

WIND EROSION IN ARID ENVIRONMENTS: EFFECTS ON SPHINX-LIKE LANDFORMS

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ABSTRACT

Running surface water is the most effective agent of erosion on the surface of the earth. Such fluvial action was responsible for the shaping of Egypt's land surface during humid phases that alternated with dry periods in the past 200,000 years. Geologic and archaeologic evidence indicates that the present dry phase began approximately 5,000 years ago. During that time, the wind reigned as the main agent of erosion.

Wind-carved landforms in rock or softer lake sediments are usually in the shape of inverted boat hulls with their pointed ends downwind. Such aerodynamically stable "yardangs" commonly occur throughout the Western Desert of Egypt. As some are subjected to further erosion, the resulting landforms have sphinx-like shapes of reclining animals.

The wind patterns and vortices around such landforms give clues to the erosive action of the wind. Differences of their effects on the front and back of the land-forms are considerable. Wind vortices also differ at the chest from the back of the head of such landforms. Furthermore, the wind passage along the body on either side is vastly different from its motion along the front and the back of the land-forms. Therefore, study of such natural landforms would help us better understand the effects of the local wind regime on the Sphinx.

