Song Bai, PhD, PE

Manager, Environmental Modeling Division
Senior Air Quality Scientist

STI
Sonoma Technology, Inc.

Dr. Bai joined STI in 2008 and focuses on mobile source emissions modeling, transportation project-level analysis for conformity and CEQA/NEPA assessment, GHG emissions assessment, and statistical analysis of air quality data. Before joining STI, he was a postdoctoral scholar at UC Davis (UCD), where he participated in the UCD-Caltrans Air Quality Project from 2006–2008. In 2007, Dr. Bai instructed undergraduate students at UCD in Transportation System Design core curriculum.

On-road emissions modeling for criteria pollutants, GHGs, and mobile source air toxics (MSATs). From 2007 to 2017, Dr. Bai was a lead developer of the CT-EMFAC on-road California emissions modeling tool. CT-EMFAC estimates project-level on-road CO_2, criteria pollutant, and air toxics emissions. In 2011, Dr. Bai oversaw creation of the DataBridge software tool, which manipulates travel demand model output data into CT-EMFAC inputs. In 2010, Dr. Bai developed a modeling approach to estimate naphthalene and polycyclic organic matter emissions from on-road vehicles. From 2006 to 2007, he was the technical lead on a UCD-Caltrans study that developed an MSAT analysis protocol for highway projects.

Particulate matter (PM) hot spot dispersion modeling. Since 2010, under Caltrans sponsorship, Dr. Bai has helped develop guidance for completing quantitative PM hot spot analyses. During 2007 and 2008, Dr. Bai worked with UCD, STI, and U.S. Federal Highway Administration researchers to compare how various dispersion modeling tools characterize real-world, near-roadway PM concentrations.

Construction emissions. Under Caltrans sponsorship, Dr. Bai collaborated with researchers and software engineers at STI to develop a spreadsheet tool for estimating emissions from construction activities. During 2007 and 2008, Dr. Bai assessed the emissions reduction benefits of retrofitting and replacing high-emitting construction equipment used to build transportation projects.

Source apportionment. Since 2010, Dr. Bai has been part of a team of STI and EPA researchers that developed a new version of the EPA Positive Matrix Factorization model (PMF version 5.0), which is a source apportionment tool that helps air quality planners identify the leading contributors to regional-scale air pollution.

Climate change. Since 2010, Dr. Bai has worked with researchers at the University of Illinois, Chicago, and the University of Arizona to integrate dynamic traffic simulations with carbon dioxide (CO_2) emissions based on the U.S. Environmental Protection Agency's (EPA) MOVES emissions model. From 2010 to 2013, Dr. Bai also developed a greenhouse gas (GHG) analysis protocol for on-road transportation projects for Caltrans. In 2007, Dr. Bai collaborated with other STI and UCD researchers to evaluate differences in GHG emissions estimates produced by MOVES and the EMFAC2007 on-road vehicle emissions model.

Land use and air quality. From 2009 to 2010, Dr. Bai led the technical development of a web-based application tool, Low-Carb Land, to evaluate how land use changes affect travel activities and CO_2 emissions. From 2006 to 2008, Dr. Bai and UCD researchers developed a system that includes 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.

Transportation network and emissions estimation. From 2002 to 2006, Dr. Bai developed a transportation planning framework and procedures to assess how temporal resolutions of traffic activity data affected regional mobile source emissions inventories.

Education

- PhD, Civil and Environmental Engineering, University of California at Davis
- MS, Statistics, University of California at Davis
- MS, Civil Engineering, Tsinghua University, China
- BS, Civil Engineering, Tsinghua University, China

Memberships

- Transportation Research Board
- Air & Waste Management Association

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

Book Chapters

Niemeier D. and Bai S. (2008) Urban travel demand modeling. In *Transportation Planning Handbook*, 3rd edition, Institute of Transportation Engineers, Washington, DC.

Journal Articles

Reid S., Bai S., Du Y., Craig K., Erdakos G., Baringer L., Eisinger D., McCarthy M., and Landsberg K. (2016) Emissions modeling with MOVES and EMFAC to assess the potential for a transportation project to create particulate matter hot spots. *Transportation Research Record: Journal of the Transportation Research Board*, 2570, 12-20, doi: 10.3141/2570-02 (STI-6330).

