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# AVALANCHES HAPPEN

On Monday, February 17th 2020, I was part of a guided tour. During the descent from the summit, we remotely triggered a huge avalanche. The avalanche level at that particular day was 2 – moderate. Three of our group got caught by the avalanche and one person was buried under the snow. We were able to locate the person fast and dig her out immediately. Overall, we were extremely lucky that nothing more severe happened and nobody got seriously injured. Since I was directly involved in the search and rescue activity, I would like to share my thoughts and observations with you to create some awareness.

## What happened

The avalanche happened on the first day of a ski-touring week in Oberengadin during a tour guided by a professional mountain guide and a candidate guide. On Monday we started near Zuoz with two groups of nine people each heading towards Piz Uter (2905m). We ascended the mountain via the standard ski route with some ski carrying on the north ridge. At the summit, the two groups merged, resulting in an unfavorable crowd size of 18 people. For the descent, there were three options: first, the blown off and thus unpleasant north ridge; second, the NW-slope, also blown-off in the upper section; and third, the large safe-looking east slope. The guides decided to go for the east slope. On the first 100m, around 30m were slightly steeper than 35°, the rest closer to 30° before reaching a flat plateau. The idea was to ski down to the mentioned plateau, then traverse out towards the north and get back to the ascent route. The guides coordinated the descent which meant we skied the slope individually, one by one. The guide candidate

went first and established a meeting point for the group. Next, some excellent skiers followed before some weaker skiers went down. The weaker skiers had trouble and at least one of them fell. Then it was my turn and I entered the slope from the ridge as the tenth person. Just at the end of the steep part I suddenly realized that a huge crack appeared on my left and a slab avalanche took off. I immediately stopped and checked the situation, realizing that my location was not affected: The avalanche had been triggered about 100m to my left. The trigger event itself, whether it was me while skiing or one of the weaker skiers who fell, was unclear. The dimensions of the avalanche itself were huge: around 100m wide and 40cm depth of snow sliding down the slope. Nevertheless, overall, there was very little snow in the slope. Near the ridge there must have been a combination of wind-shifted fresh snow lying on old snow, typical for the winter of 2019/2020.

Once I knew I was safe, I started to observe the situation, track people and try to get a first overview. The large group was moving to the right out of the danger zone, another person was to the right of me and was therefore also safe. Two more skiers escaped to the left onto a small hill. But I also saw that at least one person had been caught by the moving snow at the plateau and was being pushed forward. In the next moment, the mountain guide arrived at my location. He advised me to follow him skiing down on the loose avalanche snow searching for signals. I followed his track with some spatial distance in order to extend our reception range. At the height of 2700m, at the end of the plateau, I realized that the avalanche had not stopped there but had moved on for

another 200m over rocky surface. Moreover, it had split up into two branches. The guide soon found skis and a backpack and shouted for me to come to his position where the buried person lay. Luckily she was only covered with 30cm of snow. Nevertheless, for her it was impossible to move, shout or react. The snow was like concrete. We were able to dig her out quite easily but were struggling with further “ghost” signals from avalanche beacons which I will describe further down.

