

# James Doss-Gollin

## APPOINTMENTS

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| <b>Rice University</b><br>Assistant Professor, Department of Civil & Environmental Engineering.            | 2021– |
| <b>The Pennsylvania State University</b><br>Postdoctoral Scholar, Earth & Environmental Systems Institute. | 2020  |

## EDUCATION

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| <b>Columbia University</b><br>Ph.D. in Earth & Environmental Engineering. | 2020 |
| M.S. in Earth & Environmental Engineering.                                | 2016 |
| <b>Yale University</b><br>B.S. in Mechanical Engineering.                 | 2015 |

## AWARDS

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

## GRANTS AND CONTRACTS

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

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| <b>National Science Foundation: Confronting Hazards, Impacts and Risks for a Resilient Planet (CHIRRP).</b> "RAISE: Flood Resilience in Rural Texas Communities." <b>Co-PI</b> (Rice Lead: Avantika Gori). <b>\$999,986.</b>                                                 | 2025–2028 |
| <b>Consortium for Enhancing Resilience and Catastrophe Modeling (CERCAT).</b> "A Nonstationary Joint Probability Method for Tropical Cyclone Hazard Assessment." <b>Lead PI. \$75,000.</b>                                                                                   | 2025–2026 |
| <b>NVIDIA.</b> "Computing Infrastructure for AI-enhanced Climate Risk and Resilience at Rice." <b>Co-PI</b> (PI: Arlei Lopes da Silva). <b>in-kind.</b>                                                                                                                      | 2025–2025 |
| <b>Rice University Sustainability Institute.</b> "Workshop on Nature-Based Solutions for Resilient Coastal Cities." <b>Co-PI</b> (PI: Philip Bedient). <b>\$7,500.</b>                                                                                                       | 2024–2025 |
| <b>Ken Kennedy Institute at Rice University.</b> "Advancing AI for Climate Risk and Urban Resilience." <b>Lead PI. \$160,000.</b>                                                                                                                                            | 2024–2025 |
| <b>National Science Foundation.</b> "IUCRC Planning Grant Rice University: Center for Climate, Equity and Resilience in Catmodeling (CERCat)." <b>Co-PI</b> (PI: Jamie Padgett). <b>\$20,000.</b>                                                                            | 2024–2025 |
| <b>Texas Water Development Board.</b> "Developing Future Rainfall Frequency Grids for the State of Texas." <b>Rice PI</b> (PI: John Nielsen-Gammon). <b>\$77,750.</b> Subaward from Texas A&M University; \$192,828 total.                                                   | 2022–2025 |
| <b>National Science Foundation: Strengthening America's Infrastructure.</b> "Collaborative Research: EAGER: Participatory Design for Water Quality Monitoring of Highly Decentralized Water Infrastructure Systems." <b>Rice PI</b> (PI: Alicia Cooperman). <b>\$85,046.</b> | 2022–2025 |

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| 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.” <b>Co-PI</b> (Rice Lead: Sylvia Dee). <b>\$472,024</b> . | 2022–2025 |
| Rice University: <i>Sustainable Futures Fund</i> . “Leveraging Earth System Observations at Multiple Scales to Improve Stormwater Management in Houston.” <b>Lead PI</b> . <b>\$50,000</b> .                                                                                                                         | 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.” <b>Co-PI</b> (PI: Arlei Lopes da Silva). <b>\$50,000</b> .                                                                        | 2022–2023 |
| Energy Foundation. “Synthesis of Texas Electricity Research from Rice University.” <b>Co-PI</b> (PI: Daniel Cohan). <b>\$24,928</b> .                                                                                                                                                                                | 2022–2023 |

## PUBLICATIONS

† denotes Rice advisee publication. Google Scholar citations: 577, h-index: 11, i10-index: 13.

