

Rice University  
Department of Civil and Environmental Engineering  
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jdossgollin   
James Doss-Gollin 

## James Doss-Gollin

### research interests

Climate risk management and adaptation  
Decision-making under uncertainty  
Dynamics and spatiotemporal clustering of hydroclimate extremes  
Probabilistic modeling and uncertainty quantification  
Urban flood risk assessment and management

### appointments

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

### education

**Columbia University** *Ph.D.*, Earth & Environmental Engineering, 2020.  
**Columbia University** *M.S.*, Earth & Environmental Engineering, 2016.  
**Yale University** *B.S.*, 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

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

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

journal  
articles

- 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”. In: *Global and Planetary Change* 249, p. 104742. DOI: 10.1016/j.gloplacha.2025.104742.
- Liu, Chunshan, Kowal, Daniel R., **Doss-Gollin, James**, and Vannucci, Marina. 2025. “Bayesian Functional Graphical Models with Change-Point Detection”. In: *Computational Statistics & Data Analysis* 206, p. 108122. DOI: 10.1016/j.csda.2024.108122.
- Liu, Yuhao, **Doss-Gollin, James**, Dai, Qiushi, Veeraraghavan, Ashok, and Balakrishnan, Guha. 2025. “Downscaling Extreme Precipitation with Wasserstein Regularized Diffusion”. In: *IEEE Transactions on Geoscience and Remote Sensing*, pp. 1–1. DOI: 10.1109/TGRS.2025.3611872.
- Lu, Yuchen, Seiyon Lee, Benjamin, and **Doss-Gollin, James**. 2025. “Bayesian Spatiotemporal Nonstationary Model Quantifies Robust Increases in Daily Extreme Rainfall across the Western Gulf Coast”. In: *Environmental Research: Climate* 4.3, p. 035016. DOI: 10.1088/2752-5295/adf56e.
- Kazadi, Arnold, **Doss-Gollin, James**, Sebastian, Antonia, and Silva, Arlei. 2024. “FloodGNN-GRU: A Spatio-Temporal Graph Neural Network for Flood Prediction”. In: *Environmental Data Science* 3, e21. DOI: 10.1017/eds.2024.19.
- Murphy, Kelsey, Dee, Sylvia, **Doss-Gollin, James**, Dunne, Kieran B. J., O'Donnell, Michelle, and Muñoz, Samuel. 2024. “Competing Influences of Land Use and Greenhouse Gas Emissions on Mississippi River Basin Hydroclimate Simulated Over the Last Millennium”. In: *Paleoceanography and Paleoclimatology* 39.7, e2024PA004902. DOI: 10.1029/2024PA004902.
- Singh, Deepti, Bekris, Yianna S., Rogers, Cassandra D. W., **Doss-Gollin, James**, Coffel, Ethan D., and Kalashnikov, Dmitri A. 2024. “Enhanced Solar and Wind Potential during Widespread Temperature Extremes across the U.S. Interconnected Energy Grids”. In: *Environmental Research Letters* 19.4, p. 044018. DOI: 10.1088/1748-9326/ad2e72.
- Amonkar, Yash, **Doss-Gollin, James**, Farnham, David J., Modi, Vijay, and Lall, Upmanu. 2023. “Differential Effects of Climate Change on Average and Peak Demand for Heating and Cooling across the Contiguous USA”. In: *Communications Earth & Environment* 4.1 (1), pp. 1–9. DOI: 10.1038/s43247-023-01048-1.
- Amonkar, Yash, **Doss-Gollin, James**, and Lall, Upmanu. 2023. “Compound Climate Risk: Diagnosing Clustered Regional Flooding at Inter-Annual and Longer Time Scales”. In: *Hydrology* 10.3 (3), p. 67. DOI: 10.3390/hydrology10030067.
- Doss-Gollin, James**, Amonkar, Yash, Schmeltzer, Katlyn, and Cohan, Daniel. 2023. “Improving the Representation of Climate Risks in Long-Term Electricity Systems Planning: A Critical Review”. In: *Current Sustainable/Renewable Energy Reports*. DOI: 10.1007/s40518-023-00224-3.
- Doss-Gollin, James** and Keller, Klaus. 2023. “A Subjective Bayesian Framework for Synthesizing Deep Uncertainties in Climate Risk Management”. In: *Earth's Future* 11.1. 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". In: *Engineering Applications of Computational Fluid Mechanics* 17.1, p. 2225584. DOI: 10.1080/19942060.2023.2225584.
