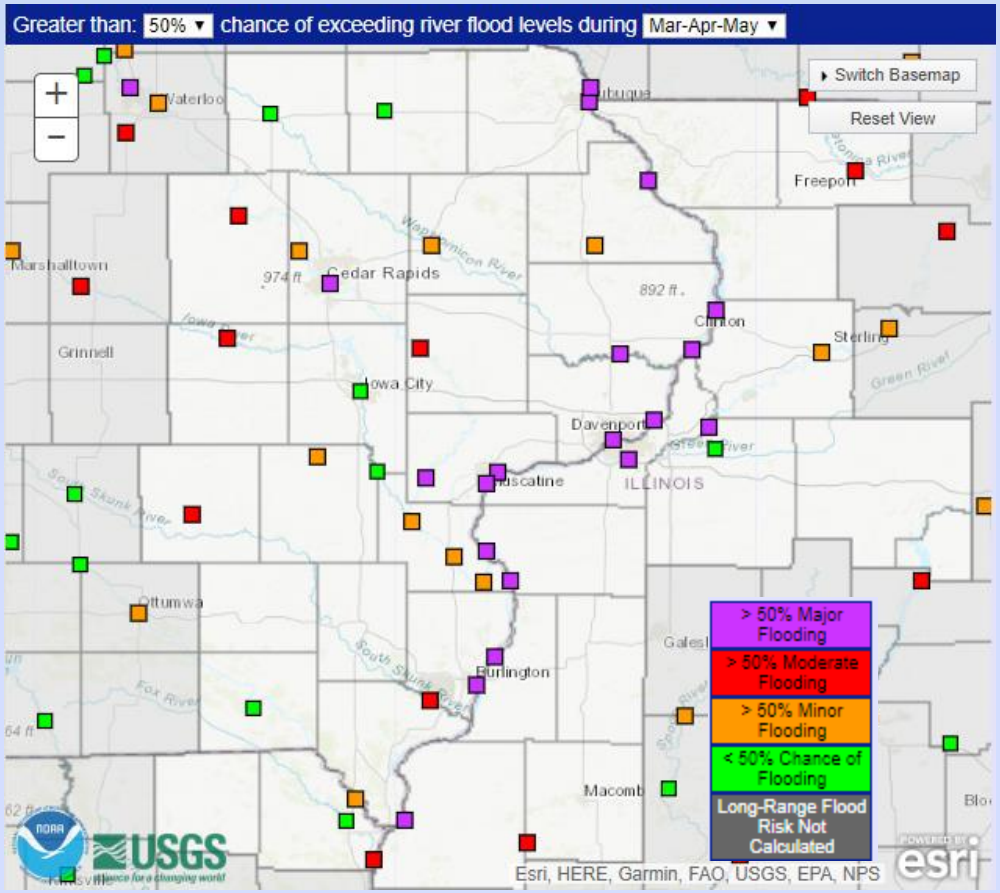
Spring Flood Outlook 2019

Updated Outlook



NWS Quad Cities

Weather Forecast Office

March 7, 2019

Jessica Brooks

Service Hydrologist

NWS Quad Cities

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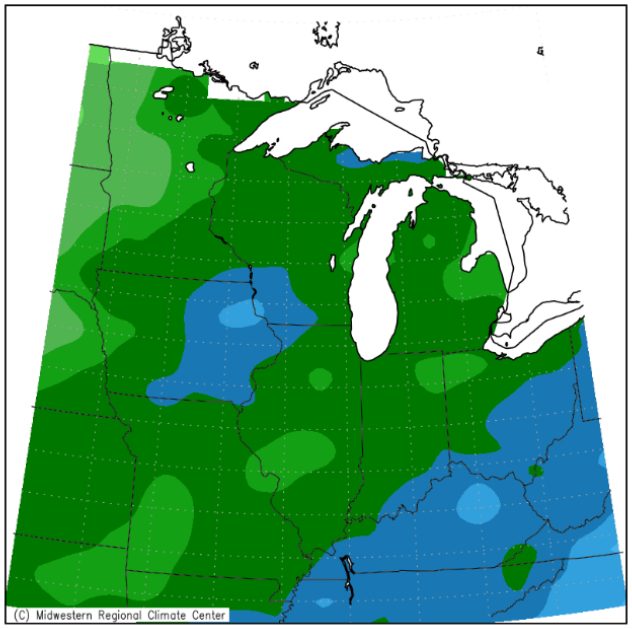
Factors Considered for this Flood Outlook

- Antecedent Conditions
- Snow Cover/Water Equivalent
- Frost Depth
- Soil Moisture
- Streamflows
- Weather Forecasts/Outlooks

Antecedent Conditions: Fall Moisture

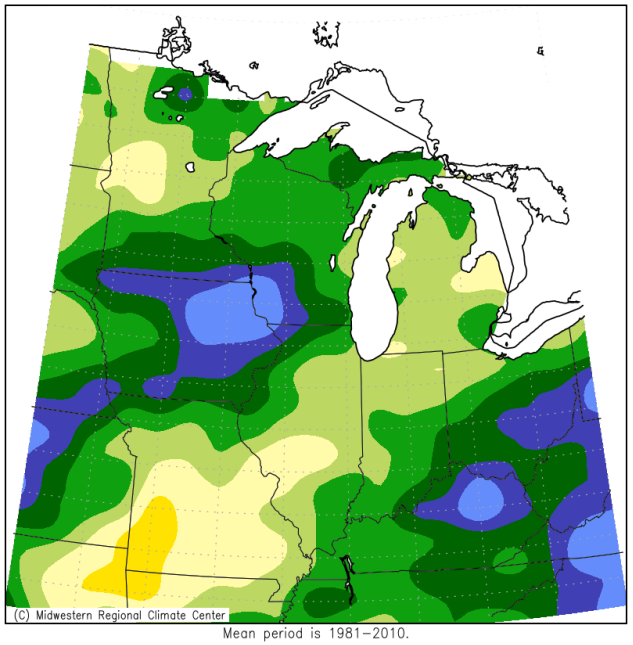
Accumulated Precipitation (in)
September 1, 2018 to November 30, 2018



0.01 1 3 7.5 15 25 40
0.00 0.5 2 5 10 20 30 50

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana–Champaign

Accumulated Precipitation: Percent of Mean
September 1, 2018 to November 30, 2018



Mean period is 1981–2010.

50 75 100 125 150 175 200 300

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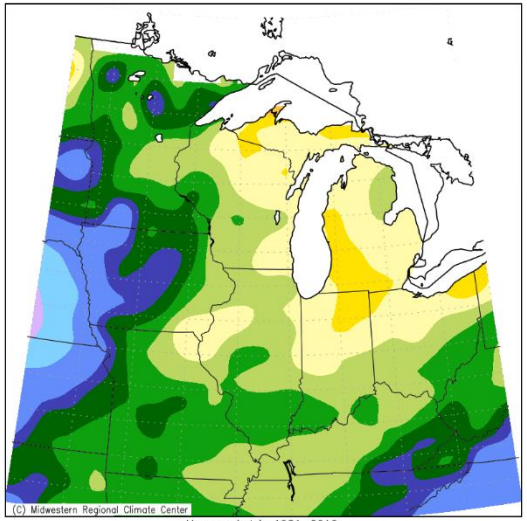
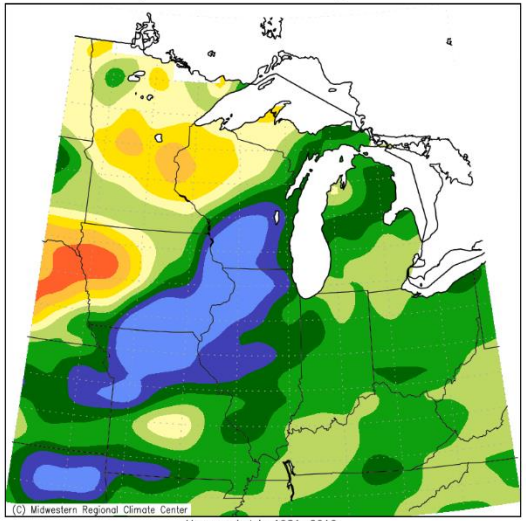
Winter Precipitation

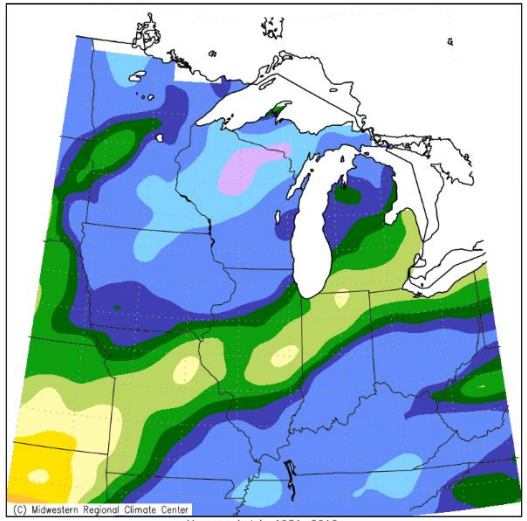
Accumulated Precipitation: Percent of Mean
December 1, 2018 to December 31, 2018



Accumulated Precipitation: Percent of Mean
January 1, 2019 to January 31, 2019



Accumulated Precipitation: Percent of Mean
February 1, 2019 to February 28, 2019



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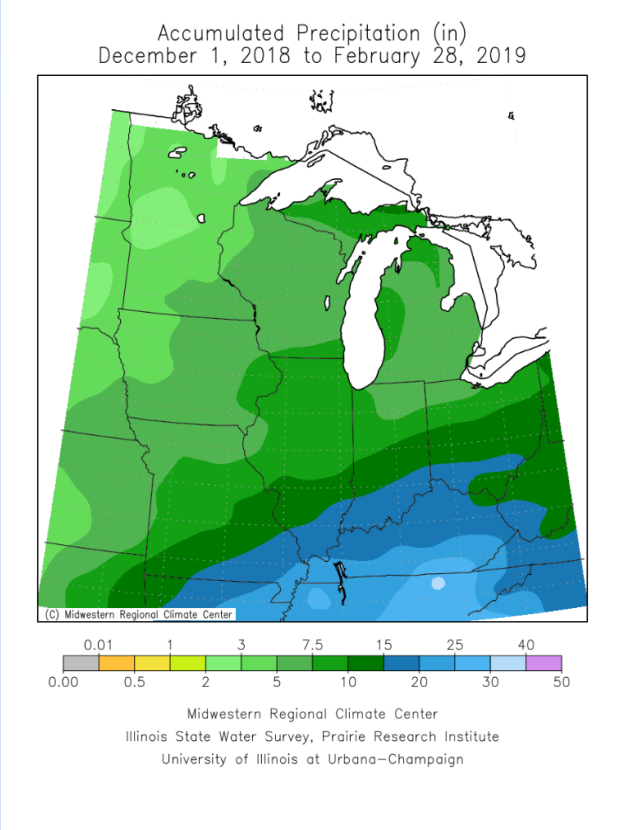
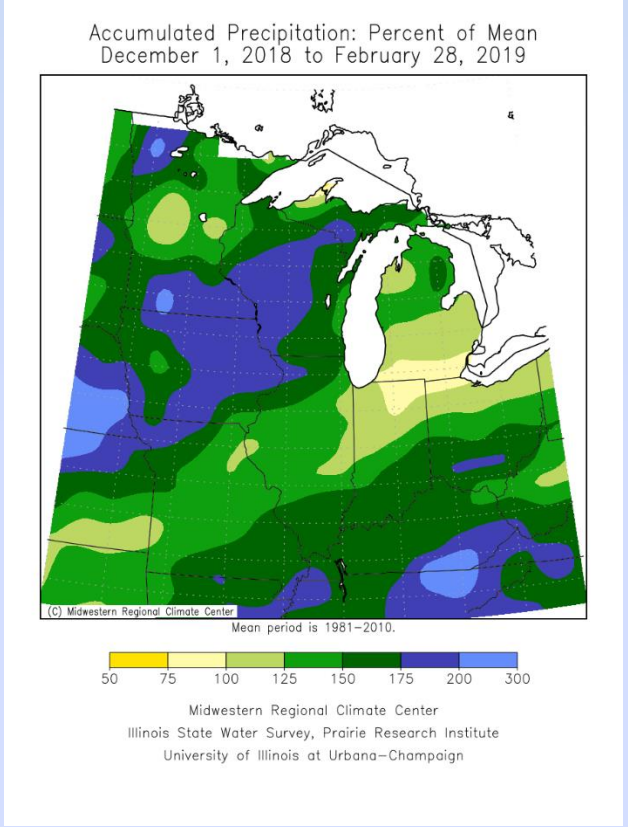
Winter Precipitation





