Michael Dumelle (Dumelle.Michael@epa.gov)

Personal-Website Google-Scholar ResearchGate ORCID-ID

EDUCATION

Oregon State University, Corvallis, Oregon

- Ph.D. in Statistics, 2020
  - Dissertation Title: A Linear Mixed Model Framework to Spatio-Temporal Random Processes using the Separable and Product-Sum Covariance Structures
  - Advisors: Claudio Fuentes & Alix Gitelman
  - Committee Members: Alec Kowalewski, Lisa Madsen, Jay Ver Hoef, Charlotte Wickham, & Harry Yeh
- Graduate Minor in Risk and Uncertainty Quantification in Marine Science, 2019
- M.S. in Statistics, 2016

California Polytechnic State University, San Luis Obispo, California

- B.A. in Political Science, 2014

EMPLOYMENT

United States Environmental Protection Agency (USEPA) 2020 - Present

- Statistician for the Freshwater Ecology Branch of USEPA's Office of Research and Development in Corvallis, Oregon

RESEARCH

Journal Publications

- **Dumelle, Michael.**, Higham, Matt., & Ver Hoef, Jay. spmodel: Spatial Statistical Modeling and Prediction in R. *In submission.*
- Mattox, Clint., **Dumelle, Michael.**, McDonald, Brian., Gould, Micah., Olsen, Connor., Braithwaite, Emily., & Kowalewski, Alec. Iron Sulfate and Phosphorous Acid Affect Turfgrass Surface pH and Microdochium Path Severity on Annual Bluegrass. 2023. *In Production at Plant Disease.*
- **Dumelle, Michael.**, Kincaid, Thomas., Olsen, Anthony., & Weber, Marc. sp-survey: Spatial Sampling Design and Analysis in R. 2023. *In Production at Journal of Statistical Software.* Preprint PDF GitHub
- **Dumelle, Michael.**, Higham, Matthew., Ver Hoef, Jay., Madsen, Lisa., & Olsen, Anthony. A Comparison of Design-Based and Model-Based Approaches for Finite Population Spatial Sampling and Inference. 2022. *Methods in Ecology and Evolution.* Preprint PDF GitHub
- **Dumelle, Michael.**, Ver Hoef, Jay., Fuentes, Claudio., & Gitelman, Alix. A Linear Mixed Model Formulation for Spatio-Temporal Random Processes with Computational Advances for the Product, Sum, and Product-Sum Covariance Functions. 2021. *Spatial Statistics.* Preprint PDF GitHub
- **Dumelle, Michael.**, Lamb, Jesse F., Jacobson, Kym., Hunsicker, Mary., Morgan, Cheryl., Burke, Brian., & Peterson, William. 2021. Captuing Copepod Dynamics in the Northern California Current Using Sentinel Stations. *Progress in Oceanography.* Preprint PDF GitHub
- Mattox, Clint., **Dumelle, Michael**., Kowalewski, Alec., McDonald, Brian., & Gould, Micah. 2020. Reducing Anthracnose on an Annual Bluegrass Putting Green with Frequent Applications of a Soil Surfactant and Hollow-tine Aerification. *Agronomy Journal.* PDF GitHub
- Mattox, Clint., **Dumelle, Michael**., McDonald, Brian., Gound, Micah., Olsen, Connor., Schmid, Chas, & Kowalewski, Alec. 2020. Comparing Rates of Minearal Oil, Sulfur, and Phosphorous Acid on Microdochium Patch Suppression, Green-Cover Percentage, and Turfgrass Quality. *Agronomy Journal.* PDF GitHub

- Mattox, Clint., **Dumelle, Michael**., McDonald, Brian., Gound, Micah., Olsen, Connor., Braithwaite, Emily., & Kowalewski, Alec. 2020. Suppression of Microdochium Patch Using Rotations of Mineral Oil, Sulfur, and Phosphorous Acid. *Agronomy Journal*. PDF GitHub

