Lake Erie Harmful Algal Bloom Early Season Projection

NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE AND THE NATIONAL CENTER FOR WATER QUALITY RESEARCH

26 May 2015, Projection 02

The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) is dependent on phosphorus inputs from March 1st through July 31st, henceforth the loading season. This new product projects the bloom severity based on the combination of current measurements of phosphorus loading from the Maumee River for the season to date with historical records from past years to estimate the remainder of the loading season.

Based on 12 weeks of data (March 1- May 23), the extensive severe blooms observed in 2011 and 2013 are not projected to occur this year. So far, this spring has been relatively dry, resulting in less discharge and lower phosphorus loads into the western basin. However, there is still a relatively large uncertainty in the projection because the loading season still has 2 months. The uncertainty will reduce over time as the loading season progresses.

This experimental product involves the Maumee River phosphorus load data from Heidelberg University's National Center for Water Quality Research and the western Lake Erie bloom severity models by NOAA's National Center for Coastal Ocean Science.

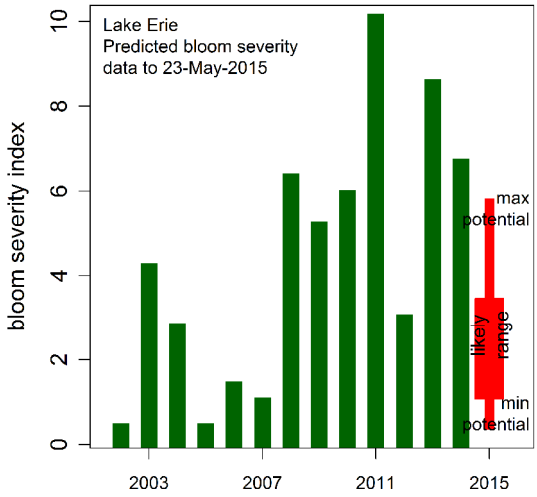

Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on data from the last 15 years. The narrow bar is the potential range of severity, indicating that a bloom of severity of 6 remains possible (as occurred in 2008-2010).

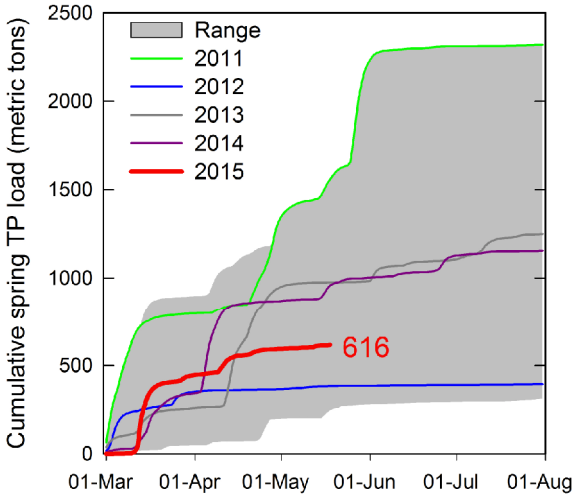

Figure 2. Cumulative total phosphorus (TP) from March 1- July 31 compared to the range from 2000-2014 (gray) and the most recent past years. The red line and text denotes the current 2015 measurements. Large load events can occur from May to July.

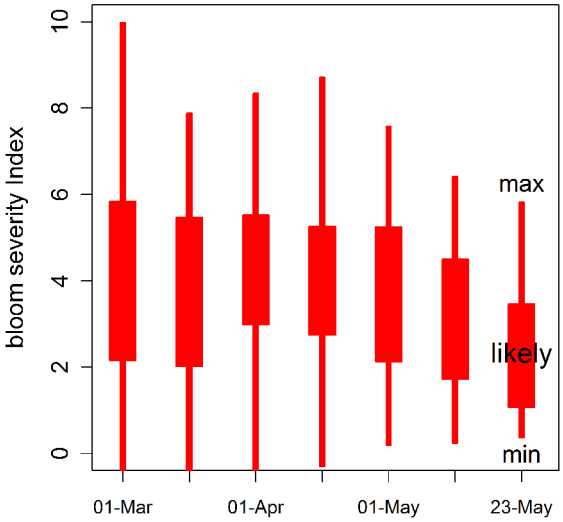

Figure 3: Loading season projections for 2015 starting March 1st, where a bloom severity of 10 indicates the record-breaking bloom of 2011. There have been fewer large runoff events in 2015 thus far compared to past years resulting in a decrease in the maximum potential bloom severity. The downward trend reflects relatively low load from the Maumee River so far.

Figure 4: MODIS Aqua Truecolor satellite image from May 22, 2015. The various colors in the water represent a mix of suspended sediment and the spring (harmless) algal bloom that supports the Lake Erie fish community.

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