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Ocean Science Discussions

Interactive comment on "Comparison of SeaWiFS and MODIS time series of inherent optical properties for the Adriatic Sea" *by* F. Mélin

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The paper presents the inter-comparison of IOP products only, mostly for the sake of clarity. Inter-comparison results for the chlorophyll-a concentration (Chla) have been also briefly discussed in a paper in press (Mélin et al., Prog. Oceanogr., 2011). Even though that manuscript is based on products associated with SeaDAS 5 (an earlier version of the processing software), I did not want to repeat similar results in another paper. In Mélin et al. (2011), the average ratios of monthly Chla records associated with MODIS and SeaWiFS was 0.91, and 0.95 for 2003-2004 that are years with full data coverage (i.e., MODIS Chla lower). This is consistent with the results presented here, an underestimate of MODIS a_{ph}(443) with respect to SeaWiFS by 14% (or a value of δ of -0.06, that is, after exponential transformation, equivalent to a mean ratio

of 0.87). The manuscript already acknowledges that the results presented are only valid for that algorithm. The QAA is one of the most used, but I can not commit to analyzing time series derived from other algorithms (there are actually quite a few algorithms available).

I admit that the conclusions of the paper might be a bit negative, as too much oriented with climate applications in mind, and more specifically trend detection. I propose to amend the conclusion to complete this aspect by first stating that the required agreement (bias or otherwise) between 2 products is actually dependent on the application that is envisioned by a specific user. The general agreement between the IOPs studied is actually fairly satisfactory, with biases all lower than 15% in amplitude, and this should be recognized. The available IOP time series represent a clear advancement with respect to the state-of-the-art of a few years ago. In turn, determining the bias between time series that can be allowed in order to detect the effectiveness of regulations (like nutrient flux limitation) is a question that should be addressed somewhere else. It is again dependent on the changes one wants to detect. What can be added here is that satellite products, even with a bias of up to 15%, can really be of support in ecosystem monitoring activities, with their fairly intensive spatial and temporal coverage when compared with monitoring activities based on field sampling conducted on discrete grids at typically monthly intervals. And investigations of trend detection can be attempted, all the more that the biases existing between the series are known (which is one output of the current manuscript). These elements shall be mentioned in a revised version of the Conclusion section.

It is difficult to state on the validity of the results for other regions. Differences in IOPs are mostly the result of differences between the input remote sensing reflectance R_{RS}. It is then legitimate to think that similar differences in IOPs will be found in regions where R_{RS} similarly differ. Considering that the Adriatic waters represent diverse and fairly typical optical water types, we can speculate that the comparison statistics apply to other mid-latitude, moderately oligotrophic to moderately turbid, water bodies. A

systematic inter-comparison of R_{RS} for the European waters is currently on-going, that should provide a more solid picture. Again these points shall be introduced in a revised version of the Conclusion section.

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