Island Lake Technical Committee Winter Drawdown 2024-25

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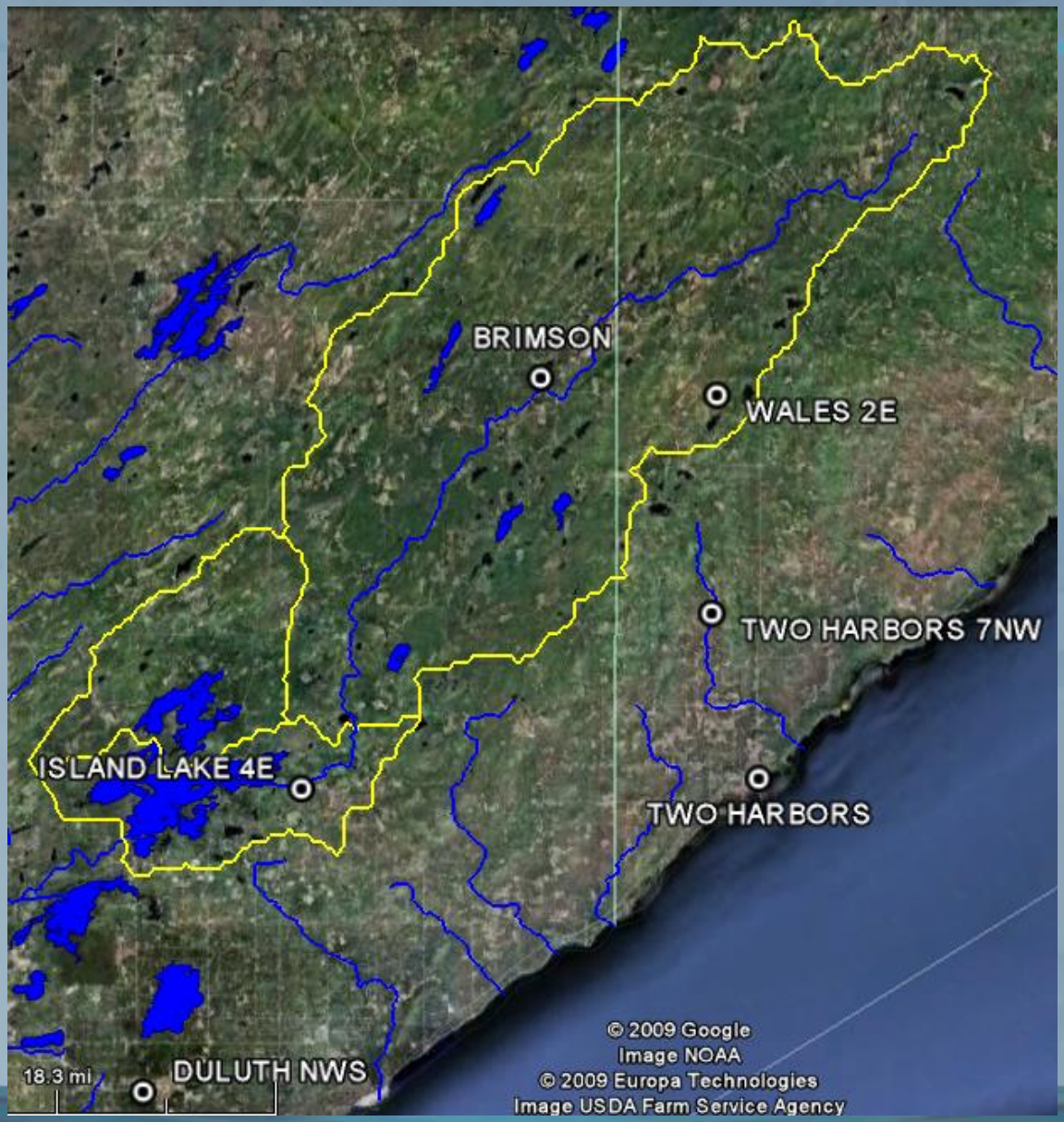
November 7th, 2024

Island Lake Basin



Bottom Line Up Front

- **Severe Drought (D2)** condition in the basin.
- **Weather outlooks**
  - Above normal precipitation favored for the next 2 weeks (40-50% chance). Above normal temperatures as well (60-80% chance)
  - A 40% chance for above normal precipitation in Dec-Feb
  - La Nina is main driver of long range forecasts

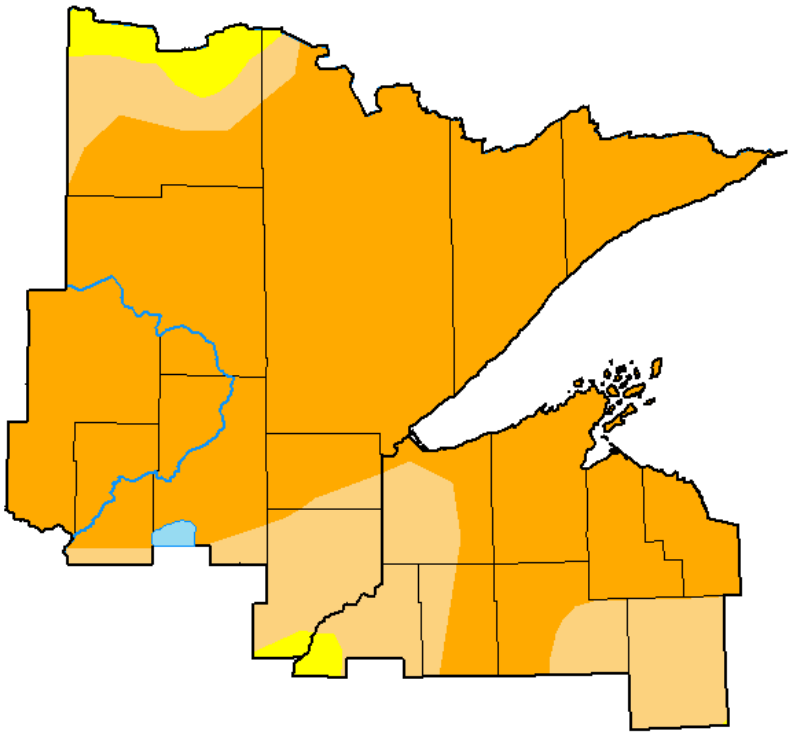
River Forecast Model run 11/6/2024

- **80%** Chance of Refill under dry condition
- **50%** Chance of Refill under normal conditions

Setting Up Current Conditions

- Lack of snow pack in Spring 2024 2nd lowest on record at Duluth and 3rd lowest at Brimson 36.7”
- Spring drought conditions erased by June 19th 5-7 inch rainstorm in the headwaters of the Cloquet River Basin
- Well below average rain since the end of June has lead to worsening drought evolving into late fall
- Periodic rainfall since October 12th may show a changing pattern away from prolonged fall drought

Most Recent Drought Monitor



U.S. Drought Monitor

Duluth, MN WFO

November 5, 2024

(Released Thursday, Nov. 7, 2024)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	96.76	77.18	0.00	0.00
Last Week *10-29-2024*	0.00	100.00	97.59	84.67	0.00	0.00
3 Months Ago *08-06-2024*	78.73	21.27	0.00	0.00	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 *10-01-2024*	2.57	97.43	71.52	0.00	0.00	0.00
One Year Ago *11-07-2023*	16.85	83.15	52.53	22.75	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme 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:

Brian Fuchs

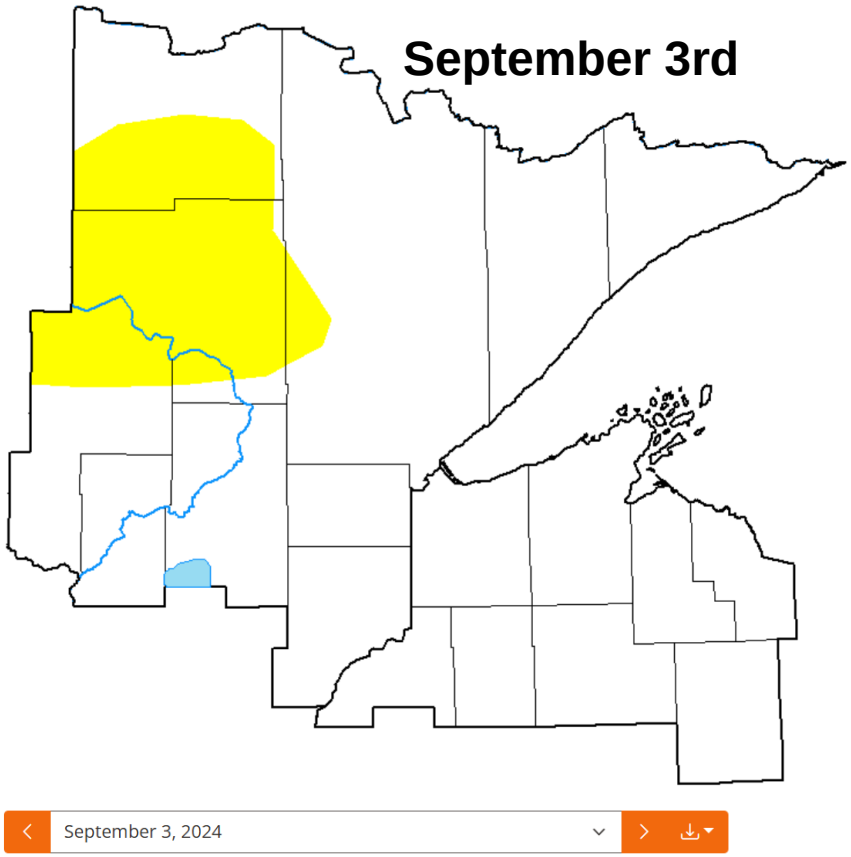
National Drought Mitigation Center

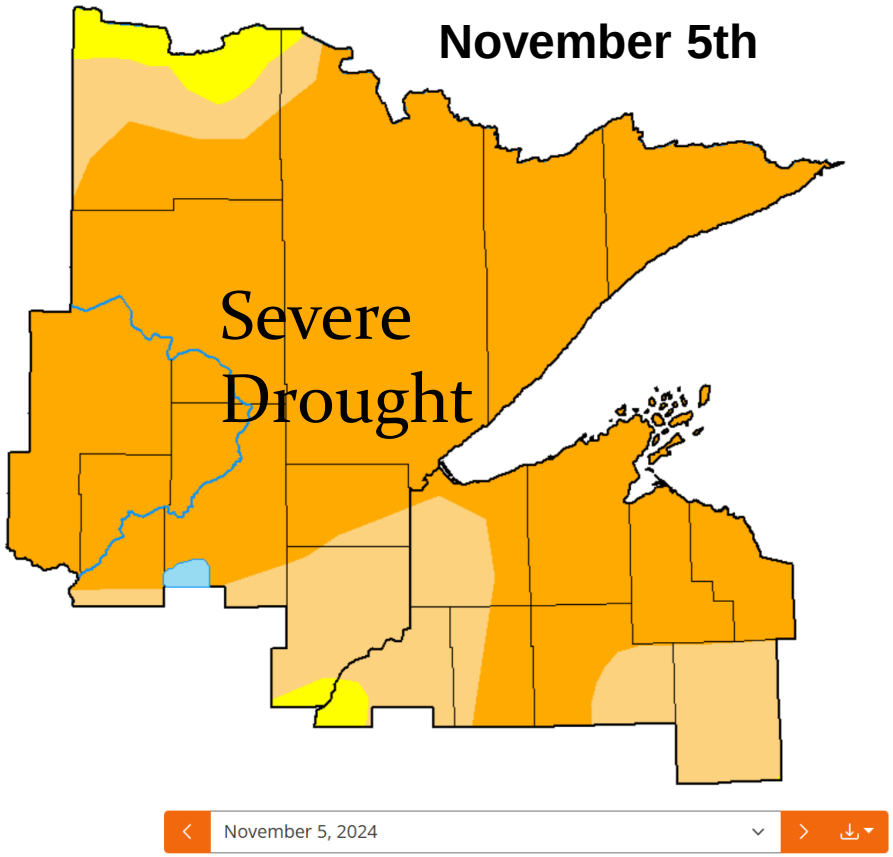
droughtmonitor.unl.edu

- Severe Drought conditions
- D2

https://droughtmonitor.unl.edu/data/png/current/current_wfodlh_trd.png

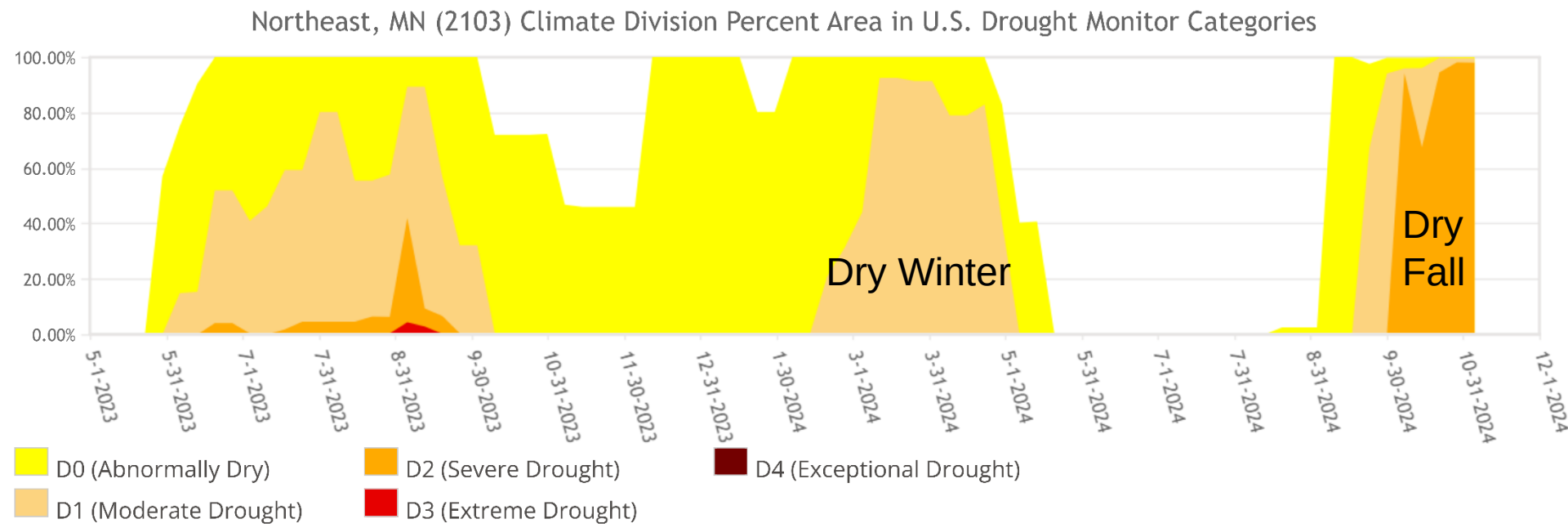
Comparing Two Months - Drought Monitor





https://droughtmonitor.unl.edu/Maps/CompareTwoWeeks.aspx

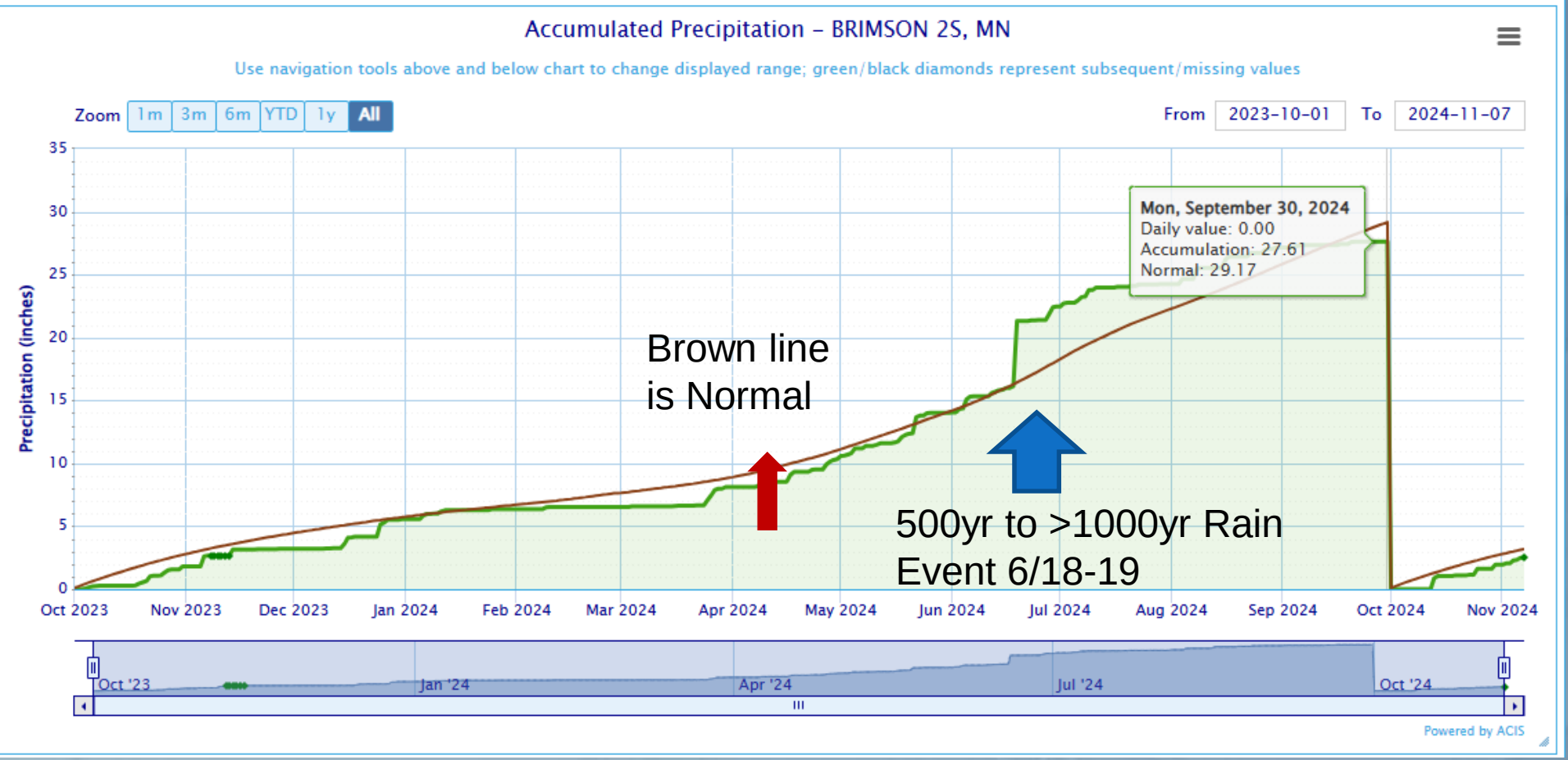
Drought Historical Context



From the U.S. Drought Monitor website, https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx, 11-7-2024

- Dry winter lead to emerging drought conditions
- 6/19 **Flooding Rain** 500 year to greater that 1000 year event
- Dry Autumn resulting in D2 – Severe Drought Conditions