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Niemeier D.A., Bai S., and Handy S. (2011) The impact of residential growth patterns on vehicle travel and pollutant emissions. *Journal of Transport and Land Use*, 4(3), 65-80, doi: 10.5198/jtlu.v4i3.226 (STI-4321).

Timoshek A., Eisinger D. S., Bai S., and Niemeier D. (2010) Mobile source air toxic emissions: sensitivity to traffic volume, fleet composition, and average speed. *Transportation Research Record: Journal of the Transportation Research Board*, 2158, 77-85, doi: 10.3141/2158-10 (STI-3964).

Hixson M., Mahmud A., Jianlin Hu, Bai S., Niemeier D.A., Handy S.L., Shengyi Gao, Lund J.R., Sullivan D.C., and Kleeman M.J. (2010) Influence of regional development policies and clean technology adoption on future air pollution exposure. *Atmos. Environ.* 44, 552-562, doi: 10.1016/j.atmosenv.2009.10.041.

Chen H., Bai S., Eisinger D.S., Niemeier D., and Claggett M. (2009) Predicting near-road $PM_{2.5}$ concentrations: comparative assessment of CALINE4, CAL3QHC, and AERMOD. *Transportation Research Record, Journal of the Transportation Research Board,* 2123, 26-37, doi: 10.3141/2123-04.

Karner A., Eisinger D.S., Bai S., and Niemeier D. (2009) Mitigating diesel truck impacts in environmental justice communities: transportation planning and air quality in Barrio Logan, San Diego. *Transportation Research Record, Journal of the Transportation Research Board,* 2125, 1-8, doi: 10.3141/2125-01.

Wang G., Bai S., and Ogden J.M. (2009) Identifying contributions of on-road motor vehicles to urban air pollution using travel demand model data. *Transportation Research, Part D: Transport and Environment,* 14(3), 168-179, doi:10.1016/j.trd.2008.11.011.

Bai S., Chiu Y.-C., and Niemeier D.A. (2007) A comparative analysis of using trip-based versus link-based traffic data for regional mobile source emissions estimation. *Atmos. Environ.* 41, 7512-7523, doi: 10.1016/j.atmosenv.2007.05.051.

Bai S., Nie Y., and Niemeier D.A. (2007) The impact of speed post-processing methods on regional mobile emissions estimation. *Transportation Research Part D: Transport and Environment,* 12, 5, 307-324, doi:10.1016/j.trd.2007.03.005.

Zhu Y., Bai S., Li Z., and Zhao F. (2000) Non-discrete sample model for fuzzy comprehensive evaluation. *Journal of Tsinghua University (Sci & Tech)*, 40(8), 125-128.

Bai S. and Meng X.H. (1998) Analysis of strategies for unifying the national housing design and construction standard. *Construction Economics*, 12, 36-38.

Meeting Presentations, Webinars, and Conference Proceedings

Erdakos G.B., Craig K.J., and Bai S. (2017) AERMOD modeling with depressed and elevated roadways. Webinar presented to the California Department of Transportation, Sacramento, CA, May 9, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6714.

Erdakos G.B., Bai S., and Du Y. (2017) Emissions modeling with CT-EMFAC and the ethylbenzene tool. Webinar presented to the California Department of Transportation, Sacramento, CA, March 21, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6693.

Bai S. and Du Y. (2017) Emissions modeling: using DataBridge to prepare inputs for CT-EMFAC. Webinar presented to the California Department of Transportation, Sacramento, CA, March 14, by Sonoma Technology, Inc., Petaluma, CA. STI-6694.

Graham A. and Bai S. (2016) Web-based GIS tool for PM hot-spot analysis. Webinar presented to the California Department of Transportation, Sacramento, CA, August 31, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6571.

Erdakos G.B., Bai S., and Craig K.J. (2016) AERMOD View modeling quality assurance. Webinar presented to the California Department of Transportation, Sacramento, CA, August 17, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6565.

