

TESS DOEFFINGER

The Citadel

Department of Civil, Environmental, and Construction Engineering
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APPOINTMENTS

- 2024 **Assistant Professor**, The Citadel, Department of Civil, Environmental, and Construction Management
- 2024 **Senior Climate Fellow**, The Citadel, Lt. Col. James B. Near, Jr., USAF, '77, Center for Climate Studies
- 2023 – 24 **Assistant Professor** of Climate Change Decision Making, University of Alabama, Department of Geography and the Environment
- 2021 – 23 **Visiting Scholar** & National Science Foundation Social, Behavioral, and Economics Postdoctoral Fellow, University of Delaware, Disaster Research Center

EDUCATION AND QUALIFICATIONS

Degrees

- 2020 **Ph.D. (DPhil.)**, University of Oxford, Geography & the Environment
- 2012 **M.S.**, Carnegie Mellon University, Architecture, Engr. & Construction Management
- 2011 **B.S.**, Embry-Riddle Aeronautical University, Aerospace Engineering

Certificates and Licenses

- 2021 Coastal Engineering Certificate, Old Dominion University
- 2013 West Virginia Engineer in Training Certificate (EIT)
- 2012 LEED AP, BD+C

PUBLICATIONS

Peer-Reviewed Journal Articles

- 2025 Parsons, M., Nalau, J., Muccione, V., van Aalst, M., Dessai, S., Doeffinger, T., Fu, X., Hasegawa, T., Khojasteh, D., Kidane, R., Preston, B.L., Simpson, N.P., Wreford, A., And Mach, K.J. “Critical Science for the Next Decade of Climate Risk Management.” *Climate Risk Management*. Doi.org/10.1016/j.crm.2025.100770
- 2025 Yu, W., Glodblatt, R., Doeffinger, T., Eisenberg, R., and Rubinyi, S. “Assessing Secondary Benefits of Urban Flood Protection Projects: Wroclaw, Poland.” The World Bank - Policy Research Working Paper.
<https://documents1.worldbank.org/curated/en/099233407222512697/pdf/IDU-b3bf89a0-e666-450f-9967-7158e7a61612.pdf>
- 2025 Doeffinger, T. and Siders, A.R. “A proposed method for evaluating historical adaptation pathways of coupled natural-human systems,” *Environmental Science and Policy*, 163. doi.org/10.1016/j.envsci.2024.103969

- 2025 Doeffinger, T. “Historical adaptation pathways: the case of Folly Beach, South Carolina,” *Journal of Ocean and Coastal Management*, 261.
doi.org/10.1016/j.ocecoaman.2024.107490
- 2024 Siders, A.R., Niemann-Morris, J., Hino, M., Shields, E., Pecharronman, L., Doeffinger, T., Gerber-Chavez, L., Huang, J., Lafferty, A., Tamima, S., Williams, C., Agopian, A., Samoray, C., and Mach, K.J., “How local governments avoid floodplain development through consistent implementation of routine ordinances, plans, and programs,” *Oxford Open Climate Change*, 4(1). doi.org/10.1093/oxfclm/kgae017
- 2023 Doeffinger, T., and Rubinyi, S., “Secondary benefits of urban flood protection,” *Journal of Environmental Management*, 326 (Part A).
doi.org/10.1016/j.jenvman.2022.116617.
- 2021 Doeffinger, T. and Hall, J.W., “Assessing water security across scales: A case study of the United States,” *Applied Geography*, 134. doi.org/10.1016/j.apgeog.2021.102500.
- 2020 Doeffinger, T., Borgomeo, E., Young, W.J., Sadoff, C., & Hall, J. W. , “A diagnostic dashboard to evaluate country water security,” *Water Policy*, 22 (5).
doi.org/10.2166/wp.2020.235.
- 2020 Doeffinger, T. & Hall, J.W., “Water stress and productivity: An empirical analysis of trends and drivers,” *Water Resources Research*, 56. doi.org/10.1029/2019WR025925.

Reports

- 2025 The World Bank, “De-Energizing Water in Europe and Central Asia: Managing the Energy Footprint of Water Services in the Region.” Washington, DC:
<https://documents1.worldbank.org/curated/en/099121125174518076/pdf/P180278-aae03e2e-cc19-4dae-a9cf-1660560ecf49.pdf>
- 2023 Ferguson, S., Van Ledden, M., Rubinyi, S., Campos, A., and Doeffinger, T., “Urban Flood Risk Handbook : Assessing Risk and Identifying Interventions. Washington, DC: World Bank. <http://hdl.handle.net/10986/40141>.
- 2023 Wasley, E., T.A. Dahl, C.F. Simpson, L.W. Fischer, J.F. Helgeson, M.A. Kenney, A. Parris, A.R. Siders, E. Tate, and N. Ulibarri, “Ch. 31. Adaptation.” In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. [served as technical contributor]

Other Publications: Public-Facing Tools

- 2014 Doeffinger, T. “Edgewood Elementary School: An Illustration of Sustainability.” ZMM Architects & Engineers. [teacher’s guide]

Datasets

- 2019 Doeffinger, T. and Hall, J.W. “Water stress, water productivity, and related drivers by country.” University of Oxford. [dataset]

Selected Public Writings

- 2023 Rubinyi, S. and Doeffinger, T. “Beyond avoided losses: capitalizing on the secondary benefits of investments in urban flood protection.” *World Bank Blogs*.

