

# Julian D. Marshall

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## Current position

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**John R. Kiely Endowed Professor, Department of Civil and Environmental Engineering, University of Washington (UW).**  
**February 2016–present.**

Research area: **Exposure to air pollution**, especially (1) mechanistic and empirical modeling of air pollution; (2) measuring and modeling air pollution exposures in developing countries; (3) environmental justice.

Citation impact (as of January 2020), by database:

Research ID / Web of Science: 4205 citations; h-index: 39; average citations per article: 30.

Scopus / Elsevier: 4658 citations; h-index: 40.

Google Scholar: 7247 citations; h-index: 47.

Associate Editor, *Development Engineering* (2015–current).

Associate Editor, *Environmental Health Perspectives* (2016–current).

## Education

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Post-doctoral Fellow	2005–2006	<b>University of British Columbia</b> , School of Environmental Health Mentor: Professor Michael Brauer
Ph.D.	2005	<b>University of California Berkeley</b> , Energy and Resources Group Dissertation: “Inhalation of Vehicle Emissions in Urban Environments” Mentor: Professor William Nazaroff
M.S.	2002	<b>University of California Berkeley</b> , Energy and Resources Group
B.S.E.	1996	<b>Princeton University</b> , Chemical Engineering, with High Honors

## Honors

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- One article (Tessum et al., 2019) listed as one of the “Top 10 Articles of 2019” from *Proceedings of the National Academy of Sciences (PNAS)*.
- One article (Ranzani et al., 2019) listed as a “Best of IJE 2019” from the *International Journal of Epidemiology*, 2019.
- One article (Apte et al., 2017) declared “Best Environmental Technology Paper of 2017” from *Environmental Science & Technology*.
- Charles E. Bowers Teaching Award, UMN, 2014.
- C. Eugene Allen Award for Innovative International Initiatives (awarded to the Acara program), UMN, 2014.
- Joan M. Daisey Outstanding Young Scientist Award, International Society of Exposure Science, 2013.
- McKnight Land-Grant Professorship, UMN, 2009–2011.

- Young Engineer of the Year, American Society of Civil Engineers, Minnesota Section, 2009.
- One article (Ji et al., 2012) on the “most read” list from *Environmental Science & Technology*.
- One article (Marshall and Toffel, 2005) on the “most downloaded” list from *Environmental Science & Technology*.
- Two articles (Marshall, McKone, et al., 2005; Marshall, Nethery, et al., 2008) on the “most downloaded” list from *Atmospheric Environment*.
- Post-doctoral research fellowships from the School of Environmental Health and from the Bridge Program in engineering, policy, and health, UBC, 2005–2006.
- Outstanding Graduate Student Instructor Award, U.C. Berkeley, 2005. Award states: “Each year, fewer than 10% of GSIs earn this distinguished award”.
- Fellowship, U.C. Toxic Substances Research & Teaching Program, 2003–2005.
- Dissertation Fellowship, U.C. Transportation Center, 2003–2004.
- Graduate Research Fellowship, National Science Foundation (NSF), 2000–2003.

### Articles submitted for peer review

Articles are numbered in chronological order, and listed in reverse chronological order. To help clarify my role in multi-author papers, the right column indicates my contributions: lead, major, or minor. “Lead” indicates my being first or corresponding author, reflecting my role as leader or principal investigator. “Major” indicates a large contribution, equivalent to a co-principal investigator or senior advisor; my contribution is less than the principal investigator but is second or third in importance. “Minor” denotes all other articles; my contribution is not among the top three investigators for that article.

B Bekbulat, JS Apte, DB Millet, AL Robinson, KC Wells, JD Marshall. PM <sub>2.5</sub> and ozone air pollution levels have not dropped consistently across the US following societal covid response. Submitted.	Lead
MM Kelp, D Jacob, N Kutz, JD Marshall, CW Tessum. Toward stable, general machine-learned models of the atmospheric chemical system. Submitted.	Major
NC Coleman, CA Pope III, M Ezzati, JD Marshall, AL Robinson, RT Burnett. Fine particulate matter air pollution and mortality risk among U.S. cancer patients and survivors. Submitted.	Minor
S Chambliss, C Preble, J Caubel, T Cados, K Messier, R Alvarez, B LaFranchi, M Lunden, JD Marshall, A Szpiro, T Kirchstetter, J Apte. Comparison of mobile and fixed-site black carbon measurements for high-resolution urban pollution mapping. Submitted	Minor
O Ranzani, C Milà, S Kinra, C Tonne, B Kulkarni, J Sunyer, S Sambandam, S Bhogadi, M Sanchez, K Balakrishnan, JD Marshall. Personal exposure to particulate air pollution and vascular damage in peri-urban South India. Submitted.	Major
M Islam, R Wathore, H Zerriffi, JD Marshall, R Bailis, A Grieshop. In-use emissions from biomass and LPG stoves measured during a large, multi-year cookstove intervention study in rural India. Submitted.	Major

S Balasubramanian, N Hunt, N Domingo, M Gittlin, K Colgan, JD Marshall, AL Robinson, I Azevedo, S Thakrar, M Clark, CW Tessum, P Adams, S Pandis, JD Hill. The food we eat, the air we breathe: A review of the fine particulate matter-induced air quality health impacts of the global food system. Submitted.	Minor
NC Coleman, RT Burnett, JD Higbee, JS Lefler, RM Merrill, M Ezzati, JD Marshall, SY Kim, M Bechle, AL Robinson, CA Pope. Cancer mortality risk, fine particulate air pollution, and smoking in a large, representative cohort of U.S. adults. Submitted.	Minor
O Ranzani, C Milà, M Sanchez, S Bhogadi, B Kulkarni, K Balakrishnan, S Sambandam, J Sunyer, JD Marshall, S Kinra, C Tonne. Personal exposure to particulate air pollution and vascular damage in peri-urban South India. Submitted.	Minor
B Sergi, P Adams, A Robinson, SJ Davis, JD Marshall, N Muller, I Azevedo. Aligning climate and health benefits in power plant siting and retirement decisions. Submitted.	Minor
A Curto, O Ranzani, C Mila, M Sanchez, JD Marshall, B Kulkarni, S Bogadi, S Kinra, G Wellenius, C Tonne. Particulate air pollution and blood glucose levels and diabetic status in peri-urban India. Submitted.	Minor
SY Kim, C Olives, N Fann, CA Pope III, JD Marshall, L Sheppard. Estimation of long-term area-average PM <sub>2.5</sub> concentrations and new insights into its association with life-expectancy. Submitted.	Minor

### Peer-reviewed journal articles

The right column indicates my contribution to each article: lead, major, or minor. Those terms are defined above.

124. B Sergi, P Adams, N Muller, AL Robinson, SJ Davis, JD Marshall, I Azenvedo. Optimizing emissions reductions from the U.S. power sector for climate and health benefits. <i>Environmental Science &amp; Technology</i> , Accepted.	Minor
123. Y Wang, MJ Bechle, SY Kim, P Adams, SN Pandis, CA Pope III, AL Robinson, L Sheppard, AA Szpiro, JD Marshall. Spatial decomposition analysis of NO <sub>2</sub> and PM <sub>2.5</sub> air pollution in the United States. <i>Atmospheric Environment</i> , In Press. DOI: 10.1016/j.atmosenv.2020.117470. 2020.	Lead
122. JD Higbee, JS Lefler, RT Burnett, M Ezzati, JD Marshall, SY Kim, M Bechle, AL Robinson, CA Pope III. Estimation long-term pollution exposure effects through inverse probability weighting methods with Cox proportional hazards models. <i>Environmental Epidemiology</i> , 4(2): e085. DOI: 10.1097/EE9.000000000000085. 2020.	Minor
121. SY Kim, MJ Bechle, S Hankey, L Sheppard, AA Szpiro, JD Marshall. Concentration of criteria pollutants in the contiguous U.S., 1979 - 2015: Role of prediction model parsimony in integrated empirical geographic regression. <i>PLOS One</i> , 15(2): e0228535. DOI: 10.1371/journal.pone.0228535. 2020.	Major

120. MM Kelp, T Gould, E Austin, JD Marshall, M Yost, C Simpson, T Larson. Sensitivity analysis of area-wide, mobile source emission factors to high-emitter vehicles in Los Angeles. <i>Atmospheric Environment</i> , 223, p.117212. DOI: 10.1016/j.atmosenv.2019.117212. 2020.	Major
119. C Milà, A Curto, A Dimitrova, V. Sreekanth, S Kinra, JD. Marshall, C Tonne. Identifying predictors of personal exposure to air temperature in peri-urban India. <i>Science of the Total Environment</i> , 707, p.136114. DOI: 10.1016/j.scitotenv.2019.136114. 2019.	Minor
118. JS Lefler, JD Higbee, RT Burnett, M Ezzati, NC Coleman, DD Mann, JD Marshall, MJ Bechle, Y Wang, AL Robinson, CA Pope. Air pollution and mortality in a large, representative U.S. cohort: multiple-pollutant analyses, and spatial and temporal decompositions. <i>Environmental Health</i> , 18, 101. DOI: 10.1186/s12940-019-0544-9. 2019.	Minor
117. MPS Thind, CW Tessum, I Azevedo, JD Marshall. Fine particulate air pollution from electricity generation in the US: health impacts by race, income, and geography. <i>Environmental Science &amp; Technology</i> , 53(23): 14010-14019. DOI: 10.1021/acs.est.9b02527. 2019.	Lead
116. A Curto, G Wellenius, C Milà, M Sanchez, OT Ranzani, JD Marshall, B Kulkarni, S Bhogadi, S Kinra, C Tonne. Ambient particulate air pollution and blood pressure in peri-urban India. <i>Epidemiology</i> , 30(4): 492-500. DOI: 10.1097/EDE.0000000000001014. 2019.	Minor
115. OT Ranzani, C Milà, M Sanchez, S Bhogadi, B Kulkarni, K Balakrishnan, S Sambandam, J Sunyer, JD Marshall, S Kinra, C Tonne. Association between ambient and household air pollution with carotid intima-media thickness in peri-urban South India: CHAI-Project. <i>International Journal of Epidemiology</i> , 1-11. DOI: 10.1093/ije/dyz208. 2019.	Minor
114. E Dimanchev, S Paltsev, M Yuan, D Rothenberg, CW Tessum, JD Marshall, N Selin. Health co-benefits of sub-national renewable energy policy in the U.S. <i>Environmental Research Letters</i> , 14(8), 085012. DOI: 10.1088/1748-9326/ab31d9. 2019.	Major
113. JE Bennett, H Tamura-Wicks, RM Parks, RT Burnett, CA Pope III, MJ Bechle, JD Marshall, G Danaei, M Ezzati. Particulate matter air pollution and national and county life expectancy loss in the USA: A spatiotemporal analysis. <i>PLOS Medicine</i> , 16(7): e1002856. DOI: 10.1371/journal.pmed.1002856. 2019.	Minor
112. P Fantke, TE McKone, M Tainio, O Jolliet, JS Apte, KS Stylianou, N Illner, JD Marshall, EF Choma, JS Evans. Global effect factors for exposure to fine particulate matter. <i>Environmental Science &amp; Technology</i> , 53(12), 6855-6868. DOI:10.1021/acs.est.9b01800. 2019.	Minor
111. CA Pope III, JS Lefler, M Ezzati, JD Higbee, JD Marshall, SY Kim, MJ Bechle, KS Gilliat, SE Vernon, AL Robinson, RT Burnett. Mortality risk and fine particulate air pollution in a large, representative cohort of U.S. adults. <i>Environmental Health Perspectives</i> , 127(7), 077007. DOI: 10.1289/EHP4438. 2019.	Minor

