

# Mackenzie Denali Day

[daym@epss.ucla.edu](mailto:daym@epss.ucla.edu) – <https://faculty.epss.ucla.edu/~mday/>

Department Earth, Planetary, and Space Sciences, University of California Los Angeles

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## EDUCATION

2012-2017 University of Texas at Austin (Austin, TX)  
PhD, Geology  
2008-2012 California Institute of Technology (Pasadena, CA)  
BS, Geology

## APPOINTMENTS

2018-present University of California Los Angeles  
Assistant Professor  
2017-2018 University of Washington; NASA Astrobiology Institute  
Postdoctoral Fellow

## AWARDS

2022 American Geophysical Union Early Career Planetary Sci. Greeley Award  
2021 National Science Foundation; CAREER Award  
2020 Hellman Fellow; Hellman Fellows Fund for Assistant Professors  
2020 Faculty Career Development Award; UCLA Office of EDI  
2017 Best PhD Exit talk; Jackson School of Geosciences,  
2016 Laura Thomson Barrow Graduate Fellowship; UT Austin  
2015, 2013 NASA Group Achievement Award, Mars Science Laboratory Team  
2015 Vada and Walter Boyle Graduate Fellowship in Petroleum Geology  
2013 Vargas Endowed Presidential Scholarship; UT Austin  
2013 David Bruton Jr. Graduate Fellowship Award  
2012 National Science Foundation Graduate Research Fellowship  
2012 Jackson School of Geosciences Conoco Phillips first year Fellowship  
2011 Howard Reynolds Prize for excellence in geology; Caltech

## PUBLICATIONS<sup>1</sup>

- 36) J. M. Bretzfelder, K. M. Stack, A. A. Fraeman, **M. Day**, W. E. Dietrich, and A. B. Bryk, “Bedrock Ridges in Gale Crater, Mars” submitted to Icarus.
- 35) M. C. Marvin, M. Lapotre, A. Gunn, **M. Day**, and A. Soto, “Dune interactions record changes in boundary conditions.” Submitted to Geology.
- 34) T. Dorn, and **M. Day**, “Exploring the transition between water and wind-dominated landscapes in Deep Springs, California as an analog for transitioning landscapes on

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<sup>1</sup> Student authors are underlined; \* indicates corresponding author when not first author

Mars.” *Earth Surface Dynamics*, (2023), 11, 149–165. <https://doi.org/10.5194/esurf-11-149-2023>

- 33) **M. Day**, **J. Bretzfelder**, and **D. Le**, “Not Every Circle Is a Crater: Kettle Hole Size Distributions and Their Implications in Planetary Surface Age Dating.” *Geosciences*, 13(1), (2023), 18. <https://doi.org/10.3390/geosciences13010018>
- 32) **N. Nizam**, **C. Divola**, **M. Day\***, A. Yin, & S. Moon, “Development of Chaos Terrain as Subaqueous Slide Blocks in Galilaei Crater, Mars.” *Remote Sensing*, 14(9), (2022), 1998. <https://doi.org/10.3390/rs14091998>
- 31) K.M. Stack, W. Dietrich, M. Lamb, R. Sullivan, J. Christian, C. Newman, C. O’Connell-Cooper, **J. Sneed**, **M. Day**, M. Baker, and R. Arvidson, “Orbital and In-Situ Investigation of Periodic Bedrock Ridges in Glen Torridon, Gale Crater, Mars,” *Journal of Geophysical Research: Planets*, (2022), no. p.e2021JE007096. <https://doi.org/10.1029/2021JE007096>
- 30) **A. Hunt**, **M. Day\***, K. Edgett, and M. Chojnacki, "The lithified aeolian dune field adjacent to the Apollinaris Sulci, Mars: Geological history and paleo-wind record." *Icarus* 373 (2022), 114788. <https://doi.org/10.1016/j.icarus.2021.114788>
- 29) **M. Day**, "Interaction bounding surfaces exposed in migrating transverse aeolian ridges on Mars." *Geology* 49, no. 12 (2021), 1527-1530. <https://doi.org/10.1130/G49373.1>
- 28) **M. Day** and J. Zimbelman, “Ripples, Megaripples, and TARs, Oh, My! Recommendations Regarding Mars Aeolian Bedform Terminology,” *Icarus*, 369, (2021), no. 114647. <https://doi.org/10.1016/j.icarus.2021.114647>
- 27) **J. Bretzfelder** and **M. Day**, “Alien Aeolian Bedforms: a Comparative Sedimentary Analysis of the Dingo Gap Bedform and Hidden Valley Ripple Traverses, Gale Crater, Mars,” *Journal of Geophysical Research: Planets* 126.8, (2021), no. e2021JE006904. <https://doi.org/10.1029/2021JE006904>
- 26) **S. Rana**, W. Anderson, and **M. Day**, “An entrainment paradox: how hysteretic saltation and secondary transport augment atmospheric uptake of aeolian source materials,” *Journal of Geophysical Research: Atmospheres*, 126, (2021), no. e2020JD033493, <https://doi.org/10.1029/2020JD033493>
- 25) S. Banham, S. Gupta, D. Rubin, K. S. Edgett, R. Barnes, J. Van Beek, J. Watkins, L. Edgar, C. Fedo, R. Williams, K. Stack, J. Grotzinger, K. Lewis, R. Ewing, **M. Day**, and A. Vasavada “A Rock Record of Complex Aeolian Bedforms in a Hesperian Desert Landscape: the Stimson formation as exposed in the Murray buttes, Gale crater, Mars”, *Journal of Geophysical Research: Planets*, 126, (2021), no. e2020JE006554. <https://doi.org/10.1029/2020JE006554>
- 24) A. Yin, S. Moon, and **M. Day**, “Glacial landform evolution of Oudemans crater on Mars: Geomorphological constraints on the Tharsis ice cap hypothesis”, *Icarus*, 360, (2021), no. 114332. <https://doi.org/10.1016/j.icarus.2021.114332>

