

# James Doss-Gollin

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

✉ [jdossgollin@psu.edu](mailto:jdossgollin@psu.edu)  
🏠 [jdossgollin.github.io](https://jdossgollin.github.io)  
🔄 [jdossgollin](https://github.com/jdossgollin)  
🆔 0000-0002-3428-2224  
🔑 6ifLBBsAAAAJ

## RESEARCH INTERESTS

- Climate risk management and adaptation
- Planning, optimization, and policy search under deep uncertainty
- Dynamics and spatiotemporal clustering of hydroclimate extremes
- Probabilistic modeling and uncertainty quantification

## PROFESSIONAL APPOINTMENTS

<i>Rice University</i>	<b>Assistant Professor</b> , Department of Civil and Environmental Engineering	2021–
<i>Penn State</i>	<b>Postdoctoral Scholar</b> , Earth and Environmental Systems Institute	2020

## EDUCATION

<i>Columbia</i>	<b>Ph.D.</b> , Earth and Environmental Engineering	2020
	<b>M.S.</b> , Earth and Environmental Engineering	2016
<i>Yale University</i>	<b>B.S. cum laude</b> , Mechanical Engineering	2015

## HONORS, FELLOWSHIPS, AND AWARDS

<i>Graduate Study</i>	<b>Nickolas and Liliana Themelis Fellowship</b> , <i>Fu Foundation School of Engineering and Applied Science</i> , Columbia University.	2018
	<b>Graduate Research Fellowship</b> , <i>Climate and Large-Scale Atmospheric Dynamics</i> , National Science Foundation.	2017
	<b>Presidential Distinguished Fellowship</b> , <i>Fu Foundation School of Engineering and Applied Science</i> , Columbia University.	2015
<i>Undergraduate Study</i>	<b>Distinction in Major</b> , <i>Department of Mechanical Engineering and Materials Science</i> , 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

## PUBLICATIONS

<i>Journal Publications</i>	<p><b>Doss-Gollin, James</b>, Farnham, David J., Ho, Michelle, and Lall, Upmanu. "Adaptation over Fatalism: Leveraging High-Impact Climate Disasters to Boost Societal Resilience". <i>Journal of Water Resources Planning and Management</i> 146.4. doi: 10.1061/(ASCE)WR.1943-5452.0001190 2020</p> <p>Rözer, Viktor, Kreibich, Heidi, Schröter, Kai, Müller, Meike, Sairam, Nivedita, <b>Doss-Gollin, James</b>, Lall, Upmanu, and Merz, Bruno. "Probabilistic Models Significantly Reduce Uncertainty in Hurricane Harvey Pluvial Flood Loss Estimates". <i>Earth's Future</i> 7.4. doi: 10.1029/2018EF001074 2019</p> <p><b>Doss-Gollin, James</b>, Farnham, David J., Steinschneider, Scott, and Lall, Upmanu. "Robust Adaptation to Multiscale Climate Variability". <i>Earth's Future</i> 7.7. doi: 10.1029/2019EF001154 2019</p> <p>Farnham, David J, <b>Doss-Gollin, James</b>, and Lall, Upmanu. "Regional Extreme Precipitation Events: Robust Inference from Credibly Simulated GCM Variables". <i>Water Resources Research</i> 54.6. doi: 10.1002/2017wr021318 2018</p> <p><b>Doss-Gollin, James</b>, Muñoz, Ángel G, Mason, Simon J, and Pastén, Max. "Heavy Rainfall in Paraguay during the 2015-2016 Austral Summer: Causes and Sub-Seasonal-to-Seasonal Predictive Skill". <i>Journal of Climate</i> 31.17. doi: 10.1175/JCLI-D-17-0805.1 2018</p>
<i>Dissertation</i>	<p><b>Doss-Gollin, James</b>. "Sequential Adaptation through Prediction of Structured Climate Risk". PhD thesis. Columbia University. doi: 10.7916/d8-p9ha-a055 2020</p>
<i>Conference</i>	<p>Amonkar, Yash Vijay, <b>Doss-Gollin, James</b>, and Lall, Upmanu. "Preserving Long-Term Variability in Simulation of Multisite Streamflow Extremes". <i>American Geophysical Union Fall Meeting</i>. San Francisco, CA. doi: 10.6084/m9.figshare.11444238.v1 2019</p> <p><b>Doss-Gollin, James</b>, Lall, Upmanu, and Lamontagne, Jonathan. "Towards Adaptive Resilience: Managing Uncertainties and Exploiting Predictability across Timescales". <i>American Geophysical Union Fall Meeting</i>. San Francisco, CA. doi: 10.6084/m9.figshare.11397936.v1 2019</p> <p><b>Doss-Gollin, James</b>, Farnham, David J, Steinschneider, Scott, and Lall, Upmanu. "Robust Adaptation to Cyclical Climate Risk". <i>American Geophysical Union Fall Meeting</i>. Washington, DC. doi: 10.13140/RG.2.2.28447.20649 2018</p> <p><b>Doss-Gollin, James</b>, Muñoz, Ángel G, Mason, Simon J, and Pastén, Max. "Causes and Model Skill of the Persistent Intense Rainfall and Flooding in Paraguay during the Austral Summer 2015-2016". <i>American Geophysical Union Fall Meeting</i>. New Orleans, LA. doi: 10.13140/RG.2.2.20146.30406 2017</p> <p><b>Doss-Gollin, James</b>, Farnham, David J, and Lall, Upmanu. "Designing and Operating Infrastructure for Nonstationary Flood Risk Management". <i>American Geophysical Union Fall Meeting</i>. New Orleans, LA. doi: 10.13140/RG.2.2.16110.46403 2017</p> <p>Faranda, Davide, Messori, Gabriele, <b>Doss-Gollin, James</b>, Farnham, David J, Lall, Upmanu, and Yiou, Pascal. "Dynamics and Thermodynamics of Weather Extremes: A Dynamical Systems Approach". <i>American Geophysical Union Fall Meeting</i>. New Orleans, LA 2017</p>

