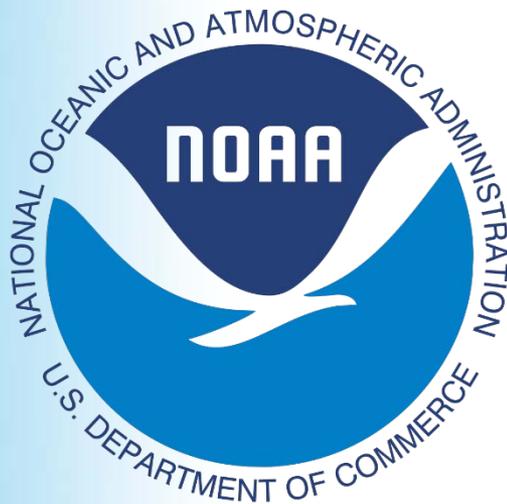


NOAA NWS Lake Levels

November 2nd 2020



Gary Garnet
Meteorologist In Charge
NOAA National Weather Service Cleveland, OH

NOAA National Weather Service

Coastal Flood Alerts

- **Lake Shore Flood Warning**
 - Significant coastal flooding is occurring or is imminent
- **Lake Shore Flood Watch**
 - Minor coastal flooding is occurring or there is potential for a more significant event within a few days
- **Lake Shore Flood Advisory (Western Lakes)**
 - Minor coastal flooding is occurring or is imminent

Lakeshore Flood Warning

Lakeshore Flood Warning

Lakeshore Hazard Message
National Weather Service Buffalo NY
431 AM EDT Mon Apr 13 2020

NYZ001-010-019-085-131700-
/O.COM.KBUF.LS.W.0009.200413T1600Z-200414T1200Z/
Niagara-Northern Erie-Chautauqua-Southern Erie-
431 AM EDT Mon Apr 13 2020

...LAKESHORE FLOOD WARNING REMAINS IN EFFECT FROM NOON TODAY TO
8 AM EDT TUESDAY...

- * WHAT...Significant lakeshore flooding expected.
- * WHERE...Niagara, Erie, and Chautauqua counties.
- * WHEN...From noon today to 8 AM EDT Tuesday.

* IMPACTS...The rapid rise in water levels will result in lakeshore flooding along the Lake Erie and Upper Niagara River shores. Along the Lake Erie shore, flooding is expected along Route 5 in Hamburg, Buffalo Harbor and Canalside, Dunkirk Harbor, and other flood prone locations. Along the Upper Niagara River, flooding is likely to affect Grand Island and Cayuga Island. Very high wave action will also result in significant shoreline erosion.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Lakeshore Flood Warning means lakeshore flooding is occurring, is imminent, or is expected to occur. For your safety, stay off breakwaters, piers, rock outcroppings and beaches! Waves are often larger than they appear and can easily wash you away. Expect significant beach erosion and debris, local road closures and extremely dangerous boating conditions.