### IN PREP. / UNDER REVIEW

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |
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| Baer, J., Sebastian, A., Grimley, L. E., <b>Doss-Gollin, J.</b> , Wright, D. B., and Hussain, M. A. : <i>Neglecting Spatiotemporal Rainfall Variability Underestimates Flood Hazard and Risk</i> .                                                                                                                                                                                                                                                                              | — |
| Hancock, C. L., Dee, S. G., Haider, M. R., <b>Doss-Gollin, J.</b> , Lehner, F., Murphy, K., and Munoz, S. E. : <i>Robust 21st Century Hydrological Trends in the Mississippi River Basin from CMIP6: West-Gets-Drier, East-Gets-Wetter</i> .                                                                                                                                                                                                                                    | — |
| Pollack, A., Auermuller, L., Burleyson, C., Campbell, J. E., Condon, M., Cooper, C., Coronese, M., Dangendorf, S., <b>Doss-Gollin, J.</b> , 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. : <i>Unlocking the Benefits of Transparent and Reusable Science for Climate-Risk Management</i> . DOI: 10.31219/osf.io/29nhv | — |
| Pollack, A., Benedict, J., Deb, M., <b>Doss-Gollin, J.</b> , Judi, D., Lehman, W., Lutz, N., Reesman, C., Sarazen, E., Son, Y., Srikrishnan, V., Sun, N., and Keller, K. : <i>Unrefined National Building Inventories Can Mislead Risk Assessments and Decisions</i> . DOI: 10.2139/ssrn.5575271                                                                                                                                                                                | — |
| Pollack, A., <b>Doss-Gollin, J.</b> , Srikrishnan, V., and Keller, K. : <i>UNSAFE: An UNCertain Structure And Fragility Ensemble Framework for Property-Level Flood Risk Estimation</i> . DOI: 10.31219/osf.io/jb9ta                                                                                                                                                                                                                                                            | — |

### JOURNAL ARTICLES

|                                                                                                                                                                                                                                                                                                                    |      |
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| Haider, M. R., Dee, S. G., <b>Doss-Gollin, J.</b> , Dunne, K. B. J., and Muñoz, S. E. : “Impact of 21st Century Climate Change on Mississippi River Basin Discharge in CESM2 Large Ensemble Projections”. <i>Global and Planetary Change</i> . DOI: 10.1016/j.gloplacha.2025.104742                                | 2025 |
| Liu, C., Kowal, D. R., <b>Doss-Gollin, J.</b> , and Vannucci, M. : “Bayesian Functional Graphical Models with Change-Point Detection”. <i>Computational Statistics &amp; Data Analysis</i> . DOI: 10.1016/j.csda.2024.108122                                                                                       | 2025 |
| Liu, Y., <b>Doss-Gollin, J.</b> , Dai, Q., Veeraraghavan, A., and Balakrishnan, G. : “Downscaling Extreme Precipitation with Wasserstein Regularized Diffusion”. <i>IEEE Transactions on Geoscience and Remote Sensing</i> . DOI: 10.1109/TGRS.2025.3611872                                                        | 2025 |
| <b>Lu, Y.</b> †, Seiyon Lee, B., and <b>Doss-Gollin, J.</b> : “Bayesian Spatiotemporal Nonstationary Model Quantifies Robust Increases in Daily Extreme Rainfall across the Western Gulf Coast”. <i>Environmental Research: Climate</i> . DOI: 10.1088/2752-5295/adf56e                                            | 2025 |
| O'Donnell, M., Murphy, K., <b>Doss-Gollin, J.</b> , Dee, S., and Munoz, S. : “Evaluation of Hydroclimatic Biases in the Community Earth System Model (CESM1) within the Mississippi River Basin”. <i>Hydrology and Earth System Sciences</i> . DOI: 10.5194/hess-29-4637-2025                                      | 2025 |
| Kazadi, A., <b>Doss-Gollin, J.</b> , Sebastian, A., and Silva, A. : “FloodGNN-GRU: A Spatio-Temporal Graph Neural Network for Flood Prediction”. <i>Environmental Data Science</i> . DOI: 10.1017/eds.2024.19                                                                                                      | 2024 |
| Murphy, K., Dee, S., <b>Doss-Gollin, J.</b> , 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”. <i>Paleoceanography and Paleoclimatology</i> . 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.**<sup>†</sup>, 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-Núñez, 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. 2025
- “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
- “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<sup>†</sup>**: “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<sup>†</sup>**: “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<sup>†</sup>**: “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<sup>†</sup>**: “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<sup>†</sup>**: “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
- “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
- “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 Reinforcement 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

