



Jenny Roberts

Sophienstraße 28,
Bremen 28203,
Germany

Email: jenny.roberts@awi.de
Website: www.jenny-roberts.com
Telephone: +49 176 26801245
DOB: 4th April 1990
Nationality: British (UK)

RESEARCH INTERESTS

- **The role of the ocean in driving climate change:** reconstructions of the physical properties of the ocean (temperature and salinity) and its carbonate chemistry, and how this relates to the storage of CO₂ in the deep ocean on Quaternary timescales.
- **Using geochemistry to reconstruct past climates:** from discovering the causes of the Permo-Triassic mass extinction using $\delta^{34}\text{S}$ and $\delta^{13}\text{C}$, to reconstructing Quaternary ocean chemistry using $\Delta^{14}\text{C}$, $\delta^{11}\text{B}$ and B/Ca.
- **Proxy/Method development:** pioneering the use of foraminifer $\delta^7\text{Li}$ as an ocean pH proxy and refining the boron isotope method for small carbonate samples.

EMPLOYMENT & EDUCATION

- Product Specialist, Thermo Fisher Scientific, Bremen** **May 2018-Present**
Inorganic Mass Spectrometry
- Developing the next generation of Multi-Collector Inductively Coupled Plasma Mass Spectrometry (MC-ICP-MS) and Gas Isotope Mass Spectrometry (GIRMS) software.
 - Project leader for major R&D project within the Inorganic Mass Spectrometry business unit.
- Post-doctorate researcher, Alfred-Wegener Institute, Bremerhaven** **May 2016-May 2018**
Marine Geology & Geochemistry. Line Managers: Dr. Frank Lamy, Prof. Jelle Bijma, Prof. Ralf Tiedemann
- Understanding deglacial carbon system dynamics in the South Pacific through carbonate ^{14}C , $\delta^{11}\text{B}$, B/Ca, $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$.
 - Developing the application of benthic foraminiferal $\delta^7\text{Li}$ as a novel proxy for bottom water pH.
 - Refining the boron isotope method via micro-distillation.
- Ph.D. University of Cambridge & British Antarctic Survey** **Oct 2012 – May 2016**
Godwin Laboratory for Palaeoclimate Research. Supervisors: Prof. David Hodell, Dr. Victoria 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 (top in class)
- Studied a wide variety of fields in Earth Sciences including geochemistry, sedimentology, petrology and geophysics.
 - Broad-based 1st & 2nd years studying Physics, Chemistry, Earth Sciences and Mathematics.

SKILLS AND TECHNICAL COMPETENCES

- Isotope mass spectrometry:** extensive knowledge of a range of inorganic mass spectrometers, e.g. Delta V, Neptune Plus, Element XR, Nu Attom and Nu Plasma to solve a variety of geochemical problems.
- Optical emission spectroscopy:** extensive experience of several OES systems, including the Agilent 5110 ICP-OES and the Varian Vista ICP-OES.
- Inorganic geochemistry:** extensive experience of the preparation of biogenic calcite samples for trace element and isotope analysis; application of a variety of methods for element separation from matrix (e.g. column chemistry and micro-distillation).
- Organic geochemistry:** experience of lipid separation using column chemistry; knowledge of GC-CIMS (Thermo Scientific DSQ single quadrupole) and GC-FID (Trace 1310 Gas-chromatography coupled with FID); data processing using Xcalibur software.
- Clean laboratory:** competency in multi-element standard preparation, method development and the preparation of samples for ultraclean trace element geochemistry.
- Software skills and coding:** proficient with R; good knowledge of Visual Basic, Matlab and the BASH language (for specific software packages e.g. GMT); some knowledge of Python. Independently developed a Visual Basic module to automate logging of argon usage and internal standards within the Godwin Laboratory.

PUBLICATIONS

(Published)

- 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.

(In Progress)

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, DE).

ORGANISATIONAL ROLES

Project Manager for Gas Isotope Ratio Mass Spectrometry software platform transformation at Thermo Fisher Scientific. **2018-Present**

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. **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**

Organiser of 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, DE **2017-2018**

Teaching assistant for first year students reading Earth Sciences, University of Cambridge, UK **2012-2016**

Field trip teaching assistant, leading and teaching first year Earth Sciences students about the geology of Arran. **April 2013**

Personal academic tutor for first year students reading Earth Sciences, University of Cambridge, UK **2013-2015**

Lecturing for prospective applicants to Trinity College, University of Cambridge. **2012-2013**

PUBLIC OUTREACH

Reviewer IPCC special report on the Ocean and Cryosphere in a Changing Climate **April 2018**

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**

GENIE 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 (SELECTED)

Goldschmidt, Oral presentation **Aug 2018**

Past Global Changes (PAGES), Oral presentation
Bern University, Oral presentation (invited)
Alfred-Wegener Institute Palaeo-Climate Modelling group, Oral presentation
International Conference for Palaeoceanography, Poster Presentation
Alfred-Wegener Institute, Oral presentation (invited)
American Geophysical Union, Oral presentation
UK International Ocean Drilling Program meeting, Oral Presentation
Quaternary of Southern South America, Oral Presentation
American Geophysical Union, Poster presentation
BUFI Science Festival, Poster presentation

May 2017
Nov 2016
Sept 2016
Sept 2016
Jan 2016
Dec 2015
Sept 2015
June 2015
Dec 2014
July 2014

REFERENCES

Prof. David A. Hodell (dah73@cam.ac.uk)
Prof. Jelle Bijma (jelle.bijma@awi.de)
Dr. Sambuddha Misra (sambuddha@iisc.ac.in)
Dr. Sasha Turchyn (avt25@cam.ac.uk)

Ph.D. supervisor, University of Cambridge
Advisor, Alfred-Wegener Institute
Collaborator, Indian Institute of Science
Master's supervisor, University of Cambridge