

ASHISH SHARMA

University of Illinois System
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EDUCATION

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| AUGUST 2012 | Ph.D. in AEROSPACE ENGINEERING
Arizona State University, USA
Thesis: Climate Modeling & Downscaling for Semi-Arid Regions
 Advisor: Prof. Huei-Ping Huang
FIELDS: regional climate modeling, climate extremes |
| DECEMBER 2009 | M.S. in AEROSPACE ENGINEERING
Arizona State University, USA
Thesis: Numerical Modeling of a Condensate Polisher Vessel of a Nuclear Reactor Advisor: Prof. H.J.S. Fernando
FIELDS: computational fluid dynamics, porous media flow |
| JULY 2007 | B.Tech. in ELECTRONICS AND COMMUNICATION ENGINEERING
Jaypee University of Information Technology, India |

APPOINTMENTS

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| AUG 2022 -
CURRENT | Climate and Urban Sustainability Lead
Discovery Partners Institute
University of Illinois System, USA |
| SEPT 2019 -
CURRENT | Graduate Faculty
The Department of Atmospheric Sciences
University of Illinois at Urbana-Champaign, USA |
| FEB 2022 -
CURRENT | Climate Scientist (Joint Appointment)
Environmental Science Division (EVS)
Argonne National Laboratory (ANL), USA |
| NOV 2018 -
CURRENT | Center Affiliate
National Center for Supercomputing Applications (NCSA)
University of Illinois at Urbana-Champaign, USA |
| APRIL 2019 -
AUG 2022 | Illinois Research Climatologist
Illinois State Water Survey, University of Illinois at Urbana-Champaign |
| AUG 2016 -
APRIL 2019 | Research Assistant Professor
Department of Civil & Environmental Engineering & Earth Sciences
University of Notre Dame, USA |
| AUG 2012 -
AUG 2016 | Post-doctoral Researcher
Environmental Change Initiative (ECI); ND Energy
University of Notre Dame, USA |
| JUNE - AUG 2016
MAY - JULY 2014 | Visitor
RAL, National Center for Atmospheric Research, USA |

HONORS AND AWARDS

- 2023 Crain's Chicago Business 40 Under 40
- 2023 DOE urban IFL project CROCUS team was awarded the Chicago Council for Science and Technology (C2ST) Inaugural Societal Impact Award, May 4, 2023.
- 2022 The Strategic Plan Award at the American Planning Association Illinois Chapter (APA-IL) State Conference in Chicago for Climate Action Plan for the Chicago Region, September 28, 2022.
- 2022 State or Regional Award of Merit in Sustainability at the Ninth Annual Awards for Excellence in Sustainability by the American Planning Association (APA) Sustainable Communities Division, May 2, 2022 for the Climate Action Plan for the Chicago Metropolitan Region, May 2, 2022
- Exhibit in the Illinois State Museum on the impacts of climate change, injustice and heat in Chicago. — scientific work in display (April 2022 to end of year).
- 2021 Climate Leadership Award as part of the Innovative Partnership Category with the Metropolitan Mayor's Caucus and the Chicago Metropolitan Agency for Planning at the Annual Climate Leadership Conference hosted by the Center for Climate and Energy Solutions (C2ES) and The Climate Registry.
- 2021 Contributed as reviewer for the Intergovernmental Panel on Climate Change Sixth Assessment Report Working Group I (IPCC AR6 WGI)
- 2021 Testified to the City of Chicago Committee on Environmental Protection and Energy on Subject Matter Hearing on Urban Heat Island Effect and Solutions; May 17, 2021
- 2019 Briefed the US Senate Climate Taskforce (7 senators attended plus 30-40 staff) and Congressional Staff at the Capitol Hill in Washington DC on the Climate Change in the Great Lakes Region; July 9, 2019
- 2019 Briefed the U.S. House of Representatives (several members plus room full (100+) of staff) on July 9, 2019 relative to the findings of the Great Lakes assessment on climate change.
- Fellow, Royal Meteorological Society (2016-present)

PROFESSIONAL COMMITTEE SERVICES

- Appointed by the Governor to the Illinois Environmental Justice Commission (2024-present)
- Appointed by the Governor as a Member of the Illinois State Museum Board (2024-present)
- Overall Planning Committee member for 2024 American Meteorological Society Annual Meeting
- U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) EJScreen Review Panel member (2023-present)
- Member of the technical advisory committee on Natural Solutions Tool by The Trust for Public Land commissioned by Chicago-Calumet River Watershed Council (2022-present).
- Scientific partner for American Geophysical Union Thriving Earth Exchange (AGU TEX) to work on heat vulnerability mapping project for Missoula, MT.
URL: <http://thrivingearthexchange.org/project/missoula-mt/>
- Executive Committee Member, Illinois Center for Urban Resilience and Environmental Sustainability (IL-CURES) (2019-present)
- Member of the Great Lakes Consortium for Petascale Computation (GLCPC) Blue Waters Allocations Committee for year 2016-2017.

JOURNAL EDITORSHIPS

- Associate Editor (2021 to date), *Frontiers in Environmental Science: Atmosphere and Climate*
- Guest Editor, Special Issue on "Interdisciplinary Climate Research for Urban Resiliency and Sustainability," *Sustainability Journal*.

FUNDING

National Science Foundation (NSF): CAS-Climate Conference - Travel Grant for Participating in Water Research and Innovation Workshop Organized by the UNESCO Megacities Alliance for Water and Climate; PI **Ashish Sharma**, Kuldip Kumar (MWRD); duration: 11/01/2023 - 10/31/2024; \$50,000

National Science Foundation (NSF): Global Centers Track 1: CLEETS - Clean Energy and Equitable Transportation Solutions; PI **Ashish Sharma**, Venkat Venkatakrishnan, P.S. Sriraj, Petros Sofronis, Eleftheria Kontou; duration: 10/01/2023 - 09/30/2028; \$5,000,000

National Wildlife Federation: QUAD Cities Climate Assessment; PI **Ashish Sharma**, Abhinav Wadhwa, Sam Miller; duration: 10/01/2023 - 11/31/2023; \$30,000

ComEd Exelon Energy: Climate Change Training Curriculum; PI **Ashish Sharma**, Don Wuebbles (DPI/UIUC), Ryan Sriver (UIUC), Robert Kerr (UIS), Emily Keener (UIS), Renu Kulkarni (DPI), Sam Miller (DPI); duration: 08/01/2023 - 03/12/2024; \$283,875

ComEd Exelon Energy: Resilient Canopies in the Chicago Region; PI Don Wuebbles, **Ashish Sharma**; duration: 05/01/2023 - 04/30/2025; \$200,000

Department of Energy (DOE): Community Research on Climate and Urban Science (CROCUS) — an Urban Integrated Field Laboratory (Urban-IFL); PI Cristina Negri (Argonne), Rao Kotamarthi (Argonne), **Ashish Sharma** (Argonne/UI), et al.; duration: 01/10/2022 - 31/09/2027; \$25,000,000

National Science Foundation (NSF): International partnerships for accelerating climate-ready, sustainable, and clean urban transportation; PI **Ashish Sharma**, P.S. Sriraj, Sandra Gesing, Rajesh Kumar, Marty Anderies; duration: 01/01/2023 - 12/31/2025; \$1,499,886

National Aeronautics and Space Administration (NASA): e-JUST — Environmental Justice using Urban Scalable Toolkit; PI **Ashish Sharma**, Edith Makra, Matt Turk; duration: 08/01/2022 - 07/31/2024; \$250,000

U.S. Department of Energy - Argonne National Laboratory (DOE-ANL): Collaborative urban research between DPI and Argonne; PI **Ashish Sharma**; duration: 02/28/2022 - 02/27/2023; \$10,038

Strategic Research Initiative (SRI) Phase 1, UIUC: AI Institute for Climate Resilience (ACRE); PI Praveen Kumar, Arindam Banerjee, Ruta Mehta, Alex Tartakovsky, Nan Jiang, Jeff Shamma, Volodymyr Kndratenko, Karrie Karahalios, Sandy Dall'Ebra, Shaowen Wang, **Ashish Sharma**; duration: 05/16/2022 - 05/12/2023; \$75,000 (total)

National Science Foundation (NSF): Collaborative Research: Interactions of Urban Systems with Storms and Heatwaves, and Resulting Impacts; PI **Ashish Sharma**, Don Wuebbles, David Kristovich and Alan Hamlet; duration: 02/01/2022 - 01/31/2025; \$852,918 (total)

Walder Foundation: From Science to Nature-Based Solutions in the Chicago Region; PI Don Wuebbles and **Ashish Sharma**; duration: 11/01/2021 - 10/31/2023; \$583,085

IBM: An AI-based Framework for Accelerated Discovery of Climate Impacts on Different Societal Sectors; PI Atul Jain, **Ashish Sharma**, Lav Varshney, and Don Wuebbles; duration: 08/16/2021 - 08/15/2022; \$260,827

Discovery Partners Institute (DPI): Risk-Based Approaches to Midwestern Climate and Weather Prediction; PI Ryan L. Sriver, **Ashish Sharma**, Vera Mikyoung Hur, Zhizhen Jane Zhao, Donald J. Wuebbles, Bo Li; duration: 10/01/2021 - 03/30/2023; \$125,000

