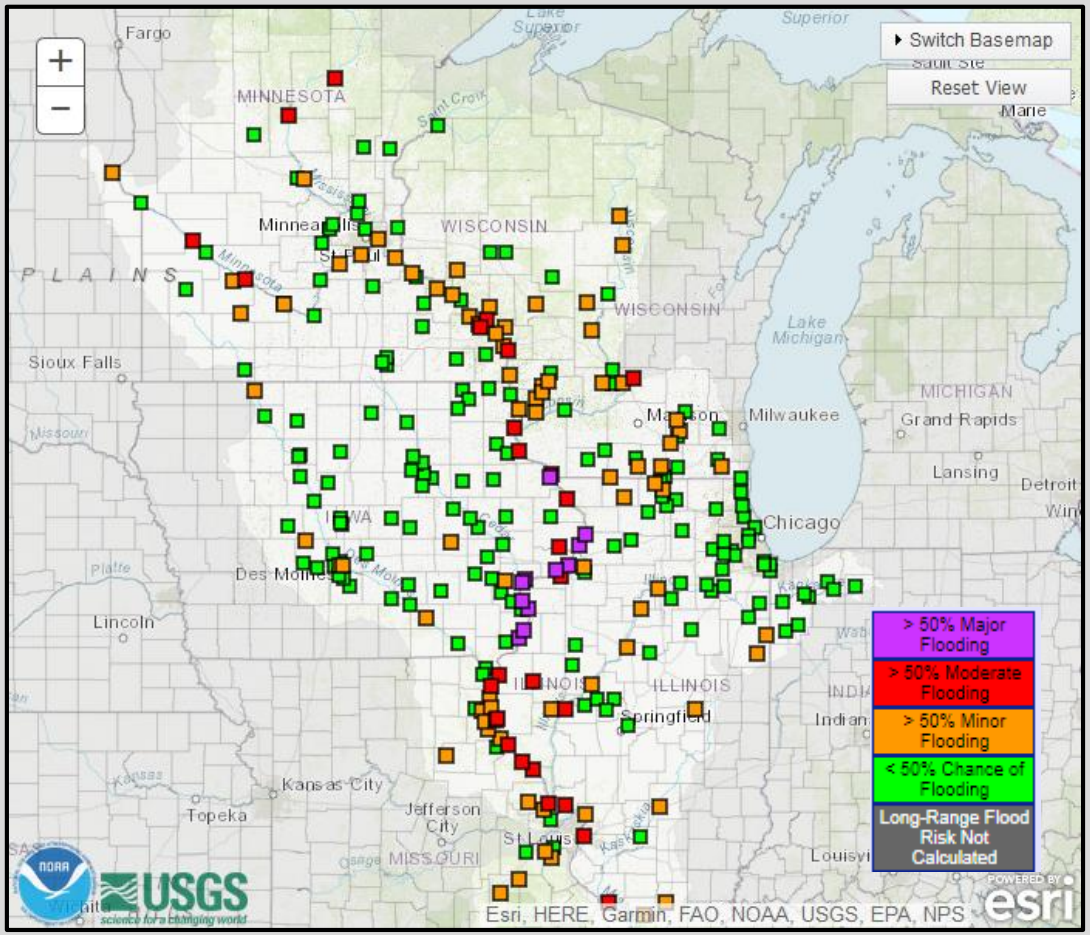
2020 Spring Flood Outlook – Update #2

National Weather Service – WFO Quad Cities

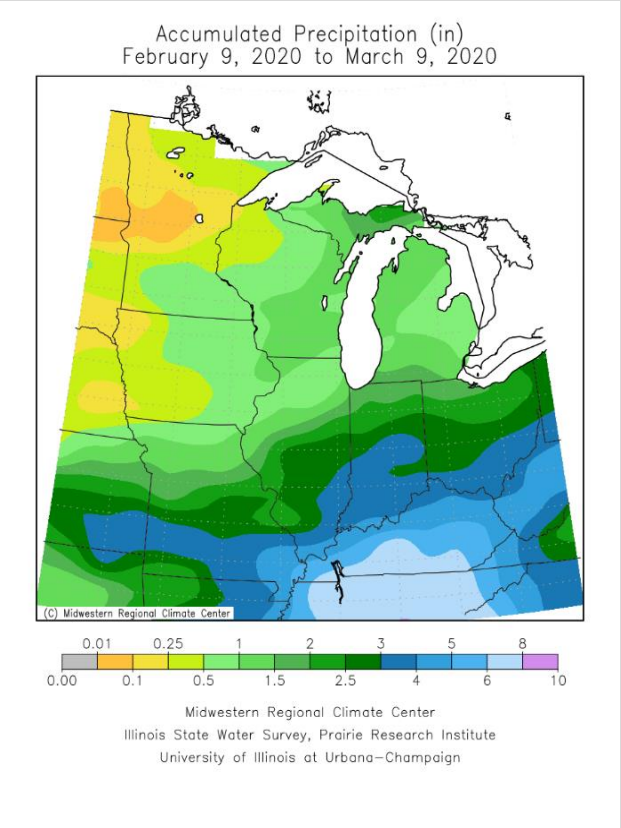
March 12, 2020

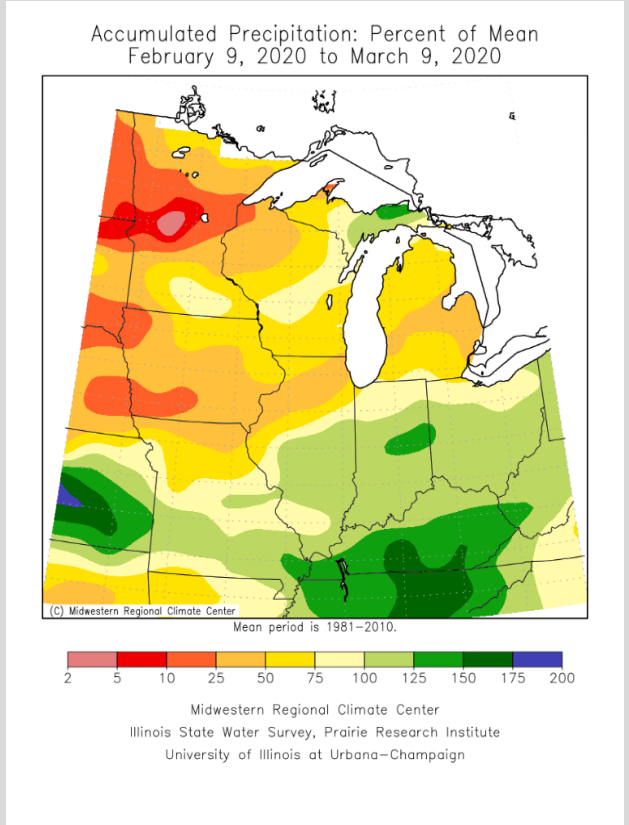


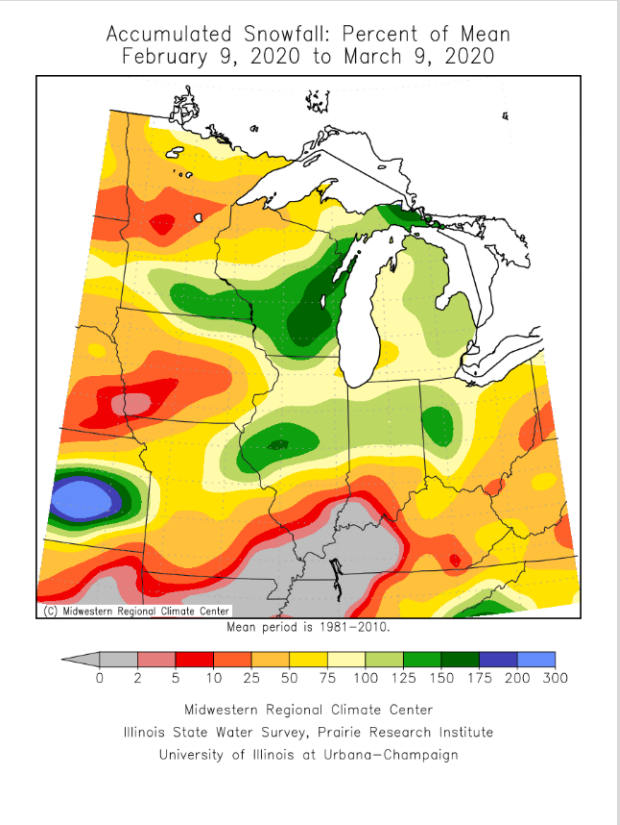
Key Points

- Main Concerns:
  - *Local Rivers:* near to slightly above average for most area rivers
    - Slight improvement in past 2 weeks
    - Any flooding will now be driven by spring rains
  - *Mississippi River:* much above average on Mississippi River
    - Improvement over the past 2 weeks (mostly on the higher end)
- Rises ongoing on area rivers and the Mississippi river due to snowmelt runoff and recent rains.
- Spring precipitation and rate of snowmelt will influence how high river levels get, but this remains uncertain.
- An elevated risk for flooding will persist until soils are able to dry out.

Precipitation – Past 30 Days







Images courtesy of Midwestern Regional Climate Center (MRCC)

Temperatures March

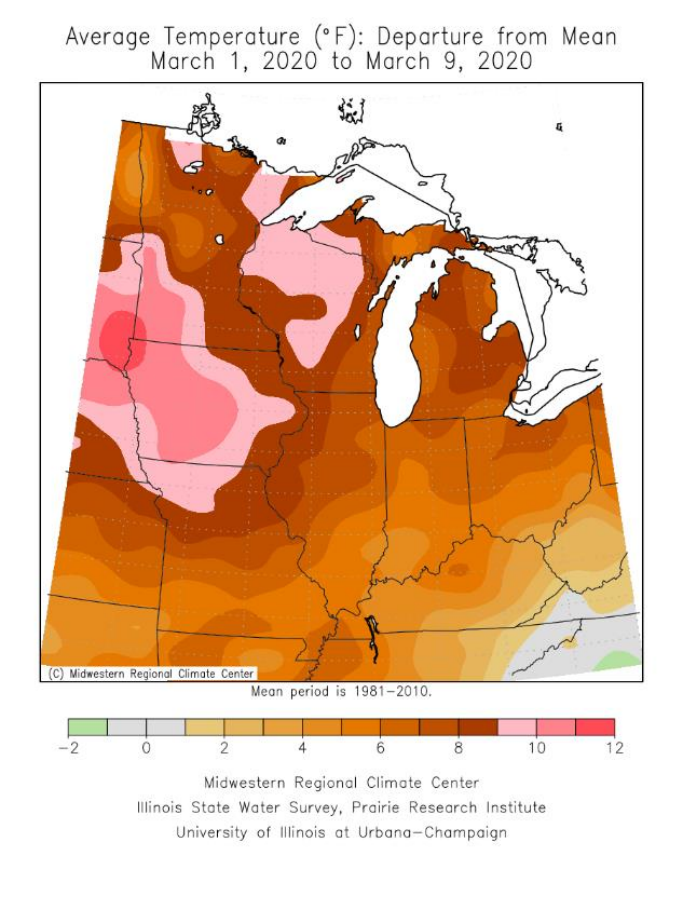
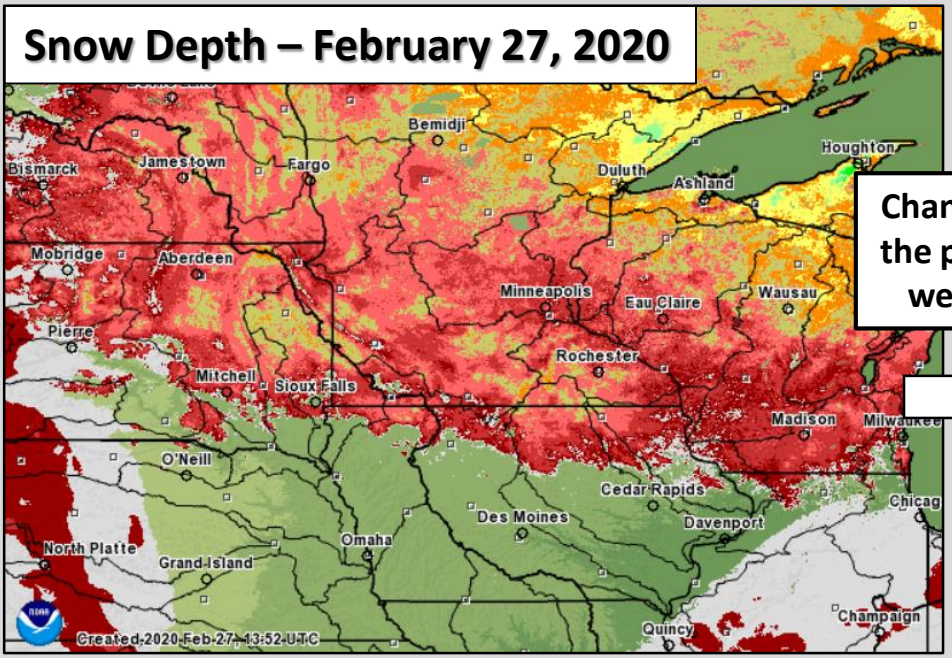
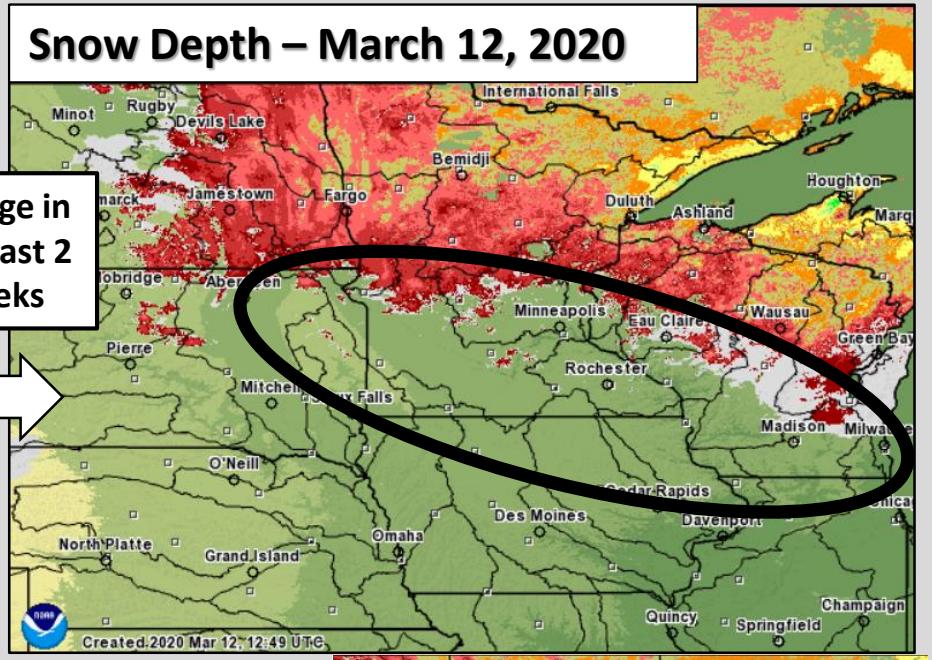


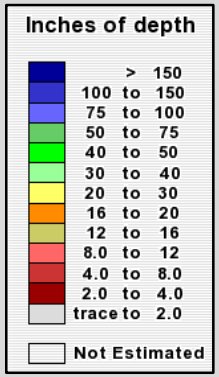
Image courtesy of Midwestern Regional Climate Center (MRCC)

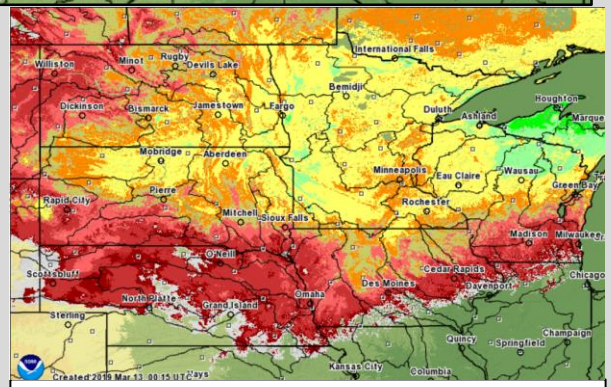
Snow Depth



Change in the past 2 weeks







Snowpack remains far northern parts of the watershed

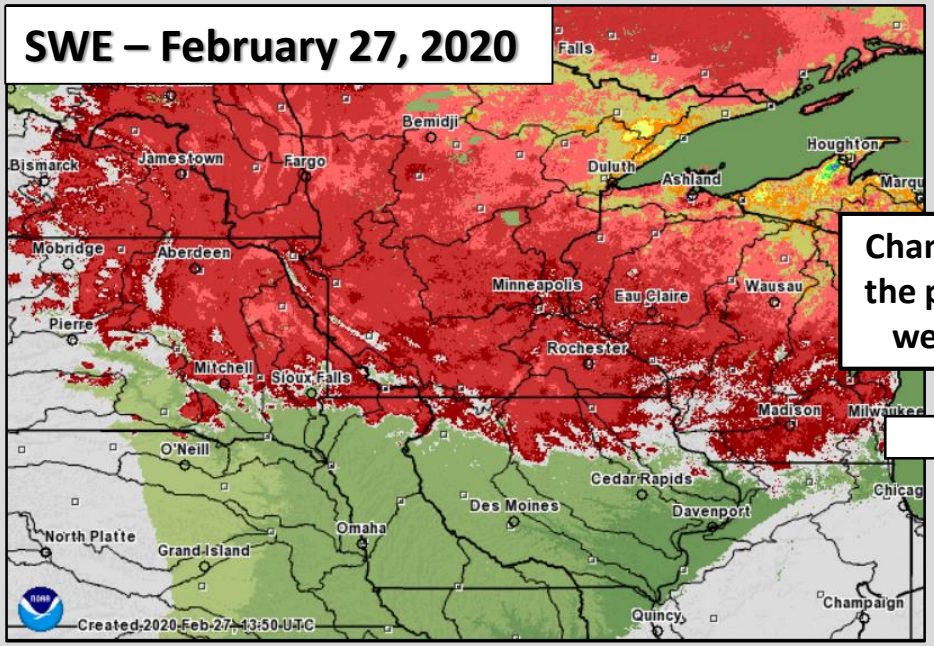
- **Change in past 2 weeks: Significant loss of snow**
- **Rivers in the black circle are now observing responses from the snowmelt**

Images courtesy of NOHRSC (NWS)

Snow Water Equivalent

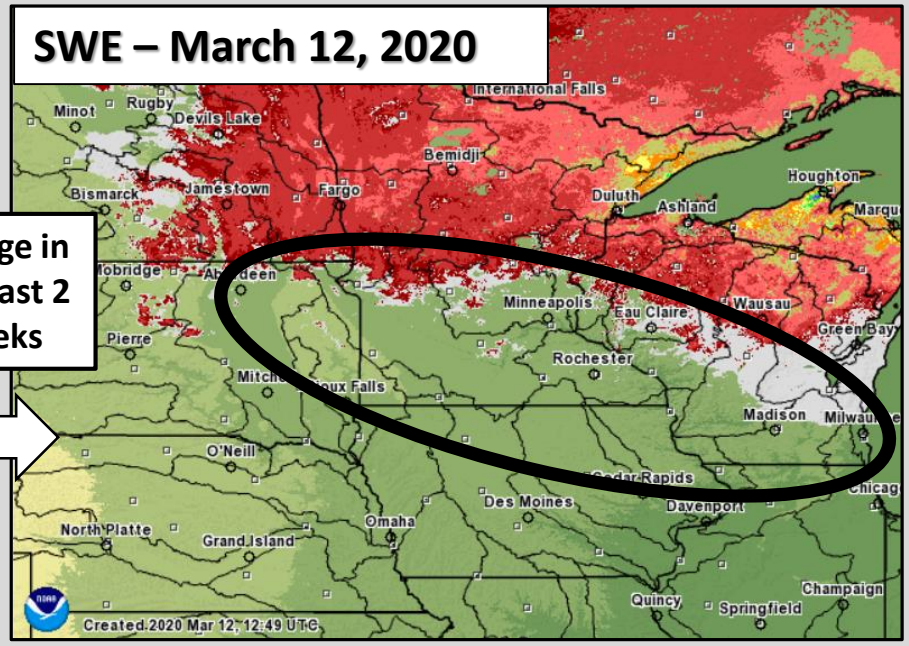
(Liquid Water Content)

