Response to final review

We'd again like to thank the reviewer for taking time to go over the manuscript and providing extensive, helpful comments. All of the comments provided in the review have been addressed and applied where necessary. A handful of them are responded to directly below:

l. 27-30: We've instead dropped the sentences on l. 68-70, keeping the short paragraph.

Comments on Table 1: Transpose indicators have been added, but the definition for forcing $0.5\,\mathbf{q}(t) - \varepsilon(t)$ is exactly what was intended. The forcing function $\mathbf{q}(t)$ is defined by Eq. (17), and we assume no knowledge of the white noise portion giving the $-\varepsilon(t)$. We don't believe this line is ambiguous as there is no other function $\mathbf{q}(t)$ defined. We have also removed the line stating $\mathbf{x}_0 = \mathbf{e}_1$ from the caption.

l. 204 - 205: The typo has been corrected, and we have clarified that the observational noise was chosen from a Gaussian distribution in the caption of Table 1.

l. 247-248: We have now included the following sentence to clarify the time intervals, "The first interval has observations every 300 timesteps, and the second every 125 timesteps."

Regarding Figure 8: We have a reference to Fig. 8 on L. 278.

l. 308-315: Due to the length of the manuscript, we prefer not to include further figures.

Comment on equation 22: We note that $\beta' = L\beta/f$ when $L = a$, as stated in the comment, but since we're working with the non-dimensional variables we keep just β'.

Comment on Eq. (29): The approximate solution considered here is that considered in Pedlosky (1965), eqn. (5.11).

Comment on Eq. (30): The last element of the state vector should indeed be 1. The state vector is defined as the time-dependent coefficients of the analytical solution, and since the steady solution ψ_s has no time-dependence the coefficient is just 1.

l. 367: We're opting to leave the diag indicator. This emphasizes that we mean a vector of values and not a single exponent for some j.

l. 389: We've added the sentence "The constant b is chosen as $1.8e-3$ in the numerical code."

Comment on Fig. 10: The following sentence has been added to the caption of Fig. 10: "The Coriolis parameter f is computed at a latitude of 30 degrees."