Ashish Sharma

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Education

August 2012	**Ph.D. in Aerospace Engineering** *Arizona State University, USA* *Dissertation:* 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

Aug 2022 - current	**Climate and Urban Sustainability Lead** *Discovery Partners Institute, University of Illinois Urbana-Champaign*
October 2023 - current	**Director, CLEETS NSF-UKRI Global Center** *Clean Energy and Equitable Transportation Solutions (CLEETS)*
Sept 2019 - current	**Graduate Faculty** *Department of Climate, Meteorology & Atmospheric Sciences* University of Illinois at Urbana-Champaign, USA
Feb 2022 - current	**Atmospheric Scientist (Joint Appointment)** *Environmental Science Division, Argonne National Laboratory, 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; ND Energy, University of Notre Dame*
June - Aug 2016 May - July 2014	**Visiting Researcher** *RAL, NSF National Center for Atmospheric Research, USA*

Honors and Awards

- 2023 **Crain's Chicago Business 40 Under 40**.
- 2023 **Chicago Council on Science and Technology (C2ST) Inaugural Societal Impact Award** — awarded to the DOE Urban Integrated Field Laboratory project *CROCUS* team (May 4, 2023).
- 2022 **Strategic Plan Award** — American Planning Association (APA) Illinois Chapter State Conference, Chicago, IL, for the *Climate Action Plan for the Chicago Region* (September 28, 2022).
- 2022 **State/Regional Award of Merit in Sustainability** — American Planning Association (APA) Sustainable Communities Division, for the *Climate Action Plan for the Chicago Metropolitan Region* (May 2, 2022).
- 2022 **Featured Research Exhibit** — Illinois State Museum exhibit on climate change, environmental injustice, and extreme heat impacts in Chicago (April–December 2022).
- 2021 **Climate Leadership Award** (Innovative Partnership Category) — awarded with the Metropolitan Mayors Caucus and 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 **Expert Testimony** — City of Chicago Committee on Environmental Protection and Energy, subject matter hearing on urban heat island impacts and solutions (May 17, 2021).
- 2021 **Reviewer** — Intergovernmental Panel on Climate Change (IPCC), Sixth Assessment Report (AR6), Working Group I.
- 2019 **Congressional Briefings** — presented findings from the *Great Lakes climate assessment* to the U.S. Senate Climate Task Force and U.S. House of Representatives, Washington, DC (July 9, 2019).
- 2016–present **Fellow**, Royal Meteorological Society.

Professional Committee Service

- 2026–present **Board Member**, Board of the Urban Environment, American Meteorological Society (AMS).
- 2024–present **Appointed Member**, Illinois Environmental Justice Commission (appointed by the Governor of Illinois).
- 2024–present **Appointed Member**, Illinois State Museum Board (appointed by the Governor of Illinois).
- 2024–present **Steering Committee Member**, Chicago Metropolitan Climate Action Plan (CAP) for the 14-county Chicago metropolitan statistical area, led by the Chicago Metropolitan Agency for Planning (CMAP).
- 2024 **Overall Planning Committee Member**, American Meteorological Society Annual Meeting.
- 2023–present **Panel Member**, U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) *EJScreen Review Panel*.
- 2022–present **Technical Advisory Committee Member**, *Natural Solutions Tool* — The Trust for Public Land (commissioned by the Chicago-Calumet River Watershed Council).
- 2022–present **Scientific Partner**, American Geophysical Union *Thriving Earth Exchange* (AGU TEX) — heat vulnerability mapping project, Missoula, MT.
  URL: http://thrivingearthexchange.org/project/missoula-mt/

- 2019–present **Executive Committee Member**, Illinois Center for Urban Resilience and Environmental Sustainability (IL-CURES).
- 2016–2017 **Member**, Blue Waters Allocations Committee, Great Lakes Consortium for Petascale Computation (GLCPC).

Journal Editorships

- 2021–present **Associate Editor**, *Frontiers in Environmental Science* (Atmosphere and Climate).
- **Guest Editor**, Special Issue: *Extreme Weather, Climate, and Air Pollution in Urban Areas: Social Impacts, Adaptation, and Mitigation*, *Urban Climate*.

Funding

Funding secured as PI: $16M+; funding secured as co-PI or senior personnel: $40M+

Institute for Climate and Sustainable Growth, University of Chicago — **The Chicago Center for Environmental and Behavioral Change to Address Psychological Impacts of Heat Exposure**.
Marc Berman, Kate Burrows, Amir Jina (UChicago); **Ashish Sharma**; Kim Meidenbauer (Washington State University).
Role: Co-PI / Senior Personnel (**Ashish Sharma**). **Period:** Jul 2025–Dec 2026. **Amount:** $300,000 (total).

National Wildlife Federation — **Quad Cities Ecological Corridors Mapping**.
Role: PI (**Ashish Sharma**); Co-I: Abhinav Wadhwa.
Period: Jan–Dec 2025. **Amount:** $30,000.

Metropolitan Planning Council (MPC) — **Climate-Driven Green Stormwater Infrastructure (GSI) Tool Adaptation for Right Infrastructure Right**.
Role: PI (**Ashish Sharma**); Co-I: Abhinav Wadhwa.
Period: Dec 2024–Jun 2027. **Amount:** $100,000.

National Science Foundation (NSF) — **Collaborative Research: Interactions of Urban Systems with Storms and Heatwaves, and Resulting Impacts**.
Role: PI (**Ashish Sharma**); Co-Is: Donald Wuebbles, David Kristovich.
Period: Feb 2025–Jul 2026. **Amount:** $75,184.

National Science Foundation (NSF) — **CAS-Climate Conference Travel Grant: Water Research and Innovation Workshop (UNESCO Megacities Alliance for Water and Climate)**.
Role: PI (**Ashish Sharma**); Co-I: Kuldip Kumar (MWRD).
Period: Nov 2023–Oct 2024. **Amount:** $50,000.

National Science Foundation (NSF) — **Global Centers Track 1: CLEETS — Clean Energy and Equitable Transportation Solutions**.
Role: PI (**Ashish Sharma**); Co-Is: Venkat Venkatakrishnan, P. S. Sriraj, Petros Sofronis, Eleftheria Kontou.
Period: Oct 2023–Sep 2028. **Amount:** $5,000,000 (U.S. share; total award: $11,194,900).

National Wildlife Federation — **Quad Cities Climate Assessment**.
Role: PI (**Ashish Sharma**); Co-I: Abhinav Wadhwa.
Period: Oct–Nov 2023. **Amount:** $30,000.

ComEd / Exelon Energy — **Climate Change Training Curriculum**.
Role: PI (**Ashish Sharma**); Co-Is: Donald Wuebbles, Ryan Sriver, Robert Kerr, Emily Keener, Renu Kulkarni, Sam Miller.
Period: Aug 2023–Mar 2024. **Amount:** $283,875.

ComEd / Exelon Energy — **Resilient Canopies in the Chicago Region**.
PI: Donald Wuebbles; Co-PI: **Ashish Sharma**.
Role: Co-PI (**Ashish Sharma**). **Period:** May 2023–Apr 2025. **Amount:** $200,000.

U.S. Department of Energy (DOE) — **Community Research on Climate and Urban Science (CROCUS): Urban Integrated Field Laboratory (Urban-IFL)**.
PIs: Cristina Negri, Rao Kotamarthi (Argonne); **Ashish Sharma** (Argonne / UIUC) et al.
Role: Co-PI / Senior Personnel (**Ashish Sharma**). **Period:** Jan 2022–Sep 2027. **Amount:** $25,000,000 (total).

National Science Foundation (NSF) — **International Partnerships for Accelerating Climate-Ready, Sustainable, and Clean Urban Transportation**.
Role: PI (**Ashish Sharma**); Co-Is: P. S. Sriraj, Sandra Gesing, Rajesh Kumar, Marty Anderies.
Period: Jan 2023–Dec 2025. **Amount:** $1,499,886.

National Aeronautics and Space Administration (NASA) — **e-JUST: Environmental Justice using Urban Scalable Toolkit**.
Role: PI (**Ashish Sharma**); Co-Is: Edith Makra, Matt Turk.
Period: Aug 2022–Jul 2024. **Amount:** $250,000.

DOE–Argonne National Laboratory — **Collaborative Urban Research between DPI and Argonne**.
Role: PI (**Ashish Sharma**). **Period:** Feb 2022–Feb 2023. **Amount:** $10,038.

Strategic Research Initiative (SRI), University of Illinois Urbana-Champaign — **AI Institute for Climate Resilience (ACRE), Phase 1**.
PI: Praveen Kumar; team includes **Ashish Sharma** and multiple co-investigators.
Role: Senior Personnel (**Ashish Sharma**). **Period:** May 2022–May 2023. **Amount:** $75,000 (total).

National Science Foundation (NSF) — **Collaborative Research: Interactions of Urban Systems with Storms and Heatwaves, and Resulting Impacts**.
Role: PI (**Ashish Sharma**); Co-Is: Donald Wuebbles, David Kristovich, Alan Hamlet.
Period: Feb 2022–Jul 2026. **Amount:** $852,918 (total).

Walder Foundation — **From Science to Nature-Based Solutions in the Chicago Region**.
PI: Donald Wuebbles; Co-PI: **Ashish Sharma**.
Role: Co-PI (**Ashish Sharma**). **Period:** Nov 2021–Oct 2023. **Amount:** $583,085.

