

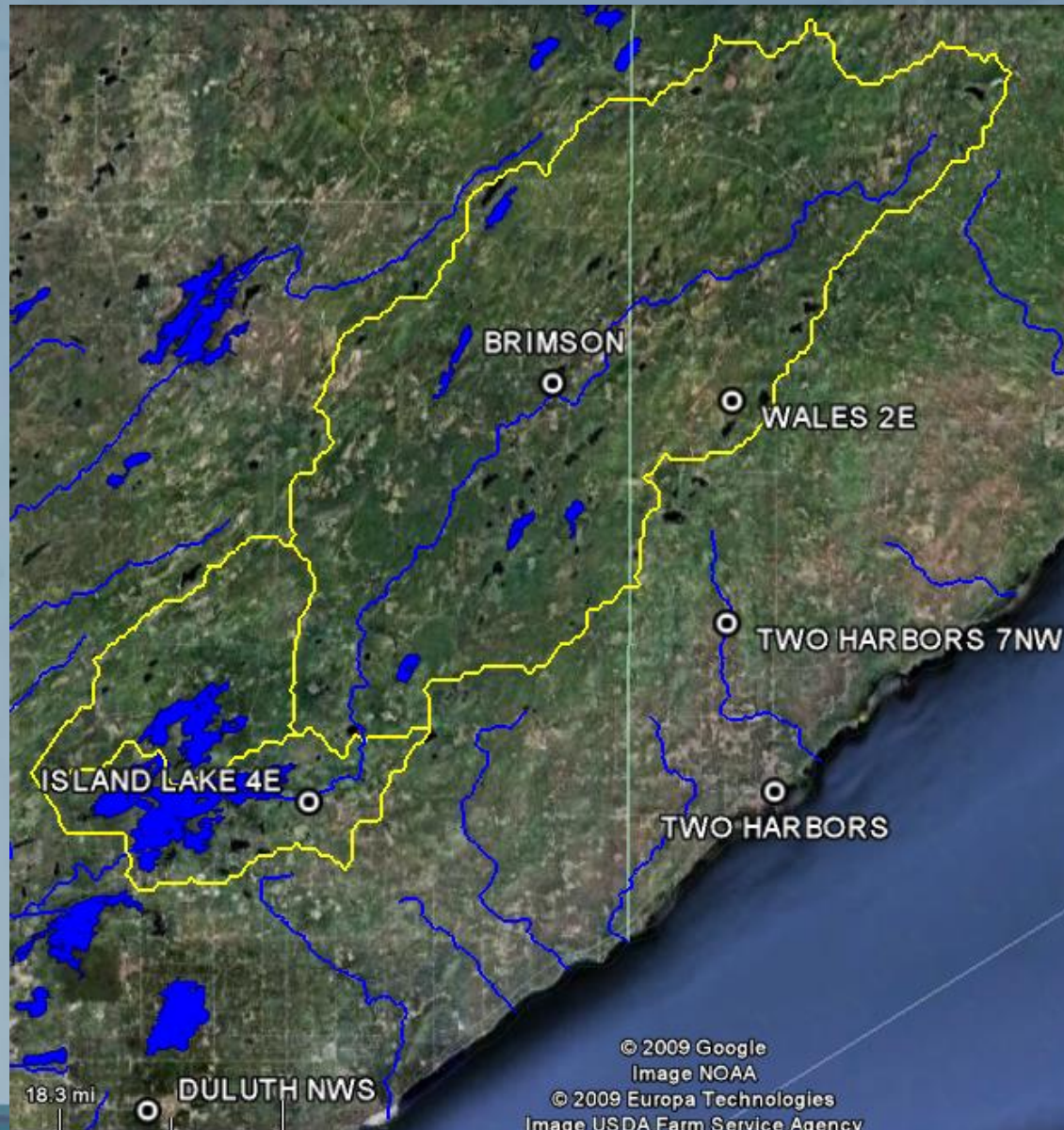
# Island Lake Technical Committee

## Late Winter Drawdown 2025

*Steve Gohde - Observing Program Leader  
National Weather Service  
WFO Duluth*

*Laura Diamond  
North Central River Forecast Center  
Hydrologic Forecaster  
February 4<sup>th</sup>, 2025*

# Island Lake Basin



# Bottom Line Up Front

- **Moderate Drought (D1)** condition in the basin.

## **River Forecast Model run 2/4/2025**

- **90%** Chance of Refill under dry condition refill rule
- **50%** Chance of Refill under normal condition rule
- **Weather outlooks**
  - Above normal precipitation favored through 2/18 with below normal temperatures
  - A 35% chance for above normal precipitation in Feb-Mar-Apr
  - La Nina is main driver of long range forecasts

# Setting Up Current Conditions

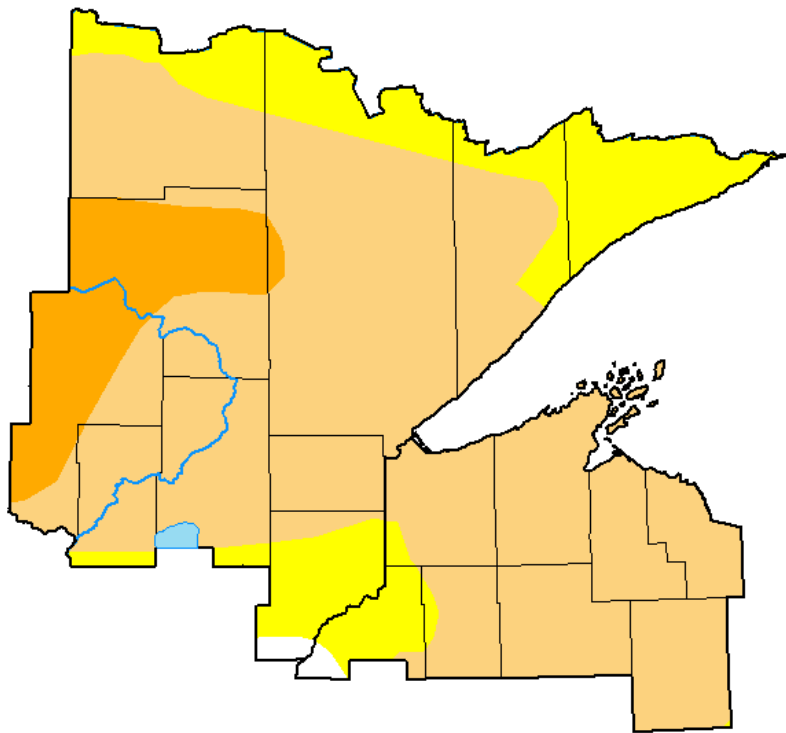
- June 19<sup>th</sup> 5-7 inch rainstorm in the headwaters of the Cloquet River Basin caused major flooding and busted the Spring drought
- Well below average rain since the end of June lead to worsening drought evolving into late fall
- Periodic rainfall October and a 1”to 2” rainfall event in November provided relief from prolonged fall drought
- Slight improvement in drought condition since November rains



# Most Recent Drought Monitor

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

**January 28, 2025**  
(Released Thursday, Jan. 30, 2025)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.73	99.27	79.88	10.47	0.00	0.00
<b>Last Week</b> 01-21-2025	0.73	99.27	79.88	10.47	0.00	0.00
<b>3 Months Ago</b> 10-29-2024	0.00	100.00	97.59	84.67	0.00	0.00
<b>Start of Calendar Year</b> 01-07-2025	0.73	99.27	79.88	10.47	0.00	0.00
<b>Start of Water Year</b> 10-01-2024	2.57	97.43	71.52	0.00	0.00	0.00
<b>One Year Ago</b> 01-30-2024	6.22	93.78	49.28	18.52	0.00	0.00

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:

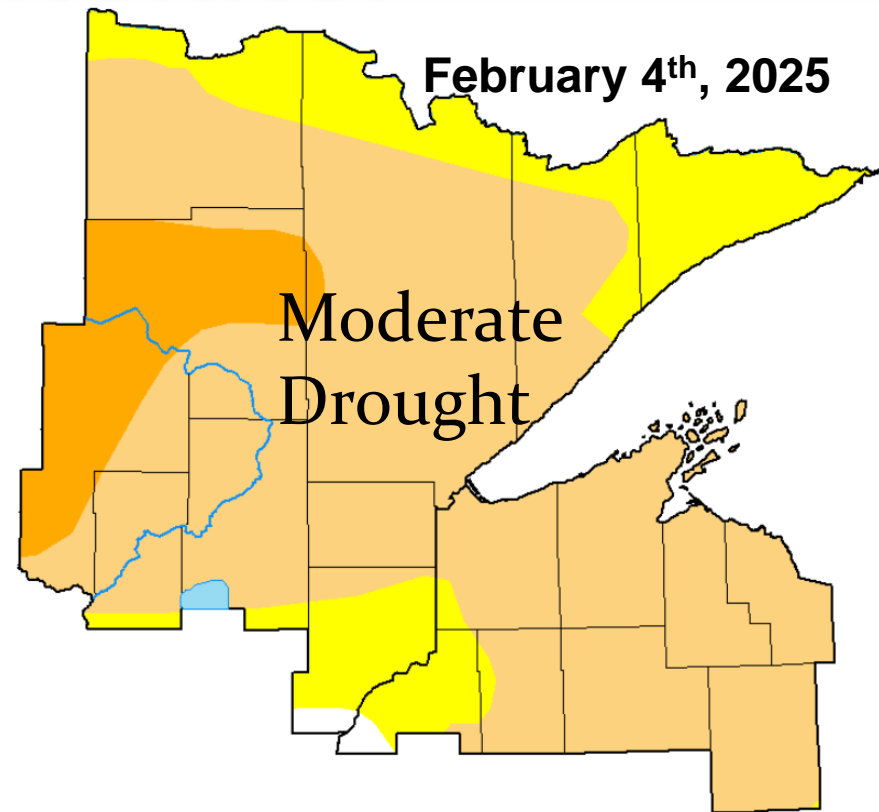
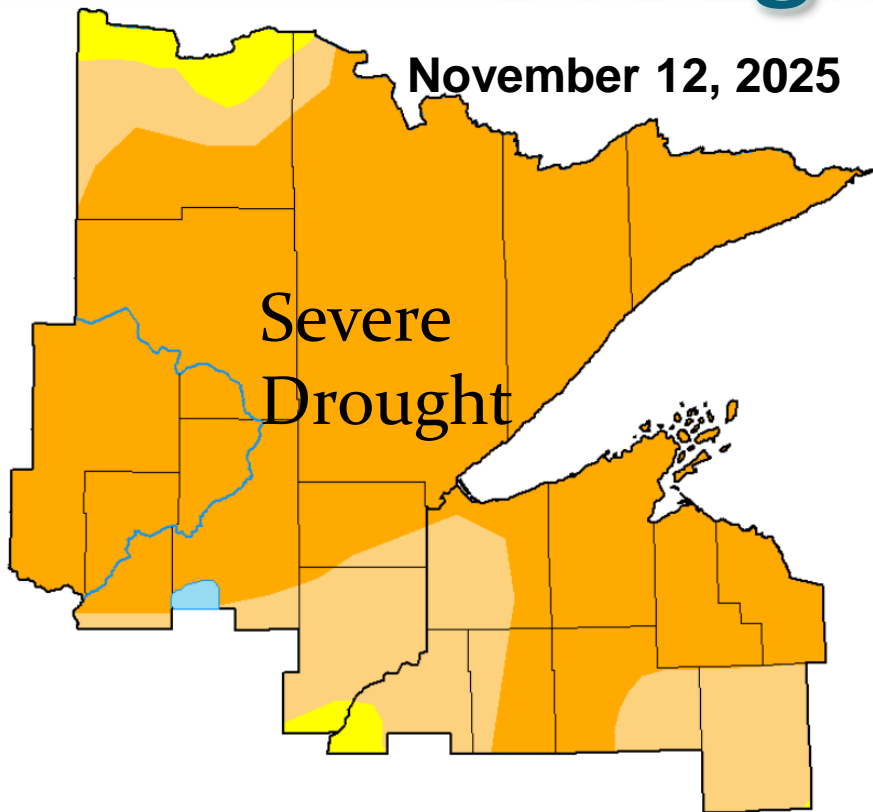
Brian Fuchs  
National Drought Mitigation Center