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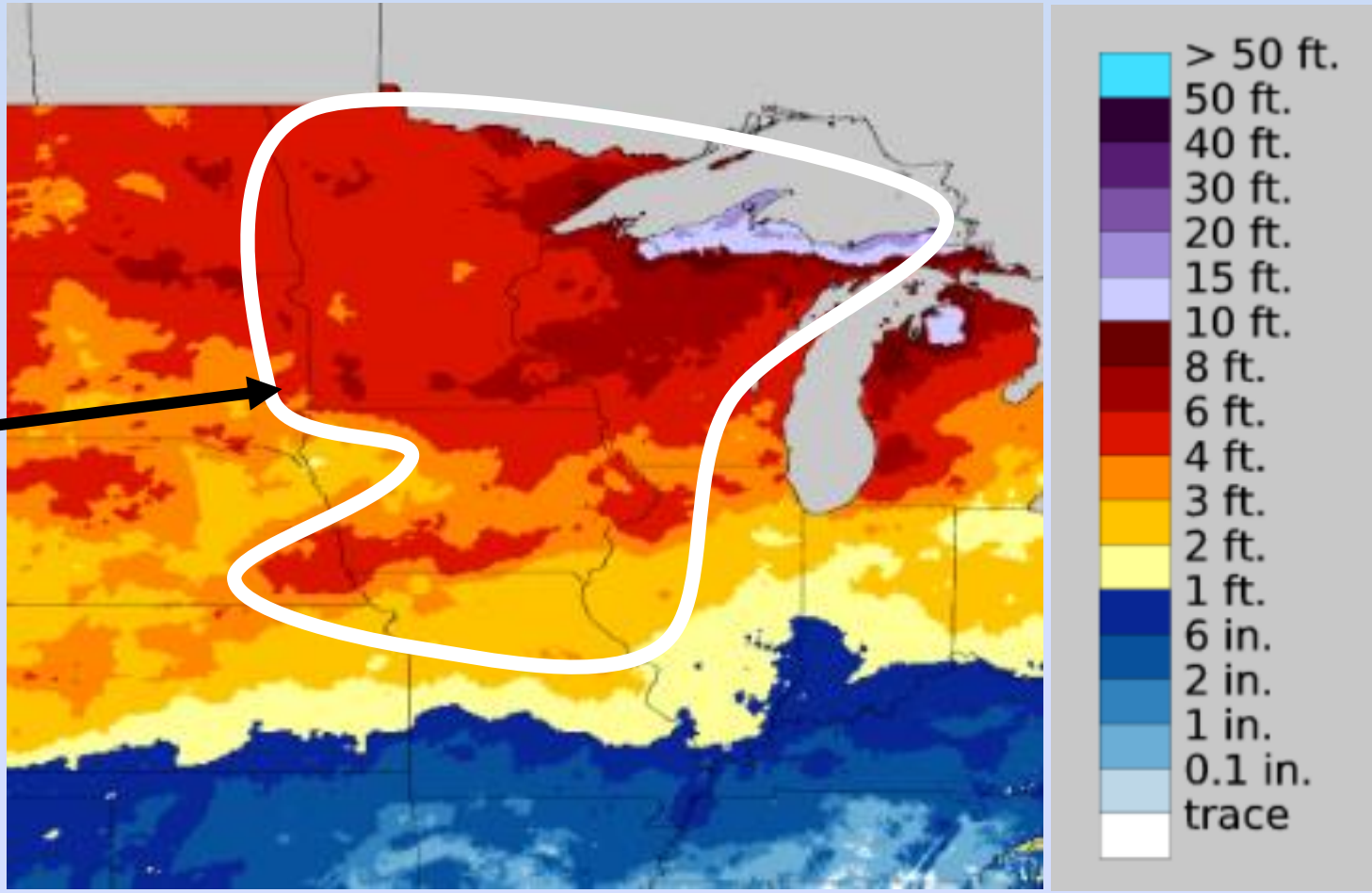
Seasonal Snowfall

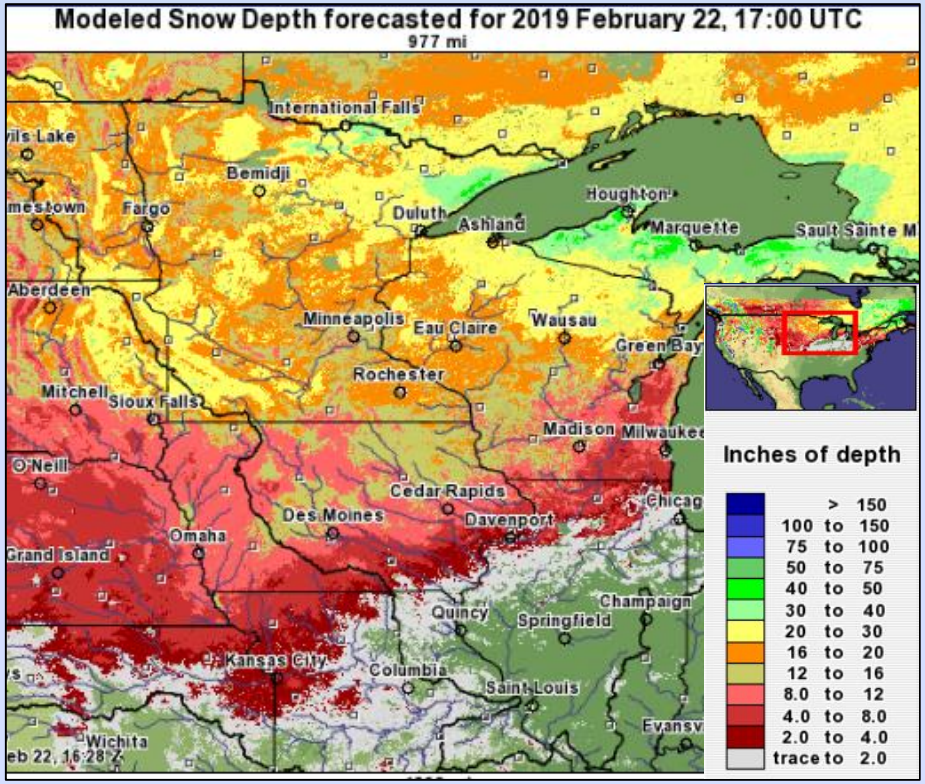
Entire area above normal seasonal snowfall.

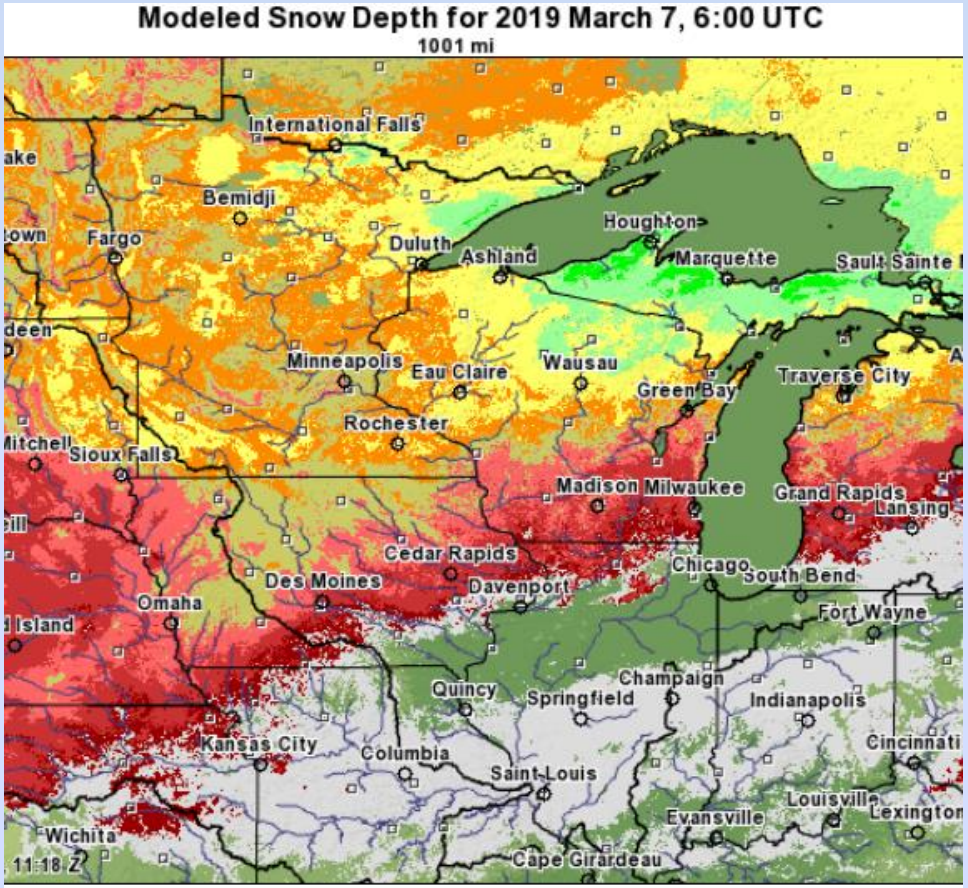
Circled area has snowfall in of 10 to 20+ inches above normal.

Some parts of Minnesota and Wisconsin have up to 40 inches above normal or nearly 300% of normal.



Current Snow Depth





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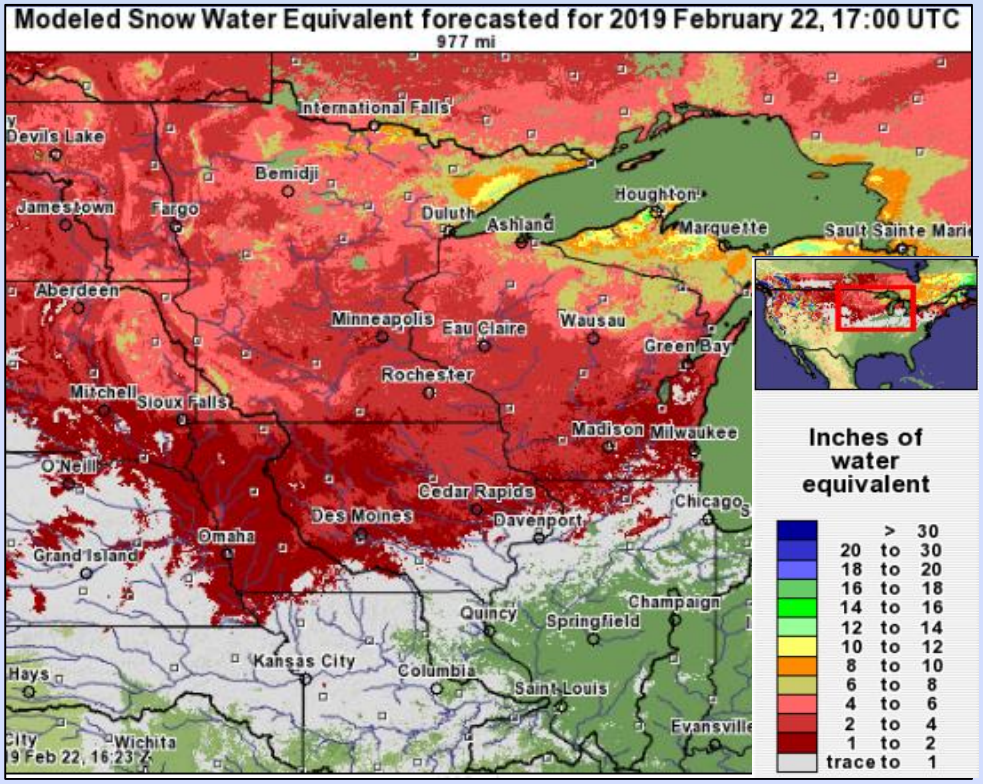
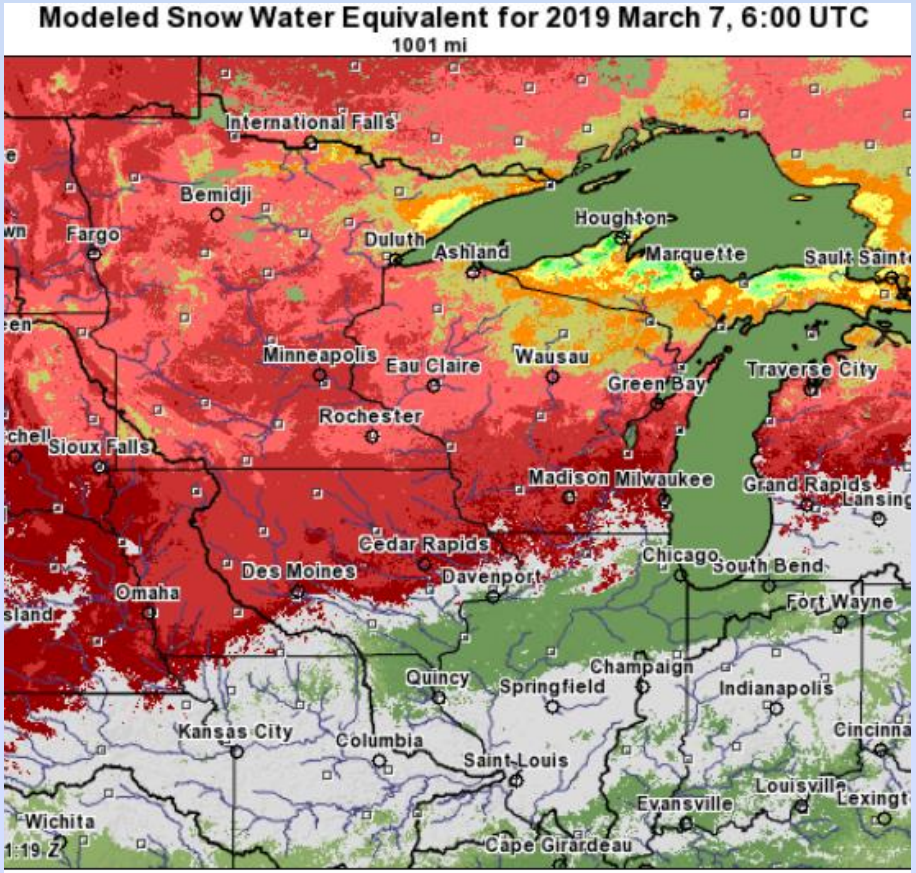
Current Snow Water Equivalent





