



Impacts of vegetation on shallow landslide activity in the South French Alps.

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Within the framework of current researches on the role – positive or negative - of vegetation on slope stability, a study was carried out to analyze the impacts of trees on landslide activity in the French South Alps.

The objectives of this work were to determine to what extent forest vegetation help to stabilize a slope and to what extent tree analyses allow to assess the spatial and temporal development of movements. Researches were conducted at both “regional” and “local” scales. The regional scale corresponds to the Barcelonnette Basin covering an area of around 250 km². The local scale corresponds to two shallow slides located in two different geomorphological contexts of the Barcelonnette Basin.

At the regional scale, land-use maps were produced by interpretation of aerial photographs of 2004, 1982 and 1974. Information on forested surfaces at the beginning of the 20th century were also collected from maps, photographs and analysis of literature. Forest dynamics was analysed and indicated an increase of wooded surfaces during the last century. Then, the forest dynamic maps were combined to the landslide inventory map compiled from photo-interpretation and field surveys in 2002 and 2003. The results indicate a strong occurrence of landslides in forested areas and of active processes in the younger forests.

At the local scale, a dendrogeomorphological analysis has been carried out on pine trees on each slide. It indicates several periods of slope instability which are well cor-

related to climatic variations. Hydro-mechanical soil characteristics were also studied from soil samples for each site. The CHASM slope stability model was then used in order to assess the instability of the slopes according to soil and vegetation characteristics. Results show the positive impact of vegetation on slope stability.

Further researches will be undertaken in order to make the modelling more representative of the field conditions and to improve the reliability of the dendrogeomorphological analysis.