Jenna Abrahamson

Located in Raleigh, NC

Email: jnabraha@ncsu.edu **GitHub**: https://github.com/jen-abrahamson
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Research Interests	Remote Sensing, Machine Learning, Data Assimilation, Bayesian Statistics, Change Detection, Computational Simulation, Hydro-biogeochemistry, Climate Change

Education

North Carolina State University — Raleigh, North Carolina
Ph.D. in Geospatial Analytics — Aug. 2021 – Present
Advisor: Dr. Josh Gray, Spatial Ecosystems Analytics Lab

Stanford University — Online
Professional Certificate in Data Science Foundations — 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
GPA: 3.8, Graduated Magna Cum Laude

Research Experience

Graduate Research Assistant (SEAL Lab, NC State University)
IARPA SMART Project - PI Dr. Josh Gray — Aug. 2021 – Present

- Helped develop and implement *roboBayes*, a Bayesian-based change detection algorithm used to flag areas of change over huge spatial scales using multi-source and multi-temporal remotely sensed data in an online monitoring mode.
- Developed modules in roboBayes pipeline to assist with time series outlier detection, and change type characterization.
- Used high-performance computing to run algorithms on big data sets through NC State's cluster computing facility.
- Awarded Phase 2 funding (PI Dr. Josh Gray) based on our success in Phase 1.

Dissertation Research — Aug. 2021 – Present

- Compared machine learning algorithms for inundation classification based on satellite observations.
- Ran process-based hydrologic models for estimating inundation in wetland areas.
- Used Kalman filter data assimilation method to combine remote sensing inundation model with physically-based hydrologic model.
- Ran biogeochemical model DNDC to simulate methane fluxes driven by inundation.

Undergraduate Research Assistant (University of St. Thomas)
Biology Department - PI Dr. Gaston Small — May 2018 – June 2019

- Helped develop statistical process-based models of urban garden systems using STELLA Architect to predict daily nutrient/water runoff.
- Competed at the EPA P3 Sustainable Design Competition in Boston, MA.

Undergraduate Research Assistant (University of St. Thomas)
Geology Department - PI Dr. Jeni McDermott — Feb. 2016 – May 2018

- Helped develop a method to predict areas of river capture in complex drainages based on statistical power-law relationships using 1-m digital elevation models.
- Participated and helped lead international fieldwork in Norway.

Grants and Awards	NCSU Geospatial Analytics Travel Grant ($500)	2022
	NCSU Geospatial Analytics Collaboration and Innovation Award	2022
	NCSU University Graduate Fellowship ($4,000)	2021
	EPA Sustainable Design Competition: Team Awarded P3 Grant ($14,997)	2019
	PEPSI Environmental Science Scholarship ($5,000)	2018
	UST Travel Grant ($750)	2017
	UST Brownstein Scholarship ($6,000)	2017
	UST Collaborative Inquiry Grant ($1,500)	2017
	UST Young Scholars Grant ($4,000)	2017
	UST Collaborative Inquiry Grant ($1,500)	2016

Publications

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

Presentations

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

Small, G.E., Wihlm, S., Wallace, H., **Abrahamson, J.N.**, Deile, M.P., Mahre, K., Fischer, J., Jimenez, I., Shrsetha, P., Salzl, M. (June 2019). Water treatment residuals and coir as soil amendments for nutrient retention in bioretention stormwater infrastructure. *EPA P3 TechConnect World Innovation Expo*, Boston, MA.

Abrahamson, J.N., Shrestha, P, Small, G.E. (May 2019). Evaluating leachate nutrient flux losses from various compost treatments in urban agriculture. *Urban Food Systems Symposium*, Minneapolis, MN.

McDermott, J., Redfield, T. F., **Abrahamson, J. N.**, Allen, E. (Dec. 2018). Neotectonic Fault Reactivation and Landscape Rejuvenation on Norway's Post-glacial Rifted Margin. *AGU Fall Meeting*, Washington, D.C.

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 Specialist**	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 field 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: R, Python, Git, Bash, Google Earth Engine, Tableau
Familiar with: MatLab, JavaScript, C, HTML, Docker, SQL, AWS

Professional Service

Invited Talks

Accenture Federal Services Computer Vision: COI Seminar Series	June 2022

Service

Volunteer with Skype a Scientist	Aug. 2022 – Present
Volunteer with UST Student-Alumni Mentoring Program	May 2019 – Present
Volunteer MPCA Water Quality Monitor	June 2020 – Aug. 2021

Member of

American Geophysical Union	Aug. 2022 – Present