

OCEAN OPTICS XXIV

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Monday, October 8

Poster Session 1

16:00–18:00

Poster 208

VALIDATION OF SENTINEL-2 MAXIMUM CHLOROPHYLL-A INDEX FOR US WATERS

Chlorophyll-a concentration can serve as a proxy for phytoplankton biomass, an indicator of increased anthropogenic nutrient stress, and a measure of nuisance algal blooms. Here, we compare chlorophyll-a concentrations derived from satellite imagery to those obtained by in situ sampling. Satellite chlorophyll-a concentrations were derived from the European Space Agency's (ESA) Sentinel-2 MultiSpectral Instrument using the Maximum Chlorophyll Index (MCI). In situ data from the Water Quality Portal, serves data collected by state, federal, and tribal groups across the United States, was quality assured and entered in the Field Integrated Exploratory Lakes Database (FIELD) for validation. Initial data screening included cloud free satellite scenes, sampling depth < 2 meters, sampling distance from shore > 60 meters, and within ± 3 , 5, and 10 days of the satellite overpass. The spectral reflectance (before atmospheric correction) and Bottom of Rayleigh Reflection (BRR, Rayleigh removed) were evaluated as options for MCI implementation within ESA's Sentinel Application Platform software. Validation regression results and statistical distributions for derived MCI are presented and evaluated for >300 lakes, reservoirs, and estuaries. The intended outcome of this work is to use this satellite product to inform trophic status and eutrophication level assessments across the United States.

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