

Julia M. Moriarty

julia.moriarty@colorado.edu | 303-492-4771 | Orcid ID: 0000-0003-1087-6180

Website: <https://instaar.colorado.edu/people/julia-moriarty>

Education

- 2017 Ph.D. Marine Science, Marine Geology Concentration**
Virginia Institute of Marine Science, College of William & Mary, VA
- 2012 M.S. Marine Science, Physical Oceanography Concentration**
Virginia Institute of Marine Science, College of William & Mary, VA
- 2009 B.A. Physics; B.S. Geophysical Sciences**
University of Chicago, IL

Professional Experience

- 2020-present Assistant Professor, Institute of Arctic and Alpine Research (INSTAAR) & Atmospheric and Oceanic Sciences Department (ATOC), University of Colorado Boulder
- 2019-2020 External Reviewer/Consultant for US Environmental Protection Agency, Eastern Research Group, Inc.
- 2017-2019 Mendenhall Post-Doctoral Research Fellow, U.S. Geological Survey

Honors and Awards

External Awards:

- 2017 **Student Modeler Award**, Community Surface Dynamics Modeling System (CSDMS). *Judged on the basis of ingenuity, applicability, and contribution toward the advancement of geoscience modeling.*
- 2016 **2015 Editors' Citation for Excellence in Refereeing**, Journal of Geophysical Research: Oceans, American Geophysical Union (AGU).
- 2016 **Outstanding Student Paper Award**, American Geophysical Union (AGU) Fall Meeting 2016. *Awarded to the top 3 – 5% of student presentations at the Earth Science community's flagship meeting.*
- 2015 **Ray Krone Award for Best Oral Contribution from a Young Scientist**, INTERCOH (International Conference on Cohesive Sediment Transport Processes), Leuven, Belgium.
- 2015 **Outstanding Poster Award**, Gordon Conference for Coastal Ocean Modeling, Biddeford, Maine.

Internal Awards:

- 2016 **George R. Healy Fellowship Award**, College of William & Mary
- 2014 **Tied for 4th-6th place**, Three-Minute Thesis (3MT) Speaking Competition, Virginia Institute of Marine Science
- 2013 **John M. and Marilyn Zeigler Student Achievement Award**, Virginia Institute of Marine Science. *Recognizes students who excel in scholarship, leadership, research initiative, outstanding publications, and exceptional thesis or dissertation work.*

Fellowships, and Grants

Externally Funded:

- 2017 **Mendenhall Post-Doctoral Research Fellowship**, US Geological Survey, Woods Hole Mass. (~\$198,000).
- 2016 **Anchor QEA 2015 Scholarship**, Anchor QEA (\$1500)

- 2014, 2016 **CSDMS Graduate Student Scholarship**, Community Surface Dynamics Modeling Systems (CSDMS) (travel expenses to Boulder, Colorado)
- 2015 **Student Grant**, Student Support Program, Southern Association of Marine Laboratories (\$250)
- 2015 **Student Travel Grant**, Coastal and Estuarine Research Federation (CERF) (\$250)
- 2014 **Ocean Sciences Meeting 2014 Student Travel Award**, ASLO/AGU/TOS (\$500)
- 2013 **East Asia and Pacific Summer Institute Fellowship**, National Science Foundation (NSF) (\$5000, plus travel to Taiwan and living expenses)
- 2008 **REU to Ocean Sciences Award**, NSF (travel expenses to San Francisco)
- 2008 **Research Experience for Undergraduates Internship**, NSF (~\$5000)
- 2007 **Summer Undergraduate Research Fellowship**, California Institute for Technology/ Jet Propulsion Laboratory, NASA (\$6000)

Internally Funded at the Virginia Institute of Marine Science:

- 2016 **Graduate Student Association Student Travel Grant** (\$600)
- 2016 **Dean's Fellowship** (\$6000)
- 2015-2016 **Council Fellowship** (\$2000)
- 2014-2015 **SunTrust Fellowship** (\$3400)
- 2014 **Graduate Student Association Student Travel Grant** (\$200)
- 2013 – 2014 **Craig L. Smith Memorial Educational Fellowship** (\$1500)
- 2013–2014 **Norfolk Southern Fellowship** (\$2000)
- 2013 **Nichols Travel Fellowship** (\$1000)
- 2009–2011 **Graduate Fellowship** (\$61,272)
- 2009–2011 **Kathleen & Robert Roper Fellowship** (\$4000)
- 2010 **Student Research Grant**, Reves Center, College of William & Mary (\$1500)

Publications

Peer-Reviewed Publications:

- 2021 Zhang, W., H. Wu and **J.M. Moriarty**. *Response of Bottom Hypoxia off the Changjiang River Estuary to Multiple Factors: A Numerical Study*. Accepted at Ocean Modelling as of Dec. 2020.
- 2021 **Moriarty, J. M.**, M.A.M. Friedrichs and C. K. Harris. *Seabed Resuspension in Chesapeake Bay: Implications for Biogeochemical Cycling and Hypoxia*. *Estuaries & Coasts*, 44 (1), 103-122. doi:doi.org/10.1007/s12237-020-00763-8
- 2019 Defne, Z., N.K. Ganju and **J.M. Moriarty**. *Hydrodynamic and Morphologic Response of a Back-Barrier Estuary to an Extratropical Storm*. *Journal of Geophysical Research: Oceans*, 24, 1-18. doi: doi.org/10.1029/2019JC015238
- 2019 Ganju, N.K., Z. Defne, T. Elsey-Quirk and **J.M. Moriarty**. *Role of Tidal Wetland Stability in Lateral Fluxes of Particulate Organic Matter and Carbon*. *Journal of Geophysical Research: Biogeosciences*, 124, 1265-1277. doi:10.1029/2018JG004920.
- 2018 Bianucci, L., K. Balaguru, R.W. Smith, L.R. Leung, and **J.M. Moriarty**. *Contribution of hurricane-induced sediment resuspension to coastal oxygen dynamics*. *Scientific Reports*, 8, 1-10. doi:10.1038/s41598-018-33640-3.
- 2018 **Moriarty, J. M.**, C.K. Harris, M.A.M. Friedrichs, K. Fennel, and K. Xu. *The Role of Seabed Resuspension on Oxygen and Nitrogen Dynamics in the Northern Gulf of Mexico: A Numerical Modeling Study*. *Journal of Geophysical Research: Oceans*, 123, 1-27. doi:10.1029/2018JC013950.
- 2017 **Moriarty, J. M.**, C.K. Harris, K. Fennel, M.A.M. Friedrichs, K. Xu, and C. Rabouille. *The Roles of Resuspension, Diffusion and Biogeochemical Processes on Oxygen Dynamics Offshore of the Rhone River, France: A Numerical Modeling Study*. *Biogeosciences*, 14, 1919-1946. doi:10.5194/bg-14-1919-2017.

- 2016 Kuehl, S.A., C. R. Alexander, N.E. Blair, C.K. Harris, K.M. Marsaglia, A.S. Ogston, A.R. Orpin, J.J. Roering, A.J. Bever, E.L. Bilderback, L. Carter, C. Cerovski-Darriau, L.B. Childress, D.R. Corbett, R.P. Hale, E.L. Leithold, N. Litchfield, **J.M. Moriarty**, M.J. Page, L.E.R. Pierce, P. Upton, and J.P. Walsh. *A Source to Sink Perspective of the Waipaoa River Margin*. Earth-Science Reviews, 153, 301-334. DOI: 10.1016/j.earscirev.2015.10.001.
- 2015 **Moriarty, J.M.**, C.K. Harris, and M.G. Hadfield. *Event - to - seasonal sediment dispersal on the Waipaoa River Shelf, New Zealand: a numerical modeling study*. Continental Shelf Research, 110, 108-123. DOI:10.1016/j.csr.2015.10.005
- 2014 **Moriarty, J.M.**, C.K. Harris, and M.G. Hadfield. *A hydrodynamic and sediment transport model for the Waipaoa Shelf, New Zealand: Sensitivity of fluxes to spatially-varying erodibility and model nesting*. J. of Marine Science and Engineering, 2 (2), 336-369.

Publicly Available Datasets:

- 2020 **Moriarty, J. M.**, Harris, C. K., Friedrichs, M.A.M, Fennel, K., and K. Xu. *A Model Archive for a Coupled Hydrodynamic-Sediment Transport-Biogeochemistry model for the Chesapeake Bay, USA*. Virginia Institute of Marine Science, College of William and Mary. <http://doi.org/10.25773/hamz-zc50>
- 2018 **Moriarty, J. M.**, Harris, C. K., Friedrichs, M.A.M, Fennel, K., and K. Xu. *A Model Archive for a Coupled Hydrodynamic-Sediment Transport-Biogeochemistry model for the Northern Gulf of Mexico, USA*. Virginia Institute of Marine Science, College of William and Mary. <http://doi.org/10.21220/rb78-k115>.
- 2017 **Moriarty, J. M.**, Harris, C. K., Fennel, K., Xu, K., Rabouille, C., and M.A.M. Friedrichs. *A Model Archive for a Coupled Hydrodynamic-Sediment Transport-Biogeochemistry model for the Rhone River Sub-aqueous Delta, France*. Virginia Institute of Marine Science, College of William and Mary. <http://doi.org/10.21220/V53P4Q>.
- 2016 **Moriarty, J.M.**, C.K. Harris, and M.G. Hadfield. *A Hydrodynamic-Sediment Transport Numerical Model for the Waipaoa Shelf, New Zealand: Model Archive*. Virginia Institute of Marine Science, College of William & Mary. <http://doi.org/10.21220/V5159T>.

Presentations

Invited Conference Abstracts:

- 2019 Harris, C. K., L. Cui, **J.M. Moriarty**, and D. Tarpley. *Sediment transport in coastal environments: Advances in numerical modeling and applications to interdisciplinary problems*. Workshop on the Asian Sedimentary Continuum (ASC): Toward a global perspective. 11-12 October 2019.
- 2019 **Moriarty, J.M.** *Sediment redistribution following marsh-edge erosion and resuspension: Implications for Biogeochemistry*. Gordon Research Conference on Coastal Ocean Dynamics, Biddeford, Maine. 16-21 June 2019. Oral Presentation.
- 2018 **Moriarty, J.M.**, C.K. Harris, and M.A.M. Friedrichs. *Role of resuspension events on oxygen and nitrogen dynamics in coastal environments*. American Geophysical Union Fall Meeting, Washington, D.C. 10-14 December 2018. Oral Presentation.
- 2018 **Moriarty, J.M.** *Lessons from Hydrodynamic-Sediment Transport-Biogeochemistry-Vegetation Modeling in Coastal Systems*. NSF Workshop on the Future of Coastal Ocean and Estuarine Modeling, Raleigh, North Carolina. 18-21 June 2018. Oral Presentation.
- 2017 Harris, C. K., **J.M. Moriarty**, and C. T. Friedrichs. *The role of particulate gravity currents on continental shelf sediment fluxes and fate for the Waipaoa Shelf, New Zealand: A numerical modeling study*. IUTAM/AMERIMEH Symposium: Dynamics of Gravity Currents, University of California, Santa Barbara. 25-27 September 2017. Oral Presentation.
- 2017 **Moriarty, J.M.**, M.A.M. Friedrichs, and C.K. Harris. *The Role of Resuspension on Organic Matter, Oxygen, and Nitrogen Dynamics in Coastal Waters: Results from a Coupled Model*.

Ocean Carbon Biogeochemistry (OCB) meeting, Woods Hole, Massachusetts. 26-29 June 2017. Oral presentation.

2017 **Moriarty, J.M.**, M.A.M. Friedrichs, and C.K. Harris. *Role of Particulate Resuspension and Transport on Oxygen Dynamics in Chesapeake Bay: Preliminary Results from a Coupled Model*. Gordon Research Seminar on Coastal Ocean Dynamics, Biddeford, Maine. 10-11 June 2017. Oral presentation.

2017 **Moriarty, J.M.** *Coupling Sediment Transport and Biogeochemical Processes: The Role of Resuspension on Oxygen & Nutrient Dynamics*. Community Surface Dynamics Modeling Systems Annual Meeting, Boulder, Colorado. 23-25 May 2017. Oral presentation.

Conference Abstracts:

2020 **Moriarty, J.M.**, N.K. Ganju, T.K. Kalra, and Z. Defne. *Variability in Marsh-Estuarine Sediment Exchanges in Back-Barrier Systems: Barnegat Bay, NJ, USA*. Community Surface Dynamics Modeling System (CSDMS) Summer Science Series (in lieu of 2020 Annual Meeting Presentation). 16 June 2020. Virtual Oral Presentation.

2020 **Moriarty, J.M.**, N.K. Ganju, T.K. Kalra, and Z. Defne. *Role of Marsh-edge erosion and Submerged Aquatic Vegetation on Estuarine Sediment Fluxes and Light Attenuation*. Ocean Sciences, San Diego, California. 16–21 February 2020. Oral Presentation.

2019 **Moriarty, J.M.**, N.K. Ganju, T.K. Kalra, and Z. Defne. *Marsh-edge erosion and estuarine transport affect sediment availability in back-barrier marshes: Barnegat Bay, New Jersey*. Coastal and Estuarine Research Federation Biennial Meeting, Mobile, Alabama. 3-7 November 2019. Oral Presentation.

2019 Kalra, T.K., A.L. Aretxabaleta, N.K. Ganju, **J.M. Moriarty**, J. Carr, and J.C. Warner. *Development of vertical marsh growth dynamics in a 3-D Coupled Wave-Flow-Sediment Transport Model (COAWST)*. Coastal and Estuarine Research Federation Biennial Meeting, Mobile, Alabama. 3-7 November 2019. Poster Presentation.

2018 Bianucci, L., K. Balaguru, R.W. Smith, L.R. Leung, and **J.M. Moriarty**. *Contribution of hurricane-induced sediment resuspension to coastal oxygen dynamics*. American Geophysical Union Fall Meeting, Washington, D.C. 10-14 December 2018. Oral Presentation.

2018 **Moriarty, J.M.**, T.K. Kalra, N.K. Ganju, and Z. Defne. *Redistribution of particulate organic matter following marsh lateral erosion in a back-barrier estuary*. American Geophysical Union Fall Meeting, Washington, D.C. 10-14 December 2018. Electronic Poster Presentation.

2018 **Moriarty, J.M.**, T.K. Kalra, N.K. Ganju, and Z. Defne. *Effect of vegetation and hydrodynamics on estuarine-marsh sediment fluxes: Implications for marsh stability*. Physics of Estuaries and Coastal Seas (PECS) Symposium, Galveston, Texas. 15–18 October 2018. Oral Presentation.

2018 **Moriarty, J.M.**, T.K. Kalra, N.K. Ganju, and Z. Defne. *Effect of Vegetation and Hydrodynamics on Estuarine-Marsh Sediment Fluxes in Barnegat Bay, New Jersey*. Mid-Atlantic Bight Physical Oceanography & Meteorology (MABPOM) Meeting, Woods Hole, Massachusetts. 11–12 October 2018. Poster Presentation.

2018 Kalra, T.S., Warner, J.C., Ganju, N.K., and **J.M. Moriarty**. *Development of a coupled modeling system to simulate ocean-wave-sediment-vegetation response to storms in a back-barrier setting*. Estuarine and Coastal Modeling, Seattle, Washington. 25–27 June 2018. Oral presentation.

2018 Bianucci, L., Balaguru, K., Leung, L.R., Smith, R. W., and **J. M. Moriarty**. *Contribution of hurricane-induced sediment resuspension to oxygen dynamics*. American Society of Limnology and Oceanography Summer Meeting, Victoria, British Columbia, Canada, 10–15 June 2018. Oral presentation.

