

STYRIA: FEBRUARY 2005 – AVALANCHE DANGER LEVEL 5 – MORE THAN 200 AVALANCHES – CONSEQUENCES FOR AVALANCHE PROGNOSIS

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In 2005 Styria was affected by catastrophic avalanches like no other federal state in Austria. It began with the passage of a cold front from January 18th to January 19th, 2005. This cold front started a phase of adverse weather including partly heavy snowfall. From February 2nd to February 4th, 2005 precipitation intensified. There was a new snow depth of 120 cm in 24 h and a snow depth increase of 300 cm in four days in the range of the Northern Alps. These amounts of new snow combined with the continuous Northern current (warm front) led to the highest possible level on the International Avalanche Danger Scale (stage 5 – see fig. 1).

Fig.1 Map presenting the avalanche danger levels in Styria on February 2nd, 2005, 5 pm



Along the Northern Alps as well as on the Northern declivity of the *Niederer Tauern* avalanches were triggered which can be categorised as once-in-a-hundred-years-events. Particularly affected were the *Planneralm* (leading to evacuation of people by military helicopters), the *Styrian Salzkammergut* (*Bad Aussee, Grundlsee, Bad Mitterndorf* and the *Tauplitz* were cut off from the outside world), the *Gesäuse* as well as the *Hochschwabmassiv* in the area of the *Wildalpen*. Between February 2nd and February 5th, 2005 there were more than 200 avalanches registered in Styria. Large

areas of protection forest were destroyed which led to the formation of new avalanche tracks.

Already on January 31st, 2005 danger level 4 was issued. The Avalanche Committee was contacted by the ZAMG Regional Center for Styria (operating company of the Avalanche Warning Service in Styria) to discuss the immediate development of the avalanche risk. On February 2nd, 2005 in the afternoon danger level 5 was finally issued.

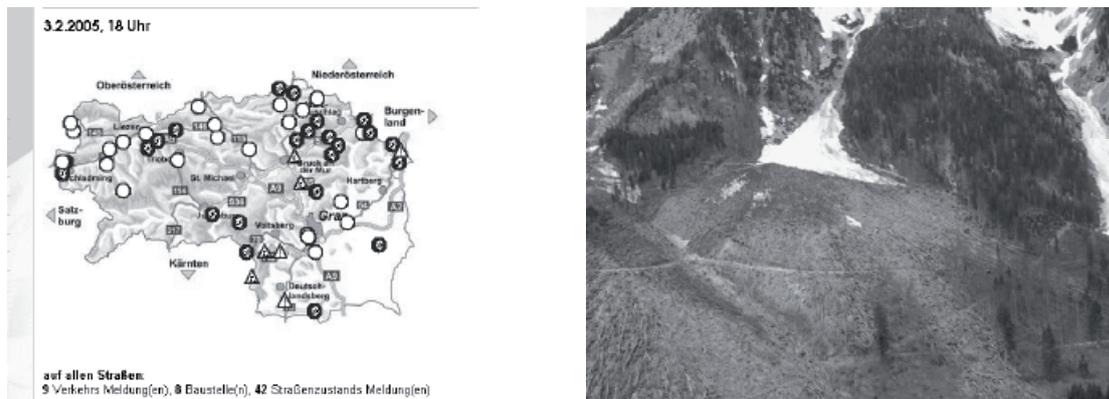
Important exposed transportation routes were hereupon closed by the Avalanche Committee (see fig. 2). Before this action was taken houses were evacuated. In reconsidering the events this kind of prevention proved to be very effective because damage to people was prevented.

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Fig. 2 (left) Closed transportation roads on February 2nd, 2005 (source: www.oeamtc.at); (right) Consequences of the avalanches on *Tamischbachturm (Gesäuse)*



Impacts of avalanches in February 2005:

- Larger avalanche prone locations
- Degradation of humus layers
- Increasing erosion in avalanche tracks
- New avalanche lines

Challenges for the future avalanche prognosis: A considerable amount of forest area was destroyed by the damaging avalanches. This means that a notable higher amount of snow can be deposited in certain areas. This is a risk potential that has to be re-evaluated.

The critical amounts of new snow for the events in February 2005 were known. Because of the large-scale changes in the terrain we have to ask ourselves the following essential question regarding avalanche prognosis: How high will the critical sum of new snow be in future to cause damaging avalanches in avalanche prone locations? Another crucial point that has to be taken into consideration is the question about how the snow cover behaves on erosion damaged soil.

It is a future goal of the Avalanche Warning Service Styria to raise avalanche awareness and provide relevant information to the population. This action will mostly affect people doing winter sports as well as hunters, forest rangers and professional road workers who spend a lot of working time outdoors in wintery weather conditions.

The described example clearly points to the practicable usefulness and value of the Avalanche Warning Service. It also highlights the required know-how which is essential for avalanche forecasting and the questions that have to be re-evaluated in future when it comes to avalanche prognosis.

All in all this report presents how the Styrian Avalanche Warning Service works, how avalanche danger level 5 came about, which effects the precipitations had, and which endeavours have to be made to improve the forecasting of avalanches.

Keywords: avalanche, danger level 5, Avalanche Warning Service Styria