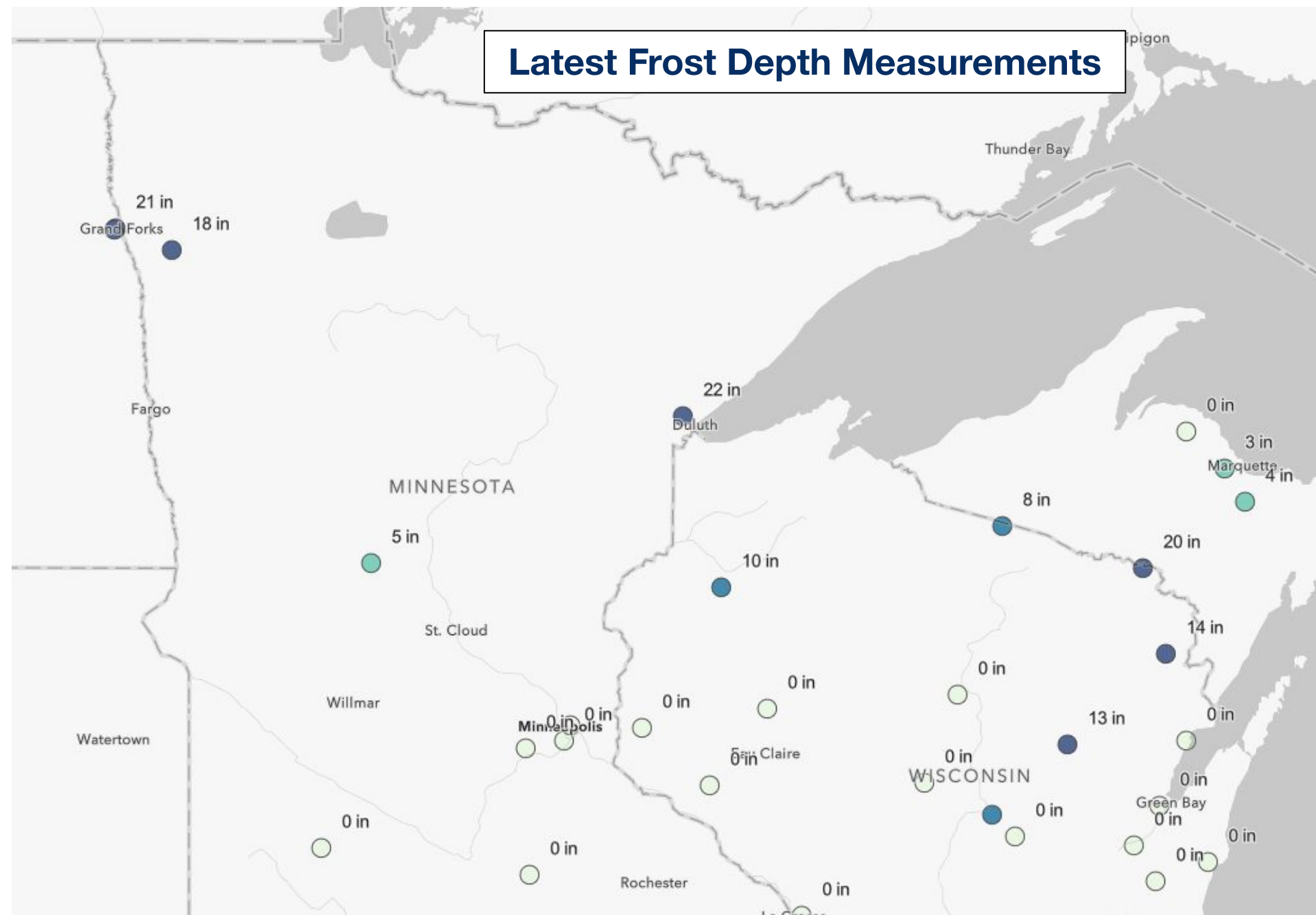
● Above flood stage	● Normal	25 th – 75 th percentile	● Not flowing
● All-time high for this day	● Below normal	10 th – 24 th percentile	● Not ranked
● Much above normal	● Much below normal	<10 th percentile	● Measurement flag
● Above normal	● All-time low for this day	0 th percentile (minimum)	● Recent measurement unavailable
>90 th percentile	100 th percentile (maximum)	76 th – 90 th percentile	



Soil and Frost Conditions

March 16, 2024
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- Latest frost measurement at NWS Duluth: 22" (March 14)
- Surface layer tends to thaw easily on warm days (up to 4 inches so far), and the line of no frost is quickly coming north.
- Deep frost could lead to poor infiltration and efficient runoff of rain if heavy rains fall while the ground is still frozen.
- Frost depth can be viewed from the NCRFC [here](#).