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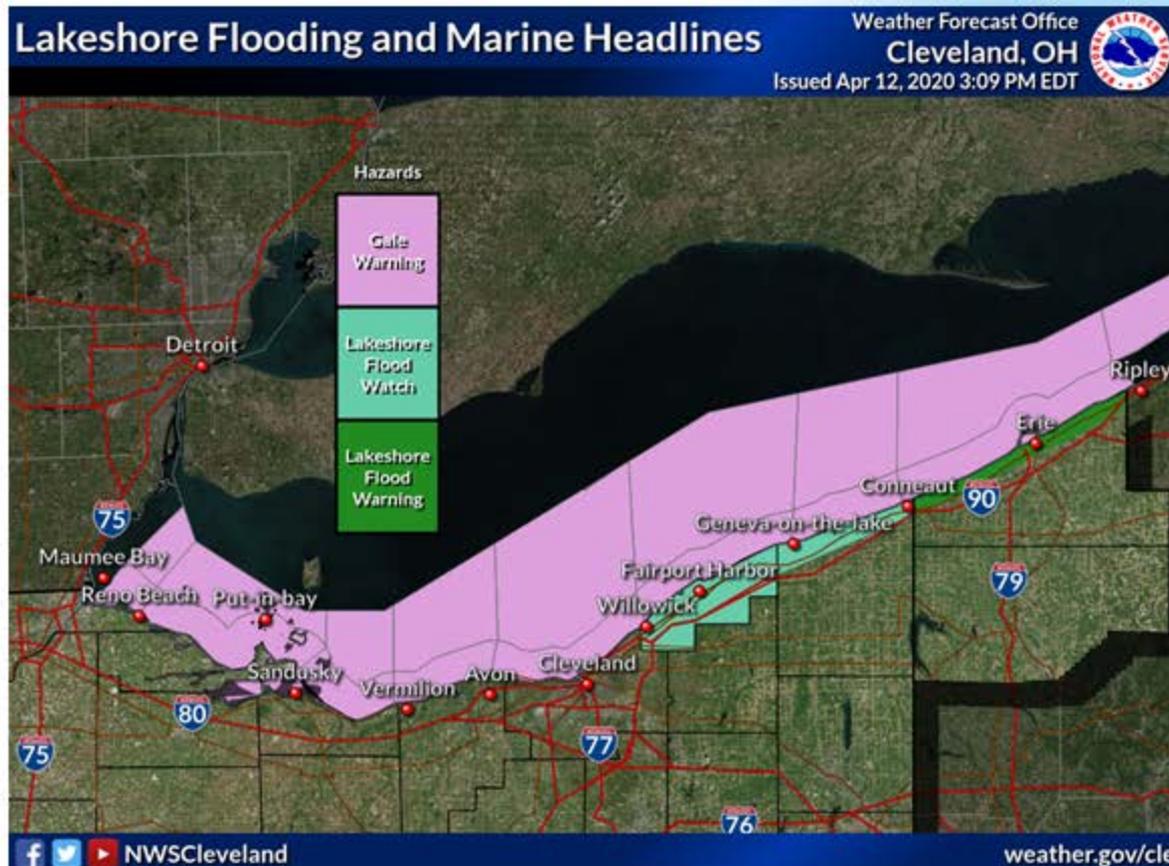
Lakeshore Flood Watch and Warning

Lakeshore Flood Timing:

Noon Monday to
Noon Tuesday

What to Expect:

- Strong southwest to west gales to 40 knots will create 8 to 15 foot waves on Lake Erie Monday.
- This, combined with already high lake levels, will cause flooding along the Erie County shoreline in Northwest Pennsylvania.
- Flooding is possible along the lakeshore of Lake and Ashtabula counties in Northeast Ohio, but is more conditional on the waves.



WFO Buffalo Briefing

Lakeshore Flood Warning

- ✓ A Lakeshore Flood Warning is in effect for Chautauqua, Erie and Niagara counties from Monday afternoon through Tuesday morning
- ✓ A Lakeshore Flood Warning is in effect for Oswego and Jefferson counties from Monday evening through Tuesday evening

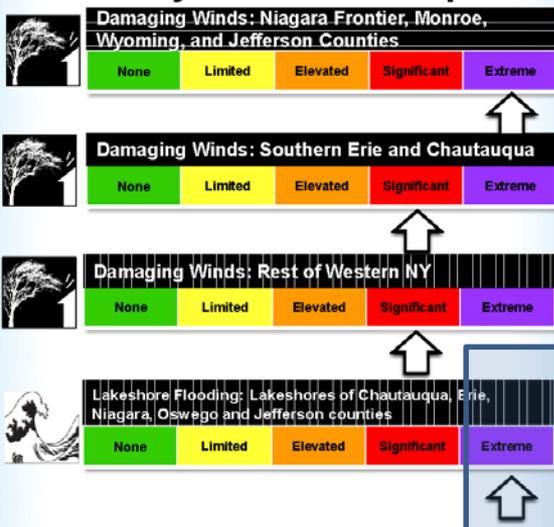


Start time for the Strongest Winds

- ✓ The strongest winds will start **abruptly** with a cold frontal passage
- ✓ Approximate start time for the strongest winds (55 mph or greater)



