

Debris flow monitoring and early warning system – Cancia – Municipality of Borca di Cadore (BL)



The Veneto Region, because of the debris flows which hit the Cancia district during the last few years, and in particular the last event on the 18/07/2009, decided to provide the municipality of Borca di Cadore of a debris flow monitoring and alert system, in order to improve the security of the inhabitants of that particular area.

Summary

Location: Cancia, Borca di Cadore (BL)

Conclusion: 2014

Focus: Geological and hydrogeological risk

Challenges:

- Improve the safety of the inhabitants of Cancia, threatened by a large debris flow

CAE solutions:

- 5 meteorological and landslide monitoring and early warning stations, all along the flows channel
- Rain gauges, geophones, sprain cables and eco-sounders
- Control center in Borca di Cadore redundant from Functional Center of the Civil Protection of Veneto
- 40 sirens and 10 traffic lights

FEATURES

The **debris flow monitoring warning system of Cancia** has two distinct, but complementary, objectives: the monitoring of the phenomenon through **conditions' identification that trigger the problem** as well as **detection of a potential debris flow** and fast communication with maximum warning time to the population and local authorities dealing with the emergency.

The choice to face the problem using an integrated approach by **monitoring precipitations' progress and debris flow's transit** in the inner channel, **guarantee enough warning time to the population** to put contingency plans in place and to keep false alarms to a minimum.

Following the standard initial period of adaptation and calibration, the monitoring system will provide essential indications, such as, channel's flows speed at different levels, high of the façade, degree of erosion and sediments' deposition.



COMPOSITION

Debris flow monitoring and alert system is composed by **5 weather and landslide monitoring stations** located **all along the flows channel**, starting from the landslide inception on the Antelao mount at 2100mt, up to Cancia's gates for a total gap of over 1000mt.

Stations are equipped with **rain gauges**, which gather and measure precipitation intensity, and sensors to measure debris' transit such as **geophones, sprain cables and eco-sounders**. This system is managed by a control center in Borca di Cadore and, if necessary by the decentralized Functional Center of the Civil Protection of Veneto, located in Marghera.

In case of emergency, the network has more than 40 sirens and 10 traffic lights within the danger area, to alert the population. In addition, the network has an instant mobile messaging service which can send up to 3600 text messages to pre-warn the risk's threshold.

