

CHRISTINE M. PROUTY

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Qualifications Summary

To mentor students and perform scientifically rigorous, system-based research at the intersection of the food-energy-water-nutrients nexus that reflects globally engaged, innovative environmental engineering solutions and values interdisciplinary academic and community partnerships.

Education

- University of South Florida Environmental Engineering PhD 2018*
Tampa, FL
Dissertation: “Wastewater in Context: Systems-Based Approaches to Improving Wastewater Infrastructure Transitions”
Major Professor: Qiong Zhang
- University of South Florida Environmental Engineering MS 2013
Tampa, FL
Thesis: “Socioeconomic Factors' and Water Source Features' Effect on Household Water Supply Choices in Uganda and the Associated Environmental Impacts”
Major Professor: Qiong Zhang (<http://scholarcommons.usf.edu/etd/4749/>)
- Louisiana State University Environmental Engineering BS 2009
Baton Rouge, LA
*Degree to be conferred in 2018

Certifications

- Water, Health, and Sustainability* 2017
University of South Florida, Tampa, FL
- A suite of interdisciplinary courses and seminars focused on addressing critical shortages and health problems associated with inadequate and unsanitary water throughout the world.
- ENVISION Sustainability Professional* 2016
Institute for Sustainable Infrastructure, Washington, DC
- A comprehensive framework for evaluating the design, construction, and operation phases of civil infrastructure projects to assess their level of sustainability.
- Engineering Intern* 2009
Louisiana Professional Engineering and Land Surveying Board, Baton Rouge, LA
- A prerequisite for professional engineering (PE) licensure is a satisfactory score on the Fundamentals of Engineering (FE) exam.
- Advanced Open Water SCUBA Diving License* 2000
Professional Association of Diving Instructors (PADI), Jackson, MS
- Successful completion of diving skills at ~30 meters depth.

Research Experience

- Research Assistant* 2013 – present
University of South Florida, Tampa, FL
Department of Civil and Environmental Engineering
- Modeled, using a system dynamics approach, the interactions and feedbacks between factors that influence the adoption and sustainability of wastewater-based resource recovery technologies to provide decision-makers with a tool to test marketing, social, and technological strategies or paradigm-shifting behavior changes by simulating system-level responses.

Research Assistant 2014 – present
University of South Florida and University of Belize (UB), Placencia, Belize
National Science Foundation Partners for International Research and Education Grant

- Collaborated with grassroots organizations and national partners to facilitate community-engaged research on the environmental impacts that the growing tourism industry has on the underdeveloped wastewater infrastructure and nutrient management in the region.

Research Fellow 2014
University of South Florida and University of the West Indies (UWI), Bridgetown, Barbados
U.S. Department of Education Graduate Assistance in Areas of National Need Fellowship

- Contributed engineering expertise to an international, interdisciplinary team to develop the Barbados Clean Business Proposal (subsequently funded a regional corporation) for the Barbados Water Authority (BWA) that outlined a means to productively manage nutrients from the wastewater effluent to demonstrate its profitability.

Peace Corps Master's International Health Volunteer 2010 – 2012
United African Orphans and Widows' Foundation, Iganga, Uganda
U.S. Peace Corps

- Trained and worked alongside community health workers in a cross-cultural setting to assess the efficacy and sustainability of household and community water supply systems.

Research Assistant 2009 – 2010
University of South Florida, Tampa, FL
Master's International Graduate Program

- Surveyed, compiled, and summarized information to shape teaching materials (i.e. classroom, homework, and extracurricular learning tools) that integrated sustainability into various engineering disciplines for an NSF-funded engineering education project.

Peer Reviewed Journal Publications

1. **Prouty, Christine** and Qiong Zhang. "How do people's perceptions of water quality influence the life cycle environmental impacts of drinking water in Uganda?" *Resources, Conservation and Recycling* 109 (2016): 24-33. DOI 10.1016/j.resconrec.2016.01.019
2. **Prouty, C.**, Koenig, E.S., Wells, E.C., Zarger, R.K., and Zhang, Q., "Rapid Assessment Framework for Modeling Stakeholder Involvement in Infrastructure Development." *Sustainable Cities and Society* (2017): 130-138. DOI 10.1016/j.scs.2016.12.009
3. Zhang, Q., **Prouty, C.**, Zimmerman, J.B., and Mihelcic, J.R., "More than Target 6.3: A Systems Approach to Rethinking Sustainable Development Goals in a Resource-Scarce World." *Engineering 2.4* (2016): 481-489. DOI 10.1016/J.ENG.2016.04.010
4. **Prouty, C.**, Mohebbi, S., and Zhang, Q. "Socio-technical Strategies and Behavior Change to Increase the Adoption and Sustainability of Resource Recovery Systems: A System Dynamics Approach." *Water Research* 137 (2018): 107-119. DOI 10.1016/j.watres.2018.03.009
5. Wells, E.C., Webb, W.A., **Prouty, C.**, Zarger, R.K., Trotz, M., Whiteford, L.M., and Mihelcic, J.R., "Wastewater Technopolitics on the South Coast of Belize." *Economic Anthropology* (2018).
6. **Prouty, C.**, Cunningham, J., Kalivoda, M., Trotz, M., and Zhang, Q. "Modeling a Decentralized Wastewater System's Treatment Efficiency for Nutrients." *Journal of Water, Sanitation, and Hygiene for Development* (2018). In preparation.

