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Grain Size Analysis and Characterisation of Depositional Environment of Holocene Sediments from Kelshi to Anjarle Creek, Ratnagiri District, Maharashtra

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Abstract

Grain size and depositional pattern of Holocene sediments from Ratnagiri district, central west coast of Maharashtra have been carried out to evaluate its textural and statistical parameters such as mean, standard deviation, skewness and kurtosis. Linear discriminate function (LDF) analyses were used to understand the depositional sedimentary environment. Sixty seven sediment samples were collected from foreshore, backshore, raised marine terrace and dune sub-environments. The sediment samples at Kelshi beach (KB) and Padale beach (PB) were bimodal to polymodal in character. In KB, the sediments are characterised by fine to very fine sand, moderately sorted to moderately well sorted, strongly coarse skewed and very platykurtic to extremely leptokurtic. In PB, the sediments are characterised by fine to very fine sand, well sorted to moderately well sorted, coarse skewed to strongly coarse skewed and very leptokurtic to leptokurtic. In Anjarle beach (AB), the sediments are characterised by fine to very fine sand, very well sorted to moderately well sorted, symmetrical to strongly coarse skewed and leptokurtic to platykurtic in nature. In KB and PB, the foreshore, backshore, raised marine terrace and dune sediment samples are negatively skewed indicating the prevalence of high energy conditions. The bi-variate plots suggest overlapping environments of beach, river and dune type in Kelshi, Padale and Anjarle beach. The LDF analysis of sediment samples indicates dominance of shallow marine depositional environment for foreshore and backshore.

Keywords: Beach sediments, Grain size analysis, LDF, Depositional sedimentary environments, Ratnagiri district, Central-west coast of Maharashtra.