Samantha Roth

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WORK EXPERIENCE:

Postdoctoral Research Associate, Thayer School of Engineering at Dartmouth College 2024-Present
Mentor: Klaus Keller

EDUCATION:

The Pennsylvania State University: State College, PA 2019-2024
Doctor of Philosophy in Statistics
Advisor: Murali Haran

Lehigh University: Bethlehem, PA 2015-2019
Bachelor of Science in Statistics, with Highest Honors Cumulative GPA: 3.82

HONORS AND AWARDS:
2024: ASA ENVR Workshop Travel Award
2024: SIAM Conference on Uncertainty Quantification Travel Award
2023-2024: Jack and Eleanor Pettit Scholarship in Science
2022-2023: J. Keith Ord Scholarship for Research in Spatial and Environmental Statistics
2019- 2024: Janet L. Norwood Science Achievement Graduate Fellowship in Statistics
2019- 2021: Institute for Computation and Data Science Scholarship
2019: Verne M. Willaman Distinguished Graduate Fellowship in the Eberly College of Science

RESEARCH INTERESTS:

Computer model calibration, uncertainty quantification, statistical downscaling, environmental statistics, spatial/spatiotemporal statistics, climate science, high performance computing

PUBLICATIONS:

Roth, S.M., Lee, B.S., Nicholas, R.E., Keller, K., & Haran, M. (2024) Bayesian spatial models for projecting corn yields. *Remote Sensing*. 16(1): 69. https://doi.org/10.3390/rs16010069.

Roth, S. M., Lee, B. S., Sharma, S., Hosseini-Shakib, I., Keller, K., & Haran, M. (2023). Flood hazard model calibration using multiresolution model output. *Environmetrics*, 34(2): e2769. https://doi.org/10.1002/env.2769.

Ye, H., Nicholas, R.E., **Roth, S.M.**, & Keller, K. (2021). Considering uncertainties expands the lower tail of maize yield projections. *PLoS ONE* 16(11): e0259180. https://doi.org/10.1371/journal.pone.0259180.

PAPERS UNDER REVIEW:

Pollack, A., Auermueller, L., Burleyson, C., Campbell, J.E., Condon, M., Cooper, C., Coronese, M., Dangendorf, S., Doss-Gollin, J., Hedge, P., Helgeson, C., Kopp, R., Kwakkel, J., Leaf, A., Lesk, C., Mankin, J., Mayfield, E., Nicholas, R.E., Rice, J., **Roth, S.M.**, Scheeler, M., Srikrishnan, V., Tuana, N., Vernon, C., Zhao, M., & Keller, K. (2024) Investing in open and fair practices for more usable and equitable climate-risk research. *Under review at PNAS*.

PAPERS IN IN PREPARATION:

Roth, S.M., Sharma, S., Alipour, A., Keller, K., & Haran, M. (TBA) PDFlood: A New Approach for Probabilistic Flood Model Downscaling. In Preparation.

Ruckert, K.L., Cooper, C., **Roth, S.M.**, and Nicholas, R.E. (TBA) Simpler Graph Types Improve Interpretation of Extreme Precipitation.

Roth, S.M., Ye, H., Nicholas, R.E., Srikrishnan, V., and Keller, K. (TBA) Emulation methods and adaptive sampling increase the efficiency of sensitivity analysis for computationally expensive models.

PRESENTATIONS:

Probabilistic Downscaling for Flood Hazard Models
- Invited Talk, Society for Industrial and Applied Mathematics Conference on Uncertainty Quantification 2024, Trieste, Italy, 2024
- Talk, DOE's Earth and Environmental Systems Modeling Program Principal Investigator's Meeting, Rockville, MD, USA, 2024
- Poster, ASA ENVR Workshop: Spatial Data Science for the Environment, Boulder, CO, USA, 2024

Statistically approximating a computationally demanding flood model
- Talk, Spatial Statistics 2023, Boulder, CO, USA, 2023

Flood hazard model calibration using multiresolution model output
- Poster, Penn State Climate Solutions Symposium, State College, PA, USA, 2023
- Poster, Rao Prize Conference at The Pennsylvania State University, State College, PA, USA, 2023
- Invited Talk, Muhlenberg College Department of Mathematics Colloquium, Allentown, PA, USA, 2023
- Poster, Institute for Computational and Data Sciences Symposium, State College, PA, USA, 2022
- Poster, American Geophysical Union Fall Meeting 2022, Chicago, IL, USA, 2022
- Talk, Joint Statistical Meetings, Washington, DC, USA, 2022
- Poster, World Meeting of The International Society for Bayesian Analysis, Montreal, QC, Canada, 2022

A Bayesian Spatial Model for Corn Yield
- Talk, Institute for Computational and Data Sciences Symposium, State College, PA, 2021

Predicting Regional Suitability for Zika Outbreaks: A Comparative Statistical Study
- Poster, Society for Mathematical Biology Annual Meeting, Montreal, QC, Canada, 2019

TEACHING EXPERIENCE:

Graduate Instructor, The Pennsylvania State University
- STAT415: Introduction to Mathematical Statistics, 2023
- STAT200: Elementary Statistics, 2022

RESEARCH EXPERIENCE:

- *Graduate Research Assistant, The Pennsylvania State University Department of Statistics* 2022-2024
- *Maryland Sea Grant REU Program, University of Maryland Center for Environmental Science* 2018

SERVICE:

- Flood Resilience Fest, Selinsgrove, PA, USA, 2022
- American Statistical Association Data Fest at Penn State, State College, PA, USA, 2022
- Undergraduate Women in Science Grad School 101 Panel, State College, PA, USA, 2023

EXTRACURRICULAR ACTIVITIES:

- *Treasurer, Institute for Computational and Data Sciences Student Group* 2022-2023

- *President, Institute for Computational and Data Sciences Student Group* 2021-2022
- *Treasurer, Statistics Graduate Student Association at The Pennsylvania State University* 2021-2022

SKILLS: Skilled with R, Stan, and ArcGIS; experience with Python and QGIS