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jdossgollin
James Doss-Gollin

# 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** (Rice Lead: Avantika Gori) (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). **in-kind**. 2025–2025

*Rice University Sustainability Institute.* "Workshop on Nature-Based Solutions for Resilient Coastal Cities." **Co-PI** (PI: Philip Bedient). **$7,500**. 2024–2025

*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.* "Developing Future Rainfall Frequency Grids for the State of Texas." **Rice PI**. **$77,750**. Subaward from Texas A&M University (PI: John Nielsen-Gammon); $192,828 total 2022–2025

*National Science Foundation: Strengthening America's Infrastructure.* "EAGER: Participatory Design for Water Quality Monitoring of Highly Decentralized Water Infrastructure Systems." **Rice PI** (PI: Alicia Cooperman). **$104,684**. 2022–2025

*National Science Foundation: Climate and Large-Scale Dynamics.* "Collaborative Research: Evaluating the Past and Future of Mississippi River Hydroclimatology to Constrain Risk via Integrated Climate Modeling, Observations, and Reconstructions." **Co-PI** (Rice Lead: Sylvia Dee) (PI: Sylvia Dee). **$472,024**. 2022–2025

*Rice University: Sustainable Futures Fund.* "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 Innovation Fund.* "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

## PUBLICATIONS

† **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*. —

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 —

### JOURNAL ARTICLES

Haider, M. R., Dee, S. G., **Doss-Gollin, J.**, Dunne, K. B. J., and Muñoz, S. E. : "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 2025

Liu, C., Kowal, D. R., **Doss-Gollin, J.**, and Vannucci, M. : "Bayesian Functional Graphical Models with Change-Point Detection". *Computational Statistics & Data Analysis*. DOI: 10.1016/j.csda.2024.108122 2025

Liu, Y., **Doss-Gollin, J.**, Dai, Q., Veeraraghavan, A., and Balakrishnan, G. : "Downscaling Extreme Precipitation with Wasserstein Regularized Diffusion". *IEEE Transactions on Geoscience and Remote Sensing*. DOI: 10.1109/TGRS.2025.3611872 2025

**Lu, Y.**†, Seiyon Lee, B., and **Doss-Gollin, J.**: "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 2025

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". *Hydrology and Earth System Sciences*. DOI: 10.5194/hess-29-4637-2025 2025

Kazadi, A., **Doss-Gollin, J.**, Sebastian, A., and Silva, A. : "FloodGNN-GRU: A Spatio-Temporal Graph Neural Network for Flood Prediction". *Environmental Data Science*. DOI: 10.1017/eds.2024.19 2024

Murphy, K., Dee, S., **Doss-Gollin, J.**, Dunne, K. B. J., O'Donnell, M., and Muñoz, S. : "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 2024

Singh, D., Bekris, Y. S., Rogers, C. D. W., **Doss-Gollin, J.**, Coffel, E. D., and Kalashnikov, D. A. : "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 2024

Amonkar, Y., **Doss-Gollin, J.**, Farnham, D. J., Modi, V., and Lall, U. : "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 2023

Amonkar, Y., **Doss-Gollin, J.**, and Lall, U. : "Compound Climate Risk: Diagnosing Clustered Regional Flooding at Inter-Annual and Longer Time Scales". *Hydrology*. DOI: 10.3390/hydrology10030067 2023

**Doss-Gollin, J.**, Amonkar, Y., Schmeltzer, K., and Cohan, D. : "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 2023

**Doss-Gollin, J.** and Keller, K. : "A Subjective Bayesian Framework for Synthesizing Deep Uncertainties in Climate Risk Management". *Earth's Future*. DOI: 10.1029/2022EF003044 2023

Garcia, M., Juan, A., **Doss-Gollin, J.**, and Bedient, P. : "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 2023

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. : "MAD Water: Integrating Modular, Adaptive, and Decentralized Approaches for Water Security in the Climate Change Era". *WIREs Water*. DOI: 10.1002/wat2.1680 2023