Peer-Reviewed Conference Proceedings

1. **Prouty, C.**, Mohebbi, S., & Zhang, Q. Determining Site-Specific Strategies to Improve the Adoption and Sustainability of Resource Recovery Systems: A Community-Informed Approach. *Proceedings of the International System Dynamics Conference (ISDC) Annual*

- Conference*, Massachusetts Institute of Technology, Cambridge, MA. June 2017. (Paper ID #1373)
2. **Prouty, C.**, Mohebbi, S., & Zhang, Q. Increasing the adoption of wastewater-based resource recovery systems: Using a community-informed system dynamics model to determine effective strategies. *Proceedings of the Caribbean Water and Wastewater Association (CWWA) Annual Conference*, Port of Spain, Trinidad and Tobago. November 2016.
 3. **Prouty, C.**, Orner, K., Naughton, C., Manser, N., Verbyla, M., Trotz, M.A., & Mihelcic, J.R. Exploring the Expanding Impact of a Sustainable Development Engineering Course through a Critical Evolutionary Review. Making Value for Society. *Proceedings of the American Society for Engineering Education (ASEE) National Conference*, Washington Convention Center, Seattle, WA. June 2015. (Paper ID #13056)
 4. Manser, N., Naughton, C., Verbyla, M., **Prouty, C.**, Orner, K., Trotz, M.A., & Mihelcic, J.R. Improving the Global Competency of Graduate Engineers Through Peace Corps Partnership and Long-term International Service. Making Value for Society. *Proceedings of the American Society for Engineering Education (ASEE) National Conference*, Washington Convention Center, Seattle, WA. June 2015. (Paper ID #13068)
 5. Naughton, C., Manser, N., Orner, K., **Prouty, C.**, Naughton, C., Manser, N., Verbyla, M., Trotz, M.A., & Mihelcic, J.R. The Expanding Impact of a Sustainable Development Engineering Course through a Critical Review over Its Offerings. Engineering for Sustainability. *Proceedings of the American Society for Engineering Education (ASEE) Southeastern Regional Conference*, Gainesville, FL. April 2015.
(<http://www.softwareeducationsupport.com/ASEE%20SE%20Conference%20Proceedings/Conference%20Files/ASEE2015/Papers2015/60.pdf>)
 6. Verbyla, M., **Prouty, C.**, Orner, K., Trotz, M.A., & Mihelcic, J.R. Improving The Global Competency Of Engineers Through The Peace Corps Master's International Program. Engineering for Sustainability. *Proceedings of the American Society for Engineering Education (ASEE) Southeastern Regional Conference*, Gainesville, FL. April 2015.

Oral Presentations

1. Trotz, M. and **C. Prouty**. Fragments of Hope: A Coral Restoration Success Story from Belize. *Sulphur Springs Museum and Heritage Center's Community Lecture Series*, Tampa, Florida, August 27, 2017.
2. **Prouty, C.**, Mohebbi, S., Zhang, Q. Increasing the adoption and sustainability of wastewater-based resource recovery systems: a system dynamics approach for determining appropriate strategies. *Association of Environmental Engineering and Science Professors (AEESP) Research and Education Conference*, Ann Arbor, Michigan, June 20-22, 2017.
3. **Prouty, C.**, and C. Bender. Interdisciplinary work investigating community resilience: Dr. Linda Whiteford's influence on environmental engineering and applied anthropology research in adopting appropriate technologies and disaster studies. *Society for Applied Anthropology Annual Conference*, Santa Fe, NM, March 2017.
4. **Prouty, C.**, Mohebbi, S., Zhang, Q. Increasing the adoption and sustainability of wastewater-based resource recovery systems. *25th Annual Caribbean Water and Wastewater Association Conference*, Port of Spain, Trinidad and Tobago, November 2016.
5. **Prouty, C.**, Garcia, L., Zhang, Q., Zarger, R. Community and complexity: Use of social science data in modeling the factors that influence the adoption of paradigm-shifting technologies. *Society for Applied Anthropology Annual Conference*, Vancouver, BC, Canada, March 2016.
6. **Prouty, C.** and Q. Zhang. Socioeconomic factors' and water source features' affect on household water supply choices in Uganda and the associated environmental impacts.