IBM Research — **An AI-Based Framework for Accelerated Discovery of Climate Impacts on Different Societal Sectors**.
PI team: Atul Jain, **Ashish Sharma**, Lav Varshney, Donald Wuebbles.
Role: Co-PI / Senior Personnel (**Ashish Sharma**). **Period:** Aug 2021–Aug 2022. **Amount:** $260,827.

Discovery Partners Institute (DPI) — **Risk-Based Approaches to Midwestern Climate and Weather Prediction**.
PI: Ryan L. Sriver; Co-Is include **Ashish Sharma** and collaborators.
Role: Co-PI / Senior Personnel (**Ashish Sharma**). **Period:** Oct 2021–Mar 2023. **Amount:** $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; Co-Is: **Ashish Sharma**, Lei Zhao, Amy Ando.
Role: Co-PI (**Ashish Sharma**). **Period:** May 2019–Apr 2020. **Amount:** $50,000.

U.S. Department of Energy (DOE) — **Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models**.
PI: Donald Wuebbles; team includes **Ashish Sharma** and collaborators.
Role: Senior Personnel (**Ashish Sharma**). **Period:** Oct 2018–Sep 2019. **Amount:** $72,271.

National Aeronautics and Space Administration (NASA) — **Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models**.
PI: Donald Wuebbles; team includes **Ashish Sharma** and collaborators.
Role: Senior Personnel (**Ashish Sharma**). **Period:** Nov 2018–Nov 2019. **Amount:** $20,581.

National Oceanic and Atmospheric Administration (NOAA) — **Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models**.
PI: Donald Wuebbles; team includes **Ashish Sharma** and collaborators.
Role: Senior Personnel (**Ashish Sharma**). **Period:** Oct 2018–Sep 2019. **Amount:** $17,626.

U.S. Department of Defense (DoD) — **Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models**.
PI: Donald Wuebbles; team includes **Ashish Sharma** and collaborators.
Role: Senior Personnel (**Ashish Sharma**). **Period:** Oct 2018–Sep 2019. **Amount:** $23,440.

U.S. EPA Great Lakes Restoration Initiative (GLRI) — **Cover Crops Prevent Nutrient Runoff and Promote Climate Resiliency in Great Lakes Watersheds** (GL00E02207).
PI: Alan Hamlet; Co-Is include **Ashish Sharma**, Jennifer Tank, Sheila Christopher, Todd Royer.
Role: Co-PI / Senior Personnel (**Ashish Sharma**). **Period:** Aug 2017–Jul 2020. **Amount:** $564,314.

Institute for Sustainability, Energy, and Environment (iSEE), UIUC — **Initial Development and Testing of a cyberGIS System for Urban Sustainability**.
PI: Donald Wuebbles; Co-Is include **Ashish Sharma**, Shaowen Wang.
Role: Co-PI / Senior Personnel (**Ashish Sharma**). **Period:** Jan–Dec 2019. **Amount:** $29,996.

Notre Dame International (NDI) — **Urban Sustainability Solutions to Mitigate Climate Change for Exponentially Growing Populations in New Delhi**.
Role: PI (**Ashish Sharma**); Co-Is: H. J. S. Fernando, Alan Hamlet.
Period: Jul 2017–Jun 2018. **Amount:** $20,000.

Center for Sustainable Energy, University of Notre Dame — **Energy Sustainable Solutions Using Green Infrastructure for an Urban Environment**.
Role: PI (**Ashish Sharma**). **Period:** Jul 2015–Jun 2017. **Amount:** $50,000.

University of Notre Dame / Pontificia Universidad Católica de Chile Internal Grant — **Climatic Impacts on Environmental Quality in Urban Santiago**.
PI: Laura Leo; Co-Is include **Ashish Sharma**, H. J. S. Fernando, Reneta Dimitrova.
Role: Co-PI / Senior Personnel (**Ashish Sharma**). **Period:** Jul 2013–Jun 2014. **Amount:** $40,000.

National Institute of Aerospace / NASA — **Graduate Student Scholarship**.
Role: Scholarship Award (**Ashish Sharma**). **Period:** 2008–2009. **Amount:** $5,875.

Computing Grants

NCAR Derecho Supercomputing Allocation — **Interactions of Urban Systems with Storms and Heatwaves, and Resulting Impacts**.
Role: PI (**Ashish Sharma**); team: Sicheng Wu, Peiyuan Li. **Period:** 2024–2027. **Allocation:** 25,000,000 core-hours.

NCAR Derecho Supercomputing Allocation — **Interactions of Urban Systems with Storms and Heatwaves, and Resulting Impacts**.
Role: PI (**Ashish Sharma**); team: Peiyuan Li. **Period:** 2024–2025. **Allocation:** 2,000,000 core-hours.

NCAR Cheyenne Supercomputing Allocation — **Interactions of Urban Systems with Storms and Heatwaves, and Resulting Impacts**.

Role: PI (**Ashish Sharma**); team: Peiyuan Li. **Period:** 2023–2025. **Allocation:** 10,000,000 core-hours.

NCAR Cheyenne Supercomputing Allocation — **Simulation of Urban Vegetation Behavior in Modifying Thermal and Carbon Dynamics in City Clusters**.
Role: PI (Peiyuan Li); Co-PI (**Ashish Sharma**). **Period:** 2022–2023. **Allocation:** 400,000 core-hours.

NCAR Yellowstone Supercomputing Allocation — **Evaluating the Impact of Green Roofs**.
Role: PI (**Ashish Sharma**). **Period:** 2014–2018. **Allocation:** 100,000 core-hours.

Great Lakes Consortium for Petascale Computation (GLCPC) — **Very High-Resolution Numerical Modeling for Climate Extremes in the Midwest U.S.**.
Role: PI (**Ashish Sharma**); Co-PIs: H. J. S. Fernando (Notre Dame), Jessica Hellmann (University of Minnesota), Rao Kotamarthi (Argonne). **Period:** 2014–2015. **Allocation:** 5,500,000 core-hours.

Travel Grants

NCAR Travel Award — **Urban Sustainable Solutions for Energy and Air Quality Impacts Using Green Infrastructure**.
Role: PI (**Ashish Sharma**). **Year:** 2016. **Amount:** $3,200.

Publications (**Students*; postdocs†**)

57. Huidobro, G.*, **Sharma, A.**, & Hamlet, A. F. (2025). Using Integrated EOF Analysis for Evaluation of WRF Simulations in Urban Environments. *J. Appl. Meteor. Climatol.*.

56. Wadhwa, A.†, Pathak, A., Struss, N., Bagherzadeh, M., & **Sharma, A.** (2026). Harnessing Community Science to Address Flood Risks and Build Climate Resilience with Nature-based Solutions (NbS): A case study from the Quad Cities region. *Community Science*. doi: 10.1029/2025CSJ000151.

55. Wu, S.†, Kumar, R., Li, P., Kotamarthi, R., Collis, S., Shams, S., & **Sharma, A.** (2025). Sensitivity of regional WRF-Chem air quality and weather simulations to biomass-burning emission data sets: A case study of the impact of Canadian wildfire on the US. *J. Geophys. Res.: Atmos.*, 130(22), e2025JD043944. doi: 10.1029/2025JD043944.

54. Lee, J.†, Park, S. Y., Wadhwa, A.†, Packman, A., Nesbitt, S. W., Garcia, M. H., Berkelhammer, M., **Sharma, A.**, Kotamarthi, R., Hence, D., & Miller, W. M. (2025). Comparing multi-source urban flood indicators: Satellite, simulation, and citizen-reported data. *Environ. Res.: Water*, 1(3), 035007. doi: 10.1088/3033-4942/ae0aed.

53. Wang, J., Yang, Z., Moustakes, T., Tan, H., Kotamarthi, R., Martilli, A., Jackson, R., Muradyan, P., Collis, S., O'Brien, J., Niyogi, D., & **Sharma, A.** (2025). Compounding effects of lake and urbanization on summer precipitation in the Greater Chicago area. *Urban Climate*, 63, 102597. doi: 10.1016/j.uclim.2025.102597.

52. Kotamarthi, R., Wang, J., Stock, J., Fytanidis, D. K., Munson, T., Niyogi, D., Muradyan, P., Jackson, R., O'Brien, J., Grover, M., Collis, S., Gonzalez-Meler, M. A., Lee, J., **Sharma, A.**, Wang, S., Kaludi, B., Kaplan, M., Nesbitt, S. W., Martilli, A., Jacob, R., & Negri, C. (2025). Artificial Intelligence–Enabled Digital Twin for U.S. Cities. *Bull. Am. Meteorol. Soc.*, 106(11), E2411–E2418. doi: 10.1175/BAMS-D-25-0229.1.

51. Wadhwa, A.†, **Sharma, A.**, Hamlet, A. F., & Li, P. (2025). Nature-based solutions: An effective approach for flood mitigation and resilience in the Quad Cities in future climate. *Hydrol. Sci. J.*, 70(16), 3048–3058. doi: 10.1080/02626667.2025.2564349.

