

# Brian J Reich

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Raleigh, NC 26795            Webpage: www4.stat.ncsu.edu/~reich
- EDUCATION        PhD, Biostatistics, University of Minnesota, 2005  
BS, Mathematics, University of Wisconsin-River Falls, 1999
- POSITIONS        Associate Professor, Department of Statistics, NCSU, 2014–Present  
Assistant Professor, Department of Statistics, NCSU, 2008–2014  
Postdoctoral fellow, Department of Statistics, NCSU, 2005–2008
- AWARDS            Paper read before the Royal Statistical Society, 2018  
D.D. Mason Award Faculty Award, 2017  
LeRoy & Elva Martin Teaching Award, 2016  
JABES Showcase Session, JSM, 2015  
NCSU Faculty Scholar, 2014  
ENVR Young Researcher Award, 2013  
Advisor of the John Van Ryzin Award winner (Laura Boehm), 2013  
*Technometrics* Invited Lecture, JSM, 2009  
ENAR Distinguished Student Paper Award, 2005
- COURSES            Applied Bayesian Statistics, Spring, 2015–2018  
Spatial Statistics, Fall, 2016  
Big Data, Fall, 2015  
Bayesian Inference, Fall 2008–2012, 2014  
Statistical Theory I, Fall 2012-2013  
Applied Spatial Statistics, Spring 2012-2013  
Statistics for Management and the Social Sciences II, Fall 2007, 2010-2011  
Introduction to Regression Analysis, Fall 2010-2011  
Introduction to Probability and Distribution Theory, Spring 2011  
Preparation for Statistical Research, Spring 2007–2009  
Economics and Business Statistics, Fall 2005–2006
- PAPERS            Larsen E, Reich BJ, Ruminski M Rappold AG. Impacts of fire smoke plumes on regional air quality, 2006-2013. Accepted, *Journal Of Exposure Science And Environmental Epidemiology*.
- Monroe KD, Collazo JA, Pacifici K, Reich BJ, Puente-Roln AR, Terando AJ. Occupancy and abundance of eleutherodactylus frogs in coffee plantations in Puerto Rico. Accepted, *Herpetologica*.
- Morris SA, Reich BJ, Pacifici K, Lei Y. A spatial model for rare binary events. Accepted, *Environmental and Ecological Statistics*.
- Hazra A, Reich BJ, Reich DS, Shinohara RT, Staicu A-M. A spatio-temporal model for longitudinal image-on-image regression. Accepted, *Statistics in Biosciences*.

Kang J, Reich BJ, Staicu A-M. Scalar-on-image regression via the soft-thresholded Gaussian process. Accepted, *Biometrika*.

Laber EB, Meyer NJ, Reich BJ, Pacifici KP, Collazo J, Drake J (2017). On-line estimation of an optimal treatment allocation strategy for the control of white-nose syndrome in bats (with discussion). Accepted by the *Journal of the Royal Statistical Society: Series C* and to be read before the Royal Statistical Society.

Wootten A, Terando AJ, Reich BJ, Semazzi F, Boyles R. Characterizing Sources of Uncertainty from Global Climate Models and Downscaling Techniques. Accepted, *Journal of Applied Meteorology and Climatology*.

Kaufeld KA, Fuentes M, Reich BJ, Herring A, Shaw GM, Terres M. A Multivariate Dynamic Spatial Factor Model for Speciated Pollutants and Adverse Birth Outcomes. Accepted, *International Journal of Environmental Research and Public Health*.

Reich BJ, Guinness J, Vandekar SN, Shinohara RT, Staicu AM. Fully-Bayesian spectral methods for imaging data. Accepted, *Biometrics*.

Li D, Reich, BJ, Brenner DW. "Using Spatial Cross-Correlation Image Analysis to Characterize the Influence of Strain Rate on Plastic Damage in Molecular Dynamics Simulation" Accepted, *Modelling and Simulation in Materials Science and Engineering*.

Li Q, Guindani M, Reich BJ, Bondell HD and Vannucci M (2017). A Bayesian mixture model for clustering and selection of feature occurrence rates under mean constraints. Accepted, *Statistical Analysis and Data Mining*.

Li D, Reich BJ, Brenner DW. Statistical and image analysis for characterizing simulated atomic-scale damage in crystals. Accepted, *Computational Materials Science*.

Farjat AE, Reich BJ, Guinness J, Whetten R, McKeand S, Isik F. Optimal seed deployment under climate change using spatial models: Application to loblolly pine in the Southeastern US. Accepted, *Journal of the American Statistical Association*.

Li D, Brenner DW, Reich BJ, Peterson CG, Bucholz E, Russ J. How predictable is plastic damage at the atomic scale? Accepted, *Applied Physics Letters*.

Pacifici K, Reich BJ, Miller D, Gardner B, Stauffer G, Singh, S, McKerrow A, Collazo J. Integrating multiple data sources in species distribution modeling: A framework for data fusion. Accepted, *Ecology*.

