

# Scott N. Spak

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School of Urban & Regional Planning  
University of Iowa  
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Iowa City, Iowa  
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## EDUCATION

PhD 2009 Atmospheric & Oceanic Sciences, University of Wisconsin-Madison  
Graduate certificates in Energy Analysis & Policy, Air Resources  
Management, Delta Certificate in Research, Teaching & Learning  
AB 2000 Engineering Sciences, Dartmouth College

## ACADEMIC APPOINTMENTS

### University of Iowa

2011 - present Assistant Professor, Urban & Regional Planning  
Civil & Environmental Engineering  
Public Policy Center  
2010 - 2011 Assistant Research Scientist, Center for Global & Regional  
Environmental Research  
Assistant Research Engineer, IIHR Hydroscience & Engineering  
2008 - 2010 Postdoctoral Research Scholar, Chemical & Biochemical Engineering

## PEER-REVIEWD PUBLICATIONS

\*graduate, undergraduate, and postdoctoral advisees, student research advised closely as a committee member or supervised as a research scientist

- M. Bilal\*, Z. Qiu, J.R. Campbell, S.N. Spak, X. Shen, M. Nazeer (2018). A new MODIS C6 Dark Target and Deep Blue merged aerosol product at 3 km spatial resolution. *Remote Sensing*, 10(3), 463, doi:10.3390/rs10030463.
- N. Herkert\*, S.N. Spak, A. Smith\*, J.K. Schuster, T. Harner, A. Martinez, K.C. Hornbuckle (2018). Calibration and evaluation of PUF-PAS sampling rates across the Global Atmospheric Passive Sampling (GAPS) Network. *Environmental Science: Processes & Impacts* 20, 210-219, doi: 0.1039/c7em00360a.
- M. Bilal\*, J.E. Nichol, S.N. Spak (2017). A new approach for estimation of hourly fine particulate concentrations using satellite aerosol optical depth and binning of meteorological variables. *Aerosol and Air Quality Research* 17, 356–367, doi:10.4209/aaqr.2016.03.0097.
- J.S. Bril\*, K.L. Langenfeld, C.L. Just, S.N. Spak, T.J. Newton (2017). Simulated mussel mortality thresholds as a function of mussel biomass and nutrient loading. *PeerJ*, 5:e2838; doi:10.7717/peerj.2838.
- A. Martinez, S.N. Spak, N.T. Petrich\*, D. Hu, G.R. Carmichael, K.C. Hornbuckle (2015). Atmospheric dispersion of PCB from a contaminated Lake Michigan harbor. *Atmospheric Environment* 122, 791-798, doi:10.1016/j.atmosenv.2015.10.040.
- C.E. Shanahan\*, S.N. Spak, A. Martinez, K.C. Hornbuckle (2015). Inventory of PCBs in Chicago and opportunities for reduction in airborne emissions and human exposure. *Environmental Science & Technology* 49, 13878–13888, doi:10.1021/acs.est.5b00906.
- A.A. Peverly, Y. Ma, M. Venier, Z. Rodenburg\*, S.N. Spak, K.C. Hornbuckle, R.A. Hites (2015). Variations of flame retardants, polycyclic aromatic hydrocarbons, and pesticide concentrations in Chicago's atmosphere measured using passive sampling. *Environmental Science & Technology* 49, 5371-5379, doi:10.1021/acs.est.5b00216.
- M. Huang\*, K.W. Bowman, G.R. Carmichael, M. Lee, T. Chai, S.N. Spak, D.K. Henze, A.S. Darmenov, A.M. da Silva (2015). Improved western US background ozone estimates via constraining nonlocal and local source contributions using Aura TES and OMI observations. *Journal of Geophysical Research-Atmospheres* 120, 3572–3592, doi:10.1002/2014JD022993.
- P.E. Saide\*, S.N. Spak, R.B. Pierce, J.A. Otkin, T. Schaack, A. Heidinger, A. M. da Silva, M. Kacenelenbogen, J. Redemann, G.R. Carmichael (2015). Central American biomass burning smoke can increase tornado severity in the US. *Geophysical Research Letters* 42, doi:10.1002/2014GL062826.
- S. Kulkarni\*, N. Sobhani, J.P. Miller-Schulze, M.M. Shafer, J.J. Schauer, P.A. Solomon, P.E. Saide\*, S.N. Spak, Y.F. Cheng, H.A.C. Denier van der Gon, Z. Lu, D.G. Streets, G. Janssens-Maenhout, C. Wiedenmyer, J. Lantz, M.S. Artamonova, B. Chen, S.A. Imashev, L.G. Sverdlik, J.T. Deminter, B. Adhikary, A. D'Allura, C. Wei, G.R. Carmichael (2015). Source sector and region contributions to black carbon and PM<sub>2.5</sub> in Central Asia. *Atmospheric Chemistry & Physics* 15, 1683-1705, doi:10.5194/acp-15-1683-2015.