- Wutich, Amber, Thomson, Patrick, Jepson, Wendy, Stoler, Justin, Cooperman, Alicia D., **Doss-Gollin, James**, Jantrania, Anish, Mayer, Alex, Nelson-Nuñez, Jami, Walker, W. Shane, and Westerhoff, Paul. 2023. "MAD Water: Integrating Modular, Adaptive, and Decentralized Approaches for Water Security in the Climate Change Era". In: *WIREs Water* n/a.n/a, e1680. DOI: 10.1002/wat2.1680.
- Zhou, Xiangnan, Duenas-Osorio, Leonardo, **Doss-Gollin, James**, Liu, Lu, Stadler, Lauren, and Li, Qilin. 2023. "Mesoscale Modeling of Distributed Water Systems Enables Policy Search". In: *Water Resources Research* 59.5. DOI: 10.1029/2022WR033758.
- Doss-Gollin, James**, Farnham, David J., Lall, Upmanu, and Modi, Vijay. 2021. "How Unprecedented Was the February 2021 Texas Cold Snap?" In: *Environmental Research Letters*. DOI: 10.1088/1748-9326/ac0278.
- Doss-Gollin, James**, Farnham, David J., Ho, Michelle, and Lall, Upmanu. 2020. "Adaptation over Fatalism: Leveraging High-Impact Climate Disasters to Boost Societal Resilience". In: *Journal of Water Resources Planning and Management* 146.4. DOI: 10.1061/(asce)wr.1943-5452.0001190.
- Doss-Gollin, James**, Farnham, David J., Steinschneider, Scott, and Lall, Upmanu. 2019. "Robust Adaptation to Multiscale Climate Variability". In: *Earth's Future* 7.7, pp. 734–747. DOI: 10.1029/2019ef001154.
- Rözer, Viktor, Kreibich, Heidi, Schröter, Kai, Müller, Meike, Sairam, Nivedita, **Doss-Gollin, James**, Lall, Upmanu, and Merz, Bruno. 2019. "Probabilistic Models Significantly Reduce Uncertainty in Hurricane Harvey Pluvial Flood Loss Estimates". In: *Earth's Future* 7.4. DOI: 10.1029/2018ef001074.
- Doss-Gollin, James**, Muñoz, Ángel G, Mason, Simon J, and Pastén, Max. 2018. "Heavy Rainfall in Paraguay during the 2015-2016 Austral Summer: Causes and Sub-Seasonal-to-Seasonal Predictive Skill". In: *Journal of Climate* 31.17, pp. 6669–6685. DOI: 10.1175/jcli-d-17-0805.1.
- Farnham, David J, **Doss-Gollin, James**, and Lall, Upmanu. 2018. "Regional Extreme Precipitation Events: Robust Inference from Credibly Simulated GCM Variables". In: *Water Resources Research* 54.6. DOI: 10.1002/2017wr021318.
- Doss-Gollin, James**, de Souza Filho, Francisco de Assis, and da Silva, Francisco Osny Enéas. 2015. "Analytic Modeling of Rainwater Harvesting in the Brazilian Semiarid Northeast". In: *Journal of the American Water Resources Association* 52.1, pp. 129–137. DOI: 10.1111/1752-1688.12376.
- preprints Baer, Jack, Sebastian, Antonia, Grimley, Lauren Elise, **Doss-Gollin, James**, Wright, Daniel B., and Hussain, Mohammad Ashar. 2024. *Neglecting Spatiotemporal Rainfall Variability Underestimates Flood Hazard and Risk*. Pre-published.
- Geldner, Nathan, Johnson, David R., **Doss-Gollin, James**, and Keller, Klaus. 2023. *Efficient Flood Risk Mitigation and Intersectional Equity Implications: A Case Study in New Orleans*. DOI: 10.21203/rs.3.rs-3098000/v1. Pre-published.
- Hancock, Christopher L, Dee, Sylvia G., Haider, Muhammad Rezaul, **Doss-Gollin, James**, Lehner, Flavio, Murphy, Kelsey, and Munoz, Samuel E. 2025. *Robust 21st Century Hydrological Trends in the Mississippi River Basin from CMIP6: West-Gets-Drier, East-Gets-Wetter*. Pre-published.
- O'Donnell, Michelle, Murphy, Kelsey, **Doss-Gollin, James**, Dee, Sylvia, and Munoz, Samuel. 2024. *Evaluation of Hydroclimatic Biases in the Community Earth System Model (CESM1) within the Mississippi River Basin*. DOI: 10.5194/hess-2024-153. URL: <https://hess.copernicus.org/preprints/hess-2024-153/> (visited on 06/10/2024). Pre-published.
- Pollack, Adam, Auermuller, Lisa, Burleyson, Casey, Campbell, Jentry E., Condon, Madison, Cooper, Courtney, Coronese, Matteo, Dangendorf, Sonke, **Doss-Gollin, James**, Hegde, Prabhat, Helgeson, Casey, Kopp, Robert, Kwakkel, Jan, Leaf, Andrew, Lesk,

