IAIN ROBERTSON

Curriculum Vitae

ACADEMIC RECORD

2018	**Senior Fellow** of the Higher Education Academy (SFHEA)
2008	**Fellow** of the Royal Society of Chemistry (FRSC)
1998	**PhD**, Godwin Institute for Quaternary Research, University of Cambridge *Tree Response to Environmental Change.*
1996	**Chartered Chemist** (CChem, MRSC), Royal Society of Chemistry.
1995	**MPhil**, Department of Archaeological Sciences, University of Bradford.
1991	**BSc (Hons),** Applied Chemistry (2.i), Nottingham Polytechnic.
1991	**Diploma,** Industrial Studies, Nottingham Polytechnic.

EMPLOYMENT

Present	**Reader (*Associate Professor*)**
	Deputy Chair of the Swansea University Progression and Awards Board (2015-2025)
	Programme Director - Postgraduate Taught Masters (Geography, 2009-present)
	Coordinator - MSc in Environmental Dynamics and Climate Change (2007-present)
	Visiting Professor, Nicolaus Copernicus University, Poland.
2008-2013	**Senior Lecturer** College of Science, Swansea University
2011	**Visiting Scholar** Laboratory of Tree-Ring Research, University of Arizona, USA.
2009-2011	**Director of Postgraduate Studies** School of the Environment and Society, Swansea University
2008-present	**NERC Peer Review College**
2003-2007	**Lecturer (*Assistant Professor*)**, Dept. of Geography, University of Wales Swansea.
2000-2003	**Head of Radiocarbon Dating**, Quaternary Dating Research, CSIR, South Africa.
2000	**Visiting Scholar**, Laboratory of Tree-Ring Research, University of Arizona, USA.
1998 - 2000	**Research Officer**, Department of Geography, University of Wales Swansea.
1994 - 1997	**Research Assistant**, Godwin Inst. for Quaternary Research, Univ. of Cambridge.
1991 - 1994	**Research Assistant**, Dept. of Archaeological Sciences, University of Bradford.
1989-1990	**Placement Student,** Neuroscience Research Centre, Merck, Sharp and Dohme.
1987-1989	**Officer Cadet,** Officer Training Corps (Territorial Army).
1987	**Voluntary Activities Instructor,** Howtown Outdoor Activity Centre.

CAREER

My main research interest is the use of chemical techniques to solve environmental problems. I have recently focused upon achieving a better understanding of natural climatic variability through the use of stable isotopes in tree-rings. My training as a chemist (BSc, Nottingham Polytechnic; CChem FRSC) and the experience gained establishing an Isotope Laboratory (MPhil, University of Bradford) were an ideal background for my PhD into "Tree Response to Environmental Change" (Department of Plant Sciences, University of Cambridge).The main findings of this research were that the intrinsic water use efficiency of oaks growing in east England has increased during the latter part of the twentieth century,

which corresponds with the maximum increase in atmospheric CO_2 concentration. The implications are that plants are already adapting significantly to changing environmental conditions.

My BSc degree in Applied Chemistry at Nottingham Polytechnic covered most aspects of chemistry. Twelve months were spent working as a synthetic organic chemist for the pharmaceutical company, Merck, Sharp and Dohme at the Neuroscience Research Centre. The work involved the synthesis of a series of compounds thought to inhibit a specific enzyme in a biological pathway, and interpretation of the relevant spectroscopic data. For my final year, I specialised in organic chemistry and the synthesis of porphyrins by a novel synthetic route. My final year dissertation was awarded for research conducted at the University of Dijon.

My research profile has been dominated by the successful award of the £8.4 million European Union funded Integrated Project *Millennium* to a research team based at Swansea University. The ambitious aim of this project was to investigate if recently reported climatic change exceeds natural variability over the last millennium? I established the MSc in *Environmental Dynamics and Climate Change* at Swansea University and based upon the success of this course I was invited to become the Director of Postgraduate Studies. This successful course was awarded professional accreditation by the Royal Geographical Society (with the Institute of British Geographers) in December 2020.

