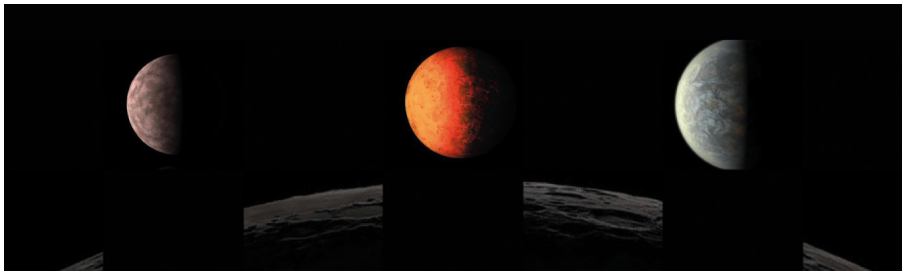

Contribution ID: **5** Type: **Talk**

What do we see, and what is overlooked? How can we improve our understanding of Martian volcanoes in the MARVEL project?

Friday 24 October 2025 11:45 (15 minutes)

Just after the Moon, Mars is among the most pioneering research areas, as it constitutes a critical step forward in planetary exploration. Nevertheless, high-resolution insights into Martian magmatic evolution remain limited and largely biased towards large-scale landforms. For decades, the narrative on Martian volcanism emphasized a global decline in explosive volcanism in favor of dominant effusive-origin features. Consequently, the small-scale volcanic features (<1 km), which could reveal new aspects of volcanic evolution, have been largely overlooked and inadequately addressed. Therefore, to significantly advance the current understanding of how volcanism has developed on Mars, the MARIVEL project (Modern Advances in high-Resolution Imaging of Volcanic Eruptive Landforms –unrevealing concealed Martian volcanic evolution by studying terrestrial analogues) aims to characterize and identify small-scale volcanic structures located in the planet's youngest provinces. Within the 4-year project (2025-2029), Martian remotely sensed observations will be supplemented by investigations of their terrestrial analogues to provide more in-depth insights. This will be achieved by the reconstruction of eruptive sequences and processes involved in the volcanic activity that will allow for generating critical data for the trans-planetary comparison. This type of comparative planetary research is currently underdeveloped due to the brief history of Martian exploration and limited coverage of high-resolution observations and their corresponding topographical models. Therefore, MARIVEL addresses this gap by integrating advanced topographic data with multiproxy analysis of volcanic landforms on Earth, seeking geological parallels, such as volcanic products and their morphological characteristics. This comprehensive approach will directly inform the future of Mars research focused on volcanism.
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