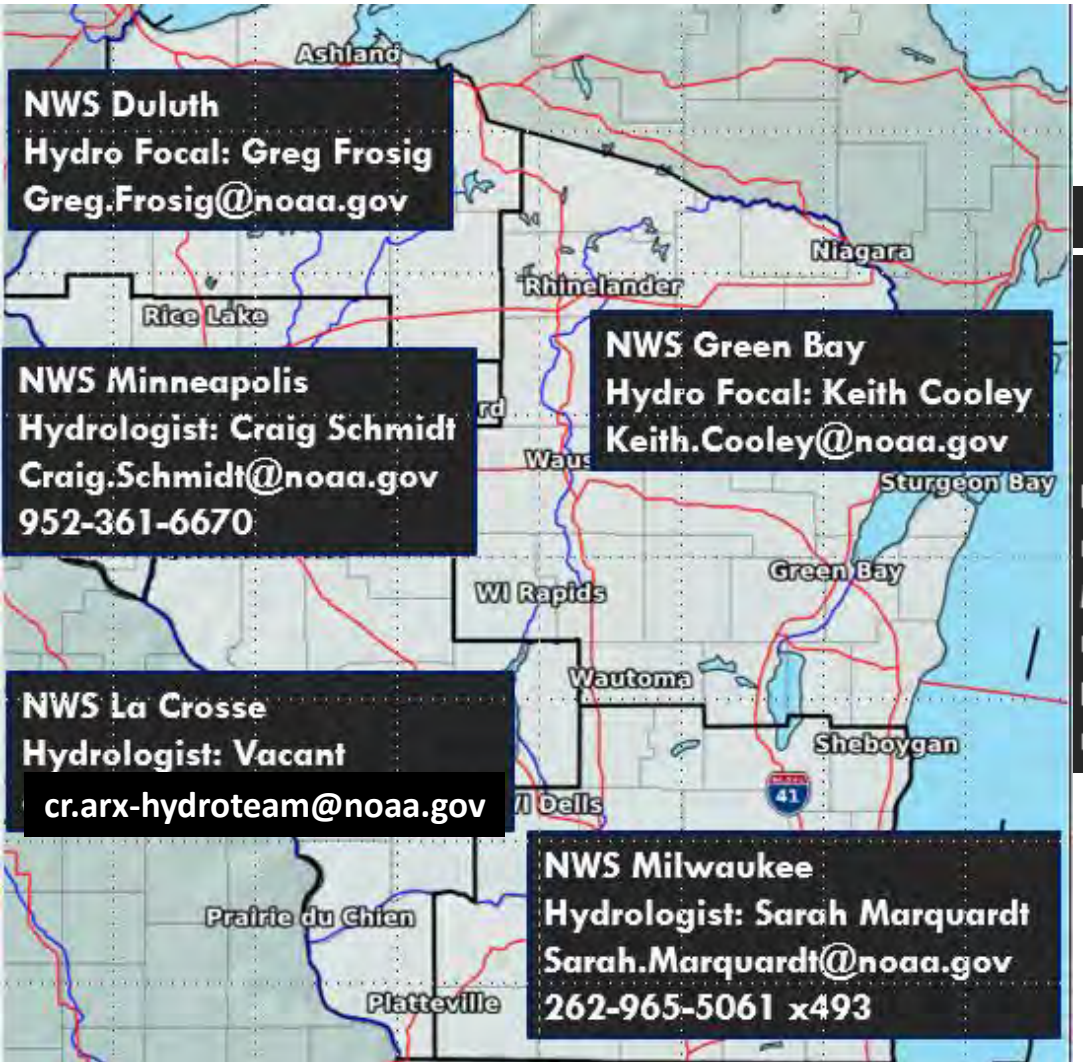
National Weather Service

Spring Flood Outlook, HEFS, HYSPLIT and Radar!

WI NWS Hydrologists/Hydro Focal Points



NWS Duluth
Hydro Focal: Greg Frosig
Greg.Frosig@noaa.gov

NWS Minneapolis
Hydrologist: Craig Schmidt
Craig.Schmidt@noaa.gov
952-361-6670

NWS Green Bay
Hydro Focal: Keith Cooley
Keith.Cooley@noaa.gov

NWS La Crosse
Hydrologist: Vacant
cr.arx-hydroteam@noaa.gov

NWS Milwaukee
Hydrologist: Sarah Marquardt
Sarah.Marquardt@noaa.gov
262-965-5061 x493

NWS Operations Contacts:

Milwaukee: 262-965-2906
nws.milwauke@noaa.gov

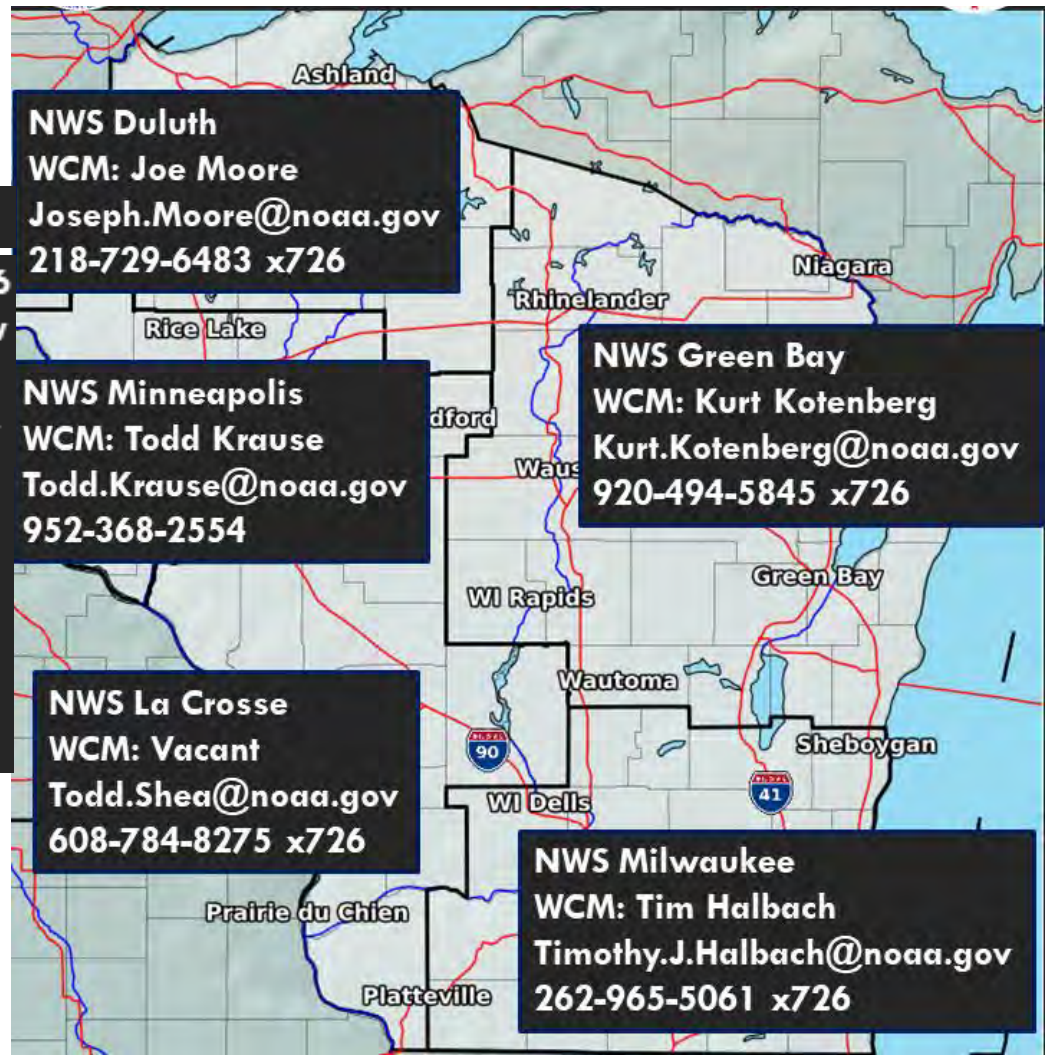
Green Bay: 920-497-8771
nws.greenbay@noaa.gov

La Crosse: 608-784-8292
nws.lacrosse@noaa.gov

Minneapolis: 952-361-6671
nws.twincities@noaa.gov

Duluth: 218-729-0653
nws.duluth@noaa.gov

WI Warning Coordination Meteorologists



NWS Duluth
WCM: Joe Moore
Joseph.Moore@noaa.gov
218-729-6483 x726

NWS Minneapolis
WCM: Todd Krause
Todd.Krause@noaa.gov
952-368-2554

NWS Green Bay
WCM: Kurt Kotenberg
Kurt.Kotenberg@noaa.gov
920-494-5845 x726

NWS La Crosse
WCM: Vacant
Todd.Shea@noaa.gov
608-784-8275 x726

NWS Milwaukee
WCM: Tim Halbach
Timothy.J.Halbach@noaa.gov
262-965-5061 x726

National Weather Service

We're from the federal government, we're here to help!

Provide weather, water and climate data, forecasts, warnings and impact-based decision support services for the protection of life and property and enhancement of the national economy.

24/7/365 Operations

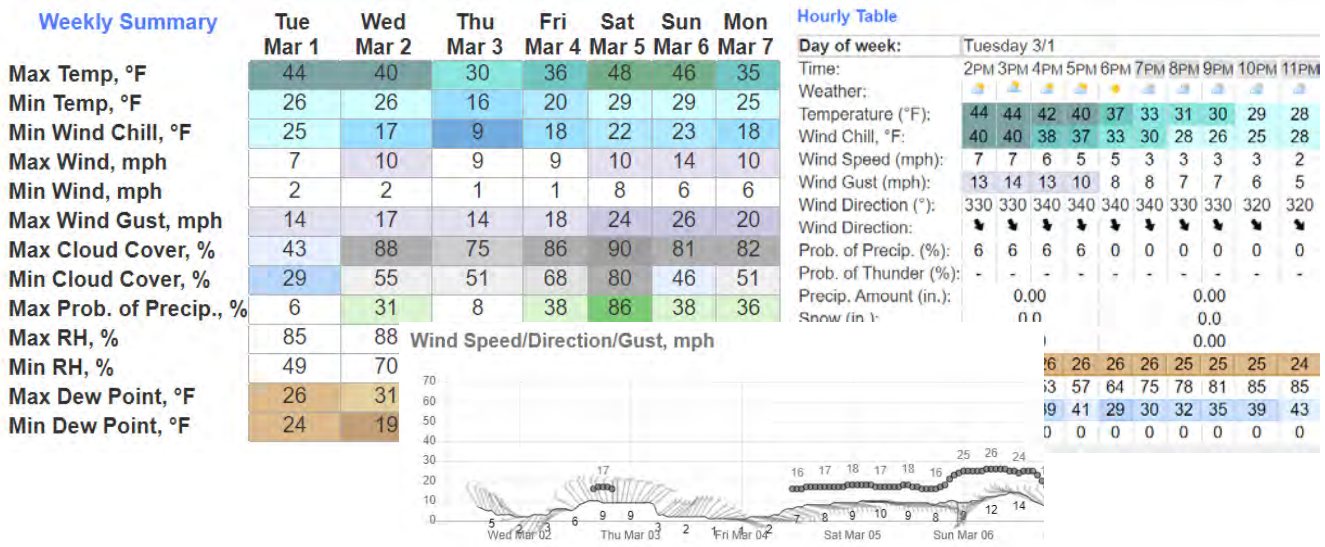
- Severe Weather Warnings
- Public/Aviation/Marine/Hydrology/Fire Weather Forecasts
- Decision support for events, disasters, public safety

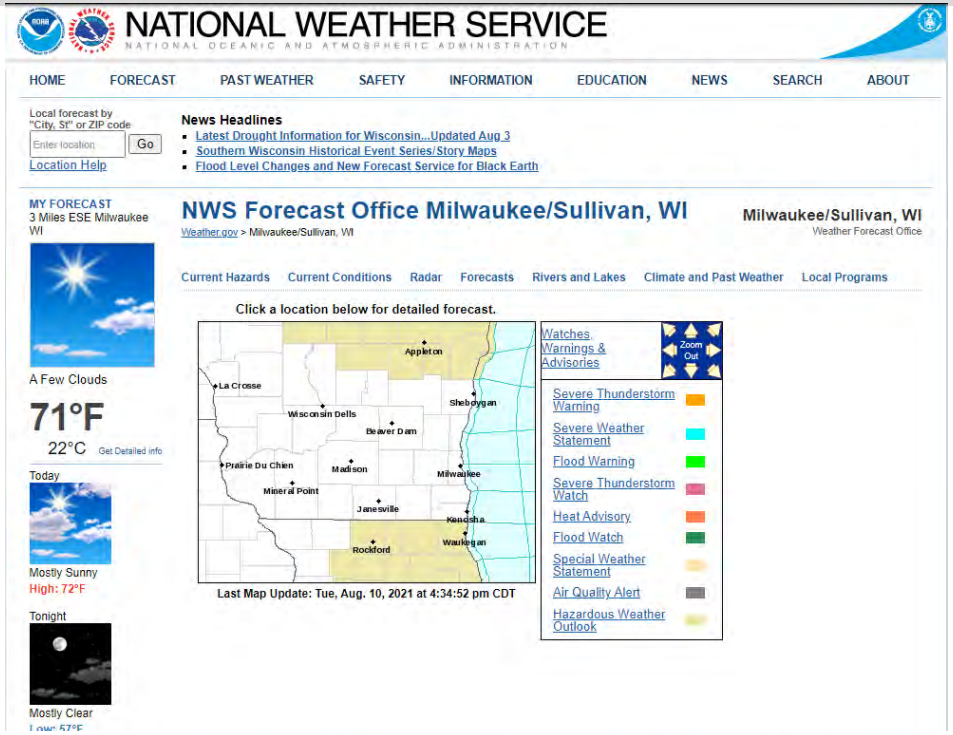
weather.gov

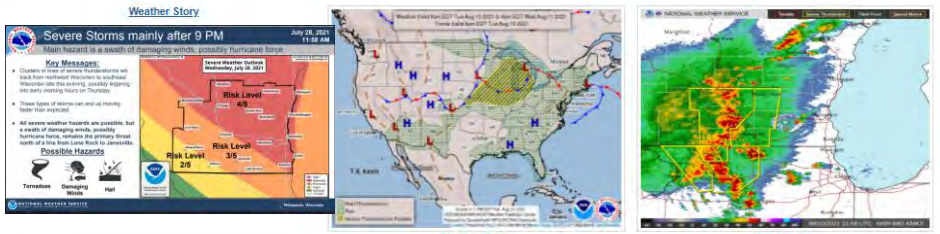
/milwaukee /lacrosse /greenbay /twincities /duluth

City/Point Specific Forecast
Clickable City Forecast
DSS Packet (Briefing PDF-Top Right)
Outlooks
Submit a Storm Report
Weather Story
Radar
So much more!

weather.gov/forecastpoints







Wisconsin Spring Flood Potential and Probabilistic River Forecasts

March 8, 2022

Presenter: Sarah Marquardt, Senior Service Hydrologist

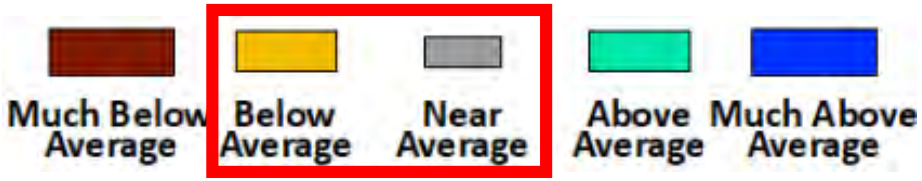
National Weather Service Milwaukee

National Weather Service Milwaukee

Show of Hands

National Weather Service Milwaukee

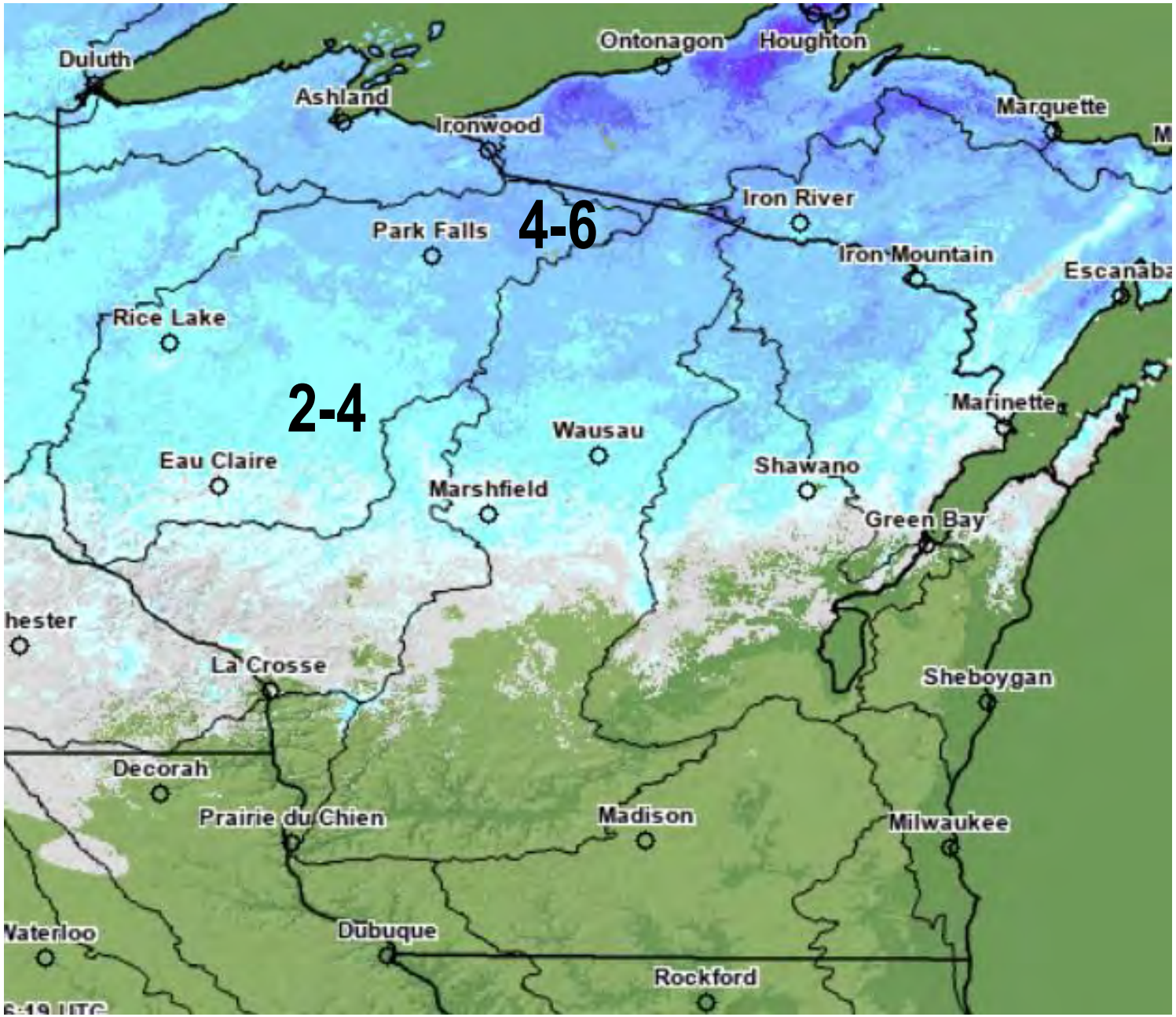
Spring Flood Risk



- **Spring flood risk is average in northern Wisconsin and below average in southern Wisconsin**
  - **Additional snow pack could increase this risk**
  - **Flooding is possible with rain on frozen ground**
  - **Greatest risk of flooding occurs with snow melt and moderate to heavy rain**
- **Break up ice jams**

