

# Scott N. Spak

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University of 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

2019 - present Associate Professor, School of Planning & Public Affairs  
Associate Professor, Department of Civil & Environmental  
Engineering (affiliate since 2011)  
Senior Research Fellow, Public Policy Center (affiliate since 2011)  
2011 - 2019 Assistant Professor, School of Urban & Regional Planning  
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

## CITATION IMPACT May 2021

Google Scholar: 2127 citations, h-index 29

Web of Science: 1332 citations, h-index 24

Scopus: 1399 citations, h-index 25

## PEER-REVIEWED PUBLICATIONS

\*student advisees/mentees #postdoctoral scholars and supervised research staff

43. L. Yoder, A.S. Ward, S.N. Spak, K.E. Dalrymple (2020). Local government perspectives on collaborative watershed governance: a comparative approach of Iowa's Watershed Management Authorities, *Policy Studies Journal*, Early View, doi:10.1111/psj.12389.

42. L. Yoder, A.S. Ward, K.E. Dalrymple, S.N. Spak, R. Lave (2019). An analysis of conservation practice adoption studies in agricultural human-natural systems, *Journal of Environmental Management* 236, 490-498, doi: 10.1016/j.jenvman.2019.02.009.

41. C. Dong\*, H. Matsui, S.N. Spak, A. Kalafut-Pettibone, C.O. Stanier (2019). Impacts of new particle formation on short-term Midwestern meteorology and air quality as determined by the NPF-explicit WRF-Chem. *Aerosol and Air Quality Research* 19, 204-220, doi:10.4209/aaqr.2018.05.0163.

40. 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, 463, doi:10.3390/rs10030463.

39. 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.

38. 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.

37. 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.

36. 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.
35. 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.
34. A.A. Peeverly, 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.
33. 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.
32. 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.
31. 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.
30. 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.

29. 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.
28. 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.
27. 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.
26. Y.J. Kim<sup>#</sup>, 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.
25. 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.
24. 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.
23. 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.
22. 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.

21. 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.
20. C. Stanier, A. Singh, W. Adamski, J. Baek, M. Caughey, G. Carmichael, E. Edgerton, D. Kanski, M. Koerber, J. Oleson, T. Rohlff, 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.
19. 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.
18. 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.
17. 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.
16. 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.
15. 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 Szoeko, 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.

14. 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.
13. 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.
12. 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.
11. 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.
10. 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.
9. 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.
8. 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.

7. 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.
6. 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.
5. 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.
4. 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* 133, D22306, doi:10.1029/2007JD009775.
3. 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.
2. 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.
1. 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 Submitted, Accepted or In Press**

- xliv.* P. Chakraborty, H. Gadhavi, B. Prithiviraj, M. Mukhopadhyay, S.N. Khuman, M. Nakamura, S.N. Spak (2021). Passive air sampling of PCDD/Fs, PCBs, PAHs, DEHA, and PAEs from informal electronic waste recycling and allied sectors in Indian megacities. *Environmental Science & Technology*, in press.

*xliv.* K. Lain\*, S.N. Spak, H.S. Udaykumar, M. Schukking\*, T. Ossing\*. Miscanthus bioenergy resource potential for commercial electricity generation in Iowa: field siting and energy evaluation. Submitted.

## **Reports**

A. Shu-Yin, M.L. Diamond, L.E. Melymuk, S.N. Spak (2018). PCB Inventory in the Great Lakes Region. Environment and Climate Change Canada, 25 pp.

S.N. Spak, 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.

## **Textbooks**

T. Neal, S. Herder, A. Malek, Z. Miller, S.N. Spak, C. Stanier (2018, with ongoing updates). [8th Grade Iowa Science Phenomenon Bundles](#).

## **AWARDS & HONORS**

2020 Curriculum Innovation Award, American Collegiate Schools of Planning and Lincoln Institute of Land Policy

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

2020 NIEHS, Iowa Superfund Research Program: Airborne PCBs: Sources, Exposures, Toxicities, Remediation. Administrative Core, \$1,143K, 2020-2025, Research Translation Coordinator, with Keri Hornbuckle (Center Director) and Hans-Joachim Lehmler (Deputy Director).

Data Management and Analysis Core, \$1,115K, 2020-2025, Core Leader, with Kai Wang (Core Co-Leader), Michael Jones (Co-I), Brian Westra (Co-I), and Qianjin Zhang (Co-I).

#### Completed

2019 NIEHS, Iowa Superfund Research Program: Airborne PCBs: Sources, Exposures, Toxicities, Remediation - Data Supplement, \$416K, 2019-2020, Co-I, with Keri Hornbuckle (PI) and 13 other Co-Is.

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, 2014-2019, Co-PI and Institutional PI, with Adam Ward (PI, Indiana University), Kajsia Dalrymple (Co-PI), and Sara Mitchell, Heather Sander, Ananya Sen Gupta, Aaron Strong, Eric Tate (Co-Is).

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).

## **UI Awards**

### Current

- 2020 Sustainable air quality: tracking aeroallergens across urban and rural environments. \$40K, 2020-2021. Co-PI, with Elizabeth Stone (PI), Thomas Peters (Co-PI), and Heather Sander (Co-PI).

### Completed

- 2016 CGRER-College of Education Iowa K-12 Climate Science Education Initiative, Co-PI, \$50K, 2016-2018, with Ted Neal (PI) and Charles Stanier (Co-PI).
- 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 Elizabeth Stone (Co-PI) and Charles Stanier (Co-PI).

## **RESEARCH ACTIVITIES & PRODUCTS**

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

Alpha Green infrastructure in UrbanSim, anticipated beta release 2021

Beta ArcGIS parcel-scale PCB stocks and emissions model, anticipated open beta 2021

2017 [GAPS PUF-PAS Sampling Rate Model](#)

- 2016 Implemented Quality-Controlled BEHR OMI NO<sub>2</sub>, OMI SO<sub>2</sub>, AIRS CO, and AIRS CH<sub>4</sub> 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

### **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

### **K-12 Climate Literacy Curriculum Development**

Co-PI, 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
- Instructor, Natural Resources 730: Energy Education in the Classroom, a one-credit University of Wisconsin-Stevens Point graduate course, Spring 2008

## INVITED RESEARCH PRESENTATIONS

- 2018 S.N. Spak. Great Vision creating Great Places: synthesizing data-driven strategic and community planning. 2018 American Planning Association Iowa Planning Conference, Council Bluffs, IA, October 18, 2018.
- 2016 S.N. Spak. 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. US Environmental Protection Agency, Research Triangle Park, NC, December 9, 2016.
- S.N. Spak. PCBs in Chicago: sources, transport, fate, exposure, and policies. Sustainability Seminar, Illinois Sustainable Technology Center, University of Illinois Urbana-Champaign, November 10, 2016.
- S.N. Spak. Identifying a Safe Operating Space for Humanity at the urban scale through high-throughput environmental modeling. Environmental Science Seminar, School of Public and Environmental Affairs, Indiana University, September 29, 2016.
- 2015 S.N. Spak. Effective transportation policies & planning for air quality & VMT, Learning from the first \$35 billion in Congestion Mitigation Air Quality funding. Next Generation Transportation for a Sustainable Future Summit, University of Wisconsin-Madison, May 29, 2015.
- 2014 S.N. Spak. 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. US Environmental Protection Agency, Research Triangle Park, NC, November 13, 2014.
- S.N. Spak. Finding the Unknown Unknowns: Using dynamic models to identify and reduce uncertainty in regulatory analyses. Institute of Medicine, Board on Population Health and Public Health Practice, June 26, 2014.
- 2013 S.N. Spak. Beyond the Stability Index -- Fire management & forecasting tools for air quality, weather & climate impacts of prescribed fires. Tallgrass Prairie & Oak Savanna Regional Fire Science Consortium, Dubuque, IA, January 30, 2013.
- 2012 S.N. Spak. Renewable energy for a resilient and prosperous Iowa. Exploring Muscatine's Renewable Energy Future, Clean Air Muscatine, Muscatine, IA, November 8, 2012.

