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Interactive comment on "Assessment of the spectral downward irradiance at the surface of the Mediterranean Sea using the OASIM ocean-atmosphere radiative model" *by* Paolo Lazzari et al.

Anonymous Referee #1

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The work entitled "Assessment of the spectral downward irradiance at the surface of the Mediterranean Sea using the OASIM ocean-atmosphere radiative model" by Lazzari et al., 2020 assessed the surface spectral downward irradiance over the Mediterranean Sea using OASIM ocean-atmosphere radiative model with high temporal resolution BOUSSOLE buoy data and BGC-Argo data. The article presented the spatiotemporal analysis of the downward planar irradiance at the ocean-atmosphere interface.

This work emphasizes the need of a good quality controlled in situ data such as from BOUSSOLE buoy and growing network of BGC-Argo floats data in model evaluations.

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Discussion paper

Availability of such data is highly relevant in addressing both the climatological as well as day-to-day impacts of light variability on ocean biology.

This work will be a very good contribution towards utilizing and the significance of high resolution data (both spatial and temporal), towards data assimilation into biogeochemical models. In my view this work definitely paves a way in considering the aspects of spatial and temporal variability considering the model resolutions and how they can be improved in future. Specifically, towards the role of light input to the models. The methodology and the representation of the data were substantially given in explaining the scientific concepts.

The proposed scientific approach and the methods applied are very well represented by the authors. The explanation of the results, discussion and conclusions are not exhaustive and very appropriately given in a more concise manner in relation to the model design in accordance with both the in situ data sets. All the explanations of results and discussion were well referenced emphasizing the role of different parameters in towards the model errors and biases. The quality of the figures, and their explanations were very much appropriate, clear and concise.

I think the manuscript would be considered for publication after making the following small corrections.

Specific comment:

Comment 1: I suggest the addition of a table explaining the abbreviations used in the article (different models, model parameters etc.,). Even though having explained them in the text looks fine, but still having a Table is highly appreciated.

Minor corrections:

P1Line 21: Table 1 shows that except for 670 nm for BOUSSOLE buoy, and DPAR values 0.79 for buoy and 0.71 for BGC-Argo, the correlation values (R) are higher than 0.8 and with removing the day-to-day they are higher than 0.9. This should be

mentioned in the abstract.

Please correct the correlation r as R.

P5Line 141: correct QC-ed as QC-Ed

(comment, no need to response) Figure 4. shows that the wind speeds are very much underestimated compared to ECMWF. It can be seen that the wind speeds go as high as 20 m/s, and a high variability is observed. Considering OSAIM model at the ocean-atmosphere interface, what possible impact does this have on model simulations? I just wanted to know.

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