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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

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-2 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-3 and 39.8 mg m-3 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

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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