

Island Lake Technical Committee

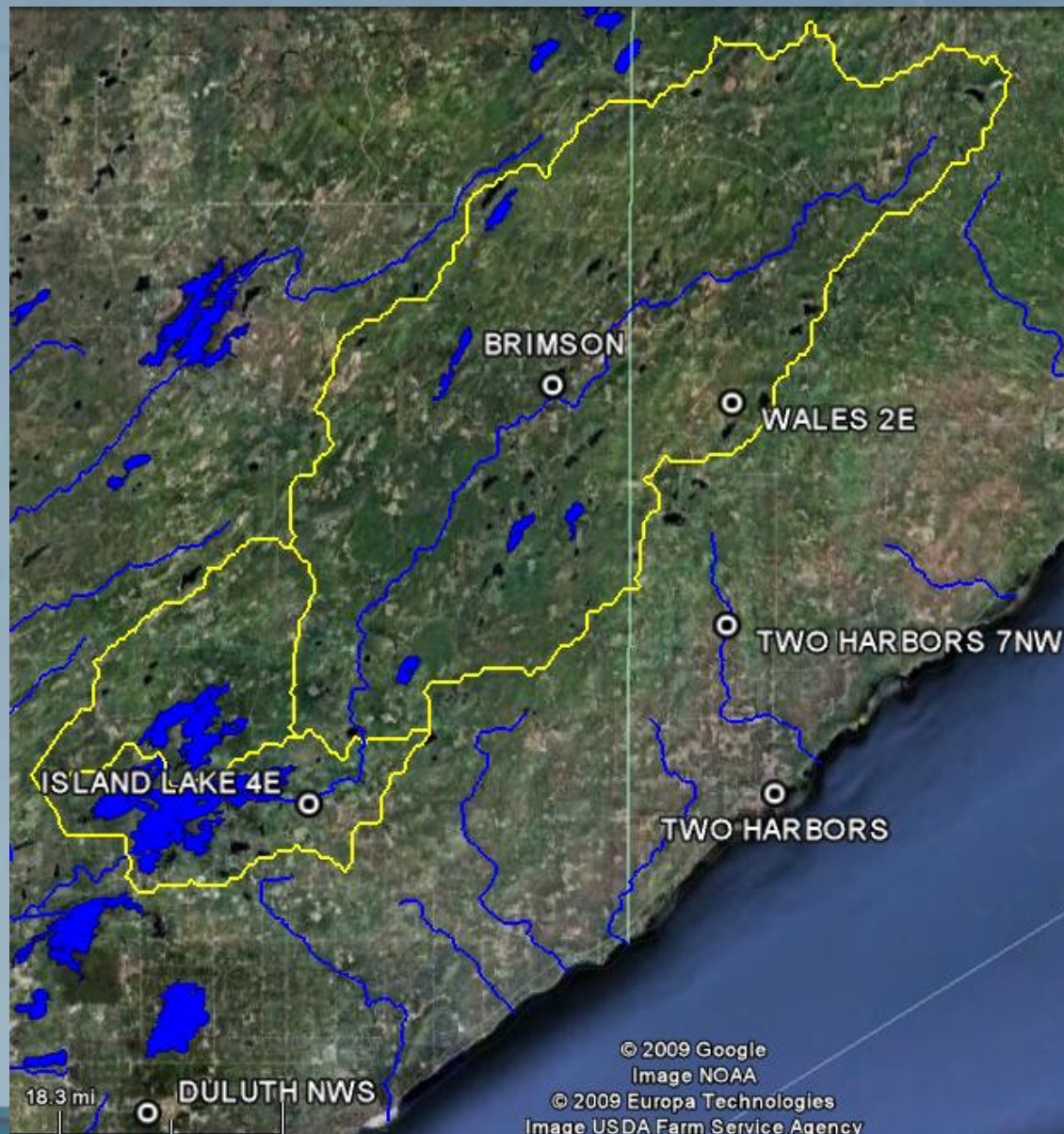
Spring Refill 2022

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Hydrologic Forecaster

April 21st , 2022

Island Lake Basin



Bottom Line Up Front

- **Persistent precipitation since October**
 - Drought conditions eased.
- **Weather outlooks**
 - Above normal precipitation in near term
 - Turning dry for the end of April
 - Short term warming 4/22-24 Cold spell 4/26!

River Forecast Model run 4/19/2022

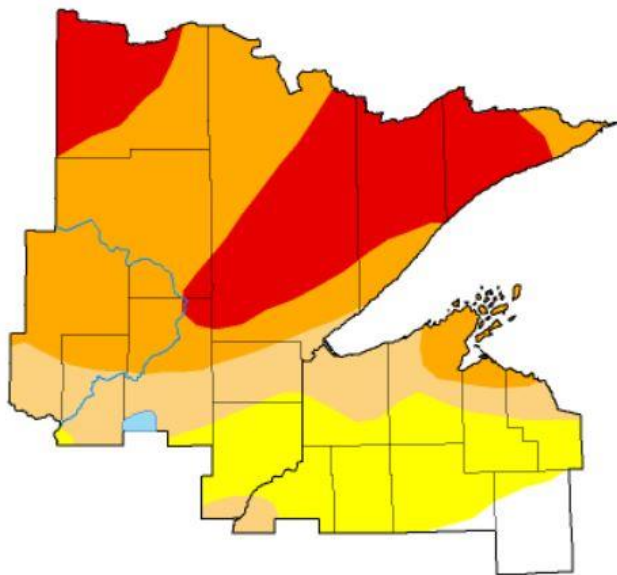
- Refill certain as model shows 100% chance of refill
- One to 6 inches of snow water equivalent still remain in basin.

Setting Up Current Conditions

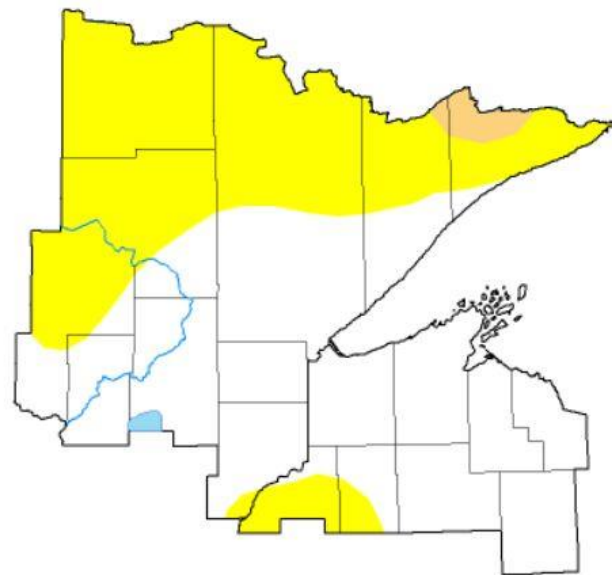
- Above normal precipitation 2022 water year (10/1/21-9/30/22)
- Slow thaw and frequent April fresh snowfalls have preserved snowpack in the North.
- Our snowmelt runoff is underway
- 4/22-24 Precipitation will increase rate of fill

