Kara Jo Sulia

Graduate Institution: Pennsylvania State University

Graduate Discipline: Meteorology – Cloud Physics

Hometown: Cookstown, NJ

Relevant SC Research: Biological and Environmental Research

Research Interest:

My main goal as a researcher is to learn as much as I can. I strive to understand the core physicality of nature as a whole through science. My research focus involves improving the understanding of Physical Meteorology and the inter-workings of the Atmospheric Cloud Systems. More specifically, I study the habit evolution of ice crystals within cold atmospheric clouds and how to improve the prediction of ice crystal evolution in detailed cloud models. I do this using theoretical models ranging from a detailed Lagrangian parcel model to the Large-Eddy Simulation Weather Research and Forecasting Model for which a new adaptive habit bulk ice growth method has been implemented. With these, I hope to share an understanding of ice particle growth and its effect on mixed-phase Arctic water phase partitioning and lifetime. Future interests include delving into the thermal dependencies of molecular incorporation into the ice lattice to further solidify our knowledge on the freezing process.

About Me:

I am a graduate from Penn State University with a Bachelor of Science in Meteorology. I began researching ice particle growth with Dr. Jerry Harrington in November 2008, and became enrolled as a graduate student at Penn State in January 2010 in order to continue on my current research path. Throughout my graduate career, I have become well-acquainted with the process of ice growth and its effect on Arctic clouds, as well as understanding the overall dynamical and microphysical evolution of strati-form clouds. With a Ph.D. in physical meteorology at the forefront, I hope to extend my career as a research scientist at a national laboratory or within a university setting within the coming years.

My research has taken me above and beyond what I could have hoped for. Not only has my knowledge and passion for the subject increased exponentially, but I am truly fortunate to have had the opportunity to form working relationships with scientists at both NCAR and NOAA in Boulder, CO. Collaborations with Drs. Graham Feingold and Barbara Ervens led to a publication in the Journal of Geophysical Research (JGR) on The Impact of Microphysical parameters, ice nucleation mode, and habit growth on ice/liquid partitioning in mixed-phase Arctic clouds as well as Drs. Hugh Morrison, Matthew Shupe, and Gijs deBoer on the Self-organization and resilience of Arctic mixed-phase clouds in Nature Geosciences. With a stronger focus on adaptive habit growth, work with Drs. Jerry Harrington and Hugh Morrison has led to the recent submission to the Journal of Atmospheric Sciences (JAS) focusing on the model description and corroboration of the new bulk adaptive habit method. Furthermore, parcel model and kinematic studies have led to two first-author publications to JGR and JAS (in progress) and an invited talk to the recent ASR Science Team Meeting. Studies with the Weather Research and Forecasting model are completed both at Penn State and NCAR (part-time), and will cap off my dissertation research. These collaborations have brought my research to a new level, and I find myself realizing how little I know, and how much I have yet to learn.

Research aside, as a goal-oriented person, I find myself enjoying life most when I am busy and centered. I achieve this by staying active daily through running, hiking, swimming, and occasionally biking. In addition, I spend a good portion of my free time as a potter and snowboarding during the winter months. I enjoy expanding my horizons by visiting a new place, or taking drawing or music lessons. Whatever the activity may be, physical or not, it is most important for me to try something new, and learn everyday.