



JENNY ROBERTS

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DOB: 4th April 1990
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RESEARCH INTERESTS

- **Physical properties of past oceans:** the influence of temperature and salinity on ocean circulation during glaciations, and how this relates to the storage of CO₂ in the deep ocean.
- **Past ocean carbon systematics:** reconstructing changes in the deep ocean carbon system using ¹⁴C, ^{δ¹¹B}, ^{δ⁷Li}, B/Ca and ^{δ¹³C} over the last glacial termination.
- **Proxy/Method development:** developing the use of ^{δ⁷Li} as a pH-proxy and refining the boron isotope method for small carbonate samples.
- **Antarctic Intermediate Water:** the glacial-interglacial changes in the chemical and physical properties of Antarctic Intermediate Water, and the effect that this may have on rapid millennial-scale climate variability.

RESEARCH AND EDUCATION

Post-doctorate researcher, Alfred-Wegener Institute, Bremerhaven

May 2016-Present

Marine Geology & Geochemistry

Working with: Dr. Frank Lamy, Prof. Jelle Bijma, Prof. Ralf Tiedemann

- Understanding deglacial carbon system dynamics in the South Pacific through carbonate ¹⁴C, ^{δ¹¹B}, B/Ca, ^{δ¹³C} and ^{δ¹⁸O}.
- Developing the application of benthic foraminiferal ^{δ⁷Li} as a novel proxy for bottom water pH.
- Refining the boron isotope method via micro-distillation (in collaboration with S. Misra, Cambridge University).

Ph.D. University of Cambridge & British Antarctic Survey

Oct 2012 – May 2016

Godwin Laboratory for Palaeoclimate Research

Supervisors: Prof. David Hodell, Dr. Vicky Peck and Dr. Sev Kender

- Reconstructing the physical properties of deep water in the south Atlantic through trace elemental and stable isotope analysis.
- Multi-proxy (organic geochemistry, sedimentology, trace elemental analyses) study of Antarctic Intermediate Water in the southwest Atlantic, and its implications for past climate.

Research Assistant, British Antarctic Survey

Jan 2012 – Apr 2012

Quaternary Sediments

Manager: Dr. Claus-Dieter Hillenbrand

- Sediment core processing, interpretation and foraminifer identification.

M.Sci. Research Project, Department of Earth Sciences, University of Cambridge

July 2011 – Jan 2012

Isotope Geochemistry

Supervisor: Dr. Alexandra Turchyn

- Using carbon and sulphur isotopes to investigate causes of the Permo-Triassic mass extinction.

M.Sci Natural Sciences, University of Cambridge

Oct 2008 – Jun 2012

Classification: First

- Studied a wide variety of fields in Earth Sciences including geochemistry, sedimentology, petrology and geophysics.
- Broad-based first and second years studying Physics, Chemistry, Earth Sciences and Mathematics.

Centre for Environmental Magnetism & Palaeomagnetism

Manager: Prof. Barbara Maher

- Using remnant magnetism to track the dispersion of heavy metal pollutant particles.

A-levels, Lancaster Girls' Grammar School

Oct 2000 – Jun 2008

PUBLICATIONS

Roberts, J., Kaczmarek, K., Skinner, L.C., Langer, G., Bijma, J., Bradbury, H., Turchyn, A.V., Misra, S. Lithium isotopic composition of benthic foraminifera: a new proxy for paleo-pH reconstruction, *Geochimica et Cosmochimica Acta (Elderfield Memorial Edition)*, 2018. DOI: 10.1016/j.gca.2018.02.038

Roberts, J., Turchyn, A.V., Wignall, P.B., Newton, R., Vane C.H. Geochemical insights into the immediate aftermath of the Permo-Triassic Boundary, Wordie Creek Formation, East Greenland, *Geochemistry, Geophysics, Geosystems*, 2018. DOI: 10.1002/2017GC007259

Roberts, J., McCave, I.N., E.L. McClymont, S. Kender, C.-D. Hillenbrand, R. Matano, Hodell, D.A., Peck, V.L. Deglacial changes in flow and frontal structure through the Drake Passage, *Earth and Planetary Science Letters*, 2017. DOI: 10.1016/j.epsl.2017.07.004

Roberts, J., Gottschalk, J., Skinner, L.C., Peck, V.L., Kender, Elderfield, H., S., Waelbroeck, C., Vázquez Riveiros, N. & Hodell, D.A. Evolution of South Atlantic density and chemical stratification across the last deglaciation, *Proceedings of the National Academy of Sciences*, 2016. DOI: 10.1073/pnas.1511252113

Roberts, J., Insights into glacial terminations from a South Atlantic perspective, *Ph.D Thesis*, 2016.

