William Kleiber

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Positions

Assistant Professor, Department of Applied Mathematics,
University of Colorado, Boulder, CO — Aug 2012 – Present

Professeur Invité (Chair Henri Lebesgue), Université de Rennes,
Rennes, France — 2016

Post-graduate Scientist, National Center for Atmospheric Research,
Institute for Mathematics Applied to Geosciences, Boulder, CO — Aug 2010 – Aug 2012

Education

University of Washington, Seattle, WA — Sep 2006 – Aug 2010
Ph.D. in Statistics
Department of Statistics

University of Iowa, Iowa City, IA — Aug 2002 – May 2006
B.S. in Mathematics
Graduation with Honors and Distinction

Publications

Kleiber, W. (2016). "High resolution simulation of nonstationary Gaussian random fields." *Computational Statistics and Data Analysis*, in press.

Kleiber, W., Hendershott, B., Sain, S. and Wiltberger, M. (2016). "Feature-based validation of the Lyon-Fedder-Mobarry magnetohydrodynamical model." *Journal of Geophysical Research: Space Physics*, in press.

Verdin, A., Rajagopalan, B., Kleiber, W., Podestá, G. and Bert, F. (2016). "A conditional stochastic weather generator for seasonal to multi-decadal simulations." *Journal of Hydrology*, in press.

Verdin, A., Funk, C., Rajagopalan, B. and Kleiber, W. (2016). "Kriging and local polynomial methods for blending satellite-derived and gauge precipitation estimates to support hydrologic early warning systems." *IEEE Transactions on Geoscience and Remote Sensing*, in press.

Genton, M.G. and Kleiber, W. (2015). "Cross-covariance functions for multivariate geostatistics. (With discussion)." *Statistical Science*, **30**, 147–163.

Hering, H., Kazor, K. and Kleiber, W. (2015). "A Markov-switching vector autoregressive stochastic wind generator for multiple spatial and temporal scales." *Resources*, **4**, 70–92.

Kleiber, W. and Nychka, D. (2015). "Equivalent kriging." *Spatial Statistics*, **12**, 31–49.

Verdin, A., Rajagopalan, B., Kleiber, W. and Funk, C. (2015). "A Bayesian kriging approach for blending satellite and ground precipitation observations." *Water Resources Research*, **51**, 908–921.

Kleiber, W. and Porcu, E. (2015). "Nonstationary matrix covariances: compact support, long range dependence and quasi-arithmetic constructions." *Stochastic Environmental Research and Risk Assessment*, **29**, 193–204.

Verdin, A., Rajagopalan, B., Kleiber, W. and Katz, R. W. (2015). "Coupled stochastic weather generation using spatial and generalized linear models." *Stochastic Environmental Research and Risk Assessment*, **29**, 347–356.

Heaton, M.J., Kleiber, W., Sain, S.R. and Wiltberger, M. (2015). "Emulating and calibrating the multiple-fidelity Lyon-Fedder-Mobarry magnetosphere-ionosphere coupled computer model." *Journal of the Royal Statistical Society, Series C*, **64**, 93–113.

Kleiber, W., Sain, S. and Wiltberger, M. (2014). "Model calibration via deformation." *SIAM/ASA Journal on Uncertainty Quantification*, **2**, 545–563.

Kleiber, W., Sain, S.R., Heaton, M.J., Wiltberger, M., Reese, C.S. and Bingham, D. (2013). "Parameter tuning for a multi-fidelity dynamical model of the magnetosphere." *Annals of Applied Statistics*, **7**, 1286–1310.

Kleiber, W., Katz, R.W. and Rajagopalan, B. (2013). "Daily minimum and maximum temperature simulation over complex terrain." *Annals of Applied Statistics*, **7**, 588–612.

Kleiber, W. and Genton, M.G. (2013). "Spatially varying cross-correlation coefficients in the presence of nugget effects." *Biometrika*, **100**, 213–200.

Kleiber, W. and Nychka, D. (2012). "Nonstationary modeling for multivariate spatial processes." *Journal of Multivariate Analysis*, **112**, 76–91.

Kleiber, W., Katz, R.W. and Rajagopalan, B. (2012). "Daily spatio-temporal precipitation simulation using latent and transformed Gaussian processes." *Water Resources Research*, **48**, doi:10.1029/2011WR011105.

Kleiber, W., Raftery, A.E. and Gneiting, T. (2011). "Geostatistical model averaging for locally calibrated probabilistic quantitative precipitation forecasting." *Journal of the American Statistical Association*, **106**, 1291–1303 (Featured Article).

