EMILY ZECHMAN BERGLUND[1], PH.D., P.E.

Professor, Civil Engineering
North Carolina State University, Raleigh, NC
PH : (919) 515-2338, emily_berglund@ncsu.edu

EDUCATION AND TRAINING:

North Carolina State University	Civil Engineering	Postdoctoral training	2005–2006
North Carolina State University	Civil Engineering	PhD	2005
University of Kentucky	Civil Engineering	MS	2001
University of Kentucky	Civil Engineering	BS	2000

PROFESSIONAL APPOINTMENTS:

Associate Head for Faculty Development, Civil Engr.	NC State University	2023–
Professor, Civil Engr.	NC State University	2019–
Associate Professor, Civil Engr.	NC State University	2014–2019
Assistant Professor, Civil Engr.	NC State University	2011–2014
Assistant Professor, Civil Engr.	Texas A&M University	2007–2011
Research Assistant Professor, Civil Engr.	NC State University	2006–2007
Postdoctoral Fellow, Civil Engr.	NC State University	2005–2006
Graduate Research Assistant, Civil Engr.	NC State University	2001–2005
Graduate Research Assistant, Civil Engr.	University of Kentucky	1999–2001

OTHER AFFILIATIONS:

Faculty Fellow, Center for Geospatial Analysis, NCSU	2017–
Member, Public Communication of Science and Technology Center, NCSU	2012–

HONORS AND AWARDS:

Nominee, NC State University Equity for Women Award, 2021

2020 Faculty LEAD Scholar, *NC State Learning and Organizational Development and Office of Faculty Development*, 2020-2021

2020 Best Seminal Paper Award, Journal of Water Resources Planning and Management, *American Society of Civil Engineering*, 2020

Editor's Choice Collection Paper Award (4), Journal of Water Resources Planning and Management, *American Society of Civil Engineering*, June 2022, April 2021, August 2020, December 2016

2018 Outstanding Graduate Faculty Mentor Award, *North Carolina State University*, 2018

Third Place Engineering Design Award, Battle of the Water Networks II Competition, *Water Distribution Systems Analysis Symposium*, 2012

Honorable Mention Engineering Design Award, National Sustainable Design Expo, *Environmental Protection Agency*, 2011

Outstanding Reviewer Award, Journal of Water Resources Planning and Management, *American Society of Civil Engineering*, 2018, 2011

---

[1] *Formerly Emily Michelle Zechman*

2011 Best Research-Oriented Paper Award, Journal of Water Resources Planning and Management, *American Society of Civil Engineering*, 2011

Outstanding Reviewer Award, Journal of Hydrologic Engineering, *American Society of Civil Engineering*, 2010

2010 Best Research-Oriented Paper Award, Journal of Water Resources Planning and Management, *American Society of Civil Engineering*, 2010

Graduate Research Fellowship, *Faculty for the Future Fellowship Program, General Electric*, 2004

Graduate Research Fellowship, *American Association of University Women*, 2004

First Place Graduate Student Poster Award, *North Carolina State University Environmental Engineering Student Poster Symposium*, 2004

Graduate Research Fellowship, *NC Beautiful*, 2003

Graduate Research Fellowship, *Graduate Assistance in Areas of National Need Program, US Department of Education*, 2002

Graduate Research Fellowship, *College of Engineering, North Carolina State University*, 2001

PUBLICATIONS:
[U] indicates undergraduate student co-author advised by Berglund; [G] indicates graduate student co-author advised by Berglund.

Peer-reviewed Journal Publications (In press or published)

1. Berglund, E.Z., Skarbek, M.[G] and Kanta, L. "A Sociotechnical Framework to Characterize Tipping Points in Water Supply Systems." *Sustainable Cities and Society*, 97, 104739.
2. Bolton, E.R.[G] and Berglund, E.Z. (2023). "Agent-based Modeling to Assess a Hybrid Water System: Micro-trading Rainwater for Aquifer Recharge." *Journal of Hydrology,* 618, 129151.
3. Monroe, J.[G], Bolton, E.R.[G] and Berglund, E.Z. (2023). "Evaluating Peer-to-Peer Electricity Markets Across the U.S. using an Agent-based Modeling Approach." *Advances in Environmental and Engineering Research*, 4(1), 017.
4. Berglund, E.Z., Shafiee, M.E., Xing, L., and Wen, J. (2023). "Digital Twins for Water Distribution Systems," *Journal of Water Resources Planning and Management*, 149(3), 02523001.
5. DiCarlo, M.[G], Berglund, E.Z., Kaza, N., Grieshop, A., Shealy, L., Behr, A. (2023). "Customer complaint management and smart technology adoption by community water systems." *Utilities Policy*, 80, 101465.
6. Grant, S., Rippy, M., Birkland, T., Schenk, T., Rowles, K., Aminpour, P. Kaushal, S., Vikesland, P., Berglund, E., Gomez-Velez, J., Hotchkiss, E., Mesa-Perez, G., Zhang, H., Armstrong, K.[G], Bhide, S., Krauss, L., Maas, C., Mendoza, K., Shipman, C., Zhang, Y., Zhong, Y. (2022). "Can Common Pool Resource Theory Catalyze Stakeholder-Driven Solutions to the Freshwater Salinization Syndrome?" *Environmental Science & Technology,* 56, 19, 13517–13527.
7. DiCarlo, M.F.[G], and Berglund, E.Z. "Using Advanced Metering Infrastructure Data to Evaluate Consumer Compliance with Water Advisories during a Water Service Interruption." (2022). *Water Research*, 118802.
8. Fasaee, M.A.K.[G], Pesantez, J.[G], Pieper, K., Ling, E., Benham, B., Edwards, M., and Berglund, E.Z. (2022). "Developing Early Warning Systems to Predict Water Lead Levels in Tap Water for Private Systems." *Water Research*, 118787.
9. Kadinski, L., Berglund, E.Z., Ostfeld, A. (2022). "An agent-based model for contamination response in water distribution systems during the COVID-19 pandemic." *Journal of Water Resources Planning and Management*, 148 (8), 04022042*.*
10. Berglund, E.Z., Buchberger, S., Cunha, M., Faust, K.M., Giacomoni, M., Goharian, E., Kleiner, Y., Lee, J., Ostfeld, A., Pasha, F., Pesantez, J.[G], Saldarriaga, J., Shafiee, E., Spearing, L., van Zyl, J.E., Yang, Y.C.E. (2022). "Effects of the COVID-19 Pandemic on Water Utility Operations and

Vulnerability." *Journal of Water Resources Planning and Management*, 148(6), 04022027. **Editor's Choice Collection**.

