6th WORLD LANDSLIDE FORUM

2023 FLORENCE ITALY

14-17 NOVEMBER 2023

PROGRAMME

CONTENTS

PRESIDENT WELCOME LETTER

Ladies and gentlemen, authorities, colleagues and friends of the global landslide community, the 6th World Landslide Forum in Florence begins November 14.

The World Landslide Forums are organized every three years to bring together scientists, engineers, practitioners, businesses, and policy makers from around the world to share progress on landslide risk reduction on a global scale.

The 6th World Landslide Forum is co-organized by the International Consortium on Landslides and the UNESCO Chair in Prevention and Sustainable Management of Geo hydrological Hazards at the University of Florence, under the International Programme on Landsl ides (IPL) support ed by five United Nations' organizations (UNESCO, WMO, FAO, UNDRR, UNU) and four international scientific organizations (ISC, WFEO, and IUGS).

More than 1100 participants from more than 60 countries participate in general plenary sessions, parallel scientific sessions, technical exhibitions, workshops and other side events during the four days of the Forum.

The Forum is dedicated to Landslide Science for Sustainable Development to spread awareness that the adverse impact of landslides, together with other hazards, undermines efforts to achieve Sustainable Development Goals of the United Nations by 2030.

The General Conference on landslide risk reduction at the Opening Plenary Session addresses the latest strategies of the landslide community to help achieve the global targets of the Sendai Framework for Disaster Risk Reduction. A Florence Declaration on Landslide Risk Reduction is adopted by the High Level Panel Discussion in the first day.

We are particularly pleased to welcome you to the city of Florence, which was the cradle of the Renaissance of Arts and Science, and which still today is a cutting edge city for science, culture, hospitality and beauty.

Florence has also been affected in the past by severe natural disasters such as floods and landslides, which have caused enormous damage to its artistic and cultural heritage. Therefore, we consider Florence an ideal place to discuss the latest advances in research, technology and policies to mitigate risks.

I wish the Forum a successful outcome and would like to thank the scientific committee, organizing committee, supporting organizations, partners, bodies that granted the patronage, and sponsors for their contribution and strong commitment to the Forum.

It is a special honor for me to inform you that the 6th World Landslide Forum has been awarded the Medal of the President of the Italian Republic, which is given to events of great scientific and cultural importance.

Yours sincerely and thank you again

Nicola Casagli
ICL President and WLF6 Chairman

SECRETARY GENERAL WELCOME LETTER

The Sixth World Landslide Forum is entitled Landslide Science for Sustainable Development and contributes to the Sendai Framework for Disaster Risk Reduction, through the Kyoto Commitment for Landslide Risk Reduction which was signed in 2020 by approximately 90 institutions.

The aim of the Forum is to create a common platform to promote cooperation between scientists, technicians, experts and policy makers dealing with landslides in order to define common priority actions for risk reduction on a global scale.

This objective is particularly important considering that the Sixth World Landslide Forum is taking place on the sixtieth anniversary of the Vajont landslide, the largest landslide disaster in Italy, which caused more than 1900 deaths.

The scientific program includes six main themes:

1 Kyoto Landslide commit ment for sustainable development

2 Remote sensing, monitoring and early warning

3 Testing , modeling and mitigation techniques

4 Mapping, hazard, risk assessment and management

5 Climate change, extreme weather conditions, earthquakes and landslides

6 Progress in landslide science and applications

On November 14, during the opening plenary session, the Florence Declaration on Landslide Risk Reduction is adopted. In this declaration, the international scientific community commits to working together to share information and best practices, support re search and development of new technologies and build capacity at all levels to improve landslide preparedness and response.

Scientific plenary lectures by four internationally renowned scientists are planned for the afternoon of November 14: Prof. Giovanni Battista Crosta from the University of Milan Bicocca, Prof. Xuanmei Fan from Chengdu University of Technology in China, Dr. Jonathan Godt from the United States Geological Survey and Prof. Olivier Dewitte from the Royal Museum for Central Africa.

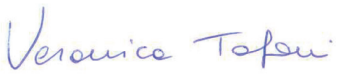
In the following days, parallel scientific sessions will take place with 853 scientific contributions, including 640 oral reports and 210 posters, divided into 47 scientific sessions.

The Forum closes on November 17 with the Closing Plenary Session, during which the baton is passed to the Seventh World Landslide Forum to be held in Taipei in 2026.

As Secretary General of the Forum, I would like to thank all the members who have contributed to the organization of the Forum over the past three years. I hope that the Forum can be an important moment of scientific exchange and personal growth.

A happy Forum to all

Veronica Tofani
WLF6 secretary general and ICL vice president



ORGANIZERS

International Consortium on Landslides (ICL)

UNESCO Chair on Prevention and Sustainable Management of Geo-Hydrological Hazards, University of Florence, Italy

Global Promotion Committee of International Programme on Landslides (IPL-GPC), including:

United Nations Educational, Scientific and Cultural Organization (UNESCO),
World Meteorological Organization (WMO),
Food and Agriculture Organization (FAO),
United Nations Office for Disaster Risk Reduction (UNDRR),
United Nations University (UNU),
International Science Council (ISC),
World Federation of Engineering Organizations (WFEO),
International Union of Geological Sciences (IUGS),
International Union of Geodesy and Geophysics (IUGG)

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Professor, University of Florence; President of ICL

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PASQUALE VERSACE
University of Calabria, Italy

GENERAL INFORMATION

CONGRESS VENUE
Palazzo dei Congressi & Palazzo degli Affari
Piazza Adua, 1, 50123 Florence

REGISTRATION DESK
To collect your badge and congress kit, the Registration Desk will be open according to the following time schedule:

Monday, 13 November	from 14:00 to 18:00
Tuesday, 14 November	from 07:30 to 19:00
Wednesday, 15 November	from 07:30 to 18:00
Thursday, 16 November	from 07:30 to 18:00
Friday, 17 November	from 07:30 to 17:00

WI-FI
A free wi-fi network will be available at the Congress Venue for all the WLF6 participants.
NETWORK: wlf6_2023 - PSWD: wlf6_2023

OFFICIAL LANGUAGE
English is the official language and no simultaneous translation will be available.

CATERING FACILITIES
14 November - Morning and afternoon coffee breaks, as well as the Welcome Cocktail are organized at Palazzo dei Congressi, in the areas just out of the Auditorium. Lunch will not be provided.
15-16-17 November - Morning and afternoon coffee breaks are organized at Palazzo degli Affari, in the Exhibition areas at Ground floor and at the First floor. Box lunches are offered only for those participants who have been registered at the side events.

CERTIFICATE OF ATTENDANCE
The certificate of attendance will be sent via email after the congress.

WLF6 APP
Download the WLF6 APP to have always with you the updated full programme and any other important information you may need:

EVENT CODE: wlf6

ORGANIZING SECRETARIAT
oic group

Viale della Giovine Italia, 17 - 50122 Florence (Italy)
For general inquiries: info@wlf6.org
For inquiries about the scientific programme: session@wlf6.org
For inquiries about sponsor-related questions: sponsor@wlf6.org
www.oic.it

TIMETABLE - Tuesday, 14 NOVEMBER 2023

	PALAZZO DEI CONGESSI AUDITORIUM
09:00-10:30	**Opening Ceremony**
10:30-11:00	*Coffee break*
11:00-13:00	**KLC2020 General Conference 2023 & High-Level Panel Discussion**
13:00-14:00	*Break*
14:00-16:00	**WLF6 Plenary Lectures**
16:00-16:30	*Coffee break*
16:30-18:00	**Recognition and Awards Ceremony**
18:00-19:00	**Welcome Cocktail**

TIMETABLE - Wednesday, 15 NOVEMBER 2023

	PALAZZO DEGLI AFFARI Basement HALL -1	PALAZZO DEGLI AFFARI 1° Floor HALL 1A	PALAZZO DEGLI AFFARI 2° Floor HALL 2	PALAZZO DEGLI AFFARI 2° Floor HALL 2A	PALAZZO DEGLI AFFARI 3° Floor HALL 3	PALAZZO DEGLI AFFARI 3° Floor HALL 3A	PALAZZO DEGLI AFFARI 4° Floor HALL 4
08:30-10:30	**SESSION 2.7** Investigation of mass movements in Alpine enviroments with remote sensing methods	**SESSION 5.7** Timescales in evolving landscapes affecting landslide hazard and risk	**SESSION 4.2** Spatial landslide assessments and beyond: new hallenges in mapping, modelling, validation and scenario building (part I)	**SESSION 6.8** Landslides in subaerial and subaqueous volcanic environments	**SESSION 2.5** Geophysical imaging, close-range sensing and geomodelling of landslide processes	**SESSION 6.1** Advances in understanding and modelling the internal and surface deformation of landslides (part I)	**SESSION 1.1** International programme on landslides and global and international activities for KLC2020 (part I)
10:30-11:00	*Coffee break*						
11:00-13:00	**SESSION 2.1** Case studies and state of the art on landslide monitoring (part I)	**SESSION 5.4** Wildfire, erosion and landslide in the framework of global warming: civil protection and land management aimed at mitigation of effects on slopes induced by extreme events	**SESSION 4.2** Spatial landslide assesments and beyond: new hallenges in mapping, modelling, validation and scenario building (part II)	**SESSION 3.7** Advancements in landslide and debris flow mitigation using geosynthetics and other solutions		**SESSION 6.1** Advances in understanding and modelling the internal and surface deformation of landslides (part II)	**SESSION 1.1** International programme on landslides and global and international activities for KLC2020 (part II)
13:00-14:30	*Lunch break*						
14:30-16:00	**SESSION 2.1** Case studies and state of the art on landslide monitoring (part II)	**SESSION 5.3** Towards a holistic understanding of landslide-induced disaster cascades in the Himalayas	**SESSION 4.2** Spatial landslide assessments and beyond: new challenges in mapping, modelling, validation and scenario building (part III)	**SESSION 3.1** Recent advancement in laboratory and in-situ testing methods for landslide and slope analyses (part I)	**SESSION 2.11** Enhancements in landslide data analysis for improved understanding, forecasting and early warning systems (part I)	**SESSION 6.6** Advances in understanding, quantifying and modeling the contribution of plants to slope stability	**SESSION 2.10** Soil moisture and rainfall measured through remote sensing for monitoring and predicting landslides
16:00-16:30	*Coffee break*						
16:30-18:00	**SESSION 2.1** Case studies and state of the art on landslide monitoring (part III)	**SESSION 5.1** Landslides and climate change: processes, trends, challenges and perspectives	**SESSION 4.11** Assessing geohazards of submarine landslides: where are we? and what are we missing?	**SESSION 3.1** Recent advancement in laboratory and in-situ testing methods for landslide and slope analyses (part II)	**SESSION 2.11** Enhancements in landslide data analysis for improved understanding, forecasting and early warning systems (part II)	**SESSION 6.5** Hydrological monitoring, modelling, and analysis of rainfall-induced landslides	**SESSION 1.9** Landslides and other ground failures triggered by the February 6, 2023 M7.7 and M7.6 Turkey-Kahramanmaras earthquakes

