

## **Cesunica Ivey**

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### **Multiscale Impacts of Poor Air Quality: Case Studies of Regional, Local, and Community Air Pollution Sources and Exposures**

Globally, human exposure to air pollution is a known risk factor for increased morbidity and mortality, and its chemical composition can vary significantly by region and season. Variabilities are largely driven by topography, meteorology, land cover, and human activities. State-of-the-science air quality modeling systems, such as the U.S. EPA's Community Multiscale Air Quality (CMAQ) model, parameterize or directly resolve many important land-atmosphere interactions. CMAQ's direct sensitivity tool enables the investigation of the model response to emissions or boundary conditions. Model sensitivity studies are useful for estimating the impacts of specific pollution sources and provide insight for the development of mitigation strategies. I will discuss past and present applications of a sensitivity approach to investigate regional source variability over the continental U.S. and to investigate local air pollution challenges in Salt Lake City, Utah. I will also discuss ongoing convergence research that addresses air quality and exposure disparities in Inland Southern California.

Dr. Cesunica (Sunni) Ivey is an assistant professor of chemical and environmental engineering at UC Riverside. She is a principal investigator at the Bourns College of Engineering Center for Environmental Research and Technology, and she is an affiliate faculty member of the UCR Center of Geospatial Sciences and the UCR School of Medicine BREATHE Center. She earned her Ph.D. in environmental engineering from the Georgia Institute of Technology in 2016. She is former postdoctoral researcher in the Department of Physics at the University of Nevada Reno and also served as a visiting scientist at NOAA's Geophysical Fluid Dynamics Laboratory before joining UC Riverside in summer of 2018. Her research interests include source apportionment of fine particulate matter, regional air quality modeling for health applications, global atmospheric modeling, and environmental justice. Her group seeks to understand fine-scale spatial and temporal variability in air pollution exposure of residents of Inland Southern California. Her group uses both field and modeling approaches to answer questions related to high-risk microenvironmental exposure and environmental injustices.