

Western Lake Erie Harmful Algal Bloom Early Season Projection

17 May 2022, Projection 02



The Western Lake Erie HAB Early Season Projection gives an estimate of potential bloom severity based on a combination of measurements and forecasts of river discharge and phosphorus loads from now through July. The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) depends on input of total bioavailable phosphorus (TBP) from the Maumee River during the loading season (March 1-July 31). TBP is the sum of dissolved phosphorus and the portion of particulate phosphorus available for HAB development.



With observations through May 15, we expect a bloom that is less severe than 2021 (<6). If precipitation for the rest of the spring matches the early season forecast of near or below average rainfall, a smaller bloom, similar to 2020 (~3), is likely. While July is not expected to be wet, elevated loads in June may result in a higher CI severity (slightly > 6), but is still too far in the future for a more accurate forecast. We will update the early season projection each week with new information, and will issue a comprehensive seasonal forecast on June 30th.

Any bloom that does develop will change over time and move with the wind; we will provide information on the presence and location of the bloom throughout the summer. The TBP loads are projected based on Heidelberg University data, river forecasts from the National Weather Service Ohio River Forecast Center (through mid-July), and previous years to the end of July.

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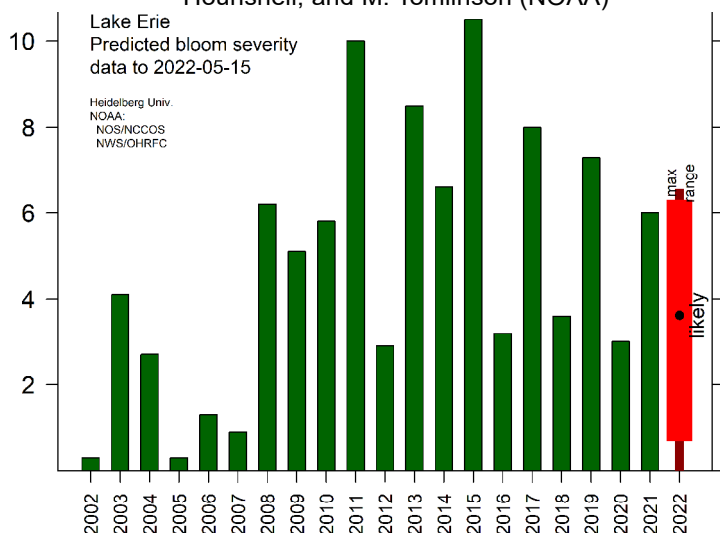


Figure 1. Projected bloom as compared to previous years. The wide, bright red bar is the likely range of severity based on limits of model uncertainty. The narrow, dark red bar is the potential range of severity. Because the forecast uses modeled discharge for two months, there is uncertainty in maximum bloom severity.

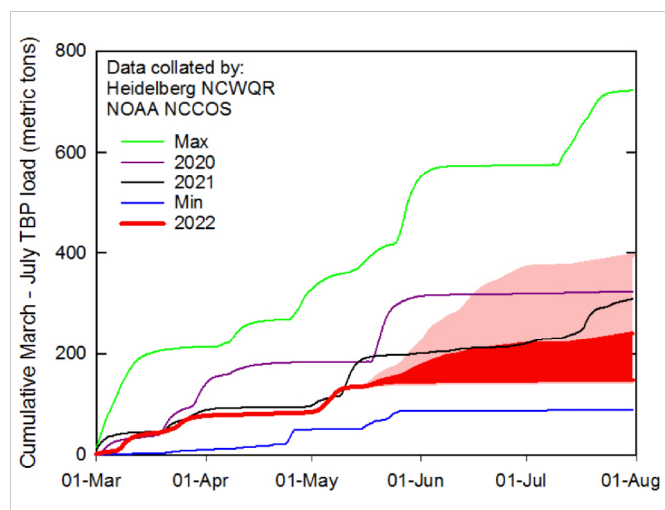


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville, OH). Each line denotes a different year. 2022 is in red: the solid line is the measured load to May 15; the red area shows the likely range for the remainder of the loading season; and the light red shows the possible range.

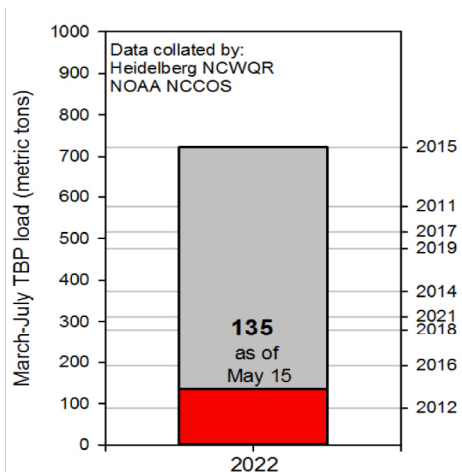


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville, OH to date. The right axis denotes the TBP load from selected previous years. Loads to date are low.



Figure 4. True color image of Lake Erie on 15 May 2022 derived from the Copernicus Sentinel-3b satellite. Brighter water in the western Lake Erie basin is likely due to sediment from recent runoff or wind resuspension.