NATIONAL WEATHER SERVICE

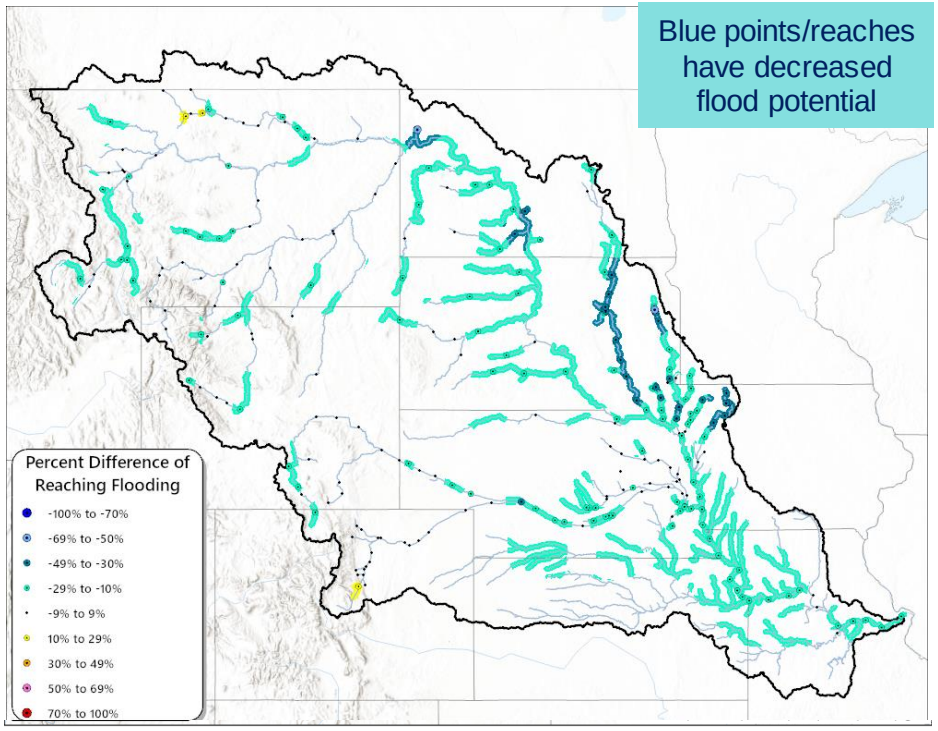
Building a Weather-Ready Nation

2025 Flood Potential Outlook
Missouri River Basin

March 13, 2025

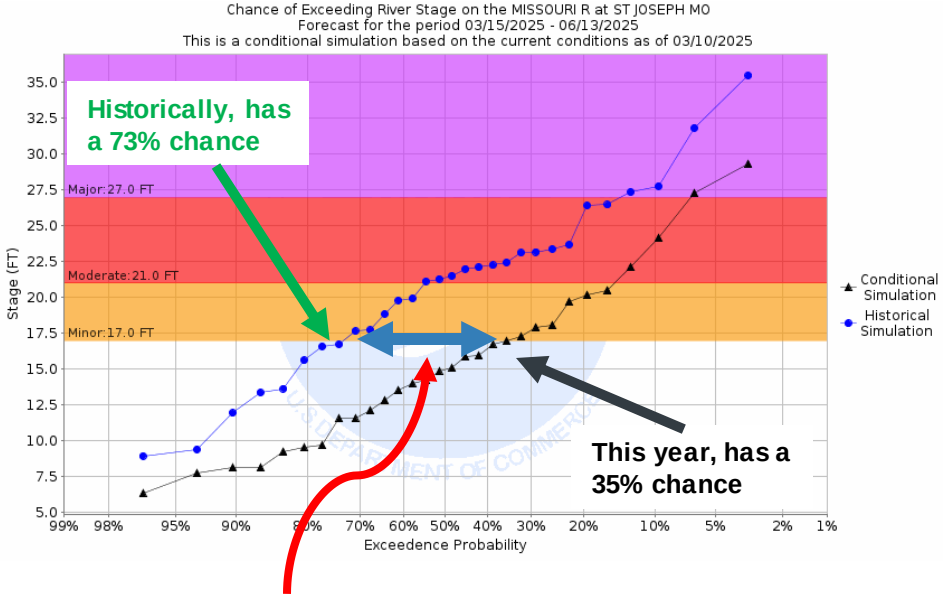
MISSOURI BASIN:

CHANCE OF REACHING FLOOD STAGE IN 2025 AS COMPARED TO HISTORICAL



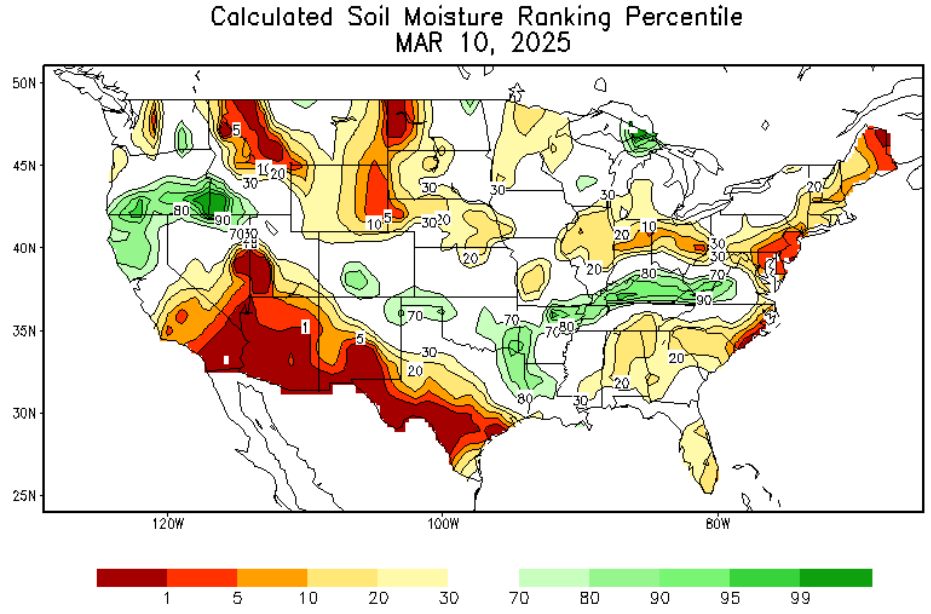
Ensemble Streamflow Prediction (ESP)
Percent Difference of Reaching Minor Flooding versus Historical Average

Many rivers across the basin have a REDUCED flood potential this year.