11. Daniel, I., Pesantez, J.[G], Letzgus, S., Fasaee, M.A.K.[G], Alghamdi, F.[G], Berglund, E., Mahinthakumar, G., Cominola, A. (2022). "LILA: A High-resolution Pressure-Driven Algorithm for Leakage Identification and Localization in Water Distribution Networks." *Journal of Water Resources Planning and Management*, 148(6), 04022025.

12. Kadinski, L., Salcedo, C., Boccelli, D., Berglund, E.Z., Ostfeld, A. (2022). "Water Distribution System contamination response using Machine Learning inside a COVID-19 inspired Agent-Based Model." *Water*, 14(7), 1088.

13. Behr, A., Sciaudone, B., and Berglund, E. (2022). "Effectiveness of indicators for assessing the vulnerability of barrier island highways." *Transportation Research Part D: Transport and Environment*, 105, 103234.

14. Pesantez, J.[G] Alghamdi, F.[G] Sabu, S., Mahinthakumar, G., and Berglund, E.Z. (2022) "Using a Digital Twin to Explore Water Infrastructure Impacts During the COVID-19 Pandemic." *Sustainable Cities and Society,* 77, 103520.

15. Ramsey, L.[G] and Berglund, E.Z. (2021). "Calibration of a Water Conservation Adoption Agent-Based Model Using a Noisy Genetic Algorithm." *Journal of Water Resources Planning and Management,* 147(10), 04021067.

16. Nikoo, M., Fasaee, M.[G], Monghasemi, S., Shafiee, M.E., Berglund, E.Z. (2021). "A k-sensor correlation-based evolutionary optimization algorithm to cluster contamination events and place sensors in water distribution systems." *Journal of Cleaner Production,* 139(15), 128763.

17. Lee, J., Taylor, L., and Berglund E.Z. (2021). "Water Use in the Landscape: A Comparison of Water Quality and Irrigation Technologies on Behavior." *Water Resources Research,* 57(10), e2020WR028853.

18. DiCarlo, M.[G], and Berglund, E.Z. (2021). "Connected Communities Improve Hazard Response: An Agent-based Model of Social Media Behaviors during Hurricanes." *Sustainable Cities and Society*, 69, 102836.

19. Berglund, E.Z., Thelemaque, N., Spearing, L., Faust, K., Kaminsky, J., Sela, L., Goharian, E., Abbokifa, A., Lee, J., Keck, J., Giacomoni, M., van Zyl, J.E., Harkness, B., Yang, Y.C., Cunha, M., Ostfeld, A., Kadinski, L. (2021). "Water and Wastewater Systems and Utilities: Challenges and Opportunities during the COVID-19 Pandemic." *Journal of Water Resources Planning and Management*, 147(5), 02521001. **Editor's Choice Collection**.

20. DiCarlo, M.[G], and Berglund, E.Z. (2021). "Connected Communities Improve Hazard Response: An Agent-based Model of Social Media Behaviors during Hurricanes." *Sustainable Cities and Society*, 69, 102836.

21. Fasaee, M.A.K.[G], Berglund E., Pieper, K., Ling, E., Benham, B., Edwards, M. (2021). "A Bayesian Belief Network Framework for Classifying Water Lead Levels in Drinking Water at Private Water Systems." *Water Research*, 116641.

22. Ramsey, E.[G], Pesantez, J.[G], Fasaee, M.A.K.[G], DiCarlo, M.[G], Monroe, J.[G], and Berglund, E.Z. (2020). "A Smart Water Grid for Micro-trading Rainwater: Hydraulic Feasibility Analysis." *Water*, 12(11), 3075.

23. DiCarlo, M.[G], and Berglund, E.Z. (2020). "Predicting Social Media Help Behaviors during Hurricanes Florence and Michael: Extending the Theory of Planned Behavior." *Smart Cities*, 3(4), 1187-1218.

24. Monroe, J.G.[G], Hansen, P., Sorell, M., Berglund, E.Z. (2020). "Agent-Based Model of a Blockchain Enabled Peer-to-Peer Energy Market: Application for a Neighborhood Trial in Perth, Australia." *Smart Cities*, 3(3), 1072-1099.

25. Berglund, E.Z., Pesantez, J.[G], Rasekh, A., Shafiee, M.E., Sela, L., and Haxton, T. (2020). "State-of-the-Art Review: Review of Modeling Methodologies for Managing Water Distribution Security." *Journal of Water Resources Planning and Management*, 146(8), 03120001, **Editor's Choice Collection**.

26. Pesantez, J.[G], Berglund, E.Z., and Mahinthakumar, G. (2020). "Geospatial and Hydraulic Simulation to Design District Metered Areas for Large Water Distribution Networks." *Journal of Water Resources Planning and Management*, 146(7), 06020010.
27. Berglund, E.Z., Monroe, J.G.[G], Ahmed, I., Noghabaei, M., Pesantez, J.E.[G], Fasaee, M.A.K.[G], Bardaka, E., Han, K., Proestos, G., and Levis, J. (2020). "State-of-the-Art Review: Smart Infrastructure: A Vision for the Role of the Civil Engineering Profession in Smart Cities." *Journal of Infrastructure Systems*, 26(2), 03120001.
28. Pesantez, J.[G], Berglund, E.Z., and Kaza, N. (2020). "Smart Meters Data for Modeling and Forecasting Water Demand at the User-level." *Environmental Modelling and Software*, 125, 104633.
29. Strickling, H.[U], DiCarlo, M.[G], Shafiee, M.E., and Berglund, E. (2020). "Simulation of Containment and Wireless Emergency Alerts within Targeted Pressure Zones for Water Contamination Management." *Sustainable Cities and Society*, 52, 101820.
30. Pesantez, J.[G], Berglund, E., and Mahinthakumar, G. (2019). "Multiphase Procedure to Design District Metered Areas for Water Distribution Networks." *Journal of Water Resources Planning and Management*, 145(8), 04019031.
31. Raei, E., Shafiee, M. E., Nikoo, M., and Berglund, E. (2019). "Placing an ensemble of pressure sensors for leak detection in water distribution networks under measurement uncertainty." *Journal of Hydroinformatics*, 21(2), 223-239.
32. Kandiah, V.[G], Berglund, E., and Binder, A. (2019). "An Agent-based Modeling Approach to Project Adoption of Water Reuse and Evaluate Expansion Plans within a Sociotechnical Water Infrastructure System." *Sustainable Cities and Society*, 46, 101412.
33. Monroe, J.[U], DuCoste, J., and Berglund, E. (2019). "Genetic Algorithm–Genetic Programming Approach to Identify Hierarchical Models for Ultraviolet Disinfection Reactors." *Journal of Environmental Engineering*, 145(2).
34. Al-Amin, S.[G], Berglund, E., Mahinthakumar, G., and Larson, K. (2018). "Assessing the Effects of Water Restrictions on Socio-Hydrologic Resilience for Shared Groundwater Systems." *Journal of Hydrology*, 566, 872-885.
35. Al-Amin, S.[G], Ajmeri, N., Du, H., Berglund, E., and Singh, M. (2018). "Toward Effective Adoption of Secure Software Development Practices." *Simulation Modelling Practice and Theory*, 85, 33-46.
36. Garcia-Cuerva, L.[G], Berglund, E., and Rivers, L. III (2018). "An Integrated Approach to Place Green Infrastructure Strategies in Marginalized Communities and Evaluate Stormwater Mitigation." *Journal of Hydrology*, 559, 648-660.
37. Monroe, J.[U], Ramsey, E.[G], and E. Berglund (2018). "Allocating Countermeasures to Defend Water Distribution Systems Against Terrorist Attack." *Reliability Engineering and System Safety,* 179, 37-51.
38. Shafiee, M.E.[G], Berglund, E., and Lindell, M. (2018). "An Agent-based Modeling Framework for Assessing the Public Health Protection of Water Advisories." *Water Resources Management,* 32(6), 2203-2059.
39. Ramsey, L.[G], Berglund, E., and Goyal, R. (2017). "The Impact of Demographic Factors, Beliefs, and Social Influences on Residential Water Consumption and Implications for Non-Price Policies in Urban India." *Water,* 9(11), 844.
40. Shafiee, M.[G] and Berglund, E. (2017). "Agent-based Modeling Approach to Evaluate the Effect of Collaboration among Scientists in Scientific Workflows." *Journal of Simulation,* 13(1), 1-13.
41. Sankarasubramanian, A., Sabo, J., Larson, K., Seo, S., Sinha, T., Bhowmik, R., Vidal, A., Kunkel, K., Mahinthakumar, G., Berglund, E., and Kominoski, J. (2017). "Sythesis of public water supply use in the United States: Spatio-temporal patterns and socio-economic controls." *Earth's Future,* 5(7), 771-788.
42. Shafiee, M.E.[G] and Berglund, E.Z. (2017). "A Complex Adaptive Systems Framework to Simulate the Performance of Hydrant Flushing Rules and Broadcasts during a Water Distribution System Contamination Event." *Journal of Water Resources Planning and Management*, 143(4), 0000744.

