

OCEAN OPTICS XXIV

Valamar Lacroma Dubrovnik Hotel | Dubrovnik, Croatia | October 7–12, 2018

<https://oceanopticsconference.org>

Thursday, October 11

Poster Session 4

10:30–12:00

Poster 48

EFFECT OF MULTIPLE INTERACTIONS OF THE UPWELLING RADIANCE WITH THE WATER-AIR INTERFACE ON THE RADIANCE TRANSMITTANCE

The radiance transmittance equation, originally known as the n_2 - law for radiance, was derived based on geometrical radiometry for the radiance interacting with the interface only once. In natural waters, the phenomenon is completely different which involves multiple interactions of the radiance with the interface. This study examines the role of multiple interactions of the upwelling radiance with the water-air interface and the influences of water optical properties on the radiance transmittance. An expression for the water-air (or water side) reflectance factor for natural waters is also derived. This study quantifies the effect due to the multiple interactions which is significant in coastal and inland waters where there is considerable presence and variable amounts of particles in the water. The results suggest that by accounting the multiple interactions of radiance with the interface on the radiance transmittance we achieve significant improvement in the determination of the water-leaving radiances and remote sensing reflectances especially in turbid coastal and productive inland waters. This study will be useful for the calibration and validation of satellite ocean colour sensors and development of bio-optical algorithms.

Pravin Dev, Indian Institute of Technology Madras, pravinlhmm@gmail.com, orcid.org/0000-0002-0873-2367

Palanisamy Shanmugam, Indian Institute of Technology Madras, pshanmugam@iitm.ac.in