

Current Position

Aug 2023-Present **Research Geologist Postdoctoral Scholar**, Smithsonian Institution, National Air and Space, Center for Earth and Planetary Studies

Education

2018-2023	Ph.D., Purdue University , Planetary Science <i>Advisor: Dr. Briony Horgan</i>
2016-2018	B.S., Western Washington University , Geology <i>Advisor: Dr. Melissa Rice</i>
2012-2015	A.S., Seattle Central Community College Geology <i>Advisor: Prof. Nancy Sola-Llonch</i>

Research Areas of Interest

- Planetary mission operations and instrument design
- Surface geology, primary and secondary mineralogy, and remote sensing of Earth and Mars
- Visible to near-infrared and thermal infrared spectroscopy
- Geologic mapping with visible imagery and hyperspectral datasets in ArcGIS Pro and IDL/ENVI
- Planetary analog field work

Professional Experience

May 2022-August 2022 **Intern**, Planetary Science Summer School, Jet Propulsion Laboratory (Virtual)

- Mock proposal of a NASA New Frontiers mission to return a sample from the surface of a comet (67P). Individual roles: reconnaissance instrument co-lead and ground operations engineer.

Aug. 2018-Present **"GeoKOP" (Keeper of the Plan)** for the Mars Science Laboratory *Curiosity* rover operations

- Help create and document science operations plan for the GeoMin group.

Aug. 2018-July 2023 **Research Assistant**, Earth, Atmospheric, and Planetary Sciences Department, Purdue University

- PhD research focusing on the depositional processes and alteration history of rocks and sediments in Gale crater, Mars

Sep. 2017-June 2018 **Laboratory Assistant**, Geology Department, Western Washington University

- Assisted with rock sample organization, chemical labeling, organization, and general cleanliness of department laboratories

June 2017-Aug. 2017 **Intern**, Lunar and Planetary Institute

- Mars analog study of clay minerals alteration via acid and temperature related to Curiosity rover datasets

Teaching Experience

Spring 2018, 2019 **Teaching Assistant**, Earth, Atmospheric, and Planetary Sciences Department, Purdue University

- EAPS 102: Earth Science for Elementary Education Majors

Journal Publications

1. **Rudolph, A.**, Horgan, B., Johnson, J., Bennett, K., Haber, J., Bell, J. F., et al. (2022). The distribution of clay minerals and their impact on diagenesis in Glen Torridon, Gale crater, Mars. *Journal of Geophysical Research: Planets*, 127, e2021JE007098. <https://doi.org/10.1029/2021JE007098>
2. Bennett, K. A., Fox, V. K., Bryk, A., Dietrich, W., Fedo, C., Edgar, L., **et al.** (2022). The Curiosity Rover's Exploration of Glen Torridon, Gale crater, Mars: An Overview of the Campaign and Scientific Results. *Journal of Geophysical Research: Planets*, 127, e2022JE007185. <https://doi.org/10.1029/2022JE007185>
3. Eng, A. M., Rice, M. S., Farrand, W. H., Johnson, J. R., Jacob, S., Rampe, E. B., **et al.** (submitted). A Mastcam Multispectral Investigation of Rock Variability in Gale Crater, Mars: Implications for Alteration in the Clay-Sulfate Transition of Mount Sharp. *Journal of Geophysical Research: Planets*.

First Author Conference and Symposium Presentations

1. A. Rudolph, B. Horgan, P. Sinha, R. Ewing, E. Rampe, M. 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, LPSC 54, abstract 2227.
2. A. Rudolph, B. Horgan, P. Sinha, R. Ewing, E. Rampe, M. Lapôtre, C. Bedford, M. Thorpe, L. Berger, E. Champion, M. Faragalli, P. 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 2022.
3. A. Rudolph, B. Horgan, P. Sinha, R. Ewing, E. Rampe, M. Lapôtre, M. Thorpe, C. Bedford, L. Berger, M. Hasson, K. Mason, M. Nachon, 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, LPSC 53, abstract #2252.

4. A. Rudolph, B. Horgan, J. R. Johnson, J. F. Bell III, K. Bennett, V. Fox, S. Jacob, S. Maurice, E. Rampe, M. Rice, C. Seeger, R. Wiens (2021) Diagenesis in the Glen Torridon region of Gale crater, Mars using VNIR spectral data from the Curiosity rover, *LPSC 52*, abstract #1502.
5. A. Rudolph, J. Haber, B. Horgan, K. Bennett, V. Fox, C. Seeger, M. Rice, J. R. Johnson, J. F. Bell III, S. Jacob, E. Rampe (2020) Evidence of Early and Late Diagenesis of Sediments from Past Habitable Environments in Gale Crater, Mars: A Mastcam Multispectral Perspective, *Goldschmidt*, doi:10.46427/gold2020.2239.
6. A. Rudolph, B. Horgan, K. Bennett, V. Fox, C. Seeger, M. Rice, J. R. Johnson, J. F. Bell III, S. Jacob, E. Rampe (2020) In Situ Mastcam Multispectral Analysis of Clay-Rich Sediments in the Glen Torridon Region of Mt. Sharp, Gale crater, Mars, *LPSC 51*, abstract #1189. *Cancelled to due COVID-19*.
7. A. Rudolph, B. Horgan, K. Bennett, M. Rice (2019) Sources of Sand in Mt. Sharp: Possible Volcanic Layers in Gale Crater, Mars, *LPSC 50*, abstract #1914.
8. A. Rudolph, B. Horgan, K. Bennett, K. Lewis, R. Anderson, N. Stein, M. Rice (2019) Sources of Sand in Mt. Sharp: Possible Volcanic Layers in Gale Crater, Mars, *Ninth International Conference on Mars*, abstract #6358.
9. A. Rudolph, M. Rice (2018) Mineralogic and Stratigraphic Analysis of Mount Sharp in Gale Crater, Mars, *Western Washington University Scholars Week*.
10. A. Rudolph, P. Craig, E. Rampe, J. Hogancamp (2018) Aqueous Alteration of Smectite in Acid-Sulfate Fluids: Implications for Clay Mineralogy at Gale Crater, *LPSC 49*, abstract #3001.
11. A. Rudolph, M. Kraft, M. Rice (2017) Spectral, Mineralogical, and Textural Changes Associated with Olivine Alteration in Naturally Weathered Dunite, *Geological Society of America Annual Meeting*, doi:10.1130/abs/2017AM-307613.
12. A. Rudolph, C. Goldsmith-Albright, G. Wilson, N. Sola-Llonch (2016) Investigation of Source and Deposition of Glacial Erratic on South Seattle College Campus, *University of Washington Undergraduate Research Symposium*.

