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HiRISE observations of possible periglacial features in the martian mid-latitude mantle.

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Scalloped pits are typical features of the mid-latitude mantle, which has been postulated to be a thin layer of an ice-dust mixture, formed as airfall deposition related to an extended decrease in the planet's obliquity 4.5-3 bya. The scalloped pits are elongated depressions a few meters to a few tenths of meters wide and from 5 to 30 m deep, associated with what seems to be ice-wedge polygons and possible pingos. They are reminiscent of south polar "Swiss cheese" feature, which are presumably formed by ice sublimation. They may represent areas of the mantle where erosion is currently the most active because of higher ground ice instability. Some of these scalloped terrains may still be evolving. Proposed formation processes include sublimation of interstitial ice and thermokarstic processes. Constraining the scallop formation process may allow better understanding of near-surface ground ice stability and may potentially improve age estimates of the mid-latitude mantle.

High resolution images from the HiRISE camera onboard Mars Reconnaissance Orbiter provides us with greater insight on the scalloped terrains and associated periglacial landforms in Utopia Planitia and on their possible formation process.