

MMM SPECIAL SEMINAR



The Cloud, Aerosol, and Complex Terrain Interactions (CACTI) Field Campaign

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Convective cloud circulations remain insufficiently measured and understood as a function of the surrounding environmental thermodynamic, kinematic, and aerosol conditions with which they interact. This contributes to model parameterization inadequacies that bias weather and climate prediction in many regions of the world. The DOE Atmospheric Radiation Measurement (ARM) Cloud, Aerosol, and Complex Terrain Interactions (CACTI) experiment was performed to improve understanding and parameterization of convective cloud and system lifecycles as functions of local environmental conditions through detailed observing of numerous orographic cumulus, deep convective initiation, and mesoscale convective organization cases.

Coordinated measurements were collected between October 2018 and April 2019 from over 50 atmospheric state, cloud, precipitation, land surface, radiation, and aerosol instruments constituting the ARM Mobile Facility-1 and deployable C-band Scanning ARM Precipitation Radar on the eastern slope of the Sierras de Córdoba mountain ridgeline in north-central Argentina. This location was chosen for its exceptionally high frequency of orographic convective cloud development of all types from cumulus to organized deep convection that includes some of the most extreme storms on the planet. This region also experiences many varied environmental influences on convective cloud evolution throughout the summer wet season including orographic, low level jet, and frontal cyclone circulations, significant daily and seasonal changes in surface fluxes, free tropospheric modification by elevated terrain and cloud detrainment, and highly variable aerosol properties. These combined factors coupled with the propensity for convective clouds to develop and organize in close proximity to one another make the region ideal for studying interactions between multi-scale convective cloud evolution and surrounding environmental conditions.

An Intensive Observation Period was performed between 30 October and 13 December 2018 that included participation of the ARM Aerial Facility Gulfstream-1 aircraft equipped with over 50 instruments measuring in situ properties in and around evolving clouds. This period also overlapped with a coincident, collaborating NSF-led field campaign in the same area called RELAMPAGO, which focused on deep convective initiation, upscale growth, and severe weather. In this talk I will provide an overview of datasets collected during CACTI and potential science that can be done with them that may be of interest to researchers at NCAR.

***Tuesday, 30 April 2019, 11:00AM**

***Please note special day and time**

Refreshments 10:45 AM

NCAR-Foothills Laboratory, 3450 Mitchell Lane, FL2-1022, Large Auditorium

This seminar will be webcast live at:
<http://ucarconnect.ucar.edu/live>

Recorded seminar link can be viewed here:
<https://www.mmm.ucar.edu/events/seminars>



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