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MATHIEU G. A. LAPÔTRE

DEPARTMENT OF EARTH & PLANETARY SCIENCES
STANFORD UNIVERSITY

Mail. 450 Jane Stanford Way, Building 320
Stanford, California 94305

Email. mlapotre@stanford.edu
Web. epsp.stanford.edu

APPOINTMENTS

Assistant Professor of Earth & Planetary Sciences	Stanford University	2019–present
Assistant Professor (by courtesy) of Geophysics	Stanford University	2020–present
John Harvard Distinguished Science Fellow	Harvard University	2017–2019

EDUCATION

Ph.D.	Geology	California Institute of Technology	2017
M.S.	Planetary Sc.	California Institute of Technology	2014
M.S.	Environmental Sc. & Eng. (Excellence Track)	Université de Strasbourg, France	2011
M.S.	Geophysical Eng. (Diplôme d'Ingénieur)	EOST, Université de Strasbourg, France	2011
B.S.	Geophysics (minor in Astrophysics)	Université de Strasbourg, France	2009

AWARDS & HONORS

Outstanding Reviewer Citation, Earth & Space Science	2022
Best Reviewer of the Year, Icarus	2022
Luna B. Leopold Early Career Award, American Geophysical Union	2021
Robert P. Sharp Lecturer, American Geophysical Union	2021
Scialog Fellow, Heising-Simons Foundation, Research Corporation for Science Advancement	2021–2023
Kavli Fellow, U.S. National Academy of Sciences	2020
John Harvard Distinguished Science Fellow, Harvard University	2017–2019
John Crowell Best Ph.D. Dissertation Award, 2nd place, SEPM Soc. Sed. Geol. Pacific Section	2017
NASA Group Achievement Award, MSL Extended Mission-1 Science & Operations Team	2017
NASA-NIA RASC-AL Space Design Contest, best overall, best in theme, PEACH award	2016
Dwornik Award, Honorable Mention, Graduate Oral Presentation, LPSC	2016
SETI & NASA Astrobiology Institutes Travel Award	2016
NASA Earth & Space Science Fellowship	2012–2015
NASA Group Achievement Award, MSL Prime Mission Science & Operations Team	2015
AGU Outstanding Student Paper Award	2014
National Center for Airborne Laser Mapping (NCALM) Seed Grant	2013
Robert P. Sharp Graduate Student Fellowship, Caltech	2012–2013

COLLABORATIVE ACTIVITIES

International Continental Scientific Drilling Program (ICDP) BASE Science Team Member	2023–present
NASA Mars Science Laboratory (MSL) Special Expert Consultant	2017–2018
NASA Mars Science Laboratory (MSL) Science and Operations Team Collaborator	2013–2017

PROFESSIONAL SERVICES

Peer reviewer for: *Nature, Nature Geoscience, Nature Communications, Science Advances, Proceedings of the National Academy of Sciences, Geology, Earth & Planetary Science Letters, Geophysical Research Letters, Journal of Geophysical Research: Planets, Bulletin of the Geological Society of America, Sedimentology, Astrobiology, Icarus, Journal of Fluid Mechanics, Water Resources Research, Earth Surface Processes & Landforms*, *Planetary & Space Science, Aeolian Research, Earth & Space Science*.

Awards Committee Member, AGU Earth & Planetary Surface Processes (2022).

Panel reviewer for: *NASA Mars Data Analysis, NASA Earth & Space Science Fellowship*.

External reviewer for: *NASA Early Career* Award, *NASA Mars Data Analysis Program*, *NASA Solar System Workings Program*, *NSF Geomorphology & Land-Use Dynamics Program*, *NSF EAR Postdoctoral Fellowship Program, NSF Geoinformatics, U.S. Department of Energy (Office of Science), U.S. Army Research Office, NSERC Discovery Grant Program, U.S.-Israel Binational Science Foundation Program*.

Science Organizing Committee member for: *9th International Conference on Mars* (2019), *Bay Area Planetary Science meeting* (founder; 2019–2020, 2022–2023), *LPSC* (2024).

Session convener/chair at: *AGU* 2018, 2019; *GSA* 2016, 2020; *LPSC* 2019, *7th International Planetary Dunes Workshop* 2022, *International Conference on Aeolian Research (ICAR) XI*, 2023.

Student Advisor for the *Planetary Geology Division* of the *Geological Society of America*, 2015–2017.

Student Representative, Board of Directors, Ecole et Observatoire des Sciences de la Terre, 2008–2011.

Internal Affairs Representative of the Strasbourg University Geophysical Society, 2008–2009.

UNIVERSITY SERVICES

Graduate Curriculum Committee	Earth & Planetary Sciences, Stanford	2019–present
Graduate Admissions Committee	Earth & Planetary Sciences, Stanford	2020–2023
Faculty Hiring Committee	Earth & Planetary Sciences, Stanford	2022, 2023
Seed Grant Review Committee	Office of Vice Provost & Dean of Research, Stanford	2023
Department Seminar Committee	Earth & Planetary Sciences, Stanford	2023–present

MENTORSHIP

Postdoctoral Advisor:

Lior Rubanenko (2020–2022), now Assist. Prof. at the Technion Israel Institute of Technology, Israel.
Andrew Gunn (2021–2022), now Lecturer at Monash University, Australia.
Nils Prieur (2021–2023), now Marie Skłodowska-Curie Postdoc. Fellow, University of Oslo, Norway.
Carlos Alvarez (2022–present).

Ph.D. Advisor:

Michael Hasson (2020–present).
Colin Marvin (2021–present).
Claire Blaske (2023–present).

Ph.D. Qualifying Exam Committee Member: Tyler Hall (Stanford GS, 2020), Travis Clow (Stanford GS, 2021), Matthew Reinhold (Stanford GS, 2021), Ji-In Jung (Stanford GP, 2022), Timmy Lui (Stanford EPS, 2024), Adrian Wackett (Stanford EPS, 2024), Sophie Bodek (Stanford CEE, 2024).

Ph.D. Committee Member: Robert Sare (Stanford, 2019–2020), Aaron Steelquist (Stanford, 2019–2021), Noah Athens (Stanford, 2020–2021), Matthew Reinhold (Stanford, 2019–present), Adrian Wackett (Stanford, 2023–present), Yueyi Che (Stanford, 2023–present).

External Ph.D. Qualifying Exam Committee Member: Natalie Jones (Northern Arizona U., 2023), Sam Kodama (UC Santa Cruz, 2023).

External Ph.D. Thesis Examiner: Valentin Bickel (ETH Zurich/Max Planck Inst. Solar Syst. Res., 2021).

M.S. Thesis Reader: Erin Barry (Stanford, 2020).
Undergraduate Research Advisor: Jade Fischer (MIT, 2018), Phoebe Murray (Vassar College, 2019), Veronica Pratt (Stanford, 2019–2020), Sebastian Pérez López (Stanford, 2020–2021), Emiliano Gonzalez (Cal Poly Pomona, 2022), Brian Amaro (Stanford, 2022–present), Colten Rodriguez (Princeton, 2023), Wen Bo (U. Chicago, 2023–present), Caroline Dee (Stanford, 2023), Raisha Abubo (Stanford, 2023–present), Euclid Soringa (Stanford, 2023–present).
B.S. Honors Thesis Advisor: Emiliano Gonzalez (Cal Poly Pomona, 2023–present), Brian Amaro (Stanford, 2023–present).
High-School Research Advisor: Joseph Schull (St Paul's School, London, 2020), Sharmila Green (Stables High School, CT, 2022).

TEACHING

Recurring Courses

EPS 120/220. Planetary Surface Processes: Shaping the Landscape of the Solar System, Stanford (undergrad. & grad., every other Spring since 2021).
EPS 224. Rivers: The arteries of Earth's continents, Stanford (grad., every other Spring since 2020).
EPS 124 (co-taught with Profs. Laura Schaefer & Sonia Tikoo). Introduction to Planetary Science, Stanford (undergrad., 2021).
EPS 3 (co-taught with Prof. George Hilley). Earth & Planetary Processes & Mechanics, Stanford (undergrad., 2022–present).
GS 249 (co-taught with Prof. Donald Lowe). Deciphering depositional environments in the pre-vegetation rock record (grad., 2021).
EPS 192. Undergraduate Research in Earth and Planetary Sciences, Stanford (undergrad., 2019–present).
EPS 400. Graduate Research, Stanford (grad., 2020–present).
GP 400. Geophysics Research, Stanford (grad., 2022–present).

Guest Lectures

EPS 124. Introduction to Planetary Science, Stanford (undergrad., 2022–present).
Earth 1a. Know Your Planet – Research Frontiers, Stanford (undergrad., 2021).
GP 101. Frontiers of Geophysical Research at Stanford, Stanford (undergrad., 2020–2021,2023).
EPS 120. Intro. To Planetary Science, Harvard (undergrad. & grad., Prof. Roger Fu, 2018).

Other Courses

Ge 125 (TA). Geomorphology, Caltech (undergrad. & grad., Prof. Michael Lamb, 2016).
Ge151 (TA & guest lect.). Planetary Surfaces (undergrad. & grad., Prof. Bethany Ehlmann, 2014–2015).
Ge101 (TA). Introduction to Geology and Geochemistry, Caltech (grad., Prof. Brian Wernicke), 2013.

EXTENDED TALKS, SEMINARS, & LECTURES

2024: Northern Arizona U. (upcoming).
2023: Tulane (McWilliams Seminar), Northern California Geological Society, Rocky Worlds Discussions.
2022: NASA Ames Research Center, UC Santa Cruz.
2021: UC Berkeley, CU Boulder, Stanford U. Geophysics, Sharp Lecture (AGU).
2020: U. Michigan, Tech Briefs Mars 2020 webinar (formerly NASA Tech Briefs), Northern Arizona U.
2019: Inst. Physique du Globe de Strasbourg (IPGS), UN Reno.
2018: Inst. Physique du Globe de Paris (IPGP), Stanford U., MIT, Harvard U., Dartmouth College, Rice U.

2017: MSL Team Meetings (Pasadena, Montreal), Harvard U., UT Austin, CRISM Team Meeting (Houston), NASA Jet Propulsion Laboratory, Brown U.
2016: NASA Jet Propulsion Laboratory, MSL Team Meeting (Pasadena), UCLA, Cal State LA.
2015: Tokyo Tech, MSL Team Meeting (Paris), CRISM Team Meeting (Baltimore).
2013: GFZ Potsdam.

VISITING POSITIONS, PROFESSIONAL EXPERIENCE

Graduate Student Researcher and Teaching Assistant, Caltech	2012–2017
Graduate Researcher, University of Cambridge, UK (advisor: Prof. A. Woods)	Jun.–Dec. 2011
Undergraduate Researcher, Caltech (advisor: Prof. M. Lamb)	Jan.–Jun. 2011
Undergraduate Research Scholar, MIT (advisor: Prof. T. Perron)	Jun.–Aug. 2010
Erasmus Student, Oslo University, Norway (advisors: Drs. O. Galland & M. Dabrowski)	2009–2010
Researcher and Developer in Seismic Modeling, NORSAR, Kjeller, Norway	2009–2010
Undergraduate Visiting Scholar, UC Berkeley (advisor: Prof. M. Manga)	Jun.–Aug. 2009

PEER-REVIEWED PUBLICATIONS

Published, In Press, or Accepted (* student/postdoc advised or co-advised; † shared first authorship or critical contribution to papers not led by advisees)

