

Daniel S. Cooley

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Education

Ph.D. Applied Mathematics, University of Colorado at Boulder, 2005
M.S. Applied Mathematics, University of Colorado at Boulder, 2002
B.A. Mathematics, University of Colorado at Boulder, 1994

Academic and Professional Experience

2017-Present: *Associate Chair*; Colorado State University, Department of Statistics.
2015-Present: *Faculty Member*; Colorado State University; School of Environmental Sustainability.
2012-Present: *Associate Professor*; Colorado State University; Department of Statistics.
2007-2012: *Assistant Professor*; Colorado State University; Department of Statistics.
2005-2007: *Postdoctoral Researcher*; Colorado State University; Department of Statistics; (joint appointment).
2005-2007: *Postdoctoral Researcher*; National Center for Atmospheric Research, Geophysical Statistics Project; (joint appointment).

Visiting Appointments

Fall 2014: *Visiting Scholar*; Department of Statistics, University of Washington, Seattle WA.
Fall 2011: *Research Fellow, Program on Uncertainty Quantification*; SAMSI, Research Triangle Park, NC.
June 2008: Institut de Recherche Mathématique Avancée, Université Louis Pasteur Strasbourg, France.

Research Interests

Extreme value theory, modeling multivariate extremes, heavy tailed phenomena, spatial statistics, applications in atmospheric science and environmental science.

Honors/Awards

College of Natural Sciences, Professor Laureate, 2017-2019.
ASA Section on Statistics and the Environment Young Researcher Award, 2012.
ASA Section on Statistics and the Environment (ENVR) JSM Presentation Award for the paper “Spatial Prediction of Extreme Value Return Levels”, August 2005.

Publications

Research Articles

1. Morris S.A., Reich B.J., Thibaud E., Cooley D. (2017). A space-time skew-t model for threshold exceedances. To appear in *Biometrics*. DOI: 10.1111/biom.12644.

2. Hunter B.D., Cooley D., Givens G.H., Beveridge J.R. (2015). Modeling the Upper Tail of the Distribution of Facial Recognition Non-match Scores. *Statistics and Its Interface*, Vol. 10, No. 4 (2017), pp. 711-725.
3. Thibaud E., Aalto J., Cooley D., Davison A.C., and Heikkinen J. (2016). Bayesian Inference for the Brown-Resnick Process, with an Application to Extreme Low Temperatures. *Annals of Applied Statistics* 10:2303-2324.
4. Russell B.T., Cooley D., Porter W.C., Reich B.J., Heald C.L. (2016). Data Mining for Extreme Behavior with Application to Ground Level Ozone. *Annals of Applied Statistics*, 10:1673-1698.
5. Brandt A.R., Heath G.A., Cooley D. (2016). Methane leaks from natural gas systems follow extreme distributions. *Environmental Science and Technology*, 50:12512-12520.
6. Russell B.T., Cooley D.S., Porter W.C., Heald C.L. (2016). Modeling the Spatial Behavior of the Meteorological Drivers of Extreme Ozone. *Environmetrics*, 27:334-344
7. Fix M., Cooley D., Sain S.R., Tebaldi C. (2016). A comparison of U.S. precipitation extremes under RCP8.5 and RCP4.5 with application to pattern scaling. *Climatic Change* DOI: 10.1007/s10584-016-1656-7.
8. Shaby B.A., Reich B.J., Cooley D., Kaufman C.G. (2016). A Markov-Switching Model for Heat Waves. *Annals of Applied Statistics* 10:74-93.
9. Tye M.R., Cooley D. (2015). Examining Extreme Rainfall along Colorado's Front Range via a Spatial Model. *Journal of Hydrology*, 530:15-23.
10. Porter W.C., Heald C.L., Cooley D., Russell B. (2015). Investigating the Observed Sensitivities of Air-Quality Extremes to Meteorological Drivers via Quantile Regression. *Atmospheric Chemistry and Physics*, 15, 10349-10366; doi:10.5194/acpd-15-14075-2015.
11. Ogle S.M., Davis K., Lauvaux T., Schuh A., Cooley D., West T.O., Heath L.S., Miles N., Richardson S., Breidt F.J., Smith J.E., McCarty J.L., Gurney K.R., Tans P., Denning A.S. (2015). An Approach for Verifying Biogenic Greenhouse Gas Emissions Inventories with Atmospheric CO₂ Concentration Data. *Environmental Research Letters*, 10:034012; doi:10.1088/1748-9326/10/3/034012.
12. Leung S., Cooley D. (2014). A Comparison of Traditional Geostatistical and General Gaussian Process Approaches for Spatial Prediction. *Stat*, 3:228-239.
13. Reich B.J., Shaby B.A., 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.
14. Weller, G.B., Cooley, D. (2014). A Sum Characterization of Hidden Regular Variation with Likelihood Inference via Expectation–Maximization. *Biometrika*, 101:17-36.
15. Weller G.B., Cooley D., Sain S.R., Bukovsky M.S., Mearns L.O. (2013). Two Case Studies of NARCCAP Precipitation Extremes. *Journal of Geophysical Research: Atmospheres*, 118:10,475-10,489.
16. Reich B.J., Cooley D., Foley K.M., Napelenok S.L., Shaby B.A. (2013). Extreme value analysis for evaluating ozone control strategies. *Annals of Applied Statistics*, 7:739-762.
17. Schuh A.E., Lauvaux T., West T., Denning A.S., Cooley D. Davis K.J., Miles N., Richardson S., Uliasz M., Lokupitiya E., Andrews A., Ogle S. (2013). Evaluating atmospheric CO₂ inversions at multiple scales over a highly-inventoried agricultural landscape. *Global Change Biology*, 19:1424-1439.

