MARGARET GARCIA

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Education

- Ph.D., Civil & Environmental Engineering, Tufts University, 2017
- M.S., Civil & Environmental Engineering, University of California, Los Angeles, 2012
- B.S., Civil & Environmental, Lafayette College, 2007; Dual Degree B.A. in International Studies

Academic Experience

- Assistant Professor, School of Sustainable Engineering & the Built Environment, 2017-present
- Senior Sustainability Scientist, Julie Ann Wrigley Global Institute of Sustainability, 2017-present

Professional Licensure

- LEED Accredited Professional, 2008
- Engineer In Training, State of Pennsylvania, 2006

Areas of Expertise

- Dr. Garcia is an expert in the area of urban water infrastructure and coupled human and natural systems. Her research investigates the factors influencing the sustainability and resilience of urban water supply systems by advancing the theory of coupled systems, translating theory into actionable models, and applying these models to support infrastructure planning and policy analysis.

Honors and Awards

1. Future Leaders in Engineering Education Fellowship, Tufts University ($24,000), 2015
2. Water Systems Science Society Fellowship, Tufts University ($4,000), 2015
3. National Socio-Environmental Synthesis Center Graduate Student Fellow, 2016
4. Young Scientist Summer Program Fellowship, International Institute of Applied Systems Analysis ($7,000), 2014
5. National Science Foundation Integrative Graduate Education and Research Traineeship in Water Diplomacy, Tufts University ($84,000), 2012 – 2015
6. Environmental Protection Agency P3 Award (As project manager of EWB Lafayette) ($75,000), 2006
7. Marquis Scholarship, Lafayette College ($48,000), 2003 – 2007

RESEARCH

Research Funding

1. Margaret Garcia (PI), Marty Anderies (Co-PI), Elizabeth Koebele (Co-PI), Aaron Deslatte (Co-PI), George Hornberger (Co-PI). NSF CNH2-L: Transition Dynamics in Integrated Urban Water Systems. Aug. 1, 2018 –January 31, 2024. $1,499,157
2. Margaret Garcia (PI), Murugesu Sivapalan (Co-PI), David Yu (Co-PI). NSF HDBE, Collaborative Research: Cross-Scale Interactions & the Design of Adaptive Reservoir Operations. Aug. 1, 2019 –July 31, 2022. $468,429
3. Mikhail Chester (PI), Eck Doerry (Senior Personnel), Margaret Garcia (Senior Personnel), Christopher Lowry (Co-PI), Giuseppe Mascaro (Senior Personnel), Thomas Miexner (Co-PI), Robert Pastel (Co-PI), Ben Ruddell (Co-PI). NSF SCC: Community-based Automated Information for Urban Flooding. Oct. 1, 2018 – Sep 31, 2021. $1,500,000

Publications

Journal Articles

1. Garcia M, Ridolfi E, and di Baldassarre G. (In Review). Reservoir storage & reliability under evolving conditions. *Journal of Hydrology*
2. Brelsford, C, Dumas, M, Schlager, E, Dermody, B+, Aiuvalasit, M, Allen-Dumas, M, Beecher, J, Bhatia, U, D'Odorico, P, Garcia, M, Gober, P, et al. (In Review). Developing an Interdisciplinary Science of Sustainability: What Can Be Learned from Water Systems? *Ecology and Society*
3. Garcia M, Koebele, E, Deslatte, A, Ernst, K, Manago, K, and Treuer, G. (2019). Drivers of and barriers to sustainable urban water management transitions: a cross case comparison. *Global Environmental Change*
4. Di Baldassarre, G., Sivapalan, M., Rusca, M., Cudennec, C., Garcia, M., Kreibich, H., Konar, M., et al. (2019). Socio-hydrology: Scientific Challenges in Addressing a Societal Grand Challenge. *Water Resources Research*.
5. Zipper, S. C., Whitney, K. S., Deines, J. M., Befus, K. M., Bhatia, U., Albers, S. J., Beecher, J., Garcia, M., et al. (2019). Balancing Open Science and Data Privacy in the Water Sciences. *Water Resources Research*.
6. Garcia, M and Islam, S. (2019). The Role of External and Emergent Drivers of Water Use Change in Las Vegas. *Urban Water Journal*
7. Gilrein EJ, Carvalhaes TM, Markolfa SA, Chester MV, Allenby BR, and Garcia M. (2019). Emerging concepts and practices for transforming infrastructure from rigid to adaptable. *Sustainable and Resilient Infrastructure*
8. Wallen, KE, Filbee-Dexter, K, Pittman, J, Posner, SM, Alexander, SM, Romulo, CL, Bennett, DE, Clark, EC, Cousins, SJM, Dubik, BA, Garcia, M, Haig, HA, Koebele, EA, Qiu, J, Richards, RC, Symons, CC, Zipper, SC. (2019). Learn by doing: An evaluation of an interdisciplinary team science graduate training program for social-environmental research. *Journal of Environmental Education and Science*
9. Konar, M, Garcia M, Sanderson MR, Yu DJ, & Sivapalan M. (2019). Expanding the scope and foundation of sociohydrology as the science of coupled human-water systems. *Water Resources Research*. doi:10.1029/2018WR024088

