

# Western Lake Erie HAB Early Season Projection

Bulletin 01 - 2024-05-02

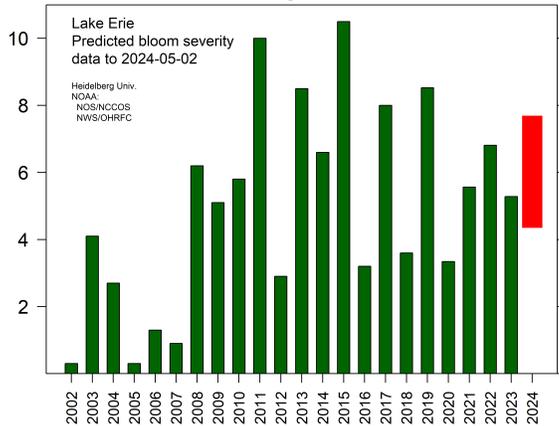
**Summary:** The Western Lake Erie HAB Early Season Projection provides an estimate of potential *Microcystis* harmful algal bloom (HAB) severity. The projected severity depends on input of total bioavailable phosphorus (TBP) from the Maumee River during the loading season (Mar. 1-Jul. 31), and uses 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 Apr. 30, we expect a moderate to larger than moderate summer bloom, with a severity between 4.5-7.5. April precipitation and TBP loads were well above average, with the second highest April TBP load since 2000. We expect wetter than normal conditions in the first half of May followed by potentially average or above average rainfall in late May and June. If close to average rainfall occurs, we expect a severity closer to 5, similar to the 2023 bloom. If higher than average rainfall continues through May and June, the bloom severity may be higher (~7), more similar to 2017 or 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.

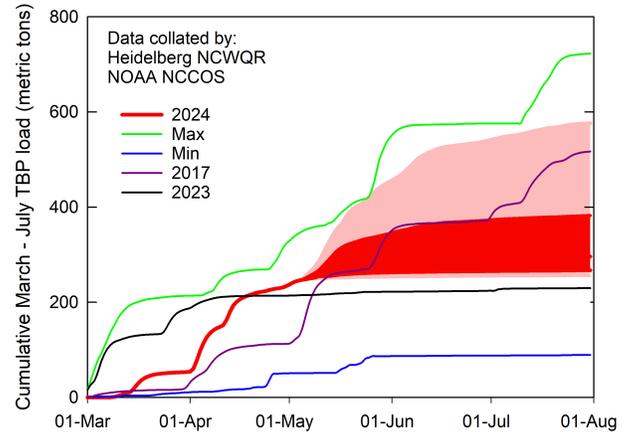
- A. Hounshell, R. Stumpf, J. Noel, A. DaSilva (NOAA), & L. Johnson (Heidelberg University)

## Predicted Bloom Severity



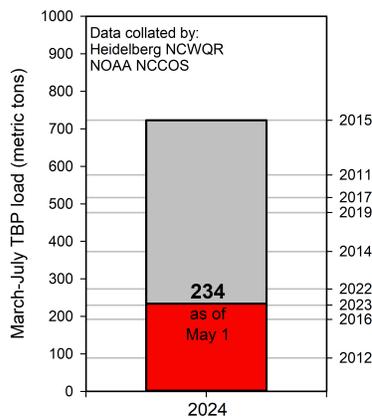
**Fig. 1.** Predicted bloom severity as compared to previous years. The wide red bar is the likely range of severity based on the limits of the forecast uncertainty (4.5-7.5). There is uncertainty in the bloom severity due to the range in estimated Maumee River flow from the river forecast and subsequent 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 Apr. 30; 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. As of 30 Apr. 2024, TBP loads have exceeded the total TBP load for the previous 2023 loading season (Mar.-Jul. 2023).

## Satellite Image - True Color



**Fig. 4.** True color image for 22 Apr. 2024 derived from the Copernicus Sentinel-3a satellite. Discolored, brown colored water along the southern shore of western Lake Erie is due to the Maumee River plume.

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