

James Doss-Gollin

APPOINTMENTS

Rice University Assistant Professor, Department of Civil & Environmental Engineering	2021–
The Pennsylvania State University Postdoctoral Scholar, Earth & Environmental Systems Institute	2020

EDUCATION

Columbia University Ph.D in Earth & Environmental Engineering.	2020
M.S. in Earth & Environmental Engineering.	2016
Yale University B.S. in Mechanical Engineering.	2015

AWARDS

Outstanding Reviewer Award , Earth's Future.	2023
Nickolas and Liliana Themelis Fellowship , Fu Foundation School of Engineering and Applied Science, Columbia University.	2018
Graduate Research Fellowship , Climate and Large-Scale Atmospheric Dynamics, National Science Foundation.	2017
Presidential Distinguished Fellowship , Fu Foundation School of Engineering and Applied Science, Columbia University.	2015
Distinction in Major , Department of Mechanical Engineering and Materials Science, Yale University.	2015
Legacy Award , New Haven Promise.	2015
Larry Coben '79 Fellowship , Yale University.	2014
Vance-Carter Travel Award , Yale University.	2013
Thomas C. Barry Travel Award , Yale University.	2012

GRANTS AND CONTRACTS

Amounts reflect Rice portion for collaborative grants and subawards; total amount for direct awards.

National Science Foundation: Confronting Hazards, Impacts and Risks for a Resilient Planet (CHIRRP) . "RAISE: Flood resilience in rural Texas communities." co-PI (PI: Avantika Gori). \$999,986 .	2025–2028
Consortium for Enhancing Resilience and Catastrophe Modeling (CERCAT) . "A Nonstationary Joint Probability Method for Tropical Cyclone Hazard Assessment." Lead PI . \$75,000 .	2025–2026
NVIDIA . "Computing Infrastructure for AI-enhanced Climate Risk and Resilience at Rice." co-PI (PI: Arlei Lopes da Silva). \$0 .	2025–2025
Ken Kennedy Institute at Rice University . "Advancing AI for Climate Risk and Urban Resilience." Lead PI . \$160,000 .	2024–2025
National Science Foundation . "IUCRC Planning Grant Rice University: Center for Climate, Equity and Resilience in Catmodeling (CERCat)." co-PI (PI: Jamie Padgett). \$20,000 .	2024–2025
Texas Water Development Board (via Texas A&M University). "Developing Future Rainfall Frequency Grids for the State of Texas." Subaward PI . \$77,750 .	2022–2025
National Science Foundation: Strengthening America's Infrastructure . "EAGER: Participatory Design for Water Quality Monitoring of Highly Decentralized Water Infrastructure Systems." PI (PI: Alicia Cooperman). \$104,684 .	2022–2025

National Science Foundation: <i>Climate and Large-Scale Dynamics</i> . “Collaborative Research: Evaluating the Past and Future of Mississippi River Hydroclimatology to Constrain Risk via Integrated Climate Modeling, Observations, and Reconstructions.” co-PI (PI: Sylvia Dee). \$472,024 .	2022–2025
Rice University: <i>Sustainable Futures Fund</i> . “Leveraging Earth System Observations at Multiple Scales to Improve Stormwater Management in Houston.” Lead PI . \$50,000 .	2022–2023
100,000 Strong in the Americas <i>Innovation Fund</i> . “IFCE-Rice-SENAI Program on Artificial Intelligence for Urban Sustainability and Resilience to Natural Disasters in the Americas.” co-PI (PI: Arlei Lopes da Silva). \$50,000 .	2022–2023
Energy Foundation. “Synthesis of Texas Electricity Research from Rice University.” co-PI (PI: Daniel Cohan). \$24,928 .	2022–2023

JOURNAL ARTICLES

[†] denotes Rice advisee publication. Google Scholar [📄] citations: 568, *h-index*: 11, *i10-index*: 13.