Summary of Greatest Impacts



Lakeshore Flood Warning Summary

Lake Erie

- ✓ Impacts: **Lake levels are expected to exceed 10 ft at Buffalo.** Flooding along Route 5 in Hamburg, Buffalo Harbor, Canalside, Dunkirk Harbor, and other flood prone locations. Flooding along the Upper Niagara River, Grand Island, and Cayuga Island
- ✓ Timing: Monday afternoon through early Tuesday morning

Lake Ontario

- ✓ Impacts: Along the Lake Ontario shore, flooding is likely in bays, inlets and damage may extend along the St. Lawrence River. Widespread shoreline erosion.
- ✓ Timing: Monday evening through Tuesday evening



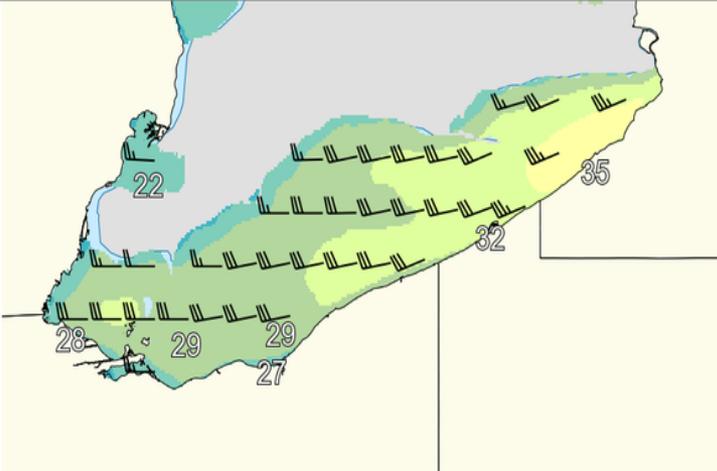
Weather Impacts on Water Levels

NOAA NWS NDFD Forecast/NOAA GLERL Great Lakes Coastal Forecasting System

Forecast Wind Speed

Valid Ending Monday April 13th, 2020 at 8 PM EDT

- 0 to 5 KTS
- 5 to 10 KTS
- 10 to 15 KTS
- 15 to 20 KTS
- 20 to 25 KTS
- 25 to 30 KTS
- 30 to 35 KTS
- 35 to 40 KTS
- 40 to 45 KTS
- 45 to 50 KTS
- 50 to 60 KTS
- 60 to 70 KTS
- 70 to 80 KTS
- Greater than 80 KTS

