SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – missions current and future (3A)

Author: Prof. Enrico Flamini
Italian Space Agency (ASI), Italy

Prof. Ori Gian Gabriele
Italy

THE ROLE OF MARS ANALOGUE ENVIRONMENTS ON EARTH IN THE INTERPRETATION OF DATA FROM THE PAST, PRESENT AND FUTURE MISSIONS

Abstract

The analysis of Mars analogue environments on Earth is of paramount importance for the interpretation of the data from past, present and future orbital and landed missions, as well as mission planning (both robotic and human). Sedimentary environments in particular attract strong interest because they can retain the paleo-climatic and paleo-environmental history of the planet and under the right conditions may harbour fossil or present life signatures. Terrestrial analogue terrains to Mars are also important for the analysis of technological development and testing of systems, instruments and operations. Whereas testing single instruments dealing with collection and analysis of single specimens can be performed in restricted environment, the testing of instrument suites, rovers, landers and operations must be conducted in large-scale analogue environments. The Ibn Battuta Centre for exploration and field activities was established in 2006 by the International Research School of Planetary Sciences (Pescara, Italy) to prepare and execute tests of rovers, landing systems, instruments and operations related to the exploration of Mars and Moon. The Centre has a major partner, the Universite' Cadi Ayyad of Marrakech (Morocco) where it is located. The Centre is named after the famous Moroccan explorer Ibn Battuta (born in Tangier on 24th February 1304 – 703 Hijra) who explored a large part of Northern Africa and Asia. The Ibn Battuta Centre deals with both scientific and operational analogues. In both case it take advantage of the long geological history of Morocco and the remarkable geological and geomorphological diversity. The Centre is part of the Europlanet Research Infrastructure of the EU. Several other activities deal with space missions or future exploration scenarios. For example at the field site of Merzuga the test of the dust probe on board the lander of the ExoMars 2016 mission is underway. The Centre is involved also in other tests related with the ExoMars missions to Mars. In 2013 the Centre has organized and financed the activities of the Austrian Space Forum dealing with a large, one month long, test of human explorations. For the ExoMars missions the Ibn Battuta has tested Dreams, the ASI provided atmospheric instrument that will be aboard ExoMars 2016 lander. Moreover, the IBn Battuta Centre is testing the EDL operation of both Mars 2016 and 2018. In particular, the current tests deal with the radar-altimeter instrument governing the landing operations.