SAMANTHA A. MORUZZI

Postdoctoral Research Associate | smoruzzi@arizona.edu

EMPLOYMENT

Postdoctoral Research Associate 2025 - Present
Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ

Graduate Research Associate 2020 - 2025
Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ

EDUCATION

PhD **University of Arizona**, Lunar and Planetary Laboratory 2025
Thesis Advisor: Dr. Jeffrey Andrews-Hanna
Planetary Science
Minor: Geoscience
GPA: 4.0

MS **The University of Arizona**, Lunar and Planetary Laboratory 2023
Thesis Advisor: Dr. Jeffrey Andrews-Hanna
Planetary Science
GPA: 4.0

BS **Cornell University**, Earth and Atmospheric Science 2020
Concentration: Planetary Science
Minor: Italian
GPA: 3.7
Senior Honors Thesis: "Investigating Sub-Resolution Surface Properties of Comet 67P/Churyumov-Gerasimenko from Optical Photometry and Hapke Modeling"

PUBLICATIONS

First-author publications:

Moruzzi, S. A., Andrews-Hanna, J. C., Schenk, P., & Johnson, B. C. (2023). Pluto's Sputnik basin as a peak-ring or multiring basin: A comparative study. *Icarus*, *405*, 115721.

Moruzzi, S. A., Kiefer, W. S., & Andrews-Hanna, J. C. (2023). Thrust faulting on Venus: tectonic modeling of the Vedma Dorsa Ridge Belt. *Icarus*, 115378.

Moruzzi, S.A., Andrews-Hanna, J.C., Broquet, A., Schenk, P. (2025), Compensation and Geophysical Evolution of Sputnik Basin on Pluto. *JGR: Planets*. (*Manuscript In Review).*

Other publications:

Jindal, A. S., Birch. S. P. D., Hayes, A. G., Özyurt, F. P., Issah, A. B., **Moruzzi, S. A**., Barrington, M. N., Soderblom, J. M., Kirk, R. L., Marchall, R., Vincent., J. B. (2024). Measuring Erosional and

Depositional Patterns Across Comet 67P's Imhotep Region. *Journal of Geophysical Research-Planets*, 129.

Reath, K., Pritchard, M. E., **Moruzzi, S**., Alcott, A., Coppola, D., & Pieri, D. (2019). The AVTOD (ASTER Volcanic Thermal Output Database) Latin America archive. *Journal of Volcanology and Geothermal Research*.

Reath, K.A., Pritchard, M., Poland, M., **et al**. (2019). Thermal, deformation, and degassing remote sensing time series (CE 2000–2017) at the 47 most active volcanoes in Latin America: Implications for volcanic systems. *Journal of Geophysical Research-Solid Earth*, 124.

Manuscripts in Prep.

Moruzzi, S.A., Andrews-Hanna, J.C., (2025), Refreezing Beneath Sputnik Basin: Thermal Modeling of Pluto's Ice Shell. *Manuscript in Prep.*

Moruzzi, S.A., Corlies, P., Hayes, A. G., Birch, S. P. D., Soderblom, J. M., Kutsop, N., Barrington, M. N., Jindal, A. S., Helfenstein, P. (2025). Sub-Resolution Properties of Comet 67P using Hapke Modeling. *Manuscript in Prep*.

HONORS AND AWARDS

Zonta International Amelia Earhart Fellowship	2024 - 2025
University of Arizona Galileo Circle Scholar	2024 - 2025
Future Investigators in NASA Earth and Space Science and Technology (FINESST) Grant	2022 - 2025
NSF Graduate Research Fellowship Program Honorable Mention	2020
CALS Academic Excellence Award in Earth and Atmospheric Science	2020
Michael W. Mitchell Memorial Fund/Cornell EAS Scholarship	2019
Society of Exploration Geophysicists/Excel Geophysical Services Scholarship	2019
American Association of Petroleum Geologists/L. Austin Weeks Undergraduate Award	2019
Society of Exploration Geophysicists/Earl D. & Reba C. Griffin Memorial Scholarship	2018
American Institute of Professional Geologists Undergraduate Scholarship	2018
Cornell Engineering Learning Initiatives Research Student Grant, Summer	2017
Society of Exploration Geophysicists/Landmark Scholarship	2017
National Organization of Italian American Women Scholarship Award	2017
Society of Exploration Geophysicists/Anadarko Scholarship	2016
Cornell Dean's List 5 Semesters	

