Steven G. Brown, PhD

Vice President
Department Manager, Data Science
Senior Atmospheric Scientist

Sonoma Technology

Dr. Brown joined Sonoma Technology in 2001. His research focuses on characterizing spatial and temporal trends of ambient aerosol and volatile organic compounds (VOCs), including applying factor analysis models such as positive matrix factorization (PMF) and chemical mass balance (CMB). Dr. Brown managed and developed a number of small- and large-scale data analysis and tool development projects. These projects included conducting regional- and national-scale analyses, assessing trends, putting concentrations in perspective with meteorology and emissions changes, and analyzing near-field data, such as near-road ambient pollutant data. He has developed and conducted training workshops on data validation techniques, data analysis for ambient air quality data, and source apportionment using PMF. Dr. Brown led the analysis of aerosol and mobile source air toxics (MSAT) data collected at schools next to major freeways in Las Vegas, Nevada, to determine the impact of freeway emissions on indoor and outdoor air quality at schools. As part of this work, he examined changes in air quality after a freeway expansion, and how traffic affected near-road air quality over time. These projects were supported by Dr. Brown's strong statistical background and his broad knowledge of aerosol sources, transport, and chemistry.

Dr. Brown led source apportionment efforts using air toxics data, speciated $PM_{2.5}$ data from the Chemical Speciation Network (CSN), the Interagency Monitoring of Protected Visual Environments (IMPROVE) network, and special studies; hourly VOC data from the Photochemical Assessment Monitoring Stations (PAMS) program; and data from semi-continuous instruments such as the AMS. Dr. Brown also led a large study using a combination of low-cost sensors and state-of-the-art instrumentation to understand differences in pollution among environmental justice (EJ) and non-EJ communities in Sacramento, California.

Education

- PhD, Atmospheric Science, Colorado State University
- MS, Atmospheric Science, Colorado State University
- BS, Chemistry, University of California, San Diego

Memberships

- Air & Waste Management Association
- American Association of Aerosol Research
- American Geophysical Union

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

Dr. Brown's research includes performing accountability analyses of specific regulations on ambient air quality. Recent accountability projects include examining changes (1) in levels of air toxics at sites near sources affected by the maximum achievable control technology regulations, (2) in NO_x and $PM_{2.5}$ levels in areas where the NO_x State Implementation Plan call was implemented, and (3) in local $PM_{2.5}$ concentrations after specific point sources were shut down. Dr. Brown has published more than 20 peer-reviewed journal articles and has been a peer reviewer for a number of journals, including *Atmospheric Environment* and *Environmental Science & Technology*. His PhD work at Colorado State University (CSU) focused on near-road high-resolution aerosol mass spectrometer (HR-AMS) measurements and analysis.

Before joining Sonoma Technology, Dr. Brown was a Research Assistant at CSU, where he received his master's and doctorate degrees in Atmospheric Science. During his research, Dr. Brown became proficient in a range of air quality analysis issues, data and laboratory analysis techniques, and particulate and trace-gas pollutant monitoring equipment.

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