ELIZABETH M. B. DORAN, PH.D.
CURRICULUM VITAE

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AREAS OF INTEREST

- Urban Heat Island
- Engineered Systems & Environmental Complexity
- Remote Sensing
- Global Environmental Change
- Climate-Energy-Water Nexus
- Sustainable Systems Analysis
- Coupled human and natural systems
- Built Environment & Land Use and Land Cover Change
- The Human-Nature Relationship
- The Anthropocene
- Science Communication

ACADEMIC PREPARATION

Duke University – Nicholas School of the Environment, Durham, North Carolina
- Ph.D. Division of Earth and Ocean Sciences, September 2016
- Sustainable Systems Analysis Certificate, May 2016
- Research Fellow, Center for Sustainability and Commerce
- Dissertation Title: *Theory and Practice in Sustainability Science: Influence of Urban Form on Urban Heat Island Dynamics and Implications for Urban Systems*

Duke University – Pratt School of Engineering, Durham, North Carolina
- Master of Science in Mechanical Engineering and Material Science, September 2011
- NASA Graduate Student Research Program Fellow, 2009–2012
- Thesis Title: *A Study of the Aeroelastic Behavior of Flat Plates and Membranes with Mixed Boundary Conditions in Axial Subsonic Flow: Theory*

Tufts University – School of Engineering, Medford, Massachusetts
- Bachelor of Science in Environmental Engineering, May 2005
- Engineer in Training Certification: Fundamentals of Engineering General Exam, Spring 2005

AWARDS

- NASA Graduate Student Research Program Fellow, 2009-2012
- Scientists with Stories Workshop, Outerbanks, NC, 2014
- ComSciCon Workshop, Harvard University, 2013
- Link Foundation Energy Fellowship, Honorable Mention, 2014
- NSF Graduate Research Fellowship Program, Honorable Mention, 2009
- Graduate Fellow, Mechanical Engineering and Materials Science Department, Duke University, 2007-08
- Cataldo Fellow, Department of Civil and Environmental Engineering, Tufts University, 2004-2005

ACADEMIC APPOINTMENTS

Research Assistant Professor – June 2020—Present – Civil and Environmental Engineering, College of Engineering and Mathematical Sciences, University of Vermont, Burlington, VT

Affiliate – November 2020—Present – Gund Institute for Environment, University of Vermont, Burlington, VT

Postdoctoral Associate – July 2017–June 2020 – Vermont EPSCoR, Basin Resilience to Extreme Events (BREE) Project, University of Vermont, Burlington, VT

- Primary responsibilities include leading Adaptive Land use and Land cover Agent Based Model development within broader context of Integrated Assessment Model to address Harmful Algal Blooms (HABs) in the Lake Champlain Basin under extreme events scenarios

RESEARCH

ARTICLES

Doran, Elizabeth M. B., Asim Zia, Stephanie E. Hurley, Yushiou Tsai, Christopher Koliba, Carol Adair, Rachel E. Schattman, Donna M. Rizzo, V. Ernesto Méndez. (*2020*) *Social-Psychological Determinants of Farmer Intention to Adopt Nutrient Best Management Practices: Implications for Resilient Adaptation to Climate Change*. Journal of Environmental Management. 275:111304. https://doi.org/10.1016/j.jenvman.2020.111304.

Doran, Elizabeth M. B., Jay S. Golden, and Billie Turner, II. (2017) *Coupled Systems and Challenge Nexus: Two Emerging Approaches to Sustainability Science*. Current Opinion in Environmental Sustainability, 29:138-144. http://doi.org/10.1016/j.cosust.2018.01.013.

Doran, Elizabeth M. B. and Jay S. Golden. (2016) "Climate and Sustainability Implications of Land Use Alterations in an Urbanizing Region: Raleigh-Durham, North Carolina." *Journal of Environmental Protection*, 7(7):1072-1088. DOI: 10.4236/jep.2016.77096.

SELECT ARTICLES IN PROGRESS

Zia, A., A.W. Schroth, J.S. Hecht, P. Isles, P.J. Clemins, S. Turnbull, P. Bitterman, Y. Tsai, I.N. Mohammed, G. Bucini, **E.M.B. Doran**, C. Koliba, A. Bomblies, B. Beckage, J. Winter, E.C. Adair, D.M. Rizzo, B. Gibson, G. Pinder. (Submitted) *Climate change-legacy phosphorus synergy hinders lake response to aggressive water policy targets*. Nature Climate Change.