53. Courrech du Pont, S., D.M. Rubin, C. Narteau, †**M.G.A. Lapôtre**, M. Day, P. Claudin, I. Livingstone, M.W. Telfer, J. Radebaugh, C. Gadal, *A. Gunn, P.A. Hesp, S. Carpy, C.S. Bristow, A.C.W. Baas, R.C. Ewing, G.F.S. Wiggs (accepted). Complementary classifications of aeolian dunes based on morphology, dynamics, and fluid mechanics. *Earth-Science Reviews*, in press.
52. Finotello, A., A. Ielpi, †**M.G.A. Lapôtre**, E. Lazarus, M. Ghinassi, L. Carniello, S. Favaro, D. Tognin, A. D'Alpaos (2024). Vegetation enhances curvature-driven dynamics in meandering rivers. *Nature Communications*, 15, 1968, https://doi.org/10.1038/s41467-024-46292-x
51. *Prieur, N., *B. Amaro, *E. Gonzalez, H. Kerner, S. Medvedev, L. Rubanenko, S. Werner, Z. Xiao, D. Zastrozhnov, **M.G.A. Lapôtre** (2023). Automatic characterization of boulders on planetary surfaces from high-resolution satellite images. *Journal of Geophysical Research Planets*, 128(11), https://doi.org/10.1029/2023JE008013
50. *Rubanenko, L., *A. Gunn, *S. Pérez-López, L. Fenton, R.C. Ewing, A. Soto, **M.G.A. Lapôtre** (2023). Global Surface Winds and Sediment Pathways on Mars from the Morphology of Barchan Dunes. *Geophysical Research Letters*, 50(18), https://doi.org/10.1029/2022GL102610
49. *Marvin, M.C., **M.G.A. Lapôtre**, *A. Gunn, M. Day, A. Soto (2023). Dune interactions record changes in boundary conditions. *Geology*, 51(10), 947–951, https://doi.org/10.1130.G51264.1
48. *Hasson, M., *C. Marvin, *A. Gunn, A. Ielpi, **M.G.A. Lapôtre** (2023). A depositional model for meandering rivers before land plants. *Sedimentology*, https://doi.org/10.1111/sed.13121
47. Kodama, S., T. Pico, N.J. Finnegan, **M.G.A. Lapôtre**, J.K. Willenbring (accepted). Glacial isostatic adjustment modulates lateral migration rate and morphology of the Red River (North Dakota, USA and Manitoba, Canada). *Geophysical Research Letters*, 50(15), https://doi.org/10.1029/2023GL103995
46. Ielpi. A., †**M.G.A. Lapôtre** (2023). Modelling fire-induced perturbations in sediment flux based on stream widening and accelerated lateral migration. *Catena*, 228, 107173, https://doi.org/10.1016/j.catena.2023.107173
45. Ielpi. A., †**M.G.A. Lapôtre**, A. Finotello, P. Roy-Léveillée (2023). Large sinuous rivers are slowing down in a warming Arctic. *Nature Climate Change*, 13(3), https://doi.org/10.1038/s41558-023-01620-9

44. Ielpi, A., A. Graham, D. Viero, †**M.G.A. Lapôtre**, A. Finotello, M. Ghinassi (2023). How is time distributed in a meandering-river floodplain? *Geophysical Research Letters*, 50(2), https://doi.org/10.1029/2022GL101285
43. Schneider, S., A. Bylard, T.G. Chen, P. Wang, M. Cutkosky, **M.G.A. Lapôtre**, M. Pavone (2022).ReachBot: A small robot for large mobile manipulation tasks. *2022 IEEE Aerospace Conf.*, https://doi.org/10.1109/AERO53065.2022.9843346
42. *Rubanenko, L., **M.G.A. Lapôtre**, R.C. Ewing, L.K. Fenton, *A. Gunn (2022). A distinct ripple-formation regime on Mars revealed by the morphometrics of barchan dunes. *Nature Communications*, 13, 7156, https://doi.org/10.1038/s41467-022-34974-3
41. Steelquist, A.T., **M.G.A. Lapôtre**, G.E. Hilley (2022). Drainage initiation, expansion, and channel-head arrest in heterogenous bedrock landscapes of the Colorado Plateau. *GSA Bulletin*, https://doi.org/10.1130/B36375.1
40. Ielpi, A., †**M.G.A. Lapôtre** (2022). Linking sediment flux to river migration in arid landscapes through mass balance. *J. Sed. Res.*, 92(8), 695–703, https://doi.org/10.2110/jsr.2022.118
39. *Gunn, A., *L. Rubanenko, **M.G.A. Lapôtre** (2022). Accumulation of windblown sand in impact craters on Mars. *Geology*, 50(9), 981–985, https://doi.org/10.1130/G49936.1
38. **Lapôtre, M.G.A.**, J.L. Bishop, A. Ielpi, D.R. Lowe, K.L. Siebach, N.H. Sleep, S.M. Tikoo (2022). Mars as a time machine to Precambrian Earth. *J. Geol. Soc.*, 179(5), https://doi.org/10.1144/jgs2022-047
37. **Lapôtre, M.G.A.**, M. Malaska, M. Cable (2022). The role of seasonal sediment transport and sintering in shaping Titan's landscapes: A hypothesis. *Geophys. Res. Lett.*, 49(8), https://doi.org/10.1029/GL097605
36. Rubin, D.M., †**M.G.A. Lapôtre**, A.W. Stevens, M.P. Lamb, C.M. Fedo, J.P. Grotzinger, S. Gupta, K.M. Stack, A.R. Vasavada, S.G. Banham, A.B. Bryk, G. Caravaca, J.R. Christian, L.A. Edgar, M.C. Malin (2022). Ancient winds, waves, and atmosphere in Gale crater, Mars, inferred from sedimentary structures and wave modeling. *J. Geophys. Res. Planet.*, 127(4), https://doi.org/10.1029/2021JE007162
35. Ielpi, A. †**M.G.A. Lapôtre**, M. Gibling, C.K. Boyce (2022). The impact of vegetation of meandering rivers. *Nature Reviews Earth & Environment*, 3, 165–178, https://doi.org/10.1038/s43017-021-00249-6
34. Diniega, S., D.M. Burr, M. Chojnacki, **M.G.A. Lapôtre**, C. Swann (2022). Martian dunes: A crucial record of present and past Mars surface environment and aeolian processes. *Treatise on Geomorphology* (2nd Edition), 7, pp. 617–636, https://doi.org/10.1016/B978-0-12-818234-5.00177-2
33. *Rubanenko, L., *S. Pérez-López, *J. Schull, **M.G.A. Lapôtre** (2021). Automatic detection and segmentation of barchan dunes on Mars and Earth using a convolutional neural network. *IEEE J-STARS*, https://doi.org/10.1109/JSTARS.2021.3109900
32. Diniega, S., A.M. Bramson, B. Buratti, P. Buhler, D.M. Burr, M. Chojnacki, S.J. Conway, C.M. Dundas, C.J. Hansen, A.S. McEwen, **M.G.A. Lapôtre**, J. Levy, L. Mc Keown, S. Piqueux, G. Portyankina, C. Swann, T.N. Titus, J.M. Widmer (2021). Modern Mars' geomorphological activity, driven by wind, frost, and gravity. *Geomorphology*, 380, https://doi.org/10.1016/j.geomorph.2021.107627
31. **Lapôtre, M.G.A.**, R.C. Ewing, & M.P. Lamb (2021). An evolving understanding of enigmatic large ripples on Mars. *J. Geophys. Res. Planet.*, 126(2), https://doi.org/10.1029/2020JE006729
30. Kurokawa, H., B.L Ehlmann, De Sanctis, M.C., **M.G.A. Lapôtre**, Usui, T., Stein, N.T., Prettyman, T.H., Raponi, A., & Ciarnello, M. (2020). A probabilistic approach to determination of Ceres' average surface composition from Dawn VIR and GRaND data. *J. Geophys. Res. Planet.*, 125(12), https://doi.org/10.1029/2020JE006606
29. Ielpi, A., †**M.G.A. Lapôtre**, A. Finotello, & M. Ghinassi (2020). Planform-asymmetry and backwater effects on river-cutoff kinematics and clustering. *Earth Surf. Proc. Land.*, 46(2), 357–370, https://doi.org/10.1002/esp.5029
28. **Lapôtre, M.G.A.**, & A. Ielpi (2020). The pace of fluvial meanders on Mars and implications for the western delta deposits of Jezero crater, Mars. *AGU Advances*, 1(2), https://doi.org/10.1029/AV000141

27. **Lapôtre, M.G.A.**, J. G. O'Rourke, L. K. Schaefer, K. L. Siebach, C. Spalding, S. Tikoo, & R. D. Wordsworth (2020). Probing space to understand Earth. *Nature Rev. Earth & Env.*, 1, 170–181, https://doi.org/10.1038/s43017-020-0029-y
26. Ielpi, A. M., †**M.G.A. Lapôtre**, A. Finotello, M. Ghinassi, & A. D'Alpaos (2020). Channel mobility drives a diverse stratigraphic architecture in the dryland Mojave River (California, USA). *Earth Surf. Proc. Land.*, 45(8), 1717–1731, https://doi.org/10.1002/ep.4841
25. Ielpi, A. & †**M.G.A. Lapôtre** (2020). A ten-fold slowdown in river meander migration driven by plant life. *Nature Geosci.*, 13, 82-86, https://doi.org/10.1038/s41561-019-0491-7
24. **Lapôtre, M.G.A.**, A. Ielpi, M.P. Lamb, R.M.E. Williams, & A.H. Knoll (2019). Model for the formation of single-thread rivers in barren landscapes and implications for pre-Silurian and martian fluvial deposits. *J. Geoph. Res. Earth Surf.*, 124(12), 2757–2777, https://doi.org/10.1029/2019JF005156
23. Ielpi. A., & †**M.G.A. Lapôtre** (2019). Barren meandering streams in the modern Toiyabe Basin of Nevada, and their relevance to the study of the pre-vegetation rock record. *J. Sed. Res.*, 89(5), 399-415, https://doi.org/10.2110/jsr.2019.25
22. Ielpi, A., & †**M.G.A. Lapôtre** (2019). Biotic forcing militates against river meandering in the modern Bonneville Basin of Utah. *Sedimentology*, 66(5), 1896–1929, https://doi.org/10.1111/sed.12562
21. Rampe, E.B., †**M.G.A. Lapôtre**, & 27 coauthors (2018). Sand mineralogy within the Bagnold Dunes, Gale crater, as observed in situ and from orbit. *Geoph. Res. Letters*, 45(18), 9488-9497, https://doi.org/10.1029/2018GL079073
20. Baker, M., †**M.G.A. Lapôtre**, M. Minitti, C. Newman, R. Sullivan, C.M. Weitz, B.L. Ehlmann, A. Vasavada, K. Edgett, N.T. Bridges, & K. Lewis (2018). The Bagnold Dunes in southern summer: Active sediment transport on Mars observed by the Curiosity rover. *Geoph. Res. Letters*, 45(17), 8853-8863, https://doi.org/10.1029/2018GL079040
19. Weitz, C.M., R. Sullivan, **M.G.A. Lapôtre**, S. Rowland, J. Grant, M. Baker, & A. Yingst (2018). Sand grain sizes and shapes in eolian bedforms at Gale crater, Mars. *Geoph. Res. Letters*, 45(18), 9471-9479, https://doi.org/10.1029/2018GL078972
18. **Lapôtre, M.G.A.**, R.C. Ewing, C.M. Weitz, K. Lewis, M.P. Lamb, B.L. Ehlmann, & D.M. Rubin (2018). Morphologic diversity of martian ripples: Implications for large-ripple formation. *Geoph. Res. Letters*, 45(19), 10229-10239, https://doi.org/10.1029/2018GL079029
17. **Lapôtre, M.G.A.**, & E.B. Rampe (2018). Curiosity's investigation of the Bagnold Dunes, Gale crater: Overview of the two-phase campaign and introduction to the special collection. *Geoph. Res. Letters*, 45(19), 10200-10210, https://doi.org/10.1029/2018GL079032
16. **Lapôtre, M.G.A.**, M.P. Lamb (2018). Substrate controls on valley formation by groundwater on Earth and Mars. *Geology*, 46(6), 531-534, https://doi.org/10.1130/G40007.1
15. Baker, M.M., C.E. Newman, **M.G.A. Lapôtre**, R. Sullivan, N.T. Bridges, K.W. Lewis (2018). Coarse sediment transport in the modern Martian environment. *J. Geophys. Res. Planet.*, 123(6), 1380-1394, https://doi.org/10.1002/2017JE005513
14. Banham, S., S. Gupta, D. Rubin, J. Watkins, K.S. Edgett, D.Y. Sumner, J.P. Grotzinger, K. Lewis, L. Edgar, K. Stack, R. Barnes, J. Bell III, M.D. Day, R.C. Ewing, **M.G.A. Lapôtre**, N. Stein, F. Rivera-Hernandez, A. Vasavada (2018). Ancient Martian aeolian processes and palaeogeomorphology reconstructed from the Stimson formation on the lower slope of Aeolis Mons, Gale crater, Mars. *Sedimentology,* 65(4), 993-1042, https://doi.org/10.1111/sed.12469
13. Conte, D., & 14 coauthors including **M.G.A. Lapôtre** (2017). Advanced concept for a crewed mission to the Martian moons. *Acta Astronautica*, 139, 545-563, https://doi.org/10.1016/j.actaastro.2017.07.044
12. Ewing, R.C., †**M.G.A. Lapôtre**, K. Lewis, M. Day, N. Stein, D.M. Rubin, N.T. Bridges, R. Sullivan, W.W. Fischer, M.P. Lamb, S. Gupta (2017). Sedimentary processes of the Bagnold Dunes: Implications for the eolian rock record of Mars. *J. Geophys. Res. Planet.,* 122(12), 2544-2573, https://doi.org/10.1002/2017JE005324

