

SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration - Part 1 (3A)

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RESULTS FROM EUROGEOMARS CAMPAIGN AND LESSONS FOR FUTURE MISSIONS

Abstract

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The goal of the EuroGeoMars campaign in Utah Mars Desert Research Station mission (from 24 January to 28 February 2009) was to demonstrate instruments from ExoGeoLab pilot project, support the interpretation of ongoing missions such as Mars-Express, validate a procedure for Martian surface in-situ and return science, and study human performance aspects. This chain begins with characterisation of the local surface and close sub-surface environment, before moving on to sample extraction and analysis. The characterisation stage involves a survey of a sample area in the vicinity of the MDRS site by our geologists and other team members. This utilises satellite and aerial photography to inform the overall morphology and geological unit distribution, with the specific geo-logical and geochemical context being provided through the use of imagers and spectrometers. Further reconnaissance is used to plan sample-extraction EVAs at sites of geochemical and astrobiological significance. Characterisation of larger-scale features is conducted in-situ (for example using ground penetrating radar to investigate the close sub-surface). Results from these sorties inform the choice and planning of sites for surface and subsurface sampling. The sample extraction step – the nature of which is dependent on the identified areas of interest – involves standard geo-logical tools such as rock drills and scoops. These samples were returned to the MDRS for analysis using microscopes and other analysis techniques (XRD/XRF, visible near Infrared reflectance, Raman spectroscopy, Oxydation analysis, Polymerase Chain Reaction DNA analysis. These documented samples were afterward taken to ESTEC and collaborators institutes for analysis by various techniques.