

## Julia M. Moriarty

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### Education

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**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

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2020-present Assistant Professor, Atmospheric and Oceanic Sciences Department (ATOC), University of Colorado Boulder

2020-present Fellow, Institute of Arctic and Alpine Research (INSTAAR), University of Colorado Boulder

2017-2019 Research Oceanographer / Mendenhall Post-doctoral Fellow, U.S. Geological Survey

### Funded Proposals and Fellowships

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- 2023 *Improving Predictability of Aqueous Coastal Biogeochemistry During Floods, Storms and a Warming Climate*, Early Career Research Program, DOE. Award Number: DE-SC0024197. PI: **J. Moriarty**. Funding for 2024-2028: \$913,399 total and to CU.
- 2023 *Leaky deltas: sources or sinks in the global carbon cycle?* Ocean Carbon Biogeochemistry (OCB). PI: Shaily Rahman, co-PIs: K. Maiti (LSU), J. Nienhuis (Utrecht University, Netherlands), C. Schultz (Northeastern), E. Chamberlain (Wageningen University & Research, Netherlands), **J. Moriarty**, and M. Repasch (U. New Mexico). Funding for 2025: \$74,050 total; \$0 for CU.
- 2022 *Collaborative Research: Facility: CSDMS: Engaging a Thriving Community of Practice in Earth-Surface Dynamics*, Geoinformatics, NSF. Award Number: 1831623 for primary award. PI: G. Tucker, co-PIs: E. Hutton, A. J. Kettner, I. Overeem, M. D. Piper, M. Zellner (Northeastern U), N. Gasparini (Tulane). Funded Senior Personnel: T. Gian, **J. Moriarty**, B. Campforts, M. Rossi. Funding requested for 2022-2027: \$6,000,057 total; \$5,403,958 for CU
- 2021 *Collaborative Research: Frameworks: OpenEarthscope—Transformative Cyberinfrastructure for Modeling and Simulation in the Earth-Surface Science Communities*, Cyberinfrastructure for Sustained Scientific Innovation (CSSI), NSF. Award Number: 2104102 for primary award. PI: G. Tucker, co-PIs: A. Kettner, E. Hutton, I. Overeem, **J. Moriarty**, C. Jenkins, S. Peckham, D. Gochis (NCAR), N. Gasparini (Tulane University), A. Pfeiffer (Western Washington University), E. Istanbuluoglu (University of Washington). Funding for 2021-2026: \$2,969,535 total; \$2,562,303 for CU
- 2017 *Biophysical Feedbacks Between Vegetation and Particulate Fluxes: Implications for Water Clarity and Carbon Sequestration in Estuarine Environments*, Mendenhall Post-Doctoral Research Fellowship, US Geological Survey, Woods Hole Mass. PI: **J. Moriarty** (VIMS/USGS). Funding for 2017-2019: ~\$198,000.

### Honors and Awards

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- 2023 **Early Career Award**, Department of Energy (also see Funded Proposals)

- 2022 **ATOC Service Award**, as part of the REU Team's Group Award for exceptional work in implementing and running the ATOC REU, University of Colorado Boulder
- 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 (\$200). *Awarded to the top 3 – 5% of student presentations at the Earth Science community's flagship meeting.*
- 2016 **George R. Healy Fellowship Award**, College of William & Mary
- 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.
- 2014 **Tied for 4<sup>th</sup>-6<sup>th</sup> 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.*