Software

- *spsurvey*: Spatial Sampling Design and Analysis. CRAN GitHub
  - Role: Author, Maintainer
  - CRAN Downloads: 94,000
- *sptotal*: Predicting Totals and Weighted Sums from Spatial Data. CRAN GitHub
  - Role: Author
  - CRAN Downloads: 10,000
- *spmodel*: Spatial Statistical Modeling and Prediction. CRAN GitHub
  - Role: Author, Maintainer
  - CRAN Downloads: 2,000

Proceedings and Technical Reports Publications

- Walsh, Kenneth C., **Dumelle, Michael.**, & Williams, Katy. 2020. Tracking Student Engagement with OER Resources and Homework. *Physics Educational Research Conference 2019 Proceedings*. PDF GitHub
- Ko, Harrison., Mayfield, Will., & **Dumelle, Michael.**. Efficient Estimates of Uncertainties in Tsunami Inundation Forecasts. *Eleventh U.S. National Conference on Earthquake Engineering*. PDF GitHub

Presentations

- **Dumelle, Michael**. 2022. spmodel: Spatial Statistical Modeling and Prediction in R. EPA Community of Practice on Statistics. Seminar Presentation.
- **Dumelle, Michael**. 2022. spmodel: Spatial Statistical Modeling and Prediction in R. 2022 ENVR Workshop. Poster Presentation.
- **Dumelle, Michael**. 2022. spmodel: Spatial Statistical Modeling and Prediction in R. EPA R Users Group. Seminar Presentation.
- **Dumelle, Michael**. 2022. A Comparison of Design-Based and Model-Based Approaches for Finite Population Spatial Sampling and Inference. 2022 Joint Statistical Meetings. Topic Contributed Presentation.
- **Dumelle, Michael**. 2022. R Tidyverse Training. EPA's Atmospheric and Environmental Systems Modeling Division. Seminar Presentation.
- **Dumelle, Michael**. 2022. Target Populations, Sampling Frames, and Site Evaluation. 2022 National NARS Meeting. Invited Presentation.
- **Dumelle, Michael**. 2022. Using R in the Quality Assurance process. US EPA's Quality Program Virtual Training Event. Seminar Presentation.
- **Dumelle, Michael**. 2021. Using R in the Quality Assurance process. EPA's Office of Research and Development Quality Assurance Spotlight Seminar. Seminar Presentation.
- **Dumelle, Michael**. 2021. Advice for Undergraduate Students Considering Graduate School in Statistics. California Polytechnic State University. Seminar Presentation.
- **Dumelle, Michael**. 2021. Using R Packages for Reproducible Workflows. 2021 EPA R Workshop. Invited Presentation. Workbook

