



Why are the Rwenzori Mountains so high ?

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With heights of 4 to 5 km the topography of Rwenzori Mountains, located in the middle of a rift zone, poses the title question. The Western Rift of the East African Rift System is embedded within the Late Proterozoic mobile belts between the Archean Tanzania Craton and Congo Craton. The ca 130 Ma old massif lies in the transition from Rwenzori Belt to the north to Kibaran Belt to the south between the southern tip of Lake Albert Rift and the northern end of Lake Edward Rift, both growing since 20 to 15 Ma.

We follow different approaches to explain the strong uplift geodynamically. Here isostasy is assumed to be the dominant driving force; isostatic situations will be examined. If old lithospheric mantle detaches from thick crust, isostatically it rises up, perhaps fast and extreme. Probable causes of a delamination are thermal anomalies under the rifts and plastic yielding, reducing strength in the region of the crust mantle boundary; influx of a supposed plume and/or extension would support the process.

Viscous flow of 2d models is approximated by Finite Difference Method in an Eulerian formulation. Equations of conservation of mass, momentum and energy are solved for a multi component and two phase system. Based on laboratory data of appropriate samples a temperature, pressure and stress dependent rheology is assumed. First results of numerical models will be presented.