Kleiber, W., Raftery, A.E., Baars, J., Gneiting, T., Mass, C.F. and Grimit, E. (2011). "Locally calibrated probabilistic forecasting using geostatistical model averaging and local Bayesian model averaging." *Monthly Weather Review*, **139**, 2630–2649.

Gneiting, T., Kleiber, W. and Schlather, M. (2010). "Matérn cross-covariance functions for multivariate random fields." *Journal of the American Statistical Association*, **105**, 1167–1177.

Cederberg, J., Nichol, J., Frodermann, E., Tollerud, H., Hilk, G., Buysman, J., Kleiber, W., Bongard, M., Ward, J., Huber, K., Khanna, T., Randolph, J. and Nitz, D. (2005). "An anomaly in the isotopomer shift of the hyperfine spectrum of LiI." *Journal of Chemical Physics*, **123**, 134321.

Talks and Seminars

Kriging Asymptotics (Invited) — Nov 2015
King Abdullah University of Science and Technology, Saudi Arabia

Spatial Prediction for Large Datasets (Invited) — Nov 2015
Colorado State University, Fort Collins, CO

Spatial Prediction for Large Datasets (Invited) — Oct 2015
Ohio State University, Columbus, OH
Lehigh University, Bethlehem, PA
University of Colorado at Denver, Denver, CO

Kriging Asymptotics (Topic Contributed) — Aug 2015
Joint Statistical Meetings, Seattle, WA

Coherence for Random Fields (Invited) — Jun 2015
Mathematical and Statistical Analysis of Spatial Data, Aalborg, Denmark

Coherence for Random Fields (Invited) — May 2015
Big Data in the Environmental Sciences, Vancouver, Canada

Feature-Based Model Calibration and Validation (Invited) — Mar 2015
Eastern North American Region Meeting of the International Biometric Society, Miami, FL

Feature-Based Model Calibration and Verification (Invited) — Jan 2015
Seismomatics, Valparaíso, Chile

Equivalent Kriging (Invited) — Oct 2014
Workshop on High Dimensional, High Frequency and Spatial Data, Karlsruhe Institute

of Technology, Germany

The Connection Between Smoothing Splines and Kriging (Invited) Oct 2014
Spatial Statistics Symposium, Heidelberg Institute of Theoretical Studies, Germany

High Resolution Simulation of Nonstationary Random Fields (Invited) Sep 2014
Workshop on Stochastic Weather Generators, Avignon, France

High Resolution Simulation of Nonstationary Random Fields
(Topic Contributed) Aug 2014
Joint Statistical Meetings, Boston, MA

Equivalent Kriging (Invited) Mar 2014
Workshop on Spatial Statistics for Environmental and Energy Challenges,
King Abdullah University of Science and Technology, Saudi Arabia

Equivalent Kriging (Invited) Nov 2013
University of Illinois, Urbana-Champaign, IL

Model Calibration via Deformation & Equivalent Kriging (Invited) Nov 2013
Water Resources Seminar, University of Colorado, Boulder, CO

A Framework for Daily Space-time Stochastic Weather
Simulation (Invited) Aug 2013
World Statistics Congress, Hong Kong, China

Equivalent Kriging for Large Datasets (Topic Contributed) Aug 2013
Joint Statistical Meetings, Montreal, Canada

Model Calibration via Space-time Feature Matching (Organized Contributed) Jul 2013
European Meeting of Statisticians, Budapest, Hungary

Model Calibration Under Space-time Misalignment (Invited) Jun 2013
The International Environmetrics Society, Anchorage, AK

Model Calibration Under Space-time Misalignment (Invited) Apr 2013
Economics Working Group, University of Colorado, Boulder, CO

A Framework for Spatio-Temporal Stochastic Weather
Simulation (Invited) Nov 2012
Applied Mathematics Colloquium, University of Colorado, Boulder, CO

A Framework for Spatio-Temporal Stochastic Weather
Simulation (Topic Contributed) Aug 2012
Joint Statistical Meetings, San Diego, CA

A Framework for Spatio-Temporal Stochastic Weather
Simulation (Invited) Aug 2012
Ten Lectures on Statistical Climatology, Seattle, WA

A Framework for Spatio-Temporal Stochastic Weather
Simulation (Invited) May 2012
Workshop on Stochastic Weather Generators, Roscoff, France

Multivariate Spatial Process Modeling: An Overview (Invited) May 2012
Interface, Houston, TX

