



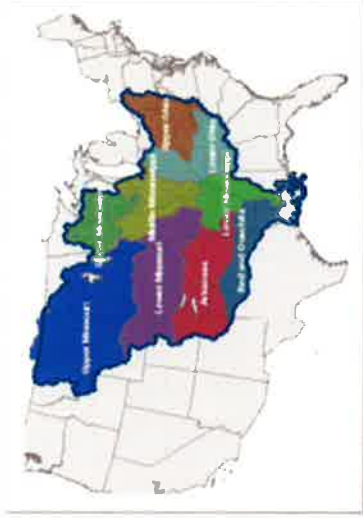
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Building a Weather-Ready Nation

For audio, please dial: 1-415-655-0060 Passcode: 753-380-966

## 2020 Hydrologic Outlook

### Mississippi Basin including Souris, Red River of the North and Great Lakes

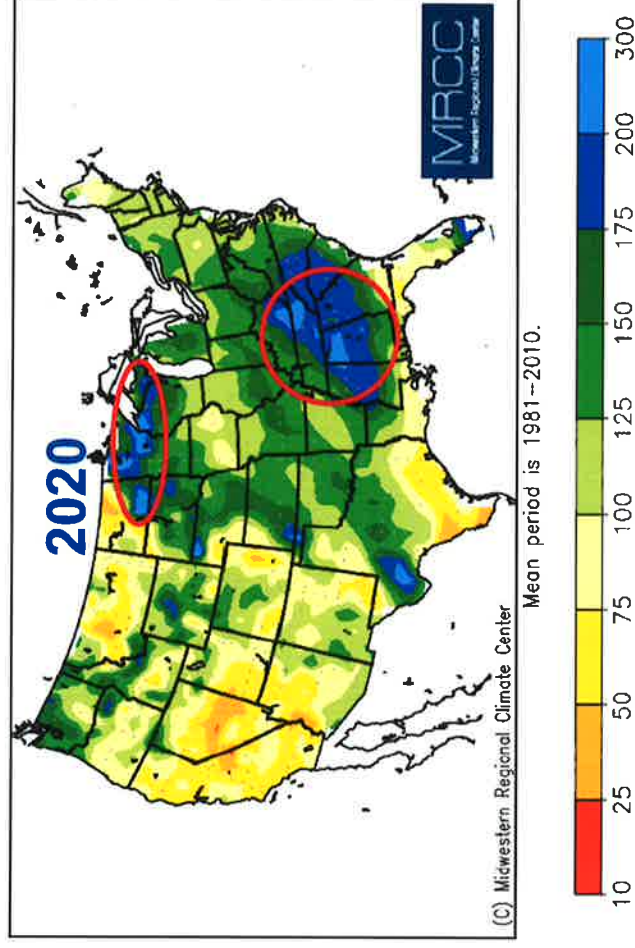


- Lead Presenter      Jim Noel – OHRFC
- Presenters            Andrew Mangham – NCRFC  
                                 Kevin Low – MBRFC  
                                 James Paul – ABRFC  
                                 Jeff Graschel - LMRFC

February 13, 2020

# Winter Precipitation

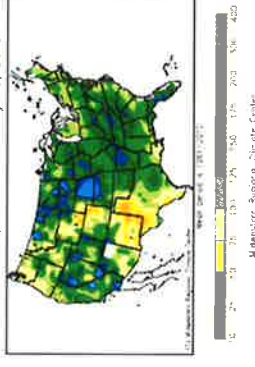
Accumulated Precipitation: Percent of Mean  
December 1, 2019 to February 13, 2020



- **Winter precipitation above normal across much of the region**
- **Not quite as wet as last year overall**
- **Wetter Exceptions: upper Midwest and MS/TN/KY**

**2019**

Accumulated Precipitation: Percent of Mean  
December 1, 2018 to February 20, 2019



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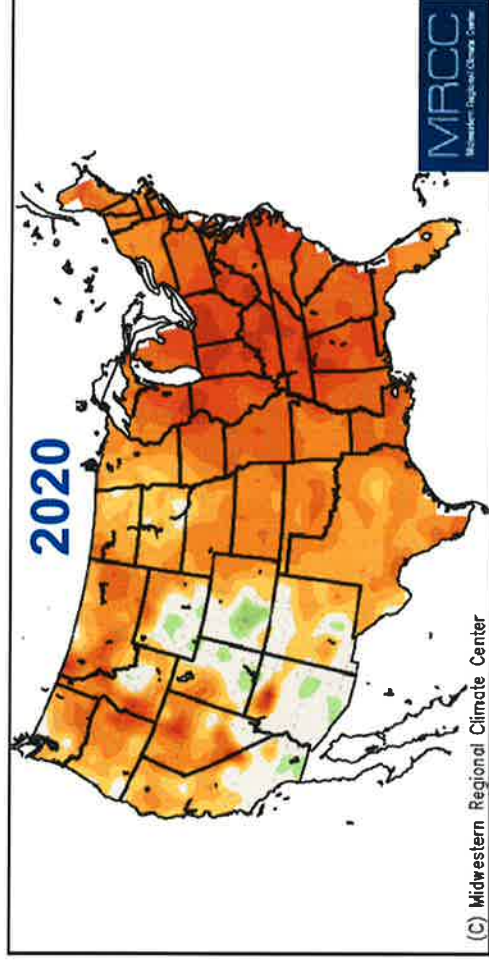
<https://mrcc.illinois.edu/>

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# Winter Temperatures

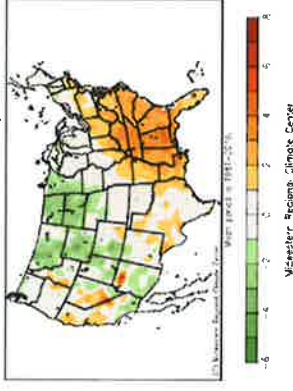
Average Temperature (°F): Departure from Mean  
December 1, 2019 to February 12, 2020



- **Most of the region has been 1-6 degrees above normal**
- **Warmth is centered in Ohio Valley to Great Lakes**
- **Much warmer than last winter**

**2019**

Average Temperature (°F): Departure from Mean  
December 1, 2018 to February 19, 2019



