

Western Lake Erie HAB Early Season Projection

Projection 01 - 2023-05-04

Summary:

The Western Lake Erie HAB Early Season Projection provides an estimate of potential cyanobacterial harmful algal bloom (HAB) severity. The projected severity depends on input of total bioavailable phosphorus (TBP) from the Maume River during the loading season (March 1-July 31), and uses a combination of measurements and forecasts of Maume River discharge from the National Weather Service - Ohio River Forecast Center (through early July) and phosphorus loads measured by the Heidelberg University National Center for Water Quality Research.

With observations through May 2nd, we expect a moderate bloom that has a severity between 2-6. A smaller bloom, closer to a severity of 3-4, is expected if precipitation is close or below average for the rest of the loading season (May-July). While the TBP load in March was higher than average, it dropped below average in April, and may continue below average into June. The range in forecasted severity reflects the uncertainty in forecasting precipitation for late June and July. We will update the early season projection weekly with new information, and will issue a comprehensive seasonal forecast on June 29th. Any bloom that does develop will change throughout the summer and move with the wind and currents; we will provide information on the presence and location of the bloom throughout the summer.

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Predicted Bloom Severity

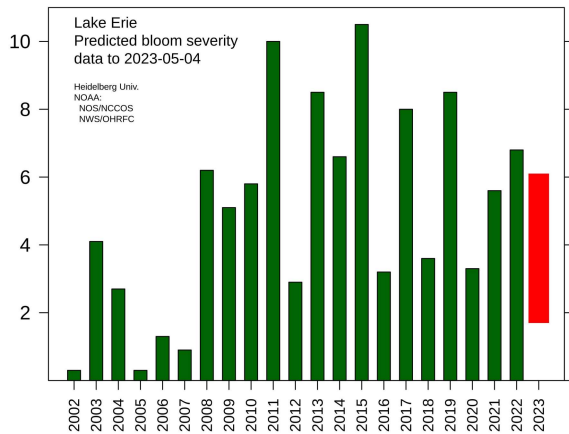


Fig. 1. Predicted bloom severity as compared to previous years. The wide red bar is the likely range of severity based on the forecast uncertainty. Forecast uncertainty is due to the river forecast and estimated TBP loads over the next three months as well as model uncertainty.

Total Bioavailable Phosphorus

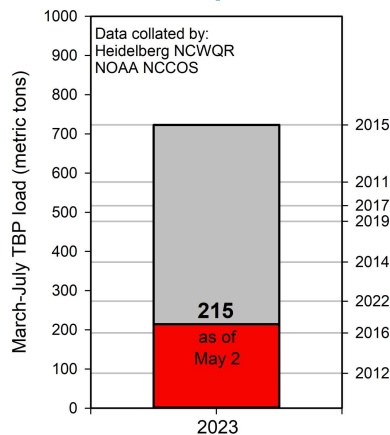


Fig. 3. Total bioavailable phosphorus (TBP) load accumulated from the Maume River near Waterville, OH to date. The right axis denotes the TBP load from selected previous years. Loads to date are above average.

Cumulative Total Bioavailable Phosphorus

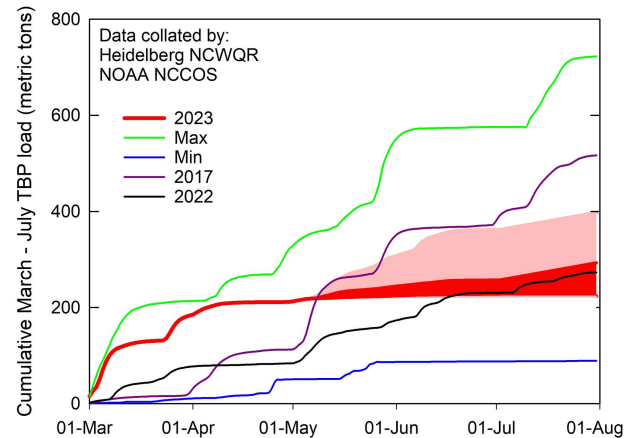


Fig. 2. Cumulative TBP loads for the Maume River (Waterville, OH). Each line denotes a different year or the min/max cumulative load since 2002. 2023 is in red: the solid line is the measured load to May 2nd; the red area shows the likely range for the remainder of the loading season; and the light red shows the possible range.

Satellite Image - True Color

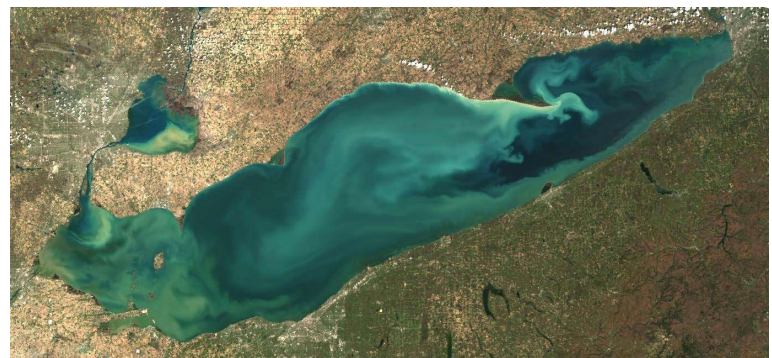


Fig. 4. True color image from 27 April 2023 derived from the Copernicus Sentinel-3b satellite. Sediment from the Maume and other rivers, due to rainfall in the watershed, causes the tan color observed in the western basin.

For more information visit: coastalscience.noaa.gov/science-areas/habs/hab-forecasts/lake-erie/ or ncwqr.gov/

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