Stanford

Sarah Fletcher

Assistant Professor of Civil and Environmental Engineering and Center Fellow at the Woods Institute for the Environment

Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrator**

  Geoffrey Tuttle - Program Administrator

  Email gwtuttle@stanford.edu

  Tel 650-725-7488

Bio

BIO

The Fletcher lab aims to advance water resources management to promote resilient and equitable responses to a changing world. Our research integrates methods from hydrology, policy analysis, and data science to inform decision-making around critical environmental challenges. Our approach centers partnership for real-world impact.

ACADEMIC APPOINTMENTS

- Assistant Professor, Civil and Environmental Engineering
- Center Fellow, Stanford Woods Institute for the Environment

HONORS AND AWARDS

- Best Policy Oriented Paper, Journal of Water Resources Planning and Management (2024)
- CAREER Award, National Science Foundation (2024)
- Inspiring Early Academic Career Award, Stanford Faculty Women's Forum (2024)
- Young Investigator Lecture, Caltech Resnick Sustainability Institute (2023)
- Editor's Choice Paper, Journal of Water Resources Planning and Management (2022)
- 1st Place Doctoral Thesis, Academic Achievement Award, American Water Works Association (2019)
- Editor's Choice Paper, Journal of Water Resources Planning and Management (2018)
- Best Presentation, Technology Management and Policy Consortium (2017)
- Outstanding Student Paper Award, AGU (2017)
- Outstanding Student Paper Award, AGU (2016)
- Graduate Research Fellowship, National Science Foundation (2015)
- Best Thesis, MIT Technology and Policy Program (2012)

PROFESSIONAL EDUCATION

- BA, University of Pennsylvania , Physics; Economics (2010)

- MS, Massachusetts Institute of Technology , Technology and Policy (2012)
- PhD, Massachusetts Institute of Technology , Engineering Systems (2018)

LINKS

- https://fletcherlab.science: https://fletcherlab.science

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Fletcher lab aims to advance water resources management to promote resilient and equitable responses to a changing world. We study water resources and climate change adaptation from a socio-technical systems perspective. Our research integrates methods from hydrology, policy analysis, and data science to inform decision-making around critical environmental challenges.

Teaching

COURSES

2025-26

- Water Resources Systems Analysis: CEE 266G (Spr)

2024-25

- Stochastic Hydrology: CEE 266F (Win)
- Water Resources Systems Analysis: CEE 266G (Aut)

2023-24

- Citizenship in the 21st Century: COLLEGE 102 (Win)
- Stochastic Hydrology: CEE 266F (Win)

2022-23

- Addressing deep uncertainty in systems models for sustainability: CEE 366A (Win)
- Water Resources Systems Analysis: CEE 266G (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

June Choi, Allisa Hastie, Kamran Tehranchi

Doctoral Dissertation Advisor (AC)

Aniket Verma, Keani Willebrand, Mofan Zhang

Master's Program Advisor

Jinhan Cai, Tyler Maxwell

Doctoral (Program)

Gina Kittleson, Greta Markey, Aniket Verma, Keani Willebrand, Mofan Zhang

Publications

PUBLICATIONS

- **Alternative household water affordability metrics using water bill delinquency behavior** *ENVIRONMENTAL RESEARCH LETTERS*
  Skerker, J. B., Verma, A., Edwards, M., Rachunok, B., Fletcher, S.

2024; 19 (7)

- **Quantifying the Value of Technology and Policy Innovation in Water Resource Portfolios** *EARTHS FUTURE*
  Zaniolo, M., Fletcher, S., Mauter, M. S.
  2024; 12 (5)
- **Equity and modeling in sustainability science: Examples and opportunities throughout the process.** *Proceedings of the National Academy of Sciences of the United States of America*
  Giang, A., Edwards, M. R., Fletcher, S. M., Gardner-Frolick, R., Gryba, R., Mathias, J., Venier-Cambron, C., Anderies, J. M., Berglund, E., Carley, S., Erickson, J. S., Grubert, E., Hadjimichael, et al
  2024; 121 (13): e2215688121
- **Valuing Combinations of Flexible Planning, Design, and Operations in Water Supply Infrastructure** *WATER RESOURCES RESEARCH*
  Willebrand, K., Zaniolo, M., Skerker, J., Fletcher, S.
  2024; 60 (3)
- **Bayesian Estimation of Advanced Warning Time of Precipitation Emergence** *EARTHS FUTURE*
  Lickley, M., Fletcher, S.
  2024; 12 (2)
- **Predicting and understanding residential water use with interpretable machine learning** *ENVIRONMENTAL RESEARCH LETTERS*
  Rachunok, B., Verma, A., Fletcher, S.
  2024; 19 (1)
- **Socio-hydrological impacts of rate design on water affordability during drought** *ENVIRONMENTAL RESEARCH LETTERS*
  Nayak, A., Rachunok, B., Thompson, B., Fletcher, S.
  2023; 18 (12)
- **Climate oscillation impacts on water supply augmentation planning.** *Proceedings of the National Academy of Sciences of the United States of America*
  Fletcher, S., Zaniolo, M., Zhang, M., Lickley, M.
  2023; 120 (35): e2215681120
- **Quantifying the Value of Learning for Flexible Water Infrastructure Planning** *WATER RESOURCES RESEARCH*
  Skerker, J. B., Zaniolo, M., Willebrand, K., Lickley, M., Fletcher, S. M.
  2023; 59 (6)
- **Multi-scale planning model for robust urban drought response** *ENVIRONMENTAL RESEARCH LETTERS*
  Zaniolo, M., Fletcher, S., Mauter, M. S.
  2023; 18 (5)
- **FIND: A Synthetic weather generator to control drought Frequency, Intensity, and Duration** *ENVIRONMENTAL MODELLING & SOFTWARE*
  Zaniolo, M., Fletcher, S., Mauter, M.
  2023; 172
- **Equity in Water Resources Planning: A Path Forward for Decision Support Modelers** *JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT*
  Fletcher, S., Hadjimichael, A., Quinn, J., Osman, K., Giuliani, M., Gold, D., Figueroa, A., Gordon, B.
  2022; 148 (7)
- **Multicriteria, Multiresolution Modeling of Suburban Residential Landscape Alternatives: Water-Efficient Villas in the Arid Middle East** *JOURNAL OF URBAN PLANNING AND DEVELOPMENT*
  Birge, D., Fletcher, S., Siddiqi, A., Al Sumaiti, A., Wescoat, J. L.
  2022; 148 (2)
- **Spatiotemporal monsoon characteristics and maize yields in West Africa** *ENVIRONMENTAL RESEARCH COMMUNICATIONS*
  Shiu, J., Fletcher, S., Entekhabi, D.
  2021; 3 (12)
- **Joint inference of CFC lifetimes and banks suggests previously unidentified emissions.** *Nature communications*
  Lickley, M., Fletcher, S., Rigby, M., Solomon, S.

2021; 12 (1): 2920

- **The COVID-19 lockdowns: a window into the Earth System** *NATURE REVIEWS EARTH & ENVIRONMENT*

  Diffenbaugh, N. S., Field, C. B., Appel, E. A., Azevedo, I. L., Baldocchi, D. D., Burke, M., Burney, J. A., Ciais, P., Davis, S. J., Fiore, A. M., Fletcher, S. M., Hertel, T. W., Horton, et al

  2020; 1 (9): 470-481