

# Island Lake Technical Committee

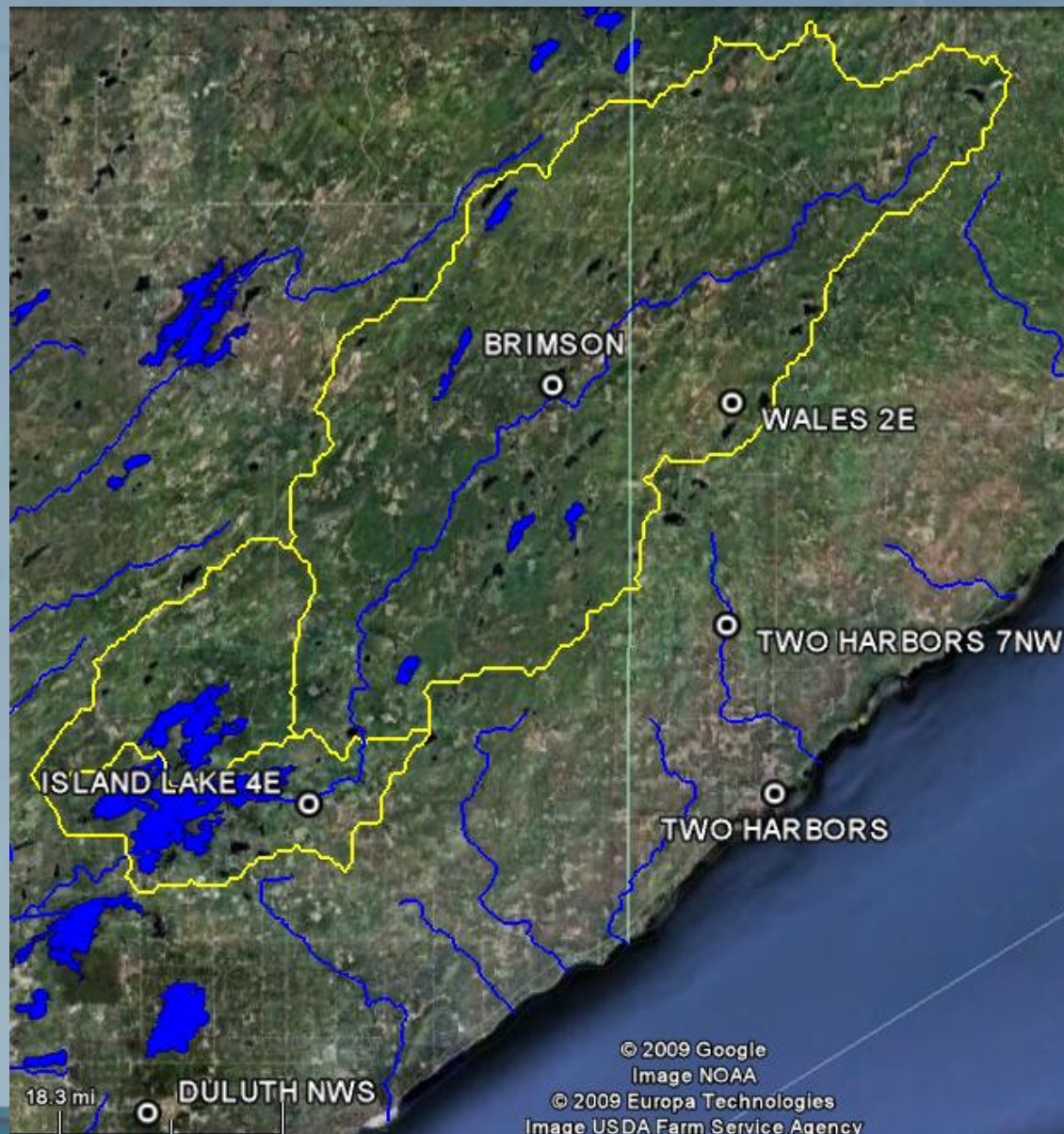
## Spring Refill 2020

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***WFO Duluth***  
***Observing Program Leader***

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***North Central River Forecast Center***  
***Hydrologic Forecasters***

***March 5, 2020***

# Island Lake Basin



# Bottom Line Up Front

- Greater than 95% Chance of Refill under normal condition
- Main Drivers
  - Wet Soils
  - 7-9" Snow Water Equivalent in snow pack

# Setting Up Current Conditions

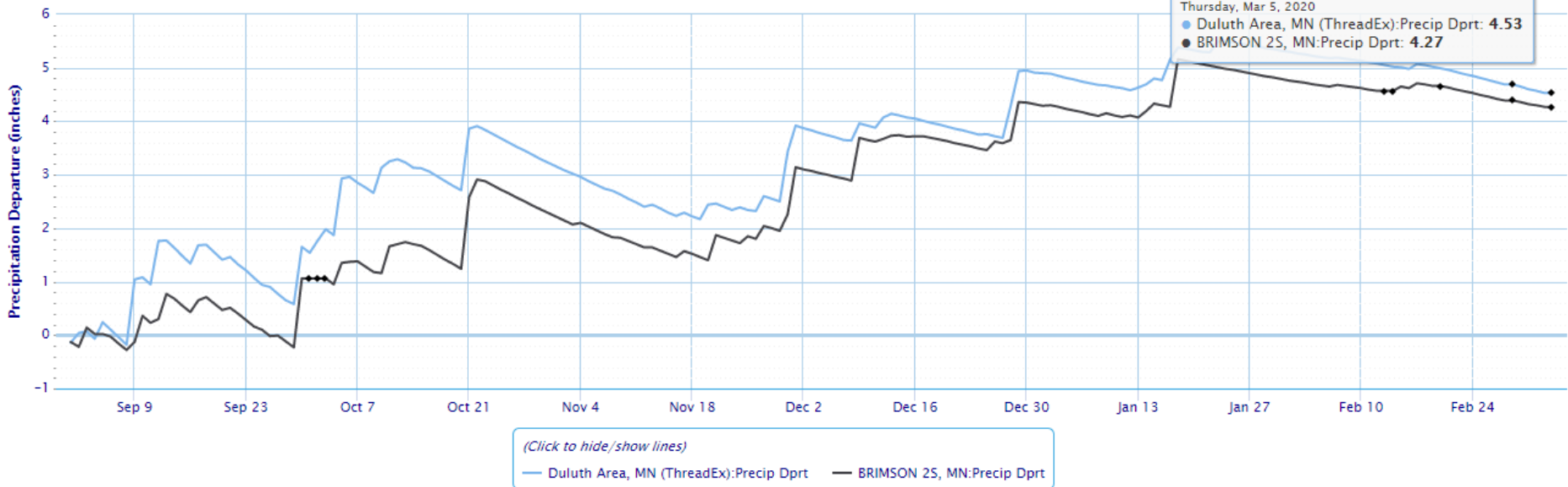
- A very wet fall primed soils prior to freeze-up
- Deep snow pack mainly from two major storms in the end of November and the end of December
  - 24" is average for snow depth 3/5
    - Range is 21" to 30"
- Precipitation in the basin is 4" above normal
- Little frost in the ground due to insulating snowpack



