

Timothy A. Goudge

Curriculum Vitae

The University of Texas at Austin
Jackson School of Geosciences
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Austin, TX 78712-1722

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Pronouns: He/Him

Research Interests

My science is driven by interests in: using remote sensing to investigate the record of surface processes on planetary bodies; reconstructing the ancient martian surface environment from its geology and sedimentary rock record; understanding how distinct boundary conditions on planetary surfaces affect sedimentary processes; and quantitative analysis of infrared spectroscopy data to remotely characterize mineralogy.

Education

Brown University, Providence, Rhode Island, USA

2015

Doctor of Philosophy (PhD) in Geological Sciences

Dissertation Title: *Paleolakes on Mars: Insights into timing, morphology, and mineralogy.*

Advisors: Jim Head and Jack Mustard

2012

Master of Science (ScM) in Geological Sciences

Advisors: Jim Head and Jack Mustard

Queen's University, Kingston, Ontario, Canada

2009

Bachelor of Science (BSc) in Geological Engineering

Focus in Geotechnical Engineering; Graduated Honors, 1st Class

Professional Experience

2019 – Present

Assistant Professor

Department of Geological Sciences, Jackson School of Geosciences, The University of Texas at Austin

2015 – 2019

Jackson School Distinguished Postdoctoral Fellow

Jackson School of Geosciences, The University of Texas at Austin

2010 – 2015

Graduate Student Research Assistant

Department of Geological Sciences, Brown University

Academic Honors and Awards

2021

NASA Planetary Science Early Career Award

2021 – 2023

CIFAR Azrieli Global Scholar, Earth 4D: Subsurface Science & Exploration Program

2021

AGU Ronald Greeley Early Career Award in Planetary Sciences

2019, 2020

G. Moses and Carolyn G. Knebel Distinguished Teaching Award
Best geology course, as judged by the students. 2019 – graduate level (Intro. Remote Sensing); 2020 – undergraduate level (Sed. Rocks)

2020	Geosphere Exceptional Reviewer
2018	National Center for Earth-Surface Dynamics 2 Synthesis Postdoctoral Fellowship
2015 – 2017	Jackson School Distinguished Postdoctoral Fellowship, The University of Texas at Austin
2015	GeoClub Award (<i>for outstanding departmental service by a graduate student</i>), Brown University
2012 – 2015	Natural Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Scholarship
2012, 2013	GSA Northeastern Section Student Travel Grant
2010 – 2011	First Year Graduate Fellowship, Brown University
Prior to 2010 (<i>at Queen's Univ.</i>)	J. P. Bickell Foundation Mining Scholarship (2008–2009); Gartner Lee Scholarship in Geological Engineering (2008–2009); J. J. Denny Memorial Scholarship in Geological Engineering (2007–2008); Morley E. Wilson Scholarship in Geological Sciences (2006–2008); Annie Bentley Lillie Book Prize for First Year Calculus (2006–2007); Dean's Scholar (2005–2008); Dean's Award (2005–2006); Dean's Entrance Scholarship in Applied Science (2005–2006)

Refereed Journal Publications

Goudge mentee. #Graduate student, †postdoctoral fellow, §undergraduate student.

2023:

1. Hughes, C. M., M. S. Rice, C. J. Barnhart, T. E. Swanson, A. M. Pfeiffer, and **T. A. Goudge** (2023), Sources of clay-rich sediment in Eberswalde crater, Mars with implications for biopreservation potential, *J. Geophys. Res. Planets*, *in press*, DOI: 10.1029/2022JE007545.
2. **Goudge, T. A.**, J. M. Swartz, T. Y. Dong[†], and D. Mohrig (2023), Characterizing the response of the coastal Rio Grande to upstream damming, *Geomorphology*, *426*, 108604, DOI: 10.1016/j.geomorph.2023.108604.
3. **Goudge, T. A.**, C. I. Fassett, M. Coholich[§], and E. R. Bamber[#] (2023), Assessing controls on the incomplete draining of martian open-basin lakes, *J. Geophys. Res. Planets*, *128*, e2022JE007443, DOI: 10.1029/2022JE007443.

2022:

4. #Bamber, E. R., **T. A. Goudge**, C. I. Fassett, G. R. Osinski, and G. Stucky de Quay (2022), Paleolake inlet valley formation: Factors controlling which craters breached on early Mars, *Geophys. Res. Lett.*, *49*, e2022GL101097, DOI: 10.1029/2022GL101097.
5. Michalski, J. R., **T. A. Goudge**, S. A. Crowe, J. Cuadros, J. F. Mustard, and S. S. Johnson (2022), Geological Diversity and Microbiological Potential of Lakes on Mars, *Nature Astronomy*, *6*, 1133–1141, DOI: 10.1038/s41550-022-01743-7.
6. †Dong, T. Y., and **T. A. Goudge** (2022), Quantitative relationships between river and channel-belt planform patterns, *Geology*, *50*, 1053–1057, DOI: 10.1130/G49935.1.
7. Hassenruck-Gudipati, H. J., T. S. Ellis, **T. A. Goudge**, and D. Mohrig (2022), A multi-proxy assessment of terrace formation in the lower Trinity River Valley, Texas, *Earth Surf. Dynam.*, *10*, 635–651, DOI: 10.5194/esurf-10-635-2022.

8. #Bamber, E. R., **T. A Goudge**, C. I. Fassett, and G. R. Osinski (2022), Constraining the formation of paleolake inlet valleys across crater rims, *Icarus*, 378, 114945, DOI: 10.1016/j.icarus.2022.114945.
9. #Tebolt, M., and **T. A Goudge** (2022), Global investigation of martian sedimentary fan features: Using stratigraphic analysis to study depositional environment, *Icarus*, 372, 114718, DOI: 10.1016/j.icarus.2021.114718.