18. Cooley D., Davis R.A., Naveau P. (2012). Approximating the Conditional Density Given Large Observed Values via a Multivariate Extremes Framework, with Application to Environmental Data. *Annals of Applied Statistics*, 6:1406-1429.
19. Weller G.B., Cooley D., Sain S.R. (2012). An Investigation of the Pineapple Express Phenomenon via Bivariate Extreme Value Theory. *Environmetrics*, 23:420-439.
20. Cooley D., Breidt F.J., Ogle S.M., Schuh A., Lauvaux T. (2013). A Constrained Least-Squares Approach to Combine Bottom-Up and Top-Down CO₂ Flux Estimates. *Environmental and Ecological Statistics*, 20:129-146.
21. Cooley D., Cisewski J., Erhardt R., Jeon S., Mannshardt E., Omolo B., Sun Y. (2012). A Survey of Spatial Extremes: Measuring Spatial Dependence and Modeling Spatial Effects. *RevStat*, 10:135-165.
22. Ribatet M., Cooley D., Davison A.C. (2012). Bayesian Inference from Composite Likelihoods, with an Application to Spatial Extremes. *Statistica Sinica*, 22:813-846.
23. Cooley D., Sain S.R. (2010). Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model. *Journal of Agricultural, Biological, and Environmental Statistics*, 15:381-402.
24. Cooley D., Davis R.A., Naveau P. (2010). The Pairwise Beta Distribution: A Flexible Parametric Multivariate Model for Extremes. *Journal of Multivariate Analysis*, 101:2103-2117.
25. Mannshardt-Shamseldin E.C., Smith R.L., Sain S.R., Mearns L., Cooley D. (2010). Down-scaling Extremes: A Comparison of Extreme Value Distributions in Point-Source and Gridded Precipitation Data. *Annals of Applied Statistics*, 4:484-502.
26. Schliep E., Cooley D., Sain S.R., Hoeting J.A. (2010). A Comparison Study of Extreme Precipitation from Six Different Regional Climate Models via Spatial Hierarchical Modeling. *Extremes*, 13:219-239.
27. Fowler H.J., Cooley D., Sain S.R., Thurston M. (2010). Detecting change in UK extreme precipitation using results from the climateprediction.net BBC Climate Change Experiment. *Extremes* 13:241-267.
28. Cooley D. (2009). Extreme Value Analysis and the Study of Climate Change, Commentary on Wigley 1988. *Climatic Change*, 97:77-83.
29. Naveau P., Guillou A., Cooley D., and Diebolt J. (2009). Modeling Pairwise Dependence of Maxima in Space. *Biometrika*, 96:1-17.
30. Cooley D., Nychka D., Naveau P. (2007). Bayesian Spatial Modeling of Extreme Precipitation Return Levels. *Journal of the American Statistical Association*, 102:824-840.
31. Naveau P., Jomelli V., Cooley D., Grancher D., Rabatel A. (2007). Modeling Uncertainties in Lichenometry Studies. *Arctic, Antarctic, and Alpine Research*, 39:277-285.
32. Jomelli V., Grancher D., Naveau P., Cooley D., and Brunstein D. (2007). Assessment study of lichenometric methods for dating surface. *Geomorphology* 86:131-143.
33. Cooley D., Naveau P., Jomelli V., Rabatel A., Grancher D. (2006). A Bayesian Hierarchical Extreme Value Model for Lichenometry. *Environmetrics*, 17:555-574.
34. Cooley D., Naveau P., Poncet, P. (2006). Variograms for spatial max-stable random fields. In *Dependence in Probability and Statistics*, edited by Bertail P., Doukhan P., Soulier, P.; Springer, New York, pp. 373-390.
35. Naveau P., Nogaj M., Ammann C., Yiou P., Cooley D. and Jomelli V. (2005). Statistical Analysis of Climate Extremes. *Comptes Rendus de l'Academie des Sciences*, 337:1013-1022.

Book Chapters, Refereed

1. Cooley D. (2012). Return Periods Under Climate Change, in *Extremes in a Changing Climate: Detection, Analysis & Uncertainty*. Springer, Netherlands, Dordrecht. Water Science and Technology Series, Vol 65.

Conference Proceedings, Refereed

1. Cooley D., Jomelli V., Naveau P. (2004). Spatio-temporal Analysis of Extreme Values from Lichenometric Studies and their Relationships to Climate. In *Proceedings of The International Environmetrics Society Conference 2004*, Portland, Maine.

