The RAL Seminar Series

NCAR

Statistical assessment of tropical cloud-system resolving model simulations using a cell-tracking algorithm

by

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Numerical cloud models are sufficiently advanced that they are capable of providing physically realistic representations of cloud systems in the tropics. Yet, due to the low predictability of moist convection, models have difficulty simulating the correct location and timing of individual convective clouds. Such a limitation makes direct comparisons between observed and simulated convection problematic and it is often more useful to compare statistics of simulated tropical convection to those of observations. In this talk I will cover some of the objective methods we have used to evaluate the statistical properties of convection generated in the Weather Research and Forecasting (WRF) model. One method I will briefly cover involves using clustering algorithm to sort histograms of reflectivity vs. height derived from both model simulated reflectivity fields and observed radar data. Finally, preliminary results will be presented outlining how we have used an objective cell-tracking algorithm, TITAN (Thunderstorm Identification Tracking Analysis and Nowcasting), to compare the statistics of the characteristics of modeled convective cells and those observed by weather radar. TITAN provides information on a variety of cloud properties, including storm duration, height, size, shape, orientation, location, and propagation speed. Model data from WRF model simulations of convection during the Tropical Warm Pool - International Cloud Experiment (TWP-ICE) are conducted, analyzed with TITAN, and compared to a similar analysis of the available radar observations.