JENN PICKERING

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PROFESSIONAL APPOINTMENTS

2023—present	Research Assistant Professor , Water Resources, Center for Applied Earth Science and Engineering Research (CAESER), The University of Memphis
2020—2023	Managing Editor, SEPM, The Sedimentary Record
2022—2023	Post-Doctoral Fellow , Water Resources, Center for Applied Earth Science and Engineering Research (CAESER), The University of Memphis
2021—2022	Senior Research Associate, Department of Geology, The University of Kansas
2016—2021	Research Geoscientist , Integrated Geosciences, Projects & Technology, Shell International Exploration and Production, Inc.
Summer 2015	Post-Graduate Intern , Clastics Research, Projects & Technology, Shell International Exploration and Production, Inc.
2010—2016	Teaching & Research Assistant , Department of Earth & Environmental Science, Vanderbilt University

EDUCATION

- 2016 Ph.D. | Vanderbilt University, Nashville, TN | Department of Civil & Environmental Engineering <u>Dissertation</u>: Response of the Brahmaputra River to tectonic deformation and paleohydrological events in the foreland Bengal basin | Advisor: Steven Goodbred
- 2014 Visiting Scholar | Universität Bremen, Bremen, Germany | Marine Technology & Geophysics | Mentor: Volkhard Spiess
- 2013 M.S. | Vanderbilt University, Nashville, TN | Department of Earth & Environmental Science

 Thesis: Late Quaternary Sedimentary Record of Holocene Channel Avulsions of the Brahmaputra River in the Upper Bengal Delta Plain | Advisor: Steven Goodbred
- 2010 B.S. | Middle Tennessee State University, Murfreesboro, TN | Department of Geosciences *Cum laude* | Advisor: J. Warner Cribb

GOVERNMENT & SOCIETY FUNDING

Under Review American Chemical Society Petroleum Research Fund New Directions:

Microplastics as Indicators of Carbon Polymer Transport Dynamics | Co-PI with

Daniel Larsen (\$125,000 proposed)

2024—2027	National Science Foundation EA: Acquisition of a Micro X-Ray Fluorescence Spectrometer for Research and Education in Earth and Environmental Studies at the University of Memphis Co-PI with Gary Stinchcomb, Deborah Leslie, William Jackson, and Rachel Lombardi (NSF Award 2318490: \$431,158)
2024—2027	State of Tennessee Megasite Authority of West Tennessee MRM-SSOE Hydro Studies Co-Investigator with Rodrigo Villalpando Vizcaino, Brian Waldron, and Daniel Larsen (\$542,380)
2024—2025	University of Memphis Inaugural Team Research Grant: Transdisciplinary Team Science and the Voynich Manuscript Co-PI with Leah Windsor and Sara Bridges (\$30,000) https://www.memphis.edu/research/impact/newsletter_2024/august24_stories/inaugural_team_science_research_grant_awarded.php
2021—2024	SEPM Society for Sedimentary Geology and SEPM Foundation, Inc.: Harleton Fund Establishing <u>The Sedimentary Record</u> as the premier diamond open access journal for soft-rock geosciences Co-grantee with Jeong-Hyun Lee (\$38,550 startup + recurring publication fees)
2019	International Continental Scientific Drilling Program Workshop DEEPDUST: Probing Continental Climate of the Late Paleozoic Icehouse-Greenhouse Transition (travel + lodging); workshop report: https://doi.org/10.5194/sd-28-93-2020 .
2016	National Science Foundation STEPPE Workshop: ONE-Delta Co-grantee with Steven Goodbred, Ryan Sincavage, and Rip Hale (Vanderbilt University), Kyle Straub (Tulane University), Paola Passalacqua (University of Texas-Austin), and Carol Wilson (Louisiana State University) (\$15,000)
2014	U.S. Department of State Critical Language Scholarship—Bangla, Independent University Bangladesh (travel + lodging + tuition + \$750)
2011	National Center Earth-Surface Dynamics Summer Institute on Earth-Surface Dynamics (SIESD) University of Minnesota Saint Anthony Falls Laboratory (travel + lodging)
2010	National Science and Mathematics Access to Retain Talent (SMART) Grant (\$4000)
2009	National Science Foundation STEP ^{MT} Upper Division research grant (\$1000)
2008	MTSU Mineral, Gem, & Fossil Museum Gem & Mineral Scholarship (\$250)
2007—2010	Middle Tennessee State University Enrichment Scholarship (\$3000)
2007—2008	Mayo Educational Foundation, Inc. Scholarship (\$5000)

