

Laura J. Moore

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Biography

Laura J. Moore is a Professor in the Department of Earth, Marine and Environmental Science and the Environment, Ecology and Energy Program at The University of North Carolina at Chapel Hill where she is Director of the Coastal Environmental Change Lab. Dr. Moore also serves as the Director of C-CoAST, Collaboratory for Coastal Adaptation over Space and Time, a multi-disciplinary, multi-university, multi-agency effort, which is currently funded as a Research Coordination Network by the National Science Foundation Coast and People (CoPe) Program, with additional support from Duke University.

Dr. Moore's interdisciplinary research program in coastal geomorphology/geology focuses on the response of low-lying coastal environments to climate change. Her recent and ongoing work merges observational and numerical approaches to investigate barrier island response to sea level rise; coastal foredune dynamics and the role of dunes in island evolution; couplings among barrier islands, back-barrier marshes and bays; large-scale coastline response to changing wave climate; feedbacks and interactions between human activities and natural processes that affect coastline evolution; and novel arts-based approaches to science education. Her research involves collaboration with ecologists, geomorphologists, economists, engineers, hydrologists, oceanographers, education researchers, behavioral scientists, computer scientists and dramatic artists, as well as coastal practitioners and stakeholders.

Dr. Moore has been an Investigator at the Virginia Coast Reserve Long-term Ecological Research site since 2008. She served as a member of the National Academy of Sciences Committee, "Long-term Coastal Zone Dynamics: Interactions and Feedbacks between Natural and Human Processes along the U.S. Gulf Coast;" was the lead editor of *Barrier Dynamics and Response to Changing Climate* published in 2018 by Springer; and delivered a keynote address at the bi-annual River, Coastal and Estuarine Morphodynamics Symposium in Auckland, New Zealand. Dr. Moore is also a communicator of climate change impacts on coastal environments, a playwright, and an appointed member of the North Carolina Coastal Resource Commission's Science Panel on Coastal Hazards.

Education

Postdoc Department of Geology and Geophysics, Woods Hole Oceanographic Institution
Ph.D. Earth Sciences, University of California Santa Cruz, March 1998.
B.A. Geology, Colgate University, Hamilton, New York, May 1993. Magna cum Laude and High Honors.

Professional Experience

Professor 2021 – present
University of North Carolina-Chapel Hill, Department of Earth, Marine and Environmental Sciences; Environment, Ecology and Energy Program

Professor 2010 – present
University of North Carolina-Chapel Hill, Department of Geological Sciences; Environment, Ecology and Energy Program

Associate Professor University of North Carolina-Chapel Hill, Department of Geological Sciences; Environment, Ecology and Energy Program	2015 – 2020
Assistant Professor University of North Carolina-Chapel Hill, Department of Geological Sciences; Curriculum for the Environment and Ecology	2010 – 2015
Visiting Assistant Professor Duke University, Earth and Ocean Sciences Division University of North Carolina-Chapel Hill, Department of Geological Sciences	AY2009 – 2010
Assistant Professor University of Virginia, Department of Environmental Sciences	2008 – 2010
Visiting Scientist U.S. Geological Survey, Woods Hole Science Center, Woods Hole, MA	AY2005 – 2006
Assistant Professor Oberlin College, Department of Geology, Oberlin, OH	2002 – 2007
Research Associate University of South Florida, College of Marine Science/USGS Center for Coastal Geology, St. Petersburg, FL	2000 – 2002
Postdoctoral Scholar Woods Hole Oceanographic Institution, Department of Geology and Geophysics, Woods Hole, MA	1998 – 2000
Instructor University of California Santa Cruz, Department of Earth Science, Santa Cruz, CA	1998
Graduate Student Researcher/Research Assistant University of California Santa Cruz, Department of Earth Science, Santa Cruz, CA	1993 – 1998

Honors and Awards

Competitive Senior Faculty Research Leave, University of North Carolina at Chapel Hill, Spring 2017.

Mellon-8 Consortium Sabbatical Fellowship Award, September 2006.

W.M. Keck Foundation Fellowship in the Natural Sciences, May 2005.

Nominated to Project Kaleidoscope Faculty for the 21st Century, July 2004.

Meyers Oceanographic Trust Research Award, April 1997.

ARCS Scholarship, Achievement Rewards for College Scientists Foundation, June 1996.

Meyers Oceanographic Trust Research Award, March 1995.

William Beye Heald Scholarship, Long Marine Laboratory, UC Santa Cruz, April 1994.

Norma Vergo Prize in Geology, Department of Geology, Colgate University, May 1993.

Publications

Science/Art Public Scholarship and Creative Work

Moore, L.J. (playwright), *in revision, Rollover*, a 90-minute play about the impacts of climate change on barrier islands. Directed by Kathryn Hunter-Williams, Dramaturgy by Jules Odendahl-James. Staged public reading April 28, 2018 at Current ArtSpace, University of North Carolina at Chapel Hill.

Books and Chapters

Hovenga, P.A., Ruggiero, P., Cohn, N., Jay, K. R., Hacker, S. D., Itzkin, M., & Moore, L. J., 2019. Drivers of Dune Evolution in Cape Lookout National Seashore, NC. *Coastal Sediments 2019 - Proceedings of the 9th International Conference*, 1283–1296.
https://doi.org/10.1142/9789811204487_0112

Hovenga, P.A., Ruggiero, P., Cohn, N., Jay, K., Hacker, S.D., *Itzkin, M., and **Moore, L.J.**, 2019. Drivers of dune evolution in Cape Lookout National Seashore, NC. In: *Coastal Sediments 2019*, edited by P. Wang and J. D. Rosati, World Scientific, Miami, FL, USA, pp. 1283-1296.

Raubenheimer, B., Chen, Q, Elgar, S., Michael, H., **Moore, L.J.**, Stark, N. 2019 (Keynote Address). The nearshore water-land system during major storms. In: *Coastal Sediments 2019*, edited by P. Wang and J. D. Rosati, World Scientific, Miami, FL, USA, pp. 13-24.

Moore, L.J. and Murray, A.B., eds., 2018. *Barrier Dynamics and Response to Changing Climate*. Springer, New York, 395p, <https://doi.org/10.1007/978-3-319-68086-6>

Murray, A. B., and **Moore, L. J.**, 2018. Geometric constraints on long-term barrier migration: from simple to surprising. In: Moore LJ, Murray AB (eds). *Barrier dynamics and response to changing climate*. Springer, New York, pp. 211-241.

Moore L. J., *Goldstein E. B., *Vinent O. D., *Walters D., Kirwan M., Lauzon R., Murray A. B., Ruggiero P., 2018. The role of ecomorphodynamic feedbacks and landscape couplings in influencing the response of barriers to changing climate. In: Moore L.J., Murray A.B. (eds) *Barrier dynamics and response to changing climate*. Springer, New York, pp. 305-336.

Moore, L.J., *Duran Vinent, O., Walters, D., and *Goldstein, E.B., 2015. Ecomorphodynamic feedbacks and couplings between landscape units affect barrier island response to changing climate. In: *Coastal Sediments 2015*, edited by P. Wang and J. D. Rosati, World Scientific, Miami, FL, USA. (digital only, no page numbers available)

Smith, M. D., Murray, A.B., Gopalakrishnan, S., Keeler A. G., Landry, C.E., McNamara, D., **Moore, L.J.**, 2015. Geoengineering Coastlines? From accidental to intentional. In: Baztan, J, Chouinard, O., Jorgensen, B., Tett, P. Vanderlinden, J. and Vasseur, L., Eds. *Coastal Zones: Solutions for the Twenty-first Century*, Elsevier, Netherlands, pp. 99-123.

Guy, D.E. and **Moore, L.J.**, 2011. *Geologic Setting and Processes along Lake Erie from Fairport Harbor to Marblehead*. Department of Natural Resources, Ohio Division of the Geological Survey, Cleveland, OH, 78p.

Moore, L. J., J. H. List, S. J. Williams, and *K. Patsch, 2011. Barriers on the brink: the complex intertwined roles of geologic framework, sediment availability and sea-level rise in island evolution. In: *Coastal Sediments 2011*, edited by P. Wang, J. D. Rosati and T. M. Roberts, pp. 272-285, World Scientific, Miami, FL, USA.

*student or postdoctoral associate author advised, co-advised, or mentored by L.J. Moore

**undergraduate student author advised by L.J. Moore

- *Wolner, C. V., **L. J. Moore**, D. R. Young, S. T. Brantley, and S. N. Bissett, 2011. Dune builders vs. overwash maintainers: the potential influence of an ecomorphodynamic overwash feedback on barrier island response to climate change. In: *Coastal Sediments 2011*, edited by P. Wang, J. D. Rosati and T. M. Roberts, pp. 258-271, World Scientific, Miami, FL, USA.
- Moore, L.J.**, List, J.H., Williams, S.J. and Stolper, D., 2007, Modeling barrier island response to sea-level rise. In: Kraus, N. and Rosati, J., (eds.), In: *Coastal Sediments 2007*, American Society of Civil Engineers, 3, pp. 1153-1164.
- Moore, L.J.**, Jol, H.M., Kaminsky, G.M., and Kruse, S., 2003. Severe winter storm effects revealed in stratigraphy of prograding coastal barrier, Southwest Washington, USA. In: Davis, R.A., Sallenger, A., and Howd, P, (eds.), In: *Coastal Sediments 2003*. American Society of Civil Engineers, pp. 1-9.
- Moore, L.J.**, and Griggs, G.B., 1998. Measuring shoreline erosion: Techniques, accuracy and strategy. In: Magoon, O.T., Converse, H., Baird, B., Miller-Henson, M., (eds.), In: *California and the World Ocean '97*, American Society of Civil Engineers, Reston, VA, pp.719-730.
- Benumof, B., **Moore, L. J.**, and Griggs, G.B., 1998. Coastal erosion: The state of the problem and the problem of the state. In: Magoon, O.T., Converse, H., Baird, B., Miller-Henson, M., (eds.), In: *California and the World Ocean '97*, American Society of Civil Engineers, Reston, VA, pp. 505-514.
- Benumof, B.T., **Moore, L.J.**, and Griggs, G.B., 1998. FEMA and state-of-the-art coastal erosion mapping along the San Diego County coastline, California. In: Ewing, L. and Sherman, D. (eds.), In: *California's Coastal Natural Hazards*. USC Sea Grant Program, pp.719-730.

