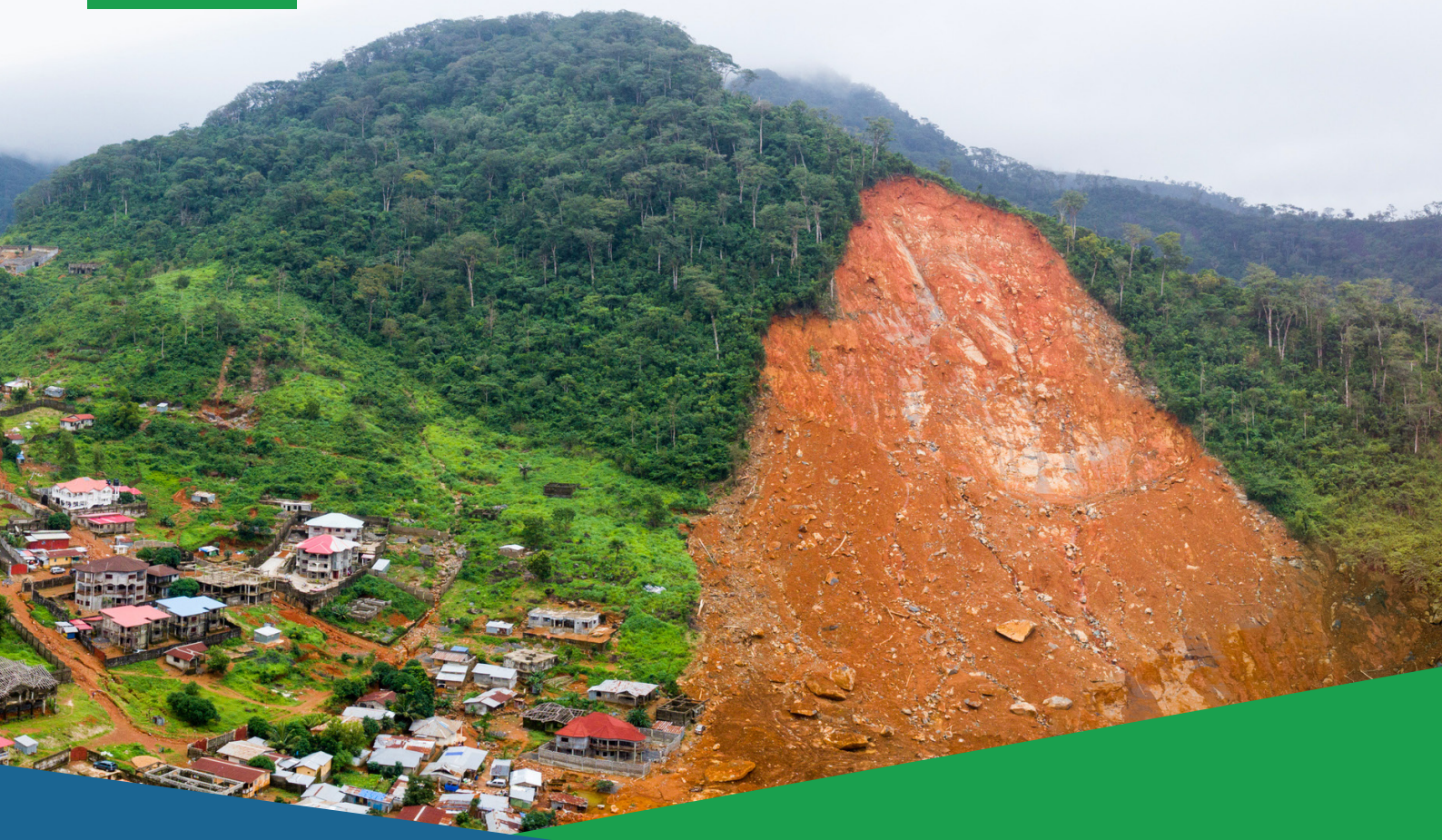
21-25 June 2021

5th international conference on Soil, Bio- and Eco-Engineering



Conference venue:
Museum of natural history
Bernastrasse 15, 3005 Bern, Switzerland

Hosts:
Bern University of Applied Sciences, EcorisQ

For more info and registration
www.ecorisqevents.com

ecorisQ.