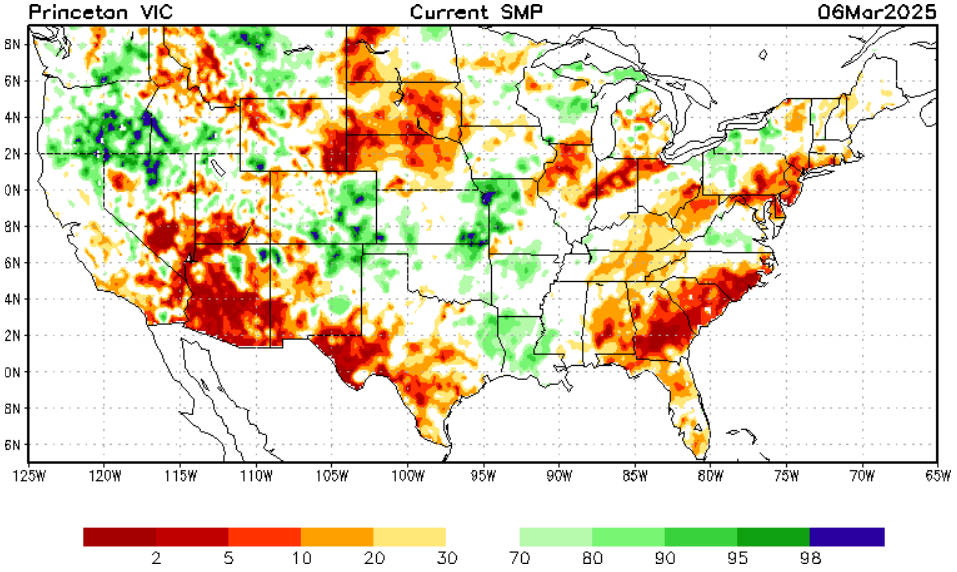


38 percent decrease in chance to reach flood stage during next 3 months

MISSOURI BASIN:
SOIL MOISTURE CONDITIONS



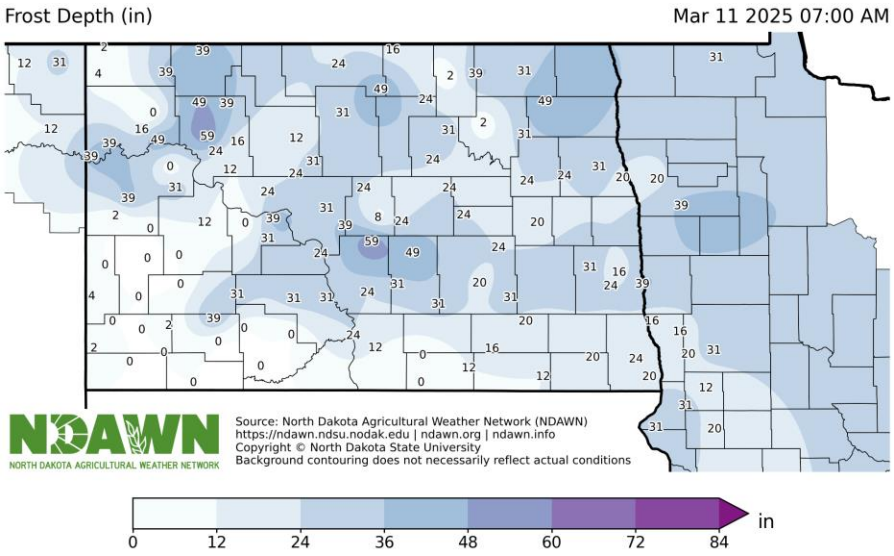
Courtesy: NOAA Climate Prediction Center

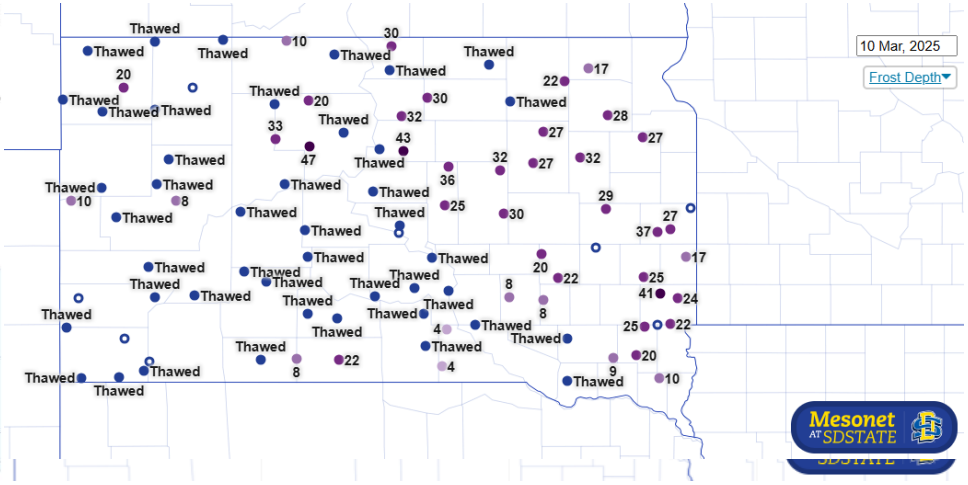


Courtesy: NOAA Climate Prediction Center

Soils very dry over much of the basin.

