

## 21st SYMPOSIUM ON SPACE ACTIVITY AND SOCIETY (E5)

Future and current space missions: including and expanding all aspects of human life on-board and in other worlds (1)

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MARS HABITABILITY PROJECT AT MDRS (SENSORY EXPERIENCE AND CREATIVE PERFORMANCE FOR MANNED PLANETARY EXPLORATION)

**Abstract**

Key words: Human Factors, Long Duration Space Mission, Habitability, Sensory Experience

Astronauts are required to creatively and adaptively approach problems in space exploration. However in long duration missions under isolation and confinement, psychological and environmental stressors can negatively affect performance of cognitive and creative tasks. We assume that a space habitat system with varied sensory stimulation will result in sustained performance, well-being and reliability, increasing the overall habitability.

The Mars Habitability Project is a pilot study from the Extreme-Design group carried out during the EuroMoonMars Campaign (February-April 2010) at the Mars Desert Research Station (MDRS) in Utah where crews of six members are isolated for two weeks at a time. The project investigates sensory perception and creativity for manned planetary exploration missions with the main goal to improve reliability, well-being, and productivity of the astronaut and to support situational awareness and problem-solving skills during the mission.

Sensory stimuli, such as displays and interaction with color, plants, sound, and fragrance samples, were prepared by specialists. Colour gradations were used to evoke visual aesthetic feelings. Plants

were provided to make the connection between natural elements and tactile interaction. Listening to natural sounds was used to relax and to stimulate imagination. Smelling fragrances were used to evoke past experiences and memories. Focused tasks on creative performance and mood analysis were used to measure the effect of the sensory stimulation. The crew's daily life, social dynamics, schedule, and daily attitude were also recorded and investigated. Methodologies included tests, questionnaires, interviews, and direct and remote behavioural observation.

(Mission in progress at the time of abstract submission, results will be presented within the paper)

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