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\textbf{THE DEBRIS-FLOW MONITORING SYSTEM OF ACQUABONA TORRENT (Cortina D'Ampezzo, BL, Italy).}

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A new debris flow monitoring system has been designed and developed at the Acquabona site (2010), on the left side of the Boite River Valley, near Cortina d'Ampezzo. The monitoring system is composed of two stations. The upstream station is located at the baseof the dolomitic rock cliff where the water feeding area is located, at an altitude of about 1715 m a.s.l., in order to measure the meteorological conditions of the site, at the feet of the dolomite rock massif. The installed weather station allows acquisition of rainfall, wind speed and direction, relative humidity, air temperature, barometric pressure and other secondary parameters.

The downstream station, located at 1175 m a.s.l., is closed to the deposition area and is provided by a tipping bucket rain gauge, an ultrasonic and a laser distance meter and a digital video camera.

The upstream station is connected via radio modem and directional antenna to the downstream station, allowing the data acquisition by a single board computer that collects and stores locally the data. The processor and the local mass storage are directly managed remotely, via 3G UMTS high speed Internet, from the Department of Geosciences of Padua.

Four geophones are distributed along the flow channel, in order to measure travelling times, at a distance of about 100 meters each other: one at the downstream station, two upstream and one downstream.

The equipment at the downstream station has been mounted on a reticular structure anchored to a big boulder at the left side of the torrent. The distance from the bottom of the channel is about 3.5 m. The support structure can be rotated around the anchorage vertical axis about 90°.

The aim of the monitoring system is to describe the hydrologic conditions for debris-flows occurrence and their dynamic properties, giving continuity to field measurements initiated at the site more than ten years ago. The new monitoring system is active from spring 2011.

The 2011 did not record debris-flow events. Some hydrological events have been analyzed. Comparison between cumulated rain in case of long events (large scale perturbation) and short events (local scale events) has been performed. As expected, short-term events show greater difference in amount of rainfall between the two stations. Also the shape in time of the intensity of the events has been taken into account and described.

The calibration process of the geophones and ultrasonic distance meter is currently being studied and has to be completed.

The monitoring system can be easily expanded. In particular, the authors are planning the application of dynamic photogrammetric techniques to describe three-dimensional properties of debris-flows.