



Daily rainfall above 75mm is a major trigger to landslides in the Muhunguzi, western Burundi

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Located in the East African Rift Valley, western Burundi is often threatened by landslides during the rainy season. Damage can be seen both in the mountains, the sites of the landslides, and in the plain where sediments are deposited: environmental degradation, loss upstream and downstream of cultivated land, destruction of infrastructures, loss of life, waterborne diseases, floods of streams laden with sludge and stones torn off during landslides... The magnitude of these shifts justifies the need for studies to understand the factors that cause this part of Burundi to be vulnerable to landslides.

Here we highlight the relationship between the environmental context and the process of landslides in this region. To analyze the impact of geomorphological, geological, soil and climatic conditions as well as anthropogenic factors, we carried out an inventory of landslides in the Muhunguzi watershed, a survey of the local population and an analysis of rainfall over the period 1935-2014.

Of 7 Muhunguzi sub-watersheds with a total area of 21.2 km², 43 landslides were identified, 29 of which were on a single sub-watershed. Most landslides were shallow. Geomorphology was characterized by steep escarpments interspersed with valleys. The landslides were located on the lower slopes and most affected the rivers. The lithology was dominated by shale inclined parallel to the slope. Landslides were located on rocky, black or red soils, identified as Nitisols. The majority of landslides occurred on cultivated fields. Daily precipitations ranging between 75mm and 100mm with a return period of 5.3 years are strongly correlated to shallow landslides in the studied area. Such intense daily rain thus appears here as a major trigger to these landslides. In addition, relief, geological and soil conditions are predisposing factors while population density and the resulting land pressure worsen land instability.

We conclude that further studies are needed to understand the impact of soil processes and human activity in order to identify adequate management practices preventing landslides in Muhunguzi area.