



Light-toned layered deposits on plateaus above Valles Marineris (Mars).

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Extensive covers of light-toned materials crop out on plateaus above several chasmata of Valles Marineris. They are observed in plains south of Ius Chasma and Melas Chasma, southwest of Juventae Chasma and west of Ganges Chasma. CRISM hyperspectral data indicate that hydrated silicates are present in the layered materials near Melas, Ius and Juventae Chasma [1, 2]. The deposits along Ganges Chasma are located in Noachian terrains. In contrast, the layered material of the other listed places is located on Hesperian terrains. The aim of our work is to constrain the nature, the spatial extent, the age and the emplacement process of these layered deposits (LDs), as well as their possible relationship with phyllosilicates that are found on the same plateaus and with Interior Layered Deposits (ILDs) enriched in sulfates and ferric oxides located in the Valles Marineris chasmata [3]. In order to characterize the history of these LDs we perform a geological analysis of the sites where LDs crop out using HiRISE, CTX, HRSC and MOLA PEDR data.

The light-toned LDs are located stratigraphically and topographically above the basaltic basement constituting the plains surrounding Valles Marineris. Their spatial extent is unclear. Most outcrops are covered by a dark mantle preventing from observing the actual extent of each site of LDs. Some LDs display alternating bright and dark layers of various thicknesses. Layers are subparallel but they may exhibit deformation at small scale. The total thickness of the LDs varies and does not exceed

a few hundreds meters. Some sinuous ridges, which are apparently composed of the same material as the LDs, are observed near Juventae and Ganges Chasma. Their morphology suggests that they are eskers or inverted fluvial channels. In that latter case, a fluvial origin could explain the deposition of the LDs. However, other origins such as eolian, lacustrine or volcanic cannot be excluded.

[1] Swayze G. A. et al. (2007) 7th *Int. Conf. on Mars*, Abstract #3384. [2] Milliken R. E. et al. (2007) *AGUFM*, Abstract #P12A-02. [3] Le Deit et al. (2008) *JGR*, in revision.