A CREEPING SOIL FIELD ON MARS. Milík Tichý[1], [1]Czech Technical University, Faculty of Civil Engineering, Thakurova 7, 166 29 Praha 6, Czechia, e-mail: milik.tichy@volny.cz.

Introduction: A creeping soil field exists on Mars. It is not distinctly laid out, no erosion is visible and its channel is either not clearly defined or possibly does not exist. The movement of the soil field on slightly inclined slope is very slow (in terms of martian time measures), interrupted by periods of standstill. The character of the movement is phenomenologically close to the creep of terrestrial glaciers or to slow movements of terrestrial soil fields.

Observation: The particular field dealt with is shown in Fig. 1, adjusted from [1]. Long, narrow, and relatively bright tapered stripes, resembling hair strands, are observed in the picture; the strands start at rock outcrops protruding from the soil field and get gradually tapered when following the slope down, being slightly curved in correspondence with the slope lines.

In the description that accompanies the original picture, the strands have been explained as traces of wind streaks (see [1]). This, however, does not correspond to the nature of gas flows, which, contrary to the strands mentioned, would spread the dust or other volatiles in veil-wise form. The result of such wind streaking and the ensuing dust settlement can be seen on other MOC/MGS images (e.g., [2], Fig. 2).

However, the tapered strands can be easily explained by movement of soil along the outcrops, where the bright rock gets abraded, and the abraded material is carried away down the slope.

Further, two important forms can be observed on the surface of the soil field:

– pitch-change lines indicating convexity of the slope surface (Fig. 1, white arrows),

– fissures indicating concave surface (Fig. 1, two of the fissured areas are highlighted by black arrows).

Both these phenomena are commonly encountered on terrestrial sand fields.

Conclusion: The soil field discussed, displayed in Fig. 1, shows signs of creeping movement of the soil.

Though the Author did not identify similar landforms on Mars, other soil fields of this kind are likely to exist there.

References:

[1] *http://www.msss.com/mars_images/moc/2004/02/06/.*

[2] *http://www.msss.com/mars_images/moc/2004/04/23/.*

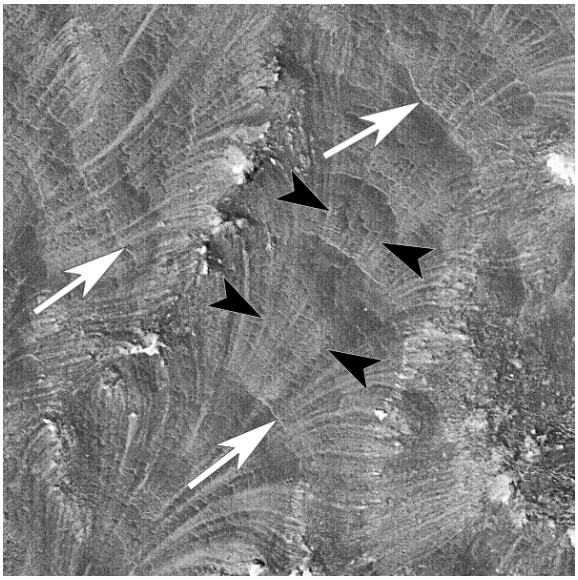

Figure 1 – A cutout of the picture of a large soil field ("*Wind-Streaked Slopes*", MGS MOC Release No. MOC2-628, 6 February 2004), moving down the slope (to the lower left corner of the picture). The cutout was contrasted to highlight the surface forms.—Observe the tapering strands generated by abrasion of outcrops; the width of the area covered by the cutout is about 1.5 km, the width of the field being minimum 3 km. The respective explanatory caption in [1] assumes that the image "shows very heavily wind-streaked slopes in an area near southern *Claritas Fossae*; wind rushing down slopes toward the lower left has moved fine sediment to create these patterns". The field is located near 25.3°S, 109.7°W; sunlight illuminates the scene from the lower left.—The original image has been magnified and processed by *Corel PaintShop© Pro X*. The Reader is advised to have a detailed, enlarged look at the full MGS/MOC image [1].

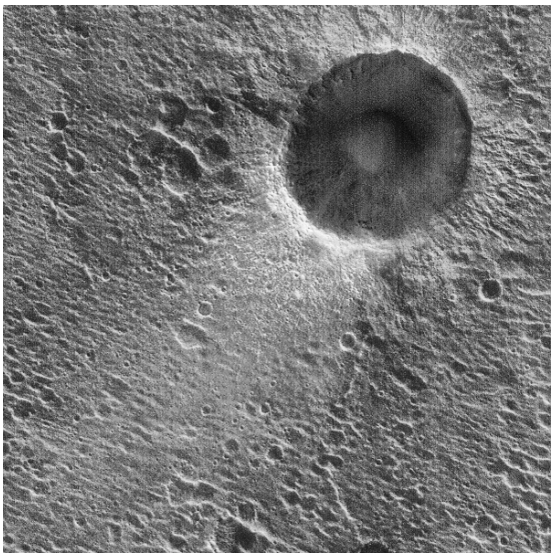

Figure 2 – A cutout of the picture of an impact crater with its environment ("*Wind Streak in Acidalia*", MGS MOC Release No. MOC2-628 – 23 April 2004), The cutout was contrasted in the same manner as in Fig. 1.—Observe the spread of dust/sand generated by wind. The width of the area covered by the cutout is about 2.7 km. The area is located near 23.0°N, 39.6°W; sunlight illuminates the scene from the lower left.—The original image has been magnified and processed by *Corel PaintShop© Pro X*. The Reader is advised to have a detailed, enlarged look at the original MGS/MOC image [2].