Zhou, X., Duenas-Osorio, L., **Doss-Gollin, J.**, Liu, L., Stadler, L., and Li, Q. : "Mesoscale Modeling of Distributed Water Systems Enables Policy Search". *Water Resources Research*. DOI: 10.1029/2022WR033758 2023

**Doss-Gollin, J.**, Farnham, D. J., Lall, U., and Modi, V. : "How Unprecedented Was the February 2021 Texas Cold Snap?". *Environmental Research Letters*. DOI: 10.1088/1748-9326/ac0278 2021

**Doss-Gollin, J.**, Farnham, D. J., Ho, M., and Lall, U. : "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 2020

**Doss-Gollin, J.**, Farnham, D. J., Steinschneider, S., and Lall, U. : "Robust Adaptation to Multiscale Climate Variability". *Earth's Future*. DOI: 10.1029/2019ef001154 2019

Rözer, V., Kreibich, H., Schröter, K., Müller, M., Sairam, N., **Doss-Gollin, J.**, Lall, U., and Merz, B. : "Probabilistic Models Significantly Reduce Uncertainty in Hurricane Harvey Pluvial Flood Loss Estimates". *Earth's Future*. DOI: 10.1029/2018ef001074 2019

**Doss-Gollin, J.**, Muñoz, Á. G., Mason, S. J., and Pastén, M. : "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 2018

Farnham, D. J., **Doss-Gollin, J.**, and Lall, U. : "Regional Extreme Precipitation Events: Robust Inference from Credibly Simulated GCM Variables". *Water Resources Research*. DOI: 10.1002/2017wr021318 2018

**Doss-Gollin, J.**, de Souza Filho, F. d. A., and da Silva, F. O. E. : "Analytic Modeling of Rainwater Harvesting in the Brazilian Semiarid Northeast". *Journal of the American Water Resources Association*. DOI: 10.1111/1752-1688.12376 2015

## PEER-REVIEWED CONFERENCE PAPERS

Kazadi, A., **Doss-Gollin, J.**, and Silva, A. : "Pluvial Flood Emulation with Hydraulics-Informed Message Passing". *Forty-First International Conference on Machine Learning*. URL: `https://openreview.net/forum?id=kIHIA6Lr0B` 2024

Kazadi, A. N., **Doss-Gollin, J.**, Sebastian, A., and Silva, A. : "Flood Prediction with Graph Neural Networks". *Climate Change AI*. URL: `https://www.climatechange.ai/papers/neurips2022/75` 2022

Araújo Júnior, L. M., de Souza Filho, F. d. A., da Silva Silveira, C., Aragão Dias, T., and **Doss-Gollin, J.**: "Análise dos eventos de seca no Nordeste Setentrional Brasileiro com base no índice de precipitação normalizada". *XII Simpósio de Recursos Hídricos Do Nordeste*. DOI: `10.13140/rg.2.1.4610.7685` 2014

**Doss-Gollin, J.**, de Souza Filho, F. d. A., and da Silva, F. O. E. : "Considerações sobre a sustentabilidade hídrica de cisternas para captação de chuva no Semiárido Brasileiro". *XII Simpósio de Recursos Hídricos Do Nordeste*. DOI: `10.13140/rg.2.1.4086.4807` 2014

## INVITED TALKS

Panelist. Exploring Water Resilience to Emerging Challenges, **Society for Risk Analysis**, Remote Presentation. 2024

"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

"Predictable and Preventable: Lessons in Climate Risk Management from the Texas Coast (and Beyond)". Climate Risk and Financial Institutions Seminar (Prof. Madison Condon), **Boston University School of Law**, Remote Presentation. 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

## CONFERENCE AND WORKSHOP PRESENTATIONS

"Robust Trends in Extreme Rainfall Probabilities in Texas". **2025 Texas Climate Conference**, *Rice University and Texas A&M University*, Houston, TX [*Talk*]. 2025

"Use-Inspired Tools for Climate Hazard Assessment". **Nature-Based Solutions for a Resilient Gulf Coast Workshop**, *Rice University*, Houston, TX [*Talk*]. 2025

