

Lake Erie Harmful Algal Bloom Early Season Projection

12 June 2018, Projection 06



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 June 11 and river forecasts through July.



March had average precipitation and river loads, April and May were somewhat wetter than average. Last week, thunderstorms produced heavy rain in the Maumee basin, which bumped up the phosphorus load, but did not substantially change the forecast from average discharge and phosphorus load over the next month. (Thunderstorms are part of a typical Ohio summer.) We currently expect a bloom bigger than the mild 2016 bloom, but noticeably smaller than in 2017. The final size will be determined by the frequency of heavy rainfall events in the Maumee basin over the next month.

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 July 12 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.

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

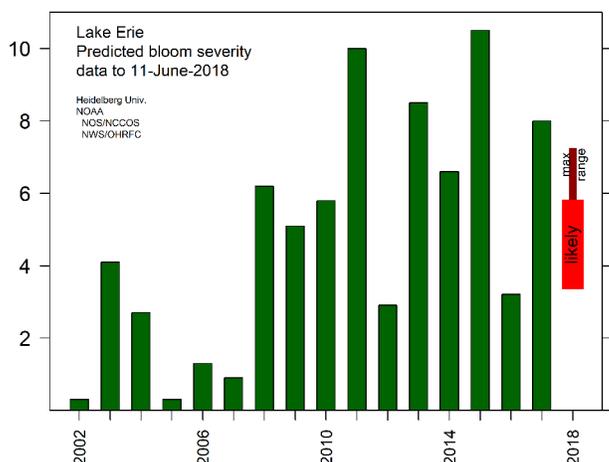


Figure 1. Projected bloom severity compared to previous years. The wide bar is the likely range of severity based on uncertainty in the weather forecasts. The narrow bar is the maximum range of severity based on the models. Because the projection uses modeled discharge for seven weeks, there still remains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

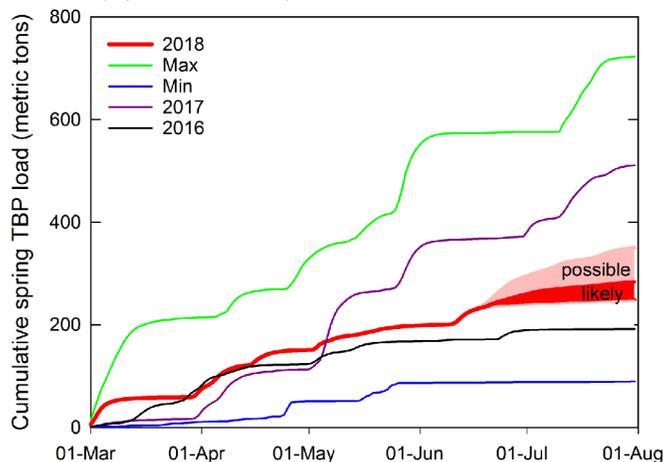


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville). Each line denotes a different year. 2018 is in red, the solid line is the measured load to June 11th, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

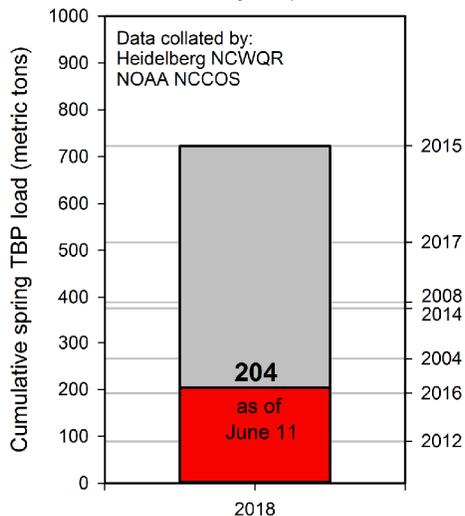


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads have passed 2016. Data at: <http://data.glos.us/maumee/>



Figure 4. True color image on 06 June 2018 made with data processed from the Terra satellite (provided by NASA). Clouds have obscured the area for most of the last week. Color variations are caused by sediment from previous weather events and from the normal—and harmless—spring algal bloom. The cyanobacteria *Planktothrix* has appeared in Sandusky Bay, as it does each year at this time. Cyanobacteria are not detectable in Lake Erie proper.