

Drainage Basin Morphometry of the Lake-Abaya-Chamo-Basin, Southern Ethiopia

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The Lake Abaya-Chamo Basin is a quasi-endorheic system in the Southern Ethiopian Rift Valley. The catchment of the Abaya-Chamo-Basin covers an area of approximately 18,000 km², while Lake Chamo and Lake Abaya together have a size of approximately 1,440 km². The headwater areas extend into the Western and Eastern Ethiopian Highlands; the lake area is located at the bottom of the Rift Valley. Lake Abaya, located north of Lake Chamo, is separated from Lake Chamo by a barrier with a vertical offset of 65 m. Several river systems drain the graben shoulders, depositing huge alluvial fans at the inflexion point between graben flank and graben floor. The Abaya-Chamo-Basin has been chosen as a case study, in order to examine in how far differences in the structural development of a landscape may be distinguished by the drainage basin morphometry.

The Abaya-Chamo-Basin has been examined by morphometric analysis of the sub-catchments (basin shape, river basin development, distribution of slope, exposition and curvature) and morphologic analysis of the longitudinal and cross profiles of the main tributaries (thalweg, valley). Significant differences between the Western and Eastern parts of the Rift Valley have been identified. The study concluded that the tectonic developments are the main influencing factor, while also taking spatial patterns of the morphometric and morphologic parameters into consideration.