P11 Summer season evaluation of a new multiscale Kain-Fritsch convection parameterization

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Numerous enhancements have been recently developed for the Kain-Fritsch (KF) convection parameterization to allow its smooth application across scales down to about 1 km grid spacing (see Alapaty et al. at this workshop). The new formulations and physics updates included in the multiscale KF scheme pertain to (1) the convective adjustment timescale, (2) the entrainment of environmental air, (3) the fallout of condensates from updrafts, (4) the stabilizing capacity, (5) the impact of convective updrafts and downdrafts on grid-scale vertical velocity, and (6) the elimination of the double counting of precipitation due to the concurrent usage of grid-scale and subgrid-scale cloud formulations within each grid cell. The performance of the multiscale KF convection parameterization is evaluated via R-2-driven WRF simulations of the 2006 summer season (JJA) over the eastern United States using 12 km grid spacing. Individual simulations were conducted with each of these formulations for a sensitivity study of the relative impacts of each on regional climate parameters such as temperature, surface fluxes, and grid- and subgrid-scale precipitation. Analysis of the results obtained from these summer simulations and an evaluation of the performance of the multiscale KF scheme will be presented.