



Cloud Resolving Model studies of tropical deep convection observed during HIBISCUS 2004.

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The UK Met Office Large Eddy Model (LEM) Cloud Resolving Model (CRM) was used to simulate tropical deep convection that occurred on several case study days of the HIBISCUS project. The aim was to quantify the effects of deep convection on the redistribution of water vapour, hydrometeors, aerosols, ozone and other gases through the use of a detailed microphysics scheme and tracer fields. The results were compared to balloon borne and aircraft measurements of such atmospheric constituents, many of which were taken both before and after convection had occurred thus allowing examination of the effects of the clouds on them. Also, various cloud statistics were compared to radar observations made nearby at sites. For example, simulated echo top and radar reflectivity statistics were compared to those observed and precipitation rate statistics were compared to precipitation rates estimated from PPI (Plan Position Indicator) images and also to ground station and TRMM satellite data. Sensitivity tests have been performed to get an idea of the variability of the model and the detrainment process to factors such as resolution, domain size, convection initialization procedure and the microphysical parameterizations.