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

- Moderate Drought conditions
- D1

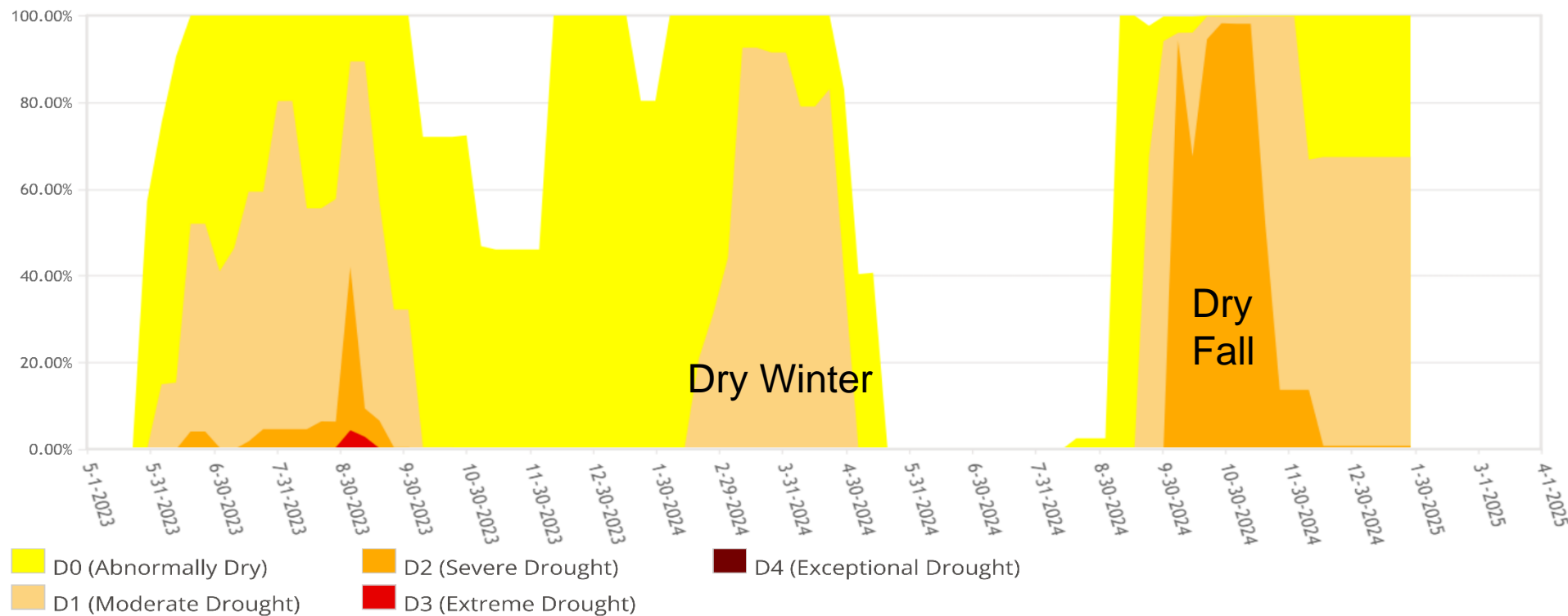
# Comparing Two Months - Drought Monitor



- Dry Autumn resulting in D2 – Severe Drought Conditions
- Improvement since November – currently D1 Moderate drought

# Drought Historical Context

Northeast, MN (2103) Climate Division Percent Area in U.S. Drought Monitor Categories



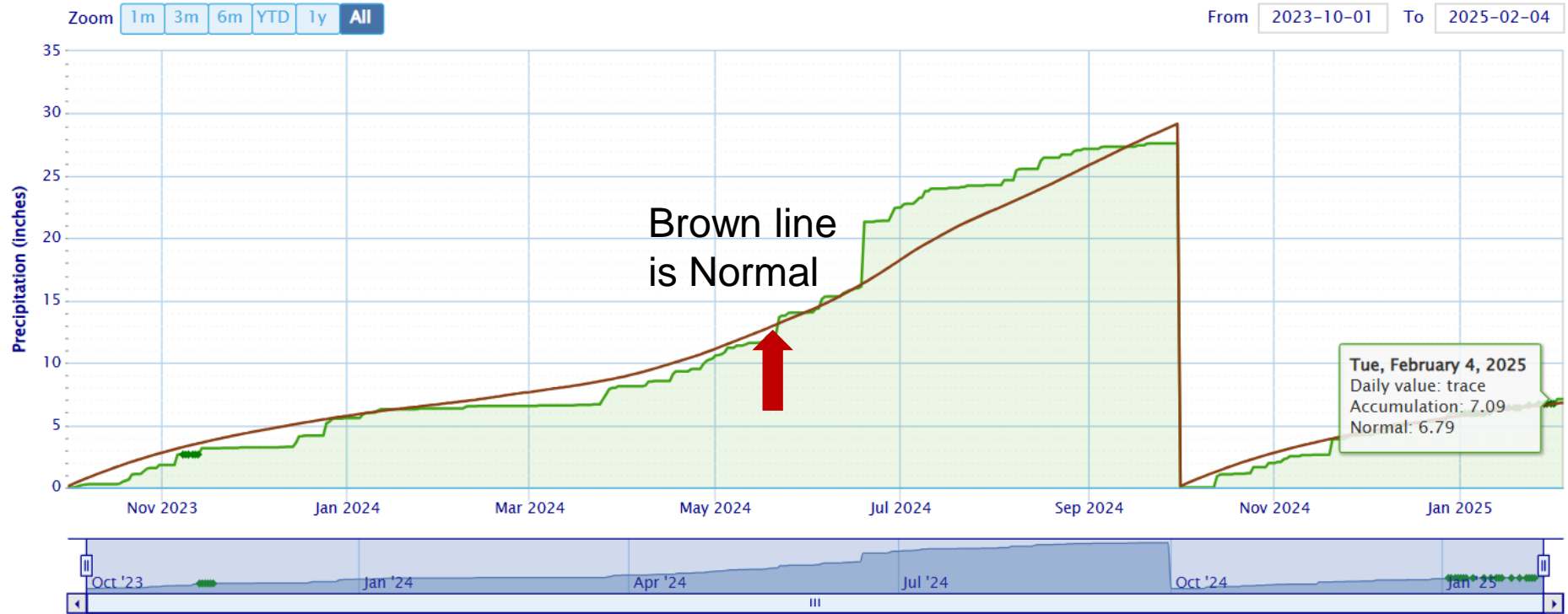
From the U.S. Drought Monitor website, <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, 2-4-2025

- 6/19 Flooding Rain 500 year to greater than 1000 year event
- Dry Autumn resulting in D2 – Severe Drought Conditions
- 11/18 Drought status improvement to D1 – Moderate Drought

# Water Year Precipitation Oct 2023-Nov 2025

Accumulated Precipitation – BRIMSON 2S, MN

Use navigation tools above and below chart to change displayed range; green/black diamonds represent subsequent/missing values