National Science Foundation (NSF): A Proposed Workshop on Interdisciplinary Sustainable Solutions for Urban Systems in a Changing Climate (Award no: 1929856); PI Donald Wuebbles, **Ashish Sharma**, Lei Zhao, and Amy Ando; duration: 05/01/2019 – 04/30/2020; \$50,000

U.S. Department of Energy (DOE): A Proposed Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models; PI Donald J. Wuebbles (UIUC), Katherine Calvin (PNNL), Charles Catlett (ANL), Beth Drewniak (ANL), Rao Kotamarthi (ANL), **Ashish Sharma** (UIUC): 10/01/2018 - 09/30/2019; \$72,271

National Aeronautics and Space Administration (NASA): A Proposed Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models; PI Donald J. Wuebbles (UIUC), Katherine Calvin (PNNL), Charles Catlett (ANL), Beth Drewniak (ANL), Rao Kotamarthi (ANL), **Ashish Sharma** (UIUC): 11/20/2018-11/19/2019; \$20,581

National Oceanic and Atmospheric Administration (NOAA): A Proposed Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models; PI Donald J. Wuebbles (UIUC), Katherine Calvin (PNNL), Charles Catlett (ANL), Beth Drewniak (ANL), Rao Kotamarthi (ANL), **Ashish Sharma** (UIUC): 10/01/2018-09/30/2019; \$17,626

U.S. Department of Defense (DoD): A Proposed Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models; PI Donald J. Wuebbles (UIUC), Katherine Calvin (PNNL), Charles Catlett (ANL), Beth Drewniak (ANL), Rao Kotamarthi (ANL), **Ashish Sharma** (UIUC): 10/01/2018 - 09/30/2019; \$23,440

EPA Great Lakes Restoration Initiative (GLRI): Cover crops prevent nutrient runoff and promote climate resiliency in Great Lakes watersheds (GL 00E02207); PI Alan Hamlet (ND), **Ashish Sharma (ND)**, Jennifer Tank (ND), Sheila Christopher (ND), and Todd Royer (IU); duration: 08/01/2017 – 07/31/2020; \$564,314

The Institute for Sustainability, Energy, and Environment, UIUC (iSEE): Initial Development and Testing of a cyberGIS System for Urban Sustainability; PI Donald Wuebbles (UIUC), **Ashish Sharma**, Shaowen Wang; duration 01/2019-12/2019; \$29,996

Notre Dame International (NDI): Urban Sustainability Solutions to Mitigate Climate Change for Exponentially Growing Populations in New Delhi; PI: **Ashish Sharma (ND)**, co-PI HJS Fernando (ND), Alan Hamlet (ND); duration 07/2017-06/2018; \$20,000

The Center for Sustainable Energy at Notre Dame (ND Energy): Energy sustainable solutions using green infrastructure for an urban environment; PI: **Ashish Sharma (ND)**; duration 07/2015-06/2017; \$50,000

University of Notre Dame/Pontifical Catholic University of Chile internal grant: Climatic Impacts on Environmental Quality in Urban Santiago; PI Laura Leo (ND), co-PI HJS Fernando (ND), **Ashish Sharma (ND)**, Reneta Dimitrova (ND). duration: 07/2013-06/2014; \$40,000

National Institute of Aerospace and NASA; Graduate student scholarship award; duration 2008-09; PI **Ashish Sharma (ASU)**; \$5,875

Computing Grants

NCAR Cheyenne supercomputing grant: Interactions of Urban Systems with Storms and Heatwaves, and Resulting Impacts; PI: **Ashish Sharma**, Peiyuan Li; duration 2023-2025; 10,000,000.0 Core-hours

NCAR Cheyenne supercomputing grant: Simulation of Urban Vegetation Behavior in Modifying Thermal and Carbon Dynamics in City Clusters; PI: Peiyuan Li, **Ashish Sharma**; duration 2022-2023; 400,000 Core-hours

NCAR Yellowstone supercomputing grant: Evaluating the impact of green roofs; PI: **Ashish Sharma**; duration 2014-2018; 100,000 Core-hours

The Great Lakes Consortium for Petascale Computation (GLCPC) computational grant: Very high-resolution numerical modeling for climate extremes in Midwest U.S.; PI: **Ashish Sharma**,

Travel Grants

NCAR travel award 2016: Urban sustainable solutions for energy and air quality impacts using green infrastructure; PI: **Ashish Sharma (ND)**; \$3,200

PUBLICATIONS AND REPORTS (students are marked with *)

35. Li, P., **Sharma, A.** (2024). Li, P. and Sharma, A., 2024. Hyper-local temperature prediction using detailed urban climate informatics. *J. Adv. Model. Earth Syst.* 16(3), p.e2023MS003943.
34. Li, P., **Sharma, A.**, Wang, Z., Wuebbles, D. (2023). Assessing impacts of environmental perturbations on urban biogenic carbon exchange in the Chicago region. *J. Adv. Model. Earth Syst.* 15(10), p.e2023MS003867. doi: <https://doi.org/10.1029/2023MS003867>
Editor's highlighted article: <https://eos.org/editor-highlights/urban-greening-could-help-achieve-carbon-neutrality-goals>
33. Li, P., Yu, Y., Huang, D., Wang, Z.H. and **Sharma, A.** (2023). Regional heatwave prediction using Graph Neural Network and weather station data. *Geophys. Res. Lett.*, 50(7), p.e2023GL103405. doi: <https://doi.org/10.1029/2023GL103405>
32. *Parde, A.N., Ghude, S.D., **Sharma, A.**, Dhangar, N.G., Govardhan, G., Wagh, S., Jenamani, R.K., Pithani, P., Chen, F., Rajeevan, M., Niyogi, D. (2022). Improving simulation of the fog life cycle with high-resolution land data assimilation: A case study from WiFEX. *Atmos. Res.*, p.106331. doi: <https://doi.org/10.1016/j.atmosres.2022.106331>
31. *Byun, K., **Sharma, A.**, Wang, J., Tank, J.L., Royer, T.V. & Hamlet, A.F. (2022). Intercomparison of Dynamically and Statistically Downscaled Climate Change Projections over the Midwest and Great Lakes Region. *J. Hydrometeorol.* doi: <https://doi.org/10.1175/JHM-D-20-0282.1>
30. Jain, A., Oliveira, D.A.B., **Sharma, A.**, Varshney, L., Watson, C., Weldemariam, K., Wuebbles, D., & Zadrozny, B. (2021). Toward an AI-based Framework for Accelerated Discovery of Climate Impacts on Agriculture. *Association for the Advancement of Artificial Intelligence*.
29. Dimitrova, R., **Sharma, A.**, Fernando, H.J.S., Gultepe, I., *Danchovski, V., Wagh, S., *Barredoel, S. & Wang, S. (2021). WRF model simulations for coastal fog prediction. *Bound.-Layer Meteorol.*, pp. 1-30, doi: <https://doi.org/10.1007/s10546-021-00662-w>
28. 2021 Climate Action Plan for the Chicago Region. Metropolitan Mayors Caucus (MMC), Illinois URL: <https://mayorscaucus.org/climate-change/>
27. *Viecco, M., Jorquera, H., **Sharma, A.**, Bustamante, W., Fernando, H.J. and Vera, S. (2021). Green roofs and green walls layouts for improved urban air quality by mitigating particulate matter. *Built Environ.*, p.108120. doi: <https://doi.org/10.1016/j.buildenv.2021.108120>.
26. **Sharma, A.**, Wuebbles, D. J., Kotamarthi, R. (2021). The Need for Urban-Resolving Climate Modeling Across Scales. *AGU Adv.*, <https://doi.org/10.1029/2020AV000271>.
Editor's highlighted article: Modeling Interactions Between Cities and Climate Across Scales; <https://eos.org/editor-highlights/modeling-interactions-between-cities-and-climate-across-scales>
25. Wuebbles, D., J. Angel, K. Petersen, and A.M. Lemke, (Eds.), (2021). An Assessment of the Impacts of Climate Change in Illinois. The Nature Conservancy, Illinois. doi: https://doi.org/10.13012/B2IDB-1260194_V1.
24. Huang, J., Mariotti, A., Selz, V., Barros, A., Delworth, T., Hurrell, J., Williams, E., **Sharma, A.**, Lombardozi, D., Fu, R., Naik, V., Vose, R., Ming, Y., Lynch, P., Chang, E., Trtanj,

