

KIMBERLY J. QUESNEL

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EDUCATION

- 2019 **PhD Civil and Environmental Engineering**, Stanford University, Stanford, CA
Concentration in Environmental Engineering
- 2015 **MS Civil and Environmental Engineering**, Stanford University, Stanford, CA
Concentration in Environmental Fluid Mechanics & Hydrology
- 2010 **BS Civil Engineering**, California Polytechnic State University (Cal Poly), San Luis Obispo, CA
Magna Cum Laude
- 2007 Engineering Summer Program, Munich University of Applied Sciences, Munich, Germany

RESEARCH EXPERIENCE

- 2020-present **Senior Project Scientist**, Blue Forest Conservation, Oakland, CA
- Financial innovation for sustainable solutions through the Forest Resilience Bond
- 2019-2020 **Postdoctoral Research Scholar**, Woods Institute for the Environment and the Bill Lane Center for the American West, Stanford University, Stanford, CA
- Linking evolving urban form to changes in water use patterns using high-resolution data integration and machine learning
 - Evaluating the potential for in-conduit hydropower in California
- 2015-2019 **Graduate Research Assistant**, ReNUWIt, Stanford University, Stanford, CA
- Doctoral research under Dr. Newsha Ajami as part of NSF's Engineering Research Center for Reinventing the Nation's Urban Water Infrastructure (ReNUWIt)
 - Investigated urban water demand as a key component of advancing future water supply planning, focusing on uncovering the drivers of water use using modern computational tools
 - Worked closely with water agencies and regional planners
 - Interdisciplinary research on water conservation behavior during a highly publicized drought
 - Data analysis & statistical methods to model interactions between irrigation and greenness
- 2014-2019 **Graduate Research Assistant**, Water in the West, Stanford University, Stanford, CA
- Research on financing and governance mechanisms to accelerate water innovation
 - Developed framework for evaluating the multi-sector performance metrics for financing green infrastructure
 - Worked with communication team to write research reports, briefs, and news stories from articles to disseminate findings to a broad audience
 - Collaboratively created interactive tools to communicate research: "living map" of innovative water financing in the U.S.; "Visualizing California's dynamic urban water use" data portal
- 2018-2019 **Water Innovation Policy Fellow**, ImagineH2O, San Francisco, CA
- Selected as one of two inaugural fellows
 - Research and development of a policy to accelerate the dissemination of in-conduit hydropower technologies across California

- Engaged with technology providers, water agencies, lobbyists, state agency employees, and legislative staff to identify technology diffusion barriers and potential solutions
- Pitched policy proposal at annual Water Innovation Week in March 2019

2014 **Graduate Student Researcher & Student Mentor**, Juneau Icefield Research Program, Juneau, AK

- Eight-week glaciological expedition across 80 miles on the Juneau Icefield
- Attended daily climate change, science policy, and glaciology lectures
- Performed scientific field work relating to glacier mass balance, strain rates, nunatak entomology, and water quality with active data analysis
- Mentored two undergraduate research projects on glacial hydrology and renewable energy during and for four months after program

2014 **Student Lab Assistant**, Environmental Fluid Mechanics Laboratory, Stanford University, Stanford, CA

- Organized, prepared, and programmed field equipment, including Acoustic Doppler Current Profilers (ADCP), Vectors, and Thermistors, Conductivity, Temperature, Depth (CTD) Sensors, for two estuarine and lake field deployments

2009 **Undergraduate Researcher (REU)**, NSF's Network for Earthquake Engineering Simulation (NEES), O.H. Hinsdale Wave Research Laboratory, Oregon State University, Corvallis, OR

- Undergraduate research examining wave breaking behavior on a reef with a rough surface through laboratory experiments
- Created a database of wave breaking behavior, performed construction at the facility, operated the wave-maker computer system, and completed data analysis to write an individual research paper collaboratively with graduate student

PROFESSIONAL AND OTHER EXPERIENCE

2011-2014 **Associate Civil Engineer, Remediation Practice**, TRC Environmental Corporation, Lakewood, CO

