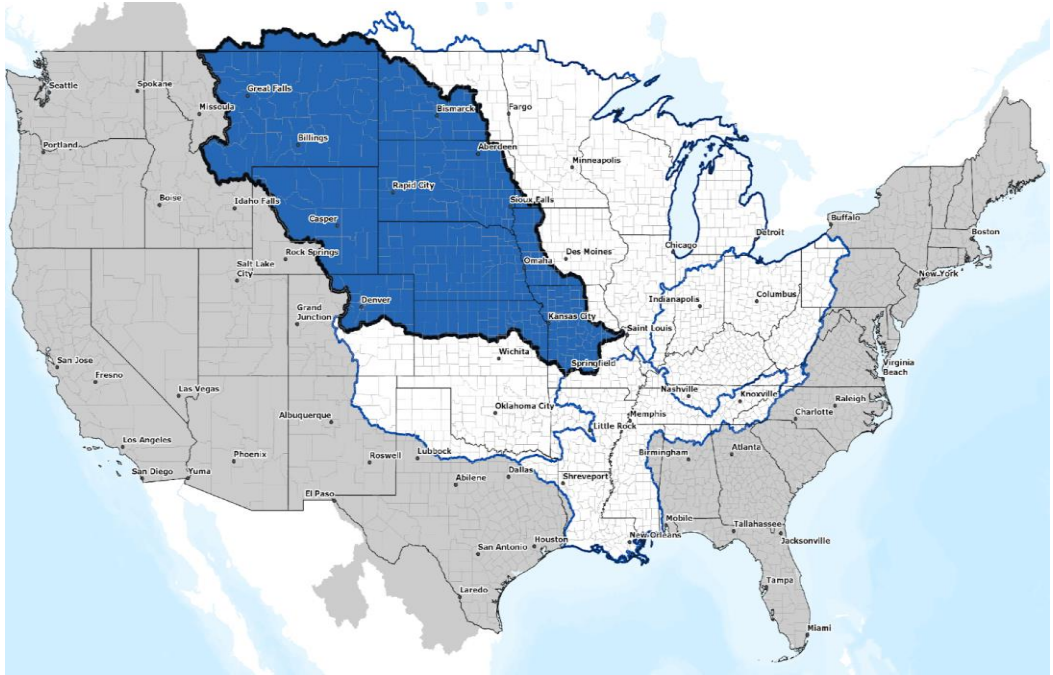
NATIONAL WEATHER SERVICE

Building a Weather-Ready Nation

2024 Flood Potential Outlook
Missouri River Basin

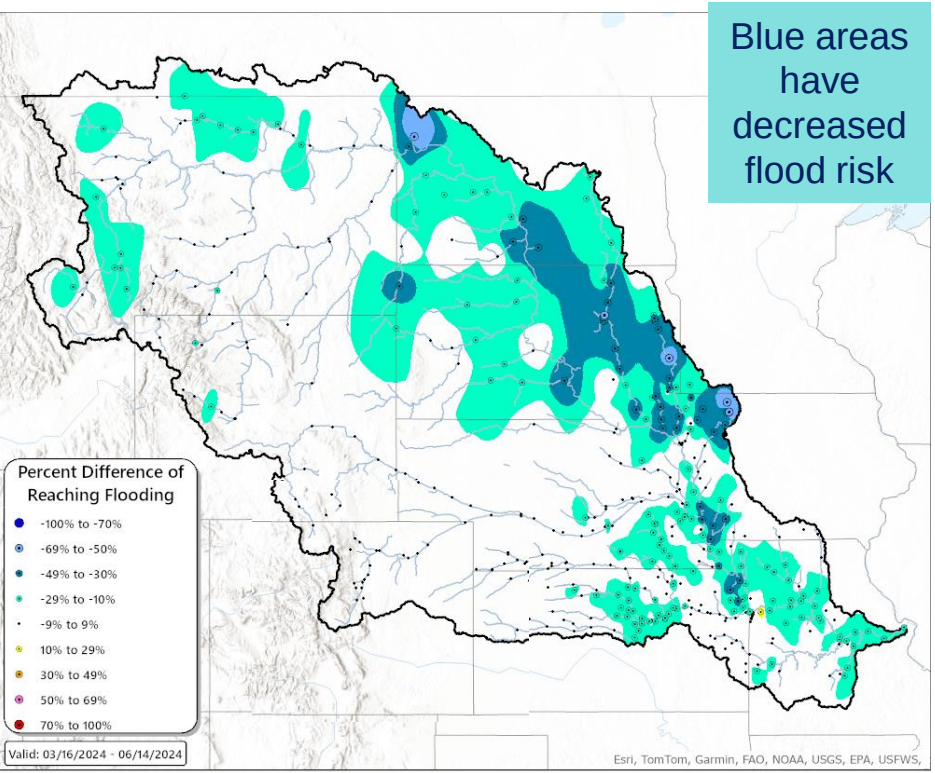


March 14, 2024

MISSOURI BASIN:

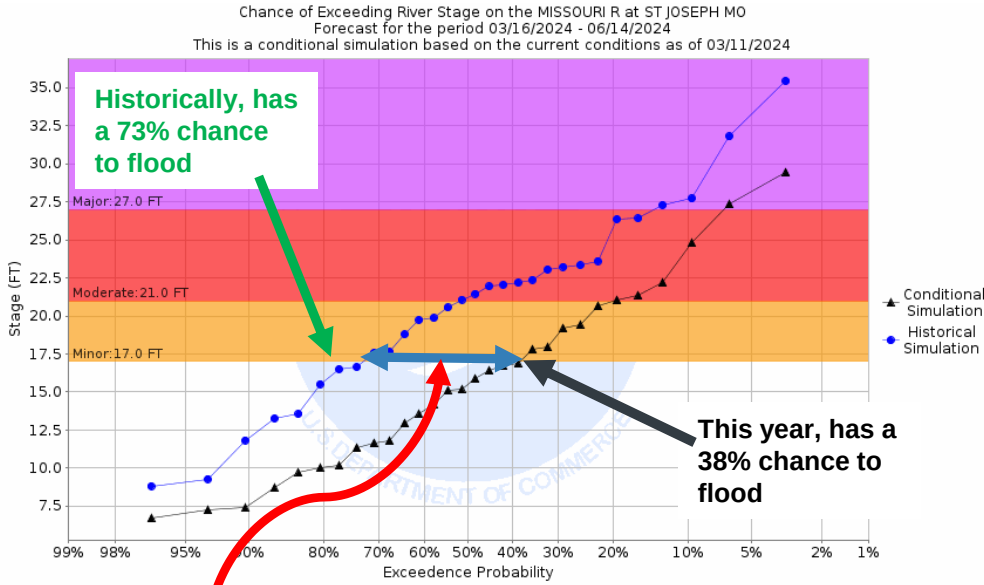
CHANCE OF REACHING FLOOD STAGE IN 2024 AS COMPARED TO HISTORICAL

MUCH OF THE MISSOURI BASIN HAS A REDUCED RISK FOR FLOODING



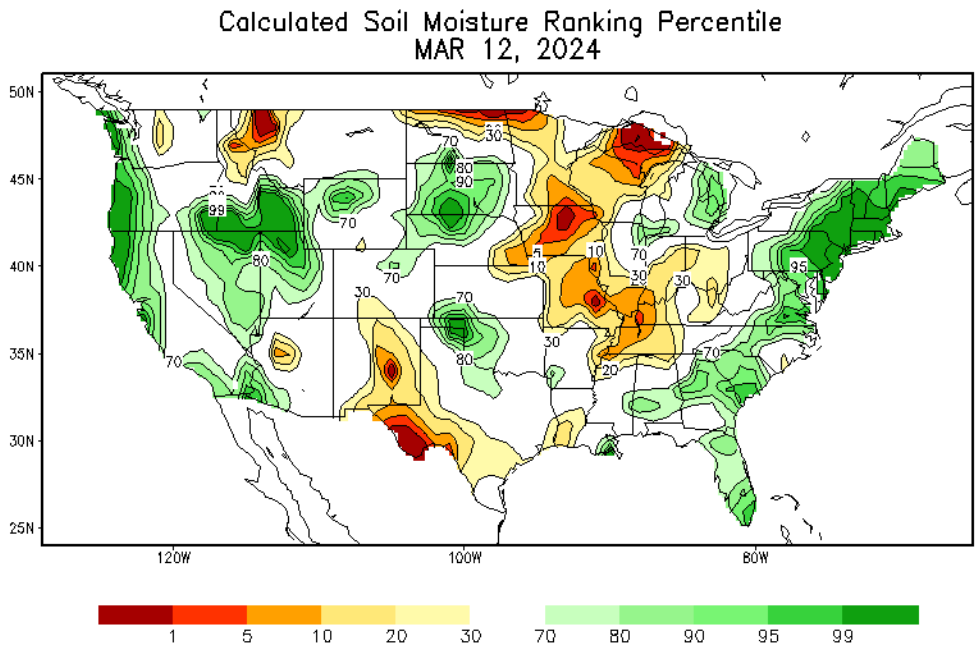
Ensemble Streamflow Prediction (ESP)
Percent Difference of Reaching Minor Flooding versus Historical Average

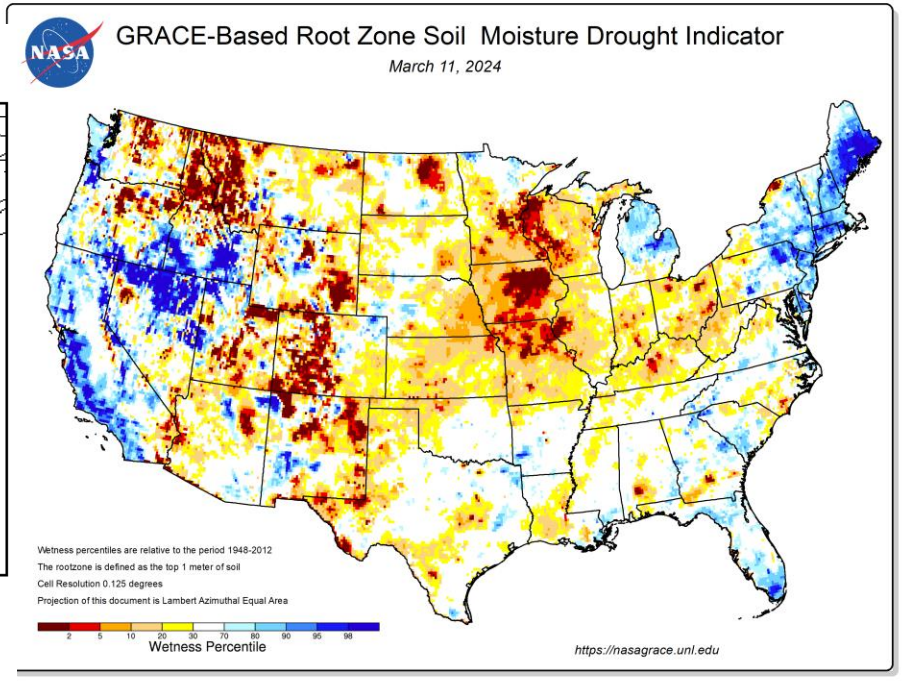
Example: Missouri River at St. Joseph, MO



