James Doss-Gollin

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RESEARCH INTERESTS

- Climate risk management and adaptation
- Dynamic planning under uncertainty
- Hydroclimate extremes and dynamics
- Risk analysis and uncertainty quantification

PROFESSIONAL APPOINTMENTS

Rice University	**Assistant Professor**, Department of Civil and Environmental Engineering	*2021–*
	Adjunct Professor, Department of Civil and Environmental Engineering	*2020*
Penn State	**Postdoctoral Scholar**, Earth and Environmental Systems Institute	*2020*

EDUCATION

Columbia	**Ph.D.**, Earth and Environmental Engineering	*2020*
	M.S., Earth and Environmental Engineering	*2016*
Yale University	**B.S.** *cum laude*, Mechanical Engineering	*2015*

HONORS, FELLOWSHIPS, AND AWARDS

Graduate Study	**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*
Undergraduate Study	**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

Journal Publications

Doss-Gollin, James, Farnham, David J., Ho, Michelle, and Lall, Upmanu. "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 — *2020*

Rözer, Viktor, Kreibich, Heidi, Schröter, Kai, Müller, Meike, Sairam, Nivedita, **Doss-Gollin, James**, Lall, Upmanu, and Merz, Bruno. "Probabilistic Models Significantly Reduce Uncertainty in Hurricane Harvey Pluvial Flood Loss Estimates". *Earth's Future* 7.4. DOI: 10.1029/2018EF001074 — *2019*

Doss-Gollin, James, Farnham, David J., Steinschneider, Scott, and Lall, Upmanu. "Robust Adaptation to Multiscale Climate Variability". *Earth's Future* 7.7. DOI: 10.1029/2019EF001154 — *2019*

Farnham, David J, **Doss-Gollin, James**, and Lall, Upmanu. "Regional Extreme Precipitation Events: Robust Inference from Credibly Simulated GCM Variables". *Water Resources Research* 54.6. DOI: 10.1002/2017wr021318 — *2018*

Doss-Gollin, James, 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". *Journal of Climate* 31.17. DOI: 10.1175/JCLI-D-17-0805.1 — *2018*

Dissertation

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

Conference

Amonkar, Yash Vijay, **Doss-Gollin, James**, and Lall, Upmanu. "Preserving Long-Term Variability in Simulation of Multisite Streamflow Extremes". *American Geophsyical Union Fall Meeting*. San Francisco, CA. DOI: 10.6084/m9.figshare.11444238.v1 — *2019*

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

Doss-Gollin, James, Farnham, David J, Steinschneider, Scott, and Lall, Upmanu. "Robust Adaptation to Cyclical Climate Risk". *American Geophsyical Union Fall Meeting*. Washington, DC. DOI: 10.13140/RG.2.2.28447.20649 — *2018*

Doss-Gollin, James, 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". *American Geophsyical Union Fall Meeting*. New Orleans, LA. DOI: 10.13140/RG.2.2.20146.30406 — *2017*

Doss-Gollin, James, Farnham, David J, and Lall, Upmanu. "Designing and Operating Infrastructure for Nonstationary Flood Risk Management". *American Geophsyical Union Fall Meeting*. New Orleans, LA. DOI: 10.13140/RG.2.2.16110.46403 — *2017*

Faranda, Davide, Messori, Gabriele, **Doss-Gollin, James**, Farnham, David J, Lall, Upmanu, and Yiou, Pascal. "Dynamics and Thermodynamics of Weather Extremes: A Dynamical Systems Approach". *American Geophsyical Union Fall Meeting*. New Orleans, LA — *2017*

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 Geophsyical 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 Geophsyical 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 Geophsyical 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 Geophsyical 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

