

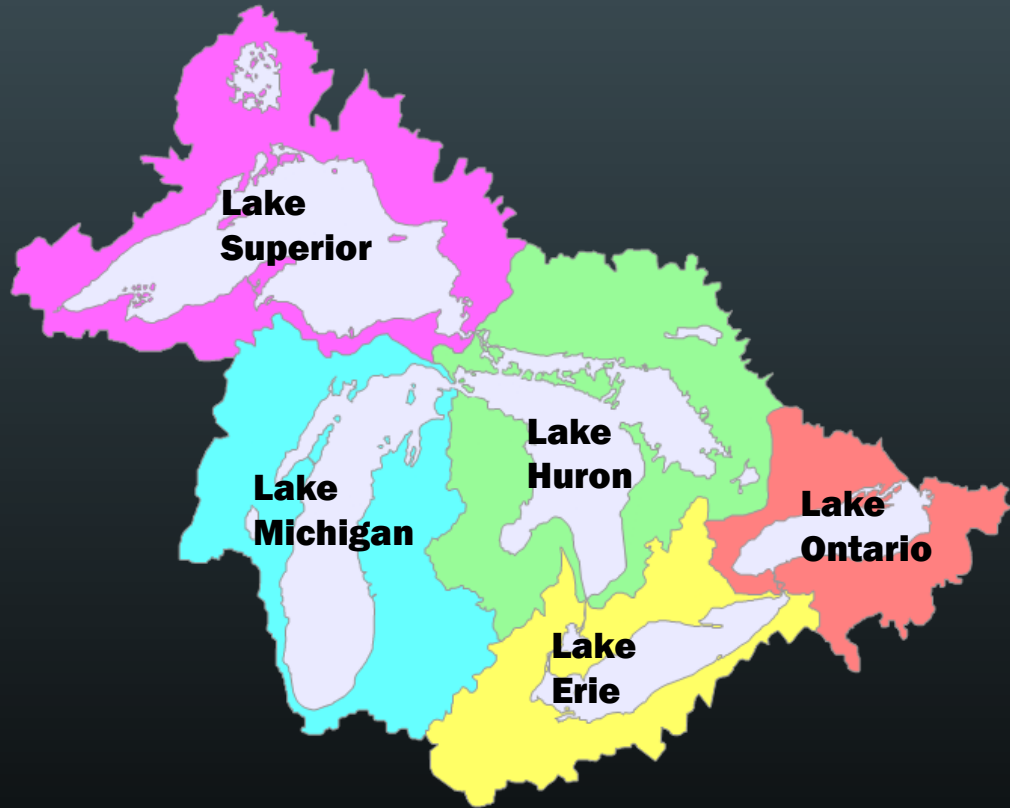
National Weather Service Updates

**Michigan – Local Emergency Management Coordinators Webinar
January 10, 2020**

National Weather Service...Helping to Build a Weather-Ready Nation



If The Entire Great Lakes Drainage Area Had Rain...



Roughly Half of That Rain

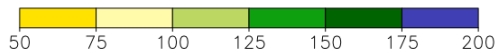
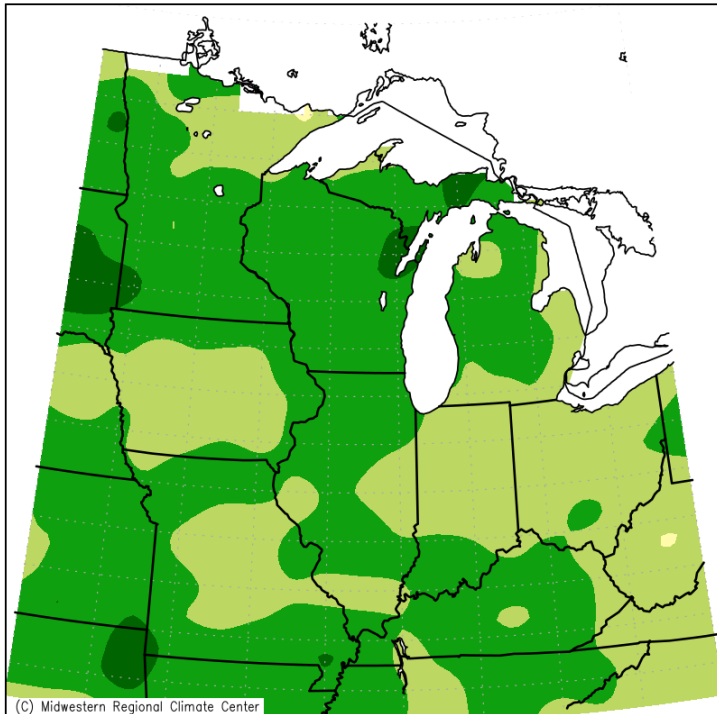
Would Fall Directly Into the Lakes

Great Lakes Drainage Area
Where Water Flows

It Has Been Awfully Wet Recently...



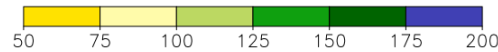
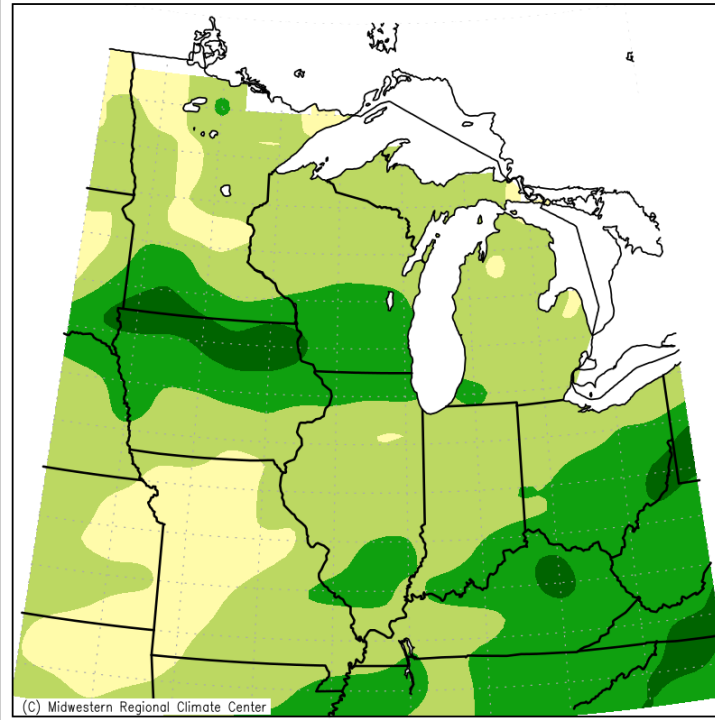
Accumulated Precipitation: Percent of Mean
January 1, 2019 to December 31, 2019



