

FIRST SUMMER SCHOOL OF THE INTERNATIONAL ASSOCIATION FOR ENGINEERING GEOLOGY AND THE ENVIRONMENT

Resumé of the IAEG First Summer School: *IMPACT OF SLOPE INSTABILITIES ON LARGE INFRASTRUCTURES*

Aosta (Italy), 4 – 10 July 2022 & Innsbruck (Austria) 11 – 15 July 2022

In 2020 and 2021, two IAEG summer schools should have been held in Italy and Austria, respectively. Unfortunately, they were cancelled due to the Covid-19 pandemic. Then, in 2022, they were merged in a two weeks single event that took place in Aosta (Italy) and Innsbruck (Austria).

The main topic concerned the impact of slope instabilities on different structures and infrastructures, with examples and case studies of dams, tunnels, and other engineering projects mainly collected from the Alpine region. The lectures described how geological and natural risks can control the design, limiting the operational lifetime, and representing a potential threat to the functionality and safety of structures and infrastructures, workers and users, and as a consequence to the health of citizens as well as to the welfare and functions of communities and their economy. Moreover, correct approaches for the definition of the geological model, the design of the infrastructures, their maintenance, and proper communication strategies were treated as well.

More than 40 students from all around the world applied for attending the Summer School. However, due to logistic issues, the number of participants was limited. Doctoral students on engineering geology or related fields were selected and 22 students were admitted (4 of them withdrawn) and thus, the actual students were 18, with variegated provenience (Figure 1).

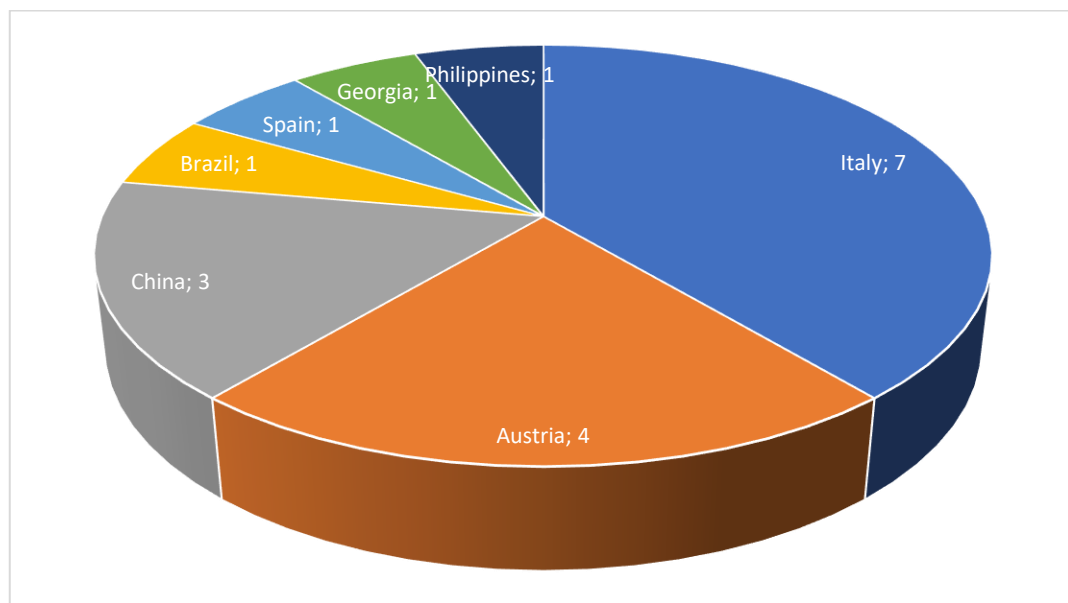


Figure 1. Nationalities of the summer school students.

The program of the summer school included 1-2 hours frontal lectures conducted in the University of Valle d'Aosta facilities and field trips organized as follows:

Part one: Aosta Valley

Monday 4.7.2022

Summer school registration

Tuesday 5.7.2022

- Welcome to the Aosta Valley Region (Valerio Segor)
- *Introduction to geology and geomorphology of the Aosta Valley Region* (Prof. Franco Gianotti)
- *Engineering Geology, Geohazards and Infrastructures, Risk and Cost-Benefit Analysis* (Farrokh Nadim, PhD)



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– *Engineering geology from conceptual model construction to investigation for the design and long term maintenance of hydroelectric structures and infrastructures* (Michele Sapigni)

Wednesday 6.7.2022

- *Deep seated gravitational slope deformations in the Alps* (Prof. Giovanni Crosta)
- *Rockfalls risk assessment* (Prof. Michel Jaboyedoff)
- *Innovative solutions for landslide monitoring* (Daniele Giordan, PhD)
- Students' presentations

Thursday 7.7.2022 - Field trip

Field trip to the Mont Blanc Tunnel, Mont de La Saxe Rockslide, Planpincieux Glacier and Brenva Buttress (Davide Bertolo, Giovanni Crosta, Daniele Giordan, Francesco Zucca)

Friday 8.7.2022

- *High mountains glacial instabilities and possible impacts* (Fabrizio Troilo)
- *Construction of large infrastructures in complex geology* (Prof. Vassilis Marinos)
- *The relevance of best practices in the engineering maintenance of large infrastructures* (Lorenzo Artaz)
- *Feasibility study and cost/benefit economic evaluation of large infrastructures* (Prof. Marco Alderighi)

Saturday morning 9.07.2022 - Field trip

Interaction between the Beauregard Dam and deep-seated gravitational slope deformation and example of monitoring activity at the Baise Pierre landslide (Daniele Giordan, Davide Bertolo)

Part Two: Austria

Monday 11.7.2022 Field trip

Landslides in the Kaunertal Valley (Gepatsch Rock Slides) - Prof. Christian Zangerl

Tuesday 12.7.2022 Field trip

Landslides in the Kaunertal Valley (Gepatsch Rock Slides) - Prof. Christian Zangerl, DI Michael Holzmann

Wednesday 13.7.2022 Field trip

Landslides in the Sellraintal Valley and visit of the Lake Piburg near Ötz - Prof. Christian Zangerl

Thursday 14.7.2022 Field trip

Landslides in the Ötztal Valley (Koefels Rock Slide) - Prof. Christian Zangerl

Friday 15.7.2022 Field trip

Landslides in the Ötztal Valley and at the Fernpass area (Tschirgant and Fernpass Rock Slide) – Dr. Christoph Prager, Prof. Christian Zangerl

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PHOTO GALLERY



Figure 2. Students and lecturers of the 2022 IAEG Summer School in Aosta.



Figure 3. View of the Brenva Glacier during the field trip on Wednesday 6th.

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Figure 4: group photo on the Beauregard dam



Figure 5. Inclinometric measurements conducted by the students at the Landslide of Baise Pierre during the field trip of Friday 8th



Figure 6. A moment of on-field explanations during the field trip of Monday 11th