Whitney Huang

CONTACT INFORMATION

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RESEARCH INTERESTS

Spatial extremes, spatio-temporal statistics, multiscale statistical modeling, spatial point processes, meteorological/environmental and ecological applications.

EMPLOYMENT

Statistical and Applied Mathematical Sciences Institute, Durham, NC Aug. 2017 to Present

- Postdoctoral Fellow, Program on Mathematical and Statistical Methods for Climate and the Earth System (CLIM)

University of North Carolina at Chapel Hill, Chapel Hill, NC Aug. 2017 to Present

- Postdoctoral Fellow, Department of Statistics and Operations Research

EDUCATION

Purdue University, West Lafayette, IN

Ph.D., Statistics, Aug. 2017

- Thesis Topic: *Statistics of Extremes with Applications in Climate*
- Advisors: Hao Zhang, Purdue University

Ph.D. study, Industrial Engineering, Aug. 2010 to Dec. 2010

- Area of Study: *Operations Research*

The University of Akron, Akron, OH

M.S., Statistics, Dec. 2009

- Master paper: *Markov Chain Monte Carlo in Practice.*
- Advisors: Desale Habtzghi, The University of Akron

National Cheng Kung University, Tainan, Taiwan

B.S., Mechanical Engineering, June 2006

- Concentration: *Thermal Science*

REFEREED PUBLICATIONS

Citations (from Google Scholar)

- Total number of citations = 68
- h-index = 5
- i10–index = 3 (# publications with at least 10 citations)

1. **Huang, W. K.**, Stein, M. L., McInerney, D. J., Sun., S., Moyer, E. J. "Estimating changes in temperature extremes from millennial scale climate simulations using generalized extreme value (GEV) distributions." (2016). *Advances in Statistical Climatology, Meteorology and Oceanography*, 2, 79–103.
2. Wang, J., Han, Y., Stein, M. L., Kotamarthi, R., **Huang W. K.** "Evaluation of dynamically downscaled extreme temperature using a spatially-aggregated generalized extreme value (GEV) model." (2016). *Climate Dynamics*, 47(9), 2833–2849.
3. Dixon Hamil, K., Iannone III, B. V., **Huang, W. K.**, Fei, S., and Zhang, H. "Cross-scale contradictions in ecological relationships." (2016). *Landscape Ecology*, 31(1), 7–18.

4. Iannone III, B. V., Potter, K. M., Dixon Hamil, K., **Huang, W.**, Zhang, H., Guo, Q., Oswalt, C. M., Woodall, C. W., and Fei, S. "Evidence of biotic resistance to invasions in forests of the Eastern USA." (2016), *Landscape Ecology*, 31(1), 85–99.

5. Malik, A., Maciejewski, R., Elmqvist, N., Jang, Y., Ebert, D. S., and **Huang, W.** "A correlative analysis process in a visual analytics environment." *Visual Analytics Science and Technology (VAST), 2012 IEEE Conference on*, pp. 33–42.

Submitted Manuscripts

1. **Huang, W. K.**, Nychka, D. W., Zhang, H. "Modeling Precipitation Extremes using Log-Histospline." Submitted to *Environmetrics*

In Preparation

1. **Huang, W. K.**, Zhang, H., Villoria, N. B., "Spatial basis function approach to accommodate teleconnection patterns in climate data" (2018+)

Professional Visits

Research visitor, The Institute for Mathematics Applied to Geosciences (IMAGe), National Center for Atmospheric Research (NCAR)

- Mentor: Dr. Douglas Nychka — Apr. 2015, Sep 2016, Apr. 2017

Research visitor, Mathematics and Computer Science Division (MCS), Argonne National Laboratory

- Mentor: Dr. Emil Constantinescu — Mar. 2017

Research visitor, Environmental Science Division (EVS), Argonne National Laboratory

- Mentor: Dr. V. Rao Kotamarthi — Mar 2015, July 2016

Visiting student, Department of Statistics, University of Chicago

- Mentor: Prof. Michael Stein — May 2013 - June 2013, May 2014 - June 2014

Visitor, NOAA's National Climatic Data Center

- Mentor: Dr. Dongsoo Kim — Nov. 2012, Dec. 2014

Awards

Student Competition

- 1st place in the Student Presenter Competition, Conference on Probability and Statistics in the Atmospheric Sciences, Baltimore, MD — July 2017
- Honorable Mention (runner-up), Graybill/ENVR student poster competition, Fort Collins, CO — Sept. 2014

Travel Awards

- STATMOS/SAMSI Workshop on Climate Statistics, Boulder, CO — July 2017
- Statistical Perspectives of Uncertainty Quantification, Atlanta, GA — May 2017
- Conference on Applied Statistics in Agriculture, Manhattan, KS — Apr. 2017
- STATMOS Workshop on Climate and Weather Extremes, State College, PA — Oct. 2016
- Rossbypalooza workshop: Climate meets Statistics at the University of Chicago, Chicago, IL — July 2016
- STATMOS workshop on High performance computing for spatial statistics, Ann Arbor, MI — Sept. 2015
- Workshop on Spatial Statistics, College Station, TX — Jan. 2015