11. Ehlmann, B.L., K.S. Edgett, B. Sutter, C.N. Achilles, M.L. Litvak, **M.G.A. Lapôtre**, A.A. Fraeman, & 32 coauthors (2017). Chemistry, mineralogy, and grain size of the Bagnold Dune Field: A synthesis of MSL Curiosity rover observations. *J. Geophys. Res. Planet.*, 122(12), 2510-2543, https://doi.org/10.1002/2017JE005267
10. Bridges, N.T., & 11 coauthors including **M.G.A. Lapôtre** (2017). Martian aeolian activity at the Bagnold Dunes, Gale crater: The view from the surface and orbit. *J. Geophys. Res. Planet.*, 122(10), 2077-2110, https://doi.org/10.1002/2017JE005263
9. **Lapôtre, M.G.A.**, B.L. Ehlmann, S. Minson, R. Arvidson, F. Ayoub, A.A. Fraeman, R. Ewing, N. Bridges (2017). Compositional variations in sands of the Bagnold Dunes, Gale crater, Mars, from visible-shortwave infrared spectroscopy and comparison to ground-truth from the Curiosity rover. *J. Geophys. Res. Planet.*, 122(12), 2489-2509, https://doi.org/10.1002/2016JE005133
8. **Lapôtre, M.G.A.**, B.L. Ehlmann, S. Minson (2017). A probabilistic approach to remote compositional analysis of planetary surfaces. *J. Geophys. Res. Planet.*, 122(5), 983-1009, https://doi.org/10.1002/2016JE005248
7. **Lapôtre, M.G.A.**, M.P. Lamb, B. McElroy (2017). What sets the size of current ripples? *Geology*, 45(3), 243-246, https://doi.org/10.1130/G38598.1
6. Kreisch, C.D., J.A. O'Sullivan, R.E. Arvidson, D.V. Politte, L. He, N.T. Stein, J. Finkel, E.A. Guinness, M.J. Wolff, **M.G.A. Lapôtre** (2017). Regularization of Mars Reconnaissance Orbiter CRISM along-track oversampled hyperspectral imaging observations of Mars. *Icarus*, 282, 136-151, https://doi.org/10.1016/j.icarus.2016.09.033
5. **Lapôtre, M.G.A.**, R. Ewing, M.P. Lamb, W.W. Fischer, J. P. Grotzinger, D. Rubin, K. Lewis, M. Ballard, M. Day, S. Gupta, & 12 other coauthors (2016). Large wind ripples on Mars: A record of atmospheric evolution. *Science*, 353, 6294, 55-58, https://doi.org/10.1126/science.aaf3206
4. **Lapôtre, M.G.A.**, M.P. Lamb, R.M.E. Williams (2016). Canyon formation constraints on the discharge of catastrophic outburst floods on Earth and Mars. *J. Geophys. Res. Planet.*, 121, 7, 1232-1263, https://doi.org/10.1002/2016JE005061
3. **Lapôtre, M.G.A.**, M. P. Lamb (2015). Hydraulics of floods upstream of horseshoe canyons and waterfalls. *J. Geophys. Res. Earth Surf.*, 120, 7, 1227-1250, https://doi.org/10.1002/2014JF003412
2. Arvidson, R.E. and 21 coauthors including **M.G.A. Lapôtre** (2015). Mars Reconnaissance Orbiter and Opportunity observations of Burns formation and underlying strata: Crater hopping at Meridiani Planum. *J. Geophys. Res. Planet.*, 120, 3, 429-451, https://doi.org/10.1002/2014JE004686
1. Perron, J.T., P.W. Richardson, K.L. Ferrier, **M.G.A. Lapôtre** (2012). The root of branching river networks. *Nature*, 492, 100-103, https://doi.org/10.1038/nature11762

WHITE PAPERS

Burr, D. & 12 coauthors including **M.G.A. Lapôtre** (2020). NASA Planetary Wind Tunnel Facilities. Submitted for consideration by the *Planetary Science & Astrobiology Decadal Survey 2023–2032*.

Diniega, S. & 16 coauthors including **M.G.A. Lapôtre** (2020). Mars as a "natural laboratory" for studying surface activity on a range of planetary bodies. Submitted for consideration by the *Planetary Science & Astrobiology Decadal Survey 2023–2032*.

Newman, C. & 37 coauthors including **M.G.A. Lapôtre** (2020). Towards more realistic simulation and prediction of Martian dust storms. Submitted for consideration by the *Planetary Science & Astrobiology Decadal Survey 2023–2032*, https://doi.org/10.1002/essoar.10503781.1

CONFERENCE ABSTRACTS

First-Authored (* = student/postdoc advised or co-advised)

(*invited*) **Lapôtre, M.G.A.**, P. Claudin, A. Gunn, S. Carpy, S. Courrech du Pont, A.C.W Baas, C. Bristow, M. Day, R.C. Ewing, C. Gadal, P. Hesp, I. Livingstone, C. Narteau, J. Radebaugh, D.M. Rubin, M. Telfer, G. Wiggs (2023). Hydrodynamic controls on the size of eolian dunes across planetary surfaces. *AGU Fall Meeting 2023*, EP24B–06.

Lapôtre, M.G.A., *L. Rubanenko, R.C. Ewing, L. Fenton, *A. Gunn (2022). A distinct dune-formation regime on Mars. *AGU Fall Meeting 2022*, EP43A–06.

Lapôtre, M.G.A., M.M. Baker, S. Carpy, M. Chojnacki, M. Day, S. Diniega, O. Durán-Vinent, R.C. Ewing, L. Fenton, M. Golombek, *A. Gunn, L. Kerber, C.Newman, J. Radebaugh, *L. Rubanenko, S. Silvestro, C. Swann, D. Tirsch, D. Vaz, C. Weitz, H. Yizhaq, J. Zimbelman (2022). Martian eolian science: Recent advances, remaining questions, and roadmap for future in situ investigations. *Optimizing Planetary In Situ Surface-Atmosphere Interaction Investigations Workshop*, Boise, ID, Abstract #7010.

Lapôtre, M.G.A., R.C. Ewing, *L. Rubanenko, P. Claudin, S. Carpy, *A. Gunn (2022). Stability of eolian bedforms on planetary surfaces – recent advances and remaining questions. *7th International Planetary Dunes Workshop*, Alamosa, CO, Abstract #3014.

(*invited*) **Lapôtre, M.G.A.** (2021). The power of comparative planetology to decipher the mechanics of surface processes and their records. *AGU Fall Meeting 2021*, EP44A–01.

Lapôtre, M.G.A., M.J. Malaska, M.L. Cable (2021). The role of seasonal sediment transport and sintering in shaping Titan's landscapes. *Titan Through Time Workshop V*.

(*invited*) **Lapôtre, M.G.A.**, R.C. Ewing, & M.P. Lamb (2021). An evolving understanding of enigmatic large ripples on Mars. *EGU General Assembly 2021*, EGU21–525.

Lapôtre, M.G.A., M. Malaska, & M. Cable (2021). Interplay between grain sintering and transport-induced abrasion in creating sand-sized sediments on Titan. *52nd LPSC*, Abstract #1135.

(*invited*) **Lapôtre, M.G.A.**, & A. Ielpi (2020). Single-thread rivers in barren landscapes: Formation, lateral migration, and deposits of pre-Silurian and ancient Martian rivers. *AGU Fall Meeting*, EP005–04.

(*invited*) **Lapôtre, M.G.A.**, A. Ielpi (2020). An extraterrestrial perspective on river meandering: Martian fluvial deposits and their significance for early Mars. *35th IAS Meeting of Sedimentology* (meeting postponed).

Lapôtre, M.G.A. (2020). The pace of fluvial meanders on Mars and implications for the landing site of NASA's next Mars rover. *2020 U.S. Kavli Frontiers of Science Symposium*.

Lapôtre, M.G.A., A. Ielpi (2020). Deciphering the paleoenvironmental archives of Jezero crater through physical sedimentology: Orbiter-based predictions. *51st LPSC, Abstract #1521*.

Lapôtre, M.G.A., A. Ielpi (2019). Formation duration and intermittency of the western delta deposits of Jezero crater, Mars. *Bay Area Planetary Science Meeting 2019*.

Lapôtre, M.G.A., A. Ielpi (2019). The Western Jezero delta deposit as a quantitative paleoclimate record: Timescales and intermittency of surface flows on Early Mars. *AGU Fall Meeting*, P54C-08.

Lapôtre, M.G.A. and 32 coauthors (2019). Martian eolian science since the Eighth International Conference on Mars: Summary of advances and remaining questions. *Ninth International Conference on Mars*, #6201.

(*invited*) **Lapôtre, M.G.A.** (2019). When one planet is not enough: Making progress in geology using other planets as full scale experiments. *Geophysical Research Abstracts*, Vol. 21, EGU2019-3185, *EGU General Assembly 2019*.

Lapôtre, M.G.A., A. Ielpi (2019). Single-thread rivers without land plants: A model to interpret martian fluvial deposits. *50th LPSC, Abstract #22519*.

Lapôtre, M.G.A., A. Ielpi (2018). The meandering-river paradox(es) of Earth and Mars: Are plants really needed to make rivers meander? *AGU Fall Meeting*, EP32A-02.

Lapôtre, M.G.A., E.B. Rampe (2018). Curiosity's investigation of the Bagnold Dunes, Gale crater: Overview of a two-phase scientific campaign. *GSA Annual Meeting 2018*, Paper no. 54-3.

Lapôtre, M.G.A., R.C. Ewing, C.M. Weitz, K.W. Lewis, M.P. Lamb, B.L. Ehlmann, D.M. Rubin, N.T. Bridges (2018). Morphologic diversity of martian ripples: Implications for low-intensity transport as a mechanism for large-ripple formation. *10th International Conference on Aeolian Research*.

Lapôtre, M.G.A., E.B. Rampe (2018). Curiosity's investigation of the Bagnold Dunes, Gale crater: Overview of a two-phase scientific campaign. *10th International Conference on Aeolian Research*.

Lapôtre, M.G.A., M.P. Lamb (2017). The role of subsurface water in carving Hesperian amphitheater-headed valleys. *AGU Fall Meeting*, P33B-2877.

Lapôtre, M.G.A., R.C. Ewing, M.P. Lamb, C.M. Weitz, D. Rubin, N.T. Bridges, B.L. Ehlmann (2017). Morphological diversity of Martian eolian bedforms as revealed by the Curiosity rover at Gale crater, Mars. *GSA Annual Meeting 2017*, Paper no. 244-9.

Lapôtre, M.G.A., M.P. Lamb (2017). Did Hesperian amphitheater-headed valleys form by groundwater sapping? *48th LPSC, Abstract #2860*.

(invited) **Lapôtre, M.G.A.**, R.C. Ewing, M.P. Lamb, W.W. Fischer, J.P. Grotzinger, D. Rubin, K. Lewis, M. Ballard, M. Day, S. Gupta, S. Banham, N.T. Bridges (2016). Origin of the two scales of wind ripples on Mars. *AGU Fall Meeting*, EP24A-02.

Lapôtre, M.G.A., M.P. Lamb, R.C. Ewing, B. McElroy (2016). Uniting ripple-formation theory under water and winds: A universal scaling relation for the wavelength of fluid-drag ripples across fluids and planetary bodies. *AGU Fall Meeting*, EP43D-06.

Lapôtre, M.G.A., B.L. Ehlmann, S.E. Minson, R.E. Arvidson, F. Ayoub, A.A. Fraeman, R.C. Ewing, N.T. Bridges (2016). Compositional variations in sands of the Bagnold Dunes at Gale crater, Mars, from visible-shortwave infrared spectroscopy and comparison to ground-truth from the Curiosity rover. *GSA Annual Meeting 2016*, Paper no. 140-12.

