

Eric A. Barefoot

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Department of Earth and Planetary Sciences
UNIVERSITY OF CALIFORNIA, RIVERSIDE
Geology 1242
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Education

RICE UNIVERSITY May 2021
Ph.D. Earth Sciences

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL May 2016
B.S. Geological Sciences with Highest Honors and Distinction

Appointments

2024– <i>present</i>	Assistant Professor of Geology	UNIVERSITY OF CALIFORNIA, RIVERSIDE Earth and Planetary Sciences Department
2022–2024	NSF Postdoctoral Fellow	INDIANA UNIVERSITY Earth and Atmospheric Sciences Department
2021–2022	Postdoctoral Associate	UNIVERSITY OF MINNESOTA Saint Anthony Falls Laboratory

Refereed Publications

- [10] Romain, William F., Edward W. Herrmann, Harrison Martin, **Eric A. Barefoot**, and Steve Scott (2025). “High Resolution Lidar Drone Imagery Assessment of the Rattlesnake Mound Complex at Cahokia, Illinois, USA.” In: *Midcontinental Journal of Archaeology* 50.1, pp. 31–62. [link] (visited on 10/14/2025).
- [9] Gearon, James H., Harrison K. Martin, Clarke DeLisle, **Eric A. Barefoot**, David Mohrig, Chris Paola, and Douglas A. Edmonds (Oct. 2024). “Rules of river avulsion change downstream.” In: *Nature* 634.8032, pp. 91–95. DOI: 10.1038/s41586-024-07964-2. [link].
- [8] **Barefoot, Eric A.**, Jeffrey A. Nittrouer, and Kyle M. Straub (2023). “Sedimentary Processes and the Temporal Resolution of Sedimentary Strata.” In: *Geophysical Research Letters* 50.13, e2023GL103925. DOI: 10.1029/2023GL103925. [link].
- [7] Wu, Chenliang, Jeffrey A. Nittrouer, **Eric A. Barefoot**, and Kurtis C. Burmeister (Dec. 23, 2022). “Reconstructing backwater hydrodynamics from fluvial-deltaic deposits using stratigraphic inversion: An example from the Tullig Sandstone, Western Irish Namurian Basin, County Clare, Ireland.” In: *GSA Bulletin* 135.9, pp. 2315–2330. DOI: 10.1130/B36475.1. [link] (visited on 03/21/2024).
- [6] **Barefoot, Eric A.**, Jeffrey A. Nittrouer, Brady Z. Foreman, Elizabeth A. Hajek, Gerald R. Dickens, Tramond Baisden, and Leah Toms (Oct. 8, 2021). “Evidence for enhanced fluvial channel mobility and fine sediment export due to precipitation seasonality during the Paleocene-Eocene thermal maximum.” In: *Geology* 50.1, pp. 116–120. DOI: 10.1130/G49149.1. [link].
- [5] **Barefoot, Eric A.**, Jeffrey A. Nittrouer, and Kyle M. Straub (2021). “Non-Monotonic Floodplain Responses to Changes in Flooding Intensity.” In: *Journal of Geophysical Research: Earth Surface* 126.10, e2021JF006310. DOI: 10.1029/2021JF006310. [link].
- [4] Moodie, Andrew J., Jayaram Hariharan, **Eric Barefoot**, and Paola Passalacqua (Aug. 26, 2021). “pyDeltaRCM: a flexible numerical delta model.” In: *Journal of Open Source Software* 6.64, p. 3398. DOI: 10.21105/joss.03398.

- [3] Wu, Chenliang, Jeffrey A. Nittrouer, Travis Swanson, Hongbo Ma, **Eric Barefoot**, Jim Best, and Mead Allison (July 21, 2020). “Dune-scale cross-strata across the fluvial-deltaic backwater regime: Preservation potential of an autogenic stratigraphic signature.” In: *Geology* 48.12, pp. 1144–1148. DOI: 10.1130/G47601.1.
- [2] **Barefoot, Eric A.**, Tamlin M. Pavelsky, George H. Allen, Margaret A. Zimmer, and Brian L. McGlynn (2019). “Temporally Variable Stream Width and Surface Area Distributions in a Headwater Catchment.” In: *Water Resources Research*. DOI: 10.1029/2018WR023877.
- [1] Allen, George H., Tamlin M. Pavelsky, **Eric A. Barefoot**, Michael P. Lamb, David Butman, Arik Tashie, and Colin J. Gleason (2018). “Similarity of stream width distributions across headwater systems.” In: *Nature Communications* 9.1, p. 610. DOI: 10.1038/s41467-018-02991-w.

Publications In Progress

- [1] **Barefoot, Eric A.**, James H. Gearon, and Douglas A. Edmonds (in review). “O levee, where art thou? Measuring the abundance of natural river levees across the contiguous USA.” In: *Journal of Geophysical Research, Earth Surface*.

