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EDUCATION

2021-2026	Stanford University	PhD, Earth and Planetary Sciences (expected June 2026)
2017-2021	Arizona State University	Bachelor of Science (Honors), Geography *Magna Cum Laude* (Minor, Mathematics) Certificate, Geographic Information Science

AWARDS AND HONORS

2025 **Outstanding Student Presentation Award (OSPA) –** Awarded for the AGU Fall 2024 Meeting presentation "Zircon Microtextures: A Record of Earth's Earliest Surface Environments".

2021 **Dean's Medal -** School of Geographical Sciences and Urban Planning, Arizona State University, Spring 2021.

2019 '**The College' Student Leader** - Recognized as a distinguished student from the School of Geographical Sciences and Urban Planning as nominated by unit, chair, director, or faculty.

GRANTS AND FELLOWSHIPS

2025 **NASA Travel Grant –** For attending the *Dragonfly* Analog Field Trip to the Namib Sand Sea (October 2025) ($3000).

2025 **NASA Travel Grant –** For attending the 'International Planetary Dunes' workshop in Alghero, Italy (May 2025) ($4000).

2024 **Earth and Planetary Sciences Travel Fund –** Travel grant for attending the American Geophysical Union (AGU) Fall 2024 meeting in Washington D.C. ($500).

2024 **SEPM Travel Grant –** Travel grant for attending the Geological Society of America meeting in Anaheim ($400).

2024 **NSF Travel Grant –** Travel grant for attending the International Sedimentary Geosciences Congress meeting in Flagstaff ($2500).

2023 **Earth and Planetary Sciences Travel Fund –** Travel grant for attending the American Geophysical Union (AGU) Fall 2023 meeting in San Francisco ($500).

2023 **NASA Travel Grant –** For attending the 'International Conference on Aeolian Research' workshop in Las Cruces, New Mexico (July 2023) ($2000).

2023 **McGee-Levorsen Fellowship –** Research fellowship to study the impacts of fluvial transport on detrital zircons ($2300).

2022 **NASA Travel Grant –** For attending the 'Optimizing planetary in-situ surface-atmosphere interaction investigations' workshop in Boise, Idaho (June 2022) ($1700).

2022 **NCALM Seed Grant –** 40 km^2 high-resolution lidar mapping of the Rice Valley dune-field from the National Center for Airborne Laser Mapping.

2021 **Geological Sciences Travel Fund –** Travel grant for attending the American Geophysical Union (AGU) Fall 2021 meeting in New Orleans ($500).

2020 **Barrett Global Explorers Grant –** Travel grant to study disturbed coastal and inland dune sediments in Arizona, California, New Mexico, and Utah. Size, shape, and microtextures analysis ($5,000).

2020 **Content Curation Fellow –** Summer fellowship curating and creating geography content for digital, solar powered learning libraries for SolarSPELL ($4,000).

2019 **Urban Equity Initiative Fellowship –** Calculation of decadal migration rates for active dune fields from aerial and satellite imagery in the Navajo and Hopi nations ($2,400).

INVITED TALKS, SEMINARS, AND LECTURES

2025 **Virtuaeolian Seminar Series –** Monthly seminar to the International Society for Aeolian Research (ISAR).

2025 **Department Seminar –** Department of Environmental Studies and Sciences, *Santa Clara University.*

2024 **Planetary Science and Exploration Seminar –** Department of Aeronautics and Astronautics, *Stanford University.*

PEER-REVIEWED PUBLICATIONS

*In prep (*with co-authors)*

A. *Radebaugh, J., Wright, M., Rose, D., **Marvin, M.C.**, Lapôtre, M.G.A., and Gunn, A. (in prep). A Global Compendium of Dune Long Axis Traces on Titan Reveals Wind and Topographic Controls.
B. ***Marvin, M. C.**, Hilgendorf, Z., & Walker, I. J. (in prep). Rebuilt foredune evolution in a high-energy coastal environment: a multi-decade remote-sensing approach.
C. **Marvin, M.C.**, DeMeester, J., Schaffer-Smith, D., Muenich, R. (in prep). Revisiting water management at Kerr Reservoir on the Roanoke River.

