



# 2023 Spring Flood Outlook - Updated

April 5, 2023  
10:23 AM

For the rivers and streams in northeastern SD, portions of central SD, and portions of west central MN

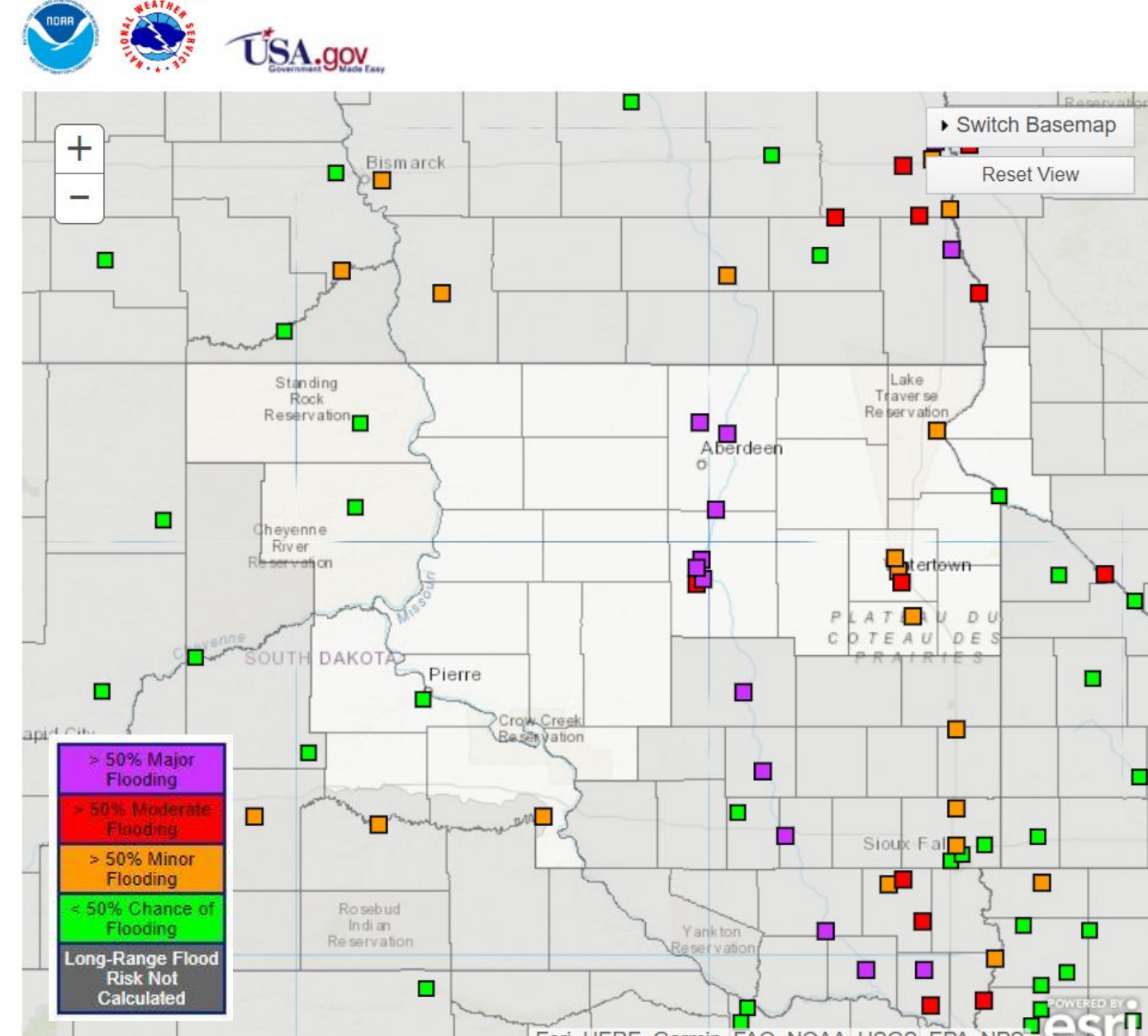
## Key Messages

- Snowpack is significant after recent snow events. **The chances for river and overland flooding have increased.**
- Major flooding can be expected along the James and Elm Rivers.
- Minor to moderate flooding is expected along the Big Sioux River.
- Minor flooding can be expected along the Little Minnesota River.
- Rate of snowmelt will be a big factor as temperatures are expected to rise to normal or even above normal values in the next week and a half. Any additional precipitation will also play a part.

## Interactive Flood Outlook Maps

- Outlook information for each forecast point is found here: [https://water.weather.gov/ahps2/long\\_range.php?wfo=ABR](https://water.weather.gov/ahps2/long_range.php?wfo=ABR)