Lapôtre, M.G.A., R.C. Ewing, M.P. Lamb, W.W. Fischer, K. Lewis, M. Ballard, M. Day, D. Rubin, J.P. Grotzinger (2016). Orbital and in-situ observations in support of the existence of an unknown stable aeolian bedform regime on Mars. *47th LPSC*, Abstract #1510.

Lapôtre, M.G.A., B.L. Ehlmann, A.A. Fraeman, S.E. Minson, F. Ayoub, R.C. Ewing, R.E. Arvidson, N.T. Bridges (2016). A quantitative assessment of aeolian fractionation at the Bagnold Dunes of Gale crater, Mars, from orbit to the ground. *47th LPSC*, Abstract #1513.

Lapôtre, M.G.A., B.L. Ehlmann, S.E. Minson, F. Ayoub, R.E. Arvidson, J. Buz, A.A. Fraeman, N.T. Bridges, R.Ewing, D.M. Rubin (2015). Implications of active surface processes for the interpretation of the Martian sedimentary rock record: Aeolian sands, sediments, and their sources at Gale Crater. *GSA Annual Meeting 2015*, Paper no. 71-15.

Lapôtre, M.G.A., B.L. Ehlmann, F. Ayoub, S.E. Minson, N.T. Bridges, A.A. Fraeman, R.E. Arvidson, J.L. Eigenbrode, R.C. Ewing, J.R. Johnson (2015). The Bagnold dunes at Gale Crater - A key to reading the geologic record of Mount Sharp. *46th LPSC*, Abstract #1634.

Lapôtre, M.G.A., M.P. Lamb (2015). How much water on Hesperian Mars - Insights from canyon morphology. *ELSI 3rd International Symposium*, 'Life in the Universe', Tokyo, Japan. Abstract P3-03.

Lapôtre, M.G.A., M.P. Lamb (2014). Hydraulic reconstruction of canyon-carving floods on Earth and ancient Mars. *AGU Fall Meeting*, EP11B-04.

Lapôtre, M.G.A., B.L. Ehlmann, R.E. Arvidson, S.E. Minson, F. Ayoub, N.T. Bridges (2014). Two tales of Martian sands and dust. *8th International Conference on Mars*, Abstract #1126.

Lapôtre, M.G.A., M.P. Lamb (2014). Is the width of canyons a diagnostic indicator of the discharge of floods on Earth and Mars? *45th LPSC*, Abstract #1422.

Lapôtre, M.G.A., B.L. Ehlmann, R.E. Arvidson (2014). Quantitative mineralogic and granulometric inversion of Visible Near Infrared Spectra of Aeolian Bedforms on Mars. *45th LPSC*, Abstract #1431.

Lapôtre, M.G.A., M.P. Lamb (2013). Is canyon width a diagnostic indicator of the discharge of megafloods on Earth and Mars? *AGU Fall Meeting*, EP53A-0712.

Lapôtre, M.G.A., M.P. Lamb (2013). Hydraulics of outburst floods spilling over a steep-walled canyon: Implications for paleo-discharges on Mars. *Geophysical Research Abstracts*, Vol. 15, EGU2013-5761, *EGU General Assembly 2013*.

Lapôtre, M.G.A., M.P. Lamb, C. Haliday (2012). Flow focusing as a control on the width of canyons formed by outburst floods. *AGU Fall Meeting*, EP51A-0961.

Lapôtre, M.G.A., M.P. Lamb (2011). Hydraulic control on the width of waterfall escarpments on Earth and Mars. *7th TOPO-EUROPE Workshop*, Davos, Switzerland.

Lapôtre, M.G.A., O. Galland, M. Dabrowski (2010). Mechanics of saucer-shaped sills emplacement - Can we predict the crack deflection? *AGU Fall Meeting*, T23A-2234.

Lapôtre, M.G.A., C. Gerlein, C. Huber, J. Watkins, M. Manga (2009). Deformation of a buoyant bubble at low Reynolds number: A model of interaction between a plume head and a subducting slab. *AGU Fall Meeting*, T13B-1867.

Other Abstracts (* = student/postdoc advised or co-advised)

*Di, J., *S. Cuevas-Quiñones, *S. Newdick, *T.G. Chen, M. Pavone, **M.G.A. Lapôtre**, M. Cutkosky (2024). Martian Exploration of Lava Tubes (MELT) with ReachBot: Scientific investigation and concept of operations. *2024 International Conference on Space Robotics*, Paper #

*Hasson, M., *M.C. Marvin, **M.G.A. Lapôtre** (2024). Determining depositional environments using quartz microtextures and deep learning. *International Sedimentary Geoscience Congress*, Abstract #174, Flagstaff, Arizona.

*Marvin, M.C., *M. Hasson, *R. Abubo, **M.G.A. Lapôtre** (2024). Detrital zircon microtextures as a powerful tool to interpret the Precambrian sedimentary record. *International Sedimentary Geoscience Congress*, Abstract #80, Flagstaff, Arizona.

(*invited*) *Gunn, A., *L. Rubanenko, **M.G.A. Lapôtre**, R.C. Ewing, D. Jerolmack, M. Chojnacki, L. Fenton, N. Bintliff, *S. Pérez López, A. Soto, I. Smith (2024). Aeolian sediment pathways on Mars. *Australian-New Zealand Geomorphology Group, 20th Biennial Conference*.

*Jung, J.-I., **M.G.A. Lapôtre**, R.E. Milliken, S.E. Minson (2023). Enabling remote compositional analyses of the lunar surface by removing spectral signatures of space weathering. *AGU Fall Meeting 2023*, P11D–2766.

*Alvarez, C., *A. Gunn, C. Swann, **M.G.A. Lapôtre** (2023). Impact of atmospheric density on dust settling and implications for dust dynamics on Mars. *AGU Fall Meeting 2023*, P53B–06.

*Amaro, B., *N.C. Prieur, L. Rubanenko, **M.G.A. Lapôtre** (2023). Rock abundance maps on the Moon from automated boulder measurements. *AGU Fall Meeting*, P22A–06.

*Marvin, M.C., *W. Bo, J. Radebaugh, A. Gunn, M. Day, **M.G.A. Lapôtre** (2023). Global analysis of dune patterns on Titan. *AGU Fall Meeting 2023*, EP31D–2112.

*Hasson, M., *M.C. Marvin, **M.G.A. Lapôtre** (2023). Determination of paleo-transport environments of sand grains using deep learning. *GU Fall Meeting 2023*, EP51E–1661.

*Cuevas-Quiñones, S., **M.G.A. Lapôtre**, S.N. Newdick, T. Chen, M.R. Cutkosky, M. Pavone (2023). Exploring caves and cliffs on Mars: Notional mission concepts enabled by ReachBot. *AGU Fall Meeting 2023*, P33B–04.

Jones, N., A. Rutledge, C. Edwards, L. Edgar, A. Li, M. Henderson, K. Bennett, E.B. Rampe, H. Eifert, A. Koepell, B. Sikes, M. Bowker, **M.G.A. Lapôtre** (2023). Do microbes shape landscapes? Investigating the abundance and distribution of EPS in Mars analog environments. *AGU Fall Meeting 2023*, EP43E–2469.

Kodama, S., T. Pico, N. Finnegan, **M.G.A. Lapôtre**, J. Willenbring, A. Limaye (2023). Spatial and temporal trends in meander migration rate influenced by glacial isostatic adjustment-induced slope change. *AGU Fall Meeting 2023*, EP12B–07.

(*invited*) Ielpi, A., **M.G.A. Lapôtre**, A. Finotello, P. Roy-Léveillée (2023). Arctic greening and permafrost thaw lead to riverbank migration slowdown *AGU Fall Meeting 2023*, EP14B–06.

Ielpi, A., D.P. Viero, **M.G.A. Lapôtre**, A. Graham, M. Ghinassi, A. Finotello (2023). How is time distributed in a meandering-river floodplain? *AGU Fall Meeting 2023*, EP31A–08.

Siebach, K.L., S.L. Preston, J.D. Henry, **M.G.A. Lapôtre**, V. Payre, S. Banham (2023). Coarse grains in the lithified ancient Stimson dune field interpreted as recycled grains from eroding fluvial conglomerates in Gale crater, Mars. *Fluvial Aeolian Interactions on Planetary Surfaces* ESA workshop, Noordwijk, The Netherlands.

Bedford, C.C., E.B. Rampe, R.C. Ewing, S. Banham, M.T. Thorpe, B. Horgan, **M.G.A. Lapôtre**, R.C. Wiens, J.C. Bridges, A. Lukas, L. Le Deit, K. Rammelkamp, E. Dehouck, P. Gasda, J. Frydenvang (2023). The geochemical and mineralogical impact of aeolian processes on fluvial deposits on the Earth and Mars. *Fluvial Aeolian Interactions on Planetary Surfaces* ESA workshop, Noordwijk, The Netherlands.

(*invited*) *Rubanenko, L., **M.G.A. Lapôtre**, *A. Gunn, R.C. Ewing, L. Fenton, M. Chojnacki, A. Soto (2023). Deciphering Mars' global atmosphere through the lens of barchan dune morphology. *GSA Annual Meeting 2023*, Abstract #84–10.

*Marvin, M.C., *W. Bo, **M.G.A. Lapôtre** (2023). What can and cannot be learned from dune interactions on Titan from Cassini SAR images. *Titan Through Time VI*.

*Hasson, M., *M.C. Marvin, *A. Gunn, A. Ielpi, **M.G.A. Lapôtre** (2023). Preservation of meandering river-deposits in unvegetated arid landscapes: Implications for paleoenvironmental interpretations of fluvial deposits on the pre-vegetation Earth and Mars. *International Conference on Fluvial Sedimentology 2023*, S03–04.

Finotello, A., A. Ielpi, E. Lazarus, M. Ghinassi, L. Carniello, **M.G.A. Lapôtre**, S. Favaro, D. Tognin, A. D'Alpaos (2023). Vegetation geoengineers river meandering. *International Conference on Fluvial Sedimentology 2023*, S15–08.

*Marvin, M.C., **M.G.A. Lapôtre**, *A. Gunn, M. Day, A. Soto (2023). Dune interactions as an indicator of morphodynamic disequilibrium. *International Conference on Aeolian Research XI*, Abstract #324.

Courrech du Pont, S., D.M. Rubin, C. Narteau, **M.G.A. Lapôtre**, M. Day, P. Claudin, I. Livingstone, M. Telfer, J. Radebaugh, C. Gadal, *A. Gunn, P. Hesp, S. Carpy, C. Bristow, A.C.W Baas, R.C. Ewing, G. Wiggs (2023). Complementary classifications of aeolian dunes based on morphology, dynamics, and fluid mechanics. *International Conference on Aeolian Research XI*, Abstract #595.

*Rubanenko, L., *A. Gunn, L.K. Fenton, R.C. Ewing, A. Soto, **M.G.A. Lapôtre** (2023). Insights from the global distribution of barchan dunes on Mars. *International Conference on Aeolian Research XI*, Abstract #590.

Berger, L.M., R.C. Ewing, **M.G.A. Lapôtre**, *M. Hasson (2023). Coarse-grained ripple patterns at the Algodones Dune Field, California. *International Conference on Aeolian Research XI*, Abstract #635.

Young, B.W., M.P. Bishop, R.C. Ewing, E. Bohacek, D.R. Hood, A.L. Cohen-Zada, A. Gunn, L. Rubanenko, M. Nachon, L. Berger, **M.G.A. Lapôtre**, D. Bustos, A. Soto (2023). Geomorphometry and semantic modeling for mapping aeolian landforms. *International Conference on Aeolian Research XI*, Abstract #289.

Mason, K.G., R.C. Ewing, M. Nachon, E.B. Rampe, B. Horgan, **M.G.A. Lapôtre**, M.T. Thorpe, C.C. Bedford, P. Sinha, E. Champion, P. Gray (2023). Sediment sorting and rounding in a basaltic glacio-fluvio-aeolian environment: Þórisjökull glacier, Iceland *International Conference on Aeolian Research XI*, Abstract #529.

*Prieur, N.C., *B. Amaro, *E. Gonzalez, *L. Rubanenko, Z. Kerner, S.C. Werner, **M.G.A. Lapôtre** (2023). Distribution of impact-generated boulders on planetary surfaces: Influence of target fracturation and lithology. *54th LPSC*, Abstract #2903.

