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Assessment and prevention of the avalanche risk on medium-high mountain from a geo-historical point of view. The Vosges range (France) as a case study.

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To mention avalanche risks in the Vosges generally causes certain disbelief because of its modest height. Moreover, as far as natural risks are concerned, and especially the avalanche risk, medium-high mountains are not usually studied. The attention is more focused on the spectacular and destructive phenomena that occur in highest mountains such as the Alps or the Pyrenees. However, in January and February 2000, fifteen people were victims of avalanches and three of them died. These accidents have suddenly drawn attention to the fact that avalanche risk is underestimated.

In opposition to the Alps and Pyrenees there is no study or systematic inventory of avalanches in the medium-high mountain ranges. Moreover, the many research and methodological articles dedicated to studies on avalanches in the high mountain ranges do not, unfortunately, raise any concerns about medium-high mountain ranges. So, we had to develop a new research method based on handwritten, printed, and oral sources as well as on observations. The results of this historical research exceeded all expectations. About 300 avalanche events have been reported since the end of the 18th century; they happened in about 90 avalanche paths.

Spatial and temporal distributions of the avalanche events can be explained by climate, vulnerability and land use evolutions. The vulnerability has evolved since the 18th century: material vulnerability decreased whereas human vulnerability increased due to the expansion of winter sports.

Finally we focus our study on the perception of the avalanche risk by the winter sports adepts in the Vosges mountains. Indeed, at the beginning of this research, we were directly confronted to a lack of knowledge, or even to an ignorance, of the avalanche risk. Several factors contribute to this situation among which the topography. Even though some places in the Vosges mountains look like the alpine topography, most of the summits are rounded. Furthermore, this mountain presents an annual and seasonal variability of snowfall and snow height. And the summits and slopes which present an avalanche risk can be easily reached in wintertime thanks to car parks close to the summits and the clearing of snow from the roads. A study is therefore being carried out in order to understand the mechanisms of perception and awareness of the avalanche risk. This is the first step towards the development of a new prevention method adapted to the recreational public in medium-high mountains.