

# The Lake Erie Harmful Algal Bloom Forecast

Revised 06/21/2021

Providing information and forecasts on cyanobacteria blooms in Lake Erie

**NCCOS** NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

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HARMFUL ALGAL BLOOM FORECASTS

## Lake Erie Harmful Algal Bloom Forecast

NOAA provides forecasts for seasonal blooms of cyanobacteria (blue-green algae) in Lake Erie, typically from July to October when warmer water creates favorable bloom conditions. For more information, please browse our [FAQ's](#).

**Forecast Products**

[Download Latest Forecast Bulletin \(PDF\)](#) [Access Archived Forecast Bulletin for the Bloom Season](#)

**Alert:** The *Microcystis* cyanobacteria bloom in western Lake Erie has an approximate area of 200 square miles, which is an increase in area since Jun 08. Bloom extends to Port Clinton, Ohio and Monroe, Michigan. Bloom may hug the Ohio coast in the next few days with little expansion to the east. See bloom position forecast figure for details. No recent toxin data currently available.

The Lake Erie Forecast is operated by the National Centers for Coastal Ocean Science. Contact [hab@noaa.gov](mailto:hab@noaa.gov) for technical Questions. Last Updated: 2021-06-10 02 PM EDT --Tomlinson

**Observed Bloom Position**  
(from most recent satellite image)

Current satellite imagery from the Ocean Land Color Imager (OLCI) and true color imagery showing bloom location and extent.

[View Product](#)

**Forecasted Bloom Position**  
(from modelling)

Forecasted extent and position of the bloom for a minimum of 96 hours, based on a combination of a hydrodynamic modeled currents and satellite imagery for initial bloom location.

[View Product](#)

**Vertical Mixing Forecast**

Forecast of the potential for mixing over the next at least 96 hours, to determine the likelihood that the bloom is at the surface or subsurface.

[View Product](#)

Click the left button to create and download a PDF bulletin of bloom forecast products. Daily archived bulletins are available from the link on the right.

Alert statement on bloom location and forecasted position, current bloom extent, presence of scum and/or toxins due to toxic cyanobacteria.

Real-Time view (i.e. current conditions) of bloom location and extent and likelihood of mixing.

Click the "View Product" buttons for detailed information on the current bloom position from satellite imagery; forecast of bloom position; and the likelihood of mixing

## Lake Erie Satellite Imagery

Current Lake Erie Satellite Imagery from the Ocean and Land Color Imager (OLCI) as of 2021-06-09 showing bloom location and extent.



Image credit: The images were derived from [Copernicus](#) Sentinel-3 satellite data from the European Organisation for the Exploitation of Meteorological Satellites ([EUMETSAT](#)) and were processed by NOAA, National Centers for Coastal Ocean Science. NOTE: Image quality will vary with clouds and satellite position ([OLCI satellite background information](#)). See [more information](#) about our bloom monitoring imagery.

**Satellite imagery** showing the cyanobacteria density. The algorithm detects cyanobacteria based on its absorption and scattering properties.

The **color bar** on the left shows the relative concentration of cyanobacteria, with blue indicating low cell abundance and red showing higher concentrations. This color bar only pertains to the cyanobacteria image product, not the true color image.