- J., Frost, G. (2020). Report on Climate Research to Enhance Resilience to Extreme Heat — Aligning research priorities with stakeholder needs. Earth System Science and Modeling Division (ESSM): Extreme Heat Workshop, November 2019, Climate Program Office, National Oceanic and Atmospheric Administration (NOAA).
23. Wuebbles, D. J., **Sharma, A.**, Ando, A., Zhao, L. & Rigsbee, C. (2020). Converging on Solutions to Plan Sustainable Cities. *Eos*, 101; doi: <https://doi.org/10.1029/2020EO150149>
 22. Wuebbles, D., Kotamarthi, R., **Sharma, A.**, Drewniak, B., Calvin, K., Catlett, C., Jacob, R. (2020). Report: Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models, Report to the U.S. Department of Energy, Army Research Office, National Aeronautics and Space Administration, and National Oceanic and Atmospheric Administration.
 21. Fernando, H.J.S., Gultepe, I., Dorman, C., Pardyjak, E., Wang, Q., Hoch, S.W., Richter, D., Cregan, E., Gaberšek, S., Bullock, T., Hocut, C., Chang, R., Alappattu, D., Dimitrova, R., Flagg, D., Z Grachev, A., Krishnamurthy, R., Singh, D.K., Lozovatsky, I., Nagare, B., **Sharma, A.**, Wagh, S., Wainwright, C., Wroblewski, M., Yamaguchi, R., Bardoeil, S., Coppersmith, R.S., Chisholm, N., Gonzalez, E., Gunawardena, N., Hyde, O., Morrison, T., Olson, A., Perelet, A., Perrie, W., Wang, S. & Wauer, B. (2020). C-FOG: Life of Coastal Fog. *Bull. Am. Meteorol. Soc.*, pp.1-53, doi: <https://doi.org/10.1175/BAMS-D-19-0070.1>
 20. **Sharma, A.**, Wuebbles, D. J., Kotamarthi, R., Calvin, K., Drewniak, B., Catlett, C. E. & Jacob, R. (2020). Urban Scale Processes in High Spatial Resolution Earth System Models (ESMs). *Bull. Am. Meteorol. Soc.*, 101 (9): E1555–E1561. doi: <https://doi.org/10.1175/BAMS-D-20-0114.1>
 19. Ando, A., Hanson, A-M., Kocs, A., Klein-Banai, C., Massey, D., Rigsbee, C., **Sharma, A.**, Wuebbles, D., Zellner, M., Zhao, L. (2019). Sustainable Urban Systems Workshop Report: A Proposed Workshop on Interdisciplinary Sustainable Solutions for Urban Systems in a Changing Climate, National Science Foundation.
URL: <https://www.ideals.illinois.edu/handle/2142/109993>
 18. Dimitrova, R., Danchevski, V., Egova, E., Vladimirov, V., **Sharma, A.**, Gueorguiev, O. & Ivanov, D. (2019). Modeling the Impact of Urbanization on Local Meteorological Conditions in Sofia City. *Atmosphere*, 10(7), 366; doi: <https://doi.org/10.3390/atmos10070366>
 17. Kristovich, D.A., E. Takle, G.S. Young & **Sharma, A.** (2019). 100 Years of Progress in Mesoscale Planetary Boundary Layer Meteorological Research. *American Meteorological Society 100-Year Anniversary Monograph*, doi: <https://doi.org/10.1175/AMSMONOGRAPHSD-18-0023.1>
 16. Wuebbles, D., Cardinale, B., Cherkauer, K., Davidson-Arnott, R., Hellmann, J., Infante, D., Johnson, L., Loë, R., Lofgren, B., Packman, A., Seglenieks, F., **Sharma, A.**, Sohngen, B., Tiboris, M., Vimont, D., Kunkel, K., Ballinger, A. (2019). An Assessment of the Impacts of Climate Change on the Great Lakes, The Environmental Law & Policy Center & the Chicago Council on Global Affairs. URL: <http://elpc.org/wp-content/uploads/2019/03/Great-Lakes-Climate-Change-Report.pdf>
 15. **Sharma, A.**, Hamlet, A. F., Fernando & H.J.S. (2019). Lessons from Inter-Comparison of Decadal Climate Simulations and Observations for the Midwest U.S. and Great Lakes Region. *Atmosphere*, 10(5), 266; doi: <https://doi.org/10.3390/atmos10050266>
 14. Pithani, P.*, Ghude, S., Naidu, C.V., Kulkarni, R.G., Steeneveld, G-J., **Sharma, A.**, Prabhakaran, T., Chate, D.M., Gultepe, I., Jenamani, R.K. & Rajeevan, M. (2018) WRF Model Prediction of a Dense Fog Event Occurred During the Winter Fog Experiment (WIFEX). *Pure Appl. Geophys.*, 176(4), pp.1827-1846. doi: <https://doi.org/10.1007/s00024-018-2053-0>
 13. **Sharma, A.**, Hamlet, A.F., Fernando, H.J.S., Catlett, C.E., Horton, D.E., Kotamarthi, V.R., Kristovich, D.A.R., Packman, A.I., Tank, J.L. & Wuebbles, D.J. (2018). The need for an integrated land-lake-atmosphere modeling system, exemplified by North America's Great Lakes region. *Earth's Future*, doi: <https://doi.org/10.1029/2018EF000870>.

12. **Sharma, A.**, Woodruff, S., Budhathoki, M., Hamlet, A. F., Fernando, H.J.S. & Chen, F. (2018). Role of green roofs in reducing heat stress in vulnerable urban communities - A multi-disciplinary approach. *Environ. Res. Lett.*, 13(9), p.094011. doi: <https://doi.org/10.1088/1748-9326/aad93c>.
11. **Sharma, A.**, Huang, H.-P., Zavalov, P. & Khan, V. (2017). Impact of desiccation of Aral Sea on the regional climate of Central Asia using WRF model. *Pure Appl. Geophys.*, 175(1), pp.465-478. doi: <https://doi.org/10.1007/s00024-017-1675-y>
10. **Sharma, A.**, Fernando, H.J.S., Hamlet, A. F., Hellmann, J. J., Barlage, M. & Chen, F. (2017). Urban meteorological modeling using WRF: a sensitivity study. *Int. J. Climatol.*, 37(4), 1885–1900. doi: <https://doi.org/10.1002/joc.4819>.
9. Kulkarni, P. S., Dasari, H. P., **Sharma, A.**, Bortoli, D., Salgado, R. & Silva, A. M. (2016). Nocturnal surface ozone enhancement over Portugal during winter: Influence of different atmospheric conditions. *Atmos. Environ.*, 147, 109–120. doi: <https://doi.org/10.1016/j.atmosenv.2016.09.056>
8. **Sharma, A.**, *Conry, P., Fernando, H.J.S., Hamlet, A. F., Hellmann, J. & Chen, F. (2016). Green and cool roofs to mitigate urban heat island effects in the Chicago metropolitan area: evaluation with a regional climate model. *Environ. Res. Lett.*, 11(6), 64004. doi: <https://doi.org/10.1088/1748-9326/11/6/064004>
7. *Arifin, R. R., James, S. C., de Alwis Pitts, D. A., Hamlet, A. F., **Sharma, A.** & Fernando, H.J.S. (2016). Simulating the thermal behavior in Lake Ontario using EFDC. *J. of Great Lakes Res.*, 42(3), 511–523. doi: <https://doi.org/10.1016/j.jglr.2016.03.011>
6. *Conry, P., **Sharma, A.**, Potosnak, M. J., Leo, L. S., Bensman, E., Hellmann, J. J. & Fernando, H.J.S. (2015). Chicago's heat island and climate change: bridging the scales via dynamical downscaling. *J. Appl. Meteor. Climatol.*, 54(7), 1430–1448. doi: <https://doi.org/10.1175/JAMC-D-14-0241.1>
5. **Sharma, A.**, *Bouchard, F., *Ryan, S., Parker, D.* & Hellmann, J. J. (2013). Species are the building blocks of ecosystem services and environmental sustainability. *Ethics, Policy & Environ.*, 16(1), 29–32. doi: <https://doi.org/10.1080/21550085.2013.768388>
4. **Sharma, A.** & Huang, H.-P. (2012). Regional climate simulation for Arizona: impact of resolution on precipitation. *Adv. Meteorology*, 2012, 13 pp. doi: <http://dx.doi.org/10.1155/2012/505726>
3. **Sharma, A.** (2012). Climate Modeling & Downscaling for Semi-Arid Regions, *ProQuest Dissertations And Theses; Thesis (Ph.D.)–Arizona State University*, 2012.; Publication Number: AAT 3525717; ISBN: 9781267592309; Source: Dissertation Abstracts International, 74-01(E), Section: B.; 150 p.
2. **Sharma, A.**, *Brown, J. & Fernando, H.J.S. (2011). Numerical Modeling of Flow in the Condensate Polisher Vessel of a Nuclear Reactor, with Applications to PVNGS. *Nuclear Technology*, 174(1), 18–28. doi: <https://doi.org/10.13182/NT11-A11676>
1. Fernando, H.J.S. & **Sharma, A.** (2009). Numerical Modeling of Flow in the Condensate Polisher Vessel of a Nuclear Reactor: Implications of modifications, Arizona Public Service (APS) PO # 500529566).

BOOKS EDITED

1. Wang, C., **Sharma, A.**, Doan, Q. V., Vinoj, V., & Yu, Z. (Eds.). (2022). Weather and climate extremes in the urban environment: Modeling and observations (Vol. 16648714). *Frontiers Media SA*.

MAGAZINE ARTICLES

- Crain's Business Chicago (2023): The importance of local solutions in addressing global climate challenges. URL: <https://www.chicagobusiness.com/craains-content-studio/importance-local->

The Conversation (2019): Adapting cities to a hotter world: 3 essential reads.

URL: <https://theconversation.com/adapting-cities-to-a-hotter-world-3-essential-reads-120634>

The Conversation (2018): Low-income neighborhoods would gain the most from green roofs in cities like Chicago.

URL: <https://theconversation.com/low-income-neighborhoods-would-gain-the-most-from-green-roofs-in-cities-like-chicago-102234>

The Conversation (2016): Green and cool roofs provide relief for hot cities, but should be sited carefully.

