



2024 Amelia Earhart Fellow

Samantha Moruzzi



Citizenship: United States

Proposed Program: Planetary Sciences at the University of Arizona, USA

Samantha Moruzzi has always been a firm believer that space sciences is intimately tied to geology. She graduated from Cornell University in 2020 with a Bachelor of Science in Earth and atmospheric science with a concentration in planetary science. Throughout her college career, she conducted geophysical research that spanned the solar system: modeling faults on Venus, surveying terrains on Comet 67P and analyzing thermal signatures of volcanoes in Latin America from satellite data.

She is currently a Ph.D. candidate at the Lunar and Planetary Laboratory at the University of Arizona and is on track for completion in mid-2025. She is developing geophysical models of impact basins in data-limited environments such as Pluto as windows into planetary interiors. She utilizes the topography data of the Sputnik impact basin and the widespread surface fractures returned from NASA's New Horizons mission to understand the interior structure of Pluto, its formation and its geophysical evolution. The first part of her thesis showed that Sputnik basin's topographic structure is morphologically and statistically consistent with large impact basins in inner solar system objects. This discovery has been a key study in understanding the universal processes governing impacts on rocky and icy solar system objects.

Ms. Moruzzi is currently generating a local gravity field over the Sputnik basin based on an approach that was once used to study the gravity signatures beneath Earth's oceans. Her work has put constraints on surface properties and interior composition, calling into question whether Pluto has a subsurface ocean like other icy moons in the outer solar system.

After completing her Ph.D., she intends to pursue a postdoctoral position in geophysics and planetary science, pursuing a career as a research scientist at a NASA-funded research institution. In her free time, she enjoys hiking, reading and amateur astronomy.