Ze JIANG
Water Research Center, University of New South Wales (UNSW), Sydney, Australia
ze.jiang@unsw.edu.au | https://scholar.google.com/citations?user=4iVouPYAAAAJ&hl=en

EDUCATION

University of New South Wales, Australia
2018 – 2021
Ph.D. in Water Resources Engineering
Supervisor: Prof. Ashish Sharma, A/Prof. Fiona Johnson
Thesis: *Implications of spectral transformations in hydro-climatology*

Partnership of five European Universities
Newcastle University (UK)
University of Nice-Sophia Antipolis (France)
Brandenburg University of Technology (Germany)
Technical University of Catalonia (Spain)
Warsaw University of Technology (Poland)
2013 – 2015
Erasmus Mundus Joint M.Sc. Degree: Hydro-Informatics and Water Management - EuroAquae
Supervisor: Prof. Frank Molkenthin, Prof. Heiko Sieker
Thesis: *Development and application of time-area function model based on QGIS environment*

Hohai University, Nanjing, China
2008 – 2012
B.Eng. in Environmental Engineering
GPA: *4.62/5.0, Awarded the Most Outstanding Graduate*

RESEARCH INTEREST

- Hydro-climatological modeling and forecasting (e.g., Wavelet System Prediction)
- Postprocessing techniques for correcting bias in numerical weather predictions
- Climate change impact on the water cycle (e.g., floods and droughts)
- Hydrology/Hydraulics and water quality modeling
- Hydro-Informatics and water management

PROFESSIONAL EXPERIENCE

Helmholtz-Centre German Research Centre GFZ, Potsdam, Germany **(May 2023 – Present)** **Visiting Research Fellow**

- Climate-informed Flood Frequency Analysis under a changing climate

University of New South Wales (UNSW), Sydney, Australia **(Jun. 2021 – Present)** **Postdoctoral Research Associate**

- The development of Wavelet System Prediction (WASP) for characterizing chaotic system
- Hydro-climatological forecasting using CMIP decadal prediction and ACCESS seasonal forecasts
- Interannual rainfall forecasting with CMIP6 decadal projections over Australia
- Bias characterisation and correction in Numerical Weather Prediction (NWP) models

Tropical Marine Science Institute (TMSI), National University of Singapore, Singapore **(Nov. 2015 – Feb. 2018)** **Research Engineer**

- DSSAT crop modeling of future rice yield in Vietnam under climate change, Singapore-MIT Alliance project.
- Development of index-based drought insurance for sovereign disaster risk transfer, World Bank project.
- Impact of climate change on inland and coastal flooding in Singapore, Public Utilities Board (PUB) project.
- Effectiveness of ABC Waters design features in residential developments, PUB-TMSI-Monash University project.

AWARDS & HONORS

- 2023 Helmholtz Visiting Researcher Grant by Helmholtz Association of German Research Centers
- 2021 Postdoctoral Writing Fellowship funded by UNSW
- 2018 University International Postgraduate Award (UIPA) funded by UNSW
- 2013 Erasmus Mundus Scholarship Award by European Union
- 2010 National Undergraduate Mathematical Contest in Modeling (Provincial Award)

PUBLICATIONS

1. Jiang, Z., & Johnson, F. (2023). A new method for postprocessing numerical weather predictions using quantile mapping in the frequency domain. ***Monthly Weather Review***, in press.
2. Kusumastuti, C., **Jiang, Z.**, Mehrotra R., & Sharma, A. (2022). Correcting systematic bias in climate model simulations in the time-frequency domain. ***Geophysical Research Letters***, 49(19), e2022GL100550.
3. Lang, Y.*, **Jiang, Z.***, & Wu, X. (2022). Investigating the linkage between extreme rainstorms and concurrent synoptic features: A case study in Henan, central China. ***Water***, 14(7), 1065.
4. **Jiang, Z.**, Sharma, A., & Johnson, F. (2021). Variable transformations in the spectral domain – Implications for hydrologic forecasting. ***Journal of Hydrology***, 603, 126816.
5. Kusumastuti, C., **Jiang, Z.**, Mehrotra R., & Sharma, A. (2021). A signal processing approach to correct systematic bias in trend and variability in climate model simulations. ***Geophysical Research Letters***, 48(13), e2021GL092953.