2018 **Moriarty, J.M.**, M.A.M. Friedrichs, and C.K. Harris. *Effects of Seabed Resuspension on Primary Productivity and Remineralization in Chesapeake Bay*. Chesapeake Research and Modeling Symposium, 2018, Annapolis, Maryland. 12-14 June 2018. Oral presentation.

- 2018 Kalra, T.S., **Moriarty, J.M.**, N.K. Ganju, and J.C. Warner. *Marsh Erosion Under Wave Action Using a 3-D Coupled Wave-Flow-Sediment Model*. Ocean Sciences, Portland, Oregon. 11–16 February 2018. Poster Presentation.
- 2018 **Moriarty, J.M.**, T.K. Kalra, N.K. Ganju, and Z. Defne. *Wetland-Estuarine Exchanges of Sediment and Particulate Organic Carbon in Barnegat Bay, New Jersey*. Ocean Sciences, Portland, Oregon. 11–16 February 2018. Oral Presentation.
- 2017 **Moriarty, J.M.**, M.A.M. Friedrichs, and C.K. Harris. *Effects of Particulate Resuspension on Oxygen and Nitrogen Dynamics in Chesapeake Bay*. Coastal & Estuarine Research Federation Biennial Meeting, Providence, Rhode Island, 5-9 November 2017. Oral Presentation.
- 2017 **Moriarty, J.M.**, M.A.M. Friedrichs, and C.K. Harris. *The Role of Particulate Resuspension and Transport on Organic Matter, Nutrient, and Oxygen Dynamics in Chesapeake Bay: Preliminary Results from a Coupled Hydrodynamic-Sediment Transport-Biogeochemical Model*. Ocean Carbon Biogeochemistry (OCB) meeting, Woods Hole, Massachusetts. 26-29 June 2017. Poster presentation.
- 2017 **Moriarty, J.M.**, M.A.M. Friedrichs, and C.K. Harris. *Role of Particulate Resuspension and Transport on Chesapeake Bay Oxygen Dynamics*. Gordon Research Conference on Coastal Ocean Dynamics, Biddeford, Maine. 11-16 June 2017. Poster presentation.
- 2017 Rabouille, C., B. Lansard, J. Rassmann, L. Pozzato, M. Taillefert, E. Eytel, A. Abchiche, **J.M. Moriarty**, and C.K. Harris. *Sediment carbon and oxygen cycling and its temporal variations at the continent-ocean interface*. European Geophysical Union (EGU) General Assembly 2017, Vienna, Austria. 23-28 April 2017. Oral Presentation.
- 2016 Harris, C.K., I. Overeem, E. Hutton, **J.M. Moriarty**, and P. Wiberg. *Introducing Students to Ocean Modeling via a Web-Based Implementation for the Regional Ocean Modeling System (ROMS) River Plume Case Study*. American Geophysical Union (AGU) Fall Meeting, 2016, San Francisco, California. 12-16 December 2016. Poster presentation.
- 2016 **Moriarty, J.M.**, C.K. Harris, M.A.M. Friedrichs, K. Fennel, and K. Xu. *The Effect of Resuspension and Deposition on Biogeochemical Cycles in the Northern Gulf of Mexico: Numerical Modeling Results*. American Geophysical Union (AGU) Fall Meeting, 2016, San Francisco, California. 12-16 December 2016. Poster presentation.
- 2016 **Moriarty, J.M.**, C.K. Harris, and M.A.M. Friedrichs. *The Roles of Resuspension and Redistribution on Nutrient Cycling in Coastal Environments: Results from a Coupled Hydrodynamic-Sediment Transport-biogeochemical Numerical Model*. Chesapeake Modeling Symposium, 2016, Williamsbrug, Virginia. 1-2 June 2016. Oral presentation.
- 2016 **Moriarty, J.M.**, C.K. Harris, and M.A.M. Friedrichs. *The Roles of Resuspension and Redistribution on Nutrient Cycling in the Northern Gulf of Mexico: Results from a Coupled Hydrodynamic-Sediment Transport-biogeochemical Numerical Model*. Community Surface Dynamics Modeling Systems Annual Meeting, Boulder, Colorado. 17-19 May 2016. Poster Presentation.
- 2016 **Moriarty, J.M.**, C.K. Harris, C. Rabouille, and M.A.M. Friedrichs. *Resuspension and Biogeochemistry in Coastal Environments: Results from a Coupled Model for Seabed-Water Column Fluxes*. Ocean Sciences, New Orleans, Louisiana, 21-26 February 2016. Oral Presentation.
- 2015 **Moriarty, J.M.**, C.K. Harris, and M.A.M. Friedrichs. *Resuspension and Biogeochemistry: A Coupled Model for Seabed-Water Column Fluxes in Coastal Environments*. Coastal & Estuarine Research Federation Biennial Meeting, Portland, Oregon, 8-12 November 2015. Oral Presentation.
- 2015 **Moriarty, J.M.**, and C.K. Harris. *Resuspension and Sediment Bed Oxygen Consumption: Developing and Testing a Coupled Model*. INTERCOH (International Conference on Cohesive Sediment Transport), Leuvan, Belgium. 6-11 September 2015. Oral Presentation.
- 2015 Rabouille, C., F. Toussaint, C. Cathalot, J. Rassmann, B. Lansard, N. Laborde, **J.M. Moriarty**, and C.K. Harris. *Temporal variability of carbon recycling in deltaic sediments at different time*

