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AN OVERVIEW OF SPACE ANALOGUES IN PORTUGAL

Abstract

Beyond addressing fundamental questions regarding the history of the universe, space exploration also promotes cutting-edge technology advancement, potentiates the use of extra-terrestrial resources, and fosters inspiration and international collaboration. This landscape is evolving rapidly in our modern society. From new public agencies and private players pursuing human space flight activities to new research and manufacturing capabilities carried out in LEO, the volume and complexity of space activities are increasing exponentially. Nonetheless, even though the costs of access to space are decreasing, this domain continues to be significantly capital expensive. Hence, the need to answer to research requirements and de-risk technologies in a more accessible manner has been giving rise to an interest in space analogue facilities and sites across the globe.

Portugal is a new player in the space exploration sector, but since the publication of the national space strategy in 2018, it has witnessed a growing scientific and industrial interest in specific space analogue sites in the country. To further develop space exploration, the Portuguese Space Agency initiated in 2022 an in-depth exercise to harmonize and consistently categorize existing and potential sites and facilities countrywide, with a particular interest in locations that offer complementary features to existing sites worldwide. For instance, Madeira and especially the Azores archipelagos hold the potential to carry out distinctive analogue activities in locations such as Selvagens islands, Capelinhos volcano, or in the Atlantic ocean by doing research, for example, around underwater hydrothermal vents.

Albeit shedding a light at a national level, it is paramount to consider a global and wide perspective by fostering collaboration and resource optimization in order to achieve common goals. Consequently, the effort carried out in Portugal builds upon the extensive experience of national and international experts and relies on the knowledge that other space agencies share via fora such as ISECG. A first deliverable of this exercise is the issue of the Portuguese Space Analogue Catalogue. This publication will become a steppingstone to promote future space analogue activities in the country in international cooperation.

This paper presents the main cross-cutting features of space analogue sites and facilities in Portugal and a way forward to promote their utilization for the benefit of all.