Josh Jacobson

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Education

University of Wollongong, Wollongong, NSW *2020–Now*
Ph.D. in Applied Statistics
Research: multivariate spatial statistics, Bayesian hierarchical models
Advisors: Noel Cressie, Andrew Zammit Mangion, and Michael Bertolacci

University of Colorado Boulder, Boulder, CO *2018–2020*
M.S. in Applied Mathematics
Research: spatial structure in ensemble forecasts, multivariate Gaussian processes
Advisors: William Kleiber and Michael Scheuerer

University of Colorado Boulder, Boulder, CO *2015–2019*
B.S. in Applied Mathematics (with honors)
Minors in Computer Science, Atmospheric and Oceanic Sciences

Relevant Professional Experience

Jupiter Intelligence, Boulder, CO *2020–2022*
Data Science Consultant
Research: extreme weather events, copula models, approximate Bayesian computation
Supervisors: Steve Sain and Alexis Hoffman

Honors and Awards

- **Best Lightning Talk**, The Bayesian Young Statisticians Meeting (*2025*)
- **Winner, Student Paper Competition**, EnviBayes Section of the International Society for Bayesian Analysis (*2025*)
- **Best Student Presentation**, 31st Conference of The International Environmetrics Society (*2024*)
- Allison Harcourt Poster Award: 1st, Early Career & Student Statisticians Conference (*2021*)
- Statistical Data Science Scholarship recipient, Australian Mathematical Sciences Institute (*2021*)
- Full Ph.D. scholarship and living stipend, University of Wollongong (*2020–2024*)
- **Paper of the Month Award**: October 2020, *Nonlinear Processes in Geophysics* (*2020*)

Publications

6. **Jacobson, J.**, Bertolacci, M., Zammit-Mangion, A., Schuh, A., & Cressie, N. (2025+). WOMBAT v2.S: A Bayesian inversion framework for attributing global CO_2 flux components from multiprocess data. Submitted preprint: https://doi.org/10.48550/arXiv.2503.09065.

5. Cressie, N., Zammit-Mangion, A., **Jacobson, J.**, & Bertolacci, M. (2023). Earth's CO_2 battle: A view from space. *Significance*, 20(1), 14-19. DOI: 10.1093/jrssig/qmad003

4. **Jacobson, J.**, Cressie, N., & Zammit-Mangion, A. (2023). Spatial statistical prediction of solar-induced chlorophyll fluorescence (SIF) from multivariate OCO-2 data. *Remote Sensing*, 15(16), 4038. DOI: 10.3390/rs15164038

3. Vu, Q., Cao, Y., **Jacobson, J.**, Pearse, A. R., & Zammit-Mangion, A. (2021). Discussion on "Competition on Spatial Statistics for Large Datasets." *Journal of Agricultural, Biological and Environmental Statistics*, 26, 614-618. DOI: 10.1007/s13253-021-00464-0

2. **Jacobson, J.**, Kleiber, W., Scheuerer, M., & Bellier, J. (2020). Beyond univariate calibration: Verifying spatial structure in ensembles of forecast fields. *Nonlinear Processes in Geophysics*, 27(3), 411-427. DOI: 10.5194/npg-27-411-2020

1. Raseman, W. J., **Jacobson, J.**, & Kasprzyk, J. R. (2019). Parasol: An open source, interactive parallel coordinates library for multi-objective decision making. *Environmental Modelling & Software*, 116, 153-163. DOI: 10.1016/j.envsoft.2019.03.005

Teaching Experience

Teaching Assistant — University of Wollongong
- MATH 255: Mathematics for Computing — *Spring 2025*
- STAT 304: Stochastic Processes and Time Series Analysis — *Fall 2024*
- STAT 332: Generalized Linear Models — *Spring 2024*
- STAT 301: Statistical Methods for Data Science — *Fall 2023*
- STAT 332: Generalized Linear Models — *Spring 2023*

Teaching Assistant — University of Colorado Boulder
- APPM 4350: Fourier Series and Boundary Value Problems — *Fall 2018*
- CSCI 1320: Introduction to Programming for Engineers — *Spring 2016*

Presentations

A Bayesian hierarchical model for CO_2 flux estimation from multiprocess satellite data
- The Bayesian Young Statisticians Meeting (BAYSM), Online — *Apr 2025*
- Department of Statistics Seminar (*Invited*), University of New South Wales, NSW — *Mar 2025*
- 31st Conference of The International Environmetrics Society, Adelaide, SA — *Dec 2024*

Spatial prediction of solar-induced fluorescence (SIF) from multiprocess satellite data
- Australian Statistical Conference, Wollongong, NSW — *Dec 2023*
- NASA Orbiting Carbon Observatory Science Team Meeting, Online — *Oct 2023*

A fully-Bayesian spatial copula model for joint-frequency analysis of extreme events
- National Institute for Applied Statistics Research Australia Seminar (*Invited*), Wollongong, NSW — *Apr 2023*
- American Meteorological Society 103rd Annual Meeting, Denver, CO — *Jan 2023*

Multivariate spatial prediction of column-averaged carbon dioxide over North America
- Australian and New Zealand Statistical Conference, Online — *Jul 2021*
- Australian Mathematical Sciences Institute Winter School, Online — *Jul 2021*

Verification of spatial structure in ensembles of forecast fields
Department of Mathematics Seminar, University of Zurich, Zurich, Switzerland *Nov 2019*

Interactive visualizations for multi-objective optimization problems
Rocky Mountain Advanced Computing Consortium HPC Symposium, Boulder, CO *Sep 2018*

Posters

A multivariate Bayesian hierarchical model for global CO_2 surface flux
ENVR Workshop on Spatial Data Science for the Environment, Boulder, CO *Oct 2024*

Multivariate spatial-dependence modeling with satellite data
Early Career & Student Statisticians Conference, Online *Jul 2021*

Academic Service

Outreach Volunteer *Fall 2024*
School of Mathematics and Applied Statistics, University of Wollongong

Head of Postgraduate Seminar Series *Spring 2024*
School of Mathematics and Applied Statistics, University of Wollongong

Co-host of "Probably Novel Radio Show and Podcast" *Spring 2019*
Radio 1190, Department of Applied Mathematics, University of Colorado Boulder

Professional Memberships

American Statistical Association
International Society for Bayesian Analysis
Statistical Society of Australia
The International Environmetrics Society

Technical Strengths

Programming Languages	R, Python, PyMC, Julia
High Performance Computing	Shell Scripting, Cluster Computing, Cloud Computing
Tools & Software	Git, LaTeX, Linux, CDO

Last updated: April 13, 2025