N. Tanner Mills Curriculum Vitae

Institute for Geophysics, Jackson School of Geosciences
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EXPERIENCE

Jan 2023–Present	**Postdoctoral Fellow**, The University of Texas at Austin *Supervisor*: Dr. Peter Flemings
2015–Dec 2021	**Graduate Research and Teaching Assistant**, Texas A&M University
Summer 2018	**Geoscience Intern**, ConocoPhillips (Subsurface Research Group)
2013–2015	**Graduate Research Assistant**, Baylor University
2011–2013	**Research and Teaching Assistant**, Brigham Young University

EDUCATION

2021	**Ph.D. Geology**, Texas A&M University *Dissertation*: Interactions between microorganisms and clay-rich sediments during early burial and diagenesis *Advisor*: Dr. Julia Reece
2015	**M.S. Geology**, Baylor University *Thesis*: Paleoceanographic conditions that resulted in the accumulation of organic matter in the Middle Pennsylvanian Hermosa Group, Southwestern Shelf, Paradox Basin, Utah *Advisor*: Dr. Steve Dworkin
2013	**B.S. Geology**, Brigham Young University

GRANTS AND AWARDS

Grants (Total: $50,000)

2023-2025	University of Texas Institute for Geophysics "Blue Sky" Grant, *Multiphase flow properties of thawing permafrost soils*, PI: N. Tanner Mills, Co-PI: Peter B. Flemings ($45,000)
2018	Geological Society of America Travel Grant ($100)
2017	Geological Society of America Travel Grant ($150)
2017	American Association of Petroleum Geologists Grants-in-Aid Michel T. Halbouty Memorial Grant ($1,250)
2014	Baylor University Graduate Student Research Grant ($3,500)

Awards

2021	Best Student Research Paper Award, Department of Geology and Geophysics, Texas A&M University
2016	2nd place poster, Geology and Geophysics Graduate Student Council Research Symposium, Texas A&M University
2015–2016	Aramco Fellowship (1-year tuition and stipend)
2013–2015	Dr. and Mrs. Kenneth Carlile petroleum applied research fellowship (2-years tuition and stipend)

PUBLICATIONS

In review

[7] **Mills, N.T.**, Reece, J.S., and Tice, M.M., *In review*, Microbially induced smectite-to-illite transformation in experimentally prepared natural sediments, *Chemical Geology*.

[6] Stockey, R.G., Cole, D.B., Farrell, U.C., **SGP Trace Metal Working Group including N.T. Mills**, Planavsky, N.J., and Sperling, E.A., *In review*, Multiple increases in atmospheric oxygen and marine productivity through the Neoproterozoic and Paleozoic, *Nature Geoscience*.

Published (peer-reviewed)

[5] **Mills, N.T.**, Reece, J.S., Tice, M.M., and Sylvan, J.B., 2022, Hydromechanical effects of microorganisms on fine-grained sediments during early burial, *Earth and Space Science*, v. 9, e2021EA002037.

[4] Farrell, U.C., (59 other authors), **Mills, N.T.**, (42 other authors), and Sperling, E.A., 2021, The Sedimentary Geochemistry and Paleoenvironments Project, *Geobiology*, v. 19, p. 545-556.

[3] **Mills, N.T.**, Reece, J.S., and Tice, M.M., 2021, Clay minerals modulate early carbonate diagenesis, *Geology*, v. 49, p. 1015-1019.

[2] Mehra, A., Keller, B, Zhang, T., Tosca, N.J., McLennan, S.M., Sperling, E., Farrell, U., Brocks, J., Canfield, D., Cole, D., Crockford, P., Cui, H., Dahl, T.W., Dewing, K., Emmings, J., Gaines, R.R., Gibson, T., Gilleaudeau, G.J., Guilbaud, R., Hodgskiss, M, Jarrett, A., Kabanov, P., Kunzmann, M., Li, C., Loydell, D.K., Lu, X., Miller, A., **Mills, N.T.**, Mouro, L.D., O'Connell, B., Peters, S.E., Poulton, S., Ritzer, S.R., Smith, E., Wilby, P., Woltz, T., and Strauss, J.V., 2021, Curation and analysis of global sedimentary geochemical data to inform Earth history, *GSA Today*, v. 31, no. 5, p. 4-9.