Bern University of Applied Sciences
School of Agricultural, Forest and Food Sciences HAFL

Congress SBEE2021

As in the preceding SBEE conference series, we will bring together researchers, practitioners, geotechnical and civil engineers, biologists, ecologists, geomorphologists and foresters to discuss current problems in soil-resource sustainability, soil- erosion and slope-stability research, and how to address these problems using soil, bio- and eco-engineering techniques.

Conference topics include

- Root-soil interactions and distribution
- Root reinforcement
- Soil erosion and conservation
- Riverbank and coastline protection measures
- Slope stability modelling
- Effects of vegetation on hillslope hydrology
- Bioengineering, ecology and biodiversity
- Eco-DRR measures, protection forests, and soil bioengineering
- Risk management and decision support systems
- Benefits and liabilities in slope and erosion control

Conference schedule *(19th-25th June)*

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<tr><td>8.30 a.m. - 10 a.m.</td><td rowspan="2">Keynote S1</td><td>Keynote S4</td><td>Keynote S8</td><td>Excursion</td><td>Pratical courses</td></tr>
<tr><td>10.30 a.m. - 12 a.m.</td><td>Keynote S5</td><td rowspan="2">Keynote S9</td><td>Excursion</td><td>Pratical courses</td></tr>
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<tr><td>5.30 p.m. - 7 ap.m.</td><td>Posters Apero</td><td>-</td><td>Vineyard Apero</td><td>Excursion</td><td>EcorisQ GA</td></tr>
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Scientific sessions *(at Museum of natural history, Bern)*

MONDAY - June 21st

8.30 *Morning Coffee*

8.45 **Welcome Speech**

S1_ROOT DISTRIBUTION AND REINFORCEMENT MODELING AND MEASUREMENT (*Chair:* Stokes A.)

9:00 **TALK**_Root distribution modelling of tree species in different environmental conditions (Perona P.)

9:15 **VIDEO**_A three-dimensional analytical model for the mobilisation of root-reinforcement in direct shear conditions(Meijer G.)

9:30 **TALK**_Exploiting a root topological model based on Leonardo's Rule to estimate additional root cohesion (Arnone E.)

9:40 **Discussion Board**

9:55 *Coffee Break*

10:20 **TALK_Keynote:** Methods for the quantification of root reinforcement (Giadrossich F.)

10:50 **VIDEO**_Root failure location during tensile testing is driven by tissue age(Loades K.)

11:00 **VIDEO**_Power-law strength-diameter relation enhanced by drying in grass roots (Ekeoma E.)

11:10 **Discussion Board**

11:30 *Coffee Break*

11:45 **VIDEO**_Root reinforcement on quarry deposits: a study case from the Carrara Marble extraction site (Mauriello C.)

11:55 **VIDEO**_The influence of forest structure on root reinforcement modelling: a study in the Northeastern Italian Alps (Cislaghi A.)

12:05 **Discussion Board**

12:15 *Lunch Break*

S2_SURFACE EROSION AND VEGETATION
(*Chair:* Burgos S.)

13:45 **TALK ONLINE_Keynote:** Influence of vegetation on soil erosion processes (Poesen J.)

14:15 **TALK**_Wood logs biomechanics at the laboratory scale (Bau V., Perona P.)

14:25 **TALK**_A case study: the assessment of erosion processes related to service road networks in a steep-slope banana cultivation in southern Brazil (Hoerbinger S.)

14:35 **Discussion Board**

14:55 *Coffee Break*

S3_SHALLOW LANDSLIDES AND VEGETATION ON HILLSLOPE SCALE (*Chair:* Giadrossich F.)

15:15 **VIDEO_Keynote:** Review on methods to quantify the effect of root reinforcement on shallow landslides (Mao Z.)