- 23) J. Mason, B. Cardenas, **M. Day\***, et al., “Subaqueous dune field pattern evolution and interactions: North Loup River, Nebraska, USA,” *Journal of Sedimentary Research*, 90 (12), (2021) pp. 1734–1746 <https://doi.org/10.2110/jsr.2020.066>
- 22) **M. Day**, “Dune Field Patterns” in *Treatise on Geomorphology: Reference Module in Earth Systems and Environmental Science*, 2<sup>nd</sup> ed., Ed. N. Lancaster, (2021), Elsevier: London. <https://doi.org/10.1016/B978-0-12-818234-5.00049-3>
- 21) K. Runyon, C. Viviano, **M. Day**, “Pyroclastic linear paleodunes in Syria and Daedalia Plana, Mars,” *Earth and Planetary Science Letters*, 557, (2021), no. 116719. <https://doi.org/10.1016/j.epsl.2020.116719>
- 20) **M. Day**, and W. Anderson, “Wind erosion on Mars exposes ideal targets for sample return,” *Geophysical Research Letters*, 48, (2021), no. e2020GL090580. <https://doi.org/10.1029/2020GL090580>
- 19) J. Bretzfelder, R. Klima, B. Greenhagen, D. Buczkowski, N. Petro, and **M. Day**, “Identification of Potential Mantle Rocks Around the Lunar Imbrium Basin,” *Geophysical Research Letters*, 47, (2020), no. e2020GL090334. <https://doi.org/10.1029/2020GL090334>
- 18) T. Dorn and **M. Day**, “Intracrater sediment trapping and transport in Arabia Terra, Mars,” *Journal of Geophysical Research: Planets*, 125, (2020), no. e2020JE006581. <https://doi.org/10.1029/2020JE006581>
- 17) S. Rana, W. Anderson, and **M. Day**, “Turbulence-Based Model for Sub-Threshold Aeolian Saltation,” *Geophysical Research Letters*: 47, (2020), no. e2020GL088050. <https://doi.org/10.1029/2020GL088050>
- 16) **M. Day**, K. S. Edgett, & D. Stumbaugh, “Ancient Stratigraphy Preserving a Wet-to-Dry, Fluvio-Lacustrine to Aeolian Transition Near Barth Crater, Arabia Terra, Mars,” *Journal of Geophysical Research: Planets*, (2019), 124, pp. 3402– 3421. <https://doi.org/10.1029/2019JE006226>
- 15) **M. Day** and L. Rebolledo, “Intermittency in wind-driven surface alteration on Mars interpreted from wind streaks and measurements by InSight,” *Geophysical Research Letters*, 46, (2019), pp. 12747-12755. <https://doi.org/10.1029/2019GL085178>
- 14) J. Williams, **M. Day\***, M. Chojnacki, and M. Rice, “Scarp orientation in regions of active aeolian erosion on Mars,” *Icarus*, 335, (2019), no. 113384. <https://doi.org/10.1016/j.icarus.2019.07.018>
- 13) **M. Day** and D. Catling, “Potential aeolian deposition of intra-crater layering: A case study of Henry crater, Mars,” *GSA Bulletin*, 132(3-4), (2019), pp. 608-616. <https://doi.org/10.1130/B35230.1>

