MMM SEMINAR SERIES

Ocean-Atmosphere Coupled Energy Budgets of Shallow and Deep Convective Discharge-Recharge Cycles

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Variations of moisture and temperature, both in the boundary layer and the lower free troposphere, have been shown to greatly influence tropical convection. Convection, in turn, drives systematic changes in the thermodynamic environment, such that both co-evolve in tandem. Recent studies have shown that feedbacks between convection and the thermodynamic environment give rise to the cyclical amplification and decay of tropical convection, referred to as convective discharge-recharge cycles.

In this study, an ERA5 atmospheric moist static energy (MSE) budget is examined alongside a HYCOM upper ocean heat content (OHC) budget, and used to investigate the energetics of both shallow and deep convective discharge-recharge cycles, which remain poorly understood. TRMM and CloudSat data are used to examine how the vertical and horizontal structure of the cloud population evolves during both shallow and deep convective discharge-recharge cycles. A recently developed dataset of mesoscale convective system (MCS) precipitation is then used to show that mesoscale organization plays a central role in the energetics of these discharge-recharge cycles.

This presentation will focus on the special role that MCSs play in the energetics of deep convective discharge-recharge cycles.

Thursday, 17 November 2022, 2:00pm

Refreshments 1:45pm

Please also join colleagues for refreshments and informal discussion after the seminar until 3:30pm

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

Seminar will also be live webcast

https://operations.ucar.edu/live-mmm

Participants may ask questions during the seminar via Slido.