Most Recent Drought Monitor

Drought Classification



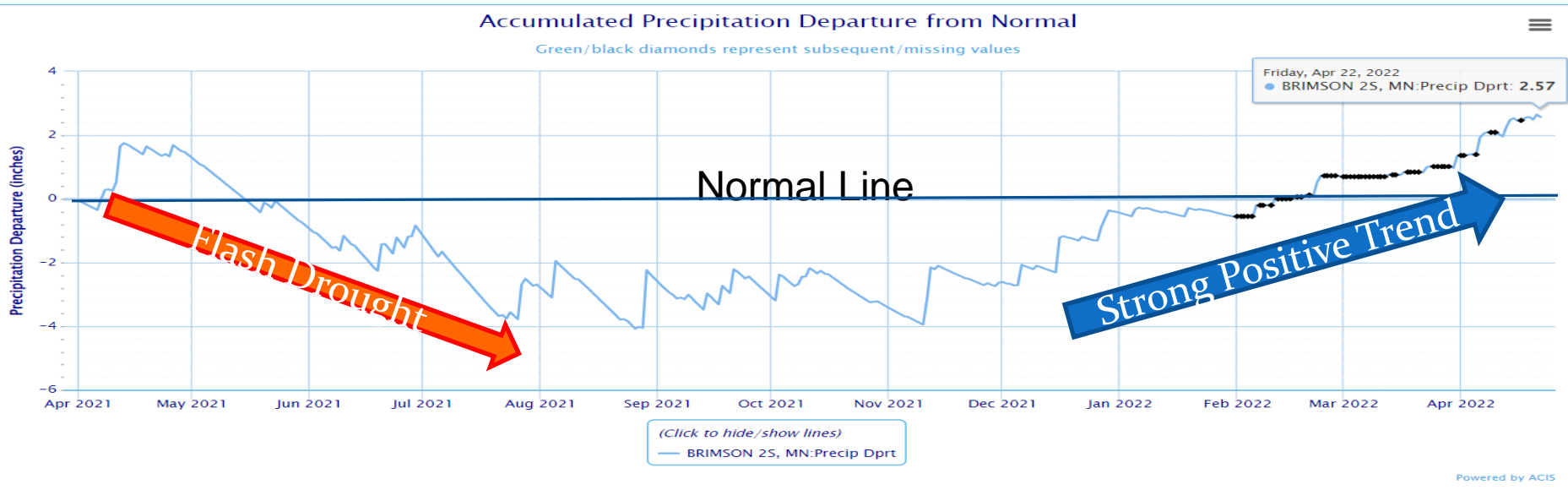
< October 5, 2021 >



< April 19, 2022 >

- Cloquet River Basin Free of Drought conditions
- Great improvement since October

Brimson Precipitation Departure (4/2021-4/22/2022)

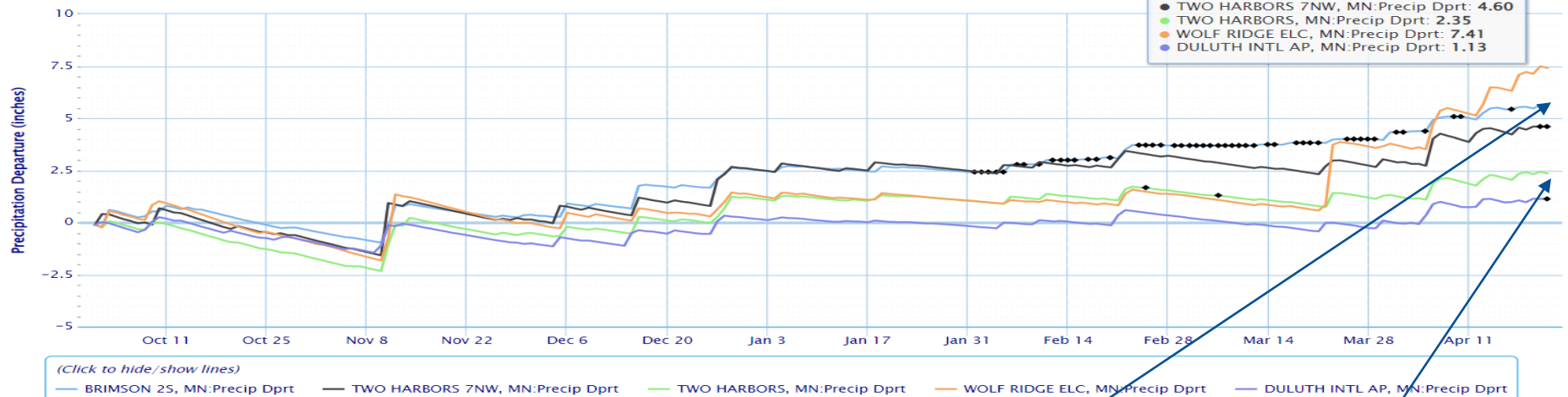


- Brimson is most representative of the Cloquet River Basin
- Positive precipitation since Autumn 2022

2022 Water Year Precipitation Departure 10/1-4/21

Accumulated Precipitation Departure from Normal

Green/black diamonds represent subsequent/missing values



Departures ending 2/28

Monday, Feb 28, 2022

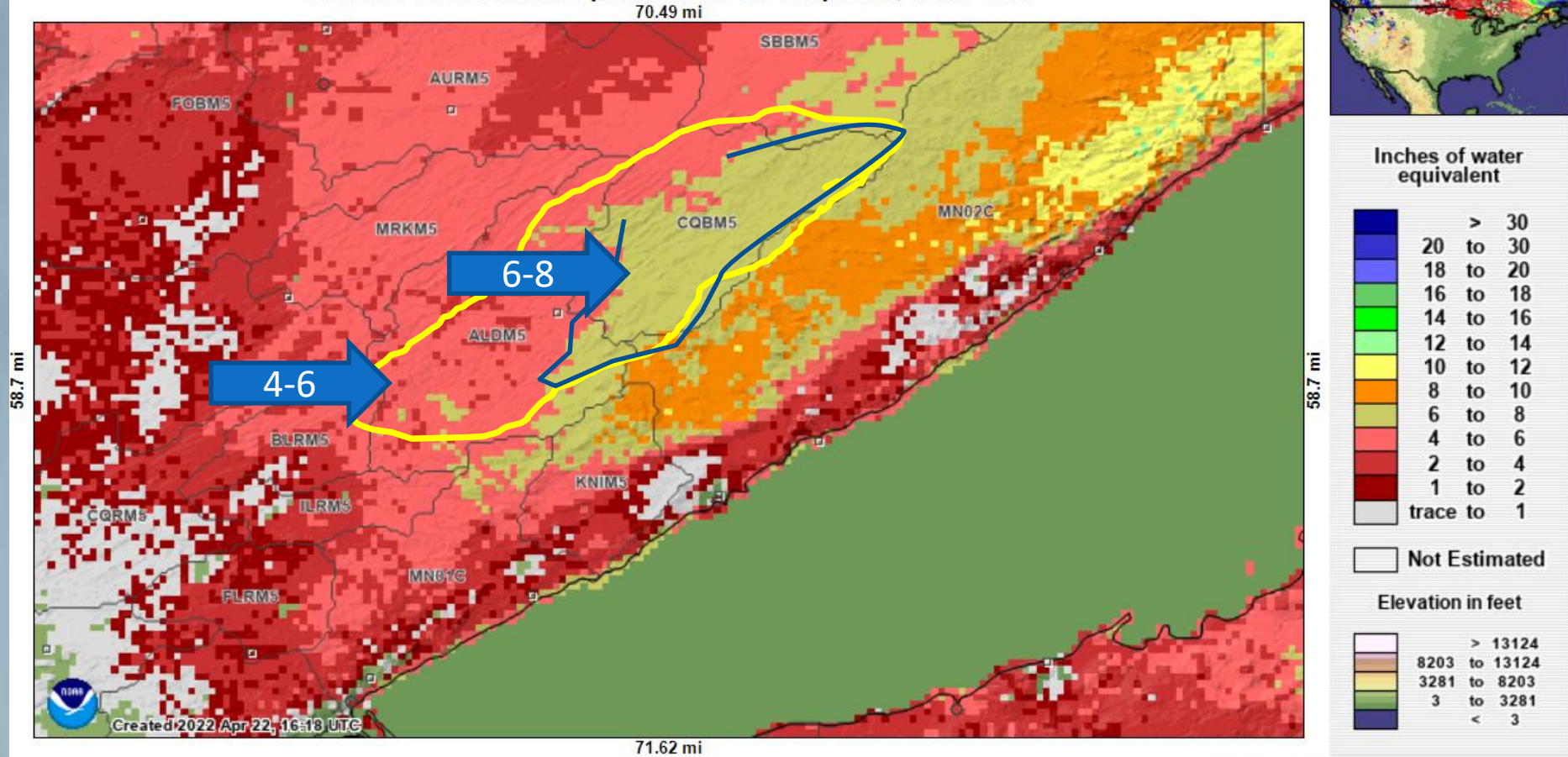
- BRIMSON 2S, MN:Precip Dprt: 3.58
- TWO HARBORS, MN:Precip Dprt: 1.54
- TWO HARBORS 7NW, MN:Precip Dprt: 3.21
- WOLF RIDGE ELC, MN:Precip Dprt: 1.37
- DULUTH INTL AP, MN:Precip Dprt: 0.37

Brimson is most
representative of
Cloquet R. Basin

Two Harbors 7NW
not within basin. But
reflects NE
headwaters..