- S.N. Spak, C.O. Stanier, Y.J. Kim, G.R. Carmichael, N. Riemer, S. R. Lee, J. Baek, T. Rohlf, S. Sousan, A. Singh. What does it take to model Midwest wintertime PM<sub>2.5</sub> episodes? Wintertime PM<sub>2.5</sub> episodes in Wisconsin during the LADCO winter nitrate study: meteorological event characterization and meteorological and photochemical model evaluation. US EPA 11th Annual Ad-Hoc Meteorological Modelers Meeting: Meteorological modeling applications for chemical transport models, Boulder, CO, June 28, 2012.
- 2011 S.N. Spak. Simulating contemporary and preindustrial atmospheric chemistry and aerosol radiative forcing in the Southeast Pacific. Department of Earth & Atmospheric Sciences, University of Nebraska, March 31, 2011.
- 2010 S.N. Spak, M.A. Mena-Carrasco, G.R. Carmichael. Simulating contemporary and preindustrial atmospheric chemistry and aerosol radiative forcing in the Southeast Pacific, 2010 AGU Fall Meeting, San Francisco, CA, December 13, 2010.
- 2009 S.N. Spak. Air Quality in the Bi-State Region: Understanding pollution episodes and response to future urban growth. Bi-State Transportation Alternatives & Air Quality Summit, Moline, IL, September 30, 2009.
- S.N. Spak. Making sense of SARP observations: data analysis and regional context. NASA NSERC Student Airborne Research Program, Irvine, CA, July 30, 2009. S.N. Spak. Recent lessons learned in improving & evaluating chemical transport modeling. Shanghai Meteorological Bureau, Shanghai, September 16, 2009.
- S.N. Spak. Land-Water-Atmosphere interactions on boundary layer pollution transport. Institute of Atmospheric Physics, Chinese Academy of Sciences, September 14, 2009.
- S.N. Spak. Climate and air quality modeling applications for heterogeneous chemistry. Research Center for Eco-Environmental Sciences Chinese Academy of Sciences, September 11, 2009.
- S.N. Spak. Applying chemical transport modeling in land use and transportation policy studies. Peking University, College of Environmental Science and Engineering, September 10, 2009.
- 2008 S.N. Spak. Air quality and exercise-related health benefits from reduced car travel for short trips. Universidad Andrés Bello, November 12, 2008.

## **INVITED WORKSHOPS**

- 2019 EHSRC Research Translation Workshop Series
- 2017 Iowa NGSS 8th Grade Phenomena Bundle Professional Development Workshops (2)
- 2015 Iowa Climate Festival
- 2013 Board of the Iowa Chapter of the American Planning Association
- 2012 NASA Applied Remote Sensing Training Program, Madison, WI  
Iowa Climate Festival
- 2011 Iowa City Business Exchange
- 2008 Wisconsin Society of Science Teachers 2008 Convention  
Madison Metropolitan School District  
UW-Stevens Point Global Environmental Teachings Program

## **CONTRIBUTED CONFERENCE PRESENTATIONS**

- 2020 T.B. Alam\*, A. Bradshaw\*, H.L. Freund\*, V. Halloran\*, T. Kraus, S.N. Spak, C. Connerly. Comprehensive planning for shared services between Tama and Toledo, Iowa. 2020 APA National Planning Conference, Houston, TX, 26 April 2020 (poster).
- H. L. Freund\*, S.N. Spak. Urban microsimulation of brownfields incentives and policies. 2020 APA National Planning Conference, Houston, TX, 26 April 2020 (poster).
- 2019 S.N. Spak, S. Islam\*, T.T.T. Mai\*, C.E. Shanahan\*. A nationally-applicable urban source and emissions inventory toolkit for legacy and emerging Superfund chemicals. 2019 NIEHS Superfund Research Program Annual Meeting, Seattle, WA, 18 November 2019 (poster).
- S.N. Spak. Research Translation at the Iowa Superfund Research Program. 2019 NIEHS Superfund Research Program Annual Meeting, Seattle, WA, 19 November 2019 (posters and technology demos).
- H. Fang, G.M. Michalski, S.N. Spak. Incorporating isotopes into atmospheric chemistry models. 18<sup>th</sup> Annual CMAS conference, Chapel Hill, NC, 22 October 2019 (poster).
- H. Freund\*, S.N. Spak. Understanding Heat Vulnerability in Iowa City: Identifying at Risk Populations and Areas. 2019 Iowa APA Conference, Iowa City, IA, 9 October 2019 (poster, 3<sup>rd</sup> place).

- Z. Chen\*, G. DeBartolo\*, M. Delp\*, L. Foelsch\*, H. Qian, S.N. Spak. Siting wind energy in Linn County, Iowa. 2019 APA National Planning Conference, San Francisco, CA, 14 April 2019 (poster).
- 2018 H. Fang, G.M. Michalski, S.N. Spak. Incorporating isotopes into atmospheric chemistry models. American Geophysical Union Fall Meeting 2018, Washington, DC, 11 December 2018 (poster).
- A. Shu-Yin, L.E. Melymuk, S.N. Spak, M.L Diamond. Polychlorinated Biphenyl (PCB) Inventory and Assessment in the Great Lakes Region. SETAC North America 39<sup>th</sup> Annual Meeting, Sacramento, CA, 5 November 2018 (poster).
- H.L. Freund\*, S.N. Spak. Green roof policy simulations in San Francisco. 2018 American Planning Association Upper Midwest Conference, Rochester, MN, 27 September 2018 (*Best Poster*).
- C. Dong\*, R. Bullard, A. Singh, S.N. Spak, H. Matsui, C.O. Stanier. Physical and model-based characterization of NPF events and sensitivity of CN and CCN to changes in anthropogenic emissions in the Midwestern United States. 10<sup>th</sup> International Aerosol Conference, St. Louis, MO, 1 September 2018 (poster).
- S. Islam\*, S.N. Spak. Development and climate impacts on solar renewable energy capacity. National Planning Conference, New Orleans, LA, 22 April 2018 (poster).
- T.T.T. Mai\*, S. Islam\*, S.N. Spak. Mitigating flood risk by improving permeability. 2018 APA National Planning Conference, New Orleans, LA, 22 April 2018 (poster).
- T. Cullison\*, A. Kofoed\*, T.T.T. Mai\*, D. Elder\*, F. AlSaeedi\*, J. Fuller, S.N. Spak. The Cedar County Comprehensive Plan. 2018 APA National Planning Conference, New Orleans, LA, 22 April 2018 (poster).
- A. Nanoski\*, K. Mueller\*, J. Fuller, S.N. Spak. Envisioning a Better Cedar County. 2018 APA National Planning Conference, New Orleans, LA, 22 April 2018 (poster).
- H.L. Freund\*, S.N. Spak. Green roof policy urban microsimulation in San Francisco. College of Engineering Research Open House, Iowa City, IA, 19 April 2018 (poster).
- S.N. Spak, L. Laurian, G. DeBartolo\*, K. Englebert\*, L. Foelsch\*, J. Frias\*, J. Jepsen\*, M. Kauder\*, P. Schmidtt\*. Adaptation planning for Iowa Parks. Iowa Parks and Recreation Association Annual Conference, Coralville, IA, 27 March 2018 (platform presentation).
- H.L. Freund\*, S.N. Spak. Green roof policy urban microsimulation in San Francisco. Spring Iowa Informatics Showcase Symposium 2018, Iowa City, IA, 23 March 2018 (poster).

- 2017 S.N. Spak, C.O. Stanier, T.A. Neal, S. Herder\*, A. Malek\*, Z. Miller\*. The Iowa K-12 Climate Science Education Initiative: a comprehensive approach to meeting in-service teachers' stated needs for teaching climate literacy with NGSS. American Geophysical Union Fall Meeting 2017, New Orleans, LA, 13 December 2017 (platform presentation).
- H. Fang, G.M. Michalski, S.N. Spak. Parse, simulation, and prediction of NO<sub>x</sub> emission across the Midwestern United States. American Geophysical Union Fall Meeting 2018, New Orleans, LA, 11 December 2017 (poster).
- N. Herkert\*, S.N. Spak, A. Smith\*, J.K. Schuster, T. Harner, A. Martinez, K.C. Hornbuckle. Evaluation of PUF-PAS Sampling Rates in Any Environment. SETAC North America 38th Annual Meeting, Minneapolis, MN, 15 November 2017 (poster).
- S. Islam\*, T. Mai\*, S.N. Spak. Mitigating flood risk by improving permeability. Fall Iowa Informatics Showcase Symposium 2017, Iowa City, IA, 11 November 2017 (poster).
- J. Vargo, S. Younkin, M.L. Grabow, J.A. Patz, S.N. Spak, F. Al-Saeedi\*. An Evaluation of the Health and Economic Benefits from Increased Active Travel in the United States. American Public Health Association 2017 Annual Meeting, Atlanta, GA, 4 November 2017 (platform presentation).
- S. Islam\*, T. Mai\*, S.N. Spak. Mitigating flood risk by improving permeability in downtown Wellman, Iowa. APA Upper Midwest conference, Dubuque, IA, 5 October 2017 (*Best Student Poster*).
- S.N. Spak. Effective Transportation Planning for Air Quality & VMT: Learning from the First \$35 Billion in Congestion Mitigation & Air Quality Improvement Program Funding. Association of Collegiate Schools of Planning Annual Conference 2017, Denver, CO, 13 October 2017 (platform presentation).
- C. Dong\*, H. Matsui, S.N. Spak, C.O. Stanier. Impacts of New Particle Formation on Short-term Midwestern Meteorology and Air Quality as Determined by the NPF-explicit WRF-Chem. American Association for Aerosol Research 36th Annual Conference, Raleigh, NC, 20 October 2017 (poster).
- N. Janecek\*, S.N. Spak, K.C. Hornbuckle, C.O. Stanier. Expanding the Modeling of Semivolatile Aerosols within the CMAQ Framework: Development and Application to Oxidized Cyclic Siloxanes and Polychlorinated Biphenyl Compounds. American Association for Aerosol Research 36th Annual Conference, Raleigh, NC, 19 October 2017 (poster).