- 12) **M. Day** and **T. Dorn**, “Wind in Jezero crater,” *Geophysical Research Letters*, 46, (2019), pp.3099– 3107. <https://doi.org/10.1029/2019GL082218>
- 11) **M. Day** and G. Kocurek, “Pattern similarity across planetary dune fields” *Geology* 46(11), (2018), pp.999-1002. <https://doi.org/10.1130/G45547.1>
- 10) G. Kocurek, R. Martindale, **M. Day**, et al., “Antecedent aeolian dune topographic control on carbonate and evaporite facies: Jurassic Todilto Member, Wanakah Formation, Ghost Ranch, New Mexico, USA,” *Sedimentology*, 66, (2018), pp.808-837. <https://doi.org/10.1111/sed.12518>
- 09) **M. Day** and D. Catling, “Dune casts preserved by partial burial: the first identification of “ghost dune” pits on Mars” *Journal of Geophysical Research: Planets*, 123, (2018), pp. 1431–1448. <https://doi.org/10.1029/2018JE005613>
- 08) S. Banham, S. Gupta, D. Rubin, J. Watkins, D. Sumner, K. Edgett, J. Grotzinger, K. Lewis, L. Edgar, K. Stack-Morgan, R. Barnes, J. Bell, **M. Day**, et al., “Ancient Martian aeolian processes and the palaeomorphology reconstructed from the Stimson formation on the lower slope of Aeolis Mons, Gale crater Mars,” *Sedimentology*, 63, (2018), pp. 993-1042. <https://doi.org/10.1111/sed.12469>
- 07) **M. Day** and G. Kocurek, “Aeolian dune interactions preserved in the ancient rock record,” *Sedimentary Geology*, 358, (2017), pp. 187-196. <https://doi.org/10.1016/j.sedgeo.2017.07.009>
- 06) W. Anderson and **M. Day**, “Turbulent flow over craters on Mars: Vorticity dynamics reveal aeolian excavation mechanism,” *Physical Review E.*, 96, (2017), pp. 043110-1-043110-20. <https://doi.org/10.1103/PhysRevE.96.043110>
- 05) G. Kocurek and **M. Day**, “What is preserved in the aeolian rock record? A Jurassic Entrada sandstone case study at the Utah-Arizona border,” *Sedimentology*, 65 (4), (2017), pp. 1301-1321. <https://doi.org/10.1111/sed.12422>
- 04) R. Ewing, M. Lapotre, K. Lewis, **M. Day**, et al, “Sedimentary processes of the Bagnold Dunes: Implications for the eolian rock record of Mars”, *Journal of Geophysical Research: Planets*, 122, (2017), pp. 2544–2573, <https://doi.org/10.1002/2017JE005324>
- 03) **M. Day**, W. Anderson, G. Kocurek, and D. Mohrig, “Carving intracrater layered deposits with wind on Mars,” *Geophysical Research Letters*, 43, (2016), <https://doi.org/10.1002/2016GL068011>
- 02) **M. Day** and G. Kocurek “Observations of an aeolian landscape: From surface to orbit in Gale Crater,” *Icarus*, 280 (2016), pp. 37-71. <https://doi.org/10.1016/j.icarus.2015.09.042>
- 01) M. Lapotre, R. Ewing, M. Lamb, W. Fischer, J. Grotzinger, D. Rubin, K. Lewis, M. Ballard, **M. Day**, et al. “Large wind ripples on Mars: A record of atmospheric evolution,” *Science*, 353, (2016), pp. 55-58. <https://doi.org/10.1126/science.aaf3206>

## TEACHING EXPERIENCE AND DEVELOPMENT

|   |                    |
|---|--------------------|
| <i>EPSS 103b: Sedimentary Petrology</i><br>Mineralogy, interpretation, and analysis of sedimentary rocks and structures               | Fall, annually     |
| <i>EPSS 111: Stratigraphic and Field Geology</i><br>Field techniques and identification culminating in construction of a geologic map | Spring, annually   |
| <i>EPSS C143/243: Advanced Physical Sedimentology</i><br>Multi-system sedimentary rock and mineral characterization and analysis      | Winter, biannually |
| <i>EPSS 009: Solar System and Planets</i><br>Overview of planetary science for general education audience                             | Winter, biannually |
| <i>GeoAllies</i><br>NSF-Funded training program aimed to improve inclusion in geoscience field education                              | 2021-2023          |
| <i>National Association of Geoscience Teachers Workshop</i><br>Pedagogy training and workshop for new faculty in Earth Sciences       | Summer 2018        |

