

ORGANIZATION ROLE

Remote Sensing Scientist

PROJECT ROLE / FOCUS AREAS

Remote sensing

Coastal ecology

Hydrology

EDUCATION

Ph.D., Civil Engineering, University of Texas at Austin

MS, Environmental and Water Resources Engineering, University of Texas at Austin

BS, Environmental Engineering, University of Florida

PROFESSIONAL MEMBERSHIPS

American Geophysical Union

ALICIA SENDROWSKI, PH.D.

Remote Sensing Scientist

Alicia Sendrowski, Ph.D., has expertise in remote sensing, statistical data analysis, signal processing, and coastal ecology and hydrology. She has worked on remote sensing of coastal environments for over eight years and has extensive knowledge working with very high-resolution imagery, advanced computing, geographic information systems (GIS), and machine learning applications.

Alicia received her bachelor's degree in environmental engineering from University of Florida where she led research on source separation of phosphorus from wastewater. She received her master's in environmental and water resources engineering and Ph.D. in civil engineering from the University of Texas at Austin, where she led research using information theory to quantify the influence of geophysical drivers on water, sediment, and nutrient fluctuations in river deltas.

Alicia developed machine learning pipelines for the classification of large wood in very high-resolution satellite imagery and has conducted extensive field campaigns in the Arctic and coastal Louisiana to analyze carbon storage and ecosystem dynamics. At The Water Institute, Alicia has led projects using machine learning to analyze avian habitat in aerial imagery and developed workflows for mapping seagrass in the Chandeleur Islands and around MacDill Air Force Base. Alicia has also coordinated with multiple agencies to develop a lessons learned database for coastal restoration projects.

PROFESSIONAL EXPERIENCE

2024–Present: Remote Sensing Scientist, The Water Institute

2022–2024: Research Engineer/Scientist 1, Michigan Tech Research Institute

2020–2022: Research Associate, Michigan State University

2018–2020: Postdoctoral Research Associate, Colorado State University

2013–2018: Graduate Assistant, University of Texas at Austin

SELECTED PROJECTS

Barrier Island Habitat Assessment for Coastal Waterbirds. *Brown Foundation (Ongoing).* PI. Developing machine learning workflows to analyze bird and habitat data from historical aerial imagery to better understand bird-habitat relationships. This is a cross-disciplinary effort providing a novel approach to inform barrier island restoration and bird conservation activities in Louisiana.

Gulf of Mexico Colonial Waterbird Data Management. *Louisiana Department of Wildlife and Fisheries and Louisiana Trustee Implementation Group (Ongoing).* Technical Support. The collection and analysis of aerial photographic surveys have been used to monitor shrub- and select ground-nesting waterbird species across the Gulf Coast. This project entails data management of >250,000 photos and associated databases through the development of an online portal.

Restoration Lessons Learned Database Development. *Coastal Protection and Restoration Authority and Louisiana Trustee Implementation Group (Ongoing).* PI. Use AI tools to extract and synthesize lessons learned from restoration project documents and structured interviews to be uploaded into lessons learned database for restoration practitioners.

Chandeleur Island Restoration Project for Seagrass (CHIRPS). *National Oceanic and Atmospheric Administration (NOAA) RESTORE. (Ongoing).* Task Lead. This project is using a co-production approach to monitor seagrass beds at the Chandeleur Islands to inform seagrass restoration/management in the face of sea level rise and other climate-related effects. Seagrass beds are monitored using field work and remote sensing, while numerical modeling will assess the impact of storms on seagrass. As the remote sensing task lead, a deep learning model is being developed using field data and satellite images to detect seagrass across the historical record of publicly available satellite imagery.

Nature Based Solutions at MacDill Air Force Base. *National Fish and Wildlife Foundation (NFWF) and Department of War Readiness and Environmental Protection Integration (REPI). (Ongoing).* Technical Support. Leading the remote sensing and analysis of seagrass habitat as part of a structured decision-making process for evaluating nature-based solutions at MacDill Air Force Base.

Wood-based carbon discharge to the Arctic Ocean. *Research funded by the National Science Foundation. (2018–2020).* Postdoctoral Research Associate. Led the remote sensing of carbon stored as large wood on the surface of the Mackenzie River Delta in the Northwest Territories, Canada. Developed machine learning pipelines for the classification of large wood in 30-60 cm satellite imagery and conducted a field campaign surveying large wood deposits.

SELECTED PUBLICATIONS

1. Sendrowski, A., Wohl, E., Hilton, R., Kramer, N., & Ascough, P. (2023). Wood-Based Carbon Storage in the Mackenzie River Delta: The World's Largest Mapped Riverine Wood Deposit. *Geophysical Research Letters*, *50*(7), e2022GL100913.
2. Sendrowski, A., & Wohl, E. (2021). Remote sensing of large wood in high-resolution satellite imagery: Design of an automated classification work-flow for multiple wood deposit types. *Earth Surface Processes and Landforms*, *46*(12), 2333-2348.
3. Livers, B., Lininger, K. B., Kramer, N., & Sendrowski, A. (2020). Porosity problems: Comparing and reviewing methods for estimating porosity and volume of wood jams in the field. *Earth Surface Processes and Landforms*, *45*(13), 3336-3353.
4. Sendrowski, A., Castañeda-Moya, E., Twilley, R., & Passalacqua, P. (2021). Biogeochemical and hydrological variables synergistically influence nitrate variability in coastal deltaic wetlands. *Journal of Geophysical Research: Biogeosciences*, *126*(9), e2020JG005737.
5. Sendrowski, A., & Passalacqua, P. (2017). Process connectivity in a naturally prograding river delta. *Water Resources Research*, *53*(3), 1841-1863.
6. Sendrowski, A., Sadid, K., Meselhe, E., Wagner, W., Mohrig, D., & Passalacqua, P. (2018). Transfer entropy as a tool for hydrodynamic model validation. *Entropy*, *20*(1), 58.
7. Abhishek, A., Phanikumar, M. S., Sendrowski, A., Andreadis, K. M., Hashemi, M. G., Jayasinghe, S., ... & Das, N. N. (2023). Dryspells and Minimum Air Temperatures Influence Rice Yields and their Forecast Uncertainties in Rainfed Systems. *Agricultural and Forest Meteorology*, *341*, 109683.