SWE – February 27, 2020



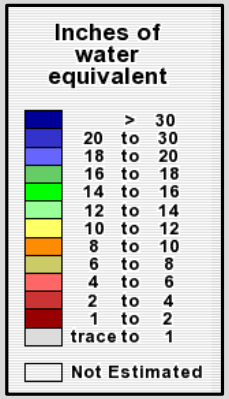
Change in the past 2 weeks

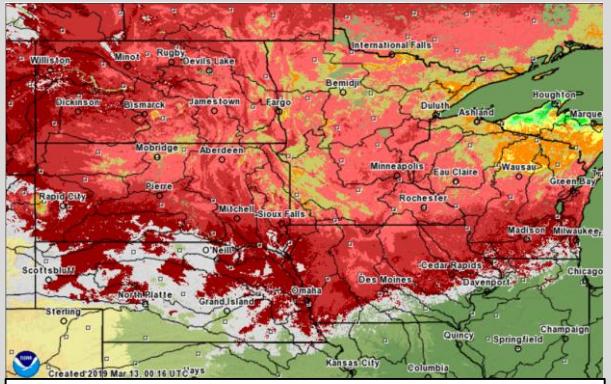
SWE – March 12, 2020



Snowpack remains far northern parts of the watershed

- **Change in past 2 weeks: Significant loss of SWE**
- **Rivers in the black circle are now observing responses from the snowmelt**
- **2” to 6”, localized up to 8” SWE remain in upper reaches of the watershed**





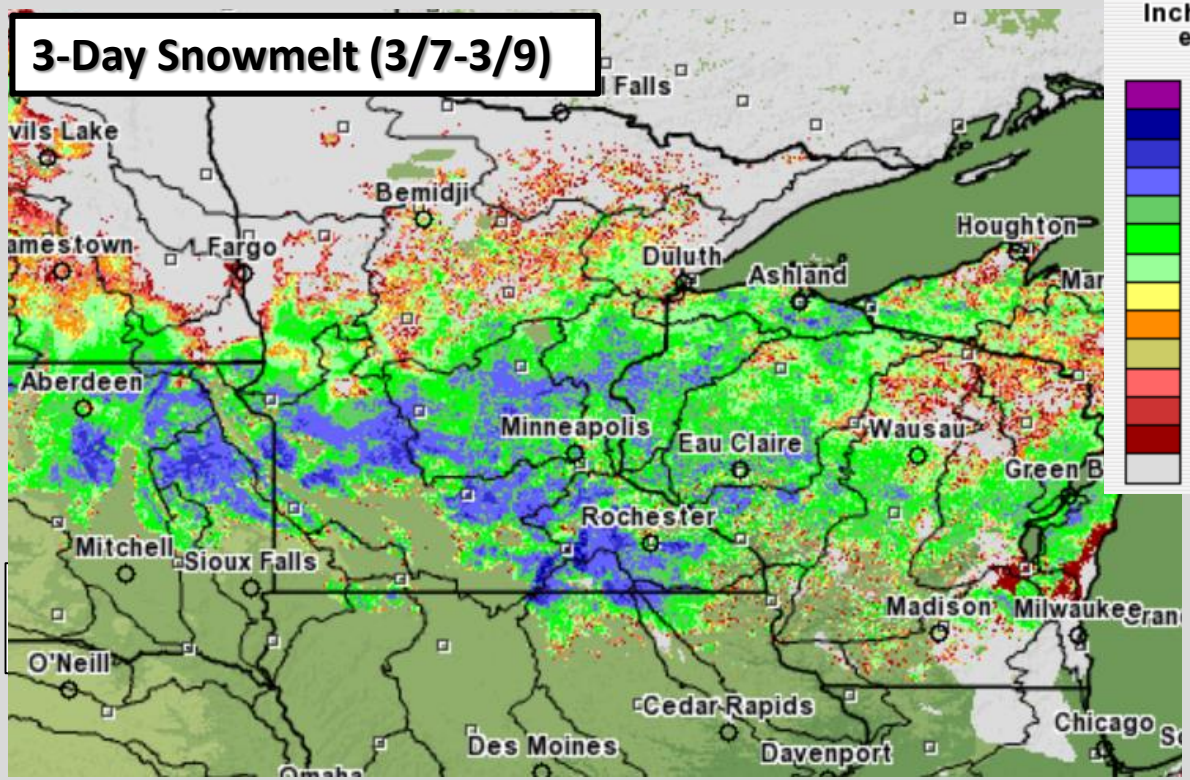
SWE – March 12, 2019

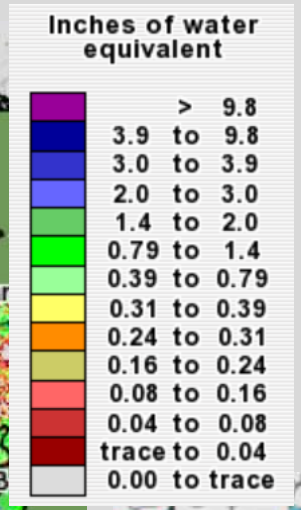
Images courtesy of NOHRSC (NWS)

Snow Water Equivalent

(Liquid Water Content) – Comparison to Historical Records

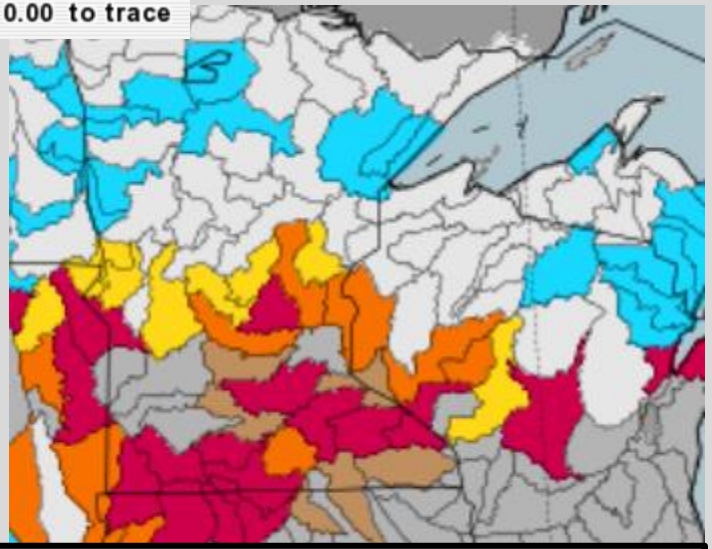
3-Day Snowmelt (3/7-3/9)





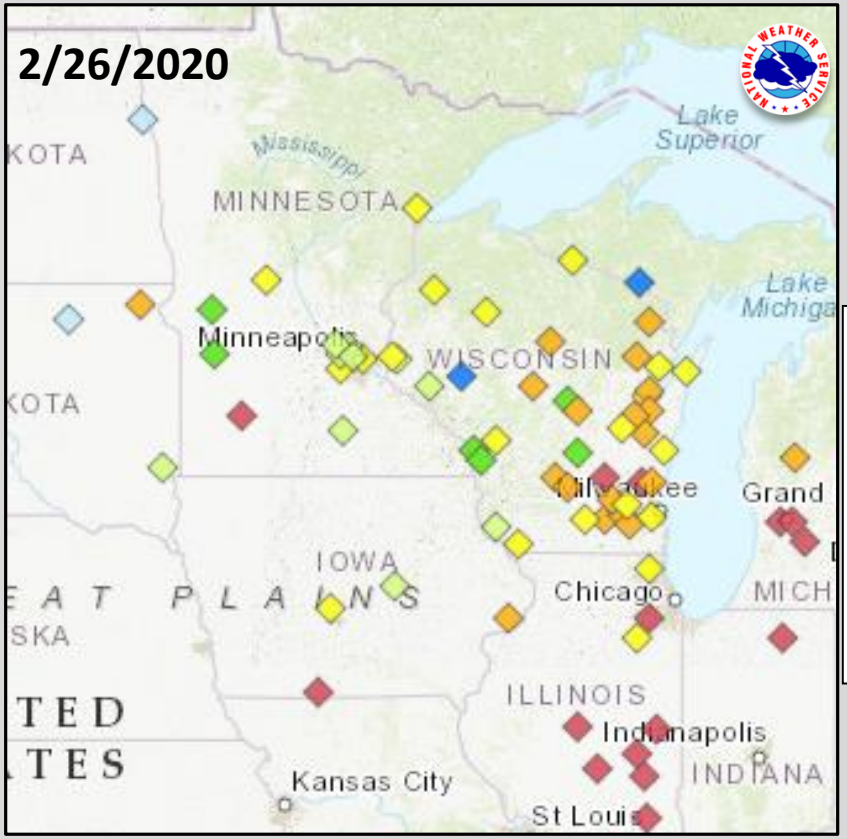
Liquid Water in the snowpack:

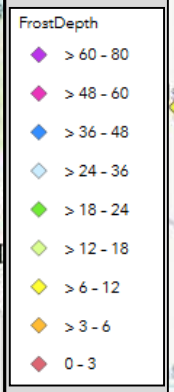
- **Loss of significant SWE in the past 2 weeks**
  - **Widespread 1” to 3”, up to 4” in some areas**
- **Remaining snowpack has near normal SWE for mid March**

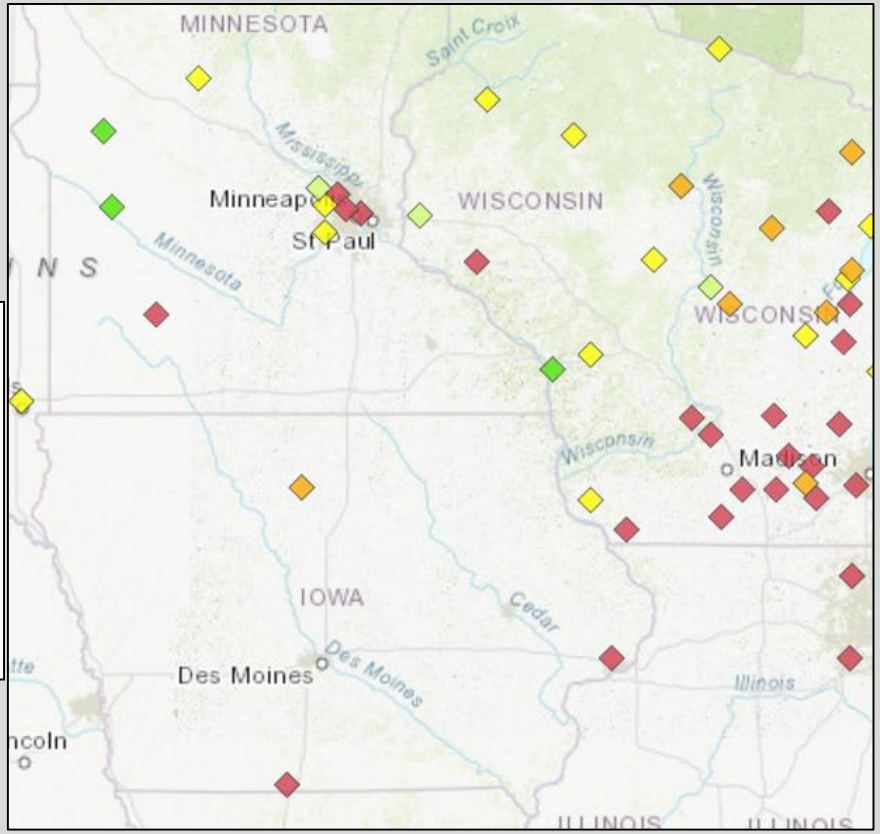


SWE Percent of Normal – March 11

Frozen Ground





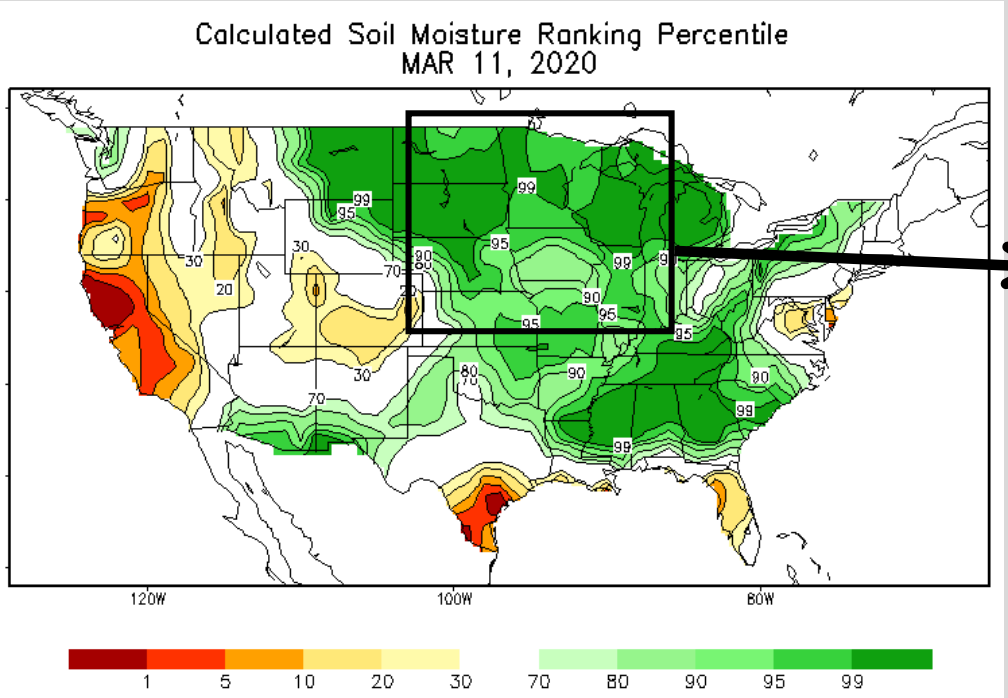


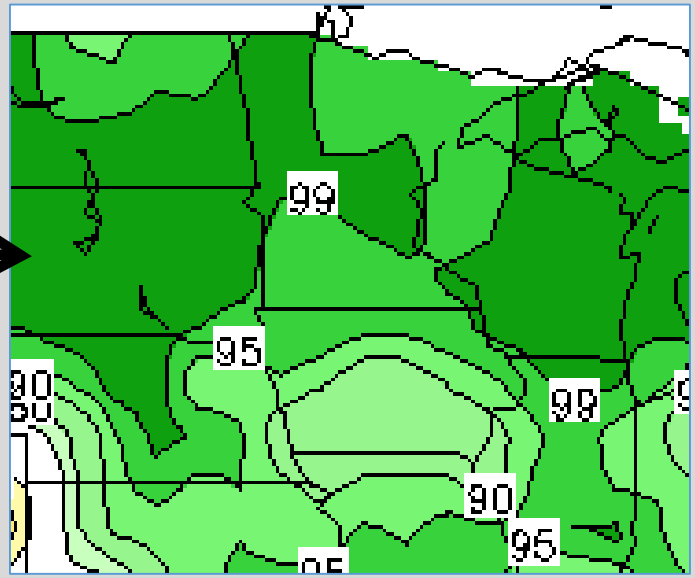
- **Ground continues to thaw**
- **Frozen ground will not have a high degree of impact on the flood risk this spring.**

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

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

Soil Moisture





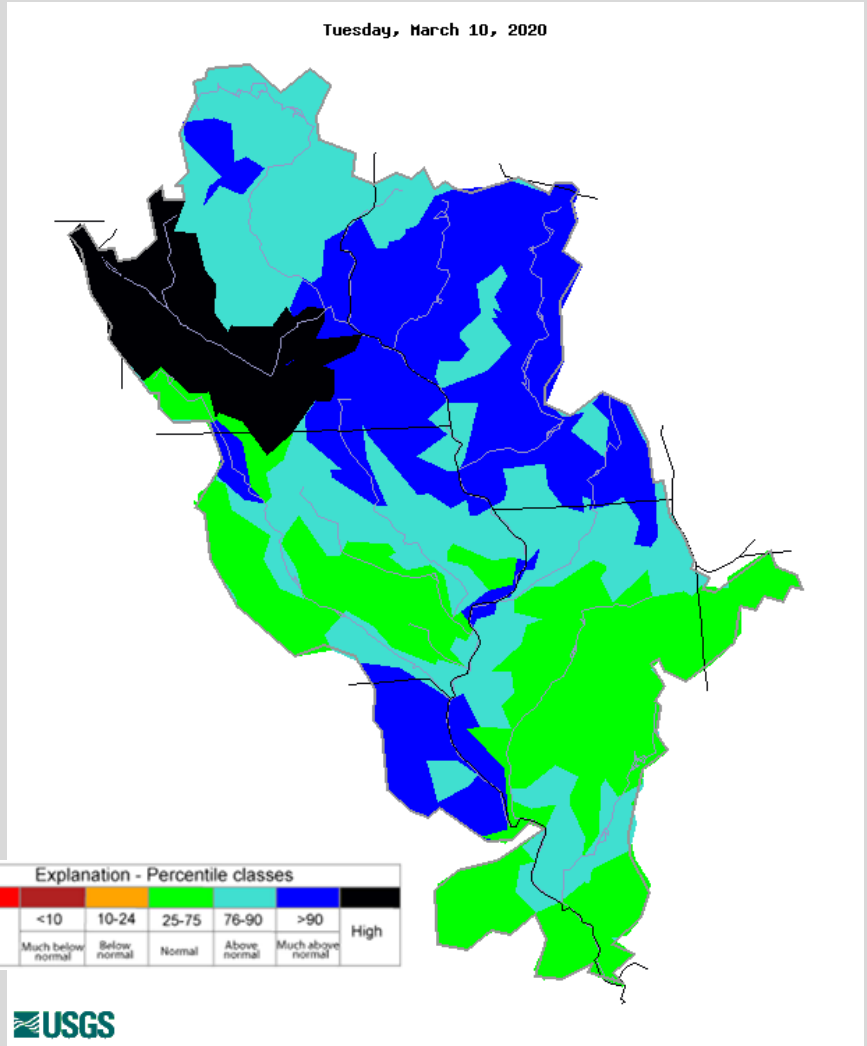
Images courtesy of the NWS Climate Prediction Center

- **Areal extent of the extremely wet soils is very widespread**
- **Even the 'drier' areas (SE Iowa/N Missouri) still above 80th percentile.**
- **Primary contributor to above normal risk**
- **Flood risk will stay high until soils can dry out**
- **Minimal change in the past 2 weeks**

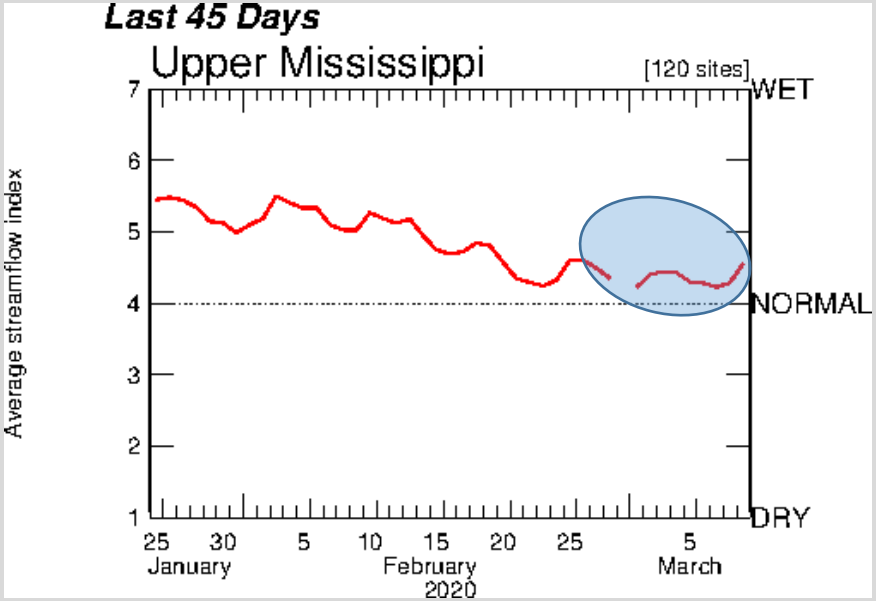
Soil Moisture – February 2019

Images courtesy of NWS Climate Prediction Center

Streamflows



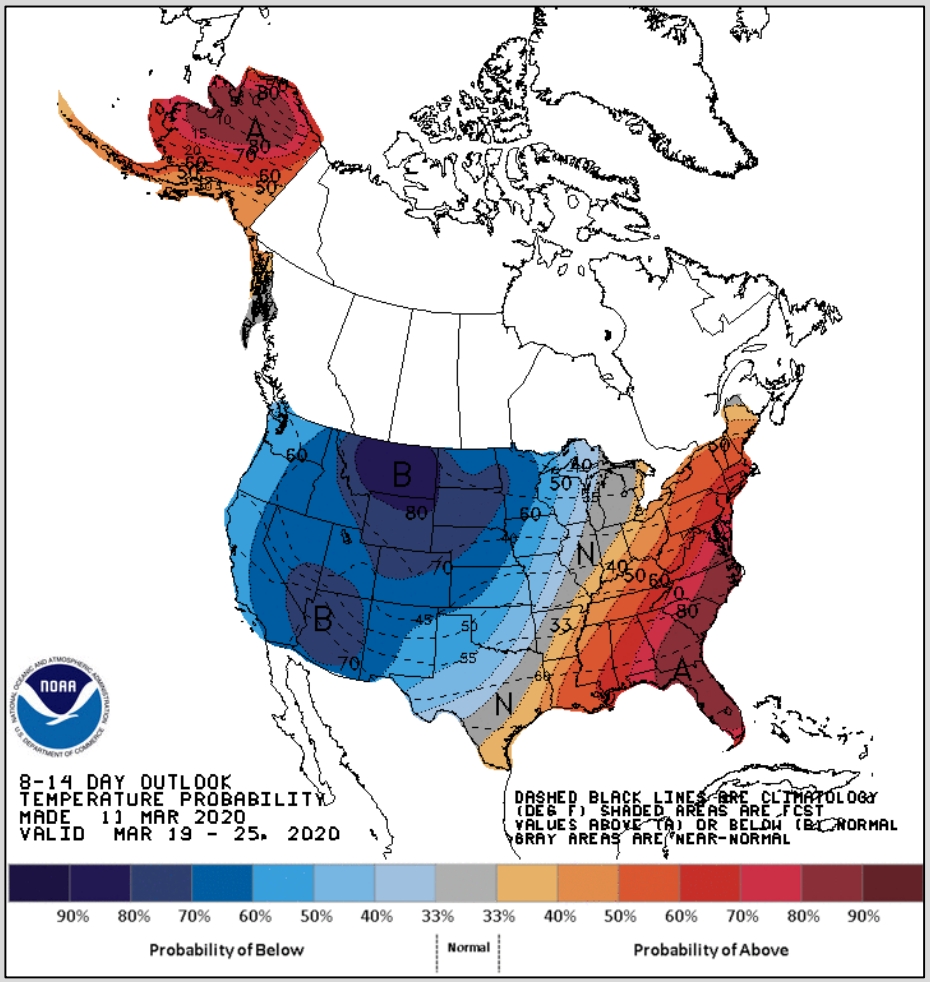
- **Rising streamflows due to runoff from widespread snowmelt and recent rainfall**
- **Above normal streamflows have persisted over the past few months.**

