MMM SEMINAR NCAR

A Complete Solution for the Radial Wind Structure of a Tropical Cyclone

Daniel Chavas

Princeton University Princeton, New Jersey

Damage due to landfalling tropical cyclones is highly sensitive to storm size and structure, yet our physical understanding of these characteristics remains poor. This work develops a complete, physics-based model for the radial wind structure of a tropical cyclone by merging existing theoretical solutions for the equilibrium radial wind structure in the inner convecting and outer non-convecting regions. The model is shown to compare well with an observational dataset of radial structure developed from QuikSCAT and HWind data. Furthermore, the general behavior of the model can reproduce the known characteristics of variability in tropical cyclone structure as seen in both observations and numerical models. In combination, this model provides a framework for precisely defining size and structure and differentiating between their respective variability.

> This seminar will be recorded and available via webcast at: http://www.fin.ucar.edu/it/mms/fl-live.htm

> > Thursday, 29 May 2014, 3:30 PM Refreshments 3:15 PM NCAR-Foothills Laboratory 3450 Mitchell Lane Bldg 2 Main Auditorium, Room 1022

MMM SEMINAR COORDINATORS: Rich Rotunno, 303.497.8904, rotunno@ucar.edu Chris Snyder, 303.497.8966, chriss@ucar.edu http://www.mmm.ucar.edu/events/seminars