

Thompson Lecture Series 2017

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Do you feel me? Investigating multi-scale interactions in the evolution of tropical convection

Monday 22 May 2017, 11:00 am. Foothills Lab Large Auditorium

Abstract:

Small thunderstorms, squall lines, tropical cyclones; all of these systems, organized across a range of scales in both space and time, comprise the tropical convection that is the source of precipitation for the most highly populated regions of the world. While significant progress has been made in understanding tropical convective systems and their associated precipitation processes, the understanding and accurate prediction of their evolution remains elusive.

With this motivation, a research program that began as an observational study of internal tropical cyclone processes necessarily expanded into a multi-scale exploration of how tropical precipitation systems interact with, and are influenced by, their larger-scale environment. Using remote sensing and in situ observations from satellites and intensive field campaigns, linked together with high-resolution numerical modeling, this research explores one big picture question: Do large-scale conditions impact tropical convective systems' kinematic and thermodynamic properties in ways that influence storm structure, organization, evolution, and precipitation production? If so, how? This question inevitably leads to a discussion about future observational needs to address these gaps in understanding about a large contributor to the global precipitation and energy budget.