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 1/7/2020 6:28:56 AM CST

2019

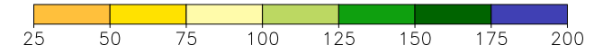
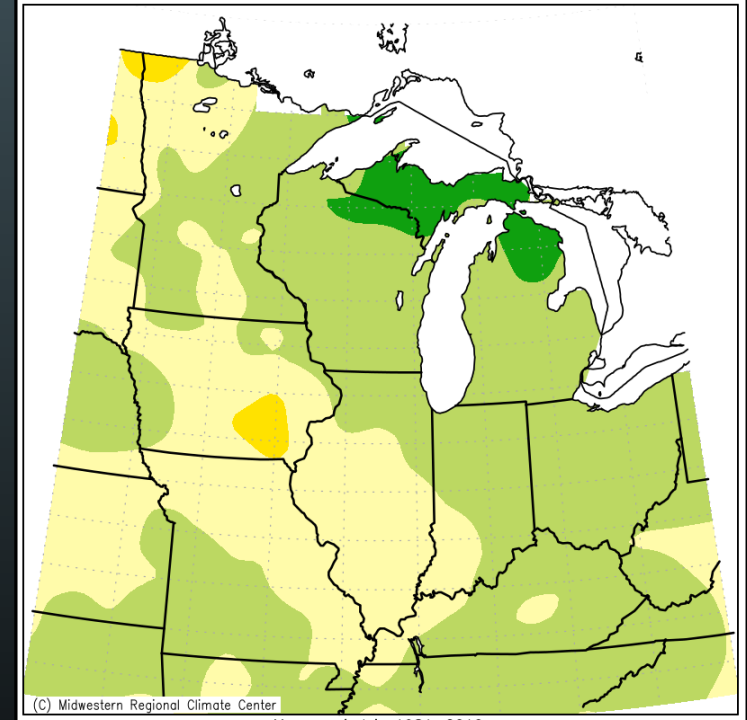
Accumulated Precipitation: Percent of Mean
January 1, 2018 to December 31, 2018



