



Covariance localization with diffusion-based correlation model

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Flow-dependent localization of the ensemble-generated covariances is essential for improving the performance of the data assimilation algorithms. Using numerical experiments simulating inhomogeneous Gaussian-shaped covariances \mathbf{B} , two methods of retrieval the diffusion tensor field from the simulated ensembles are tested. The diffusion-based approach is compared with the adaptive ensemble covariance localization (AECL) technique based on the modulated ensembles. Results of the experiments suggest that the diffusion-based correlation model is capable of effectively approximating \mathbf{B} with an accuracy of the AECL method when the typical decorrelation scale gradients are less than unity. Comparison of the methods in the strongly inhomogeneous situations demonstrates a substantial growth of the approximation errors.