

Aidan Starr

Research Associate in Paleoceanography

School of Earth and Environmental Science
Cardiff University
Park Place, Cardiff, UK

Email: StarrA1@Cardiff.ac.uk
Web: <https://aidanstarr.github.io/>

(a) Research Interests

I am interested in the use of paleoclimate proxy records to investigate oceanographic changes, marine biogeochemical cycles, and climate dynamics in Earth's past. I employ (i) terrigenous sediment proxies ('Sortable Silt' and bulk sediment grain-size analysis; XRF and XRD bulk sediment geochemistry; Ice-Rafted Debris) and (ii) foraminifera-based proxies (stable isotope analysis of benthic and planktic species). I also specialise in sediment core age-depth modelling using a variety of techniques.

An overarching motivation for my research is understanding the role and response of Southern Hemisphere processes in climate variations on a variety of timescales, with emphasis on the Indian Ocean. I am particularly enthusiastic towards exploring data through numerical modelling, statistical analyses, and wider data science approaches.

(b) Education

PhD	Cardiff University	Cardiff, UK	Paleoceanography	2017 - ongoing
MSci	Uni. of Southampton	Southampton, UK	Oceanography	2013 - 2017

(c) Employment

Research Associate	Cardiff University	Cardiff, UK	Paleoceanography	2021 - ongoing
---------------------------	--------------------	-------------	------------------	----------------

(d) Skills

- Sediment Grain-Size Analysis (Coulter-Counter; Malvern MultiSizer X)
- Foraminifera identification and picking
- Stable isotope analysis of calcite (Thermo MAT 253; Kiel V)
- Chronostratigraphy: Age-depth modelling of sediment cores
- Statistics and time series analysis; Novel paleoclimate data analysis
- Computing: Python, Matlab, \LaTeX , Linux 'command line', Ocean Data View, Microsoft Office

(e) Fieldwork and Seagoing

- Participation in the *CROCCA-2s* expedition to the SE Indian Ocean, 2018 (R/V Thomas G. Thompson; PI E.L. Sikes)
- Participation in the *ACCLIMATE2* expedition to the S. Atlantic Ocean, 2020 (R/V Marion Dufrense; PI C. Waelbroeck)
- Participated in 2 field campaigns to southern Africa to sample river sediments (2018, 2020)

(f) Community

Reviewer for:
Nature Communications

Paleoceanography and Paleoclimatology

Committee Member:

Seminar Series Host: UK Paleoclimate Society (*present*)

President: University of Southampton Marine Conservation Society (*2015*)

Member:

Institute of Marine Engineering, Science and Technology (*2015-present*)

PAGES Early Career Network (*2016-present*)

American Geophysical Union (*2018-2019*)

Quaternary Research Association (*2018-present*)

(g) Awards and Grants

Studentship: NERC GW4+ Doctoral Training Partnership Studentship (*2018*)

Undergraduate Internships: Cardiff Undergraduate Research Opportunities Programme (CUROP) (*2018 and 2019*)

Grant: Antarctic Science Limited International Bursary (*2018*)

Award: Best Oral Presentation; QRA PG Symposium (*2018*)

(h) Press and Publicity

- The Guardian (Feb 2021) "Terrawatch: the adventurous icebergs that trigger ice ages" - **Article**
- Mail Online (Feb 2021) "How melting icebergs change ocean patterns: New study sheds light on how ice ages happen" - **Article**
- BBC Newsround (Jan 2021) "How melting icebergs trigger an ice age" - **Article**
- Independent (Jan 2021) "Climate crisis: Scientists 'identify missing link' in formation of ice ages" - **Article**
- BBC Radio Wales (Mar 2021) Science Cafe Episode titled "Another Ice Age?" - **Radio**

(i) Teaching Responsibilities

Graduate Teaching Assistant:

Numerical Modelling in Earth and Ocean Sciences (Cardiff University, masters-level)

Chemistry of the Environment (Cardiff University, undergraduate-level)

Glaciology (Cardiff University, undergraduate-level)