- J. Downard, A. Singh, R. Bullard, T. Jayarathne, C. Rathnayake, D.L. Simmons, B.R. Wels, S.N. Spak, T. Peters, D. Beardsley, C. Stanier, E.A. Stone (2015). Uncontrolled combustion of shredded tires in a landfill – Part 1: Characterization of gaseous and particulate emissions. *Atmospheric Environment* 104, 195-204, doi:10.1016/j.atmosenv.2014.12.059.
- A. Singh, S.N. Spak, E.A. Stone, J. Downard, R. Bullard, M. Pooley\*, P.A. Kostle, M.W. Mainprize, M.D. Wichman, T. Peters, D. Beardsley, C. Stanier (2015). Uncontrolled combustion of shredded tires in a landfill - Part 2: Population exposure, public health response, and an air quality index for urban fires. *Atmospheric Environment* 104, 273-283, doi:10.1016/j.atmosenv.2015.01.002.
- M.C. Wyant, C.S. Bretherton, R. Wood, G.R. Carmichael, A. Clarke, J. Fast, R. George, W.I. Gustafson, C. Hannay, A. Lauer, Y. Lin, J.-J. Morcrette, J. Mulcahy, P.E. Saide\*, S.N. Spak, Q. Yang (2015). Global and regional modeling of clouds and aerosols in the marine boundary layer during VOCALS: The VOCA Intercomparison. *Atmospheric Chemistry & Physics* 15, 53-172, doi:10.5194/acp-15-153-2015.
- M.A. Mena-Carrasco, P.E. Saide\*, R. Delgado, P. Hernandez, S.N. Spak, L.T. Molina, G.R. Carmichael, X. Jiang (2014). Regional climate feedbacks in Central Chile and their effect on air quality episodes and meteorology. *Urban Climate* 10, 771-781, doi:10.1016/j.uclim.2014.06.006.
- Y.J. Kim, S.N. Spak, G.R. Carmichael, N. Riemer, C.O. Stanier (2014). Modeled aerosol nitrate formation pathways during wintertime episodes in the Great Lakes region of North America. *Journal of Geophysical Research-Atmospheres* 119, 12,420–12,445, doi:10.1002/2014JD022320.
- Y. Hu, M.T. Odman, P. Lee, D. Tong, S.N. Spak, A.G. Russell (2014). A clear view of tomorrow's haze: improvements in air quality forecasting. *EM — Air & Waste Management Association's Magazine for Environmental Managers*, February 2014, 11-15.
- N.T. Petrich\*, S.N. Spak, G.R. Carmichael, D. Hu, A. Martinez, K.C. Hornbuckle (2013). Simulating and explaining passive air sampling rates for semi-volatile compounds on polyurethane foam passive samplers. *Environmental Science & Technology* 47 (15), 8591–8598, doi:10.1021/es401532q.
- G.R. Carmichael, S. Kulkarni\*, Y.F. Cheng, V. Ramanathan, S.N. Spak (2013). Short-lived climate forcing agents and their roles in climate change. *Procedia-Social and Behavioral Sciences* 77, 227–236, doi:10.1016/j.sbspro.2013.03.082.
- C.H. Twohy, J.R. Anderson, D.W. Toohey, M. Andrejczuk, A. Adams, M. Lytle, R.C. George, R. Wood, P. E. Saide\*, S.N. Spak, P. Zuidema, D. Leon (2013). Impacts of aerosol particles on the microphysical and radiative properties of stratocumulus clouds over the southeast Pacific ocean. *Atmospheric Chemistry & Physics* 13, 2541-2562, doi:10.5194/acp-13-2541-2013.