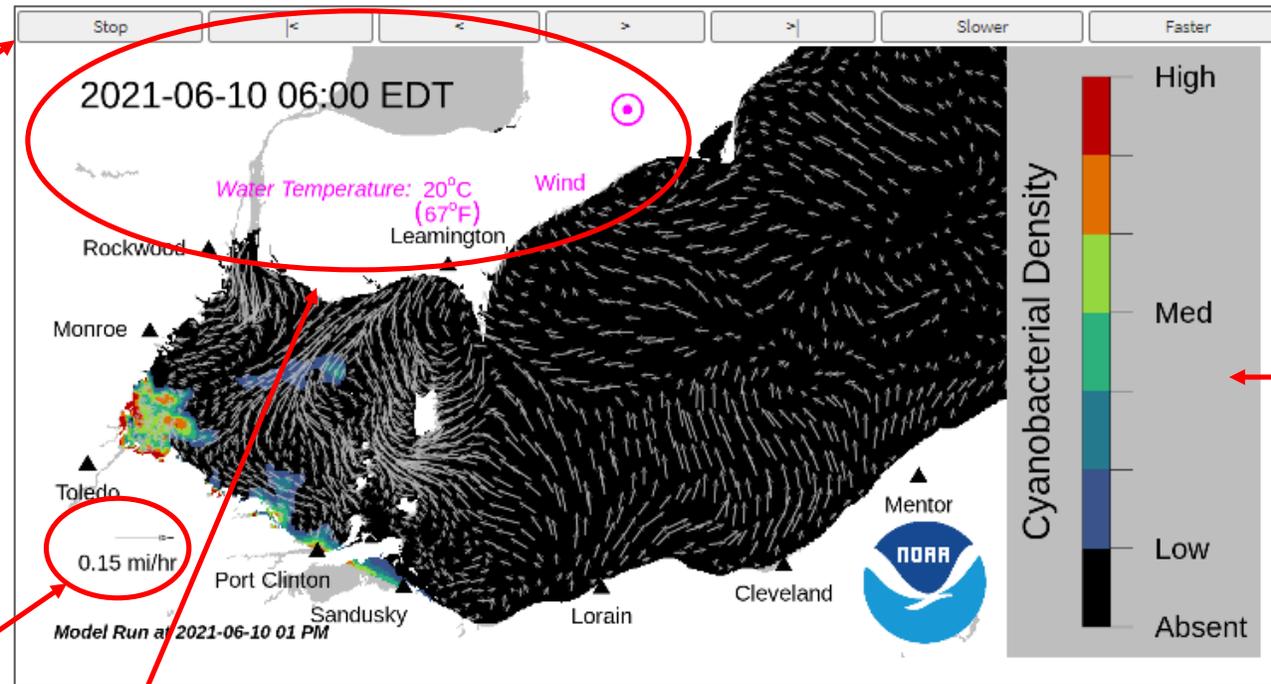
The **layers box** on the top right allows you to change the background maps from a street view to a grayscale view. You can also toggle between the true color and cyanobacteria density products.

Date convention throughout the system is YYYY-MM-DD (Y=year, M=month, D=Day)

## Lake Erie Bloom Position Forecast

This map models bloom position from date of satellite imagery as of 2021-06-09 to a minimum of 96 hours from date of publication, using water currents data from the Lake Erie Operational Forecast System (LEOFS). Potential for bloom movement is forecast in 3-dimensions with a hydrodynamic model using satellite imagery and currents. The modeled output does not contain clouds. Black coloring indicates the absence of chlorophyll and gray color indicates area with no data. Water temperature and winds (in magenta) are the averages for the western basin from the model.

The Lake Erie Position Forecast predicts the location and extent of the bloom for a minimum of 96 hrs from the model run. The satellite imagery or previous model results are used to initiate the model. The **buttons** at the top of the figure can be used to scroll through the model results, slow down the model loop, or stop on a particular model result.



The image in the background show the forecast concentration of cells based on a relative **cyanobacterial density** shown in the legend at the right.

The gray arrows on the image shows the **modeled currents**, with arrows pointing in the direction the currents are going.

The text at the top of each model run shows the average **modeled water temperature** and **wind** direction over the Western Basin of Lake Erie. The **time step** at the top in EDT is the time for the forecast output

For previous forecasts click on the link to the **Archived Forecasts**.

# Lake Erie Mixing Forecast

Forecast of the potential for mixing over at least the next 96 hours, to determine whether the majority of the bloom is at the surface, subsurface, or mixed throughout the water column. Black coloring indicates the absence of chlorophyll. Each point represents a location used by the bloom forecast. Click a point to visualize bloom depth in the water column by date and modeled concentration. Last Updated: 2021-06-10

