Michael F. Christensen, Ph.D.

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EDUCATION

Ph.D. in Statistical Science, *Duke University*, September 2024
Dissertation: *Utilizing Network Structure to Flexibly Model Areal Data*
Committee: Peter D. Hoff (chair), Alan E. Gelfand, David B. Dunson, and James S. Clark
M.S. in Statistics, *Brigham Young University*, April 2019
Thesis: *Bayesian Multi-scale Dynamic Modeling of Precipitation in the Indus Watershed*
Committee: C. Shane Reese, Matthew J. Heaton, Natalie J. Blades, and Summer B. Rupper
B.S. in Statistics, *Brigham Young University*, April 2019
Minors: Mathematics and Psychology

WORK EXPERIENCE

Assistant Professor, *Brigham Young University, Department of Statistics,* 2024-Present
Graduate Student Researcher, *Los Alamos National Laboratory, Statistical Sciences Group,* 2023

TEACHING EXPERIENCE

As Instructor at Brigham Young University:
- Stat 330: Statistical Modeling 2 (Introduction to Regression)

As Teaching Assistant at Duke University:
- STA 432: Theory and Methods of Statistical Learning and Inference; Alexander Volfovsky; Spring 2024
- STA 240: Probability for Statistical Inference, Modeling, and Data Analysis; Simon Mak, Spring 2023
- STA 521: Predictive Modeling and Statistical Learning; Yuansi Chen; Fall 2021
- STA 360: Bayesian Infernce and Modern Statistical Methods; Rebecca Steorts; Fall 2020
- MATH 342D: Intro to Statistical Inference; Hau-Tieng Wu; Spring 2020

RESEARCH EXPERIENCE

My dissertation research focused on the development of graph-based methods for characterizing complex patterns of spatial and spatiotemporal dependence in areal data.

Other research projects have included:
- Development of adaptive MCMC techniques for high-dimensional data
- Modeling of covariance between functional and scalar variables in ecological settings
- Extension of FAB inference procedures (see Hoff 2021) to discrete data settings
- Analysis of precipitation data from high mountain Asia using dynamic spatial models
- Using Gaussian process regression to model Antarctic surface mass balance
- Development of Bayesian hierarchical model to study psychological patient-therapist outcomes

PEER-REVIEWED PUBLICATIONS

Christensen MF and Hoff PD (2024). "A flexible and interpretable covariance model for data observed on graphs." *Environmetrics* e2879, doi: 10.1002/env.2879

White PA, **Christensen MF**, Frye H, Gelfand AE, and Silander JA (2023). "Joint multivariate and functional modeling for plant traits and reflectances," *Environmental and Ecological Statistics* 1:28, doi: 10.1007/s10651-023-00574-7

White PA, Frye H, **Christensen MF**, Gelfand AE, and Silander JA (2022). "Spatial functional data modeling of plant reflectances," *Annals of Applied Statistics* 16:3, 1919–36, doi: 10.1214/21-AOAS1576

Christensen MF, Heaton MJ, Rupper SB, Reese CS, and Christensen WF (2019). "Bayesian multi-scale spatio-temporal modeling of precipitation in the Indus Watershed," *Frontiers in Earth Science*, 7:210, doi: 10.3389/ feart.2019.00210

WORKING PAPERS

Christensen MF and Eidsvik J (2024). "A dimension reduction approach to edge weight estimation for use in spatial models." Under review at *Journal of Computational and Graphical Statistics,* arXiv:2407.02684

Christensen MF and Hoff PD (2024). "Incorporating circuit theory into a dynamic model for crowd-sourced observations of migratory birds." In preparation for *Journal of Agricultural, Biological, and Environmental Statistics* arXiv: 2407.02690

TALKS AND PRESENTATIONS

"A dimension reduction approach to edge weight estimation for use in spatial models," 2024 ENVR Workshop: Poster Session, October 2024

"Utilizing network structure to flexibly model areal data," BYU Department of Statistics Seminar, November 2023

"Better MCMC: an eclectic overview of MCMC tips and tools for use with tricky posteriors," Los Alamos National Laboratory Statistical Sciences Group Seminar, November 2023

"An eclectic overview of MCMC tips and tools for use with tricky posteriors," Duke STA 701 Talk, Septamber 2023

"A dynamic model characterizing bird migration," WNAR 2023, June 2023, *Student Paper Competition: Best Oral Presentation Award*

"A spatio-temporal model characterizing bird migration," Duke STA 701 Talk, January 2023

"A nonstationary spatial covariance model for data on graphs," 2022 ENVR Workshop: Poster Session, October 2022

"A nonstationary spatial covariance model for data observed on graphs," Duke STA 701 Talk, February 2022

"Multi-scale Dynamic Modeling of Precipitation in the Indus Watershed," JSM 2019, August 2019

"Multi-scale Dynamic Modeling of Precipitation in the Indus Watershed," BYU Student Research Conference, March 2019

"Climate Model Validation via Local Approximate Gaussian Processes," BYU Student Research Conference, March 2018

"Bayesian Statistical Models in Climate Change Assessment," BYU Student Research Conference, March 2017

"Hierarchical Modeling and the Therapist Effect," BYU Student Research Conference, March 2016

PROFESSIONAL SERVICE

Departmental Service, *Brigham Young University, Department of Statistics*:

- Course Coordinator for Stat 330, (2024-present)
- Graduate Admissions Committee, (2024-present)
- Student Outreach/Recruiting Committee, (2024-present)

MEMBERSHIPS

American Statistical Association:

- Section on Statistics and the Environment