

# OCEAN OPTICS XXIV

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Tuesday, October 9

Poster Session 2

10:30–12:30

## Poster 10

### **A NEW APPROACH FOR ESTIMATING TOTAL SUSPENDED SOLIDS (TSS) IN INLAND AND NEARSHORE COASTAL WATERS**

Moderate-resolution space-borne sensors (~10-60m spatial sampling) provide synoptic observations of water quality, primary productivity, suspended sediments in inland and nearshore coastal waters. One of the challenging task in modern aquatic remote sensing is the retrieval of concentrations of total suspended solids (TSS), which indirectly decreases the rate of primary production by attenuating the propagation of underwater light field. Currently, the models available in the literature are developed based on remote sensing reflectance (Rrs) in the red and the near-infrared (NIR) region. Although models work well for the regional waters but fails globally/seasonally due to the saturation of Rrs. In this study, we improve TSS retrievals using a two-step procedure; a) develop a machine learning technique for the retrieval of bbp from Rrs, and b) retrieve TSS based on estimated bbp using empirical relationship. The retrieved bbp and TSS are validated using synthetic datasets (simulated using widely-used radiative transfer code for turbid and eutrophic nearshore coastal and inland waters) and in-situ datasets collected from complex turbid waters over the inland and coastal regions. The retrieved bbp statistically shows improvement when compared with the bbp from quasi-analytical model (QAA) and generalized inherent optical properties (GIOP) model. We also explain the reliability of new approach to understand the spatial variation of TSS over coastal and inland waters using Landsat-8 and Sentinel-2A/B images.

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