(The page and line numbers are those of the version in which the modifications made by the authors are explicitly identified).

There is no significance in the order of the comments and suggestions below.

- P. 2, l. 20 … *renounce ~~to~~ physically-based* …

- P. 5, l. 10, … *3 variables,* x_0, x_1, x_2 (not x_3)

- P. 7, ll. 15-16, … *hardly generate trivial flows.* → … *do produce non-uniform flows*. (I understand that is what you mean).

- P. 11, ll. 9 and 10, … *tangent linear* ***operator*** …

- P. 15, l. 10, … *with e.g., Fablet et al.* … Do you mean … *following e.g., Fablet et al.* … ?

- P. 16, l. 20, … *space-wise linear interpolation* … What is the observation operator $\mathbf{H}_k$? The remark is actually more general, and it might be useful to define more precisely, at this point and elsewhere, what $\mathbf{H}_k$ exactly is. My first understanding was that observations are made at every grid-point at each observation time (or on a 'dense' grid in the case when no grid is assumed to be *a priori* known). But that seems not to be the case here, and is obviously not the case for experiments described p. 23, ll. 1-6. Some clarification would be helpful.

- P. 10, l. 14, and p. 17, l. 8, $p(\boldsymbol{y}_\mathrm{O} | \mathbf{A})$ (and not $p(\boldsymbol{y}_\mathrm{O}, \mathbf{A})$)

- P. 18, l. 4, … *a lead time of 23*. I presume you mean … *a lead time of 23 Lyapunov times* (see also l. 12 further down) ?

- P. 25, l. 15 and p. 26, l.1, … *based on a ensemble-based stochastic* … I suggest … *built on an ensemble-based* …

- P. 11, ll. 14-15, change to … *the adjoint****s*** $(\nabla_{xk}\, \mathbf{H}_k)^\mathrm{T}$ *of the tangent […] operators are known,* …