

# Emily A. (Timmons) Elliott

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## Education

### ***The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina***

PhD. in Marine Science (Department of Marine Sciences) – May 2017

- NSF Graduate Research Fellow (2010-2013)
- Dissertation: “Raiding the Toolbox – Techniques for Assessing Historical High-Resolution Records of Coastal and Estuarine Sediment Erosion, Transport and Sedimentation” (Research Advisors: Brent A. McKee and Antonio B. Rodriguez).

### ***The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina***

M.S. in Marine Science (Department of Marine Sciences) – December 2009

- Master’s Thesis: “Transition of a Regressive to a Transgressive Barrier Island as a Function of Back-Barrier Erosion, Climate Change, and Low Sediment Supply, Bogue Banks, North Carolina, U.S.A.” (Research Advisor: Antonio B. Rodriguez)

### ***Hope College, Holland, Michigan***

B.S. in Geology (Department of Geological and Environmental Sciences) – May 2007

- Minor in Environmental Science
- *Magna Cum Laude*

## Appointments

### ***Post-Doc/Research Scientist: The University of Alabama, Department of Geography***

June 2017 – Present Tuscaloosa, AL

- Assisting in the development of paleoclimate and streamflow reconstructions in the Southeastern US through laboratory research, peer-reviewed publications and the development of successful proposals for additional funding (see *Funded Proposals*).
- PI and co-PI on collaborative research proposal between the Departments of Geography and Geological Sciences focused on understanding paleo tropical cyclone and flood records at a regional scale throughout the Southeastern United States.
- Co-PI on a funded collaborative project through BOEM to characterize the underlying geology and depositional environments/transitions during the Holocene transgression offshore of MS-AL.
- Mentored graduate and undergraduate students in research, technical writing and manuscript preparation, and served as thesis committee member.

### ***Instructor: The University of Alabama and Dauphin Island Sea Lab***

August 2017 – Present Tuscaloosa, AL; Dauphin Island, AL

The University of Alabama, Department of Geography

- Instructor of Record for GY/GEO 363: Geomorphology (Fall 2019, Fall 2020),
- Instructor of Record for GY 102: Earth Surface Processes (Spring 2020 – GY 102.001, GY 102.004)

## The University of Alabama, Department of Geological Sciences

- Instructor of Record for GEO 101: The Dynamic Earth (Fall 2017 – GEO 101.005; Spring 2018 – GEO 101.002; Fall 2018 – GEO 101.003; Spring 2020 – GEO 101.008)
- Instructor of Record for GEO 105: Sustainable Earth (Spring 2020)

## Dauphin Island Sea Lab/ The University of Alabama, Marine Sciences Program

- Instructor of Record for MS 304: Marine Geology (Summer 2019, 2020, 2021)

***Graduate: University of North Carolina at Chapel Hill, Institute of Marine Sciences****Dissertation and Thesis Research*

July 2010 – May 2017

Cape Lookout, NC; Chapel Hill, NC; Tuscaloosa, AL

- Investigation of mechanisms for erosion and transport (including increased rates of sea-level rise, storms and human influence) within a coastal watershed through high resolution geochronology in semi-enclosed coastal basin.

June 2007 – August 2007 and May 2008 – December 2009

Morehead City, NC

- Investigation of mechanisms of back-barrier erosion, causing island narrowing and eventual transition from a regressive to transgressive barrier island.

*Teaching*

- Freshman Seminar Class (Spring 2011), The Marine Environment (Spring 2008), Freshman Seminar Class (Fall 2007)

***Undergraduate: Hope College, Department of Geological and Environmental Sciences****Research*

May - August 2004, May-August 2005, May-August 2006 Holland, MI and San Francisco, CA

- Investigation of Michigan coastal dune complexes through lake cores from small inland lakes. Intern opportunity as part of this research at Laurence Livermore National Laboratory for two consecutive summers.

*Teaching*

- Studying the Beach (Fall 2006), Planet Earth (Fall 2005), Historical Geology (Fall 2004), Planet Earth (Spring 2004), Atmosphere and Environmental Change (Fall 2003)

**Selected Grants, Fellowships and Awards*****Pending Proposals - \$3,199,164***

- NSF P2C2 - Integrating multiproxy records of Tropical Cyclone activity over the last millennia to contextualize 21st century events in the Northern Gulf of Mexico, \$499,609; Project PI; 2021-2024.
- NSF DRK-12 – Community-Connected Creative Problem Solving (C3PS) Partnership for Rural, Marginalized Communities, \$2,699,555; co-PI (PI-Joni Lakin, UA); 2021-2025

***Funded Proposals******Total Awarded - \$877,032***

- Bureau of Ocean Energy Sciences (BOEM) - Microfossil Assemblage Analysis in Support of the Mississippi Offshore Sediment Resources Inventory, \$50,000; co-PI (PI-Rebecca Minzoni, UA); 2021-2023
- NSF Paleo Perspectives on Climate Change (P2C2), Paleo-perspectives of streamflow variability for Southeastern Interstate Rivers, \$348,767; Proposal lead and co-PI (PI Glenn Tootle, UA); 2018-2022.