## Publications

### Peer-Reviewed Publications:

- 2024 Gan, T., Tucker, G. E., Hutton, E.W.H., Piper, M.D., Overeem, I., Kettner, A.J., Campforts, B., **Moriarty, J. M.**, Undzisz, B. <sup>++</sup>, Pierce, E., and L. McCready. *CSDMS Data Components: Data-Model Integration Tools for Earth Surface Processes Modeling*. Submitted to Geoscientific Model Development. Accepted.
- 2021 Kalra, T., N. K. Ganju, A. Arexabaleta, J. Carr, Z. Defne, and **J. M. Moriarty**. *Modeling Marsh Dynamics Using a 3-D Coupled Wave-Flow-Sediment Model*. *Frontiers in Marine Science*, 8, 740921. doi:10.3389/fmars.2021.740921
- 2021 Hood, R. R., G. W. Shenk, R. L. Dixon, S. M. C. Smith, W. P. Ball, J. O. Bash, R. Batiuk, K. Boomer, D. C. Brady, C. Cerco, P. Claggett, K. de Mutsert, Z. M. Easton, A. J. Elmore, M. A. M. Friedrichs, L. A. Harris, T. F. Ihde, I. Lacher, L. Li, L. C. Linker, A. Miller, **J. Moriarty**, G. B. Noe, G. Onyullo, K. Rose, K. Skalak, R. Tian, T. L. Veith, L. Wainger, D. Weller, Y. J. Zhang. *The Chesapeake Bay Program Modeling System: Overview and Recommendations for Future Development*. *Ecological Modeling*, 456, 109653. doi:10.1016/j.ecolmodel.2021.109653.
- 2021 Zhang, W., **J. M. Moriarty**, H. Wu and Y. Feng. *Response of Bottom Hypoxia off the Changjiang River Estuary to Multiple Factors: A Numerical Study*. *Ocean Modelling*, 159, 101751. doi:10.1016/j.ocemod.2021.101751.
- 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: 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.

#### **Book Chapters (Peer-Reviewed):**

- 2022 Fennel, K., T. Cyronak, M. DeGrandpre, D. T. Ho, G. G. Laruelle, D. Maher, D. and **J. Moriarty**. *Carbon, Coasts, and the Climate*. In Oxford Research Encyclopedia of Climate Science. Oxford University Press. doi: <https://doi.org/10.1093/acrefore/9780190228620.013.824>.

#### **Publicly Available Datasets:**

- 2020 **Moriarty, J. M.**, M. A. M. Friedrichs, and C. K. Harris. *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.**, C. K. Harris, M. A. M. Friedrichs, K. Fennel, 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.**, C. K. Harris, K. Fennel, K. Xu, C. Rabouille, 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

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**Bold** indicates Moriarty; <sup>+</sup> Moriarty as post-doctoral advisor; <sup>++</sup> Moriarty as graduate advisor; <sup>+++</sup> Moriarty as undergraduate advisor. \* Indicates presenting author, if not first author.

### Invited Conference Abstracts:

- 2022 **Moriarty, J.M.** *Using Models to Quantify Knowledge Gaps: The Role of Storm-Induced Resuspension on Coastal Biogeochemical Cycling*. C-SAW: Time Domain Controls on Carbon Storage, Release, and Transformation in Coastal and Estuarine Waters Following Extreme Events, Ocean Carbon Biogeochemistry (OCB) Workshop, NC State University. 23-26 October 2022. Oral Presentation / Plenary Speaker
- 2021 **Moriarty, J.M.** *Modeling at the Land-Sea Interface: Understanding the Impact of Sediment Transport on Oxygen Levels and Marsh Vulnerability Using Coupled Hydrodynamic-Sediment Transport-Biogeochemistry Models*. Gulf Coast Terrestrial Aquatic Interfaces Workshop: Climate Change and Disturbance Impacts, Oak Ridge National Laboratory, US Department of Energy, Virtual Workshop. 2-3 September 2021. Oral Presentation
- 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.
- 2016 Harris, C. K., **J. M. Moriarty**, and I. Overeem. *Introduction to Classroom Activities on Regional Ocean Modeling*. Community Surface Dynamics Modeling System (CSDMS) 2016 Meeting, University of Colorado. 17-19 May 2017. Oral workshop.

