

Western Lake Erie Harmful Algal Bloom Early Season Projection

14 June 2022, Projection 06



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



With observations through June 13, we continue to expect a bloom that is likely less severe than 2021 (<6) with a maximum range a little >6. If precipitation for the rest of the spring continues to match the early season forecast of near average rainfall, a smaller bloom, similar to 2020 (~3), is likely. While June and July are expected to have average rainfall, there is still large uncertainty in the size of rain events, especially in the next few weeks. Larger rain events may produce larger TBP loads, resulting in a CI severity closer to 2021 (~6). We will issue a comprehensive seasonal forecast on June 30th.

Blooms that do form will move with the wind and change over time; we will provide information on the presence and location of the bloom throughout the summer. The TBP loads are projected using Heidelberg University data and river forecasts from the National Weather Service Ohio River Forecast Center (through July).

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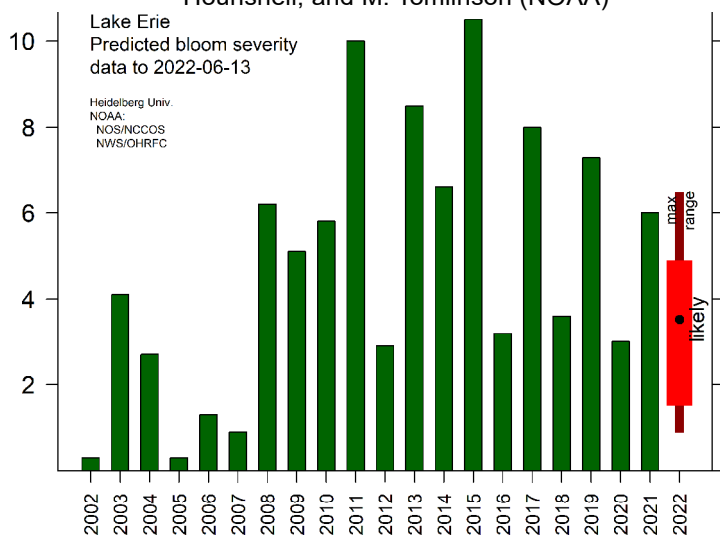


Figure 1. Projected bloom intensity as compared to previous years. The wide, bright red bar is the likely range of severity based on limits of model uncertainty. The narrow, dark red bar is the potential range of severity. Because the forecast uses modeled discharge for two months, there is uncertainty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

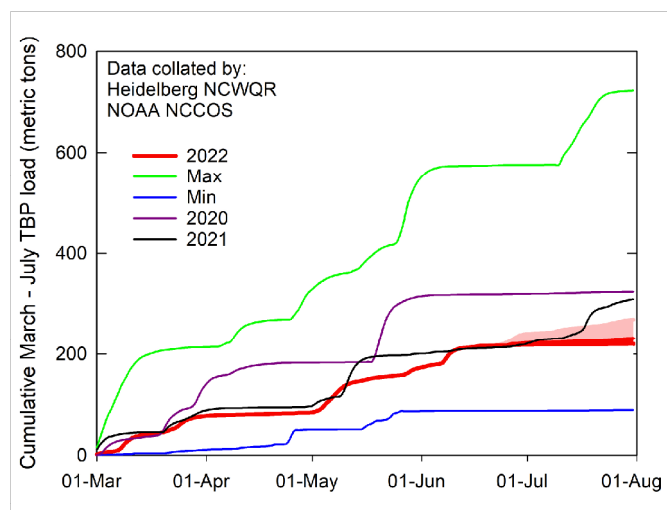


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville, OH). Each line denotes a different year. 2022 is in red: the solid line is the measured load to June 13; the red area shows the likely range for the remainder of the loading season; and the light red shows the possible range. The bloom forecast includes additional uncertainty in location and intensity of rainfall events that is not fully captured in the load estimate.

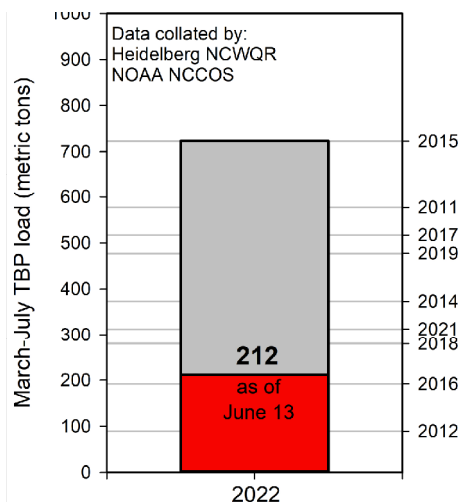


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville, OH to date. The right axis denotes the TBP load from selected previous years. Loads to date are about average.



Figure 4. True color image of Lake Erie on 11 June 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.