# Above Normal Fall Precipitation

Accumulated Precipitation Departure from Normal

Green/black diamonds represent subsequent/missing values



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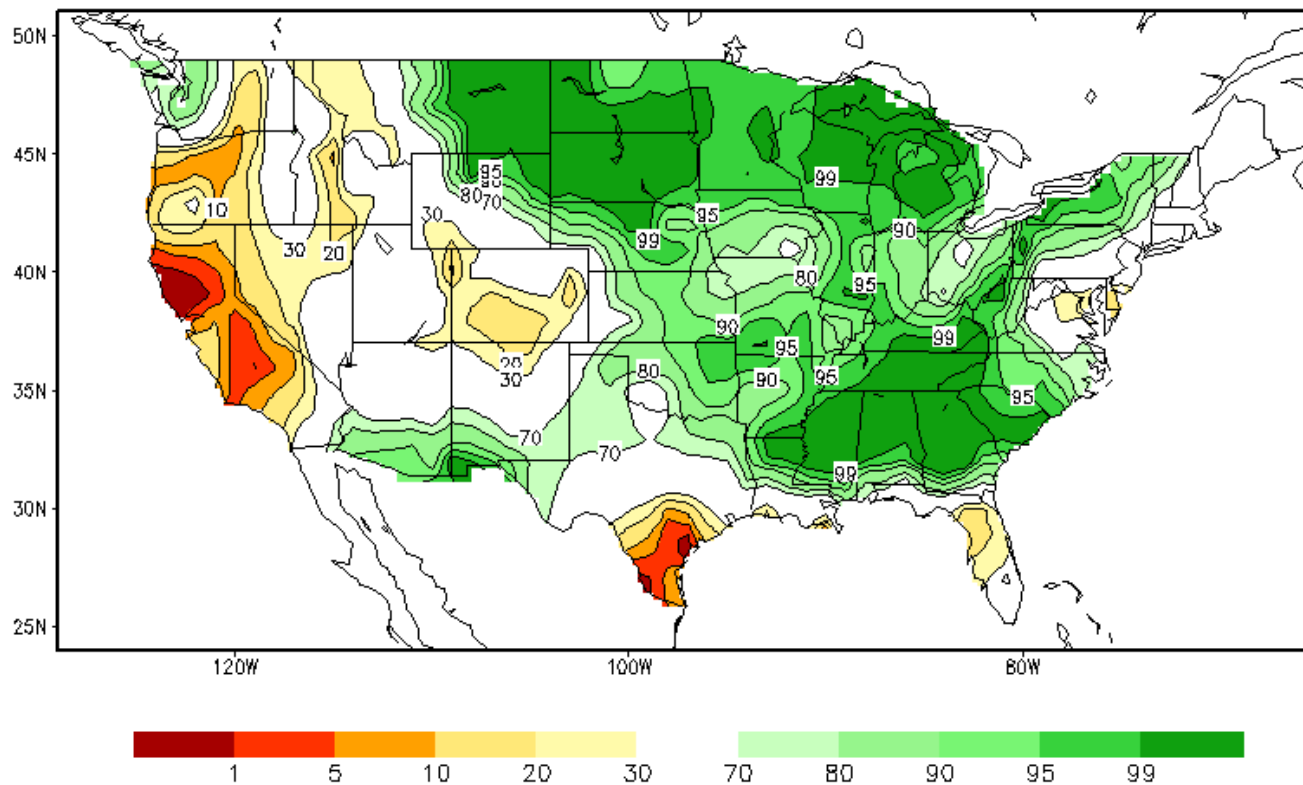
September to March 5th precipitation 4" to 5" above normal

# Soil Moisture

- Above normal fall precipitation = above normal soil moisture
- No Drought condition
- River model shows full contents for every parameter of the soil profile

