

Review of Barré et al. 2023B-authors response : Implementation and assessment of a model including mixotrophs and carbonate cycle (Eco3M_MIX_CarbOx v1.0) – Part 2. – Julien Palmiéri.

In my review of Barré et al's study, I've made quite a lot of comments, not all easy to assess, and I would like to thank Lucille Barré and her co-authors for the efforts they've demonstrate in their answer. I must have to highlight that the paper is now much clearer. The addition of the new figure 1 and the additional explanations in the text help the reader to understand what is really happening in the model, and to appreciate what is calculated from what is imposed to the model.

All my questions and corrections have been successfully addressed, and I am then happy with the revised version of the paper. I didn't realize it takes 45 minutes to run 3y in 0D, it's quite something! That does help explaining the need of the 0D. Still, to me, this choice will stay a weakness in the paper. But we won't change that now, and we'll see the real potential of the model in the bay of Marseille in your next paper (where ECO3M shouldn't need the allochthonous formulation to get the alkalinity right).

There are few typo mistakes I've spotted, but they are minor and will be easily fixed (based on the track-changes author response pdf) :

L145 : "...the only exchanges allowed between..."

L150 : "contrary to C" I would change for something like "unlike what is done for the C pool". At your convenience, but contrary to C doesn't sound right.

L152 : "In the following, ..." I would say "In the following section,..."

L753-4 : "... would have been more complex to conduct in 3D (i.e., longer simulations and isolation of pCO₂ variation drivers' contributions more difficult as the model is more complex)."

Could be improved without the repetition of "complex". Maybe something like "... would have been a tedious task to realize in 3D (i.e., longer simulations and isolation of pCO₂ variation drivers' contributions more difficult due to the complexity of the model)." ?

Last question. While filling the journal review page. I am asked about the reproducibility of the experiment, if someone else would like to test your code. Although you explain all your work in great details, I realize I wouldn't know where to get your code, apart from asking for it by mail... Is there I link to a git or svn repository ? As I think that for GMD the model should be freely accessible. If there is such a thing for ECO3M, and for your version of the code, could you add them in the paper ?

Again, thanks for your effort!

Best regards,

Julien Palmiéri.