### **Conference Abstracts:**

- 2023 Undzis, B.C. <sup>++</sup>, and **Moriarty, J.M.\*** *Variability in Sediment Resuspension and Transport on the Beaufort Sea Shelf During the 2019 Open Water Season: Results from a Hydrodynamic-Sediment Transport Model*. American Geophysical Union (AGU) Annual Meeting, 11 – 15 December 2023. Poster Presentation.
- 2023 Geller, T. <sup>++</sup>, and **Moriarty, J.M.** *Variability in Freshwater Transport in a chain of Lagoons*. Coastal and Estuarine Research Federation (CERF) biennial meeting, 12–16 November 2023. Lightning Oral Presentation.
- 2023 **Moriarty, J.M.**, Jenkins, C., and Undzis, B. <sup>++</sup>. *Quantifying Oxygen Exposure Time of Particulates in Coastal Systems*. Coastal and Estuarine Research Federation (CERF) biennial meeting, 12–16 November 2023. Lightning Oral Presentation
- 2023 Sunberg, L. <sup>+</sup>, **Moriarty, J.M.**, and Moulton, M. *Impact of microplastic transport pathways on microplastic transformation at a regional scale*. Coastal and Estuarine Research Federation (CERF) biennial meeting, 12–16 November 2023. Poster Presentation.
- 2023 Undzis, B. <sup>++</sup>, and **Moriarty, J.M.** *Variability in Bed Shear Stresses and Resuspension on the Alaskan Beaufort Sea Shelf: A Numerical Modeling Study*. Gordon Research Conference: Coastal Ocean Dynamics, 18–23 June 2023. Poster Presentation.
- 2023 Yin, D., Cui, L., Harris, C.K., Maiti, K., Beck, H., and **Moriarty, J.M.** *Understanding the benthic DIC and TA fluxes in relation to bottom water acidification: a modeling approach*. Gordon Research Conference: Coastal Ocean Dynamics, 18–23 June 2023. Poster Presentation.
- 2023 Geller, T. <sup>++</sup>, and **Moriarty, J.M.** *Variability of estuarine-ocean fluxes in a chain of Arctic estuaries*. Community Surface Dynamics Modeling System (CSDMS) Annual Meeting, 16–18 May 2023. Poster Presentation.
- 2023 **Moriarty, J.M.** , Jenkins, C., and Undzis, B. <sup>++</sup>. *Influence of Sediment Resuspension on Oxygen Exposure Time: A Case Study from the Rhône Delta*. Community Surface Dynamics Modeling System (CSDMS) Annual Meeting, 16–18 May 2023. Poster Presentation.
- 2023 Undzis, B. <sup>++</sup>, and **Moriarty, J.M.** *Variability in Bed Shear Stresses and Resuspension on the Alaskan Beaufort Sea Shelf: A Numerical Modeling Study*. Community Surface Dynamics Modeling System (CSDMS) Annual Meeting, 16–18 May 2023. Poster Presentation.
- 2023 Yin, D., Cui, L., Harris, C.K., Maiti, K., Beck, H., and **Moriarty, J.M.** *A coupled benthic-pelagic biogeochemical model for estimating sediment-water exchange of particulates and solutes: sensitivity tests and application to the northern Gulf of Mexico*. Community Surface Dynamics Modeling System (CSDMS) Annual Meeting, 16–18 May 2023. Poster Presentation.
- 2023 Geller, T. <sup>++</sup>, and **Moriarty, J.M.** *Seasonally Varying Residence Time in Arctic Back-Barrier Estuaries*. Hydrologic Sciences Symposium, 12–13 April 2023. Oral Lightning Presentation.
- 2023 Undzis, B. <sup>++</sup>, and **Moriarty, J.M.** *Bed Shear Stress on the Alaskan Beaufort Sea Shelf: A Numerical Modeling Study*. Hydrologic Sciences Symposium, 12–13 April 2023. Oral Lightning Presentation.
- 2022 **Moriarty, J.M.** , C. Jenkins, and B. Undzis <sup>++</sup>. *Quantifying oxygen exposure time due to sediment resuspension in the coastal ocean*. American Geophysical Union (AGU) Annual Meeting, 12–16 December 2022. Poster Presentation.
- 2022 Geller, T. <sup>++</sup>, and **Moriarty, J.M.** *Residence time and estuarine-ocean fluxes in an Arctic estuary: A numerical modeling study of Kaktovik Lagoon*. C-SAW: Time Domain Controls on Carbon Storage, Release, and Transformation in Coastal and Estuarine Waters Following Extreme Events, Ocean Carbon Biogeochemistry (OCB) Workshop, NC State University. 23-26 October 2022. Poster Presentation.
- 2022 Geller, T. <sup>++</sup>, and **Moriarty, J.M.** *Implementing a numerical hydrodynamic model for Beaufort Sea Lagoons*. Community Surface Dynamics Modeling System (CSDMS) Annual Meeting, 17–19 May 2022. Poster Presentation.