IN PREP. / UNDER REVIEW

- Baer, J., Sebastian, A., Grimley, L. E., **Doss-Gollin, J.**, Wright, D. B., and Hussain, M. A. *Neglecting Spatiotemporal Rainfall Variability Underestimates Flood Hazard and Risk*.
- Hancock, C. L., Dee, S. G., Haider, M. R., **Doss-Gollin, J.**, Lehner, F., Murphy, K., and Munoz, S. E. *Robust 21st Century Hydrological Trends in the Mississippi River Basin from CMIP6: West-Gets-Drier, East-Gets-Wetter*.
- O'Donnell, M., Murphy, K., **Doss-Gollin, J.**, Dee, S., and Munoz, S. *Evaluation of Hydroclimatic Biases in the Community Earth System Model (CESM1) within the Mississippi River Basin*. DOI: 10.5194/hess-2024-153.
- Pollack, A., Auermuller, L., Burleyson, C., Campbell, J. E., Condon, M., Cooper, C., Coronese, M., Dangendorf, S., **Doss-Gollin, J.**, Hegde, P., Helgeson, C., Kopp, R., Kwakkel, J., Leaf, A., Lesk, C., Mankin, J., Nicholas, R. E., Rice, J. S., Roth, S., Scheeler, M., Srikrishnan, V., Tuana, N., Vernon, C., Zhao, M., and Keller, K. *Unlocking the Benefits of Transparent and Reusable Science for Climate-Risk Management*. DOI: 10.31219/osf.io/29nhv.
- Pollack, A., **Doss-Gollin, J.**, Srikrishnan, V., and Keller, K. *UNSAFE: An UNcertain Structure And Fragility Ensemble Framework for Property-Level Flood Risk Estimation*. DOI: 10.31219/osf.io/jb9ta.

PUBLISHED

- Haider, M. R., Dee, S. G., **Doss-Gollin, J.**, Dunne, K. B. J., and Muñoz, S. E. 2025. “Impact of 21st Century Climate Change on Mississippi River Basin Discharge in CESM2 Large Ensemble Projections”. *Global and Planetary Change*, DOI: 10.1016/j.gloplacha.2025.104742.
- Liu, C., Kowal, D. R., **Doss-Gollin, J.**, and Vannucci, M. 2025. “Bayesian Functional Graphical Models with Change-Point Detection”. *Computational Statistics & Data Analysis*, DOI: 10.1016/j.csda.2024.108122.
- Liu, Y., **Doss-Gollin, J.**, Dai, Q., Veeraraghavan, A., and Balakrishnan, G. 2025. “Downscaling Extreme Precipitation with Wasserstein Regularized Diffusion”. *IEEE Transactions on Geoscience and Remote Sensing*, DOI: 10.1109/TGRS.2025.3611872.
- Lu, Y.**[†], Seiyon Lee, B., and **Doss-Gollin, J.** 2025. “Bayesian Spatiotemporal Nonstationary Model Quantifies Robust Increases in Daily Extreme Rainfall across the Western Gulf Coast”. *Environmental Research: Climate*, DOI: 10.1088/2752-5295/adf56e.
- Kazadi, A., **Doss-Gollin, J.**, Sebastian, A., and Silva, A. 2024. “FloodGNN-GRU: A Spatio-Temporal Graph Neural Network for Flood Prediction”. *Environmental Data Science*, DOI: 10.1017/eds.2024.19.
- Murphy, K., Dee, S., **Doss-Gollin, J.**, Dunne, K. B. J., O'Donnell, M., and Muñoz, S. 2024. “Competing Influences of Land Use and Greenhouse Gas Emissions on Mississippi River Basin Hydroclimate Simulated Over the Last Millennium”. *Paleoceanography and Paleoclimatology*, DOI: 10.1029/2024PA004902.
- Singh, D., Bekris, Y. S., Rogers, C. D. W., **Doss-Gollin, J.**, Coffel, E. D., and Kalashnikov, D. A. 2024. “Enhanced Solar and Wind Potential during Widespread Temperature Extremes across the U.S. Interconnected Energy Grids”. *Environmental Research Letters*, DOI: 10.1088/1748-9326/ad2e72.
- Amonkar, Y., **Doss-Gollin, J.**, Farnham, D. J., Modi, V., and Lall, U. 2023. “Differential Effects of Climate Change on Average and Peak Demand for Heating and Cooling across the Contiguous USA”. *Communications Earth & Environment*, DOI: 10.1038/s43247-023-01048-1.
- Amonkar, Y., **Doss-Gollin, J.**, and Lall, U. 2023. “Compound Climate Risk: Diagnosing Clustered Regional Flooding at Inter-Annual and Longer Time Scales”. *Hydrology*, DOI: 10.3390/hydrology10030067.
- Doss-Gollin, J.**, Amonkar, Y., Schmeltzer, K., and Cohan, D. 2023. “Improving the Representation of Climate Risks in Long-Term Electricity Systems Planning: A Critical Review”. *Current Sustainable/Renewable Energy Reports*. DOI: 10.1007/s40518-023-00224-3.

