

Fig. 5. Exposed columnar jointing along the edge of the rock layer that caps the valley walls. (a) Polygonal fractures 10 m in diameter are present within the surface of the rock layer close to the top of the valley slopes. (b) Perspective view of 30 m high structural columns within the rock layer. The columns have the same diameter as the polygonal fractures seen in (a). This structure is similar to columnar jointing that forms in terrestrial basaltic flows as a result of thermal contraction during cooling. This suggests that the rock layer was formed by a lava flow on top of the crater fill. HiRISE images: PSP_003603_1325 (a), PSP_003669_1325 (b).

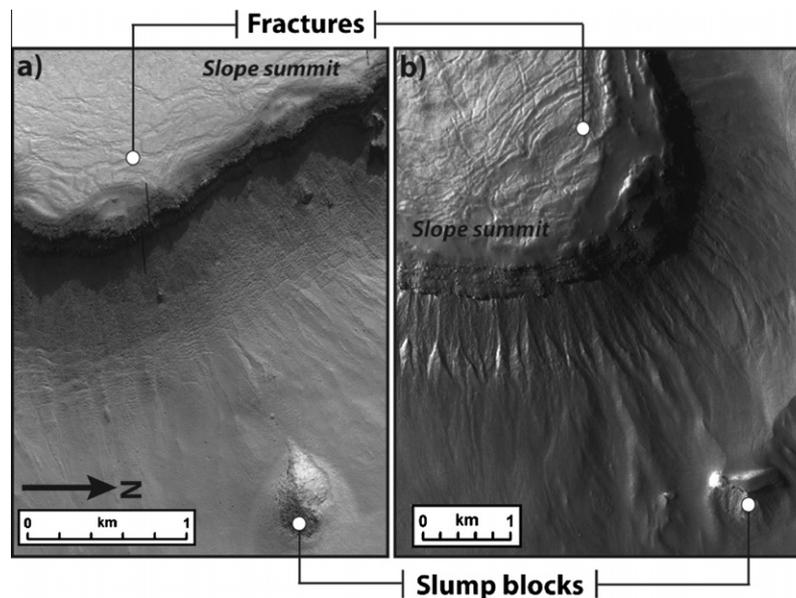


Fig. 6. Evidence for mass wasting in the form of slumping along the slopes of the valleys. Boulders within the slump blocks suggest that the blocks originated from the rock layer at the top of the slopes. Arcuate fractures along the surfaces above the valley slopes imply that extension has occurred, which may contribute to further detachment of the steep scarps. (a) Western slope of the northeastern valley complex. HiRISE image: PSP_003814_1325. (b) Northern slope within the central depression. CTX image: P05_003102_1327. See Fig. 3 for location.

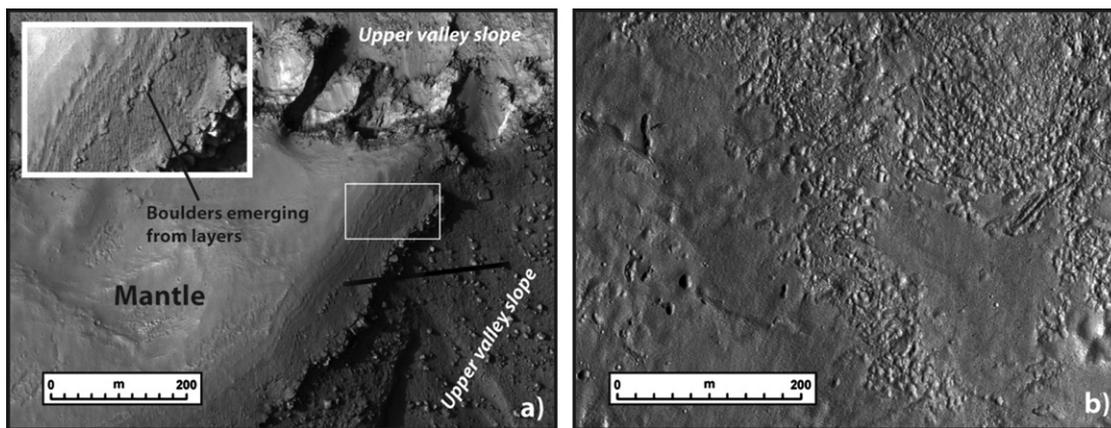


Fig. 7. Morphology of the latitude-dependent mantle within Asimov Crater. (a) Along the top of the plateau edge the mantle forms a distinct layer above the coherent lava flow rock layer. The abrupt change in slope along the edge of the rock layer provides a perspective view of the mantle, which in some areas appears to be several tens of meters thick and consists of multiple layers. In some places, the occurrence of boulders emerging from the layers suggests that these are regions where the mantle is relatively thin (near the cliff edge) and the structure of the underlying rock layers shows through. (b) Example of degradational textures along the surface of the mantle, including isolated pits and shallow cusped depressions. These features have been attributed to the loss of ice through sublimation (Mustard et al., 2001). HiRISE images: PSP_003880_1325 (a) and PSP_003603_1325 (b).