Earth Surface Processes (Cardiff University, undergraduate-level)

Exam Author:

Chemistry of the Environment (Cardiff University, undergraduate-level)

(j) Selected Training and Workshops

2018	BOSCORF Advanced Training Course in <i>Sediment core description and analysis</i>	NOCS, UK
2018	IODP Exp. 361 Post-Cruise Meeting	Livingstone, Zambia
2018	Numerical Modelling Workshop with the <i>c-Genie Earth System Model</i> (A. Ridgwell)	Bristol, UK
2019	BOSCORF Advanced Training Course in <i>XRF core scanning and interpretation</i>	NOCS, UK
2020	Potsdam Institute for Climate Impact Research Workshop <i>Uncertainties in Data Analysis</i> (N. Marwan)	Online
2021	LinkedEarth Paleo-Hackathon <i>Python tools for the analysis of paleoclimate data</i> , (J. Emile-Geay)	Online

(k) Publications - Journal Articles

Starr, A., Hall, I. R., Barker, S., Rackow, T., Zhang, X., Hemming, S. R., ... others (2021). Antarctic icebergs reorganize ocean circulation during pleistocene glacials. *Nature*, 589(7841), 236–241.

van der Lubbe, H. J. L., Hall, I. R., Hemming, S. R., Barker, S., Baars, T. F., Starr, A., ... Jorrendens, J. C. A. (2021). Indo-pacific walker circulation drove pleistocene african aridification. *Nature*.

Williams, T. J., Martin, E. E., Sikes, E. L., Starr, A., Umling, N., & Glaubke, R. (2021). Neodymium isotope evidence for coupled southern ocean circulation and antarctic climate throughout the last 118,000 years. *Quaternary Science Reviews*.

Tanganan, D. N., Berke, M. A., Cartagena-Sierra, A., Flores, J. A., Gruetzner, J., Jimenez-Espejo, F. J., ... Starr, A. (2021). Biotic response to late pleistocene glacial-interglacial variability in the indian ocean sector of the southern ocean. *Communications Earth and Environment*.

Cartagena-Sierra, A., Berke, M. A., Robinson, R. S., Marcks, B., Castañeda, I. S., Starr, A., ... Hemming, S. R. (2021). Latitudinal migrations of the subtropical front across the mid-pleistocene transition at the agulhas plateau. *Paleoceanography and Paleoclimatology*.

Barker, S., Starr, A., van der Lubbe, H., Doughty, A., Knorr, G., Conn, S., ... others (*submitted*). Persistent influence of precession on northern ice sheet variability since the early Pleistocene. *Science*.

Selected Conference Abstracts

Starr, A., et al. (2020). *The evolution of subantarctic fronts, deep ocean ventilation and flow vigour at the agulhas plateau: Surface-deep coupling across climate transitions*. Oral Presentation at the European Geophysical Union General Assembly, Vienna, Austria.

Starr, A., et al. (2019a). *Icebergs at the agulhas plateau through the pleistocene: Accumulation,*

provenance, and interpretation of ice-rafted debris. Poster Presentation at the American Geophysical Union Fall Meeting, San Francisco, USA.

Starr, A., et al. (2019b). *Ice-rafted debris at the agulhas plateau and links to deep water mass geometry over the past 1.65 ma.* Poster Presentation at the 13th International Conference on Paleooceanography, Sydney, AUS.

Starr, A., et al. (2018). *1.5 million years of ice-rafted debris on the agulhas plateau.* Poster Presentation at the American Geophysical Union Fall Meeting, San Francisco, USA.

Other

Starr, A. (2017). *Vertical habitat changes preceding extinction in planktic foraminifer globocornella puncticulata* (Unpublished master's thesis). University of Southampton, (Masters Dissertation) National Oceanography Library, Southampton.

Starr, A. (submitted). *Surface and deep hydrography across the Mid-Pleistocene Transition; multi-proxy paleoceanographic reconstructions from the southwest indian ocean* (Unpublished doctoral dissertation). Cardiff University.