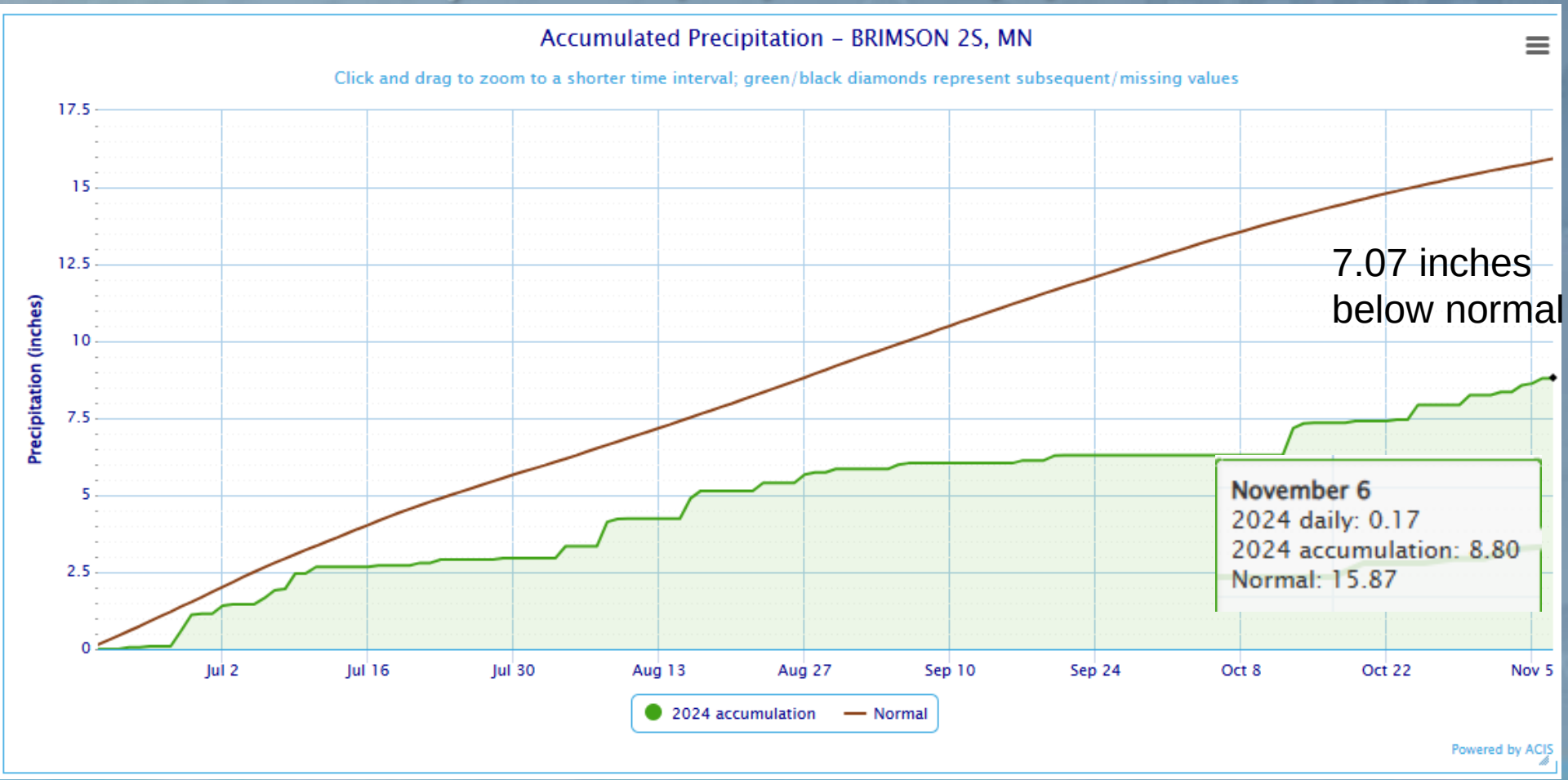
Water Year Precipitation Oct 2023-Nov 2024



