Whitney Huang

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CITIZENSHIP   United States

RESEARCH INTERESTS   Statistics of extremes; Spatio-temporal statistics; Design and analysis of computer experiments; Multiscale statistical modeling; Spatial point processes; Environmental applications.

EMPLOYMENT

Statistical and Applied Mathematical Sciences Institute (SAMSI) and **Canadian Statistical Sciences Institute**   Aug. 2017 to Present

- CANSSI Postdoctoral Fellow, Pacific Climate Impacts Consortium (PCIC)
- SAMSI Postdoctoral Fellow, Program on Mathematical and Statistical Methods for Climate and the Earth System (CLIM)

University of Victoria, Victoria, BC, Canada   Aug. 2018 to Present

- Postdoctoral Fellow, PCIC and School of Earth and Ocean Sciences (SEOS)
- Mentors: Dr. Francis W. Zwiers, Director, PCIC and Dr. Adam H. Monahan, Professor, SEOS

University of North Carolina at Chapel Hill, Chapel Hill, NC   Aug. 2017 to July 2018

- Postdoctoral Fellow, Department of Statistics and Operations Research (STOR)
- Mentor: Dr. Richard L. Smith, Mark L. Reed III Distinguished Professor, STOR

EDUCATION

Purdue University, West Lafayette, IN

Ph.D., Statistics,   Aug. 2017
- Thesis Topic: *Statistics of Extremes with Applications in Climate*
- Advisor: Dr. Hao Zhang, Department Head, Professor, Statistics

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.*
- Advisor: Dr. Desale Habtzghi, Associate Professor, DePaul University

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 = 88
- h-index = 5
- i10–index = 4 (# publications with at least 10 citations)

1. **Huang, W. K.**, Nychka, D. W., Zhang, H. "Estimating Precipitation Extremes using Log-Histospline." (2018+) *Environmetrics* (accepted)

2. **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.

3. 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.

4. 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.

5. 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.

REFEREED CONFERENCE PROCEEDINGS

1. Ebert-Uphoff, I., **Huang, W.K**, Mitra, A, Cooley, D.S., Chatterjee, S.B., Chen, C., and Wang, Z. "Studying extremal dependence in climate using complex networks" *Proceedings of the 8th International Workshop on Climate Informatics (CI 2018)*, Boulder, CO, 2018.

2. 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.**, Cooley, D. S., Ebert-Uphoff, I., Chen, C., Chatterjee, S.B. "χ Network: An Exploratory Tool for Extremal Dependence" (2018+) Submitted to *Journal of Agricultural, Biological, and Environmental Statistics*, Special Issue on Climate and Earth System

IN PREPARATION

1. Ebert-Uphoff, I., Mitra, A, **Huang, W.K**, Cooley, D.S., Chatterjee, S.B., Chen, C. "Using Complex Networks to Study Extremal Dependence in Climate" (2018+)

2. **Huang, W. K.**, Smith, R. L., Asher, T. G., Blanton, B. O., Luettich, R. A. "Estimating r-year Storm Surge Heights: A Statistical Perspective" (2018+)

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

PROFESSIONAL VISITS

Research visitor, Department of Statistics, University of British Columbia
- Host: Prof. William J. Welch   Nov. 2018

Research visitor, Department of Statistics & Actuarial Science, Simon Fraser University
- Host: Prof. Derek Bingham   Nov. 2018

Research visitor, The Institute for Mathematics Applied to Geosciences (IMAGe), National Center for Atmospheric Research (NCAR)
- Mentor: Dr. Douglas W. 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 L. Stein   May 2013 - June 2013, May 2014 - June 2014

Visitor, NOAA's National Climatic Data Center
- Mentor: Dr. Dongsoo Kim   Nov. 2012, Dec. 2014

Presentation/Poster Competition

- **Best posters competition**, Institute for Mathematics and its Applications (IMA) workshop on Forecasting from Complexity, Minneapolis, MN   Apr. 2018

- **1st place in the Student Presenter Competition**, Conference on Probability and Statistics in the Atmospheric Sciences, Baltimore, MD   July 2017

- **Runner-up in the student poster competition**, Graybill/ENVR conference, Fort Collins, CO   Sept. 2014

Travel Awards

- SAMSI Opening Workshop on MUMS   Sept. 2018
- 20th IMS New Researchers Meeting   July 2018
- IMA workshop on Forecasting from Complexity   Apr. 2018
- STATMOS/SAMSI Workshop on Climate Statistics   July 2017
- Statistical Perspectives of Uncertainty Quantification   May 2017
- Conference on Applied Statistics in Agriculture   Apr. 2017
- STATMOS Workshop on Climate and Weather Extremes   Oct. 2016
- Rossbypalooza workshop: Climate meets Statistics at the UChicago   July 2016
- STATMOS workshop on High performance computing for spatial statistics   Sept. 2015
- Workshop on Spatial Statistics   Jan. 2015
- 2014 Graybill/ENVR Conference: Modern Statistical Methods for Ecology   Sept. 2014
- Pan-American Advanced Study Institute on Spatio-Temporal Statistics   June 2014
- SAMSI/NCAR Workshop on Massive Datasets in Environment and Climate   Feb. 2013
- NSF-CBMS Regional Conference on Statistical Climatology   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: 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.   Jan. 2011 – Dec. 2013