### Long-Range River Flood Risk





# Temperature and Precip Outlook

April 5, 2023  
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## Overview

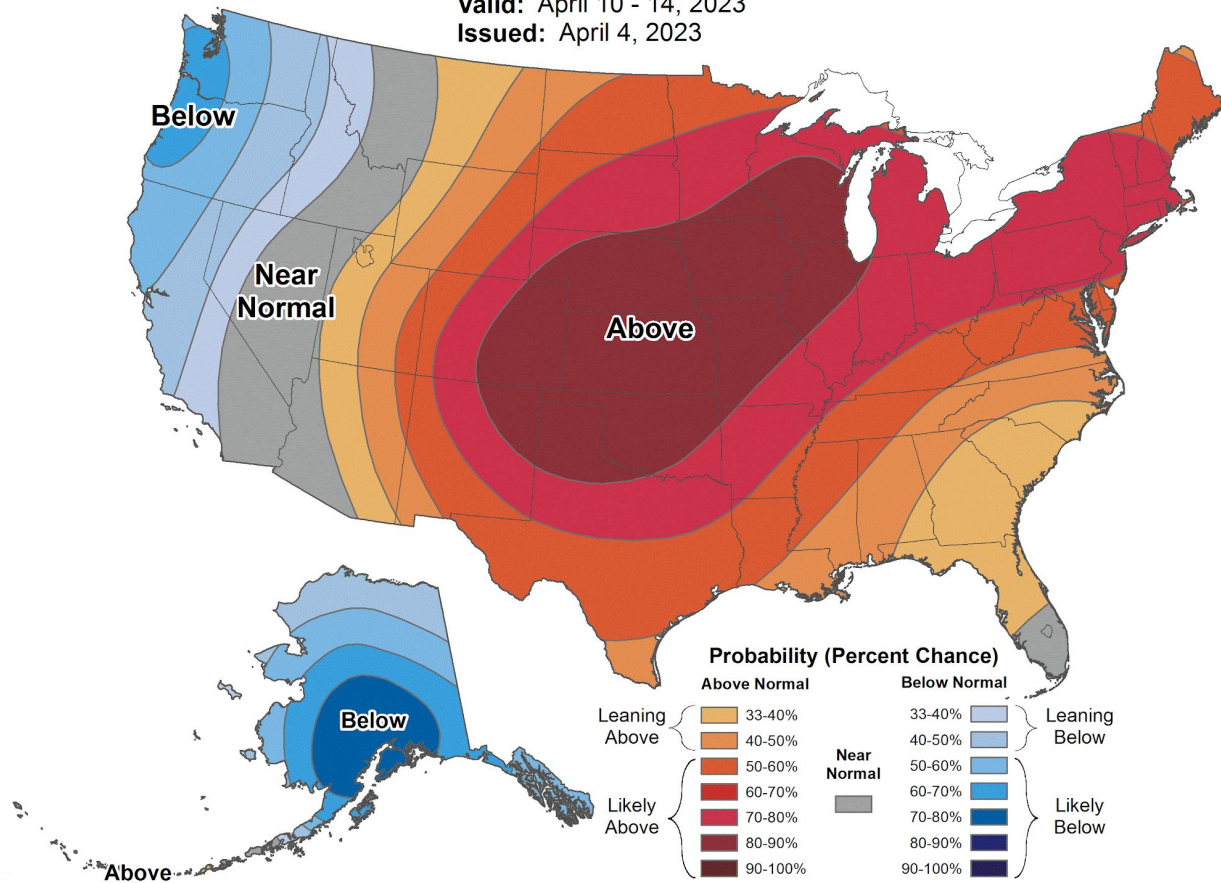
→ The outlook for the next 10 days is for increased chances for above normal temperatures and near to below normal precipitation.



### 6-10 Day Temperature Outlook



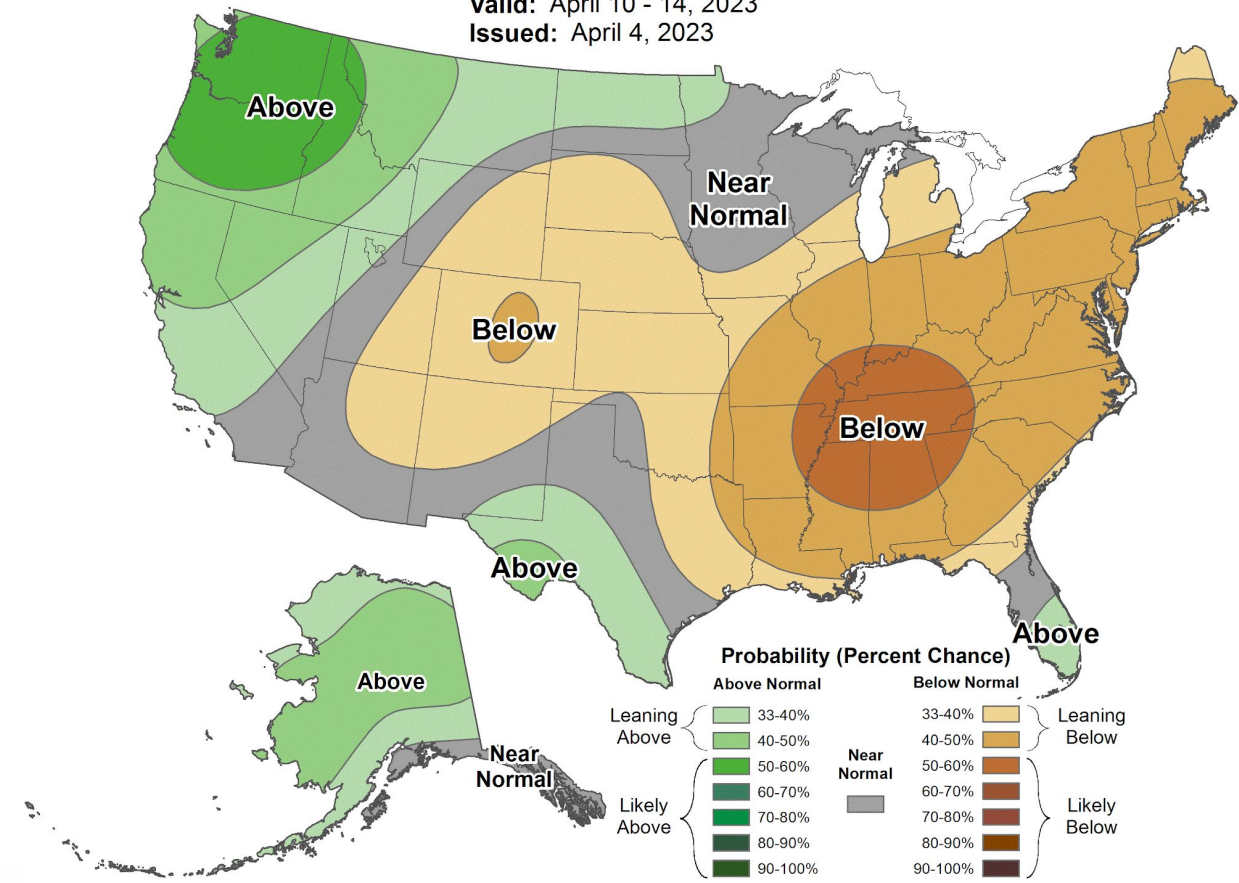
Valid: April 10 - 14, 2023  
Issued: April 4, 2023