URL: <https://theconversation.com/green-and-cool-roofs-provide-relief-for-hot-cities-but-should-be-sited-carefully-60766>

Fonderist Magazine (2016): Green, Cool Roofs May Be Key To Cooling Cities Down.

URL: <http://www.fondriest.com/news/green-cool-roofs-may-key-cooling-cities.htm>

CONFERENCE PROCEEDINGS (students are marked with *)

Hans A., **Sharma, A.**, Carter T., Budhathoki M., Zhang X., Harp RD., Veiga C., Understanding the Relationship between Crime and Temperature in the Chicago Region. *In 104th AMS Annual Meeting*, Baltimore, 31 January 2024.

Sharma, A., Veiga C., Li P, Miranda F., Moreira G., Wu S., Budhathoki M., 2024: e-JUST - Environmental Justice using Urban Scalable Toolkit. *In 104th AMS Annual Meeting*, Baltimore, 31 January 2024.

Chen X, Chen JH, Li P, Collis SM, Kotamarthi R, Muradyan P, **Sharma, A.**, Turner, J., Williams, B., Wang, J., 2024: High-Resolution Spatiotemporal Analysis of Air Quality and Urban Heat Island in Chicago Using the Microsoft Eclipse Network. *In 104th AMS Annual Meeting*, Baltimore, 31 January 2024.

Biswas, M.K., He, C., Kumar, R., **Sharma, A.**, Sharma, P., Ghude, S.D., and Das. T., 2024: Assessing the Impacts of Integrating High-Resolution Land Use Data in WRF-Chem on Air Quality Forecasting in New Delhi, India. *In 104th AMS Annual Meeting*, Baltimore, 1 February 2024.

Li, P. and **Sharma, A.**, 2023: The Next Frontier of Urban Models: A Machine Learning Perspective on Data-Model Integration. *AGU Fall Meeting Abstracts 2023*, San Francisco, 12 December 2023.

Sharma, A., Li, P., Wuebbles, D., Burg, R., Khalid. C., 2023: Resilience Canopy: Strategic Tree Planting for Heat Mitigation and Energy Efficiency. *AGU Fall Meeting Abstracts 2023*, San Francisco, 13 December 2023.

Wu, S., **Sharma, A.**, Wang, J., Hamlet, A.F., Kumar. R., He, C., 2023: Assessing coupled urban weather-chemistry feedbacks for the Chicago region. *AGU Fall Meeting Abstracts 2023*, San Francisco, 13 December 2023.

Rasmussen, A., Jain, A., Love, N., Haynes, K., Nunez-Mir1, G., Sheriff, J., Garcia, S., Darling, L., Minor, E., **Sharma, A.**, Gonzalez-Meler, M.A., 2023: Does a Luxury Effect Exist in Chicago, Illinois? An Analysis of Tree Biodiversity and its Relationship to Social/Environmental Factors Across the 77 Community Areas of Chicago. *AGU Fall Meeting Abstracts 2023*, San Francisco, 13 December 2023.

Wadhwa, A., **Sharma, A.**, Pathak, A., 2023: Flood Control Alternatives for Rapidly Evolving Urban Landscapes with a Focus on Low Impact Development (LID) Approaches. *AGU Fall Meeting Abstracts 2023*, San Francisco, 13 December 2023.

Li, P. and **Sharma, A.**, 2023: Detailed Mapping of Building and Tree Heights over Chicago Metropolitan Area. *AGU Fall Meeting Abstracts 2023*, San Francisco, 13 December 2023.

- Huidobro, G., Hamlet, A.F., **Sharma, A.**, Li, P., 2023: Revealing Urban Climate Patterns: Regional Climate Model Validation using EOF Analysis. *AGU Fall Meeting Abstracts 2023*, San Francisco, 13 December 2023.
- Li, P. and **Sharma, A.**, Wuebbles, D., Wang, Z. 2023: Variability of urban biogenic carbon exchange under environmental perturbations: a case study of Chicago Metro Area. *In 11th International Conference on Urban Climate*, Sydney, Australia, 29 August, 2023.
- Sharma, A.**, Martilli, A., Collis, S., Kumar, R., Chen, F., Kotamarthi, R., Li, P., 2023: Green infrastructure for reducing energy and air quality impacts in Chicago region. *In 11th International Conference on Urban Climate*, Sydney, Australia, 29 August, 2023.
- Li, P. and **Sharma, A.**, 2023: High-resolution modeling of street-level temperature based on machine learning and urban informatics. *In 11th International Conference on Urban Climate*, Sydney, Australia, 28 August, 2023.
- Collis, S., Negri, C., Kotamarthi, R., Grange, R.W., Berkelhammer, M., Nesbitt, S., Theisen, A., Sims, N., Cintron, R., Makra, E., Sullivan, E., Anderson, G., Gala, T., **Sharma, A.**, Fytanidis, D., Tan, H., 2023: The Community Research on Climate and Urban Science (CROCUS) Project, a Department of Energy Urban Integrated Field Laboratory. *In 11th International Conference on Urban Climate*, 30 August, 2023
- Kumar, R., Ghude, S., Govardhan, G., Jena, C., Soni, V., Yadav, P., Debnath, S., Sharma, P., **Sharma, A.** 2023: Development of high-resolution air quality early warning systems to strengthen air quality decision-making activity in Indian Megacities. *In 11th International Conference on Urban Climate*. 30 August, 2023.
- Li, P. and **Sharma, A.**, Wang, Z., and Wuebbles, D.J., 2023: Impacts of Environmental Perturbations on Carbon Sequestration from Urban Greenery. *In 103rd American Meteorological Society Annual Meeting*. American Meteorological Society, Denver, 12 Jan 2023.
- Li, P. and **Sharma, A.**, 2023: Hyper-Resolution Downscaling of Street-Level Temperature Via a Machine Learning Approach. *In 103rd American Meteorological Society Annual Meeting*, Denver, American Meteorological Society. 11 Jan 2023.
- Li, P. and **Sharma, A.**, 2022: Variability of Urban CO₂ Sequestration under Environmental and Anthropogenic Forcings. *AGU Fall Meeting Abstracts 2022*, Chicago, 13 December 2022.
- Ibrahim, H.D., Li, P., **Sharma, A.**, Kristovich, D., Khadse, T. and Wuebbles, D.J., 2022: Effects of soil moisture on flooding and strategizing place-based nature-based solutions in urban watersheds: A case study from the Chicago region. *AGU Fall Meeting Abstracts 2022*, Chicago, 13 December 2022.
- Klene, A.E., Tompkins*, J., **Sharma, A.**, Cilimburg, A. and Goodwin, M., 2000: We Can't Just Open a Window: Mapping Vulnerability to Summer Heat in a Mountain Community, Missoula, MT. *AGU Fall Meeting Abstracts 2022*, Chicago, 13 December 2022.
- Li, P. and **Sharma, A.**, 2022: Estimating Street-level Temperature Using a Machine Learning Approach, a Case Study in Chicago. *AGU Fall Meeting Abstracts 2022*, Chicago, 13 December 2022.
- Sharma, A.**, Li, P., Khadse*, T., Sharma, P., Martilli, A. and Chen, F., 2022: Impact of photovoltaic rooftops in the Chicago area. *AGU Fall Meeting Abstracts 2022*, Chicago, 13 December 2022.
- Yu*, Y., Li, P., Huang, D., **Sharma, A.** and Wang, Z., 2022: Predicting regional heatwaves using Interpretable Graph Neural Networks. *AGU Fall Meeting Abstracts 2022*, Chicago, 13 December 2022.
- Sharma, A.**, Makra, E. 2022: Climate Action at Regional Scales: Lessons for the Chicago Region. *iCACGP-IGAC Joint International Atmospheric Chemistry Conference*, Manchester, UK, 12 September 2022.

