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Study of the variability of the coastal waters of the Adriatic Sea from SeaWiFS imagery

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An historical analysis of the evolution of the spatial and temporal distribution of the coastal waters of the Adriatic sea is performed by means of SeaWiFS imagery. A seven years dataset of the SeaWiFS chlorophyll maps and case II water quality flag is considered. This flag gives information about the presence, and therefore the location, of water classifiable as coastal water (case II), differing it from the open sea water (case I) (Morel and Prieur, 1977; Hooker et al., 1992) . This classification is operated by the SeaWiFS standard algorithm for the chlorophyll retrieval which is designed for retrieving information from the water leaving radiances of the open sea and "fails" where there are turbid or shallow coastal waters because of its constituents (suspended sediments, bubbles, bottom reflection, colored dissolved organic matter, etc.). The cloud flag is also considered. Monthly maps of mean chlorophyll concentration and of frequencies of occurrence of the case II water pixels are produced and weighted with the frequencies of occurrence of the cloudy pixels. The maps of the monthly averages show that high chlorophyll concentrations and high frequency of case II occurrence are always present in the northern Adriatic sub-region, where the outflow of many Northern Italian rivers is found. The highest values coincide with the Po River plume, and the associated exiting coastal flow known as the Western Adriatic Current. This current flows along the Italian coast and is observable year round, but its offshore extension varies seasonally. An interannual signal superimposed to the seasonal one is also observed. The seasonal and interannual variability of Italian coastal water shows the importance of the Po river run-off in the overall circulation of the basin.