35 percent decrease in chance to reach flood stage during next 3 months

MISSOURI BASIN:
SOIL MOISTURE CONDITIONS

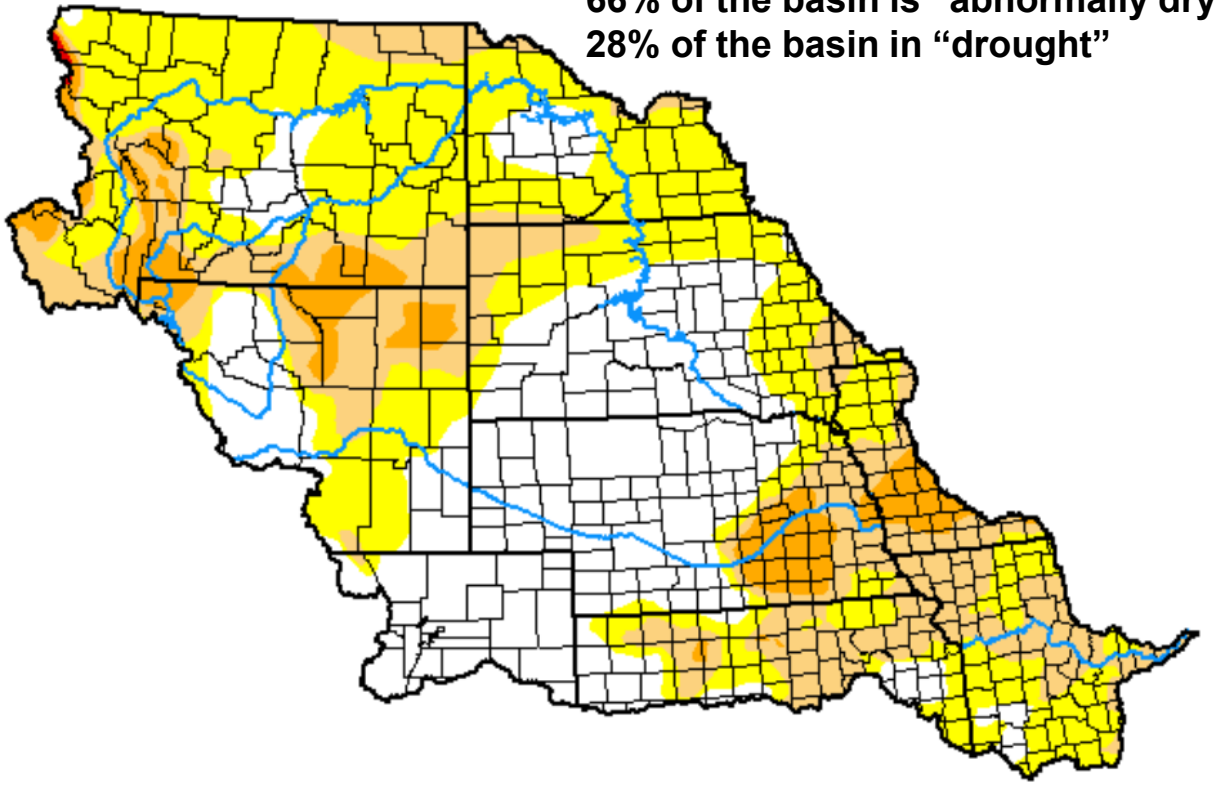




Soil moisture is better than last year in portions of the northern plains. But, in general, soils in the Missouri River basin are dry.

MISSOURI BASIN:
DROUGHT CONDITIONS

66% of the basin is “abnormally dry”
28% of the basin in “drought”



March 12, 2024
(Released Thursday, Mar. 14, 2024)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.84	66.16	28.22	7.21	0.08	0.00
Last Week *03-05-2024*	34.19	65.81	28.14	7.12	0.08	0.00
3 Months Ago *12-12-2023*	61.42	38.58	20.00	10.57	2.47	0.56
Start of Calendar Year *01-02-2024*	53.56	46.44	19.40	8.57	1.61	0.03
Start of Water Year *09-26-2023*	57.86	42.14	31.19	17.17	5.73	0.70
One Year Ago *03-14-2023*	22.97	77.03	51.04	24.19	8.58	1.62

