Zhenhua Wang

CONTACT INFORMATION

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RESEARCH INTERESTS

Bayesian, physics-inspired, and modern data science methods for analyzing spatio-temporal datasets in social and environmental science

EDUCATION

University of Missouri, Columbia, Missouri USA

Ph.D. Candidate, Statistics, October 2025 (expected graduation date: Aug 2026)

- Advisor: Scott H. Holan

Duke University, Durham, North Carolina USA

M.S., Interdisciplinary Data Science, May 2020

Shandong University of Science and Technology, Qingdao, Shandong China

B.S., Geographical Information Science, July, 2018

EXPERIENCE

University of Missouri, Columbia, Missouri USA

Graduate Research Assistant July, 2022 - present

Graduate Teaching Assistant September, 2021 - May, 2022

- Stat 1200 Introductory Statistical Reasoning

Duke University, Durham, North Carolina USA

Graduate Research Assistant July, 2020 - July, 2021

Graduate Teaching Assistant September, 2019 - May, 2020

- IDS 705 Principles of Machine Learning
- Math 730 Probability

RENCI (Renaissance Computing Institute), Chapel Hill, North Carolina USA

Research Internship May, 2019 - August, 2019

HONORS AND AWARDS

Winning Paper - JSM Student Paper Competition 2025

GSS/SSS/SRMS Section

Joint Statistical Meetings Student Travel Award 2025

Survey Research Methods Section

PUBLICATIONS

Wang, Z., Parker, P.A., and Holan, S.H. (2025) Variational autoencoded multivariate spatial Fay-Herriot models. *Spatial Statistics*, 70, 100929.

Wang, Z., Holan, S. H., and Wikle, C. K. (2025). Echo state networks for spatio-temporal area-level data. *(Invited Paper) Data Science in Science*, 4(1), 2554883. (Winning paper, ASA's GSS/SSS/SRMS 2025 Student Paper Competition)

Rico-Straffon, J., **Wang, Z.**, Loucks, C. J., and Pfaff, A. (2025). When do extraction rights help forests? Robustness and heterogeneity for linked interventions in the Peruvian Amazon. *Conservation Science and Practice*, e70081.

Rico-Straffon, J., **Wang, Z.**, Panlasigui, S., Loucks, C. J., Swenson, J., and Pfaff, A. (2023). Forest concessions and eco-certifications in the Peruvian Amazon: Deforestation impacts of logging rights and logging restrictions. *Journal of Environmental Economics and Management*, 118, 102780.

Wang, Z., Akande, O., Poulos, J. and Li, F. (2022). Are deep learning models superior for missing data imputation in surveys? Evidence from an empirical comparison. *Survey Methodology*, Statistics Canada, Catalogue No. 12-001-X, Vol. 48, No. 2.

Ai, B., Liu, Y., **Wang, Z.**, and Sun, D. (2020). Evaluation of multi-scale representation of ocean flow fields using the Euler method based on map load. Journal of Spatial Science, 65(3), 539-551.

Ai, B., Wen, Z., **Wang, Z.**, Wang, R., Su, D., Li, C., and Yang, F. (2020). Convolutional neural network to retrieve water depth in marine shallow water area from remote sensing images. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 13, 2888-2898.

Book Chapters

Wang, Z., Parker, P.A. and Holan, Neural networks for official statistics: modeling high-dimensional structure in complex surveys and administrative records. (Invited submission - Volume 55, Handbook of Statistics)

Working Papers

Wang, Z., Parker, P.A. and Holan, S.H. Variational autoencoded Hausdorff Gaussian process.

Wang, Z., Parker, P.A. and Holan, S.H. vmsae - An R package for variational multivariate spatial small area estimation.

Wang, Z., Holan, S.H. and Wikle, C.K. Bayesian graph diffusion model for spatio-temporal spreading process.

Rico-Straffon, J., **Wang, Z.**, and Pfaff, A. Comparing protection types in the Peruvian amazon: multiple-use protected areas did no worse for forests.

Software

Wang, Z., Parker, P.A., and Holan, S.H. (2025) vmsae - An R package for variational multivariate spatial small area estimation. Available at https://cran.r-project.org/web/packages/vmsae/index.html

Conference Presentations

Echo state networks for spatio-temporal area-level data, Joint Statistical Meetings, (JSM Student Paper Competition), Nashville, Tennessee USA, August 2025

Service

Space Time Reading Group Coordinator — August 2025 - Current

Department of Statistics and Data Science, University of Missouri

DataFest Mid-Missouri VIP Consultant — 2022 - 2025

American Statistical Association

Computer Skills

- Languages: Python, R, C++, ELisp, Bash, LaTeX
- Softwares/packages: PyTorch, NumPyro, Keras, TensorFlow, Git, Stan, ArcGIS, Slurm, Emacs
- Operating Systems: GNU/Linux, macOS