Morris SA, Reich BJ, Thibaud E, Cooley DA. A space-time skew-t model for threshold exceedances. Accepted, *Biometrics*.

Fancher C, Han Z, Levin I, Page K, Reich BJ, Smith R, Wilson A, Jones, J. Use of Bayesian inference in crystallographic structure refinement via full diffraction profile analysis. Accepted, *Scientific Reports*.

Russell BT, Cooley DS, Porter WC, Heald CL, Reich BJ. Data Mining for Extreme Behavior with Application to Ground Level Ozone. Accepted, *Annals of Applied Statis-*

*tics*.

Balderama E, Gardner B, Reich BJ. A spatial-temporal double-hurdle model for extremely over-dispersed avian count data. Accepted, *Spatial Statistics*.

Cabral M, Zhang S, Chi J, Reich BJ, Dickey E, LeBeau J. (2017). Correlating local chemistry and local cation displacements in the relaxor ferroelectric PMN. *Microscopy and Microanalysis*, **23**, 1616-1617.

Monroe KD, Collazo JA, Pacifici K, Reich BJ, Puente-Roln AR, Terando AJ (2017). Occupancy and index of abundance of *Eleutherodactylus Wightmanae* and *E. Brittoni* along elevation gradients in West-Central Puerto Rico. *Caribbean Naturalist*, **40**, 1–18.

Peterson GC, Reich BJ, Li D, Brenner DW. Spatial prediction of crystalline defects observed in molecular dynamic simulations of plastic damage. *Journal of Applied Statistics*, **44**, 1761–1784.

Storlie CB, Reich BJ, Rust WN, Ticknor LO, Bonnie AM, Montoya AJ, Michalak SE (2017). Spatiotemporal modeling of node temperatures in supercomputers. *Journal of the American Statistical Association*, **112**, 92-108.

Pazdernik K, Reich BJ, Page K, Wilson AG (2017). Hierarchical Bayesian Modeling of Atomic Structural Disorder. M&C 2017 - International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering, Jeju, Korea.

Wilson, A, Reich BJ, Nolte, CG, Spero, TL, Hubbell, B, Rappold, AG (2017). Projecting Excess Mortality in 2030 with Spatially-Varying Ozone-Temperature Risk Surfaces. *Journal Of Exposure Science And Environmental Epidemiology*, **27**, 118-124.

Qian G, Laber EB, Reich BJ (2016). Discussion of “Bayesian Nonparametric Estimation for Dynamic Treatment Regimes with Sequential Transition Times”. *Journal of the American Statistical Association*, **111**, 936-942.

Reich BJ, Fuentes M (2016). Discussion of “Spatial product partition models” by Page and Quintana. *Bayesian Analysis*, **11**, 303-305.

Pacifici, JK, Reich BJ, Conroy M, Dorazio, B (2016). Occupancy estimation for rare species using a spatially-adaptive sampling design. *Methods in Ecology and Evolution*, **7**, 285-293.

Parker R, Reich BJ, Eidsvik J (2016). A fused lasso approach to nonstationary spatial covariance estimation. *Journal of Agricultural, Biological, and Environmental Statistics*, **21**, 569-587.

Shaby BA, Reich BJ, Cooley D, Kaufman, CG (2016). A Markov-switching model for heat waves. *Annals of Applied Statistics*, **10**, 74-93.

Tsai W-L, Floyd MF, Leung Y-F, McHale MM, Reich BJ (2016). Urban Vegetative Cover Fragmentation in the U.S.: Associations with Physical Activity and Body Mass Index. *American Journal of Preventive Medicine*, **50**, 509-517.

Smith LB, Gordon-Larsen P, Reich BJ, Fuentes M (2015). Quantile regression for mixed models. *Annals of Applied Statistics*, **9**, 1226-1246.

Terando AJ, Reich BJ, Pacifici K, Costanza J, McKerrow A, Collazo J (2015). Uncertainty quantification and propagation for projections of extremes in monthly area burned under climate change: A case study in the coastal plain of Georgia, USA. Accepted. AGU Monograph Series: Characterizing Uncertainties in Natural Hazard Modeling.

Smith LB, Fuentes M, Reich BJ, Herring AH, Langlois PH (2015). Multilevel Quantile Function Modeling with Application to Birth Outcomes. *Biometrics*, **71**, 508-519.

Chang HH, Warren JL, Darrow LA, Reich BJ, Waller LA (2015). Assessment of critical exposure and outcome windows in time-to-event analysis with application to air pollution and preterm birth study. *Biostatistics*, **16**, 509-521.

Farjat AE, Isik F, Reich BJ, Whetten RW, McKeand SE (2015). Modeling Climate Change Effects on the Height Growth of Loblolly Pine. *Forest Science*, **61**, 703-715.

