Daniel R. Chavas

Graduate Institution: Massachusetts Institute of Technology

Graduate Discipline: Atmospheric Science

Hometown: Madison, WI

Relevant SC Research: Biological and Environmental Research

Research Interest:

My research interests lie primarily in the dynamics, predictability, and impacts of tropical cyclones. In particular, my current thesis research focuses on what sets the transient and equilibrium size (i.e. diameter) of a tropical cyclone, which is currently poorly understood and largely unpredictable. In addition, I have increasingly become involved with research in the societal impacts and risk management of tropical cyclones and other natural hazards, a field that lies at the intersection of physics, statistics, economics, and the social sciences. Beyond tropical cyclones, I am also broadly interested in climate science, as well as climate change science and policy.

About Me:

I am currently a 4th year graduate student pursuing my PhD in atmospheric science in the Program in Atmospheres, Oceans, and Climate at MIT. My thesis research focuses on the dynamics of tropical cyclone size and is performed under the supervision of Professor Kerry Emanuel. I have a long-held fascination with the weather ever since a tree fell on my house during a storm when I was four years old, which has translated well to my current research on tropical cyclones. Indeed, as a complement to my PhD work, I am also actively engaged in collaborative research on the economic and societal impacts of hurricanes, including hurricane-induced storm surge and analysis of the historical U.S. economic damage database for landfalling hurricanes and its application in statistical and dynamical approaches to hurricane risk assessment. Furthermore, I recently served as Vice-President of the Science Policy Initiative (June 2011 – May 2012), an MIT student organization dedicated to the education and engagement of young scientists and engineers in the policy context in which science and technology are embedded. I am also an active member of the MIT Joint Program in the Science and Policy of Global Change, which enables interaction between scientists and economists working in the area of climate, energy, and society.

My career goal is to bring physics to bear in natural hazard risk management, with a specific focus on hurricanes. Hurricanes are responsible for 7 of the top 10 largest insured loss events globally since 1980, yet despite significant advances in our understanding and prediction of hurricanes, we still struggle not only to quantify risk but also to translate risk information into useful formats that enable individuals, governments, and emergency managers to respond accordingly. Bridging these gaps demands intimate knowledge not only of the physics of the hazard of interest, but also the statistics and dynamics of its economic impacts and the geography of societal vulnerability, both in the past and the future. Such an endeavor will therefore require a collaborative environment spanning many areas of expertise from fundamental physical hazard research to on-the-ground risk management. I hope to be a leader in this long-term effort, and have begun to build a network of potential contributors.

In April 2012, I received the Max Eaton Award for the top student abstract/presentation at the American Meteorological Society 30th Conference on Hurricanes and Tropical Meteorology.

Beyond academics, I am an avid tennis player and fan and love traveling, gardening, cooking, and skiing. I also am learning how to play the Ukulele, but I am still just a beginner.