

Identification of ferric oxides in East Candor Chasma (Valles Marineris, Mars) with several methods of analysis of OMEGA/Mars Express data - geomorphological context

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The mineralogical composition of the Martian surface is constrained by analysing the data of the visible and near infrared imaging spectrometer OMEGA onboard Mars Express. We use three independent methods (Spectral Angle Mapper (Kruse et al., 1993), modified Linear Unmixing Model (Combe et al., 2006) and Modified Gaussian Model (Sunshine et al., 1990)) and we detect ferric oxides in East Candor Chasma. Ferric signatures had previously been reported in Valles Marineris, Margaritifer Terra and Terra Meridiani (Gendrin et al., 2005).

Ferric oxides appear to be distributed in isolated areas in East Candor Chasma. MOLA altimetry indicates that the oxides are preferentially located in topographic lows (Christensen et al., 2001; Gendrin et al., 2005). THEMIS and MOC images show that the signatures are systematically correlated with superficial deposits of low albedo, at the foot or on Interior Layered Deposits (ILD's). Some sulfates have been identified on some of the ILD's of the region (Gendrin et al., 2005). The spatial distribution of ferric oxides in regard with ILD suggests that they are genetically linked. A remobilization of ferric oxides from the ILD's could explain their accumulation around the ILD's.