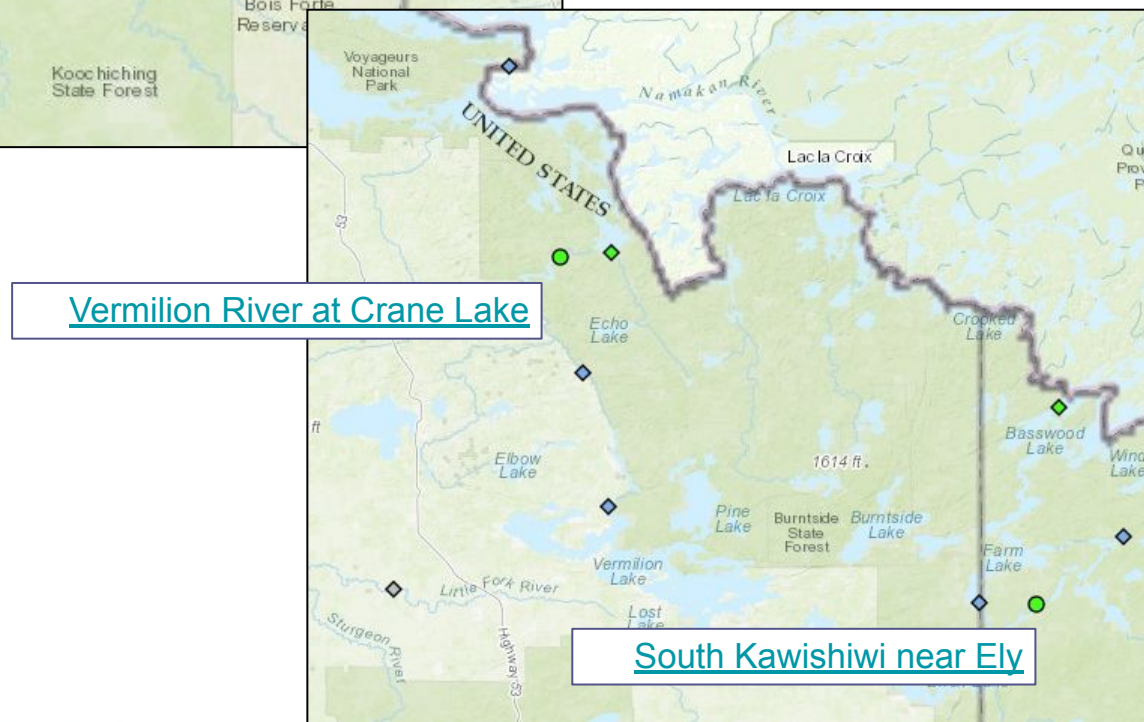


Rainy Basin Outlook

March 16, 2024
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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.	<5%	<5%



View Interactive Map:

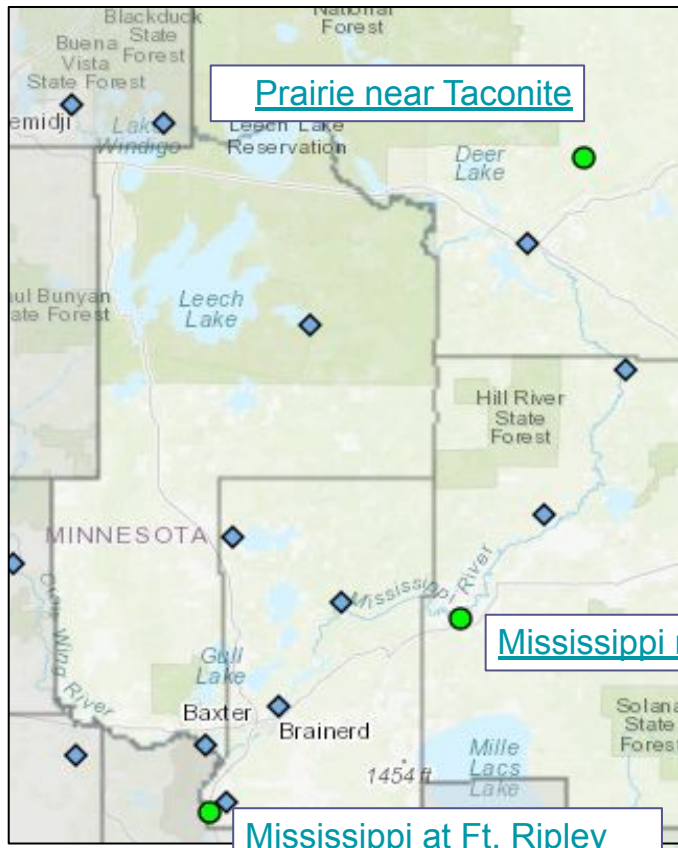
- [River Observations](#)
- [Short-Term River Forecasts](#)
- [Long-Range River Flood Risk](#)



Upper Mississippi Basin Outlook

March 16, 2024
8:51 AM

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.	11%	<5%
Mississippi at Ft. Ripley	10.5 ft.	11%	<5%



View Interactive Map:

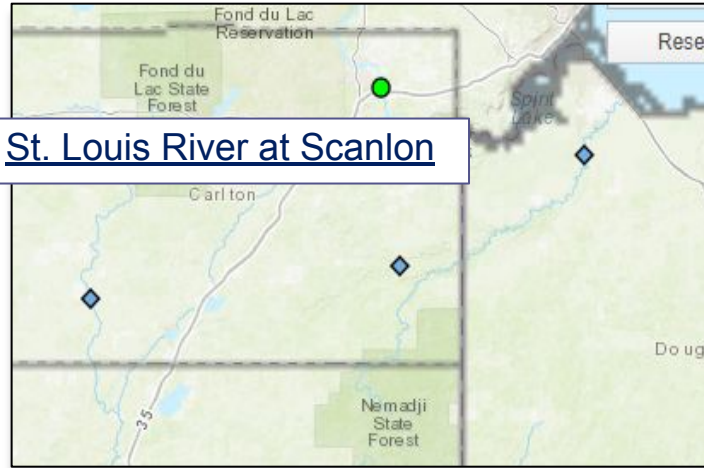
- [River Observations](#)
- [Short-Term River Forecasts](#)
- [Long-Range River Flood Risk](#)



W. Lake Superior Basin Outlook

March 16, 2024
8:51 AM

Spring Flood Outlook



Point	Flood Stage	Chance of Minor Flood	Chance of Moderate Flood
St. Louis at Scanlon	10.5 ft.	<5%	<5%
Bad River at Odanah	8.5 ft.	<5%	<5%
Bad River nr. Odanah	16.0 ft.	<5%	<5%
Tyler Forks River nr. Mellen	9.0 ft.	12%	<5%

View Interactive Map:

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



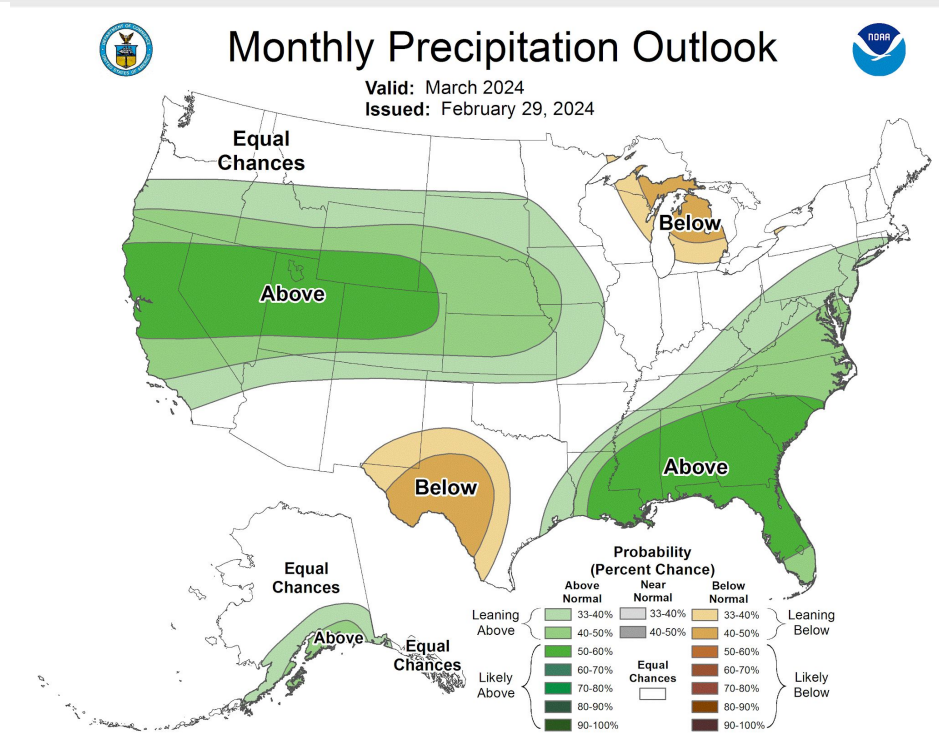
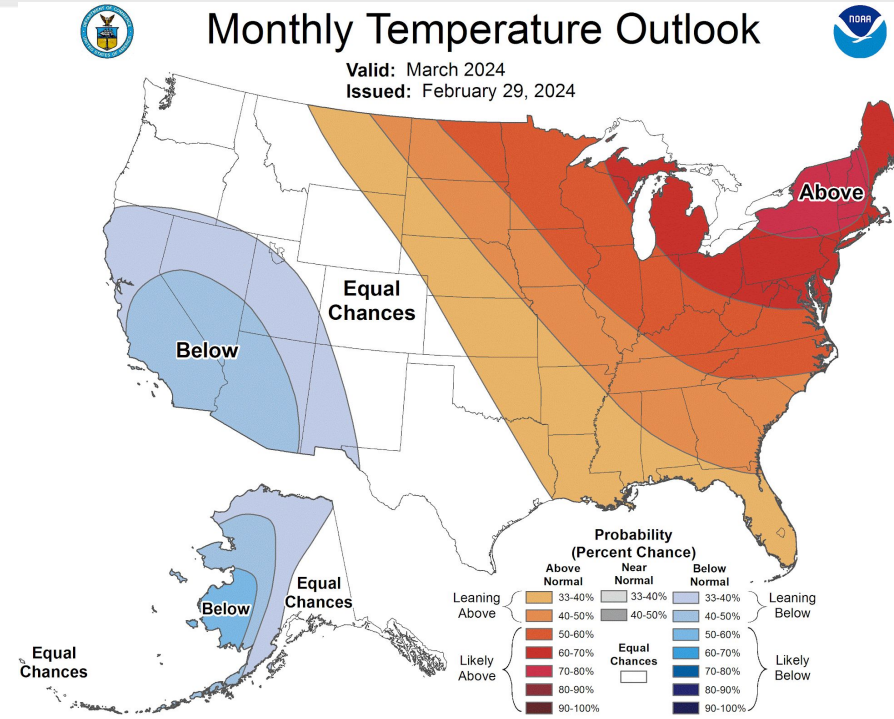
Spring Weather Outlook

March 16, 2024
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These are general outlooks that depict broad trends for the weeks and months ahead