- 2022 Undzis, B. <sup>++</sup>, and **Moriarty, J.M.** *Implementing a Hydrodynamic – Sediment Transport Numerical Model for the Beaufort Sea Shelf*. Community Surface Dynamics Modeling System (CSDMS) Annual Meeting, 17–19 May 2022. Poster Presentation.
- 2022 Geller, T. <sup>++</sup>, and **Moriarty, J.M.** *Variability of Residence Time and Estuary-Shelf Fluxes in an Arctic Lagoon: A numerical modeling study*. Ocean Sciences, Virtual Conference. 27 February–4 March 2022. Poster Presentation.
- 2022 **Moriarty, J.M.** *How Does Source Location Impact the Role of Seabed Nutrients on Estuarine Biogeochemistry?: A Numerical Modeling Study*. Ocean Sciences, Virtual Conference. 27 February–4 March 2022. Oral Presentation.
- 2022 Undzis, B. <sup>++</sup>, and **Moriarty, J.M.** *Variability in Hydrodynamics and Sediment Transport due to Waves and Sea Ice Extent: A numerical modeling study of the Beaufort Sea Shelf*. Ocean Sciences, Virtual Conference. 27 February–4 March 2022. Poster Presentation.
- 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), Virtual Webinars. 16 June 2020. 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, Williamsburg, 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), Leuven, 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:**

- 2023 **Moriarty, J.M.** *Sediment Transport-Biogeochemical Modeling Across Spatiotemporal Scales in the Coastal Ocean*. Earth Surface Processes Institute (ESPI), University of Colorado Boulder. 11 May.
- 2022 **Moriarty, J.M.** *Resuspension in Chesapeake Bay: Implications for Biogeochemistry*. Chesapeake Bay Program, Virtual Seminar. 11 July.
- 2022 **Moriarty, J.M.** *Coupled Hydrodynamic-Sediment Transport-Biogeochemistry Modeling: Examples from the Coastal Ocean*. Earth Surface Processes Institute (ESPI), University of Colorado Boulder. 13 May.
- 2021 **Moriarty, J.M.** *Coupled Hydrodynamic-Sediment Transport Modeling: Examples from the Coastal Ocean*. Earth Surface Processes Institute (ESPI), Virtual Summer School. 15 June.
- 2021 **Moriarty, J.M.** *Sediment Transport – Biogeochemical Coupling, and “Biology” Modules in COAWST*. COAWST [Coupled Ocean-Atmosphere-Wave-Sediment Transport] Modeling Workshop 2021, U.S. Geological Survey, Virtual Workshop. 27 May.
- 2021 **Moriarty, J.M.** *The Role of Sediment and Particulate Organic Matter Transport on Oxygen Dynamics and Marsh Trajectory*. Department of Marine Science, University of Southern Mississippi, Virtual Seminar Series. 19 February.
- 2021 **Moriarty, J.M.** *The Role of Sediment and Particulate Organic Matter Transport on Marsh Trajectory and Hypoxia*. Soft Rock Seminar, Jackson School of Geosciences, University of Texas Austin, Virtual Seminar. 8 February.
- 2019 **Moriarty, J.M.** *Implementing the Biogeochemistry Modules in COAWST*. COAWST [Coupled Ocean-Atmosphere-Wave-Sediment Transport] Modeling Workshop 2019, North Carolina State University
- 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 **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 **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.

