Lunar and Mars analogue research performed at the HI-SEAS research station in Hawaii, part of the EuroMoonMars - IMA - HI-SEAS campaigns
The International MoonBase Alliance (IMA) has been organizing regular simulated missions to the Moon & Mars at the Hawaii Space Exploration Analog and Simulation (HI-SEAS) habitat. HI-SEAS is an analog space research station located on the active volcano Mauna Loa, Hawaii. Missions at HI-SEAS can be from several days to several months long, depending on the needs of the researchers.
Why Mauna Loa?

- HI-SEAS is located on an isolated, yet accessible site year-round
- High elevation (2’500 m): little vegetation & poses physical challenges
- Disused quarry site: no further damage to the land
- Geology similar in composition to Martian/lunar rock & in terms of geological features: skylights, lava tubes & lava flows
Restricted space inside the habitat (12 meters in diameter): almost no privacy & mostly shared living/working space
Restricted amounts of freeze-dried food available for the duration of the mission.
Restricted amounts of water available for the duration of the mission, including <8 min of shower time per week.
A Mission Control Center (MCC) is located in Hawaii & Remote support (RS) is provided by volunteers around the world (e.g. ESTEC & ILEWG members).
Communication delays are imposed from several seconds to 20 minutes, depending on the mission type.
EuroMoonMars IMA HI-SEAS Mission 1 (EMMIHS I) in 2019
Busy schedule: the analog astronauts have a packed schedule every day, filled with research, technology testing, maintenance work, exercising & limited free time. Their progress is monitored by the MCC & RS.
Daily detailed mission reporting to MCC & RS
Examples of research performed:
1. Geological research & mapping
2. Geochemical sampling & astrobiological studies
3. Physiological, psychological & sociological research
Technology testing (including drone, rover and other relevant space mission equipment).
Engineering maintenance performed by the crew engineer(s), such as habitat system monitoring & repairs.

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Issue with setup of beartooth group messaging

Antenna replaced with EVA-NODE1 and functioning. (Ref. EVA-19)
EMMIHS missions have included a number of student, media & art projects, which have led to the creation of films, TV series & student competitions, etc.
The research data & findings from HI-SEAS missions are used to help build a prototype Moon base in Hawaii in the near future, and one day an international settlement on the Moon.

Credit: ESA
Mahalo!

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Credit: HI-SEAS
References & relevant links

- Hawaii Space Exploration Analog and Simulation, [https://hi-seas.org](https://hi-seas.org)
- International MoonBase Alliance, [https://moonbasealliance.com](https://moonbasealliance.com)
- HI-SEAS missions trailer: [https://vimeo.com/327837822](https://vimeo.com/327837822)