

Cory M. Hughes

Curriculum vitae

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PERSONAL

Dual Citizen – Canada and USA

Pronouns: He|Him|His

RESEARCH INTERESTS

Earth Analogues for Planetary Science

Planetary Science

Sedimentary Geology

Remote Sensing

EDUCATION

PhD, Geology

University of Arkansas

Advisor: Dr. John Shaw

Expected: 2024

MS, Geology

Western Washington University

Advisor: Dr. Melissa Rice

Thesis: *Bio-preservation potential of sediment in Eberswalde crater, Mars*

2020

BS, Geological Sciences

The University of Texas at Austin, Jackson School of Geosciences

Advisor: Dr. David Mohrig

Undergraduate Research: *Deltaic deposits indicative of a paleo-coastline at Aeolis Dorsa, Mars*

2017

PROFESSIONAL APPOINTMENTS

University of Texas at Austin

Post-Baccalaureate Research Associate, Martian and Terrestrial Sedimentology

2017 – 2018

REFEREED JOURNAL PUBLICATIONS

Hughes, C. M., Rice, M. S., Barnhart, C. J., Swanson, T. E., Pfeiffer, A. M., & Goudge, T. A. (2023). Sources of Clay-Rich Sediment in Eberswalde Crater, Mars With Implications for Biopreservation Potential. *Journal of Geophysical Research: Planets*, 128(4), e2022JE007545. [\[Link\]](#)

Zaki A. S., Edgett K. S., Pajola M., Kite E., Davis J. M., Mangold N., Madof A. S., Lucchetti A., Grindrod P., **Hughes C. M.**, Sangwan K. Prolonged Record of Hydroclimatic Changes at Antoniadi Crater, Mars. *Journal of Geophysical Research: Planets*. 2023 Jul;128(7):e2022JE007606. [\[Link\]](#)

Zaki, A., Davis, J., Edgett, E., Giegengack, R., Roige, M., Conway, S., Schuster, M., Gupta, S., Salese, F., Sangwan, K., Fairen, A., **Hughes, C. M.**, Pain, C., & Castelltort, S. (2022). Fluvial depositional systems of the African humid period: An analog for an early, wet Mars in the eastern Sahara. *Journal of Geophysical Research: Planets*, 127(5), e2021JE007087. [\[Link\]](#)

Rice, M.S., Seeger, C., Bell, J., Calef, F., St. Clair, M., Eng, A., Fraeman, A.A., **Hughes, C. M.**, Horgan, B., Jacob, S. and Johnson, J. (2022). Spectral diversity of rocks and soils in Mastcam observations along the Curiosity rover's traverse in Gale crater, Mars. *Journal of Geophysical Research: Planets*, 127(8), e2021JE007134.

Stack, K. M., Williams, N. R., Calef, F., Sun, V. Z., Williford, K. H., Farley, K. A., Eide, S., Flannery, D., **Hughes, C. M.**, ... & Yingst, R. A. (2020). Photogeologic map of the perseverance rover field site in Jezero crater constructed by the Mars 2020 Science Team. *Space Science Reviews*, 216(8), 1-47. [\[Link\]](#)

Cardenas, B. T., Mohrig, D., Goudge, T. A., **Hughes, C. M.**, Levy, J. S., Swanson, T., ... & Zhao, F. (2020). The anatomy of exhumed river-channel belts: Bedform to belt-scale river kinematics of the Ruby Ranch Member, Cretaceous Cedar Mountain Formation, Utah, USA. *Sedimentology*. [\[Link\]](#)

Cardenas, B. T., Kocurek, G., Mohrig, D., Swanson, T., **Hughes, C. M.**, & Brothers, S. C. (2019). Preservation of Autogenic Processes and Allogenic Forcings in Set-Scale Aeolian Architecture II: The Scour-and-Fill Dominated Jurassic Page Sandstone, Arizona, USA. *Journal of Sedimentary Research*, 89(8), 741-760. [\[Link\]](#)

Hughes, C. M., Cardenas, B. T., Goudge, T. A., & Mohrig, D. (2019). Deltaic deposits indicative of a paleo-coastline at Aeolis Dorsa, Mars. *Icarus*, 317, 442-453. [\[Link\]](#)

Kocurek, G., Martindale, R. C., Day, M., Goudge, T. A., Kerans, C., Hassenruck-Gudipati, H. J., ... **Hughes, C. M.** & Nazworth, C. M. (2019). Antecedent aeolian dune topographic control on carbonate and evaporite facies: Middle Jurassic Todilto Member, Wanakah Formation, Ghost Ranch, New Mexico, USA. *Sedimentology*, 66(3), 808-837. [\[Link\]](#)

