

Overall

The aim of the study is worthwhile, as it focuses on a relatively understudied coccolithophore (compared to model species such as *Emiliana*/*Gephyrocapsa huxleyi* and *Gephyrocapsa oceanica*). The authors investigated whether elevated pCO₂ impacts *Helicosphaera carteri*, assessing coccolith morphology and particulate inorganic and organic carbon (PIC and PIC, respectively). The authors claim that the results of this study suggest that *H. carteri* may have a constant contribution to the rain ratio under ocean acidification.

The revised manuscript is significantly improved over the previous version. The authors' did a good job incorporating feedback from myself and the other reviewer, which has strengthened the manuscript. Notably, they have added text to the methods and discussion clarifying their experimental setup and the lower DIC under OA conditions. I only have one major concern remaining (Fig. 2), as well as some minor revisions and recommendations for the text.

Figure 2.

I appreciate the authors' desire to improve the readability of the manuscript by present the data in multiple formats, but my concern is that, currently, the figure is misleading and detracts from the conclusion—that there is no difference in the percentage of malformed coccoliths under increase CO₂. Many (if not most) readers tend to look at figures first when reading results. It is necessary to incorporate error in some way so that readers cannot be misled by the figure. There are methods to incorporate error bars on stacked bar plots, but if that is not feasible, perhaps the type of figure should be changed.

Minor Comments and Recommendations

Introduction

Line 58: "...*H. carteri* produces between ~80 120 pg cell⁻¹ day⁻¹". Missing an 'and' or dash
Line 70: "Indeed, despite the coccosphere's function is still unclear...". The grammar is a bit unclear. Rephrase for clarity.

Materials and Methods

Table 1 caption: Define SD in caption.

Line 176: "C_L³ is the coccolith length." Is there a typo here? Should it be C_L, C_L³?

Results

Lines 224-226: I don't think it is necessary to state that the high standard deviation (SD) is due to high variability among the replicates (and vice versa for low SD and low variability). It's a bit redundant.

Lines 241-242: I recommend condensing into one sentence and rephrasing.

Line 246: Define protoplast and coccosphere sizes as 'dimensionless' in methods.

Eliminate 'μm/μm'.

Lines 246-249: There only seems to be one set of values reported (600 μatm ?). Is it meant to include the values at 295 μatm as well?

Line 250-251: “The range of...” This seems to repeat the previous sentence, except it also states trends that are not statistically significant (i.e., “slightly higher range”). I recommend eliminating.

Discussion

Line 259: Section 4.1 header may be a bit misleading as written. Consider rephrasing to clarify that elevated CO_2 did not lead to increased malformations.

Lines 330-331: Its awkward as written. Consider rephrasing and avoid ‘good health’.

Lines 338-342: “A non-significant variation” sounds awkward. It seems like you are drawing attention to the variability, not the lack of a significant difference. Clarify that Le Guevel et al (2024) did not observe a difference in PIC:POC with changing CO_2 , but coccosphere size was impacted.

Line 346: “global decreasing trend in CO_2 ”. Consider providing the range of CO_2 to make it more relevant (i.e., is $\sim 600\mu\text{atm}$ represented in this study?)

Lines 335-337: “could represent an advantage in future oceans where the species could play a stable role in the C cycle despite changes in CO_2 concentrations.” What kind of advantage? Is it an advantage to *H. carteri*? Isn’t the point that stable PIC:POC means the contribution to the rain ratio should remain stable over elevated CO_2 concentrations?

Lines 385-387: “The most likely explanation of these observations is that other aspects than the PIC:POC ratio influence the species’ response to increased CO_2 levels.” Isn’t this reversed? Aspects other than CO_2 influence the PIC:POC ratio.