The geologically recent areas as one key target for identifying active volcanism on Venus.

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Abstract

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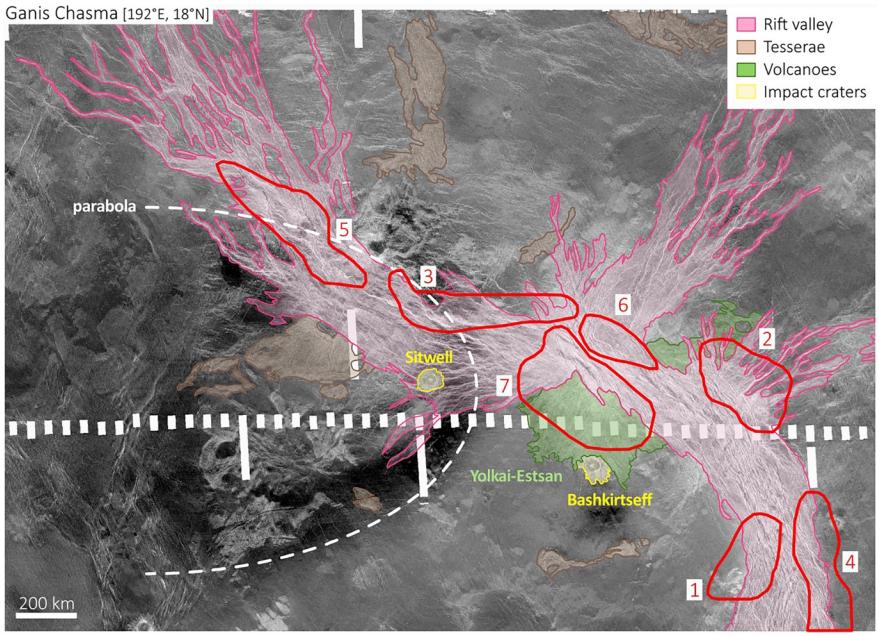
Similarly, using a holistic approach, other recent studies have combined laboratory results, geologic interpretation, and Venus Express VIRTIS 1 micron surface emissivity data to provide additional lines of evidence for recently or possibly ongoing volcano-tectonic activity at Idunn Mons, the major volcanic structure of Imdr Regio on Venus (D'Incecco et al., 2017, 2021a,b,c; Filiberto et al., 2020., 2021; Cutler et al., 2020; López et al., 2022). Combining this new work with previous studies by Brossier et al., (2020) and Brossier and Gilmore (2021), this demonstrates that the Magellan dataset is able to provide important clues about the materials on the surface, which can be used as a potential chronometer for the surface age of Venus. The results of this manuscript are extremely relevant to our understanding of how volcanic processes are currently acting on Venus. Further, these models can be tested with the upcoming fleet of missions expected to arrive at Venus in the next decade.



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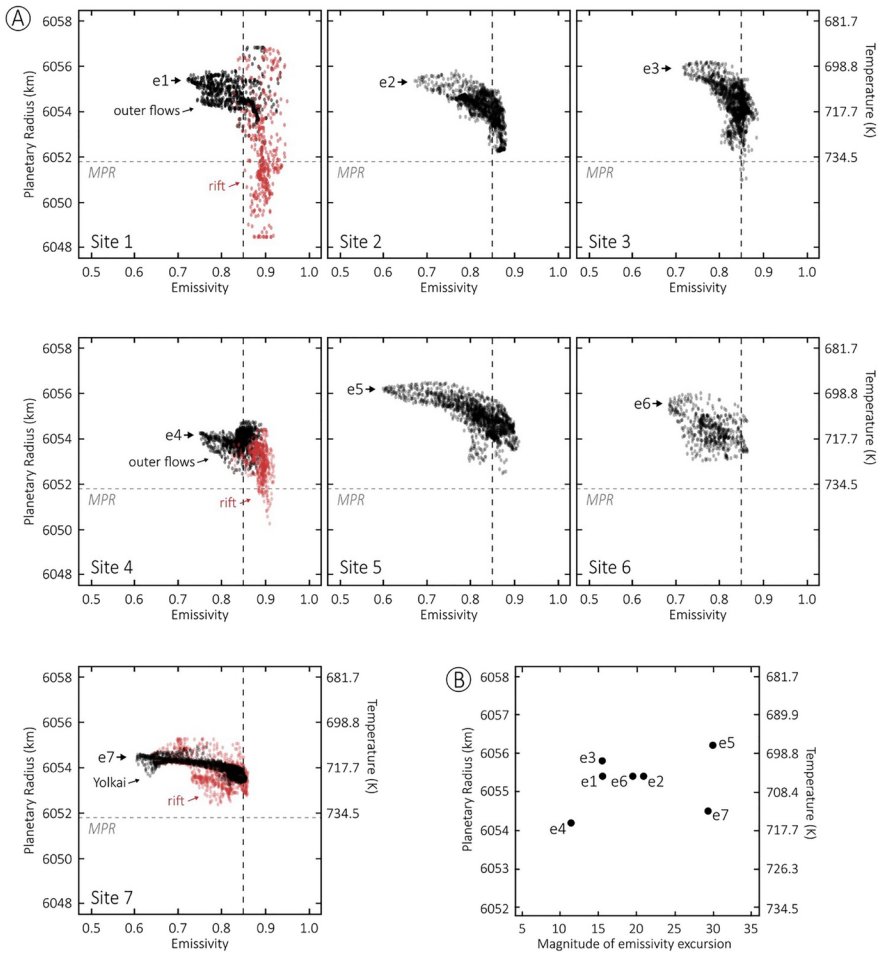

