

Sebastian Rowan

PH.D CANDIDATE IN CIVIL AND ENVIRONMENTAL ENGINEERING

University of New Hampshire, Durham, NH

He/Him | sebastian.rowan@unh.edu | [sebastianrowan.github.io](https://github.com/sebastianrowan) | [sebastianrowan](https://orcid.org/0000-0002-7249-0170) | [sebastian-rowan-72490170](https://www.researchgate.net/profile/sebastian-rowan-72490170)

I am Ph.D. candidate in civil and environmental engineering researching the impacts of flood events and climate change on people and communities. The goal of my research is to develop a more comprehensive understanding of the risks posed by floods to enable the development of mitigation efforts that prioritize long-term sustainability and community well-being.

Education

University of New Hampshire

Durham, New Hampshire

Ph.D. CANDIDATE, CIVIL AND ENVIRONMENTAL ENGINEERING

2026

- Dissertation Title: Towards Sustainable Flood Risk Management: Incorporating Uncertainty and Environmental Impacts
- Developed model to estimate economic loss and greenhouse gas emissions from flood exposure to residential buildings using component-level fragility estimates
- Quantified expected GHG emissions from flood exposure to residential buildings under current and future climate projections in a nation-wide, multi-frequency flood risk assessment

University of New Hampshire

Durham, New Hampshire

B.S. ENVIRONMENTAL ENGINEERING

2016

Experience

U.S. Army Corps of Engineers, Engineer Research Development Center

Vicksburg, MS

ORISE GRADUATE RESEARCH FELLOW

Sep. 2020 - Present

- Implemented method to estimate greenhouse gas emissions from flood damage in USACE'S "go-consequences" flood consequence analysis tool
- Co-lead economic consequence and social vulnerability analysis of future flooding in the Mississippi River Valley
- Lead systematic literature review and meta-analysis to assess the effect of home damage on post-flood psychiatric morbidity to support USACE effort to comprehensively assess "Other Social Effects" of floods for planning studies
- Performed data analysis using social vulnerability and other geospatial data to support Tier 1 Other Social Effects/Environmental Justice Analysis for the USACE New York/New Jersey Harbors and Tributaries Coastal Storm Risk Management Feasibility Study

University of New Hampshire

Durham, NH

RESEARCH & TEACHING ASSISTANT

Aug. 2018 - Dec. 2020

- (RA) Resilient Bridge Planning in Mozambique - Bridge Failure Risk from Flooding and Climate Change
- (TA) CEE 705: Introduction to Sustainable Engineering (Fall 2019, Fall 2020)
- (TA) CEE 502: Project Engineering (Spring 2019)

New Hampshire Department of Transportation, Bureau of Planning and Community Assistance

Concord, NH

CIVIL ENGINEER I-II

2016 - 2018

University of New Hampshire InterOperability Laboratory

Durham, NH

10 GIGABIT ETHERNET TECHNICIAN

2014-2017

New Hampshire Department of Environmental Services, Air Resources Division

Concord, NH

ENVIRONMENTAL TECHNICIAN

2015

Awards

3RD PLACE - UNH 3-MINUTE THESIS (3MT) COMPETITION

2025

Publications

Rowan, S., Yeates, E. (In Review). The effects of home damage on post-flood mental health: A systematic review and meta-analysis. *npj Mental Health Research*

Rowan, S., Bell, E. S., Mo, W., (2025). Quantifying the hidden carbon cost of floods: a stochastic and uncertainty-based valuation framework. *Environmental Research Letters*, <https://doi.org/10.1088/1748-9326/ae2d76>

Qiao, Y., Guo, Y., **Rowan, S.,** Medina, R., Espinet, X., Cullen, J., Meng, F., Cao, Z. (2025). Doubling of flood-induced bridge asset failure loss in Mozambique under 2050 climate. *Global Environmental Change*

Rowan, S., Yeates, E., (2024) PROTOCOL: The effect of home damage on post-flood psychiatric morbidity: A systematic review and meta-analysis. PROSPERO, <https://www.crd.york.ac.uk/PROSPERO/view/CRD42024618891>