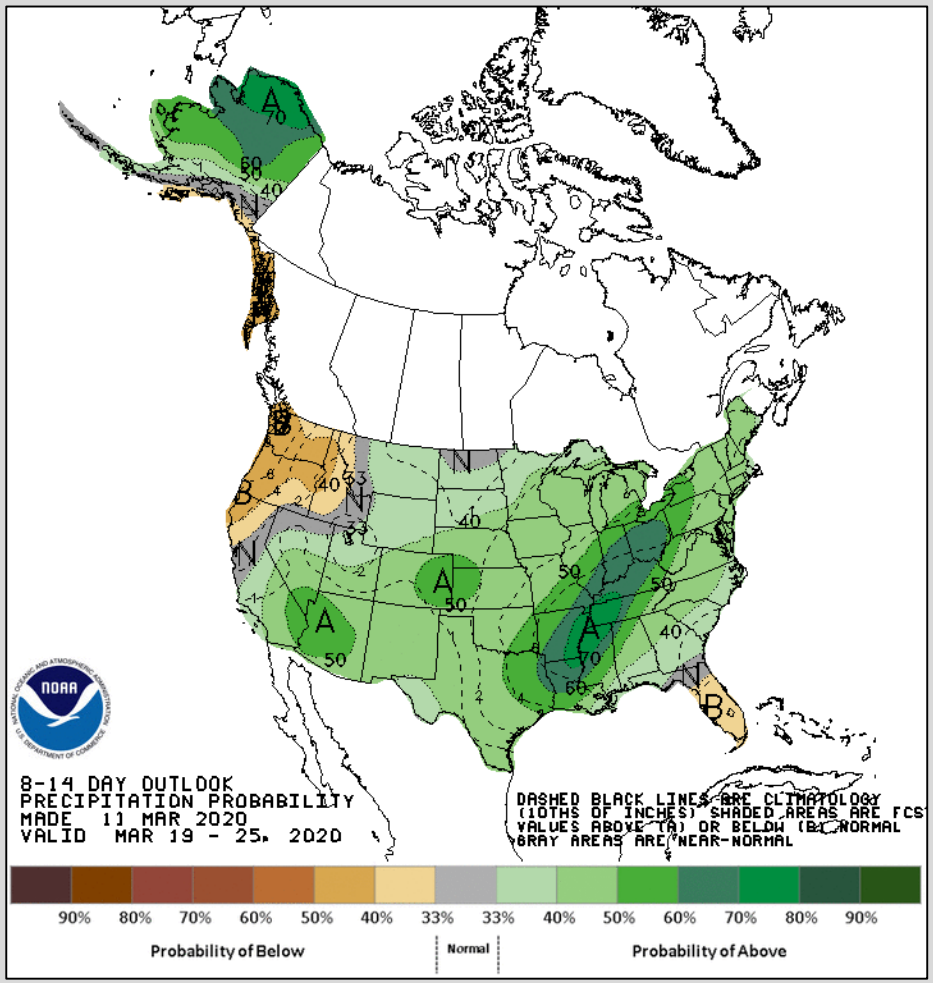


Images courtesy of US Geological Survey

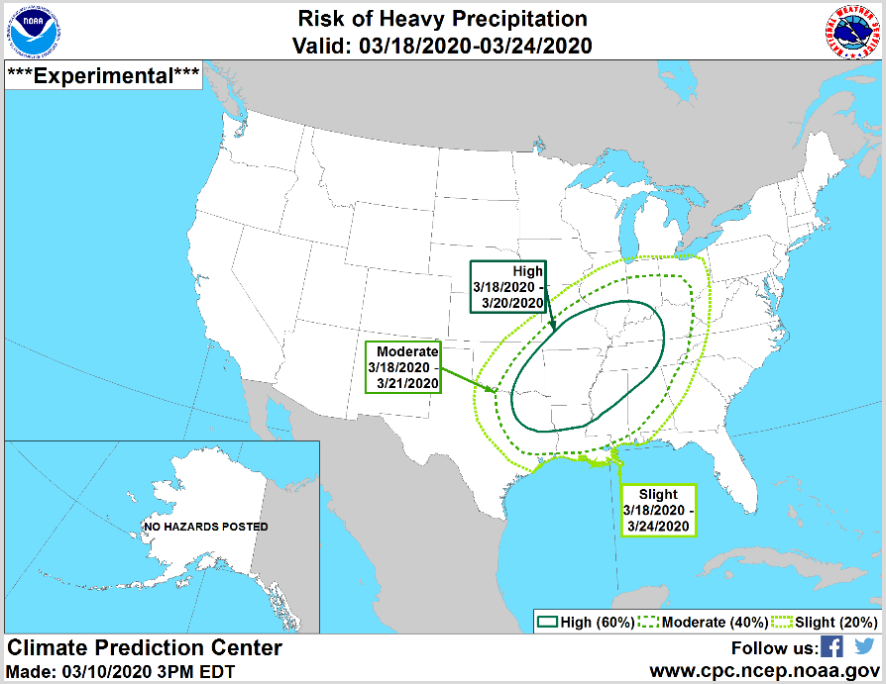
Week 2 Weather Outlook

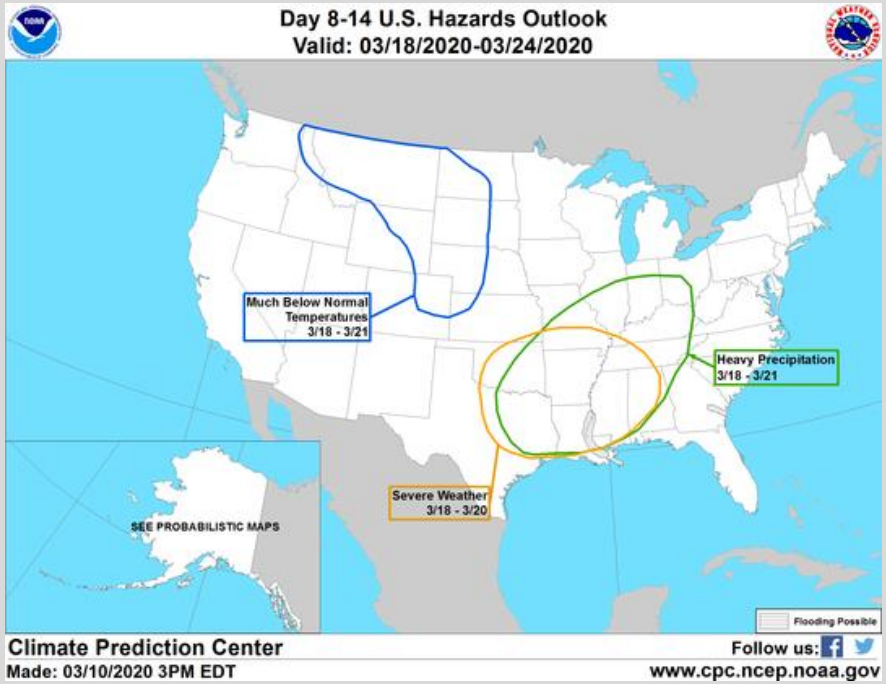
March 19th – 25th





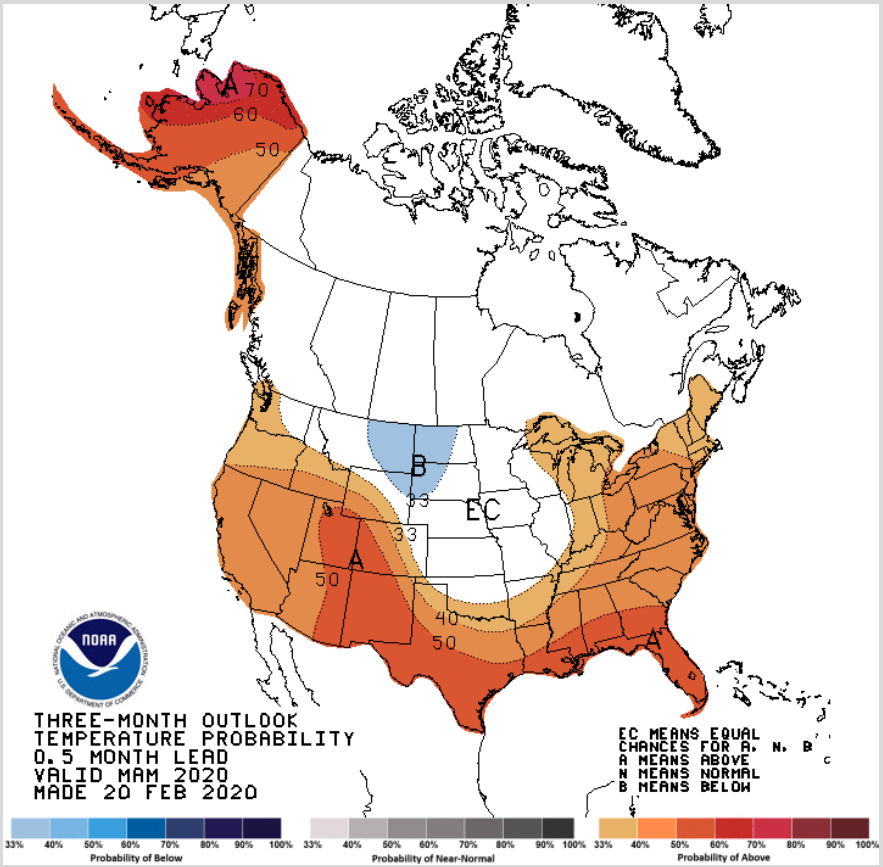
Week 2 Hazards Outlook
March 18th – 25th

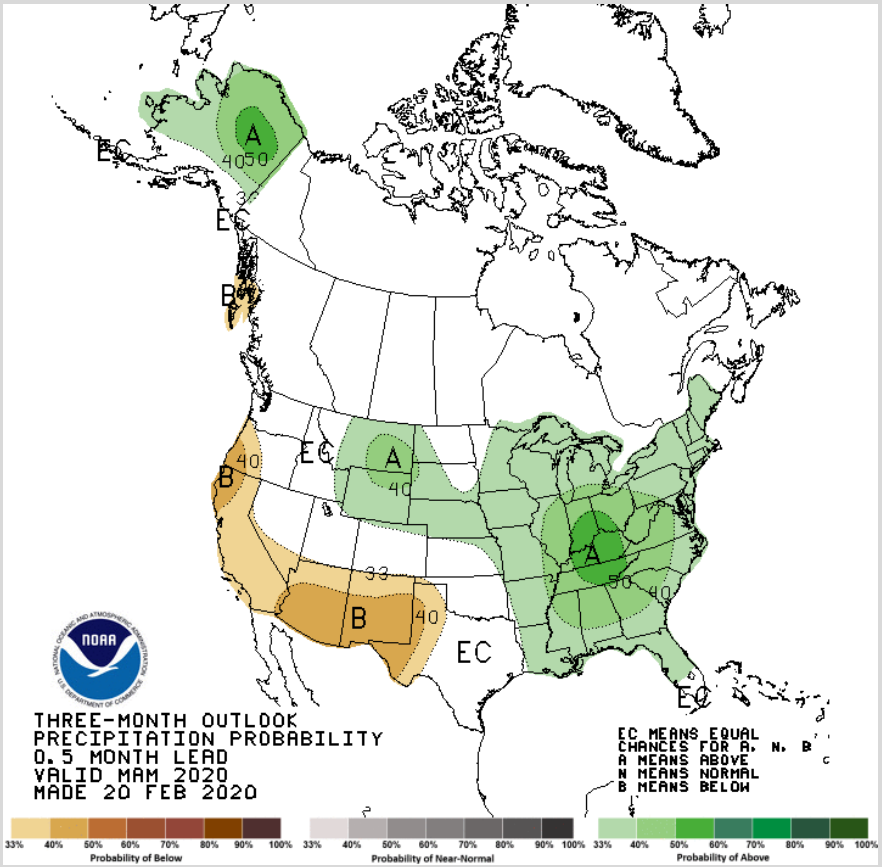




3 Month Weather Outlooks

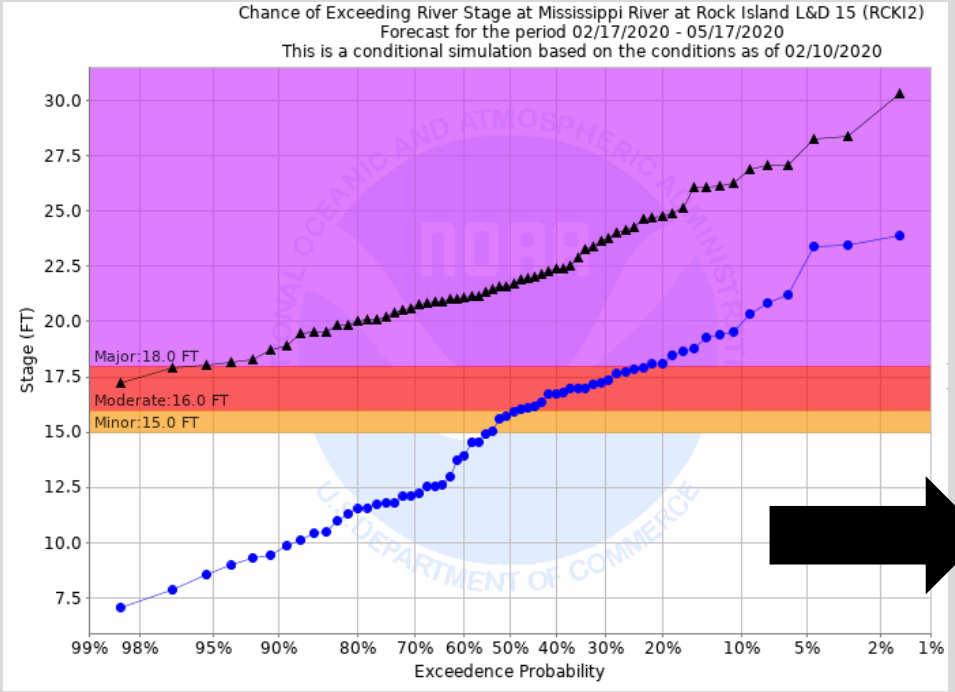
March/April/May

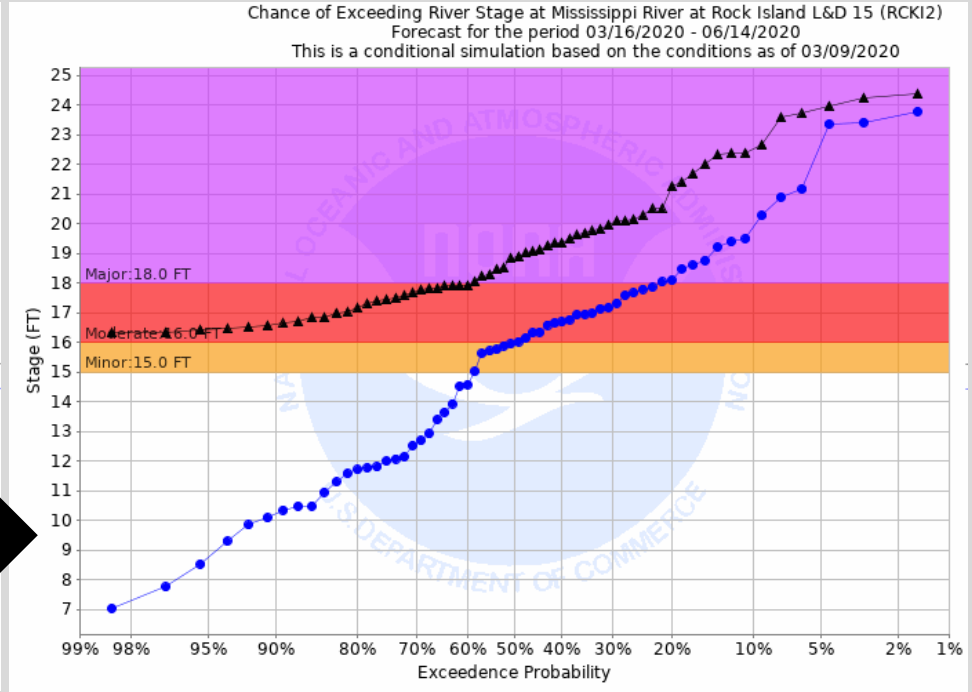




NOAA Climate Prediction Center –www.cpc.ncep.noaa.gov

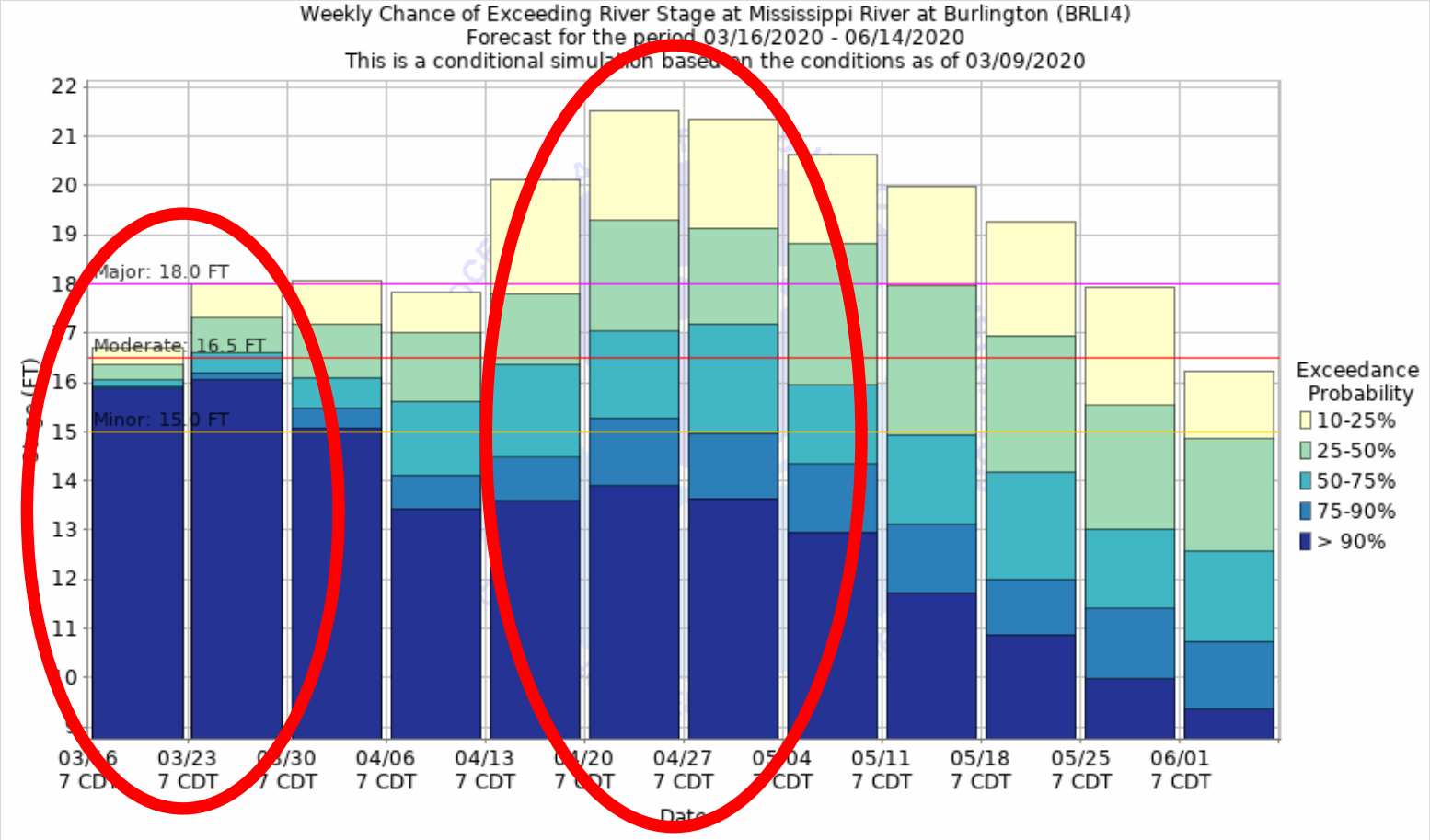
What is the Flood Risk?
Change in past 2 weeks?