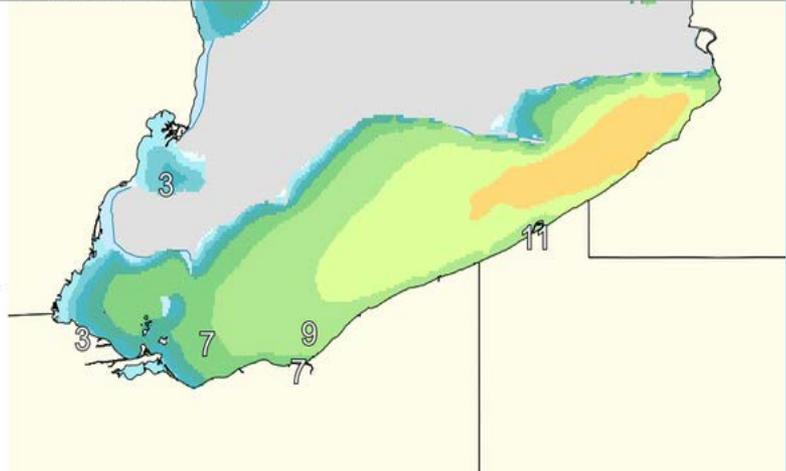


Graphic Created
April 13th, 2020
7:54 AM EDT

Wave Height

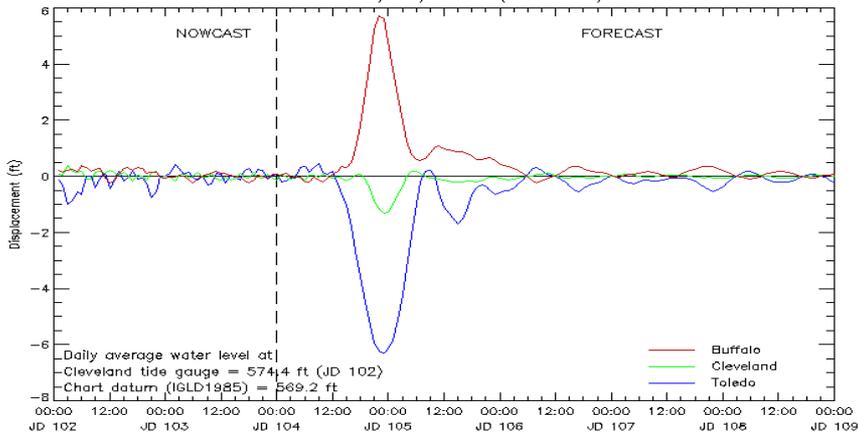
Valid Ending Monday April 13th, 2020 at 8 PM EDT

- 0 to 1 foot
- 1 to 2 feet
- 2 to 3 feet
- 3 to 4 feet
- 4 to 5 feet
- 5 to 7 feet
- 7 to 10 feet
- 10 to 12 feet
- 12 to 15 feet
- 15 to 20 feet
- 20 to 25 feet
- 25 to 30 feet
- 30 to 35 feet
- 35 to 40 feet
- 40 to 50 feet
- 50 to 60 feet
- Greater than 60 feet

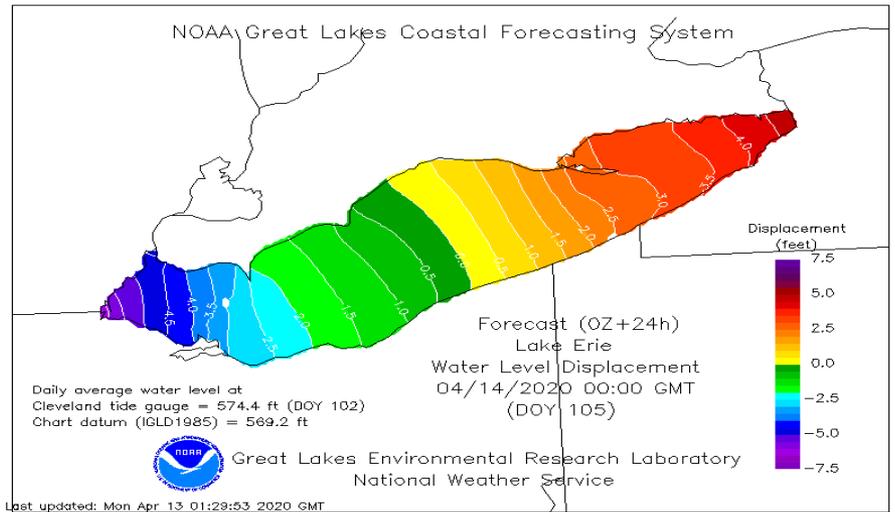


Graphic Created
April 13th, 2020
7:54 AM EDT

Lake Erie Water Level Displacement
start of forecast: 04/13/2020 (DOY 104) 00:00 GMT



NOAA Great Lakes Coastal Forecasting System



Great Lakes Environmental Research Laboratory
National Weather Service

Last updated: Mon Apr 13 01:28:53 2020 GMT





USCG Port Huron Dashboard

Weather.gov > Detroit/Pontiac, MI > USCG Port Huron Dashboard

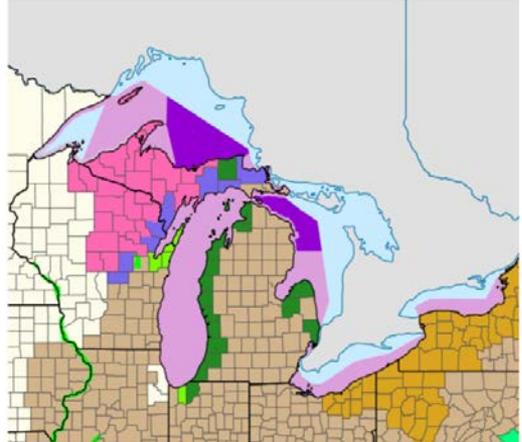
https://www.weather.gov/dtx/USCG_PortHuron