### 6-10 Day Precipitation Outlook



Valid: April 10 - 14, 2023  
Issued: April 4, 2023



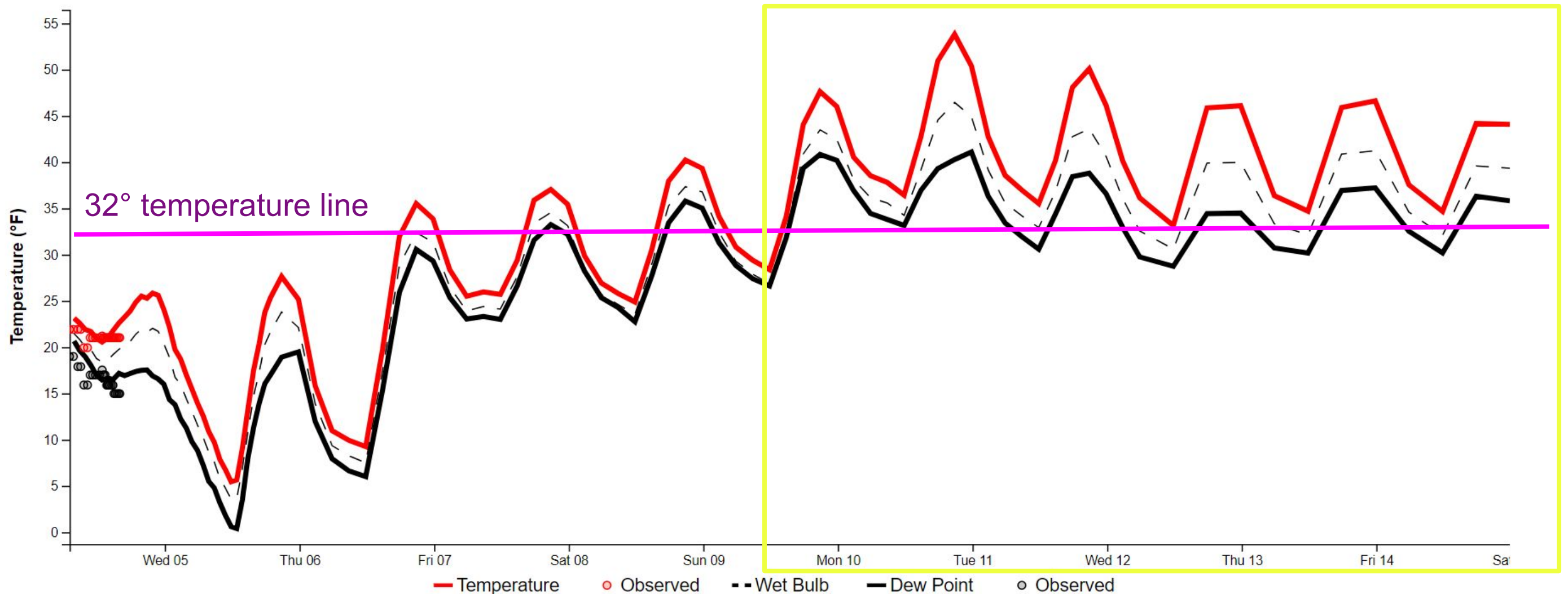


# Temperature Outlook

April 5, 2023  
10:23 AM

## Overview

→ The chart below is a temperature forecast for the James Valley region. Temperatures (red line) rising above freezing (purple line) and not dropping below freezing at night will increase the rate of snowmelt as we head into the week of April 10.