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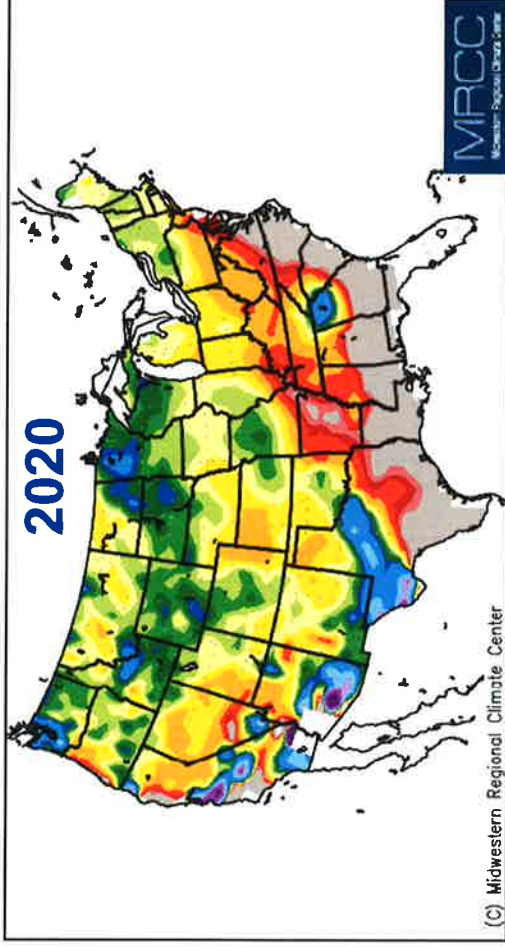
<https://mrcc.illinois.edu/>

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# Winter Snowfall

Accumulated Snowfall: Percent of Mean  
December 1, 2019 to February 13, 2020

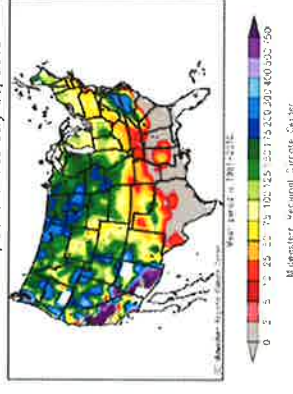


- **Above normal snowfall has been contained to a smaller area this winter**

- **Eastern Dakotas, northern MN, northern WI and upper Michigan biggest area of above**

**2019**

Accumulated Snowfall: Percent of Mean  
December 1, 2018 to February 20, 2019



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<https://mrcc.illinois.edu/>

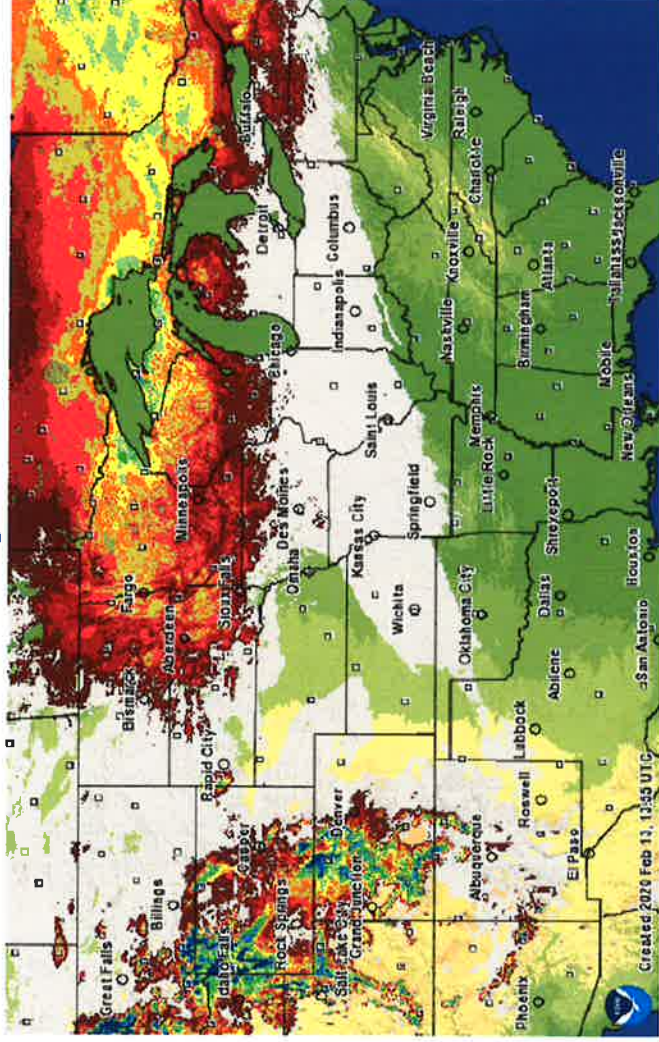
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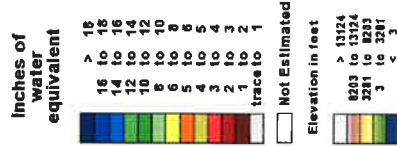
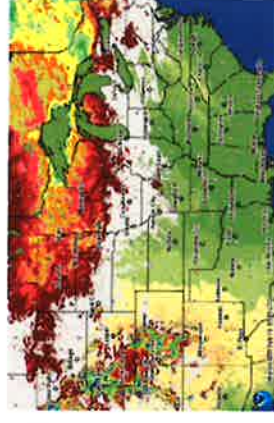
# Snow Water Content

- Snow water content is similar to last winter overall
- Highlights: Slightly more from the Great Lakes to Minnesota
- Same to less in most of the Dakotas

February 13, 2020



2019



<http://www.nohrsc.noaa.gov/interactive/html/map.html>



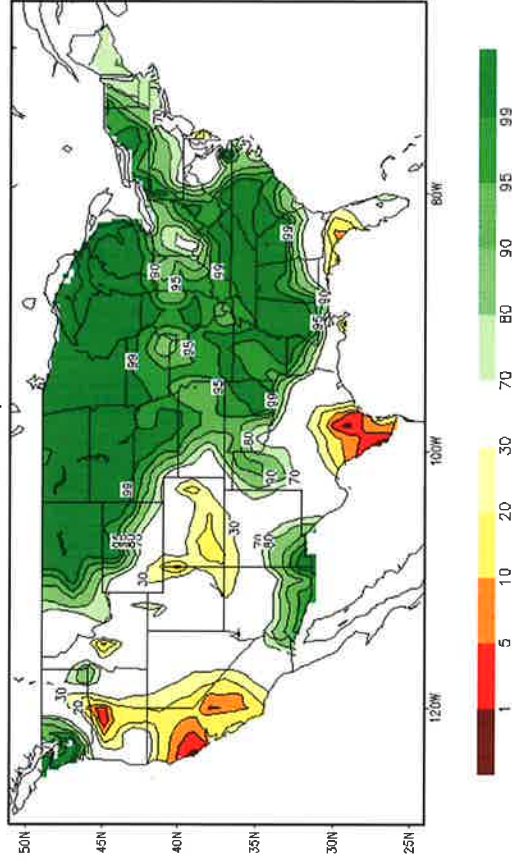
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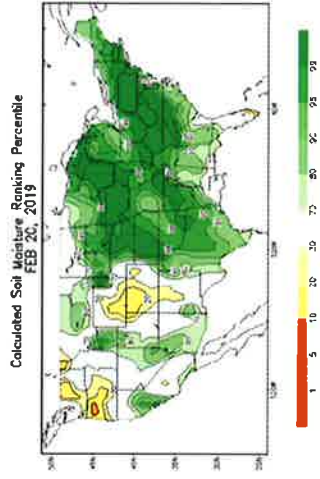
# Soil Moisture