10. Di Baldassarre, G, Wanders, N, AghaKouchak, A, Kuil, L, Rangecroft, S, Veldkamp, TIE, Garcia, M, van Oel, PR, Breinl, K, and Van Loon, AF. (2018). Water shortages worsened by reservoir effects. *Nature Sustainability*, 1(11), 617-622.
11. Treuer, G, Koebele, E, Deslatte, A, Ernst, K, Garcia, M and Manago, K. (2017). A narrative method for analyzing transitions in urban water management: The case of the Miami-Dade Water and Sewer Department. *Water Resources Research*, 53(1), pp.891-908. doi:10.1002/2016WR019658
12. Srinivasan, V, Sanderson, M, Garcia, M, Konar, M, Blöschl, G and Sivapalan, M. (2017). Prediction in a socio-hydrological world. *Hydrological Sciences Journal*, 62(3), pp.338-345. http://dx.doi.org/10.1080/02626667.2016.1253844
13. Garcia, M, Portney, K, & Islam, S, (2016). A question driven socio-hydrological modeling process. *Hydrology and Earth System Sciences*, 20(1), 73-92. https://doi.org/10.5194/hess-20-73-2016
14. Read, L and Garcia, M, (2015). Water diplomacy: Perspectives from a group of interdisciplinary graduate students. *Journal of Contemporary Water Research & Education*, 155(1), pp.11-18. doi:10.1111/j.1936-704X.2015.03191.x

Journal Editorials

1. Srinivasan, V., Sanderson, M., Garcia, M., Konar, M., Blöschl, G., & Sivapalan, M. (2018). Moving socio-hydrologic modelling forward: unpacking hidden assumptions, values and model structure by engaging with stakeholders. Hydrological Sciences Journal, 63 (9), 1444-1446.
2. Levy, M. C., Garcia, M., Blair, P., Chen, X., Gomes, S. L., Gower, D. B., ... & McCord, P. F. (2016). Wicked but worth it: student perspectives on socio-hydrology. *Hydrol. Process*. http://dx. doi. org/10, 1002.

Book Chapters

1. Turlington, MW, de Neufville, R, and Garcia, M, (2017). Flexible Design of Water Infrastructure Systems. *Water Diplomacy in Action: Contingent Approaches to Managing Complex Water Problems*, 1, p.51. http://www.jstor.org/stable/j.ctt1jktqgh
2. AlMisnad, A, de Neufville, R, and Garcia, M, (2017). Risk Distribution and the Adoption of Flexibility: Desalination Expansion in Qatar. *Water Diplomacy in Action: Contingent Approaches to Managing Complex Water Problems*, 1, p.229. http://www.jstor.org/stable/j.ctt1jktqgh

Refereed Conference Papers

1. Hjelmstad, A., Garcia, M., & Larson, K., (2019). Effect of Drought Policies on Los Angeles Water Demand. World Environmental and Water Resources Congress.
2. Parker, P. J., Penn, M. R., Apul, D. S., Garcia, M., & Torlapati, J. (2018). Collaboratively Developing an Introductory Infrastructure Systems Curriculum: The One Water Module. ASEE Annual Conference & Exposition

TEACHING & MENTORING

Teaching Experience

1. Hydrology (Undergraduate: CEE440, Graduate: CEE545)
2. Urban Infrastructure Anatomy (Graduate: CEE 507)
3. Hydrosystems Seminar (Graduate: CEE 591)
4. Uncertainty Analysis for Infrastructure Systems (Graduate: CEE598)
5. Socio-Hydrological Systems Analysis (Graduate: CEE 598)

New Course Development

1. Uncertainty Analysis for Infrastructure Systems (CEE598)
2. Socio-Hydrological Systems Analysis (CEE 598)

Mentorship & Supervision

PhD Students

1. Ashish Shrestha. (Current). Novel Techniques and Technologies for Flexibility in Urban Drainage Design. Funding: Start up and NSF #1831475
2. Behshad Mohajer Iravanloo. (Current). Adaptive Reservoir Management for Floods and Droughts. Funding: Start up and NSF #1913920

Masters Students

1. Annika Hjelmstad. (Current). Thesis: Estimation of Precipitation Measurement Error and its Propagation in Urban Stormwater Models. Funding National Weather Service and NSF #1831475. (Co-mentored with Dr. Mascaro)
2. Dillon Nys. (2018-2019). Research Assistant & Applied Project: Socio-Technical Dynamics of Closed Loop Systems.

Undergraduate Students

1. Marielle Ransom. (Current). Research Assistant: Water Stress and Hydrological Change. Funding: NSF #1923880
2. Annika Hjelmstad. (2017-2018). Thesis: Effect of Drought Policies on California Water Demand. Funding: Fulton Undergraduate Research Initiative.
3. Kiran Pendyala. (2017-2019). Research Assistant & Thesis: Analysis of Santa Monica Water Usage Data for Sustainability Measures. Funding start up.
4. Ivan Bystrov. (2017-2019). Research Assistant: Green Infrastructure Performance. Funding: Start up. (Co-mentored with Dr. Muenich)

Thesis & Dissertation Committees

1. Alysha Helmrich. (Current PhD Student in CEE)
2. Adenike Opejin. (Current PhD Student in SOS)
3. Mercedes Kindler. (Current MS Student in CEE)
4. Erica Gilrein. (CEE MS: 2017-2019). Thesis: Emerging concepts and practices for transforming infrastructure from rigid to adaptable.
5. Raveena John (CEE BS: 2017-2018). Thesis: The EcoCode.