15:45 **VIDEO**_Applying the SOSlope model to evaluate apparent root cohesion estimates for the monitored CB1 landslide in the Oregon Coast Range, USA (Schmidt K.)

15:55 **Discussion Board**

Poster Apero starting at 16:10

Scientific sessions *(at Museum of natural history, Bern)*

TUESDAY - June 22nd

8:30 *Morning Coffee*

S4_SHALLOW LANDSLIDES AND VEGETATION ON CATCHMENT SCALE (Chair: PHILLIPS C.*)*

9:00 **TALK ONLINE_Keynote:** Vegetation effects on shallow landslide processes at catchment scale (HALES T.)

9:30 **VIDEO**_Characteristics of bedload transport in forest-damaged areas, Republic of Korea (JUNPYO S.)

9:45 **Discussion Board**

10:00 *Coffee Break*

10:15 **VIDEO**_A case study on the hydraulic control of the rhizosphere on rainfall-induced shallow landslides (BALZANO B., TARANTINO A.)

10:25 **VIDEO**_ Triaxial shear behaviour of root-reinforced soil (KARIMZADEH A.)

10:35 **Discussion Board**

10:45 *Coffee Break*

S5_HYDROPEDOLOGY AND VEGETATION (Chair: RAUCH H.P.*)*

11:10 **VIDEO**_Plant-soil interactions can enhance climate adaptation control technologies for urban spaces (BOLDRIN D.)

11:10 **VIDEO**_Is Soil-Water Bioengineering a Nature-Based Solution? A comparison of terms and definitions (PRETI F.)

11:20 **Discussion Board**

11:30 *Coffee Break*

11:45 **VIDEO**_The turning resistance of trees in highly moist soil conditions(FAN C. C.)

11:55 **VIDEO**_Development of shrubby willows on a test levee and their impact on the seepage (SOKOPP M.)

12:05 **Discussion Board**

12:15 *Lunch Break*

S6_RIVERBANK STABILITY AND VEGETATION (Chair: MAY D.*)*

13:45 **TALK_Keynote:** The role of vegetation in fluvial system dynamics (PERONA P.)

14:15 **VIDEO**_Bioengineering measures of bank protection along Federal Waterways: the ecological potential for riverbank vegetation (BORNEMANN V.)

14:30 **TALK**_Nature-based engineering solution for sustainable invasive alien plants control and ecosystem restoration (HOERBINGER S.)

14:40 **Discussion Board**

15:00 *Coffee Break*

15:15 **TALK**_Soil bioengineering for riverbank protection, what benefits for biodiversity? (EVETTE A.)

15:25 **TALK**_River bio-engineering for bank protection in urban context: measured and perceived ecosystem services (FRANÇOIS A.)

15:35 **Discussion Board**

15:45 *Coffee Break*

S7_PROTECTION FOREST MANAGEMENT (Chair: BERGER F.*)*

16:00 **VIDEO_Keynote:** Prospectives of protective forest management in the Alps (VACCHIANO G.)

16:15 **VIDEO**_Large trees protect small trees from the dislodging stress of landslides (SONG M.)

16:25 **VIDEO**_Slow recovery from soil disturbance increases susceptibility of high elevation forests to landslides (HONGXI L.)

16:35 **Discussion Board**

18:00 *Confrence Dinner (at HAFL - Länggasse 85, 3052 Zollikofen)*

Scientific sessions *(at Museum of natural history, Bern)*

WEDNESDAY - June 23rd

8:30 *Morning Coffee*

S8_SOIL BIOENGINEERING AND TEMPORAL TECHNICAL CONSTRUCTION IN SLOPE STABILITY
(Chair: Bischetti G.B.*)*

9:00 **TALK_Keynote:** Design and temporal issues in Soil Bioengineering structures for the stabilisation of shallow soil movements (De Cesare G.)

9:30 **VIDEO**_Using forest trees as a bio-shield for debris flow mitigation: physical modelling (Himanshu K.)

9:40 **TALK**_A case study: Application of soil bioengineering techniques for gully stabilization in Jvarboseli / Tusheti National Park / Georgia (Rauch H.P.)

