Chlorophyll_a algorithms for MODIS and MERIS full resolution imagery: a comparison between Case 1 and Case 2 Ligurian and North Tyrrhenian waters

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We present the results of a work based on MODIS (moderate resolution imaging spectroradiometer) and MERIS (medium resolution imaging spectrometer) full resolution satellite data, to estimate concentrations of chlorophyll_a ([CHL]) in the Ligurian and North Tyrrhenian sea. We tested the performance of ocean color chlorophyll algorithms, OC3M [O'Reilly et al. 2000] and MedOC3 [Santoleri et al. 2008], which are standard algorithms known to overestimate [CHL] in Mediterranean oligotrophic waters, together with two new algorithms, OC5 [Gohin et al. 2002] and SAM_LT [Maselli et al. 2009], which exploits more of the satellite spectral information. This evaluation exercise has been carried out using *in situ* data taken in the North Tyrrhenian and Ligurian Seas during recent oceanographic campaigns. The four algorithms perform differently in Case 1 and Case 2 waters defined following global and local classification criteria. In particular, the mentioned [CHL] overestimation of the two standard algorithms is more evident in intermediate and Case 2 waters. The two new algorithms are less sensitive to this problem, and are generally more accurate in Case 2 waters. An analysis of the different reliability of the algorithms depending on varying water properties is then provided.

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