43. Kandiah, V.[G], Binder, A.R., Berglund, E.Z. (2017). "An Empirical Agent-Based Model to Simulate the Adoption of Water Reuse Using the Social Amplification of Risk Framework." *Risk Analysis*, 37(10), 2005-2022.
44. Mashhadi Ali, A.[G], Shafiee, M.E.[G], and E.Z. Berglund (2017). "Agent-based Modeling to Simulate the Dynamics of Urban Water Supply: Climate, Population Growth, and Water Shortages." *Sustainable Cities and Society*, 28, 420-434.
45. Barker, Z.[U], Stillwell, A., and Berglund, E. (2016). "Scenario Analysis of Energy and Water Trade-Offs in the Expansion of a Dual Water System." *Journal of Water Resources Planning and Management,* 05016012.
46. Kandiah, V.[G], Berglund, E.Z., Binder, A.R. (2016). "Cellular Automata Modeling Framework for Urban Water Reuse Planning and Management." *Journal of Water Resources Planning and Management,* 142(12), 04016054, **Editor's Choice Collection**.
47. Garcia-Cuerva, L.[G], Berglund, E.Z., Binder, A.R. (2016). "Public Perceptions of Water Shortages, Conservation Behaviors, and Support for Water Reuse in the U.S." *Resources, Conservation & Recycling*, 113, 106-115.
48. Shafiee, M.E., and Berglund, E. (2016). "Agent-based Modeling and Evolutionary Computation for Disseminating Public Advisories about Hazardous Material Emergencies." *Computers, Environment and Urban Systems*, 57, 12-25.
49. Shafiee, M.E., Berglund, A., Berglund, E., Brill, E., Jr., and Mahinthakumar, G. (2015). "Parallel Evolutionary Algorithm for Designing Water Distribution Networks to Minimize Background Leakage." *Journal of Water Resources Planning and Management*, 142(5), C4015007.
50. Kanta, L., and Berglund, E. (2015). "Exploring Tradeoffs in Demand-side and Supply-side Management of Urban Water Resources using Agent-based Modeling and Evolutionary Computation." *Systems*, 3(4), 287-308.
51. Berglund, E.Z. (2015). "Using Agent-based Modeling for Water Resources Planning and Management." *Journal of Water Resources Planning and Management,* 141(11), 04015025.
52. Giacomoni, M.[G] and Berglund, E.Z. (2015). "A Complex Adaptive Simulation Framework for Evaluating Adaptive Demand Management for Urban Water Resources Sustainability." *Journal of Water Resources Planning and Management,* 141(11), 04015024.
53. Shafiee, M.E.[G] and Berglund, E.Z. (2015). "Real-Time Guidance for Hydrant Flushing Using Sensor-Hydrant Decision Trees." *Journal of Water Resources Planning and Management*, 141(6), 04014079.
54. Giacomoni, M.[G], Gomez, R.[U], and Berglund, E.Z. (2014). "Hydrologic Impact Assessment of Land Use Change and Stormwater Management using the Hydrologic Footprint Residence." *Journal of American Water Resources Association (JAWRA)*, 50(5), 1242-1256.
55. Rasekh, A., Shafiee, M.[G], Zechman, E.M., and Brumbelow, K. (2014). "Sociotechnical Risk Assessment for Water Distribution System Contamination Threats." *Journal of Hydroinformatics*, 16(3), 531-549.
56. Scott, T.J.[G], Politte, A.[U], Collard, S., Saathoff, S., Berglund, E.Z., Barbour, J., and Sprintson, A. (2014). "A Test of the Stormwater Footprint Calculator for Improving Knowledge and Changing Attitudes about Design for Sustainability in Stormwater Management." *Sustainability: Science, Practice, & Policy*, 10(2), 51-64.
57. Kanta, L.[G] and Zechman, E.M. (2014). "A Complex Adaptive Systems Framework to Assess Supply-side and Demand-side Management for Urban Water Resources." *Journal of Water Resources Planning and Management*, 140(1), 75-85.
58. Marchi, A., …, Zechman, E.M. et al. (+59 co-authors). (2014). "The Battle of the Water Networks II (BWN-II)." *Journal of Water Resources Planning and Management,* 140(7), 04014009.
59. Giacomoni, M.[G], Kanta, L.[G], and Zechman, E.M. (2013). "A Complex Adaptive Systems Approach to Simulate the Sustainability of Water Resources and Urbanization." *Journal of Water Resources Planning and Management*, 139(5), 554-564.

60. Shafiee, M.[G] and Zechman, E.M. (2013). "An Agent-Based Modeling Framework for Sociotechnical Simulation of Water Distribution Contamination Events." *Journal of Hydroinformatics,* 15(3), 862-880.

