Emily R. Bamber

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Title A Research Fellow, Trinity College, University of Cambridge, UK Oct 2024 – present

Education

PhD, Jackson School of Geosciences, the University of Texas at Austin, TX, USA Jan 2020 – Aug 2024
Dissertation: Formation of Lakes on Mars: Rivers versus Crater Rims
advisor: Tim Goudge

MEarthSci *first class*, Department of Earth Sciences, University of Oxford, UK Oct 2014 – May 2018
Dissertation: Assessing formation history of Izu Island anorthite-rich plagioclase phenocrysts.
advisors: Nick Tosca, David Pyle, Kerri Donaldson-Hanna

Publications

Bamber, E. R., (2024) *Rivers versus Crater Rims: How to Form a Lake on Mars. Chapter 4: Modeling the Influence of Impact Crater Morphology on Fluvial Characteristics and Connectivity.* [Doctoral dissertation chapter, University of Texas at Austin - *in preparation for peer-reviewed publication*].

Goudge, T.A., Fassett, C. I., Coholich, M., **Bamber, E. R.**, (2023) Assessing Controls on the Incomplete Draining of Martian Open-Basin Lakes. *Journal of Geophysical Research – Planets*, 128, e2022JE007443, DOI: 10.1029/2022JE007443.

Bamber, E. R., Goudge, T. A., Fassett, C. I., Osinski, G. R., Stucky de Quay, G. (2022b). Paleolake inlet valley formation: Factors controlling which craters breached on early Mars. *Geophysical Research Letters,* 49(24). DOI: 10.1029/2022GL101097

Bamber, E. R., Goudge, T. A., Fassett, C. I., Osinski, G. R. (2022a). Constraining the formation of paleolake inlet valleys across crater rims. *Icarus*, 378, 114945, DOI: 10.1016/j.icarus.2022.114945

Rampe, E., Horgan, B., Smith, R., Scudder, N., **Bamber, E. R.**, Rutledge, A., Christoffersen, R. (2022). A mineralogical study of glacial flour from Three Sisters, Oregon: An analog for a cold and icy early Mars. *Earth and Planetary Science Letters,* 584, 117471, DOI: 10.1016/j.epsl.2022.117471

Proposals

NASA Future Investigators (FINESST) Program 2020: *Exploring Controls on the Lack of Valley Network-Fed Crater Lakes on Early Mars.* ***FI: Emily Bamber*** *(proposal written entirely by Bamber), PI: T. A. Goudge*

NASA Mars Data Analysis Program 2021: *How Do Crater Lakes on Mars Develop Inlets?*
PI: T. A. Goudge, ***Emily Bamber*** *was a contributor.*

Select Honours & Awards

2023 Jackson School of Geosciences Analytical Research Grant
2022 Eugene & Carolyn Shoemaker Impact Crater Research Award
2022 Jackson School of Geosciences Off-Campus Research Fund Award
2022 Center for Planetary Systems Habitability Travel Award to LPSC
2021 Early Career Graduate Student Presentation Award (2nd), JSG Research Symposium
2020 AGU Outstanding Student Presentation Award (OSPA)
2020 Jackson School of Geosciences, Recruitment Fellowship
2018 Royal Astronomical Society Travel Grant to attend LPSC
2018 USRA Travel Grant to attend LPSC
2017 Anjool Maldé Memorial Scholarship, University of Oxford
2017 Shell Prize for Performance in Geochemistry, University of Oxford
2017 Royal Astronomical Society Travel Grant to attend LPSC
2016 St Peter's Christian Deelman Travel Fund, University of Oxford
2016 Fieldwork Grant, St Peter's College, University of Oxford
2016 Fieldwork Grant, Department of Earth Sciences, University of Oxford
2016 Collection Prize, St Peter's College, University of Oxford

Select Presentations

2025 MIT, Planetary Geology Seminar [**talk**], *Rivers versus Craters*

2024	Lunar & Planet. Sci. Conf., [**talk**], *How do impact craters influence fluvial structure? A modeling approach.*
2024	MIT, Gaia Group Seminar [**talk**], *Forming Lakes on Mars: Rivers vs. Crater Rims*
2024	British Planetary Science Conference, [**talk**], *How Do Rivers Traverse Impact Crater Topography?*
2023	AGU, [**invited**, poster], *Modeling Mars' Competition Between Impact Crater Rims and Fluvial Connectivity*
2023	GSA, [**invited, talk**], *Hydrology versus Crater Rims: How to Form a Lake on Mars* & [poster] M*odeling Martian Lake Formation by Inlet Valley Breaching*
2023	GSA Penrose, [poster], *Overflow as a mechanism of crater lake-inlet valley formation*
2023	EGU, [poster] *Investigating Crater Inlet Valley Formation: Field Study at Lonar Crater, India*
2023	Kerala University [**talk**], *How do drainages cross crater rims from upstream?*
2023	Lunar & Planet. Sci. Conf., [poster] *Factors Controlling Which Craters Developed Inlet Valleys on Early Mars*
2023	Lunar & Planet. Sci. Conf., [poster] *Impact Crater Lakes and Fluvial Valley Incision on Early Mars (contributor)*
2023	Lunar & Planet. Sci. Conf., [poster] *Cascading boulder and boulder track experiment at Barringer Meteorite Crater (aka Meteor Crater), Arizona. (contributor)*
2022	Lunar & Planet. Sci. Conf., [**talk**], *Exploring Controls on the Fluvial Breaching of Degraded Impact Craters*
2021	Lunar & Planet. Sci. Conf., [poster], *Formation of Inlet Valleys into Crater-Hosted Lakes on Mars*
2020	AGU, [e-Lightning poster], *Insight into Erosion and Lake-Filling Process from Crater Rim Fluvial Breaches on Mars. (*AGU Outstanding Presentation Award (OSPA))*