- Doss-Gollin, J.** and Keller, K. **2023**. “A Subjective Bayesian Framework for Synthesizing Deep Uncertainties in Climate Risk Management”. *Earth’s Future*. DOI: 10.1029/2022EF003044.
- Garcia, M., Juan, A., **Doss-Gollin, J.**, and Bedient, P. **2023**. “Leveraging Mesh Modularization to Lower the Computational Cost of Localized Updates to Regional 2D Hydrodynamic Model Outputs”. *Engineering Applications of Computational Fluid Mechanics*, DOI: 10.1080/19942060.2023.2225584.
- Wutich, A., Thomson, P., Jepson, W., Stoler, J., Cooperman, A. D., **Doss-Gollin, J.**, Jantrania, A., Mayer, A., Nelson-Nuñez, J., Walker, W. S., and Westerhoff, P. **2023**. “MAD Water: Integrating Modular, Adaptive, and Decentralized Approaches for Water Security in the Climate Change Era”. *WIREs Water*, DOI: 10.1002/wat2.1680.
- Zhou, X., Duenas-Orsorio, L., **Doss-Gollin, J.**, Liu, L., Stadler, L., and Li, Q. **2023**. “Mesoscale Modeling of Distributed Water Systems Enables Policy Search”. *Water Resources Research*. DOI: 10.1029/2022WR033758.
- Doss-Gollin, J.**, Farnham, D. J., Lall, U., and Modi, V. **2021**. “How Unprecedented Was the February 2021 Texas Cold Snap?” *Environmental Research Letters*. DOI: 10.1088/1748-9326/ac0278.
- Doss-Gollin, J.**, Farnham, D. J., Ho, M., and Lall, U. **2020**. “Adaptation over Fatalism: Leveraging High-Impact Climate Disasters to Boost Societal Resilience”. *Journal of Water Resources Planning and Management*. DOI: 10.1061/(asce)wr.1943-5452.0001190.
- Doss-Gollin, J.**, Farnham, D. J., Steinschneider, S., and Lall, U. **2019**. “Robust Adaptation to Multiscale Climate Variability”. *Earth’s Future*, DOI: 10.1029/2019ef001154.
- Rözer, V., Kreibich, H., Schröter, K., Müller, M., Sairam, N., **Doss-Gollin, J.**, Lall, U., and Merz, B. **2019**. “Probabilistic Models Significantly Reduce Uncertainty in Hurricane Harvey Pluvial Flood Loss Estimates”. *Earth’s Future*. DOI: 10.1029/2018ef001074.
- Doss-Gollin, J.**, Muñoz, Á. G., Mason, S. J., and Pastén, M. **2018**. “Heavy Rainfall in Paraguay during the 2015-2016 Austral Summer: Causes and Sub-Seasonal-to-Seasonal Predictive Skill”. *Journal of Climate*, DOI: 10.1175/jcli-d-17-0805.1.
- Farnham, D. J., **Doss-Gollin, J.**, and Lall, U. **2018**. “Regional Extreme Precipitation Events: Robust Inference from Credibly Simulated GCM Variables”. *Water Resources Research*. DOI: 10.1002/2017wr021318.
- Doss-Gollin, J.**, de Souza Filho, F. d. A., and da Silva, F. O. E. **2015**. “Analytic Modeling of Rainwater Harvesting in the Brazilian Semiarid Northeast”. *Journal of the American Water Resources Association*, DOI: 10.1111/1752-1688.12376.

