

Toward a Genetic Classification of Aeolian Sand Dunes

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Aeolian sand dunes occur in a wide variety of forms in many different environmental settings. Although several notable attempts have been made to classify dune forms, the problem of dune classification is complicated by the diverse terminology used in the literature. More importantly, most dune classification systems fail to emphasize the genetic linkage between different dune types. In many situations dune morphologies can be represented as part of a continuum from one dune type to another.

The purpose of this paper is to describe a simple dune classification system that stresses the genetic linkage between the different types of dunes controlled by 1) autogenic processes, 2) vegetation and 3) topography. In the first case, dunes controlled by autogenic processes reflect bedform self-organization and the nature of dune morphology is largely a function of the wind regime, sand supply and time. In the second case, vegetation is considered to be an important controlling variable and dunes are classified as part of a continuum reflecting the degree of sand accumulation or deflation. Lastly, dunes are classified in relation to topography, expressed as either sloped terrain or cliffed terrain.