



## **The ancient stone structures of Harrat Khaybar (Saudi Arabia): a neolithic spot frozen in time.**

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The Harrat Khaybar, one of the largest Cenozoic lava fields (known as harrats) occurring in Arabia, hosts traces of prehistoric activity testified by abundant archaeological remains of Neolithic communities. “Enigmatic circular stone formations, reminiscent of those found in Europe are scattered throughout this arid country on hilltops and valleys remote from human habitation” were first already reported in an article published in 1977 by the Sydney Morning Herald, but only with the development of the satellite images they have been recognized in a more systematic way. Field observations remain mostly confined to the work carried out by Roobol and Camp in 1991 for the geological mapping of the Arabia.

Here we report the first field-work in the area aimed to observe the stone-built archaeological structures and their relationships with the geological context that influenced the activity of the ancient inhabitants. This is the first step of a work necessary to classify typologically the structures, understand their function and obtain findings in the field allowing a more specific function definition.

Khaybar area is an unique area because of its high number of visible monuments, the large variety of structures and the excellent preservation due to the arid local climate and the fact that the majority of them are not buried under sand or volcanic lava. It represents a complete prehistoric landscape frozen in time.

Widely distributed volcanic stones were used for the construction of villages, fences, funeral (“keyholes”, “pendants”, “needles”) and more enigmatic structures such as “Kites” and “Gates”. Up to now the use or connotation of most of these structures is far to be fully understood and probably only few of them such as the so-called “desert kites”, stone fences probably used as animal traps have a reliable interpretation. It is even possible that these hunting traps were not designed to just capture and then kill animals, but they could represent a first attempt of domestication of animals. The human-animal relationships mediated by these constructions have both ecological and economic implications, such as the environmental impact of these activities, territorial demarcation and control. Some structures are not randomly distributed, but follow alignments that seem travel routes up to tens of kilometers long. Clearly the anthropic activity reflects different climatic conditions occurring during the early Holocene that up to now represent the only time constraints for these structures. We sampled a recent lava flow, known as Habir Flow, cutting few kites and surrounding other structures (gates, cairns) that could be not much older than the volcanic eruption in order to obtain a minimum age for these features. A state of art dating by using  $^{40}\text{Ar}/^{39}\text{Ar}$  and archaeomagnetic data is coming soon and would help to solve the mystery.