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## Drainage basin morphometric analysis of the Zungeru/ Nupeko segment of river Kaduna catchment north Central Nigeria

**Umar Mohammed Umar**
IBB University, Nigeria

This study relied on the medium resolution Digital Elevation Model (SPOT DEM, 20 m resolution) of the Drainage Basin that was acquired from the Office of the Surveyor-General of the Federation in Abuja, Nigeria. Digital spatial data (such as sub-basin and river network maps) were extracted from other reliable sources and literatures. Analyses were undertaken in various stages to obtain parameters for drainage density, form factor, compactness coefficient, elongation ratio and circulatory ratio. Thus, automated feature attribute extraction (Add Geometry Attributes) module was adopted to derive the independent morphometric parameters on ArcGIS. Hydrological interactions of a drainage basin was defined by morphometric properties, soil characteristics and landuse. The drainage density of the basin was 0.49. The drainage density value is low which indicated that the basin is of low relief, less vegetation cover and low permeable soil. The form factor of the basin is 0.19 which indicated the basin to be slightly elongated with flatted peak flows. The basin is 0.18, which indicates strongly elongated and highly permeable homogenous geologic materials, the basin is in its youth stage, moderate discharge of runoff and moderate permeability of the subsoil condition. The calculated elongation ratio is 0.49. This indicate the basin is elongated. The paper also reveals the basin is considerably steep with low relief..The computed value of compactness coefficient of the basin is 2.32. This indicates slightly high peak values for shorter duration. A manual trace on a Google earth map of the basin also agrees with the calculated values of a slightly elongated basin.

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