Memarsadeghi, N. P., **Rowan, S.**, Sisco, A. W., Tavakoly, A. A., (2024). Enhancing resilience: Integrating future flood modeling and socio-economic analysis in the face of climate change impacts. *Science of the Total Environment*, <https://doi.org/10.1016/j.scitotenv.2024.174893>

Seigerman, C. K., McKay, S. K., Basilio, R., Biesel, S. A., Hallemeier, J., Mansur, A. V., Piercy, C., **Rowan, S.**, Ubiali, B., Yeates, E., & Nelson, D. R. (2023). Operationalizing equity for integrated water resources management. *JAWRA Journal of the American Water Resources Association*, 59(2), 281–298. <https://doi.org/10.1111/1752-1688.13086>

Galaitsi, S., Kurth, M., **Rowan, S.**, Yeates, E., & Kalaidjian, E. (2022). New York—New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study—Tier 1 Other Social Effects/Environmental Justice Analysis. U.S. Army Corps of Engineers New York District. https://www.nan.usace.army.mil/Portals/37/Appendix%20A12_Tier%201%200SE_EJ_HATS.pdf

Rowan, S., & Kwiatkowski, K. (2020). Assessing the Relationship Between Social Vulnerability, Social Capital, and Housing Resilience. *Sustainability*, 12(18), 7718. <https://doi.org/10.3390/su12187718>

Presentations

Rowan, S., Han, F., Permenter, R., Mo, W. Monte Carlo-Based Building Damage and Emission Functions for Assessing Flood Risks. *AGU25; December 2025; New Orleans, LA*. Oral Presentation.

Rowan, S., Yeates, E. The Effect of Home Damage On Post-Flood Psychiatric Morbidity: A Systematic Review and Meta-Analysis. *AGU25; December 2025; New Orleans, LA*. Oral Presentation.

Rowan, S., Measuring what matters for flood risk management. *University of New Hampshire 3MT (3-Minute Thesis) Competition Finals; March 2025; Durham, NH*. Oral Presentation. https://media.unh.edu/media/Sebastian%20Rowan%20-%20UNH%203MT%20Finals%202025%20-%20Third%20Place/1_da4qt06x

Rowan, S., Memarsadeghi, N., Sisco, A., Tavakoly, A. An Assessment of the Socio-Economic Impacts from Climate Change and its Relationship with Vulnerability. *AGU23; December 2023; San Francisco, CA*. Oral Presentation.

Rowan, S., Yeates, E., Mo, W. Estimating the Greenhouse Gas Emissions of Flood Damages. *AEEPS Research & Education Conference; June 2023; Boston, MA*. Poster.

Rowan, S., Yeates, E. Predicting the Mental Health Impacts of Floods. *47th Annual Natural Hazards Research and Applications Workshop; July 2022; Virtual*. Poster.

Rowan, S., Yeates, E., Wells, E. Quantifying the Health Impacts of Floods - A Systematic Literature Review. *2021 UNC Water and Health Conference; October 2021; Virtual*. Poster.

Rowan, S., Kwiatkowski, K. Assessing the Relationship Between Social Vulnerability, Social Capital, and Housing Resilience. *45th Annual Natural Hazards Research and Applications Workshop; July 2020; Virtual*. Poster.

Rowan, S., Kwiatkowski, K., Qiao, Y. Resilient Bridge Planning in Mozambique: Bridge Failure Risk from Flooding and Climate Change. *2nd International Conference on Transportation System Resilience to Natural Hazards and Extreme Weather Events (TR2019); November 2019; Washington, D.C.* Oral Presentation.

Open Source Projects

svIBUILDR	Active
• An R package that allows users to download or construct the CDC's Social Vulnerability Index as a tidyverse or simple features data frame.	
• Enables greater flexibility in region selection for SVI analyses than is possible with state- or national-level datasets hosted by CDC.	
NSI DATA QGIS PLUGIN	Active
• A QGIS plugin that downloads data from the USACE National Structures Inventory for a specified region and adds it to a map.	
NSIPY	Active
• A Python package to download data from the U.S. Army Corps of Engineers National Structures Inventory using the NSI API.	

Skills

PROGRAMMING LANGUAGES

- Python, R, Go, SQL, MATLAB

SOFTWARE

- QGIS, ArcGIS, go-consequences, Vensim, NVivo, Excel