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The wealth of data to be provided by the future missions will tell us more about ongoing volcanic activity on Venus. For this reason, it is crucial to select a number of relevant volcanically and tectonically active areas on Earth as suitable Venus's analogues. To this regard, Project "Analogues for VENus's GEologically Recent Surfaces" aims to create a list of suitable analogue volcanic sites on Earth, which can help us to: i) collect spectral signatures from lava flow samples on Earth, whose chemical composition is known, to compare with the spectra to be provided by the future investigations of Venus; ii) analyze radar backscattering over volcanically active areas on Earth to check how to evaluate changes in the areal extent of the lava flows in short amounts of time due to the effect of possibly ongoing eruptions; and iii) use easily accessible volcanic sites on Earth as test areas for drilling operations and in-situ elemental analyses. As a first analogue site for Project AVENGERS, preliminary studies are currently being conducted on Mount Etna, one of the most active and well monitored volcanoes on Earth. Building off this, studying active and recently active volcanism on the Earth is vital to test models for Venus exploration, such as Brossier et al. (2022) in order to be able to constrain potentially active volcanism and tectonism on Venus with the future missions due to arrive and make repeated measurements over the same surface previously measured by Magellan.

Data Availability Statement

For this commentary article, no new data were used. The data we commented in this article come from the previously published research by Brossier et al. (2022), on this journal.

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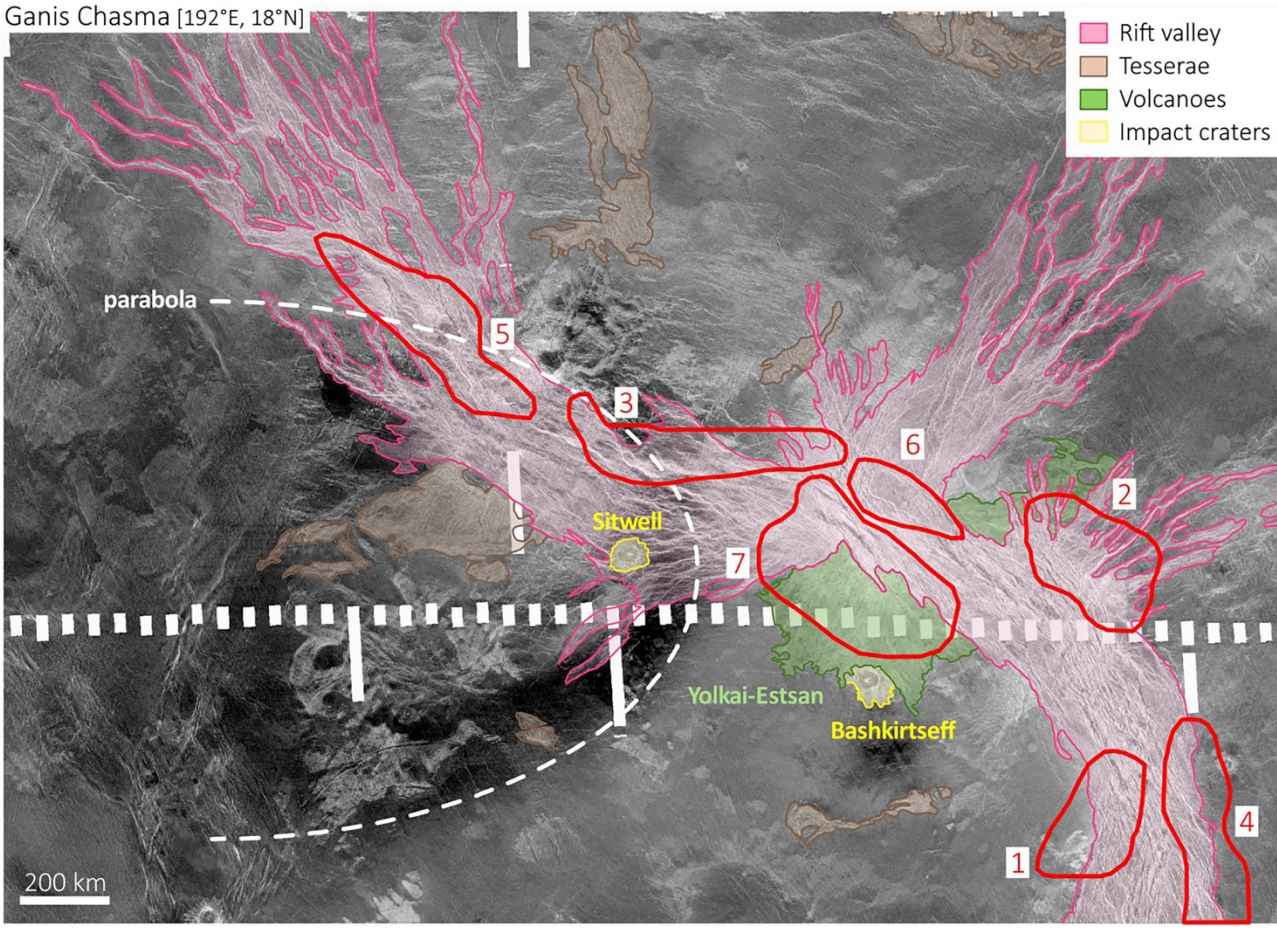