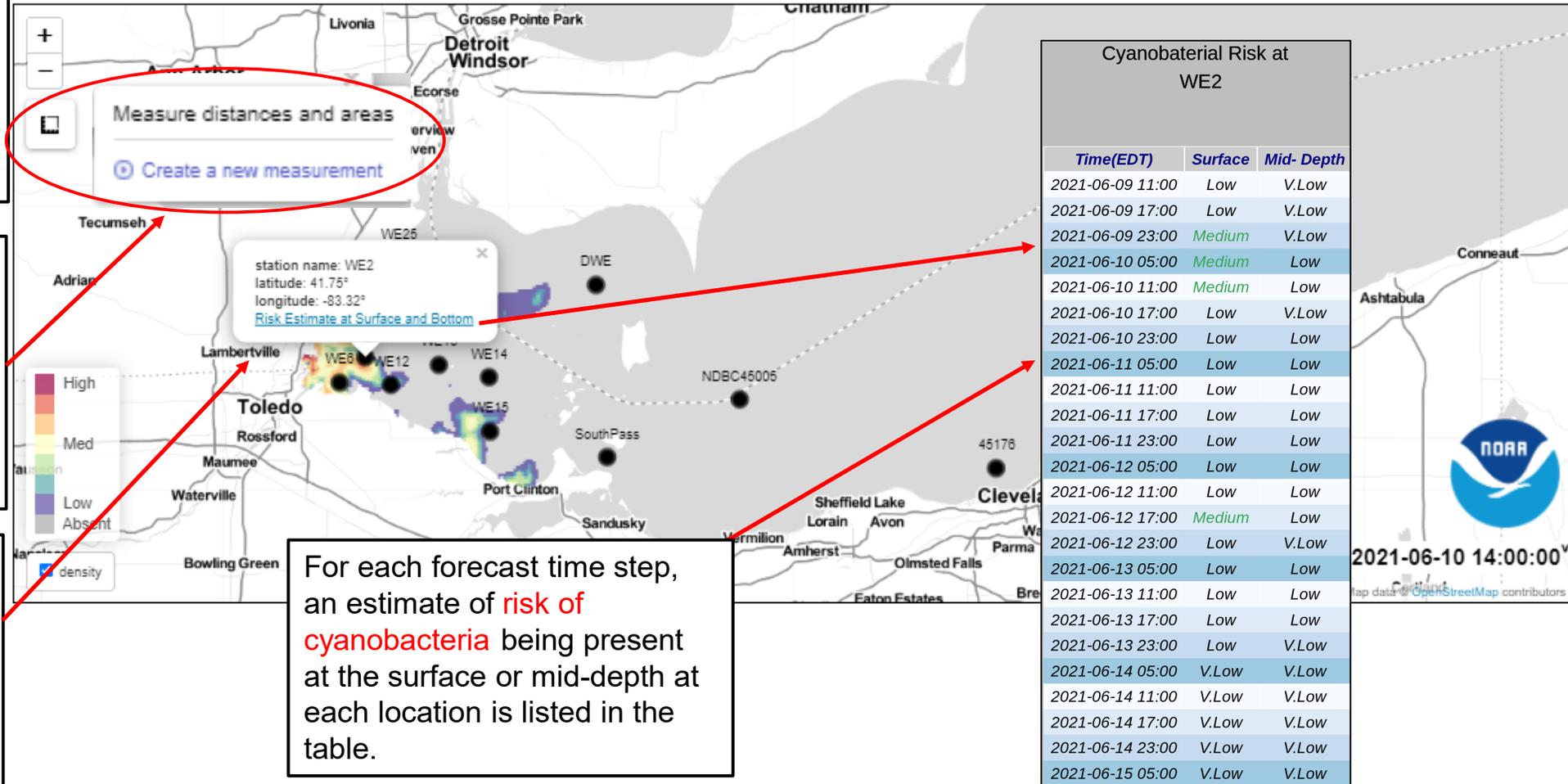
[Click here for plots of Wind vector and wind-induced mixing potential in western Lake Erie.](#)