MISSION INVOLVEMENT

EnVision Venus Synthetic Aperture Radar (VenSAR) 2025 – Present
VenSAR Science Team Collaborator

Space Exploration Synthetic Aperture Radar (SESAR – LITE) 2025 – Present
Science Team Collaborator

INVITED TALKS

Geological Society of America October 2023

GSA Connects, Pittsburgh, PA | Talk Title: “Thrust Faulting on Venus: Tectonic Modeling of the Vedma Dorsa Ridge Belt”

New Horizons Mission Science Team Meeting January 2023
Johns Hopkins Applied Physics Laboratory, Laurel, MD | Talk Title: “Pluto’s Sputnik Basin as a Peak or Multiring Basin: A Comparative Study”

CONFERENCE PRESENTATIONS AND SEMINARS

Progress in Understanding the Pluto System: 10 Years After Flyby July 2025
Johns Hopkins Applied Physics Laboratory, Laurel, MD | Talk Title: “Geophysical Evolution of Sputnik Basin on Pluto: Insights into Pluto’s Interior”

The Lunar and Planetary Science Conference March 2025
LPSC, Houston, TX | Poster Title: “Refreezing Beneath Sputnik Basin: Thermal Modeling of Pluto’s Ice Shell”
Session Moderator: The Kuiper Belt from Triton to Eris and Beyond

The Lunar and Planetary Science Conference March 2023, 2024
LPSC, Houston, TX | Poster Title: “Structure and Geophysical Evolution of Sputnik Basin on Pluto”

The Lunar and Planetary Science Conference March 2022
LPSC, Houston, TX | Talk Title: “Pluto’s Sputnik Basin as a Peak-ring Basin: A Comparative Analysis”

The Lunar and Planetary Laboratory Conference August 2021
LPLC, Tucson, AZ | Talk Title: “Constraining the Compensation State, Structure and Geophysical Evolution of Sputnik Basin on Pluto”

The Lunar and Planetary Science Conference March 2021
LPSC, Houston, TX- Virtual due to COVID-19 Pandemic| Talk Title: “Constraining the Compensation State, Structure and Geophysical Evolution of Sputnik Basin on Pluto”

The Lunar and Planetary Science Conference March 2021
LPSC, Houston, TX- Virtual due to COVID-19 Pandemic| Poster Title: “Investigating Sub-Resolution Surface Properties of Comet 67P/Churyumov-Gerasimenko from Optical Photometry”

The Lunar and Planetary Science Conference March 2020
LPSC, Houston, TX- Canceled due to COVID-19 Pandemic| Poster Title: “Investigating Sub-Resolution Surface Properties of Comet 67P/Churyumov-Gerasimenko from Optical Photometry”

American Geophysical Union Conference Fall Meeting December 2019
AGU Fall Meeting, San Francisco| Poster Title: “Investigating Sub-Resolution Surface Properties of Comet 67P/Churyumov-Gerasimenko from Optical Photometry”

The 2019 LPI Summer Intern Conference August 2019
The Lunar and Planetary Institute, Houston, TX| Talk Title: “Thrust Faulting on Venus: Tectonic Modeling of the Vedma Dorsa Ridge Belt”

The Scientista Symposium March 2019
The Scientista Symposium, Boston, MA | Poster Title: “Investigating the Surface Properties of Comet 67P/Churyumov-Gerasimenko from Optical Photometry”