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| 110. | M Sanchez, C Milà, V Srekanth, K Balakrishnan, S Sambandam, M Nieuwenhuijsen, S Kinra, JD Marshall, C Tonne. Personal exposure to particulate matter in peri-urban India: predictors and association with ambient concentration at residence. <i>Journal of Exposure Science and Environmental Epidemiology</i> , 1-10. DOI: 10.1038/s41370-019-0150-5, 2019.                                | Major |
| 109. | E Gilmore, J Heo, N Muller, CW Tessum, JD Hill, JD Marshall, P Adams. An inter-comparison of air quality social cost estimates from reduced-complexity models. <i>Environmental Research Letters</i> , 14(7), 074016. DOI: 10.1088/1748-9326/ab1ab5. 2019.   | Minor |
| 108. | AL Goodkind, CW Tessum, JS Coggins, JD Hill, JD Marshall. Fine-scale damage estimates of particulate matter air pollution reveal opportunities for location-specific mitigation of emissions. <i>Proceedings of the National Academy of Sciences</i> , 116(18), 8775-8780. DOI: 10.1073/pnas.1816102116. 2019.   | Major |
| 107. | Y Wen, H Wang, T Larson, MM Kelp, S Zhang, Y Wu, JD Marshall. On-highway vehicle emission factors, and spatial patterns, based on mobile monitoring and absolute principal component score. <i>Science of the Total Environment</i> , 676, 242-251. DOI: 10.1016/j.scitotenv.2019.04.185. 2019.  | Lead  |
| 106. | R Alotaibi, MJ Bechle, JD Marshall, T Ramani, J Zietsman, M Nieuwenhuijsen, H Khreis. Traffic related air pollution and the burden of childhood asthma in the contiguous United States in 2000 and 2010. <i>Environment International</i> , 127, 858-867. DOI: 10.1016/j.envint.2019.03.041. 2019.   | Minor |
| 105. | JD Hill, AL Goodkind, CW Tessum, SK Thakrar, D Tilman, S Polasky, T Smith, N Hunt, K Mullins, M Clark, JD Marshall. Air-quality-related health damages of maize. <i>Nature Sustainability</i> , 2, 397-403. DOI: 10.1038/s41893-019-0261-y. 2019.  | Major |
| 104. | L Liu, T Hwang, S Lee, Y Ouyang, B Lee, SJ Smith, CW Tessum, JD Marshall, F Yan, K Daenzer, TC Bond. Health and climate impacts of future United States land freight modelled with global-to-urban models. <i>Nature Sustainability</i> , 2, 105-112. DOI: 10.1038/s41893-019-0224-3. 2019.  | Minor |
| 103. | CW Tessum, JS Apte, AL Goodkind, NZ Muller, KA Mullins, D Paoella, S Polasky, NP Springer, SK Thakrar, JD Marshall, JD Hill. Inequity in consumption of goods and services adds to racial–ethnic disparities in air pollution exposure. <i>Proceedings of the National Academy of Sciences</i> , 116(13), 6001-6006. DOI: 10.1073/pnas.1818859116. 2019.<br>Listed as a “most-read article.” | Major |
| 102. | V Srekanth, C Tonne, M Salmon, S Arulselvan, JD Marshall. The role of blank filter mass in attenuation measurements using an off-line transmissometer. <i>Journal of Aerosol Science</i> , 131 (41-47). DOI: 10.1016/j.jaerosci.2019.03.001. 2019.   | Major |
| 101. | V Menghwani, H Zerriffi, P Dwivedi, JD Marshall, AP Grieshop, R Bailis. Determinants of cookstoves and fuel choice among rural households in India. <i>EcoHealth</i> , 16, 21-60. DOI: 10.1007/s10393-018-1389-3. 2019.  | Minor |

100.	H Xu, MJ Bechle, M Wang, A Szpiro, S Vedal, Y Bai, JD Marshall. National PM <sub>2.5</sub> and NO <sub>2</sub> exposure models for China based on land use regression, satellite measurements, and universal Kriging. <i>Science of the Total Environment</i> , 655, 423-433. DOI: 10.1016/j.scitotenv.2018.11.125. 2018.	Lead
99.	C Mila, M Salmon, M Sanchez, A Ambrós, S Bhogadi, V Sreekanth, M Nieuwenhuijsen, S Kinra, JD Marshall, C Tonne. When, where and what? characterizing personal PM <sub>2.5</sub> exposure in peri-urban India by integrating GPS, wearable camera, ambient and personal monitoring data. <i>Environmental Science &amp; Technology</i> , 52(22), 13481-13490. DOI: 10.1021/acs.est.8b03075. 2018.	Major
98.	KP Messier, SE Chambliss, R Alvarez, M Brauer, JJ Choi, SP Hamburg, J Kerckhoffs, B LaFranchi, MM Lunden, JD Marshall, CJ Portier, A Roy, AA Szpiro, RCH Vermeulen, JS Apte. Mapping air pollution with Google Street View cars: efficient approaches with mobile monitoring and land use regression. <i>Environmental Science &amp; Technology</i> , 52 (21), 12563–12572. DOI: 10.1021/acs.est.8b03395. 2018.	Major
97.	M Salmon, C Mila, S Bhogadi, S Addanki, P Madhira, N Muddepaka, A Mora, M Sanchez, S Kinra, V Sreekanth, A Doherty, JD Marshall, C Tonne. Wearable camera-derived microenvironments in relation to personal exposure to PM <sub>2.5</sub> . <i>Environmental International</i> , 117, 300-307. DOI: 10.1016/j.envint.2018.05.021. 2018.	Minor
96.	D Paolella, CW Tessum, P Adams, JS Apte, S Chambliss, JD Hill, N Muller, JD Marshall. Effect of model spatial resolution on estimates of fine particulate matter exposure and exposure disparities in the United States. <i>Environmental Science &amp; Technology</i> , 5(7), 436-441. DOI: 10.1021/acs.estlett.8b00279. 2018.	Lead
95.	TW Aung, J Baumgartner, G Jain, K Sethuraman, C Reynolds, JD Marshall, M Brauer. Effect on blood pressure and eye health symptoms in a climate-financed randomized cookstove intervention study in rural India. <i>Environmental Research</i> , 166, 658-667. DOI: 10.1016/j.envres.2018.06.044. 2018.	Major
94.	MM Kelp, AP Grieshop, J Baumgartner, CC Reynolds, K Sethuraman, G Jain, JD Marshall. Real-time indoor measurement of health and climate-relevant air pollution concentrations during a carbon-finance-approved cookstove intervention in rural India. <i>Development Engineering</i> , 3, 125-132. DOI: 10.1016/j.deveng.2018.05.001. 2018.	Lead
93.	LD Knibbs, A van Donkelaar, RV Martin, MJ Bechle, M Brauer, DD Cohen, CT Cowie, M Dirgawati, Y Guo, IC Hanigan, FH Johnston, GB Marks, JD Marshall, G Pereira, B Jalaludin, JS Heyworth, GG Morgan, AG Barnett. Satellite-based land-use regression for continental-scale long-term ambient PM <sub>2.5</sub> exposure assessment in Australia. <i>Environmental Science &amp; Technology</i> , 52(21), 12445-12455 DOI: 10.1021/acs.est.8b02328. 2018.	Minor
92.	MK Kumar, S Vakacherla, M Salmon, C Tonne, JD Marshall. Use of spatiotemporal characteristics of ambient PM <sub>2.5</sub> in rural South India to infer local versus regional contributions. <i>Environmental Pollution</i> , 239, 803-811. DOI: 10.1016/j.envpol.2018.04.057. 2018.	Lead

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| 91. | M Sanchez, A Ambros, C Mila, M Salmon, K Balakrishnan, S Sambandamm, V Sreekanth, JD Marshall, C Tonne. Development of land-use regression models for fine particles and black carbon in peri-urban South India. <i>Science of the Total Environment</i> , 634, 77-86. DOI: 10.1016/j.scitotenv.2018.03.308. 2018.     | Major |
| 90. | LD Knibbs, CP Coorey, MJ Bechle, JD Marshall, MG Hewson, B Jalaludin, GG Morgan, AG Barnett. Long-term nitrogen dioxide exposure assessment using back-extrapolation of satellite-based land-use regression models for Australia. <i>Environmental Research</i> , 163, 16-25. DOI: 10.1016/j.envres.2018.01.046. 2018. | Minor |
| 89. | D Donaire-Gonzalez, J Barrera-Gómez, JD Marshall, MJ Nieuwenhuijsen, GA Wellenius, C Tonne. Performance of low-cost monitors to assess household air pollution. <i>Environmental Research</i> , 163, 53-63. DOI: 10.1016/j.envres.2018.01.024. 2018.   | Minor |
| 88. | NP Nguyen, JD Marshall. Impact, efficiency, inequality, and injustice of urban air pollution: variability by emission location. <i>Environmental Research Letters</i> , 13(2), 024002. DOI: 10.1088/1748-9326/aa9cb5. 2018.  | Lead  |
| 87. | SK Thakrar, AL Goodkind, CW Tessum, JD Marshall, JD Hill. Life cycle air quality impacts on human health from potential switchgrass production in the United States. <i>Biomass and Bioenergy</i> , 114, 73-82. DOI: 10.1016/j.biombioe.2017.10.031. 2017.   | Major |
| 86. | MPS Thind, EJ Wilson, IL Azevedo, JD Marshall. Marginal emissions factors for electricity generation in the midcontinent ISO. <i>Environmental Science &amp; Technology</i> , 51 (24), 14445–14452. DOI: 10.1021/acs.est.7b03047. 2017.  | Lead  |
| 85. | S Hankey, JD Marshall. Urban form, air pollution, and health. <i>Current Environmental Health Reports</i> , 4(4), 491-503. DOI: 10.1007/s40572-017-0167-7. 2017.   | Major |
| 84. | MJ Bechle, DB Millet, JD Marshall. Does urban form affect urban NO <sub>2</sub> ? Satellite-based evidence for more than 1,200 cities. <i>Environmental Science &amp; Technology</i> . 51 (21), 12707-12716. DOI: 10.1021/acs.est.7b01194. 2017.   | Lead  |
| 83. | AP Grieshop, G Jain, K Sethuraman, JD Marshall. Emission factors of health- and climate-relevant pollutants measured in-home during a carbon-finance-approved cookstove intervention in rural India. <i>GeoHealth</i> , 1(5), 222–236. DOI: 10.1002/2017GH000066. 2017.  | Major |
| 82. | LP Clark, DB Millet, JD Marshall. Changes in transportation-related air pollution exposures by race-ethnicity and socioeconomic status: outdoor nitrogen dioxide in the United States in 2000 and 2010. <i>Environmental Health Perspectives</i> , 125(9):097012. DOI: 10.1289/EHP959. 2017.                           | Lead  |
| 81. | M Sanchez, A Ambros, M Salmon, S Bhogadi, RT Wilson, S Kinra, JD Marshall, C Tonne. Predictors of daily mobility of adults in peri-urban South India. <i>Environmental Research &amp; Public Health</i> , 14:14(7). DOI: 10.3390/ijerph14070783. 2017.   | Minor |

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| 80. | JS Apte, K Messier, S Gani, M Brauer, T Kirchstetter, M Lunden, JD Marshall, C Portier, R Vermeulen, S Hamburg. High-resolution air pollution mapping with Google Street View cars: exploiting big data. <i>Environmental Science &amp; Technology</i> , 51 (12), 6999–7008. DOI: 10.1021/acs.est.7b00891. 2017. *Listed as the ‘Best Environmental Technology Paper of 2017’ from <i>Environmental Science &amp; Technology</i>              | Minor |
| 79. | CW Tessum, JD Hill, JD Marshall. InMAP: a model for air pollution interventions. <i>PLOS One</i> , 12(4): e0176131. DOI: 10.1371/journal.pone.0176131. 2017.  | Lead  |
| 78. | A Larkin, J Geddes, R Martin, Q Xiao, Y Liu, JD Marshall, M Brauer, P Hystad. A global land use regression model for nitrogen dioxide air pollution. <i>Environmental Science &amp; Technology</i> , 51 (12), 6957–6964. DOI: 10.1021/acs.est.7b01148. 2017.  | Minor |
| 77. | C Tonne, M Salmon, M Sanchez, V Srekanth, S Bhogadi, S Sambandam, K Balakrishnan, S Kinra, JD Marshall. Integrated assessment of exposure to PM <sub>2.5</sub> in South India and its relation with cardiovascular risk: design of the CHAI study. <i>International Journal of Hygiene and Environmental Health</i> , 220(6), 1081-1088. DOI: 10.1016/j.ijheh.2017.05.005. 2017.  | Major |
| 76. | P Pant, G Habib, JD Marshall, RE Peltier. PM <sub>2.5</sub> exposure in highly polluted cities: A case study from New Delhi, India. <i>Environmental Research</i> , 156, 167-174. DOI: 10.1016/j.envres.2017.03.024. 2017.  | Minor |
| 75. | MC Turner, D Krewski, WR Diver, CA Pope III, RT Burnett, M Jerrett, JD Marshall, SM Gapstur. Ambient air pollution and cancer mortality in the cancer prevention study-II. <i>Environmental Health Perspectives</i> , 125(8):087013. DOI: 10.1289/EHP767. 2017.   | Minor |
| 74. | E Carter, C Norris, KL Dionisio, K Balakrishnan, W Checkley, ML Clark, S Ghosh, DW Jack, PL Kinney, JD Marshall, LP Naeher, JL Peel, S Sambandam, JJ Schauer, KR Smith, BJ Wylie, J Baumgartner. Assessing exposure to household air pollution: a systematic review and pooled analysis of carbon monoxide as a surrogate measure of particulate matter. <i>Environmental Health Perspectives</i> , 125(7):076002. DOI: 10.1289/EHP767. 2017. | Minor |
| 73. | M Jerrett, R Brook, L White, RT Burnett, J Yu, J Su, E Seto, JD Marshall, J Palmer, L Rosenberg. Ambient ozone and incident diabetes: a prospective analysis in a large cohort of African American women. <i>Environment International</i> , 102:42-47. DOI: 10.1016/j.envint.2016.12.011. 2017.  | Minor |
| 72. | S Hankey, G Lindsey, JD Marshall. Population-Level exposure to particulate air pollution during active travel: planning for low-exposure, health-promoting cities. <i>Environmental Health Perspectives</i> , 125(4): 527-534. DOI: 10.1289/EHP442. 2016.   | Major |
| 71. | L Knibbs, C Coorey, MJ Bechle, C Cowie, M Dirgawati, J Heyworth, G Marks, JD Marshall, L Morawska, G Pereira, M Hewson. Independent validation of national satellite-based land-use regression models for nitrogen dioxide using passive samplers. <i>Environmental Science &amp; Technology</i> , 50(22), 12331–12338. 2016.   | Minor |