Schnell P, Bandyopadhyay D, Reich BJ, Nunn ME (2015). A marginal cure-rate proportional hazards model for spatial survival data. *Journal of the Royal Statistical Society: Series C*, **64**, 673-691.

Kao Y, Reich BJ, Storlie CB, Anderson B (2015). Malware detection using nonparametric Bayesian clustering and classification techniques. *Technometrics*, **57**, 535-546.

Coleman D, Martin D, Reich BJ (2015). Multiple Window Discrete Scan Statistic for Higher-Order Markovian Sequences. *Journal of Applied Statistics*, **42**, 1-16.

Barberán A, Dunn RR, Reich BJ, Pacifici JK, Laber EB, Menninger HL, Morton J, Henley JB, Leff JW, Miller S, Fierer N (2015). The ecology of microscopic life in household dust. *Proceedings of the Royal Society B*, **282**, 20151139.

Parker R, Reich BJ, Sain S (2015). A multiresolution approach to estimating the value added by regional climate models. *Journal of Climate*, **28**, 8873-8887.

Langley RL, Mort SA, Kao Y, Bateman A, Simpson BD, Reich BJ (2015). Adverse neurodevelopmental effects and hearing loss in children associated with manganese in well water, North Carolina, USA. *Journal of Environmental and Occupational Science*, **4**, 62-69.

Grantham NS, Reich BJ, Pacifici K, Laber EB, Menninger HL, Henley JB, Barberán A, Leff JW, Fierer N, Dunn RR (2015). Fungi identify the geographic origin of dust samples. *PLoS ONE*, **10**, e0122605.

Boehm Vock LF, Reich BJ, Fuentes M, Dominici F (2015). Spatial variable selection methods for investigating acute health effects of fine particulate matter components. *Biometrics*, **71** 167-177.

Stephenson A, Shaby BA, Reich BJ, Sullivan A (2015). Estimating spatially varying

severity thresholds of the forest fire danger rating system using max-stable extreme event modelling. *Journal of Applied Meteorology and Climatology*, **54**, 395-407.

Reich BJ, Porter MD (2015). Partially-supervised spatiotemporal clustering for burglary crime series identification. *Journal of the Royal Statistical Society: Series A*, **178**, 465-480.

Sun W, Reich BJ, Cai T, Guindani M, Schwartzman A (2015). False discovery control in large-scale spatial multiple testing. *Journal of the Royal Statistical Society: Series B*, **77**, 59-83.

Reich BJ, Gardner B (2014). A spatial capture-recapture model for territorial species. *Environmetrics*, **25**, 630-637.

Wilson A, Reich BJ (2014). Confounder selection via penalized credible regions. *Biometrics*, **70**, 852-861.

Reich BJ, Chang HH, Foley KM (2014). A spectral method for spatial downscaling. *Biometrics*, **70**, 932-942.

Wilson A, Rappold AG, Neas LM, Reich BJ (2014). Modeling the Effect of Temperature on Ozone-Related Mortality. *Annals of Applied Statistics*, **8**, 1728-1749.

Eidsvik J, Shaby B, Reich BJ, Wheeler M, and Niemi J (2014). Estimation and prediction in spatial models with block composite likelihoods. *Journal of Computational and Graphical Statistics*, **23**, 295-315.

Reich BJ, Chang HH, Strickland MJ. Spatial health effects analysis with uncertain residential locations (2014). *Statistical Methods in Medical Research*, **23**, 156-168.

Wilson A, Reif D, Reich BJ (2014). Hierarchical dose-response modeling for high-throughput toxicity screening of environmental chemicals. *Biometrics*, **70**, 237-246.

Reich BJ, Shaby BJ, Cooley D (2014). A hierarchical model for serially-dependent extremes: A study of heat waves in the western US. *Journal of Agricultural, Biological, and Environmental Statistics*, **19**, 119-135.

Reich BJ, Porter MD (2013). Discussion of "Estimating the historical and future probabilities of large terrorist events". *Annals of Applied Statistics*, **7**, 1871-1875.

Smith LB, Fuentes M, Reich BJ, Eder BK (2013). Prediction of Speciated Particulate Matter and Bias Assessment of Numerical Output Data. *International Journal of Environmental Science and Engineering Research*, **4**, 8-17.

Mannshardt E, Sucic K, Jiao W, Dominici F, Frey C, Reich BJ, Fuentes, M (2013). Comparing exposure metrics for the effects on fine particulate matter on emergency hospital admissions. *Journal Of Exposure Science And Environmental Epidemiology*, **23**, 627-636.

Fuentes M, Reich BJ (2013). Multivariate spatial nonparametric modeling via kernel processes mixing. *Statistica Sinica*, **23**, 75-97.

Reich BJ, Bandyopadhyay D, Bondell HD (2013). A nonparametric spatial model for periodontal data with non-random missingness. *Journal of the American Statistical Association*, **108**, 820-831.

