



Experimental Lake Erie Harmful Algal Bloom Bulletin

31 October 2019, Seasonal Assessment

2019 Bloom Analysis. The *Microcystis* cyanobacteria bloom in 2019 had a severity index (SI) of 7.3, indicating a relatively severe bloom. This was more severe than 2018 (3.6) and somewhat less than 2017 (8.0). The severity index captures the amount of bloom biomass over the peak 30 days of the bloom. The measured bloom severity of 7.3 matched the forecast severity of 7.5 (with likely range of 7 to 8). This bloom severity was consistent with the total bioavailable phosphorus (TBP) load into western Lake Erie from the Maumee River. While the discharge volume and total phosphorus loads approached those in 2011, a lower concentration of TBP compared to recent years led to lower TBP loads and allowed us to avoid a 2011-sized bloom.

This bloom developed rapidly and reached full intensity at the beginning of August, a characteristic of recent blooms. The maximum areal coverage was about 700 square miles toward the end of August. Persistent strong winds in September kept the bloom down, causing a rapid decline with little bloom present in October. Like 2018, this is one of the earliest ends to the bloom we have seen. Scums were present in August, but did not reach the scope of those observed in 2017.

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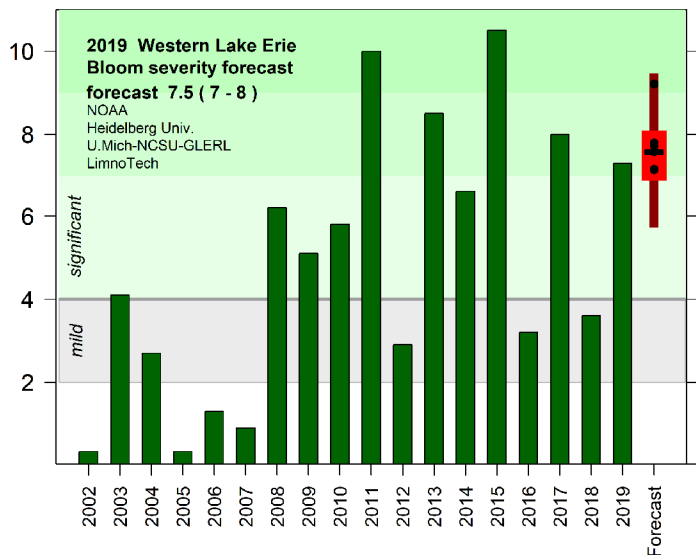


Figure 1. Bloom severity index for 2002-2019, and the forecast for 2019. The index is based on the amount of biomass over the peak 30 days. The 2019 bloom had a severity of 7.3, somewhat smaller than 2017 (8). 2011 had a severity of 10; 2015 was 10.5.

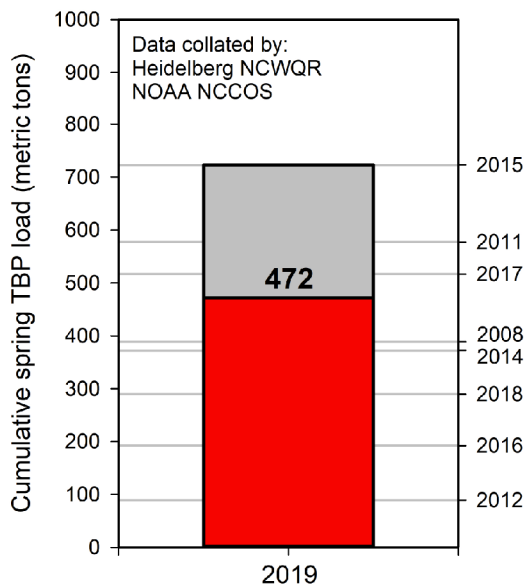


Figure 2. Total bioavailable phosphorus from the Maumee River for 2019 compared to some other years. Data collected by Heidelberg University.



Figure 3. The *Microcystis* cyanobacteria bloom in western Lake Erie on 05 August 2019 taken with data derived from Copernicus Sentinel-3 data provided by EUMETSAT. This date captures the the maximum biomass of the bloom. The greenish area along southwest Lake Erie and northeastward toward Canada is the bloom. Sandusky Bay has a bloom of *Planktothrix*, another cyanobacteria, which produced a darker brownish green at this time.