Book Reviews

1. Cooley D., (2016+) Review of *Extreme Value Modeling and Risk Analysis* Dipak K. Dey and Jun Yan, editors. Submitted to *Biometrics*.

Conference Proceedings, Not Refereed

1. Cooley D. (2011) Spatial Hierarchical Models for Extremes: Modeling Both Climate and Weather Effects In *Proceedings of The International Statistical Institute Conference 2011*, Dublin, Ireland.

Invited Commentaries

1. Cooley D., Sain S.R. (2012). Invited commentary on ‘Statistical Modelling of Spatial Extremes’ by Davison, Padoan, and Ribatet. *Statistical Science*, 27:187-188.
2. Cooley D. (2011). Invited discussion of “Threshold modelling of spatially-dependent non-stationary extremes with application to hurricane-induced wave heights”, by Northrup and Jonathan, *Environmetrics*, 22:812-813.

Commentaries

1. Cooley D., Hoeting J.A. (2011). Discussion of “An explicit link between Gaussian fields and Gaussian Markov random fields: the stochastic partial differential equation approach” by Lindgren, Rue, and Lindstrom. *Journal of the Royal Statistical Society, Series B*, 73:470.
2. Chenet M., Roussel E., Jomelli V., Grancher D., Cooley, D. (2011). A response to the commentary of M. Dabbski about the paper ‘Asynchronous Little Ice Age glacial maximum extent in southeast Iceland’ (*Geomorphology* (2010), 114, 253-260). *Geomorphology*, 128, 103-104.
3. Jomelli V., Naveau P., Cooley D., Grancher D., Rabatel A. (2010). A Response to Bradwell’s Commentary on Recent Statistical Studies in Lichenometry. *Geografiska Annaler: Series A, Physical Geography*, 92:485-487.

Technical Reports

1. Weller G.B., Cooley D. (2012). An Alternative Characterization of Hidden Regular Variation in Joint Tail Modeling *CSU Department of Statistics Technical Report 2012/2*.
2. Cooley D., Davis R., Naveau P. (2007). Prediction for Max-Stable Processes via an Approximated Conditional Density. *CSU Department of Statistics Technical Report 2007/3*.

Forthcoming Publications

1. von Fischer J.C., Cooley D., Gaylord A., Griebenow C.J. Hamburg S., Salo J., Schumacher R., Theobald D., Ham J. (2015). Rapid Identification of location and magnitude of urban natural gas pipeline leaks. *Under revision*.
2. Cooley D., Thibaud E. (2016+). Principal Component Decomposition and Completely Positive Decomposition of Dependence for Multivariate Extremes *Submitted*.

Presentations

Invited Presentations

- Two Decompositions of Dependence for Multivariate Extremes, *Statistics for High Dimensional and Complex Data, KAUST, Thuwal, Saudi Arabia, November 6-9, 2016.*
- Two Decompositions of Dependence for Multivariate Extremes, *STATMOS Workshop on Weather and Climate Extremes, Penn State University, State College PA, October 24-25, 2016.*
- Extreme Analysis for Climate Models; *CMIP Analysis Platform Tutorial, NCAR, Boulder CO; August 17, 2016.*
- Principal Component Analysis for Extremes; Applications for Climate; *Joint Statistical Meetings, Chicago Illinois, Invited Session: Uncertainty Quantification in Climate Science; August 4, 2016.*
- Decomposition of Dependence for Multivariate Extremes; *Extreme Values and Water Resources Workshop, CNRS Center, Aussois France, June 27-July 1, 2016.*
- Assessing Regional Climate Models' Ability to Produce Extreme Precipitation; *Uncertainty and Causality Assessment in Modeling Extreme and Rare Events, NCAR, Boulder CO, April 25-28, 2016.*
- Extreme Values in Atmospheric Science: Progress and Current Challenges; *American Meteorological Society Annual Meeting, New Orleans LA; January 13, 2016.*
- Data Mining to Investigate the Meteorological Drivers of Extreme Ozone; *The Mathematics and Statistics of Quantitative Risk Management, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany; September 25, 2015.*
- Assessing Regional Climate Models Ability to Produce Extreme Precipitation; *Extreme Value Analysis Conference, Ann Arbor MI; June 18, 2015.*
- Data Mining for Extreme Behavior and Application to Ground Level Ozone; *Department of Biostatistics, Yale University; April 14, 2015.*
- Using Bivariate Extreme Value Methods to Examine and Model Dependence Between RCM Output and Observations; *Climate, Risk, and Statistics Workshop, Columbia University, New York NY; December 11, 2014.*
- Data Mining for Extreme Behavior and Application to Ground Level Ozone; *Department of Statistics, Oregon State University; November 3, 2014.*
- Regular Variation and Extremes in Atmospheric Science; *Department of Statistics, University of Washington, Seattle WA; October 20, 2014.*
- Tail Dependence and Applications; *Extremes 2014 Symposium, Volkswagen Foundation, Hannover Germany; October 6-7, 2014.*
- Tail Dependence and Geosciences; *CMG++ Roadmap Workshop, Boise ID; September 18-19, 2014.*
- Hidden Regular Variation in Joint Tail Modeling with Likelihood Inference via the MCEM Algorithm; *High-dimensional and Multivariate Extremes Research Workshop, Bristol, UK; July 2-4, 2014.*
- Extremes: Univariate, Multivariate, and Spatial Processes; *Pan-American Studies Institute, Buzios, Brazil; June 23, 2014.*
- Describing Dependence in the Tail, and Applications (poster); *Kavli German-American Frontiers of Science Symposium, National Academy of Science Irvine CA; April 4, 2014.*

