

Appointments

Assistant Professor, Department of Civil, Construction, and Environmental Engineering, North Carolina State University. 2017-Present

National Center for Earth Surface Dynamics 2 Synthesis Postdoctoral Fellow, Department of Geological Sciences at Indiana University. 2015 – 2016. Adviser: Dr. Doug Edmonds

Education

Ph.D. **MIT-WHOI Joint Program in Oceanography and Applied Ocean Science & Engineering**. 2010 – 2015. Marine Geology & Geophysics Department. Investigating the Evolution and Formation of Coastlines and the Response to Sea-Level Rise. Dr. Andrew D. Ashton.

M.S. **MIT**. 2011 - 2012. Civil and Environmental Engineering Department. Investigation of the Effect of a Circular Patch of Vegetation on Turbulence Generation & Sediment Deposition Using 4 Case Studies. Dr. Heidi M. Nepf.

B.A. **Wellesley College**. 2006 – 2010. Geosciences & Classical Civilizations. Honors in Geosciences & cum laude. Sigma Psi. Senior Thesis in Geosciences. Investigating the Effect of Wave Energy on Coastal Morphology & Beach Sedimentology Using Real and Modeled Wave Data. Dr. Britt Argow.

Research Interests

- Coastal Geomorphology
- Numerical Modeling
- Coastal Response to Climate Change
- Fluvial Ecogeomorphology
- Coastal Engineering

Teaching Experience

- Professor. NCSU – CE 583. Coastal Processes with Engineering Applications. Graduate Seminar and student-led journal paper discussion. 2017
- Professor. NCSU – CE 487. Introduction to Coastal and Ocean Engineering. 79 undergraduate students. Senior elective course. 2017
- Co-Taught Software Bootcamp – Summer Institute of Earth Surface Dynamics, co-taught seminar on introduction to python and git-bash computing. Graduate students 2016
- Teaching Assistant. MIT – 12.717. Coastal Geomorphology. Planned class field trip, planned and graded homework assignments. Graduate students. 2015
- Teaching Assistant. MIT – 1.69. Transport Processes in the Environment. Planned and prepped 1 lab and 2 lectures. Undergraduates. 2013
- Teaching Assistant. MIT – 12.747. Modeling, Data Analysis, and Numerical Techniques for Geochemistry. MatLab Programming. Graduate students. 2012
- Teaching Assistant. Wellesley College – CS 112. Computation for the Sciences. MatLab Programming. Undergraduates. 2009-2010

Peer-Reviewed Publications

- **Ortiz, A. C.**, S. Roy, and D. A. Edmonds (2017), Land loss by pond expansion on the Mississippi River Delta Plain, *Geophysical Research Letters*, 44, 3635–3642, doi:10.1002/2017GL073079.
- Cuvelier, M. L., Guo, J., **Ortiz, A. C.**, Van Baren, M. J., Tariq, M. A., Partensky, F., & Worden, A. Z. (2017). Responses of the picoprasinophyte *Micromonas commoda* to light and ultraviolet stress. *PloS one*, 12(3), e0172135.
- **Ortiz, A. C.**, and A. D. Ashton (2016), Exploring shoreface dynamics and a mechanistic explanation for a morphodynamic depth of closure, *Journal of Geophysical Research: Earth Surface*, 121(2), 442–462, doi:10.1002/2015JF003699.
- **Ortiz, A. C.**, A. Ashton, H. Nepf. Mean and Turbulent Velocity Fields Near Rigid and Flexible Plants, and the Implications for Deposition. *Journal of Geophysical Research: Earth Surface*. 118(4). 2013
- Chen, Z., **Ortiz, A. C.**, Zong, L., & Nepf, H. (2012), The wake structure behind a porous obstruction and its implications for deposition near a finite patch of emergent vegetation, *WRR*.

- Cuvelier, M. L., **Ortiz, A. C.**, Kim, E., Moehlig, H., Richardson, D. E., Heidelberg, J. F., Archibald, J. M. & Worden, A. Z. (2008), Widespread distribution of a unique marine protistan lineage, *Environmental microbiology*, 10(6), 1621-1634.

