

2.1 Ga OLD AEOLIAN DEPOSITS: KARUTOLA FORMATION; DONGARGARH SUPERGROUP, CENTRAL INDIA.

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The paper describes aeolian strata from ~2.1 Ga old Dongargarh Supergroup, central India, that comprises ~10 km thick succession of volcanic and sedimentary rocks. Karutola Formation (300 m), a mature quartzarenite, is the top-most sedimentary unit of the Supergroup and is sandwiched between two basaltic volcanic flows. Upper part of the Karutola Formation shows two major facies. (1) The Foreshore Facies comprising fine to medium sandstone with parallel laminations, thin trough cross-beds and abundant adhesion strata, and is overlain by (2) the Shoreface Facies comprising medium to coarse sandstone with 10-40 cm thick planar and trough cross-strata showing bipolar azimuthal distribution. In the study area the foreshore association is about 55 m thick and can be traced for more than 5 km. Thickness and lateral persistence of the foreshore facies reflect a well-developed, low-gradient shoreline and their preservation indicates rapid subsidence. Alternation of adhesion strata, low-angle beach stratification and small trough cross-strata of Facies 1 reflects uninhibited interaction of aeolian and coastal marine processes in the Paleoproterozoic Karutola shoreline. Abundance of dry sand, wet substrate, periodic incursions by tide/storms and vigorous wind action in the vegetation-free landscape favoured significant development of adhesion structures and inhibited development of large-scale aeolian dunes. Absence of vegetation and burrowing organisms facilitated preservation of these delicate aeolian strata. Preservation of aeolian strata indicate that aeolian processes played a major role in transporting sediment in Paleoproterozoic earth surface and absence of aeolian deposit of that age is more apparent than real.