

Lake Erie Harmful Algal Bloom Early Season Projection



07 May 2018, Projection 01

The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) is dependent on input of bioavailable phosphorus, particularly from the Maume River during the loading season (March 1-July 31). This product 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.

A wet early April combined with heavy rainfall on May 2 have led to slightly above average discharge and phosphorus loads for the Maume River this season. Precipitation is expected to be near, to slightly above, normal for the next several weeks; with a forecast of fairly low chance of major rainfall events that would cause significant runoff. 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). The projection will be updated approximately weekly with new data and weather models through the end of June.

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 3rd using river forecasts from the National Weather Service Ohio River Forecast Center, and to the end of the loading season using past data.



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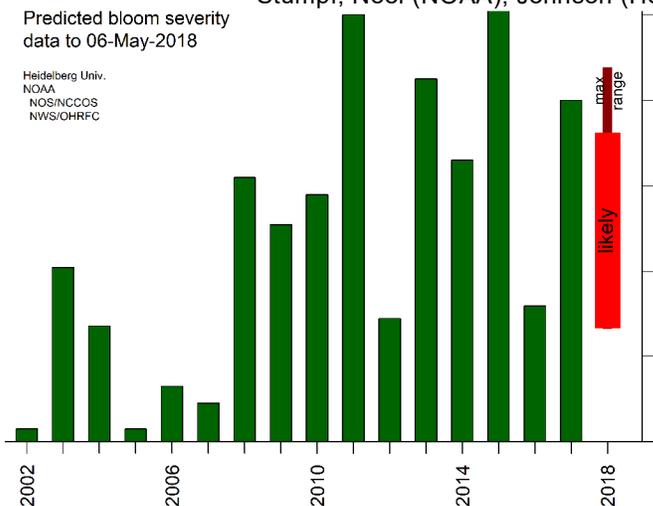


Figure 1. Projected bloom severity compared to previous years. The wide bar is the likely range of severity based on data from the last 15 years. The narrow bar is the potential range of severity. Because the forecast uses modeled discharge for two months, there is a large uncertainty in bloom severity.

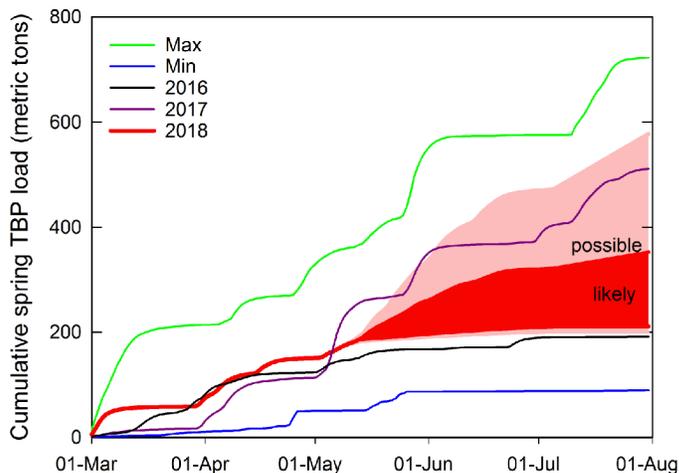


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maume River (based on Waterville). Each line denotes a different year. 2018 is in red, the solid line is the measured load to May 6th, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

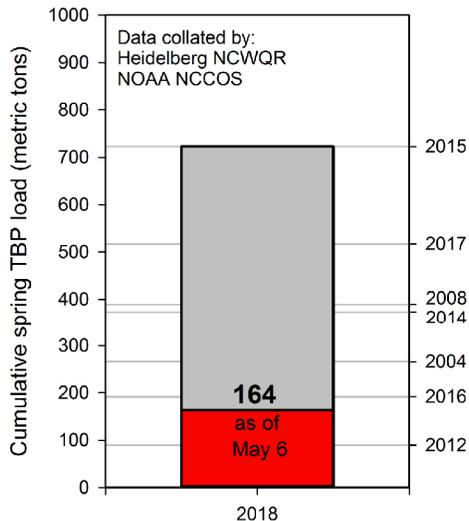


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maume River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads have surpassed 2012, and are about equal to 2016.

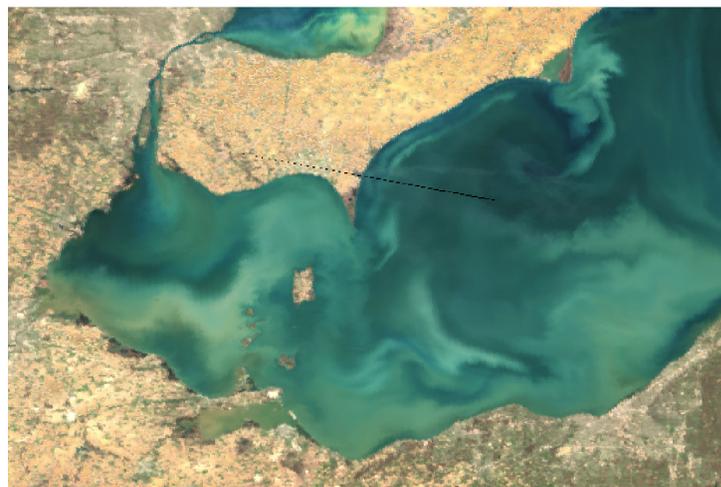


Figure 4. True color image on 01 May 2018 taken by the OLCI on the Copernicus Sentinel-3a satellite. A plume of sediment from the Maume River extends into the western basin. Sediment stirred up by strong winds, and sediment from other rivers appears throughout the lake.