Grants and Fellowships

Current Support

2024–2028	Co-PI	\$ 684,446	Office of Advanced Computing NATIONAL SCIENCE FOUNDATION <i>Award # NSF OAC 2411033</i> <i>Collaborative Research: Frameworks: Sandpiper - A community toolchain to support geomorphology from data acquisition to analysis.</i> \$ 3.5 M total, \$ 684,446 to Barefoot
2025–2028	PI	\$ 317,289	Geomorphology and Land-Use Dynamics Program NATIONAL SCIENCE FOUNDATION <i>Collaborative Research: Investigating the coupling between superelevation and gradient advantage in river avulsions</i> \$ 642,318 total, \$ 317,289 to Barefoot

Past Support

2021–2023	PI	\$ 174,000	Earth Sciences Postdoctoral Fellowship NATIONAL SCIENCE FOUNDATION <i>Award # NSF EAR-PF 2052844</i> <i>Impact of flooding intensity on levee development and dynamics.</i>
2019		\$ 3,000	David Worthington Named Grant AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS <i>Drone photogrammetry and outcrop investigations: Piceance Basin, CO</i>
2019		\$ 4,750	Pathfinder Fellowship CONSORTIUM OF UNIVERSITIES FOR THE ADVANCEMENT OF HYDROLOGIC SCIENCE <i>Sedimentary experiments at Tulane University</i>
2018		\$ 3,000	David Worthington Named Grant AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS <i>Mapping channel dynamics during PETM: Piceance Basin, CO</i>
2018		\$ 1,300	SEPM Student Assistance Grant SOCIETY FOR SEDIMENTARY GEOLOGY <i>Paleohydraulic estimates during the PETM: Piceance Basin, CO</i>

Awards and Honors

2021	BASIN RESEARCH	Outstanding Reviewer
2021	LETTERS TO A PRESCIENTIST	Compassionate Connections Award
2021	CSDMS	Terrestrial Working Group Spotlight Award
2021	RICE UNIVERSITY	Alison Henning Teaching Award
2018	RICE UNIVERSITY	Department Service Award in Earth Science
2017	RICE UNIVERSITY	Sam and Helen Worden Fellowship
2016	UNC CHAPEL HILL	Carolina Research Scholar
2016	UNC CHAPEL HILL	Op White Prize in Geology
2016	UNC CHAPEL HILL	Best Undergraduate Oral Presentation
2014	UNC CHAPEL HILL	Phi Beta Kappa
2014	UNC CHAPEL HILL	Sigma Gamma Epsilon
2012	UNC CHAPEL HILL	Morehead-Cain Scholar
2009	BOY SCOUTS OF AMERICA	Eagle Scout

Invited Talks

2025	Landscape impacts of intensified flooding during the Paleocene-Eocene Thermal Maximum UC STANTA BARBARA – <i>Earth Science Department Seminar</i>
2025	Landscape impacts of intensified flooding during the Paleocene-Eocene Thermal Maximum CAL STATE UNIVERSITY–SAN BERNADINO – <i>Geology Department Seminar</i>
2025	Feast and famine: how hydrological extremes shape Earth’s surface and strata LOMA LINDA UNIVERSITY – <i>Biological and Earth Sciences Department Seminar</i>
2024	Experimental Constraints on the Morphology of Canyons Formed by Crater Overtopping EGU GEOMORPHOLOGY DIVISION – <i>Landscapes Live (peer-voted seminar series)</i>
2023	Feast and famine: how hydrological extremes shape Earth’s surface and strata UNIVERSITY OF NEVADA - LAS VEGAS – <i>GEO Department Seminar</i>
2023	Extreme flows shaping the surface and strata of Earth and Mars UNIVERSITY OF MINNESOTA – <i>EES Department Seminar</i>
2023	Floods and the physical structure of the stratigraphic record UNIVERSITY OF CALIFORNIA - RIVERSIDE – <i>EPS Department Seminar</i>
2022	Linking environmental processes to sedimentary biases INDIANA UNIVERSITY – <i>EAS Department Colloquium</i>
2022	Surface processes distort the history of climate in sedimentary strata UNIVERSITY OF MINNESOTA – <i>EES Department Seminar</i>
2022	Surface processes distort the history of climate in sedimentary strata PRINCETON UNIVERSITY – <i>Department Lecture Series</i>
2022	Landscape impacts of intensified flooding during the Paleocene-Eocene Thermal Maximum UNIVERSITY OF WISCONSIN AT EAU CLAIRE – <i>Earth Sciences Seminar Series</i>
2021	A Goldilocks zone for natural river levees CALGARY CHAPTER OF SIGMA XI – <i>Sigma Xi Seminar Series</i>
2021	The impact of changing flood intensity on delta and floodplain processes UNIVERSITY OF MINNESOTA – <i>EES Department Seminar</i>
2020	The impact of changing flooding intensity on delta and floodplain processes UT AUSTIN – <i>Soft Rocks Seminar</i>
2019	Constraining uncertainty in paleohydraulic estimates of fluvial response to the PETM EXXONMOBIL SEDIMENTOLOGY – <i>Sedimentology and Stratigraphy Workshop</i>

