

Wednesday, October 10

Poster Session 3

16:00–18:00

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ESTIMATION OF CHLOROPHYLL-A CONCENTRATIONS IN A HIGHLY TURBID PRODUCTIVE LAKE BY A CLASSIFICATION-BASED MODIS LAND-BAND ALGORITHM

Due to the saturation issues of the MODerate-resolution Imaging Spectrometer (MODIS) 1-km ocean bands, the 250 and 500 m resolution land bands are tended to be used in coastal and inland waters. However, these MODIS land bands can only provide limited wide spectral information. Therefore, it is a significant challenge to estimate chlorophyll-a in highly turbid productive waters. In this study, we present a classification-based chlorophyll-a estimation algorithm in a highly turbid productive lake, Taihu Lake in Eastern China. This algorithm uses four visible to near-infrared MODIS land bands. Firstly, Taihu Lake is classified into two classes by threshold segmentation of MODIS $Rrs(555)/Rrs(645)$. The optical property of the first class (Class 1) is dominated by chlorophyll-a, while the second class (Class 2) is dominated by suspended particulate matter. Then, $Rrs(859)/Rrs(645)$ was applied to estimate Chla in Class 1, and a newly-proposed Anti SPM Chlorophyll-a Index (ASCI) was used to estimate Chla in Class 2. Validation showed that the Average Unbiased Relative Error (AURE) of the derived Chla is 44.4%. The algorithm was further applied to estimate chlorophyll-a in Taihu Lake between 2000 and 2015, and the spatial and temporal patterns of the estimated chlorophyll-a agreed well with previous studies.

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