- scales: An example from the Rhone River delta.* Goldschmidt 2015, Prague, Czechoslovakia. 16-21 August 2015. Oral Presentation.
- 2015 **Moriarty, J.M.**, and C.K. Harris. *Resuspension and Sediment Oxygen Consumption: Developing and Testing a Coupled Model.* Gordon Conference on Coastal Ocean Modeling, Biddeford, Maine. 7-12 June 2015. Poster Presentation.
- 2015 **Moriarty, J.M.**, and C.K. Harris. *Resuspension and Sediment Bed Oxygen Consumption: Developing and Testing a Coupled Model.* Atlantic Estuarine Research Society (AERS) Spring Meeting, Wanchese, North Carolina. 12-14 March 2015. Poster Presentation.
- 2014 **Moriarty, J.M.**, and C.K. Harris. *Resuspension and Sediment Oxygen Consumption: Developing and Testing a Coupled Model.* Mid-Atlantic Bight Physical Oceanography and Meteorology (MABPOM) Conference, Gloucester Point, Virginia. 30-31 October 2014. Poster Presentation.
- 2014 **Moriarty, J.M.**, C.K. Harris, C. Rabouille, and F. Toussaint. *Resuspension and Sediment Oxygen Consumption: Developing and Testing a Coupled Model.* Chesapeake Modeling Symposium, 2014, Annapolis, Maryland. 28-29 May 2014. Oral Presentation.
- 2014 **Moriarty, J.M.**, C.K. Harris, C.T. Friedrichs and M.G. Hadfield. *Buoyant and gravity-driven transport on the Waipaoa Shelf, New Zealand.* Community Surface Dynamics Modeling Systems Annual Meeting. Boulder, Colorado. 20-22 May 2014. Poster Presentation.
- 2014 Harris, C.K., **J. M. Moriarty**, K. Fennel, and R. Hetland. *Modeling resuspension and sediment oxygen demand.* Ocean Sciences, Honolulu, Hawaii. 23-28 February 2014. Oral Presentation.
- 2014 **Moriarty, J.M.**, S.-J. Kao, T.-Y. Lee, and C.K. Harris. *Variations in riverine fluxes of suspended matter during typhoons: the Zhuoshuei River, Taiwan.* Ocean Sciences, Honolulu, Hawaii. 23-28 February 2014. Poster Presentation.
- 2013 Kuehl, S.A., C.R. Alexander, D.R. Corbett, C.K. Harris, L. Leithold, **J.M. Moriarty**, A.S. Ogston, A.R. Orpin, J.P. Walsh. *Humans, Tectonics and Climate, Changing S2S Systems over Time: Waipaoa River Margin Example.* AGU Fall Meeting, San Francisco, California. 9–13 December 2013. Poster Presentation.
- 2013 **Moriarty, J.M.**, C.K. Harris, C.T. Friedrichs and M.G. Hadfield. *Gravity-driven transport on the Waipaoa River Continental Shelf, New Zealand.* Coastal & Estuarine Research Federation Biennial Meeting. San Diego, California. 3-8 November 2013. Oral Presentation.
- 2013 **Moriarty, J.M.**, C.K. Harris, and M.G. Hadfield. *A hydrodynamic and sediment transport model for the Waipaoa Shelf, New Zealand: Sensitivity of fluxes to spatially-varying erodibility and model nesting.* Estuarine & Coastal Modelling Biennial conference. San Diego, California. 4-6 November 2013. Oral Presentation.
- 2012 Walsh, J.P., D.R. Corbett, R. Hale, C.K. Harris, J. Kiker, **J.M. Moriarty**, C. Nittrouer, A. Ogston, A. Orpin, D. Young. *Emplacement, character, and preservation of shelf event strata: Insights from river dispersal systems.* Geological Society of America (GSA) Annual Meeting, Charlotte, NC. 4–7 November 2012. Oral Presentation.
- 2012 **Moriarty, J.M.**, C.K. Harris, and C.T. Friedrichs. *Gravity-driven transport on the Waipaoa River Continental Shelf, New Zealand.* Physics of Estuaries and Coastal Seas (PECS) Symposium, New York City, New York. 12–6 August 2012. Oral Presentation.
- 2012 Corbett, D.R., J.P. Walsh, A. Orpin, A. Ogston, J. Kiker, R. Hale, **J.M. Moriarty**, C.K. Harris. *An investigation of spatial and temporal variability of surface seabed properties and erodibility on the Waipaoa River margin, New Zealand.* Ocean Sciences, Salt Lake City, Utah. 20–24 February 2012. Oral Presentation.
- 2012 **Moriarty, J.M.**, C.K. Harris. *Reworking of Flood Deposits on the Waipaoa River Continental Shelf, New Zealand.* Ocean Sciences, Salt Lake City, Utah. 20–24 February 2012. Poster Presentation.
- 2012 Orpin, A.R., J.P. Walsh, D.R. Corbett, A. Ogston, R. Hale, J. Kiker, **J.M. Moriarty**, C.K. Harris. *Floods, ocean storms and stratigraphic variability over a year-long experiment on the muddy and energetic Waipaoa River margin.* Ocean Sciences, Salt Lake City, Utah. 20–24 February 2012. Oral Presentation.