- M. Huang\*, G.R. Carmichael, T. Chai, R.B. Pierce, S.J. Oltmans, D.A. Jaffe, K.W. Bowman, A. Kaduwela, C. Cai, S.N. Spak, A.J. Weinheimer, L.G. Huey, G.S. Diskin (2013). Impacts of transported background pollutants on summertime western US air quality: model evaluation, sensitivity analysis and data assimilation. *Atmospheric Chemistry & Physics* 13, 359-391, doi:10.5194/acp-13-359-2013.
- C. Stanier, A. Singh, W. Adamski, J. Baek, M. Caughey, G. Carmichael, E. Edgerton, D. Kenski, M. Koerber, J. Oleson, T. Rohlf, S.R. Lee, N. Riemer, S. Shaw, S. Sousan, S.N. Spak (2012). Overview of the LADCO winter nitrate study: Hourly ammonia, nitric acid and PM<sub>2.5</sub> composition at an urban and rural site pair during PM<sub>2.5</sub> episodes in the U.S. Great Lakes region. *Atmospheric Chemistry & Physics* 12, 11037-11056, doi:10.5194/acp-12-11037-2012.
- C.C. Tsao, J.E. Campbell, M.A. Mena-Carrasco, S.N. Spak, G.R. Carmichael, Y. Chen (2012). Biofuels that cause land-use change may have much larger non-GHG air quality emissions than fossil fuels. *Environmental Science & Technology* 46, 10835-10841, doi:10.1021/es301851x.
- T. Holloway, C. Voigt, J. Morton, S.N. Spak, A.P. Rutter, J.J. Schauer (2012). An assessment of atmospheric mercury in the Community Multiscale Air Quality (CMAQ) model at an urban site and a rural site in the Great Lakes Region of North America. *Atmospheric Chemistry & Physics* 12, 7117-7133, doi:10.5194/acp-12-7117-2012.
- P.E. Saide\*, G.R. Carmichael, S.N. Spak, P. Minnis, J.K. Ayers (2012). Improving aerosol distributions below clouds by assimilating satellite-retrieved cloud droplet number. *Proceedings of the National Academy of Sciences* 30, 11939-11943, doi:10.1073/pnas.1205877109.
- M.A. Mena-Carrasco, E. Oliva, P.E. Saide\*, S.N. Spak, C. de la Maza, M. Osses, S. Tolvett, J.E. Campbell, C.C. Tsao, L.T. Molina (2012). Estimating the health benefits from natural gas use in transport and heating in Santiago, Chile. *Science of the Total Environment* 429, 257-265, doi:10.1016/j.scitotenv.2012.04.037.
- P.E. Saide\*, S.N. Spak, G.R. Carmichael, M.A. Mena-Carrasco, Q. Yang, S. Howell, D.C. Leon, J.R. Snider, A.R. Bandy, J.L. Collett, K.B. Benedict, S.P. de Zoeke, L.N. Hawkins, G. Allen, I. Crawford, J. Crosier, S.R. Springston (2012). Evaluating WRF-Chem aerosol indirect effects in Southeast Pacific marine stratocumulus during VOCALS-REx. *Atmospheric Chemistry & Physics* 12, 3045-3064, doi:10.5194/acp-12-3045-2012.
- M.L. Grabow\*, S.N. Spak, T. Holloway, B. Stone, A.C. Mednick, J.A. Patz (2012). Air quality and exercise-related health benefits from reduced car travel in the Midwestern United States. *Environmental Health Perspectives* 120, 68-76, doi:10.1289/ehp.1103440.
- C.C. Tsao, J.E. Campbell, M.A. Mena-Carrasco, S.N. Spak, G.R. Carmichael, Y. Chen (2012). Increased estimates of air-pollution emissions from sugarcane ethanol in Brazil. *Nature Climate Change* 2, 53-57, doi:10.1038/NCLIMATE1325.
- D.S. Tkacik\*, Y. Luna-Cruz\*, N.E. Clinton, S.N. Spak, J. Ryan (2012). Atmospheric correction for MASTER image data using localized modelled and observed meteorology and trace gases. *Remote Sensing Letters* 3(3), 201-209, doi:10.1080/01431161.2010.551550.