National Weather Service Milwaukee

Snow Water Equivalent (inches) 3/6/2022



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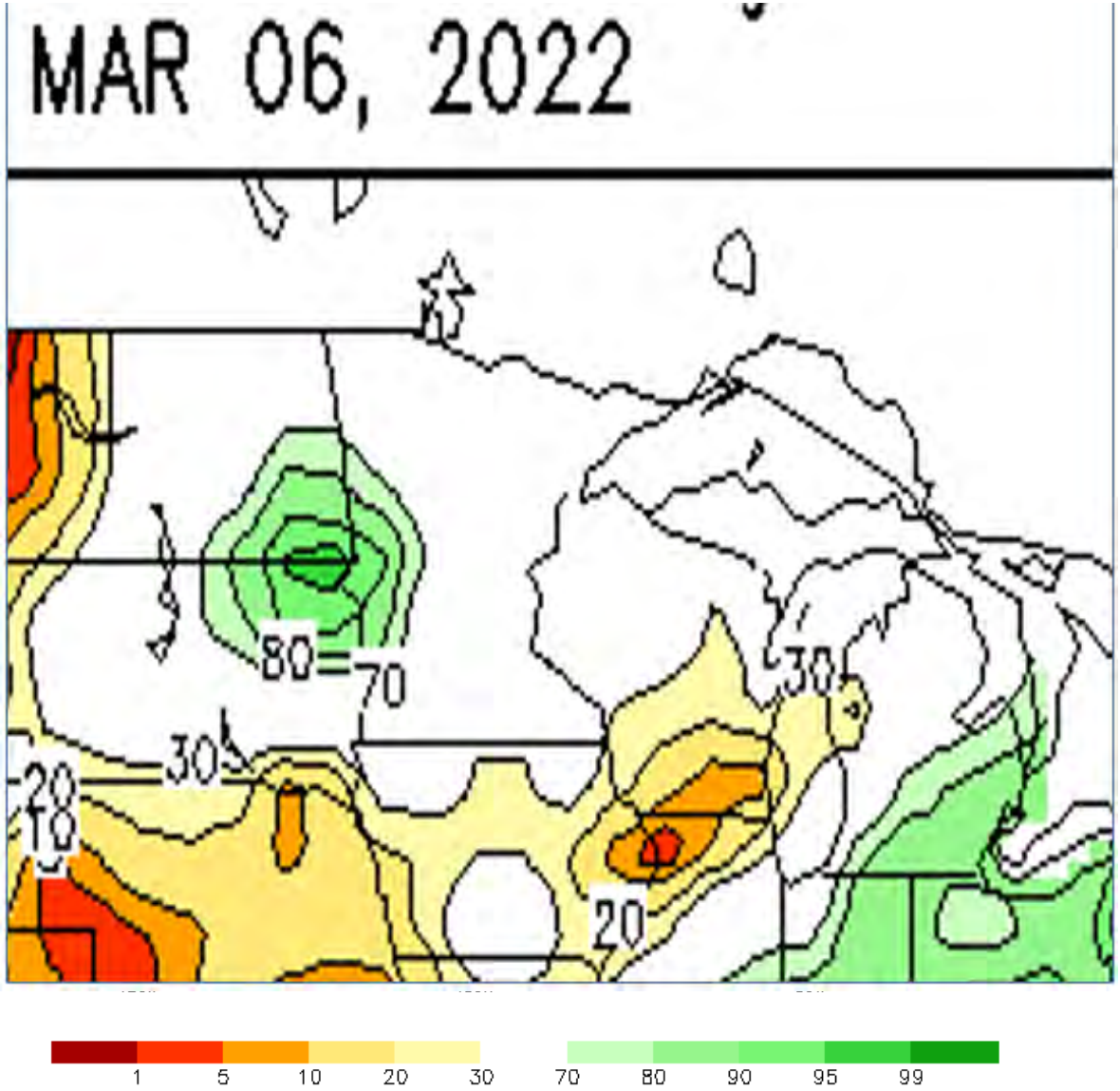
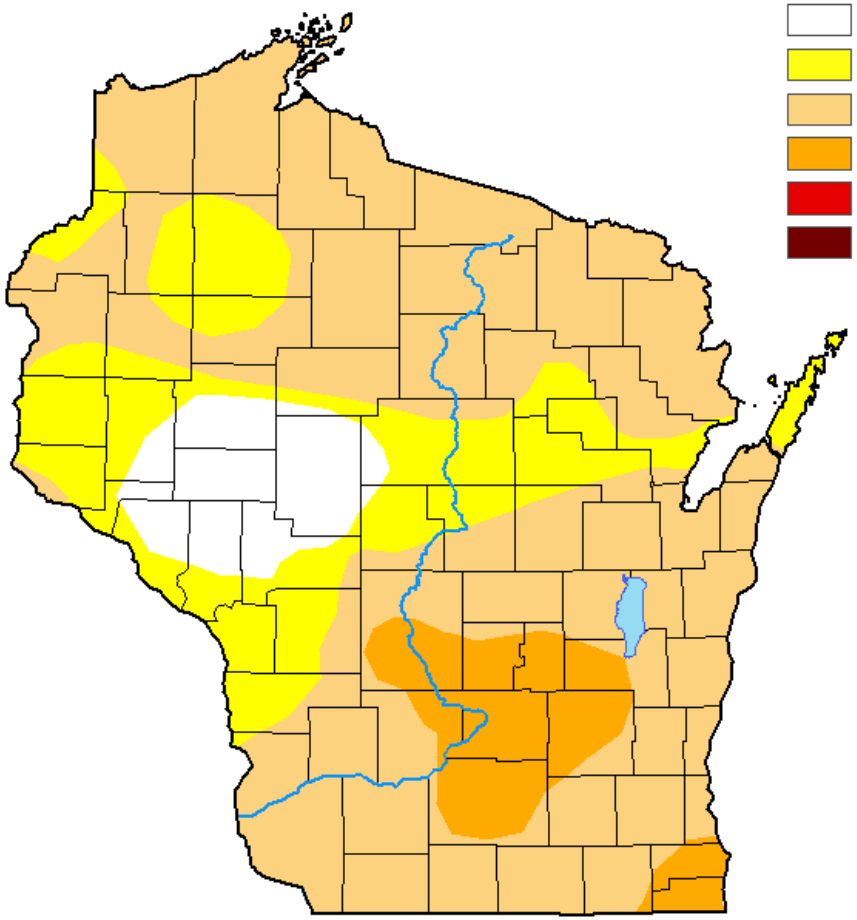
Soil Moisture Percentile



U.S. Drought Monitor
Wisconsin

Map released: Thurs. March 3, 2022

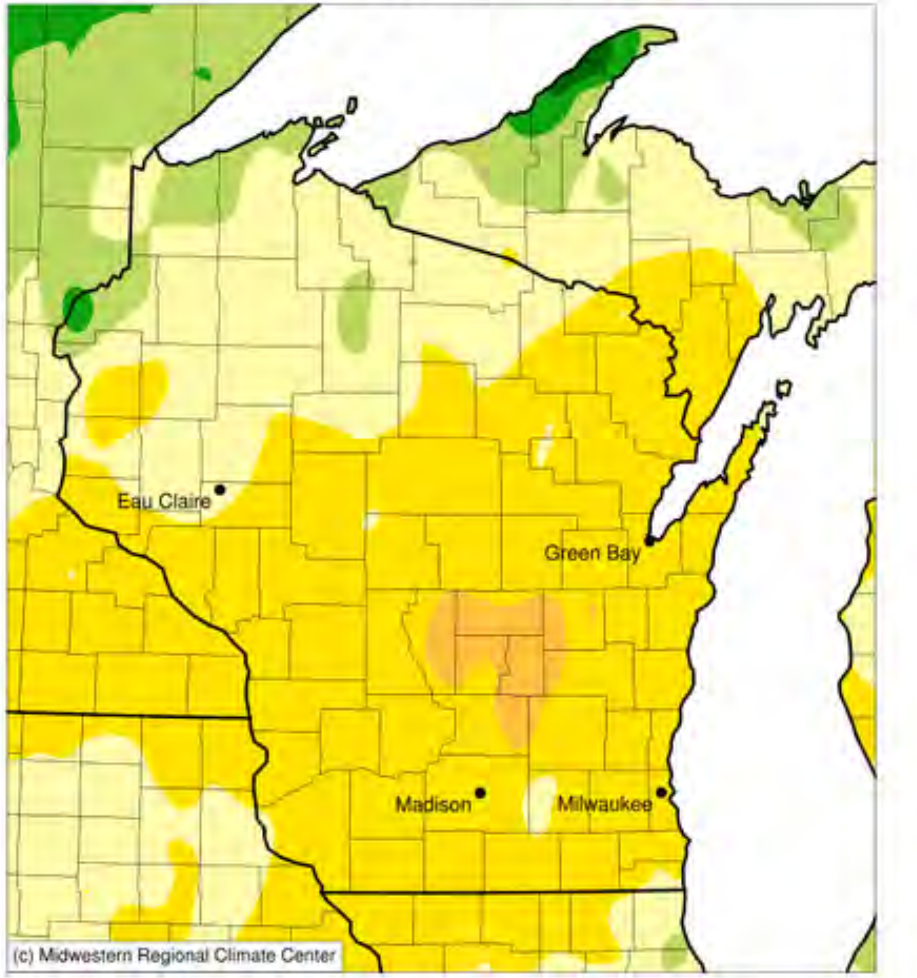
Data valid: March 1, 2022 at 7 a.m. EST



National Weather Service Milwaukee

Accumulated Precipitation (in): Percent of 1991-2020 Normals

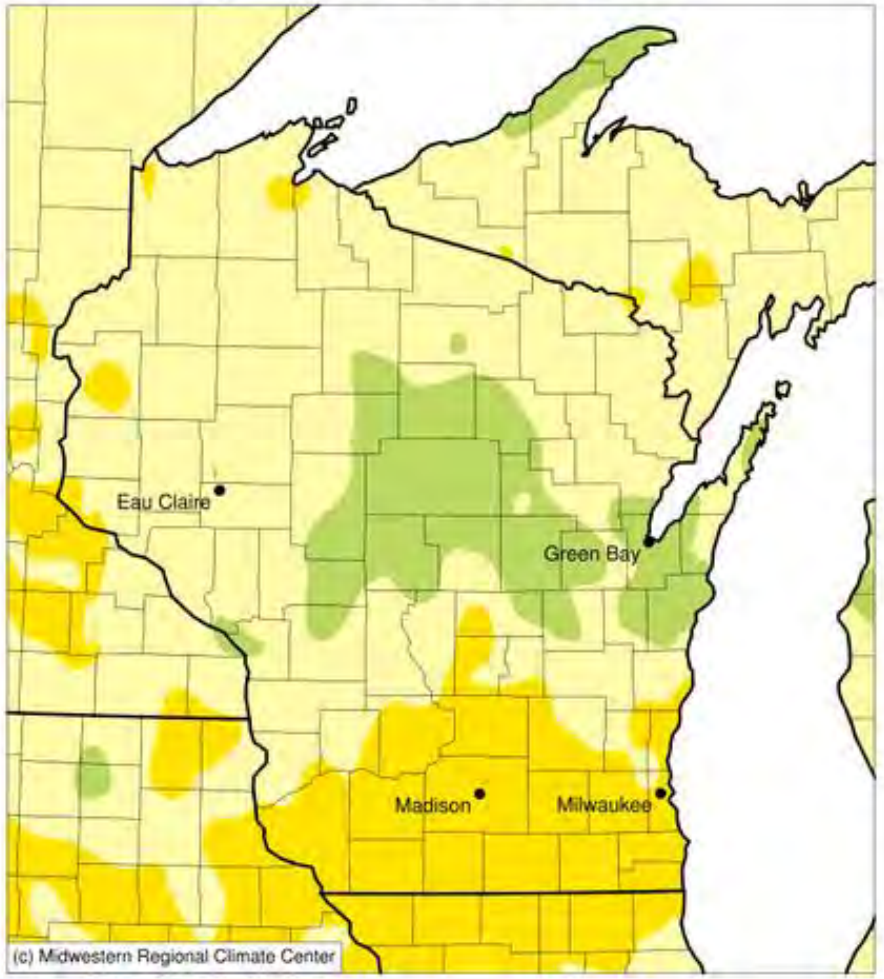
September 01, 2021 to March 07, 2022



Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI,
Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 3/7/2022 1:52:21 PM CST

Accumulated Precipitation (in): Percent of 1991-2020 Normals

April 01, 2021 to March 07, 2022



Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI,
Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 3/7/2022 1:53:08 PM CST

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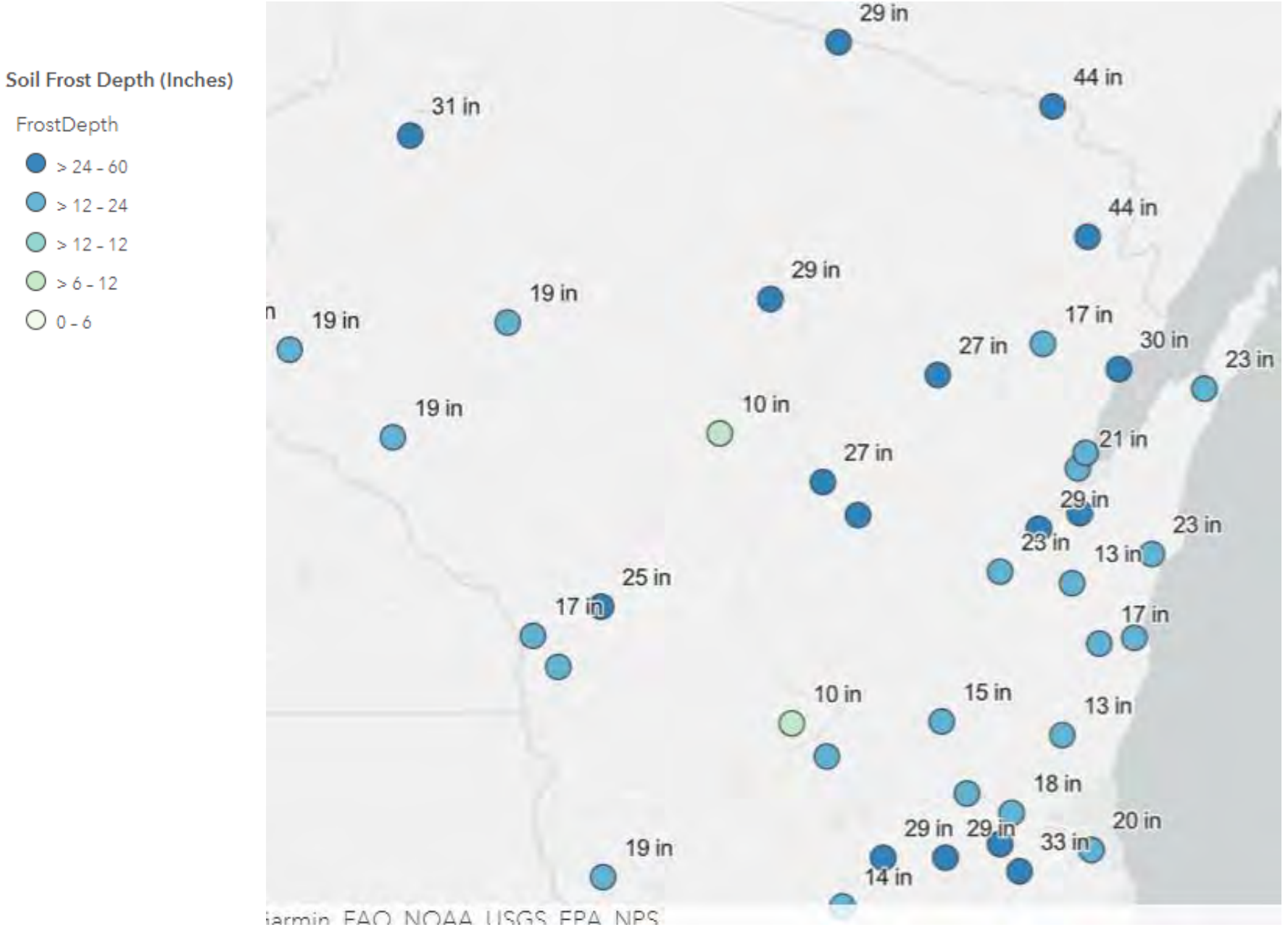
Frost Depth 3/7/2022