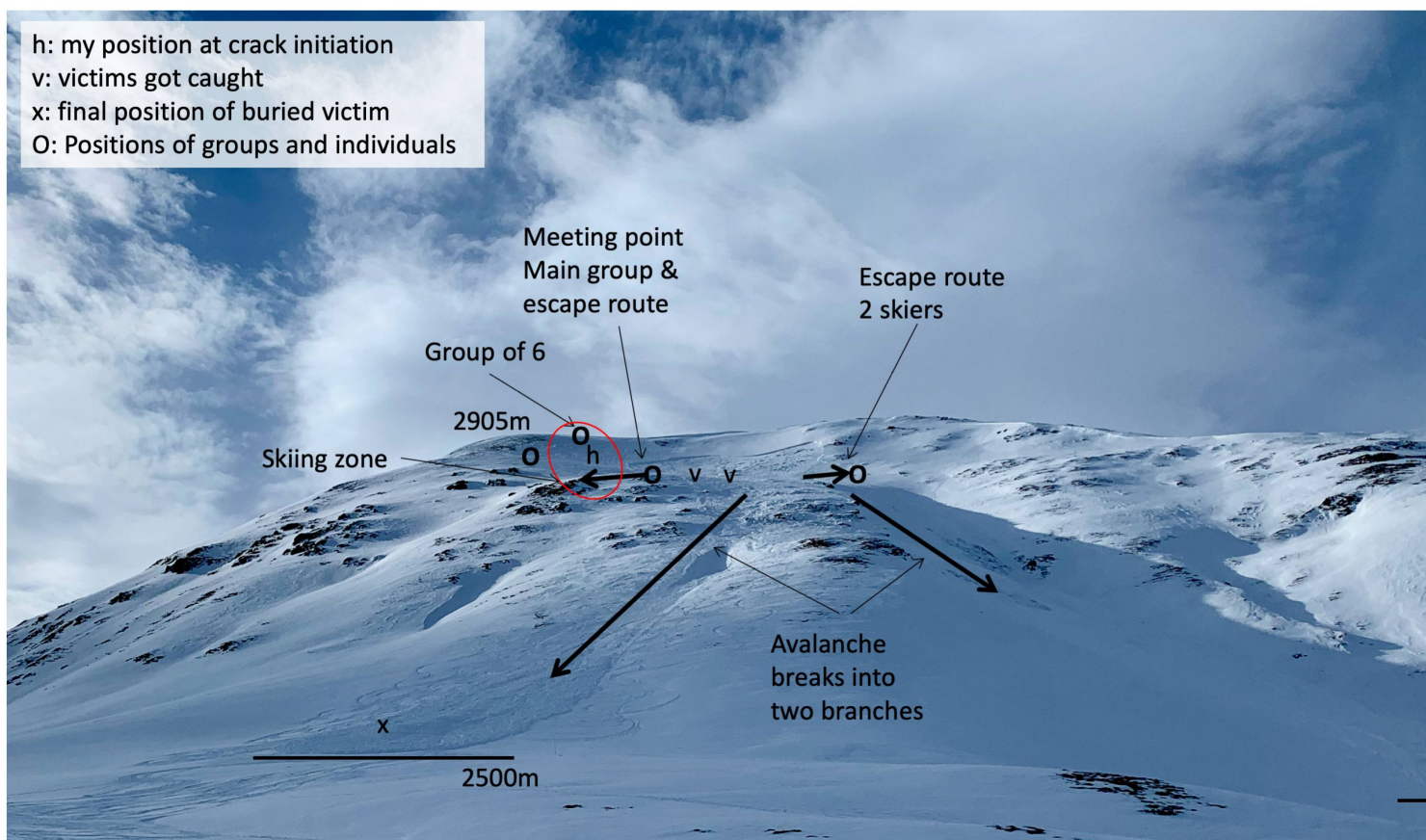
In total, three skiers were caught by the avalanche. One escaped by “swimming” against the snow, another person was partially covered but luckily the head and one arm remained out of the snow. The third person, however, was carried over more than 200m and was fully covered by the snow. In the end, it probably took us 10 minutes to find everyone and rescue them. We were extremely lucky that

nothing more serious happened. Thanks to the professional coordination of the mountain guide we were fast and efficient.

I would like to add some personal observations:

### Hardware / technical topics

“Ghost signals”: Everybody has probably heard about the “ghost signals”. During the evacuation of the buried person, we again and again had up to three additional signals on our beacons and therefore continued to dig. The reason was that one person in the group who had approached us to help had switched his beacon from “search” back to “send”. Do not underestimate how chaotic and nervous the situation can get. Continuously check all beacons in the surroundings and keep asking the others about their beacon status.



Mobile phone network: We did not have any mobile phone network in this remote valley. Keep in mind that there are situations in which it gets very difficult to call for help or rescue. Moreover, our group was divided into three sub-groups: one still waiting on the ridge at the entry of the slope, the large group at the meeting point and the third team at the location of the victims. Without mobile connection, you cannot communicate between the groups. Think about communication signals which you can give.

LVS in the pocket: I am aware that many people carry the beacon in the pocket of their pants. We made the experience that it is very difficult to switch off a beacon of a person which is partially buried in the snow but already rescued. These additional beacon signals are confusing and need to be switched off as fast as possible. I recommend to use the harness provided with the beacon because it makes the beacon much more accessible for others.

Airbag backpack: Quite often the question arises whether it is possible to use and activate an airbag once caught by an avalanche. In the case of this particular avalanche which moved slowly, the victims would have had enough time to activate an airbag which certainly would have helped not to be buried by the snow.

