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Research Scientist II
The Water Institute
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EDUCATION

Oregon State University	Corvallis, OR	Geology	MS, 2013
Hamilton College	Clinton, NY	Geosciences	BA, 2010

RESEARCH INTERESTS

Coastal and riverine systems, groundwater management, natural hazards, sediment transport.

PROFESSIONAL EXPERIENCE

The Water Institute	Research Scientist II	2022–Present
	Research Scientist I	2018–2022
Tulane University	Laboratory Supervisor I	2016–2019
	Laboratory Specialist	2013–2016

PROFESSIONAL SOCIETY MEMBERSHIPS

- Professional Geologist, Louisiana
#1298, 2020–Present

AWARDS AND HONORS

- Phi Beta Kappa, 2010

TEACHING EXPERIENCE

Graduate teaching assistant, CEOAS, Oregon State University, teaching introductory geology labs and field courses from 2010–2012.

TRAINING COURSES

- XBeach Basic Course, Deltares, 2020
- XBeach Advanced Course, Deltares, 2020
- CARIS, 2016

- Geoprobe, 2016
- Boater Education Course, 2010

NOTABLE PROJECTS

Project Manager, Geologist/Phase 2: Long Term Strategic Planning for Water Resources   Current

Capital Area Ground Water Conservation Commission (CAGWCC)
Organize a large team of Water Institute scientists and subcontractors to provide science for decision making as the project manager. Provide data analysis (Python and MATLAB) and ArcGIS analysis to support groundwater geology and subsidence aspects of the project. The Capital Area Groundwater Conservation Commission will use the data and information provided by this project to make critical aquifer management decisions.

Geoscientist/Louisiana Barrier Island System Management (BISM): Program Development   Current

Coastal Protection and Restoration Authority
Developed Python-based workflows and tools for the Barrier Island Restoration Tradeoff Analysis (BIRTA) tool as part of the BISM program. Provided project management and ArcGIS analysis support. The goal of BISM is to implement a holistic, long-term approach to adaptively manage Louisiana's coastal systems by maintaining barrier island functions over the next 50 years. BISM is designed to use long-term monitoring data, breach management storm response strategies, regional sediment management (RSM), and environmental and societal needs to guide restoration decisions based on overall benefit. An objectives-orientated and data-driven workflow was also developed for use in prioritizing barrier island restoration projects and selected sand resources for use in those projects.

Geoscientist, Coder/SmartPort   2021–2023

U.S. Economic Development Administration
Developing tools for ports along the Mississippi River, including a shoaling forecast tool using crowdsourced data from tugboats in the river. The shoaling forecast will be supported by hydraulic modeling to predict shoaling locations and time scales to inform port dredging operations. Participated in workflow and code (Python) development. Team lead for exploratory machine learning applications for depth predictions.

Geoscientist/Advancement of the Southeast Conservation Adaptation Strategy (SECAS) for Project Scale Planning: Chandeleur Islands Restoration   2020–2021

U.S. Fish and Wildlife Service
Developed an XBeach model of the Chandeluer Islands, LA, USA with the goals of (1) developing and evaluating metrics for characterizing the restoration and conservation value of barrier islands that could inform the application of the Southeast Conservation Adaptation Strategy (SECAS) Southeast Conservation Blueprint and (2) characterizing the geomorphic evolution and ecosystem value of the Chandeleur Islands with and without restoration action. Model experiments explored the placement of two end-member restoration templates (marsh restoration focused and dune restoration focused) across the islands to investigate the potential

island responses during storm conditions under the different restoration scenarios. This work included developing and evaluating metrics for characterizing the restoration and conservation value of barrier islands that could inform the application of the Southeast Conservation Adaptation Strategy (SECAS) Southeast Conservation Blueprint.

Assistant Project Manager, Geologist/Port Fourchon: Coastal Evolution   2019–2022
Management for a Resilient Working Coast
National Fish and Wildlife Foundation, Partnership for Our Working Coast
Organize a large, multi-disciplinary team of scientists including geologists, social scientists, ecological, and modelers for a transdisciplinary effort that seeks to model the landscape and ecosystem evolution around Port Fourchon for the next 30 years to plan the best beneficial use of dredge sediment. Highly involved in every aspect of the project from modeling to meetings with stakeholders. Provided ArcGIS and MATLAB data analysis and model development support.

