

Won Chang

Associate Professor
Department of Statistics
Seoul National University

Education and Training

Postdoctoral Scholar, Department of Statistics, University of Chicago, August 2014 – July 2016 (mentored by Dr. Michael L. Stein and co-mentored by Dr. Elisabeth J. Moyer)

Ph.D. Statistics, Pennsylvania State University, 2014.

Thesis title: *Climate model calibration using high-dimensional and non-Gaussian spatial data* (Thesis advisor: Dr. Murali Haran, Thesis co-advisor: Dr. Klaus Keller).

M.S. Statistics, Korea University, 2009.

Thesis title: *Estimating volatility and distribution of European option prices using Bayesian UHF GARCH-M model* (Thesis advisor: Dr. Yousung Park).

B.S. Statistics, Korea University, 2007.

Employment

Associate Professor, Department of Statistics, Seoul National University, September 2024 – Present

Associate Professor, Department of Mathematical Sciences, University of Cincinnati, July 2022 – August 2024

Assistant Professor, Department of Mathematical Sciences, University of Cincinnati, August 2016 – June 2022

Articles Submitted to or under Revision for Peer-Reviewed Journals

Xie, J., Jeon, H., Chang, W., Jeon, Y., Li, Z., Ma, Q., Chung, D. (2024+) spaDesign: A Statistical Framework to Improve the Design of Sequencing-based Spatial Transcriptomics Experiments, submitted

Hwang, Y., Kim, H. J., Chang, W., Hong, C., MacEachern, S. N. (2024+) Bayesian Model Calibration and Sensitivity Analysis for Oscillating Biological Experiments, submitted

Articles Accepted or Published in Peer-Reviewed Journals

Cho, D., Chang, W., Park, J. (2024+) Fast Compartment Model Calibration using Annealed and Transformed Variational Inference, accepted for publication in *the Journal of Computational and Graphical Statistics*

Park, Y., Chang, W. (2024+) A Personalized Dose-Finding Algorithm Based on Adaptive Gaussian Process Regression, accepted for publication in *Pharmaceutical Statistics*

Bonas, M., Datta, A., Wikle, C. K., Boone, E. L., Alamri, F., Hari, B. V., Kavila, I., Simmons, S. J., Jarvis, S. M., Burr, W. S., Pagendam, D., Chang, W., Castruccio, S. (2024+) Assessing Predictability of Environmental Processes with Statistical and Machine Learning Models, accepted for publication in *Environmetrics*

