

Adam Hartland

Senior Scientist, Lincoln Agritech Ltd. Adjunct Associate Professor, University of Waikato and Lincoln University, New Zealand. Founder and Managing Director, Waikato Scientific Ltd.

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ORCID 0000-0002-1864-5144. Google Scholar: 2,065 citations, h-index 28, i10-index 45 (August 2026).

Academic qualifications and career

- 2022 to now** **Senior Scientist, Lincoln Agritech Ltd.** Principal Investigator, Emerging Climatic Pressures programme (MBIE Endeavour, NZ\$11.4M, 2023 to 2028). Adjunct Associate Professor, University of Waikato and Lincoln University.
- 2016 to 2021** **Rutherford Discovery Fellow (90% research allocation), University of Waikato.**
- 2020** **Promoted to Associate Professor, University of Waikato.**
- 2012 to 2022** **Lecturer, Senior Lecturer, then Associate Professor, University of Waikato.** Founder and Director, Waikato Environmental Geochemistry research group.
- 2016 to 2020** **Visiting Researcher: University of Cambridge; JGU Mainz; PIK Potsdam.**
- 2011 to 2012** **Postdoctoral Research Fellow, University of New South Wales.** National Centre for Groundwater Research and Training.
- 2011** **PhD Geochemistry, University of Birmingham.** NERC Doctoral Scholarship; viva March 2011. Supervisor: Prof. Ian Fairchild.
- 2007** **BSc (Hons, First Class) Environmental Science, University of Birmingham.** Most Distinguished Student.

Research interests

Carbonate geochemistry as a unifying toolkit across Earth surface environments and timescales: speleothem palaeoclimate and palaeohydrology; kinetic proxy development for tropical cyclone and monsoon reconstruction; freshwater biogeochemistry; critical zone carbon cycling; calcium and metal stable isotopes; contaminant cycling in modified catchments.

Research funding (over NZ\$14.5M as principal investigator)

Period	Role	Title	Funder	Value
2023 to 2028	PI	Safeguarding te Mana o te Awa o Waikato from Emerging Climatic Pressures	MBIE Endeavour Fund	NZ\$11,400,000
2021 to 2024	PI	Quantifying past rainfall and climate extremes in New Zealand	MBIE Endeavour Fund	NZ\$1,000,000
2016 to 2021	PI	Rutherford Discovery Fellowship	Royal Society Te Apārangi	NZ\$800,000
2016 to 2020	PI (NZ)	QUEST: Quantitative paleoEnvironments from SpeleoThems (EU MSCA RISE; partners Cambridge, JGU Mainz, PIK Potsdam)	European Commission	NZ\$400,000
2018 to 2020	PI	An isotopic toolkit for cadmium management: from agrisystems to ecosystems	MBIE Endeavour Fund	NZ\$999,808
2015 to 2018	PI	The terrestrial carbon cycle in transition: tracking changes using novel tracers on multiple timescales	Marsden Fast-Start	NZ\$300,000
2018, 2020	PI	Synchrotron beam time awards (XFM)	Australian Synchrotron	AU\$132,000
2012 to 2014	PI	Aquitards: a globally significant carbon sink?	AINSE	AU\$24,000
2008	PI	Characterisation of colloids in karst percolation waters	BCRA / CSTRl	NZ\$12,000

Associate investigator: MBIE Endeavour (\$8M); Marsden Fast-Start (\$330K); NZ Antarctic Research Institute; MBIE Smart Ideas (three awards).

Publications

65 peer-reviewed articles; two books or book chapters. Selected publications (* denotes primary PhD supervision):

Hartland A, Melchior M, Hamilton DP, Lehto NJ, Mullarney JC, Sandwell D, Robb L, Jabbari A, Lang J, Clague J, Özkundakci D, Hofstra D (2026) Carbonate-system perturbation by invasive bivalves threatens drinking-water security in calcium-limited catchments. *Environmental Science & Technology* doi 10.1021/acs.est.6c03421. Published online 19 August 2026.