"Advancing Urban Flood Hazard Characterization through Machine Learning: Challenges and Opportunities". **American Geophysical Union Fall Meeting 2024**, 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**, 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**, Washington, DC [*Talk*]. 2024

**Yuchen Lu**†: "Nonstationary Extreme Precipitation Probabilities in Texas". **Fall Meeting**, *Consortium for Enhancing Resilience and Catastrophe Modeling (CERCat)*, 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**, *Conference on Computational Methods in Water Resources*, Tucson, AZ [*Talk*]. 2024

"Incorporating Temperature Projections into Energy Systems Planning". **Extreme Heat Workshop**, *Columbia University*, New York, NY [*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**, *Environmental & Water Resources Institute (EWRI) - ASCE*, 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**, 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**, San Francisco, CA [*Talk*]. 2023

"A Bayesian Spatial Hierarchical Framework for Process-Informed Nonstationary Analysis of Precipitation Frequencies". **13th International Workshop on Statistical Hydrology**, *International Association of Hydrological Sciences*, 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**, Chicago, IL [*Talk*]. 2022

"H35F-07: Near-term Predictability Lowers Long-Term Adaptation Costs". **American Geophysical Union Fall Meeting 2022**, Chicago, IL [*Talk*]. 2022

"H25U-1265: Operationalizing Bayesian Model Checking for Robust Decision Making: Insights from House Elevation". **American Geophysical Union Fall Meeting 2021**, New Orleans, LA [*Poster*]. 2021

"A14H-03: How Unprecedented Was the February 2021 Texas Cold Snap?". **American Geophysical Union Fall Meeting 2021**, New Orleans, LA [*Talk*]. 2021

"Valuing Flexibility and Soft Instruments for Sequential Decision Problems". **2020 Annual Meeting**, *Society for Decision Making under Deep Uncertainty*, [*Remote Presentation*]. 2020

"H11G-07: Towards Adaptive Resilience: Managing Uncertainties and Exploiting Predictability across Timescales". **American Geophysical Union Fall Meeting 2019**, San Francisco, CA [*Talk*]. 2019

"Adaptive Resilience through Real Options and Deep Reinforecement Learning". **Doctoral Consortium on Computational Sustainability**, *Carnegie Mellon University*, Pittsburgh, PA [*Talk*]. 2019

"Evaluating Staged Investments in Critical Infrastructure for Climate Adaptation". **2019 Interdisciplinary Ph.D. Workshop in Sustainable Development**, *Columbia University*, New York, NY [*Talk*]. 2019

"H52F-05: Robust Adaptation to Cyclical Climate Risk". **American Geophysical Union Fall Meeting 2018**, 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**, New Orleans, LA [*Talk*]. 2017

"H22B-02: Designing and Operating Infrastructure for Nonstationary Flood Risk Management". **American Geophysical Union Fall Meeting 2017**, 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**, *University of Massachusetts Amherst*, Amherst, MA [*Talk*]. 2017

"Regional Intense Precipitation: Inferences From GCM Atmospheric Circulation Fields". **Modeling Research in the Cloud**, *National Center for Atmospheric Research*, Boulder, CO [*Poster*]. 2017

"Statistical-Dynamical Analysis of Climate Projections for Flood Infrastructure Design". **Interdisciplinary Ph.D. Workshop in Sustainable Development 2017**, *Columbia University*, 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**, *Columbia University*, 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 [*recorded video interview*]. 2025

"After deadly flooding in Central Texas, state lawmakers look to prevent similar tragedies." **KVUE** — Daniel Perreault [*recorded video interview*]. 2025

"New Flood Warning System Greenlit Shortly Before Deadly Texas Disaster." **The Wall Street Journal** — Joseph De Avila [*print*]. 2025

"Questions arise on how emergency warning systems work after Central Texas flood." **ABC13** — Tom Abrahams [*print*]. 2025

"Bajo la Amenaza del Golfo (Under the Threat of the Gulf)." **Telemundo Houston** [*recorded video interview*]. 2025