Young, B.M., R.C. Ewing, M.P. Bishop, A. Soto, A. Gunn, D.N. Martin, A.L. Cohen-Zada, **M.G.A. Lapôtre** (2023). Linking winds and sediment accumulation patterns at Herschel crater, Mars. *54th LPSC*, Abstract #2235.

Berger, L.M., R.C. Ewing, **M.G.A. Lapôtre**, *M. Hasson (2023). Coarse-graine ripple patterns at the Algodones dune field, California. *54th LPSC*, Abstract #2801.

Preston, S.L., K.L. Siebach, **M.G.A. Lapôtre** (2023). Was ancient windblown sand larger than modern windblown sand on Mars? Grain size distribution in the Stimson formation, Gale crater, Mars, and implications for martian paleoatmosphere. *54th LPSC*, Abstract #2978.

Martin, D.N., R.C. Ewing, B.W. Young, M.P. Bishop, A. Soto, A. Gunn, **M.G.A. Lapôtre** (2023). Classification of the aeolian sedimentary systems at Herschel crater, Mars. *54th LPSC*, Abstract #2836.

Rudolph, A., B. Horgan, P. Sinha, R. Ewing, E. Rampe, **M.G.A. Lapôtre**, C. Bedford, M. Thorpe, L. Berger, E. Champion, M. Faragalli, P. Gray, *M. Hasson, K. Mason, M. Nachon, E. Reid (2023). Fate of glaciovolcanic sediments transported by fluvial and aeolian processes in a cold climate Mars-analog environment. *54th LPSC*, Abstract #2227.

Bourikas, T., A. Rudolph, B. Horgan, P. Sinha, R. Ewing, E. Rampe, **M.G.A. Lapôtre**, C. Bedford, M. Thorpe, L. Berger, E. Champion, M. Faragalli, P. Gray, *M. Hasson, K. Mason, M. Nachon, E. Reid (2023). Examining the transport of volcanic sediment from Vatnajökull using decorrelation stretches (DCS). *54th LPSC*, Abstract #2195.

*Hasson, M., *M.C. Marvin, *A. Gunn, A. Ielpi, **M.G.A. Lapôtre** (2022). A depositional model for meandering rivers in unvegetated arid basins. *AGU Fall Meeting 2022*, EP56A–06.

*Gonzalez, E., *N.C. Prieur, *B. Amaro, **M.G.A. Lapôtre** (2022). Quantifying the radial distribution of meter-sized boulders around lunar impact craters of variable degradation state and target properties. *AGU Fall Meeting 2022*, P45A–04.

*Amaro, B., *N.C. Prieur, *E. Gonzalez, **M.G.A. Lapôtre** (2022). Machine learning-driven detection of boulders on the martian surface. *AGU Fall Meeting 2022*, P25A–64.

*Rubanenko, L., L. Fenton, M. Chojnacki, **M.G.A. Lapôtre** (2022). Impact of surface volatiles on the slipface slope angle of martian barchan dunes. *AGU Fall Meeting 2022*, EP43A–09.

*Prieur, N.C., *B. Amaro, *E. Gonzalez, *L. Rubanenko, H.R. Kerner, Z. Xiao, S.C. Werner, **M.G.A. Lapôtre** (2022). Deep learning for boulder detection on planetary surfaces. *AGU Fall Meeting 2022*, P23A–02.

Kodama, S., T. Pico, N.J. Finnegan, **M.G.A. Lapôtre**, J.K Willenbring (2022). Isolating the role of slope change due to glacial isostatic adjustment on meander rates and river morphology in the Red River (North Dakota, USA). *AGU Fall Meeting 2022*, EP55D–0851.

Rudolph, A., P. Sinha, R.C. Ewing, E.B. Rampe, **M.G.A. Lapôtre**, C.C. Bedford, M. Thorpe, E. Champion, L. Berger, M. Faragalli, P.C. Gray, *M. Hasson, K. Mason, M. Nachon, E. Reid (2022). Compositional trends with distance from source to sink in glaciovolcanic Mars-analog fluvial systems. *AGU Fall Meeting 2022*, EP36C–02.

Ielpi, A., **M.G.A. Lapôtre** (2022). Stream widening and accelerated lateral migration from wildfire-induced watershed-wide perturbations in sediment flux. *AGU Fall Meeting 2022*, EP53A–06.

*Newdick, S., T. Chen, **M.G.A. Lapôtre**, M. Cutkosky, M. Pavone (2022). ReachBot: Robot for mobility and large manipulation tasks in challenging environments with adverse planetary gravity. *International Planetary Probe Workshop 2022*, Abstract #110.

*Marvin, C., *A. Gunn, M. Day, **M.G.A. Lapôtre** (2022). Quantifying dune interactions on planetary surfaces: Exploring pattern-development dependence on environmental conditions. *7th International Planetary Dunes Workshop*, Alamosa, CO, Abstract #3023.

*Rubanenko, L., *S. Pérez-López, L.K. Fenton, R.C. Ewing, **M.G.A. Lapôtre** (2022). Winds on Mars inferred from the global distribution of barchan dunes using a convolutional neural network. *7th International Planetary Dunes Workshop*, Alamosa, CO, Abstract #3022.

Berger, L.M., R.C. Ewing, **M.G.A. Lapôtre**, *M. Hasson (2022). Topographic analysis of a coarse-grained ripple field, Algodones Dunes, California. *7th International Planetary Dunes Workshop*, Alamosa, CO, Abstract #3032.

*Schneider, S., T. Chen, A. Bylard, **M.G.A. Lapôtre**, M. Cutkosky, M. Pavone (2022). ReachBot: A small robot for large mobile manipulation tasks in martian cave environments. *AbSciCon 2022*, Abstract #417–06.

*Marvin, C., **M.G.A. Lapôtre**, *A. Gunn, M. Day (2022). Quantifying dune interactions on planetary surfaces: Updated methodology and implications for dune pattern analyses. *53rd LPSC*, Abstract #1236.

*Rubanenko, L., *S. Pérez-López, L.K. Fenton, R.C. Ewing, **M.G.A. Lapôtre** (2022). Global map of surface winds on Mars from barchan dune migration directions and horn asymmetry using a convolutional neural network *53rd LPSC*, Abstract #1209.

*Prieur, N.C., *L. Rubanenko, Z. Xiao, H. Kerner, S.C. Werner, **M.G.A. Lapôtre** (2022). A large training dataset of boulder sizes and shapes as a first step towards the automated detection of rock fragments on planetary surfaces. *53rd LPSC*, Abstract #1835.

Berger, L.M., R.C. Ewing, **M.G.A. Lapôtre**, *M. Hasson (2022). Topographic analysis of a coarse-grained ripple field, Algodones Dunes, California. *53rd LPSC*, Abstract #1772.

Young, B.M., M.P. Bishop, R.C. Ewing, **M.G.A. Lapôtre**, *A. Gunn (2022). Using topographic structure to map sand dunes: Results from White Sands dune field and applications to Mars *53rd LPSC*, Abstract #1734.

Bedford, C.C., E.B. Rampe, M.T. Thorpe, R.C. Ewing, M. Nachon, K. Mason, E. Champion, L. Berger, B. Horgan, P. Sinha, A. Rudolph, E. Reid, **M.G.A. Lapôtre**, *M. Hasson, P. Gray (2022). Characterizing the effects of glaciation on the volcanic source rocks of the SAND-E Mars analog mission and its implications for Mars. *53rd LPSC*, Abstract #2817.

Bedford, C.C., E.B. Rampe, M.T. Thorpe, R.C. Ewing, M. Nachon, K. Mason, E. Champion, L. Berger, B. Horgan, P. Sinha, A. Rudolph, E. Reid, **M.G.A. Lapôtre**, *M. Hasson, P. Gray (2022). Identifying the products of volcano-ice interactions in the martian sedimentary record. *53rd LPSC,* Abstract #2844.

Rudolph, A., B. Horgan, P. Sinha, R.C. Ewing, E.B. Rampe, **M.G.A. Lapôtre**, M. Nachon, M.T. Thorpe, C.C. Bedford, K. Mason, L. Berger, *M. Hasson, E. Champion, P. Gray, E. Reid, M. Faragalli (2022). Comparing the influence of transport vs. alteration on the composition of cold climate Mars-analog sediments. *53rd LPSC*, Abstract #2254.

Sinha, P., B. Horgan, A. Rudolph, R.C. Ewing, E.B. Rampe, **M.G.A. Lapôtre**, M. Nachon, M.T. Thorpe, C.C. Bedford, K. Mason, E. Champion, P. Gray, E. Reid, M. Faragalli (2022). Color analysis of visible images for assessing sediment provenance during orbital and in situ planetary exploration. *53rd LPSC*, Abstract #2312.

Champion, E., R.C. Ewing, M. Nachon, E.B. Rampe, B. Horgan, **M.G.A. Lapôtre**, M.T. Thorpe, C.C. Bedford, P. Sinha, A. Rudolph, K. Mason, M. Tice, P. Gray, E. Reid (2022). μXRF investigation of geochemical and physical grain characteristics in a glacio-fluvial-aeolian catchment in southwest Iceland. *53rd LPSC*, Abstract #2409.

*Hasson, M., *A. Gunn, **M.G.A. Lapôtre**, A. Ielpi (2021). Point-bar and channel-fill deposits of an unvegetated distributary fluvial system: Implications for Jezero crater, Mars. *AGU Fall Meeting 2021*, P15E–2138.

*Gunn, A., **M.G.A. Lapôtre** (2021). Accumulation rates of aeolian sediments in martian impact craters. *AGU Fall Meeting 2021*, EP12A–06.

*Rubanenko, L., *A. Gunn, *S. Pérez-López, *J. Schull, **M.G.A. Lapôtre**, L. Fenton, R.C. Ewing (2021). Global surface winds inferred from barchan dunes on Mars using a convolutional neural network. *AGU Fall Meeting 2021*, EP21A–03.

*Steelquist, A., **M.G.A. Lapôtre**, G.E. Hilley (2021). Drainage initiation and expansion in bedrock landscapes. *AGU Fall Meeting 2021*, EP41B–03.

Preston, S., K.L. Siebach, **M.G.A. Lapôtre** (2021). New constraints on grain size of eolian sediments in the Stimson Sandstone, Gale crater, Mars, and implications for paleoclimate. *AGU Fall Meeting 2021*, EP15B–1333.

Bedford, C.C., E.B. Rampe, M. Thorpe, R.C. Ewing, M. Nachon, K. Mason, L. Berger, E. Champion, B.H.N. Horgan, P. Sinha, A. Rudolph, **M.G.A. Lapôtre**, *M. Hasson, P.C. Gray, E. Reid (2021). The role of glaciovolcanic sources in Iceland's Mars-analog sedimentary systems. *AGU Fall Meeting 2021*, P21a–04.

(invited) Pavone, M., M. Cutkosky, **M.G.A. Lapôtre**, *S. Schneider, T. Chen, A. Bylard (2021). ReachBot: A small robot for large mobile manipulation tasks in martian cave environments. *2021 NASA Innovative Advanced Concepts (NIAC) Symposium*.

Sinha, P., B. Horgan, A. Rudolph, R.C. Ewing, E.B. Rampe, **M.G.A. Lapôtre**, M. Nachon, M.T. Thorpe, C.C. Bedford, K. Mason, E. Champion, P. Gray, E. Reid, M. Faragalli (2021). Assessing sediment provenance on Earth and Mars using visible and near-infrared (VNIR) spectroscopy and decorrelation stretches (DCS) of visible images. *Workshop on Terrestrial Analogs for Planetary Exploration*, Abstract #8082.

Ewing, R.C., E.B. Rampe, B. Horgan, **M.G.A. Lapôtre**, M. Nachon, M.T. Thorpe, C.C. Bedford, P. Sinha, K.G. Mason, E. Champion, P. Gray, A. Soto, M. Faragalli, E. Reid (2021). Overview of logistics and operations for SAND-E: Semi-Autonomous Navigation for Detrital Environments. *Workshop on Terrestrial Analogs for Planetary Exploration*, Abstract #8119.

Mason, K.G., R.C. Ewing, M. Nachon, E.B. Rampe, B. Horgan, **M.G.A. Lapôtre**, M.T. Thorpe, C.C. Bedford, P. Sinha, E. Champion, P. Gray (2021). Grain size and shape analysis of basaltic aeolian and fluvial sediment in a volcanic catchment: Þórisjökull glacier, Iceland. *Workshop on Terrestrial Analogs for Planetary Exploration*, Abstract #8118.