MISSOURI BASIN: FROST DEPTHS

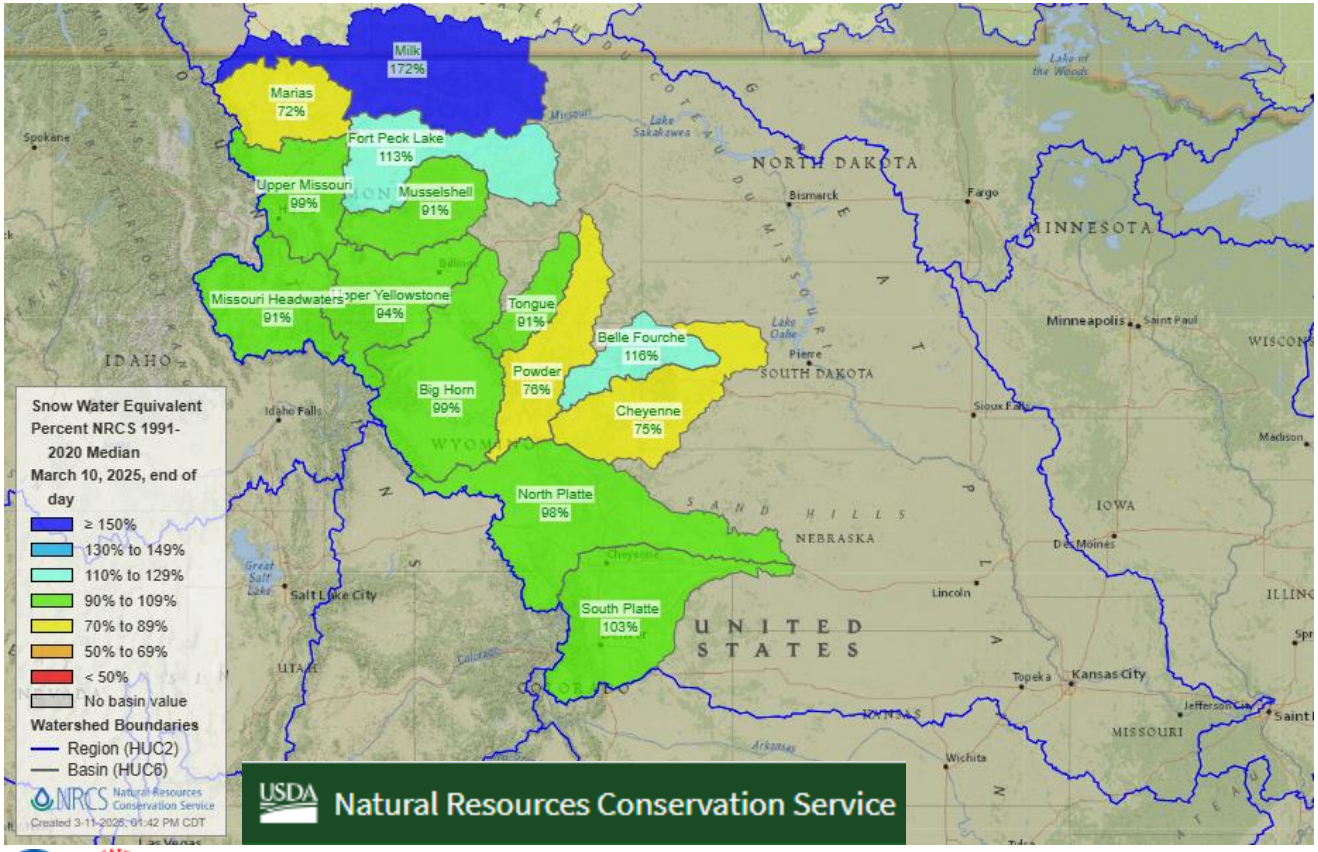




Cold January & February and little insulative plains snowpack, have led to development of significantly deep frost. While the soils have begun to thaw in some locations, other area could still see increased spring runoff if snowmelt & rainfall cannot penetrate into the soil.