- **Dumelle, Michael**., Olsen, Tony., Kincaid, Tom., & Weber, Marc. 2021. *spsurvey*: An R Package for Selecting and Analyzing Spatial Probability Samples. 2021 Joint Statistical Meetings. Contributed Presentation.
- **Dumelle, Michael**., Olsen, Tony., Kincaid, Tom., & Weber, Marc. 2021. *spsurvey*: An R Package for Selecting and Analyzing Spatial Probability Samples. EPA R Users Group. Seminar Presentation.
- **Dumelle, Michael.**, Ver Hoef, Jay., Fuentes, Claudio., & Gitelman, Alix. 2021. A Linear Mixed Model Formulation for Spatio-Temporal Random Processes with Computational Advances for the Product, Sum, and Product-Sum Covariance Functions. 2021 Western North American Region of the International Biometric Society. Invited Presentation.
- **Dumelle, Michael**. 2021. A Tidyverse Approach to Data Analyses in R. EPA R Users Group. Seminar Presentation.
- **Dumelle, Michael**., Olsen, Tony., Kincaid, Tom., & Weber, Marc. 2021. *spsurvey* R Package: New Options and Changes for Selecting and Analyzing Probability Samples. 12th National Monitoring Conference. Contributed Presentation.
- **Dumelle, Michael.** 2021. On Being an Effective Statistical Consultant. Oregon State Statistics Winter 2021 Consulting Practicum. Seminar Presentation.
- **Dumelle, Michael.**, Ver Hoef, Jay., Fuentes, Claudio., & Gitelman, Alix. 2021. A Linear Mixed Model Formulation for Spatio-Temporal Random Processes with Computational Advances for the Product, Sum, and Product-Sum Covariances. 2021 Spatial & Temporal Statistics Symposium. Contributed Presentation.
- **Dumelle, Michael**., & Olsen, Tony. 2020. How Sample Size Influences Statistics. Environmental Protection Agency Community of Practice for Statistics. Seminar Presentation.
- **Dumelle, Michael**., Mattox, Clint., & Kowalewski, Alec. 2020. Adjusting Standard ANOVA Methods to Account for Heterogeneous Variances with an Application to Turfgrass Management. OSU Fall 2020 Seminar Series. Seminar Presentation. GitHub
- Mattox, Clint., **Dumelle, Michael.**, Manning, Viola., Weidman, Clara., Trippe, Kristin., & Kowalewski, Alec. 2020. The Importance of Quantifying Media pH at Ambient Temperatures. ASA, CSSA and SSSA International Annual Meetings. Contributed Presentation.
- **Dumelle, Michael.**, Ver Hoef, Jay., Fuentes, Claudio., & Gitelman, Alix. 2020. A Linear Mixed Model Formulation for Spatio-Temporal Random Processes with Computational Advances for the Separable and Product-Sum Covariances. ASA Oregon Chapter Winter 2020 Meeting. Contributed Presentation.
- **Dumelle, Michael**., Mattox, Clint., Braithwaite, Emily., McDonald, Brian., & Kowalewski, Alec. 2019. Adjusting Standard ANOVA Methods to Account for Heterogeneous Variances with an Application to Turfgrass Management. ASA, CSSA and SSSA International Annual Meetings. Contributed Presentation.
- **Dumelle, Michael.**, Ver Hoef, Jay., Fuentes, Claudio., & Gitelman, Alix. 2019. A Mixed Model Approach to the Product-Sum Spatio-Temporal Covariance Function with Computational Advances. Joint Statistical Meetings. Contributed Poster.

Grants

- National Science Foundation Research Traineeship, $ 34,000, 2016.

SERVICE

Sessions Organized

- Conference: 2021 Joint Statistical Meetings. Session Title: Spatio-Temporal Statistical Applications. Invited Session.

Sessions Chaired

- Conference: 2022 Joint Statistical Meetings. Session Title: Statistical Methods in Ecology. Contributed Session.
- Conference: 2021 Joint Statistical Meetings. Session Title: Spatio-Temporal Statistical Applications. Invited Session.

Journals Refereed

- *Journal of Statistical Software*
- *Spatial Statistics*
- *Journal of Agricultural, Biological, and Environmental Statistics*

Leadership Roles

- Member of EPA's Community of Practice on Statistics 2022 - Present
- Organized, Mentor, and Judge for ASA Oregon Chapter's 2022 DataFest 2022
- Member of ASA's JEDI Students and Young Professionals (SAYP) Committee 2022 - Present
- Member of EPA's CPHEA DEIA Committee 2022 - Present
- EPA R User Group Co-Lead 2021 - Present
- Member of ASA's JEDI Outreach Group 2021 - Present
- EPA R User Group Bi-yearly Workshop Planning Committee 2020 - Present
- Courtesy Faculty in Horticulture at Oregon State University 2020 - Present
- ASA Oregon Council of Chapters Representative 2020 - Present
- Member of EPA's PESD DEIA Committee 2020 - Present
- Member of ORD's DEIA Community of Practice 2020 - Present

Individual Awards

- EPA's PESD Division Honor Award for *Using R Packages for Reproducible Workflows*. 2022.
- EPA's PESD Division Honor Award for *PESD DEIA Committee Work*. 2022.

PROFESSIONAL AFFILIATIONS

Society Memberships

- American Statistical Association 2018 - Present
- WNAR Branch of the International Biometric Society 2019 - Present
- American Society of Agronomy 2019 - 2020
- Crop Science Society of America 2019 - 2020
- Soil Science Society of America 2019 - 2020