



Garnet B. Erdakos, PhD

Atmospheric Scientist / Project Manager

Dr. Erdakos joined STI's Atmospheric and Emissions Modeling Group in 2011. She is actively involved in various atmospheric modeling projects and regulatory support projects for the California Department of Transportation (Caltrans). Dr. Erdakos is experienced in configuring air quality models, and in processing, analyzing, interpreting, and communicating model results. She has developed software tools, and guidance and training materials, for PM hot-spot analyses. Her modeling experience includes the use of CMAQ, CAMx, and AERMOD for a wide range of projects. Dr. Erdakos also has experience developing models of the

formation of atmospheric aerosol particles, and compiling chemical speciation profiles. Dr. Erdakos has been the lead author and co-author of several peer-reviewed journal articles, and has presented her work nationally and internationally at conferences, workshops, and seminars. Two peer-reviewed publications that Dr. Erdakos co-authored in 2014 were recognized with a Level III Scientific and Technological Achievement Award (STAA) in 2015 by the U.S. Environmental Protection Agency (EPA).

Chemical transport modeling. Dr. Erdakos has applied the CMAQ model to quantify the human and environmental health co-benefits of carbon standards for existing power plants in a partnership with Syracuse University and Harvard School of Public Health; to investigate impacts of industrial emissions on local and regional air quality for the U.S. Department of Justice and Harvard University; and to investigate regional impacts of nanomaterial diesel fuel additives. She has used CAMx to study winter ozone formation in oil and gas development regions of the Intermountain West, as well as to quantify the impact of power plants and other emission source sectors on downwind nonattainment using ozone source apportionment tools.

Dispersion modeling and near-road air quality. Dr. Erdakos is actively involved in developing tools, guidance, and best practices to help streamline project-level particulate matter (PM) hot-spot assessments required by the U.S. Environmental Protection Agency (EPA) transportation conformity rule. She is a lead author of guidance documents that assist Caltrans in completing PM hot-spot analyses using AERMOD, and she has been the technical lead for developing a Caltrans software tool that calculates and compares design values for PM hot-spot analyses. She has also developed and presented training material to Caltrans District staff through webinars and a course hosted at District offices. Dr. Erdakos has also used AERMOD to evaluate air quality impacts of construction projects in San Francisco, California, and developed automated data processing streams to support regulatory AERMOD modeling work at the Bay Area Air Quality Management District. Dr. Erdakos also used a near-road particle dynamics model at EPA while investigating near-road impacts of nanomaterial diesel fuel additives.

Prior to STI. Dr. Erdakos held her first post-doctoral appointment at the California Institute of Technology, where she developed a semi-empirical method for computing chemical activities of components in mixed aqueous/organic/inorganic atmospheric aerosol particles. She later served as an Instructional Assistant Professor at Illinois State University, where she taught introductory physics to non-science majors. Dr. Erdakos also served as a National Research Council Research Associate at the EPA's Research Triangle Park office from 2009-2011.

Technical skills. In addition to her air quality modeling experience, Dr. Erdakos has used GIS, NCL, and other software applications for data analysis and visualization. She is a skilled user of the Microsoft Office suite, Visual Basic for Applications, Linux, Fortran, and Python.

Education

- PhD, Environmental Science and Engineering, Oregon Health and Science University
- MS, Environmental Science and Engineering, Oregon Health and Science University
- BS, Physics, Illinois State University

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