



Mapping of Daedalia Planum Lava Field

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Daedalia Planum is one of the Tharsis volcanic plains and is located southwest of the Arsia Mons. MOLA, THEMIS, MOC and OMEGA data have been analysed, providing a multi-scale characterisation of this Martian lava field. According to Mars Global Surveyor's MOLA data, the flanks of Arsia have an average slope $<5^\circ$, while the surrounding regions, including Daedalia Planum, have slopes $<0,5^\circ$ and commonly $<0,1^\circ$. Mars Odyssey/THEMIS VIS and IR images show a plain covered by a huge number of lava flows. Older and larger lava flows on the field have a length greater than ~ 1500 km. Moreover most of the Daedalia flows are associated to wrinkly and ropy surfaces, typical of pahoehoe lavas. On the base of the morphology differences among the flows and through stratigraphic relationships we performed a geological map of the area.

MEX/OMEGA spectra were collected in different areas of the lava field. Besides the similar absorption bands OMEGA spectra showed also some differences in reflectance and spectral slope. The spectral map created using the SAM classification reveals that these spectral variations are generally in agreement with the lava flows mapped previously on the base of the flows morphology and stratigraphy. This suggested that such variability is related with different surface textures of the lava flow. Moreover in some cases spectral map highlighted the presence of spectral subunits inside the same stratigraphic unit, due likely to a different mineralogy or rock textures. Therefore spectral analysis revealed useful to improve the geological mapping of the Daedalia Planum region.