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

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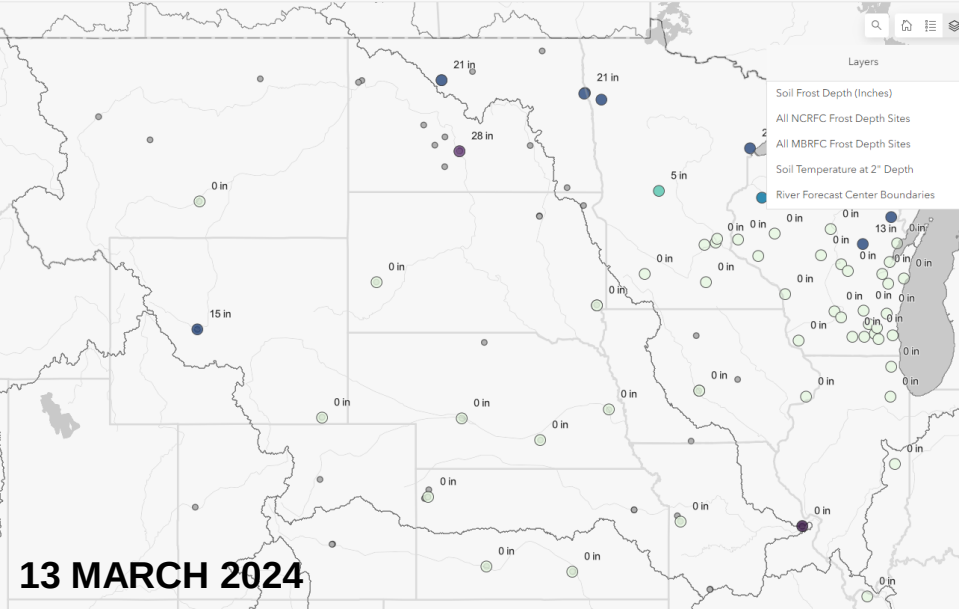
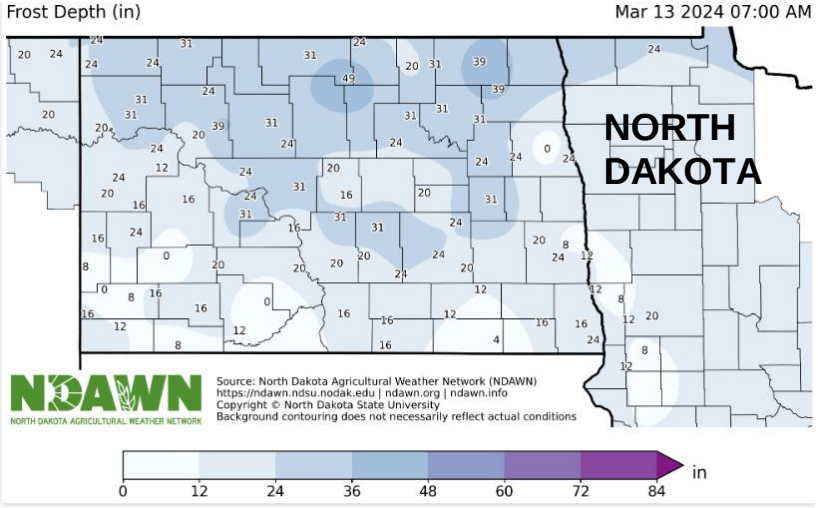
National Drought Mitigation Center