- Environmental Protection Agency (EPA) Gulf of Mexico Program Cooperative Agreements, Increasing community resilience in coastal watersheds of Alabama by risk assessment of past, present and future trends in hydrologic and hydroclimatic extremes, \$299,215; Proposal lead and co-PI (PI Matthew Therrell, UA); 2018-2022.
- UA Research Grants Committee (RGC), Understanding Paleo-Cyclone Activity through Tree-rings and Oxygen Isotopes, \$6,000; Proposal lead and co-PI (PI Matthew Therrell, UA); 2018.
- UNC University Research Council (URC) Small Grant Program, Sediment Sampler (TISC) Design, Testing and Implementation, \$3,350; Proposal lead and co-PI (PI Brent McKee, UNC).
- UNC Graduate School Dissertation Completion Fellowship – \$38,000; Proposal lead and PI; 2015-16
- Association for Women Geoscientists Chrysalis Scholarship - \$1,700; Proposal lead and PI; 2015-16
- National Science Foundation (NSF) Graduate Research Fellowship - \$130,000; Proposal lead and PI; 2010-13

## Publications and Presentations

### *Peer-reviewed Publications*

Therrell, M.D., **Elliott, E.A.**, Meko, M.D., Bregy, J.C., Tucker, C.S., Harley, G.L., Maxwell, J.T. and Tootle, G.A., (2020), Streamflow Variability Indicated by False Rings in Bald Cypress (*Taxodium distichum* (L.) Rich.). *Forests*, 11(10), 1100.

Minzoni, R.T., Parker, L., Wallace, D.J., Lambert, J.W., **Elliott, E.A.**, Andrus, C.F.T., Lehrmann, A.A., (2020), Evaluating natural and anthropogenic nutrients in a protected coastal estuary: A 7,000-year record of floods and ecological feedbacks in Weeks Bay, Alabama, USA. *Science of the Total Environment*, 140052.

Sadeghi, S., Tootle, G., **Elliott, E.A.**, Lakshmi, V., Therrell, M.D., Kalra, A., (2019), Impacts of the 2015-2016 El Niño on Coastal Alabama – Mississippi Agriculture, *Hydrology*, 6(4): 96.

Sadeghi, S., Tootle, G., **Elliott, E.A.**, Lakshmi, V., Therrell, M., Kam, J., Bearden, B., (2019), Atlantic Ocean Sea Surface Temperatures and Southeast United States Streamflow Variability: Associations with the Recent Multi-decadal Decline. *Journal of Hydrology*. 576:422-429.

**Elliott, E.A.**, Monbureau, E., Walters, G.W., Elliott, M.A., McKee, B.A., Rodriguez, A.B., (2017), A novel method for sampling the suspended sediment load in the estuarine environment using bi-directional Time-Integrated Mass-Flux Sediment (TIMS) samplers. *Estuarine, Coastal and Shelf Science*. 199: 14-24

**Elliott, E.A.**, McKee, B.A., Rodriguez, A.B. (2015). The utility of estuarine settling basins for constructing multi-decadal, high-resolution records of sedimentation. *Estuarine Coastal and Shelf Science*. 164: 105-114

**Timmons, E.A.**, Rodriguez, A.B., Mattheus, C.R., and DeWitt, R. (2010). Transition of a regressive to a transgressive barrier island as a function of back-barrier erosion, climate change, and low sediment supply, Bogue Banks, North Carolina, USA. *Marine Geology*. 278: 100-114.

**Timmons, E.A.**, Fisher, T.G., Hansen, E.C., Eisaman, E., and Daly, T. (2007). Elucidating aeolian dune history from lacustrine sand records in the Lake Michigan coastal zone USA. *The Holocene*. 17 (6): 789-801.

***Conference Presentations and Posters (Primary Author/Presenter)***

“Legacy of the Storm: Paleo-perspective on tropical cyclone activity along the northern Gulf of Mexico region and associated impacts on ecosystem health”. December 13, 2019, Poster Presentation, 2019 American Geophysical Union Annual Meeting, San Francisco, CA.

“Stirring things up: Estuarine sediment dynamics during non-equilibrium conditions”. November 7, 2019, Oral Presentation, 25<sup>th</sup> Biennial Coastal and Estuarine Research Federation Conference, Mobile, Alabama.

“Hurricanes and Coastal Response: Building a Longer History of Storms and Associated Ecosystem Response for the Alabama and Mississippi Coasts”. September 5, 2019, Oral Presentation, 2018 Alabama Water Resources Conference and Symposium, Orange Beach, Alabama.

“Panel Discussion: Past, Present and Future SE US Streamflow”. September 6, 2018, Panel Discussion/Oral Presentation (Moderator), 2018 Alabama Water Resources Conference and Symposium, Orange Beach, Alabama.

“Estuarine facies model revisited: Conceptual model of estuarine sediment dynamics during non-equilibrium conditions”. December 12, 2017, Poster Presentation, 2017 American Geophysical Union Annual Meeting, New Orleans, Louisiana.