61. Zechman, E.M. (2013). "Integrating Evolutionary Computation and Sociotechnical Simulation for Flushing a Contaminated Water Distribution System." *Journal of Hydroinformatics,* 15(3), 798-812.

62. Zechman, E.M., Giacomoni, M.[G], and Shafiee, M.[G] (2013). "An Evolutionary Algorithm Approach to Generate Distinct Sets of Non-Dominated Solutions for Wicked Problems." *Engineering Applications of Artificial Intelligence,* 26(5), 1442-1457.

63. Suresh, M., Stoleru, R., Zechman, E.M., and Shihada, B. (2013). "On Event Detection and Localization in Acyclic Flow Networks." *IEEE Transactions on Systems, Man and Cybernetics, Part A,* 43(3), 708-723.

64. Damodaram, C.[G] and Zechman, E.M. (2013). "Simulation-Optimization Approach to Design Low Impact Development for Managing Peak Flow Alterations in Urbanizing Watersheds." *Journal of Water Resources Planning and Management,* 139(3), 290-298.

65. Mirghani, B., Mahinthakumar, G., Ranjithan, S., and Zechman, E.M. (2012). "Enhanced Simulation-Optimization Approach using Surrogate Modeling for Solving Inverse Problems." *Environmental Forensics,* 13(4), 348-363.

66. Liu, L., Zechman, E.M., Mahinthakumar, G., Ranjithan, S. (2012). "Identifying Contaminant Sources for Water Distribution Systems Using a Hybrid Method." *Civil Engineering and Environmental Systems,* 29(2), 123-136.

67. Manian, D.[G], Kaihatu, J.M. and Zechman, E.M. (2012). "Using Genetic Algorithms to Optimize Bathymetric Sampling for Predictive Model Input." *Journal of Atmospheric and Oceanic Technology* 12(3), 464-477.

68. Kanta, L.[G], Zechman, E.M., and Brumbelow, K. (2012). "A Multi–Objective Evolutionary Computation Approach for Redesigning Water Distribution Systems to Provide Fire Flows." *Journal of Water Resources Planning and Management,* 138(2), 144-152.

69. Giacomoni, M.[G], Zechman, E.M., and Brumbelow, K. (2012). "The Hydrologic Footprint Residence: An Environmentally-friendly Criteria for Best Management Practices." *Journal of Hydrologic Engineering*, 17(1), 99-108.

70. Liu, L., Zechman, E.M., Mahinthakumar, K., and Ranjithan, S. (2012). "Coupling of Logistic Regression Analysis and Local Search Methods for Characterization of Water Distribution System Contaminant Source." *Engineering Applications of Artificial Intelligence*, 25(2), 309-316.

71. Purtha, R.[G], Quadrifoglio, L., and Zechman, E.M. (2012). "Using an Ant Colony Optimization Approach for Solving Traffic Signal Coordination in Oversaturated Networks." *Computer-Aided Civil and Infrastructure Engineering,* 27(1), 14–28.

72. Zechman, E.M. (2011). "Agent-Based Modeling to Simulate Contamination Events and Evaluate Threat Management Strategies in Water Distribution Systems." *Risk Analysis,* 31(5), 758-772.

73. Damodaram, C.[G], Giacomoni, M.[G], Khedun, C., Holmes, H.[U], Ryan, A.[U], Saour, W.[U] and Zechman, E.M. (2010). "Simulation of Combined Best Management Practices and Low Impact Development for Sustainable Stormwater Management." *Journal of American Water Resources Association,* 46(5), 907-918.

74. Nicklow, J., Reed, P., Savic, D., Dessalegne, T., Harrell, L., Chan-Hilton, A., Karamouz, M., Minsker, B., Ostfeld, A., Singh, A., Zechman, E.M. (2010). "State of the Art for Genetic Algorithms and Beyond in Water Resources Planning and Management." *Journal of Water Resources Planning and Management,* 136(4), 412-432. **Best Seminal Paper Award, ASCE Journal of Water Resources Planning and Management 2020.**

75. Booker, G., Sprintson, A., Zechman, E.M., Singh, C., Guikema, S. (2010). "Efficient Availability Evaluation for Transport Backbone Networks." *Computer Networks,* 54(10), 1683-1691.

76. Reichold, L.[G], Zechman, E.M., Brill, E.D., Jr., Holmes, H.[U] (2010). "A Simulation-Optimization Framework to Support Sustainable Watershed Development by Mimicking the Predevelopment Flow

Regime." *Journal of Water Resources Planning and Management*, 136(3), 366-375. **Best Research-Oriented Paper Award, ASCE Journal of Water Resources Planning and Management 2011**.

77. Mirghani, B., Tryby, M., Ranjithan, S., Zechman, E.M., and Mahinthakumar, G. (2009). "A Parallel Evolutionary Strategy Based Simulation–Optimization Approach for Solving Groundwater Source Identification Problems." *Advances in Water Resources*, 32(9), 1373-1385.

78. Zechman, E.M. and Ranjithan, S. (2009). "Evolutionary Computation-based Methods for Characterizing Contaminant Sources in a Water Distribution System." *Journal of Water Resources Planning and Management*, 135(5), 334-343. **Best Research-Oriented Paper Award, ASCE Journal of Water Resources Planning and Management 2010.**

79. Jin, X., Mahinthakumar, G., Zechman, E.M., and Ranjithan, S. (2009). "A Genetic Algorithm-Based Procedure for 3D Source Identification at the Borden Emplacement Site." *Journal of Hydroinformatics*, 11(1), 51-64.

80. Raghavachar, K., Mahinthakumar, G., Worley, P., Zechman, E.M., and Ranjithan, S. (2007). "Parallel Performance Modeling using a Genetic Programming-based Error Correction Procedure." *Simulation*, 83(7), 515-527.

81. Zechman, E.M. and Ranjithan, S. (2007). "Evolutionary Computation-based Approach for Model Error Correction and Calibration." *Advances in Water Resources*, 30(5), 1360-1370.

82. Zechman, E.M. and Ranjithan, S. (2007). "Generating Alternatives using Evolutionary Algorithms for Water Resources and Environmental Management Problems." *Journal of Water Resources Planning and Management*, 133(2), 156-165.

83. Zechman, E.M. and Ranjithan, S. (2005). "Multipopulation Cooperative Coevolutionary Programming (MCCP) to Enhance Design Innovation." In Beyer et al. (eds.), *GECCO*, ACM Press, 1641-1648.

84. Zechman, E.M. and Ranjithan, S. (2004). "An Evolutionary Algorithm to Generate Alternatives (EAGA) for Engineering Optimization Problems." *Engineering Optimization*, 36(5), 539-553.

85. Ormsbee, L., Elshorbagy, A., and Zechman, E.M. (2004). "Methodology for pH Total Maximum Daily Loads: Application to Beech Creek Watershed." *Journal of Environmental Engineering*, 130(2), 167-174.

