

# EARLY WARNING SYSTEMS FOR DEBRIS FLOWS: STATE OF THE ART AND CHALLENGES

16—18 October 2019  
Bozen-Bolzano

Debris flows represent a major hazard for infrastructures and human life in mountain areas. Structural mitigation measures are not always suitable to protect transportation routes, especially in narrow and highly-anthropized valleys. Therefore, the development and application of warning systems based on real-time detection of debris flows with compact and low-cost sensors has spurred a great deal of interest worldwide.

The international workshop “Early warning systems for debris flows: state of the art and challenges” will allow scientists and practitioners to discuss the different methods for debris flow monitoring and warning, the goal being to promote the reliable use of such systems by local authorities.

During the first day (in Italian, with simultaneous translation in English), the state of the art of debris flow monitoring at the national level will be presented by invited researchers, as well as the potential and the limitations of warning systems from the point of view of local authorities will be discussed. In the second day of the workshop (entirely in English), invited international scientists will present recently developed methods and procedures for both debris flows and lahars warning. Poster sessions will be available on both days. A field trip to the Gadria monitoring basin (Bozen-Bolzano, Italy) will be offered on October 18.

The conference is organized in collaboration with the **Civil Protection Agency of the Autonomous Province of Bozen/Bolzano South Tyrol**.

## Professional credits

The participation in the conference entitles to professional credits for **SURVEYORS, ENGINEERS, GEOLOGISTS, AGRONOMISTS** and **FORESTERS** from the Autonomous Province of Bozen-Bolzano as well as from the other Provinces of Italy.

## Event Venue

Free University of Bozen-Bolzano  
Universitätsplatz, 1  
Piazza Università  
39100 BZ

## Organizing committee

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## PROGRAMME

### 16 October, Room D1.02, Campus BZ

|               |                                                                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 09:30 — 10:30 | Caffè di benvenuto e registrazione                                                                                                                                                      |
| 10:30 — 10:45 | Saluti dalla Provincia Autonoma di Bolzano                                                                                                                                              |
| 10:45 — 11:00 | Francesco Comiti<br>Introduzione alla prima giornata del workshop                                                                                                                       |
| 11:00 — 11:30 | Lorenzo Marchi, CNR IRPI Padova<br><b>Le colate detritiche nei bacini alpini: fenomenologia e pericolosità</b>                                                                          |
| 11:30 — 12:00 | Matteo Berti, Università di Bologna<br><b>Soglie pluviometriche di innesco delle colate detritiche</b>                                                                                  |
| 12:00 — 12:30 | Massimo Arattano, CNR IRPI Torino<br><b>Monitoraggio ed allertamento delle colate detritiche</b>                                                                                        |
| 12:30 — 14:15 | Pausa pranzo                                                                                                                                                                            |
| 14:15 — 14:30 | Saluti dal Rettore unibz                                                                                                                                                                |
| 14:30 — 15:00 | Matteo Cesca, ARPA Veneto<br><b>La gestione del Sistema di monitoraggio e allarme della colata detritica di Cancia (Borca di Cadore, Belluno)</b>                                       |
| 15:00 — 15:30 | Valerio Segor, Regione Valle d'Aosta<br><b>Difesa strutturale vs sistemi di detezione di fenomeni di colata detritica / valanghe: alcuni esempi in Valle d'Aosta</b>                    |
| 15:30 — 16:00 | Sandro Gius, Provincia Autonoma di Bolzano<br><b>Difesa strutturale e sistemi di allerta per le colate detritiche: soluzioni alternative o complementari? Casi studio in Alto Adige</b> |
| 16:00 — 16:30 | Pausa caffè                                                                                                                                                                             |
| 16:30 — 17:00 | Volkmar Mair, Provincia Autonoma di Bolzano<br><b>Il sistema di monitoraggio delle colate detritiche del Rio di Grissiano, Nalles (BZ) oltre 10 anni di esperienza</b>                  |
| 17:00 — 18:00 | Tavola Rotonda<br>Modera: Marta Chiarle, CNR IRPI Torino                                                                                                                                |

