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James Doss-Gollin

Education

Present **Ph.D. Candidate**, *Department of Earth and Environmental Engineering*, Columbia University.
- NSF Graduate Research Fellow
- Columbia University Presidential Fellow
- Advisor: Upmanu Lall

2016 **M.S.**, *Department of Earth and Environmental Engineering*, Columbia University.

2015 **B.S.**, *Mechanical Engineering* , Yale University, New Haven, CT.
- Senior project: "Adapting UVC-LEDs for Portable Water Purification"
- Graduated *Cum Laude*
- Distinction in Mechanical Engineering and Materials Science

2011 **High School**, Wilbur Cross H.S., New Haven, CT.

Professional Experience

2014-2015 **Undergraduate Research Assistant**, *Department of Chemical and Environmental Engineering*, Yale University, New Haven, CT.
- Research: applying UV-C LED technology for water treatment
- Supervisor: Prof. Jaehong Kim

2014 **Visiting Student Researcher**, *Hydraulic and Environmental Engineering Department*, Universidade Federal do Ceará, Fortaleza, Brazil.
- Research: bottom-up drought vulnerability assessment of rural drinking water systems
- Supervisors: Prof. Francisco de Assis de Souza Filho, Prof. Francisco Osny Enéas da Silva

2013 **Mechanical Design Intern**, *DEKA Research & Development*, Manchester, NH.
- Used CAD and 3D printing, to evaluate design changes for Slingshot water purification system
- Supervisors: Paul Ambler, Andy Racicot

2012 **Summer Intern**, *Ikatú Agua Project*, Fundación Paraguaya, Asunción, Paraguay.
- Assessed impact of credit for water system improvement in 19 rural communities
- Supervisors: Omar Sanabria, Roberto Gimenéz, Paula Burt

Professional and Community Engagement

Teaching

2018 **Teaching Assistant**, *Environmental Data Modeling & Analysis*, Columbia University.
- Write and grade problem sets for 40 masters-level students
- Two lectures: "Introduction to R and RStudio", and "Introduction to Bayesian Methods"
- Supervisor: Upmanu Lall

Mentoring

High School Caroline Schwab

Professional Service

2017-2018 **Organizer**, *Earth and Environmental Engineering Student Research Symposium*, Columbia University, New York, NY.

2017-Present **Reviewer**.

A verified record of reviews available at `https://publons.com/a/1468228/`.
- Oxford Journal of Development Studies
- Journal of Hydrology
- Journal of Applied Meteorology and Climatology

Community Service and Outreach

2016–2017 **Volunteer**, *Youth Career Connect*, New York, NY.
Mentor New York high school juniors and seniors interested in STEM careers

2015 **Education Policy Summer Intern**, *New Haven Housing Authority/Elm City Communities*, New Haven.

2012–2015 **Founder & President**, *New Haven REACH*, New Haven, CT.
- Founded and led a program to support New Haven high school seniors applying to college
- Recruited and trained $>$ 50 volunteer mentors from Yale

Professional Memberships

2018–Present American Society of Civil Engineers
2015–Present American Geophysical Union
2016–Present American Meteorological Society

Skills

Computer

Programming advanced: Python, R; proficient: bash, Matlab, C++
Stats / ML advanced: stan; proficient: PyMC3, Edward, tensorflow, keras
Communication advanced: Markdown/Pandoc, Rmarkdown, LaTeX, jupyter
Reproducibility proficient: Docker, git, conda, GNU make
Web proficient: jekyll, pelican

Language

English Native speaker
Spanish Full professional proficiency
Portuguese Professional working proficiency
French Elementary proficiency
Italian Elementary proficiency
Guaraní Basic

Honors & Awards

2018 **Nickolas and Liliana Themelis Fellowship**, *Fu Foundation School of Engineering and Applied Science*, Columbia University.

2017-2020 **Graduate Research Fellowship**, *Climate and Large-Scale Atmospheric Dynamics*, National Science Foundation.
Research: "Understanding & Predicting Climate Drivers of Extreme, Mid-latitude River Floods"

2015-2019 **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 **B.S. Cum Laude**, Yale University.

2014 **Larry Coben '79 Fellowship**, Yale University.

2013 **Vance-Carter Travel Award**, Yale University.

2012 **Thomas C. Barry Fellowship**, Yale University.

