SPACE EXPLORATION SYMPOSIUM (A3)
Space Exploration Overview (1)

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ASSESSMENT OF AFRICAN SPACE ANALOGUES

Abstract

Analogue activities are an increasingly important part of national space exploration programmes all over the world. Future human and robotic exploration missions to the Moon, Mars and near-Earth objects will have to deal with long duration exposure to microgravity, extremely isolated environments and challenging new operating conditions that will test not only physiological and psychological aspects of the crew but also the performance of such challenging missions. The success of these missions will depend upon the performance of the astronauts, their interaction with robots and their capability to react to unexpected situations, etc. Identifying the potential constraints and problems that could be encountered during missions in advance, understanding them better, trying to find solutions (prevention is better than the cure), and testing the hardware in relevant conditions, or in other words, having the experience and knowledge, will make a huge difference in minimizing the probability of failures.

These activities will be carried out in analogue sites on Earth: places that offer similar conditions to those that will be found in space. Isolated and virgin areas with landscapes similar to those on Mars, the Moon or NEAs, and with extreme environments, are best suited to performing analogue activities. Africa and its landscapes (unique, isolated, virgin and extreme) offers the perfect conditions to set up areas to test hardware, procedures and any activities needed by space agencies to test the future path of their programmes. Therefore, Africa can also become an important contribution to the in the global space exploration roadmap.

This paper aims to be a first step for Africa to show its potential for future global space exploration. A collection of different interesting sites and potential analogues are described, which will be a valuable guide for international space agencies to choose sites to carry out analogue campaigns. Already known areas like Ibn-Batutta will be analysed in terms of which characteristics make them good analogue sites, as well as potential and as yet undiscovered sites, like more than 20 known impact craters, lunar and Martian analogue landscapes like those offered by Namibia's desert (similar to the ones Mars Global Surveyor imaged), and other sites.