

ARCHISPACE PROJECT



Figs.1-2 Example of extreme environmental conditions on Fogo Island, in Cape Verde

In this decade, we aim to come back to the Moon to stay. It is therefore crucial to develop reliable and safe settlements that adequately protect astronauts physical and mental well-being from all possible threats that the hostile environment of extraterrestrial space presents.

ArchiSpace aims to design and build sub-systems prototypes (such as living spaces) of human infrastructures to be built on planetary surfaces, which will be tested in planetary analogue environments. This project represents the first effort, to the best of our knowledge, to use environmental and geological setting analogues, as a base to define architectural constraints, sketch design and prototypes to be used in future space human settlements. ArchiSpace is pioneering a new field of interdisciplinary and intersectoral research in Europe by bridging geology/space sciences and architecture/space architecture.

Geology/space science is crucial because the subsurface plays a fundamental role in the selection of the landing sites and the location of 'human-focused' habitats. Architecture/space architecture has a key-role in designing comfortable, safe and functional habitats.

ArchiSpace complementary partners are leaders in their respective sectors and hold the necessary know-how and/or technology level to achieve the ArchiSpace objectives. In addition, the human settlements to be developed will involve (new) low impact, low-cost and light operations and ISRU materials. This planetary “green” approach could also be applied on Earth. The project will create, through the planned secondments, common standards, methods and prototypes for the development of space bases on the Moon and in Mars in the future; which will be tested in three joint field activities (e.g., in Morocco analogue sites). Thus, ArchiSpace promotes an innovative international, inter-sectoral and interdisciplinary research and innovation collaboration that can contribute to Europe's competitiveness and growth.

CIAUD-UPT working team will be constituted by a multidisciplinary team of architects, conservators & material scientists, psychologists and educators to deliver:

- . A Report on Living in Extreme Environments;
- . Guidelines on Psychological Adaptation to Extreme Environments;
- . A Report on Green Space Design;
- . Guidelines on Earthen Building on the Moon and Mars.

ArchiSpace: Space Architecture design and prototyping in planetary analogue environments.

PROJECT-LEADER:

IRSPS SRL – International Research School of Planetary Sciences (Italy)

PARTNERS:

- T.U. DELFT (The Netherlands)
- Portucalense University, CIAUD-UPT (Portugal)
- Université de Lyon 1 Claude Bernard (France)
- Vertico BV (The Netherlands)
- HUN-REN Research Centre for Astronomy and Earth Sciences (Hungary)
- Université de Cadi Ayyad (Morocco)
- Università degli Studi G. d’Annunzio Chieti - Pescara (Italy)

FUNDING:

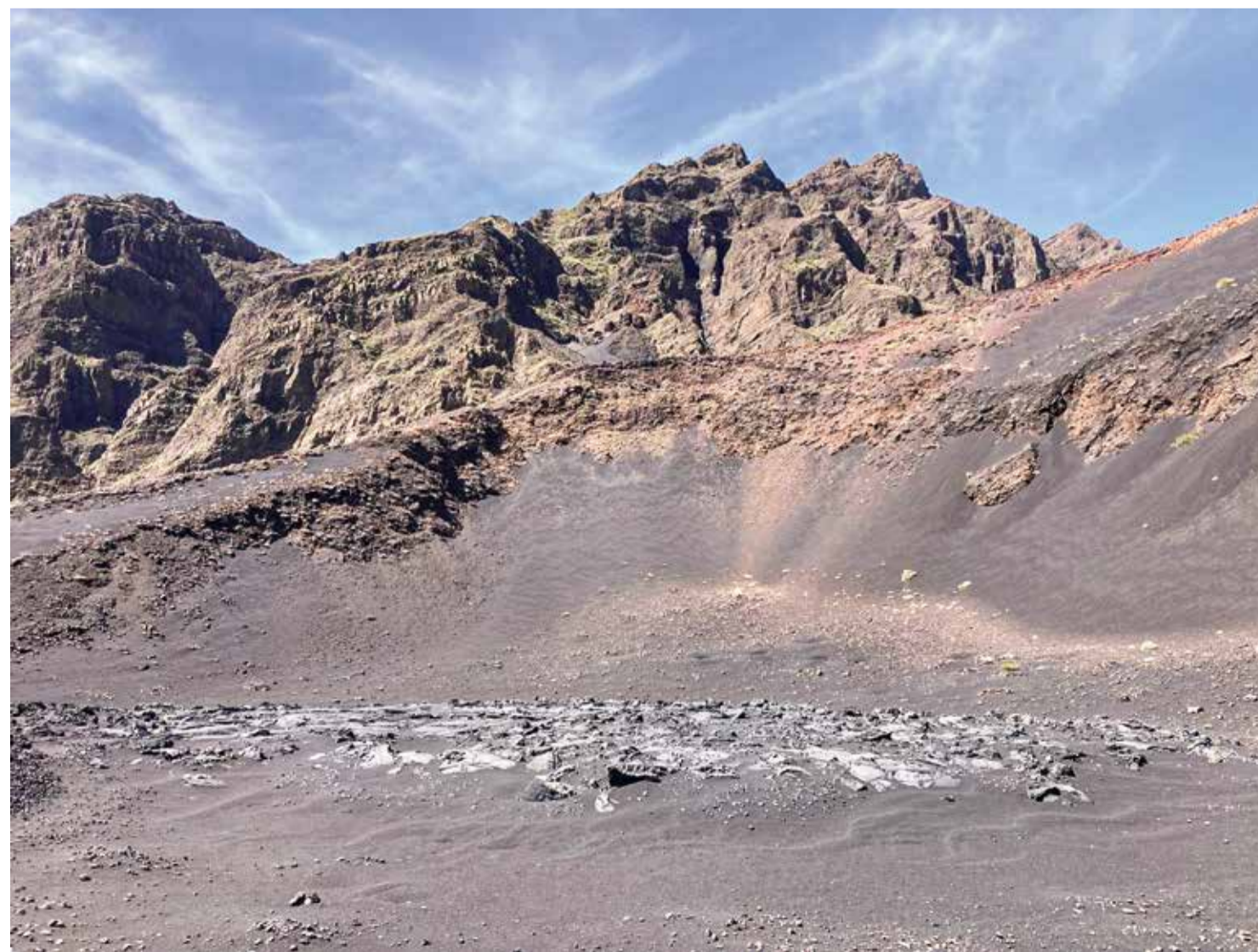
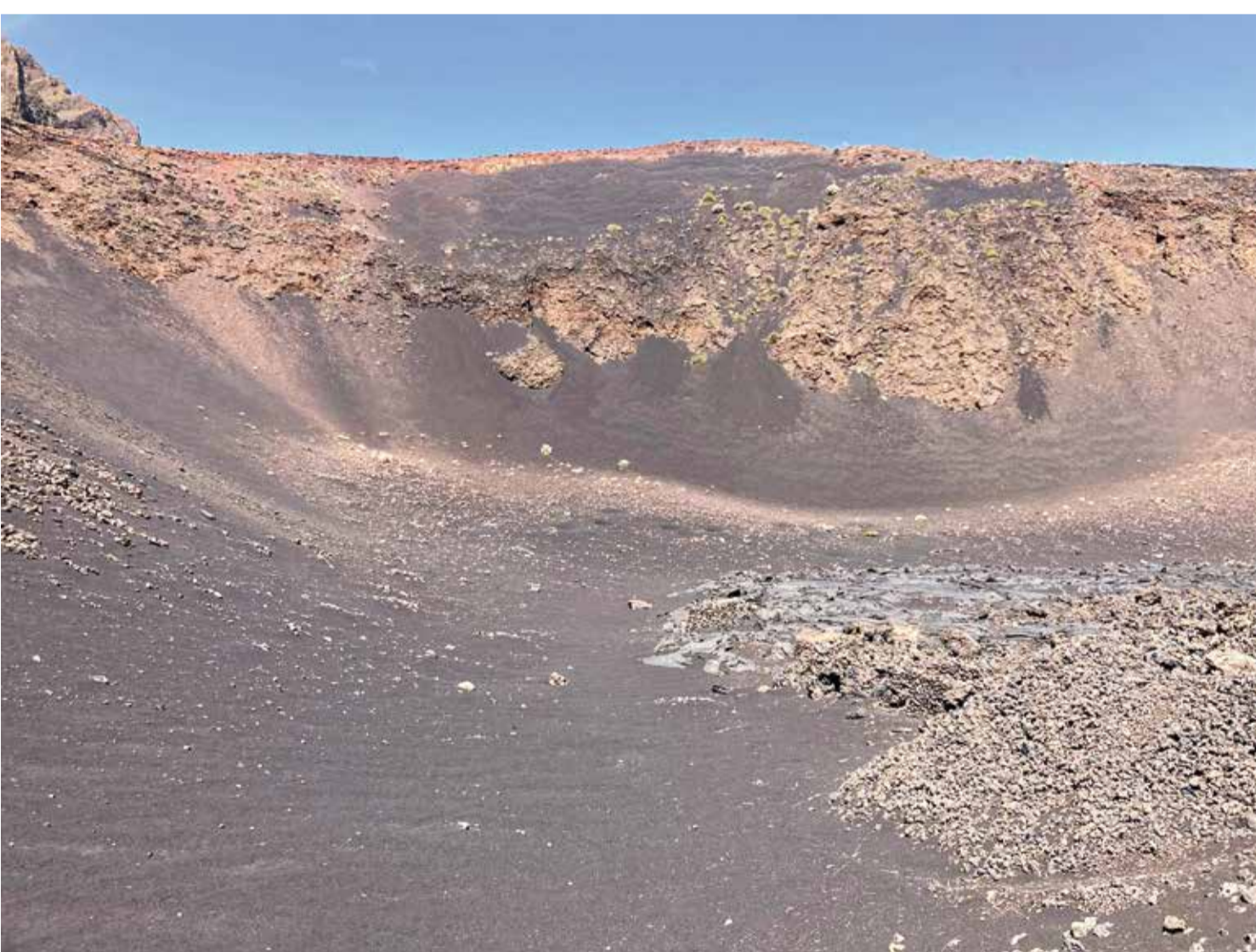
HORIZON Europe | European Marie Skłodowska-Curie Action.

DURATION:

2025-2028



FUTURE RESEARCH



Figs.3-8 Example of extreme environmental conditions on Fogo Island, in Cape Verde