



Performance comparison of Ground based Microwave Radiometer with Radiosonde

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Ground-based Microwave Radiometer (GMWR) that observes vertical profiles of atmospheric temperature, humidity in real-time and with high resolution near the surface replaces radiosonde. High resolution vertical temperature and humidity profiles of GMWR are useful in understanding of thermal, micro physical characteristics for extreme weather phenomenon and improve prediction performances through assimilation in Numerical Weather Prediction Model. To get detail weather data in urban areas, Weather Information Service Engine (WISE) has installed 3 GMWRs (model : RPG-HATPRO_G4) in urban sites that are representative residential, commercial and background areas, respectively, since December 2014. The vertical profiles of temperature and humidity observed by GMWR and radiosonde are compared to verify the accuracy of GMWR for the period from 0000UTC 23th to 2100UTC 29th in November, 2015. It is found that the accuracy of temperature profile is relatively high below 2000 m. However, the error increases with higher altitude above 2°C of RMSE for these period. Humidity profiles show a large error variation. RMSE is over 50 % at 1700 m on clear days and less 10 % below 2000 m on rain days. The higher altitude is, the grower error is. Also, relative humidity tends to be underestimated at all heights.