- C. Dong\*, S.N. Spak, R.O. Bullard, E.A. Stone, C.O. Stanier. Air Quality Impact of a Power Plant in the Midwest: High Resolution CMAQ-ISAM Modeling and Policy Applications. American Association for Aerosol Research 36th Annual Conference, Raleigh, NC, 17 October 2017 (poster).
- C. Dong\*, S.N. Spak, R.O. Bullard, E.A. Stone, C.O. Stanier. Air Quality Impact of a Power Plant in the Midwest: High Resolution CMAQ-ISAM Modeling and Policy Applications. Meteorology and Climate - Modeling for Air Quality Conference, Davis, CA, 14 September 2017 (poster).
- A.S. Ward, S.N. Spak, T. Balson, Y. Li\*, K.E. Dalrymple. Nutrient export from intensively managed landscapes integrates human and natural forcing. Critical Zone Science: Current Advances and Future Opportunities, Arlington, VA, 4 June 2017 (poster).
- T. Beghtol\*, S. Liu\*, M. Schukking\*, F. Waisath\*, S.N. Spak, L. Laurian. Midwestern Sustainability: The "Wright" Fit. 2017 APA National Planning Conference, New York, NY, 5 May 2017 (poster).
- 2016 S.N. Spak. This is the Anthropocene, and we're not just input files anymore: coupling urban Human and Earth Systems models for decision support. American Geophysical Union Fall Meeting 2016, San Francisco, CA, 12 December 2016 (platform presentation).
- S.N. Spak, A.S. Ward, Y. Li, K.E. Dalrymple. Influences of historical and projected changes in climate and land management practices on nutrient fluxes in the Mississippi River Basin, 1948-2100. American Geophysical Union Fall Meeting 2016, San Francisco, CA, 12 December 2016 (poster).
- C.L. Just, A. Johannes, D.O. Osterberg, S.N. Spak. Using Hollywood to make protective policy on chemicals. NIEHSFest, Research Triangle Park, NC, 7 December 2016 (poster).
- N.J. Herkert\*, S.N. Spak, A. Smith\*, A. Martinez, J. Schuster, T. Harner, K.C. Hornbuckle. Simulated sampling rates across the Global Atmospheric Passive Sampling (GAPS) Network. Society for Environmental Toxicology and Chemistry - North America annual meeting, 8 November 2016 (platform presentation).
- T.A. Neal, K. Kylbarda, S.N. Spak. Climate science and Iowa's science standards. Third Iowa Climate Educators Forum, Des Moines, IA, 7 October 2016 (platform presentation).
- X. Liu, I. Peate, S.N. Spak, T.E. Mattes. Reconstructing ancient prokaryotic lake communities from Lake Leija paleosediments in the Atacama desert. 16th International Symposium on Microbial Ecology, Montreal, QC, 22 August 2016 (platform presentation).

- K. Lain\*, S.N. Spak, H.S. Udaykumar, M. Schukking\*. Estimation of resource availability for Miscanthus as a dedicated bioenergy crop in the State of Iowa. ASME International Conference on Power Engineering 2016, Charlotte, NC, 27 June 2016 (poster).
- V. Borde\*, B. Curtis\*, P. Just\*, K. Gandhi\*, L. Laurian, S.N. Spak. Greening 45 Blocks of CBD: Sioux City, Iowa. 2016 APA National Planning Conference, Phoenix, AZ, 3 April 2016 (poster).
- J. Szykman, S.N. Spak, G.R. Carmichael, D.K. Henze, R. McNider, R.B. Pierce, T. Plessel, M. Freeman, H.-D. Choi, A.C. Lynch\*. NASA AQAST Tiger Team: Web-Enabled Tools for Air Quality Management – Extending use of the EPA Remote Sensing Information Gateway (RSIG). 10th Biennial NASA Air Quality Applied Science Team Meeting, Research Triangle Park, NC, 6 January 2016 (platform presentation).
- G.R. Carmichael, P. Lee, R.B. Pierce, D. McNider, E. Russel, E. Hyer, Y. Liu, A. Pour Biazar, Y. Hu, M.T. Odman, S.N. Spak, D. Edward, Y. Tang, L. Pan, H. Kim, D. Tong. AQAST 2011-2015 achievements, and TT Air Quality Reanalysis Project. 10th Biennial NASA Air Quality Applied Science Team Meeting, Research Triangle Park, NC, 6 January 2016 (platform presentation).
- 2015 J.E. Campbell, S.N. Spak, C.-C. Tsao, M.A. Mena, Y. Chen. Alternative Land-Use Scenarios for Bioenergy Production in the U.S. and Brazil American Geophysical Union Fall Meeting 2015, San Francisco, CA, 14 December 2015 (poster presentation).
- C.L. Just, D.O. Osterberg, S.N. Spak. The Iowa Superfund Research Program, Ecolotree, and the Town of Altavista Expand a Partnership. Superfund Research Program Annual Meeting, San Juan, PR, 16 November 2015 (poster).
- J. Vargo, M.A. Grabow, S.N. Spak, J.A. Patz. Climate Change Mitigating Health Co-Benefits of Healthy Transportation. American Public Health Association 2015 Annual Meeting, Chicago, IL, 3 November 2015 (Platform presentation).
- S.N. Spak, E.A. Minor\*, F. Meyer, Z.L. Hall. Planning Permaculture Food Systems in a Changing Climate. 55th Association of Collegiate Schools of Planning Annual Conference, Houston, TX, 24 October 2015 (Platform presentation).
- C.O. Stanier, S.N. Spak, Y.J. Kim, G.R. Carmichael, C. Dong. Great Lakes Air Quality. Meteorology And Climate - Modeling for Air Quality (MAC- MAQ), Sacramento CA, 16 September 2015 (*Invited* Platform presentation).

S.N. Spak, J. Szykman, G.R. Carmichael, D.K. Henze, R. McNider, R.B. Pierce, T. Plessel, M. Freeman, H.-D. Choi, A.C. Lynch\*. Tiger Team: Web-Enabled Tools for Air Quality Management Decision Support. 9th Biennial NASA Air Quality Applied Science Team Meeting, St. Louis, MO, 3 June 2015 (Platform presentation).

G.R. Carmichael, P. Lee, R.B. Pierce, D. McNider, E. Russel, E. Hyer, Y. Liu, A. Pour Biazar, Y. Hu, M.T. Odman, S.N. Spak, D. Edward, Y. Tang, L. Pan, H. Kim, D. Tong. Air Quality Reanalysis (Configuration for 2010 HTAP production). 9th Biennial NASA Air Quality Applied Science Team Meeting, St. Louis, MO, 3 June 2015 (Platform presentation).

A.C. Lynch\*, S.N. Spak. Identifying cost-effective travel demand strategies. 9th Biennial NASA Air Quality Applied Science Team Meeting, St. Louis, MO, 3 June 2015 (poster).

A.S. Ward, K. Prior, C.A. Davis, A.J. Burgin, T.D. Loecke, D.A. Riveros-Iregui, D.J. Schnoebelen, C.L. Just, S.A. Thomas, L.J. Weber, M.A. St. Clair, S.N. Spak, K.E. Dalrymple. In-stream Nitrogen Processing and Dilution in an Agricultural Stream Network. Society for Freshwater Science Annual Meeting, Milwaukee, WI, 18 May 2015 (Platform presentation).

