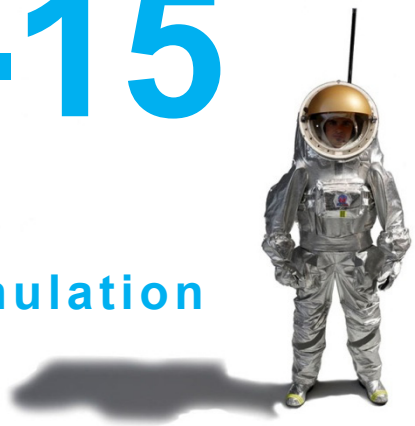
Österreichisches Weltraum Forum
Austrian Space Forum
Sillufer 3a, 6020 Innsbruck, Austria
Web: www.oewf.org , Email: info@oewf.org

AMADEE-15

Announcement of Opportunity

Austrian Rock Glacier Mars Simulation



In August 2015, the Austrian Space Forum will conduct an integrated Mars analog field mission in western Austria, in the framework of the PolAres research programme. Directed by a Mission Support Center, a small field crew will conduct experiments preparing for future human and robotic Mars exploration missions.

The Austrian Space Forum solicits experiment proposals in the fields of geosciences, engineering, planetary surface operations, life sciences including astrobiology, and others. The deadline for submissions is 06 October 2014. The announcement of the selected proposals will be released on 14 October 2014.

For questions, please contact:

Dr. Gernot Groemer, PolAres Programme Officer, Austrian Space Forum
Sillufer 3a, 6020 Innsbruck, Austria. gernot.groemer@oewf.org

DVR-Nr./Data Protection Registry 4012062, ZVR-Zahl/Austrian National Associations Registry Nr. 900838754, UID/VAT: ATU66428902

Field mission aims

Conducting field research in an environment representative for Mars missions is an excellent tool to gain experience and understand the advantages and limitations of remote science operations on other planetary bodies. In the framework of the PolAres[1] research programme, the AMADEE-15 Mars analog field mission facilitates scientific, operational and technical exploration research for future human Mars missions.

The (rock) glaciers in western Austria are considered to be a relevant proxy for corresponding types of geological features on Mars, featuring a diversity of biological signatures and terrain topographies similar to Martian terrains requiring a diligent exploration mission design.

AMADEE-15 offers…

- **an opportunity to study equipment behavior involving the simultaneous usage of instruments with the option of humans-in-the-loop (via two high-fidelity spacesuit simulators,**
- **a platform for testing life-detection or geoscience techniques, performing terrain tests for rovers and test concepts for high situational awareness of remote support teams,**
- **studying (rock) glaciers as a model region for their Martian counterparts,**
- **serving as a catalyst to increase the visibility of planetary sciences and human exploration**

AMADEE-15 candidate sites: Kaunertal area (tbc)

The final test site(s) will be selected in autumn 2014. The current default region for selecting the test site is the Kaunertal-area, ranging from 2400 to 2900 m.a.s.l., and covering an area of several km². Active rock glaciers and patterned ground indicate the presence of extensive alpine permafrost. This region is extensively studied w.r.t. permafrost distribution and its influence on the hydrological regime, rendering it an analog for ice-rich regions on Mars.

The terrains vary from flat, sandy areas to car-sized boulder fields with a wide range of inclinationsl, including a walk-in glacier crevasse.