Awards, Grants, and Fellowships

2021-2022	Zonta International Amelia Earhart Fellowship
2021, '22	Cedric J Newby Award
2020-2023	National Science Foundation Graduate Research Fellowship
2020	Lunar and Planetary Institute Career Development Award
2020	IndianaView Remote Sensing Scholarship
2020	Purdue EAPS Graduate Student Expo Outstanding Poster Presentation Award
2020, '21, '22	Michael C. Gardner Memorial Award
2019-2020	Indiana Space Grant Consortium Doctoral Fellowship
2019	Donald W. Levandowski Memorial Scholarship
2018	Purdue College of Science Women in Science Programs Travel Grant
2017	Kurt Schmierer Memorial Endowment
2016	Antoni "Jontek" Wodzicki Geology Scholarship

Service

STUDENT SERVICE

2022-2023 **Peer Mentor**, Earth, Atmospheric, and Planetary Sciences Department, Purdue University

- One-on-one mentoring with incoming graduate students in the EAPS department.

2020-2022 **Graduate Assistant Coordinator**, Undergraduate Women in Science Programs, Purdue University

- Advising undergraduate students in coordinating in-person monthly events for the undergraduate WISP group

2019-2021 **Earth, Atmospheric, and Planetary Sciences Departmental Representative**, Graduate Women in Science Programs, Purdue University

- Coordinate monthly events for the graduate Women in Science Program group with invited speakers that cover a range of topics from life skills to career skills.

2019-2021 **Social Committee Member**, EAPS department Graduate Student Association, Purdue University

- co-organize social events for graduate students in the EAPS department.

2016-2018 **Student Chapter Officer**, Society of Economic Geologists, Western Washington University

- Attended and organized biweekly meetings which consist of talks from industry professional, community hikes to share local geology facts with general population, field trips to geologically relevant sites, organizing attendance of local geology conferences.

2016-2018 **Student Chapter Member**, Women in Geology, Western Washington University

- Attended biweekly meetings consisting of providing a safe space within the department, volunteering for events interacting with K-12 students interested in geology.

COMMUNITY SERVICE

2022 **Community College Student Chat (Virtual)**, Ivy Tech Community College

- Introducing community college students to planetary science and highlighting opportunities in the field that are available to them.

2022 **Invited Speaker: Zonta Amelia Earhart Program (Virtual)**, Zonta International

- Invited speaker event sharing my research with members of the Zonta International group.

2022 **Invited Speaker: Zonta E-Club of USA 3 (Virtual)**, Zonta International

- Invited speaker event sharing my research with members of the Zonta International group.

2021 **Invited Speaker: Zonta District 6 Conference** Zonta International

- Invited speaker event sharing my research with members of the Zonta International group in Chicago, Illinois

2021 **Invited Speaker: Research-O-Rama!**, Purdue Graduate Student Government Program Event at West Lafayette Public Library

- Invited speaker event sharing my research with members of the community in West Lafayette, Indiana

2021 **Panel Member**, Western Washington University NSF GRFP workshop

- Panel member speaking on my experience applying to the NSF GRFP and giving attendees tips for their applications.

2020 **Invited Speaker: Conquering the Application Process**, Undergraduate Women in Science Program Event

- Invited speaker event advising undergraduate women on the graduate school application process.

2020 **Alumni Panel Member**, Western Washington University

- Panel member at fundraising event for Western Washington University Geology department.

2020 **Panel Member**, Jet Propulsion Laboratory Intern Program

- Panel member speaking on applying to graduate school from the perspective of a non-traditional transfer student.

2020, 2023 **Executive Secretary**, NASA Review Panel

- Take notes summarizing discussions of proposals reviewed by the panel.

2019-present **Letters to a Pre-Scientist Mentor**

- Correspond with a K-12 student to encourage a career in STEM fields, talk about my journey as a scientist, and answer any science questions the student may have.

References (More available upon request)

- [Dr. Briony Horgan](mailto:Dr.Briony.Horgan@purdue.edu): briony@purdue.edu
- [Connie Kaspar](mailto:Connie.Kaspar@purdue.edu): brophyc@purdue.edu
- [Dr. Kristen Bennett](mailto:Dr.Kristen.Bennett@usgs.gov): kbennett@usgs.gov