PEER-REVIEWED CONFERENCE PROCEEDINGS

- Kazadi, A., **Doss-Gollin, J.**, and Silva, A. **2024**. “Pluvial Flood Emulation with Hydraulics-Informed Message Passing”. *Forty-First International Conference on Machine Learning*.
- Kazadi, A. N., **Doss-Gollin, J.**, Sebastian, A., and Silva, A. **2022**. “Flood Prediction with Graph Neural Networks”. *Climate Change AI*. NeurIPS 2022 Workshop on Tackling Climate Change with Machine Learning. Climate Change AI.
- Araújo Júnior, L. M., de Souza Filho, F. d. A., da Silva Silveira, C., Aragão Dias, T., and **Doss-Gollin, J.** **2014**. “Análise dos eventos de seca no Nordeste Setentrional Brasileiro com base no índice de precipitação normalizada”. *XII Simpósio de Recursos Hídricos Do Nordeste*. Natal, Rio Grande do Norte, Brasil: Associação Brasileira de Recursos Hídricos (ABRH). DOI: 10.13140/rg.2.1.4610.7685.
- Doss-Gollin, J.**, de Souza Filho, F. d. A., and da Silva, F. O. E. **2014**. “Considerações sobre a sustentabilidade hídrica de cisternas para captação de chuva no Semiárido Brasileiro”. *XII Simpósio de Recursos Hídricos Do Nordeste*. Natal, Rio Grande do Norte, Brasil: Associação Brasileira de Recursos Hídricos (ABRH). DOI: 10.13140/rg.2.1.4086.4807.

INVITED TALKS

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|---|------|
| “Advancing Urban Flood Risk Management through Physics-informed, Data-Driven Hazard Assessment”. Earth, Marine, and Environmental Science Seminar, University of North Carolina , Chapel Hill, NC. | 2024 |
| “Quantifying and characterizing uncertain climate hazards to enable adaptive resilience”. Atmospheric Sciences Seminar, Texas A&M University , College Station, TX. | 2022 |
| “Unprecedented impacts don’t require unprecedented weather”. Post-Harvey Climate & Flood Impacts on the Built Environment, Severe Storm Prediction, Education, & Evacuation from Disasters Center , Houston, TX. | 2022 |
| “Revisiting our design criteria: What hazards should we design for in a changing climate?”. Hydrologic Sciences and Water Resources Engineering Seminar, University of Colorado Boulder , Remote Presentation. | 2022 |

"Adapting Engineering Design Criteria to a Changing Climate: Insights from House Elevation". Technical Webinar, ASCE Central New Jersey Branch , Remote Presentation.	2022
"Panelist". Extreme Weather: How To Report on a World That's Warmer, Colder, Wetter, Drier and Weirder, 31st Annual Conference of the Society of Environmental Journalists , Houston, TX.	2022
"Extreme Impacts Don't Require Extreme Weather: Lessons from the February 2021 Texas Blackouts". Outreach Event: Science is for Everyone, American Meteorological Society , Remote Presentation.	2022
"Extreme Impacts Don't Require Extreme Weather: Lessons from the February 2021 Texas Blackouts". Compound Events Working Group, Risk KAN (Knowledge Action Networks) , Remote Presentation.	2021
"Panelist". Tail events: Prediction, Planning, and Performance, Harvard Electricity Policy Group , Remote Presentation.	2021
"Towards Adaptive Resilience: Managing Flood Risks in a Changing World". Technical Webinar, ASCE Central New Jersey Branch , Remote Presentation.	2021
"Prediction and Implications of Structured Climate Risk for Sequential Adaptation under Deep Uncertainty". Center for Climate Risk Management CLIMA Seminar, the Pennsylvania State University , State College, PA.	2020
"Prediction and Implications of Structured Climate Risk for Sequential Adaptation under Deep Uncertainty". Department of Civil and Environmental Engineering Seminar, Rice University , Houston, TX.	2020
"Prediction and Implications of Structured Climate Risk for Sequential Adaptation under Deep Uncertainty". Complex Systems Simulation and Optimization Group, National Renewable Energy Laboratory , Golden, CO.	2020
"Drivers of Extreme Rainfall: Atmospheric Circulation Patterns and Regional Intense Rainfall in the Ohio River". European Flood Awareness System Group, European Centre for Medium Range Weather Forecasting , Reading, England.	2016
"Understanding the Physical Drivers of Extreme Rainfall for Flood Prediction". Oxford Water Network, Oxford University , Oxford, England.	2016

WORKSHOP PRESENTATIONS

Presenter names in blue indicate advisee presentations.