## INVITED TALKS

|  |                           |                |
|--|---------------------------|----------------|
| Palos Verdes Gem and Min. Society      | Monthly Meeting           | June 2022      |
| University of Alaska Anchorage         | Department Seminar        | April 2022     |
| American Geophys. Union Fall Meeting   | EPSP Section              | December 2021  |
| National Academy of Sciences           | Decadal Survey Committee  | February 2021  |
| International Association of Geomorph. | Virtual Global Webinar    | February 2021  |
| American Geophys. Union Fall Meeting   | EPSP                      | December 2020  |
| University of Nevada Las Vegas         | Department Colloquium     | September 2020 |
| Los Angeles Basin Geological Society   | Society Colloquium        | February 2020  |
| University of Arizona                  | Department Colloquium     | February 2020  |
| Stanford University                    | Department Colloquium     | January 2020   |
| American Geophys. Union Fall Meeting   | EPSP                      | December 2019  |
| University of Illinois                 | Department Colloquium     | November 2019  |
| UCLA Society of Women Geoscientists    | Inaugural meeting keynote | November 2019  |
| University of Southern California      | Department Colloquium     | November 2019  |
| California State University Northridge | Department Colloquium     | February 2019  |
| University of California Davis         | Department Colloquium     | February 2019  |
| California Institute of Technology     | GeoClub                   | February 2019  |
| University of California Los Angeles   | IPLEX seminar             | October 2018   |
| California State University Fullerton  | Department Colloquium     | October 2018   |
| University of Washington               | Paleo-lunch seminar       | May 2018       |
| NASA Astrobiology Institute            | Astrobiology Colloquium   | April 2018     |
| American Geophys. Union Fall Meeting   | EPSP                      | December 2017  |
| American Geophys. Union Fall Meeting   | Planetary Science         | December 2017  |
| California State University East Bay   | Department Colloquium     | March 2017     |
| Western Washington University          | Department Colloquium     | November 2016  |
| American Geophys. Union Fall Meeting   | Planetary Science         | December 2015  |

## SELECTED PRESENTATIONS<sup>2</sup>

- Day, M., E. Kim, M. Sullivan, T. Goudge, D. Paige**, “High Resolution DTMs for Mars: A repository of paired HiRISE and CTX DTMs,” 6<sup>th</sup> Planetary Data Workshop, Flagstaff, AZ, (2023). <https://www.hou.usra.edu/meetings/planetdata2023/pdf/7062.pdf>
- Telfer, M. and **M. Day**, “Extensive paleodunes on steep slopes in Noctis Labyrinthus, Mars,” International Conference on Aeolian Research XI, (2023), Las Cruces, New Mexico.
- Courrech du Pont, S., D. Rubin, C. Narteau, M. Lapotre, **M. Day**, P. Claudin, I. Livingstone, M. Telfer, J. Radebaugh, C. Gadal, A. Gunn, P. Hesp, S. Carpy, C. Bristow, A. Baas, R. Ewing, and G. Wiggs, “Complementary classifications of aeolian dunes based on morphology, dynamics, and fluid mechanics,” International Conference on Aeolian Research XI, (2023), Las Cruces, New Mexico.
- Diniega, S., J., Nield, **M. Day**, C. Swann, and T. Titus, “Investigating present-day dune formation on Mars: from orbit and in-situ,” International Conference on Aeolian Research XI, (2023), Las Cruces, New Mexico.
- Marvin, C., M. Lapotre, A. Gunn, **M. Day**, and A. Soto, “Dune interactions as an indicator of morphodynamic equilibrium,” International Conference on Aeolian Research XI, (2023), Las Cruces, New Mexico.
- J. Bretzfelder and **M. Day**, “Wind tunnel analog for aeolian sediment motion under planetary conditions,” 54<sup>th</sup> Lunar and Planetary Science Conference (2023), <https://www.hou.usra.edu/meetings/lpsc2023/pdf/2881.pdf>
- J. Widmer and **M. Day**, “Martian rover track monitoring – A helpful tool to understand aeolian activity,” 54<sup>th</sup> Lunar and Planetary Science Conference (2023), <https://www.hou.usra.edu/meetings/lpsc2023/pdf/1272.pdf>
- Archbold, A. and **M. Day**, “Aeolian bounding surface geometry,” International Meeting for Applied Geoscience and Energy (2023), Houston, TX.
- S. Diniega, N. Barba, L. Giersch, B. Jackson, A. Soto, D. Banfield, **M. Day**, G. Doran, C. Dundas, M. Mischna, S. Rafkin, I. Smith, R. Sullivan, C. Swann, T. Titus, I. Walker, J. Widmer, D. Burr, L. Mandrake, N. Vriend, K. Williams, “It’s Time for Focused In Situ Studies of Planetary Surface-Atmosphere Interactions.” 2022 IEEE Aerospace Conference (AERO), (2022), 1–19. <https://doi.org/10.1109/AERO53065.2022.9843357>
- Dorn, T. and **M. Day**, “Surface Changes in a Transitioning Wet and Dry Depositional Environment, Deep Springs Playa, California with Implications for Mars,” American Geophysical Union Fall Meeting, (2022).
- Bretzfelder, J., A. Fraeman, K Stack, and **M. Day**, “Ridges bedrock terrain in Gale crater, Mars,” Geological Society of America Annual Meeting, (2022).
- Bretzfelder, J., and **M. Day**, “Wind Tunnel Experiments as an Analog for Sediment Motion in Planetary Systems,” American Geophysical Union Fall Meeting, (2022) , Chicago, IL.
- Widmer, J. and **M. Day**, “The degradation of Opportunity’s rover tracks – A proxy for local aeolian activity on Mars,” 53rd Lunar and Planetary Science Conference (2022), <https://www.hou.usra.edu/meetings/lpsc2022/pdf/1662.pdf>
- Marvin, M. C., A. Gunn, **M. Day**, and M. G. A. Lapôte, “Quantifying Dune Interactions on Planetary Surfaces: Updated Methodology and Implications for Dune Pattern Analyses,”