- 2014 Graybill/ENVR Conference: Modern Statistical Methods for Ecology, Fort Collins, CO Sep 2014
- Pan-American Advanced Study Institute on Spatio-Temporal Statistics, Búzios, RJ, Brazil June 2014
- IMAGe STATMOS Course on Visualization of Climate Data, Boulder, CO (Declined) May 2013
- SAMSI/NCAR Workshop on Massive Datasets in Environment and Climate, Boulder, CO Feb 2013
- NSF-CBMS Regional Conference on Statistical Climatology, Seattle, WA Aug. 2012

Student Awards – Purdue University

- Purdue Research Foundation (PRF) Fellowship Aug. 2016 – May 2017
- Graduate School Summer Research Grants 2015
- Homeland Security - Science, Technology, Engineering and Mathematics (HS-STEM) Career Development Program Jan. 2011 – Dec. 2013
  - This program is designed to support undergraduate and graduate students in developing the skills to become preeminent scientists in the homeland security scientific and technical community.

Presentations

Invited Talks

Modeling Precipitation Extremes using Log-Histospline

- Math Colloquium, Department of Mathematics and Statistics, University of North Carolina at Greensboro, Greensboro, NC Nov. 2017
- International Chinese Statistical Association Applied (ICSA) Statistics Symposium, Chicago, IL June 2017
- Department of Mathematical Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI Mar. 2017
- Mathematics and Computer Science Division (MCS), Argonne National Laboratory, Lemont, IL Mar. 2017

Estimating changes in temperature extremes from millennial scale climate simulations using generalized extreme value (GEV) distributions

- STATMOS Workshop on Climate and Weather Extremes, State College, PA Oct. 2016
- Atmospheric sciences colloquia, Department of Atmospheric Sciences, University of Illinois at Urbana–Champaign, Champaign, IL Oct. 2016
- Data Science Seminar, Mathematics Department, College of William and Mary, Williamsburg, VA Mar. 2016
- IMAGe Brown Bag Seminar, National Center for Atmospheric Research (NCAR), Boulder, CO Apr. 2015
- Environmental Science Division (EVS), Argonne National Laboratory, Lemont, IL Mar. 2015

Spatial Extremes – Current Approaches and Future Outlook

- National Climatic Data Center (NCDC), Asheville, NC Nov. 2012

Contributed Talks

Modeling Precipitation Extremes using Log-Histospline

- Contributed session on Environmental Extremes, Joint Statistical Meetings (JSM), Baltimore, MD Aug. 2017
- Contributed session on Extreme Value Analysis and Prediction, Conference on Probability and Statistics in the Atmospheric Sciences, Baltimore, MD July 2017

Spatial Basis Function Approach to Accommodate Teleconnection Patterns in Climate Data

- Conference on Applied Statistics in Agriculture, Manhattan, KS Apr. 2017
- Contributed session on Nonstationary Models for Spatial Data, Joint Statistical Meeting (JSM), Chicago, IL Aug. 2016

Estimating changes in temperature extremes from millennial scale climate simulations using generalized extreme value (GEV) distributions

- 13th International Meeting on Statistical Climatology meeting, Canmore, Alberta, Canada June 2016
- Workshop on Uncertainty and Causality Assessment in Modeling Extreme and Rare Events, National Center for Atmospheric Research, Boulder, CO Apr. 2016
- Oral session on Characterizing and Interpreting Changes in Temperature and Precipitation Extremes, American Geophysical Union Fall meeting, San Francisco, CA Dec. 2015
- Contributed session on Analysis of Extreme Values, Joint Statistical Meeting (JSM), Seattle, WA Aug. 2015
- Contributed session on Modeling extreme events: precipitation and floods, The 9th international conference on Extreme Value Analysis (EVA), Ann Arbor, MI June 2015

Dependence modeling of spatio-temporal weather extreme events

- Contributed session on Spatial-temporal Data, The Ninth International Chinese Statistical Association International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, Hong Kong Dec. 2013
- Contributed session on Statistical Methods and Inference for Extreme Environmental Events, Joint Statistical Meeting (JSM), Montreal, QC Aug. 2013

Purdue University Talks

Job/Summer Internship Panel. Graduate Student Organization seminar, Department of Statistics Apr. 2017

An Overview of Spatial Extremes. Mathematical Statistics Seminar, Department of Statistics Oct. 2015

An Introduction to Extreme Value Analysis. Graduate Student Organization seminar, Department of Statistics Mar. 2014

Contributed Posters

Modeling Precipitation Extremes using Log-Histospline

- SAMSI CLIM Program Opening Workshop, Durham, NC Aug. 2017

- Statistical Perspectives of Uncertainty Quantification, Atlanta, GA May 2017

Estimating changes in temperature extremes from millennial scale climate simulations using generalized extreme value (GEV) distributions