Powered by ACIS

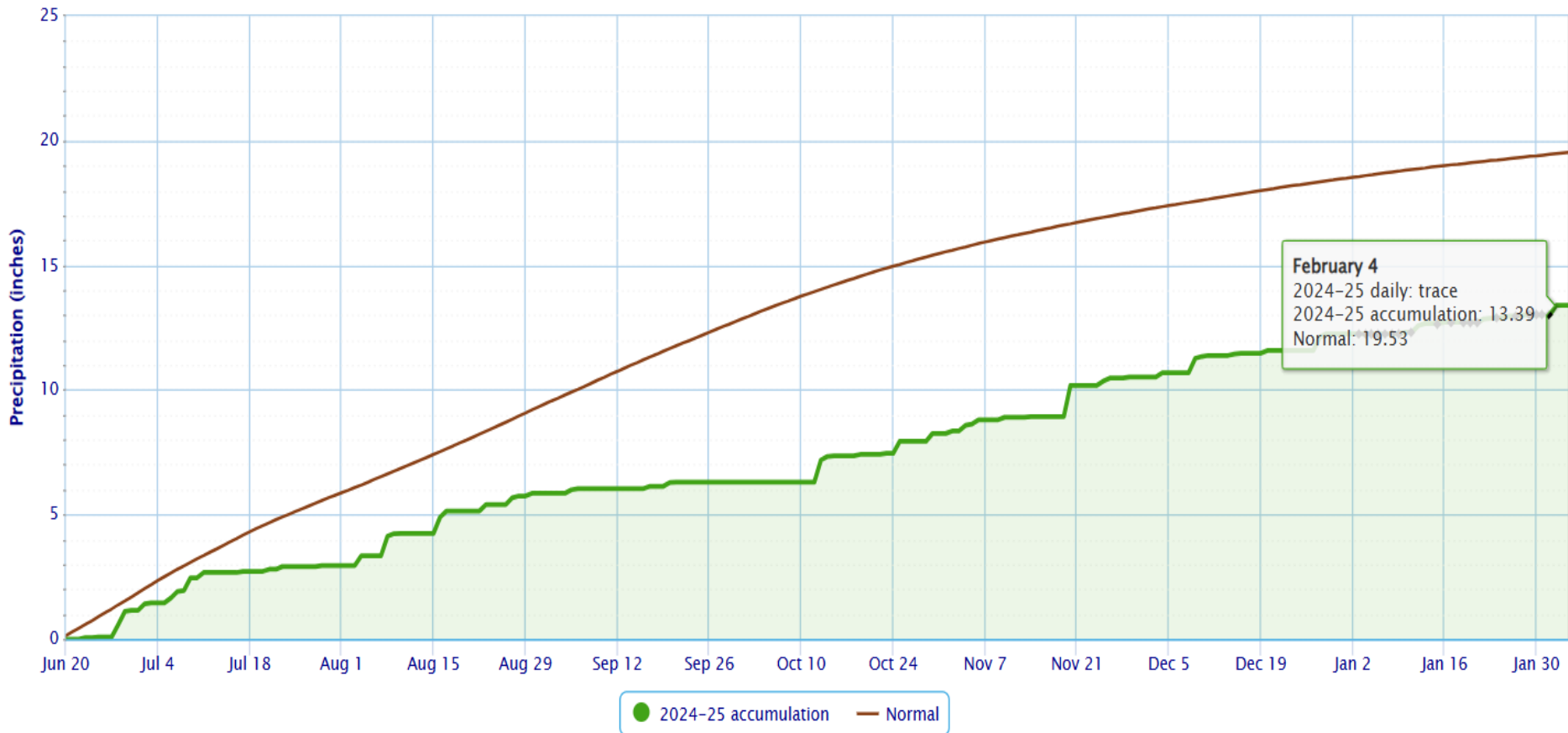
- Dry 23'-24' winter lead to early spring drought conditions
- 6/19 Flooding Rain 500 year to greater than 1000 year event
- Very dry conditions after 6/20. Recovery to near normal in November



# Brimson Low Precipitation Since the June Flood

Accumulated Precipitation - BRIMSON 2S, MN

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Powered by ACIS

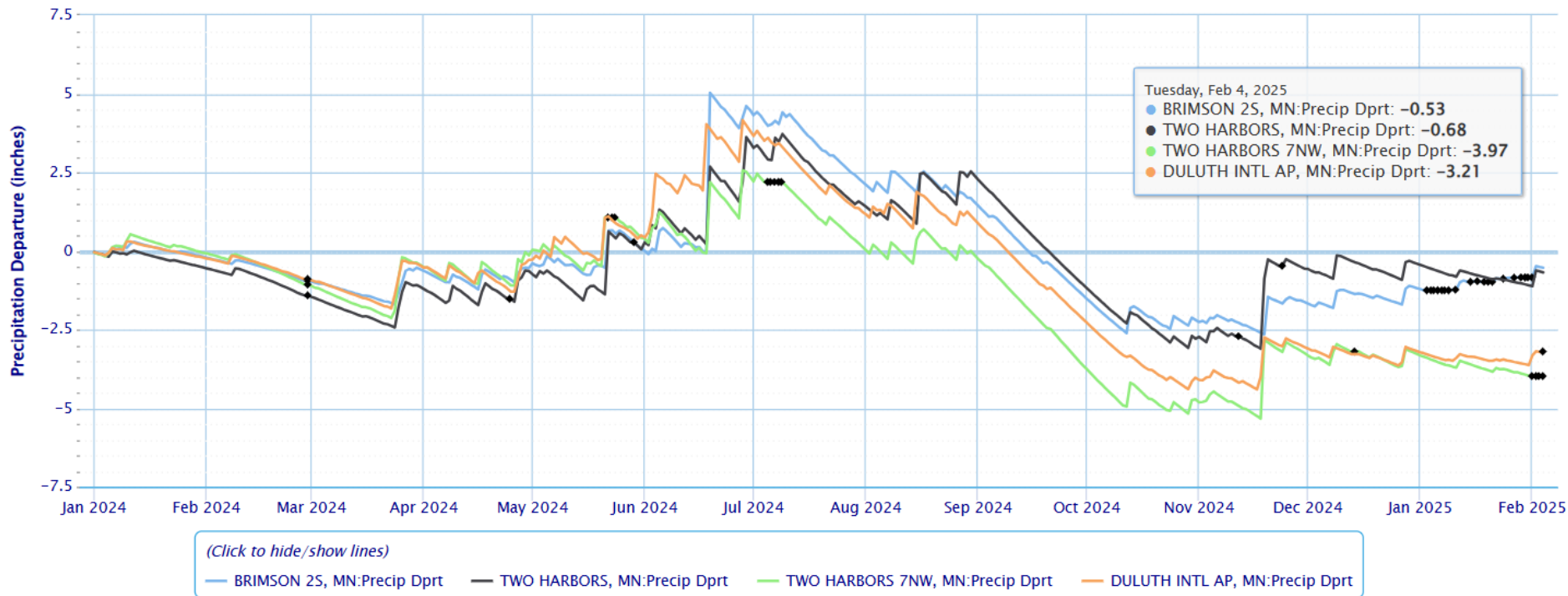
- Very dry conditions since 6/20. **6.14 inches below average**

# Precipitation Departure

1/1/2024-2/3/2025

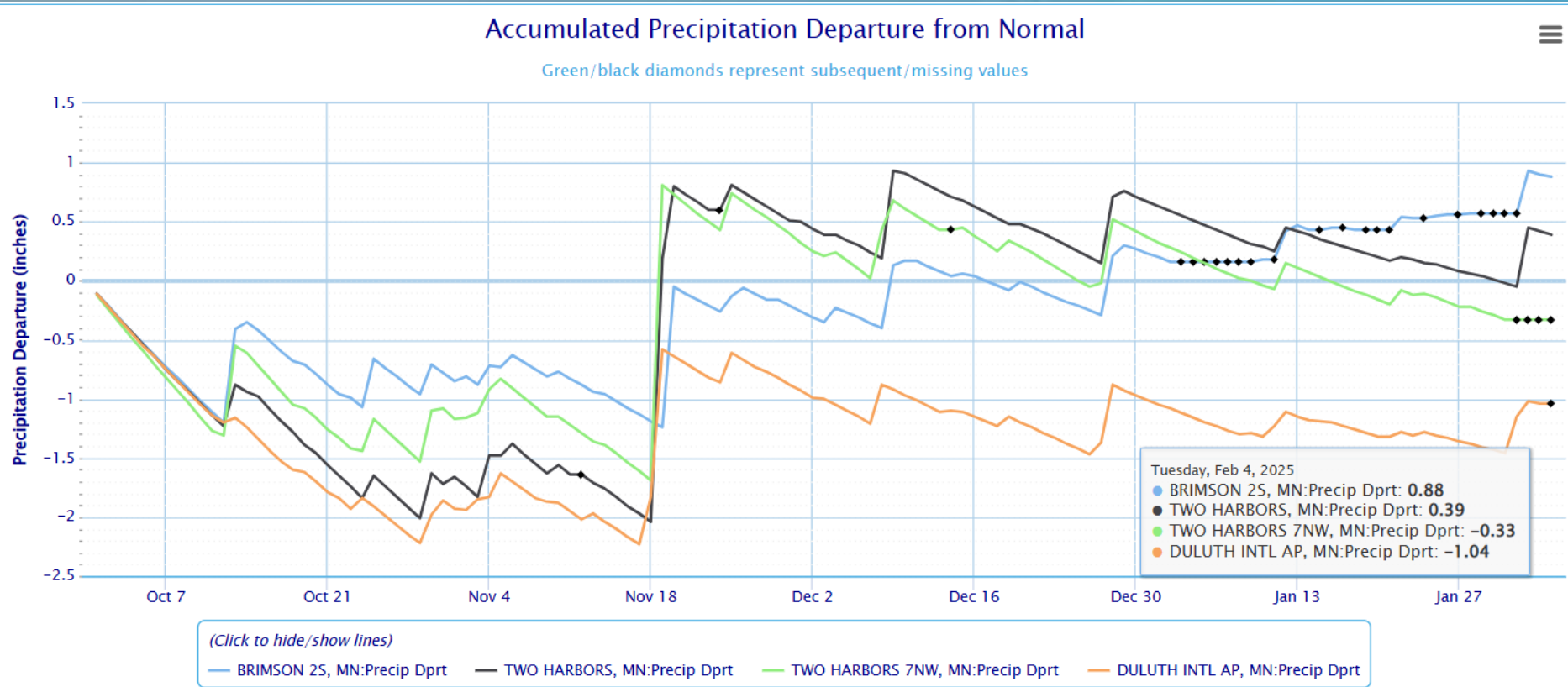
Accumulated Precipitation Departure from Normal