James DH, Bradbury HJ, Carolin SA, Breitenbach SFM, Cheng H, Orland IJ, Curtis JH, **Hartland A**, Gallup C, Kwiecien O, Mason AJ, Henderson GM, Brenner M, Turchyn AV, Hodel DA (2026) Pronounced drought and wet periods during the Maya Terminal Classic period reconstructed using stalagmite calcium isotopes. *Earth and Planetary Science Letters* 691: 120226.

Hartland A, et al. (2026) Decoupled infiltration and isotope signals reveal a hidden East Asian monsoon megadrought. *Nature Communications* In revision.

Moseley GE, Koltai G, Baker JL, Wang J, Stoll H, Donner A, Friedrich L, Spötl C, Smith MP, Scholz D, Cheng H, **Hartland A**, Hejny C, Edwards RL (2025) Late Miocene Arctic warmth and terrestrial climate recorded by North Greenland speleothems. *Nature Geoscience* 18: 1252 to 1258.

Fox BRS, Lascu I, Harrison R, Pearson AR*, Hellstrom J, Breitenbach SFM, Einsle JF, Muraszko J, **Hartland A** (2025) Multi-domain magnetic particles in speleothems as a proxy for past cave-stream flooding: a 33 kyr record from central North Island, Aotearoa New Zealand. *Quaternary Science Reviews* 356: 109289.

Hartland A, Farrant M, Höpker SN*, Torres Rojas D, Saeed H*, Rivas A, La Croix A, Grainger M, O'Neill T (2024) Mines to moana: hydrochemical legacies in a historically mined watershed. *Applied Geochemistry* 171: 106104.

Pearson AR*, Fox BRS, Hellstrom JC, Vandergoes MJ, Breitenbach SFM, Drysdale RN, Höpker SN, Wood CT, Schiller M, **Hartland A** (2024) Warming drives dissolved organic carbon export from pristine alpine soils. *Nature Communications* 15: 3522.

Höpker SN*, Breitenbach SFM, Grainger M, Stirling CH, **Hartland A** (2024) Characterising the decay of organic metal complexes in speleothem-forming cave waters. *Geochimica et Cosmochimica Acta* 373: 98 to 108.

Nava-Fernandez C*, Braun T, Pederson CL, Fox B, **Hartland A**, Kwiecien O, Höpker SN, Bernasconi S, Jaggi M, Hellstrom J, Gázquez F, French A, Marwan N, Immenhauser A, Breitenbach SFM (2024) Mid-Holocene rainfall seasonality and ENSO dynamics over the south-western Pacific. *The Depositional Record* 10: 176 to 194.

Giesche A, Hodel DA, Petrie CA, Haug GH, Adkins JF, Plessen B, Marwan N, Bradbury HJ, **Hartland A**, French AD, Breitenbach SFM (2023) Recurring summer and winter droughts from 4.2 to 3.97 thousand years ago in north India. *Communications Earth & Environment* 4: 103.

Warken SF, Kuchalski L, Schröder-Ritzrau A, Vieten R, Schmidt M, Höpker SN, **Hartland A**, Spötl C, Scholz D, Frank N (2022) The impact of seasonal and event-based infiltration on transition metals (Cu, Ni, Co) in tropical cave drip water. *Rapid Communications in Mass Spectrometry* 36: e9278.

Lindeman I*, Hansen M, Scholz D, Breitenbach SFM, **Hartland A** (2022) Effects of organic matter complexation on partitioning of transition metals into calcite: cave-analogue crystal growth experiments. *Geochimica et Cosmochimica Acta* 317: 118 to 137.

Hartland A, Zitoun R (2018) Transition metal availability to speleothems controlled by organic binding ligands. *Geochemical Perspectives Letters* 8: 22 to 25.

Salmanzadeh M*, **Hartland A**, Stirling CH, Balks MR, Schipper LA, Joshi C, George E (2017) Isotope tracing of long-term cadmium fluxes in an agricultural soil. *Environmental Science & Technology* 51: 7369 to 7377.

