



Landslide susceptibility analysis using remote sensing derived data and GIS techniques - Navua Catchment, South Viti Levu, Fiji Islands

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Landslides are very common in the Fiji Region and pose significant hazard and risk to communities and infrastructures. In particular on the Fiji Islands, the interaction of geologic, geomorphic and climatic factors favours the occurrence of gravitational mass movements. The Navua catchment in southern Viti Levu, Fiji Islands, was chosen as study area. This catchment experienced significant landslide occurrences in the past which raised the demand for more detailed landslide studies. In this region, it is of particular importance to calculate landslide susceptibility zones in order to delineate prone areas.

Landslide types, distinguished in young and old failures, are mapped from aerial photography within representative areas in the catchment and a digital landslide inventory is established in MapInfo format. Mapped landslide types include debris flows, translational slides, rotational slides, rock fall and complex features. A direct heuristic approach for determination of landslide susceptibility is performed to assign areas which are prone to landsliding. The Catchment is divided into homogeneous geomorphologic units and for each the landslide susceptibility is determined. Mapping exclusively in the field is too time-consuming and imprecise due to impassable terrain and dense tropical forest cover, which exacerbate the visibility on the terrain. However, landslide maps from aerial photography need to be verified in the field. This study demonstrated that the methodology of mapping landslide distributions from aerial photography is a powerful tool to identify and interpret landslides within the Navua Catchment.