



Press conference – Habitable worlds in the Solar System

Thursday, 26 April, 10h00

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The adaptation potential of extremophiles to Martian surface conditions and its implication for the habitability of Mars

By J.-P. de Vera and Ulrich Köhler

Extreme terrestrial environments like tropical deserts, polar or alpine regions are a challenge to life – some microorganisms like lichens or cyanobacteria nevertheless survive under these extremely irradiated, dry or cold conditions. Could it be possible that these so called 'extremophile' microorganisms would also be able to live, for example, on or right below the Martian surface?

Earlier experiments like BIOPAN or EXPOSE-E brought samples of microorganisms into space. During BIOPAN, different organisms were exposed for ten days to space vacuum, cosmic radiation and selected wavelength ranges of solar extraterrestrial electromagnetic radiation. EXPOSE-E offered the scientists the possibility to expose extremophiles to different conditions under long-duration exposure up to 1.5 years. In both experiments the extremophiles even coped with real space conditions. Could these lichens be candidates for a life on Mars?

Jean-Pierre Paul de Vera, scientist at the Institute of Planetary Research of the German Aerospace Center (DLR), and his team examine therefore the possibility of whether these 'survivors' could also be fit enough to live under Martian conditions by adapting to this environment. As a first step, the scientists collected samples in terrestrial regions that show analogies to Mars, such as permafrost environments with their typical polygon pattern, known from the Mars Phoenix landing site, or fissures, micro-caves and cracks in rocks, gullies and rock glaciers. In the Mars Simulation Lab (MSL) at the DLR Berlin, experiments were prepared to expose these samples to a gas mixture resembling Mars tenuous atmosphere, appropriate humidity, irradiation, temperature and pressure. "It is a technical challenge to perform Mars simulation experiments with long duration exposure times on microorganisms", states de Vera. "One of the challenges is to take care of measuring and monitoring all environmental parameters including measurements of metabolic activity of the investigated microorganisms."

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Information for editors

This research was presented on Thursday 26 April at the press conference 'Habitable worlds in the Solar System' at the 2012 General Assembly of the European Geosciences Union. The corresponding scientific abstract, presented at the PS8.1 scientific session, is available at: <http://meetingorganizer.copernicus.org/EGU2012/EGU2012-2113.pdf>.

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