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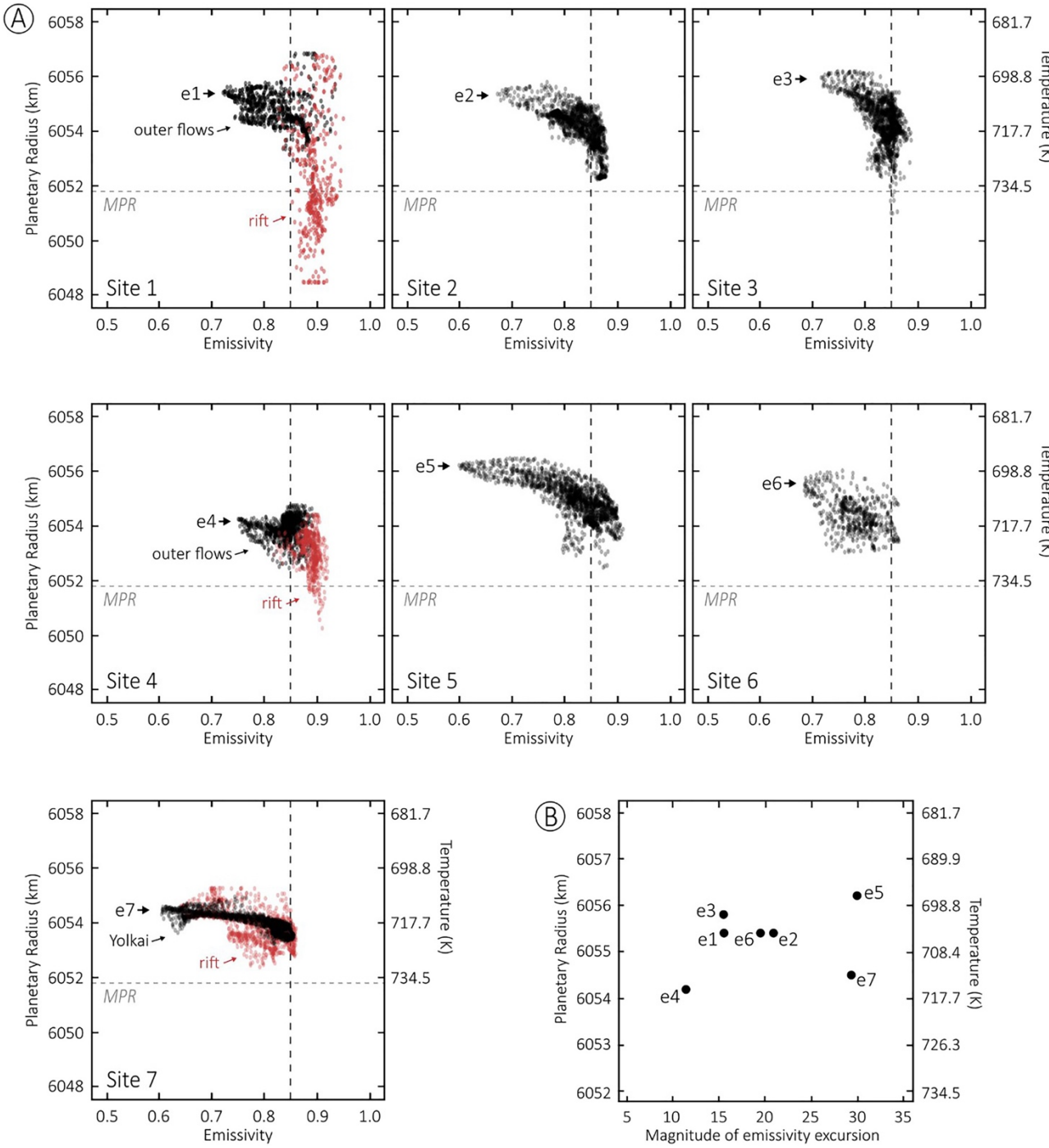

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