Fieldwork, Workshops & Courses

2023	Cape Verde Fieldwork: Assessed river morphologies and collected samples for cosmogenic dating, on volcanic islands with collaborators.
2023	Channeled Scablands, Washington Fieldwork - GSA Penrose "Outburst Floods": Attended excursions to geomorphologically important features.
2023	Lonar Crater, India Fieldwork: Led international collaboration to survey river erosion and topographic profile, and collected samples for cosmogenic dating.
2022	Meteor Crater, Arizona Fieldwork: Investigated features of impact cratering and collaborated with a large group of peers for an on-site research project.
2021	Earth Surface Processes Institute, (Community Surface Dynamics Modeling Systems): Developed skills and best-practices in modelling, repositories, and git and bash scripting. Developed a module and lessons for the open-source modelling software LandLab..
2021	Texas Coast & Trinity River Fieldwork: Attended "Dynamics of Sedimentary Systems Fieldtrip" and assisted PhD colleague with research on river bank erosion.
2021	Unlearning Racism in the Geosciences (URGE)
2020	Jackson School of Geosciences - Geoscience Empowerment Network: Communicating Science
2020 - 2024	University of Texas at Austin graduate-level courses in: Astronomical Data Analysis; Dynamics of Sedimentary Systems; Mathematical Modeling; Planetary Geology and Geophysics; Remote Sensing; Python for Geoscientists; Astrobiology; Geomorphology; GIS & GPS in geosciences;
2020, 2022	University of Texas Gender and Sexuality Centre LGBTQ+ Allyship Toolkit part 1 and part 2
2020, 2022	NAGT-JSG 'Becoming an Inclusive Geosciences Leader for Graduate Students'
2020	University of Texas at Austin, Leadership & Ethics Institute: Inclusive Leadership
2017 - 2018	Oxford University graduate-level courses in: Planetary Chemistry; Records of Major Environmental Change; Volcanology.
2017	AGU Communicating Science Workshop

Teaching & Mentoring

2024 - now	Lab & Field Teaching Assistant, University of Cambridge: Supervised in labs covering the climate system and sedimentology/stratigraphy, and in field excursions covering sediments.
2023	Field Teaching Assistant, University of Texas Honors Program International Field Trip: Selected and led field visits at Ries & Steinheim Craters. Designed student field guide.

2022	Guest Lecturer, Planetary Geology and Geophysics: Taught students about Mars' surface, preparing them for a group landing site selection activity.
2021	Teaching Assistant, Introduction to Geology: Led virtual practical sections and graded assignments, covering mineralogy to map reading, for 3 student groups.
2021, 2020	Mentor & Co-Mentor, Jackson School of Geoscience 'Research Trainee Experience': Trained and supervised three 10-week research projects for undergraduate trainees. Organized and convened professional development panels for the entire summer cohort of trainees.
2021 - 2023	Workshop Host, SkillsGap (UK, paid): Trained hosts, edited materials for and hosted virtual workshops for KS3-4 students on skills relating to tech sectors (e.g. coding, cybersecurity).

Select Service Roles

est. 2023	Peer Reviewer: *Earth and Planetary Science Letters, Geology, Icarus, JGR-Planets*
2023 - now	Blog Editor, EGU Geomorphology Division: Contributed and edited blog posts on behalf of EGU's Early Career Geomorphologists Group.
2020 - 2024	Editor & Lead Editor, Science, Y'all! Student Blog & Podcast: Contributed and edited blog posts on the themes of science communication, student wellbeing, resources, access and inclusion, among other posts. As Lead Editor: Led new blog initiatives; advised and motivated the editorial team.
2021 - 2023	Student Government Roles, Graduate Student Executive Committee (GSEC): Vice President (2021-2022), DEIA Committee Representative (2022-2023), Webmaster, (2022-2023): Led and organized representatives, led design and digestion of the annual survey on graduate student issues. Partook in executive-level discussions of DEIA at the school, particularly regarding a workplace climate survey.
2020-2022	Workshop Chair, Geoscience Empowerment Network (GEN): Organized a bystander intervention workshop for faculty, staff and students, with specific discussions of field work.
2021	Volunteer COVID-19 Report Writer, Scientists for Labour, UK: Distilled information from medical manuscripts and produced daily reports on Covid-19 for policy makers, and longer reports on particular areas of interest, as part of a dynamic team.