Peer-reviewed Consensus Study Report

- National Academies of Sciences, Engineering, and Medicine, 2018. *Understanding the Long-Term Evolution of the Coupled Natural-Human Coastal System: The Future of the U.S. Gulf Coast*. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/25108>. (**Moore, L.J.** one of 12 appointed committee members)

Manuscripts in Preparation

- *Reeves, I.R.B., **Moore, L.J.**, Goldstein, E.B., & Zinnert, J.C. (*In Preparation*). Exploring the impacts of shrub-barrier feedbacks with an ecological-morphological model.
- Itzkin, M., **Moore, L.J.**, Ruggiero P., and Hacker, S.D, (*In Preparation*), Modeling dune growth and recovery on managed and unmanaged dunes and beaches

Manuscripts in Review

- Jay, K., Hacker, S., Hovenga, P., **Moore, L.J.**, Ruggiero, P., (*In Revision*). Sand supply and dune grass species affect foredune shape along the US Central Atlantic Coast, *Ecosphere*.
- *Itzkin, M., **Moore, L.J.**, Ruggiero, P., Hacker, S.D., & Biel, R.G., (*In Revision*), The relative influence of dune aspect ratio and beach width on dune erosion as a function of storm duration and surge level, *Earth Surface Dynamics*
- *Biel, R., **Moore, L.J.**, and *Goldstein, E.B., (*In Revision*). Influence of wrack on foredune development, *Journal of Geophysical Research-Earth Surface*.

Peer-Reviewed Journal Articles

- Hovenga, P.A., Ruggiero, P., Goldstein, E.B., Hacker, S.D., and **Moore, L.J.**, (*In Press*). The relative role of constructive and destructive processes in dune evolution on Cape Lookout National Seashore, North Carolina, USA. *Earth Surface Processes and Landforms*.
- *Reeves, I.R.B., **Moore, L.J.**, Murray, A.B., *Anarde, K.A., & Goldstein, E.B. (2021). Dune dynamics drive discontinuous barrier retreat. *Geophysical Research Letters*.
- *Reeves, I.R.B., Goldstein, E.G., *Anarde, K.A., and **Moore, L.J.** (2021) Remote bed level change and overwash observation with low-cost ultrasonic distance sensors. *Shore & Beach*, 89(2), 22-30. <https://doi.org/10.34237/1008923>.
- *Straub, J., Rodriguez, T., Luettich, R., **Moore, L.J.**, *Itzkin, M., Ridge, J.T., Seymour, A.C., Johnston, D.W., and Theuerkauf, E.J., 2020. The role of beach state and the timing of pre-storm surveys in determining the accuracy of storm impact assessments, *Marine Geology*, 425. DOI: 10.1016/j.margeo.2020.106201.
- *Reeves, I., **Moore, L.J.**, Goldstein, E.B., Murray, A.B., Carr J., and Kirwan, M., 2020 Impacts of seagrass dynamics on the coupled long-term evolution of barrier-marsh-bay systems. *Journal of Geophysical Research-Biogeosciences*.
- *Itzkin, M., **Moore, L.J.**, Ruggiero, P., Hacker, S.D., 2019, Effects of sand fencing on the morphology of natural dune systems, *Geomorphology*, DOI: 10.1016/j.geomorph.2019.106995
- Woods, N., Dows, B.L., *Goldstein, E.B., **Moore, L.J.**, and Young, D.R., and Zinnert, J.Z., 2019, Interaction of seed dispersal and environmental filtering affects woody encroachment patterns in coastal grassland, *Ecoshpere*, 10(7). DOI: e02818.10.1002/ecs2.2818
- Ruggiero, P.R., Cohn, N., Hoonhout, B., *Goldstein, E.B., de Vries, S., **Moore, L.J.**, Hacker, S., Durán Vinent, O.D. 2019. Simulating dune evolution on managed coastlines: exploring policy options with the Coastal Recovery from Storms Tool, *Shore and Beach*, 87(2), pp. 36-43.
- Hacker, S.D., Jay, K.R., Cohn, N., *Goldstein, E.G., Hovenga P.A., *Itzkin, M., **Moore, L.J.**, Mostow, R., *Mullins, E. and Ruggiero, P., 2019. Species-specific functional morphology of four U.S. Atlantic Coast dune grasses: biogeographic implications for dune shape and coastal protection. *Diversity*, 11(5). DOI: 10.3390/d11050082
- *Mullins, E.D., **Moore, L.J.**, *Goldstein, E.B., *Jass, T., Bruno, J.F. and *Duran, O.D, 2019. Investigating dune-building feedback at the plant level: insights from a multispecies field experiment. *Earth Surface Processes and Landforms*. DOI: 10.1002/esp.4607
- Zinnert, J., Via, S., Nettleton, B., Tulley, P., **Moore, L.J.**, Stallins, J., 2019. Connectivity in coastal systems: barrier island vegetation influences upland migration in a changing climate. *Global Change Biology*. DOI: 10.1111/gcb.14635
- Cohn, N., Hoonhout, B.M., *Goldstein, E.B., de Vries, S., **Moore, L.J.**, *Durán Vinent O., and Ruggiero, P.R., 2019. Exploring marine and aeolian controls on coastal foredune growth using a coupled numerical model, *In Special Issue of Journal of Marine Science and Engineering*, G. Ruessink and C. Schwarz, eds., 7(13) DOI:10.3390/jmse7010013

- *Goldstein E.B. *Mullins, E., **Moore, L.J.**, *Biel, R.G., Brown, J.K., Hacker, S.D., Jay, K.R., Mostow, R.S., Ruggiero, R., Zinnert J.K., 2018. Literature-based latitudinal distribution and possible range shifts of two US east coast dune grass species (*Uniola paniculata* and *Ammophila breviligulata*), *PeerJ*. DOI: 10.7717/peerj.4932
- *Goldstein E.B. and **Moore L.J.**, 2018, A calibration workflow for coastal dune models, *Shore & Beach*, 86(3), pp. 47-51 DOI: 10.31223/osf.io/cd87u
- *Lauzon, R., Murray, A.B., **Moore, L.J.**, *Walters, D., Kirwan, M., Fagherazzi, S., 2018. Effects of marsh edge erosion in coupled barrier island-marsh systems and geometric constraints on marsh evolution. *Journal of Geophysical Research-Earth Surface*, 123(6), pp. 1218-1234, DOI: 10.1029/2017JF004530
- Antolínez, J.A., Méndez, F.J., Murray, A.B., **Moore, L.J.**, **Farley, G., and Wood, J., 2018. Downscaling changing coastlines in a changing climate: The hybrid approach, *Journal of Geophysical Research-Earth Surface*. DOI: 10.1002/2017JF004367
- *Goldstein, E.B., **Moore, L.J.**, and *Durán Vinent, O., 2017. Lateral vegetation growth rates exert control on coastal foredune hummockiness and coalescing time. *Earth Surface Dynamics*, 5(3), p. 417-427, DOI: 10.5194/esurf-5-417-2017
- *Yousefi Lalimi, F., Silvestri, S., **Moore L.J.**, and M. Marani, 2017. Coupled topographic and vegetation patterns in coastal dunes: Remote sensing observations and ecomorphodynamic implications. *Journal of Geophysical Research-Biogeosciences*, 122(1), pp. 119-130. DOI: 10.1002/2016JG003540
- Moore, L.J.**, Ruggiero, P. and *Duran, O., 2016. Vegetation control allows autocyclic formation of multiple dunes on prograding coasts. *Geology*, 44(7). DOI: 10.1130/G37778.1
- *Goldstein, E.B. and **Moore, L.J.**, 2016, Stability and bistability in a one-dimensional model of coastal foredune height. *JGR-Earth Surface*, 121(5). DOI: 10.1002/2015JF003783
- *Durán Vinent, O. and **Moore, L.J.**, 2016. Reply to Bistability and the future of barrier islands. *Nature Climate Change*, 6(6).
- Elko, N., Brodie, K., Stockdon, H., Nordstrom, K., Houser, C., McKenna, K., **Moore, L.**, Rosati, J., Ruggiero, P., Thuman, R. and Walker, I., 2016. Dune management challenges on developed coasts. *Shore & Beach*, 84(1), pp. 15-28.
- *Rogers, L., **Moore, L.J.**, *Goldstein, E.B., Hein, C., Lorenzo-Trueba, J., and Ashton, A., 2015. Anthropogenic controls on overwash deposition: Evidence and consequences, *Journal of Geophysical Research-Earth Surface*, 120, 2609–2624, DOI: 10.1002/2015JF003634.
- *Brenner, O.T., **Moore, L.J.** and Murray, A.B., 2015. The complex influences of backbarrier deposition, substrate slope and underlying stratigraphy in barrier island response to sea level rise: Insights from the Virginia Barrier Islands, Mid-Atlantic Bight, U.S.A. *Geomorphology*, 246(1), pp. 334-350, DOI: 10.1016/j.geomorph.2015.06.014.
- Pelletier, J.D., Murray, A.B., Pierce, J.L., Bierman, P.R., Breshears, D.D., Crosby, B.T., Ellis, M., Foufoula-Georgiou, E., Heimsath, A.M., Houser, C., Lancaster, N., Marani, M., Merritts, D.J., **Moore, L.J.**, Pederson, J.L., Poulos, M.J., Rittenour, T.M., Rowland, J.C., Ruggiero, P., Ward, D.J., Whipple, K.X., Wickert, A.D., Yager, E.M., 2015. Forecasting the response of Earth's surface to future climatic and land-use changes: An assessment. *Earth's Future*, 3(7), pp. 220-251, DOI: 10.1002/2014EF000290.

