Hazard scenarios for bridges due to avalanche impact based on the experiences with the collapsed bridge Ri di Alp/Lukmanier Pass (AGB1998/108)

Gefährdungsbilder für die Lawineneinwirkungen auf Strassenbrücken am Beispiel der eingestürzten Brücke Ri di Alp (Lukmanierpass)

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Background & policy context:
The two-lane street bridge Ri di Rialp at the Lukmanier pass, which was built in 1972, was completely destroyed by a big avalanche on 11 April 1998. The exact failure mechanism and especially the kind of avalanche impacts are unknown. As far as is known, the bridge broke in the middle, then fell down vertically and was taken away with the avalanche. Thus it is assumed that the bridge had to be loaded with vertical avalanche loads, which goes against the classic rules of avalanche dynamics in this case.

Objectives:
The primary goal of the study is to know the failure which led to the destruction of a two-lane street bridge Ri di Rialp at the Lukmanier pass. To avoid future damages of this kind, detailed analysis of additional hazard scenarios which have not been looked at so far is to be carried out at the example of this event.

To determine the avalanche impacts, the static design of the bridge is analysed first. Then an analysis of the state of the bridge, including material samples and material properties, is carried out. Next, load and mechanism of failure are analysed as well as the avalanche impacts which correspond to the failure load. Finally the avalanche impacts are verified with avalanche dynamic calculations, and general hazard situations deducted.

Parent Programmes:
ARAMIS - ARAMIS information system

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