This study developed an observation operator to assimilate the Advanced Microwave Sounding Unit-A (AMSU-A) brightness temperature observations with the Nonhydrostatic Icosahedral Atmospheric Model (NICAM)-based Local Ensemble Transform Kalman Filter (LETKF) using the radiative transfer model RTTOV (Radiative Transfer for the TOVS (TIROS Operational Vertical Sounder)) version 11.1.

An adaptive bias correction method was applied for both airmass and scan biases, or the biases originating from the atmospheric state and scan position.

Comparing the two experiments with and without the AMSU-A radiances, we find that the adaptive bias correction methods work appropriately, and that the analysis is significantly improved by assimilating the AMSU-A radiances (Fig. 1).