Earth and Atmospheric Science Student Association Fall 2018, Spring 2019 Symposium
Cornell University, Ithaca, NY| Poster Title: "Characterizing Morphologies of Comet 67P/Churyumov-Gerasimenko"
Coordinator and mediator for Undergraduate Research Presentations

Science of Earth Systems Student Association Spring 2017, Fall 2017, Spring 2018 Symposium
Cornell University, Ithaca, NY | Poster Title: "Satellite Detection of Thermal Anomalies at Latin American Volcanoes"
Coordinator and mediator for Honors Thesis Presentations

PUBLIC TALKS

UA Osher Lifelong Learning Institute February 2025
Tucson, AZ | Talk Title: "The Dwarf Planet Pluto: A Geologically Active World, a Mysterious Interior, and a Blueprint for Investigating Icy Worlds"

Sun City Oro Valley Astronomy Club November 2022
Oro Valley, AZ | Talk Title: "Planet Wars: A New Horizon(s) and Pluto Strikes Back"

RESEARCH EXPERIENCE

Lunar and Planetary Laboratory-University of Arizona, Tucson, AZ August 2025-Present
Postdoctoral Research Associate, Advisor: Dr. Lynn Carter

- Target analysis for VenSAR Science Team
- Radar performance analysis for SESAR-LITE

Lunar and Planetary Laboratory-University of Arizona, Tucson, AZ August 2020-August 2025
Graduate Research Assistant, Advisor: Dr. Jeff Andrews-Hanna

- Adapted and utilized geophysical models of Sputnik Basin on Pluto to constrain its compensation state, subsurface structure, and structural evolution.
- Modeled the thermal evolution of Pluto's ice shell to understand refreezing of the potential ocean uplift beneath Sputnik basin and the basin's flexural response. Quantifying that response through modeling the stress and strain field in comparison to the orientation of proximate tectonic features.
- Analyzed the topography and morphological parameters of Sputnik Basin and 23 inner solar system peak/multi-ring basins to support the hypothesis that Sputnik Basin may be a peak/ring basin.

Cornell University, Ithaca, NY Sept. 2018-Sept. 2020
Student Research Assistant, Supervisor: Dr. Alexander Hayes
Senior Honors Thesis Research

- Analyzed photometric properties of characteristic terrain types of Comet 67P/Churyumov-Gerasimenko as observed by the European Space Agency (ESA) Rosetta's OSIRIS narrow angle camera.
- Created high resolution phase curves comparing radiance factor, I/F, with phase angles for 11 available filter wavelengths and fitting them to Hapke photometric models to derive the best fit coefficients.
- Constrained roughness factors and dielectric constants in each region indicative of erosional and active surface processes.

LPI Summer Intern Program in Planetary Science, Houston, TX Summer 2019
LPI Summer Intern, Supervisor: Dr. Walter S. Kiefer

- Performed elastic dislocation modeling of thrust faulting along the Vedma Dorsa Ridge Belt in Llorona/Vellamo Planitiae on Venus to constrain faulting parameters such as fault displacement, faulted layer thickness and fault dip angle.
- Determined estimates for paleothermal gradient and lithospheric heat flux at the time of ridge belt formation based on best fit values for faulted layer thickness, improving our understanding of the lithospheric properties and conditions under which the ridge belt formed.

Cornell University, Ithaca, NY Summer 2018
Student Research Assistant, Supervisor: Dr. Matthew Pritchard and Dr. Rowena Lohman

- Acquired and analyzed InSAR data of Ithaca, Lansing and Tully Valley, NY to identify deformation and subsidence signals in these areas. Research in conjunction with CLEAN and Cornell University's Earth Source Heat Project

Cornell University, Ithaca, NY Jan. 2017-May 2018
Student Research Assistant, Supervisor: Dr. Matthew Pritchard

