

Lake Erie Harmful Algal Bloom Early Season Projection

15, June 2016, Projection 05



The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) depends on the load of bioavailable phosphorus, particularly from the Maume River during the loading season (March 1-July 31). This product provides an estimate of the bloom severity based on a combination of measurements to date and model predictions into July. The seasonal forecast, with more data and a comprehensive set of models, will be made at a webinar at 2 pm EDT on July 7th. Check Ohio Sea Grant (ohioseagrant.osu.edu) for more information.



To date this spring, the Maume has had an average river discharge. However, precipitation has decreased since late May, resulting in a drop in discharge. While drier conditions are currently expected to continue over the next six weeks, some rain expected over the next week leads to more uncertainty in the forecast than last week. However, the current projection is still for a smaller bloom than the last three years. We again note that estimates of toxicity are not currently possible.

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 22th using river forecasts from the National Weather Service Ohio River Forecast Center, and to the end of the loading season using past data. The projection will be updated weekly with new data and weather models through June.

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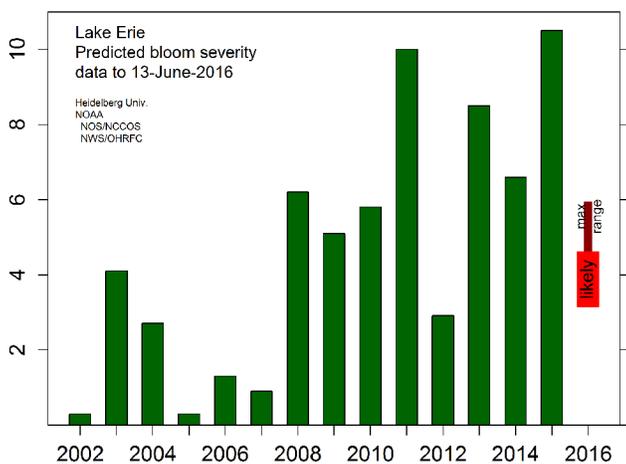


Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on the models. The narrow bar is the potential range of severity. The range has decreased since last week, owing to convergence in the weather models to reduced precipitation.

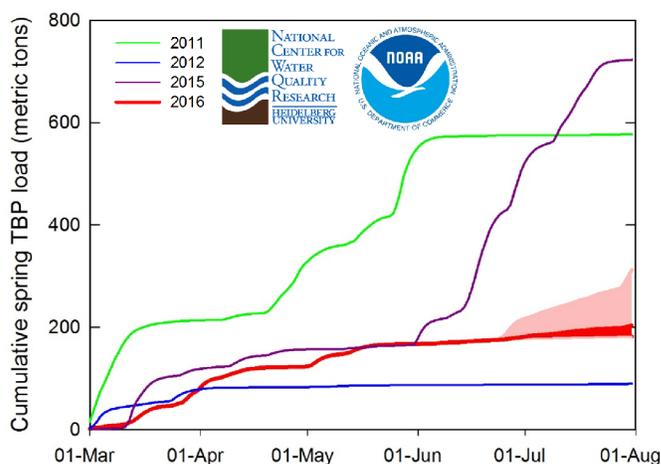


Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maume River (based on Waterville). Each line denotes a different year. 2016 is in red, the solid line is the measured load to June 13th, the likely range for the remainder of the loading season in red area and possible range in light red area. Loads are unlikely to approach those of 2011 or 2015.

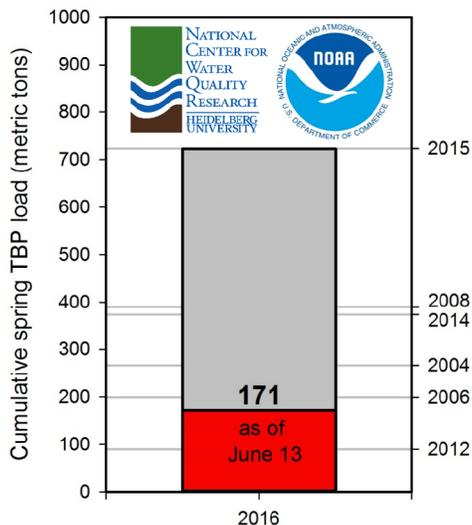


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maume River near Waterville to date. The right axis denotes the TBP load from select previous years. Current loads have surpassed 2012, but remain far lower than several recent years.



Figure 4. True color image from June 12, 2016 taken by MODIS on NASA's Aqua satellite. The brighter areas in the western basin are caused by sediment in the water. There is a small amount of harmless algae coloring the water in some areas.