- 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 since 6/20

Brimson Precipitation Since Flood

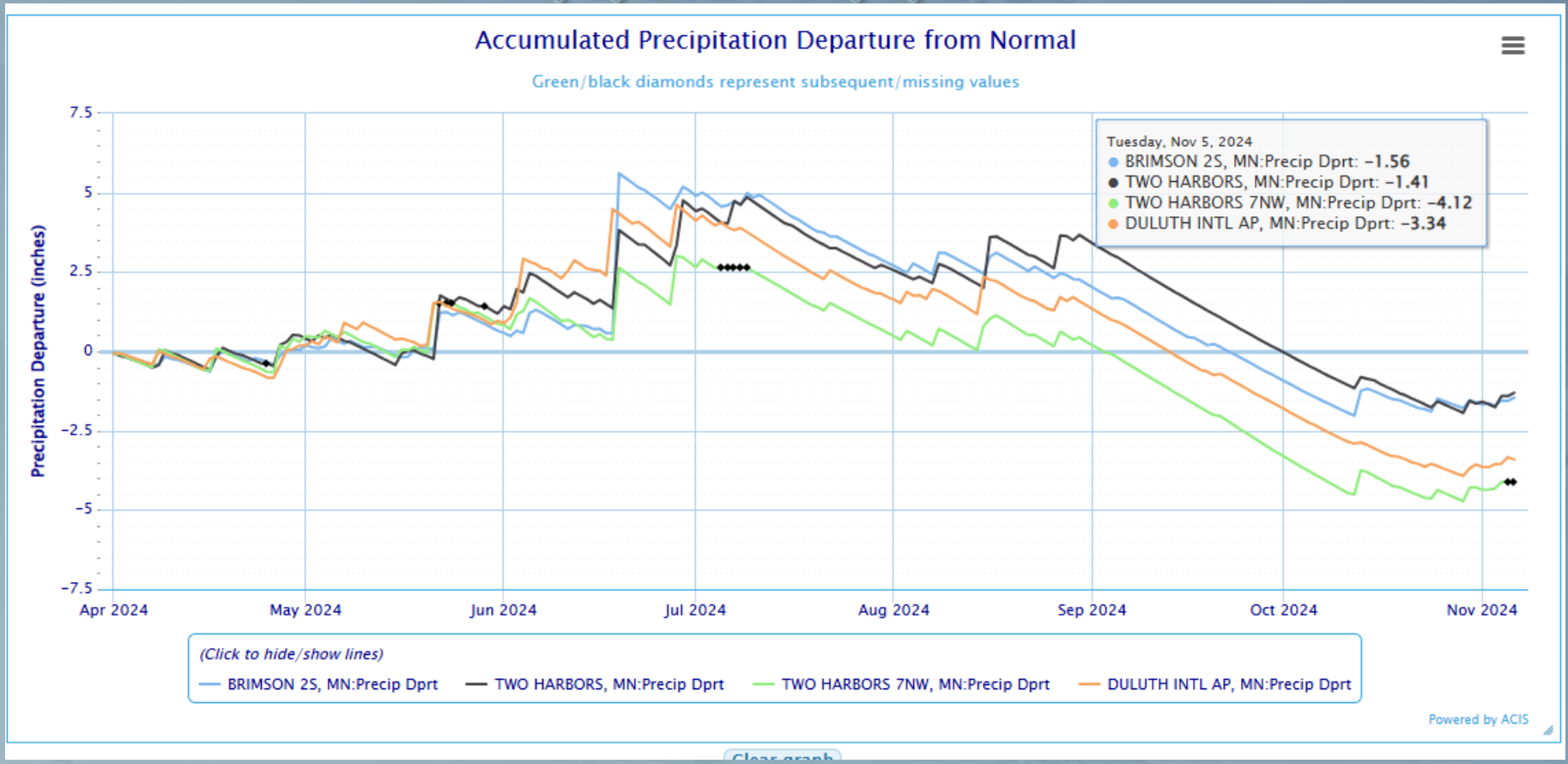
Departure 6/20/2024-11/7/2024



- Very dry conditions since 6/20. 7.07 inches below average

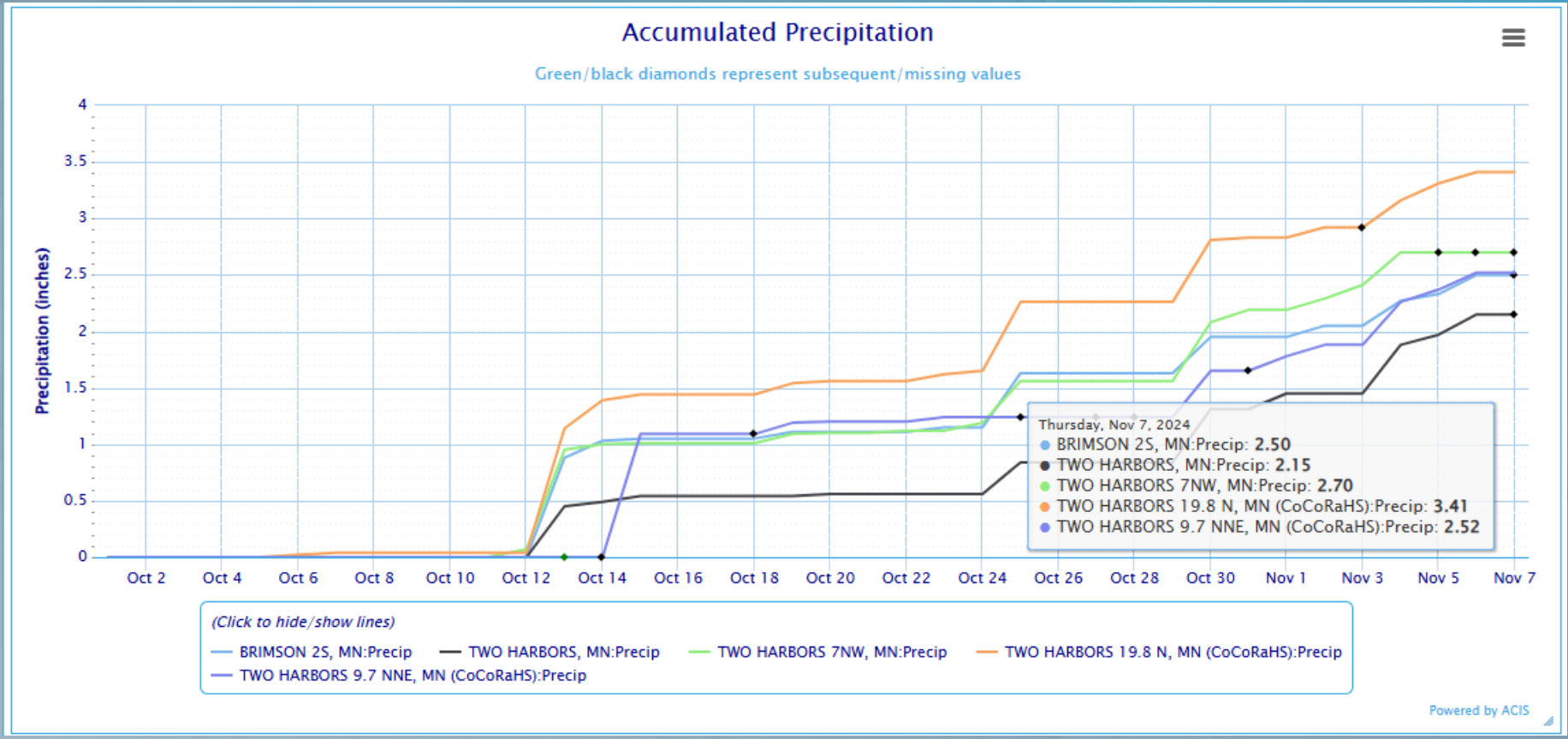
Precipitation Departure

4/1/2024-11/6/2024



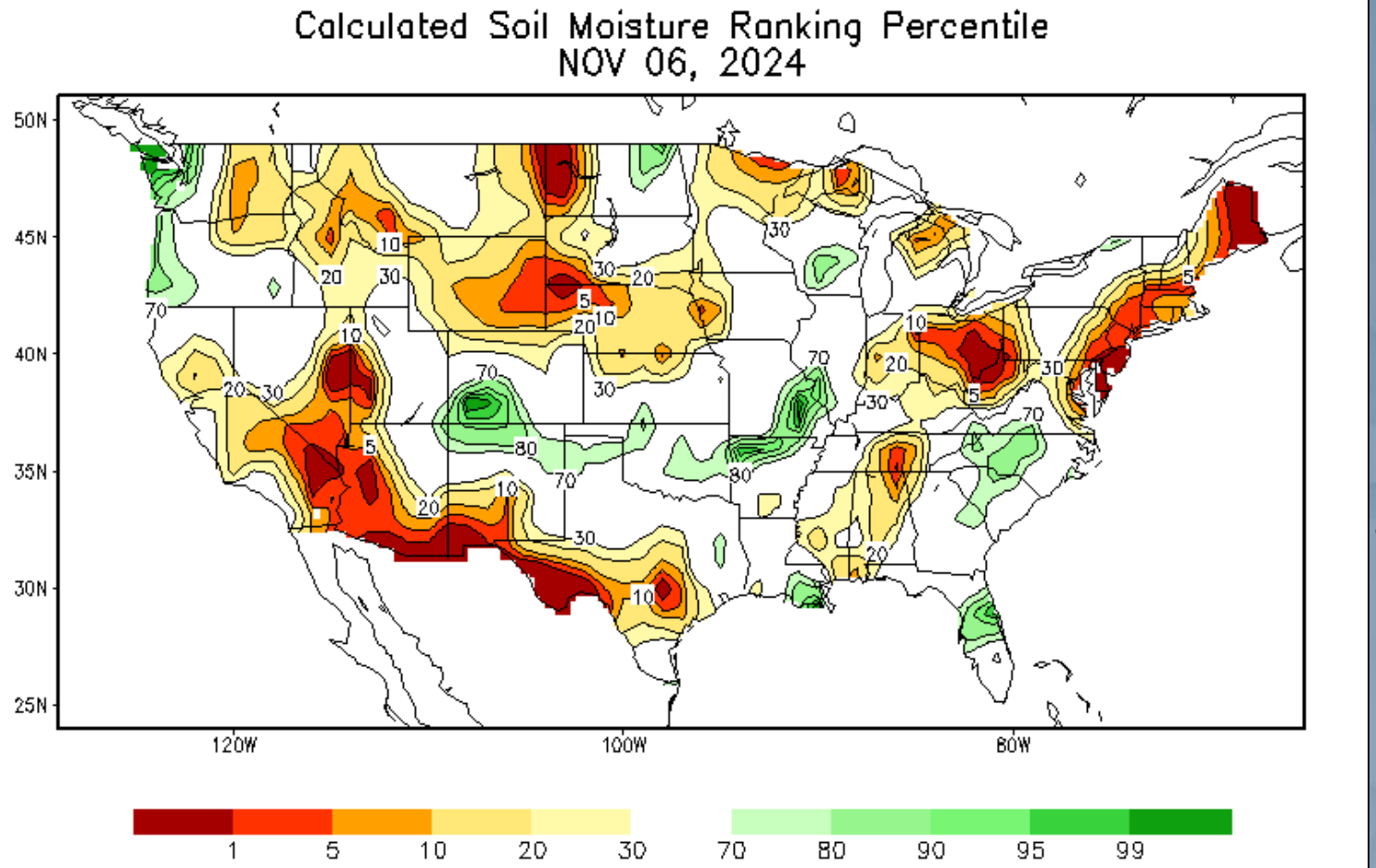
- This chart shows precipitation departure from normal since April 1st and is generally 2 to 4 inches below normal for several stations near or in the Cloquet River Basin

Precipitation Since 10/1/24



- This chart shows precipitation for several stations near or in the Cloquet River basin. In general, precipitation since October 1st is above normal 2.0 to 3.5 inches.

Soil Moisture



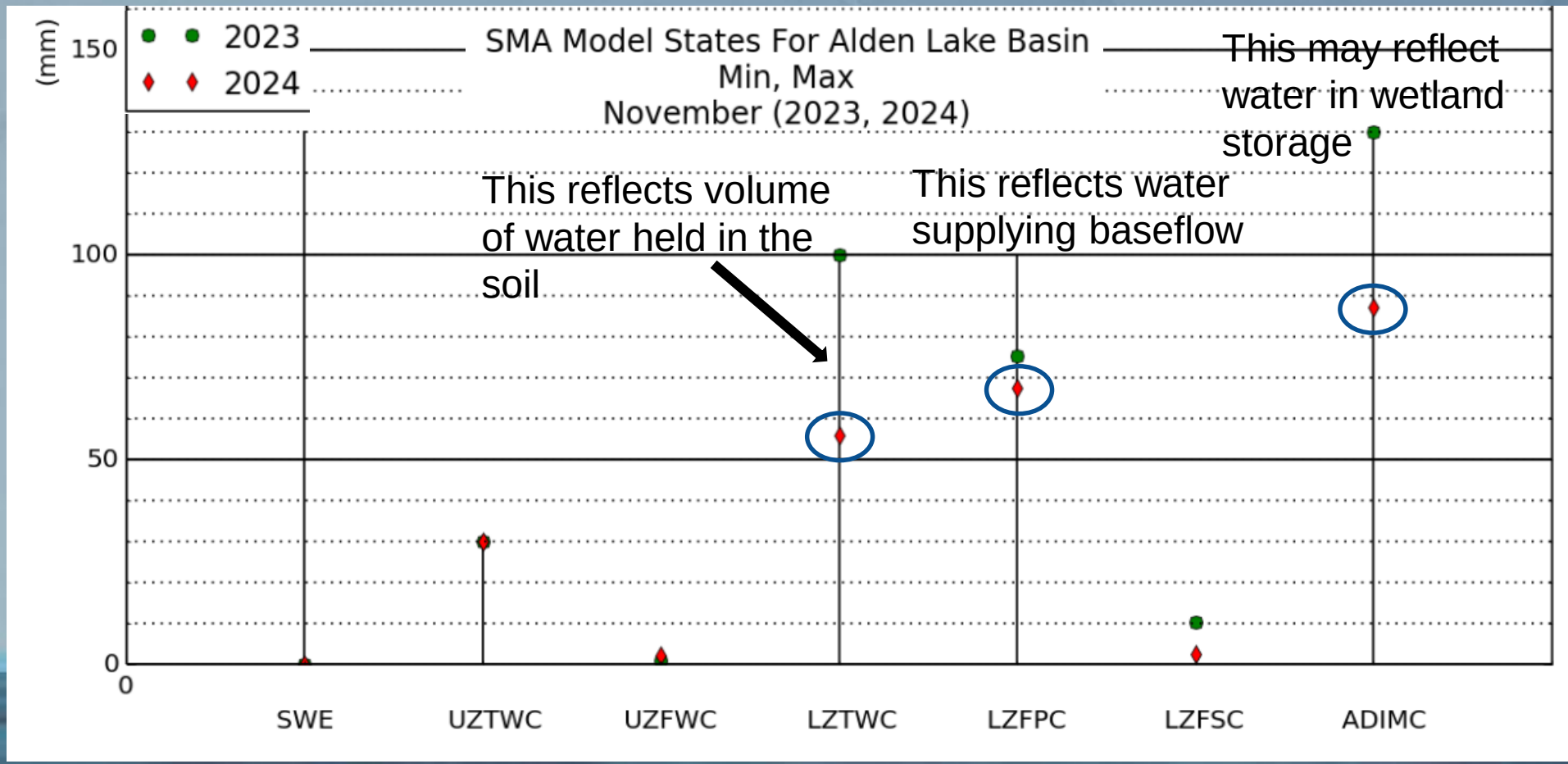
Below Normal soil moisture

Evidence of drought near NE Minnesota region is apparent

Fall rain is critical for soil moisture recharge

Soil Moisture - Modeled

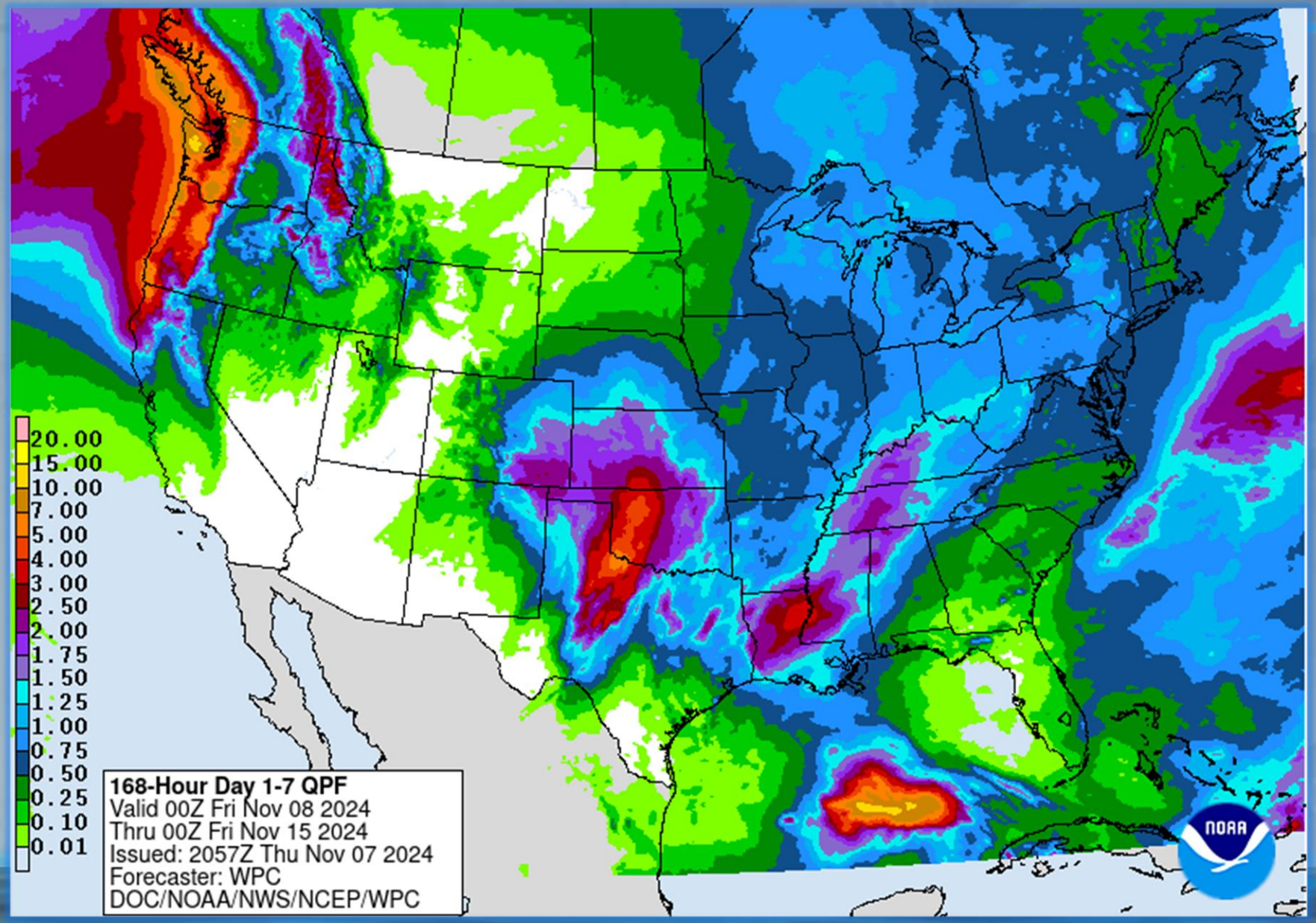
- River model moisture contents appear diminished
- A response to well below normal summer and fall precipitation
- No snow pack as of 11/6/2024



