Verification of MSI low radiance calibration over coastal waters, using AERONET-OC network

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oral presentation

Session: In situ measurements and validation

The ESA S2RadVal (Sentinel-2 Radiometric Validation) project aims at developing a method for validating the radiometry of Sentinel-2 Level-1c product in case of low radiance values. MSI acquisition over coastal waters constitutes a target of choice for this verification due to the presence of suspended particles that increase the magnitude of reflectance with respect to open ocean. Additionally, Aerosol type and amount largely contribute to the signal received by the sensor of the satellite. The AERONET-Ocean Color (OC) network can supply sea conditions and optical properties in several bands matching some of Sentinel-2/MSI ones. The proposed verification method consists thus in simulating Sentinel-2/MSI observations acquired over AERONET-OC stations comparing both simulations, made through 6SV radiative transfer model, and observations, accounting for their respective uncertainties. Sentinel-2/MSI observations acquired over AERONET-OC stations are extracted from the corresponding tiles in band 1 to 8, and if a concomitant AERONET-OC measure exists, the MSI observations are simulated with a modified version of 6SV, tailored to maximize the use of AERONET-OC data, in particular the water-leaving radiance and the spectral variations of the aerosol optical thickness. In this talk, we will present the method used to replaced the Case I computed reflectance emerging from the sea by the product derived from the AERONET-OC water-leaving radiance measured in situ -thus taking into account the presence of suspended matter other than the chlorophyll-a- and the contribution to the global uncertainty from various parameters, following the recommendations of the Guide to expression of Uncertainty Measurement. MSI data acquired since July 2015 have been processed so far. These first results will be presented and discussed.