- Q. Yang, W.I. Gustafson, J.D. Fast, H. Wang, R.C. Easter, H. Morrison, Y.-N. Lee, S.N. Spak, M.A. Mena (2011). Assessing regional scale predictions of aerosols, marine stratocumulus, and their interactions during VOCALS-REx using WRF-Chem. *Atmospheric Chemistry & Physics* 11, 11951-11975, doi:10.5194/0.5194/acp-11-11951-2011.
- P.E. Saide\*, G.R. Carmichael, S.N. Spak, L. Gallardo, A.E. Osses, M.A. Mena-Carrasco, M. Pagowski (2011). Forecasting urban PM10 and PM2.5 pollution episodes in very stable nocturnal conditions and complex terrain using WRF-Chem CO tracer model. *Atmospheric Environment* 45, 2769-2780, doi:10.1016/j.atmosenv.2011.02.001.
- G.R. Rubasinghege, S.N. Spak, G.R. Carmichael, C. Stanier, V.H. Grassian (2011). Abiotic mechanism for the formation of atmospheric nitrous oxide from ammonium nitrate. *Environmental Science & Technology* 45 (7), 2691-2697, doi:10.1021/es103295v.
- M. Huang\*, G.R. Carmichael, S.N. Spak, B. Adhikary, S. Kulkarni\*, Y. Cheng, C. Wei, Y. Tang, A. D'Allura, P. Wennberg, G. Huey, J. Dibb, J.L. Jimenez, A.J. Weinheimer, A. Kaduwela, C. Cai, M. Wong, R.B. Pierce, J.A. Al-Saadi, D.G. Streets, Q. Zhang (2011). Multi-scale modeling study of the source contributions to near-surface ozone and sulfur oxides levels over California during the ARCTAS-CARB period. *Atmospheric Chemistry & Physics* 11, 3173-3194, doi:10.5194/acp-11-3173-2011.
- M. Huang\*, G.R. Carmichael, B. Adhikary, S.N. Spak, S. Kulkarni, Y.F. Cheng, C. Wei, Y. Tang, D.D. Parrish, S.J. Oltmans, A. D'Allura, A. Kaduwela, C. Cai, A.J. Weinheimer, M. Wong, R.B. Pierce, J.A. Al-Saadi, D.G. Streets, Q. Zhang (2010). Impacts of transported background ozone on California air quality during the ARCTAS-CARB period—A multi-scale modeling study. *Atmospheric Chemistry & Physics* 10, 6947-6968, doi:10.5194/acp-10-6947-2010.
- S.N. Spak and T. Holloway (2009). Seasonality of speciated aerosol transport over the Great Lakes region. *Journal of Geophysical Research – Atmospheres* 114, D08302, doi:10.1029/2008JD010598.
- B. Stone, A.C. Mednick, T. Holloway, S.N. Spak (2009). Mobile source CO2 mitigation through smart growth development and vehicle fleet hybridization. *Environmental Science & Technology* 43 (6), 1704–1710, doi:10.1021/es8021655.
- T. Holloway, S.N. Spak, D.J. Barker\*, M.P. Bretl\*, C. Moberg, K. Hayhoe, J. Van Dorn, D. Wuebbles (2008). Change in ozone air pollution over Chicago associated with global climate change. *Journal of Geophysical Research – Atmospheres* 113, D22306, doi:10.1029/2007JD009775.
- T. Holloway, T. Sakurai, Z. Han, S. Ehlers, S.N. Spak, L.W. Horowitz, G.R. Carmichael, D. Streets, Y. Hozumi, H. Ueda, S.U. Park, C. Fung, M. Kajino, N. Thongboonchoo, M. Engardt, C. Bennet, H. Hayami, K. Sartelet, Z. Wang, K. Matsuda, M. Amann (2008). Impact of global emissions on regional air quality in Asia. *Atmospheric Environment* 42, 3543–3561, doi:10.1016/j.atmosenv.2007.10.022.
- B. Stone, A.C. Mednick, T. Holloway, S.N. Spak (2007). Is compact growth good for air quality? *Journal of the American Planning Association* 73:4, 404-418, doi:10.1080/01944360708978521.

S.N. Spak, T. Holloway, B. Lynn, R. Goldberg (2007). A comparison of statistical and dynamical downscaling for surface temperature in North America. *Journal of Geophysical Research–Atmospheres* 112, D08101, doi:10.1029/2005JD006712.

### **Manuscripts in Review**

C. Dong\*, H. Matsui, S.N. Spak, A. Kalafut-Pettibone, C.O. Stanier. Impacts of new particle formation on short-term Midwestern meteorology and air quality as determined by the NPF-explicit WRF-Chem. *Atmospheric Environment*.

### **Technical Reports & Planning Documents**

S.N. Spak<sup>^</sup>, J. Baek, J. Carlson, G.R. Carmichael, Y.J. Kim, N. Riemer, C.O. Stanier (2012). Episodic Air Pollution in Wisconsin during the 2009 LADCO Winter Nitrate Study, Phase II. Lake Michigan Air Directors Consortium, 292 pp.

J. Baek, G.R. Carmichael, S.-R. Lee, J.J. Oleson, N. Riemer, T. Rohlf, S. Sousan, S.N. Spak, C.O. Stanier (2010). Episodic Air Pollution in Wisconsin during the 2009 LADCO Winter Nitrate Study. Lake Michigan Air Directors Consortium, 144 pp.

C.O. Stanier (ed.) (2009). Understanding Episodes of High Airborne Particulate Matter in Iowa. Bi-State Regional Commission, 127 pp.