"Robust Trends in Extreme Rainfall Probabilities in Texas". 2025 Texas Climate Conference , <i>Rice University and Texas A&M University</i> , Houston, TX [Talk].	2025
"Use-inspired tools for climate hazard assessment". Nature-Based Solutions for a Resilient Gulf Coast Workshop , <i>Rice University</i> , Houston, TX [Talk].	2025
"Advancing Urban Flood Hazard Characterization through Machine Learning: Challenges and Opportunities". American Geophysical Union Fall Meeting 2024 , AGU, Washington, DC [Talk].	2024
Yuchen Lu : "TxRAIN-Observational: A Hierarchical Bayesian Spatial Framework to Assess Nonstationary Rainfall Intensity, Frequency, and Duration in Texas". American Geophysical Union Fall Meeting 2024 , AGU, Washington, DC [Talk].	2024
"Assessing and Managing Climate Risks to Electricity Systems in an Era of Climate Change and Energy Transition". American Geophysical Union Fall Meeting 2024 , AGU, Washington, DC [Talk].	2024
Yuchen Lu : "Nonstationary Extreme Precipitation Probabilities in Texas". Fall Meeting , <i>Consortium for Enhancing Resilience and Catastrophe Modeling (CERCat)</i> , Bethlehem, PA [Poster].	2024
"Leveraging Machine Learning to Advance Urban Flood Hazard Assessment: Challenges and Opportunities". Data-driven and physics-based machine learning methods for forecasting and knowledge discovery of surface hydrology , <i>Conference on Computational Methods in Water Resources</i> , Tucson, AZ [Talk].	2024
Yuchen Lu : "Spatially Varying and Duration Dependent Covariate Model: A Hierarchical Bayesian Framework for Multi-duration Extreme Precipitation Frequency Analysis in Texas". World Environmental & Water Resources Congress 2024 , <i>Environmental & Water Resources Institute (EWRI) - ASCE</i> , Milwaukee, WI [Talk].	2024

Yuchen Lu: “H21T-1602: Spatially Varying Covariate Model: A Hierarchical Bayesian Framework for Precipitation Frequency Analysis in the Gulf Coast”. American Geophysical Union Fall Meeting 2023 , AGU, San Francisco, CA [Talk].	2023
“NH14B-07: Linking Robust Trends in Observations and Models to Develop Nonstationary Rainfall Frequency Grids for the State of Texas”. American Geophysical Union Fall Meeting 2023 , AGU, San Francisco, CA [Talk].	2023
“A Bayesian Spatial Hierarchical Framework for Process-Informed Nonstationary Analysis of Precipitation Frequencies”. 13th International Workshop on Statistical Hydrology , <i>International Association of Hydrological Sciences</i> , Boston, MA [Talk].	2023
Yuchen Lu: “H42E-1333: Nonstationary GEV with Hierarchical Spatial Pooling: A Spatiotemporal Bayesian Framework for Nonstationary Extreme Precipitation Frequency Analysis in the Gulf Coast”. American Geophysical Union Fall Meeting 2022 , AGU, Chicago, IL [Talk].	2022
“H35F-07: Near-term Predictability Lowers Long-Term Adaptation Costs”. American Geophysical Union Fall Meeting 2022 , AGU, Chicago, IL [Talk].	2022
“H25U-1265: Operationalizing Bayesian Model Checking for Robust Decision Making: Insights from House Elevation”. American Geophysical Union Fall Meeting 2021 , AGU, New Orleans, LA [Poster].	2021
“A14H-03: How Unprecedented Was the February 2021 Texas Cold Snap?”. American Geophysical Union Fall Meeting 2021 , AGU, New Orleans, LA [Talk].	2021
“Valuing Flexibility and Soft Instruments for Sequential Decision Problems”. 2020 Annual Meeting , <i>Society for Decision Making under Deep Uncertainty</i> , [Remote Presentation].	2020
“H11G-07: Towards Adaptive Resilience: Managing Uncertainties and Exploiting Predictability across Timescales”. American Geophysical Union Fall Meeting 2019 , AGU, San Francisco, CA [Talk].	2019
“Adaptive Resilience through Real Options and Deep Reinforcement Learning”. Doctoral Consortium on Computational Sustainability , <i>Carnegie Mellon University</i> , Pittsburgh, PA [Talk].	2019
“Evaluating Staged Investments in Critical Infrastructure for Climate Adaptation”. 2019 Interdisciplinary Ph.D. Workshop in Sustainable Development , <i>Columbia University</i> , New York, NY [Talk].	2019
“H52F-05: Robust Adaptation to Cyclical Climate Risk”. American Geophysical Union Fall Meeting 2018 , AGU, Washington, DC [Talk].	2018
“Robust Adaptation to Multi-Scale Climate Variability”. The Nexus of Climate Data, Insurance, and Adaptive Capacity , Asheville, NC [Poster].	2018
“A31H-0135: Causes and Model Skill of the Persistent Intense Rainfall and Flooding in Paraguay during the Austral Summer 2015-2016”. American Geophysical Union Fall Meeting 2017 , AGU, New Orleans, LA [Talk].	2017
“H22B-02: Designing and Operating Infrastructure for Nonstationary Flood Risk Management”. American Geophysical Union Fall Meeting 2017 , AGU, New Orleans, LA [Talk].	2017
“Extreme Rainfall in Paraguay during the 2015-16 Austral Summer: Causes and Predictive Skill”. North East Graduate Student Water Symposium , <i>University of Massachusetts Amherst</i> , Amherst, MA [Talk].	2017
“Regional Intense Precipitation: Inferences From GCM Atmospheric Circulation Fields”. Modeling Research in the Cloud , <i>National Center for Atmospheric Research</i> , Boulder, CO [Poster].	2017
“Statistical-Dynamical Analysis of Climate Projections for Flood Infrastructure Design”. Interdisciplinary Ph.D. Workshop in Sustainable Development 2017 , <i>Columbia University</i> , New York, NY [Talk].	2017
“Causes and Model Skill of the Persistent Intense Rainfall and Flooding in Paraguay during the Austral Summer 2015-2016”. Workshop on Subseasonal to Seasonal Predictability of Extreme Weather and Climate , <i>Columbia University</i> , New York, NY [Poster].	2016