- Jeon, Y., Chang, W., Jeong, S., Park, J. (2024) A Bayesian Convolutional Neural Network-based Generalized Linear Model, *Biometrics*, 80 (2), ujae057
- Kim, H., Chang, W., Chae, S. J., Park, J-E, Seo, M., Kim, J. K. (2024), scLENS: Data-driven signal detection for unbiased scRNA-seq data analysis, *Nature Communications*, 15, 3575
- Jo, H., Hong, H., Hwang, H. J., Chang, W., Kim, J. K. (2024) Density Physics-Informed Neural Network identifies sources of cell heterogeneity in signal transduction under antibiotic stress, *Patterns*, 5 (2), 100899
- Wang, S., Kim, S., Cho, H., Chang, W. (2024) Nonparametric Predictive Model for Sparse and Irregular Longitudinal Data, *Biometrics*, 80 (1), ujad023
- Park, J., Yi, S., Chang, W., Mateu, J. (2023) A Spatio-Temporal Dirichlet Process Mixture Model for Coronavirus Disease-19, *Statistics in Medicine*, 42 (30), 5555-5576
- Lee, M. P., Hoang, K., Park, S., Song, Y. M., Joo, E. Y., Chang, W., Kim, J. H. , Kim, J. K. (2023) Imputing Missing Sleep Data from Wearables with Neural Networks in Real-World Settings, *SLEEP*, 47 (1), zsad266
- Allen, C., Chang, Y., Neelon, B., Chang, W., Kim, H. J., Li, Z., Ma, Q., Chung, D. (2023) A Bayesian Multivariate Mixture Model for Spatial Transcriptomics Data, *Biometrics*, 73 (3), 1775-1787
- Rahat, S. H., Steissberg, T., Chang, W., Chen, X., Mandavya, G., Tracy, J., Wasti, A., Atreya, G., Saki, S., Bhuiyan, M. D. A., Ray, P. (2023) Remote Sensing-Enabled Machine Learning for River Water Quality Modeling Under Multidimensional Uncertainty, *Science of the Total Environment*, 898, 165504
- Deng, Q, Nam, JH, Yilmaz, AS, Chang, W, Pietrzak, M, Li, L, Kim, HJ, and Chung, D. (2023), graph-GPA 2.0: improving multi-disease genetic analysis with integration of functional annotation data, *Frontiers in Genetics*, 14
- Jeong, J, and Chang, W. (2023) Analysis of East Asia Wind Vectors Using Space–Time Cross-Covariance Models, *Remote Sensing* 15 (11), 2860
- Wikle, C. K., Datta, A., Hari, B. V., Boone, E. L., Sahoo, I., Kavila, I., Castruccio, S., Simmons, S. J., Burr, W. S., Chang, W. (2023). An illustration of model agnostic explainability methods applied to environmental data, *Environmetrics*, 34 (1), e2772
- Jeon H, Xie J, Jeon Y, Jung KJ, Gupta A, Chang W, Chung D. (2023) Statistical Power Analysis for Designing Bulk, Single-Cell, and Spatial Transcriptomics Experiments: Review, Tutorial, and Perspectives, *Biomolecules*, 13 (2), 221
- Chang, W., Konomi, B. A., Karagiannis, G., Guan, Y., Haran, M. (2022) Ice model calibration using semi-continuous spatial data, *the Annals of Applied Statistics*, 16 (3), 1937-1961
- Bhatnagar, S., Chang, W., Kim, S., Wang, J. (2022) Computer Model Calibration with Time Series Data using Deep Learning and Quantile Regression, *SIAM/ASA Journal on Uncertainty Quantification*, 10 (1), 1–26 (Winner of the 2021 American Statistical Association Section on Statistics and the Environment Student Paper Competition)
- Park, J., Chang, W., Choi, B. (2022) An interaction Neyman-Scott point process model for Coronavirus Disease-19, *Spatial Statistics*, 47, 100561
- Tracy, J., Chang, W., Freeman, S., Brown, C., Palma, A., Ray, P. (2021) Enabling Dynamic Emulation of High-Dimensional Model Outputs: Demonstration for Mexico City Groundwater Management, *Environmental Modelling & Software*, 147, 105238
- Wang, J., Liu, Z., Foster, I., Chang, W., Kettimuthu, R., Kotamarthi, R. (2021) Fast and accurate learned multiresolution dynamical downscaling for precipitation, *Geoscientific Model Development*, 14 (10), 6355–6372

