Multi-scale localization with NICAM-LETKF using real observations

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Covariance localization plays an essential role in the ensemble Kalman filter (EnKF) with a limited ensemble size. Localization limits the influence of observations and reduces the impact of sampling errors. To enhance localization, our previous studies proposed and investigated a multi-scale localization method named the "dual localization" method which coupled two separate localization scales using an intermediate AGCM under the perfect model scenario. The results showed consistent improvement over a traditional single localization approach. In this study, we further extended the previous study to use the real-world observations with the non-hydrostatic icosahedoral atmospheric model (NICAM) and to investigate how well the dual localization method captures the multi-scale covariance structures. The results showed that the dual-localization method produced generally better spatial correlation patterns. We will present the newest results up to the time of the meeting.

Keywords: data assimilation, Multi-scale data assimilation, Ensemble Kalman Filter