**Ocean Science
Discussions**

Interactive comment on "**Comparative analysis of
the multi-sensor global ocean colour data record**"
by **S. Djavidnia et al.**

S. Djavidnia et al.

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Review #2

R: Responses to each comment are provided below (after each R:). They describe the
major changes brought to the manuscript. Other minor changes in wording have been
carried out. The title has been modified in response to a recommendation by Reviewer
#1. Page/paragraph/line numbers refer to the revised manuscript.

– General comments The manuscript entitled "Comparative analysis of the multi-sensor
global ocean colour data record" by S. DJAVIDNIA, F. MELIN, and N. HOEPFFNER
presents a comparison of individual ocean color sensors records onboard a series
of earth observing satellites. The discussion of the global properties of the indepen-

dent data set is thorough and one of the main conclusions (and the strength of the manuscript) is that the agreement amongst remotely sensed Chl-a is better than what is found between SeaWiFS and in situ estimates. Additional evidence is that the above convergence between satellite data records is significantly modulated on a regional and seasonal basis which is a very interesting find and the result of accurate work by the authors. Perhaps the way in which this evidence is dealt with is a weakness of the manuscript because it is hard for the reader to grasp how this discrepancy between satellite data records results from a combination of different factors (sensors, coverage, viewing geometry algorithms and water type). The possibility that MERIS data significant difference from both SeaWiFS and MODIS is indicative of weaker performance should also be included.

R: It is indeed a challenging task to investigate and quantify the factors leading to differences between the final Chla products derived from several space missions. This task is out of the scope of the present work, that focuses on documenting these differences in a systematic way both in space and time, with the secondary goal of defining a framework to perform such an analysis on a regular basis. The short discussion on various sources of differences in Section 6 (last paragraph) has however been extended with some appropriate literature references (3rd paragraph of Section 6, page 25). The possibility that the MERIS Chla product has a higher level of uncertainty, creating larger differences when compared to either SeaWiFS or MODIS Chla, is included in Section 6 (3rd paragraph, page 25).

Specific comments

– Fig.2 deserves further discussion. In particular although the mode (0.35) is the same for the 4 sensors the difference in percentage is large which opens some questions.

R: The discussion on Fig.2 (now Fig. 1, since it is referred to earlier in the text) has been slightly extended. Moreover, even though the text was mentioning that Chla values were weighted by the surface associated with each grid point (i.e., changing with

latitude), the histogram did not plot the Chla frequency distribution in an appropriate way. The figure and related statistics have now been updated (giving more weight to oligotrophic waters). This change does in no way affect the rest of the analysis. It is noteworthy to add that the exact shape of the histogram somewhat depends on the choice of bin size. Fig. 2 (now 1) has been also completed with a cumulative histogram, with curves that are less dependent on the choice of bin size and help in discussing the results (1st paragraph, Section 3.1, page 11).

Technical corrections

– Pag 1614 line 10 remove "average" as it is included in "statistics"

R: Done.

– Pag 1614 line 18 replace Spectrometer with Spectroradiometer

R: Done.

– Pag 1645 Fig 2 hard to detect the colors of the bar plots outlines

R: Fig.2 (now 1) has been redrawn with a system of symbols used for three sensors with respect to the bar plots showing SeaWiFS. This figure has also been completed by a cumulative histogram.

– Pag 1652 and 1653 Figures 9 and 10 have an unfortunate choice of colors: too many similar blues!

R: Different symbols have been used in Fig. 9 and 10 to avoid confusion between similar colors.

– Figure 9 caption 3rd line needs "half" between "filled" and "circle"

R: Done.

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