

Validation of Three Atmospheric Correction Algorithms for GOCI Using In-situ Measurements

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Abstract: In the retrieval of ocean color data, water-leaving radiance (L_w) account for less than 10% of the sensor measured top-of-atmosphere radiance in the visible at the satellite altitude. The information of ocean water bio-optical properties is contained in L_w . Over 90% of the TOA radiance, resulted from the scattering of atmosphere should be removed in the quantitatively retrieval of water bio-optical properties from ocean color data. As a result, atmospheric correction (AC) is a key procedure in ocean color remote sensing.

The Geostationary Ocean Color Imager (GOCI) is the first geostationary ocean color satellite sensor. AC algorithms have been developed for the GOCI data. However, no studies have been carried out to evaluate these algorithms. The purpose of the present study is to validate the AC algorithms that have been developed for GOCI data using in-situ measurements. The AC algorithms are iterative algorithm based on the spectral relationships between NIR and red bands, iterative algorithm based on the relationship between NIR R_{rs} and $K_d(490)$ and standard algorithm with the spatial homogeneity of NIR ratios of L_a and L_w .

Keyword: Atmospheric correction; Ocean color; GOCI