Observation: xxxxxxx
 Nowcast: -----
 Forecast Guidance: -----

- Overview
- Detailed Forecast
- Wind
- Gusts
- Waves
- Currents & Levels
- Outlook

- Hazards
- Wave Height
- Wind Speed
- Wind Gust
- Temperature
- Weather

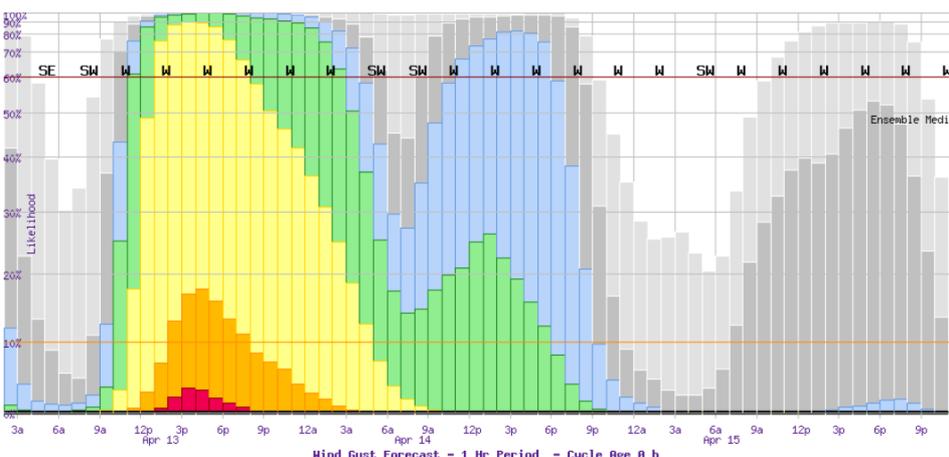
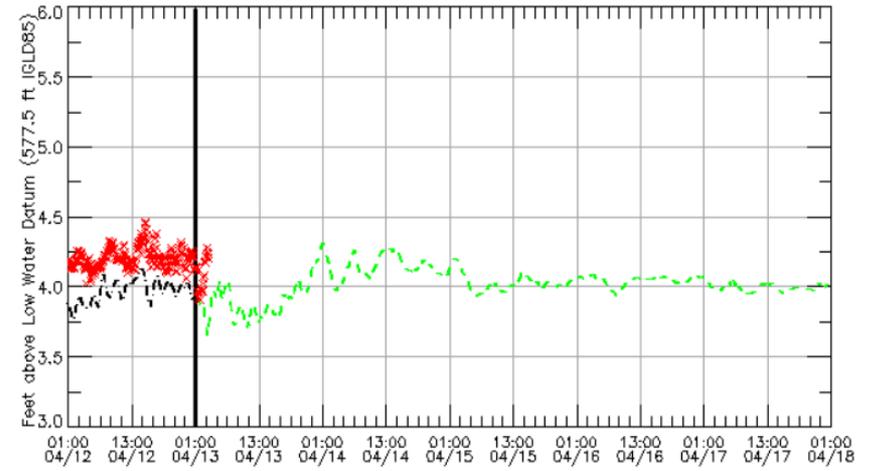
- Winter Storm Warning
- High Wind Warning
- Storm Warning
- Lakeshore Flood Warning
- Flood Warning
- Gale Warning
- Winter Weather Advisory
- Lakeshore Flood Advisory
- Small Craft Advisory
- Wind Advisory
- Low Water Advisory
- Lakeshore Flood Watch