- Kim, S., DeSarbo, W., and Chang, W. (2021) Note: A new approach to the modeling of spatially dependent and heterogeneous geographical regions, *the International Journal of Research in Marketing*, 38 (3), 792-803
- Plumlee, M., Asher, T. G., Chang, W., Bilskie, M. (2020) High-fidelity hurricane surge forecasting using emulation and sequential experiments, *the Annals of Applied Statistics*, 15 (1), 460-480
- Chang, W., Wang, J., Marohnic, J., Kotamarthi, V.R., and Moyer, E. J. (2020) Diagnosing added value of convection-permitting regional models using precipitation event identification and tracking, *Climate Dynamics*, 55, 175-192
- Chang, W., Kim, S., Chae, H. (2020) A regularized spatial market segmentation method with Dirichlet process Gaussian mixture prior, *Spatial Statistics*, 30, 100402
- Guan, Y., Sampson, C., Tucker, D., Chang, W., Mondal, A., Haran, M., Sulsky, D. (2019) Computer model calibration based on image warping metrics: an application for sea ice deformation, *the Journal of Agricultural, Biological and Environmental Statistics*, 24(3), 444-463.
- Olson, R., An, S.-I, Fan, Y., Chang, W., and Evans, J. P. (2019) A novel method to test non-exclusive hypotheses applied to Arctic ice projections from dependent models, *Nature Communications*, 10(1), 3016
- Hwang, Y., Kim, H.J., Chang, W., Yeo, K., Kim, Y. (2019) Bayesian Pollution Source Identification via an Inverse Physics Model, *Computational Statistics and Data Analysis*, 134, 76-92
- Olson, R., Ruckert, K. L., Chang, W., Keller, K., Haran, M., and An, S.-I. (2018) Stilt: easy emulation of AR(1) computer model output in multidimensional parameter space, *the R Journal*, 10, 2, 209-225
- Chang, W., and Chen, X. (2018) Rainfall-runoff modeling at watershed scale: A machine learning approach with exploratory modeling capability, *Water*, 10 (9), 1116
- Haran, M., Chang, W., Keller, K., Nicholas, R., and Pollard, D. (2017) Statistics and the Future of the Antarctic Ice Sheet, *Chance*, 30 (4), 37-44.
- Chang, W., Haran, M., Applegate, P.J., and Pollard, D. (2016) Improving ice sheet model calibration using paleoclimate and modern data, *the Annals of Applied Statistics*, 10 (4), 2274-2302.
- Chang, W., Stein, M., Wang, J., Kotamarthi, V. R. and Moyer, E. J. (2016). Changes in Spatio-temporal Precipitation Patterns in Changing Climate Conditions, *Journal of Climate*, 29 (23), 8355-8376.
- Jeon, S., Chang, W., and Park, Y. (2016) An Option Pricing Model using High Frequency Data, *Procedia Computer Science*, 91, 175-179
- Chang, W., Haran, M., Applegate, P. J., and Pollard, D. (2016) Calibrating an ice sheet model using high-dimensional binary spatial data, *Journal of the American Statistical Association*, 111 (513), 57-72
- Pollard, D., Chang, W., Haran, M., Applegate, P., and DeConto, R. (2016) Large ensemble modeling of last deglacial retreat of the West Antarctic Ice Sheet: Comparison of simple and advanced statistical techniques, *Geoscientific Model Development*, 9, 1697-1723
- Chang, W., Haran, M., Olson, R., and Keller, K. (2015) A composite likelihood approach to computer model calibration with high-dimensional spatial data, *Statistica Sinica*, 25 (1), 243-260
- Chang, W., Haran, M., Olson, R., and Keller, K. (2014) Fast dimension-reduced climate model calibration and the effect of data aggregation, *the Annals of Applied Statistics*, 8 (2), 649-673
- Chang, W., Applegate, P. J., Haran, M., and Keller, K. (2014) Probabilistic calibration of a Greenland Ice Sheet model using spatially-resolved synthetic observations: toward projections of ice mass loss with uncertainties, *Geoscientific Model Development*, 7, 1933-1943
- Olson, R., Sriver, R., Chang, W., Haran, M., Urban, N. M., and Keller, K. (2013) What is the effect of unresolved internal climate variability on climate sensitivity estimates? *Journal of Geophysical Research - Atmospheres*, 118 (10), 4348-4358

Past Grants

NIH/NHGRI R21-HG012482: "Statistical Power Calculation Framework for Spatially Resolved Transcriptomics Experiments" (PI: Chung, Ma), Role: Co-Investigator

Services

Associate Editor, *Journal of Korean Statistical Society*, Dec 2023 – Present

Associate Editor, *STAT*, July 2023 – Present

Associate Editor, *Journal of Agricultural, Biological and Environmental Statistics*, Jan 2023 – Present

Membership Director, *Korean International Statistical Society (KISS)*, Oct 2021 – Present

Honors and Awards

Elected Member, International Statistical Institute (ISI), 2021

Career Development Award, Korean International Statistical Society, 2019

Winner, 2014 American Statistical Association Section on Statistics and the Environment Student Paper Competition

Graduate Fellow, Eberly College of Science, the Pennsylvania State University, Fall 2009 – Spring 2010

PhD/Master Supervision

Dongkyu Cho (Master 2023, co-advised with Jaewoo Park and Ick Hoon Jin), First Position: PhD Student, Duke University, USA

Saumya Bhatnagar (PhD 2022), First Position: Data Scientist&Applied Statistician, Bayer, USA

Mohammed Alamari (PhD 2022), First Position: Assistant Professor, King Khalid Univesity, Saudi Arabia

Ayat Almomani (PhD 2021, co-advised with Hang Joon Kim), First Position: Assistant Professor, Yarmouk University, Jordan

Teaching Experiences

Instructor for Bayesian Data Science, Fall 2023

Instructor for Machine Learning and Statistics, Spring 2020, Spring 2021, Spring 2022, Spring 2023, and Spring 2024