Green/black diamonds represent subsequent/missing values



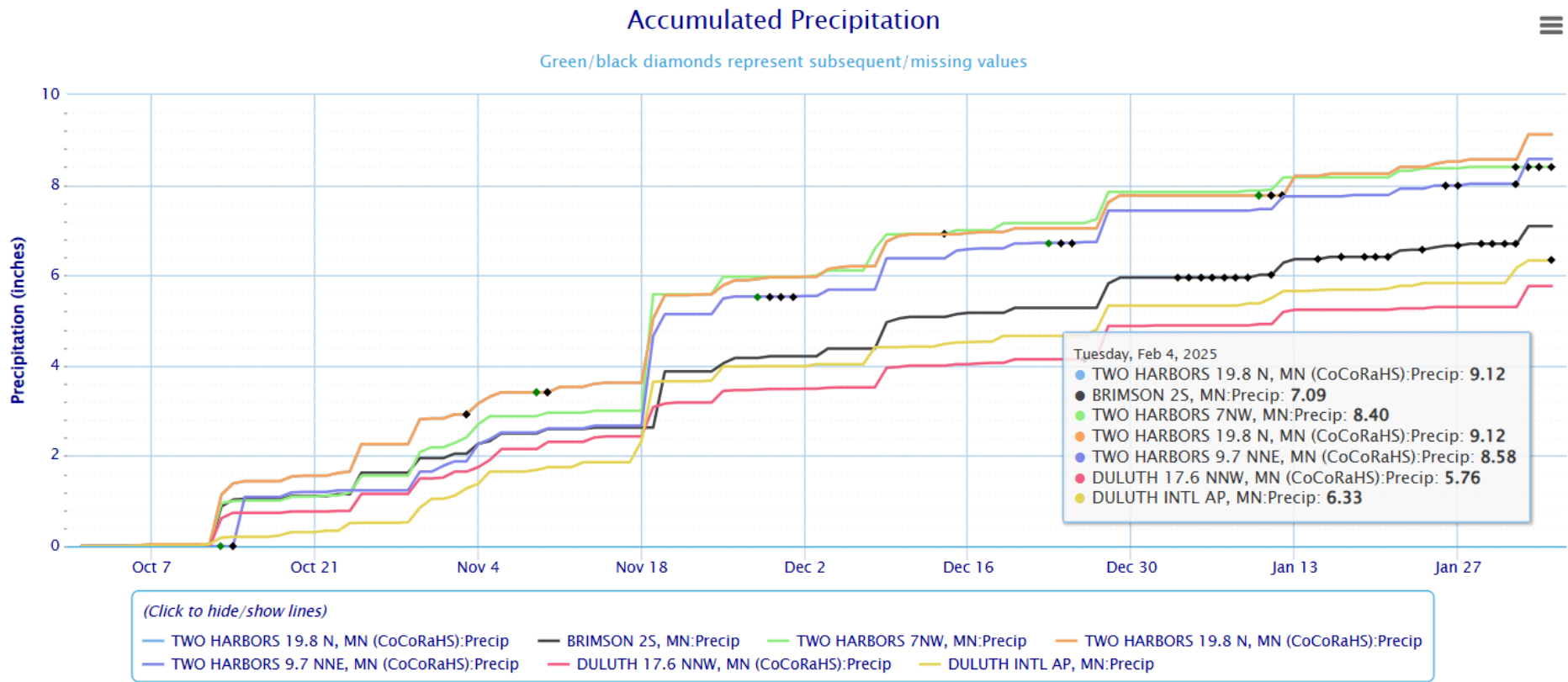
This chart shows precipitation departure from normal since April 1st and is generally 0.5 to 4 inches below normal for several stations near or in the Cloquet River Basin

# Precipitation Since 10/1/24



• This chart shows precipitation for several stations near or in the Cloquet River basin. In general, precipitation since October 1<sup>st</sup> is near normal -0.33 to +0.88 inches.

# Precipitation Since 10/1/24



- In general, precipitation since October 1, 2024 5.5” to 9” of precipitation
- Less precipitation in the lower half of the basin



# Snow Water Equivalent SWE

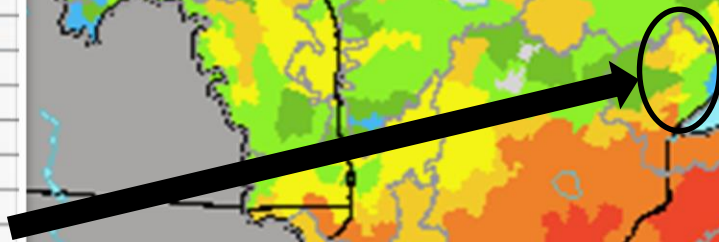
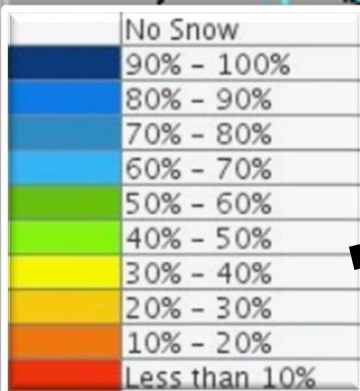


North Central River Forecast Center  
Ranked Simulated Snow Water Equivalent

Valid for 02/03/2025 12 GMT



40% to 50% of normal  
Snow Water Equivalent

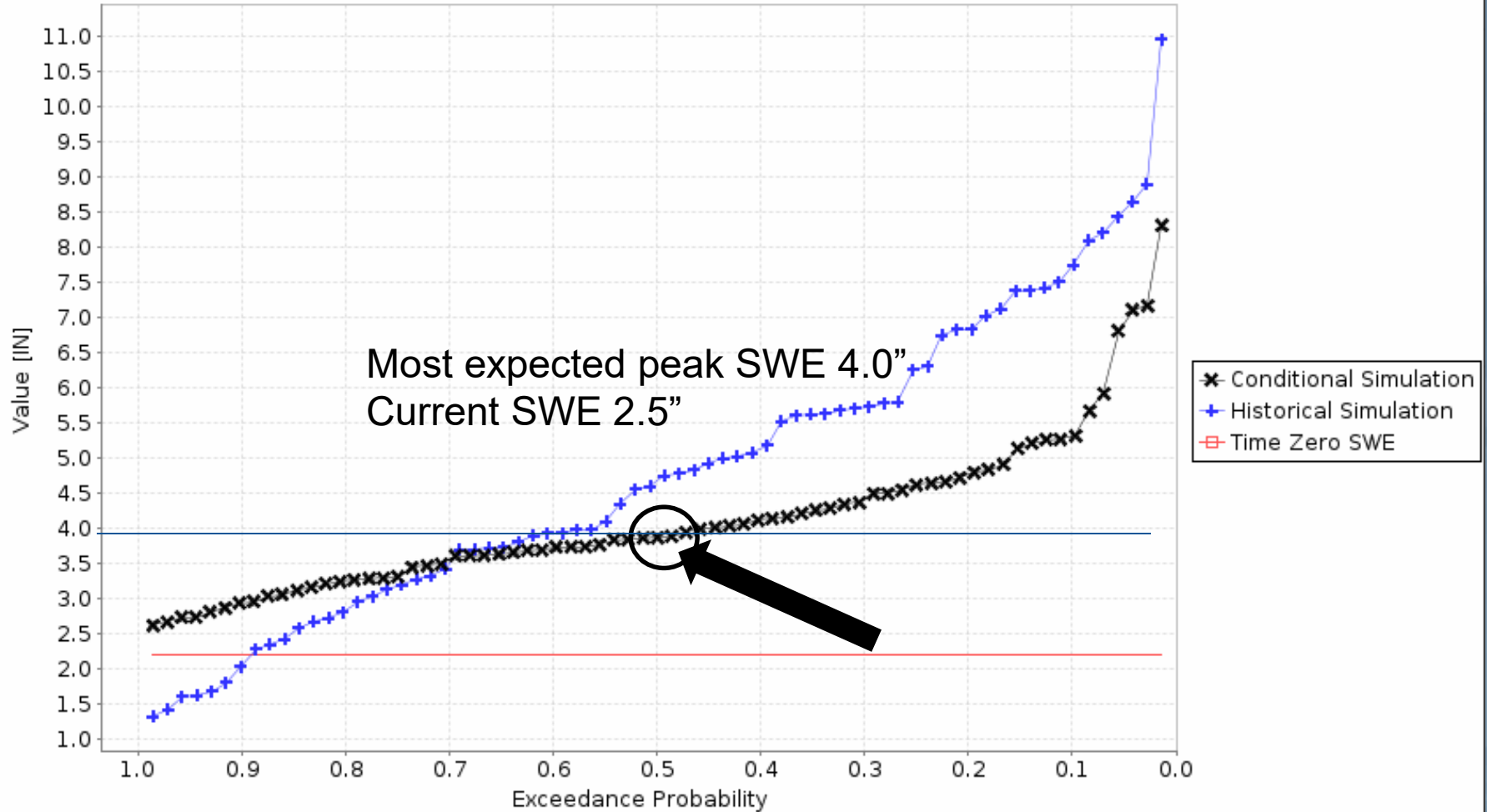


Note: This map compares current NCRFC Modeled SWE with the historical record of modeled SWE for each basin. An area ranked as 'Less than 10 percent' is at the lower end of the record and one ranked near 100 percent is at the higher end. A 50 percent ranking indicates current SWE is in the middle of our historical record.

Created on 02/04/2025 at 01:07:15 AM CST

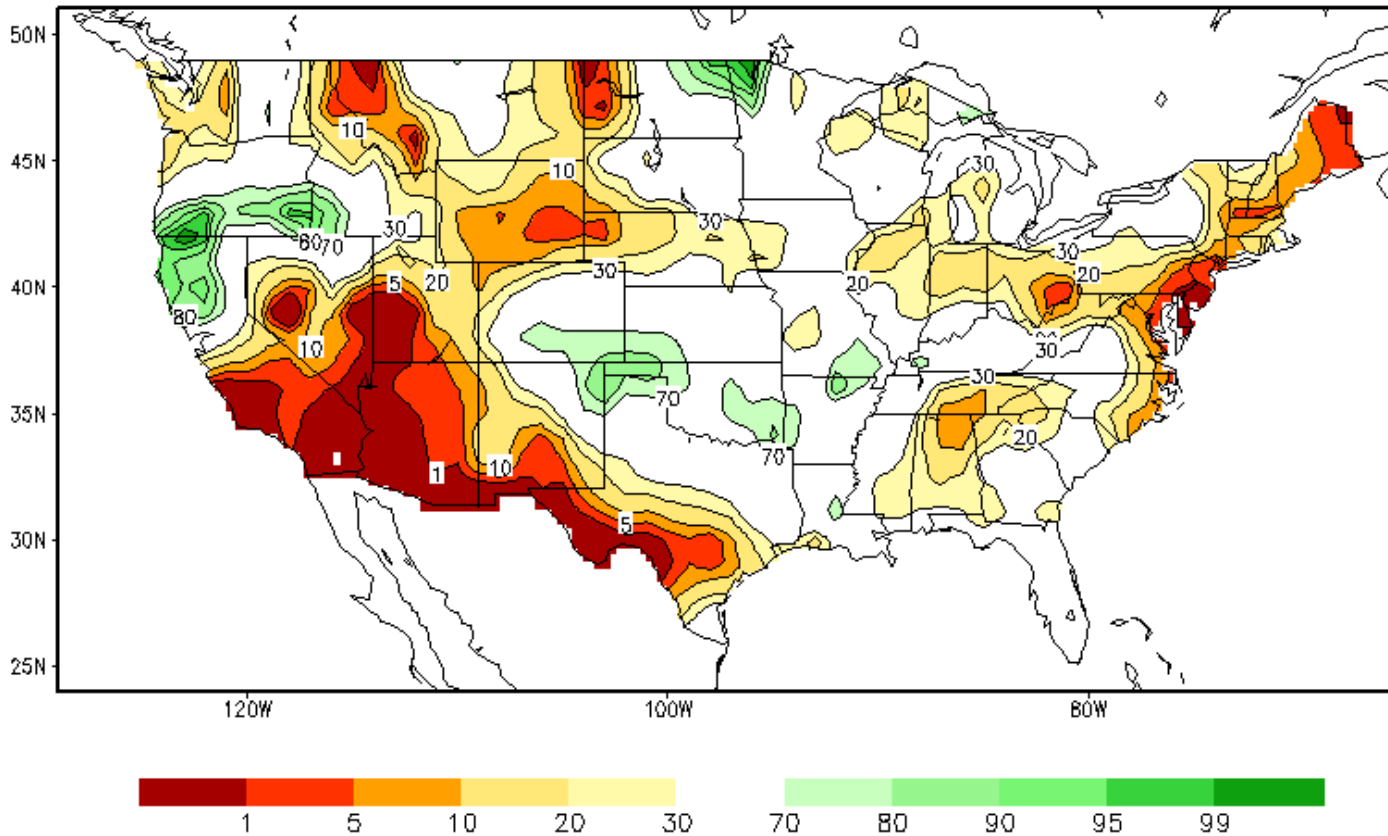
# Snow Water Equivalent SWE

Chances of exceeding SWE values for Cloquet River at Fredenberg INNW-Island Lake (ILRM5)  
Forecast for the period 02/03/2025 - 05/11/2025



