



## **Phyllosilicates on Mars as revealed by OMEGA/MEx observations**

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One of the primary objectives of the OMEGA instrument on the Mars Express spacecraft is to determine and map the mineralogical composition of the Martian surface. Of particular interest is the identification of minerals formed through interaction with liquid water. Data from the recent Mars missions show that the Ca-Mg-Fe sulphates have been identified as the best and most common water-bearing minerals on Mars. More recently, unambiguous detection of phyllosilicates by OMEGA has been reported over large areas. Here, new identifications of phyllosilicate minerals are presented. Their presence in several rough, eroded and excavated terrains (outcrops, scarps and crater ejecta) of Noachian units strongly supports the following conclusions: (1) large-scale water-rock interactions occurred during the Noachian period; the formation may have continued into later periods but in this case, it occurred at depth; (2) the water-bearing minerals are a bulk component rather than a soil surface coating, and the crust has been altered to depth; (3) the phyllosilicates tend to indicate an environment different of that responsible for the formation of the sulfates; in particular, the formation of Fe- and Al- phyllosilicates require abundant water and near neutral or higher pH; (4) the presence of nontronite-like mineral suggests oxidizing conditions in the early history of Mars.