Geophysical Research Abstracts,
Vol. 11, EGU2009-10621-2, 2009
EGU General Assembly 2009

Field Test of the ExoMars Panoramic Camera in the High Arctic - First Results and Lessons Learned

N. Schmitz (1), D. Barnes (3), A. Coates (2), A. Griffiths (2), E. Hauber (1), R. Jaumann (1), H. Michaelis (1), H. Mosebach (5), G. Paar (4), P. Reissaus (5), F. Trauthan (1), and the AMASE 2008 Team

(1) German Aerospace Center (DLR), Institute of Planetary Research, Berlin, Germany (nicole.schmitz@dlr.de), (3) Space Robotics Group, Aberystwyth University, UK, (2) Mullard Space Science Laboratory, University College London, Surrey, UK, (5) Kayser-Threde GmbH, Munich, Germany, (4) Institute of Digital Image Processing, Joanneum Research, Graz, Austria

The ExoMars mission as the first element of the ESA Aurora program is scheduled to be launched to Mars in 2016. Part of the Pasteur Exobiology Payload onboard the ExoMars rover is a Panoramic Camera System (‘PanCam’) being designed to obtain high-resolution color and wide-angle multi-spectral stereoscopic panoramic images from the mast of the ExoMars rover. The PanCam instrument consists of two wide-angle cameras (WACs), which will provide multispectral stereo images with 34° field-of-view (FOV) and a High-Resolution RGB Channel (HRC) to provide close-up images with 5° field-of-view.

For field testing of the PanCam breadboard in a representative environment the ExoMars PanCam team joined the 6th Arctic Mars Analogue Svalbard Expedition (AMASE) 2008. The expedition took place from 4-17 August 2008 in the Svalbard archipelago, Norway, which is considered to be an excellent site, analogue to ancient Mars. 31 scientists and engineers involved in Mars Exploration (among them the ExoMars WISDOM, MIMA and Raman-LIBS team as well as several NASA MSL teams) combined their knowledge, instruments and techniques to study the geology, geophysics, biosignatures, and life forms that can be found in volcanic complexes, warm springs, subsurface ice, and sedimentary deposits. This work has been carried out by using instruments, a rover (NASA’s CliffBot), and techniques that will/may be used in future planetary missions, thereby providing the capability to simulate a full mission environment in a Mars analogue terrain.

Besides demonstrating PanCam’s general functionality in a field environment, test and verification of the interpretability of PanCam data for in-situ geological context determination and scientific target selection was a main objective. To process the collected data, a first version of the preliminary PanCam 3D reconstruction processing & visualization chain was used. Other objectives included to test and refine the operational scenario (based on ExoMars Rover Reference Surface Mission), to investigate data commonalities and data fusion potential w.r.t. other instruments, and to collect representative image data to evaluate various influences, such as viewing distance, surface structure, and availability of structures at "infinity" (e.g. resolution, focus quality and associated accuracy of the 3D reconstruction).

Airborne images with the HRSC-AX camera (airborne camera with heritage from the Mars Express High Resolution Stereo Camera HRSC), collected during a flight campaign over Svalbard in June 2008, provided large-scale geological context information for all field sites.