Global Governance and Sustainable Communities Interdisciplinary Conference, Tampa, FL, April 12, 2013.

7. **Prouty, C.** and Q. Zhang. Environmental impacts associated with household water source and treatment choices in Uganda. *University of Oklahoma's International Water Conference*, Norman, OK, September 22-25, 2013.

Teaching and Mentoring Experience

- Community-Engaged Engineering* 2017
University of South Florida, Tampa, FL
Honors College (IDH 4970)
- Developed syllabus, lectures, out-of-class activities and instructed an interdisciplinary engineering capstone course that coupled systems thinking alongside sustainability principles to engage 17 undergraduate engineering and computer science students with community partners to collaborate on long-term, actionable solutions.
- Environmental Engineering Laboratory* 2017
University of South Florida, Tampa, FL
Department of Civil and Environmental Engineering (ENV 4004)
- Guided 14 undergraduate civil engineering students in project design, data collection, analysis, reporting, and presentation of results from assessing sustainability projects at the Gasparilla Music Festival for the locally affiliated non-profit.
- Water Quality Fieldwork and Research* 2015 – 2016
University of Belize, Placencia, Belize
Department of Natural Resource Management
- Partnered with 3 University of Belize undergraduate Natural Resource Management (NRM) students and 2 NRM faculty to develop, execute, and achieve mutually-beneficial short- and long-term academic goals which included a week-long water quality field school.
- Sustainable Development Engineering* 2014
University of South Florida, Tampa, FL
Department of Civil and Environmental Engineering (ENV 6510/PCH6301)
- Re-formulated the graduate-level syllabus to incorporate a multimedia component, adapted a hands-on field laboratory, and expanded the lecture topics to a broader range of global engineering applications that highlighted technical and cultural challenges with implementing development projects.
- Graduate Coordinator of Research Experience for Undergraduates* 2013
University of South Florida, Tampa, FL
Department of Civil and Environmental Engineering
- Navigated the placement of 12 undergraduate students within research groups, negotiated logistics, and planned research outings that linked lab or theoretical-based information with real-world engineering applications.
 - Mentored students towards their academic and professional goals through open office hours, weekly surveys, and individual appointments.
- Numerical Methods (MATLAB)* 2012
University of South Florida, Tampa, FL
Department of Civil and Environmental Engineering (EGN 4453)
- Strengthened 45 undergraduate students' understanding of engineering coursework through weekly review sessions and office hours while also providing updates to the professor about students' knowledge and retention of previous material from lectures and homework.

Engineering and International Development Experience

- Research Assistant* 2016 – present
University of South Florida and Barbados Water Authority (BWA), Bridgetown, Barbados
- Developed the survey questions and interview guide used to elicit perspectives from grassroots and institutional stakeholders' regarding their water and sanitation infrastructure, practices of reuse, and mechanisms for sharing feedback with service providers.
 - Conducted > 220 surveys throughout Barbados and analyzed qualitative and quantitative data to guide authorship of the Stakeholder Analysis for the project entitled Sustainable Coastal Infrastructure for the Energy-Water-Nutrient Nexus in Barbados.
- Co-Director Camp BUILD (Boys of Uganda in Leadership Development)* 2010 – 2011
U.S. Peace Corps, Kisubi, Uganda
- Co-Director of Camp BUILD Co-Director (Boys of Uganda in Leadership Development)
 - Planned logistics, provided financial oversight, and coordinated the mechanics of staff duties for camp serving over 130 young men.
 - Employed best practices for young adult and experiential learning by partnering with Ugandan educators and community members to develop curriculum, design participatory activities, and lead group education sessions. 99% of expected students completed the training and approximately 105 achieved the particular objectives outlined for the project.

