



## **Cloud resolving model simulation of thunderstorm tops: comparison with observations**

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The application of satellite remote sensing techniques to observe severe storms depends very much on our understanding of the cloud physics and dynamics at the top of these storms. The most feasible way to achieve such understandings is to perform cloud resolving model (CRM) simulations of storms and to analyze the model results to search for underlying physics. Thus the performance of the CRM plays a central role in this type of study. This paper will discuss some of the successes of a CRM, WISC DYMM, developed by us in simulating some storm top properties as observed by satellites, aircraft, and ground-based studies. These include the storm top plume phenomenon, the jumping cirrus, and some infrared features (enhanced-V, warm-clod couplet, close-in warm area, distant warm area, etc.) observed by satellites. Satellite and aircraft storm images and ground-based storm loops will be shown and compared with model simulation results. Physical mechanisms involved in these observed phenomena will be explained using simulation results.

This paper will also briefly review some features of storm tops that appear in many MODIS images but are not reproduced in the cloud resolving model, pointing to the possibility that there are some convection processes not captured by the model.