August 21,2023

Mariam Moreno

[BIOL708](https://github.com/morenomg02/BIOL708)

**Toxic Phytoplankton Blooms in the Coastal Area around Kotzebue, Alaska**

Rising sea surface temperatures in the Arctic pose risks of increased toxic algae abundances. Warmer temperatures provide an optimal environment for toxin-producing cyanobacteria. The Native Village of Kotzebue in Kotzebue, Alaska noticed abnormal algae blooms in 2009 in the Kotzebue Sound (*Native Village of Kotzebue Environmental Program*). Kotzebue Sound is commercially important for the community, providing a large portion of their annual food harvest. The population heavily relies on seafood such as seals, beluga, and shellfish. The presence of cyanotoxins could impact food security as these toxins can bioaccumulate in higher trophic animals. Since there is no large-scale observation program on harmful algae blooms (HABs) in the area, the goal of this project is to pilot a monitoring program that can involve the community and secondary school students. Through July to September of the ice-free seasons, we will take plankton samples with plankton nets and collect water column data using a YSI Exo 2 sonde (Carpenter, Edward, Revised Scope of Work). Water samples will also be taken for organic and inorganic nutrients and chlorophyll concentrations. Phytoplankton samples will then be examined using a Sedgwick-Rafter counting chamber using a 32X long-working-distance objective on a Zeiss Axioskop microscope (Carpenter, Edward, Revised Scope of Work). The end goal is to establish a HAB observation program for Kotzebue, Alaska to not only broaden the knowledge of the microbial ecology of its coastal areas, but to also ensure food security in their main food sources.