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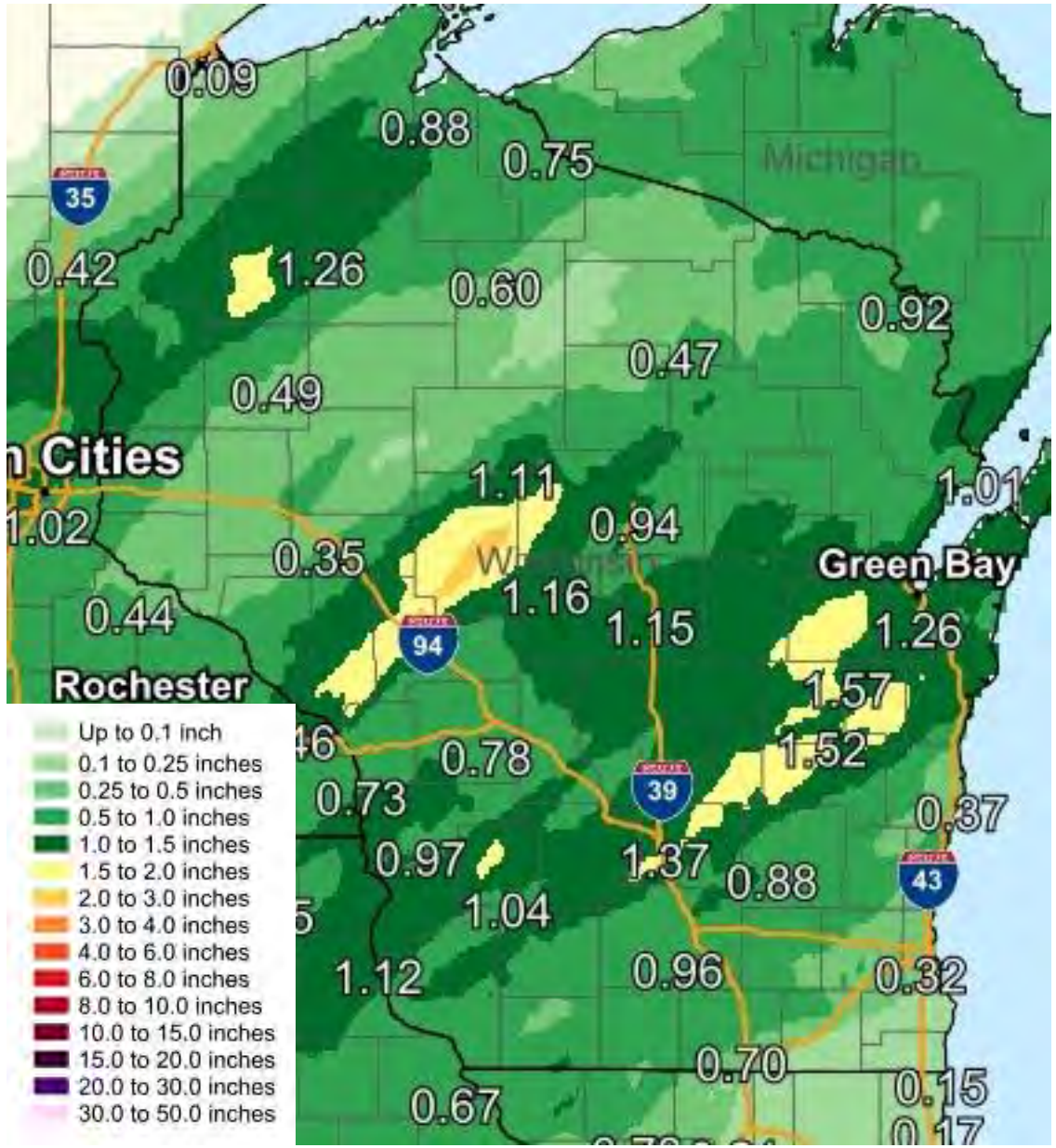
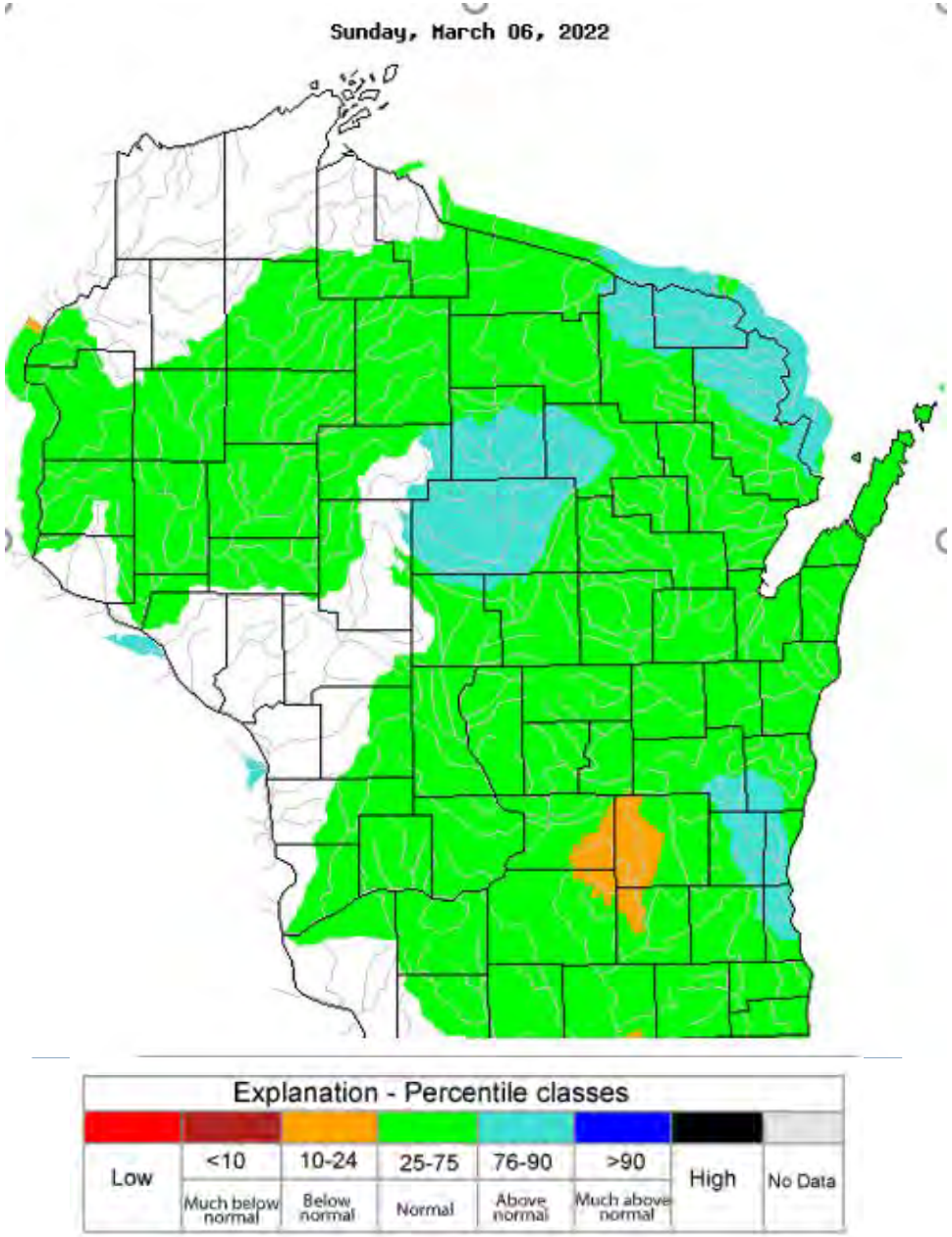
Observed 2 Day Precipitation
Friday Night to Saturday Night



7 day Mean Streamflow Percentile



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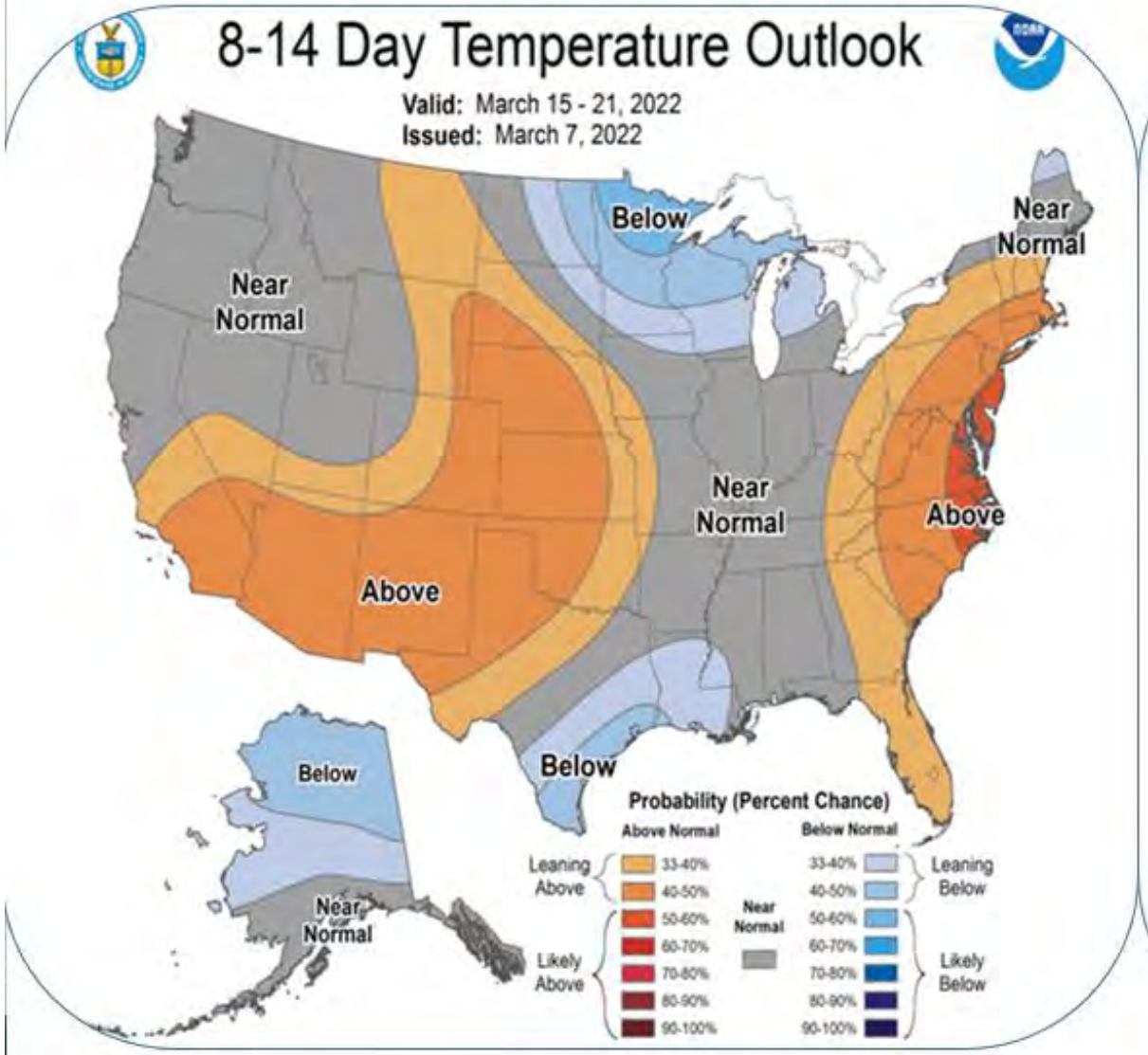
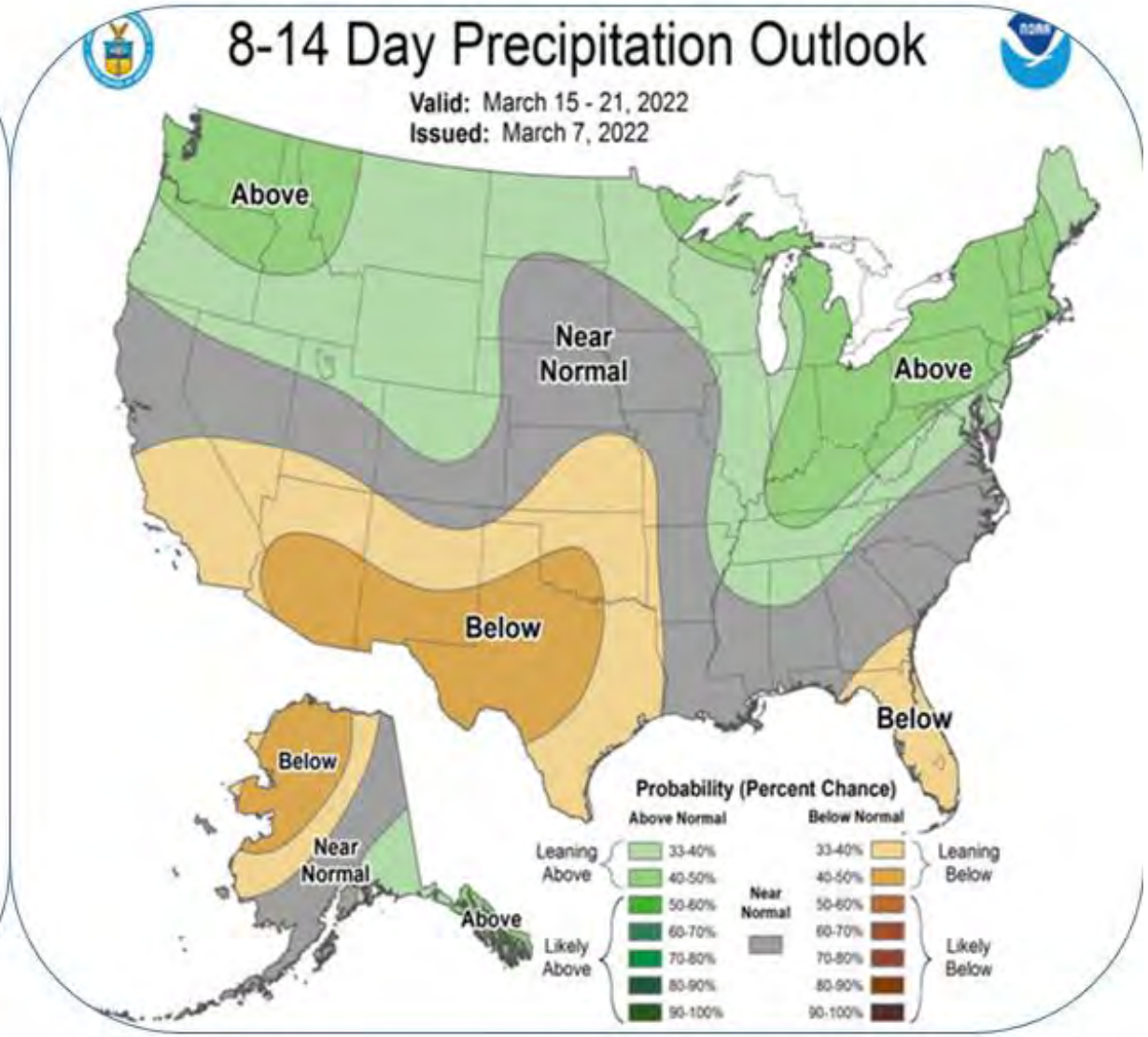
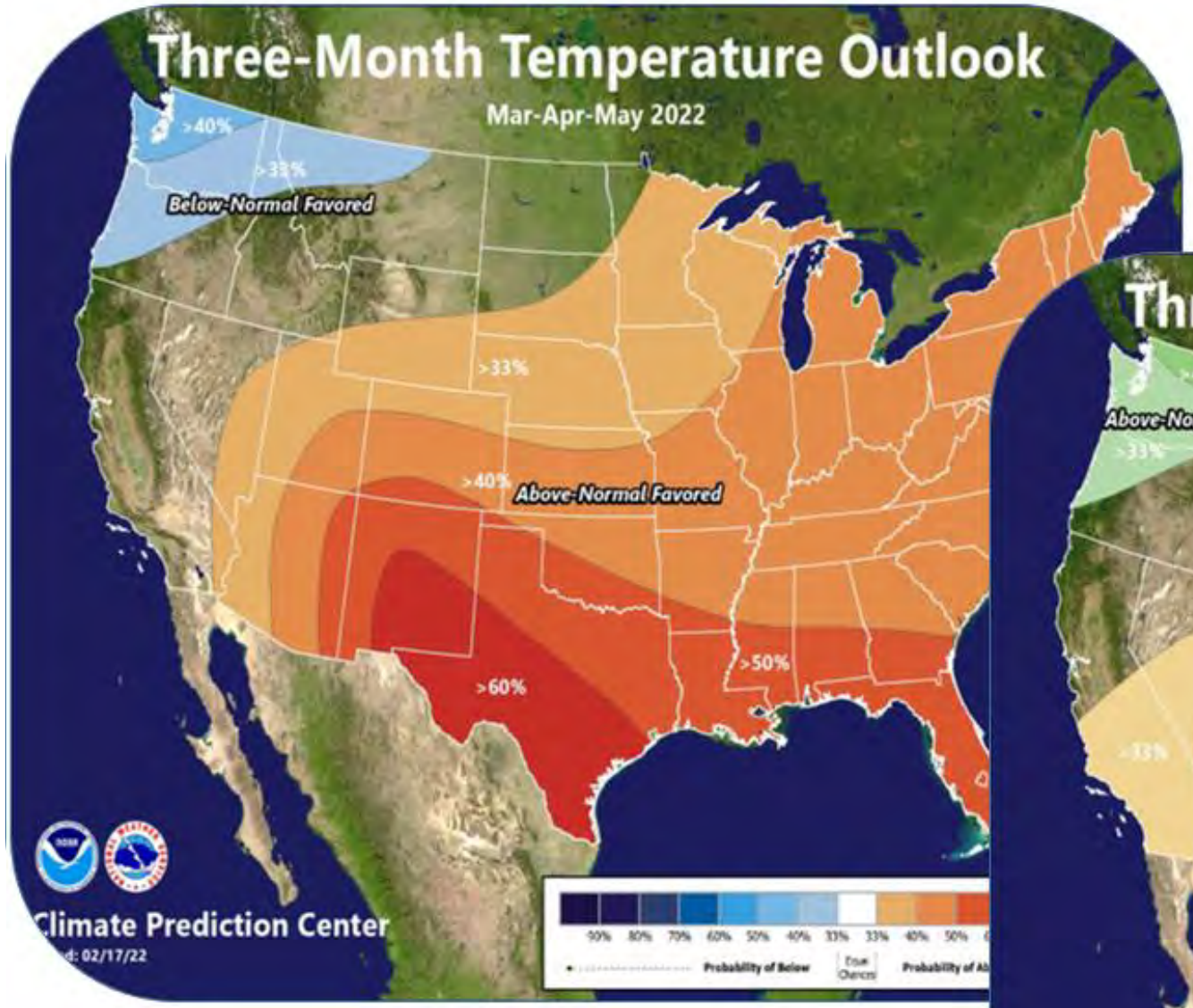
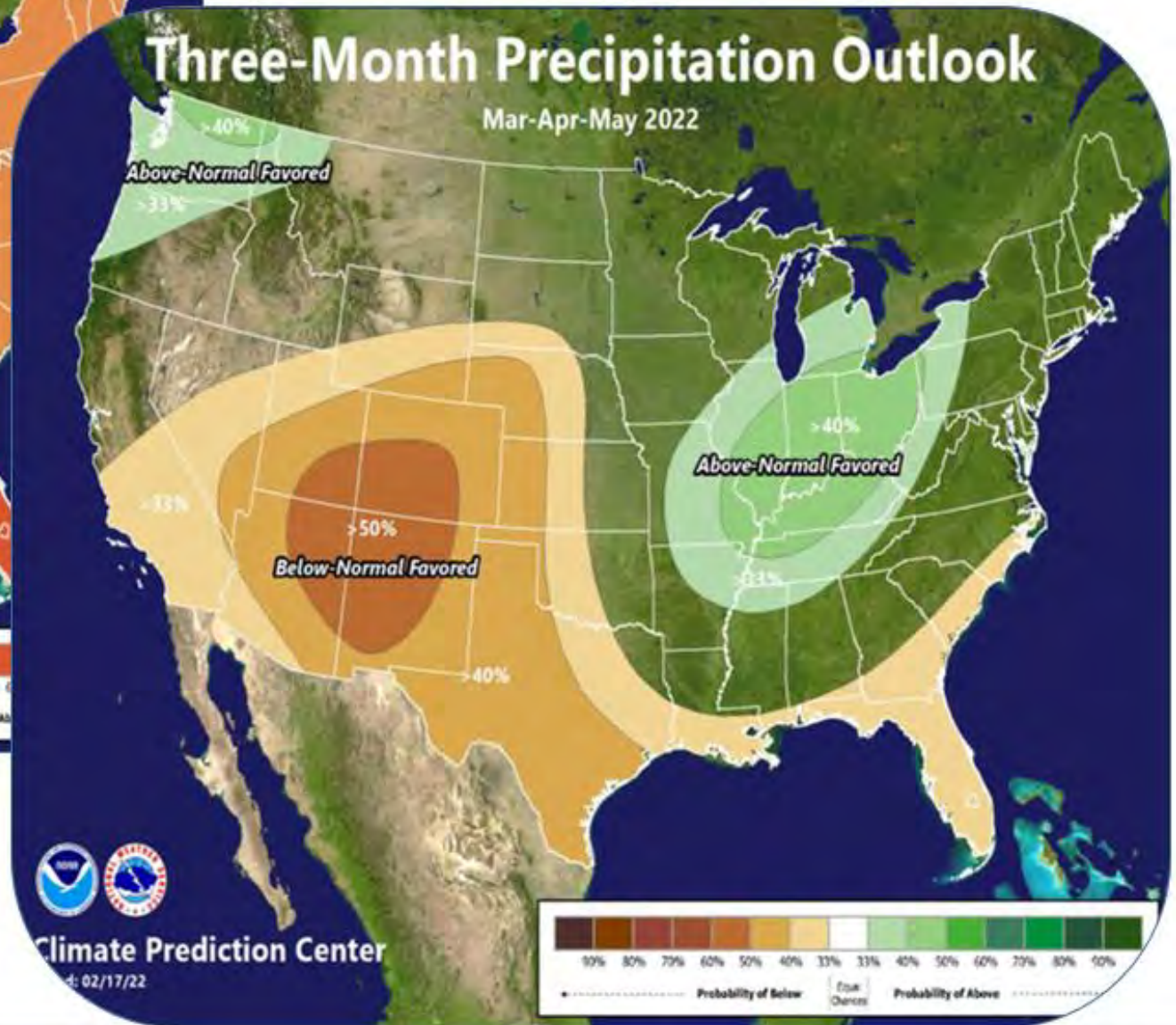




