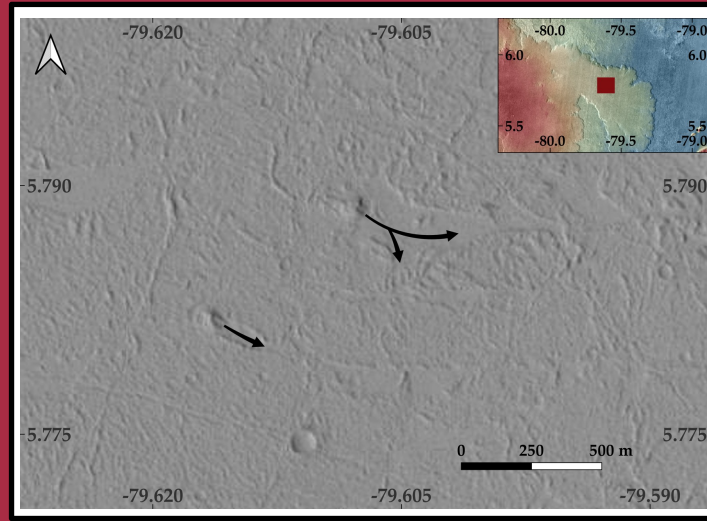
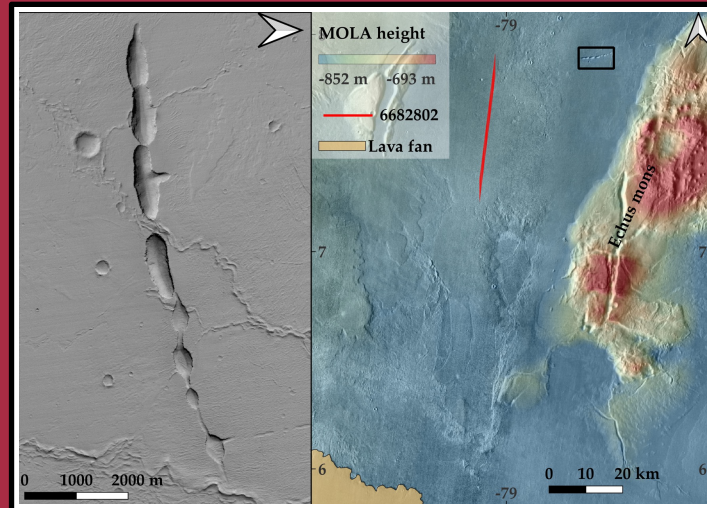
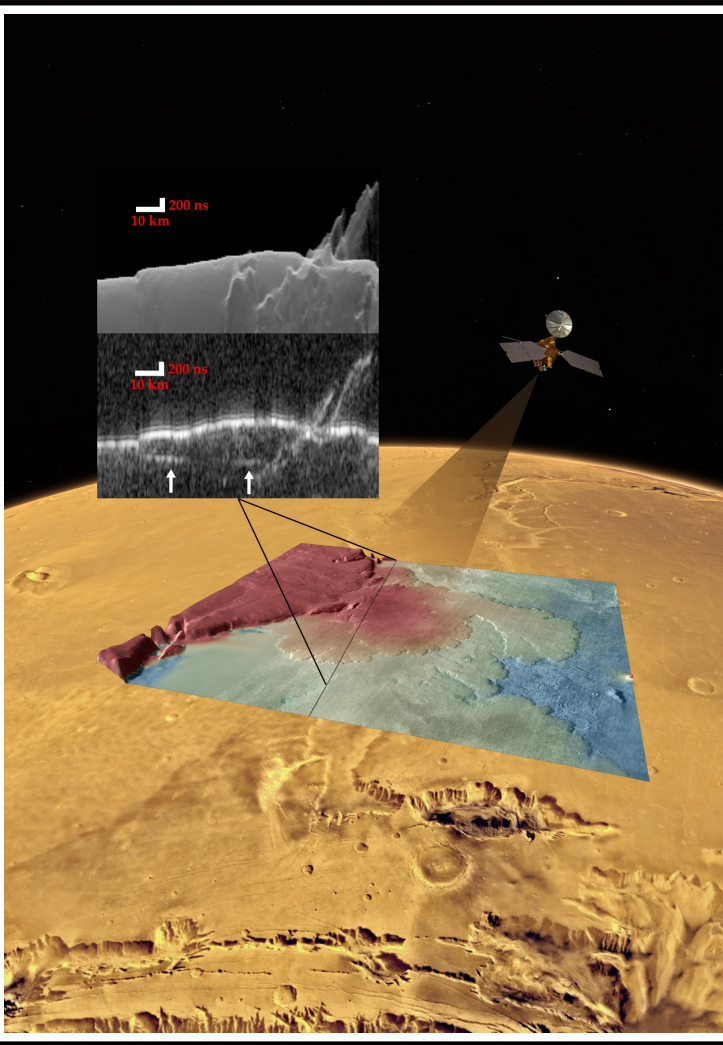


Preserved pit chains, lava vents and subsurface reflectors within a 59 Ma years old lava flow in Echus Chasma, Mars.



The Echus-Kasei region on Mars has been exposed to different episodic volcanic, fluvial, and glacial events in Amazonian time. The goal of the present work is to demonstrate the usefulness of radar instruments to find preserved late Amazonian subsurface structures that may have been encapsulated underneath recent lava flows on Mars.

We have analyzed 27 radar observations of the SHAlow RADar (SHARAD) instrument on board the Mars Reconnaissance Orbiter (MRO), over the region of Echus Chasma. We discovered the presence of subsurface reflectors in five consecutive SHARAD radargrams at a depth from 35 to 79 m beneath the structure of a lava fan that formed about 59 ± 4 Ma ago. Some vents are preserved above the surface of this lava flow, which stands at a height of 80 m above the surrounding surface. A few kilometers to the north, we find other subsurface reflectors at a depth of about 30 m and a long pit chain formed by the collapse of a lava tube.

These kinds of subsurface late Amazonian structures are of interest for astrobiology because they date from the last period when the planet still experienced intense volcanic activity over regions that were previously extensively covered by water.

“Unveiling the Subsurface of Late Amazonian Lava Flows at Echus Chasma, on Mars”.

F. Mansilla, M.-P. Zorzano, I. Giannakis and J. Ruiz. Remote Sens. 2023, 15(5), 1357; <https://doi.org/10.3390/rs15051357>