

JAMES A. BRADLEY

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EDUCATION

- PhD, Physical Geography, University of Bristol, UK** **2013-2016**
Thesis: Microbial dynamics in High-Arctic proglacial soils: an integrated modelling, field and laboratory approach.
- BSc, 1st Class with Honours, Physical Geography, University of Bristol, UK** **2008-2011**
Thesis: Geoengineering the climate with forestation: the albedo effect.

PROFESSIONAL ACADEMIC APPOINTMENTS

- Queen Mary University of London, UK.** **2019-Present**
Lecturer (Assistant-Professor)
- GFZ German Research Centre for Geosciences, Germany.** **2018-Present**
Humboldt Fellow, Alexander von Humboldt Foundation.
- University of Southern California, Department of Earth Sciences, USA.** **2018-2019**
Postdoctoral Fellow, Deep Carbon Observatory, Alfred P. Sloan Foundation.
- University of Southern California, Department of Earth Sciences, USA.** **2016-2018**
Postdoctoral Fellow, Centre for Dark Energy Biosphere Investigations, NSF.
- University of Bristol, UK.** **2013-2016**
PhD Student, School of Geographical Sciences.

PUBLICATIONS

Peer-Reviewed Articles

- Bradley J**, Amend J, LaRowe D. Survival of the fewest: Microbial dormancy and maintenance in marine sediments through deep time. *Geobiology*. doi: 10.1111/gbi.12313 **2019**
- Bradley J**, Amend J, LaRowe D. Necromass as a limited source of energy for microorganisms in marine sediments. *Journal of Geophysical Research: Biogeosciences*. doi: 10.1002/2017JG004186 **2018**
- Bradley J**, Amend J, LaRowe D. Bioenergetic controls on microbial ecophysiology in marine sediments. *Frontiers in Microbiology – Extreme Microbiology*. doi: 10.3389/fmicb.2018.00180 **2018**
- Bradley J**, Daille L, Trivedi C, Bojanowski C, Stamps B, Stevenson B, Nunn H, Johnson H, Loyd S, Berelson W, Corsetti F, Spear J. Carbonate-Rich Dendrolitic Cones: Insights into a Modern Analogue for Incipient Microbialite Formation, Little Hot Creek, Long Valley Caldera, California. *npj Biofilms and Microbiomes*. doi:10.1038/s41522-017-0041-2 **2017**
- Stibal M, **Bradley J**, Box J. Ecological modelling of the supraglacial ecosystem: a process-based perspective. *Frontiers in Earth Science – Cryospheric Sciences*. doi: 10.3389/feart.2017.00052 **2017**
- Bradley J**, Anesio, A, Arndt S. Microbial and biogeochemical dynamics in glacier forefields are sensitive to century-scale climate and anthropogenic change. *Frontiers in Earth Science – Biogeoscience*. doi:10.3389/feart.2017.00026 **2017**
- Bradley J**, Arndt S, Sabacka M, Benning L, Barker G, Blacker J, Yallop M, Wright K, Bellas C, Telling J, Tranter M, Anesio A. Microbial dynamics in a High-Arctic glacier forefield: a combined field, laboratory, and modelling approach. *Biogeosciences*. doi:10.5194/bg-13-5677-2016 **2016**