TIMETABLE - Thursday, 16 NOVEMBER 2023

	PALAZZO DEGLI AFFARI Basement HALL -1	PALAZZO DEGLI AFFARI 1° Floor HALL 1A	PALAZZO DEGLI AFFARI 2° Floor HALL 2	PALAZZO DEGLI AFFARI 2° Floor HALL 2A	PALAZZO DEGLI AFFARI 3° Floor HALL 3	PALAZZO DEGLI AFFARI 3° Floor HALL 3A	PALAZZO DEGLI AFFARI 4° Floor HALL 4
08:30-10:30	**SESSION 2.9** Past, present and future of satellite interferometry for landslides (part I)	**SESSION 1.4** Landslides and society: cultural, educational, ethical, and social aspects in sustainable landslide risk reduction (part I)	**SESSION 5.5** Advances in earthquake-induced landslide research (part I)	**SESSION 6.9** Landslide studies in Italy: state of the art and future perspectives (part I)	**SESSION 4.9** Land use and slope management practices with landslide occurrence: past, recent and future challenges and adaptation strategies	**SESSION 3.6** Landslides prediction: advanced techniques and alternative data sources for uncertainty assessment and reduction	**SESSION 1.7** Cultural heritage threatened by landslides: from earth observation and in situ investigation to sustainable mitigation measures
10:30-11:00	*Coffee break*						
11:00-13:00	**SESSION 2.9** Past, present and future of satellite interferometry for landslides (part II)	**SESSION 1.4** Landslides and society: cultural, educational, ethical, and social aspects in sustainable landslide risk reduction (part II)	**SESSION 5.5** Advances in earthquake-induced landslide research (part II)	**SESSION 6.9** Landslide studies in Italy: state of the art and future perspectives (part II)	**SESSION 4.5** Rockfall data: collection methods, analysis and use for hazard and risk assessments (part I)	**SESSION 3.9** Geotechnical mitigation of landslide hazard through nature-based solutions (NBS)	**SESSION 4.8** Landslide impacts, vulnerability and quantitative risk assessments of people, communities, structures, and infrastructure (part I)
13:00-14:30	*Lunch break*						
14:30-16:00	**SESSION 2.4** Multiplatform and multisensor applications for landslides characterization and monitoring (part I)	**SESSION 3.4** Physical and numerical modelling of landslide-structure-interaction (LSI) (part I)	**SESSION 6.7** 4D high-resolution topographic surveys to support the analysis of slope instability processes in high-steep slope agricultural and forested landscapes	**SESSION 2.2** Integrated application of deformation monitoring techniques and process analyses of deep-seated landslides (part I)	**SESSION 4.5** Rockfall data: collection methods, analysis and use for hazard and risk assessments (part I)	**SESSION 3.3** Recent advancement on slope stability and deformation analysis (part I)	**SESSION 4.8** Landslide impacts, vulnerability and quantitative risk assessments of people, c ommunities, structures, and infrastructure (part II)
16:00-16:30	*Coffee break*						
16:30-18:00	**SESSION 2.4** Multiplatform and multisensor applications for landslides characterization and monitoring (part II)	**SESSION 3.4** Physical and numerical modelling of landslide-structure-interaction (LSI) (part II)	**SESSION 2.8** Earth observation data for landslide prediction and risk assessment	**SESSION 2.2** Integrated application of deformation monitoring techniques and process analyses of deep-seated landslides (part II)	**SESSION 4.10** Landslide risk management: the challenges of transdisciplinary research in data-scarce environments	**SESSION 3.3** Recent advancement on slope stability and deformation analysis (part II)	**SESSION 4.8** Landslide impacts, vulnerability and quantitative risk assessments of people, ommunities-structures, and infrastructure (part III)

TIMETABLE - Friday, 17 NOVEMBER 2023

	PALAZZO DEGLI AFFARI Basement HALL -1	PALAZZO DEGLI AFFARI 1° Floor HALL 1A	PALAZZO DEGLI AFFARI 2° Floor HALL 2	PALAZZO DEGLI AFFARI 2° Floor HALL 2A	PALAZZO DEGLI AFFARI 3° Floor HALL 3	PALAZZO DEGLI AFFARI 3° Floor HALL 3A	PALAZZO DEGLI AFFARI 4° Floor HALL 4
08:30-10:30	**SESSION 2.12** Landslide early warning systems: innovations and applications (part I)	**SESSION 1.3** Cascading multi-hazard risks: submarine landslides, tsunamis, and impacts on infrastructures (part I)	**SESSION 6.4** Machine learning applications in landslide science (part I)	**SESSION 3.5** Rock falls and rock avalanches (part I)	**SESSION 4.1** Regional and global landslide inventories: parameters and principles of compilation	**SESSION 3.2** Natural field laboratories on landslides	**SESSION 4.4** Shallow landslides: monitoring, modeling, predicting
10:30-11:00	*Coffee break*						
11:00-13:00	**SESSION 2.12** Landslide early warning systems: innovations and applications (part II)	**SESSION 1.3** Cascading multi-hazard risks: submarine landslides, tsunamis, and impacts on infrastructures (part II)	**SESSION 6.4** Machine learning applications in landslide science (part II)	**SESSION 3.5** Rock falls and rock avalanches (part II)	**SESSION 4.3** Weak points in landslide susceptibility modelling (part I)	**SESSION 5.2** Landslides in the cold extremes (part I)	**SESSION 4.6** Landslides in urban environments (part I)
13:00-14:30	*Lunch break*						
14:30-16:00		**SESSION 2.3** Proactive risk management based on innovative monitoring methods		**SESSION 5.6** Landslides, earth dam and levee failures during recent extreme precipitation events	**SESSION 4.3** Weak points in landslide susceptibility modelling (part II)	**SESSION 5.2** Landslides in the cold extremes (part II)	**SESSION 4.6** Landslides in urban environments (part II)
16:00-17:00			**CLOSING CEREMONY**				

Tuesday, 14 NOVEMBER 2023

09:00-10:30 | AUDITORIUM
OPENING CEREMONY
Chairs: **Kyoji Sassa** - *ICL Secretary General*
Veronica Tofani - *ICL Vice President and WLF6 Secretary General*

09:00 Opening address from the primary organizers
Nicola Casagli - *ICL President and Chair of the 6th WLF*
Paolo Canuti - *UNESCO Chairholder prevention and sustainable mitigation of geo-hydrological hazard*

09:10 Greetings from United Nations organizations
Tshilidzi Marwala - *Under-Secretary-General of the United Nations / Rector of the United Nations University*
Mami Mizutori - *UN Special Representative of the Secretary-General for Disaster Risk Reduction*
Qu Dongyu - *Director-General of the Food and Agriculture Organization FAO*
Elena Manaenkova - *Deputy Secretary-General of the World Meteorological Organization WMO*
Lidia Brito - *Assistant Director-General for Natural Sciences of United Nations Educational, Scientific and Cultural Organization UNESCO*

09:35 Greetings from scientific organizations
Motoko Kotani - *Vice-President for Science and Society of the International Science Council ISC*
Mustafa B. Shehu - *President of the World Federation of Engineering Organizations WFEO*
John Ludden - *President of the International Union of Geological Sciences IUGS*
Chris Rizos - *President of the International Union of Geodesy and Geophysics IUGG*

09:55 Welcome messages from host organizations in Italy
Marco Pierini - *Vice Rector of Florence University*
Dario Nardella - *Major of Florence*
Eugenio Giani - *President of Tuscany Region*
Nello Musumeci - *Minister for Civil Protection*
Anna Maria Bernini - *Minister of University and Research*
Gilberto Pichetto Fratin - *Minister of Environment*

10:30 *Coffee break*

Tuesday, 14 NOVEMBER 2023

11:00-13:00 | AUDITORIUM

KLC2020 GENERAL CONFERENCE 2023 & HIGH-LEVEL PANEL DISCUSSION

Chair: **John Ludden** - *IUGS President*

11:00 Opening of the KLC2020 General Conference 2023
John Ludden - *IUGS President and Chair of KLC2020 General Conference* 2023

11:10 Signing ceremony of new KLC2020 signatories

Kyoji Sassa - *Secretary General of KLC2020*

Introduction of new KLC2020 partners:

Zhimin Wu - *Director, Forestry Division at FAO*

John Ludden - *President, International Union of Geological Sciences (IUGS)*

Fawu Wang - *Professor, Tongji University, China*

Jian Guo - *Professor, Tsinghua University, China*

Huiming Tang - *Vice-President, China University of Geosciences, China*

Rajendra Ratnoo - *Director, National Institute of Disaster Management (NIDM), India*

Kaoru Takara - *President, National Research Institute for Earth Science and Disaster Resilience (NIED), Japan*

Taichi Minamitani - *Director, Disaster Risk Reduction Team 1, Global Environment Department, Japan International Cooperation Agency (JICA), Japan*

Shinji Sassa - *Head, Soil Dynamics Group, National Institute of Maritime, Port and Aviation Technology, Japan*

Katsuo Sasahara - *Professor, Kochi University, Japan*

Ryosuke Seko - *Director, Chuo Kaihatu Cooperation, Japan*

Yoshiyuki Yagiura - *President, Kiso-Jiban Consultants Co., Ltd., Japan*

Julijana Bojadjieva - *Macedonian Association for Geotechnics, North Macedonia*

Jagath Gunatilake - *Director, Engineering Geology Research Group (EGRG), University of Peradeniya, Sri Lanka*

Jonathan Chambers - *United Kingdom Research and Innovation as represented by the British Geological Survey, UK*

Beena Ajmera - *Iowa State University, USA*

Tuesday, 14 NOVEMBER 2023

11:30 High-level panel discussion “KLC2020 Review and way forward”

Chairs: **Matjaž Mikoš** and **Qunli Han** - *Global Promotion Committee of IPL and KLC2020*