Instructor for Data Science and Statistics Fall 2023, and Spring 2024

Instructor for Introduction to Data Science, University of Cincinnati, Spring 2020, Spring 2021, Spring 2022, Spring 2023

Instructor for Statistical Computing with R and SAS, Fall 2021

Instructor for Applied Statistics I, University of Cincinnati, Fall 2017, Fall 2018, Fall 2019, Fall 2020 and Fall 2021

Instructor for Spatial Statistics, University of Cincinnati, Spring 2017 and Spring 2019

Instructor for Probability and Statistics II, University of Cincinnati, Fall 2020

Instructor for Probability and Statistics I, University of Cincinnati, Fall 2016 – Fall 2019

Instructor for Introduction to Statistics, Pennsylvania State University, Summer 2012

Instructor for Introduction to Biometry, Pennsylvania State University, Spring 2012

Invited Presentations

“Physics Driven Dynamic Interpolation with Application to Pollution Satellite Images”, Ecosta 2024, Beijing, China, July 2024 (Virtual Conference)

“Physics Driven Dynamic Interpolation with Application to Pollution Satellite Images”, Korean Statistical Society Semi-Annual Meeting, Seoul, Korea, June 2024

“Fast Compartment Model Calibration using Annealed and Transformed Variational Inference, accepted for publication”, Departmental Colloquium, Department of Statistics, Seoul National University, Seoul, Korea, May 2024

“Fast Computer Model Calibration using Annealed and Transformed Variational Inference”, Departmental Colloquium, Department of Statistics, Kyungpook National University, Daegu, Korea, May 2024

“Fast Computer Model Calibration using Annealed and Transformed Variational Inference”, Departmental Colloquium, Department of Mathematics, Pusan National University, Pusan, Korea, May 2024

“Fast Computer Model Calibration using Annealed and Transformed Variational Inference”, Departmental Colloquium, Department of Statistics and Actuarial Science, University of Iowa, Iowa City, IA, USA, Apr 2024 (Virtual Conference)

“Physics Driven Dynamic Interpolation with Application to Pollution Satellite Images”, Departmental Colloquium, Department of Mathematical Sciences, Ulsan National Institute of Science and Technology, Ulsan, Korea, Feb 2024 (Virtual Conference)

“Uncertainty Quantification for Ice Models”, AAAS Annual Meeting 2024, Denver CO, Feb 2024

“Ice Model Calibration Using Semi-continuous Spatial Data”, ASA Cincinnati Chapter Speaker Series, Cincinnati, OH, Nov 2023

“Ice Model Calibration Using Semi-continuous Spatial Data”, ASA Cincinnati Chapter Speaker Series, Cincinnati, OH, Nov 2023

(Tutorial) “More than Curve Fitting: and Uncertainty Quantification”, Institute of Mathematical Science, Yonsei University, Seoul, Korea, Jul 2023

“Fast Compartment Model Calibration using Annealed and Transformed Variational Inference”, The 8th CIJK Conference on Mathematical and Theoretical Biology, Jeju, Korea, Jun 2023

(Tutorial) “Statistical surrogate for mathematical models: towards faster simulation and parameter estimation”, 2023 KSIAM-NIMS School on Biomathematics: Statistical Tools for Mathematical Modeling, Jeju, Korea, Jun 2023

“Fast Compartment Model Calibration using Annealed and Transformed Variational Inference”, WAD-SCRC 2023 The 10th International Conference, Department of Statistics, Chung-Ang University, Seoul, Korea, Jun 2023

“Fast Compartment Model Calibration using Annealed and Transformed Variational Inference”, Departmental Colloquium, Department of Statistics, Ewha Womans University, Seoul, Korea, May 2023

“Bayesian Model Calibration and Sensitivity Analysis for Oscillating Biological Experiments”, Departmental Colloquium, Department of Mathematics, Pusan National University, Pusan, Korea, May 2023

“Computer Model Calibration Using Discrete Data”, Departmental Colloquium, Department of Mathematics, Pusan National University, Pusan, Korea, May 2023

“Fast Compartment Model Calibration using Annealed and Transformed Variational Inference”, Departmental Colloquium, Department of Statistics, Seoul National University, Seoul, Korea, May 2023