- Tales of Tail Dependence; *Brigham Young University; February 13, 2014.*
- Tales of Tail Dependence; *University of Colorado, Boulder CO; December 6, 2013.*
- Tales of Tail Dependence; *University of New Mexico, Albuquerque, NM; November 15, 2013.*
- Discussant for the Session “Patterns and Extremes: Development and Review of Spatial Data Analysis”; *Joint Statistical Meetings; Montreal, Canada; Invited Session, Spatial Extremes, Max-Stable Processes and Beyond; August 8, 2013.*
- Modeling Spatial Extremes on a Lattice and Inference via Hidden Regular Variation; *Joint Statistical Meetings; Montreal, Canada; Invited Session, Spatial Extremes, Max-Stable Processes and Beyond; August 6, 2013.*
- Extreme Events, Tail Dependence, and Climate Applications; *Next Generation Climate Data Products Workshop; NCAR, Boulder CO; July 17, 2013.*
- Data Mining for Extreme Behavior: Investigating the Causes of Extreme Ground-Level Ozone Observations; *Extreme Value Analysis Conference; Shanghai, China; July 9, 2013.*
- *PhD Course and Workshop on Extremes in Space and Time, University of Copenhagen, Copenhagen Denmark, May 27-31, 2013*
 - Applications of Tail Dependence, Part I: Interpolating Extreme Air Pollution Levels
 - Applications of Tail Dependence, Part II: Investigating the Pineapple Express
 - Modeling Both Climate and Weather Spatial Effects for Extreme Precipitation
 - Hidden Regular Variation in Joint Tail Modeling with Likelihood Inference via the MCEM Algorithm
- Modeling Tail Dependence and Performing Prediction via the Angular Measure; *STATMOS: Ten Lectures on Statistical Climatology, University of Washington, Seattle WA; August 8, 2012.*
- A Model for Extremes on a Regular Spatial Lattice; *Joint Statistical Meetings; San Diego, CA; Invited Session, Extremes with Applications to Climate Studies; August 1, 2012.*
- Minitutorial: Introduction to Statistical Analysis of Extremes; *SIAM Conference on Uncertainty Quantification; Raleigh, NC; April 4, 2012.*
- Estimating Probabilities of Joint Tail Climate Events; *National Research Council Meeting: Assessing the Impacts of Climate Change on Social and Political Stresses, Washington DC, January 12, 2012.*
- A Model for Extremes on a Regular Spatial Lattice; *Univeristy of North Carolina, Chapel Hill NC; October 31, 2011.*
- A Model for Extremes on a Regular Spatial Lattice; *North Carolina State University, Raleigh NC; September 29, 2011.*
- Tutorial Lecture: Statistics of Extremes; *SAMSI UQ Program: Methodology Opening Workshop, Research Triangle Park, NC; September 7, 2011.*
- A Comparison Study of Extreme Precipitation from Six Regional Climate Models via Spatial Hierarchical Modeling; *SAMSI UQ Program: Climate Modeling Opening Workshop, Pleasanton CA; August 30, 2011.*
- Spatial Hierarchical Models for Extremes: Modeling Both Climate and Weather Effects; *58th Congress of the International Statistics Institute, Dublin, Ireland; August 24, 2011.*
- A Model for Extremes on a Regular Spatial Lattice; *EVA 2011, Lyon, France; July 1, 2011.*
- Models for Spatial Extremes, *Statistical Assessment of Extreme Weather Phenomena under Climate Change, National Center for Atmospheric Research, Boulder, Colorado, USA; June 8, 2011.*