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| 70. | H Vreeland, JJ Schauer, AG Russell, JD Marshall, A Fushimi, G Jain, K Sethuraman, V Verma, SN Tripathi, MH Bergin. Chemical characterization and toxicity of particulate matter emissions from roadside trash combustion in urban India. <i>Atmospheric Environment</i> , 147, 22-30. 2016.   | Minor |
| 69. | S Zhu, JD Marshall, D Levinson. Population exposure to ultrafine particles: size-resolved and real-time models for highways. <i>Transportation Research Part D: Transport and Environment</i> , 49, 323-336. 2016.  | Major |
| 68. | BL Keeler, JD Gourevitch, S Polasky, F Isbell, CW Tessum, JD Hill, JD Marshall. The social cost of nitrogen. <i>Science Advances</i> , 2(10). DOI: 10.1126/sciadv.1600219. 2016.  | Minor |
| 67. | K de Hoogh, J Gulliver, A van Donkelaar, RV Martin, JD Marshall, MJ Bechle, G Cesaroni, MC Pradas, A Dedele, M Eeftens, B Forsberg, C Galassi, J Heinrich, B Hoffmann, B Jacquemin, K Katsouyanni, M Korek, N Kunzli, SJ Lindley, J Lepeule, F Meleux, A de Nazelle, M Nieuwenhuijsen, W Nystad, O Raaschou-Nielsen, A Peters, VH Peuch, L Rouil, O Udvardy, R Slama, M Stempfelet, EG Stephanou, MY Tsai, T Yli-Tuomi, G Weinmayr, B Brunekreef, D Vienneau, G Hoek. Development of West-European PM <sub>2.5</sub> and NO <sub>2</sub> land use regression models incorporating satellite-derived and chemical transport modelling data. <i>Environmental Research</i> , 151, 1-10. 2016. | Minor |
| 66. | TW Aung, G Jain, K Sethuraman, J Baumgartner, C Reynolds, AP Grieshop, JD Marshall, M Brauer. Health and climate-relevant pollutant concentrations from a carbon-finance approved cookstove intervention in rural India. <i>Environmental Science &amp; Technology</i> , 50(13), 7228–7238. 2016.   | Major |
| 65. | PF Coogan, LF White, J Yu, RT Burnett, JD Marshall, E Seto, RD Brook, JR Palmer, L Rosenberg, M Jerrett. Long term exposure to NO <sub>2</sub> and diabetes incidence in the black women's health study. <i>Environmental Research</i> , 148, 360-366. 2016.  | Minor |
| 64. | C Norris, MS Goldberg, JD Marshall, MF Valois, T Pradeep, M Narayanswamy, G Jain, K Sethuraman, J Baumgartner. A panel study of the acute effects of personal exposure to household air pollution on ambulatory blood pressure in rural Indian women. <i>Environmental Research</i> , 147, 331-342. 2016.   | Major |
| 63. | LF White, M Jerrett, J Yu, JD Marshall, L Rosenberg, PF Coogan. Ambient air pollution and 16-year weight change in African American women. <i>American Journal of Preventive Medicine</i> , 51(4), e99–e105. 2016.  | Minor |
| 62. | MT Young, MJ Bechle, PD Sampson, AA Szpiro, JD Marshall, L Sheppard, JD Kaufman. Satellite-based NO <sub>2</sub> and model validation in a national prediction model based on universal Kriging and land-use regression. <i>Environmental Science &amp; Technology</i> , 50(7), 3686–3694. 2016.  | Minor |
| 61. | MC Turner, M Jerrett, CA Pope III, D Krewski, SM Gapstur, WR Diver, BS Beckerman, JD Marshall, J Su, DL Crouse, RT Burnett. Long-term ozone exposure and mortality in a large prospective study. <i>American Journal of Respiratory and Critical Care Medicine</i> , 193(10):1134-1142. DOI: 10.1164/rccm.201508-1633OC. 2016.  | Minor |

60.	S Ji, C Cherry, W Zhou, R Sawhney, Y Wu, S Cai, S Wang, JD Marshall. Environmental justice aspects of exposure to PM <sub>2.5</sub> emissions from electric vehicle use in China. <i>Environmental Science &amp; Technology</i> , 49(24), 13912-13920. 2015.	Minor
59.	JD Marshall, JS Apte, JS Coggins, AL Goodkind. Blue skies bluer? <i>Environmental Science &amp; Technology</i> , 49(24), 13929-13936. 2015.	Lead
58.	MJ Bechle, DB Millet, JD Marshall. National spatiotemporal exposure surface for NO <sub>2</sub> : monthly scaling of a satellite-derived land-use regression, 2000-2010. <i>Environmental Science &amp; Technology</i> , 49(20), 12297-12305. 2015.	Major
57.	S Hankey, JD Marshall. On-bicycle exposure to particulate air pollution: particle number, black carbon, PM <sub>2.5</sub> , and particle size. <i>Atmospheric Environment</i> , 122, 65-73. 2015.	Lead
56.	S Hankey, JD Marshall. Land use regression models of on-road particulate air pollution (particle number, black carbon, PM <sub>2.5</sub> , particle size) using mobile monitoring. <i>Environmental Science &amp; Technology</i> , 49(15):9194-9202. DOI: 10.1021/acs.est.5b01209.	Lead
55.	JS Apte, JD Marshall, AJ Cohen, M Brauer. Addressing global mortality from ambient PM <sub>2.5</sub> . <i>Environmental Science &amp; Technology</i> , 49(13), 8057-8066. 2015. Listed as a “most-downloaded article.”	Major
54.	H Chan, VC Van Hee, S Bergen, AA Szpiro, LA DeRoo, SJ London, JD Marshall, JD Kaufman, DP Sandler. Long-term air pollution exposure and blood pressure in the Sister Study. <i>Environmental Health Perspectives</i> , 123(10), 951-958. 2015.	Minor
53.	S Hankey, G Lindsey, JD Marshall. Day-of-year scaling factors and design considerations for non-motorized traffic monitoring programs. <i>Transportation Research Record</i> , 2468, 64-73. 2015.	Major
52.	CW Tessum, JD Hill, JD Marshall. Twelve-month, 12 km resolution North American WRF-Chem air quality simulation: performance evaluation. <i>Geoscientific Model Development</i> , 8(4), 957-973. 2015.	Lead
51.	S Hankey, K Sullivan, A Kinnick, A Koskey, K Grande, JH Davidson, JD Marshall. Using objective measures of stove use and indoor air quality to evaluate a cookstove intervention in rural Uganda. <i>Energy for Sustainable Development</i> , 25, 67-74. 2015.	Major
50.	L Hu, DB Millet, M Baasandorj, TJ Griffis, KR Travis, CW Tessum, JD Marshall, WF Reinhart, T Mikoviny, M Müller, A Wisthaler, M Graus, C Warneke, J de Gouw. Emissions of C <sub>6</sub> -C <sub>8</sub> aromatic compounds in the United States: constraints from tall tower and aircraft measurements. <i>Journal of Geophysical Research</i> , 120(2), 826-842. 2015.	Minor
49.	L Dekoninck, D Botteldooren, LI Panis, S Hankey, G Jain, K Sethuraman, JD Marshall. Applicability of a noise-based model to estimate in-traffic exposure to black carbon and particle number concentration in different cultures. <i>Environment International</i> , 74, 89-98. 2015.	Major

48.	CW Tessum, JD Marshall, JD Hill. Life cycle air quality impacts of conventional and alternative light-duty transportation in the United States. <i>Proceedings of the National Academy of Sciences</i> , 111(52), 18490–18495. 2014.	Lead
47.	AL Goodkind, JS Coggins, JD Marshall. A spatial model of air pollution: the impact of the concentration-response function. <i>Journal of the Association of Environmental and Resource Economists</i> , 1(4), 451-479. 2014.	Major
46.	P Fantke, O Jolliet, JS Evans, JS Apte, AJ Cohen, OO Hanninen, F Hurley, MJ Jantunen, M Jerrett, JI Levy, MM Loh, JD Marshall, BG Miller, P Preiss, JV Spadaro, M Tainio, JT Tuomisto, CJ Weschler, TE McKone. Health effects of fine particulate matter in life cycle impact assessment: conclusions from the Basel guidance workshop. <i>The International Journal of Life Cycle Assessment</i> . 20(2), 267-288. DOI 10.1007/s11367-014-0822-2. 2014.	Minor
45.	LD Knibbs, MG Hewson, MJ Bechle, JD Marshall, AG Barnett. A national satellite-based land use regression model for air pollution exposure assessment in Australia. <i>Environmental Research</i> , 135, 204-211. 2014.	Minor
44.	LP Clark, DB Millet, JD Marshall. National patterns in environmental injustice and inequality: outdoor NO <sub>2</sub> air pollution in the United States. <i>PLOS One</i> , 9(4). DOI 10.1371/journal.pone.0094431. 2014.	Lead
43.	JD Marshall, KR Swor, NP Nguyen. Prioritizing environmental justice and equality: diesel particles in California's South Coast. <i>Environmental Science &amp; Technology</i> , 48(7), 4063-4068. 2014.	Lead
42.	DPdL Barido, JD Marshall. Relationship between urbanization and CO <sub>2</sub> emissions depends on income level and policy. <i>Environmental Science &amp; Technology</i> , 48(7), 3632-3639. 2014.	Lead
41.	D Vienneau, K de Hoogh, MJ Bechle, R Beelen, A van Donkelaar, RV Martin, DB Millet, G Hoek, JD Marshall. Western European land use regression incorporating satellite- and ground-based measurements of NO <sub>2</sub> and PM <sub>10</sub> . <i>Environmental Science &amp; Technology</i> , 47(23), 13555–13564. 2013.	Major
40.	A Saraswat, JS Apte, M Kandlikar, M Brauer, SB Henderson, JD Marshall. Spatiotemporal land use regression models of fine, ultrafine and black carbon particulate matter in New Delhi, India. <i>Environmental Science &amp; Technology</i> , 47(22), 12903–12911. 2013.	Lead
39.	MJ Bechle, DB Millet, JD Marshall. Remote sensing of exposure to NO <sub>2</sub> : satellite versus in situ measurement in a large urban area. <i>Atmospheric Environment</i> , 69, 345–353. 2013.	Lead
38.	AF Both, D Westerdahl, S Fruin, B Haryanto, JD Marshall. Exposure to carbon monoxide, fine particle mass, and ultrafine particle number in Jakarta, Indonesia: effect of commute mode. <i>Science of the Total Environment</i> , 443, 965–972. 2013.	Lead
37.	CW Tessum, JD Marshall, JD Hill. A spatially and temporally explicit life cycle inventory of air pollutants from gasoline and ethanol in the United States. <i>Environmental Science &amp; Technology</i> , 46(20), 11408–11417. 2012.	Major

36.	DB Millet, E Apel, DK Henze, JD Hill, JD Marshall, HB Singh, CW Tessum. Natural and anthropogenic ethanol sources in North America and potential atmospheric impacts of ethanol fuel use. <i>Environmental Science &amp; Technology</i> , 46(15), 8484–8492. 2012.	Major
35.	JS Apte, E Bombrun, JD Marshall, WW Nazaroff. Global intraurban intake fractions for primary air pollutants from vehicles and other distributed sources. <i>Environmental Science &amp; Technology</i> , 46(6), 3415–3423. 2012.	Lead
34.	S Ji, C Cherry, MJ Bechle, Y Wu, JD Marshall. Electric vehicles in China: emissions and health impact. <i>Environmental Science &amp; Technology</i> , 46(4), 2018–2024. 2012. Listed as a “most-read article.”	Major
33.	S Aggarwal, R Jain, JD Marshall. Real-time prediction of size resolved ultrafine PM on freeways. <i>Environmental Science &amp; Technology</i> , 46(4), 2234–2241. 2012.	Lead
32.	S Hankey, JD Marshall, M Brauer. Health impacts of the built environment: within-urban variability in physical inactivity, air pollution and ischemic heart disease mortality. <i>Environmental Health Perspectives</i> , 120(2), 247–253. 2012.	Lead
31.	AP Grieshop, JD Marshall, M Kandlikar. Health and climate benefits of cook-stove replacement options. <i>Energy Policy</i> , 39(12), 7530–7542. 2011.	Major
30.	LP Clark, DB Millet, JD Marshall. Air quality and urban form in US urban areas: evidence from regulatory monitors. <i>Environmental Science &amp; Technology</i> , 45(16), 7028–7035. 2011.	Lead
29.	JS Apte, TW Kirchstetter, AH Reich, SJ Deshpande, G Kaushik, A Chel, JD Marshall, WW Nazaroff. Exposure concentrations of fine, ultrafine, and black carbon particles in auto-rickshaws in New Delhi, India. <i>Atmospheric Environment</i> , 45(26), 4470–4480. 2011.	Lead
28.	AF Both, A Balakrishnan, B Joseph, JD Marshall. Spatiotemporal aspects of real-time PM <sub>2.5</sub> : low- and middle-income neighborhoods in Bangalore, India. <i>Environmental Science &amp; Technology</i> , 45(13), 5629–5636. 2011.	Lead
27.	MJ Bechle, DB Millet, JD Marshall. Effects of income and urban form on urban NO <sub>2</sub> : global evidence from satellites. <i>Environmental Science &amp; Technology</i> , 45(11), 4914–4919. 2011.	Lead
26.	S Humbert, JD Marshall, S Shaked, JV Spadaro, Y Nishioka, P Preiss, TE McKone, A Horvath, O Jolliet. Intake fractions and characterization factors for particulate matter: review and recommendations for life cycle assessment. <i>Environmental Science &amp; Technology</i> , 45(11), 4808–4816. 2011.	Major
25.	EV Novotny, MJ Bechle, DB Millet, JD Marshall. National satellite-based land-use regression: NO <sub>2</sub> in the United States. <i>Environmental Science &amp; Technology</i> , 45(10), 4407–4414. 2011.	Lead

