Sarah Marie Fletcher

Y2E2 Room 169
473 Via Ortega
Stanford University
Stanford, California 94305

sfletcher@stanford.edu
+1 410 493 0929
www.sarahmfletcher.com
Last updated: August 8, 2020

ACADEMIC APPOINTMENTS

Stanford University
Assistant Professor, Civil and Environmental Engineering — July 2020 - present
Center Fellow, Woods Institute for the Environment — July 2020 - present

Massachusetts Institute of Technology
Postdoctoral Associate, Civil and Environmental Engineering — August 2018 – June 2020

EDUCATION

Massachusetts Institute of Technology
PhD, Engineering Systems — September 2014 – May 2018
MS, Technology and Policy — September 2010 – May 2012

University of Pennsylvania
BA, Physics; Economics — September 2006 – May 2010

SELECTED HONORS AND AWARDS

1st Place Doctoral Thesis, Academic Achievement Award, AWWA, 2019
Fellow, Global Future Council on Food Systems Innovation, World Economic Forum, 2018
Editor's Choice Paper, Journal of Water Resources Planning and Management, 2018
Outstanding Student Paper Award, AGU Fall Meeting, 2017
Rasikbhai L. Meswani Fellowship for Water Solutions, MIT, 2017
Best Presentation, Technology Management and Policy Consortium, Stony Brook, NY, 2017
Outstanding Student Paper Award, AGU Fall Meeting, 2016
National Science Foundation Graduate Research Fellowship, 2015
Best Thesis in Technology and Policy, MIT, 2012
MIT Energy Fellowship, 2011
Phi Beta Kappa, 2010

JOURNAL ARTICLES

N. Diffenbaugh, C. Field, E. Appel, I. Azevedo, D. Baldocchi, M. Burke, J. Burney, P. Ciais, S. Davis, A. Fiore, **S. Fletcher**, T. Hertel, D. Horton, S. Hsiang, R. Jackson, X. Jin, M. Levi, D. Lobell, G. McKinley, F. Moore, A. Montgomery, K. Nadeau, D. Pataki, J. Randerson, M. Reichstein, J. Schnell, S. Seneviratne, D. Singh, A. Steiner, and G. Wong-Parodi. 2020. "The COVID-19 Lockdowns: A Window into the Earth System." Nature Reviews Earth & Environment.

M. Lickley, S. Solomon, **S. Fletcher**, G. Velders, J. Daniel, M. Rigby, S. Montzka, and L Kuijpers. 2020. "Quantifying contributions of chlorofluorocarbon banks to emissions and impacts on the ozone layer and climate." Nature Communications. 11 (1380).

J. Herman, J. Quinn, S. Steinschneider, M. Giuliani, **S. Fletcher**. 2020. **"**Climate adaptation as a control problem: Review and perspectives on dynamic water resources planning under uncertainty." Water Resources Research. 56 (e24389).

S. Fletcher, K. Strzepek, A. Alsaati, and O. de Weck. 2019. "Learning and flexibility for water supply infrastructure planning under groundwater resource uncertainty." Environmental Research Letters. 14 (11).

S. Fletcher, M. Lickley, and K. Strzepek. 2019. "Learning about climate change uncertainty enables flexible water infrastructure planning." Nature Communications. 10 (1782).

S. Fletcher, M. Miotti, J. Swaminathan, M. Klemun, K. Strzepek and A. Siddiqi. 2017. "Water Supply Infrastructure Planning: A Decision-Making Framework to Classify Multiple Uncertainties and Evaluate Flexible Design." Journal of Water Resources Planning and Management. 143 (10).

J. Wescoat, **S. Fletcher**, and M. Novellino. 2016. "National Rural Drinking Water Monitoring: Progress And Challenges With India's IMIS Database." Water Policy 18 (4).

A. Siddiqi and **S. Fletcher**. 2015. "Energy Intensity of Water End-Uses." Current Sustainable/ Renewable Energy Reports 2 (1): 25-31

MANUSCRIPTS UNDER REVIEW

S. Fletcher, A. Jain Figueroa, H. Alemohammad, and D. Entekhabi. 2020. "Spatial patterns in smallholder crop yield uncertainty identify priority intervention areas." Under Review.

D. Birge, **S. Fletcher**, A. Siddiqi, A. Al-Sumaiti, and J. Wescoat. 2020. "Modeling Residential Landscape Alternatives in the Arid Middle East: A Multi-Criteria, Multi-Resolution Approach." Under Review.

M. Lickley, **S. Fletcher**, S. Solomon, and M. Rigby. 2020. "Joint inference of CFC lifetimes and banks across molecules indicates new, unexpected emissions." Under Review.

INVITED TALKS

"Addressing water and food security in sub-Saharan Africa using uncertainty quantification and systems models," School of Geography, Clark University. Scheduled for March 11, 2019; cancelled due to COVID-19.

"Building theory on the drivers of effective adaptive water supply planning using Bayesian learning and engineering options analysis," Invited oral presentation. AGU Fall Meeting. San Francisco, CA. December 20, 2019.

"Water supply infrastructure planning: Learning and adapting for an uncertain future," Woods Institute for the Environment, Stanford University. January 29, 2019.

"Learning about climate change uncertainty to enable flexible water infrastructure planning," Invited oral presentation. AGU Fall Meeting. Washington, DC. December 11, 2018.

"Water infrastructure planning and policy: Learning and adapting for an uncertain future," Goldman School of Public Policy, University of California, Berkeley. December 4, 2018.

