

Three consecutive years of road closures due to natural hazards in the Weisstannen valley, Canton of St-Gallen, Switzerland

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The Weisstannen small alpine valley located in the Canton of St-Gallen, Switzerland, has been affected by four different natural hazards these three last years. Its unique access road has been cut off height times during this period: by an earth slide in January 2014, by three debris flows in August 2015, by one debris flow in September 2016, by two floods in June and July 2016 and by a rockfall in May 2016. Although the valley is sparsely populated, 240 people have been affected by the height road closures due to these events. In addition to road damages, several buildings, of which a restaurant (with EUR 190'000 damages) and an animal shelter, have been damaged.

In Switzerland, some roads of 15 communes have been affected by natural hazards at least three times in five years (2012-2016). Then the Weisstannen valley is not an exception at the communal level. However, it is the only valley whose unique access was cut off three consecutive years.

With these repeated events, the population of the valley does not understand how possible it is to end up in such a situation in a country accustomed to natural hazards. In the media and social media, people do not hide their irritation regarding to this situation: "Have the authorities failed to take into account natural dangers despite of the 4.7 million Euro allocated for a flood protection project? Who is responsible of those repeated damages? Why the situation did not improve after the events of the first year and then the second year? ".

In the present work, we try to shed the light on this peculiar case analysing the causes of road closures, studying meteorological, topographical, hydrological and geological data for each events. The effectiveness of the new protective measures built between the events are assessed, as the future planned protectives measures. Road closures consequences on the population and the economy are also estimated. Finally, we estimate the probability of having new road closures in the Weisstannen valley during the next years. Data about the events were documented during field visit, or obtained from the media and official reports.