

Interactive comment on “Insensitivity of alkenone carbon isotopes to atmospheric CO₂ at low to moderate CO₂ levels” by Marcus P. S. Badger et al.

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We are grateful to the referee for their comments and for their kind words on the manuscript. We are happy to make the minor revisions the referee suggests in a revised manuscript. Specifically we are happy to include a further figure at the appropriate point in the discussion which shows pCO₂ calculated with a lith-size correction included, and to include additional posterior distributions which take account of this correction.

To briefly answer the comment about growth rates (page 9 line 20) our point in the previous paragraph is that growth rates could be part of the story (if the evidence of low productivity is correct) but that the scale of change required the move the recon-

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structed CO₂(ϵ_p-alk) in line with the CO₂($\delta_{11Bplank}$) and ice core CO₂ for the glacial is very substantial (see Figure 1), and greater than we think likely based on our current understanding of how growth rates would effect ϵ_p . This suggests to us that if growth rate is the main cause for the discrepancy our understanding of growth rate effects on ϵ_p is incorrect. We are happy to clarify this in a revised manuscript.

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2018-152>, 2018.

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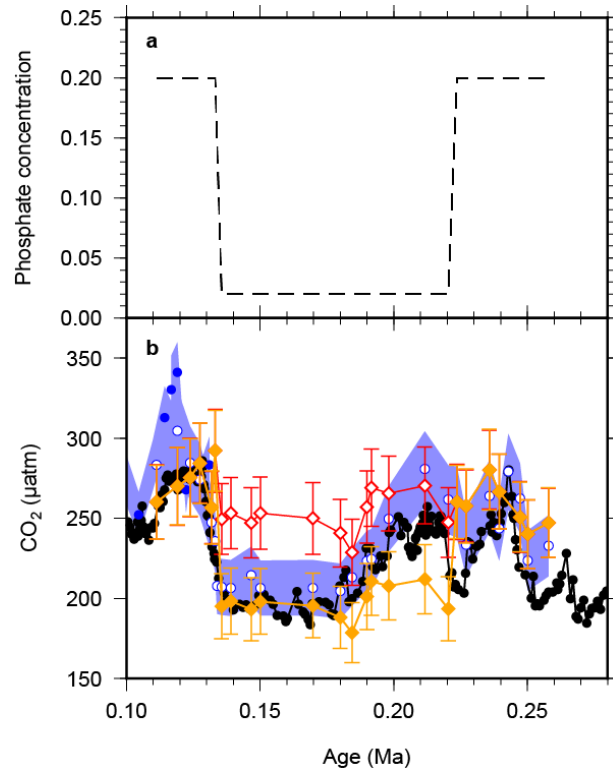


Fig. 1. Only if growth rate (a) is modelled to be an order of magnitude lower in the glacial can alkenone CO₂ (b; orange diamonds) match ice core (b; black circles) and boron CO₂ (b; blue, Chalk et al 2017)