Invited Talks	**Towards Adaptive Resilience: Decision and Policy Support for Household Flood Risk Management**, *Department of Earth and Environmental Engineering Summer Seminar*, Columbia University.	*2020-08-21*
	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*, 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 Basin, *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*
Workshop Presentations	**Adaptive Resilience through Real Options and Deep Reinforecement Learning**, *Doctoral Consortium on Computational Sustainability*, Carnegie Mellon University, Pittsburgh, PA. Oral Presentation.	*2019-10-18*
	Evaluating Staged Investments in Critical Infrastructure for Climate Adaptation,*Interdisciplinary Ph.D. Workshop in Sustainable Development*, Columbia University,New York, NY. Oral Presentation.	*2019-04-13*
	Robust Adaptation to Multi-Scale Climate Variability, *The Nexus of Climate Data, Insurance, and Adaptive Capacity*, Asheville, NC. Poster Presentation.	*2018-11-08*
	Extreme Rainfall in Paraguay During the 2015-16 Austral Summer, *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*, NCAR, Boulder, Colorado. 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*
	Physical Mechanisms and Subseasonal-to-Seasonal Predictability of Persistent Intense Rainfall and Paraguay River Flooding During the Austral Summer 2015/2016, *Workshop on Subseasonal to Seasonal Predictability of Extreme Weather and Climate*, Columbia University, New York, NY. Poster Presentation.	*2016-12-07*

PUBLIC OUTREACH

Media Coverage

The False Comfort of Higher Seawalls, *Paola Rosa-Aquino*, The New Republic — *2019-10-29*

Panelist, *Liquid Futures: Envisioning a World with Water for All*, Lenfest Center for the Arts, Columbia University, New York, NY. — *2019-09-21*

New Study Shows Promise for Long-Term Weather Forecasts in South America, *Elisabeth Gawthrop*, State of the Planet. — *2018-08-06*

PROFESSIONAL ENGAGEMENT

Peer Review

A verified review is available on Publons:

- Hydrology and Earth System Sciences
- Journal of Applied Meteorology and Climatology
- Journal of Hydrology
- Journal of Water Resources Management and Planning
- Oxford Journal of Development Studies
- Water Resources Research
- Water Security

Workshops and Sessions Organized

Primary Convenor, *51A: 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*

TEACHING

Columbia University

Teaching Assistant, *Environmental Data Modeling and Analysis*. — *2017*

Guest Lecturer, *Water Systems Analysis*. — *2017*

Non-Academic

Python and Data Science Facilitator, *Oliver Wyman Group*

FURTHER EXPERIENCE

Graduate Study

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 Intern, *Education Policy Initiative*, Elm City Communities / New Haven Housing Authority, New Haven, CT. — *2015*

Undergraduate Study

President (2014), Design Lead (2013), Member (2012, 2015), *Engineers Without Borders*, Yale Student Chapter, New Haven, CT. — *2012 – 2015*

Founder and President, *New Haven REACH*, New Haven, CT. — *2012–2015*

Visiting Undergraduate Researcher, *Water and Climate Risk Lab*, Department of Hydraulic and Environmental Engineering, Universidade Federal do Ceará, Fortaleza, Brazil. *2014*

Undergraduate Research Assistant, *Lab of Jaehong Kim*, Department of Chemical and Environmental Engineering, Yale University, New Haven, CT. *2014–2015*

Mechanical Design Intern, *Slingshot Team*, DEKA Research & Development, Manchester, NH. *2012*

Undergraduate Research Assistant, *Lab of Jan Schroers*, Department of Mechanical Engineering and Materials Science, Yale University, New Haven, CT. *2012*

Summer Intern, *Ikatú Agua Project*, Fundación Paraguaya, Asunción, Paraguay *2012*

OTHER SKILLS

Computer Skills

LANGUAGES Julia, Python, R, Matlab, C++

COMMUNICATION LaTeX, Markdown, Jupyter, RMarkdown, Jekyll

REPRODUCIBILITY git, Snakemake, GNU Make

MODELING stan, Turing, PyMC, Keras, Tensorflow

Languages

ENGLISH Native language

SPANISH Full professional proficiency

PORTUGUESE Professional working proficiency

ITALIAN Elementary proficiency

FRENCH Elementary proficiency

GUARANI Basic