Rice University
Department of Civil and Environmental Engineering
6100 Main Street, Ryon Lab 204-MS 318
Houston, TX, 77005

jdossgollin@rice.edu
https://dossgollin-lab.github.io/
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

appointments

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

education

Ph.D., Earth & Environmental Engineering, Columbia University, 2020
M.S., Earth & Environmental Engineering, Columbia University, 2016
B.S., Mechanical Engineering, Yale University, 2011

awards

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

publications

Peer-Reviewed Journal Articles

Doss-Gollin, J., Farnham, D. J., Ho, M., and Lall, U. 2020. "Adaptation over Fatalism: Leveraging High-Impact Climate Disasters to Boost Societal Resilience". *Journal of Water Resources Planning and Management* **146**.(4). DOI: 10.1061/(asce)wr.1943-5452.0001190.

Rözer, V., Kreibich, H., Schröter, K., Müller, M., Sairam, N., **Doss-Gollin, J.**, Lall, U., and Merz, B. 2019. "Probabilistic Models Significantly Reduce Uncertainty in Hurricane Harvey Pluvial Flood Loss Estimates". *Earth's Future* 7.(4). DOI: 10.1029/2018ef001074.

Doss-Gollin, J., Farnham, D. J., Steinschneider, S., and Lall, U. 2019. "Robust Adaptation to Multiscale Climate Variability". *Earth's Future* 7.(7). DOI: 10.1029/2019ef001154.

Doss-Gollin, J., Muñoz, Á. G., Mason, S. J., and Pastén, M. 2018. "Heavy Rainfall in Paraguay during the 2015-2016 Austral Summer: Causes and Sub-Seasonal-to-Seasonal Predictive Skill". *Journal of Climate* **31**.(17), 6669–6685. DOI: 10.1175/jcli-d-17-0805.1.

Farnham, D. J., **Doss-Gollin, J.**, and Lall, U. 2018. "Regional Extreme Precipitation Events: Robust Inference from Credibly Simulated GCM Variables". *Water Resources Research* **54**.(6). DOI: 10.1002/2017wr021318.

Doss-Gollin, J., de Souza Filho, F. d. A., and da Silva, F. O. E. 2015. "Analytic Modeling of Rainwater Harvesting in the Brazilian Semiarid Northeast". *Journal of the American Water Resources Association* **52**.(1), 129–137. DOI: 10.1111/1752-1688.12376.

Articles Under Review or Forthcoming

Doss-Gollin, J., Farnham, D. J., Lall, U., and Modi, V. 2021. "How Unprecedented Was the February 2021 Texas Cold Snap?"

Dissertation

Doss-Gollin, J. 2020. "Sequential Adaptation through Prediction of Structured Climate Risk". Columbia University. DOI: 10.7916/d8-p9ha-a055.

Conference Proceedings

Amonkar, Y. V., **Doss-Gollin, J.**, and Lall, U. 2019. "Preserving Long-Term Variability in Simulation of Multisite Streamflow Extremes". In: *American Geophsyical Union Fall Meeting*. San Francisco, CA. DOI: 10.6084/m9.figshare.11444238.v1.

Doss-Gollin, J., Lall, U., and Lamontagne, J. 2019. "Towards Adaptive Resilience: Managing Uncertainties and Exploiting Predictability across Timescales". In: *American Geophsyical Union Fall Meeting*. San Francisco, CA. DOI: 10.6084/m9.figshare.11397936.v1.

Doss-Gollin, J., Farnham, D. J., Steinschneider, S., and Lall, U. 2018. "Robust Adaptation to Cyclical Climate Risk". In: *American Geophsyical Union Fall Meeting*. Washington, DC. DOI: 10.13140/rg.2.2.28447.20649.

Rözer, V., Kreibich, H., Schröter, K., **Doss-Gollin, J.**, Lall, U., and Merz, B. 2017. "BN-FLEMOps Pluvial - A Probabilistic Multi-Variable Loss Estimation Model for Pluvial Floods". In: *American Geophsyical Union Fall Meeting*. New Orleans, LA.

Doss-Gollin, J., Muñoz, Á. G., Mason, S. J., and Pastén, M. 2017. "Causes and Model Skill of the Persistent Intense Rainfall and Flooding in Paraguay during the Austral Summer 2015-2016". In: *American Geophsyical Union Fall Meeting*. New Orleans, LA. DOI: 10.13140/rg.2.2.20146.30406.