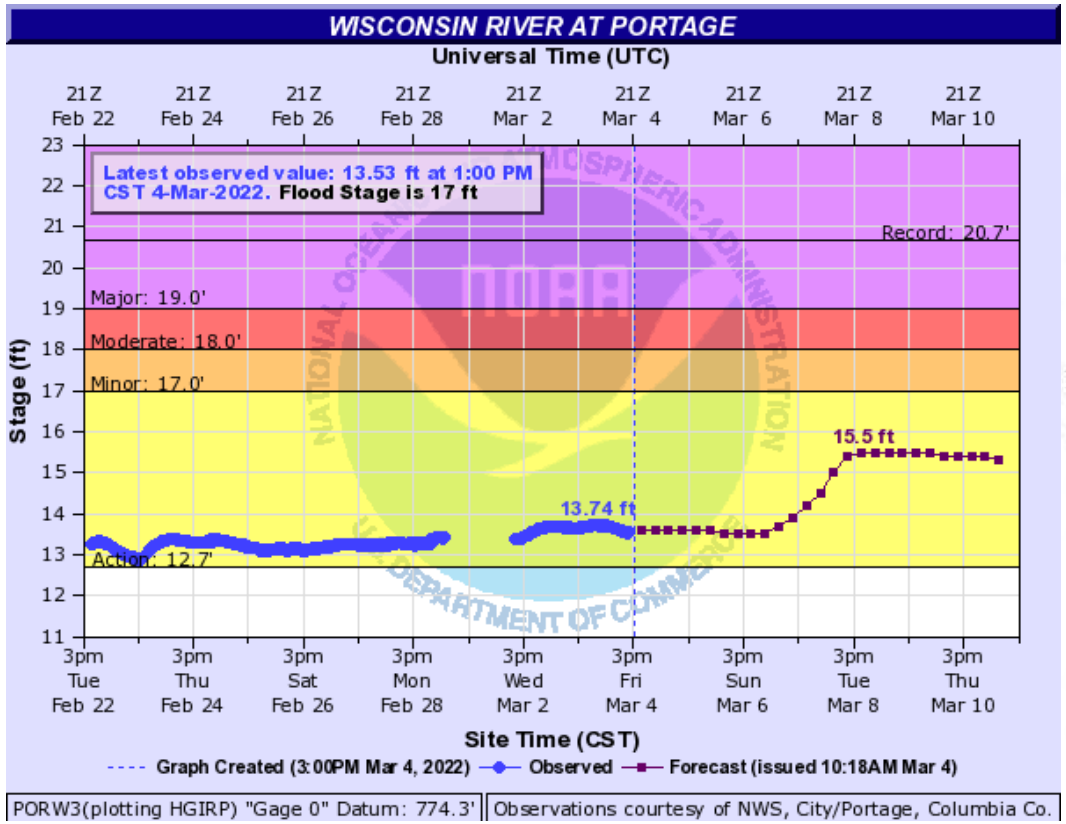
National Weather Service Milwaukee

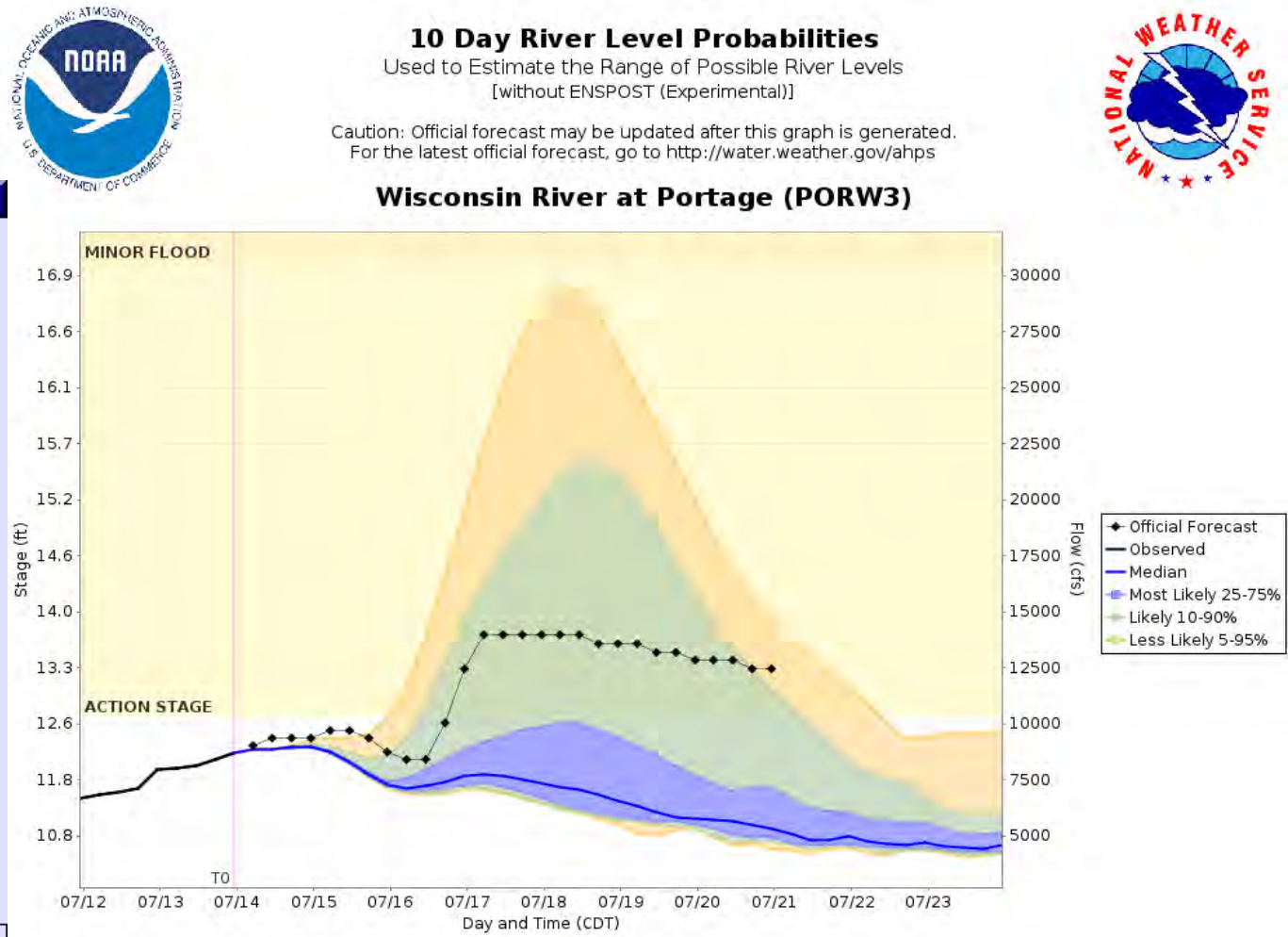




New River Forecast Planning Tool

National Weather Service Milwaukee

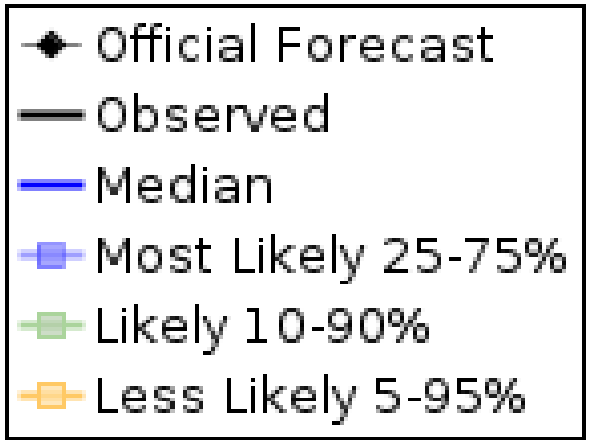


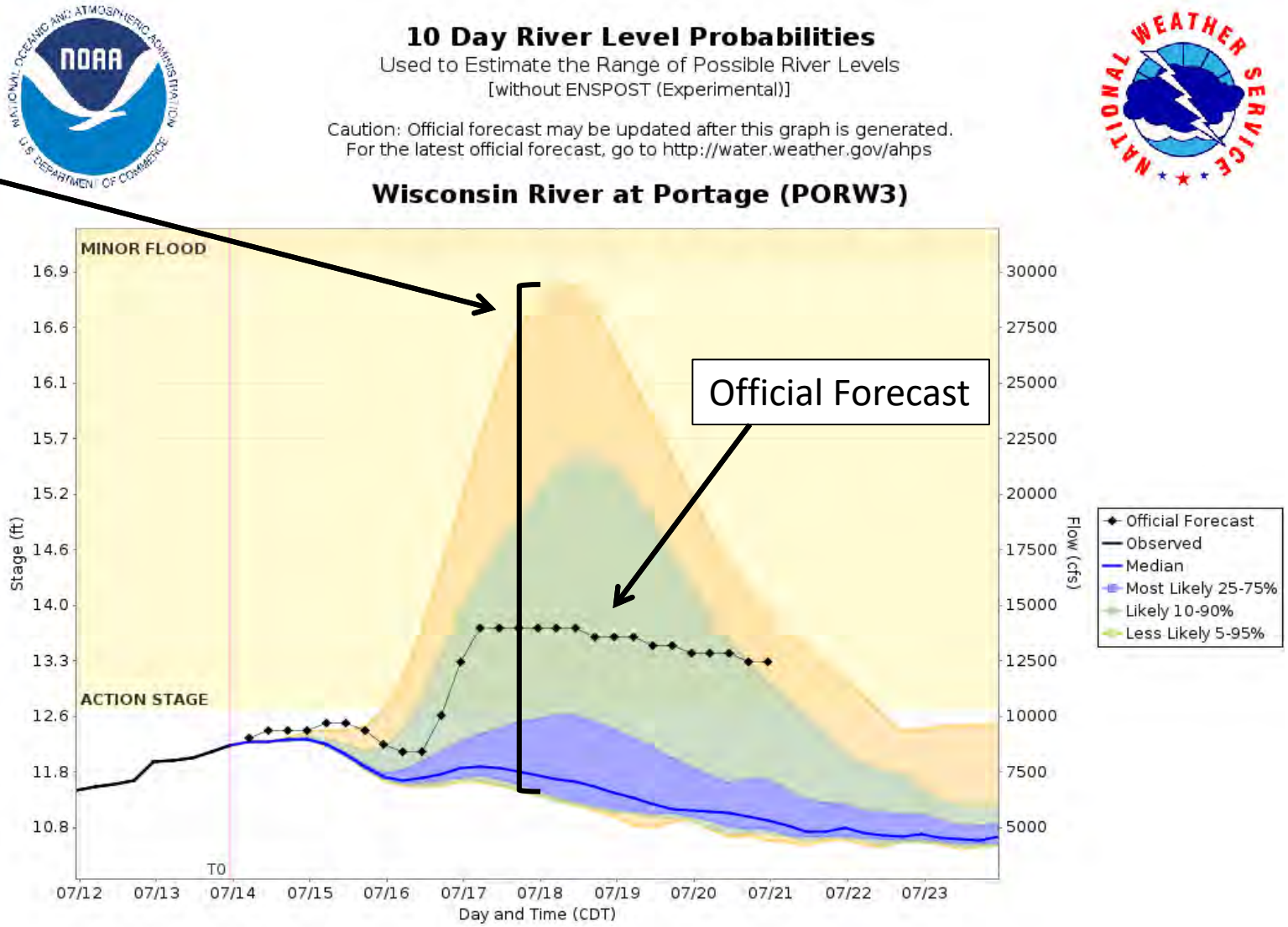


Hydrologic Ensemble Forecast Service (HEFS)
Probabilistic Forecast Hydrograph

National Weather Service Milwaukee

Shaded area shows the range of possible river levels. There is a small chance the level could end up outside this range.





The hydrograph is based on 10 days of precipitation and temperature forecasts (including snow melt) applied to river forecast models. The official forecast includes 24-48 hours of precipitation.