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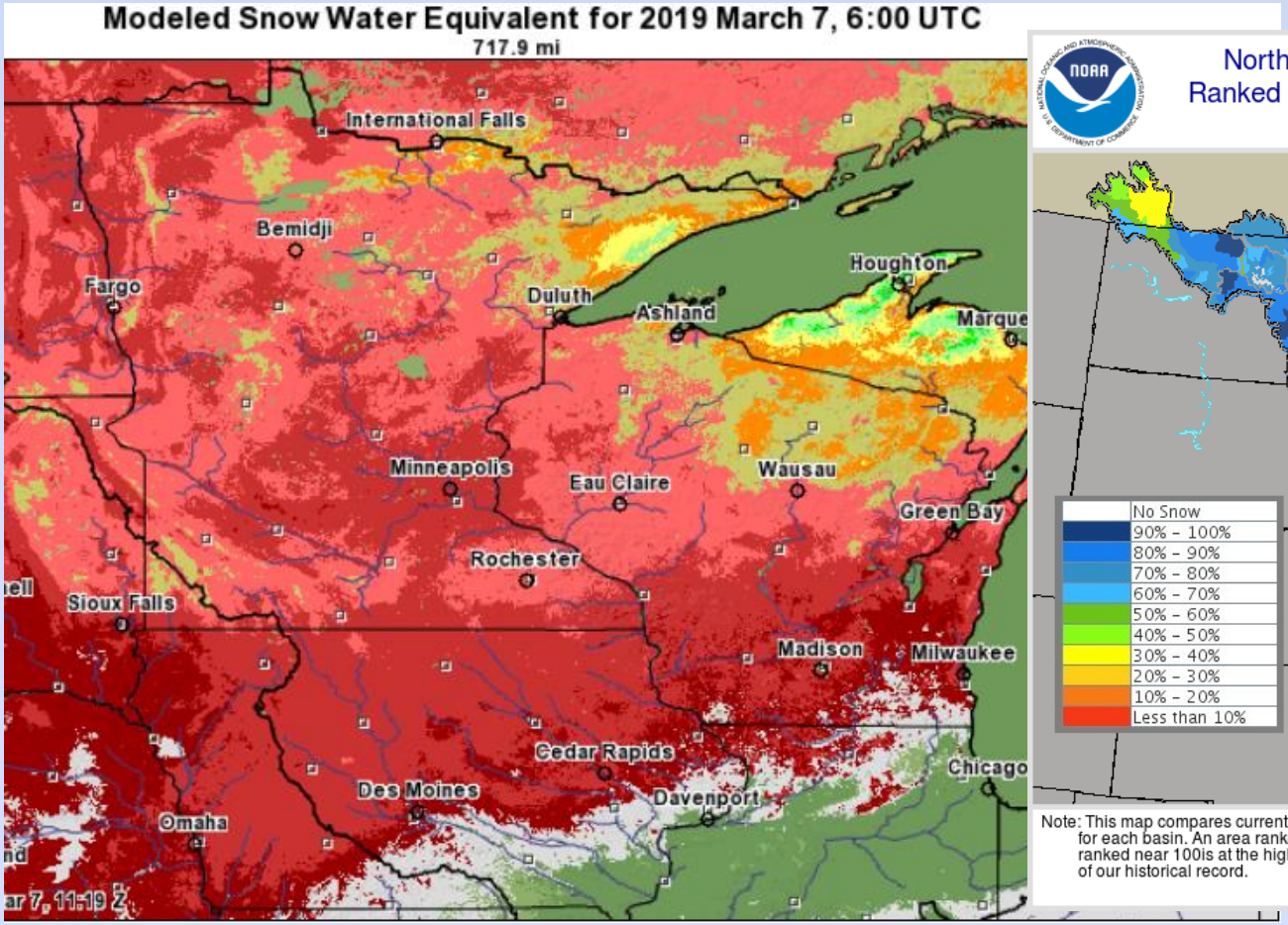
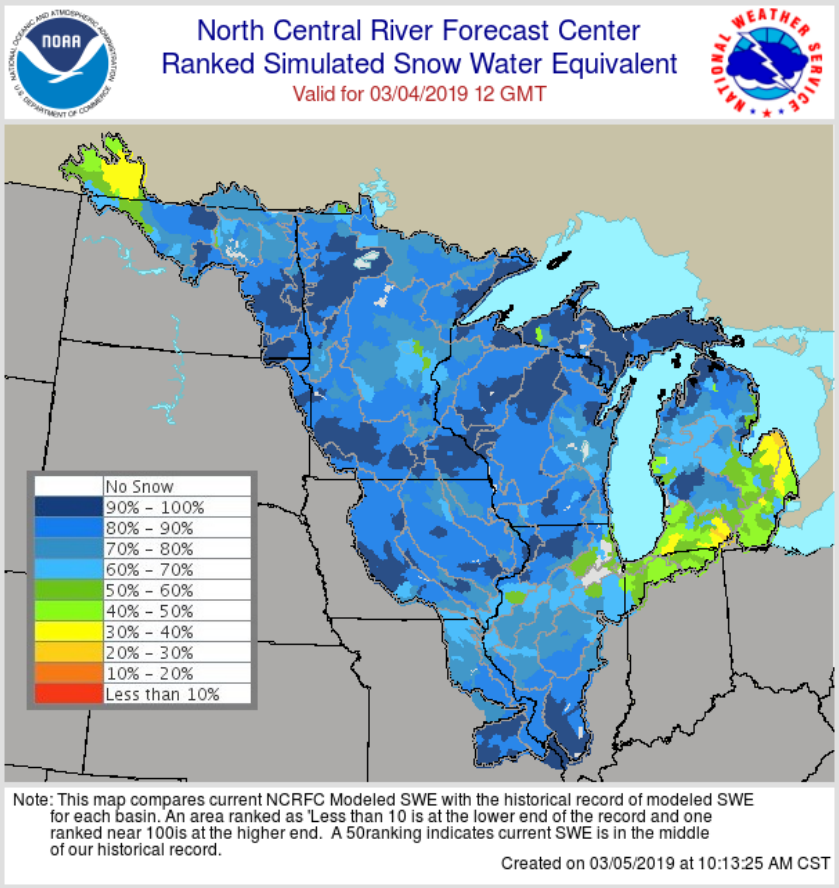
Current Snow Water Equivalent





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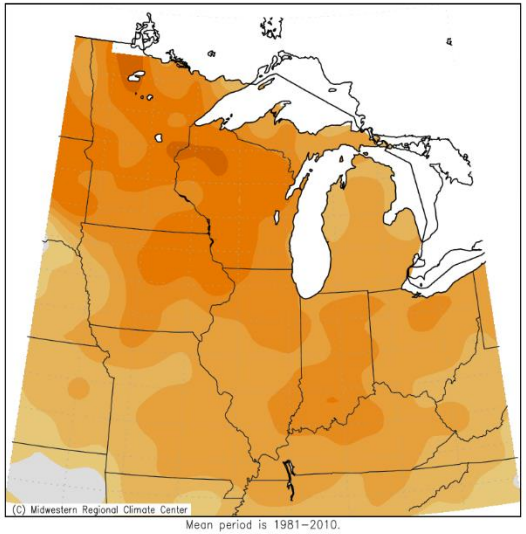
Winter Temperatures

Average Temperature (°F): Departure from Mean
December 1, 2018 to December 31, 2018



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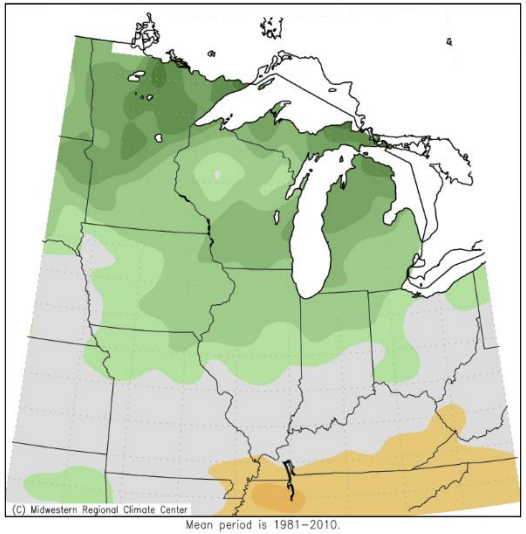
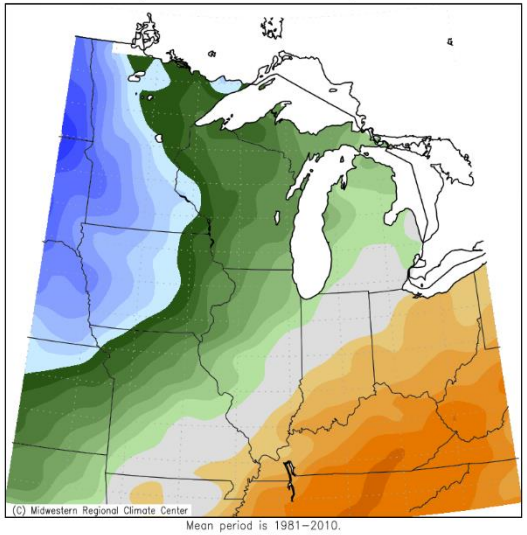
University of Illinois at Urbana–Champaign

Average Temperature (°F): Departure from Mean
January 1, 2019 to January 31, 2019



Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana–Champaign

Average Temperature (°F): Departure from Mean
February 1, 2019 to February 28, 2019



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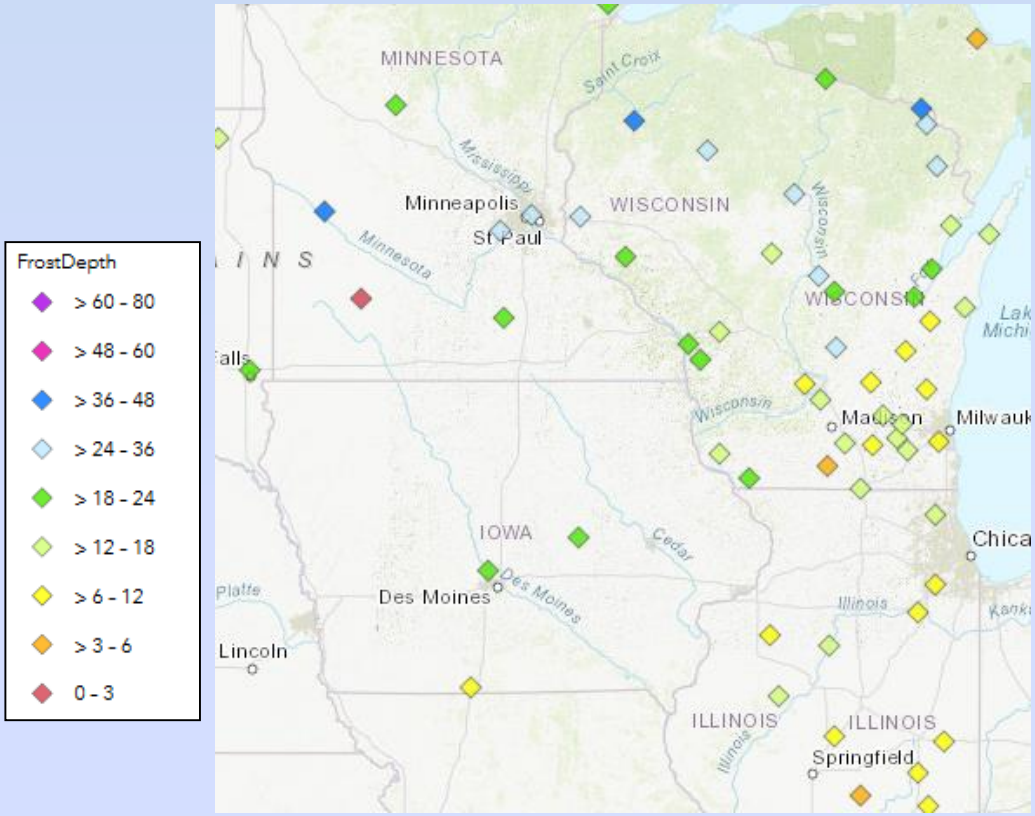
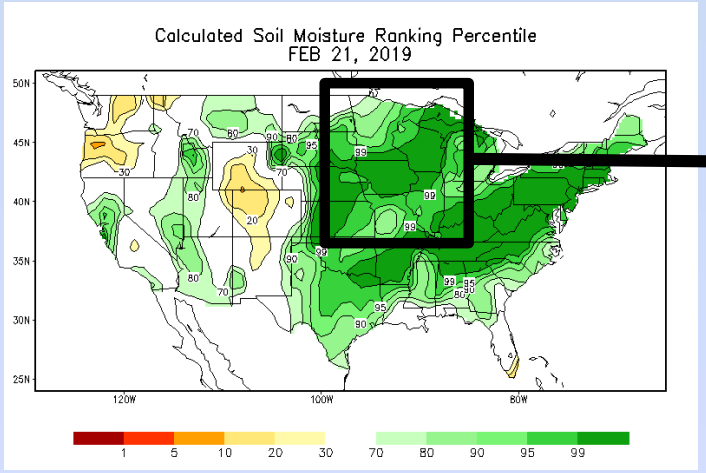
Frost Depth

