6.5 Modeling convection using the Tiedtke cumulus scheme at different grid sizes.

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Cumulus convection scheme (CPS) is an important model component in many applications. A CPS is especially important in models like MPAS where the model grid distance can be varied from relatively coarse to fine sizes across the globe. Several of the CPS in WRF and MPAS have been adapted to be 'scale-aware'. In this work, an attempt is made to enable the new Tiedtke scheme to reduce its effect as the model grid size decreases. The modified scheme is tested in several cases to show that the behavior of the scheme changes smoothly from coarse grid where convection is largely driven by the CPS to fine grid where the effect of the CPS is reduced, and convection is predominantly modeled by microphysics.