Reich BJ, Smith LB (2013). Bayesian quantile regression for censored data. *Biometrics*, **69**, 651-661.

Boehm L, Reich BJ, Bandyopadhyay D (2013). Bridging conditional and marginal inference for spatially-referenced binary data. *Biometrics*, **69**, 545-554.

Reich BJ, Cooley D, Foley KM, Napelenok SL, Shaby BA (2013). Extreme value analysis for evaluating ozone control strategies. *Annals of Applied Statistics*, **7**, 739-762.

Wang H, Reich BJ, Lim Y (2013). A Bayesian approach to probabilistic streamflow forecasts. *Journal of Hydroinformatics*, **15**, 381-391.

Storlie CB, Reich BJ, Helton JC, Swiler LP (2013). Analysis of computationally demanding models with continuous and categorical inputs. *Reliability Engineering & System Safety*, **113**, 30-41.

Chang HH, Reich BJ, Miranda ML (2013). Spatial time-to-event analysis of fine particulate matter and preterm birth. *Journal of the Royal Statistical Society: Series C*, **62**, 167-179.

Fuentes M, Henry JB, Reich BJ (2013). Nonparametric Spatial Models for Extremes: Application to Extreme Temperature Data. *Extremes*, **16**, 75-101.

Shaby BA, Reich BJ (2012). Bayesian spatial extreme value analysis to assess the changing risk of concurrent extremely high temperatures across large portions of European cropland. *Environmetrics*, **23**, 638-648.

Bondell HD, Reich BJ (2012). Consistent high-dimensional Bayesian variable selection via penalized credible regions. *Journal of the American Statistical Association*, **107**, 1610-1624.

Foley KM, Reich BJ, Napelenok SL (2012). Bayesian analysis of a reduced-form air quality model. *Environmental Science & Technology*, **46**, 7604-7611.

Reich BJ (2012). Spatiotemporal quantile regression for detecting distributional changes in environmental processes. *Journal of the Royal Statistical Society: Series C*, **64**, 535-553.

Shaby B, Reich BJ (2012). Comment on “Statistical Modelling of Spatial Extremes” by Davison, Padoan, and Ribatet. *Statistical Science*, **27**, 197-198.

Reich BJ, Shaby BA (2012). A hierarchical max-stable spatial model for extreme

precipitation. *Annals of Applied Statistics*, **6**, 1430-1451.

Porter MP, Reich BJ (2012). Evaluating temporally weighted kernel density methods for predicting the next event location in a series. *Annals of GIS*, **18**, 225–240.

Chang HH, Reich BJ, Miranda ML (2012). Response to “Epidemiology studies of the health associations of environmental exposures on preterm births. *American Journal of Epidemiology*, **175**, 111-112.

Chang HH, Reich BJ, Miranda ML (2012). Fine Particle Air Pollution and Preterm Birth in North Carolina, 2001-2005 (with discussion). *American Journal of Epidemiology*, **175**, 91–98.

Modlin D, Fuentes M, Reich BJ (2012). Circular conditional autoregressive modeling of vector fields. *Environmetrics*, **23**, 46–53.

Reich BJ, Kalendra E, Storlie CB, Bondell HD, Fuentes M (2012). Variable selection for high-dimensional Bayesian density estimation: Application to human exposure simulation. *Journal of the Royal Statistical Society: Series C*, **61**, 47–66.

Reich BJ, Fuentes M (2012). Nonparametric Bayesian models for a spatial covariance. *Statistical Methodology*, **9**, 265-274.

Hayashi K, Hayashia M, Reich BJ, Lee S-P, Sachdevaa AUC, Mizoguchi I (2012). Functional data analysis of mandibular movement using third-degree b-spline basis functions and self-modeling regression. *Orthodontic Waves*, **71**, 17-25.

Pati D, Reich BJ, Dunson DB (2011). Bayesian geostatistical modeling with informative sampling locations. *Biometrika*, **98**, 35–48.

Havard S, Reich BJ, Bean K, Chaix B (2011). Social inequalities in residential exposure to road traffic noise: An environmental justice analysis based on the RECORD Cohort Study. *Occupational and Environmental Medicine*, **68**, 366-374.

Storlie CB, Bondell HD, Reich BJ, Zhang HH (2011). Surface estimation, variable selection, and the nonparametric oracle property. *Statistica Sinica*, **21**, 679–705.

Reich BJ, Li L, Bondell HD (2011). Sufficient Dimension Reduction via Bayesian Mixture Modeling. *Biometrics*, **67**, 886–895.

Reich BJ, Bondell HD (2011). A spatial Dirichlet process mixture model for clustering population genetics data. *Biometrics*, **67**, 381–390.

Reich BJ, Eidsvik J, Guindani M, Nail AJ, Schmidt AM (2011). A class of covariate-dependent spatiotemporal covariance functions for the analysis of daily ozone concentrations. *Annals of Applied Statistics*, **5**, 2425–2447.

