



Seismic hazard assessment of the Kivu rift segment based on a new seismo-tectonic zonation model (Western Branch of the East African Rift system)

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In the frame of the Belgian GeoRisCA multi-risk assessment project focused on the Kivu and Northern Tanganyika Region, a seismic hazard map has been produced for this area. It is based on a recently re-compiled catalogue using various local and global earthquake catalogues. The use of macroseismic epicenters determined from felt earthquakes allowed to extend the time-range back to the beginning of the 20th century, thus spanning about 100 years. The magnitudes have been homogenized to M_w and the coherence of the catalogue has been checked and validated. The seismo-tectonic zonation includes 10 seismic source areas that have been defined on the basis of the regional geological structure, neotectonic fault systems, basin architecture and distribution of earthquake epicenters.

The seismic catalogue was filtered by removing obvious aftershocks and Gutenberg-Richter Laws were determined for each zone. On the basis of this seismo-tectonic information and existing attenuation laws that had been established by Twesigomwe (1997) and Mavonga et al. (2007) for this area, seismic hazard has been computed with the Crisis 2012 (Ordaz et al., 2012) software. The outputs of this assessment clearly show higher PGA values (for 475 years return period) along the Rift than the previous estimates by Twesigomwe (1997) and Mavonga (2007) while the same attenuation laws had been used. The main reason for these higher PGA values is likely to be related to the more detailed zonation of the Rift structure marked by a strong gradient of the seismicity from outside the rift zone to the inside.

Mavonga, T. (2007). An estimate of the attenuation relationship for the strong ground motion in the Kivu Province, Western Rift Valley of Africa. *Physics of the Earth and Planetary Interiors* 62, 13–21.

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Twesigomwe, E. (1997). Probabilistic seismic hazard assessment of Uganda, Ph.D. Thesis, Dept. of Physics, Makerere University, Uganda.