



Tectonic Interferences in the Evolution of a Tropical River Basin, South Western Ghats, India: Evidences from Hierarchical Drainage Network Anomalies

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Abstract

Drainage networks act as surface expressions that reflect the lithologic, structural, atmospheric factors and geologic process of a terrain. The sequence of the hierarchical progressions of the drainage network development is obliterated in response to variation in these factors. In this article, we evaluate the extent of anomalies in the hierarchical organization of the Minachil River in South Western Ghats, India from hierarchical anomaly index and hierarchical anomaly density. An attempt is also made to infer the erosional status of the river basin from the denudation index. The drainage network exhibit high hierarchical anomaly indices in three tributary sub-basins and the denudation index value range from 0.28 - 0.44 tons/km²/year. The tributary sub-basins of the Minachil River at the head part of the basin, exhibits high hierarchical anomaly index, basin asymmetry revealing the tectonic imprints in the drainage basin evolution.

Keywords: Drainage Morphometry, Hierarchical Anomaly, Tectonic Geomorphology, Rivers of Kerala, Western Ghats.