PUBLICATIONS

Refereed Journal Articles

[11] **Pickering, J.**, Morris, M., Driskill, B., and Laycock, D., 2023, A new chronostratigraphic datum for the Permian Delaware Basin and beyond, Marine and Petroleum Geology, 157 (106502), https://doi.org/10.1016/j.marpetgeo.2023.106502.

- [10] Raff, J.L., Goodbred Jr, S.L., **Pickering, J.L.**, Sincavage, R.S., Ayers, J.C., Hossain, M.S., Wilson, C.A., Paola, C., Steckler, M.S., Mondal, D.R. and Grimaud, J.L., 2023. Sediment delivery to sustain the Ganges-Brahmaputra delta under climate change and anthropogenic impacts. Nature Communications, 14(1), p.2429. https://doi.org/10.1038/s41467-023-38057-9
- [9] Sincavage, R., Liang, M., **Pickering, J.**, Goodbred, S., and Passalacqua, P., 2022, Antecedent topography and sediment dispersal: the influence of geologically instantaneous events on basin fill patterns. Journal of Geophysical Research: Earth Surface. https://doi.org/10.1029/2021JF006539
- [8] Grimaud, J-L., Grall, C., Goodbred, S., Steckler, M., Sincavage, R., Pickering, J., Paola, C., Seeber, L., and Hossain, M., 2020, Flexural deformation controls on Late Quaternary sediment dispersal in the Garo-Rajmahal Gap, NW Bengal Basin. Basin Research, v. 30, p. 1252–1270. https://doi.org/10.1111/bre.12425.
- [7] Grall, C., Steckler, M.S., **Pickering, J.L.**, Goodbred, S.L., Paola, C., Akhter, S.H., and Spiess, V., 2018, A base-level stratigraphic approach to determining Holocene subsidence of the Ganges-Meghna-Brahmaputra Delta plain: Earth and Planetary Science Letters, v. 499, p. 23–36, https://doi.org/10.1016/j.epsl.2018.07.008.
- [6] **Pickering, J.L.**, Diamond, M.S., Goodbred, S.L., Grall, C., Martin, J.M., Palamenghi, L., Paola, C., Schwenk, T., Sincavage, R., and Spiess, V., 2018, Impact of glacial-lake paleofloods on valley development since glacial termination II: A conundrum of hydrology and scale for the lowstand Brahmaputra-Jamuna paleovalley system: GSA Bulletin; 131 (1-2): 58–70, https://doi.org/10.1130/B31941.1.
- [5] Martin, J., Fernandes, A.M., **Pickering, J.**, Howes, N., Mann, S., and McNeil, K., 2018, The Stratigraphically Preserved Signature of Persistent Backwater Dynamics in a Large Paleodelta System: The Mungaroo Formation, North West Shelf, Australia: Journal of Sedimentary Research, v. 88, p. 850–872, https://doi.org/10.2110/jsr.2018.38.
- [4] Sincavage, R., Goodbred, S.L., and **Pickering, J.**, 2017, Holocene Brahmaputra River path selection and variable sediment bypass as indicators of fluctuating hydrologic and climate conditions in Sylhet Basin, Bangladesh: Basin Research, v. 30, p. 302--320, https://doi.org/10.1111/bre.12254.
- [3] **Pickering, J.L.**, Goodbred, S.L., Beam, J.C., Covey, A.K., Ayers, J., Rajapara, H.M., and Singhvi, A.K., 2017, Terrace formation in the upper Bengal basin since the Middle Pleistocene: Brahmaputra fan delta construction during multiple highstands: Basin Research, v. 30, p. 550–567, https://doi.org/10.1111/bre.12236.
- [2] Reitz, M.D., **Pickering, J.L.**, Goodbred, S.L., Paola, C., Steckler, M.S., Seeber, L., and Akhter, S.H., 2015, Effects of tectonic deformation and sea level on river path selection: Theory and application to the Ganges-Brahmaputra-Meghna River Delta: Journal of Geophysical Research: Earth Surface, v. 120, p. 671–689, https://doi.org/10.1002/2014JF003202.
- [1] **Pickering, J.L.**, Goodbred, S.L., Reitz, M.D., Hartzog, T.R., Mondal, D.R., and Hossain, M.S., 2014, Late Quaternary sedimentary record and Holocene channel avulsions of the Jamuna and Old Brahmaputra River valleys in the upper Bengal delta plain: Geomorphology, v. 227, p. 123–136, https://doi.org/10.1016/j.geomorph.2013.09.021.

