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Biogeosciences Discussions

Interactive comment on "Significant long-term increase of fossil fuel CO_2 uptake from reduced marine calcification" *by* A. Ridgwell et al.

Anonymous Referee #3

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The manuscript includes an number of interesting results and I recommend its publication after the comments by the different reviewers have been considered.

1) The authors do not provide much information on model performance. A plot comparing the simulated Delta-CO3–(difference between simulated carbonate ion concentration and the saturation concentration) with observation based-data is necessary to inform the reader about the performance of the model.

2) P. 1768, line 1-5: The authors should note that the production model for POC is very simple and depends on phosphate concentration only.

3) P 1768, 4: It is not clear what this sentence means. Is the decrease in calcite saturation state simulated in the tropical surface ocean??

4) P 1768, line26, define Delta-CO2 here.

5) P 1770 line 5: There is a typo

6) P 1770 line 6-13: Suggest to delete these sentences. The statement that the relatively small CO2 reduction is important for ice sheet stability seems exaggerated. The 25 ppm reduction is small compared to the rise to more than 1000 ppm. The amount of fossil fuel CO2 released is the main driver for long-term CO2 concentration.

7) P 1770 The role of a possible redissolution of aragonite should be briefly discussed.

Interactive comment on Biogeosciences Discuss., 3, 1763, 2006.