Certifications

2025	Wilderness First Responder	WILDERNESS MEDICINE INSTITUTE
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Short Courses and Extra Training

2019	Graduate Pedagogy Institute	RICE CNTR. TEACHING EXCELLENCE
2018	Fluvial Paleohydraulics Workshop	UNIVERSITY OF WYOMING
2017	Drone Applications for Earth Science Research	AMERICAN GEOPHYSICAL UNION

Conference Activity

Sessions Convened

- 2025 Understanding erosional to depositional landscape dynamics
Co-conveners: Eric Barefoot, Magdalena Curry, Debsmita Das, Luke Gezovich, Marissa Tremblay, Chenliang Wu, Malcolm McMillan
AGU 2025
- 2024 Linking Surface Processes to the Stratigraphic Record: Past is the Key to the Future
Co-conveners: Chenliang Wu, Sinead Lyster
AGU 2024
- 2024 Measuring the imprint and implications of missing time in strata
Co-conveners: Kyle Straub
International Sedimentary Geoscience Congress
- 2023 Understanding Processes Governing Overbank Sediment Transport in Riparian Zones
Co-conveners: Hima Hassenruck-Gudipati, Douglas Edmonds
AGU Fall Meeting
- 2020 Advances in Quantifying Fluvial Sediment Transport and Refining Paleohydraulic Reconstruction Models
Co-conveners: Robert Mahon, Kate Potter Leary
AGU Fall Meeting – Online
- 2019 Signatures of Environmental Signals on Earth’s Surface and Subsurface
Co-conveners: Anastasia Piliouras, Colin Phillips, Carli Arendt, Kyle Straub
AGU Fall Meeting – San Francisco, CA

Presentations

- 2025 Oral Measuring the abundance and dimensions of natural river levees across the contiguous USA
River, Coastal, and Estuarine Morphodynamics
- 2023 Poster Measuring the abundance of natural river levees across the contiguous USA with 3DEP lidar
AGU Fall Meeting.
- 2023 Poster Measuring the abundance of natural river levees across the contiguous USA with 3DEP lidar
River, Coastal, and Estuarine Morphodynamics
- 2023 Oral Experimental Constraints on the Morphology of Canyons Formed by Crater Overtopping
GSA Penrose Conference.
- 2022 Oral Experimental Constraints on the Morphology of Canyons Formed by Crater Overtopping
AGU Fall Meeting.
- 2021 Oral Time dilation in the stratigraphic record driven by changes in fluvial morphodynamics.
AGU Fall Meeting.
- 2020 Oral Non-monotonic surface process response to increased flooding intensity.
AGU Fall Meeting.
- 2019 Oral Field evidence of the impact of increased channel mobility on sand body stacking density in an alluvial basin. *AGU Fall Meeting.*
- 2018 Poster Paleohydraulic estimates from alluvial strata during the PETM: an example from the Piceance Basin, Colorado. *AGU Fall Meeting.*

- 2017 Poster Towards a mechanistic understanding of the linkages between PETM climate modulation and stratigraphy, as discerned from the Piceance Basin, CO, USA. *AGU Fall Meeting.*
- 2016 Poster Stream Width Dynamics in a Small Headwater Catchment. *AGU Fall Meeting.*
- 2015 Oral Quantitative geomorphology of Bank's Peninsula provides insight into forcing mechanisms for landscape evolution, *GSA Fall Meeting.*
- 2015 Poster Stratigraphic changes in bulk rock chemistry may exercise control on landscape evolution in Akaroa volcano, New Zealand. *GSA Fall Meeting*

Campus Talks

- 2025 Updates from the UCR Sedimentology Lab
UNIVERSITY OF CALIFORNIA, RIVERSIDE – *EPS 250 Seminar*
- 2021 Changes in climate can alter their own taphonomic potential
UNIVERSITY OF MINNESOTA – *Earth Sciences Soft Rocks Seminar*
- 2020 Non-monotonic fluvial response to intensified flooding
RICE UNIVERSITY – *Graduate Interdisciplinary Earth Science Symposium*
- 2017 Towards a mechanistic understanding of the linkages between PETM climate modulation and stratigraphy, as discerned from the Piceance Basin, CO, USA
RICE UNIVERSITY – *Graduate Interdisciplinary Earth Science Symposium*
- 2016 Stream Width Dynamics in a Small Headwater Catchment
UNC CHAPEL HILL – *Anadarko Symposium*