50. Ibrahim, H. D.†, Li, P., **Sharma, A.**, & Wuebbles, D. J. (2026). Simulated impacts of nature-based solutions on flooding in the Upper Illinois River Basin. *J. Hydrol. Eng.*, 31(1), 04025049. doi: 10.1061/JHYEFF.HEENG-6279.

49. Sivasubramanian, R., Vaithilingam, C. A., Paiman, S., **Sharma, A.**, & Gandhi, I. (2025). Hybrid photovoltaic cell with triboelectric nanogenerator: Overcoming energy availability limits and reducing optical scattering losses. *Environ. Prog. & Sustain. Energy*, 44(5), e70046. doi: 10.1002/ep.70046.

48. Wuebbles, D., Cherkauer, K., Infante, D., Johnson, L., Jorns, J., Kunkel, K., Li, P., Mayhal, N., Miller, J., **Sharma, A.**, Young, A. H., Wilson, R., & Xue, P. (2025). 2025 Update: An assessment of the impacts of climate change on the Great Lakes by scientists and experts from universities and institutions in the Great Lakes region. *Great Lakes Climate Assessment Report*. University of Illinois.

47. **Sharma, A.** (2025). Urban climate science needs to step out. *Nature Cities*, 1–2. doi: 10.1038/s44284-025-00264-4.

46. **Sharma, A.**, Li, P., Wadhwa, A.†, Wu, S.†, & Veiga, C.†(2025). Urban science to solutions: Bridging knowledge and practice for sustainable cities. In T. L. Killeen, D. J. Wuebbles, & J. E. Lane (Eds.), *Pathways to Sustainability: Collaborative Solutions for a Resilient Future* (Chap. 11). University of Illinois Press.

45. Shaddick, G., Rana, O., Radcliffe, J., & **Sharma, A.** (2025). Environmental intelligence: The crucial role for AI in supporting environmental sustainability. In T. L. Killeen, D. J. Wuebbles, & J. E. Lane (Eds.), *Pathways to Sustainability: Collaborative Solutions for a Resilient Future* (Chap. 16). University of Illinois Press.

44. **Sharma, A.**, Kumar, K., Wadhwa, A.†, Mijic, A., Ignace, V., Negri, C., Marcus, F., Cherrier, J., Matthews, T., Deroubaix, J. F., Deutsch, J. C., & Juran, I. (2025). Advancing urban water resilience: Co-producing knowledge through civic-academic global partnerships on water and climate. *Bull. Am. Meteorol. Soc.*, 106(6), E1098–E1107. doi: 10.1175/BAMS-D-25-0065.1.

43. Wadhwa, A.†, **Sharma, A.**, Hamlet, A. F., & Li, P. (2025). Effectiveness of nature-based solutions to reduce flooding in the Quad Cities Metro Area (QCMA) using a SWMM–HEC based flood model. *Front. Earth Sci.*, 19, 1–15. doi: 10.1007/s11707-025-1157-y.

42. Shaddick, G., Topping, D., Hales, T. C., Kadri, U., Patterson, J., Pickett, J., Petri, I., Taylor, S., Li, P., **Sharma, A.**, Venkatkrishnan, V., Wadhwa, A.†, Ding, J., Bowyer, R., & Rana, O. (2025). Data science and AI for sustainable futures: Opportunities and challenges. *Sustainability*, 17(5), 2019. doi: 10.3390/su17052019.

41. Chen, X. W., Vaithilingam, C. A., **Sharma, A.**, Ponnan, S., & Goh, H. H. (2025). Enhancing the efficiency of hybrid parabolic and parabolic trough concentrators for dual solar applications. *Clean Technol. Environ. Policy*, 1–17. doi: 10.1007/s10098-024-03125-1.

40. Pathak, A., Bagherzadeh, M., Struss, N., Wadhwa, A.†, & **Sharma, A.** (2024). *Navigating Climate Challenges in the Quad Cities: A Comprehensive Assessment and Paths to Resilience*. National Wildlife Federation. doi: $10.13012/B2IDB\text{-}5303810_V1$.

39. Meidenbauer, K. L., Schertz, K. E., Li, P., **Sharma, A.**, Freeman, T. R., Janey, E. A., Stier, A. J., Samtani, A. L., Gehrke, K., & Berman, M. G. (2024). Variable and dynamic associations between hot weather, thermal comfort, and individuals' emotional states during summertime. *BMC Psychol.*, 12(1), 504. doi: 10.1186/s40359-024-02005-z.

38. Li, P.†, **Sharma, A.**, & Wuebbles, D. (2024). Impact assessment of climate change and afforestation. University of Illinois at Urbana-Champaign. Report on the ComEd Resilient Canopy Project. doi: $10.13012/B2IDB\text{-}0652675_V1$.

37. Li, P.†, **Sharma, A.**, & Li, P. (2024). Detailed Height mapping of Trees And Buildings (HiTAB) in Chicago and its implications to urban climate studies. *Environ. Res. Lett.*, 19(9), 094013. doi: 10.1088/1748-9326/ad661a.

36. Yu, Y., Li, P.†, Huang, D., & **Sharma, A.** (2024). Street-level temperature estimation using Graph Neural Networks: Performance, feature embedding and interpretability. *Urban Climate*, 56, 102003. doi: 10.1016/j.uclim.2024.102003.

35. Li, P.[†], & **Sharma, A.** (2024). Hyper-local temperature prediction using detailed urban climate informatics. *J. Adv. Model. Earth Syst.*, 16(3), e2023MS003943. doi: 10.1029/2023MS003943.

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), e2023MS003867. doi: 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., & **Sharma, A.** (2023). Regional heatwave prediction using Graph Neural Network and weather station data. *Geophys. Res. Lett.*, 50(7), e2023GL103405. doi: 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.*, 106331. doi: 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.*, 23(5), 659–679. doi: 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. *Proc. AAAI*.

29. Dimitrova, R., **Sharma, A.**, Fernando, H. J. S., Gultepe, I., Danchovski, V.[*], Wagh, S., Bardoel, S. L.[*], & Wang, S. (2021). Simulations of coastal fog in the Canadian Atlantic with the Weather Research and Forecasting model. *Bound.-Layer Meteorol.*, 181, 443–472. doi: 10.1007/s10546-021-00662-w.

28. (2021). *2021 Climate Action Plan for the Chicago Region*. Metropolitan Mayors Caucus (MMC), Illinois. https://mayorscaucus.org/climate-change/.

27. Viecco, M.[*], Jorquera, H., **Sharma, A.**, Bustamante, W., Fernando, H. J. S., & Vera, S. (2021). Green roofs and green walls layouts for improved urban air quality by mitigating particulate matter. *Build. Environ.*, 108120. doi: 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.*, 2(1), e2020AV000271. doi: 10.1029/2020AV000271.
Editor's highlighted article: https://eos.org/editor-highlights/modeling-interactions-between-cities-and-climate-across-scales.

25. Wuebbles, D., Angel, J., Petersen, K., & Lemke, A. M. (Eds.). (2021). *An Assessment of the Impacts of Climate Change in Illinois*. The Nature Conservancy, Illinois. doi: 10.13012/B2IDB-1260194$_V$1.

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 (Nov. 2019). NOAA Climate Program Office.

23. Wuebbles, D. J., **Sharma, A.**, Ando, A., Zhao, L., & Rigsbee, C. (2020). Converging on solutions to plan sustainable cities. *Eos*, 101, 18–23. doi: 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 U.S. DOE, ARO, NASA, and NOAA.

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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.* Frontiers Media SA. (Vol. 16648714).

Toolkits Developed

- **AerisIQ**: Early-warning forecasting system for the State of Illinois.
- **Fuel Station Flood Risk Mapper**: Flood risk screening tool for fuel stations in Illinois.
- **Bi-CAN Ecological Corridor Mapper**: Ecological corridor mapping toolkit for the Bi-CAN region.
- **Quad Cities NbS Flood Reduction Tool**: Mapping flood reductions using nature-based solutions in the Quad Cities.
- **HiTaB**: Height mapping of trees and buildings for Chicago, supporting urban climate analysis.

Magazine and Popular Articles

Crain's Business Chicago (2023). *The importance of local solutions in addressing global climate challenges.*

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

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

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

Fondriest Magazine (2016). *Green, cool roofs may be key to cooling cities down.*

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Conference Proceedings (Students*; postdocs†)

Thakur, K.*, Feng, C.*, Li, P., & **Sharma, A.** (2025). Air quality inference at neighborhood scale for the Chicago metropolitan area using graph neural networks. *AGU Fall Meeting Abstracts*, New Orleans, LA, USA, 17 December 2025.

Li, P., & **Sharma, A.** (2025). Detailed and dynamic description of urban vegetation (3DUV) for enhanced urban climate resilience. *AGU Fall Meeting Abstracts*, New Orleans, LA, USA, 17 December 2025.

Sharma, A., Sharma, I.*, Cai, E.*, Kumar, A.*, Wang, J., Wu, S.†, Kandya, A., Patel, V.*, & Kumar, R. (2025). Sky Scouts: Cultivating climate curiosity through wonder, storytelling, and backyard science. *AGU Fall Meeting Abstracts*, New Orleans, LA, USA, 17 December 2025.

Wang, J., Cai, E.*, Sharma, I.*, Wu, S.†, & **Sharma, A.** (2025). My connection to weather, the environment, and solar energy: A case study through SkyScouts. *AGU Fall Meeting Abstracts*, New Orleans, LA, USA, 17 December 2025.