Bai S., McCarthy M., and Graham A. (2016) Mobile source NOx emissions in the National Emissions Inventory. Presented at the *Transportation Research Board Summer Conference on Transportation Planning and Air Quality, Minneapolis, MN, August 5,* by Sonoma Technology, Inc., Petaluma, CA. STI-6460. Available at http://www.sonomatech.com/assets/projects/STI%20TPAQC%202016%20-%20NOx%20Emissions%20in%20the%20NEI.pdf.

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Hafner H., Brown S., Bai S., Du Y., and Reid S. (2016) Introduction to source apportionment modeling and emission inventory development. Presented at the Jiangsu Final Workshop and U.S. Air Pollution Control Technology Exhibition, Nanjing, China, March 4, by Sonoma Technology, Inc., Petaluma, CA. STI-914021-6478.

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Brown S.G., Chinkin L.R., Bai S., Roberts P.T., McCarthy M.C., and Vaughn D.L. (2015) Changes in black carbon outdoors and indoors at near-roadway schools in Las Vegas: 2008 to 2013. Presented at the *34th Annual AAAR Conference, Minneapolis, MN, October 12-16,* by Sonoma Technology, Inc., Petaluma, CA. STI-6256.

Erdakos G. and Bai S. (2015) The Design Value (DV) tool: using v2.0 for PM hot-spot analysis. Webinar presented to the California Department of Transportation, Sacramento, CA, July 22, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6317.

Reid S., Du Y., and Bai S. (2015) Construction activity and emissions: CAL-CET and RCEM. Webinar presented to the California Department of Transportation, Sacramento, CA, July 15, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6312.

Bai S., Brown S., DeWinter J., Du Y., Eisinger D., Erdakos G., Graham A., and Reid S. (2015) Transportation Pooled Fund (TPF): overall progress webinar. Presented to Transportation Pooled Fund participants, May 14, by Sonoma Technology, Inc., Petaluma, CA. STI-914201-6273.

Bai S., Du Y., and Reid S. (2015) Contributions of tire wear and brake wear to particulate matter emissions inventories for on-road mobile sources. Presented at the *2015 International Emission Inventory Conference, San Diego, CA, April 12-16*, by Song Bai, Sonoma Technology, Inc., Petaluma, CA. STI-6133, STI-6221.

Reid S., Raffuse S., Craig K., and Bai S. (2015) Estimating emissions and air quality impacts from crop residue burning. Presented at the *Yangtze River Delta Clean Air Forum, Shanghai, China, March 24*, by Song Bai, Sonoma Technology, Inc., Petaluma, CA. STI-6210.

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Eisinger D., Sexton T., Graham A., Reid S., Brown S., and Bai S. (2015) Near-road air quality transportation pooled fund. Presented at the *Transportation Research Board 94th Annual Meeting, Project-Level Analysis Subcommittee Meeting, Washington, D.C., January 12,* by Sonoma Technology, Inc., Petaluma, CA. STI-6155.

McCarthy M., Brown S., Bai S., DeWinter J., O'Brien T., Vaughn D., Peltier R., Soltis J., Field R., Murphy S., and Roberts P. (2014) Characterizing air toxics from oil field operations in Los Angeles, CA. Poster presented at the *AGU Fall Meeting, San Francisco, CA, December 16*, by Sonoma Technology, Inc., Petaluma, CA. STI-6039.

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McCarthy M., Brown S., Bai S., DeWinter J., O'Brien T., Vaughn D., and Roberts P. (2014) Baldwin Hills air quality study. Presented at the *National Ambient Air Monitoring Conference, Atlanta, GA, August 13,* by Sonoma Technology, Inc., Petaluma, CA. STI-5954.

Pasch A., Bai S., Karner A., Eisinger D., Hafner H., Tidd L., Polidori A., and Niemeier D. (2014) Background and ambient near-road PM concentrations: insights and analysis strategies. Presented at the *Transportation Research Board 93rd Annual Meeting, Reconciling Transportation and Air Quality Planning to Promote*

Sustainable Development, Washington, DC, January 12, by Sonoma Technology, Inc., Petaluma, CA. STI-5873.

