

Interactive comment on “The Onsager–Machlup functional for data assimilation” by Nozomi Sugiura

Anonymous Referee #2

Received and published: 14 September 2017

I enjoyed reading this paper. I found it to be well written, well structured and presented in such a way that the results can be well understood and re-created.

In addition to the suggestions from the other referee I would suggest:

1. I find the abstract to be a bit vague and think you may want to state more clearly what is done in the paper. For example mention that you implement 4DVAR. The way it's written makes it unclear if you're referring to things covered in the paper or in the literature.
2. You mention later on that the methods involving the divergence of f would be difficult to implement for large dimension and 4DVAR due to the need to compute the derivative of $\text{div } f$. I think it would be interesting if you could mention this when you introduce your

C1

models, or show the gradient of the cost function for 4DVAR and highlight the need of this extra term. E.g. after Eq 25 you could have a "where $\text{del}J_{\text{tube}} = \dots$ (26)"

3. P5L23 "You can see" -> "It is clear"

4. Yaxis labels in Fig 1 are missing and a number at the origin is not clear.

Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2017-44>, 2017.

C2