SAND DISTRIBUTION IN THE WESTERN DESERT OF EGYPT

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Prevailing winds from the north move enormous quantities of debris across the Western Desert of Egypt. Some of the debris was produced by fluvial erosion in the geological past, but most of it is the product of wind erosion. The finest particles are hurled by the wind as dust, leaving larger granules behind to armor the surfaces of open desert plains. Sand-sized particles constitute the larger part of wind deposits that accumulate in dunes. In general, dune belts of the Western Desert trend in a clockwise pattern. From north to south these dunes trend toward the southeast direction near the Mediterranean coast; SSE in the eastern part of the desert; due south in the central part; and SSW in the southwestern part of the desert. This pattern is also inferred from the prevailing wind directions, although wind records from the meteorological stations are complicated by their local setting. Our studies of the sand distribution in the Western Desert indicate that dune orientation is affected by scarps that bound depressios. This relationship is believed to result from the interaction between sand-carrying winds and scarps and other topographic highs. The understanding of dune patterns and their migration directions is very important to plans for the development of the Western Desert.