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Interactive comment on "Ocean acidification reduces growth and grazing of Antarctic heterotrophic nanoflagellates" *by* Stacy Deppeler et al.

Anonymous Referee #1

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General comments This work is part of a minicosm investigation of the effects of increasing fCO2 levels on a natural planktonic microbial community of Prydz Bay, East Antarctica, and deals with the response of heterotrophic flagellates (HNF), nano- and picophytoplankton, and prokaryotes. The design of the experiments was similar to that of previous studies in East Antarctica, but with an initial CO2 acclimation period. The present manuscript complements other publications (one of them, at least, in Biogeosciences) on the same minicosm experiment, and will have benefitted from the reviews of the previous works. Overall, the manipulations appear to have been competently carried out and the text is well written. Concerning the discussion, I appreciated, in particular, the consideration given to potential community shifts, in addition to physio-

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Discussion paper

logical changes. Some comments on aspects that could be improved are given below. Specific comments The main results of these accompanying works tend to appear late in the text; they should rather be presented up front in the introduction, so that the reader can better appreciate what is the context for and the contribution of the present study. Some conclusions go further than supported by the presented results. For example, the statement (whether correct or not) : “Therefore, it is likely that increasing CO2 will cause the phytoplankton community to shift from a summer community that is currently dominated by large diatoms to one composed of smaller species or morphotypes of nano- and picophytoplankton.” (lines 27-29 of page 13) does not derive from the work shown in the present manuscript (or if the authors believe so, it should be much better discussed). Other comments It would be helpful for the readers to give more details on the statistical analyses (for example, explain “I” in tables S2-S5, number of time points and of pseudoreplicates). It would be helpful to repeat somewhere that the prokaryote group here is supposed to include few or no cyanobacteria. Line 3 of page 9. Eliminate “treatments”. Lines 6-7 of page 10. “acclimating cells over the years to decades . . . is unachievable in most experimental designs”. It is also doubtful to expect that the same cells/taxa would be acclimating for years or decades in natural settings. Lines 7-8 of page 13. “dominated by large diatoms and . . .” Which were the main “large diatom taxa”? Lines 28-29 of page 13. “a summer community that is currently dominated by large diatoms”. This would not apply to many Antarctic areas. Line 31 of page 13. “Increases of prokaryote ..” Explanation of Fig. 7: “prokaryotes” instead of “prokryotes”. Explanation of Fig. 9: Add indication that the abscisssa shows the picophytoplankton and prokaryote abundances on the day before decline. For example: “Heterotrophic nanoflagellate abundance (y axis) on the day before (a) picophytoplankton and (b) prokaryote abundance (shown in x axis) declined in each . . . “

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