Review of revised version of **On the reconstruction of ocean interior variables: a feasibility data-driven study with simulated surface and water column observations**
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submitted to *EGUsphere*

General comments

I thank the authors for their responses to my initial round of comments. The revised manuscript is much improved and explores the results obtained from the OSSE in greater detail. The addition of Figure 3 is very helpful in describing the approach employed in the study. The added material in the discussion section to contextualize the results relative to similar studies is valuable as well.

I appreciate the authors taking the opportunity to simulate uncertainties in their reconstruction experiments. I am, however, unclear about the statement in lines 183–185 that simulating uncertainties as Gaussian noise is a "worst-case-scenario" for uncertainty estimates. I'd think that consistent Gaussian noise is actually a best-case scenario. A worst-case would consider possible systematic biases and/or noise that is not consistent in space or time. These represent additional uncertainty scenarios that could be explored, but are probably outside the scope of this study.

Overall, I support the acceptance of this manuscript subject to minor revisions.

Line-by-line comments

Figure 8: Typo – should be LSTMv2

Figures 9 and 10: It would be helpful to specify in these figure captions that these models are trained with data that include uncertainties.

Figure 12: Define the black OGCM line in the figure caption as well.

316–317: It would be helpful to point to a figure in referencing the sampling density and dynamic environment over which this validation is performed.

376: Note in making this point that the LSTMv2 gives a better feature reconstruction "than the RFRv2"

Figure 20. This figure is not referenced in the text. The discussion in Section 5.4 should be expanding with more information of exactly what the singularity exponent analysis is telling us about the reconstructions.