

## ***Interactive comment on “Data assimilation cycle length and observation impact in mesoscale ocean forecasting” by Paul Sandery***

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**Abstract.** A brief examination of the relationship between data assimilation cycle length and observation impact in a practical global mesoscale ocean forecasting setting is provided. Behind real-time reanalyses and forecasts from two different cycle length systems are compared and skill is quantified using all observations typically available for ocean forecasting. A 1-day Ensemble Optimal Interpolation (EnOI) cycle is compared to a 3-day cycle. The mean analysis increments for the 1-day system are significantly smaller suggesting a less biased system. Comparison of mean absolute increments identifies observations have greater impact in the 1-day system. Whilst smaller mean increments and greater observation impact do not guarantee a better forecast system, analysis of 7-day parallel forecasts show that the 1-day cycle

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system delivers improvement in predictability, particularly for the subsurface. This improvement appears to mainly come from less biased initial conditions and suggests greater retention of memory from observations and improved balance in the model.

Please also note the supplement to this comment:

<https://www.geosci-model-dev-discuss.net/gmd-2017-298/gmd-2017-298-AC3-supplement.pdf>

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