

ZOE HUGHES

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PROFESSIONAL PREPARATION

- PhD.** 2003 National Oceanography Centre, University of Southampton, UK.
Small scale changes in bed morphology and sediment transport under waves and currents
- B.Sc. (Hons)** 1997 School of Ocean and Earth Science, University of Southampton, UK.
Oceanography with Mathematics

APPOINTMENTS

- 2017 - present Research Assistant Professor, Boston University (non-tenure)
- 2016 - 2021 Adjunct Assistant Professor, University of New Orleans.
- 2012 – 2018 Research Assistant Professor, University of Houston (non-tenure)
- 2010 Lecturer, Boston University Dept of Earth Science
- 2009 Adjunct Professor, Metropolitan College, Boston.
- 2004 – 2016 Postdoctoral/Senior Postdoctoral Research Associate, Boston University.
- 2003 – 2004 Scientist/Numerical Modeler, Metoc plc, Liphook UK.
- 1998 – 2001 Research Assistant, University of Southampton.

AWARDS FUNDED

- 2023 Lower Buzzards Bay Sedimentation & Gooseberry Causeway Impact Study addendum. Agency: Buzzards Bay Coalition/Rathmann Foundation. PI: Hughes; Funds Awarded **\$5,000.**
- 2022 Lower Buzzards Bay Sedimentation & Gooseberry Causeway Impact Study. Agency: Buzzards Bay Coalition/Rathmann Foundation. PI: Hughes; Co-PI: Fagherazzi and FitzGerald Funds Awarded **\$1,300,000 (\$925,000 to BU).**
- 2021 Archaeology Climate Action Plan, Boston. Agency: City of Boston. PI: Hughes. Funds Awarded **\$30,000.**
- 2020 Post-Graduate Internship project – Coskata-Coatue Wildlife Refuge. Agency: The Trustees of the Reservation. PI FitzGerald; Co-PI: Hughes. Funds Awarded **\$132,660.**
- Collaborative Research: Hurricane Sedimentation on Salt Marshes: Extent, Provenance, and Processes. Agency: National Science Foundation. PI: FitzGerald; Co-PI: Hughes. Funds Awarded **\$187,990.**
- 2019 Eelgrass Health Assessment for Madaket Harbor. Agency: Nantucket Land Council. PI: Novak; Co-PI: Hughes. Funds Awarded **\$40,000.**

- Storm and Wave Impacts to Joppa Flats and the Abutting Saltmarsh. *Agency Merrimack Valley Planning Commission. PI: Hughes. Funds Awarded \$9,000*
- 2018 Impacts of future storminess, greater wave energy, and increased sediment transport along Castle Neck and into Essex Bay: Essex, MA. *Agency: Massachusetts Executive office of Energy and Environmental Affairs. PI: FitzGerald ; Co-PI: Hughes. Funds Awarded \$187,149.*
- RAPID: Capturing the Hurricanes Florence and Michael Sedimentation Event. *Agency: National Science Foundation. PI: FitzGerald; Co-PI: Hughes. Funds awarded: \$22,276.*
- Assessing storm energy reduction by the vegetated salt marsh platform in Newbury, MA: a background to enhancing natural protection by the living shoreline. *Agency: Massachusetts Executive office of Energy and Environmental Affairs. PI: FitzGerald; Co-PI: Hughes. Funds Awarded \$225,840.*
- 2017 RAPID: Quantifying the Great Marsh Sedimentation Event. *Agency: National Science Foundation. PI: Hughes. Funds awarded: \$8,000.*
- Inspire Cooperative Climate Change Adaptation Through Locally-Scaled Vulnerability Analyses, Part II. *Agency: National Park Service. PI: FitzGerald and Hughes. Funds Awarded \$274,910.*
- 2015 RAPID: Collaborative Research: Storm Surge Deposition on Salt Marshes: Impacts of Hurricane Irma from Florida to South Carolina. *Agency: National Science Foundation. PI: FitzGerald; Co-PI: Hughes. Funds awarded: \$25,412*
- Inspire Cooperative Climate Change Adaptation Through Locally-Scaled Vulnerability Analyses. *Agency: National Park Service. PI: FitzGerald and Hughes. Funds Awarded \$96,839.*
- 2014 Analyzing marsh stability in Cape Romain Wildlife Refuge: Marsh platform dissection as a response to sea level rise. *Agency: National Fish and Wildlife Federation. PI: Hughes (at UH) Funds Awarded \$15,000.*
- 2012 Hydrodynamic and Sediment Transport Modeling Leading to Restoration, Better Management, and Improved Sustainability of Great Marsh. *Agency: National Fish and Wildlife Federation. PI: FitzGerald. Co-PI: Hughes, Hein and Georgiou Funds Awarded \$340,070.*
- 2011
- 2010 Mangroves are invading saltmarshes, what are the consequences? *Agency: Texas Seagrant. PI: Pennings. Co-PI: Hughes. Funds awarded \$273,314.*
- Mangroves invading saltmarsh: does it matter? *Agency: Texas Seagrant. PI: Pennings and Armitage. Co-PI: Hughes. Funds awarded \$131,146.*
- Variability In Lateral Accretion And Internal Architecture Of Bars In Tidally-Influenced Channels: *Continuation. Agency: Shell International Exploration and Production. PI: FitzGerald; Co-PI: Hughes. Hughes. Funds awarded: \$20,000.*
- 2009 Collaborative Research: Biophysical alteration of wetland geomorphology in response to rising sea level. *Agency: National Science Foundation. PI: FitzGerald and Mahadevan; Co-PI: Hughes. Funds awarded: \$448,278.*
- Variability In Lateral Accretion and Internal Architecture Of Bars In Tidally- Influenced Channels. *Agency: Shell International Exploration and Production. PI: FitzGerald; Co-PI: Hughes. Funds awarded: \$100,000*

- Modeling Tools to Predict Effects of Coastal Protection and Restoration Projects, Morphology module. *Agency: Louisiana Office of Coastal Protection and Restoration PI: FitzGerald; Co-PI: Hughes.* Funds awarded: **\$120,000.**
- 2008 Analyzing marsh stability in Cape Romain Wildlife Refuge: Marsh platform dissection as a response to sea level rise. *Agency: Fish and Wildlife Service. PI: FitzGerald, Co-PI: Hughes.* Funds Awarded: **\$21,504.**
- Marsh Platform Dissection As A Response To Sea Level Rise: Physical Mechanisms Of Erosion. *Agency: Department of Energy National Institute for Climate Change Research. PI: FitzGerald. Co-PI: Hughes, Mahadevan, Pennings.* Funds awarded **\$95,000.**
- 2007 ETBC: Coupling biogeochemical cycles and sediment fluxes in the intertidal zone: erosion, deposition and landform evolution *Agency: National Science Foundation. PI: Fagherazzi. Co-PI: FitzGerald, Deegan and Fulweiler.* Funds awarded (to FitzGerald and Hughes): **\$300,000.**
- Hydrodynamic Modeling of Diversions into Barataria Bay. *Agency: National Oceanic and Atmospheric Administration. PI: FitzGerald.* Funds awarded: **\$42,000.**
- Marsh Sedimentation Study: Boston Harbor Islands National Recreation Area. *Agency: National Park Service. PI: FitzGerald, Co-PI: Rosen and Hughes* Funds awarded: **\$249,424.**
- 2006 Dissection of platform marshes by ecophysical processes in response to sea level rise. *Agency: Department of Environment, National Institute for Climate Change Research. PI: FitzGerald, Co-PI: Hughes, Mahadevan, Pennings.* Funds awarded: **\$182,813**
- Quantifying Factors Producing Shear Zones Due To Major Hurricanes: Caernarvon Basin. *Agency: NOAA. PI: FitzGerald.* Funds awarded: **\$69,000.**
- Determination of wave impacts at spectacle island. *Agency: Department of Conservation and Recreation Boston. PI: FitzGerald, Co-PI: Hughes and Rosen.* Funds awarded **\$39,173.**
- Wave, hydrodynamic, and sediment transport study of northern Long Island, Boston Harbor *Agency: National Park Service. PI: FitzGerald. Co-PI: Hughes and Rosen.* Funds awarded: **\$197,423.**

PUBLICATIONS

Books Edited

FitzGerald D.M. and **Z.J. Hughes**, 2021. Salt Marshes: Function, Dynamics, and Stresses, Cambridge University Press, Cambridge, UK.

