

***Interactive comment on***  
**“Photosynthesis-irradiance parameters of marine  
phytoplankton: synthesis of a global data set” by  
Heather A. Bouman et al.**

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The manuscript presents a unique and valuable dataset of photosynthetic parameters of marine algal with a global perspective. Such a dataset is extremely valuable to global attempts to measure (satellite-derived) and model marine primary production and I can see this dataset being widely used. I have mainly minor comments and suggestions.

P1, Ln 39: Concentration of chlorophyll – please specify chlorophyll-a, or are some of the normalisation against total chlorophyll? I assume the former is relevant based on reading the introduction and methods. As chlorophyll-a from both fluorometric and HPLC measurements are used for normalisation, should this not be another flag or

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comment in the database? Alternatively, the authors should add some comment on the sensitivity of derived parameters from fluorometric versus HPLC measures of chlorophyll biomass.

P2, Ln 4: Replace 'would' with 'will'.

P6, Ln 18-19: More rationale is needed to explain why the data from sea-ice algae with chlorophyll-a concentrations greater than 50 mg chl-a m<sup>-2</sup> were removed. I can see why but a report detailing the construction of a database needs to establish clear rationale for data-removal (especially given that such a database may be expanded in the future).

P6, Ln 23 onwards: Here it would be good to make clear that the application of the Longhurst (1995, 1998) provinces is the author's choice to represent the eco-geographical spread of the data and is not inherent in the database.

P7, Ln 25-26: Please make it clear that chlorophyll-a concentrations have been used to classify trophic conditions (i.e. it is unclear (to the uninitiated) what 0.02 mg m<sup>-3</sup> and 39.8 mg m<sup>-3</sup> refer to, and there are other index's that could be used to examine trophic conditions).

P7, Ln 28-29: How are the data distributed? Have the authors considered using a geometric mean rather than an arithmetic mean? Rates of photosynthesis and chlorophyll-a concentrations range from very low values (e.g., oligotrophic waters) up to extremely high values (e.g., ice-edge bloom). Consequently, photosynthetic rates (and derived parameters) can vary over several orders of magnitude, and appear to exhibit a log-normal distribution (e.g. Fig 6). In this case maybe a geometric mean, rather than arithmetic mean, may better represent the data?

P11, Ln 18-19: What about nutrient availability as an environmental factor which varies strongly with latitude?

Figs. 3-8: Please ensure that the axis labels and data-points are clear in the final

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publication sized version of the manuscript to ensure they can be clearly read (some of the early figures have slightly small text for the axis).

Fig. 8 and 9: The density (or heat plot) component of the plots is not mentioned in the figure legends.

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