

Western Lake Erie Harmful Algal Bloom Early Season Projection

13 May 2020, Projection 01



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 to date and forecasts of river discharge and phosphorus loads from now 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 July 9 and it uses the measured phosphorus loads for the spring.



We project that the bloom will be smaller than last year (2019). Our models indicate a likely severity of 4 or less, but the uncertainty in these forecasts indicate a potential severity of up to 6, (still less than 7.5 seen in 2019). Rain events are expected for the rest of May and into June, and are included in the forecast. There is still uncertainty in the projected maximum severity because of limitations in forecasting the exact location and amount of rainfall the rest of May. 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, and we provide information on the presence and location of any 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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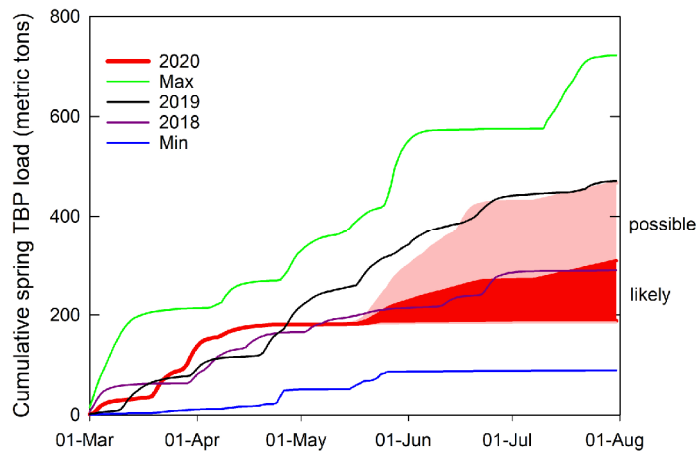
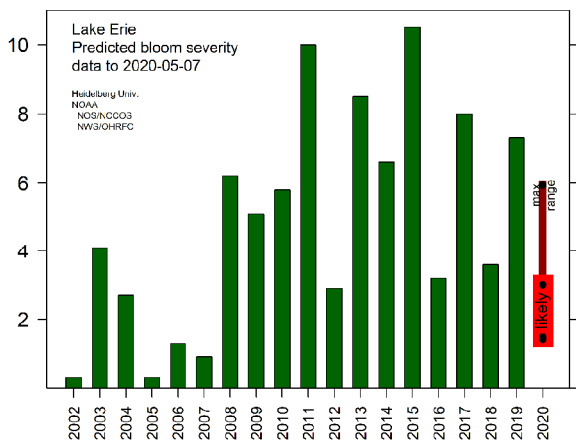


Figure 1. Projected bloom severity compared to previous years. The wide bar is the likely range of severity based on limits of model uncertainty. The narrow bar is the potential range of severity. Because the forecast uses modeled discharge for a month, there is uncertainty in maximum bloom severity.

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 8, the red area shows the likely range for the remainder of the loading season, and the light red shows the possible range.

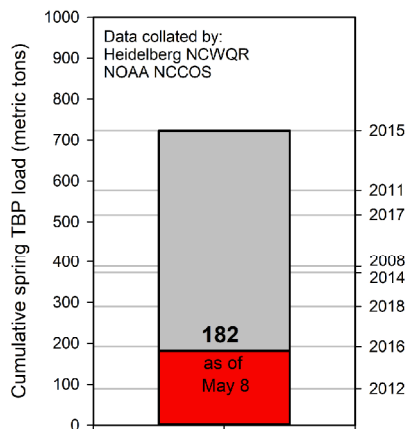


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maume River near Waterville to date. The right axis denotes the TBP load from selected previous years. Loads through May 8 matched those to this time in 2018, and equal the total for 2016.

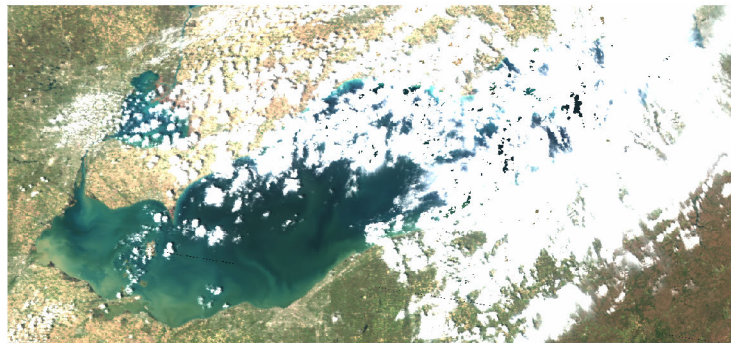


Figure 4. True color image on 7 May 2020 derived from OLCI on Copernicus Sentinel-3a satellite. Sediment either from rivers, or stirred up by winds appears as tan. Harmless algae makes Sandusky Bay appear somewhat brown.