Published

9. **Marvin, M.C.**, Colicci, V., Hasson, M., Abubo, R., and Lapôtre, M.G.A. (2025). Microtextural analyses of detrital zircons for paleoenvironmental interpretations of metasediments. *Geology*. https://doi.org/10.1130/G53712.1
8. **Marvin, M. C.**, Lapôtre, M. G. A., Radebaugh, J., & Bo, W. (2025). From Xanadu around and back: A ca. 11,000 km journey of windblown sand revealed by global dune patterns on Titan. *Geophysical Research Letters*, 52, e2024GL112760. https://doi.org/10.1029/2024GL112760
7. Hasson, M., **Marvin, M. C.**, & Lapôtre, M. G. A. (2024). Automated determination of transport and depositional environments in sand and sandstones. *Proceedings of the National Academy of Sciences of the United States of America*, *121*(40), e2407655121. https://doi.org/10.1073/pnas.2407655121
6. **Marvin, M.C.**, Lapôtre, M.G.A., Gunn, A., Day, M.D., & Soto, A. (2023). Dune interactions record changes in boundary conditions, *Geology*, *51*(10), 947-951. https://doi.org/10.1130/G51264.1
5. Hasson, M., **Marvin, M.C.**, Gunn, A., Ielpi, A. & Lapôtre, M.G.A. (2023). A depositional model for meandering rivers without land plants. *Sedimentology*, *70*(7), 2272-2301. https://doi.org/10.1111/sed.13121
4. Heintzman, R., Brandi, A., Kelley, M., & **Marvin, M.C.** (2023). A Physical Geography Lab's Online Transition: Student and Instructor Insights Using iGEO Video Games during the Pandemic. *Journal of Geography,* 1-9. https://doi.org/10.1080/00221341.2023.2216705
3. González, C., Kelley, M., **Marvin, M.C.**, López-Castañeda, N., Dorn, R. I., & Schmeeckle, M. (2022). Regional piedmont incision during base-level rise in the northeastern Sonoran Desert, Arizona, USA. *Physical Geography*, *43*(1), 67-97. https://doi.org/10.1080/02723646.2021.1934964
2. Shandonay, K.L., Moll, H., **Marvin, M.C.**, López-Castañeda, N., Kelley, M., Hilgendorf, Z., Heintzman, R., & Dorn, R. (2021). The Fieldwork of Shared Experiences. *The Geographical Bulletin, 62*(2), 82-88. https://www.gammathetaupsilon.org/the-geographical-bulletin/2020s/volume62-2/A/article7.pdf
1. Hilgendorf, Z., **Marvin, M. C.**, Turner, C. M., & Walker, I. J. (2021). Assessing Geomorphic Change in Restored Coastal Dune Ecosystems Using a Multi-Platform Aerial Approach. *Remote Sensing*, *13*(3), 354. MDPI AG. http://dx.doi.org/10.3390/rs13030354

OTHER PUBLICATIONS

2. **Marvin, M. C.**, Abbey, P., Mrazek, J., Weitzel, E., & Work, R. (2021). Assateague Island National Seashore Ecological Forecasting: Characterizing Nearshore Suspended Sediments and Landcover Change Relative to Sediment Bypassing and Catastrophic Events. NASA DEVELOP National Program.

1. Dialesandro, J., Kruskopf, M., **Marvin, M. C.**, & Vargas, M. (2021). San Diego Urban Development: Utilizing NASA Earth Observations to Identify Drivers of Extreme Urban Heat and Generate a High-Resolution Vulnerability Index for Urban Planning and Climate Resiliency in San Diego, California. NASA DEVELOP National Program.

CONFERENCE PRESENTATIONS

First author:

Marvin, M.C., Lapôtre, M.G.A., Radebaugh, J., and Bo, W. (2025). From Xanadu around and back: A ca. 11,000 km journey of windblown sand revealed by global dune patterns on Titan. *8th International Planetary Dunes Conference,* Abstract #3005.

Marvin, M.C., Hasson, M., Abubo, R., and Lapôtre, M.G.A. (2024). Zircon Microtextures: A Record of Earth's Earliest Surface Environments. *AGU Fall Meeting 2024*, EP43F–03.

(*invited*) **Marvin, M.C.**, Lapôtre, M.G.A., Radebaugh, J., Bo, W., Day, M., Gunn, A., and Soto, A. (2024). Surface conditions on Titan through dune-pattern analysis. *GSA 2024*. Abstract #401270.

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

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

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

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

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

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

Marvin, M.C. (2021). Effectiveness of foredune restoration in high-energy coastal environments. *AAAS: Understanding Dynamic Ecosystems.* (2nd Place, Environment and Ecology).

Contributing author:

Lui, T., **Marvin, M.C.**, Caers, J., and Lapôtre, M.G.A. (2024). Segmentation of Dune Crestlines Using Convolutional Neural Networks. *AGU Fall Meeting 2024*, EP51D–1378.

Radebaugh, J., Wright, M., Rose, D., Kerber, L., Lapôtre, M.G.A., Rodriguez, S., Lorenz, R.D., Barnes, J.W., **Marvin, M.C.**, and Cohen-Zada, A. (2024). Eolian landforms and processes on Titan and role in material movement. *Europlanet Science Congress 2024*, EPSC2024-613.

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

Hasson, M., **Marvin, M.C.**, Lapôtre, M.G.A. (2023). Determination of paleo-transport environments of sand grains using deep learning. *AGU Fall Meeting 2023*, EP31D–2112.

Hasson, M., **Marvin, M.C.**, Gunn, A., Ielpi, A., Lapôtre, M.G.A. (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*, Abstract S03–04.

