

## THIRD SUMMER SCHOOL OF THE INTERNATIONAL ASSOCIATION FOR ENGINEERING GEOLOGY AND THE ENVIRONMENT

### ***Natural hazards, societal impact and risk from theory to practice: identification, assessment, and remediation***

Aosta (Italy) 1 – 9 July 2024

Natural hazards often have a direct impact on infrastructures and the safety of people. The effects of climate change and the intensive use of mountain areas have recently emphasized the impact of floods, fires, earthquakes and landslides. New settlements, particularly in mountain areas, and the increasing frequency and magnitude of natural hazards are causing a rise in high-risk areas.

The role of the scientific community is important for improving multidisciplinary studies that are aimed to characterize the dynamic of active hazardous processes and also for supporting novel approaches more oriented toward the development of adaptation strategies and solutions.

Recent years have been characterized by an increasing frequency of localized high-magnitude processes that greatly impact on settlements and infrastructures. Resulting damages are often very high in terms of casualties and economic, social and psychological costs to society.

The 2024 IAEG Summer School will analyze natural hazards and consequent risks in different environments and landscapes, defining multidisciplinary methods and tools for describing and analysing processes, and exploring the recent approaches used to limit the impact on human settlements and infrastructures, including nature-based solutions.

The International Association for Engineering Geology and the Environment (IAEG) was founded in 1964 and is affiliated with the International Union of Geological Sciences (IUGS). IAEG is a worldwide scientific society that promotes and encourages the advancement of Engineering Geology through technological activities and research, improves teaching and training in Engineering Geology, and collects, evaluates and disseminates the results of engineering geological activities worldwide.

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## PROGRAM

### Monday - July 1, 2024

*Introductions and background to school and fundamental concepts*

8.00 – 8.30 Summer school registration

8.30 – 9.00 Introduction to the IAEG Summer School and Welcome to the Aosta Valley Region *Raffaele Rocco/Sara Ratto (Aosta Valley Region Authority)*

9.00 –10.45 Natural Hazards: a general introduction; different types and approaches commonly used in different fields; global impacts; insurance; policies. *Fausto Guzzetti - IRPI*

10.45– 11.15 Coffee break

11.15 - 13.00 Snow Avalanches, dynamic and impacts. *(TBD)*

13.00 – 14.30 Lunch

14.30 – 16.15 Slope instabilities *Michel Jaboyedoff - UNIL*

16.15 – 18.00 Students' presentations

18.00 – 19.00 Ice-break cocktail

### Tuesday - July 2, 2024

*Natural hazards - Processes and risk assessment*

9.00-10.45 Wildfires effects and impacts. *Jonathan Godt - USGS*

10.45 – 11.15 Coffee break

11.15-13.00 Floods and flash floods: monitoring, modelling and forecasting using new Earth Observation data *Christian Massari - IRPI*

13.00-14.30 Lunch

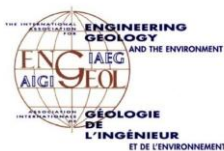
14.30-16.15 Glaciers and permafrost-related processes and hazards. *Fabrizio Troilo - FMS*

16.30 – 18.00 Working groups

### Wednesday - July 3, 2024 - Field trip

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Dangerous natural processes and mitigation solutions in Courmayeur

### Thursday - July 4, 2024

*Put theories into practice*

9.00-10.45 workshop - Rockfall modelling. *Giovanni Crosta, Paolo Frattini - UNIMIB*

10.45-11.15 Coffee break

11.15-13.00 Workshop - Rockfall modelling. *Giovanni Crosta, Paolo Frattini - UNIMIB*

13.00-14.30 Lunch

14.30-16.15 The relevance of best practices in the engineering maintenance of large infrastructures *(TBD)*

16.15-18.00 Countermeasures design for slope instabilities, Active and Passive mitigation, land-planning, *Davide Bertolo - Aosta Valley Region Authority*

### Friday - July 5, 2024

*Evaluation of impacts and possible solutions*

9.00-10.45 Countermeasures design for ice and snow avalanches, active and passive mitigation solutions, land-planning. *Valerio Segor - Aosta Valley Region Authority*

10.45-11.15 Coffee break

11.15-13.00 MultiHazard and Multirisk analyses. *Paolo Frattini - UNIMIB*

13.00-14.30 Lunch

14.30-16.15 “Navigating nature challenges”: Exploring risk perception, behavioural responses, and effective communication strategies in the face of natural hazards. *Simona Sacchi - UNIMIB*

16.15-18.00 Hazard and Risk assessment cost/benefit analyses *Marco Alderighi - UNIVDA*

### Saturday - July 6, 2024 - Field trip

Impact of large slope instability on large dam: the case study of Beaugard dam

### Sunday - July 7, 2024

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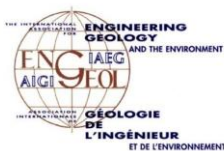
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MONTAGNE SÛRE



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Free tour of Aosta and surroundings!!

### Monday - July 8, 2024

*Evaluation of impacts and possible solutions*

9.00-10.45 Countermeasures design for flooding, Active and Passive mitigation, land-planning. *Paolo Ropele*  
- Aosta Valley Region Authority

10.45-11.15 Coffee break

11.15-13.00 Understanding earthquakes and their interaction with the environment: an introduction to engineering seismology *Chiara Smerzini - POLIMI*

13.00-14.30 Lunch

14.30-16.15 Countermeasures design for seismic shaking, Active and Passive mitigation, and land-planning  
*Stefano Pampanin - UNIROMA1*

16.15-18.00 Working groups

### Tuesday - July 9, 2024

*Put theories into practice*

9.00-10.45 workshop - Seismic hazards assessment simulation *Marco Pagani - Global Earthquake Model*

10.45-11.15 Coffee break

11.15-13.00 workshop - Seismic hazards assessment simulation *Marco Pagani - Global Earthquake Model*

13.00-14.30 Lunch

14.30-16.15 Vulnerability and Exposure, Insurances *Barbara Borzi - EUCENTRE*

16.15-18.00 Working group results presentation

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