2021:

10. Fassett, C. I., and **T. A. Goudge** (2021), Modeling the hydrodynamics, sediment transport, and valley incision of outlet-forming floods from martian crater lakes, *J. Geophys. Res. Planets*, 126, e2021JE006979, DOI: 10.1029/2021JE006979.
11. **Goudge, T. A.**, A. M. Morgan, G. Stucky de Quay[†], and C. I. Fassett (2021), The importance of lake breach floods for valley incision on early Mars, *Nature*, 597, 645–649, DOI: 10.1038/s41586-021-03860-1.
12. [†]Stucky de Quay, G., **T. A. Goudge**, E. S. Kite, C. I. Fassett, and S. D. Guzewich (2021), Limits on runoff episode duration for early Mars: Integrating lake hydrology and climate models, *Geophys. Res. Lett.*, 48, e2021GL093523, DOI: 10.1029/2021GL093523.
13. Baum, M., R. Wordsworth, and **T. A. Goudge** (2021), Consequences of proposed shoreline deformation scenarios for Jezero crater, Mars, *Planet. Sci. J.*, 2, 218, DOI: 10.3847/PSJ/ac01de.
14. Levy, J. S., C. I. Fassett, J. W. Holt, R. Parsons, W. Cipolli, **T. A. Goudge**, M. Tebolt[#], L. Kuentz, J. Johnson, F. Ishraque, B. Cvijanovich, and I. Armstrong (2021), Surface boulder banding indicates martian debris-covered glaciers formed over multiple glaciations, *Proc. Natl. Acad. Sci.*, 118, e2015971118, DOI: 10.1073/pnas.2015971118.

2020:

15. [†]Stucky de Quay, G., **T. A. Goudge**, and C. I. Fassett (2020), Precipitation and aridity constraints from paleolakes on early Mars, *Geology*, 48, 1189–1193, DOI: 10.1130/G47886.1.
16. Cardenas, B. T., D. Mohrig, C. M. Hughes, **T. A. Goudge**, J. S. Levy, T. Swanson, J. Mason, and F. Zhao (2020), The anatomy of exhumed river-channel belts: Bedform- to belt-scale river kinematics of the Ruby Ranch Member, Cretaceous Cedar Mountain Formation, Utah, USA, *Sedimentology*, 67, 3655–3682, DOI: 10.1111/sed.12765.
17. Swartz, J. M., **T. A. Goudge**, and D. Mohrig (2020), Quantifying coastal fluvial morphodynamics over the last 100 years on the lower Rio Grande, USA and Mexico, *J. Geophys. Res. Earth Surface*, 125, e2019JF005443, DOI: 10.1029/2019JF005443.
18. Cook, C. W., A. M. Bramson, S. Byrne, J. W. Holt, M. S. Christoffersen, D. Viola, C. M. Dundas, and **T. A. Goudge** (2020), Sparse subsurface radar reflectors in Hellas Planitia, Mars, *Icarus*, 348, 113847, DOI: 10.1016/j.icarus.2020.113847.
19. Brown, A. J., C. E. Viviano, and **T. A. Goudge** (2020), Olivine-carbonate mineralogy of the Jezero crater region, *J. Geophys. Res. Planets*, 125, e2019JE006011, DOI: 10.1029/2019JE006011.
20. #Tebolt, M., J. Levy, **T. Goudge**, and N. Schorghofer (2020), Slope, elevation, and thermal inertia trends of martian recurring slope lineae initiation and termination points: Multiple possible processes occurring on coarse, sandy slopes, *Icarus*, 338, 113536, DOI: 10.1016/j.icarus.2019.113536.

2019:

21. Cardenas, B. T., T. Swanson, **T. A. Goudge**, R. W. Wagner, and D. Mohrig (2019), The effect of remote sensing resolution limits on aeolian sandstone measurements and the reconstruction of ancient dune fields on Mars: Numerical experiment using the Page Sandstone, Earth, *J. Geophys. Res. Planets.*, *124*, 3244–3256, DOI: 10.1029/2019JE006191.
22. Tarnas, J. D., J. F. Mustard, H. Lin, **T. A. Goudge**, E. S. Amador, M. S. Bramble, C. H. Kremer, X. Zhang, Y. Itoh, and M. Parente (2019), Orbital identification of hydrated silica in Jezero crater, Mars, *Geophys. Res. Lett.*, *46*, 12,771–12,782, DOI: 10.1029/2019GL085584.
23. Schorghofer, N., J. S. Levy, and **T. A. Goudge** (2019), High-resolution thermal environment of recurring slope lineae in Palikir crater, Mars, and its implications for volatiles, *J. Geophys. Res. Planets*, *124*, 2852–2862, DOI: 10.1029/2019JE006083.
24. Lim, Y., J. S. Levy, **T. A. Goudge**, and W. Kim (2019), Ice cover as a control on the morphodynamics and stratigraphy of Arctic deltas, *Geology*, *47*, 399–402, DOI: 10.1130/G45146.1.
25. Shahrzad, S., K. M. Kinch, **T. A. Goudge**, C. I. Fassett, D. H. Needham, C. Quantin-Nataf, and C. P. Knudsen (2019), Crater statistics on the dark-toned, mafic floor unit in Jezero Crater, Mars, *Geophys. Res. Lett.*, *46*, 2408–2416, DOI: 10.1029/2018GL081402.
26. Kocurek, G., R. C. Martindale, M. Day, **T. A. Goudge**, C. Kerans, H. J. Hassenruck-Gudipati, J. Mason, B. T. Cardenas, E. I. Petersen, D. Mohrig, D. S. Aylward, C. M. Hughes, and C. M. Nazworth (2018), Antecedent aeolian dune topographic controls on carbonate and evaporite facies: Jurassic Todilto Member, Wanakah Formation, Ghost Ranch, New Mexico, USA, *Sedimentology*, *66*, 808–837, DOI: 10.1111/sed.12518.
27. Bramble, M. S., **T. A. Goudge**, R. E. Milliken, and J. F. Mustard (2019), Testing the deltaic origin of fan deposits at Bradbury crater, Mars, *Icarus*, *319*, 363–366, DOI: 10.1016/j.icarus.2018.09.024.
28. Hughes, C. M., B. T. Cardenas, **T. A. Goudge**, and D. Mohrig (2019), Deltaic deposits indicative of a paleo-coastline at Aeolis Dorsa, Mars, *Icarus*, *317*, 442–453, DOI: 10.1016/j.icarus.2018.08.009.
29. de Haas, T., S. J. Conway, F. E. G. Butcher, J. Levy, P. M. Grindrod, **T. A. Goudge**, and M. R. Balme (2019), Time will tell: Temporal evolution of martian gullies and paleoclimatic implications, *Geol. Soc. London Spec. Pub.* *467*, 165–186, DOI: 10.1144/SP467.1.
30. **Goudge, T. A.**, C. I. Fassett, and D. Mohrig (2019), Incision of paleolake outlet canyons on Mars from overflow flooding, *Geology*, *47*, 7–10, DOI: 10.1130/G45397.1.