Bedford, C., E.B. Rampe, M. Thorpe, R.C. Ewing, M. Nachon, B. Horgan, **M.G.A. Lapôtre**, K.G. Mason, P. Sinha, E. Champion, P. Gray, E. Reid (2021). Investigating the geochemical and mineralogical evolution of basaltic sediments in the Mars analog Þórisjökull glacio-fluvio-aeolian sedimentary system using Mars rover techniques. *Workshop on Terrestrial Analogs for Planetary Exploration*, Abstract #8091.

(invited) *Rubanenko, L., **M.G.A. Lapôtre**, ***J. Schull, *S. Pérez-López, L.K. Fenton, & R.C. Ewing (2021). Mapping surface winds on Mars from the global distribution of barchan dunes employing an instance segmentation neural network. *EGU General Assembly 2021*, EGU21–12960.

*Rubanenko, L., **M.G.A. Lapôtre**, ***J. Schull, *S. Pérez-López, L.K. Fenton, & R.C. Ewing (2021). Mapping Mars' surface winds from the global distribution of barchan dunes employing artificial intelligence. *52nd LPSC*, Abstract #1650.

Champion, E., R.C. Ewing, M. Nachon, E.B. Rampe, B. Horgan, **M.G.A. Lapôtre**, M.T. Thorpe, C.C. Bedford, P. Sinha, K. Mason, & M. Tice (2021). μXRF investigation of relationships between geochemistry and physical grain characteristics in a glacio-fluvial-aeolian catchment in Iceland. *52nd LPSC*, Abstract #2429.

Mason, K.G., R.C. Ewing, M. Nachon, E.B. Rampe, B. Horgan, **M.G.A. Lapôtre**, M.T. Thorpe, C.C. Bedford, P. Sinha, E. Champion, P. Gray (2021). Sediment sorting and rounding in a basaltic glacio-fluvio-aeolian environment: Þórisjökull glacier, Iceland. *52nd LPSC*, Abstract #1752.

Sinha, P., B. Horgan, A. Rudolph, R.C. Ewing, E.B. Rampe, **M.G.A. Lapôtre**, M. Nachon, M. Thorpe, C. Bedford, K. Mason, E. Champion, P. Gray, E. Reid, M. Faragalli (2021). Decorrelation stretches (DCS) of visible images as a tool for assessing sediment provenance on Earth and Mars. *52nd LPSC*, Abstract #2682.

(*invited*) Ielpi, A., **M.G.A. Lapôtre**, A. Finotello, & M. Ghinassi (2021). Planform-asymmetry and backwater effects in river-cutoff kinematics and clustering. *SEPM International Sedimentary Geosciences Congress 2021* (meeting postponed).

Rampe, E.B., B.H.N. Horgan, A.M. Rutledge, R.J. Smith, N. Scudder, R.C. Ewing, **M.G.A. Lapôtre**, C.C. Bedford, & M.T. Thorpe (2020). Astrobiology field sites in proglacial mafic terrains in Oregon and Iceland. *Open University Astrobiology Mini-Symposium*.

*Rubanenko, L., *J. Schull, & **M.G.A. Lapôtre** (2020). Mapping and analysis of eolian bedforms on Mars using fully convolutional instance segmentation networks. *AGU Fall Meeting*, P008–06.

(*invited*) Ielpi, A. & **M.G.A. Lapôtre** (2020). The case for barren meanders in Earth's modern endorheic basins as analogs to early Mars' rivers. *AGU Fall Meeting*, EP041–03.

(*invited*) Baker, M.M., C. Newman, **M.G.A. Lapôtre**, & 28 coauthors (2020). Surface investigations of aeolian activity on Mars: Recent advances and outstanding questions. *AGU Fall Meeting*, EP022–01.

Ewing, R.C., M. Nachon, E.B. Rampe, B.H.N. Horgan, **M.G.A. Lapôtre**, M.M. Tice, E. Reid, M. Battler, M. Faragalli, C.C. Bedford, M. Thorpe, P. Sinha, P.C. Gray, K. Mason, & E. Champion (2020). Translating analog field studies for mission science and operations on Mars 2020: Approaches from Iceland and Padre Island, TX. *AGU Fall Meeting*, P059–02.

Finotello, A., A. Ielpi, E.D. Lazarus, M. Ghinassi, **M.G.A. Lapôtre**, S. Favaro, & A. D'Alpaos (2020). Quantifiable effects of vegetation on river meander morphology and dynamics. *AGU Fall Meeting*, EP004–0006.

Bedford, C.C., E.B. Rampe, M.T. Thorpe, R.C. Ewing, K. Mason, E. Champion, M. Nachon, B. Horgan, P. Sinha, E. Reid, **M.G.A. Lapôtre**, P. Gray (2020). Identifying the products of volcano-ice interaction in Icelandic Mars analog sedimentary environments using Mars rover techniques. *AGU Fall Meeting*, *P059–03*.

Ielpi. A., **M.G.A. Lapôtre**, A. Finotello, M. Ghinassi, & A. d'Alpaos (2020). Predictions of stratigraphic architecture in relation to channel mobility of dryland rivers: Insight from the Mojave River of California (USA). *GSA Annual Meeting 2020*, Paper no. 87–9.

Mason, K.G., R.C. Ewing, M. Nachon, E.B. Rampe, B. Horgan, **M.G.A. Lapôtre**, M.T. Thorpe, C.C. Bedford, P. Sinha, & E. Champion (2020). Fluvial and eolian sediment sorting and rounding in a basaltic pro-glacial catchment: Þórisjökull glacier, Iceland. *GSA Annual Meeting 2020*, Paper no. 229–2.

Bedford, C.C., E.B. Rampe, M.T. Thorpe, R.C. Ewing, K. Mason, E. Champion, M. Nachon, B. Horgan, P. Sinha, E. Reid, **M.G.A. Lapôtre**, & P.C. Gray (2020). An investigation into the effectiveness of Mars rover techniques in identifying source-to-sink sedimentary processes in basaltic environments. *GSA Annual Meeting 2020*, Paper no. 229–4.

Burr, D.M., M. Day, L. Fenton, **M.G.A. Lapôtre**, L. Neakrase, C. Swann, I. Walker, I., & D. Williams (2020). Facilities for planetary aeolian experimental research: A draft white paper. *6th International Planetary Dunes Workshop*, *Abstract #3029*.

Weitz, C. M., R.J. Sullivan, **M.G.A. Lapôtre**, S. K. Rowland, J. A. Grant, M. M. Baker, & R. A. Yingst (2020). Physical properties of sand grains in the Bagnold Dunes at Gale crater, Mars. *6th International Planetary Dunes Conference, Abstract #3004*.

Ielpi, A. & **M.G.A. Lapôtre** (2020). Plants hold back the migration of river meanders. Submitted to *35th IAS Meeting of Sedimentology* (meeting postponed).

Ewing, R. C. E., E. B. Rampe, B. H. N. Horgan, **M.G.A. Lapôtre**, M. Nachon, M. T. Thorpe, C. C. Bedford, P. Sinha, K. Mason, E. Champion, P. Gray, A. Soto, M. Faragalli, & E. Reid (2020). Overview and initial results of SAND-E: Semi-Autonomous Navigation for Detrital Environments. *51st LPSC, Abstract #2857*.

Champion, E., R. C. Ewing, M. Nachon, E. B. Rampe, B. H. N. Horgan, **M.G.A. Lapôtre**, M. T. Thorpe, C. C. Bedford, P. Sinha, K. Mason, M. Tice (2020). Investigating relationships between geochemistry and physical grain characteristics along a glacio-fluvial-aeolian sediment transport pathway using μXRF. *51st LPSC, Abstract #2883*.

Mason, K. G., R. C. Ewing, M. Nachon, E. B. Rampe, B. H. N. Horgan, **M.G.A. Lapôtre**, M. T. Thorpe, C. C. Bedford, P. Sinha, E. Champion (2020). Sediment sorting and rounding in a basaltic glacio-fluvio-aeolian environment: Þhórisjökull glacier, Iceland. *51st LPSC, Abstract #2720*.

Nachon, M., R. C. Ewing, F. Marcantonio, L. Romero, D. Schimmenti, M. Tice, E. B. Rampe, B. H. N. Horgan, **M.G.A. Lapôtre**, M. T. Thorpe, C. C. Bedford, K. Mason, P. Sinha, E. Champion, A. D. Harrington, & the SAND-E engineering team (2020). Dust from Mars-analog plains (Iceland): Physico-compositional properties as a function of grain-size fraction. *51st LPSC, Abstract #2250*.

Thorpe, M. T., E. B. Rampe, K. L. Siebach, C. C. Bedford, R. C. Ewing, R. Christofferson, P. Sinha, B. H. N. Horgan, **M.G.A. Lapôtre**, M. Nachon, K. Mason, E. Champion, & the SAND-E team (2020). Clay sediments from basaltic terrains: Implications for sedimentary processes on Mars. *51st LPSC, Abstract #1566*.

Bedford, C. C., E. B. Rampe, M. T. Thorpe, R. C. Ewing, B. H. N. Horgan, M. Nachon, **M.G.A. Lapôtre**, P. Sinha, K. Mason, E. Champion, E. Reid (2020). Identifying the products of volcano-ice interaction in basaltic sediments in Iceland and their implications for Mars. *51st LPSC, Abstract #2478*.

Rampe, E. B., R. C. Ewing, M. T. Thorpe, C. C. Bedford, B, Horgan, **M.G.A. Lapôtre**, P. Sinha, M. Nachon, K. Mason, E. Champion, P. Gray, A. Soto, & E. Reid (2020). Using XRD to characterize sediment sorting in a Mars analog glacio-fluvio-eolian basaltic sedimentary system in Iceland. *51st LPSC, Abstract #2365*.

Sinha, P., B. H. N. Horgan, R. C. Ewing, E. B. Rampe, **M.G.A. Lapôtre**, M. Nachon, M. Thorpe, A. Rudolph, C. Bedford, K. Mason, E. Champion, P. C. Gray, E. Reid & M. Faragalli (2020). Decorrelation stretches (DCS) of visible images as a tool for sedimentary provenance investigations on Earth and Mars. *51st LPSC, Abstract #1495*.

Sinha, P., B. H. N. Horgan, R. C. Ewing, E. B. Rampe, **M.G.A. Lapôtre**, M. Nachon, M. Thorpe, C. Bedford, K. Mason, E. Champion, P. C. Gray, E. Reid & M. Faragalli (2020). SAND-E: A Rover-Based Mars Analog Study of a Mafic Sedimentary Environment, Iceland. *Seventh International Conference on Mars Polar Science & Exploration*, Abstract #6056.

Ewing, R. C., E. B. Rampe, B. H. N. Horgan, **M.G.A. Lapôtre**, & 8 other coauthors (2019). SAND-E: Semi-Autonomous Navigation for Detrital Environments First Results. *AGU Fall Meeting*, EP24A-05.

*Steelquist, A. T., G. Hilley, & **M.G.A. Lapôtre** (2019). Drainage initiation in bedrock landscapes. *AGU Fall Meeting*, EP53I-2247.

Ielpi, A., **M.G.A. Lapôtre** (2019). Evolution of land plants impacted global rates of meander migration and biogeochemial fluxes. *AGU Fall Meeting*, EP41A-02.

Chojnacki, M., L. Fenton, M. Banks, S. Silvestro, D. Vaz, A. Urso, R.C. Ewing, **M.G.A. Lapôtre** (2019). Wind-driven sand motion across Mars and implications from orbital analysis. *Ninth International Conference on Mars*, Abstract #6361.

Ielpi, A., **M.G.A. Lapôtre** (2019). Plant life hinders river meandering in the Bonneville Basin of Utah. *Geological Association of Canada – Mineralogical Association of Canada – International Association of Hydrogeologists Conference 2019*.

Ruangsirikulchai, A., K. Wilson, H.J. Hassenruck-Gudipati, **M.G.A. Lapôtre**, D.C. Mohrig (2019). Developmental History of Return-Flow Channels Caused by Hurricane Harvey at San Jose Island, Texas, USA. *Geophysical Research Abstracts*, Vol. 21, EGU2019-1475, *EGU General Assembly 2019*.