April 22nd 2022 - Snowpack

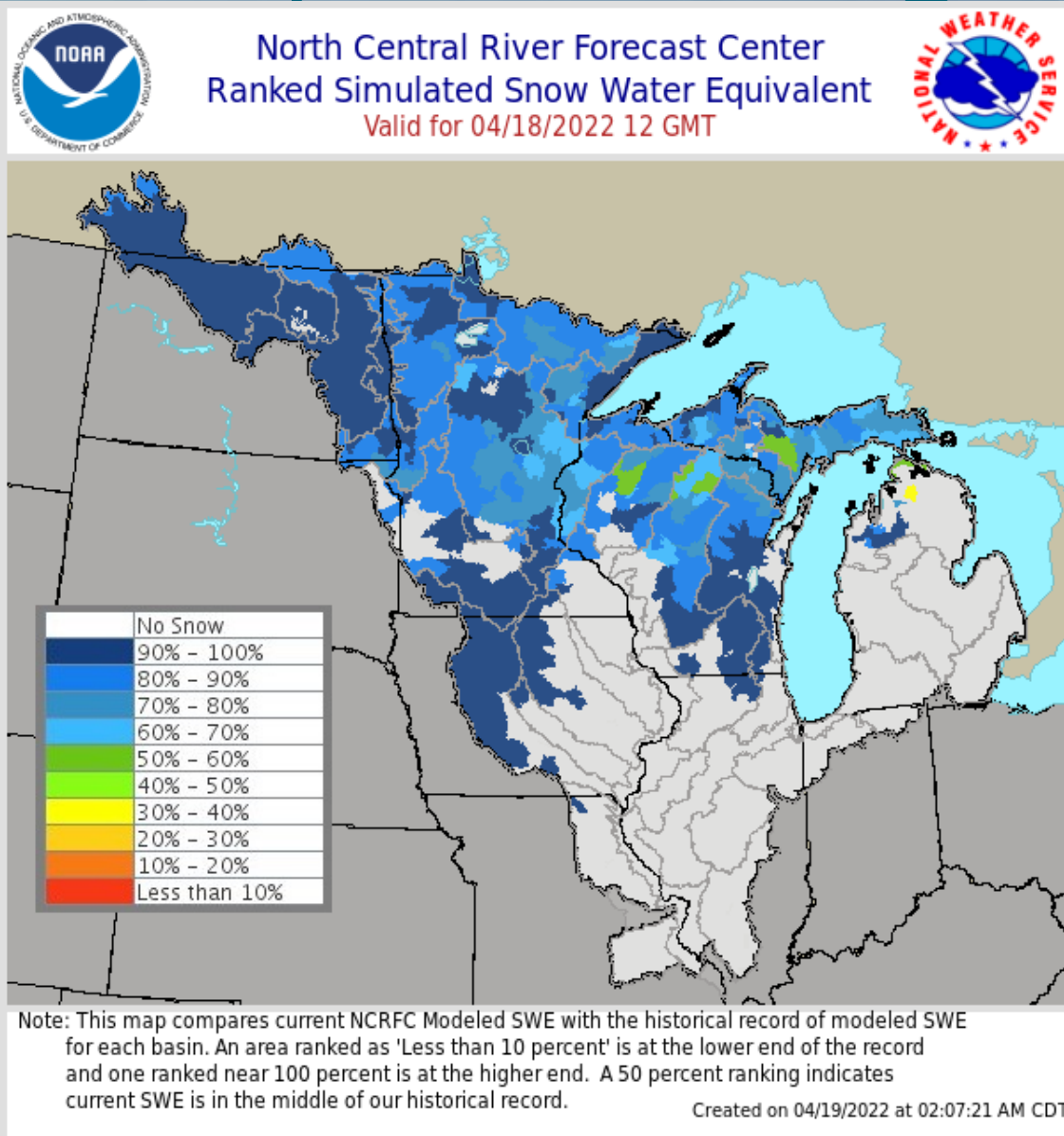
Modeled Snow Water Equivalent for 2022 April 22, 12:00 UTC



Snow contains 4-8 inches of water. Higher amounts in NE Basin

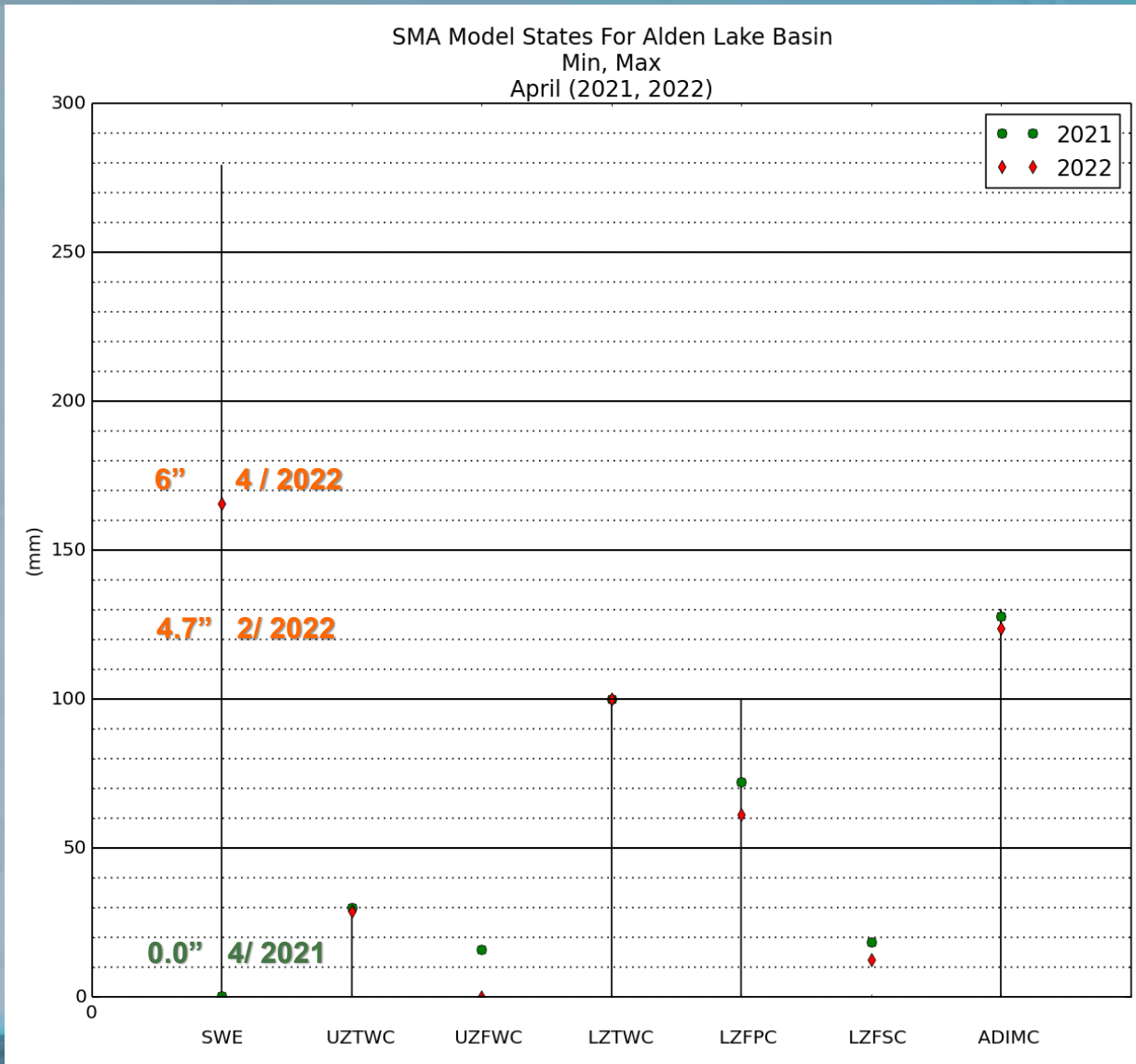
<https://www.nohrsc.noaa.gov/>

Snowpack Ranking



- Modeled Snow Water contents Rank in the 80th to 100th percentile.