E.A. Minor\*, S.N. Spak. Permaculture food systems and climate change. 2015 APA National Planning Conference, Seattle, WA, 20 April 2015 (poster).

A.C. Lynch\*, S.N. Spak. Identifying cost-effective travel demand strategies. 2015 APA National Planning Conference, Seattle, WA, 20 April 2015 (poster).

M. Brouse\*, D. Caldwell\*, R. Heitner\*, K. Morfitt\*, D.T. Sweeney\*, L. Laurian, H. Qiang, S.N. Spak. Projecting the economic impacts of Iowa frac-sand mining. 2015 APA National Planning Conference, Seattle, WA, 19 April 2015 (poster).

A.C. Lynch\*, K. Davila\*, H. Le\*, K.W. Randle\*, S. Sturtz\*, S.N. Spak. Get Active Sioux City. 2015 APA National Planning Conference, Seattle, WA, 18 April 2015 (Platform presentation).

S.N. Spak, C.O. Stanier, N. Riemer, Y.J. Kim, G.R. Carmichael. Midwest wintertime PM<sub>2.5</sub> Response to NO<sub>x</sub> and NH<sub>3</sub> emissions controls. American Meteorological Society 95th Annual Meeting, Phoenix, AZ, 8 January 2015 (Platform presentation).

C.O. Stanier, Y.J. Kim, S.N. Spak, N. Riemer, G.R. Carmichael. Nitrate, Nitric Acid, and Ammonia in the Upper Midwest—Measurements and Reactive Production Pathways. American Meteorological Society 95th Annual Meeting, Phoenix, AZ, 8 January 2015 (Platform presentation).

- S.N. Spak, P.E. Saide\*, M.A. Mena-Carrasco, G.R. Carmichael. Radiative forcing by coastal anthropogenic emissions explains observed 20th century Southeast Pacific cooling. American Meteorological Society 95th Annual Meeting, Phoenix, AZ, 6 January 2015 (Platform presentation).
- 2014 S.N. Spak, P.E. Saide\*, M.A. Mena-Carrasco, G.R. Carmichael. Radiative forcing by coastal anthropogenic emissions explains observed 20th century Southeast Pacific cooling. American Geophysical Union Fall Meeting, San Francisco, CA, 18 December 2014 (Platform presentation).
- G.R. Carmichael, D. Edwards, Y. Hu, E. Hyer, P. Lee, Y. Liu, R. McNider, M.T. Odman, R.B. Pierce, A. Pour Biazar, A. Russell, R. Saylor, S.N. Spak. Air Quality Reanalysis (Translating research to service) NASA Air Quality Applied Sciences Team 8th Biannual Meeting, Georgia Institute of Technology, 3 December 2014 (Platform presentation).
- S.N. Spak, G.R. Carmichael, D.K. Henze, G. Grell, P.E. Saide\*, P. Marrapu, E.A. Minor\*, N. Sobhani, J.J. Guerette, L. Zhang, F. Lacey. 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. EPA STAR Black Carbon Review Meeting, Research Triangle Park, NC, 13 November 2014 (Platform presentation).
- P.E Saide\*, S.N. Spak, B. Pierce, J. A. Otkin, T. K. Schaack, A. K. Heidinger, A. Da Silva, M. Kacenelenbogen, G.R. Carmichael. Central American biomass burning smoke impacts on tornado severity in the US: Mechanism and multiple episode analysis. 27th Conference on Severe Local Storms, Madison, WI, 4 November 2014 (Platform presentation).
- K. Davila\*, D. Sweeney\*, S.N. Spak. Urban and Regional Land Cover Change in the Cedar Rapids-Iowa City Corridor: Applications and Implications for Policy Analysis. Upper Midwest APA Planning Conference, Mason City, IA, 24 October 2014 (poster, 2<sup>nd</sup> place).
- E.A. Minor\*, S.N. Spak. Adapting Permaculture Food Systems Planning to Iowa's Changing Climate. Upper Midwest APA Planning Conference, Mason City, IA, 24 October 2014 (poster, 3<sup>rd</sup> place).
- 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. Uncontrolled Combustion of Shredded Tires in a Landfill: Emission Characterization, Population Exposure and Public Health Responses. American Association for Aerosol Research 33rd Annual Conference, Orlando, FL, 21 October 2014 (poster).

R.L. Bullard, E.A. Stone, C.O. Stanier, A. Singh, C. Dong\*, C. Rathanyake, T. Jayarathne, S.N. Spak. How To Achieve Further PM2.5 Reductions in a Midwestern City? A Combined Modeling and Measurement-Based Analysis of Iowa City. 32nd Annual American Association for Aerosol Research Conference. Orlando FL, 20 October 2014.

S.N. Spak, C.E. Shanahan\*, A. Martinez, K.C. Hornbuckle. An Inventory of PCBs in Chicago and opportunities for reduction in airborne emissions and human exposure. 8th PCB workshop, Woods Hole, MA, 8 October 2014 (Platform presentation).

P.E Saide\*, S.N. Spak, B. Pierce, J. A. Otkin, T. K. Schaack, A. K. Heidinger, A. Da Silva, M. Kacenelenbogen, G.R. Carmichael. Central American biomass burning smoke can increase tornado severity in the US. 13th Quadrennial ICAGP Symposium & 13th IGAC Science Conference on Atmospheric Chemistry. Natal, Brazil, 22 September 2014 (Platform presentation).

S.N. Spak, C.E. Shanahan\*, A. Martinez, K.C. Hornbuckle. An Inventory of PCBs in Chicago and opportunities for reduction in airborne emissions and human exposure. American Chemical Society 248th National Meeting, San Francisco, CA, 11 August 2014 (Platform presentation).

Z.L. Rodenburg, S.N. Spak, C.E. Shanahan\*, K.C. Hornbuckle. Synthetic musk fragrances in Chicago and Lake Michigan air. American Chemical Society 248th National Meeting, San Francisco, CA, 11 August 2014 (Platform presentation).

A. Martinez, N.T. Petrich\*, S.N. Spak, D. Hu, G.R Carmichael, K.C. Hornbuckle. Transport modeling of PCB airborne emissions from Indiana Harbor and Ship Canal into the local atmosphere. American Chemical Society 248th National Meeting, San Francisco, CA, 11 August 2014 (Platform presentation).

G.R. Carmichael, D. Edwards, Y. Hu, E. Hyer, P. Lee, Y. Liu, R. McNider, M.T. Odman, R.B. Pierce, A. Pour Biazar, A. Russell, R. Saylor, S.N. Spak. Air Quality Reanalysis (Translating research to service) NASA Air Quality Applied Sciences Team 7th Biannual Meeting, Harvard University, 6 June 2014 (Platform presentation).

P.E Saide\*, S.N. Spak, B. Pierce, J. A. Otkin, T. K. Schaack, A. K. Heidinger, A. Da Silva, M. Kacenelenbogen, G.R. Carmichael. Role of Central American biomass burning smoke in increasing tornado severity in the U.S. Sixth Symposium on Aerosol-Cloud-Climate Interactions, Atlanta, GA, 2 February 2014 (Platform presentation).

- J. Szykman, S.N. Spak, D.K. Henze, R. McNider, R.B. Pierce. Web-Enabled Tools for Air Quality Management Decision Support. NASA Air Quality Applied Sciences Team 6th Biannual Meeting, Rice University, 15 January 2014 (Platform presentation).
- 2013 Spak, S.N., Petrich, N.T.\*, Carmichael, G. R., Hu, D., Martinez, A., Hornbuckle, K. C. Assessing spatiotemporal commensurability for semi-volatile compounds in passive and active sampling through simulated passive air sampling rates and concentrations. American Chemical Society Annual Meeting, Indianapolis, Indiana, September 2013 (Platform presentation).
- Petrich, N.T.\*, Spak, S. N., Carmichael, G. R., Martinez, A., Hu, D., Hornbuckle, K. C. Air Sampling Rates for Semi-Volatile Compounds on Passive Samplers. International Association of Great Lakes Research, West Lafayette, Indiana, June 2013 (Platform presentation).
- P. E. Saide\*; S.N. Spak; R. B. Pierce; J. Otkin; R. Rabin; T. Schaack; A.K. Heidinger; A. da Silva; M.S. Kacenenbogen; J. Redemann; G.R. Carmichael. Role of Central American biomass burning smoke in increasing tornado severity in the US. American Geophysical Union 2013 Fall Meeting, A23C-0243, December 2013 (Platform presentation).
- G.R. Carmichael, P. Marrapu\*, Y.F. Cheng; P.E. Saide\*, G. Beig; S.N. Spak; M.G. Schultz; S. Kulkarni, N. Sobhani, S.K. Sahu; M. Gao; L. Liu. Emissions and Impacts of Short-Lived Climate Forcers. American Geophysical Union 2013 Fall Meeting, A13I-01, December 2013 (Platform presentation).
- A. Singh, R.O. Bullard, A. Hesselink, A. Hassanein, D. Beardsley, M.D. Wichman, T. Peters, S.N. Spak, E.A. Stone, C.O. Stanier. Air quality during Landfill Fire in Iowa City, Summer 2012: Ambient Measurement and Plume Characterization. American Association for Aerosol Research Annual Meeting, Portland, OR, October 2013 (Platform presentation).
- A. Martinez, Petrich, N.T.\*, Spak, S.N., Hu, D., Carmichael, G. R., Hornbuckle, K. C. Dispersion Modeling of PCB Airborne Emissions from the Indiana Harbor and Ship Canal into the local Atmosphere. International Association of Great Lakes Research, West Lafayette, Indiana, June 2013 (Platform presentation).
- Y. Ma, Petrich, N.T.\*, Venier, M., Salamova, A., Hu, D., Spak, S.N., Hornbuckle, K.C., Hites, R.A. Identification and Measurement on Organophosphorus Flame Retardants in Chicago's Atmosphere. International Association of Great Lakes Research, West Lafayette, Indiana, June 2013 (Platform presentation).