National Weather Service Milwaukee

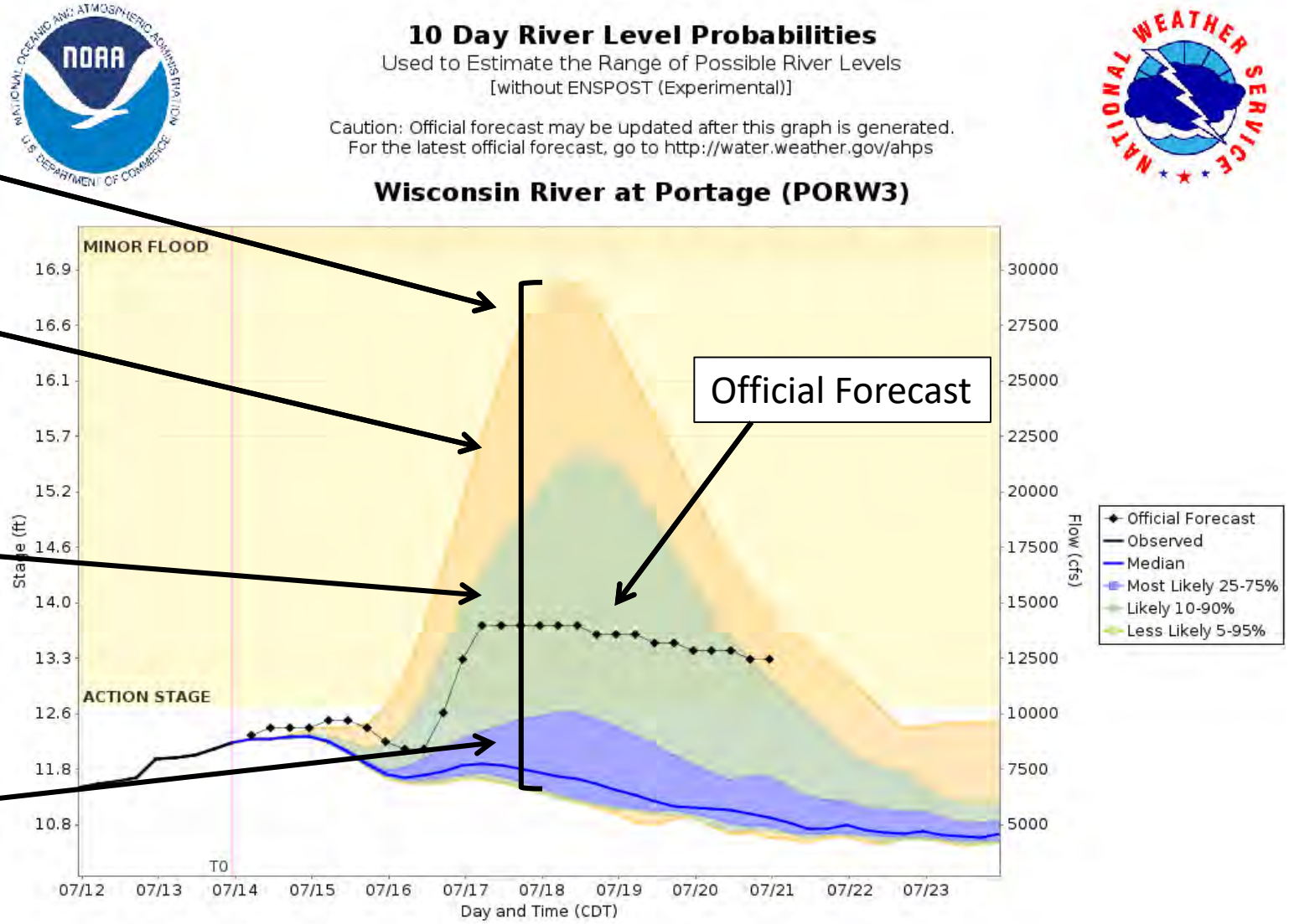
Hydrologic Ensemble Forecast Service (HEFS)
Probabilistic Forecast Hydrograph

Shaded area shows the range of possible river levels. There is a small chance the level could end up outside this range.

~90% of forecasts are within the blue, green, and tan ranges. ~5% forecasts are above and ~5% are below the tan range.

~80% of forecasts are within the blue and green ranges. ~10% of forecasts are above and ~10% are below the green range.

~50% of forecasts are within the blue shaded range. ~25% of forecasts are above and ~25% are below the blue range.



The hydrograph is based on 10 days of precipitation and temperature forecasts (including snow melt) applied to river forecast models. The official forecast includes 24-48 hours of precipitation.

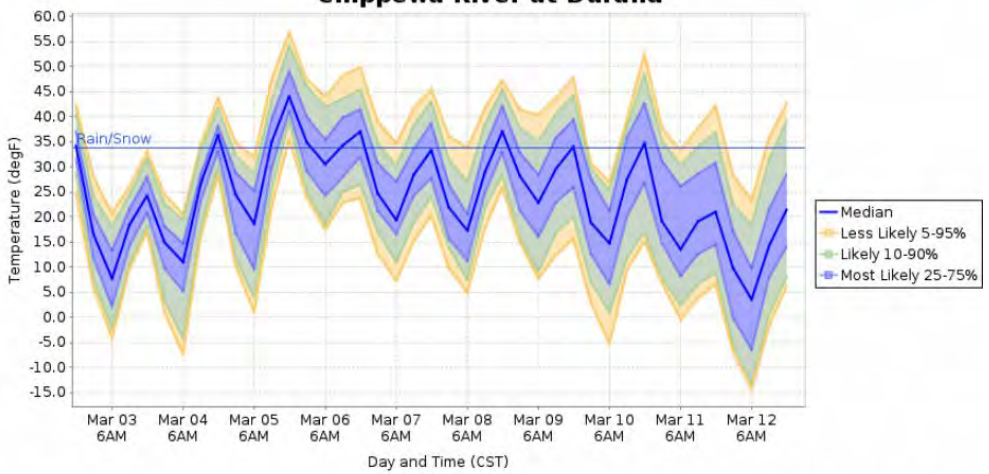
National Weather Service Milwaukee

10 Day Temperature Probabilities

Used to Estimate the Range of Possible River Levels

Caution: Official forecast may be updated after this graph is generated.
For the latest official forecast, go to http://water.weather.gov/ahps

Chippewa River at Durand



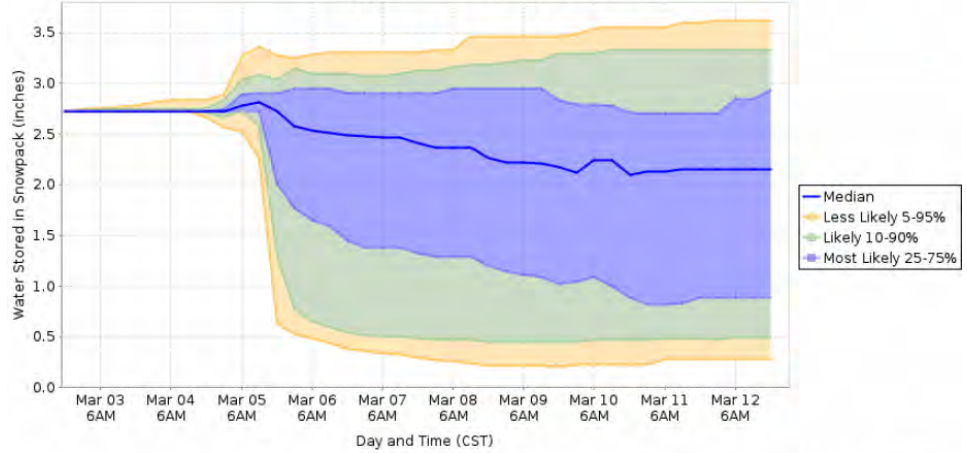
Model runtime: 06:00 PM CST Mar 02 2022

10 Day Simulated Stored Water in Snowpack Probabilities

Used to Estimate the Range of Possible River Levels

Caution: Official forecast may be updated after this graph is generated.
For the latest official forecast, go to http://water.weather.gov/ahps

Chippewa River at Durand



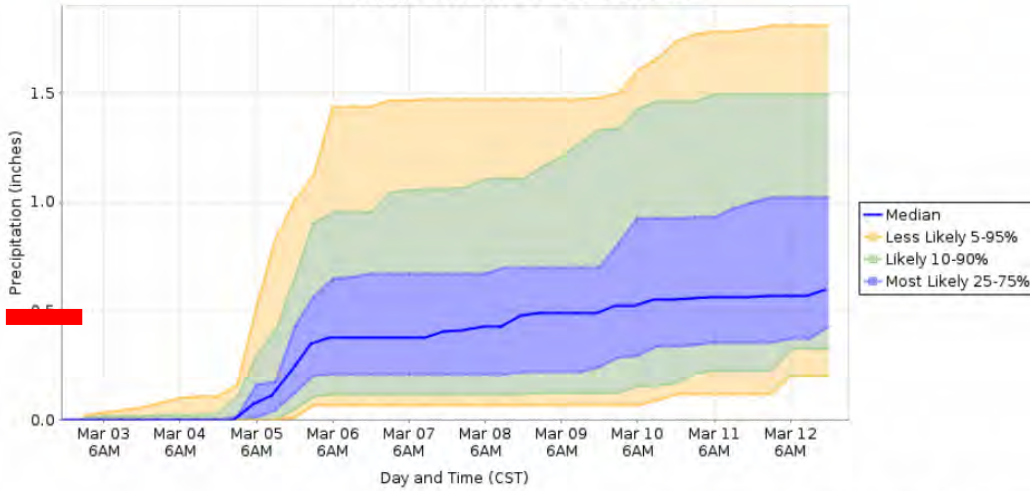
Model runtime: 06:00 PM CST Mar 02 2022
North Central River Forecast Center

10 Day Accumulated Precipitation Probabilities

Used to Estimate the Range of Possible River Levels

Caution: Official forecast may be updated after this graph is generated.
For the latest official forecast, go to http://water.weather.gov/ahps

Chippewa River at Durand



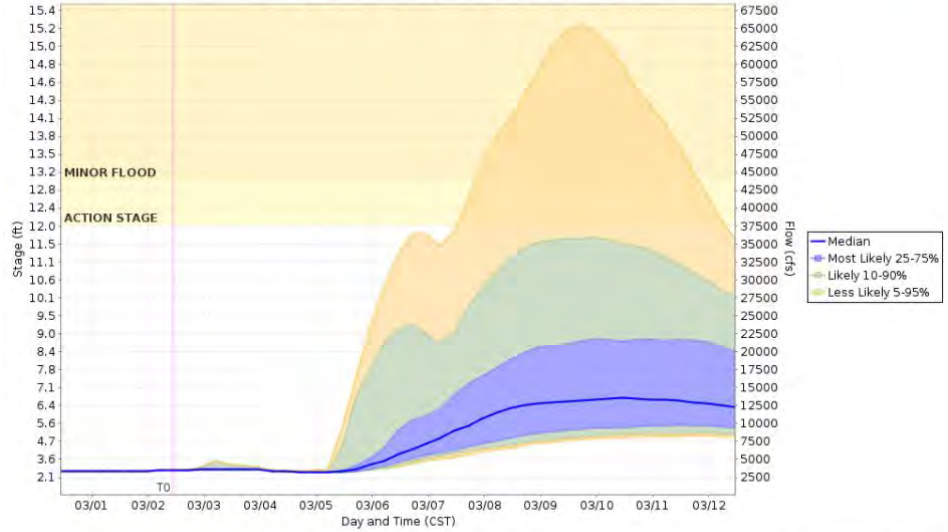
Model runtime: 06:00 PM CST Mar 02 2022
North Central River Forecast Cente

10 Day River Level Probabilities

Used to Estimate the Range of Possible River Levels
[without ENSPOST (Experimental)]

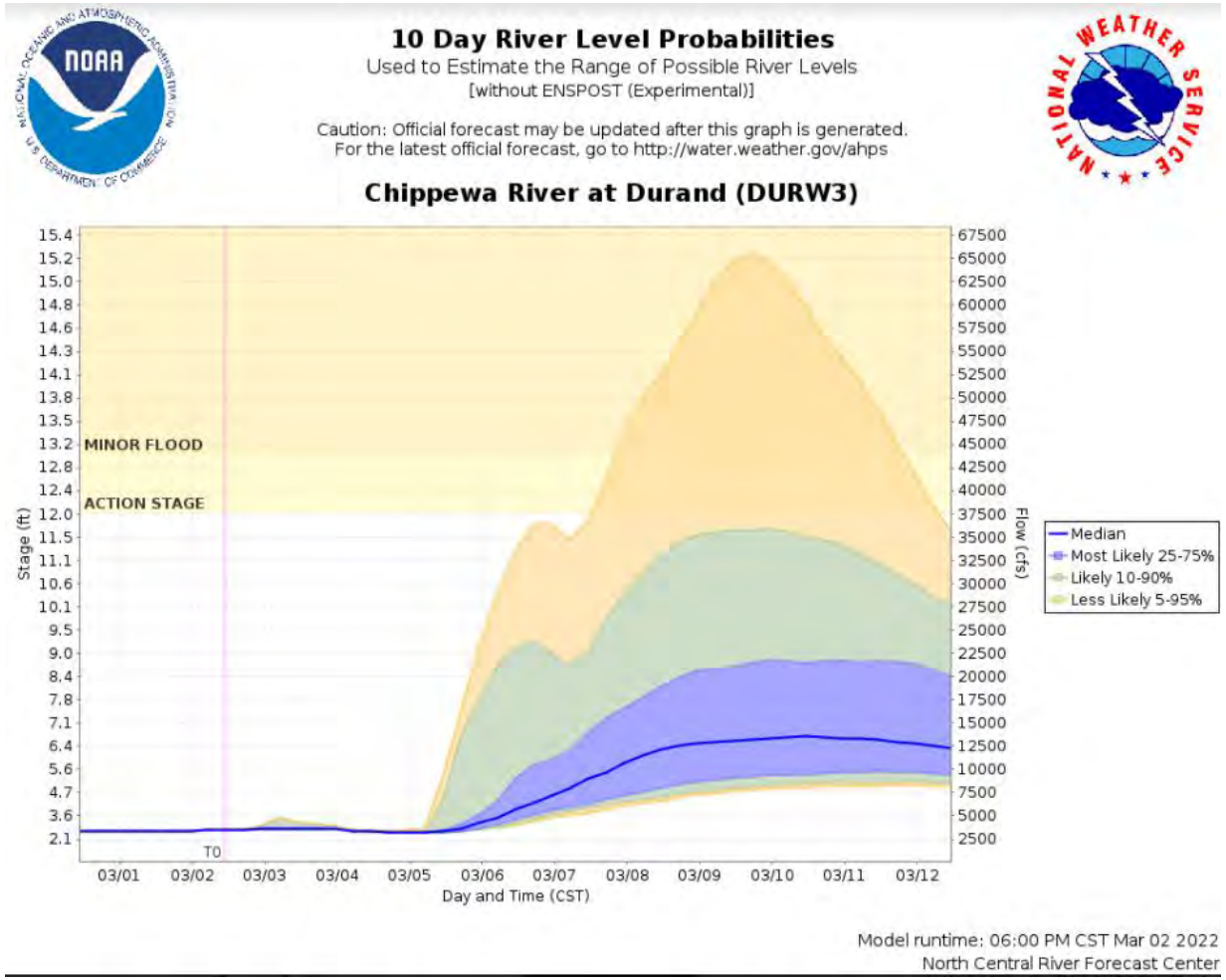
Caution: Official forecast may be updated after this graph is generated.
For the latest official forecast, go to http://water.weather.gov/ahps

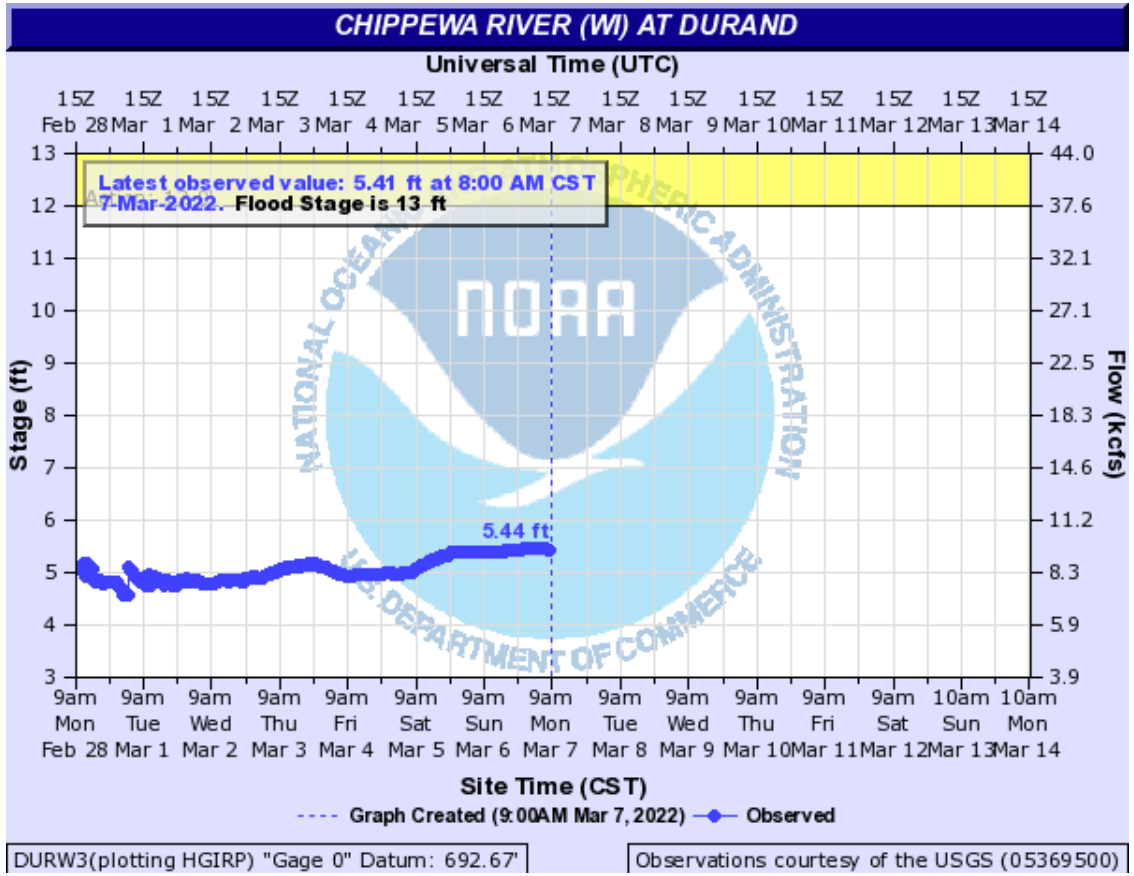
Chippewa River at Durand (DURW3)



