

## ***Interactive comment on “Impact of trace metal concentrations on coccolithophore growth and morphology: laboratory simulations of Cretaceous stress” by Giulia Faucher et al.***

**L.J. de Nooijer (Referee)**

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Dear editor,

After careful assessment of the manuscript BG-2017-138 by Faucher and co-workers on the effect of trace metals on coccolith growth, I recommend it for publication in Biogeosciences after moderate revisions. It is well-written and reports results that will be of interest to the audience of Biogeosciences. Below, I have listed my minor comments that I hope will help improving the manuscript.

There is one more serious issue I have with the content, which is the absence of data on the actual metal concentrations in the treatments. Why were those concentrations

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not determined after preparing the culture media? It may have been that the concentrations did not vary much between treatments due to sorption of ions and this may therefore have important consequences for the interpretation of the data. I suggest that the authors either determine trace metal concentrations from the stock solutions, or explicitly report that the difference between treatments is inferred from the recipe that was used to make the culture media.

Sincerely,

Lennart de Nooijer

Abstract

Page 1, line 16: what does ‘phylogenetically linked’ mean?

Introduction

Page 2, line 4: are there references to support this statement?

Page 2, line 5: ‘affect’ here probably means ‘negatively affect’, consider replacing by e.g. ‘hamper’. Is there a reference that has reported this?

Page 2, line 31: please add one/ a few references on the evolutionary relation between the studied species. Moreover, it is now suggested that the species themselves have separated from each other in the late Cretaceous, whereas the extant species are likely much younger: the groups to which they belong may have separated in the late Cretaceous.

Page 3, line 6: no such studies

Page 3, line 9: metals

Methods

Page 3, line 30: what was the concentration of the EDTA in the trace metal stock solutions?

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Page 4, line 3: what is meant by 'experimental conditions'? These are the conditions without the trace metals added, I assume.

Page 4, line 23: for how long were the samples incubated in 0.1 M HCl? Was this sufficient to dissolve all CaCO<sub>3</sub>?

Page 5, line 4: analysis

Page 5, line 17: comparison

#### Results

Page 6, line 5: although likely true, this is technically speaking an interpretation and should belong in the discussion.

Page 6, line 20: I don't understand the definition of coccosphere volume. Isn't the coccosphere simply the cell volume + the coccolith volume?

Page 6, line 26: 'cells' should be 'cell'

Page 7, line 9: 'the cells' should probably be 'cell volumes'

#### Discussion

Page 9, line 15: should be 'trace metals'

Page 9, line 17: should be hand

#### Figures

Please add to the caption what the individual dots and error bars represent.

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