- A Comparison Study of Extreme Precipitation from Six Regional Climate Models via Spatial Hierarchical Modeling, *Statistical Assessment of Extreme Weather Phenomena under Climate Change*, National Center for Atmospheric Research, Boulder, Colorado, USA; June 14, 2011.
- Climate Change and Extremes; *ASA Section on Statistics and the Environment Workshop on Environmetrics*, Oct. 14-16, 2010, National Center for Atmospheric Research, Boulder CO, October 15, 2010.
- Models for Spatial Extremes; *Extreme Events in Climate and Weather: An Interdisciplinary Workshop*, Banff, Alberta, Canada, August 25, 2010.
- A Comparison Study of Extreme Precipitation from Six Regional Climate Models via Spatial Hierarchical Modeling; *11th International Meeting on Statistical Climatology*; Edinburgh, Scotland, July 14, 2010.
- Spatial Hierarchical Models for Extremes: Modeling Both Climate and Weather Effects; *University of Georgia*, February 11, 2010.
- Modeling Precipitation Extremes from Regional Climate Models; *Program on Space-time Analysis for Environmental Mapping, Epidemiology and Climate Change*, opening workshop; SAMSI, Research Triangle Park, NC; September 15, 2009.
- Modeling Precipitation Extremes from Regional Climate Models; *Joint Statistical Meetings; Washington DC; Invited Session: From Climate to Weather: Regionalizing Climate Models*; August 2009.
- Spatial Hierarchical Models for Extremes; *Spatial Extremes and Applications Workshop*, Lausanne Switzerland; July 13-17, 2009.
- Prediction for Extremes via an Approximated Conditional Density; *IMS Asia-Pacific Rim Meetings*; Seoul, Korea, June 28-July 1, 2009.
- Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model; *University of Colorado Health Sciences Center*, May 6, 2009.
- Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model; *Spatial Extremes-Theory and Applications*, Lisbon Portugal; April 6-9, 2009.
- Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model; *University of Northern Colorado*, April 1, 2009.
- A New Parametric Model for Multivariate Extremes and Prediction via an Angular Density Model; *University of Colorado at Boulder, Applied Math Colloquium*; February 27, 2009.
- Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model; *EXTREMES meeting*, Davos Switzerland; January 22, 2009.
- A New Parametric Model for Multivariate Extremes and Prediction via an Angular Density Model; *EPFL, Lausanne, Switzerland*; January 15, 2009.
- Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model; *American Geophysical Union Fall Meeting; Session: Understanding and Modeling Hydrologic Extremes and Mathematical Representation of the Rainfall Phenomenon I*; San Francisco, CA, December 15, 2008.
- Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model; *University of Wyoming*, October 3, 2008.
- Bayesian Hierarchical Modeling of Extremes from Regional Climate Model Simulations; *Statistical Modeling of Extremes in Data Assimilation and Filtering Approaches*; Strasbourg, France, June 25, 2008.

- Estimating Dependence and Performing Prediction for Max-stable Processes; *Institut de Recherche Mathématique Avancée, Université Louis Pasteur Strasbourg, France, June 10, 2008.*
- Prediction for Max-Stable Processes via an Approximated Conditional Density; *Interface 2008, Durham NC, May 22, 2008.*
- Bayesian Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model; *Risk Revisited, SAMSI, Durham NC, May 21, 2008.*
- Estimating Dependence and Performing Prediction for Max-stable Processes; *University of Wyoming, November 9, 2007.*
- Estimating Dependence and Performing Prediction for Max-stable Processes; *Brigham Young University, November 1, 2007.*
- Prediction for Max-Stable Processes via an Approximated Conditional Density; *Program on Risk Analysis, Extreme Events, and Decision Theory, Kickoff Workshop, SAMSI, Durham NC; September 17, 2007.*
- Spatial Characterization of Extreme Meteorological Events; Climate and Weather Effects; *10th International Meeting on Statistical Climatology; Beijing China; August 24, 2007.*
- Spatial Dependence Estimation and Prediction for Max-stable Random Fields;
 - *Texas A&M University, College Station TX; January 26, 2007.*
 - *Colorado State University; Fort Collins, CO; January 30, 2007.*
 - *Montana State University; Bozeman MT; February 1, 2007.*
 - *University of Missouri; Columbia MO; February 8, 2007.*
 - *University of New Mexico; Albuquerque, NM; February 15, 2007.*
- Toward Spatial Prediction in Max-stable Random Fields; *Colorado School of Mines, Golden CO; November 17, 2006.*
- Bayesian Modeling of Extreme Precipitation Return Levels; *Texas A&M University, College Station, TX; September 21, 2006.*
- Dependence and Spatial Prediction in Max-stable Random Fields; *2006 International Workshop on Applied Probability; Storrs CT; May 15, 2006.*
- Bayesian Modeling of Extreme Precipitation Return Levels; *IMS session on Spatio Temporal Statistics; ENAR, Tampa FL; March 27, 2006.*
- Spatial Analysis of Return Levels for Extreme Precipitation; *Institute for the Study of Society and Environment, NCAR, Boulder; November 22, 2005.*
- Modeling Extreme Precipitation for Colorado's Front Range; *Faculty/Student Seminar, Colorado College, Colo Spgs; April 29, 2005.*
- Modeling Spatial Extremes for both Climate and Weather;
 - *SAMSI; Research Triangle Park, NC; March 21, 2005.*
 - *Johns Hopkins University; Baltimore, MD; March 28, 2005.*
 - *Colorado State University; Fort Collins, CO; April 25, 2005.*

Conference/Other Presentations

- Assessing Regional Climate Models' Ability to Produce Extreme Precipitation *Joint Statistical Meetings, Seattle WA, Contributed Session: Analysis of Extreme Values; August 9, 2015.*
- Tales of Tail Dependence; *STATMOS Online Seminar Series; July 9, 2014.*
- Comparing, Attributing, and Reconciling Differences Between Inventory and Inversion Estimates for the MCI Region; *North American Carbon Program Investigators Meeting; New Orleans LA; February 2, 2011.*

