

Abstract

Title: Predicting Algae Blooms by Remote Sensing and Comparing to In Situ Measurements in Washington Lakes

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Efficiently monitoring harmful algal blooms in lakes is essential for the safety of recreational users. Harmful algae blooms (HABs) are indicated by high concentrations of phycocyanin, the photosynthetic pigment of cyanobacteria. Cyanobacteria produce cyanotoxins which can be deadly to humans and animals at high concentrations. To monitor these blooms in a cost-effective, timely manner, a remote method is needed that will allow public health agencies to predict algae blooms without a physical visit to the lakes. We are testing the use of remote sensing data, consisting of multispectral imagery from the Sentinel-2 satellite, to estimate temperature, chlorophyll-a, turbidity, and phycocyanin levels in Washington lakes over 30 acres in size. We are currently comparing satellite data from Snohomish County lakes with *in situ* chlorophyll and phycocyanin measurements to look for correlation between the two data sources. These results will ultimately be used to create an index based on satellite data to estimate HABs more efficiently, which can be used by the WA Department of Health to communicate health risks to ensure the safety of lake users.