

Interactive comment on “EnKF and 4D-Var Data Assimilation with a Chemistry Transport Model” by S. Skachko et al.

Anonymous Referee #2

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I am satisfied with the authors responses. I only suggest the following text be used instead of the added text on page C4 of the authors latest response (which incorrectly referred to the "4D-Var" window when describing the 4D-EnKF approach):

"Other possibilities may be considered to properly compare two essentially different data assimilation systems. For example, the 4D-EnKF (Hunt et al., 2004) approach could be used that computes 4D error covariances from the ensemble of forecasts at several times within the assimilation window. This would allow a longer assimilation window to be used in the EnKF experiment, making it more comparable to the configuration of 4D-Var. In this case, the EnKF analysis would be forced to simultaneously fit all of the observations distributed over a longer window, while still satisfying the model equations, as in 4D-Var. Applying the model error in this 4D-EnKF only at the beginning of each assimilation window would make it similar to the strong-constraint version of

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4D-Var that was used.”

Hunt, B. R., and Coauthors, 2004: Four-dimensional ensemble Kalman filtering. *Tellus*, 56A, 273–277.

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