- Project engineer and technical support for a wide-variety of projects including mine site remediation in Nevada and Idaho, time-sensitive ASTM Phase I environmental site assessments, and regulatory documents for landfill closure
- Worked as a contract employee at a midstream natural gas company in the Environmental Health and Safety Group, Water/Waste and Pipeline Compliance & Integrity groups—developed a data analysis program in Excel to streamline their Pipeline and Hazardous Materials Safety Administration (PHMSA) annual gas report
- Asked to maintain contract employment status for special projects during graduate school

2007-2010 **Undergraduate Engineering Volunteer, Thailand Team**, Engineers Without Borders, Cal Poly, San Luis Obispo, CA

- Member of six-person senior design team responsible for the planned implementation of seven Slow Sand Filter (SSF) systems for the community of Huai Nam Khun in Thailand, responsible for operations and maintenance
- Travelled to village in December 2009 to collect site data, interview community members, and perform on-site water quality testing
- Created workshops for June 2008 trip to help villagers construct their own SSF systems
- Extensive reports and grant writing including presentation of project to national Technical Advisory Committee for gaining approval to implement design

- 2008 **Structural Engineering Intern**, John Labib and Associates Structural Engineering, Los Angeles, CA
- Worked with AutoCAD daily to revise plans, sections, and details
 - Designed a small timber structure using LRFD principles and Enercalc
 - Analyzed soil reports for geotechnical information, critical to design

PUBLICATIONS

Peer-Reviewed Journal Articles

- In Prep* [11] Brand, M., **K.J. Quesnel**, et. al. Environmental Impact Bonds: Laying a common framework and looking forward
- [10] **Quesnel, K.J.** et al. Forest restoration in the Western U.S.: a synthesis of benefits to enable financing and create resilient ecosystems
- [9] Sundararaman, A., **K.J. Quesnel**, Xu, S.Y., and N.K. Ajami. Methodological assessment of the potential for in-conduit hydropower generation in the state of California
- 2020 [8] **Quesnel, K.J.**, S. Agrawal, and N.K. Ajami. Diverse paradigms of residential development inform water use and drought-related conservation behavior. *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/abb7ae>
- 2019 [7] **Quesnel, K.J.**, N.K. Ajami, and A. Marx. Shifting landscapes: Decoupled urban irrigation and greenness transitions during severe drought. *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/ab20d4>
- [6] **Quesnel, K.J.**, and N.K. Ajami. Large landscape urban irrigation: a data-driven approach to evaluating conservation behavior. *Water Resources Research*. <https://doi.org/10.1029/2018WR023549>
- 2018 [5] Gordon, B.L, **K.J. Quesnel**, R. Abs, and N.K. Ajami. A case-study based framework for assessing the multi-sector performance of green infrastructure. *Journal of Environmental Management*. <https://doi.org/10.1016/j.jenvman.2018.06.029>
- [4] **Quesnel, K.J.** and N.K. Ajami. Advancing Water Innovation through Public Benefit Funds: Examining California’s Electricity Public Goods Charge. *Journal American Water Works Association (JAWWA)*. <https://doi.org/10.5942/jawwa.2018.110.0009>. Issue Featured Author
- [3] Roby, N.A., P. Gonzales, **K.J. Quesnel**, and N.K. Ajami. A novel search algorithm for quantifying news media coverage of environmental events. *Environmental Modelling and Software*. <https://doi.org/10.1016/j.envsoft.2017.12.012>
- 2017 [2] **Quesnel, K.J.** and N.K. Ajami. Changes in water consumption linked to heavy news media coverage of extreme climatic events. *Science Advances*. <https://doi.org/10.1126/sciadv.1700784>
Media Coverage: Los Angeles Times, Scientific American, Grist, High Country News, Water Deeply, Yale Environment Review, and others
- [1] **Quesnel, K.J.**, N.K. Ajami, and N. Wyss. Accelerating the Integration of Distributed Water Solutions: A Conceptual Financing Model from the Electricity Sector. *Environmental Management*. <https://doi.org/10.1007/s00267-017-0914-4>

Book Chapters

- In Prep* Kreibich, H., D. Yu, **K.J. Quesnel**, et al. Chapter 5: Data needs and acquisition. *Coevolution and Prediction of Coupled Human-Water Systems: A Synthesis of Change in Hydrology and Society*.
- Ajami, N.K., P. Adriaens, **K.J. Quesnel**. Water Security and Equity Risk Assessment under Digital Water Infrastructure Finance and Governance Models. *Water Risk and Its Impact on the Financial Markets and Our Society: New Developments in Risk Assessment and Management*.

