Jenna Abrahamson

Located in Raleigh, NC

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Research Interests

Satellite Remote Sensing, Machine Learning, GeoAI, Data Assimilation, Bayesian Statistics, Change Detection, Wetland Hydrology, Process-Based Modeling

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 remote sensing change detection algorithm used to flag areas of change over huge spatial scales using multi-source and multi-temporal data in an online monitoring mode.
- Developed modules in roboBayes code pipeline to assist with time series outlier detection, and change characterization using spectral features.
- 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 Project — Aug. 2021 – Present

- Tested machine learning algorithms and different feature inputs for inundation classification to generate inundation maps over multiple years.
- Run process-based hydrologic and bioegeochemical models for assessing inundation and methane fluxes in wetland areas.
- Accepted for presentation on hydrologic modelling and remote sensing integration at American Geophysical Union 2022 Annual Meeting in Chicago, IL.

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.
- Presented at the EPA P3 Sustainable Design Competition in Boston, MA where our team was awarded the P3 grant.

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

- Helped develop method to predict areas of river capture in complex drainages based on statistical power-law relationships using 1-m digital elevation models and MatLab.
- 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 Conference 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 Office of Sustainability Grant ($600)	2016
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

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 Abstracts (Vol. 2018, EP54A-03).*

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 in Seattle, Washington, USA.

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