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Interactive comment on "Responses of coccolithophores to ocean acidification: a meta-analysis" *by* J. Meyer and U. Riebesell

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This study synthesizes the available data of coccolithophore biological responses to ocean acidification, presenting a meta-analyses of the results, mainly considering PIC and POC.

In general, the manuscript is well-written, well structured and the approach in data selection well justified. A main critical question that the authors should clarify is about the need and innovative aspects of this work since there are other meta-analyses exercises performed and published on this topic; for examples see Findlay et al. (2011). The authors mentioned the accordance with the Findlay et al., 2011 meta-analyses results. The general negative effects of OA on Ehux calcification and PIC/POC has already been shown. What can we learn more on the coccolithophore response to OA mainly from the meta-analyses of monoclonal culture experimental results that haven't

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already been published? In addition, the large majority of data available and presented here are from Ehux and for all other tested species there are not enough data to do a meaningful meta-analysis.

Since a main justification for having this article published is to use a larger set of experiments to allow a more robust prediction of the impacts of OA on coccolithophores, it is key that the authors clearly make a comparison with the number of data previously used and the benefit of having this new meta-analysis.

I found the title -Responses of coccolithophores to ocean acidification: a meta-analysis- misleading, since the number of living coccolithophore species is >200 and having the responses of 4 tested heterococcolithophore species mainly from culture experiments doesn't resolve the response of coccolithophores to OA. It is mentioned that "The perturbation method appears to affect photosynthesis, as responses varied significantly between total alkalinity (TA) and dissolved inorganic carbon (DIC) manipulations". This needs to be clarified since it is hard to conclude this on the basis of a meta-analysis. This hypothesis should be probably tested in a controlled experiment for example as, shown in Hoppe et al. (2011).

The results shown in Table 2 should be checked carefully since it is suggested that the C. braarudii results in Krug et al. (2011) and Langer et al. (2006) are completely different when instead they are very similar.

It would be important to add the Conclusions section to summarize the main findings and the differences with previous similar meta-analysis exercises.

Other minor comments: -Findlay et al., 2011 is not listed in the references. -'PIC/POC ratio' should be changed to 'PIC/POC'; 'ratio' is redundant. -In the introduction when mentioning the ballasting properties of coccolithophores the paper by Ziveri et al., 2007 could be mentioned.

References: Findlay, H. S., Calosi, P., and Crawfurd, K.: Determinants of the PIC:POC

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