Comparing Avalanches in the Alps and Afghanistan

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Article

Where have the avalanches taken place?

Intense periods of snow fall in two regions of the world caused a series of deadly avalanches in early 2015. Switzerland was badly hit in the Tabor region of the Alps and especially around the Great St Bernard Pass near the Swiss-Italian border which is popular with skiers and snowboarders. The isolated Panjshir Valley, north of Kabul in Afghanistan also saw a series of avalanches at the end of what was an unusually heavy few weeks of snow.



The location of the Panjshir region in Afghanistan and Great St Bernard Pass in Switzerland

What has caused the avalanches in the Alps and Afghanistan?

For the first part of winter 2014-15 in both regions, the recorded snow fall was far lower than previous years. At one point ski resorts in the Alps were closing for lack of snow and snow canons were deployed to move snow from one point to another to try and keep resorts open. Then throughout late January and early February separate heavy snow fell in intense bursts on southern Switzerland and northern Afghanistan leaving them under two metres and 1.5 metres of snow respectively. The Panjshir region received the heaviest snowfall of the last thirty years.

In the Swiss Alps this sudden deluge of snow meant that in areas off the main ski runs (the 'off-piste' areas) the snow was not packed down and was very unstable as it sat in layers on an icy base layer of previously compacted snow. In these conditions relatively gentle slopes of 30° or more are vulnerable to avalanches. The slopes in the Panjshir region were far steeper in places and the sheer weight of non-compacted snow that they were trying to hold was too great for the shape of the mountain side.



The Panjshir valley in summer. In winter, the whole region is blocked off from the rest of Afghanistan.

(Source: United Nations Photo)

The exact trigger in both areas is not known. In many avalanches, once a critical mass of snow is reached the pull of gravity of the snow fall is too great for the snow to stay in place. In other circumstances

however a person walking or skiing over loose snow can exert enough force to start a slight movement of snow. Very quickly the amount of snow moving increases and a full avalanche occurs.

What impact did the avalanches have in the Alps and Afghanistan?

While the causes of the avalanches in both locations show similarities, the impacts they had and how they were managed were very different.

In the Alps twenty five people died in the first two months of 2015 as a result of avalanches, mostly in the Tabor region and all of them skiers. This pushed avalanche deaths to the highest point Europe has reached over a single ski season in the last five years. Most of the deaths were a result of asphyxiation and the skiers having been overcome by high levels of snow, though at least one of the deaths was a result of a collision brought on by the force of the avalanche.

In the Panjshir region at least 310 people died and two hundred were injured as a result of housing collapse and victims becoming buried within their flattened homes. A few deaths were as a result of flooding brought on by rivers blocked by snowfall. The avalanches, which produced forty metre high drifts in some places, left power cables severely damaged and the already basic communication lines to the region were as good as destroyed.

What management has there been of avalanches in the Alps and Afghanistan?

The European Avalanche Warning Services collates information fed from smaller avalanche agencies all over the Alps and gives regular updates on the chance of an avalanche in certain areas. While they can only stop people venturing into the mountains in extreme cases, they act as an advisory service for skiers and emergency rescue services.

Many of the people who survived the 2015 avalanches in the Alps were wearing ‘air bags’ – an inflatable air sack that is packed inside a skier’s back pack and designed to increase the size of the wearer in the event of an avalanche. This has the effect of ‘sieving’ the wearer to the top of the loose snow, making it far more likely they will be able to ‘ride’ the avalanche or at the very least be found more quickly by rescue services. Though they rely on the wearer being quick enough to pull a cord that releases them, they are remarkably effective: the air bag reduces the risk of being buried under snow by twenty seven percent.



An example of a commercially available avalanche air bag. (Source: Unofficial Squaw)

No such equipment is available in Afghanistan and with the mountains used more for pastoral farming and herding than recreation, the greater danger lies from the chosen position of homes and farm buildings. These often cluster on plateaus in the mountain sides or at their base and lie right in the path of any potential avalanche or rock fall. While the Alps have a large number of ready-to-deploy rescue helicopters dotted close to the main ski resorts, in Afghanistan there is no centralised rescue service for the mountainous regions so injured victims stuck in an avalanche may stand little chance of survival. In the 2015 avalanches there, most rescuers trekked into the mountain side on foot and tried to dig out bodies and survivors using domestic shovels and their bare hands.

The Panjshir region is very difficult to reach by road. The area that saw most of the avalanche damage sits in the valley between two large mountains and is only connected via a single road. This road became snow blocked during the rescue efforts and though the use of foreign army helicopters were donated for the air drop of food and medical parcels, the rescue effort was hampered by the ongoing bad weather and the remote nature of the region affected.

Though the causes and circumstances of the two sets of avalanches were similar the rescue efforts each country was able to use were vastly different. This is in part due to the different topographies as well as the different ways in which the mountains are used; the Alps for recreation and the Panjshir region for farming. Switzerland and Afghanistan also occupy quite different parts of the development scale with the former recording a GDP per capita in 2013 of 120 times that of the latter. This difference in wealth means that Afghanistan has few options in creating a more successful avalanche rescue service, nor do the pastoral farmers of the Panjshir region have little choice but to continue to live in a dangerous area of the country.