“Five Common Misperceptions about Deep Learning”, Departmental Colloquium, Department of Statistics, Kyungpook National University, Daegu, Korea, May 2023

“Introduction to Deep Learning”, Departmental Colloquium, Department of Statistics, Kyungpook National University, Daegu, Korea, May 2023

“Introduction to Computer Model Calibration”, Departmental Colloquium, Department of Applied Mathematics and Statistics, SUNY Korea, Incheon, Korea, Nov 2022 (Virtual Conference)

“Big Data and Gaussian Process”, Innovation Center for Industrial Mathematics, National Institute for Mathematical Sciences, Seongnam, Korea, Nov 2022

“Deep Learning-based Uncertainty Quantification for Mathematical Models”, Mathematical Biology & Bioinformatics workshop, POSTECH, Pohang, Korea, Oct 2022

“Deep Learning-based Uncertainty Quantification for Mathematical Models”, Graduate School of Data Science Seminar Series, Korea Advanced Institute of Science and Technology, Oct 2022

“Gaussian Process and Bayesian Inference”, Innovation Center for Industrial Mathematics, National Institute for Mathematical Sciences, Seongnam, Korea, Sep 2022

“Deep Learning-based Uncertainty Quantification for Mathematical Models”, Departmental Colloquium, Department of Mathematical Sciences, Korea Advanced Institute of Science and Technology, Sep 2022

(Keynote Lecture) “Statistics, Data Science, Machine Learning: Why you want to major in Mathematics”, Symposium for AI and University-Level Mathematics, Pusan, Korea, Aug 2022

(Tutorial) “More than Curve Fitting and Uncertainty Quantification”, 2022 KSIAM-NIMS School on Biomathematics: Statistical Tools for Mathematical Modeling, Yeosu, Korea, Jun 2022

“Deep Learning-based Uncertainty Quantification for Mathematical Models”, Biomedical Mathematics Group, Institute for Basic Science (IBS), Daejeon, Korea, Jun 2022

“Deep Learning-based Uncertainty Quantification for Climate Simulations and Observations”, Irreversible Climate Change Research Center (IRCC), Yonsei University, Seoul, Korea, Jun 2022

“Computer Model Calibration with Time Series Data using Deep Learning and Quantile Regression”, SIAM Conference on Uncertainty Quantification, Atlanta, GA, Apr 2022 (Virtual Conference)

“Computer Model Calibration with Time Series Data using Deep Learning and Quantile Regression”, Departmental Colloquium, Department of Statistics, University of Missouri, Columbia, MO, Mar 2022 (Virtual Conference)

“Bayesian Model Calibration and Sensitivity Analysis for Oscillating Biological Experiments”, Departmental Colloquium, Department of Statistics, Iowa State University, Ames, IA, Feb 2022 (Virtual Conference)

“Ice Model Calibration using Semi-Continuous Spatial Data”, Recent Developments in Statistical Science and Its Applications, Chung-Ang University, Seoul, Korea, Dec 2021 (Virtual Conference)

“Bayesian Model Calibration and Sensitivity Analysis for Oscillating Biological Experiments”, Biostatistics Seminar Series, Department of Bioinformatics and Biostatistics, University of Louisville, KY, Oct 2021

“Bayesian Model Calibration and Sensitivity Analysis for Oscillating Biological Experiments”, Departmental Colloquium, Department of Statistics, University of Nebraska, NE, Oct 2021 (Virtual Conference)

“Computer Model Emulation and Calibration Using Complex Spatial and Temporal Data”, The Information Systems and Statistics Research Seminar Series, Paul H. Chook Department of Information Systems and Statistics, Baruch College, City University of New York, NY, Oct 2021 (Virtual Conference)

“New Statistical Framework for Large Scale Computer Model Calibration Using Deep Learning”, Ecosta 2021, Hong Kong, June 2021 (Virtual Conference)

“Statistical Inference with Neural Network Imputation for Item Nonresponse”, Departmental Colloquium, Department of Statistics, Korea University, Seoul, Korea May 2021 (Virtual Conference)

“Computer Model Emulation and Calibration Using Complex Spatial and Temporal Data”, Departmental Colloquium, Department of Statistics, Yonsei University, Seoul, Korea Mar 2021 (Virtual Conference)

