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.

We would like to thank the reviewer once again for her/his valuable comments. Our response is given in blue, and the number of lines corresponds to those of the new manuscript with track changes.

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 the 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.

We do agree with the reviewer. We have rephrased lines 185-190 accordingly to make that point clearer.

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

Line-by-line comments

Figure 8: Typo – should be LSTMv2
Typo has been addressed.

Figures 9 and 10: It would be helpful to specify in these figure captions that these models are trained with data that include uncertainties.
We specified the usage of uncertainties in the captions of Figures 9, 10, and A1, A2.

Figure 12: Define the black OGCM line in the figure caption as well.
The caption has been modified to define the black line as suggested.

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.
We thank the reviewer for this comment. We have pointed to Fig. 2, where we show the sampling of Argo floats and the temporal standard deviation of SST and SSS.

376: Note in making this point that the LSTMv2 gives a better feature reconstruction “than the RFRv2”
Added.

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.
We fixed the reference to Figure 20 (it referenced another figure that used the same label). We have added some lines of discussion on the exponents in lines 380-381.