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 12/16/2019 12:12:56 PM CST

2018

Accumulated Precipitation: Percent of Mean
January 1, 2017 to December 31, 2017

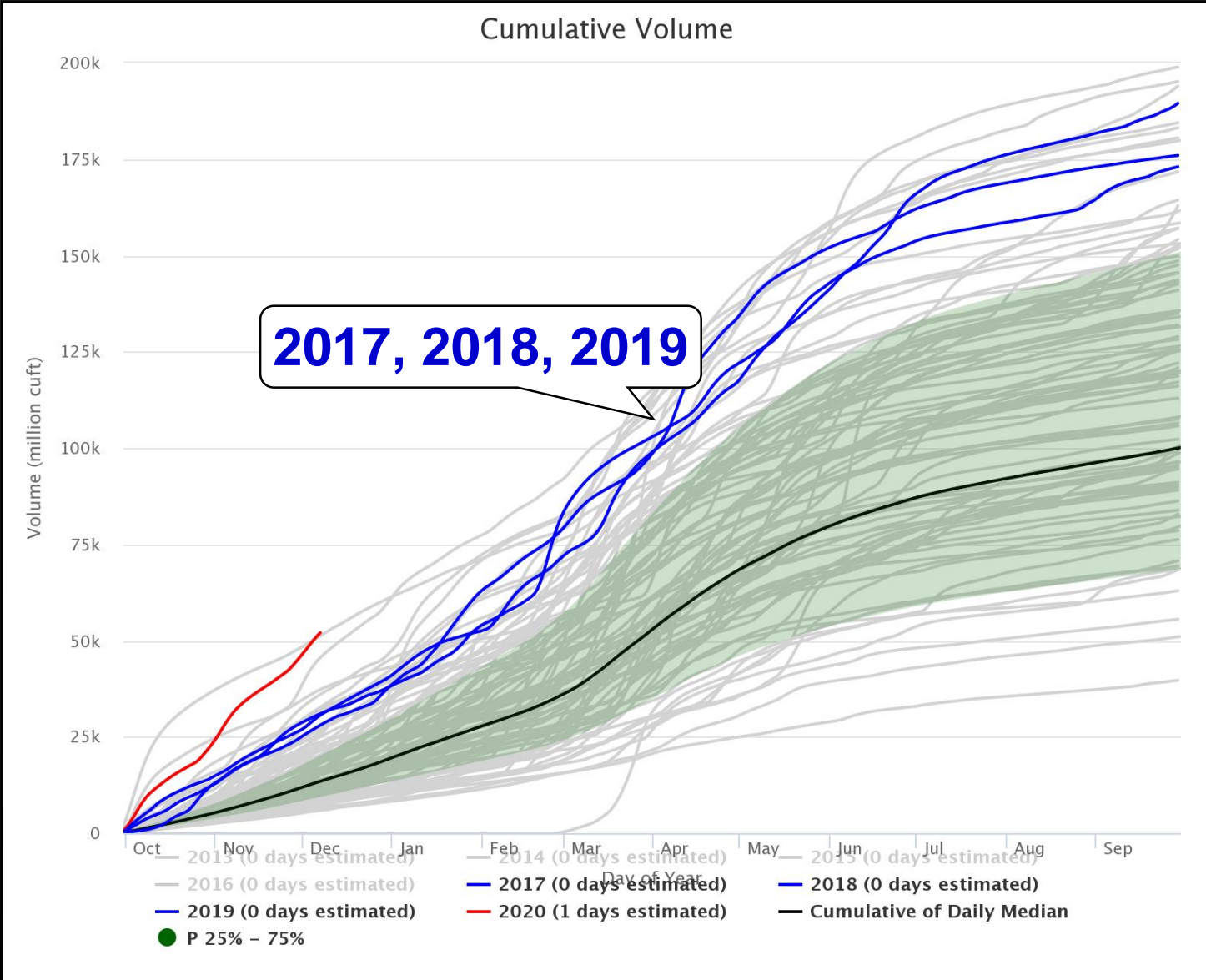


Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 12/16/2019 12:14:17 PM CST

2017



Grand River at Grand Rapids – All Years on Record



Water Year: Oct 1 – Sept 30

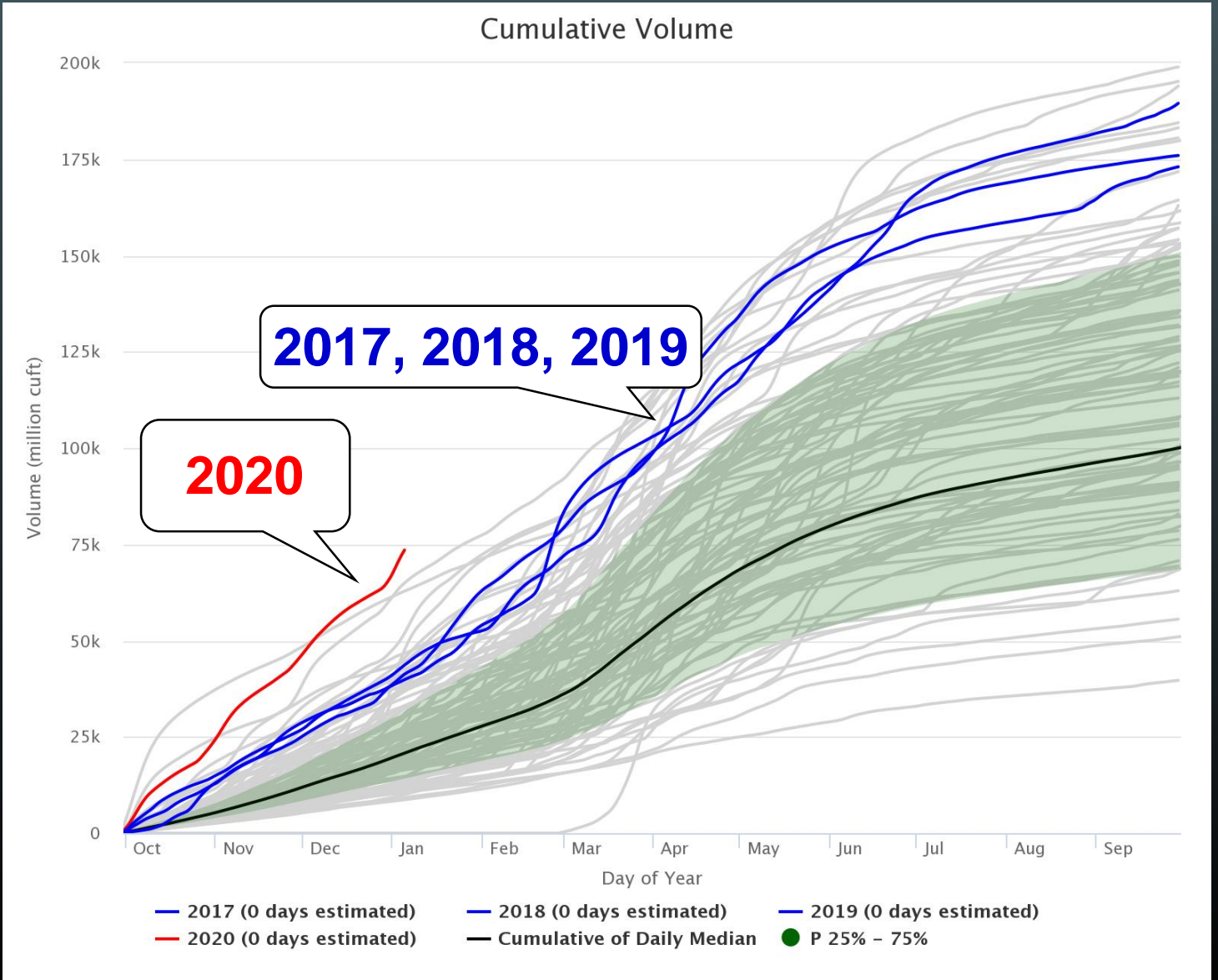
Each Water Year is a Line Showing How Much Water Flowed Through the Site