24.	A de Nazelle, MJ Nieuwenhuijsen, JM Antó, M Brauer, D Briggs, C Braun-Fahrlander, N Cavill, AR Cooper, H Desqueyroux, S Fruin, G Hoek, LI Panis, N Janssen, M Jerrett, M Joffe, ZJ Andersen, E van Kempen, S Kingham, N Kubesch, K Leyden, JD Marshall, J Matamala, G Mellios, M Mendez, H Nassif, D Ogilvie, R Peiró, K Pérez, A Rabl, M Ragetti, D Rodríguez, D Rojas, P Ruiz, JF Sallis, J Terwoert, JF Toussaint, J Tuomisto, M Zuurbier, E Lebret. Improving health through policies to promote active travel: a review of evidence to support integrated health impact assessment. <i>Environment International</i> , 37(4), 766–777. 2011.	Minor
23.	NL Boeke, JD Marshall, S Alvarez, KV Chance, A Fried, TP Kurosu, B Rappenglück, D Richter, J Walega, P Weibring, DB Millet. Formaldehyde columns from the Ozone Monitoring Instrument: urban versus background levels and evaluation using aircraft data and a global model. <i>Journal of Geophysical Research</i> , 116(D05303). DOI 10.1029/2010JD014870/full. 2011.	Major
22.	E Setton, JD Marshall, M Brauer, KR Lundquist, P Hystad, P Keller, D Cloutier-Fisher. The impact of mobility on exposure to traffic-related air pollution and health effect estimates. <i>Journal of Exposure Science and Environmental Epidemiology</i> , 21(1), 42-48. 2011.	Major
21.	EJ Wilson, JD Marshall, RD Wilson, KJ Krizek. School choice and children's school commuting. <i>Environment and Planning A</i> , 42(9), 2168–2185. 2010.	Major
20.	JD Marshall, RD Wilson, KL Meyer, SK Rajangam, NC McDonald, EJ Wilson. Vehicle emissions during children's school commuting: impacts of education policy. <i>Environmental Science &amp; Technology</i> , 44(5), 1537–1543. 2010.	Lead
19.	S Hankey, JD Marshall. Impacts of urban form on future U.S. passenger-vehicle greenhouse gas emissions. <i>Energy Policy</i> , 38(9), 4880–4887. 2010.	Lead
18.	A Boies, S Hankey, D Kittelson, JD Marshall, P Nussbaum, W Watts, E Wilson. Reducing motor vehicle GHG emissions in a non-California state: a case study of Minnesota. <i>Environmental Science &amp; Technology</i> , 43(23), 8721–8729. 2009.	Lead
17.	JD Marshall, M Brauer, LD Frank. Healthy neighborhoods: walkability and air pollution. <i>Environmental Health Perspectives</i> , 117(11), 1752–1759. 2009.	Lead
16.	FJ Ries, JD Marshall, M Brauer. Intake fraction of urban wood smoke. <i>Environmental Science &amp; Technology</i> , 43(13), 4701–4706. 2009.	Lead
15.	JD Marshall. Environmental equality: air pollution exposures in California's South Coast Air Basin, <i>Atmospheric Environment</i> , 42(21), 5499-5503. 2008.	Sole author
14.	JD Marshall. Energy-efficient urban form. <i>Environmental Science &amp; Technology</i> , 42(9), 3133-3137. 2008.	Sole author
13.	JD Marshall, E Nethery, M Brauer. Within-urban variability in ambient air pollution: comparison of estimation methods. <i>Atmospheric Environment</i> , 42(6), 1359-1369. 2008.	Lead

12.	JD Marshall. Urban land area and population growth: a new scaling relationship for metropolitan expansion. <i>Urban Studies</i> , 44(10), 1889-1904. 2007.	Sole author
11.	PJ Marcotullio, JD Marshall. Potential futures for road transportation CO <sub>2</sub> emissions in the Asia Pacific. <i>Asia Pacific Viewpoint</i> , 48(3), 355-377. 2007.	Major
10.	JD Marshall, PW Granvold, AS Hoats, TE McKone, E Deakin, WW Nazaroff. Inhalation intake of ambient air pollution in California's South Coast Air Basin. <i>Atmospheric Environment</i> , 40(23), 4381-4392. 2006.	Lead
9.	JD Marshall, E Behrentz. Vehicle self-pollution intake fraction: children's exposure to school bus emissions. <i>Environmental Science &amp; Technology</i> , 39(8), 2559-2563. 2005. Widely reported in news media, including <i>New York Times</i> and <i>Los Angeles Times</i> .	Lead
8.	JD Marshall, TE McKone, EA Deakin, WW Nazaroff. Inhalation of motor vehicle emissions: effects of urban population and land area. <i>Atmospheric Environment</i> , 39(2), 283-295. 2005. Listed as a "most-downloaded article."	Lead
7.	JD Marshall, SK Teoh, WW Nazaroff. Intake fraction of nonreactive vehicle emissions in US urban areas. <i>Atmospheric Environment</i> , 39(7), 1363-1371. 2005	Lead
6.	JD Marshall, MW Toffel. Framing the elusive concept of sustainability: a sustainability hierarchy. <i>Environmental Science &amp; Technology</i> , 39(3), 673-682. 2005. Listed as a "most-downloaded article."	Lead
5.	PJ Marcotullio, E Williams, JD Marshall. Faster, sooner, and more simultaneously: how recent road and air transportation CO <sub>2</sub> emission trends in developing countries differ from historic trends in the United States. <i>Journal of Environment and Development</i> , 14(1), 125-148. 2005.	Major
4.	MW Toffel, JD Marshall. Comparative analysis of weighting methods used to evaluate chemical release inventories. <i>Journal of Industrial Ecology</i> , 8(1-2), 143-172. 2004. Chosen as the issue's "sample article."	Major
3.	JD Marshall, WJ Riley, TE McKone, WW Nazaroff. Intake fraction of primary pollutants: motor vehicle emissions in the South Coast Air Basin. <i>Atmospheric Environment</i> , 37(24), 3455-3468. 2003.	Lead
2.	JD Marshall, BW Shimada, PR Jaffe. Effect of temporal variability in infiltration on contaminant transport in the unsaturated zone. <i>Journal of Contaminant Hydrology</i> , 46(1-2), 151-161. 2000.	Lead
1.	SR Hayes, JD Marshall. Designing optimal strategies to attain the new US particulate matter standards: some initial concepts. <i>Journal of the Air &amp; Waste Management Association</i> , 49(SI):192-198. 1999.	Major

### **Book chapters and other peer-reviewed publications**

D Philippon, B Colombo, F Rose, JD Marshall. Translating Knowledge to Engage Global Grand Challenges: A Case Study. (Peer reviewed.) In *Innovative Learning and Teaching: Experiments*

- Across the Disciplines*, ID Alexander, RK Poch, (eds). 2017; University of Minnesota libraries publishing: Minneapolis, MN.
- KJ Krizek, E Wilson, JD Marshall, R Wilson. Transport Costs of School Choice. (Peer reviewed.) In *Education, Land, and Location*, GK Ingram, DA Kenyon (eds). 2014; Lincoln Institute LPS: Cambridge, MA.
- FJ Ries, JD Marshall, M Brauer. Wood Energy: The Dangers of Combustion. Letter to the editor (peer reviewed), *Science*, 324(5933). 2009.
- M Brauer, B Ainslie, M Buzzelli, S Henderson, T Larson, JD Marshall, E Nethery, D Steyn, J Su. Models of Exposure for Use in Epidemiological Studies of Air Pollution Health Impacts. In *Air Pollution Modeling and Its Application XIX (NATO Science for Peace and Security Series C: Environmental Security)*, C Borrego, AI Miranda (eds). 2008; Springer: Dordrecht, The Netherlands.
- JD Marshall, WW Nazaroff. Intake Fraction. (Peer reviewed.) In *Exposure Analysis*, WR Ott, A Steinemann, L Wallace (eds). 2007; CRC Press: Boca Raton, FL.

## Reports and other publications

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- CW Tessum, JD Marshall. Air quality and health impacts of potential nuclear electricity generator closures in Pennsylvania and Ohio. Report to the Nuclear Energy Institute. April 2019.
- MM Kelp, CW Tessum, JD Marshall. Orders-of-magnitude speedup in atmospheric chemistry modeling through neural network-based emulation. Published at *arXiv preprint arXiv:1808.03874*. August 2018.
- CW Tessum, JD Marshall, JD Hill. Tank-to-Wheel Emissions of Ethanol and Biodiesel Powered Vehicles as Compared to Petroleum Alternatives. Report to the Center for Transportation Studies, University of Minnesota, Minneapolis, MN. March 2010.
- C Cherry, S Ji, JD Marshall, Y Wu. Emissions and Public Health from Electric Vehicles in China. Report to the Energy Foundation, Beijing, China. September 2009.
- CW Tessum, A Boies, JD Hill, JD Marshall. Assessing the Sustainability of Biofuels: Metrics, Models, and Tools for Evaluating the Impact of Biofuels. In *Expanding Biofuel Production and the Transition to Advanced Biofuels*. National Research Council, 2009: 117-140.
- M Brauer, SB Henderson, JD Marshall. A Land Use Regression Road Map for the Burrard Inlet Area Local Air Quality Study. Report to the Greater Vancouver Regional District (GVRD), Vancouver, BC. December 2006.
- B Haryanto, JD Marshall, D Westerdahl, S Fruin, I Trihandini. Personal Exposure Measurements of PM<sub>2.5</sub> and Carbon Monoxide in Jakarta, Indonesia. Report to US Agency for International Development, and US Asia Environmental Partnership (USAID, USAEP), Jakarta, Indonesia. October 2005.
- JD Marshall, WW Nazaroff. Using Intake Fraction to Guide ARB Policy Choices: the Case of Particulate Matter. Report to the Research Division of the California Air Resources Board (ARB), Sacramento, CA. October 2004.
- MW Toffel, JD Marshall. Assessing Environmental Performance with Chemical Release Inventories. In *Proceedings of the 11th International Conference of the Greening of Industry Network*. October 2003.
- JD Marshall. Exposure to Motor Vehicle Emissions: an Intake Fraction Approach. Report LBL-51854, Lawrence Berkeley Laboratory, Berkeley, CA. December 2002.
- JD Marshall, WW Nazaroff. Health Risk Assessment of Diesel-fired Back-up Generators Operating in California. Report to Environmental Defense, Oakland, CA. August 2002. Presented to the California Air Resources Board, Sacramento, CA, May 2002.

## Invited presentations

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- JD Marshall. "Air pollution and environmental justice", iCOMOS (International Conference on One Medicine One Science), University of Minnesota, April 25, 2016. Minneapolis, MN.

