



Impacts of floods and debris flows on transportation: Case study in mountain valleys of Switzerland

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Floods and debris flows in mountain areas regularly cause high damage to infrastructure, and in a highly connected society, the interruption of the transport network is even more important. Aiming sustainable risk management of road and rail infrastructure, a key is to quantify the possible impacts of floods or debris flows on infrastructure by a comprehensive vulnerability analysis. Furthermore, in recent decades, the changing mobility of the local population on a daily base and global tourism are the main drivers of an increased number of commuters using road and railway transportation to mountain villages in Switzerland. Thus, these changing patterns additionally highlight the need for improving the quantification of the vulnerability of infrastructure to floods towards making appropriate risk management decisions.

The presented studies comprise the quantification of direct and indirect impacts by applying existing methods and models, the comparison of these different methods regarding the identification of critical elements of road infrastructure that are immediately vulnerable to flooding and quantifying consequences of flooding on the mobility pattern using complex network approaches.