



Covariance inflation in the ensemble Kalman filter: a residual nudging perspective and some implications

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This note examines the influence of covariance inflation on the distance between the measured observation and the simulated (or predicted) observation with respect to the state estimate. In order for the aforementioned distance to be bounded in a certain interval, some sufficient conditions are derived, indicating that the covariance inflation factor should be bounded in a certain interval, and that the inflation bounds are related to the maximum and minimum eigenvalues of certain matrices. Implications of these analytic results are discussed, and a numerical experiment is presented to verify the validity of our analysis.

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