Peer Reviewed Journal Articles and Book Chapters

Tas, S.A.J., **Hughes, Z.J.**, FitzGerald, D.M., Xie, D, Asik Zaman, T. and Fagherazzi, S, 2024. Pathways and thresholds for sediment transport into Slocums Embayment. *In prep.*

Staro, A., FitzGerald, D.M., **Hughes, Z.J.**, Hein C., Georgiou I.Y., 2024. Hurricane sedimentation can aid Salt Marsh resiliency against climate change induced sea level rise. *In prep.*

Hughes Z.J., Wright, S., D.M. FitzGerald, 2024. Impacts of anthropogenic ditching on marsh elevation. Wetlands. Wetlands. *In prep.*

- Black, S.K., **Hughes, Z.J.**, FitzGerald, D.M., 2024. Controls on Coastal Bluff Erosion for a Drowned Drumlin Field: Boston Harbor, Massachusetts. *Geomorphology Submitted*.
- Xie, D., **Hughes, Z.J.**, FitzGerald, D., Tas, S., Zaman Asik, T., and Fagherazzi, S., 2024. Impacts of Causeway Removal on Nearshore Hydrodynamics and Sediment Transport Across a Tombolo. *Water Resources Research. Submitted*.
- Hein, C.J., Connell, J.E., FitzGerald, D.M., Georgiou, I.Y., **Hughes, Z.J.**, King, K., 2024. Vertical accretion trends project doughnut-like fragmentation of saltmarshes, *Nature Communications: Earth & Environment*. 5: 74. <https://doi.org/10.1038/s43247-024-01219-8>
- Xie, D., **Hughes, Z.J.**, FitzGerald, D.M., Tas, S., Zaman Asik, T., and Fagherazzi, S., 2024, Impacts of climate change on coastal hydrodynamics around a headland and potential headland sediment bypassing. *Geophysical Research Letters*, 51, e2023GL105323. <https://doi.org/10.1029/2023GL105323>
- Novak A.B., Plaisted H.K., **Hughes Z.J.**, Mittermayr A., Molden E. 2023. Eelgrass (*Zostera marina* L.) populations are imperiled by high sea-surface temperatures and eutrophic waters on Nantucket Island, USA. *Marine Pollution Bulletin* 197: 115689. <https://doi.org/10.1016/j.marpolbul.2023.115689>
- Hughes Z.J.**, Farron, S.J. and D.M. FitzGerald, 2023. Geographic variability in headward erosion of marsh tidal creeks: ecological and physical causes. *Earth Surface and Planetary Landforms*. <https://doi.org/10.1002/esp.5747>
- Hanegan, K., D.M. FitzGerald, I.Y. Georgiou, **Z.J. Hughes**, 2023. Long-term sea level rise modeling of a basin and tidal inlet system reveals sediment sinks. 2022. *Nature Communications* 14:7117. <https://doi.org/10.1038/s41467-023-42895-y>
- Houttuijn Bloemendaal L.J., D.M. FitzGerald, **Z.J. Hughes**, A.B. Novak, and Georgiou, I.Y 2023, Reevaluating the wave power-salt marsh retreat relationship. *Nature: Scientific Reports*. 13:2884
- Souza, P, Georgiou, I, FitzGerald, DM, **Hughes, Z.J.** Howes, N.C. and Kulp, M.A., 2023. Hydrodynamic controls on sedimentary facies of tidal point bars: A case study in the Georgia coastal plain, USA. *Sedimentology*. <https://doi.org/10.1111/sed.13060>
- FitzGerald DM, **Hughes Z.J.**, Staro A, Hein CJ, Sakib MM, Georgiou IY, Novak A., 2022. Following the Sand Grains. *Journal of Marine Science and Engineering*. 10(5):631. <https://doi.org/10.3390/jmse10050631>
- Wilson C.A., **Z.J. Hughes**, D.M. FitzGerald, 2022. Causal Relationships among Sea-level rise, Marsh Crab Activity, and Saltmarsh Geomorphology. *Proceedings of the National Academy* 119(9). <https://doi.org/10.1073/pnas.2111535119>
- Houttuijn Bloemendaal L.J., D.M. FitzGerald, **Z.J. Hughes**, A.B. Novak, P. Phippen, 2021, What controls marsh edge erosion? *Geomorph*. <https://doi.org/10.1016/j.geomorph.2021.107745>
- Pennings S.C., R.M. Glazner, **Z.J. Hughes**, J.S. Kominoski, A.R. Armitage 2021. Effects of mangrove cover on coastal erosion during a hurricane in Texas, USA. *Ecology* 102(4) doi.org/10.1002/ecy.3309.
- FitzGerald, DM., C.J. Hein, J.E Connell, **Z.J. Hughes**, I.Y. Georgiou, S. Black, and A. Novak, 2021. Largest Marsh in New England near a Precipice. *Geomorphology* <https://doi.org/10.1016/j.geomorph.2021.107625>

- Wilson C.A., G. Perillo and **Z.J. Hughes**, 2021. Ecogeomorphic processes in Salt Marshes in Marshes, Function, Dynamics, and Stresses, Eds: D.M. FitzGerald and Z.J Hughes. Cambridge University Press, Cambridge, UK.
- Hughes Z.J.**, C.A. Wilson and D.M. FitzGerald, 2021. The future of marshes: Impacts of Climate Change and Sea Level Rise: in Marshes, Function, Dynamics, and Stresses, Eds: D.M. FitzGerald and Z.J Hughes. Cambridge University Press, Cambridge, UK.
- FitzGerald D.M. and **Hughes Z.J.**, 2021. State of Marshes: in Marshes, Function, Dynamics, and Stresses, Eds: D.M. FitzGerald and Z.J Hughes. Cambridge University Press, Cambridge, UK.
- Wilson C.A., **Z.J. Hughes**, D.M. FitzGerald, A. Kolker, J. Lynch, and P. Rosen, 2020. Saltmarsh sustainability throughout the Holocene in Boston Harbor: A new sea-level curve for the lower Gulf of Maine and implications of recent anthropogenic alteration. *Quaternary Science Review* 240:106383 [10.1016/j.quascirev.2020.106383](https://doi.org/10.1016/j.quascirev.2020.106383)
- FitzGerald, D., Ryerson, O., **Hughes, Z.**, Black, S., Georgiou, I., Hein, C., and Novak, A. 2020. Long-term variability in inorganic sediment contribution to the Great Marsh, Massachusetts. In: Malvárez, G. and Navas, F. (eds.), *Proceedings from the International Coastal Symposium (ICS) 2020* (Seville, Spain). *Journal of Coastal Research*, Special Issue No. 95, pp. 1–5. Coconut Creek (Florida), ISSN 0749-0208.
- Farron, S.J., **Z.J. Hughes**, D.M. FitzGerald, and K. B Strom. 2020. The Impacts of Crab Bioturbation on the Threshold of Erosion for Marsh Sediment. *Estuaries, Coasts and Shelf Science* V238. doi.org/10.1016/j.ecss.2020.106710.
- FitzGerald, DM., **Z.J. Hughes**, I.Y. Georgiou, S. Black, and A. Novak. 2020. Enhanced climate-driven sedimentation on salt marshes. *Geophysical Research Letters*. doi.org/10.1029/2019GL086737
- Farron, S., **Z.J. Hughes**, and D.M. FitzGerald. 2020. Assessing the response of the Great Marsh to sea level rise: migration, submersion or survival. *Marine Geology* doi.org/10.1016/j.margeo.2020.106195
- FitzGerald D.M. and **Hughes Z.J.**, 2019. Marsh Processes and Their Response to Climate Change and Sea-Level Rise. *Annual Review of Earth and Planetary Science*. Vol. 47, pp. 481-517).
- FitzGerald D.M., J. Hein C., **Hughes Z.**, Kulp M., Georgiou I., Miner M. 2018. Runaway Barrier Island Transgression Concept: Global Case Studies. In: Moore L., Murray A. (eds) *Barrier Dynamics and Response to Changing Climate*. Springer.
- Wilson C.A., **Z.J. Hughes**, D.M. FitzGerald, C Hopkinson, V Valentine, and A Kolker, 2014. Saltmarsh pool and tidal creek morphodynamics: Dynamic equilibrium of northern latitude saltmarshes? *Geomorphology* 213 p99-115.
- Fagherazzi S., FitzGerald D.M., Fulweiler R.W., **Hughes Z.**, Wiberg P.L., McGlathery K.J., Morris J.T., Tolhurst T.J., Deegan L.A., Johnson D.S., 2013. Ecogeomorphology of Tidal Flats, *Treatise on Geochemistry*, Ed. in chief, J. Shroder, vol. 12, Ecogeomorphology, eds. D. Butler and C. Hupp, 201-220. San Diego, CA: Academic Press
- Fagherazzi S., FitzGerald D.M., Fulweiler R.W., **Hughes Z.**, Wiberg P.L., McGlathery K.J., Morris J.T., Tolhurst T.J., Deegan L.A., Johnson D.S. 2013. Ecogeomorphology of salt marshes. In *Treatise on Geochemistry*, Ed. in chief, J. Shroder, vol. 12, Ecogeomorphology, eds. D. Butler and C. Hupp, 182-200. San Diego, CA: Academic Press
- Wilson C.A., **Z.J. Hughes**, D.M. FitzGerald, 2012. The effects of crab bioturbation on Mid-Atlantic saltmarsh tidal creek extension: Geotechnical and geochemical changes. *Estuarine, Coastal and Shelf Science* 95 p 33-44