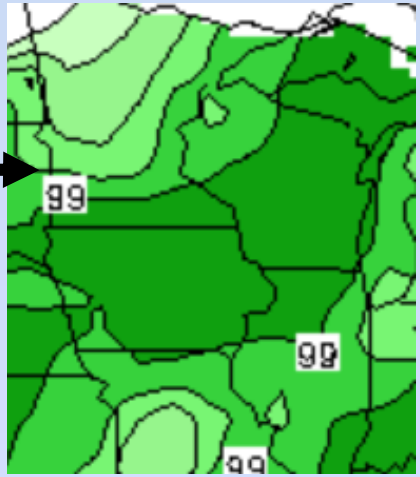


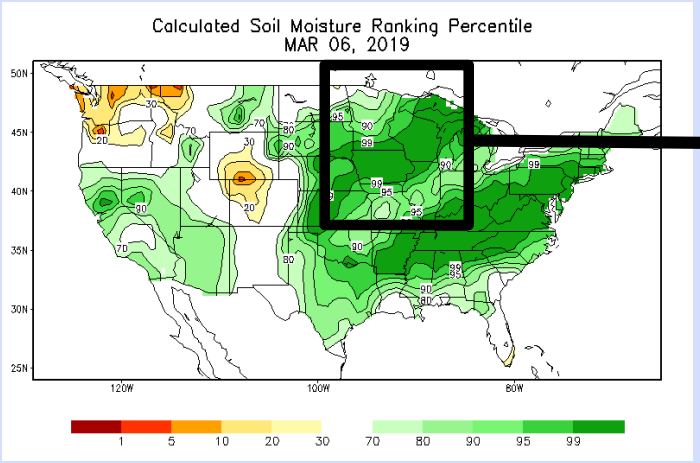
https://www.weather.gov/ncrfc/LMI_FrostDepthMap

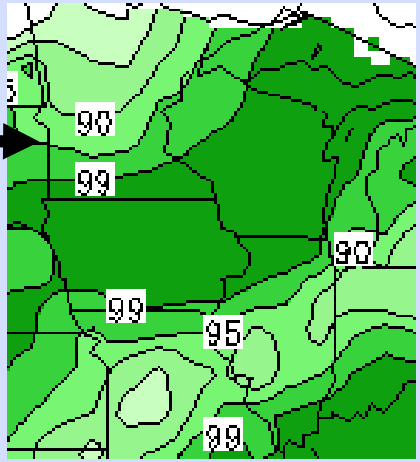
*** Can overlay current snow analysis from NOHRSC and precipitation forecast from WPC**

Soil Moisture









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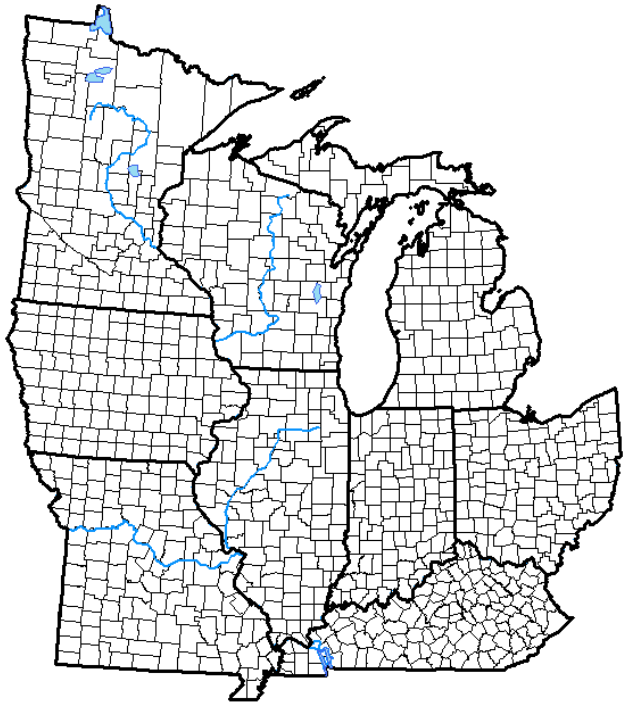
Drought Status

U.S. Drought Monitor

Midwest



March 5, 2019

(Released Thursday, Mar. 7, 2019)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week 02-26-2019	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago 12-04-2018	98.06	1.94	0.00	0.00	0.00	0.00
Start of Calendar Year 01-01-2019	99.27	0.73	0.00	0.00	0.00	0.00
Start of Water Year 09-25-2018	81.26	18.74	8.55	1.71	0.37	0.01
One Year Ago 03-06-2018	81.51	18.49	2.91	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

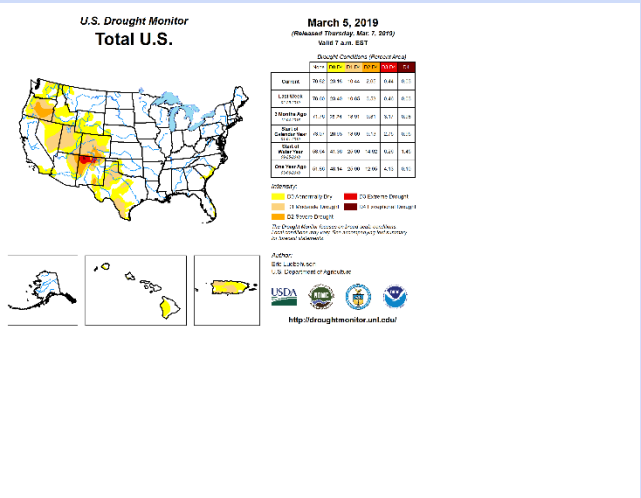
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Eric Luebehusen

U.S. Department of Agriculture

http://droughtmonitor.unl.edu/



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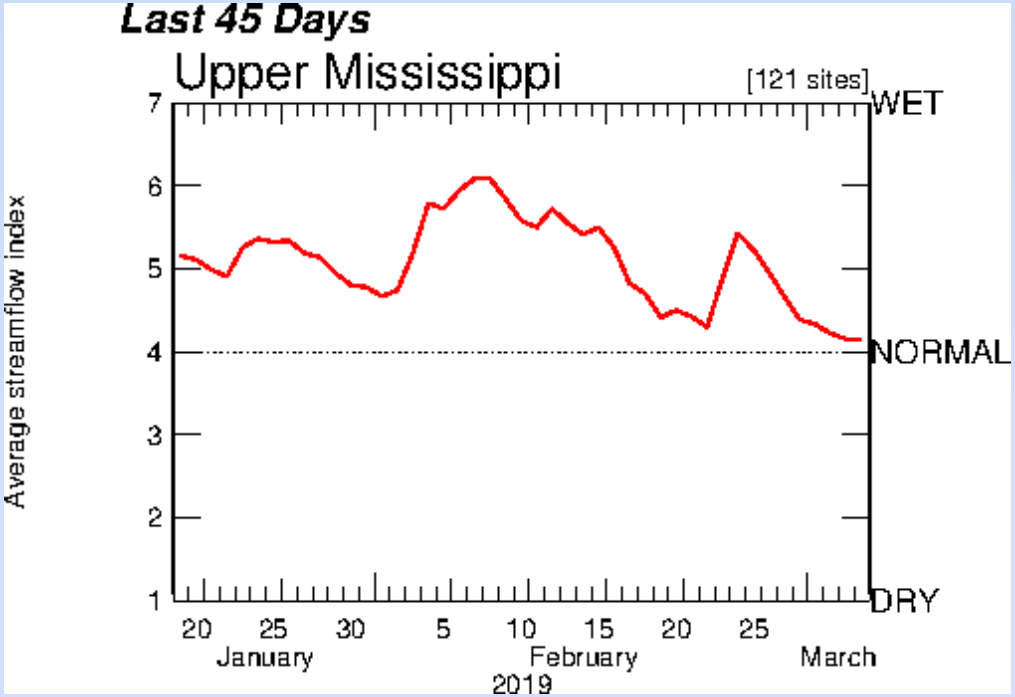
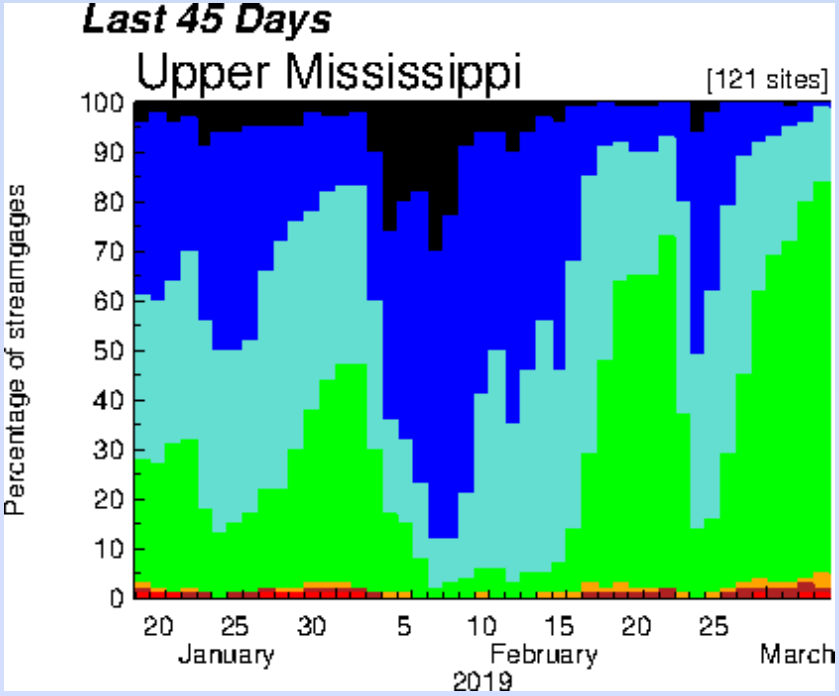
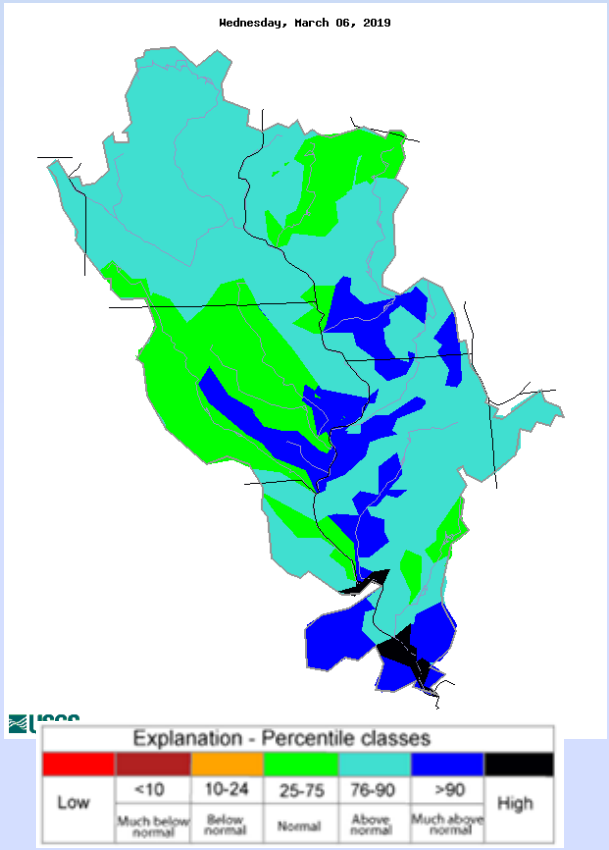
Stream Levels - USGS





Near to above normal current streamflows.

