



Sismotectonics in the western branch of the East African Rift System

Damien Delvaux (1,2), François Kervyn (1), Jean-Luc Mulumba (3), Louis Kipata (3), Stanislas Sebagenzi (3), Georges Mavonga (4), Athanas Macheyeke (5), and Elly Bryan Temu (5)

(1) Royal Museum for Central Africa, Geology - Mineralogy, Tervuren, Belgium (damien.delvaux@africamuseum.be, +32 2 7695432), (2) School of Geosciences, University of the Witwatersrand, Johannesburg, 2050 Wits, South Africa, (3) Department of Geology, University of Lubumbashi, Katanga, Democratic Republic of the Congo, (4) Goma Volcanic Observatory, Goma, North Kivu, Democratic Republic of the Congo, (5) Geological Survey of Tanzania, Dodoma, Tanzania

The western branch of the East African rift system is known of its particular seismic activity with larger magnitude (up to Ms 7.3) and more frequent destructive earthquakes than in the eastern branch. As a contribution to the IGCP 601 project Seismotectonic Map of Africa, we compiled the known active faults, thermal springs and historical seismicity in Central Africa. Using the rich archives of the Royal Museum for Central Africa, publications and own field observations, we present a compilation of available data relative to the current seismotectonic activity along the western branch of the East African rift system, in DRC, Rwanda, Burundi and Tanzania. Neotectonic activity related to the western rift branch is in general well expressed and relatively well studied in the eastern flank of this rift branch, in Uganda, Rwanda, Burundi and Tanzania. In contrast, the western flank of this rift branch, largely exposed in the DRC, has attracted less attention. However, data collected during the colonial times show significant sismotectonic activity in East DRC, not only in the western flank of the western rift branch, but extending far westwards up to the margin of the Congo basin. In particular, our predecessors paid a special attention to the mapping and description of thermal springs, noticing that they are often controlled by active faults. In addition, the operators of the relatively dense network of meteorological stations installed in the DRC, Rwanda and Burundi also recorded with variable level of completeness and detail the earthquakes that they could felt. This provides a rich database that is used to complete the existing knowledge on historical seismicity. An important effort has still to be paid to identify and map potentially active fault due to poor field accessibility, tropical climate weathering and vegetation coverage. The main problem in the compilation of active fault data is that very few of them have been investigated by paleoseismic trenching. Therefore, this compilation will highlight the pattern of neotectonic faults (those active since the onset of the last and currently active tectonic stage) rather than those of active faults (with proven activity during the last 10 Ka). The first- and second-order stress field of this region is relatively well known thanks to the stress inversion of earthquake focal mechanisms, but the more detailed stress field related to the interaction of fault segments has still to be defined.