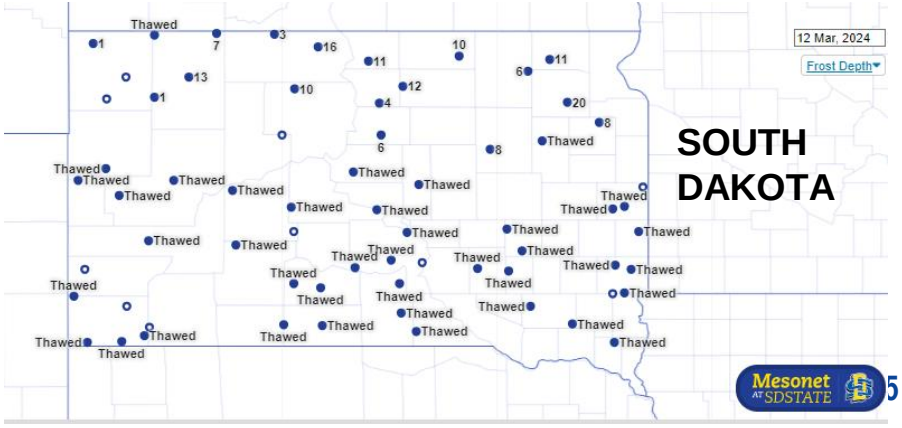
droughtmonitor.unl.edu

MISSOURI BASIN: FROST DEPTHS

FROZEN GROUND NOT A CONCERN SOUTH OF mid-SOUTH DAKOTA



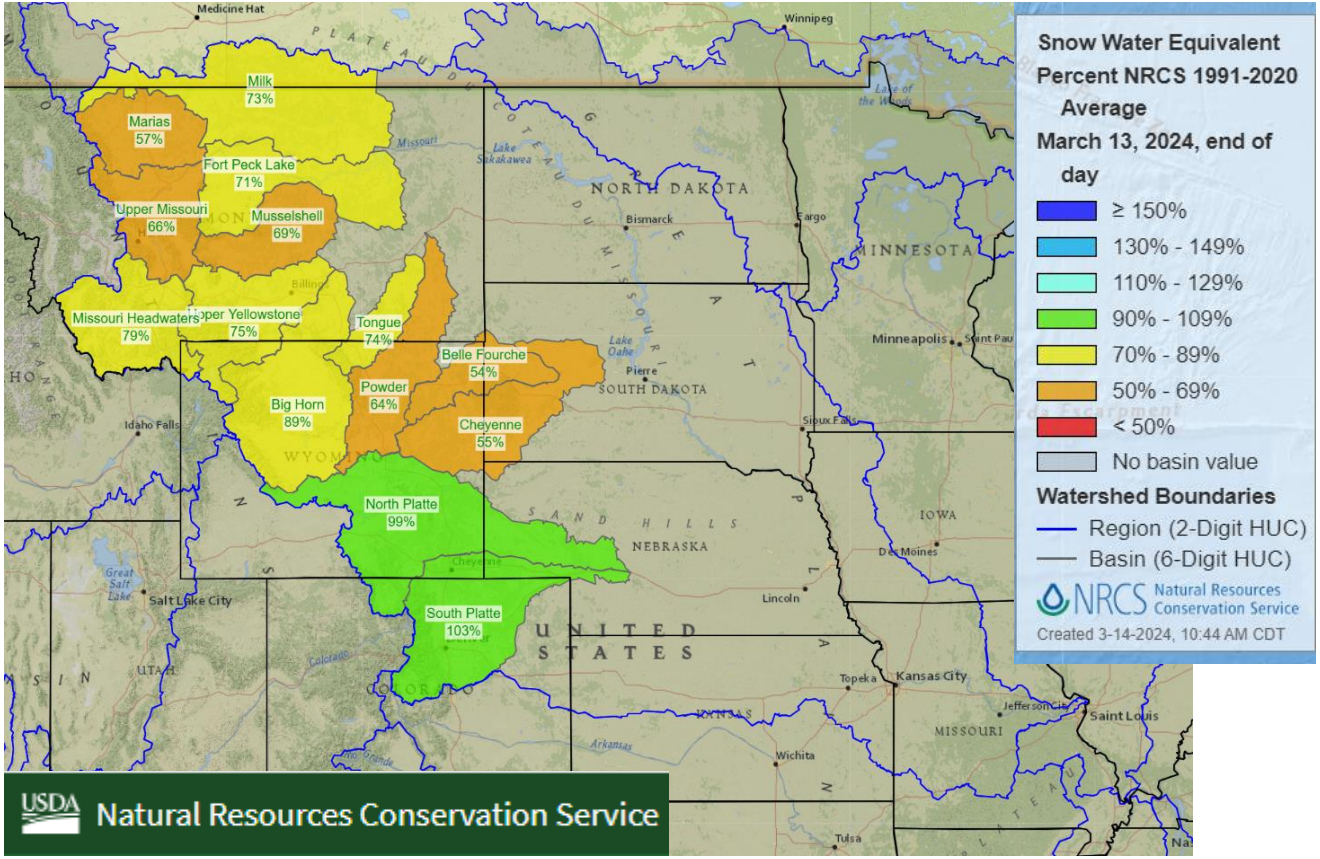




NATIONAL WEATHER SERVICE

MISSOURI BASIN:

Mountain Snowpack As of 13 March 2024

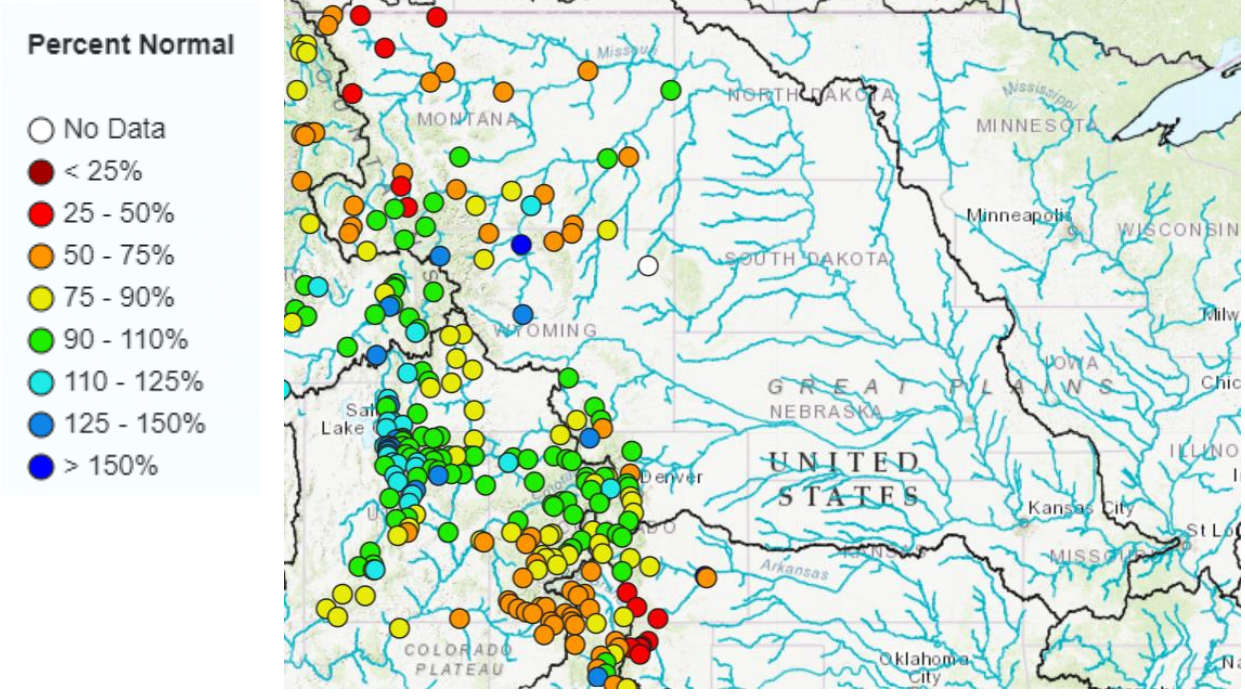


Mountain snowpack running well below average in the northern Rockies;

Near average in the Platte River system

MISSOURI BASIN:

Mountain Runoff Volume April-September
Percent of Normal



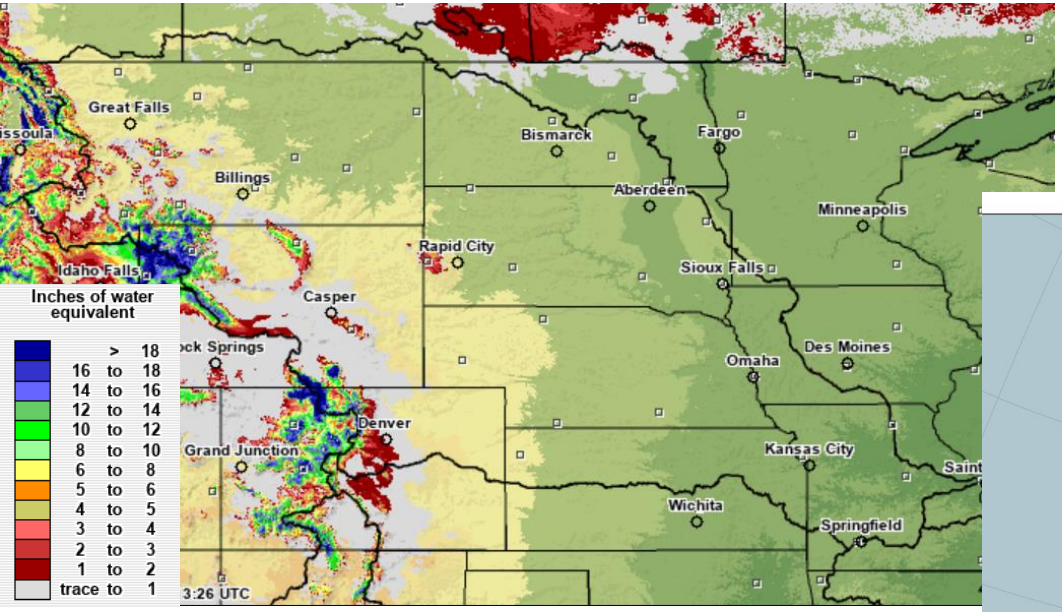
Mountain runoff volume projected to be below normal (per 01 March 2024 Outlook)

- **Upper Missouri above Ft. Peck: 80%**
- **Yellowstone: 92%**
- **North Platte: 94%**
- **South Platte: 76%**

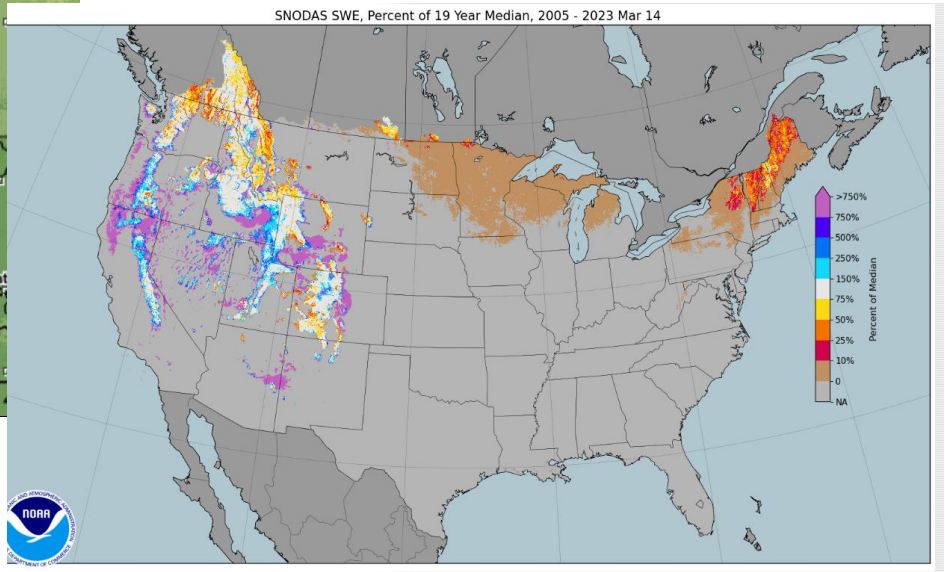
MISSOURI BASIN:

Plains Snowpack as of 14 March 2024

Plains snow pretty much non-existent



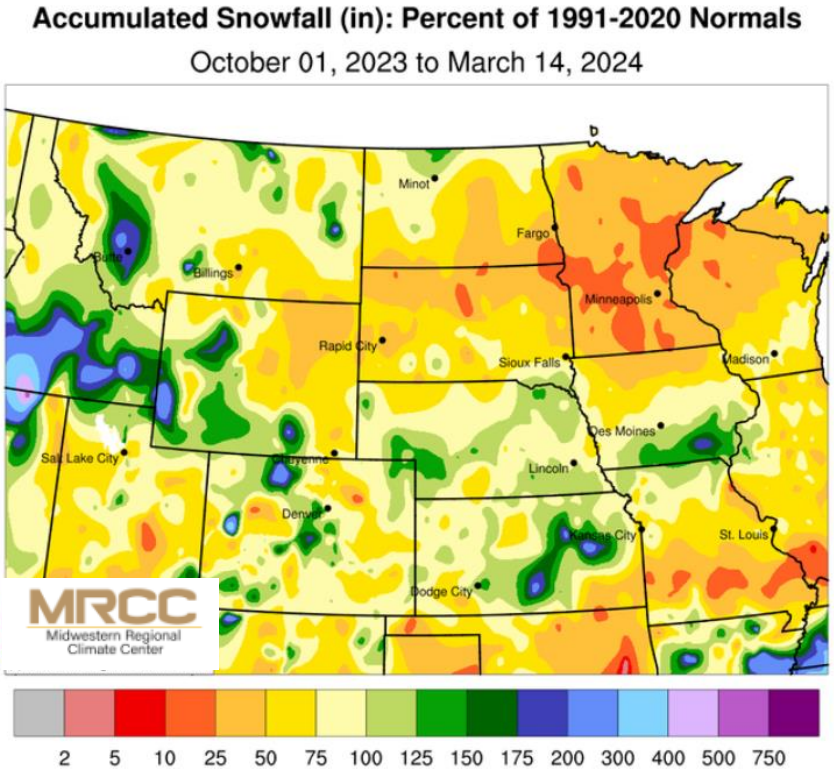
Current Snow Water Equivalent (inches)



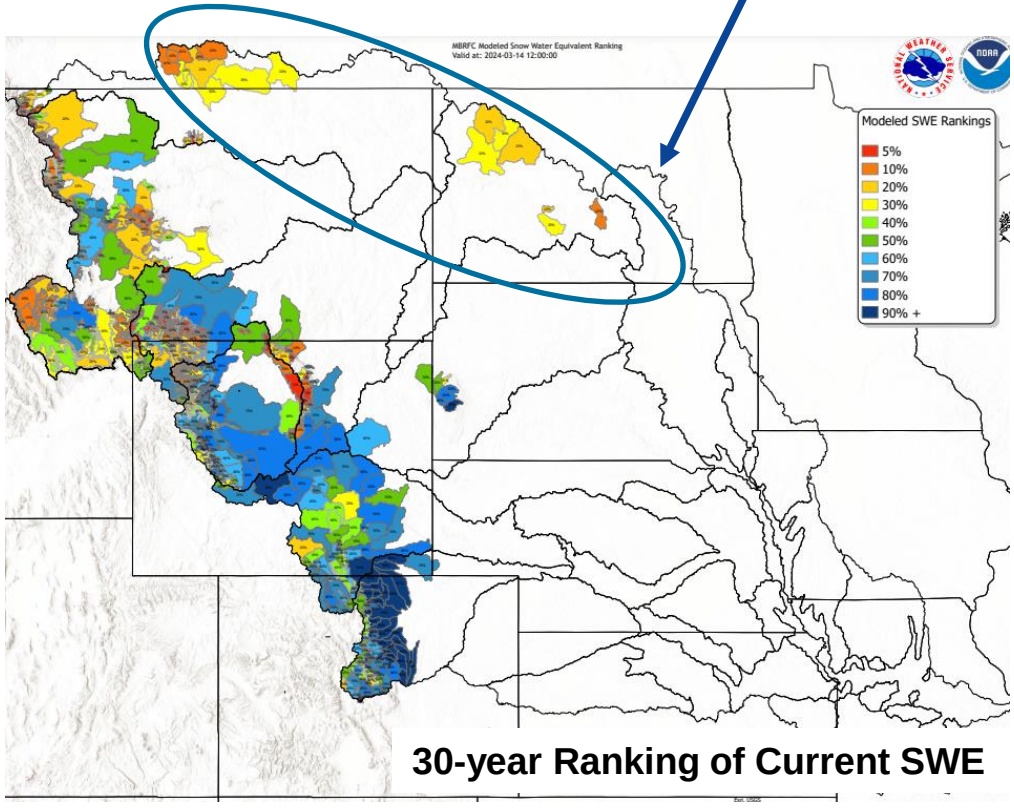
SNODAS Modelled SWE in % of 19-year Median

MISSOURI BASIN:

Plains Snowpack Compared to “Normal”