MEDIA HIGHLIGHTS

“Historic Texas Flooding.” KEYE-AUS (CBS) [recorded video interview].	2025
“Houston’s Morning Show.” Fox26 Houston [live video interview].	2025
“Breaking down the force of water in the Texas floods.” AP News — Michael Phillis [print].	2025
“Here are some things you can do to be better prepared for major flooding.” Associated Press — Caleigh Wells [print].	2025

"ABC13-Luke Jones speaks with James Doss-Gollin, an assistant professor of Civil and Environmental Engineering at Rice University, about the key differences between flooding in Houston and central Texas." ABC13 — Luke Jones [<i>recorded video interview</i>].	2025
"After deadly flooding in Central Texas, state lawmakers look to prevent similar tragedies." KVUE — Daniel Perreault [<i>recorded video interview</i>].	2025
"New Flood Warning System Greenlit Shortly Before Deadly Texas Disaster." The Wall Street Journal — Joseph De Avila [<i>print</i>].	2025
"Questions arise on how emergency warning systems work after Central Texas flood." ABC13 — Tom Abrahams [<i>print</i>].	2025
"Bajo la Amenaza del Golfo (Under the Threat of the Gulf)." Telemundo Houston [<i>recorded video interview</i>].	2025
"Will Texas become too hot for humans?." BBC Future — Sarah Griffiths [<i>print</i>].	2023
"Climate change has sent temperatures soaring in Texas." The Texas Tribune — Erin Douglas, Yuriko Schumacher and Alex Ford [<i>print</i>].	2023
"Texas could have foreseen 2021 cold-wave disaster, new study concludes." Texas Climate News — Bob Henson [<i>print</i>].	2022
"Opinion: The risks of climate change are great - so are the rewards of solving it." Houston Chronicle — Andrew Dessler, James Doss-Gollin, and Katherine Hayhoe [<i>print</i>].	2021
"The False Comfort of Higher Seawalls." The New Republic — Paola Rosa-Aquino [<i>print</i>].	2019
"New Study Shows Promise for Long-Term Weather Forecasts in South America." State of the Planet — Elisabeth Gawthrop [<i>print</i>].	2018