External Funding Experience

- Sustainable Coastal Infrastructure for the Energy-Water-Nutrient Nexus* 2016 – present
Green Climate Fund (funded)
- Co-authored portions (e.g. Stakeholder Involvement, Gender Analysis, Environmental and Social Impacts Assessment (ESIA)) of a collaborative funding proposal (~\$20M) between the University of South Florida, Barbados Water Authority, University of the West Indies, and the Caribbean Community Climate Change Center entitled “Sustainable Coastal Infrastructure for the Energy-Water-Nutrient Nexus in Barbados.”
 - The proposal is being submitted to the Green Climate Fund, an intergovernmental funding mechanism that supports adaptive programs and mitigating efforts for the most vulnerable areas at risk from the effects of climate change.
- Systems Training for Research ON Geography-based Coastal Food Energy Water Systems (STRONG-CFEWS)* (funded) 2016
National Science Foundation Research Traineeships (NRT)
- Provided system dynamics-based expertise (i.e. Using a Systems Approach to Define Research Goals, System-based Research Projects) during the development of a successfully funded interdisciplinary grant (\$2.5M) seeking to expose graduate students to transformative community-engaged training and research of Food Energy Water Systems (FEWS).
 - The program's focus is to research and design innovative solutions to sustainably manage the complexities of coastal systems including human, environmental, technical, and economic aspects.
- Integrated Marine Aquaculture Systems for Sustainable Seafood Production in the Gulf of Mexico Region* (not funded) 2016
U.S. Department of Agriculture National Institute of Food and Agriculture (NIFA) Grant
- Co-authored portions of an interdisciplinary grant for \$4M addressing food-energy-water nexus issues by developing integrated multi-trophic aquaculture systems that provide the right water (synergistic water recycling) for the right place (away from the coast due to limited water resources) at the right time (year-round production).
 - Contributed system dynamics modeling skills and a community-based system dynamics modeling framework to the proposal in order to holistically consider the dynamics that influence the adoption and sustainability of the proposed technology.
- Nutrient Fate and Transport Study of the Placencia Peninsula and Marine Environment of Belize*
Caribbean Development Bank Call for Proposals (not funded) 2016

- Assisted in conceptualizing and formulating a proposal (unsuccessful) to employ a ridge-to-reef approach to water management of the Placencia Peninsula's ecosystems and its adjacent marine environment that acknowledges the dynamic interconnectivity between community members, the growing tourism industry, agricultural operations, and seasonal nutrient fluxes from the watershed.
- The goal of this approach is to integrate numerical models (e.g. system dynamics) for watershed, hydrodynamic, water quality, and ecological processes to predict the movement and fate of nutrients and fecal contamination in the landscape, lagoon, and coastal areas near Placencia.

Economic Independence and Nutrition for Iganga, Uganda (funded) 2011 – 2012

United States' President's Emergency Plan for AIDS Relief (PEPFAR)

- Authored a successful \$5000 grant for women's empowerment project through the global funding mechanisms of the United States' President's Emergency Plan for AIDS Relief (PEPFAR) and the United States Agency for International Development (USAID).
- The project aimed to improve economic independence and nutrition through education and skills-building activities in animal husbandry in rural Iganga, Uganda.

Camp BUILD (Boys of Uganda in Leadership Development) (funded) 2010 – 2011

United States' President's Emergency Plan for AIDS Relief (PEPFAR)

- Co-authored a successful \$15,000 grant for boy's leadership camp through the global funding mechanisms of the United States' PEPFAR, USAID, and the U.S. Peace Corps.
- Co-directed Camp BUILD (Boys of Uganda in Leadership Development) that aimed to encourage and foster constructive male engagement in critical areas like gender inclusion and equity, environmental stewardship, conflict resolution, and creative expression to equip the next generation of leaders in Uganda with positive skills for building a strong future.

Honors and Awards

2015 – present

- Thomas and Janice Sands Ash Scholarship
- Indeevar and Srinath Memorial Scholarship
- U.S. Dept. of Education Graduate Assistance in Areas of National Need (GANN) Fellowship Recipient
- ASCE Florida West Coast Professional Chapter's Graduate Scholarship

2012 – 2013

- NSF S-STEM Graduate Scholarship

Professional Organizations

2014 – present

- American Association for University Women, Secretary
- American Water Works Association, Member
- Association of Environmental Engineering and Science Professors, Member
- System Dynamics Society, Member and Peer-to-Peer Mentor
- Florida Water Environment Association, Member

2012 – 2015

- University of South Florida Graduate School Ambassador for College of Engineering

Community Involvement

2015 – present

- Gasparilla Music Foundation, Coordinator for Ambient Talent during Gasparilla Music Festival
- Great American Teach-In, Elementary and Middle School Lecturer

2010 – Tampa, FL

- Community Art Walk, Coordinator for High School Art Students

Multimedia

Nutrient Management in Barbados 2015

- A video introducing sustainable nutrient management practices and potential opportunities for education, research, innovation, and entrepreneurship in Barbados to fulfill this theme. (<https://www.youtube.com/watch?v=q1YcTXp7Mj4>)

Reclaim is a Business Opportunity 2015

- A video highlighting the wastewater management opportunities and challenges of a Belizean entrepreneur who has developed and installed on-site wastewater treatment systems that recover water and nutrients. (<https://www.youtube.com/watch?v=Ifa9VHfwo4o>)