

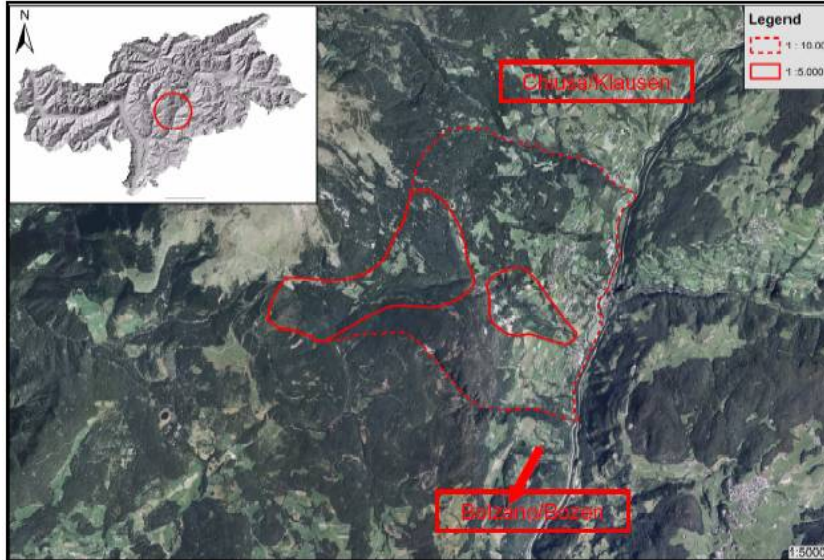
# Test-bed “Barbian / Barbiano” (Italy)



## Location of the test bed

The test-bed is situated in the central area of South Tyrol, inter the cities Klausen and Bolzano. The village Barbiano is located at the left side of the Eisack-Valley (about 800 m sea level); the test-bed reaches from 400 m to about 1.000 m sea level. As it connects the Brenner with Bolzano, the Eisack-Valley is the most important traffic

way between North and South in South Tyrol. The landslides which take place above Barbiano and in the area of Kollmann do not affect the traffic system in the valley, consisting of highways and freeways, but act as a risk for at hillside resided housing estates.

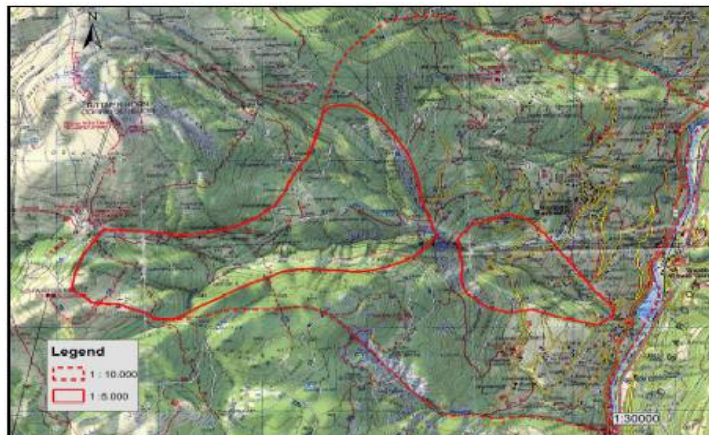


**Fig.:** Topographic map of area around test-bed (central part of South Tyrol)

## Geographic description of the test bed

The test-bed stretches over the hill side of the Eisack-Valley directly above the village Ponte Gardena/Waidbruck. The community Barbiano compasses nearly the whole in the landslide located hill. The surface of the area which should be analysed reaches about 16,8 km<sup>2</sup>; the surface which has to be mapped is 4,5 km<sup>2</sup>; the area reaches

from the Schwarzseespitze (2069 m sea level) to the bottom of the valley (440 m sea level). The landslide areas concern especially meadows and farmland but they act as a risk for the urbanised areas of Barbiano and Kollmann.



**Fig.:** The whole landslide area with distinction in the detailed mapping zone (1:5000) and areas with large-scale mapping (1:10.000) [IGM Map]

## Geological setting of test bed

In the area of Barbiano-Kollman, in the deeper parts, the Brixen quartzphyllites (South-alpine Basement) crops out. In the higher situated area are exposed the Bolzano quartz porphyry (ryodactical group). Referring to the surface these geological units are overlaid from different powerful quaternary deposits. At this encrustation widespread morphological hints on active and inactive slides are recognizable.

## Historical information of mass movements in test bed

In the night from 17th to 18th August 1891, Kollmann suffered a huge high water catastrophe. The village was hit by a huge mudflow which was caused by a thunderstorm. The consequences of the floods have been catastrophic: 39 dead and 5 injured persons; 16 carcasses were not able to be salvaged.

Beside the destruction of about 17 houses also the street and the railway have caused damages. Finally at the following day the whole extent of the damage was able to be seen. Where ever you looked: Debris, wood-trunks, mud and stones. Some houses just came off, others were badly damaged. At the Eisack a large bulk of scree, which had a length of about 400-600 m and a height of 10-16 m, had established. 50.000 to 60.000 m<sup>3</sup> rock reached the Eisack. This impoundment also led to a destruction of about 1 km railway, the street connections have been impassable and also the telegraphs were damaged. Recent in this area lots of survey-sights and further material in connection to the mudflow were able to be ascertained within an assimilation of the area. This test-bed has not been detailed analyzed yet and that is why no exact mappings and monitoring data presently exist.

## Relevance of test bed regarding MONITOR

A sophisticated and scientifically established monitoring can support the short-term analyses methods, enables long-term analyses of the landslide-hill and thus it can significant contribute to an appraisalment and to the planning of measures. Referring to the MONITOR Project a geological mapping of the landslides which occur at the survey and GPS measurement and -observation are planned. Remote sensing should contribute to a clarification of the causes and of the movement mechanisms of this landslide. In the area which should be analysed also measurements of founts and their observation with taking of samples and chemical analyses are planned.

## Planned Activities/Outputs

- Collection data and GIS application to the valutation of the several influences
- Further geological surveys, soil analyses and watercircle analysis
- Mapping of geological hot spots; display of different risk
- Interpretation of natural impacts
- Comparison of the development trend under consideration of meteorological and other basic data
- Comparison of instrument(s) in the three selected test beds

## SWOT-analysis of the test-bed

<b>Strengths:</b>	<b>Weaknesses:</b>
<ul style="list-style-type: none"> <li>▪ Existing geological basic data and documentation of post events</li> <li>▪ Co-operation with universities</li> <li>▪ Know-how a experience in the field slope movement within the research Team</li> <li>▪ Trans-national co-operation with other Italian and Austrian partners</li> </ul>	<ul style="list-style-type: none"> <li>▪ No existing monitoring data/systems</li> <li>▪ Relatively short duration of the project</li> </ul>

<b>Opportunities:</b>	<b>Threats:</b>
<ul style="list-style-type: none"><li>▪ Monitoring slope movements</li><li>▪ Testing new technologies of monitoring</li><li>▪ Revision of danger/risk zone plan</li><li>▪ Risk scenario analysis</li><li>▪ Close cooperation with various partners</li></ul>	<ul style="list-style-type: none"><li>▪ Endangerment of urbanised areas by potential mass-movements</li><li>▪ Effects of Climate change on recurrence of hazard events</li><li>▪ Indirect change to local economy and to depopulation of threaten areas</li></ul>