IAF SPACE EXPLORATION SYMPOSIUM (A3)
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HIGHLIGHTS FROM EUROMOONMARS AND EUROSPACEHUB 2024-2025: RESEARCH, TECHNOLOGY, ASTRONAUTICS, INNOVATION

Abstract

Lunex EuroMoonMars, has been organizing in collaboration with ESA, NASA, European and US universities a programme of data analysis, instrumentation tests, field work and analog missions for students and researchers in different locations worldwide since 2009, including Hawaii HI-SEAs, Utah MDRS, Iceland, Etna/ Vulcano Italy, Atacama, AATC Poland, ESTEC Netherlands, Eifel Germany, etc... Missions, Data, Instruments, Field Work, Astronauts: EuroMoonMars is an ILEWG programme [refs] in collaboration with space agencies, academia, universities and research institutions and industries. The programme includes research activities supporting Moon and Mars Missions for data analysis, instruments tests and development, field tests in MoonMars analogue, pilot projects, training and hands-on workshops, technical visits and outreach activities.

Support for Moon, Mars and Space Missions: we have contributed to lunar missions (SMART-1, Kaguya, Chang'E 1-8, LCROSS, LRO, Chandrayaan 1-3, CLPS), as well as Mars missions (Mars Express, MRO, MER, Curiosity, Perseverance, ExoMars TGO 2018 and Rosalynd Franklin Rover 2028). LUNEX is participating to future lunar lander missions, including commercial landers, in particular Qosmosys and from CLPS and Artemis programme. LUNEX CEO Prof Foing is now Chief Scientist for Qosmosys lunar lander, and is coordinating possible lunar science and exploration payloads, with LUNEX EMMESI supporting instruments teams.

Sample analysis: we analysed various samples including meteorites from Moon, Mars, asteroids, and analogue field samples from campaigns (Vulcano, Etna, Hawaii HI-SEAS) using spectrometry, hyperspectral imaging and Raman . LUNEX also participates in collaboration with TU Delft in the study of ice, minerals and organics mixture relevant for Moon, Mars and icy Moons.

Payload development: we have developed a test bench for sample analysis using reflectance and transmission spec-troscopy, Raman spectroscopy and microscopy. We also adapted an Hyperspectral camera for sample analysis and for telescopic observations of the Moon and other celestial objects. Space Photonics Lab : this is being developed with in collaboration with Fotonika Latvia, with cubesat synergy.

ExoSpaceHab Xpress (ESH-X) is an innovative portable lunar base simulator designed for educa-tion, analog missions and public outreach. This habitat has been funded by European consortium EuroSpace-Hub and its partner LUNEX EuroMoonMars. After being exhibited at a conference and Padova Botanical Garden in Italy, ExoSpace-Hab-X was installed at ENS Paris Saclay, prominent research centers. It was then installed at SBIC Space Business Innovation Centre near ESTEC Noordwijk, and in various locations in France (Pleaux-Auvergne, Grenoble) and Europe (Leiden, Padova) in 2024 and 2025.

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References https://ui.adsabs.harvard.edu/search/q=euromoonmars