Reich BJ, Haran M (2011). Guest editors’ introduction to the special issue on computer models and spatial statistics for environmental science. *Journal of Agricultural, Biological, and Environmental Sciences*, **16**, 451-452.

- Bandyopadhyay D, Reich BJ, Slate E (2011). A spatial beta-binomial model for clustered count data on dental caries. *Statistical Methods in Medical Research*, **20**, 85–102.
- Reich BJ, Fuentes M, Dunson DB (2011). Bayesian spatial quantile regression. *Journal of the American Statistical Association*, **106**, 6–20.
- Bondell HD, Reich BJ, Wang H (2010). Non-crossing quantile regression curve estimation. *Biometrika*, **97**, 825–838.
- Hayashi K, Mizoguchi I, Lee SP, Reich BJ (2010). Development of a novel statistical model for mandibular kinematics. *Medical Engineering and Physics*, **32**, 423–428.
- Storlie CB, Bondell HD, Reich BJ (2010). A locally adaptive penalty for estimation of functions with varying roughness. *Journal of Computational and Graphical Statistics*, **19**, 569–589.
- Reich BJ, Fuentes M, Herring AH, Evenson KR (2010). Bayesian variable selection for multivariate spatially-varying coefficient regression. *Biometrics*, **66**, 772–782.
- Hodges JS, Reich BJ (2010). Adding spatially-correlated errors can mess up the fixed effect you love. *The American Statistician*, **64**, 325–334.
- Reich BJ, Bandyopadhyay D (2010). A latent factor model for spatial data with informative missingness. *Annals of Applied Statistics*, **4**, 439–459.
- Reich BJ, Bondell HD, Wang H (2010). Flexible Bayesian quantile regression for independent and clustered data. *Biostatistics*, **11**, 337–352.
- Bandyopadhyay D, Reich BJ, Slate E (2009). Bayesian modeling of multivariate spatial binary data with applications to dental caries. *Statistics in Medicine*, **28**, 3492–3508.
- Reich BJ, Storlie CS, Bondell HD (2009). Variable selection in Bayesian smoothing spline ANOVA models: Application to deterministic computer codes. *Technometrics*, **51**, 110–120.
- Reich BJ, Fuentes M, Burke J (2009). A Bayesian analysis of the effects of particulate matter using a human exposure simulator. *Environmetrics*, **20**, 131–146.
- Bondell HD, Reich BJ. (2009) Simultaneous factor selection and collapsing of levels in ANOVA. *Biometrics*, **69**, 169–177.
- Hayashi K, Reich BJ, DeLong R, Lee SP, Mizoguchi I (2009). A novel statistical model for mandibular helical axis analysis. *Journal of Oral Rehabilitation*, **36**, 102–109.
- Costalonga M, Batas L, Reich BJ (2009). Effects of Toll-Like Receptor-4 in Porphyromonas gingivalis-induced bone loss. *Journal of Periodontal Research*, **44**, 537–542.
- Choi J, Fuentes M, Reich BJ (2009). Spatial-temporal association between fine particulate matter and daily mortality. *Journal of Computational and Graphical Statistics*, **53**, 2989–3000.



Choi J, Reich BJ, Fuentes M, Davis JM (2009). Multivariate spatial-temporal modeling and prediction of speciated fine particles. *Journal of Statistical Theory and Practice*, **3**, 407–418.

Fuentes M, Reich BJ, Lee G (2008). Spatial–temporal mesoscale modeling of rainfall intensity using gage and radar data, *The Annals of Applied Statistics*, **4**, 1148–1169.

Reich BJ, Hodges JS (2008). Modeling longitudinal spatial periodontal data: A spatially-adaptive model with tools for specifying priors and checking fit. *Biometrics*, **64**, 790–799.

Bondell HD, Reich BJ (2008). Simultaneous regression shrinkage, variable selection and clustering of predictors with OSCAR. *Biometrics*, **64**, 115–123.

Reich BJ, Hodges JS (2008). Identification of the variance components in the general two-variance linear model. *Journal of Statistical Planning and Inference*, **138**: 1592–1604.

Niemi JB, Porter MD, Reich BJ. (2008) Mixture likelihood ratio scan statistic for disease outbreak detection. *Advances in Disease Surveillance* 5:49.

Reich BJ, Fuentes M (2007). A multivariate nonparametric Bayesian spatial framework for hurricane surface wind fields. *The Annals of Applied Statistics*, **1**: 249–264.

Reich BJ, Fuentes M (2007). Non-Gaussian Bayesian spatial modeling of hurricane surface wind fields. *In the proceedings of the International Statistical Institute Conference, IMP08, Lisboa, 2007*.