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| "Extreme Rainfall in Paraguay during the 2015-16 Austral Summer: Causes and Predictive Skill". <b>North East Graduate Student Water Symposium</b> , University of Massachusetts Amherst, Amherst, MA [Talk].                                                     | 2017 |
| "Regional Intense Precipitation: Inferences From GCM Atmospheric Circulation Fields". <b>Modeling Research in the Cloud</b> , National Center for Atmospheric Research, Boulder, CO [Poster].                                                                    | 2017 |
| "Statistical-Dynamical Analysis of Climate Projections for Flood Infrastructure Design". <b>Interdisciplinary Ph.D. Workshop in Sustainable Development 2017</b> , 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". <b>Workshop on Subseasonal to Seasonal Predictability of Extreme Weather and Climate</b> , Columbia University, New York, NY [Poster]. | 2016 |

## MEDIA HIGHLIGHTS

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| "Historic Texas Flooding." <b>KEYE-AUS (CBS)</b> [recorded video interview].                                                                                                                                                                                       | 2025 |
| "Houston's Morning Show." <b>Fox26 Houston</b> [live video interview].                                                                                                                                                                                             | 2025 |
| "Breaking down the force of water in the Texas floods." <b>AP News</b> — Michael Phillis [print].                                                                                                                                                                  | 2025 |
| "Here are some things you can do to be better prepared for major flooding." <b>Associated Press</b> — 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." <b>ABC13</b> — Luke Jones [recorded video interview]. | 2025 |
| "After deadly flooding in Central Texas, state lawmakers look to prevent similar tragedies." <b>KVUE</b> — Daniel Perreault [recorded video interview].                                                                                                            | 2025 |
| "New Flood Warning System Greenlit Shortly Before Deadly Texas Disaster." <b>The Wall Street Journal</b> — Joseph De Avila [print].                                                                                                                                | 2025 |
| "Questions arise on how emergency warning systems work after Central Texas flood." <b>ABC13</b> — Tom Abrahams [print].                                                                                                                                            | 2025 |
| "Bajo la Amenaza del Golfo (Under the Threat of the Gulf)." <b>Telemundo Houston</b> [recorded video interview].                                                                                                                                                   | 2025 |
| "Will Texas become too hot for humans?." <b>BBC Future</b> — Sarah Griffiths [print].                                                                                                                                                                              | 2023 |
| "Climate change has sent temperatures soaring in Texas." <b>The Texas Tribune</b> — Erin Douglas, Yuriko Schumacher and Alex Ford [print].                                                                                                                         | 2023 |
| "Texas could have foreseen 2021 cold-wave disaster, new study concludes." <b>Texas Climate News</b> — Bob Henson [print].                                                                                                                                          | 2022 |
| "Opinion: The risks of climate change are great - so are the rewards of solving it." <b>Houston Chronicle</b> — Andrew Dessler, James Doss-Gollin, and Katherine Hayhoe [print].                                                                                   | 2021 |
| "The False Comfort of Higher Seawalls." <b>The New Republic</b> — Paola Rosa-Aquino [print].                                                                                                                                                                       | 2019 |
| "New Study Shows Promise for Long-Term Weather Forecasts in South America." <b>State of the Planet</b> — Elisabeth Gawthrop [print].                                                                                                                               | 2018 |

## TEACHING AND ADVISING

### COURSES TAUGHT

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

### CURRENT GRADUATE STUDENTS

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|--------------------------------------------------------------------------------------------------------------|-------|
| True Furrh: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. <b>Committee Member</b> .  | 2021– |
| Dongwook Kim: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. <b>Primary Advisor</b> . | 2024– |
| Yuchen Lu: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. <b>Primary Advisor</b> .    | 2021– |