Corey, Mankin, Justin, Nicholas, Robert E., Rice, Jennie S., Roth, Samantha, Scheeler, Moira, Srikrishnan, Vivek, Tuana, Nancy, Vernon, Chris, Zhao, Mengqi, and Keller, Klaus. 2024. *Unlocking the Benefits of Transparent and Reusable Science for Climate-Risk Management*. DOI: 10.31219/osf.io/29nhv. URL: <https://osf.io/29nhv> (visited on 10/31/2024). Pre-published.

Pollack, Adam, **Doss-Gollin, James**, Srikrishnan, Vivek, and Keller, Klaus. 2024. *UNSAFE: An Uncertain Structure And Fragility Ensemble Framework for Property-Level Flood Risk Estimation*. DOI: 10.31219/osf.io/jb9ta. URL: <https://osf.io/jb9ta> (visited on 05/20/2024). Pre-published.

#### invited talks

**“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, 2024-03-27.

**“Quantifying and characterizing uncertain climate hazards to enable adaptive resilience”**, Atmospheric Sciences Seminar, *Texas A&M University*. College Station, TX, 2022-11-16.

**“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, 2022-04-29.

**“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, 2022-04-13.

**“Adapting Engineering Design Criteria to a Changing Climate: Insights from House Elevation”**, Technical Webinar, *ASCE Central New Jersey Branch*. Remote Presentation, 2022-04-12.

**“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, 2022-04-02.

**“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, 2022-01-25.

**“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, 2021-12-09.

**“Panelist”**, Tail events: Prediction, Planning, and Performance, *Harvard Electricity Policy Group*. Remote Presentation, 2021-09-28.

**“Towards Adaptive Resilience: Managing Flood Risks in a Changing World”**, Technical Webinar, *ASCE Central New Jersey Branch*. Remote Presentation, 2021-04-28.

**“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, 2020-01-29.

**“Prediction and Implications of Structured Climate Risk for Sequential Adaptation under Deep Uncertainty”**, Department of Civil and Environmental Engineering Seminar, *Rice University*. Houston, TX, 2020-01-27.