2018:

31. **Goudge, T. A.**, and C. I. Fassett (2018), Incision of Licus Vallis, Mars from multiple lake overflow floods, *J. Geophys. Res. Planets*, *123*, 405–420, DOI: 10.1002/2017JE005438.
32. Cardenas, B. T., D. Mohrig, and **T. A. Goudge** (2018), Fluvial stratigraphy of valley fills at Aeolis Dorsa, Mars: Evidence for base-level fluctuations controlled by a downstream water body, *Geol. Soc. Amer. Bull.*, *130*, 484–498, DOI: 10.1130/B31567.1.
33. Liu, Y., **T. A. Goudge**, J. G. Catalano, and A. Wang (2018), Spectral and stratigraphic mapping of hydrated minerals associated with interior layered deposits near the southern wall of Melas Chasma, Mars, *Icarus*, *302*, 62–79, DOI: 10.1016/j.icarus.2017.11.006.
34. **Goudge, T. A.**, D. Mohrig, B. T. Cardenas, C. M. Hughes, and C. I. Fassett (2018), Stratigraphy and paleohydrology of delta channel deposits, Jezero crater, Mars, *Icarus*, *301*, 58–75, DOI: 10.1016/j.icarus.2017.09.034.
35. Salvatore, M. R., **T. A. Goudge**, M. S. Bramble, C. S. Edwards, J. L. Bandfield, E. S. Amador, J. F. Mustard, and P. R. Christensen (2018), Bulk mineralogy of the NE Syrtis and Jezero crater

regions of Mars derived through thermal infrared spectral analyses, *Icarus*, *301*, 76–96, DOI: 10.1016/j.icarus.2017.09.019.

2017:

36. **Goudge, T. A.**, J. M. Russell, J. F. Mustard, J. W. Head, and S. Bijaksana (2017), A 40,000 year record of clay mineralogy at Lake Towuti, Indonesia: Paleoclimate reconstruction from reflectance spectroscopy and perspectives on paleolakes on Mars, *Geol. Soc. Amer. Bull.*, *129*, 806–819, DOI: 10.1130/B31569.1.
37. **Goudge, T. A.**, R. E. Milliken, J. W. Head, J. F. Mustard, and C. I. Fassett (2017), Sedimentological evidence for a deltaic origin of the western fan deposit in Jezero crater, Mars and implications for future exploration, *Earth Planet. Sci. Lett.*, *458*, 357–365, DOI: 10.1016/j.epsl.2016.10.056.
38. Levy, J. S., **T. A. Goudge**, J. W. Head, and C. I. Fassett (2017), Candidate volcanic and impact-induced ice depressions on Mars, *Icarus*, *285*, 185–194, DOI: 10.1016/j.icarus.2016.10.021.

2016:

39. **Goudge, T. A.**, C. I. Fassett, J. W. Head, J. F. Mustard, and K. L. Aureli (2016), Insights into surface runoff on early Mars from paleolake basin morphology and stratigraphy, *Geology*, *44*, 419–422, DOI: 10.1130/G37734.1.
40. Weider, S. Z., L. R. Nittler, S. L. Murchie, P. N. Peplowski, T. J. McCoy, L. Kerber, C. Klimczak, C. M. Ernst, **T. A. Goudge**, R. D. Starr, N. R. Izenberg, R. L. Klima, and S. C. Solomon (2016), Evidence from MESSENGER for sulfur- and carbon-driven explosive volcanism on Mercury, *Geophys. Res. Lett.*, *43*, 3653–3661, DOI: 10.1002/2016GL068325.

