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Karst processes evidences on a Martian evaporite Dome

D. Baioni (1), N. Zupan Hajna (2), and F.C. Wezel (1)

(1) Urbino University, Earth Science Institute,Campus Sogesta, 61029 Urbino, Italy, (dvbgeo@uniurb.it), (2) Karst Research Institute ZRC SAZU, Titov trg 2, 6230 Postojna, Slovenia

In the eastern part of Tithonium Chasma (Mars) a body displaying a dome shape morphology is located. According to OMEGA mineralogical data (OMEGA data orbit 531_3) and further studies the dome appears to consist of kieserite, an evaporitic mineral also found on the Earth. Previous works highlighted the presence on the dome surface of karst-like landforms and morphologies that strongly resemble the evaporitic karst morphologies found on the Earth. Through the analysis of the new MRO HIRISE images we have investigated the Martian landform and the possible processes involved in their formation and shaping in great detail. The results of our study out show that the landforms observed clearly indicate the presence of solutional processes that also acted in a selective way just as in the evaporite rocks on the Earth.
The analysis carried out highlight that the Martian dome can be also formed of different materials with different solutional proprieties. The dome quite probably it is constituted mainly by salts such as carnallite, kainite and halite (a mineral without spectral signatures that might be present in the dome). Our observation also suggest that on the dome liquid water must have existed in the past for enough time so that the solution features we investigated could be formed.