Selected Conference Proceedings (6 of 150+)

1. Karrenberg, C., Baugh, J., Berglund, E.Z., Kang, E., Balagopal, B. Chow, M.-Y. (2022). "Identifying Cyber-Physical Attack Scenarios on Water Distribution Systems using Finite State Processes." World Environmental and Water Resources Congress, Atlanta, GA, Jun 2022.

2. Monroe, J. G and Berglund, E. (2019). "Simulating Peer-to-peer Electricity Trades Using an Agent-based Modeling Framework." Energy and Society in Transition: 2nd International Conference on Energy Research and Social Science, Tempe, AZ, May 2019.

3. Shafiee, M., Berglund, A., Berglund, E., Brill, E. Downey, Jr., and Mahinthakumar, G. (2014). "Evolutionary Computation-Based Decision-Making Framework for Designing Water Networks to Minimize Background Leakage." Battle of the Water Networks, Proceedings of the 16th Conference on Water Distribution System Analysis WDSA 2014, Bari, Italy, Jul 2014.

4. Zechman, E. and Guikema, S. (2012). "Agent-based Simulation of Learning Adversaries in Defender-attacker Games." Proceedings of INFORMS Annual Meeting, Phoenix, AZ, Oct. 2012.

5. Damodaram, C.G and Zechman, E. (2010). "Optimization for Locating Low Impact Development in an Urban Watershed." Proceedings of the ASCE/EWRI World Environmental and Water Resources Congress, Providence, RI, May 2010.

6. Shafiee, M.E., Zechman, E. (2011). Sociotechnical Simulation and Evolutionary Algorithm Optimization for Routing Siren Vehicles in a Water Distribution Contamination Event. Proceedings of the Genetic and Evolutionary Computation Conference 2011 (GECCO), Evolutionary Computation and Multi-agent Systems and Simulation (ECoMASS) Workshop, Dublin, Ireland, July 2011.

FUNDED RESEARCH PROJECTS:

Externally Funded Research

1. Water distribution systems management under COVID-X, *U.S-Israel Binational Science Foundation*, A. Ostfeld (PI), E.Z. Berglund, $250,000 (66%), 10/21-10/25.
2. Catalyzing Stakeholder-Driven Solutions to Inland Freshwater Salinization, *National Science Foundation Growing Convergence Program,* 05/2021-09/2022, S. Grant (PI), T. Birkland, K. Rowles, T. Schenk, M. Rippey, E. Berglund, S. Kaushal, P. Vikesland, E. Hotchkiss, J. Gomez Velez, $3,600,000
3. A Citizen Science Internship Program to Quantify Racial and Economic Disparities in Lead Levels in Drinking Water Across North Carolina, *North Carolina Water Resources Institute*, C. Cooper (PI), V. Johnson, E. Berglund, $120,000 (20%), 08/21-08/23.
4. Training for Innovation in Smart, Sustainable Infrastructure, *VentureWell Sustainable Design Faculty Grant*, A. Grieshop (PI), E. Berglund, $10,000, (Individual budget: 50%) 06/2020-12/2021,
5. Untapping the Crowd: Consumer Detection and Control of Lead in Drinking Water, *Environmental Protection Agency*, Edwards, M. (PI), K. Pieper, C. Cooper, A. Katner, E. Berglund, $1,981,358 (Individual budget: 23%), 05/18-05/21
6. National Center of Sustainable Water Infrastructure Modeling, *Environmental Protection Agency*, B. Hodges (PI), A. Rowney, T. Cleveland, M. Barrett, D. Ames, F. Leite, E.Z. Berglund, G. Speitel, L. Pechacek, D. Maidment, T. Whiteaker, $4,000,000 (Individual budget: 0.4%), 09/16-09/21
7. Modeling Approaches for Predicting Water Lead Risks in Underserved Communities, *Springer Loop (Private Funder)*, K. Pieper, E. Berglund (PI), $47,995 (Individual budget: 100%), 08/17-12/18
8. Smart Management of Water Resources and Infrastructure with the Internet of Things, *UNC Inter-institutional Planning Grant,* E. Berglund (PI), G. Mahinthakumar, N. Kaza, J. Bowen, M. Anwar, $72,500 (Individual budget: 38%), 09/17 – 09/18
9. Understanding Effects of Norms and Policies on the Robustness, Liveness, and Resilience of Systems, *National Security Agency*, *Science of Security Lablet*, M. Singh, J. Doyle, and E. Z. Berglund, $367,000 (Individual budget: 47%), 01/14 – 07/17
10. WSC- Category 3: Collaborative Research: Water Sustainability under Near-term Climate Change: A cross-regional analysis incorporating socio-ecological feedbacks and adaptations, *National Science Foundation, Water Sustainability and Climate*, S. Arumuagam (PI), E.M. Zechman, J. Sabo, J. Kominoski, G. Mahinthakumar, K. Kunkel, K. Larson, T. Sinha, $890,576 (Individual budget: 20%), 09/12 – 09/18
11. Laboratory for Analytical Science: DO5: Advanced Concepts: Adversarial Risk Assessment, *National Security Agency*, E.Z. Berglund (PI), $62,862 (Individual budget: 100%), 04/15-12/15
12. Laboratory for Analytical Science: DO3: Agent-based Modeling for Simulating and Analyzing Workflow, *National Security Agency*, E.Z. Berglund (PI), $69,274 (Individual budget: 100%), 05/14-05/15
13. Laboratory for Analytical Science: DO2: Agent-based Modeling for Simulating and Analyzing Workflow, *National Security Agency*, E.Z. Berglund (PI), $52,550 (Individual budget: 100%), 09/13-12/14
14. An Agent-based Modeling Approach to Integrate Social Dimensions and Infrastructure Management for Urban Water Reuse, *National Science Foundation, Civil Infrastructure Systems*, E.M. Zechman (PI) and A.R. Binder, $320,000 (Individual budget: 46%), 09/12 – 09/15
15. An Integrated Framework for Assessing the Dynamics of Population Growth, Land Use and Climate Change for Urban Water Resources Management, *North Carolina Water Resources Research Institute*, E.M. Zechman (PI), S. Arumugam, $50,000 (Individual budget: 50%), 03/12 – 03/14
16. BRIGE: A Complex Adaptive Systems Analysis Approach for Integrated Water Resources Sustainability, *National Science Foundation, Broadening Participation Research Initiation Grants in Engineering*, E.M. Zechman (PI), $174,866 (Individual budget: 100%), 09/09 – 09/12

Research Experience for Undergraduate Students (REU) Supplement, $12,000 (Individual budget: 100%), 09/09 – 09/12