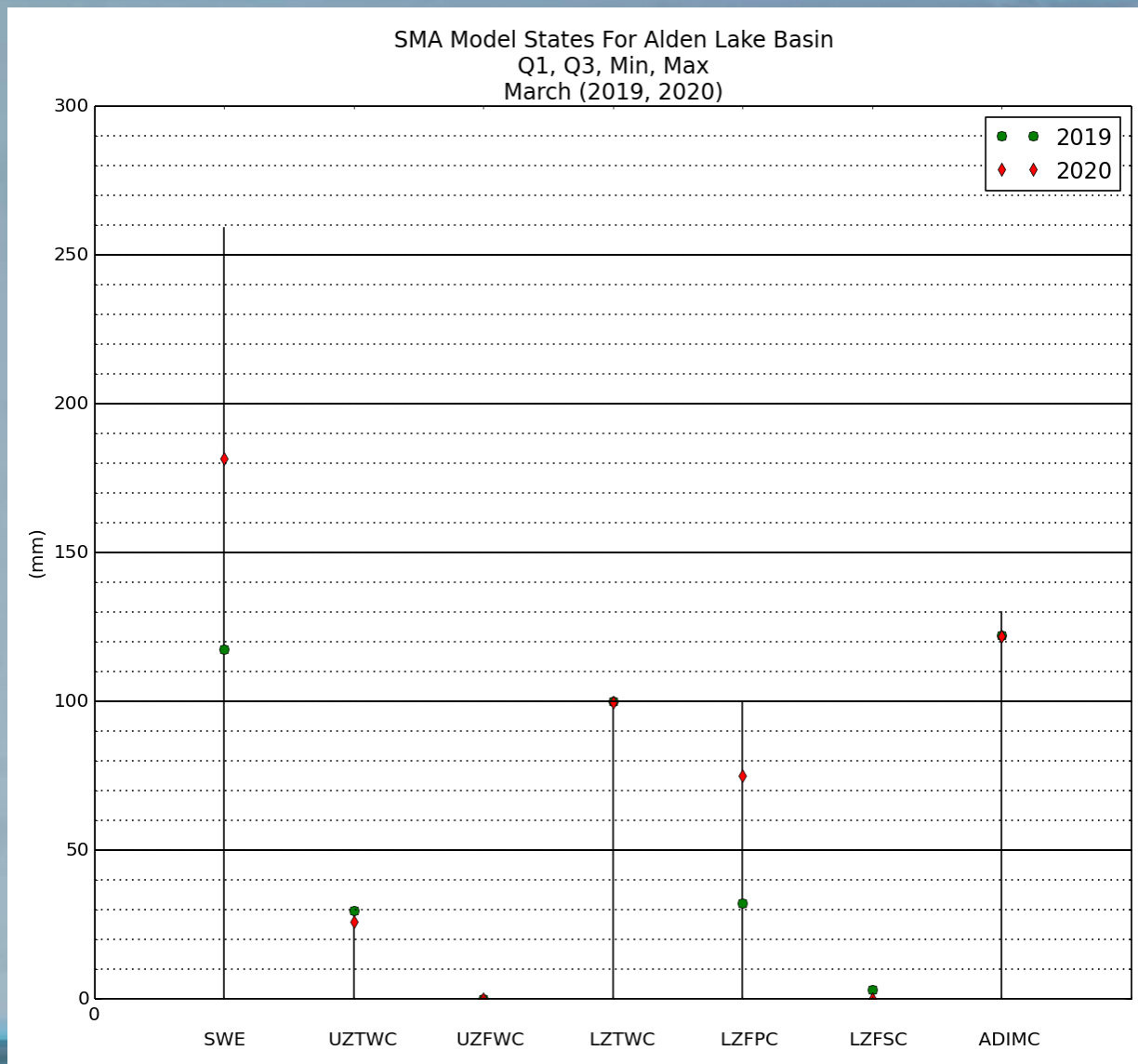
# Soil Moisture

Calculated Soil Moisture Ranking Percentile  
MAR 07, 2020



- Ranking soil Moisture
- 90<sup>th</sup> – 95<sup>th</sup> Percentile

# Soil Moisture - Modeled



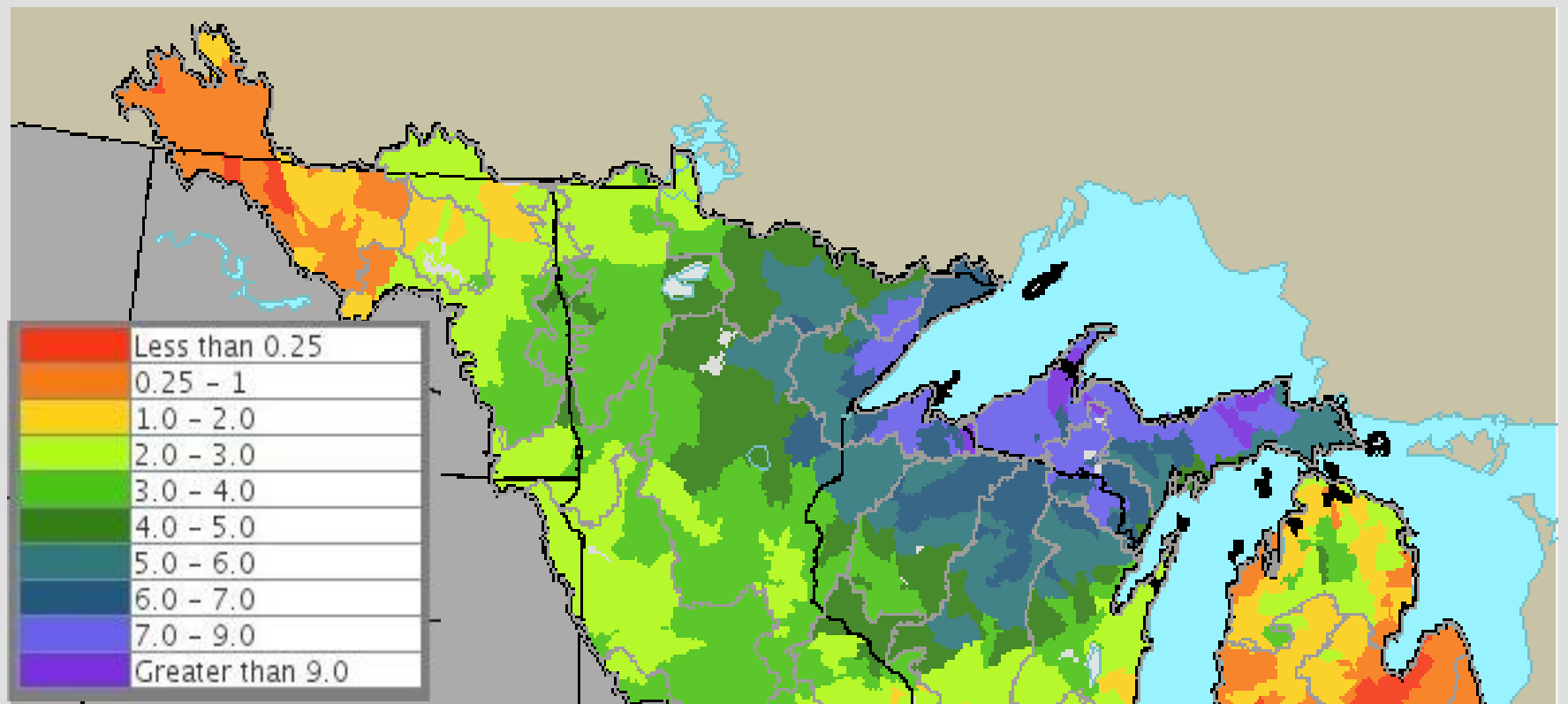
- Soil moisture is very high
- On March 5<sup>th</sup> Basin Average of 7" snow water equivalent.