Stream Levels - USGS



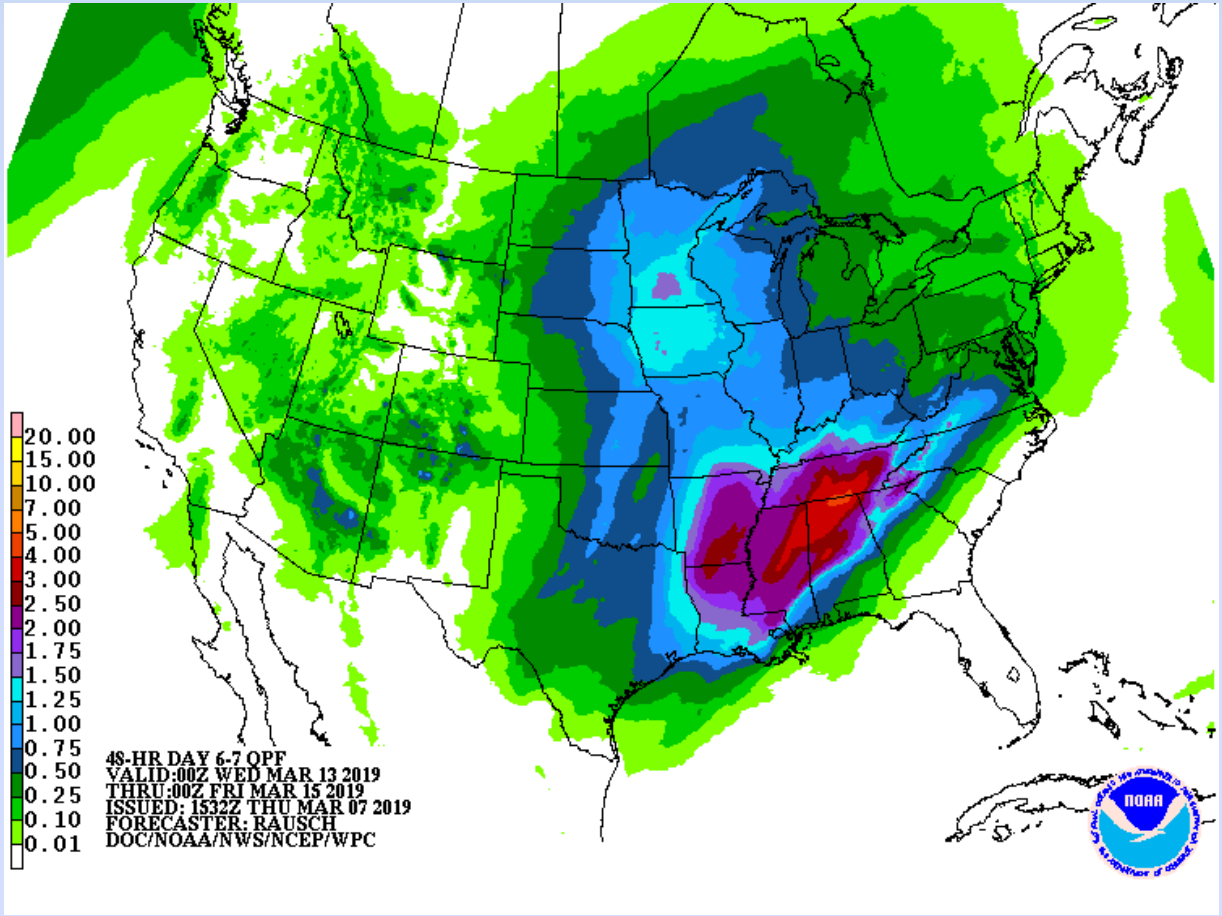
Above normal streamflows throughout the area. Some abnormally high streamflows.

Ice Jams

Break-up Jams	*Mid-winter Jams*
❄ Form mid to late-winter	❄ Form with mid-winter thaw
❄ Air temperatures near freezing	❄ Characteristics of break-up jams
❄ Unsteady water flow	❄ Refreeze in place forming significant blockage
❄ Composed of broken sheet and border ice	❄ May result in more jamming
❄ Moderate to very rough surface	
❄ Highly unstable, can release suddenly	

- **Excessive runoff from snowmelt or rainfall causes the river to rise. Ice is rapidly pushed up, causing it to break up and flow downstream. Ice jams and associated flooding can result from this process.**
- **Ice Jams will be a threat until all rivers have no ice cover.**

7 day Forecast Precipitation



Two storm systems to impact the region.

- **Saturday into Sunday**
- **Tuesday night through Thursday (13th-15th)**

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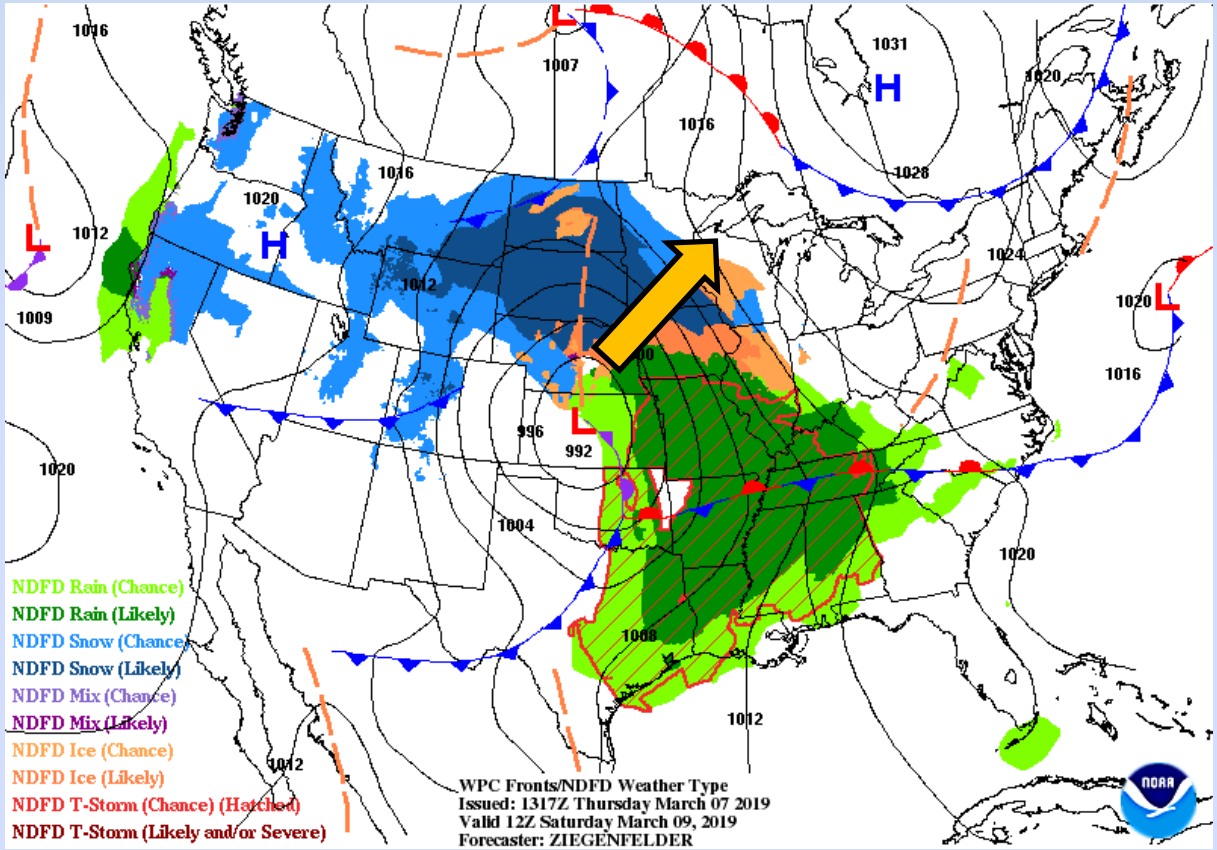
Weekend Storm System



- Saturday into Sunday
- Rain across the southern part of the Upper Mississippi River basin.
- Snow across the northern part of the Upper Mississippi River basin.

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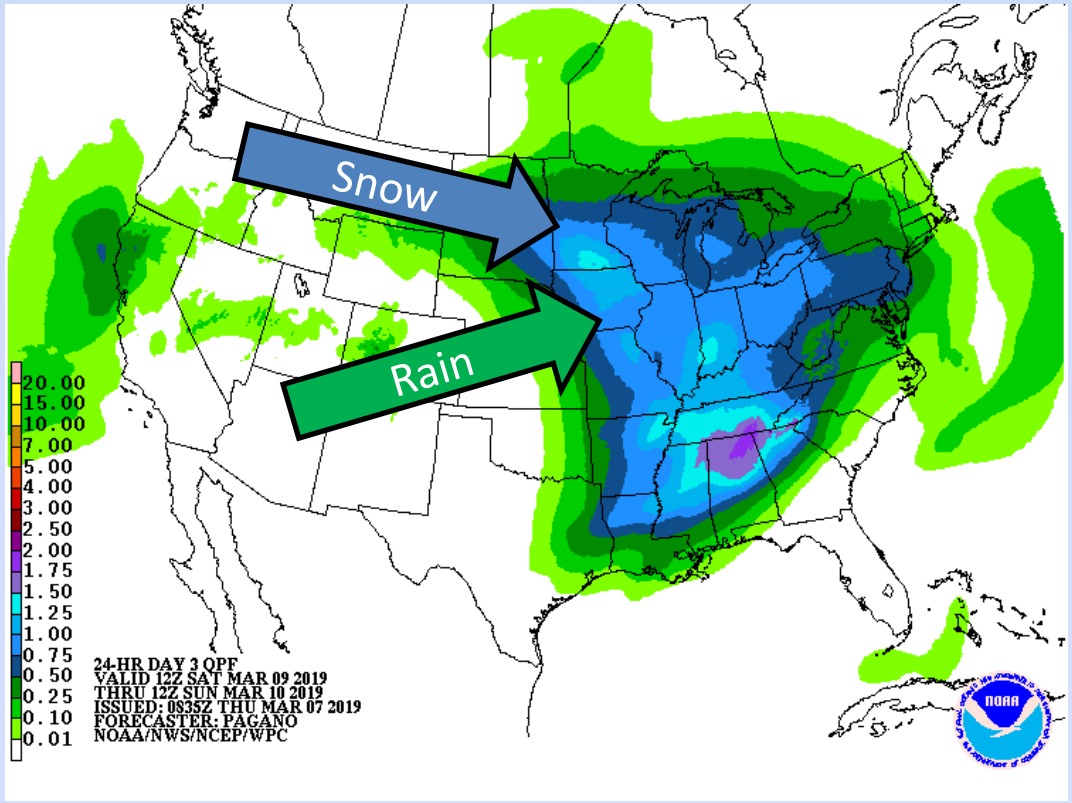
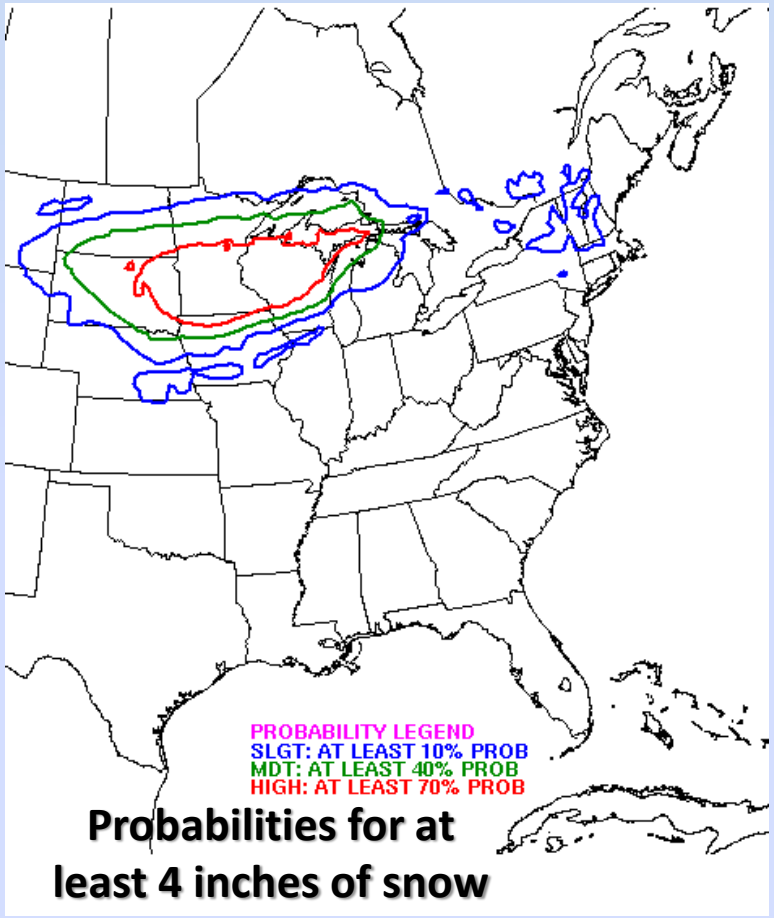
Weekend Storm System
(Saturday into Sunday)





