Monday, October 8
Poster Session 1
16:00–18:00

Poster 53

SATURATION OF WATER REFLECTANCE IN EXTREMELY TURBID MEDIA BASED ON FIELD MEASUREMENTS, SATELLITE DATA AND BIO-OPTICAL MODELLING – CAN WE USE THIS TO ESTIMATE SUSPENDED PARTICLE CONCENTRATION AND TYPE?

Evidence of water reflectance saturation in extremely turbid media is highlighted based on field measurements and atmospherically-corrected satellite data recorded over three estuarine zones, namely over the highly turbid Subei Shallow Bank (China), Gironde (France) and Yellow River (China) estuarine waters. This saturation is obvious in visible spectral bands, i.e., in the blue, green and even red spectral regions when the concentration of suspended particulate matter (SPM) reaches then exceeds 100 to 1000 $g.m^{-3}$. The validity of several bio-optical semi-analytical models is assessed in the case of highly turbid waters, based on comparisons with outputs of the Hydrolight radiative transfer model. The most suitable models are finally used to reproduce the observed saturation then, by inversion, to retrieve information on the SPM mass-specific inherent optical properties, more precisely on the SPM mass-specific backscattering to absorption ratio. These findings open new perspectives for the remote sensing of SPM size distribution and composition information, but also to constrain ocean color inversion algorithms and retrieve the contribution of, e.g., colored dissolved organic matter. For example, a reflectance spectrum, e.g. from a single satellite data pixel, may allow for SPM concentration retrieval in the red as well as SPM type (absorption/backscatter ratio) in the blue.

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