"Will Texas become too hot for humans?." **BBC Future** — Sarah Griffiths [*print*]. 2023

"Climate change has sent temperatures soaring in Texas." **The Texas Tribune** — Erin Douglas, Yuriko Schumacher and Alex Ford [*print*]. 2023

"Texas could have foreseen 2021 cold-wave disaster, new study concludes." **Texas Climate News** — Bob Henson [*print*]. 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 [*print*]. 2021

"The False Comfort of Higher Seawalls." **The New Republic** — Paola Rosa-Aquino [*print*]. 2019

"New Study Shows Promise for Long-Term Weather Forecasts in South America." **State of the Planet** — Elisabeth Gawthrop [*print*]. 2018

## TEACHING AND ADVISING

### COURSES TAUGHT

Rice CEVE 543: *Statistical-Physical Methods for Hydroclimate Extremes and Catastrophes*. Fall 2025

Rice CEVE 101: *Fundamentals of Civil and Environmental Engineering*. Fall 2024

Rice CEVE 421/521: *Climate Risk Management*. Spring 2024

Rice CEVE 543: *Data Science Methods for Climate Hazard Assessment*. Fall 2023

Rice CEVE 421/521: *Climate Risk Management*. Spring 2023

Rice CEVE 543: *Environmental Data Science*. Spring 2022

Rice CEVE 101: *Fundamentals of Civil and Environmental Engineering*. Fall 2021

### CURRENT GRADUATE STUDENTS

True Furrh: **Ph.D.** in Civil and Environmental Engineering, Rice University. **Committee Member**. 2021—

Dongwook Kim: **Ph.D.** in Civil and Environmental Engineering, Rice University. **Primary Advisor**. 2024—

Yuchen Lu: **Ph.D.** in Civil and Environmental Engineering, Rice University. **Primary Advisor**. 2021—

Kelsey Murphy: **Ph.D.** in Earth, Environmental, and Planetary Sciences, Rice University. **Committee Member**. 2021—

Jonah Schaechter: **Ph.D.** in Civil and Environmental Engineering, Rice University. **Primary Advisor**. 2024—

Valeriia Sobolevskaia: **Ph.D.** in Earth, Environmental, and Planetary Sciences, Rice University. **Committee Member**. 2020—

### PAST GRADUATE STUDENTS

Karan Jakhar: **Ph.D.** in Mechanical Engineering, Rice University. Thesis: "Equation Discovery and Deep Learning for Geophysical Turbulence". **Committee Member**. 2025

Kyle Ostlind: **M.S.** in Civil and Environmental Engineering, 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: **MCEE** in Civil and Environmental Engineering, 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: **M.S.** in Earth, Marine and Environmental Sciences, 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: **Ph.D.** in Civil and Environmental Engineering, Rice University. Thesis: "Modeling Coastal Petrochemical Infrastructure Risk, Resilience, and Cascading Community Consequences". **Committee Member**. 2024

Xinyue Luo: **Ph.D.** in Earth, Environmental and Planetary Sciences, Rice University. Thesis: "Characterizing the El Niño-Southern Oscillation and Its North American Teleconnections over the Last Millennium". **Committee Member**. 2024

Anibal Tafur Gutierrez: **Ph.D.** in Civil and Environmental Engineering, Rice University. Thesis: "Methods and Tools for Risk-Informed Resilience Enhancement of Coastal Intermodal Freight Networks". **Committee Member**. 2024

Matthew Garcia: **Ph.D.** in Civil and Environmental Engineering, Rice University. Thesis: "Novel Urban Floodplain Modeling Methods for Applications in Coupling Surrogate Machine Learning Methods". **Committee Member**. 2023

Mia Peeples: **M.S.** in Civil and Environmental Engineering, Rice University. Thesis: "Modeling Flood Reduction of Nature-Based Channel Modifications in Houston, TX". **Committee Member**. 2023

Xiangnan Zhou: **Ph.D.** in Civil and Environmental Engineering, Rice University. Thesis: "Resilience Planning for Water Distribution Systems". **Committee Member**. 2023