Soil Moisture - Modeled



- Basin average snow water equivalent (SWE) 6"
- River model moisture contents very strong
- Above normal Fall precipitation

Weather Outlook

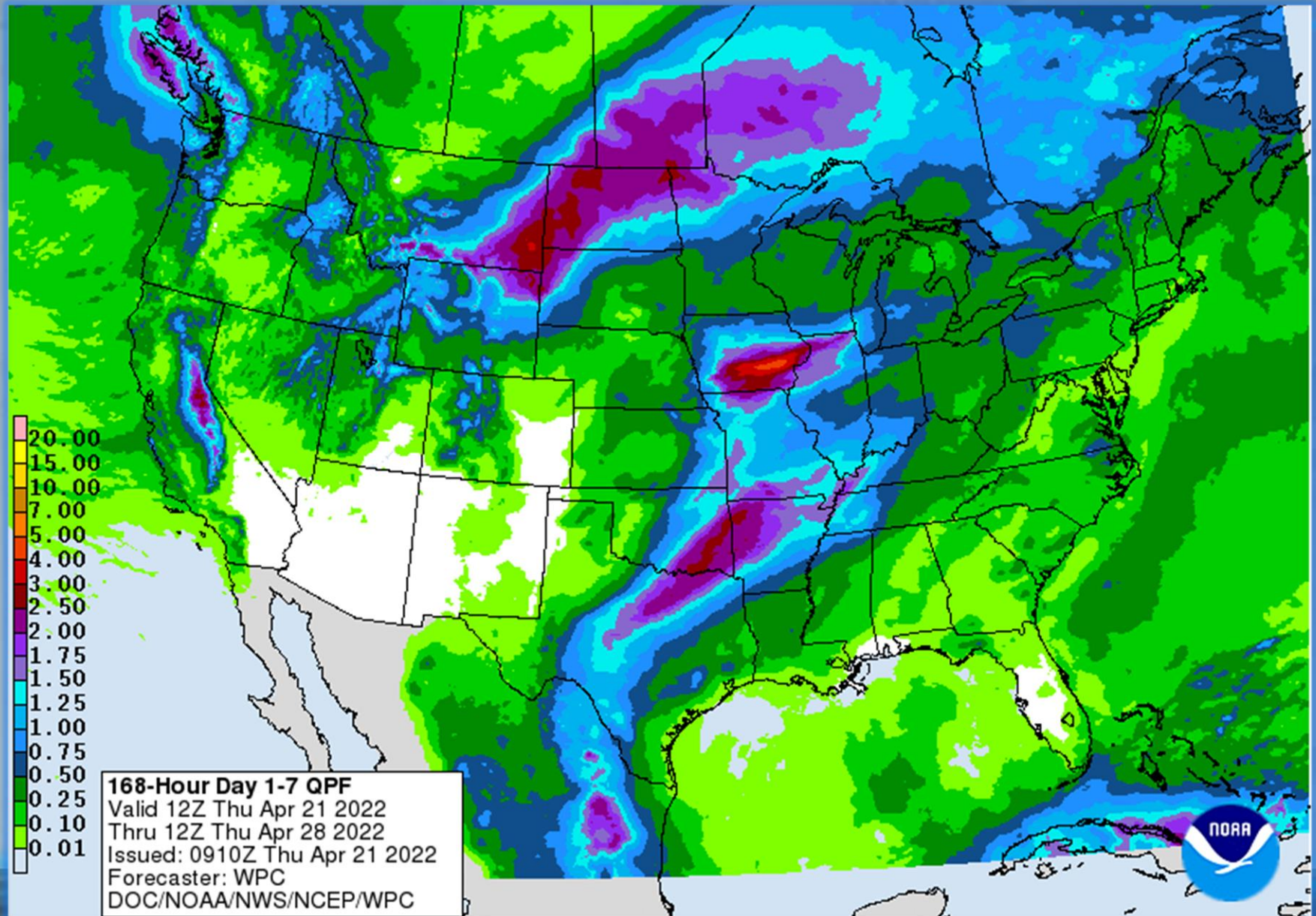
- Near-term

- Rain expected this weekend
- Above normal temps through 25th
- Snowmelt runoff kicks into gear
- Cooler than normal temperatures favored the next several weeks

- Precipitation Outlook

- Half inch to inch of rain Fri-Sun
- Below normal remainder of April
- No strong signal for May

Near-term Outlook 7 Day Precip.