Kumar, A.*, Kumar, R., Sharma, I.*, Wu, S.†, & **Sharma, A.** (2025). Tornado in a bottle: Exploring extreme weather events through backyard monitoring, visiting exhibits, and easy experiments. *AGU Fall Meeting Abstracts*, New Orleans, LA, USA, 17 December 2025.

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Sharma, A., Negri, M. C., Kotamarthi, V. R., Collis, S. M., Wang, J., Muradyan, P., Niyogi, D., Stock, J., Grover, M., Li, P., Fytanidis, D. K., Wang, S., Tan, H., Fernando, J., Nesbitt, S. W., Martilli, A., Wadhwa, A., Berkelhammer, M. B., Gonzalez-Meler, M. A., Cho, A., O'Brien, J. R., Tuftedal, M., Raut, B., Jacob, R. L., Lee, J., & Park, S. Y. (2025). A multiscale model-driven experimental (ModEx) framework for urban areas: A CROCUS approach. *AGU Fall Meeting Abstracts*, New Orleans, LA, USA, 17 December 2025.

Li, P., Rai, A.*, & **Sharma, A.** (2025). Co-analysis of tree and building heights for enhanced urban climate modeling. *105th AMS Annual Meeting*, New Orleans, LA, USA, 14 January 2025.

Li, P., **Sharma, A.**, & Kotamarthi, R. (2025). Integrating urban modeling across scales: A structured blueprint for hybrid urban climate modeling. *105th AMS Annual Meeting*, New Orleans, LA, USA, 14 January 2025.

Veiga, C.†, Li, P., Miranda, F., Tokkar, S., Wu, S.†, Jogi, K., Gautam, A., Colombo, M., Makra, E., **Sharma, A.**, & (2025). e-JUST: Environmental Justice using Urban Scalable Toolkit (development and enhancements). *105th AMS Annual Meeting*, New Orleans, LA, USA, 14 January 2025.

Wu, S.†, Li, P., **Sharma, A.**, Kumar, R., Kotamarthi, R., & Collis, S. (2025). Sensitivity of regional WRF-Chem air quality and climate simulations to biomass burning emission datasets: A case study of the impact of Canadian wildfire on the U.S. *105th AMS Annual Meeting*, New Orleans, LA, USA, 14 January 2025.

Wadhwa, A.†, **Sharma, A.**, & Hamlet, A. (2025). Identification of significant locations of road and rail infrastructure in the Chicago metropolitan area facing high inflows. *105th AMS Annual Meeting*, New Orleans, LA, USA, 15 January 2025.

Wadhwa, A.†, Bao, W., Kontou, E., **Sharma, A.**, & Chen, C. (2025). Nature-based solutions: An effective approach for flood mitigation and resilience over urban areas. *105th AMS Annual Meeting*, New Orleans, LA, USA, 15 January 2025.

Jain, A.*, Veiga, C.†, & **Sharma, A.** (2025). Processing and transforming environmental justice data: Multiple approaches and urban field campaign collaboration. *105th AMS Annual*

Meeting, New Orleans, LA, USA, 14 January 2025.

Sharma, I.[*], Kumar, A., Jogi, K., Wu, S.[†], Kumar, R., & **Sharma, A.** (2025). Experiences and reflections of elementary school students on daily weather using ambient low-cost weather stations installed in home backyards. *105th AMS Annual Meeting*, New Orleans, LA, USA, 13 January 2025. ***First Place — Best Student Poster Presentation (29th Conf. of Applied Climatology)***.

Rai, A.[*], Li, P., & **Sharma, A.** (2025). Deriving height information using LiDAR data for Chicago: A high school student's journey to urban climate research. *105th AMS Annual Meeting*, New Orleans, LA, USA, 13 January 2025. ***Second Place — Best Student Poster Presentation (29th Conf. of Applied Climatology)***.

Huidobro, G.[*], Wu, S.[†], Li, P., **Sharma, A.**, & Hamlet, A. F. (2025). Intercomparison of WRF urban configurations for optimizing long-term high-resolution simulations in the Chicago metro area. *105th AMS Annual Meeting*, New Orleans, LA, USA, 15 January 2025.

Veiga, C.[†], **Sharma, A.**, Oliveira, D. de, Lage, M., & Miranda, F. (2024). Urban computing for climate and environmental justice: Early perspectives from two research initiatives. *Viz4Climate + Sustainability: IEEE VIS 2024 Workshop*, October 14, 2024.

Li, P., & **Sharma, A.** (2024). Integrating urban modeling across scales: A hybrid machine learning framework. *AGU Fall Meeting Abstracts 2024*, Washington, DC, USA, 10 December 2024.

Veiga, C.[†], **Sharma, A.**, Li, P., Miranda, F., & Tokkar, S. (2024). e-JUST: Environmental Justice using Urban Scalable Toolkit. *AGU Fall Meeting Abstracts 2024*, Washington, DC, USA, 10 December 2024.

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Huidobro, G.[*], Li, P., **Sharma, A.**, & Hamlet, A. (2024). Development of gridded vehicle anthropogenic heat emission datasets for the Chicago metro area and testing using WRF-SLUCM with distributed urban parameters. *AGU Fall Meeting Abstracts 2024*, Washington, DC, USA, 10 December 2024.

Ibrahim, H.[†], Li, P., & **Sharma, A.** (2024). Simulated impact of nature-based solutions (land-surface vegetation changes) on rainstorm propagation and flooding in the urban Upper Illinois River Basin. *AGU Fall Meeting Abstracts 2024*, Washington, DC, USA, 10 December 2024.

Sharma, A., & Wu, S.[†](2024). Chicago's regional air quality challenges from Canadian wildfire and solutions to reduce emissions and increase urban sustainability. *7RAQM Conference: Win-win for air quality improvement and climate change response*, HKUST-GZ, China, 31 May 2024.

Hans, A.[*], **Sharma, A.**, Carter, T., Budhathoki, M., Zhang, X., Harp, R. D., & Veiga, C. (2024). Understanding the relationship between crime and temperature in the Chicago region. *104th AMS Annual Meeting*, Baltimore, MD, USA, 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. *104th AMS Annual Meeting*, Baltimore, MD, USA, 31 January 2024.

Chen, X.[*], Chen, J. H., Li, P., Collis, S. M., 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. *104th AMS Annual Meeting*, Baltimore, MD, USA, 31 January 2024.

Biswas, M. K., He, C., Kumar, R., **Sharma, A.**, Sharma, P.[*], Ghude, S. D., & Das, T. (2024). Assessing the impacts of integrating high-resolution land use data in WRF-Chem on air quality forecasting in New Delhi, India. *104th AMS Annual Meeting*, Baltimore, MD, USA, 1 February 2024.

Li, P.[†], & **Sharma, A.** (2023). The next frontier of urban models: A machine learning perspective on data-model integration. *AGU Fall Meeting Abstracts 2023*, San Francisco, CA, USA, 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, CA, USA, 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, CA, USA, 13 December 2023.

Rasmussen, A.[*], Jain, A., Love, N., Haynes, K., Nunez-Mir, 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 and environmental factors across the 77 community areas of Chicago. *AGU Fall Meeting Abstracts 2023*, San Francisco, CA, USA, 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, CA, USA, 13 December 2023.

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Li, P.[†], & **Sharma, A.** (2023). High-resolution modeling of street-level temperature based on machine learning and urban informatics. *11th International Conference on Urban Climate (ICUC11)*, Sydney, Australia, 28 August 2023.

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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. *11th International Conference on Urban Climate (ICUC11)*, Sydney, Australia, 30 August 2023.

Li, P.[†], **Sharma, A.**, Wang, Z., & Wuebbles, D. J. (2023). Impacts of environmental perturbations on carbon sequestration from urban greenery. *103rd AMS Annual Meeting*, Denver, CO, USA, 12 January 2023.

Li, P.[†], & **Sharma, A.** (2023). Hyper-resolution downscaling of street-level temperature via a machine learning approach. *103rd AMS Annual Meeting*, Denver, CO, USA, 11 January 2023.

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Klene, A. E., Tompkins, J.[*], **Sharma, A.**, Cilimburg, A., & Goodwin, M. (2022). We can't just open a window: Mapping vulnerability to summer heat in a mountain community (Missoula, MT). *AGU Fall Meeting Abstracts 2022*, Chicago, IL, USA, 13 December 2022.

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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.

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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, LA, USA, 17 December 2021.

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Sharma, A., Wuebbles, D. J., & Catlett, C. (2020). Bridging urban scales using modeling and measurements for improved urban sustainability. *AGU Fall Meeting Abstracts 2020*, San Francisco, CA, USA (virtual), 8 December 2020. *(Invited).*

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Sharma, A., Budhathoki, M., Sanyal, S.[*], Wuebbles, D. J., & Lei, Z. (2019). Understanding relationships between demography and climate change to improve urban resiliency: A case study. *AGU Fall Meeting Abstracts 2019*, San Francisco, CA, USA.

Dimitrova, R., **Sharma, A.**, Fernando, H. J. S., Wang, S., & Wagh, S. D.[†](2019). High-resolution numerical simulations of advection fog events during the C-FOG field campaign. *AGU Fall Meeting Abstracts 2019*, San Francisco, CA, USA.