- Modeling Both Climate and Weather Spatial Effects for Extreme Precipitation; *Joint Statistical Meetings, Vancouver, BC, Canada, Topic Contributed Session: Climate Extremes and Paleoclimate; August 3, 2010.*
- Spatial Hierarchical Modeling of Precipitation Extremes from a Regional Climate Model (Poster); *Workshop on Environmetrics, Boulder CO, October 23, 2008.*
- Spatial Hierarchical Modeling of Weather Extremes from a Regional Climate Model; *Joint Statistical Meetings, Denver CO; Topic Contributed Session: Statistics of Weather and Climate; August 5, 2008.*
- Spatial Hierarchical Modeling of Weather Extremes from a Regional Climate Model; *Eleventh Meeting of New Researchers in Statistics and Probability; Boulder CO; July 30, 2008.*
- Modeling Extremes from Regional Climate Model Simulations; *Joint Statistical Meetings, Salt Lake City UT; Topic Contributed Session: The role of statistics in ecological and climate modeling; July 23, 2007.*
- Prediction for max-stable processes via an approximated conditional density; *EVA 2007; Bern, Switzerland, July 31, 2007.*
- Toward Spatial Prediction for Max-stable Random Fields (Poster); *Multivariate Methods in Environmetrics; Chicago IL; October 27, 2006.*
- Dependence and Spatial Prediction in Max-stable Random Fields; *Joint Statistical Meetings, Seattle WA; Topic Contributed Session: Statistics of Extremes; August 10, 2006.*
- An Extreme Precipitation Atlas for Colorado's Front Range; *Hydrology Days, Colorado State University; March 20, 2006.*
- A Spatial Bayesian Hierarchical Model to Compute a Precipitation Return Levels Map; *Fourth Conference on Extreme Value Analysis, Gothenburg, Sweden; August 17, 2005.*
- Spatial Prediction of Extreme Value Return Levels; *Joint Statistical Meetings, Minneapolis, Minnesota; Topic Contributed Session: Experiments on the Earth: Statistics for Geophysical Models and Data; August 7, 2005.*
- Estimating Dependence for Spatial Extremes (Poster); *Statdep 2005: Statistics for Dependent Data; Paris/Malakoff, France; January 26, 2005.*
- A Spatio-Temporal Extreme Value Model for Lichenometry; *Conference of the International Environmetrics Society; Portland ME; June 29, 2004.*
- Spatial Scaling of Extremes; *Graybill Conference; Ft. Collins CO; June 18, 2004.*
- Extreme Values for Paleoclimate Data Sets with Application in Lichenometry (Poster); *American Geophysical Union 2003 Fall Meeting; San Francisco, CA; December 12, 2003.*

Workshops Presented

- Introduction to Statistical Methods for Environmental Extremes *Short course at the STAT-MOS Workshop for Weather and Climate Extremes, State College PA, October 23, 2016.*
- Extreme Value Modeling and Water Resources: Summer School. *Université Claude Bernard Lyon 1, Lyon France; June 13-24, 2016.* Instructor of three sessions:
 - Introduction to Multivariate Extremes
 - Spatial Extremes: Modeling Weather and Climate Effects
 - Extremes and Climate Models
- Beyond P-values: The Statistics of Extremes. *National Center for Atmospheric Research, Boulder CO; March 28-30, 2016.* (One of four instructors for a three day course)

- Introduction to Analysis of Extremes: Univariate and Multivariate Cases. *Joint Statistical Meetings, Montreal, Canada; August 2, 2013.* (Full-day short course)
- Introduction to Analysis of Extremes: Univariate and Multivariate Cases. *ENVR Workshop, Raleigh, NC; October 4, 2012.* (Half-day short course)
- Introduction to Analysis of Extremes: Univariate and Multivariate Cases. *Joint Statistical Meetings, San Diego, CA; July 28, 2012.* (Full-day short course)
- Introduction to Extreme Value Analysis: Univariate, Multivariate, and Spatial Cases. *SAMSI/Sandia UQ Summer School, Albuquerque NM, June 22, 2011.* (Full-day short course)

Grants

Funded

- 7/1/2015 - 6/30/2018, Changes in Climate and its Effect on Timing of Snowmelt and Intensity-Duration-Frequency Curves, SERDP (DOD, EPA, DOE), D.Cooley, co-investigator (1 month), PI: Dr. Anna Wagner, U.S. Army Cold Regions Research and Engineering Laboratory, Fairbanks, AK. Total: \$1,391,000, CSU: \$666K, Statistics: \$59K.
- 7/1/2013-6/30/2018, Collaborative Research: Advancing extreme value analysis of high impact climate and weather events, *NSF/DOE/USDA Decadal and Regional Climate Prediction using Earth System Models (EaSM) Program Solicitation NSF 12-522.* D. Cooley, lead PI (1.5 months); collaborative research with UC Berkeley, Lawrence Berkeley National Labs, and University of North Carolina, Chapel Hill. CSU: \$867,275; Total: \$4,901,718.
- 07/15/12-10/31/12 Interpretation of street-level methane concentrations. *Environmental Defense Fund*, \$402,108. J. Von Fischer (CSU, Biology), PI, D. Cooley, Investigator: one-half month of salary.
- 06/01/12 - 5/31/15, 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, *EPA STAR Extreme Event Impacts on Air Quality and Water quality with a Changing Global Climate (EPA-G2011-STAR-D1)*, \$750,000. C. Heald (MIT Atmospheric Science) Lead-PI, D. Cooley, co-PI: CSU subcontract: \$190,844, one month per year summer support plus funding for one graduate student.
- 07/01/09-06/30/13, Models for extremes on a spatial lattice. *NSF DMS-Statistics*, \$169,990. D. Cooley, PI.
- 01/01/08-12/31/10, Resolving net CO₂ exchange in the mid-continent region of North America by comparing and reconciling results from inverse modeling and inventory-based approaches. *NASA Carbon Cycle Science*, \$1,094,526. S. Ogle (CSU, NREL), PI, D. Cooley, Investigator: two months per year of support.

