

Run out distances of arctic cornice fall avalanches

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Cornice fall is usually considered as a release mechanism for slab avalanches or as a hazard for mountaineers that break the cornice and fall into the deep below the cornice, which causes usually harm to people. In this work, however, we investigate run out distances of cornice chunks. In the unique arctic climate of Svalbard, an archipelago in the Arctic Ocean, such cornice chunks endanger people to get hurt, especially within the town of Longyearbyen. The comparable very hard snow pack of the cornices allows that large chunks are not destroyed while descending down the mountain. The run out distances are as far as buildings and roads are located. To investigate the flow behavior of those cornice chunks we conducted repeated terrestrial laser scans of the area to gain knowledge about 1) the size of the cornice parts that were released at the start and 2) to investigate the flow behavior and the run out distances. The hard cornice chunks usually leave well visible tracks on the snow pack and are easily located at their stopping point within the resolution and accuracy of the laser scans. In this way we determined that the run out distances are usually significant longer than those of usual snow avalanches in the area and that the flow behavior is similar rather to rock fall than to the dynamics of avalanches. In our presentation we present the results of our terrestrial laser scan analysis and discuss what modeling approach would make sense to incorporate cornice fall run out distances into the hazard mapping process for the town of Longyearbyen.