

# Ze JIANG

Water Research Center, University of New South Wales (UNSW), Sydney, Australia

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## PROFILE

- Highly self-motivated researcher with demonstrated research expertise modelling hydro-climatology processes.
- 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 modelling and GIS, using MIKE, SWMM, DSSAT, and QGIS.

## EDUCATION

**University of New South Wales, Australia**  
2018 – 2021

**Ph.D. in Water Resources Engineering**

UNSW UIPA Scholarship

**Supervisor:** Ashish Sharma, 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: HydroInformatics and Water Management - EuroAqua**

GPA: 17.16/20, Awarded Excellent Graduate

European Erasmus Mundus Scholarship

**Hohai University, Nanjing, China**

2008 – 2012

**B.Sc. in Environmental Engineering**

GPA: 4.62/5.0, Awarded Most Outstanding Graduate

## RESEARCH INTEREST

- Wavelet-based time series decomposition and transformation
- Hydro-climatological modelling and forecasting
- Climate change impact on the water cycle (e.g., floods and droughts)

## PROFESSIONAL EXPERIENCE

**University of New South Wales,**  
**Sydney, Australia**

**(Jun. 2021 – present)**

**Research Associate**

- CMIP decadal prediction for rainfall forecasting
- Bias characterisation and correction in Numerical Weather Prediction (NWP) models

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

**Research Engineer**

- DSSAT crop modelling 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.

**PUBLICATIONS:** <https://scholar.google.com/citations?user=4iVouPYAAAAJ&hl=en>

### Selected Journal Publications

1. Jiang, Z., Johnson, F., & Sharma, A. (2021). Why uncertainty matters? A new alternative to project drought for future climates. submitted to *Water Resources Research*, under review.
2. Jiang, Z., Sharma, A., & Johnson, F. (2021). Variable transformations in the spectral domain – Implications for hydrologic forecasting. submitted to *Journal of Hydrology*, 126816.
3. 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.
4. 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*, 104907.
5. Hohl, R., Jiang, Z., Tue Vu, M., Raghavan, S. V., & Liang, 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.
6. 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.
7. 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.
8. Jiang, Z., Raghavan, S. V., Hur, J., Sun, Y., Liang, 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.

## TALKS

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. Jiang, Z., Molkenhuth, 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 AND 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
- Reviewer for Scholarly Journals:
  - Journal of Hydrology
  - Frontiers In Water
  - International Journal of River Basin Management

## MEMBERSHIP

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

## REFEREES

Professor Ashish Sharma

Future Fellow (ARC) in the School of Civil and Environmental Engineering

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The University of New South Wales, Sydney, NSW 2052 Australia

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*My primary supervisor for my Ph.D. and Research Associate roles at UNSW*

Associate Professor Fiona Johnson

Water Research Centre, School of Civil and Environmental Engineering

The University of New South Wales, Sydney, NSW 2052 Australia

T: +61 2 9385 9769; E: [f.johnson@unsw.edu.au](mailto:f.johnson@unsw.edu.au)

*My joint supervisor for my Ph.D. and Research Associate roles at UNSW*

Professor Shie-Yui Liong

Deputy Director (2008 – till retirement on Aug 2019), Tropical Marine Science Institute, National University of Singapore

Founding member and Treasurer of Asia Water Council (2016 – present)

The National University of Singapore, 119077 Singapore

M: +65 9277 6493; E: [yui.liong@h2oclimate.org](mailto:yui.liong@h2oclimate.org)

*My supervisor for Research Engineer roles at the National University of Singapore*

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