Komal Shukla, PhD

Air Quality Modeling Scientist

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Dr. Komal Shukla joined Sonoma Technology in 2023 as an Air Quality Modeling Scientist in the Atmospheric and Emissions Modeling Group. She uses numerical models to quantify and assess air quality impacts from emissions sources and to understand the complex meteorological and chemical processes that influence air quality from local to continental scales. She also develops decision-support tools to meet air quality forecasting and management needs. Dr. Shukla has a keen interest in quantifying air quality impacts from transportation sources, fossil fuel combustion, and biomass burning, and has developed reduced form modeling approaches to support rapid air quality assessment and policy analysis. In addition, Dr. Shukla is actively involved with transportation emissions and air quality assessments to support various federal and state regulations.

Dr. Shukla uses a variety of tools and models, including AERMOD, CALPUFF, CMAQ, and CAMx, to develop and evaluate best-case emission scenarios and model air quality concentrations. She is conducting high-resolution air quality model simulations to better understand ozone and particulate matter formation throughout the United States. Currently, she is providing modeling support for various projects, which aim to provide a reusable modeling platform suitable for air quality management decisions. She is also quantifying the human and environmental health co-benefits of reduction in air pollution. Dr. Shukla is using air quality models and source apportionment approaches to estimate emission source contributions to downwind particulate matter and ozone nonattainment.

Education
- PhD, Air Quality Modeling, IIT Delhi & University of Birmingham
- MS, Environmental Management
- BS, Chemistry, University of Delhi

Post-Doctoral Associate
- NYSERDA, University of North Carolina, Chapel Hill

Before joining Sonoma Technology, Dr. Shukla was an air quality modeling scientist at Environment & Climate Change Canada (ECCC), where she further developed global chemical transport models (GEMMACH) to study emissions from oil sands facilities in Alberta and elsewhere in Canada. She was also the lead air quality modeling scientist for NYSERDA (New York State Energy Research & Development) during her post-doctoral appointment at University of North Carolina, Chapel Hill. She developed a web-based screening tool called "Zip code Air Pollution Policy Assessment, NYC (ZAPPA)" that allows users to estimate the benefits to public health from policies that address air pollutant emissions in New York City.