Bradley J , Anesio A, Arndt S. Bridging the divide: A model-data approach to Polar & Alpine Microbiology. <i>FEMS Microbiology Ecology</i> . doi:10.1093/femsec/fiw015	2016
Pearce D, Irina A, Terauds A, Wilmotte A, Quesada A, Edwards A, Dommergue A, Sattler B, Adams B, Magalhães C, Wan Loy C, Yim M. Lau C, Cary C, Smith D, Wall D, Eguren G, Matcher G, Bradley J , Devera J, Elster J, Hughes K, Benning L, Gunde-Cimerman N, Convey P, Gyu Hong S, Pointing S, Pellizari V, Vincent W. Aerobiology over Antarctica – a new initiative for atmospheric ecology. <i>Frontiers in Microbiology – Terrestrial Microbiology</i> . 7. doi: 10.3389/fmicb.2016.00016	2016
Bradley J , Anesio A, Singarayer J, Heath M, Arndt S. SHIMMER (1.0): A novel mathematical model for microbial and biogeochemical dynamics in glacier forefield ecosystems. <i>Geoscientific Model Development</i> . 8, 3441-3470. doi:10.5194/gmd-8-3441-2015	2015
Bradley J , Singarayer J, Anesio A. Microbial community dynamics in the forefield of glaciers. <i>Proceedings of the Royal Society B</i> . 281: 20140882. doi:10.1098/rspb.2014.0882	2014

Book Chapters

Bradley J . Microbial dynamics in forefield soils following glacier retreat. In: Liebner, S (Ed.) <i>Microbial life In the Cryosphere and its feedback on Global change</i> . de Gruyter, Berlin, Germany.	In press
Lutz S, Bradley J . Glacial surfaces: functions and biogeography. In: Liebner, S (Ed.) <i>Microbial life In the Cryosphere and its feedback on Global change</i> . de Gruyter, Berlin, Germany.	In press

GRANTS, FELLOWSHIPS, AND AWARDS

Total: USD 352,195

Humboldt Research Fellowship for Postdoctoral Researchers Alexander von Humboldt Foundation, EUR 85,680	2018-2021
Deep Carbon Observatory, DLMV Postdoctoral Fellowship Modelling the role of dormancy and maintenance of microorganisms on carbon transformations in marine sediments. USD 33,375	2018-2019
NASA Travel Award 12 th International Congress of Extremophiles, 2018, Ischia, Italy. USD 2,000	2018
USC Postdoctoral Research Symposium: Oral Presentation Prize University of Southern California, Los Angeles, USA. USD 250	2018
Antarctic Service Medal , United States Congress	2018
Centre for Dark Energy Biosphere Investigations, Postdoctoral Fellowship Develop a 1D biogeochemical-evolutionary model for deep marine sediments. USD 215,429	2016-2018
University of Southern California, Postdoctoral Scholar Training & Travel Award International workshop on Marine Geomicrobiology, 2017, Sandbjerg, Denmark. USD 500	2017
Natural Environmental Research Council, Antarctic Circumnavigation Expedition (ACE) Contributing Applicant, BIOAIR. Principal Investigator: David Pearce, Northumbria University.	2016
ABTA Doctoral Research Award: Honourable Mention	2016
European Association of Geochemistry, Student Sponsorship Award European Geosciences Union General Assembly 2016, Vienna, Austria. EUR 500	2016
European Geosciences Union, Early Career Scientist's Travel Award EUR 275	2016
Scott Polar Research Institute, Gino Watkins Memorial Fund Lead investigator on small grant to support winter/spring fieldwork in Svalbard. GBP 500	2015
University of Bristol, Alumni Foundation Travel Award	2015

Polar & Alpine Microbiology Conference 2015, České Budějovice, Czech Republic. GBP 500	
Agouron Institute, International Geobiology Course	2015
USD 4,000	
John Muir Trust, Bill Wallace Grant	2014
Lead investigator on small grant to support fieldwork in Greenland. GBP 500	
Natural Environmental Research Council, PhD Studentship	2013-2016
University of Bristol Faculty of Science, Outstanding Academic Success Award.	2011
Royal Geographical Society 'Climate Change Research Group' dissertation award, nomination	2011

SOFTWARE

MicroLow 1.0

Microbial model for growth and maintenance of active and dormant microorganisms in low-energy environments. Open source, executed in R.

https://github.com/jbradley8365/MICROLOW_1.0_SOURCE

SHIMMER 1.0

Microbial-biogeochemical model for Arctic soils. Open source, executed in R.