TEACHING

Rice University

CEVE 421/521: <i>Climate Risk Management</i> . Instructor.	Spring 2024
CEVE 421/521: <i>Climate Risk Management</i> . Instructor.	Spring 2023
CEVE 543: <i>Environmental Data Science</i> . Instructor.	Spring 2022
CEVE 543: <i>Statistical-Physical Methods for Hydroclimate Extremes and Catastrophes</i> . Instructor.	Fall 2025
CEVE 101: <i>Fundamentals of Civil and Environmental Engineering</i> . Instructor.	Fall 2024
CEVE 543: <i>Data Science Methods for Climate Hazard Assessment</i> . Instructor.	Fall 2023
CEVE 101: <i>Fundamentals of Civil and Environmental Engineering</i> . Instructor.	Fall 2021

Columbia University

EAECE 4257: <i>Environmental Data Analysis and Modeling</i> . Teaching Assistant.	Spring 2018
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ADVISING

GRADUATE STUDENTS

True Furrh: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Committee Member .	
Dongwook Kim: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Primary Advisor .	
Yuchen Lu: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Primary Advisor .	
Kelsey Murphy: <i>Ph.D. in Earth, Environmental, and Planetary Sciences</i> , Rice University. Committee Member .	
Jonah Schaechter: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Primary Advisor .	
Valeriia Sobolevskaia: <i>Ph.D. in Earth, Environmental, and Planetary Sciences</i> , Rice University. Committee Member .	
Karan Jakhar: <i>Ph.D. in Mechanical Engineering</i> , Rice University. Thesis: "Equation Discovery and Deep Learning for Geophysical Turbulence". Committee Member .	2025
Kyle Ostlind: <i>M.S. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Evaluating Runoff Response to Nature-Based Solutions under Varying Development Scenarios in Upper Cypress Creek near Houston, Texas". Committee Member .	2025
Katlyn Schmeltzer: <i>MCEE in Civil and Environmental Engineering</i> , Rice University. Thesis: "Pre-Trained Long Short-Term Memory Network Performance for Streamflow Prediction in the Brazos River Basin". Primary Advisor .	2025

John A. Baer: <i>M.S. in Earth, Marine and Environmental Sciences</i> , University of North Carolina at Chapel Hill. Thesis: "Quantifying Precipitation-Induced Uncertainty in Flood Hazard Assessment in a Coastal Urban Area". Committee Member.	2024
Kendall Capshaw: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Modeling Coastal Petrochemical Infrastructure Risk, Resilience, and Cascading Community Consequences". Committee Member.	2024
Xinyue Luo: <i>Ph.D. in Earth, Environmental and Planetary Sciences</i> , Rice University. Thesis: "Characterizing the El Niño-Southern Oscillation and its North American Teleconnections over the Last Millennium". Committee Member.	2024
Anibal Tafur Gutierrez: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Methods and Tools for Risk-informed Resilience Enhancement of Coastal Intermodal Freight Networks". Committee Member.	2024
Matthew Garcia: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Novel Urban Floodplain Modeling Methods for Applications in Coupling Surrogate Machine Learning Methods". Committee Member.	2023
Mia Peeples: <i>M.S. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Modeling Flood Reduction of Nature-Based Channel Modifications in Houston, TX". Committee Member.	2023
Xiangnan Zhou: <i>Ph.D. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Resilience Planning for Water Distribution Systems". Committee Member.	2023
Raychel Bahnick: <i>M.S. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Assessing Land Use Change and Subsidence Impact on Inland Flooding". Committee Member.	2022
Alyssa Graham: <i>M.S. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Water Supply Vulnerability Testing and Robust Planning Analysis with Exploratory Modeling under Deep Uncertainty". Committee Member.	2022
Elizabeth Hoffmann: <i>M.S. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Mapping Dynamic Watershed Response Under Increasing Development Using HEC-RAS 2D: A Case Study of the Big Creek Watershed in Fort Bend County". Committee Member.	2022
Chunshan Liu: <i>Ph.D. in Statistics</i> , Rice University. Thesis: "Bayesian Graphical Models for Multivariate Time Series". Committee Member.	2022
Xiaoyu (Toby) Li: <i>M.S. in Civil and Environmental Engineering</i> , Rice University. Thesis: "Evaluating the Effects of Project Brays Mitigation Using Unsteady HEC-RAS Hydraulic Modeling: Application to Meyerland in Houston, TX". Committee Member.	2021