- M. Pooley\* and S.N. Spak. Prioritizing roadway infrastructure networks for accessibility, safety, and health: a cost-benefit approach to rational planning for complete streets. 2013 APA National Planning Conference, Chicago, IL, 15 April 2013 (Poster).
- S.N. Spak. Iowa air quality: sources, trends, and new resources for emergency and routine events. IPHA Governor's Conference on Public Health, Ames, IA, 9 April 2013 (Platform presentation).
- M. Pooley\* and S.N. Spak. Prioritizing Complete Streets for Commuter Safety. Iowa Bike Summit, Ames, IA, 25 January 2013 (Platform presentation).
- P.E. Saide\*, G.R. Carmichael, S.N. Spak, P. Minnis, J.K. Ayers. Improving aerosol distributions below clouds by assimilating satellite-retrieved cloud droplet number. Fifth Symposium on Aerosol-Cloud-Climate Interactions, Poster presentation at the American Meteorological Society 93rd Annual Meeting, Austin, TX, 7 January 2013 (Poster).
- N.T. Petrich\*, S.N. Spak, G.R. Carmichael, D. Hu, A. Martinez, K.C. Hornbuckle. Simulating and explaining passive air sampling rates for semi-volatile compounds on polyurethane foam disks. American Meteorological Society 93rd Annual Meeting, Austin, TX, 6 January 2013 (Poster).
- 2012 M.A. Mena-Carrasco, P.E. Saide\*, S.N. Spak, R. Delgado. Recent developments in AQF in Santiago, Chile. 4th International Workshop on Air Quality Forecasting Research, Geneva, Switzerland, 12 December 2012 (Platform presentation).
- Y.J. Kim, S.N. Spak, G.R. Carmichael, N. Riemer, J. Baek, A. Fontaine, M. Janssen, D.M. Kanski. Quantifying wintertime aerosol nitrate formation pathways and their vertical profiles in the Great Lakes region of North America by CMAQ process analysis and hourly observations. Abstract 43D-0176, AGU 2012 Fall Meeting, San Francisco, CA, 6 December 2012 (Poster).
- P.E. Saide\*, G.R. Carmichael, S.N. Spak, P. Minnis, J.K. Ayers, Z. Liu, H.-C. Lin; C. Schwartz. Improving aerosol distributions below clouds by assimilating satellite-retrieved cloud droplet number. Abstract A31I-06, AGU 2012 Fall Meeting, San Francisco, CA, 5 December 2012 (Platform presentation).
- S.N. Spak and Mark Pooley\*. Design strategies for human & earth systems modeling to meet emerging multi-scale decision support needs. Abstract GC11D-1042, AGU 2012 Fall Meeting, San Francisco, CA, 3 December 2012 (Poster).
- G.R. Carmichael, P. Marrapu, Y. Cheng, G. Beig, S.N. Spak, M. Decker, M.G. Schultz, S.K. Sahu. Sectoral Contributions to Black Carbon Concentrations and Radiative Forcing in Delhi. Abstract A13M-02, AGU 2012 Fall Meeting, San Francisco, CA, 3 December 2012 (Platform presentation).

G.R. Carmichael, P.E. Saide\*, S.N. Spak. Improving aerosol predictions over California via assimilation of cloud and aerosol optical depths. Fourth Biennial NASA AQAST Meeting, California Air Resources Board, Sacramento, CA, 29 November 2012 (Platform presentation).

Y. Ma, N.T. Petrich\*, M. Venier, D. Hu, S.N. Spak, K.C. Hornbuckle, R. Hites. Atmospheric distribution of flame retardants in Chicago, Illinois. Society of Environmental Toxicology and Chemistry, Long Beach, CA, 12 November 2012 (Poster).

N.T. Petrich\*, S.N. Spak, G.R. Carmichael, D. Hu, A. Martinez, K.C. Hornbuckle. Simulating and explaining passive air sampling rates for semi-volatile compounds on polyurethane foam disks. Society of Environmental Toxicology and Chemistry, Long Beach, CA, 12 November 2012 (Poster).

M. Pooley\*, S.N. Spak. Evaluating access to current and proposed facilities in the Iowa City area using urban network analysis. American Planning Association Iowa Chapter Annual Conference, Ames, IA, 1 November 2012 (Poster).

S.N. Spak. Building a next generation public health toolkit for local air pollution events. Iowa Environmental Health Association Fall Conference, Marshalltown, IA, 23 October, 2012 (Platform presentation).

S. Sousan\*, T.F. Chai, J. Baek, S.N. Spak, N. Kumar, J. Oleson, S. Kulkarni, G.R. Carmichael, C. Stanier. A case study in fusion of surface PM<sub>2.5</sub> observations and 3D air quality model output. American Association for Aerosol Research 31st Annual Conference Minneapolis, MN, 8 October 2012 (Platform presentation).

C. Stanier, S.N. Spak, Yoo Jung Kim, J. Carlson, J. Baek, G.R. Carmichael, A. Fontaine, M. Janssen, M. Koerber, N. Riemer, S. Shaw. LADCO Winter Nitrate Study – sensitivity of 2009 winter PM<sub>2.5</sub> to modeled reductions in NO<sub>x</sub> and ammonia. American Association for Aerosol Research 31st Annual Conference, Minneapolis, MN, 10 October 2012 (Platform presentation).

Y.J. Kim, S.N. Spak, G.R. Carmichael, N. Riemer, J. Baek, A. Fontaine, M. Janssen, D.M. Kenski, S. Shaw. Integrated process and reaction rate analysis for wintertime nitrate formation and chemical transport in the Midwestern U.S using CMAQ. CMAS 2012, Chapel Hill, NC, 15 October 2012 (Poster).



G.R. Carmichael, S.N. Spak, P.E. Saide, P. Marrapu, N. Sabhani, S. Kulkarni, M. Huang, J.J. Guerrette, F. Lacey, D.K. Henze, Y. Mao, Q. Li, K.-N. Liou, J. Randerson, G. Grell. 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. EPA Black Carbon Kick-off Meeting, Research Triangle Park, NC, 21 May 2012 (Platform presentation).

S.N. Spak. Improving air quality analysis through closer integration of observations & models. Third Biennial NASA AQUEST Meeting, Madison, WI, 13 June 2012 (Platform presentation).

M. Pooley\*, S.N. Spak. Building better bike networks. Think Bicycles Bike to Work Week, Iowa City, IA, 15 May 2012 (Platform presentation).

N.T. Petrich\*, S.N. Spak, G.R. Carmichael, D. Hu, A. Martinez, Z. Rodenburg, K.C. Hornbuckle. Quantifying meteorological artifacts in passive air sampling: implications for urban and regional POPs monitoring in the Great Lakes region. International Association for Great Lakes Research, Cornwall, Ontario, 14 May 2012 (Platform presentation).

C.O. Stanier, S.N. Spak, Y. Kim, G.R. Carmichael, N. Riemer, S.-R. Lee, J. Baek, T. Rohlf, S. Sousan, A. Singh. LADCO Winter Nitrate Study. US EPA Regional/State/Local Modelers Workshop, Chicago, IL, 5 May 2012 (Platform presentation, invited).