## **Other observations**

Chaotic situation: Even if I had previously spent quite some time learning about avalanches and exercising rescue situations, I was quite overwhelmed by how fast the situation can become confusing, unclear and chaotic. Later, I tried to reflect on the situation and on what I had observed during the event: I was aware of the large group, I took note of other individuals who were safe and I saw the one

person who got caught. However, I missed that the avalanche continued over 200m in altitude. I missed that the avalanche broke up into two branches and I also missed that two more persons got caught. In the end, in such a situation you have to focus on your current role and ignore what else is going on. If you have to dig, you dig. If you take care for others, you just take care for others. However, if you are the leader of the group, your awareness and grasp have to be trained. Another point which needs to be mentioned here is the size of the group: A group of 18 people is just too big to coordinate and very difficult to control.

Personal health and safety protection: When I reached the victim, for some reason which I do not even recall, I took off my gloves to handle something. Then, the situation escalated and everything turned very fast so I just started digging snow without gloves. Consequently, within seconds, my fingers were freezing like crazy. When I tried to get my gloves back on, I realized that it was almost impossible because of wet fingers. This was reducing my efficiency notably. Thus, it is really important to prepare and protect yourself well. It takes only a few seconds, but it increases your efficiency significantly.

Skiing, skills and endurance: Under this topic I would like to describe another impressive observation. Once it was clear that search and rescue procedures had to be initiated, the guide candidate, who was coordinating the group at the meeting point, sent off two skilled persons to search for the victims. They started their mission already half way down the slope. However, the person who found the victim first was the guide who started the descent at the very top! He was able to ski fast and knew where to go efficiently.

Shock and caretaking: Once we knew that everybody was safe and we were sure that the group was complete, we started to calm down. When the avalanche happened, especially people from the group who couldn't help or do anything were overwhelmed by the situation. It is therefore very important to keep asking around if everybody is ok. If someone needs support, you will feel it immediately. It is important also not to hurry. Let everybody sit down, drink something, wait and check again and again if everybody is ok.

You might want to know how we continued after this event. Back at the "Gruppenhaus", the guides took the affected group members

into an environment separated from the rest of the group to reflect the situation again and again. This created an open environment where everybody was given the space to describe his/her feelings. During the remaining week, we continued with these meetings. Also for the mountain guides it was very important to talk with us. As concerns the ski-touring, we continued according to our original plan and went back onto skiers immediately the next day. The following days we had fantastic weather and great powder slopes. Already on the tour on Tuesday, there was a lot of fun and laughing and our confidence returned.

*Hans Wäsle*

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## GEOLOGISCHE EXKURSION IM WINDGÄLLENGEBIET

12./13. September 2020 – Beim Stiftungsfest durfte ich eine geologische Führung in meiner Heimat leiten. Nebst reinen geologischen Fakten ergänzte ich das Programm mit alten Geschichten, welche ich von meinen Grosseltern Gottfried und Margrit Epp-Loretz, dem früheren Hüttenwartspaar der Windgällenhütte, aus ihren Erzählungen erfahren hatte. Wir starteten kurz nach Mittag oberhalb der Windgällenhütte für eine generelle Einführung in das Lesen von geologischen Karten. Weiter ging es dann auf dem blau-weissen Weg in Richtung Unteres Furggeli, wo wir die Geologie an einem Aufschluss südlich des Pkt. 2300 diskutierten. Die hier aufgeführten Erläuterungen sind ein kurzer und sehr allgemeiner Abriss der sehr komplexen Geologie des Windgällengebiets.

Die Windgällenregion ist die nördliche Grenze des Maderanertals (Abb. 1). Sein EW verlau-

fender Chärstelenbach fliesst in Amsteg mit der Reuss zusammen. Die Übersichtskarte zeigt kristallines Grundgebirge des Erstfeld-Gneises und Windgällen-Porphyr mit Lokalsedimenten aus dem Karbon (Alter: älter als Trias, siehe Abb. 3A zur chronostratigraphischen Einordnung). Dieses Kristallin wird überlagert von jüngeren mesozoischen Meeressedimenten (Alter: Trias-Jura). Aus tektonischer Sicht befinden wir uns im Aar-Massiv. Die Rutschgebiete sind vermutlich von glazialen Alter und wurden durch Instabilitäten seit dem Gletscherrückzug gebildet (Brückner und Zbinden, 1987).

Das Windgällengebiet ist bekannt für seine Faltung. Sowohl kristallines Grundgebirge als auch Sedimentgesteine sind verfaltet worden (Tan, 1976). Die Falte ist sowohl als liegende Falte (z.B. Heim, 1878; Baker, 1964; Tan, 1976) oder als synformale Antiklinale (z.B.