Bai S., Eisinger D., Niemeier D., Reid S., Roberts P., and Chenausky B. (2013) Construction activity, emissions, and air quality: findings from recent studies. Presented at the *Transportation Research Board 92nd Annual Meeting, Washington, DC, January 13*. (STI-5575).

Claggett M. and Bai S. (2012) Comparing predictions from the CAL3QHCR AERMOD models for highway applications. Presented at the *Transportation-Related Environmental Analysis, Ecology, and Air Quality Summer Conference, Little Rock, Arkansas, June 24-27,* by the U.S. Department of Transportation's Federal Highway Administration Resource Center, Washington, DC, and Sonoma Technology, Inc., Petaluma, CA.

Pasch A.N., Bai S., Eisinger D.S., Craig K.J., Andrews J., and Elder J. (2012) PM hot-spot analysis using AERMOD & EMFAC2011: technical issues and lessons learned. Presented at the *TRB 91st Annual Meeting, Washington, DC, January 22,* by Sonoma Technology and the California Department of Transportation (STI-4332).

Lin J., Chiu Y.-C., Bai S., and Vallamsundar S. (2011) Integration of MOVES and dynamic traffic assignment models for fine-grained transportation and air quality analyses. Proceedings of the *IEEE Forum on Integrated and Sustainable Transportation Systems, 176-181, Vienna, Austria, July.*

Bai S., Eisinger D., Phillips J., Black T., Waters M., and Amador J. (2011) Low-Carb Land: informing your land use decisions to consider travel and CO_2 impacts. Presented at the *90th Annual Transportation Research Board Meeting, Washington, DC, January 26,* by Sonoma Technology, Inc., Petaluma, CA (STI-4081).

Eisinger D.S. and Bai S. (2011) DataBridge, CT-EMFAC, and CL4. Webinar presented to the California Department of Transportation, June 23 (909114-4152).

Lin J., Chiu Y.C., Bai S., and Vallamsundar S. (2011) Integration of MOVES and dynamic traffic assignment models for fine-grained transportation and air quality analyses. Presented at the *90th Transportation Research Board Annual Meeting, Workshop 137,* Washington, DC, January 23.

Timoshek A., Eisinger D., Bai S., and Niemeier D. (2010) Mobile source air toxics emissions: sensitivity to traffic volume, fleet composition, and average speed. Poster presented at the *Coordinating Research Council (CRC) Mobile Source Air Toxics Workshop, Sacramento, December 2*, by Sonoma Technology, Inc., Petaluma, CA, and University of California, Davis, CA. STI-4025.

Vallamsundar S., Lin J., Chiu Y.-C., Bai S., and Eisinger D. (2010) Linking MOVES and dynamic traffic assignment model: integration framework and methodology. Paper presented at *ISATS2010: First International Symposium on Advances in Transport Sustainability, Arizona State University, Tempe, AZ, November 18,* by University of Illinois, Chicago, IL, University of Arizona, Tucson, AZ, and Sonoma Technology, Inc., Petaluma, CA.

Bai S. (2010) Integration of dynamic traffic assignment (DTA) with vehicle emissions modeling. Webinar presented to the Southern California Association of Governments by Sonoma Technology, Inc., Petaluma, CA, STI-4026, November 2.

Reid S.B., Roberts P.T., Eisinger D.S., Wheeler N.J.M., Bai S., and Chenausky B.T. (2010) Field study of $PM_{2.5}$ emissions from a road-widening project. *CRC On-Road Vehicle Emissions Workshop, San Diego, CA, March 24* (STI-3740).

Timoshek A., Eisinger D., Bai S., and Niemeier D. (2010) Mobile source air toxics emissions: sensitivity to traffic volume, fleet composition, and average speed. Poster presented at the *89th Transportation Research Board Annual Meeting, Session 438, Washington, DC, January 12,* by Sonoma Technology, Inc., Petaluma, CA, and University of California, Davis, CA (STI-909019-3781).

Bai S., Eisinger D., Wang R., and Niemeier D. (2009) Construction equipment retrofits and replacements: a new tool to estimate emission reduction benefits. Presented at the *19th CRC On-road Emissions Workshop, San Diego, CA, March 24* (STI-3597).