2020

Calculated Soil Moisture Ranking Percentile  
FEB 12, 2020



2019



- **Soils are saturated or nearly saturated across the majority of the Mississippi River Basin into the Great Lakes**

[https://www.cpc.ncep.noaa.gov/products/Soilmst\\_Monitoring/US/Soilmst/Soilmst.shtml#](https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#)



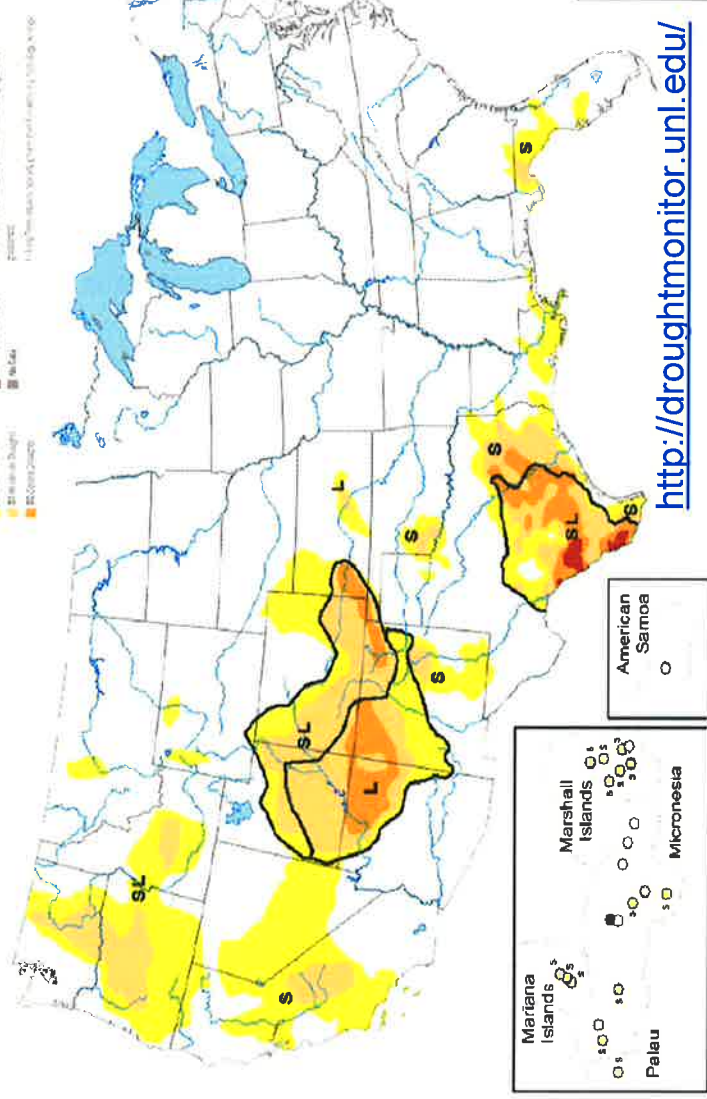
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# Drought Monitor

Map released: February 13, 2020

Data valid: February 11, 2020



<http://droughtmonitor.unl.edu/>

- Drought remains limited in the Mississippi River Basin
- Pockets over most of the headwaters of the Arkansas basin

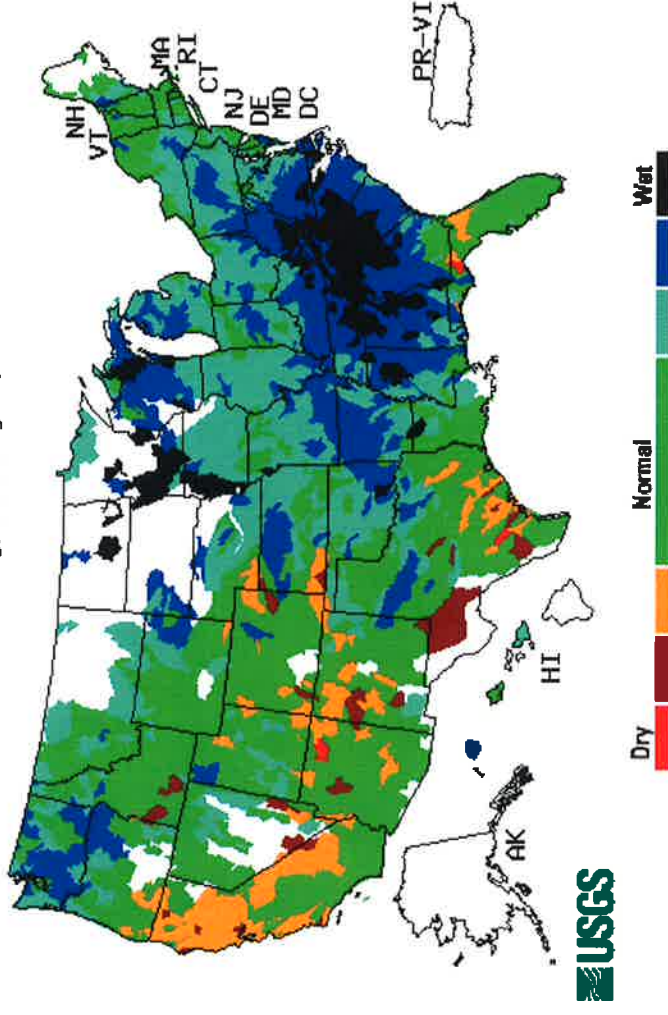


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# USGS 7-Day Streamflows

- **River flows are above to much above normal across most of the system making the region vulnerable to floods**
- **The white area is iced over conditions in the northern Plains and upper Midwest**
- **Ice conditions are near normal in most areas, below normal Ohio Valley**