Roberts, J., Lamy, F., Mackensen, A., Sarnthein, M., Southon, J. & Tiedemann, R. Quantified effects of abundance changes and bioturbation on proxy records in marine sediment cores, *Paleoceanography*, in rev.

Wengler, M., Lamy, F., Struve, T., Borunda, A., Böning, P., Geibert, W., Kuhn, G., Pahnke, K., **Roberts, J.**, Tiedemann, R., Winckler, G., Reconstruction of modern South Pacific dust fluxes and provenance areas: Insights from lithogenic fluxes, REE, Sr, Nd and Pb isotopes, *Geochimica et Cosmochimica Acta*, in rev.

Kaczmarek, K., Misra, S., Greaves, M., **Roberts, J.**, Raitzsch, M., Bijma, J., Lithium incorporation and isotope fractionation in planktonic foraminifera, part I: The role of pH, in rev.

Kaczmarek, K., Misra, S., Greaves, M., **Roberts, J.**, Raitzsch, M., Bijma, J., Lithium incorporation and isotope fractionation in planktonic foraminifera, part II: Li/Ca trends across glacial-interglacial transitions, in rev.

Roberts, J., Misra, S., Rae, J.B.W., Skinner, L.C., Butzin, M., Grotheer, H., Shuttleworth, R., Mollenhauer, G., Bijma, J., Tiedemann, R., Lamy, F. Deep water formation in the glacial South Pacific and the deglacial release of CO₂, in prep.

RESEARCH EXPEDITIONS**Oceanographic expedition JC089 Iberian Margin aboard *R/V James Cook* (5 weeks)****Aug 2013**

Roles: Sedimentologist, assisted in marine seismology group. Pls: Prof. D.A. Hodell, Dr. L.C. Skinner, Prof. H.E. Elderfield (University of Cambridge, UK).

Oceanographic expedition ANT-XXIX/4 Punta Arenas-South Sandwich Islands-Port Stanley aboard *R/V Polarstern* (5 weeks).**Mar 2013**

Roles: Sedimentologist, assisted in SWATH bathymetry acquisition. PI: Prof. Gerhard Bohrmann (Marum, Germany).

ORGANISATIONAL ROLES

Led Geo Seminar talk series , a fortnightly meeting of academics in the marine geology section of the Alfred Wegener Institute.	2017-2018
Sponsorship co-ordinator in the organising committee for the Postgraduate Research in Marine and Earth Sciences meeting. Raised £3000 from sponsors.	Nov 2015
Chair and member of organising committee for the British Antarctic Student Symposium	Nov 2015
Lead author in the IODP APL846 , South Falkland Slope Drift. Co-ordinated the re-submission of the scientific proposal and seismic data.	Oct 2015
Head of the organising committee for the Quaternary Research Association Postgraduate Symposium. Raising sponsorship, chairing sessions and promoting conference.	Sept 2015
Led the Godwin Journal Club , a weekly meeting of academics in the field of palaeo-climate to discuss recent papers.	2013-2014
Student Representative for the British Antarctic Survey.	2013-2014

SCHOLARSHIPS & FUNDING

IODP APL846 , for short drilling campaign, scheduled March 2019	Aug 2017
UK IODP Travel Grant , for travel to the UK IODP Meeting Newcastle	Sept 2015
Internal Graduate Studentship , awarded by Trinity College, for 3.5 years of postgraduate studies, covering 50% of university fees	July 2012
Fully-funded 4 year NERC Ph.D. Scholarship at the University of Cambridge	Mar 2012
Centre for Latin American Studies Research Grant , for research in Central and Southern America – geological mapping project to Chile	May 2010
Trinity College Project Scholarship , for travel and subsistence for academic project proposals – geological mapping project to Chile	April 2010
Shell plc Project Scholarship , for outstanding proposal for academic research	April 2010