- * Durán Vinent, O. and **Moore, L.J.**, 2015. Bistability of barrier islands induced by biophysical interactions. *Nature Climate Change*, 5, pp. 158–162, DOI: 10.1038/nclimate2474.
- *Johnson, J., **Moore L.J.**, Ells, K., Murray, B., Adams, P., Jaeger, J., MacKensize, R., 2015. Recent shifts in coastline change and shoreline stabilization linked to storm climate change. *Earth Surface Processes and Landforms*, 40, pp. 569-585, DOI: 10.1002/esp.3650.
- *Walters, D., **Moore, L.J.**, *Duran, O., Fagherazzi, S., and Mariotti, G. 2014. Interactions between barrier islands and backbarrier marshes affect island system response to sea level rise: Insights from a coupled model. *Journal of Geophysical Research—Earth Surface*, 119, pp. 2013-2031, DOI: 10.1002/2014JF003091
- *Brantley, S.T., *Bissett, S.N., Young, D.R., *Wolner, C.V., **Moore, L.J.**, 2014. Barrier island morphology and sediment characteristics affect the recovery of dune building grasses following storm-induced overwash. *PLOS One*, 9(8), e104747, DOI: 10.1371/journal.pone.0104747
- Moore, L.J.**, *Patsch, K., Williams, S.J., and List, J.L., 2014. Barrier islands poised for geomorphic threshold crossing in response to rapid sea-level rise: Insights from numerical model experiments, Chandeleur Islands, Louisiana, USA, *Marine Geology*, 355(1), pp. 244-259, DOI: 10.1016/j.margeo.2014.05.022.
- Moore, L.J.**, McNamara, D.E., Murray, A.B, and *Brenner, O., 2013. Observed changes in hurricane-driven waves explain the dynamics of modern cusped shorelines. *Geophysical Research Letters*, 40(22), pp. 5867-5871, DOI: 10.1002/2013GL057311.
- *Durán Vinent, O. and **Moore, L.J.**, 2013. Vegetation controls on the maximum size of coastal dunes. *Proceedings of the National Academy of Sciences*, 110(43), pp. 17217-17222, DOI: 10.1073/pnas.1307580110.
- *Grady, A.E., **Moore, L.J.**, Storlazzi, C., Elias, E., Reidenbach, M., 2013. The potential influence of future sea-level rise and changes in fringing reef morphology on gradients in alongshore sediment transport. *Geophysical Research Letters*. 40(12), pp. 3096-3101. DOI: 10.1002/grl.50577
- *Wolner, C.V., **Moore, L.J.**, Young, D.R., Brantley, S.T., Bissett, S.N., McBride, R.A., 2013. Ecomorphodynamic feedbacks and barrier island response to disturbance: Insights from the Virginia Barrier Islands, Mid-Atlantic Bight, USA, *Geomorphology*, 199, pp. 115-128, DOI: 10.1016/j.geomorph.2013.03.035.
- Moore, L.J.**, List, J.H., Williams, S.J. and Stolper, D., 2010. Complexities in barrier island response to sea-level rise: Insights from model experiments. *Journal of Geophysical Research—Earth Surface*, DOI: 10.1029/2009JF001299.
- Moore, L.J.**, Ruggiero, P.R. and List, J., 2006. Comparing high water line and datum-based shorelines: Implications for shoreline change. *Journal of Coastal Research*, 22(4), pp. 894-905.
- Morton, R.A., Miller, T.L., and **Moore, L.J.**, 2005. Historical shoreline changes along the U.S. Gulf of Mexico: A summary of recent shoreline comparisons and analyses. *Journal of Coastal Research*, 21(4), pp. 704-709.
- Moore, L.J.**, Jol, H.M., Kruse, S., Vanderburgh, S. and Kaminsky, G.M., 2004. Annual layers revealed in the subsurface of a prograding coastal barrier, southwest Washington, U.S.A., *Journal of Sedimentary Research*, 74(5), pp. 690-696.

- Moore, L.J.**, Kaminsky, G.M., and Jol, H.M., 2003. Exploring linkages between coastal progradation rates and the El Niño Southern Oscillation, southwest Washington, USA, *Geophysical Research Letters*, 30(9), DOI: 10.1029/2002GL016147.
- Moore, L.J.**, *Sullivan, C., and Aubrey, D.G., 2003. Interannual evolution of multiple longshore bars, Truro, Massachusetts. *Marine Geology*, 196(3-4), pp. 127-144.
- Solow A and **Moore, L.J.**, 2002. Testing for trend in North Atlantic Hurricane Activity, 1900-1998. *Journal of Climate*, 15(21), pp. 3111-3114.
- Moore, L.J.** and Griggs, G.B., 2002. Long-term cliff retreat and erosion hotspots along the central shores of the Monterey Bay National Marine Sanctuary. *Marine Geology*, 181(1-3), pp. 265-283.
- Solow, A. and **Moore, L.J.**, 2000. Testing for trend in a partially incomplete hurricane record. *Journal of Climate*, 13(20), pp. 3696-3699.
- Moore, L.J.**, 2000. Shoreline mapping techniques. *Journal of Coastal Research*, 16(1), pp. 111-124.
- Moore, L.J.**, Benumof, B., and Griggs, G.B., 1999. Coastal erosion hazards in Santa Cruz and San Diego Counties, California. In: Crowell, M. and Leatherman, S.P. (eds.), *Coastal Erosion Mapping and Management, Journal of Coastal Research Special Issue No. 28*, pp. 121-139.
- Hapke, C., Gibbs, A., Richmond, B., Hampton, M., Jaffe, B., Dingler, J., Sallenger, A., Benumof, B., Brown, K., Griggs, G., **Moore, L.J.**, Scholar, D., Storlazzi, C., Krabill, W., Swift, R., and Brock, J., 1998. A collaborative program to investigate the impacts of the 1997-98 El Nino along the California coast. *Shore and Beach*, 66, pp. 24-32.
- Pinet, P.R., McClennen, C.E., and **Moore, L.J.**, 1998. Unpacking environmental complexity: a geologic appraisal of shoreline erosion along southeastern Lake Ontario, New York. In: Welby, C. W. and Gowan, M. E. (eds.), *A Paradox of Power: Voices of Warning and Reason in the Geosciences, Reviews in Engineering Geology XII*, The Geological Society of America, pp. 9-21.
- Griggs, G.B., **Moore, L.J.**, Tait, J.F., Scott, K. and Pembroke, D., 1996. The effects of the storm waves of 1995 on beaches adjacent to a long-term seawall monitoring site in northern Monterey Bay, California. *Shore and Beach*, 64(1), pp. 34-39.
- McClelland, J., Ashwal, L., and **Moore, L.J.**, 1994, Composition and petrogenesis of oxide-, apatite-rich gabbro-norites associated with Proterozoic anorthosite massifs: examples from the Adirondack Mountains, New York. *Contributions to Mineralogy and Petrology*, 116, pp. 225-238.

Models

- *Reeves, I.R.B., **Moore, L.J.**, *Anarde, K., 2021. Barrier 3D v 2.0, A spatially explicit model of coastal barrier evolution. DOI: 10.5281/zenodo.4730988
- *Reeves, I.R.B., **Moore, L.J.**, *Anarde, K., 2020. Barrier 3D v 1.0, A spatially explicit model of coastal barrier evolution, DOI: 10.5281/zenodo.4730989
- *Reeves, I.R.B., **Moore, L.J.**, 2020. GEOMBEST++Seagrass v. 1.0 (Geomorphic Model of Barrier, Estuarine, and Shoreface Translations + Marsh + Seagrass). DOI: 10.5281/zenodo.3242095

- *Itzkin, M., **Moore, L.J.**, Ruggiero, P. and Hacker, S.D., 2020. Automorph; Dune morphology extraction tool in support of “*The effect of sand fencing on the morphology of natural dune systems*.” <https://github.com/github.com/mcitz/Automorph/tree/master/MATLAB>.
- Cohn, N., Hoonhout, B. Goldstein, E., de Vries, S., **Moore, L.**, Duran, O.V., and Ruggiero, P., 2019. Tool relating to: Exploring marine and aeolian controls on coastal foredune growth using a coupled numerical model. <https://github.com/ncohn/Windsurf>
- *Lauzon, R., **Moore, L.J.**, and Murray, A.B., 2017. Geombest-PlusPlus v. 1.0 (Geomorphic Model of Barrier and Estuarine Translations-Plus Dynamic Marsh and Wave Edge Erosion). DOI: <https://zenodo.org/record/1248198>. 10.5281/zenodo.1248198
- *Durán Vinent, O. and **Moore, L.J.**, 2017. Coastal Dune Model, v2.0. DOI: 10.5281/zenodo.847746
- *Durán Vinent, O. and **Moore, L.J.**, 2015. Coastal Dune Model, v1.0. DOI:10.5281/zenodo.16161
- *Walters, D., **Moore, L.J.**, *Durán Vinent, O., Mariotti, G. and Fagherazzi, S., 2015. GEOMBEST-Plus (Geomorphic Model of Barrier and Estuarine Translations- Plus Dynamic Marsh), v.1.0, DOI: 10.5281/zenodo.16687
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Teaching Resources

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USGS Reports

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Pre-print

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Book Review

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*Anarde, K., *Reeves, I.R.B., Murray, A.B., and **Moore, L.J.**, 2020. A coupled model framework for simulating barrier island and coastline response to climate change and land use. American Geophysical Union Fall Meeting. Online. December 16.