### 17 October, Room D1.02, Campus BZ

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|---------------|-------------------------------------------------------------------------------------------------------------------------------|
| 08:30 — 09:15 | Registration                                                                                                                  |
| 09:15 — 09:30 | Velio Coviello<br>Introduction to the second day of workshop                                                                  |
| 09:30 — 10:00 | Kate Allstadt, USGS<br><b>Progress in Seismic Characterization of Debris Flows and Lahars: Insights from USGS Experiments</b> |

|               |                                                                                                                                           |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 10:00 — 10:30 | Matteo Picozzi, Università di Napoli Federico II<br><b>Lessons from seismology: early warning systems for earthquakes</b>                 |
| 10:30 — 11:00 | Coffee break                                                                                                                              |
| 11:00 — 11:30 | Lucia Capra, UNAM<br><b>Hydrological Characterization and Instrumental Detection of Lahars on Active Volcanoes, Mexico</b>                |
| 11:30 — 12:00 | Marcel Hürlimann, UPC Barcelona<br><b>Regional Scale Debris-Flow Warning Using Weather Radar Applications. Experiences from Catalonia</b> |
| 12:00 — 12:30 | Emanuele Marchetti, Università di Firenze<br><b>Lessons from Volcanoes: Infrasonic Early Warning System for Explosive Eruptions</b>       |
| 12:30 — 14:30 | Lunch break                                                                                                                               |
| 14:30 — 15:00 | Andreas Schimmel, BOKU Vienna<br><b>Identification of Alpine Mass Movements Based on a Combination of Seismic and Infrasonic Signals</b>  |
| 15:00 — 15:30 | Fabian Walter, ETH Zürich<br><b>Debris-Flow Seismology: A Playground or a Construction Site?</b>                                          |
| 15:30 — 16:00 | Brian McArdeall, WSL Switzerland<br><b>An Analysis of the 2017 Rock Avalanche And Debris Flows at Pizzo Cengalo, Switzerland</b>          |
| 16:00 — 16:30 | Final discussion and field trip info                                                                                                      |
| 16:30 — 17:30 | Closure cocktail                                                                                                                          |

### 18 October, Field Trip

|               |                                                                                                                                                                                                                                                       |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:00          | Bus leaves at the corner between Domenikanerplatz-Piazza Domenicani and the main building of University of Bozen-Bolzano.                                                                                                                             |
| 9:15          | Arrival in Allitz-Lasa. The meeting point for participants arriving with their own car is at the Gasthaus Sonneck (goo.gl/maps/3onEeDCC7oKFzMs7).                                                                                                     |
| 9:15 — 10:00  | Coffee and strudel (included in the field trip registration costs) and transfer by shuttles to the Gadria monitoring station. Delegates with their own car can drive up to the station (unpaved road, not for low clearance vehicles, 4WD not needed) |
| 10:00 — 12:30 | Visit to the monitoring installations (led by unibz and CNR IRPI)                                                                                                                                                                                     |
| 12:30 — 13:30 | Packed lunch                                                                                                                                                                                                                                          |
| 13:30 — 16:00 | Split into two groups:                                                                                                                                                                                                                                |

Group 1) Technical discussion on debris-flow monitoring (indoor, at Gasthaus Sonneck)  
Group 2) Visit to the upper part of the basin (max 30 persons). Transfer by vans and then short walk (steep and slippery terrain)

|               |                                               |
|---------------|-----------------------------------------------|
| 16:00 — 16:30 | Return to the bus in Allitz-Lasa by shuttles. |
| 16:30         | Bus departure from Allitz-Lasa                |
| 18:00         | Arrival in Bozen-Bolzano                      |

Packed lunch for the day will be not provided by the organization. It has to be arranged by each participant on the previous days (stops to buy food on the way to the Gadria will be not possible due to time constraints). Food can be purchased in grocery shops and supermarkets in downtown Bozen-Bolzano. Bring warm clothes for the field trip! Temperature might be close to 0°C plus wind chill in the upper basin. In Bozen-Bolzano temperatures could be milder (10°—20° C). Hiking shoes are absolutely needed.

## CALL FOR POSTERS

Scientists and practitioners working in the fields of risk management, debris-flow modeling, monitoring and warning are invited to present their recent advancements and the feedback that they received from decision makers. We warmly encourage poster presentations from PhD students and young scientists as first authors.

The poster display time is from 9:30 of October 16 to 18:00 of October 17. Authors are kindly asked to put up their posters on the first day of the workshop, in order to enable the conference participants to view their posters at any time on both days. We ask the authors of a poster to be present at their display for presentation during the coffee breaks. Each attendant to the conference, regularly registered, can present max 1 poster. Required poster format is A0 portrait (841x1189 mm, 33x47 inches).

Inclusion of your abstract in the conference book-of abstracts implies you or one of your co-authors to present your contribution at the time and in the manner indicated. If you already know that your poster will not be presented, you are asked to withdraw your abstract as soon as possible.

## More informations

debrisflow.events.unibz.it/home/poster-session/

## Registration

debrisflow.events.unibz.it

## In collaboration with



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