YI YU

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🎓 EDUCATION

The Australian National University, Canberra, Australia   07/2021 – 08/2024
Ph.D., Hydrology and Remote Sensing

The Australian National University, Canberra, Australia   07/2018 – 06/2020
M.Sc., Environment (Advanced)

Southwest University, Chongqing, China   09/2014 – 06/2018
B.Mgmt., Land Resources Management

💼 EXPERIENCES

The University of Sydney, Sydney, Australia   09/2024 – Present
Postdoctoral Researcher   Supervisor: Prof. Thomas F. A. Bishop

- Developing mechanism-driven deep learning model to enable enhanced spatial agricultural modelling.

CSIRO, Canberra, Australia   08/2021 – Present
Visiting Scientist (09/2024 – Present)

PhD Candidate (08/2021 – 08/2024)

Academic collaboration with the Australian National University. The key responsibilities included:
- Engaged in industry-aligned projects focusing on interdisciplinary challenges in agricultural innovation and climate science, leveraging statistical methodologies and high-performance computing (HPC) resources.
- Developed a variant of a spatiotemporal fusion algorithm to enhance the accuracy of downscaled land surface temperature (LST) data. Released a benchmark dataset to support future algorithmic refinements.
- Contributed to a Himawari-8 project that aimed at developing geostationary data products for enhanced sub-daily monitoring of Australia's ecosystems. Responsible for the development of an LST product.
- Established a geo-database integrating ground measurements, passive microwave data, and soil information, to enable spatiotemporal modelling of soil water dynamics for key growing regions in Australia.

The Australian National University, Canberra, Australia   01/2021 – 12/2022
Casual Sessional Academic (01/2022 – 12/2022)

- Course: ENVS3020 (Climate Change: Science, Society, and Policy)
- Developed and implemented course plans and study materials that effectively communicated scientific concepts. Provided timely and constructive feedback on assignments and exams to facilitate student learning and progress.
- Facilitated student comprehension of the scientific principles underlying climate change through the use of diverse visual aids and real-world examples. Guided students in exploring and assessing potential policy options for mitigation of climate extremes.

Research Officer (01/2021 – 12/2021)

- Processed continental-scale earth observation data using Australia's national HPC platform. Demonstrated expert-level spatial analysis skills using R and Python.
- Undertook testing and statistical analysis as required. Prepared and disseminated relevant analysis reports to internal and external stakeholders, including external funding agencies.
- Participated in workshops and professional networks across campus to develop a broad base of industry knowledge. Provided input to improve the area's research practices and processes.

▣ Journal Articles (* correspondence)

[1] **Yu, Y.***, McVicar, T. R., Renzullo, L. J., Van Niel, T. G., et al., 2024. Monitoring agricultural drought in dryland ecosystems using surface heat-informed soil moisture index during the Tinderbox Drought, *In Prep.*

[2] **Yu, Y.***, Malone, B. P., Renzullo, L. J., Burton, C. A., Tian, S., Searle, R. D., Bishop, T. F. A. and Walker, J. P., 2024. Spatial soil moisture prediction from in-situ data upscaled to Landsat footprint across heterogeneous agricultural landscapes, *IEEE Transactions on Geoscience and Remote Sensing, Under Review.* `http://doi.org/10.2139/ssrn.4873038`

[3] **Yu, Y.***, Renzullo, L. J., McVicar, T. R., Van Niel, T. G., Cai, D., Tian, S. and Ma, Y., 2024. Solar zenith angle-based calibration of Himawari-8 land surface temperature for correcting diurnal retrieval error characteristics, *Remote Sensing of Environment, 308*, 114176. `https://doi.org/10.1016/j.rse.2024.114176`

[4] **Yu, Y.***, Renzullo, L. J., McVicar, T. R., Malone, B. P. and Tian, S., 2023. Generating daily 100 m resolution land surface temperature estimates continentally using an unbiased spatiotemporal fusion approach, *Remote Sensing of Environment, 297*, 113784. `https://doi.org/10.1016/j.rse.2023.113784`

[5] **Yu, Y.***, Xu, T. and Wang, T., 2020. Outmigration Drives Cropland Decline and Woodland Increase in Rural Regions of Southwest China, *Land, 9*(11), p.443. `https://doi.org/10.3390/land9110443`

[6] Jahangir, Z., Shao, Z., **Yu, Y.**, Fu, P., Yasir, Q. M. and Xiao, X., 2024. Generating daily 100 m seamless land surface temperature using stacked ensemble regression for heterogeneous landscapes, *Remote Sensing of Environment, Submitted.*