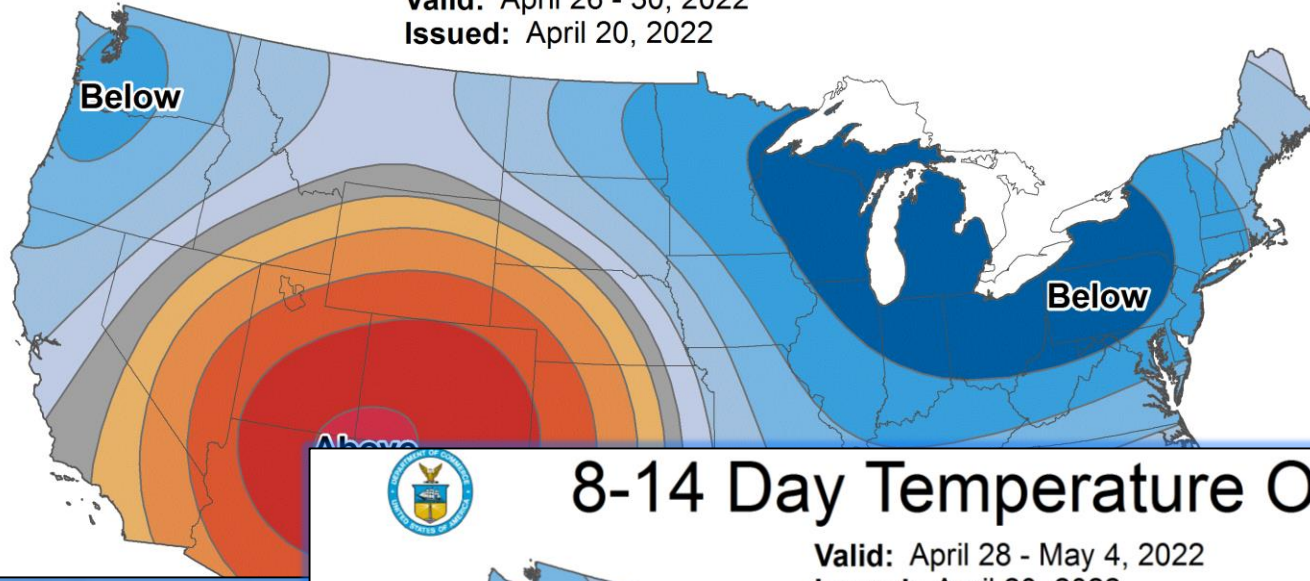
Near-term Outlook - Temperature



6-10 Day Temperature Outlook



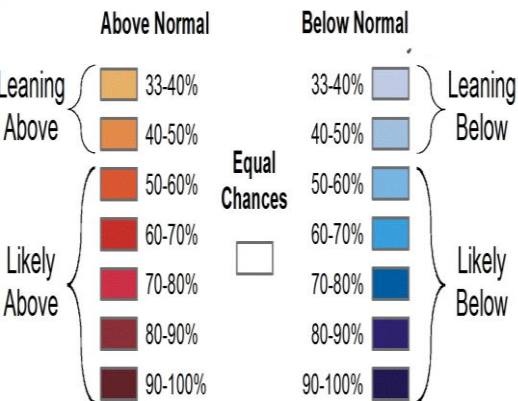
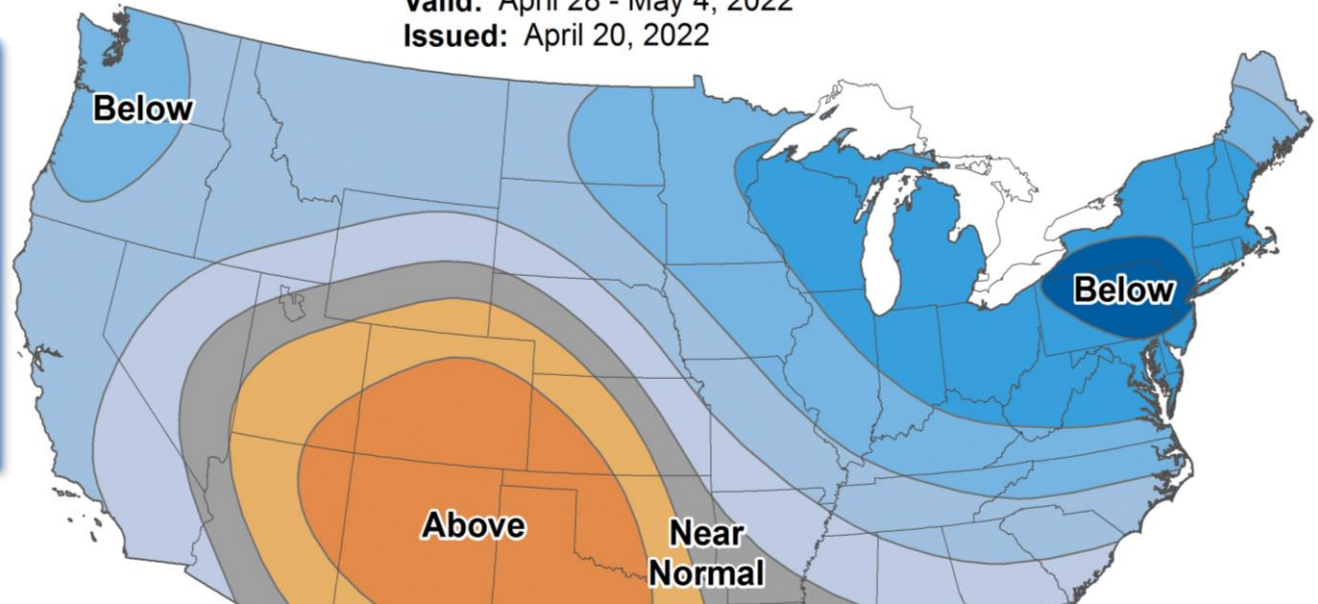
Valid: April 26 - 30, 2022
Issued: April 20, 2022



8-14 Day Temperature Outlook



Valid: April 28 - May 4, 2022
Issued: April 20, 2022



Near-term Outlook - Precipitation

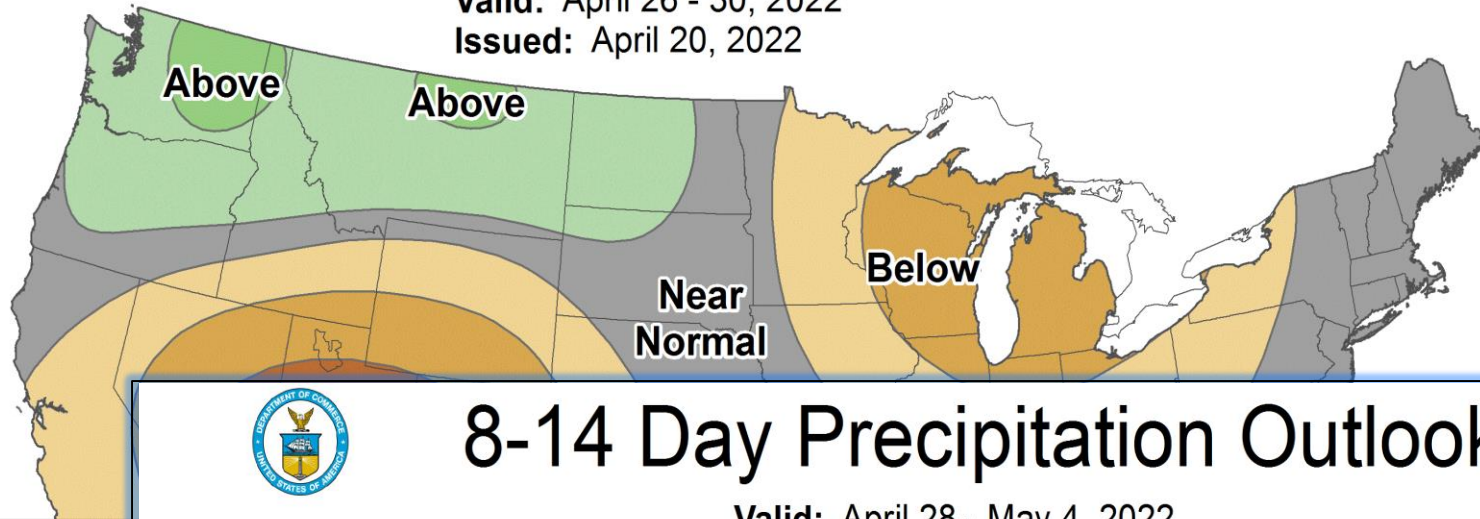


6-10 Day Precipitation Outlook



Valid: April 26 - 30, 2022

Issued: April 20, 2022

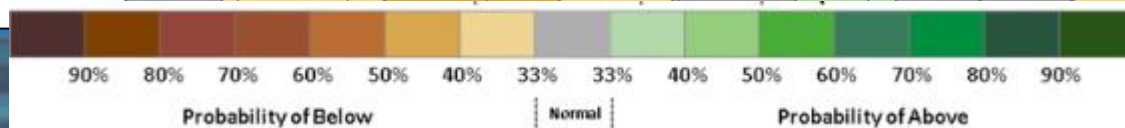
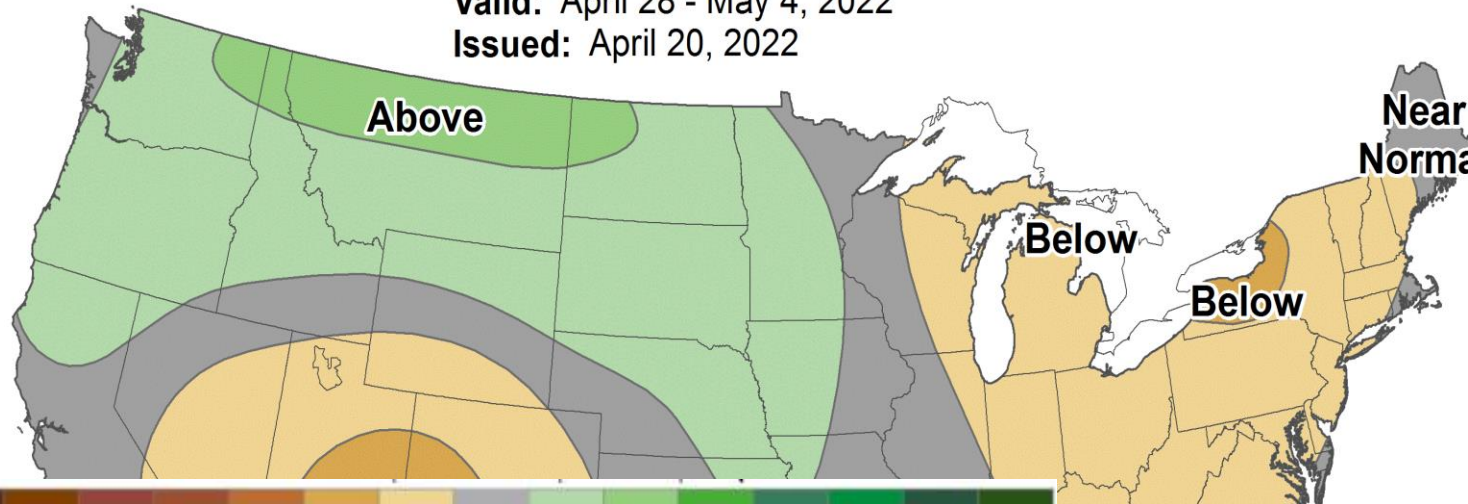


