



Samantha J. Kramer, PhD

Air Quality Data Scientist, Program Manager



Dr. Kramer joined STI's Data Science Department in 2020. She has 7 years of academic research experience in atmospheric science, with particular expertise in natural aerosol pollutants, airflow tracking, regional climatology, and sub-seasonal prediction. She has worked in multiple areas of atmospheric science, including laboratory processing, dataset production and quality control, numerical weather prediction output, and code building for statistical analysis. Dr. Kramer is currently supporting a variety of STI's technical air quality research and analysis work across multiple business segments,

including electric utilities assessments, industrial monitoring, litigation support, and exposure assessment.

Before joining STI Dr. Kramer completed her Doctorate Program at the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences. Her research focused on the sub-seasonal variability and prediction of Saharan dust transport. She utilized multi-decadal *in situ* dust data, HYSPLIT model back-trajectories with cluster analysis, and statistical data science tools to identify predictable pathways and atmospheric influences that result in the transport of large quantities of Saharan dust to Miami, Florida.

The identified pathways were used to develop a dust-transport-efficiency index, calculated from wind forecast data, as a metric for seasonal to weekly dust prediction. Her doctoral work generated a Saharan dust prediction estimate that incorporates large-scale atmospheric and climate information into regional air quality conditions. She also founded an outreach program to bring graduate students into K-12 classrooms to teach earth science topics free of charge. The goal of this program is to increase STEM (science, technology, engineering, and mathematics) visibility and understanding in underprivileged school systems. Dr. Kramer's undergraduate research included the maintenance and processing of Saharan dust samples that were collected at the University of Miami and were included in the long-term record utilized in her doctoral research.

Dr. Kramer has experience working with Java, FORTRAN, IDL, and NCL. She is continuing to expand her coding proficiencies in R and Python. She also has experience working with the HYSPLIT aerosol tracking model, CCSM4 global forecast model, MERRA2 reanalysis, and NCEP reanalysis products. Dr. Kramer has teaching experience in weather forecasting and climate change, and strong skills in communicating complex scientific topics to a range of audiences.

Education

- PhD, Meteorology and Physical Oceanography, University of Miami
- BS, Atmospheric Science and Mathematics, University of Miami

Memberships

American Meteorological Society (AMS)

For a list of publications, see sonomatech.com/ResPub/SJKpub.pdf.