K. Hayhoe and D. Wuebbles (eds.) (2008). Climate change and Chicago: Projections and potential impacts. City of Chicago, Chicago Climate Action Plan, 208 pp.

### **Other Non-Refereed Publications**

S.N. Spak<sup>^</sup>, M.A. Mena-Carrasco, G.R. Carmichael (2010). Atmospheric transport of anthropogenic oxidized sulfur over the Southeast Pacific during VOCALS REx. *CLIVAR Exchanges*, 53, 20-21.

### **AWARDS & HONORS**

2015 NASA Group Achievement Award for the SEACR4S 2013 mission

2013 Amicus Curiae to the U.S. Supreme Court, No. 12-1182, -1183

2009 Instructor, NASA NSERC Student Airborne Research Program

2004 George W. Bunn Wisconsin Distinguished Fellow, 2004-2005

## RESEARCH GRANTS

### External Awards

#### Current

- 2017 NESI-SES, Energy systems planning for smart communities, \$36K, 2017-2018, PI.
- 2015 NIEHS, Iowa Superfund Research Program, Research Translation Core, \$416K, 2015-2020, PI, with Craig Just (Co-PI) and David Osterberg (emeritus).
- NIEHS, Iowa Superfund Research Program, Project 4: Atmospheric sources of PCB congeners, \$1,100K, 2015-2020, Co-PI, with Keri Hornbuckle (PI), Andres Martinez (Co-PI), and Kai Wang (Co-I).
- 2014 NSF, Decision processes, climate change, and water resources in the Agricultural Midwest, \$599K, 2014-2018, Co-PI and Institutional PI, with Adam Ward (PI, Indiana University), Kajsa Dalrymple (Co-PI), and Sara Mitchell, Heather Sander, Ananya Sen Gupta, Aaron Strong, Eric Tate (Co-Is).

#### Completed

- 2014 NASA, Tiger Team: Web-enabled tools for air quality management decision support, \$240K, 2014-2016, Co-PI, with James Szykman (US EPA, PI), Gregory Carmichael (Co-I), Daven Henze (Co-I, University of Colorado at Boulder), Richard McNider, (Co-I, University of Alabama-Huntsville), and Brad Pierce (NOAA NESDIS, Co-I).
- 2011 US EPA, Constraining urban-to-global scale estimates of black carbon distributions, sources, regional climate impacts, and co-benefit metrics with advanced coupled dynamic - chemical transport adjoint models, \$895K, 2011-2015, Co-I, with Gregory Carmichael (PI), Daven Henze (Co-PI, University of Colorado at Boulder) and George Grell (NOAA ESRL, Co-PI).
- NASA, Air Quality Applied Science Team: Improving air quality analysis through closer integration of observations and models, \$575K, 2011-2016, Co-I, with Gregory Carmichael (PI) and David Streets (Co-PI).
- 2009 LADCO, Analysis and modeling of the LADCO Winter Nitrate Study, \$135K, 2009-2011, Co-I, with Charles Stanier (PI), Nicole Reimer (Co-PI), and Gregory Carmichael (Co-PI).

### Internal UI Awards

- 2014 University of Iowa Internal Funding Initiatives, Quantifying climate change and the impact of volcanic activity on high-altitude late glacial lake sediments in Chile, \$60K, 2014-2015, Co-PI, with Ingrid Peate (PI) and Timothy Matthes (Co-PI).
- 2011 University of Iowa Facilities Management, Air quality impact of stationary power generation at the University of Iowa, \$160K, 2011-2015, PI, with Betsy Stone (Co-PI) and Charles Stanier (Co-PI).

## **RESEARCH ACTIVITIES & PRODUCTS**

### **Forecasting for Atmospheric Science Field Campaigns**

- 2013 NASA SEAC4RS
- 2011 Ganges Valley Aerosol Experiment
- 2010 Commonwealth Games Delhi SAFAR
- 2009 NASA NSERC Student Airborne Research Program
- 2008 VAMOS Ocean-Cloud-Atmosphere-Land Study Regional Experiment

### **Publicly Released Software & Datasets**

- Alpha LEED for UrbanSim 3.0, anticipated beta release December 2018
  - Green roof model in UrbanSim 3.0, anticipated beta release July 2018
  - Parcel-scale PCB stocks and emissions model, anticipated beta release April 2018
- 2018 Implemented AIRS CO and AIRS CH<sub>4</sub> Level 2 Retrievals in US EPA Remote Sensing Information Gateway, released January 2018
- 2017 GAPS PUF-PAS Flowrate Model Map Interface
  - GAPS PUF-PAS Flowrate Model for MATLAB
- 2016 Implemented Quality-Controlled BEHR OMI NO<sub>2</sub> and OMI SO<sub>2</sub> Level 2 Retrievals in US EPA Remote Sensing Information Gateway
- 2014 Wisconsin DNR / LADCO Winter Nitrate Study dataset (lead: Charles Stanier)
- 2010 VOCA emissions inventory
- 2004 Compiled, ported, and optimized Community Multi-scale Air Quality Model and Models-3 System to Mac OS X with PowerPC and Intel processors