Submitted Publications

- Ferdowsi, B., Gartner, J.D., Johnson, K.N., Kasprak, A., Limaye, A.B., Miller, K.L., Nardin, W., **Ortiz, A.C.**, Perignon, M., and Tejedor, A., 2017, Earthcasting: Geomorphic Prediction for Society: Earth's Future, (Submitted).
- **Ortiz, A. C.** and A. D. Ashton, Understanding the Timescales of Morphologic Evolution in the Cross-shore and Long-shore of Sandy Wave-Dominated Coast, *Geology*. (Submitted).
- **Ortiz, A. C.** and A. D. Ashton, Exploring Carbonate Reef Flat Hydrodynamics and Formation Mechanisms of Sub-Aerial Land, *Marine Geology*. (Submitted).
- Roy, S., Edmonds, D.A., **Ortiz, A.C.**, and Robeson, S. Spatial and Temporal Patterns of Wetland Morphology in a Degrading Delta. (In Prep).

Students Supervised

- Ph.D.: Hanieh Moghadam Current
- Masters: Faith Johnson Current

Grants and Other Funding

- NC Renewable Ocean Energy Program (NCROEP). MHK Structure-Sloping Seabed: Response, Instability and Sediment Transport. \$75,000, 3 Co-PIs, \$32,000 to Ortiz. 2017
- NC Space Grant Early Career Award. Quantifying Interior Coastal Marsh Loss along North Carolina at Mackay Island and Roanoke Marsh. \$25,000 to Ortiz. 2017
- SEN funding to attend SEN-CSDMS annual meeting & conference. 2017
- Sediment Experimentalist Network (SEN) funding to attend Community Surface Dynamics Modeling (CSDMS) annual meeting & conference. 2016
- Indiana University Bloomington Provost Travel Award for Women in Science. 2016
- National Center for Earth Surface Dynamics 2 (NCED2) Synthesis Postdoctoral Fellow. Earthcasting deltaic land area change in the Mississippi River Deltaic Plain. 2016
- Indiana University Bloomington Provost Travel Award for Women in Science. 2015
- Geological Society of America (GSA) Research Grant. Investigating the Evolution and Morphology of Atolls across a range of scales. 2014
- Ocean Ventures Fund, Woods Hole Oceanographic Institution. Motu Formation and Evolution with Sea-Level Rise: Investigating Rangiroa and Maupiti. 2013
- Coastal Ocean Institute, Woods Hole Oceanographic Institution. Motu Formation and Evolution with Sea-Level Rise: Investigating Atolls in French Polynesia. 2013
- Howard Hughes Medical Institute Research Grant. Wellesley College. 2009
- Dean of Wellesley College Student Research Travel Grant. Wellesley College. 2009
- Annabel Boyce James Fund. Wellesley College. 2009
- Northeastern Geological Society of America Undergraduate Student Research Grant. 2009
- Moore Foundation Fellowship. Dr. Alexandra Worden. Monterey Bay Aquarium Research Institute. 2008

Mentoring Activities

- Mentored IU graduate student resulting in 2 papers (1 first-authored by the student) and several poster presentations. 2016-Present
- Supervised & mentored Carleton student over Spring & Summer for senior capstone project – resulted in poster presented at GSA. 2016
- MIT Undergraduate Research Opportunity. Supervised MIT undergrad for 4 weeks of GIS. 2015
- MIT Graduate Women Mentoring Committee. 2014-2015
- Mentoring MIT undergraduate in Geosciences. 2014
- Mentoring MIT undergraduate in Civil and Environmental Engineering. 2013

Invited Talks

- **Ortiz, A.C.** (2018), Reef Island Self-Organization: Conceptual Model & Analysis. Duke Marine Lab.

