P56 Development of NTU triple-moment ice-phase microphysics scheme with consideration of particle shape and density variation.

Chen, Jen-Ping, Tzu-Chin Tsai, *Department of Atmospheric Sciences, National Taiwan University*

A physics-base cloud microphysical parameterization was developed by the National Taiwan University (NTU) and implemented into the WRF model. This NTU scheme considers two classes of liquid-phase hydrometeors (cloud drop and raindrop) using double-moment representation, and 4 classes of ice-phase hydrometeors (pristine cloud ice, snow aggregate, rimed ice, and hail) using triple-moment representation. Furthermore, shape (aspect ratio) and density variations are considered for cloud ice and snow aggregate; while rimed ice (graupel) also considers density changes. The liquid-phase parameterization was derived from binned microphysics models, while the ice-phase scheme follows traditional bulk parameterization but with improved representation of size spectrum and physical mechanisms, the latter include full interaction with condensation nuclei and ice nuclei. Our scheme has been applied in several cloud systems, all showing satisfactory results especially in the radar reflectivity analysis.