Lake Erie Harmful Algal Bloom Early Season Projection

02 June, 2017 Projection 04

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 in early July with all the data and a comprehensive set of models.

In March and April, the Maumee River had discharge and phosphorus loads below average. May has been an extremely wet month, leading to large phosphorus loads from the Maumee River. The total spring load has now exceeded the loads observed in mild bloom years. The timing of the end of the wet weather is still uncertain, leading to uncertainty in the ultimate phosphorus load and the size of the bloom.

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 12th 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)

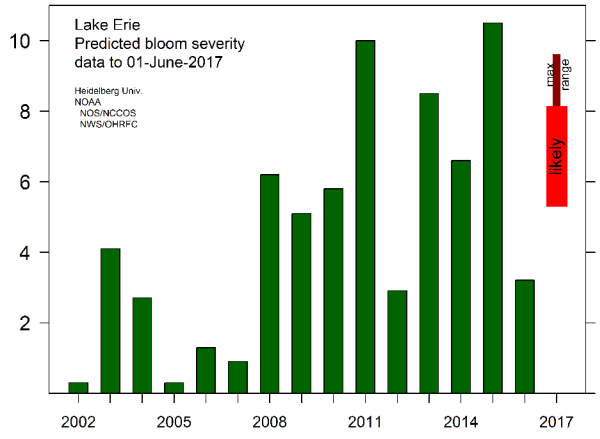

Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on the forecast supplemented with data from the last 15 years. The narrow bar is the potential range of severity. There remains uncertainty in rainfall over the next few weeks, causing the uncertainty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

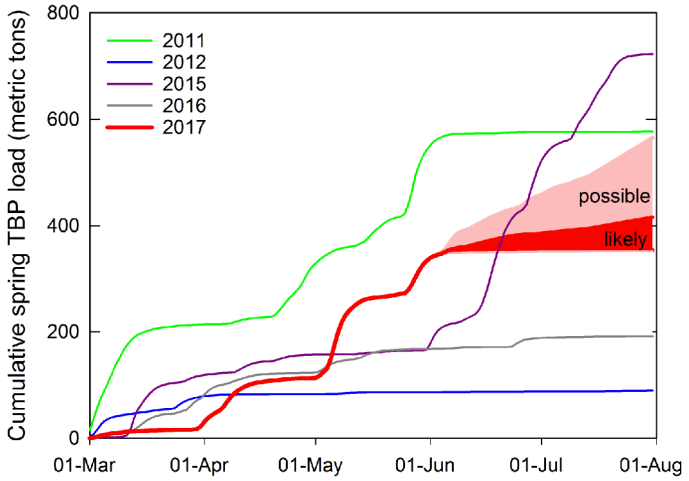

Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville). Each line denotes a different year. 2017 is in red, the solid line is the measured load to June 1, the likely range for the remainder of the loading season in red area and possible range in light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

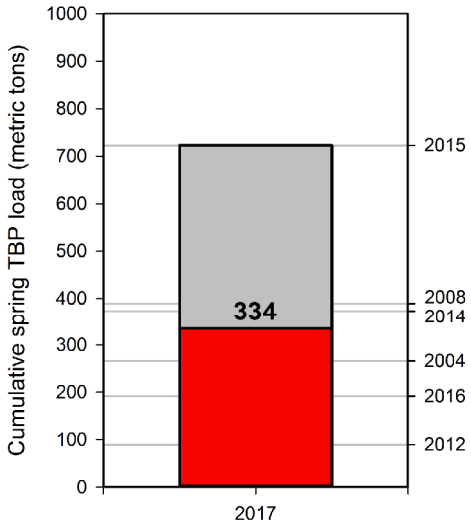

Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads have surpassed 2003 and 2004.

Figure 4. True color image from June 01, 2017 taken by the MODIS on NASA's Aqua satellite. Runoff from the rain event last weekend have produced a plume of sediment from the Maumee River. Additional sediment extends down the Ohio coast toward Sandusky Bay.

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