

Dr Georgina (Georgy) Maja Falster

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PERSONAL STATEMENT

My research goal is to better understand dynamical variability within the global water cycle, on time scales from inter-annual to centennial. Understanding **how & why** the water cycle has varied in the past will help us to better predict how the water cycle will change with future anthropogenic warming. I use information from many different palaeoclimate proxy archives, along with instrumental observations and earth system model simulations, to form a comprehensive picture of water cycle variability through time.

I am a creative and adaptable researcher, with a strong focus on collaboration. I particularly enjoy sharing my research (and climate science in general), through undergraduate teaching, scientific workshops & conferences, and public outreach events.

EDUCATION & EMPLOYMENT

Relevant Employment

- 2021-present Research School of Earth Sciences, The Australian National University (ANU) ARC Centre of Excellence for Climate Extremes (CLEX) Postdoctoral Fellow using palaeoclimate proxy data & Earth System Model simulations to investigate the nature & drivers of Australian droughts.
Supervisor: Prof. Nerilie Abram
- 2019-2021 Department of Earth and Planetary Sciences, Washington University in St. Louis Postdoctoral Research Associate using water isotope observations & proxy records to investigate changes in ocean-atmosphere circulation during the past 2000 years.
Supervisor: A/Prof. Bronwen Konecky
- 2018-2019 Geoscience Australia.
Marine geoscientist, using various data types to perform geomorphological mapping of seafloor features in Australian marine parks

Education

**see below for summer schools & short courses attended*

- 2015-2019 Doctor of Philosophy, The University of Adelaide, Australia.
Awarded Dean's Commendation for Doctoral Thesis Excellence
Advisors: Jonathan Tyler, John Tibby
- 2008-2011 Bachelor of Science with First Class Honours, The University of Adelaide, Australia
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PUBLICATIONS

Current H-index: 5 (Google Scholar & Web of Science)

Peer-reviewed journal articles

- Churakova-Sidorova, O., V. Myglan, M. Fonti, O. Naumova, A. Kirilyanov, I. Kalugin, V. Babich, **G. Falster**, E. Vaganov, R. Siegwolf, M. Saurer. 2022. Modern aridity in the Altai-Sayan mountain range derived from multiple millennial proxies. *Scientific Reports* 12(1), 1-10.
- **Falster, G.**, B. Konecky, M. Madhavan, S. Stevenson, S. Coats. 2021. Imprint of the Pacific Walker Circulation in global precipitation $\delta^{18}\text{O}$. *Journal of Climate* 34(21), 8579-8597.
- Konecky, B., N. McKay, O. Churakova, L. Comas-Bru, E. Dassié, K. DeLong, **G. Falster**, M. Fischer, M. Jones, L. Jonkers, D. Kaufman, G. Leduc, S. Managave, B. Martrat, T. Opel, A. Orsi, J. Partin, H. Sayani, E. Thomas, D. Thompson, J. Tyler, N. Abram, A. Atwood, J. Conroy, Z. Kern, T. Porter, S. Stevenson, L. von Gunten, Iso2k Project Members. 2020. The Iso2k Database: A global compilation of paleo- $\delta^{18}\text{O}$ and $\delta^2\text{H}$ records to aid understanding of Common Era climate. *Earth System Science Data* 12, 2261-2288.
- Khider, D., J. Emile-Geay, N. McKay, Y. Gil, D. Garijo, V. Ratnakar...**G. Falster**...[see paper for full author list]. 2019. PaCTS 1.0: a crowdsourced reporting standard for paleoclimate data. *Paleoceanography and Paleoclimatology* 34(10), 1570-1596.
- **Falster, G.**, S. Delean, J. Tyler. 2018. Hydrogen peroxide treatment of natural lake sediment prior to carbon and oxygen stable isotope analysis of calcium carbonate. *Geochemistry, Geophysics, Geosystems* 19(9), 3583-3595.
- **Falster, G.**, J. Tyler, K. Grant, J. Tibby, C. Turney, G. Jacobsen, A. P. Kershaw. 2018. Millennial-scale variability in south-east Australian hydroclimate between 30,000 and 10,000 years ago. *Quaternary Science Reviews* 192, 106-122.
- Collins, A., S. Patranabis-Deb, E. Alexander, C. Bertram, **G. Falster**, R. Gore, J. Mackintosh, P. Dhang, D. Saha, J. Payne, F. Jourdan, G. Backe, G. Halverson, B. Wade. 2015. Detrital mineral age, radiogenic isotopic stratigraphy and tectonic significance of the Cuddapah Basin, India. *Gondwana Research* 28(4), 1294-1309.

