

Weathering, cycles of saturation-unsaturation, and strain effects as principal processes for rock mass destabilization

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Abstract

Weathering is a process affecting fault gouges in the Swiss Alps. Smectites are one of the alteration products under Alpine climate. Weathering is considered to be one of the main factors leading to rock instability failure. Preliminary analysis of recent rockslides within gneissic rocks in Switzerland indicates that accelerations of movements are linked to precipitations, without any possibility of excess pore water pressure.

Rockslide movements induced by water seepage can be explained by processes like crushing or weathering, and by the strain effect in both the fractures walls and the infilling material. Such processes lead to soil-like behaviour of the faults.

Weathering processes leading to precipitation of smectite appear to be an indicator of slope evolution. The process make possible a change in mechanical properties, which in turn leads to landslides.