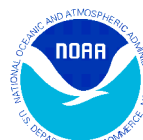


Lake Erie Harmful Algal Bloom Early Season Projection

22 June 2018, Projection 07



The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) depends on the input of bioavailable phosphorus, particularly from the Maumees River during the loading season (March - July). This bulletin gives an estimate of potential bloom severity based on a combination of measurements through June 21 and river forecasts through July.



March had average precipitation and river loads, April and May were somewhat wetter than average. In June, weekly thunderstorms have produced occasional heavy rain in the Maumees Basin, keeping the discharge and phosphorus load above average. The bloom will be larger than the mild 2016 bloom, but we still expect it to be smaller than in 2017. The final size will be influenced by the occurrence of heavy rainfall events in the Maumees basin over the next few weeks. Field samples have found some cyanobacteria in Maumees Bay, which are present at very low concentrations that do not pose a risk—normal for late June. The annual, and harmless, spring algae still dominate the western basin.

Next week, NOAA will issue a standard weekly bulletin. The final seasonal forecast will be made July 12 with a comprehensive set of models and data. The forecast is for the peak bloom severity, which typically does not occur 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.

Stumpf, Noel (NOAA), Johnson (Heidelberg University), and Dupuy (CSS at NOAA)

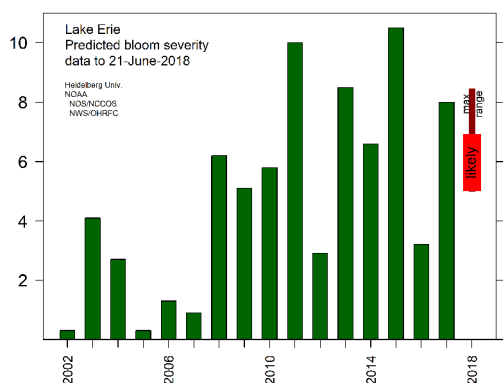


Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on uncertainty in the weather forecasts. The narrow bar is the maximum range of severity based on the models. Because the projection uses modeled discharge for five weeks, there still remains uncertainty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

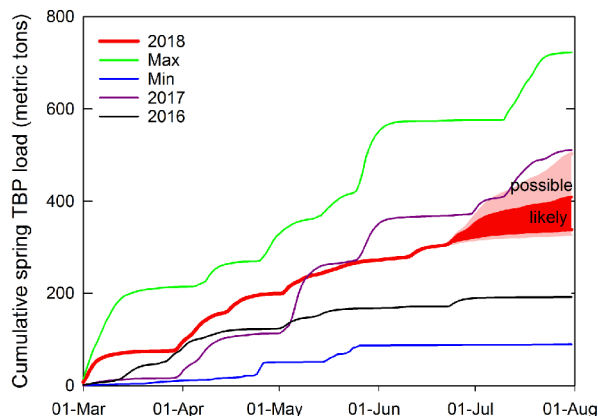


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumees River (based on Waterville). Each line denotes a different year. 2018 is in red, the solid line is the measured load to June 21st, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

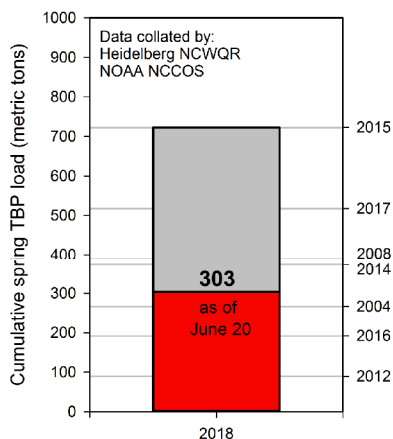


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumees River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads have passed 2016. Data at: <http://data.glos.us/maumees/>



Figure 4. Cyanobacteria concentration on 15 June 2018 (processed from Copernicus Sentinel-3 data provided by EUMETSAT). High flow events from the Sandusky River pushed some of the Sandusky Bay *Planktothrix* bloom into Lake Erie. It typically does not last long in the lake. In the western basin, any cyanobacteria were present only at concentrations too low for detection or concern.