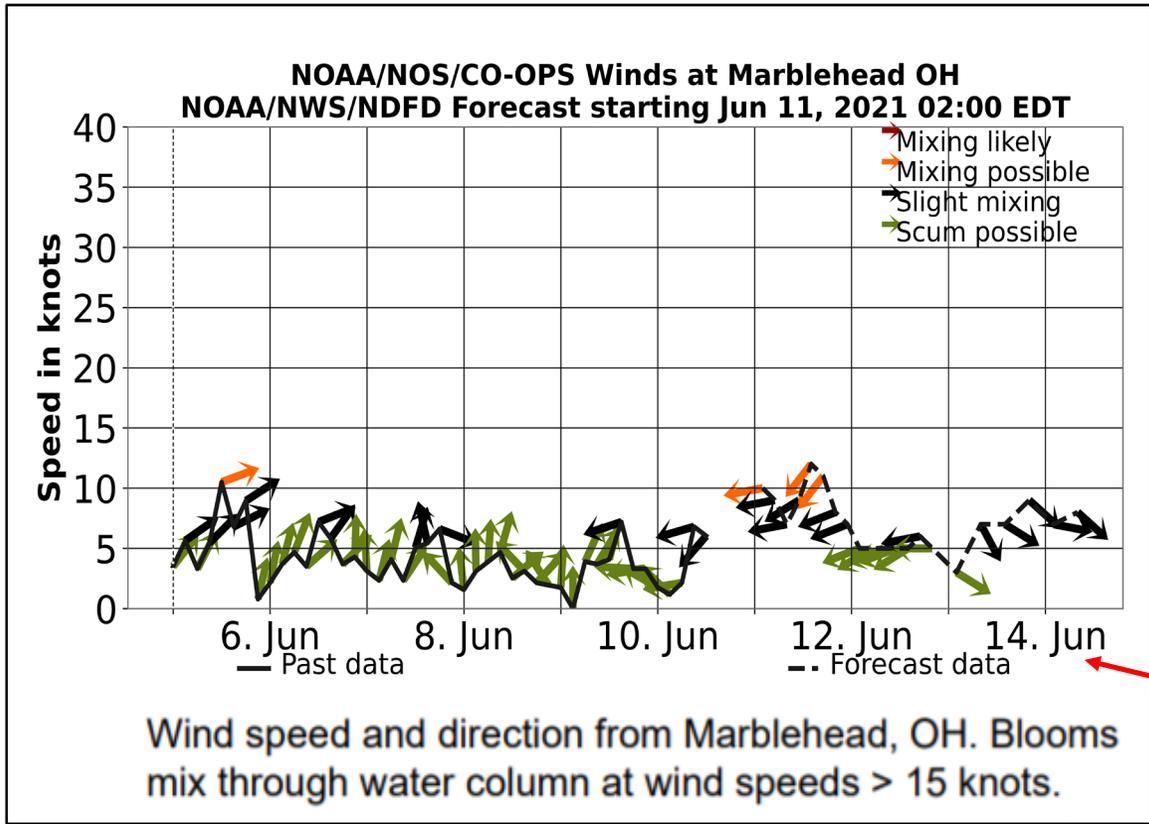
The Lake Erie Mixing Forecast predicts the potential for mixing over at least the next 96 hours, at individual stations. The background image shows the relative concentration of the cyanobacteria bloom at the surface.

Click on the small square to use the measuring tool. This can be used to get an estimate of how far the edge of the bloom is from a city or location in the Lake, or the area of the bloom.

By clicking on the black circles for each station, you will get a pop-up box with the station name, latitude and longitude. To get the mixing forecast, click on the hyperlink for **Risk Estimate at Surface and Bottom**

For each forecast time step, an estimate of **risk of cyanobacteria** being present at the surface or mid-depth at each location is listed in the table.





Wind speed and direction from Marblehead, OH. Blooms mix through water column at wind speeds > 15 knots.

The forecast and hindcast winds at Marblehead, OH are available by clicking on the link under the informational text box. Marblehead is a representative station within Western Lake Erie, to give an estimate of the expected winds over the next several days. Previous wind speed (in knots) observations are shown in the solid black lines, while forecasted wind speeds are shown by the dashed line. Arrows are pointing in the direction the wind is blowing from and the color indicates the likelihood of mixing or scum formation (due to low wind speeds). The warmer colors indicate increased likelihood of mixing.

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