### **K-12 Climate Literacy Research & Development**

- CGRER – College of Education Iowa K-12 Climate Science Education Initiative, 2016 – present
- Curriculum Developer & Scientific Advisor, Teaching Climate Change in the Great Lakes Region, 2006-2008 (CIRTL Delta Internship)
  - Climate Science Advisor & Evaluation Coordinator, *“Paradise Lost? Artists on Climate Change in the Northwoods”* art exhibition and community education project, 2006 – 2009
  - Instructor & Co-Developer, K-12 Energy Education Program Teacher Training on Climate Change, 2007 – 2009



- Invited workshops for Wisconsin Society of Science Teachers 2008 Convention, Madison Metropolitan School District, and UWSP Global Environmental Teachings Program, 2008
- Instructor, Natural Resources 730: Energy Education in the Classroom, a one-credit University of Wisconsin-Stevens Point graduate course, Spring 2008

## **INVITED RESEARCH PRESENTATIONS**

- 2016 Environmental Science Seminar, School of Public and Environmental Affairs, Indiana University  
Sustainability Seminar, Illinois Sustainable Technology Center, University of Illinois Urbana-Champaign (+ webinar)  
US Environmental Protection Agency STAR Black Carbon 2016 Webinar Series
- 2015 Next Generation Transportation for a Sustainable Future Summit, University of Wisconsin-Madison  
Iowa United Nations Association Community Climate Forum
- 2014 Institute of Medicine, Board on Population Health and Public Health Practice  
US Environmental Protection Agency
- 2013 Board of the Iowa Chapter of the American Planning Association  
Johnson County, Iowa Boards of Supervisors & Public Health  
Tallgrass Prairie & Oak Savanna Regional Fire Science Consortium (+ webinar)
- 2012 US EPA 11<sup>th</sup> Annual Ad-Hoc Meteorological Modelers Meeting: Meteorological modeling applications for chemical transport models, Boulder, CO  
Department of Earth & Atmospheric Sciences, University of Nebraska
- 2010 American Geophysical Union Fall Meeting, Ocean-Cloud-Land-Atmosphere Interactions in the Southeastern Pacific
- 2009 Bi-State Transportation Alternatives & Air Quality Summit, Moline, IL  
Institute of Atmospheric Physics, Chinese Academy of Sciences  
Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences  
College of Environmental Science and Engineering, Peking University  
NASA NSERC Student Airborne Research Program, Irvine, CA
- 2008 Universidad Andrés Bello

## >140 CONTRIBUTED CONFERENCE PRESENTATIONS

### INVITED TALKS, UNIVERSITY OF IOWA

- 2017 Iowa City March for Science
- 2015 Iowa Climate Symposium  
GEEMaP Research Workshop
- 2014 Meeting the Renewable Energy Challenge Symposium, Forckenbrock Series on Public Policy (+ webinar)  
Environmental Engineering Sciences Seminar  
Environmental Health Sciences Research Center
- 2012 Kohn Colloquium, Department of Geography & Sustainability Sciences

### TEACHING, UNIVERSITY OF IOWA

#### Graduate

- Environmental Policy (Spring 2012-2014, Spring 2016)
- Environmental Management & Policy (Spring 2017-2018, co-taught with Lucie Laurian)
- Inquiry approaches to Climate, Weather, and Energy in the 6-9 Classroom (Summer 2011, co-taught with Charles Stanier, CBE, and Morgan Yarker, Education)
- Megacities Seminar and Studio, (Spring 2013, Fall 2014, Spring 2017-2018)
- Modeling Dynamic Systems (Fall 2012-2014, Spring 2015, Fall 2016-2017)
- Global Environmental Systems (Fall 2011)

#### Readings

- Active Transportation Health Impacts Assessment, Summer 2017
- Planning for Emerald Ash Borer in Urban Forests, Spring 2015
- Environmental Planning and Policy in Mongolia, Summer 2014
- Megacity Transportation and Land Use Simulation, Spring 2014
- Leadership in Energy and Environmental Design in Planning Context, Spring 2014
- Climate Adaptation Planning, Summer 2013