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Tompkins, J.[*], Klene, A. E., **Sharma, A.**, Silverman, N., & VonReichert, C. (2018). Just open a window: Understanding the combined effects of heat and smoke on a mountain community in the western United States (Missoula, MT). *AGU Fall Meeting Abstracts 2018*, Washington, DC, USA.

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Sharma, A., Fernando, H. J. S., Hamlet, A. F., Hellmann, J. J., Barlage, M., & Chen, F. (2015). Sensitivity of WRF model to land use, with applications to Chicago metropolitan urban heat island and lake breeze. *AGU Fall Meeting Abstracts 2015*, San Francisco, CA, USA.

Sharma, A., Kulkarni, P. S., Dasari, H. P., Bortoli, D., Salgado, R., & Silva, A. M. (2015). Nocturnal surface ozone enhancement over Portugal during winter: Influence of different atmospheric conditions. *AGU Fall Meeting Abstracts 2015*, San Francisco, CA, USA.

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. *AGU Fall Meeting Abstracts 2014*.

Sharma, A., Fernando, H. J. S., Hellmann, J. J., & Chen, F. (2014). Sensitivity of high-resolution regional climate model to urban parameterizations for the Chicago metropolitan area. *15th Annual WRF Users Workshop*, NCAR, Boulder, CO, USA.

Arifin, R. R.*, de Alwis Pitts, D. A., James, S. C., **Sharma, A.**, Fernando, H. J., & 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)*, Toronto, Canada, 12–14 November 2014.

Sharma, A., Hellmann, J., Fernando, H. J. S., & 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 Conference*, Chicago, IL, USA (Paper FEDSM2014-21292), doi: 10.1115/FEDSM2014-21292.

Conry, P.*, **Sharma, A.**, Fernando, H. J. S., Leo, L. S., Potosnak, M., & Hellmann, J. (2014). Multi-scale simulations of climate-change influence on Chicago heat island. *Proceedings of the 4th Joint US–European Fluids Engineering Conference*, Chicago, IL, USA (Paper FEDSM2014-21581), doi: 10.1115/FEDSM2014-21581.

Conry, P.*, **Sharma, A.**, Potosnak, M., Hellmann, J., & Fernando, H. J. S. (2014). Multi-scale study of Chicago heat island and the impacts of climate change. *11th Symposium on the Urban Environment (AMS 94th Annual Meeting)*, Atlanta, GA, USA.

Conry, P.*, **Sharma, A.**, Fernando, H. J. S., Potosnak, M., & Hellmann, J. (2014). Multi-scale modelling of Chicago urban heat island and climate-change impacts. *16th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes*, Varna, Bulgaria, 8–11 September 2014.

Fernando, H. J. S., Bhat, G. N., & **Sharma, A.** (2013). The battle of fluids: Air, water, and climate. *35th IAHR World Congress*, Chengdu, China, 8–13 September 2013.

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 the Chicago heat island. *Bull. Am. Phys. Soc.*, 58.

Arifin, R. R.*, de Alwis Pitts, D. A., **Sharma, A.**, James, S. C., Fernando, H. J., & Suhardjo, A. (2013). Modeling the formation and propagation of thermal bar in Lake Ontario. *56th Annual Conference on Great Lakes Research*, West Lafayette, IN, USA, 2–6 June 2013.

Conry, P.*, **Sharma, A.**, Leo, L. S., Hellmann, J., & Fernando, H. J. S. (2013). High-resolution simulations of Chicago heat island and natural landscapes and its response to climate change. *Change & the Common Good: Security, Sustainability and Policy*, University of Notre Dame, IN, USA.

Arifin, R. R.*, de Alwis Pitts, D. A., **Sharma, A.**, James, S. C., Fernando, H. J., & Suhardjo, A. (2013). Modeling the formation of thermal bar in Lake Ontario using climatological parameters. *Change & the Common Good: Security, Sustainability and Policy*, University of Notre Dame, IN, USA.

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. *Bull. Am. Phys. Soc.*, 56.

Sharma, A., Brown, J., & 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, CO, 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, CO, USA.

Invited Talks

2025. Early warning system for the State of Illinois. *Illinois Weather and Public Health Response Summit*, Illinois Department of Public Health (IDPH), Chicago, IL, USA, 13 November 2025.

2025. The Greater Chicagoland urban flooding case study of 2023: Impacts, response, and lessons learned. *Megacities Alliance for Water and Climate — Europe & North America (MAWAC-ENA) Workshop*, Paris, France, 19 November 2025.

2025. Building resilient cities of tomorrow: Integrating climate models, machine learning, and tools to combat heat, flooding, and air quality. *Dayalbagh Educational Institute (DEI)*, Agra, India, 27 August 2025.

2025. Building resilient cities of tomorrow: Integrating climate models, machine learning, and tools to combat heat, flooding, and air quality. *Atria University*, Bengaluru, India, 25 August 2025.

2025. Climate resilient cities. *India Meteorological Department (IMD)*, New Delhi, India, 19 February 2025.

2025. Climate resilient cities. *Pandit Deendayal Energy University (PDEU)*, Gandhinagar, India, 13 February 2025.

2024. Empowering communities with science & education. *Sewa Service Day Commemoration Event*, Schaumburg, IL, USA, 22 September 2024.

2024. Historical perspective on urban development in different parts of the world and future prospects. *ASP Summer Colloquium: Integrating Atmospheric and Social Approaches to Improve Urban Air Quality (AEROPOLIS)*, Boulder, CO, USA, 15 July 2024.

2024. Navigating urban complexities: Data-driven strategies for sustainable cities. *Division of Environment and Sustainability Seminar*, Hong Kong University of Science and Technology, Hong Kong, 5 June 2024.

2024. Charting the way forward: Pathways to air quality improvement and climate response. *7RAQM Hong Kong Forum*, Hong Kong University of Science and Technology, Hong Kong, 3 June 2024.

2024. Resilient tree canopies: Addressing heat challenges in the Chicago region. *Bronzeville Advisory Council Meeting*, Chicago, IL, USA, 16 May 2024.

2024. Sustainable and climate-resilient urban solutions. *EarthTalks Lecture Series*, Penn State University & Johns Hopkins University, USA, 22 April 2024.

2024. e-JUST: Environmental Justice using Urban Scalable Toolkit. *Metropolitan Mayors Caucus (MMC) Housing & Environment Committee*, Chicago, IL, USA, 16 April 2024.

2024. e-JUST: Environmental Justice using Urban Scalable Toolkit. *Water In Water Out — Innovative Water Research Symposium*, Chicago, IL, USA, 16 April 2024.

2024. Climate science to actionable solutions. *Seminar Series*, Metropolitan Water Reclamation District of Greater Chicago (MWRD), Chicago, IL, USA, 26 January 2024.

2023. Urban science to actionable solutions. *Diamond Jubilee Lecture*, CSIR–Institute of Minerals and Materials Technology (IMMT), Bhubaneswar, India, 7 November 2023.

2023. Climate science to actionable urban solutions. *India Meteorological Department (IMD)*, New Delhi, India, 6 November 2023.

2023. Adapting to climate change (Part III): Air quality. *APA–CMS × ILASLA Event Series*, Chicago, IL, USA, 24 August 2023.

2023. Community Research on Climate and Urban Science (CROCUS). *APEC 2023 Workshop: Promoting a Just Energy Transition*, Detroit, MI, USA, 20 May 2023.

2023. Metropolitan water "SMART CITIRISE" challenges. *UNESCO MAWAC-ENAR Water Research & Innovation (WRI) Workshop*, New York, NY, USA, 20 March 2023.

2023. Urban science to solutions. *Environmental Fluid Dynamics Seminar Series*, University of Notre Dame, Notre Dame, IN, USA, 7 March 2023.

2023. Climate and urban sustainability. *UIC Environmental Justice Symposium*, Chicago, IL, USA, 15 March 2023.

2022. Urban science to solutions. *Atmospheric Science Data Center (ASDC) Seminar*, NASA Langley Research Center, Hampton, VA, USA, 9 December 2022.

2022. Urban science to solutions. *Environmental Engineering & Sciences Seminar Series*, Northwestern University, Evanston, IL, USA, 18 November 2022.

2022. Urban heat and solutions for the Chicago region. *APA Chicago Metro Section & ASLA Illinois*, Chicago, IL, USA, 25 August 2022.

2022. Urban science to solutions. *ESIP Air Quality Cluster*, Earth Science Information Partners (ESIP), USA, 26 May 2022.

2022. Urban science to solutions. *DPI R&D Seminar Series*, Discovery Partners Institute, Chicago, IL, USA, 12 May 2022.

2022. Don's newfound interest: Urban resiliency and environmental sustainability. *Donald J. Wuebbles Symposium*, University of Illinois, Urbana-Champaign, IL, USA, 8 March 2022.

2022. Multiscale climate modeling for cities. *GEO Health Community of Practice: Prediction and Prevention of Heat-related Health Risks Across Time Scales*, Virtual, 9 February 2022.

2021. Multiscale climate modeling for urban systems. *Climate Security Workshop*, Sandia National Laboratories & University of Illinois, Virtual, 21 October 2021.

2021. An assessment of the impacts of climate change in Illinois (with J. Angel and T. Ford). *Illinois State Agencies Working Group*, Virtual, 13 April 2021.

