

Western Lake Erie Harmful Algal Bloom Early Season Projection

24 May 2022, Projection 03



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 May 22, we expect a bloom that is likely less severe than 2021 (<6) with a maximum range slightly above 6. If precipitation for the rest of the spring matches 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 uncertainty in the size of rain events. Larger rain events may produce larger TBP loads, resulting in a CI severity closer to 2021 (~6). We will update the early season projection each week with new information, and will issue a comprehensive seasonal forecast on June 30th.

Blooms that 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 mid-July).

R. Stumpf, J. Noel (NOAA), and L. Johnson (Heidelberg University) with assistance from E. Davenport, A. Hounshell, and M. Tomlinson (NOAA)

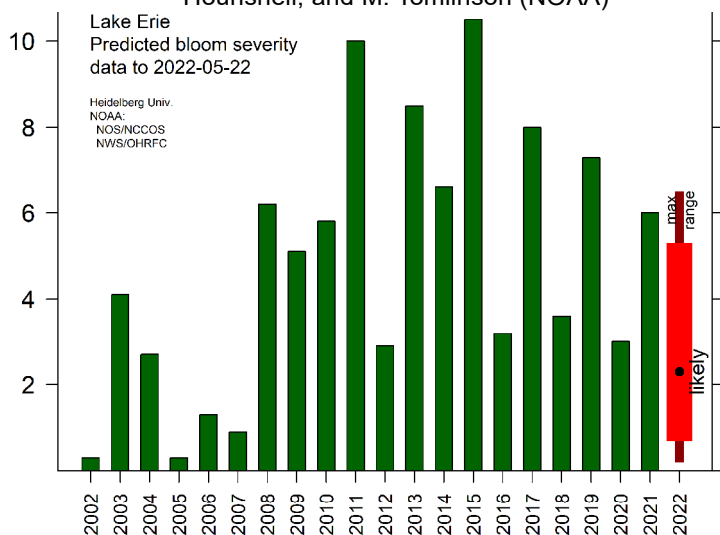


Figure 1. Projected bloom as compared to previous years. The wide, bright red bar is the likely range of severity based on limits of model uncertainty. The narrow, dark red bar is the potential range of severity. Because the forecast uses modeled discharge for two months, there is uncertainty in maximum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

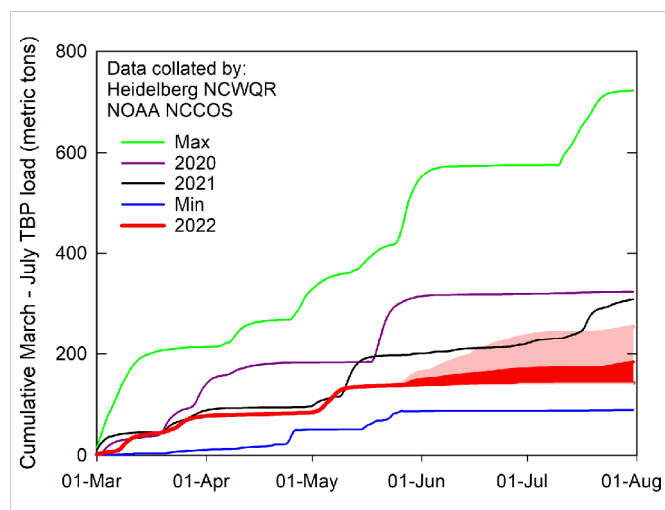


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville, OH). Each line denotes a different year. 2022 is in red: the solid line is the measured load to May 22; the red area shows the likely range for the remainder of the loading season; and the light red shows the possible range.

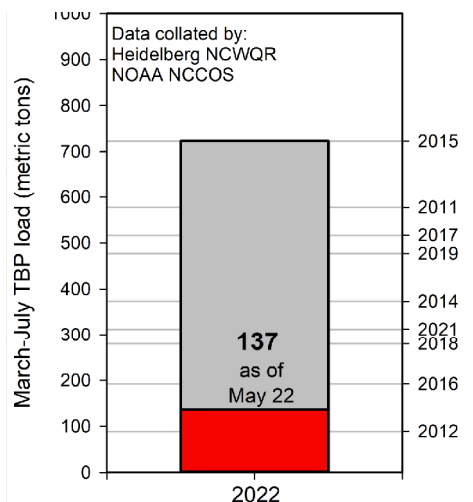


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville, OH to date. The right axis denotes the TBP load from selected previous years. Loads to date are low.



Figure 4. True color image of Lake Erie on 17 May 2022 derived from the Copernicus Sentinel-3a satellite. Due to clouds, a more recent image has not been obtained. Brighter water in the western Lake Erie basin is likely due to sediment from recent runoff or wind resuspension.