

**AVALANCHE WARNING AND HAZARD ZONING IN AUSTRIA -  
SOME NEW ASPECTS**

Peter Höller  
Institute for Avalanche Research  
Rennweg 1 - Hofburg  
A-6020 Innsbruck  
Phone: ...43/512/573933 Fax: ...43/512/572820

**EXTENDED ABSTRACT**

**NEW REGULATIONS CONCERNING AVALANCHE WARNING**

1. The new European Risk Scale

Instead of different hazard classes in each European country it was developed a standardized scale with 5 degrees. The risk scale was introduced in 1993 and is now valid all over Europe. Details were already published in Avalanche News No. 41 and Avalanche Review No.6 (Vol.12).

2. New regulations concerning avalanche commissions in Tyrol

The so-called avalanche commissions have to be organized by each community itself, they are responsible for avalanche safety on highways and skiing areas, but their tasks were not specified exactly until 1992. As a result of an avalanche accident (one person was killed on an opened ski-piste), new regulations for the foundation of avalanche commissions were elaborated. The provisions of the law (LAND TIROL, 1991), passed by the Tyrolean Government, do regulate the education and remuneration as well as the insurance cover for the commission members.

**HAZARD ZONING - ACTUAL PROBLEMS AND SOLUTIONS FOR THE FUTURE**

1. Effects of catastrophic avalanches

The enactment of avalanche zoning in Austria was in 1975 (REPUBLIK ÖSTERREICH, 1975, 1976).

The Red Zone includes areas which are endangered by avalanches in such a manner that the permanent utilisation of human settlements and traffic is not possible; avalanche pressure of more than 25 kN/m<sup>2</sup> must be expected.

The Yellow Zone includes areas which are affected by avalanches, too, but maximum avalanche pressure is less than 25 kN/m<sup>2</sup>.

In 1988 a great avalanche event took place near to St. Anton; 7 people were killed, several buildings were damaged in the Yellow Zone, especially the houses "Strolz" and "Zangerle", as well as the house "Tscholl"(Nr.480), which was destroyed completely (Fig.1). The calculated avalanche pressure was about 16 kN/m<sup>2</sup>.

During a study tour of avalanche experts (AGERER, 1989) the hazard map of St. Anton was discussed intensively. Nearly most participants of the group agreed, that the buildings in the Yellow Zone were not designed according to the special building regulations of the hazard map.

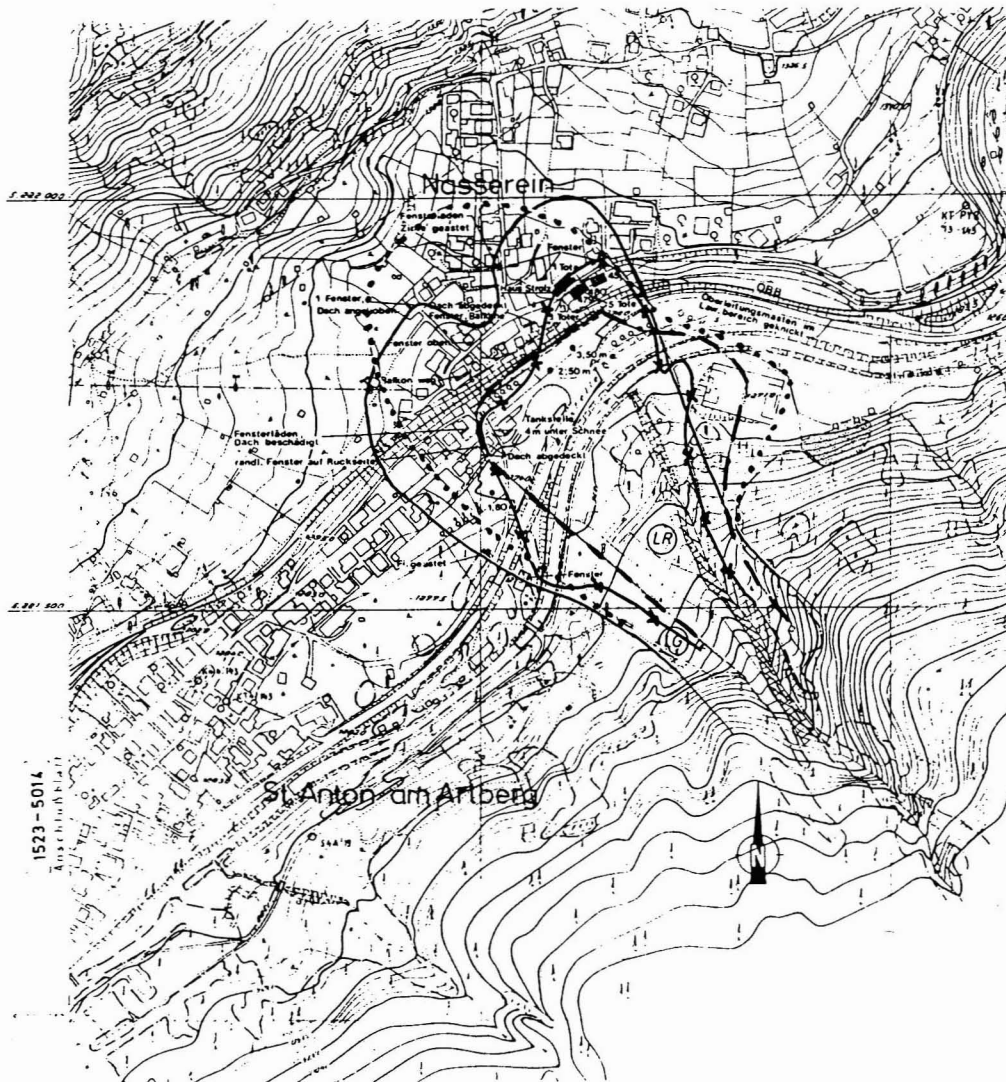


Fig.1 Runout zone of the "Wolfsgruben-Avalanche" (AGERER, 1989)