Submitted or in-preparation manuscripts

- **Falster, G.**, B. Konecky, S. Coats, S. Stevenson, C. Pflieger. 2022. No evidence for forced changes in Pacific Walker Circulation variability over the past 800 years. (in preparation for *Nature Climate Change*).
- Konecky, B., N. McKay, **G. Falster**, S. Stevenson, M. Fischer, A. Atwood, D. Thompson, M. Jones, K. DeLong, J. Tyler, B. Martrat, E. Thomas, J. Conroy, S. Dee, L. Jonkers, O. Churakova (Sidorova), Z. Kern, T. Opel, H. Sayani, Iso2k Project Members. 2022. Temperature-driven changes in the global water cycle during the Common Era. (in preparation for *PNAS*).
- **Falster, G.**, J. Tyler, A. Chivas, F. Dux, R. Drysdale, T. Kluge. 2022. Environmental controls on the clumped and stable isotope ratios of land snail shells in Australia. (in preparation for *EPSL*)

Selected other publications

***denotes invited conference submission.*

- **Falster, G.,** B. Konecky, S. Stevenson, S. Coats. 2021. 'Multi-method, multi-proxy reconstructions of the Pacific Walker Circulation through the last millennium. *AGU Fall Meeting*, virtual (oral presentation).
- **Falster, G.,** B. Konecky, S. Coats, S. Stevenson. 2021. 'Pacific Walker circulation variability during the last millennium reconstructed from a network of water isotope proxy records'. *EGU General Assembly*, virtual (vPICO presentation).
- ****Falster, G.,** B. Konecky, M. Madhavan, S. Stevenson, S. Coats. 2020. 'Fingerprinting the Pacific Walker Circulation using precipitation $\delta^{18}\text{O}$ '. *AGU Fall Meeting*, virtual (oral presentation).
- **Falster, G.,** B. Konecky, N. McKay, A. Atwood, J. Conroy, M. Fischer, M. Jones, L. Jonkers, S. Stevenson, D. Thompson, J. Tyler, 2019. 'New insights into spatial and temporal dynamics of the global water cycle from the Iso2k database'. *AGU Fall Meeting*, San Francisco (oral presentation).
- **Falster, G.,** L. Armbricht, L. Missiaen, 2019. 'Under the Southern Cross: 13th International Conference on Paleoceanography'. *Past Global Changes Magazine* 27(2), 87.
- **Falster, G.,** G. Simpson, H. Ye. 2019. 'Testing the link between southern Australian aridity and variability in the global carbon cycle'. *13th International Conference on Paleoceanography*, Sydney (poster).
- **Falster G.,** J. Tyler, T. Kluge, F. Dux, R. Drysdale, A. Chivas, J. Tibby, L. Reed. 2018. 'Leaving a trail: reconstructing past climates from stable and clumped isotope analysis of snail shells.' *Australasian Quaternary Association biennial meeting*, Canberra (oral presentation)
- **Falster, G.,** J. Tyler, K. Grant, J. Tibby, C. Turney, G. Jacobsen, A. P. Kershaw. 2018. 'Millennial-scale variability in south-east Australasian hydroclimate between 30,000 and 10,000 years ago.' *Southern Hemisphere Assessment of PalaeoEnvironments (SHAPE) workshop*, Wollongong (poster and short oral presentation)
- **Falster, G.,** J. Tyler, K. Grant, J. Tibby, C. Turney, G. Jacobsen, A. P. Kershaw. 2017. 'Coherent millennial-scale variability in southern Australasia during the Last Glacial Period.' *5th PAGES Open Science Meeting*, Zaragoza (poster)
- **Falster, G.** 2017. 'A report on the inaugural workshop for the Last Glacial Maximum in the Southern Hemisphere (SHeMax) project.' *Quaternary Australasia* 43, 33-36
- **Falster, G.,** J. Tyler, J. Tibby, C. Barr, K. Grant, A. P. Kershaw. 2016. 'Hydroclimate variability in southern Australia during the Last Glacial Period: a multi-proxy record from Lake Surprise.' *Australasian Quaternary Association biennial meeting*, Auckland (oral presentation)
- **Falster, G.,** J. Tyler, J. Tibby, C. Barr, K. Grant, A. P. Kershaw. 2016. 'Climate variability in southern Australia during the Last Glacial Period: a multi-proxy record from Lake Surprise.' *Australian Earth Sciences Convention*, Adelaide (oral presentation)
- **Falster, G.,** J. Tyler, J. Tibby, C. Barr, K. Grant, A. P. Kershaw. 2015. 'Climate variability in southern Australia during the last glacial-interglacial transition: toward new insights from lake sediments using conventional and clumped isotope geochemistry.' *XIX INQUA Congress*, Nagoya (poster)