Publications and Presentations

Peer-Reviewed Journal Articles

[1] **James Doss-Gollin**, Ángel G Muñoz, Simon J Mason, and Max Pastén. "Heavy Rainfall in Paraguay during the 2015-2016 Austral Summer: Causes and Sub-Seasonal-to-Seasonal Predictive Skill". In: *Journal of Climate* (June 2018). DOI: 10.1175/JCLI-D-17-0805.1.

[2] David J Farnham, **James Doss-Gollin**, and Upmanu Lall. "Regional Extreme Precipitation Events: Robust Inference From Credibly Simulated GCM Variables". In: *Water Resources Research* (2018). DOI: 10.1002/2017wr021318.

[3] **James Doss-Gollin**, Francisco de Assis de Souza Filho, and Francisco Osny Enéas da Silva. "Analytic Modeling of Rainwater Harvesting in the Brazilian Semiarid Northeast". In: *Journal of the American Water Resources Association* 52.1 (Dec. 2015), pp. 129–137. DOI: 10.1111/1752-1688.12376.

Manuscripts In Review

[1] **James Doss-Gollin**, David J Farnham, Scott Steinschneider, and Upmanu Lall. "Robust Adaptation to Multi-Scale Climate Variability".

[2] Viktor Rözer, Heidi Kreibich, Kai Schröter, Meike Müller, Nivedita Sairam, **James Doss-Gollin**, Upmanu Lall, and Bruno Merz. "Probabilistic Models Significantly Reduce Uncertainty in Hurricane Harvey Pluvial Flood Loss Estimates".

Conference Papers and Presentations

[1] **James Doss-Gollin**, David J Farnham, Scott Steinschneider, and Upmanu Lall. "Robust Adaptation to Multi-Scale Climate Variability". In: *American Geophsyical Union Fall Meeting*. Washington, DC, Dec. 2018. DOI: 10.13140/RG.2.2.28447.20649.

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

[3] **James Doss-Gollin**, Ángel G Muñoz, Simon J Mason, and Max Pastén. "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, Dec. 2017. DOI: 10.13140/RG.2.2.20146.30406.

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

[5] Viktor Rözer, Heidi Kreibich, Kai Schröter, **James Doss-Gollin**, Upmanu Lall, and Bruno Merz. "BN-FLEMOps Pluvial - A Probabilistic Multi-Variable Loss Estimation Model for Pluvial Floods". In: *American Geophsyical Union Fall Meeting*. New Orleans, LA, Dec. 2017.

[6] **James Doss-Gollin**, David J Farnham, and Upmanu Lall. "Global-Local Interactions Modulate Tropical Moisture Exports to the Ohio River Basin". In: *American Geophsyical Union Fall Meeting*. San Francisco, CA, 2016. DOI: 10.13140/RG.2.2.36009.19044.

[7] David J Farnham, **James Doss-Gollin**, and Upmanu Lall. "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, Dec. 2016.

[8] Caitlin M Spence, Casey Brown, and **James Doss-Gollin**. "Exploiting Synoptic-Scale Climate Processes to Develop Nonstationary, Probabilistic Flood Hazard Projections". In: *American Geophysical Union Fall Meeting*. 2016.

[9] David J Farnham, Upmanu Lall, H H Kwon, and **James Doss-Gollin**. "Moisture Transport and Extreme Precipitation in Mid-Latitudes". In: *American Geophsyical Union Fall Meeting*. San Francisco, CA, Dec. 2015.

[10] Luiz Martins Araújo Júnior, Francisco de Assis de Souza Filho, Cleiton da Silva Silveira, Tyhago Aragão Dias, and **James Doss-Gollin**. "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, 2014. DOI: 10.13140/RG.2.1.4610.7685.

[11] **James Doss-Gollin**, Francisco de Assis de Souza Filho, and Francisco Osny Enéas da Silva. "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), 2014. DOI: 10.13140/RG.2.1.4086.4807.

Talks and Workshop Presentations

2018-11-08 **Robust Adaptation to Multi-Scale Climate Variability**, *The Nexus of Climate Data, Insurance, and Adaptive Capacity*, Asheville, NC, poster.

2017-09-10 **Extreme Rainfall in Paraguay During the 2015-16 Austral Summer**, *North East Graduate Student Water Symposium*, Amherst, MA, talk.

2017-05-31 **Regional Intense Precipitation: Inferences From GCM Atmospheric Circulation Fields**, *Modeling Research in the Cloud*, NCAR, Boulder, Colorado, poster.

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

2016-12-07 **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.

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

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