- Rözer, Viktor, Kreibich, Heidi, Schröter, Kai, **Doss-Gollin, James**, Lall, Upmanu, and Merz, Bruno. "BN-FLEMOps Pluvial - A Probabilistic Multi-Variable Loss Estimation Model for Pluvial Floods". *American Geophysical Union Fall Meeting*. New Orleans, LA 2017
- Doss-Gollin, James**, Farnham, David J, and Lall, Upmanu. "Global-Local Interactions Modulate Tropical Moisture Exports to the Ohio River Basin". *American Geophysical Union Fall Meeting*. San Francisco, CA. doi: 10.13140/RG.2.2.36009.19044 2016
- Farnham, David J, **Doss-Gollin, James**, and Lall, Upmanu. "Space-Time Characteristics and Statistical Predictability of Extreme Daily Precipitation Events in the Ohio River Basin". *American Geophysical Union Fall Meeting*. San Francisco, CA 2016
- Spence, Caitlin M, Brown, Casey, and **Doss-Gollin, James**. "Exploiting Synoptic-Scale Climate Processes to Develop Nonstationary, Probabilistic Flood Hazard Projections". *American Geophysical Union Fall Meeting* 2016
- Doss-Gollin, James**, de Souza Filho, Francisco de Assis, and da Silva, Francisco Osny Enéas. "Analytic Modeling of Rainwater Harvesting in the Brazilian Semiarid Northeast". *Journal of the American Water Resources Association* 52.1. doi: 10.1111/1752-1688.12376 2015
- Farnham, David J, Lall, Upmanu, Kwon, Hyun-Han, and **Doss-Gollin, James**. "Moisture Transport and Extreme Precipitation in Mid-Latitudes". *American Geophysical Union Fall Meeting*. San Francisco, CA 2015
- Araújo Júnior, Luiz Martins, de Souza Filho, Francisco de Assis, da Silva Silveira, Cleiton, Aragão Dias, Tyhago, and **Doss-Gollin, James**. "Análise dos eventos de seca no Nordeste Setentrional Brasileiro com base no índice de precipitação normalizada". *XII Simpósio de Recursos Hídricos Do Nordeste*. Natal, Rio Grande do Norte, Brasil: Associação Brasileira de Recursos Hídricos (ABRH). doi: 10.13140/RG.2.1.4610.7685 2014
- Doss-Gollin, James**, de Souza Filho, Francisco de Assis, and da Silva, Francisco Osny Enéas. "Considerações sobre a sustentabilidade hídrica de cisternas para captação de chuva no Semiárido Brasileiro". *XII Simpósio de Recursos Hídricos Do Nordeste*. Natal, Rio Grande do Norte, Brasil: Associação Brasileira de Recursos Hídricos (ABRH). doi: 10.13140/RG.2.1.4086.4807 2014
- In Preparation* Amonkar, Yash Vijay, **Doss-Gollin, James**, and Lall, Upmanu. "Diagnosis, Simulation and Prediction of Inter-Annual and Longer Variations of Multi-Site, Annual Maximum Streamflow at a Regional Scale in the Ohio River Basin"
- Doss-Gollin, James**, Lall, Upmanu, and Lamontagne, Jonathan R. "Near-Term Predictability Can Lower Long-Term Adaptation Costs"
- Doss-Gollin, James**, Lall, Upmanu, and Cohn, Timothy A. "Nonparametric Estimation of Autocorrelation Functions and Spectra of Irregularly Sampled Data"