9:50 **TALK**_Overview of the degradation processes and causes of 223 soil bioengineering structures for riverbank protection (Leblois S.)

10:00 **Discussion Board**

10:25 *Coffee Break*

S9_SOIL BIOENGINEERING AND TEMPORAL TECHNICAL CONSTRUCTION IN RIVERBANK STABILITY
(Chair: Rauch H.P.*)*

10:40 **VIDEO_Keynote:** Soil Bioengineering and temporal technical construction in riverbank stability (Raymond P.)

11:10 **VIDEO**_Long-term riverbank soil bioengineering effectiveness monitoring in Calgary, Alberta Canada (Gallant M.)

11:25 **Discussion Board**

11:35 *Coffee Break*

11:45 **TALK**_A database about river bioengineering techniques: building online map and first analyses (Jaymond D.)

11:55 **VIDEO**_Mechanical filtration stability of willow brush mattresses (Sokopp M.)

12:05 **Discussion Board**

12:15 *Lunch Break*

13:45 **VIDEO**_Fluvial bioengineering in the Baztan-Arraioz river within the H2O Gurea project framework and the water bioengineering guidelines presentation (Sangalli P.)

13:55 **VIDEO**_"Proteger": a sustainable soil bioengineering project for riverbank protection in the Caribbean (Mira E.)

14:05 **Discussion Board**

14:15 *Coffee Break*

S10_BIO-ECONOMICS AND THE ROLE OF VEGETATION IN DISASTER RISK REDUCTION
(Chair: Dorren L.*)*

14:30 **VIDEO_Keynote:** Bioeconomic modeling: applications towards sustainable land use (Castro M.)

15:00 **VIDEO**_Specialization for the Soil and Water Bioengineering sector in the Mediterranean environment ECOMED Project (Sangalli P.)

15:10 **Discussion Board**

15:25 *Coffee Break*

15:40 **TALK_Keynote:** Towards quantitative evidence of Eco-DRR in mountains: a concise review (Moos C.)

16:10 **TALK**_Cost-benefit analysis of rockfall and landslide protection of railways by forests (Kühne K.)

16:20 **VIDEO**_FAT: a decision support tool for risk management in the Alpine Space (Teich M.)

16:30 Discussion Board

from 16:50 Vineyard Apero

Excursions

24th JUNE

Bioengineering and Torrent control measures: Canton of Fribourg and Bern (Schwarz M. & May D.)

Post-conference courses on model applications

(at BFH HAFL, Zollikofen)

25th JUNE

Post-conference courses are the moment where science meet practice! Choosing one of the courses, scientists and practitioners have the opportunity to discuss in detail the application of methods or tools for issues related to bioengineering measures:

- **SOSlope (D. Cohen)**, slope stability and vegetation (hillslope scale): SOSlope is a hydro-mechanical model of slope stability (depth< 2 m) that computes the factor of safety considering the mechanical forces due to roots and soil at the hillslope scale (Cohen and Schwarz, 2017).

- **Rockyfor3D (L. Dorren)**, rockfall and vegetation: Rockyfor3D is an application that explicitly and realistically integrates the barrier effect of trees on falling rocks.

Further information

New: The option to participate online in the scientific sessions (Monday to Wednesday) is introduced

Conference fee

Three day Conference: CHF 500 (late registration: 650) | Conference dinner: CHF 60 | Excursions: CHF 150 | Post-conference courses: CHF 250 (late registration: 350)

Online conference fee

CHF 250 (late registration: 350)

Registration

Please register at: www.ecorisqevents.com
(Early-bird registration closes: 30 April 2021)

Directions

Museum of natural history, Bernastrasse 15, 3005 Bern (Switzerland)
www.nmbe.ch/en/planing-your-vist

BFH-HAFL, Länggasse 85, 3052 Zollikofen (Bern, Switzerland)
https://www.bfh.ch/hafl/en/about-hafl/locations-facilities/

Contact

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Partner organisations

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FACHSTELLE FÜR FORSTLICHE BAUTECHNIK
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