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Interactive comment on "A 15 million-year long record of phenotypic evolution in the heavily calcified coccolithophore *Helicosphaera* and its biogeochemical implications" *by* Luka Šupraha and Jorijntje Henderiks

Anonymous Referee #2

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This morphometric study of the coccolithophore Helicosphaera is extremely interesting. It shows that different coccolithophore lineage adapted differently to the oceanographic changes that occurred in the Late Neogene: The morphological adaptation of Helicosphaera is different from that of Reticulofenestra and Gephyrocapsa. The first group modifies the size of the coccoliths but not their aspect ratio, whereas the second modifies both. Knowing that the aspect ratio is, in coccolithophores, a way to adapt their physiology to environment, this founding is important because it shows that different adaptative strategies are at play in this phytoplanktonic group. The paper is very

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Discussion paper

well written, the data are abundant and of high quality. The figures are well designed. It is rare that I have to review a manuscript of that quality and with very little to say expect trying to replicate what is already written. My only surprise is to see a record of the percentage of Florisphaera profonda covering the last 15 Ma. In my experience F. profunda first evolved around 10 Ma. So what was counted between 15 and 10 Ma ? Can we show picture of a specimen ? I understand that this comment is not relevant to the main discussion of this manuscript. I congratulate the authors on their work because I have to stop wondering what constructive criticisms I could formulate.

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