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Impact of microwave radiance assimilation over land using dynamic emissivity in the global NWP system of JMA.

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Assimilating the microwave radiance observations is essential for numerical weather prediction systems (NWP). For the radiance assimilation, it is important to estimate land surface emissivity and temperature which spatiotemporally varies depending on surface conditions. A dynamic emissivity (DE) method can dynamically estimate emissivity and temperature from satellite observations and reduces uncertainty related to the radiative transfer calculation.

The Japan Meteorological Agency/Meteorological Research Institute (JMA/MRI) is working on applying the DE method to the global NWP system of JMA. The DE method was applied to surface-sensitive channels of the advanced microwave sounding unit (AMSU-A) and advanced technology microwave sounder (ATMS), and was evaluated by data assimilation experiments. As a result, the forecast skill was improved where the RMSD between brightness temperatures of background and observation became smaller. This presentation will include the most recent results up to the time of this conference.