Bai S., Eisinger D., and Niemeier D. (2009) MOVES vs. EMFAC: a comparison of greenhouse gas emissions using Los Angeles County. Presented at the *Transportation Research Board 88th Annual Meeting, Washington, D.C., January 13* (STI-3541).

Chen H., Bai S., Eisinger D.S., Niemeier D., and Claggett M. (2009) Predicting near-road $PM_{2.5}$ concentrations: a comparative assessment of CALINE4, CAL3QHC and AERMOD. Presented at the *Transportation Research Board 88th Annual Meeting, Washington, D.C., January 13*.

Karner A., Eisinger D.S., Bai S., and Niemeier D.A. (2009) Mitigating diesel truck impacts in environmental justice communities: transportation planning and air quality in Barrio Logan, San Diego. Presented at the *Transportation Research Board 88th Annual Meeting, Washington, D.C., January 13*.

Bai S. (2008) The impact of speed variability and dynamic assignment methods on regional vehicle emissions inventories. Presented at the *Seminar of Civil Engineering & Engineering Mechanics Department, University of Arizona, Tucson, AZ, April 25*.

Bai S., Chiu Y.C., and Niemeier D.A. (2008) Using dynamic assignment to improve regional mobile emissions estimation. Presented at the *Transportation Research Board 87th Annual Meeting, Washington, DC, January 13*.

Bai S., Eisinger D.S., and Niemeier D. (2007) Mobile source air toxics (MSATs): assessing project-level impacts. Presented at the *2007 CAPCOA Health Conference: Understanding and Addressing Health Impacts of Air Pollution on Communities, Carson, CA, September 19,* by the UC Davis-Caltrans Air Quality Project.

Bai S., Niemeier D.A., Handy S.L., Gao S., Lund J.R., and Sullivan D.C. (2007) Integrated impacts of regional development, land use strategies and transportation planning on future air pollution emissions. Presented at the *Transportation Land-use Planning & Air Quality Conference, Orlando, Florida, July 9*.

Bai S., Chiu Y.C., and Niemeier D.A. (2007) Comparative analysis: effect of trip-based versus link-based traffic data on regional mobile emissions estimation. Presented at the *Transportation Research Board 86th Annual Meeting, Washington, DC, January 21*.

Bai S., Eisinger D., and Niemeier D. (2007) Project-level air toxics: emissions modeling procedures using EMFAC and UC Davis spreadsheet application. Presented at the *Federal Highway Administration MSAT Training Workshops, San Diego and Sacramento, CA, January 8-9,* by Caltrans and the UC Davis-Caltrans Air Quality Project.

Bai S., Eisinger D., and Niemeier D. (2006) Project-level air toxics: southern California case study using a new analysis framework. Presented at the *CRC MSAT Workshop, Phoenix, AZ, October 25,* University of California, Davis-Caltrans Air Quality Project, Davis, CA.

Bai S., Nie Y., and Niemeier D.A. (2005) Impact of speed post-processing methods on regional mobile emissions estimation. Presented at the *Transportation Research Board 84th Annual Meeting, Washington, D.C., January 10.*

Bai S., Nie Y., and Niemeier D.A. (2004) Evaluating speed post-processors for regional mobile emissions estimation. Presented at the *INFORMS Annual Meeting, Denver, CO, October 26.*

Bai S. and Zhu Y. (2000) Statistical analysis of housing satisfaction index system. Presented at the 5th *Annual Conference of Asian Real Estate Society, Beijing, China, July 27.*

Formal Reports

Bai S., Craig K., Reid S., Eisinger D., Farstad E., Erdakos G., Du Y., and Baringer L. (2017) Quantitative particulate matter hot-spot analysis best practices guidebook. Report prepared for the California Department of Transportation, Sacramento, CA by Sonoma Technology, Inc., Petaluma, CA, CTAQ-RT-17-317.02.6, STI-914112-6704-FR, June.

Erdakos G.B. and Bai S. (2017) PM background ArcGIS web map user guide (version 1.2). Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, 914111-6316-UG, March.

Erdakos G.B. and Bai S. (2016) PM background ArcGIS web map user guide (v1.1). Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, 914111-6316-UG, December.

