

Education

University of Arkansas 2016- 2022

- PhD Space and Planetary Sciences, 3.879 GPA
- Dissertation: Understanding Martian Salts and Their Implications for Liquid Water

University of Texas at El Paso 2014- 2016

- MS Geological Sciences, 4.0 GPA
- Thesis: Discovering lunar subsurface cavities using thermal inertia and temperature maximum to minimum ratios

University of Arkansas 2010- 2013

- BS Geology
- BS Earth Sciences

Selected Experience

Post-Doctoral Fellow, Lunar and Planetary Institute (USRA) August 2022- Present

- Spectral analysis of field samples from magmatic intrusions within sulfur-rich sediments, analogous to past Martian environments
- Numerical modeling of the constraints on deliquescence of calcium perchlorate

August 2016- August 2022 University of Arkansas- Research Assistant/PhD Student

- Worked on the Ares Mars Simulation Chamber at the University of Arkansas Keck Lab. The chamber can simulate martian conditions (temperature, pressure, atmosphere) allowing to better understand surface atmosphere interactions. I worked on different satly regolith mixtures at varying temperatures and humidities to study adsorption and deliquescence in the near subsurface of Mars.

May 2018- September 2018 Planetary Science Institute (PSI)/Green Bank Observatory- Student Intern

- Worked with Hanna Sizemore to develop a thermodynamic molecular diffusion model to calculate how much water vapor diffuses through the martian regolith and ice table to create and build ice lens as well as build onto the ice table below.

January 2013- May 2016 University of Texas at El Paso- Master's Student

- Wrote MATLAB codes to locate lunar subsurface cavities using thermal inertia and temperature differences. These subsurface cavities are an ideal location for human exploration bases due to diurnal temperature swings, radiation, and micrometeorite bombardment as well an unique geological sites.

August 2015- December 2015 NASA Langley Research Center- Student Intern

- Combined DISCOVER-AQ with geographic information system (GIS) software to create a demo presentation that will be used throughout the science directorate as a new way to process, analysis, and display data. This project is still at the exploring stage to seek potential application of GIS software in analysis of airborne and ground in-situ observations. Analysis of the data

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based on the data visualization plots to allow a detailed examination of the temporal and spatial variations in vertical profiles of various atmospheric species with different chemical and physical properties.

June 2015- August 2015 NASA Langley Research Center- Student Intern

- Obtained aerosol optical thickness and Angstrom exponents from direct measurements with sun photometers. Gathered aerosol concentrations and weather data from AERONET, CAPABLE, and the Virginia Department of Environmental Quality. All data is analyzed via Igor Pro.

Publications

- Slank, R. A., Rivera-Valentín, E. G., Chevrier, V. F., 2022, Experimental Constraints on Deliquescence of Calcium Perchlorate Mixed with a Mars Regolith Analog. *Planet Sci. J.*, 3 (154), doi.org/10.3847/PSJ/ac75c4.

Grants

- PSTAR: Detectability of magmatic intrusions within sulfur-rich sediments for Martian mineralogical and in-situ operational analyses, grant # 80NSSC18K1686
 - PI, 2022-Present
- HW: Experimental study of brine production in the Martian regolith: Insights into present-day habitability, grant # 80NSSC20K0227
 - Co-I, 2022-Present
 - Graduate Student, 2019-2022

Selected Conferences and Presentations (out of 28)

- Astrobiology Science Conference (AbSciCon) 2022 oral presentation- Experimental Constraints on Deliquescence of a Salty Calcium Perchlorate Mars Regolith Analog: Implications for Habitability #108-06 (Slank et al.)
- University of Arkansas Research Colloquium 2022, won 1st place- Experimental Constraints on Water Vapor Exchange with a Salty Mars Regolith Analog: Implications for Brine Formation
- Lunar and Planetary Science Conference (LPSC) 2022 poster presentation- Experimental Constraints on Water Vapor Exchange with a Salty Mars Regolith Analog: Implications for Brine Formation #2166 (Slank et al.)
- Brines Across the Solar System: Modern Brines 2021 oral presentation- Experimental Investigation of the Near-Surface Martian Water Cycle with a Salty Regolith: Implications for Brine Formation # 6026 (Slank et al.)
- Lunar and Planetary Science Conference (LPSC) 2021 oral presentation- Experimental Investigation of Deliquescence-Driven Liquid Brine Formation with Calcium Perchlorate in a Mars-Like Environment # 2338 (Slank and Chevrier)
- Invited talk at the Fayetteville Public Library 2021- A Look at the Red Planet and the Perseverance Rover
- Invited talk at the Fayetteville Public Library 2019- Mars: A Look at the Red Planet
- Lunar and Planetary Science Conference (LPSC) 2019 oral presentation- Experimental Simulation of Calcium Perchlorate Liquid Brine Formation through Deliquescence on Mars (Slank et al.)
- Keynote talk at the Green Bank Observatory 2018- A Look Inside the Red Planet: The InSight Mission

