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Corinne Bowers, Ph.D.

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Interdisciplinary data scientist and engineer modeling climate risk and resilience in communities impacted by extreme natural hazards. Highly motivated problem solver with excellent communication skills and technical expertise in statistics, geospatial analytics, uncertainty quantification, and data visualization.

PROFESSIONAL EXPERIENCE

Mendenhall Postdoctoral Fellow, United States Geological Survey, Reston, VA — *September 2023 –*
Research Proposal: "Multiscale Risk and Resilience to Hydrologic Extremes"

EDUCATION

Stanford University, Palo Alto, CA — *June 2023*
Doctor of Philosophy in Civil Engineering
Title: "Characterizing Hydrologic and Economic Risk from Flooding driven by Atmospheric Rivers"
Advisor: Dr. Jack Baker

- Proposed atmospheric river (AR) sequences as a metric to capture the elevated risk associated with temporally compounding (back-to-back) AR events; quantified changes in sequence frequency, intensity, and duration under future climate scenarios
- Measured the effect of temporal compounding on predicted AR flood losses in California using multiple loss datasets and a fixed effects statistical approach
- Developed the Performance-based Atmospheric River Risk Analysis (PARRA) framework to capture the hydrologic impacts and economic consequences of AR-driven flooding through a chain of physical models; implemented proof-of-concept case study in Sonoma County, CA
- Trained random forest models on flood insurance claims in California to predict AR flood damage at multiple scales and identified drivers of damage with interpretable ML

Stanford University, Palo Alto, CA — *June 2020*
Master of Science in Structural Engineering

Northeastern University, Boston, MA — *May 2018*
Bachelor of Science in Civil Engineering, Minor in Mathematics — *Summa Cum Laude*

PUBLICATIONS

Bowers, C., Serafin, K. A., and Baker, J. W. (2023). Temporal Compounding Increases Economic Impacts of Atmospheric Rivers in California. In review.

Bowers, C., Serafin, K. A., Tseng, K.-C., and Baker, J. W. (2023). Atmospheric River Sequences as Indicators of Hydrologic Hazard in Historical Reanalysis and GFDL SPEAR Future Climate Projections. Under revision at *Earth's Future* [preprint available at https://doi.org/10.22541/essoar.167590838.86645781/v1].

Bowers, C., Serafin, K. A., and Baker, J. W. (2022). A performance-based approach to quantify atmospheric river flood risk. *Natural Hazards and Earth System Sciences*, 22, 1371–1393, https://doi.org/10.5194/nhess-22-1371-2022.

SELECTED CONFERENCES & PRESENTATIONS

Webb, M., Sumargo, E., Ogle, S., and **Bowers, C.** "Hydrologic Impacts of Atmospheric Rivers: Understanding and Managing a Variable Hydroclimate." **Session organizer**, *American Geophysical Union Fall Meeting*, December 2023, San Francisco, CA.

Bolte, E., Sharp, C., Costa, R., and **Bowers, C.** "Assessing the Impact of Presidential Declarations on Post-Flood Housing Recovery." **Oral presentation**, *Natural Hazards Workshop*, July 2023, Boulder, CO.

Bowers, C., Serafin, K., Baker, J. and Filipek, E. "Occurrence and Impacts of Atmospheric River Sequences." **Oral presentation**, *International Atmospheric Rivers Conference*, October 2022, Santiago, Chile (attended virtually).

Bowers, C., Serafin, K., and Baker, J. "A Performance-Based Approach to Quantifying Atmospheric River Flood Risk in Northern California." **Conference poster**, *American Geophysical Union Fall Meeting*, December 2021, New Orleans, LA.

Bowers, C., Serafin, K., and Baker, J. "Identifying Key Damage Drivers of Atmospheric River-Induced Flooding in California." **Oral presentation**, *American Geophysical Union Fall Meeting*, December 2020, Virtual.

Bowers, C., Amaral, S., and Hajjar, J. "Hurricane Risk Predictions in the Boston Area." **Conference poster**, *Northeastern Research, Innovation, and Scholarship Expo (RISE)*, April 2018, Boston, MA. Selected as one of two finalists in the Undergraduate Engineering & Technology category.

LEADERSHIP, MENTORING, & TEAMWORK

2023 Cohort Member, *Rising Environmental Leaders Program:* Traveled to Washington, DC and Sacramento, CA with an interdisciplinary group of graduate students to meet with federal and state policymakers, learn how environmental research is transformed into actionable policy, and develop the next generation of climate leaders — *Spring 2023*

Graduate Advisor, *Stanford Summer Undergraduate Research Program:* Primary advisor and manager for ten-week undergraduate intern; provided guidance in conducting independent research and promoted professional development through weekly journal article readings and presentation opportunities — *Summer 2022*

Student Representative, *Civil Engineering Faculty Search Committee:* Part of a six-person team that conducted student roundtables and participated in chalk talks with thirteen prospective faculty candidates, then synthesized and presented summary recommendations to the full search committee — *Spring 2022*

Teaching Assistant, *Probabilistic Models in Civil Engineering:* Led office hours twice a week with 20-30 students in regular attendance, led exam review sessions with 50-60 students, and designed and implemented a mid-quarter feedback survey — *Fall 2021*

Leadership Council Member, *Stanford Urban Resilience Initiative:* Organized community events for disaster resilience researchers at Stanford and proposed new activities about climate-related extreme events to expand membership — *2020 – 2023*
Member 2018 – 2023

President, *Stanford Earthquake Engineering Research Institute:* Coordinated technical seminars, community outreach, and social events centered on earthquake hazard and mitigation for structural engineering graduate students — *2019 – 2020*
Member 2018 – 2023

ADDITIONAL EXPERIENCE

Honors in the Discipline Undergraduate Thesis, Northeastern University — *2017 – 2018*
Title: "Predicting Hurricane Risk and Resilience in the Boston Area"
Advisor: Dr. Jerome Hajjar, CDM Smith Professor and Chair

Undergraduate Research Assistant, Northeastern University — *2013 – 2017*
Supervisor: Dr. Jerome Hajjar, CDM Smith Professor and Chair

Intern, Catastrophe Engineering and Analytics Team — *June – August 2018*
Co-op, Catastrophe Engineering and Analytics Team — *January – June 2017*
Berkshire Hathaway Specialty Insurance, Boston, MA

Co-op, Structural Engineering and Building Technology Groups — *January – June 2016*
Simpson Gumpertz & Heger, Waltham, MA

Co-op, Engineering Team, Fan Pier Building I — *January – June 2015*
Turner Construction, Boston, MA

Hobbies: Whitewater kayak instructor, adventurous home baker, NYT Crossword enthusiast