- Parde*, A.N., Ghude, S. D., Pithani, P., **Sharma, A.**, Dhangar, N. G., Govardhan, G., Chen, F., Niyogi, D., Rajeevan M., 2022: Impact of High-Resolution Land Surface Data Assimilation on Fog: A Case Study from the WiFEX Campaign. *In 102 American Meteorological Society Annual Meeting*. American Meteorological Society. 24 Jan 2022.
- Sharma, A.**, Chen, F., Khadse, T.*, 2021: Impact of photovoltaic rooftops in the Chicago metro area. *AGU Fall Meeting Abstracts 2021*, New Orleans, 17 December 2021.
- Eun, J.*, **Sharma, A.**, Budhathoki, M., Khadse, T.*, 2021: Using climate models to assess spatio-temporal crime behavior in cities. *AGU Fall Meeting Abstracts 2021*, New Orleans, 17 December 2021.
- Sharma, A.**, *Vaidya, H.M., Budhathoki, M. and Wei, J.C., 2020: Impact on global air quality due to reduced mobility from COVID-19 related shutdowns. *AGU Fall Meeting Abstracts 2020*, San Francisco (virtual), 16 December 2020.
- Sharma, A.**, Wuebbles, D.J. and Catlett C., 2020: Bridging urban scales using modeling and measurements for improved urban sustainability. *AGU Fall Meeting Abstracts 2020*, San Francisco (virtual), 8 December 2020. (invited).
- Sharma, A.**, Wuebbles, D.J., Wei, J.C., *Vaidya, H.M., Binita, K.C. and Budhathoki, M., 2020: Changes in global air quality due to reduced mobility from COVID-19 related shutdowns. *World Meteorological Organization and American Geophysical Union symposium*, Climatological, Meteorological and Environmental factors in the COVID-19 pandemic, 4-6 August 2020. (Virtual)
- Kristovich, D.A., E. Takle, G.S. Young, **Sharma, A.**, 2020: 100 Years of Progress in Mesoscale Planetary Boundary Layer Meteorological Research. *In 100th American Meteorological Society Annual Meeting and 18th History Symposium*. American Meteorological Society.
- Sanyal, S., Wuebbles, D.J., Tilmes, S., Liang, X.Z., Wang, S.W. and **Sharma, A.**, 2019: Changing Climate And Its Effect On Urban Life: Ozone and Particulate Matter exceedance events and a CyberGIS toolkit for Urban Sustainability. *AGU Fall Meeting Abstracts*, San Francisco.
- Sharma, A.**, Budhathoki, M., Sanyal, S., Wuebbles, D.J. and Lei, Z., 2019: Understanding relationships between demography and climate change to improve urban resiliency: A case study. *AGU Fall Meeting Abstracts*, San Francisco.
- Dimitrova, R., **Sharma, A.**, Fernando, H.J.S., Wang, S. and Wagh, S.D., 2019: High Resolution Numerical Simulations of Advection Fog Events during C-FOG Field Campaign. *AGU Fall Meeting Abstracts*, San Francisco.
- Byun, K., **Sharma, A.**, Hamlet, A.F, Tank, J., Royer, T., 2019: Intercomparison of Midwest Precipitation Changes from Statistical and Dynamical Downscaling Methods. *IAGLR 2019*. International Association for Great Lakes Research, Brockport NY, June 7-14, 2019.
- Julie Tompkins*, Anna E. Klene, **Sharma, A.**, Silverman, Nick Silverman, VonReichert Christiane, 2018: Just open a window: Understanding the combined effects of heat and smoke on a mountain community in the western United States, Missoula, Montana. Abstract PA21D-1312 *In AGU Fall Meeting Abstracts 2018*, AGU, Washington, D.C.
- Mariana Silva*, M., **Sharma, A.**, Budhathoki, M., Jain, R. and Catlett, C.E. 2018: Neighborhood scale heat mitigation strategies using Array of Things (AoT) data in Chicago. Abstract PA21D-1312 *In AGU Fall Meeting Abstracts, 2018*, AGU, Washington, D.C.
- Sharma, A.**, Woodruff, S., Budhathoki, M., Hamlet, A. F., Fernando, H.J.S. and Chen F., 2018: Can green roofs reduce urban heat stress in vulnerable urban communities: A coupled atmospheric and social modeling approach. *EGU General Assembly 2018, Geophysical Research Abstracts Vol. 20, EGU2018-9549, 2018*, Vienna, Austria.
- Sharma, A.**, Kumar, R., Fernando, H.J.S., Hamlet, A., Chen F. and Krishnamurthy, R. 2018: Impact of land data assimilation on meteorology and air quality. *EGU General Assembly 2018, Geophysical Research Abstracts Vol. 20, EGU2018-10704-1, 2018*, Vienna, Austria.

- Sharma, A.**, Woodruff, S., Budhathoki, M., Hamlet, A. F., Fernando, H.J.S. and Chen F., 2017: Can green roofs reduce urban heat stress in vulnerable urban communities: A coupled atmospheric and social modeling approach. *In AGU Fall Meeting Abstracts*, New Orleans.
- Woodruff, S., **Sharma, A.**, 2017: Planning for heat: can green infrastructure reduce exposure of the most vulnerable neighborhoods? *57th Association of Collegiate Schools of Planning (ACSP) Annual Conference*, Denver.
- Fernando, H.J.S., Conry, P., & **Sharma, A.**, 2017: Effects of Climate Change on Cities: Dynamical Downscaling to Pedestrian Scale. *In 97th American Meteorological Society Annual Meeting and 13th Symposium of the Urban Environment*. American Meteorological Society, Seattle.
- Sharma, A.**, Kumar, R., Martilli, A., Fernando, H.J.S., Hamlet, A., Chen, F., 2017: Urban Sustainable Solutions for Energy and Air Quality Impacts Using Green Infrastructure. *In 97th American Meteorological Society Annual Meeting and 13th Symposium of the Urban Environment*. American Meteorological Society, Seattle.
- Sharma, A.**, *Conry, P., Fernando, H.J.S., Hamlet, A. F., Hellmann, Chen, F., 2016: Green and Cool Roofs to Mitigate Urban Heating: An Analysis with a Regional Climate Model. *Themed Joint Session: Helping Society Mitigate and Adapt to Climate Variability and Change, 96th American Meteorological Society Annual Meeting*, Jan 11-14, 2016 (paper TJ14.4), New Orleans.
- Sharma, A.**, Fernando, H.J.S., Hamlet, A. F., Hellmann, J.J., Barlage, M., and Chen, F., 2015: Sensitivity of WRF model to landuse, with applications to Chicago metropolitan Urban Heat Island and lake breeze. *In AGU Fall Meeting Abstracts*, San Francisco.
- Sharma, A.**, Kulkarni, P.S., Dasari, H.P, Bortoli, D., Salgado, R., and Silva, A.M., 2015: Nocturnal surface ozone enhancement over Portugal: Influence of different atmospheric conditions. *AGU Fall Meeting Abstracts*, San Francisco.
- Hamlet, A. F., Bolster, D., Tank, J. L., Hellmann, J., Christopher, S. F., **Sharma, A.**, Chiu, C. M., 2014: An Overview of Interdisciplinary Research at Notre Dame Addressing“ Grand Challenges“ in the Midwest and Great Lakes Region. *In AGU Fall Meeting Abstracts* (Vol. 1, p. 0756).
- Sharma, A.**, Fernando, H.J.S., Hellmann, J.J., and Chen, F., 2014: Sensitivity of high-resolution regional climate model to urban parameterizations for Chicago metropolitan area, *15th Annual WRF Users Workshop*, NCAR, Boulder, USA.
- *Arifin, R.R., De Alwis Pitts, D.A., James, S.C., **Sharma, A.**, Fernando, H.J., And Suhardjo, A., 2014: Numerical Modeling of Spring Thermal Bar Evolution in Lake Ontario using the EFDC model, *14th Annual Great Lakes Beach Association Conference, GLBA*, 12-14 November, Toronto, Canada.
- Sharma, A.**, Hellmann, J., Fernando, H.J.S., and Chen, F., 2014: Sensitivity of WRF Model to Urban Parameterizations, With Applications to Chicago Metropolitan Urban Heat Island, *Proceedings of the 4th Joint US-European Fluids Engineering, Chicago. Paper No. FEDSM2014-21292*, pp. V01DT28A002, 10 pages. doi: <https://doi.org/10.1115/FEDSM2014-21292>
- *Conry, P., **Sharma, A.**, Fernando, H.J.S., Leo, L.S., Potosnak, M., and Hellmann, J., 2014: Multi-Scale Simulations of Climate-Change Influence on Chicago Heat Island, *Proceedings of the 4th Joint US-European Fluids Engineering, Chicago, Paper No. FEDSM2014-21581*, pp. V01DT28A007, 11 pages. doi:10.1115/FEDSM2014-21581.
- *Conry, P., **Sharma, A.**, Potosnak, M., Hellmann, J., and Fernando, H.J.S., 2014: Multi-scale Study of Chicago Heat Island and the Impacts of Climate Change, Extended Abstracts, *11th Symposium on the Urban Environment, American Meteorological Society 94th Annual Meeting, Paper 3.6*, Atlanta, GA.
- *Conry, P., **Sharma, A.**, Fernando, H.J.S., Potosnack, M. And Hellman, J.: Multi-scale Modelling of Chicago Urban Heat Island and Climate-Change Impacts, Extended Abstracts, *16th*

International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, 8-11 September 2014, Varna, Bulgaria.

- Fernando, H.J.S., Bhat, G.N. and **Sharma, A.**, 2013: The Battle of Fluids: Air, Water and Climate, *35th IAHR World Congress*, 8-13 September 2013, Chengdu, China.
- *Conry, P., **Sharma, A.**, Leo, L., Fernando, H.J.S., Potosnak, M., & Hellmann, J., 2013: Modeling and measuring neighborhood scale flow, turbulence, and temperature within Chicago heat island. *Bulletin of the American Physical Society*, 58.
- *Arifin, R.R., De Alwis Pitts, D.A., **Sharma, A.**, James, S.C., Fernando, H.J., And Suhardjo, A., 2013: Modeling the Formation and Propagation of Thermal Bar in Lake Ontario, *56th Annual Conference on Great Lakes Research*, 2-6th June, West Lafayette.
- *Conry, P., **Sharma, A.**, L. S. Leo, J. Hellmann, and H.J.S. Fernando, 2013: High Resolution Simulations of Chicago Heat Island & Natural Landscapes and its Response to Climate Change, *Change & the Common Good: Security, Sustainability and Policy*, University of Notre Dame, IN.
- *Arifin, R.R., De Alwis Pitts, D.A., **Sharma, A.**, James, S.C., Fernando, H.J., and Suhardjo, A., 2013: Modeling the Formation of Thermal Bar in Lake Ontario using Climatological Parameters, *Climate Change & the Common Good*, University of Notre Dame, IN.
- Huang, H. P., Hunt, J., **Sharma, A.**, *Tse, L., Fernando, H., *Gunawan, A., & *Thompson, M., 2011: Axially asymmetric rotating tank experiments for thermally forced stationary waves in geophysical fluids. *Bulletin of the American Physical Society*, 56.
- Sharma, A.**, *Brown, J., and Fernando, H.J.S., 2011: A CFD Investigation of Modification Options to Minimize Separation During Resin Bed Replacement in a PWR Condensate Demineralizer Vessel, *International Conference on Nuclear Engineering, ICONE19-43546*, American Society of Mechanical Engineers.
- Sharma, A.**, Huang, H.-P., 2011: Impact of model resolution on rainfall for Arizona using WRF model, *12th Annual WRF Users Workshop*, NCAR, Boulder, USA.
- Sharma, A.**, Huang, H.-P., 2010: Climate downscaling for Arizona using WRF: Dependence of precipitation on model resolution and convective parameterization, *11th Annual WRF Users Workshop*, NCAR, Boulder, USA.

