SONG BAI, Ph.D., P.E.
Air Quality Analyst

Sonoma Technology, Inc.

1455 N. McDowell Blvd., Suite D
Petaluma, CA 94954-6503
707.665.9900
Fax: 707.665.9800
www.sonomatech.com

Educational Background

Ph.D., Civil & Environ. Engineering, University of California at Davis
M.S., Statistics, University of California at Davis
M.S., Civil Engineering, Tsinghua University, China
B.S., Civil Engineering, Tsinghua University, China

Professional Experience

Dr. Bai joined STI in 2008 as an Air Quality Analyst. He is a licensed Civil Engineer in the State of California. Before joining STI, he was a postdoctoral scholar from 2006 to 2008 at the University of California, Davis (UCD), where he participated in the UC Davis-Caltrans Air Quality Project. In 2007, Dr. Bai lectured at UCD, instructing undergraduate students in Transportation System Design core curriculum. From 2001 to 2006, he was a graduate student researcher in the Department of Civil and Environmental Engineering at UCD, where he conducted research on integrated transportation and mobile source emissions modeling. In 2004, Dr. Bai completed a three-month STI internship in which he helped prepare a state implementation plan (SIP) update for the State of Minnesota. His work involved preparing an on-road motor vehicle emission inventory; Dr. Bai focused on using off-model algorithms to improve the speed estimates associate with traffic volume data provided by Minnesota's travel demand modeling staff.

Climate Change: In 2007, Dr. Bai collaborated with researchers at STI and UCD to investigate the structure, algorithms, and assumptions underlying the U.S. Environmental Protection Agency's (EPA) new motor vehicle emissions model, "MOVES." He used a Los Angeles County case study to evaluate differences in the greenhouse gas emissions produced by MOVES and the California Air Resources Board's EMFAC2007 on-road vehicle emissions model.

Land Use and Air Quality: From 2006 to 2007, Dr. Bai, together with faculty and researchers at UCD, developed an integrated modeling system including land use, travel demand, and vehicle emissions models to study the impact of urban growth patterns on future transportation system performance and mobile source emissions inventories in the San Joaquin Valley.

Mobile Source Air Toxics: From 2006 to 2007, Dr. Bai had the lead technical role in a UCD research effort that developed a transportation project-level mobile source air toxics (MSAT) analysis protocol applicable in California. The analysis spreadsheet tool is used by Caltrans to conduct qualitative and quantitative MSAT assessments for large transportation projects. In 2007, Dr. Bai was among a team of UCD researchers that developed CT-EMFAC, a new project-level emissions modeling tool that estimates on-road carbon dioxide, criteria pollutant, and air toxics emissions.

Construction Emissions: During 2007 and 2008, Dr. Bai, working with researchers from UCD and STI, assessed the emissions reduction benefits of retrofitting and replacing high-emitting construction equipment used to build transportation projects.

Particulate Matter (PM) Hotspot Dispersion Modeling: During 2007 and 2008, Dr. Bai worked with UCD, STI and U.S. Federal Highway Administration (FHWA) researchers to compare how well various dispersion modeling tools characterized real-world, near-roadway PM concentrations.

Transportation Network and Emissions Estimation: From 2002 to 2006, Dr. Bai developed a transportation planning framework and procedures to integrate dynamic traffic simulation models and mobile source emissions models. He assessed various speed post-processors used in mobile source emissions modeling; he also examined how improving the temporal resolution of traffic activity data affected regional mobile source emissions inventories. In 2004, working with STI scientists, Dr. Bai assisted the Minnesota Pollution Control Agency (MPCA) in updating their carbon monoxide state implementation plan (SIP); his work focused on post-processing travel activity data and preparing the on-road motor vehicle emission inventory.

Memberships

Transportation Research Board (TRB)
The Air & Waste Management Association (A&WMA)

See http://www.sonomatech.com/staff.cfm for a list of publications.