# Water in the Current Snowpack



North Central River Forecast Center  
Model Simulated Snow Water Equivalent  
Valid for 02/24/2020 12 GMT

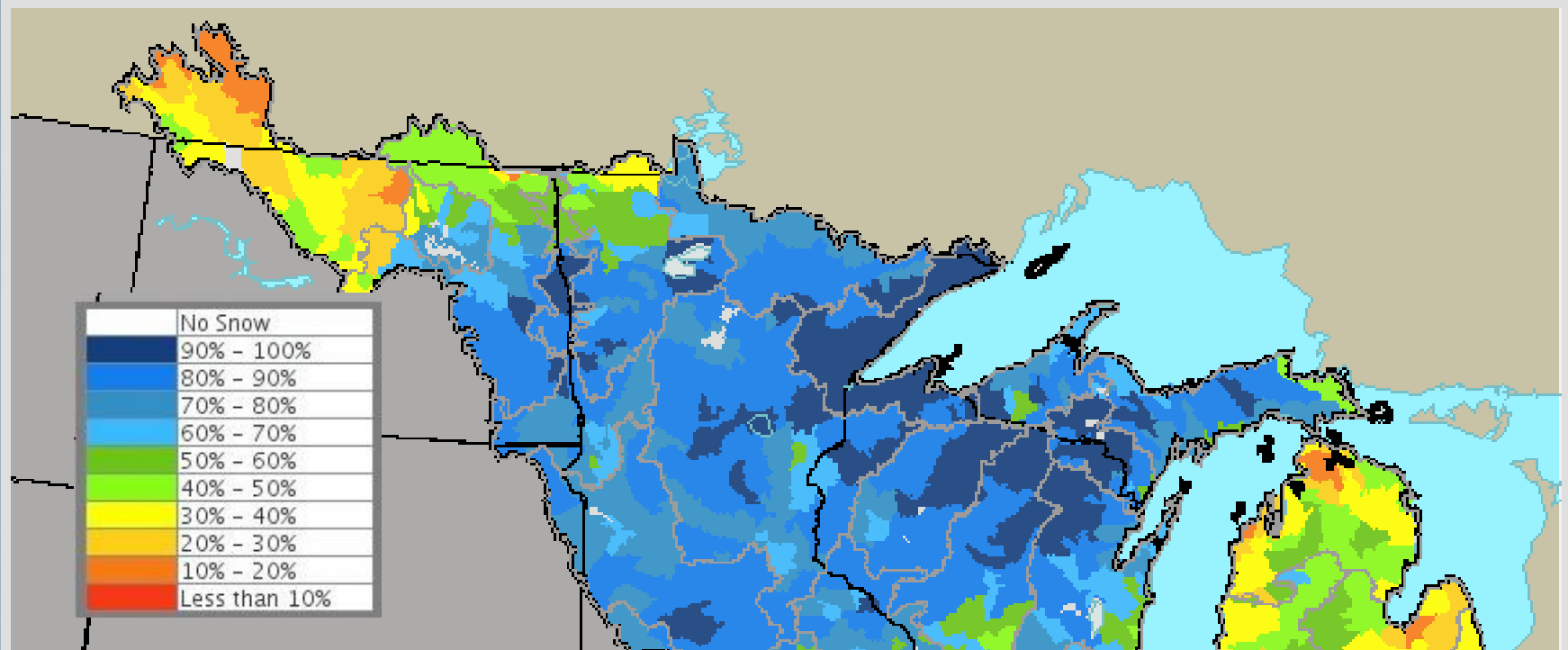


- 6 to 9 inches of water being held in the snowpack in the Basin

# Water in the Current Snowpack



## North Central River Forecast Center Ranked Simulated Snow Water Equivalent Valid for 02/24/2020 12 GMT



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 02/25/2020 at 12:13:18 AM CST