17. An Agent-based Modeling Framework for Response Planning to Contamination Events for Water Utilities, *National Science Foundation, Infrastructure Management and Extreme Events*, E.M. Zechman (PI), K. Brumbelow, M. Lindell, and J. Mumpower, $378,000 (Individual budget: 25%), 09/09 – 09/12

    Research Experience for Undergraduate Students (REU) Supplement, $6,000 (Individual budget: 50%), 09/09 – 09/12

18. Increasing Stormwater Awareness through Development of a Stormwater Footprint Game, *US Environmental Protection Agency P3: People, Prosperity and the Planet Student Design Competition for Sustainability*, E.M. Zechman (PI), J. Barbour, A. Sprintson, $10,000 (Individual budget: 100%), 09/10 – 09/11

19. Sustainable Hydrologic Management Practices on Texas A&M University Campus, *US Environmental Protection Agency P3: People, Prosperity and the Planet Student Design Competition for Sustainability*, E.M. Zechman (PI), R. Autenrieth, K. Brumbelow, T. Cahill, F. Olivera, $10,000 (Individual budget: 100%), 08/08 – 08/09

20. Ant Colony Optimization Algorithm for Signal Coordination of Oversaturated Networks, *Texas Transportation Institute*, E.M. Zechman (PI) and L. Quadrifoglio, $50,000 (Individual budget: 50%), 08/08 – 12/09

Internally Funded Research at North Carolina State University (NCSU)

21. From Consumers to Prosumers: Micro-Trading Rainwater at Households, *2019 UoA-NC State Starter Grant*, E. Berglund (PI), M. Lambert, $6,700 (100%), 02/20-02/21

22. Social Media, Information Diffusion, and Flood Response During Hurricane Florence, *NCSU Department of Civil, Construction, and Environmental Engineering Rapid Response Funding Program*, E. Berglund, $5,000 (100%), 09/18-09/19

23. A Research Network on Water Solutions (ReNeWS): the U.S. Southeast and Beyond, *NCSU Research Innovation Seed Funding*, L. Taylor (PI), S. Arumugam, E.Z. Berglund, A. Binder, J. Burkholder, R. Emanuel, W. Robinson, S. White, $21,926 (Individual budget: 0%), 01/15 – 12/15

24. We are WE: Improving Recruitment and Retention of Women in Engineering at North Carolina State University, *NCSU Office of Institutional Equity and Diversity Mini-grant Program*, E.M. Zechman (PI), $3,000 (Individual budget: 100%), 01/13 – 12/13

25. Disaster Management for Critical Infrastructure: An Evolutionary Algorithm Approach to Route a Fleet of Emergency Vehicles, *NCSU Southeastern Transportation Center Fellowship Program*, E.M. Zechman (PI), $1,800 (Individual budget: 100%), 01/13 – 05/13

26. Increasing the Participation of Women in Civil Engineering at North Carolina State University, *NCSU Office of Institutional Equity and Diversity Mini-grant Program*, E.M. Zechman (PI), $3,000 (Individual budget: 100%), 01/12 – 12/12

RESEARCH MENTORSHIP:

Post-doctoral Scholar Adviser: Completed

Hongying Du, Post-doctoral Researcher (co-adviser), North Carolina State University, 11/13 – 4/15.

M. Ehsan Shafiee, Post-doctoral Researcher, North Carolina State University, 01/13 – 12/13. Current position: Engineer, Sensus USA, Inc.

Lufthansa Kanta, Post-doctoral Researcher, Texas A&M University, 01/10 – 06/11. Current position: Lecturer, Texas A&M University.

Graduate Student Adviser: Current

Cade Karrenberg   Ph.D. student   expected graduation 2025

Brent Vizanko	Ph.D. student	expected graduation 2025
Faisal Alghamdi	Ph.D. student	expected graduation 2025
Elias Zauscher	Ph.D. student	expected graduation 2027
Kingston Armstrong	Ph.D. student	expected graduation 2027

Ph.D. Student Adviser: Graduated

Morgan DiCarlo, Ph.D. 2022, North Carolina State University. Dissertation: *Characterizing Behaviors in Response to Water-related Hazards and Effects on Consequence Mitigation*

Elizabeth Ramsey Bolton, Ph.D. 2022, North Carolina State University. Dissertation: *Resource Trading Markets: Applying Agent-Based Models to Test New Paradigms for Water Security*

Jorge Pesantez, Ph.D. 2022, North Carolina State University. Current position: Assistant Professor, California State University, Fresno. Dissertation: *Using Smart Meter Data to Improve the Management and Operation of Water Distribution Systems*

Jacob Monroe, Ph.D. 2020, North Carolina State University. Dissertation: *Simulating Evolution of Low-voltage Electric Grids with Distributed Energy Technology Adoption: An Agent-based Modeling Approach*

Shams Al-Amin, Ph.D. 2018, North Carolina State University. Dissertation: *Agent-based Modeling to Explore Emergent Socio-Hydrologic Responses of a Shared Groundwater System Under Mandatory Restriction Policies*

Venu Kandiah, Ph.D. 2015, North Carolina State University. Dissertation: *Agent-based modeling for simulating the effects of demand reduction on urban water resources and infrastructure systems*

M. Ehsan Shafiee, Ph.D. 2013, North Carolina State University. Current position: Engineer, Sensus USA, Inc. Dissertation: *Modeling sociotechnical water distribution system contamination events to evaluate and identify mitigation strategies*

Marcio Giacomoni, Ph.D. 2012, Texas A&M University. Current position: Associate Professor, University of Texas at San Antonio. Dissertation: *A complex adaptive systems approach for simulating urban water resources sustainability*

Lufthansa Kanta, Ph.D. 2009 (co-advised), Texas A&M University. Dissertation: *Hazards mitigation design for water distribution systems*

M.S. Student Adviser: Graduated

Kingston Armstrong, M.S. 2023, North Carolina State University. Thesis: *Simulating the Emergence of Institutions that Reverse Freshwater Salinization: An Agent-based Modeling Approach*

Faisal Alghamdi, M.S. 2021, North Carolina State University. Thesis: *A Dynamic Pricing Framework for Water Demand Management Using Advanced Metering Infrastructure Data*

Michael Skarbek, M.S. 2019, North Carolina State University. Thesis: *Fisher Information Methods for Detecting Shifting Regimes in Water Supply Systems*

Elizabeth Ramsey, M.S. 2018, North Carolina State University. Thesis: *Coupling Agent-Based Modeling and a Genetic Algorithm to Simulate Adoption of Dual-Flush Toilets Using Household Survey Data*

Jorge Pesantez, M.S. 2017, North Carolina State University. Thesis: *A Multi-Step Simulation-Optimization Approach to Design District Metering Areas for Water Distribution Networks*

Laura Garcia-Cuerva, M.S. 2017, North Carolina State University. Thesis: *Exploring Low Impact Development Strategies for Marginalized Communities in Urbanizing Watersheds*