- Vieillard, A., Fulweiler, R.W., **Hughes, Z.**, 2012 The ebb and flood of Silica: Quantifying dissolved and biogenic silica fluxes from a temperate salt marsh. 2011. *Estuarine, Coastal and Shelf Science* 95 (4): 415-423.
- Argow B.A., **Z.J. Hughes** and D.M. FitzGerald, 2011. Ice raft formation, sediment load, and theoretical potential for ice-rafted sediment influx on northern coastal wetlands. *Continental Shelf Research*, 31(12): 1294-1305
- Hughes Z.J.**, 2011. Tidal channels on tidal flats and marshes. In: Principles of Tidal Sedimentology. R A Davis and R W Dalrymple (Eds), Springer, New York. Doi: 10.1007/978-94-007-0123-6_11.
- Hughes Z.J.**, 2010. Tourism and climate impact on North American Eastern Seaboard. In: Disappearing Destinations. A. Jones and M. Phillips (Eds). pp161-176. CABI, Wallingford, UK
- Howes N.C., D.M. FitzGerald, **Z.J. Hughes**, I.Y. Georgiou, M.A. Kulp, M.D. Miner, J.M. Smith and J.A. Barras, 2010 Hurricane-induced failure of low salinity wetlands. *Proceedings of the National Academy of Sciences of the United States of America*, 107(32): 14014-14019
- Georgiou, I.Y., J.A. McCorquodale, J. Schindler, A.G. Retana, D M. FitzGerald, **Z.J. Hughes**, and N Howes. 2009. Impact of Multiple Freshwater Diversions on the Salinity Distribution in the Pontchartrain Estuary under Tidal Forcing. *Journal of Coastal Research* SI(54), pp. 59-70
- Hughes, Z. J.**, D. M. FitzGerald, C. A. Wilson, S. C. Pennings, K. Wieiski, and A. Mahadevan 2009, Rapid headward erosion of marsh creeks in response to relative sea level rise, *Geophysical Research Letters*, 36, L03602, doi:10.1029/2008GL036000 .
- Hughes, Z.J.**, D.M. FitzGerald, N.C. Howes and P. Rosen, 2007, The impact of natural waves and ferry wakes on the erosion of bluffs, Boston Harbour, US. *J. Coast. Res.*, SI(50) 497-501.
- Williams, J.J., B.A. O'Connor, S.M. Arens, S. Abadie, P. Bell, Y. Balouin, J.H. Van Boxel, A.J. Do Carmo, M. Davidson, O. Ferreira, M. Heron, H. Howa, **Z. Hughes**, L.M. Kaczmarek, H. Kim, B. Morris, J. Nicholson, S. Pan, P. Salles, A. Silva, J. Smith, C. Soares and A. Vila. . 2003 "Tidal inlet function: field evidence and numerical simulation in the INDIA Project". *Journal of Coastal Research*, Vol. 19(1):189-211.

[Proceedings and Reports](#)

- Georgiou, I.Y., **Hughes, Z.J.**, Trosclair, K., 2013. Application of Hydrodynamic Models in support of the Buried Oil Project Along the Coast of Louisiana and Mississippi, Technical Report prepared for OSAT3, 17pp
- Georgiou, I.Y., **Hughes, Z.J.**, Trosclair, K., 2013. Application of Hydrodynamic and Sediment Transport Models for Cleanup Efforts Related to the Deepwater Horizon Oil Spill Along the Coast of Mississippi and Louisiana, Technical Report prepared for OSAT3, 44pp
- Howes, N.C., **Z.J. Hughes**, D.M. FitzGerald, I.Y. Georgiou, J.L. Kindinger, N.A. Buster, 2013. Barataria Bay Tidal-Inlet Management Considerations. In Louisiana Barrier Island Comprehensive Monitoring (BICM) Program Summary Report: Data and Analyses 2006 through 2010: U.S. Geological Survey Open-File Report 2013–1083 (Eds: J. L. Kindinger, N. A. Buster, J. G. Flocks, J. C. Bernier, and M. A. Kulp) p60:70
- Georgiou, I.Y., **Hughes, Z.**, Weathers, H.D., Kulp, M.A., FitzGerald, D.M., 2012. Barrier Shoreline Morphology Model, in: Louisiana Comprehensive Master Plan 2012 for a sustainable Coast, Coastal Protection and Restoration Authority, 37 pp.
- FitzGerald D., **Z.J. Hughes** and P Rosen, 2011. Determination of wave impacts at spectacle island. Report to Applied Coastal Engineering Ltd and the City of Boston, 45 pp.

- Georgiou, I.Y., McCorquodale, J.A., Nepani, J., Howes, N., **Hughes, Z.**, FitzGerald, D.M., Schindler, J.K., 2010. Modeling the hydrodynamics of diversions into Barataria Bay, Technical Final Report submitted to the Lake Pontchartrain Basin Foundation, Pontchartrain Institute for Environmental Sciences, March 2010, New Orleans, LA 70148, 82 pp.
- FitzGerald D., **Z.J. Hughes**, A Mahadeven and S Pennings, 2009. Dissection of Platform Marshes by Ecophysical Processes in Response to Sea-Level Rise. Final Report to the National Institute of Climate Change Research, 22 pp.
- FitzGerald D., **Z.J. Hughes** and P Rosen, 2009. Boat Wake Impacts and their Role in Shore Erosion Processes, Boston Harbor Islands National Recreation Area. Final Report to National Park Service, Boston. pp 171
- Georgiou, I.Y., McCorquodale, J. A., Schindler, J., Retana A.G., FitzGerald, D.M., **Hughes, Z.**, Howes, N., 2009. Impact of Multiple Freshwater Diversions on the Salinity Distribution in the Pontchartrain Estuary under Tidal Forcing, final report submitted to the National Oceanic and Atmospheric Administration (NOAA), New Orleans, LA, 40 pp.
- Georgiou, I.Y., McCorquodale, J. A., Schindler, J., Retana A.G., FitzGerald, D.M., **Hughes, Z.**, 2008. Hydrodynamic and salinity modeling in the Pontchartrain Basin: assessment of freshwater diversion at Violet with MRGO modifications, final report submitted to the National Oceanic and Atmospheric Administration (NOAA), New Orleans, LA, 34 pp.
- FitzGerald, D.M., Howes, N., **Hughes, Z.**, Wilson, C., Mahadevan, A., Kulp, M.A., Georgiou, I., and Miner, M.D., 2008. Evolving wetlands and field and modeling studies. Annual CIRP Technology-Transfer Workshop Estuarine Design and Research Needs: Navigation Channels, Estuarine Vegetation, Placement of Dredged Sediments, and Long-term Estuary Evolution, vol. 9, 43 pp.
- FitzGerald D., **Z.J. Hughes** and P Rosen, 2008. Wave, hydrodynamic, and sediment transport study of northern Long Island, Boston Harbor. Final Report to Boston Harbor Alliance, Boston, 122 pp.
- Argow, B.A., **Z.J. Hughes**, and D.M. FitzGerald, 2007. Ice raft formation, dispersion and sedimentation on New England salt marshes. In: N.C. Kraus and J.D. Rosati (Editors), Coastal Sediments '07: Proceedings of the Sixth International Symposium on Coastal Engineering and Science of Coastal Sediment Processes. American Society of Civil Engineers, New Orleans, LA, USA, 1:798-813.
- FitzGerald, D.M., M. Kulp, **Z.J. Hughes**, I. Georgiou, M. Miner, S. Penland, and N.C. Howes. 2007. Impacts of rising sea level to backbarrier wetlands, tidal inlets, and barrier islands: Barataria coast, Louisiana. In: N.C. Kraus and J.D. Rosati (Editors), Coastal Coastal Sediments '07, Proceedings of the 6th International Symposium on Coastal Engineering and Science of Coastal Sediment Processes, May 13-17, New Orleans, Louisiana, p. 1179-1192
- Hughes, Z.J.**, J.J. Williams, A Velegrakis, P.S. Bell, P. Thorne, and M.B. Collins, 2001. Temporal and spatial variation in the morphology of current related bedform; and sediment transport within a tidal inlet. In: INDIA MAS3-CT-0106 Final Report Ed O'Connor B.A.C
- Thompson, J De Silva, M.B. Collins and **Z.J. Hughes**, 2001. Oceanographic processes associated with the Ria Formosa, Southern Portugal, observed using SAR imagery. In: INDIA MAS3-CT-0106 Final Report Ed O'Connor B.A.
- A Hughes. and **Z Hughes.**, 2000. Settling Velocity and Carbonate content analysis of samples collected near the Barra Nova, Ria Formosa Algarve. SOES Report No 0001.
- Williams, J. J., B. Arens, D. Aubrey, P. Bell, A. Bizzaro, M. Collins, M. Davidson, J. Dias, O. Ferreira, M. Heron, H. Howa, **Z. Hughes**, D. Huntley, M. T. Jones, B. O'Connor, S. Pan, A. Sarmento, F.

