P27 Numerical simulation of the formation of precipitation using bin microphysics

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The correct prediction of quantitative and qualitative properties of precipitation is still challenging in everyday forecast. In this research complex microphysical properties were of a squall line has been investigated including different microphysical processes. For more reliable comparison of the simulated and observed data a new numerical scheme was developed for the calculation of the radar reflectivity patterns. The results of about severe thunderstorm developed on 20 June 2007 in central Oklahoma are presented. The correct prediction of quantitative and qualitative properties of precipitation is still challenging in everyday forecast. In this research complex microphysical properties were of a squall line has been investigated including different microphysical processes. For more reliable comparison of the simulated and observed data a new numerical scheme was developed for the calculation of the radar reflectivity patterns. The results of about severe thunderstorm developed on 20 June 2007 in central Oklahoma are presented. The applied bin microphysical scheme includes the following type of hydrometeors: water drops, pristine ice crystals, snowflakes, graupel particles. The size distribution of them was divided into 36 size category. The following microphysical processes are simulated: i) Diffusional growth of water drops, pristine ice crystals; ii) Melting of solid hydrometeors: snowflakes, graupel particles; iii) Freezing of supercooled water drops; iv) Collision and coalescence of water drops – break up of water drops; v) Self-coagulation of pristine ice crystals; vi) Collision of aggregates to form graupel particles and vii) Riming process: collision between supercooled water drops and pristine ice crystals. The research focused on the effect of the melting and that of the evaporation of precipitation elements on the formation of the cold pool. The research focused on the effect of the melting and that of the evaporation of precipitation elements on the formation of the cold pool.