2020. Integrated climate research for improved sustainability. *Illinois Climate Working Group*, Virtual, 10 November 2020.

2020. Interdisciplinary modeling across scales for urban resiliency and sustainability. *Big Ten Workshop on Urban Issues*, Virtual, 1 October 2020.

2020. Interdisciplinary approaches to improve resiliency across scales for humans and ecosystems to thrive. *Jaypee University of Information Technology*, Solan, India, 29 August 2020.

2020. COVID-19, weather, and health: A global perspective. *National Remote Sensing Day*, Indian Society for Remote Sensing, Kolkata, India, 12 August 2020.

2020. COVID-19, weather, and health. *Illinois Climate Working Group*, Virtual, 9 June 2020.

2020. COVID-19, weather, and health. *University of Illinois Foundation & National Center for Supercomputing Applications (NCSA)*, Champaign, IL, USA, 19 May 2020.

2020. Bridging spatial scales for urban impacts: Modeling to measurements. *India Meteorological Department (IMD)*, New Delhi, India, 3 March 2020.

2020. Bridging scales for societal impacts: Modeling to measurements. *Indian Institute of Tropical Meteorology (IITM)*, Pune, India, 27 February 2020.

2020. How will climate change affect Illinois communities, and what can we do? (with Liang Chen). *125 Years of Water and Weather*, Illinois State Water Survey, Champaign, IL, USA, 4 February 2020.

2019. Interdisciplinary modeling approaches to improve resiliency. *Atmospheric Sciences Seminar*, University of Illinois at Urbana-Champaign, Urbana, IL, USA, 3 December 2019.

2019. Lessons learned from the workshop on urban scale processes and their representation in high spatial resolution Earth system models. *Annual ESSM Community Workshop: Climate Research to Enhance Resilience to Extreme Heat*, Silver Spring, MD, USA, 18–19 November 2019.

2019. Interdisciplinary modeling approaches to improve resiliency. *Ven Te Chow Hydrosystems Seminar Series*, University of Illinois at Urbana-Champaign, Urbana, IL, USA, 4 October 2019.

2019. Climate change and social justice. *Institute of Social and Economic Research (ISER)*, University of Alaska Anchorage, Anchorage, AK, USA, 9 August 2019.

2019. Assessment of the impacts of climate change on the Great Lakes (with D. Wuebbles and D. Infante). *U.S. Capitol Hill Briefing*, Congressional Visitor Center, Washington, DC, USA, 9 June 2019.

2019. Modeling to alleviate urban heat. *Mansueto Institute of Urban Innovation Workshop: Fighting Urban Heat with Green*, University of Chicago, Chicago, IL, USA, 9–10 May 2019.

2019. Climate modeling and impact assessment at scales humans and ecosystems thrive. *Department of Earth, Atmospheric, and Planetary Sciences Seminar*, Purdue University, West Lafayette, IN, USA, 24 January 2019.

2018. Global warming and social justice: Fighting for vulnerable Chicago neighborhoods. *Energy Week*, University of Notre Dame, Notre Dame, IN, USA, 17 September 2018.

2018. Climate modeling at scales humans and ecosystems thrive. *Illinois State Water Survey*, Champaign, IL, USA, 7 September 2018.

2018. Urban microscale modeling and developing heat mitigation strategies. *Array of Things Users Workshop*, Argonne National Laboratory, Lemont, IL, USA, 29–30 August 2018.

2018. Assessment of climate change impacts in the Midwest and Great Lakes region using multi-scale modeling strategies. *Environmental Engineering Seminar*, Northwestern University, Evanston, IL, USA, 25 May 2018.

2018. Climate modeling and impact assessment in the Midwest and Great Lakes region using a multi-scale modeling approach. *Illinois State Water Survey*, Champaign, IL, USA, 16 May 2018.

2018. An interdisciplinary approach for modeling and impact assessment of urban climates. *Department of Physics and Astronomy Seminar*, University of Bologna, Bologna, Italy, 16 April 2018.

2018. Multiscale climate modeling and impact assessment of meteorology, energy, and air quality at urban scales. *Army Research Laboratory (WSMR)*, White Sands Missile Range, NM, USA, 29 January 2018.

2018. Modeling and impact assessment of meteorology, energy, and air quality at urban scales. *Mathematics and Computer Science Seminar Series*, Argonne National Laboratory, Lemont, IL, USA, 11 January 2018.

2017. Urban climate modeling: Current & future research directions. *Indian Institute of Science Education and Research (IISER)*, Pune, India, 19 October 2017.

2017. Urban climate modeling: Current & future research directions. *Indian Institute of Tropical Meteorology (IITM)*, Pune, India, 18 October 2017.

2016. Climate modeling at scales people and ecosystems live: An urban climate modeling perspective. *Research Applications Laboratory Seminar*, National Center for Atmospheric Research (NCAR), Boulder, CO, USA, 1 July 2016.

2016. Climate modeling at scales people and ecosystems live. *Urban Climate Institute Seminar*, University of Minnesota, St. Paul, MN, USA, 13 July 2016.

2016. Regional climate modeling: Current & future research directions. *Environmental Change Initiative (ECI)*, University of Notre Dame, Notre Dame, IN, USA, 10 February 2016.

2015. Sensitivity of WRF model to land use, with applications to the Chicago metropolitan urban heat island and lake breeze. *AGU Fall Meeting Abstracts 2015*, San Francisco, CA, USA, 16 December 2015.

2015. Green and cool roofs to combat urban heating in Chicago: Evaluation with the WRF regional climate model. *ND Energy Seminar Series*, University of Notre Dame, Notre Dame, IN, USA, 16 September 2015.

2014. Climate modeling at scales humans and ecosystems live. *Environmental Fluid Dynamics Seminar Series*, University of Notre Dame, Notre Dame, IN, USA, 18 November 2014.

2013. Impact of climate change on urban heat island (with Laura Leo). *Urban Landscapes and Climate Change Workshop*, Argonne National Laboratory, Lemont, IL, USA, 27 August 2013.

2012. Climate modeling & downscaling and interactions with ecosystems. *Environmental Fluid Dynamics Seminar Series*, University of Notre Dame, Notre Dame, IN, USA, 18 September 2012.

2012. Climate modeling & downscaling for semi-arid regions. *Brookhaven National Laboratory Seminar*, Brookhaven National Laboratory, Upton, NY, USA, 14 February 2012.

Panel Discussions

2025. **Panelist**. From ideas to action: Driving research & social innovation for resilient communities. *IIN Sustainability and Social Innovation Research Conference*, Northern Illinois University, DeKalb, IL, USA, 26 September 2025.

2025. **Panelist**. Chicago as a global leader in climate resilience: Industry–academic collaborative strategies for urban sustainability and economic growth. *Sustainability Research & Innovation (SRI) Congress 2025*, Chicago, IL, USA, 16 June 2025.

2025. **Panelist**. Water and ocean research agenda for India: Opportunities and challenges. *Forging Leading-Edge Water Cycle and Ocean Research — High-Risk, High-Gain Innovations Workshop*, IIT Bombay, Mumbai, India, 11 February 2025.

2025. **Moderator**. Bridging scale gaps and increasing resilience in communities. *Presidential Session, 105th AMS Annual Meeting*, New Orleans, LA, USA, 14 January 2025.

2025. **Moderator**. Towards a thriving planet: Actionable science to address environmental justice. *Presidential Session, 105th AMS Annual Meeting*, New Orleans, LA, USA, 14 January 2025.

2024. **Panelist**. Sustainable mobility for future cities: Innovations, partnerships, and collaborative frameworks. *UN World Urban Forum*, 6 November 2024.

2024. **Panelist**. Academia and industry partnerships in addressing climate change. *Jacobs Earth Day Event*, 15 April 2024.

2023. **Panelist**. ESG best practices: Tools, tips, and tech for managing and measuring goals. *4th Infraday Midwest*, 13 June 2023.

2023. **Panelist**. Addressing crises of planetary scale: Lessons from pandemics and climate change. Panel: Equity — role of science in bridging environmental justice gaps in cities. *iSEE Congress*, 13 April 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, Lisle, IL, USA, 9 February 2023.

2022. **Panelist**. Hot topic, cool sites: Mitigating and adapting to climate change. *APA Chicago Metro Section & ASLA Illinois*, Omni Ecosystems, Chicago, IL, USA, 25 August 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, IL, USA, 27 June 2022.

2022. **Panelist**. What's your organization's climate on climate change? *ILCMA Winter Conference*, Illinois City/County Management Association (ILCMA), 29 March 2022.

2020. **Panelist**. Effects on air quality due to COVID-19-related shutdowns and impacts on health. *Illinois Climate Working Group*, Virtual, 9 June 2020.

2020. **Panelist**. Urban heat impacts & solutions. *A Chicago Regional Climate Plan — Climate Impacts & Hazards Webinar Series*, Metropolitan Mayors Caucus (MMC) & Chicago Metropolitan Agency for Planning, Virtual, 29 May 2020.

2020. **Panelist**. COVID-19, climate change, and health. *University of Illinois Foundation & National Center for Supercomputing Applications (NCSA)*, University of Illinois, Virtual, 19 May 2020.