https://water.weather.gov/ahps/region_long_range.php?rfc=ncrfc&percent=50 ⇨ Mouse over gage of interest

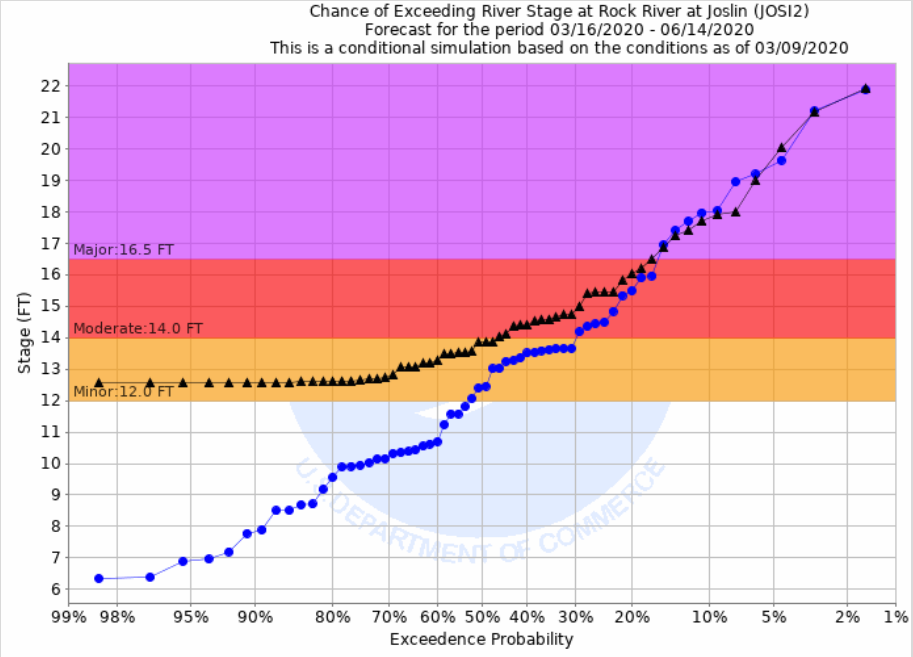
What is the Flood Risk?



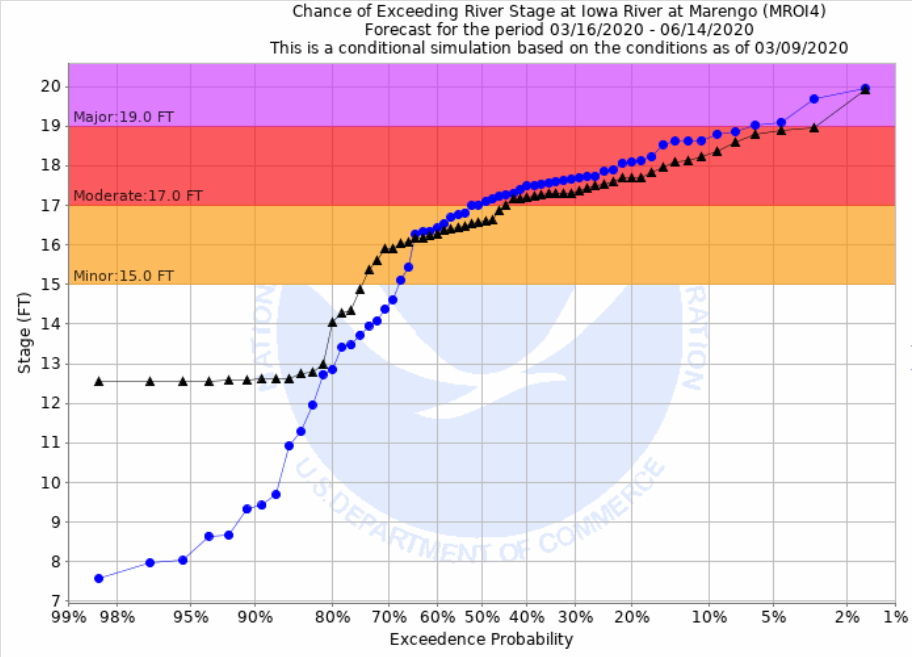
https://water.weather.gov/ahps/region_long_range.php?rfc=ncrfc&percent=50 ⇨ Mouse over gage of interest

What is the Flood Risk?

And how much outside of normal is it?



Rock River at Joslin

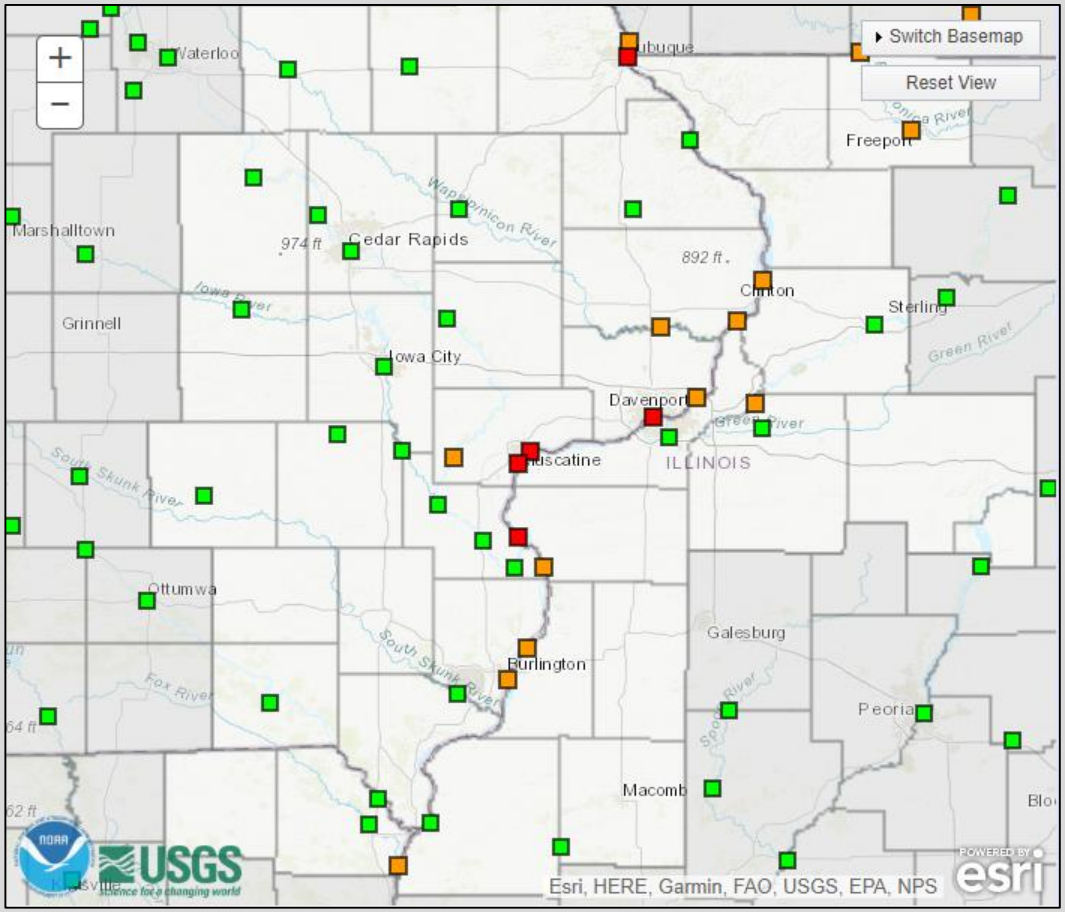


Iowa River at Marengo

Long-Range River Outlooks

Locations with high chances for flooding:

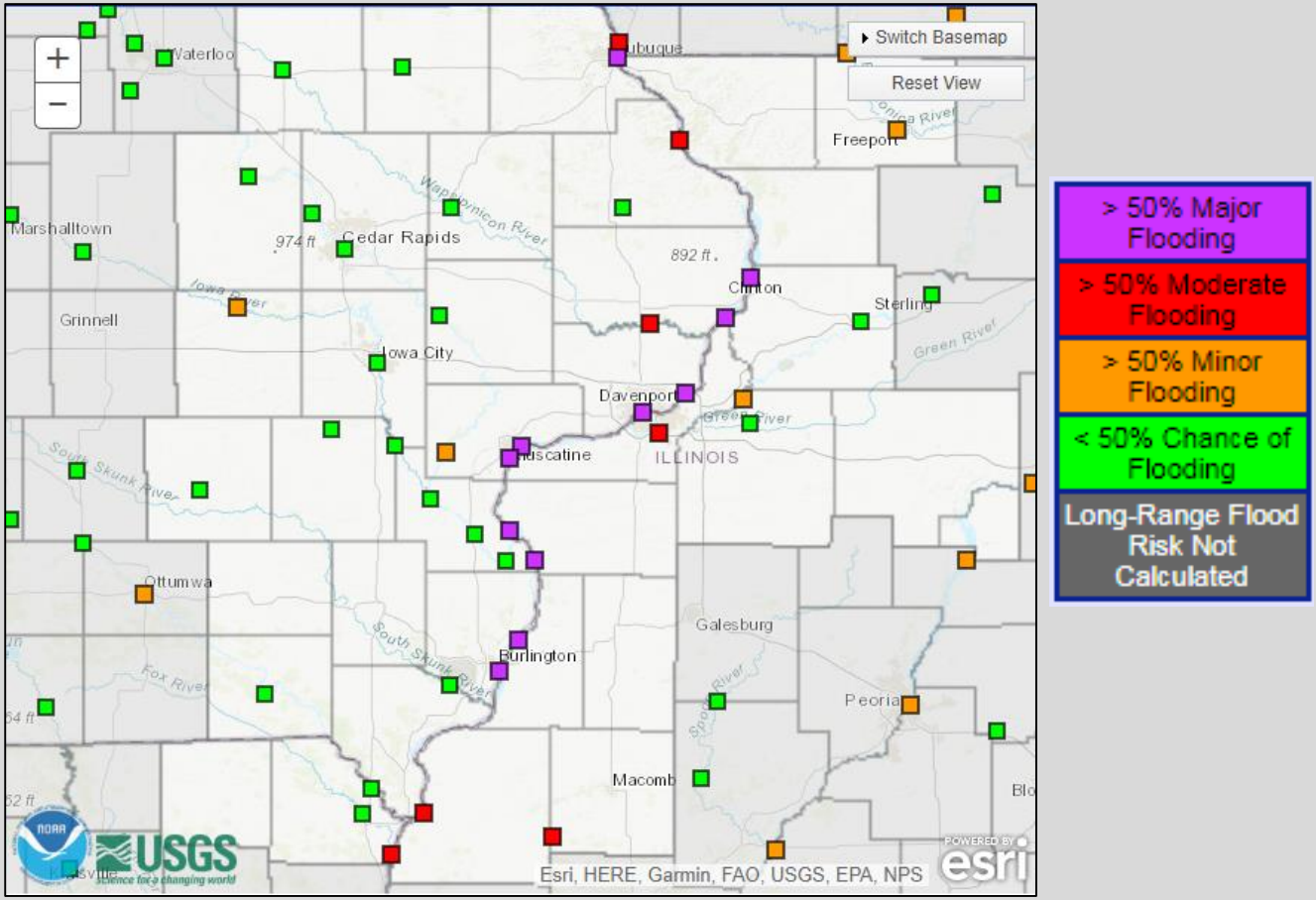
- Greater than 90% chance to reach the labeled flood stage



Long-Range River Outlooks

Highlighted gages have at least a 50% chance to reach colored stage.

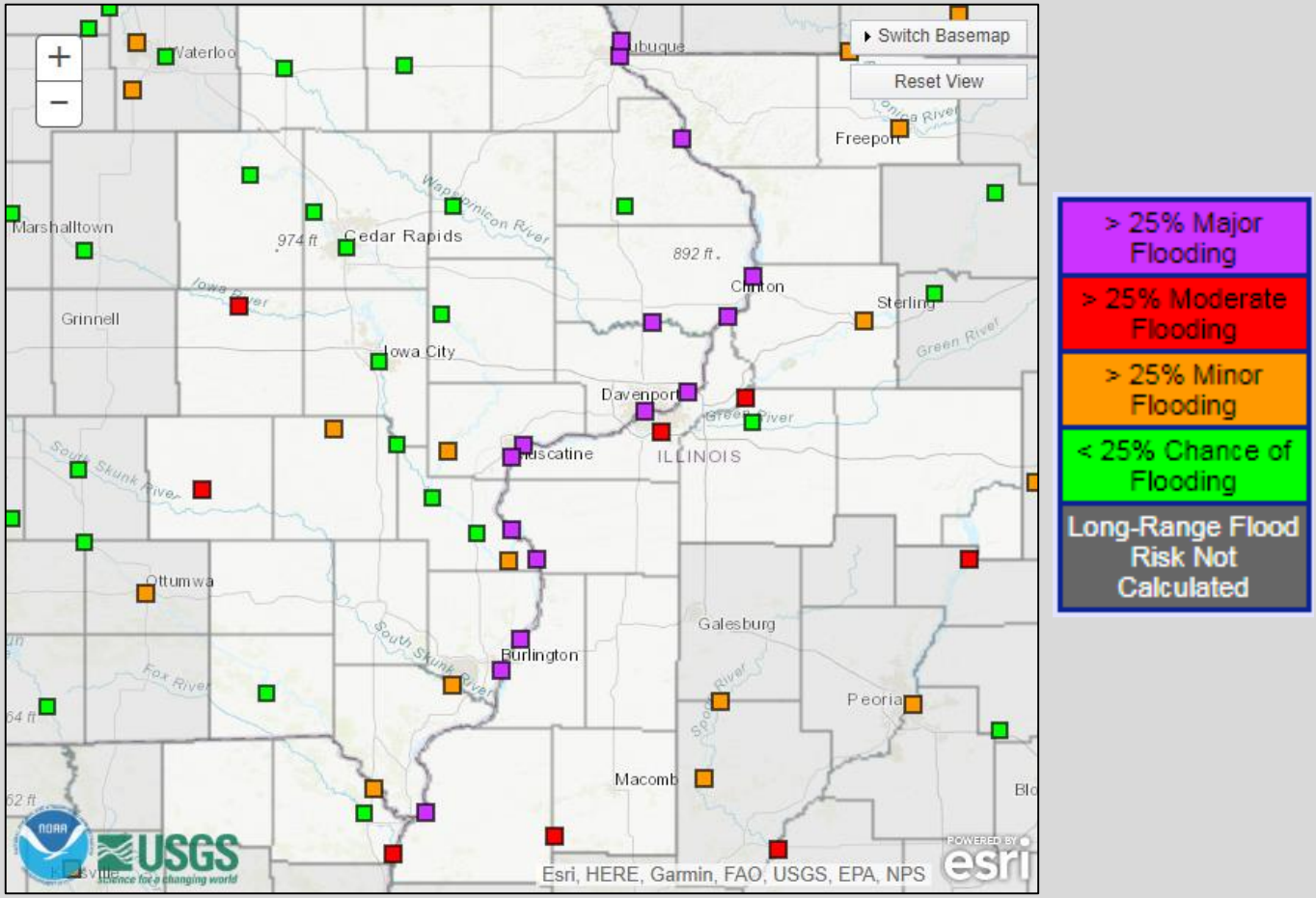
Number adjacent to the gage is the probability of reaching the colored stage level



Long-Range River Outlooks

Locations with chances for flooding:

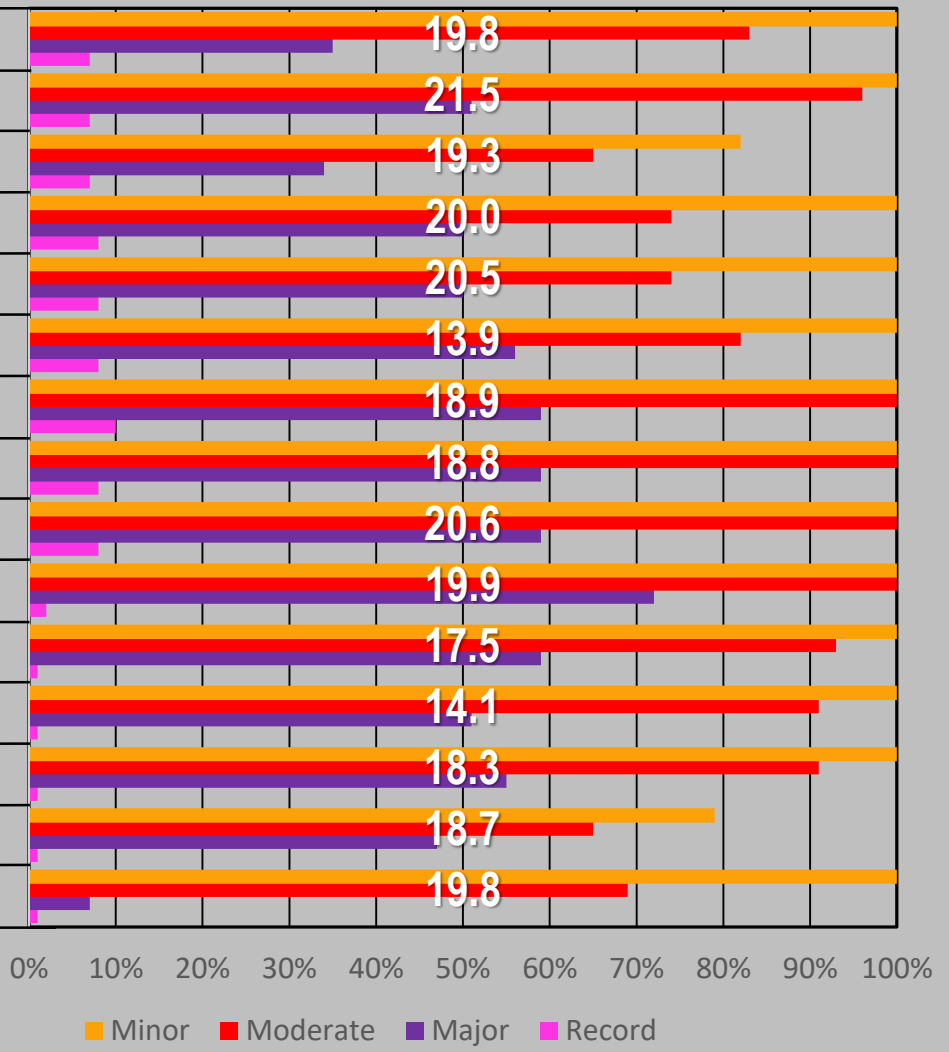
- Around a 25% chance to reach the labeled flood stage → Lower Confidence (Probability)



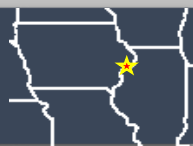
Long-Range River Outlooks

Flood Stage & Record Levels

Minor	Mod	Major	Record	
16.0	17.0	20.5	25.69	Dubuque LD11
17.0	18.0	21.5	26.81	Dubuque
17.0	18.0	20.0	23.51	Bellevue LD12
16.0	18.0	20.0	24.75	Fulton LD13
17.0	18.5	20.5	24.65	Camanche
11.0	12.0	13.5	17.75	Le Claire LD14
15.0	16.0	18.0	22.70	Rock Island LD15
15.0	16.0	18.0	24.10	Illinois City LD16
16.0	18.0	20.0	25.61	Muscatine
15.0	16.5	18.5	25.90	New Boston LD17
14.0	15.5	17.0	24.49	Keithsburg
10.0	12.0	14.0	22.46	Gladstone LD18
15.0	16.5	18.0	25.73	Burlington
16.0	17.5	19.0	27.58	Keokuk LD19
15.0	18.0	25.0	28.49	Gregory Landing



NATIONAL WEATHER SERVICE
QUAD CITIES IA/IL
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



2020 Mississippi River Spring Snowmelt Timing

(Dubuque, IA → Gregory Landing, MO)

Rising river levels expected through March. Peak river levels remain highly uncertain. ***Flooding from snowmelt runoff alone is not a certainty.***

Locations that do reach flood stage will likely see that happen between March 18 and March 25. Timing and peak heights is ***highly*** dependent on additional precipitation in the next several weeks.