Black Line
50th Percentile

Green Shaded Area
25th to 75th Percentile



Grand River at Grand Rapids – All Years on Record



Water Year: Oct 1 – Sept 30

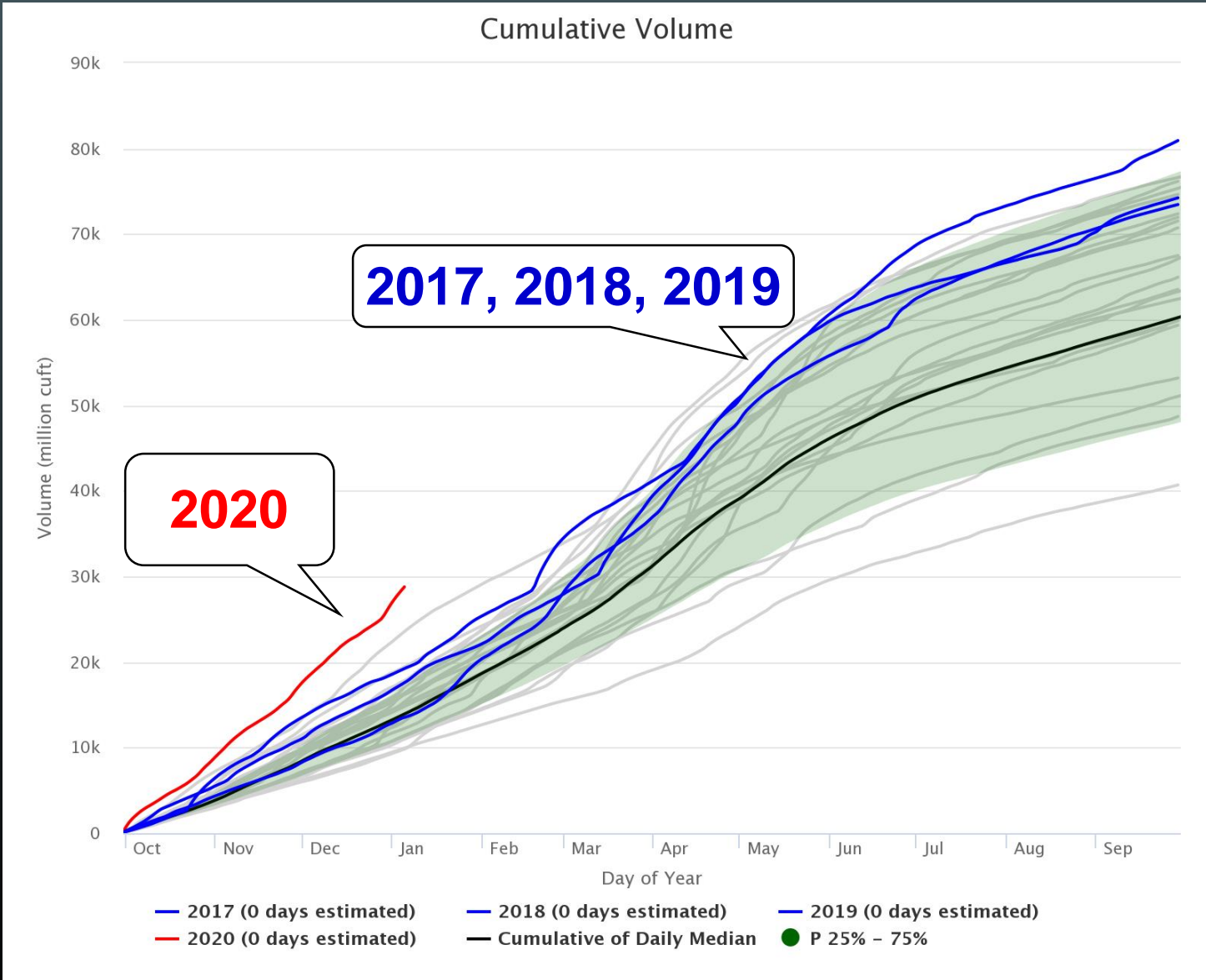
Each Water Year is a Line Showing How Much Water Flowed Through the Site

Black Line
50th Percentile

Green Shaded Area
25th to 75th Percentile



Muskegon River at Croton Dam – All Years on Record



Water Year: Oct 1 – Sept 30

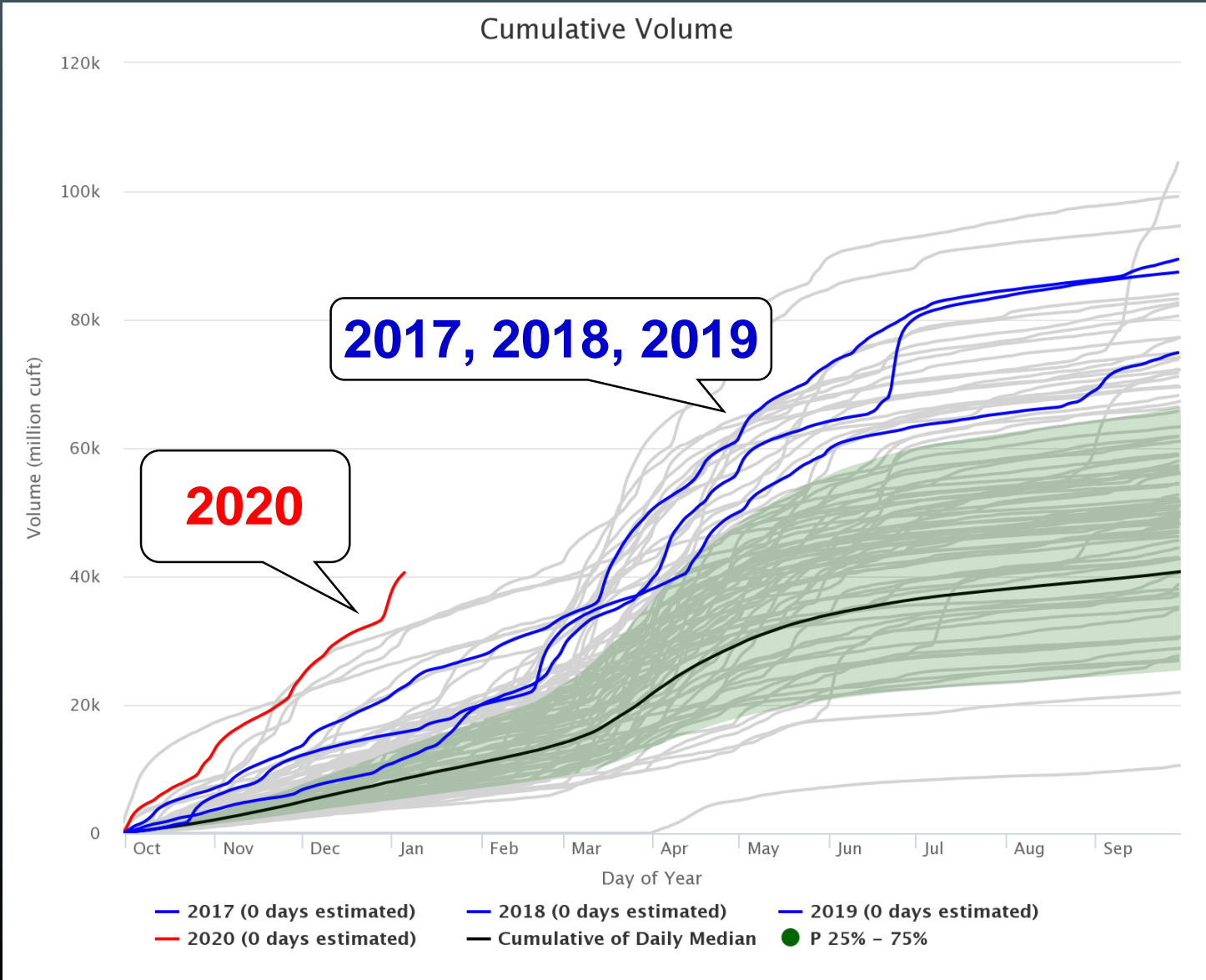
Each Water Year is a Line Showing How Much Water Flowed Through the Site