“Going with the Flow: A novel, inexpensive method for collection of suspended sediment in the coastal environment”. September 9, 2017, Oral Presentation, 2017 Alabama Water Resources Conference, Orange Beach, Alabama.

“Understanding estuarine ravinement processes at monthly to decadal timescales through high-resolution geochronologies”. April 5, 2017, Poster Presentation, 2017 American Association of Petroleum Geologists Annual Convention, Houston, Texas.

“Estuarine sedimentation <sup>210</sup>Pb and age models in a changing world – The right fit makes all the difference”. November 2, 2015, Oral Presentation, 2015 Geological Society of America Annual Meeting, Baltimore, Maryland.

“Utilizing small coastal mini-basins for multi-decadal, high-resolution estuarine geochronologies”. December 15-19, 2014, Oral Presentation, 2014 American Geophysical Union Annual Meeting, San Francisco, California.

“New method of suspended sediment flux collection in the estuarine environment using bi-directional time-integrated mass-flux samplers (TIMs)”. December 15-19, 2014, Poster Presentation, 2014 American Geophysical Union Annual Meeting, San Francisco, California.

“Assessing coastal estuarine sediment erosion through basin sedimentation: Cape Lookout Bight, NC”. November 5, 2012, Poster Presentation, 2012 Geological Society of America Annual Meeting, Charlotte, North Carolina.

“Shifting Sands – Exploring Coastal Sediment Erosion and Transport in a Changing World”. December 2, 2011, Oral Presentation, Hope College Department of Geological and Environmental Sciences, Invited Speaker, Holland, Michigan.

“Skinny Beaches: Understanding Barrier Development and Erosion in North Carolina”. April 6, 2011, Poster Presentation, 2011 UNC Graduate Education Advancement Board Impact Award Research Poster Presentation, Chapel Hill, North Carolina.

“Transitioning from a regressive to transgressive barrier: discussing threshold response and the mechanisms of change”, November 2, 2010, Oral Presentation, 2010 Geological Society of America Annual Meeting, Denver, Colorado.

“Barrier transition from regressive to transgressive with decelerating sea-level rise, Bogue Banks, North Carolina”, December 16, 2009, Oral Presentation, 2009 American Geophysical Union Annual Meeting, San Francisco, California.

“Underlying paleochannels facilitate barrier progradation: Bogue Banks, North Carolina”, October 5, 2008, Poster Presentation, 2008 Joint Meeting of the Geological Society of America, Houston, Texas.

“Geomorphic history of a dune complex along the southeastern shore of Lake Michigan”, May 28 – June 1, 2007, Poster Presentation, 2007 International Association for Great Lakes Research Conference, Penn State University, State College, Pennsylvania. *Abstract published in International Association for Great Lakes Research Conference on Great Lakes Research Book of Abstracts* 195.

“Using sediments from small dune lakes to reconstruct the history of Lake Michigan coastal dune complexes”, May 2006, Poster Presentation. Council for Undergraduate Research Posters on the Hill, Washington D.C.

“Chronology of Eolian activity in a coastal dune complex near Holland, Michigan” March 7-11, 2006, Oral Presentation, 2006 Annual Meeting of the Association of American Geographers, Chicago, Illinois.

“The record of Eolian activity in the sediments from a small lake within a coastal dune complex, southeastern shore of Lake Michigan”, May 19-20, 2005, Oral Presentation, 39<sup>th</sup> Annual Meeting of North-Central Section of The Geological Society of America, Minneapolis, Minnesota.

“The record of dune growth and migration preserved in small lakes within a Lake Michigan coastal dune complex”, October 16-19, 2005, Oral Presentation. 2005 Annual Meeting of Geological Society of America, Salt Lake City, Utah. *Abstract published in Abstracts with Programs: The Geological Society of America 2005 Annual Meeting and Exposition* 462

### **Honors and Awards**

- UNC Graduate School Dissertation Completion Fellowship, 2015-2016
- Association for Women Geoscientists Chrysalis Award, 2015-2016
- UNC Graduate Education Advancement Board (G.E.A.B) Impact Award, 2010-2011
- National Science Foundation (NSF) Graduate Research Fellowship, 2009 – 2013
- Hope College Chapter Phi Beta Kappa and Mortar Board, 2006 – 2007
- Council for Undergraduate Research Posters on the Hill Student Presenter, 2005-2006
- Udall and Goldwater Scholarship Hope College Nominee, 2005 – 2006

**Synergistic Activities**

Journal Reviewer: *Estuarine Coastal and Shelf Science, Journal of Hydrology, Sedimentology*  
Committees and Outreach: Scientific Research and Education Network (SciREN) University of Alabama, Steering Committee; UA Collaborative Research on Paleoenvironments and Societies (CoRPS), Steering Committee; Thesis committee member (Department of Geological Sciences; Department of Geography)

Membership/ Conference Affiliation: Alabama Water Research Association, Coastal and Estuarine Research Federation, American Geophysical Union, American Association of Petroleum Geologists, Geological Society of America