Second Review of GMD_2022_27: **Cloud-based framework for inter-comparing submesoscale permitting realistic ocean models** by Takaya Uchida and others

Review by Mike Bell

Summary

The authors have replied satisfactorily to most of the technical points in my review. However the replies to my questions on the sustainability of the ARCO methodology were weak and did not respond very directly to my questions (other than the last one) in the normal way. More importantly the manuscript is largely unchanged in this section so the questions that I suggested many readers would have unanswered in their minds when reading the original draft are not answered by the revised version. Andy Hogg also asked that the discussion on the sustainability issue include a more objective discussion of the pros and cons and the reply on that point was similarly weak. As this issue lies at the heart of the paper, the authors really need to go through another round of revisions focused on this part of the paper. Providing the authors give a reasoned and objective response on this issue I would still expect to recommend that the paper is accepted.

More detailed points

These more detailed notes refer to the sections and paragraph numbers of the original review.

Presentation of results

1. The responses on this point are very thorough and the paper has been revised appropriately.
2. Yes, a detailed examination of this issue could be quite extensive. I'm willing to accept that it is outside the scope of this paper.
3. The authors have changed the colour scale in figure 3 but the dynamic range is no better. So I still think that the colour scales in figures 2, 3 and 5 could be improved but will not insist that they are.
4. The authors give a reason for keeping the figures as they are. This is a minor presentational point so I am content with the response.
5. The paper has been revised appropriately.
6. I'm concerned that the results presented do not properly support the statement "Considering the difference between simulations tidally forced and not, it is likely that in order to emulate the upcoming SWOT observations, applying tidal forcing is a key aspect in addition to model resolution (Savage et al., 2017a, b; Arbic et al., 2018)" and that this could be quoted out of context. It is clear that to compare with SWOT or altimeter data, tidal forcing and atmospheric pressure loading need to be taken into account. But there are pros and cons to doing this interactively. Do the references given supply that evidence? The text that has been added in line 149 does not fit into the rest of the paragraph properly so needs to be revised.
7. Both the figure and supporting text have been improved.
8. Fine
9. The authors make a very valid point in response. But it would be helpful to use a common range ($8\ 10^{-9}$) for 3 models (GIGATL, HYCOM50 and FESOM-GS) and $1.2\ 10^{-8}$ for eNATL60 and LLC4320. The Ce range for GIGATL could be made 0.07 to be in line with eNATL60 and FESOM-GS. I hope these minor changes would be easy to do. They would facilitate comparison.
10. This point was worded slightly differently from the one I questioned in point 6 above. This wording is OK.

11. The additional explanation of the calculation of C(t) is an important addition and the additional plots were requested by other reviewers. I still think that one would usually plot C(t)*MLI on the x-axis. The slope of the scatter fit would then be shallower than the 1:1 line – which is what one expects to see when the fit is not particularly good. If this is relatively easy to do the authors should do that.

Sustainability of ARCO methodology

As I said in the summary, the responses for this section didn't respond directly to most of my questions. More importantly only very minor changes to the wording of the paper have been made in response to my comments. The same questions would come up in my mind reading the revised paper as the original one. Could you produce a revised version of this section?

On the point about 1000 Euros per month I still don't really understand what this means. How many users can be supported for 1000 Euros per month and how does the cost scale as the number of users and the number of ARCO data sets are increased?

Minor points

These are fine. I just suggest that on line 17 "each party of interest (often an independent group)" is changed to "each of the interested parties (or an independent group)".