*** NOTE: Dry conditions through March would keep peak levels lower. In this case, some locations could crest at levels below flood stage. Stay tuned to official forecasts and flood products over the coming weeks.***

NATIONAL WEATHER SERVICE
QUAD CITIES IA/IL
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Updated: 3/12/2020

Overview of Flood Risk Factors

Factors	Impact to Potential Spring Flooding	Change Since Last Outlook
River Levels	**Increased Threat**	Higher river levels in the past 2 weeks due to snowmelt and recent rains
Soil Moisture	**Increased Threat**	Unchanged
Snowpack/Liquid Equivalent	**Increased Threat – Mississippi ***	Extensive Melting – causing impending river rises
	Decreased Threat – Local Rivers	Unchanged – still no snowcover
Rate of Snowmelt	**Unknown**	N/A
Frost Depth	**Decreased Threat**	Slightly Improved – thawing ground
Spring Precipitation	**Near Normal**	N/A
Ice Jam Flooding	**Decreased Threat**	Improved – loss of river ice

* Following the upcoming high water on the Mississippi River, the loss of snowpack will decrease the threat for more significant flooding

Combination of factors → Mississippi River: Well Above Normal Risk for Flooding
Local Rivers: Near to Above Normal Risk for Flooding (Minor)

Spring Flood Outlook
--Bottom Line--

Mississippi River – Well Above Normal
Local Rivers – Near to Above Normal

- **Flood risk remains well above normal for the Mississippi River and near to slightly above normal for local rivers**
- **Risk for major flooding on the Mississippi River has been reduced due to conditions that occurred over the past 2 weeks**
- **Rises through March on the Mississippi River from snowmelt runoff.**
- **Low confidence on the peak severity on eventual flooding**
- **Until soil moisture dries out, flood risk will remain above normal.**

Spring Flood Outlook Dates

Outlook Schedule

Last Update: March 12, 2020

Information from this outlook can be found:

From the North Central River Forecast Center

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

From the Quad Cites Weather Forecast Office:

Quad Cities - weather.gov/dvn/2020_springfloodoutlook

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NWS Quad Cities
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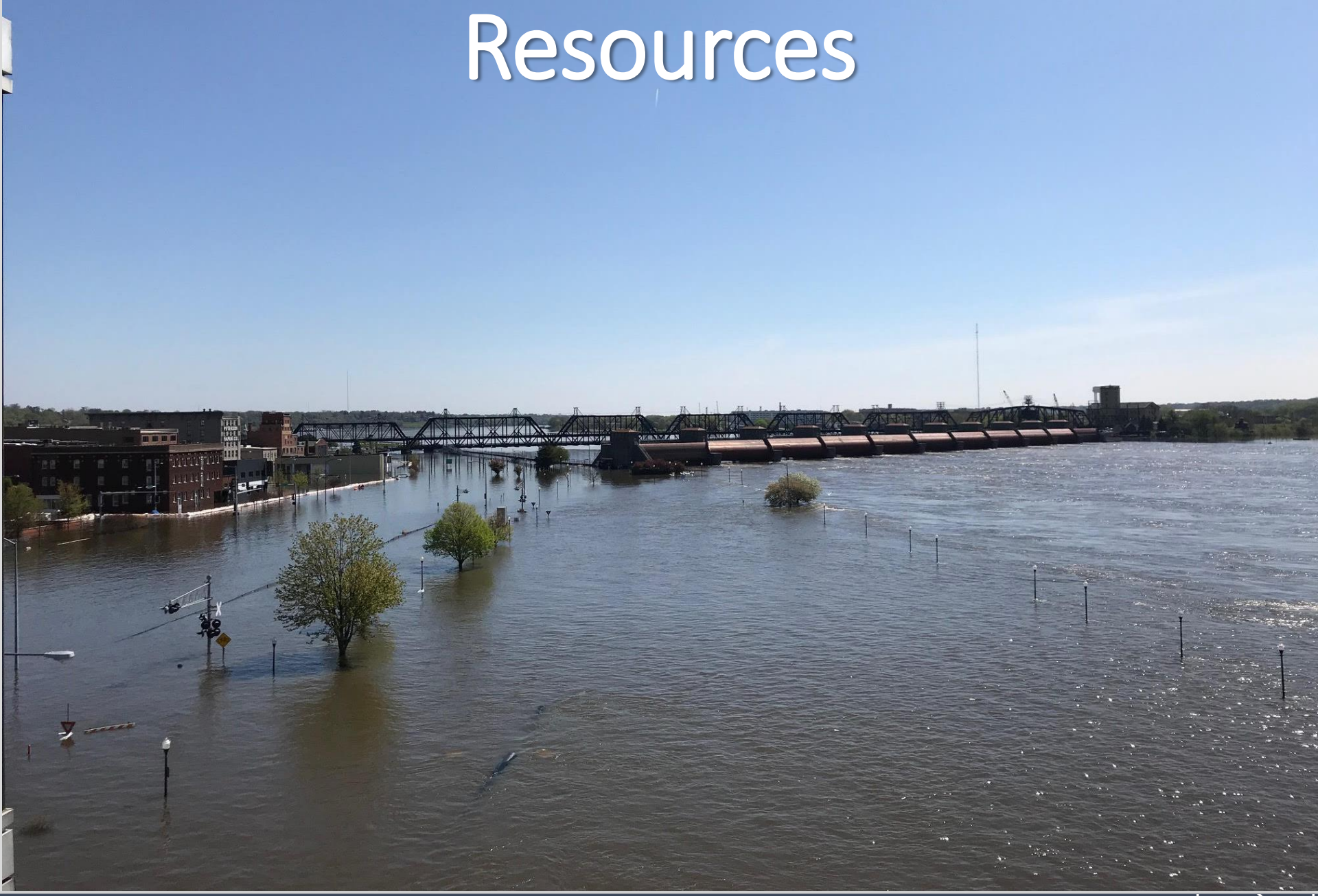
Information Sources

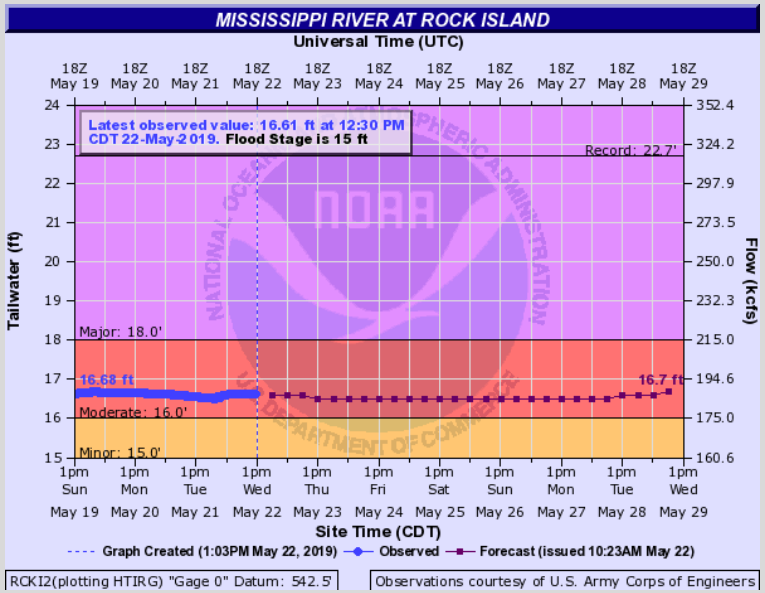
- Midwest Regional Climate Center (MRCC) – http://mrcc.isws.illinois.edu/
- US Geological Survey (USGS) – http://www.usgs.gov
- National Operational Hydrologic Remote Sensing Center (NOHRSC) – www.nohrsc.noaa.gov
- NOAA Climate Prediction Center –www.cpc.ncep.noaa.gov
- NOAA Weather Prediction Center – www.wpc.ncep.noaa.gov
- North Central River Forecast Center – www.weather.gov/ncrfc
- https://www.weather.gov/ncrfc/LMI_ROF_NFP_SpringHydroOutlook
- Advanced Hydrological Prediction Service (AHPS) – water.weather.gov/ahps
- US Drought Monitor – droughtmonitor.unl.edu
- NWS Quad Cities - https://www.weather.gov/dvn/2020_springfloodoutlook