Panelists from KLC2020 partners:
- **Thomas Hofer** - *Senior Forestry Officer at FAO*
- **Yuki Matsuoka** - *Head UNDRR office in Japan*
- **Soichiro Yasukawa** - *Chief of Disaster Risk Reduction Unit at UNESCO*
- **Satoru Nishikawa** - *International Institute of Disaster Science*
- **Alexander Rudloff** - *Secretary General of IUGG*
- **Hiroshi Kitazato** - *Treasurer of IUGS*
- **Fabrizio Curcio** - *Department of Civil Protection Italian Government*
- **Stefano Laporta** - *ISPRA, Geological Survey of Italy*

Explanation of the Florence Declaration
Nicola Casagli - *ICL President and Chair of the 6th WLF*

12:45 Adoption of the Florence Declaration on Landslide Risk Reduction
John Ludden - *IUGS President and Chair of KLC2020 General Conference 2023*

12:50 Joint photo of the panelists and the new KLC2020 signatories

13:00 *Break*

14:00-16:00 | AUDITORIUM
WLF6 PLENARY LECTURES
Chairs: **Fausto Guzzetti** - *National Research Council* and **Vít Vilímek** - *ICL Vice-President*

14:00 Landslides in tropical environments: insight from the East African Rift
Olivier Dewitte - *Royal Museum for Central Africa*

14:30 Mechanisms and prediction of earthquake and climate change induced cascading hazards
Xuanmei Fan - *Chengdu University of Technology*

15:00 New US national strategy for landslide loss reduction
Jonathan Godt - *USGS*

15:30 Landslides impact on structures and infrastructures
Giovanni B. Crosta - *Università degli Studi di Milano Bicocca*

16:00 *Coffee break*

Tuesday, 14 NOVEMBER 2023

16:30-18:00 | AUDITORIUM
RECOGNITION AND AWARDS CEREMONY
Chairs: **Peter Bobrowsky** - *Chair IPL Awards Committee* and
Irasema Alcántara Ayala - *Chair IPL Evaluation Committee*

16:30 World Centers of Excellence on Landslide Risk Reduction

- Institute of Cold Regions Science and Engineering, Northeast Forestry University, China
- Croatian Landslide Group, Croatia
- Charles University, Czech Republic
- National Institute of Disaster Management (NIDM), India
- Amrita Vishwa Vidyapeetham, Amritapuri campus, India
- Universitas Gadjah Mada, Indonesia
- University of Calabria (UNICAL), Italy
- UNESCO Chair on Prevention and Sustainable Management of Geo-Hydrological Hazards, University of Florence, Italy
- CERI – Centre for Research on Prediction, Prevention, and Mitigation of Geological Risks, Italy
- Institute of Geography, National Autonomous University of Mexico (UNAM), Mexico
- JSC “Hydroproject Institute”, Russia
- Laboratory of Engineering Geodynamics, Department of Engineering and Ecological Geology, Faculty of Geology, Moscow State University, Russia
- University of Belgrade, Faculty of Mining and Geology, Belgrade, Serbia
- University of Ljubljana -Faculty of Civil and Geodetic Engineering (UL FGG) and the UNESCO Chair on Water-related Disaster Risk Reduction (WR DRR), Ljubljana, Slovenia
- Engineering Geology Research Group (EGRG), Department of Geology, University of Peradeniya, Sri Lanka
- British Geological Survey, U.K.

Tuesday, 14 NOVEMBER 2023

17:00 Varnes Medals

Charles Ng - *Hong Kong University of Science and Technology* - 2022 Medal
Edward N. Bromhead - *formerly Kingston University UK* - 2022 Medal
Irasema Alcántara-Ayala - *National Autonomous University of Mexico* - 2023 Medal

17:30 IPL-KLC Award for Success

Maneesha V. Ramesh – 2021-2023 Award

17:40 Hiroshi Fukuoka IPL Award

Vít Vilímek and **Jan Klimeš** - *Charles University* - 2021-2023 Award

17:50 Oldrich Hungr Awards

Clarence Choi - *University of Hong Kong* - 2022 Award
Tommaso Carlà – *University of Florence* - 2023 Award

18:00-19:00 | AUDITORIUM
Welcome Cocktail

Wednesday, 15 NOVEMBER 2023

08:30-10:30 | HALL -1
SESSION 2.7
INVESTIGATION OF MASS MOVEMENTS IN ALPINE ENVIROMENTS WITH REMOTE SENSING METHODS
Chairs: **Federico Agliardi** *(Italy)*, **Mylene Jacquemart** *(Switzerland)*

08:30 Remote sensing applications for deformation monitoring and process analyses of landslides in alpine environment
Christine Fey, Rechberger Christina, Klaus Voit, Christian Zangerl *(Austria)*

08:40 Investigation of mass movements in alpine environments with L-band persistent scatterer interferometry using ALOS-2 PALSAR-2
Tazio Strozzi, Rafael Caduff, Nina Jones, Urs Wegmüller, Andrea Manconi *(Switzerland)*

08:50 Wide area landslide detection by satellite remote sensing techniques
Chen Bo, Zhenhong Li *(China)*

09:00 The contribution of ground motion in the decision making processes of the Geological Survey of the Autonomous Region Friuli Venezia Gulia
Antonio Bratus, Federica Muro, Fabrizio Kranitz Gerd *(Italy)*

09:10 Assessment of alpine rock glacier activity by exploiting SAR interferometric products
Fabio Bovenga, Ilenia Argentiero, Antonella Belmonte, Alberto Refice, Davide Nitti, Raffaele Nutricato *(Italy)*

09:20 Exploring subglacial hydrologic connections for intermittent motion of the Barry Arm landslide (Alaska, USA)
Brian Collins[1], Dennis Staley[1], Johannes Gassner[2], Charles Miles[1], Lauren Schaefer[1], Mason Einbund[1], Lorenz Meier[2], Skye Corbett[1], Gabriel Wolken[1] *([1]USA, [2]Switzerland)*

09:30 Impact of landslides on glacier dynamics - project oultine
Marek Ewertowski, Gisela Domej, Jakub Małecki, Aleksandra Tomczyk *(Poland)*

09:40 Characterization of landslide movement before and after impoundments at the Maoergai Reservoir (China) using multi-temporal InSAR
Jiantao Du, Zhenhong Li *(China)*

19:50 Rock failure analysis of an unstable Alpine slope using remote sensing and volume frequency relationship: the Brenva instability case study (Aosta Valley, Italy)
Li Fei[1], Davide Bertolo[2], Tiggi Choanji[1], Marc-Henri Derron[1], Michel Jaboyedoff[1], Fabrizio Troilo[2], Patrick Thuegaz[2], Joëlle Hélène Vicari[1], Charlotte Wolff[1] *([1]Switzerland, [2]Italy)*

10:00 Deformation analysis and geological characterisation of an active deep-seated rockslide near Laatsch (South Tyrol, Italy)
Klaus Voit[1], Christine Fey[1], Christina Rechberger[1], Volkmar Mair[2], Christian Zangerl[1] *([1]Austria, [2]Italy)*

10:10 Laserscan fusion of multitudinous stations in a touristic gorge revearls early-warning relevant rockfall detachment patterns (Hoellentalklamm, Bavarian Alps)
Benjamin Jacobs, Paul Schmid, Michael Krautblatter *(Germany)*

10:20 Discussion

Wednesday, 15 NOVEMBER 2023

08:30-10:30 | HALL 1A

SESSION 5.7

TIMESCALES IN EVOLVING LANDSCAPES AFFECTING LANDSLIDE HAZARD AND RISK

Chairs: **Yi Zhang** *(China),* **Mike Winter** *(United Kingdom),*

08:30 Landscape evolution as key to understanding landslide patterns in the northern Colombian Andes
Edier Aristizabal, Oliver Korup *(Germany)*

08:40 Simulation and risk assessment of landslide - debris hazard chain in typical debris flow gully
Wei Shi *(China)*

08:50 Novel evidence of a Mass Rock Creep deforming slope in the Mountain Front Fault of the Lorestan region of the Zagros belt (Iran)
Michele Delchiaro[1], Marta Della Seta[1], Salvatore Martino[1], Mohammad Moumeni[1], Reza Nozaem[2], Gian Marco Marmoni[1], Carlo Esposito[1] *([1]Italy, [2]Iran)*

09:00 Paleolandslides on the southern edge of the Larzac plateau
Kévin Elkharrat, Catherine Homberg *(France)*

09:10 Multistage evolution of coastal slopes as a proxy for the climatic influence on landslides
Federico Feliziani, Marta Della Seta, Michele Delchiaro, Matteo Fiorucci2, Gian Marco Marmoni, Salvatore Martino *(Italy)*

09:20 Landscape dynamics and re-activation of large-scale landslides controlled by fault zones in the Western Qinling Mountains, China
Xingmin Meng[1], Tom Dijkstra[2], dongxia Yue[1], Guan Chen[1], Yi Zhang[1], Yajun Li[1], Runqiang Zeng[1], Tianjun Qi[1], Yan Zhao[1], Zhiqiang Wu[1], Shengcheng Xu[1] *([1]China, [2]United Kingdom)*

09:30 Slope dynamic processes in a medium-low permeability catchment in Central Italy
Sofia Ortenzi, Corrado Cencetti, Marco Stelluti, Ivan Marchesini, Lucio Di Matteo *(Italy)*

09:40 Research on fragmentation of glacial till under freeze-thaw cycles and it's effect to debris flow initiation
Tie Yongbo *(China)*

09:50 Risk assessment of moli landslide based on dynamic process simulation in Zhouqu County, Gansu Province, China
Xin Wang, Fuyun Guo, Juan Zhang, Rui Shi, Yi Zhang, Dongxia Yue *(China)*

10:00 Investigation of the 2019 Wenchuan County debris flow disaster suggests nonuniform spatial and temporal post-seismic debris flow evolution patterns
Xianzheng Zhang, Chenxiao Tang, Chuan Tang *(China)*

10:10 Activities and kinematic evolution of large landslides along fault belt in the NE Qinghai-Tibet Plateau
Yi Zhang, Xingmin Meng, Yuanxi Li, Wangcai Liu, Aijie Wang, Xiaojun Su, Jing Chang, Guan Chen, Runqiang Zeng, dongxia Yue *(China)*

10:20 Discussion

Wednesday, 15 NOVEMBER 2023

08:30-10:30 | HALL 2
SESSION 4.2
SPATIAL LANDSLIDE ASSESSMENTS AND BEYOND: NEW HALLENGES IN MAPPING, MODELLING, VALIDATION AND SCENARIO BUILDING (part I)
Chairs: **Thomas Glade** *(Austria)*, **Susana Pereira** *(Portugal)*