Model runtime: 06:00 PM CST Mar 02 2022
North Central River Forecast Center

National Weather Service Milwaukee





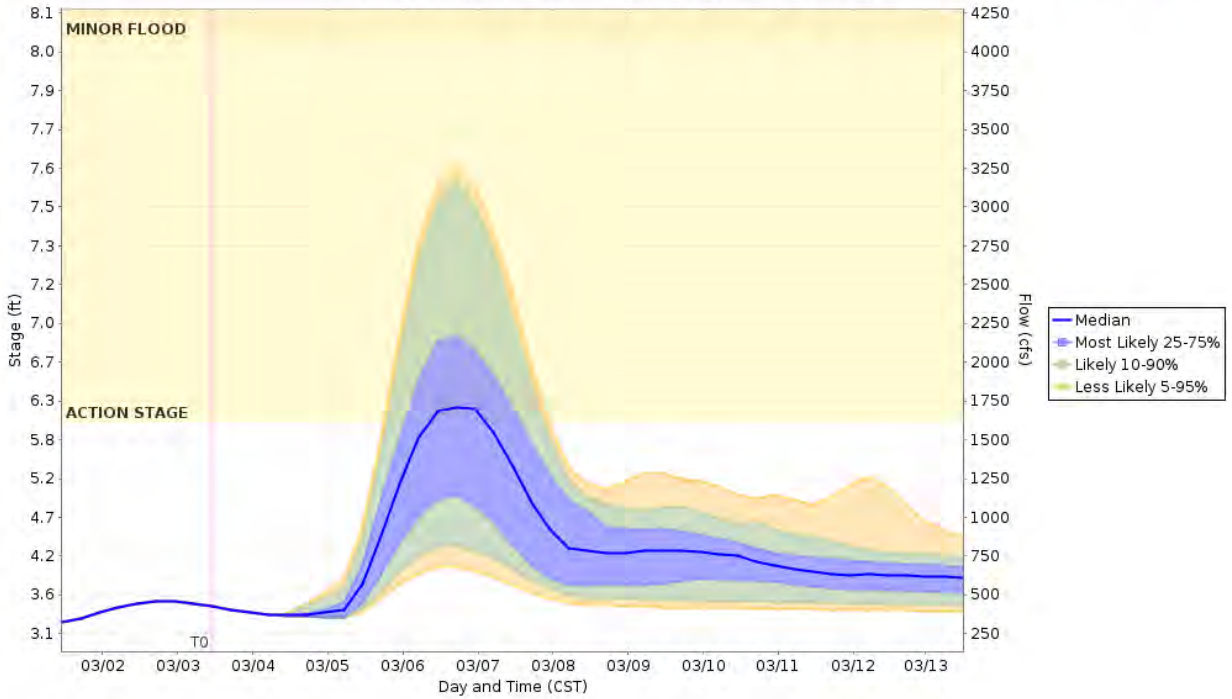
National Weather Service Milwaukee

10 Day River Level Probabilities

Used to Estimate the Range of Possible River Levels
[without ENSPOST (Experimental)]

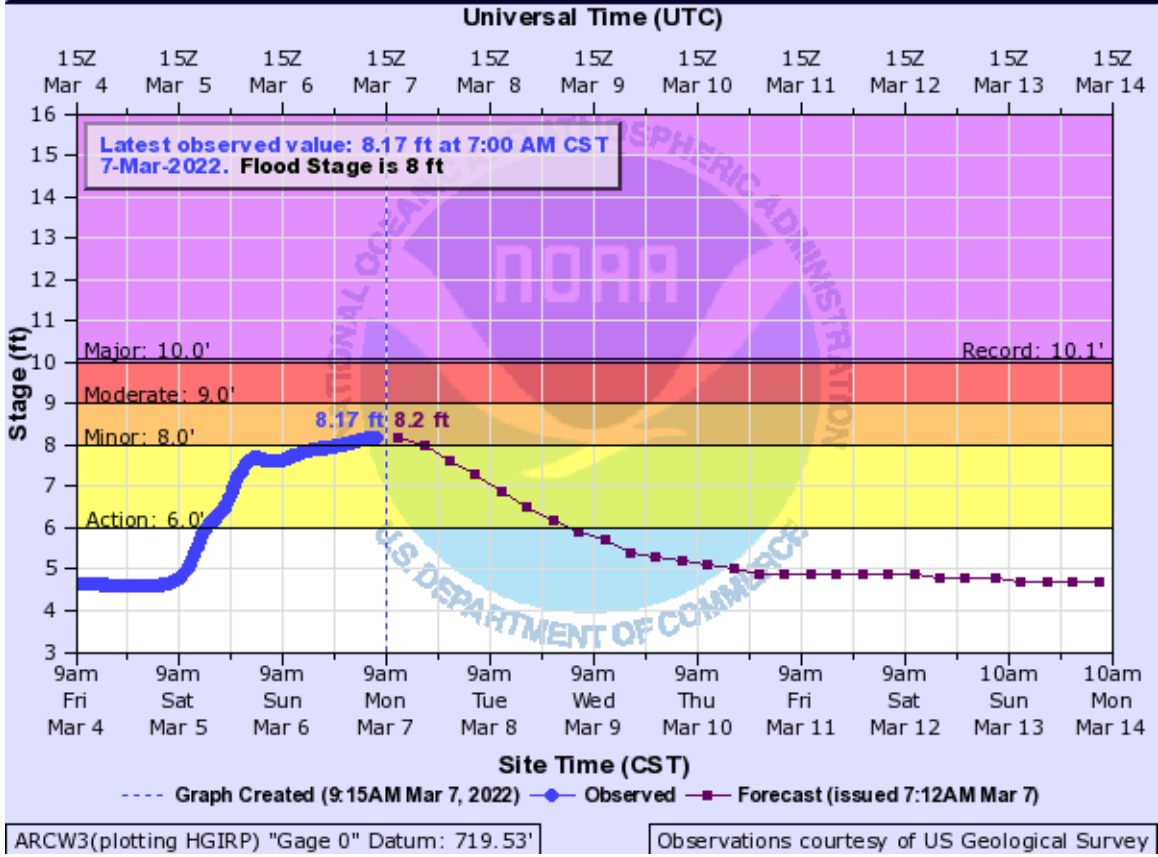
Caution: Official forecast may be updated after this graph is generated.
For the latest official forecast, go to http://water.weather.gov/ahps

Trempealeau River at Arcadia (ARCW3)



Model runtime: 06:00 PM CST Mar 03 2022
North Central River Forecast Center

TREMPEALEAU RIVER AT ARCADIA



ARCW3(plotting HGIRP) "Gage 0" Datum: 719.53'

Observations courtesy of US Geological Survey

How To Find the Probability Info

National Weather Service Milwaukee

NWS Forecast Office Milwaukee/Sullivan, WI

Weather.gov > Milwaukee/Sullivan, WI

Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past

RADAR UPDATE 7:25 AM

Snow starting to end from west to east. However, roads this morni
morning commute. Only minor additional accumulations expected t

Click a location below for detailed forecast.

Watches, Warnings & Advisories

Zoom Out

Wind Chill Advisory

Special Weather Statement

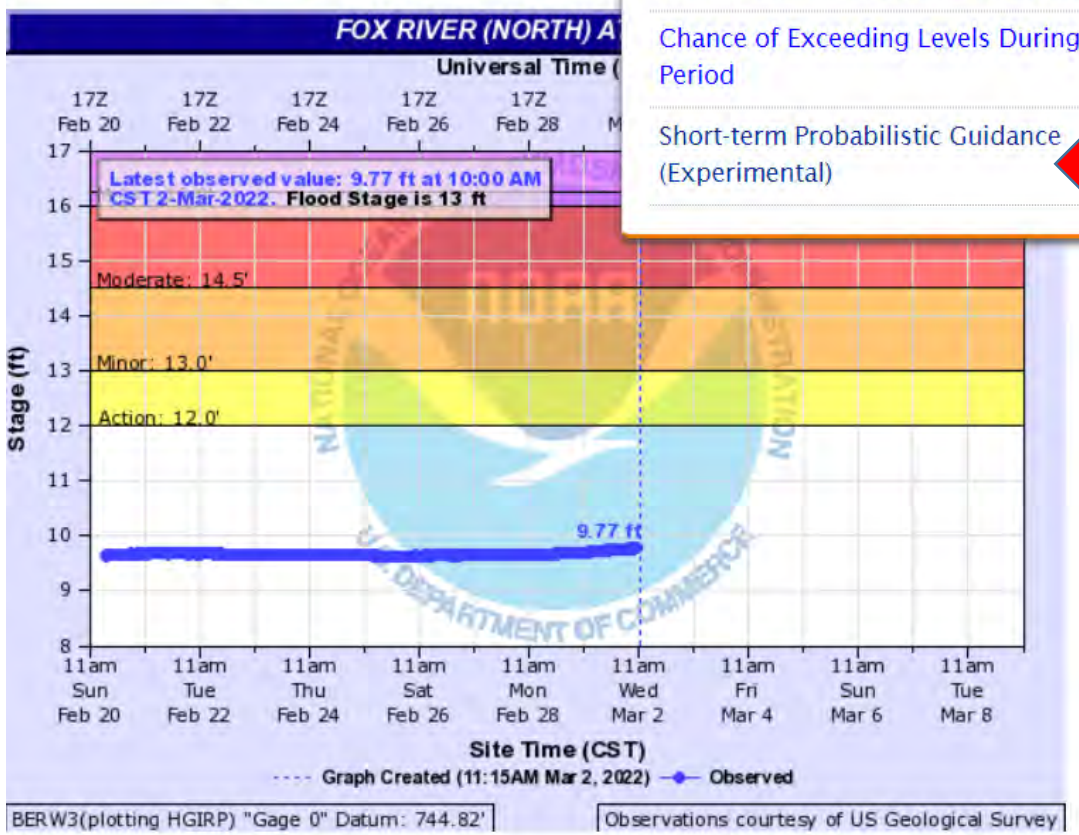
Hazardous Weather Outlook

Weather Forecast Office Milwaukee/Sullivan, WI — North Central River Forecast Center

Hydrograph | River at a Glance | Download | Probability Information

Auto Refresh: OFF

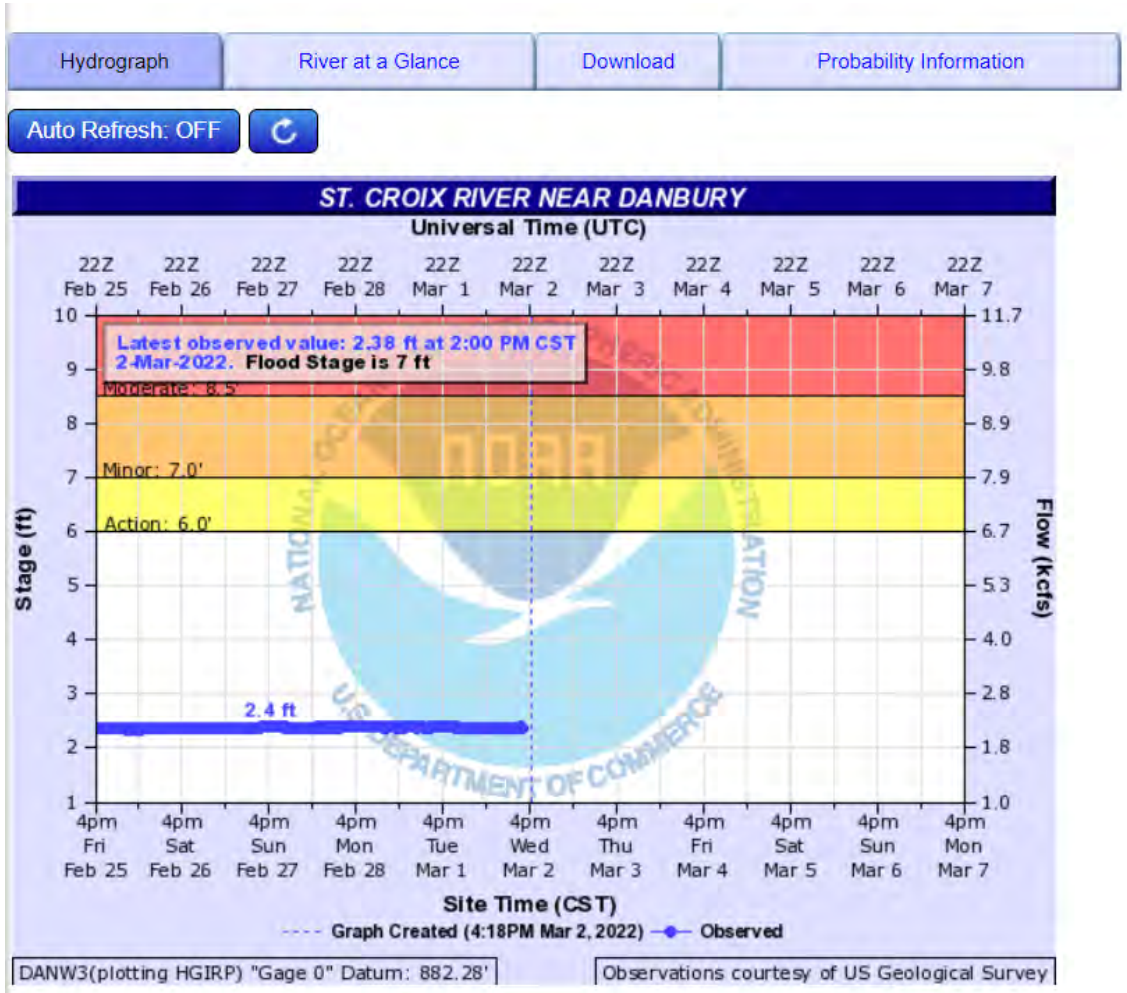
- Weekly Chance of Exceeding Levels
- Chance of Exceeding Levels During Entire Period
- Short-term Probabilistic Guidance (Experimental)



