

Interactive comment on “Regional variability of acidification in the Arctic: a sea of contrasts” by E. E. Popova et al.

Anonymous Referee #1

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I appreciate that the authors are planning to address the critical methodological problems in their (otherwise interesting) study in a reasonable way.

I anticipate that the two additional simulations, one with fixed preindustrial pCO₂ and one with fixed preindustrial climate, will resolve issue 1. Additionally, I think that comparing the two new simulations could add an interesting point to the paper by discussing the similarity/difference between the two approaches to separate climate- and direct geochemical effects on ocean acidification.

I see the points of the authors regarding issue 2 and I am willing to accept their approach as long as it is clearly stated in the revised manuscript that they use an ocean-only model and if the consequences of not using a fully coupled ESM are discussed.

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Issue 3 is indeed the most challenging and I don't know which would be the best approach here. Nevertheless, I encourage the authors to try the proposed method and I am looking forward to see what the results are.

In summary, I think that the proposed way forward is reasonable and will likely lead to a more robust paper that is acceptable for publication in Biogeosciences. That said, there is of course no guarantee for this and a second round of review will be necessary.

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