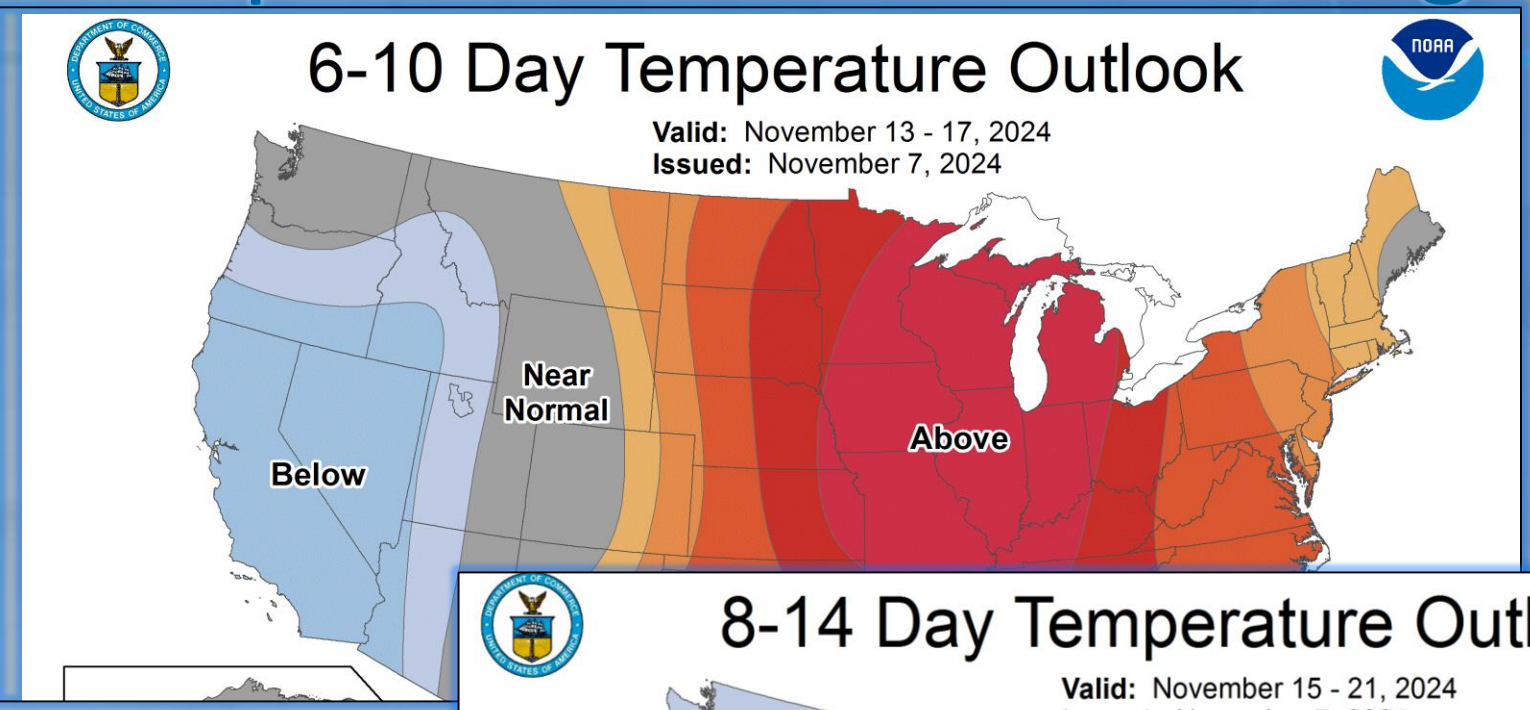
Weather Outlook

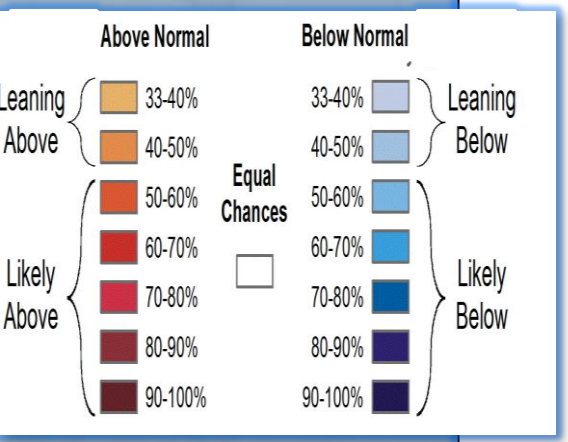
- Near-term through 11/19
  - Near normal precipitation expected
  - Above normal temperatures
- Two Week Outlook Ending 11/20
  - Chances are weighted towards above normal temperatures and above normal precipitation
- 3-Month Precipitation OUTLOOKS:
- Forecasts driven by La Nina pattern
  - Dec-Jan-Feb Equal chance for above or below normal temperatures
  - Dec-Jan-Feb Leaning towards above normal precipitation (35-40% chance)

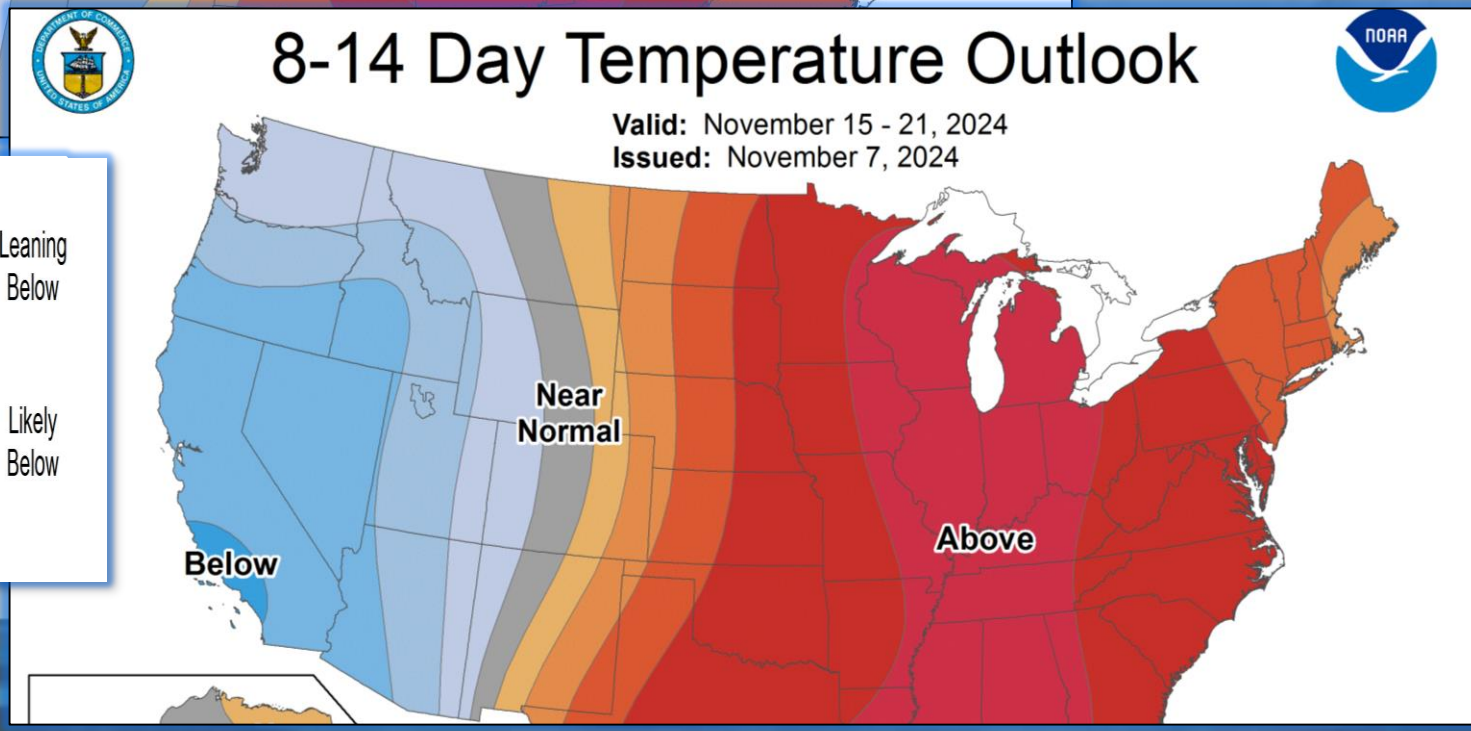
Near-term Outlook 7 Day Precip.