8-14 Day Precipitation Outlook



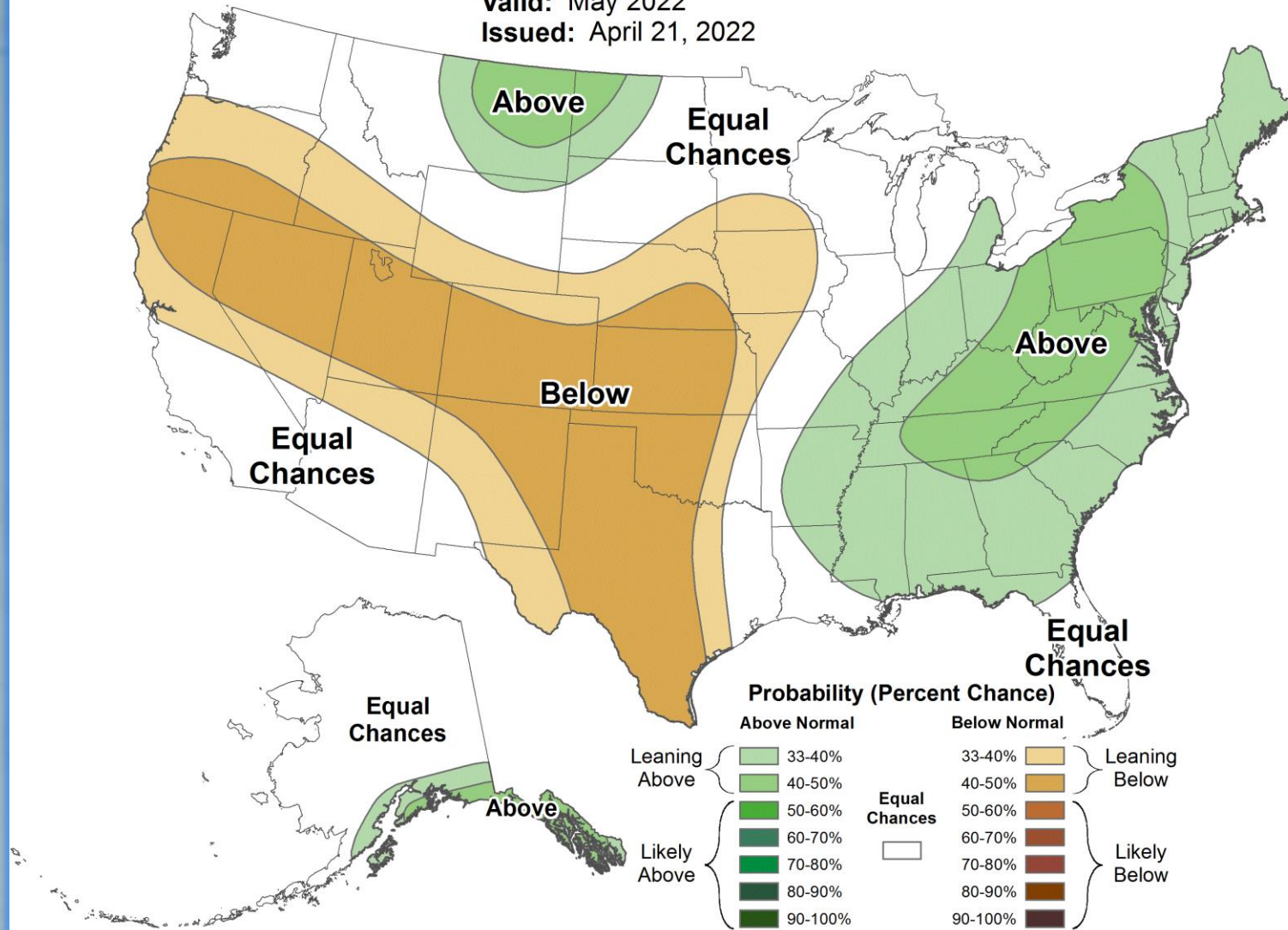
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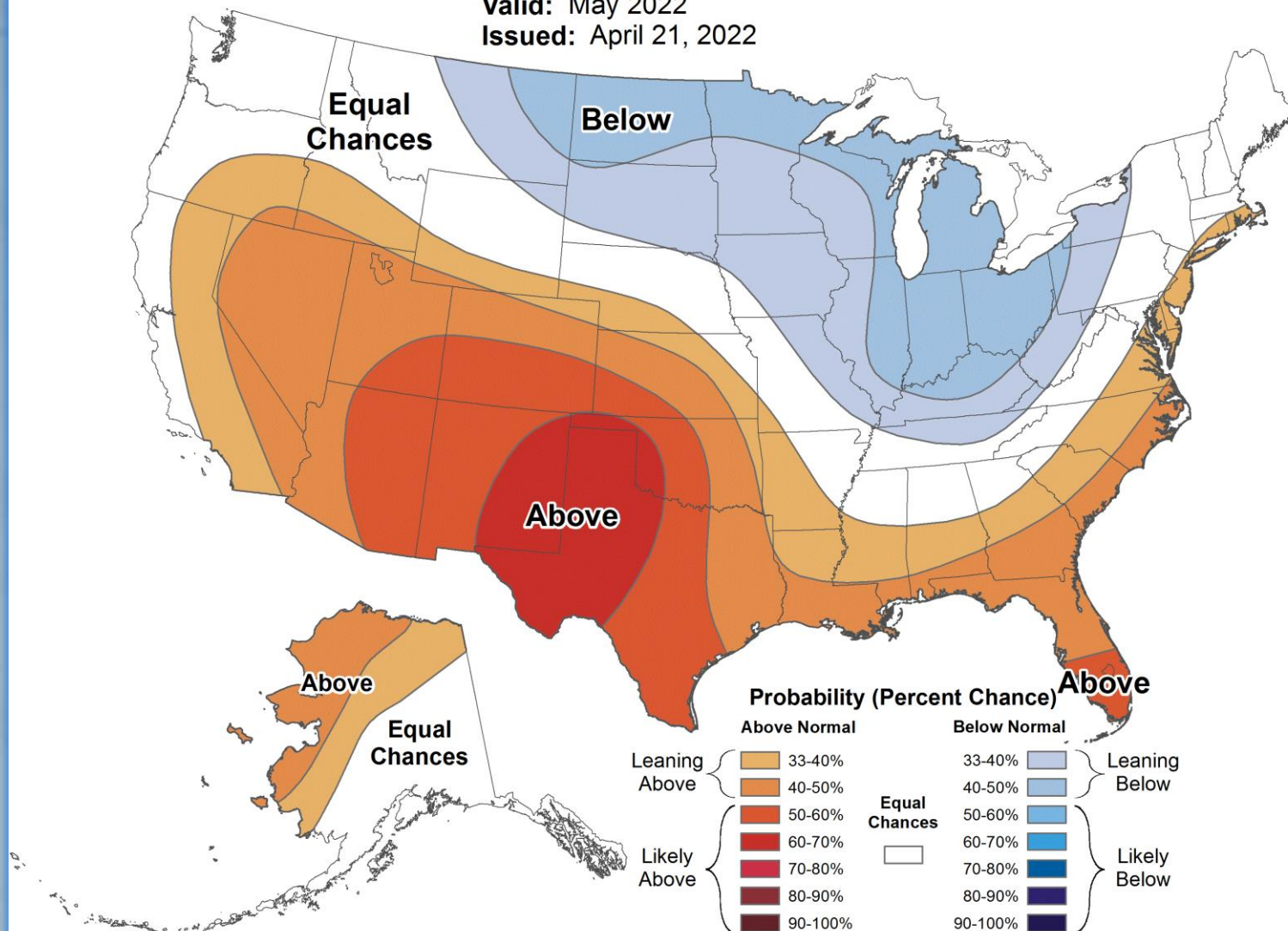


