Jenna Abrahamson

Email: jnabraha@ncsu.edu
GitHub: github.com/jen-abrahamson
Website: jenna-abrahamson.netlify.app
LinkedIn: linkedin.com/in/jenna-abrahamson

Education

North Carolina State University — Raleigh, North Carolina
Ph.D. in Geospatial Analytics — Aug. 2021 – Present
Advisor: Dr. Josh Gray
Expected Graduation: August 2025

Stanford University — Online
Professional Certificate in Data Science — Oct. 2020 – Jan. 2021
Courses: Python Programming, R Programming, Statistics

University of St. Thomas — St. Paul, Minnesota
B.S. in Environmental Science and Geology — Sept. 2015 – May 2019
Minor in Sustainability/GIS
Graduated Magna Cum Laude

Relevant Experience

NSF Graduate Research Fellow
Fellow in Dr. Josh Gray's SEAL Lab at NCSU — Aug. 2021 – Present

- Employing machine learning methods for inundation classification based on multi-sensor satellite observations.
- Creating Bayesian data fusion algorithms to integrate machine learning models with physically-based hydrologic models.
- Studying the interactions of water and carbon fluxes, with a focus on methane, in wetland ecosystems through time.

Ph.D. Intern — June 2023 – Aug. 2023
Pacific Northwest National Laboratory

- Developed strategies to optimize the characterization and prediction of flooding/inundation at local and global scales integrating remote sensing, machine learning, and time series techniques.
- Primary developer of a multi-sensor remote sensing code pipeline for mapping variable inundation across ecosystems.

Graduate Research Assistant — Aug. 2021 – June 2023
IARPA SMART Project under PI Dr. Josh Gray

- Implemented and assisted in developing *roboBayes*, a Bayesian-based change detection algorithm used to flag anthropogenic and/or natural changes such as flooding, natural disasters, and urban development in near-real-time.
- Developed a tree-based machine learning module in roboBayes capable of characterizing types of change across a variety of regions on Earth.
- Awarded Phase 2 funding by IARPA based on our success in Phase 1.

Grants and Awards

NASA Future Investigator in Earth and Space Technology	2023
NSF Graduate Research Fellowship	2023
NCSU Geospatial Analytics Collaboration and Innovation Award	2022
NCSU University Graduate Fellowship	2021
PEPSI Environmental Science Scholarship	2018
Brownstein Geology Scholarship	2017

Publications

Stegen, J., Burgin, A., Busch, M., Fisher, J., Ladau, J., **Abrahamson, J.N.,**...Variable Inundation Across Earth's Terrestrial Ecosystems. *EGU Biogeosciences, 2024.* (In Preparation).

Rasmussen, P., **Abrahamson, J.N.**, Tang, X., Smith, O., Gray, J., Woodcock, C., Ruiz, M. Assessment of Performance of Tree-Based Algorithms to Reduce Errors of Omission and Commission in Change Detection. *IGARSS 2023 - IEEE International Geoscience and Remote Sensing Symposium.*

Shrestha, P., Salzl, M. Jimenez, I., Pradhan, N., Hay, M., Wallace, H., **Abrahamson, J.N.**, Small, G. Efficacy of Spent Lime as a Soil Amendment for Nutrient Retention in Bioretention Green Stormwater Infrastructure. *Water, 2019.*

Presentations

Abrahamson, J.N., Gray, J. (Dec. 2023). Monitoring Ephemeral Inundation Dynamics in Coastal Wetlands Using Time Series of Sentinel and PlanetScope Data. *AGU Fall Meeting*, San Francisco, CA.

Abrahamson, J.N., Gray, J. (Dec. 2022). Integrating Physical and Remote Sensing Models to Map Inundation at High Spatial and Temporal Resolution. *AGU Fall Meeting*, Chicago, IL.

Abrahamson, J. N., McDermott, J. A., Allen, E. F., Redfield, T. F. (Oct. 2017). Using Drainage Area Power-Law Relationships as a Method to Test for Points of River Capture. *GSA Annual Meeting*, Seattle, Washington.

Industry Experience

GIS Analyst — St. Paul, MN
Pointmap Inc. — Oct. 2019 – June 2021

- Maintained spatial databases and applications, assisted in environmental consulting mapping and spatial analysis projects.

Environmental Field Technician — Minneapolis, MN
Braun Intertec Corporation — May 2019 – Oct. 2019

- Collected samples for soil, groundwater, air, and soil vapor data analysis and aided in drafting Phase I and II Environmental Site Assessments.

Technical Skills

Proficient in: Python, R, High-Performance Computing, Git, Machine Learning (caret, H2O, sklearn, Dask-ML), Google Earth Engine, Jupyter

Familiar with: C, MatLab, JavaScript, HTML, Docker, SQL, AWS

Professional Service

Invited Talks
Accenture Federal Services Computer Vision Seminar Series — June 2022

Diversity, Equity, and Inclusion Chair
Geospatial Graduate Student Organization (GGSO) — May 2023 - Present