- JD Marshall. "Air pollution and environmental justice", Big Ideas, Better Cities conference, McMaster Institute for Transportation & Logistics, April 20, 2016. Hamilton, Ontario.
- JD Marshall. "Air pollution kills! So what? Air quality engineering to improve public health", Energy and Resources Group, UC Berkeley, February 12, 2014. Berkeley, CA.
- JD Marshall. "Environmental-justice & -equality in the U.S.: Quantifying and addressing regional variability", USC Program for Environmental and Regional Equity, University of Southern California February 8, 2014. Los Angeles, CA.
- JD Marshall. "Air pollution kills! So what? Air quality engineering to improve public health", Keck School of Medicine, University of Southern California, February 7, 2014. Los Angeles, CA.
- JD Marshall. "Air pollution kills! So what? Air quality engineering to improve public health", Center for Research in Environmental Epidemiology, October 5, 2012. Barcelona, Spain.
- JD Marshall. "Urban sustainability: Designing cities for human health and the environment", Geography Department, University of Minnesota, February 10, 2012, Minneapolis, MN.
- CW Tessum, K Wagstrom, JD Hill, JD Marshall. "Air quality and public health impacts of biofuel production and use in the United States", Peking University, August 15, 2011, Beijing, China.
- JD Marshall, "Urban sustainability: Designing cities for human health and the environment", Civil Engineering Department, École Polytechnique Fédérale de Lausanne, June 9, 2011, Lausanne, Switzerland.
- JD Marshall, "Exposure to PM in a low-income country: Real-time measurements in India", Swiss Tropical & Public Health Institute, June 7, 2011, Basel, Switzerland.
- JD Marshall, "Satellite-based land-use regression", Institute for Risk Assessment Sciences, Utrecht University, February 11, 2011, Utrecht, The Netherlands.
- JD Marshall, "Mobility-based exposure assessment", VITO, the Flemish Institute for Technological Research [Vlaamse Instelling voor Technologisch Onderzoek], February 2, 2011, Mol, Belgium.
- JD Marshall, R Wilson, KL Meyer, SK Rajangam, N McDonald, E Wilson, "Active travel & children: Effects of education policy", Transportation, Air Pollution, and Physical Activities International Workshop (TAPAS), November 9–10, 2009, Barcelona, Spain.
- JD Marshall, S Hankey, M Brauer, LD Frank, "Healthy neighborhood design: Exposure to air pollution and physical inactivity", TAPAS, November 9–10, 2009, Barcelona, Spain.
- CW Tessum, JD Hill, JD Marshall, "Spatially and temporally explicit life-cycle analysis of biofuels", First Annual Fulbright US-Brazil Biofuels Short Course, July 27-August 7, 2009, Sao Paulo, Brazil.
- JD Marshall. "Incorporating environmental justice into air quality management." 2<sup>nd</sup> Colombian Congress on Air Quality & Public Health. Inter-university Group for Research on Air Quality & Health. July 14–17, 2009. Manizales, Colombia.
- JD Marshall. "Urban land-use and transportation-GHG: Minnesota". How Land Use Can Help Minnesota Reach Its Greenhouse Gas Reduction Goals (Workshop held at University of Minnesota). January 5, 2009. Minneapolis, MN.
- JD Marshall. "Urban sustainability engineering". Minnesota Pollution Control Agency, December 4, 2008. St Paul, MN.
- JD Marshall. "Urban sustainability engineering". Center for Urban Environmental Research and Education, University of Maryland Baltimore County. November 7, 2008. Baltimore, MD.
- JD Marshall. "Urban sustainability engineering". Liu Institute for Global Issues, University of British Columbia. October 31, 2008. Vancouver, BC.
- JD Marshall. "Urban Health: Walkability and Air Pollution". 7<sup>th</sup> International Conference on Urban Health. October 30, 2008. Vancouver, BC.
- JD Marshall. "Fine particles and haze: Reductions and resulting benefits." Minnesota Air, Water, and Waste Environmental Conference. February 26–28, 2008. Bloomington, MN.
- JD Marshall. "Energy efficient urban form: Carbon implications of reducing urban sprawl in United States." International Workshop on Urban Energy and Carbon Modeling. Global Carbon Project. February 4–6, 2008, Asian Institute of Technology, Pathumthani, Thailand.



- JD Marshall. "Intake fraction: a new tool for air quality management." 20<sup>th</sup> Annual Research Symposium, UC Toxic Substances Research & Teaching Program. April 20–21, 2007. Santa Cruz, CA.
- JD Marshall. "Incorporating exposures into air quality management." 1<sup>st</sup> Colombian Congress on Air Quality & Public Health. Inter-university Group for Research on Air Quality & Health. March 14–16, 2007. Manizales, Colombia.
- JD Marshall. "Intake fraction: a new tool for air quality management." 4<sup>th</sup> Annual Workshop on Air Pollution & Public Health. British Columbia Lung Association. March 7, 2007. Vancouver, BC.
- JD Marshall. "Mobility-based estimates of inhalation of vehicle emissions." Symposium on Current Advances in Exposure and Health Effect Assessment of Traffic Exhaust. International Society of Exposure Analysis and International Society for Environmental Epidemiology (ISEA/ISEE) Joint Annual Meeting. September 2–6, 2006. Paris, France. Abstract published in *Epidemiology*, 17(6): S53. November 2006.
- JD Marshall. "Applying New Exposure Tools to ARB Efforts: Mobility-Based Exposure Modeling and Intake Fraction." California Air Resources Board's Chairman's Air Pollution Seminar Series. January 30, 2006. Sacramento, CA.
- JD Marshall. Panel discussion on effective library research techniques for graduate students. Spring 2004. California Clearinghouse on Library Instruction. May 17, 2004. Fremont, CA.
- JD Marshall. "Making Choices in Local Air Quality Management: Emissions vs. Exposures." Workshop by the Institute for Global Environmental Strategies: "Policy Integration towards Sustainable Energy Use for Asian Cities: Integrating Local Air Pollution and Greenhouse Gas Emissions Concerns." January 28–30, 2004. Hayama, Japan.
- JD Marshall. "Making Sense of Sustainability" United Nations University. January 27, 2004. Tokyo, Japan.
- WW Nazaroff, GA Heath, AS Hoats, JD Marshall. "Environmental Health Implications of Electricity Generation Choices: Pollutants of Concern and Exposure Issues." California Air Resources Board Haagen-Smit Symposium. April 9–12, 2002. Lake Arrowhead, CA.

## Conference presentations

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- O Ranzani, C Mila, M Sanchez, B Kulkarni, K Balakrishnan, S Sambandam, J Sunyer, JD Marshall, S Kinra, C Tonne. "Personal exposure to particulate air pollution and cardiovascular markers in periurban South India", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- A Curto, O Ranzani, C Mila, M Sanchez, JD Marshall, B Kulkarni, S Bhogadi, S Kinra, G Wellenius, C Tonne. "Particulate air pollution and blood glucose levels and diabetic status in peri-urban India", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- Y Wang, MJ Bechle, H Xu, X Chen, H Cui, Y Wang, Y Zhao, JD Marshall. "National disparities of air pollution exposure level by socioeconomic status in China", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- J Liu, L Clark, MJ Bechle, SY Kim, JD Marshall. "National Patterns in Exposure to Criteria Air Pollutants in the United States by Race/Ethnicity and Income, 1990-2010", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- MJ Bechle, JD Marshall. "Outdoor NO<sub>2</sub> Exposure Disparities at Public Schools in the Contiguous United States", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- L Clark, S Vakacherla, M Baum, S Yang, JD Marshall. "A Low-Cost Passive Monitor for Black Carbon Air Pollution: Initial Testing", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- M Kushwaha, A Upadhyaya, E Savio, V Sreekanth, J Asundi, J Apte, JD Marshall. "Mobile-monitoring of Black Carbon and PM<sub>2.5</sub> Air Pollution - Data only approach from Bangalore, India", International

- Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- MJ Bechle, JD Marshall. “Inter-comparison of Publicly-available National-scale Integrated Empirical Geographic Regression Models for Outdoor Air Pollution in the Contiguous United States”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 25-28, 2019, Utrecht, The Netherlands.
- C Tonne, M Sanchez, C Mila, V Srekanth, S Sambandam, K Balakrishnan, JD Marshall. “Particle Exposure Assessment in Peri-Urban India: Lessons Learned from the CHAI Project”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- D Paoletta, CW Tessum, JD Hill, JD Marshall. “Source-Specific Contributions to Fine Particulate Matter Exposure Disparities in the United States”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- HT Wicks, J Bennett, MJ Bechle, RM Parks, CA Pope, JD Marshall, R Burnett, M Ezzati. “A National Study of the Mortality Effects of PM<sub>2.5</sub> on All-Cause and Cause-Specific Mortality in the Contiguous U.S.”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- SY Kim, MJ Bechle, S Hankey, L Sheppard, A Szpiro, JD Marshall. “A Parsimonious Approach to National Prediction: Criteria Pollutants in the Contiguous U.S., 1979 - 2015”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- M Wang, PD Sampson, MJ Bechle, JD Marshall, S Vedal, JD Kaufman. “National PM<sub>2.5</sub> and NO<sub>2</sub> Spatiotemporal Models Integrating Intensive Monitoring Data and Satellite-Derived Land Use Regression in a Universal Kriging Framework in the United States: 1999-2016”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- H Xu, MJ Bechle, M Wang, A Szpiro, S Vedal, JD Marshall. “National PM<sub>2.5</sub> and NO<sub>2</sub> Exposure Models for China Based on Land Use Regression, Satellite Measurements, and Universal Kriging”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- K Messier, S Chambliss, A Roy, JD Marshall, M Brauer, A Szpiro, C Portier, J Kerckhoffs, R Vermeulen, JS Apte. “Mapping Air Pollution with Google Street View Cars: Towards Efficient Mobile Monitoring”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- JS Apte, K Messier, S Chambliss, M Brauer, S Gani, S Hamburg, TW Kirchstetter, JD Marshall, B LaFranchi, M Lunden, C Portier, KT Bettman, R Vermeulen, R Alvarez. “Understanding Traffic-Related Air Pollution Exposures through Mobile Monitoring”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- O Ranzani, C Mila, M Sanchez, JD Marshall, S Kinra, C Tonne. “Air Pollution and Subclinical Atherosclerosis in a Peri-Urban Area in South India (CHAI-Project)”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- AC Tirado, GA Wellenius, C Mila, M Sanchez, O Ranzani, JD Marshall, B Kulkarni, S Bhogadi, S Kinra, C Tonne. “Residential Ambient Particulate Air Pollution and Blood Pressure in Peri-Urban India”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- JD Marshall, M Baum, P Baylon, LP Clark, T Gould, T Larson, S Vakacherla, S Yang. “A One-Dollar Passive Sensor for Black Carbon Monitoring: Capturing the Blackening”, International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26-30, 2018, Ottawa, Canada.
- JS Apte, K Messier, S Chambliss, M Brauer, J Caubel, S Gani, S Hamburg, TW Kirchstetter, JD Marshall, B LaFranchi, MM Lunden, CV Preble, AA Presto, C Portier, A Robinson, ES Robinson, R Shah, K Tuxen-Bettman, R Vermeulen, R Alvarez. “Early Lessons from New Air Pollution Exposure Science: High-resolution Mapping of Urban Air Quality using Google Street View Cars, Low-cost Samplers,

- and Aerosol Mass Spectrometry”, American Association for Aerosol Research (AAAR) International, September 2-7, 2018. St. Louis, MO.
- MM Islam, R Wathore, G Jain, K Sethuraman, H Zerriffi, JD Marshall, R Bailis, AP Grieshop. “Emission Factors and Optical Properties of Health and Climate Relevant Pollutants Measured in a Multi-year Cookstove Intervention Study in Rural India”, American Association for Aerosol Research (AAAR) International, September 2-7, 2018. St. Louis, MO.
- MM Islam, R Wathore, G Jain, K Sethuraman, H Zerriffi, JD Marshall, R Bailis, AP Grieshop. “Linking PM 2.5 Indoor Air Quality and Emission Factors Measured during a Cookstove Intervention Trial in Rural India”, American Association for Aerosol Research (AAAR) International, September 2-7, 2018. St. Louis, MO.
- JS Apte, K Messier, S Chambliss, M Brauer, J Caubel, S Gani, S Hamburg, TW Kirchstetter, JD Marshall, B LaFranchi, MM Lunden, CV Preble, AA Presto, C Portier, A Robinson, ES Robinson, R Shah, K Tuxen-Bettman, R Vermeulen, R Alvarez. “Early lessons from new air pollution exposure science: High-resolution mapping of urban air quality using Google Street View cars, low-cost samplers, and aerosol mass spectrometry”, American Association for Aerosol Research (AAAR) International, September 2-7, 2018. St. Louis, MO.
- JS Apte, JD Marshall. "Addressing Global Mortality from PM<sub>2.5</sub>", Art Rosenfeld Symposium, December 1, 2017. Berkeley, CA.
- TW Aung, AP Grieshop, MM Kelp, JD Marshall. "Emission and Concentration Linkages from a Cookstove Intervention Trial in India", International Society of Exposure Science (ISES) Annual Meeting, October 15-19, 2017. Research Triangle Park, NC.
- M Sanchez, A Ambros, M Salmon, C Mila, V Sreekanth, JD Marshall, C Tonne. "Development of land use regression model for fine particles in peri-urban South India", International Society for Environmental Epidemiology (ISEE) Annual Meeting, September 24-28, 2017. Sydney, Australia.
- JD Marshall, LP Clark, MJ Bechle, N Nguyen, K Swor, CW Tessum, JD Hill, DB Millet. "Environmental justice aspects of transportation-related air pollution in the United States: evidence from national-scale longitudinal analyses, case studies, and life cycle assessment", Health Effects Institute Annual Conference, May 1–3, 2016. Denver, CO.
- LP Clark, MJ Bechle, JD Marshall. "National Patterns in Environmental Injustice Over Time: Outdoor NO<sub>2</sub> Air Pollution in United States Urban Areas, 2000-2010", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 30 - September 3, 2015. São Paulo, Brazil.
- S Hankey, G Lindsey, JD Marshall. "Active Travel and Exposure to Air Pollution: Implications for Planning Healthy Cities", ISEE Annual Meeting, August 30 - September 3, 2015. São Paulo, Brazil.
- S Hankey, JD Marshall. "Exposure to On-Road Particulate Air Pollution (PM<sub>2.5</sub>, Black Carbon, Particle Number, Particle Size) While Cycling", ISEE Annual Meeting, August 30 - September 3, 2015. São Paulo, Brazil.
- S Hankey, JD Marshall. "Land Use Regression Models of Particulate Air Pollution (PM<sub>2.5</sub>, Black Carbon, Particle Number, Particle Size) Using Mobile Monitoring", ISEE Annual Meeting, August 30 - September 3, 2015. São Paulo, Brazil.
- N Nguyen, JD Marshall. "Addressing Environmental Justice: Importance of Spatially-Targeted Emission-Reductions", ISEE Annual Meeting, August 30 - September 3, 2015. São Paulo, Brazil.
- MJ Bechle, JD Marshall. "Use of LUR Models to Cover a Large Spatial Scale: Integration with Satellite Data", International Society of Exposure Science Annual Meeting, October 12–16, 2014. Cincinnati, Ohio.
- S Hankey, JD Marshall, G Lindsey. "Modeling Spatial Patterns of Bicycle and Pedestrian Traffic to Estimate Exposure to Hazards", International Society for Environmental Epidemiology (ISEE) Annual Meeting. August 24–28. Seattle, Washington.
- S Hankey, K Sullivan, A Kinnick, A Koskey, K Grande, J Davidson, JD Marshall. "Using Objective Measures of Stove Use and Indoor Air Quality to Evaluate a Cookstove Intervention in Rural Uganda", ISEE Annual Meeting. August 24–28. Seattle, Washington.