Doran, Elizabeth M. B., Asim Zia, Donna Rizzo, Andrew Schroth, Jory Hecht, Clelia Marti, Patrick Clemins, Jonathan Winter, Yushiou Tsai, Scott Turnbull. (In Progress) *A phase space approach to understanding water quality resilience to agricultural nutrient management interventions under future climate scenarios*.

Golden, J.S., **Doran, E.**, Lois Lebel, Kira Matus, Vanessa Timmer, A Tukker, Maarten van't Zelfde, and Arjan de Konig. (In Progress) *The emerging role of mega-urban regions in the sustainability of global production-consumption systems*.

Doran, Elizabeth M. B. (In Progress) *Sustainability and the Anthropocene: The Emergence of a Global Ambition for the Human-Nature Relationship.*

Doran, Elizabeth M. B. and Jay S. Golden. (In Progress) *Multi-method Local Scale Characterization of the Urban Heat Island in Durham, North Carolina, USA.*

Doran, Elizabeth M. B., and Jay S. Golden (In Progress) *Multi-method Interdisciplinary Urban Form Characterization and Correlation with Urban Heat Island Intensity in Durham, North Carolina, USA.*

BOOKS AND CHAPTERS

Doran, Elizabeth M. B., Lindsay Barbeiri, Ida Kubiszewski, Kate Pickett, Tom Dietz, Michael Abrams, Richard Wilkienson, Robert Costanza, Stephen C. Farber. (2020) "Frameworks and Systems Thinking for

Measuring and Achieving Sustainable Wellbeing." in Costanza, Robert, Jon Erikson, Josh Farley, Ida Kubiszewski, Eds. *Sustainable Wellbeing Futures: A Research and Action Agenda for Ecological Economics*. Edward Elgar Publishing, Cheltenham, UK and Northampton, MA, USA. pp. 103-126.

Costanza, Robert, **Elizabeth Doran**, Tatiana Gladkikh, Ida Kubiszewski, Valerie Luzadis, Eric Zencey. (2020) "Creating Positive Futures for Humanity on Earth." in Costanza, Robert, Jon Erikson, Josh Farley, Ida Kubiszewski, Eds. *Sustainable Wellbeing Futures: A Research and Action Agenda for Ecological Economics*. Edward Elgar Publishing, Cheltenham, UK and Northampton, MA, USA. pp. 17-26.

Southwell, Brian G., **Elizabeth M. B. Doran**, and Laura S. Richman, Eds. (2015) *Innovations in Home Energy Use: A Sourcebook of Ideas for Behavior Change*, Research Triangle Park, NC: RTI Press.

Doran, Elizabeth M. B. "Leverage Points for Achieving Sustainable Consumption in Homeowner Energy Use." in Southwell, Brian G., Elizabeth M. B. Doran, Laura S. Richman, Eds. (2015) *Innovations in Home Energy Use: A Sourcebook of Ideas for Behavior Change*, Research Triangle Park, NC: RTI Press.
Reviewed in *Energy Research and Social Science*

BOOK REVIEWS

Doran, Elizabeth M. B. and Brian G. Southwell. (2016) Rev. of *Fact and Fiction in Global Energy Policy: 15 Contentious Questions*, by Benjamin K. Sovacool, Marilyn A. Brown and Scott V. Valentine. *Journal of Environmental Studies and Sciences*. DOI 10.1007/s13412-016-0417-2.

CONFERENCE PROCEEDINGS

Hefele, Mikayla, and **Elizabeth Doran**. *Forest land use activities and fragmentation as a threat to Northeastern forest cover and water quality*. Forest Ecosystem Monitoring Cooperative Conference, University of Vermont, Burlington, Vermont, December 13, 2019.
Led by undergraduate advisee

Doran, Elizabeth M. B. *Social-psychological determinants of Farmer Intention to adopt nutrient best management practices in the Lake Champlain Basin.* 39th International Symposium of the North American Lake Management Society, Burlington, Vermont, November 11-15, 2019.

Aytur, Semra, Alyssa Greig, Mary Doidge, **Elizabeth Doran**, Jade Mitchell, Jiyoung Lee, Mark Axelrod, DG Webster, Emily Jenkins, Robyn Wilson, Kevin Carlin. *Assessing correlates of farmer behavior to prevent Harmful Algal Blooms (HABs): A multi-level analysis*. American Public Health Association Annual Meeting, Philadelphia, Pensylvania, USA, November 2-6, 2019.

Doran, Elizabeth M. B. *A case study in knowledge co-production to address home energy consumption*. Global Research Forum on Sustainable Production & Consumption, Hong Kong University of Science and Technology, Hong Kong, China, June 26-29, 2019.