"Flexible water supply infrastructure planning: Learning and adapting for an uncertain future," Civil and Environmental Engineering, Tufts University. November 30, 2018.

"Flexible water supply infrastructure planning under uncertainty: Learning and adapting for resilience," Civil and Environmental Engineering, University of Massachusetts Amherst. March 5, 2018.

"Flexible water supply infrastructure planning under uncertainty: Learning and adapting for resilience," Department of Civil and Mechanical Engineering, California Institute of Technology. February 23, 2018.

"Flexible Water Supply Infrastructure Planning Under Uncertainty: A Differentiated Approach," Center for Climate and Energy Decision Making, Carnegie Mellon University. February 20, 2018.

"Flexible Water Supply Infrastructure Planning Under Uncertainty," Global Food+ Symposium, Tufts University. February 16, 2018.

"Forging successful partnerships between academia, industry and government." Invited panelist. AGU Fall Meeting. New Orleans, LA. December 12, 2017.

"Water supply infrastructure planning under multiple uncertainties: A differentiated approach," Invited oral presentation. AGU Fall Meeting. New Orleans, LA. December 11, 2017.

SELECTED CONFERENCE PRESENTATIONS / PAPERS

S. Fletcher, H Alemohammad, AJ Figueroa, D Entekhabi. Characterizing farm-scale variability in maize yields in West Africa by integrating optical and passive microwave earth observation data with a process model. AGU Fall Meeting. San Francisco, CA. December 2019.

S. Fletcher, K. Strzepek, A. Alsaati, and O. de Weck. Learning about groundwater resource uncertainty enables adaptive and reliable water supply infrastructure planning. Oral presentation. AGU Chapman Conference on the Quest for Sustainability of Heavily Stressed Aquifers at Regional to Global Scales. Valencia, Spain. October 2019.

S. Fletcher, M. Lickley and K. Strzepek. "Bayesian learning about climate uncertainty enables flexible infrastructure planning," Oral presentation. EWRI Congress. Pittsburgh, PA. May 2019.

S. Fletcher and K. Strzepek. "Urban water supply infrastructure planning under predictive groundwater uncertainty: Bayesian updating and flexible design," Oral presentation. AGU Fall Meeting. New Orleans, LA. December 2017.

S. Fletcher. "Flexible Water Supply Planning Under Multiple Uncertainties: A Differentiated Approach," Oral Presentation. Technology Management and Policy Consortium. Stony Brook, NY. June 2017.

S. Fletcher, A. Alhassan, A. Alsaati, and K. Strzepek. "Uncertainty Categorization, Modeling, and Management for Regional Water Supply Planning," Oral Presentation. AGU Fall Meeting. San Francisco, CA. December 2016.

S. Fletcher. "Decisions Under Scarcity: Water Supply Infrastructure Investment Under Uncertainty in Melbourne." Oral Presentation. Sustainable Water Management 2016. American Water Works Association. Providence, RI. March 2016.

S. Fletcher. "Collaborating for Sustainable Water Management in the Oil and Gas Industry." Oral Presentation. World Water Week. Stockholm, Sweden. September 2013.

TECHNICAL REPORTS

M. Gay, A. Horn, **S. Fletcher**, and L. Capper. 2013. "The Future of Water in Unconventionals: Water Management Strategies." IHS CERA. pp 163.

E. Moniz et al. 2011. "The Future of Natural Gas: An Interdisciplinary MIT Study." MIT Energy Initiative.

SELECTED MEDIA COVERAGE

"Incremental additions to water infrastructure are best bet," MIT Technology Review. October 24, 2017.

"Desal planning: When and how big?" GWI Water Desalination Report. September 25, 2017.

"Case study suggests new approach to urban water supply" MIT News. August 14, 2017.

PROFESSIONAL EXPERIENCE

Sourcewater, Cambridge, MA
Director of Product Development — May 2014 – September 2014
Part-time Consultant — September 2014 – December 2015

IHS Cambridge Energy Research Associates (CERA), Cambridge, MA
Associate — June 2012 – May 2014

Bipartisan Policy Center, Washington, DC
Energy Intern — January 2010 – August 2010
Transportation Intern — May 2009 – August 2009

TEACHING

Stanford University
Instructor, Stochastic Hydrology — Winter 2021 (Scheduled)
Instructor, Water, Models, and Decision-Making — Spring 2021 (Scheduled)

Harvard University
Teaching Assistant, Water Resources Development and Management — Spring 2017

Massachusetts Institute of Technology
Teaching Assistant, Science, Technology, and Public Policy — Fall 2015

SERVICE

Reviewer for: Nature Food, Environmental Research Letters, Water Resources Research, Climatic Change, Journal of Water Resources Planning and Management, Journal of Infrastructure Systems, International Journal of Climatology, Hydrological Processes

Co-President, Engineering Systems Student Society, MIT, September 2016 – December 2017

Seminar Co-Chair, Engineering Systems Student Society, MIT, September 2015 – May 2016

Content Director, MIT Energy Conference, May 2011 – March 2012

Fellow, Community Water Solutions, Tamale, Ghana, January 2011

PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU), American Society for Civil Engineers (ASCE), Society for Risk Analysis (SRA), Society for Decision Making under Deep Uncertainty (DMDU)

SKILLS

Computer: Python, MATLAB, ArcGIS, R, Google Earth Engine, bash, git
Interests: Rock climbing, cooking, contemporary literature, classical violin