6. **Jiang, Z**., Rashid, M. M., Johnson, F., & Sharma, A. (2020). A wavelet-based tool to modulate variance in predictors: An application to predicting drought anomalies. ***Environmental Modelling & Software***, 135, 104907.
7. Hohl, R., **Jiang, Z**., Vu, T. M., Raghavan, S. V., & Liong, S.-Y. (2020). Using a regional climate model to develop index-based drought insurance for sovereign disaster risk transfer. ***Agricultural Finance Review***, 81(1), 151-168.
8. **Jiang, Z**., Sharma, A., & Johnson, F. (2020). Refining predictor spectral representation using wavelet theory for improved natural system modeling. ***Water Resources Research***, 56(3), e2019WR026962.
9. **Jiang, Z**., Sharma, A., & Johnson, F. (2019). Assessing the sensitivity of hydro-climatological change detection methods to model uncertainty and bias. ***Advances in Water Resources***, 134, 103430.
10. **Jiang, Z**., Raghavan, S. V., Hur, J., Sun, Y., Liong, S.-Y., Nguyen, V. Q., & Van Pham Dang, T. (2019). Future changes in rice yields over the Mekong River Delta due to climate change - Alarming or alerting? ***Theoretical and Applied Climatology***, 137(1), 545-555.
11. **Jiang, Z**., Molkenthin, F., & Sieker, H. (2016). Urban surface characteristics study using time-area function model: a case study in saudi arabia. ***Procedia Engineering***, 154, 911-918.

TALKS

1. Johnson, F. and Jiang, Z. (2023). Wavelet-based post-processing of NWP precipitation forecasts, ***EGU General Assembly 2023***, PICO presentation, Vienna, Austria, 28 Apr 2023.
2. Jiang, Z., Choudhury, D., and Sharma, A. (2023). Could the 2019-20 Australia bushfires or 2020-22 floods be predicted using CMIP decadal prediction?, ***EGU General Assembly 2023***, Oral presentation, Vienna, Austria, 24 Apr 2023.
3. Jiang, Z., Sharma, A., & Johnson F. (2022). Hydrologic forecasting over long lead times: A wavelet-based variance transformation approach, ***Asia Oceania Geosciences Society (AOGS) 2022***, Oral presentation, Online, Singapore, 5 August 2022.
4. Jiang, Z., & Johnson, F. (2022). Applications of the Wavelet-based Method for Postprocessing Rainfall Forecasts – Implications for Urban Flood Forecasting, ***Asia Oceania Geosciences Society (AOGS) 2022***, Oral presentation, Online, 2 August 2022.
5. Jiang, Z., Sharma, A., & Johnson, F. (2021). Advanced wavelet-based variance transformation algorithms for ENSO forecasting over long lead times, 24th International Congress on Modelling and Simulation (***MODSIM 2021***), Oral presentation, Online, Sydney, Australia, 8 December 2021.
6. Jiang, Z., Sharma, A., & Johnson, F. (2020). Hydro-climatological forecasting: A view from the spectral domain. In ***AGU Fall Meeting 2020***. AGU, Oral presentation, Online, San Francisco, CA, USA, 15 December 2020.
7. Sharma, A., Jiang, Z., & Johnson, F. (2020). Forecasting drought revisited - the importance of spectral transformations to dominant atmospheric predictor variables, ***EGU General Assembly 2020***, Invited talk, Online, 4-8 May 2020, EGU2020-12334.
8. Jiang, Z., Sharma, A., & Johnson, F. (2019). A wavelet-based method to analyse sustained hydrological anomalies under climate change, 23rd International Congress on Modelling and Simulation (***MODSIM 2019***), Oral presentation, Canberra, Australia, 6 December 2019.
9. Jiang, Z., Sharma, A., & Johnson, F. (2019). Drought prediction for improved water resource management: A wavelet-based system prediction approach, ***STAHY 2019***, Oral presentation, Nanjing, Jiangsu, China, 20 October 2019.
10. Jiang, Z., Sharma, A., & Johnson, F. (2018). Assessing the impact of systematic biases in detection of hydrologic change across Australia, ***STAHY 2018***, Oral presentation, Adelaide, South Australia, Australia, 18 September 2018.
11. Jiang, Z., Raghavan, S. V., Hur, J., Sun, Y., & Liong, S.-Y. (2017). Impacts of Climate Change on Rice Crop Yields in Vietnam, ***Asia Oceania Geosciences Society (AOGS) 2017***, Oral presentation, Singapore, 11 August 2017.
12. Jiang, Z., Molkenthin, F., & Sieker, H. (2016). Urban Surface Characteristics Study Using Time-area Function Model: A Case Study in Saudi Arabia. 12th International Conference on Hydroinformatics (***HIC 2016***), Poster, Incheon, South Korea.

