

Characteristics of Tafoni in Western Dronning Maud Land, Antarctica

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Tafoni are a cavernous weathering landform that have been an enigma in the academic community and are found within a large range of environments with an extensive geographical distribution. There is no set definition for the forms and they are commonly confused with other forms of cavernous weathering. Thus, no single process has been identified as the cause behind tafoni. Antarctica provided a unique opportunity to study tafoni without the increased complexity that the role of fauna and flora can have on their development. This paper provides an insight on tafoni found on a single nunatak, Lorenzennpiggen, in the Ahlmannryggen of Western Dronning Maud Land (WDML). Analysis included typifying size and shape of tafoni, the positioning of the landform to the parent rock, and the geology of the parent rock. Results show that geology of the parent rock is not a driving force in formation, due to tafoni being found on a variety of geologies in the area. Tafoni on Lorenzennpiggen do not vary greatly in shape, the majority being classified as spheres and rods. They do, however, vary greatly in size and this can be ascribed to the differences in micro-lithology of the parent rock. It was noted on Lorenzennpiggen that tafoni often grew elongated over lines of weakness in the rock, such as joints and cracks, and began to resemble gutters or rills, instead of the usual cavernous form. Rock hardness data show that a hard outer casing surrounds a softer inner cavern. Furthermore, tafoni are also shown to provide a habitat for lichen colonies, suggesting a potential link between geomorphological landforms and Antarctic biodiversity.