Probabilities for at least 4 inches of snow

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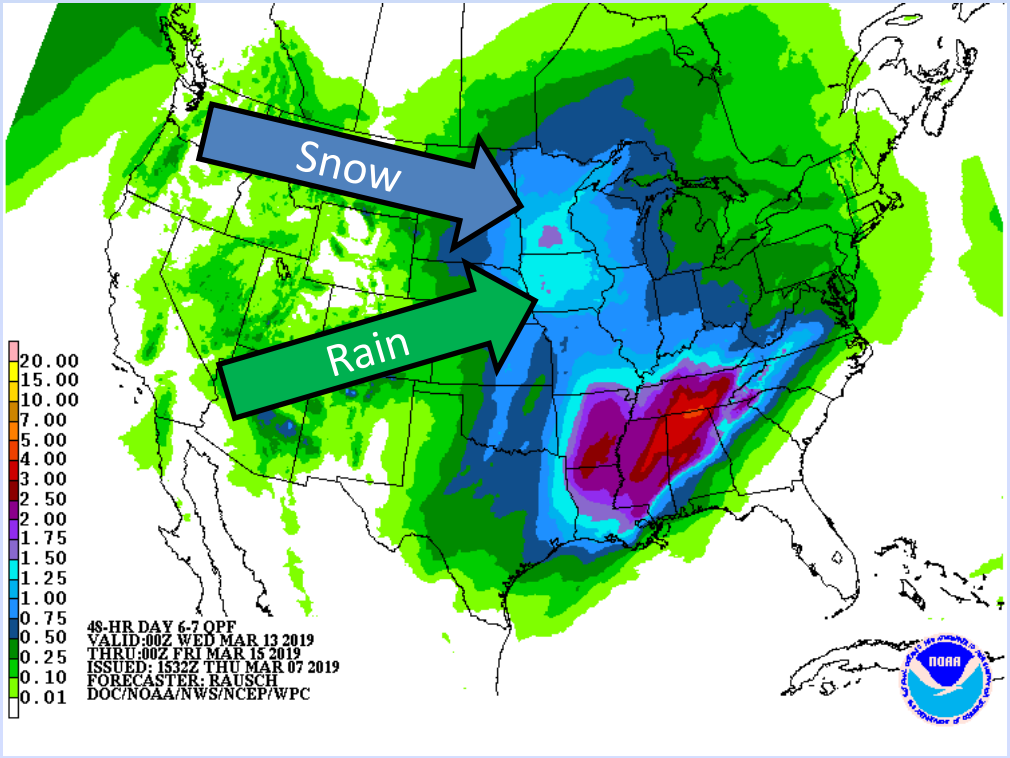
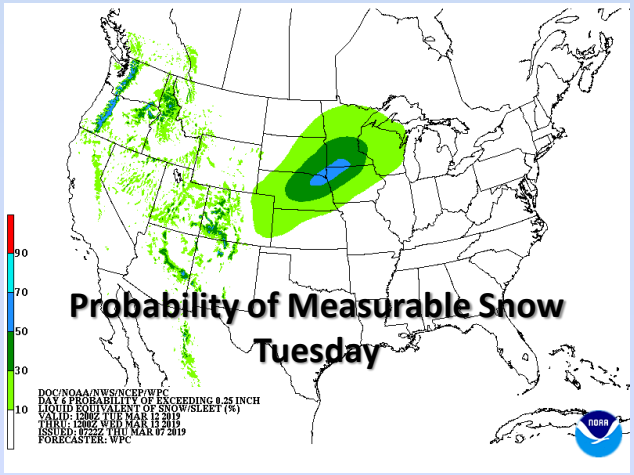
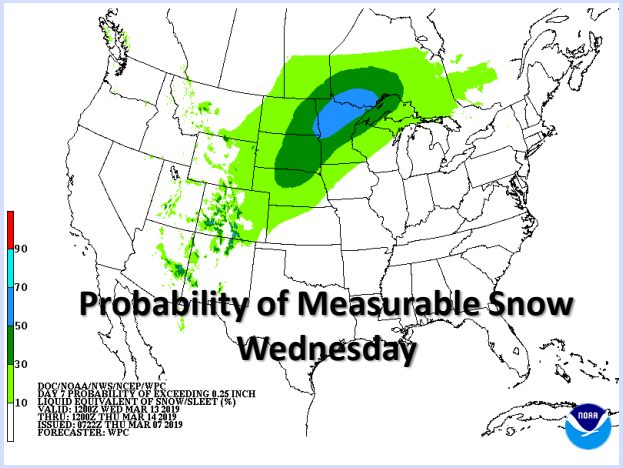
Potential System for Next Week
(Tuesday evening through Thursday)







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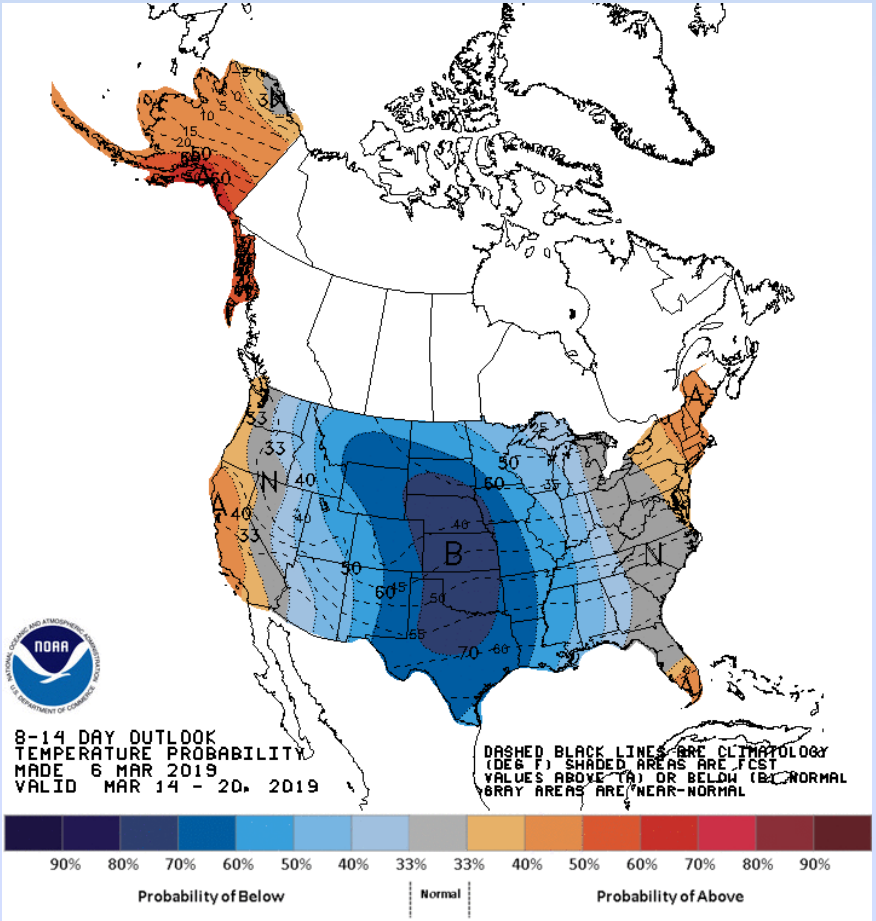
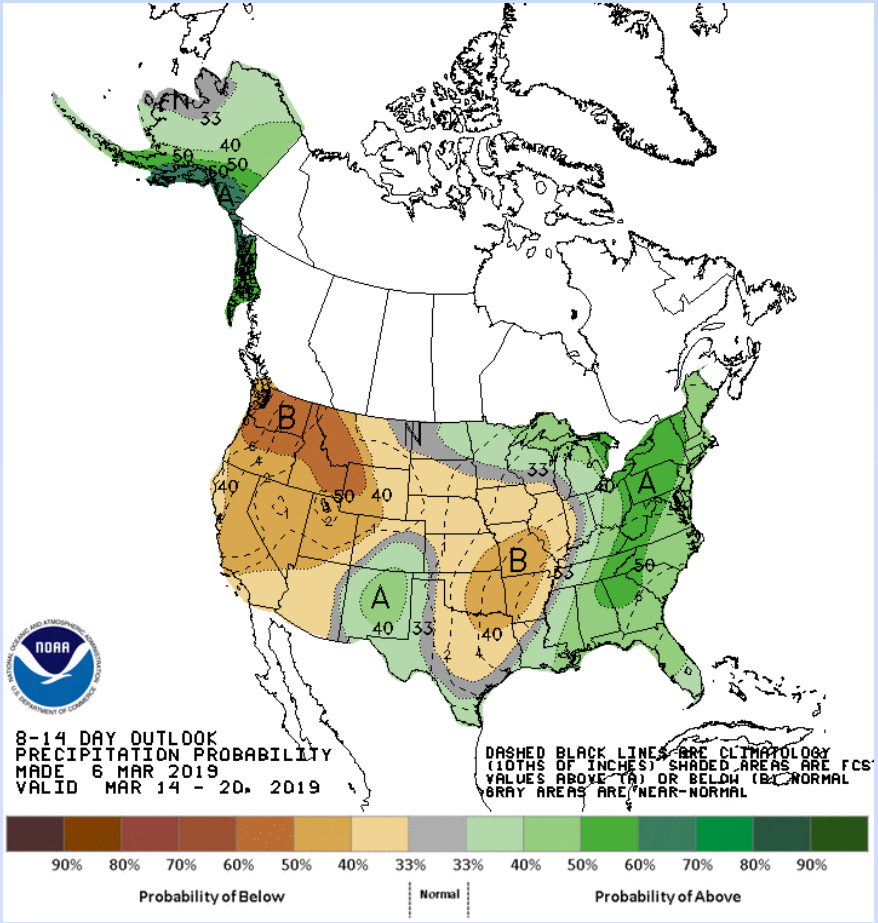
Week 2 Weather Outlook





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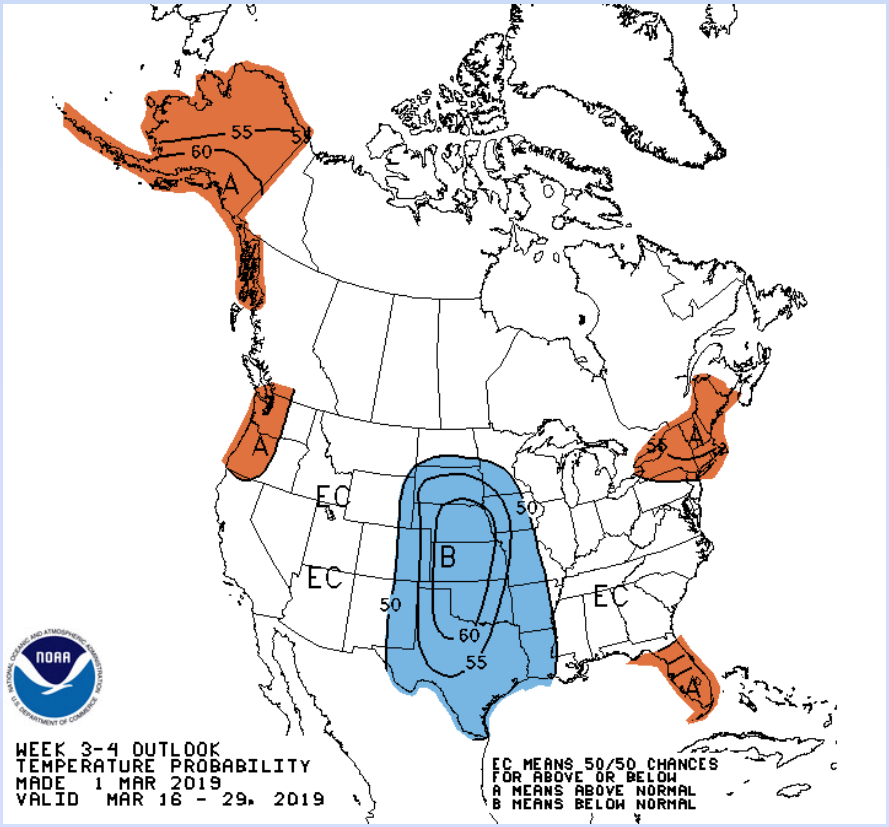
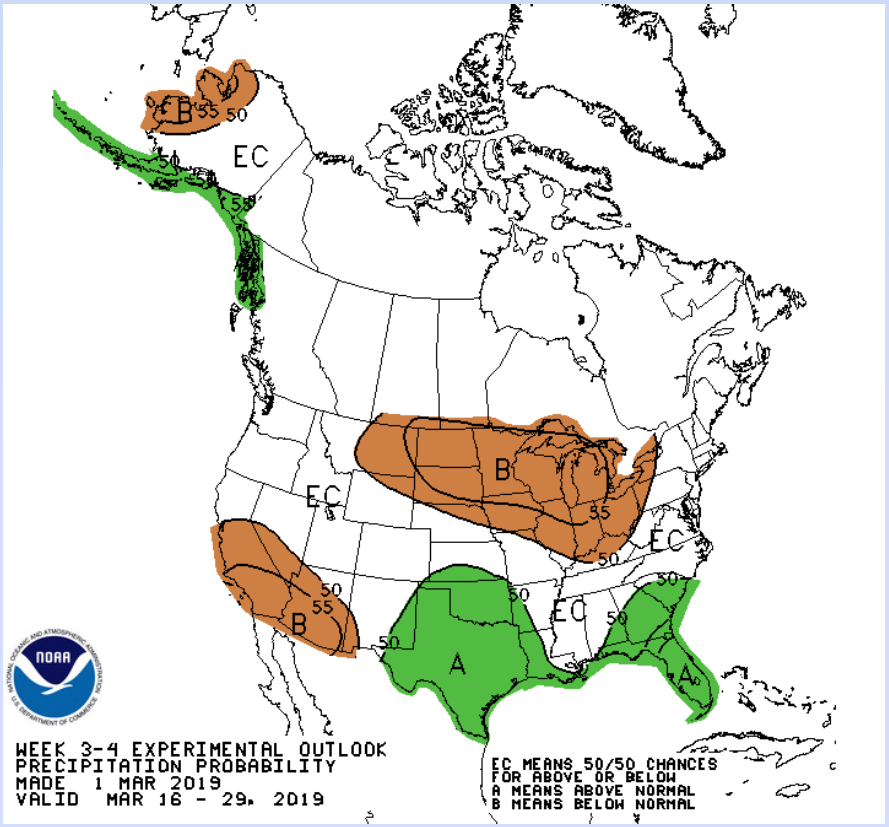
Weeks 3 & 4 Weather Outlooks