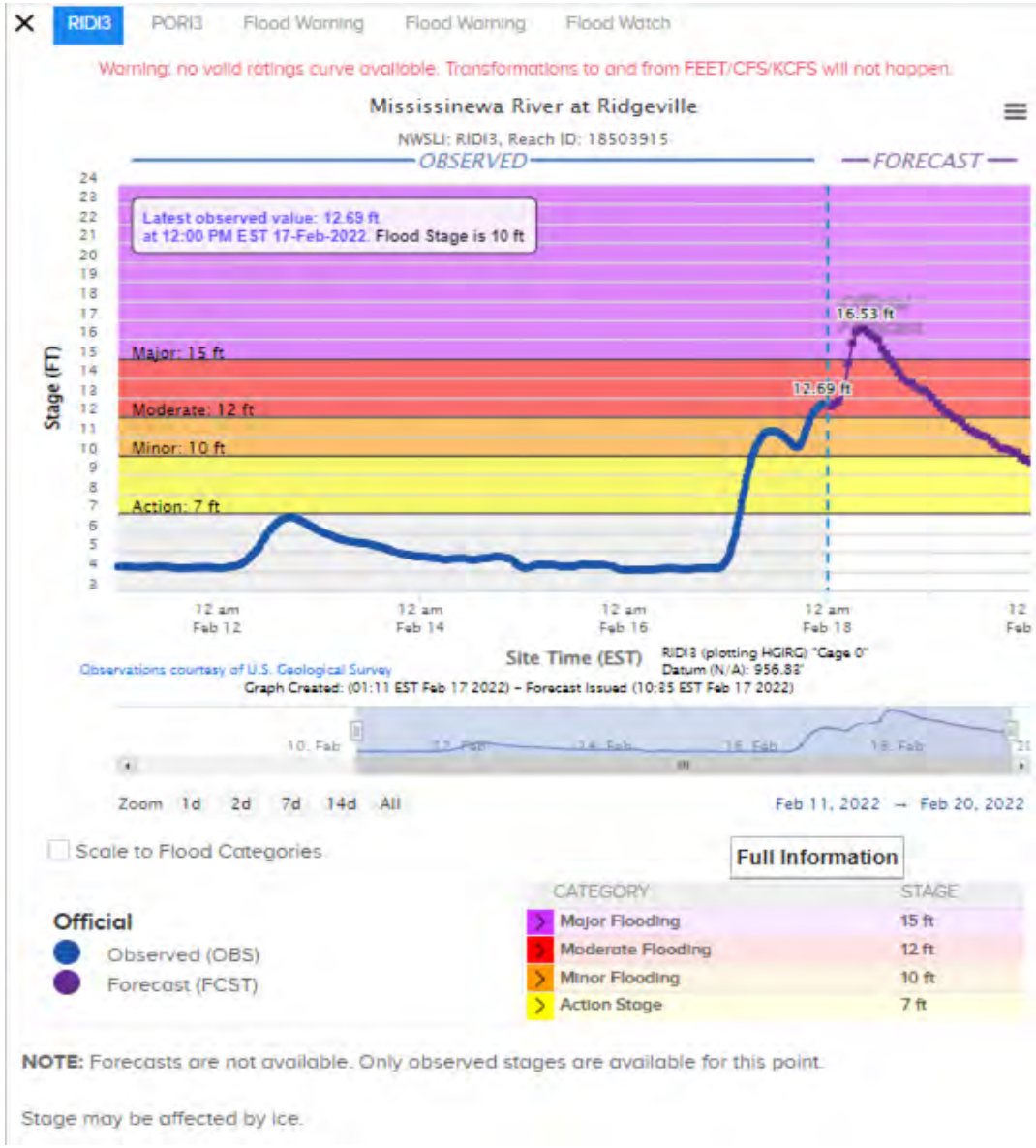
New Website Sneak Peak

National Weather Service Milwaukee

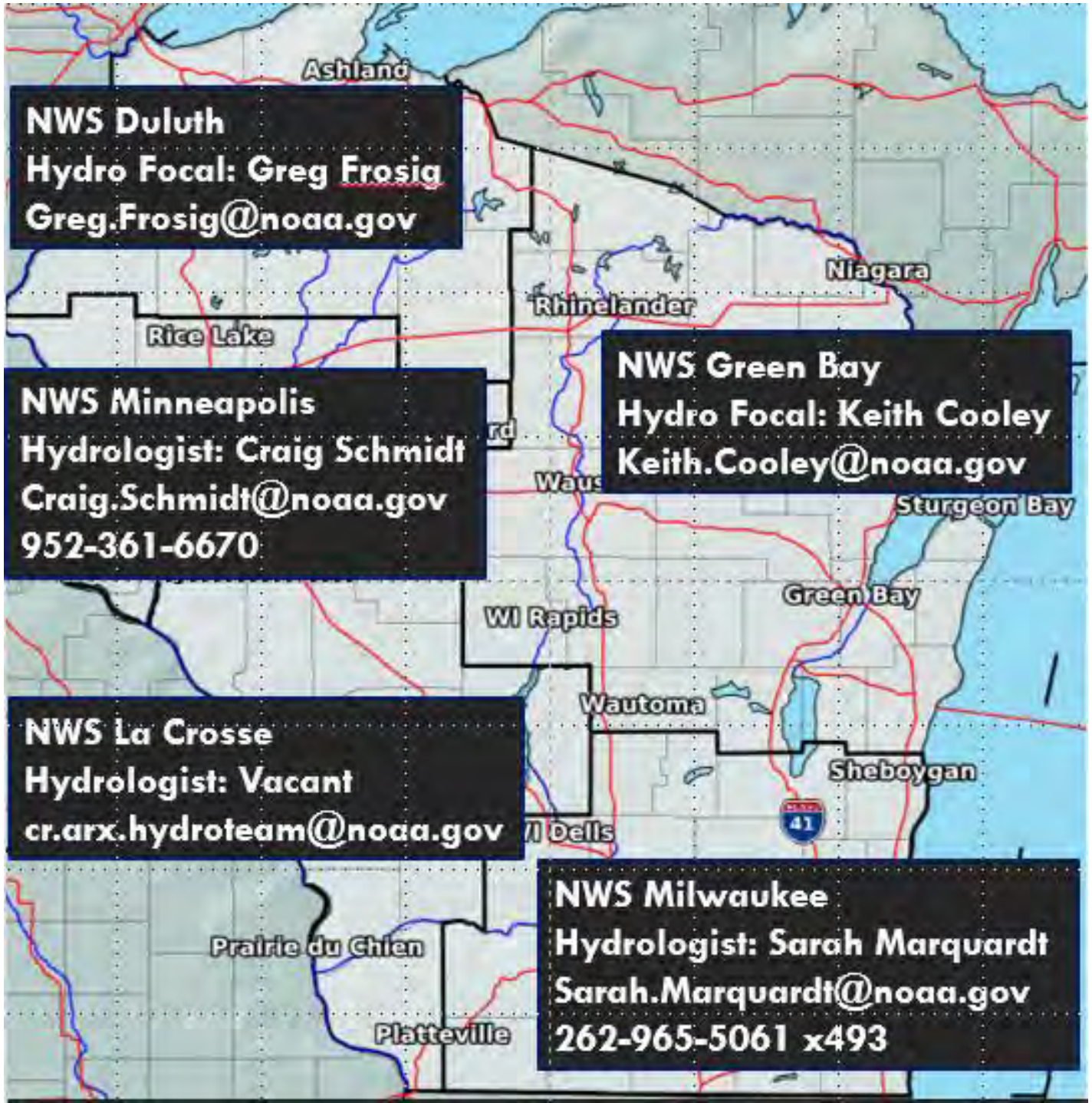
Advanced Hydrologic Prediction Service



National Water Prediction Service



National Weather Service Milwaukee



The HYSPLIT Model

Support to a Hazmat Incident

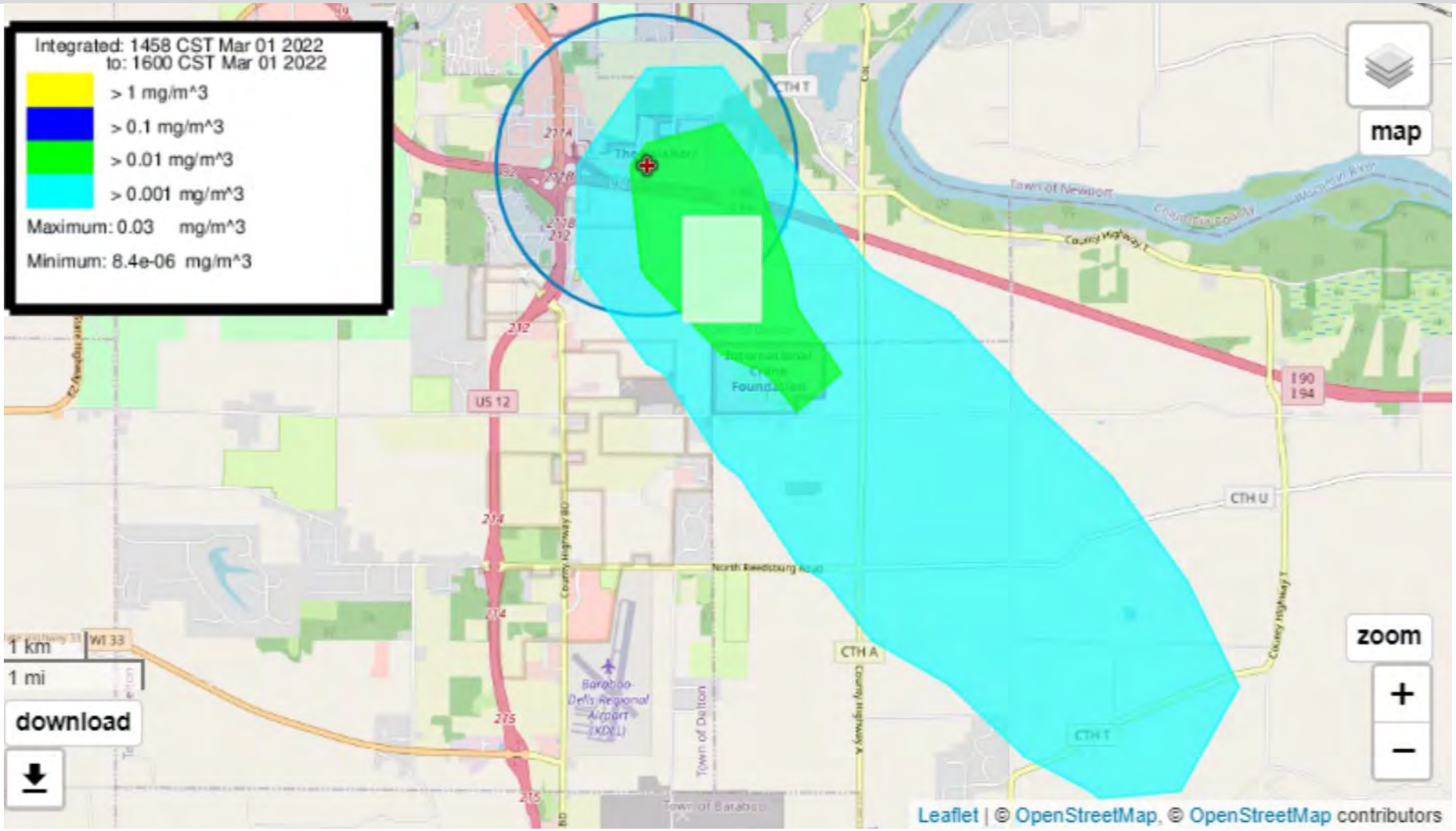
Tim Halbach
Warning Coordination Meteorologist
NWS Milwaukee/Sullivan

HYSPLIT

Support to a Hazmat Incident

In the event of an incident that results in a release of pollutants or hazardous materials, NWS personnel can quickly run the "HYSPLIT" model that forecasts the dispersion, concentration and trajectory of the plume.

Based on current and forecast weather conditions, a forecast plume location will be generated.

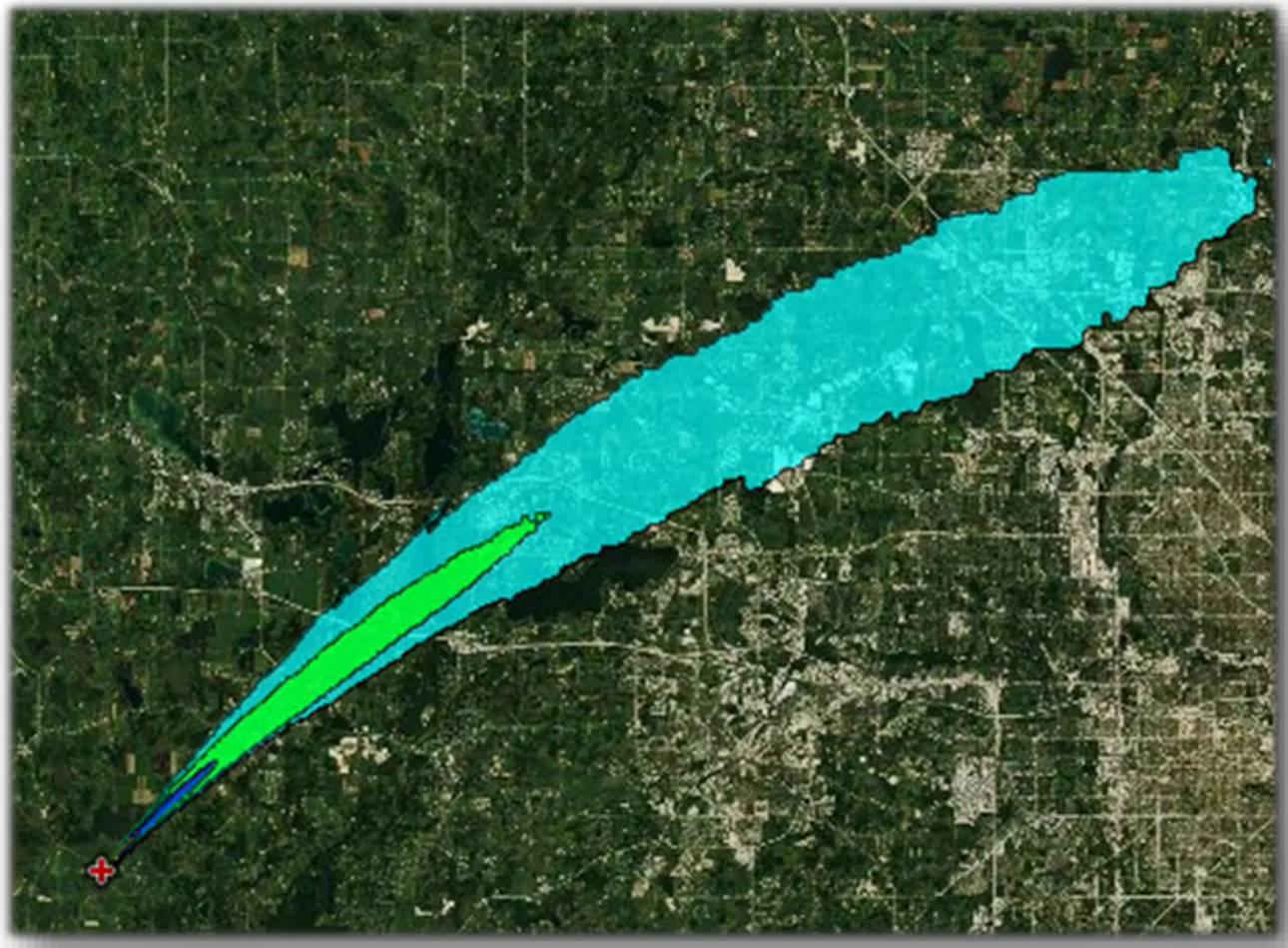


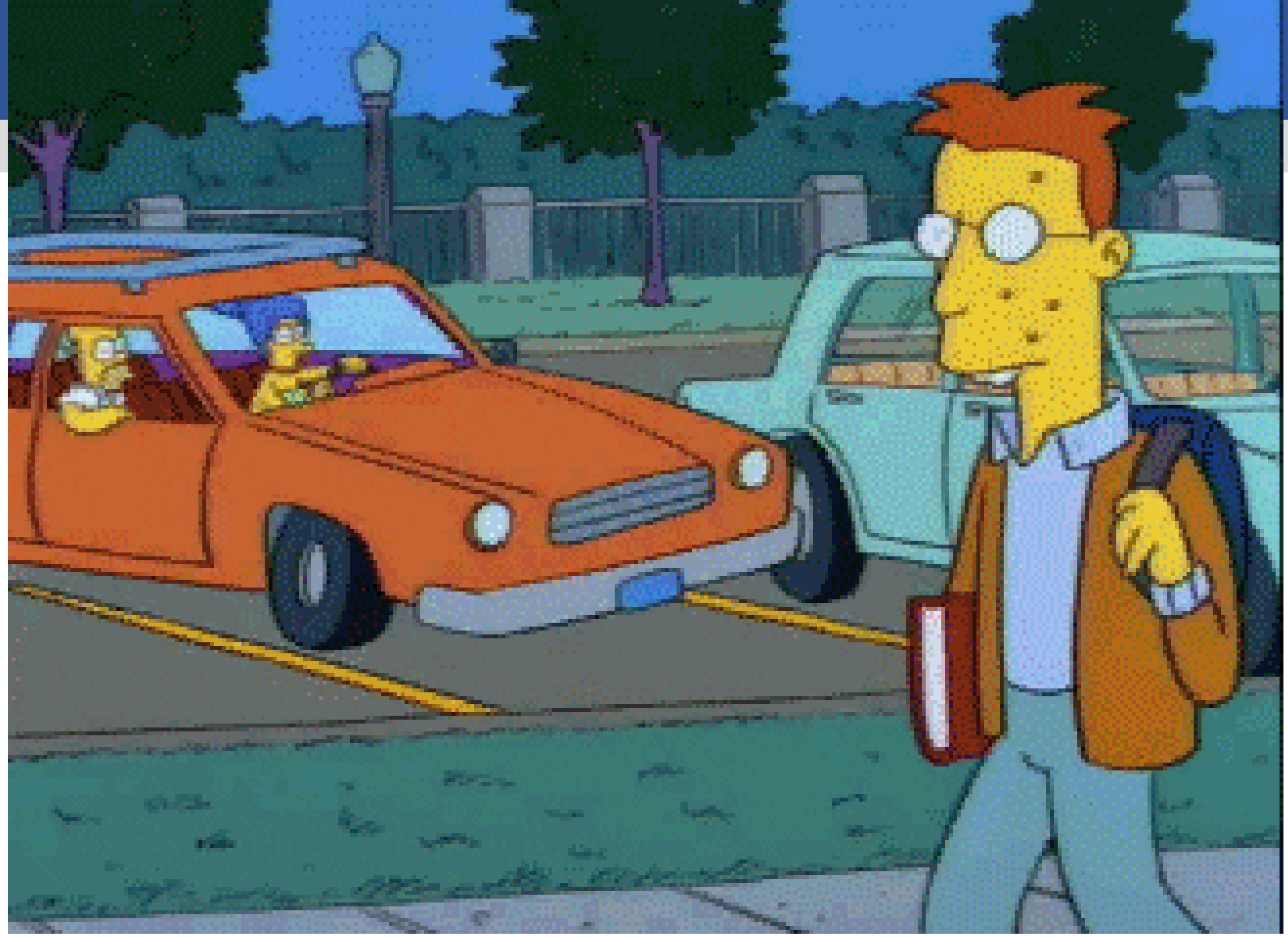
HYSPLIT

What is it?

Hybrid Single-Particle Lagrangian Trajectory Model

A complete system for computing simple air parcel trajectories as well as complex transport, dispersion, chemical transformation and deposition simulations.



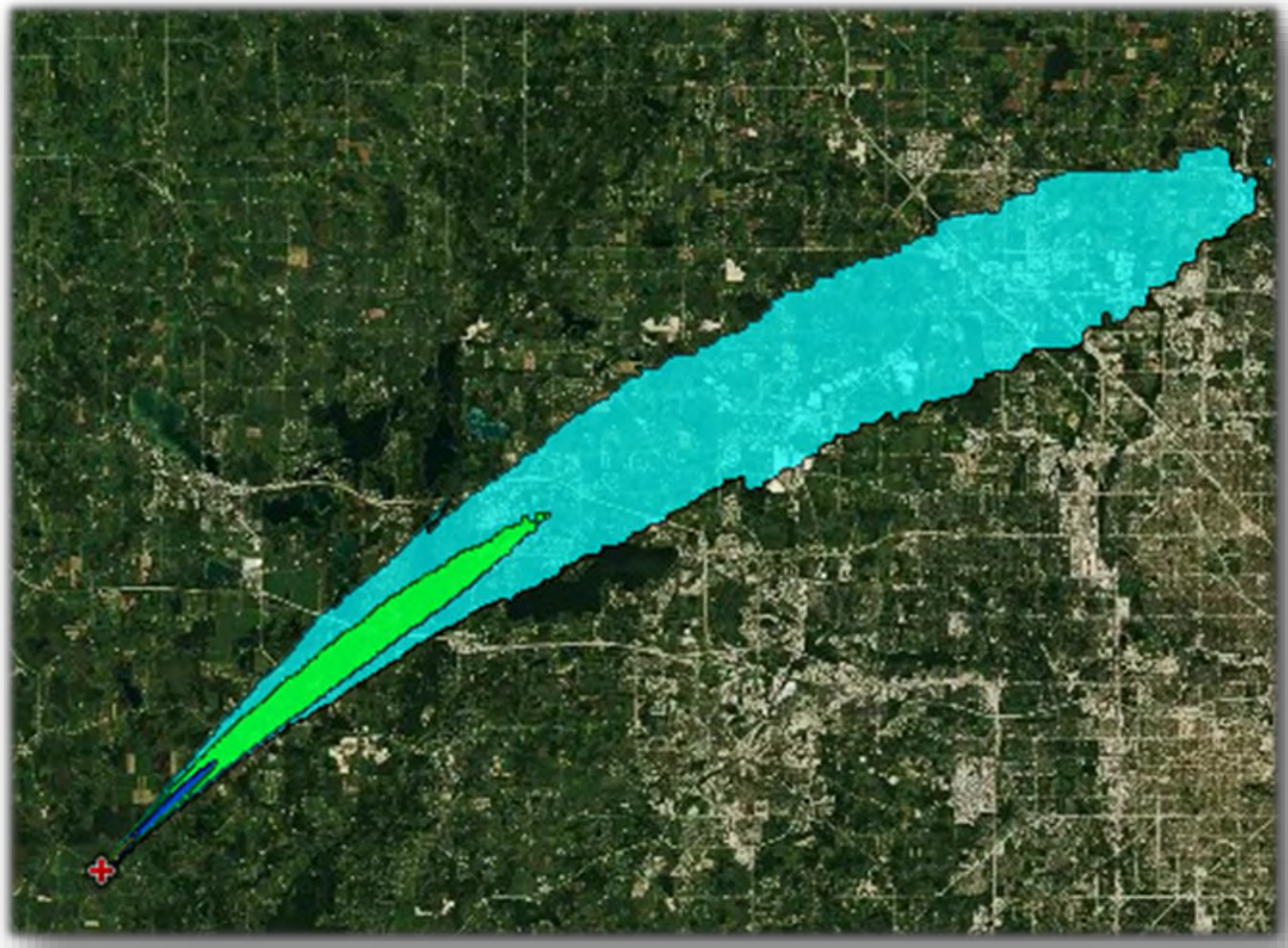

NATIONAL WEATHER SERVICE

HYSPLIT

What is it?