Michelle Schmidt, M.S. 2015, North Carolina State University. Thesis: *Simulating the Selection of Municipal Water Supply Portfolios to Assess Vulnerability in a Seniority-based Water Rights Program*

Alireza Mashhadi Ali, M.S. 2014, North Carolina State University. Thesis: *An integrated framework for assessing the dynamics of population growth and climate change for urban water resources management*

Kristen Drake, M.S. 2011, Texas A&M University. Thesis: *Evolutionary computation approaches to address non-uniqueness in source identification of contamination in water distribution systems*

Tommi Jo Scott, M.S. 2011, Texas A&M University. Thesis: *A Stormwater Footprint Game to increase stormwater sustainability awareness*

Chandana Damodaram, M.S. 2010, Texas A&M University. Thesis: *Simulating and optimizing stormwater management strategies in an urban watershed*

Laurel Reichold, M.S. 2008 (co-advised), North Carolina State University. Current position: Army Corp of Engineers. Thesis: *Simulation-optimization framework to support sustainable watershed development by mimicking the pre-development flow regime*

Undergraduate Student Research Adviser: Graduated, with thesis

Elias Zauscher, North Carolina State University, 2023. Thesis: *An Agent-based Modelling Approach to Simulate the Performance of Water Micro-trading.*

Tori Ponthier, North Carolina State University, 2021. Thesis: *Effects on Urban Water Consumption and Water Distribution Infrastructure During the COVID-19 Pandemic.*

Jacob Monroe, North Carolina State University, 2016. Thesis: *Genetic Programming Approaches to Identify Log Reduction Models for UV Reactors*

Kate Mueller, North Carolina State University, 2016. Thesis: *Modeling the Effects of Social Dynamics on Water Conservation Technology Adoption*

James East, North Carolina State University, 2015. Thesis: *Agent-based modeling to simulate water use adaptations in the Upper Neuse River Basin*

Alyssa Politte, Texas A&M University, 2011. Thesis: *Evaluating the effects of paver systems on urban development using a distributed hydrological model*

Avery White, Texas A&M University, 2011. Thesis: *Translation, Optimization, and Parallelization of Genetic Algorithms: A Discourse of Implementation into C++*

Ramiro Martinez, Louis Stokes Alliance for Minority Participation Scholar, Texas A&M Univ., 2010. Thesis: *Climate Change Impacts on Watershed Hydrology*

William Saour, Texas A&M University, 2009. Thesis: *Feasibility Study of Rainwater Harvesting on Texas A&M University Campus*

Undergraduate Student Research Adviser (non-thesis): 1 Current, 30 Graduated

AWARDS FOR RESEARCH TO GRADUATE STUDENTS UNDER MY SUPERVISION:

NSF Graduate Fellowship: *Cade Karrenberg* (2021), *Morgan DiCarlo* (2018), *Jacob Monroe* (2016), *Elizabeth Ramsey* (2015)

Saudi Arabian Cultural Mission (SACM) Fellowship: *Faisal Alghamdi* (2019-2025)

Full Tuition Scholarship for Ecuadorian PhD students: *Jorge Pesantez* (2018-2021)

NSF Graduate Research Opportunities Worldwide Program: *Jacob Monroe* (2019)

Fullbright Fellowship: *Elizabeth Ramsey* (2015)

National Defense Science and Engineering Graduate Fellowship Program, *Elizabeth Ramsey* (2019)

First Place Graduate Student Poster Award, ASCE World Water and Environmental Resources Congress: *Morgan DiCarlo* (2019)

Third Place Graduate Student Paper Competition, ASCE World Water and Environmental Resources Congress: *Venu Kandiah* (2014), *M. Ehsan Shafiee* (2013)

Best Student Presentation, Battle of the Water Networks II Competition, Water Distribution Systems Analysis Symposium: *Venu Kandiah* (2012)

AWARDS TO UNDERGRADUATE STUDENTS UNDER MY SUPERVISION:

1st place Undergraduate Student Paper Competition, ASCE World Environmental and Water Resources Congress, *Elias Zauscher*, 2023.

Spring 2023 Richard L. Blanton Outstanding Capstone Award, NC State University Honors Program, *Elias Zauscher*, 2023.

Second Place Undergraduate Paper Competition, ASCE World Water and Environmental Congress: *Hayden Strickling* (2016)

First Place Undergraduate Student Poster Competition, Air & Waste Management Association Conference: *James East* (2015)

Second Place Undergraduate Student Poster Competition, Air & Waste Management Association Conference: *Jacob Monroe* (2015)

NCSU Office of Undergraduate Research Grant: *Jacob Monroe* (2015)*, Hayden Strickling* (2015)*, Michael Knepper* (2015)

NCSU CCEE Undergraduate Research Grant: *Elias Zauscher* (2022), *Tori Ponthier* (2021)*, Cade Karrenberg* (2019, 2020, 2021)*, Ashton Stuart* (2017), *Kate Mueller* (2015)*, Jacob Monroe* (2015)*, James East* (2014), *Zachary Barker* (2013), *Michelle Schmidt* (2013)

Best Undergraduate Thesis Award, Texas A&M University: *Alyssa Politte* (2011)

TEACHING EXPERIENCE:

Undergraduate Course Instruction
Civil Engineering Systems Analysis, Hydraulics, Hydrology and Urban Water Systems, Water Resources Engineering, Entrepreneurship and Innovation for Smart Sustainable Infrastructure

Graduate Course Instruction
Advanced Environmental System Analysis: Case Studies, Complex Adaptive Systems Analysis, Environmental Systems Modeling and Analysis, Evolutionary Computation for Civil Engineering, Water Resources Systems Analysis, Smart Cities

SELECTED INVITED TALKS:

Invited Panelist: "Exploring Innovations in Water Resources Management through Agent-based Modeling," *American Water Resources Association (AWRA) National Capital Virtual Water Symposium*, Online, Apr 2021

"Using Advanced Metering Infrastructure Data to Understand Water Use Behaviors during Emergencies," *University of Massachusetts at Amherst Department of Civil and Environmental Engineering EWRE Seminar*, Online, Mar 2021

Keynote Presentation: "Exploring New Paradigms for Water Resources Management through Agent-based Modeling," *WATER Institute for Saint Louis University, 2021 SLU Summit for Water*, Online, Mar 2021

"Predicting Critical Transitions and Averting Tipping Points in Water Supply." Civil Engineering Seminar, University of South Carolina, Online, Nov 2020

Invited Panelist: "Sociotechnical Modeling for Security and Sustainability of Water Infrastructure." ASCE Women-Water Nexus 7th Short Conference Session, Online Conference, Jul 2020

"Cities and People: Managing Urban Water Shortages using a Sociotechnical Approach," *Southeastern Climate Change Conference*, Asheville, NC, August 16, 2016