2015:

41. **Goudge, T. A.**, K. L. Aureli, J. W. Head, C. I. Fassett, and J. F. Mustard (2015), Classification and analysis of candidate impact crater-hosted closed-basin lakes on Mars, *Icarus*, *260*, 346–367, DOI: 10.1016/j.icarus.2015.07.026.
42. Weber, A. K., J. M. Russell, **T. A. Goudge**, M. R. Salvatore, J. F. Mustard, and S. Bijaksana (2015), Characterizing clay mineralogy in Lake Towuti, Indonesia, with reflectance spectroscopy, *J. Paleolimnol.*, *54*, 253–261, DOI: 10.1007/s10933-015-9844-4.
43. **Goudge, T. A.**, J. F. Mustard, J. W. Head, C. I. Fassett, and S. M. Wiseman (2015), Assessing the mineralogy of the watershed and fan deposits of the Jezero crater paleolake system, Mars, *J. Geophys. Res. Planets*, *120*, 775–808, DOI: 10.1002/2014JE004782.
44. Dickson, J. L., J. W. Head, **T. A. Goudge**, and L. Barbieri (2015), Recent climate cycles on Mars: Stratigraphic relationships between multiple generations of gullies and the latitude dependent mantle, *Icarus*, *252*, 83–94, DOI: 10.1016/j.icarus.2014.12.035.
45. **Goudge, T. A.**, J. F. Mustard, J. W. Head, M. R. Salvatore, and S. M. Wiseman (2015), Integrating CRISM and TES hyperspectral data to characterize a halloysite-bearing deposit in Kashira crater, Mars, *Icarus*, *250*, 165–187, DOI: 10.1016/j.icarus.2014.11.034.

2014:

46. **Goudge, T. A.**, J. W. Head, L. Kerber, D. T. Blewett, B. W. Denevi, D. L. Domingue, J. J. Gillis-Davis, K. Gwinner, J. Helbert, G. M. Holsclaw, N. R. Izenberg, R. L. Klima, W. E. McClintock, S. L. Murchie, G. A. Neumann, D. E. Smith, R. G. Strom, Z. Xiao, M. T. Zuber, and S. C. Solomon (2014), Global inventory and characterization of pyroclastic deposits on Mercury: New insights into pyroclastic activity from MESSENGER orbital data, *J. Geophys. Res. Planets*, *119*, 635–658, DOI: 10.1002/2013JE004480.

47. Izenberg, N. R., R. L. Klima, S. L. Murchie, D. T. Blewett, G. M. Holsclaw, W. E. McClintock, E. Malaret, C. Mauceri, F. Vilas, A. L. Sprague, J. Helbert, D. L. Domingue, J. W. Head, **T. A. Goudge**, S. C. Solomon, C. A. Hibbitts, and M. D. Dyar (2014), The low-iron, reduced surface of Mercury as seen in spectral reflectance by MESSENGER, *Icarus*, *228*, 364–374, DOI: 10.1016/j.icarus.2013.10.023.

2012:

48. **Goudge, T. A.**, J. F. Mustard, J. W. Head, and C. I. Fassett (2012), Constraints on the history of open-basin lakes on Mars from the composition and timing of volcanic resurfacing, *J. Geophys. Res. Planets*, *117*, E00J21, DOI: 10.1029/2012JE004115.
49. Watters, T. R., S. C. Solomon, C. Klimczak, A. M. Freed, J. W. Head, C. M. Ernst, D. M. Blair, **T. A. Goudge**, and P. K. Byrne (2012), Extension and contraction within volcanically buried impact craters and basins on Mercury, *Geology*, *40*, 1123–1126, DOI: 10.1130/G33725.1.
50. **Goudge, T. A.**, J. W. Head, J. F. Mustard, and C. I. Fassett (2012), An analysis of open-basin lake deposits on Mars: Evidence for the nature of associated lacustrine deposits and post-lacustrine modification processes, *Icarus*, *219*, 211–229, DOI: 10.1016/j.icarus.2012.02.027.

2011:

51. Head, J. W., C. R. Chapman, R. G. Strom, C. I. Fassett, B. W. Denevi, D. T. Blewett, C. M. Ernst, T. R. Watters, S. C. Solomon, S. L. Murchie, L. M. Prockter, N. L. Chabot, J. J. Gillis-Davis, J. L. Whitten, **T. A. Goudge**, D. M. H. Baker, D. M. Hurwitz, L. R. Ostrach, Z. Xiao, W. J. Merline, L. Kerber, J. L. Dickson, J. Oberst, P. K. Byrne, C. Klimczak, and L. R. Nittler (2011), Flood volcanism in the northern high latitudes of Mercury revealed by MESSENGER, *Science*, *333*, 1853–1856, DOI: 10.1126/science.1211997.

Non-Refereed Publications

1. Piatek, J. L., K. E. Vander Kaaden, **T. A. Goudge**, J. L. Molaro, and M. P. Milazzo (2020), Breaking Down Barriers: Accessibility in Planetary Science, *White Paper for Planetary Science and Astrobiology Decadal Survey 2023-2032*.
2. Diniega, S., J. Castillo-Rogez, I. Daubar, J. Filiberto, **T. Goudge**, K. Lynch, A. Rutledge, J. Rathbun, J. Scully, R. Smith, C. Richey, C. Tai Udovicic, and M. Villarreal (2020), Ensuring a safe and equitable workspace: The importance and feasibility of a Code of Conduct, along with clear policies regarding authorship and team membership, *White Paper for Planetary Science and Astrobiology Decadal Survey 2023-2032*.
3. Horgan, B., J. L. Bishop, A. Brown, W. Calvin, C. Edwards, A. Fraeman, **T. Goudge**, L. C. Kah, E. Kite, K. Lynch, R. M. Ramirez, E. Rampe, W. Rapin, M. Rice, F. Rivera-Hernández, K. Stack, J. Tarnas, A. Treiman, and C. Viviano (2020), The evolution of habitable environments on terrestrial planets: Insights and knowledge gaps from studying the geologic record of Mars, *White Paper for Planetary Science and Astrobiology Decadal Survey 2023-2032*.
4. Murchie, S. L., R. E. Arvidson, J. L. Bishop, W. M. Calvin, J. Carter, J. Christian, R. N. Clark, C. M. Dundas, B. L. Ehlmann, V. K. Fox, A. A. Fraeman, **T. A. Goudge**, B. H. Horgan, M. N. Hughes, E. K. Leask, A. S. McEwen, J. F. Mustard, M. Parente, K. E. Powell, F. P. Seelos, K. D. Seelos, J. D. Tarnas, C. E. Viviano, and J. J. Wray (2020), Maximizing the Science and Resource Mapping Potential of Orbital VSWIR Spectral Measurements of Mars, *White Paper for Planetary Science and Astrobiology Decadal Survey 2023-2032*.
5. Brown, A. J., C. E. Viviano, and **T. A. Goudge** (2020), Mars 2020 team using Australian rocks in search for life on Mars, *Eos*, *101*, DOI: 10.1029/2020EO146438.