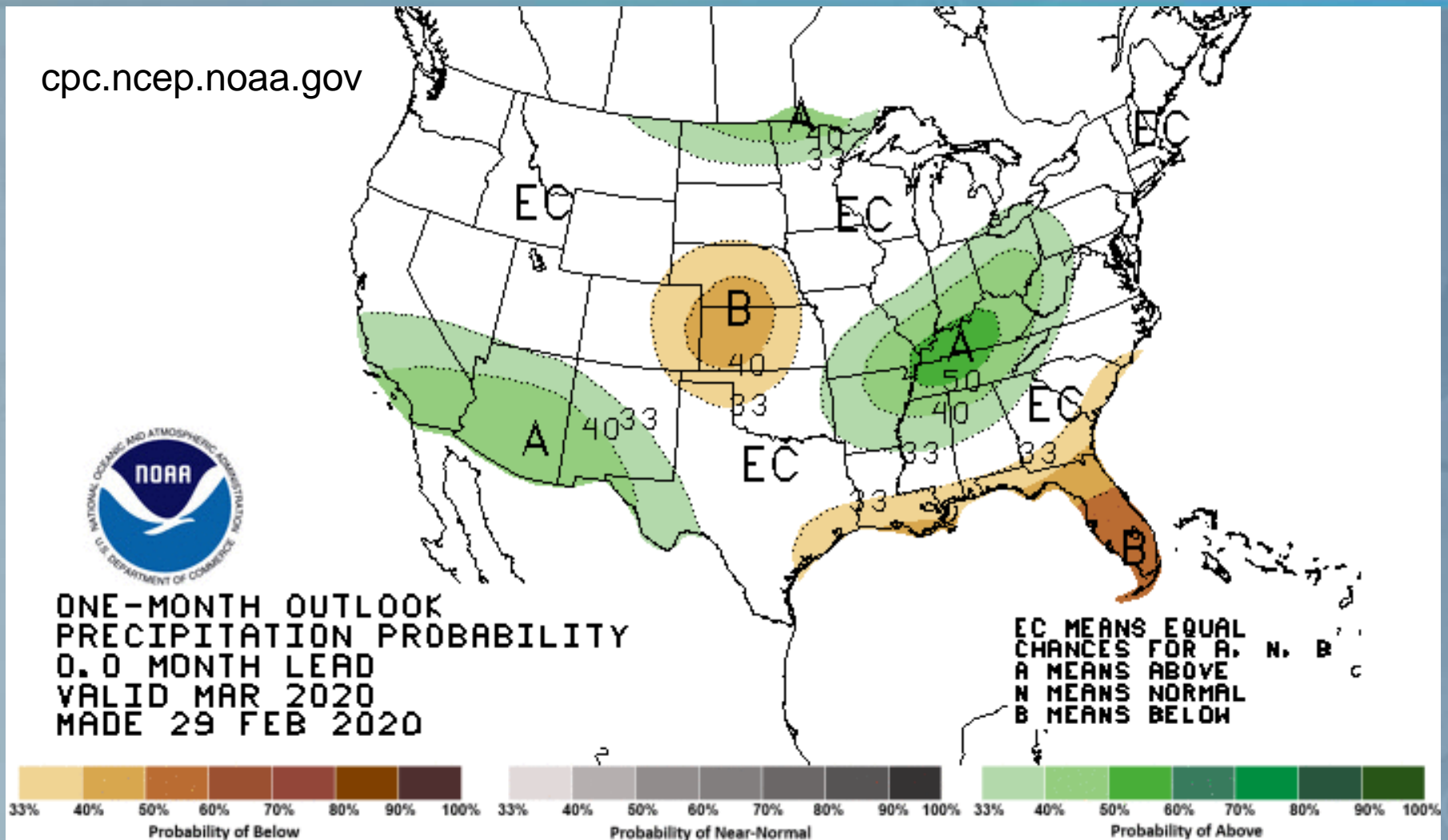
- Generally 90<sup>th</sup> to 100<sup>th</sup> ranking of snow water in the Basin

# Weather Outlook

- Near term – Chance for snow March 14<sup>th</sup>-16<sup>th</sup>
- March – Signal towards above normal precipitation and temperatures. Melt during day refreeze at night.
- Three Month Outlook March, April, May
  - Slight lean towards above normal precipitation
  - No signal of above or below normal temperatures

# Short Term Outlook - Precipitation

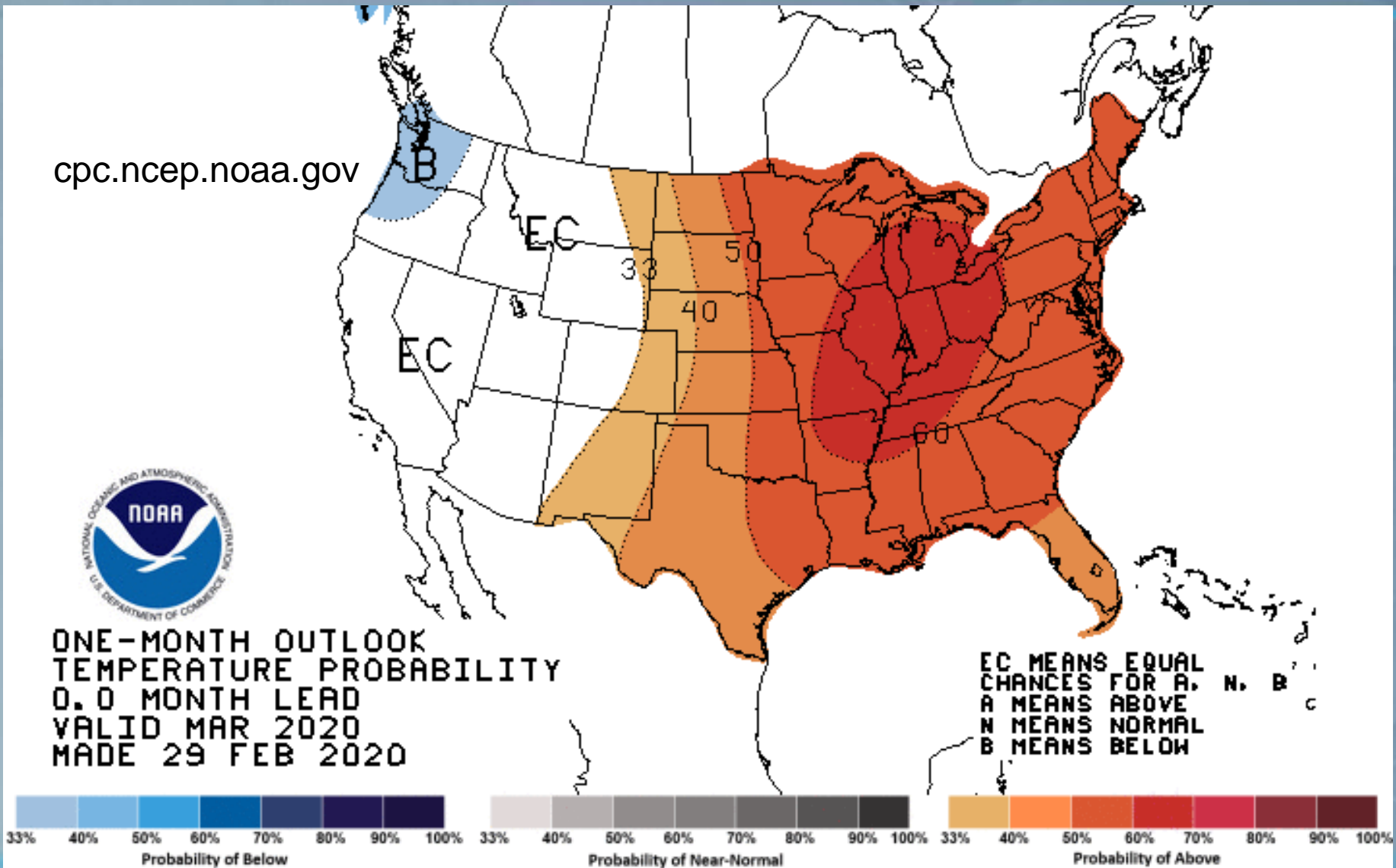
cpc.ncep.noaa.gov



- Slight lean towards above normal Precipitation Mar.

