



## **Stratigraphic correlation between Mawrth Vallis region's clays detected by OMEGA and HRSC color images and DTM**

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OMEGA/Mars Express has discovered large outcrops rich in phyllosilicates in the region of the outflow channel Mawrth Vallis, Mars (around 20°W, 25°N). Comparison with laboratory spectra reveals similarities with Fe-rich smectites such as nontronite or Al-rich smectites such as montmorillonites. Those hydrous minerals are located exclusively on bright outcrops present on the Noachian highlands, locally cut by the outflow channel. On HRSC/MEx and MOC/MGS visible images, the phyllosilicates-rich outcrops reveal strong erosion features such as numerous residual buttes showing a meter-scale layering. In order to have a better estimate of the thickness and geometry of the clay-rich unit, we have correlated the clay-rich outcrops with HRSC color images and the DTM calculated from stereoscopic images. We show that the Fe-rich clays are predominantly located on reddish outcrops whereas the Al-rich clays are located on white outcrops. This correlation suggest not only that the different clays occur on distinct part of the bedrock, but also that this difference of composition could correspond to a chemical layering of the crust, either created during the sedimentation processes or during *in situ* alteration through different chemical pathways.

Future lander missions would be essential to discriminate these possibilities and more completely understand the past environment of this region.