Sophia J. Wood

erg7mw@virginia.edu | linkedin.com/in/sophia-j-wood | github.com/Geomorphia | geomorphia.rocks
University of Virginia | Department of Environmental Sciences | Charlottesville, VA 22903

EDUCATION

University of Virginia
Doctor of Philosophy in Environmental Science (Focus in Geosciences) *Aug 2025 – Present*

Pennsylvania State University
Bachelor of Science in Geosciences, Minor in Astrobiology *Aug 2021 – May 2025*

Cum Laude | Thesis: "Lateral Extent of the Fluvial Carolyn Shoemaker Formation, Gale Crater, Mars"

RESEARCH

University of Virginia
Research Assistant (Advisor: Ajay B. Limaye) *Aug 2025 – Present*

- Authored an NSF GRFP proposal titled "Influence of Changing Water-Level on the Morphology of Martian Fan-Shaped Deposits" defining a multi-year research plan to investigate how changes in morphology are modulated in different basin settings.
- Developed a centralized database to aggregate HiRISE DEMs from PDS, USGS, and individual publications to implement into a numerical model designed to test whether scenarios with and without standing water cause distinctive deposit geometries.
- Leveraging the parallel computing power of Rivanna Supercomputer to construct HiRISE DEMs utilizing the Ames Stereo Pipeline.

Pennsylvania State University
Undergraduate Researcher (Advisor: Benjamin T. Cardenas) *Sep 2023 – May 2025*

- Correlated remote orbital mapping data with in-situ measurements from the MSL Curiosity rover traverse, identifying lateral extensions of the Carolyn Shoemaker formation located 37 km away from the rover's path.
- Developed a geometric model in Python to simulate post-depositional structural tilt, quantifying its impact on the stratigraphic positioning of fluvial deposits relative to known rover-observed outcrops.
- Collected 600+ paleoflow orientation measurements for crossbeds in the San Rafael Swell, UT during a week-long field campaign.

TEACHING

University of Virginia
Teaching Assistant

- EVSC 4891/ASTR 3881, Planetary Astronomy & Geology Laboratory — Spring 2026
- EVSC 2800, Fundamentals of Geology — Fall 2025

Pennsylvania State University
Undergraduate Teaching Assistant

- GEOSC 465, Structural Geology Laboratory — Spring 2025

PROFESSIONAL EXPERIENCE

Penn State Earth and Mineral Sciences Museum State College, PA
Mineral Collections Assistant *Jan 2024 – Jul 2025*
Gallery Attendant *Jun 2025 – Jul 2025*

Houston Museum of Natural Science Houston, TX
Customer Service Representative *May 2023 – Aug 2023*

Lincoln Caverns Huntingdon, PA
Cavern Tour Guide *Apr 2022 – Aug 2022*

PUBLICATIONS

- Cardenas, B.T., Baran, Z., Downey, N.M, Lawrence, M., **Wood, S.J.**, Yurchak, A. "Can structural tilt be measured from exhumed channel belts on Mars? Numerical experiments using analog alluvial strata." In review/revision.
- Cardenas, B.T., Baran, Z., Downey, N.M., Lawrence, M., **Wood, S.J.**, Yurchak, A. (2025) Data for "Can structural tilt be measured from exhumed channel belts on Mars?". *Scholarsphere*, https://doi.org/10.26207/zewr-9672.

PRESENTATIONS

2026

- **Wood, S.J.**, Limaye, A.B., "Characterizing the modulating effects of basin geometry and water level on Mars fan-shaped deposits." *Department of Environmental Sciences EnviroDay Research Symposium*, University of Virginia, February 20, 2026, Charlottesville, VA, USA.

2025

- **Wood, S.J.**, "Lateral Extent of the Fluvial Carolyn Shoemaker Formation, Gale Crater, Mars." *Undergraduate Thesis*, Pennsylvania State University, April 25, 2025, State College, PA, USA.

2024

- **Wood, S.J.**, Cardenas, B.T., "Lateral Extent of the Fluvial Carolyn Shoemaker Formation, Gale Crater, Mars." Abstract #1618920, *American Geophysical Union Fall Meeting*, December 9-13, 2024, Washington D.C., USA
- Cardenas, B.T., Baran, Z., Downey, N., Lawrence, M., **Wood, S.J.**, and Yurchak, A., "Martian fluvial ridge topography: experiments on differential erosion and structural tilt." Abstract #1685373, *American Geophysical Union Fall Meeting*, December 9-13, 2024, Washington, D.C., USA
- Cardenas, BT., Baran, Z., **Wood, S.J.**, and Yurchak, A., Indicators of Structural Tilt Preserved in Fluvial Ridge Topography: Numerical Experiments Exploring the Biases of Using Erosional Topography to Reconstruct Underlying Stratigraphy. Abstract #3007, *Tenth International Conference on Mars*, July 22-25, 2024, Pasadena, CA, USA.
- Cardenas, B.T., Baran, Z., **Wood, S.J.**, and Yurchak, A., "Could channel belts on Mars be used to reconstruct structural tilt? Numerical experiments using 3D seismic volumes from the US Gulf Coast." Abstract #70, *SEPM International Sedimentary Geosciences Congress*, May 5-8, 2024, Flagstaff, AZ, USA.

AWARDS AND HONORS

Pennsylvania State University

Leone Family Scholarship	2022, 2024
Matthew J. Wilson Honors Scholarship	2024
Frank and Lillie Mae Dachille Memorial Award in Geochemistry	2024
Kappmeyer-Isaacs Field Camp Award	2024
AWG Field Camp Award	2024
Arthur P. Honess Memorial Award in Geosciences	2023
John & Elizabeth Teas Scholarship Fund in Geosciences	2023
Ellis George Scholarship in Geosciences	2022
Stephens First-Time Endow Scholarship in Geosciences	2022

SKILLS

Software: Proficient in ArcGIS Pro, Python, MATLAB, VS Code, GitHub, Adobe Illustrator, Microsoft suite. Familiar with Ames Stereo Pipeline, JMARS, WSL, Linux/Bash, R, RStudio, HTML, LaTeX, Overleaf.
Databases: UA HiRISE, PDS, Astropedia
Field: geomorphic mapping of Quaternary glacial and fluvial deposits, quantitative stratigraphy, Brunton compass measurements, geologic mapping, structural mapping, paleoenvironment analysis, fossil identification

INVOLVEMENT

Vice President and Founding Member | Penn State Paleontology Club	Apr 2024 – Apr 2025
Secretary | Penn State Pride of the Lions Pep Band	Aug 2021 – May 2025
Principal Instrumentalist | Penn State Concert Band	Aug 2021 – May 2025
Member | Penn State Geoscience Club	Aug 2022 – May 2025
Mentee | Association for Women Geoscientists	Oct 2022 – Apr 2024
Outdoor School Counselor | Shaver's Creek Environmental Center	Oct 2023, Apr 2024
Player – Chaser | Penn State Club Quidditch/Quadball	Aug 2022 – Oct 2023