#### **Departmental and Community Presentations:**

- 2023 Undzis, B.<sup>++</sup>, and **Moriarty, J.M.** *Variability in Shelf Sediment Fluxes Due to Changing Arctic Winds: Results from a Numerical Model*. Earth System and Space Science Poster Conference, Boulder, CO. 8 December.
- 2023 Geller, T.<sup>++</sup>, and **Moriarty, J.M.** *Variability of estuarine-ocean fluxes in a chain of Arctic estuaries*. CSDMS Group Summer Seminar, Boulder, CO. 24 Aug.
- 2023 Gonzales, M.<sup>+</sup>, Undzis, B.<sup>++</sup> and **Moriarty, J.M.** *Variability of Ocean Currents on the Beaufort Sea Shelf*. ATOC REU Oral Presentations, Boulder, CO. 3 Aug.
- 2023 Gonzales, M.<sup>+</sup>, Undzis, B.<sup>++</sup> and **Moriarty, J.M.** *Variability of Ocean Currents on the Beaufort Sea Shelf*. ATOC REU Poster Session, Boulder, CO. 2 Aug. Poster Presentation.
- 2023 **Moriarty, J.M.** *Resuspension-Induced Oxygen Exposure Time: Comparing Methods*. CSDMS Group Summer Seminar. Boulder, CO. 27 July.
- 2023 **Moriarty, J.M.** *Modeling the Coastal Ocean: An Example of Low-Oxygen "Dead Zones"*. Thailand's GISTA visit to INSTAAR. 21 July.
- 2023 **Moriarty, J.M.** *Sediment Transport-Biogeochemical Modeling in the Coastal Ocean*. UNOLS Arctic Chief Scientist Training Cruise. 8 June.
- 2023 Undzis, B.<sup>++</sup>, and **Moriarty, J.M.** *Resuspension on the Alaskan Beaufort Sea Shelf Estimated Using a Coupled Hydrodynamic-Sediment Transport Model*. INSTAAR Noon Seminar, Boulder, CO. 17 May.
- 2022 Tucker, G., Hutton, E.W.H., Kettner, A., **Moriarty, J.M.**, Overeen, I., Piper, M., Gan, T., Campforts, B., Peckham, S.D., Stoica, M., McCready, L., Gasparini, N., Pfeiffer, A., Istanbuloglu, E., Gochis, D., Cabell, R. *OpenEarthscope: A Community Platform for Computational Modeling of Earth-surface Processes*. 2022 NSF Cyberinfrastructure for Sustained Scientific Innovation Principal Investigator Meeting. July 2022.
- 2021 Geller, T.<sup>++</sup>, and **Moriarty, J.M.** *Implementation of a Hydrodynamic Model for an Arctic Lagoon*. Earth System and Space Science Poster Conference, Boulder, CO. 3 December.
- 2021 Undzis, B.<sup>++</sup>, and **Moriarty, J.M.** *Sediment Dynamics on the Beaufort Sea Shelf: Implementation of a Coupled Numerical Model*. Earth System and Space Science Poster Conference, Boulder, CO. 3 December.
- 2021 Martinez, I.<sup>+</sup>, DeRepentigny, P. **Moriarty, J. M.**, Jahn, A., Zankowski, H. *The North Water Polynya: Change Over Time*. Joint Boulder Summer Internship Poster Session, Boulder, CO. 29 July.
- 2020 **Moriarty, J.M.** *Coastal Ocean Modeling: Sediment and Nutrient Transport*. Data Blitz, Institute for Arctic and Alpine Research (INSTAAR), CU Boulder, Boulder, CO. 15 January.
- 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 **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 **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.

- 2017 **Moriarty, J.M.**. *The Role of Resuspension on Oxygen Dynamics*. Coastal Ocean Fluid Dynamics Laboratory, Woods Hole Oceanographic Institution. 17 November.
- 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.
- 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.
- 2015 **Moriarty, J.M.**, and C.K. Harris. *Seabed Resuspension and Biogeochemistry: A Coupled Model for Seabed-Water Column Fluxes in Coastal Environments*. 75<sup>th</sup> Anniversary Alumni Research Symposium, Virginia Institute of Marine Science. 8-9 October.
- 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.
- 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.
- 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 **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.

## Teaching & Advising

### Classroom Teaching (at University of Colorado Boulder, and in-person, unless indicated):

2024	Numerical Methods and Modeling Laboratory, ATOC 4850/5850 (3 credits)
2023	Coastal Oceanography, ATOC 4500/5500 (3 credits)
2023	Our Changing Environment, ATOC 1060 (3 credits)
2023	Seminar in Coastal Oceanography, ATOC 6020-812 (1 credit, fall)
2022	Introduction to Physical Oceanography, ATOC 5051 (3 credits)
2022	Seminar in Coastal Oceanography, ATOC 6020-812 (1 credit, spring)
2022	Our Changing Environment, ATOC 1060 (3 credits, in-person except first two weeks)
2021	Introduction to Physical Oceanography, ATOC 5051 (3 credits)
2021	Numerical Methods and Modeling Laboratory, ATOC 4850/5850 (3 credits, online synchronous class)
2020	Numerical Methods and Modeling Laboratory, ATOC 4500/7500 (3 credits, in-person format, transitioned to online synchronous class at the beginning of the pandemic)
2016	Sediment Transport Modeling, MSCI 398 (1 credit), College of William & Mary

### Student Advising (at University of Colorado Boulder, unless indicated):

#### Ph.D. Students:

- 2021-present **Advisor**, Brianna Undzis, Dept. of Atmospheric and Oceanic Sciences.
- 2020-present **Advisor**, Christina Geller, Dept. of Atmospheric and Oceanic Sciences.