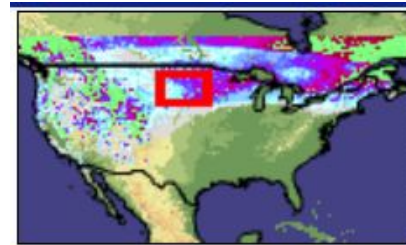


# Current Snow Pack

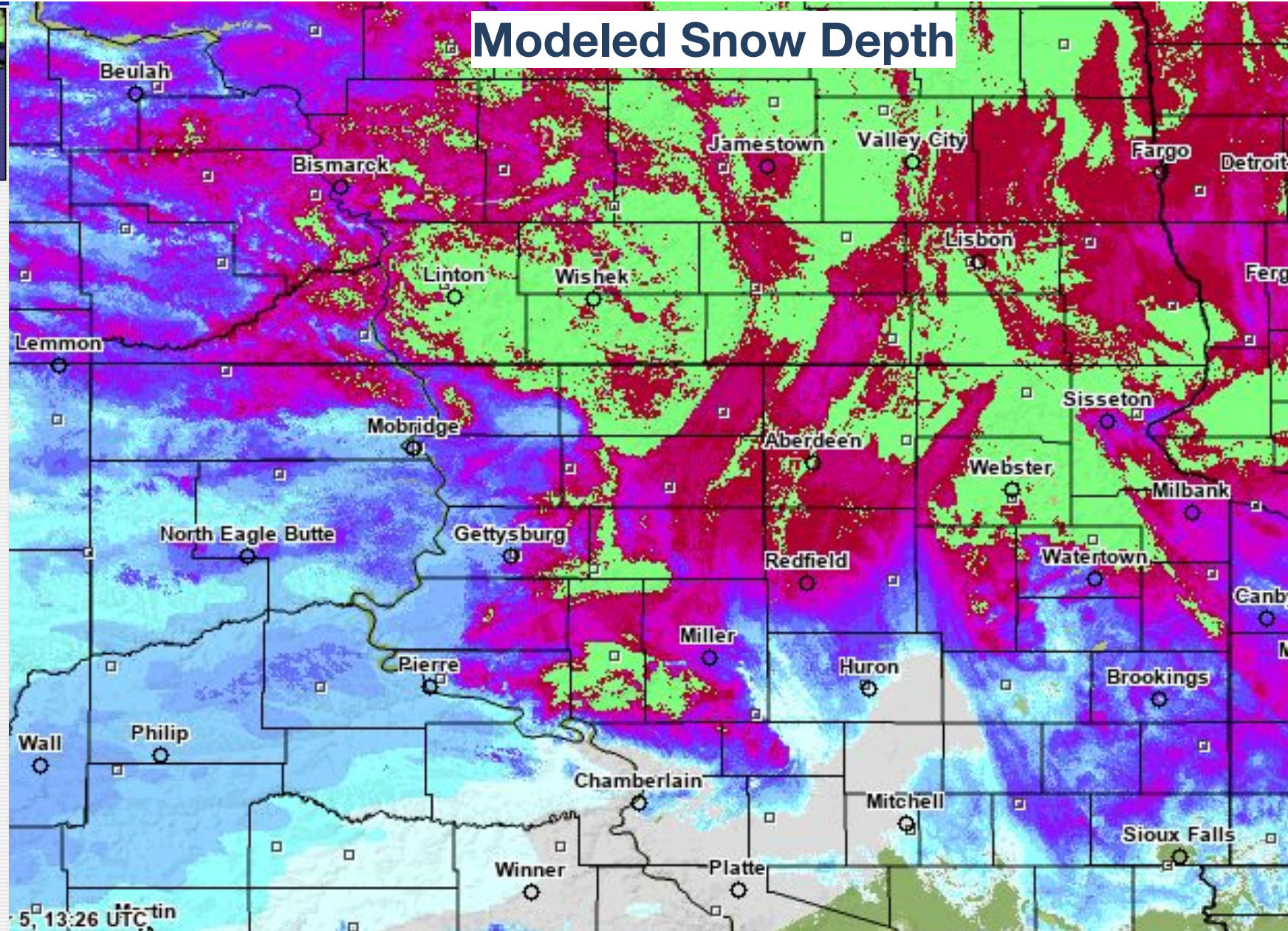
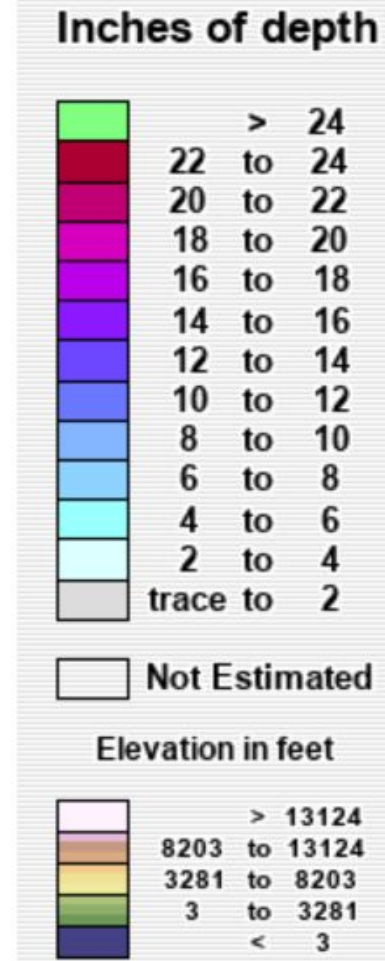
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## Overview

- Snowpack is well above normal, and very much a concern.
- Over 20 inches of snow is fairly widespread east of the Missouri River and north of US HWY 14.
- Along and west of the Missouri River snowpack varies, but generally ranges from 4 to 10 inches.