Reports and Research Briefs for Policy Makers

- 2019 [4] Ajami, N.K. and **K.J. Quesnel**. Innovative Ideas to Finance Resiliency in the Water Sector. *Research Brief*. Stanford Woods Institute for the Environment, Stanford University, Stanford, California.
- 2016 [3] Ajami, N.K., B.H. Thompson, and **K.J. Quesnel**. Renewing Investment in Our Water System. *Research Brief*. Stanford Woods Institute for the Environment, Stanford University, Stanford, California.
- [2] **Quesnel, K.J.**, N.K. Ajami, and N. Wyss. Tapping into Alternative Ways to Fund Innovative and Multi-Purpose Water Projects: A Financing Framework from the Electricity Sector. *Report*. Water in the West, Stanford University, Stanford, California.
- 2015 [1] **Quesnel, K.J.** and N.K. Ajami. Funding Water in Times of Financial Uncertainty: The Case for a Public Goods Charge in California. *Report*. Water in the West, Stanford University, Stanford, California.

Popular Media Writings and Blogs

- 2019 [3] Gordon, B., **K.J. Quesnel**, J.M. Wolfand, and P. Hamel. "Using nature to tackle water infrastructure challenges: frontiers of green infrastructure research at Stanford" Water in the West's Insight blog. <http://waterinthewest.stanford.edu/news-events/news-insights/using-nature-tackle-water-infrastructure-challenges-frontiers-green>
- 2016 [2] **Quesnel, K.J.** "How Scientists Can Reach Policy Makers: Lessons from Space Weather Scientists." AGU's The Bridge blog. <http://thebridge.agu.org/2016/12/16/scientists-can-reach-policy-makers-lessons-space-weather-scientists/>
- 2014 [1] **Quesnel, K.J.** "The Final Trail Party Finally Makes it to Camp 10." Juneau Icefield Research Program blog. <http://juneauicefield.org/blog/2014/7/31/the-final-trail-party-finally-makes-it-to-camp-10>

AWARDS AND HONORS

- 2020 *Outstanding Reviewer*, ASCE's Journal of Sustainable Water in the Built Environment
- 2016-2019 *Awardee*, U.S. Environmental Protection Agency (EPA) Science to Achieve Results (STAR) Fellowship (\$132,000)
- 2018-2019 *Awardee*, Water Innovation Policy Fellowship, ImagineH2O (\$10,000)
- 2018 *Selected Participant*, Rising Environmental Leaders Program, Woods Institute for the Environment, Stanford University

- 2017 *Best Student Presentation: Oral Category*, American Water Resources Association (AWRA) Annual Conference, Portland, Oregon
Honorable Mention, California Water Policy Challenge for “Data for green infrastructure: defining monitoring, evaluation, and data collection technologies and recourses for calculating performance metrics to reduce risk and increase access to financing” proposal, ImagineH2O
- 2016 *Finalist, California Water Data Challenge* for “Coping with the California Drought: 2014-2016” interactive data visualization, State of California and the White House Council on Environmental Quality. <https://ca-drought.herokuapp.com/>
Honorable Mention, Student Video Competition for “The World without Environmental Engineers” educational video, Association of Environmental Engineering and Science Professors
- 2015 *Winner, Vail Global Energy Forum Student Video Competition* for “Uncovering Novel Relationships in the Water-Energy Nexus” video, Precourt Institute for Energy, Stanford University
- 2014 *Awardee*, Joan W. Miller Scholarship, Juneau Icefield Research Program (\$1,450)
- 2013-2014 *Awardee*, Femineer’s Scholarship Fund, Stanford University (\$5,000)
- 2010 *Nominee*, Outstanding Women in Engineering Award, Cal Poly
- 2007-2009 *Dean’s List and President’s List*, Cal Poly
- 2009 *Best Poster Presentation*, NSF NEES Young Researchers Symposium

