

Cloud-system-resolving large-domain simulations of tropical convection and the MJO

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High-resolution (up to 1.5 km grid size) limited-area simulations of large tropical domains are analyzed as part of the Cascade project. Model versions with explicit convection and sufficient vertical mixing are found to show significant improvements in the representation of the MJO; this is accompanied by an improved relationship between free-tropospheric moisture and precipitation. Simulations with 12 km grid length and parameterized convection have too many occurrences of very light rain and too few of heavier rain when interpolated onto a one-degree grid and compared with TRMM data. This has important potential implications for the maintenance and propagation of large-scale waves and circulations.