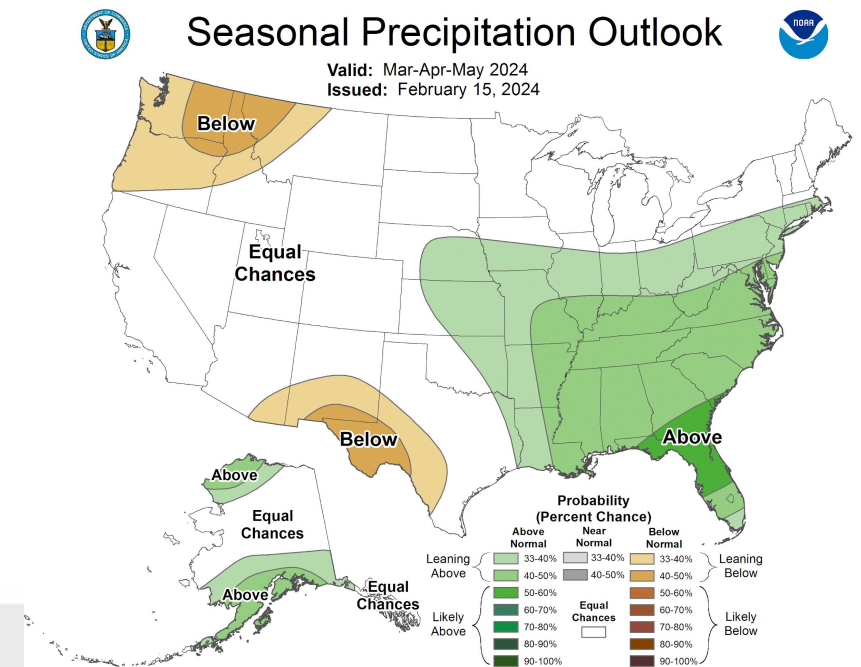
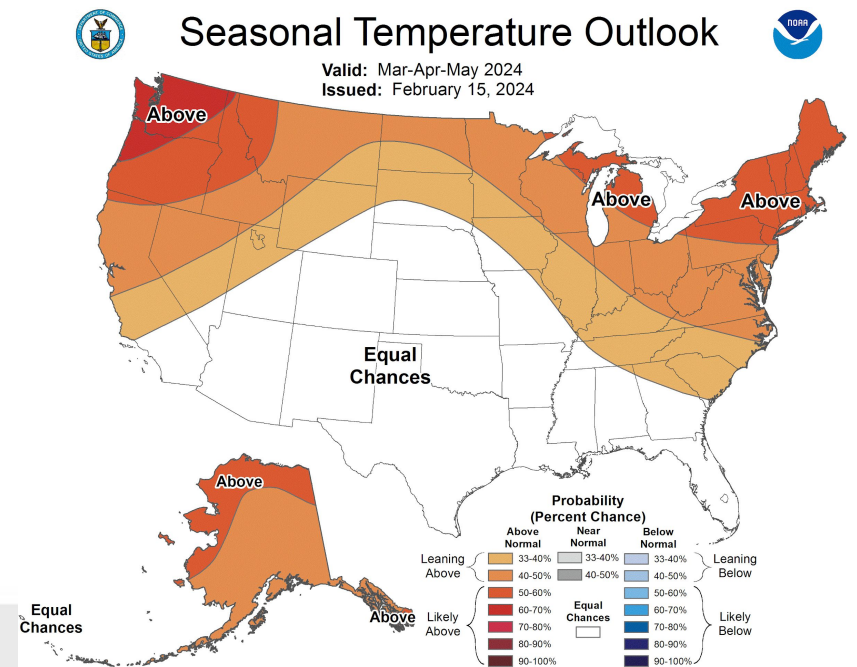
This Month (March)

- 50-60% chance above normal temperatures. . Slight cooling trend possible late month.
- Equal chance of above, below, or near normal precipitation.
- Impact to Spring Flooding: **Neutral**



Seasonal Outlook (March-April-May)

- 40-50% chance above normal temperatures.
- Equal chance of above, below, or near normal precipitation.
- Impact to Spring Flooding: **Neutral**





Spring Flood Outlook

March 16, 2024
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Potential for Spring Flooding Low across Northeast Minnesota and Northwest Wisconsin

Key Messages

- The spring flooding potential across the Northland is far below normal.
- Largely <5% reaching minor flood stage at most forecast points.
 - ◆ Only three locations with a greater than 5% chance of minor flooding, all below 15%
- Deep frost could lead to poor infiltration and efficient runoff if it rains.

Next Scheduled Briefings

→ None scheduled

Threat	Impact to Potential Spring Flooding	Link to Image(s)
High river levels	Lower	USGS WaterWatch MN WI
High soil moisture	Normal to Below Normal	CPC Soil Moisture
Winter Precipitation	Normal to Below Normal	Climate Prediction Center 6 to 10 Day 8 - 14 Day
Snowpack/ Liquid Equivalent	Far Below Normal	Snow Analysis Snow Depth Ranking
Rate of Snowmelt	Low. Little to no snow left to melt.	24, 48, & 72 hr Snowmelt
Frost Depth	Higher	Frost Depth Map
Spring Precipitation	TBD	Precip Forecast (3-Month)