

Lake Erie Harmful Algal Bloom Early Season Projection

30 May 2018, Projection 04



The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) depends on the input of bioavailable phosphorus, particularly from the Maumee River during the loading season (March - July). This bulletin gives an estimate of potential bloom severity based on a combination of measurements through May 28, river forecasts until July 28st, and past data to the end of July.

March had average precipitation, April was wetter than average, and May has continued to be somewhat wetter than average (including today's forecasted storms). The current outlook for June is for slightly drier conditions. The phosphorus load to date is sufficient for some bloom to occur. The range has continued to decrease, although we still have a large uncertainty in the projected bloom severity. This uncertainty will be reduced as we replace modeled phosphorus loads with measured loads.

These projections will be updated each week through the end of June with new data and weather models. The final seasonal forecast will be made in early July with a comprehensive set of models and data. This seasonal projection is for the peak bloom severity, which is typically not observed until late August or early September in the western lake. Most of the lake will be unaffected. Even in the Western Basin, bloom location will depend on wind, and NOAA will provide updates on the bloom location twice weekly during the summer. This projection uses river forecasts from the National Weather Service Ohio River Forecast Center, and measurements from Heidelberg University.

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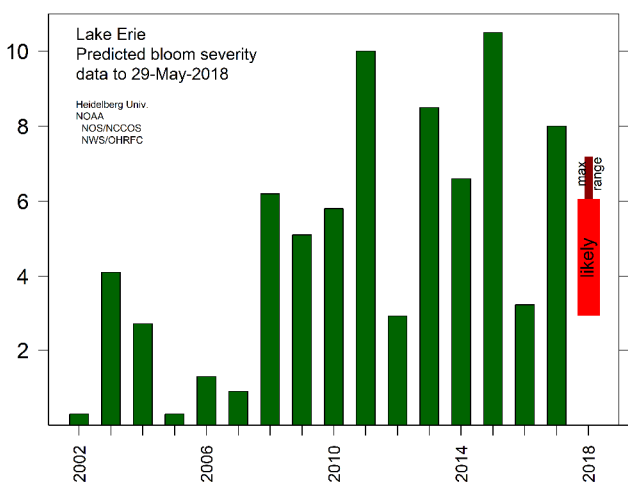


Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on uncertainty in the weather forecasts. The narrow bar is the maximum range of severity based on the models. Because the projection uses modeled discharge for eight weeks, there still remains uncertainty in potential bloom severity.

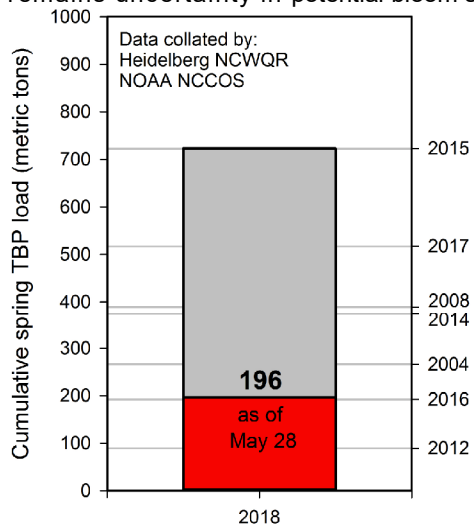


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads have passed 2016. Data at: <http://data.glos.us/maumee/>

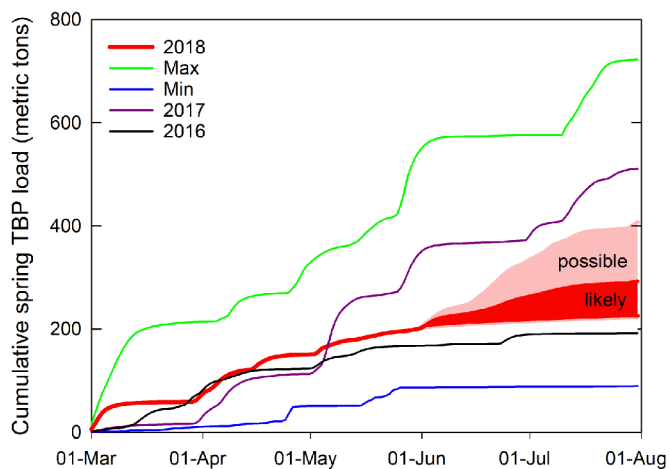


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville). Each line denotes a different year. 2018 is in red, the solid line is the measured load to May 28st, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.



Figure 4. True color image on 28 May 2018 made with data from the Copernicus Sentinel-3 satellite (provided by EUMETSAT). With lower flow this past week, the Maumee River no longer has an obvious sediment plume. Water color variations in the lake reflect both sediment stirred up by wind and the normal—and harmless—spring algal bloom. The cyanobacteria *Planktothrix* has appeared in Sandusky Bay, as it does each year at this time. No cyanobacteria are present in Lake Erie proper.