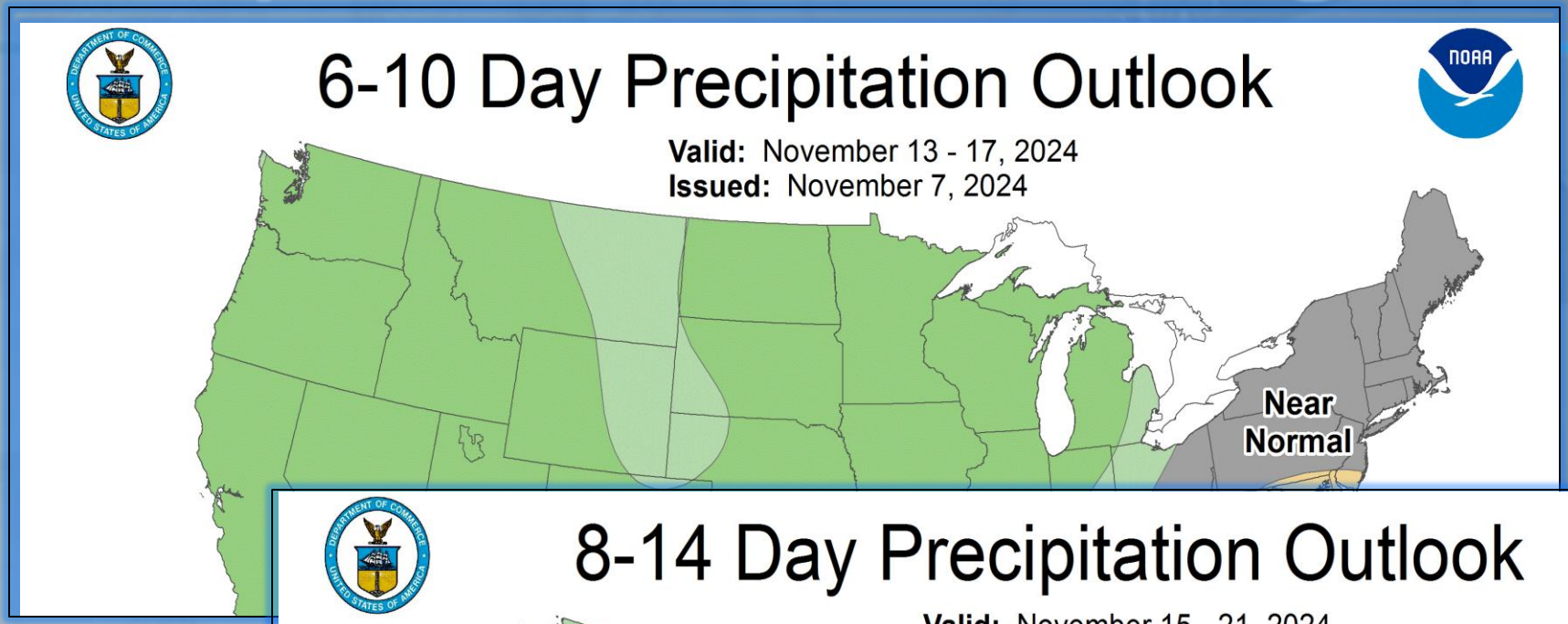
Temperature Outlooks Through 11/20

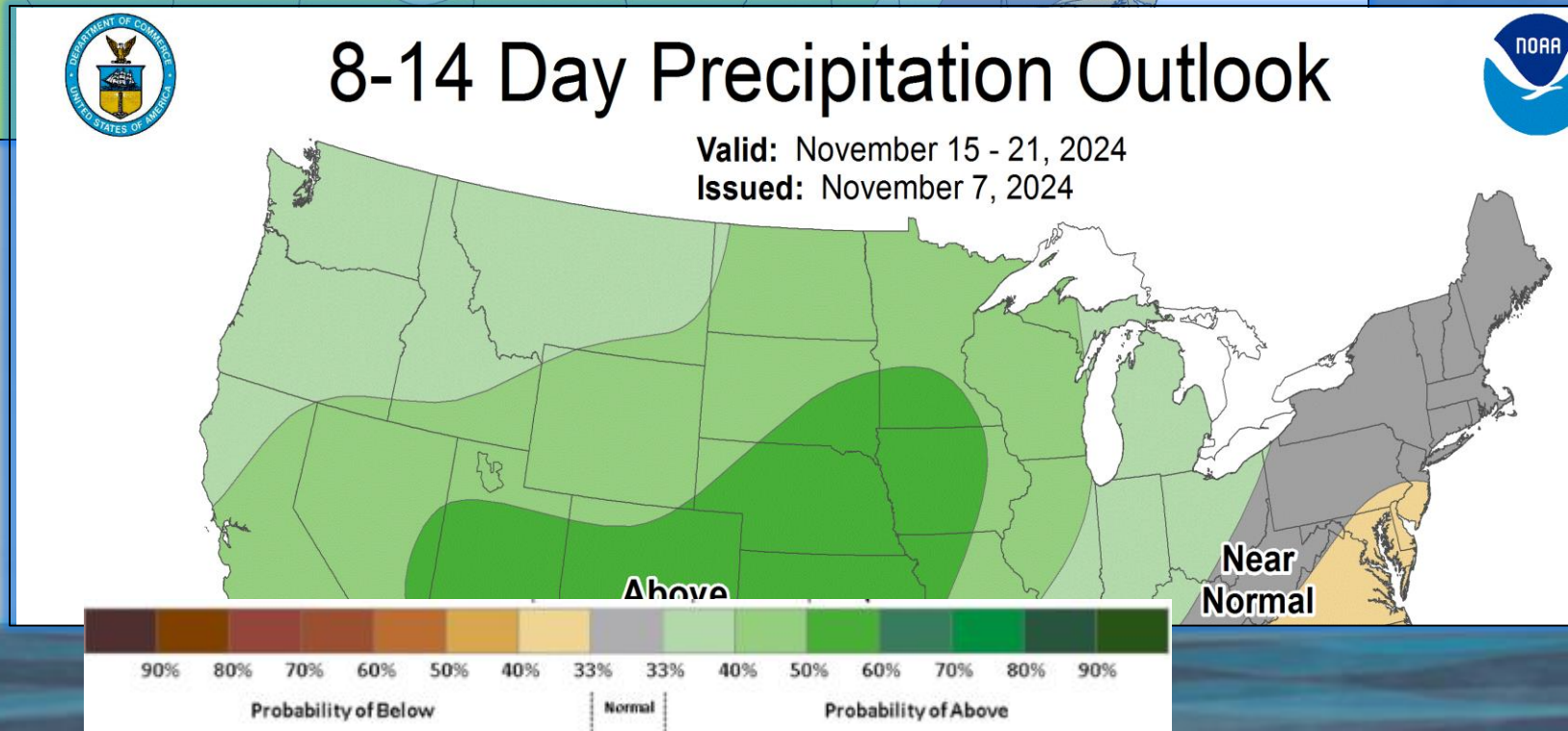






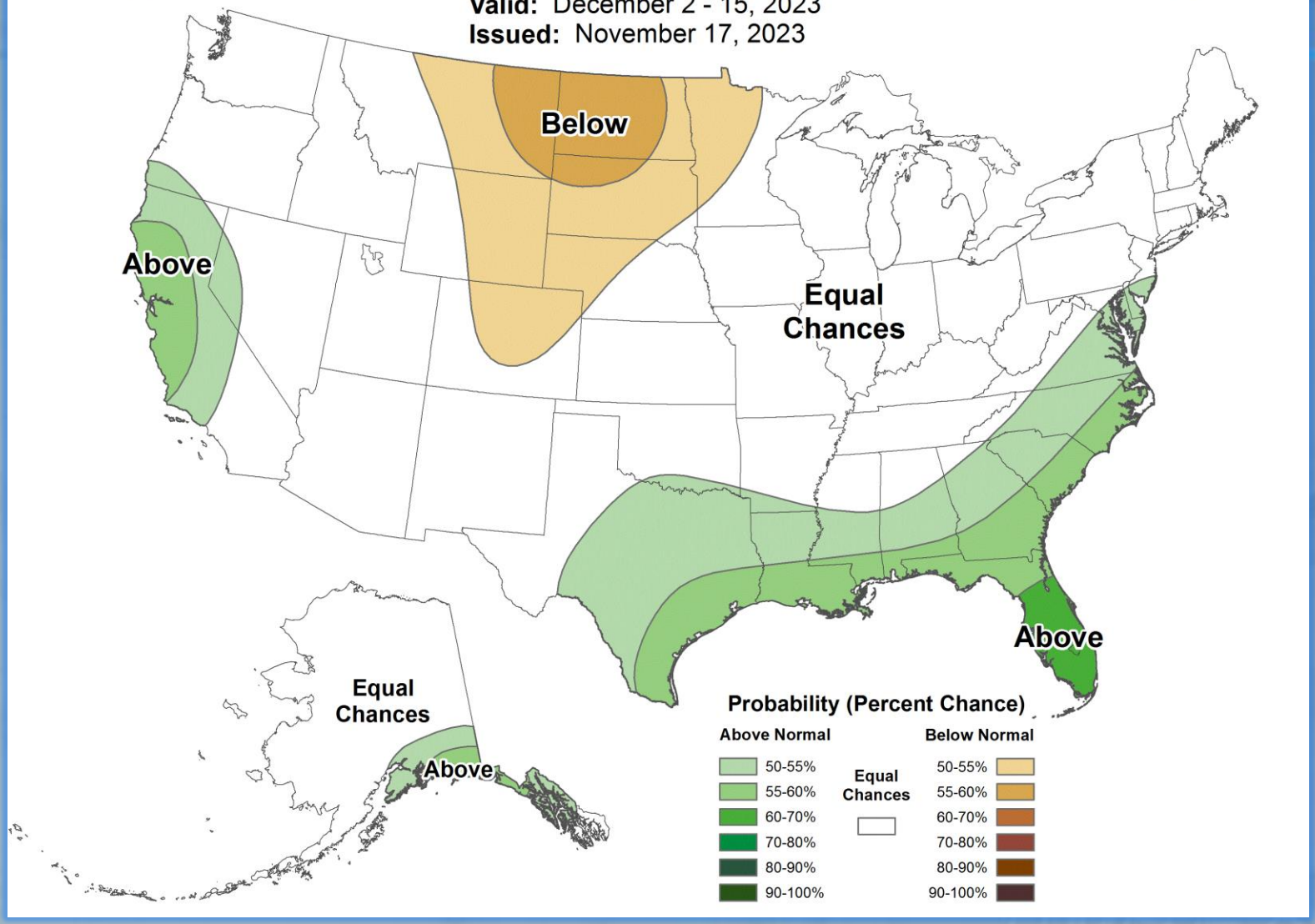
Precipitation Outlooks Through 11/20





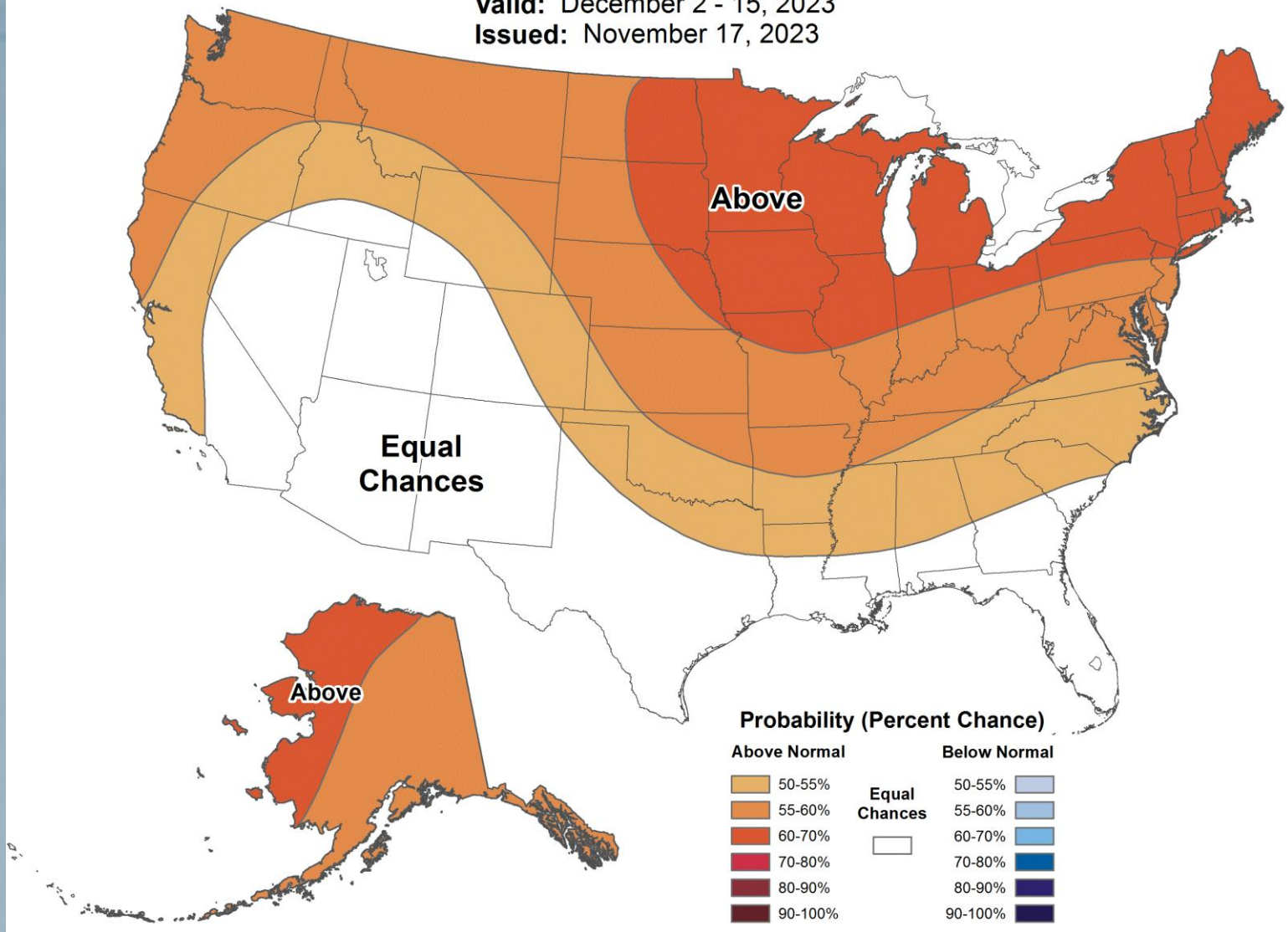
Weeks 3-4 Precipitation Outlook

Valid: December 2 - 15, 2023
Issued: November 17, 2023



Weeks 3-4 Temperature Outlook

Valid: December 2 - 15, 2023
Issued: November 17, 2023



Winter 2024-2025 Outlook

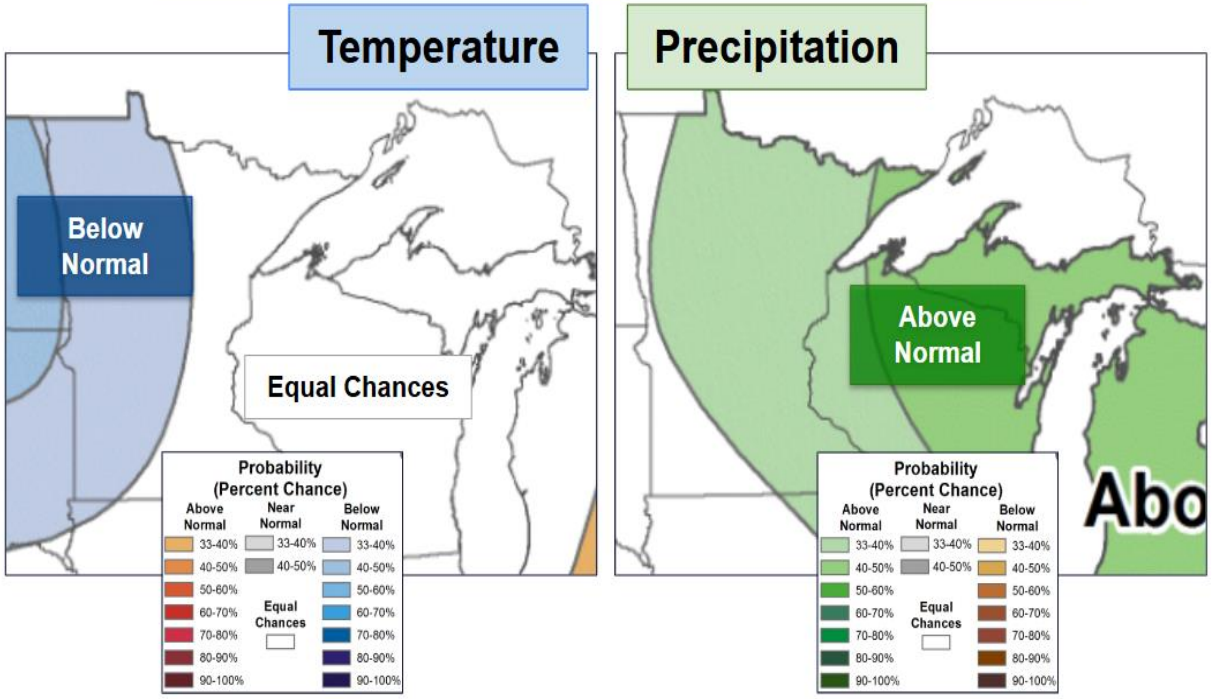
October 26, 2024
5:15 AM

For the period December-January-February