Hybrid Single-Particle Lagrangian Trajectory Model

Where's the bad stuff gonna go?



How can you use this?

Real life and Table Top Exercises

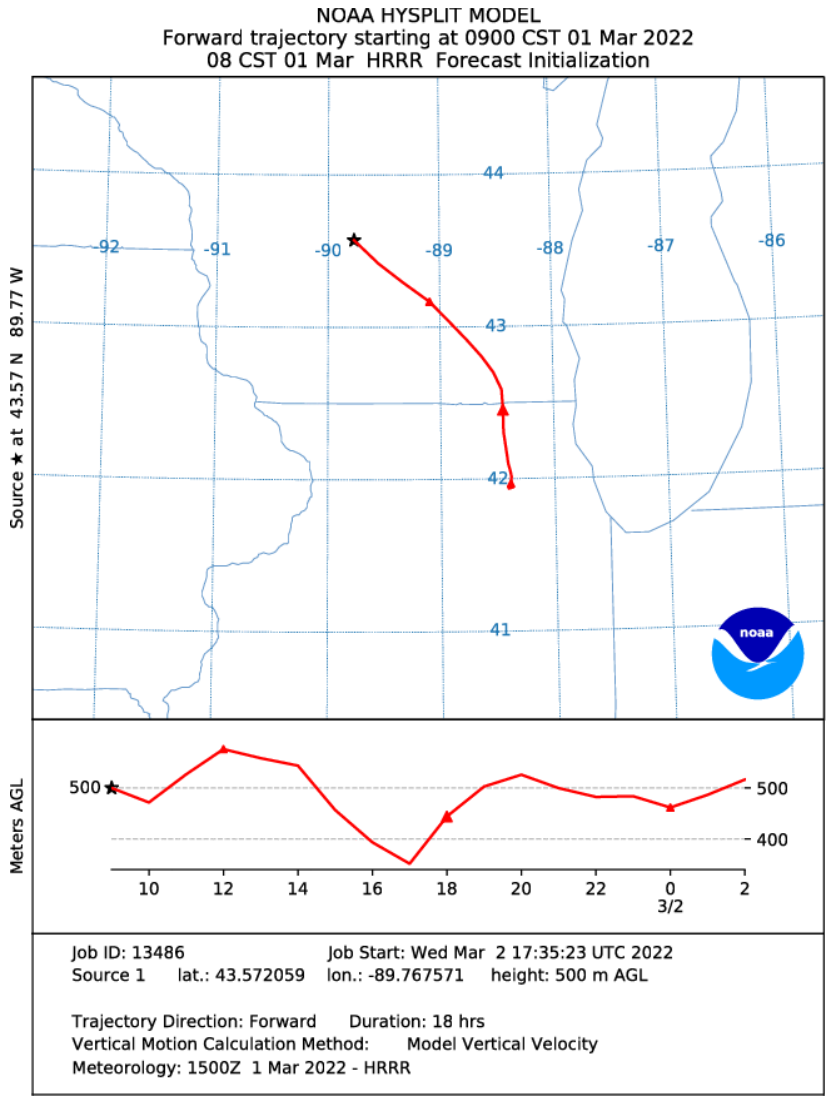
Husky Energy Oil Refinery-Duluth

Cheese Factory TTX

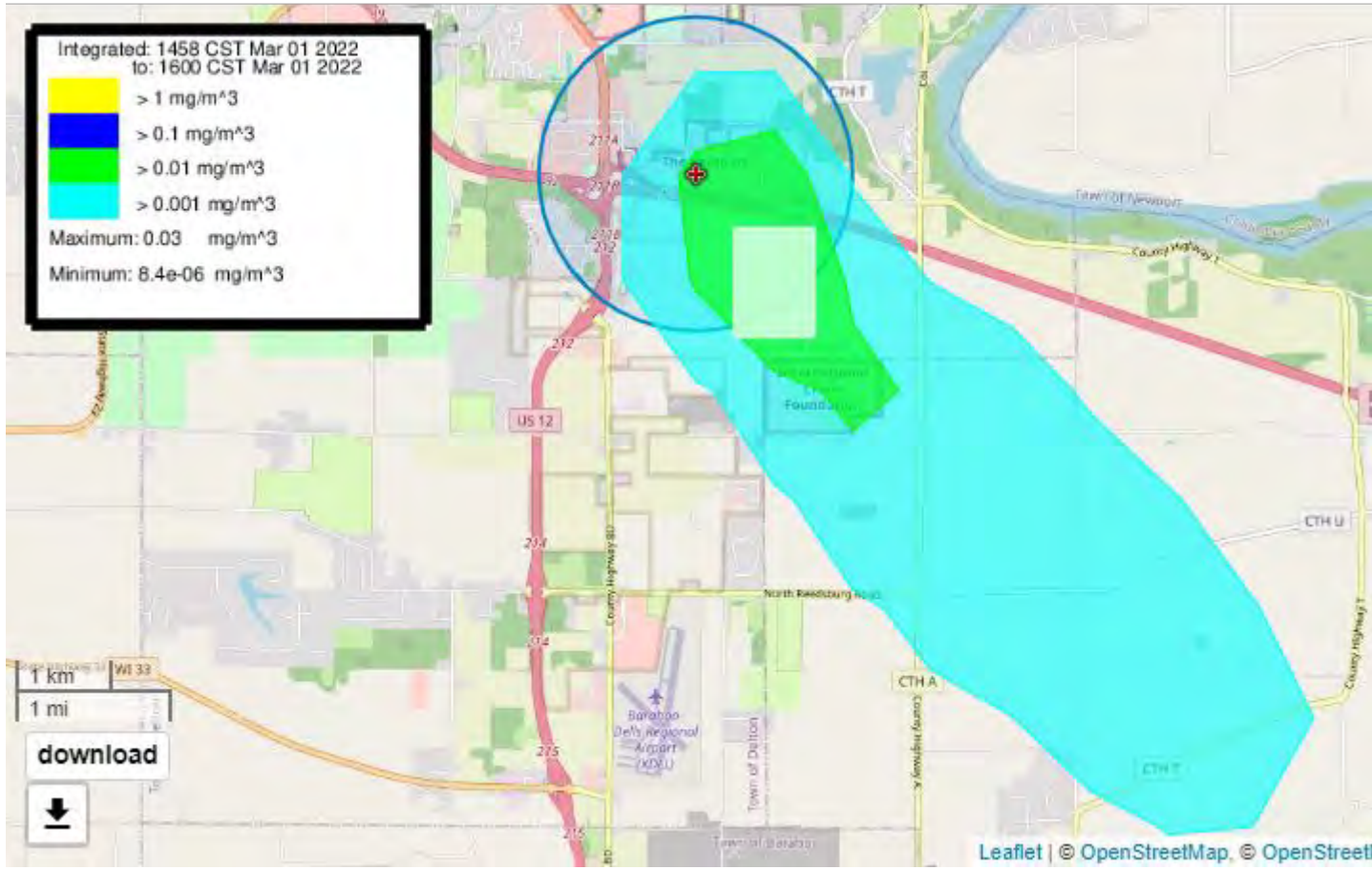
Trajectory vs Dispersion

Two main options

Trajectory is more for bigger picture



Dispersion is the main one you'd likely use



What information do we need?

Support to a Hazmat Incident

Release Type

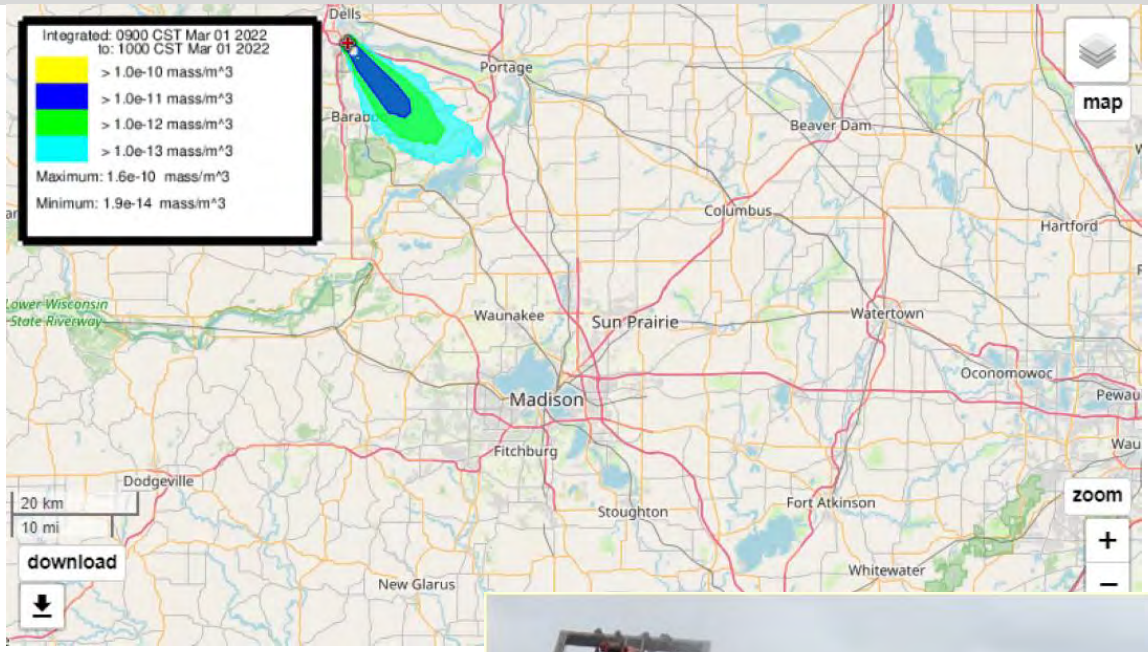
- Unknown Material (Generic Mass, <24 hrs)
- Unknown Material (Generic Mass, long duration)
- Chemical
- Radiological Multi-species Nuclear Detonation

Location

- Address or Lat/Lon…need to be specific

Release Details

- Top
- Bottom
- Quantity (lb, kg, mass)
- Duration (how long do you expect it to take?)

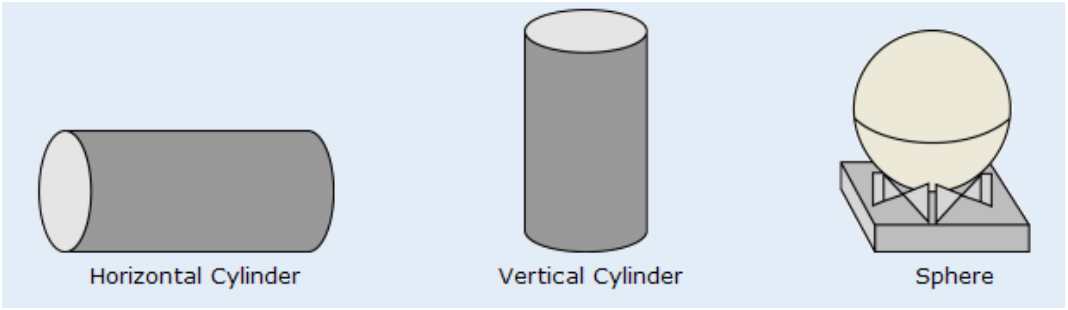


What information do we need?

Support to a Hazmat Incident

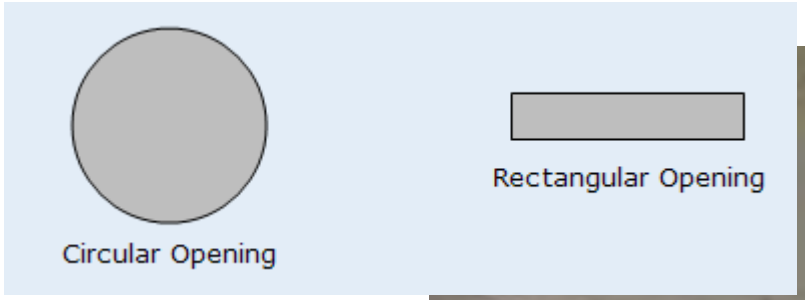
If a Chemical Release:

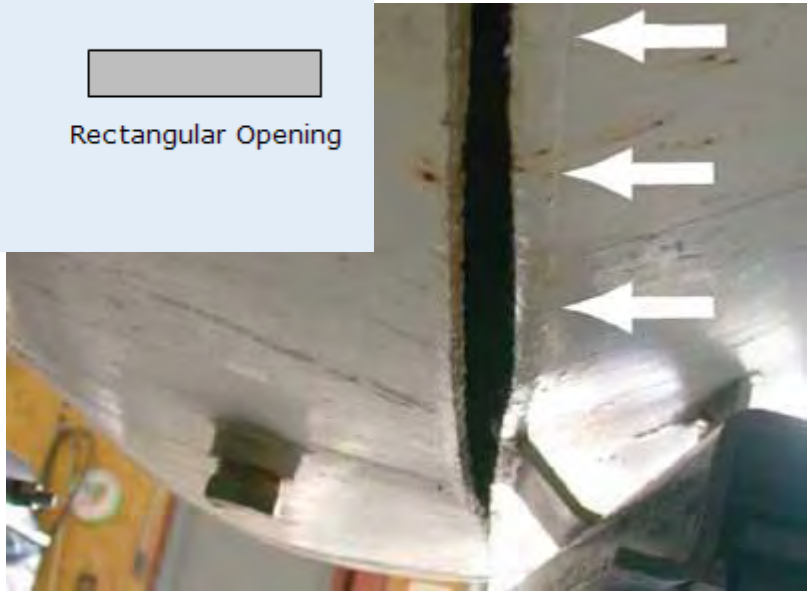
- Hazmat? Industrial or Transportation
- Chemical Name or CAS Number
- Release Type: Tank, Puddle, Gas Pipeline, Direct
- Tank:



- Tank Size: Diameter, Length, Volume
  - Anhydrous Ammonia Nurse Tank

- Chemical Storage Temperature Inside of Tank
  - Outside air temperature?
- Mass of Chemical in Tank (lbs, tons, kgs)
- Dimensions of Opening in Tank
  - Shape of Opening-Circular or Rectangular
- Type of Leak: Hole or Pipe
- Height of Leak: Bottom of leak above bottom of tank)



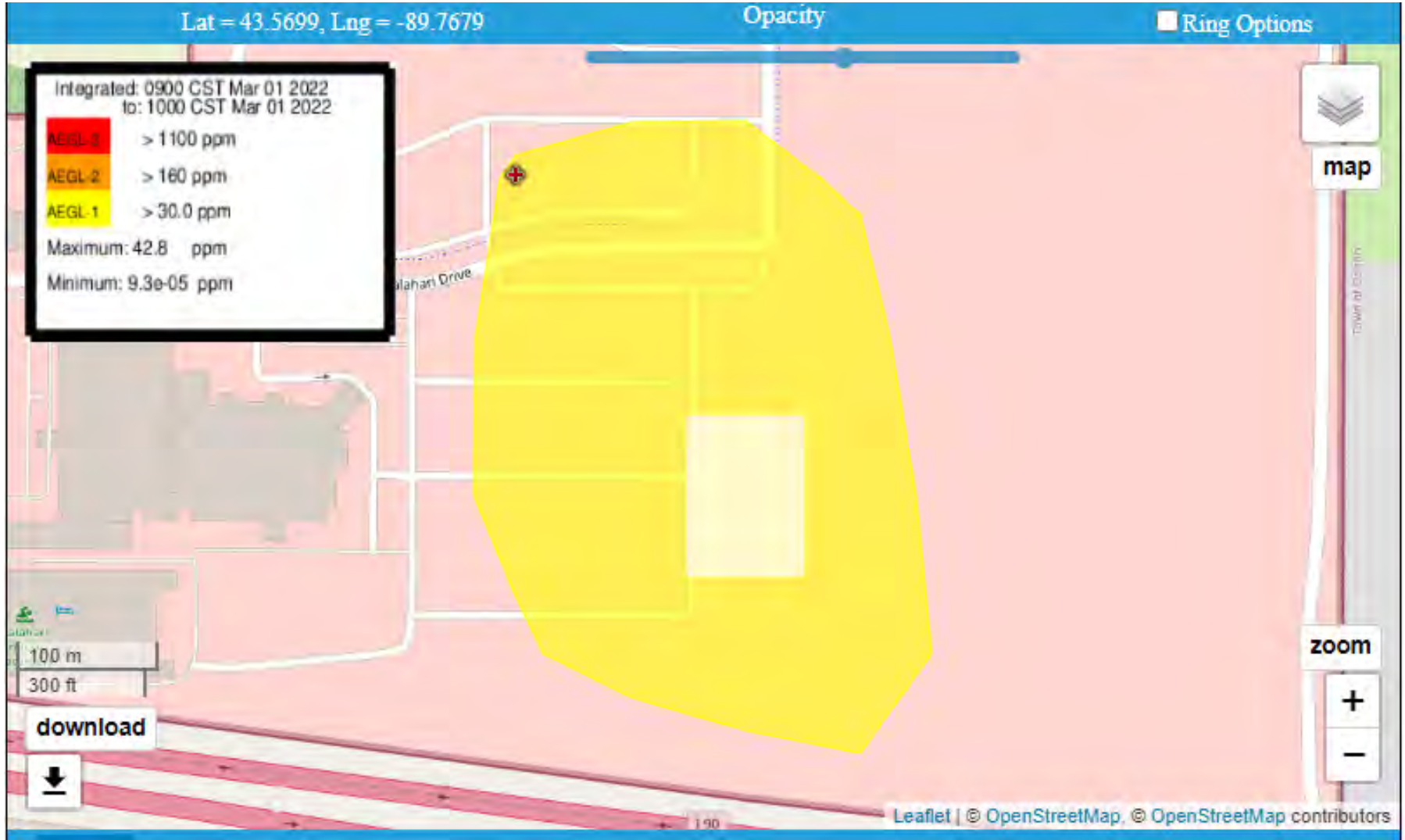


What information do we need?

Support to a Hazmat Incident

If a Chemical Release:

- Different chemicals will respond differently depending on the current and forecast weather conditions



HYSPLIT

Support to a Hazmat Incident

Real Life Incident:
Contact your local NWS office Operations (Phone)

Table Top Exercise:
Contact your local NWS office Warning Coordination Meteorologist