Teaching

Department of Geological Sciences, The University of Texas at Austin:

Sedimentary Rocks (GEO 416M)

- Fall 2022
- Fall 2021
- Fall 2020; *voted best undergraduate course by DGS students (Knebel Teaching Award)*

Introduction to Remote Sensing for Geoscientists (GEO 455S/485S)

- Spring 2022
- Spring 2021
- Spring 2020
- Spring 2019; *voted best graduate course by DGS students (Knebel Teaching Award)*

Mars Sedimentology (GEO 291)

- Spring 2016; *co-taught as postdoctoral instructor with David Mohrig*

Additional Teaching Experience:

2014	Graduate Teaching Assistant; <i>Mars, Moon, and the Earth (GEOL 0050); Department of Geological Sciences, Brown University</i>
2014	Sheridan Teaching Certificate I – Reflective Teaching; <i>The Harriet W. Sheridan Center for Teaching and Learning, Brown University</i>
2007 – 2008	Undergraduate Teaching Assistant; <i>Earth's Physical Environment (APSC 151); Department of Geological Sciences and Geological Engineering, Queen's University</i>

Student Advising

Postdoctoral Fellows:

2022 – Present	Andrew Moodie. <i>PhD at Rice University. Jackson School Distinguished Postdoctoral Fellow.</i>
2020 – 2022	Tian Dong. <i>PhD at Rice University. NSF Postdoctoral Fellow.</i>
2019 – 2021	Gaia Stucky de Quay. <i>PhD at Imperial College London.</i>

Graduate Students:

2022 – Present	Morgan Carrington. <i>BS at University of California, Los Angeles. Co-advised w/ J. Johnson</i>
2020 – Present	Mariel Nelson. <i>BA at University of California, Berkeley. Co-advised w/ D. Mohrig</i>
2020 – Present	Emily Bamber. <i>MSc at University of Oxford.</i>
2019 – Present	Michelle Tebolt. <i>BA at Colgate University.</i>

Undergraduate Students:

2022 – Present	Juan Vazquez, <i>Undergraduate Research Assistant & Mentee, Champions of Diversity Program, Dept. Geological Sciences, UT Austin.</i>
2022	Nisa Downey, <i>Undergraduate Guided Research Mentee, Dept. Geological Sciences, UT Austin.</i>
2020 – 2021	Junwoo Kim, <i>Environmental Science Capstone Research Experience, Dept. Geological Sciences, UT Austin. Co-advised w/ G. Stucky de Quay.</i>
2020 – 2021	Irineo Sanchez, <i>Honors Thesis, Dept. Geological Sciences, UT Austin.</i>
2019 – 2020	Nirvana Kaur, <i>Dept. Geological Sciences, UT Austin.</i>

2018 – 2020 Marianne Coholich, *Honors Thesis, Dept. Geological Sciences, UT Austin. Co-advised w/ W. Kim.*

Committee Membership:

PhD:

- Charlie Zheng, *Department of Geological Sciences, UT Austin. Primary advisor C. Kerans.*
- Grace Guryan, *Dept. Geological Sciences, UT Austin. Primary advisor J. Johnson.*
- Eric Hiatt, *Institute for Geophysics and Dept. Geological Sciences, UT Austin. Primary advisors M. Hesse and S. Gulick.*
- Scarlett Hsia, *Department of Geological Sciences, UT Austin. Primary advisor C. Kerans.*
- Shawn Fullmer, *Department of Geological Sciences, UT Austin. Primary advisor C. Kerans.*
- Cole Speed, *Department of Geological Sciences, UT Austin. Primary advisors Z. Sylvester and D. Mohrig.*
- Dallas Dunlap, *Bureau of Economic Geology, UT Austin. Primary advisor T. Meckel.*
- Matthew Svensson, *Dept. of Earth Sciences, U. Western Ontario. Primary advisor G. Osinski. PhD, 2022.*
- Sophie Goliber, *Institute for Geophysics, UT Austin. Primary advisor G. Catania. PhD, 2022*
- Natalie Wolfenbarger, *Institute for Geophysics, UT Austin. Primary advisor D. Blankenship. PhD, 2022.*
- Chris Liu, *Department of Geological Sciences, UT Austin. Primary advisor D. Mohrig. PhD, 2022.*
- Kathleen Wilson, *Department of Geological Sciences, UT Austin. Primary advisor D. Mohrig. PhD, 2022.*
- Paul Morris, *Department of Geological Sciences, UT Austin. Primary advisors J. Covault and D. Mohrig. PhD, 2022.*
- Hima Hassenruck-Gudipati, *Department of Geological Sciences, UT Austin. Primary advisor D. Mohrig. PhD, 2021.*

MSc:

- Nicole Guinn, *Dept. Geological Sciences, UT Austin. Primary advisor J. Gardner. MSc, 2020.*

Undergraduate Honors Thesis:

- Laura Arnold, *Dept. Geological Sciences, UT Austin. Primary advisor D. Breecker. BSc, 2022.*
- Juanita Vargas-Londoño, *Departamento de Ciencias de la Tierra, Universidad EAFIT. Primary advisor J. F. Paniagua-Arroyave. BSc, 2020.*
- Harry Hull, *Dept. Geological Sciences, UT Austin. Primary advisor J. Snedden. BSc, 2019.*
- Jake Gearon, *Dept. Geological Sciences, UT Austin. Primary advisor M. Young. BSc, 2019.*

