Introduction

Interior layered deposits (ILDs) have been analyzed especially in the western part of the Valles Marineris and northern Elysium Planitia. Often ILDs are characterized by lineations which are most prominent in the upper parts of ILDs and superimpose the chaotic terrain (Figs. 1a, 1b no. 8, 5, 8). Many authors studied their formation processes. Following hypotheses concerning their origin are considered:

- volcanic activity formation of ILDs (i)
- terrestrial deposition (ii)
- periglacial weathering in subglacial (iii, iv)
- eolian- and pyroclastic volcanism in subaerial (v)
- hydrothermal alteration of volcanic material (vi)
- sub glacial environments (vii)
- evaporation by decreasing water availability (viii)
- sub glacial environments (ix)
- water-indicating minerals like hematite were observed in the layered deposits (l)

Hypotheses for the formation of ILDs:

For more than 30 years, ILDs have been known and analyzed but their origin remains uncertain. Many authors studied their formation processes. Following hypotheses concerning their origin are considered:

- terrestrial deposition (il)
- periglacial weathering in subglacial (ii, iii, iv)
- volcanic activity formation of ILDs (i)

ILDs classes

The ILDs are divided into classes, in Gangis Chasma and in the chaotic terrain they sometimes show lineations which are most prominent in the upper parts of ILDs and superimpose the chaotic terrain. Therefore, different hypotheses are presented. The ILDs show a young erosional age with heavily fractured and rugged surfaces leading to a nearly flat field with chaotic terrain (Figs. 5, 8). The transitions from chaotic terrain to ILDs are not so well known and study their structure regarding elevation, stratigraphic position, thickness and lineations using remote and high-resolution data (Figs. 4, 6, 8). The upper parts of ILDs are of different morphologic character and are characterized by lineations which are most prominent in the upper parts of ILDs and superimpose the chaotic terrain (Figs. 1a, 1b no. 8, 5, 8). Many authors studied their formation processes. Following hypotheses concerning their origin are considered:

- terrestrial deposition (i)
- periglacial weathering in subglacial (ii, iii, iv)
- volcanic activity formation of ILDs (i)

Conclusions

The ILDs have various morphologies and show different weathering patterns, which may point to different environmental conditions. All ILDs in the research area are located near the second part of the canyon; these ILDs are not so well known and study their structure regarding elevation, stratigraphic position, thickness and lineations using remote and high-resolution data (Figs. 4, 6, 8). The upper parts of ILDs are of different morphologic character, but a classification is possible.

References