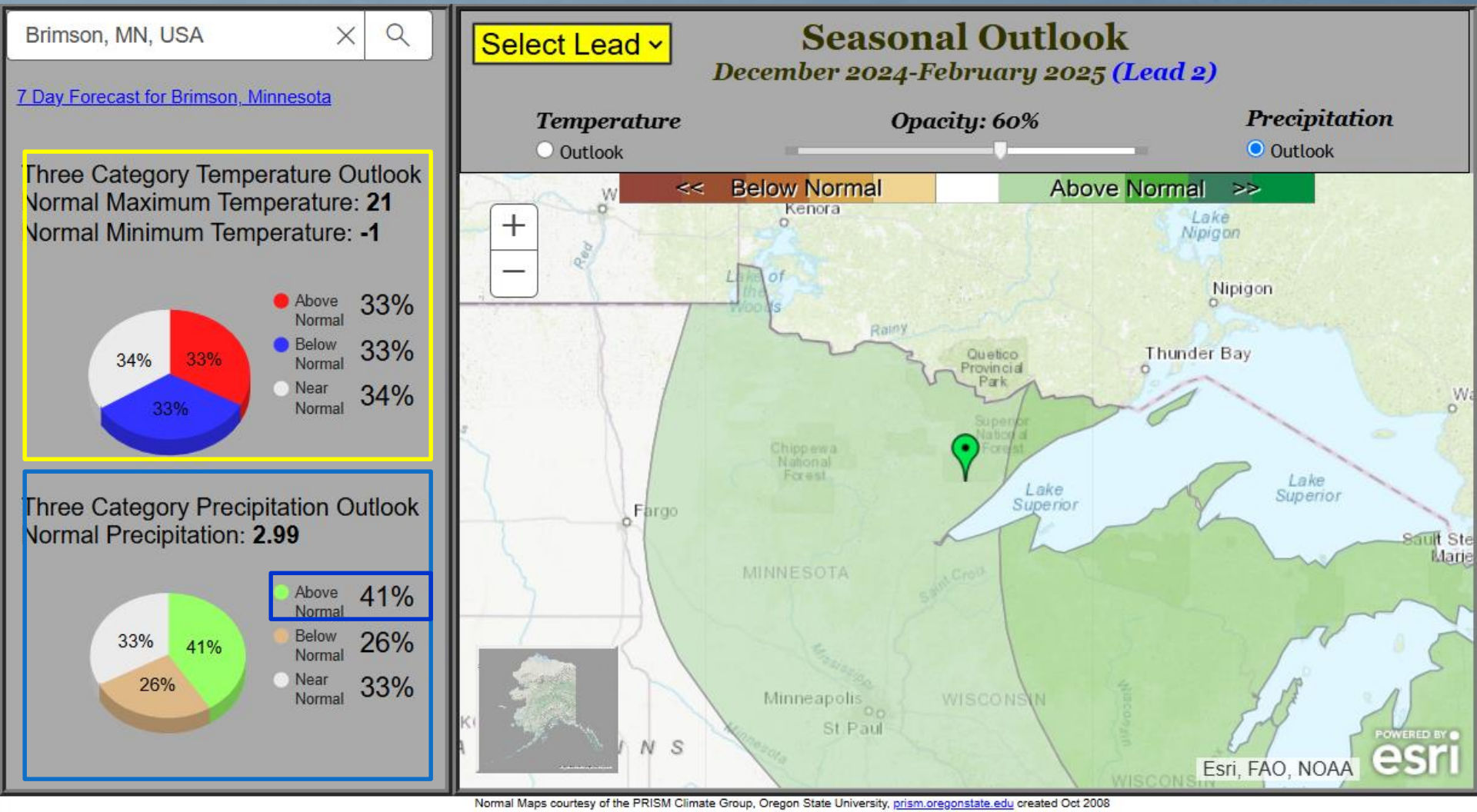
Key Messages

- Current forecast favors **mostly equal chances for above or below average temperatures** and **above normal chances for precipitation**
  - Western Minnesota more favored for **below normal temperatures**
- A **La Niña** is expected to emerge this fall and persist through the winter
- The seasonal Drought Outlook indicates **drought conditions are expected to persist** through the winter season
- This outlook is not an indicator of daily weather events, but a summation of the entire season.

