



Mars South Cap: Seven Martian Years Survey By OMEGA/MEX

Brigitte Gondet, Yves Langevin, and Jean-Pierre Bibring

CNRS / Université Paris Sud, Institut d' Astrophysique spatiale (IAS), Orsay Campus, France (brigitte.gondet@ias.u-psud.fr)

The VIS-NIR spectro-imager Omega is a very powerful tool for the study of ices and dust. In the first 5 years of the mission, when the cryocooler of the short wavelength IR channel was still operating, it was able to unambiguously identify the ice composition based on a near-IR spectral features located at 1.25 μm , 1.5 μm , 2. μm , 3. μm (H_2O ice) and 1.435 μm , 2.281 μm , 2.7 μm , 3.3 μm (CO_2 ice) [1]. Ices can also be monitored even mixed with dust from surface temperatures in the long wavelength IR channel, and the VIS channel (0.36 – 1.06 μm) provides information on the albedo in the visible and on the presence of aerosols thanks to the slope between .5 μm and 1. μm [2].

Since the beginning of the Mars Express mission (2004) OMEGA has done a systematic survey of the south and North caps of Mars. Thanks to the orbit of Mars Express, we can observe the caps from different altitudes (from apocenter to pericenter) and at different local times. Changes in orbit period have made it possible to optimize the precession of the pericenter and of the nodes in terms of science return. During the last 4 Martian years (2011 to 2017), the pericenter was in the North during southern summer, which made it possible to obtain global views of the southern cap during the last stages of recession from altitudes of 4000 to 9000 km. Due to instrumental issues, most observations were implemented using the VIS channel of OMEGA.

We will present the result of 7 Martians years of observations so as to identify year to year variations within the framework of the relatively stable pattern of advances and recesses of the seasonal caps as well as dust activity at southern latitudes related to storm activity close to the southern solstice.

References [1] Langevin et al JGR 2006; [2] Vincendon et al JGR 2006