

Lake Erie Harmful Algal Bloom Early Season Projection

NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE AND THE NATIONAL CENTER FOR WATER QUALITY RESEARCH
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The severity of the western Lake Erie cyanobacterial harmful algal bloom (HAB) is dependent on phosphorus inputs from March 1st through July 31st, henceforth called the loading season. This new product projects the bloom severity based on the combination of current measurements of discharge and 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 data from March 1 to this week, the extensive severe bloom observed in 2011 is not projected to occur this year. After a relatively dry April and May, heavy rains this month have led to the highest discharge yet recorded for the Maumee River in the month of June. Heavy rains on Saturday are producing another large discharge and load event this week. We will understand the extent of this event by next week.

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](#).

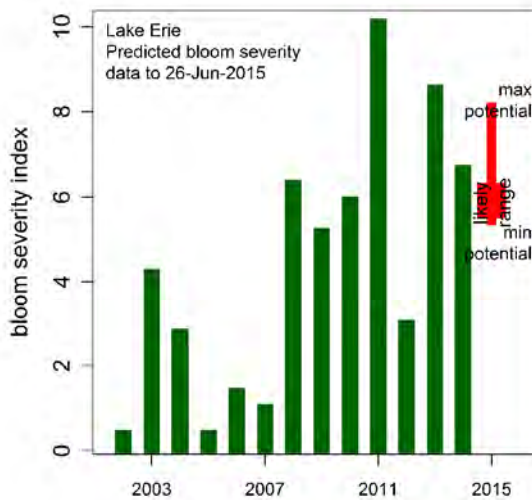


Figure 1. Projected bloom compared to previous years. The wide bar is the likely range of severity based on data from the last 15 years. The narrow bar is the potential range of severity. Given the high discharge expected this week, the maximum potential severity should be considered possible.

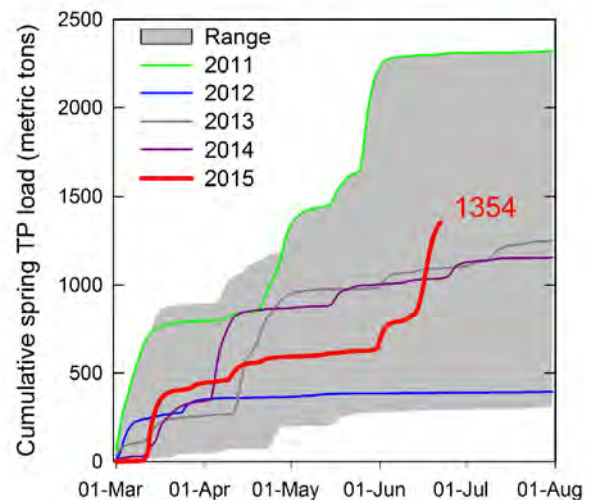


Figure 2. Cumulative total phosphorus projected to June 26, compared to the range from 2000-2014 (gray and the most recent past years). The red line and text denotes data through June 26. Projection is based on past date and discharge through June 26. Nutrient loads have surpassed those of 2013 and 2014, but remain below 2011.

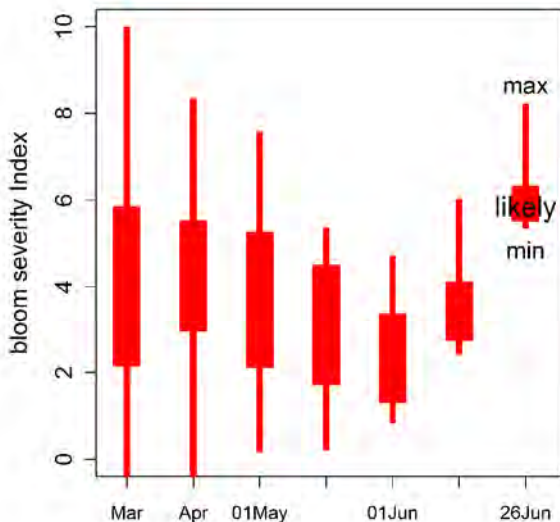


Figure 3: Loading season projections for 2015 starting March 1st, where a bloom severity of 10 indicates the record-breaking bloom of 2011. Recent rainfall has significantly increased the phosphorus load over the last week, indicating an increase in the bloom severity index compared to previous projections.



Figure 4: MODIS Aqua true color image from June 28, 2015. Sediment in the lake was resuspended by 30 knot winds during the storm over the weekend. The high discharge in the Maumee River has also introduced sediment into the western basin, with the high sediment concentrations along the Ohio coast between Toledo and Sandusky.