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<sup>2</sup> Student authors are underlined

- 53rd Lunar and Planetary Science Conference (2022),  
<https://www.hou.usra.edu/meetings/lpsc2022/pdf/1236.pdf>
- Marvin, M. C., A. Gunn, **M. Day**, and M. G. A. Lapôtre, “Quantifying Dune Interactions on Planetary Surfaces: Exploring Pattern Development Dependence on Environmental Conditions,” 7<sup>th</sup> International Planetary Dunes Workshop (2022),  
<https://www.hou.usra.edu/meetings/dunes2022/pdf/3023.pdf>
- Lapôtre, M.G.A., S. Carpy, M. Chojnacki, **M. Day**, S. Diniega, O. Durán-Vinent. R.C. Ewing, L. Fenton, M. Golombek, A. Gunn, L. Kerber, J. Radebaugh, L. Rubanenko1, S. Silvestro, C. Swann, D. Tirsch, D. Vaz, C. Weitz, H. Yizhaq, and J. Zimbelman, “Martian eolian science: Recent advances, remaining questions, and roadmap for future in situ investigations” Optimizing Planetary In Situ Surface-Atmosphere Interaction Investigation Workshop (2022).
- Rana, S., W. Anderson W., and **M. Day**, “Turbulence-driven mechanisms of aeolian dust entrainment on Earth and Mars,” Bluebonnet Symposium on Thermal-Fluid Sciences, (2022), Dallas, Texas.
- Day, M.** and S. Pérez-Cortés, “Scour pits formed by wind erosion on Mars,” American Geophysical Union Fall Meeting, (2021).
- Archbold, A. and **M. Day**, “Dune-Field Patterns in the American Southwest,” American Geophysical Union Fall Meeting, (2021).
- Dorn, T. and **M. Day**, “Spatial Variability of Aeolian Abrasion: Early Results from Ixex Dune Field, Death Valley National Park”\_American Geophysical Union Fall Meeting, (2021).
- Bretzfelder, J. and **M. Day**, “Sediment Motion Initiation: A Modern and Interplanetary Experimental Approach,” American Geophysical Union Fall Meeting, (2021).
- Paige, D., **M. Day**, R. Nuno, and A Yin, “P25A-09A Glacial Land systems Model for Jezero Crater,”\_American Geophysical Union Fall Meeting, (2021).
- Pérez-Cortés, S. and **M. Day**, “Characterization of scour pits in the Medusae Fossae Formation of Mars. Geological Society of America Annual Meeting, (2021).
- Runyon, K., C. E. Viviano, K. Seelos, and **M. Day**, “Abraded pyroclastic linear paleodunes in Syria and Daedalia Plana,Mars,” 52nd Lunar and Planetary Science Conference (2021), #1683. Virtual meeting due to COVID-19.
- Sneed, J., **M. Day**, and K. Edgett, “Fresh impact crater detection from difference mapping of CTX images,” 51st Lunar and Planetary Science Conference, (2020). Meeting canceled due to COVID-19. <https://www.hou.usra.edu/meetings/lpsc2019/pdf/1224.pdf>
- Sneed, J., K. Stack, **M. Day**, and A. Fraeman, “Large-Scale HiRISE Survey Demonstrates a Genetic Relationship Between Martian Periodic Bedrock Ridges and Transverse Aeolian Ridges,” American Geophysical Union Fall Meeting, (2020), # EP018-0009. Virtual meeting due to COVID-19.
- Hunt, A., and **M. Day**, “Geological Map of Petrified Dunes and Yardangs in Apollinaris Sulci,” American Geophysical Union Fall Meeting, (2020), # EP018-0011. Virtual meeting due to COVID-19.
- Witchalls, J. and **M. Day**, “Geological Mapping in Northern Meridiani Planum: Insights into Flooding in Paleo-dune Fields,” American Geophysical Union Fall Meeting, (2020), #P045-0001. Virtual meeting due to COVID-19.
- Light, A., **M. Day**, and A. Yin, “Linear Dunes – What controls the direction of their bifurcations?” American Geophysical Union Fall Meeting, (2020), # EP018-0007. Virtual meeting due to COVID-19.

