

Dr. Micheline Campbell

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Professional Summary

I have a PhD in speleothem palaeoclimatology and am currently employed as a research associate at the University of New South Wales, contributing to the Australian Research Council Discovery Project “Reconstructing Australia’s fire history from cave stalagmites”. My PhD research focused on stalagmite-based climate proxy records and associated karst geomorphology and groundwater hydrology, and I also have experience in the surface hydrology and palaeoclimate-water security nexus.

Education

Aug 2014 - **PhD (Geography)**, *School of Agriculture and Environment, The University of Western Australia*, Perth, Western Australia, Australia.

Jul 2013 - **BA (Hons, 1st Class) (Geography)**, *School of Geography, Planning, and Environmental Management, The University of Queensland*, Brisbane, QLD, Australia.

Feb 2010 - **BA (Geography and Spanish)**, *The University of Queensland*, Brisbane, QLD, Australia.

Experience

Research

Jun 2021 - **Research Associate**, *School of Biological, Earth and Environmental Sciences, University of New South Wales*, Sydney, NSW, Australia.

- Contributing to the ARC Discovery Project “Reconstructing Australia’s fire history from cave stalagmites”

Jul 2020 - **Postdoctoral Researcher**, *School of Geography, University College Dublin*, Dublin/Brisbane, QLD, Ireland/Australia.

- Contributed to the project ‘Using Palaeo-climate Proxies for Water Security Planning’
- Undertook the majority of data science tasks for the development of a new database of Australian climate proxy data

Feb 2020 - **Scientist**, *Land and Water Science Unit, QLD Dept. of Natural Resources, Mining and Energy*, Rockhampton, QLD, Australia.

Aug 2019 - **Research Assistant**, *School of Agriculture and Environment, University of Western Australia*, Perth, WA, Australia.

Aug 2014 - **PhD Researcher**, *School of Agriculture and Environment, University of Western Australia*, Perth, WA, Australia.

Teaching

2018 **Tutor: Geographies of a Global City**, *School of Agriculture and Environment, The University of Western Australia*, Perth, WA, Australia.

2018 **Course Co-Coordinator and Lecturer: Catchment and River Processes**, *School of Agriculture and Environment, The University of Western Australia*, Perth, WA, Australia.

2014–2018 **Tutor: Catchment and River Processes**, *School of Agriculture and Environment, The University of Western Australia*, Perth, WA, Australia.

Teaching contributions include the delivery and creation of content for undergraduate and masters level units, both in the classroom/laboratory and in the field. Catchment and River Processes, which I taught into for my entire time at UWA, consistently achieved high student ratings.

Funding and Scholarships

2023 **ANSTO 24 hours of beamtime on the XFM line at the Australian Synchrotron (experiment 19157).**

○ \$32 784

2022 **ANSTO 48 hours of beamtime on the XFM line at the Australian Synchrotron (experiment 17897).**

○ \$65 568

2022 **ANSTO 144 hours of beamtime on the IRM line at the Australian Synchrotron (experiment 17905).**

○ \$196 704

2022 **ANSTO 48 hours of beamtime on the IRM line at the Australian Synchrotron (experiment 18777).**

○ \$65 568

2021 **Australian Institute of Nuclear Science and Engineering Early Career Researcher Grant.**

○ \$10 000

2021 **University of New South Wales UNSW Science Covid-19 Strategic Support Grant.**

○ \$4 000

2018 **Australian Institute of Nuclear Science and Engineering Travel grant.**

○ \$1 000

- 2017 **Australian and New Zealand Geomorphological Group Travel grant.**
○ \$300
- 2016 **University of Western Australia Travel grant.**
○ \$1 850
- 2015–2018 **Australian Institute of Nuclear Science and Engineering Postgraduate Research Award Stipend.**
○ \$7 500pa
- 2015–2018 **Australian Institute of Nuclear Science and Engineering Postgraduate Research Award Analytical Budget.**
○ \$10 000pa
- 2014–2018 **Australian Government Research Training Program Stipend.**
○ \$26 000pa
- 2014–2015 **Snowy Hydro Ltd. Stipend.**
○ \$5 000pa
- 2014 **University of Western Australia Stipend.**
○ \$3 000

