Lake Erie Harmful Algal Bloom Early Season Projection

25 May, 2017 Projection 03

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 more data and a comprehensive set of models.

In March and April, the Maumee River had discharge and phosphorus loads below average. High rains at the beginning of May, followed by a relatively wet period, have produced a substantial load so far in May. The timing of the end of the wetter weather is still uncertain, leading to a large uncertainty in bloom size. The projection will be updated approximately weekly with new data and weather models through the end of June.

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 June 20th 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)

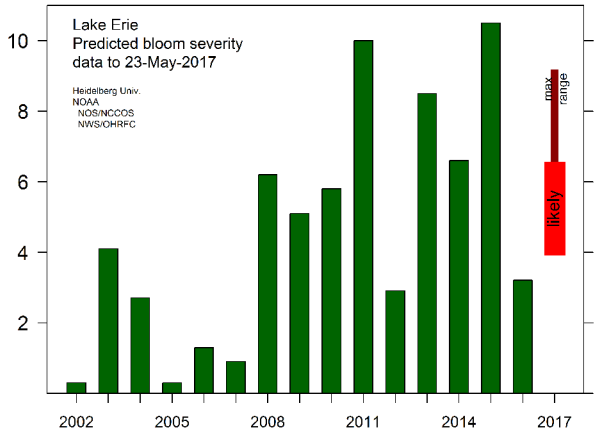

Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on data from the last 15 years. The narrow bar is the potential range of severity. There remains uncertainty in rainfall over the next few weeks, causing the large uncertainty in the potential bloom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

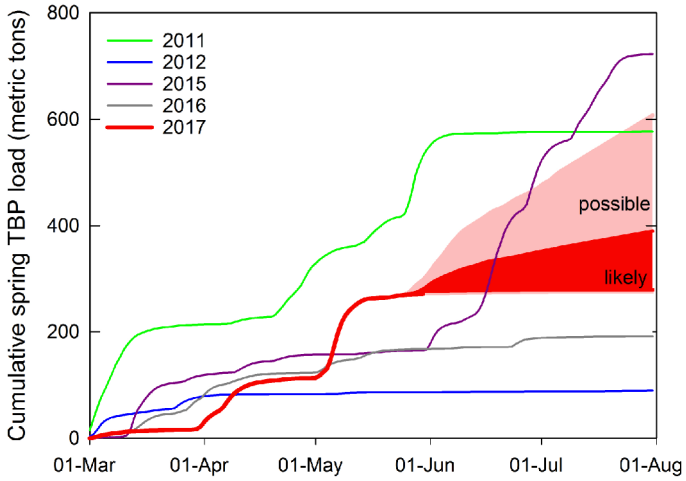

Figure 2. Cumulative total bioavailable phosphorus (TBP) loads for the Maumee River (based on Waterville). Each line denotes a different year. 2017 is in red, the solid line is the measured load to May 24th, the likely range for the remainder of the loading season in red area and possible range in light red area. The load will pass 2016 this week, but is likely to be lower than either 2011 or 2015.

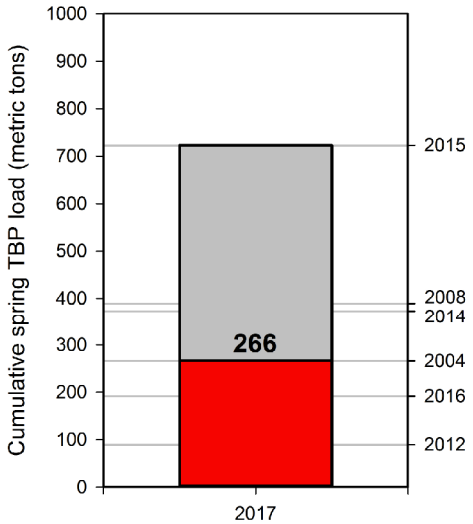

Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date. The right axis denotes the TBP load from selected previous years. Current loads have surpassed 2012, and equaled 2016 on May 24.

Figure 4. True color image from May 22 2017 taken by the MODIS on NASA's Aqua satellite. A plume of sediment from the Maumee River extends down the Ohio coast to Sandusky Bay. Small plumes are also evident around the smaller rivers. Shallow areas also show sediment stirred up from strong winds.

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