R. Fenning\*, M. Beach\*, N. Benson\*, A. Bennett\*, A. Gebhart\*, E. Isaacs\*, Y. Li\*, H. Papineschi\*, M. Vitale\*, S.N. Spak. Sustainable Dubuque: Renewable energy mapping & policy. Presentation to Dubuque City Council, Dubuque, IA, 8 May 2012 (Platform presentation).

S.N. Spak, D. Babb\*, J. Bailey\*, I. Belding\*, E. Chavanin\*, J. Endsley\*, E. House\*, E. Sampson\*, J. Sanchagrin\*, B. Voigt\*, G. Wenman\*, L. Whitson\*. Environmental Policy, Urban & Regional Planning 246: Student research develops new policy solutions for emerging sustainability issues. UI Sustainability Festival, Iowa City, IA, 27 April 2012 (Poster).

R. Fenning\*, M. Beach\*, N. Benson\*, A. Bennett\*, A. Gebhart\*, E. Isaacs\*, Y. Li\*, H. Papineschi\*, M. Vitale\*, S.N. Spak. Student capstone presentation: Renewable energy asset mapping and policy Implications in Dubuque, Iowa. 2012 APA National Planning Conference, Los Angeles, CA, 16 April 2012 (Platform presentation).

- N.T. Petrich\*, S.N. Spak, G.R. Carmichael, D. Hu, A. Martinez, Z. Rodenburg, K.C. Hornbuckle. Quantifying meteorological artifacts in passive air sampling: implications for urban and regional POPs monitoring in the Great Lakes region. 14th Annual James F. Jakobsen Graduate Research Conference, University of Iowa, Iowa City, IA, 24 March 2012 (Poster).
- E. Isaacs\*, M. Beach\*, Y. Li\*, N. Benson\*, M. Vitale\*, A. Gebhart\*, H. Papineschi\*, R. Fenning\*. Renewable Energy Capacity Mapping and Policy in Dubuque, Iowa. 14th Annual James F. Jakobsen Graduate Research Conference, University of Iowa, Iowa City, IA, 24 March 2012 (Platform presentation).
- S.N. Spak. NASA Air Quality Applied Science Team: decision support for air quality managers in the Upper Midwest. NASA Applied Remote Sensing Training Program, Madison, WI, 14 March 2012 (Platform presentation).
- M. Pooley\*, S.N. Spak. Developing Iowa Scenic Bikeways. Iowa Bike Summit, Des Moines, IA, 28 January, 2012 (Platform presentation).
- P.E. Saide\*, G.R. Carmichael, S.N. Spak, M.A. Mena-Carrasco. Modeling marine boundary layer and stratocumulus clouds in the southeast pacific during VOCALS REX using WRF-Chem: configuration and aerosol-climate interactions. 2012 Annual Meeting of the American Meteorological Society, New Orleans, LA, 26 January 2012 (Platform presentation).
- P.E. Saide\*, G.R. Carmichael, S.N. Spak, M.A. Mena-Carrasco. Modeling marine boundary layer and stratocumulus clouds in the southeast pacific during vocals rex using wrf-chem: configuration and aerosol-climate interactions, 2012 Annual Meeting of the American Meteorological Society, New Orleans, LA, 26 January 2012.
- 2011 T.A. Holloway, S.D. Plachinski, J.L. Morton, S.N. Spak. Assessing Climate Impacts on Air Pollution from Models and Measurements, 2011 American Geophysical Union Fall Meeting, San Francisco, CA, 5-9 December, 2011, GC31E-09.
- Y.J. Kim, S.N. Spak, C.O. Stanier, G.R. Carmichael, J. Baek, A. Fontaine, M. Janssen, D.M. Kanski, S.L. Shaw. Secondary ammonium nitrate air pollution episodes in the U.S. Great Lakes region: sensitivity to NO<sub>x</sub>, NH<sub>3</sub>, and SO<sub>2</sub> emission changes, 2011 American Geophysical Union Fall Meeting, San Francisco, CA, 5-9 December, 2011, A32A-03.
- P. Marrapu\*, Y. Cheng, G.R. Carmichael, G. Beig, S.N. Spak, M. Lin, M. Decker, M.G. Schultz, W. Winiwarer. Local and regional interactions between air quality and climate in New Delhi: a sector-based analysis, 2011 American Geophysical Union Fall Meeting, San Francisco, CA, 5-9 December, 2011, GC33A-1054.

P.E. Saide\*, G.R. Carmichael, S.N. Spak. Seeing aerosol through clouds: assimilating submicron marine aerosol concentrations from satellite cloud retrievals, 2011 American Geophysical Union Fall Meeting, San Francisco, CA, 5-9 December, 2011, A51B-01.

N.T. Petrich\*, S.N. Spak, Z.L. Rodenburg\*, G.R. Carmichael, K.C. Hornbuckle. Estimating hourly passive sampler mass transfer rates and concentrations in an urban landscape using a numerical weather prediction model, SETAC Boston, Boston, MA, 13-17 November 2011.

R. Marek, S.N. Spak, P.S. Thorne, J. DeWall, K.C. Hornbuckle. PCBs and their hydroxylated metabolites in children and their mothers living in urban and rural communities, SETAC Boston, Boston, MA, 13-17 November 2011.

S.N. Spak, J. Baek, G.R. Carmichael, A. Fontaine, M. Janssen, Y.J. Kim, M. Koerber, M. Majewski N. Riemer, C.O. Stanier. Understanding fine particle episodes in the Upper Midwest during the 2009 LADCO Winter Nitrate Study using CMAQ and CAMx: model performance, processes, and response to emissions controls, 2011 CMAS Conference, Chapel Hill, NC, 24-26 October 2011.

G. Beig, S.K. Sahu, G.R. Carmichael, S.N. Spak, S. Reka, S. Kulkarni, S.D. Ghude, K. Ali, L. Jalkanen. An integrated modeling and monitoring approach to forecast the air quality for a Mega City in Asia for Commonwealth Games 2010. World Climate Research Programme Open Science Conference, Denver, CO, 24-28 October 2011.

S. Sousan\*, J. Baek, S.N. Spak, N. Kumar, J. Oleson, G.R. Carmichael, C.O. Stanier. Optimizing data assimilation parameters for improved CMAQ PM<sub>2.5</sub> estimates over the United States to inform epidemiological studies, American Institute of Chemical Engineers 2011 Annual Meeting, Minneapolis, MN, 17 October 2011.

S. Sousan\*, J. Baek, S.N. Spak, N. Kumar, J. Oleson, G.R. Carmichael, C.O. Stanier. Optimizing data assimilation parameters for improved CMAQ PM<sub>2.5</sub> estimates over the United States to inform epidemiological studies, 30th American Association for Aerosol Research Annual Conference, Orlando, FL, 3-7 October 2011, 485.

C.O. Stanier, S.N. Spak, J. Baek, et al. Overview of the LADCO Winter Nitrate Study: Modeling and measurement of hourly gas aerosol concentrations and meteorology during nitrate episodes, 30th American Association for Aerosol Research Annual Conference, Orlando, FL, 3-7 October 2011, 659.

