



EuroGeoMars campaign at Mars Desert Research Station: Preparing for Future Mars Landers and Sample

B.H. Foing (1), V. Pletser (2), C. Stoker (3), L. Boche-Sauvan (1), and the EuroGeoMars Crew & Support Team

(1) ESA ESTEC/SRE-S, Research & Scientific Support Dept., Noordwijk, Netherlands (bernard.foing@esa.int, +31 71 565 4697), (2) ESA ESTEC/HSF, Human Spaceflight Directorate, (3) NASA Ames Research Centre,

Background: Surface science is one of the prime objectives of current and future Mars, Moon, or planetary missions and encompasses a wide range of activities from global mapping via specific studies of localised regions until microscopic scales. The studies of rocks and soil in situ, or with sample return missions, require the development of systematic multi-instruments protocols, characterisation diagnostics, and merging of data from various techniques. Both photogeology and mineralogical wide scale mapping have been performed to some extent previously so significant new surface science results may only come from co-ordinated multi-instrument operations operating from the surface.

EuroGeoMars MDRS campaign: The goal of the mission (from 24 January to 1 March 2009) is to demonstrate and validate a procedure for Martian surface in-situ and return science. 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 geological 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 sub-surface sampling. The sample extraction step – the nature of which is dependent on the identified areas of interest – involves standard geological tools such as rock drills and scoops etc, as well as more specific techniques such as lacquer peels. These samples are returned to the MDRS for analysis using microscopes and other analysis techniques. These documented samples are afterward taken to ESTEC and collaborators institutes for analysis by various techniques.