08:30 The application of GIS-based logistic regression analysis for landslide susceptibility mapping: a case study in western Albania
Besnik Ago, Shkëlqim Daja *(Albania)*

08:40 Relations between geotechnical and mineralogical properties of materials and mid term evolution of earthflows
Mariagiulia Annibali Corona, Domenico Calcaterra, Piergiulio Cappelletti, Francesco Izzo, Alessio Langella, Mariano Mercurio, Giacomo Russo, Enza Vitale, Luigi Guerriero *(Italy)*

08:50 Development of landslide domain maps at regional scale in data poor areas underlain by tropical residual soils
Christian Arnhardt[1], Vanessa Banks[1], Majdi Mansour[1], Nikhil Nedumpallile Vasu[1], Audrey Ougier-Simonin[1], Krishna Priya V K[2], K. Sajinkumar[2], Rajkumar Mathiyalaghan[1] *([1]United Kingdom, [2]India)*

09:00 Development of a prototype data-driven model to define the transient susceptibility to shallow landslides for operational purpoes in Aosta Valley (Italy)
Corrado Camera, Greta Bajni, Tiziana Apuani *(Italy)*

09:10 LiDAR-based identification, mapping and inventory of slope deformations in Biele Karpaty Mts
Ivan Dananaj, Pavel Liščák, Peter Pauditš, Peter Ondrus, František Teťák, Robert Žjak, Juraj Papčo, Matej Oros *(Slovakia)*

09:20 Prioritizing of factor responsible for land sliding by Analytical Hierarchical Process (AHP)
Atahuda Arachchige Virajh Dias, A A J Gunathilake Gunathilake *(Sri Lanka)*

09:30 Quantitative earthquake-induced landslide model validation of Abra Province, Philippines: a case study of the landslide impacts of the 2022 July 27 Mw 7.0 Northwestern Luzon earthquake
Margarita Dizon, Roland Joseph de Leon, Arturo Daag, Mike Gabriel Pedrosa, Hannah Melissa Baltazar, Ron Stephen Pitapit, Rocamora Cyrah Gail, Ched Satorre, Dan Gil Fermo, Teresito Bacolcol *(Philippines)*

09:40 Regional seismic landslide hazards mapping: a case study using calibrated newmark model in The Yingxiu area, Sichuan, China
Hua Ge *(China)*

09:50 Residual landslide hazard on slopes covered by pyroclastic deposits: lesson learned from the Palma Campania events in southern Italy
Ciro Sepe, Domenico Calcaterra, Diego Di Martire, Francesco Fusco, Rita Tufano, Enza Vitale, Luigi Guerriero *(Italy)*

10:00 An integrated probabilistic mechanism-driven and data-driven approach to loess landslide risk assessment at regional scale: An example from Chengguan district of Lanzhou city, China
Jianyin He *(China)*

10:10 Discussion

Wednesday, 15 NOVEMBER 2023

08:30-10:30 | HALL 2A
SESSION 6.8
LANDSLIDES IN SUBAERIAL AND SUBAQUEOUS VOLCANIC ENVIRONMENTS
Chairs: **Federico Di Traglia** *(Italy)*, **Irene Manzella** *(The Netherlands)*

08:30 Numerical investigation on the role of hydrothermal alteration on volcanic flank instabilities
Jens Niclaes, Pierre Delmelle, Rattez Hadrien *(Belgium)*

08:40 Mineralogy controls the mechanical behaviour of volcanic soils subjected to changes in water content
Maxime Delvoie[1], Rattez Hadrien[1], Jean-Michel Pereira[2], Anh-Minh Tang[2], Pierre Delmelle[1] *([1]Belgium, [2]France)*

08:50 Inventory of submarine mass-wasting processes at Vulcano edifice (Aeolian Islands): spatial distribution, morphometric characteristics and associated geohazard
Daniele Casalbore, Fabiana Bonaventura, Maddalena Biancone, Claudia Romagnoli, Francesco Chiocci *(Italy)*

09:00 Multidisciplinary approach for studying the flank instability at Vulcano Island
Roberto Gianardi, Marina Bisson, Paolo Madonia, Mauro Antonio Di Vito, Claudia Spinetti, Marco Polcari, Cristiano Tolomei, Matteo Cerminara, Mattia dé Michieli Vitturi, Benedetta Calusi, Gianfilippo De Astis *(Italy)*

09:10 Monitoring and modelling of Stromboli volcano (Italy) repeated crater-rim failure
Teresa Nolesini, Tommaso Carlà, Francesco Casu, Claudio De Luca, Teresa Gracchi, Fernando Monterroso, Yenni Lorena Belen Roa, Guglielmo Rossi, Carlo Tacconi Stefanelli, Federico Di Traglia, Riccardo Lanari, Nicola Casagli *(Italy)*

09:20 Assessing hazards of pyroclastic avalanches generated by paroxysms at Stromboli (Italy)
Andrea Bevilacqua, Alessio Di Roberto, Federico Di Traglia, Mattia de' Michieli Vitturi, Tomaso Esposti Ongaro, Antonella Bertagnini, Massimo Pompilio, Marina Bisson, Alessandro Fornaciai, Luca Nannipieri, Massimiliano Favalli, Alessandro Tadini, Zeno Geddo, Augusto Neri *(Italy)*

09:30 Deciphering controls of secondary lahars related to glacier recession and permafrost degradation at Chimborazo and Cotopaxi volcano, Ecuador
Theresa Frimberger, Michael Krautblatter *(Germany)*

09:40 Past and future landslides in Askja caldera: slope stability analysis and link to cryospheric processes
Alina Shevchenko[1], Thomas Walter[1], Magdalena Vassileva[1], Najibullah Kakar[1], Magnus Gudmundsson[2], Pouria Marzban[1], Joaquín Belart[2], Daniel Mueller[1], Mahdi Motagh[1], Nicole Richter[1] *([1]Germany, [2]Iceland)*

09:50 Landslides leading to the dismantling of volcanic edifices in the Campi Flegrei district (Southern Italy)
Giuseppe Esposito, Fabio Matano *(Italy)*

10:00 Discussion

Wednesday, 15 NOVEMBER 2023

08:30-10:30 | HALL 3
SESSION 2.5
GEOPHYSICAL IMAGING, CLOSE-RANGE SENSING AND GEOMODELLING OF LANDSLIDE PROCESSES
Chairs: **Hans-Balder Havenith** *(Belgium)*, **Veronica Pazzi** *(Italy)*

08:30 Landslides live in 3D: 3 cases illustrating why 3D geophysics is needed
Filip Hartvich, Petr Tábořík, Jakub Stemberk *(Czech Republic)*

08:40 Geophysical characterisation and geomodelling of the giant San Andres landslide, El Hierro Island, Spain
Hans-Balder Havenith[1], Jan Klimes[2], Jan Blahůt[2], Anne-Sophie Mreyen[1], Yawar Hussain[3], Lena Cauchie[1], Romy Schloegel[1] *([1]Belgium, [2]Czech Republic, [3]Italy)*

08:50 New insights on a slow-moving landslide from a multi-method geophysical investigation (Heinzenberg, Switzerland)
Franziska Glueer[1], Donat Fäh[1], Anne-Sophie Mreyen[2], Lena Cauchie[2], Hans-Balder Havenith[2], Hallo Miroslav[1], Paolo Bergamo[1] *([1]Switzerland, [2]Belgium)*

09:00 Multi-disciplinary investigation to characterize and remediate a complex historic landslide in British Columbia, Canada
Kelvin Sattler, Allen Kelly, David Elwood, Mehwish Rahman, David Huntley *(Canada)*

09:10 Geophysical survey for the estimation of geotechnical parameters and for the stability assessment of the Theilly landslide (VdA, Italy)
Veronica Pazzi, Agnese Innocenti, Ascanio Rosi, Veronica Tofani, Elisa Gargini, Elena Benedetta Masi, Samuele Segoni, Davide Bertolo, Marco Paganone, Nicola Casagli *(Italy)*

09:20 Investigating the influence of fractures and near-surface temperature variations on the stability of a sea arch through ambient vibration monitoring and numerical modal analysis
Guglielmo Grechi[1,2], Emanuele Colica[3], Sebastiano D'Amico[3], Roberto Iannucci[1], Salvatore Martino[1], Jeffrey Moore[2] *([1]Italy, [2]USA, [3]Malta)*

09:30 Integrated four-year time-lapse geophysical imaging with estimated uncertainty of a landslide prone to the anthropological triggering - An example from Outer Carpathians
Artur Marciniak, Sebastian Kowalczyk, Bartosz Owoc, Justyna Cader, Iwona Stan-Kłeczek, Rafał Czarny, Wojciech Gajek, Andrzej Górszczyk, Adam Nawrot, Szymon Oryński, Mariusz Majdański, Julia Rewers *(Poland)*

09:40 Joint P-wave and S-wave seismic refraction tomography survey for landslide area investigations
Marcin Lasocki, Szymon Ostrowski *(Poland)*

09:50 Improving self-potential methodology for a better understanding of subsurface flow patterns in an active landslide
Oziel Araujo, Mara Rossi, Massimo Giorgi, Stefano Picotti, Antonio Bratus, Roberto G. Francese *(Italy)*

10:00 Comprehensive electrical imaging of the ridge below the ancient church of Saint Martin (Dolomites, Italy)
Roberto G. Francese, Massimo Giorgi, Stefano Picotti, Federico Fischanger, Gianfranco Morelli, Adrian Flores-Orozco, Oziel Souza de Araujo, Clemens Moser, Aldino Bondesan, Federico Bocchia, Fabio Meneghini *(Italy)*

10:10 Integration of multisource surveys in a three-dimensional software environment for the subsurface characterization of a deep-seated slow-moving rockslide
Vincenzo Critelli, Edgar Ferro, Lucia Simeoni, Francesco Ronchetti, Alessandro Corsini *(Italy)*

10:20 Discussion

Wednesday, 15 NOVEMBER 2023

08:30-10:30 | HALL 3A
SESSION 6.1
ADVANCES IN UNDERSTANDING AND MODELLING THE INTERNAL AND SURFACE DEFORMATION OF LANDSLIDES (part I)
Chairs: **Mirko Francioni** *(Italy)*, **Douglas Stead** *(Canada)*

08:30 The importance of internal deformation in landslides and rock slope failures
Douglas Stead[1], Davide Donati[2], Davide Elmo[1], John Coggan[3], Mirko Francioni[2], Lisa Borgatti[2] *([1]Canada, [2]Italy, [3]United Kingdom)*