https://www.cpc.ncep.noaa.gov/

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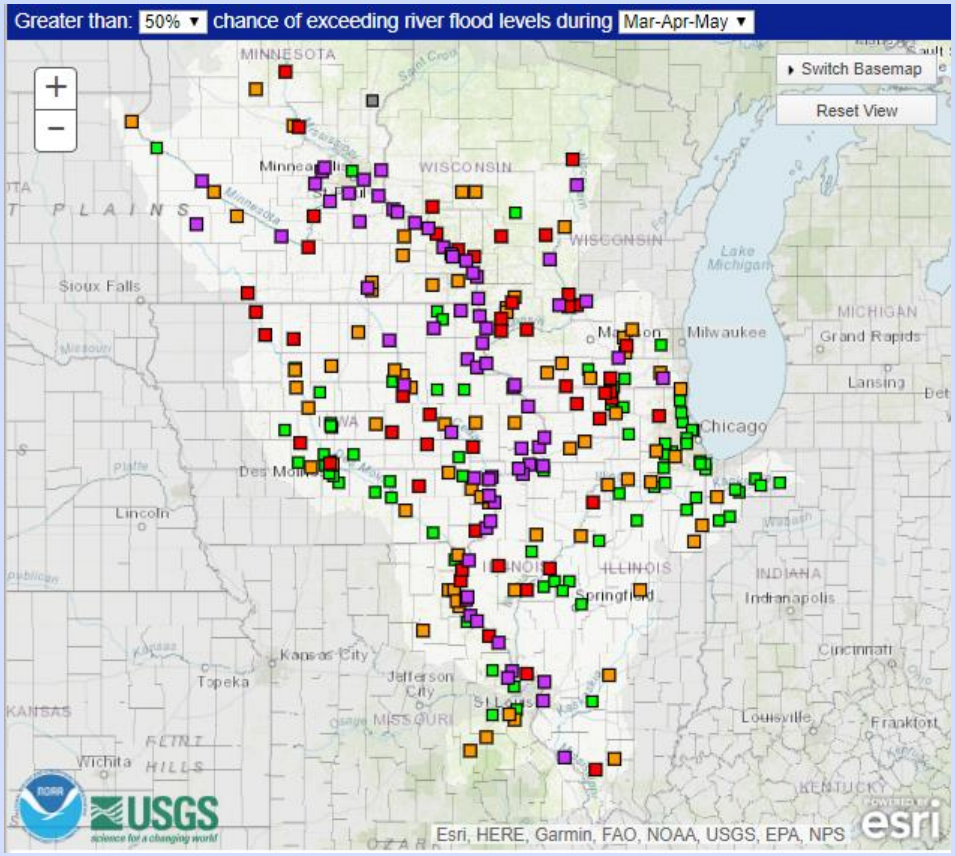
Outlooks



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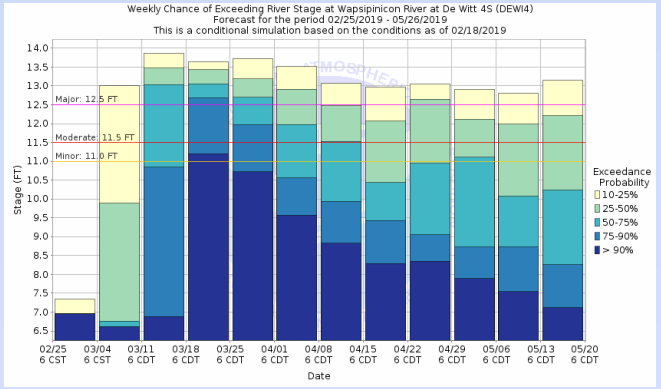
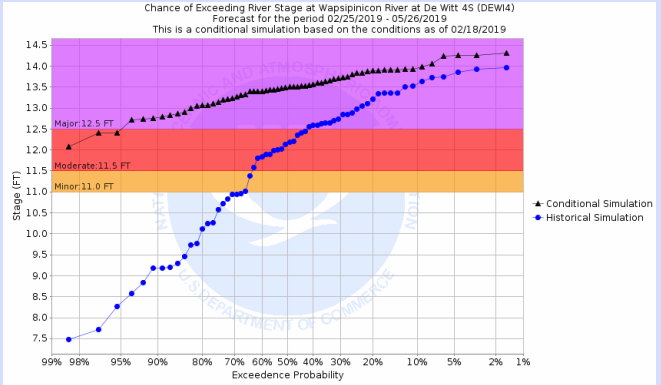
Advanced Hydrologic Prediction Service





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Outlooks

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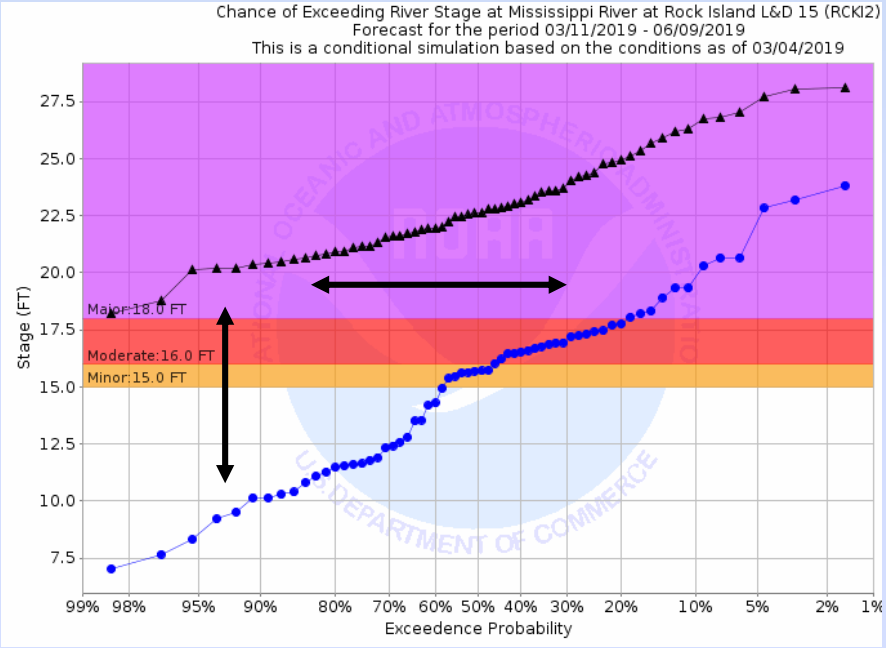
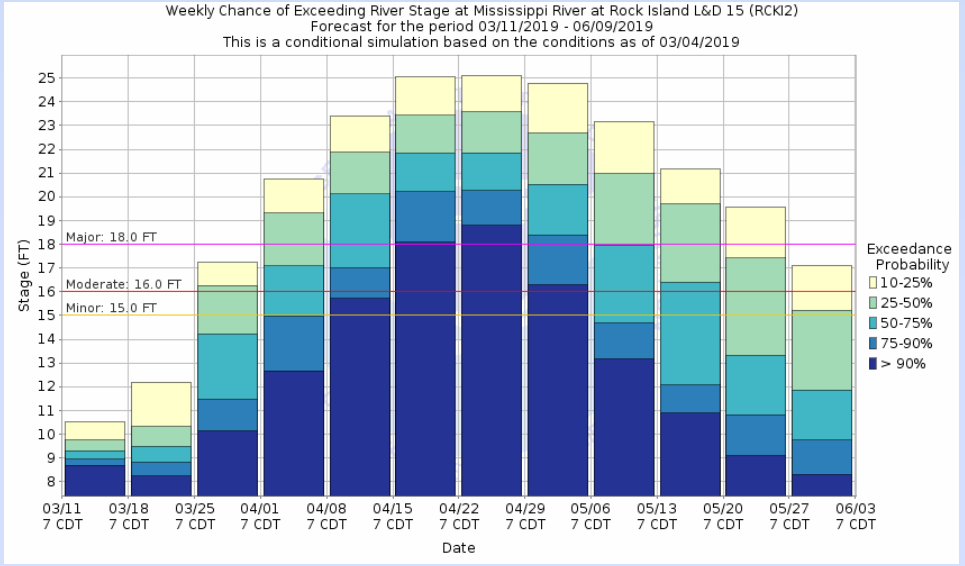
Advanced Hydrologic Prediction Service





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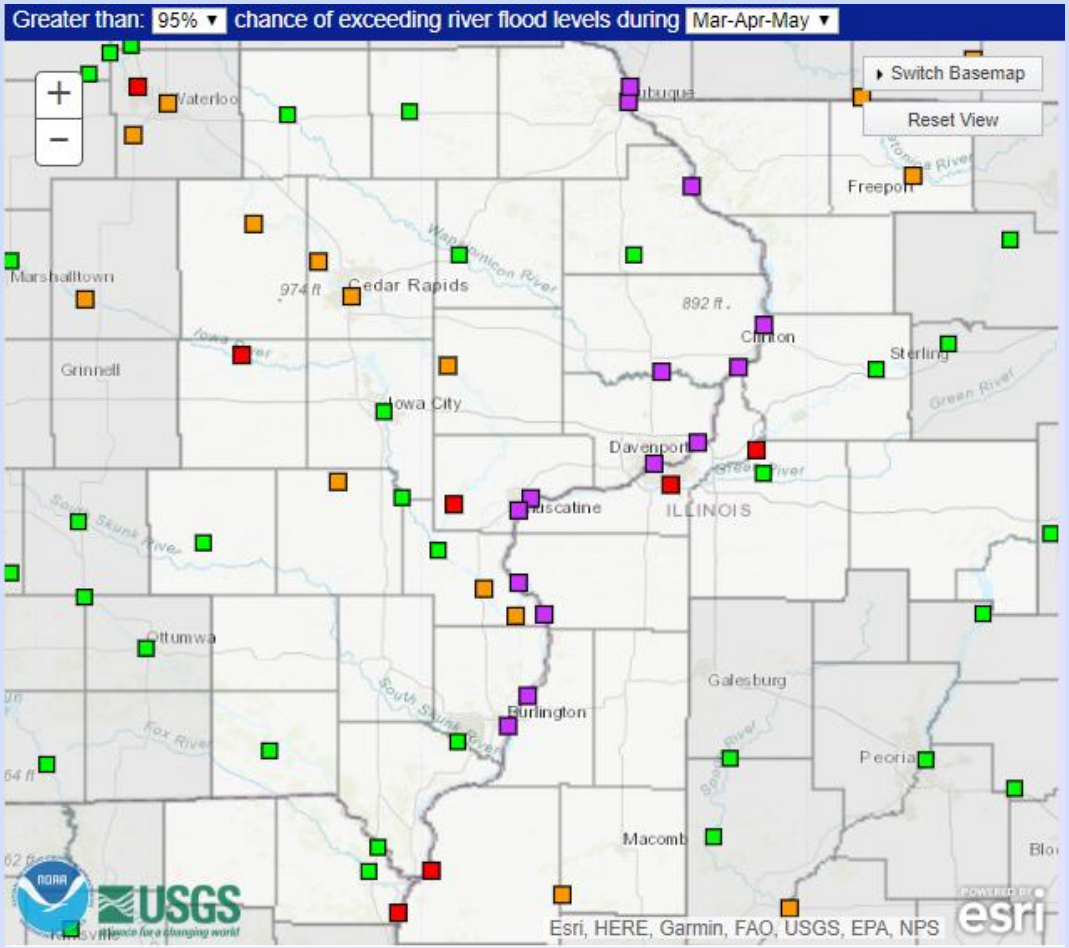
Probabilistic Flood Outlook
95% Chance – High Probability