"Urban Water Sustainability and Human Behaviors: Conservation, Reuse, and Social Networks," *Osher Lifelong Learning Institute*, Duke University, Durham, NC, March 22, 2016

Keynote Presentation: "Addressing Complexity in Urban Water Resources Management Using Agent-based Modeling," *U.S. Environmental Sustainability Fellowship Program Forum 2014,* Carnegie Mellon University, Pittsburg, PA, June 6, 2014

"Sustainable Water Management: Reuse, Conservation, and Human Factors," *Design Your Own Professional Engineering Workshop*, Raleigh, NC, December 6, 2013

Keynote Presentation: "Water," *Piqua City Schools STEM Day*, Washington Intermediate School, Piqua, OH, November 14, 2013

Invited Panelist: "State of the Art and the Future of Water Resources Systems Analysis," *World Environmental and Water Resources Congress*, Cincinnati, OH, May 23, 2013

Invited Panelist: "Cities and Water: Sociotechnical Simulation for Managing Urban Water Resources and Infrastructure," *Open Dialogue on Critical Urban Environmental Issues*, The Yale School of Forestry & Environmental Studies, New Haven, CT, January 18, 2013

Keynote Presentation: "Water Sustainability at the Confluence of Social Science and Engineering: A Sociotechnical Approach," *College of Humanities And Social Science Dual Degree Dinner,* North Carolina State University, Raleigh, NC, September 2013

"Socio-Technical Systems Analysis for Civil Engineering Infrastructure," *Board of Trustees Meeting*, North Carolina State University, Raleigh, NC, February 22, 2013

INTERVIEWS and MEDIA:

The Charlotte Observer, "Aging infrastructure in a fast-growing city: Inside Charlotte Water after main breaks," charlotteobserver.com/news/business/development/article255116687.html, Oct 20, 2021.

Crowd the Tap, Interview with Dr. Emily Berglund, youtube.com/watch?v=I_Mu2kVwjM0, Oct 14, 2021.

Let's Talk About Water Film Festival, "Water Day Zero", https://www.letstalkaboutwater.ca, June 2020.

ASCE Civil Engineering Magazine, "Model Aims to Help Utilities Gauge Public Attitudes toward Water Reuse," pp. 32-33, May 2017

ABC11 Eyewitness News, "Hurricane-Damaged Towns Seek Protection", http://abc11.com/weather/hurricane-damaged-towns-seek-protection/1824751/, March 29, 2017

Indy Week, "N.C. State Researchers Say That, in a Drought-Stricken Future, the World Might Look to Cary", http://www.indyweek.com/indyweek/nc-state-researchers-say-that-in-a-drought-stricken-future-the-world-might-look-to-cary, August 10, 2016.

News & Observer, "Supply of Drinking Water Isn't Endless", http://www.newsobserver.com/news/technology/article10880276.html, February 12, 2015.

PROFESSIONAL SERVICE

Editorial Work

Associate Editor, ASCE Journal of Water Resources Planning and Management, 2019-2023

Guest Editor, Special Collection "The COVID-19 Pandemic and Water Resources," ASCE Journal of Water Resources Planning and Management, 2021

Professional Organizations and Conference Work

Control Group Member, ASCE Environmental and Water Resources Institute (EWRI), Planning and Management Council, (Secretary 2015-2017; Vice Chair 2017-2019; Chair 2019-2021)

Control Group Member, ASCE EWRI Environmental and Water Resources Systems Standing Committee (Secretary 2010-2011; Vice Chair 2011-2012; Chair 2012-2013; Past Chair 2013-2014)

Member, Environmental and Water Resources Systems Standing Committee, *American Society of Civil Engineering*, June 2005-

Member, Water Distribution Systems Analysis Standing Committee, *American Society of Civil Engineering*, June 2014-

Task Committee Member, Task Committee on EXSTATIC: Excellence in Systems Analysis Teaching and Innovative Communication, *American Society of Civil Engineering*, October 2013-2018

Task Committee Member, Task Committee on Evolutionary Computation in Environmental and Water Resources Engineering, *American Society of Civil Engineering*, May 2006-May 2011

Program Committee Member, Planning and Management Track, *World Environmental & Water Resources Congress 2014*

Program Committee Member, Evolutionary Computing in Water Resources Planning and Management Session, *11th International Conference on Hydroinformatics 2014*

Program Committee Member, Evolutionary Computation and Multi-agent Systems and Simulation (ECoMASS) Workshop, *Genetic and Evolutionary Computation Conference 2014*

Panel Moderator, "State of the Art and the Future of Water Resources Systems Analysis," *World Environmental and Water Resources Congress*, Portland, OR, June 2014

Invited Session Chair, "Evolutionary Computation for Managing Infrastructure Risk", Institute for Operations Research and Management Science (INFORMS) Annual Meeting 2008, Washington DC

Reviews

Science Fair Judge, Centennial Campus Magnet Middle School, Raleigh, NC, January 2012.

Panelist, National Science Foundation, National Institute for Water Resources/USGS, Ohio Water Resources Research Institute

Reviewer, 20+ scientific journals on computing, evolutionary algorithms, water resources, environmental management, and water resources management.

DEPARTMENTAL AND UNIVERSITY SERVICE:

Chair (2022-) and Committee Member *Reappointment, Tenure and Promotion Committee,* Department of Civil, Construction & Environmental Engineering, North Carolina State University, 2020-

Chair (2019-2023) and Committee Member, *Diversity and Recruitment Committee,* Department of Civil, Construction & Environmental Engineering, North Carolina State University, 2018-2023

Chair (2018-2019) and Committee Member, *Seminar and Research Committee,* Department of Civil, Construction & Environmental Engineering, North Carolina State University, 2017-2021

Member *Department Head Nominating Committee,* College of Engineering, North Carolina State University, 2020-2021

Member, *Outstanding Graduate Faculty Mentor Award Committee,* The Graduate School, North Carolina State University, 2019-2020

Member, *Faculty Committee*, Environmental, Water Resources, and Coastal Engineering Spring Poster Symposium, Department of Civil, Construction & Environmental Engineering, 2021

Director, *We are W.E. - Women in Engineering Annual Recruiting Event*, Department of Civil, Construction & Environmental Engineering, North Carolina State University, 2012-2019

Member, *Public Communication Committee*, Department of Civil, Construction & Environmental Engineering, North Carolina State University, 2011-2016

Member, *Leadership Review Committee*, Department of Civil, Construction & Environmental Engineering, North Carolina State University, Fall 2014

Graduate Student Mentor, *Graduate Teaching Academy*, Texas A&M University, 2009-2010

Mentor, *High School Summer Engineering Camp,* The Engineering Place, North Carolina State University, June 2014

Judge, *Annual Graduate Student Research Symposium*, North Carolina State University, 2013, 2014