https://github.com/jbradley8365/2016_17_SHIMMER_demo

INVITED PRESENTATIONS

Oral*, Poster°

Bradley, J. et al. DeepCarbon 2019: Launching the Next Decade of Deep Carbon Science. Washington, DC, USA.	10.2019
*Bradley, J. et al. Bio-energetics of life in marine sediments on a global scale. 2 nd Geobiology Society Conference, Banff, Canada.	06.2019
*Bradley, J. Bio-energetics of life in marine sediments. GFZ Helmholtz Centre, Potsdam, Germany.	05.2019
*Bradley, J. Widespread energy limitation in global marine sediments, Department of Earth and Planetary Sciences, McGill University, Montreal, Canada.	02.2019
*Bradley, J. et al. Bioenergetics of life in the marine subsurface. Inaugural Symposium for the International Center for Deep Life Investigation (ICDLI) and Deep Life Community Meeting, Shanghai, China.	11.2018
*Bradley, J. Survival of the fewest: Microbial energetics in marine sediments. Department of Earth Sciences, University of Southern California, USA.	10.2018
*Bradley, J. Microbial energetics, dormancy, and maintenance in marine sediments through deep time. California Institute of Technology, USA.	04.2018
*Bradley, J. Modelling the role of dormancy and maintenance of microorganisms on carbon transformations in marine sediments. Deep Carbon Observatory DLMV workshop, Arizona State University, USA.	03.2018
*Bradley, J. Quantifying microbial processes and their role as drivers of biogeochemical cycles, using integrated model-data approaches. Woods Hole Oceanographic Institution	03.2018
°Bradley, J. et al. Necromass as a source of energy for microorganisms in marine sediments. American Geophysical Union Fall Meeting, New Orleans, USA	12.2017
*Bradley, J. et al. Necromass as a limited source of energy for microorganisms in marine sediments. C-DEBI Annual Meeting, Marina, California, USA	11.2017
*Bradley, J. Necromass as a limited source of energy for microorganisms in marine sediments. University of Bristol, Bristol, UK	09.2017
°Bradley, J. et al. Develop a 1D biogeochemical-evolutionary model for deep marine sediments. C-DEBI Annual Meeting, Marina, California, USA	10.2016
*Bradley, J. et al. Modelling microbial processes during soil formation in a High-Arctic glacier forefield. Goldschmidt Conference, Yokohama, Japan	06.2016

- ***Bradley, J.** et al. Characterisation of Arctic Soil Development Using the New Biogeochemical Model: SHIMMER. 22nd International Symposium on Polar Sciences, Korea Polar Research Institute, Incheon, Republic of Korea **05.2016**
- °**Bradley, J.** et al. Characterising the initial stages of soil formation in the High Arctic. NERC GW4 & DTP Launch Event, Natural History Museum, London, UK **01.2014**

CONFERENCE PRESENTATIONS

Oral*, Poster°

(Presenting author only)