Teaching

Colorado State University

STAT 192	First Year Seminar in Mathematical Sciences	S10, S14, S15
STAT 342	Statistical Data Analysis II	S16
STAT 430	Probability/Mathematical Statistics II	S12
STAT 511	Design and Data Analysis for Researchers I	F07, F09(2), F10
STAT/NR 523	Quantitative Spatial Analysis	S08, S09, S11, S12, S13
STAT 525	Analysis of Time Series I	F08, F10, F13
STAT 740	Extreme Value Analysis	S09, F12, F15
STAA 565	Quantitative Reasoning	F13
STAA 576	Methods in Environmental Statistics	S13, S14
STAA 574	Multivariate Statistics	S13, S14, S15, S16
MATH 495	FEScUE Seminar	S08
NCSI 610	TREE/PRIMES – Team Research in Ecology	S07

Other

Graduate Instructor, Applied Mathematics, University of Colorado at Boulder, Fall 2004

Instructor for APPM 1360: Calculus II for Engineers.

Teaching Assistant, Applied Mathematics, University of Colorado at Boulder, 2000-2002

Lead recitations for Calculus I, II, & III, and Differential Equations.

Lead Teaching Assistant, Applied Mathematics, University of Colorado at Boulder, 2001-02

Oversaw the department's new teaching assistants.

Mathematics Teacher, Glenwood Springs High School, Glenwood Springs Colorado, 1995-2000

Instructor of high school mathematics including AP Calculus.

Co-Instructor, Department of Applied Mathematics Summer Institute, July 2001, July 2002

Calculus instructor of a two-week course for high school teachers.

Instructor, Colorado Mountain College, Summer 1999

Taught a summer-semester introductory statistics course.

Advising

Postdoctoral Advisor

Emeric Thibaud (2015-2016)

Advisor

Miranda Fix (PhD, In Progress)

Brett Hunter (PhD, 2016)

Brook Russell (PhD, 2015)

Grant Weller (PhD, 2013)

David Russo (MS, 2014)

Stanley Leung (MS, 2014)

Linde Bischak (MS, 2013)

George Weigt (MS, 2011)

Atul Sharma (MS, 2009)

Fatima Anderson (MS, 2009)

Erin Schliep (MS, 2009)

Austin Lampros (MS, 2009)

Committee Member

Jungmin Park (PhD, Atmospheric Science, In Progress)
Emily Bell (MS, Atmospheric Science, In Progress)
Joshua Mirth (MS, Mathematics, In Progress)
Josh Hewitt (PhD, In Progress)
Qian Zhong (PhD, In Progress)
Henry Scharf (PhD, In Progress)
Ben Zheng (PhD, In Progress)
Keith Morse (MS, Civil Engineering, In Progress)
Gregory Herman (MS, Atmospheric Science 2015, PhD, In Progress)
Dave Fox (MS, In Progress)
Max Nevill (MS, 2017) Zach Weller(PhD, 2017)
Jingyuan Li (MS, Atmospheric Science, 2016)
Indrati Bosono (PhD, Applied Statistics, University of Melbourne, Australia, 2016)
Bettina Younge (MS, 2016)
Perry Williams (MS, 2015)
Wuliang Sun (Computer Science, PhD, 2015)
Chad Martin (Civil Engineering, MS, 2015)
Eliot Foust (Atmospheric Science, MS, 2014)
Lauren Potter (Atmospheric Science, MS, 2013; PhD, In Progress)
Sam Atwood (Atmospheric Science, PhD, In Progress)
Nick Klausner (Electrical and Computer Engineering, MS, 2010; PhD, 2014)
Wade Herndon (PhD, 2014)
Brandon Wolding (Atmospheric Science, MS, 2013)
Erin Schliep (PhD, 2013)
Soheil Kolouri (Electrical and Computer Engineering, MS, 2012)
Jamie Fuller (Forestry, Rangeland, and Watershed Science, MS, 2012)
Jennifer Cooley (Music Therapy, MS, 2012)
Jon Greenberg (MS, 2011)
Basil Conway IV (MS, 2010)
David Teolis (MS, 2010)
Mark Labovitz (PhD, 2009, University of Colorado at Denver)
Joshua French (PhD, 2009)
E. S. (Environmental and Radiological Health, MS, 2009)
Megan Baburek (MS, 2009)
Josh Horstman (MS, 2008)

Other

Quentin Grail, visiting student from ENSAI, France, Summer 2016.
Raphael DeFondeville, visiting student from Ecole des Mines, France, April - June 2014.
Hélène Beneviste, visiting student from Ecole des Mines, France, March - June 2012.
Virgile Bal, visiting student from ENSAI, France, Summer 2010.