- 2011 Orpin, A.R., J.P. Walsh, D.R. Corbett, A. Ogston, R. Hale, J. Kiker, **J.M. Moriarty**, C.K. Harris. *Floods, ocean storms and stratigraphic variability over a year-long experiment on the muddy and energetic Waipaoa River margin*. Geosciences 2011 Conference, Nelson, New Zealand. 27 November–1 December 2011.
- 2011 **Moriarty, J.M.**, C.K. Harris. *Model Nesting: Open Boundary Conditions for a Hydrodynamic-Wave-Sediment Transport Coastal Ocean Model*. MODSIM (Modeling and Simulation) World Conference & Expo, Virginia Beach, Virginia. 11– 4 October 2011. Poster Presentation.
- 2011 **Moriarty, J.M.**, C.K. Harris. *Wave- and current- induced bed stress on the Waipaoa Shelf, New Zealand: Variations in Time and Space*. AGU Chapman Conference on source to Sink Systems Around the World and Through Time, Oxnard, California. 24– 27 January 2011. Poster Presentation.
- 2010 Hastings, R.H., M.A. Goñi, R.A. Wheatcroft, T.A. Kniskern, **J.M. Moriarty**. *Particulate organic carbon distribution in ocean margin sediments adjacent to the Umpqua River*. Ocean Sciences, Portland, Oregon. 22–26 February 2010. Poster Presentation.
- 2010 **Moriarty, J.M.**, T.A. Kniskern, C.K. Harris, and J. Warrick. *Inter-annual Variation in Sediment Transport and Deposition During Winter and Spring Flood Events: Umpqua River, Oregon*. Ocean Sciences, Portland, Oregon. 22–26 February 2010. Poster Presentation.
- 2009 Kniskern, T.A., J. Warrick, **J.M. Moriarty**, K. Farnsworth, C.K. Harris. *Effects of Seasonal River-Ocean Coherence on Sediment Transport, Deposition and Reworking along the U.S. West Coast*. Coastal and Estuarine Research Federation, Portland, Oregon. 1–5 November 2009.
- 2008 **Moriarty, J.M.**, T. Kniskern, and C.K. Harris. *Effect of Seasonal Variation on Sediment Transport and Deposition on a Collision Margin: The Umpqua River*. AGU Fall Meeting, San Francisco, California. 15–19 December 2008. Poster Presentation.

Invited Departmental and Community Presentations:

- 2018 **Moriarty, J.M.** *Sediment Transport in Estuarine and Continental Shelf Systems: Effects on Oxygen and Nitrogen Dynamics*. Department of Marine Sciences, University of Connecticut. 9 November 2018.
- 2018 **Moriarty, J.M.** *Sediment Transport in Coastal Systems: Implications for Water Quality and Carbon Cycling*. Skidaway Institute of Oceanography, Department of Marine Sciences, University of Georgia. 5 November 2018.
- 2018 **Moriarty, J.M.** *Sediment Transport in Coastal Systems: Implications for Hypoxia and Carbon Cycling*. Center for Coastal Physical Oceanography and ODU Resilience Collaborative Seminar Series, Old Dominion University. 17 September 2018.

Departmental and Community Presentations:

- 2019 **Moriarty, J.M.** *Spatial Variability in Marsh-Estuarine Sediment Exchanges in a Back-Barrier Estuary*. Woods Hole Coastal and Marine Science Center Meeting, United States Geological Service, Woods Hole, MA. 3 September 2019.
- 2019 **Moriarty, J.M.** *Role of Estuarine Hydrodynamics & Sediment Transport on Marsh-Estuarine Sediment Fluxes*. Coastal Ocean Fluid Dynamics Laboratory, Woods Hole Oceanographic Institution. 23 August 2019.
- 2019 **Moriarty, J.M.** *Marsh-edge Erosion and Estuarine Transport Affect Sediment Availability in Back-Barrier Marshes*. Pacific Coastal and Marine Science Center, United States Geological Service, Santa Cruz, CA. 21 August 2019.
- 2017 **Moriarty, J.M.** *The Role of Resuspension on Oxygen Dynamics*. Coastal Ocean Fluid Dynamics Laboratory, Woods Hole Oceanographic Institution. 17 November 2017.
- 2017 **Moriarty, J.M.** *The Role of Resuspension on Coastal Ocean Oxygen Levels: Results from a Coupled Numerical Model*. Woods Hole Science Center Meeting, United States Geological Service. 3 October 2017.
- 2016 **Moriarty, J.M.**, C.K. Harris, M.A.M. Friedrichs, K. Fennel, K. Xu. *The Effect of Resuspension and Deposition on Seabed-Water Column Fluxes: Numerical Modeling Results from the Northern*

