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Simulating Space Habitation: Habitats, Design and Simulation Missions (6)

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LUNEVA: THE FIRST MEXICAN HIGH ALTITUDE ANALOG SPACE RESEARCH ECO-STATION

Abstract

Background: Research in extreme environments, isolation and confinement prepares humanity for space exploration and the development of technological innovation. It also provides solutions from Earth to spatial problems and situations. The new space age in Mexico requires the development of new technologies, companies, and projects. The development of similar space missions and the formation of human capital that will drive Mexico to the stars.

Methods:

Through an space research eco-station located in "Nevado de Toluca (LUNEVA) in Mexico at 4080 m above sea level, strategies and training for human adaptation in hostile environments, risk prevention and health care in space are sought. Three 2-day expeditions were conducted with the aim of conducting medical, psychological, physical, engineering, habitat and simulation training of analog astronauts on survival techniques and skills development in confinement.

Results:

A program of expeditions was generated to work in different areas of extreme climate through crews working for the collection of data in the area of space research, having the opportunity to expand the tests and experiments in different environments and terrains enriching the collaboration with international research centers promoting the satellite area, human capital formation and space exploration, as well as technical manuals and protocol guides for upcoming similar missions and research projects in Mexico with a focus on technological innovation and the goals of the 2030 agenda. All this to develop an ecosystem that allows astro-entrepreneurs, researchers, young people, girls and boys to participate in activities in the space sector, orienting their dreams towards the stars with the help of professionals, international collaboration companies and networks for space.

Conclusions:

This project aims to train the first generations of Mexican astronauts in synergy with the international community by creating similar modules of space training and positioning Mexico in this sector. The sustainable and ecological infrastructure adapted for similar missions and research projects specific to the lunar area, turns out to be an excellent place of tests for new technologies, robotic equipment, vehicles, medicine, communications, agriculture, energy generation, mobility, infrastructure and star-gazing storage and the development of technological innovation in the sector.