Rampe, E.B., T.F. Bristow, D.F. Blake, D.T. Vaniman, **M.G.A. Lapôtre**, & 22 other coauthors (2019). Mineralogy of modern regolith and ancient sedimentary deposits in Gale crater, Mars from the Curiosity rover. *2019 Soil Science Society of America Meeting*, Abstract #148-1.

Ruangsirikulchai, A., K. Wilson, H.J. Hassenruck-Gudipati, **M.G.A. Lapôtre**, D.C. Mohrig (2018). Evolution of return-flow channels cut into San Jose Island, Texas, caused by hurricane Harvey. *AGU Fall Meeting*, EP23C-2347.

Ewing, R.C., & 6 other coauthors including **M.G.A. Lapôtre** (2018). Overview of SAND-E: Semi-Autonomous Navigation for Detrital Environments. *AGU Fall Meeting*, P51C-11.

(*invited*) Baker, M.M., C.E. Newman, **M.G.A. Lapôtre**, K.W. Lewis, M.E. Minitti, R. Sullivan, A. Vasavada, C.M. Weitz, D.M. Rubin, & N.T. Bridges (2018). Characterizing the modern-day Aeolian environment at Gale crater, Mars. *AGU Fall Meeting,* EP43A-08.

Rampe., E.B., **M.G.A. Lapôtre**, & 27 coauthors (2018). Using Mineralogy of the Bagnold Dune Field in Gale Crater to Interpret Eolian Sediment Sorting on the Martian Surface. *GSA Annual Meeting 2018*, Paper no. 54-2.

Kurokawa, H., B.L. Ehlmann, E. Ammanito, M.C. De Sanctis, **M.G.A. Lapôtre**, T. Usui, N.T. Stein, T. Prettyman, A. Raponi, & M. Ciarniello (2018). A probabilistic approach to deriving Ceres average surface composition from Dawn VIR data. *JpGU 2018*, MIS18-P10.

Kurokawa, H., B.L. Ehlmann, E. Ammanito, M.C. De Sanctis, **M.G.A. Lapôtre**, T. Usui, N.T. Stein, T. Prettyman, A. Raponi, & M. Ciarniello (2018). A Bayesian approach to deriving Ceres surface composition from Dawn VIR data: Initial quantification of bright spot and typical dark material phases with this method. *49th LPSC, Abstract #1908*.

Rampe, E.B., T.F. Bristow, D.F. Blake, D.T. Vaniman, C.N. Achilles, N. Castle, S.J. Chipera, P.I. Craig, D.J. Des Marais, R.T. Downs, J. Farmer, R. Hazen, B. Horgan, **M.G.A. Lapôtre**, D.W. Ming, R.V. Morris, S.M. Morrison, T.S. Peretyazhko, A.H. Treiman, V. Tu, & A.S. Yen (2018). Mineralogy of Aeolian sand in Gale crater, Mars. *49th LPSC, Abstract #1654*.

Weitz, C.M., R.J. Sullivan, **M.G.A. Lapôtre**, S.K. Rowland, K.S. Edgett, J.A. Grant, & R.A. Yingst (2018). Grain size measurements of eolian ripples in Gale crater, Mars. *49th LPSC, Abstract #1257*.

(*invited*) Lamb, M.P., **M.G.A. Lapôtre**, I.J. Larsen, & R.M.E. Williams (2017). Bedrock canyons carved by the largest known floods on Earth and Mars. *AGU Fall Meeting*, U43A-03.

(*invited*) Ehlmann, B.L., K.S. Edgett, B. Sutter, C.N. Achilles, M.L. Litvak, **M.G.A. Lapôtre**, & 34 other coauthors (2017). The sands of the Bagnold Dunes, Mars. *AGU Fall Meeting*, P51H-10.

Baker, M., **M.G.A. Lapôtre**, N.T. Bridges, M. Minitti, C. Newman, B.L. Ehlmann, A. Vasavada, K. Lewis (2017). The Bagnold Dunes in the southern summer season: Active sediment transport on Mars observed by MSL. *AGU Fall Meeting*, P33F-04.

Weitz, C.M., R. Sullivan, **M.G.A. Lapôtre**, S. Rowland, K.S. Edgett, J.A. Grant, R.A. Yingst (2017). Grain size measurements of eolian ripples in Gale crater, Mars. *AGU Fall Meeting*, P31A-2787.

Banham, S., S. Gupta, D. Rubin, J. Watkins, K.S. Edgett, D.Y. Sumner, J.P. Grotzinger, K. Lewis, L. Edgar, K. Stack, R. Barnes, J. Bell III, M.D. Day, R.C. Ewing, **M.G.A. Lapôtre**, N. Stein, F. Rivera-Hernandez, A. Vasavada (2017). From lakes to sand seas: A record of early Mars climate change explored in northern Gale crater, Mars. *AGU Fall Meeting*, P33F-02.

Ewing, R.C., **M.G.A. Lapôtre**, K. Lewis, M.D. Day, N.T. Stein, D.M. Rubin, R. Sullivan, S.G. Banham, M.P. Lamb, N.T. Bridges, S. Gupta, W.W. Fischer (2017). Relating sedimentary processes in the Bagnold Dunes to the development of crater basin aeolian stratification. *AGU Fall Meeting*, B23A-2051.

Ewing, R.C., **M.G.A. Lapôtre**, K. Lewis, M.D. Day, N.T. Stein, D.M. Rubin, R. Sullivan, S.G. Banham, M.P. Lamb, N.T. Bridges, S. Gupta, W.W. Fischer (2017). Relating sedimentary processes in the Bagnold Dunes to the development of crater basin aeolian stratification. *GSA Annual Meeting 2017*, Paper no. 24-4.

Lamb, M.P., **M.G.A. Lapôtre**, I.J. Larsen, & R.M.E. Williams (2017). Morphodynamics of bedrock canyons carved by megafloods. *10th Symposium on River, Coastal and Estuarine Morphodynamics*, Padova, Italy.

Banham, S.G., S. Gupta, D.M. Rubin, J.A. Watkins, D.Y. Sumner, J.P. Grotzinger. K.W. Lewis, K.S. Edgett, L.A. Edgar, K.M Stack, J. Bell, R. Ewing, M.D. Day, & **M.G.A. Lapôtre** (2017). Anatomy of an ancient eolian sandstone on Mars: The Stimson formation in Gale crater. *2017 National Astronomy Meeting,* Hull, UK.

Baker, M., K.W. Lewis, N.T. Bridges, C. Newman, J. Van Beek, **M.G.A. Lapôtre** (2017). Aeolian transport of coarse sediment in the modern martian environment. *Dust in the Atmosphere of Mars and Its Impact on Human Exploration workshop*, Houston, TX, Abstract #6021.

Bridges, N.T., B.L. Ehlmann, C. Achille, A. Cousin, C. Edwards, R. Ewing, J. Johnson, **M.G.A. Lapôtre**, C. Newman, C. O'Connel-Cooper, D. Rubin, R. Sullivan (2017). Investigation of the Bagnold Dunes by the Curiosity rover: Summary of results from the first investigation of an active dune field on another planet. *5th International Planetary Dunes Workshop*, St. George, UT, Abstract #3031.

Banham, S.G., S. Gupta, D.M. Rubin, J.A. Watkins, D.Y. Sumner, J.P. Grotzinger. K.W. Lewis, K.S. Edgett, L.A. Edgar, K.M Stack, J. Bell, R. Ewing, M.D. Day, & **M.G.A. Lapôtre** (2017). Anatomy of an ancient eolian sandstone on Mars: The Stimson formation in Gale crater. *5th International Planetary Dunes Workshop*, St. George, UT, Abstract #3039.

(*invited*) Lamb, M.P., **M.G.A. Lapôtre**, I.J. Larsen, & R.M.E. Williams (2017). Erosional threshold for the formation of bedrock canyons carved by megafloods on Earth and Mars. Geophysical Research Abstracts, Vol. 19, EGU2017-614, *EGU General Assembly 2017*.

Achilles, C.N., R.T. Downs, D.W. Ming, E.B. Rampe, R.V. Morris, A.H. Treiman, S.M. Morrison, D.F. Blake, D.T. Vaniman, R.C. Ewing, S.J. Chipera, A.S. Yen, T.F. Bristow, B.L. Ehlmann, **M.G.A. Lapôtre**, R. Gellert, R.M. Hazen (2017). Ground-truth mineralogy vs. orbital observations at the Bagnold Dune Field. *48th LPSC, Abstract #2889*.

Bridges, N.T., R. Sullivan, C.E. Newman, S. Navarro, J. van Beek, R.C. Ewing, F. Ayoub, S. Silvestro, O. Gasnault, S. Le Mouelic, **M.G.A. Lapôtre**, W. Rapin (2017). Martian aeolian activity at the Bagnold Dunes, Gale crater: The view from the surface and orbit. *48th LPSC, Abstract #1983*.

Banham, S.G., S. Gupta, D.M. Rubin, J.A. Watkins, D.Y. Sumner, J.P. Grotzinger, K.W. Lewis, K.S. Edgett, L.A. Edgar, K.M. Stack, J. Bell, M.D. Day, R.C. Ewing, **M.G.A. Lapôtre** (2017). The Stimson formation: Determining the morphology of a dry aeolian dune system and its climatic significance in Gale crater, Mars. *48th LPSC, Abstract #2014*.

Ballard, M.J., R.C. Ewing, & **M.G.A. Lapôtre** (2017). Variations in bedform wavelength by elevation on Mars. *48th LPSC, Abstract #2430*.

Ehlmann, B.L., S.S. Johnson, B. Horgan, P.B. Niles, E.S. Amador, P.D. Archer, Jr, S. Byrne, C.S. Edwards, A.A. Fraeman, D.P. Glavin, T.D. Glotch, C. Hardgrove, P.O. Hayne, E.S. Kite, N.L. Lanza, **M.G.A. Lapôtre**, J. Michalski, M. Rice, A.D. Rogers (2017). Mars exploration science in 2050. *Planetary Science Vision 2050 Workshop*, Abstract #8236.

Bridges, N.T., R. Sullivan, R.C. Ewing, C.E. Newman, F. Ayoub, **M.G.A. Lapôtre**, & J. Van Beek (2016). Sand dune dynamics on Mars: Integration of surface imaging, wind measurements, and orbital remote sensing. *AGU Fall Meeting*, EP24A-05.

(invited) Ewing, R.C., N.T. Bridges, R. Sullivan, **M.G.A. Lapôtre**, W.W. Fischer, M.P. Lamb, D.M. Rubin, K. Lewis, S. Gupta (2016). Aeolian sedimentary processes at the Bagnold Dunes Mars: Implications for modern dune dynamics and sedimentary structures in the aeolian stratigraphic record of Mars. *GSA Annual Meeting 2016*, Paper no. 140-3.

Baker, M.M., K. Lewis, **M.G.A. Lapôtre**, C.E. Newman, J. Van Beek, & N.T. Bridges (2016). Aeolian transport of coarse sediment in the modern martian environment. *GSA Annual Meeting 2016*, Paper no. 140-9.

Gupta, S., S. Banham, D. Rubin, J. Watkings, D.Y. Sumner, J.P. Grotzinger, K. Lewis, K.S. Edgett. L. Edgar, K. Stack, M. Day, R. Ewing, **M.G.A. Lapôtre** (2016). Anatomy of an ancient aeolian sandstone on Mars: The Stimson formation, Gale crater, Mars. *48th DPS Annual Meeting*, Abstract 507.01.

Ehlmann, B.L., N.T. Bridges, A.A. Fraeman, **M.G.A. Lapôtre**, K.S Edgett, J.R. Johnson, A. Cousin, A.S. Yen, P. Conrad, L. Thompson, J. Van Beek, D, Vaniman, S. Schroder, A. Vasavada, & the MSL Science Team (2016). Chemistry and mineralogy in-situ at the Bagnold sand dunes: Evidence for aeolian sorting and size-dependence in sand composition. *47th LPSC,* Abstract #1536.

Ewing, R.C., N.T. Bridges, R. Sullivan, **M.G.A. Lapôtre**, W.W. Fischer, M.P. Lamb, D. Rubin, K.W. Lewis, S. Gupta (2016). Aeolian sedimentary processes at the Bagnold Dunes, Mars: Implications for modern dune dynamics and sedimentary structures in the aeolian stratigraphic record of Mars. *47th LPSC*, Abstract #2783.