- Gulf of Mexico*. Department of Physical Sciences, Virginia Institute of Marine Science. 1 December 2016.
- 2015 **Moriarty, J.M.**, and C.K. Harris. *Seabed Resuspension and Biogeochemistry: A Coupled Model for Seabed-Water Column Fluxes in Coastal Environments*. 75th Anniversary Alumni Research Symposium, Virginia Institute of Marine Science. 8-9 October 2015. Poster Presentation.
- 2015 **Moriarty, J.M.**, and C.K. Harris. *Resuspension and Sediment Oxygen Consumption: A Coupled Model for the Rhone River Delta*. Department of Physical Sciences, Virginia Institute of Marine Science. 3 September 2015.
- 2014 **Moriarty, J.M.**, S.-J. Kao, T.-Y. Lee and C.K. Harris. *Variations in Riverine Fluxes of Suspended Matter During Typhoons: the Jhuoshuei River, Taiwan*. Department of Physical Sciences, Virginia Institute of Marine Science. 13 March 2014. Oral Presentation.
- 2013 **Moriarty, J.M.**, C.K. Harris, C.T. Friedrichs and M.G. Hadfield. *Sensitivity of sediment fluxes to seabed erodibility, model nesting, and gravity-induced transport: A modeling study of the Waipaoa Shelf, New Zealand*. Department of Physical Sciences, Virginia Institute of Marine Science. 31 October 2013. Oral Presentation.
- 2013 **Moriarty, J.M.**, C.K. Harris, C.T. Friedrichs and M.G. Hadfield. *Gravity-driven transport on the Waipaoa River continental shelf, New Zealand*. Institute of Oceanography, National Taiwan University. 8 August 2013. Oral Presentation.

Teaching & Advising

Classroom Teaching:

- 2021 Numerical Methods and Modeling Laboratory (3 credits), ATOC 4850/5850, University of Colorado Boulder
- 2020 Numerical Methods and Modeling Laboratory (3 credits), ATOC 4500/7500, University of Colorado Boulder
- 2016 Sediment Transport Modeling (1 credit), MSCI 398, College of William & Mary

Workshops:

- 2019 Implementing the Biogeochemistry Modules in COAWST, Workshop at COAWST [Coupled Ocean-Atmosphere-Wave-Sediment Transport] Modeling Workshop 2019, North Carolina State University
- 2016 Introduction to Classroom Activities on Regional Ocean Modeling, Workshop at Community Surface Dynamics Modeling System (CSDMS) 2016 Meeting, University of Colorado (Co-leader)
- 2014 Regional Ocean Modeling System (ROMS) For the Non-Specialist (ROMS-LITE), Workshop at Community Surface Dynamics Modeling System (CSDMS) 2014 Meeting, University of Colorado (Co-leader)

Online Educational Materials:

- 2016 Community Surface Dynamics Modeling System (CSDMS) Online Lab Portal, University of Colorado (Co-developer)
- ROMS-Lite Modeling: Learning About Grids
 - ROMS-Lite Modeling: Settling Rates and Shear Stress
 - ROMS-Lite Modeling: Wave Forcing
 - ROMS-Lite Modeling: River Forcing

Student Advising:

- 2020-present **Advisor** for Christina Geller, Ph.D. Student, Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder.

- 2020 **Advisor** for David Imola, B.S. Student, Department of Electrical, Computer and Energy Engineering, Undergraduate Research Opportunity Program (UROP), University of Colorado Boulder
- 2014 **Co-Advisor** for Jessica Sydnor, Governor's (High) School program, Virginia Institute of Marine Science
- 2011 **Co-Advisor** for Daniel O'Hara, NSF's Research Experience for Undergraduates program, Virginia Institute of Marine Science

Student Committee Service:

- 2019-present **Committee Member**, Geneviève Elsworth PhD Dissertation committee, Department of Geology, University of Colorado Boulder. Advisors: Lovenduski and Marchitto.
- 2020 **External Reader**, Drew Brown B.S. Honors Thesis, Department of Geology, University of Colorado Boulder Advisor: Trower.

Student Professional Development:

- 2020 **Speaker**, Atmospheric and Oceanic Sciences Department Forum, University of Colorado Boulder
- 2020 **Mentor**, CV/Communication workshop, Dept. of Atmospheric and Oceanic Sciences, University of Colorado Boulder
- 2018 **Visiting Scientist and Seminar Speaker**, City College of New York (CCNY)–U.S. Geological Survey Outreach Program, CCNY
- 2018 **Seminar Speaker**, Summer Lecture Series, Summer [Undergraduate] Student Fellowship Program, Woods Hole Oceanographic Institution.
- 2016 **Panelist**, Graduate Student Panel, Undergraduate Marine Science Society, College of William & Mary
- 2009 **Panelist**, Women in Physics, University of Chicago, IL

K-12 Education:

- 2020 **Correspondent/Subject Matter Expert**, AP Environmental Science Student's Final Project, Mead High School Freshman, Colorado
- 2019 **Science Fair Judge**, Mashpee Middle and High School, MA
- 2014-2017 **Activity Leader**, TechSavvy career program for middle school girls, American Association of University Women
- 2010, '12-' 17 **Competition Official (Science Judge and other roles)**, Blue Crab Bowl Competition for High School Students, National Ocean Sciences Bowl
- 2009 **Correspondent**, Science and Technology Outreach and Mentoring Program, University of Chicago, IL

Community Education:

- 2019 **Outreach Educator**, U.S. Geological Survey, Woods Hole Science Stroll
- 2014-2017 **Exhibit Leader and other roles**, Marine Science Day Open House, Virginia Institute of Marine Science
- 2016-'17 **Math and English Tutor**, Literacy for Life program for adults, Williamsburg, VA
- 2010–2011 **Outreach Educator**, Careers in Marine Science Program, Virginia Sea Grant
- 2010 **Reviewer**, Bastian, Scott F. (2011). "Oceanography", In: *Virginia Beach Naturally: A Guide to Enjoying the Wildlife of Virginia Beach, Virginia*. Dexter, Michigan: Thomson-Shore, Inc.