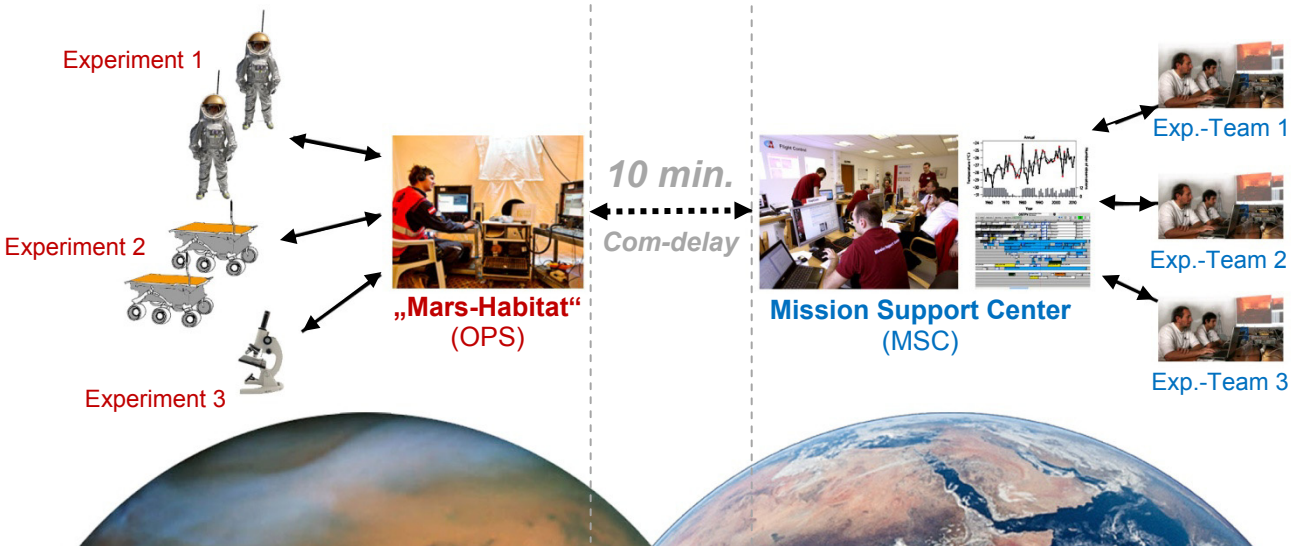
[1] **PolAres is an interdisciplinary research programme of the Austrian Space Forum preparing exploration strategies for a human-robotic Mars expedition with a focus on planetary protection.**

PolAres is designed to **develop** hardware and operational requirements for future human-robotic missions to Mars including near-real time decision making procedures for field exploration, **study** contamination issues in planetary exploration, its hardware elements like the rover and the spacesuit simulator serve as a testbed for instruments in a realistic setting, and **engage** the general public in space exploration.

Location and examples for expected terrain morphologies

Baseline design of the AMADEE-15 field simulation

Based upon previous high-fidelity Mars analog mission simulations, the Austrian Space Forum has established a field campaign infrastructure and associated roadmaps. All field activities will be scheduled through a “flight plan”, which is established by the Mission Support Center depending on requests and available resources.



3-day preparatory phase

The first three days will be for preparatory activities and the establishment of an operational base camp. This period also offers an opportunity for guest researchers and media to be present on site. Instruments which cannot be operated by the OeWF field crew (e.g. due to the experiment sensitivity, operator training requirements etc…) may be operated by the researchers in the field. Selected pilot & calibration measurements may be conducted.

7-day research phase

The following 7 (tbc) days, the MSC Innsbruck/Austria will direct the crew limited to ca. 10-14 crewmembers who will conduct experiments according to a flight plan. Field data will be analyzed in near-real time by the remote science support team which receives a telemetry stream. A 10 minutes time-delay between “Earth” and “Mars” will be introduced.

During both phases, the following infrastructure will be available:

- General logistics (accommodation in tents, water/food/medical care, basic hygiene)
- Broadband internet access and 230V/50Hz electrical power
- A basic mechanical and electrical workshop (including 3d-printer) & basic mobility (tbc)
- Remote support team (Mission Support Center, Innsbruck/Austria)

For reports on comparable, previous OeWF field missions, please visit:

http://www.oewf.org/cms/polares-field-simulations.phtml

Timeline & Selection process

Aug2014	Announcement of Opportunity
06Oct2014, 23:59 CEST	**Deadline for experiment proposal submissions**
14Oct2014	Notification of Acceptance/Non-Acceptance
Until Dec2014	Experiments interaction defined in detail, preliminary mission definition, release of the AMADEE-15 Mission Manifest (the main expedition planning reference document)
Dec2014-March2015	hardware arrives in Innsbruck, field and MSC team training
Aug2015	**Field mission**
Sep2015	return of hardware to Innsbruck, shipping back to home institutions, debriefings
Dec2015 (tbd)	AMADEE-15 Science & Technology Workshop (Austria, *tbd*)

Selection process

Submissions of proposals MUST reach the Austrian Space Forum PolAres Programme office via Email not later than 06Oct2014, 23:59 CEST in electronic form. All proposals will undergo a peer-review process to ensure a high quality of research. They will also have to be self-funded, but the scientific and logistics infrastructure will be provided by the Austrian Space Forum. Also, the option for purely remote-science operated experiments is available.

