Sebastian **Rowan**

PH.D CANDIDATE IN CIVIL AND ENVIRONMENTAL ENGINEERING

University of New Hampshire, Durham, NH

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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 rather than maximizing financial return on investment.

🎓 Education

University of New Hampshire   *Durham, New Hampshire*

PH.D. CANDIDATE, CIVIL AND ENVIRONMENTAL ENGINEERING   *2025 (Expected)*

- Dissertation Title: Towards Sustainable Flood Risk Management: Incorporating Uncertainty and Environmental Impacts
- Advisor: Dr. Weiwei Mo

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 (Remote)*

ORISE GRADUATE RESEARCH FELLOW   *Sep. 2020 - Present*

- Contributed to the development of USACE consequence analysis tools go-consequences and Generation II Coastal Resilience Model (G2CRM)
- 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 ASSISTANT   *Fall 2018, Spring 2020*

- Resilient Bridge Planning in Mozambique - Bridge Failure Risk from Flooding and Climate Change
- PI: Dr. Kyle Kwiatkowski

University of New Hampshire   *Durham, NH*

TEACHING ASSISTANT   *2019 - 2020*

- CEE 705: Introduction to Sustainable Engineering (Fall 2019, Fall 2020)
- 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*

- Contributed to the development of statewide asset management system for culvert and closed drainage systems in partnership with UNH Technology Transfer Center/SADES.
- Developed data analysis pipelines to produce standard reports to support Department-wide operations and assess progress on key performance metrics

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

UNH 3-MINUTE THESIS (3MT) COMPETITION   *2025*

- 3rd Place

📄 Publications

Rowan, S., Permenter, R., Han, F., Mo, W. (Manuscript in preparation). Accounting for Building Variability in Flood Impact Estimation.

Rowan, S., Bell, E. S., Mo, W., (Manuscript In Review). Economic valuation of residential flood damages considering the social cost of greenhouse gas emissions. Sustainable Cities and Society

Rowan, S., Yeates, E., (2024) The effect of home damage on post-flood psychiatric morbidity: A systematic review and meta-analysis. (Protocol), 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%20SE_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., 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 Fransisco, CA.* Oral Presentation.

Rowan, S., Yeates, E., Mo, W. Estimating the Greenhouse Gas Emissions of Flood Damages. *AEESP 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