Hartland A, Larsen JR, Andersen MS, Baalousha M, O'Carroll D (2015) Association of arsenic and phosphorus with iron nanoparticles between streams and aquifers: implications for arsenic mobility. *Environmental Science & Technology* 49: 14101 to 14109.

Hartland A, Fairchild IJ, Müller W, Dominguez-Villar D (2014) Preservation of NOM-metal complexes in a modern hyperalkaline stalagmite: implications for speleothem trace element geochemistry. *Geochimica et Cosmochimica Acta* 128: 29 to 43.

Hartland A, Fairchild IJ, Lead JR, Borsato A, Baker A, Frisia S, Baalousha M (2012) From soil to cave: transport of trace metals by natural organic matter in karst dripwaters. *Chemical Geology* 304 to 305: 68 to 82.

Fairchild IJ, Baker A, with contributions from Asrat A, Dominguez-Villar D, Gunn J, **Hartland A**, Lowe D (2012) Speleothem Science: From Process to Past Environments. *Wiley-Blackwell* 432 pp.

Research supervision

Chief supervisor for six completed PhDs (Saeed 2022, Mohammadi 2022, Höpker 2024, Pearson 2020, Muraoka 2019, Salmanzadeh 2017) and three MSc; contributing supervisor for a further nine doctoral students to completion. PhD students have published in Nature Communications, Geochimica et Cosmochimica Acta, Environmental Science & Technology and Science of the Total Environment. Currently supervising two doctoral students at Lincoln University.

Mentored early-career researchers to fellowship success: Dr Beth Fox (Marsden Fast-Start), Dr Terry Isson (Rutherford Discovery Fellowship), Dr Andrew La Croix (Endeavour Smart Ideas), Dr Megan Grainger (Marsden Fast-Start).

Teaching

- 2013 to 2022** **Convenor and lecturer, University of Waikato:** CHEM261, CHEM361, CHEM516 (analytical and environmental geochemistry, isotope systems, Earth surface processes), undergraduate and postgraduate level.
- 2017, 2019** **Invited Expert, Summer School of Speleothem Science (S4).** Intensive international postgraduate short course.
- 2022 to now** **Postgraduate supervision and advisory roles, University of Waikato and Lincoln University (adjunct).**
- 2010** **Invited Lecturer, Ion Partitioning, European Mineralogical Union Summer School, Burgos, Spain.**

Prizes and distinctions

Kudos WRC Environmental Scientist Award (2020). Invited keynote, Geoscience Society of New Zealand (2020). Invited keynote, Climate Change: the Karst Record 7, Melbourne (2014). Invited seminars: University of Lausanne, University of Savoie, University of Wisconsin-Madison, University of Hawaii (2016). Invited speaker, National Freshwater Conference, Te Papa (2024). Most Distinguished Student, BSc Environmental Science, University of Birmingham (2007).

Funding panels and editorial service

Marsden Fund panel member, Earth Sciences and Astronomy (2022 to 2024). MBIE College of Assessors (2020 to present). Chairperson, New Zealand Trace Elements Group (2018 to present). Associate Editor, Scientific Reports (2015 to 2020). Australian Synchrotron XFM working group (2024). Reviewer for Nature Geoscience, Nature Communications, Geochimica et Cosmochimica Acta, Environmental Science & Technology, Quaternary Science Reviews and Earth and Planetary Science Letters.

Entrepreneurship and technology transfer

Founder and Managing Director, Waikato Scientific Ltd, which manufactures and markets the SYP autosampler for automated water quality monitoring and is currently entering the US institutional market. Licensed IP from the University of Waikato. Briefed the Murray-Darling Basin Authority (July 2026) on invasive bivalve impacts on river carbonate chemistry.

Public engagement

River Diaries, a Substack on freshwater science and management (riverdiaries.substack.com); The Conversation (2025, 2026); NZ Herald; RNZ Our Changing World; TVNZ 1 News; Waatea News; Royal Society Te Apārangi 150th anniversary article.

Referees available on request.