# Short Term Outlook - Temperature

cpc.ncep.noaa.gov



- Signal for Above Normal Temperatures March 2020

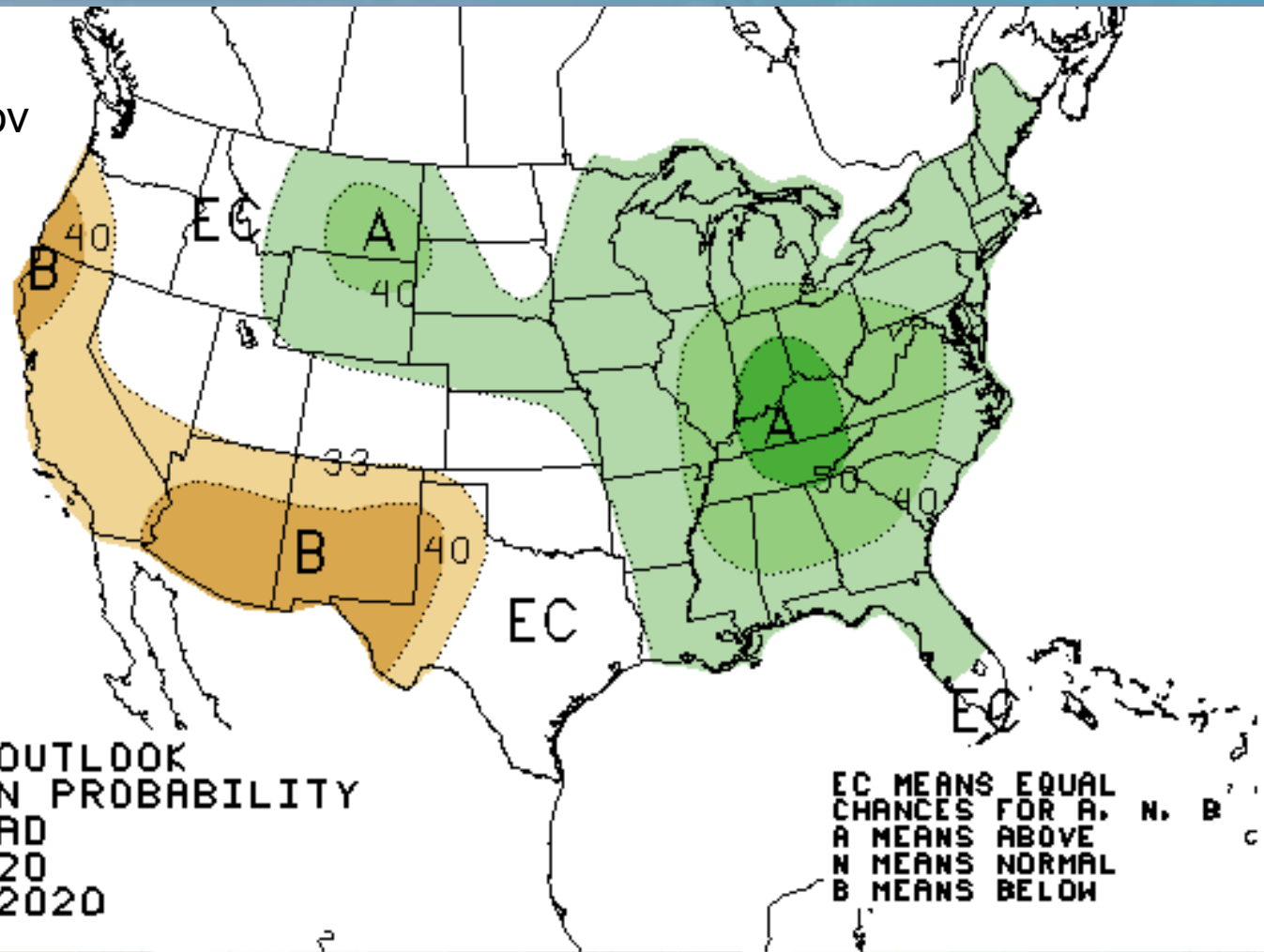


# Spring Outlook - Precipitation

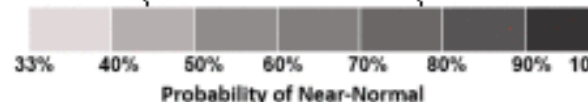
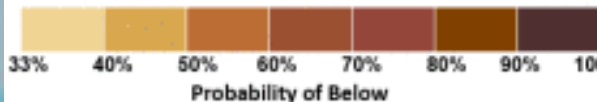
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THREE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
0.5 MONTH LEAD  
VALID MAM 2020  
MADE 20 FEB 2020