GRANTS

Major

- **Leverhulme Trust grant** "Remediation of plastic polluted water using biochar and steel industry waste." The primary aim of this research is to investigate if biochar modified with iron oxide from steel manufacturing waste offers a viable and sustainable solution to removing nano and microplastics from water (£211,929, 2024).
- **Heritage Lottery Fund** grant 'Lost Peatlands of South Wales' which will restore the historic peatland landscape (initial grant £25,679; 2021). The aim of the project is to restore and manage more than 490 hectares of this historic landscape and habitats, including heathland, grassland and native woodland.
- **Dutch Research Council (NWO)** "Save the tiger! Save the grasslands! Save the water!" PI Prof. Jasper Griffioen, Utrecht University. (£22,000 allocated to Swansea University; 2021). I will lead the stable isotope dendroclimatology part of this major project.
- **National Geographic Global Exploration Fund** (£15,000). *Drought reconstruction in the Horn of Africa* (GEFNE80-13)
- **European Union**, Integrated Project *Millennium* (joint PI with Prof. D McCarroll (Leader), Dr N J Loader, Dr M Gagen and Dr S Davies; £8.4million with £1.0 million allocated to Swansea University), 40 partners.

SUPERVISION

PhD; current

- **Aaron Todd** (primary supervisor; submitted January 2025). *"Mapping hydrological pathways and apportioning sources of metals at Nant y Mwyn."*
- **Jyoti Stuart-Lawson** *(co-supervisor, started October 2024). "Refining the chronology and paleoclimatology of Chaco Canyon using stable isotope dendrochronology."*
- **Adetoun Adebunmi Afolabi** *(primary supervisor; started January 2024). "Evaluating the Socio-Environmental Benefits and Perceptions of Nature-Based Solutions."*

PhD; primary supervisor

- **Stuart Lee Cairns** (awarded 2023). "*Developing motorway balancing ponds with long-term net ecological value."*
- **Heather De-Quincey** (awarded 2021). *"Re-vegetation and stabilization of toxic mine waste using biochar compost."*
- **Rory Clisby** (awarded 2015). *"Is there a carbon dioxide fertilization effect in high elevation bristlecone pines?"*

- **Tommy Wils** (awarded 2009). *"Isotope dendroclimatological studies on* Juniperus procera *from Ethiopia: towards a reconstruction of Blue Nile baseflow."*

- **Rochelle Campbell** (awarded 2009). *"Dendroclimatology in central Sweden."*

- **Roderick Bale** (awarded 2008). "*Climatic reconstruction of the last 1000 years from bristlecone pine tree rings at Blanco, White Mountains, California, USA."*

PhD; co-supervisor

- **Sophie Claire Hocking** (with Prof. D Eastwood; awarded 2021). "*Enhancing Japanese knotweed control and long-term site restoration post-treatment."*

- **Eyob Gebrehiwot Gebregeorgis** (with Dr Marcin Koprowski, Nicolaus Copernicus University, Toruń, Poland; awarded 2019). *"Annual to Intra-annual Dendroclimatic Studies of Juniperus procera at Blue Nile's basin, Gonder Ethiopia"*

- **Jamie Williams** (with Dr Sietse O. Los; awarded 2014). *"The Effect of Water-Use Efficiency on Catchment Runoff in Great Britain."*

- **Ewan Woodley** (with Prof. Neil J. Loader; awarded 2010). *"Reconstructing the climate of Scotland using stable carbon and oxygen isotopes in tree rings."*

External Examiner

- **Emily Reid (PhD).** *"Tree rings and volcanoes: the climate of NW North America."* University of St Andrews (November 2024).

- **Bruno Barçante Ladvocat Cintra (PhD).** *"Spatial-temporal reconstruction of Amazon flood pulse and dry season length over the past century using tree rings and isotopes of floodplain tree species Macrolobium acaciifolium."* University of Leeds (May 2019).

- **Adalbert Ngongang (PhD).** *"A hierarchical Bayesian model for climate reconstruction."* University of Lancaster (February 2012).

- **Gemma Louise Williams (MPhil).** *Plant macrofossls from Lake Suigetsu, Japan.* Institute of Geography and Earth Sciences, University of Aberystwyth (January 2012).

- **Grant Hall (PhD)**. *Reconstruction of ancient environments using stable isotope analysis of archaeological charcoal from Sibudu Cave, KwaZulu-Natal*. Faculty of Science, University of Witwatersrand, South Africa (November 2009).

- **Elin Norström (PhD)**. *Late Quaternary climate and environmental change in the summer rainfall region of South Africa.* Department of Physical Geography and Quaternary Geology, University of Stockholm, Sweden (February 2008).