**“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, 2020-01-07.

**“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, 2016-09-02.

**“Understanding the Physical Drivers of Extreme Rainfall for Flood Prediction”**, Oxford Water Network, *Oxford University*. Oxford, England, 2016-08-26.

#### teaching

**Columbia University**

Environmental Data Analysis and Modeling. Teaching Assistant. Spring 2018.

**Rice University**

Fundamentals of Civil and Environmental Engineering. Instructor. Fall 2024.  
 Climate Risk Management. Instructor. Spring 2024.  
 Data Science Methods for Climate Hazard Assessment. Instructor. Fall 2023.  
 Climate Risk Management. Instructor. Spring 2023.  
 Environmental Data Science. Instructor. Spring 2022.  
 Fundamentals of Civil and Environmental Engineering. Instructor. Fall 2021.

primary  
advisor

**Current** Dongwook Kim, *Ph.D. in Civil and Environmental Engineering*, Rice University.  
**Current** Yuchen Lu, *Ph.D. in Civil and Environmental Engineering*, Rice University.  
**Current** Jonah Schaechter, *Ph.D. in Civil and Environmental Engineering*, Rice University.

committee  
member

**Current** True Furrh, *Ph.D. in Civil and Environmental Engineering*, Rice University.  
**Current** Kelsey Murphy, *Ph.D. in Earth, Environmental, and Planetary Sciences*, Rice University.  
**Current** Valeriia Sobolevskaia, *Ph.D. in Earth, Environmental, and Planetary Sciences*, Rice University.  
**2025** Karan Jakhar, *Ph.D. in Mechanical Engineering*, Rice University. Thesis: "Equation Discovery and Deep Learning for Geophysical Turbulence."  
**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."  
**2024** Kendall Capshaw, *Ph.D. in Civil and Environmental Engineering*, Rice University. Thesis: "Modeling Coastal Petrochemical Infrastructure Risk, Resilience, and Cascading Community Consequences."  
**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."  
**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."  
**2024** 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."  
**2023** 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."  
**2023** Xiangnan Zhou, *Ph.D. in Civil and Environmental Engineering*, Rice University. Thesis: "Resilience Planning for Water Distribution Systems."  
**2023** Mia Peeples, *M.S. in Civil and Environmental Engineering*, Rice University. Thesis: "Modeling Flood Reduction of Nature-Based Channel Modifications in Houston, TX."  
**2022** Chunshan Liu, *Ph.D. in Statistics*, Rice University. Thesis: "Bayesian Graphical Models for Multivariate Time Series."  
**2022** Raychel Bahnick, *M.S. in Civil and Environmental Engineering*, Rice University. Thesis: "Assessing Land Use Change and Subsidence Impact on Inland Flooding."  
**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."  
**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."  
**2021** 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."



media coverage

Historic Texas Flooding, **KEYE-AUS (CBS)**, 2025-07-25. *recorded video interview*.  
Houston's Morning Show, **Fox26 Houston**, 2025-07-10. *live video interview*.  
Breaking down the force of water in the Texas floods, *Michael Phillis*, **AP News**, 2025-07-10. *print*.  
Here are some things you can do to be better prepared for major flooding, *Caleigh Wells*, **Associated Press**, 2025-07-10. *print*.  
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., *Luke Jones*, **ABC13**, 2025-07-09. *recorded video interview*.  
After deadly flooding in Central Texas, state lawmakers look to prevent similar tragedies, *Daniel Perreault*, **KVUE**, 2025-07-09. *recorded video interview*.  
New Flood Warning System Greenlit Shortly Before Deadly Texas Disaster, *Joseph De Avila*, **The Wall Street Journal**, 2025-07-09. *print*.  
Questions arise on how emergency warning systems work after Central Texas flood, *Tom Abrahams*, **ABC13**, 2025-07-08. *print*.  
Bajo la Amenaza del Golfo (Under the Threat of the Gulf), **Telemundo Houston**, 2025-05-30. *recorded video interview*.  
Will Texas become too hot for humans?, *Sarah Griffiths*, **BBC Future**, 2023-06-30. *print*.  
Climate change has sent temperatures soaring in Texas, *Erin Douglas*, *Yuriko Schumacher* and *Alex Ford*, **The Texas Tribune**, 2023-06-27. *print*.  
Texas could have foreseen 2021 cold-wave disaster, new study concludes, *Bob Henson*, **Texas Climate News**, 2022-05-21. *print*.  
Opinion: The risks of climate change are great - so are the rewards of solving it, *Andrew Dessler*, *James Doss-Gollin*, and *Katherine Hayhoe*, **Houston Chronicle**, 2021-09-01. *print*.  
The False Comfort of Higher Seawalls, *Paola Rosa-Aquino*, **The New Republic**, 2019-10-29. *print*.  
New Study Shows Promise for Long-Term Weather Forecasts in South America, *Elisabeth Gawthrop*, **State of the Planet**, 2018-08-06. *print*.

