

Towards a long-term high-resolution regional reanalysis over Japan by using NHM-LETKF

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We are developing a regional reanalysis system covering Japan and its surrounding area with a 5-km grid spacing over ~60 years using the JMA's nonhydrostatic model (NHM) nested in JRA-55 and the local ensemble transform Kalman filter (LETKF). The assimilated data are limited to the conventional observations, such as surface pressure observations and radiosonde observations, in considering the consistency in reanalysis quality throughout the entire reanalysis period.

Before conducting a long-term reanalysis, a regional reanalysis experiment that covered one summer and one winter was conducted. We assessed the system, paying special attention to its reproducibility of precipitation in summer and winter. While underestimation of the frequency is more apparent as the precipitation intensity increases in JRA-55, a lower-resolution ($dx \sim 55$ km) reanalysis, it was not shown in the regional reanalysis.