TEACHING AND MENTORING

- 2018 *Guest Lecturer* for CEE 265F: Environmental Governance and Climate Resilience. Fall Quarter
Teaching Assistant for PUBLPOL 200C: Senior Practicum. Spring Quarter
- 2017 *Teaching Assistant* for CEE 70/ENGR 90: Environmental Science and Technology. Winter Quarter
Teaching Assistant for PUBLPOL 200C: Senior Practicum. Spring Quarter
- 2014-2019 *Research Mentor* for undergraduate and master’s students working in the Ajami group
- Cecily Wang: MS student, Civil & Environmental Engineering 2018-2019
 - Saahil Agrawal: MS student, Management Science & Engineering 2018
 - Robin Abs: MS student, Civil & Environmental Engineering 2017-2018
 - Tim Hsu: MS student, Civil & Environmental Engineering Summer 2017
 - Mai Tran: MS student, Management Science & Engineering Summer 2017
 - Thomas Ng: MS student, Civil & Environmental Engineering 2016-2017
 - Nick Roby: MS student, Civil & Environmental Engineering 2015-2017
 - Zheng Ma: BS student, Mathematical & Computational Science Summer 2015
 - Noemi Wyss: Intern, Woods Institute for the Environment 2014-2015
- 2007-2008 *Study Session Leader* for Pre-Calculus Students, Cal Poly

OUTREACH AND SERVICE

- 2016-present *Reviewer* for Delaware Sea Grant, Environmental Research Letters, Journal of the American Planning Association, Journal of the American Water Resources Association, Journal of

- Sustainable Water in the Built Environment, Journal of Water Resources Planning and Management, Water Resources Research
- 2019-present *Student Mentor and Research Advisor*, AP Capstone Research, Leland High School
- 2017-2018 *Student Mentor*, Green Academy at Woodside High School
- 2015-2017 *Treasurer (2015/16), Campus Representative (2016/17)*, Student Leadership Committee, ReNUWit
- 2015-2016 *Volunteer Educator*, Tuolumne River Trust
- 2014-2016 *Founding Member*, Environmental and Water Studies Graduate Student Committee, Stanford
- 2008-2010 *Vice President (2008/09), Events Coordinator (2009/10)*, Chi Epsilon CE Honor Society, Cal Poly
- 2009-2010 *Mentor*, International Student Program, Cal Poly
- 2006, 2007 *Orientation Leader*, Week of Welcome, Cal Poly

PRESENTATIONS

External Invited Talks and Panels

- 2019 **Quesnel, K.J.** October 2019. *Panelist*. Digitizing Circular Water Systems Part 1: Understanding the Ecosystem & Engaging your Value Chain. Greenbiz's VERGE19, Oakland, CA
- Quesnel, K.J.** August 2019. *Panelist*. Driving customer engagement and water efficiency program performance with market data. California Data Collaborative, Davis, CA.
- 2018 **Quesnel, K.J.** and N.K. Ajami. June 2018. Media: the Silent Player in the California Drought Game. American Water Works Association (AWWA) Annual Conference, Las Vegas, NV.
- Quesnel, K.J.** and N.K. Ajami. January 2018. Water use during a highly-publicized drought: what matters for conservation? 2017-2018 UC Riverside Water Seminar Series, Riverside, CA.
- 2017 **Quesnel, K.J.** November 2017. Smart Meters: An overview, potential benefits, and overcoming challenges, American Water Resources Association (AWRA) Annual Conference, Portland, OR.
- Quesnel, K.J.** October 2017. *Panelist*. Blended Finance for Natural Infrastructure Investment, Forest Trends Association, San Francisco, CA.
- 2016 **Quesnel, K.J.** and N.K. Ajami. March 2016. Alternative Ways to Fund Water Projects: Looking to the Electricity Sector for Guidance. How to Fund Groundwater Sustainability Symposium, Groundwater Resources Association of California, Sacramento, CA.