<u>Peer-Reviewed Conference Proceeding Articles</u>

- Driskill, B., **Pickering, J.**, and Rowe, H., 2018, Interpretation of High Resolution XRF data from the Bone Spring and Upper Wolfcamp, Delaware Basin, USA, in Proceedings of the 6th Unconventional Resources Technology Conference, https://doi.org/10.15530/urtec-2018-2901968.
- Thompson, M., Desjardins, P., **Pickering, J.**, and Driskill, B., 2018, An Integrated View of the Petrology, Sedimentology, and Sequence Stratigraphy of the Wolfcamp Formation, Delaware Basin, Texas, in Proceedings of the 6th Unconventional Resources Technology Conference, https://doi.org/10.15530/urtec-2018-2901513.

Other Relevant Publications (Not Peer-Reviewed)

- **Pickering, J.,** invited contributor for <u>Uncharted: How Scientists Navigate Their Own Health, Research, and Experiences of Bias, Columbia University Press. In production now and expected to be released August 8, 2023.</u>
- **Pickering, J.** and Lee, J.H., 2021, Renovation of The Sedimentary Record: The Sedimentary Record, v. 19 (1), p. 1-2, https://doi.org/10.2110/sedred.2021.1.02.

Selected Conference Presentations/Posters

- **Pickering, J.,** Goodbred, S., Sincavage, R., and Salam, M., 2023, Impacts of Holocene lake-burst floods in the Ganges-Brahmaputra River delta, Part 2: Constraining the timing of extreme flood events and major avulsions using radiocarbon ages, in International Conference on Fluvial Sedimentology Book of Abstracts. July 2-7, 2023, Riva del Garda, Italy, https://drive.google.com/file/d/1zJpfv8Stc1h8u6NpbxrQkBTNCj4NUDUh/view.
- **Pickering, J.,** Morris, N., and Driskill, B., 2021, Bentonite ash bed as chronostratigraphic datum for Permian Delaware Basin and beyond, in Geological Society of America Abstracts with Programs. Vol. 53, No. 3, https://doi.org/10.1130/abs/2021NC-363191.
- **Pickering, J.L.,** Goodbred, S.L. and Akhter, S.H., 2019, Late Quaternary Brahmaputra River sediment dispersal and storage controlled by regional tectonic uplift, in Geological Society of America Abstracts with Programs, Vol. 51.
- **Pickering, J.L.** and Martin, J.M, 2017, Channel belt distribution and connectivity of a fossilized channel belt network of a Late Triassic fluvial system, 11th International Conference on Fluvial Sedimentology Meeting, Calgary.
- **Pickering, J.**, Goodbred, S., Rajapara, H.M., and Singhvi, A.K., 2017, Controls on the Distribution of Channel Sands in a Fluvial Fan System: The Effects of Tectonic Deformation and Discharge Variation on the Stratigraphic Architecture of the Brahmaputra Fan Delta, AAPG Annual Convention and Exhibition, Houston.
- **Pickering, J.**, Grall, C., Spiess, V., Schwenk, L., Palamenghi, L., Sincavage, R., Diamond, M.S., and Goodbred, S.L., 2015, Effects of Neotectonic Deformation on Channel Planform and Avulsion History of the Brahmaputra-Jamuna River, Bangladesh, in AGU Fall Meeting Abstracts, San Francisco.