BOOK CHAPTERS

1. Raghavan, S. V., Jiang, Z., Hur, J., Liu, J., Nguyen, N. S., & Liong, S.-Y. (2019). ASEAN Food Security under the 2 C-4 C Global Warming Climate Change Scenarios. In V. Anbumozhi, M. Breiling, & V. Reddy (Eds.), Towards a Resilient ASEAN: Disasters, Climate Change, and Food Security: Supporting ASEAN Resilience (Vol. 1, pp. 37-52). Jakarta, Indonesia: Economic Research Institute for ASEAN and East Asia.
2. Kim, D., Sun, Y., Wendi, D., Jiang, Z., Liong, S.-Y., & Gourbesville, P. (2018). Flood modelling framework for Kuching City, Malaysia: overcoming the lack of data. In Advances in Hydroinformatics (pp. 559-568): Springer, Singapore.

SERVICE & LEADERSHIP

- Contribute to First Order Draft of IPCC 6th Assessment Report (FOD-WGII-AR6) as a group reviewer
- Contribute to Second Order Draft of IPCC 6th Assessment Report (SOD-WGI-AR6) as a group reviewer
- Topic Coordinator for a Special Issue of Frontiers in Marine Science
- Reviewer Editor: Frontiers in Water (Sections: Water and Climate; Water and Hydrocomplexity)
- Reviewer for Scholarly Journals: Journal of Hydrology; Weather and Climate Extremes; Journal of Applied Meteorology and Climatology; International Journal of River Basin Management; Frontiers in Water; Water; Sustainability; International Journal of Environmental Research and Public Health

MEMBERSHIP

- American Geophysical Union (AGU)

- European Geosciences Union (EGU)
- Asia Oceania Geosciences Society (AOGS)
- International Commission of Statistical Hydrology (ICSH-IAHS)
- Modeling and Simulation Society of Australia and New Zealand (MSSANZ)

TEACHING & ADVISING EXPERIENCE

- 2021-2022 Assistant to my advisor for: One Ph.D. student and two undergraduate students' Final Year thesis
- 2021-2022 Assistant to assignment: Catchment and Water Resources Modelling (Prof. Ashish Sharma, UNSW)
- 2018-2019 Teaching Assistant & Grader: Fundamentals of Water Engineering (Prof. Ashish Sharma, UNSW)
- 2019 Teaching Assistant: Water Resources Engineering (A/Prof. Fiona Johnson, UNSW)

SKILLS

- Language: Mandarin (Native), English (Fluent), German (Basic), French (Basic).
- Strong interpersonal skills with a good sense of teamwork.
- Programming Skills: R, C/C++, and Python in both Unix and Windows systems.
- Rich experience in modeling and GIS, using MIKE, SWMM, DSSAT, and QGIS.