



Return from a virtual Mars mission

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Lucie Poulet, from the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR), spent four months living 'on Mars', donning a spacesuit to explore the Red Planet and cultivating vegetables inside the domed Mars station. To do all this, she did not have to move away from her home planet, Earth. The experimental martian habitat is situated on the northern slope of Mauna Loa in Hawaii. "Even if you looked out the window and saw the volcanic landscape – so clearly a part of Earth – it frequently still felt as though you were living on Mars," she says of the several months she spent in this research project, which started on 28 March 2014.

Lucie Poulet soon felt at home in the dome-shaped habitat operated by the University of Hawaii. It would never have occurred to her to leave the environment without donning a spacesuit. "You really do feel cut off from the outside world – isolated here on Earth." No direct contact with other people, restricted Internet access and delayed emails with news from the outside world made everyone in the international team of six researchers feel far from everyday life. Only the most important messages from Earth made their way to the Mars station, and with quite a delay: "I only realised how many things I had missed after I got back to Germany." Before leaving for the mission, the DLR scientist asked friends and family to send letters and postcards to ensure her normal life did not disappear entirely from thoughts, and also as a means of at least interrupting the mundane routines on Mars. So, during the month of isolation she opened these messages one by one and used them to decorate the walls in her tiny room. "I opened one of the letters whenever I felt a little less motivated or slightly unhappy – and immediately the day became brighter."

Tomatoes and radishes added to the diet

Poulet certainly had plenty to do, as her days were filled by the experiments she had prepared for the mission. She is normally employed as a scientist in the EDEN laboratory (Evolution & Design of Environmentally-closed Nutrition Sources) at DLR in Bremen which, among other things, focuses on cultivating vegetables for long-term missions. Her role on Mars was to research plant growth when exposed to different wavelengths of light. This came with an added benefit for the team – once the lettuces, tomatoes or radishes had been harvested, weighed and measured, they ended up on the crewmembers' plates and added a dash of fresh variety to the menu. "I worked with tomato seeds that had been in space for seven years." Three of the 10 seeds germinated despite their exposure to cosmic radiation over such a prolonged period. Poulet also examined the impact of plants on the mental well-being of the crewmembers – isolated in their habitat. The questionnaires produced a unanimous response: "Everyone really enjoyed looking after the plants and having something fresh to eat."

Everyday life in the Mars habitat

The four months that Lucie Poulet spent living in the virtual Mars were not always easy: "You lose sense of time very quickly." The same environment every day, the same five people around you. Poulet did not meet her companions until one week before the mission started. Before that, she had only heard their voices in telephone conferences. So the team spent the first month of the mission simply getting to know each other. "Thankfully, there were no major clashes," she says. "And even if we had differences of opinion once in a while, we were always able to reach common ground." During the day, they all worked on their individual research projects, but gathered around a table for meals. The scientists even worked at the weekend, doing their laundry or cleaning the habitat. "We made agreements to take a break together."

Watermelon and leisure for a change

Poulet used the treadmill every day to stay fit and burn off some energy. She also kept up a strength and fitness regime. "You don't really move all that much when you are in the habitat itself; the only time you get about is when you are working outside in your spacesuit." Poulet emerged from four months in voluntary isolation with two very clear things in mind – eat fresh watermelon and take a holiday on the island that, over four long months, had been her Red Planet. She does not regret the time she spent in the Mars habitat: "I would really like to take part in the human exploration of space and contribute my experience to making these missions possible." Now, back at DLR Bremen, she is starting a new project with the EDEN Team – planning a greenhouse for the Moon.

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Mars on Hawaii



For four months, Lucie Poulet from the German Aerospace Center (DLR) lived and worked in a Mars habitat on Hawaii. Expeditions into the 'outside world' were on the itinerary during this simulated habitation on the Red Planet.

Credit: DLR (CC-BY 3.0).

Field research on Mars



DLR scientist Lucie Poulet (right) conducted geological experiments during the simulated Mars mission on Hawaii. The scientist donned a spacesuit to keep the simulation as realistic as possible.

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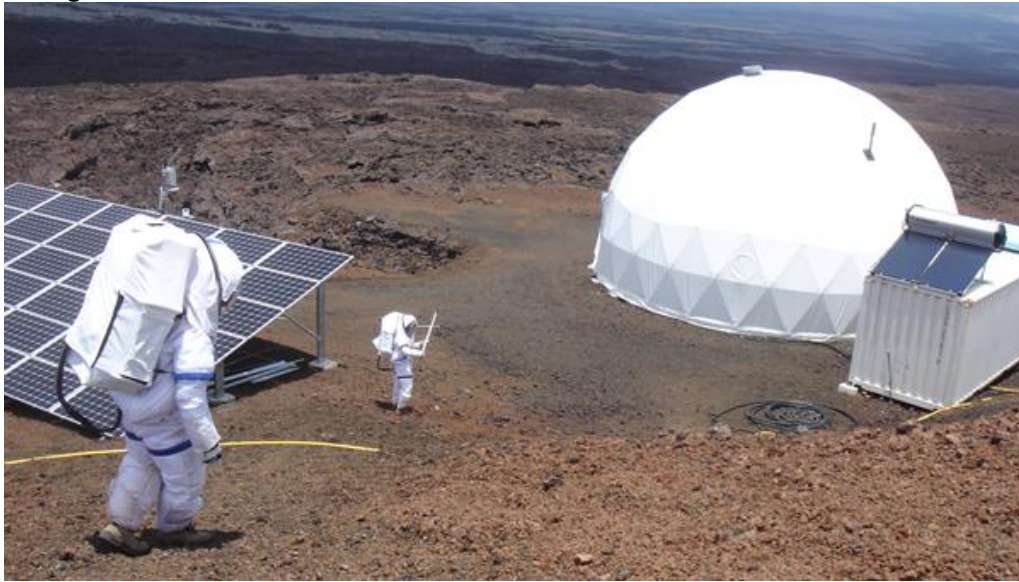
Kitted out for a spacewalk



DLR scientist Lucie Poulet joined an international team taking part in a virtual Mars mission. Living in a habitat on Hawaii, the scientist spent four months on the Red Planet.

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Living in a Mars habitat



The dome-shaped Mars habitat, operated by the University of Hawaii, was home to DLR scientist Lucie Poulet (in the background) for four months.

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