SELECT PRESENTATIONS & CONFERENCES

- 2025 “Translating research to the community: An example using historical adaptation pathways (HAP) for Folly Beach, SC,” Mobility, Adaptation, and Wellbeing in Climate Change Conference, [presentation], June 16-18
- 2023 “Coastal Adaptation Pathways: The Case of Folly Beach, South Carolina,” At What Point Managed Retreat Conference, [presentation], June 20-23
- 2023 “Improving Decision Making for Water-Related Risk,” University of South Florida [presentation], February 28
- 2023 “Improving Decision Making for Water-Related Risk,” University of Alabama [presentation], February 17
- 2023 “Providing Usable Information to Decision Makers,” Appalachian State [presentation], February 9
- 2022 “A Historical Pathways Approach for Coastal Adaptation: The Case of Folly Beach, South Carolina,” AGU Conference [presentation], December 13
- 2022 “Improving Information for Decision Makers: Secondary Benefits & Coastal Adaptation Pathways,” OPSIS Seminar, University of Oxford Programme for Sustainable Infrastructure Systems, September 7
- 2022 “Coastal Adaptation in the Sea Islands: A Historical Pathways Analysis for Folly Beach, SC,” Seminar Series, University of Delaware Department of Geography and Spatial Sciences, April 15
- 2022 “Creating a Database on Coastal Risk Management for South Carolina,” AAG Conference [presentation], February 26.
- 2021 “Improving Decision Making for Water-related Risks,” Impact Talk Series, University of Delaware Biden School, November 12
- 2021 “Water,” Climate Scholars Session, University of Delaware, November 17
- 2021 At What Point Managed Retreat [attendee], virtual, June 22-25
- 2020 World Water Week [attendee], virtual, August 23-28.
- 2019 “Water Security Diagnostics,” DPhil Seminar, University of Oxford, February 13
- 2017 DMDU Society Annual Meeting [attendee], Oxford, UK, November 13-15
- 2017 “Water Security: A framework for people, economies, and the environment,” REACH Seminar, University of Oxford, October 25
- 2017 “A Dynamic System: Decision Making in Bangladesh’s Coastal Zone,” Transfer of Status Presentation, University of Oxford, February 22
- 2017 “Modeling Human-Water,” DPhil Seminar, University of Oxford, January 21
- 2016 DMDU Society Annual Meeting [attendee], Washington, DC., November 16-17
- 2016 1.5 Degrees: Meeting The Challenges of the Paris Climate Agreement [volunteer], Oxford, UK, September 21-22

MEDIA

- 2025 SC Local Fox 24 News Now Television Interview
2023 Yale Climate Connections Radio Story

GRANTS, FELLOWSHIPS, AND AWARDS

- 2025 – 2028 NSF HBDE
Proposal: Building Accessibility Evaluation for Inclusive Flood Response
Role: Co-PI
Amount: \$72,017
- 2025 – 2027 The Citadel Climatological Research Studies Grant
Proposal: Facilitating student learning through climate-related research
Role: PI
Amount: \$12,000
- 2025 – 2027 NSF IUUSE/PFE RED Planning
Proposal: Persistence, Propensity to Learn, and Professional Enculturation
Role: Personnel
Amount: \$175,000
- 2024 – 2028 NSF EPSCoR RII: Focused EPSCoR Col
Proposal: Risks, Impacts & Strategies for Coastal Communities (RISCC)
Role: Personnel
Amount: \$1,500,000
- 2024 – 2026 SC Sea Grant Margaret A. Davidson Resilience Scholars Program
Proposal: Evaluating island communities on their water-related risks
Role: Mentor
Amount: \$ 11,000
- 2021 – 2023 NSF SBE Postdoctoral Research Fellowship (SPRF)
Proposal: *Approaches to Coastal Adaptation in the United States*
Role: Principal Investigator
Amount: \$138,000

TEACHING EXPERIENCE

Classroom Instruction

- 2024 – **The Citadel**
- *Global Environmental Change & Security* (course developer and instructor) (Fall, 2026)
 - *Hydrology & Hydraulics* (instructor) (Spring 2026)
 - *Water Security under Climate Change* (content creator and instructor) (Fall 2025)
 - *Introduction to Engineering* (instructor) (Fall 2024, Fall 2025, Fall 2026)

- *Computer Applications* (updated course content and instructor) (Spring 2025, Spring 2026)
- *Introduction to Environmental Engineering* (instructor) (Spring 2025)

2023 – 24 **University of Alabama**

- *Global Environmental Change* (undergraduate and graduate, course developer and instructor) (Spring 2024)