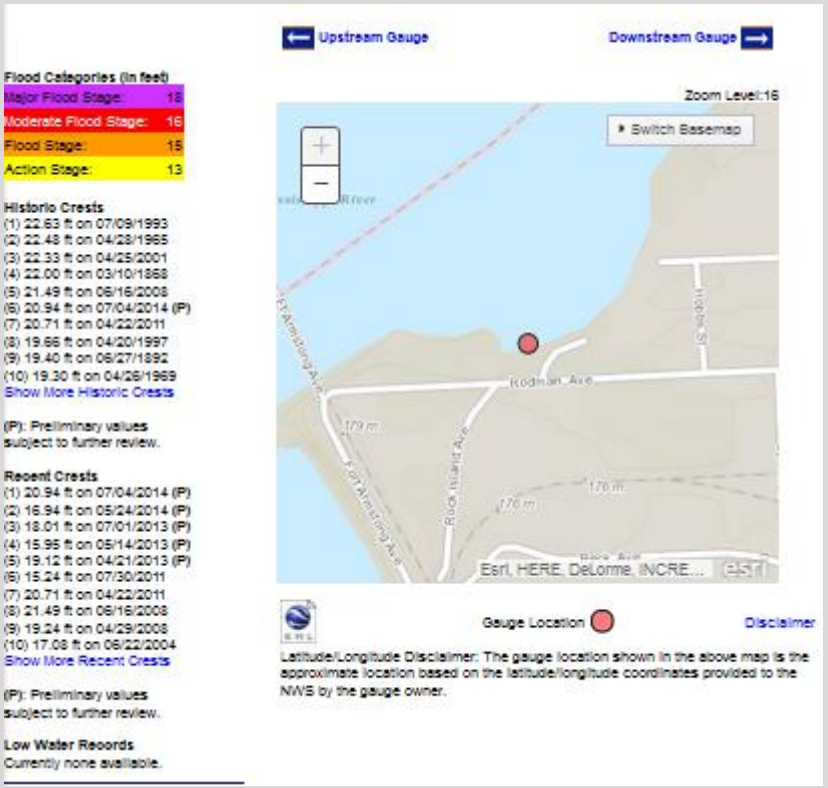
Resources

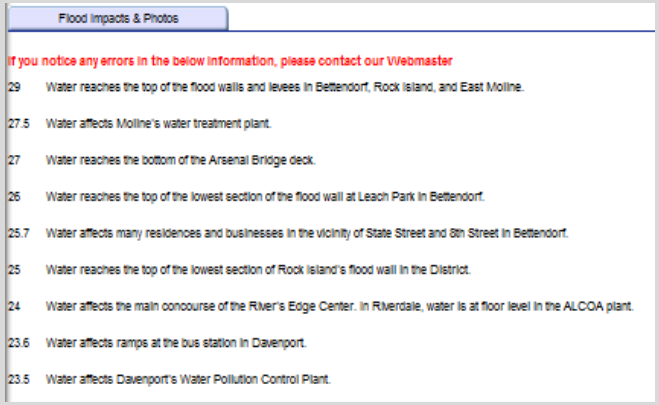


NWS AHPS Webpage

weather.gov/dvn → Rivers and Lakes tab



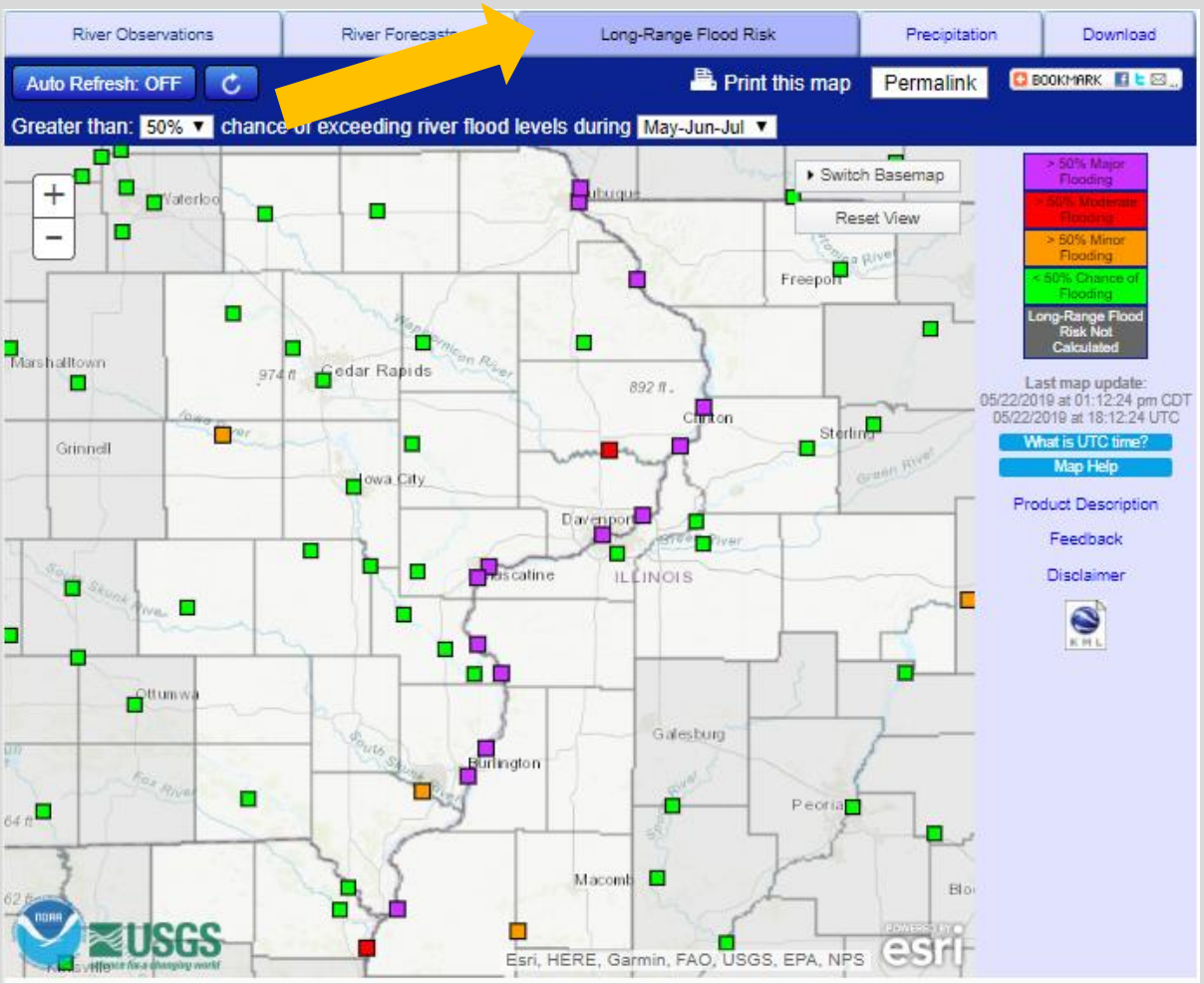




https://water.weather.gov/ahps2/index.php?wfo=DVN

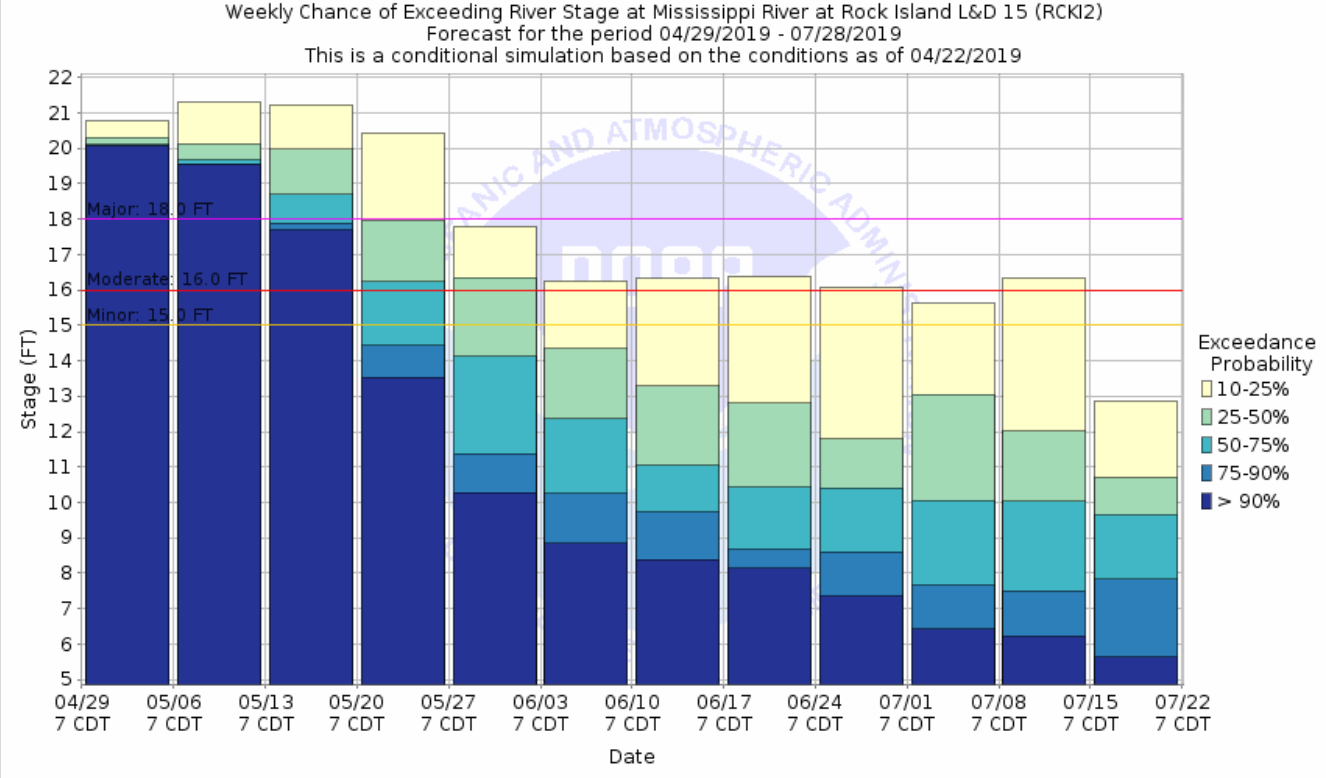
Extended Outlooks

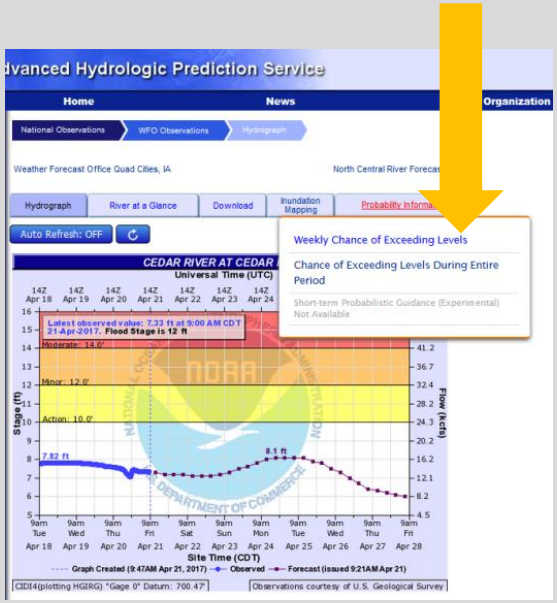
50% or Greater Chance



https://water.weather.gov/ahps2/index.php?wfo=dvn

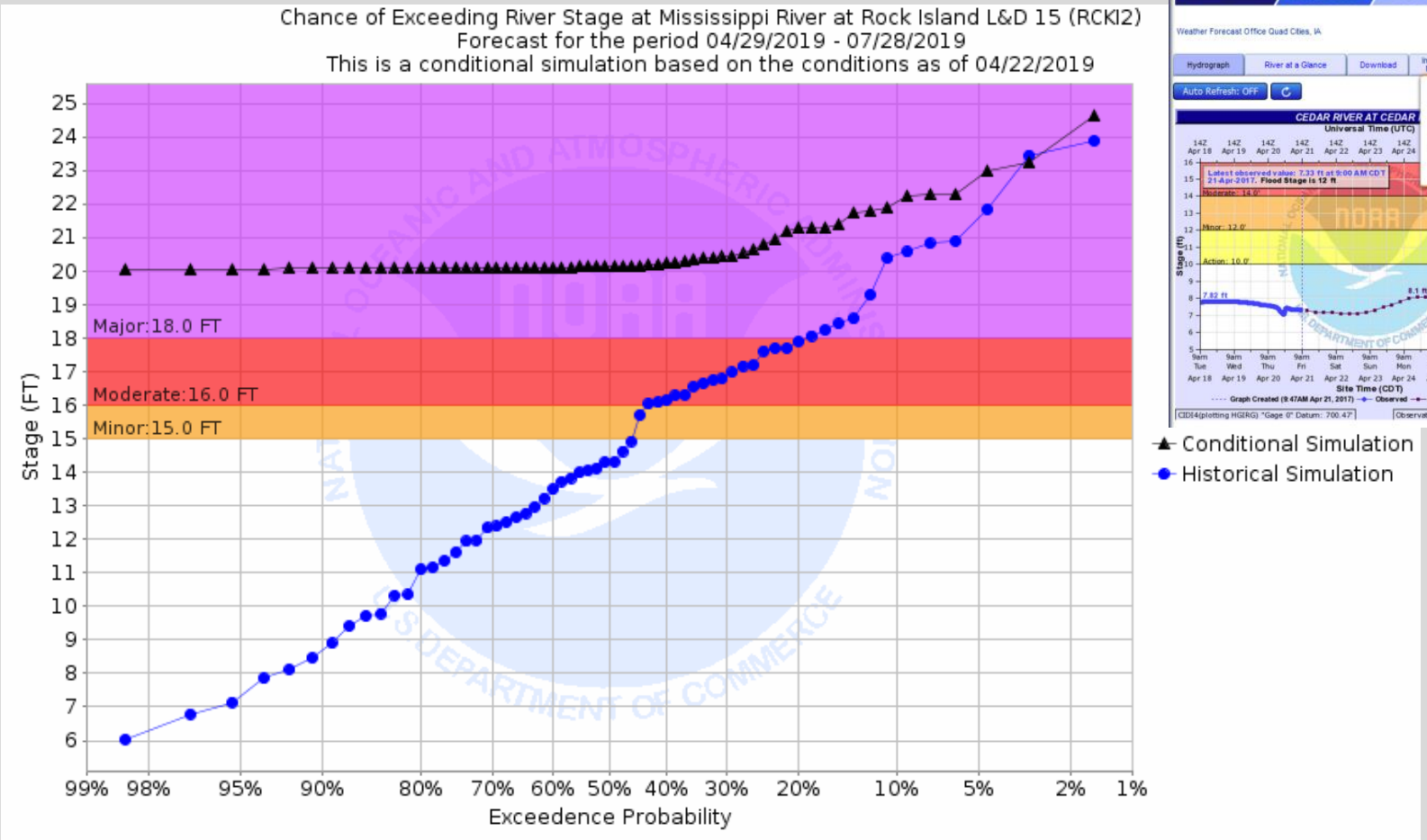
Long Range Outlooks
AHPS

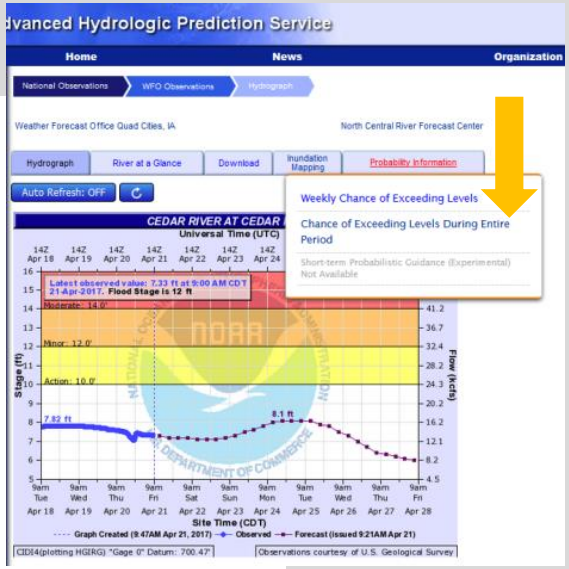




https://water.weather.gov/ahps2/long_range.php?wfo=DVN

Long Range Outlooks





https://water.weather.gov/ahps2/long_range.php?wfo=DVN

Area Forecast Discussion

When there is active flooding or a concern for flooding to develop, the NWS Quad Cities will provide a technical discussion about forecast in our Area Forecast Discussion.

This discussion is updated frequently through the day and contains the thoughts of our forecasters on the weather and hydrological concerns.

.HYDROLOGY...
Issued at 121 PM CDT Fri May 24 2019

Heavy rain fell over the last 24 hours across the region, with the heaviest amounts of an inch or more north of a line from Sigourney, IA through Freeport, IL. There was a narrower strip of amounts up to 3.50 inches from about Dysart, IA through Potosi, WI. With this rain and expected rains still through 12Z Saturday morning most river forecasts this morning saw rises, some quite significant rises.

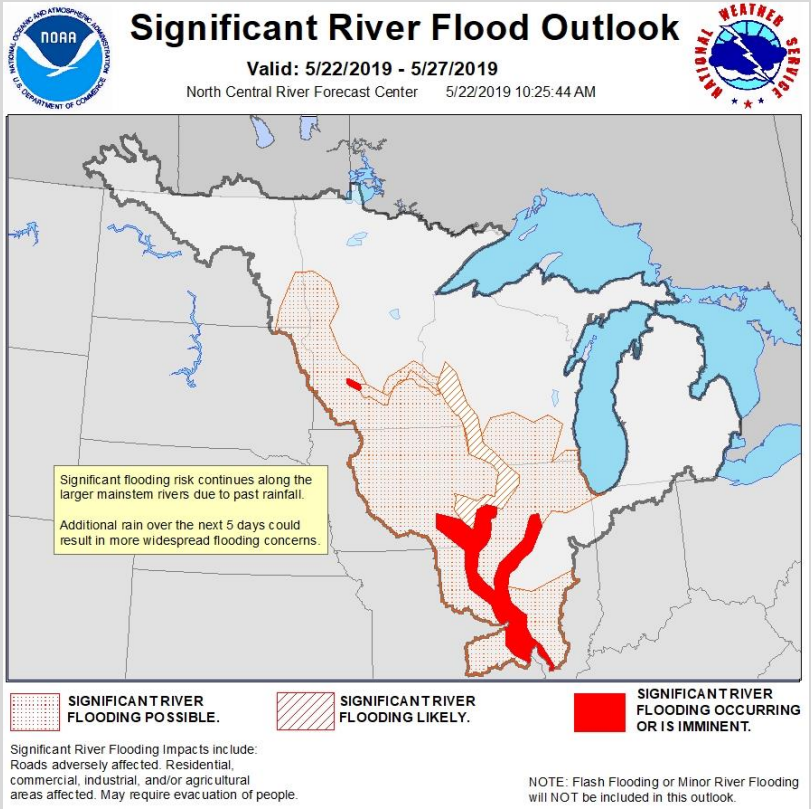
This continues to be a concerning situation with more rain in the forecast every day. With the ground conditions saturated, and accounting for little vegetation to pull any water out as the majority of farm fields are either not yet planted, or have very new plants emerging runoff amounts will be high with quicker responses in the rivers likely than would normally occur.

Numerous flood warnings were issued this morning for tributary rivers. Many of these forecasts to show crests over the weekend, with falling levels next week. We would express caution with these forecasts as more rain is expected through the weekend and into next week which will likely either raise the crest forecasts or prolong the time the rivers remain high.

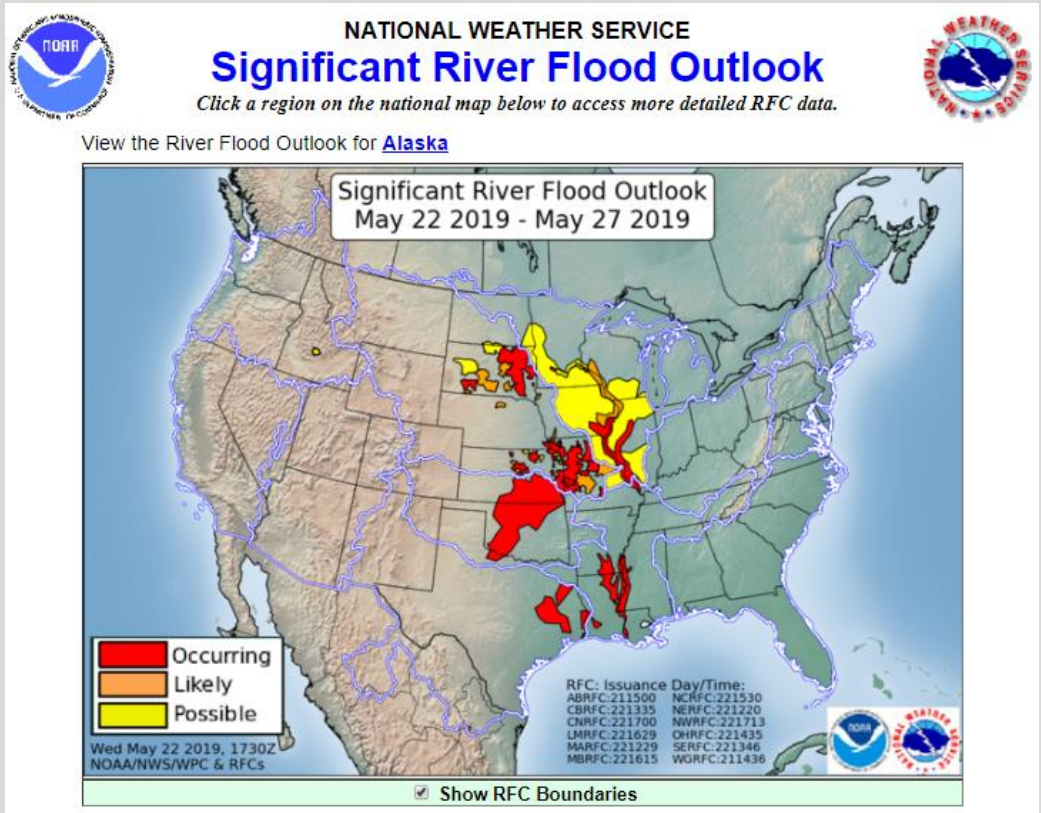
On the Mississippi, significant rises were sent out in this morning's forecasts. NOTE: these crest forecasts will likely change and rise further as more of the forecast rain gets utilized in the forecasts in the coming days.

https://forecast.weather.gov/product.php?site=DVN&issuedby=DVN&product=AFD&format=CI&version=1&glossary=1

River Flood Outlooks



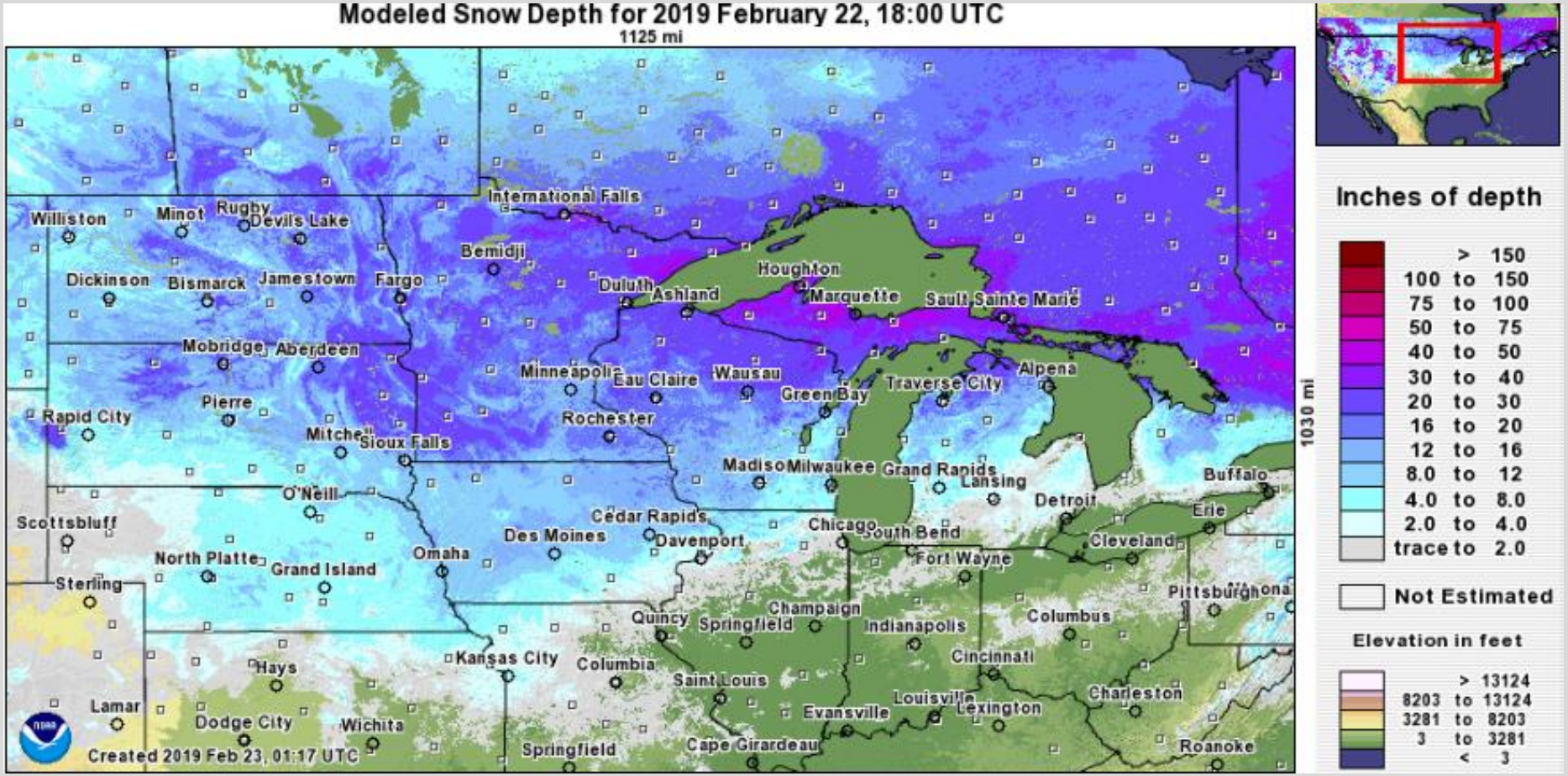
http://www.weather.gov/ncrfc/LMI_FOP_summary