- **Ortiz, A.C.** (2018), Ecogeomorphology: Tools to analyze largescale landscape changes from remote sensing to numerical modeling. University of North Carolina Chapel Hill.
- **Ortiz, A.C.** (2017), Why do Atolls Look the Way they do?. Science Saturday, Dec. 2. N.C. Space Grant. North Carolina Museum of Natural Sciences.
- **Ortiz, A.C.,** Roy, S., and Edmonds, D.A. (2017), Marsh Collapse by Pond Expansion on the Mississippi River Delta Plain, Abstract 303557 presented at 2017 Annual Meeting, GSA, Seattle, WA 24 Oct.
- **Ortiz, A.C.** (2017). Atoll Morphometrics: Why do Atolls and Reef Islands Look the Way they Do, Duke University. Sept. 8.
- **Ortiz, A.C.** and Edmonds, D.A. (2016). Potential Marsh collapse by Edge Erosion in the Mississippi River Deltaic Plain. University of Central Florida. Oct. 28.

Professional Development

- National Center for Faculty Development and Diversity (NCFDD) 12 week Faculty Success Bootcamp. 2018
- Strategies for a Gender Inclusive Classroom. Reflective Teaching: Student-Centered Learning Environment. NCSU Office of Faculty Development. 2017
- MentorRings. NCSU wide group-mentoring for early-career faculty. 2017
- New Faculty Orientation. College of Engineering and College of Sciences NCSU. Four Day intensive orientation for new faculty with 2 days focused on teaching led by Dr. Richard Felder. 2017
- American Geophysical Union (AGU) Annual Meeting: Ecogeomorphology: Sediment-Biota Feedbacks that Shape Land and Seascape. Session Convener and Outstanding Student Presentation Award (OSPA) Liaison and Judge. I co-convened the session and found and organized judges for students presenting oral and poster presentation. 2016
- National Center Earth Surface Dynamics 2 (NCED2): Summer Institute Earth Surface Dynamics (SIEDS) Coupled hydro-eco-geomorphologic processes in human dominated landscapes. I helped teach sections as Postdoctoral researcher for a 2 week summer workshop geared towards graduate students in Earth Surface research. 2016
- Delft Software Days 2015: Training by Deltares in using Delft3D Modeling software 2015
- Building Future Faculty Program: Hosted by North Carolina State University to prepare students for academia and successful faculty jobs. 2015
- Woods Hole Oceanographic Institution (WHOI): Coastal Field Methods Course. 2 week course including fieldwork for graduate students. 2014
- National Association of Geoscience Teachers (NAGT) & Cutting Edge: Preparing for an Academic Career in the Geosciences. 3 day workshop. 2014
- Frameworks Institute & National Network for Ocean and Climate Change Interpretation (NNOCCI): Communicating Climate Change. Several workshops and meetings geared towards helping docents communicate climate change to visitors. 2013
- Massachusetts Institute of Technology (MIT): Teaching College-level Engineering & Science. Semester long course for graduate students. 2012
- National Center Earth Surface Dynamics (NCED): Summer Institute Earth Surface Dynamics (SIEDS) Coastal Processes and the Dynamics of Deltaic Systems. 2 week summer workshop geared toward graduate students. 2011
- Massachusetts Institute of Technology (MIT): Path to Professorship. 3 day workshop geared towards helping women in academia. 2011
- Massachusetts Institute of Technology (MIT): Teaching Certificate. 2 week workshop. 2011
- Association for Women Geoscientists (AWG): Writing Workshop. 5 day writing intensive workshop geared to help women in geosciences. 2010

Awards

- American Geophysical Union (AGU) Outstanding Student Presentation Award (OSPA). Turbulence & Mean Velocity near Rigid & Flexible Plants, and Implications for deposition. 2012

- National Science Foundation Graduate Research Fellowship (NSF-GRF). Honorable Mention. Investigating Barrier Island Evolution with Accelerated Sea Level Rise using an Alongshore-Coupled Morphodynamic Model. 2011
- Sigma Xi. 2010
- Cum Laude. Wellesley College. 2010
- Geoscience Department Honors. Wellesley College. 2010
- Sara F. Langer Memorial Award in Geosciences. Wellesley College. 2009
- Academic Achievement Award. Wellesley College. 2009 & 2010