AWARDS

ICP student poster prize	Sept 2016
BUFI Science Festival peer prize ; best poster	July 2014
Research Scholarship , awarded by Trinity College for first class degree	July 2012
Harkness Prize ; highest mark in class, awarded by Department of Earth Sciences	July 2012
Trinity College Engineering Essay Prize , best essay on an engineering problem	April 2011
Robert Wright Geology Prize ; highest mark in college	July 2009

TEACHING

Organising and leading R and GMT scripting classes for doctorate students , Alfred Wegener Institute, Germany	2017-2018
Teaching assistant for first year students reading Earth Sciences , University of Cambridge, UK; teaching hours per week: 3	2012 –2016
Teaching assistant for first year Earth Sciences students on the Arran field trip , leading and teaching groups about the geology of Arran.	April 2013
Personal academic tutor for first year students reading Earth Sciences , University of Cambridge, UK; teaching hours per week: 3	2013-2015
Lecturing for prospective applicants to Trinity College , University of Cambridge.	2012-2013
Volunteer English teacher in Jinja , Uganda (8 weeks).	Summer 2008

PUBLIC OUTREACH

Royal Society Summer Science Festival , teaching the public about Earth Sciences	Jul 2016
Cambridge TV , interview discussing results of PNAS paper.	Jan 2016
School visits on behalf of the British Antarctic Survey , inspiring school children (11-15 yrs) to study science.	2012-2014

PROFESSIONAL TRAINING

Earth System Modelling , 5-day introduction, Dr. Joy Singarayer, Reading University	Feb 2016
AGENIE Earth System Modelling , 2-day introduction, Prof. Andy Ridgwell, University of Bristol	Aug 2015
Outdoor Fieldwork First Aid Course , 2-day training course, Marlin Training	March 2014
Sea Survival Training , Lowestoft College, UK	Feb 2013

ACADEMIC CONFERENCES/PRESENTATIONS (SELECTED)

Aug 2018, **Goldschmidt**, Oral presentation
May 2017, **Past Global Changes (PAGES)**, Oral presentation
Nov 2016, **Bern University**, Oral presentation (invited)
Sept 2016, **Alfred-Wegener Institute Palaeo-Climate Modelling group**, Oral presentation
Sept 2016, **International Conference for Palaeoceanography**, Poster Presentation
Jan 2016, **Alfred-Wegener Institute**, Oral presentation (invited)
Dec 2015, **American Geophysical Union**, Oral presentation
Nov 2015, **Postgraduate Research in Marine and Earth Sciences**, Oral Presentation
Nov 2015, **British Antarctic Survey Student Symposium**, Oral Presentation
Sept 2015, **UK International Ocean Drilling Program meeting**, Oral Presentation
Sept 2015, **Quaternary Research Association Postgraduate Symposium**, Oral Presentation
June 2015, **Quaternary of Southern South America**, Oral Presentation
Dec 2014, **American Geophysical Union**, Poster presentation
Oct 2014, **Investigating Past Ocean Dynamics (iPODS) workshop**, Poster Presentation
Aug 2014, **Quaternary Research Association Postgraduate Symposium**, Oral Presentation
July 2014, **BUFI Science Festival**, Poster presentation
Sept 2013, **British Antarctic Survey Student Symposium**, Poster Presentation
Sept 2013, **International Conference for Palaeoceanography**, Poster Presentation

REFEREES

Prof. David A. Hodell (dah73@cam.ac.uk)	Ph.D. supervisor, University of Cambridge
Prof. Jelle Bijma (jelle.bijma@awi.de)	Advisor, Alfred-Wegener Institute
Dr. Sambuddha Misra (sambuddha@iisc.ac.in)	Collaborator, Indian Institute of Science
Prof. Ralf Tiedemann (ralf.tiedemann@awi.de)	Advisor, Alfred-Wegener Institute
Dr. Sasha Turchyn (avt25@cam.ac.uk)	Master's supervisor, University of Cambridge