- G.R. Carmichael, Y. Cheng, S.N. Spak, P.E. Saide\*, P. Marrupu\*. Sensitivity analysis of aerosols feedbacks on chemistry and climate at urban and regional scales, American Chemical Society 2011 Annual Meeting, Denver, CO, 31 August 2011, 257.
- S.N. Spak, M.A. Mena-Carrasco, P.E. Saide\*, G.R. Carmichael. Simulating aerosols, radiative forcing, and impacts on marine stratocumulus during VOCALS REx, 3rd VOCALS meeting, Miami, FL, 21 March 2011.
- 2010 P. Marrapu\*, Y. Cheng, G. R. Carmichael, G. Beig, S.N. Spak, S. K. Sahu, M. Decker, M. G. Schultz. Two way interactions between criteria air pollutants and meteorology over Delhi. 2010 AGU Fall Meeting, San Francisco, CA, 15 December, 2010. A33D-0206.
- J.E. Campbell, S.N. Spak, M.A. Mena-Carrasco, G.R. Carmichael, Y. Chen, C.C. Tsao. Modern biofuels life-cycle effects on black carbon emissions and impacts. 2010 AGU Fall Meeting, San Francisco, CA, 15 December, 2010. A33D-0178.
- C.C. Tsao, J.E. Campbell, Y. Chen, G.R. Carmichael, M.A. Mena-Carrasco, S.N. Spak. Emissions and health benefits from using sugarcane waste as a cellulosic ethanol feedstock. 2010 AGU Fall Meeting, San Francisco, CA, 14 December, 2010. B22D-02
- M.A. Mena-Carrasco, G.R. Carmichael, S.N. Spak, L. T. Molina, P. Saide. Characterizing anthropogenic sources of pollution and their influence on regional air quality and meteorology during the VOCALS-REX experiment. 2010 AGU Fall Meeting, San Francisco, CA, 17 December, 2010. A51A-0059.
- M. Huang\*, G. R. Carmichael, S. Spak, B. Adhikary, S. Kulkarni\*, Y. Cheng, C. Wei, Y. Tang, D. D. Parrish, S. J. Oltmans, A. D'Allura, P. O. Wennberg, L. G. Huey, J. E. Dibb, J. L. Jimenez, A. J. Weinheimer, A. Kaduwela, C. Cai, M. Wong, R. Pierce, J. A. Al-Saadi, D. G. Streets, Q. Zhang. Impacts of long-range transport and local emissions on California near-surface ozone and sulfur oxides during the ARCTAS period--A multi-scale modeling study. 2010 AGU Fall Meeting, San Francisco, CA, 14 December, 2010. A23D-07.
- S. Sousan\*, J. Baek, N. Kumar, J. Oleson, S.N. Spak, G.R. Carmichael, C.O. Stanier. Use of Surface Measurements and MODIS Aerosol Optical Depth for Improved Model Based PM<sub>2.5</sub> Prediction in the United States. American Association for Aerosol Research 29th Annual Conference, Portland, OR, 26 October 2010.

- C.O. Stanier, J. Baek, M. Caughey, A. Beranek-Collins, G.R. Carmichael, E. Edgerton, D. Kenski, M. Koerber, S.-R. Lee, N. Riemer, S. Shaw, S. Sousan, S.N. Spak (2010). Overview of the LADCO Winter Nitrate Study and New Insights on Wintertime PM Episodes in the Upper Midwest. American Association for Aerosol Research 29th Annual Conference, Portland, OR, 26 October 2010.
- Y. Lee, S. Springston, J. Jayne, J. Wang, G. Senum, J. Hubbe, L. Alexander, J. Brioude, S.N. Spak, M. Mena-Carrasco, L. Kleinman, P. Daum (2010). Aerosol Composition, Chemistry, and Source Characterization During the 2008 VOCALS Experiment. 1st Science Team Meeting of the U.S. DOE Atmospheric System Research Program, Bethesda, MD, 15-19 March 2010.
- 2009 M. Huang\*, G.R. Carmichael, B. Adhikary, S. Kulkarni\*, S.N. Spak, C. Wei, Y. Tang, D.D. Parrish, S.J. Oltmans, A.J. Weinheimer, C. Wiedinmyer, D.G. Streets, Q. Zhang, A. D'Allura, R. Pierce, J.A. Al-Saadi (2009). A regional-scale modeling study of Ozone transport from oceanic background to northern Sacramento Valley during ARCTAS/California period. 2009 AGU Fall Meeting, San Francisco, CA, 17 December, 2009. Abstract A41D-0138.
- B. Langenbrunner, M.G. Hastings, S.N. Spak, W. Petersen (2009). Is there a quantifiable relationship between lightning and nitrate deposition in the subtropics? 2009 AGU Fall Meeting, San Francisco, CA, 15 December, 2009. Abstract A21C-0193.
- S.N. Spak, M.A. Mena-Carrasco, G.R. Carmichael (2009). Influences of land-ocean-atmosphere dynamics and emissions sectors on atmospheric chemical transport during VOCALS REx. 2009 AGU Fall Meeting, San Francisco, CA, 14 December, 2009. Abstract A13J-0439.
- G.R. Carmichael, C. Wei, Y. Cheng, S.N. Spak, D.G. Streets, Q. Ziang, Z. Lu, K. Pickering, N. Krotkov, C. Li, J. Witte, T. Chai (2009). Dynamic updating of emissions to support air quality forecasting and analysis: a methodology for satellite-based rapid emission inventory development. NOAA International Workshop on Air Quality Forecasting Research, Boulder, CO, 2 December 2009.
- S. Sousan\*, N. Kumar, S.N. Spak, A. Beranek-Collins, G.R. Carmichael and C.O. Stanier (2009). Use of Surface Measurements and MODIS Aerosol Optical Depth for Improved Model Based PM<sub>2.5</sub> Prediction in the United States. American Association for Aerosol Research 28th Annual Conference Abstract 1371, Minneapolis, MN, 27 October 2009.

- C.O. Stanier, A Bender, G.R. Carmichael, A. Beranek-Collins, M.B. Yarker, T. Holloway, S.-R. Lee, A.K. Pettibone, S.N. Spak, S. Sousan (2009). Understanding Episodes of High Airborne Particulate Matter in the Upper Midwest. American Association for Aerosol Research 28th Annual Conference Abstract 1381, Minneapolis, MN, 26 October 2009.
- J.A. Patz, S. Vavrus, C. Uejio, M.L. Grabow, S.N. Spak, T. Holloway (2009). Climate Change & Water & Air Quality: Future scenarios of risks and co-benefits in the Great Lakes Region, 2009 National Environmental Public Health Conference, Atlanta, GA, 26 October 2009.
- M.L. Grabow, S.N. Spak, J. Sledge, S. Ventura, J.A. Patz (2009). Health co-benefits from green transportation: The Triple-Win Biking Project. 21st Annual Conference of the International Society for Environmental Epidemiology, Dublin, Ireland, 25 August 2009.
- S.N. Spak, M.A. Mena-Carrasco, G.R. Carmichael (2009). VOCALS emissions inventories and regional scale chemical transport. 2nd VOCALS Workshop, Seattle, WA, 11 July 2009.
- P. Marrapu\*, G.R. Carmichael, S.N. Spak, M. Huang\*, A. Jamaroensan\*, G.S. Diskin, P. Wennberg, A. Weinheimer (2009). Air quality in California: Comparison of WRF-CHEM predictions with observations from the NASA ARCTAS field experiment. 10th WRF Users' Workshop, Boulder, CO, 23-26 June 2009.
- M.A. Mena-Carrasco, G.R. Carmichael, L.T. Molina, S.N. Spak, T. Campos, C. McNaughton, A. Clarke, L. Gallardo (2009). Evaluating the regional influence of Santiago de Chile on air quality and meteorology during VOCALS-REx, Geophysical Research Abstracts, Vol. 11, EGU2009-0.
- 2008 S.N. Spak, T. Holloway, A. Mednick, B. Stone (2008). Impacts of lake effect meteorology on the seasonality of ozone and fine particles over the Great Lakes: a model study, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract A41H-0215.
- T. Holloway, C. Dresser, A Bickford, S.N. Spak (2008). The response of ozone to transportation technology and policy options, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract A21A-0110.
- C.C. Moberg, T. Holloway, D.J. Vimont, A. Steiner, S.N. Spak (2008). The impact of ENSO on surface ozone concentrations over California, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract A21A-0110.
- 2007 S.N. Spak, T. Holloway, A. Mednick, B. Stone (2007). Evaluation of bottom-up mobile emissions inventories in the Upper Midwest. *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract A23C-1479.

- S.N. Spak and T. Holloway (2007). A regional aerosol modeling perspective on global models. 3rd GEOS-Chem User Meeting, Cambridge, MA, 11-13 April 2007.
- 2006 S.N. Spak and T. Holloway (2006). Seasonality of black carbon over the Great Lakes. *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract A43A-0124.
- H.L. Woods, S.N. Spak, T. Holloway (2006). Meteorological contribution to variability in particulate matter concentrations. *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract A53E-0243.
- S.N. Spak and T. Holloway (2006). An evaluation of primary aerosol transport in the Great Lakes Region. 5th annual CMAS Conference, Research Triangle Park, NC, 16 October 2006.
- S.N. Spak and T. Holloway (2006). A comparison of statistical and dynamical downscaling for surface temperature in North America. *Air Pollution as Climate Forcing: A Second Workshop*. International Center for Climate & Society, Honolulu, HI, April 5, 2006.
- 2004 T. Holloway and S.N. Spak (2004). A reduced form model for assessing future climate and air quality. *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract A52A-05.
- S.N. Spak, T. Holloway, B. Lynn, R. Goldberg (2004). A comparison of statistical and dynamical downscaling for surface temperature in North America. *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract A53A-0852.
- T. Holloway, J. Bachan, S.N. Spak (2004). Performance of CMAQ on a Mac OS X System. 3rd CMAS Conference, Research Triangle Park, NC, 19 October 2004.