Graphic Created
 April 13th, 2020
 8:10 AM CDT

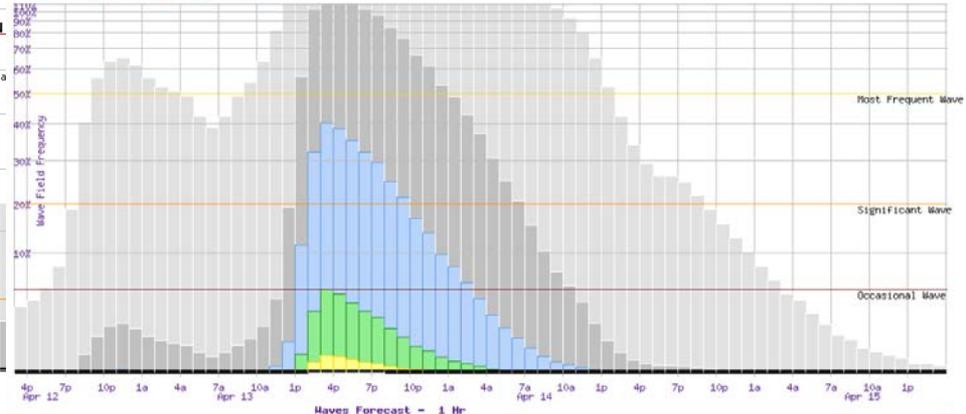
Forecast System (LMHOFS)

9014098 Fort Gratiot, MI Water Levels



Wind Gust Forecast - 1 Hr Period - Cycle Age 0 h

Wave height Frequency Distribution



Waves Forecast - 1 Hr

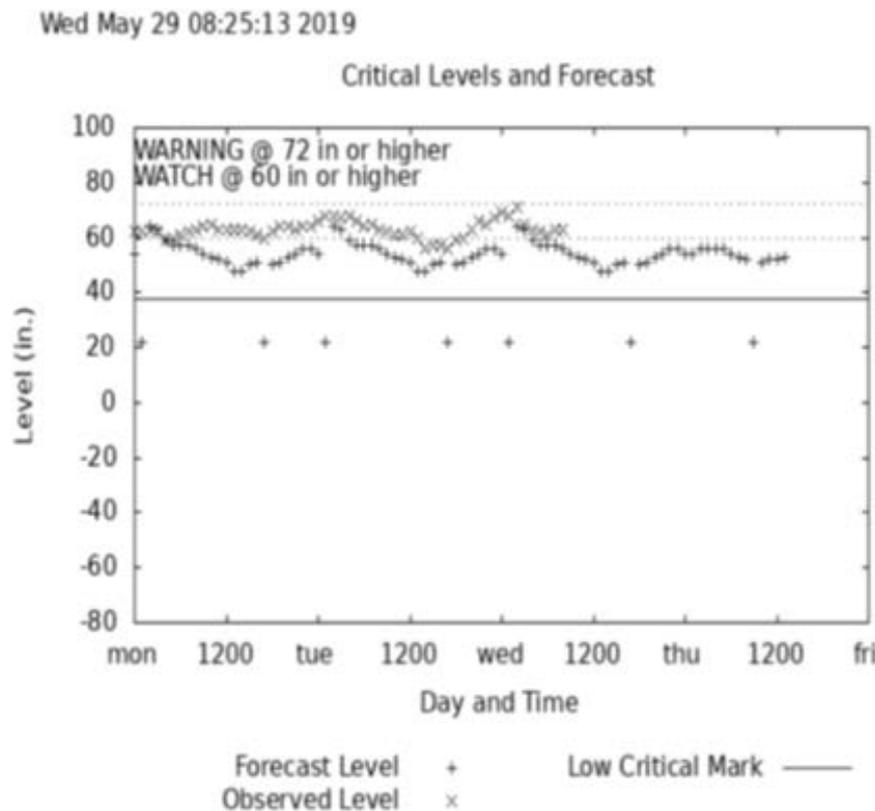
- Likelihood to Exceed - 1 Hr 10 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 15 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 20 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 25 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 33 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 42 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 50 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 58 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 64 knot Wind Gust
 - Likelihood to Exceed - 1 Hr 64 knot Wind Gust
- South-Lake-Huron
- Peak Wind Correlates with 15-30% Probability Band

- Percentage of Waves Exceeding - 2 feet
 - Percentage of Waves Exceeding - 4 feet
 - Percentage of Waves Exceeding - 6 feet
 - Percentage of Waves Exceeding - 9 feet
 - Percentage of Waves Exceeding - 12 feet
 - Percentage of Waves Exceeding - 16 feet
 - Percentage of Waves Exceeding - 20 feet
 - Percentage of Waves Exceeding - 26 feet
 - Percentage of Waves Exceeding - 34 feet
 - Percentage of Waves Exceeding - 34 feet
- South-Lake-Huron
- Forecast Waveheight Distribution

Challenges

- Warnings/Watches/Advisories are based on water levels above low water datum (LWD) at water level stations.