- **Pickering, J.L.**, 2013, Evidence for fluvio-tectonic interactions at the Dapsi-Dauki fault system: Unraveling the stratigraphic history of the Brahmaputra River, International Geoscience Programme (IGCP) 581, Ha Noi.
- Pickering, J.L., Goodbred, S.L., Hartzog, T.R., Spiess, V., Schwenk, T., Palamenghi, L., Steckler, M.S., Seeber, L., Akhter, S.H., Mondal, D., Hossain, S., Petter, A.L., and Paola, C., 2012, Antecedent morphology and active tectonics in the upper Bengal Delta: Multi-temporal controls on river mobility and sediment preservation, in AGU Fall Meeting Abstracts.
- **Pickering, J.L.**, Goodbred, S.L., Hartzog, T.R., Briel, H.E., Mondal, D., Hossain, S., and Mahmud, Z., 2011, Source-to-sink processes recorded in a deltaic gateway: A post-glacial history of the Brahmaputra River in the Bengal Delta, in Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 49.
- **Pickering, J.L.**, Tonish, J., Cares, J., and Cribb, J.W., 2009, Optimization of x-ray fluorescence spectrometry for environmental analysis of arsenic at low concentrations in sediment and soil materials, in Geological Society of America Abstracts with Programs, Vol. 41, No. 1, p. 45.

INVITED PRESENTATIONS

- 2024 Extreme Floods from Source-to-Sink: Tracking Himalayan GLOFs through the Ganges-Brahmaputra Delta to the Deep Marine Bengal Turbidite Fan Using Radiocarbon: Deltas 2024 Science Symposium, Center for River Studies, Louisiana State University, August 15.
- 2023 Extreme Floods from Source-to-Sink: Tracking Himalayan GLOFs through the Ganges-Brahmaputra Delta to the Deep Marine Bengal Turbidite Fan Using Radiocarbon: Fall Colloquium Speaker, Center for Earthquake Research and Information, The University of Memphis, November 3.
- 2023 Rethinking Geomorphic Drivers in Bengal: Impacts of Megafloods on Fluvial-Deltaic System Dynamics. Keynote speaker, Climate Change and Disaster Management Seminar, Bangladesh Open University, Gazipur, Bangladesh, April 3.
- The Power of Megafloods: How Ice-Dammed Lakes in Tibet Carved the Himalayas, Reorganized Brahmaputra River Drainage, and Transported Sediment 2000+ Miles to the Indian Ocean. Invited speaker, Neville Public Museum Geology Club, Green Bay, WI, March 15.
- 2018 Integration of High-Resolution Geochemical and Petrophysical Data with Process Sedimentology Interpretations of Subsurface Bone Spring and Upper Wolfcamp Formations, Delaware Basin, Texas. Keynote, West Texas Geological Society Luncheon, Midland, TX, December 11.
- 2015 Depositional environments and connectivity of the Mungaroo Formation, Carnarvon Basin. Middle Tennessee State University, Murfreesboro, TN, September 16.
- Details in the Delta: Late Quaternary histories of the Brahmaputra and Meghna rivers, International Geoscience Programme (IGCP) 581, Ha Noi, November 11.

AWARDS & HONORS

2023 MIST (Mentoring Institute for Sediment Transport Researchers) funded by NSF Geomorphology and Land Surface Dynamics Program – MIST Mentee Award

2019	Shell Special Recognition Award for excellence in technical geology—Brazil New Ventures (Potiguar Basin)
2018	Shell Special Recognition Award for excellence in technical geology—Permian Growth (Delaware Basin)
2017	Shell Special Recognition Award for excellence in technical geology— Clastics/Mudrock Systems Research
2014	U.S. Department of State Critical Language Scholar—Bangla
2010	TN Academy of Sciences First Place Student Poster
2010	TN Academy of Sciences Third Place Student Poster
2010	Middle Tennessee State University Outstanding Research Assistant