PhD Qualification Exam:

- Dimitri Voytan, *Institute for Geophysics, UT Austin. Primary advisor M. Sen. Exam 12/2021.*
- Logan Schmidt, *Dept. Geological Sciences, UT Austin. Primary advisor D. Rempe. Exam 4/2019.*

Invited Talks

2023	University of Kerala, Department of Geology Seminar
2021	Life in the Universe 2021: Our Past, Present and Future Selves
2021	University of Miami, Rosenstiel School of Marine and Atmospheric Science, Geotopics Seminar

- 2021 Massachusetts Institute of Technology, Chemical Oceanography, Geology, Geochemistry, and Geobiology (COG³) Seminar
- 2021 Northern Arizona University, Planetary Surface Brown Bag Seminar
- 2020 University of California, Los Angeles/University of California, Berkeley/Jet Propulsion Laboratory, Planetary Science Seminar
- 2020 GSA Annual Meeting
- 2020 University of Western Ontario, Western Space Weekly Webinar
- 2020 The University of Massachusetts Amherst, Department of Geosciences Lecture Series
- 2020 California Institute of Technology, Geoclub Seminar
- 2019 Rice University, Department of Earth, Environmental and Planetary Sciences Colloquium
- 2019 Midwestern State University, Kimbell School of Geosciences Colloquium
- 2019 The University of Arizona, Lunar and Planetary Laboratory Colloquium
- 2019 PICO Presentation, 2019 SEPM Annual Meeting
- 2019 Tulane University, Department of Earth and Environmental Sciences Seminar
- 2018 GSA Annual Meeting
- 2018 McMaster University, School of Geography & Earth Sciences Seminar
- 2018 Queen's University, Department of Geological Sciences and Geological Engineering Seminar
- 2018 The University of Texas at Austin, Department of Geological Sciences Seminar
- 2018 Stanford University, Department of Geological Sciences Seminar
- 2017 AGU Fall Meeting
- 2017 NASA Marshall Space Flight Center, NSSTC Space Science Seminar
- 2017 NASA Ames Research Center, Space Science & Astrobiology Division Seminar
- 2017 USGS Menlo Park, Geology, Minerals, Energy and Geophysics Group Seminar
- 2017 Southwest Research Institute, Space Science and Engineering Division Seminar
- 2017 NASA Jet Propulsion Laboratory, Seminar
- 2017 Rice University, Sedimentology Seminar
- 2017 58th Brown-Vernadsky Microsymposium
- 2017 The University of Texas at Austin, UT Institute for Geophysics Seminar
- 2017 SETI Institute, Weekly Colloquium
- 2016 University of Manitoba, Department of Geological Sciences Seminar
- 2016 The University of Texas at Austin, DeFord Lecture Series (Department of Geological Sciences Seminar)
- 2016 GSA Annual Meeting
- 2013 Massachusetts Institute of Technology, Planetary Internal Colloquium Series

Professional Service

To the University:

2022 – Present	Chair, Department of Geological Sciences Diversity, Equity and Inclusion Committee
2020 – Present	Faculty Advisor, <i>Hola Geo/GeoLatinas Austin Local Team</i>
2020 – Present	Executive Committee, <i>UT Center for Planetary Systems Habitability</i>
2018 – Present	Leadership Committee, <i>UT Geoscience Empowerment Network</i>
2018 – Present	Judge for Jackson School of Geosciences Student Research Symposium
2021 – 2023	Champions of Diversity Cohort, Jackson School of Geosciences
2021 – 2022	Member, Department of Geological Sciences Excellence in Earth Science Postdoctoral Fellows Program search committee
2021 – 2022	Member, ad hoc committee for changing the name of the Department of Geological Sciences
2020 – 2021	Sub-pod Group Leader, JSG Megapod, Unlearning Racism in Geoscience (URGE)
2020 – 2021	Member, UT Institute for Geophysics Research Associate search committee
2019 – 2021	Lead, Jackson School AGU Bridge Program proposal initiative
2020, 2021	Faculty Annual Evaluation Committee, Subsurface, Surface and Life Program, Department of Geological Sciences
2020	Member, Graduate Studies Committee ad hoc committee on graduate admissions process
2020	Member, Department of Geological Sciences Chair ad hoc search committee
2019	Early career researcher interviewer group, Jackson School of Geosciences Dean search committee
2016 – 2018	Team member, Pop-Up Institute, <i>Understanding Planetary Habitability</i>

To the Community:

2021 – Present	Co-Convener, 2023 GSA Penrose Conference, “ <i>The role of outburst floods in Earth and planetary evolution</i> ”
2020 – Present	Member, AGU Africa Space Science Award Committee
2016 – Present	Judge for Dwornik Award at the Lunar and Planetary Science Conference
2015 – Present	Peer Reviewer for <i>Proceedings of the National Academy of Sciences; Nature Geoscience; Geology; Nature Communications; Science Advances; Geophysical Research Letters; Earth and Planetary Science Letters; Geosphere; Geomorphology; Scientific Reports; Journal of Geophysical Research – Planets; Journal of Geophysical Research – Earth Surface; Icarus; Astrobiology; Planetary and Space Science; Space Science Reviews; Planetary Data System (PDS)</i>
2015 – Present	Review Panelist and External/Ad Hoc Reviewer for NASA ROSES and NSF
2015 – Present	Judge for Outstanding Student Paper Award at the American Geophysical Union Fall Meeting
2022	Session Co-Chair at 53 rd Lunar and Planetary Science Conference
2021	External Reviewer for Swiss National Science Foundation
2021	Session Co-Chair at 52 nd Lunar and Planetary Science Conference
2019	Reviewer for AGU Fall Meeting Travel Grants
2014 – 2018	Lead advocate for Jezero crater paleolake as a landing site for the NASA Mars 2020 rover
2018	Program Committee for 49 th Lunar and Planetary Science Conference
2017	Session Co-Chair at 48 th Lunar and Planetary Science Conference

