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Recent Volcanism at the Martian North Pole

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A number of circum-north polar volcanic cones and comparable edifices on Mars have been investigated by several authors [e.g., [1]-[3]] on the basis of topographic data as derived from the Mars Orbiter Laser Altimeter (MOLA) onboard Mars Global Surveyor. The volcanic features have been mainly identified in dark polar dune fields between 240 deg to 300 deg eastern longitude and 75 deg to 85 deg northern latitude.

During its nominal mission the High-Resolution Stereo Camera (HRSC) onboard ESA's Mars Express [4] has achieved an almost goreless image coverage of the north polar area with resolutions between 10 m/px and 50 m/px. Color-image data as well as topographic data as derived from HRSC's stereo capabilites have allowed us to (a) re-investigate the circum-polar distribution of volcanic structures in more detail, and (b) identify formerly unknown features, and (c) obtain a better insight into the morphology of these cones. Part of the new investigations has been presented by [5].

On high resolution image data (HRSC and Mars Orbiter Camera (MOC)), surface ages have been estimated on the basis of established chronology models. Estimates suggest that they have formed in the recent past and might be active even today.

[1] Garvin et al. (2000), Icarus, 145, 648-652.
[2] Sakimoto et al. (2000), Lun. Planet. Sci. Conf. #1971, Houston.
[3] Sakimoto et al. (2001), Lun. Planet. Sci. Conf. #1808, Houston.
[4] Neukum et al. (2004), ESA-SP 1240, 18-36, 2004.
[5] Neukum et al. (2005), 1st Mars Express Sci. Conf., Noordwijk.