TEACHING EXPERIENCE

2023	Guest lecturer University of Memphis course: Unlocking the Secrets of the Voynich Manuscript, Honors Forum (Fall 2023)
2021	Guest lecturer & field trip assistant under mentorship of Mike Blum Department of Geology, University of Kansas: Geomorphology (Fall 2021), Fluvial Processes and Systems (Spring 2021)
2017—2018	Instructor Shell Graduate Program, Shell: Rocks and Reservoirs field course, deepwater section (2018), Modern Coastal Systems for Reservoir Engineers & Geologists (2017), Basins and Reservoirs field course (2017)
2014—2016	Instructor of record Department of Earth & Environmental Sciences, Vanderbilt University: Introduction to the Dynamic Earth Technology Recitation (Spring 2015, Spring 2016), Transdisciplinary Initiative on Environmental Studies (TIES) Graduate capstone course (Mississippi River Delta: Spring 2014)
2015	Instructor of record Department of Geology, Dhaka University: Multichannel Seismic Data Processing & Interpretation
2012—2013	Student Athlete Tutor Stratton Foster Academic Center, Vanderbilt University
2010—2013	Laboratory instructor Department of Earth & Environmental Sciences,
	Vanderbilt University: Introduction to Dynamic Earth (Spring 2013), Transdisciplinary Initiative on Environmental Studies (TIES) Graduate capstone course (Bengal Delta, Bangladesh: Spring 2012), Earth Systems through Time upper division course (Fall 2011), Introduction to Oceanography (Fall 2010)
2008	Transdisciplinary Initiative on Environmental Studies (TIES) Graduate capstone course (Bengal Delta, Bangladesh: Spring 2012), Earth Systems through Time

STUDENT ADVISING & MENTORING

2023—present	Abrar Hossain UoM PhD student; primary advisor for dissertation addressing heavy metal toxicity, sources, and remediation techniques for contaminated water and soil in Southwest Memphis
2023—present	Chinyere 'Eunice' Eme UoM PhD student; primary advisor for dissertation addressing hydrostratigraphy, contaminant transport, and machine learning approach to core and wireline log data analysis and integration for Eocene strata of the Mississippi Embayment Regional Aquifer
2022-present	Zijie Gao KU PhD student; external co-advisor with Mike Blum for dissertation on the sediment gravity flow (SGF) deposits recovered by IODP 354 Bengal Fan, especially their thickness distributions, transport processes to the deep-sea coring sites, and timing of deposition
2017—2021	Stella McClure University of Houston undergraduate student; now interning at U.S. House of Representatives and graduate student at American University
2015	Emma "Rae" Tennant Nashville area high school student; assisted with labwork through an REHS program, went on to complete BS in Geology at Carleton College; now Educational Associate (staff) at Department of Geology, Carleton College
2014—2015	Michael Diamond Vanderbilt undergraduate Earth & Environmental Sciences major; published a paper together and presented at multiple conferences, completed his MS & PhD at University of Washington, now faculty at UF

SERVICE TO PROFESSION

Editorial service:

2021—2024 SEPM Society for Sedimentary Geology's <u>The Sedimentary Record Managing</u> Editor

Journal & Grant Proposal Reviews:

National Science Foundation (2023), G-Cubed (2022), Nature Communications (2021), Earth Surface Processes & Landforms (2021), Nature (2020), Geology (2020), AAPG Bulletin (2020, 2019), Quaternary Research (2019), Journal of Mountain Science (2018), Center of Excellence for Louisiana (2017), Continental Shelf Research (2017), Geomorphology (2017), American Chemical Society (2016), Basin Research (2015)

Conference panel and forum organizer:

2023 Session Chair | AGU Fall Meeting

2019 Student Poster Judge | GSA Annual Meeting

2016—2018 SedNet Coordinator & Host | Shell global sedimentology network and monthly

forum

2017	AAPG Oral & Poster Session Chair Siliciclastics: Impact of structures on sedimentary systems
2017	ICFS Oral Session Chair Dispersing the load: Controls on sediment extraction and mass balance

OUTREACH

<u>Water on Wheels (WOW) Mobile</u> event leader at DeSoto County School District's Conservation Field Day 2022 by <u>DeSoto County Soil and Water Conservation District</u> with Paulina Reyes

See It Be It STEM It Role Model (2021): Mentorship for young women, toward pursuit of STEM careers; https://www.seeitbeitstemit.com/get-inspired/2021/1/20/meet-jenn-pickering

Great Minds in STEM mentor (2020): Mentor undergraduate and graduate students in Earth Science

Volunteer editor (2011—2018): Assist undergraduate and graduate students from Dhaka University with application materials for their next level of education

Expanding Your Horizons in Science & Mathematics (2007): Led workshop on paleontology for young women in junior high school