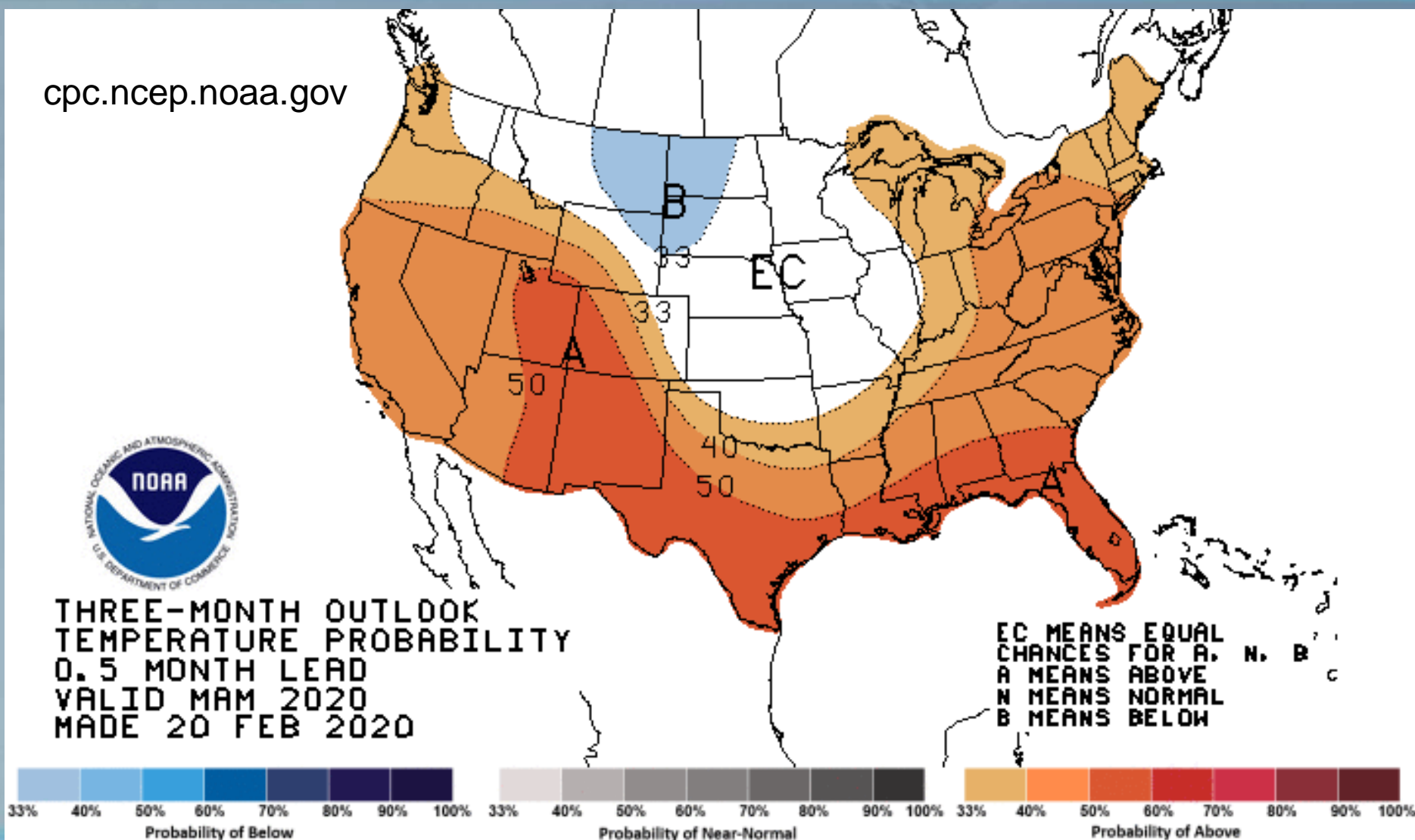
EC MEANS EQUAL  
CHANCES FOR A, N, B  
A MEANS ABOVE  
N MEANS NORMAL  
B MEANS BELOW



- Higher Confidence in Above Normal Precipitation Mar-May

# Spring Outlook - Temperature

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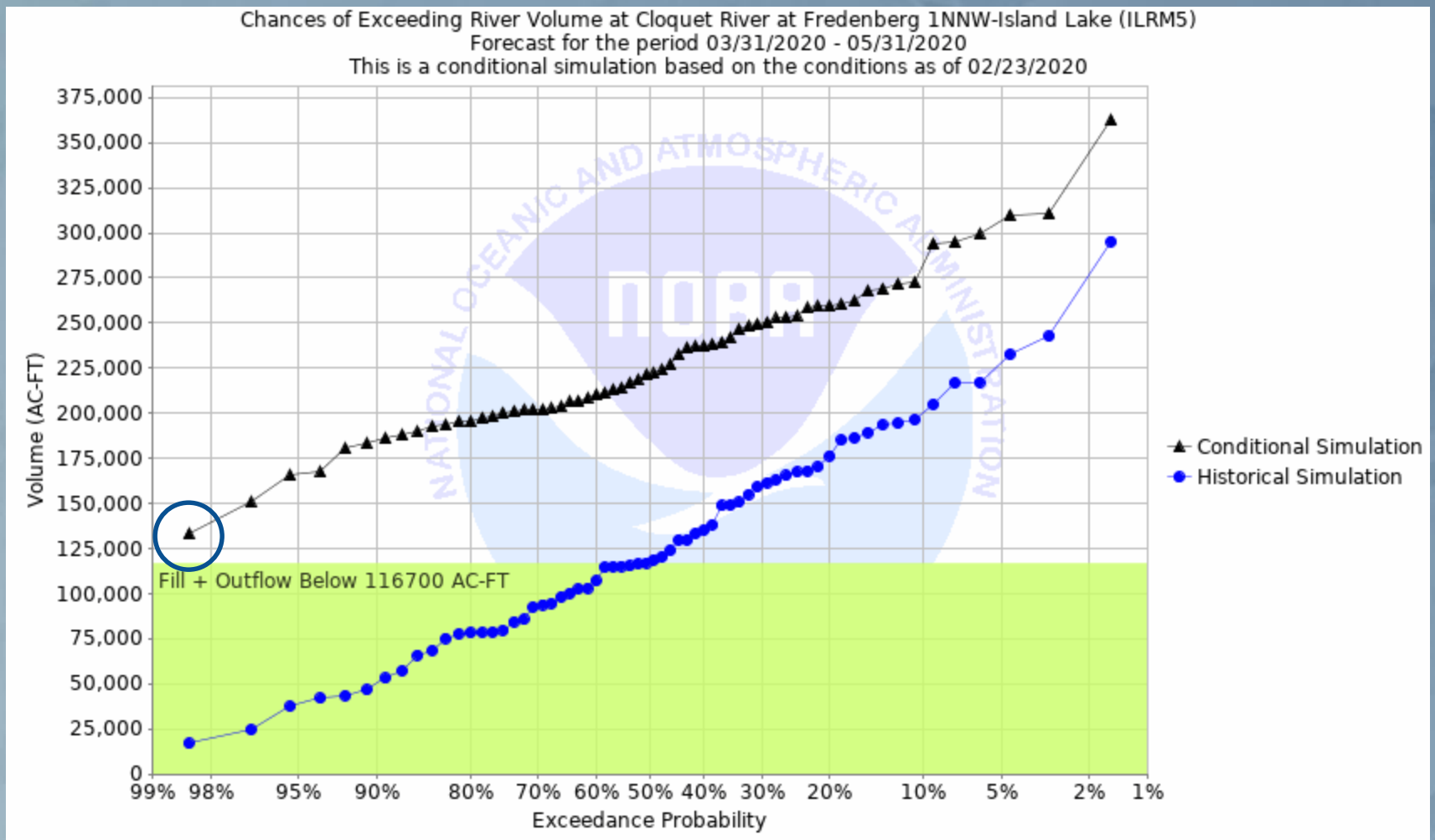


