



Garnet B. Erdakos, PhD

Atmospheric Scientist, Project Manager

Dr. Erdakos has worked at Sonoma Technology since 2011. She has over 20 years of experience in research and numerical modeling, and atmospheric sciences. She serves as a technical lead on near-road and regional air quality modeling projects, and she has managed transportation-related air quality projects. Dr. Erdakos is actively involved in developing guidance and best practices documents for quantitative particulate matter (PM) hot-spot assessments, and has performed AERMOD modeling for numerous transportation project case studies. Dr. Erdakos also developed software tools to streamline PM hot-spot

analyses, including a tool that calculates design values for comparison to the NAAQS and a tool that prepares hourly emission rates for AERMOD dispersion modeling. She has also developed and presented training material for air quality analysts, including hands-on use of the AERMOD dispersion model, with the California Department of Transportation (Caltrans). Dr. Erdakos was the lead modeler and technical report author for a Caltrans project to evaluate modeling of depressed and elevated roadways in AERMOD.

Dr. Erdakos also supported the U.S. Federal Highway Administration (FHWA)-funded Near-Road Air Quality Transportation Pooled Fund with partner agencies including several state DOTs. She conducted AERMOD modeling for a Pooled Fund study to identify sample transportation project types and project characteristics that, when combined, can be reasonably excluded from consideration as a "project of air quality concern" (POAQC). Dr. Erdakos has also used AERMOD for investigating impacts of point source emissions and to evaluate air quality impacts of construction projects and other industrial sources. She developed automated data processing streams to support regulatory AERMOD modeling work at the Bay Area Air Quality Management District.

Dr. Erdakos is experienced with photo-chemical grid models, including CMAQ and CAMx. She applied the CMAQ model to (1) 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, and (2) investigate impacts of industrial emissions on local and regional air quality for the U.S. Department of Justice and Harvard University. She used CAMx to study winter ozone formation in oil and gas development regions of the Intermountain West, and used CAMx source apportionment technology to quantify the impact of power plants and other emission source sectors on downwind ozone nonattainment. She also used CAMx source apportionment to quantify contributions to ozone in Albuquerque/Bernalillo County.

Dr. Erdakos assisted in the evaluation of available meteorological observational databases and gridded reanalysis data sets for inclusion in version 2 of the Omnibus Meteorological Database, or MetDat2, for the EPA's AirNow-Tech web platform. She also contributed to evaluations of weather prediction accuracy for a forecast performance evaluation system funded by the Joint Fire Science Program (JFSP).

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 EPA's Research Triangle Park office from 2009-2011. While at EPA, she prepared a comprehensive inventory of nanoparticulate cerium oxide (nCe) additive-impacted diesel emissions, and implemented CMAQ and a particle dynamics model to estimate the impacts of nCe diesel fuel additives on regional-scale and near-roadway PM. Two peer-reviewed publications on that work, co-authored by Dr. Erdakos, were recognized with a Level III Scientific and Technological Achievement Award (STAA) in 2015 by the EPA.

Education

- PhD, Environmental Science and Engineering, Oregon Health and Science University
- MS, Environmental Science and Engineering, Oregon Graduate Institute of Science and Technology
- BS, Physics, Illinois State University

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