## TALKS AND PRESENTATIONS

<i>Invited Talks</i>	<b>Towards Adaptive Resilience: Decision and Policy Support for Household Flood Risk Management</b> , <i>Department of Earth and Environmental Engineering Summer Seminar</i> , Columbia University.	2020-08-21
	<b>Prediction and Implications of Structured Climate Risk for Sequential Adaptation under Deep Uncertainty</b> , <i>Center for Climate Risk Management CLIMA Seminar</i> , the Pennsylvania State University, State College, PA.	2020-01-29
	<b>Prediction and Implications of Structured Climate Risk for Sequential Adaptation under Deep Uncertainty</b> , <i>Department of Civil and Environmental Engineering</i> , Rice University, Houston, TX.	2020-01-27
	<b>Prediction and Implications of Structured Climate Risk for Sequential Adaptation under Deep Uncertainty</b> , <i>Complex Systems Simulation and Optimization Group</i> , National Renewable Energy Laboratory, Golden, CO.	2020-01-07
	<b>Drivers of Extreme Rainfall: Atmospheric Circulation Patterns and Regional Intense Rainfall in the Ohio River Basin</b> , <i>European Flood Awareness System Group</i> , European Centre for Medium Range Weather Forecasting, Reading, England.	2016-09-02
	<b>Understanding the Physical Drivers of Extreme Rainfall for Flood Prediction</b> , <i>Oxford Water Network</i> , Oxford University, Oxford, England.	2016-08-26
<i>Workshop Presentations</i>	<b>Adaptive Resilience through Real Options and Deep Reinforcement Learning</b> , <i>Doctoral Consortium on Computational Sustainability</i> , Carnegie Mellon University, Pittsburgh, PA. Oral Presentation.	2019-10-18
	<b>Evaluating Staged Investments in Critical Infrastructure for Climate Adaptation</b> , <i>Interdisciplinary Ph.D. Workshop in Sustainable Development</i> , Columbia University, New York, NY. Oral Presentation.	2019-04-13
	<b>Robust Adaptation to Multi-Scale Climate Variability</b> , <i>The Nexus of Climate Data, Insurance, and Adaptive Capacity</i> , Asheville, NC. Poster Presentation.	2018-11-08
	<b>Extreme Rainfall in Paraguay During the 2015-16 Austral Summer</b> , <i>North East Graduate Student Water Symposium</i> , University of Massachusetts Amherst, Amherst, MA. Oral Presentation.	2017-09-10
	<b>Regional Intense Precipitation: Inferences From GCM Atmospheric Circulation Fields</b> , <i>Modeling Research in the Cloud</i> , NCAR, Boulder, Colorado. Poster Presentation.	2017-05-31
	<b>Statistical-Dynamical Analysis of Climate Projections for Flood Infrastructure Design</b> , <i>Interdisciplinary Ph.D. Workshop in Sustainable Development 2017</i> , Columbia University, New York, NY. Oral Presentation.	2017-04-21
	<b>Physical Mechanisms and Subseasonal-to-Seasonal Predictability of Persistent Intense Rainfall and Paraguay River Flooding During the Austral Summer 2015/2016</b> , <i>Workshop on Subseasonal to Seasonal Predictability of Extreme Weather and Climate</i> , Columbia University, New York, NY. Poster Presentation.	2016-12-07