Professional Service

- Steering Committee to plan River Coastal Estuarine Morphodynamics (RCEM 2019) Conference in Auckland, NZ. 2017-Present
- Faculty Liaison to Student Groups and Advisory Board in CCEE Department at NCSU. 2017
- Undergraduate Programs Committee – helping to plan curricula for undergraduate majors in Civil, Construction, and Environmental Engineering (CCEE) Department at NCSU. 2017
- Reviewer for national Science Foundation, American Chemical Society, Bioinspiration and Biomimetics, Elementa Science of the Anthropocene, JGR: Earth Surface, Environmental Fluid Mechanics 2015-Present
- Graduate Applications Committee, CCEE Department at NCSU. 2017

Other Publications

- **Ortiz, A. C.** (2015), Investigating the Evolution and Formation of Coastlines and Response to Sea-Level Rise, MIT-WHOI.
- **Ortiz, A. C.**, Ashton, A. D., and Donnelly, J. P. (2015), Modeling Motu Profile Response to Varying Wave Climate, Coastal Sediments '15.
- **Ortiz, A. C.** (2012), Investigating the Effect of a Circular Patch of Vegetation on Turbulence Generation and Sediment Deposition Using Four Case Studies, 116 pp, MIT, Cambridge.
- **Ortiz, A. C.** (2010), Investigating the Effect of Wave Energy on Coastal Morphology and Beach Sedimentology Using Real and Modeled Wave Data, Honors Thesis, Wellesley College, Wellesley.

Published Abstracts

- Roy, S., Edmonds, D.A., Robeson, S.M., **Ortiz, A.C.**, and Nienhuis, J., 2017, Spatial and Temporal Patterns of Land Loss in Mississippi River Delta, presented at 2017 Fall Meeting, AGU, New Orleans, LA.
- Edmonds, D.A., **Ortiz, A.C.**, and Roy, S., (2017), Land Loss by Pond Expansion on the Mississippi River Delta Plain, Abstract EP13D-08, presented at 2017 Fall Meeting, AGU, New Orleans, LA.
- **Ortiz, A.C.**, (2017), Understanding the Primary Drivers of Atoll Morphometrics on a Global Scale, Abstract F7400, poster presented at 2017 River Coastal Estuarine Morphodynamics Conference, Padua, Italy.
- **Ortiz, A.C.** (2017), Atoll Morphometrics: Why do Atolls and Reef Islands Look the Way they Do?, poster presented at annual Community Surface Dynamics Modeling System (CSDMS) meeting, Boulder, CO.
- **Ortiz, A. C.**, and D. A. Edmonds (2016), Impact of Wind Driven Pond Expansion on Landloss in the Mississippi River Delta Plain, Abstract GC23D-1277 presented at 2016 Fall Meeting, AGU, San Francisco, Calif. 12-16 Dec. Poster.
- Ashton, A.D., **Ortiz, A.C.**, and Lorenzo-Trueba, J., 2016, Modeling Reef Island Morphodynamics in Profile and Plan View, presented at 2016 Fall Meeting, AGU, San Francisco, CA.
- Arcuri, J.L., **Ortiz, A.C.**, and Edmonds, D.A. (2016), Remote Sensing Analysis of Land Loss Processes in the Mississippi Delta Plain, presented at Geological Society of America Annual Meeting, in Denver, CO.
- **Ortiz, A. C.**, A. D. Ashton, J. P. Donnelly (2015), Modeling Motu Profile Response to Varying Wave Climate, paper presented at Coastal Sediments, San Diego, CA.
- **Ortiz, A. C.**, A. D. Ashton, and J. P. Donnelly (2014), Modeling Motu Profile Response to Varying Wave and Storm Climate, Abstract EP31B-3537 presented at 2014 Fall Meeting, AGU, San Francisco, Calif. 15-19 Dec. Poster.
- **Ortiz, A. C.**, and A. D. Ashton (2013), A Morphodynamic Explanation for the Shoreface Depth of Closure, paper presented at River, Coastal, and Estuarine Morphodynamics, Santander, Spain.
- **Ortiz, A. C.**, A. D. Ashton, and H. M. Nepf (2012), Turbulence and Mean Velocity Near Rigid and Flexible Plants, and the Implications for Deposition, Abstract EP43C-08 presented at 2012 Fall Meeting, AGU, San Francisco, Calif. 3-7 Dec. Oral Presentation.

