

Dear Editor,

Thank you for your suggestions and I have made revisions based on your comments.

Reviewer #1 comment 3 have question about the inflation technique. The inflation technique enlarges the standard deviations between ensemble members. As a result, it is necessary in assimilation experiments and I have cited more literature to introduce this point (Line 169-171). Solely rely on emission perturbations may not acquire steady and sufficient spread.

Reviewer#2 comment 1 have question about perturbations. There are some other kinds of disturbances can be added into emissions, but may complex and not easy to implement. The distribution of perturbations in manuscript is feasible, justified and widely used in previous researches (Line 189).

Lastly, I ensure that my equations are properly numbered and punctuated after the reversion.

Kind regards,

Jianyu Lin