- MT Young, MJ Bechle, PD Sampson, JD Marshall, LA Sheppard, JD Kaufman. "A National Prediction Model Based on Universal Kriging and Land-Use Regression Using Satellite-Based NO<sub>2</sub> Measurements for Epidemiological Analysis of Long-Term Health Effects", ISEE Annual Meeting. August 24–28. Seattle, Washington.
- T Aung, JD Marshall, J Baumgartner, B Alexander, G Ramachandran, A Grieshop, C Reynolds, M Brauer, S Narayanswami, T Pradeep, G Jain, K Sethuraman. "Air Quality and Health Evaluation of a Climate-Financed Cookstove Intervention. Institute for Resources", Environment and Sustainability (IRES) Seminar (University of British Columbia), January 7, 2014. Vancouver, Canada.
- T Aung, JD Marshall, J Baumgartner, B Alexander, G Ramachandran, A Grieshop, C Reynolds, M Brauer, S Narayanswami, T Pradeep, G Jain, K Sethuraman. "Air Pollution and Blood Pressure Outcomes from a Cookstove Intervention", Occupational and Environmental Health (OEH) Seminar (University of British Columbia), October 25, 2013. Vancouver, Canada.
- JS Apte, JD Marshall. "Addressing Global Mortality from PM<sub>2.5</sub>", American Association for Aerosol Research Annual Meeting, October 20-24, 2013. Orlando, FL.
- JS Apte, JD Marshall, WW Nazaroff. "Inhalation Intake of Urban Emissions of Semivolatile Organic Compounds from Vehicles", American Association for Aerosol Research Annual Meeting, September 30–October 4, 2013. Portland, OR.
- JS Apte, JD Marshall. "Addressing Global Mortality from PM<sub>2.5</sub>", International Society for Environmental Epidemiology Annual Meeting, August 25-28, 2013. Seattle, WA.
- JS Apte, AL Goodkind, JS Coggins, JD Marshall. "Blue Skies Bluer? Puzzling Implications of a Possible Supra-Linear Relationship Between PM Exposure and Mortality", International Society of Exposure Science, International Society for Environmental Epidemiology, and International Society of Indoor Air Quality and Climate (ISES/ISEE/ISIAQ) Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- T Aung, JD Marshall, T Pradeep, S Narayanswami, G Jain, K Sethuraman, A Grieshop, J Baumgartner, C Reynolds, M Brauer. "Air Quality and Health Evaluation of a Climate Financed Cookstove Intervention in Rural India", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- MJ Bechle, DB Millet, JD Marshall. "Monthly National Satellite-Based Land-Use Regression of NO<sub>2</sub> in the United States for 2000-2010", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- MJ Bechle, DB Millet, JD Marshall. "Remote Sensing of Exposure to NO<sub>2</sub>: Satellite Versus Ground Based Measurement in a Large Urban Area", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- LP Clark, DB Millet, MJ Bechle, JD Marshall. "Environmental Injustice and Inequality: NO<sub>2</sub> Air Pollution in the United States", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- S Hankey, M Brauer, G Lindsey, JD Marshall. "Neighborhood Walkability and Air Pollution Exposure", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- S Hankey, G Lindsey, JD Marshall. "Comparing Spatial Patterns of Non-Motorized Traffic and Particulate Air Pollution in Minneapolis, MN", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- S Hankey, G Lindsey, JD Marshall. "Measuring and Modeling Particulate Air Pollution Using a Mobile, Bicycle-Based Platform", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- JD Marshall, K Swor, N Nguyen. "Measuring and Improving Environmental Equality and Justice: Diesel Particles in California's South Coast", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- CW Tessum, JD Hill, JD Marshall. "Air Pollution, Health, and Environmental Justice Implications of Shifting Transportation Fuels", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.

- D Vienneau, K de Hoogh, MJ Bechle, R Beelen, RV Martin, A van Donkelaar, EV Novotny, DB Millet, G Hoek, JD Marshall. "High Resolution NO<sub>2</sub> and PM<sub>10</sub> Models for Europe Using Satellite-Derived Measurements", ISES/ISEE/ISIAQ Joint Annual Meeting, August 19–23, 2013. Basel, Switzerland.
- T Aung, G Jain, K Sethuraman, A Greishop, T Pradeep, S Narayanswami, JD Marshall, M Brauer. "Air Quality and Health Evaluation of a Climate Financed Cookstove Intervention in Rural India", Institute for Heart + Lung Health FEST, February 19–23, 2013. Vancouver, Canada.
- T Aung, G Jain, K Sethuraman, A Greishop, T Pradeep, S Narayanswami, JD Marshall, M Brauer. "Evaluating Climate Financed Cookstove Intervention in Rural Karnataka, India", Symposium on Atmospheric PM Research in British Columbia, December 10, 2012. Vancouver, Canada.
- JS Apte, JD Marshall, WW Nazaroff. "Intraurban Intake Fraction of Vehicle Emissions: Asian Cities in Global Context." Better Air Quality 2012 Meeting, December 5-7, 2012. Hong Kong, China.
- G Jain, K Sethuram, T Aung, MJ Bechle, A Grieshop, J Baumgartner, T Pradeep, M Narayanswamy, C Reynolds, M Brauer, JD Marshall. "Stove Emissions and Indoor and Outdoor Pollution Levels from a Randomized Cook-stove Exchange in Karnataka, India", International Society of Exposure Science (ISES) Annual Meeting, October 28–November 1, 2012. Seattle, WA.
- T Aung, JD Marshall, J Baumgartner, B Alexander, G Ramachandran, A Grieshop, C Reynolds, M Brauer, S Narayanswami, T Pradeep, G Jain, K Sethuraman. "Emissions, Health, and Livelihood Impacts of a Randomized Cookstove Exchange in Karnataka, India", International Society for Environmental Epidemiology (ISEE) Annual Meeting, August 26–30, 2012. Columbia, SC.
- JD Marshall. "Experiential Education: Designing Solutions to Global Grand Challenges", American Association for the Advancement of Science (AAAS) Annual Meeting, February 16–20, 2012. Vancouver, Canada.
- JD Marshall. "Verifying Health and Emission Improvements from a Stove Change-Out", AAAS Annual Meeting, February 16–20, 2012. Vancouver, Canada.
- JD Marshall, LP Clark, DB Millet, MJ Bechle. "Environmental Justice and Equality in NO<sub>2</sub> Air Pollution in the United States", AAAS Annual Meeting, February 16–20, 2012. Vancouver, Canada.
- K Wagstrom, CW Tessum, JD Hill, JD Marshall. "Air Pollution Impacts of Conventional and Alternative Transportation Fuels", AAAS Annual Meeting, February 16–20, 2012. Vancouver, Canada.
- CW Tessum, K Wagstrom, JD Hill, JD Marshall. "Air Quality and Public Health Impacts of Biofuel Production and Use in the United States", Initiative for Renewable Energy and the Environment E3 Conference. November 7, 2011. St Paul, MN.
- CW Tessum, K Wagstrom, JD Hill, JD Marshall. "Air Quality and Public Health Impacts of Biofuel Production and Use in the United States", Student Sustainability Symposium. October 26, 2011. St Paul, MN.
- K Wagstrom, CW Tessum, JD Hill, JD Marshall. "Air Quality Impacts of Achieving U.S. Renewable Fuels Mandates", American Institute of Chemical Engineers Annual Meeting. October 16–21, 2011. Minneapolis, MN.
- JS Apte, JD Marshall, WW Nazaroff. "Inhalation Intake Fraction for Vehicle-Attributable Organic PM<sub>2.5</sub>", American Association for Aerosol Research Annual Meeting. October 8–12, 2011. Minneapolis, MN.
- JS Apte, E Bombrun, JD Marshall, WW Nazaroff. "Intake Fraction of Nonreactive Ground-Level Pollutant Emissions in 3,646 Global Urban Areas", American Association for Aerosol Research (AAAR) Annual Meeting. October 3–7, 2011. Orlando, FL.
- K Wagstrom, CW Tessum, JD Hill, JD Marshall. "Air Quality Impacts of Achieving U.S. Renewable Fuel Mandates", AAAR Annual Meeting. October 3–7, 2011. Orlando, FL.
- CW Tessum, K Wagstrom, JD Hill, JD Marshall. "Air Quality and Public Health Impacts of Biofuel Production and Use in the United States", American Center for Life Cycle Analysis. October 3–6, 2011, Chicago, IL. Won "Third Place Student Poster" award.
- K Lundquist, JD Marshall. "Air Quality Modeling and Exposure Analysis for Environmental Justice Opportunities", Promoting Healthy Communities: Developing and Exploring Linkages Between Public Health Indicators, Exposure and Hazard Data. September 26–27, 2011. Washington, DC.

- K Lundquist, JD Marshall. "Effect of Emission Reductions by Source or Location", Promoting Healthy Communities: Developing and Exploring Linkages Between Public Health Indicators, Exposure and Hazard Data. September 26–27, 2011. Washington, DC.
- JS Apte, JD Marshall, W, Nazaroff. "Transient Exposure to Vehicle Exhaust Plumes Inside New Delhi Auto-rickshaws", International Society for Environmental Epidemiology (ISEE) Annual Meeting. September 13–16, 2011. Barcelona, Spain.
- S Hankey, JD Marshall, M Brauer. "Health Impacts of the Built Environment: Physical Inactivity, Exposure to Air Pollution, and Ischemic Heart Disease", ISEE Annual Meeting. September 13–16, 2011. Barcelona, Spain.
- D Martinez, A De Nazelle, S Fruin, D Westerdahl, JD Marshall, J Matamala, N Kubesch, A Ripoll, M Nieuwenhuysen. "Relation Between Commuter and Exposure to Pollution Related to Traffic in Barcelona", ISEE Annual Meeting. September 13–16, 2011. Barcelona, Spain.
- CW Tessum, K Wagstrom, JD Hill, JD Marshall. "Air quality and public health impacts of biofuel production and use in the United States", ISEE Annual Meeting, September 13-16, 2011. Barcelona, Spain.
- D Vienneau, K de Hoogh, G Hoek, MJ Bechle, EV Novotny, DB Millet, JD Marshall. "European NO<sub>2</sub> Land Use Regression Incorporating Satellite- and Ground-based Measurements", ISEE Annual Meeting. September 13–16, 2011. Barcelona, Spain.
- K Wagstrom, CW Tessum, JD Hill, JD Marshall. "Air Pollution Impacts of Conventional and Alternative Transportation Fuels". 22<sup>nd</sup> Annual CTS Transportation Research Conference. May 24–25, 2011. Portland, OR.
- LP Clark, DB Millet, JD Marshall. "Air pollution and urban form in US urban areas", University of Minnesota Center for Transportation Studies Research Conference. May 24, 2011. St. Paul, MN.
- CW Tessum, K Wagstrom, JD Hill, JD Marshall. "Air Quality Implications of Alternative Fuels: A spatially, Temporally Explicit Life Cycle Modeling Approach", Minnesota Supercomputing Institute Research Exhibition. April 25, 2011, Minneapolis, MN.
- A de Nazelle, E Seto, D Donaire, M Mendez, D Rodriguez, L Maurer, J Matamala, M Portella, JD Marshall, M Nieuwenhuisen, M Jerret. "Ubiquitous Sensing Technology: A Tool to Understand and Promote Bicycling Behavior". X Fòrum TIG SIG. March 15–16, 2011. Barcelona, Spain.
- NL Boeke, JD Marshall, S Alvarez, K Chance, A Fried, T Kurosu, B Rappenglück, D Richter, J Walega, P Weibring, DB Millet. "Formaldehyde Columns from the Ozone Monitoring Instrument: Urban vs. Background Levels and Evaluation Using Aircraft Data and a Global Model". American Geophysical Union Fall Meeting. December 13–17, 2010. San Francisco, CA.
- CW Tessum, K Wagstrom, JD Hill, JD Marshall. "Air Quality Implications of Alternative Fuels: A Spatially, Temporally Explicit Life Cycle Modeling Approach". Initiative for Renewable Energy and the Environment E3 Conference. November 30, 2010. Saint Paul, MN.
- JS Apte, TW Kirchstetter, JD Marshall, WW Nazaroff. "An Instrumentation Package for Measuring Commuter Exposure to Vehicle Exhaust Pollutants in New Delhi, India". AWMA Symposium on Air Quality Measurement Methods and Technology. November 2–4, 2010. Los Angeles, CA.
- K Wagstrom, CW Tessum, JD Hill, JD Marshall. "Air Pollution Impacts of Conventional and Alternative Fuels". American Association for Aerosol Research Annual Meeting. October 25–29, 2010. Portland, OR.
- NL Boeke, S Alvarez, K Chance, A Fried, T Kurosu, B Rappenglück, D Richter, P Weibring, J Walega, JD Marshall, DB Millet. "Formaldehyde Columns From the Ozone Monitoring Instrument: Urban vs. Background Levels and Evaluation Using Aircraft Data and a Global Model". NASA Aura Science Team Meeting. September 27–29, 2010. Boulder, CO.
- JD Marshall. "Exposure Assessment for Improved Air Quality Management". International Society of Exposure Science and International Society for Environmental Epidemiology (ISES/ISEE) Joint Annual Meeting. August 28–September 1, 2010. Seoul, Korea.
- JD Marshall. "Is Epidemiology Important for Environmental Sustainability?" ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.

