Joshua S. North

Earth and Environmental Sciences
Lawrence Berkeley National Laboratory
1 Cyclotron Road, Berkeley, CA 94720

jsnorth@lbl.gov
https://jsnowynorth.github.io

PROFESSIONAL EXPERIENCE

Lawrence Berkeley National Laboratory, Berkeley, California. (August 2022 - Present)

Postdoctoral Fellow
Advisor: Dr. Mark D. Risser
Climate and Ecosystems Sciences Division

EDUCATION

University of Missouri Columbia, Columbia, Missouri. (July, 2022)

Ph.D., STATISTICS
Advisors: Dr. Christopher K. Wikle and Dr. Erin M. Schliep

University of Missouri Columbia, Columbia, Missouri. (May, 2019)

M.A., STATISTICS

University of Colorado Boulder, Boulder, Colorado. (May, 2017)

B.S., APPLIED MATHEMATICS
B.A., ECOLOGY AND EVOLUTIONARY BIOLOGY
Minor, STATISTICS

PUBLICATIONS

North, J. S., Wikle, C. K., & Schliep, E. M. (2023). "A Review of Data-Driven Discovery for Dynamic Systems". *International Statistical Review*, 2210.10663, 1–29. https://doi.org/10.1111/insr.12554

Wagner, T., Schliep, E. M., **North, J. S.**, Kundel, H., Custer, C. A., Ruzich, J. K., & Hansen, G. J. A. (2023). "Predicting climate change impacts on poikilotherms using physiologically guided species abundance models". *Proceedings of the National Academy of Sciences*, *120*(15), 1–8. https://doi.org/10.1073/pnas.2214199120

North, J. S., Wikle, C. K., & Schliep, E. M. (2022). "A Bayesian approach for data-driven dynamic equation discovery". *Journal of Agricultural, Biological, and Environmental Statistics*, *1*(1), 1–28. https://doi.org/10.1007/s13253-022-00514-1

North, J. S., Schliep, E. M., & Wikle, C. K. (2020). "On the spatial and temporal shift in the archetypal seasonal temperature cycle as driven by annual and semi-annual harmonics". *Environmetrics*, 1–16. https://doi.org/10.1002/env.2665

North, J. S., Stanley, Z., Kleiber, W., Deierling, W., Gilleland, E., & Steiner, M. (2020). "A statistical approach to fast nowcasting of lightning potential fields". *Advances in Statistical Climatology, Meteorology, and Oceanography*, *2*, 79–90. https://doi.org/https://doi.org/10.5194/ascmo-6-79-2020

PREPRINT

North, J. S., Risser, M. D., & Breidt, F. J. (2023). "A flexible class of priors for conducting posterior inference on structured orthonormal matrices". *arXiv*. https://doi.org/10.48550/arXiv.2307.13627

North, J. S., Schliep, E. M., Hansen, G. J. A., Kundel, H., Custer, C. A., McLaughlin, P., & Wagner, T. (2022). "Accounting for spatio-temporal sampling variation in joint species distribution models", Revision submitted to the Journal of Applied Ecology.

North, J. S., Wikle, C. K., & Schliep, E. M. (2022). "A Bayesian approach for spatio-temporal data-driven dynamic equation discovery". *arXiv*, Revision submitted to Bayesian Analysis. https://doi.org/10.48550/arXiv.2209.02750

IN PREPARATION

Custer, C. A., **North, J. S.**, Wagner, T., Schliep, E. M., Kundel, H., Ruzich, J. K., & Hansen, G. J. A. (2023+). "Extending physiologically guided abundance models to include species and spatial dependencies for making predictions under future climate scenarios".

Wagner, T., **North, J. S.**, Schliep, E. M., & Lottig, N. R. (2023+). "Predictions of water quality for > 400,000 inland lakes of the Conterminous United States".

North, J. S., & Risser, M. D. (2023+). "A Bayesian approach to Higher Order Singular Value Decomposition".

North, J. S., & Risser, M. D. (2023+). "Data-driven spatial prediction using structured probablistic basis functions".