MISSOURI BASIN:

Mountain Snowpack As of 10 March 2025



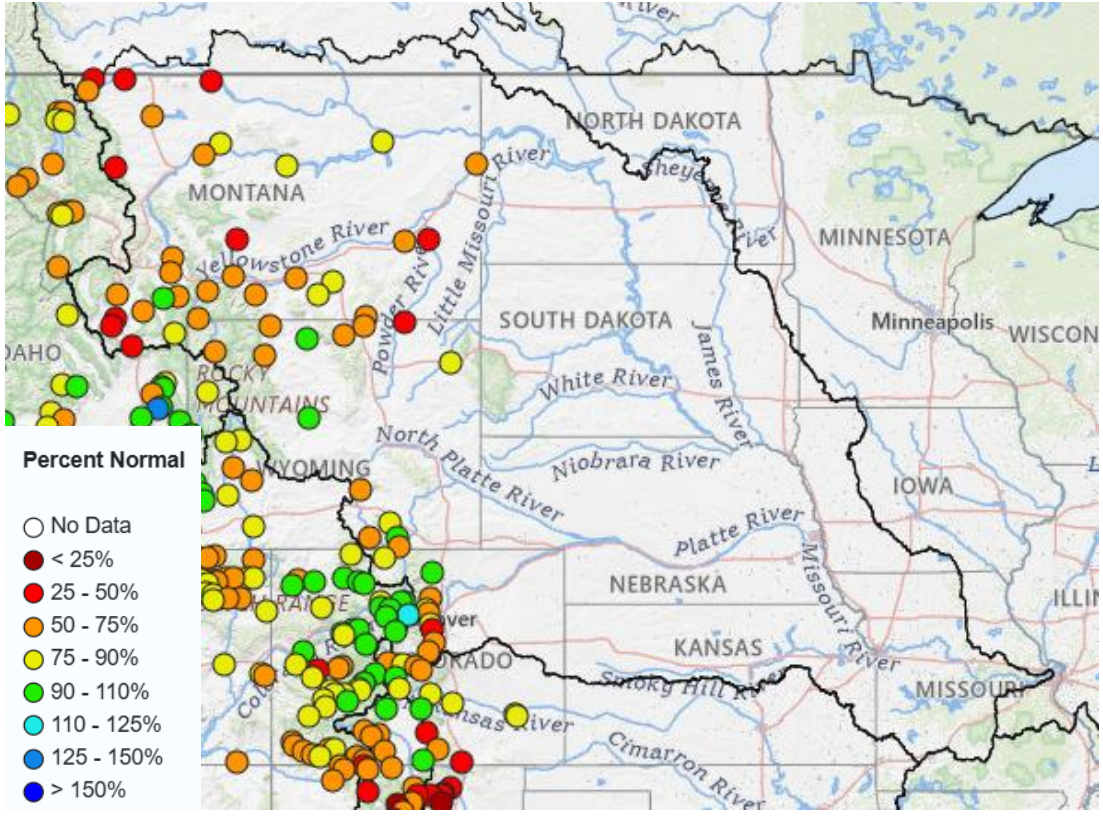
Mountain snowpack running near average.

We are about 80% of the way thru the peak seasonal snow equivalent accumulating period.

Note: the Milk basin is over calculated due to the lack of station data.