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

Heintzman, R., Brandi, A., Kelley M.M., **Marvin, M.C.** (2021). Student and Instructor Insights for an Online Synchronous Introductory Geography Lab Using Interactive Geovisualization "Video Games" – Fall 2020 Term at Arizona State University. *American Association of Geographers (AAG) Annual Meeting.*

TEACHING

2023 **GEOLSCI 120/220 – Planetary Surface Processes: Shaping the Landscape of the Solar System (TA),** *Stanford University* – Course assistance, grading, and peer mentorship of undergrad/grad students looking to expand their knowledge of endo- and exogenous landscape-shaping processes across the Solar System.

2022 **GEOLSCI 180/280 - Magmatic and Eruptive Processes (TA),** *Stanford University* – Field trip planning, transportation, and logistics for Fall 2022. Ensured inclusive and safe environment for undergrad/grad students on three overnight and day trips. Development of geologic maps and supplementary materials.

2018–2021 **GPH 112 - Physical Geography Lab (Peer Mentor),** *Arizona State University* - Development of material and learning aids for in-person and online sections, in-class lecturing, support for graduate TAs, and tutoring outside of class for 9 semesters (Fall/Spring/Summer, 2018-2021).

SERVICE AND COMMUNITY ENGAGEMENT

Ongoing **Peer Reviewer** for *Nature Communications, Geophysical Research Letters, Journal of Geophysical Research: Earth Surface, Earth and*

Planetary Science Letters, Icarus, Aeolian Research, and *The Geographical Bulletin.*

Ongoing **Session Convener** at the *American Geophysical Union Fall Meeting* (2024, 2025).

Ongoing **Peer Mentor** for three students as part of the *American Geophysical Union Earth and Planetary Surface Processes* mentorship program.

Ongoing **GeoKids** – Volunteer for hands-on geoscience education provided to local elementary schools focused on rocks, minerals, and soils. Started March 2024.

Ongoing **Graduate Student Mentor** – Student mentor to first-year Geological Sciences graduate student. Providing professional and academic guidance. Started September 2022.

Ongoing **Graduate Studies Committee** – Graduate student representative working with the Department Chair, Director of Graduate Studies, and department administrative staff to address student's concerns regarding graduate student curriculum. Started September 2021.

Ongoing **Member: Gamma Theta Upsilon -** National Honor Society in Geography. Since March 2019.

2024 **Eclipse Outreach** – Department graduate student tabling representative for the 2024 Eclipse. Science communication and educational outreach, including interviews with CBS San Francisco and Doerr School social media accounts.

2023 **SESUR Mentor** – Working with Sustainability and Earth Summer Undergraduate Research (SESUR) student developing a foundation in sediment transport and geomorphology applied towards experimental sedimentology.

OTHER PROFESSIONAL AND RESEARCH EXPERIENCE

2021 **Project Lead, NASA DEVELOP Program,** *Science Systems and Applications (SSAI), Pocatello, ID* – Led a team of five that collaborated with Assateague Island National Seashore and the US Army Corps of Engineers utilizing Landsat 5/7/8 and Sentinel-2 Earth observations. Created time series maps of sediment transport, habitat suitability, and forecasting. Ten-week project from June to August 2021.

2021 **Intern,** *Arizona State University, Summer Undergraduate Research Internship (SURI), Tempe, AZ* – Collaborative project with the US Army Corps of Engineers and The Nature Conservancy characterizing hydrologic alterations of the Roanoke River in using statistical methods in R. Eight-week project from May to July 2021.

2021 **Team Member, NASA DEVELOP Program,** *Science Systems and Applications (SSAI), Tempe, AZ* – Providing the City of San Diego with data and toolsets to address the impacts of the urban heat island. Employing the InVEST urban cooling model and a vulnerability assessment. Deriving and processing NASA raster layers (i.e., albedo, land surface temperature,

land use) from Landsat 8 and ECOSTRESS on Google Earth Engine. Ten-week project from January to April 2021.

2018-2021 **Research Assistant,** *Arizona State University* - Processing and analyzation of UAS and terrestrial laser scanning data for the development of DEMs and DSMs, particle size distribution of sediments, and wind tunnel maintenance. Assistance on field campaigns.

MEDIA MENTIONS

2025 "Colin Marvin - Zircon microtextures: A record of Earth's earliest surface environments -Virtuaeolian": *International Society for Aeolian Research*

2024 "Automated determination of transport and depositional environments in sand and sandstones": *NPR Science Friday*, *MSN*, *Stanford Report*, *Interesting Engineering*

2024 Eclipse 2024: *The Stanford Daily*, *CBS News*

2023 "Dune interactions record changes in boundary conditions": *Stanford Earth*, *Phys.org*, *Science Daily*

2021 "In pursuit of global impact, geography Dean's Medalist to study planetary surface processes of Saturn moon": *ASU News*

2020 "Barrett students win Barrett Global Explorers Grant for worldwide research projects": *Barrett, The Honors College*

2019 "New ASU fellowship program addresses urban equity through geographic perspectives": *ASU News*