Seabra-Santos, S. Shayler, J. Smith and G. Voulgaris, 1999. "Inlet Dynamics Initiative: Algarve (INDIA)". 16pp. in, Proceedings Coastal Sediments '99, ASCE.

Data

Hein, C; Connell, J; FitzGerald, DM; Hughes, ZJ; Georgiou, IY; King, K 2024. Rates of vertical accretion of backbarrier marshes along the Georgia Bight as measured from sediment cores collected during December 2017 (NCEI Accession 0286629). [indicate subset used]. NOAA National Centers for Environmental Information. Dataset. <https://doi.org/10.25921/eff9-d732>.

Pennings, S.C., R.M. Glazner, Z.J. Hughes, J.S. Kominoski, and A.R. Armitage. 2021. Effects of mangrove cover on coastal erosion during a hurricane in Texas, USA ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/1b30a722e2e89177e6a217ad77bad74f>.

FitzGerald, Duncan M.; Hughes, Z.J.; Black, S.K. (2020). Ice-Rafted sediment deposit locations, thickness measurements, and coverage calculations in the Great Marsh, Massachusetts from 2018-01-26 to 2018-07-03 (NCEI Accession 0210237). NOAA National Centers for Environmental Information. Dataset <https://www.nci.noaa.gov/archive/accession/0210237>.

PROFESSIONAL SERVICE

Created an *Introduction to Fieldwork* for the BU Marine Program, Marine Semester Orientation.

Led the application for BU affiliation to North Atlantic Coast Cooperative Ecosystem Studies Unit (NAC-CESU).

Founding member and Mentoring Coordinator of Association of Women Geoscientists Greater Boston Chapter, 2023.

Department of Earth and Environment Diversity, Equity, and Inclusion Committee 2020-2023.

- Manager of collection and analysis of Department Diversity Survey 2021, 2024.
- Co-author of the EE-DEI Field Inclusivity and Safety Plan and Field Code of Conduct (2022).
- Organized FieldFutures® Safe and Inclusive Field training for Department of Earth and Environment and BU Marine Program communities (2023).

Member of the BU Unlearning Racism in the Geosciences (URGe) Pod, 2020. BU

Warren Mcleod Fellowship review committee, 2020, 2021.

Mentor for BU RISE (Research In Science and Engineering) Program: Mentoring rising senior in high school during a 6 week internship. 2019, 2021.

Journal Review (2005-present) including Marine Geology, Limnology and Oceanography, Journal of Coastal Research, Geophysical Research Letters, Estuaries and Coasts, Ecology, Wetlands, Ecological Marine Progress Series, Wetlands Ecology and Management, Geological Society of America Bulletin, Journal of Coastal Research, Journal of Geophysical Research, Remote Sensing of the Environment, Earth Surface Processes and Landforms, Proceedings of the National Academy of Science.

Academic Review: Proposal review: SC Sea Grant, 2023, NC Sea Grant, 2023, NSF Geomorphology and Land Use Dynamics 2012, 2015 and 2016, 2019, 2023. National Park Service Awards 2014 and 2016, New York Sea Grant 2015 and Gulf of Mexico Research Initiative, April 2015. Panel: NFS EAR 2017 and NSF EAR 2018; NOAA/NOS Ecological Effects of Sea Level Rise in the Northern Gulf of Mexico, Jan 2007; Gulf of Mexico Research Initiative, Aug 2011. Gulf of Mexico Research Initiative, Aug 2015.

Recognized for “*Outstanding Contributions to Manuscript Review*” 2012 by the Coastal and Estuarine Research Federation, the Editors in Chief and the Editorial Board of *Estuaries and Coasts*.

Scientific Advising: Boston Research Advisory Group for Boston Climate Ready 2017-18. NOAA funded project, Ecological Effects of Sea Level Rise in the Northern Gulf of Mexico, 2010-2014. Spectacle Island Technical Advisory Committee, 2008-2012. New England Salt Marsh Working Group 2020-2022. Belle Isle Marsh Advisory Group 2020-2022. National Park Service, Advisor, Boston Harbor Islands National Recreation Area (2004-2023). Trustees of the Reservation, Advisor, Crane Beach (2019-2023) and Nantucket/Coskata-Coatue Reservation (2021-2023).

Conference Session Chair: NE GSA Manchester, March 17-19 2024; NE/SE GSA Reston Virginia March 17-19 2023; *Coastal & Estuarine Research Federation CERF21* Online, Nov 4-7. *Geological Society of America, South East Section* Charleston, SC, 2019; *Coastal & Estuarine Research Federation CERF11*, Daytona Beach, November 6-10 2011; *Geological Society of America, South Central Section*, New Orleans, Mar 27-29 2011; *Geological Society of America National Meeting*, Denver, Colorado, Oct 31-Nov 3 2010; *Coastal & Estuarine Research Federation CERF09*, November 4-8 2009 Portland, Oregon; *AGU Ocean Sciences*, March 2-7, 2008, Orlando FL.; *Research Federation ERF2007*, November 4-8 2007 Providence RI.

PRESENTATIONS AT SCIENTIFIC CONFERENCES

Hughes, Z.J., D.M. FitzGerald, S Farron (2023). Geographic variability in headward erosion of marsh tidal creeks: ecological and physical causes (INVITED). AGU Fall Meeting, San Francisco Dec 2023.

Hughes, Z.J., D.M. FitzGerald, S Black, I.Y. Georgiou and N.C. Howes (2018). Assessing the extent and importance of sedimentation from a 100 year winter storm on saltmarsh resilience. GSA Indianapolis Nov 4-7 2018.

Hughes, Z.J., I.Y. Georgiou, A. Gaweesh, K. Hannegan, D.M. FitzGerald, Christopher J Hein. (2017) Assessing saltmarsh resilience to sea-level rise by examining sediment transport trends in the Great Marsh, MA. AGU Fall Meeting, New Orleans, Dec 11-5 2017.

Hughes, Z.J., C.A. Wilson and D.M. FitzGerald and P. Rosen (2017). Sea Level Rise and Salt Marsh Evolution in Boston Harbor. Boston Harbor Science Symposium, Boston April 11 - 12, 2017

Hughes, Z.J., I.Y. Georgiou, N.C. Howes, D.M. FitzGerald. (2014) Patterns of flow and sedimentation in channels with variable tidal and fluvial influence: observations from coastal Georgia. AGU Fall Meeting, San Francisco, Dec 15-19 2014.

Hughes, Z.J., C.A. Wilson, H. Vu, S. J. Farron, N.C. Howes, and D.M FitzGerald, (2013). Biophysical mediation of wetland geomorphology in response to rising sea level. *Joint Penrose Chapman Conference: Coastal Processes and Environments Under Sea-Level Rise and Changing Climate: Science to Inform Management*, 14–19 April 2013, Galveston, Texas, USA

Hughes Z.J., N.C. Howes, I.Y. Georgiou, M. Kulp, D.M. FitzGerald, (2012). Development and morphology of point bars in tidal rivers, observations from Sapelo and the Altamaha River, GA. *AGU Fall Meeting*, San Francisco, Dec 2-7 2012.

Hughes Z.J., N.C. Howes, I.Y. Georgiou, M. Kulp, D.M. FitzGerald, (2012). Development and morphology of point bars in tidal rivers, observations from Sapelo and the Altamaha River, GA. *AGU Chapman Conference (Hydrogeomorphic Feedbacks and Sea Level Rise in Tidal Freshwater River Ecosystems)*, Reston Virginia, 13-16 November 2012. Poster presentation.

