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Human Aspects and Habitat Studies from EuroGeoMars Campaign

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Introduction: In a human space mission, the human factor is one of the dominant aspects, which may strongly influence work results and efficiency. To quantify such a difficult and uncontrollable aspect of space missions, it is necessary to reproduce as exactly as possible the environmental and technical conditions in which astronauts may be confronted: limited re-sources, social interactions in an isolated and cramped area... We will take the benefit of the EuroGeoMars campaign in the Mars Desert Research Station (MDRS, Mars Society) in Utah to observe and measure these characteristics.

EuroGeoMars campaign: The EuroGeoMars team aims at assessing the development of scientific protocols and techniques in geology and biology research in planetary conditions. In this framework, MRDS simulation constitutes its main achievement. The scientific investigations conducted in MRDS are expected to provide valuable results, beyond the simple reflection on how managing planetary specific conditions. Nevertheless, the different scientific protocols, even tailored for extreme environmental conditions, require an exhaustive analysis to evaluate how the results and their timing may possibly be affected.

MDRS: The MDRS habitat will demand the crew members to work in a cramped environment, surrounded by dust and very limited manpower. Moreover, energy power and communication bandwidth will be limited to the crew members.

Human aspects and habitat studies: The crewmember will work in an uncomfortable environment in the habitat: dust, cramping and crowd. Moreover, the sustainibility of the mission will relie on an optimal energy and ressources sharing. This will impose a planification of the different investigating activities.
The study of the human aspects and habitat will be performed in terms of impact on scientific and technical tasks rather than in terms of crew's comfort. As any astronaut will previously be aware of the daily condition, we want to improve the working conditions in the aim of optimizing the obtaining of scientific results. A mission off the land will be worth only with a real scientific gain. Moreover, as the schedule is focused on the work time, better working conditions will provide better general living resentment.
Following this approach, observations and interviews of the crewmembers in the simulation will be done. That will cover several sides: layout, equipment, area, and mostly man-machine interface. This last side will be the most studied in different situation: during daily life, in the laboratory, in the workshop and during the EVA. Indeed, the specifications for such an interface will be different according to the use: easy use in EVA, but with a good layout in the habitat.

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