

NOAA Western Lake Erie Harmful Algal Bloom Seasonal Forecast

30 June 2022



NOAA and our research partners forecast that western Lake Erie will experience a smaller-than-average cyanobacterial harmful algal bloom this summer. We expect the bloom to be less severe than last year (severity of 6) and similar to 2020.

We predict this year's bloom to have a severity of ~3.5 with a potential range between 2-4. The bloom severity is based on the quantity (biomass) of the bloom over a sustained 30-period. The largest blooms, in 2011 and 2015, were 10 and 10.5, respectively. The phosphorus load from the Maumee River (March-July) has the largest impact on bloom severity. The bloom forecast includes a projection for an average July load and will be updated in late-July as more data becomes available.



The size of the bloom does not necessarily indicate how toxic it is. During calm weather scums can form, which concentrate toxins at the surface. People and pets should not swim in areas with scum. The bloom varies in size and location throughout the summer and early fall, often due to wind. Many areas of the lake are safe to enjoy throughout 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 Institute for Science. For additional information on safe recreation, visit Ohio EPA's site on HABs: <https://epa.ohio.gov/HAB-Algae>.

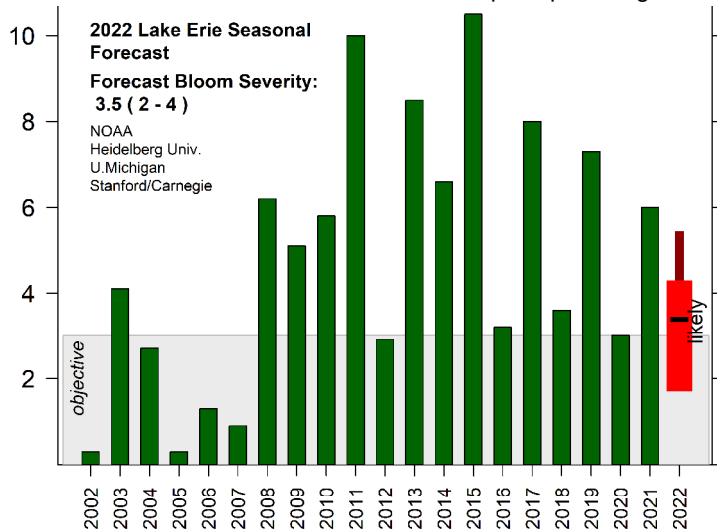


Figure 1. Bloom intensity forecast compared to previous years bloom. The wide red bar is the likely range of severity based on the different models used, the narrow red bar indicates possible range. A severity below 3 is the goal of the Great Lakes Water Quality Agreement (GLWQA).

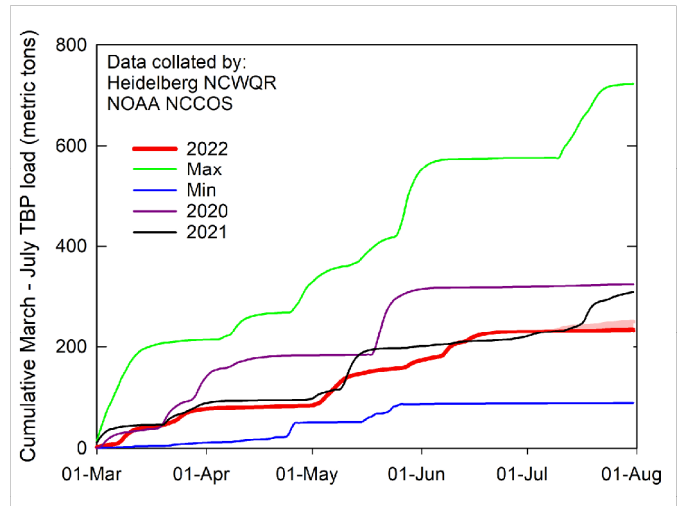


Figure 2. Cumulative total bioavailable phosphorus (TBP) load for the Maumee River at Waterville, OH. Each line denotes a different year. 2022 is shown in red, with the forecast range to August 1 in pink. The TBP load over the first week of July will have the greatest impact on bloom severity, and could push the bloom severity to the maximum value (4).

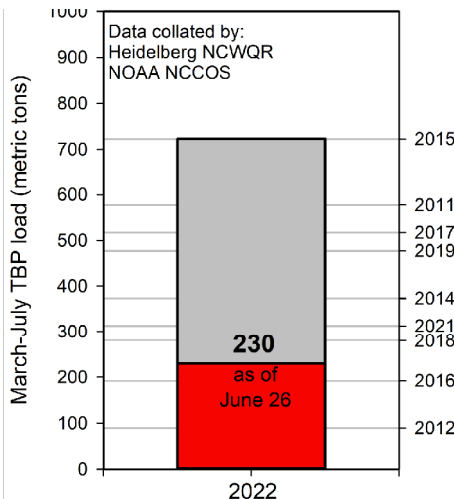


Figure 3. Total bioavailable phosphorus (TBP) load accumulated for the Maumee River near Waterville, OH to date (230 metric tons) shown in red with the upper likely estimate for the end of July estimated as 233 metric tons.

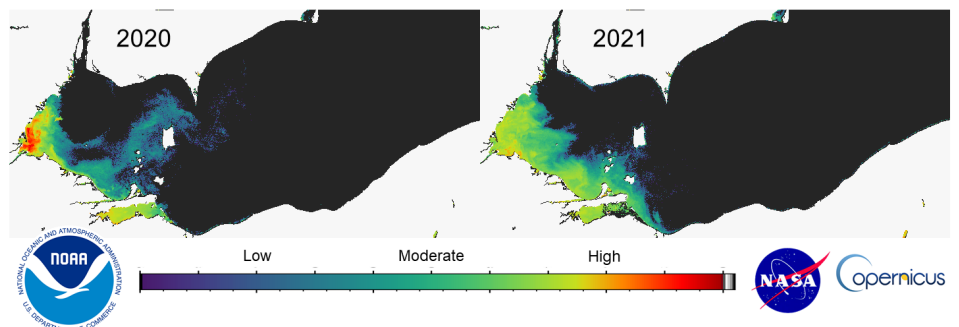


Figure 4. The maximum bloom intensity in 2020 (Aug. 21-31) and 2021 (Aug. 29-Sep. 7) collected with Copernicus Sentinel-3 data. 2022 may be similar to one of these blooms, depending on winds and July nutrient loads. In 2020, winds from the northeast tended to concentrate the bloom in a smaller, more concentrated area. In 2021, high loads in July and winds from the west, spread the bloom more thinly over a larger area. We cannot yet forecast which condition may occur. Bluish-green indicate lower concentrations, which would have been barely noticeable by eye on most days. Sandusky Bay has a different type of cyanobacteria that typically does not form scum.