2014 Session Co-Chair at 2014 GSA Annual Meeting

Public Outreach

2021 Guest speaker for the Fall Professional Learning Institute for OnRamps Earth, Wind, and Fire Instructors

2021 Guest speaker for Introduction to Astronomy and Planetary Science, Prison Education Project

2021 Guest speaker at Sun City Georgetown Nature Club

2020 Panelist, AIR Centre Roundtable: Oceans in the Solar System

2020 Guest speaker at Northwest Austin Rotary Club

2020 Guest speaker at Hot Science – Cool Talks

2019 Guest speaker at the University of Texas at Austin Undergraduate Geological Society; the Austin Geological Society; Senior University Georgetown; UT GIS Day Lightning Talks; Astronomy on Tap ATX

2018 Presenter at the 2018 AISD Science + Mathematics X Conference

2011 – 2016 Volunteer for Mars Exploration Student Data Teams (MESDT)

2011 – 2015 Vartan-Gregorian Elementary School Volunteer Science Teacher

2014 Guest speaker at University of Maryland Observatory; Skyscrapers, Inc.

2012 – 2014 Vartan-Gregorian Elementary School Volunteer Science Teacher Program Organizer

2011 Judge for Athena Science Challenge

First-Authored Conference Abstracts and Presentations (*past 2 years*)

**Oral presentation*

Goudge mentee: #Graduate student, †postdoctoral fellow, §undergraduate student.

1. **Goudge, T. A.**, A. M. Morgan, G. Stucky de Quay, and C. I. Fassett (2022), Catastrophic lake breach floods and the early Mars landscape, *GAC-MAC-IAH-CNC-CSPG Joint Meeting*, Abstract 298.
2. ***Goudge, T. A.**, A. M. Morgan, G. Stucky de Quay, and C. I. Fassett (2022), Catastrophic lake breach floods and the early Mars landscape, *53rd Lunar and Planetary Science Conference*, Abstract 1006.
3. **Goudge, T. A.**, **A. M. Morgan*, G. Stucky de Quay, and C. I. Fassett (2021), Paleolake outlet valley incision and the early Mars landscape, *2021 AGU Fall Meeting*, Abstract EP22B-02. [*Talk given by Morgan*]
4. ***Goudge, T. A.**, C. I. Fassett, and M. Coholich[§] (2021), Assessing controls on the termination of overflow floods for paleolakes on Mars, *52nd Lunar and Planetary Science Conference*, Abstract 2196.

Co-Authored Conference Abstracts and Presentations (*past 2 years*)

Goudge mentee: #Graduate student, †postdoctoral fellow, §undergraduate student.

1. Stucky de Quay, G., R. Ramalho, **T. A. Goudge**, and A. M. Morgan (2022), Primary controls in incipient erosion: A tale of two volcanic landscapes, *2022 AGU Fall Meeting*, Abstract EP22E-1382.

2. Hiatt, E., M. A. Shadab, M. A. Hesse, S. P. S. Gulick, and **T. A. Goudge** (2022), Limited recharge on early martian aquifers: Numeric & analytic recharge estimates as constrained by geomorphic and geochemical observations, *2022 AGU Fall Meeting*, Abstract P25C-03.
3. Barefoot, E. A., A. D. Wickert, **T. A. Goudge**, and C. Paola (2022), Experimental constraints on the morphology of canyons formed by crater overtopping, *2022 AGU Fall Meeting*, Abstract EP36C-08.
4. #Nelson, M. D., **T. A. Goudge**, and D. Mohrig (2022), Characterizing bank erosion style along two bends of a sand-bedded meandering river with monthly lidar surveys, *2022 AGU Fall Meeting*, Abstract EP55D-0853.
5. †Dong, T. Y., **T. A. Goudge**, and B. A. Chapa (2022), Using channel-belt planform patterns to reconstruct river channel patterns and drainage basin characteristics, *2022 AGU Fall Meeting*, Abstract EP16B-03.
6. Chapa, B. A., T. Y. Dong†, and **T. A. Goudge** (2022), Characterizing the relationships between channel-belt planform patterns and drainage basin characteristics, *2022 GSA Annual Meeting*, Abstract 236-9.
7. McAdam, M. M., J. Scully, **T. Goudge**, M. Milazzo, L. Gaddis, J. Roberts, A. Venkatesan, C. Richey, M. McCanta, and the IDEA Working Group (2022), Cross-AG IDEA Working Group: Reckoning with inclusion, diversity, equity and accessibility within NASA's Planetary Science Division Assessment/Analysis Groups and Planetary Science Advisory Committee, *Advancing IDEA in Planetary Science*, Abstract 2024.
8. Scully, J. E. C., G. Cerretti, A. Viswanathan, J. K. Steckloff, C. Richey, A. Probst, G. Poh, M. Melwani Daswani, C. L. McLeod, X. Mao, R. Lillis, N. Kumari, H. Kraus, T. Hoogenboom, H. Hay, **T. A. Goudge**, E. C. Fayolle, C. M. Elder, S. Diniega, S. Daftry, P. K. Byrne, S. M. Brooks, J. G. Blank, P. Becerra, and S. Bandyopadhyay (2022), Foreign nationals employed and studying in the field of planetary research in the United States, and recommendations for supporting this group, *Advancing IDEA in Planetary Science*, Abstract 2008.
9. Hiatt, E., M. A. Shadab, M. A. Hesse, S. P. S. Gulick, and **T. A. Goudge** (2022), Estimates of groundwater divides and basins on Noachian Mars, *53rd Lunar and Planetary Science Conference*, Abstract 2618.
10. Miller, R. C., C. Grima, S. P. S. Gulick, **T. A. Goudge**, N. E. Putzig, M. R. Perry, A. T. Russell, and B. A. Campbell (2022), Volcanic facies and 15m scale roughness throughout Athabasca Valles lava system: A multi-stage flow development, *53rd Lunar and Planetary Science Conference*, Abstract 1554.
11. #Tebolt, M. A., **T. A. Goudge**, K. M. Stack, C. M. Fedo, S. Gwizd, and F. Rivera-Hernández (2022), Constraining the paleoenvironment of the Darwin outcrop in Gale crater from facies and stratigraphic mapping, *53rd Lunar and Planetary Science Conference*, Abstract 1098.
12. #Bamber, E. R., **T. A. Goudge**, C. I. Fassett, G. R. Osinski, and G. Stucky de Quay (2022), Exploring controls on the fluvial breaching of degraded impact craters, *53rd Lunar and Planetary Science Conference*, Abstract 1017.
13. Hiatt, E., M. A. Shadab, M. A. Hesse, S. P. S. Gulick, **T. A. Goudge**, and J. Liebeck (2021), Numerical modeling of the formation of Hellas Planitia with focus on spatio-temporal scales required for hydrologic equilibration, *2021 AGU Fall Meeting*, Abstract P25G-2228.
14. †Stucky de Quay, G., R. Ramalho, **T. A. Goudge**, and A. M. Morgan (2021), Quantifying the climate-erosion relationship in young volcanic islands, *2021 AGU Fall Meeting*, Abstract EP15A-01.