“Computer Model Emulation and Calibration Using Complex Spatial and Temporal Data”, LANL Stats Seminar, Los Alamos National Laboratory, NM, Dec 2020 (Virtual Conference)

“Computer Model Emulation and Calibration Using Complex Spatial and Temporal Data”, Departmental Colloquium, Department of Statistics, University of Illinois, Urbana-Champaign, IL, Nov 2020 (Virtual Conference)

“Ice Model Calibration Using Semi-continuous Spatial Data”, Statistics Colloquium, Department of Mathematics and Statistics, University of Maryland, Baltimore County, MD, Oct 2020 (Virtual Conference)

“Ice Model Calibration Using Semi-continuous Spatial Data”, UC Day at JPL, NASA Jet Propulsion Laboratory, CA, Sep 2020

“Ice Model Calibration using Semi-continuous Spatial Data”, Departmental Colloquium, Department of Statistics, Ohio State University, OH, Oct 2019

“Ice Model Calibration using Semi-continuous Spatial Data”, ICOSDA 2019, Grand Rapids, MI, Oct 2019

“New Statistical Framework for Large Scale Computer Model Calibration Using Deep Learning”, SAMSI Deep Learning Workshop, Research Triangle Park, NC, August 2019

“Ice Model Calibration using Zero-Inflated Continuous Spatial Data”, SAMSI MUMS Closing Workshop, Research Triangle Park, NC, May 2019

“Big Data Challenges in Uncertainty Quantification and Environmental Statistics”, Department of Physics, University of Dayton, Dayton, OH, Dec 2018

“Computer Model Emulation and Calibration using High-dimensional and Non-Gaussian Spatial Data”, SAMSI MUMS Opening Workshop, Research Triangle Park, NC, Aug 2018

“Computer Model Emulation and Calibration using High-dimensional and Non-Gaussian Spatial Data”, Young Statistician’s Meeting, Yangpyeong, Korea, Jul 2018

"A Bayesian Spatial Market Segmentation Method Using Dirichlet Process Gaussian Mixture Model and LASSO regularization", ISBA-EAC, Seoul, Jul 2018

"Calibrating an ice sheet model using high-dimensional binary spatial data", IMS-APRM, Singapore, Jun 2018

"A Bayesian spatial market segmentation method using Dirichlet process-Gaussian mixture models", Ecosta 2018, Hong Kong, Jun 2018

"Ice Model Calibration using Zero-Inflated Continuous Spatial Data", SAMSI CLIM Transition Workshop, Research Triangle Park, NC, May 2018

"Changes in Spatio-temporal Precipitation Patterns in Changing Climate Conditions", IISA International Conference on Statistics 2017, Hyderabad, India, Dec 2017

"Diagnosing added value of convection-permitting regional models using precipitation event identification and tracking", Department of Atmospheric Sciences, University of Illinois, Champaign, IL, Dec 2017

"Calibrating an ice sheet model using high-dimensional binary spatial data", Department of Mathematics and Statistics, University of North Carolina, Charlotte, NC, Nov 2017

"Calibrating an Ice Sheet Model Using High-Dimensional Binary Spatial Data", Division of Biostatistics and Bioinformatics, University of Cincinnati, Cincinnati, OH, Oct 2017

"Diagnosing added value of convection-permitting regional models using precipitation event identification and tracking", Mathematical and Statistical Methods for Climate and Earth Systems Program Opening Workshop, SAMSI, Durham, NC, Aug 2017

"Calibrating an ice sheet model using high-dimensional binary spatial data", Korean Statistical Society Semi-Annual Meeting, Seoul, Korea, May 2017

"Improving ice sheet model calibration using paleoclimate and modern data", Department of Geography, University of Cincinnati, Cincinnati, OH, Feb 2017

"Improving ice sheet model calibration using paleoclimate and modern data", National Institute for Mathematical Sciences, Daejeon, Korea, Jan 2017

"Calibrating an ice sheet model using high-dimensional binary spatial data", University of Akron, Department of Statistics, Akron, OH, Nov 2016

"Changes in Spatio-temporal Precipitation Patterns in Changing Climate Conditions", the 2016 International Chinese Statistical Association Applied Statistics Symposium, Atlanta, Jun 2016

"Understanding and Simulating Changes in Future Spatio-temporal Precipitation Patterns by Identifying and Characterizing Individual Rainstorm Events", Department of Statistics, Korea University, Seoul, Korea, Oct 2015

"Understanding and Simulating Changes in Future Spatio-temporal Precipitation Patterns by Identifying and Characterizing Individual Rainstorm Events", Department of Applied Statistics, Hoseo University, Asan, Korea, Oct 2015

"A conditional simulation approach to future precipitation scenario generation", Invited Poster Session, Joint Statistical Meeting, Seattle, WA, Aug 2015.