Jay, K.R., Hovenga, P.A., **Moore, L.J.**, Ruggiero, P., Hacker, S.D. 2020. Investigating the relative roles of sand supply and dune vegetation on foredune morphology in the US North Carolina Outer Banks. American Geophysical Union Meeting. Online. December 16.

*Itzkin, M., **Moore, L.J.**, Ruggiero, P.R., Hacker, S.D., 2020. Modeling dune growth and recovery on developed barrier islands. American Geophysical Union Fall Meeting. Online. December 16.

Hovenga, P.A., Ruggiero, P., *Itzkin, M., Jay, K., **Moore, L.**, Hacker, S.D. 2020. Modeling Variable Dune Evolution in Cape Lookout National Seashore, North Carolina. AGU Fall Meeting. Online. December 16.

- Hovenga, P.A., Ruggiero, P., Itzkin, M., Jay, K., **Moore, L.**, Hacker, S.D., 2020. Modeling variable dune recovery in Cape Lookout National Seashore, NC. *ASBPA 2020 National Coastal Conference*. Online. October 13-16.
- (Keynote Address)* **Moore, L.**, 2019. The role of ecomorphodynamic feedbacks, landscape couplings and natural-human dynamics in determining the fate of coastal barrier systems. River, Coastal and Estuarine Morphodynamics Symposium, November 16-20, Auckland, New Zealand.
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- *Biel, R.G. and **Moore, L.J.**, 2018. Inhibition or facilitation of dune development on barriers: The influence of back-beach vegetation on barrier island stable states. Ecological Society of America Annual Meeting, August 5-10, New Orleans, LA, Abstract 8.
- *Biel, R., **Moore, L.J.**, *Goldstein, E.B., *Itzkin, M., 2018. Influence of wrack on coastal foredune development and dune habitat complexity, American Geophysical Union Fall Meeting, December 10-14; Washington D.C., Abstract EP11A-07.
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- Moore, L.J.**, List, J.H. *Patsch, K., and Williams, S.J., 2009. Barrier island sensitivity to sea-level rise: Insights from numerical model experiments, North Carolina Outer Banks and Chandeleur Islands, LA USA. *EOS Transactions AGU*, 90(22), Fall Meet. Suppl., Abstract U51A-0012.
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- *Wolner, C.V., **Moore, L.J.**, Young, D., Brantley, S., 2009. Biogeomorphic feedbacks in barrier island evolution: Exploring temporal and spatial persistence of overwash zones in the Virginia Coast Reserve. *EOS Transactions AGU*, 90(22), Fall Meet. Suppl., Abstract EP31C-06.
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- Moore, L.J.**, List, J.H., Stolper, D. and Williams, J., 2006. Modeling the large-scale morphodynamics of barrier island coasts under conditions of rising sea level, *EOS Transactions*. AGU, 87(36), Ocean Sci. Meet. Suppl., Abstract OS35E-03.
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- Moore, L.J.**, Ruggiero, P.R., and List, J.L., 2004. Quantifying shoreline change using mean high water and high-water line shorelines: Should proxy datum offsets be incorporated? *EOS Transactions*. AGU, 85(47), Fall Meet. Suppl., Abstract H41C-0324.
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- Moore, L.J.**, Harris, M., Brock, J., Schirokauer, D., and McIntyre P. 2002. Coastal dune habitat, morphology and restoration at Point Reyes National Seashore: Applications of historical aerial photography, DEMs and lidar. *Coastal and Marine Remote Sensing*, Miami, May 22.
- Moore, L.J.**, Morton, R.A., Sallenger, A. H., and Guy, K., 2001. Historical coastal change hazards for the United States: Initial progress under the USGS National Assessment. *Abstracts with Programs - Geological Society of America*, 33(6).
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- Moore, L.J.**, Jol, H.M., and Kaminsky, G., 2001. Exploring linkages between coastal processes and climate variability using ground penetrating radar, southwest Washington, USA. GPR in Sediments Conference, London, UK, August 20,21.
- (Invited)* **Moore, L.J.**, Mote, P., 2000. Linking climate variability and coastal processes: A session overview and perspectives, *EOS Supplement*, American Geophysical Union Fall Meeting.
- Moore, L.J.**, Jol, H. and Kaminsky, G., 2000. Exploring correlations between shoreline progradation and climate indices, southwest Washington, *EOS Supplement*, American Geophysical Union Fall Meeting.
- Moore, L.J.**, Solow, A. and Aubrey, D.G., 2000. The coastal perspective: Trends in Atlantic Basin hurricane landfall activity, American Geophysical Union Ocean Sciences Meeting, San Antonio, Texas. January 24-28.
- Moore, L.J.**, 1999. Climate change and variability: Considering impacts on coastal morphology in the Columbia River littoral cell. *Proceedings of the Fourth Southwest Washington Coastal Erosion Study Workshop*, November 17-19.
- Moore, L.J.**, 1997. Application of digital softcopy photogrammetry to the measurement of shoreline erosion rates along the California Coast. *EOS Supplement*, American Geophysical Union Fall Meeting.

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- Benumof, B., and **Moore, L.J.**, 1997. FEMA and state-of-the-art coastal erosion mapping along the San Diego County shoreline. California's Coastal Natural Hazards Conference, November 12-14.
- Urish, D.W., **Moore, L.J.** and Morin, R.H., 1995. The effect of a dynamic coastal boundary on potential sea water intrusion: Carmel River Beach, CA. *Eos, Transactions, American Geophysical Union*. 76(46) Suppl., p. 193
- Moore, L.J.**, **Randolph, C., and Griggs, G.B., 1995. The infrequent appearance of an ephemeral storm beach, Santa Cruz, CA. *Eos, Transactions, American Geophysical Union*. 76(46), Suppl., p. 286-28
- Moore, L.J.**, Richmond, B.R., and Griggs, G.B., 1994. The relationship between coastal sand mining and erosion rates along the southern Monterey Bay shoreline, 25th Annual Underwater Mining Institute, December 1-4.
- Pinet, P., McClennen, C., and **Moore, L.**, 1993. Coastal compartments of the southeastern shoreline of Lake Ontario: Implications for coastal management. *The Geological Society of America Abstracts with Programs*, 25(6) p. A368.

External Grants

Pending Grant Applications

Large-Scale CoPe: The Collaboratory for Coastal Adaptation over Space and Time (C-CoAST) Hub for Transdisciplinary Understanding of Coupled Human-Natural Coastal Dynamics, National Science Foundation Coasts and People (CoPe) Program, **\$19,872,345 (UNC-CH Total)/\$16,275,590 (UNC-CH Direct)**, **Lead-PI: L.J. Moore**, Co-PIs M. Watzin (Aquatic Science), A.B. Murray (Geomorphology, Duke), Reide Corbett (Geochemistry; ECU) and S. Gopalakrishnan (Economics; Ohio State U.). Five-year request, Submitted October 2020.

Immersive, Multi-modal Learning Experiences about Coastal Environmental Hazards to Promote Emotional Mediation of Content Understanding and Behavior, Advancing Informal STEM Learning Program, \$2,572,123 (UNC-CH Total)/\$2,052,212 (UNC Direct), **Lead PI: L.J. Moore**, Co-PIs K.C. Busch (STEM Education; NC State), K. Hunter-Williams (Dramatic Arts; UNC- CH), R. Kopper (Computer Science; UNC- Greensboro), G. Wong-Parodi (Behavioral Science; Stanford University).

Funded Grants

CoPe: RCN: Building a Collaboratory for Coastal Adaptation over Space and Time (C-CoAST), National Science Foundation Coasts and People (CoPe) Program, **\$499,864 (UNC-CH Total)/\$382,532 (UNC-CH Direct)**, **Lead-PI: L.J. Moore**, Co-PIs R. Luettich (Engineering), D. McNamara (Non-linear dynamics; UNC-W), M. Mullin (Political Science; Duke) and M. Smith (Economics; Duke). Two-year award, Submitted June, 2019. Moore salary effort: 8.3 % of 12 month equivalent per year.

