



2021 Amelia Earhart Fellow

# Indujaa Ganesh



**Citizenship:** India

**Proposed Program:** Planetary Science at the University of Arizona (UArizona)

Ms. Ganesh's research focuses on studies of explosive volcanism on Earth, Mars and Venus, using a combination of radar remote sensing and numerical models. On Earth, we see a variety of volcanic landforms formed by both effusive and explosive (or pyroclastic) eruptions, indicating different magma compositions, eruptions through oceanic and continental crusts, and varying tectonic environments. On other planets, the lack of plate tectonics and differences in size and composition result in volcanic features that are mostly formed by effusive activity. Explosive activity, while less common, is linked to excess volatiles like water in the planet's interior. Therefore, investigating explosive volcanism is important for understanding the volatile inventory of terrestrial planets.

Sounding radars are effective in studying low-density deposits, like those resulting from explosive activity. Ms. Ganesh uses data from Shallow Subsurface Radar (SHARAD), a radar instrument currently orbiting Mars, to identify buried pyroclastic deposits in the shallow subsurface of Martian shield volcanoes. She is also interested in understanding products of explosive eruptions on Venus. Explosive eruptions on Venus result in a hot, flowing mixture of torn-apart magma and gases called pyroclastic flows. Ms. Ganesh uses numerical models to simulate the transport of these flows under Venus conditions and compare them with synthetic aperture radar data to determine eruption parameters that can be used to constrain magma volatile content. To supplement these planetary research projects, she assists collaborators with field studies of voluminous pyroclastic flow deposits in the American Southwest.

At UArizona, Ms. Ganesh has been involved with various outreach activities, ranging from representing the Lunar and Planetary Laboratory (LPL) at events like the annual Connect2STEM and Spacefest to running activities for middle school students who visit LPL. In the future, she wants to lead and contribute to efforts aimed at increasing the participation of women in science, especially those from marginalized communities and economies that lack the necessary educational infrastructure.