## PUBLIC OUTREACH

<i>Media Coverage</i>	<b>The False Comfort of Higher Seawalls</b> , Paola Rosa-Aquino, The New Republic	2019-10-29
	<b>Panelist</b> , <i>Liquid Futures: Envisioning a World with Water for All</i> , Lenfest Center for the Arts, Columbia University, New York, NY.	2019-09-21
	<b>New Study Shows Promise for Long-Term Weather Forecasts in South America</b> , Elisabeth Gawthrop, State of the Planet.	2018-08-06

## PROFESSIONAL ENGAGEMENT

<i>Peer Review</i>	A verified review is available on Publons: <ul style="list-style-type: none"><li>• Hydrology and Earth System Sciences</li><li>• Journal of Applied Meteorology and Climatology</li><li>• Journal of Hydrology</li><li>• Journal of Water Resources Management and Planning</li><li>• Oxford Journal of Development Studies</li><li>• Water Resources Research</li><li>• Water Security</li></ul>	
<i>Workshops and Sessions Organized</i>	<b>Primary Convenor</b> , <i>51A: Emerging Needs and Approaches for Climate Services: Understanding and Developing Innovative Approaches to User-Oriented Climate Services</i> , American Geophysical Union Fall Meeting, San Francisco, CA.	2019-12-23
	<b>Student Organizer</b> , <i>Earth and Environmental Engineering Student Research Symposium</i> , Columbia University, New York, NY.	2018-10-12
	<b>Student Organizer</b> , <i>Earth and Environmental Engineering Student Research Symposium</i> , Columbia University, New York, NY.	2017-10-27

## TEACHING

<i>Columbia University</i>	<b>Teaching Assistant</b> , <i>Environmental Data Modeling and Analysis</i> .	2017
	<b>Guest Lecturer</b> , <i>Water Systems Analysis</i> .	2017
<i>Non-Academic</i>	<b>Python and Data Science Facilitator</b> , <i>Oliver Wyman Group</i>	

## FURTHER EXPERIENCE

<i>Graduate Study</i>	<b>Visiting Graduate Researcher</b> , <i>Lamontagne Research Group</i> , Department of Civil and Environmental Engineering, Tufts University, Medford, MA.	2019–2020
	<b>Graduate Research Fellow</b> , <i>Columbia Water Center</i> , Department of Earth and Environmental Engineering, Columbia University, New York, NY.	2015–2020
	<b>Summer Intern</b> , <i>Education Policy Initiative</i> , Elm City Communities / New Haven Housing Authority, New Haven, CT.	2015
<i>Undergraduate Study</i>	<b>President</b> (2014), Design Lead (2013), Member (2012, 2015), <i>Engineers Without Borders</i> , Yale Student Chapter, New Haven, CT.	2012 – 2015
	<b>Founder and President</b> , <i>New Haven REACH</i> , New Haven, CT.	2012–2015

<b>Visiting Undergraduate Researcher</b> , <i>Water and Climate Risk Lab</i> , Department of Hydraulic and Environmental Engineering, Universidade Federal do Ceará, Fortaleza, Brazil.	2014
<b>Undergraduate Research Assistant</b> , <i>Lab of Jaehong Kim</i> , Department of Chemical and Environmental Engineering, Yale University, New Haven, CT.	2014–2015
<b>Mechanical Design Intern</b> , <i>Slingshot Team</i> , DEKA Research & Development, Manchester, NH.	2012
<b>Undergraduate Research Assistant</b> , <i>Lab of Jan Schroers</i> , Department of Mechanical Engineering and Materials Science, Yale University, New Haven, CT.	2012
<b>Summer Intern</b> , <i>Ikatú Agua Project</i> , Fundación Paraguaya, Asunción, Paraguay	2012

## OTHER SKILLS

<i>Computer Skills</i>	LANGUAGES	Julia, Python, R, Matlab, C++
	COMMUNICATION	L <sup>A</sup> T <sub>E</sub> X, Markdown, Jupyter, RMarkdown, Jekyll
	REPRODUCIBILITY	git, Snakemake, GNU Make
	MODELING	stan, Turing, PyMC, Keras, Tensorflow
<i>Languages</i>	ENGLISH	Native language
	SPANISH	Full professional proficiency
	PORTUGUESE	Professional working proficiency
	ITALIAN	Elementary proficiency
	FRENCH	Elementary proficiency
	GUARANI	Basic