HONOURS & AWARDS

Invited seminars

- 2022 Australian National University, Research School of Earth Sciences.
- 2021 LinkedEarth Town Hall, AGU Fall Meeting.
- 2021 University of Hawai'i International Pacific Research Center.
- 2021 Lamont-Doherty Earth Observatory Biology.
- 2021 Past Global Changes (PAGES) 2k Network (online seminar series).
- 2021 University of Adelaide, Department of Earth Sciences.
- 2018 Australian National University, Research School of Earth Sciences.

Academic awards & scholarships

- 2022 EarthCube Early Career Researcher travel award
To attend the 13th International Conference on SH Meteorology & Oceanography
 - 2019 Dean's Commendation for Doctoral Thesis Excellence
 - 2019 Won various competitive travel awards to attend AGU Fall Meeting, INQUA 2019, ICP13, and the US CLIVAR Water Isotopes and Climate Workshop
 - 2019, Fame-Lab Australia national semi-finalist
 - 2017 *National science communication competition*
 - 2017 Esther Bright Prize (from Soroptimist International of Adelaide)
To attend the Advanced Climate Dynamics Course in Norway
 - 2017 Australian Institute of Nuclear Science & Engineering (AINSE) International Travel Scholarship + University of Adelaide Research Abroad Scholarship
To spend time in the Heidelberg University clumped isotope laboratory
 - 2016 Geological Society of Australia prize for best student presentation (oral)
At the Australian Earth Sciences Convention
 - 2016 Adelaide University Graduate Union R. C. Heddle Award
Scholarship awarded annually to one doctoral candidate at Adelaide Uni
 - 2016 Walter and Dorothy Duncan Trust Award
Travel grant to attend the 5th PAGES Open Science Meeting
 - 2015- AINSE Postgraduate Research Award
 - 2019 *Annual stipend plus support to prepare and analyse samples at the Australian Nuclear Science and Technology Organisation (radiocarbon lab)*
 - 2015- Australian Postgraduate Award
 - 2019 *Federal government funding to support postgraduate training for students of exceptional research potential*
 - 2014 CRC LEME scholarship
For outstanding research in regolith science
 - 2011 AusIMM-Playford Trust Honours Scholarship
For one outstanding student entering a full-time earth science Honours year in Australia
 - 2010 James Barrans Scholarship
For highest-achieving student in third-year earth science subjects at Adelaide Uni
 - 2009 Glenn Scotford Prize
For outstanding academic achievement in second year earth science at Adelaide Uni
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SCIENTIFIC LEADERSHIP, SERVICE, AND OUTREACH

