

Lake Erie Harmful Algal Bloom Early Season Projection

09 May 2019, Projection 01



The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) is dependent on input of bioavailable phosphorus 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 forecasts of phosphorus loads into July. The projection will be updated weekly with new data and weather models through the end of June. The final seasonal forecast will be made on July 11 using the measured phosphorus loads for the spring.

We project that the bloom will have a severity greater than 5, which is larger than 2018, as a result of heavy rains in April that produced high river flow and large phosphorus loads. High flow is expected to decrease after this week, then precipitation is forecast to be near normal going into summer. There is considerable uncertainty in the projected maximum severity; the maximum is based on the possible occurrence of heavy rain in June and early July. As we add data over the next two months, this uncertainty will decrease. Any bloom that develops will change with time and move with the wind.

Total bioavailable phosphorus (TBP) is the sum of dissolved phosphorus and the portion of particulate phosphorus available for HAB development. The TBP loads are projected based on Heidelberg University data, river forecasts from the National Weather Service Ohio River Forecast Center (through early July), and previous years to the end of July. -Stumpf, Noel (NOAA), Johnson (Heidelberg University)

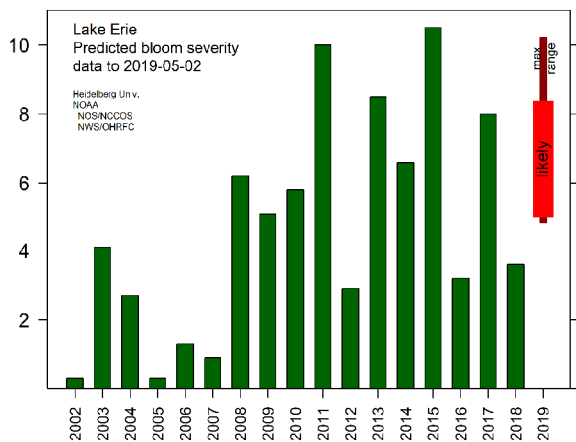


Figure 1. Projected bloom severity compared to previous years. The wide bar is the likely range of severity based on data from the last 15 years. The narrow bar is the potential range of severity. Because the forecast uses modeled discharge for two months, there is a large uncertainty in maximum bloom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

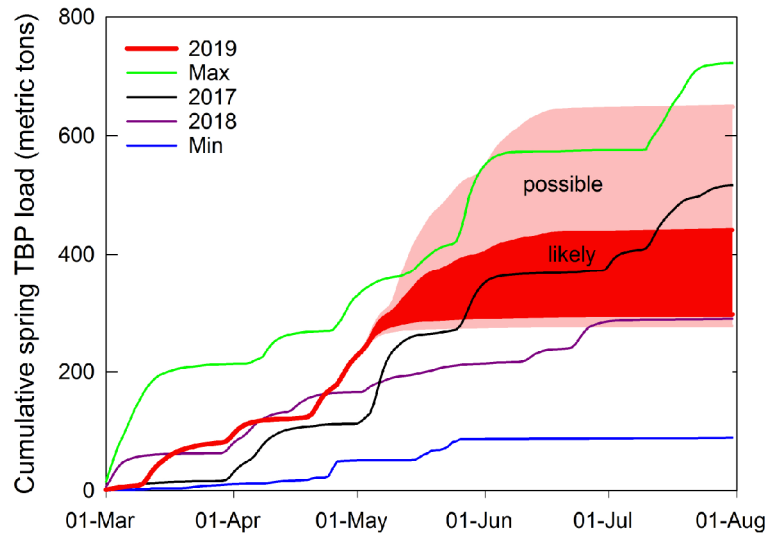


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maume River (based on Waterville). Each line denotes a different year. 2019 is in red, the solid line is the measured load to May 3rd, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

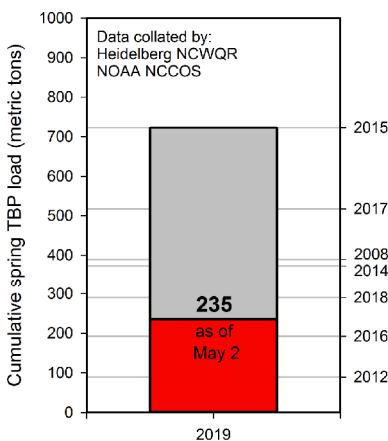


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maume River near Waterville to date. The right axis denotes the TBP load from selected previous years. Loads through May 1 fall between 2016 and 2018, both moderate bloom years.

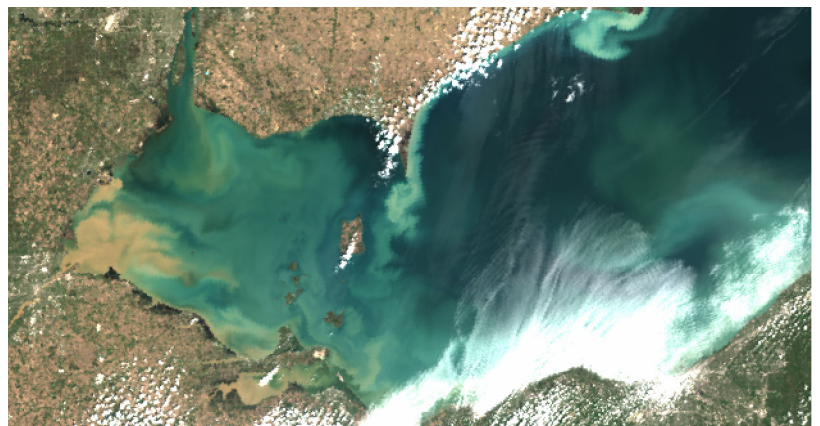


Figure 4. True color image on 05 May 2019 taken by the OLCI on the Copernicus Sentinel-3a satellite. A plume of sediment from the Maume River extends into the western basin. Sediment from other rivers appears throughout the lake.