Reich BJ, Hodges JS, Carlin BP (2007). Spatial analysis of periodontal data using conditionally autoregressive priors having two types of neighbor relations. *Journal of the American Statistical Association*, **102**: 44–55.

Reich BJ, Hodges JS, Zadnik V (2006). Effects of residual smoothing on estimation of the fixed effects in disease-mapping models. *Biometrics*, **62**: 1197–1206.

Reich BJ, Hodges JS, Carlin BP, Reich AM (2006). Spatial analysis of Sam Cassell’s 2003–2004 shot chart data. *American Statistician*, **60**: 3–12.

Zadnik V, Reich BJ (2006). Analysis of the relationship between socioeconomic factors and stomach cancer incidence in Slovenia. *Neoplasma*, **53**: 103–10.

Allen SS, Britnell D, Hatsukami DK, Reich BJ (2004). Energy intake and physical activity during short-term smoking cessation in post-menopausal women. *Addictive Behaviors*, **29**: 947–951.

Lemmonds CA, Mooney M, Reich BJ, Hatsukami D (2004). Characteristics of cigarette smokers seeking treatment for cessation versus reduction. *Addictive Behaviors*, **29**: 357–364.

*of Spatial Epidemiology*. CRC Press.

Reich BJ, Fuentes M (2015). Spatial Bayesian nonparametric methods. *Nonparametric Bayesian Methods in Biostatistics and Bioinformatics*. Springer.

Reich BJ, Shaby BA (2015). Time Series of Extremes. *Extreme Value Modeling and Risk Analysis: Methods and Applications*. ASA-SIAM series on statistics and applied probability.

Reich BJ, Fuentes M (2013). Accounting for design in the analysis of spatial data. *Spatio-temporal design: Advances in efficient data acquisition*. Wiley.

Fuentes M, Reich BJ (2010). Spectral Analysis for Spatial Data. *Handbook of Spatial Statistics*. CRC Press.

REFEREED  
CONFERENCE  
PROCEEDINGS

Meyer, N.J., Laber. E.B., Pacifici, K., Reich, B., Drake, J. (2014) Adaptive Management Strategies for White-Nose Syndrome. Selected for a poster presentation at the NIPS-14 Workshop: "From Bad Models to Good Policies."

Larsen A, Reich BJ, Ruminski M, Rappold AG (2016). Impacts of wildfire smoke plumes on regional air quality *Proceedings for the 5th International Fire Behavior and Fuels Conference*. April 11-15, Portland, Oregon, USA.

INVITED  
TALKS

Maxpoint, RTP, NC, 2017

Joint Statistical Meetings, Baltimore, MD, 2017

The Department of Applied and Computational Mathematics and Statistics, Notre Dame, 2017

Center for Geospatial Analytics, North Carolina State University, 2017

Department of Statistics, Purdue University, 2017

STATMOS Workshop on Climate Extremes, Penn State University, 2016

Department of Statistics, Colorado State University, 2016

Department of Biostatistics, Virginia Commonwealth University, 2016

Joint Statistical Meetings, Chicago, IL, 2016

University of Chicago, Chicago, IL, 2016

The International Environmetrics Society Annual Conference, Edinburgh, UK, 2016

National Center for Atmospheric Research, Boulder, CO, 2016

Extreme Events in Climate and Weather Workshop, Banff, AB, 2016

Statistical Methods and Analysis of Environmental Health Data, Mumbai, India, 2016