Scientific leadership

- Past Global Changes (PAGES) 2k Network Coordination team (2021-present)
 - Planning, facilitating, and guiding global collaborations to better understand hydroclimate variability during the past 2000 years
- PAGES Early Career Network Steering Committee member (2021-present)
- Scientific Program Committee member for the PAGES Young Scientists Meeting (2020-2022)
- Reviewer for US NSF Paleoclimate Program (GEO directorate)

Service to academic community

- Reviewer for *Geophysical Research Letters*, *Journal of Limnology*, *Boreas*, *Journal of Climate*, *Paleoceanography*, *Climate of the Past* (2019-present)
- ARC Centre of Excellence for Climate Extremes Culture & Diversity committee member (2022-present)
- Session convener: ‘Studying the climate of the last two millennia’, EGU General Assembly (2022)
- PAGES Open Science Meeting Diversity Committee member (2020-2022)
- Session convener: ‘Water Isotope Systematics: Improving Modern and Paleoclimate Interpretations’, AGU Fall Meeting (2021)
- Australasian Quaternary Association (AQUA) Treasurer (2016-2019)
- Member of local organising committee for the AQUA Biennial Conference (2018)

Outreach & other contributions

- Mentor at the ANU Women* in STEM Leadership Conference
- Keynote speaker at the ANU Research School of Earth Science Student Convention (2022)
- Panellist on Washington University in St. Louis ‘Climate Conversation: Extreme Weather Events’ public Q&A event (2021)
- National Youth Science Forum – scientists in the ‘Speed Date a Scientist’ program (2018)
- Australian National Science Week - exhibitor at Science in ACTION school event, Canberra (2018)

TEACHING & SUPERVISION

Teaching

Co-lecturer

Australian National University EMSC 1006 – *The Blue Planet*. First-year undergraduate course providing a broad introduction to Earth system science. I prepared and delivered lectures, tutorials, and practicals covering atmospheric circulation, the water cycle, climate observations & reconstructions, and climate models (2022).

Guest lecturer

Washington University in St. Louis EPSc 486 – *Paleoclimatology*. Advanced paleoclimatology course for graduate students & fourth-year undergraduate students. I prepared and delivered course material covering the last deglaciation (2019)

Demonstrator

The University of Adelaide – demonstrator and teaching assistant during field trips and weekly practicals for various earth and environmental science subjects.

Supervision

PhD candidates

- Sarah Jackson, The Australian National University (2019-present)

Undergraduate researchers

- Anastasia-Filia Morfiadakis, The Australian National University (2021-2022)
- Flora Perlmutter, Washington University in St. Louis (2021-2022)
 - Awarded Courtney Werner Memorial Prize for outstanding academic achievement

ACADEMIC & PROFESSIONAL DEVELOPMENT

Scientific workshops & short courses

***denotes event with competitive selection process*

- **LinkedEarth PaleoHackathon (Pyleoclim) workshop, virtual (2021)
- **Advanced Climate Dynamics Course ‘The Dynamics of the Seasonal Cycle’, Rondane National Park, Norway (2017)
- ** GeoChronR training workshop, Northern Arizona University, USA (2017)
- **3rd Past Global Changes (PAGES) Young Scientists Meeting, Zaragoza, Spain (2017)
- ‘Numerical Analysis of Palaeoenvironmental Research’ with Gavin Simpson, Adelaide, Australia (2017)
- **15th annual Swiss Climate Summer School, Grindelwald, Switzerland (2016)
- ‘Advanced Isotope Geochemistry Course’, University of Wollongong, Australia. (2015)

Scientific workshops

- **‘Water cycle in a 1.5° warmer world: interdisciplinary approaches’ joint Early Career Research workshop, San Francisco, USA (2019)
- US CLIVAR Water Isotopes and Climate Workshop, Boulder, USA (2019)
- ‘Southern Hemisphere Assessment of PalaeoEnvironments’ workshop, Wollongong, Australia (2018)

REFEREES

Contact details available on request