GEOs experiments in MARS ANALOG MISSION: AMADE20

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Analog missions are a unique opportunity to test methods and equipment in the field on Earth before they are used in space. AMADEE-20 is a Mars analog simulation in Negev Desert, Israel, managed by the Austrian Space Forum similar to the previous missions (Morocco2013 Groemer et al. 2014, Oman2018 Groemer et al. 2019). The test site is located within the erosional structure of the Ramon Crater. It has a variety of terrain types relevant to Mars exploration.

GEOS experiment is a suite of geology-related experiments that will be performed during the AMADEE-20, it is built on experiences from previous missions (e.g., Losiak et al. 2014). The aim of the GEOS experiments is to study how to optimise the future geological exploration on Mars.

The GEOS is divided into four parts:

(1) **Geo-mapping**: The aim is to optimise the process of preparing and using the geologic map of the exploration area. A map will be prepared before the mission, and later it will be improved using the data collected by a drone, rover and AAs observations. After the mission pre- and post-mission maps will be compared to optimize and improve the mission preparation phase.

(2) **Geo-sampling**: The aim is to compare the geological understanding of the area based on sampling and field observations performed by analog astronauts with the one obtained by a proper research performed by trained geologists in the past.

(3) **Geo-compare**: The aim of the study is to determine strategies of spatial information acquisition from thematic maps and the environment. In other words, we will study how people learn about the spatial relationships between objects and their attributes from thematic maps and while working in the field by using a mobile and stationary eye tracking. The results can be used to create a more efficient way of teaching spatial information acquisition skills to all the people that work in the field, including astronauts to be sent within the next couple tens of years to the Moon and Mars.

(4) **Micrometeorite**: The aim is to search for micrometeorites within the collected sand samples in the field, aiming to find these highest flux extraterrestrial materials on the earth's surface. This experiment might provide a practical and achievable application which may also provide
information about Mars’ history as well as the solar system.