Internal Service

University of California, Riverside

- 2024–present Member EPS Engagement Committee
- 2024–present Faculty Advisor EPS Grad Student Association
- 2025 Member Search Committee – Economic Geology

University of Minnesota

- 2022 Instructor Scientific Visualization Workshop Series
- 2021-2022 Member Confronting Colonization Committee

Rice University

- 2019-20 EEPS Representative Rice Graduate Student Association
- 2019-20 Mentor Graduate-Undergraduate Earth Science Mentoring Program
- 2019 Organizer Rice Graduate Interdisciplinary Earth Science Symposium
- 2017-19 Founder Earth Environmental and Planetary Sciences Journal Club
- 2017-18 President Earth, Environmental and Planetary Sciences Student Union
- 2017-18 General Manager Valhalla; campus bar
- 2017-18 Volunteer EEPS Houston School Outreach Program
- 2016-17 Community Organizer Rice Queer Graduate Student Association

Professional Service

Professional Organizations

- 2023–present Committee Member AGU EPSP Program Committee
- 2022 Student Committee co-Liaison AGU EPSP Executive Committee
- 2019-20 Student Representative AGU EPSP Section Executive Committee
- 2019-21 Convener AGU EPSP Early-Career/Student Networking Hour

Grant Peer Review Service

- 2022 *National Science Foundation ad hoc reviewer*
- 2024 *National Science Foundation panelist*
- 2025 *National Science Foundation ad hoc reviewer*

Journal Peer Review Service

2025–present	Associate Editor <i>Journal of Sedimentary Research</i>
2025	<i>GSA Bulletin, Journal of Geophysical Research – Earth Surface, Marine and Petroleum Geology</i>
2024	<i>Basin Research, Geophysical Research Letters, Earth and Planetary Science Letters, Journal of Geophysical Research – Earth Surface, Marine and Petroleum Geology, Earth Surface Dynamics</i>
2023	<i>GSA Bulletin, Basin Research, Journal of Hydrology, Frontiers in Earth Science, Sedimentology, Earth and Planetary Science Letters, Geoscience Model Development</i>
2022	<i>Remote Sensing, Basin Research, Earth Surface Dynamics, Geophysical Research Letters, Geology</i>
2021	<i>Water Resources Research, Journal of Hydrology, Geophysical Research Letters, Basin Research, Natural Hazards and Earth Systems Sciences, GSA Bulletin, Earth Surface Processes and Landforms</i>
2020	<i>Geology, Earth Surface Processes and Landforms</i>

Teaching Experience

University of California, Riverside

GEO 102A/B Summer Field Geology Instructor Spring/Summer 2025

University of Minnesota

Visual Science Communication: Department Workshop INSTRUCTOR Spring 2022

Rice University

Oceans and Atmospheres	Teaching Assistant	Spring 2021
Earth and Planetary Surfaces	Teaching Assistant	Fall 2020
Introduction to the Earth	Teaching Assistant	Spring 2020
Department Research in Earth Sciences	Teaching Assistant	Fall 2019
Freshman Seminar in Environmental Research	Instructor of Record	Fall 2017

UNC Chapel Hill

Field Geology of Eastern California Teaching Assistant Fall 2013

Other Expertise

Experimental:	Sedimentary experiment design, construction, and operation.
Geological:	Field mapping, stratigraphy, structural restoration.
Environmental:	Sediment sampling, flow measurement, shallow coring, surveying.
Computational:	Matlab, Python, QGIS/ArcGIS, Git, L ^A T _E X, R, bash, Unix, MS Suite, image and vector design, Photogrammetry (Agisoft Metashape), lidar processing, C++ (arduino; novice).
Instrumentation:	Terrestrial LiDAR acquisition, low-cost sensors and open-source hardware, soldering, IoT.
Languages:	English (native speaker), Spanish (proficient speaker), ASL (novice speaker).
Medicine:	Wilderness First Aid

Additional Science Presentations

2017	Poster	Towards a mechanistic understanding of the linkages between PETM climate modulation and stratigraphy, as discerned from the Piceance Basin, CO, USA. <i>Houston Geological Society Rice Night.</i>
2017	Poster	Towards a mechanistic understanding of the linkages between PETM climate modulation and stratigraphy, as discerned from the Piceance Basin, CO, USA.

2016 Poster *Industry-Rice Earth Science Symposium.*
Stream Width Dynamics in a Small Headwater Catchment.
Industry-Rice Earth Science Symposium.

Professional Affiliations

Society for Sedimentary Geology

Joined 2018

American Geophysical Union; Earth and Planetary Surface Processes Section

Joined 2015

Geological Society of America

Joined 2015