Toledo Water Level

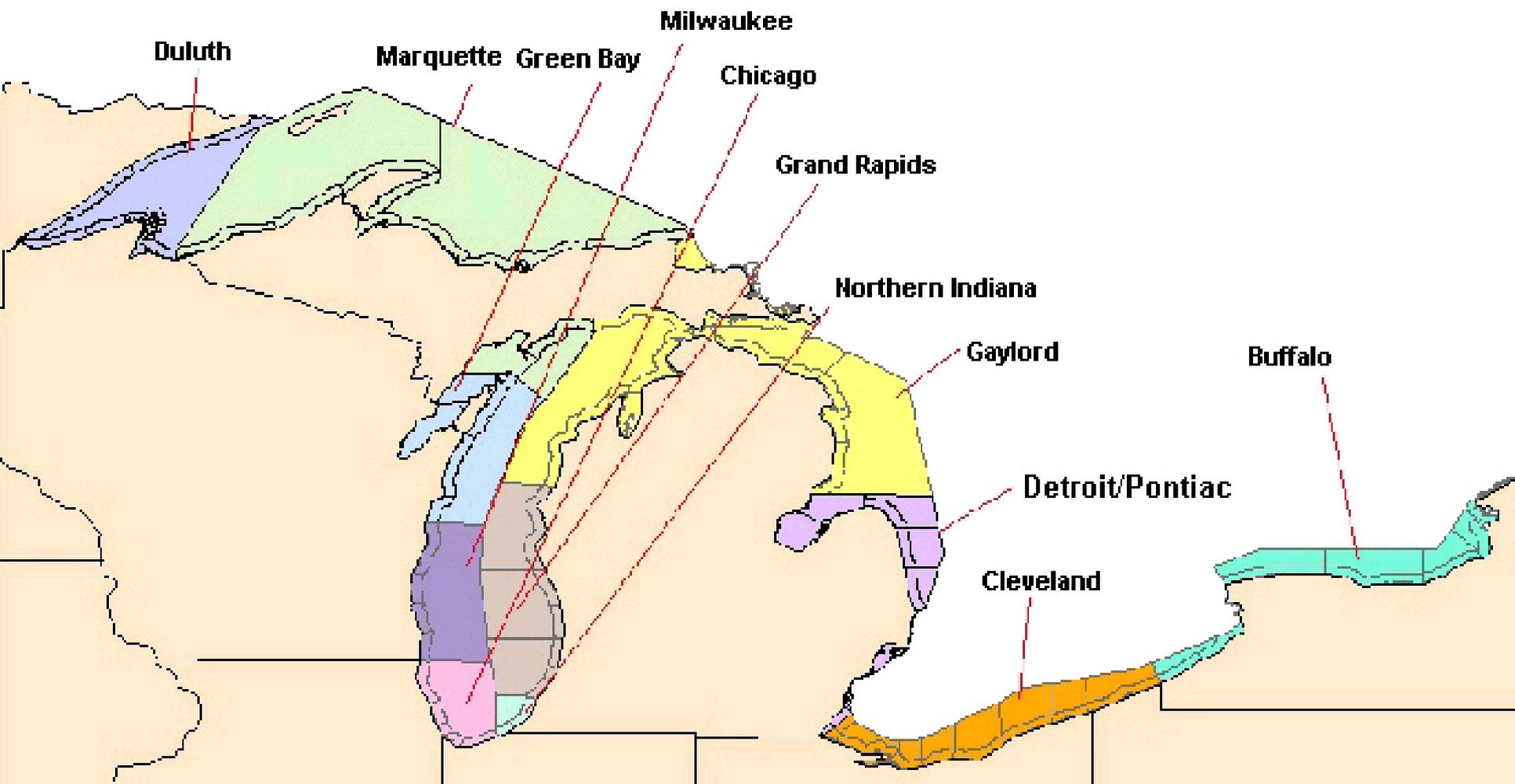


Example: Toledo, OH

- Warning issued at 72 inches above LWD
- Watch issued at 60 inches above LWD

BASE LAKE LEVELS ARE AROUND CRITERIA FOR WATCHES AND ADVISORIES ~ 60 INCHES ON A DAILY BASIS

Great Lakes Weather Forecast Offices





Great Lakes Weather

<https://www.weather.gov/>

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, ST" or ZIP code
Enter location ...
[Location Help](#)