PUBLISHED WORKS

Peer-Reviewed Publications

Beltran-Burgos, M., Esposito, C. R., Nepf, H. M., Baustian, M., & Di Leonardo, D. (2023). Vegetation-driven seasonal sediment dynamics in a freshwater marsh of the Mississippi River Delta. *Journal of Geophysical Research: Biogeosciences*, *128*(4).

Hemmerling, S. A., Haertling, A., Shao, W., Di Leonardo, D., Grismore, A., & Dausman, A. (2024). "You turn the tap on, the water's there, and you just think everything's fine": A mixed methods approach to understanding public perceptions of groundwater management in Baton Rouge, Louisiana, USA. Frontiers in Water, 6. https://doi.org/10.3389/frwa.2024.1289400

Hemmerling, S. A., DeMyers, C., Parfait, J., Piñero, E., Baustian, M. M., Bregman, M., Di Leonardo, D., Esposito, C., Georgiou, I. Y., Grismore, A., Jung, H., McMann, B., & Miner, M. D. (2023). A community-informed transdisciplinary approach to coastal restoration planning: Maximizing the social and ecological co-benefits of wetland creation in Port Fourchon, Louisiana, USA. *Frontiers in Environmental Science*, *11*. https://doi.org/10.3389/fenvs.2023.1105671

Esposito, C. R., Di Leonardo, D., Harlan, M., & Straub, K. M. (2018). Sediment storage partitioning in alluvial stratigraphy: The influence of discharge variability. *Journal of Sedimentary Research*, *88*(6), 717–726.

Stephens, J. D., Allison, M. A., Di Leonardo, D. R., Weathers, H. D., Ogston, A. S., McLachlan, R. L., Xing, F., & Meselhe, E. A. (2017). Sand dynamic in the Mekong River channel and export to the coastal ocean. *Continental Shelf Research*, *147*(Supplement C), 38–50.

Di Leonardo, D., & Ruggiero, P. (2015). Regional scale sandbar variability: Observations from the U.S. Pacific Northwest. *Continental Shelf Research*, *95*, 74–88.

Technical Reports

DiLeonardo, D., Dausman, A., Clark, R., Runge, M., Dalyander, S., Hemmerling, S., Grismore, A., Haertling, A., Bienn, H., Afinowicz, J., Taucer, P., Skipwith, J., Tsai, F., & Shao, W. (2022). *Long-term strategic plan for the Capital Area Ground Water Conservation Commission* (Final Report 2A; p. 405). The Water Institute. Prepared for and funded by the Capital Area Ground Water Conservation Commission.

Forrest, B., Miner, M., Vollmer, H., DiLeonardo, D. R., Swartz, J., & Dong, Z. (2021). *Gap Analysis: Geological and geophyscial data and sediment resources reserves estimates, Northern Gulf of Mexico Sediment Availability and Allocation Program* (p. 47) [Technical Memorandum]. The Water Institute of the Gulf and APTIM, prepared for the Gulf of Mexico Alliance.

The Water Institute. (2022). *Partnership for Our Working Coast: A community-informed transdisciplinary approach to maximizing benefits of dredged sediment for wetland restoration planning at Port Fourchon, Louisiana*. The Water Institute of the Gulf. Prepared for and funded by The National Fish and Wildlife Foundation, Shell, Chevron, Danos, and the Greater Lafourche Port Commission.

Miner, M., Dalyander, S., DiLeonardo, D., Windhoffer, E., Georgiou, I., Dudeck, N., Carruthers, T., & Kiskaddon, E. (2021). *Advancement of the Southeast Conservation Adaptation Strategy (SECAS) for project scale planning: Chandeleur Islands (Breton National Wildlife Refuge) restoration* (p. 104). The Water Institute. Produced for and funded by U.S. Fish and Wildlife Service.

Dalyander, P. S., Miner, M. D., Khalil, S., Lee, D., Leblanc, W., Newman, A., Cameron, C., & DiLeonardo, D. R. (2021). *Barrier Island System Management (BISM)* (p. 115). The Water Institute of the Gulf. Produced for and funded by the Louisiana Coastal Protection and Restoration Authority.

Dalyander, P. S., Foster-Martinez, M., DiLeonardi, D. R., Georgiou, I. Y., Miner, M. D., & Fitzpatrick, C. (2021). *2023 Draft Coastal Master Plan. 2023 Barrier Island Model: ICM-BITI and ICM-BI* (p. 70) [Version 02]. Coastal Protection and Restoration Authority.