08:40 Slope processes and large-scale infrastructures: the Varna landslide along the access to the Brenner base tunnel (Isarco valley, northern Italian Alps)
Gianluca Benedetti, Lisa Borgatti, Gianfranco Fioraso, Giovanni Monegato, Stefano Rodani, Federico Sciascia *(Italy)*

08:50 Assessing the impact of reservoir drawdown on a deep-seated landslide in Western Alberta
Ingrid Berru, Renato Macciotta *(Canada)*

09:00 Kinematic evolution of the deep-seated, slow moving Pisciotta rock slide (Campania, Southern Italy)
Antonio Milano, Delia Cusano, Raffaele D'Angelo, Pantaleone De Vita *(Italy)*

09:10 Development of a rock slope damage interaction matrix using a combined characterization-numerical modelling approach
Davide Donati[1], Doug Stead[2], Lisa Borgatti[1] *([1]Italy, [2]Canada)*

09:20 Probabilistic estimation of displacement in seismically-induced landslides of the upper Sele River valley
Gerardo Grelle, Chiara Di Muro, Domenico Calcaterra, Diego Di Martire, Giuseppe Sappa, Luigi Guerriero *(Italy)*

09:30 Multidisciplinary slope stability analysis applied to cultural and natural heritage sites in Central Italy
Pooya Hamdi[1], Emilie Lemaire[1], Raphael Burchartz[1], Mirko Francioni[2], Davide Donati[2], Lisa Borgatti[2], Doug Stead[3] *([1]Germany, [2]Italy, [3]Canada)*

09:40 Digital aerial photogrammetry and Time-Lapse Electrical Resistivity Tomography (TL-ERT) in landslide monitoring- an example from Poland
Mirosław Kamiński *(Poland)*

09:50 Optimizing prediction of landslides deformation through the synthesis of temporal rainfall data and deep learning stacking algorithm
Mohammad Amin Khalili, Luigi Guerriero, Giovanna Pappalardo, Domenico Calcaterra, Diego Di Martire *(Italy)*

10:00 Three dimensional back analysis of landslide inventories to evaluate trends in strength at large spatial scales
Ben Leshchinsky, Stefano Alberti, Michael Olsen *(USA)*

10:10 Discussion

Wednesday, 15 NOVEMBER 2023

08:30-10:30 | HALL 4
SESSION 1.1
INTERNATIONAL PROGRAMME ON LANDSLIDES AND GLOBAL AND INTERNATIONAL ACTIVITIES FOR KLC2020 (part I)
Chairs: **Matjaž Mikoš** *(Slovenia)*, **Qunli Han** *(China)*

08:30 Fukuoka IPL Award (2020-2023)
Jan Klimes *(Czech Republic)*

08:45 2021 Oldrich Hungr Award
Clarence Edward Choi *(Hong Kong)*

09:00 2022 Oldrich Hungr Award
Tommaso Carlà *(Italy)*

09:15 Monitoring multi-stakeholders' contributions for building resilience against landslides through the Sendai Framework Voluntary Commitments Online Platform
Yuki Matsuoka, Alyssa Holganza *(Japan)*

09:25 Review and way forward of the open access book series "progress in landslide research and technology" for the Kyoto Landslide Commitment 2020
Sassa Kyoji *(Japan)*

09:35 Introduction and promotion of WLF7 in Taiwan 2026
Chih-Chung Chung, Ray-Shyan Wu, Jia-Jyun Dong, Yong-Ming Tien, Tai-Tien Wang, Wen-Chao Huang, Kuo-Lung Wang, Wen-Yi Hung, Meng-Chia Weng *(Taiwan)*

09:45 Research and development of core technology and its application for early warning in landslides - introduction of the Sino-Japan Collaboration Project
Ryosuke Seko[1], Lin Wang[2], Wenjian Tang[2], Linyao Dong[2] *([1]Japan, [2]China)*

09:55 Landslide quantitative risk assesment for developing countries in a densely populated urban context: the case of the high city of Antananarivo (Madagascar)
Giacomo Lazzeri, Francesco Caleca, Daniele Spizzichino, Alexandrine Wadel, Claudio Margottini, Veronica Tofani, William Frodella *(Italy)*

10:05 International panel of experts on landslide risk for cultural heritage sites (NICHE)
Yasser Elshayeb[1], Claudio Margottini[2], Daniele Spizzichino[2] *([1]Egypt, [2]Italy)*

10:15 Actions and contributions of integrated research on disaster risk to Kyoto Landslide Commitment 2020
Fang Lian, Qunli Han *(China)*

10:25 Study on technology for forecasting and early warning large-scale landslides in Vietnam's hilly areas
Khang Dang, Duc Do, Duc Dao, Toan Duong *(Vietnam)*

Wednesday, 15 NOVEMBER 2023

11:00-13:00 | HALL -1

SESSION 2.1

CASE STUDIES AND STATE OF THE ART ON LANDSLIDE MONITORING (part I)

Chairs: **Philipp Marr** *(Austria)*, **Michel Jaboyedoff** *(Switzerland)*

11:00 Remote sensing techniques to enhance early-warning ground monitoring networks management
Jacopo Allievi, Luca Dei Cas, Iolanda Iannicella, Andrea Pavan, Margherita Cecilia Spreafico *(Italy)*

11:10 Enhancing landslide risk mitigation through satellite InSAR data: insights from Japan's experience
Toshimi Mizuno[1], Yasunori Katsume[1], Alessandro Ferretti[2], Iolanda Iannicella[2] *([1]Japan, [2]Italy)*

11:20 A synthetic aperture radar interferomtery perspective on Instability of Joshimath, India
Vipin Maurya, Shivam Shukla, Ramji Dwivedi, Tapas Martha *(India)*

11:30 Exploring Polarimetric Synthetic Aperture Radar (PolSAR) potentiality for landslide detection. Case study: Large-scale landslide in the Pan-American Highway Corridor in the Andes Mountain region in Colombia
Johnny Vega[1], Anna Barra[2], César Hidalgo[1] *([1]Colombia, [2]Spain)*

11:40 Landslide monitoring with passive RFID: case studies
Mathieu Le Breton, Etienne Rey, Charléty Arthur, Laurent Baillet, Éric Larose, Frank Muller, Nicolas Grunbaum, Bruno Tisset, Lucie Guillen, Fabrice Guyoton *(France)*

11:50 Remote sensing of vegetation covered landslides using multi-frequency synthetic aperture radar
Andreu Mas-Vinolas, Adria Amezaga, Carlos Lopez-Martinez, Roger Jove-Casulleras, Marc Badia, Ricard Gonzalvez-Foguet *(Spain)*

12:00 A study on the applicability of sediment-related disaster investigations using combinations of satellite SAR images under different observation conditions
Takumi Sato, Kumiko Yamashita, Ken'ichi Honda, Tomohiro Taguchi, Shigetaka Takiguchi, Hiroaki Nakaya *(Japan)*

12:10 Rock slope displacement and change detection analysis by terrestrial PhotoMonitoring in White Canyon, British Columbia, Canada
Antonio Cosentino[1], Giacomo Santicchia[1], Giandomenico Mastrantoni[1], Jean Hutchinson[2], Paolo Mazzanti[1] *([1]Italy, [2]Canada)*

12:20 Multivariate statistical analysis of the conditioning factors for landslides in the central area of Angra Dos Reis, Rio de Janeiro State, Brazil
Amanda Silva, Marcos Mendonça, André Avelar *(Brazil)*

12:30 Smart boulders for real-time detection of hazardous movement on landslides
Georgina Bennett[1], Kyle Roskilly[1], Chunbo Luo[1], Kate Newby[1], Aldina Franco[1], Irene Manzella[2], Alessandro Sgarabotto[1], Michael Robert Zordan Whitworth[1], Joshua Jones[1] *([1]United Kingdom, [2]The Netherlands)*

12:40 Discussion

Wednesday, 15 NOVEMBER 2023

11:00-13:00 | HALL 1A

SESSION 5.4

WILDFIRE, EROSION AND LANDSLIDE IN THE FRAMEWORK OF GLOBAL WARMING: CIVIL PROTECTION AND LAND MANAGEMENT AIMED AT MITIGATION OF EFFECTS ON SLOPES INDUCED BY EXTREME EVENTS

Chairs: **Giuseppe Mandrone** *(Italy)*, **Dario Peduto** *(Italy)*

11:00 Post-fire analysis after the 2018 event in Monte Pisano mountain (Tuscany, Italy): monitoring and planning of measures at hillsplope scale to mitigate erosion processes
Silvia Calvani, Cristiano Foderi, Enrico Marchi, Federico Preti *(Italy)*

11:10 Evaluation of the RUSLE model for quantifying hillslope erosion after the wildfire, on March 30, 2020, in Xichang, China
Xichao Cao, Xiewen Hu, Kun He, Yan Wang, Yonghao Zhou, Ying Yang, Ruichen Zhou, Tao Jin, Yu Zhang, Wenchao Duan *(China)*

11:20 Quantifying the factor contribution on shear strength of soil augmented with natural fibers for erosion prevention
Charu Chauhan, Kala Venkata Uday *(India)*

11:30 Wildfire-conditioned-landslide scenarios under multi-hzard perspective: experiences from the urban area of Naples (Italy)
Matteo Ferrarotti, Giuseppe Bausilio, Francesca Bozzano, Diego Di Martire, Domenico Calcaterra, Carlo Esposito, Gian Marco Marmoni, Salvatore Martino, Paolo Mazzanti, Michele Solfanelli *(Italy)*

11:40 Effect of fire-induced soil water repellency on slope stability in a fire damaged forest
Sangjun Im, Chulwon Lee *(South Korea)*

11:50 Dynamic landslide hazard evaluation in the context of wildfires and climate change in the Mediterranean area
Pier Andrea Marras, Francesco Gallittu, Giuseppina Pintus, Mattia Alessio Meloni, Antonio Pignalosa, Giovanni Forte, Claudio Arras, Stefania Da Pelo *(Italy)*

12:00 Wildfire- induced geohydrological hazards in the Alps: the need for a systematic documentation procedure
Sandra Melzner[1], Johannes Hüb[1], Mateja Jemec-Auflic[2], Zeno Petrovich[1], Franz Goldschmidt[1], Marco Conedera[3] *([1]Austria, [2]Slovenia, [3]Switzerland)*

12:10 Landforms and geomorphic control on post-fire erosion: the Montiferru study-case
Costantino Pala, Maria Teresa Melis, Maria Teresa Brunetti, Giacomo Deiana, Laura Pioli, Stefano Loddo, Salvatore Cinus, Daniela Pani *(Italy)*