Wednesday, February 12, 2020



<http://waterwatch.usgs.gov>



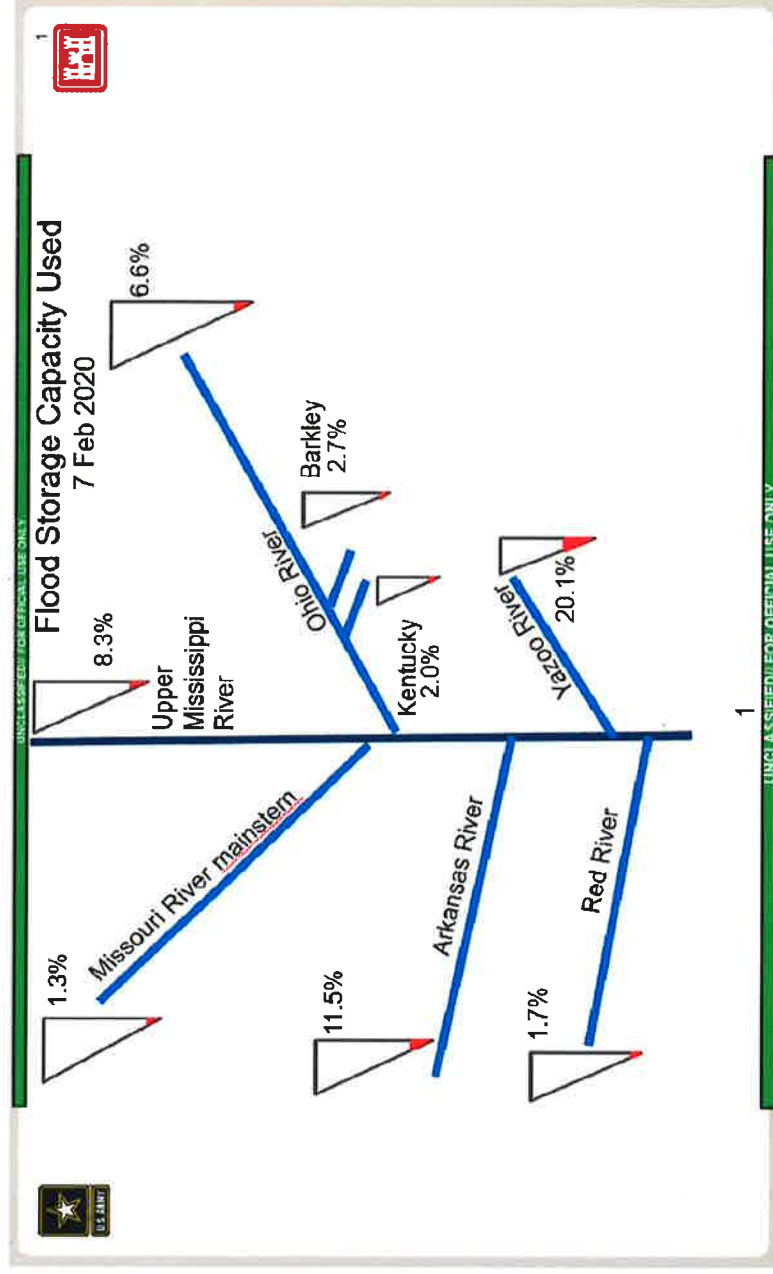
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# USACE Flood Storage Used

## February 7, 2020

- The USACE manages the water through the Mississippi system
- Flood control projects have plenty of availability through the system



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# USACE Great Lakes Outlook



## **Lake Superior:**

Lake Superior is forecast to be within a couple inches of record high levels through July.

## **Michigan-Huron:**

Lake Michigan-Huron is forecast to be above last year's levels and record high levels in each of the next 6 months.

## **St. Clair:**

Lake St. Clair is forecast to be above record high levels through June, and within an inch of the record in July.

## **Erie:**

Lake Erie is forecast to be above record high levels through May, and within a few inches of record high levels in June and July.

## **Ontario:**

Lake Ontario is forecast to be below record high levels throughout the next 6 months.



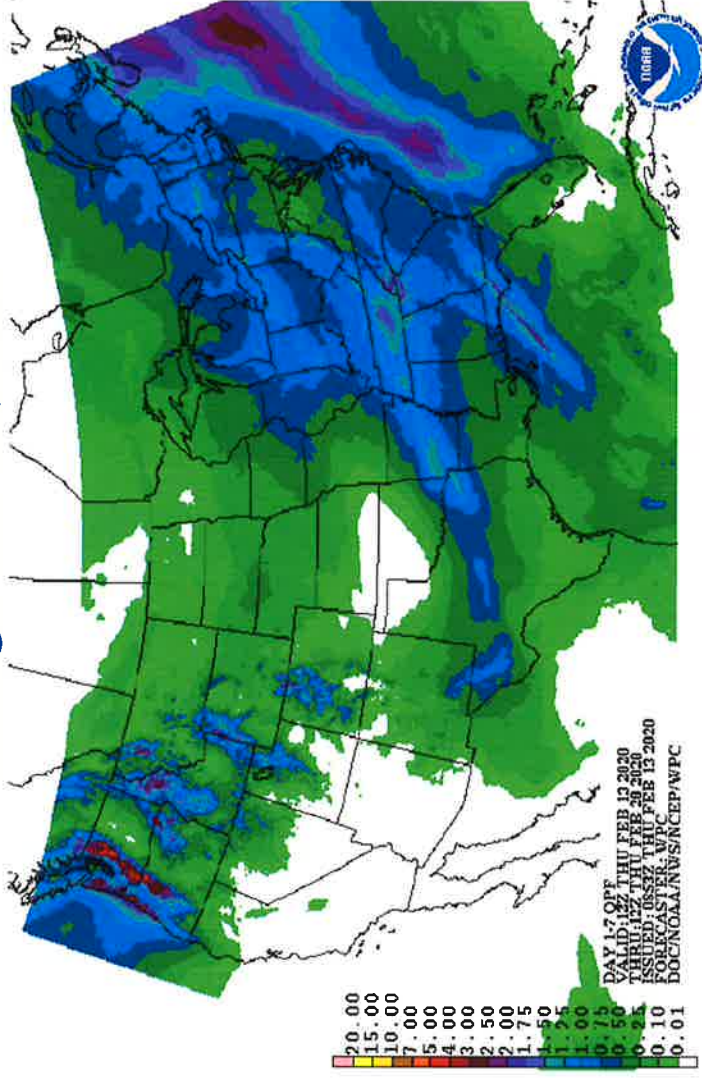
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# Week One Precipitation Forecast

Through Feb 20, 2020

- Precipitation will remain focused in the eastern and southern US over the next week
- 1-2 inches are forecast through February 20<sup>th</sup>
- Amounts will be light west and north



