

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

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).

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 and Conference Proceedings

Lin J., Chiu Y.C., Vallamsundar S., and Bai S. (2011) Integration of MOVES and dynamic traffic assignment models for fine-grained transportation and air quality analyses. Proceedings of the 2011 IEEE Forum on Integrated and Sustainable Transportation Systems, 176-181, Vienna, Austria, June 29-July 1.

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

- 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 CO₂ impacts. Presented at the *90th Annual TRB Meeting, Regional Air Quality Analysis Subcommittee of the Transportation and Air Quality Committee (ADC20)*, Washington, D.C., January 26, by Sonoma Technology, Inc., Washington State Department of Commerce, Thurston Regional Planning Council, and Washington State Department of Transportation (STI-620000-4081).
- 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.
- 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-600000-4026, 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 (TRB) 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 (TRB) 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 U.C. Davis spreadsheet application. Presented at the *Federal Highway Administration MSAT Training Workshops, San Diego and Sacramento, CA, January 8-9* by Caltrans and the U.C. 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

- Reid S., Du Y., Bai S., and Eisinger D. (2011) Preliminary results from comparisons of GPS and daily diary data. Technical memorandum prepared for the California Transportation Department, Sacramento, CA by Sonoma Technology, Inc., Petaluma, CA, STI-909115-4199-TM, August 29.
- Bai S., Eisinger D., Niemeier D., and Timoshek A. (2011) Greenhouse gas analysis protocol for transportation projects, version 2.0. Prepared for California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, and U.C. Davis Department of Civil and Environmental Engineering, Davis, CA, STI-909102-3987, June 28.
- Pasch A.N., Craig K.J., Bai S., and Eisinger D.S. (2011) AERMOD particulate matter hot-spot analyses: simple highway project example. Report prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-909106-4125, June 28.
- Craig K.J., Bai S., Eisinger D.S., and Brown S.G. (2011) Guidance for using AERMOD to complete particulate matter hot-spot analyses. Report prepared for the California Department of Transportation, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-909106-3966, June 28.

- Bai S., Craig K.J., Pasch A.N., Eisinger D.S., and Niemeier D. (2011) Quantitative particulate matter hot-spot analysis guidance, version 2. Report prepared for California Department of Transportation, Sacramento, CA by Sonoma Technology, Inc., Petaluma, CA, and U.C. Davis Department of Civil and Environmental Engineering, Davis, CA, STI-909106-4110, June 28.
- Bai S., Eisinger D.S., and Funk T.H. (2010) Guidance for estimating naphthalene and polycyclic organic matter emissions from transportation projects. Technical memorandum Prepared for Jim Andrews, P.E., California Department of Transportation, Division of Environmental Analysis, Office of Hazardous Waste, Air and Noise, by Sonoma Technology, Inc., STI-909103-3820, June.
- Bai S., Phillips J., Eisinger D.S., Amador J., Black T., Waters M., and Reid S.B. (2010) TESTER: The emissions sensitivity tool to evaluate CO₂ reductions. Final report prepared for the Office of Planning, U.S. Federal Highway Administration, STI-908062-3842-FR, March.
- Niemeier D., Eisinger D.S., and Bai S. (2009) Developing effective and quantifiable air quality mitigation measures: overview report. Prepared for the U.C. Davis-Caltrans Air Quality Project, October 29.
- Norris G., Vedantham R., Wade K., Brown S., Prouty J., Bai S., DeWinter J., and Foley C. (2009) EPA Positive Matrix Factorization (PMF) 4.0 Fundamentals and User Guide. Prepared for the National Exposure Research Laboratory, U.S. Environmental Protection Agency, by Sonoma Technology, Inc., Petaluma, CA, STI-909017, September.
- Bai S., Eisinger D.S., Waters M., Phillips J., and Black T. (2009) Brief literature review, data compilation, and modeling approach. Land use changes and greenhouse gas emissions: a new analysis tool for small and medium metropolitan areas. Prepared for the Federal Highway Administration Office of Planning, Olympia Fields, IL, by Sonoma Technology, Inc., Petaluma, CA, Washington State Department of Transportation, Seattle, WA, Washington State Department of Commerce, Olympia, WA, and Thurston Regional Planning Council, Olympia, WA, STI-908062-3717-TM, September.
- Fuller M., Bai S., Eisinger D.S., and Niemeier D. (2009) Practical mitigation measures for diesel particulate matter: near-road vegetation barriers. Report prepared for the U.C. Davis-Caltrans Air Quality Project, July 14.
- Wang R., Eisinger D.S., Bai S., and Niemeier D. (2008) Construction equipment retrofits and replacements: a new tool to estimate emission reduction benefits. Final report prepared by the U.C. Davis-Caltrans Air Quality Project, Davis, CA, Task Order No. 81, December 30.
- Karner A., Eisinger D.S., Bai S., and Niemeier D. (2008) Mitigating diesel truck impacts in environmental justice communities: transportation planning and air quality in Barrio Logan, San Diego. Report prepared for the U.C. Davis-Caltrans Air Quality Project, November 30.
- Roberts P.T., Reid S.B., Eisinger D.S., and Bai S. (2008) Field study of PM_{2.5} emissions generated from road widening project. Technical memorandum prepared for the Arizona Department of Transportation by Sonoma Technology, Inc., Petaluma, CA, STI-908017.03-3493, November.
- Bai S., McCarthy M.C., and Hafner H.R. (2008) Development of a new AQI indicator - progress report. Technical memorandum prepared for Eastern Research Group, Lexington, MA, by Sonoma Technology, Inc., Petaluma, CA, STI-908401.02-3487, October.
- Bai S., Eisinger D., and Niemeier D. (2008) MOVES vs. EMFAC: A comparative assessment based on a Los Angeles County case study. Prepared by the U.C. Davis-Caltrans Air Quality Project, Davis, CA, Task Orders No. 9 and 53, August 22.
- Chen H., Bai S., Eisinger D., Niemeier D., and Claggett M. (2008) Modeling uncertainties and near-road PM_{2.5}: a comparison of CALINE4, CAL3QHC and AERMOD. Prepared by the U.C. Davis-Caltrans Air Quality Project, Davis, CA, Task order numbers 67 and 80, August 21.