- Red Zone      ···· Yellow Zone
- Avalanche accident from 1988:
- ✖-✖ boundary of the flowing part
- boundary of the powder part

## 2. Effects of endangered forests

Negative effects on hazard zoning must also be expected as a result of non-cultivated mountain forests.

In the so-called Putzenwald (western Tyrol/St. Anton) new avalanches released because of lacking cultivation and increasing damages by deer (MAYER, 1984; GASPERL, 1989). The consequences for the settlement in the valley (new hazard zones) are shown in Fig.2. In order to consider this new situation FIEBIGER (1989) proposed to elaborate a new hazard map with special regard to the negative dynamics of stand development.

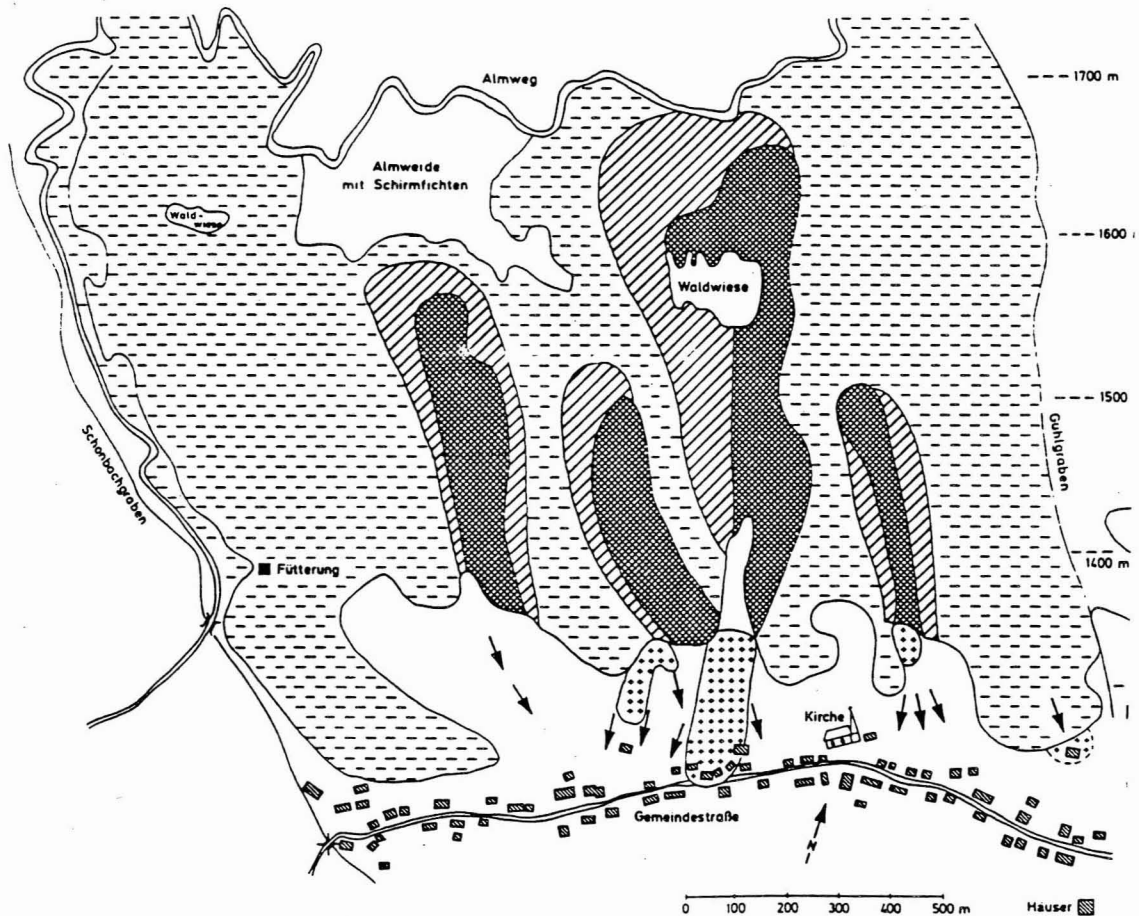


Fig.2 Dynamics of stand development in the so-called Putzenwald (MAYER, 1984)

- stable forest
- ▨ disintegration of forest in the next 30 - 40 years
- ▧ disintegration of forest in the next 50 - 60 years
- ♦♦♦ hazard zones (1981)
- ➔ new hazard zones because of disintegration of forest

### 3. Effects of tourism

Due to limited building land in some parts of Northern Tyrol we can observe an increasing interest to reduce Red Zones in order to break new ground for settlements (especially to establish new hotels and apartments).

To stop this dangerous development rigorous land use planning is required in future.

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