- Bradley, J.** et al. DeepCarbon 2019: Launching the Next Decade of Deep Carbon Science. Washington, DC, USA. **10.2019**
- ***Bradley, J.** et al. Bio-energetics of microbial life in marine sediments. Goldschmidt, Barcelona, Spain. **08.2019**
- ***Bradley, J.** et al. Bioenergetics of life in marine sediments on a global scale. 2nd Geobiology Society Conference, Banff, Canada. **06.2019**
- °**Bradley, J.** et al. Bioenergetics of life in marine sediments on a global scale. C-DEBI Annual Meeting, Marina, California, USA. **11.2018**
- °**Bradley, J.** et al. Survival of the fewest: Microbial energetics in oligotrophic marine sediments. C-DEBI Annual Meeting, Marina, California, USA. **11.2018**
- ***Bradley, J.** et al. Bioenergetics of life in the marine subsurface. Inaugural Symposium for the International Center for Deep Life Investigation (ICDLI) and Deep Life Community Meeting, Shanghai, China. **11.2018**
- °**Bradley, J.** et al. Microbial energetics in oligotrophic marine sediments. 12th International Congress of Extremophiles, Ischia, Italy. **09.2018**
- ***Bradley, J.** et al. Energetics of life in the deep biosphere. 3rd Annual Postdoctoral Research Symposium, University of Southern California, Los Angeles, USA. **05.2018**
- °**Bradley, J.** et al. Necromass as a source of energy for microorganisms in marine sediments. American Geophysical Union Fall Meeting, New Orleans, USA. **12.2017**
- ***Bradley, J.** et al. Necromass as a limited source of energy for microorganisms in marine sediments. C-DEBI Annual Meeting, Marina, California, USA. **11.2017**
- °**Bradley, J.** et al. Necromass as a source of energy for microorganisms in marine sediments. International workshop on Marine Geomicrobiology – A Matter of Energy, Sandbjerg, Denmark **08.2017**
- ***Bradley, J.** et al. Utilization of microbial necromass in marine sediments. 14th Annual Southern California Geobiology Symposium, Los Angeles, USA **04.2017**
- ***Bradley, J.** et al. Modelling microbial processes during soil formation in a High-Arctic glacier forefield. Goldschmidt, Yokohama, Japan **06.2016**
- °**Bradley, J.** et al. Investigating the initial stages of soil formation in glacier forefields using the new biogeochemical model: SHIMMER. European Geosciences Union General Assembly, Vienna, Austria **04.2016**
- °**Bradley, J.** et al. Vertical Microbial Community Variability Of Carbonate-based Cones May Provide Insight Into Ancient Conical Stromatolite Formation. European Geosciences Union General Assembly, Vienna, Austria **04.2016**
- ***Bradley, J.** et al. Microbial community dynamics in the forefield of glaciers – a modelling perspective. UK Arctic Science Conference, Sheffield **09.2015**
- ***Bradley, J.** et al. Microbial community dynamics in the forefield of glaciers – a modelling perspective. 6th International Conference on Polar and Alpine Microbiology, České Budějovice, Czech Republic **09.2015**
- ***Bradley, J.** et al. Polar Ecosystems and Marine Implications. Marine Science and Technology, British Council Researcher Links Workshop, Santa Marta, Colombia **11.2014**
- °**Bradley, J.** et al. Microbial community dynamics in the forefield of glaciers. International Glaciological Society British Branch Meeting, Bristol **09.2014**
- °**Bradley, J.** et al. Microbial community dynamics in the forefield of glaciers. UK Antarctic Research Symposium, Bristol, UK **09.2014**

°Bradley, J. et al. Modelling microbial community development in deglaciated forefield soils. Natural Systems and Processes, Bristol, UK	03.2014
°Bradley, J. et al. Characterising the initial stages of soil formation in the High Arctic. Understanding Uncertainty in Environmental Modelling, CATS/LSE, London, UK	01.2014
°Bradley, J. et al. Characterising the initial stages of soil formation in the High Arctic. Life In The Cold, Leeds, UK	11.2013