CMStatistics Conference, London, UK, 2015

Virginia Tech University, Department of Statistics, 2015

Florida State University, Department of Statistics, 2015

Harvard University, Department of Biostatistics, 2015

Joint Statistical Meetings, Seattle, WA, 2015

Conference on Extreme Value Analysis, Ann Arbor, MI, 2015

SRCOS Summer Research Conference, Wilmington, NC, 2015

Medical University of South Carolina, Division of Biostatistics, 2015

Emory University, Department of Biostatistics and Bioinformatics, 2015

Texas A&M, Workshop of Spatial Statistics, 2015

Brigham Young University, Department of Statistics, 2014

University of Michigan, Department of Statistics, 2014

Graybill Conference, Fort Collins, CO, 2014  
 Joint Statistical Meetings, Boston, MA, 2014  
 Los Alamos National Lab, Statistical Sciences Group, 2014  
 University of Chicago, Booth School of Business, 2014  
 ENAR, Baltimore, MD, 2014  
 Penn State University, Department of Statistics, 2014  
 University of Southern California, Marshall School of Business, 2013  
 MD Anderson Cancer Center, Department of Biostatistics, 2013  
 Harvard University, Department of Statistics, 2013  
 JSM, Montreal, Canada, 2013  
 CSU Workshop on Spatial Statistics, Fort Collins, CO, 2013  
 University of Georgia, Department of Statistics, 2012  
 JSM, San Diego, CA, 2012  
 WNAR/Graybill Conference, Fort Collins, CO, 2012  
 SAMSI Transition Workshop on Uncertainty Quantification, RTP, NC, 2012  
 ENAR, Washington, DC, 2012  
 SAMSI Workshop on Uncertainty Quantification, Asheville, NC, 2012  
 JSM, Miami, FL, 2011  
 Workshop on Environmental Risk and Extreme Events, Ascona, Switzerland, 2011  
 The Seventh Conference on Extreme Value Analysis, Lyon, France, 2011  
 U.S. EPA, Research Triangle Park, NC, 2011  
 IISA Annual Meeting, Raleigh, NC, 2011  
 NCSU Scope Lecture Series, Raleigh, NC, 2011  
 SAMSI transition workshop, RTP, NC, 2010  
 TIES Annual Meeting, Venezuela, 2010  
 New England Statistics Symposium, Cambridge, MA, 2010  
 Harvard University, Department of Biostatistics, 2010  
 SAMSI Workshop on Environmental Risk, RTP, NC, 2010  
 Chilean Biometric Conference, Santiago, Chile, 2010  
 Chilean Dental Statistics Meeting, Santiago, 2010  
 Conference on Geomedical Systems, Charleston, SC, 2009  
 The University of South Carolina, Department of Statistics, 2009  
 Duke University, Division of Statistical Sciences, 2009  
 NCSU, Department of Statistics, 2009  
 JSM, Washington, DC, 2009  
 NCSU, Undergraduate Statistics Club, 2009  
 University of New Mexico, Department of Mathematics and Statistics, 2009  
 JSM, Denver, CO, 2008  
 IISA Annual Meeting, Storrs, CT, 2008  
 NCSU, Department of Statistics, 2006  
 TIES Annual Meeting, Kalmar, Sweden, 2006  
 NCSU, Department of Statistics, 2005

**SHORT COURSES** Beyond p-values: Regression analysis, National Center for Atmospheric Research, 2017.  
 Bayesian statistics for pharmaceutical applications , Parexcel, 2015.  
 Introduction to Bayesian statistics, University of Southern California, 2015.

**FUNDING** Data Integration Methods for Environmental Exposures with Application in Air Pollution and Asthma Morbidity (2017-2021). NIH, co-PI, \$2,722,000.

A spatiotemporal recommendation engine for malaria control (2016-2018). Bill and Melinda Gates Foundation, PI, \$100,000.

NRT-DESE: Data-enabled research traineeships in the science and engineering of atomic structure (SEAS). NSF, co-PI, \$2,999,310.

Forensic geolocation via biological signatures (2016-2018). DOD, co-PI, \$1,164,161.

Designing material-liquid-nanoparticle interfaces for tribological control (2015-2018). NSF, co-PI, \$1,200,000.

Spatiotemporal models for periodontal disease monitoring and recall frequencies (2015-2018). NIH, PI, \$1,145,035

Optimal decision strategies for large spatio-temporal decision problems (2015-2018). NSF, co-PI, \$150,000.

Environmental pesticide exposure and respiratory outcomes in women and children (2015-2017). NIH, co-I, \$351,007.

Estimating fire smoke related health burden and novel tools to manage impacts on urban populations (2014-2017). DOI, PI, \$289,143.

10th Conference on Bayesian Nonparametrics (2015). US Army Research Office, co-PI, \$10,000.

10th Conference on Bayesian Nonparametrics (2015). NSF, co-PI, \$25,000.

Monitoring federal trust avian species in managed shade coffee plantations under the partner for fish and wildlife and coastal programs in Puerto Rico (2014-2015). US Fish & Wildlife Service, co-I, \$30,000.

Research and applications in support of the National GAP Analysis Program (2014-2017). USGS, Co-PI, \$1,616,571.

Advancing the use and application of diverse data sources and species distribution models (2014-2017). USGS, Co-PI, \$300,000.

Exploring tooth survival using Bayesian spatial models (2014-2016). NIDCR, PI, \$319,000.

Optimal sampling of animal communities (2014-2017). USGS, Co-PI, \$300,000.

Conservation design and habitat conservation in Puerto Rico (2013-2017). US FWS, Co-PI, \$1,734,995.

Statistical methods for exposure uncertainty in air pollution and health studies (2013-2016). NIH, Co-PI, \$118,069.

CSUMS: NC State University computation for undergraduates in statistics program

(2007-2014). NSF, Joined as PI in 2013, \$770,714.

Molecular simulation: A new paradigm in materials modeling (2012-2015). NSF, Co-PI, \$456,331.

Mapping the distribution, abundance and risk assessment of marine birds in the North-west Atlantic (2012-2014). US FWS, PI, \$115,000.

Studying the associations between manganese exposure and childhood development in North Carolina (2012-2013). North Carolina Division of Public Health, PI, \$15,000.

Using advanced statistical techniques to identify the drivers and occurrence of historical and future extreme air quality events in the United States from observations and models (2012-2015). US EPA, Co-I, \$749,930.