# Soil Moisture

Calculated Soil Moisture Ranking Percentile  
FEB 04, 2025

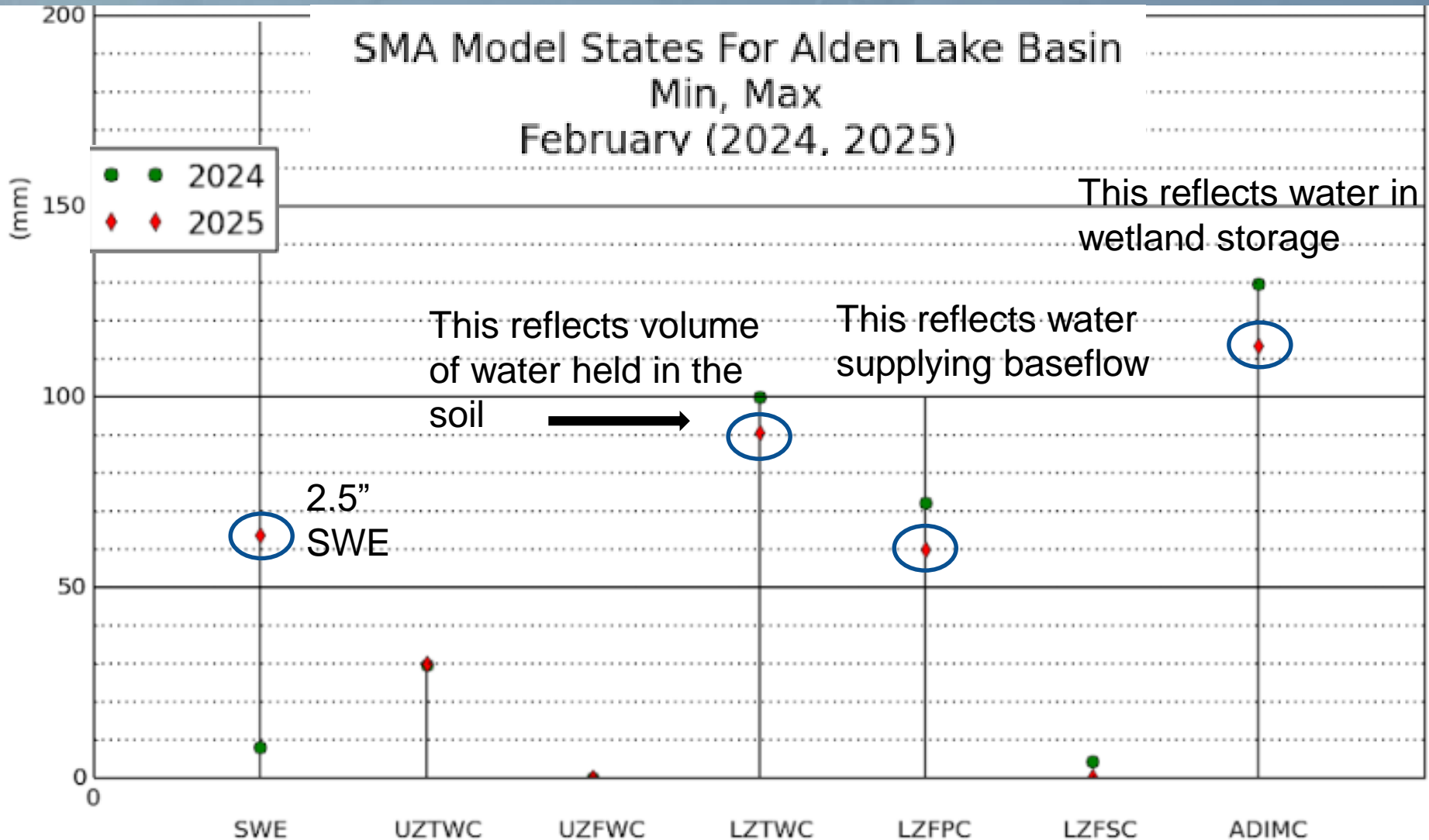


Below Normal  
soil moisture

Evidence of  
drought near  
NE Minnesota  
region is  
apparent

# Soil Moisture - Modeled

- Better snow pack compared to as of 2/3/2024





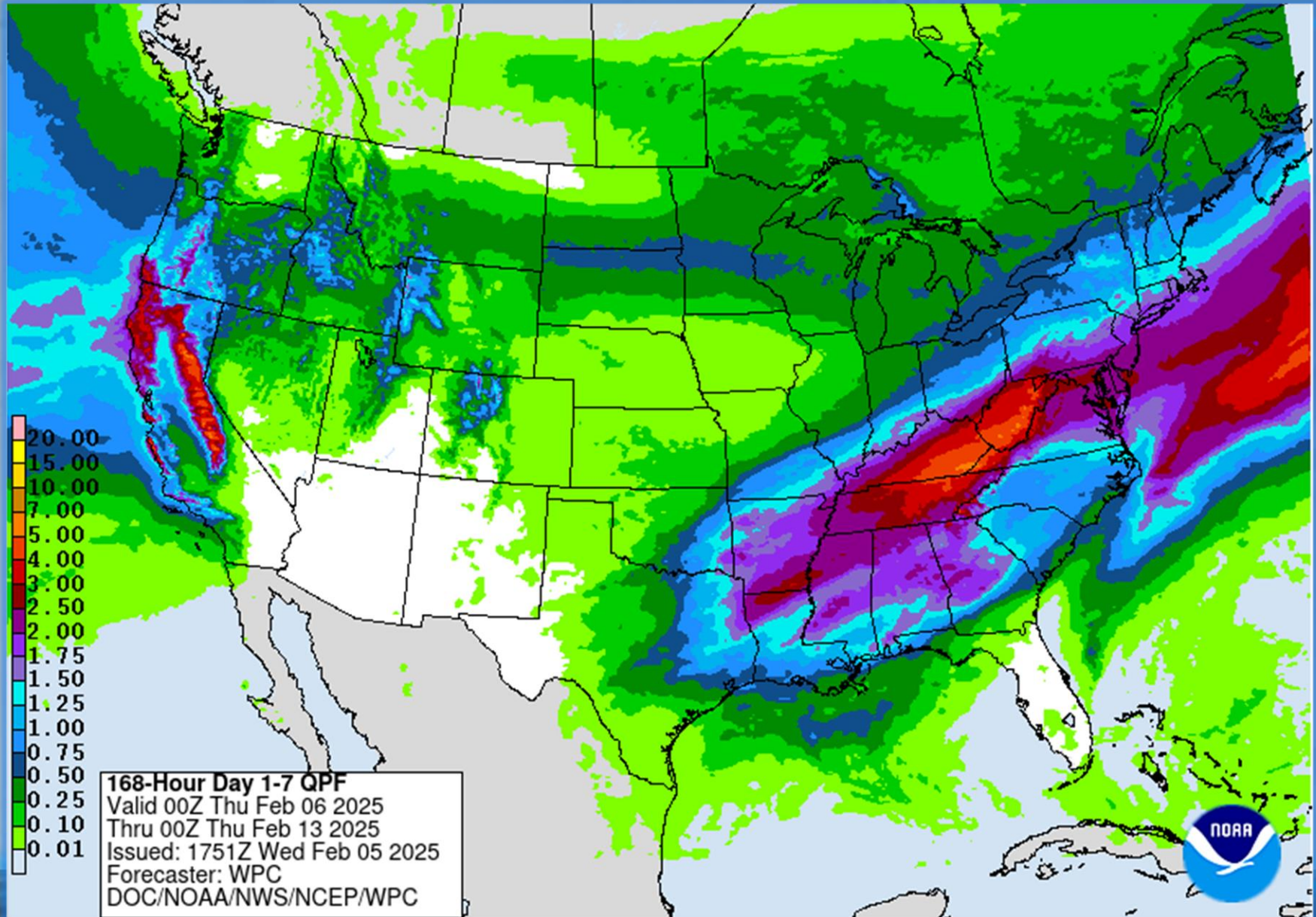
# Soil Conditions – Frost

- Thirty inches of frost in the ground at Duluth NWS. This is due to below normal snow pack and cold snaps
  - Average frost depth since 2012 is around 22 inches
  - Snowpack depth below normal. Deficit in Cloquet basin 7” to 18”
- Frost can be a major factor to Spring snowmelt/rain on snow flooding
  - Impervious ground with rapid snowmelt can lead to efficient runoff

# Weather Outlook

- Near-term through 2/10/2025
  - One quarter inch to half inch of precipitation expected
  - Near normal temperatures
- Two Week Outlook Ending 2/17
  - Chances are weighted towards below normal temperatures and below normal precipitation
- 3-Month Precipitation OUTLOOKS:
- Forecasts driven by La Nina pattern
  - Feb-Mar-April very slight lean towards above normal precipitation (35% chance)