opinion

Historic Texas Flooding, , **KEYE-AUS (CBS)**, 2025-07-25.  
Houston's Morning Show, , **Fox26 Houston**, 2025-07-10.  
Breaking down the force of water in the Texas floods, *Michael Phillis*, **AP News**, 2025-07-10.  
Here are some things you can do to be better prepared for major flooding, *Caleigh Wells*, **Associated Press**, 2025-07-10.  
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., *Luke Jones*, **ABC13**, 2025-07-09.  
After deadly flooding in Central Texas, state lawmakers look to prevent similar tragedies, *Daniel Perreault*, **KVUE**, 2025-07-09.  
New Flood Warning System Greenlit Shortly Before Deadly Texas Disaster, *Joseph De Avila*, **The Wall Street Journal**, 2025-07-09.  
Questions arise on how emergency warning systems work after Central Texas flood, *Tom Abrahams*, **ABC13**, 2025-07-08.  
Bajo la Amenaza del Golfo (Under the Threat of the Gulf), , **Telemundo Houston**, 2025-05-30.  
Will Texas become too hot for humans?, *Sarah Griffiths*, **BBC Future**, 2023-06-30.  
Climate change has sent temperatures soaring in Texas, *Erin Douglas*, *Yuriko Schumacher* and *Alex Ford*, **The Texas Tribune**, 2023-06-27.  
Texas could have foreseen 2021 cold-wave disaster, new study concludes, *Bob Henson*, **Texas Climate News**, 2022-05-21.  
Opinion: The risks of climate change are great - so are the rewards of solving it, *Andrew Dessler*, *James Doss-Gollin*, and *Katherine Hayhoe*, **Houston Chronicle**, 2021-09-01.

The False Comfort of Higher Seawalls, *Paola Rosa-Aquino*, **The New Republic**, 2019-10-29.  
 New Study Shows Promise for Long-Term Weather Forecasts in South America, *Elisabeth Gawthrop*, **State of the Planet**, 2018-08-06.

sessions  
organized

**Co-Organizer**, *Nature-Based Solutions for a Resilient Gulf Coast Workshop*, Rice University, Houston, TX. 2025-03-03.  
**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. 2023-12-13.  
**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. 2023-12-11.  
**Chair**, *H44G - Water and Society: Interdisciplinary Perspectives on Hydroclimatic Forecasting for Water Resources Decision Making*, American Geophysical Union Fall Meeting, New Orleans, LA. 2021-12-16.  
**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. 2019-12-23.  
**Student Organizer**, *Earth and Environmental Engineering Student Research Symposium*, Columbia University, New York, NY. 2018-10-12.  
**Student Organizer**, *Earth and Environmental Engineering Student Research Symposium*, Columbia University, New York, NY. 2017-10-27.

