Wednesday, October 10
Poster Session 3
16:00–18:00

Poster 183

TOWARDS A LONG-TERM DATA SET ON LIGHT AVAILABILITY AND TOTAL CHLOROPHYLL-A DERIVED FROM SPECTRAL SIGNATURES OF VIBRATIONAL RAMAN SCATTERING IN HYPERSPECTRAL SATELLITE OBSERVATIONS

Vibrational Raman scattering (VRS) in the water is an inelastic scattering process that causes a spectral redistribution of the radiation in the ocean. It needs to be taken into account accurately to determine the underwater light field and to exploit this information in oceanic remote sensing applications. The VRS signal in hyperspectral satellite radiances has been investigated in the UV and used as a proxy for the effective in-water light path and for total chlorophyll-a estimations. For determining the light availability directly in the visible range and retrieving a spectrally derived PAR (photosynthetically available radiation) product, the VRS signature in the visible channel from hyperspectral radiances measured by the Scanning Imaging Absorption Spectrometer for Atmospheric Chartography (SCIAMACHY) has been exploited. Since SCIAMACHY stopped measuring in 2012, newer hyperspectral sensors such as the recently launched TROPOspheric Monitoring Instrument (TROPOMI) on the Sentinel-5-precurser satellite could be used for light availability investigations from 2012 onwards. Here, we are presenting the VRS retrieval on top of atmosphere radiances measured by the Ozone Monitoring Instrument (OMI) that bridges the time period between 2012 and 2018 and has the same sensor design as TROPOMI. From the OMI VRS signal we derive the light availability, the diffuse attenuation coefficient (Kd490), in an approach similar to that used for SCIAMACHY observations, and additionally total chlorophyll-a. These products are then compared to SCIAMACHY results as well as total chlorophyll-a and Kd490 from MODIS-Aqua.

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