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Interactive comment on "A global compilation of coccolithophore calcification rates" *by* Chris J. Daniels et al.

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In this study, Daniels et al. compile all available coccolithophore calcification rates from the field in a common data base. They use published and unpublished data thereby enlarging our current data coverage substantially. The dataset is quality-controlled and invaluable for coccolithophore research, especially in light of the increasing number of studies using spaceborne and in situ sensor data to estimate calcification rate. The accompanying text is well written. I only have minor comments/suggestions.

Line 38ff: In this context it may also be useful to mention that satellites are restricted to the upper euphotic zone and miss/underestimate cocco blooms that are stretched out over the water column.

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Discussion paper

Line 54f: Why would CaCO3 export be a positive feedback on atmospheric CO2. Wouldn't the ballasting effect outweigh the Alkalinity drawdown?

Line 155: Hasn't temperature also always been measured? Temperature would be helpful.

Line 155: In Line 163 you write 6 – 24 hours. In line 216 you refer to Lam et al. who incubated 5 hours. I suggest being consistent on this in the text.

Line 167: The approximated abundances of foraminifera and pteropods would probably require a reference.

Line 246ff: Readers who are not familiar with the "optical depth" assessment/rationale (like me) may appreciate a more thorough explanation of this concept. It is a bit of a pain to go through the Kirk reference only for this.

Line 275: I totally agree with removing zero values. However, also some very low measurements which are slightly above zero may still be below the detection limit and thus unreliable. I wonder if it wouldn't be helpful to give an approximate detection limit of the method just to show how trustworthy such very low values would be.

Line 349ff: This is an interesting aspect. Can you assure that the incubations were made at light levels too low for photosynthesis (and not only the sampling depths)? Otherwise the hypothesis would not hold.

Line 359: "global CP" or "global CP by coccolithophores"? I guess it is the latter but this should be clarified here.

Line 375: I find this not particularly convincing because per cell calcification rates may vary massively in between species. So I wonder if it is useful normalize to cell abundance without accounting for the different sizes of the various species. There seem to be too many degrees of freedom to come to any particularly useful conclusions. You basically say this yourself in the subsequent paragraphs.

Line 796: 2% (10 to 28)? Do you mean 20%?

Appendix: Maybe this is just a problem for me but I found the acronym “diff” (for difference) a bit unlucky because I confused it with diffusion all the time.

Figure 4: I guess the x-axis is on a logarithmic scale? If so, it would be good to label it as such.

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