Raychel Bahnick: **M.S.** in Civil and Environmental Engineering, Rice University. Thesis: "Assessing Land Use Change and Subsidence Impact on Inland Flooding". **Committee Member**. 2022

Alyssa Graham: **M.S.** in Civil and Environmental Engineering, Rice University. Thesis: "Water Supply Vulnerability Testing and Robust Planning Analysis with Exploratory Modeling under Deep Uncertainty". **Committee Member**. 2022

Elizabeth Hoffmann: **M.S.** in Civil and Environmental Engineering, 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: **Ph.D.** in Statistics, Rice University. Thesis: "Bayesian Graphical Models for Multivariate Time Series". **Committee Member**. 2022

Xiaoyu (Toby) Li: **M.S.** in Civil and Environmental Engineering, 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 RESEARCHERS

*Year indicates graduation year.*

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

### TEAMS ADVISED

**Optimal Policy for Decentralized Wastewater Systems (DWS) while Relaxing Certainty**: Rice Computational Mathematics and Operations Research (CMOR) Senior Project. 2024-2025

**Flood Sight | Advancing Real-Time Flood Predictions for Situational Awareness**: Rice Data to Knowledge (D2K) Lab. Spring 2025

**[TBD]**: Rice Data to Knowledge (D2K) Lab. Fall 2025

### ADVISEE AWARDS

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

## SERVICE ACTIVITIES

### DEPARTMENTAL SERVICE

**Member**, Graduate Studies Committee. 2024—
**Member**, Diversity, Equity, and Inclusion Committee. 2024
**Member**, Seminar Committee. 2023–2024
**Member**, Faculty Search Committee. 2022–2023

### UNIVERSITY SERVICE

**Member**, Research Council. Ken Kennedy Institute. 2024—
**Faculty Associate**. Duncan College. 2023—
**External Search Committee Member**. Department of Earth, Environmental, and Planetary Sciences. 2022–2023

### PROFESSIONAL SERVICE

**Committee Member**, Water and Society Newsletter Committee. American Geophysical Union. 2024—

**Committee Member**, Environmental and Water Resources Systems (EWRS) Committee. American Society of Civil Engineers (ASCE) Environmental & Water Resources Institute (EWRI). 2021—

**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).

**SESSIONS CONVENED**

**Co-Organizer**. *Nature-Based Solutions for a Resilient Gulf Coast.* **Rice University**, Houston, TX. 2025

**Primary Convener**. *H31G - Integrating Social, Scientific, and Engineering Approaches to Identify and Address Gaps in Water Infrastructure and Household Water Security*. **American Geophysical Union Fall Meeting**, San Francisco, CA. 2023

**Convener**. *NH41C - Hybrid Modeling and Digital Twin Systems for Flood Hazard Prediction and Risk Assessment at Different Spatial Scales.* **American Geophysical Union Fall Meeting**, Washington, DC. 2023

**Chair**. *H44G – Water and Society: Interdisciplinary Perspectives on Hydroclimatic Forecasting for Water Resources Decision Making.* **American Geophysical Union Fall Meeting**, New Orleans, LA. 2021

**Primary Convener**. *NH53 – Emerging Needs and Approaches for Climate Services: Understanding and Developing Innovative Approaches to User-Oriented Climate Services.* **American Geophysical Union Fall Meeting**, San Francisco, CA. 2019

**Student Organizer**. *Earth and Environmental Engineering Student Research Symposium.* **Columbia University**, New York, NY. 2018

**Student Organizer**. *Earth and Environmental Engineering Student Research Symposium.* **Columbia University**, New York, NY. 2017

## ADDITIONAL EXPERIENCE

**Social and Behavioral Research - Basic/Refresher** — *CITI Program.* 2025–2028

**Strategic Program to Accelerate Researchers in Computing (SPARC) Participant** — *Natural Hazards Engineering Research Infrastructure (NHERI) DesignSafe-CI.* 2025

**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