## Modeled Snow Depth



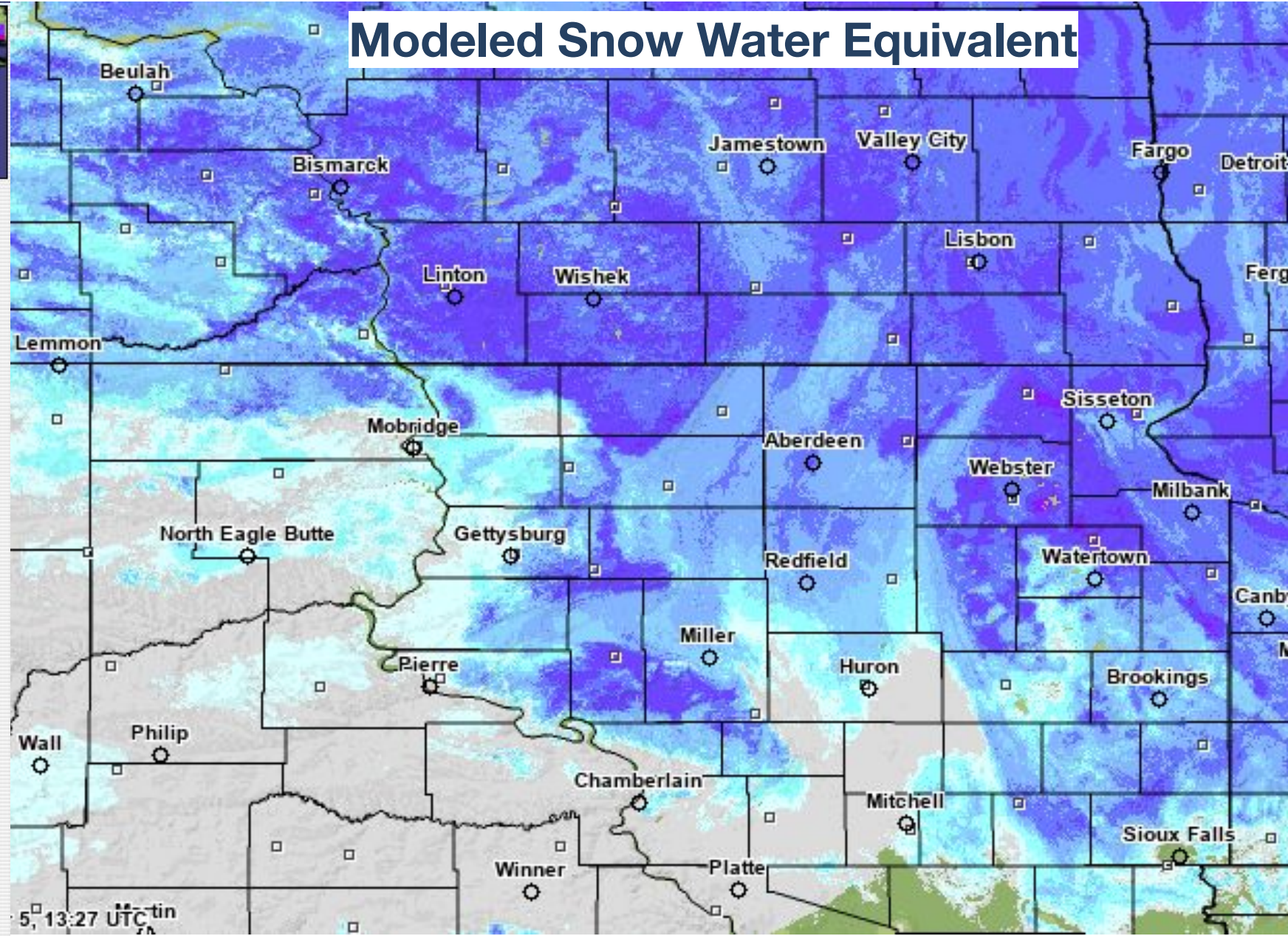
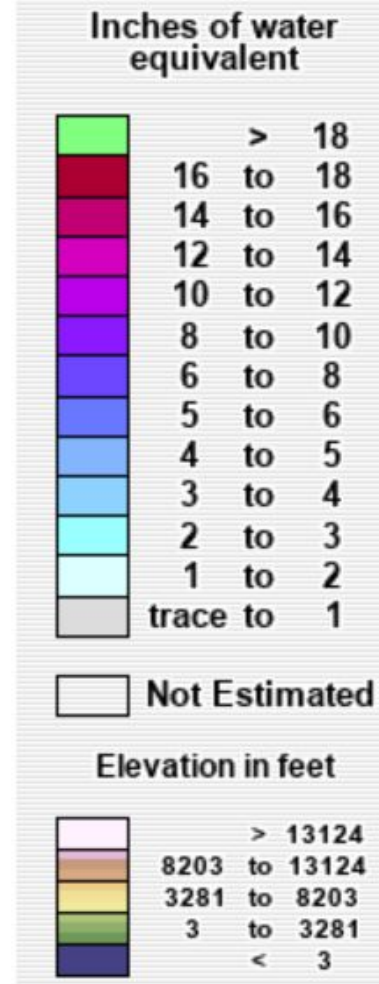
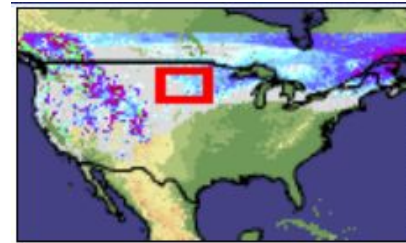


