Mars research in the desert

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DLR researcher Volker Maiwald is a crewmember at the Utah Mars Desert Research Station

Near Hanksville, Utah, in the United States, but 'on Mars'. At least that is what Volker Maiwald will feel when he embarks on his two-week mission in the Mars Desert Research Station on 23 February 2013. The scientist is normally based at the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) Institute of Space Systems in Bremen, where he works determining the feasibility, costs and benefits of space systems and concepts of the future, calculating trajectories and planning habitats for isolated or harsh environments. As a member of Crew 125, he will soon experience being part of a team of six living on Mars.

'Mars is within reach' – the Mars Society advertises on the project website. The group of Mars enthusiasts operates the research station in the Utah desert and makes the crew changeover operation safe. Their new home on Mars is very small – a mere 10-metre long 'box' for six astronauts. "The rooms consist of a very narrow bed, a small folding table and a half-metre square of space in front – it is very sparse," says Volker Maiwald. But a station on Mars would hardly offer its occupants more space. In the two-storey Martian station, the upper floor is designated for living, cooking and eating, and the lower level comprises the workstations and the hatch, to go out for a 'Martian' stroll. An observatory and a greenhouse complete the station.

Research in the greenhouse

The greenhouse particularly impresses Volker Maiwald. "A greenhouse is of utmost importance for missions to other planets, or those that involve living and working in remote locations such as Antarctica." For this reason, the scientist wants to, among other things, get an idea of how effective the crops in the Martian greenhouse are and whether the concepts previously developed by DLR actually stand up to reality. Maiwald is currently working with Daniel Schubert and Dominik Quantius from the Space Segment Systems Analysis Department on various types of closed life-support systems where – isolated from influences of the outside world – for example, plants can grow and be harvested. Where in the artificial Mars habitat could the DLR Micro-Harvester be placed to grow lettuce, herbs and tomatoes as fast as possible? Can the Mars Desert Research Station be used as a greenhouse? The aerospace engineer hopes to gain practical knowledge during his two-week stay. "We will gather knowledge for future Mars missions, but also for applications here on Earth," he says.

Excursions on the Red Planet

As Deputy Commander, Volker Maiwald must support the crew, and as a habitat engineer, he is responsible for taking care of all the technology at the station. "I am responsible, for example, for monitoring the energy and water supply as well as the systems for communicating with the outside world." He will send a daily report detailing the current status. The scientific programme of Crew 125 also involves a trip to the exterior in a type of space suit; outside, there will be an area in which biological and geological experiments are to be conducted. A webcam inside the station will record the life and work of the international crewmembers from Germany, Japan, the Netherlands, Hungary and Canada. On 9 March 2013 the DLR researcher will return from 'Mars' and leave the habitat in the desert. "There aren't many places on Earth where one can live such an experience," says Maiwald confidently.

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'Space walks' in the surrounding area

Volker Maiwald, a researcher at the German Aerospace Center is a member of Crew 125 of the Mars Desert Research Station in Utah. The scientific programme includes 'space walks' in a kind of space suit to an outside area in which biological and geological experiments are to be conducted.

Credit: Mars Society.

Mars Desert Research Station in Utah

In the two-storey Martian station of the Mars Society, the upper floor is designated for living, cooking and eating, and the lower level comprises the workstations and the hatch, to go out for a 'Martian' stroll. An observatory and a greenhouse complete the station.

Credit: Mars Society.

DLR researcher Volker Maiwald

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