



## **Rockfalls in the Mont-Blanc massif during the hot Summer of 2003**

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Rockfall is one of the main processes that affect rockwalls. Because of the existing permafrost, rockfall magnitude and frequency are partly climatically-driven in high mountain areas. Thus, the related risks for people and infrastructures could increase with the degradation of the permafrost due to the present global warming.

During the heatwave of the 2003 Summer in Europe, a large number of rockfalls affected high-alpine steep rockwalls in the whole Alps. But there is a lack of systematic observations about these rockfalls, which are necessary in order to improve our understanding of this process and its relation with the permafrost degradation.

Using data extracted from a SPOT-5 satellite image, we survey the deposits of the 2003 Summer rockfalls at the surface of the glaciers in the Mont-Blanc massif. With additional data (terrestrial observations and photos, field measurements), we documented 182 rockfalls, ranging in volume from 100 m<sup>3</sup> to 30,000 m<sup>3</sup> (total volume: 340,000 ± 100,000 m<sup>3</sup>). Analysis of this rockfall inventory supports the hypothesis of the trigger action of the permafrost degradation for rockfalls in high mountain areas.