CGD SEMINAR

NCAR

DATE: Tuesday, 30 April 2019

TIME: 11 am – 12 pm

LOCATION: NCAR, 1850 Table Mesa Drive
Mesa Lab, Main Seminar Room

TITLE: Water vapor, precipitation, and tropical waves: what can we learn from simple models?

SPEAKER: Ángel Adames-Corraliza, University of Michigan

ABSTRACT:

When it comes to our understanding of tropical motion systems and tropical precipitation, the last two decades have been characterized by fast advances. Yet our conceptual understanding of tropical motions remains incomplete. Here I present a conceptual framework that may provide insight into the nature of tropical motion systems and the mechanics of convective coupling. Scale analysis of simplified basic equations reveals the relative role that temperature and moisture play in convection and in the evolution of tropical waves, indicating that the tropics are characterized by two distinct regimes. One regime is driven by moist gravity waves that propagate at fast speeds and may couple to convection through thermal fluctuations. Slow waves are driven by fluctuations in water vapor and modify rainfall through decreased dilution in updrafts. Intermediate behavior exists in the form of mixed moisture-gravity waves. For balanced rotational disturbances, it is shown that the evolution of water vapor becomes increasingly more important the higher the concentration of atmospheric water vapor is.

Live webcast: http://ucarconnect.ucar.edu/live

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