Convergence: RAISE: The Nearshore Water-Land Interface During Extreme Storms, convergent science prospectus submitted in response to Dear Colleague Letter, National Science Foundation, \$991,941 (total)/**\$78,785 (UNC-CH Total)/\$50,704 (UNC-CH Direct)**, Lead-PI: B. Raubenheimer (WHOI), Co-PI: S. Elgar (WHOI), Senior Personnel: Q.J. Chen (Northeastern U), S. Elgar H. Michael (U. Del), **L. J. Moore** (UNC-CH), Nina Stark (Virginia Tech). September 15, 2018 – August 31, 2021. Moore salary effort: 8.3 % of 12 month equivalent per year.

ILTER (Long-term Ecological Research): Climate drivers, dynamics, and consequences of ecosystem state change in coastal barrier systems, National Science Foundation, Division of Environmental Biology, ~\$5,990,000 (total)/**\$240,000 (UNC-CH Total)/\$202,782 (UNC-CH Direct)**, Lead-PI: K.McGlathery, Coversheet Co-PIs: P. Wiberg (UVA); M. Reidenbach (UVA); J. Porter (UVA), LTER PIs: S. Fagherazzi (BU), S. Karpanty (Virginia Tech); M. Kirwan (VIMS); D. Johnson (VIMS); **L.J. Moore** (UNC-CH), M. Pace (UVA), J. Zinnert (VCU). November 30, 2018 – November 29, 2024. Moore salary effort: 0%.

CNH-L: Climate Change in a Coupled Geomorphic-Economic System. National Science Foundation, Coupled Natural Human Systems, \$1,499,752 (total)/ **\$223,123 (UNC Total)/\$149,140 (UNC-CH Direct)**. UNC-CH Lead PI: D. McNamara (UNC-W), UNC-CH PI: **L.J. Moore**, Co-PIs: M. Smith and A.B. Murray (Duke), S. Golpalakrishnan (OSU) and C. Landry (UG). August 1, 2017 – July 31, 2020. Moore salary effort: 8.3 % of 12 month equivalent per year.

The Role of Vegetation in Coastal Response to Sea Level Rise. National Oceanic and Atmospheric Administration, Ecological Effects of Sea Level Rise Program, \$629,550 (total)/**\$186,112 (UNC-CH Total)/\$144,142 (UNC-CH Direct)**, Lead-PI: P. Ruggiero (OSU), **PIs:** S. Hacker (OSU) and **L. Moore**, September 15, 2015 – September 14, 2019. Moore salary effort: 8.3 % of 12 month equivalent per year.

ILTER (Long-term Ecological Research): Drivers, dynamics and consequences of non-linear change in coastal barrier systems, National Science Foundation, Division of Environmental Biology, \$5,880,000 (total)/**\$215,000 (UNC-CH Total)/\$178,629 (UNC-CH Direct)**, Lead-PI:K.McGlathery, **Co-PIs:**, P. D’Odorico (UVA), S. Fagherazzi (BU), **L.Moore** (UNC-CH), M. Pace (UVA), J. Porter (UV0041), M. Reidenbach (UVA), P. Wiberg (UVA), D. Young (VCU), November 1, 2012 – October 31, 2018. Moore salary effort: 0%.

Modeling dune growth on managed coasts, Engineer Research and Development Center, Army Corps of Engineers, **\$49,987 (UNC-CH Total)/ \$42,452 (UNC-CH Direct)**, **PI: L. Moore**, August 15, 2016 – December 14, 2017. Moore salary effort: 8.3 % of 12 month equivalent per year.

Collaborative Research: Exploring the role of Ecomorphodynamic Feedbacks in Barrier Island Response to Climate Change. National Science Foundation, Geomorphology and Land Use Program, \$481,982 (total)/ **\$382,784 (UNC-CH Total)/ \$307,196 (UNC-CH Direct)**. **Lead PI: L. Moore**, Co-PIs: J. Bruno (UNC-CH), D. Young (VCU). September 15, 2013 – September 14, 2018. Moore salary effort: 8.3 % of 12 month equivalent per year.

Enhancing Coastal Resilience on Virginia’s Eastern Shore, National Federation for Fish and Wildlife (NFWF) via subcontract from The Nature Conservancy, \$1,250,000 (total)/**\$105,668 (UNC-CH Total)/\$91,832 (UNC-CH Direct)**, **Lead PI: L. Moore**, Co-PIs: M. Fenster (Randolph Macon College), A.B. Murray (Duke), D. McNamara (UNC-W), August 15, 2014 – March 14, 2017. Moore salary effort: 8.3 % of 12 month equivalent per year.

Collaborative Research: Coastal Geomorphic Consequences of Wave Climate Change, National Science Foundation, Geomorphology and Land Use Program, \$515,000 (total)/ **\$155,071 (UNC-CH Total)/\$108,424 (UNC-CH Direct)**. Lead-PI: P. Adams (UF), **Co-PIs: L. Moore**, D. McNamara (UNC- W) and A.B. Murray (Duke), September 1, 2011 – August 31, 2015. Moore salary effort: 8.3 % of 12 month equivalent per year.

Biogeomorphic Controls on Barrier Island Evolution in Response to Climate Change, Subaward from University of Virginia for remainder of NICCR-DOE award (below). **\$25,241 (UNC-CH Direct)**. **Lead PI: L. Moore.**, Co-PI: D. Young (VCU), January 2011 – August 2012. Moore salary effort: 8.3 % of 12 month equivalent per year.

Collaborative Research: Biogeomorphic Controls on Barrier Island Evolution in Response to Climate Change, National Institute for Climatic Change Research, Department of Energy, \$249,000 (total)/ **\$142,000 (UVA Total)**. **Lead PI: L. Moore**, Co-PI: D. Young (VCU), August 2009 – August 2012.

Seismic Data Collection, National Science Foundation Subcontract via Randolph Macon College in support of collaborations with Michael Fenster, **\$8,700 (UVA Total)**. **Lead PI: L. Moore.**

Modeling the Holocene and potential future evolution of the Chandeleur Islands, Louisiana, U.S. Geological Survey, **\$60,800 (UVA Total)**. **Lead PI: L. Moore**, Jan. 2008 – Dec. 2009.

S-STEM Scholarships at Oberlin College: Supporting Undergraduate Engagement in Computation and Modeling, National Science Foundation, **\$541,000 (Total)**. Lead PI: R. Salter, **Co-PIs: L. Moore** and D. Stinebring, 2007 – 2010.

Modeling the Holocene and potential future evolution of the Chandeleur Islands, Louisiana, U.S. Geological Survey, **\$88,372 (Total)**. **Lead PI: L. Moore**, 2007– 2008.

Barrier island response to sea-level rise, Mellon 8 Consortium Semester Research Leave, **\$30,000 (Total)**. **Lead PI: L. Moore**, 2005 – 2006.

Quantifying the bias between proxy-based and datum-based shorelines, U.S. Geological Survey, **\$28,828 (Total)**. **Lead PI: Moore**, 2003 – 2004.

Quantification of beach change and coastal erosion hazards, U.S. Geological Survey, **\$125,000 (Total)**. Lead PI: P. Howd, **Co-PI: L. Moore**, 2001 – 2002.

Exploring late-Holocene hurricane activity as recorded in salt ponds and lagoons of the Caribbean region. National Science Foundation SGER – Earth System History, **\$40,000 (Total)**. **Lead PI: L. Moore**, Co-PI: A. Cohen, 2000 – 2002.

Operational creation of aerial mapping data products for Vital Signs Monitoring within northeastern national seashores, National Park Service, **\$50,000 (Total)**. Lead PI: Brock, **PI: L. Moore**, 2001 – 2002.

Coastal erosion hazard mapping in Santa Cruz and San Diego Counties, Federal Emergency Management Agency, **\$77,760 (Total)**. Lead PI: G. Griggs, **Co-Author: L. Moore**, 1996 – 1998.

Acquisition of hardware and software for an Imaging and GIS Facility for the study of Earth Sciences, National Science Foundation, Instrumentation and Facilities Program, **\$42,000 (Total)**. Lead PI: G. Griggs, PI: R. Anderson, **Author: L. Moore**, 1996 – 1997.

Selected Funded Internal Grants

Funding Interdisciplinary Research Explorations (FIRE) Grant, PI, Co-PI K. Hunter Williams, *Performing Science to Promote Shifts in Cultural Perception: Developing a Play to Communicate the Impacts of Climate Change on Barrier Islands*. Provided funds for research, travel, workshops and staged reading in support of development of *Rollover*

(Playwright - Laura J. Moore; Dramaturg - Jules Odendahl-James; Director - Kathryn Hunter Williams), \$25,000, UNC-CH, Office of the Vice Chancellor for Research, May 2016 - June 2018.

Senior Competitive Faculty Leave, sole PI, University of North Carolina at Chapel Hill, *A Transdisciplinary Investigation of the Role of Coastal Dunes in Coastal Resilience*, one semester of Research and Scholarly Leave for Spring 2017, UNC-CH, Office of the Provost.

Junior Faculty Development Award, sole PI, summer salary in support of development of a proposal (solicited by Springer) and preparation of an introductory chapter for an edited volume on barrier island response to climate change, \$7468, Office of the Provost, August 2014.

Writing Grant, Professors as Writers Program, sole PI, University of Virginia, \$1000, Fall 2009 - Spring 2010.

Research Grant, Modeling Barrier Island Response to Sea-Level Rise, sole PI, Oberlin College Grant-in-Aid, \$2400, 2007.