Publications

1. Campbell, M., McDonough, L., Treble, P. C., Baker, A., Kosarac, N., Coleborn, K., Wynn, P. M., & Schmitt, A. K. (2023). A Review of Speleothems as Archives for Paleofire Proxies, With Australian Case Studies. *Reviews of Geophysics*, 61(2), e2022RG000790. <https://doi.org/10.1029/2022RG000790>
2. Cahill, N., Croke, J., Campbell, M., Hughes, K., Vitkovsky, J., Kilgallen, J. E., & Parnell, A. (2023). A Bayesian time series model for reconstructing hydroclimate from multiple proxies. *Environmetrics*, n/a(n/a), e2786. <https://doi.org/10.1002/env.2786>
3. Croke, J., Vitkovský, J., Hughes, K., Campbell, M., Amirnezhad-Mozhdehi, S., Parnell, A., Cahill, N., & Dalla Pozza, R. (2021). A palaeoclimate proxy database for water security planning in Queensland Australia. *Scientific Data*, 8(1), 292. <https://doi.org/10.1038/s41597-021-01074-8>
4. McGowan, H., Campbell, M., Callow, J. N., Lowry, A., & Wong, H. (2020). Evidence of wet-dry cycles and mega-droughts in the Eemian climate of southeast Australia. *Scientific Reports*, 10(1), 1–10. <https://doi.org/10.1038/s41598-020-75071-z>
5. McGowan, H., Callow, J. N., Soderholm, J., McGrath, G., Campbell, M., & Zhao, J. (2018). Global warming in the context of 2000 years of Australian alpine temperature and snow cover. *Scientific Reports*, 8(1), 4394. <https://doi.org/10.1038/s41598-018-22766-z>
6. Campbell, M., Callow, J., McGrath, G., & McGowan, H. (2018). Co-authorship analysis of the speleothem proxy-climate community: working together to tackle the big problems. *International Journal of Speleology*, 47(2), 165–172. <https://doi.org/10.5038/1827-806X.47.2.2159>
7. Campbell, M., Callow, J. N., McGrath, G., & McGowan, H. (2017). A multimethod approach to inform epikarst drip discharge modelling: Implications for palaeo-climate reconstruction. *Hydrological Processes*, 31(26), 4734–4747. <https://doi.org/10.1002/hyp.11392>

Media

1. Campbell, M., McDonough, L., Treble, P. C., & Baker, A. (2023). Using Cave Formations to Investigate Ancient Wildfires. *Eos*, 104. <http://eos.org/editors-vox/using-cave-formations-to-investigate-ancient-wildfires>

Conference Presentations (presenting only)

Talks

- Dec 2022 **Towards the development of fire proxies in speleothems using geochemical signatures in ashes from bushfires**, *2022 AQUA Biennial, Adelaide, Australia*, Campbell, M., McDonough, L., Naeher, S., Treble, P., Grierson, P., Sinclair, D., Howard, D., Baker, A..
- Feb 2022 **Reconstructing Australia's fire history from cave stalagmites**, *13th International Conference on Southern Hemisphere Meteorology and Oceanography, New Zealand (online)*, Campbell, M., McDonough, L., Kosarac, N., Treble, P., Baker, A.
- Nov 2021 **Applying an open access palaeoclimate database for Australia, climate reconstructions, and water security planning in Queensland**, *Seminar Panel, Australia*, Croke, J., Vitkovsky, J., Hughes, K., Campbell, M., Dalla Pozza, R.
- Feb 2017 **A geophysical approach to inform epikarst drip discharge modelling: Implications for palaeo-climate reconstruction**, *Australian and New Zealand Geomorphological Group 17th Biennial Conference, Greytown, New Zealand*, Campbell, M., Callow, J.N., McGrath, G.S., McGowan, H.A.

Posters

- Apr 2023 **Speleothems as archives for palaeofire proxies**, *EGU General Assembly, Vienna, Austria*, Campbell, M., McDonough, L., Treble, P.C., Baker, A., Kosarac, N., Coleborn, K., Wynn, P., Schmitt, A.K..
- Dec 2022 **Stalagmites as high-resolution archives of past fire severity**, *Synchrotron User Meeting, Melbourne, Australia*, Campbell, M., McDonough, L., Treble, P., Baker, A., Howard, D., Hankin, S.
- Jul 2022 **Stalagmites as high-resolution archives of past fire severity**, *Climate Change, The Karst Record IX, Innsbruck, Austria*, Campbell, M., McDonough, L., Treble, P., Baker, A., Howard, D., Hankin, S.