INVITED TALKS

- 2023 Diamond Jubilee Lecture: Urban Science to Actionable Solutions. CSIR-Institute of Minerals and Materials Technology (IMMT), Bhuvneshwar, India, Nov 7, 2023.
- 2023 Climate Science to Actionable Urban Solutions. India Meteorology Department (IMD), New Delhi, India, Nov 6, 2023.
- 2023 APA-CMS x ILASLA event: Adapting to Climate Change (Part III) – Air Quality, August 24, 2023.
- 2023 Asia Pacific Economic Cooperation (APEC) 2023. Promoting a Just Energy Transition: A Workshop to Guide Policies and Actions in the APEC Region. Community Research on Climate and Urban Science (CROCUS), May 20, 2023.
- 2023 UNESCO MAWAC-ENAR Water Research & Innovation (WRI) Workshop NYC, Metropolitan Water “SMART CITIRISE” Challenges, 20 March, 2023.
- 2023 University of Notre Dame, Environmental Fluid Dynamics Seminar Series, Urban Science to Solutions, March 7, 2023.
- 2023 UIC EJ symposium, Climate and Urban Sustainability, March 15, 2023.
- 2022 NASA Langley Research Center: Atmospheric Science Data Center (ASDC). Urban Science to Solutions, December 9, 2022.

- 2022 Northwestern University: Environmental Engineering & Sciences Seminar Series, Urban Science to Solutions, November 18, 2022.
- 2022 American Planning Association (APA) Chicago Metro Section and ASLA Illinois: American Society of Landscape Architects, Urban heat and solutions for the Chicago region, August 25, 2022.
- 2022 Earth Science Information Partners (ESIP) Air Quality cluster, Urban Science to Solutions, May 26, 2022.
- 2022 Discovery Partners Institute (DPI) R&D Seminar Series, Urban Science to Solutions, May 12, 2022.
- 2022 Donald J. Wuebbles Symposium, University of Illinois, Don's newfound interest: Urban Resiliency and Environmental Sustainability, March 8, 2022.
- 2022 GEO Health Community of Practice (CoP): Working group — Prediction and Prevention of Heat-related Health Risks across Time Scales, Multiscale climate modeling for cities, February 9, 2022.
- 2021 Sandia National Labs and University of Illinois: Climate Security Workshop, Multiscale climate modeling for urban systems, October 21, 2021.
- 2021 Illinois State Agencies Working Group, An Assessment of the Impacts of Climate Change in Illinois, presented with Angel, J., Ford, T., April 13, 2021.
- 2020 Illinois Climate Working Group, Integrated Climate Research for Improved Sustainability, November 10, 2020.
- 2020 Big 10 Workshop on Urban Issues, Interdisciplinary Modeling Across Scales for Urban Resiliency and Sustainability, October 1, 2020.
- 2020 Jaypee University of Information Technology, Interdisciplinary approaches to improve resiliency at scales for humans and ecosystems to thrive, August 29, 2020, Solan, India.
- 2020 National Remote Sensing Day, Indian Society for Remote Sensing, COVID-19, Weather, Health: A global perspective, August 12, 2020, Kolkata, India.
- 2020 Illinois Climate Working Group, COVID-19, Weather, Health, June 9, 2020.
- 2020 University of Illinois Foundation and the National Center for Supercomputing Applications, COVID-19, Weather, Health, May 19, 2020, Champaign, IL.
- 2020 India Meteorological Department (IMD), Bridging spatial scales for urban impacts: Modeling to Measurements, March 3, 2020, New Delhi, India.
- 2020 Indian Institute of Tropical Meteorology (IITM), Bridging scales for societal impacts: Modeling to Measurements, February 27, 2020, Pune, India.
- 2020 125 Years of Water and Weather, Illinois State Water Survey, How will climate change affect Illinois communities, and what can we do? with Liang Chen February 4, 2020, Champaign, IL.
- 2019 Department of Atmospheric Sciences: Atmospheric Sciences Seminar, Interdisciplinary modeling approaches to improve resiliency, December 3, 2019, University of Illinois at Urbana-Champaign, IL.
- 2019 Annual ESSM Community Workshop 2019 Theme: Climate Research to Enhance Resilience to Extreme Heat, 2019 CPO ESSM Workshop and Annual Council Meeting, Lessons learnt from Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models, November 18-19, 2019, Silver Spring, MD.
- 2019 Ven Te Chow Hydrosystems Seminar Series, Illinois Water Resources Engineering and Science (WRES), Civil and Environmental Engineering, Interdisciplinary modeling approaches to improve resiliency, October 4, 2019, University of Illinois at Urbana-Champaign, IL.

- 2019 Institute of Social and Economic Research (ISER), Climate Change and Social Justice, August 9, 2019, University of Alaska, Anchorage, AK.
- 2019 U.S. Capitol Hill: Congressional Visitor Center, Assessment of the Impacts of Climate Change on the Great Lakes, with Don Wuebbles, Dana Infante, June 9, 2019, Washington DC.
- 2019 Mansueto Institute of Urban Innovation Climate: Fighting Urban Heat with Green: Adaptation and Mitigation Strategies, Modeling to Alleviate Urban Heat, May 9-10, 2019, University of Chicago, IL.
- 2019 Purdue University: Department of Earth, Atmospheric, and Planetary Sciences (EAPS), Climate Modeling and Impact Assessment at Scales Humans and Ecosystems Thrive, January 24, 2019, IN.
- 2018 University of Notre Dame: 2018 Energy Week, ND Energy, Global Warming and Social Justice: Fighting for Vulnerable Chicago Neighborhoods, September 17, 2018, Notre Dame, IN.
- 2018 Illinois State Water Survey, Climate modeling at scales humans and ecosystems thrive, September 7, 2018, Champaign, IL.
- 2018 Argonne National Laboratory: Array of Things (AoT) Users Workshop, Urban Microscale Modeling and Developing Heat Mitigation Strategies, August 29-30, 2018, Lemont, IL.
- 2018 Northwestern University: Environmental Engineering Seminar, Assessment of Climate Change Impacts in the Midwest and Great Lakes Region Using Multi-Scale Modeling Strategies, May 25, 2018, IL.
- 2018 Illinois State Water Survey, Climate Modeling and Impact Assessment in the Midwest and Great Lakes Region Using Multi-Scale Modeling Approach, May 16, 2018, Champaign, IL.
- 2018 University of Bologna: Department of Physics and Astronomy, An interdisciplinary approach for modeling and impact assessment of urban climates, April 16, 2018, Italy.
- 2018 Army Research Laboratory: White Sands Missile Range (WSMR), Multiscale Climate Modeling and Impact Assessment of Meteorology, Energy and Air Quality at Urban Scales, January 29, 2018, New Mexico.
- 2018 Argonne National Lab: Mathematics and Computer Science (MCS) Seminar Series, Modeling and Impact Assessment of Meteorology, Energy and Air Quality at Urban Scales, January 11, 2018, IL.
- 2017 Indian Institute of Science Education and Research (IISER), Urban Climate Modeling: Current & Future Research Directions, October 19, 2017, Pune, India.
- 2017 Indian Institute of Tropical Meteorology (IITM), Urban Climate Modeling: Current & Future Research Directions, October 18, 2017, Pune, India.
- 2016 NCAR: Research Applications Laboratory, Climate modeling at scales people and ecosystems live: an urban climate modeling perspective, July 1, 2016, Boulder, CO.
- 2016 University of Notre Dame: Environmental Change Initiative (ECI), Regional Climate Modeling: Current & Future Research Directions, February 10, 2016, Notre Dame, IN.
- 2016 University of Minnesota: The Urban Climate Institute, Climate modeling at scales people and ecosystems live, July 13, 2016, St. Paul, MN.
- 2015 AGU Fall Meeting, Sensitivity of WRF model to landuse, with applications to Chicago metropolitan Urban Heat Island and lake breeze, December 16, 2015, San Francisco, CA.
- 2015 University of Notre Dame: ND Energy seminar series, Green and cool roofs to combat urban heating in Chicago: Evaluation with WRF regional climate model, September 16, 2015, IN.
- 2014 University of Notre Dame: Environmental Fluid Dynamics seminar series, Climate Modeling at scales humans and ecosystems live, November 18, 2014, Notre Dame, IN.