Research Grant, Using Oxygen isotopes to identify hurricane overwash deposits, St. Croix, USVI, sole PI, Oberlin College-University of Michigan Cooperative, \$10,000, 2005 - 2006.

Science-Art Program Grant, Interdisciplinary collaborations: Campus visit by coastal geologist Dr. Orrin Pilkey and American artist Mary Edna Fraser, sole PI, Mead-Swing Lecture Fund, Oberlin College, \$3500, 2004.

Research Grant, Reconstructing late-Holocene climate change and sea-level variations, St. Croix, U.S.V.I., sole PI, Oberlin College AIRE grant, \$3650. Funding for summer research assistant, 2003.

First Year Seminar Development Grant, Developing first year seminar "Coasts in Crisis," First Year Seminar Program, sole PI, Oberlin College, \$3500, 2003.

Travel Grant, Exploring linkages between coastal progradation and climate variability, PI, University of South Florida Travel Grant Program, \$5000, 2001.

Teaching Record

Courses Taught

University of North Carolina

Advanced Coastal Environmental Change (GEOL 710, ENEC 710, MASC 730), Fall 2020, 9 students

Coastal Environmental Change (GEOL 310, ENEC 310, MASC 316), Spring 2020, 8 students

Coasts in Crisis First Year Seminar (GEOL 79), Fall 2019, 19 students

Coastal Environmental Change (GEOL 310, ENEC 310, MASC 316), Spring 2019, 14 students

Coastal Environmental Change (GEOL 310, ENEC 310, MASC 316), Spring 2018, 12 students

Advanced Coastal Environmental Change (GEOL 710, ENEC 710, MASC 730), Spring 2018, 6 students

Advanced Coastal Environmental Change (GEOL 710), Fall 2016, 4 students

Coastal Environmental Change (GEOL 310), Spring 2016, 12 students

Advanced Coastal Environmental Change (GEOL 710), Spring 2016, 4 students

Advanced Coastal Environmental Change (GEOL 710), Spring 2015, 6 students, 1 auditor

Introductory Graduate Seminar (GEOL 700), Fall 2014, 9 students

Coasts in Crisis First Year Seminar (GEOL 79), Fall 2014, 19 students

Introductory Graduate Seminar (GEOL 700), Fall 2013, 11 students
Coastal Environmental Change (GEOL 310), Fall 2013, 19 students
Advanced Coastal Environmental Change (GEOL 710), Spring 2013, 6 students, 1 auditor
Introduction to Geology (GEOL 101), Spring 2013, 114 students
Coasts in Crisis First Year Seminar (GEOL 079), Fall 2012, 20 students
Coastal Sedimentary Environments (GEOL 430), Spring 2012, 3 students
Introduction to Earth and Climate for Science Majors (GEOL 110), Spring 2012, 27 students, 1 auditor.
Introduction to Earth and Climate for Science Majors (GEOL 110), Spring 2011, 23 students.
Independent Study (Geol 390), Spring 2011, Marcelaine Tanner, 1.0 credit.

University of Virginia

Independent Study (EVSC 494), Fall 2010, Nicholas Brockemeir, co-advised with R. Davis
Coastal Processes (EVSC 485), Spring 2009, 14 students and 1 auditor, 1 TA, team-taught with R. Dolan
Independent Study (EVSC 494), Spring 2009, Danielle LaRock, co-advised with P. Wiberg,
Independent Study (EVSC 494), Spring 2009, Caleb Buller, co-advised with M. Reidenbach,
Climate Change Impacts on Coastal Processes (EVSC 493/793), Fall 2008, 3 students and 2 auditors
Independent Study (EVSC 494), Fall 2008, Danielle LaRock, co-advised with P. Wiberg,

Oberlin College

Coasts in Crisis (First-year Seminar), Fall 2003, 2004, 2005, 2007
Earth's Environments, Spring 2003, 2004, 2005, 2007
Geographic and Geologic Mapping and Analysis, Spring 2003, 2004
Earth Surface Processes, Fall 2002, 2003, 2004, 2005, 2007

University of California Santa Cruz

Remote Sensing and GIS: Geologic Applications, Spring 1998

Teaching Workshops

Attended or co-organized the following Cutting Edge Workshops: Early Career Faculty Workshop (2002); Innovative Course Design (2004); Teaching Quantitative Methods in the Geosciences (*Invited Participant*, 2005); and Teaching Geomorphology in the 21st Century (*Invited co-organizer*, 2008).

Current UNC-CH Graduate Students and Postdoctoral Associates

Ian Reeves (Postdoctoral Scholar), May 2021 – present
Eve Eisemann (Ph.D. Student) July 2021 – present
Benton Franklin (Ph.D. Student) August 2020 – present
Briana Ingram (M.S. Student) August 2020 - present

Previous Postdoctoral Associates and Graduate Students/Research Assistants

Postdoctoral Associates:

Katherine Anarde (Postdoctoral Associate), October 2019 – July 31, 2021
Reuben Biel (Postdoctoral Associate), October 2017 – January 31, 2019
Evan Goldstein (Postdoctoral Associate), June 2014 – December 2017.
Orencio Duran Vinent (Postdoctoral Associate), August 2011 – July 2013

Kiersten Patsch (Postdoctoral Associate, UVA) October 2009 – December 2010

Graduate Students/Research Assistants:

Michael Itzkin (Ph.D. Student), August 2016 – August 2021

Dissertation: Anthropogenic influences on coastal dune dynamics: Exploring past and future effects of management interventions on a developed barrier island

Ian Reeves (Ph.D. student), August 2016 – May 2021

Dissertation: Controls on sediment exchange and connectivity in coastal barrier systems and implications for long-term evolution.

Elsemarie deVries (M.S. student), August 2014 – May 2018

Thesis: Investigating the dune-building feedback at the plant level: Insights from a multi-species field experiment.

Margaret Jones (M.S. student), August 2014 – August 2016

Thesis: Considering holistic coastal response to climate-change induced shifts in natural processes and anthropogenic modifications

Laura Rogers (M.S. student), August 2013 – July 2015

Thesis: Anthropogenic Controls on Overwash Deposition: Evidence and Consequences

Theo Jass (M.S. student), August 2013 – July 2015

Thesis: Environmental Controls on the Growth of Dune-building Grasses and the Effect of Plant Morphology on Coastal Foredune Formation, August 2013 – July 2015

David Walters (M.S. student), August 2011 – August 2013

Thesis: Overwash deposition increases back-barrier marsh resiliency to sea level rise: Insights from a coupled barrier island-marsh model

Jennifer Johnson (M.S. student), August 2011 – August 2013

Thesis: The Geomorphic Consequences of Wave Climate Change along Cuspate Coastlines

Owen Brenner, (M.S. student- UVA), September 2010 – April 2012

Thesis: The complex influences of back-barrier deposition, substrate slope and underlying stratigraphy in barrier island response to sea level rise: Insights from the Virginia Barrier Islands, Mid-Atlantic Bight, USA

Dana Oster, (M.S. student- UVA), September 2010 – April 2012

Thesis: The influence of morphology on barrier island recovery following storms: Insights from the Virginia Barrier Islands, Mid-Atlantic Bight, USA

Catherine Wolner, (M.S. student-UVA), September 2009 – July 2011

Thesis: Ecomorphodynamic feedbacks and barrier island evolution, Virginia Coast Reserve, USA.

Owen Brenner (Research Assistant, full-time-UVA), September 2008 – August 2009

Graduate Student Awards and Honors (beyond awards of research funding)

Michael Itzkin, Dissertation Completion Fellowship, UNC-CH, August 2020 - May 2021.

Ian Reeves, Syvitski Student Modeler Award, May 2020

Ian Reeves, Mackin Award, GSA Quaternary Geology and Geomorphology Division, May 2018

Elsemarie deVries, NSF Graduate Student Fellowship, July 2016 - June 2018

Margaret Jones, Best Graduate Student Talk, 3rd Place, Anadarko Symposium, April 2016

Margaret Jones, Best Presentation, Young Coastal Scientists and Engineers, July 2015

Laura Rogers, Best Graduate Student Talk, 3rd Place, Anadarko Symposium, April 2015

J.J. Johnson, Best Graduate Student Talk, 3rd Place, Anadarko Symposium, April 2013

J.J. Johnson, Best First-year Graduate Student Poster, Anadarko Symposium, April 2012

Amy Grady, NSF Graduate Fellowship, August 2011 - July 2016
Catherine Wolner, Best Poster Award, UVA EnviroDay, January 2011
Dana Oster, Best Poster Award runner-up, UVA EnviroDay, January 2011
Amy Grady, NSF Graduate Fellowship Honorable Mention, August 2010