[7] Malone, B. P., Searle, R. D., Wimalathunge, N. S., Tian, S., Bishop, T. F. A. and **Yu, Y.**, 2024. Evaluating a model averaging approach for the combination of operational and dynamic soil water models to determine their efficacy for in situ and spatial estimation of plant available water, *Geoderma Regional, Under Review.*

[8] Wang, T., Yan, J., Cheng, X. and **Yu, Y.**, 2020. Irrigation Influencing Farmers' Perceptions of Temperature and Precipitation: A Comparative Study of Two Regions of the Tibetan Plateau, *Sustainability, 12*(19), p.8164. `https://doi.org/10.3390/su12198164`

▣ Conference Proceedings, Posters & Oral Presentations

[1] **Yu, Y.**, Malone, B. P. and Renzullo, L. J., 2024. Empirical upscaling of point-scale soil moisture measurements for spatial evaluation of model simulations and satellite retrievals, *IEEE International Geoscience and Remote Sensing Symposium (IGARSS) 2024, Athens, Greece, 7-12 July.* `https://doi.org/10.48550/arXiv.2404.05229`

[2] **Yu, Y.**, Renzullo, L. J., McVicar, T. R., Van Niel, T. G., Cai, D. and Tian, S., 2023. Himawari-ANU: A recalibrated geostationary land surface temperature dataset based on MODIS spatiotemporal characteristics, *AGU Fall Meeting 2023, San Francisco, United States, 11-15 December.* `https://doi.org/10.22541/essoar.171269611.14193436/v2`

[3] **Yu, Y.**, Renzullo, L. J., Tian, S. and Malone, B. P., 2023. An unbiased spatiotemporal fusion approach to generate daily 100 m spatial resolution land surface temperature over a continental scale, *EGU General Assembly 2023, Vienna, Austria, 24-28 April*, EGU23-1501. `https://doi.org/10.5194/egusphere-egu23-1501`

[4] **Yu, Y.**, Renzullo, L. J. and Tian, S., 2021. Continental scale downscaling of AWRA-L analysed soil moisture using random forest regression, *24th International Congress on Modelling and Simulation, MODSIM2021, Sydney, Australia, 5-10 December.* `https://doi.org/10.36334/modsim.2021.J10.yu`

▣ Theses

[1] **Yu, Y.**, 2024. Role of land surface temperature in improving spatiotemporal predictability of soil moisture-related agricultural drought, PhD Thesis, The Australian National University, Canberra. *In Prep.*

[2] **Yu, Y.**, 2020. An Assessment of Outmigration-related Land Use Transition in Rural Area and Corresponding Social and Ecological Dynamics - A Case Study in Southwest China, Masters Thesis, The Australian National University, Canberra. `https://doi.org/10.25911/5fabaffa0e0e9`

▤ Community Service

- Peer Reviewer for ***Remote Sensing of Environment***, ***IEEE Transactions on Geoscience and Remote Sensing***, ***Journal of Remote Sensing***

★ Honours & Awards

- IEEE IGARSS Student Paper Competition Finalists (Top 10 out of 375 submissions; 2024) ↗
- CSIRO Agriculture & Food Director's Award - Next Generation Science (2023) ↗
- ANU-CSIRO Digital Agriculture PhD Supplementary Scholarship (2021 - 2025) ↗
- ANU University Research Scholarship (2021 - 2024) ↗
- ANU Residential Scholarship (2020, 2023, 2024) ↗

ⓘ Skills & Certificates

- **Programming Languages**: R Programming (Expert); Python (Advanced); Shell Scripting
- **Platform & Software Packages**: High Performance Computing; Google Earth Engine; GitHub; ArcGIS; EndNote; LaTeX
- **Certificates**: First Aid Certificate; Youth Mental Health First Aider

👥 Referees

- Dr Tim R. McVicar (*Principal Research Scientist*, **CSIRO**) ✉ tim.mcvicar@csiro.au
- Prof. Thomas F. A. Bishop (*Professor*, **The University of Sydney**) ✉ thomas.bishop@sydney.edu.au
- Dr Luigi J. Renzullo (*Senior Research Scientist*, **Bureau of Meteorology**) ✉ luigi.renzullo@bom.gov.au
- Dr Brendan P. Malone (*Senior Research Scientist*, **CSIRO**) ✉ brendan.malone@csiro.au
- Dr Thomas G. Van Niel (*Senior Experimental Scientist*, **CSIRO**) ✉ tom.vanniel@csiro.au
- Dr Siyuan Tian (*Research Scientist*, **Bureau of Meteorology**) ✉ siyuan.tian@bom.gov.au