Western Lake Erie HAB Early Season Projection

Bulletin 04 - 2024-05-23

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

With observations through May 21 we predict a potential severity range of 4.5-7.5, similar to what we predicted in early May. Rainfall amounts in the Maumee watershed were less than expected last week, resulting in only a slight increase in the total TBP load. However, we continue to expect a moderate to larger-than-moderate summer bloom. If close to average rainfall occurs through June, we expect a severity closer to 5, similar to the 2023 bloom. If higher than average rainfall occurs, the bloom severity may be higher (~7), closer to 2022.

The range in forecasted severity reflects the uncertainty in forecasting precipitation, particularly through June and July. We will update the early season projection weekly with new information, and will issue a comprehensive seasonal forecast on Jun. 27. 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 via forecasts that are posted daily on the web, and emailed to subscribers weekly.

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Predicted Bloom Severity

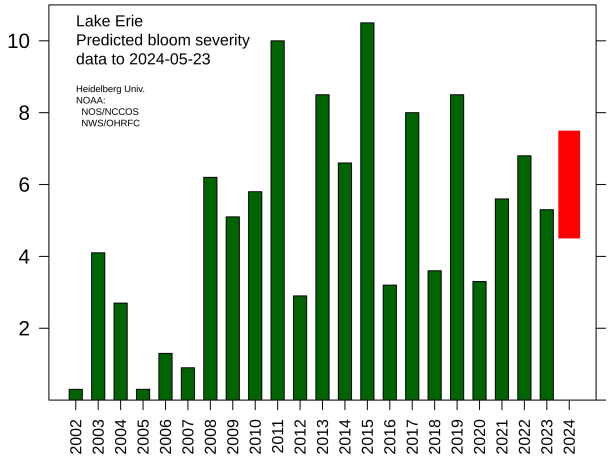

Fig. 1. Predicted bloom severity as compared to previous years. The wide red bar is the likely range of severity based on the limits of the forecast uncertainty (4.5-7.5). There is uncertainty in the bloom severity due to the range in estimated Maumee River flow from the river forecast and subsequent TBP loads in June and July.

Cumulative Total Bioavailable Phosphorus

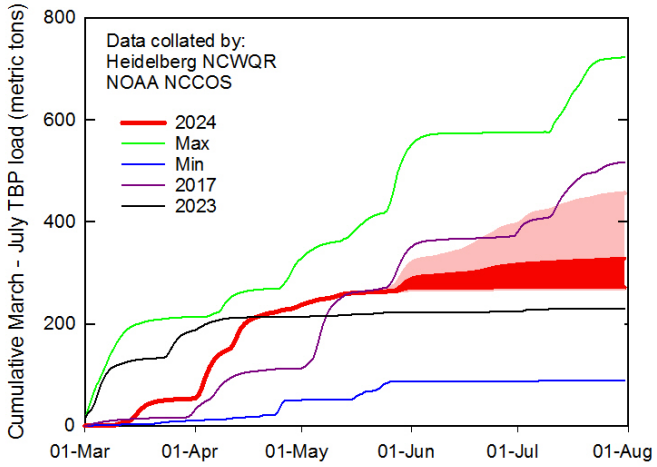

Fig. 2. Cumulative TBP loads for the Maumee River (Waterville, OH). Each line denotes a different year or the min/max cumulative load since 2002. 2024 is in red: the solid line is the measured load to May 21; the red area shows the likely range for the remainder of the loading season; and the light red shows the possible range.

Total Bioavailable Phosphorus

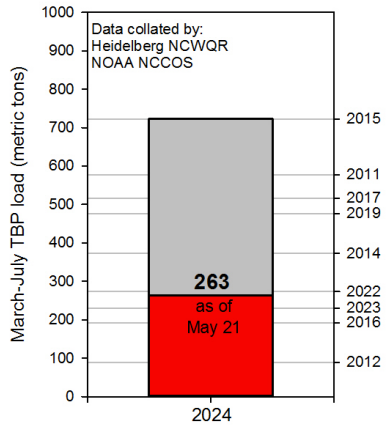

Fig. 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville, OH to date. The right axis denotes the TBP load from selected previous years.

Satellite Image - True Color

Fig. 4. True color image for 21 May 2024 derived from the Copernicus Sentinel-3a/b satellite. Discolored, brown water along the southern shore of western Lake Erie is due to sediment (tan color) and the annually occurring spring diatom bloom (khaki color).

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

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