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High-resolution photosynthesis-irradiance curves in microalgae

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Reviewer 1: Thomas Roach

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Manuscript reviewed 2022-07-11: *Only major points included.*

Reviewer 1

The data presented show error bars or +/- values, but I could not find what these refer to. Please clarify in the Figure and Table legends. This is particularly relevant for Table 1 since values for I_{sat} are very large (e.g. almost 4-fold more than avg. values for 100×10^6 cell conc.). Perhaps the calculation of these values needs checking.

Authors

We checked the calculations and applied some improvements to the fitting protocol of the data in Table 1. Now the curves referring to 40, 75 and 100×10^6 cells concentration show an improved fitting to the datapoints. This has, for instance, reduced the standard error of I_{sat} for these samples. We also clarified that the +/- values refer to the standard error of the mean in the legend of Table 1, as suggested.

Reviewer 1

What the parameters actually mean in Table 1 could be explained for a non-specialist to be able to understand what information is gained. This data is also not referred to in the results or discussion as much as it could.

Authors

We added in the Methods section 2.5 the equation used for the fitting and the meaning and units of all the calculated parameters. We believe this clarification makes clearer to retrieve the corresponding information from the PI curves.

Reviewer 1

Due to the large diversity of algal cell sizes across species, the authors could consider to express O_2 flux data on a chlorophyll basis rather than cell number.

Authors

We are aware that normalization to chlorophyll is also frequently used in the field, in order to account for the diversity of sizes between different microalgae species. In the original version of our manuscript (lines 166-172), we clearly stated that the working cell concentration changes depending on the cell size of each species, and we give a conversion factor between number of cells and amount of chlorophylls for *Nannochloropsis* in our conditions.