Conference Oral Presentations

- 2017 **Quesnel, K.J.**, N.K. Ajami, J. Urata, and A. Marx. November 2017. Using smart meters to uncover drivers of water use for nonresidential urban irrigation. American Water Resources Association (AWRA) Annual Conference. Portland, OR. Winner of best student oral presentation
- 2016 **Quesnel, K.J.**, P. Gonzales, N. Roby, and N.K. Ajami. October 2016. Coping with drought: Investigating media impact on water consumption. WaterSmart Innovations Conference, Las Vegas, NV.
- 2015 **Quesnel, K.J.** and N.K. Ajami. March 2015. Funding Water in Times of Financial Uncertainty: The Case for a Public Goods Charge in California. American Water Resources Association (AWRA)

Spring Specialty Conference-Water for Urban Areas: Managing Risks & Building Resiliency, Los Angeles, CA.

- 2014 **Quesnel, K.J.**, L. Gulbrandsen, L. Christie, C. Amott, S. O'Neel, and J. Kavanaugh. October 2014. Using Glacial Mass Balance on the Juneau Icefield as an Indicator for Hydrologic Fluxes and Implications for Downstream Ecosystems. Geological Society of America (GSA) Annual Meeting, Vancouver, British Columbia, Canada.

Select Conference Poster Presentations

- 2020 **Quesnel, K.J.** et al. Ecosystem services of forest restoration in the Western U.S.: a synthesis of benefits to enable financing. American Geophysical Union (AGU) Fall Meeting
- 2019 **Quesnel, K.J.**, S. Agrawal, and N.K. Ajami. December 2019. High income customers do not always use the most water: linking urban planning to water use behavior. American Geophysical Union (AGU) Fall Meeting, San Francisco, CA.
- Quesnel, K.J.**, S. Agrawal, and N.K. Ajami. October 2019. Evolving urban form plays a key role in water use and drought-related conservation regimes. Drought in the Anthropocene Workshop, Arizona State University, Tempe, AZ.
- 2018 **Quesnel, K.J.** and N.K. Ajami. December 2018. Does having recycled water affect conservation behavior? Assessing nonresidential urban irrigation during drought. American Geophysical Union (AGU) Fall Meeting, Washington, DC.
- 2017 **Quesnel, K.J.**, N.K. Ajami, A. Marx. December 2017. Combining high resolution water use data from smart meters with remote sensing and geospatial datasets to investigate outdoor water demand and greenness changes during drought. AGU Fall Meeting, New Orleans, LA.
- Gordon, B.L, N.K. Ajami, and **K.J. Quesnel**. December 2017. A case-study based analysis of performance metrics for green infrastructure. AGU Fall Meeting, New Orleans, LA.
- 2016 **Quesnel, K.J.**, N. Roby, P. Gonzales, and N.K. Ajami. December 2016. The Role of Political Action and Media in Increasing Public Awareness of Water Scarcity: Combined Effects on Water Use Behavior. AGU Fall Meeting, San Francisco, CA.
- Quesnel, K.J.**, P. Gonzales, N. Roby, and N.K. Ajami. July 2016. Changes in Residential Water Consumption during Drought: An Investigation of Water Use Behavior. STREAM Challenge Week, Torquay, UK.
- 2015 **Quesnel, K.J.**, N.K. Ajami, and N. Wyss. December 2015. Funding Sustainable Water Projects: A Financing Framework from the Electricity Sector. Young Environmental Scholars (YES) Annual Conference, Stanford, CA.
- 2009 **Quesnel, K.J.**, P.D. Quiroga, I. Roberston, R. Riggs, and K.F. Cheung. August 2009. Tsunami Wave Breaking Behavior on a Reef with a Rough Surface. NSF's ERC for Network for Earthquake Engineering Simulation (NEES) Young Researcher's Symposium, Buffalo, NY. Winner of best student poster presentation

PROFESSIONAL CREDENTIALS AND MEMBERSHIPS

CA Board for Professional Engineers, Land Surveyors, & Geologists: Engineer in Training (EIT) Certification, 2008
Student Member, American Water Resources Association, American Geophysical Union

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