EXTERNAL MEETINGS AND WORKSHOPS

Invited Participant*

* DeepCarbon 2019: Launching the Next Decade of Deep Carbon Science. Washington, DC, USA.	10.2019
* C-DEBI Annual Meeting, Marina, California, USA.	11.2018
* Inaugural Symposium for the International Center for Deep Life Investigation (ICDLI) and Deep Life Community Meeting, Shanghai, China.	11.2018
Deep Sea Mining Impacts on Microbial Ecosystem Services, Bigelow Laboratory for Ocean Sciences, Maine, USA.	04.2018
* Deep life modelling and visualization. Deep Carbon Observatory sponsored workshop, Arizona State University, USA	03.2018
* Microorganisms and organic carbon in the marine subsurface. C-DEBI sponsored workshop, University of Tennessee, Knoxville, USA	03.2018
* C-DEBI Annual Meeting, Marina, California, USA.	11.2017
International workshop on Marine Geomicrobiology – A matter of energy. Sandbjerg, Denmark.	09.2017
* C-DEBI Annual Meeting, Marina, California, USA.	10.2018
Marine Science and Technology, British Council Researcher Links and Newton Fund sponsored workshop, Santa Marta, Colombia.	11.2014
Quantifying albedo feedbacks and their role in mass balance of the Arctic terrestrial cryosphere, IASC/ICARP III workshop, University of Bristol, UK.	09.2014
Understanding uncertainty in environmental modelling, NERC sponsored workshop. London School of Economics, UK.	01.2014
Life in the cold workshop, University of Leeds, UK.	11.2013
Glacial Biogeochemistry workshop, University of Bristol, UK.	03.2013

TEACHING AND MENTORING

Undergraduate and Graduate student research supervision, University of Bristol	2014-2017
Undergraduate and Graduate Classes, University of Bristol	2013-2016
Guest Lecturer, University of Bristol	2015
Tutor & Discussion group leader, University of Bristol	2013-2016
Mentor for students with disabilities, University of Bristol. 5 students. Working with disabled students for one to one support meetings and academic assistance.	2013-2016

FIELD EXPERIENCE

McMurdo Sound, Antarctica Sea-ice based fieldwork investigating biological adaptation of Polar organisms to environmental change.	2018
Long Valley Caldera, USA Fieldwork in California and Nevada on modern (hot springs, lakes) and ancient outcrop settings. Carbonate, organic, and sulphur geochemistry, genomics (16S rRNA and metagenomics), petrography, microscopy, isotope geochemistry.	2015
Svalbard	2015

SNOW WAKE winter/spring sampling campaign. Geochemical and biological sampling of snow, lake ice, cryoconite, soils.	
Russel Glacier, Greenland	2014
Arctic Soils summer campaign. Geochemical and biological sampling of soils and cryoconite.	
Svalbard	2013
Arctic soils summer sampling campaign. Geochemical and biological sampling of soils and cryoconite.	
Haut d'Arolla, Switzerland	2010
Field training in geochemical, biological and hydrological analyses.	

SELECTED COURSES AND TRAINING

NSF Advanced Training Program in Antarctica	2018
Biological Adaptations to Environmental Change, McMurdo Station, Antarctica.	
International Geobiology Course, University of Southern California	2015
Intensive 5 week course combining lectures, modelling, fieldwork and laboratory analyses (University of Southern California and California State University, Fullerton). Carbonate, organic, and sulphur geochemistry, genomics (16S rRNA and metagenomics), petrography, microscopy, isotope geochemistry.	
Nonlinear Dynamics: Mathematical and Computational Approaches	2015
Online Complexity Explorer course, Santa Fe Institute and Portland State University.	
Earth System Modelling with GENIE	2015
University of Bristol, UK	
Freshwater Taxonomic and Field Technique Course	2015
Natural History Museum, UK.	
Introduction to Mathematical Modelling for the Environmental and Biological Sciences	2015
University of Stirling, UK.	
Marine Science and Technology Researcher Links workshop, British Council	2014
Santa Marta, Colombia.	
Introduction to Ecological Modelling	2014
UCL, UK	
Building your own ODE ecological models in R	2014
University of Strathclyde, UK.	
Molecular Techniques for Taxonomy	2014
Introduction to molecular ecology, laboratory training including DNA extraction, PCR and gene sequencing. Natural History Museum, UK.	
Understanding Uncertainty in environmental modelling	2014
London School of Economics, UK	

