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Optical classification of contrasted coastal waters

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The high optical complexity of the coastal ocean prevents the development of general open ocean-like inversion algorithms needed to derive in-water bio-optical and biogeochemical parameters from satellite information. To overcome this issue, regional algorithms are generally used in order to focus on the range of optical variability specific to a defined coastal region. This regional approach presents however various limitations including its high dependency on the data set used for its development as well as its limited applicability for large scale applications. Another and more universal approach consists in classifying coastal waters according to their optical properties (independently of their location) and then in applying a class-specific algorithm (empirical or semi-analytical). The framework associated with the development of such classification-based approach is detailed from an in situ data set collected in contrasted coastal waters of the eastern English Channel, north Sea and French Guyana. The advantages of defining an optical typology of the coastal domain for monitoring coastal water masses optical quality and improving the performance of the inversion procedure is emphasized. Further, the representativeness of optical classes defined in the latter training areas for global scale applications is also illustrated.