CONTINUED EDUCATION

2020—2022	72-hour Permaculture Design Certification course with Advanced Social Permaculture certification through Permaculture Women's Guild
2019—2021	Shell Advanced Technical Program: Integrated Reservoir Modeling, Greenfield Pore Pressure Prediction, Introduction to Geohazards
2019	Basins and Margins & Tectonics, BSG short courses, University of Leeds
2016—2019	Shell Graduate Program: Basins & Reservoirs (New Mexico / West Texas), Reservoirs & Rocks (Utah), Geophysics Foundations, 3D Seismic Interpretation (Structural, Stratigraphic, Quantitative), Seismic and Sequence Stratigraphy, Operations Geology, Subsurface Structure & Mapping, 3D Static Reservoir Modeling, Petroleum Systems, Risk & Volumes, Play Based Exploration, Volumes & Risking for Unconventionals, Advanced Trap Analysis
2017	Mudstone Sequence Stratigraphy, AAPG short course
2014	Beginning Bangla, Independent University—Bangladesh
2011	Sequence Stratigraphy for Graduate Students, GSA short course
2011	Summer Institute on Earth-Surface Dynamics, University of Minnesota

FIELD EXPERIENCE

Bengal Delta, Bangladesh – alluvial geomorphology + fluvial subsurface sed/strat = geophysics + social impact | 2011, 2012, 2013, 2014, 2015, 2023 (10 months total)

Rocky Mountain National Park – glacial and alluvial geomorphology | 2021 (3 days)

Anadarko Basin, Oklahoma – Permian loess stratigraphy | 2019 (1 day)

Point Loma, California – deepwater sed/strat | 2018 (5 days)

Gulf Islands, Vancouver – deepwater sed/strat + diagenesis | 2018 (1 week)

Book Cliffs, Utah – sed/strat | 2016, 2017, 2018, 2021 (4 weeks total)

Ross Formation, Ireland – deepwater sed/strat | 2017 (1 week)

Guadalupe Mountains, New Mexico – Permian Basin stratigraphy | 2017 (1 week)

Shillong Plateau, India – alluvial stratigraphy + structure | 2013, 2014 (2 months total)

Mississippi River Delta, Louisiana – geomorphology + social impact | 2014 (2 weeks)

Red River, Vietnam – fluvial sed/strat | 2013 (4 days)

Land Between the Lakes, Kentucky & Tennessee – hillslope diffusion | 2012 (3 days)

Black Hills & Yellowstone, South Dakota, Wyoming, Montana – field mapping: igneous stratigraphy, structure | 2010 (5 weeks)

Southeastern rivers affected by Kingston Coal Ash Spill, Tennessee, Kentucky, Alabama – soil and water contaminants | 2009 (2 months total)

Cascade Range, Oregon & Washington – igneous petrology | 2008 (2 weeks)

Nashville dome, central Tennessee – carbonate sed/strat | 2008, 2009, 2010 (3 weeks total)

UNIVERSITY SERVICE

CAESER, Research Assistant Professor search committee | member (2024)

CAESER, Education & Outreach Coordinator search committee | member (2023)

Vanderbilt University, Faculty search committee | Graduate student member (2012—2015)

Sigma Gamma Epsilon (Geology Honor Society), Eta Sigma Chapter | Vice President (2008-2009)

SOCIETY MEMBERSHIPS

Society for Sedimentary Geology (SEPM) – active

American Geophysical Union (AGU) – active

Geological Society of America (GSA) – inactive

International Association of Sedimentologists (IAS) – inactive

American Association of Petroleum Geologists (AAPG) – inactive

Houston Geological Society (HGS) – inactive

American Institute of Professional Geologists (AIPG) – inactive

ACTIVE COLLABORATORS

Janey Camp, University of Memphis, CAESER

Rodrigo Villalpando Vizcaino, University of Memphis, CAESER

Leah Windsor, University of Memphis, Institute for Intelligent Systems

William Jackson, University of Memphis, Earth Sciences

Mike Blum, The University of Kansas, Department of Geology

Steven Goodbred, Vanderbilt University, Department of Earth & Environmental Science

Ryan Sincavage, Radford University, Geology Department

Neal Auchter, Shell Projects & Technology, Geology & New Reservoirs Research Team

Brian Driskill, Shell Upstream Unconventionals, Permian Basin

Dallin Laycock, ConocoPhillips Canada, Base Exploitation Team - Surmont