#### Undergraduate Students:

- 2023 **Advisor**, Max Gonzales, CU ATOC's NSF REU program. Graduate Student Mentor: Brianna Undzis.

2021-2022 **Advisor**, Kaosidi (Ossy) Obioha, CU Uplift Program. Graduate Student Mentor: Tina Geller.

2021 **Advisor**, Liam Duncan, CU Undergraduate Research Opportunity Program (UROP).

2021 **Advisor**, Ivonne Martinez, CU ATOC's REU program. Co-advisor: Alexandra Jahn. Graduate Student Mentor: Patricia DeRepentigny.

2020 **Advisor**, David Imola, CU Undergraduate Research Opportunity Program (UROP).

Postdoctoral Researchers:

2023-present **Advisor**, Laura Sunberg, NSF OCE Postdoctoral Research Fellow.

### **Student Committee Service:**

Graduate Students (excluding my own students):

2023-present **Committee Member**, Harry Allbrook, PhD Dissertation committee, Department of Geology, University of Colorado Boulder. Advisor: Julio Sepúlveda.

2023-present **Committee Member**, Brianna Hibner, PhD Dissertation committee, Department of Geology, University of Colorado Boulder. Advisor: Lizzy Trower.

2023-present **Committee Member**, Genevieve Clow, PhD Dissertation committee, Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder. Advisors: Nicole Lovenduski and Jennifer Kay.

2022-present **Committee Member and 2023 COMPS 2 Chair**, William Kamp, PhD Dissertation committee, Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder. Advisor: Weiqing Han.

2022-present **Committee Member**, Holly Olivarez, PhD Dissertation committee, Department of Environmental Sciences, University of Colorado Boulder. Advisor: Nicole Lovenduski

2019-2022 **Committee Member**, Geneviève Elsworth, PhD Dissertation committee, Department of Geology, University of Colorado Boulder. Advisors: Nicole Lovenduski, Tom Marchitto

Undergraduate Students:

2021 **External Reader**, Madeleine Horan, B.S. Honors Thesis, Department of Ecology and Evolutionary Biology, University of Colorado Boulder. Advisor: Jingchun Li

2020 **External Reader**, Drew Brown, B.S. Honors Thesis, Department of Geology, University of Colorado Boulder. Advisor: Elizabeth Trower

### **Enhancing Undergraduate & Graduate Student Professional Development:**

2022 **Speaker**, "Growing Up in Science" seminar series, NSF's Research Experience for Undergraduates program, Dept. of Atmospheric and Oceanic Sciences, University of Colorado Boulder

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

## **Professional Service**

### **Service at Professional Organizations:**

2023 **Session Co-convenor**, Sediment Delivery, Transport and Deposition in Coastal and Marine Aquatic Environments, AGU. Lead Convenor: Courtney Harris

2023 **Ambassador**, Coastal and Estuarine Research Federation (CERF) Biennial Conference. Acted as liaison between attendees and organizers, ensuring that all attendees had a safe, welcoming, and enriched conference experience.

2022-present **Co-Founder**, Coastal Colorado. Led networking events for Coastal Scientists in the Boulder and Golden, CO region

- 2020 – present **Co-Chair**, Marine Working Group, Community Surface Dynamics Modeling System (CSDMS)
- 2018 – present **Reviewer**, Student Posters at conferences, e.g. AGU 2018, CERF 2019, OSM 2022, CERF 2023, ESSS (2021, 2023)
- 2023 **Member**, Lifetime Achievement Award Committee, Community Surface Dynamics Modeling System (CSDMS)
- 2020 **Mentor**, Mentoring365, AGU Ocean Sciences Meeting
- 2019-2020 **External Reviewer**, Consultant for U.S. Environmental Protection Agency, Eastern Research Group, Inc.
- 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:**