- 2013 Argonne National Lab: Urban Landscapes and Climate Change Workshop, Impact of climate change on urban heat island, with Laura Leo, August 27, 2013, Lemont, IL.
- 2012 University of Notre Dame: Environmental Fluid Dynamics Seminar Series, Climate Modeling & Downscaling and interactions with Ecosystems, September 18, 2012, IN.
- 2012 Brookhaven National Laboratory: Brookhaven National Laboratory, Climate Modeling & Downscaling for Semi-Arid Regions, February 14, 2012, NY.

PANEL DISCUSSIONS

- 2023 4th Infraday Midwest. ESG Best Practices: Tools, Tips, and Tech for Managing and Measuring Goals, June 13, 2023
- 2023 iSEE Congress. Addressing Crises of Planetary Scale - Lessons from Pandemics and Climate Change. Panel “Equity - Role of Science in Bridging the Environmental Justice Gaps in Cities, April 13, 2023
- 2023 **Panelist.** : Hot Topics and Urban Trees: Resiliency in the Face of Urban Heat Island and Climate Change - Urban heat and afforestation in the Chicago region *Chicago Regional Tree Initiative*, Morton Arboretum, Illinois, February 9, 2023.
- 2022 **Panelist.** Hot Topic, Cool Sites: Mitigating and Adapting to Climate Change *APA Chicago Metro Section + ASLA Illinois*, Omni Ecosystems, Chicago, Illinois, August 25, 2022.
- 2022 **Panelist.** Great Lakes, Great Minds: An Update on Creating a Great Lakes Higher Education Consortium and Partnership Fund, *Great Lakes Economic Forum*, Chicago, Illinois, June 27, 2022.
- 2022 **Panelist.** 2022 ILCMA Winter Conference: What’s Your Organization’s Climate on Climate Change? *The Illinois City / County Management Association (ILCMA)*, March 29, 2022.
- 2020 **Panelist.** Effects on air quality due to COVID-19 related shutdowns and its impact on health, Illinois Climate Working Group, June 9, 2020.
- 2020 **Panelist.** Urban Heat Impacts & Solutions, *A Chicago Regional Climate Plan — Climate Impacts & Hazards Webinar Series*, Metropolitan Mayors Caucus (MMC) and Chicago Metropolitan Agency for Planning, May 29, 2020.
- 2020: **Panelist.** COVID-19, Climate Change, and Health *University of Illinois Foundation and the National Center for Supercomputing Applications*, University of Illinois, May 19, 2020.
- 2020: **Panelist.** Cities 2020 and Beyond: Intelligent, Resilient and Sustainable *The Consulate General of France in Chicago event* at the The Field Museum, January 30, 2020.
- 2019 **Moderator.** Engineering perspective to urban woes and potential solutions across scales, *Illinois Center for Urban Resilience and Environmental Sustainability (IL-CURES)*, CURES Connections Workshop: New Voices and Paths to Urban Sustainability, Discovery Partners Institute, Chicago, IL, August 7-8, 2019.
- 2018 **Panelist.** Urban Systems: Capabilities and Tools panel, *Illinois Center for Urban Resilience and Environmental Sustainability (IL-CURES)*, University of Illinois at Urbana-Champaign, IL, August 20-21, 2018.

MISCELLANEOUS

- 2022 Public outreach for the Illinois State Water Plan report, Yorkville Public Library, August 24, 2022.
- 2022 Invited meeting to brief Dr. Richard W. Spinrad, Under Secretary of Commerce for Oceans and Atmosphere & NOAA Administrator on our work on the Chicago Region Climate Action Plan (CAP), June 15, 2022.

2022 Invited meeting by the British Consulate-General Chicago together with The UK Science and Innovation Network at a luncheon to discuss Communicating Climate Risk, April 4, 2022.

2019 Invited meeting by Metropolitan Mayors Caucus, Environmental committee meeting on the Greenest Region Compact, June 26, 2019

TEACHING EXPERIENCE

Sustainability Minor, University of Notre Dame

Instructor, Sustainability: Principles and Practices, Fall 2017

Summer Bridge Program, Arizona State University

Instructor, Freshman Mathematics, Summer 2010, Summer 2011

Mechanical & Aerospace Engineering, Arizona State University

Teaching Assistant, Numerical Methods of Engineer, Spring 2008

OUTREACH

University Service

- Illinois Water Survey: 125 Years of Water and Weather
- Outreach for the Center for Sustainable Energy at Notre Dame events to share with public the impact of urban heating and mitigation strategies.
- Notre Dame Day: LIVE remote from the roof of the Morris Inn. URL: <https://goo.gl/zAgHHs>

K-12 school students

- Mentoring K-12 students and inspiring them to pursue STEM education; helping them achieve STEM school projects.
- Remotely advising high-school student on their science projects and include them on university research projects.

NEWS AND MEDIA COVERAGE

External

- Researchers explore how climate change will affect Wrigley, Guaranteed Rate, March 28, 2024
URL: Daily Herald: <https://www.dailyherald.com/20240328/news/researchers-explore-how-climate-change-will-affect-wrigley-guaranteed-rate/>
- Importance of tree canopy cover highlighted during extreme heat, August 24, 2023
URL: NBC Chicago: <https://www.nbcchicago.com/weather/importance-of-tree-canopy-cover-highlighted-during-extreme-heat/3214548/>
- Chicago Tribune: Mapping a threat: Climate change's deadly summer heat may deepen disparities in Chicago, May 25, 2023
URL: <https://www.chicagotribune.com/investigations/ct-chicago-climate-change-extreme-heat-20230525-qrqbssnbnljpitge3lycz3sm-htmlstory.html>
- Next City: What the City of Rotterdam Can Teach Us About the Power of Green Roofs, June 17, 2022
URL: <https://nextcity.org/urbanist-news/what-the-city-of-rotterdam-can-teach-us-about-the-power-of-green-roofs>
- Detroit Free Press: Great Lakes fish and fisheries suffer stress of warming climate, June 14, 2022

URL: <https://www.freep.com/in-depth/news/local/michigan/2022/06/14/great-lakes-fish-fisheries-warming-climate/9925762002/>

- The Nature Conservancy (2021): Climate change is transforming Illinois, with more to come, major report by The Nature Conservancy concludes (April 20, 2021)
URL: <https://www.nature.org/en-us/newsroom/illinois-climate-assessment/>
- News on the Capitol Hill briefing on "Climate Change Impacts on the Great Lakes (2019): Scientists: Climate change could prompt a rebound – and problems – in Great Lakes region
URL: <https://buffalonews.com/2019/07/11/scientists-climate-change-could-prompt-a-rebound-and-problems-in-the-great-lakes-region/>
- The Daily Northwestern (2019): Report warns of climate change-related impacts on Great Lakes
URL: <https://dailynorthwestern.com/2019/04/07/city/report-warns-of-climate-change-related-impacts-on-great-lakes/>
- CNBC (2018): Low-income neighborhoods would gain the most from green roofs in cities like Chicago
URL: <https://www.cnbc.com/2018/09/07/low-income-neighborhoods-would-gain-the-most-from-green-roofs.html/>
- Next City, an urban affairs magazine (2018): Detailed Maps Trace the Heat in Chicago Neighborhoods
URL: <https://nextcity.org/daily/entry/detailed-maps-trace-heat-chicago-neighborhoods/>
- Columbia Chronicle (2018): Green roofs take heat off low-income areas
URL: <http://http://https://columbiachronicle.com/0585cdb0-bd0e-11e8-bd63-ffca5ff75765>
- IOP Physics World (2018): Computer model picks which roofs to make green
URL: <https://physicsworld.com/a/computer-model-picks-which-roofs-to-make-green/>
- Beyond Zero Emissions (BZE) Technology Radio Show (2016): 26 July 2016 Podcast in Australia on my overall urban climate research.
URL: <http://bze.org.au/dr-ashish-sharma/>
- Vice Impact (2016): A Deadly Heatwave Turned Chicago Into the Country's Green Roof Capital
URL: <https://goo.gl/kbJM3t>

News: Argonne National Laboratory

- A Blueprint for Change: How Computer Models Will Help Communities Respond to Climate Change, July 14, 2023. URL: <https://crocus-urban.org/blog/2023/07/14/a-blueprint-for-change-how-computer-models-will-help-communities-respond-to-climate-change/>

News: University of Illinois System

- Illinois climate researchers develop methodology to predict temperatures at street scale
URL: <https://dpi.uillinois.edu/news/illinois-climate-researchers-develop-methodology-to-predict-temperatures-at-street-scale/>
- University of Illinois System 2023 Annual Report: A Cooler Chicagoland
URL: <https://uillinois.foleon.com/annualreport/2023/cooling-chicagoland>
- Discovery Partners Institute: DPI receives \$1.5 million grant from National Science Foundation to fund international research partnership on clean transportation, August 1, 2022. URL: <https://dpi.uillinois.edu/news/dpi-receives-1-5-million-grant-from-national-science-foundation-to-fund-international-research-partnership-on-clean-transportation/>
- Illinois News Bureau: How can academia help implement lessons from the 2022 climate summit? NOV 28, 2022. URL: <https://news.uillinois.edu/view/6367/748484811>