# Current Snow Water Equivalent

April 5, 2023  
10:23 AM

## Overview

- Snow water equivalent is the amount of moisture in the snow pack.
- Snow water equivalent is well above normal for this time of the year.
- Widespread 4 to 6 inches of snow water equivalent exists east of the Missouri River.
- Along and west of the Missouri River snow water equivalent is generally 1 to 3 inches.





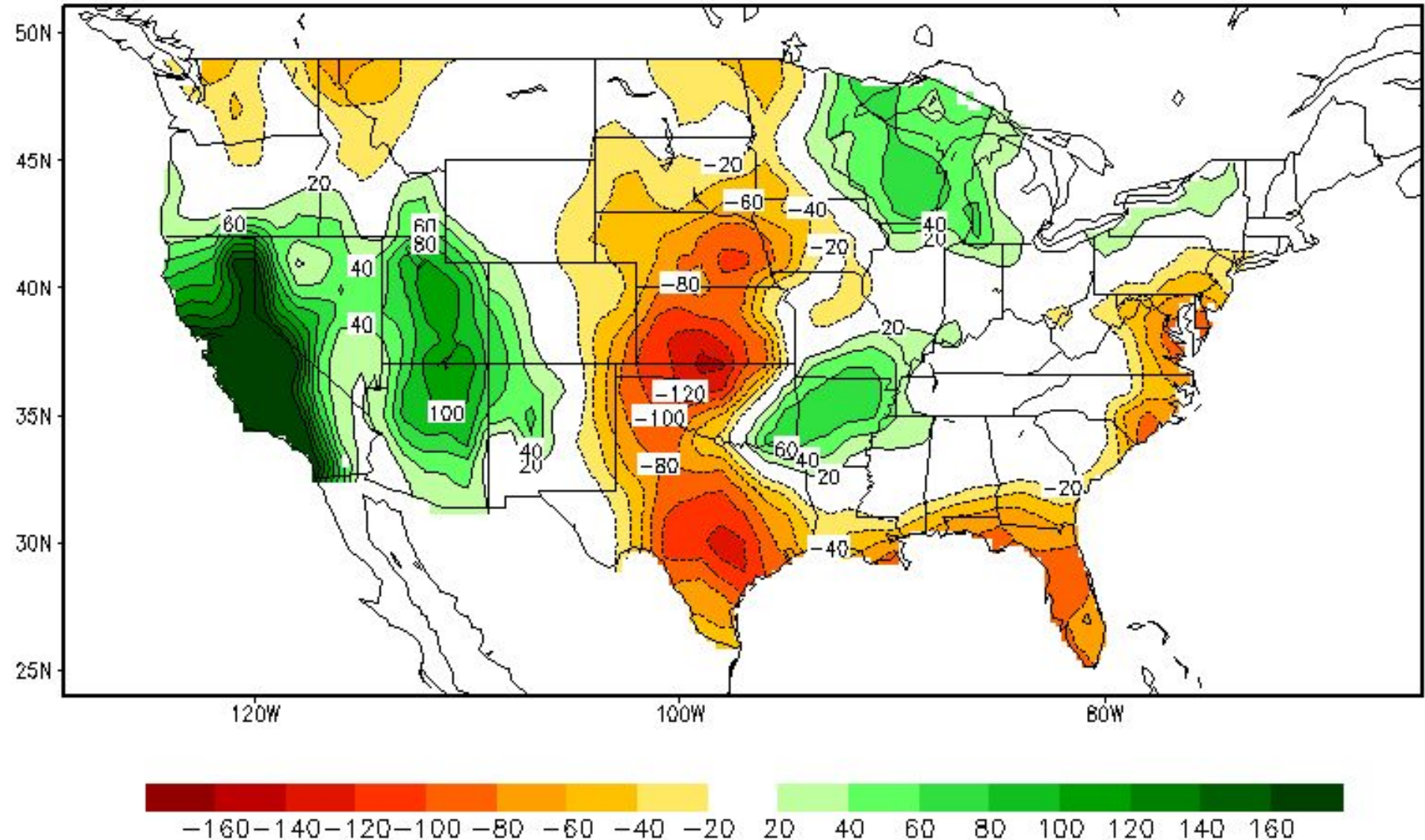
# Current Soil Conditions

April 5, 2023  
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## Overview

- Soil moisture is near to below normal across the area.
  - ◆ The image at the right shows the difference from normal soil moisture
- Frost depths are generally in the 6 inch to 1 foot range. Slightly deeper over north central South Dakota.
- The entire region is in Abnormally Dry to Moderate drought conditions.
- The drier conditions to allow some capacity for water to soak in and runoff into normal channels