"Fast dimension-reduced climate model calibration and the effect of data aggregation", Department of Statistics, Purdue University, West Lafayette, IN, Nov 2014.

"Fast dimension-reduced climate model calibration and the effect of data aggregation", Division of Biostatistics and Bioinformatics, Pennsylvania State University, Hershey, PA, Nov 2014.

Other Presentations

“Deep Learning-based Uncertainty Quantification for Mathematical Models”, Joint Statistical Meetings, Toronto, ON, August 2023

“Bayesian Model Calibration and Sensitivity Analysis for Oscillating Biological Experiments”, 2022 Global KMS International Conference, Seoul, Korea, Oct 2022

“Computer Model Emulation and Calibration Using Complex Spatial and Temporal Data”, Joint Statistical Meetings, Washington DC, August 2022

“An interaction Neyman-Scott point process model for Coronavirus Disease-19”, Joint Statistical Meetings, Virtual Conference, August 2021

“Calibrating a WRF-Hydro Model Using a New Deep Learning-Based Calibration Method”, Joint Statistical Meetings, Virtual Conference, August 2020

“Ice Model Calibration using Semi-continuous Spatial Data”, Joint Statistical Meetings, Denver, CO, August 2019

“New Statistical Framework for Large Scale Computer Model Calibration Using Deep Learning”. AGU 2018 Fall Meeting , Washington DC, December 2018

“Changes in Spatiotemporal Precipitation Patterns in Changing Climate Conditions Presentation”, JSM, Vancouver, BC, August 2018

“Diagnosing added value of convection-permitting regional models using precipitation event identification and tracking”, AGU Fall Meeting, New Orleans, LA, December 2017

Discussant, topic contributed session on “Environmental Statistics on Smart Phones”, JSM, Baltimore, MD, August 2017

“Improving ice sheet model calibration using paleoclimate and modern data”, Spatial Statistics 2017: One World: One Health, Lancaster, UK, July 2017

“Improving ice sheet model calibration using paleoclimate and modern data”, the 1st International Conference on Econometrics and Statistics, Hong Kong, June 2017

“Calibrating an ice sheet model using high-dimensional binary spatial data”, ENVR/EnviBayes Workshop on Bayesian Environmetrics, Columbus, OH, April 2016

“Calibrating an ice sheet model using high-dimensional non-Gaussian spatial data”, 6th IMS-ISBA Joint Meeting, Lenzerheide, Switzerland, January 2016

“Simulating Future Changes in Spatio-temporal Precipitation by Identifying and Characterizing Individual Rainstorm Events”, AGU Fall Meeting, San Francisco, CA, December 2015

“A conditional simulation approach to future precipitation scenario generation”, Poster Session, STATMOS Annual Meeting, Chicago, IL, September 2014.

“Fast Dimension-Reduced Climate Model Calibration”, Topic Contributed Session, Joint Statistical Meeting, Boston, Ma, August 2014.

“A dimension reduction approach to climate model calibration”, Poster Session, NCAR IMAGE Pattern Scaling Workshop, Boulder, CO, April 2014.

“Two approaches for climate model calibration: Principal component analysis and Composite likelihood”, Poster Session, Rao Prize Conference, The Pennsylvania State University, University Park, PA, October 2013.

“Fast Dimension-Reduced Climate Model Calibration”, Topic contributed session, Joint Statistical Meeting, Montreal, Canada, August 2013.

“Fast dimension-reduced climate model calibration”, Poster Session, NCAR IMAGE Next Generation Climate Data Products Workshop, Boulder, CO, July 2013.

“A dimension reduction approach to climate model calibration”, Poster Session, 2012 ENVR Workshop on Environmetrics, October 2012.

“A dimension reduction approach to climate model calibration”, Poster Session, NSF-CBMS Regional Research Conference, Seattle, WA, August 2012.

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