Paper ID: 37832
student

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Interactive Presentations (IP)

Author: Ms. Monika Johanna Pardo Spiess
Space Generation Advisory Council (SGAC), Germany

Mr. Oscar Ivan Ojeda Ramirez
Universidad Nacional de Colombia, Colombia

TERRESTRIAL ANALOGUES TO MARS, THE MOON AND MICROGRAVITY: ANALYSIS OF RESEARCH SITES FOR ANALOGUE MISSIONS IN COLOMBIA AS AN EMERGING COUNTRY IN SPACE ACTIVITIES

Abstract

As human space exploration advances, it becomes necessary to test new technologies, procedures, and in general how some parts of a mission will be developed, from hardware performance, to logistics and operations, including the analysis of team dynamics, individual psychology and physiology, human factors during a prolonged isolation time as well as limited and delayed communication . Terrestrial analogue missions are designed to have similar geological, environmental and/or biological conditions as in extreme space environments. Current analogue missions, focused on simulating possible scenarios comparable to the surface of Mars or the Moon, require locations that imitate certain aspects of said surfaces for the tests in mention. Mission constraints and operational scenarios depend on the characteristics of the analogue sites. Colombia has a lot to offer in this aspect, given that its geography offers multiple possibilities for analogue mission sites ranging from high-relief to smooth and flat deserts, volcano edifices similar to lunar terrain, hot springs hosting endemic species, caves resembling lunar or martian lava tubes and snow top mountains, among others. Also, existing infrastructure such as diving pools, to perform simulated EVAs under neutral buoyancy conditions, or air force planes capable of performing short parabolic flights are taken into account as places to simulate analogue environments. For this work possible suitable locations in Colombia are analyzed, characterized and categorised: For each possible location the type of analogue mission is defined and potential investigation topics are described. The logistics and resources available and required to use the site by individuals or research teams are also mentioned. This work shows multiple examples for Colombia, where the current improving socio-political situation has opened new opportunities of access to places that were impossible before due to insecurity. The identification of this analogues provides an opportunity to expand research in space exploration matters for the country and the region.