- Ashton, A. D., **A. Ortiz**, P. Lane, and J. P. Donnelly (2011), Characteristic Timescales of Shoreface Response to Sea-Level Rise, Abstract OS43D-05 presented at 2011 Fall Meeting, AGU.
- Ashton, A. D., and **A. C. Ortiz** (2011), Overwash controls coastal barrier response to sea-level rise, paper presented at Coastal Sediments, ASCE, Miami, FL. Oral Presentation
- **Ortiz, A. C.**, et al. (2009), Investigating the Effect of Wave Energy on Sediment Characteristics of Vieques, Puerto Rico Using Real and Modeled Wave Data, abstract presented at GSA.
- **Ortiz, A. C.** (2008), Fast Repetition Rate Fluorometry measuring effects of light quantity and quality on Micromonas, Monterey Bay Aquarium Research Aquarium, 22 Aug 2008. Oral Presentation.
- Cuvelier, M. L., et al. (2006), Ecology of Picoeukaryotes in Open Ocean Environments, paper presented at Gordon Research Conference: Marine Microbes, Biddeford, ME. Poster

Fieldwork & Cruises

- Rangiroa, French Polynesia. Investigating atolls & motu response to sea-level rise. Primary Investigator for self-led data collection of sediment data, GPR, GPS, and bathymetric data. March 2014
- Tour of French Polynesia (Tahiti, Fakarava, Nuku Hiva, Hiva Oa, Tahuata, Mangareva, Hao) collaborating with Semester at Sea (SEA). Self-led investigation of atolls and motu collecting sedimentological data, GPR, GPS, bathymetric data, and fluvial samples. February 2014
- Marshall Islands. Investigation of Atolls (Kwajalein & Majuro). Data collection of bathymetry, GPS, GPR, and sedimentological data. January 2014
- Ebro Delta, Spain. Collection of sediment samples for OSL Dating. June 2013
- Destin, Florida. Collection of sediment traps. April 2013
- Destin, Florida. Collection of sediment samples of Santa Rosa Island using Geoprobe MC5 system. Also collected GPR and GPS surveys, marsh cores, bathymetry, and lake cores. January 2011
- Vieques, Puerto Rico. Collection of sediment samples, cores, and wave data. July 2008
- Plum Island LTER Saltwater Marsh, Massachusetts. Collection of sediment data, current and wave data, and ice-rafting events. January 2008

Tutoring

- Tutoring Geosciences Courses. Undergraduates. 2007-2010
- Tutoring Latin & Classical Civilizations. Undergraduates. 2008-2010

Additional Work Experience

- Linux System Administrator. Wellesley College. 2009-2010
- Student Manager IT Help Desk. Wellesley College. 2007-2010

Skills

- Computer: Proficient in MatLab, Java Programming, and Microsoft Office. Experience in Google Earth Engine, GIS, Adobe CS5, Ftp, Terminal, and Stella. Proficient in Mac, Windows, and Linux OS.
- Languages: Proficient in Spanish, Italian, and Latin.
- Broader Impacts: Blog of fieldwork (<http://extd160cukoo.blogspot.com/>). Mentoring of lab interns.
- Other: International residency, extensive travel, and fieldwork experience.

Affiliations/Memberships

- American Geophysical Union (AGU). 2012-Present
- Geological Society of America (GSA). 2009-Present
- Association for Women Geoscientists (AWG). 2009-Present
- Earth Science Women's Network 2011-Present