- Workshop on Spatial Statistics, College Station, TX Jan. 2015
- 2014 Graybill/ENVR Conference: Modern Statistical Methods for Ecology, Fort Collins, CO Sept. 2014
- STATMOS Annual Meeting, Chicago, IL Sept. 2014

Dependence modeling of spatio-temporal weather extreme events

- Environmental and Longitudinal Data Analysis, Eastern North American Region (ENAR) spring meeting, Baltimore, MD Mar. 2014
- Frontiers of Statistics and Forecasting in Celebration of the 80th Birthday of George C. Tiao, Taipei, Taiwan Dec. 2013
- SAMSI LDHD Opening Workshop, Research Triangle Park, NC Sept. 2013

Research and Consulting Experience

Research Assistant Jan. 2015 to Aug. 2016

USDA grant: The role of international trade in adapting U.S. agriculture to increased global climate variability, Department of Agricultural Economics, Statistics, and Agronomy, Purdue University

Responsibilities: To analyze historical and future climate data to exact climate patterns relevant for a better understanding of global commodity markets.

Supervisor: Prof. Nelson Villoria, Prof. Hao Zhang, and Prof. Dev Niyogi

Consultant Jan. 2012 to May 2013, Aug. 2014 to Dec. 2014

Statistical Consulting Service, Department of Statistics, Purdue University

Responsibilities: To assist members of Purdue academic community with statistical design, data analysis, and software issues for their research.

Research Assistant Jan. 2011 to Aug. 2012

Purdue University Rendering and Perceptualization Lab, School of Electrical and Computer Engineering, Purdue University

Responsibilities: To analyze spatio-temporal data for homeland security projects.

Supervisor: Prof. David Ebert, Dr. Ross Maciejewski, and Dr. Yun Jang

Teaching Experience

Statistical and Applied Mathematical Sciences Institute

Undergraduate Modelling Workshop May 2018

Undergraduate workshop on climate extremes Oct. 2017

- Tutorial on extreme value analysis for climate research
- Hands on demos for extreme value analysis using `R`

Department of Statistics, Purdue University

Instructor: STAT 225 Introduction to Probability Models Aug. 2013 – May 2014

- Conducted lectures and prepared course slides [Syllabus; Course website].
- Held office hours to address individual questions and concerns.

– Graded students' homeworks, quizzes, and exams.

Teaching Assistant May 2012 – May 2016

– STAT 598 G Introduction to Computational Statistics, Fall 2012.
– STAT 598 HZ Modern Applied Statistics, Spring 2015.
– STAT 526 Advanced Statistical Methodology, Fall 2012.
– STAT 525 Intermediate Statistical Methodology, Fall 2015.
– STAT 529 K Bayesian Applied Decision Theory, Summer 2012, Spring 2013, Spring 2015, Spring 2016.
– STAT 511 Statistical Methods, Spring 2013.

School of Industrial Engineering, Purdue University

Teaching Assistant: IE 535 Linear Programming Aug. 2010 – Dec. 2010

– Held office hours to address individual questions and concerns.
– Graded students' homeworks and exams.

Department of Statistics, University of Akron

Teaching Assistant: STAT 250 Statistics for Everyday Life Aug. 2008 – Dec. 2009

– Taught weekly computer lab using Minitab® to reinforce lecture material.
– Held office hours to address individual questions.
– Graded students' homeworks.

Service

Journal Referee:

2017: *Journal of Geophysical Research (JGR): Atmosphere*, *Advances in Statistical Climatology, Meteorology and Oceanography (ASCMO)*, *Stat*, *Journal of the Korean Statistical Society (JKSS)*, *Computational Statistics & Data Analysis (CSDA)*, *Environmetrics*

2018: *Annals of Applied Statistics (AOAS)*, *Environmetrics*

Session Organizer:

– The Climate Extremes Program at SAMSI, Section on Statistics and the Environment, Joint Statistical Meetings, Vancouver, BC, Canada Aug. 2018

Session Chair:

– Environmental Applications of Bayesian Methods, Section on Bayesian Statistical Science, Joint Statistical Meetings, Baltimore, MD July. 2017
– Environmental Extremes, Section on Statistics and the Environment, Joint Statistical Meetings, Chicago, IL Aug. 2016

Spatial statistics and Statistical Climatology seminar coordinator: Department of Statistics, Purdue University Aug. 2013 – May 2017

Graduate Student Organization (GSO) seminar coordinator: Department of Statistics, Purdue University Jan. 2014 – May 2015

Computer Skills

Programming Languages: R

Applications: LaTeX, MySQL.

Operating Systems: Mac OS X, Linux and other UNIX variants.

Professional Membership	American Statistical Association (ASA)	Since Dec. 2010
	Institute of Mathematical Statistics (IMS)	Since June 2012
	International Chinese Statistical Association (ICSA)	Since Mar. 2013
	American Geophysical Union (AGU)	Since July 2015
	The International Environmetrics Society (TIES)	Since Dec. 2016
	American Meteorological Society (AMS)	Since Feb. 2017
	Society for Industrial and Applied Mathematics (SIAM)	Since Feb. 2017