



Pavonis Mons: Volcanic Episodicity of the Tharsis Montes based on Geologic Mapping on HRSC Data

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Data sets, acquired from Mars during several missions have provided detailed data for a better understanding of the evolution of the Tharsis Region in particular the origin of the Tharsis Montes. The High Resolution Stereo Camera (HRSC) on board of the ESA Mars Express Orbiter provided high-resolution color and stereo image data of the Tharsis Montes volcano Pavonis Mons. These data sets allow deeper insights into the volcanic history of Pavonis Mons by geologic/geomorphologic mapping with. Additionally, the analysis of crater – size frequency distribution (CSFD) allows the derivation of absolute surface ages.

Pavonis Mons is the central volcano of the three Tharsis Montes volcanoes situated on the Tharsis bulge near Mars' equator, which was first observed by Mariner 9 imagery data. Compared to its neighboring volcanoes (Arsia and Ascraeus Montes), Pavonis Mons is the smallest of them, with a volume of $4 \times 10^5 \text{ km}^3$. Similar to its neighbors Arsia Mons to the southwest and Ascraeus Mons to the northeast, Pavonis has gently sloping flanks, whereas the eastern flank is slightly steeper (4.6°) when compared to the western slope (4.1°). These flanks are covered by two plain lava units in the northeast and southwest.

Recent studies assume an episodic activity of the Tharsis Montes. Our dating work shows, that episodic eruption also occurred at the Pavonis Mons volcano. Compared to the ages of the main calderas of Arsia Mons and Ascraeus Mons, our age determinations of the old caldera are placed in between those ages. Age determinations on the heavily degraded chasma (Pavonis Chasma) unit in the north provided young ages due to very few impact craters which suggest ongoing volcanic activity and resurfacing related to exogenic rather than to endogenic processes.