

Interactive comment on “Global distribution of photosynthetically available radiation on the seafloor” by Jean-Pierre Gattuso et al.

Anonymous Referee #2

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Overall comments: This manuscript should be accepted for publication pending some editing. The science appears to be sound and results are potentially very useful to a wide range of readers, as the authors note in the Introduction and Conclusions. The role of light in biogeochemical cycles, especially the carbon cycle, is so fundamental that many researchers overlook the important details, such as those presented in this paper. My comments are primarily editorial, with the goal of making the manuscript a bit easier to read. One common challenge for the reader is the authors' frequent use of ambiguous pronouns. For example, starting a sentence with "It", when the closest singular noun is not what the authors are referring to (e.g., second line of the Abstract and also in the Conclusions). Even more nebulous is beginning paragraphs with "It

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is. . ." when rearranging the topic sentence slightly can provide clarity. Inconsistencies are persistent throughout the manuscript, including in the figures and tables. For example, the authors use non polar, non-polar, Non polar, Non-polar, Non-Polar, and even NonPolar. Many of those usages are highlighted in the manuscript pdf that is annotated with comments (provided). Related to this issue is the placement of "Arctic" and "Non polar" graphs in the figures. In Figure 2, Arctic is on the left, but on the right in figures 3 and 4. Similarly, there is no consistency to heading placement in the tables. Also, in Table 5, please provide units for Irradiance. Are the authors referring to mol photons m⁻² d⁻² or to percent of surface irradiance. Another ambiguity for the reader is the sparse use of "benthic" when referring to photosynthetic organisms in the "Results and discussion". This ambiguity is particularly problematic when referring to "surface area", which generally appears to refer to surface area of the ocean, though the Figure 3 caption does refer to the "surface area of the sea floor". The authors could revise their wording to clarify for the reader, especially in section 3.4, when they are specifically referring to benthic photosynthesis, productivity, communities, etc.

Please also note the supplement to this comment:

<https://www.earth-syst-sci-data-discuss.net/essd-2020-33/essd-2020-33-RC2-supplement.pdf>

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-33>, 2020.

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