

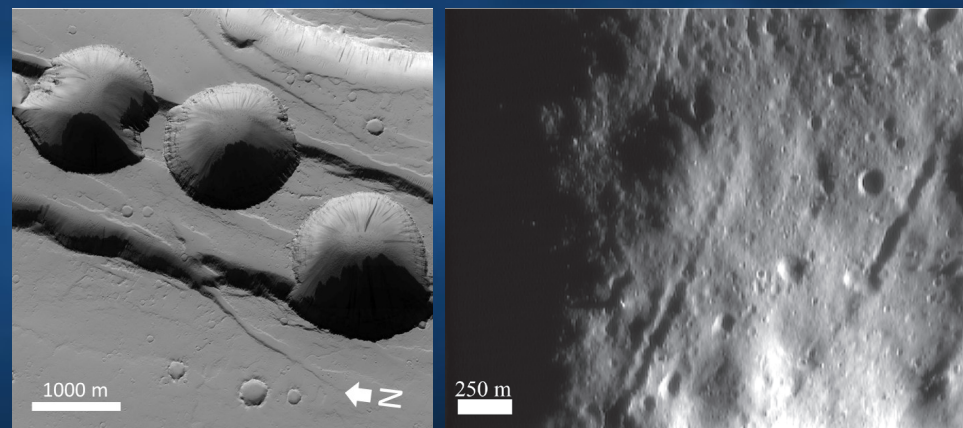
Pit Crater Chains Across the Solar System

Pit crater chains have important implications for in situ resource utilization and identifying habitable zones on planetary bodies.

- Pit crater chains are surface features comprised of linear assemblages of collapsed depressions that are identified on several solid bodies throughout the Solar System.
- On Earth, they have been observed to form when dilational motion on normal faults causes the overlying materials to collapse into tectonic caves, the dilating segment of the buried fault.
- It has been hypothesized that pit crater chains observed on Mars, Enceladus, and various small bodies are formed by the same process, and also represent subsurface void space.
- Movement along dilational faults can create subsurface permeability pathways through the void spaces for fluid/volatile transport and trapping.
- Studying pit crater chains and tectonic caves on planetary bodies should be considered as a potential driver for determining exploration targets.



Pit crater in basaltic terrain in northern Iceland (~66.03°N, 16.57°W) showing (a) the surface expression of collapse and (b) the dilational segment underlying the surface pit.



Example pit crater chains. (left) HiRISE PSP_002710_2040 (25 cm/px) of pit chain in Tractus Fossae trough, on Mars (right) NEAR MSI image 135344864 (res. 4.91 m/px) of pit chains on Eros.