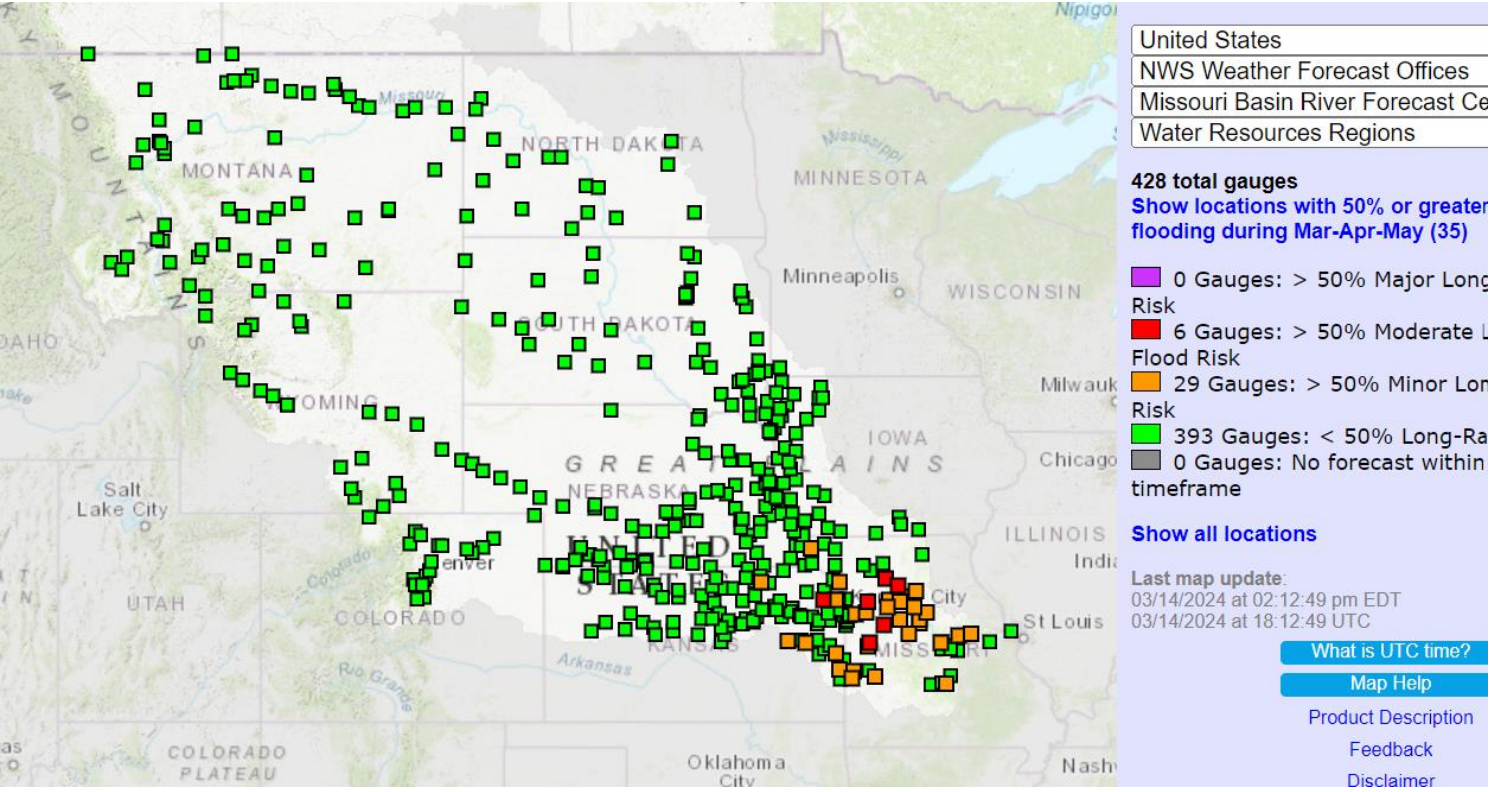
Lower third of all years



30-year Ranking of Current SWE

MISSOURI BASIN:

Locations Expected to Flood Next 90 days (thru mid-June)



Minor to moderate flooding likely in the lower portion of the basin.

The Missouri River itself could see episodic, on-again, off-again, minor flooding downstream of KC to the mouth at St. Louis

MISSOURI BASIN:

Flood Potential Outlook: Summary Points

- **Overall, spring flood risk is normal to lower-than-normal.**
- **Mountain snowpack is well-below average in north, near-average in south. We still have roughly 15% of snow accumulating period remaining.**
- **Plains snowpack is limited to CO and WY. Plains snowpack will not be a player this Spring.**
- **Soils thawed south of extreme northern South Dakota. Frozen soils may enhance flood risk across North Dakota and Montana.**
- **Ice is rotting in place, or has already moved out of much of the plains. Ice jam break-up flooding risk is low. Where river ice remains, risk for ice jamming remains.**
- **Flood Potential mountains: No flooding currently expected.**
- **Flood Potential northern plains: No flooding currently expected.**
- **Flood Potential lower basin: Episodic minor-to-moderate level flooding likely in the lower portion of the basin (eastern KS, MO) due to Spring-time thunderstorm activity.**
- **Flood Potential Missouri River mainstem: Minor flooding likely downstream of KC, again due to thunderstorm activity. As we move further into Summer, minor flooding in the Nebraska City thru Atchison reach of the Missouri River cannot be ruled out.**