- > 95% Major Flooding
- > 95% Moderate Flooding
- > 95% Minor Flooding
- < 95% Chance of Flooding
- Long-Range Flood Risk Not Calculated

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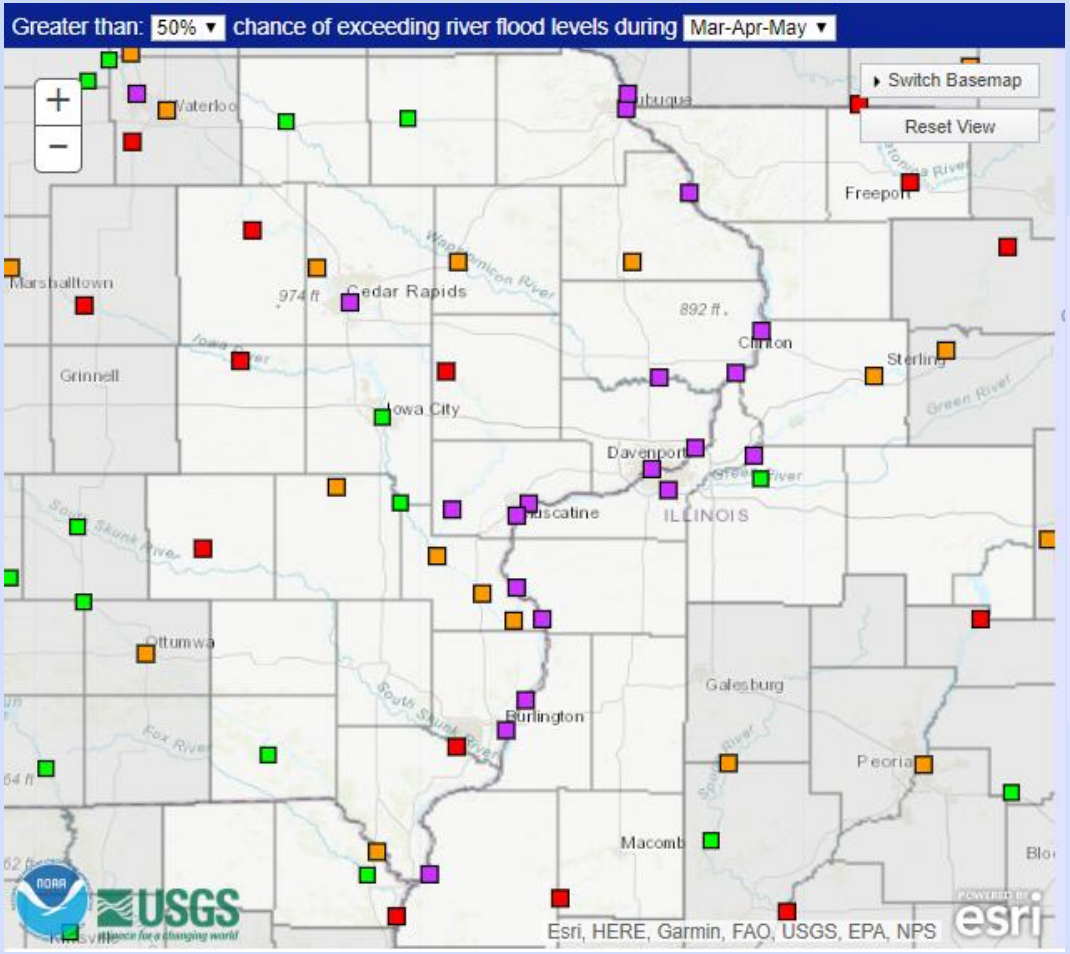
Probabilistic Flood Outlook
50% Chance



- > 50% Major Flooding
- > 50% Moderate Flooding
- > 50% Minor Flooding
- < 50% Chance of Flooding
- Long-Range Flood Risk Not Calculated

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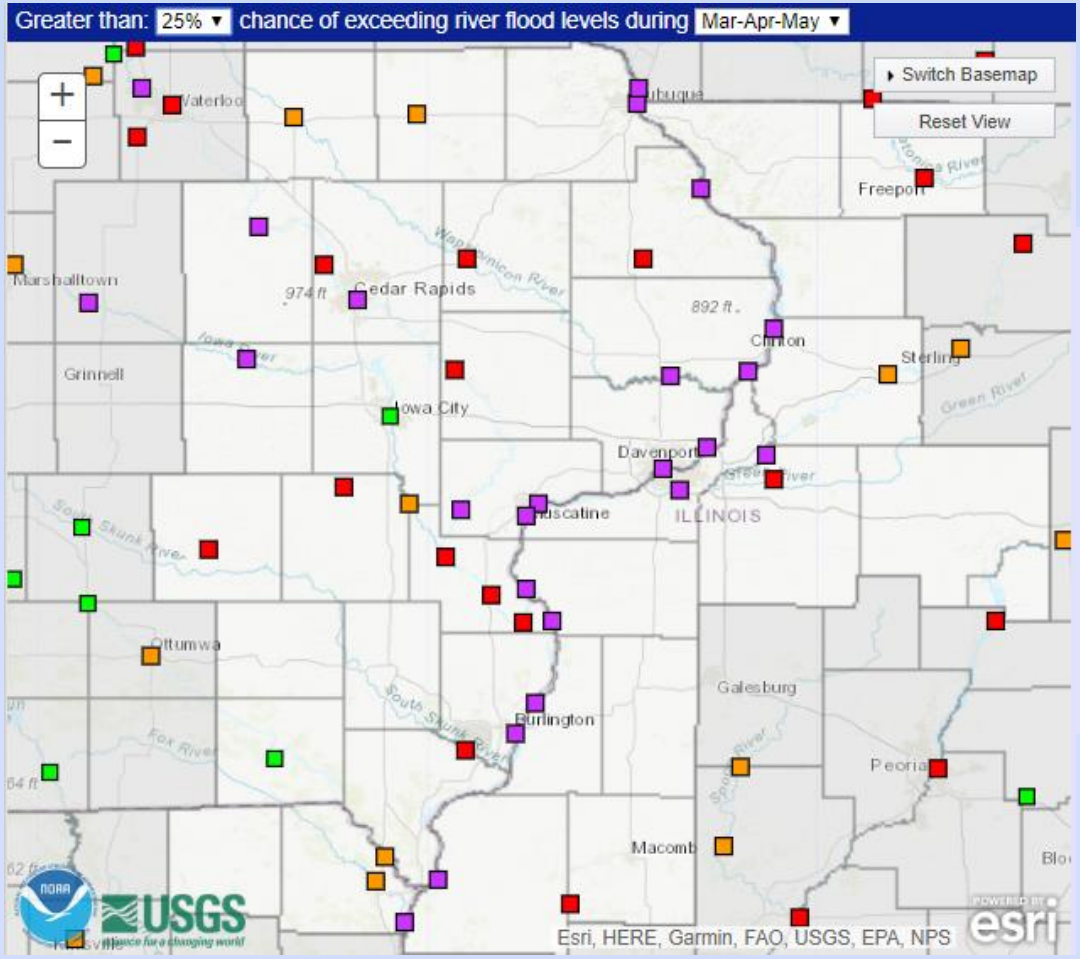
Probabilistic Flood Outlook
25% Chance



> 25% Major Flooding

> 25% Moderate Flooding

> 25% Minor Flooding

< 25% Chance of Flooding

Long-Range Flood Risk Not Calculated

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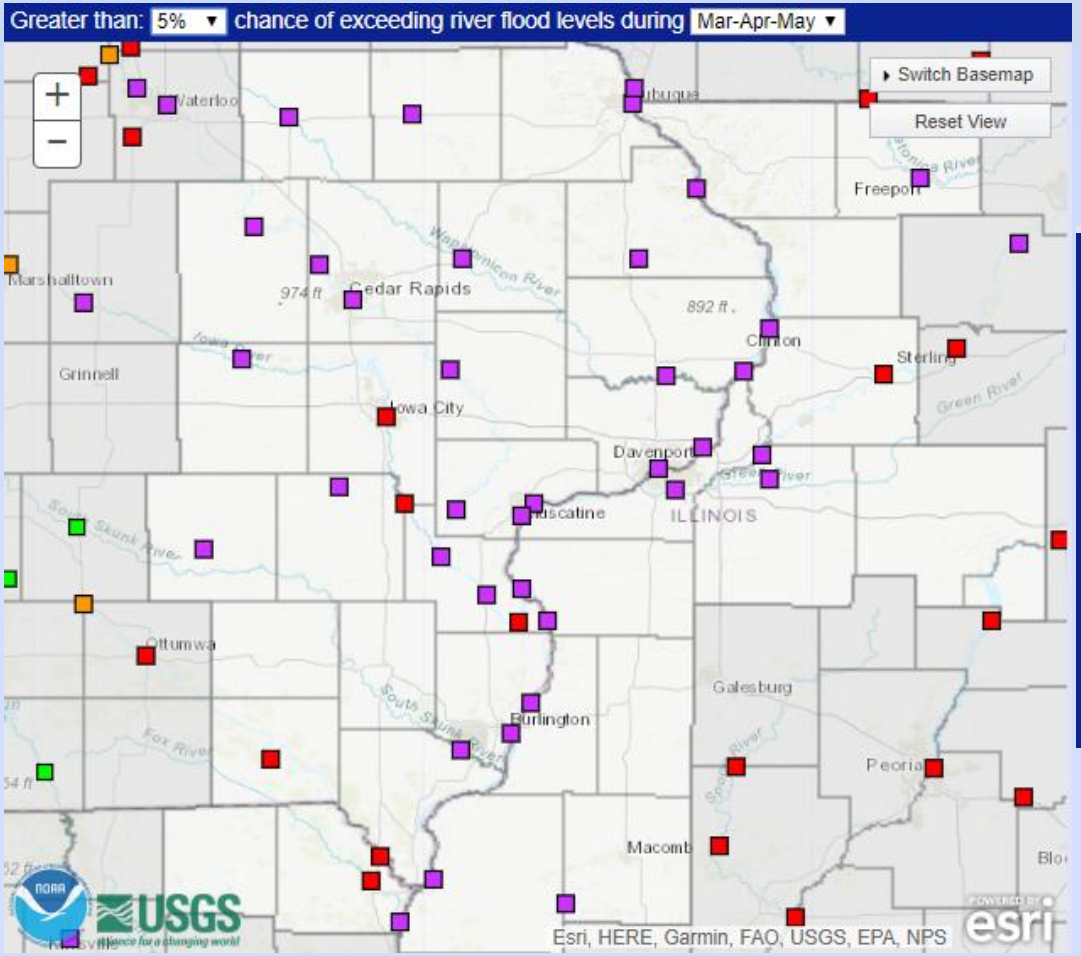
Probabilistic Flood Outlook
5% Chance – Low Probability



- > 5% Major Flooding
- > 5% Moderate Flooding
- > 5% Minor Flooding
- < 5% Chance of Flooding
- Long-Range Flood Risk Not Calculated

National Weather Service

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Spring Flood Outlook
Primary Factors in Consideration

- Saturated Soils & extensive area of Frozen Soils
- Above normal river levels going into spring
- Significant snowpack and associated water equivalent across much of the region
- Snowmelt alone will likely cause many rivers to rise above flood stage
- Ice jams may continue to be problematic

Spring Flood Outlook
--Bottom Line--

Mississippi River – Well Above Normal

Tributary Rivers – Above to Well Above Normal

- **High confidence on widespread rises to near or above flood stage on nearly all rivers (especially those with source regions where snowpack currently exists)**
- **Low confidence on the peak severity on eventual flooding**
- ***The rate of the snowmelt and additional spring rains will be essential to the severity of flooding that occurs this spring***
- **Ice Jam flooding will be a threat until all rivers are ice free**

Information Sources

- Advanced Hydrologic Prediction Service (*AHPS*) (observations and forecasts, etc) — water.weather.gov
- Local Quad Cities WFO AHPS — water.weather.gov/ahps2/index.php?wfo=DVN
- North Central River Forecast Center — weather.gov/ncrfc
- National Operational Hydrologic Remote Sensing Center (snow information) — nohrsc.noaa.gov
- NWS Weather Prediction Center — wpc.ncep.noaa.gov
- NWS Climate Prediction Center — cpc.ncep.noaa.gov

Quad Cities WFO Forecast Discussions (technical weather and hydrology discussion)
forecast.weather.gov/product.php?site=DVN&issuedby=DVN&product=AFD

Find out more information at: www.weather.gov/dvn/2019_springfloodoutlook

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Information can be found from the NCRFC

https://www.weather.gov/ncrfc/

From the Quad Cites Weather Forecast Office:

Quad Cities - http://www.weather.gov/dvn/

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