



Snow bridge over crevasses, a poorly understood structure on glaciers

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Crevasses are one of the most symbolic landforms for mountaineering. They form when ice creep is not fast enough to allow the shape of the glacier to adjust to the constraints; ruptures thus occur. These fractures, up to tens of meters deep in temperate glaciers, may be marginal, longitudinal or transverse depending on their position. In the accumulation zone throughout the year, or in the ablation zone when the snow cover is present, snow bridges can form and hide the crevasses.

So covered, a crevasse can be easily crossed by climbers and skiers but it also causes a significant hazard in case of bridge rupture. Many accidents result from such failure, although a large part of them does not take a tragic turn. On the very frequented French side of the Mont Blanc massif, 170 mountaineers died during the summers of the period 2003-2012, of whom only 3% due to a break of snow bridges. In winter, skiers are not roped together along itineraries such as the very popular Vallée Blanche, making them much more vulnerable.

Apart from the assessment of the danger by guides and climbers, we know almost nothing about those fragile ice/snow structures. To (i) acquire first data, (ii) transcribe the empirical knowledge of practitioners, and (iii) establish the foundation for a research project, an online survey was conducted in Summer and Fall 2014. About 200 questionnaires were completed. They include information about accident sites (especially topography), snow and weather conditions, characteristics of the incriminated bridges and crevasses, factors and modes of break, indices of crevasse presence below the snow surface, and risk management from practitioners. Main results of this preliminary study will be presented.