Collaborative research: RNMS statistical methods for atmospheric and oceanic sciences (2011-2016). NSF, Co-I, \$2,837,003.

Robust spatial models for periodontal data (2011-2014). NIDCR, PI, \$145,390.

Space-time modeling for linking climate change, pollutant exposure, built environments, and health outcomes (2010-2014), NIH, Co-I, \$1,204,878.

Statistical methods for spatiotemporal crime series linkage analysis (2011-2013). NIJ, co-PI, \$234,000.

Multivariate nonstationary spatial extremes in climate and atmospheric (2009-2010). NSF, Co-PI, \$325,000.

A spatial-temporal modeling approach for evaluating the impact of environmental stressors, in conjunction with human activity, on human health outcomes (2007-2010). US EPA, Co-I, \$893,439.

Multivariate space-time models and methods to combine large disparate spatial data and numerical models (2007-2010). NSF, Co-PI, \$260,000.

#### ADVISING

##### **PhD advisor / co-advisor (\*):**

Jennifer Wei\* (2017). Bayesian variable selection using continuous shrinkage priors for nonparametric models and non-Gaussian Data.

Neal Grantham (2017). Statistical Methods for High-Dimensional, Spatially-Distributed Microbiome Data from Next-Generation Sequencing.

Colin Peterson\* (2016). Mean-dependent spatial statistical prediction methods with Applications to Material Sciences.

Sam Morris (2016). Spatial Methods for Modeling Extreme and Rare Events.

Alfredo Farjat\* (2015). Optimal Seed Deployment under Climate Change using Spatial

Models and Prediction of Genetic Merit in Loblolly Pine.

Ryan Parker (2015). Efficient computational methods for large spatial data sets.

Deidra Coleman\* (2015). Advances in Significance Testing for Cluster Detection.

Beth Ann Tidemann-Miller\* (2014). Statistical modeling of multivariate functional data that exhibit complex correlation structures.

Luke Smith\* (2014). Bayesian quantile regression in biostatistical applications.

Yimin Kao (2014). Advances in nonparametric Bayesian methods for clustering and classification.

Ander Wilson (2014). Advances in Bayesian methods for high-dimensional environmental data.

Laura Boehm\* (2013). Bridge models and variable selection methods for spatial data.

Eric Kalendra\* (2010). Space-time modeling of health effects while controlling for spatially varying exposure surfaces.

**Post-doc advisor / co-advisor (\*):**

Earvin Balderama\* (2012-2014)

Yen-Ning Huang\* (2015-present)

**SERVICE**

**Associate Editor:**

Journal of the American Statistical Association - Applications & Case Studies (2015-present)

Journal of the American Statistical Association - Theory & Methods (2014-present)

Biostatistics (2012-present)

Annals of Applied Statistics (2011-2016)

Journal of Agricultural, Biological, and Environmental Statistics (2011-2015)

**Guest Co-Editor:**

Journal of Agricultural, Biological, and Environmental Statistics, special issue on "Computer models and spatial statistics for environmental science", 2011.

**Review Panel Member:**

NSF Division of Mathematical Sciences (2014)

NSF Computational and Data-Enabled Science and Engineering in Mathematical and Statistical Sciences Program (2012)

**Conference Co-Organizer:**

ASA Workshop for the Statistics and the Environment Section, Raleigh, NC (2012).

ISBA/BNP Conference on Bayesian Nonparametrics, Raleigh, NC (2015).  
SAMSI Summer Program on Bayesian Nonparametrics: Synergies between Statistics, Probability and Mathematics, RTP, NC (2015).

**Departmental Committees:** Search committee chair (2014); Course and Curriculum Committee member (2013-present); Basic exam committee chair (2013); Big data committee member (2013); Search committee member (2010, 2013); PhD preliminary written exam committee member (2009, 2011, 2012); Environmental statistics seminar chair (2011, 2012); Basic exam committee member (2012); Seminar committee chair (2012); Seminar committee member (2010); Beach trip committee chair (2009).

**Conference Committees:** ASA Section on Statistics and the Environment (ENVR) Program Chair (2016); Section on Bayesian Statistical Science Student Award Selection Committee member (2011-2013); ENVR representative on the ENAR Program Committee (2012, 2013, 2017); ENAR student paper awards committee (2013-2015).

**Session Organizer:**

Recent developments in estimating the health effects of air pollution and regulation (2014), ENAR, Baltimore MD.

Computer models and spatial statistics for environmental science (2012), JSM, San Diego, CA.

Geostatistical modeling for environmental data (2010), JSM, Vancouver, BC.

Particulate Matter Air Policy Standards: From Statistical Evidence to Federal Policy (2009), JSM, Washington, DC;

**Undergraduate research leader:** Computation for Undergraduates in Statistics Program (2012-2014).

**Standing committees:** ASA Advisory Committee on Climate Change