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Ocean Science
Discussions

Interactive comment on "Chl a trends in European seas estimated using ocean-colour products" *by* G. Coppini et al.

Anonymous Referee #2

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The authors propose an alternative methodology to complement the standard procedure adopted by EEA in calculating the surface chlorophyll a, adopted as indicator 23 included in the EEA's Core Set of Indicators (CSI023). The new indicator called CSI023+ exploits two different ocean colour products, one global (for all the European seas) the other local (for the Med Sea) and it is used to estimate the trends.

I'm fully supportive to this alternative approach but the paper exhibits three major shortcoming: 1) The author say that the ocean colour products 'are calibrated for open ocean waters and not specifically for coastal waters, and a lower performance is therefore expected'. Since the vast majority of the Eionet in-situ data used for the comparison are collected along the European coasts, a careful discussion of the error of the algorithms (calibrated for Case 1 waters) and data (representative of Case 2 waters)

must be carried out. A comparison between the products used in this study in some areas where ocean colour has been processed with Case 2 coastal algorithms will be very beneficial. 2) As the author correctly declare, the OC-in-situ data comparison has made only during Summer: it is positive for the Southern European Seas, as the river loads impact on the coastal waters is limited but badly affects the results in areas such Baltic Sea where the runoffs in this period are relevant. There is any difficulty to extend the comparison at least over 9 months? 3) The statistical approach in the trend detection procedure is correctly based on a nonparametric statistics (Sen's method), but as far as I understand the of the standard deviation is made according a normal (parametric) distribution hypothesis for a stationary stochastic process. This rises a amin concern about the estimation of σ (pg. 1490 r.18): the mean value is calculated over time i.e. <Chl>=<Chl>time. This mean estimate imposes the stationarity and the ergodicity of the process, which is not the case if the presence of the slope is statistically detected by Sen's algorithm and corroborated by the Mann-Kendall test. In other words, it is incorrect to calculate a statistical mean if the time series has a temporal trend. Therefore the right plate in picture 1 is wrong, but possibly all the other considerations must be seriously reconsidered. Other approaches should be considered in order to guarantee a better statistical consistency. 4) The CSI023+ has been compared only in coastal areas but the performances of the indicator should be tested against the literature that exists in some open-sea areas. No effort is made under this aspect. 5) The correlation plots (fig. 4-8) seem to be 'shaved'., and all the OC data whose difference with the relative observations is above a fixed threshold have been eliminated. Which are the original plots? Is it possible to demonstrate, if I'm right, that the the cancelled data are really outliers?

Some formal points: The abstract is too long, contains comments and future developments issues that generally belong to the text. The introduction is vague, largely focused on eutrophication, subject that is only marginally touched during the rest of the paper.