



Sensitivity of simulated microwave brightness temperature to nucleation processes in tropical convective cloud systems during KWAJEX

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This paper discusses potential impacts of aerosols and nucleation processes on microwave brightness temperature simulated for tropical convective clouds. Satellite remote sensing is a powerful tool to study tropical and global precipitation distribution. Many physically-based passive-microwave (MW) satellite precipitation algorithms make use of cloud radiation databases (CRDs), which typically consist of microphysical profiles from cloud resolving model (CRMs) and simulated MW brightness temperature. Climate change and anthropogenic activity may alter aerosol distributions and nucleation of hydrometeors. Thus, it is important to study how any changes in the tropical clouds due to aerosols and nucleation processes translate into the precipitation and brightness temperature. Forward calculation of brightness temperature will be implemented based on outputs from a CRM with Advanced Microphysical Prediction System (Hashino and Tripoli, 2007) for various aerosol profiles, and implications for the CRDs will be discussed.