- Day, M.**, “Bedform interaction strata exposed in transverse aeolian ridges on Mars,” American Geophysical Union Fall Meeting, (2020), #EP014-01. Virtual meeting due to COVID-19.
- Dorn, T.** and **M. Day**, “Intracrater sediment trapping and transport in Arabia Terra,” American Geophysical Union Fall Meeting, (2020), #EP018-0003. Virtual meeting due to COVID-19.
- Burr, D., **M. Day**, L. Fenton, M. Lapotre, L. Neakrase, C. Swann, I. Walker, D. Williams, “Facilities for Planetary Aeolian Experimental Research: A Draft White Paper,” 6th International Planetary Dunes Workshop (2020), #3029. Virtual meeting due to COVID-19. <https://www.hou.usra.edu/meetings/dunes2020/pdf/3029.pdf>
- Bretzfelder, J.** and **M. Day**, “Analysis and Classification of the Aeolian Bedform at Dingo Gap,” American Geophysical Union Fall Meeting, (2020), # EP018-0006. Virtual meeting due to COVID-19.
- Nizam, S., C. Divola, M. Day**, “Geologic Map and Interpreted Formation of Chaos Terrain in Galilaei crater, Mars,” American Geophysical Union Fall Meeting, (2020), #P038-05. Virtual meeting due to COVID-19.
- Day, M.** “Finding hidden aeolian strata on Mars,” 11<sup>th</sup> International Conference on Aeolian Research. Session 6. (2020). Canceled due to COVID-19. <https://www.hou.usra.edu/meetings/lpsc2021/pdf/1683.pdf>
- Burr, D., **M. Day**, L. Fenton, M. Lapotre, L. Neakrase, C. Swann, I. Walker, D. Williams, “Facilities for Planetary Aeolian Experimental Research: A Draft White Paper,” 6<sup>th</sup> International Planetary Dunes Workshop (2020), #3029. Virtual meeting due to COVID-19. <https://www.hou.usra.edu/meetings/dunes2020/pdf/3029.pdf>
- Runyon, K., C. Viviano, **M. Day**, “Dunes to Yardangs: Deposition and Erosion in Syria and Daedalia Plana, Mars,” 6<sup>th</sup> International Planetary Dunes Workshop (2020), #3037. Virtual meeting due to COVID-19. <https://www.hou.usra.edu/meetings/dunes2020/pdf/3037.pdf>
- Dorn, T.**, and **M. Day**, “Intracrater Sediment Trapping and Transport in Arabia Terra,” 6<sup>th</sup> International Planetary Dunes Workshop (2020), #3038. Virtual meeting due to COVID-19. <https://www.hou.usra.edu/meetings/dunes2020/pdf/3038.pdf>
- Sneed, J., M. Day, K. Stack, and A. Fraeman**, “Experimental Hypothesis Testing of the Origins of Periodic Bedrock Ridges,” 6<sup>th</sup> International Planetary Dunes Workshop (2020), #3040. Virtual meeting due to COVID-19. <https://www.hou.usra.edu/meetings/dunes2020/pdf/3040.pdf>
- Day, M., T. Dorn, D., Stumbaugh,** and K. Edgett, “Interpreting Ancient Climate from Aeolian Features on Mars: Case studies from Jezero crater and Arabia Terra,” American Geophysical Union Fall Meeting, (2019), #EP23B-04
- Valdez-Luna, C.** and **M. Day**, “Geologic Mapping in the Midway Mars 2020 Landing Ellipse,” American Geophysical Union Fall Meeting, (2019), # P33G-3504.
- Mejia, M.,** and **M. Day**, “Geologic mapping in Henry crater, Mars” American Geophysical Union Fall Meeting, (2019), #P41C-3452.
- Day, M., D., Stumbaugh,** and K. Edgett. “Geologic mapping of a paleo-dune field near Barth crater, Mars,” Geological Society of America annual meeting, (2019), #T95-278.
- Dorn., T.** and **M. Day**, “Temporal wind variability and erosion of the western delta fan in Jezero crater,” the Ninth International Conference on Mars Science, July 2019.
- Lapotre, M., N. Bridges, B. Ehlmann, E. Rampe, R. Ewing, J. Johnson, F. Ayoub, M. Baker, S. Banham, M. Chojnacki, A. Cousin, **M. Day**, S. Diniega, O. Duran, C. Edwards, L.

