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Wednesday, October 10
Oral Session 8
14:00–16:00

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MODELING REMOTE SENSING REFLECTANCE OF HIGHLY TURBID WATERS

Several models relating remote sensing reflectance to water inherent optical properties (IOPs) have been developed. In particular, the reflectance is expressed as a function of a parameter u which is defined as a ratio of backscattering to extinction coefficients. We note that the quadratic model reported by Gordon et al (1988) has been widely accepted and validated. A more recent model by Lee et al (2004) separated the contributions by water and particle scattering. Most models however, only consider oceanic waters where scattering is low. This is not the case in coastal or inland waters with high suspended sediment load. Using Hydrolight simulations in waters with high scattering coefficient values, we found that the quadratic relation is not sufficient to describe the corresponding remote sensing reflectance. A polynomial of at least fourth degree is required to fit the simulation results at high u. Monte Carlo simulations were conducted to investigate the relation between the remote sensing reflectance and the u parameter at similar IOP values. Results of Monte Carlo simulations confirm the quartic relation derived from Hydrolight. Application of this relation in the retrievals of IOPs from remote sensing reflectance of highly turbid waters would prevent the overestimation of scattering constituents in such waters.

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