[1] Lipp, A., Shorttle, O., Sperling, E.A., Brocks, J.J., Cole, D., Crockford, P.W., Del Mouro, L., Dewing, K., Dornbos, S.Q., Emmings, J.F., Farrell, U.C., Jarrett, A., Johnson, B.J., Kabanov, P., Keller, C.B., Kunzmann, M., Miller, A.J., **Mills, N.T.**, O'Connell, B., Peters, S.E., Planavsky, N.J., Ritzer, S.R., Schoepfer, S.D., Wilby, P., and Yang, J., 2021, The composition and weathering of the continents over geologic time, *Geochemical Perspectives Letters*, v. 17, p. 21-26.

Manuscripts in preparation

Mills, N.T., Dworkin, S.I., and Atchley, S., *in prep*, Redox conditions driven by accommodation space on the Southwestern Shelf of the Middle Pennsylvanian Paradox Basin, *planned for Palaeogeography, Palaeoclimatology, Palaeoecology.*

CONFERENCE PRESENTATIONS

Mills, T., Flemings, P.B., Nole, M., Germaine, J., Garrett, R., Fukuyama, D., Bigler, L.A., Farquharson, L.M., Hasson, N.R., Smallwood, C.R., Schambach, J.Y., Kolker, S., Sanchez, M., and Ricken, J.B., 2023, Flow and index properties of permafrost cores from Fairbanks, Alaska and synthetic permafrost specimens. American Geophysical Union Fall Meeting, San Francisco, CA.

Mills, N.T., Reece, J.S., Tice, M.M., and Sylvan, J.B., 2021, Hydromechanical effects of microorganisms on fine-grained sediments during early burial. American Geophysical Union Fall Meeting, New Orleans, LA, Abstract H45G-1263 (poster).

Mills, N.T., Reece, J.S., and Tice, M.M., 2021, Clay minerals modulate early carbonate diagenesis. American Geophysical Union Fall Meeting, New Orleans, LA, Abstract PP35B-0996 (poster).

Mills, N.T., Reece, J.S., and Tice, M.M., 2020, Clay minerals modulate early carbonate diagenesis. Gordon Research Conference, Geobiology Section, Galveston, TX (poster).

Mills, N.T., Reece, J.S., and Tice, M.M., 2018, The acid-base properties of clay minerals as a potential buffer for sediment pore water pH and carbonate saturation during microbial iron reduction. Geological Society of America Annual Meeting, Indianapolis, IN, Abstract 167-7 (oral).

Mills, N.T., Reece, J.S., and Tice, M.M., 2018, The role of clay minerals on the evolution of mudstone pore fluids during microbial iron reduction. Gordon Research Conference, Geobiology Section, Galveston, TX, Abstract 32 (poster).

Mills, N.T., Reece, J.S., and Tice, M.M., 2017, The influence of clay minerals on the evolution of mudstone pore fluids during microbial iron reduction. Geological Society of America Annual Meeting, Seattle, WA, Abstract 134-6 (oral).

Mills, T., and Reece, J.S., 2016, Evolution of mudstone porosity, permeability, and microstructure in the presence of microorganisms during vertical compression. American Geophysical Union Fall Meeting, San Francisco, CA, Abstract MR51C-2731 (poster).

Mills, T., and Dworkin, S.I., 2015, Paleoceanographic conditions that resulted in the accumulation of organic matter in the Middle Pennsylvanian Hermosa Group, Southwestern Shelf, Paradox Basin. Geological Society of America Annual Meeting, Baltimore, MD, Abstract 40-9 (poster).

Mills, N.T., Radebaugh, J., and Le Gall, A, 2013, Ongoing measurements of dune width and spacing on Titan reveal dune field properties. Lunar and Planetary Science Conference, The Woodlands, TX, Abstract 2305 (poster).

