Lake Erie Harmful Algal Bloom Early Season Projection

14 June, 2017 Projection 05

The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) is dependent on input of bioavailable phosphorus, particularly from the Maumee River during the loading season (March 1-July 31). This product provides an estimate based on a combination of measurements to date and model predictions into July. The final seasonal forecast will be made July 13 with all the data and a comprehensive set of models.

While March and April saw below average discharge and phosphorus loads into the Lake from the Maumee River, wet weather in May led to large phosphorus loads. Drier conditions have developed, although rainfall this week will determine discharge for the next week or more. The total spring load has now exceeded the loads observed in mild bloom years.

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 27th using river forecasts from the National Weather Service Ohio River Forecast Center, and to the end of the loading season using past data.

Stumpf (NOAA National Ocean Service), Johnson (Heidelberg University), and Dupuy (CSS at NOAA)

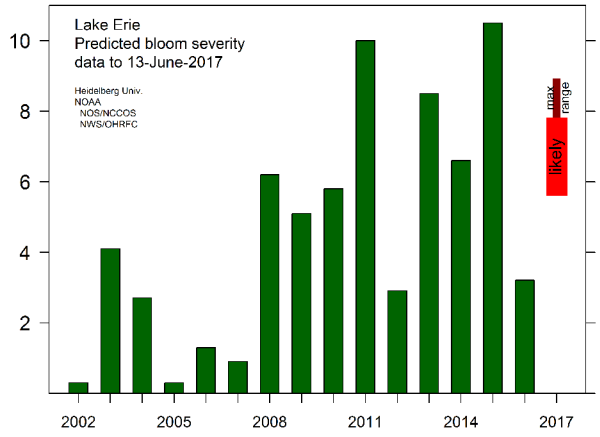

Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on the forecast supplemented with data from the last 15 years. The narrow bar is the potential range of severity. Uncertainty in rainfall and models over the next few weeks determines the uncertainty in the potential bloom severity.

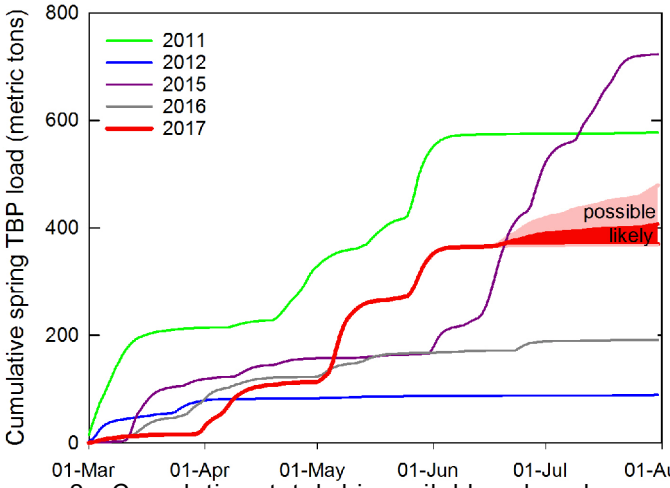

Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville). Each line denotes a different year. 2017 is in red, the solid line is the measured load to June 1, the likely range for the remainder of the loading season in red area and possible range in light red area. The load is highly likely to be lower than either 2011 or 2015.

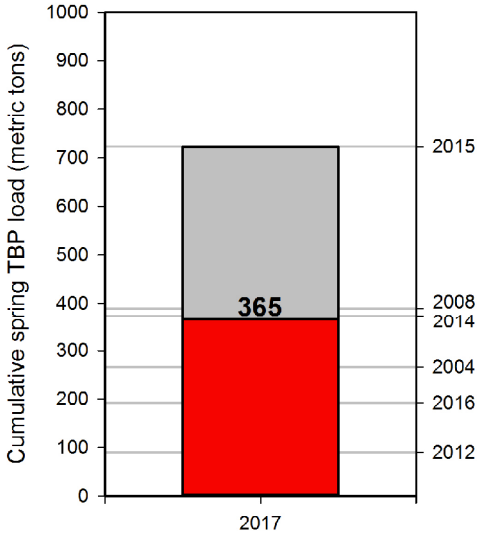

Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads are about those observed in 2014.

Figure 4. True color image from June 11, 2017 taken by the MODIS on NASA's Terra satellite. The bloom of sediment from the Maumee River has decreased. Additional sediment extends down the Ohio coast toward Sandusky Bay.

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