http://www.wpc.ncep.noaa.gov/nationalfloodoutlook/

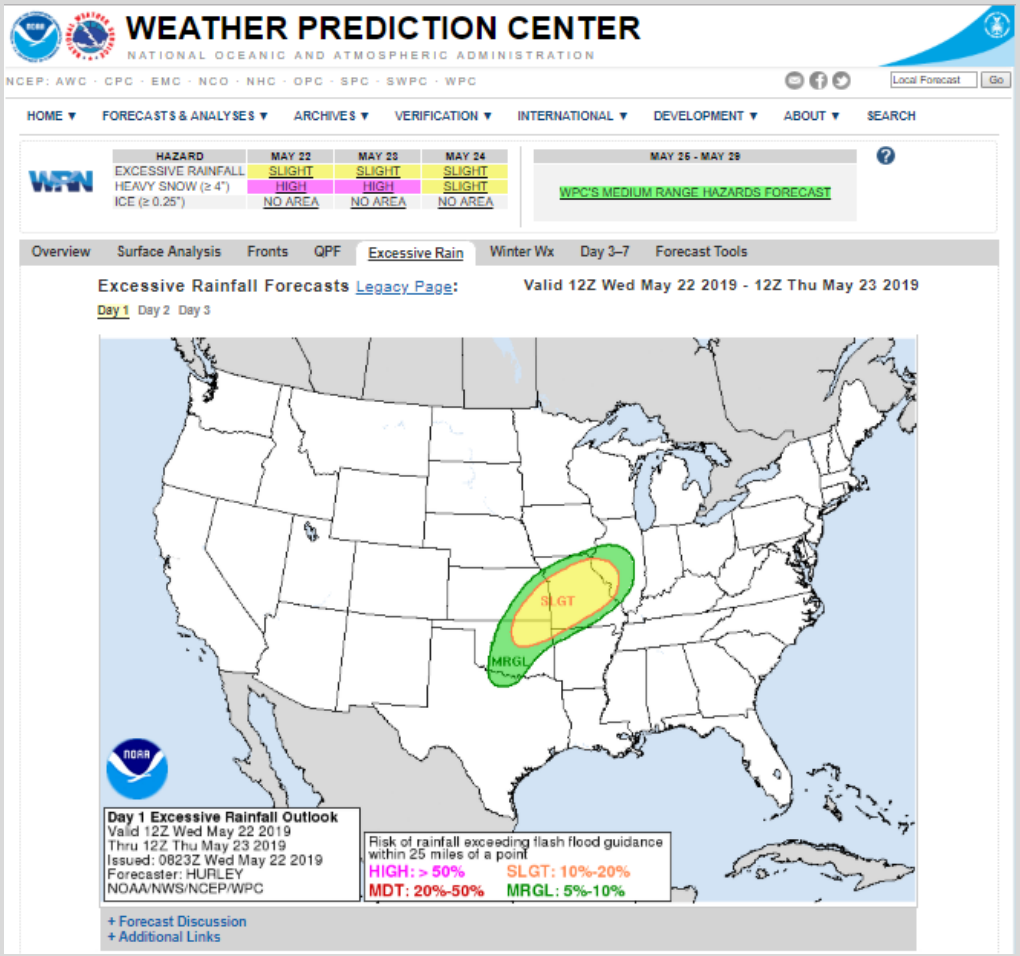
Snow Cover

National Operational Hydrologic Remote Sensing Center

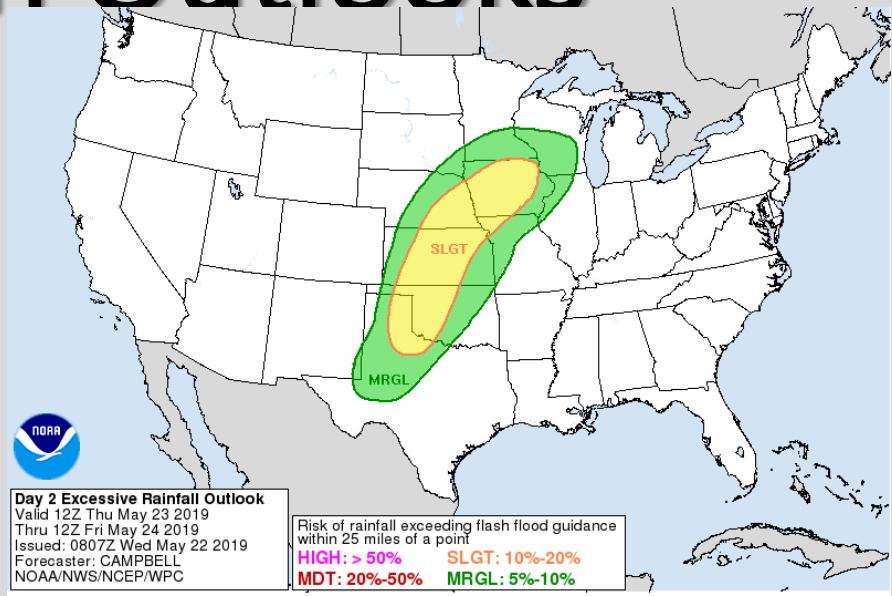


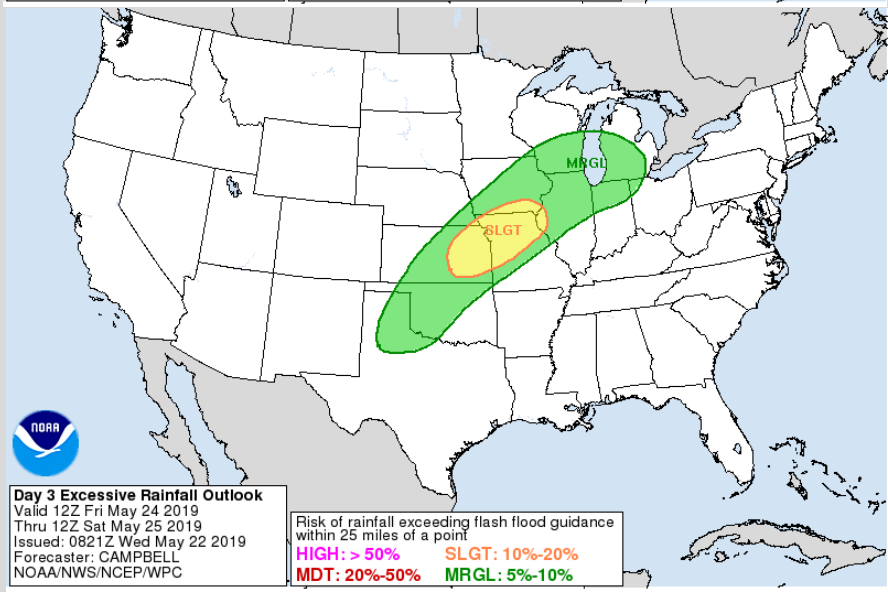
www.nohrsc.noaa.gov

Excessive Rain Outlooks

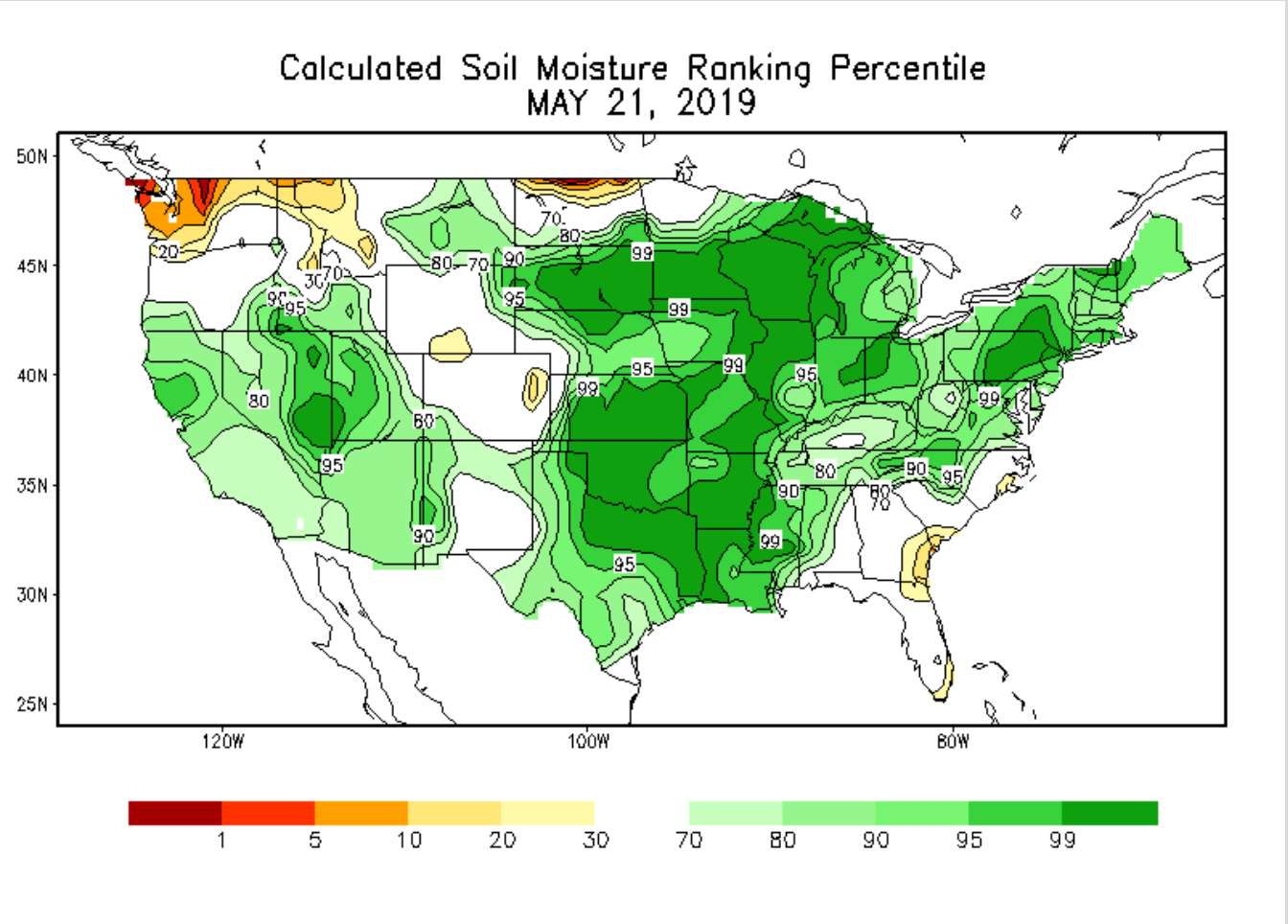


wpc.ncep.noaa.gov



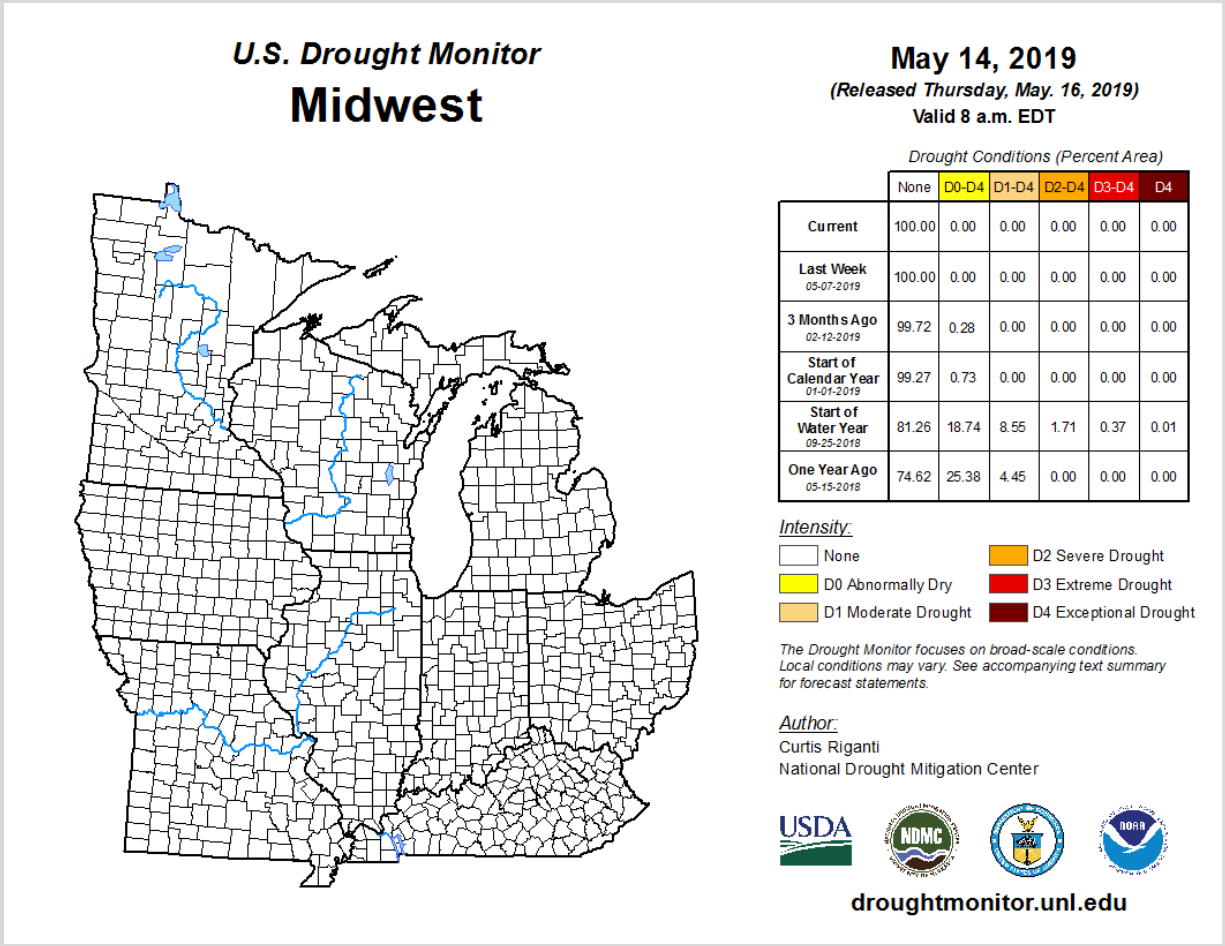


Soil Moisture



http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml

Drought Status



- **https://www.drought.gov/drought/**
- **droughtmonitor.unl.edu**

River Levels

US Army Corps of Engineers

RIVERGAGES.COM
Water Levels of Rivers and Lakes
US Army Corps of Engineers

Home | Search This Site | Related Websites | Data Mining | Glossary | Reports | Who We Are | Contact Us

Water Levels By: Choose An Option

National Weather Service Products

Mississippi River & Passes

View Real-Time Stations In This Basin | View All Stations In This Basin
View All Values In Stage | View All Values In Elevation
Google Earth

STATION * Currently Forecasted Station	RECORD STAGE	FLOOD STAGE	LATEST LEVEL	24 Hr CHANGE	24 Hr PRECIP
Mississippi River at Lock and Dam 15 (POOL) as of 08:00			17.34	+ 0.02	
* Mississippi River at Lock and Dam 15 (Rock Island,IL) as of 08:00	22.63 07/09/1993	15.00	16.62	+ 0.04	
* Mississippi River at Lock and Dam 15 (MET Station) as of 14:00		15.00	16.60	+ 0.05	0.43

Google Earth | What's This? | Google Map

Mississippi River at Lock and Dam 15 (Rock Island,IL)

Stream Name: Mississippi River
Gage Zero: 542.50 Ft. MSL 1912
Flood Stage:15 Ft.
Record High Stage:22.63 Ft.

Longitude: -90.56194000
Latitude: 41.51778000
Flat Pool : 18.50
Flat Tail : 2.50
River Mile: 482.9 miles above the mouth of the Ohio River
Record High Stage Date: 07/09/1993

Drainage Area : 88500.00 Mi^2
Location of Gage :

Pool No. 15 extends from Rock Island, IL. 10.4 miles upstream to LeClaire, IA. Lock and Dam 15 is located on the North side of the West End of Arsenal Island. The Lock and Dam is immediately downstream of the Government Bridge. A Visitor's Center is located at the Lock and Dam.

The National Weather Service information is also linked in the Additional Links for this station.

This gage is operated by the US Army Corps of Engineers (Rock Island District).

Latest Data
05/22/2019 08:00 Central

Latest Stage	16.62 Ft.
24 Hr. Change	+0.04 Ft.
Tomorrow's Forecast (Issued 05/22/2019 10:40)	16.50 Ft. Plot Forecast
Last Year's Stage	13.57 Ft.
Today's Historic Normal Stage	8.40 Ft.
Today's Historic Max Stage	15.67 Ft.
Today's Historic Min Stage	3.80 Ft.
Latest Pool Level	17.34 Ft.
24 Hr. Change	+0.02 Ft.
Last Year's Pool Level	18.03 Ft.

7 Days | Stage

Plot | Tabulate

Daily Historic Data
(06:00 Central Reading)

Choose A Parameter

From JAN 1 2019
To DEC 31 2019
Stage

Plot (5-Year Limit) | Tabulate | Tabulate (Yearly Formatted)

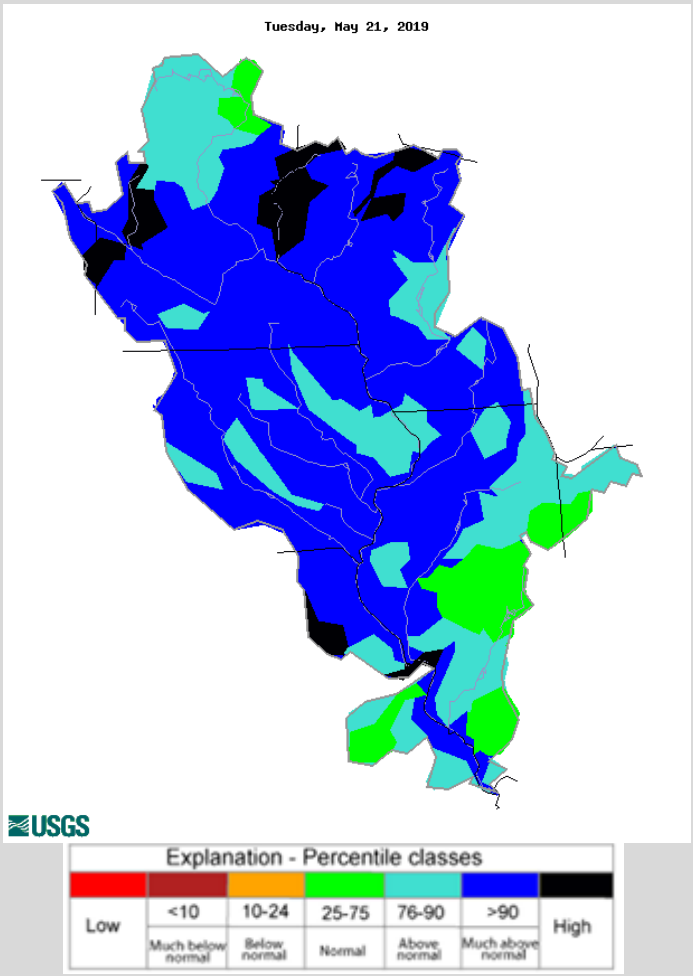
View All Images

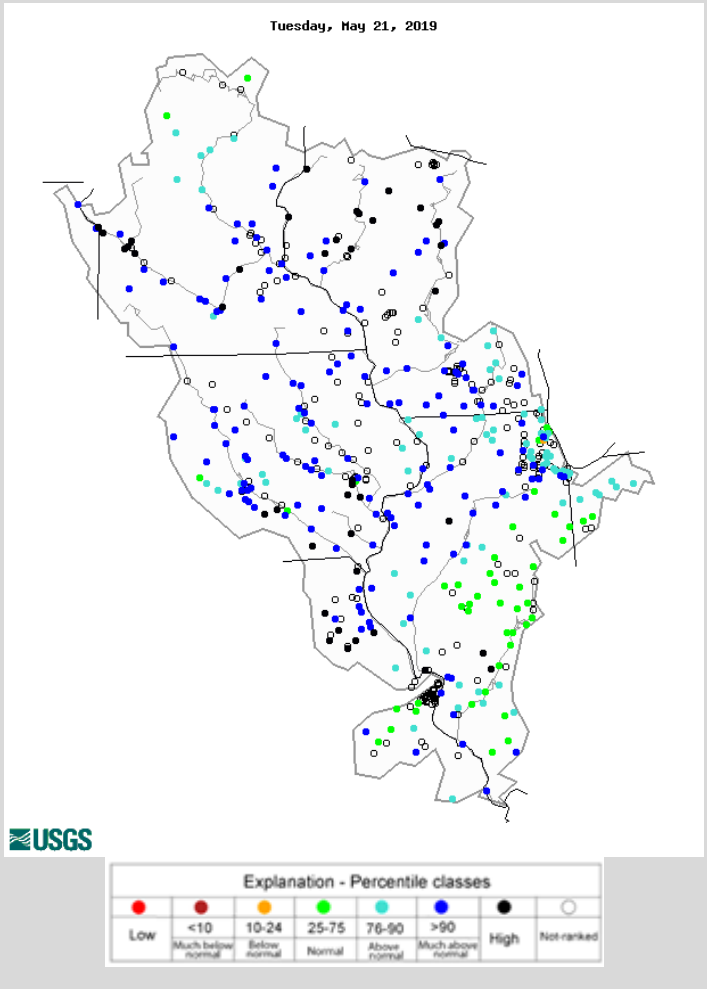
Additional Links:
View Record Stage High / Lows
Vessels Queued at Lock 15
Historic Flood Profiles (Pool 15)
WebMET15
Real-Time SHEF Report
Water Transparency
Official National Weather Service information for this station

Rivergages.com

Stream Levels

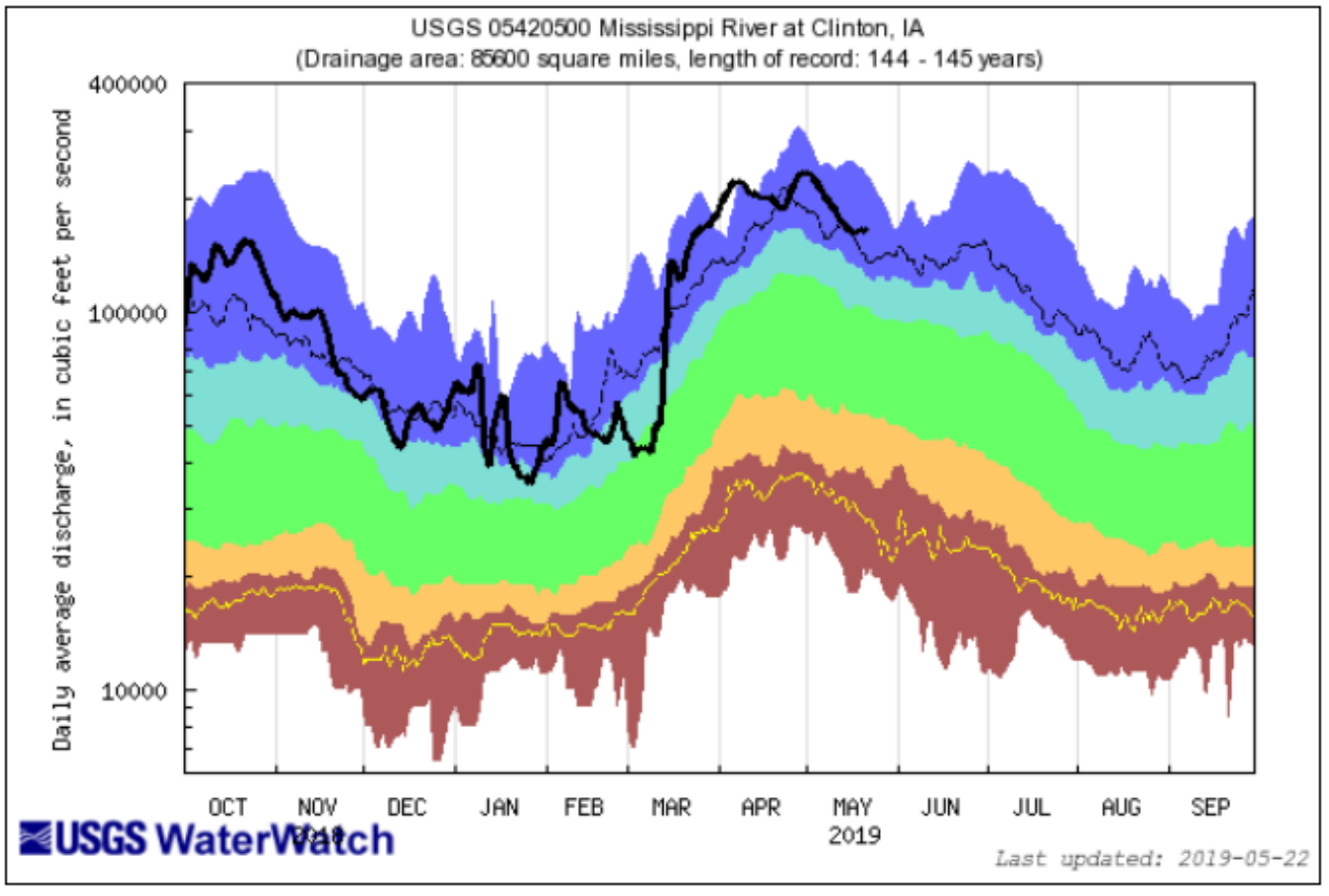
US Geological Survey





https://waterwatch.usgs.gov/

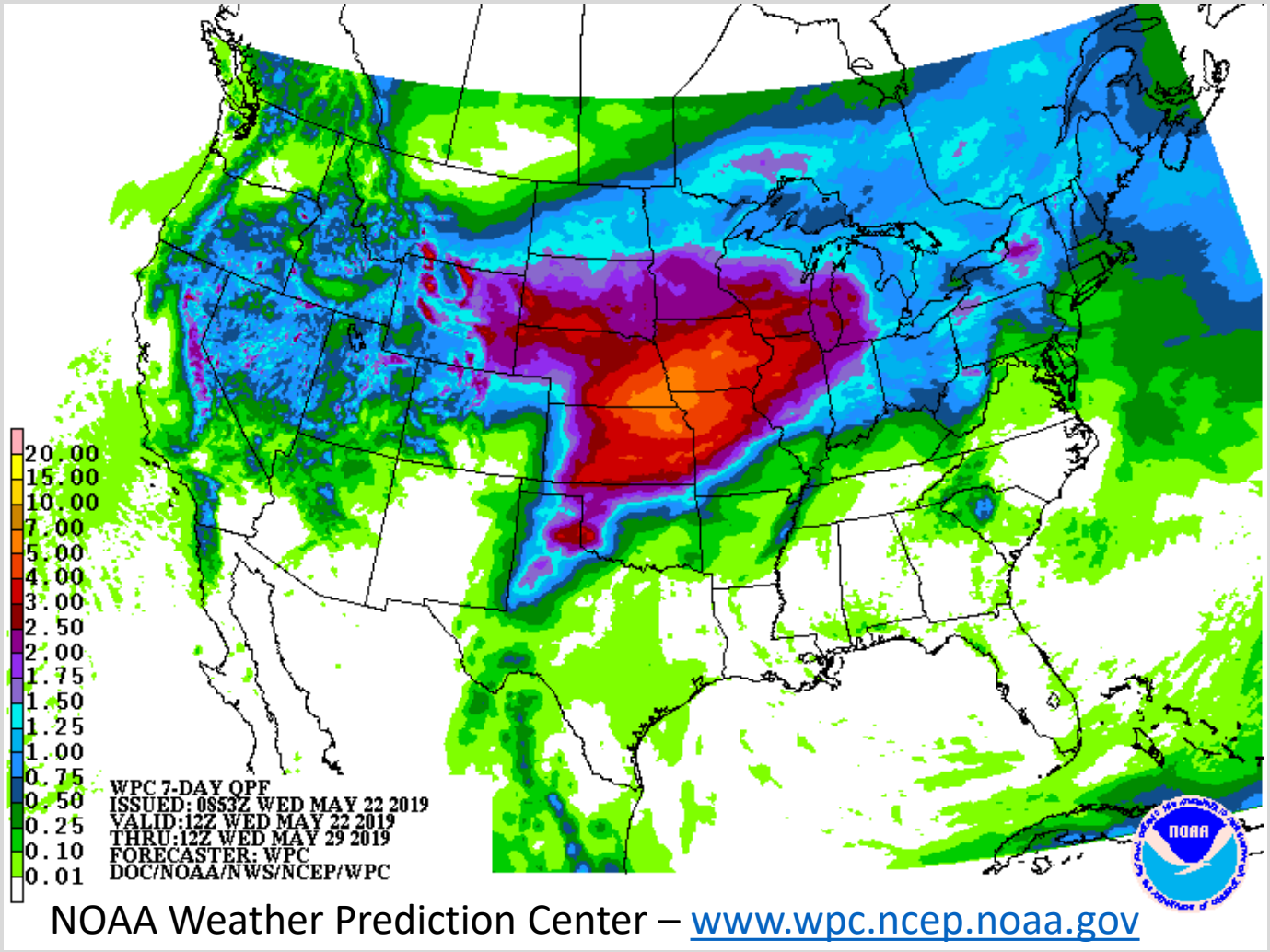
Stream Levels



Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Runoff
Much below Normal		Below normal	Normal	Above normal	Much above normal		