Black Line
50th Percentile

Green Shaded Area
25th to 75th Percentile



Tittabawassee River at Midland – All Years on Record



Water Year: Oct 1 – Sept 30

Each Water Year is a Line Showing How Much Water Flowed Through the Site

Black Line
50th Percentile

Green Shaded Area
25th to 75th Percentile



Spring River Flooding: Risk Factors



Not possible This Year to say what parts of Michigan are most likely to flood
The Unusual Situation We Are In Means Everyone is Vulnerable

Fall & Winter Weather

Winter Snowpack

Spring Weather

Great Lakes Levels

Spring River Flooding: Risk Factors



Fall & Winter Weather

3rd Wettest Fall

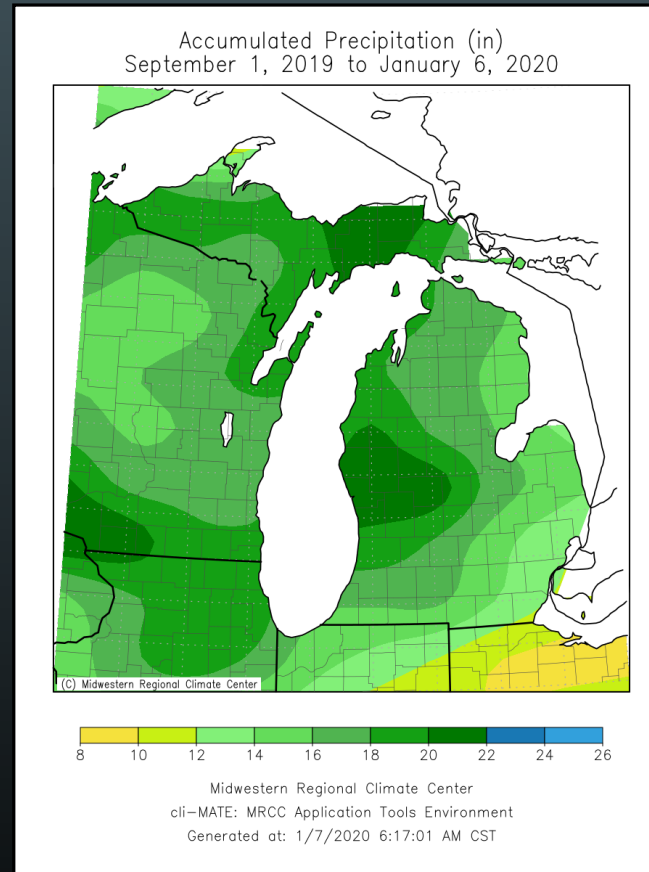
Sep – Oct – Nov

On Record for Michigan

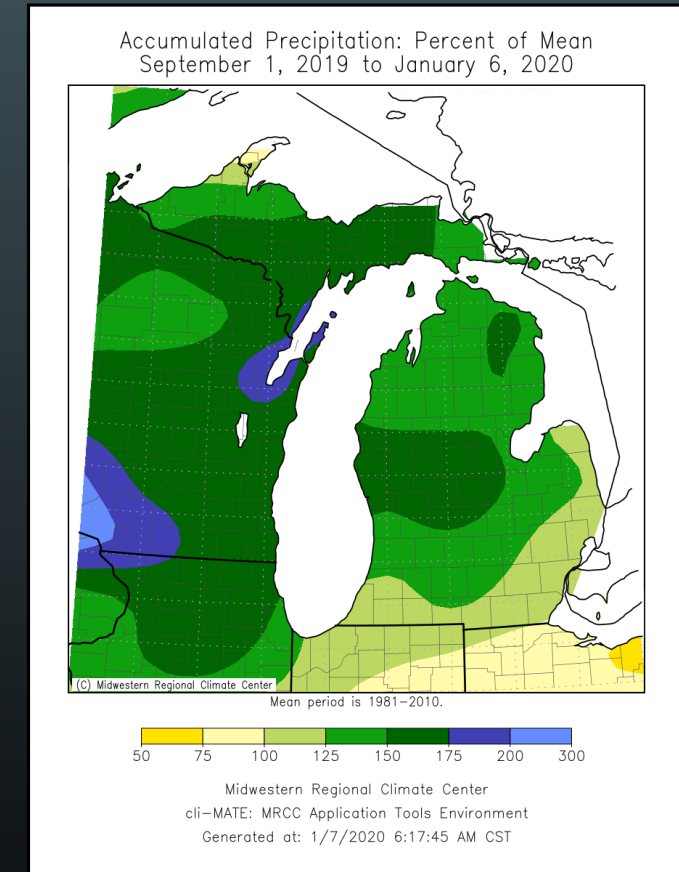
Soil Holding Much More Water

Than Typical Entering Winter

Ground Absorption Will Be
Lower or None This Spring



General 14 to 22 Inches
Of Rain Since September 1



Up to Double of what is Typical
Since September 1

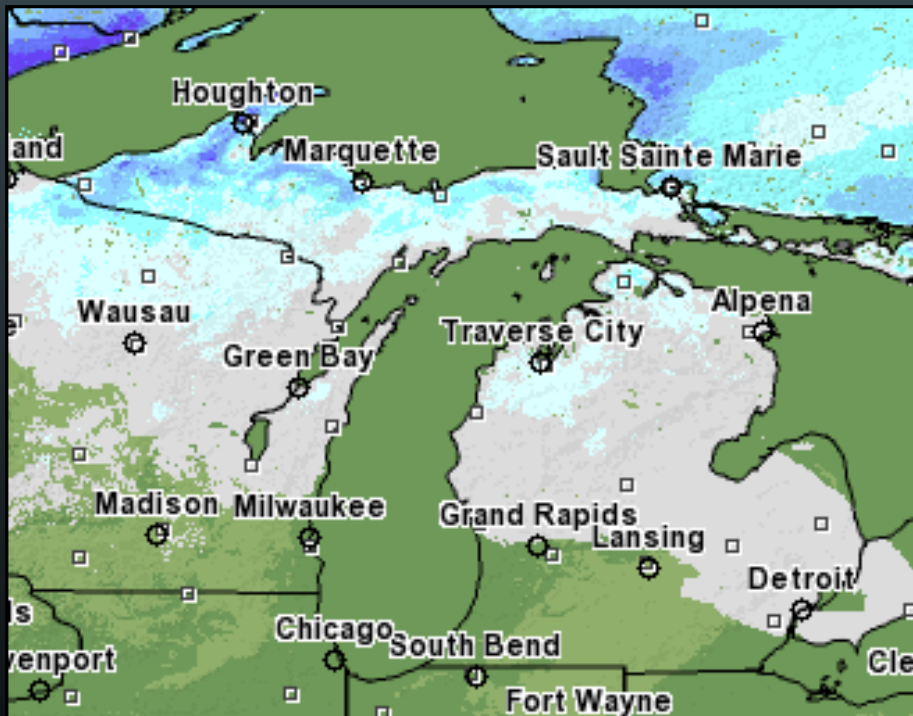
Spring River Flooding: Risk Factors



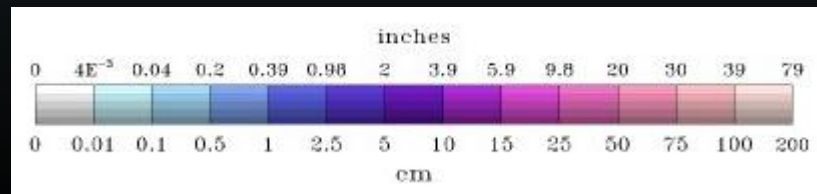
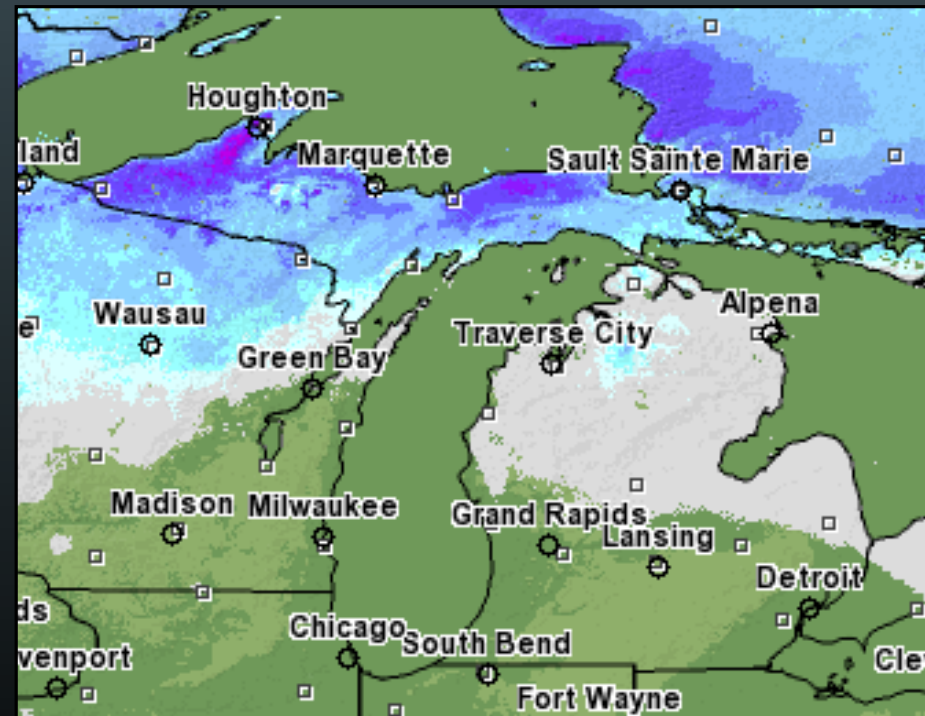
Winter Snowpack