<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>



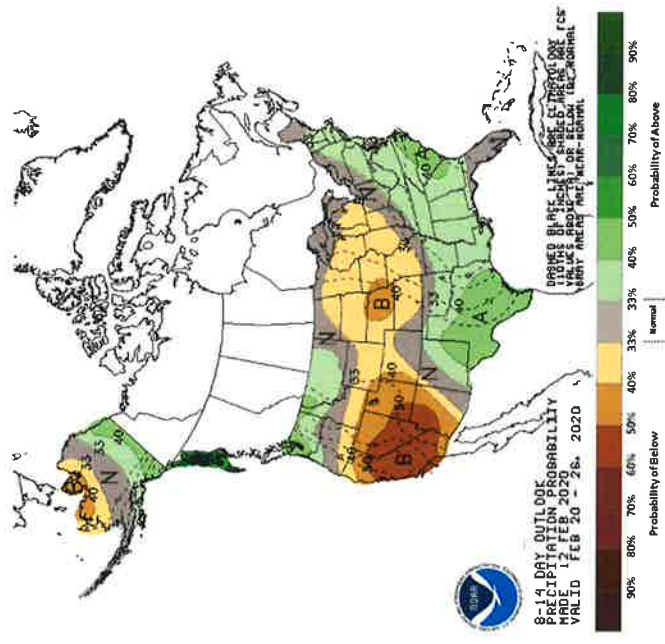
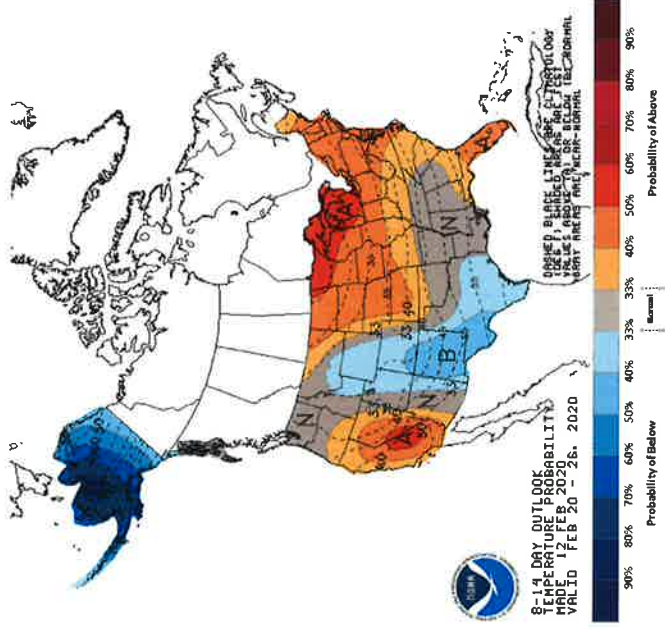
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# Week Two Outlook

Through Feb 26, 2020

- **Temperatures will be at or above normal across much of the basin**
- **It will generally be drier than normal north and wetter than normal south, but not as extreme as lately**



<http://www.cpc.ncep.noaa.gov/>

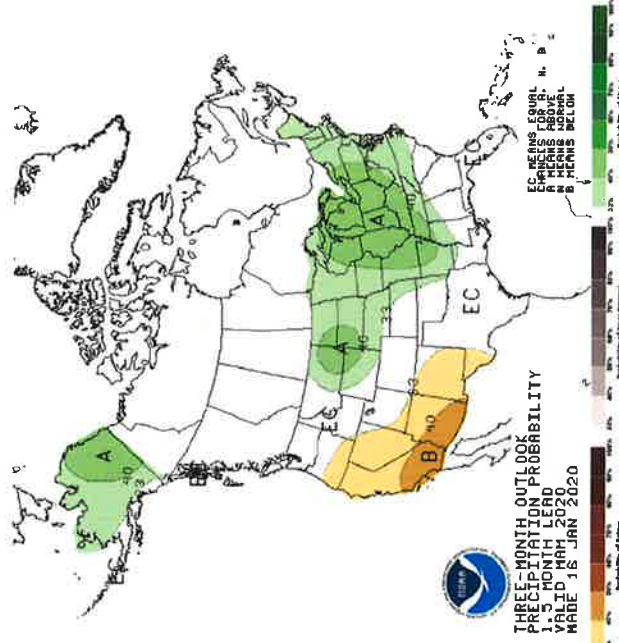
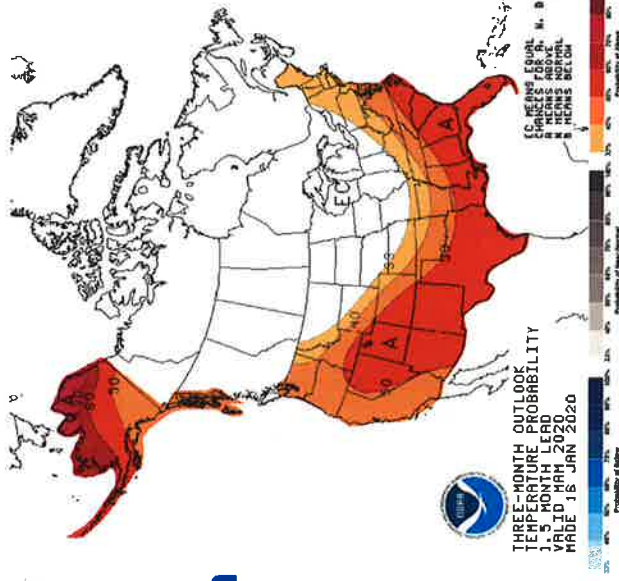


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# March-May Outlook

- The temperature outlook favors warmer than normal in southern areas but uncertainty in northern areas
- Wetter than normal is favored across much of the region, but confidence is low to medium



<http://www.cpc.ncep.noaa.gov/>

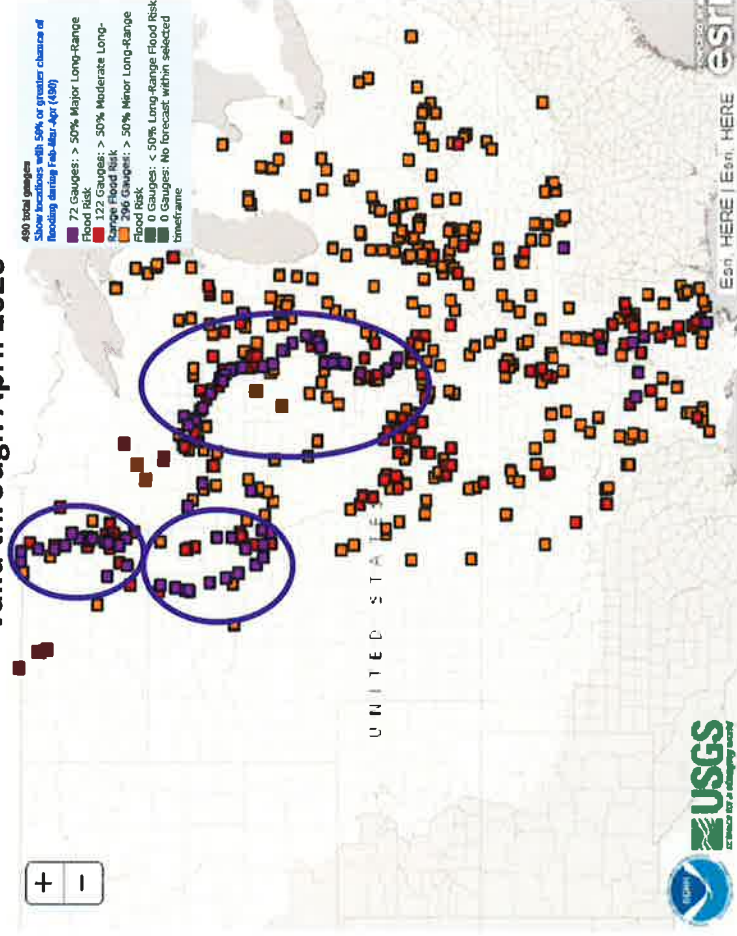


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# Mississippi Basin Flood Outlook