McCarthy M.C., O'Brien T.E., Brown S., Bai S., and Eisinger D.S. (2016) Mobile source air toxics analysis of the Detroit Near-Road Study. Final report prepared for the Federal Highway Administration, Washington, DC, by Sonoma Technology, Inc., Petaluma, CA, STI-915054-6471-FR, June 3.

Bai S. and Baringer L. (2016) Assessment of road dust calculation in particulate matter emissions modeling. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, STI-914112-6441-TM, April 28.

Bai S. and Erdakos G. (2016) Case study on preparing meteorological data for use in PM hot-spot analyses. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, STI-914112-6449-TM, February 12.

Erdakos G., Craig K., Baringer L., Reid S., Bai S., and Eisinger D. (2016) Illustration of roadway source setup in AERMOD view for PM hot-spot analyses. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, STI-914112-6453-TM, February 12.

Reid S.B., Bai S., Eisinger D.S., Erdakos G.B., Du Y., and Baringer L. (2016) Scoping study to identify potential project types and situations that will not create PM hot spots. Final report prepared for the Washington State Department of Transportation, Seattle, WA, by Sonoma Technology, Inc., Petaluma, CA, STI-914202-6259-FR, February.

McCarthy M., Graham A., and Bai S. (2015) Literature review of the accuracy of NO_x emissions in the National Emissions Inventory. Technical memorandum prepared for the Electric Power Research Institute, Palo Alto, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-915079-6419-TM, December 30.

Graham A., Eisinger D., Chazan D., Stewart K., Baldauf R., Thomas J., Bailey C., Brown S., and Bai S. (2015) Best practices for reducing near-road pollution exposure at schools. Final report prepared for the U.S. Environmental Protection Agency Office of Children's Health Protection, Research Triangle Park, NC by Sonoma Technology, Inc., Petaluma, CA, EPA-100-R-15-001; STI-910510-6024, November. Available at http://www.epa.gov/schools/best-practices-reducing-near-road-pollution-exposure-schools.

Bai S., Reid S., and Eisinger D. (2015) Potential project-level PM mitigation measures. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, CTAQ-TM-15-317.12.2, October 30.

Craig K., Baringer L., Reid S., Bai S., and Eisinger D. (2015) Future-year background PM concentrations. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, CTAQ-TM-15-317.12.1, October 30.

Bai S., Craig K., Graham A., Reid S., Eisinger D., Farstad E., Erdakos G., Du Y., and Baringer L. (2015) Quantitative particulate matter hot-spot analysis best practices guidebook. Prepared for the California Department of Transportation, Sacramento, CA, CTAQ-RT-15-317.02.3, September 30.

Graham A., Baringer L., Bai S., and Eisinger D. (2015) Caltrans district scan to identify CEQA analysis support needs. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-914101-6318-TM, July 10.

Bai S., Graham A., Reid S., Craig K., Du Y., Erdakos G., Baringer L., and Eisinger D. (2015) Potential transportation project design concepts and features to reduce PM impacts. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-914102-6284-TM, May.

Erdakos G.B., Bai S., and Eisinger D.S. (2015) Tools, protocols, and guidance for streamlining transportation project air quality studies. STI-914101-6255, April.

Farstad E., Craig K.J., Bai S., Erdakos G.B., and Eisinger D.S. (2015) Guidance for reviewing and quality-checking quantitative PM hot-spot analyses. Technical memorandum prepared for Caltrans by Sonoma Technology, Inc., Petaluma, CA, STI-914102-6231-TM, April.

Bai S., Reid S., Baringer L., and Eisinger D. (2015) Using EMFAC2014 for project-level emissions assessment. Technical memorandum prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-914104-6230-TM, March 31.

Craig K.J., Bai S., Reid S.B., and Eisinger D.S. (2015) Information for estimating level of effort to complete quantitative PM hot-spot analysis. Technical memorandum prepared for Caltrans Sonoma Technology, Inc, Petaluma, CA, STI-914102-6216-TM, March.

Erdakos G.B., Bai S., Eisinger D.S., and Parajón G. (2015) DVTool user guide. Prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, CTAQ-OT-15-317.02.02; STI-914102-6141-UG, February 23.

