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A quantitative and qualitative study on risk perception of multiple rockfall hazards in the Zugspitze Mountains (German/Austrian Alps)

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The intended purpose of this project is to evaluate and differentiate the actual ("objective") risk and the individual ("subjective") perception of rockfall risks in the Wetterstein Alps (Zugspitze Region). We aim to highlight discrepancies between the distinct knowledge on potential threats and the individual behaviour in spite of the awareness of certain threats.

In spite of the fact that both valleys in the Zugspitze Region, the Reintal and Höllental show intense and well studied rockfall activity, they are highly frequented by tourists on their way to the highest mountain of Germany (Zugspitze). An empirical method for a qualitative and quantitative evaluation of risk perception and the individual knowledge about rockfall hazards was developed and carried out in August 2010. The quantitative questionnaire was answered by 130 hikers and the qualitative questionnaire was hereafter presented to a handful of stake holders. The questionnaires refer to both, the knowledge on natural hazards and the individual perception of the risk. On the one hand the questionnaire investigates the interface of the physical rockfall hazard and social aspects of risk. On the other hand it explores the correlation between the individual knowledge of the area, prior experience with rockfall events, an estimation of the own mountaineering experience and the environmental conditions during the hike. Hereafter, five responsible persons of mountain huts, which are frequented by up to 1000 hikers and more per day, were confronted with the preliminary quantitative results of the 130 hikers in a qualitative interview. The qualitative interviews provide a detailed insight into the attitude of the mountaineering hut leaseholders towards the risk perception of hikers and also explore their understanding of the physical rockfall hazard, exposure of individuals, vulnerability and personal experiences.

Given the fact of annual rising tourism figures around the Zugspitze and reminiscent of changing regimes of permafrost and summer rainstorms that influence rockfall activity, we want to evaluate how rockfall risk is perceived by hikers and how they adjust their behaviour. The study reveals what information sources are considered in advance and what role personal experience plays for the planning of a hiking trip. Here we show that several factors evidently influence individual behaviour and act to orchestrate the exposure and vulnerability to the hazard.