conference  
papers

Baule, William J., Nielsen-Gammon, John W., **Doss-Gollin, James**, and Niraula, Rewati. 2024. "TxRAIN-Future Projections: Non-stationary Projections of Extreme Precipitation for Texas". In: AGU24. AGU.  
 Cooperman, Alicia, Fuerte, Manuela Muñoz, **Doss-Gollin, James**, and Mayer, Alex S. 2024. "Before and After Piped Water Expansion: Water Use Patterns and Trust in Water and Political Institutions". In: AGU24. AGU.  
**Doss-Gollin, James**, Amonkar, Yash Vijay, and Duenas-Osorio, Leonardo. 2024. "Assessing and Managing Climate Risks to Electricity Systems in an Era of Climate Change and Energy Transition". In: AGU24. AGU.  
**Doss-Gollin, James**, Silva, Arlei, Sebastian, Antonia, Vergopolan, Noemi, and Nayak, Adam. 2024. "Advancing Urban Flood Hazard Characterization through Machine Learning: Challenges and Opportunities". In: AGU.  
 Kazadi, Arnold, **Doss-Gollin, James**, and Silva, Arlei. 2024. "Pluvial Flood Emulation with Hydraulics-Informed Message Passing". In: *Forty-First International Conference on Machine Learning*.  
 Lu, Yuchen, Lee, Benjamin Seiyon, **Doss-Gollin, James**, Nielsen-Gammon, John W., and Niraula, Rewati. 2024. "TxRAIN-Observational: A Hierarchical Bayesian Spatial Framework to Assess Nonstationary Rainfall Intensity, Frequency, and Duration in Texas". In: AGU24. AGU.  
 Murphy, Kelsey, Dee, Sylvia, Wallace, Elizabeth Jane, Pitchon, Emilia, **Doss-Gollin, James**, and Munoz, Samuel E. 2024. "Last Millennium Changes in Mississippi River Basin Hydroclimate Driven by Anthropogenic Forcing and Atmospheric Dynamics". In: AGU24. AGU.  
 Nielsen-Gammon, John W., Lu, Yuchen, and **Doss-Gollin, James**. 2024. "Cross-Network Intercomparison of 5-Minute and 15-Minute Gauge-Measured Precipitation Extremes in the South-Central United States". In: AGU24. AGU.  
 O'Donnell, Michelle, Dee, Sylvia, **Doss-Gollin, James**, and Munoz, Samuel E. 2024. "Mechanisms of Hydroclimate Whiplash Over the Mississippi River Basin". In: AGU24. AGU.  
 Cooperman, Alicia, Fuerte, Manuela Muñoz, **Doss-Gollin, James**, Mayer, Alex S., and Walker, W. Shane. 2023. "H33P-1999: Before and After Piped Water Expansion: Water Use Patterns and Trust in Water and Political Institutions". In: AGU23. AGU.

- Doss-Gollin, James**, Lu, Yuchen, Nielsen-Gammon, John W., Niraula, Rewati, and Lee, Benjamin Seiyon. 2023. "NH14B-07: Linking Robust Trends in Observations and Models to Develop Nonstationary Rainfall Frequency Grids for the State of Texas". In: AGU23. AGU.
- Lu, Yuchen, Lee, Benjamin Seiyon, and **Doss-Gollin, James**. 2023. "H21T-1602: Spatially Varying Covariate Model: A Hierarchical Bayesian Framework for Precipitation Frequency Analysis in the Gulf Coast". In: AGU23. AGU.
- Murphy, Kelsey, Dee, Sylvia, Munoz, Samuel E., Pitchon, Emilia, Wallace, Elizabeth Jane, O'Donnell, Michelle, and **Doss-Gollin, James**. 2023. "PP33E-1563: Last Millennium Changes in Mississippi River Basin Hydrology Driven by the Bermuda High and Great Plains Low Level Jet". In: AGU23. AGU.
- Amonkar, Yash Vijay, **Doss-Gollin, James**, Farnham, David J., Modi, Vijay, and Lall, Upmanu. 2022. "GC42N-0889: Changing Climate, Peak Demand and Load Factors across the Contiguous United States". In: Fall Meeting 2022. AGU.
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presentations

"Robust Trends in Extreme Rainfall Probabilities in Texas", 2025 Texas Climate Conference, *Rice University and Texas A&M University*. Houston, TX. Oral Presentation. 2025-04-10.

