THE WATER INSTITUTE

ALICIA SENDROWSKI, PH.D.
Remote Sensing Scientist

ORGANIZATION ROLE
Remote Sensing Scientist

PROJECT ROLE / FOCUS AREAS

Remote sensing

Data analysis

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

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.

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).* Technical support. This project is developing machine learning workflows to analyze bird and habitat data from aerial imagery and fill in associated data gaps for restoration design. 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 GOM. This project entails data management of >25,000 photos and associated databases through the development of an online portal.

Chandeleur Island Restoration Project for Seagrass (CHIRPS). *National Oceanic and Atmospheric Administration (Ongoing).* Technical support. This project focuses on understanding how to best restore the Chandeleur Islands and adaptively manage the islands and seagrass habitat after restoration. Project goals include remote sensing of seagrass to find historical and modern seagrass extent to inform monitoring efforts.

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.