

Test-bed “Community Bovec” (Slovenia)



Location of the test bed

The test-bed is situated in the westernmost part of Slovenia near the Italian border.



Fig. Topographical map of the location of the test bed

Geographic description

The landscape in the upper Soča Valley was created mostly by glacier erosion and it continues to be shaped by river erosion.

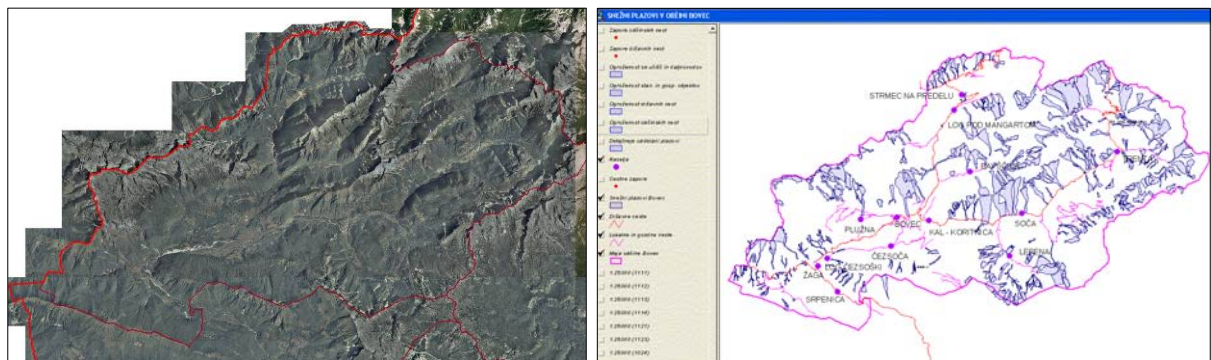


Fig. Region "Bovško" (Orthophoto by MKGP) and snow avalanches

Geological setting

In the Southern Alpine region 210 to 200 million years ago, layers of Dachstein limestone were formed in the shallow seas in the upper Trias period. The Bohinj Mountains, Krn, Polovnik, Kanin, Rombon, the Triglav northern face and the upper Trenta region are all mostly built with this material.

Historical information of snow avalanches in test bed

Avalanches represent much greater threat to Slovenia than general public is aware of. At least 74 avalanches in commune Bovec endanger roads and 30 avalanches pose a serious threat to residential areas, farm buildings, ski resorts and power lines. There is a huge seasonal variation in the duration and maximum height of the snow cover in "Bovško". The snow hazard information system on potential damage caused by avalanches and snow sliding represents a firm basis for temporal and permanent protection against avalanches. Therefore, such a system should include all potential avalanche areas.

Relevance of test bed regarding MONITOR

Snow erosion is one of the most frequent types of erosion in Slovenia and causes the most serious damage. Based on the study "The Estimate of snow avalanche threat in Slovenia" a cadastre of snow avalanches in Slovenia has been elaborated (scale 1:10.000). For every recorded avalanche there is a form containing data on all three parts of avalanche line (form, vegetation, stability and fertility of soil, area, condition, circumference and exposition) data on impact on the traffic and buildings and on the frequency of the avalanche. Graphic data are presented in the scale 1:10.000.

This study thus makes possible a rough identification of avalanche areas and also offers a series of data which enable a detailed identification.

However, for detailed identification, the data from this study have to be supplemented with data on maximum dimensions of snow avalanches.

In addition to the cadastre of snow avalanches and data on their maximum dimensions displayed by various silent marks in the environment, we can also use in Slovenia the statistical topographic method developed by the Norwegian geotechnical institute (NGI) which has been successfully used in Austrian Alps, to determine the maximum dimensions of snow avalanches.

For determination of maximum length of snow avalanches we can also use dynamic models. The biggest problem in practical application of these models is the collection of the appropriate input data. Considering the data in preliminary cadaster of snow avalanches in Slovenia and the economical point of view, the use of such models in Slovenia is only justified for solving the problem of the largest snow avalanches endangering vital objects along the upper Soča River.

As the land use in Slovenia has been quite good considering the protection against avalanches, we do not, with some small exceptions, have to deal with buildings in avalanche paths and can consider their whole area as "prohibited area".

Threat of snow avalanches in Community Bovec – Activities:

- Processing of meteorological data on the height, duration of snow cover and the intensity of snowfall
- Review and supplement of existing data on snow cover and avalanche paths
- Estimation of the damage caused by avalanches
- Avalanche hazard zoning (endangerment evaluations and detailed avalanche analysis),
- National Protection and Rescue Plans for the snow avalanche in community Bovec

Threat of snow avalanches in Community Bovec – Outputs:

- Processing of meteorological data on the height, duration of snow cover and the intensity of snowfall
- Review and supplement of existing data on snow cover and avalanche paths
- Estimation of the damage caused by avalanches
- Avalanche hazard zoning (endangerment evaluations)
- Protection and Rescue Plans

SWOT-analysis of the test-bed

Strengths:	Weaknesses:
<ul style="list-style-type: none"> ▪ Existing Basic data ▪ Pre-information for test-area through studies ▪ Interdisciplinary co-operation ▪ Experienced local people and local authorities ▪ Monitoring of danger and early warnings ▪ Implementation of protective measures ▪ Organization of individual and mutual protection for the population ▪ Full support from state level (nat. bodies) ▪ Integration of MONITOR project partners 	<ul style="list-style-type: none"> ▪ Very limited possibility and feasibility to organizing substitutive traffic connection in the cases of roadblock ▪ Natural hazard processes ▪ Conflicts: tourism, natural hazards & traffic routes
Opportunities:	Threats:
<ul style="list-style-type: none"> ▪ Elaboration of local risk assessment and emergency response plans ▪ Modelling of measured data ▪ Risk analysis ▪ Revision of cadastre of snow avalanches ▪ Revision of Protection and Rescue Plans ▪ Integration of Snow avalanche risk assessment and Protection and Rescue Plans into local planning and decision making ▪ "Avalanche commission" - improvement ▪ Improvement of risk communication regarding to avalanches ▪ Increasing of public awareness about natural hazards ▪ Increasing of co-operation & commitment from governments, corporations, community groups and individuals ▪ Installation of measuring & warning systems ▪ Organization, equipment and training of civil protection and other local protection and rescue units and services 	<ul style="list-style-type: none"> ▪ Endangerment through potential mass-movements; tourist areas; ▪ Possibility of chain accident (avalanches - traffic accident) ▪ Natural hazard processes ▪ Interrupted or disconnected traffic connections ▪ Barrage of rivers with snow avalanches ▪ Cut-out of a electricity circuit (power breakdown) ▪ Unpredictability of impact of climatic changes ▪ Lack of funds