Guest Lectures

2025 **The Citadel**, Weather, Climate, and Conflict

2021 **University of Delaware**, Climate Adaptation

2018 – 19 **University of Oxford**, Statistics

Teaching Assistant

2017 – 19 **University of Oxford**, MSc Water Science, Policy, and Management (graduate)

2011 – 12 **Carnegie Mellon University**

- Ethics and Decision Making in Architecture (undergraduate)
- Environment II: Mechanical Systems (undergraduate and graduate)

2009 – 11 **Embry-Riddle Aeronautical University**

- Solids (undergraduate)
- Statics (undergraduate)
- Thermodynamics (undergraduate)

Student Advising and Research Supervising

2024 – **The Citadel**, Research Supervisor for 4 undergraduate students

2024 – **The Citadel**, Academic Advisor for 17 undergraduate students

2024 – **University of Alabama**, Doctoral Committee Member

2022 – 23 **University of Delaware**, Research Apprenticeship Work-Study (UDRAW)

2021 – 23 **University of Delaware**, Adaptation Lab

Mentor graduate and undergraduate students in research group focused on climate change adaptation. Directly supervise 3 undergraduate student researchers.

SERVICE ACTIVITIES

University Leadership and Service

2023 **University of Alabama**, Department's DEI committee

2021 **University of Delaware**, Speaker for EmPower Panel, December 1

2016 – 20 **University of Oxford**, Joint Consultative Committee

Graduate student representative for School of Geography & the Environment

2007 – 11 **Embry-Riddle Aeronautical University**, Student Government

Student Representative for the College of Engineering

Leadership Positions

2015 – 16 **Cornell University**, Alpha Xi Delta

Chapter Advisor

2008 – 11 **Embry-Riddle Aeronautical University**, Alpha Xi Delta

Chapter Vice President

Journal Editorial Roles

2024 Associate Editor – *Climate Risk Management*

Journal Reviewer

Sustainable Cities and Society, International Journal of Environmental Research and Public Health, Natural Hazards Research, Water Resources Research, Water Policy, Sustainability, Earth's Future, Global Environmental Change, Building & Cities, Nature-Based Solutions, Climatic Change, Discover Sustainability, Discover Water, Urban Water

Grant Reviewer

NSF Human-Environmental and Geographical Sciences
National Academies of Sciences, Engineering, and Medicine

Professional Affiliations

- 2022 – American Geophysical Union
- 2022 – American Society of Adaptation Professionals
- 2021 – American Association of Geographers
- 2013 – US Green Building Council
- 2012 – Green Building Alliance

Professional Development

- 2021 NCAR BRIGHT Workshop, Exploring Coastal Flood Risk through Geospatial Storytelling

SELECT PROFESSIONAL EXPERIENCES

- 2021 – 25 **The World Bank Group**, Consultant
Consultant on resilience and urban flooding.
- 2021 **Sayers and Partners**, Research Fellow
Applying machine learning techniques to improve publicly available topography data, with a geographic focus on India and Bangladesh.
- 2017 – 19 **The World Bank Group**, Consultant
Consultant on water security. Contributed key insights to the refinement of the conceptualization of a water security diagnostic framework through multiple iterations of a water security framing. Performed accurate and effective data analysis for rapid country-level assessments. Created a water security database in PostgreSQL with over 100 indicators that is now the basis for a new water security dashboard initiative.
- 2018 **The Architect of the Capitol**, Summer Intern
Planning and project management intern. Created heat maps for bike traffic around the capitol to determine need for additional bike lanes and aided in developing plans for the potential bike lanes.
- 2016 – 17 **ZMM Architects & Engineers**, Consultant
Consultant on construction management and sustainability. Reviewed documentation for LEED credits. Conducted Pre-Bid meetings and led final building walk-throughs.
- 2014 – 15 **ZMM Architects & Engineers**, Constr. Administration Assist. & Sustain. Coord.
LEED documentation and coordination. Generated a teaching tool for K-5 educators to help them and their students better understand the importance of sustainability and the sustainable design features throughout their school. Conducted Pre-Bid meetings

and led final walk-throughs. Managed the construction phase for several projects: budgeting, site meetings, and closeout. Processed contract documents, RFIs, submittals, change orders, closeout documents, and payment applications.

2013 – 14 **ZMM Architects & Engineers**, Construction Administration Assistant
Processed contract documents, RFIs, submittals, change orders, closeout documents, and payment applications. Attended Pre-Bid meetings and final site walk-throughs

SKILLS

- Proficient in statistical analysis (Stata, R)
- Proficient in qualitative data analysis (NVivo)
- Proficient in geographic information systems (ArcGIS and QGIS)
- Proficient in database creation (SQL, Oracle, and Maximo)
- Proficient in construction management (MS Project, AIA Contract Documents, BIM, and CAFM)
- Proficient in impact analysis (IMPLAN)
- Intermediate knowledge of 3D design software (AutoCAD, Revit, and CATIA)
- Intermediate knowledge of coding and programming platforms (R, Python, and Matlab)
- Novice Italian (reading and writing) and Novice Spanish (reading and writing)