Goudge, T. A., Mohrig, D., Cardenas, B. T., **Hughes, C. M.**, & Fassett, C. I. (2018). Stratigraphy and paleohydrology of delta channel deposits, Jezero crater, Mars. *Icarus*, 301, 58-75. [\[Link\]](#)

PUBLICATIONS IN-PREP OR SUBMITTED

Hughes, C. M., et al., (2024). Estimates for Backwater Length of River Delta Deposits at Aeolis Dorsa , Mars. *Geophysical Research Letters* (submitted).

Hughes, C. M., et al., (2024). The Wedington Sandstone: A Terrestrial Analog for Topographically Inverted River Delta Deposits on Mars. (In preparation).

Mahon, R. C., Shaw, J. B., Ma, H., & **Hughes, C. M.**, (2024). Analysis of Ancient Channel-Mouth Bifurcation Angles on Earth and Mars. *In-prep*.

OTHER PUBLICATIONS

Hughes, C. M. (2020). Bio-preservation potential of sediment in Eberswalde crater, Mars. [\[Link\]](#)

CONFERENCE ABSTRACTS

Hughes, C. M., & Shaw, J. B. (2020). Preliminary Analysis of a Terrestrial Analog for Topographically Inverted Martian River Delta Deposits. In *AGU Fall Meeting 2021*. AGU.

Hughes, C. M., & Shaw, J. B. (2021). River Delta Trunk Channel Deposit Preserved in Inverted Relief, Weddington, Arkansas. *LPI Contributions*, 2595, 8078.

Zaki, A., Edgett, K. S., Gupta, S., Pajola, M., Davis, J., **Hughes, C. M.**, ... & Castelltort, S. (2020). Reconstructing the fluvial history of Antoniadi crater: evidence for Noachian and Amazonian stream networks on Mars. In *AGU Fall Meeting 2020*. AGU.

Hughes, C. M., & Rice, M. S. (2019). Hyperspectral Analysis of the Source-to-Sink System at Eberswalde crater, Mars. *AGUFM*, 2019, P51F-3425.

Seeger, C., Rice, M. S., Starr, M., **Hughes, C. M.**, & Frizzell, K. (2019). Mastcam Spectral Diversity Within Glen Torridon, Gale crater, Mars. *AGUFM*, 2019, P31A-3426.

Seeger, C. H., Rice, M. S., Starr, M., & **Hughes, C. M.** (2019). Mastcam Spectral Characterization of Stratigraphic Units Along Curiosity's Traverse in Gale crater, Mars. *LPI*, (2132), 2235.

Rice, M. S., Starr, M. S., **Hughes, C. M.**, Seeger, C. H., Fraeman, A. A., Johnson, J. R., ... & Wellington, D. F. (2019). Science Results from a Comprehensive Mastcam Spectral Database for Curiosity's Traverse. *LPI*, (2132), 3030.

Starr, M. S., Rice, M. S., **Hughes, C. M.**, Seeger, C. H., Bell, J. F., & Wellington, D. F. (2019). Methodology for the Creation and Analysis of a Comprehensive Mastcam Multispectral Database of Curiosity's Traverse. *LPI*, (2132), 3087.

Hughes, C. M., & Rice, M. (2019). Spectral Characteristics of Deposit Stratigraphy at Eberswalde crater, Mars. *EPSC, 2019, EPSC-DPS2019*.

Cardenas, B. T., Mohrig, D. C., Goudge, T. A., **Hughes, C. M.**, Levy, J., Swanson, T., & Mason, J. (2018). Anatomy of exhumed river channel-belts. *AGUFM, 2018, EP52A-01*.

Cardenas, B. T., Kocurek, G., Mohrig, D., Swanson, T., **Hughes, C. M.**, Brothers, S., & Goudge, T. (2018). Ancient environmental forcings recorded in aeolian stratigraphy: an Earth analog to aeolian strata on Mars. *LPI*, (2083), 2971.

Goudge, T. A., Mohrig, D., Cardenas, B. T., **Hughes, C. M.**, & Fassett, C. I. (2017). Stratigraphy and evolution of delta channel deposits, Jezero crater, Mars.

Goudge, T. A., Mohrig, D., Cardenas, B. T., **Hughes, C. M.**, & Fassett, C. I. (2017). Stratigraphy and evolution of delta channel deposits, Jezero crater, Mars.