- Fenton, T. Gabriel, M. Golembek, L. Kerber, J. Kok, M. Lamb, J. Lasue, C. Newman, C. O'Connell-Cooper, D. Rubin, S. Silvestro, J. Stern, R. Sullivan, A. Vasavada, D. Vaz, C. Weitz, H. Yizhaq, J. Zimbelman, "Martian eolian science since the eighth international conference on Mars: Summary of advances and remaining questions," the Ninth International Conference on Mars Science, July 2019.
- Sneed, J., M. Day and K. Edgett, "Fresh impact crater detection from difference mapping of CTX images," 50th Lunar and Planetary Science Conference, (2019), #1224.  
<https://www.hou.usra.edu/meetings/lpsc2019/pdf/1224.pdf>
- Dorn, T. and **M. Day**, "Temporal variations in wind patterns within Jezero crater," 50th Lunar and Planetary Science Conference, (2019), #2081.  
<https://www.hou.usra.edu/meetings/lpsc2019/pdf/2081.pdf>
- Stack, K., V. Sun, R. Arvidson, C. Fedo, **M. Day**, K. Bennett, L. Edgar, V. Fox, and S. Cofield, "Origin of linear ridges in the clay-bearing unit of Mount Sharp, Gale crater, Mars" 50th Lunar and Planetary Science Conference, (2019), #1210.  
<https://www.hou.usra.edu/meetings/lpsc2019/pdf/1210.pdf>
- Stumbaugh, D., T. Dorn, and **M. Day**, Investigating an Aeolian Origin to Washboard Terrain on Mars. Abstract EP51C-1833. American Geophysical Union Fall Meeting, Washington DC, December, 2018.
- McCarthy, F., M. Day, and P. Davis, Exploring the gravitational anomaly of Mount Sharp in Gale crater, Mars. Abstract EP51C-1830. American Geophysical Union Fall Meeting, Washington DC, December, 2018.
- Day, M.**, and D. Catling, Preserved morphologies of an ancient dune field – the first identification of negative cast "ghost dunes" on Mars. Abstract EP51C-1835. American Geophysical Union Fall Meeting, Washington DC, December, 2018.
- Newman, C., **M. Day**, N. Teanby, and M. Richardson. Reproducing the characteristics of Mars dune fields using the MarsWRF model. International Conference on Aeolian research, Bordeaux, France, June 2018.
- Day, M.**, and D. Catling. Dune casts preserved by partial burial: the first identification of "ghost dune" pits on Mars. European Geosciences Union General Assembly, Vienna, Austria, April 2018.
- Banham, S., S. Gupta, D. Rubin, J. Watkins, D. Sumner, K. Edgett, J. Grotzinger, K. Lewis, L. Edgar, K. Stack-Morgan, R. Barnes, J. Bell, **M. Day**, R. Ewing, M. Lapotre, N. Stein, F. Rivera-Hernandez, and A. Vasavada. An ancient sand sea in Gale crater, and its significance for martian climate: Stimson formation. American Geophysical Union Fall Meeting, New Orleans, LA. December 2017.
- Ewing, R., M. Lapotre, K. Lewis, **M. Day**, N. Stein, D. Rubin, and N. Bridges. Relating sedimentary processes in the Bagnold Dunes to the development of crater basin aeolian stratification. Geological Society of America annual meeting, Seattle, WA. October 2017.
- Day, M.** and G. Kocurek. How perfect if perfect in a dune field pattern? Geological Society of America annual meeting, Seattle, WA. October 2017.
- Calef, F., **M. Day**, H. Newsom. Crater densities on lower Mount Sharp as a proxy for modern geologic erosion. Geological Society of America annual meeting, Seattle, WA. October, 2017.
- Banham, S. G., S. Gupta, D. Rubin, J. Watkins, D. Sumner, J. Grotzinger, K. Lewis, K. Edgett, L. Edgar, K. Stack, J. Bell, R. Ewing, **M. Day**, M. Lapotre. Anatomy of an ancient eolian

- sandstone on Mars: The Stimson formation in Gale crater. 5<sup>th</sup> Planetary Dunes Conference. St. George, UT. May 2017.
- Banham, S. G., S. Gupta, D. Rubin, J. Watkins, D. Sumner, J. Grotzinger, K. Lewis, K Edgett, L. Edgar, K. Stack, J. Bell, **M. Day**, R. Ewing, M. Lapotre. The Stimson formation: Determining the morphology of a dry aeolian dune system and its climate significance in Gale crater, Mars. 48<sup>th</sup> Lunar and Planetary Science Conference, Woodlands, TX, March, 2017.
- Day, M.**, and G. Kocurek. Preserved dune interactions in sandstones on the Colorado Plateau, USA. Abstract 144747. American Geophysical Union Fall Meeting, San Francisco, CA, December, 2016. (poster)
- Anderson, W., **M. Day**, G. Kocurek. Modeling turbulent flows in the atmospheric boundary layer of Mars: application to Gale crater, Mars, landing site of the Curiosity rover. Abstract R35.0001. 69<sup>th</sup> Annual Meeting of APS Division of Fluid Dynamics, Portland, OR, November 2016.
- Lapotre, M., R. Ewing, M. Lamb, W. Fischer, J. Grotzinger, D. Rubin, K. Lewis, M. Ballard, **M. Day**, et al. Origin of the two scales of wind ripples on Mars. Abstract 134355. American Geophysical Union Fall Meeting, San Francisco, CA, December, 2016.
- Calef, F., D. Archer, B. Clark, **M. Day**, W. Goetz, J. Lasue, J. Martin-Torres, M. Zorzano, R. Navarro-Gonzalez. Assessing Gale Crater as an exploration zone for the first human mission to Mars. 47<sup>th</sup> Lunar and Planetary Science Conference, Woodlands, TX, March 2016. (poster)
- Anderson, R., C. Dundas, L. Edgar, O. Gasnault, S. LeMouelic, H. Newsom, N. Bridges, R. Weins, J. Frydenvang, A. Vasavada, and **M. Day**. Ongoing and planned long distance remote micro imager observations of targets on Aeolis Mons identified from orbit. 47<sup>th</sup> Lunar and Planetary Science Conference, Woodlands, TX, March 2016. (poster)
- Lapotre, M., R. Ewing, M. Lamb, W. Fischer, K. Lewis, M. Ballard, **M. Day**, D. Rubin, J. Grotzinger. Orbital and in-situ observations in support of the existence of an unknown stable aeolian bedform regime on Mars. 47<sup>th</sup> Lunar and Planetary Science Conference, Woodlands, TX, March 2016.
- Calef, F., B. Clark, **M. Day**, W. Goetz, J. Lasue, J. Martin-Torres, M. Zorzano. Assessing Gale crater as a landing site for the first human mission to Mars. First Landing Site/Exploration Zone Workshop for Human Mission to the Surface of Mars, Houston, TX, October 2015.
- Bridges, N., B. Ehlmann, P. Conrad, R. Ewing, F. Ayoub, **M. Day**, M. de la Torre, M. Fisk, et al. Investigation of the Bagnold Dunes by the *Curiosity* rover: Plans for the first study of an active dune field on another planet. 4<sup>th</sup> International Planetary Dunes Workshop, Boise, ID, May 2015.
- Bridges, N., D. Blaney, **M. Day**, K. Herkenhoff, N. Lanza, S. Le Mouelic, F. Martin-Torres, S. Maurice, C. Newman, et al., Rock abrasion and landscape modification by windblown sand as documented by the MSL *Curiosity* rover. 46<sup>th</sup> Lunar and Planetary Science Conference, Woodlands, TX, March 2015. (poster)
- Jacob, S., S. Rowland, K. Edgett, **M. Day**, F. Calef, M. Palucis, and R. Anderson. Characteristics and Origin of a Cratered Unit near the MSL Bradbury Landing Site (Gale Crater, Mars) Based on Analyses of Surface Data and Orbital Images. American Geophysical Union Fall Meeting, San Francisco, CA, December 2014.