- Created a database of temperature time series for approximately 330 volcanoes in Latin America using thermal images from the NASA/Japan funded ASTER (Advanced Spaceborne Thermal Emission Reflection Radiometer) mission.
- Studied thermal anomalies as precursors to eruptions and comparing the manual detection to the algorithmic detection by JPL created and run AVA (ASTER Volcano Archive)

TEACHING EXPERIENCE

The Lunar and Planetary Laboratory, Tucson, AZ Spring 2024
Teaching Assistant - PTYS 170A1: Alien Earths

- Graded labs, homework, and semester projects for an undergraduate course of ~ 120 students.
- Taught lectures on relative age dating/stratigraphy and their application planetary science.
- Developed and conducted in-class lab assignments on planetary geomorphology and analogs.

Cornell University, Ithaca NY Fall 2017-Fall 2019
Teaching Assistant - EAS 1540/1560: Introduction to Oceanography

- Graded labs, homework and proctored examinations for undergraduate course of ~ 1100 students
- Facilitated weekly laboratory sections.
- Worked with other teaching assistants and professor to develop projects and bi-weekly newsletters to engage students' interest in the course material.

The Lunar and Planetary Institute, Houston, TX July 2019
Sky Fest-Apollo 11: Looking Back to Move Forward

- Led educational activities on lunar phases and the Earth's interior for elementary and middle school students.

Cornell University, Ithaca NY April 2019
Cornell University SPLASH!: Introduction to Earth and Space Sciences

- Taught an introductory course on Earth and Space Sciences to middle school and high school students from around the northeast.
- Course emphasized the connections between aspects of the environment as well as the solar system.

Cornell University, Ithaca NY April 2019
Expanding Your Horizons: How to Make a Comet

- Taught a course on the importance of comets in our solar system and their role in the origin of life to middle school girls from the Ithaca area.
- Course included a hands-on experiment on how to artificially make a comet.

ADDITIONAL SKILLS

Proposal Writing: NASA FINESST Grant (Received); NSF Graduate Research Fellowship (2020 Honorable Mention); Cornell University Engineering Learning Initiatives Summer Research Grant (Received)
Programming: Unix/Linux, Python, MATLAB
Applications: Coulomb 3.3, ArcGIS, ENVI, USGS Glovis, NASA Reverb Echo, ASF Vertex Data Portal, ISCE, Seismic Unix, Oasis Montage: Geosoft, Google Earth Engine
Publication Review: 1 review requested by *JGR: Planets*

AFFILIATIONS

Graduate Student Colloquium Co-Chair May 2023-Present
Co-Chair | Lunar and Planetary Laboratory
• Organize graduate student colloquium throughout the semester and serve as mediator for the seminars

Curriculum Committee May 2021-Present
Graduate Student Representative | Lunar and Planetary Laboratory
• Review proposed course syllabi, providing feedback and comments on each course's role in the department's curriculum
• Assess the department's current curriculum and provide commentary and suggestions for the core courses that is presented to the faculty.

The Art of Planetary Science (TAPS) Committee / Social Media Chair 2021-2024
• Organize and run annual TAPS show held at the Lunar and Planetary Laboratory in Tucson, AZ, including advertising, intake and selection of exhibition submissions, and exhibition guidance during show
• Create engaging content for the TAPS social media pages to advertise the exhibition, highlight the in-depth space science history of the University of Arizona and Tucson, an interact with the local community.

The Scientista Foundation Fall 2016-Spring 2020
Cornell University Chapter
• Presented research at the 2019 annual national symposium.
• Organized leadership summits for middle school and high school female students to encourage their interest in STEM.
• Networked with professionals in fields of interest.

Earth and Atmospheric Science Student Association (EASSA) Fall 2016-Spring 2020
Co-President| Cornell University
• Organize biannual undergraduate research symposiums.
• Coordinate information sessions regarding graduate school, course selections and networking events for Earth and Atmospheric Science majors.

Hudson Mohawk Professional Geologists Association and NYSCPG Student Member June 2015-2020
• Attend meetings and discuss careers and geological research with professional geologists in the Capital District.