



Meteorological Hazard Assessment and Risk Mitigation in Rwanda.

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Between 10 and 13 April 2012, heavy rains hit sectors adjacent to the Vulcanoes National Park (Musanze District in the Northern Province and Nyabihu and Rubavu Districts in the Western Province of RWANDA), causing floods that affected about 11,000 persons. Flooding caused deaths and injuries among the affected population, and extensive damage to houses and properties. 348 houses were destroyed and 446 were partially damaged or have been underwater for several days. Families were forced to leave their flooded homes and seek temporal accommodation with their neighbors, often in overcrowded places.

Along the West-northern border of RWANDA, Virunga mountain range consists of 6 major volcanoes. Mount Karisimbi is the highest volcano at 4507m. The oldest mountain is mount Sabyinyo which rises 3634m. The hydraulic network in Musanze District is formed by temporary torrents and permanent watercourses. Torrents surge during strong storms, and are provoked by water coming downhill from the volcanoes, some 20 km away. This area is periodically affected by flooding and landslides because of heavy rain (Rwanda has 2 rainy seasons from February to April and from September to November each year in general and 2 dry seasons) striking the Volcano National Park. Rain water creates big water channels (in already known torrents or new ones) that impact communities, agricultural soils and crop yields. This project aims at identifying hazardous and risky areas by producing susceptibility maps for floods, debris flow and landslides over this sector.

Susceptibility maps are being drawn using field observations, during and after the 2012 events, and an empirical model of propagation for regional susceptibility assessments of debris flows (Flow-R). Input data are 10m and 30m resolution DEMs, satellite images, hydrographic network, and some information on geological substratum and soil occupation. Combining susceptibility maps with infrastructures, houses and population density maps will be used in identifying the most risky areas. Finally, based on practical experiences in this kind of field and produced documents some recommendations for low-cost mitigation measures will be proposed.

Reference:

MIDIMAR, Impacts of floods and landslides on socio-economic development profile. Case study: Musanze District. Kigali, June 2012.