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| Kelsey Murphy: <b>Ph.D.</b> in Earth, Environmental, and Planetary Sciences, Rice University. <b>Committee Member.</b>         | 2021— |
| Jonah Schaechter: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. <b>Primary Advisor.</b>                | 2024— |
| Valeriia Sobolevskaia: <b>Ph.D.</b> in Earth, Environmental, and Planetary Sciences, Rice University. <b>Committee Member.</b> | 2020— |

## PAST GRADUATE STUDENTS

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| Karan Jakhar: <b>Ph.D.</b> in Mechanical Engineering, Rice University. Thesis: “Equation Discovery and Deep Learning for Geophysical Turbulence”. <b>Committee Member.</b>                                                                                                 | 2025 |
| Kyle Ostlind: <b>M.S.</b> 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”. <b>Committee Member.</b>                 | 2025 |
| Katlyn Schmeltzer: <b>MCEE</b> in Civil and Environmental Engineering, Rice University. Thesis: “Pre-Trained Long Short-Term Memory Network Performance for Streamflow Prediction in the Brazos River Basin”. <b>Primary Advisor.</b>                                      | 2025 |
| John A. Baer: <b>M.S.</b> 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”. <b>Committee Member.</b>                   | 2024 |
| Kendall Capshaw: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. Thesis: “Modeling Coastal Petrochemical Infrastructure Risk, Resilience, and Cascading Community Consequences”. <b>Committee Member.</b>                                            | 2024 |
| Xinyue Luo: <b>Ph.D.</b> in Earth, Environmental and Planetary Sciences, Rice University. Thesis: “Characterizing the El Niño-Southern Oscillation and Its North American Teleconnections over the Last Millennium”. <b>Committee Member.</b>                              | 2024 |
| Anibal Tafur Gutierrez: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. Thesis: “Methods and Tools for Risk-Informed Resilience Enhancement of Coastal Intermodal Freight Networks”. <b>Committee Member.</b>                                        | 2024 |
| Matthew Garcia: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. Thesis: “Novel Urban Floodplain Modeling Methods for Applications in Coupling Surrogate Machine Learning Methods”. <b>Committee Member.</b>                                          | 2023 |
| Mia Peebles: <b>M.S.</b> in Civil and Environmental Engineering, Rice University. Thesis: “Modeling Flood Reduction of Nature-Based Channel Modifications in Houston, TX”. <b>Committee Member.</b>                                                                        | 2023 |
| Xiangnan Zhou: <b>Ph.D.</b> in Civil and Environmental Engineering, Rice University. Thesis: “Resilience Planning for Water Distribution Systems”. <b>Committee Member.</b>                                                                                                | 2023 |
| Raychel Bahnick: <b>M.S.</b> in Civil and Environmental Engineering, Rice University. Thesis: “Assessing Land Use Change and Subsidence Impact on Inland Flooding”. <b>Committee Member.</b>                                                                               | 2022 |
| Alyssa Graham: <b>M.S.</b> in Civil and Environmental Engineering, Rice University. Thesis: “Water Supply Vulnerability Testing and Robust Planning Analysis with Exploratory Modeling under Deep Uncertainty”. <b>Committee Member.</b>                                   | 2022 |
| Elizabeth Hoffmann: <b>M.S.</b> 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”. <b>Committee Member.</b> | 2022 |
| Chunshan Liu: <b>Ph.D.</b> in Statistics, Rice University. Thesis: “Bayesian Graphical Models for Multivariate Time Series”. <b>Committee Member.</b>                                                                                                                      | 2022 |
| Xiaoyu (Toby) Li: <b>M.S.</b> 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”. <b>Committee Member.</b>           | 2021 |

## UNDERGRADUATE RESEARCHERS

*Year indicates graduation year.*

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

**TEAMS ADVISED**

|                                                                                                                                                                          |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Optimal Policy for Decentralized Wastewater Systems (DWS) while Relaxing Certainty:</b> Rice Computational Mathematics and Operations Research (CMOR) Senior Project. | 2024–2025   |
| <b>Flood Sight   Advancing Real-Time Flood Predictions for Situational Awareness:</b> Rice Data to Knowledge (D2K) Lab.                                                  | Spring 2025 |
| <b>[TBD]:</b> Rice Data to Knowledge (D2K) Lab.                                                                                                                          | Fall 2025   |