"Use-inspired tools for climate hazard assessment", Nature-Based Solutions for a Resilient Gulf Coast Workshop, *Rice University*. Houston, TX. Oral Presentation. 2025-03-04.

"Advancing Urban Flood Hazard Characterization through Machine Learning: Challenges and Opportunities", American Geophysical Union Fall Meeting 2024, AGU. Washington, DC. Oral Presentation. 2024-12-13.

- "TxRAIN-Observational: A Hierarchical Bayesian Spatial Framework to Assess Non-stationary Rainfall Intensity, Frequency, and Duration in Texas"**, American Geophysical Union Fall Meeting 2024, AGU. Washington, DC. Oral Presentation. 2024-12-10.
- "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. Oral Presentation. 2024-12-10.
- "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. Oral Presentation. 2024-10-01.
- "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. Oral Presentation. 2023-12-12.
- "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. Oral Presentation. 2023-12-11.
- "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. Oral Presentation. 2023-11-10.
- "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. Oral Presentation. 2022-12-15.
- "H35F-07: Near-term Predictability Lowers Long-Term Adaptation Costs"**, American Geophysical Union Fall Meeting 2022, AGU. Chicago, IL. Oral Presentation. 2022-12-14.
- "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 Presentation. 2021-12-14.
- "A14H-03: How Unprecedented Was the February 2021 Texas Cold Snap?"**, American Geophysical Union Fall Meeting 2021, AGU. New Orleans, LA. Oral Presentation. 2021-12-13.
- "Valuing Flexibility and Soft Instruments for Sequential Decision Problems"**, 2020 Annual Meeting, *Society for Decision Making under Deep Uncertainty*. . Remote Presentation. 2020-11-11.
- "H11G-07: Towards Adaptive Resilience: Managing Uncertainties and Exploiting Predictability across Timescales"**, American Geophysical Union Fall Meeting 2019, AGU. San Francisco, CA. Oral Presentation. 2019-12-09.
- "Adaptive Resilience through Real Options and Deep Reinforcement Learning"**, Doctoral Consortium on Computational Sustainability, *Carnegie Mellon University*. Pittsburgh, PA. Oral Presentation. 2019-10-19.
- "Evaluating Staged Investments in Critical Infrastructure for Climate Adaptation"**, 2019 Interdisciplinary Ph.D. Workshop in Sustainable Development, *Columbia University*. New York, NY. Oral Presentation. 2019-04-12.
- "H52F-05: Robust Adaptation to Cyclical Climate Risk"**, American Geophysical Union Fall Meeting 2018, AGU. Washington, DC. Oral Presentation. 2018-12-14.
- "Robust Adaptation to Multi-Scale Climate Variability"**, The Nexus of Climate Data, Insurance, and Adaptive Capacity, . Asheville, NC. Poster Presentation. 2018-11-08.
- "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. Oral Presentation. 2017-12-01.
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**“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. Oral Presentation. 2017-09-10.

**“Regional Intense Precipitation: Inferences From GCM Atmospheric Circulation Fields”,** Modeling Research in the Cloud, *National Center for Atmospheric Research*. Boulder, CO. Poster Presentation. 2017-05-31.

**“Statistical-Dynamical Analysis of Climate Projections for Flood Infrastructure Design”,** Interdisciplinary Ph.D. Workshop in Sustainable Development 2017, *Columbia University*. New York, NY. Oral Presentation. 2017-04-21.

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Water Resources Research  
Water Security  
Weather, Climate, and Society

grant review Department of Energy (BER)  
National Science Foundation

external review 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.