Bridges N.T., B.L. Ehlmann, R.C. Ewing, C.E. Newman, R. Sullivan, P.G. Conrad, A. Cousin, K.S. Edgett, M.R. Fisk, A.A. Fraeman, J.R. Johnson, M.P. Lamb, **M.G.A. Lapôtre**, S. Le Mouelic, G.M. Martinez, P.-Y. Meslin, P. Pinet, L.M. Thompson, J. Van Beek, A.R. Vasavada, R.C. Wiens (2016). Investigation of the Bagnold

Dunes by the Curiosity rover: Overview of initial results from the first study of an active dune field on another planet. *47th LPSC*, Abstract #2298.

Achilles, C.N., D.T. Vaniman, D.F. Blake, T.F. Bristow, E.B. Rampe, D.W. Ming, S.J. Chipera, R.V. Morris, S.M. Morrison, R.T. Downs, K.V. Fendrich, B.L. Ehlmann, A.S. Yen, P.C. Sarrazin, A.H. Treiman, P.I. Craig, **M.G.A. Lapôtre**, K.S. Edgett, R. Gellert, J.A. Crisp, J.M. Morookian, J.P. Grotzinger, D.J. Des Marais, J.D. Farmer (2016). Mineralogy of eolian sands at Gale crater. *47th LPSC*, Abstract #2532.

Baker, M., K.W. Lewis, N.T. Bridges, C.E. Newman, J. Van Beek, **M.G.A. Lapôtre** (2016). Aeolian transport of coarse sediment in the modern martian environment. *47th LPSC,* Abstract #2894.

Ballard, M., R.C. Ewing, **M.G.A. Lapôtre** (2016). Variations in bedform wavelength by elevation on Mars. *47th LPSC,* Abstract #2977.

Ewing, R.C., N.T. Bridges, R. Sullivan, **M.G.A. Lapôtre**, W.W. Fischer, M.P. Lamb, D. Rubin, K.W. Lewis, S. Gupta (2016). Aeolian sedimentary processes at the Bagnold Dunes, Mars: Implications for modern dune dynamics and sedimentary structures in the aeolian stratigraphic record of Mars. Geophysical Research Abstracts, Vol. 18, EGU2016-10731, *EGU General Assembly 2016*.

Bridges N.T., B.L. Ehlmann, R.C. Ewing, C.E. Newman, R. Sullivan, P.G. Conrad, A. Cousin, K.S. Edgett, M.R. Fisk, A.A. Fraeman, J.R. Johnson, M.P. Lamb, **M.G.A. Lapôtre**, S. Le Mouelic, G.M. Martinez, P.-Y. Meslin, L.M. Thompson, J. Van Beek, A.R. Vasavada, R.C. Wiens (2016). Overview of initial results from studies of an active dune field on Mars by the Curiosity rover. Geophysical Research Abstracts, Vol. 18, EGU2016-9711, *EGU General Assembly 2016*.

Rubin, D.M., R.C. Ewing, **M.G.A. Lapôtre**, S.G. Banham, S. Gupta, J.P. Grotzinger (2016). Comparison of cross-bedding in eolian dunes in the Namib Desert and the eolian Stimson sandstone in Gale crater, Mars. *35th International Geological Congress, Cape Town, SA*.

Banham, S.G., S. Gupta, & others including **M.G.A. Lapôtre** (2016). Sedimentary architecture and evolution of the Stimson formation: Reconstruction of aeolian environments in Mars' early history. *32nd IAS Meeting of Sedimentology*, Abstract #340.

Ehlmann, B.L., C.N. Achilles, N.T. Bridges, P. Conrad, A. Cousin, K. Edgett, A.A. Fraeman, J.R. Johnson, **M.G.A. Lapôtre**, M. Litvak, S. Rowland, S. Schroder, B. Sutter, N. Stein, L. Thompson, J. Van Beek, D, Vaniman, A. Vasavada, A. Yen, & the MSL Science Team (2016). Chemistry and mineralogy in-situ at the Bagnold dunes, Gale Crater: Evidence for size-dependence in martian sand composition. *Goldschmidt Conference 2016, Yokohama, Japan*.

Achilles, C.N., R.T. Downs, D.T. Vaniman, D.F. Blake, R.V. Morris, D.W. Ming, A.S. Yen, E.B. Rampe, T.F. Bristow, S.J. Chipera, S.M. Morrison, A.H. Treiman, K.V. Fendrich, P.C. Sarrazin, P.I. Craig, B.L. Ehlmann, **M.G.A. Lapôtre**, K.S. Edgett, R. Gellert, J.A. Crisp, J.P. Grotzinger, D.J. Des Marais, J.D. Farmer, J.M. Morookian (2016). Mineralogy of eolian sands at Gale crater, Mars. *Goldschmidt Conference 2016, Yokohama, Japan*.

Fraeman, A.A., R.E. Arvidson, B.L. Ehlmann, B. Clark, A. Cousin, D. Des Marais, R. Gellert, J.R. Johnson, **M.G.A. Lapôtre**, S. Schröder, N. Stein, R. Sullivan, D. Welington (2015). Physical and material properties of Gale Crater sandy deposits: From Rocknest to Parhump. *46th LPSC,* Abstract # 1682.

Bridges, N.T. and 20 coauthors including **M.G.A. Lapôtre** (2015). Investigation of the Bagnold Dunes by the Curiosity rover: Plans for the first study of an active dune field on another planet. *4th International Planetary Dunes Workshop*, Abstract #8028.

Bridges, N.T., R.E. Arvidson, F. Ayoub, B.L. Ehlmann, A.A. Fraeman, **M.G.A. Lapôtre**, J. Martin-Torres, H. Newsom, D. Rubin, R. Sullivan (2014). Studies of Aeolian Bedforms and Wind Activity in Gale Crater from Surface to Orbital Scales. *GSA Annual Meeting 2014*, Paper no. 202-12.

(*invited*) Lamb, M.P., B. Mackey, M. Fonstad, **M.G.A. Lapôtre**, K. Farley (2012). Rapid canyon formation by extreme floods. *AGU Fall Meeting*, EP53I-03.

(i*nvited*) Woods, A.W. and the students of the BP Institute (2011). The intrusion of buoyant plumes in the energy industry, *Wyss Lecture*, Harvard University.

Perron, J.T., P.W. Richardson, **M.G.A. Lapôtre**, K. Ferrier (2011). Reading rock types, climate, and life from emergent patterns in landscapes. *24th Kongsberg Seminar*, Norway.

Galland, O., **M.G.A. Lapôtre**, E.-R. Neumann, S. Plank (2011). Experimental modelling of ground deformation above shallow magma intrusion. *Volcanic and Magmatic Studies Group Annual Meeting*, Cambridge, UK.

(*invited*) Perron, J.T., **M.G.A. Lapôtre** (2010). The branching instability in valley networks. *AGU Fall Meeting*, H41J-02.

OUTREACH & EXTERNAL ENGAGEMENT

"Four Question for Mathieu Lapôtre on *Dune*." Interview with Stanford News on planetary and sci-fi dunes in preparation for the release of the *Dune 2* movie.

Roundtable with H.R.H. Crown Prince Guillaume of Luxembourg, Minister of the Economy Franz Fayot, and a delegation of Luxembourg officials including Dr. Matthias Link, Director of the Luxembourg Space Agency, and Mr. Daniel Da Cruz, Consul General of Luxembourg in San Francisco, May 8, 2023. Organized and convened a roundtable event with officials from Luxembourg to discuss research conducted at Stanford in the space of planetary science and resources.

Live Q&A with Astronaut Jessica Watkins from the International Space Station, Oct. 5, 2022. Organized and led a Q&A event for Stanford community members to ask questions to Stanford Alumna Jessica Watkins onboard the ISS.

Mars landing watch party. Organized and led a virtual event open to the broad Stanford community to celebrate Perseverance's landing on Mars on Feb. 18, 2021. Presented Mars 2020 mission goals and landing site, created a "guess the landing site" game, and answered questions from the audience with the help of Paul Wercinski, NASA engineer at the Ames Research Center.

Tech Briefs Mars 2020 webinar (formerly NASA Tech Briefs). Presented Mars 2020 mission goals and landing site to an engineering and technology oriented audience.

Movie night, Department of Geological Sciences, Stanford. Screening of "The Martian" followed by Q&A about Mars geology and exploration.

Interviewee and science consultant for BBC (UK) and NOVA (USA) Science Documentary Series *The Planet*s, Episode *Mars*. The series was broadcasted in the Summer of 2019 (UK/USA).

Volunteer at the Planetary Geology Division booth at the GSA Annual Meetings in 2015 (Baltimore, MD), 2016 (Denver, CO), and at the LPSC 2017. Presented various orbital datasets to a general audience. Answered questions about planets and moons of the solar system.

Volunteer at the Curiosity Landing Planetfest 2012, Pasadena. Answered questions about Mars and its geologic history to a general audience.

MEDIA COVERAGE

Marvin et al. (2023) "Dune interactions record changes in boundary conditions" was covered by multiple news outlets, including *Phys.Org* and *Science Daily*.

Ielpi et al. (2023) "Large sinuous rivers are slowing down in a warming Arctic" was covered by multiple news outlets, including *EOS*, *CBC*, *Phys.Org*, *Science Daily*, *Toronto Telegraph*, and *Big News Network*.

Ielpi & Lapôtre (2023) "Modeling fire-induced perturbations in sediment flux based on stream widening and accelerated bank migration" was covered by multiple new outlets, including *Water Canada* and *Global News Canada*.

Rubanenko et al. (2022) "A distinct ripple-formation regime on Mars revealed by the morphometrics of barchan dunes" was covered by *Phys.Org* and *Universe Today*.

Lapôtre et al. (2022) “The role of seasonal sediment transport and sintering in shaping Titan’s landscapes: A hypothesis.” was covered by multiple news outlets including the *Universe Today*, *SyFy Wire*, *Forbes*, *Space.com*, *Daily Galaxy*, *Phys*.org, Stanford *News* (04/2022).

A story written in mud, *Stanford Earth Matters* (01/2022).

NASA backs concepts for deep-drilling Mars rover and interstellar-object probe, *GeekWire* (02/2021).

Mars landing: Cause for celebration, Stanford Earth *Dean’s Desk* (02/2021).

Les géologues pris dans les pièges des dunes martiennes (“Geologists bogged down in martian sand dunes,” in French), *Le Monde* (02/2021).

Stanford scientists anticipate the Mars 2020 rover launch, *Stanford News, Stanford Earth Matters* (07/2020).

Mars 2020: The legacy continues for NASA space robotics, *Tech Briefs* (06/2020).

The pace of fluvial meanders on Mars and implications for the western delta deposits of Jezero crater, *EOS*, *Stanford News*, *Stanford Earth Matters*, *CTV News*, *Science & Avenir*, *TechBriefs*, and various science and tech blogs including *BGR.com* (04/2020).

What other planets can teach us about Earth: Stanford researchers explain, *Stanford News, Stanford Earth Matters* (03/2020).

Fact or fiction? The science of Star Wars, *Stanford Earth Matters* (12/2019).

A tenfold slowdown in river meander migration driven by plant life, *SciGlow* (12/2019).

Seeing Mars in a grain of sand, *EOS*, (10/2018).

A rover’s eye view of moving Martian dunes, *EOS* (11/2017).

Curiosity rover spies shifting sands on Mars, *EOS* (06/2017).

NASA rover samples active linear dune on Mars, *NASA* (05/2017).

Gloopy fluid makes bigger ripples, *The Guardian* (02/2017).

Reconstructing catastrophic floods on Earth and Mars, *EOS* (07/2016).

Lapôtre et al. (2016) “Large wind ripples on Mars: A record of atmospheric evolution” was covered by multiple news outlets including the *Wall Street Journal*, the *Washington Post*, *Time Magazine*, the *Daily News*, *Popular Mechanics*, *Space.com*, & *Natural History Magazine*.

Sandy ripples point to Mars’s past, *Science* (04/2016).

Comment les bassins des rivières évoluent? (“How do river basins evolve?” in French), interview for *Pour la Science* (03/2014).

Comment leur forme vient aux rivieres? (“What gives rivers their shapes?” in French) Interview about *Perron et al*. (2012), *Le Temps* (12/2012).

Pourquoi les rivières ne sont pas de longs fleuves tranquilles? (“Why aren’t all rivers long quite rivers?” in French) Interview about *Perron et al.* (2012) for *Le Monde* (12/2012).