- Hughes Z.J.**, I.Y. Georgiou, N.C. Howes, C.A. Wilson, M. Kulp, D.M. FitzGerald, (2011). Development mechanics and morphology of point bars in tidal creeks, observations from Sapelo and the Altamaha, GA. *South East Tidal Creek Summit*, Charleston SC, Dec 5-6 2011.
- Hughes Z.J.**, C.A. Wilson, H. Vu, D.M. FitzGerald, S. Pennings. (2011) Recent expansion of tidal creek networks in the South Atlantic Bight: an ecogeomorphological responses to sea level rise? *South East Tidal Creek Summit*, Charleston SC, Dec 5-6 2011.
- Hughes Z.J.**, N.C. Howes, D.M. FitzGerald, I.Y. Georgiou, M.A. Kulp, M. D. Miner, J. M. Smith and J. A. Barras. (2010). Wetland loss during hurricanes: failure of low salinity marshes in Breton Sound. *Louisiana State of the Coast Conference*, June 8-10, Baton Rouge, LA. Poster presentation.
- Hughes, Z.J.**, C.A. Wilson, D.M. FitzGerald and P. Rosen (2010). Backbarrier dynamics in a glaciated environment: the evolution of a small saltmarsh system in Boston Harbor. *Geological Society of America Northeastern Section*, March 13-16th March 2010, Baltimore, MD. Poster Presentation
- Hughes Z.J.** D. M FitzGerald, A. Mahadevan, C. Wilson and S. Pennings. (2009) Rapid evolution of a marsh tidal creek network in response to sea level rise. *CERF2009*, November 4-8 2009 Portland, Oregon.
- Hughes, Z.J.**, D. M FitzGerald, A. Mahadevan, C. Wilson and S. Pennings. (2009) Rapid evolution of a marsh tidal creek network in response to sea level rise. *Geological Society of America Northeastern Section*, March 20-22nd 2009, Portland ME.
- Hughes, Z.J.**, (2007) The impact of natural waves and ferry wakes on the erosion of bluffs, Boston Harbour, US. *International Coastal Symposium 2007*, Queensland, Australia, 16-20 April 2007.
- Hughes, Z.J.** and D.M. FitzGerald, (2006). Tidal and Wave induced sedimentation transport pathways at Wells Inlet Maine. *Proceedings of Association of Environmental and Engineering Geologists*, 49th Annual Meeting, Boston Ma, Oct 30- Nov 4 2006.
- Hughes, Z. J.**, D M FitzGerald and P. Rosen, (2006), Assessing the impact of ferry boat wakes on shoreline erosion in Boston Harbor, Massachusetts. *Proceedings of the International Conference of Coastal Engineering* San Diego, CA, Sept 4-8 2006.
- Hughes Z.J.** (2006) Wave measurements nearshore, Boston Harbor, **Invited lecture at the 1st Advisory Meeting for the Center for Environmental Sensing Networks**, Boston, Aug 16 2006
- Hughes, Z.J.**, (2000), The evolution of Small Scale bedforms within the Barra Nova Tidal Inlet. *Third Symposium on the Iberian Coastline*. Faro, Portugal, Sept 2000. Abstract in proceedings.

INVITED SEMINARS AND FIELD TRIPS

- Hughes, Z.J., D.M. FitzGerald, S Farron (2023). Geographic variability in headward erosion of marsh tidal creeks: ecological and physical causes. AGU San Francisco Dec 2023.
- Hughes, Z. (2023). Understanding the Westport-South Dartmouth Coastal System. Buzzards Bay Coalition Meeting, June 28 2023.
- Hughes, Z.J. (2023) Ecosystem engineers improve saltmarsh resilience to climate change. Invited talk to Noanett Garden Club. March 3 2023.
- Hughes, Z., & FitzGerald, D. (2022). Lower Buzzards Bay Sedimentation & Gooseberry Causeway Impact. Invited talk to Rathmann Foundation Annual Meeting. November 28 2022.

- Hughes, Z.J. (2021) How ecosystem engineers can help improve saltmarsh resilience to climate change. Colby College, Dept of Geology Seminar Series, December 2 2021.
- D. FitzGerald and Hughes, Z.J. (2020) Climate Change Risks to Nantucket. To Trustees of the Reservation July 8 2020.
- Hughes, Z.J. (2019) Erosion of resources in Essex Bay due to Tides and Waves. Field Trip for Town of Essex. Essex River Cruises, October 23 2019.
- Hughes, Z.J. (2019) Storm energy reduction by the vegetated salt marsh platform: preliminary results from Newbury, MA. To Town of Newbury and Parker River National Wildlife Reserve and the Headquarters of Parker River National Wildlife Reserve. May 31 2019.
- Hughes, Z.J. (2019) Impacts of Increased Storminess on Boston Harbor Islands. To Boston Harbor Island Partnership. NPS State St Boston, March 19 2019.
- Hughes, Z.J. (2017). The geology and geomorphology of Boston Harbor. Field Trip as part of Boston Harbor Science Symposium. April 11, 2017.
- Hughes, Z.J. (2013). The importance of biophysical feedbacks in the geomorphology of wetlands responding to rising sea level. Dept of Marine Sciences, University of South Carolina, Columbia, SC. April 26 2013.
- Hughes, Z.J., D.M. FitzGerald, C.A. Wilson, H. Vu and S. Pennings, (2013). Crabs in McClellanville! – how some little diggers might be helping the local marshes cope with climate change. U.S. Fish and Wildlife Sewee Visitor and Environmental Education Center, Awendaw, SC. 12th Jan 2013.
- Hughes, Z.J., D. M FitzGerald, A. Mahadevan, C. Wilson and S. Pennings. (2010) Rapid evolution of a marsh tidal creek network in response to sea level rise. *Invited Speaker, Fish and Wildlife, Sewee Visitor and Environmental Education Center, May 25th 2010, Awendaw, SC.*
- Hughes, Z.J., (2009) Past and future evolution of the Great Marsh: studies of ecogeomorphology. Great Marsh Symposium, April 11th, 2009, Plum Island, MA
- Hughes, Z.J., D.M. FitzGerald and P. Rosen. (2008) Dynamic Processes of Boston Harbor: past and future evolution of the Islands. Boston Harbor Islands Science Symposium, October 3rd 2008.
- Hughes, Z.J. (2007) The impact of Katrina on the marshes of Louisiana. *Visiting Scientist Talk, Explorer of the Seas, Rosenstiel School of Marine & Atmospheric Science/Royal Caribbean Cruises, June 2007*
- Hughes, Z.J. (2006) The marsh and the Hurricane: how Katrina effected the marshes of Louisiana. *Visiting Scientist Talk, Explorer of the Seas, Rosenstiel School of Marine & Atmospheric Science/Royal Caribbean Cruises, August 2006*
- Hughes, Z.J., (2005) Changing coastlines: Boston Harbor Islands. *Visiting Scientist Talk, Explorer of the Seas, Rosenstiel School of Marine & Atmospheric Science/Royal Caribbean Cruises, October 2005*
- Hughes, Z.J., (2005) Nearshore Hydrodynamics and Sediment Transport: the Impact of Waves and Currents. *Invited speaker: Department of Earth Science Colloquium, Boston University. Spring 2005.*
- Hughes, Z.J., (2004) Harbor Islands: Future investigations. Boat Wake Impacts and their Role in Shore Erosion Processes. *Annual meeting of the Boston Harbor Islands Partnership. Summer 2004*

PRESENTATIONS BY OTHERS

- Xie, D., **Hughes, Z.J.**, FitzGerald, D., Tas, S., Zaman Asik, T., and Fagherazzi, S. (2023), Implications of Causeway Removal on Longshore Sediment Transport During Storms in a Complex Shoreline System, *AGU. San Francisco, USA*.
- Staro, A., FitzGerald, D.M., **Hughes, Z.J.**, Hein C., Georgiou I.Y., 2023. Physical processes affecting hurricane sedimentation on marshes. CERF Biennial Conference, Nov. 2023, Portland, OR.
- Black, S.K., FitzGerald, D.M., **Hughes, Z.J.**, Georgiou I.Y., 2023. Impact of storm-induced suspended sediment deposition on salt marshes, Plum Island Sound, Massachusetts. CERF Biennial Conference, Nov. 2023, Portland, OR.
- Giess, M., FitzGerald D.M, **Hughes, Z.**, & Staro, A. (2023). The contribution of reworking extensive offshore glaciofluvial deposits in the geomorphological development of the western Buzzard's Bay coast. CERF Biennial Conference, Nov. 2023. Portland, OR.
- Tas, S.A.J., **Hughes, Z.J.**, FitzGerald, D.M., Xie, D, Asik Zaman, T. and Fagherazzi, S, (2023). Spit and beach ridge evolution driven by headland bypassing in Slocum River Embayment, Massachusetts, USA. 13th River, Coastal and Estuarine Morphodynamics Symposium (RCESM 2023) in Urbana-Champaign, IL, USA, 25-28 September 2023.
- Xie, D., **Hughes, Z.J.**, FitzGerald, D., Tas, S., Zaman Asik, T., and Fagherazzi, S. (2023), Beyond the shoreline: The importance of coastal headlands on reducing nearshore hydrodynamic forces under climate change, 13th River, Coastal and Estuarine Morphodynamics Symposium (RCESM 2023) in Urbana-Champaign, IL, USA, 25-28 September 2023.
- Tas, S.A.J., **Hughes, Z.J.**, FitzGerald, D.M., Xie, D, Asik Zaman, T. and Fagherazzi, S, van Maren, D S, and Reniers, Ad J H M (2023). Chenier dynamics in the context of eroding mangrove-mud coasts. Coastal Ocean Fluid Dynamics Laboratory (COFDL) at Woods Hole Oceanographic Institute (WHOI), June 23rd, 2023.
- O'Donnell, O., FitzGerald, D., Mulick, T., **Hughes, Z.J.**, Novak, A., (2023). Microplastic Accumulation in the Great Marsh, MA. (2023, June 11). *Poster*. 2023 Consortium of Universities for the Advancement of Hydrologic Science Biennial Colloquium, Tahoe City, CA.
- O'Donnell, O., FitzGerald, D., Mulick, T., **Hughes, Z.J.**, Novak, A., (2023). Microplastic Accumulation in the Great Marsh, MA. (2023, June 11). *Presentation*. 2023 Consortium of Universities for the Advancement of Hydrologic Science Biennial Colloquium, Tahoe City, CA.
- Tas, S.A J, van Maren, D S, Reniers, Ad J H M, **Hughes, Z.J.**, and FitzGerald, D. M (2023). Modelling chenier dynamics in the context of mangrove-mud coasts: A challenge across spatial and temporal scales. Keynote presentation at CSDMS 2023 Annual Meeting in Boulder, Colorado, USA, 16-18 May 2023.
- Tigges, S., FitzGerald, D., **Hughes, Z.**, Novak, A., (2023). Quantifying climate-driven saltmarsh platform degradation through the formation of potholes in the Great Marsh, MA. *Poster*. NE/SE GSA Joint Section Meeting, Reston Virginia. 17-20 March 2023.
- Tigges, S., FitzGerald, D., **Hughes, Z.**, Novak, A., (2023). Quantifying climate-driven saltmarsh platform degradation through the formation of potholes in the Great Marsh, MA. *Presentation*. NE/SE GSA Joint Section Meeting, Reston Virginia. 17-20 March 2023.
- Black, S., **Hughes, Z.**, & FitzGerald, D. (2022). Drivers of Bluff Retreat on Drowned Drumlin Field Comprising the Boston Harbor Islands, Boston, Massachusetts. American Geophysical Union Fall Meeting 2022. Chicago, IL.