A Framework for Spatio-Temporal Stochastic Weather
Simulation (Contributed) Apr 2012
Colorado/Wyoming American Statistical Association Chapter Meeting, Boulder, CO

Computer Model Calibration with High and Low Fidelity Model
Output for Spatio-Temporal Data (Invited) Mar 2012
Texas A&M University, College Station, TX

Computer Model Calibration with High and Low Fidelity Model
Output for Spatio-Temporal Data (Invited) Jan 2012
University of Iowa, Iowa City, IA

Colorado State University, Fort Collins, CO
North Carolina State University, Raleigh, NC
Iowa State University, Ames, IA

Computer Model Calibration with High and Low Resolution Model Output for Spatio-Temporal Data (Invited) — Dec 2011
University of Colorado, Boulder, CO

Computer Model Calibration with High and Low Resolution Model Output for Spatio-Temporal Data (Invited) — Nov 2011
Colorado School of Mines, Golden, CO

Computer Model Calibration with High and Low Resolution Model Output for Spatio-Temporal Data (Topic Contributed) — Aug 2011
Joint Statistical Meetings, Miami, FL

Geostatistical Model Averaging for Probabilistic Quantitative Precipitation Forecasting (Invited) — Apr 2011
Colorado/Wyoming American Statistical Association Chapter Meeting, Boulder, CO

Multivariate Matérn Models (Topic Contributed) — Mar 2011
Eastern North American Region Meeting of the International Biometric Society, Miami, FL

Geostatistical Model Averaging for Probabilistic Quantitative Precipitation Forecasting (Invited) — Jan 2011
Colorado State University, Fort Collins, CO

Methods for Locally Calibrated Probabilistic Forecasting (Invited) — Feb 2010
National Center for Atmospheric Research, Boulder, CO

Geostatistical Model Averaging (Invited) — Jan 2010
Mathematical Research Institute of Oberwolfach, Germany

Matérn Cross-Covariance Functions for Multivariate Random Fields (Invited) — Jan 2010
University of Heidelberg, Germany
University of Lund, Sweden

Posters

Equivalent Kriging (Invited Poster) — Aug 2014
Joint Statistical Meetings, Boston, MA

Nonstationary Space-Time Stochastic Weather Simulation — Feb 2013
SAMSI Workshop on Massive Datasets in Environment and Climate, Boulder, CO

Uncertainty Quantification for a Multi-Fidelity Dynamical Model of the Magnetosphere — Apr 2012
SIAM Conference on Uncertainty Quantification, Raleigh, NC

Calibrating the LFM-MIX Model with Single and Double Resolution Model Output — Dec 2011
American Geophysical Union Meeting, San Francisco, CA

Geostatistical Model Averaging for Probabilistic Quantitative Precipitation Forecasting — Jan 2011
American Meteorological Society Meeting, Seattle, WA

Geostatistical Model Averaging for Probabilistic Quantitative Precipitation Forecasting — Oct 2010
ASA Section on Statistics and the Environment Workshop, Boulder, CO

Professional Service

Associate Editor — 2014 – Present
Annals of Applied Statistics

Associate Editor 2015 – Present
Advances in Statistical Climatology, Meteorology and Oceanography

Associate Editor 2015 – Present
Stat

Organizer May 2016
Workshop on Stochastic Weather Generators

Organizer Jun 2015
Big Data in Environmental Science (Pacific Institute for the Mathematical Sciences)

Workshop Organizer Jun 2014
Pan-American Advanced Studies Institutes Program (PASI)

Session Chair Aug 2013
World Statistics Congress, Hong Kong, China

Referee for Journals
Advances in Statistical Climatology, Meteorology and Oceanography; *Annals of Applied Statistics*; *Biometrika*; *Bulletin of the Mexican Mathematical Society*; *Environmetrics*; *International Journal of Climatology*; *Journal of Agricultural, Biological and Environmental Statistics*; *Journal of Applied Meteorology and Climatology*; *Journal of the American Statistical Association*; *Journal of Climate*; *Journal of Hydrometeorology*; *Journal of Multivariate Analysis*; *Journal of the Royal Statistical Society Series A*; *Journal of the Royal Statistical Society Series B*; *Monthly Weather Review*; *NCAR Technical Report Series*; *Nonlinear Processes in Geophysics*; *SIAM Online Undergraduate Journal*; *Stat*; *Statistica Sinica*; *Statistics and Probability Letters*; *Stochastic Environmental Research and Risk Assessment*; *Water Resources Research*

Grants and Funding

NSF BCS-1461576, Co-PI (subaward from University of Montana),
$34,754 (CU amount) May 2015–Oct 2018