### **INVITED RESEARCH PRESENTATIONS, UNIVERSITY OF IOWA**

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

## **TEACHING, UNIVERSITY OF IOWA**

### **Graduate (all introduced as new courses)**

Environmental Policy (3 credit hours, Spring 2012-2014, Spring 2016, Spring 2021)

Environmental Policy & Management (3 credit hours, Spring 2017-2020, with Lucie Laurian)

Field Problems in Planning (3 credit hours, Fall 2011-Spring 2012, Fall 2014-Fall 2020)

Global Environmental Systems (3 credit hours, Fall 2011)

Inquiry approaches to Climate, Weather, and Energy in the 6-9 Classroom (3 credit hours, Summer 2011, with Charles Stanier, CBE, and Morgan Yarker, Education)

Megacities Seminar and Studio, (1-3 credit hours, Spring 2013, Fall 2014, Spring 2017-2018)

Modeling Dynamic Systems (3 credit hours, Fall 2012-2013, Spring 2015, Fall 2015-2020)

### Readings

Resilient Rural Communities, Spring 2021

Wildfire Management, Spring 2021

Navajo Planning, Spring 2021

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

Brownfields, Spring 2019

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**

Eight Generational Planning - Envisioning Regenerative Cities (3 credit hours, Spring 2019 with Lucie Laurian, Spring 2020 with Steven Spears)

First Year Seminar: Climate Change, Air Pollution & Human Health, (Spring 2010, with Gregory Carmichael, CBE)

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

#### Environmental Policy & Management

- 2021 City of Iowa City Solar Energy Study
- 2020 Johnson Clean Energy District, electrification and greenhouse gas mitigation decision support (operational, 2020)
- 2019 Implementation Plan for the City of Iowa City Climate Action Plan (operational, 2019)
- 2018 Adaptation Plan for Terry Trueblood Recreation Area and Iowa River, City of Iowa City and Sustainability Theme Semester (initial implementation funded by a \$200K Iowa DNR REAP grant, 2019)
- 2017 English River Watershed Management Authority, Applied watershed management in an urban and rural context (operational, 2017)

#### Field Problems in Planning Capstone

- 2020 - 2021 Maquoketa River Watershed Management Plan
- 2019 - 2020 Tama Comprehensive Plan (adopted, 2020)
- 2018 - 2019 Linn County Wind Energy Land Use Compatibility Assessment (decision support operational, 2019)
- 2017 - 2018 Cedar County Comprehensive Plan (adopted, 2018)  
Cedar County Great Places Vision Plan (designated, 2018)
- 2016 - 2017 Mason City Sustainability Plan
- 2015 - 2016 Sioux City Downtown Greenspace Plan (initial implementation funded by a \$500K gift, 2016; inaugural Iowa APA Exemplary Student Project Award, 2018)

- 2014 - 2015      Sioux City Active Transportation Plan (adopted, 2015)  
                       Frac-Sand Mining in Winneshiek County: A Comprehensive Impact  
                       Study (resolution adopted, 2015)
- 2011 - 2012      Renewable Energy for a Smarter Sustainable Dubuque  
                           (decision support operational, 2012)

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

### **PhD Committees**

- Current*    Lingyun Du, Chemical & Biochemical Engineering  
                   Gonzalo Ferrada, Chemical & Biochemical Engineering  
                   Behrooz Roozitalab, Chemical & Biochemical Engineering
- 2018        Maryam Abdi Oskouei, Civil & Environmental Engineering  
                   Can Dong, Chemical & Biochemical Engineering  
                   Nicholas Herkert, Civil & Environmental Engineering  
                   Nathan Janecek, 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  
                   Aditsuda Jamroensan, Civil & Environmental Engineering
- 2012        Jeremy Bril, Civil & Environmental Engineering  
                   Pallavi Marrapu, Chemical & Biochemical Engineering  
                   Sinan Sousan, Chemical & Biochemical Engineering

### **MS Thesis Supervised**

- 2012        Nicholas Petrich, Civil & Environmental Engineering: simulating & explaining  
                   passive air sampling rates, analyte air concentrations & uptake rates for  
                   semi-volatile compounds on polyurethane foam disks

### **MS Committees**

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

### **Urban & Regional Planning Graduate Research Assistants (2+ semesters)**

- 2018 - 2020 Harrison Freund, Ursula Ferrier
- 2017 - 2019 Gia DeBartolo
- 2016 - 2018 Faris Al-Saeedi, Sadya Islam, Trang Mai
- 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 Aaron Kline  
Claire Richmond (Chair)

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

- 2020 - present Joshua Engelbrecht, Maya Simon
- 2019 - 2021 Leon Begay, Jack Johansen
- 2018 - 2020 Dillon Constant, Harrison Freund, Nelson Loring
- 2017 - 2019 Gia DeBartolo, Emily Legel

2016 - 2018 Luke McClanahan, Matthew Morlan  
2015 - 2017 Menno Schukking  
2015 Romeo Abraham  
2014 - 2015 Katie Gandhi  
2013 - 2015 Vanessa Fixmer-Oraiz, Andrew Lynch, Liza Minor, David Sweeney  
2012 - 2014 Caitlin Shanahan, Claire Richmond, Kira Stoller  
2011 - 2013 Charles Cowell, Mark Pooley

### **Undergraduate Honors Theses Supervised**

2021 Ganon Evans, BA Economics and Mathematics  
2018 Harrison Freund, BE Computer Science & Engineering  
College of Engineering Grand Challenge Scholar, 2017 – 2018  
2012 Andrew Bennett, BE Mechanical Engineering  
Brianna O’Neal, BE Mechanical Engineering

### **Undergraduate Researchers**

2020 - 2021 Abbie Dirks, BE Civil Engineering  
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**

2019 Nathan Janechek  
2015 - 2016 Yuwei Li, IIHR (co-advised)

## **PROFESSIONAL LEADERSHIP & SERVICE**

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

- 2018            Reviewer, National Science Foundation
- 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** for *Atmospheric Chemistry & Physics*, *Atmospheric Environment*, *Environmental Science & Technology*, *Geophysical Research Letters*, *Geoscientific Model Development*, *Journal of Environmental Management*, *Journal of Geophysical Research*, *Nature Climate Change*, *Nature Sustainability*, *Proceedings of the National Academy of Sciences*, *Urban Climate* (selected, from 71 [verified](#) reviews)

### **University of Iowa**

- 2011 - present    Member Representative, University Corporation for Atmospheric Research
- 2019 - present    UI Climate Resolutions Systems Thinking Coursework Committee
- 2017 - present    Reviewer, Center for Health Effects of Environmental Contamination Seed Grants
- 2014 - 2015      Faculty Search Committee, Chemical & Biochemical Engineering
- 2013 - present    High Performance Computing Policy Committee
- 2012 - present    Reviewer, CGRER Seed Grants
- 2009 - present    Judge, College of Engineering Research Open House

### **Graduate College**

- 2020 - present    Diversity, Equity, and Inclusion Committee

### **School of Planning and Public Affairs**

- 2020 - present Chair, Undergraduate and Graduate Certificates committee
- 2020 - 2021 Faculty search committee
- 2019 - 2020 Director of Graduate Studies
- 2019 - present Faculty review committee
- 2019, 2012 Planning Accreditation Board self study
- 2014 Faculty search committees (2)
- 2011 - present Admissions and Financial Aid 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

### **National/International**

- 2019 - present Organizing committee, 11<sup>th</sup> International PCB Workshop
- 2017 Session proposal reviewer, 2017 National Planning Conference, Workshops, Deep Dives & Institutes
- 2012 - present Outstanding Student Poster Award Judge, American Geophysical Union Fall Meeting
- 2009 Session chair, American Geophysical Union 2009 Fall Meeting, Ocean-Atmosphere-Land Interactions in the Eastern Tropical Oceans

### **Other Service to the Profession**

- Book reviewer, ESRI Press, 2014
- Curriculum reviewer, Climate Literacy and Energy Awareness Network, 2012 – present
- Dartmouth College Admissions Ambassador, 2002 – present

## **OUTREACH**

2014 - 2018            Climate Voices Science Speakers Network  
2012 - present        City Plaza Children's Garden, City of Iowa City  
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  
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 & TEACHING**

- 2019 Cedar Rapids Gazette, Daily Iowan, Iowa City Press-Citizen, KGAN, NASA Space for US
- 2018 Cedar Rapids Gazette, KCRG, Tipton Conservative
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