

ORGANIZATION ROLE
Director of Coastal and Deltaic Systems

PROJECT ROLE / FOCUS AREAS
Estuarine hydrodynamics

Coastal processes and geomorphology

Morphodynamics

Rivers and deltas

EDUCATION
Ph.D., Engineering and Applied Sciences, University of New Orleans, 2002

MS, Civil and Environmental Engineering, University of New Orleans, 1999

BS, Civil Engineering, Louisiana State University, 1997

PROFESSIONAL MEMBERSHIP
American Geophysical Union

American Society for Civil Engineers

Geological Society of America

Coastal and Estuarine Research Federation

Licensed Professional Geoscientist, LA #411

IOANNIS GEORGIOU, PH.D., PG

Director of Coastal and Deltaic Systems

Dr. Ioannis Georgiou is the Director of Coastal and Deltaic Systems and has more than 25 years of experience working in the Mississippi River Delta Plain, and other coastal systems nationwide. Ioannis has experience on various surface processes occurring in rivers, deltas, estuaries and marshes, and led many studies to understand regional-to-local processes driving geomorphic change using observations in the field and numerical models. In Louisiana, Ioannis has experience in the evolution of Louisiana barrier islands and inlets in response to coastal erosion and interior wetland loss, the response of bays and sounds to freshwater and sediment diversions, the exchange of water and sediment during storms along coastal systems, and the dynamics of saltwater intrusion in the lower Mississippi River and Delta. At the institute, he is leading the ongoing modeling in support of CPRA's Sediment Diversion Program, he continues to be involved in the barrier islands and tidal inlets aspects of the 2023 Coastal Masterplan and leads technical modeling teams supporting the development of multidimensional coastal evolution models in Louisiana and the rest of the country.

PROFESSIONAL EXPERIENCE

2019–Present: Director of Coastal and Deltaic Systems, The Water Institute

2019–Present: Professor Gratis, College of Sciences, University of New Orleans

2017–2019: Olga Braunstein Endowed Professor in Sedimentary Geology, University of New Orleans

2012–2019: Associate Professor of Earth Sciences, University of New Orleans

2007–2012: Assistant Professor of Earth Sciences, University of New Orleans

2005–2007: Assistant Professor Research, University of New Orleans

2013–2019: Director of the Pontchartrain Institute for Environmental Sciences, University of New Orleans

2002–2004: Post-Doctoral Associate, Pontchartrain Institute for Environmental Sciences, University of New Orleans

SELECTED PROJECTS

Morphodynamic Evolution of the Assateague-Chincoteague Coastal System, Virginia Eastern Shore. *(2019–2022).* Principal and Modeling Lead. Developed and used a coupled wave-flow-sediment model (Delft3D) with multiclass sediment to evaluate the hydrodynamic controls and local-to-regional processes contributing to the morphologic evolution of the coast and evaluate restoration options to inform planning by Chincoteague Island community.

Hurricane Sedimentation on Salt Marshes: Extent, Provenance, and Processes *(Ongoing).* Principal Investigator. Collaborative study (with Boston University, Virginia Institute of Marine Science) to understand sediment provenance and processes driving mineral sedimentation onto salt marshes using storm surge and morphological modeling (Delft3D FM ADCIRC) assessing storm-induced sedimentation in the Sapelo Island backbarrier basin, and the coastal reaches of the Altamaha River.

Mid-Breton Sediment Diversion – Environmental Impact Statement (EIS) support and evaluation of diversion operation. *CPRA (Ongoing).* Principal Investigator. Numerical modeling to assess impacts of the planned Mid-Breton Sediment Diversion in southeast Louisiana on geomorphology, salinity, flooding, and water quality in the receiving area as well as the Mississippi River and delta. Technical lead for various analyses including water and sediment budget, sedimentation and dredging, conveyance analysis, impacts to marine mammals, and river, delta, and receiving basin impacts resulting from crevassing in the lowermost Mississippi River.

Economic and Geomorphic Comparison of Nearshore and Offshore Sands for Barrier Island and Shoreline Restoration in Coastal Louisiana. Data Synthesis. *(2018–2020).* Principal Investigator, Modeling. Delft3D modeling to simulate barrier island evolution with and without sand nourishments. Scenarios were developed to assess the physical performance of placed sediments sourced from within and outside the barrier system. Collaborators Rex Caffey (LSU) and Daniel Petrolia (Mississippi State) integrated the geomorphic and economic sub-models within an analytical framework to evaluate project performance for a 50-year trajectory.

Partnership for Our Working Coast. *(2020–2022)* Modeling Lead. Public-private partnership between The Water Institute and energy industry partners (Chevron, Shell, and Danos) and the Greater Lafourche Port Commission (GLPC). The partnership took a science-based approach to find ways to maximize coastal restoration benefits from sediment that will be generated by a large-scale dredging project to deepen the Port's entrance channel.

SELECTED PUBLICATIONS

1. Hein, C.J., Connell, J., FitzGerald, D.M., Georgiou, I.Y., Hughes, Z.J., & King, K. (2024). Vertical accretion trends project doughnut-like fragmentation of saltmarshes. *Communications Earth & Environment*, *5*(1), 74.
2. Hanegan, K., FitzGerald, D.M., Georgiou, I.Y., & Hughes, Z.J. (2023). Long-term sea level rise modeling of a basin-tidal inlet system reveals sediment sinks. *Nature Communications*, *14*(1), 7117.
3. Caffey, R., Petrolia, D.R., Georgiou, I.Y., Miner, M.D., Wang, H., Kime, B. (2022). The economics of sediment quality on barrier shoreline restoration, Journal of Environmental Management, 319, https://doi.org/10.1016/j.jenvman.2022.115730
4. Bendoni, M., Georgiou, I.Y., Roelvink, D., Oumeraci, H. (2019). Numerical Modeling of the Erosion of Marsh Boundaries due to Wave Impact, Coastal Engineering, 152 (2019) 103514
5. FitzGerald, D.M., Hein, C.J., O'Connell, J.E., Hughes, Z.J, Georgiou, I.Y., Novak, A, 2021, Largest Marsh in New England near a Precipice, Geomorphology, https://doi.org/10.1016/j.geomorph.2021.107625
6. Howes, N.C., FitzGerald, D.M., Hughes, Z.J., Georgiou, I.Y., Kulp, M.K., Miner, M.D., Smith, J.M., and Barras, J.A., (2010). Hurricane Induced failure of low salinity wetlands, PNAS, v. 107, 32, 14014-14019, doi/10.1073/pnas.0914582107.
7. FitzGerald, D.M., Hughes, Z.J., Georgiou, I.Y., Black, S., Novak, A., (2020). Climate Driven Event Sedimentation on Marshes, Geophysical Research Letters, 47, https://doi.org/10.1029/2019GL086737
8. Esposito, C. R., Georgiou, I. Y., Kolker, A. S., (2013). Hydrodynamic and geomorphic controls on mouth bar evolution. Geophysical Research Letters, 40(8), 1540–1545. https://doi.org/10.1002/grl.50333