

TROPICAL CLOUD LIFE CYCLE AND OVERLAP STRUCTURE

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ABSTRACT

The profile of cloud microphysical properties and how the clouds are overlapped within a vertical column have a profound impact on the radiative transfer and subsequent general circulation model simulations. We will present how cloud microphysical properties and overlap structure retrieved at the ARM Tropical Western Pacific (TWP) sites depend on cloud type and the stage of the cloud life cycle. This is achieved by combining the complimentary attributes of the vertical profiling data from radars with the horizontal information available from geostationary satellite data. In particular, we focus on the Darwin ARM site where a new MMCR spectral processor has been installed that enables improved cloud masking, characterization and microphysical retrievals. Those vertical profiles may be augmented using the 3-D scanning information from the Australian BOM C-POL radar, stationed near Darwin. The stage of the cloud life cycle at the time of the radar observations will be determined using a satellite cloud tracking algorithm (Boer and Ramanathan, 1997). The cloud tracking algorithm will not only be able to provide time (life-cycle) context to the ARM radar observations, but can also be used to determine the representativeness of the Darwin cloud observations (and their behavior) relative to the broader TWP region.

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