

Western Lake Erie Harmful Algal Bloom Early Season Projection

19 May 2020, Projection 02



The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) depends 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 and forecasts of river discharge and phosphorus loads from now into July. These projections will be updated weekly with new data and weather models through the end of June. A NOAA seasonal Lake Erie HAB Forecast will be issued on July 9th, using measured spring phosphorus loads.



Heavy rain this week has changed the minimum expected bloom size, but it remains in the range we reported last week. We project that the bloom will be smaller than last year (2019), with a likely severity between 3 and 5. Uncertainty in the models and forecasts indicate a potential severity of up to 6 (less than 7.5 seen in 2019). The models include rain events that are expected through early June. There is still uncertainty in the projected maximum severity because of limitations in forecasting the exact location and amount of rainfall. As we add data over the next month, this uncertainty will decrease. Any bloom that develops will change with time and move with the wind; we will provide information on the presence and location of the bloom throughout the summer.

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.

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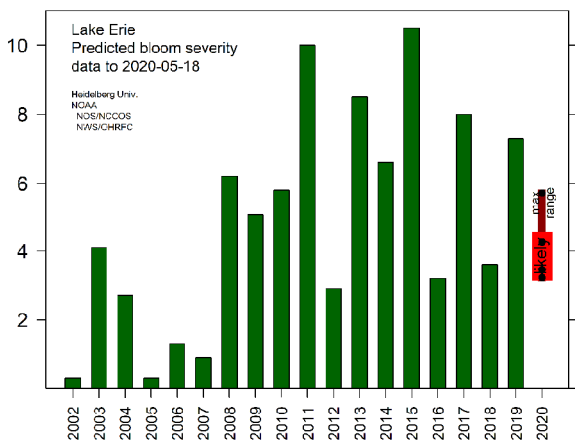


Figure 1. Projected bloom severity compared to previous years. The wide bar is the likely range of severity based on limits of model uncertainty. The narrow bar is the potential range of severity. Because the forecast uses modeled discharge for a month, there is uncertainty in maximum bloom severity.

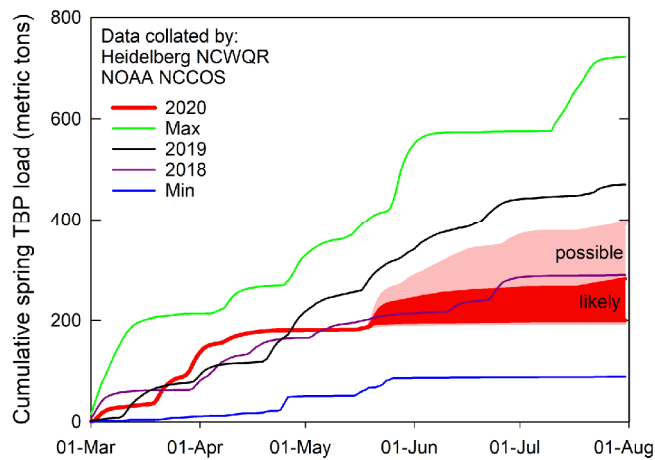


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maume River (based on Waterville). Each line denotes a different year. 2020 is in red, the solid line is the measured load to May 17, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

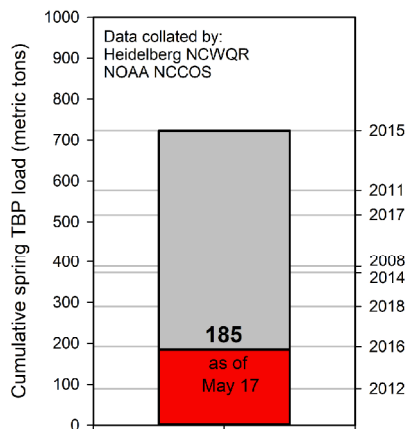


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maume River near Waterville to date. The right axis denotes the TBP load from selected previous years. Loads through May 17 matched those to this time in 2018, and equal the total load for 2016.

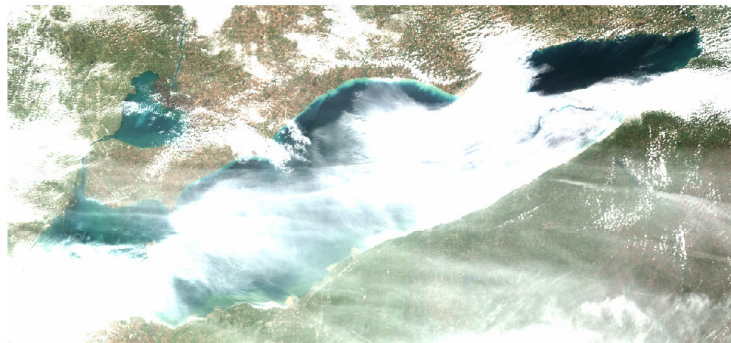


Figure 4. True color image on 16 May 2020 derived from the Copernicus Sentinel-3b satellite. Clouds, associated with rain, have obscured imagery over the last several days.