

# Timothy A. Goudge

## Curriculum Vitae

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The University of Texas at Austin  
Jackson School of Geosciences  
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### 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; quantitative analysis of infrared spectroscopy data to remotely characterize mineralogy; and understanding how distinct boundary conditions on planetary surfaces affect sedimentary processes.

### 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, 1<sup>st</sup> 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

### Refereed Journal Publications

*Goudge research group members: #Graduate student, †postdoctoral fellow, §undergraduate student.*

**2020:**

1. †Stucky de Quay, G., **T. A. Goudge**, and C. I. Fassett (2020), Precipitation and aridity constraints from paleolakes on early Mars, *Geology*, *in press*, DOI: 10.1130/G47886.1.

2. 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*, *in press*, DOI: 10.1111/sed.12765.
3. 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.
4. 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.
5. 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.
6. #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:**

7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.

15. 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.

**2018:**

16. **Goudge, T. A.**, C. I. Fassett, and D. Mohrig (2018), Incision of paleolake outlet canyons on Mars from overflow flooding, *Geology*, **47**, 7–10, DOI: 10.1130/G45397.1.
17. **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.
18. 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.
19. 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.
20. **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.
21. 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:**

22. **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.
23. **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.
24. 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:**

25. **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.
26. 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:**

27. **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.

28. 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.
29. **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.
30. 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.
31. **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:**

32. **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.
33. 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:**

34. **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.
35. 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.
36. **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:**

37. 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. 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*.

2. 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*.
3. 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 2020

Introduction to Remote Sensing for Geoscientists (GEO 471T/491)

- Spring 2020
- Spring 2019; *voted best graduate course by DGS graduate students*

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

## **Student Advising**

### **Postdoctoral Fellows:**

2020 – Present	Tian Dong. <i>PhD at Rice University. NSF Postdoctoral Fellow.</i>
2019 – Present	Gaia Stucky de Quay. <i>PhD at Imperial College London.</i>

### **Graduate Students:**

2020 – Present	Mariel Nelson. <i>BA at University of California, Berkeley.</i>
2020 – Present	Emily Bamber. <i>MSc at University of Oxford.</i>
2019 – Present	Michelle Tebolt. <i>BA at Colgate University.</i>

### **Undergraduate Students:**

2018 – 2020	Marianne Coholich, <i>Honors Thesis, Dept. Geological Sciences, UT Austin. Co-advised w/ W. Kim.</i>
2019 – 2020	Nirvana Kaur, <i>Dept. Geological Sciences, UT Austin.</i>

### **Committee Membership:**

**PhD:**

- 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.*
- Kathleen Wilson, *Department of Geological Sciences, UT Austin. Primary advisor D. Mohrig.*
- Sophie Goliber, *Institute for Geophysics, UT Austin. Primary advisor G. Catania.*
- Natalie Wolfenbarger, *Institute for Geophysics, UT Austin. Primary advisor D. Blankenship.*
- Chris Liu, *Department of Geological Sciences, UT Austin. Primary advisor 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.*

**MSc:**

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

**Undergraduate Honors Thesis:**

- 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:**

- Logan Schmidt, *Dept. Geological Sciences, UT Austin. Primary advisor D. Rempe. Exam 4/2019.*

**Invited Talks**

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 Fall 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	58 <sup>th</sup> 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	MIT, Planetary Internal Colloquium Series (PICS)

## **Professional Service**

### **To the University:**

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
2016 – 2018	Team member, Pop-Up Institute, <i>Understanding Planetary Habitability</i>

### **To the Community:**

2016 – Present	Judge for Dwornik Award at the Lunar and Planetary Science Conference
2015 – Present	Peer Reviewer for <i>Nature Geoscience; Geology; Nature Communications; Science Advances; Geophysical Research Letters; Geosphere; 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 Reviewer for NASA ROSES
2015 – Present	Judge for Outstanding Student Paper Award at the American Geophysical Union Fall Meeting
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 <sup>th</sup> Lunar and Planetary Science Conference
2017	Session Co-Chair at 48 <sup>th</sup> Lunar and Planetary Science Conference
2014	Session Co-Chair at 2014 GSA Annual Meeting

## **Public Outreach**

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

### **Academic Honors and Awards**

2019	G. Moses and Carolyn G. Knebel Distinguished Teaching Award <i>Best graduate level geology course, as judged by the students</i>
2018	National Center for Earth-Surface Dynamics 2 Synthesis Postdoctoral Fellowship
2015 – 2017	Jackson School Distinguished Postdoctoral Fellowship, The University of Texas at Austin
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
2008 – 2009	J. P. Bickell Foundation Mining Scholarship, Queen's University
2008 – 2009	Gartner Lee Scholarship in Geological Engineering, Queen's University
2007 – 2008	J. J. Denny Memorial Scholarship in Geological Engineering, Queen's University
2006 – 2008	Morley E. Wilson Scholarship in Geological Sciences, Queen's University
2006 – 2007	Annie Bentley Lillie Book Prize for First Year Calculus, Queen's University
2005 – 2008	Dean's Scholar, Queen's University
2005 – 2006	Dean's Award, Queen's University
2005 – 2006	Dean's Entrance Scholarship in Applied Science, Queen's University