2020. **Panelist**. Cities 2020 and beyond: Intelligent, resilient, and sustainable. *Consulate General of France in Chicago Event*, The Field Museum, Chicago, IL, USA, 30 January 2020.

2019. **Moderator**. Engineering perspectives on urban challenges and potential solutions across scales. *CURES Connections Workshop: New Voices and Paths to Urban Sustainability*, Illinois Center for Urban Resilience and Environmental Sustainability (IL-CURES), Discovery Partners Institute, Chicago, IL, USA, 7–8 August 2019.

2018. **Panelist**. Urban systems: Capabilities and tools. *Illinois Center for Urban Resilience and Environmental Sustainability (IL-CURES)*, University of Illinois at Urbana-Champaign, Urbana, IL, USA, 20–21 August 2018.

Miscellaneous

2022. Public outreach for the Illinois State Water Plan report. *Yorkville Public Library*, Yorkville, IL, USA, 24 August 2022.

2022. Invited briefing for Dr. Richard W. Spinrad (Under Secretary of Commerce for Oceans and Atmosphere & NOAA Administrator) on the Chicago Region Climate Action Plan (CAP). Washington, DC, USA, 15 June 2022.

2022. Invited luncheon discussion on communicating climate risk. *British Consulate-General Chicago & UK Science and Innovation Network*, Chicago, IL, USA, 4 April 2022.

2019. Invited briefing for the Environmental Committee meeting on the Greenest Region Compact. *Metropolitan Mayors Caucus*, Chicago, IL, USA, 26 June 2019.

Teaching Experience

University of Notre Dame — Sustainability Minor
Instructor: *Sustainability: Principles and Practices* (Fall 2017)

Arizona State University — Summer Bridge Program
Instructor: *Freshman Mathematics* (Summer 2010; Summer 2011)

Arizona State University — School of Mechanical & Aerospace Engineering
Teaching Assistant: *Numerical Methods for Engineers* (Spring 2008)

Outreach

University Service

- *Illinois State Water Survey* — Participation in *125 Years of Water and Weather* public engagement program.
- Outreach for the *Center for Sustainable Energy at Notre Dame*: public-facing events on urban heat impacts and mitigation strategies.
- *Notre Dame Day* — Live remote broadcast from the roof of the Morris Inn. URL: https://goo.gl/zAgHHs

K–12 Engagement

- Mentored K–12 students and supported STEM projects to inspire pathways into science and engineering.
- Remotely advised high-school students on science fair projects and integrated student contributions into university research activities.

News and Media Coverage

External

- Eos: New tool maps the overlap of heat and health in California. 19 November 2025. URL: https://eos.org/articles/new-tool-maps-the-overlap-of-heat-and-health-in-california.
- KARE11 (CBS News): Chicago scientists create new tool to better personalize forecasts as weather events get more severe. 23 September 2025. URL: https://www.kare11.com/article/news/local/kare11-extras/chicago-scientists-create-new-tool-to-better-personalize-forecasts-as-weather-events-get-more-severe/89-20e24051-1709-497f-b2b4-7d299491b51c.
- Inside Climate News: As climate change makes hail more destructive, Illinois residents pay the price. 12 August 2025. URL: https://insideclimatenews.org/news/12082025/illinois-hail-damage-insurance-rates/.
- Chicago Tribune: Smoky air from Canadian wildfires envelops Chicago for third day. What does this mean for summer? 6 June 2025. URL: https://www.chicagotribune.com/2025/06/06/chicago-canada-wildfires-air-quality/.
- Chicago Tribune: Illinois affected by a record number of billion-dollar climate disasters in 2024, mostly severe storms. 20 January 2025. URL: https://www.chicagotribune.com/2025/01/20/illinois-affected-by-a-record-number-of-billion-dollar-climate-disasters-in-2024-mostly-severe-storms/.
- Center for Media Engagement: Climate change in Illinois is massively affecting low-income communities. 6 June 2024. URL: https://mediaengagement.org/blogs/climate-change-in-illinois-is-massively-affecting-low-income-communities/.
- **Quad Cities Climate Assessment**:
  - The Gazette: Report: Quad Cities will be warmer and wetter in future decades because of climate change. 29 April 2024. URL: https://www.thegazette.com/environment-nature/report-quad-cities-will-be-warmer-and-wetter-in-future-decades-because-of-climate-change/.
  - Quad-City Times: Local coverage of the Quad Cities Climate Assessment. 26 April 2024. URL: https://qctimes.com/news/local/weather/article$_3$993a726 − fc00 − 11ee − a322 − bb74245413f7.$html$.
- Crain's Business Chicago: The importance of local solutions in addressing global climate challenges. 11 December 2023. URL: https://www.chicagobusiness.com/crains-content-studio/importance-local-solutions-addressing-global-climate-challenges.

- Daily Herald: Researchers explore how climate change will affect Wrigley, Guaranteed Rate. 28 March 2024. URL: https://www.dailyherald.com/20240328/news/researchers-explore-how-climate-change-will-affect-wrigley-guaranteed-rate/.
- NBC Chicago: Importance of tree canopy cover highlighted during extreme heat. 24 August 2023. URL: 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. 25 May 2023. URL: https://www.chicagotribune.com/investigations/ct-chicago-climate-change-extreme-heat-20230525-qrfqbssnbngljpitge3lycz3sm-htmlstory.html.
- Next City: What the city of Rotterdam can teach us about the power of green roofs. 17 June 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. 14 June 2022. URL: https://www.freep.com/in-depth/news/local/michigan/2022/06/14/great-lakes-fish-fisheries-warming-climate/9925762002/.
- The Nature Conservancy: Climate change is transforming Illinois, with more to come, major report concludes. 20 April 2021. URL: https://www.nature.org/en-us/newsroom/illinois-climate-assessment/.
- The Buffalo News: Scientists: Climate change could prompt a rebound—and problems—in the Great Lakes region. 11 July 2019. URL: https://buffalonews.com/2019/07/11/scientists-climate-change-could-prompt-a-rebound-and-problems-in-the-great-lakes-region/.
- The Daily Northwestern: Report warns of climate change-related impacts on Great Lakes. 7 April 2019. URL: https://dailynorthwestern.com/2019/04/07/city/report-warns-of-climate-change-related-impacts-on-great-lakes/.
- CNBC: Low-income neighborhoods would gain the most from green roofs in cities like Chicago. 7 September 2018. URL: https://www.cnbc.com/2018/09/07/low-income-neighborhoods-would-gain-the-most-from-green-roofs.html.
- Next City: Detailed maps trace the heat in Chicago neighborhoods. 2018. URL: https://nextcity.org/daily/entry/detailed-maps-trace-heat-chicago-neighborhoods/.
- Columbia Chronicle: Green roofs take heat off low-income areas. 2018. URL: https://columbiachronicle.com/0585cdb0-bd0e-11e8-bd63-ffca5ff75765.
- IOP Physics World: Computer model picks which roofs to make green. 2018. URL: https://physicsworld.com/a/computer-model-picks-which-roofs-to-make-green/.
- Beyond Zero Emissions (BZE) Technology Radio Show: Podcast on urban climate research. 26 July 2016. URL: http://bze.org.au/dr-ashish-sharma/.
- Vice Impact: A deadly heatwave turned Chicago into the country's green roof capital. 2016. URL: https://goo.gl/kbJM3t.

News: Argonne National Laboratory

- New urban morphology dataset with tree and building heights for sustainable urban planning. 11 October 2024. URL: https://www.anl.gov/evs/article/new-urban-morphology-dataset-with-tree-and-building-heights-for-sustainable-urban-planning.
- Advanced hyper-local air temperature prediction in urban environments. 23 July 2024. URL: https://www.anl.gov/evs/article/advanced-hyperlocal-air-temperature-prediction-in-urban-environments.
- Carbon reduction from urban greening strategies. 3 July 2024. URL: https://www.anl.gov/evs/article/carbon-reduction-from-urban-greening-strategies.

- A blueprint for change: How computer models will help communities respond to climate change. 14 July 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

- DPI previews K–12 climate education platform at meteorology conference. 15 January 2025. URL: https://dpi.uillinois.edu/news/dpi-previews-k-12-climate-education-platform-at-meteorology-conference/.
- International partnership fuels transportation equity, EV buy-in. 16 September 2024. URL: https://news.uillinois.edu/view/7815/1339147712.
- 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 Annual Report (2023): A cooler Chicagoland. URL: https://uillinois.foleon.com/annualrepor chicagoland.
- DPI receives $1.5 million NSF grant to fund international research partnership on clean transportation. 1 August 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/.
- How can academia help implement lessons from the 2022 climate summit? 28 November 2022. URL: https://news.illinois.edu/view/6367/748484811.
- Scientists to build toolkit addressing climate change and environmental justice in Chicago communities. 1 August 2022. URL: https://blogs.illinois.edu/view/7447/55588468.
- NSF funds project to improve weather forecasts for cities. 25 February 2022. URL: https://blogs.illinois.edu/view/7447/5
- How can cities help accelerate climate action to meet COP26 goals? 18 November 2021. URL: https://news.illinois.edu/view/6367/1668083379.
- ISWS researcher contributes to award-winning Chicago Regional Climate Action Planning Partnership. 22 October 2021. URL: https://blogs.illinois.edu/view/7447/2040698152.
- Climate studies focus on a new priority: Urban areas. 15 July 2021. URL: https://blogs.illinois.edu/view/7784/154286121
- Converging on solutions to plan sustainable cities. 10 January 2021. URL: https://atmos.illinois.edu/news/2021-01-10/converging-solutions-plan-sustainable-cities.
- ISWS kicks off 125th anniversary year. 10 March 2020. URL: https://blogs.illinois.edu/view/7447/806466.

