

## ***Interactive comment on “Cornice dynamics and meteorological control at Gruvefjellet, Central Svalbard” by S. Vogel et al.***

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General comments: The presented dataset is unique and valuable. The ideas developed are not substantially new but are sound and based on previous research which is mostly adequately referenced. The paper presents the findings in a clear and concise way.

Specific comments:

1) In the abstract and in the beginning of the paper the authors call the observed events "cornice fall avalanches". This is a term that is generally associated with avalanches that are released after triggering by cornice falls. Later in the paper (P2294) it is stated that there is little or no entrainment in the track. Hence I suggest calling the observed

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events "cornice fall", leaving out the term "avalanche".

2) In the first five lines of the abstract (P2280, L 2-6) and the last lines in the conclusion (P2301, L 19-21), the fact that life and infrastructure are at risk due to cornice fall is used as the reason for the research. For a scientist this may be a good reason to carry our research, but for society in general and specifically for the people living below the cornices, it is not very reassuring that research must be carried out over several years to come to an understanding of the process. Has it been considered that installing safety measures are more important than research to keep the 200 people living in the houses safe? In this respect I also miss the very clear conclusion that with the observations provided here it is clear that warning is not a very good option when considering safety measures for the housing at risk.

3) It seems that the measurements done on for example the crack width are relatively simple and somewhat "ad hoc" solutions. This may explain some of the results where the crack opening is reduced by 20 cm while the crack is not actually being closed (P 2291 L 17-18). Could the methods be improved, for example by installing extensometers or tiltmeters used for example to monitor movements in rocks? This would be valuable information for others trying to do similar observations.

4) It is commented (P 2293 L 25-27) that solar radiation might contribute to cornice failure, and this has been shown in other literature referenced. Do you have any way of quantifying this? For example by using radiation measurements from a place close to the observations? Or, alternatively, this is worth mentioning as a possible improvement to the observation set-up.

5) On P 2294 the size and runout length of the detached cornices are reported. The results are not discussed further in the "Discussion" section. The results are somewhat obvious as they are presented and it might be worth adding some heavier scientific discussion here. For example that for avalanches and other rapid mass movements it is generally the case that events with large volumes have longer runout distances than

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events with smaller volumes.

Technical corrections and typing errors:

A) P 2283 L 4: remove the last "a" in the line

B) P 2284 L 21: remove "as well"

C) Fig. 4, Fig. 11: What do the box and whiskers show? Extremes, 95 percentiles, mean, median, ...?

D) P 2289 L 6-7: The sentence is not easy to understand. Consider rewording "...with minimum periods in excess of ...".

E) P 2297 L 13: Snowpack is normally written in one word (whereas snow cover is in two words).

F) P 2300 L 24: Change "were" to "where".

G) P 2304 L4: Change "Squaq" to "Squaw".

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Interactive comment on The Cryosphere Discuss., 5, 2279, 2011.