Professional Service

Service at Professional Organizations:

- 2020 – present **Co-Chair**, Marine Working Group, Community Surface Dynamics Modeling System (CSDMS)

- 2020 **Session Leader**, Session 3, Community Surface Dynamics Modeling System (CSDMS), Summer Science Series
- 2020 **Mentor**, Mentoring365, AGU Ocean Sciences Meeting
- 2018, 2019 **Coordinator**, Outstanding Student Presentation Award, Ocean Sciences Section, American Geophysical Union (AGU)
- 2018 **Panel Convener**, Student and Early Career Scientist Conference Planning Committee, American Geophysical Union (AGU)
- 2018 **Invited Participant**, Workshop on Lateral Carbon Flux in Tidal Wetlands: Filling a Key Knowledge Gap Through a Methods Intercomparison and Data Synthesis, Ocean Carbon and Biogeochemistry
- 2018 **Invited Participant**, Modeling Beyond 2025, Chesapeake Bay Program (CBP)'s Science and Technology Advisory Committee (STAC)
- 2017 **Session Chair**, Ocean, Carbon and Biogeochemistry annual meeting

Service at University of Colorado Boulder:

- 2021-present **Member**, ARPAC Committee, Institute of Arctic and Alpine Research
- 2021-present **Member**, Search Committee, Institute of Arctic and Alpine Research
- 2020-present **Co-Chair**, Seminar Committee, Institute of Arctic and Alpine Research
- 2020-present **Member**, Technology Committee, Atmospheric and Oceanic Sciences Department
- 2020-present **Member**, ATOC Fest and Distinguished Seminar Committee, Atmospheric and Oceanic Sciences Department

Service at U.S. Geological Survey:

- 2017-2019 **Internal Reviewer**, 4 manuscripts, 14 conference abstracts, 3 datasets
- 2019 **Panelist**, Job Application Workshop, Woods Hole Oceanographic Institution Postdoctoral Association
- 2018 **Panelist**, Response to Integrated Modeling Presentation, Community for Data Integration

Service at Virginia Institute of Marine Science:

- 2015–2017 **Peer Advisor**, Graduate Ombudsmen Program
- 2015–2017 **Student Representative**, Academic Council
- 2014–2016 **Founder & Member**, Writing Group for Graduate Students
- 2009–2016 **Student Representative**, Educational Policy Committee
- 2012–2013 **Student Representative**, Physical Sci. Department Faculty Meetings
- 2011–2012 **Student Representative**, Marine Geology Search Committee
- 2010–2012 **Student Representative**, Awards Committee

Journal Article and Proposal Reviews:

- 2020 Journal of Geophysical Research: Oceans (4 manuscripts), Estuaries and Coasts (2 manuscripts), Geoscientific Model Development (1 manuscript)
- 2020 National Science Foundation (1 proposal)
- 2019 National Science Foundation (2 proposals)
- 2019 Journal of Geophysical Research: Oceans (2 manuscript), Ocean Modeling (1 manuscript), Continental Shelf Research (1 manuscript), Estuaries and Coasts (3 manuscripts), Marine Ecology Progress Series (1 manuscript)
- 2018 National Science Foundation (1 proposal)
- 2018 Journal of Geophysical Research: Oceans (1 manuscript), Journal of Geophysical Research: Biogeosciences (1 manuscript)
- 2017 Journal of Marine Systems (1 manuscript), Ocean Modeling (1 manuscript), Journal of Sea Research (1 manuscript)

- 2016 Continental Shelf Research (1 manuscript), Journal of Marine Systems (1 manuscript), Journal of Sea Research (2 manuscripts), Journal of Geophysical Research: Oceans (1 manuscript), Estuarine, Coastal and Shelf Science (1 manuscript)
- 2015 Journal of Geophysical Research: Oceans (1 manuscript)
- 2014 Ocean Dynamics (1 manuscript)
- 2013 Ocean Dynamics (1 manuscript)

Professional Memberships:

- 2009-present American Geophysical Union (AGU)
- 2010-present Community Surface Dynamics Modeling System (CSDMS)
- 2013-present Coastal and Estuarine Research Federation (CERF)
- 2016-present Mentoring Physical Oceanography Women to Increase Retention (MPOWIR)

News and Online Media

- 2021 “Muddy waters lead to decreased oxygen in Chesapeake Bay”, Geobites. < <https://geobites.org/muddy-waters-lead-to-decreased-oxygen-in-chesapeake-bay/>>.
- 2020 “Meet Julia Moriarty”, INSTAAR, CU Boulder. < <https://instaar.colorado.edu/news-events/instaar-news/meet-julia-moriarty/>>.
- 2019 “Featured Modeler: Julia Moriarty”, Community Chesapeake Modeling Program Newsletter. <<https://mailchi.mp/9396e27b5941/results-from-the-tech-transfer-workshop-new-use-of-the-coawst-model-and-more>>.
- 2019 “Featured Model: Simulating Processes in Vegetated Estuaries using COAWST”, Community Chesapeake Modeling Program.
- 2013 “VIMS Graduate Students Pursue Summer Research in East Asia”. Virginia Institute of Marine Science Website. <<https://www.vims.edu/newsandevents/topstories/archives/2013/eapsi.php>>.