- Equal chance of above/below normal Temperatures Mar-May

# Hydrologic Outlook - Refill

- Greater than 95% chance of Refill under normal condition
- Nearly certain refill under Dry refill rules

# Greater than 95 % Chance of Refill - Normal

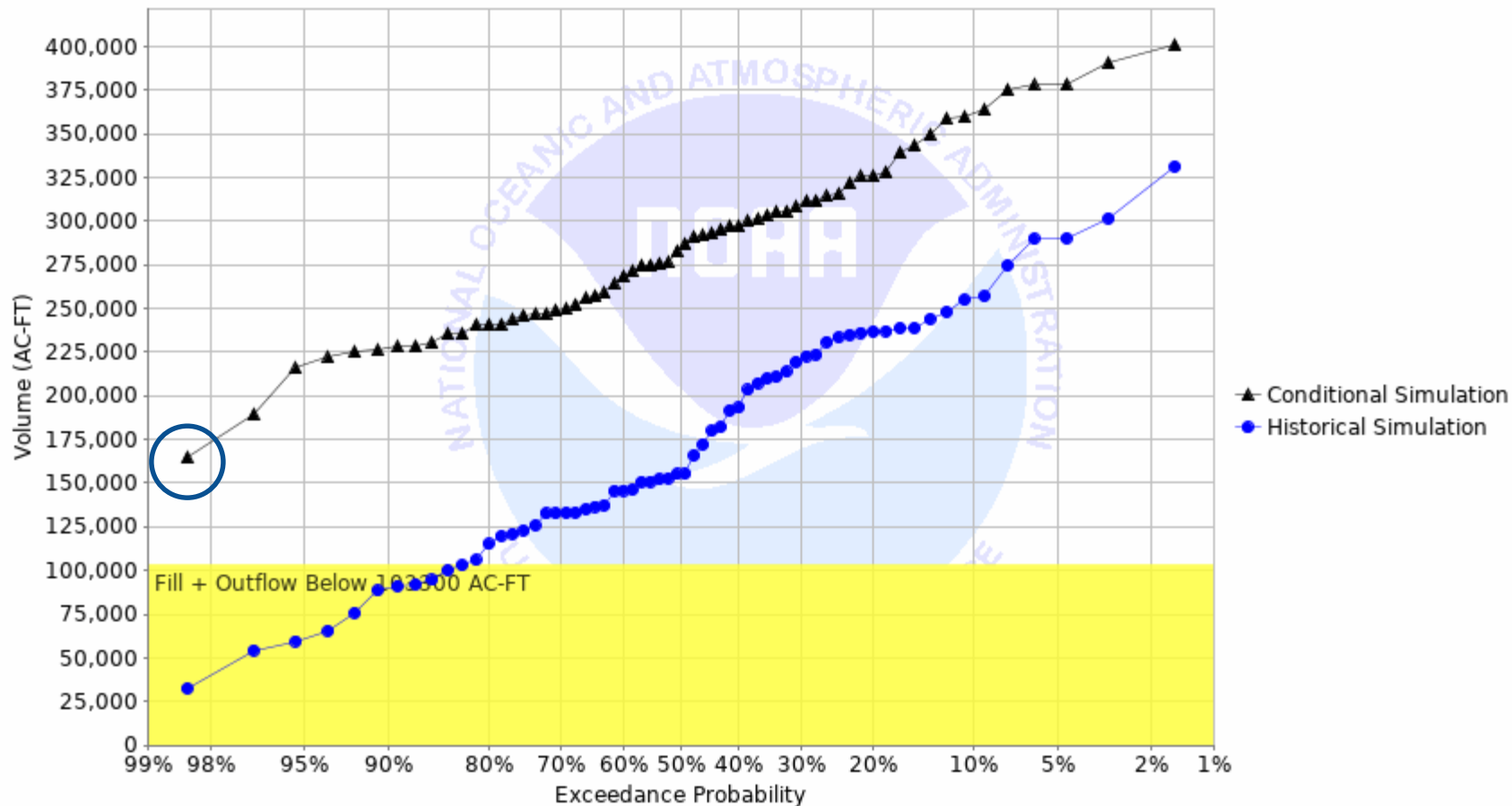


# 100% of Refill - Dry

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

Forecast for the period 03/31/2020 - 07/14/2020

This is a conditional simulation based on the conditions as of 02/23/2020





# 2020 Refill - Summary

- Above normal precipitation 2019 (especially wet Fall)
- Above normal soil moisture
- Weather Outlook
- Hydrologic Outlook
  - Greater than 95% Chance of Refill under normal condition
  - 100 % chance of refill under dry drawdown rule.