Major Storm To Barrel Through The East Today
A major storm system will barrel through the East today. Severe thunderstorms with tornadoes, damaging winds and hail will sweep through the Southeast and Mid-Atlantic. Locally heavy rain will be possible across the Northeast and lake effect snow is likely across the Upper Great Lakes. Finally, strong and gusty damaging winds are possible from the Great Lakes to the Northeast and Mid-Atlantic. [Read More >](#)

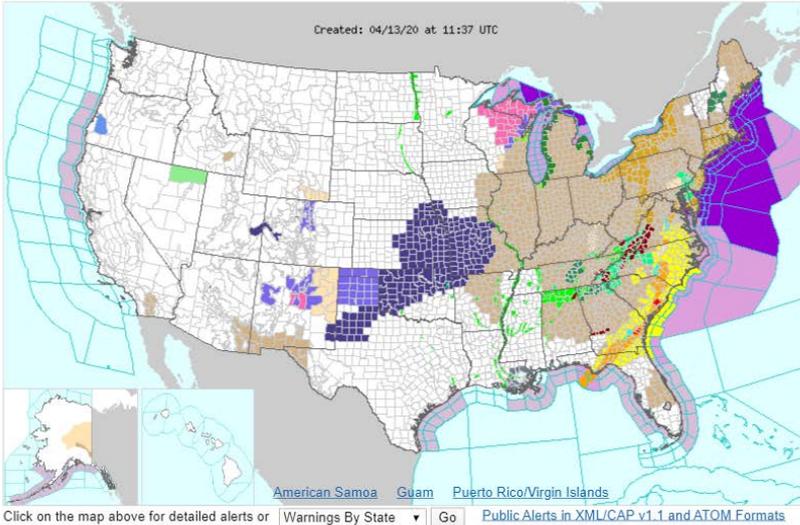
<https://www.weather.gov/greatlakes/>

Marine Specific

EDUCATIONAL RESOURCES

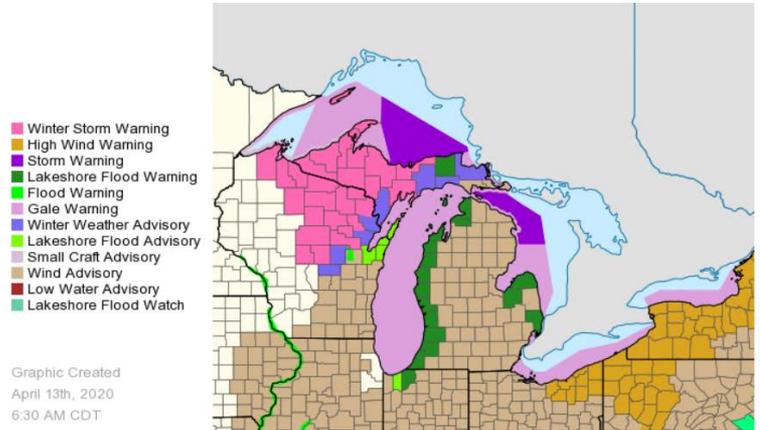


ACTIVE ALERTS FORECAST MAPS RADAR RIVERS, LAKES, RAINFALL AIR QUALITY SATELLITE PAST WEATHER



| | | | | |
|----------|----------|-------|------|---------|
| Superior | Michigan | Huron | Erie | Ontario |
|----------|----------|-------|------|---------|

| | | | | | |
|---------|-------------|------------|-----------|-------------|---------|
| Hazards | Wave Height | Wind Speed | Wind Gust | Temperature | Weather |
|---------|-------------|------------|-----------|-------------|---------|



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