NSF DMS-1406536, PI, $307,938 Aug 2014–Jul 2017

NSF DMS-1417724 (CDS&E-MSS), PI, $73,116 Aug 2014–Jul 2017

Academic Honors, Awards & Scholarships

Lebesgue Chair, Centre Henri Lebesgue, France 2016
Elected as a Junior Lebesgue Chair: an invited visiting international professorship

LEAP, University of Colorado Jan 2013
Participated in Leadership Education for Advancement and Promotion program

JASA Featured Article Dec 2011
"Geostatistical Model Averaging for Locally Calibrated Probabilistic Quantitative Precipitation Forecasting" chosen by Editors of the Journal of the American Statistical Association as a Featured Article for the December, 2011 issue of JASA

Z.W. Birnbaum Award, University of Washington 2009
Annual award for best General Examination in the Department of Statistics

NSF Vertical Integration of Research and Education
(VIGRE) Fellowship Sep 2006 – Sep 2008

President's List, University of Iowa May 2005
Achieved GPA of 4.0 or higher for two consecutive semesters

Dean's List, University of Iowa Jan 2003 – May 2006
Achieved GPA of 3.5 or higher

Teaching Experience

Professor, Statistical Applications, University of Colorado Spring 2016

Professor, Introduction to Time Series, University of Colorado — Spring 2016

Professor, Applied Probability, University of Colorado — Fall 2015

Lecturer, Spatial Statistics, Data Analytics Bootcamp, National Center for Atmospheric Research — Jun 2015

Professor, Spatial Statistics, University of Colorado — Spring 2015

Professor, Applied Probability, University of Colorado — Spring 2015

Professor, Introduction to Time Series, University of Colorado — Spring 2014

Professor, Applied Probability, University of Colorado — Spring 2014

Professor, Applied Probability, University of Colorado — Spring 2013

Professor, Matrix Methods, University of Colorado — Fall 2012

Lecturer, Mathematical Science of Understanding and Predicting Regional Climate: A School and Workshop, National University of Singapore — Feb-Mar 2011

Teaching Assistant, Introduction to Mathematical Statistics, University of Washington — Sep 2007

Teaching Assistant, Elements of Statistical Methods, University of Washington — Jan 2007

Advising and Students

Advisor for Graduate Students in Applied Mathematics

Ph.D. Advisor, Zach Mullen, Department of Applied Mathematics, University of Colorado — 2014 – Present

Master's Thesis Advisor, Branden Olson, Department of Applied Mathematics, University of Colorado — 2014 – Present

Ph.D. Advisor, Tony Wong, Department of Applied Mathematics, University of Colorado — 2013 – 2016

Committee Member for Graduate Students in Applied Mathematics

Ph.D. Committee Member, Dale Jennings, Department of Applied Mathematics, University of Colorado — 2016 – Present

Ph.D. Committee Member, Ashar Ali, Department of Applied Mathematics, University of Colorado — 2014 – Present

Ph.D. Committee Member, Yuanting Chen, Department of Applied Mathematics, University of Colorado — 2012 – 2014

Undergraduate Students in Applied Mathematics

Undergraduate Research Advisor, Joshua North, Department of Applied Mathematics, University of Colorado — 2015 – Present

Undergraduate Research Advisor, Ian Laga,
Department of Applied Mathematics, University of Colorado 2015 – Present

Undergraduate Summer Research Advisor, Brad Hendershott,
Department of Applied Mathematics, University of Colorado 2013 – 2014

Graduate Students in Other Departments

Ph.D. Committee Member, Cameron Bracken,
Department of Civil, Environmental and Architectural Engineering,
University of Colorado 2015 – Present

Ph.D. Committee Member, Andrew Verdin,
Department of Civil, Environmental and Architectural Engineering,
University of Colorado 2015 – Present

Master's Thesis Committee Member, Pawel Janas,
Department of Economics, University of Colorado 2016

Campus Activities & Positions Held

Probability and Statistics Prelim Committee Chair, University of Colorado Spring 2016

Department Awards Committee, University of Colorado 2015 – 2016

Department Colloquium Chair, University of Colorado 2014 – 2015

Probability and Statistics Prelim Committee, University of Colorado Fall 2014

Undergraduate Committee, University of Colorado 2012 – 2014

Probability and Statistics Prelim Committee, University of Colorado 2013

Undergrad Math Sciences Seminar Committee, U. of Washington 2006 – 2007

Graduate Student Senator, University of Washington 2006 – 2007