- FitzGerald, D., **Hughes, Z.**, FitzGerald, D., Hein, C., & Georgiou, I. (2022). Keynote Address: Latitudinal Differences in Marsh Sedimentation Processes. In *Particles in Americas*. Argentina.
- Georgiou, I., FitzGerald, D., Hein, C., & **Hughes, Z.** (2022). Storm induced sedimentation, erosion, sediment provenance, and potential carbon disturbances. Presentation to the National Fish and Wildlife Foundation (NFWF), Washington DC, April 13, 2021.
- Houttuijn Bloemendaal, L., FitzGerald, D., **Hughes, Z.**, Novak, A., & Georgiou, I. (2022). Dispelling myths concerning the wave power-salt marsh retreat relationship. American Geophysical Union Fall Meeting Dec 11-15 2022. Chicago IL.
- Sakib M.M., **Hughes, Z.J.**, FitzGerald, D.M., Georgiou, I.Y. (2021). Impact of Storm-induced Sediment Transport and Depositional Processes in Essex Tidal Inlet and Backbarrier Bay System. *AGU Fall Meeting*, New Orleans, LA, December 2021
- Staro, A., FitzGerald, D.M., **Hughes, Z.J.**, Hein, C.J., Georgiou, I.Y., Pondell, C.R., Guthrie, R., Connell, J.E., (2021). Hurricane deposition can enhance salt marsh resiliency to sea-level rise, AGU Fall Meeting, New Orleans, LA, December 2021.
- Connell, J.E., Hein, C.J., FitzGerald, D.M., **Hughes, Z.J.**, Georgiou, I.Y., King, K., (2021). The contribution of inorganic sediment inputs to multi-decadal accretion of backbarrier saltmarshes in the Southeast USA, *AGU Fall Meeting*, New Orleans, LA, December 2021
- Staro, A., FitzGerald D.M., **Hughes Z.J.**, 2021. The sequential flow of sand through tidal inlet, barrier island, and backbarrier reservoirs. 90th meeting of the Italian Geological Society, Trieste (Italy), 13-17 September 2021, Online.
- Staro, A. FitzGerald D.M., **Hughes Z.J.**, Hein C.J., Georgiou, I.Y., King K., Connell J., Pondell C., 2021. Will hurricane sedimentation aid southeastern US saltmarsh resiliency in the face of climate change and sea-level rise? European Geoscience Union (EGU) March 3 2021, Online.
- Staro, A., FitzGerald.D., **Hughes, Z.J.**, 2021. Patterns of erosion and deposition along Castle Neck Barrier Island and in Essex Bay, MA. GSA NE Meeting 14-15 March 2021 Online.
- Staro, A., FitzGerald.D., **Hughes, Z.J.**, Change detection analysis on sand reservoir redistribution in a coupled beach-estuarine environment in the Gulf of Maine (USA), 4th meetings of the Italian marine geologists, 25-26 February 2021, Rome, Italy.
- Houttuijn Bloemendaal L.J., FitzGerald D.M., **Hughes Z.J.**, Novak A. 2020. Marsh edge characteristics controlling the distribution and type of edge erosion. Joint 69th Annual Southeastern / 55th Annual Northeastern GSA Section Meeting - 2020. Geological Society of America.
- Scott C., Hein C.J., Pondell C., FitzGerald D.M., **Hughes Z.J.**, Georgiou I. 2020 Provenance of hurricane-induced salt marsh sedimentation along the southeast us coast. Joint 69th Annual Southeastern / 55th Annual Northeastern GSA Section Meeting - 2020. Geological Society of America.
- Houttuijn Bloemendaal L.J., FitzGerald D.M., **Hughes Z.J.**, Novak A. 2020. Marsh edge characteristics controlling the distribution and type of edge erosion. Ocean Science Meeting, San Diego, CA, February 2020.
- Connell, J. E., Herbine, L. E., Gedan, K. B., **Hughes, Z. J.**, FitzGerald, D. M., Georgiou, I. Y., & Hein, C. J. (2019). Event-Driven Sedimentation In Massachusetts And Virginia Salt Marshes. In 68th Annual GSA Southeastern Section Meeting - 2019. Geological Society of America.
doi:10.1130/abs/2019se-327025

- King, K., Hein, C. J., FitzGerald, D. M., **Hughes, Z. J.**, Georgiou, I. Y., & Connell, J. E. (2019). Saltmarsh Event Sedimentation: A Comparative Study Of Hurricane Irma Deposits Across The Southeast U.S.A. In 68th Annual GSA Southeastern Section Meeting - 2019. Geological Society of America. doi:10.1130/abs/2019se-326988
- Foster-Martinez, M., Georgiou, I., **Hughes, Z.**, & FitzGerald, D. (2019). Role of marsh edge form in wave attenuation: field measurements in Newbury, MA. In American Geophysical Union Annual Meeting. December 9 2019, San Francisco CA.
- Foster-Martinez, M., **Hughes, Z.**, Georgiou, I., & FitzGerald, D. (2019). Wave attenuation across a salt marsh in Newbury, MA. Coastal and Estuarine Research Federation Annual Meeting. November 5, 2019 Mobile AL.
- Ryerson, O., FitzGerald, D. M., Hughes, Z. J., Black, S., Georgiou, I. Y., Hein, C. J., & Novak, A. (2019). Temporal And Spatial Variability In Inorganic Sediment Contributions To The Great Marsh, Massachusetts. In 68th Annual GSA Southeastern Section Meeting - 2019. Geological Society of America. doi:10.1130/abs/2019se-326881
- Farron, S., **Hughes, Z.**, FitzGerald, D. 2017. Assessing the Potential for Inland Migration of a Northeastern Salt Marsh. AGU Fall Meeting, New Orleans, Dec 11-5 2017.
- Charles S.P., J.S. Kominoski, A.R. Armitage, H Guo, S Dastidar, **Z.J. Hughes**, S.C. Pennings, A. Whitt and C.A. Weaver, 2016. Quantifying Effects Of Foundation Species Identity And Density On Organic Carbon Storage Along An Experimental Marsh-Mangrove Gradient. Ecological Society of America, August 7-12th 2016, Fort Lauderdale, FL.
- Armitage, A.R., H Guo, S. Dastidar, **Z.J. Hughes**, C.A. Weaver, A. Whitt, S.P. Charles, J.S. Kominoski, S.C. Pennings, 2016. Bottom-up effects of mangrove stand expansion on salt marsh plant and animal assemblages: Implications for mangrove restoration in Texas. **Mangrove & Macrobenthos Meeting** July 18-22nd 2016, St. Augustine, FL.
- Farron, S., **Hughes, Z.**, FitzGerald, D. 2016. Assessing the Potential for Inland Migration of a Northeastern Salt Marsh. PIE-LTER All Scientists meeting, March 2016, Marine Biology Laboratories, Woods Hole.
- Weaver, C.A., A. Whitt, A.R. Armitage, S.P. Charles, S. Dastidar, H Guo, **Z.J. Hughes**, J.S. Kominoski, S.C. Pennings, 2015. Implications of Northern Gulf of Mexico mangrove encroachment: Will coastal faunal community composition change? Coastal and Estuarine Research Federation 23rd Biennial Conference, November 2015, Portland, Oregon.
- Farron, S., **Z.J. Hughes**, D.M., FitzGerald, and K. Strom, 2015. Quantifying the effects of crab bioturbation on salt marsh sediment erodibility. Coastal and Estuarine Research Federation 23rd Biennial Conference, November 2015, Portland, Oregon.
- De Souza, P.C.M., Georgiou, I., **Z.J. Hughes**, N.C. Howes D.M. FitzGerald. 2015. Architecture and Evolution of Tidal Point Bars: Influence of the Hydrodynamic Processes on the Sedimentary Record. Geological Society of America, November 1-4th 2015, Baltimore, MD.
- Pennings, S.P., A.R. Armitage, C.A. Weaver, A. Whitt, S.P. Charles, S. Dastidar, H Guo, **Z.J. Hughes**, J.S. Kominoski, 2015. Vegetation regime shift in coastal wetlands affects trapping of wrack subsidies from subtidal habitats. Ecological Society of America, August 7-12th 2015, Fort Lauderdale, FL.
- Armitage, A.R., C.A. Weaver, A. Whitt, S.P. Charles, S. Dastidar, H Guo, **Z.J. Hughes**, J.S. Kominoski, S.C. Pennings, 2015. Bottom-up effects of mangrove expansion on transient and resident salt marsh fauna. Ecological Society of America, Aug 7-12th 2015, Fort Lauderdale, FL.