- Dec 2021 **Speleothems as palaeofire archives - a synthesis and meta-analysis of data and methods**, *American Geophysical Union, Fall Meeting, New Orleans, USA (online)*, Campbell, M., Treble, P., McDonough, L., Baker, A., Kosarac, N.
- Nov 2021 **Speleothem 14C is unlikely to be impacted by wildfire - case studies from Western Australia and Tasmania**, *Accelerator Mass Spectroscopy 15th International Conference, Sydney, Australia*, Campbell, M., McDonough, L., Kosarac, N., Treble, P., Markowska, M., Baker, A., Hua, Q.
- Apr 2018 **Climate patterns in South-east Australia: the Last Interglacial vs. the last 2K**, *EGU General Assembly, Vienna, Austria*, Campbell, M., Callow, J.N., McGowan, H.A., McGrath, G.S., Wong, H.
- Feb 2017 **First Insights of the Eemian Hydroclimate of the Snowy Mountains, Australia**, *Australian and New Zealand Geomorphological Group 17th Biennial Conference, Greytown, New Zealand*, Campbell, M., Wong, H., McGrath, G.S., McGowan, H.A., Callow, J.N.
- Dec 2016 **First Insights of the Eemian Hydroclimate of the Snowy Mountains, Australia**, *American Geophysical Union, Fall Meeting, San Francisco, USA*, Campbell, M., Wong, H., McGrath, G.S., McGowan, H.A., Callow, J.N.

Service

- Apr 2023 - **Session Convenor, EGU General Assembly 2023.**
- Apr 2023 ○ Co-Convenor and co-chair for session “Fire in the Earth system: understanding effects across spatiotemporal scales”
- Nov 2022 - **UOW Honours thesis examiner.**
- Nov 2022
- Jul 2022 - **Session Co-Chair, Climate Change the Karst Record IX.**
- Jul 2022 ○ Co-Chair for session ‘Cave Monitoring’
- Aug 2021 - **Executive Committee Member, Australasian Quaternary Association.**
- Present ○ IT and communications
- Present ○ Organising committee for AQUA’s inaugural mentoship program
- Aug 2017 - **Participant, Science in Schools Program.**
- Aug 2017 ○ Travelled to a regional town to share some love for science with primary school kids
- Jan 2016 - **Co-Convenor, SEE LearnR Workshop.**
- Mar 2016 ○ Organised a short series of ‘Introduction to R’ courses for the students and staff of the School of Earth and Environment
- Mar 2016 ○ Presented ‘Introduction to ggplot2’
- Mar 2016 ○ Presented ‘Introduction to R’

- Feb 2015 - **Postgraduate representative to the School of Earth and Environment.**
- Jul 2017 ○ Led the organisation of 2 annual symposia for postgraduate students within the school.
○ Reported student concerns to the School administration
○ Support and troubleshooting for new students
- Oct 2014 - **Guest presenter, ENVT2221: Global Climate Change and Biodiversity.**
- Oct 2014 ○ Presented 'Palaeo-climate and Stalagmites' for 2nd-year Biology students at UWA

Completed Peer Reviews

- 2023 Climate of the Past.
- 2023 Nature Communications.
- 2022 Paleooceanography and Paleoclimatology.
- 2021 Geology.

Professional Development

- 2022 Science Meets Parliament. Online
- 2020 Advanced R Workshop. The University of Queensland, Australia
- 2020 Intermediate R Workshop. The University of Queensland, Australia
- 2018 Weathering Climate Change: How have humans coped with climate change-and how will we continue to do so. The University of Western Australia, Australia
- 2018 Masterclass in Creating Opportunities and Developing your Research Skills. The University of Western Australia, Australia
- 2016 Synthesis II - From dynamics of structure to function of complex networks. TU Dresden, Germany
- 2016 Water on Earth: origin, reservoirs, and its global cycle. The University of Western Australia, Australia
- 2016 Fundamentals of the analysis of networks. The University of Western Australia, Australia
- 2014 Writing and publishing in scientific journals. The University of Western Australia, Australia

Professional Memberships

- Aug 2021 - European Geosciences Union.
Present
- Jul 2021 - Australasian Quaternary Association.
Present
- Jul 2021 - American Geophysical Union.
Present