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Yifan Luo

Education

Ph.D., Civil and Environmental Engineering, Cornell University, 2027 (expected)
Concentration: Energy and Water Resource Systems
Minors: Atmospheric Sciences, Public Policy
Committee: Vivek Srikrishnan (Chair), Flavio Lehner, Sheila Olmstead, Danielle Grogan
M.S., Civil and Environmental Engineering, Cornell University, 2025
M.S., Environment and Sustainability, University of Michigan, 2022
Specializations: Ecosystem Science and Management, Geospatial Data Sciences
Advisors: Andrew Gronewold, Derek van Berkel
B.S., Forest Sciences, University of British Columbia, 2020
Specialization: Forest Ecology
B.S., Biotechnology, Beijing Forestry University, 2020
Minor: Japanese

Research Experience

Graduate Research Assistant, Srikrishnan Research Group, Cornell University. Aug. 2023–present
Graduate Student Research Assistant, Hydrologic Science & Uncertainty Assessment Lab, University of Michigan. Mar. 2021–May 2023
GIS Specialist, Center for Sustainable Systems, University of Michigan. May 2022–Sept. 2022
Research Assistant, Environmental Spatial Analysis Lab, University of Michigan. May 2021–Dec. 2021
Lab Intern, Institute of Applied Ecology, Shanghai Academy of Environmental Science. June 2018–Aug. 2018
Research Assistant, Environmental Functional Nanomaterials Lab, Beijing Forestry University. Sept. 2017–May 2018
Laboratory Technician, State Key Laboratory of Pollution Control & Resource Reuse, Tongji University. Jan. 2018–Feb. 2018

Publications

Manuscripts in Preparation

- [3] **Luo, Y.** and Srikrishnan, V. 2026. "Sources of Explanation Uncertainty in Spatiotemporal Deep Learning Emulators of the Fire Weather Index in the Western United States." *Earth's Future*. In preparation.
- [2] **Luo, Y.**, Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2026. "Who Gains When Water Runs Out? Welfare from Agriculture-to-Urban Water Rights Trading in the Western United States." *Environmental Research Letters*. In preparation.

- [1] **Luo, Y.**, Grogan, D. S., Zuidema, S., Lammers, R. B., Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2026. “Explainable Artificial Intelligence (XAI) Attributions of Water Scarcity in the Western United States are Unstable and Uncertain.” *Nature Water*. In preparation.

Reports

- [1] Paulson, H., **Luo, Y.**, Muir, M., Huber, J., and Gronewold, A. 2023. “Cumulative Impact Assessment (2016-2020) of Withdrawals, Consumptive Uses and Diversions.” Great Lakes-St Lawrence River Water Resources Regional Body and Great Lakes-St. Lawrence River Basin Water Resources Council. <https://glsregionalbody.org/media/s4lnxt3p/cumulative-impact-assessment-2016-2020.pdf>

Theses

- [1] **Luo, Y.** 2022. “Gelman Site 1,4-Dioxane Groundwater Contamination Plume Modeling and Forecasting.” Master’s practicum, University of Michigan. DOI: [10.7302/4314](https://doi.org/10.7302/4314).

Conference Presentations

- [6] **Luo, Y.**, Grogan, D. S., Zuidema, S., Lammers, R. B., Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2026. “Explainable Artificial Intelligence (XAI) Attributions of Water Scarcity in the Western United States are Unstable and Uncertain.” AGU Fall Meeting.
- [5] **Luo, Y.**, Grogan, D. S., Zuidema, S., Lammers, R. B., Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2026. “Quantifying Explanation Uncertainty in XAI Emulators for Water Shortage Attribution in the Western U.S.” Society for Decision Making Under Deep Uncertainty (DMDU) Annual Meeting.
- [4] **Luo, Y.**, Grogan, D. S., Zuidema, S., Lammers, R. B., Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2025. “Water Shortage Attribution in the Western U.S. using eXplainable Artificial Intelligence Emulators of Process-Based Hydrologic Models.” Cornell Energy & Water Resources Systems Seminar.
- [3] Gronewold, A., Fetrow, A., Akey, L., Gossard, A., Katz, S. A., Levin, N. E., **Luo, Y.**, Passey, B., Langston, J., VanDeWeghe, A., and Calzada, C. 2023. “Holistic water balance modeling: a large lake perspective on combining Bayesian inference, in situ data, model simulations and remote sensing.” AGU Fall Meeting.
- [2] **Luo, Y.**, Muir, M., Huber, J., and Gronewold, A. 2022. “Analysis of Great Lakes Water Balance Components: Uncertainty Reduction, Trend Detection, and Projections for the Future.” Great Lakes—St. Lawrence River Basin Governors and Premiers Regional Body and Compact Council Meeting of the State and Provincial Designees and Science Team.
- [1] **Luo, Y.** 2022. “Gelman Site 1,4-Dioxane Groundwater Contamination Plume Modeling and Prediction.” University of Michigan School for Environment and Sustainability Capstone Conference.