12:20 Soil bioengineering techniques to counteract soil erosion in fire-affected areas
Francesco Vito Ronco, Giovanni Romano, Giovanni Francesco Ricci, Francesco Gentile *(Italy)*

12:30 Effects of the temporal dynamic of root reinforcement after wildfire on the susceptibility of shallow landslides
Massimiliano Schwarz[1,2], Denis Cohen[3], Dominik May[1] *([1]Switzerland, [2]USA)*

12:40 Discussion

Wednesday, 15 NOVEMBER 2023

11:00-13:00 | HALL 2
SESSION 4.2
SPATIAL LANDSLIDE ASSESMENTS AND BEYOND: NEW HALLENGES IN MAPPING, MODELLING, VALIDATION AND SCENARIO BUILDING (part II)
Chairs: **Thomas Glade** *(Austria)*, **Susana Pereira** *(Portugal)*

11:00 Topographical analysis on the collapsing landslides induced by rainfall - Case of the 1972 Amakusa Disaster in Kyushu, Japan
Daisuke Higaki, Masataka Yamada, Jo Okazaki, Ryo Fujimoto, Hayato Ishida, Joko Kamiyama, Hiroyuki Sugimoto, Fumiaki Akazawa *(Japan)*

11:10 Landslides, gully erosion and badlands as associated geological hazards in flysch environment - analysis of geomorphological inventories and LiDAR DTM at a large scale
Petra Jagodnik, Sanja Bernat Gazibara, Marko Sinčić, Hrvoje Lukačić, Gabrijela Šarić, Martin Krkač, Zeljko Arbanas, Snježana Arbanas *(Croatia)*

11:20 National scale landslide susceptibility assessment in Greece: a project in progress
Katerina Kavoura, Emmanuel Apostolidis, Natalia Spanou, Garyfalia Konstantopoulou, Panagiotis Paschos2, Vasilis Ieronymakis, Foteini Panagiotidou *(Greece)*

11:30 The collaboration between bivariate and multivariate statistical methods in determining landslide susceptibility zones in Garut Regency, West Java Province, Indonesia
Dean Saptadi, Twin Hosea Widodo Kristyanto, Urwatul Wusqa *(Indonesia)*

11:40 A new model for global landslide susceptibility assessment and scenario-based hazard assessment
Farrokh Nadim, Rosa Maria Palau Berastegui, Eivind Magnus Paulsen, Erlend Storrøsten *(Norway)*

11:50 Evaluating landslide susceptibility in northern Philippines using machine learning
Dymphna Nolasco-Javier[1], Gaia Maria Javier[2] *([1]Philippines, [2]Australia)*

12:00 Initiation and mobility of flows in the Southern Apennines of Italy
Vincenzo Festa, Isabella Serena Liso, Piernicola Lollino, Mario Parise, Luigi Spalluto *(Italy)*

12:10 Testing the exploitability of heterogeneous regional landslide inventories in susceptibility assessment: an application to the volcanic system of El Salvador
Edoardo Rotigliano[1], Chiara Martinello[1], Chiara Cappadonia[1], Claudio Mercurio[1], Miguel Ángel Hernández Martínez[2], Abel Alexei Argueta-Platero[1,2], Christian Conoscenti[1], Valerio Agnesi[1] *([1]Italy, [2]El Salvador)*

12:20 GIS-based evolution and comparisons of landslide susceptibility mapping of Chiang Rai Province, Northern Thailand
Tatsanaporn Ruansorn, Namphon Khampilang *(Thailand)*

12:30 Discussion

Wednesday, 15 NOVEMBER 2023

11:00-13:00 | HALL 2A

SESSION 3.7

ADVANCEMENTS IN LANDSLIDE AND DEBRIS FLOW MITIGATION USING GEOSYNTHETICS AND OTHER SOLUTIONS

Chairs: **Zeljko Arbanas** *(Croatia),* **Sabatino Cuomo** *(Italy)*

11:00 Analytical modelling of the mechanical behaviour of the interaction between soil and anchored geosynthetic systems
Katia Boschi[1], Claudio di Prisco[1], Luca Flessati[1,2] *([1]Italy, [2]The Netherlands)*

11:10 3D printed reinforcement for soil stabilization
Guang-Ting Fu, Chi Cheng Luo, Chieh-Sheng Chen, Ching Hung, Chih-Hsuan Liu *(Taiwan)*

11:20 Green protection barriers against debris avalanches
Sabatino Cuomo[1], Angela Di Perna[1], Mario Martinelli[2] *([1]Italy, [2]The Netherlands)*

11:30 How effective was sluicing as a rockfall remediation method following the 2016 Kaikoura earthquake?
Imogen Daysh, Tom Robinson, Rori Green, Doug Mason *(New Zealand)*

11:40 Application of two-dimensional shallow water equations in debris flow modelling: a case study in Marumori, Miyagi, Japan
Nilo Lemuel Dolojan, Reika Nomura, Shuji Moriguchi, Kenjiro Terada *(Japan)*

11:50 Experimental investigation of negative possion's ratio structures to arrest geophysical granular flows
Taikun Han, Clarence Choi *(Hong Kong)*

12:00 Evaluation of slope protection works from shear strain in ground with soil nailing by centrifuge tests
Shuntaro Nada, Kazuya Sano, Naoto Iwasa, Sahare Anurag, Takuya Ishigaki, Hiroshi Kokuryo, Kazuya Itoh *(Japan)*

12:10 Risks associated with the management of structural protective measures for rockfall mitigation: an overview on their supervision and monitoring over time
Daniele Giordan, Martina Cignetti, Davide Notti, Danilo Godone, Paolo Allasia, Davide Bertolo *(Italy)*

12:20 Predictive modelling of debris flow entrainment in contrasting environmental settings
Verena Stammberger, Andreas Dietrich, Michael Krautblatter *(Germany)*

12:30 *Discussion*

Wednesday, 15 NOVEMBER 2023

11:00-13:00 | HALL 3A

SESSION 6.1

ADVANCES IN UNDERSTANDING AND MODELLING THE INTERNAL AND SURFACE DEFORMATION OF LANDSLIDES (part II)

Chairs: **Luigi Guerriero** *(Italy)*, **Lisa Borgatti** *(Italy)*

11:00 Small-scale landslide modelling: limitations and challenges
Zeljko Arbanas, Josip Peranić, Martina Vivoda Prodan, Nina Čeh, Vedran Jagodnik *(Croatia)*

11:10 The triggering of flow liquefaction in loess flowslides: a constitutive investigation
Runkang Zhao[1], Fangzhou Liu[2] *([1]China, [2]Canada)*

11:20 Understanding the evolution of large-scale deformation processes through back-analyses: knowledge elements from monitoring and integration of stress-strain and landscape evolution modelling
Gian Marco Marmoni, Michele Delchiaro, Marta Della Seta, Salvatore Martino, Gabriele Scarascia Mugnozza *(Italy)*

11:30 A smart inclinometer for monitoring the internal deformation of deep-seated landslides
Emilia Damiano, Erika Molitierno, Martina de Cristofaro, Settimio Ferlisi, Domenico Guida, Nadia Netti, Mario Valiante, Lucio Olivares *(Italy)*

11:40 Using UAV time series to estimate landslide's surface deformation uncertainties. Case study: Chirlesti Earthflow, Romania
Ionut Sandric, Radu Irimia, Viorel Ilinca, Zenaida Chitu, Ion Gheuca *(Romania)*

11:50 Numerical modelling applied to large landslides phenomena
Nicola Sciarra, Antonio Pasculli *(Italy)*

12:00 New techniques to monitor landslide behavior using digital terrain models and in-situ GNSS
Andrew Senogles, Ben Leshchinsky, Michael Olsen *(USA)*

12:10 Landslides on cataclinal slopes in anisotropic flysch rocks. Study from the Outer Carpathians (Poland)
Rafal Sikora *(Poland)*

12:20 Deep-seated rock slide - implications of engineering geological models on stability and hazard assessment
Christian Zangerl, Christine Fey, Christina Rechberger *(Austria)*

12:30 Assessing the efficacy of digital particle image velocimetry in studying the reactivation of flow-like landslides in conditions of suboptimal image quality
Alessandro Zuccarini[1], Nikhil Nedumpallile Vasu[2], Vanessa Banks[2], Elisabeth Bowman[2], Alessandro Leonardi[2], Matteo Berti[1] *([1]Italy, [2]United Kingdom)*

12:40 *Discussion*

Wednesday, 15 NOVEMBER 2023

11:00-13:00 | HALL 4
SESSION 1.1
INTERNATIONAL PROGRAMME ON LANDSLIDES AND GLOBAL AND INTERNATIONAL ACTIVITIES FOR KLC2020 (part II)
Chairs: **Sassa Kyoji** *(Japan)*, **Irasema Alcántara-Ayala** *(Mexico)*,

11:00 Development of early warning technology for rain-induced rapid and long traveling landslides in Sri Lanka - Predict catastrophic landslides a day in advance
Kazuo Konagai[1], Asiri Karunawardena[2], Sassa Kyoji[1], Gamini Jayathissa[2] *([1]Japan, [2]Sri Lanka)*

11:10 Recent initiatives for enhancing landslide risk management in Sri Lanka
Asiri Karunawardena, Dayan Munasinghe, Gamini Jayathissa, Kithsiri Bandara *(Sri Lanka)*

11:20 Introducing Japanese landslide warning system to Sri Lanka: field survey for analyzing the availability of map interpretation for successful technology transfer
Kumiko Fujita *(Japan)*

11:30 Rain-induced rapid and long-travelling landslides - A case study in the Atami District, Shizuoka Prefecture, Japan
Loi Doan, S.H.S. Jayakody, Kyoji Sassa, Kazuo Konagai, Khang Dang *(Japan)*

11:40 Slope stability analysis under the integrated effects from groundwater and rainfall - Centrifuge modeling
S.H.S. Jayakody, Ryosuke Uzuoka, Kyohei Ueda, Kenta Saito *(Japan)*

11:50 Development of a new integrated earthquake-ground tilt-rainfall monitoring system in Sri Lanka
Koji Matsunami, Ranjan Weerasinghe *(Japan)*

12:00 Super-resolution simulation for real-time operational predictions of orographic precipitation in Sri Lanka
Ryo Onishi, Anuththara Bandara, Joe Hirai, Yuki Yasuda *(Japan)*

