Geoscientific
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Discussions

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Interactive comment on "Performance of offline passive tracer advection in ROMS (v3.6, revision 904)" *by* Kristen M. Thyng et al.

Anonymous Referee #2

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General Comments:

This paper provides an excellent description of a new method for running ROMS, a open-source, commonly used hydrodynamic ocean model, offline. The paper does not, to the best of my understanding, represent a huge advance the field of numerical modeling itself, but it does provide documentation of a new tool available to the scientific community. This is consistent with the goals of the GMD journal.

Overall, I consider the paper to be excellent in scientific quality and presentation quality, and moderate on scientific significance. The archiving of all relevant files to reproduce the results implies it has excellent reproducibility.

The paper could be improved by considering non-spatially averaged skill scores. In

most coastal systems, the dynamics, as well as the representative length scales and temporal scales, vary in space (and time). The extent to which this affects the skill scores in different areas of the grid would be of much interest to readers and possible users of this software.

It would also be useful to demonstrate that this method works for more than one model configuration. Different pre-processing choices, grid configurations, open boundary conditions, etc. may all impact the ability for this software to be implemented by other ROMS users.

Specific Comments & Technical Corrections:

1. Lines 63-5: This sentence is confusing as written. I suggest deleting "as opposed to" and breaking the sentence into two sentences.

2. Can you include a map showing the difference in tracer concentration among different model runs so that users can visually see the magnitude and spatial variability of the error of the offline simulations, compared to the online simulations?

3. Figure 4 contains a lot of important information, but was difficult to understand. I suggest considering removing the 'dt' from the figure. If needed, this could be included in a subplot. Also, including nhis as a 2nd y-axis instead of numbers on the plot, would be useful for orienting the reader. Finally, drawing a box around the legend would help readers more readily separate it from the rest of the text in the figure. If the dt's are kept in the figure, please include them in the legend.