Additional Graduate Student Committee Service

Emily Ruffe (Ph.D. student), Virginia Commonwealth University, Fall 2020 – present.
Ted Langhorst (Ph.D. student), Department of Geological Sciences, University of North Carolina Chapel Hill, January 2020 – present.
Wayana Dolan (Ph.D. student), Department of Geological Sciences, University of North Carolina Chapel Hill, June 2016 – present.
Sarina Little (M.S. student), Department of Geological Sciences, University of North Carolina at Chapel Hill, March 2019 – May 2020.
Kaia Findlay, (M.S. student), School of Media and Journalism, University of North Carolina Chapel Hill, January 2019 – July 2019.
Jessamin Straub (M.S. student), Department of Marine Sciences, University of North Carolina at Chapel Hill, January 2018 – August 2019.
Maggie Esch (Ph.D. student), Department of Marine Sciences, University of North Carolina Chapel Hill April 2015 – August 2016.
Mejs Hasan (Ph.D. student), Department of Geological Sciences, University of North Carolina Chapel Hill December 2014 – December 2016.
Wayana Dolan (M.S. student), Department of Geological Sciences, University of North Carolina Chapel Hill, January 2014 – May 2016.
Liz Humphries (Ph.D. student), Department of Geological Sciences, University of North Carolina Chapel Hill, January 2014 – May 2018.
Rebecca Lauzon (Ph.D. student), Earth and Ocean Sciences Division, Duke University, September 2013 – May 2016.
Fateme Yousefi (Ph.D. student), Earth and Ocean Sciences Division, Duke University, September 2013 – May 2018.
Katherine Murray (Ph.D. student), Earth and Ocean Sciences Division, Duke University, May 2013 – December 2015.
Sierra Schelegle (Ph.D. student), Curriculum for the Environment and Ecology, University of North Carolina Chapel Hill, April 2013 – December 2015.
George Allen (Ph.D. student), Department of Geological Sciences, University of North Carolina Chapel Hill, January 2012 – May 2017.
Emily Timmons (Ph.D. student), Department of Marine Sciences, University of North Carolina-Chapel Hill, January 2012 – June 2013.
Evan Goldstein (Ph.D. student), Earth and Ocean Sciences Division, Duke University, January 2011 – July 2013.
Jodi Smith (Ph.D. student), Department of Environmental Sciences, May 2008 – June 2010

Previous Undergraduate Research Assistants and Honors Students

Jack Boucher, University of North Carolina, Geology Major, January 2021 – April 2021.
Graham Farley, University of North Carolina, Geology Major, September 2016 – May 2017.
Klio Stroubakis, Chancellor's Science Scholar, UNC-CH, January 2016 – present
Francesca Peay, IDEA Program Researcher, UNC-CH, August 2015 – present
Sara Hahne, Wheaton College, Environmental Science major, June 2015 – August 2015

Amber Oliver, Duke University, Earth and Ocean Sciences Major, June 2015 – August 2015
Meredith Fish, University of North Carolina, Math Major, August 2014 – December 2014
Sarah Margolis, Boston University, Environmental Sciences Major, June 2014 – December 2014
CJ Cornette, University of North Carolina, Geological Sciences Major, 2013
Nicholas Brockemeir, University of Virginia, Environmental Sciences Major, 2009
Michael Rose, Oberlin College, Geology Major, 2005
Margaret Reitz, Oberlin College, Geology Major, 2005
Ting Fong Lee, Oberlin College, Environmental Studies Major, Honors Student, 2004
Andrew Donnellycolt, Oberlin College, Geology Major, 2004
Susan Powell, Oberlin College, Geology Major, 2003
Benjamin Stanley, Oberlin College, Geology Major, 2003
Lindsey Kraatz, Eckerd College, USGS Research Assistant, 2001
Charlene Sullivan, WHOI Summer Student Fellow, 1999
Carrie Randolph, UCSC, Earth Sciences Major, 1998

Professional Service

Associate Editor, Coastal Futures, a new journal by Cambridge Press. July 2021 – present.

Appointed Member, North Carolina Coastal Resources Commission’s Science Panel on Coastal Hazards. July 2019 – August 2023.

Co-Founder and Director, Collaboratory for Coastal Adaptation over Space and Time (C-CoAST), a collective of coastal researchers, practitioners, and stakeholders working to promote transdisciplinary coupled human-natural coastal research and informed decision making that considers interactions between short-term and long-term system dynamics.

- Coordinating researchers across 8 institutions and 18 disciplines; practitioners from state and federal agencies, and stakeholders from multiple communities.
- Lead PI on a CoPe Research Coordination Network proposal to the National Science Foundation to support an initial two-year effort; working with Innovate Carolina and Duke Nicholas School colleagues to identify additional sources of funding.

Leadership Team/Steering Committee Member, (lead: Raubenheimer, WHOI) founding and developing the Nearshore Extreme Event Reconnaissance (NEER) Association framework to provide coordination across the nearshore/coastal research community for rapid pre- and post-storm deployment to collect perishable data in support of storm impact assessments.

- Senior Personnel on an NSF Convergence RAISE award to support development of a framework for a NEER Association; contributed to a CoPe EAGER proposal (recommended for funding as of July 2019) to fund set up and piloting of NEER activities.
- Initial Development Workshop, Washington D.C., August 5-6, 2019.

Principal Investigator, National Science Foundation Virginia Coast Reserve—Long-term Ecological Research (VCR-LTER) Site, January 2008 – present.

- Leading interdisciplinary research team in investigations of the role of ecomorphodynamic processes and landscape couplings in barrier island evolution.
- Proposal writing team for \$6M renewals in 2012, 2018; Mid-term review 2015; Annual All-hands meetings.

Appointed Member, National Academy of Sciences and Medicine Committee on *Long-term Coastal Zone Dynamics: Interactions and Feedbacks between Natural and Human Processes along the U.S. Gulf Coast*, May 2017 - August 2018.

- Served a leading role in the writing of report chapters 2 and 3.
- Committee worked via weekly conference calls & meetings and workshops: May 17-18, 2017, Washington, DC; July 18-20, 2017, Houston, TX; September 18-19, 2017, New Orleans, LA; November 15-16, 2017, St. Petersburg, FL; January 17-18, 2018, Galveston, TX, April 16-17, 2018, Chapel Hill, NC.

Invited Participant, National Science Foundation Coasts and People (CoPe) Virtual Scoping Workshop, September 26-28, 2018.

Invited Instructor, *CoastTools*, International summer school institute for graduate students from 12 countries. University of the Algarve, Portugal, August 2017.

International external project consultant, *EVREST – Evolution and resilience of barrier island systems*, funded by the Portuguese Foundation for Science, Lead PI Anna Matias, University of Algarve, Portugal. September 2016.

Invited Editor, *Barrier Dynamics and Response to Changing Climate*, Springer, Environmental Sciences. December 2014 – January 2018.

Session Co-convenor, "Barrier island dynamics in a changing climate." Ocean Sciences Meeting of the American Geophysical Union, New Orleans, LA, February 2018.

Coastal Working Group Member, Community Surface Dynamics Modeling System (CSDMS), Multi-year NSF- funded Community Modeling Effort, March 2008 – present. Attended all-hands CSDMS meeting, March 2013.

Steering Committee Member, for the NFWF-funded project, Enhancing Coastal Resilience on Virginia's Eastern Shore, National Federation for Fish and Wildlife, led by The Nature Conservancy. August 2014 – March 2017.

Session Co-convenor, "Relevant Science for our Changing Coasts: A Tribute to Gary Griggs." Organizing special session to be held at Coastal Sediments '15, May 11-15, 2015, San Diego, CA.

Invited Participant, Dune Management Challenges on Developed Coasts, American of Shore and Beach Preservation Association, Community of Practice Workshop, October 26-28, 2015, Kitty Hawk, NC.

Invited Participant, Predicting Landscape Response to Climate Change, NSF-Funded Workshop for 25 participants from the field of geomorphology invited to consider future directions for the study of landscape response to climate change. September 25-27, 2013, Tucson, AZ.

Participant, Coastal Processes and Environments under Sea-Level Rise and Changing Climate: Science to Inform Management, Joint Penrose/Chapman Conference, sponsored by the American Geophysical Union and The Geological Society of America). A gathering of 85 coastal specialists to assess our current understanding of climate change impacts on coastal environments, April 14-19, 2013, Galveston, TX.

Invited Panelist, Shifting Shorelines: Combining Insights from Biological, Physical and Social Sciences, October 27-29, 2010, Duke University Marine Lab. Workshop to present results of National Science Foundation Biocomplexity Project, "Coupling Human and Natural Influences on Coastline Evolution as Climate Changes" and to discuss further scientific work and future policy and management applications.

Facilitator, Community Surface Dynamics Modeling System (CSDMS) Meeting: Modeling for Environmental Change, October 14-17, 2010. Facilitator for multi-session breakout group titled "Couplings between physical, biological and human processes in earth surface and ocean dynamics."

NASA Wallops Independent Review Team Member, Four-person team reviewed scientific studies and Draft EIS chapters for shoreline protection project at NASA Wallops, June 2009 - December 2010.

Invited Climate Change Workshop Participant, The Nature Conservancy, February 11 - 12, 2009 Virginia Beach, VA.

Technical Reviewer, Northeast Coastal and Barrier Network Geomorphological Monitoring Protocol, National Park Service, Vital Signs Program, September 2009.

Coastal Advisory Board Member, Southeastern University Research Association, May 2008 - present.

Invited Workshop Co-convenor, "Teaching Geomorphology in the 21st Century." Four-day teaching workshop for geomorphologists from across the country and from abroad, sponsored by Cutting Edge with funding from the National Science Foundation and the National Association of Geoscience Teachers, July 2008.

Invited Session Co-Convenor, Coastal Response to Climate Change and Sea-Level Rise, Coastal Sediments'07, New Orleans, May 2007.

Session Co-Convenor, Coastal Geomorphology and Morphodynamics, American Geophysical Union Fall Meeting, San Francisco, December 2006.

Contributing Author, U.S. Climate Change Science Program, Product 1.4, Coastal Elevations and Sensitivity to Sea-Level Rise, March 2006.

Session Co-Chair, Coastal Processes and Hazards along Active Margin and Low Latitude Coasts, Special Session, Geological Society of America Annual Meeting, Seattle, November 2003.