Mills, N.T., Radebaugh, J., Savage, C.J., and Le Gall, A, 2012, Ongoing measurements of dune width and spacing on Titan reveal dune field properties. Lunar and Planetary Science Conference, The Woodlands, TX, Abstract 2812 (poster).

INVITED TALKS

2022 Microbes and mud: interactions during early burial and diagenesis, *Lawrence Berkeley National Lab*, July 21, 2022.

2022 Microbes and mud: interactions during early burial and diagenesis, *Rice University*, January 10, 2022.

REVIEWS

Journal reviews: Marine and Petroleum Geology, Precambrian Research, Journal of Sedimentary Research
Grant proposal reviews: American Chemical Society – Petroleum Research Fund

UNDERGRADUATE STUDENT ADVISING

Student name, dates advised, current position

Gunner Boler, 09/19 – 12/19, graduate student at Louisiana State University
Jesse Yeon, 05/19 – 12/19, graduate student at Texas A&M University
Lucky Marchelino, 05/19 – 12/19, graduate student at University of Houston
Tate Ryan, 05/19 – 08/19, geologist at Fugro
Andrew Robertson, 05/19 – 08/19, graduate student at University of Houston

TEACHING EXPERIENCE

2018–2020 **Graduate Teaching Assistant**, Texas A&M University
Physical Geology, 42 total students (Sp. 2020)
Igneous and Metamorphic Petrology, 15 students (Sp. 2020)
Geological Field Methods, 16 students (F. 2019)
Geological Communication, 101 total students (F. 2018, Sp. 2019, F. 2019)
Undergraduate Research, 5 students (Su. 2019)
Sedimentology and Stratigraphy, 48 total students (F. 2018, Sp. 2019)

Summer 2013 **Teaching Assistant**, Brigham Young University
Geological Field Methods (Field Camp), 20 students

Teaching Certificates

2021 **Academy for Future Faculty**, Texas A&M University

FIELD EXPERIENCE

Research

2023	UT-GOM2-2, Gulf of Mexico; pore water collection team; 14 days
2023	Fairbanks, Alaska; taking permafrost cores; 6 days
2018	Austin, Texas; collecting Austin Chalk samples; 2 days
2014	Honaker Trail, Utah; measuring section, collecting samples; 14 days
2013	San Rafael Swell, Utah; taking core plugs, measuring section; 4 days
2013	Capitol Reef National Park, Utah; mapping; 3 days

Teaching

2020	Death Valley, California; mapping, measuring section; 4 days
2020	Valley of Fire, Nevada; mapping; 4 days
2018	Canyon Lake Gorge; carbonate facies; 1 day
2013	Kanarraville & San Rafael Swell, Utah; mapping, measuring section; 14 days

Coursework

2019	Lozier Canyon, Texas; Eagle Ford Group; 2 days
2018	Paradox Basin, Utah; Cutler Group; 6 days
2014	Waco, Texas; Brazos River cutbank; 3 days
2014	Permian Basin, New Mexico and Texas; Permian stratigraphy; 4 days
2014	Book Cliffs, Utah; Blackhawk and Castlegate Formations; 4 days
2014	White Sands National Monument, New Mexico; eolian processes; 1 day
2012	Field Camp, throughout Utah; 6 weeks
2012	Wind River and Big Horn Basins, Wyoming; petroleum systems; 3 days
2012	Florida and the Bahamas; modern carbonates; 8 days

SKILLS

Computer: Python, MatLab, Petra, Spotfire, ArcGIS, Adobe Illustrator

Laboratory: mudstone resedimentation, triaxial load frame, grain size analysis (Mastersizer; hydrometer), Atterberg limits, grain density via helium porosimetry, resin embedding of sediments, SEM, XRD, XRF, μXRF (limited experience), laser ablation ICP-MS (limited experience), carbon and nitrogen isotope preparation, IRMS (lab technician help), total organic carbon preparation, petrographic microscopy, ferrozine assay, anaerobic chamber, bacterial culture, cell counts (DAPI stain)

AFFILIATIONS

American Geophysical Union, Geological Society of America, American Association of Petroleum Geologists, Sedimentary Geochemistry and Paleoenvironments Project.