12:10 Potential damage zone prediction of rain-induced rapid and long traveling landslides in Sri Lanka, based upon debris flow analysis combining cellular automation and multi-agent models
Sandaruwan Karunarathne[1], Satoshi Goto[2] *([1]Sri Lanka, [2]Japan)*

12:20 Comparison on residual shear strength of landslide soil using undrained ring shear apparatus
N.P.G. Amali, Haluweerage Maduranga, Ranjan Weerasinghe *(Sri Lanka)*

12:30 Assessing the potential rapid and long travelling landslides in Sri Lanka - A case study of Athwelthota landslide
Ranjan Weerasinghe[1], S.H.S. Jayakody[2], N.P. Amali[1], H.R. Maduranga[1], Loi Doan Huy[2] *([1]Sri Lanka, [2]Japan)*

12:40 Assessment of the structural geological, hydrogeological, and geomorphological relationship that contribute to the formation of an unstable slope in the Athwelthota landslide located in Baduraliya, Sri Lanka
D.M.D.S. Dissanayake[1], A.R.P. Weerasinghe[1], S.H.S. Jayakody[2], Shiho Asano[2], K.N. Bandara[1] *([1]Sri Lanka, [2]Japan)*

12:50 Introducing a mechanism to manage the risk associated with “Rain-induced, Rapid, and Long traveling Landslides” (RRLL) in Sri Lanka
Hasali Hemasinghe, Gamini Jayathissa *(Sri Lanka)*

Wednesday, 15 NOVEMBER 2023

14:30-16:00 | HALL -1
SESSION 2.1
CASE STUDIES AND STATE OF THE ART ON LANDSLIDE MONITORING (part II)
Chairs: **Philipp Marr** *(Austria)*, **Michel Jaboyedoff** *(Switzerland)*

14:30 Development of a ground displacement sensor for prediction of seismic deformation of embankments
Kenki Owada, Kazuya Sano, Anurag Sahare, Kazuya Itoh, Naoaki Suemasa *(Japan)*

14:40 Landslide risk assessment in Kyrgyz Republic
Andrea Tamburini[1], Nathan Rive[2], Miguel Coulier[3] *([1]Italy, [2]Philippines, [3]Viet Nam)*

14:50 Monitoring and risk management of unstable rock slopes in Norway
Lene Kristensen, Lars Harald Blikra *(Norway)*

15:00 Analysis of tree growth microscopical disturbances for landslide movement monitoring and their possible application as low-cost environmentally friendly sesnors
Jan Klimes, Filip Hartvich, Jan Blahůt, Petr Tábořík, Jan Balek *(Czech Republic)*

15:10 Comparing deformation monitoring methods at the North Slide, south-central British Columbia, Canada
David Huntley, Drew Rotheram-Clarke, Philip LeSueur, Robert Cocking, Jamel Joseph *(Canada)*

15:20 Integrated real-time emergency monitoring during landslide recovery operations through combined use of interferometric radar and total stations
Alessandro Pettinari[1], Matthias Twardzik[1], Paolo Papeschi[1], David Fernandez Bruna[2], Oskar Moral[3] *([1]Italy, [2]Spain)*

15:30 Extraction of landslides due to the 2018 Hokkaido Easten-Iburi earthquake based on multi-temporal Lidar data
Fumio Yamazaki, Wen Liu *(Japan)*

15:40 Multi-method long-term assessment of a landslide reactivated by the extreme 2021 flood event in the Ahr Valley (Germany)
Till Wenzel[1], Rainer Bell[2], Michael Dietze[2], Lothar Schrott[2], Alexander Beer[2], Anika Braun[2], Tomas Fernandez-Steeger[2] *([1]Austria, [2]Germany)*

15:50 A multi-sensor and multi-variable satellite observation approach for investigating landslide life cycle and the controlling role in their mechanism of meteorological and human factors: March 2019 Hoseynabad-e Kalpush disaster in Iran
Magdalena Vassileva[1], Mahdi Motagh[1], Sigrid Roessner[1], Bahman Akbari[2], Zhuge Xia[1] *([1]Germany, [2]Iran)*

Wednesday, 15 NOVEMBER 2023

14:30-16:00 | HALL 1A
SESSION 5.3
TOWARDS A HOLISTIC UNDERSTANDING OF LANDSLIDE-INDUCED DISASTER CASCADES IN THE HIMALAYAS
Chairs: **S.Srikrishnan Subramanian** *(India)*, **Vít Vilímek** *(Czech Republic)*

14:30 Probabilistic modeling of landslide hazards in the North-West Himalayas: a case study of Malli Bazar landslide
Saurabh Kumar, Sarada Prasad Pradhan *(India)*

14:40 Seismic monitoring of landslide in the Himalayas: a critical tool for disaster prevention
Deepak Rawat, Mukat Sharma, Debi Kanungo, Anand Joshi *(India)*

14:50 Towards establishing an optimal regional rainfall thresholds for landslide occurrence in Himachal Pradesh, India: a comparative study of methods and datasets
Soumya Darshan Panda, Sarada Prasad Pradhan *(India)*

15:00 An integrated framework to assess the impact of extreme precipitation-induced cascading hazards in the Himalayas
Sudhanshu Dixit, S.Srikrishnan Subramanian, Sumit Sen *(India)*

15:10 Seasonality influence on cascading processes resulting from avalanches made of multiple components (rock, ice, snow, water)
Jessica Munch, Perry Bartelt *(Switzerland)*

15:20 Experimental study on the failure mechanism of moraine dams with different compactness composition under surge action
Xiao Xian, Xuanmei Fan *(China)*

15:30 Investigating vertical heterogeneity of soil-rock mixtures and unsaturated shear strength of landslide debris in the Himalayas
Manish Dewrari, S. Srikrishnan Subramanian *(India)*

15:40 Discussion

Wednesday, 15 NOVEMBER 2023

14:30-16:00 | HALL 2
SESSION 4.2
SPATIAL LANDSLIDE ASSESSMENTS AND BEYOND: NEW CHALLENGES IN MAPPING, MODELLING, VALIDATION AND SCENARIO BUILDING (part III)
Chairs: **Thomas Glade** *(Austria)*, **Stefan Steger** *(Italy)*

14:30 Influence of indisturbed parts of slope and the orientation of bedding strata to landslide susceptibility assessment
Edyta Rycio *(Poland)*

14:40 An integration of the fractal method and the statistical index method for mapping landslide susceptibility in Muong Khoa commune, Son La province, Vietnam
Binh Duong[1], Igor Fomenko[2], Denis Gorobtsov[2], Kien Nguyen[1], Dang Vu[1], Daria Shubina[2] *([1]Viet Nam, [2]Russia)*

14:50 Three-dimensional slope stability analysis based on limit equilibrium theory for a large area
Daichi Sugo, Saneiki Fujita, Kenta Tozato, Reika Nomura, Shuji Moriguchi, Kenjiro Terada *(Japan)*

15:00 Landslide damming forecasting: a tool for risk management and land use planning
Carlo Tacconi Stefanelli, Nicola Casagli, Filippo Catani *(Italy)*

15:10 Susceptibility assessment with QGIS. SZ-plugin does it all?
Giacomo Titti[1], Letizia Elia[1], Luigi Lombardo[2], Lisa Borgatti[1] *([1]Italy, [2]The Netherlands)*

15:20 Identifying the fundamental mapping unit for shallow landslide susceptibility mapping in a tropical region - Case study in the Western Ghats, India
Krishna Priya V K[1], K. Sajinkumar[1], Rajaneesh A[1], Nikhil Nedumpallile Vasu[2], Christian Arnhardt[2], Vanessa Banks[2] *([1]India, [2]United Kingdom)*

15:30 An approach of approximation the landslide scarp whose toe is buried
Hock Kiet Wong, Yih-Chin Tai, Chih-Ling Wang *(Taiwan)*

15:40 A Datahub for comparative reliability assessment of model-based landslide prediction
Anil Yildiz, Minu Abraham, Mithlesh Kumar, Nicholas Book, Julia Kowalski *(Germany)*

15:50 An automatic slope units delineation software integrating a new method based on contour
Shilin Zhu, Lixia Chen, Deying Li *(China)*

14:30-16:00 | HALL 2A
SESSION 3.1
RECENT ADVANCEMENT IN LABORATORY AND IN-SITU TESTING METHODS FOR LANDSLIDE AND SLOPE ANALYSES (part I)
Chairs: **Binod Tiwari** *(USA)*, **Beena Ajmera** *(USA)*

14:30 The clays involved in the 1963 Vajont slide: mineralogy, geotechnical characterization and geomechanical implications
Paolo Paronuzzi, Daniela Pinto, Davide Lenaz, Marco Del Fabbro, Massimo Soccal, Alberto Bolla *(Italy)*

14:40 Mitigation of the catastrophic quick clay landslide at Ask, Gjerdrum in Norway, 30th December 2020
Håkon Heyerdahl, Ragnar Moholdt, Amanda DiBiagio, Bjørn Kristian Bache *(Norway)*

14:50 Research on formation mechanism and new prevention technology of landslide induced by hydro-fluctuation belt rock mass deterioration in the Three Gorges Reservoir Area
Zhenwei Dai, Yueping Yin, Luqi Wang, Xiaolin Fu, Shengtao Zhou, Anle Zhang, Runqing Ye, Yanjun Zhang *(China)*

15:00 Site response of ancient landslides to initial impoundment of Baihetan Reservoir (China) based on ambient noise investigation
Hongfeng Liu, Luo Yonghong, Feng Wenkai, Yunsheng Wang, Hu peng, Ma Haimiao *(China)*

15:10 Investigation on the physical properties of the layered pyroclastic covers involved in shallow landslides in Campania (Italy)
Daniel Romàn Quintero, Emilia Damiano, Roberto Greco, Lucio Olivares *(Italy)*

15:20 Rock slope stability analysis through on-site methods: data from CSIRO HI cells tests for calibrating 3D numerical models
Vivien De Lucia, Andrea Rindinella, Luisa Beltramone, Andrea Ermini, Daniele Silvestri, Riccardo Salvini, Stefano Guido, Daria Marchetti, Domenico Gullì *(Italy)*

15:30 Shear surface undulations modulate gouge strength and contribute to divergent landslide acceleration
William Schulz[1], Gonghui Wang[2], Yao Jiang[3], Brian Collins[1], Mark Reid[1], Mason Einbund[1] *([1]USA, [2]Japan, [3]China)*

15:40 Development of a new ring shear device for investigating shearing response of flow-like landslides with pore pressure feedback
Aastha Bhatta, Charles Ng, Sunil Poudyal, Clarence Choi, Haiming Liu *(Hong Kong)*

