

Lake Erie Harmful Algal Bloom Early Season Projection

14 May 2018, Projection 02



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 1-July 31). This bulletin gives an estimate of potential bloom severity based on a combination of measurements to date, and model predictions into July. The final seasonal forecast will be made in early July with more data and a comprehensive set of models.

March had average precipitation, April was wetter than average, and May is expected to be somewhat wetter than average. Another rainfall event this week contributes to this outlook; it is expected to product moderately high (but not severe) flow in the Maumee River. The current outlook for June suggests drier conditions. The phosphorus load to date is sufficient for some bloom to occur, however, the uncertainty is quite large (2016 load, shown for reference, was a relatively mild bloom). As we replace modeled phosphorus loads with measured loads, the uncertainty will decrease.

Total bioavailable phosphorus (TBP) is the sum of dissolved phosphorus (which is ~100% available for HAB development), and the portion of particulate phosphorus that is available for HAB development. The TBP loads are projected to July 13th using river forecasts from the National Weather Service Ohio River Forecast Center, and to the end of the loading season using past data. The projection will be updated approximately weekly with new data and weather models through the end of June.



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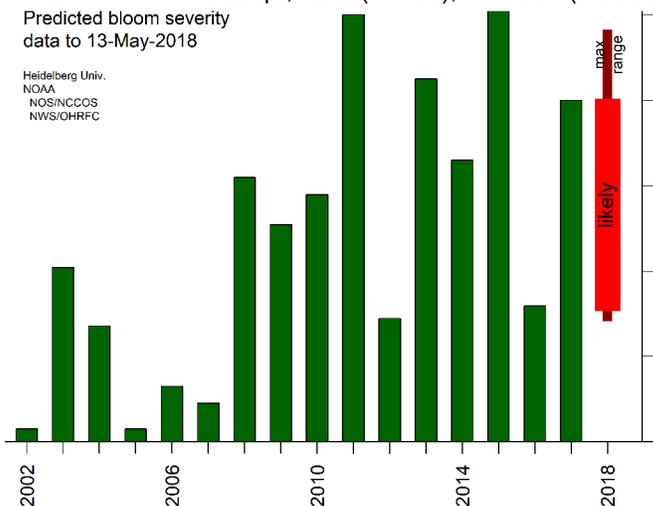


Figure 1. Projected bloom severity compared to previous years. The wide bar is the likely range of severity based on data from the last 15 years. The narrow bar is the potential range of severity. Because the projection uses modeled discharge for two months, there is a large uncertainty in bloom severity.

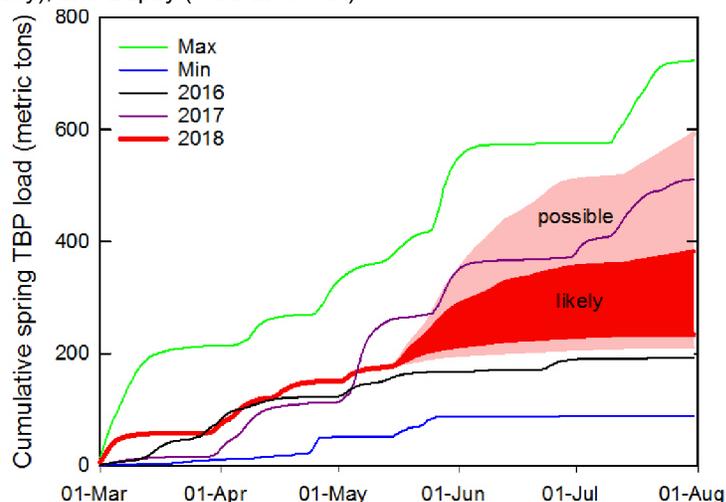


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville). Each line denotes a different year. 2018 is in red, the solid line is the measured load to May 13th, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

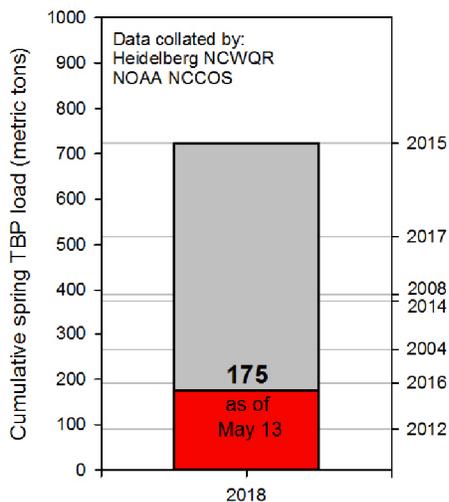


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads have surpassed 2012, and are about equal to 2016. Data at:

<http://data.glos.us/maumee/>

For more information visit: <http://www.ncwqr.org/> or <http://coastalscience.noaa.gov/research/habs/forecasting/>

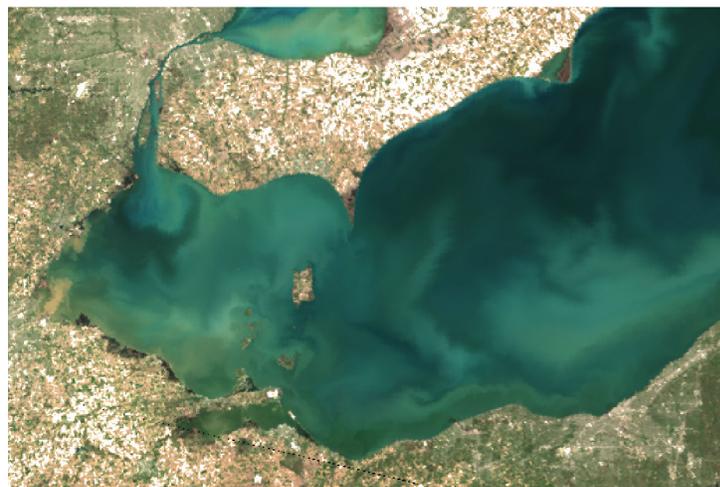


Figure 4. True color image on 08 May 2018 taken by the OLCI on the Copernicus Sentinel-3a satellite. A fresh plume of sediment from the Maumee River appears in the western basin. Previous high flow events and strong winds also cause sediment to be found throughout the lake.