PROFESSIONAL SERVICE

Reviewer for internationally peer-reviewed journals	2017-Present
<i>Nature Communications, ISME Journal, Environmental Microbiology, Geobiology, FEMS Microbiology Ecology, Geoderma, Astrobiology.</i>	
Reviewer for NSF Research Proposals	2017-Present
European Association of Geochemistry Communications Committee	2017-Present
Chair of Bristol Glaciology Centre weekly seminar seminars	2014-2016
Conference Organization	
International Glaciological Society British Branch Meeting, Bristol, UK	2014
UK Antarctic Research Symposium, Bristol, UK	2014

COMMUNITY ENGAGEMENT AND OUTREACH

International Polar Foundation	2018
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Design a flag for Antarctica	
Antarctica Expedition: Student Questions & Answers	2018
https://antarcticatrainees2018.weebly.com/	
Life in Extremes	2015
Exhibit at the Science Museum, London, UK, with the Royal Society.	
Digital Explorer "Arctic Live" event	2015
Direct classroom interaction (via Skype interviews) with schools worldwide from the UK Arctic Research Station, Svalbard.	
Sircome collaboration	2015
Photographs and motivational piece, integrating Arctic soils research.	
Sutton Trust Summer School	2013-2014
Bristol Ice Explorers	2014
Room 13 Hareclive Academy for a polar science education and exploration day and ongoing art project with 8-11 year olds.	
Access To Bristol	2013

MEDIA

SuperScience: 120 Recent Scientific Discoveries	2019
Illustrated book documenting the most surprising or interesting studies in the world. <i>Le Courier du Livre/Guy Tredaniel Publisher.</i>	
Scientific American: Inside Earth, Microbes Approach Immortality: Mostly dead is slightly alive.	2019
https://blogs.scientificamerican.com/artful-amoeba/inside-earth-microbes-approach-immortality/	
New Scientist: 75-million-year old ocean microbes live forever on almost zero energy.	2018
https://www.newscientist.com/article/2182271-75-million-year-old-ocean-microbes-live-forever-on-almost-zero-energy/	
DCO Research News: How microbes survive when buried alive.	2018
https://deepcarbon.net/how-microbes-survive-when-buried-alive	
Eos Research Spotlight: Life and Death in the Deepest Depths of the Seafloor.	2018
https://eos.org/research-spotlights/life-and-death-in-the-deepest-depths-of-the-seafloor	
DOI: 10.1002/2017JG004186	
Antarctic Sun: A World-Class Classroom At The Bottom Of The World.	2018
https://antarcticsun.usap.gov/science/contentHandler.cfm?id=4360	
Mines Newsroom: Microbial hot spring structures offer clues into geological past.	2017
http://www.minesnewsroom.com/news/microbial-hot-spring-structures-offer-clues-geological-past	
DOI: 10.1038/s41522-017-0041-2	
Frontiers Blog: Microbial colonisers of Arctic soils are sensitive to future climate change.	2017
https://blog.frontiersin.org/2017/04/04/microbial-colonisers-of-arctic-soils-are-sensitive-to-future-climate-change/	
DOI: 10.3389/feart.2017.00026	
Science Daily: Microbial colonisers of Arctic soils are sensitive to future climate change.	2017
https://www.sciencedaily.com/releases/2017/04/170403091317.htm	
DOI: 10.3389/feart.2017.00026	
University of Bristol News: Simple forms of life are quick to colonise new 'desert' landscapes created by shrinking Arctic ice	2016
http://www.bristol.ac.uk/news/2016/october/arctic-ice.html	
DOI: 10.5194/bg-13-5677-2016	
Phys.Org: Simple forms of life are quick to colonise new 'desert' landscapes created by shrinking Arctic ice	2016
https://phys.org/news/2016-10-simple-life-quick-colonise-landscapes.html	

PROFESSIONAL AFFILIATIONS

**American Geophysical Union
International Geological Society
European Polar and Alpine Microbiology Society
British Society of Soil Science
European Geosciences Union
European Association of Geochemistry
Deep Carbon Observatory
Cabot Institute
The Mineralogical Society
Astrobiology Society of Britain
Humboldt Foundation
The Geobiology Society**