U.P. : More Water in Snow Now
Lower P : Similar to Last Winter

January 7, 2019



January 7, 2020



Spring River Flooding: Risk Factors



Spring Weather

Too Early to Tell

Recent Year Trends = Wetter Than Normal

**No Signal Suggesting This Will Change
But Too Early to Really Know**

Spring River Flooding: Risk Factors



Great Lakes Levels

High Lake Levels Mean Higher Water Levels at River Mouth Lakes and Lower Portions of Some Rivers

Some Places on Michigan Rivers that Typically Do Not Have Spring Flooding May Be At Risk in Spring 2020

Ice-Jam Prone Areas Should Be More Vulnerable to Flooding Due to High Water Levels

**US Army Corps Predicts
Record or Near Record Levels for Spring & Summer 2020
on all the Great Lakes**

Spring River Flooding: Risk Factors



Fall & Winter Weather

Wet Fall and Early Winter
Increased Risk
For Spring River Flooding

Winter Snowpack

Too Early to Tell if Spring River Flood
Risk is Higher Due to Snowpack

Increased Risk in the U.P.
So Far

Spring Weather Pattern

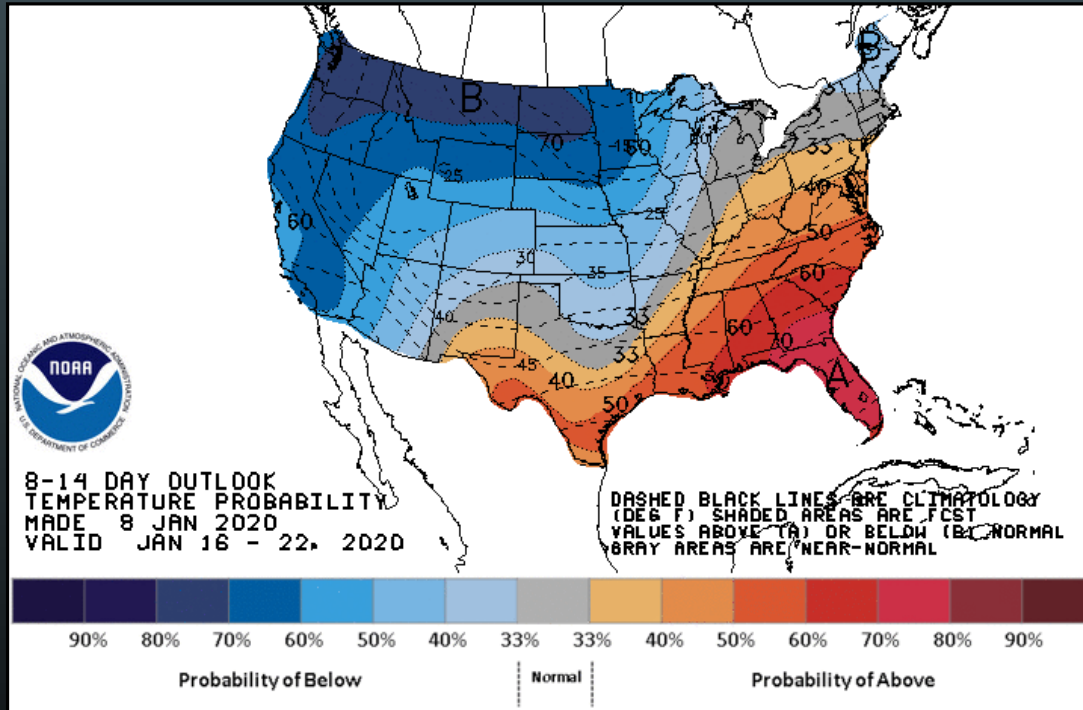
Too Early to Tell What Kind of Spring
We Will Have And What Impact it
Might Have on Spring River Flooding

