

Observation and Analysis of Tropospheric Convection during CPEA

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Gravity wave activity associated with tropical convection has been observed with the Equatorial Atmosphere Radar (EAR). Comparisons have been made between the Doppler X-band radar, located south of the EAR site, and measurements made with the EAR. The X-band radar reflectivity measurements were

used to construct profiles of the convective cells above the EAR site. This allowed an indication of the extent of water droplets and precipitation in the troposphere.

Results from the EAR suggest that fluctuations in the vertical wind velocities above cloud tops are a result of the emission of high frequency gravity waves by the convective cells. These gravity waves were observed to extend into the lower stratosphere.

During the CPEA campaign, a RASS (Radio Acoustic Sounding System) dataset was obtained with the EAR. this has allowed calculation of the virtual temperature up to 5 km. Initial investigations with the RASS data have revealed increases in temperature within the convective cells, which may be due to latent heat release.

Preliminary results from the analysis of a lower tropospheric humidity dataset will be presented. Studies of the internal cloud dynamics will also be detailed.