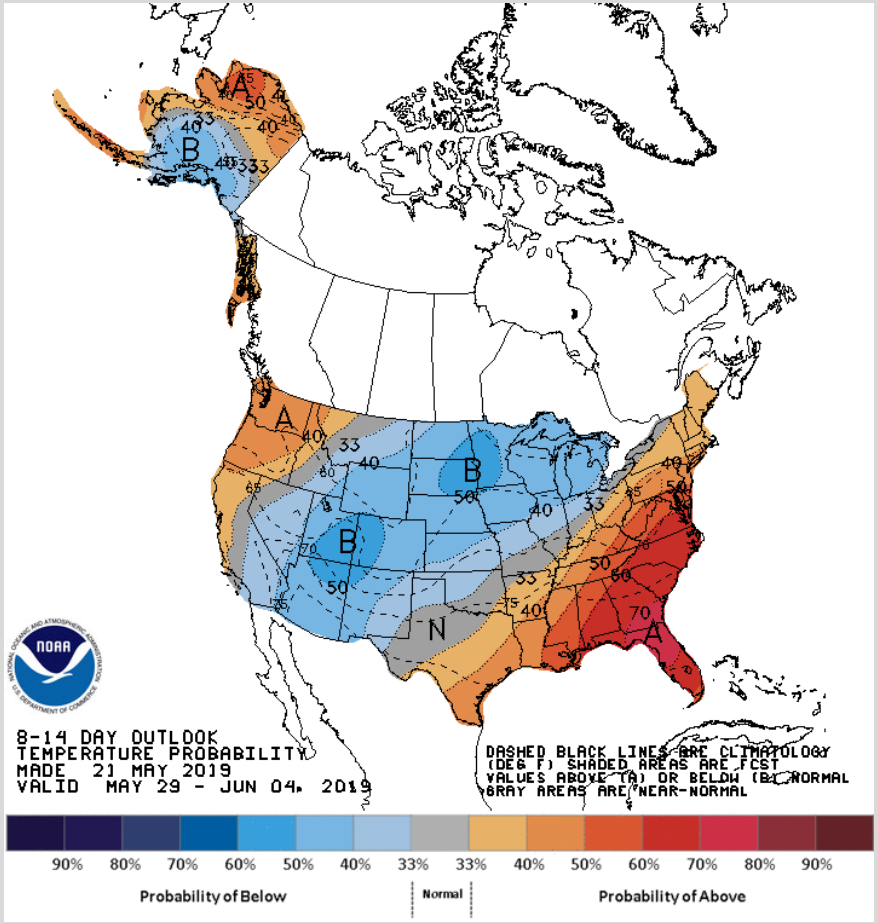
https://waterwatch.usgs.gov/

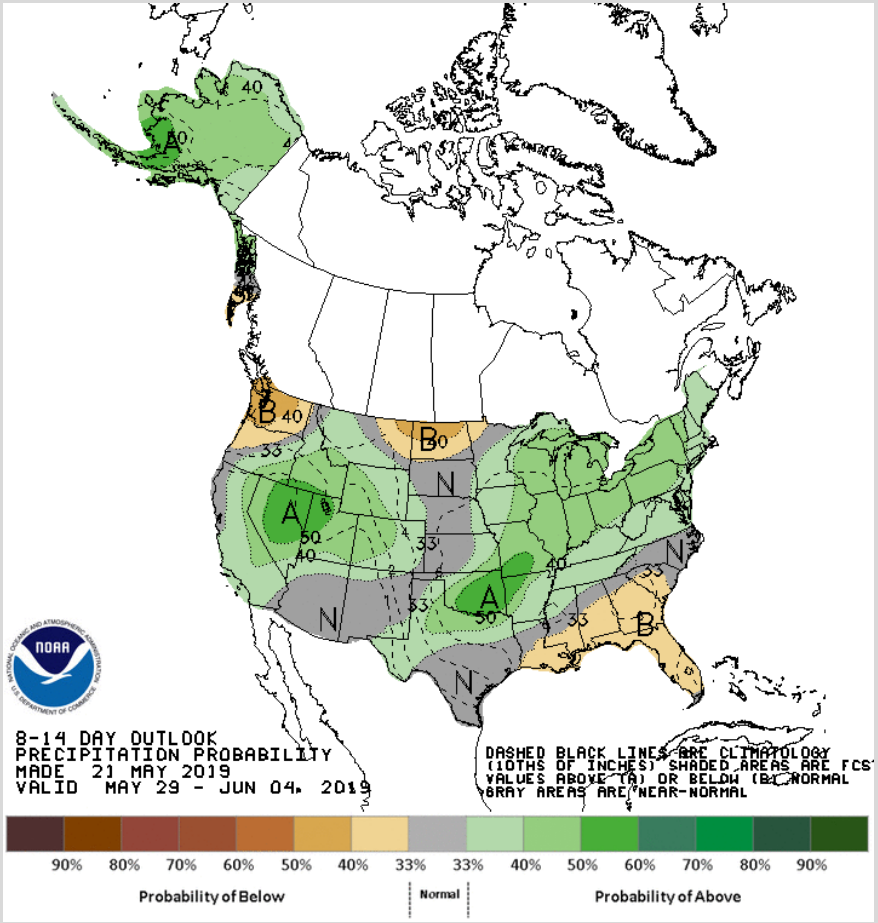
7-day Precipitation (QPF) Forecast



NOAA Weather Prediction Center – www.wpc.ncep.noaa.gov

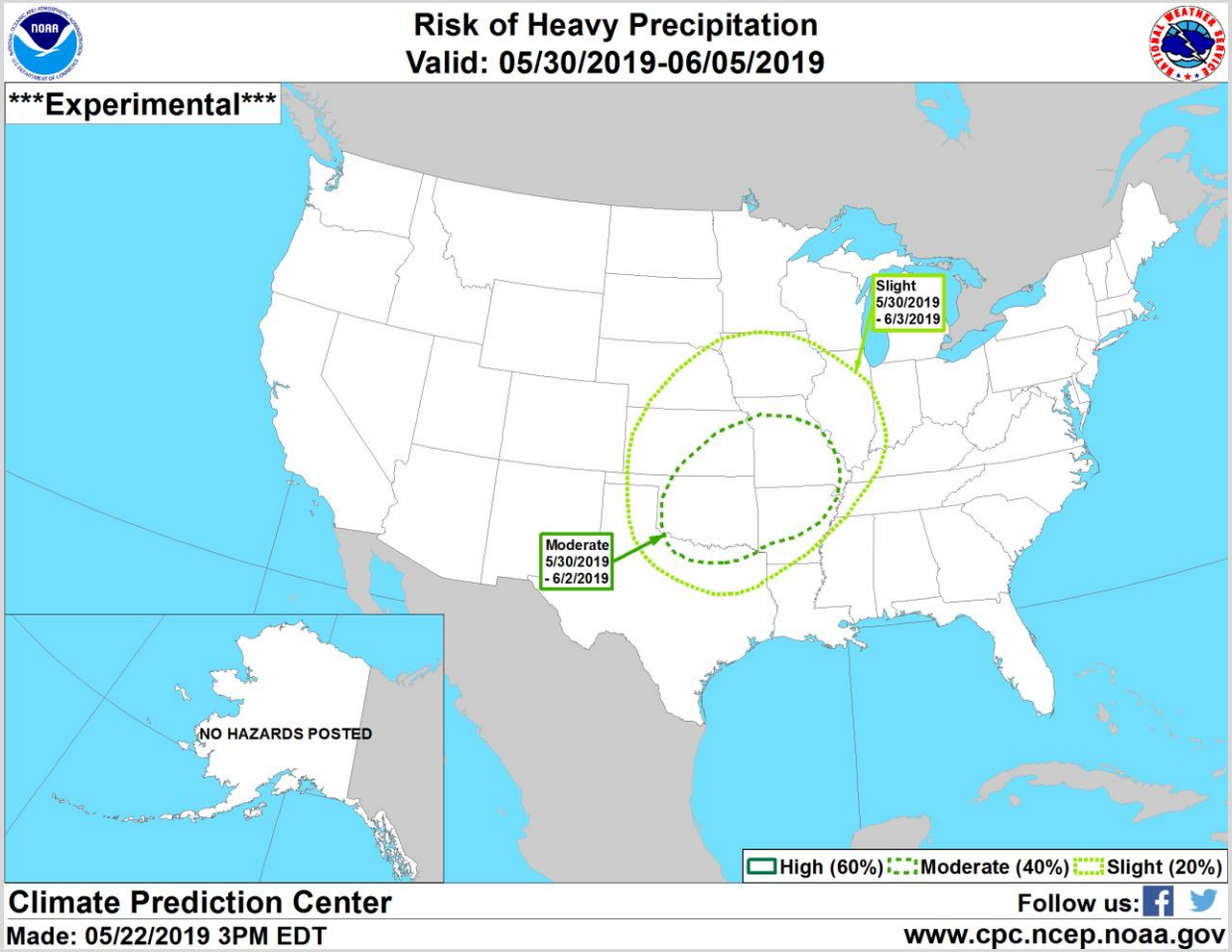
Week 2 Weather Outlook





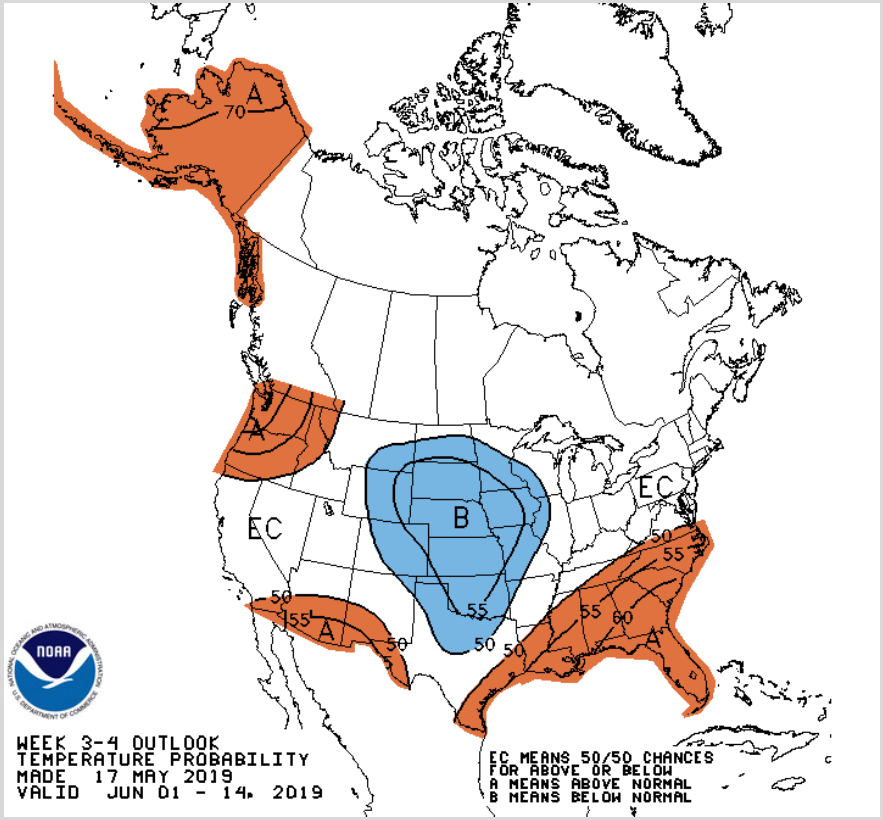
NOAA Climate Prediction Center –www.cpc.ncep.noaa.gov

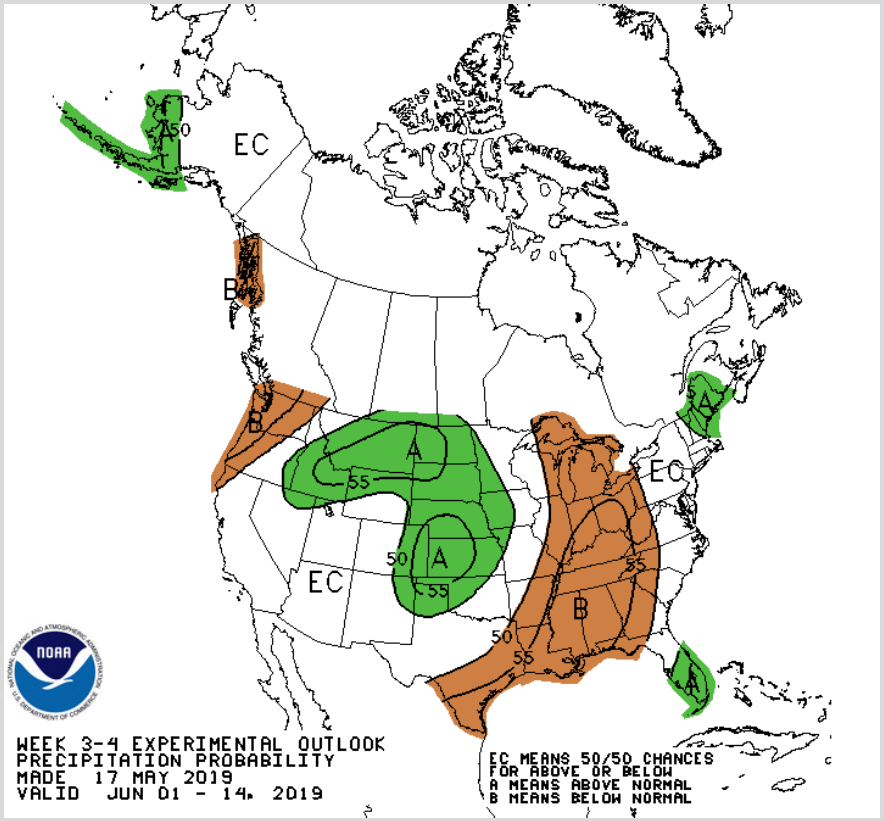
Week 2 Risk of Heavy Precipitation



NOAA Climate Prediction Center –www.cpc.ncep.noaa.gov

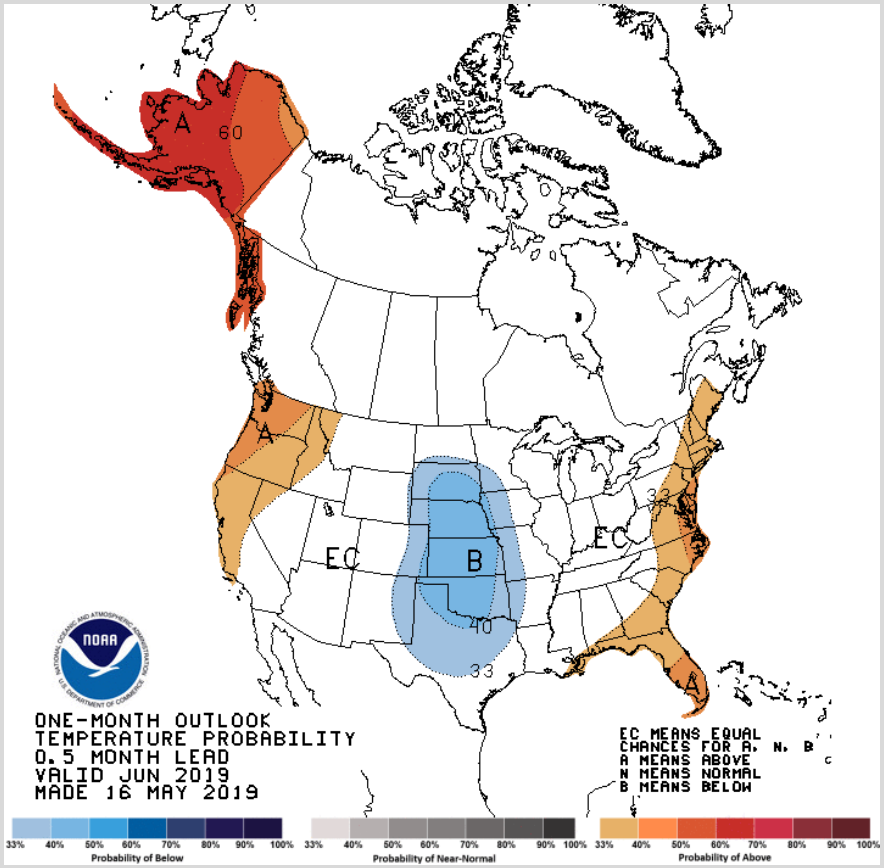
Weeks 3 & 4 Outlooks

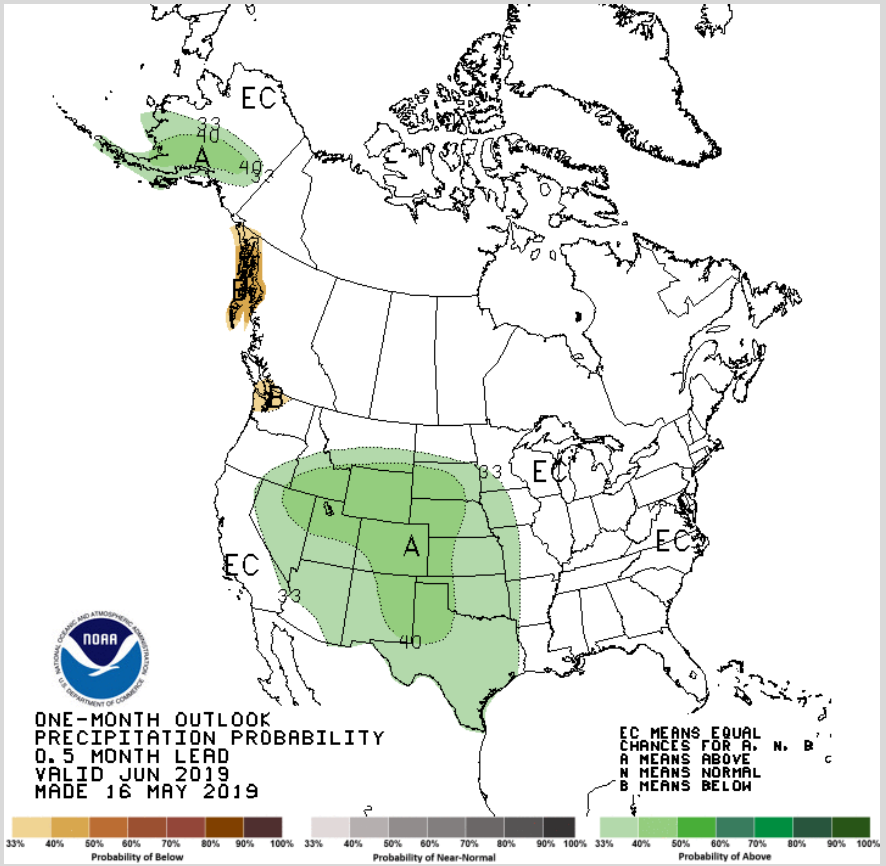




NOAA Climate Prediction Center –www.cpc.ncep.noaa.gov

Monthly Weather Outlooks





NOAA Climate Prediction Center –www.cpc.ncep.noaa.gov