CoupEvent: Hillslope-channel coupling during extreme events

Final Workshop, February 14th, 2:30 pm – 5:30pm

The project *CoupEvent - Hillslope-channel coupling during extreme events* has focused on interconnections among mass wasting processes and channel dynamic during extreme events in South Tyrol, a paradigmatic mountain region.

The research was proposed as an increasing number of heavy precipitation events have been affecting Europe over the last years. Their occurrence caused flash floods, severe morphological channel changes, as well as debris flows and other types of landslides along the adjacent hillslopes. Especially in the mountain environments, coupled mass wasting processes may be the dominant source of sediment supply to the valley-bottom streams and the prevalent mechanisms for sediment transport continuity among the catchments. In light of this, the coupling of hillslope processes with the channel network is of great relevance for the hydromorphological quality of the mountain rivers (as required by the EU Water Framework Directive, WFD, 2000) but it may also bring about augmented flood hazards during extreme events.

The main goals of the *CoupEvent* project were:

1) to provide a basin-scale understanding of morphological changes induced in the main channels during some extreme events in South Tyrol; to investigate the role of connected debris flows on such changes;
2) to develop a novel, data-driven methodology to map areas that are both susceptible of debris flow initiation and structurally connected to the main channel.

Results have a high potential impact and use for public agencies and for river managers that in accordance with the EU "Water Framework" Directive (2000/60/EC), the "Floods" Directive (2007/60/EC), and several Italian legislative decree (3 April 2006 n. 152; 23 February 2010, n. 49, the 3 March 2011, n. 28 and more recently the "Collegato Ambientale alla Legge di Stabilità 2016, Legge 28 dicembre 2015, n. 221) are requested to adopt policies of sustainable river basin management.

Speakers of the workshop will be the following:

1. Vittoria Scorpio, Institute for Earth Observation, Eurac Research, Bolzano, Italy
2. Stefan Steger, Institute for Earth Observation, Eurac Research, Bolzano, Italy
3. Francesco Comiti, Faculty of Science and Technology, Free University of Bozen-Bolzano, Bolzano, Italy
4. Marco Cavalli, Research Institute for Geo-hydrological Protection, National Research Council (CNR IRPI), Padova, Italy
5. Jason Goetz, Department of Geography, Friedrich Schiller University, Jena, Germany
6. Massimiliano Pittore, Institute for Earth Observation, Eurac Research, Bolzano, Italy