1116-86-2334 **Reed Ogrosky*** (ogrosky@math.wisc.edu) and **Samuel Stechmann**. *Modeling and data analysis of large-scale rainfall events and convection in the tropics.*

Rainfall and clouds, i.e. convection, in the tropics occur on many temporal and spatial scales. Increasing our understanding of tropical convection is essential due both to its large economic and societal impacts in the tropics as well as its close connections to events in the midlatitudes and beyond. I will present results from both deterministic and stochastic models for several large-scale phenomena in the tropical atmosphere that are coupled with rainfall patterns, including the Walker circulation and the Madden-Julian oscillation. It will be shown that these results agree remarkably well with observed events and accurately capture typical event lifetime, propagation characteristics, frequency, intermittency, and strength. This agreement is found using a data analysis technique based on solutions to the shallow water equations frequently used in studying the tropical atmosphere. Additional applications of the data analysis method will also be discussed, including identifying the signals of convectively coupled equatorial waves in observational data. (Received September 22, 2015)