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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A data assimilation method of the Ensemble Kalman Filter for use in severe dust storm forecasts over China" *by* C. Lin et al.

Anonymous Referee #1

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A data assimilation method of the Ensemble Kalman Filter for use in severe dust storm forecasts over China by C.Y. Lin, Z.F. Wang, and J. Zhu

General Comments

This paper includes a value application of Ensemble Kalman Filter method for dust storm modeling. The description of this paper is a bit poor (or unfriendly) and need more description to have a better understanding. I think that this paper is suitable for publication to ACP after some minor revision.

Comments

1. page 17512 Abstract: What does model errors mean ?

2. page 17513 line 5: significant errors must be replaced by significantly model dependent.

3. page 17516 Section 3: this section is very much reader-unfriendly, and need more careful descriptions i) What is parallel assimilation ? ii) What is H in equation (1) iii) What is a, lx, ly and lz iv) What is a range of alpha in equation (5), especially in your application ?

4. page 17518 lines 24-25. Improvement in vertical distribution might be due to vertical diffusion not in background error covariance ?

5. Lidar observation in Figure 6 (most upper panel) needs more careful description. Lidar data is restricted only near the surface on March 20. This might be a missing observation because the dust layer to too thick to prevent the penetration of lidar signal above ?

6. Figure 11 and 12 is difficult to capture the difference (or improvement by EnKF) between with and without EnKF. I recommend preparing the model difference contour additionally.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 17511, 2007.

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Interactive Comment