Calculated Soil Moisture Anomaly (mm)  
APR 04, 2023





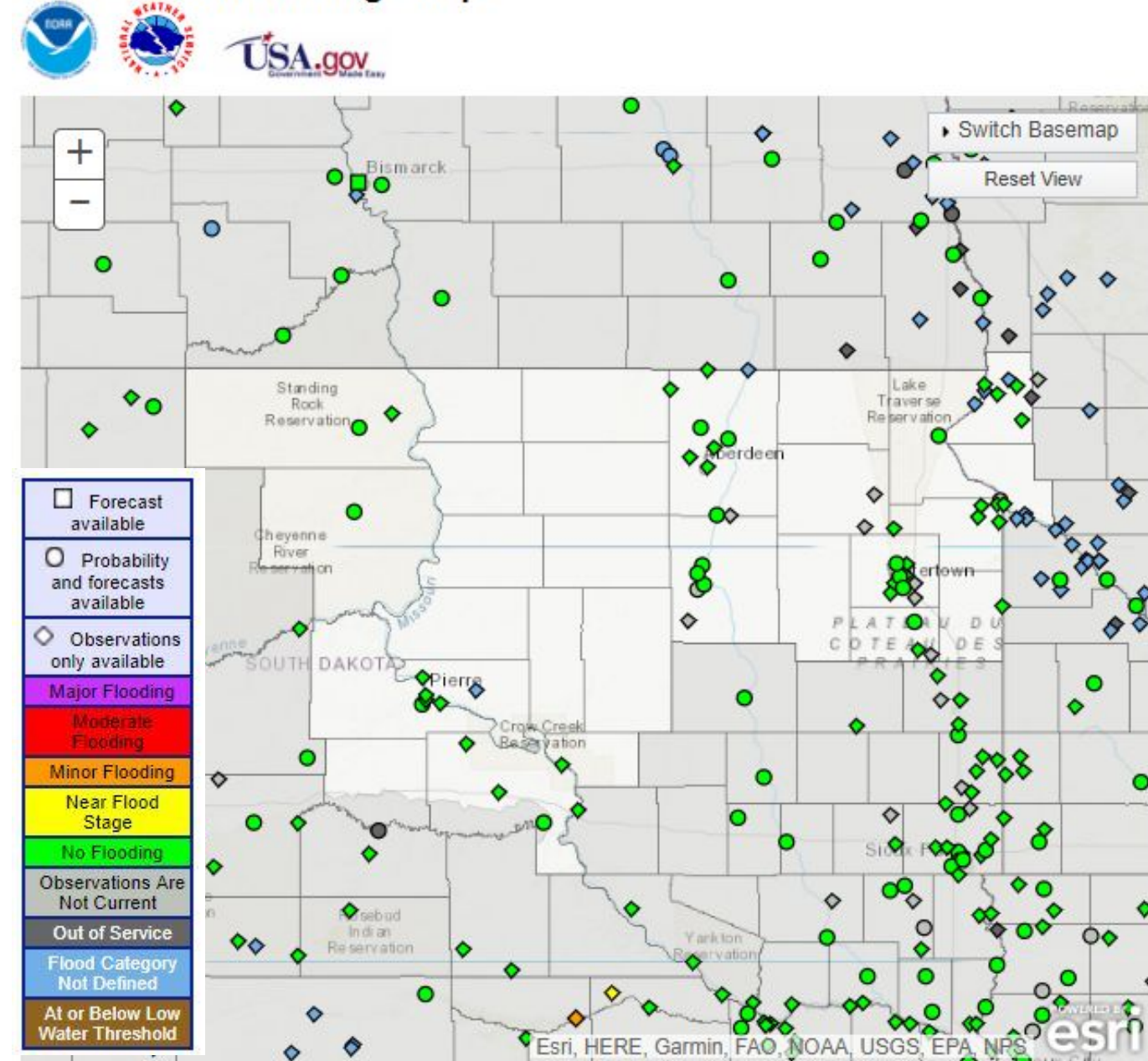
# Current River Conditions

April 5, 2023  
10:23 AM

## Overview

- All of the rivers in the area are iced over or mostly iced over.
- River levels froze at near to below normal across the region.
- The threat for break-up ice jams are possible as we head into a period of warmer temperatures. Any potential ice jam flooding will be determined by how fast the ice melts and how much additional flow can get into the rivers to raise and break up the existing ice cover before it melts.

### AHPS Observed Gauge Map





# Probabilistic Outlooks

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## Probabilities for minor...moderate and major flooding

### Overview

- In Table 1 to the right, the current (CS) and historical (HS) or normal probabilities of exceeding minor, moderate, and major flood stages are listed for the valid time period.
- CS values indicate the probability of reaching a flood category based on current conditions.
- HS values indicate the probability of reaching a flood category based on historical or normal conditions.
- When the value of CS is more than HS, the probability of exceeding that level is higher than normal. When the value of CS is less than HS, the probability of exceeding that level is lower than normal.

