Kayla A. Besong-Cowan, PhD

Air Quality Data Scientist

Sonoma Technology

Dr. Besong-Cowan joined Sonoma Technology in 2022 and supports a variety of projects for government and industry clients that involve data analysis, processing, and management. She works on a NOAA grant evaluating the Unified Forecast System Subseasonal Model for fire weather metrics. Dr. Besong-Cowan has provided further support for HYSPLIT trajectory and dispersion modeling, generating visually aesthetic outputs in ArcGIS Pro, and has gained a reputation at the company for being an expert in obtaining and handling weather forecast data. She has also developed the backend for a smoke dispersion climatology tool, increasing the efficiency of the processing by a factor of four.

Education

- PhD, Atmospheric Science, University of Miami
- BS, Environmental Resources Engineering, SUNY College of Environmental Science and Forestry

Memberships

- American Meteorological Society

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

Prior to Sonoma Technology, Dr. Besong-Cowan completed her doctoral degree from the University of Miami Rosenstiel School of Marine and Atmospheric Science under Dr. Ben Kirtman. Dr. Besong-Cowan's research focused on atmospheric blocking, evaluating sensitivity in analysis techniques and how that translated to the blocking-North Atlantic Oscillation (NAO) relationship. She also explored systematic biases in the Community Earth System Model (CCSM4) global climate model and how they relate to poor modeled representation of blocking in the North Atlantic. As part of her research, Dr. Besong-Cowan utilized a complex blocking algorithm that included Lagrangian centroid-based tracking and allowed for classification of blocking events by the type of Rossby wave breaking influencing their onset. A highlight of the analysis, the classification into cyclonic and anticyclonic driven blocking events helped to further identify biases in CCSM4 and better understand the blocking-NAO relationship.

During her time at the University of Miami, Dr. Besong-Cowan was involved in an array of science communication and outreach programs including being an editor and primary graphics developer for the Seasoned Chaos blog. Mentored by NOAA's ENSO Blog on Climate.gov, Seasoned Chaos targets scientists and non-scientist alike to explain subseasonal weather phenomena, prediction, and variability through light-hearted analogies. Fostered at the College of Environmental Science and Forestry, Dr. Besong-Cowan carries a passion for the environment and sustainability. Along with giving multiple outreach talks on the intersection of climate change and sustainability, she founded the Sustainability Initiative at RSMAS with the goal to raise environmental awareness, promote community engagement through projects such as a community garden, and offer environmentally-focused events.

Dr. Besong-Cowan has teaching experience in Python and meteorology and has given guest lectures at various institutions including NYU and the UM School of Public Health. Beyond her extensive science communication, public speaking, and outreach skills, Dr. Besong-Cowan is a seasoned programmer with over nine years of Python experience. She has worked with R, VIM, MATLAB, ArcGIS, big data, parallel processing, climate modelling (CCSM4), ERA-5, CONUS404, NARR, and NCEP reanalysis, weather forecast data (UFS, HRRR, NAM, NMME, and GFS), and thoroughly enjoys data visualization and graphics production.

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