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Friday, October 12
Oral Session 11
11:30–12:30

11:50–12:10

IMPROVING ESTIMATIONS OF REFLECTED SKY LIGHT AT THE AIR-WATER INTERFACE FROM ABOVE-WATER RADIOMETRY

Networking of automated above-water sensors has proved to be the most effective way to provide validation data for earth observation optical missions. However, when deriving the water-leaving reflectance from above-water sensors, the contribution of the surface-reflected sky light and sun glint need to be estimated and removed from the total upwelling surface radiance measured by the sensor. The sky-light may be accurately estimated by simultaneously measuring the total upwelling radiance and the sky radiance in the direction of the region of the sky that reflects into the sea-viewing sensor. However the fraction of the sky-light that is actually reflected by the water surface to the sensor, rs, remains the most critical aspect when deriving the water leaving reflectance from above-water measurement. The fraction rs varies with illumination and viewing geometry, atmospheric conditions and wavelength as well as polarization and sea state. An accurate estimation of the latter is very challenging, particularly because these environmental variables are largely affected by the contribution of continuously changing wave conditions at the water surface. In the present study we investigate how estimations of these parameters, and subsequently rs, may be improved by (1) measuring the total upwelling radiance at viewing geometries that differ from the currently recommended above-water measurement protocol and (2) taking into account the entire spectral range. The main objective is to provide accurate rs estimations in the aim to improve water-leaving reflectance measurements with a focus on above-water hyperspectral sensors.

Clemence Goyens, Royal Belgian Institute of Natural Sciences (RBINS), cgoyens@naturalsciences.be,
https://orcid.org/0000-0002-8036-6082
Kevin Ruddick, Royal Belgian Institute of Natural Sciences (RBINS), kruddick@naturalsciences.be