## 50% or Greater Chance of Flooding

Valid through April 2020



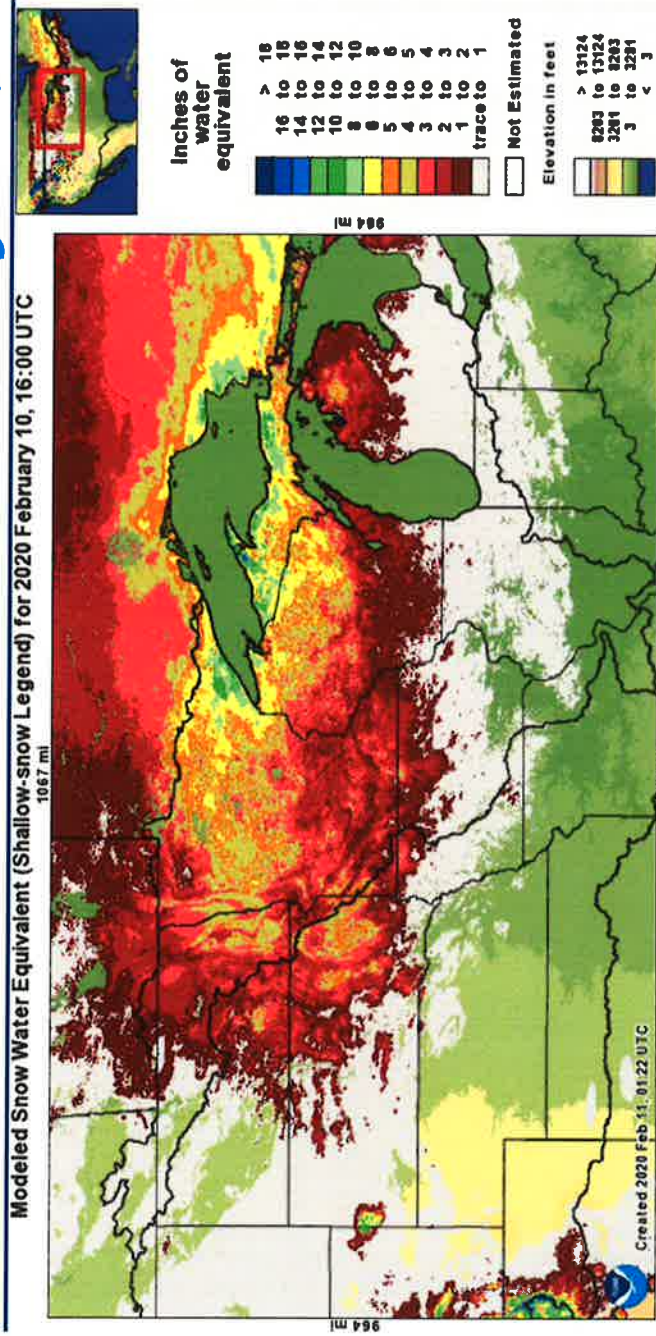
- **Widespread flooding expected through spring**
- **Above normal flood potential eastern 2/3<sup>rd</sup> of the region**
- **Most significant flooding expected from upper Missouri, Red River of the North into the upper Mississippi**
- **~30% of gages forecast above flood**

[http://water.weather.gov/ahps/region\\_long\\_range.php?rfc=mvrfc&percent=50](http://water.weather.gov/ahps/region_long_range.php?rfc=mvrfc&percent=50)



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# Snow Water Content: February 10, 2020

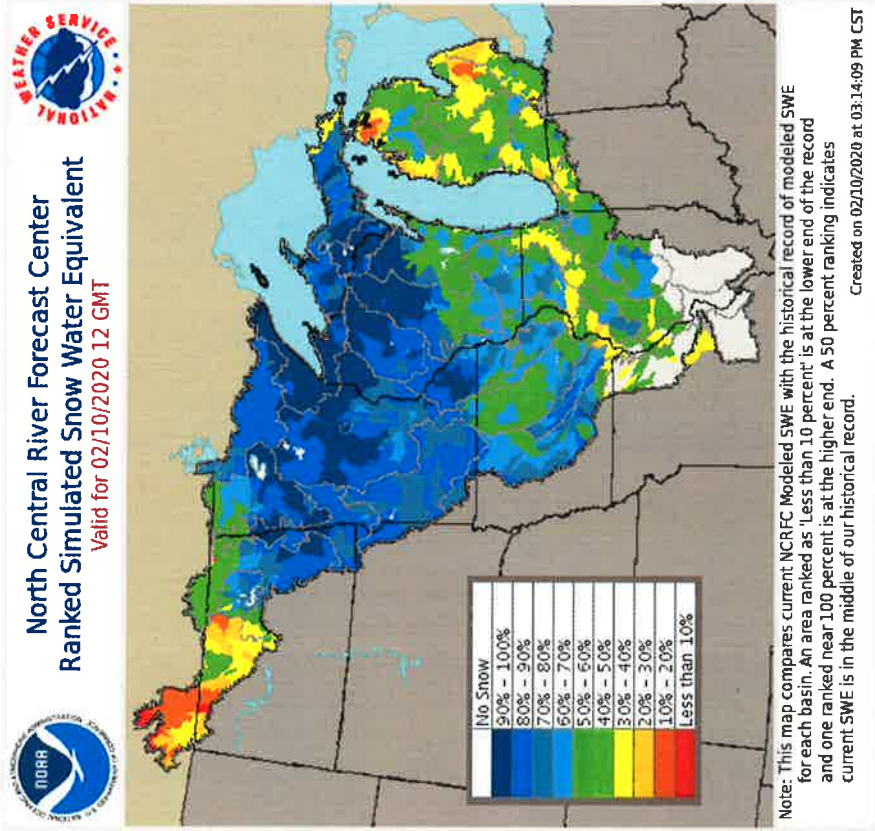


- 1-4" Snow water content across northern NCRFC. Higher accumulations around Lake Superior.
- Little to no snow water content in western N. Dakota



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# Snow Water Content Ranking



- Snow Water Content Rankings reflect precipitation patterns.
- 90% - 100% rankings in Minnesota, Wisconsin, UP and eastern N. Dakota.
- Eastern, southeastern regions of NCRFC at normal or just above normal rankings.
- Recent shift in precipitation driving up snow water content rankings in Iowa and southern Wisconsin.
- This trend is expected to continue and will drive up rankings in eastern, southeastern NCRFC