#### Independent Study in Planning

- Megacity Renewable Energy Planning, Summer 2017

Urban Microsimulation, Fall 2016

Stormwater Management in South Asia, Fall 2016

Dynamic Systems in Planning and Public Health, Fall 2014

Climate Resilience through Native Perennial Biomass, Summer 2013

## **Undergraduate**

Climate Change, Air Pollution & Human Health, (Spring 2010 co-taught with Gregory Carmichael, CBE)

## **Student Plans & Reports Supervised: Iowa Initiatives for Sustainable Communities**

Environmental Management & Policy

2018                    Theme Semester: Adaptation Plan for Terry Trueblood Recreation Area and Iowa River, City of Iowa City

2017                    English River Watershed Management Authority, Applied watershed management in an urban and rural context

Field Problems in Planning Capstone

2017 - 2018           Cedar County comprehensive plan

Cedar County Great Places visioning plan

2016 – 2017           Mason City sustainability plan

2015 – 2016           Sioux City downtown greenspace plan  
(initial implementation funded by a \$500K gift, 2016)

2014 – 2015           Sioux City active transportation plan (adopted, 2015)

Winnishiek County frac sand impact assessment, (resolution adopted, 2015)

2011 – 2012           Dubuque renewable energy assessment

## **ADVISING & MENTORING, UNIVERSITY OF IOWA**

### **PhD Committees**

*Current*    Maryam Abdi Oskouei, Civil & Environmental Engineering

Nicholas Herkert, Civil & Environmental Engineering

Nathan Janecek, Chemical & Biochemical Engineering

Nathan Quaderer, Science Education

2018           Can Dong, Chemical & Biochemical Engineering

2017           Negin Sobhani, Chemical & Biochemical Engineering

- 2015 Meng Gao, Chemical & Biochemical Engineering
- 2014 Man Yu, Chemical & Biochemical Engineering
- 2013 Rachel Marek, Civil & Environmental Engineering  
Pablo Saide, Civil & Environmental Engineering
- 2012 Jeremy Bril, Civil & Environmental Engineering  
Aditsuda Jamaroensan, Civil & Environmental Engineering  
Pallavi Marrapu, Chemical & Biochemical Engineering  
Sinan Sousan, Chemical & Biochemical Engineering

**MS Thesis Supervised**

- 2012 Nicholas Petrich, Civil & Environmental Engineering

**MS Committees**

- 2017 Kayley Lain, Mechanical Engineering (co-advised), Iowa Space Grant Fellow
- 2015 Andrew Awad, Civil & Environmental Engineering
- 2014 Charlene Becka, Civil & Environmental Engineering  
Colin O'Sullivan, Civil & Environmental Engineering  
Zachary Rodenburg, Civil & Environmental Engineering
- 2013 Blake Rupe, International Studies (co-advised)  
Rachel Yucuis, Civil & Environmental Engineering

**Urban & Regional Planning Graduate Research Supervised (2+ semesters, from 17 total)**

- 2016 - present Faris Al-Saeedi, Sadya Islam, Trang Mai, Ahnna Nanoski
- 2015 - 2016 Menno Schukking, William Mackaman
- 2013 - 2015 Vanessa Fixmer-Oraiz, Andrew Lynch, Liza Minor, David Sweeney
- 2012 - 2014 Caitlin Shanahan
- 2011 - 2013 Mark Pooley

**Urban & Regional Planning MS Practica Committees**

- 2016 Samantha Wittrock
- 2015 Zachary Hall

2014 Claire Richmond (Chair)  
Aaron Kline

### **Urban & Regional Planning MS Graduate Advisees**

2017 - present Gia DeBartolo, Emily Legel  
2016 - present Luke McClanahan, Matthew Morlan  
2015 - 2017 Menno Schukking  
2014 - 2016 Katie Gandhi  
2015 Romeo Abraham  
2013 - 2015 Vanessa Fixmer-Oraiz, Andrew Lynch, Liza Minor (AICP Award), David Sweeney  
2012 - 2014 Caitlin Shanahan (AICP Award), Claire Richmond, Kira Stoller  
2011 - 2013 Charles Cowell, Mark Pooley

### **Undergraduate Honors Theses Supervised**

2016 - present Harrison Freund, BE Computer Science & Engineering,  
(College of Engineering Grand Challenge Scholar)  
2012 Andrew Bennett, BE Mechanical Engineering  
Brianna O'Neal, BE Mechanical Engineering

### **Undergraduate Researchers**

2014 - 2016 Grant Gregory, BA Political Science & Geography  
2014 - 2015 Kayley Lain, BE Mechanical Engineering