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- Invited talk Science Café, Green Bank Observatory 2018- Discussion of the Subglacial Lake on Mars
- Invited talk Star Quest 2018- Water on Mars
- Mars Workshop on Amazonian and Present-Day Climate 2018 oral presentation- Experimental Simulation of Deliquescence and Implications for Brine Formation at the Martian Surface (Slank et al.)
- Invited talk to NASA Headquarters and project head of TEMPO 2015- over summer 2015 internship
- UTEP Student Colloquium 2015 oral presentation- Examination of Lunar Subsurface Cavities Using Thermal Inertia and Temperature Maximum to Minimum Ratios (Slank and Hurtado)

Professional Services

- Moderator for oral session at the Lunar and Planetary Sciences Conference, 2022
- Executive Secretary for NASA Panel, January 2022
- Executive Secretary for NASA Panel, November 2021
- Session chair at Brines Across the Solar System: Modern Brines 2021
- Executive Secretary for NASA Panel, April 2021
- Dwornik Judge at the Lunar and Planetary Sciences Conference, 2021, 2022

Selected Leadership Positions (out of 24)

- Mars Lab Manager for the Keck Laboratory at the University of Arkansas, 2016- 2022
- Graduate and Professional Student Congress (GPSC) President Pro Tempore, 2019- 2021
- Chair of Ad Hoc committee to address concerns graduate and professional student concerns about sexual violence at the University of Arkansas, 2021
- Dean's Advisory Board, Space and Planetary Science's Representative, 2020- 2022
- Co-Chair of Policy and Procedures Committee for GPSC, 2020-2021
- GPSC Ethics Chair, 2019- 2020
- All University Conduct Board Graduate Student Representative, 2017- 2022
- Space and Planetary Sciences Student Representative, 2017-2019
- Scuba Teaching Assistant (TA) at the University of Arkansas, 2012- 2013 and 2016- 2019
- Secretary of American Association of Petroleum Geologists (AAPG), 2014- 2015
- President of Alpha Phi Omega (APO), 2013- 2013
- Head Student Program Coordinator for Friday Night Live (FNL), 2012- 2013
- Director of Accessibility, Associated Student Government (ASG) cabinet, 2012- 2013
- Fundraising Chair for National Residence Hall Honorary (NRHH), 2013-2013
- Treasurer of National Residence Hall Honorary (NRHH), 2012- 2013
- Accessibility Committee Chair, 2012- 2013
- Fresh HOGS mentor, 2012- 2013
- Residents' Interhall Congress (RIC) Secretary Treasurer, 2011- 2012
- Secretary of National Residence Hall Honorary, (NRHH), 2011-2012

Selected Other Activities

- Pen Pal for Letters to Pre-Scientists, 2018- Present
- Orchestrated a peaceful protest concerning how the University of Arkansas was handling sexual violence, 2021

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- Served on COVID-19 committees as Graduate Student Representative, 2020-2021
- Participated in multiple community outreach events, including 7 to different elementary and middle schools
- Attended Geology Field Camp in Dillon, Montana for 6 weeks hosted by the University of Arkansas, 2013
- Presented at Diversity Leadership Impact (DLI) in 2012
- Organized and implemented 30 programs at the University of Arkansas

Academic Awards and Honors

- Graduate and Professional Student inaugural Presidential Service Award, 2021
- Inaugural Graduate Student Mentorship Award, 2021
- Graduate and Professional Student Leadership Award, 2021
- Graduate and Professional Student Alex Marino Service Award, 2021
- Graduate and Professional Student inaugural Leadership Award, 2020
- PEO local scholarship, 2020
- Distinguished Doctoral Fellowship, 2016- 2020
- Distinguished Graduating Student Leader medal, 2013
- Distinguished Service Key for Alpha Phi Omega, 2013
- 700 service hour award, 2013
- Hal S. Dean West Texas Geology Foundation scholarship, 2015
- Doy L. Zachry Geology Scholarship, 2013
- Outstanding Service Pledge, spring 2012 semester
- NRHH Outstanding Leadership Pin and Bronze Award, 2012
- Har-Ber High School Valedictorian, 2010
- Northwest Arkansas Heisman Trophy Winner, 2010
- Junior Rotarian, 2010