- Wilson C., **Hughes, Z.**, FitzGerald, D., and Kolker, A., 2015. Evolution of Boston Harbor's embayed saltmarshes: a refined holocene sea-level curve for Massachusetts Geological Society of America Northeastern Section, March 22-25th 2015. Bretton Woods, NH.
- Farron, S., FitzGerald, D., and **Hughes, Z.**, 2015. Assessing the Potential for Inland Migration of a Northeastern Saltmarsh. Geological Society of America Northeastern Section, March 22-25th 2015. Bretton Woods, NH.
- Farron, S., **Hughes, Z.**, FitzGerald, D., Strom, K., 2014. The Impacts of Crab Bioturbation on the Threshold of Erosion for Marsh Sediment. Geological Society of America November 5-9th 2014. Vancouver, BC, Canada.
- Wilson C.A., **Hughes, Z.**, FitzGerald, D., 2014. Evolution of Boston Harbor's Embayed Saltmarshes: a Refined Holocene Sea-Level Curve For Massachusetts. Geological Society of America November 5-9th 2014. Vancouver, BC, Canada.
- Weaver, C.A., A. Whitt, A.R. Armitage, S.P. Charles, S. Dastidar, H Guo, **Z.J. Hughes**, J.S. Kominoski, S.C. Pennings, 2014. Implications of mangrove expansion in the northern Gulf of Mexico: Mangrove and marsh habitats support different nekton species. Gulf Estuarine Research Society, 2014. October 30-31st 2014, Austin, TX.
- Weaver, C.A., A. Whitt, A.R. Armitage, S.P. Charles, S. Dastidar, H Guo, **Z.J. Hughes**, J.S. Kominoski, S.C. Pennings, 2014. Ecological implications of black mangrove expansion in the Gulf of Mexico. Texas Bays and Estuaries Meeting, April 23-24 2014, Port Aransas, TX.
- Farron, S., **Hughes, Z.**, Wilson, C., and FitzGerald, D., 2013, The impact of bioturbation on the erodibility of marsh sediment and the incision of tidal creeks" Coastal and Estuarine Research Federation. November 3-7th 2013 San Diego, CA.
- Pennings, S. C. , H. Guo, A. Armitage, S. Dastidar, C. Weaver, A. Whitt, **Z. Hughes**, 2013, Ecological implications of black mangrove expansion in the Gulf of Mexico: insights from a large-scale mangrove removal experiment. Coastal and Estuarine Research Federation. November 2013, San Diego California.
- Pennings S.C., Guo H., Armitage A.R., Dastidar S., Weaver C., **Hughes Z.**, 2013. Mangroves invading Texas salt marshes: Does it matter? Texas Bays and Estuaries Meeting, April, 2013. Port Aransas, TX.
- Armitage A.R., Pennings S.C., Weaver C., Whitt A., Guo H., **Hughes Z.**, Dastidar S., 2013. Ecological implications of black mangrove expansion into Texas salt marshes: Comparisons among marsh and mangrove habitats. Texas Mangrove Research Symposium, February 2013, Port Aransas, TX.
- Pennings S.C., Guo H., Armitage A.R., **Hughes Z.**, Weaver C., Dastidar S., 2013. Ecological implications of black mangrove expansion into Texas salt marshes: Insights from a large-scale mangrove removal experiment. Texas Mangrove Research Symposium, February 2013, Port Aransas, TX.
- Howes, N.C., Georgiou, I.Y., **Hughes, Z.J.**, Wolinsky, M.A., 2012, A Conceptual Framework and Classification for the Fluvial-Backwater-Marine Transition in Coastal Rivers Globally. Abstracts with Programs, American Geophysical Union Fall meeting, December 3-7, San Francisco, CA.
- Georgiou, I.Y., **Hughes Z.J.**, Weathers, H.D., M., Kulp, D.M. FitzGerald, 2012. Short-term modeling of coastal response to wave climate and relative sea level rise, State of the Coast Conference, New Orleans, LA, June 23-25.

- Georgiou, I.Y., **Hughes Z.J.**, Weathers, H.D., M., Kulp, D.M. FitzGerald, 2012. Short-term modeling of coastal response to wave climate and relative sea level rise, International Wetlands conference, Orlando, Florida, June 3-8.
- Wilson C, FitzGerald F, **Hughes Z**, Rosen P. 2012. Ecophysical Processes in Saltmarsh Formation and Evolution throughout the Holocene. Woods Hole Oceanographic Institution, 31 January.
- Wilson, C., **Hughes, Z.**, FitzGerald, D., 2011, The Effects of Crab Bioturbation on Mid-Atlantic Saltmarsh Tidal Creek Extension: Geotechnical and Geochemical Changes. Coastal and Estuarine Research Federation meeting, 6-10 November, Daytona Beach, FL.
- Wilson C, P. Rosen, D. FitzGerald, **Z. Hughes**, 2011. Drowned drumlins, battered bluffs, and saltmarsh sediments: Boston Harbor Islands through time. Harvard University's Boston Harbor Islands Science Symposium, 19 October, Cambridge, MA. Oral presentation.
- Howes, N., Georgiou, I.Y., Kulp, M.,A., FitzGerald, D.M., **Hughes, Z.**, 2011, A Novel Method Linking Processes and Stratigraphy in a Tidal Environment: Barataria Basin, Louisiana, American Association of Petroleum Geologists (AAPG) Search and Discovery Article #90135, International Conference and Exhibition, Milan, Italy, 23-26 October 2011.
- Keegan, K.M., Raub, K.B., Tuck, C.E., **Hughes, Z.J.**, FitzGerald, D., and Hein, C.J., 2010, Hydraulics and morpho-dynamics of More River Inlet, Maine, GSA Abs. with Programs, vol. 42, no 1, p. 1.
- Wilson, C., **Hughes, Z.**, FitzGerald, D.M., Mahadevan, A., Pennings, S., 2010. Ecophysically driven tidal creek expansion in the Santee Delta, SC. Geological Society of America NE/SE Section meeting, Baltimore, MD. Abs. with Programs.
- Wilson C, D. FitzGerald, **Z. Hughes**, S. Pennings, M. Allison, 2010. Saltmarsh Evolution as a Function of Relative Sea-level Rise, Sediment Supply, and Marsh Productivity: Case Studies in Louisiana, South Carolina, and Massachusetts. Geological Society of America Annual Meeting, Oct 31 – Nov 3, Denver, CO.
- Bolbrock, A., FitzGerald, D., Rosen, P., and **Hughes, Z.**, 2009. Boston Harbor salients: morphology, formation, and evolution. Geological Society of America Northeast Section Annual Meeting, March 22-24, Portland, Maine.
- Kandrot, S., Curtis, C., Cudney, S., Buynevich, I., FitzGerald, D., Hein, C., and **Hughes, Z.**, 2009. Massive overwash at Seal Cove, Maine: evidence for the Great Colonial Hurricane of 1635. Geological Society of America Northeast Section Annual Meeting, March 22-24, Portland, Maine.
- Wilson, C., FitzGerald, D., and **Hughes, Z.**, 2009. Microchannel and creek development in a New England saltmarsh, Rowley, MA. Geological Society of America Northeast Section Annual Meeting, March 22-24, Portland, Maine.
- Howes N., FitzGerald D.M., Georgiou I.Y., **Hughes Z.**, Kulp M., Miner M., 2008, Hydrodynamics of Barataria Bay, Annual Meeting of the Association of Engineering Geologists, Sept. 12-14, New Orleans, LA
- Wilson, C.A., FitzGerald, D., **Hughes, Z.J.**, Mahadevan, A., Pennings, S., 2008, Drivers of headward creek erosion in Santee River delta saltmarshes. Association of American Geographers Annual Meeting, Boston, Massachusetts.
- Wilson, C.A., **Hughes, Z.J.**, FitzGerald, D., Mahadevan, A., Pennings, S., 2008, Physical and ecological interactions, in creek headward erosion. American Geophysical Union Ocean Sciences Annual Meeting, Orlando, Florida.