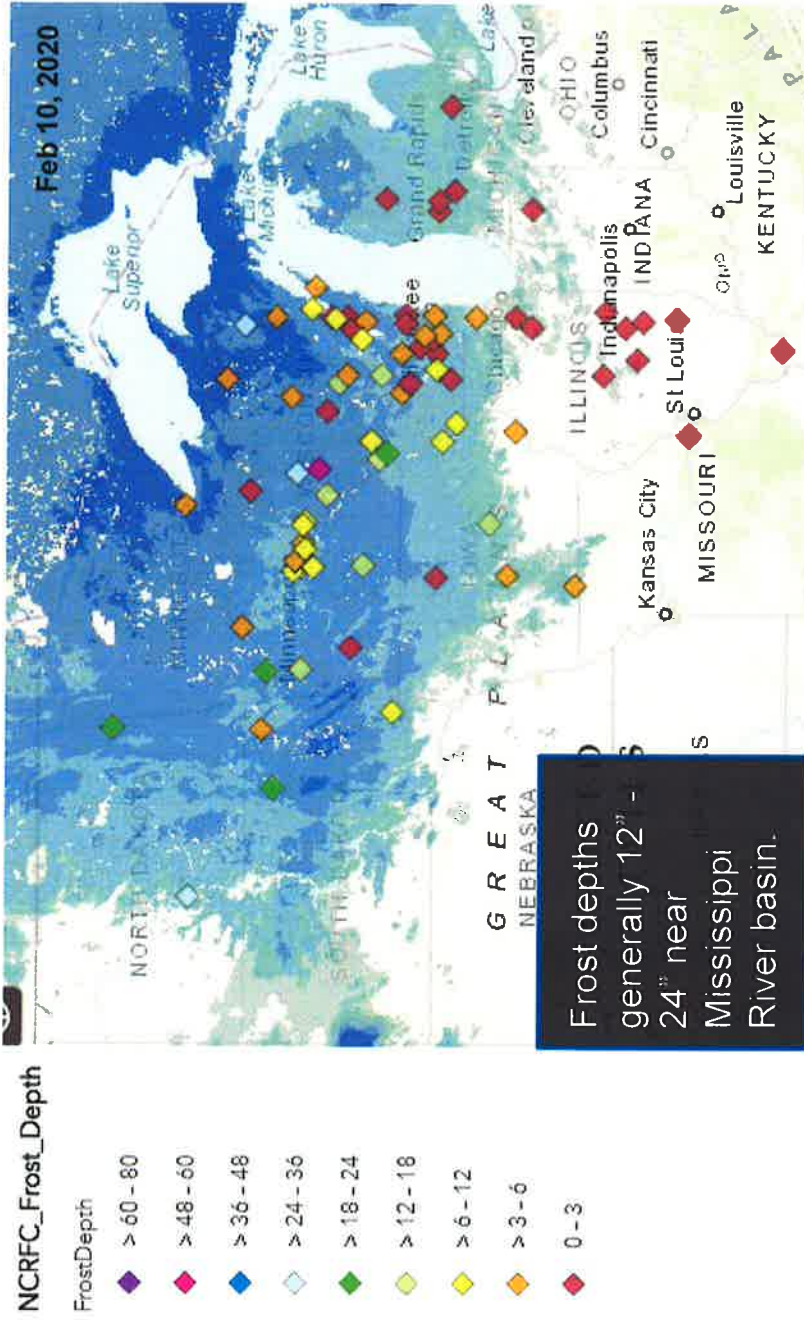


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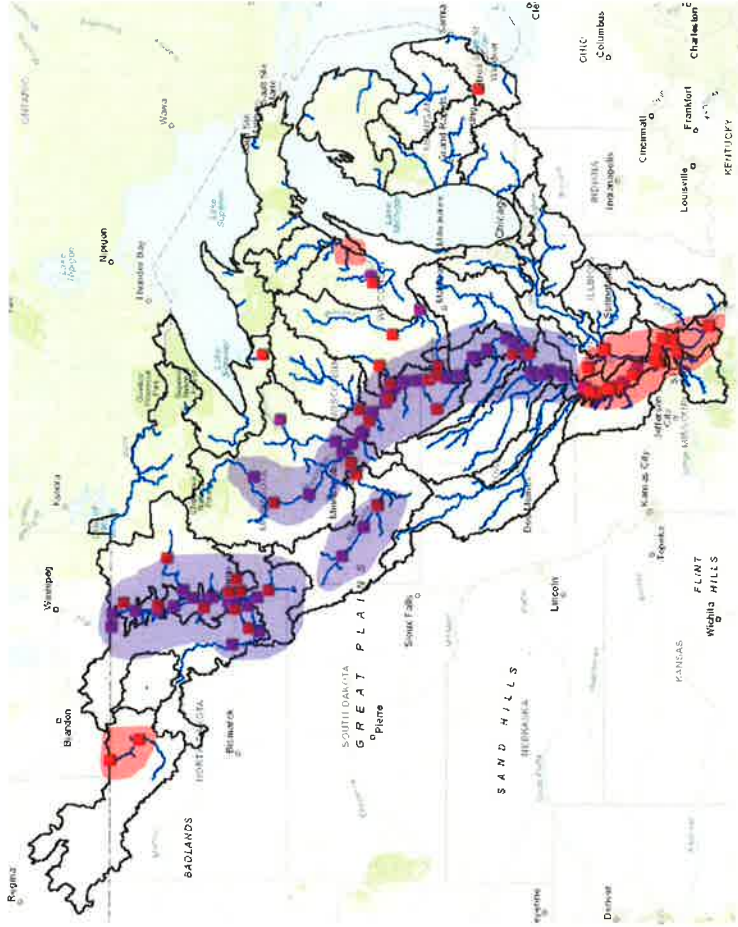
# Frost Depths



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# NCRFC Flood Outlook



- Under current conditions: 101 forecast points with 50% or greater chance of significant flooding.
- 53 major flood stage
- 48 moderate flood stage
- Mississippi River Drainage Area: 69 points
- Hudson Bay Drainage Area: 28 points
- Great Lakes Drainage Area: 4 points