- JD Marshall, P Hystad, EV Novotny, M Brauer. "Challenges and Next Steps for LUR Models". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- S Aggarwall, R Jain, JD Marshall. "Real Time, Size-resolved Prediction of Ultrafine and Accumulation-mode Particle Concentrations on Freeways". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- JS Apte, E Bombrun, WW Nazaroff, JD Marshall. "Intake Fractions for Vehicle Emissions in 88 Worldwide Urban Areas". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- JS Apte, TW Kirchstetter, JD Marshall, WW Nazaroff. "Commuter Exposure to Vehicle Exhaust Plumes in New Delhi, India". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- NL Boeke, B Rappenglück, A Fried, JD Marshall, DB Millet. "Satellite-derived NO<sub>2</sub> and HCHO: Comparison to in Situ Measurement and Application to Air Quality Management". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- S Hankey, JD Marshall, M Brauer, LD Frank. "Within-city Variation in Exposures to Air Pollution and Physical Inactivity". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- KR Lundquist, JD Marshall. "Intake and Exposure Effects of Reducing Diesel PM in the South Coast". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- EV Novotny, MJ Bechle, DB Millet, JD Marshall. "National Satellite-based Land Use Regression: NO<sub>2</sub> in the United States". ISES/ISEE. August 28–September 1, 2010. Seoul, Korea.
- NL Boeke, A Fried, P Weibring, J Walega, D Richter, B Rappenglück, S Alvarez, T Kurosu, K Chance, JD Marshall, DB Millet. "Investigating Ozone Chemistry with Measurements of HCHO and NO<sub>2</sub> from the Ozone Monitoring Instrument and GEOS-Chem". International Commission on Atmospheric Chemistry and Global Pollution and International Global Atmospheric Chemistry (CACGP/IGAC). July 11–16, 2010. Halifax, Canada. Won a "Best Student Poster" award at this international conference.
- K Wagstrom, CW Tessum, JD Hill, JD Marshall. "Air Pollution Impacts of Conventional and Alternative Fuels". Initiative for Renewable Energy and the Environment E3 Conference. November 17, 2009. Saint Paul, MN.
- KR Lundquist, JD Marshall. "Exposure to Diesel Particulate Matter in the South Coast". International Society of Exposure Science (ISES) Annual Meeting. November 1–5, 2009. Minneapolis, MN.
- A Both, B Joseph, JD Marshall. "PM<sub>2.5</sub> in Low- and Middle-income Neighborhoods in Bangalore, India". ISES. November 1–5, 2009. Minneapolis, MN.
- MJ Bechle, LC Ohman, KR Lundquist, DB Millet, JD Marshall. "Within-urban Variability in Outdoor NO<sub>2</sub> Concentrations: Satellite versus Ground-based Estimates". ISES. November 1–5, 2009. Minneapolis, MN.
- S Hankey, JD Marshall. "Impacts of Urban Form on Passenger-vehicle CO<sub>2</sub> Emissions". Transportation, Planning, Land Use and Air Quality (TPLUAQ) Conference 2009. July 28–29, 2009. Denver, CO.
- JD Marshall, E Setton, M Brauer. "Enhancing Spatiotemporal Aspects of Air Pollution Epidemiological Studies". International Society of Exposure Analysis and International Society for Environmental Epidemiology (ISEA/ISEE) Joint Annual Meeting. October 12–16, 2008. Pasadena, CA.
- KL Lundquist, JD Marshall. "Strategies for Improving Exposure and Exposure Distributions: Air Pollution and Environmental Justice in the South Coast". ISEA/ISEE. October 12–16, 2008. Pasadena, CA.
- S Humbert, S Shaked, Y Nishioka, P Preiss, JD Marshall, *et al.* "Development of Consensus Characterization Factors for Primary and Secondary Particulate Matter". Society of Environmental Toxicology and Chemistry (SETAC) North America Annual Meeting. November 11–15, 2007. Milwaukee, WI. And, SETAC Europe Annual Meeting, May 25–29, 2008. Warsaw, Poland.
- M Brauer, C Lencar, L Tamburic, JD Marshall, *et al.* "The Impact of Woodsmoke, Point Sources and Traffic-related Air Pollution on Intrauterine Growth Retardation (IUGR)". ISEE Annual Meeting. September 5–9, 2007. Mexico City, Mexico.
- JD Marshall. "Environmental Equality and Environmental Justice: Exposure to Air Pollution in California's South Coast". ISEE. September 5–9, 2007. Mexico City, Mexico.
- JD Marshall, E Nethery, C Lencar, M Brauer. "Accounting for Intra-urban Variability in Outdoor Air Concentrations: Estimating Exposures Using Monitoring Station Data and Land-Use Regression

- Models". ISEA/ISEE. September 2–6, 2006. Paris, France. Abstract published in *Epidemiology*, 17(6): S473–474. November 2006.
- JD Marshall. "U.S. Urban-scale Intake Fraction of Motor Vehicle Emissions: Trends During 1950 – 2000". ISEA/ISEE. September 2–6, 2006. Paris, France. Abstract published in *Epidemiology*, 17(6): S31. November 2006.
- D Westerdahl, S Fruin, JD Marshall, PL Fine, *et al.* "Fine and Ultrafine Particles in Jakarta, Indonesia." Asian Aerosol Conference. December 13–16, 2005. Mumbai, India.
- D Westerdahl, JD Marshall, S Fruin, B Haryanto. "Assessing Micro-environmental and Personal Exposures to Carbon Monoxide and Fine and Ultrafine Particles in Jakarta, Indonesia." Asian Aerosol Conference. December 13–16, 2005. Mumbai, India.
- JD Marshall, PW Granvold, AS Hoats, TE McKone, *et al.* "Mobility, Demographics, and Air Pollutant Exposure." Coordinating Research Council Mobile Source Air Toxics Workshop. December 1–2, 2004. Scottsdale, AZ.
- JD Marshall, PW Granvold, AS Hoats, TE McKone, *et al.* "Mobility, Demographics, and Air Pollutant Exposure." ISEA. October 18–21, 2004. Philadelphia, PA.
- JD Marshall. "'Smart Growth,' Infill Development, and Health." U.C. Toxic Substances Research & Teaching Program Annual Conference. April 23–24, 2004. San Diego, CA.
- MW Toffel, JD Marshall. "Assessing Environmental Performance with Chemical Release Inventories." International Conference of the Greening of Industry Network. October 12–15, 2003. San Francisco, CA.
- JD Marshall, TE McKone, EA Deakin, WW Nazaroff. "The Relationship between Land Use Patterns and Human Exposure to Motor Vehicle Emissions." ISEA. September 21–25, 2003. Stressa, Italy.
- MC DeSimone, TE McKone, JD Marshall. "How Source Location, Population Distribution, and Pollutant Travel Distance Affect Exposure Estimates for Pollution Prevention." August 11–15, 2002. Vancouver, Canada. ISEA/ISEE. Abstract published in *Epidemiology*, 13(4): 204. July 2002.
- JD Marshall, WJ Riley, TE McKone, WW Nazaroff. "Population, Proximity, and Persistence: Incorporating Exposure into Life-cycle Assessment." (LBNL-53038 Abs.). August 11–15, 2002. Vancouver, Canada. ISEA/ISEE. Abstract published in *Epidemiology*, 13(4): 205. July 2002.
- MC DeSimone, TE McKone, JD Marshall. "Health Impact Calculations for Life-cycle Impact Assessment Based on Source Location, Population Distribution, and Characteristic Travel Distance." SETAC Europe Annual Meeting. May 12–16, 2002. Vienna, Austria.
- JD Marshall, T Kyosai, C Poomontree, M Kane, *et al.* "The 10 or 20 Million Dollar Question: Can Airlines Recycle Their Aluminum Beverage Cans?" International Society for Industrial Ecology. November 12–14, 2001. Leiden, the Netherlands.
- JD Marshall, WJ Riley, TE McKone, WW Nazaroff. "Exposure to Motor Vehicle Emissions: a Dose Fraction Approach." ISEA. November 4–8, 2001. Charleston, SC.
- SR Hayes, JD Marshall, "Designing Optimal Strategies to Attain the New US Particulate Matter Standards: Some Initial Concepts." Air & Waste Management Association International Specialty Conference on PM<sub>2.5</sub>. January 28–30, 1998. Long Beach, CA.
- JD Marshall, BW Shimada, PR Jaffe, "Effect of Temporal Variability in Infiltration on Contaminant Transport in the Unsaturated Zone." Spring meeting of the American Geophysical Union. May 20–24, 1996. Baltimore, MD.

## Teaching: classes taught

### University of Minnesota, Minneapolis, MN.

CSE1905: Design for Grand Challenge Innovation (1 credit, undergrad), Fa2013, Fa2014.

CE3501: Intro to Environmental Engineering (3 credits, undergrad), Fa2007, Sp2008, Sp2012, Sp2013.

CE5561: Air Quality Engineering (3 credits, grad), Fa2008, Fa2009, Sp2012, Sp2013.



CE4011/5570: Design for Sustainable Development: Discovery India, Study Abroad in India (3 credits, grad + undergrad, 3 weeks), January 2013, May 2014, scheduled: May 2015.

CE5571: Design for Sustainable Development: Innovate (4 credits, grad + undergrad), Sp2010, Fa2011, Fa2013, Fa2014.

CE8490: Technologies for Sustainable Societies (2 credits, grad), Sp2007, Fa2007.

**University of California, Berkeley, CA.** Teaching Assistant, 2004–2005. Civil & Environmental Engineering Department.

**Temasek Polytechnic, Singapore.** Lecturer, 1998–1999. Chemical Technologies Department.

### **Teaching: curriculum development and collaborative efforts**

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- Developed and taught new graduate course in air quality engineering (CE5561).
- In 2013, I “flipped” the CE5561 course: lectures were online, class-time was used for discussion and problem solving.
- Developed and taught graduate- and freshman-level course in innovation for environmental solutions (CSE1905, CE5571). These classes are taught collaboratively with the business school (Carlson School of Management).
- Contributed to the Acara Summer Institute, a class (2 weeks, full-time) in Bangalore, India, to help students launch a social venture to solve an environmental or health problem in India.
- Co-developed and taught a grad/undergrad learning abroad class on civil engineering in developing countries. This 3-week class (CE 4011/5011) was co-taught in Delhi, India, in January 2013 with instructors from Minnesota and India. In May 2014, I co-taught this class in Bangalore, India.
- At Temasek Polytechnic (1998–1999), developed and taught an introductory math class for students majoring in Chemical Technologies.

### **Advising and mentoring**

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#### ***Undergraduate Student Activities***

Undergraduate research projects (UROPs, directed research, or lab participation) [7]

- Matthew Bechle (CE, UMN)
- Sean DeBruzzi (CE, UMN)
- Adam Heinzen (Mechanical Eng., UMN)
- Aditya Kumar (Civil Eng., India Institute of Technology – Kanpur)
- Laura Ohman (CE, UMN)
- Diego Ponce de Leon Barido (CE, UMN)
- Bernardo Villalba Cahue (CE, UMN)

Undergraduate theses or honors projects directed [1]

- Diego Ponce de Leon Barido (CE, UMN). Honors project: “CO<sub>2</sub> and Growth Patterns: Will Cities Lead the Way?”, May 2009. 111 pp. (Research later published in *Environmental Science & Technology*.)

#### ***Graduate Student Activities***

Master’s student advisees: past [9]

Research-based Masters [6]:

- Ryan Wilson, “Effect of Education Policy and Urban Form on Elementary-age School Travel,” 2008.

- Katie Lundquist, “Air Quality Engineering to Reduce Environmental Injustice: Diesel PM<sub>2.5</sub> in Southern California,” 2010.
- Adam Both, “PM<sub>2.5</sub> Concentration in Low- and Middle-Income Neighborhoods in Bangalore, India,” 2012.
- Nik Boeke, 2012.
- Nam Nguyen, 2014.
- Srinidhi Murali, 2014.