UNDERGRADUATE RESEARCH ASSISTANTS

Zain Rahman: <i>B.S. in Computer Science</i> , Rice University.	2027
Kyle Olcott: <i>B.S. in Civil and Environmental Engineering</i> , Rice University.	2025
Sophia Prieto: <i>B.S. in Statistics</i> , Rice University.	2023
John Cook: <i>B.S. in Civil and Environmental Engineering</i> , Rice University.	2022

ADVISEE AWARDS

Karen and John Huff Graduate Fellowship in Civil and Environmental Engineering, Dongwook Kim.	2025
H.W. Reeves Endowed Scholarship, Yuchen Lu.	2022

SESSIONS ORGANIZED

Co-Organizer. <i>Nature-Based Solutions for a Resilient Gulf Coast Workshop</i> at Rice University , Houston, TX.	2025
Primary Convener. <i>H31G - Integrating Social, Scientific, and Engineering Approaches to Identify and Address Gaps in Water Infrastructure and Household Water Security</i> at American Geophysical Union Fall Meeting , San Francisco, CA.	2023
Convener. <i>NH41C - Hybrid Modeling and Digital Twin Systems for Flood Hazard Prediction and Risk Assessment at Different Spatial Scales</i> at American Geophysical Union Fall Meeting , Washington, DC.	2023
Chair. <i>H44G - Water and Society: Interdisciplinary Perspectives on Hydroclimatic Forecasting for Water Resources Decision Making</i> at American Geophysical Union Fall Meeting , New Orleans, LA.	2021

Primary Convener. <i>NH53 – Emerging Needs and Approaches for Climate Services: Understanding and Developing Innovative Approaches to User-Oriented Climate Services</i> at American Geophysical Union Fall Meeting , San Francisco, CA.	2019
Student Organizer. <i>Earth and Environmental Engineering Student Research Symposium</i> at Columbia University , New York, NY.	2018
Student Organizer. <i>Earth and Environmental Engineering Student Research Symposium</i> at Columbia University , New York, NY.	2017

PEER REVIEW

Journals: AGU Advances; Climate Risk Management; Climatic Change; Communications Earth and Environment; Earth's Future; Energy Technology; Environmental Data Science; Environmental Research Letters; Geophysical Research Letters; Hydrology and Earth System Sciences; Joule; Journal of Applied Meteorology and Climatology; Journal of Hydrology; Journal of Water Resources Management and Planning; Oxford Journal of Development Studies; Water Resources Research; Water Security; Weather, Climate, and Society.

Funding Agencies: Department of Energy (BER); National Science Foundation.

Other: Electric Power Research Institute (EPRI); Texas Water Development Board (TWDB).

ADDITIONAL EXPERIENCE

Social and Behavioral Research - Basic/Refresher — CITI program.	2025–2028
Panel Fellow — NSF CMMI's Game Changer Academies for Advancing Research Innovation.	2021
Visiting Graduate Researcher — Lamontagne Research Group, Department of Civil and Environmental Engineering, Tufts University, Medford, MA.	2019–2020
Graduate Research Fellow — Columbia Water Center, Department of Earth and Environmental Engineering, Columbia University, New York, NY.	2015–2020
Summer School Participant — Fluid Dynamics of Sustainability and the Environment, Cambridge University, Cambridge, England.	2016
Education Policy Intern — Elm City Communities / New Haven Housing Authority, New Haven, CT.	2015
President (2014), Design Lead (2013), Member (2012, 2015) — Engineers Without Borders, Yale Student Chapter, New Haven, CT.	2012–2015
Undergraduate Research Assistant — Lab of Jaehong Kim, Department of Chemical and Environmental Engineering, Yale University, New Haven, CT.	2014–2015
Visiting Undergraduate Researcher — Water and Climate Risk Lab, Department of Hydraulic and Environmental Engineering, Universidade Federal do Ceará, Fortaleza, Brazil.	2014
Mechanical Design Intern — Slingshot Team, DEKA Research & Development, Manchester, NH.	2013
Undergraduate Research Assistant — Lab of Jan Schroers, Department of Mechanical Engineering and Materials Science, Yale University, New Haven, CT.	2012
Ikatú Agua Intern — Fundación Paraguaya, Asunción, Paraguay.	2012