15. †Dong, T., and **T. A. Goudge** (2021), Characterizing the relationship between river branch number and water discharge using distributions of channel belt properties, *2021 AGU Fall Meeting*, Abstract H15M-1192.
16. Martindale, R., M. D. Nelson#, E. J. Ramos, B. Shuck, S. Fakhreddine, D. M. Tremaine, S. L. Loewy, C. Lowery, **T. A. Goudge**, G. L. Christeson, J. P. L. Johnson, and UT Austin JSG URGE MegaPod (2021), Lessons learned by the UT Austin URGE megapod and our plan for continued action, *2021 AGU Fall Meeting*, Abstract U35A-2261. Salvatore, M., J. Sankey, D. Dean., **T. Goudge**, T. Titus, J. Unema, D. Chapline, and J. Caster (2021), Grand Falls, Arizona, as an analog for fluvial erosion on Mars, *2021 GSA Annual Meeting*, Abstract 240-5.
17. Martindale, R., M. Nelson#, E. Ramos, B. Shuck, S. Fakhreddine, D. M. Tremaine, S. Loewy, C. M. Lowery, **T. Goudge**, G. Christeson, and J. P. L. Johnson (2021), Lessons learned by the UT Austin URGE megapod and our plan for continued action, *2021 GSA Annual Meeting*, Abstract 243-8.
18. Baum, M., R. Wordsworth, and **T. Goudge** (2021), Consequences of early ocean and shoreline deformation scenarios for Jezero crater, Mars, *52nd Lunar and Planetary Science Conference*, Abstract 2402.
19. #Bamber, E. R., **T. A. Goudge**, C. I. Fassett, and G. R. Osinski (2021), Formation of inlet valleys into crater-hosted lakes on Mars, *52nd Lunar and Planetary Science Conference*, Abstract 1793.
20. J. S. Levy, W. Cipolli, F. Ishraque, J. Johnson, L. Kuentz, I. Armstrong, B. Cvijanovich, M. Tebolt#, **T. Goudge**, C. I. Fassett, R. Parsons, and J. Holt (2021), Boulder bands on lobate debris aprons: Debris-covered glacier growth at martian mid-latitudes spans multiple glaciations, *52nd Lunar and Planetary Science Conference*, Abstract 1537.
21. #Tebolt, M. A., and **T. A. Goudge** (2021), Investigation of the depositional environment of martian sedimentary fan features, *52nd Lunar and Planetary Science Conference*, Abstract 1525.
22. Scully, J. E. C., G. Cerretti, A. Viswanathan, J. K. Steckloff, C. Richey, A. Probst, G. Poh, M. Melwani Daswani, C. L. McLeod, X. Mao, R. Lillis, N. Kumari, H. Kraus, T. Hoogenboom, H. Hay, **T. A. Goudge**, E. C. Fayolle, C. M. Elder, S. Diniega, S. Daftry, P. K. Byrne, S. M. Brooks, J. G. Blank, P. Becerra, and S. Bandyopadhyay (2021), Foreign nationals employed and studying in planetary research in the United States, and recommendations for supporting this group, *52nd Lunar and Planetary Science Conference*, Abstract 1493.
23. Schorghofer, N., J. S. Levy, **T. A. Goudge**, and M. Tebolt# (2021), High-resolution thermal environment of recurring slope lineae at Palikir crater, Mars, *52nd Lunar and Planetary Science Conference*, Abstract 1391.

Field Experience

2013 – Present Pedernales River, TX; Rio Grande River, TX; Ghost Ranch, NM; Texas Gulf Coast; Coos Bay, OR; Trinity River, TX; Green River, UT; Wax Lake Delta, LA; North Loup River, NE; Meriden, CT; Bavaria, Germany

Professional Associations

2012 – Present Geological Society of America (GSA)
 2011 – Present American Geophysical Union (AGU)
 2011 – Present Geological Association of Canada (GAC)