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Scenarios of changes in future landslide occurrences and hazard in the South French Alps.

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Abstract:

Landslides across the Alpine countries are recognized by practitioners, politicians and scientists as having a major socio-economic impact, and may represent a significant risk for the population and the properties in particular locations. In this context, climate and landcover changes are crucial components of hazard and vulnerability in terms of quantification of possible future landslide hazard. To avoid these possible damages and even fatalities in the future, a method of assessing spatial and also temporal patterns of landslides is necessary. This study represents results of climate and landcover modeling as a first step to the proposition of scenarios of landslide hazard for the future.

The method used for future climate analysis is the downscaling (at a resolution of 250 m) of large scale IPCC A1B climate models; the method used for future land cover analysis is the CLUE modeling framework combining past and actual observed landcover conditions. The study area is the Ubaye Valley on the South French Alps. Parameter maps of the future climate and landcover are implemented in a statistical approach for future hazard assessment.

The simulations show that climate change is the main driving factors of the hazard changes in the region as the different models predict a very probable increase in landslide activity. This change is materialized either as an increase in the frequencies of landslides or as an increase in surface of the potentially unstable areas.