



Are plant species and vegetation communities an indicator of soil instability?

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The tight link between spatial distribution of plant species and patterns of soil characteristics has still been demonstrated (Braun-Blanquet and Jenny, 1926). However, there are few studies on the relation between geomorphological processes and vegetation. Recently, Cannone and Gerdol (2003) showed that the distributional pattern of vascular species in rock glaciers could not be directly related to surface instability but depended on a combination of substrate texture and movement intensity. No study has investigated the potential relation between soil instability and plant species distribution.

In this work we used the large landslide of “La Glaivaz” (Ollon, VD, Switzerland) as a model and 36 forest plots from Delarze (1978) and the cantonal inventory as datasets. Plots were all done before the last shallow mud flow (1998). They are located on the landslide area or just outside to allow direct comparison vegetation. Several forest fires happened in the area. Detailed maps of geomorphology and landslide activity reveal a typical scar with outcropping gypsum and an accumulation zone in the study area.

Preliminary results showed that a Correspondence Analysis (CA) on the 36 plots allowed discrimination of the vegetation on the landslide and on the gypsum substrate from the off-landslide plots. When focused on the landslide area, a new CA discriminated three classes of vegetation. These units were distributed along a gradient of xericity. The vegetation areas showing the highest level of xericity were located on the mud flow starting zone.

The distribution of the vegetation on the landslide is driven by complex interactions

between topography, soil and fire dynamics.

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