

Mapping and Database on Mass Movements along the Eastern Edge of the East African Rift in Burundi

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Abstract : The eastern edge of the East African Rift in Burundi shows many mass movement phenomena corresponding to landslides, mudflow, debris flow, spectacular erosion (mega-gully), flash floods and alluvial deposits. These phenomena usually occur during the rainy season. Their extent and consecutive damages vary widely. To manage these phenomena, it is necessary to adopt a methodological approach of their mapping with a structured database. The elements for this database are: three-dimensional extent of the phenomenon, natural causes and conditions (geological lithology, slope, weathering depth and products, rainfall patterns, natural environment) and the anthropogenic factors corresponding to the various human activities. The extent of the area provides information about the possibilities and opportunities for mitigation technique. The lithological nature allows understanding the influence of the nature of the rock and its structure on the intensity of the weathering of rocks, as well as the geotechnical properties of the weathering products. The slope influences the land stability. The intensity of annual, monthly and daily rainfall helps to understand the conditions of water saturation of the terrains. Certain natural circumstances such as the presence of streams and rivers promote foot slope erosion and thus the occurrence and activity of mass movements. The construction of some infrastructures such as new roads and agglomerations deeply modify the flow of surface and underground water followed by mass movements. Using geospatial data selected on the East African Rift in Burundi, it is presented case of mass movements illustrating the nature, importance, various factors and the extent of the damages. An analysis of these elements for each hazard can guide the options for mitigation of the phenomenon and its consequences.

Keywords : mass movement, landslide, mudflow, debris flow, spectacular erosion, mega-gully, flash flood, alluvial deposit, East African rift, Burundi

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