MISSOURI BASIN:

Mountain Runoff Volume April-September
Percent of Normal

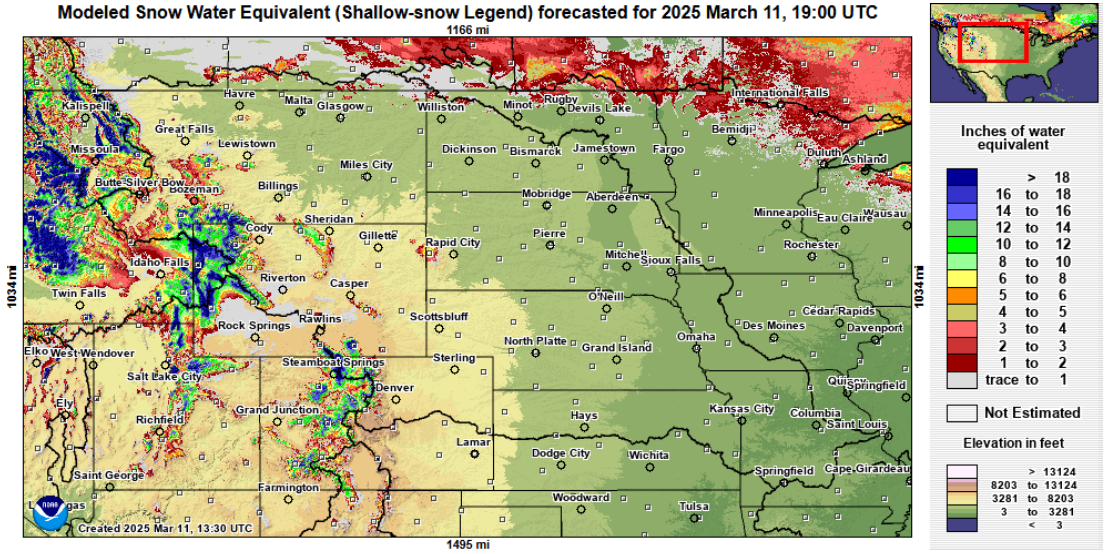


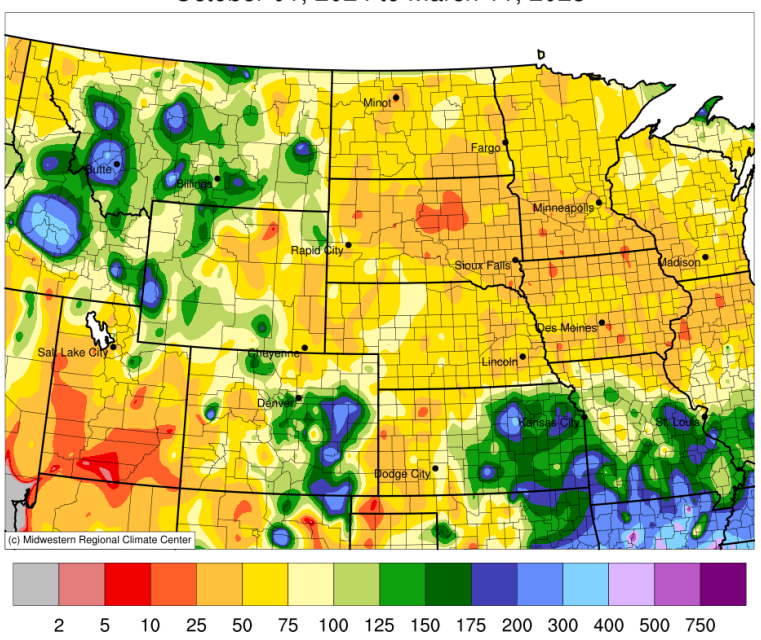
Mountain runoff volume projected to be below normal (per 01 Mar 2025 Outlook)

- **Upper Missouri above Ft. Peck: 73%**
- **Yellowstone: 68%**
- **North Platte: 73%**
- **South Platte: 69%**

MISSOURI BASIN:

Plains Snowpack





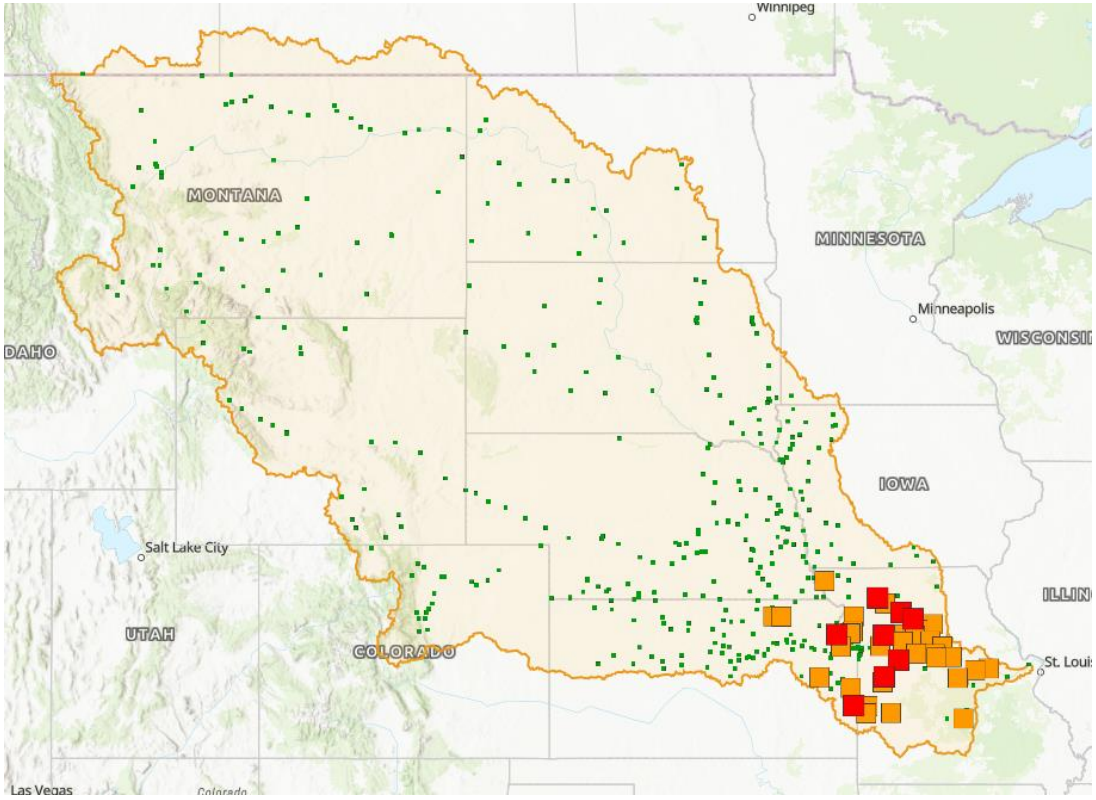
Plains snow has completely melted across the Missouri River Basin, including the recent snowfall from early March

Courtesy MRCC

Plains snow has been lacking all season

MISSOURI BASIN:

Locations Expected to Flood Thru mid-June



50% or greater chance of exceeding river flood levels:

0 > Major	☑
8 > Moderate	☑
30 > Minor	☑
391 <= No Flooding	☑
0 Unavailable	☐

- ***Between now and mid June (i.e. the next 3 months), flooding should be limited to only the lower portion of the basin (indicated by oranges and red squares).***
- ***This is typical; Springtime flooding in the lower basin is driven by thunderstorm activity.***

MISSOURI BASIN:

Flood Potential Outlook: Summary Points

- **Overall, spring flood risk for the Missouri River basin is lower-than-normal.**
- **Mountain snowpack is near normal this year. We still have roughly 20% of snow accumulating period remaining.**
- **Plains snowpack all but gone.**
- **Impressive frost depths in the Dakotas are beginning to thaw out in some areas, but is the ground like concrete? (because the soils are so dry, perhaps some percolation of runoff can still occur)**
- **Ice jam break-up flooding risk is low. Word of Caution: Where river ice remains, risk for break-up ice jamming remains.**
- **Flood Potential mountains: Mountainous areas are not expected to see flooding.**
- **Flood Potential northern plains: No flooding 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.**