MEMBERSHIP OF PROFESSIONAL SOCIETIES

- Tree-Ring Society **(President 2018-2021)**
- Royal Society of Chemistry - Chartered Chemist (CChem, FRSC)
- Quaternary Research Association
- Association of Tree-Ring research

SELECTED RECENT PUBLICATIONS
(H-index = 44; tinyurl.com/GoogleScholar-Iain)

Groenendijk, P., Babst, F., Trouet, V., Fan, Z., Granato-Souza, D., Locosselli, G., Mokria, M., Panthi, S., Pumijumnong, N., Abiyu, A., Acuña-Soto, R., Adenesky-Filho, E., Alfaro-Sánchez, R., Junior, C., Aragão, J., Assis-Pereira, G., Astudillo-Sánchez, C., Barbosa, A., Barreto, N....**Robertson, I**, & Zuidema, P. (2025). The importance of tropical tree-ring chronologies for global change research. *Quaternary Science Reviews*, 355, 109233
https://doi.org/10.1016/j.quascirev.2025.109233

Xu, S., Zheng, C., Shang, Z., Zhang, Z., Kong, X., **Robertson, I.**, & Zhao, Z. (2024). A 903-year annual temperature reconstruction for the southeastern Tibetan Plateau from the tree ring widths of *Juniperus saltuaria. Scientific Reports*, *14*(1)
https://doi.org/10.1038/s41598-024-79096-6

Cairns, S., Meza Rojas, D., Holliman, P., & **Robertson, I.** (2024). Interactions Between Biochar and Nano(Micro)Plastics in the Remediation of Aqueous Media. *International Journal of Environmental Research*, *18*(5), 87
https://doi.org/10.1007/s41742-024-00635-0

Todd, A., **Robertson, I.**, Walsh, R., Byrne, P., Edwards, P., & Williams, T. (2024). Long-term changes in water quality downstream of three abandoned metal mines. *Journal of Hydrology*, *634*, 131011
https://doi.org/10.1016/j.jhydrol.2024.131011

Waszak N, Campelo F, **Robertson I**, Puchałka R, Balghiti F-ZE, Gričar J, et al. (2024). Fertilisation with potato starch wastewater effect on the growth of Scots pine (*Pinus sylvestris* L.) forest in Poland. *Trees*, Forests and People 15, 100480.
https://doi.org/10.1016/j.tfp.2023.100480.

Treydte, K., Liu, L., Padrón, R.S…. **Robertson, I** et al. Recent human-induced atmospheric drying across Europe unprecedented in the last 400 years. *Nature Geoscience* 17, 58–65 (2024). https://doi.org/10.1038/s41561-023-01335-8

Patrut, R.T.; Patrut, A.; Hall, G.; Winterbach, C.W.; **Robertson, I.**; Ratiu, I.A.; Bocos-Bintintan, V.; Rakosy, L.; Woodborne, S. (2023). A 900-Year Isotopic Proxy Rainfall Record from Northeastern Botswana. *Forests* 14, 1917. https://doi.org/10.3390/f14091917

Palmer, L., **Robertson, I.**, Lavergne, A., Hemming, D., Loader, N. J., Young, G., et al. (2022). Spatio-temporal variations in carbon isotope discrimination predicted by the JULES land surface model. *Journal of Geophysical Research: Biogeosciences*, 127, e2022JG007041.
https://doi.org/10.1029/2022jg007041

Cairns, S., Todd, A., **Robertson, I.**, Byrne, P., & Dunlop, T. (2022). Treatment of mine water for the fast removal of zinc and lead by wood ash amended biochar. Environmental Science: Advances 1, 506-516.
https://doi.org/10.1039/d2va00085g

Zuidema, P., Babst, F., Groenendijk, P., Trouet, V., Abiyu, A., Acuña-Soto, R., Adenesky-Filho, E., Alfaro-Sánchez, R., Aragão, J., Assis-Pereira, G., Bai, X., Barbosa, A., Battipaglia, G., Beeckman, H., Botosso, P., Bradley, T., Bräuning, A., Brienen, R., Buckley, B...., **Robertson, I.** … & Zhou, Z. (2022). Tropical tree growth driven by dry-season climate variability. *Nature Geoscience*, *15*(4), 269-276.
https://doi.org/10.1038/s41561-022-00911-8

Azizi, G., **Robertson, I.**, Karimi, M., & Ravari, M. (2020). Relationship between Altitude and Juniper Genus Tree-Rings Width Case Study: Juniperus Habitats in North of Kerman Province. Ecology of Iranian Forest, 8(15), 115-127. https://doi.org/10.52547/ifej.8.15.115

Cairns, S., **Robertson, I.**, Sigmund, G., & Street-Perrott, A. (2020). The removal of lead, copper, zinc and cadmium from aqueous solution by biochar and amended biochars. Environmental Science and Pollution Research, 27, 21702-21715. https://doi.org/10.1007/s11356-020-08706-3