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

*\*Oral presentation*

1. **Goudge, T. A.**, D. Mohrig, B. T. Cardenas, C. M. Hughes, and C. I. Fassett (2019), Using Earth's sedimentary record to inform studies of delta channel deposits on Mars, *2019 SEPM Annual Meeting* (Invited).
2. **Goudge, T. A.**, C. I. Fassett, and G. R. Osinski (2019), How do crater lakes on Mars develop inlet valleys?, *50<sup>th</sup> Lunar and Planetary Science Conference*, Abstract 1223.
3. **\*Goudge, T. A.**, C. I. Fassett, and D. Mohrig (2018), Incision of paleolake outlet canyons on Mars from overflow flooding, *2018 GSA Annual Meeting*, Abstract 138-3 (Invited).

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

*Goudge research group members: #Graduate student, †postdoctoral fellow, §undergraduate student.*

1. #Tebolt, M. A., and **T. A. Goudge** (2020), The geometry of the Tyras Vallis fan: Using stratigraphy to study depositional environment, *51<sup>st</sup> Lunar and Planetary Science Conference*, Abstract 1606. [*Conference cancelled*]



2. †Stucky de Quay, G., **T. A. Goudge**, and C. I. Fassett (2020), Precipitation and aridity constraints on early Mars from globally distributed paleolakes, *51<sup>st</sup> Lunar and Planetary Science Conference*, Abstract 1410. [*Conference cancelled*]
3. Brown, A. J., **T. A. Goudge**, and C. E. Viviano (2020), Jezero watershed mapping of olivine-carbonate lithology, *51<sup>st</sup> Lunar and Planetary Science Conference*, Abstract 1082. [*Conference cancelled*]
4. Speed, C. M., Z. Sylvester, P. P. Flaig, P. Durkin, and **T. A. Goudge** (2019), Relating the fluvial avulsion process to channel-belt stratigraphic architecture: An example from the Cretaceous Cedar Mountain Formation, Utah, *2019 AGU Fall Meeting*, Abstract EP21D-2233.
5. §Coholich, M., W. Kim, and **T. A. Goudge** (2019), Controls of martian crater size and rim geometry on outlet channel morphology: Experiment and Observation, *2019 AGU Fall Meeting*, Abstract EP21E-2200.
6. †Stucky de Quay, G., and **T. A. Goudge** (2019), Global constraints on run-off depths from open- and closed-basin paleolakes on Mars, *2019 AGU Fall Meeting*, Abstract EP21E-2203.
7. Salvatore, M. R., **T. A. Goudge**, T. Titus, J. B. Sankey, D. J. Dean, and J. Unema (2019), The Little Colorado River at Grand Falls, Arizona: A valuable terrestrial analog in investigating the rates and nature of fluvial erosion on Mars, *2019 GSA Annual Meeting*, Abstract 275-4.
8. Swartz, J. M., D. Mohrig, and **T. Goudge** (2019), Coastal River Dynamics and Morphology on the Rio Grande Delta, *34<sup>th</sup> IAS Meeting of Sedimentology*.
9. Salvatore, M. R., **T. A. Goudge**, M. S. Bramble, Y. Liu, and C. S. Edwards (2019), The composition and thermophysical character of Jezero crater and its surrounding watershed, *Ninth International Conference on Mars*, Abstract 6264.
10. Schorghofer, N., J. S. Levy, **T. A. Goudge**, and M. Tebolt (2019), Thermal environment of recurring slope lineae at Palikir crater, Mars, and its implications for volatiles, *Ninth International Conference on Mars*, Abstract 6150.
11. Brown, A. J., **T. A. Goudge**, C. E. Viviano (2019), Correlations, causations and consequences of Nili Fossae olivine-carbonate, *Ninth International Conference on Mars*, Abstract 6018.
12. Speed, C. M., Z. Sylvester, P. P. Flaig, P. Durkin, B. T. Cardenas, and **T. A. Goudge** (2019), Stratigraphic architecture of exhumed fluvial channel-belts: Anatomy of an avulsion, *2019 AAPG Annual Convention & Exhibition*.
13. Liu, Y., **T. Goudge**, and M. R. Salvatore (2019), Large localized carbonate exposures in northeast Tyrrhena Terra, Mars, and possible formation mechanisms, *AOGS 16<sup>th</sup> Annual Meeting*, Abstract PS03-A003.
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### **Field Experience**

2013 – Present            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)