Dr. Micheline Campbell

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Professional Summary

I have a PhD in palaeo-climatology and am currently working in hydrological sediment and nutrient transport. I have strong data science skills and have developed research skills applicable to a broad range of topics within the environmental sciences. My PhD research focused on stalagmite-based climate proxy records and associated karst geomorphology and groundwater hydrology, while my current position with the Queensland Department of Natural Resources, Mining, and Energy has a strong focus on field experiments and hypothesis testing of reducing nutrient and sediment runoff to Great Barrier Reef catchments. I am hoping to further my scientific career by securing a position where I can continue to use the skills I have developed, broaden my skillset, and continue teaching and engaging with undergraduate and postgraduate students.

Experience

Research

Feb 2020 - Jul 2020 **Scientist**, *Land and Water Science Unit, QLD Dept. of Natural Resources, Mining and Energy*, Rockhampton, QLD, Australia.
- Analysed cane trash trial data.
- Found that there a significant proportion of the variation of sediment in cane paddock runoff can be described by soil type and cane trash cover.

Aug 2019 - Dec 2019 **Research Assistant**, *School of Agriculture and Environment, University of Western Australia*, Perth, WA, Australia.
- Miscellaneous data analysis tasks

Aug 2014 - Jul 2019 **PhD Researcher**, *School of Agriculture and Environment, University of Western Australia*, Perth, WA, Australia.
- Developed two new palaeo-climate proxy records for south east Australia
- Showed that the climate of the LIG has similar significant periodicities, suggesting our long term climate patterns (e.g. PDO) will continue as temperatures increase with climate change.
- Used social network analysis to advance our understanding of methodologies applied in the speleothem palaeo-climate proxy community and the development of the field over time.
- Demonstrated that LA-ICP-MS and LA-ICP-AES of trace elements in speleothem calcite produce comparable results

Teaching

2019 **Course Co-Coordinator and Lecturer: Catchment and River Processes**, *School of Agriculture and Enviroment, The University of Western Australia*, Perth, WA, Australia.

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

2014–2019 **Tutor: Catchment and River Processes**, *School of Agriculture and Enviroment, 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 have taught into since its inception at UWA, has consistently achieved high student ratings, including in 2018 when it received a score of 3.7/4. This placed it in the 70th percentile of UWA courses.

Education

Aug 2014 - Jul 2019 **PhD (Geography)**, *Agriculture and Environment, The University of Western Australia*, Perth, Western Australia, Australia.
- **Thesis: Speleothem-based palaeo-climate research: Methodology, applications, and insight from the Snowy Mountains, southeast Australia**
- Supervisors: JN. Callow, H. McGowan, G.McGrath, H. Wong

Jul 2013 - Jun 2014 **BA (Hons, 1st Class) (Geography)**, *Geography, Planning, and Environmental Management, The University of Queensland*, Brisbane, QLD, Australia.
- **Thesis: The Drip Hydrology of a Speleothem from the Yarrangobilly Caves, NSW, Australia**
- Supervisors: H. Mcgowan, JN. Callow

Feb 2010 - Dec 2012 **BA (Geography and Spanish)**, *The University of Queensland*, Brisbane, QLD, Australia.

Publications

1. Campbell, M, J Callow, G McGrath, and H McGowan (May 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.
2. McGowan, H, JN Callow, J Soderholm, G McGrath, M Campbell, and Jx Zhao (Dec. 2018). Global warming in the context of 2000 years of Australian alpine temperature and snow cover. *Scientific Reports* **8**(1), 4394.
3. Campbell, M, JN Callow, G McGrath, and H McGowan (Dec. 2017). A multimethod approach to inform epikarst drip discharge modelling: Implications for palaeo-climate reconstruction. *Hydrological Processes* **31**(26), 4734–4747.

Funding and Scholarships

2018 **Australian Institute of Nuclear Science and Engineering Travel grant**, $1000.

2017   **Australian and New Zealand Geomorphological Group Travel grant**, $300.

2016   **University of Western Australia Travel grant**, $1850.

2015–2018   **Australian Institute of Nuclear Science and Engineering Postgraduate Ressarch Award Stipend**, $7500pa.

2015–2018   **Australian Institute of Nuclear Science and Engineering Postgraduate Ressarch Award Analytical Budget**, $1000pa.

2014–2018   **Australian Government Research Training Program Stipend**, $26000pa.

2014–2015   **Snowy Hydro Ltd. Stipend**, $5000pa.

2014   **University of Western Australia Stipend**, $3000.

Conference Presentations

Talks

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. 2016.

Posters

Apr 2018   **Climate patterns in South-east Australia: the Last Interglacial vs. the last 2K**, *20th 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..

Skills

Software

R (advanced).

Python (fundamental awareness).

ArcGIS (novice).

Microsoft Suite (advanced).

LaTEX (novice).

Statistical

Statistics.
o Time series analysis
o Hypothesis testing
o Social network analysis
o Linear models
o Generalised linear models

Field

Surveying.
o Total station
o Real time kinematic

Electrical Resistivity Tomography.
o Deployment
o Data processing and analysis

Environmental Data Loggers.
o Onset HOBO
o In-Situ Rugged Troll
o Driptych Stalagmate

Soil profile and sampling protocol.

Water sampling.
o Isotopes
o Nutrients

Service

Aug 2017 - **Participant, Science in Schools Program**.
Aug 2017   o Travelled to a regional town to share some love for science with primary school kids

Feb 2015 - **Postgraduate representative to the School of Earth and Environment**.
Jul 2017   o Led the organisation of 2 annual symposia for postgraduate students within the school.
  o Reported student concerns to the School administration
  o Support and troubleshooting for new students

Mar 2016 - Jan 2016	**Co-Convenor, SEE LearnR Workshop**. ○ Organised a short series of 'Introduction to R' courses for the students and staff of the School of Earth and Environment
Oct 2014 - Oct 2014	**Guest presenter, ENVT2221: Global Climate Change and Biodiversity**. ○ Presented 'Palaeo-climate and Stalagmites' for 2nd-year Biology students at UWA

Professional Development

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*.

2018   **Masterclass in Creating Opportunities and Developing your Research Skills**, *The University of Western 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*.

2016   **Research Bazaar**, *Murdoch University, Australia*.

2016   **Fundamentals of the analysis of networks**, *The University of Western Australia*.

2014   **Writing and publishing in scientific journals**, *The University of Western Australia*.

Referees