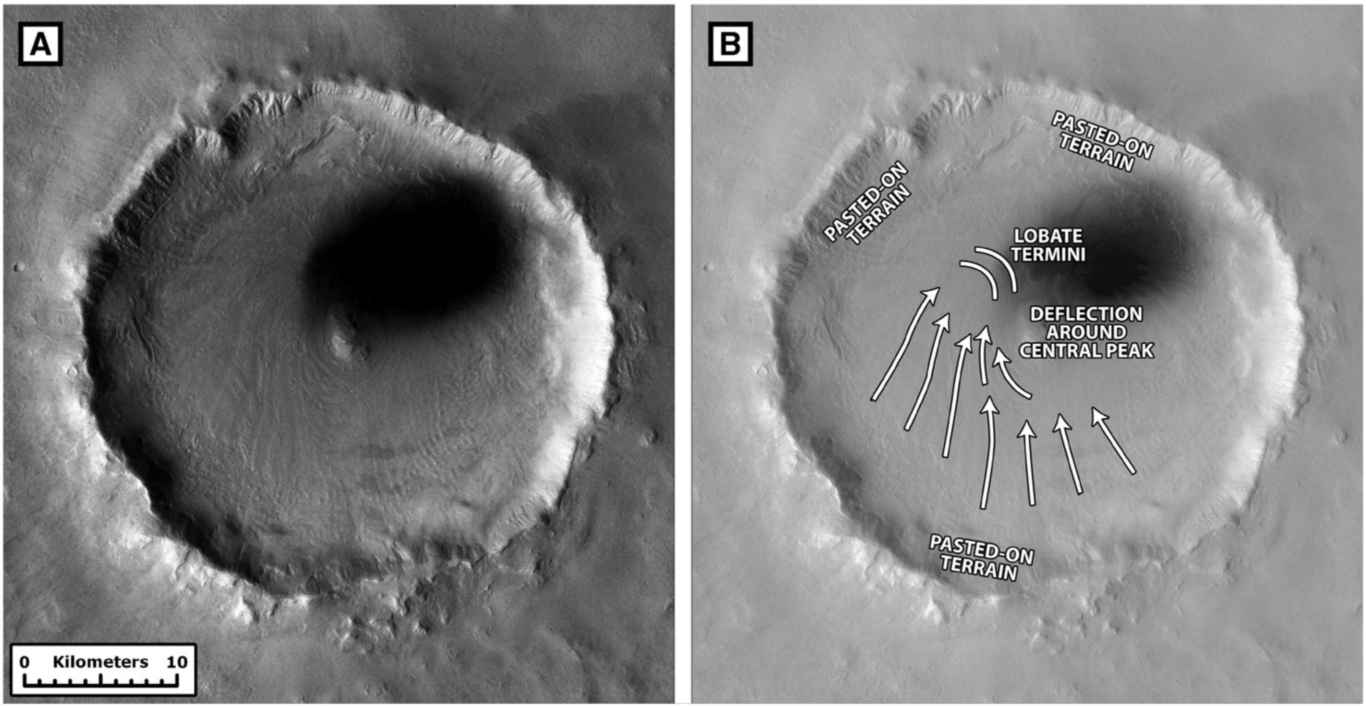

Fig. 9. Subframe of HRSC orbit h3211_0000, showing a ~35 km impact crater ~60 km to the northeast of the two-crater system (see Fig. 1B for context). This crater shows evidence for a similar sequence of crater-filling glaciation followed by more localized accumulation along the crater walls. Remnant lineations indicate that when crater-filling glaciation occurred, flow was primarily from the south, deflecting around the central peak of the crater.

to being a topographic trap, crater walls provide sheltered slopes that can shield surface ice deposits from solar insolation and from sublimation. Additionally, ice that sublimates from equator-facing slopes can be redeposited directly on pole-facing slopes (Forget et al., 2008), adding to the annual accumulation rates. This is consistent with the asymmetric profile of the crater floor and the morphologic evidence for material preferentially flowing onto the crater floor from the south (Fig. 2). Nearby craters with similar ice-related deposits show similar pole/equatorward (Fig. 9).

Mars has had a long and complicated history of ice deposition and glaciation within the last several hundred million years of the Amazonian. The glacial high-stand proposed here is consistent with that of Dickson et al. (2008), providing evidence in multiple places in the northern mid-latitudes for kilometer-scale glaciation (Head et al., 2010-this issue; Head and Marchant, 2008). This may not necessitate regional ice sheets that blanketed either or both of these regions, but rather could represent localized elevated accumulation of ice. These results should be incorporated into the array of evidence for glaciation in each hemisphere to better constrain the amount of ice needed to produce these features on the global scale, and the environmental conditions that led to their formation.

Acknowledgements

We appreciate suggestions made by Jeffrey Plaut and an anonymous reviewer. Caleb Fassett significantly aided in the processing and registration of all data used in this study, and we thank him accordingly. The features at the core of this study were initially found in THEMIS VIS data, and we appreciate the work of the science and engineering teams for THEMIS and Mars Odyssey. Likewise, we appreciate the efforts of the science and engineering staff for HRSC, HiRISE, CTX and MOLA. John Huffman of Brown University assisted with the visualization of stereo data, and we appreciate his contributions. We greatly acknowledge financial assistance from NASA for support on the ESA Mars Express High-Resolution Stereo Camera experiment (JPL1237163), for NASA Mars Data Analysis Program Grants NNG04GJ99G and NNX07AN95G, and for NASA Applied Information Systems Research Program Grant NNG05GA61G.

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