McCarthy M.C., Brown S.G., Bai S., DeWinter J.L., O'Brien T.E., Vaughn D.L., and Roberts P.T. (2015) Baldwin Hills air quality study. Final report prepared for Los Angeles County by Sonoma Technology, Inc., Petaluma, CA, STI-912024-5924-FR, February 20.

Craig K.J., Bai S., Reid S.B., and Eisinger D.S. (2015) Streamlining quantitative particulate matter (PM) hot-spot analysis documentation. Technical memorandum prepared for Caltrans by Sonoma Technology, Inc., Petaluma, CA, STI-914102-6198-TM, February.

Bai S., Graham A.R., and Brown S.G. (2015) SEMC PMF module design document. Technical memorandum prepared for the Shanghai Environmental Monitoring Center (SEMC), Shanghai, China by Sonoma Technology, Inc., Petaluma, CA, STI-914074-6194-TM, February.

Graham A., Bai S., and Eisinger D. (2014) Establishing representative background concentrations for quantitative PM hot-spot analyses in California. Final report prepared for California Department of Transportation, Sacramento, CA by Sonoma Technology, Inc., Petaluma, CA, STI-914102-6151, December 30.

Bai S., Reid S., Du Y., Eisinger D., Benson P., and Niemeier D. (2014) Construction activities and emissions: comparison case studies. Final report prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-914105-6105-FR, December.

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Bai S., Du Y., and Eisinger D. (2014) EMFAC2014 beta version testing. Technical memorandum prepared for the California Department of Transportation by Sonoma Technology, Inc., Petaluma, CA, STI-914101-6111-TM, November 5.

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Courses Taught

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Reid S.B., Bai S., Erdakos G.B., and Craig K.J. (2016) Introduction to air quality modeling tools: a two-day hands-on workshop for project analysts. Training course presented to the California Department of Transportation by Sonoma Technology, Inc., Petaluma, CA, STI-914103-6424, January 26-27.

Bai S., Craig K.J., and Reid S.B. (2015) Transportation project hot-spot assessment for particulate matter (PM): two-day hands-on workshop. Training course presented to the California Department of Transportation, Petaluma, CA, June 9-10, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6288.

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Craig K., Reid S., and Bai S. (2014) Transportation project hot-spot assessment for particulate matter: two-day hands-on workshop. Presented to the California Department of Transportation, Oakland, CA, December 11-12, by Sonoma Technology, Inc., Petaluma, CA. STI-914103-6063.

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Bai S., Pasch A., and Eisinger, D. (2011) Advanced air quality impact assessment for transportation projects. One-day hands-on workshop presented to the California Department of Transportation District 7, Los Angeles, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-909104-4130, May 25.

Eisinger D., Bai S., and Pasch A. (2011) Introduction to transportation air quality issues. One-day workshop presented to the California Department of Transportation District 6, Fresno, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-909104-4065, February 9.

Eisinger D., Bai S., and Pasch, A. (2010) Introduction to transportation air quality issues. One-day workshop presented to the California Department of Transportation headquarters, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-909104-4009, November 9.

Bai S. (2007) Transportation system design (ECI 162). Course taught at University of California, Department of Civil and Environmental Engineering, Davis, CA, four credit units.

Bai S., Eisinger D., and Niemeier D. (2007) Project-level air toxics: emissions modeling procedures using EMFAC and UC Davis spreadsheet application. Presented at the Federal Highway Administration MSAT Training Workshops, San Diego and Sacramento, CA, January 8-9, by Caltrans and the UC Davis-Caltrans Air Quality Project.

Peer-Review Services

Environmental Practice: Journal of the National Association of Environmental Professionals (2010-present).

Transportation Research Part A: Policy and Practice (2008-present).

Transportation Research Part C: Emerging Technologies (2014-present).

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Transportation Research Board (TRB), annual conference papers sponsored by the Committee on Transportation and Air Quality (2006-present).

Thesis

Bai S. (2006) The impact of dynamic assignment methods and speed variability on regional vehicle emissions inventories. PhD dissertation, Civil and Environmental Engineering, University of California at Davis, Davis, CA.