Doran, Elizabeth, Asim Zia, Donna Rizzo, Yushiou Tsai, Scott Turnbull, Christopher Koliba and VT EPSCoR Basin Resilience to Extreme Events (BREE) Social Systems and IAM Teams. *A phase space approach to understanding the efficacy of agricultural BMP adoption on water quality under a range of socio-ecological scenarios using a watershed scale, feed-forward integrated assessment model.* Conference Poster, American Geophysical Union Fall Meeting, Washington, D.C., USA, December 10-14, 2018.

Doran, Elizabeth. *Comparative Analysis of Human Behavior Models in an Agent-based Social-Ecological System Model.* American Association of Geographers: Annual Meeting, New Orleans, Louisiana, USA. April 10-13, 2018.

Doran, E. M. B. *Urban Heat Island and Urban Form in Durham, North Carolina and Levers for Change*. 2016 Carolina Climate Resilience Conference, Charlotte, NC, September 12-14, 2016.

Doran, Elizabeth. *Priority Intervention Points to Mitigate Urban Heat in the Context of Planning for the Durham-Orange Light Rail Project*. 4th International Conference on Countermeasures to Urban Heat Island, National University of Singapore, Singapore. May 30-31 and June 1, 2016.

Doran, E. M. B. *Urban Form, Urban Heat, and Implications for Future Development and Health in the Context of the Durham-Orange County Light Rail Project*. EDRA Fall Translational Research Symposium, Raleigh, NC, October 10, 2015.

Doran, Elizabeth, Jay S. Golden and Douglas P. Nowacek. *Sustainable Systems Analysis Framework for Oceans: Scenarios for Conventional and Bio-based Energy Commodities*. Conference Poster, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.

Gibbs, S. Chad, Ivan Wang, **Elizabeth Bloomhardt** and Earl H. Dowell. *Aeroelastic Behavior of Noise-Reducing Membranes for Aircraft Lifting Surfaces Part I: Theory.* Conference Proceedings, 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Honolulu, Hawaii, April 23-26, 2012.

Wang, Ivan, S. Chad Gibbs, **Elizabeth Bloomhardt**, and Earl H. Dowell. *Aeroelastic Behavior of Noise-Reducing Membranes for Aircraft Lifting Surfaces Part II: Experiment*. Conference Proceedings, 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Honolulu, Hawaii, April 23-26, 2012.

Bloomhardt, Elizabeth and Earl H. Dowell. *Study of the Aeroelastic Behavior of Flat Plates and Membranes with Mixed Boundary Conditions in Axial Subsonic Flow*. Conference Proceedings, 52nd AIAA/ASME/ASCE/AHS/ACS Structures, Structural Dynamics, and Materials Conference, Denver, CO, April 4-7, 2011.

TECHNICAL PUBLICATIONS

Bloomhardt, L. (2012). Environmental Health Summit: Incorporating Public and Environmental Health into Sustainable Solutions: Recommendations from the Research Triangle Environmental Health Collaborative. http://environmentalhealthcollaborative.org/images/2011_Environmental_Health_Summit_Recommendation_FINAL.pdf

GENERAL INTEREST PUBLICATIONS

Envirobites blog, "Environmental science research for everyone." Bimonthly contributor, August 2017 – Present. Available online: envirobites.org.

Green Devil Column, "Following the journey toward a greener Duke," The Chronicle, biweekly, January 2010 – December 2011. Archives can be found at www.dukechronicle.com or www.dukegreendevil.wordpress.com.

INVITED PRESENTATIONS & LECTURES

Doran, E. M. B. *Harmful Algal Blooms and the Policy Cycle*. Invited Talk, North Carolina State University, Raleigh, North Carolina, October 18, 2018.

Doran, E. M. B. *Is Sustainability the Environmentalism of the Anthropocene?* GradX Conference Presented by the Society of Duke Fellows and The Duke Graduate School, Durham, NC, March 24, 2015.

Doran, E. M. B. *Visualizing Sustainable Oceans: Sustainable Systems Analysis Framework for Oceans.* Visualizing Friday Forum, Duke University, Durham, NC, March 28, 2014.

Bloomhardt, L. *Study of the Aeroelastic Behavior of Flat Plates and Membranes with Mixed Boundary Conditions in Axial Subsonic Flow.* Conference Presentation. 52nd AIAA/ASME/ASCE/AHS/ACS Structures, Structural Dynamics, and Materials Conference, Denver, CO, April 4-7, 2011.

AWARDED GRANTS & FUNDED PROJECTS

Partnership for International Research & Education (PIRE) Water and Commerce (2013). National Science Foundation, $3,768,373.00. Assisted in proposal preparation and as a graduate student researcher working with Dr. Jay Golden and Dr. Douglas Nowacek at Duke University.