Technical Reviewer, *U.S. Clifed Coasts: Status and Trends*, Fall 2002

Session Co-Chair, Linking Climate Variability and Coastal Processes, Special Session, American Geophysical Union Fall Meeting, San Francisco, December 2000.

Non-Resident Director, California Shore and Beach Preservation Association, November 1998 - 2005.

Session Chair, Science and Engineering for Coastal Hazard Reduction, California's Coastal Natural Hazards Conference, November 12 - 14, 1997.

Director, California Shore and Beach Preservation Association, April 1997 - November 1998.

Academic Service

University of North Carolina

Director of Graduate Admissions, May 2019 - present.

Anadarko Research Symposium Organizer, Department of Geological Sciences, Spring 2019.

Admissions Committee, Department of Geological Sciences, 2017 & 2019.

Strategic Planning Committee, Department of Geological Sciences, Fall 2016.

Guest presenter, Natural Hazards Certificate Core Course, April 16, 2016.

Natural Hazards and Resilience Certificate Committee, August 2015 - present.

Colloquium Series Organizer, Department of Geological Sciences, March 2015 - March 2016; March 2017 - December 2017.

Geological Sciences X-ray Fluorescence Core Scanner Point of Contact, arranged for and supervised the process of returning the instrument to working status, address requests for use, Fall 2014 - present.

Sediment Analysis Lab, Department of Geological Sciences, designed the space and provided oversight during construction, June 2013 - March 2014.

Hydrology Search Committee, Department of Geological Sciences October 2012 - April 2013.
Executive Committee, Department of Geological Sciences, September 2012 - September 2014.
Colloquium Series Organizer, Department of Geological Sciences, August 2012 - November 2013.

Coastal Environmental Change Field Trip (developed and led) for 36 introductory geoscience students, Saturday, March 31, 2012 and Sunday, October 7, 2012.

Joint-Hires Committee, Curriculum for the Environment and Ecology, January 2011 - present.
B.S. Concentration Committee, Curriculum for the Environment and Ecology, January 2011 - January 2012.

University of Virginia

Seminar Speaker Host, Dr. Abby Sallenger (U.S. Geological Survey), December 2010.

Long-term Ecological Research - Virginia Coast Reserve, Co-Principal Investigator and Research Oversight Committee, September 2009 - June 2010.

Undergraduate Seminar Speaker, *Climate Change Impacts on Coastal Barriers: Field Observations and Model Insights*, April 2009.

Allocation and Policy Board, September 2008 - August 2009.

Climate Dynamics Faculty Search Committee, September 2008 - May 2009.

Moore Lectureship Committee, September 2008 - May 2009

Computational Science Advisory Committee, April 2008 - August 2009.

Oberlin College

Petrology Faculty Search Committee, Oberlin College Department of Geology, Fall 2006;

Visiting Faculty Search Committee, Oberlin College Environmental Studies Program, Fall 2006

Center for Instructional Technology Science Specialist Search Committee, Summer 2005;

Oberlin Center for Computation and Modeling (OCCaM), Co-founder and Steering Committee Member, Oberlin College, March 2005 – December 2007.

Oberlin Center for Computation and Modeling (OCCaM), Conference Planning Committee, 2005.

Oberlin College Admissions Committee, September 2004 – 2005.

Oberlin College Natural and Mathematical Sciences Advisory Committee, Sept. 2004 – May 2005.

Visiting Petrology Faculty Search Committee, Oberlin College Department of Geology, Spring 2004

Environmental Studies Program Committee, Sept. 2003 – May 2005.

Woods Hole Oceanographic Institution

Coastal Morphodynamics Symposium Convener, Woods Hole Oceanographic Institution, April 26, 2000.

University of California Santa Cruz

Graduate Commons Building Committee Co-Chair, January 1997 – August 1998.

Graduate Student Association President, June 1995 – June 1996.

Graduate Council Academic Senate Committee Ex-Officio Member, October 1995 – June 1996.

Graduate Student Association Secretary, October 1994 – June 1995.

Professional Development

Chancellor's Faculty Entrepreneurship Workshop, 2019. *The Entrepreneurial Mindset: Maximizing Faculty Impact*, 2019 Theme: Design Thinking, CURRENT ArtSpace at UNC-CH, Conducted by Innovate Carolina, May 14-16.

Science Communication

Advisory Committee Member, The Outer Banks Documentary Project, The Tamassee Group, June 2020 – present.

Radio show guest, The State of Things with Frank Stasio on NPR Station WUNC, March 2019.

Content and copy consultant, *Earth Moves*, new 1.6-acre outdoor geomorphology exhibit at the North Carolina Museum of Life and Science, Spring 2019.

Presenter, *Barrier Islands 101*, for 80 4th grade students from Rashkis Elementary School, as well as teachers and parents. Ft. Fisher, NC, May 24, 2018.

Playwright, Public staged reading of *Rollover*. Current ArtSpace, UNC-CH, Funded by FIRE grant, April 27, 2018.

Interviewee, Moore et al., research on coastal dunes and barrier islands of North Carolina, featured by *College of Arts & Sciences Magazine* and UNC Research's *Endeavors*, written feature article and video by Mary Lide Parker, Spring 2017.

Featured researcher, Moore et al., coastal dune research included in Hurricane Matthew Infographic, UNC Research *Endeavors* Spring 2017.

Selected Invited Presentations

(Keynote Address) Rivers, Coasts and Estuarine Morphodynamics Symposium, *The role of ecomorphodynamic feedbacks, landscape couplings and natural-human dynamics in determining the fate of coastal barrier systems*. Rivers, Coasts and Estuarine Morphodynamics Symposium, Auckland, New Zealand, November 19, 2019.

Oregon State University, College of Ocean and Atmospheric Science, *From stem to island: Vegetation controls on coastal foredune morphology, dune state and barrier response to climate change*, Corvallis, OR, April 27, 2017.

American Geophysical Union Fall Meeting, *Ecogeomorphology: Sediment-Biota Feedbacks That Shape Land and Seascape* (Session EP014), December 2016, San Francisco, CA.

University of the Algarve Marine and Coastal Systems Master Programme Kick-off Seminar, *Barrier island ecomorphodynamics and Response to Changing Climate*, Faro, Portugal, September 2016.

Ocean Sciences Meeting, *Morphological Evolution of Coastal Environments - Crossing the Land/Water Interface* (Session MG003), February 22-26, 2016, New Orleans, LA.

Geological Society of America Annual Meeting, *Field and Modeling Approaches to Understanding the Response of Coupled Barrier-Backbarrier Systems to Coastal Change* (Session T128), November 1-4, 2015, Baltimore, MD.

Dune Management Challenges on Developed Coasts, *Vegetation Controls on Maximum Dune Size and the Role of Biophysical Interactions in Determining Dune/Island State*, Sponsored by the American Shore and Beach Preservation Association, Army Corps of Engineers and the U.S. Geological Survey, October 26-29, 2015, Kitty Hawk, NC.

Second Annual UNC Climate Change Symposium, *How Climate Change and Humans are Altering the Fate of Barrier Island Coastlines*, Sponsored by Carolina Climate Change Scientist, April 10, 2015.

University of North Carolina, Department of Marine Sciences Seminar Series, *Ecomorphodynamic Feedbacks and Couplings Between Landscape Subsystems Influence Barrier Island Response to Changing Climate*, March 4, 2015.

American Geophysical Union Fall Meeting, *Ecomorphodynamic Feedbacks and Couplings Between Landscape Subsystems Influence Barrier Island Response to Changing Climate*, (Coastal Morphodynamics, Session EP22A), December 2013, San Francisco, CA.

Modeling Decadal Shoreline Change Workshop, *State of the Art in Cross-Shore Coastal Change Modeling*. Organized by the U.S. Geological Survey Coastal and Marine Geology Program, San Francisco, CA, December 2015.

Predicting Landscape Response to Climate Change, *The Fate of Coupled Barrier, Marsh and Bay Systems Depends on Sediment Supply, Geologic Framework and Ecomorphodynamics*, NSF-funded conference (for 25 invited participants) to provide guidance on research directions in the field of geomorphology, September 25-27, 2013, Tucson, AZ.

American Geophysical Union Fall Meeting, *Biological-physical feedbacks determine coastal environmental response to climate change* (Biogeodynamics and Earth System Sciences I Session B51H), December 2012, San Francisco, CA.

University of North Carolina, Department of Geological Sciences, *Barriers on the Brink? The complex, intertwined roles of geologic framework, sediment availability and sea-level rise in island evolution*, February 2010.

American Geophysical Union Fall Meeting, *Recent shifts in shoreline orientation along a cusped coast potentially linked to climate change, North Carolina Outer Banks* (Coastal Geomorphology and Morphodynamics Session EP13), December 2009, San Francisco, CA.

USGS Coastal and Marine Geology Program, St. Petersburg, FL, November 2009

Virginia Institute of Marine Science, October, 2008.

Duke University, Earth and Ocean Sciences Division, March 2007.

USGS Center for Coast and Watershed Studies, February, 2007.

Press Conference at the American Geophysical Union Fall Meeting, December 2006.

Woods Hole Oceanographic Institution, July 2006.

USGS Pacific Science Center, Santa Cruz, CA June 2006.

University of Toledo, Department of Earth and Environmental Sciences, February 2004.

Bowling Green State University, Geology Department, April 2004.