



Flood and landslide damage in Switzerland - distribution, causes and evolution

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The Swiss Federal Research Institute WSL has been collecting information on flood and landslide damage in Switzerland since 1972. The major source of information are all articles published in Swiss newspapers dealing with flooding and landslides. These articles are analysed and completed with information from insurance companies, state agencies and own surveys to maintain a database containing information on site, causes, processes and damage.

The database consists of 15'000 entries each describing one damaging event in one community. The total financial damage adds up to more than 8.5 Mia CHF and about 90 people have been killed. Distribution in time is highly irregular: While in 1987, the year with the highest financial damage, about 1.6 Mia CHF damage were recorded, for several other years damage totals only a few tens of millions CHF. The most important damaging process is flooding, causing almost 90 % of the events with damage to buildings and more than 50 % of the events with damage to traffic routes. Landslides were found to be the main cause of 39 % of the events damaging traffic lines and 11 % of events damaging buildings. Debris flows are of minor importance in terms of damage to traffic lines and buildings.

The spatial distribution of the events depends on the process. Flood damage represents more or less the distribution of potential damage with concentrations in the densely populated areas of the Swiss plateau and the southern part of the canton of Ticino. Landslide damage is most frequent along the northern and southern border of the Swiss Alps and debris flows are mainly to be found in the inner Alps.

Not all Swiss cantons have been affected similarly. The highest per capita losses are registered in mountainous areas. This can be attributed to the sparse population but

also to the higher energy related to events in the Alps, resulting in more damage to infrastructure (roads, sewage systems, etc.) than in regions with less relief energy. The highest per capita damage was registered in the Canton of Uri totalling almost 30'000.- CHF since 1972. Per capita damage as low as 100.- CHF has been registered in the cantons of Basel and Geneva, which mainly consist of one large city. The average annual damage in Switzerland is in the order of 40.- CHF per person per year.

Looking at the distribution of damage in time, a slight increase can be detected. However, this trend is small compared to the increase of population and especially of exposed values. The world-wide trend showing a dramatic increase in financial damage due to natural disasters in the last decades can't be found in the Swiss data. All information about flood and landslide damage collected by WSL is made available to the authorities dealing with natural hazards and represents important background information for mitigation measures (e.g., hazard mapping). Work on the database will be continued in order to observe future developments.

Literature:

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