Invited Talks

Estimating Extreme Storm Surge Levels: A Statistical Perspective

- Minisymposia on Statistics of Extreme Weather and Climate Events, Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematics of Planet Earth (MPE18), Philadelphia, PA   Sept. 2018
- SAMSI CLIM Transition Workshop, Durham, NC   May 2018

Network Analysis of Gulf Coast Extreme Precipitation

- SAMSI Climate Extremes Workshop, Durham, NC   May 2018

Estimating Precipitation Extremes using Log-Histospline

- Statistics Seminar, Department of Mathematics and Statistics, University of Victoria, Victoria, BC, Canada   Nov. 2018
- 28th The International Environmetrics Society (TIES) Conference, Guanajuato, Mexico   July 2018
- Math Colloquium, Department of Mathematics and Statistics, University of North Carolina at Greensboro, Greensboro, NC   Nov. 2017
- Environmental seminar, Department of Statistics, North Carolina State University, Raleigh, NC   Sep. 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

- Pacific Climate Seminar Series, University of Victoria, Victoria, BC, Canada Sept. 2018
- 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
- Workshop on Uncertainty and Causality Assessment in Modeling Extreme and Rare Events, National Center for Atmospheric Research, Boulder, CO   Apr. 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

Topic contributed Talks

Estimating Extreme Storm Surge Levels: A Statistical Perspective

- Topic contributed session on The Climate Extremes Program at SAMSI, Section on Statistics and the Environment, Joint Statistical Meetings (JSM), Vancouver, BC, Canada   Aug. 2018

Estimating Precipitation Extremes using Log-Histospline

- Oral session on Utilizing Long-Term Precipitation Data Records for Understanding Climate Extremes I, American Geophysical Union (AGU) Fall Meeting, New Orleans, LA   Dec. 2017

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

- Oral session on Characterizing and Interpreting Changes in Temperature and Precipitation Extremes, AGU Fall meeting, San Francisco, CA   Dec. 2015

Contributed Talks

Estimating Precipitation Extremes using Log-Histospline

- Session on Environmental Extremes, JSM, Baltimore, MD   Aug. 2017
- 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
- Session on Nonstationary Models for Spatial Data, 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
- Session on Analysis of Extreme Values, JSM, Seattle, WA   Aug. 2015
- 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

- 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
- 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

Estimating Extreme Storm Surge Levels: A Statistical Perspective

- SAMSI MUMS Opening Workshop, Durham, NC   Aug. 2018

Estimating Precipitation Extremes using Log-Histospline

- IMS New Researchers Meeting, Burnaby, BC, Canada   July 2018
- IMA workshop on Forecasting from Complexity, Minneapolis, MN   Apr. 2018
- Triangle Machine Learning Day (TMLD 2018), Durham, NC   Apr. 2018
- 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

SERVICE

SAMSI Administrative Service:

Storm Surge Risk Working Group Co-Leader (joint with Taylor Asher, Marine Sciences, UNC-Chapel Hill), MUMS program   Aug. 2018 to Present

Extremes and Risk and Coastal Hazards Working Groups administrator, CLIM program,   Aug. 2017–Jun. 2018

Journal Referee:

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

2018: *Annals of Applied Statistics (2)*, *Environmetrics*, *Computational Statistics*, *Journal of Agricultural, Biological, and Environmental Statistics*, *Journal of Hydrologic Engineering*

Session Organizer:

- Minisymposia on Statistics of Extreme Weather and Climate Events, SIAM Conference on Mathematics of Planet Earth, Philadelphia, PA   Sept. 2018
- The Climate Extremes Program at SAMSI, Section on Statistics and the Environment, Joint Statistical Meetings, Vancouver, BC, Canada   Aug. 2018

Session Chair:

- Statistical Methods of Air Quality and Exposure, Section on Statistics and the Environment, Joint Statistical Meetings, Vancouver, BC, Canada   Aug. 2018
- 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

Program Committee:

- 4th International Conference on Big Data and Information Analytics   Aug. 2018

Seminar Organizer:

- Community Climate Science Seminars (CCSS), University of Victoria Oct. 2018 –
- Spatial statistics and Statistical Climatology Seminar: Department of Statistics, Purdue University   Aug. 2013 – May 2017
- Graduate Student Organization (GSO) Seminar: Department of Statistics, Purdue University   Jan. 2014 – May 2015

Teaching Experience	**Department of Mathematics and Statistics, University of Victoria**

Guest Lecturer: STAT 457/554 Time Series Analysis   Nov. 7, 2018

– Gave an introductory lecture on extreme value analysis

SAMSI Education and Outreach Programs and Workshops

Undergraduate Modelling Workshop   May 2018

– Designed and led a week-long project on "Estimating extreme US southeast rainfall"
– Mentored a team of 6 undergrad students with Statistics, Mathematics, and Computer Sciences background. **Final group presentation**: Slides; Video

Undergraduate workshop on climate extremes   Oct. 2017

– Gave a tutorial on extreme value analysis for climate research (Slides)
– Presented a demos of extreme value analysis using `R` (Handout)

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].

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

Department of Statistics, University of Akron

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

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

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
Statistical Society of Canada (SSC)	Since Oct. 2018