Wu P., Bai S., Eisinger D., and Niemeier D. (2007) CT-EMFAC: a computer model to estimate transportation project emissions. Prepared for the California Department of Transportation, Division of Transportation Planning, Sacramento, CA, by the UC Davis-Caltrans Air Quality Project, Davis, CA, Task Orders No. 61 and 67, December 10.

Bai S., Eisinger D., and Niemeier D. (2006) Estimating mobile source air toxics emissions: a step-by-step project analysis methodology. Report prepared for the California Department of Transportation, Sacramento, CA, by the University of California, Davis-Caltrans Air Quality Project, Davis, CA, October.

Tamura T.M., Bai S., Eisinger D.S., and Sullivan D.C. (2004) Revision of the Minneapolis-St. Paul Carbon Monoxide Maintenance Plan. Final report prepared for the Minnesota Pollution Control Agency, St. Paul, MN, by Sonoma Technology, Inc., Petaluma, CA, STI-904360-2583-FR, August.

Eisinger D.S. and Bai S. (2010) Introduction to transportation-air quality issues. Training course presented at the Caltrans Training Workshop, 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 U.C. Davis spreadsheet application. Presented at the Federal Highway Administration MSAT Training Workshops, San Diego and Sacramento, CA, January 8-9 by Caltrans and the U.C. Davis-Caltrans Air Quality Project.

Software

Bai S., Prouty J.D., Eisinger D.S., Stille J.C., Dai S., and Niemeier D. (2011) CAL-CET construction emissions spreadsheet tool (beta version 1.0). Prepared for the Division of Environmental Analysis, California Department of Transportation, Sacramento, CA, STI-909115, December.

Prouty J.D., Bai S., and Eisinger D.S. (2011) DataBridge: Preparing input data files for the CT-EMFAC modeling tool (beta version 1.0.2). Prepared for the Division of Environmental Analysis, California Department of Transportation, Sacramento, CA, STI-909114, March.

Bai S., Amador J., Eisinger D.S., Reid S., Waters M., Black T., Phillips J. (2011) Low-Carb Land (Beta Version 4.0): Informing your land use decisions to consider travel and CO₂ impacts. Prepared by Sonoma Technology, Inc., the Washington State Department of Transportation, the Thurston Regional Planning Council, and the Washington State Department of Commerce. January 18.

Bai S., Prouty J.D., and Eisinger D.S. (2010) Spreadsheet tool for estimating naphthalene and polycyclic organic matter emissions from transportation projects (beta version 1.0). Prepared for California Department of Transportation, Division of Environmental Analysis, Office of Hazardous Waste, Air, and Noise, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-909101-3970, June.

Bai S., Amador J., Eisinger D.S., Reid S., Waters M., Black T., Phillips J. (2010) TESTER (Beta Version 3.0): The Emissions Sensitivity Tool to Evaluate CO₂ Reductions. Prepared for the U.S. Federal Highway Administration. Prepared by Sonoma Technology, Inc., the Washington State Department of Transportation, the Thurston Regional Planning Council, and the Washington State Department of Commerce. March 31.

Websites and Web Services

Bai S., Amador J., Eisinger D., Reid S., Waters M., Black T., Phillips J., and Jennings C. (2011) Low-carb land beta version 4.0, a web-based modeling tool to evaluate how changes in land use and future growth affect travel activity and CO₂ emissions. Prepared by Sonoma Technology, Inc., in collaboration

with the Washington State Department of Transportation, the Thurston Regional Planning Council, and the Washington State Department of Commerce. Available on the Internet at <http://lowcarbland.sonomatechdata.com>. STI-4052, January.

Bai S., Eisinger D., Amador J., and Jennings C. (2011) Low-carb land: informing your land use decisions to consider travel and CO2 impacts. Web tool prepared by Sonoma Technology, Inc., Petaluma, CA. Available on the Internet at <http://lowcarbland.sonomatechdata.com/> STI-600000-4052, January.

Bai S., Prouty J.D., and Eisinger D.S. (2010) CT-EMFAC: a batch mode version of the UC Davis CT-EMFAC tool. Prepared for the California Department of Transportation Division of Transportation Planning by Sonoma Technology, Inc., Petaluma, CA. March.

Wu P., Bai S., Eisinger D.S., and Niemeier D. (2008) CT-EMFAC. Prepared by the U.C. Davis-Caltrans Air Quality Project, Task Order No. 61 and 67.

Wang R., Eisinger D.S., Bai S., and Niemeier D. (2008) Construction equipment retrofit and replacement tool. Prepared by the U.C. Davis-Caltrans Air Quality Project, Task Order No. 81.

Courses Taught

Eisinger D.S. and Bai S. (2011) Introduction to transportation-air quality issues. Training course presented at the Caltrans Training Workshop, Fresno, CA by Sonoma Technology, Inc., Petaluma, CA, STI-909104-4009, February 9.

Peer-Review Service

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

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

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. Ph.D. dissertation, Civil and Environmental Engineering, University of California at Davis, Davis, CA