- FitzGerald, D.M., Howes, N., Kulp, M., **Hughes, Z.**, Georgiou, I.Y., and Penland, P., 2007, Hurricane impacts to the Caernarvon wetlands, Saint Bernard Parish, Louisiana, Abstracts with Programs, Estuarine Research Federation, Providence, RI, p. 63.
- Argow, B., **Hughes, Z.** and FitzGerald, 2007, Comparative importance of winter processes on New England back-barrier marsh sediment budget, Abstracts with Programs, Estuarine Research Federation, Providence, RI, p. 6.
- Howes, N.C. , FitzGerald, D.M. Kulp, M.; **Hughes, Z.J.**; Georgiou, I.; Penland, S., 2007, Katrina Impacts to the Caernarvon Wetlands, Saint Bernard Parish, Louisiana. Estuarine Research Federation 2007: Providence, Rhode Island, 4-8 November, 2007.
- FitzGerald, D., Howes, N., Kulp, M., **Hughes, Z.**, Georgiou, I.Y., and Penland, S., 2007, Impacts of rising sea level to backbarrier wetlands, tidal inlets, and barriers: Barataria Coast, Louisiana, Coastal Sediments 07, Conference Proceedings, CD-ROM13.
- Argow, B.A., **Hughes, Z.J.**, and FitzGerald, D.M., 2007, Ice raft formation, dispersion and sedimentation on New England marshes, Coastal Sediments 07, New Orleans, LA.
- Howes, N.C., **Hughes, Z.J.**, FitzGerald, D.M., and *Hatten, T., 2006, Investigations of bluff erosion and sediment transport in Boston Harbor, MA. GSA Northeastern Section, Abstracts with Programs, Harrisburg, PA, v. 38.
- Hatten, T.V., FitzGerald, D.M., **Hughes, Z.J.**, and Howes, N., 2006, Sedimentation processes and morphological behavior of Lovells Island, Boston Harbor, MA. GSA Northeastern Section, Abstracts with Programs, Harrisburg, PA, v. 38.
- Howes, N.C., **Z.J. Hughes** and D.M. FitzGerald, 2005. A Coastal Geographic Information System of the Boston Harbor Islands. Poster at The Boston Harbor Island Annual Awards Dinner, Boston, November 7th 2005
- Giese. A., **Z.J. Hughes** and D.M. FitzGerald, (2005). Comparison of Spring and Neap Tides on Toe Erosion of Coastal Bluffs. Poster at The Boston Harbor Island Annual Awards Dinner, Boston, November 7th 2005.

OUTREACH

Co-organized and taught a distributed graduate student course with Steven Pennings, 2023.
Looking at Disturbance in Coastal Wetlands
(<https://www.bucoastallab.com/disturbanceincoastalwetlands>).

Co-organized and taught a distributed graduate student course with Steven Pennings, 2013.
Linking biology and geomorphology in coastal wetlands (and other habitats).
(<https://biogeomorph2013.wordpress.com/>)

Regular presenter to local interest groups 2004–Present (e.g., Boston Harbor Science Symposium, Great Marsh Symposium; Cape Romain NWR Sewee Center Outreach; Noanett Garden Club).

Organized and co-taught an after-school Science Club for grades 3-6 (year 4-7 UK) at the Runkle School, Boston, Spring 2005.

Visiting Scientist on Royal Caribbean Cruise Liner, Explorer of the Seas, 2005, 2006 and 2007 (for a period of one week annually, assist with sampling in the marine lab, present public lectures on marine science and my own work and lead tours of the marine lab).

Physical Oceanographer in the National Environmental Research Council (UK) ‘Posters for Schools’ Initiative, 2003.

TEACHING EXPERIENCE

I regularly serve as instructor for guided studies for graduate students within the Department of Earth and Environment (specifically guiding numerical modeling or data analyses studies).

Fall 2023	EE941: Disturbance in Coastal Wetlands
Fall 2022-Present	Introduction to Fieldwork, Marine Semester Orientation.
Fall 2020-Present	EE544: Coastal Sedimentology (co-teach with FitzGerald)
Fall 2019-Present	EE542: Coastal Ecosystems (co-teach with Novak)
Summer 2021-Present	EE144: Introduction to Oceanography
Present	EE142: Introduction to Beaches and Shoreline Processes
Spring 2021	GE270: Data, Models, and Analysis in Earth & Environment (<i>lab component</i>).
Fall 2017	
Spring 2010	ES142: Introduction to Beaches and Shoreline Processes.
Fall 2009	MET ES141: Introduction to Marine Science.
2004-2023	Visiting speaker (contributing 1-2 lectures within another's class): EE142 2007-2023 Beaches & Shores, Boston University, Prof FitzGerald. EE331 Sedimentology, 2005-2020 Boston University, Prof FitzGerald. GEOS208 Oceanography 2008-2010, Wellesley College, Prof Argow. Oceanography 2011, University of New Orleans, Prof Georgiou.
1999-2003	Teaching Assistant Introduction to Oceanography, Computing Skills (100 level). Ocean Physics (300-500 level) Sampling & Surveying Techniques (300-500 level) Ocean Modeling (300-500 level). Undergraduate Residential Field Course (300-500 level)

PROFESSIONAL SOCIETIES

American Geophysical Union (AGU).
Coastal and Estuarine Research Federation (CERF)
Geological Society of America (GSA).
Association of Women Geoscientists (AWG).

AFFILIATIONS AND COLLABORATORS

[Collaborators](#)

Anna Armitage (Texas A&M), John Barras (US Army Corps of Engineers), Sergio Fagherazzi (Boston U.), Linda Deegan (Marine Biological Labs, Woods Hole), Duncan FitzGerald (Boston U.), Wally Fulweiler (Boston U.), Ioannis Georgiou (U. of New Orleans), Chuck Hopkinson (U. of Georgia), Nick Howes (Shell International Exploration and Production), David Johnson (MBL, Woods Hole), Alex Kolker, (Tulane U.), Mark Kulp (U. of New Orleans), Karen McGlathery (U. of Virginia), Mike Miner (Bureau of Ocean Energy Management), Steve Pennings (U. of Houston), Peter Rosen (Northeastern U.), Jane Smith (USACO), Kyle Strom (U. of Houston), Harry Dallon Weathers (Water Institute of the Gulf), Carol Wilson (Vanderbilt U.), Matt Wolinsky (Shell IEP), Vinton Valentine (U. of South Maine), Amanda Vieillard (Boston U.)

Advisors

PhD: Michael Collins, School of Ocean and Earth Sciences, Southampton University

Postdoc: Duncan FitzGerald, Dept of Earth and Environment, Boston University

PhD Thesis panel member/chair*

Luca Cortese, Boston University (EE), to finish 2024.

Yiyang Xu, Boston University (EE), to finish 2023.

Tansir Azir, Boston University (EE), to finish 2025

Sophia Tigges, Boston University (EE), to finish 2025.

Sarah Black*, Boston University (EE), to finish 2024.

Alice Staro*, Boston University (EE), to finish 2024.

Lucila Houttuijn Bloemendaal*, Boston University (EE), 2023.

Kevin Hanegan, University of New Orleans, 2020.

Pricilla De Souza, University of New Orleans, 2020.

Sarah Farron*, Boston University (EE), 2017.

Undergraduate advising

I regularly mentor undergraduates within BU Earth and Environment for summer internships, UROP studies or research theses (22 in total since 2005; recent students include: Trenton Mulick CAS2021, Cece Gerstenbacher CAS2021, Hannah Ferrero CAS2022, Tara Nayantara CAS2022, Ryen Guthrie CAS2023, Olivia O'Donnell, CAS2024).

Tyler Chisley, Senior Thesis panel, 2022

Ryan Shipley, Senior Thesis panel, 2022

Ryen Guthrie, UROP Mentor, 2022

Aleja Ortiz, Wellesley College, Senior Thesis Panel 2010.

Other Affiliations

Georgia Coastal Ecosystems, Long-Term Ecological Research Site ([GCE-LTER](#))

Great Marsh Partnership

BU affiliation to North Atlantic Coast Cooperative Ecosystem Studies Unit (NAC-CESU).

REFERENCES

1. Duncan FitzGerald, Professor, Department of Earth and Environment, Boston University, dunc@bu.edu.
2. Steven Pennings, Professor, Department Biology and Biochemistry, University of Houston, scpennin@central.uh.edu,
3. Peter Buston, Director Boston University Marine Program, Boston University, buston@bu.edu.