Masters International (coursework-based) [6]:

- Nathan Warner, 2014
- Eric Svingen, 2014
- Kathleen Thurmes, 2014
- Ethan Lipscomb, 2014
- K Brook Johnson, 2014
- Jamie Strandemo, 2014

Master’s student advisees: current [7]

Masters International (coursework-based) [7]:

- Makenzie Dixon
- Adam Iversen
- Bushra Jawaid
- Matthew Simon
- Malcolm Smith
- Sarah Walsh
- Gareth Westler

Doctoral student advisees: past [3]

- Steve Hankey, “Exposure to Particulate Air Pollution During Active Travel”, 2014. Job after graduation: Assistant Professor, Virginia Tech.
- Chris Tessum, “Life cycle air quality and climate impacts of conventional and alternative light-duty transportation in the United States”, 2014. Job after graduation: Post-doc, U Minnesota.
- Joshua Apte, “Human Exposure to Urban Vehicle Emissions”, 2014. [UC Berkeley]. Job after graduation: post-doc, followed by Assistant Professorship, UT Austin.

Doctoral student advisees: current [4]

- Matthew Bechle
- Lara Clark
- Maninder Thind
- Ther Aung [U British Columbia]

### ***Post-doctoral Student Activities***

Post-doctoral researchers supervised [5]

- Kristina Wagstrom, 7/2009–8/2012. Job after post-doc: Assistant Professor, U Connecticut
- Eric Novotny, 9/2009–11/2010. Job after post-doc: Environmental Engineer, Barr Engineering
- Jill Baumgartner, 9/2010–10/2011. Job after post-doc: Assistant Professor, McGill University
- Conor Reynolds, 1/2011–1/2012. Job after post-doc: Environmental Engineer, MetroVancouver

- Chris Tessum, 1/2015–1/2016. Job after post-doc: Staff research scientist, University of Washington

## **Professional experience**

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**Professor**, Department of Civil and Environmental Engineering, University of Washington (UW). 2/2016–present. John R. Kiely Professorship, 2/2016–present.

**Adjunct Associate Professor**, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota, Minneapolis, MN. 2/2016 – present.

**Associate Professor**, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota, Minneapolis, MN. 5/2013–2/2016. **Assistant Professor**, 1/2007–5/2013.

**Visiting Researcher**, UC Berkeley, CA, 1/2014–5/2014; focus: air pollution impacts of transportation.

**Visiting Researcher**, Centre de Recerca en Epidemiologia Ambiental [CREAL], Barcelona, Spain, 8/2010–5/2011; focus: spatiotemporal variability of air pollution, interactions between air pollution and physical activity.

**Post-doctoral Research Fellow**, University of British Columbia, Vancouver, BC. 2005–2006.

**Independent Contract Researcher**, Berkeley, CA. 2001–2005.

Designed and performed contract research on energy and the environment, including health risk assessments. Clients: California Air Resources Board (Sacramento, California), Environmental Defense Fund (Oakland, California), United Nations University (Tokyo, Japan), and the United States Agency for International Development (Jakarta, Indonesia).

**Graduate Student Researcher**, Lawrence Berkeley National Laboratory, Berkeley, CA. 2001–2005.

**Graduate Student**, University of California, Berkeley, CA. 2000–2005.

**Volunteer**, Ladakh Ecological Development Group, Kashmir, India. 1999.

**Lecturer and International Fellow**, Chemical Technologies Department, Temasek Polytechnic, Singapore. 1998–1999.

**Air Sciences Consultant**. Environ Corporation, Emeryville, CA. 1996–1998.

**Environmental Security Intern**, The Pentagon, Washington, DC. Summer 1995.

## **Professional service**

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University of Minnesota

- **Director, Master's International (1/2010–1/2016)**

Co-founded a new Master's program in my department. Students complete 2–3 semesters of coursework in residence at UMN, then earn experiential credits via (option 1) 27 months service in the Peace Corps while working on water and sanitation projects or, alternatively (option 2) 10 months service in the Acara program. After 2-3 years (~1 year at UMN, plus either ~1 year in Acara or ~2 years in the Peace Corps), students earn an MS with a focus in environmental

engineering or water resources engineering. With Professor Gulliver, I initiated the program, including defining policies governing student activities and writing the agreement between UMN and the Peace Corps. I currently co-oversee day-to-day management of the program and student recruitment and advising. Program size: 3–5 incoming students per year.

- **co-Director, Acara (1/2008–1/2016)**

Acara offers classes in Minnesota, India, and Africa for students to identify an environmental or health problem, propose a sustainable local solution, and launch a for-profit or not-for-profit organization to address the problem. External judges evaluate teams' ideas; Acara and outside groups fund students to test and launch their ideas. I co-founded and co-direct the program with Mr. Fred Rose, including teaching classes in Minnesota and in India, mentoring student teams, and helping winning teams develop their ideas and find funding. We have had several students travel to India to test their ideas or to start new projects in existing organizations. One team has received venture funding (\$100k–\$1million) and is a growing business employing >20 people in Madurai, India; their focus is drip-irrigation and other agricultural technologies for small-plot farmers.

- **Chair (2014-1/2016) and Member (2009–1/2016), Curriculum Committee, Sustainability Studies Minor**

This committee provides oversight and assists with decisions for academic requirements associated with the Sustainability Studies Minor at UMN.

- **Faculty advisor, UMN Chapter of Engineers Without Borders (2007–2013)**

Advised a student group that designs and builds drinking water, wastewater, and sanitation projects in low-income communities overseas. EWB-UMN has multiple active projects overseas (e.g., Guatemala, Honduras, Uganda), with about 100 student members actively participating.

- **Chair, Department of Civil Engineering Scholarship Committee (2008–2012)**

Oversaw a \$100,000 annual budget for undergraduate student scholarships.

- **Member, Sustainability Goals and Outcomes Committee (2008–2010)**

Provided guidance and assistance to UMN Vice President O'Brien regarding how UMN can chart a path towards measuring and reducing its environmental impact.

Other

- Associate Editor, *Development Engineering* (2015–).
- Associate Editor, *Environmental Health Perspectives* (2016–).
- Reviewer for *Atmospheric Environment*, *Aerosol Science and Technology*, *Environmental Science and Technology*, *Environmental Health Perspectives*, *Indoor Air*, *Journal of the American Planning Association*, *Journal of Infrastructure Systems*, *Science of the Total Environment*, and *Journal of Transport and Land Use*
- Member, United Nations Environmental Program advisory group (UNEP/SETAC Life Cycle Initiative - Task Force 4, Particulate Matter sub-group), 2006–2011
- Testified three times to Minnesota State Legislature regarding transportation greenhouse gas emissions.
- Technical (content) advisor for two children's books: *Awesome Air* (ABDO Publishing Group, Edina, MN. 2008) and *Let it Blow! Learn about Air* (The Children's World, Mankato, MN. 2010).
- Organized multiple sessions for International Society for Environmental Epidemiology annual conferences.

## Legal testimony

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- Expert Witness in the Matter of the Further Investigation into Environmental and Socioeconomic Costs Under Minnesota Statute 216B.2422, Subd. 3. PUC Docket No. E-999/CI-14-643. OAH Docket No. 80-2500-31888.

## Pending research support

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(Federal grants are underlined.)

(none.)

## Current research support

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(Federal grants are underlined.)

“Air Pollutants and Cardiovascular Risk: Investigating Thresholds with Pooled Cohorts and Electronic Health Records”, NIH, 2016-2020, **co-Investigator, \$3 million.**

Objective: investigate the shape of the concentration-response function for outdoor air pollution, based on datasets covering millions of residents in the U.S.

“S&CC-IRG Track 1: Connecting the Smart-City Paradigm with a Sustainable Urban Infrastructure Systems Framework to advance Equity in Communities”, NSF, 2017–2020, **co-PI, \$2.8 million.**

Objective: link sensor technologies and data sciences with equity and sustainability planning in specific cities.

“Center for Air, Climate, and Energy Solutions”, US EPA, 2015–2020, co-lead (**dual-PI**), **\$10 million.**

Objective: investigate regional differences, multiple pollutants, and development and dissemination of tools for addressing air quality & climate.

“Experimental interventions to facilitate clean cookstove adoption, promote clean indoor air, and mitigate climate change”, US EPA, 2013–2019, **co-Principal Investigator, \$1.5 million.**

Objective: in situ measurement of emissions from a cookstoves change-out in rural India.

## Previous grants

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(Federal grants are underlined.)

“SRN: Integrated Urban Infrastructure Solution for Sustainable, Healthy and Livable Cities”, NSF, 2014–2018, **co-Investigator, \$12 million.**

Objective: multi-university research network on sustainable cities.

“Cardiovascular health effects of particulate air pollution in Andhra Pradesh, India”, European Research Council, 2014–2018, **collaborator, €1.4 million.**

Objective: quantify the association between exposure to air pollution and biomarkers of cardiovascular disease. Exposure estimates are derived from models and measurements.

“Air pollution, environmental justice, and urban form”, National Science Foundation, 2013–2016, **Principal Investigator, \$310,000.**

Objective is to use panel data (time series data for many cities) to explore empirical evidence of how changes in urban form relate to air pollution and environmental justice. Pollution estimates are from nationwide satellite-based land-use regression models.

“Urbanization and exposure to air pollution (Hyderabad, India)”, Global Programs and Strategies Alliance, University of Minnesota, 2012–2014, **Principal Investigator, \$75,000.**

Objective is to measure air pollution in communities along a rural-to-urban gradient in and around Hyderabad, India to explore the effect of urbanization on air pollution.

“Stove change-out: A ‘win-win-win’ for development, environment, and health?”, Discovery Grant, Institute on the Environment, University of Minnesota, 2011–2013, **Principal Investigator, \$300,000.**

Objective is to measure air pollution and health impacts of a stove change-out in rural India, while exploring opportunities for financially sustainable businesses.

“Air pollution impacts of conventional and alternative fuels: a spatial and temporal life cycle analysis decision support tool”, UMN Institute for Renewable Energy and the Environment, 2009–2014, **Principal Investigator, \$599,786.** Co-PI: JD Hill, Ecology / Applied Economics, University of Minnesota

Objective is to compare air pollution and health impacts of fossil fuels versus bio-fuels, considering the lifecycle of fuels (production plus consumption) and environmental justice (how pollution exposures change for specific groups).

“The Bridge Program: CIHR Strategic Training Program bridging public health, engineering and policy research”, Canadian Institutes of Health Research (CIHR), Ottawa, 2009–2014, **Co-Investigator, CND\$19 million.** (2 PIs, 53 co-Investigators.)

Objective is interdisciplinary training program in environment and health, University of British Columbia.

“Smartphone-based travel experience sampling (UbiHappy Phase I): Transportation, health, and happiness”, SLPP TechPlan, ITS Institute, University of Minnesota, 2011–2012, **Co-Investigator, \$578,000.**

Objective is to develop a smartphone application prototype to investigate travel behavior patterns and travel-related health and well-being impacts.

“Air pollution and urban form: evidence from satellite data”, NSF. 2009–2011, **Principal Investigator, \$199,970.**

Using satellite data for several cities internationally, the objective is to obtain cross sectional empirical evidence as to how urban form (e.g., sprawl versus infill development) influences air pollution concentrations.

“The Acara Summer Institute for High Impact Businesses”, National Collegiate Inventors and Innovators Alliance, 2009–2011, **Principal Investigator, \$20,500.**

Objective is to develop and offer a two-month summer program for intensive incubation of selected social venture teams from the Acara Challenge.

“Impact of emission reductions on exposures and exposure distributions: application of a geographic exposure model”, EPA. 2007–2011, **Principal Investigator, \$459,276.**

Objectives include calculating intake fraction for several sources in California’s South Coast Air Basin, and exploring how various emission reduction options would impact average exposures and exposure distribution (environmental justice).

“Decision tools for assessing transportation impacts of school policy and school choice”, University of Minnesota Intelligent Transportation Systems / State and Local Policy Program / Center for Transportation Studies. 2008–2010. **Co-Investigator, \$78,400.**

Objective is to determine the impact of school policy on environmental and health impacts of children’s school commutes, and to develop a software tool to allow schools to explore this issue on their own.

“Comparing GHG emissions and health impacts of emissions of traditional pollutants from electric and traditional motorized transport modes in China”, The Energy Foundation, Beijing, 2008–2009, **Co-Principal Investigator, \$78,812.** PI: C Cherry, Civil & Environmental Engineering, University of Tennessee.

Objective is to compare environmental impacts of fossil fuel versus electric vehicles.

“Urban environmental health: air pollution in Bangalore, India”, University of Minnesota Grant-in-Aid. 2008–2009, **Principal Investigator, \$39,898.**

Objective is to measure air pollution in a low- and a medium-income neighborhood in Bangalore, to understand how exposure concentrations change over time as a result of rural-to-urban migration.

“Assessment of transportation policy and technology options to reduce greenhouse gas emissions in Minnesota”, Minnesota State Legislature. 2007–2008. **Co-Principal Investigator, \$300,000.**

Objectives include estimating potential reductions in climate-change emissions based on three policy strategies: changes to fuels; changes to motor-vehicle; and, ‘smart growth’ and other land-use planning options.

“School travel and the implications for advances in transportation related technology”, University of Minnesota Intelligent Transportation Systems / State and Local Policy Program / Center for Transportation Studies. 2007–2008. **Co-Investigator, \$97,400.**

Objective is to survey elementary-school parents to understand which travel modes they choose for their children and why. Based on those results, we will estimate impacts of shifts in school policies such as modifying busing or school-choice rules.