Great Lakes Levels

Projected At or Near Record High Levels
in Spring 2020
Increases Risk for Spring River Flooding

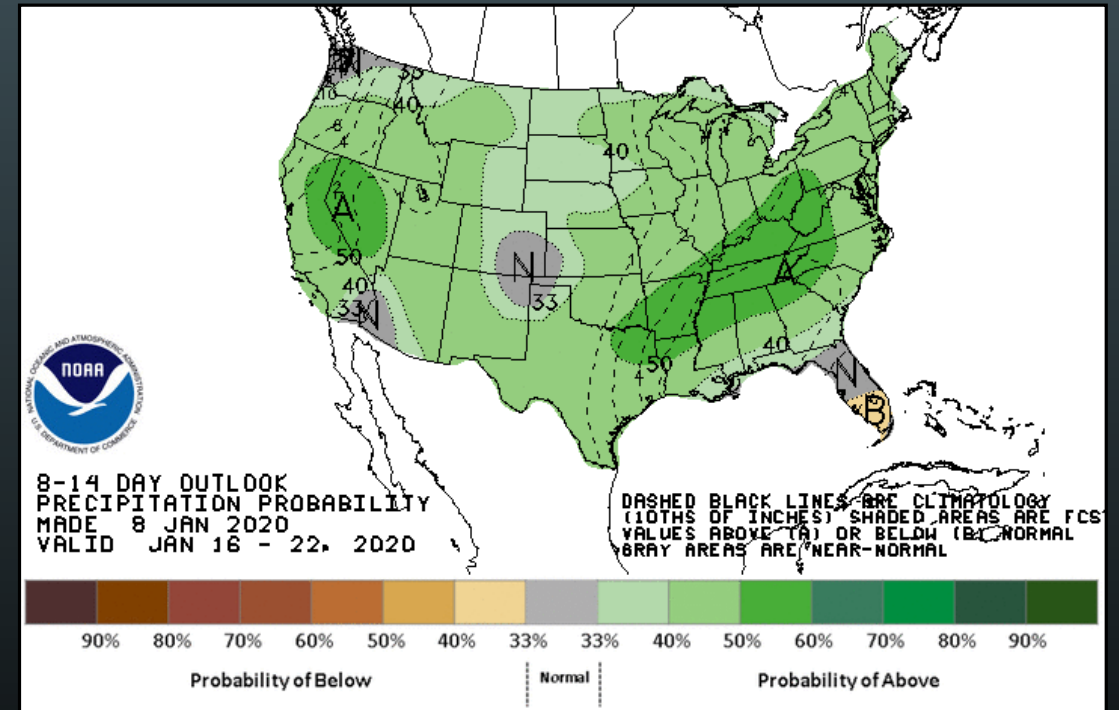
Week Two Outlook – January 16-22, 2019

Temperature



Mild for Mid-Late January

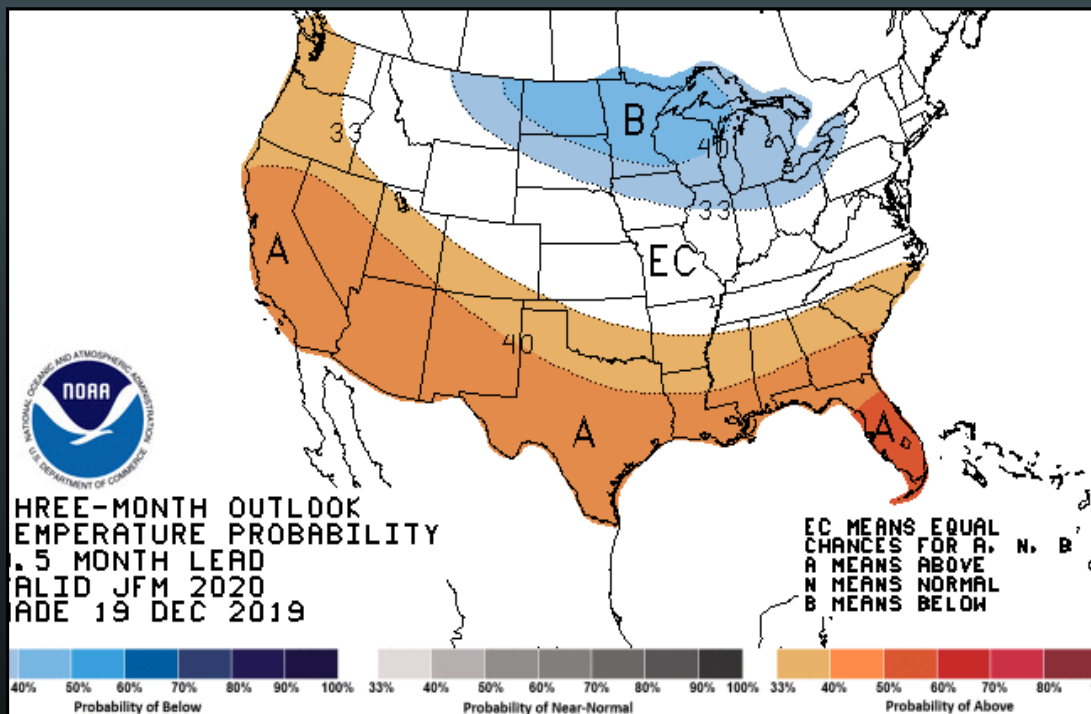
Precipitation



Not Looking Drier ☹️

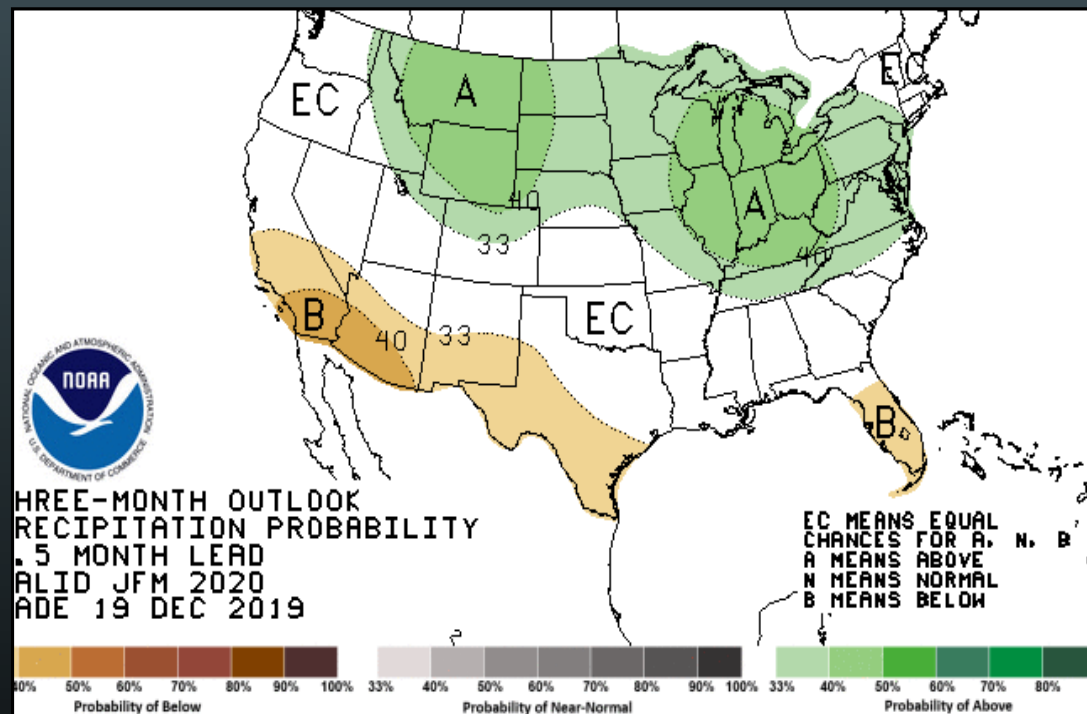
Three Month Outlook – January, February, March

Temperature



**Coldest Air Late?
February Perhaps?**

Precipitation



Active Pattern Continuing ☹️

Great Lakes Water Levels and Shore Erosion

What Are the Lanes?



National Weather Service

Weather Forecasts

Winds, Waves, Rain

Potential/Expected Impacts of Winds, Waves, Rain



US Army Corps of Engineers

