

Alyssa C. Mills
Graduate Teaching and Research Assistant
Department of Geological Sciences
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Education

- Current **Master's Student:** Department of Geological Sciences, University of Alabama, Tuscaloosa, AL, USA.
 Advisor: Alain Plattner
- 2018 **B.S. Geology (with honors):** Department of Geology, University of Maryland, College Park, MD, USA.
 Thesis: Elastic Flexure Models for Sputnik Planitia on Pluto
 Advisor: Professor Laurent G.J. Montési
- 2018 **B.S. Astronomy:** Department of Astronomy, University of Maryland, College Park, MD, USA.
- 2018 **Geological Field Camp:** School of Earth and Environmental Science, University of St. Andrews, St. Andrews, Scotland, UK.

Experience

Aug 2019- Current: **Graduate Research Assistant**

Department of Geological Sciences, The University of Alabama- Tuscaloosa, AL

Supervisor: Dr. Alain Plattner

- Create crustal magnetic field inversion models for Mercury and Ganymede to understand connections to the interior and estimate the depth to sources
- Compare Mercury and Ganymede based on similarities and dissimilarities

Aug 2019- Dec 2019: **Graduate Teaching Assistant**

Department of Geological Science, The University of Alabama- Tuscaloosa, AL

Supervisor: Dr. Delores Robinson

- Instructor for 3 sections of Geo101 lab for Fall 2019, teaching students introductory topics of geology with hands-on lab work

June 2019- Aug 2019: **Research Assistant**

NASA Goddard Space Flight Center- Greenbelt, MD

- Obtained topographic profiles of cryolava domes on Europa from Galileo data to determine elastic thickness and heat flux
- Determined existence of local thinning due to cryovolcanism on Europa

Jan 2019- June 2019: **Physical Research Scientist**

Center for Earth and Planetary Studies, Smithsonian Institution- District of Columbia

- Compiled a detailed database that includes the locations, dimensions, shapes, and geological settings of domes on Europa that formed from extrusive cryovolcanism

Jan 2015-Feb 2019: **Agronomy Field Trials Research Assistant**

University of Maryland- College Park, MD

- Assisted in monitoring, planting, harvesting, and analyzing Maryland variety trials, a Misted Nursery, an Aragonite study, and other various studies that incorporate corn, soybeans, and wheat
- Prepare weather summaries for the Agronomy program of the Western and Eastern Shores of Maryland

June 2017- Aug 2017: **NASA Intern**

NASA Goddard Space Flight Center- Greenbelt, MD

- Conducted a research project on the potential of a positive correlation between prominent meteor showers to the elevated dust impacts detected by the Wind spacecraft, using Matlab
- Explored possible explanations of the flux in dust impact counts Wind experienced, mostly looking at comet dust streams and interstellar dust

Selected Publications

Mills, A.C. and Montesi, L.G.J., 2019. *Evidence of a High Heat Flux around Sputnik Planitia on Pluto through the Analysis of Flexure Models*. Nature Geoscience, In Preparation.

Abstracts and Conference Proceedings

Mills, A.C. and Montesi, L.G.J., *Elastic Flexure Around Sputnik Planitia, Pluto, and Evidence for a Very High Heat Flux*, Abstract #7030, Pluto Systems After New Horizons 2019.

Mills, A.C. and Montesi, L.G.J., *Elastic Flexure Around Sputnik Planitia, Pluto, and Evidence for a Very High Heat Flux*, Abstract #1995, Lunar Planetary Science Conference 2019.

Mills, A.C. and Montesi, L.G.J., *Determining the Elastic Thickness of Sputnik Planitia on Pluto and its Surrounding Using Topography and Inverse Theory*, Abstract #441608, American Geophysical Union (AGU) Fall Meeting, Washington, DC, December 2018.

St. Cyr, O.C., Wilson, L.B., Rockcliffe, K., **Mills, A.**, Nieves-Chinchilla, T., Adrian, M.L., and Malaspina, D., *Investigations of Wind/WAVES Dust Impacts*, Abstract #SH23D-2682, American Geophysical Union (AGU) Fall Meeting, New Orleans, LA, December 2017.

Meetings and Workshops (Attendee Only)

NASA Outer Planet Assessment Group Meeting (OPAG), 2019

Ocean Worlds 4 Meeting, 2019

Honors and Awards

Awarded at The University of Alabama

Fall 2019-Spring 2020 **Lindhahl Scholarship**

Awarded at University of Maryland

Awarded Dec 2018 **Department Honors (Geology)**

Fall 2017-Winter 2018	Maryland Space Grant Consortium Scholarship
Fall 2018	Jeffrey and Lily Chen Scholarship
Summer 2018	CMNS Undergraduate Summer Research, Travel, and Educational Enrichment Award
Summer 2018	Geology Department Field Camp Support Scholarship
Fall 2017-Spring 2018	Mary and Robert Ross Scholarship
Fall 2016-Spring 2018	College of Computer Science, Mathematics, and Natural Sciences Scholarship
Fall 2016-Spring 2017	Dean's List at University of Maryland
Fall 2014	President's List at Harford Community College

Public Outreach

Dec 2016	Guest speaker at University of Maryland Observatory, presented on identifying flares and temperature of dM and dMe stars and possible correlation, using the iPTF database
Mar 2018	Geology Maryland Day volunteer
Fall 2018	Peer mentored two 6 th grade students from Palm Springs, California
Nov 2018	Pop-Up Exhibit, "Grain Elevator". Smithsonian American History Museum. 4th Annual Smithsonian Food History Weekend. 2018.

Memberships

- American Geophysical Union
- Alpha Sigma Pi

Skills

- Proficient in Matlab, GMT, and ArcGIS
- Proficient in MS Powerpoint, MS Word, MS Excel, MS Publisher
- Familiarity with NASA websites containing spacecraft data e.g. New Horizons, Wind, and Galileo
- Familiarity with IDL
- Using structural and stratigraphic geologic mapping techniques (e.g. stratigraphic columns, cross sections, signal processing in Matlab of seismometers, gravimeters, etc.)
- Inverse theory
- Signal processing
- Using ANOVA (used for analysis of variance)
- Electron Probe Microanalysis

- Optical Petrographic analysis
- Laser Ablation ICP-MS analysis
- Aperture photometry
- CCD image calibration/ image processing
- Telescope operations
- Various mapping techniques: structural, stratigraphic, etc
- Biomass analysis
- Working with databases, creating and analyzing (e.g. NASA's Wind database)
- Field Analysis and Laboratory experience
- Resourcefulness
- Ability to work independently