

## **EuroMoonMars Extreme Field Analogue Campaigns**

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### **EuroMoonMars campaigns**

We have organised field campaigns (EuroMoonMars) in specific locations of technical, scientific and exploration interest. Field tests have been conducted in ESTEC, EAC, at Utah MDRS station, Eifel, Rio Tinto, Iceland, La Reunion, Hawaii, and LunAres base at Pila Poland in summer 2017. These were organised by ILEWG in partnership with ESTEC, VU Amsterdam, NASA Ames, GWU in Utah MDRS (EuroGeoMars 2009, and then yearly for EuroMoonMars 2010-2013).

Other EuroMoonMars analogue field campaigns using selected instruments from ExoGeoLab suite were conducted in other MoonMars extreme analogues such as Eifel volcano, Rio Tinto, Iceland, La Reunion, Hawaii.

The ExoGeoLab research incubator project, has started in the frame of a collaboration between ILEWG [3] (International Lunar Exploration working Group <http://sci.esa.int/ilewg>), ESTEC and partners, supported by a design and control desk in the European Space Incubator (ESI), as well as infrastructure.

We brought the ExoGeoLab lander and suite of instruments for a test campaign at Eifel volcano park in

Germany in 2009 (EuroMoonMars 2009), and more recently in 2015 & 2016. We tested various phases of a robotic lander mission (rover deployment, lander inspection, instruments remote operations, lander + 2 rovers cooperative operations, sample collection and analysis) as well as possible operations during Extravehicular activity astronaut simulations.

### **EuroMoonMars 2017 & campaigns at LunAres base at Pila, Poland.**

In Summer 2017, the ILEWG ExoGeoLab lander was brought to be part of a series of MoonMars simulation campaigns in LunAres base just completed in Pila airport, Poland. We present various posters illustrating these EuroMoonMars results:

B. Foing, A. Lillo, P. Evellin et al: ILEWG EuroMoonMars research technology and simulation

P. Evellin, B. Foing, A. Lillo et al: 2017 EuroMoonMars Analog Habitat Preparation and Simulation at ESTEC

A. Lillo, B. Foing, P. Evellin et al: Remote operations of ExoGeoLab lander at ESTEC and LunAres base

V. Guinet, M. Monnerie, B. Jehannin, A. Cowley, C. Jonglez, B. Foing: Preparation of human telerobotics operations using EAC & ESTEC facilities

C. Stoker, J. Clarke, B. Foing, K. Martin Mineralogical and organic properties of samples from MDRS Mars Desert Research Station; analog study for MSL Curiosity

M. Offringa, B. Foing, C. Jonglez: UV-VIS NIR and FTIR spectroscopy of MoonMars analogues

D. Wills, B. Foing: Gamma-Ray bursts spectral structure and implications for life

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### **References**

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### **Short Summary**

We organised field campaigns (EuroMoonMars) in specific locations of technical, scientific and exploration interest. Field tests have been conducted at ESTEC, EAC, Utah MDRS station , Eifel, RioTinto, Iceland, La Reunion, Hawaii, and LunAres base at Pila Poland in summer 2017. These were organised by ILEWG in partnership with ESTEC, VU Amsterdam, NASA Ames, GWU.