- 2024-present **Program Director**, Oceanography Certificate, Atmospheric and Oceanic Sciences Department
- 2023-present **Member**, Social and Culture Committee, Institute of Arctic and Alpine Research
- 2023-present **Member**, Academic Program Allocations & Major Funds, Atmospheric and Oceanic Sciences Department
- 2021-present **Reviewer**, Teaching Evaluation (~1 per year), Atmospheric and Oceanic Sciences Department
- 2021-present **Chair**, Fest and Distinguished Seminar Committee, Atmospheric and Oceanic Sciences Department
- 2020-present **Member**, Technology Committee, Atmospheric and Oceanic Sciences Department
- 2023 **Panelist**, DOE Early Career Award, Rising Early Career Faculty Webinar Series, Research and Innovation Office (RIO)
- 2023 **Member**, Search Committee, Atmospheric and Oceanic Sciences Department
- 2022-2023 **Retention Lead**, JEDI Committee, Institute of Arctic and Alpine Research
- 2021-2023 **Member**, Admissions Committee, Atmospheric and Oceanic Sciences Department
- 2021-2022 **Member**, Executive Committee, Institute of Arctic and Alpine Research
- 2022 **Co-Leader**, Initiated and led in-person social activities for Ocean Sciences Meeting attendees from the Boulder, CO region
- 2021 **Poster Evaluator**, Earth System and Space Science Poster Conference, Atmospheric and Oceanic Sciences Department
- 2021 **Poster Evaluator**, Boulder Summer Student Research Virtual Poster Symposium
- 2021 **Reviewer**, REU Admissions, Atmospheric and Oceanic Sciences Department
- 2021 **Reviewer**, UROP Review Board
- 2021 **Reviewer**, Research & Innovation Seed Grants
- 2021 **Member**, ARPAC Committee, Institute of Arctic and Alpine Research
- 2021 **Member**, Search Committee, Institute of Arctic and Alpine Research
- 2020-2021 **Member**, Fest and Distinguished Seminar Committee, Atmospheric and Oceanic Sciences Department
- 2020-2021 **Co-Chair**, Seminar Committee, Institute of Arctic and Alpine Research

**Journal Article and Proposal Reviews (Selected):**

2023	National Science Foundation, ARPA, DOE
2023	Geophysical Research Letters, Journal of Geophysical Research: Oceans
2022	National Science Foundation
2022	Journal of Geophysical Research: Oceans, Journal of Geophysical Research: Earth Surface Processes, Estuarine, Coastal and Shelf Science
2021	National Science Foundation
2020	Journal of Geophysical Research: Oceans, Estuaries and Coasts, Geoscientific Model Development
2020	National Science Foundation

**Professional Memberships:**

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

**News and Online Media**

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2023	"From molecule movement to coastal flooding, CU scientists push boundaries", Colorado Arts and Sciences Magazine, CU Boulder < <a href="https://www.colorado.edu/asmagazine/2023/09/27/molecule-movement-coastal-flooding-cu-scientists-push-boundaries">https://www.colorado.edu/asmagazine/2023/09/27/molecule-movement-coastal-flooding-cu-scientists-push-boundaries</a> >.
2022	"INSTAAR DEI Summer Scholars share research plans", INSTAAR, CU Boulder. < <a href="https://www.colorado.edu/instaar/2022/05/20/instaar-dei-summer-scholars-share-research-plans">https://www.colorado.edu/instaar/2022/05/20/instaar-dei-summer-scholars-share-research-plans</a> >.
2021	"Muddy waters lead to decreased oxygen in Chesapeake Bay", Geobites. < <a href="https://geobites.org/muddy-waters-lead-to-decreased-oxygen-in-chesapeake-bay/">https://geobites.org/muddy-waters-lead-to-decreased-oxygen-in-chesapeake-bay/</a> >.
2020	"Meet Julia Moriarty", INSTAAR, CU Boulder. < <a href="https://instaar.colorado.edu/news-events/instaar-news/meet-julia-moriarty/">https://instaar.colorado.edu/news-events/instaar-news/meet-julia-moriarty/</a> >.
2019	"Featured Modeler: Julia Moriarty", Community Chesapeake Modeling Program Newsletter. < <a href="https://mailchi.mp/9396e27b5941/results-from-the-tech-transfer-workshop-new-use-of-the-coawst-model-and-more">https://mailchi.mp/9396e27b5941/results-from-the-tech-transfer-workshop-new-use-of-the-coawst-model-and-more</a> >.
2019	"Featured Model: Simulating Processes in Vegetated Estuaries using COAWST", Community Chesapeake Modeling Program.