Peng, Y., Steel, R., Rossi, V. M., Clayton, C., & **Hughes, C. M.**, Mixed Energy Process Interactions Read From a Tide-Dominated Shoreline: The Paleo-Orinoco Delta, Trinidad. In *AAPG Annual Convention and Exhibition*.

Hughes, C. M., Cardenas, B. T., Goudge, T. A., & Mohrig, D. (2016, March). Deltaic deposits indicative of a paleo-coastline at Aeolis Dorsa, Mars. In *Proceedings of the 47th Lunar and Planetary Science Conference: Houston, Texas, Lunar and Planetary Institute, abstract* (Vol. 2139).

Goudge, T. A., Mohrig, D., Cardenas, B. T., **Hughes, C. M.**, Levy, J. S., & Fassett, C. I. (2016). Sedimentology of the Jezero crater Western Fan Deposit: 2. Secular Changes in the Style of Channelization. *LPI*, (1903), 1656.

Cardenas, B. T., Bryk, B. A., Goudge, T. A., **Hughes, C. M.**, & Mohrig, D. (2016). Determining Paleoflow Direction of Martian Channel Belts Using Preserved Channel-Bend Asymmetry: Case Study at Aeolis Dorsa, Mars. *LPI*, (1903), 2367.

HONORS & AWARDS

University of Arkansas, Doctoral Academy Fellowship (\$48000)	2020-2024
Association for Women Geoscientists – Summer Scholarship (\$300)	2021
Haley & Aldrich DEI Essay Contest Winner (\$1000)	2021
Ross Travel Grant (\$500)	2019
SETI Institute LPSC Travel Grant (\$600)	2016

DEPARTMENT TALKS

GeoHog Conference Talks	2020 – 2024
WWU Geology Department Brown-bag	2018
UT Undergraduate Geologic Society Speaker	2017
Soft-Rock Talk Speaker	2016
Planetary Organization for Space Science and Exploration Speaker	2016

TEACHING EXPERIENCE

Western Washington University, Department of Geology
Graduate Teaching Assistant 2018 – 2020
Introduction to Geology (GEOL 101) – three quarters
Physical Geology (GEOL 211 & 211A) – five quarters

FIELD EXPERIENCE

Pea Ridge, Arkansas 2024
Demmings, New Mexico 2023
Lake Wedington, Arkansas 2021
Vantage, Washington; Caspe, Northern Spain 2019
Deming, Washington; Yakima, Washington 2018
Ghost Ranch, New Mexico; Gulf Coast, Texas 2017
Page, Arizona; Green River, Utah; Gulf Coast, Texas; Liberty, Texas 2016
Trinidad January 2015
Jackson School of Geosciences Field School; Questa, New Mexico 2014

MISSION INVOLVEMENT

NASA – Mars 2020 Rover
Student Participant 2018 – 2020
Inlet-Valley Co-Lead for geologic mapping of the Jezero crater landing site

Mars Science Laboratory Curiosity Rover
Student Participant 2018 – 2019
Quality assurance on Mastcam Multispectral Database; Mastcam multispectral observation processing and analysis

PUBLIC OUTREACH & SERVICE

Western Washington University Geology Department Volunteer Educator 2019
Bellingham Space Enthusiasts Volunteer Speaker 2018
Blinn Community College Planetary Science Speaker 2018
Bellville I.S.D., Science and Tech. Booster Club, Space Science Volunteer Educator 2018 – 2019
Speaker for UT Undergraduate Geological Society 2017

LEADERSHIP & SERVICE

University of Arkansas 2020-2022
Association of Women Geoscientists - Member
Graduate Student Diversity, Equity, and Inclusiveness Group Founder
Geoscience Mentorship Program Co-Founder

Western Washington University
Graduate Student Advisory Council 2018 – 2019
Committee Chair on Graduate Student Finances
Committee Member on Diversity, Equity and Inclusiveness

PROFESSIONAL DEVELOPMENT

University of Arkansas
Sexual Orientation and Gender Identity Seminar January 2021
Western Washington University
LGBTQ+ 101 Seminar January 2019
Student Centered Teaching Practices Seminar 2018 – 2019

TECHNICAL SKILLS

Proficient skills with ENVI (Intermediate), ESRI ArcGIS (Advanced), and Adobe Suite (Intermediate), Python (intermediate-advanced), R (beginner), IDL (beginner), MATLAB (beginner), and Latex (beginner)