Soil characteristics of landslides on Mount Elgon (Uganda): implications for estimating their age

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The slopes of Mount Elgon, a complex volcano at the border between Uganda and Kenya, are frequently affected by landslides with disastrous effects on the livelihood of its population. Since local people greatly depend on the land for crop production, we examined if and how fast physico-chemical characteristics in landslide scars recover.

A chronosequence of 18 landslides covering a period of 103 years was sampled in order to explore differences between topsoil within and outside landslide scars. For each landslide, two topsoil samples were taken within the landslide and two in nearby undisturbed soils to compare their physico-chemical characteristics. No differences were found for available P, Ca^{2+}, Mg^{2+} content or for the fine earth texture. Recent landslides had however lower content of soil organic carbon (OC) and K^+, and higher content of rock fragments and Na^+ than the adjacent soils. Soil OC content increased significantly with age and reached levels of the corresponding undisturbed soils after ca. 60 years. Older landslides had even higher OC contents than soils adjacent to the landslide. Hence landslide scars act as local carbon sink. We suggest that the occurrence of rock fragments in the topsoil is a useful indicator for mapping past landslides. Moreover, the difference in soil OC content between landslide scars and adjacent soil could be used for estimating the age of landslides in data-poor regions.