- Prairie Research Institute: Scientists to build toolkit addressing climate change and environmental justice in Chicago communities, August 1, 2022. URL: <https://blogs.illinois.edu/view/7447/55588468>
- Prairie Research Institute: National Science Foundation funds project to improve weather forecasts for cities, Feb 25, 2022. URL: <https://blogs.illinois.edu/view/7447/588593230>
- Illinois News Bureau: How can cities help accelerate climate action to meet COP26 goals? NOV 18, 2021. URL: <https://news.illinois.edu/view/6367/1668083379>
- Prairie Research Institute: ISWS researcher contributes to award-winning Chicago Regional Climate Action Planning Partnership, OCT 22, 2021. URL: <https://blogs.illinois.edu/view/7447/2040698152>
- Prairie Research Institute: Climate studies focus on a new priority: urban areas, JUL 15, 2021. URL: <https://blogs.illinois.edu/view/7784/1542861218>
- Department of Atmospheric Sciences: Converging on Solutions to Plan Sustainable Cities, Jan 10, 2021. URL: <https://atmos.illinois.edu/news/2021-01-10/converging-solutions-plan-sustainable-cities>
- Prairie Research Institute: ISWS kicks off 125th anniversary year, March 10, 2020. URL: <https://blogs.illinois.edu/view/7447/806466>

News: University of Notre Dame news

- Importance of Great Lakes highlighted in new climate assessment
<https://environmentalchange.nd.edu/news-events/news/importance-of-great-lakes-highlighted-in-new-climate-assessment/>
- University of Notre Dame news release (2018): New study shows ways to maximize temperature-lowering benefits of Chicago's green roofs
URL: <https://news.nd.edu/news/new-study-shows-ways-to-maximize-temperature-lowering-benefits-of-chicagos-green-roofs/>
- University of Notre Dame Engineering for a Better World Stories from Notre Dame's Department of Civil & Environmental Engineering & Earth Sciences (2017): To the Frontline: Notre Dame Professors Build Collaborations in Bangladesh
URL: <http://ceees.nd.edu/stories/our-stories/to-the-frontline-notre-dame-professors-build-collaborations-in-bangladesh>
- University of Notre Dame news release (2016): Cooling down Chicago: How green and cool roofs could impact urban climate
URL: <http://news.nd.edu/news/cooling-down-chicago-how-green-and-cool-roofs-could-impact-urban-climate/>

PH.D. THESIS COMMITTEE

- Gonzalo Huidobro, University of Notre Dame (external Ph.D. thesis committee member - current)
- Dr. Margareth Viecco, Pontificia Universidad Católica de Chile, Santiago, Chile (external Ph.D. thesis committee member, 2021)

ADVISING STUDENTS

High school interns

- Ayush Jain, Metea Valley High School, Aurora, IL; July 2023 - current
- Tanish Khadse, Central High School, Champaign; July 2021 - June 2022
- David Krutz, Central High School, Champaign; Summer 2019

- Tabeeb Kandaker, Central High School, Champaign; Summer 2019

Undergraduate students

- Tanish Khadse, University of Illinois at Urbana-Champaign; June 2022 - current
- Mariana Silva, University of Notre Dame; 2018-19

Graduate students

- Priyanka Sharma, Department of Atmospheric Sciences, UIUC (August 2023 - current)
- Mitchell Lazarow, Department of Atmospheric Sciences, UIUC (August 2022 - current)
- Hem Amit Vaidya, University of Illinois at Urbana-Champaign; 2020

Visiting Ph.D. students

- Nimish Gupta, Indian Institute of Technology (IIT) Kharagpur, India; Fall 2019
- Margareth Viecco, Pontificia Universidad Católica de Chile, Santiago, Chile; Summer 2018
- Prakash Pithani, Indian Institute of Tropical Meteorology (IITM), Pune, India, Summer 2017

Postdoctoral students

- Abhinav Wadhwa (August 2023 - current)
- Carolina Veiga Ferreira de Souza (July 2023 - current)
- Sicheng Wu (June 2023 - current)
- Peiyuan Li (Jan 2022 - current)

Visiting Scholars

- Dr. Lei Zhou, Associate Professor, School of Geomatics and Urban Information, Beijing University of Civil Engineering and Architecture (Aug 2019 - July 2020)

PROFESSIONAL SERVICE

Professional Affiliations

- Fellow, Royal Meteorological Society (2016-present)
- Member, American Association for the Advancement of Science (2019-present)
- Member, American Meteorological Society (2015-present)
- Member, American Geophysical Union (2011-present)

Conference Organization: Convenor or Co-convenor

- Workshop on Climate Action in Global Cities, December 13, 2023, San Francisco, USA.
- Environmental Justice and Racism Roundtable, Carle, University of Illinois, and Carle Illinois College of Medicine, March 24, 2022 and April 21, 2023 Champaign, IL, USA.
URL: <https://carle.org/For-Providers/Continuing-Education/Environmental-Justice-and-Racism-Roundtable>

- DPI CURES Community Project Lab: Sustainable Solutions for Rural, Small and Medium Sized Illinois Communities Facing a Changing Climate, University of Illinois Springfield, December 2, 2021, Springfield, IL, USA.
URL: <https://dpi.uillinois.edu/applied-research/cures/cures-community-project-lab/>
- Workshop on 2019 CURES CONNECTIONS WORKSHOP: New Voices and Paths to Urban Sustainability – 2019, Discovery Partners Institute, August 7-8, 2019, Chicago, IL, USA.
URL: <https://dpi.uillinois.edu/page-block-preview/cures-connections-workshop/>
- Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models – 2019, Argonne National Laboratory, May 22-24, 2019, Chicago, USA.
URL: <https://web.evs.anl.gov/urban-workshop/>
- Mini-symposia on Urban Fluid Mechanics and member of local organizing committee of the 8th International Symposium on Environmental Hydraulics (ISEH) – 2018 conference, University of Notre Dame, June 4-7, 2018, Notre Dame, USA. URL: <https://ceees.nd.edu/iseh2018>

Conference/Workshop Session Chair

- Scientific Session chair for AGU 2023 Fall Meeting on "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation", December 12, 2023, San Francisco.
- Innovation Session chair for AGU 2023 Fall Meeting on "Climate Action in Global Cities", December 13, 2023, Chicago.
- 11th International Conference on Urban Climate, Sydney Australia; "Extreme weather and climate in urban areas, their social impacts, and mitigation" 28 Aug - 1 Sept 2023
- Session chair for AMS 2023 Annual Meeting on "Urban Climate Modeling: Approaches and Tools for Pathways to Societal Resilience and Adaptation"
- Innovation Session chair for AGU 2022 Fall Meeting on "Climate Action in Global Cities", December 13, 2022, Chicago.
- Scientific Session chair for AGU 2022 Fall Meeting on "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation", December 13, 2022, Chicago.
- Union Session chair for AGU 2022 Fall Meeting on "Climate Change and Climate Action Leadership in Illinois", December 14, 2022, Chicago.
- Session chair for AGU 2022 Frontiers in Hydrology — Future of Water — "Addressing current and emerging challenges to closing the water balance in integrated human-natural systems at urban to continental scales," 19-24 June 2022, Puerto Rico.
- Session chair for AMS 2022 Annual Meeting on "Urban Climate Modeling: Approaches and Tools for Pathways to Societal Resilience and Adaptation"
- Session chair for AGU 2021 Fall Meeting on "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation"
- Session chair for AGU 2020 Fall Meeting on "Extreme Weather and Climate in Urban Areas and Their Social Impacts and Mitigation"
- Session chair for AGU 2019 Fall Meeting on "Interdisciplinary Sustainable Solutions for Urban Areas"
- Session chair for urban session at the Annual ESSM Community Workshop 2019 Theme: Climate Research to Enhance Resilience to Extreme Heat, 2019: CPO ESSM Workshop and Annual Council Meeting, November 18-19, 2019, Silver Spring, MD.
- Session chair for Mini-Symposium: Urban Fluid Mechanics: 8th International Symposium on Environmental Hydraulics (ISEH) – 2018 conference, University of Notre Dame, June 4-7, 2018, Notre Dame, USA.

University Service

- Faculty and researcher hiring committee
- Traveling for the university to establish long-term collaborations
- Inviting seminar speakers at Climate and Atmospheric Science (CAS) seminar series (Illinois State Water Survey).
- Environmental Change Initiative (ECI) seed funding committee member (University of Notre Dame).

Award Proposal Reviewer Service

National Science Foundation (NSF) (multiple programs), US Department of Energy, National Aeronautics and Space Administration (NASA) (multiple programs), Army Research Office (ARO), National Oceanic and Atmospheric Administration (NOAA), Great Lakes Consortium for Petascale Computation Blue Waters Allocations (GLCPC), Canada Foundation for Innovation (CFI), Netherlands Organisation for Scientific Research (NWO), NSF-Poland

Reviewer Service

IPCC AR6, Advances in Atmospheric Sciences, Advances of Meteorology, AGU Advances, Atmosphere, Atmospheric Research, Boundary-Layer Meteorology, Environmental Fluid Mechanics, Environmental Research Letters, International Journal of Climatology, International Journal of Environmental Research and Public Health, Journal of Applied Meteorology & Climatology, Journal of Geophysical Research-Atmospheres, Journal of Hydrology: Regional Studies, Journal of Water and Land Development, Meteorology and Atmospheric Physics, Nature, Pure and Applied Geophysics, Remote Sensing, Science of the Total Environment, Sustainability, Sustainable Cities and Society, Urban Climate

LANGUAGES

Native speaker of English and Hindi