### **Visiting Scholars**

2012 Muhammad Bilal, PhD, Hong Kong Polytechnic University 2014

### **Postdoctoral Scholars**

2015-2016 Yuwei Li, IIHR (co-advised)

## **PROFESSIONAL LEADERSHIP & SERVICE**

### **External Committees and Panels (Invited Participation)**

- 2017            Panelist and reviewer, National Science Foundation  
Reviewer, U.S. National Academy of Sciences
- 2016            Panelist and reviewer, National Science Foundation  
Reviewer, Tahoe Regional Planning Agency 2015 Threshold Evaluation Report
- 2015            Panelist and reviewer, National Science Foundation
- 2012            Reviewer, Fundação para a Ciência e a Tecnologia

**Journal Referee** (2006 – present) for *Aerosol Science & Technology, Atmospheric Chemistry & Physics, Atmospheric Environment, Environmental Pollution, Environmental Science & Technology, Geophysical Research Letters, Geoscientific Model Development, International Journal of Climatology, International Journal of Remote Sensing, Journal of Environmental Management, Journal of Geophysical Research, Journal of Great Lakes Research, Journal of Transport & Health, Nature Climate Change, Proceedings of the National Academy of Sciences, Remote Sensing, Research in Transportation Business and Management, Sustainability, Urban Climate*

### **University of Iowa**

- 2017            Center for Health Effects of Environmental Contamination Seed Grant reviewer
- 2015            Search committee, Dept. of Chemical & Biochemical Engineering
- 2013 - present    High Performance Computing Policy Committee
- 2012 - present    CGRER Seed Grant reviewer
- 2011 - present    Faculty representative, University Corporation for Atmospheric Research
- 2009 - present    Judge, College of Engineering Research Open House

### **School of Urban & Regional Planning**

- 2014            Search committees (2)
- 2012            Planning Accreditation Board self study
- 2011 – present    Admissions committee

## **Public Policy Center**

- 2016 Organizing committee, Iowa's Drinking Water: Could Flint Happen Here?
- 2015 Organizing committee, Feeding the World: Challenges for Water Quality and Quantity
- 2014 Organizing committee, Meeting the Renewable Energy Challenge Symposium
- 2013 Organizing committee, Adapting to Weather Extremes: The Economic Impact in Iowa

## **International**

Session proposal reviewer, 2017 National Planning Conference, Workshops, Deep Dives & Institutes

Reviewer, Cy-Tera and Eastern Mediterranean HPC, Cyprus Institute, 2016

Session chair, American Geophysical Union 2009 Fall Meeting, Ocean-Atmosphere-Land Interactions in the Eastern Tropical Oceans

Outstanding Student Poster Award Judge, American Geophysical Union Fall Meeting, 2012 – present

## **Other Service to the Profession**

Book reviewer, ESRI Press, 2014

Curriculum reviewer, Climate Literacy and Energy Awareness Network, 2012 – present

Dartmouth College Admissions Ambassador & Alumni Interviewer, 2002 – present

## **OUTREACH**

2014 – present Climate Voices Science Speakers Network

2011 – present Iowa Climate Stories

### Iowa City Senior Center

2012 Environment & Climate Stewardship for Seniors

Share Your Iowa Climate Stories

2011 Air Pollution and Climate Change in Iowa

2010 Iowa's Weather and Climate

Air Pollution and Climate Change in Iowa

## **AFFILIATIONS**

### **Professional Associations**

American Chemical Society  
American Geophysical Union  
American Meteorological Society  
American Planning Association  
Association of Collegiate Schools of Planning

### **University of Iowa**

Center for Global & Regional Environmental Research  
Geoinformatics for Environmental and Energy Modeling and Prediction (GEEMaP) IGERT  
Iowa Initiative for Sustainable Communities  
Iowa Informatics Initiative (UI3)  
Iowa Superfund Research Program

## **RECENT MEDIA APPEARANCES**

2017      Rebecca Altman, "[How the Benzene Tree Polluted the World](#)," *The Atlantic*, 4 October 2017.  
2016      Guest, River to River, Iowa Public Radio, 1 November 2016.  
2015      Guest, River to River, Iowa Public Radio, 19 February 2015.

## **RECENT MEDIA COVERAGE OF RESEARCH**

2017      Cedar Rapids Gazette, Des Moines Register, Scientific American  
2015      CBS News, Environmental Health News, NBC Nightly News, National Geographic, Nature, Science, Scientific American, USA Today  
2012      Nature  
2011      The Atlantic