Conference Posters

- [10] **Luo, Y.**, Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2026. “Water Market Responses and Adaptation to Drought in the Western United States.” AGU Fall Meeting.
- [9] **Luo, Y.**, Grogan, D. S., Zuidema, S., Lammers, R. B., Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2025. “Water Scarcity Attribution in

the Western U.S. using Interpretable Machine Learning Emulators of Process-Based Hydrologic Models.” AGU Fall Meeting.

- [8] **Luo, Y.**, Grogan, D. S., Zuidema, S., Lammers, R. B., Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2025. “Disentangling Climate and Socioeconomic Contributions to Water Shortage in the Western US.” Cornell BEE 16th Annual Research Symposium.
- [7] **Luo, Y.**, Grogan, D. S., Zuidema, S., Lammers, R. B., Zheng, J., Lisk, M. D., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2025. “Disentangling Climate and Socioeconomic Contributions to Water Shortage in the Western US.” 15th Annual Civil and Environmental Engineering Graduate Research Symposium.
- [6] **Luo, Y.**, Grogan, D. S., Zuidema, S., Fisher-Vanden, K., Olmstead, S. M., and Srikrishnan, V. 2024. “Disentangling Climate and Socioeconomic Contributions to Water Shortage in the Western US.” AGU Fall Meeting.
- [5] **Luo, Y.**, Katz, S. A., Jayaram, J., Cohn, D., Armbrustmacher, R., Waddell, J. M., Crooks, J., Calappi, T. J., and Gronewold, A. 2023. “A Comparative Analysis of Lake-to-Lake Connecting Channel Discharge Computation Methods.” AGU Fall Meeting.
- [4] VanDeWeghe, A., **Luo, Y.**, and Gronewold, A. 2023. “Designing Statistical Prediction Systems to Capture Seasonal Lake Water Balance Dynamics.” AGU Fall Meeting.
- [3] **Luo, Y.**, Gronewold, A., Mei, Y., and Van Berkel, D. 2022. “Developing a Spatio-temporal Modeling and Forecasting Tool for a Subsurface Water-borne Toxin (1,4-Dioxane).” AGU Fall Meeting.
- [2] **Luo, Y.**, Gronewold, A., Paulson, H., Muir, M., and Huber, J. 2022. “Applying the Large Lake Statistical Water Balance Model (L2SWBM) to reduce uncertainty in Great Lakes water balance components.” AGU Fall Meeting.
- [1] Paulson, H., Gronewold, A., **Luo, Y.**, Muir, M., and Huber, J. 2022. “Climate Change and Great Lakes Basin Water Management.” AGU Fall Meeting.

Teaching

University of Michigan

EAS 531: Principles of GIS. Graduate Student Instructor. Fall 2021.

EAS 553: Diverse Farming Systems: Theory & Practice. Graduate Student Instructor. Fall 2021.

Workshops and Professional Training

Deep Learning for Science (DL4Sci) Summer School. Lawrence Berkeley National Laboratory. Jun. 2025.

Community Earth System Model (CESM) Workshop. National Center for Atmospheric Research (virtual). Jun. 2025.

Workshop & Hackathon on Climate Risk, Insurance, and Reinsurance. Cornell University. May 2025.

Groundwater & Society Workshop. Pennsylvania State University. May 2024.

Wilderness First Aid CPR/AED Certification. Cornell Wilderness & Environmental Medicine Program. Oct. 2023.

Water Balance Model (WBM) User Community Meeting & Workshop. University of New Hampshire. Jul. 2023.

Great Lakes Groundwater Workshop. U.S. Geological Survey (USGS) John Wesley Powell Center. May 2023.

Large Lake Statistical Water Balance Model (L2SWBM) & Copula Workshop. University of Michigan. Jul. 2022.

Outreach and Science Communication

“One Model, Many Stories: Why Your AI’s Explanation Might Be Misleading You” blog post, Water Programming: A Collaborative Research Blog, Blog contributor. Oct. 28, 2025.

“People of PCHES: Yifan Luo Spotlight” research profile, Program on Coupled Human and Earth Systems (PCHES), Pennsylvania State University, Featured researcher. Jul. 2025.

“EPA considers Ann Arbor’s Gelman Plume for list of nation’s most serious contamination sites” news article, The Michigan Daily, Research featured. Mar. 2025.

Service

Committee Member, Cornell Civil and Environmental Engineering Graduate Research Symposium. 2024–2025.

Skills

Programming & Computing: Python, R, Julia, Jupyter, Bash/Shell scripting, Git/GitHub, conda, LaTeX, HPC (Slurm)

Geospatial & Modeling Tools: ArcGIS, ERDAS Imagine, Google Earth Engine, NetLogo, QGIS

Statistical & Analytical Methods: Bayesian inference, regression & multivariate analysis, time-series & spatial statistics, uncertainty quantification and characterization, data visualization

Languages: English (Fluent), Mandarin Chinese (Native), Japanese (Conversational), German (Conversational)

References

Dr. Vivek Srikrishnan (Ph.D. advisor)

Department of Biological and Environmental Engineering, Cornell University

Dr. Sheila Olmstead (Thesis committee member)

Brooks School of Public Policy, Cornell University

Dr. Flavio Lehner (Thesis committee member)

Department of Earth and Atmospheric Sciences, Cornell University

Dr. Andrew Gronewold (M.S. advisor)

School for Environment and Sustainability, University of Michigan