# Near-term Outlook 7 Day Precip.





# Temperature Outlooks Through 2/18

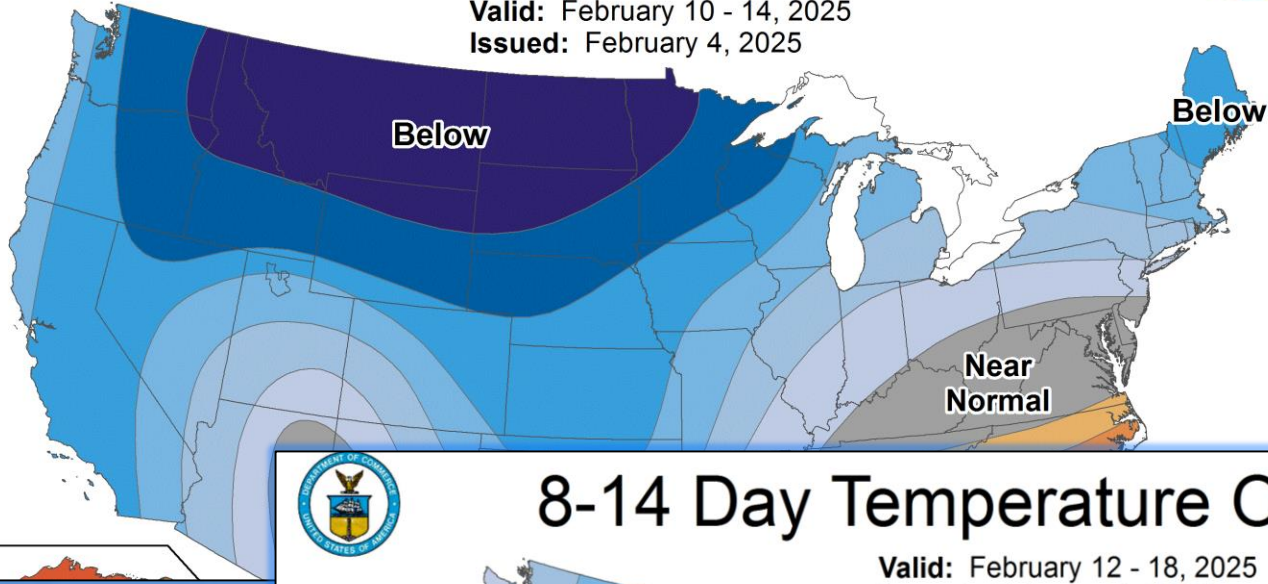


## 6-10 Day Temperature Outlook



Valid: February 10 - 14, 2025

Issued: February 4, 2025

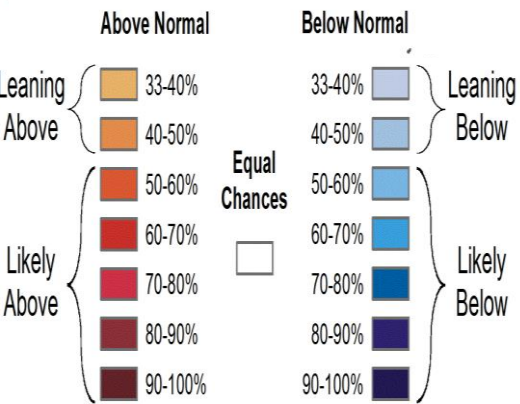
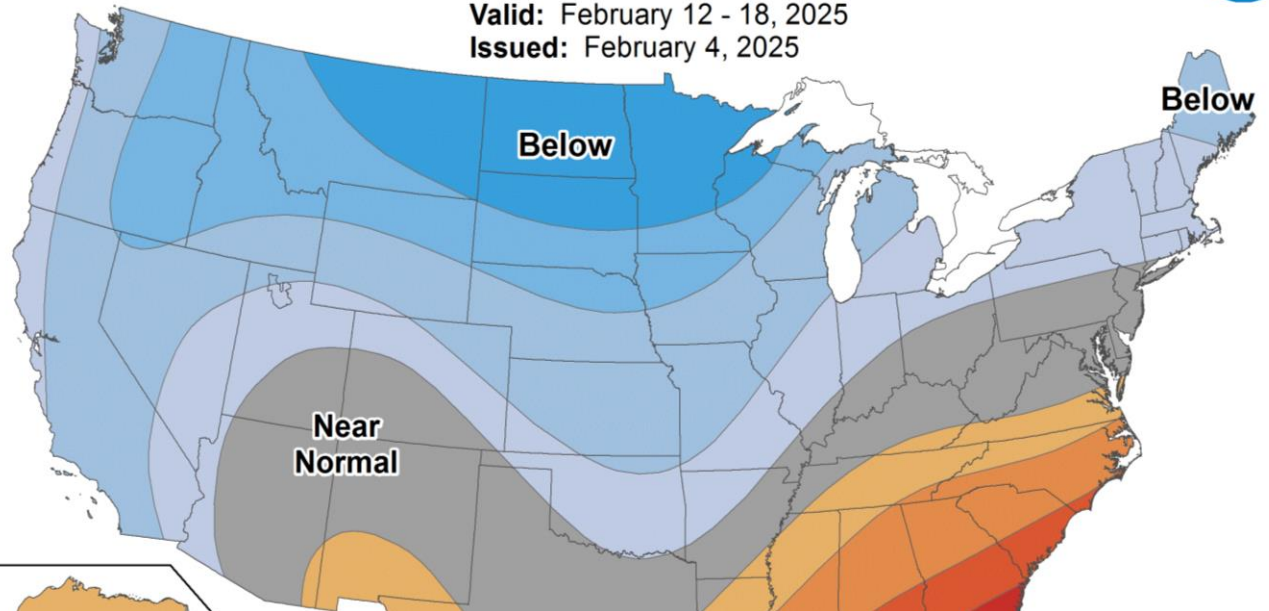


## 8-14 Day Temperature Outlook



Valid: February 12 - 18, 2025

Issued: February 4, 2025





# Precipitation Outlooks Through 2/18



## 6-10 Day Precipitation Outlook



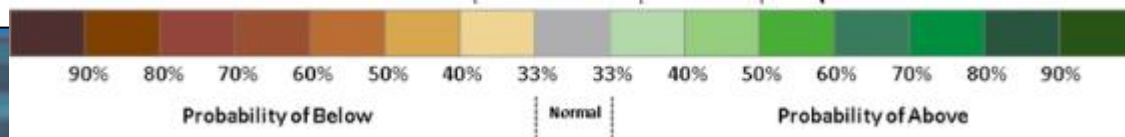
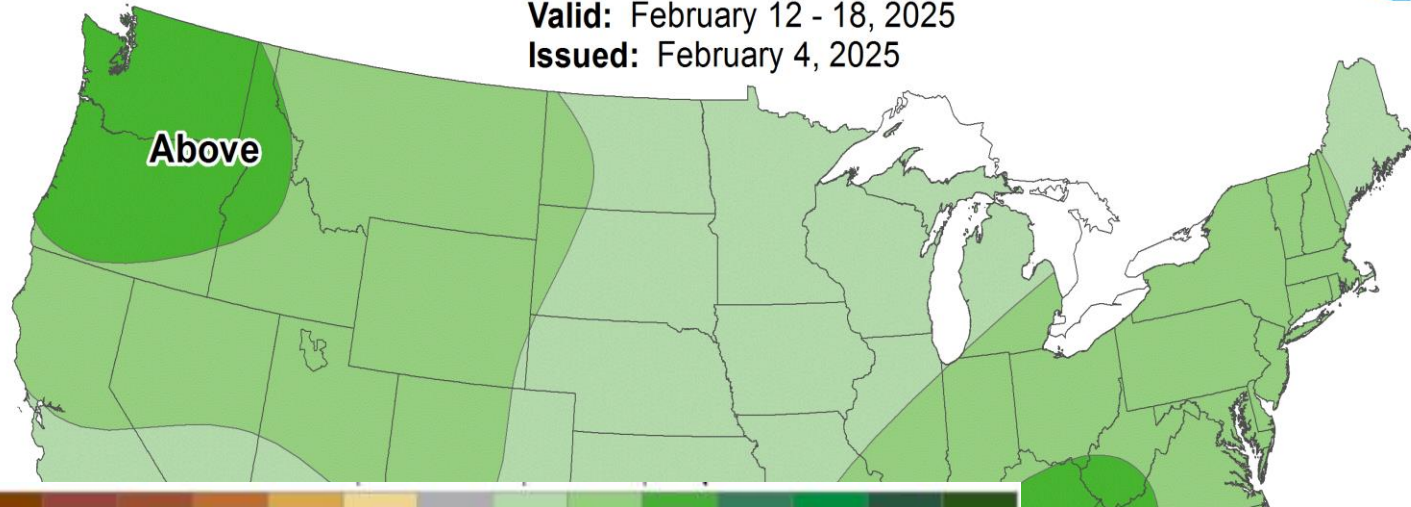
Valid: February 10 - 14, 2025  
Issued: February 4, 2025