Transition to a Bio-Based Economy – Sustainable Systems Analysis (2012). Deloitte LLP $150,000
Assisted in proposal preparation and one of the primary researchers working with Dr. Jay Golden at Duke University and Dr. Julie Zimmerman at Yale University.

TEACHING

DUKE UNIVERSITY

Guest Instructor. *ENVIRON 245: Sustainability Theory and Practice*, Professor Charlotte Clark & Tavey Capps, Duke Sustainability Director, Duke University, Fall, 2016.

Teaching Assistant. *ENVIRON 638L: Environmental LCA*, Professor Jay Golden & Jesse Daystar, Duke University, Spring, 2016.

Teaching Assistant. *EOS 550: Climate and Society*, Professor Drew Shindell, Duke University, Fall, 2015.

Guest Instructor. *Exploring the World3 Model and Limits to Growth.* Sustainable Systems Theory and Drivers. Duke University. Fall, 2012; Fall 2016.

SERVICE

PROFESSIONAL SERVICE

American Meteorological Society, 2015-Present
Association of American Geographers, 2015-Present
American Geophysical Union, 2011-Present
American Society of Mechanical Engineers, 2007-2011
American Institute of Aeronautics and Astronautics, 2008-2011

Peer reviewer for the Journals: Urban Climate, Elsevier; PlosONE; PeerJ –The Journal of Life and Environmental Science; and, Land, MDPI

UNIVERSITY SERVICE

Board of Trustees Facilities and Environment Standing Committee, Duke University
- Graduate and Professional Student Representative, 2009-2016

Engineering Graduate Student Council, Duke University, Pratt School of Engineering
- President, 2010-11
- MEMS Representative, 2007-10

MEMS Department Chair Search Committee, 2010

Graduate and Professional Student Council, Duke University
- EOS Division Representative, Duke University, 2012-13
- Career Development Chair, Executive Board, 2011-12
- MEMS Department Representative, Duke University, 2008-11
- GPSC Green Team, Chair, 2009-12

University Campus Sustainability Committee, Duke University
- GPSC Representative, 2010-12
- Transportation Subcommittee Member, 2010-11
- Materials Management Subcommittee Member, 2011-12

Columnist, The Chronicle, Duke's Independent Student Newspaper, 2010-12
- Column tagline: 'green devil'

COMMUNITY SERVICE

Village West Homeowners Association, Chapel Hill, NC, 2012-2015
- President, 2013-2016
- Led oversight of $625,000 roofing special assessment preparation, passage and implementation

Lake Meddybemps Association, Meddybemps, ME, 2006-Present
- President, 2013-2015
- Vice President, 2012-2013
- Board Member, 2006-2012, 2016-Present

TrailHeads, Inc., Carrboro, NC, 2008-2017
- Volunteer, Little River Trail Runs (4M and 10M), Little River State Park, Durham, NC
- Volunteer, Philosopher's Way Trail Run (7 km and 15 km), Carolina North Forest, Chapel Hill, NC

INDUSTRY EXPERIENCE

2005-2007, Roux Associates, Inc., Staff Assistant Engineer and Office Equipment Manager
- Managed oversight of hazardous waste site cleanup initiatives
- Coordinated environmental sampling of air, soil and groundwater
- Coordinated wetland reconstruction and monitoring programs
- Drafted internal safety documents and legally mandated status and closure reports
- Managed field equipment availability, billing, maintenance and tracking for MA office

2004, Department of Civil and Environmental Engineering, Tufts University, Cataldo Fellow
- Conducted regression analysis of water quality data under the guidance of Professor Richard Vogel

2004, Tufts University, Medford, MA, Research Assistant
- Conducted environmental sampling of surface water after storm events and during routine monitoring

- Performed nitrate analysis using MIT facilities, and maintained data records for graduate student researchers

2004 – Spring Semester, Grader for ES-9 Applied Strength of Materials at Tufts University School of Engineering

2003, S E A Consultants, Cambridge, MA, Summer Intern
- Conducted environmental sampling of air, soil, and groundwater
- Drafted environmental and geotechnical reports
- Maintained environmental and geotechnical databases

2002, URS Corp, White Rock, NM, Summer Intern
- Los Alamos National Laboratory (LANL), Meteorology and Air Quality Group
  - Provided field support to Ambient Air Monitoring Project
  - Conducted QA/QC on laboratory analytical data
  - Obtained training in the safety and security protocols required for working in a national laboratory
- Provided field support and maintained visual site documentation for the North Rd. Reconstruction Project
- Compiled beryllium exposure data and performed QA/QC for the LANL Beryllium Project