NOAA Climate Prediction Center Dec-Jan-Feb Outlook



The seasonal outlook above **depicts <u>only</u> the most likely outcome** where there is greater confidence, but this is **<u>not</u>** the only possible outcome.



Normal Maps courtesy of the PRISM Climate Group, Oregon State University, prism.oregonstate.edu created Oct 2008

Dec-Jan-Feb Seasonal Outlook

No clear signal for temperatures

Precipitation 41% leaning towards above Normal

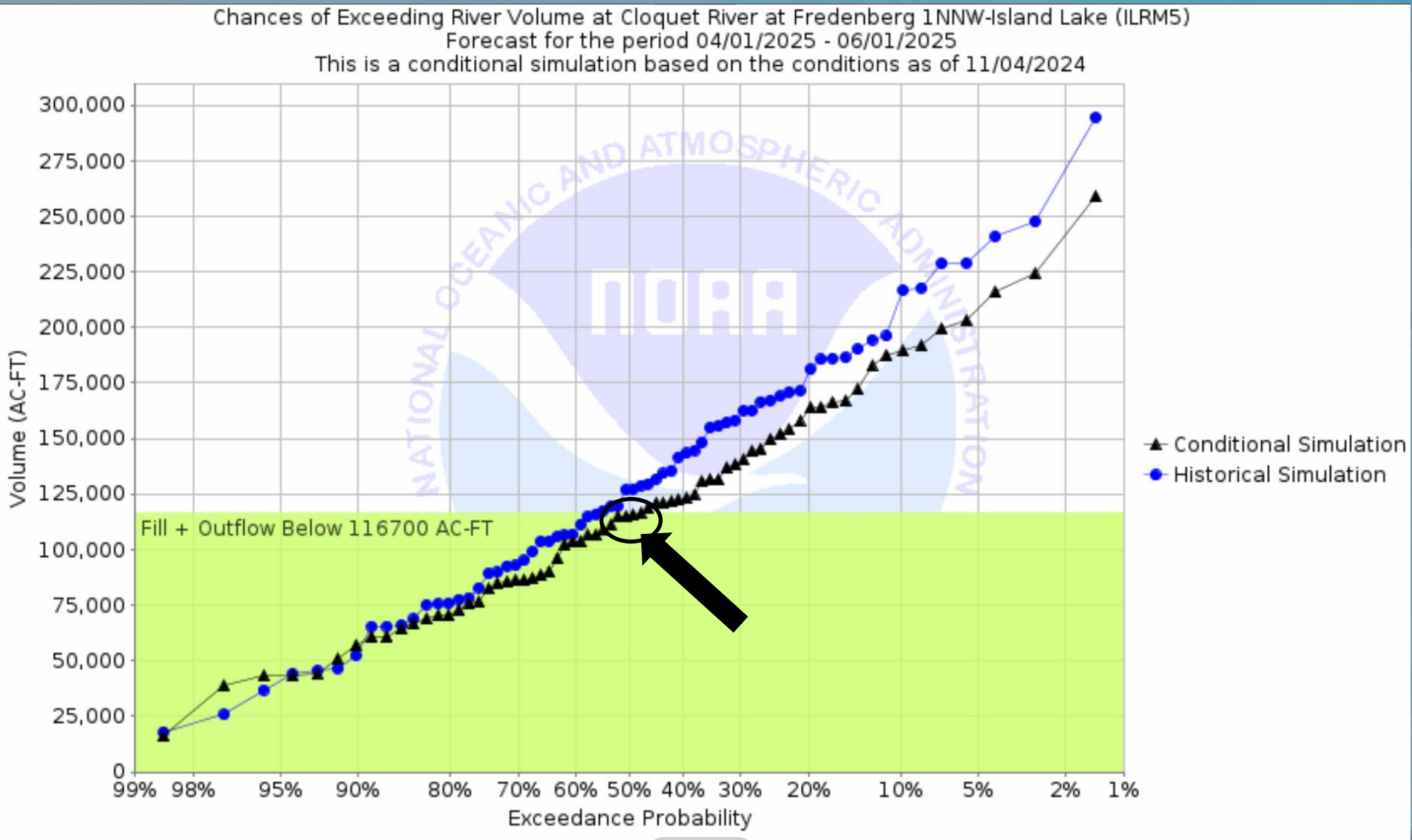
La Nina Driving the Forecast

- A weak La Nina is expected to form this winter
- Leaning towards above normal precipitation
- Not every La Nina is the same as many weather patterns are at play
- La Nina's tend to bring above normal snow to our region, however, the sample size is relatively small
- 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

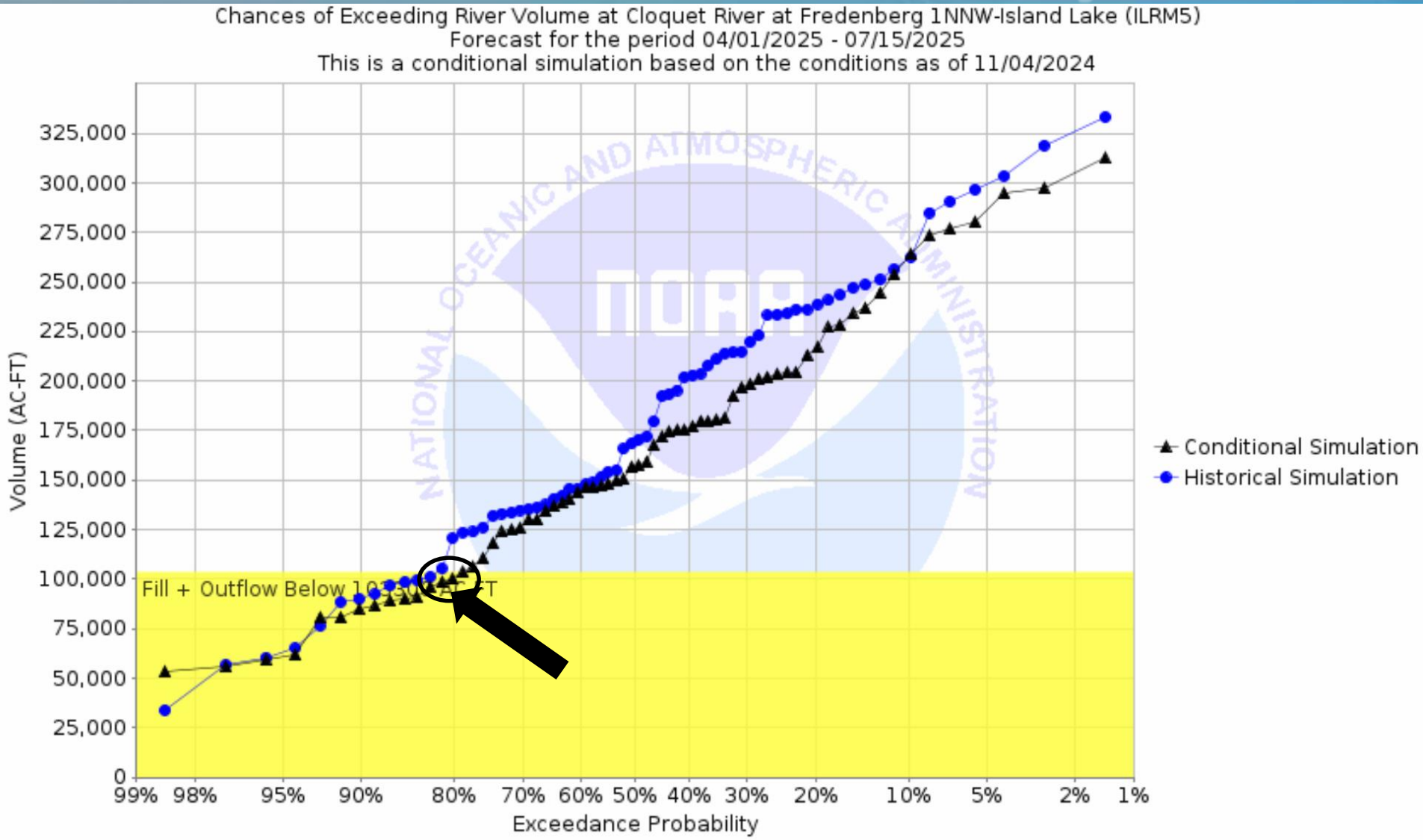
Hydrologic Outlook - Refill

- 50% Chance of Refill Under Normal Conditions
- 80% Chance of Refill under Dry Conditions

50 Percent Chance Refill - Normal



80 Percent Chance Refill - Dry



2024-25 Weather/Hydro Outlook - Summary

- Antecedent conditions
  - Severe drought conditions (D2) at this time due to dry a summer and fall
  - Brimson area has reported 2 to 3.5 inches above normal precipitation since 10/1
  - No snowpack accumulation as of 11/6/2024
- Weather Outlook
  - Short term forecast shows above normal precipitation (40% chance) through late November
  - Long term forecasts indicate no clear signal for temperature (above or below) and slightly favors above normal precipitation Dec-Feb
- Hydrologic Outlook
  - 50% Chance for refill under Normal condition
  - 80% Chance for refill under Dry condition

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/mpx/islandlake