## 8-14 Day Precipitation Outlook



Valid: February 12 - 18, 2025  
Issued: February 4, 2025



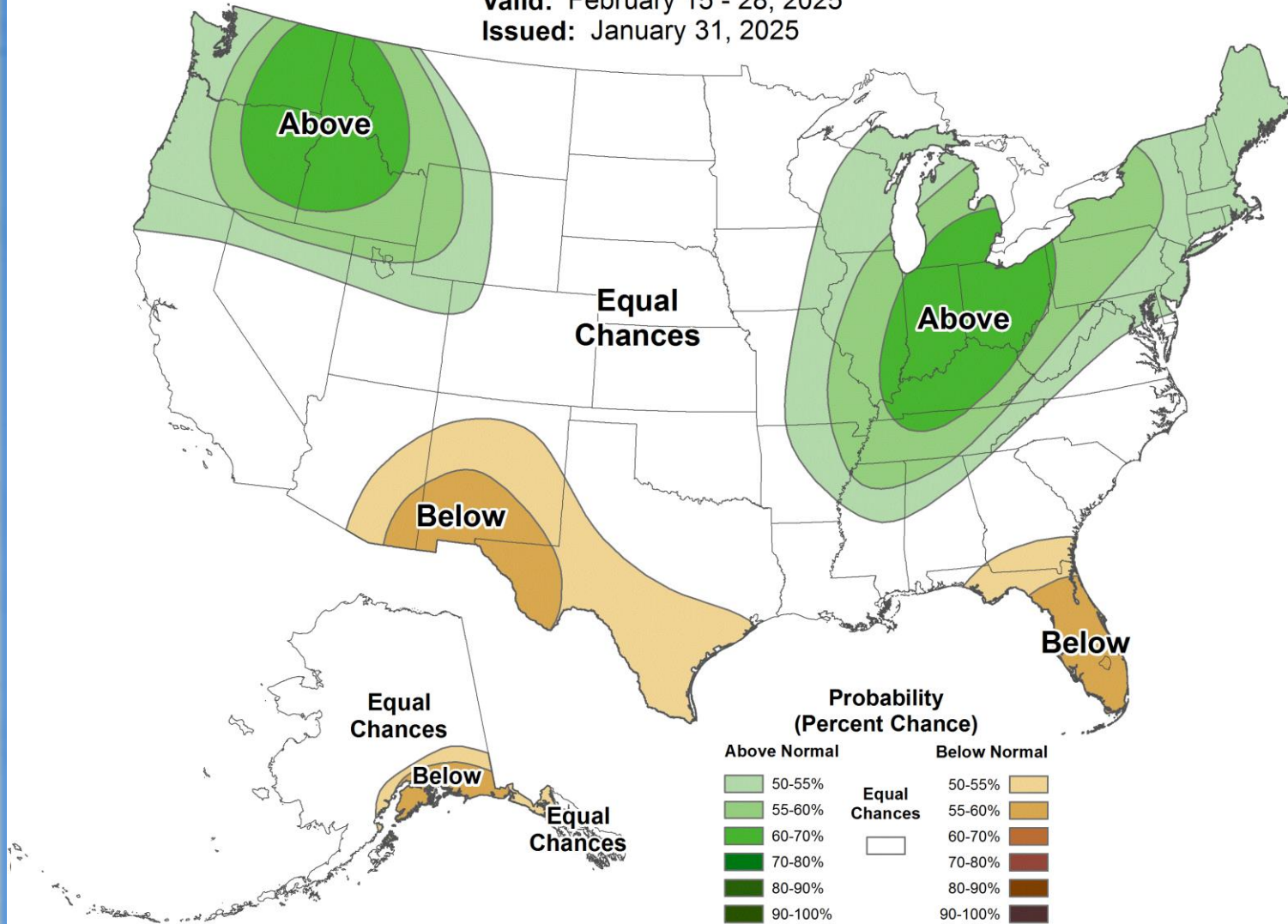


# Weeks 3-4 Precipitation Outlook



Valid: February 15 - 28, 2025

Issued: January 31, 2025

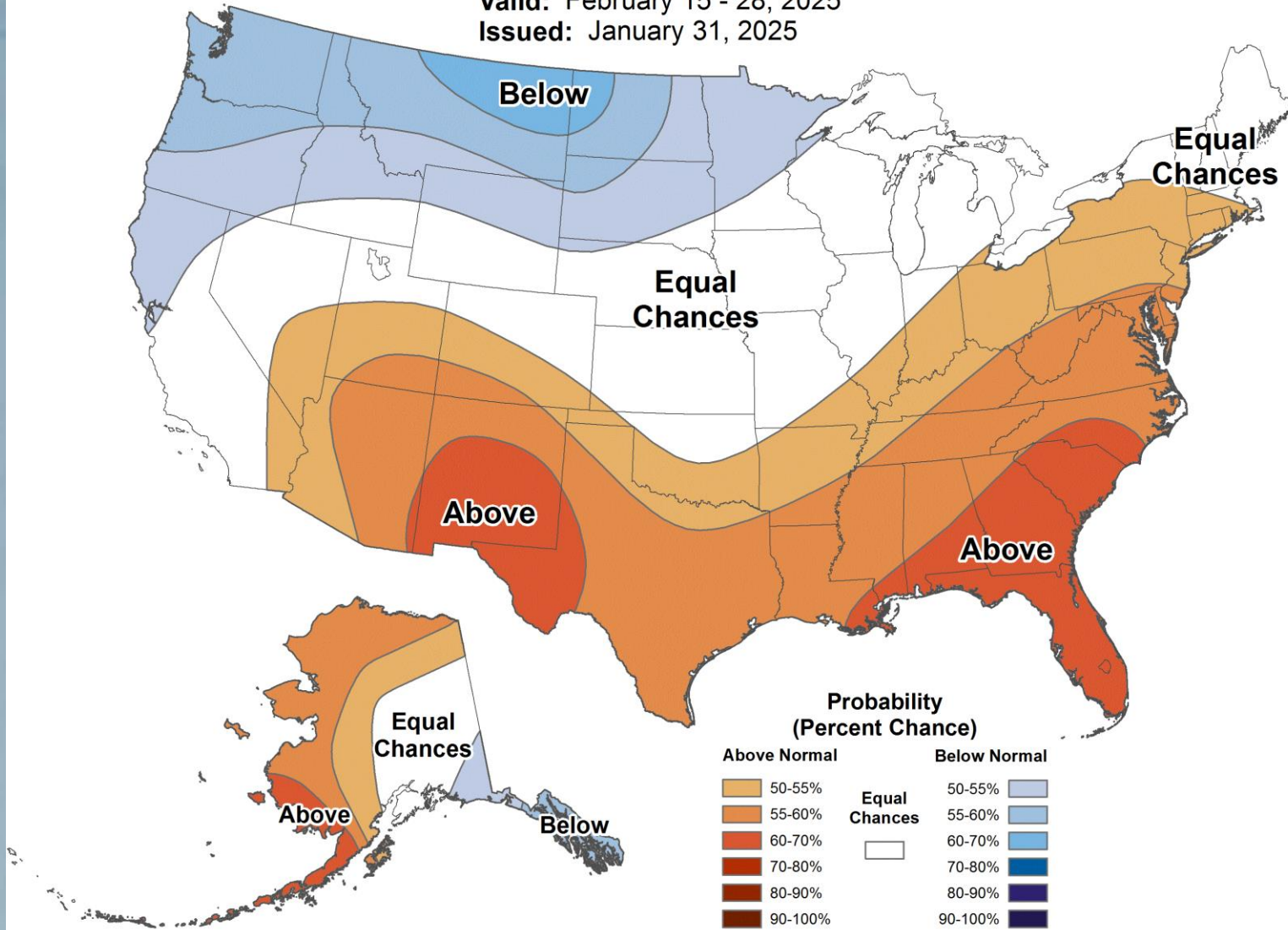




# Weeks 3-4 Temperature Outlook



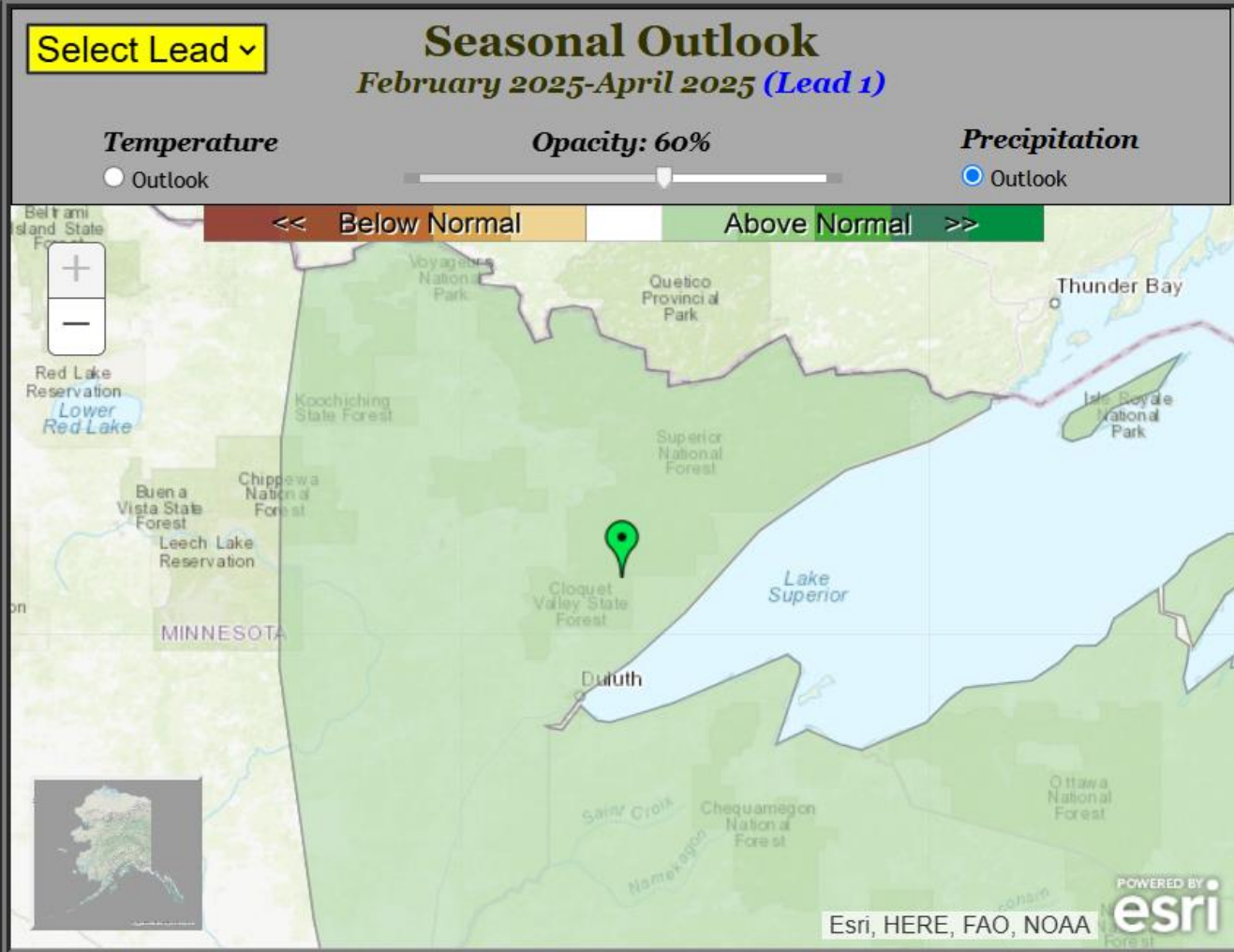
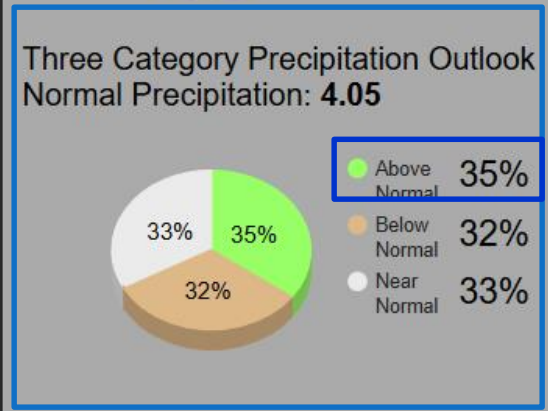
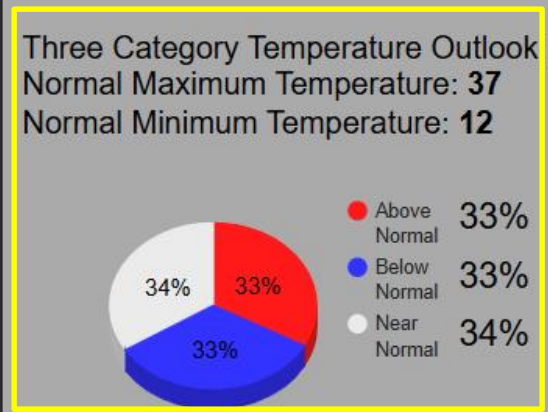
Valid: February 15 - 28, 2025  
Issued: January 31, 2025





brimson, mn | X 🔍

[7 Day Forecast for Brimson, Minnesota](#)