North, J. S., Risser, M. D., & O'Brian, T. A. (2023+). "A statistical approach for estimating climate forcing from observational data".

TEACHING

University of Missouri Columbia, Columbia, Missouri.

> *Course Development*
>
>> STAT 4330/7330 - Methods in Sports Analytics I
>>
>> STAT 4340/7340 - Methods in Sports Analytics II
>
> *Graduate Teaching Assistant*
>
>> STAT 4340/7340 - Methods in Sports Analytics II (S20, S21, S22)

STAT 4330/7330 - Methods in Sports Analytics I (F20, F21)

STAT 3500 - Introduction to Probability and Statistics II (F18)

STAT 2500 - Introduction to Probability and Statistics I (F17, S18)

University of Colorado Boulder, Boulder, Colorado.

Undergraduate Teaching Assistant

APPM 3570 - Applied Probability (S16)

APPM 1235 - Pre-Calculus for Engineers (F15)

PRESENTATIONS

* - Invited, † - Virtual, ‡ - Poster

A flexible prior for structured orthonormal matrices, South Dakota State University: Brookings, SD; September 29, 2023.*†

A flexible prior for structured orthonormal matrices, Joint Statistics Meeting 2023: Toronto, Canada; August 8, 2023.

A flexible prior for structured orthonormal matrices, Spatial Statistics 2023 - Climate and the Environment: University of Colorado Boulder; July 21, 2023.

A flexible class of priors for conducting posterior inference on structured orthonormal matrices, Climate Extremes Workshop: Clemson University; May 16, 2023. ‡

A flexible class of priors for conducting posterior inference on structured orthonormal matrices, Machine Learning and Analytics Group: Lawrence Berkeley National Laboratory; May 11, 2023.*

A Bayesian Approach for Spatio-Temporal Data-Driven Dynamic Equation Discovery, ENVR 2022 Workshop: Environmental and Ecological Statistical Research and Applications with Societal Impacts, Provo, UT; October 6, 2022. ‡

A Bayesian Approach for Data-Driven Dynamic Equation Discovery, Joint Statistical Meeting, Washington D.C.; August 10, 2022.

A Bayesian Approach to Data-Driven Discovery of Nonlinear Dynamic Equations, Lawrence Berkeley National Laboratory, Berkeley, CA; January 21, 2022.*†

A Bayesian Approach to Data-Driven Discovery of Nonlinear Dynamic Equations, Sandia National Laboratory, Albuquerque, NM; December 14, 2021.*†

Data-Driven Approach to Nonlinear Dynamic Equation Discovery, Joint Statistical Meeting; August 9, 2021.†

On the Spatial and Temporal Shift in the Archetypal Seasonal Temperature Cycle as Driven by Annual and Semi-Annual Harmonics, Joint Statistical Meeting; Virtual, August 4, 2020. *†

Accuracy of Radial Support Vector Classifiers; Effect of Imbalanced Training Sets on Varying Minority Class Prevalence, University of Colorado Boulder, Boulder, Colorado; May 1, 2017. ‡

Creating Reproducible Research, University of Colorado Boulder, Boulder, Colorado; March 21, 2017.

AWARDS

ENVR Student Paper competition - Honorable Mention (2022)

PROFESSIONAL ACTIVITIES

Organized Statmospheric Seminar Series in the Earth and Environmantal Sciences Area at Lawrence Berkeley National Laboratory (Fall 2023)

Graduate Student Leader, Space-Time Reading Group, University of Missouri (2021-2022)

Instructor and VIP Consultant for University of Missouri DataFest (2018-2022)

University of Missouri Statistics Graduate Student Association Vice-President (2017-2018)

University of Missouri Statistics Graduate Student Association Treasurer (2018-2019)

PROFESSIONAL MEMBERSHIPS

American Statistical Association (ASA) member (2017 - present)

International Society for Bayesian Analysis (ISBA) member (2023 - present)

American Geophysical Union (AGU) member (2023 - present)

REFEREE

Geoscientific Model Development

Journal of Agricultural, Biological and Environmental Statistics