- Bridges, N., **M. Day**, F. Martin-Torres, H. Newsom, A. Ullan, et al. Rock abrasion as seen by the MSL Curiosity rover: insights on physical weathering on Mars. American Geophysical Union Fall Meeting, San Francisco, CA, December 2014.
- Day, M.**, G. Kocurek, N. Bridges, R. Ewing, W. Anderson, C. Newman, the MSL team. Temporal and spatial differences in wind indicators in Gale Crater. Geological Society of America Annual Meeting, Vancouver, BC. Canada. October 2014.
- Jacob, S., S. Rowland, K. Edgett, **M. Day**, F. Calef, and M. Palucis. Crater density as an aid to mapping the Cratered Surface unit at Gale Crater, Mars. Geological Society of America Annual Meeting, Vancouver, BC. Canada. October 2014. (poster)
- Day, M.**, G. Kocurek, W. Anderson, A. Hamed, K. Christiansen. Aeolian Erosion of Filled Martian Craters. 45<sup>th</sup> Lunar and Planetary Science Conference, Woodlands, TX, March, 2014. (poster)
- Alibay, F., R. McGranaghan, R. Clegg, P. Craig, **M. Day**, et al. Design of a High-Value, Low-Cost Mission to the Neptunian System, IEEE Aerospace Conference, Big Sky, Montana, March 2014.
- Day, M. D.**, M. Malaska, et al. Neptune and Triton: A Study in Future Exploration. Abstract P51G-1822, American Geophysical Union Fall Meeting, San Francisco, CA, December, 2013. (poster)
- Day, M. D.**, F. J. Calef, P. Buhler, and J. P Grotzinger. Small Crater Analysis of the Mars Science Laboratory Landing Sites, 5<sup>th</sup> Landing Site Selection Workshop, Pasadena, CA. May 2011.
- Day, M. D.**, F. J. Calef, P. Buhler, and J. P Grotzinger. Small Crater Analysis of the Mars Science Laboratory Landing Site, Abstract P33C-1773, American Geophysical Union Fall Meeting, San Francisco, CA, December, 2011. (poster)

**PROFESSIONAL MEMBERSHIPS**

- 2011-present American Geophysical Union
- 2013-present Geological Society of America
- 2017-present Planetary Society
- 2017-present International Society of Aeolian Research
- 2012-2017 Austin Partners in Education

**GRADUATE STUDENT ADVISEES**

|                    |     |               |  |
|--------------------|-----|---------------|--|
| Taylor Dorn        | PhD | Class of 2023 | Now faculty at Front Range Comm. College |
| Jonathan Sneed     | PhD | Class of 2023 |  |
| Jordan Bretzfelder | PhD | Class of 2024 |  |
| Jacob Widmer       | PhD | Class of 2026 |  |
| Alana Archbold     | MS  | Class of 2024 |  |
| Imani Lawrence     | PhD | Class of 2028 |  |
| Sarah Preston      | PhD | Class of 2028 |  |