News: University of Notre Dame

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

Thesis Committees

Ph.D. Thesis Committees

- Ashley Rasmussen, University of Illinois Chicago (2024–present)
- Priyanka Sharma, University of Illinois Urbana-Champaign (2023–present)
- Gonzalo Huidobro, University of Notre Dame (external Ph.D. committee member; present)
- Margareth Viecco, Pontificia Universidad Católica de Chile, Santiago, Chile (external Ph.D. committee member; 2021)

Master's Thesis Committees

- Ashley Rasmussen, University of Illinois Chicago (2023–2024)

Advising and Mentoring

Elementary School Student Interns

- Ishika Sharma, Nancy Young Elementary School, IL (Jun 2024–present)

High School Student Interns

- Carissa Chen, Illinois Mathematics and Science Academy (IMSA), IL (Aug 2024–Apr 2025)
- Yurem Xique, Illinois Mathematics and Science Academy (IMSA), IL (Jun 2024–Apr 2025)
- Atiksh Rai, Metea Valley High School, Aurora, IL (Jun 2024–present)
- Ayush Jain, Metea Valley High School, Aurora, IL (Jun 2023–Dec 2023)
- Tanish Khadse, Central High School, Champaign, IL (Jul 2021–Jun 2022)
- David Krutz, Central High School, Champaign, IL (Summer 2019)
- Tabeeb Kandaker, Central High School, Champaign, IL (Summer 2019)

Undergraduate Students

- Ammani Khan, Computer Science, University of Illinois Chicago (Jun–Aug 2025)
- Caroline Feng, Statistics and Computer Science, University of Illinois Urbana-Champaign (Jun–Aug 2025)
- Catherine Xu, University of Illinois Urbana-Champaign (Jun–Aug 2025)
- Elima Zholdubaeva, Harper College, Palatine, IL (Jun–Aug 2025)
- Kavya Patel, College of Engineering, University of Illinois Chicago (Jun–Aug 2025)
- Kshitij Thakur, Electrical and Computer Engineering, University of Illinois Chicago (Jun–Aug 2025)
- Rishi Sandrana, Siebel School of Computing and Data Science, University of Illinois Urbana-Champaign (Jun–Aug 2025)
- Ayush Jain, University of Illinois Chicago (Aug 2024–present)
- Tanish Khadse, University of Illinois Urbana-Champaign (Jun 2022–present)
- Mariana Silva, University of Notre Dame (2018–2019)

Graduate Students

- Priyanka Sharma, Department of Atmospheric Sciences, University of Illinois Urbana-Champaign (Aug 2023–present)

- Mitchell Lazarow, Department of Atmospheric Sciences, University of Illinois Urbana-Champaign (2022–2023)
- Hem Amit Vaidya, University of Illinois Urbana-Champaign (2020–2021)

Postdoctoral Scholars

- Abhinav Wadhwa (Aug 2023–present)
- Carolina Veiga Ferreira de Souza (Jul 2023–present)
- Sicheng Wu (Jun 2023–present)
- Peiyuan Li (Jan 2022–Jun 2024)

Research Scholars / Research Associates

- Peiyuan Li, Senior Research Associate, Discovery Partners Institute (Jun 2024–present)

Software Engineers

- Ajay Satish Kumar, Software Engineer, Discovery Partners Institute (Feb 2025–present)

Visiting Postdocs / Researchers / Faculty

- Karn Vohra, University of Birmingham, UK (Summer 2025)
- Lei Zhou, Associate Professor, School of Geomatics and Urban Information, Beijing University of Civil Engineering and Architecture (Aug 2019–Jul 2020)

Visiting Ph.D. Students

- Prafull Yadav, Indian Institute of Tropical Meteorology (IITM), Pune, India (Summer 2025)
- Viral Patel, Pandit Deendayal Energy University (PDEU), India (Summer 2025)
- Monalin Mishra, CSIR–Institute of Minerals & Materials Technology (CSIR-IMMT), India (Fall 2024)
- 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)

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 (Convener / Co-convener)

- Clean Energy and Equitable Transportation Solutions (CLEETS) session, *79th UN General Assembly Science Summit*, Virtual, 18 September 2024.
- UNESCO Megacities workshop on climate and water, Virtual, 11–13 September 2024.
- Workshop on climate action in global cities, *AGU Fall Meeting*, San Francisco, CA, USA, 13 December 2023.

- Environmental Justice and Racism Roundtable, Carle, University of Illinois, and Carle Illinois College of Medicine, Champaign, IL, USA, 24 March 2022 and 21 April 2023. 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, Springfield, IL, USA, 2 December 2021. URL: https://dpi.uillinois.edu/applied-research/cures/cures-community-project-lab/
- CURES Connections Workshop: New Voices and Paths to Urban Sustainability, Discovery Partners Institute, Chicago, IL, USA, 7–8 August 2019. 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, Argonne National Laboratory, Chicago, IL, USA, 22–24 May 2019. URL: https://web.evs.anl.gov/urban-workshop/
- Mini-symposium on Urban Fluid Mechanics and member, local organizing committee, *8th International Symposium on Environmental Hydraulics (ISEH)*, University of Notre Dame, Notre Dame, IN, USA, 4–7 June 2018. URL: https://ceees.nd.edu/iseh2018

Conference / Workshop Session Chair

- Scientific session chair, "Extreme Weather and Climate in Urban Areas: Physical Modeling, AI/ML Approaches, and Digital Twins for Social Impacts and Mitigation," *AGU Fall Meeting*, New Orlens, LA, USA, 10 December 2025.
- Scientific session chair, "Urban Scale Climate Impacts and Mitigation: Developing an Observational and Modeling Integration," *105th AMS Annual Meeting*, New Orleans, LA, USA, 14 January 2025.
- Scientific session chair, "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation," *AGU Fall Meeting*, Washington, DC, USA, 9 December 2024.
- Scientific session chair, "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation," *AGU Fall Meeting*, San Francisco, CA, USA, 12 December 2023.
- Innovation session chair, "Climate Action in Global Cities," *AGU Fall Meeting*, San Francisco, CA, USA, 13 December 2023.
- Scientific session chair, "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation," *11th International Conference on Urban Climate*, Sydney, Australia, 28 August–1 September 2023.
- Session chair, "Urban Climate Modeling: Approaches and Tools for Pathways to Societal Resilience and Adaptation," *AMS Annual Meeting*, 2023.
- Innovation session chair, "Climate Action in Global Cities," *AGU Fall Meeting*, Chicago, IL, USA, 13 December 2022.
- Scientific session chair, "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation," *AGU Fall Meeting*, Chicago, IL, USA, 13 December 2022.
- Union session chair, "Climate Change and Climate Action Leadership in Illinois," *AGU Fall Meeting*, Chicago, IL, USA, 14 December 2022.
- Session chair, "Addressing current and emerging challenges to closing the water balance in integrated human–natural systems at urban to continental scales," *AGU Frontiers in Hydrology*, Puerto Rico, 19–24 June 2022.
- Session chair, "Urban Climate Modeling: Approaches and Tools for Pathways to Societal Resilience and Adaptation," *AMS Annual Meeting*, 2022.
- Session chair, "Extreme Weather and Climate in Urban Areas, Their Social Impacts, and Mitigation," *AGU Fall Meeting*, 2021.

- Session chair, "Extreme Weather and Climate in Urban Areas and Their Social Impacts and Mitigation," *AGU Fall Meeting*, 2020.
- Session chair, "Interdisciplinary Sustainable Solutions for Urban Areas," *AGU Fall Meeting*, 2019.
- Session chair (Urban Session), *ESSM Community Workshop: Climate Research to Enhance Resilience to Extreme Heat*, Silver Spring, MD, USA, 18–19 November 2019.
- Session chair, Mini-Symposium: Urban Fluid Mechanics, *8th International Symposium on Environmental Hydraulics (ISEH)*, University of Notre Dame, Notre Dame, IN, USA, 4–7 June 2018.

University Service

- Faculty and research staff hiring committees (multiple searches).
- Delegations and visits to establish long-term academic and research collaborations.
- Seminar organizer and speaker host, Climate and Atmospheric Science (CAS) Seminar Series, Illinois State Water Survey.
- Seed Funding Committee Member, Environmental Change Initiative (ECI), University of Notre Dame.

Proposal and Award Review Service

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

Award / Proposal Reviewer Service
National Science Foundation (NSF; multiple programs), U.S. Department of Energy (DOE), National Aeronautics and Space Administration (NASA; multiple programs), Army Research Office (ARO), National Oceanic and Atmospheric Administration (NOAA), Great Lakes Consortium for Petascale Computation (GLCPC; Blue Waters allocations), Canada Foundation for Innovation (CFI), Netherlands Organisation for Scientific Research (NWO), NSF–Poland.

Reviewer Service
IPCC AR6, Advances in Atmospheric Sciences, Advances in 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

English (native); Hindi (native)