

## **7.2 High resolution model simulations for MC3E: Comparisons with observations and different microphysics schemes**

**Tao, Wei-Kuo**, *National Aeronautics and Space Administration*; Di Wu, Steve Lang, *Science Systems and Applications, Inc.*; and Jiundar Chern, *Morgan State University*

Recently, several major improvements to ice microphysical processes (or schemes) have been made for cloud-resolving models (Goddard Cumulus Ensemble, GCE, model) and regional scale (Weather Research and Forecasting, WRF) models. These improvements include an improved 3-ICE (cloud ice, snow and graupel) scheme (Lang et al. 2011) and a 4-ICE (cloud ice, snow, graupel and hail) scheme (Lang et al. 2014) scheme. In addition, a spectral bin microphysics scheme and two different two-moment microphysics schemes are used for comparison to evaluate the performance of the improved one-moment schemes.

The performance of all of these schemes has been evaluated using observational data (e.g. NEXRAD) from a major GPM field campaign: the Midlatitude Continental Convective Clouds Experiment (MC3E). In this talk, we will present high-resolution GCE and WRF model simulations with different microphysics schemes and compare the model results with observations. In addition, the main issues related to the microphysics schemes in high-resolution (1-6 km grid spacing) numerical models will be discussed.