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Tuesday, October 9
Oral Session 3
08:30–10:30

09:50–10:10

ADJACENCY EFFECTS IN COASTAL WATERS

Coastal regions definitely represent a challenge in ocean color (OC) remote sensing due to simultaneous potential radiance contributions from non-covarying in-water optically active components, sea bottom and nearby land. The latter contributions, neglected in default atmospheric correction procedures, constitute a source of perturbations in satellite data and derived products. This work presents results from an extensive theoretical analysis of adjacency effects (AE) in typical multi-sensors observations of coastal seawaters. As an example, results indicate AE still above OLCI-RR noise level at ~36 km offshore for typical land covers (green and dry vegetation, white sand, bare soil, concrete, snow), except in the case of green vegetation at the red wavelengths. OLCI-FR data, characterized by significantly higher noise, are considerably less sensitive to AE. Results further indicate a noteworthy AE seasonality. While radiometric perturbations in the signal at the sensor are proportional to the land albedo, this does not hold for biases on derived radiometric products (e.g., Rrs) due to compensations between AE affecting the bands from which the atmospheric properties are determined and the bands at which the primary products are retrieved. With specific reference to in situ measurements performed in coastal regions to support ocean color validation activities (e.g., AERONET-OC), the analysis indicates the need to account for adjacency contributions to increase the accuracy of matchup analysis. Specific investigations on AE from the Lampedusa Island further indicates no land perturbations for distances larger than ~15 km offshore, where a potential System Vicarious Calibration site could be positioned.

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