The Water Institute of the Gulf. (2019). *Identifying sediment sources and optimizing placement of dredge material to protect critical infrastructure—Port of Lake Charles* (p. 175). Prepared by the Water Institute of the Gulf for the Port of Lake Charles.

Ramatchandirane, C. G., Courtois, A., DiLeonardo, D. R., Eckland, A. C., Miner, M. D., & Yocum, T. E. (2019). *Investigation of flow and water constituent fluxes through the tidal inlets of the Barataria Basin* (Task Order 55; p. 91). The Water Institute of the Gulf. Prepared for and funded by the Coastal Protection and Restoration Authority.

Mead, A., Carruthers, T. J. B., Clark, R., DiLeonardo, D. R., Hemmerling, S. A., Meselhe, E. A., Moss, L. C., Weathers, H. D., White, E. D., & Yuill, B. T. (2018). *Partnership for Our Working Coast: Port Fourchon Phase 1 Technical Report* (p. 215) [Technical report]. The Water Institute of the Gulf. Produced for and funded by: Shell, Chevron, Danos, and the Greater Lafourche Port Commission.

Mead, A., Marsh, J., DiLeonardo, D., Eckland, A., Ramatchandirane, C., & Weathers, H. (2018). *Bonnet Carré 2018 Flood Response*. The Water Institute. Prepared for and funded by the Coastal Protection and Restoration Authority.

Mead, A., DiLeonardo, D., Eckland, A., Ramatchandirane, C., & Weathers, H. (2018). *Mid-Breton technical team field data support*. The Water Institute. Prepared for and funded by the Coastal Protection and Restoration Authority.

Allison, M. A., Ramatchandirane, C., DiLeonardi, D. R., Esposito, C. R., Meselhe, E. A., & Weathers, H. D. (2018). *Calcasieu salinity control project: Data collection phase II* (p. 97). The Water Institute of the Gulf. Funded by the Coastal Protection and Restoration Authority.

Conference Proceedings and Presentations

Di Leonardo, D, Dalyander, S., Nicholas Enwright, Casey Stuht, Travis Swanson. (2024) *Indicators of Barrier Island Resilience and Resistance in Louisiana*. GOMCON Meeting.

Di Leonardo, D., McMann, B., Baustian, M., Bregman, M., Esposito, C., Georgiou, I., Hemmerling, S., Jung, H., & Miner, M. (2023). *A community-informed transdisciplinary approach to beneficial use of sediment for wetland restoration in Louisiana, USA*. Proceedings of Coastal Sediments Conference.

Di Leonardo, D., Dalyander, P. S., Miner, M., Georgiou, I. Y., & Dudeck, N. (2021, October). *Using XBeach to evaluate dune versus marsh restoration end member fill templates for enhanced barrier island resiliency: Chandeleur Islands, Gulf of Mexico*. American Shore and Beach Preservation Association (ASBPA), New Orleans, LA.

Di Leonardo, D., Baustian, M., Bregman, M., Cobell, Z., Courtois, A., Dalyander, S., DeMyers, C., Esposito, C., Georgiou, I., Hemmerling, S., Jung, H., McMann, B., Messina, F., Miner, M., & Yuill, B. (2020). *Coastal evolution management for a resilient working coast: Incorporating local knowledge into numerical modeling in Port Fourchon, Louisiana, USA*. Geological Society of America Annual Meeting.

Di Leonardo, D., Miner, M. D., Carruthers, T., Hemmerling, S., Clark, R., Cobell, Z., Dalyander, P. S., DeMyers, C., McHugh, C., & Yuill, B. (2019). *The role of geosciences in coastal community resilience strategies: A case study at Port Fourchon in the Mississippi River delta plain, USA*. *51*.

DiLeonardo, D., Mead, A., McLachlan, R., & Ogston, A. (2017). *Suspended sediment character in the Tidal Mekong River: Observations from LISST profiling*. Geological Society of America annual meeting.

DiLeonardo, D., & Mead, A. (2016). *Suspended sediment character in the Tidal Mekong River: Observations from LISST profiling*. Ocean Sciences Meeting.

Stephens, J., DiLeonardo, D., Weathers, H., & Mead, A. (n.d.). *Suspended and bedload sand dynamics in the Mekong River Channel and export to the coastal ocean*. Ocean Sciences Meeting.