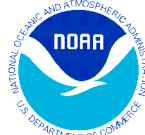


NOAA Western Lake Erie Harmful Algal Bloom Seasonal Forecast

30 June 2021



NOAA and our research partners forecast that western Lake Erie will experience a smaller-than-average harmful algal bloom (HAB) of cyanobacteria this summer. The bloom will be similar in size to 2020, making this the first time in more than a dozen years that relatively mild blooms will have occurred in consecutive summers.

We expect this year's bloom to have a severity index of about 3, with a potential range between 2-4.5. The severity index is based on the quantity (biomass) of the bloom over a sustained period. The largest blooms, 2011 and 2015, were 10 and 10.5, respectively. The 2020 bloom had a severity of 3. The size of a bloom does not necessarily indicate how toxic it is. During calm weather, the usual cyanobacteria, *Microcystis*, can form scums, which concentrate toxins at the surface. People and pets should not swim in areas with scum.

The bloom varies in size and location through the summer and early fall. Winds are a key factor in determining where the bloom will go. Many areas of the lake will be safe to enjoy through the summer. Information on the location and intensity of the bloom can be found at NOAA's Lake Erie Harmful Algal Bloom Forecast (<https://coastalscience.noaa.gov/research/stressor-impacts-mitigation/hab-forecasts/lake-erie/>).

Nutrient load data for the forecast came from Heidelberg University, with additional input from NOAA's Ohio River Forecast Center. The forecast models are run by NOAA's National Centers for Coastal Ocean Science, the University of Michigan, Stanford University, and the Carnegie Institution for Science. For additional information for safe recreation, check Ohio EPA's site on harmful algal blooms: <https://epa.ohio.gov/HAB-Algae>.

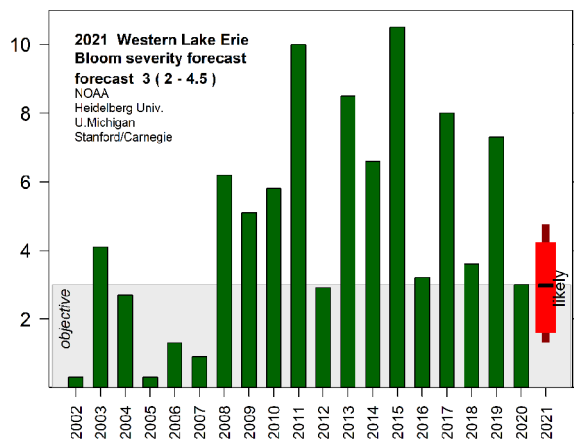


Figure 1. Bloom forecast compared to previous years. The wide bar is the likely range of the combination of models that were applied, the narrow bar indicates possible range. A severity below 3 is the goal of the Great Lakes Water Quality Agreement (GLWQA).

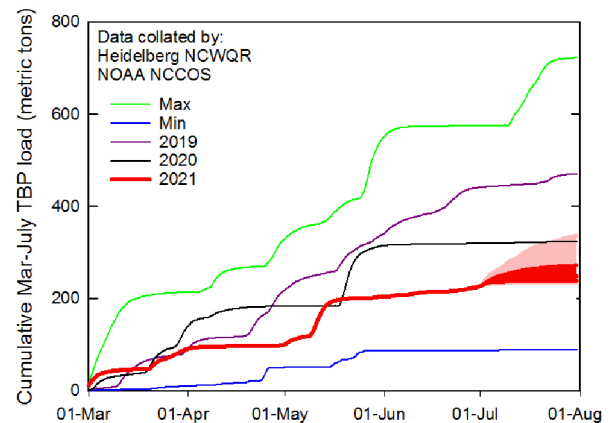


Figure 2. Cumulative total bioavailable phosphorus (TBP) load for the Maumee River at Waterville. Each line denotes a different year. 2021 is shown in red, with the forecast range to August 1 shown in pink. The TBP load over the first week of July will have the greatest impact, and could push the bloom severity to the maximum value (4.5).

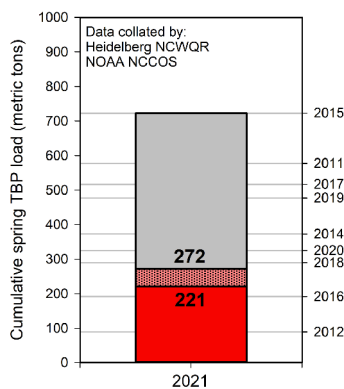


Figure 3. Total bioavailable phosphorus (TBP) load accumulated from the Maumee River near Waterville to date (221 metric tons) shown in red, with the upper likely estimate for the end of July (272 metric tons) shown in pink.

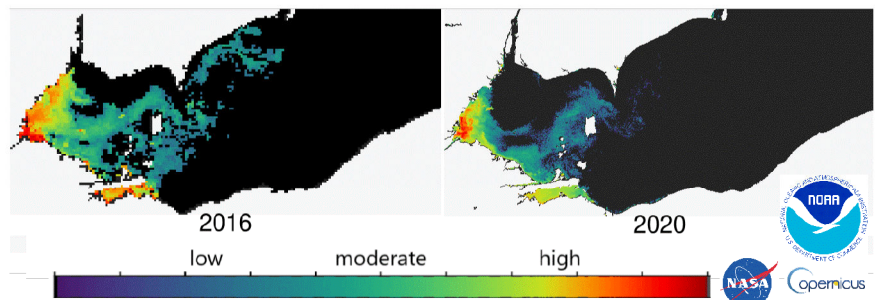


Figure 4. The maximum bloom intensity in 2016 (Aug 10-19) and 2020 (Aug 21-31) collected with Copernicus Sentinel-3 data. 2021 may be similar to one of these blooms, depending on winds. In 2016, winds from the west spread the bloom more thinly over a larger area; in 2020, winds from the northeast tended to concentrate it more in a smaller area. We cannot yet forecast which condition may occur. Bluish-green indicate low concentrations, which would have been barely noticeable by eye on most days. Sandusky Bay has a different type of cyanobacteria and typically does not have scum.