**ADVISEE AWARDS**

|                                                                                                      |      |
|------------------------------------------------------------------------------------------------------|------|
| <b>Dongwook Kim:</b> Karen and John Huff Graduate Fellowship in Civil and Environmental Engineering. | 2025 |
| <b>Yuchen Lu:</b> H.W. Reeves Endowed Scholarship.                                                   | 2022 |

**SERVICE ACTIVITIES****DEPARTMENTAL SERVICE**

|                                                            |           |
|------------------------------------------------------------|-----------|
| <b>Member,</b> Graduate Studies Committee.                 | 2024–     |
| <b>Member,</b> Diversity, Equity, and Inclusion Committee. | 2024      |
| <b>Member,</b> Faculty Search Committee.                   | 2022–2023 |
| <b>Member,</b> Seminar Committee.                          | 2022–2023 |

**UNIVERSITY SERVICE**

|                                                                                                      |           |
|------------------------------------------------------------------------------------------------------|-----------|
| <b>Member,</b> Research Council. Ken Kennedy Institute.                                              | 2024–     |
| <b>Faculty Associate.</b> Duncan College.                                                            | 2023–     |
| <b>External Search Committee Member.</b> Department of Earth, Environmental, and Planetary Sciences. | 2022–2023 |

**PROFESSIONAL SERVICE**

|                                                                                                                                                                                   |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Committee Member,</b> Water and Society Newsletter Committee. American Geophysical Union.                                                                                      | 2024– |
| <b>Committee Member,</b> 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; Engineering Applications of Computational Fluid Mechanics; Environmental Data Science; Environmental Research Letters; Geophysical Research Letters; Hydrology and Earth System Sciences; IEEE Transactions on Geoscience and Remote Sensing; Joule; Journal of Applied Meteorology and Climatology; Journal of Hydrology; Journal of Water Resources Management and Planning; Machine Learning: Earth; Natural Hazards and Earth System Sciences; NPJ Natural Hazards; Oxford Journal of Development Studies; Water Resources Research; Water Security; Weather, Climate, and Society.

**Funding Agencies:** Department of Energy (BER); Dutch Research Council (NWO); National Science Foundation.

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

**SESSIONS CONVENED**

|                                                                                                                                                                                                                                                          |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Co-Organizer.</b> <i>Nature-Based Solutions for a Resilient Gulf Coast.</i> <b>Rice University</b> , Houston, TX.                                                                                                                                     | 2025 |
| <b>Primary Convener.</b> <i>H31G - Integrating Social, Scientific, and Engineering Approaches to Identify and Address Gaps in Water Infrastructure and Household Water Security.</i> <b>American Geophysical Union Fall Meeting</b> , San Francisco, CA. | 2023 |
| <b>Convener.</b> <i>NH41C - Hybrid Modeling and Digital Twin Systems for Flood Hazard Prediction and Risk Assessment at Different Spatial Scales.</i> <b>American Geophysical Union Fall Meeting</b> , Washington, DC.                                   | 2023 |
| <b>Chair.</b> <i>H44G - Water and Society: Interdisciplinary Perspectives on Hydroclimatic Forecasting for Water Resources Decision Making.</i> <b>American Geophysical Union Fall Meeting</b> , New Orleans, LA.                                        | 2021 |
| <b>Primary Convener.</b> <i>NH53 - Emerging Needs and Approaches for Climate Services: Understanding and Developing Innovative Approaches to User-Oriented Climate Services.</i> <b>American Geophysical Union Fall Meeting</b> , San Francisco, CA.     | 2019 |
| <b>Student Organizer.</b> <i>Earth and Environmental Engineering Student Research Symposium.</i> <b>Columbia University</b> , New York, NY.                                                                                                              | 2018 |



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

## ADDITIONAL EXPERIENCE

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