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James Doss-Gollin 𝔤

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?" DOI: `10.31223/X5003J`.

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`.

<div style="display:flex"><div style="color:#b33">invited talks</div></div>

"**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.

<div style="color:#b33">workshop presentations</div>

"**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.

media coverage   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.

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.

peer review   Climatic Change
Geophysical Research Letters
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

professional experience

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

Education Policy Intern, Elm City Communities / New Haven Housing Authority, New Haven, CT). 2015

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

President (2014), Design Lead (2013), Member (2012, 2015), Engineers Without Borders, Yale Student Chapter, 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

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