Associations

American Statistical Association (2003-)

Institute for Mathematical Statistics (2009-)
Statistics and Environment Section of the ASA (2003-)
The International Environmetrics Society (2011-)

Service

Departmental

Mentor to new assistant professor, 2016-
Faculty dinner schedule guy, 2016-
Promotion and tenure advisory committee, 2015-2018
Undergraduate committee, 2015-16
Graduate committee, 2014-15, Spring 2016
Search/Hiring committee, 2012-13, 2013-14, 2015-16
Graduate student admissions committee, 2008-09, 2011-12 (chair), 2012-13 (chair), 2014-15
Distance compensation ad-hoc committee, Spring 2010
Distance/MAS committee, 2009-10, 2010-11, 2011-12, 2013-14, 2014-15, 2015-16
Undergraduate committee, 2009-10, 2010-11
Seminar organizer, 2007-08, 2008-09 (chair), Spring 2012 (chair), Spring 2015
Library liaison for statistics department, 2007-08

College/University

CNS Scholarship Committee 2017
Department of Statistics Chair Search Committee, Fall 2016.
CSU Colorado Flood Committee, 2014
ISTeC Research Computing Committee, Spring/Summer 2014
CNS Teaching Awards Committee, Spring 2013, Spring 2014, Spring 2015
Hiring committee for postdoc position for Climate Change Impacts to Hydropower Generation in Pacific Northwest River Basins project; P.I. Stephanie Kampf, Watershed Science, CSU, Fall 2008.

Professional

National Academy of Science Committee on Anthropogenic Methane Emissions in the US, member 2017.
DOE Grant Review Panel: Regional and Global Climate Modeling and Integrated Assessment Research, June 1-2, 2016.
Participant in Climate Science Day on Capitol Hill, Washington DC, February 10, 2016.
Member, Scientific Advisory Panel, RPSEA Project 12122-95, "Development of a protocol to reconcile top-down and bottom-up methane emission estimates from onshore gas development in multiple basins." 2015-
Associate Editor, *Extremes*, 2015 -
Program committee member, EVA 2015 conference
Organizer of STATMOS/NCAR Invited Poster Session on Statistics in Atmospheric Science JSM 2014.

JSM Program Committee Member, Chair of the Poster Session, 2013-2014

Co-organizer, INLA Short Course and Spatial Statistics Workshop, April 2013, Fort Collins, CO.

Associate Editor, *Advances in Statistical Climatology, Meteorology and Oceanography*, 2014 -

Associate Editor, *Environmetrics*, 2013-

Associate Editor, *STAT*, 2012-

Associate Editor, *JRSSC*, 2009-2012.

ASA Advisory Committee on Climate Change Policy, Member 2013 - 2017, vice chair 2016, chair 2017.

Member, NSF DMS review panel statistics, Jan 2010.

Local organizer/Program co-chair 6th Extreme Value Analysis Conference/8th Graybill conference; Fort Collins, Colorado June 2009.

Member ENVR JSM Presentation Award Committee, Aug 2008, Aug 2009, Aug 2010 (Chair).

Assisted organizing New Researchers Conference; Boulder, Colorado, July 2008.

Organizer and Chair for the Session "Extremes: Methods for environmental and meteorological studies", JSM Conference; Seattle, WA; August 2006.

– Referee for:

2006: *Journal of Computational and Graphical Statistics, Global and Planetary Change, Water Resources Research, Advances in Water Resources*

2007: *Annals of Applied Probability, Environmental and Ecological Statistics, Water Resources Research*, Grant Review for NERC (UK) Flood Risk from Extreme Events program, Grant Review for NSF-CMG, *Journal of Statistical Planning and Inference, Extremes, Environmetrics*

2008: *JRSSC (2), Water Resources Research, Journal of Geophysical Research - Atmospheres, JABES*

2009: *Advances in Water Resources, Water Resources Research, Biometrika, JASA*

2010: *Biometrika, JASA (2), American Statistician, JRSSC*

2011: *JABES, JSPI, Environmetrics*

2012: *JABES, JRSSB, Biometrika, Extremes*

2013: *JASA, JRSSC, Progress in Oceanography, Technometrics, Environmetrics*

2014: Grant Reviews for NSF (2), *Environmetrics*, Proposal Review for Private Nonprofit Foundation, *Journal of Applied Meteorology and Climatology, Annals of Statistics, JASA, JCGS*

2015: *Nature, Extremes*, Book Proposal Review, *Climate Dynamics, Biometrika*, NSF Grant ad hoc review

2016: *AOAS*, NSF ad hoc review, *Scandinavian Journal of Statistics*

2017: *Environmetrics, Stat*