

CURRICULUM VITAE

NAME: Samantha J. Kramer, PhD, ORCID: 0000-0002-0526-6057

EDUCATION/TRAINING

Institution and Location	Degree	Completion	Field of Study
Univ. of Miami, Miami, FL	BS	05/2015	Atmos. Science & Math
Univ. of Miami, Miami, FL	PhD	06/2020	Meteorology & Phys. Oceanography

A. Personal Statement

My technical expertise broadly ranges in natural aerosol pollutants, airflow tracking, regional climatology, radiative impacts, and sub-seasonal prediction. I am currently leading a cross-sector research study, (Kramer- Lead PI) NOAA Weather Program Office (WPO) Innovations Fire Weather Competition (Award #NA23OAR4590383) generating a standardized fire weather database to streamline research and reduce barriers to evaluating forecasts. This work includes evaluating new NOAA United Forecast System (UFS) products specifically for decision-maker cases. I have led stakeholder workshops and iterative polling for key partners, in-line with research to ensure maximum potential benefit. Prior research in this area includes statistical analysis of forecast variability, climatology, and accuracy to determine the baseline dependability of six-week forecasts for use in regional natural aerosol predictions to redefine how research communities can approach computational limitations. I have also recently led particulate matter (PM_{2.5}) smoke-dispersion modeling efforts using BlueSky Pipeline, HYSPLIT, and ArcGIS for historical wildfire and prescribed fire records. I have designed and implemented 4 million acres of hypothetical projected prescribed fires in California to determine the public health impacts from smoke at ZIP-code levels based on state policy. I also oversee the development of EPA's Smoke Sense citizen science application, and secondary NSF-funded smoke mitigation study for disadvantaged communities. My greatest strength is harmonizing university, federal, state, and industry connections to build interdisciplinary teams and cross-sharing data to improve societal outcomes for decision support processes. This includes direct work with the University of Miami, U.S. EPA, U.S. Forest Service, NOAA, California Department of Public Health (CDPH), and California Department of Forestry and Fire Protection (CAL FIRE). I have also coordinated at the local level, including fire evacuation research, mitigation prioritization research, and tool development for the Marin Wildfire Prevention Authority (MWPA), which included direct collaboration with local agencies including fire departments, office of emergency management, and department of transportation.

B. Positions and Honors

Career

2013-2015	Research Assistant, Univ. of Miami
2015-2017	Graduate Researcher, Univ. of Miami Rosenstiel School of Marine and Atmos. Science
2017-2020	PhD Candidate, Univ. of Miami Rosenstiel School of Marine and Atmos. Science
2020-2022	Air Quality Data Scientist, Sonoma Technology
2022-2025	Air Quality Data Scientist and Project Manager, Sonoma Technology
2024-2025	Program Manager Wildland Fire and Smoke, Sonoma Technology
2025-Current	Symposium Chair: Community Modeling and Innovation Committee at AMS Annual
2026-Current	Principal Scientist, Founder, Atmospheric Interdisciplinary Research Institute

Memberships and Awards

2023	Sonoma Technology 'You Make a Difference Award': Peer nominated and selected
2021-Current	Member, International Association of Wildland Fire

2017-Current Member, American Meteorological Society

2015 Outstanding Meteorology Major Award: Faculty nominated and selected

C. Contributions to Science

1. Numerical Weather Prediction

I am currently leading a cross-sector research study, (Kramer- PI) NOAA Weather Program Office (WPO) Innovations Fire Weather Competition, Award #NA23OAR4590383, generating a standardized fire weather database to streamline research and reduce barriers or forecast evaluation. This work includes evaluating new NOAA United Forecast System (UFS) forecast products specifically for decision-maker cases. Stakeholder workshops and iterative polling for key partners/participants/collaborators is being conducted in-line with research to ensure maximum potential benefit. Prior research in this area includes statistical analysis of forecast variability, climatology, and accuracy to determine the baseline dependability of six-week forecasts for use in regional natural aerosol predictions to re-define how research communities can approach computational limitations.

2. Smoke-Related Health Assessments

I have managed PM_{2.5} smoke-dispersion modeling efforts using BlueSky Pipeline, HYSPLIT, and ArcGIS for 10 years of wildfire and prescribed fire records. This work involves comparing fire weather climatology over 10 years and modeling dispersion for 4 million acres of hypothetical prescribed fires in California to determine the public health impacts from smoke at ZIP-code levels. I have also done extensive analysis for an National Institutes of Health (NIH)-funded study focused on PM_{2.5} smoke impacts on California birth outcomes (2007-2018) using model output for wildland fire smoke scenarios, completing data extractions, smoke exposure assignments, environmental justice analyses, and data quality assessments. I am serving as the technical lead on a current smoke transport climatology project for California and Nevada, funded by CAL FIRE, which will use high-resolution HYSPLIT trajectories with kernel density calculations for spatial probability density. currently leading a report on

3. Wildfire Impacts for Carbon and Climate

I have performed greenhouse gas (GHG) and carbon quantification for forest management activities utilizing the Forest Vegetation Simulator, Interagency Fuel Treatment Decision Support System Model, and field observations. This work was funded by the State of California through the Cap-and-Trade program serving to meet climate emission goals in tandem with wildfire hazard actions. Our efforts in this analysis lead to improved understanding of wildfire risk reduction and impacts on carbon capture. Most recently, I am leading an analysis and written report on extreme temperature, wildfire, and smoke exposure projections for the 5th California Climate Change Assessment in collaboration with UC Berkeley. This work includes past and historical data synthesized with downscaled climate projections for various simulations and scenarios.

4. Community Mitigation of Wildland Fire Tools

Due to the increasing threat of wildfire and wildfire smoke impacts, community decision support tools have become necessary for public agencies and citizens. My research has included the development of EPA's Smoke Sense citizen science application, an NSF-funded smoke mitigation study for disadvantaged communities. I have also led the development of an evacuation risk mitigation toolkit, which involved (1) an extensive literature review on the state of science and citizen fatality incidents due to wildfire; (2) direct communication and discussion with local agencies, including fire departments, emergency support services, and traffic control services; and (3) developing guidance for local agencies to implement mitigation solutions and reduce risks at the local level.