The selection will be based upon the following criteria

- Scientific, technical or operational merit: Detailed plan of the research that clearly states importance and feasibility of the proposed project, including the potential for data fusion with other experiments and alignment with the aims of the PolAres research programme.
- Logistics resources, ability to assess and mitigate programmatic, engineering and safety risks ("*Can it work reliably and safe*?")
- Ability to process, analyze, share and publish the experiment data in a timely manner.

Depending on the outcome of the selection board recommendations, experiments will either be selected "*as is*", "*with a request for modifications*" (where the Principal Investigator has still the option to decline), or "*not selected*".

Acknowledging the short timeframe for submitting and processing proposals to national funding institutions, experiments can also be submitted as "*subject to funding decisions*". In this case, the final decision on the PI-side has to be provided by 01Dec2014 latest to allow for the flight planning.

Administrative aspects

Junior Researchers Programme

The Austrian Space Forum has a tradition of implementing a "Junior Researchers" programme: Students at high school or university level may submit research projects for AMADEE-15. Their experiments shall allow for experiencing the full life-cycle of an experiment from formulating a research question to data interpretation. The review process for Junior Researchers will be independent from the formal selection.

Media activities

A major media attention is expected for the mission, as it was the case in previous simulations. The Austrian Space Forum as project owner will coordinate and manage all media activities to ensure a professional media campaign.

Funding

Experiments have to be self-funded, including the development of the hardware, documentation, transport of hardware and personnel to and from Innsbruck (Austria), as well as to and from the mission site. For experiment-specific personnel participating in the field, the expenses for infrastructure and consumables will be distributed amongst the experiments. (Ca. € 300-500 /field person-week, tbd).

Legal Disclaimer

Although very unlikely, the Austrian Space Forum reserves the right to cancel the field mission. Hence, teams submitting a research proposal do so at their own discretion, expenses and risks without guarantee of success. Experiment teams will be asked to enter a legal agreement for their respective experiment after a successful review.

By submitting a proposal, you agree to

- …fulfill the requirements put forward in this Announcement of Opportunity, including deadlines, documentation, etc.
- …be available during the mission for remote science support, either at your home institution or in the Mission Support Center.
- …potentially share data for data fusion and joint experiments on a case-to-case bases.
- …be able to cover the funding for your experiment, to deliver the experiment hardware in time to and from Innsbruck/Austria including its documentation and customs clearances.
- …participate in the preparatory teleconferences and training workshops as necessary (either virtually or in person) as well as in the post-simulation science workshop.
- …be willing and able of processing, analyzing and publishing the results of your experiment within a reasonable time after the end of the field campaign.

Submission format (proposals must include the following content)

0. Title	An informative title such that by reading the title a person can understand the goal of the proposed investigation; plus a one-word name or acronym for the proposal.	Cover Page
1. Summary & Contact details	A summary of the proposal's scientific objectives and the means to address them. The detailed contact coordinates of every member in the proposing team (name, affiliation, postal address, email, telephone(s)). There is no limit on the number of Co-Investigators.	≤ 1 page
2. Expertise	A brief outline of the expertise that each investigator will contribute to the proposed investigation.	≤ one paragraph per person
3. Scientific description	A detailed description of the project to be accomplished during the AMADEE-15 mission should follow the standard outline of scientific proposal: • research rationale (why it is important to perform your experiment, including a brief literature review (what was done in this field so far) • Scientific, engineering or operational hypothesis (testable statement being the core of this specific experiment) • detailed proposed methods • expected results & publication plan • potential for collaboration The aim of this part of the proposal is to demonstrate that the proposed work is scientifically/technically relevant and feasible.	≤ 3 pages
4. Technical description	The scientific, technical and management implementation description, including heritage and maturity, where applicable. Indicate if you would need to be present in the field or the Mission Support Center or remotely from your institution. This section should include: • Duration of experiment in the field (e.g. 10 x 2 hrs total) • Suit tester time requested (projected training and actual test time) • Power requirements (if >100 W: e.g. 1500 W, 4 hrs per day) • Communication (if >500 kB/s: for how long/day?) • Storage/shipment sizes & weights • Do you have any other special needs? (e.g. legal/IPR issues, ITAR-restrictions, special needs of team members, etc…)	≤ 3 pages

Submissions MUST reach the Austrian Space Forum PolAres Programme office via Email by 06Oct2014, 23:59 CEST (info@oewf.org, cc: gernot.groemer@oewf.org).