Wednesday, October 10
Poster Session 3
16:00–18:00

Poster 218

A NEW ALGORITHM FOR DERIVING VIIRS INHERENT OPTICAL PROPERTY PRODUCTS IN GLOBAL HIGHLY TURBID COASTAL AND INLAND WATERS

In coastal and inland waters, the normalized water-leaving radiance spectra are determined by water inherent optical properties (IOPs). The complex feature of the water IOPs makes it challenging for accurately retrieval of IOPs from satellite measurements. This presentation shows that remote-sensing reflectance model in the turbid waters can be significantly simplified at the near-infrared (NIR) wavelengths, thus particle backscattering coefficient (bbp(λ)), phytoplankton absorption coefficient (aph(λ)), and dissolved and detrital absorption coefficient (adg(λ)) can be derived from normalized water-leaving radiance spectra nLw(λ) at the NIR wavelengths. Using the HYDROLIGHT simulated water-leaving radiance spectra and in-situ measurements in Lake Taihu, we show that the bbp(λ), aph(λ), and adg(λ) values derived using the NIR IOP algorithm generally match well with true values in turbid coastal and inland waters. bbp(λ), aph(λ) and adg(λ) products derived using the NIR IOP approach are also compared with those from other IOP algorithms such as the quasi-analytical algorithm (QAA). Based on evaluation results, an IOP algorithm combining the NIR-based IOP algorithm for coastal/inland turbid waters and the QAA IOP algorithm for open oceans is proposed. Specifically, using China's east coastal region as an example, nLw(λ) spectra at the NIR bands are derived using the NIR and SWIR combined atmospheric correction algorithm from measurements of the Visible Infrared Imaging Radiometer Suite (VIIRS), and VIIRS-derived nLw(λ) spectra are used as inputs for retrievals of IOPs. We demonstrate that the combined IOP algorithm can produce high-quality bbp(λ), aph(λ), and adg(λ) data for both the turbid coastal/inland waters and the open ocean.

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