



ANALYSIS OF GEOLOGICAL FEATURES AND SEASONAL PROCESSES IN THE CAVI NOVI REGION OF MARS

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We study the morphology, composition, and evolution of different features in a region of about 200x200 km centered at 37E 66.4S on Mars. More than twenty wide- and narrow-angle Mars Global Surveyor MOC images taken in a period spanning 2,5 terrestrial years reveal that two different terrains coexist in this area. The southern part is dominated by the high-albedo region known as Pityusa Patera, while the northern part is covered by dark material and dunes (probably dust or sand-sized eolian sediments). We term this part “Csontváry region”.

The whole area undergoes frosting and defrosting through the martian year, and MGS MOC images point out to strong changes in the frost coverage with season and to dramatic differences in the seasonal processes depending on the nature of the soil. During the second half of the Martian winter and early spring, peculiar spots appear on the frost-covered dark dunes in the Csontváry region. These have been named Dark Dune Spots and various hypotheses concerning their origin and formation process have been put forward. Once frost is absent, interesting eolian transport processes taking place at the interface can be observed.

We have used data from the Mars Orbiter Laser Altimeter to describe with high-resolution the topography of the area and to study how seasonal changes correlate with

height. In addition, we have calculated temperature variations throughout the Martian year and the integrated amount of energy in the visible and UV ranges reaching the surface. A preliminary characterization of the soil composition has been obtained by using THEMIS and TES data. Integrating all this information together allows us construct a geological mapping of the region and permits to derive a phenomenological model for a number of seasonal processes occurring in this area. Some open questions might be answered in the near future with the additional data provided by the Mars Express Mission.