



Low-temperature thermochronology, uplift and denudation history of the East African Rift System with special emphasis to the Rwenzori Mtns, Uganda

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In the East African Rift System (EARS), only a few studies quantify the uplift and denudation history of the rift flanks. With the published studies predominantly related to the Kenya, Malawi and Rukwa Rift flanks (southern EARS), the Pangani Rift basin in Tanzania (southern EARS) and the Afar region (northern EARS), respectively. Thermochronologic data discussing the thermal history of the northern part of the Western Rift however are lacking.

The Rwenzori Mtns. are situated in the northern part of the Western Rift of the EARS, following the border between the Democratic Republic of Congo and Uganda. Due to their significant height of more than 5000 m and their extraordinary position within a rift setting, the Rwenzori Mtns. represent a key area for rift-flank uplift in the EAR. Furthermore they seem to play a significant role regarding climate changes in eastern Africa by influencing regional atmospheric circulation resulting in a significant impact on the climate in central and eastern Africa.

In the course of this project results of apatite fission-track and apatite (U-Th)/He thermochronology will be combined to establish the thermal, uplift and denudation history of this region. In part, this aim will be achieved by 2-D and 3-D thermokinematic modelling, integrating surface processes by using/customizing existing computer codes. Testing model solutions (i.e. predictions) obtained for the multidimensional parameter space (thermal parameters, uplift-, erosion rate, tectonic boundaries/relative movements) against the real thermochronological data set, the most likely combinations of parameter values can be constrained; thus the project will deliver conclusions about

(i) timing of onset of rapid uplift and (ii) spatial and temporal evolution of uplift and denudation rates.

A progress-report will be presented with first (U-Th)/He and fission-track data of samples along a nearly W-E transect.