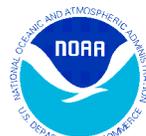


Lake Erie Harmful Algal Bloom Early Season Projection

15 May 2019, Projection 02



The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) is dependent on input of bioavailable phosphorus from the Maumee 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.



Like last week, we project that the bloom will have a severity greater than 5 (greater than 2018), as a result of heavy rains in April and early May that produced high river flow and large phosphorus loads. Flow is expected to continue to decrease. Precipitation is forecast to be near normal going into summer. The projected maximum severity has decreased somewhat; that maximum still includes the possible occurrence of heavy rain in June and early July. As we add data over the next two months, this uncertainty will continue to 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) with assistance from Davenport and Tomlinson (NOAA)

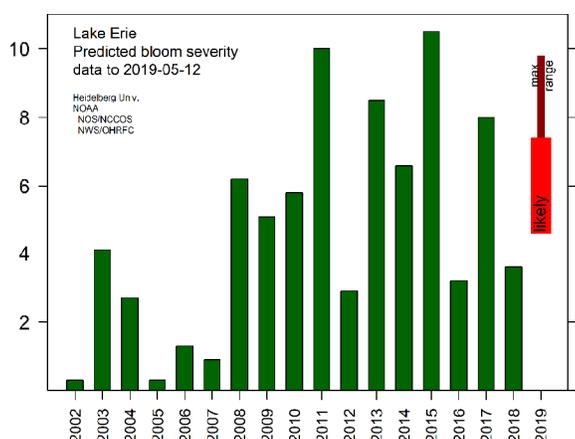


Figure 1. Projected bloom severity compared to previous years. The wide bar is the likely range of severity based on data from the last 15 years. The narrow bar is the potential range of severity. Because the forecast uses modeled discharge for two months, there is uncertainty in maximum bloom severity.

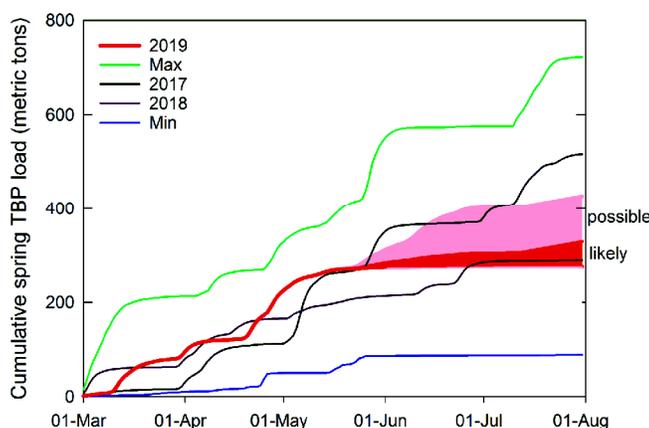


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville). Each line denotes a different year. 2019 is in red, the solid line is the measured load to May 12th, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

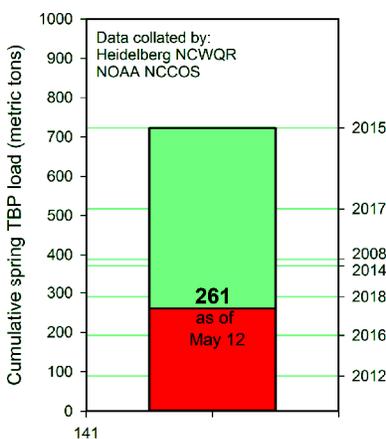


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date. The right axis denotes the TBP load from selected previous years. Loads through May 12 fall between 2016 and 2018, both moderate bloom years.



Figure 4. True color image on 14 May 2019 taken by the OLCI on the Copernicus Sentinel-3a satellite. Sediment from the Maumee River (and other rivers) causes the tan color in the western basin. Sediment resuspended from near the shore produces gray colors in the central basin.