...Table 1--Probabilities for minor...moderate and major flooding...  
Valid Period:  
Valid Period: 03/27/2023 - 06/25/2023  
: Current and Historical  
: Chances of Exceeding  
: Flood Categories  
: as a Percentage (%)

Location	Categorical Flood Stages (FT)			Minor		Moderate		Major	
	Minor	Mod	Major	CS	HS	CS	HS	CS	HS
:Elm River Westport	14.0	16.0	19.0	>98	20	>98	16	88	6
:James River Columbia	13.0	16.0	18.0	>98	52	>98	38	>98	27
Stratford	14.0	17.0	18.5	>98	63	>98	38	>98	26
Ashton	13.0	14.0	16.0	>98	60	>98	56	>98	39
Redfield	20.0	22.0	25.0	>98	38	>98	37	>98	34
:Snake Creek Ashton	11.5	13.0	16.0	>98	39	>98	28	>98	21
:Turtle Creek Redfield	7.0	10.0	15.0	>98	52	>98	36	43	22
:Big Sioux River Watertown 10NW	10.0	11.0	12.0	>98	8	12	<5	<5	<5
Watertown Conifer	9.0	10.0	12.0	60	31	21	14	<5	<5
Watertown Broadway	10.5	11.0	13.5	>98	32	56	31	5	<5
Castlewood	9.0	11.0	16.0	>98	40	27	23	<5	<5
:Grand River Little Eagle	15.0	17.0	21.0	14	20	6	13	<5	<5
:Moreau River White Horse	21.0	23.0	25.0	<5	18	<5	14	<5	5
:Bad River Fort Pierre	21.0	25.0	27.0	19	14	10	5	<5	<5
:Little Minnesota Peever	17.0	22.0	24.0	52	27	<5	<5	<5	<5
:Minnesota River Big Stone Lake	971.5	973.0	975.0	11	6	<5	<5	<5	<5





# Probabilistic Outlooks

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## Exceedance Probabilities

### Overview

→ In Table 2 to the right, the 95 through 5 percent columns indicate the probability of exceeding the listed stage levels (FT) for the valid time period.

...Table 2--Exceedance Probabilities...

Location	Chance of Exceeding Stages at Specific Locations						
	Valid Period:						
	95%	90%	75%	50%	25%	10%	5%
:Elm River							
Westport	18.8	18.9	19.3	20.1	21.9	23.0	23.6
:James River							
Columbia	18.1	18.2	18.3	19.0	19.4	19.8	20.3
Stratford	19.0	19.1	19.2	19.4	20.2	20.7	21.1
Ashton	20.9	21.3	21.8	23.0	27.2	31.1	32.6
Redfield	28.3	28.4	28.7	30.4	33.4	34.4	34.7
:Snake Creek							
Ashton	17.7	17.8	17.9	19.4	23.4	28.6	30.1
:Turtle Creek							
Redfield	12.6	12.6	12.7	14.1	17.3	19.3	20.6
:Big Sioux River							
Watertown 10NW	10.1	10.1	10.1	10.2	10.6	11.2	11.4
Watertown Conifer	8.8	8.8	8.8	9.2	9.8	10.8	11.5
Watertown Broadway	10.6	10.6	10.6	11.2	12.0	12.9	13.6
Castlewood	9.9	9.9	9.9	10.3	11.2	12.0	13.0
:Grand River							
Little Eagle	12.5	12.6	12.7	13.0	13.7	15.3	19.8
:Moreau River							
White Horse	10.4	10.4	10.4	11.0	13.0	14.8	19.1
:Bad River							
Fort Pierre	12.4	12.4	12.5	14.9	19.8	24.9	26.7
:Little Minnesota							
Peever	15.6	15.9	16.6	17.0	18.7	20.2	21.1
:Minnesota River							
Big Stone Lake	968.1	968.2	968.5	968.9	970.3	971.6	972.5



# Probabilistic Outlooks

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## Non-Exceedance Probabilities

### Overview

→ In Table 3 to the right, the 95 through 5 percent columns indicate the probability of falling below the listed stage levels (FT) for the valid time period.

...Table 3--Nonexceedance Probabilities...

LOCATION	Chance of Falling Below Stages at Specific Locations						
	Valid Period:						
	95%	90%	75%	50%	25%	10%	5%
Elm River							
Westport	4.3	4.3	4.3	4.3	4.3	4.3	4.3
James River							
Columbia	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Stratford	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Ashton	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Redfield	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Snake Creek							
Ashton	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Turtle Creek							
Redfield	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Big Sioux River							
Watertown 10NW	4.8	4.8	4.7	4.5	4.3	4.1	4.0
Watertown Conifer	4.2	4.2	4.2	4.2	4.2	4.0	3.9
Watertown Broadwy	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Castlewood	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Grand River							
Little Eagle	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Moreau River							
White Horse	3.1	3.0	3.0	2.6	2.5	2.4	2.3
Bad River							
Fort Pierre	1.4	0.9	0.7	0.6	0.6	0.6	0.6
Little Minnesota							
Peever	10.1	10.1	10.1	9.8	9.8	9.8	9.8
Minnesota River							
Big Stone Lake	967.3	967.3	967.3	967.3	967.3	967.3	967.3



# Preparation & More Information

## Steps to minimize flood losses

- Waterproof your basement by checking water alarms and maintain a working sump pump. Install a battery-operated backup pump in case of power failure.
- Make a path for water to run so it does not pool around the house foundation.
- Elevate or move your furniture or any important personal belongings.
- **When a flood is imminent or occurring, your first priority should be the physical safety of you, your loved ones, and your pets. Never drive into flooded roadways.**



Visit our website [weather.gov/abr](https://www.weather.gov/abr) or [water.weather.gov/ahps2/long\\_range.php?wfo=ABR](https://water.weather.gov/ahps2/long_range.php?wfo=ABR) for more weather and water information.