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Geomorphology and drift potential of major aeolian sand deposits in Egypt

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Abstract

Aeolian sand deposits cover a significant area of the Egyptian deserts. They are mostly found in the Western Desert and Northern Sinai. In order to understand the distribution, pattern and forms of sand dunes in these dune fields it is crucial to analyze the wind regimes throughout the sandy deserts of the country. Therefore, a set of wind data acquired from twelve meteorological stations were processed in order to determine the drift potential (DP), the resultant drift potential (RDP) and the resultant drift direction (RDD) of sand in each dune field. The study showed that the significant aeolian sand deposits occur in low-energy wind environments with the dominance of linear and transverse dunes. Regions of high-energy wind environments occur in the south of the country and exhibit evidence of deflation rather than accumulation with the occurrence of migratory crescentic dunes. Analysis of the sand drift potentials and their directions help us to interpret the formation of major sand seas in Egypt. The pattern of sand drift potential/direction suggests that the sands in these seas might be inherited from exogenous sources.

Keyword: *Aeolian deposits; linear dunes; sand seas; Egypt.*

1. Introduction

Dune forms in major sand seas have been classified either as transverse, linear and star (Lancaster, 1995) or as simple, compound and complex (McKee 1979). In terms of dune activity

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