Normal Maps courtesy of the PRISM Climate Group, Oregon State University. [prism.oregonstate.edu](http://prism.oregonstate.edu) created Oct 2008

# Feb-Mar-Apr Seasonal Outlook

No clear signal for temperatures

Precipitation 35% leaning towards above Normal



# La Nina Driving the Forecast

- A weak La Nina is in place
- Outlooks are leaning towards above normal precipitation
- Not every La Nina is the same as many weather patterns are at play
- Alberta clipper storm patterns are common and produce drier snow with less water equivalent
- Predictability of weather events and potential impacts increases within the 14 day range
- La Nina's tend to bring above normal snow to our region, however, the sample size is relatively small



# Hydrologic Outlook - Refill

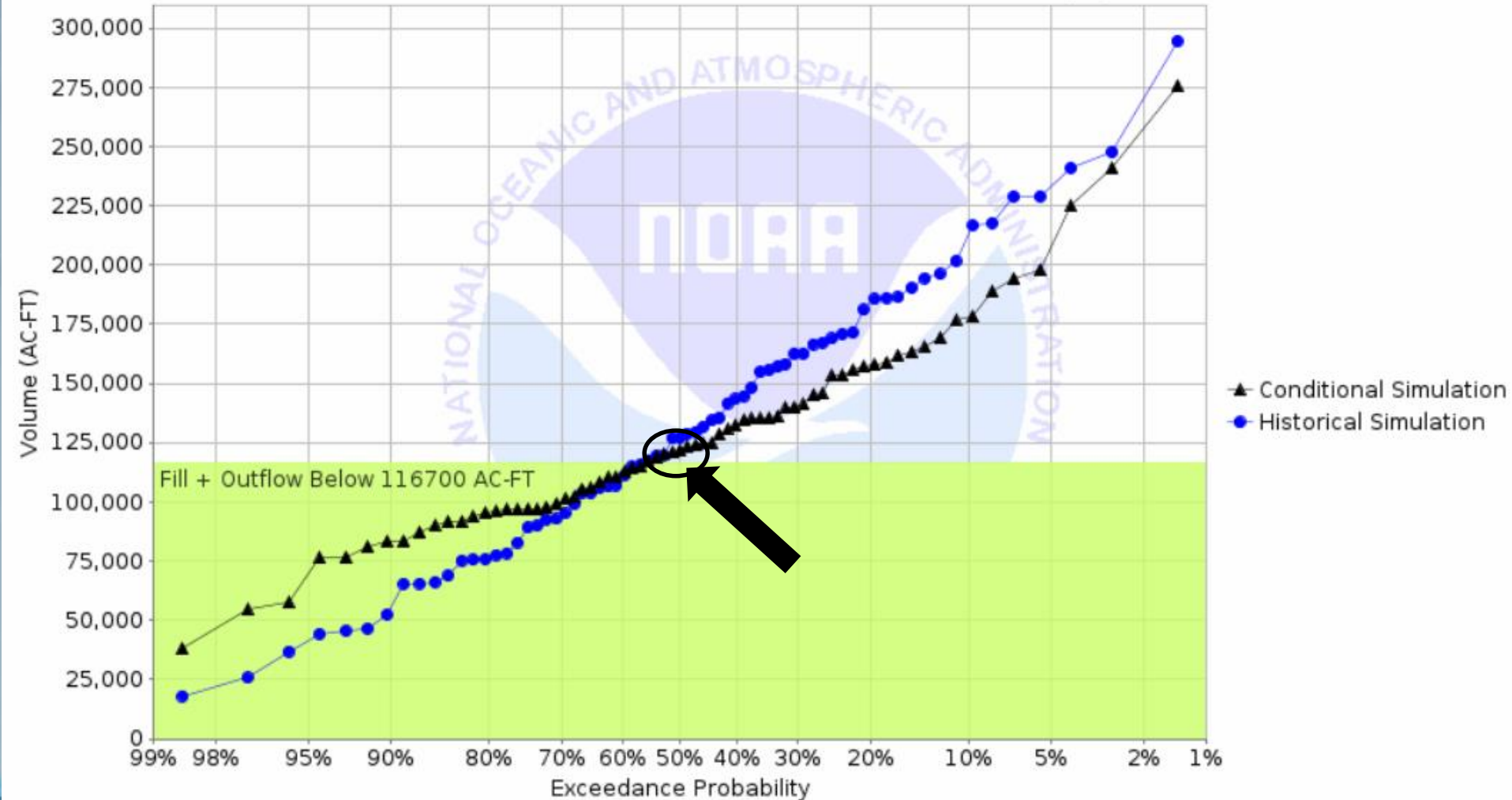
- 50% Chance of Refill Under Normal Conditions
- 90% Chance of Refill under Dry Conditions

# 50 Percent Chance Refill - Normal

Chances of Exceeding River Volume at Cloquet River at Fredenberg 1NNW-Island Lake (ILRM5)

Forecast for the period 04/01/2025 - 06/01/2025

This is a conditional simulation based on the conditions as of 02/03/2025

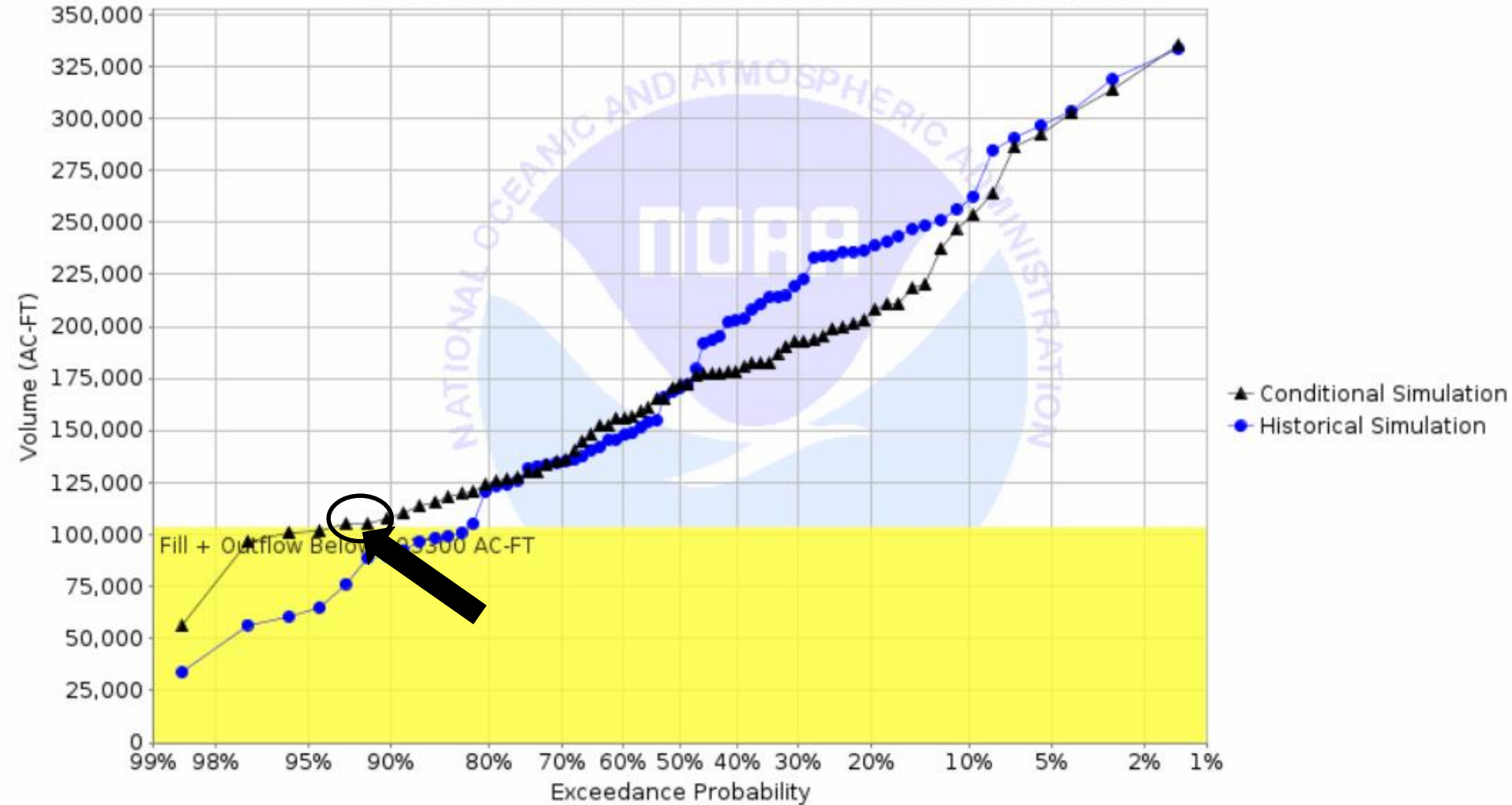


# 90 Percent Chance Refill - Dry

Chances of Exceeding River Volume at Cloquet River at Fredenberg 1NNW-Island Lake (ILRM5)

Forecast for the period 04/01/2025 - 07/15/2025

This is a conditional simulation based on the conditions as of 02/03/2025



# 2025 Weather/Hydro Outlook - Summary

- Hydrologic Outlook
  - 50% Chance for refill under Normal condition
  - 90% Chance for refill under Dry condition
- Antecedent conditions
  - Moderate drought conditions (D1) at this time due to dry a summer and fall
  - Brimson area has reported one inch above normal precipitation since 10/1
  - Below to near normal Snow Water Equivalent 1.5”-2.5”
- Weather Outlook
  - Above normal precipitation through mid-February
  - Long term forecasts show a slight lean towards above normal precipitation Feb-Mar-Apr



# Resources

- <https://www.weather.gov/media/dlh/DssPacket.pdf>
- <https://cpc.ncep.noaa.gov>
- <https://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>
- <https://prism.oregonstate.edu/comparisons/drought.php>
- <https://www.nohrsc.noaa.gov/interactive/html/map.html>
- <https://droughtmonitor.unl.edu/>
- [weather.gov/forecastpoints](https://weather.gov/forecastpoints)
- <https://weather.gov/mpx/islandlake>