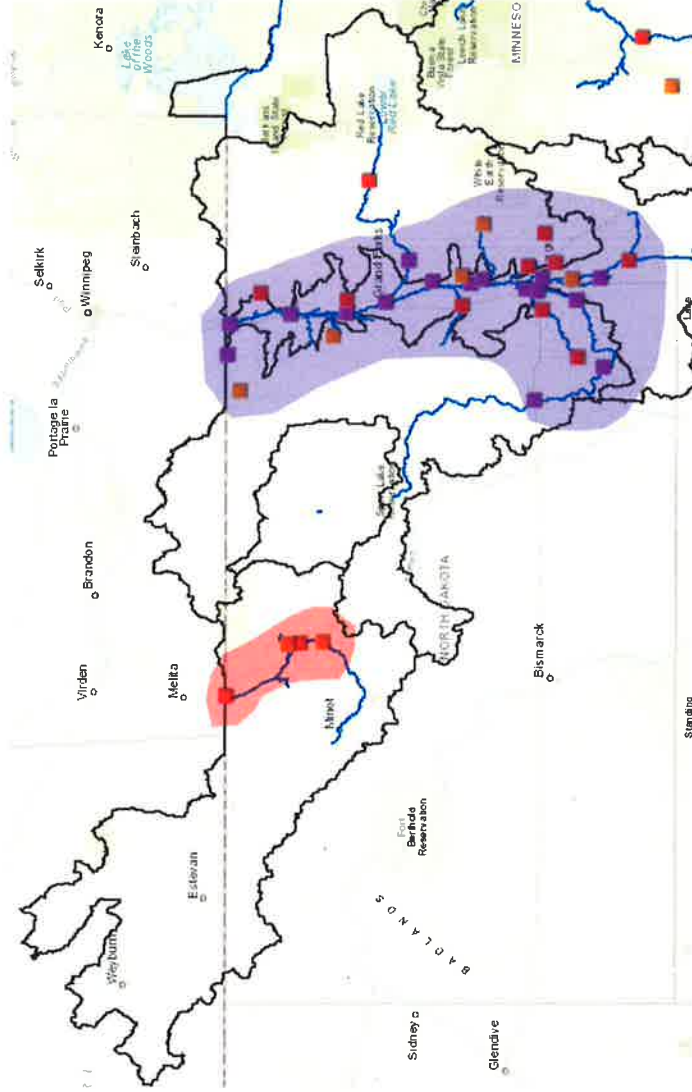
## Bottom Line: Elevated Risk of Significant Flooding



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# North Dakota

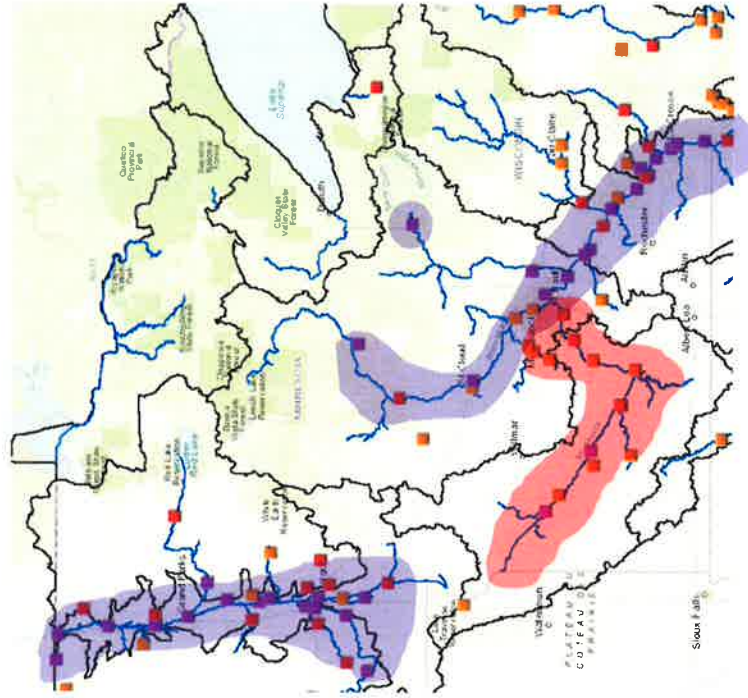


- **Primary concern is Red River of the North.**
- **Widespread 50% or greater chance of major and moderate flooding.**
- **Some moderate flooding potential in the Souris.**



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# Minnesota and South Dakota

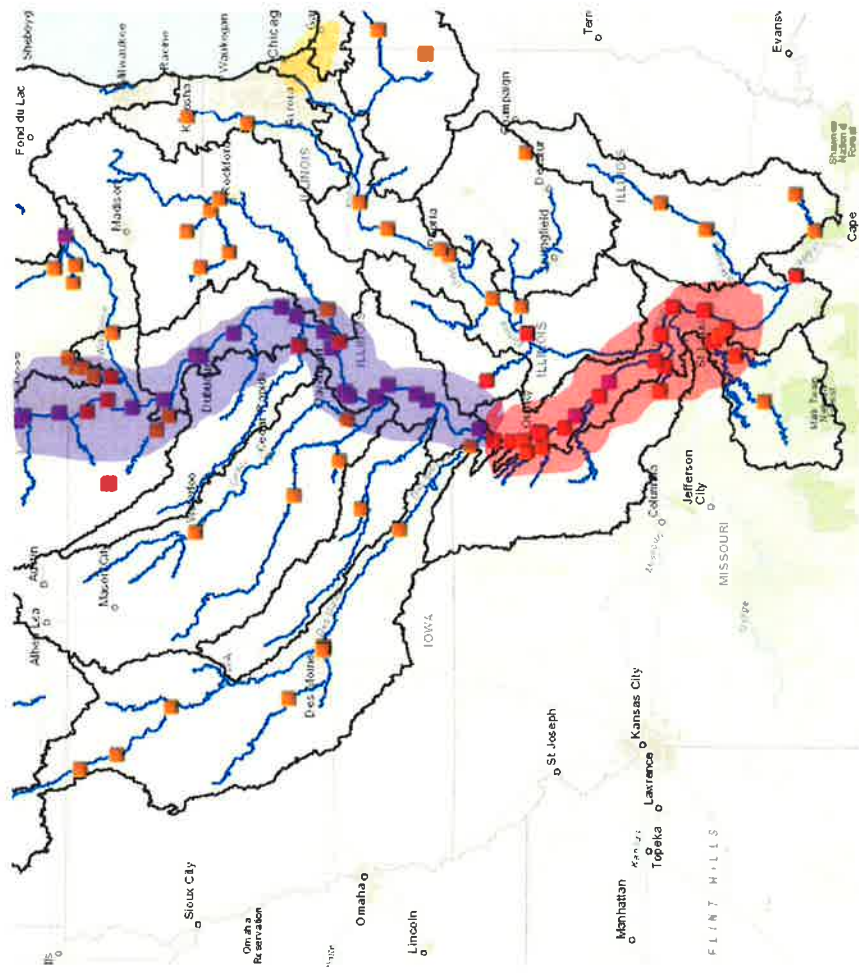


- Primary concern is Red River of the North and Upper Mississippi River.
- Widespread 50% or greater chance of major flooding.
- Minnesota river shows a mix of points ranging from minor to major. Differences in risk driven mostly by variation in snow water content.



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# Iowa, Illinois, and Missouri



- Primary concern is mainstem Mississippi River.
- 50% or greater chance of major flooding above L/D 19.
- 50% or greater chance of moderate flooding from L/D 19 to St. Louis.
- Widespread minor flooding in Mississippi tributaries and Illinois river system expected. Elevated risk of flood impacts in southern Chicago due to historic lake levels.



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# Flood Outlook Summary

## Through April 2020

- There is a significantly elevated risk of moderate to major flooding in the Upper Mississippi and Red River of the North Basins.
- Elevated risk is largely driven by:
  - Extremely wet conditions from record precipitation levels in 2019 driving high soil moisture.
  - High snow water content in the northern areas of the Mississippi and southern portion of the Red River of the North drainages.



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