Great Lakes Water Levels

Measuring, Reporting, Forecasting

Record Keeping - Declaring Record Levels

<https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/>



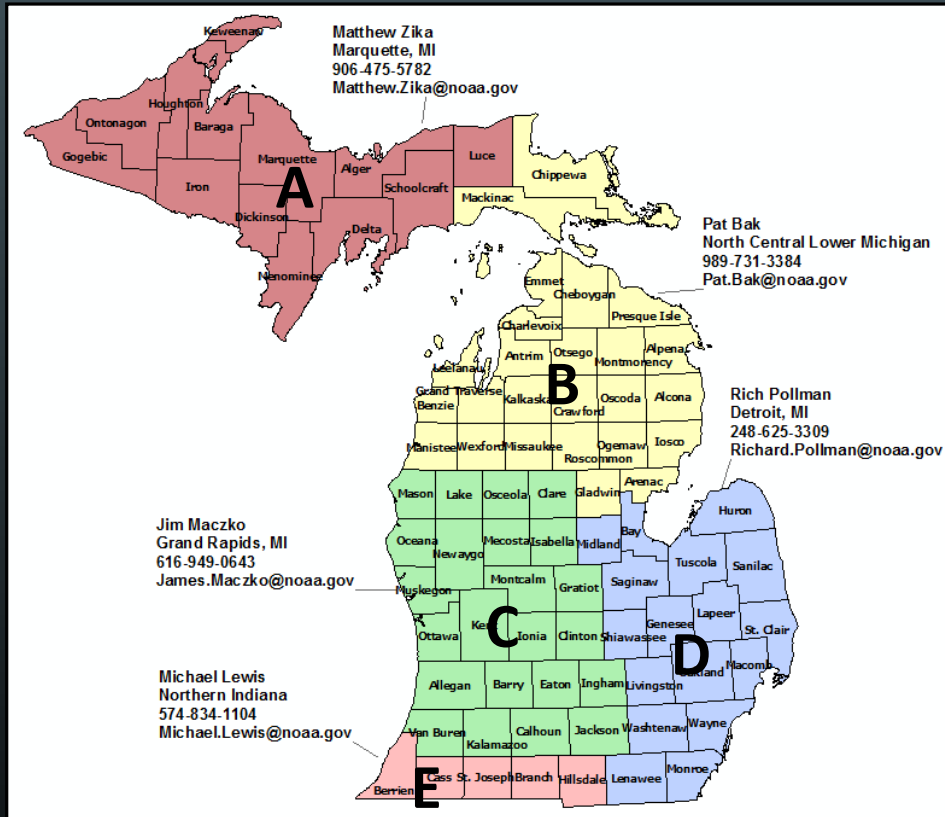
Michigan Department of Environment, Great Lakes and Energy

Shoreline Protection

<http://michigan.gov/ShoreLands>

National Weather Service - Michigan

NOT FOR PUBLIC DISTRIBUTION - 24/7 Numbers for Forecast Offices



A: Marquette
1-800-828-8002

B: Gaylord
1-888-647-8676

C: Grand Rapids
1-800-647-3836

D: Detroit
1-800-808-0006

E: Northern Indiana
1-888-668-3344



Winter Weather Safety Information
<https://go.usa.gov/xPuVB>

National Weather Service...Helping to Build a Weather-Ready Nation