Monthly Temperature Outlook



Valid: May 2022

Issued: April 21, 2022





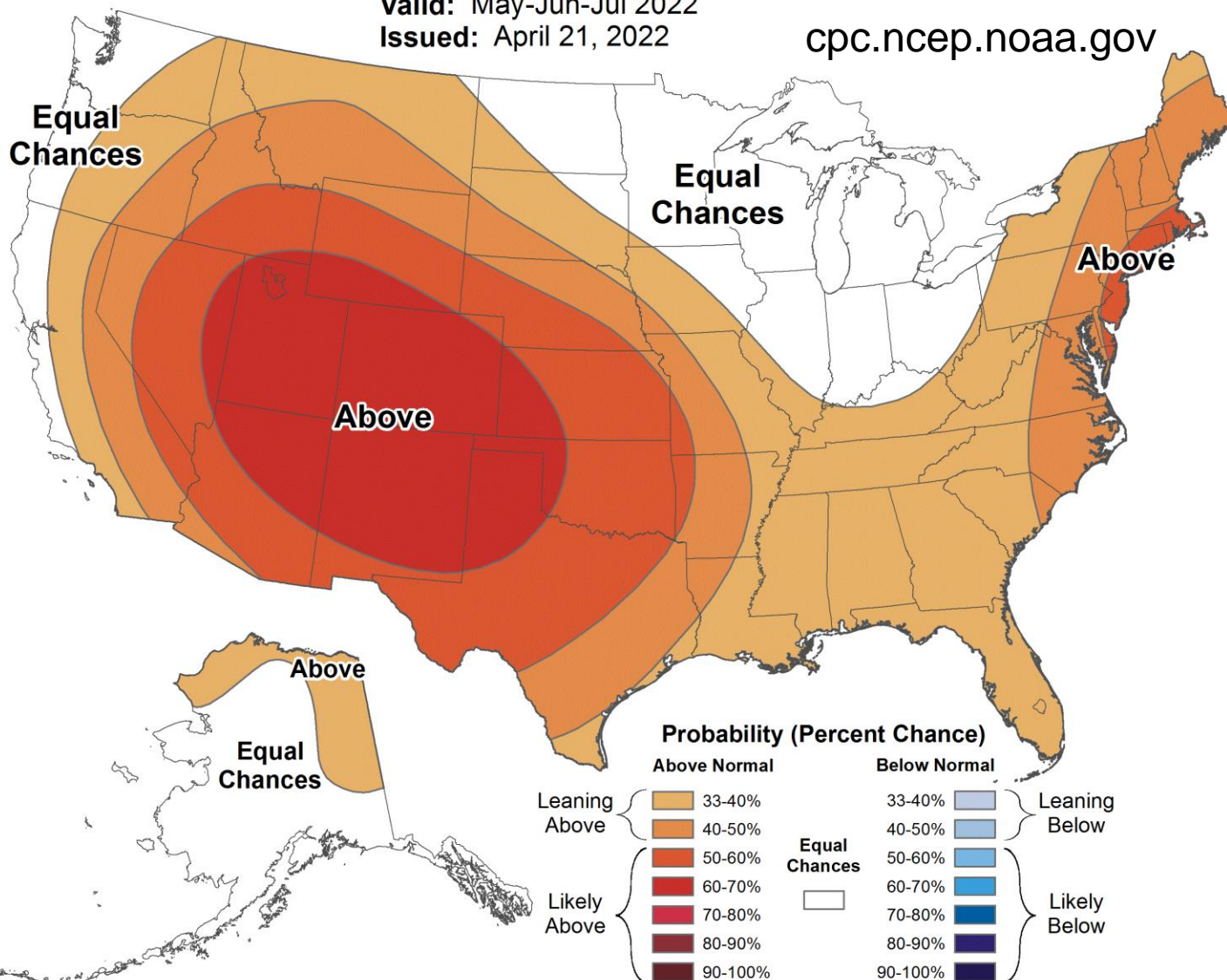
Seasonal Temperature Outlook



Valid: May-Jun-Jul 2022

Issued: April 21, 2022

cpc.ncep.noaa.gov





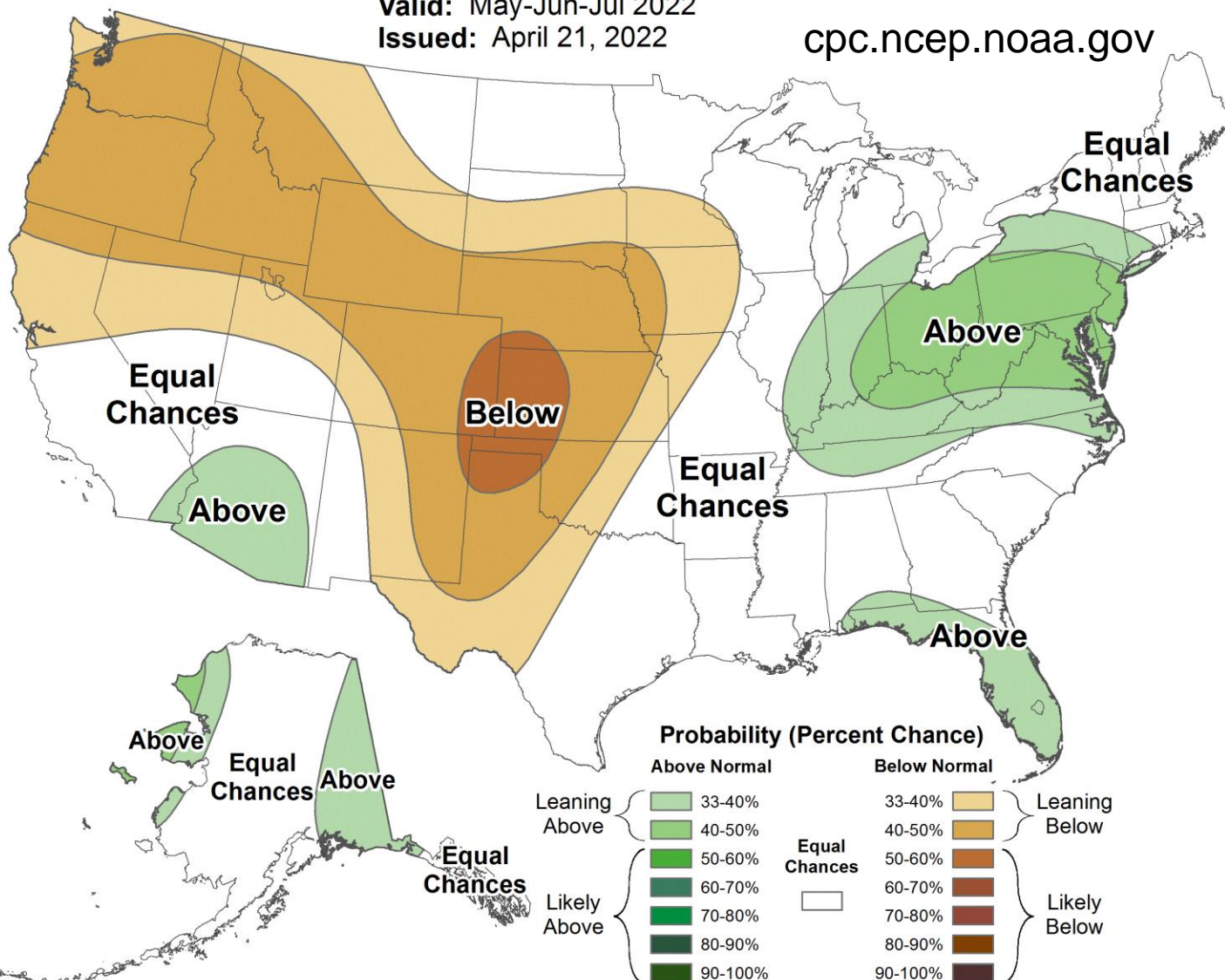
Seasonal Precipitation Outlook



Valid: May-Jun-Jul 2022

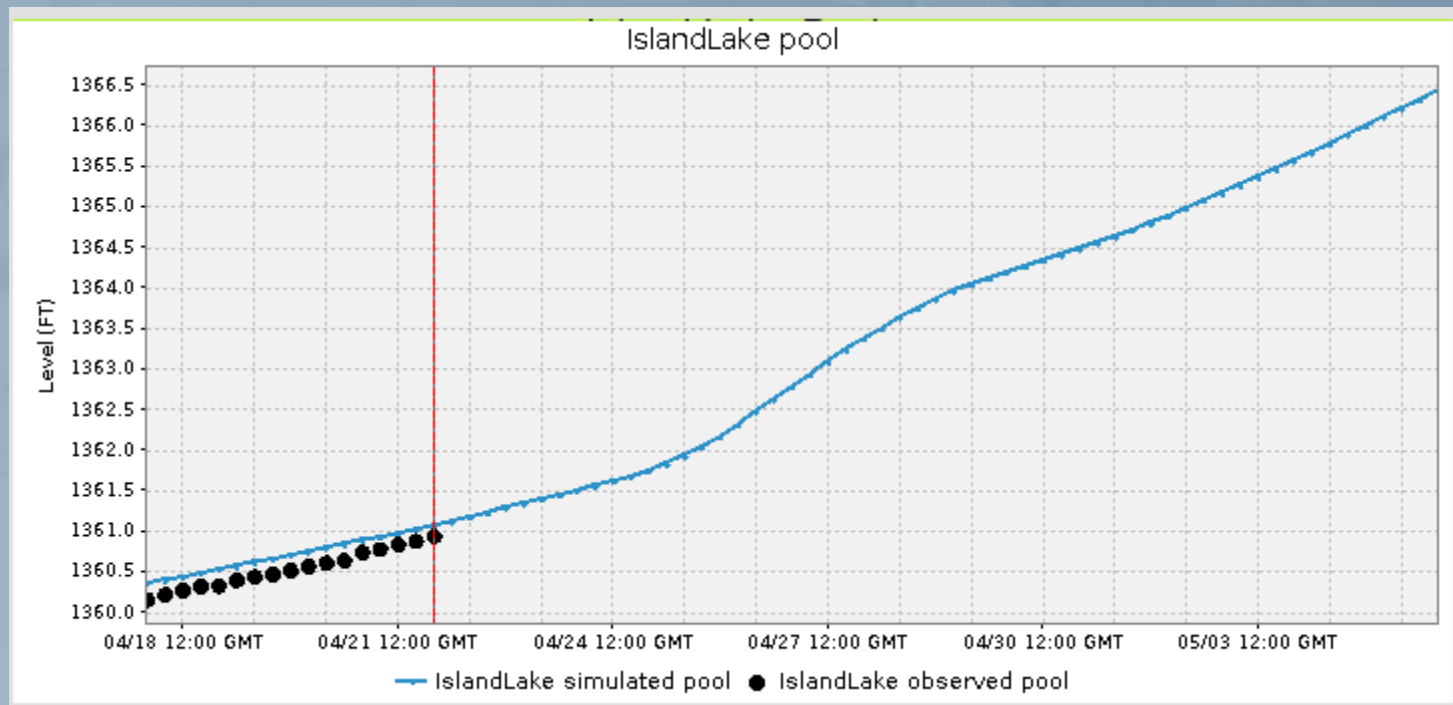
Issued: April 21, 2022

cpc.ncep.noaa.gov



Hydrologic Outlook - Refill

- High volume of water stored in snowpack is forecast to fill the reservoir in all cases.

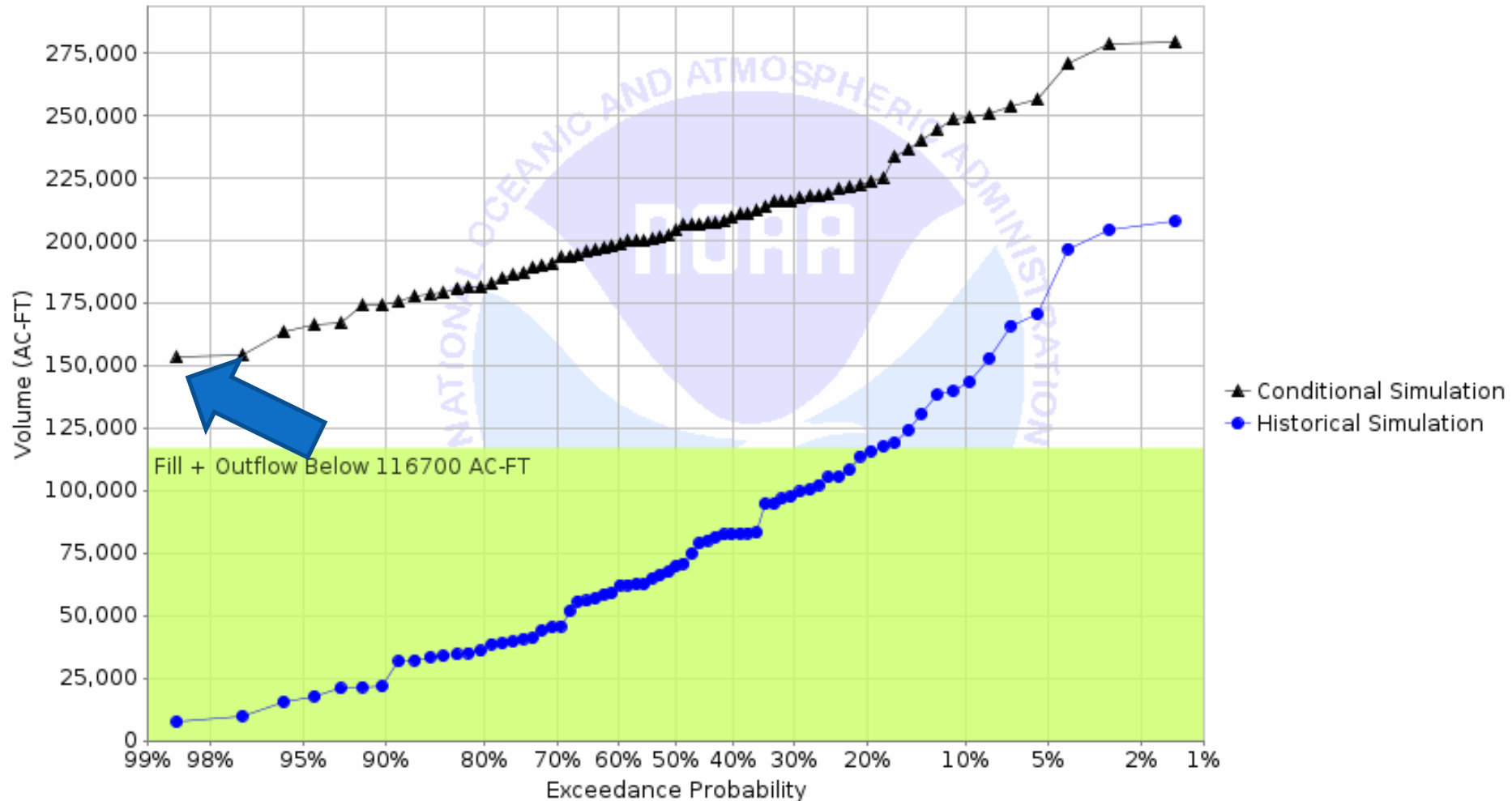


92 Percent Chance Refill - Normal

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

Forecast for the period 04/25/2022 - 06/01/2022

This is a conditional simulation based on the conditions as of 04/18/2022



2021-22 Weather/Hydro Outlook - Summary

- Antecedent conditions
 - Long term drought has been erased
 - Heavy snowpack with high water content remains
- Weather Outlook
 - Short term forecast shows above normal precipitation
 - Long term forecasts not leaning one way or another
 - After short warm up cool weather expected to persist
- Hydrologic Outlook
 - Refill is under way with plenty of snow and forecast rain to fill Island Lake

Resources

- <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>
- <https://www.weather.gov/media/dlh/DssPacket.pdf> (when storms are pending)