Doss-Gollin, J., Farnham, D. J., and Lall, U. 2017. "Designing and Operating Infrastructure for Nonstationary Flood Risk Management". In: *American Geophsyical Union Fall Meeting*. New Orleans, LA. DOI: 10.13140/rg.2.2.16110.46403.

Faranda, D., Messori, G., **Doss-Gollin, J.**, Farnham, D. J., Lall, U., and Yiou, P. 2017. "Dynamics and Thermodynamics of Weather Extremes: A Dynamical Systems Approach". In: *American Geophsyical Union Fall Meeting*. New Orleans, LA.

Spence, C. M., Brown, C., and **Doss-Gollin, J.** 2016. "Exploiting Synoptic-Scale Climate Processes to Develop Nonstationary, Probabilistic Flood Hazard Projections". In: *American Geophysical Union Fall Meeting*. San Francisco, CA.

Doss-Gollin, J., Farnham, D. J., and Lall, U. 2016. "Global-Local Interactions Modulate Tropical Moisture Exports to the Ohio River Basin". In: *American Geophsyical Union Fall Meeting*. San Francisco, CA. DOI: 10.13140/rg.2.2.36009.19044.

Farnham, D. J., **Doss-Gollin, J.**, and Lall, U. 2016. "Space-Time Characteristics and Statistical Predictability of Extreme Daily Precipitation Events in the Ohio River Basin". In: *American Geophsyical Union Fall Meeting*. San Francisco, CA.

Farnham, D. J., Lall, U., Kwon, H.-H., and **Doss-Gollin, J.** 2015. "Moisture Transport and Extreme Precipitation in Mid-Latitudes". In: *American Geophsyical Union Fall Meeting*. San Francisco, CA.

Araújo Júnior, L. M., de Souza Filho, F. d. A., da Silva Silveira, C., Aragão Dias, T., and **Doss-Gollin, J.** 2014. "Análise dos eventos de seca no Nordeste Setentrional Brasileiro com base no índice de precipitação normalizada". In: *XII Simpósio de Recursos Hídricos Do Nordeste*. Natal, Rio Grande do Norte, Brasil: Associação Brasileira de Recursos Hídricos (ABRH). DOI: 10.13140/rg.2.1.4610.7685.

Doss-Gollin, J., de Souza Filho, F. d. A., and da Silva, F. O. E. 2014. "Considerações sobre a sustentabilidade hídrica de cisternas para captação de chuva no Semiárido Brasileiro". In: *XII Simpósio de Recursos Hídricos Do Nordeste*. Natal, Rio Grande do Norte, Brasil: Associação Brasileira de Recursos Hídricos (ABRH). DOI: 10.13140/rg.2.1.4086.4807.

invited talks

"**Towards Adaptive Resilience: Decision and Policy Support for Household Flood Risk Management**", Summer Seminar Series, *Columbia University Department of Earth and Environmental Engineering*. Remote. Aug. 2020.

"**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. Jan. 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. Jan. 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. Jan. 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. Sept. 2016.

"**Understanding the Physical Drivers of Extreme Rainfall for Flood Prediction**", Oxford Water Network, *Oxford University*. Oxford, England. Aug. 2016.

workshop presentations

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

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

"**Robust Adaptation to Multi-Scale Climate Variability**", The Nexus of Climate Data, Insurance, and Adaptive Capacity, . Asheville, NC. Poster Presentation. Nov. 2018.

"**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. Sept. 2017.

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

"**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. Apr. 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 Pre-

dictability of Extreme Weather and Climate, *Columbia University*. New York, NY. Poster Presentation. Dec. 2016.

teaching

Columbia University

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

outreach

Taught session on multi-objective robust decision-making, SCRiM Summer School. 2018, 2019.

service

Associate Deputy Editor, *Climatic Change*. 2021–present.

Co-Chair, MultiSector Dynamics Working Group on Uncertainty Quantification and Scenario Development. 2019–present.

Member, MultiSector Dynamics Community of Practice Scientific Steering Group. 2019–present.

Co-Convener and Co-Chair, AGU Session on MultiSector Dynamics: Science and Modeling for Societal Transformations II. 2020.

Co-Guest Editor, *Water*. Special Issue on 'Climate Model Projections: Sea-Level Rise and Impacts on Coastal Defense Decision-Making'. Forthcoming.

professional experience

Research Assistant, Brownson Solar Research Group, Pennsylvania State University). 2011–2014

Technical Editor, Journal of Modern Dynamics). 2008–2010