15:50 Discussion

14:30-16:00 | HALL 3
SESSION 2.11
ENHANCEMENTS IN LANDSLIDE DATA ANALYSIS FOR IMPROVED UNDERSTANDING, FORECASTING AND EARLY WARNING SYSTEMS (part I)
Chairs: **Michael Hendry** *(Canada)*, **Emanuele Intrieri** *(Italy)*

14:30 A new concept for prospective failure time forecasting
Johannes Leinauer[1], Samuel Weber[1,2], Alessandro Cicoira[2], Maximilian Jokel[1], Jan Beutel[3], Michael Krautblatter[1] *([1]Germany, [2]Switzerland, [3]Austria)*

14:40 Anomaly detection using elastic net for slope strain measured by centrifugal model test
Ryota Nakane, Nobutaka Hiraoka, Yuki Nakajo, Yuki Kasa, Naotaka Kikkawa, Kazuya Itoh *(Japan)*

14:50 AutoEncoder-based anomaly detection for monitoring data in a full-scale model slope test excavation
Nobutaka Hiraoka, Ryota Nakane, Yuki Nakajo, Naotaka Kikkawa, Kazuya Itoh, Katsuo Sasahara *(Japan)*

15:00 AI enabled IoT based landslide early warning system integrating crowd sourcing and community reslience
Maneesha Vinodini Ramesh *(India)*

15:10 Examination of inverse velocity method in forecasting failure time against methods of SLO and Velocity Over Acceleration
Sohrab Sharifi, Renato Macciotta, Michael Hendry *(Canada)*

15:20 Prediction of slope failures based on massive and multi-temporal inverse velocity analysis of satellite InSAR and ground-based radar data
Paolo Farina, Davide Colombo, Veronica Taurino, Andrea Ciampalini, Giacomo Ciabatti, Minja Kukavicic *(Italy)*

15:30 Procedure of data processing for the improvement of failure time prediction of a landslide based on the velocity and acceleration of the displacement
Imaya Ariyarathna, Katsuo Sasahara *(Japan)*

15:40 Discussion

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14:30-16:00 | HALL 3A
SESSION 6.6
ADVANCES IN UNDERSTANDING, QUANTIFYING AND MODELING THE CONTRIBUTION OF PLANTS TO SLOPE STABILITY
Chairs: **Elena Benedetta Masi** *(Italy)*, **Jorge Pedro Galve** *(Spain)*,

14:30 State-of-the-art: parametrization of hydrological and mechanical reinforcement of roots in slope stability models
Amanda DiBiagio, Vittoria Capobianco, Amy Oen, Lena Tallaksen *(Norway)*

14:40 Mechanical impacts of forest vegetation on shallow landslides considering its spatial distribution in a mountain watershed
Dongyeob Kim, Song Eu *(South Korea)*

14:50 A probabilistic model for slope stability analysis including the root reinforcement effects
Sara Galeazzi, Diana Salciarini, Luca Ciabatta, Evelina Volpe, Luca Brocca *(Italy)*

15:00 Probabilistic analysis of root-reinforced slopes with intelligent surrogate models
Carlotta Guardiani[1], Barbara Świtała[2], Enrico Soranzo[1], Wei Wu[1] *([1]Austria, [2]Poland)*

15:10 Contribution of sloping olive yards to slope stability: preliminary results
Massimiliano Bordoni, Valerio Vivaldi, Graziano Rossi, Claudia Meisina *(Italy)*

15:20 Effects of mixed-planting condition on stability of a three-dimensional vegetated slope
Qi Zhang, Haowen Guo, Charles Ng *(China)*

15:30 Comparison between SlideforMAP and SHALSTAB shallow landslides susceptibility models: the Garfagnana (Northern Tuscany, Italy) case study
Lorenzo Marzini[1], Enrico D'Addario[1], Denis Cohen[2], Massimiliano Schwarz[3], Leonardo Disperati[1] *([1]Italy, [2]USA, [3]Switzerland)*

15:40 Discussion

Wednesday, 15 NOVEMBER 2023

14:30-16:00 | HALL 4
SESSION 2.10
SOIL MOISTURE AND RAINFALL MEASURED THROUGH REMOTE SENSING FOR MONITORING AND PREDICTING LANDSLIDES
Chairs: **Massimiliano Bordoni** *(Italy)*, **Thomas Stanley** *(USA)*

14:30 Dielectric spectrum analysis of soils due to drying-wetting rate and environment influences using TDR pressure plate
Chih-Chung Chung, Muhammad Azhar, Umar Zada *(Taiwan)*

14:40 Comparison of different radar-raingauge precipitation-merging-methods for the Tuscany region
Rossano Ciampalini, Andrea Antonini, Alessandro Mazza, Samantha Melani, Alberto Ortolani, Ascanio Rosi, Samuele Segoni, Sandro Moretti *(Italy)*

14:50 Early warning of shallow landslide on soil moisture in Guizhou Province, China
Bin Yu, Yangchun Li *(China)*

15:00 Random forest model and gridded precipitation products applied to landslides forecasting in the Colombian Andean Region
Derly Gómez, Edier Aristizabal, Edwin García *(Colombia)*

15:10 Integrating rainfall and soil moisture measurements to assess landslide risk along highways
Abraham Alvarez Reyna, Leila Rahimikhameneh, Jack Montgomery, Frances O'Donnell *(USA)*

15:20 Assessing the potential of different satellite soil moisture products in landslide hazard assessment
Binru Zhao *(China)*

15:30 Identifying hydroclimatic precursors for sudden activity transitions in large landslides using modelled hydroclimatic data from satellites
Richard Carter, Corey Froese, Corey Scheip, Michael Porter, Geoff Eichhorn, Dave Gauthier *(Canada)*

15:40 Discussion

Wednesday, 15 NOVEMBER 2023

16:30-18:00 | HALL -1
SESSION 2.1
CASE STUDIES AND STATE OF THE ART ON LANDSLIDE MONITORING (part III)
Chairs: **Philipp Marr** *(Austria),* **Thomas Glade** *(Austria)*

16:30 Landslide monitoring network in Italy: current status and future perspectives
Saverio Romeo, Carla Iadanza, Piera Gambino, Stefano Calcaterra, Alessandro Trigila *(Italy)*

16:40 Monitoring results for safety management strategy in silty clay landslide area South East Hua;ien, Taiwan after heavy rainfall and strong earthquake
Lin Bing-Shyan (Ben), Hui-Chi Hsu, Zhi-Hao Wang, Yu-Lin Chen *(Taiwan)*

16:50 Flowslides spatial modeling and monitoring: experiences carried out in Faito test field (South Italy)
Giovanni Forte, Melania De Falco, Marianna Pirone, Antonio Santo, Gianfranco Urciuoli *(Italy)*

17:00 Characterization and monitoring of urban landslide hazards using geophysics, remote sensing, and wireless sensor networks
Sebastian Uhlemann, Sylvain Fiolleau, Stijn Wielandt, Baptiste Dafflon *(USA)*

17:10 Monitoring landslide instability: a case study of Mount Amiata volcanic complex, Italy
Taraka Venkatadripathi Pattela, Enrico D'Addario, Lorenzo Marzini, Michele Amaddii, Leonardo Disperati *(Italy)*

17:20 The San Nicola landslide experimental field
Mario Valiante, Magno Battipaglia, Emilia Damiano, Martina De Cristofaro, Settimio Ferlisi, Lucio Olivares, Gennaro Petraglia, Domenico Guida *(Italy)*

17:30 What causes creep bursts in the Åknes landslide, Norway?
Andreas Aspaas[1], Pascal Lacroix[2], Francois Renard[1,2], Lene Kristensen[1], Bernd Etzelmüller[1], Nadège Langet[1], Clara Sena[1] *([1]Norway, [2]France)*

17:40 Discussion

16:30-18:00 | HALL 1A

SESSION 5.1

LANDSLIDES AND CLIMATE CHANGE: PROCESSES, TRENDS, CHALLENGES AND PERSPECTIVES

Chairs: **Corrado Camera** *(Italy)*, **Martina Böhme** *(Norway)*

16:30 Rock fall and climate change: a quantitative study to predict changes in the rock fall hazard due to climate change in British Columbia, Canada
Nima Mirhadi, Renato Macciotta *(Canada)*

16:40 Analysis of sediment sources and transfer dynamics in two catchments of the Liguria Region (Italy) hit by Storm Alex in 2020
Francesca Ardizzone, Marco Cavalli, Stefano Crema, Giuseppe Esposito, Federica Fiorucci *(Italy)*

16:50 Extremely slow landslide rainfall-displacement relationships
Fruzsina Kápolnainé Nagy-Göde, Ákos Török, Eszter Horváth-Kálmán *(Hungary)*

17:00 Prediction of the evolution of a large landslide under different climate scenarios: a physics-based model applied to the Ruinon Landslide (Italian Alps)
Andrea Morcioni[1], Tiziana Apuani[1], Francesco Cecinato[1], Andrea Citrini[1], Manolis Veveakis[2] *([1]Italy, [2]USA)*

17:10 Cosmogenic nuclide dating of the back scarp of the active Reinbenkan / Kruvnnut rockslide, northernmost Norway, indicates accelerated movement in the Holocene climatic optimum followed by deceleration
Reginald L. Hermanns[1], John Gosse[2], Francoise Noél[1], Ivanna Penna[1], Marie Bredal[1], Ingrid Skrede[1], Martina Böhme[1], Raymond Eilertsen[1] *([1]Norway, [2]Canada)*

17:20 Rock slope instability along the coastlines of Svalbard: the effects of litho-structure and permafrost degradation
Dirk Kuhn[1], Reginald L Hermanns[2], Michael Fuchs[1], Nick Schüßler[1], Juditha Aga[2], Marie Bredal[2], Jewgenij Torizin[1], Dirk Balzer[1] *([1]Germany, [2]Norway)*

17:30 Predictive modelling in landslide susceptibility in Indian Himalayan Region: special focus on the anthropogenic activities
Sangeeta Sangeeta[1], Hans-Balder Havenith[2] *([1]India, [2]Belgium)*

17:40 Discussion

Wednesday, 15 NOVEMBER 2023

16:30-18:00 | HALL 2
SESSION 4.11
ASSESSING GEOHAZARDS OF SUBMARINE LANDSLIDES: WHERE ARE WE? AND WHAT ARE WE MISSING?
Chairs: **Silvia Ceramicola** *(Italy)*, **Francesco Chiocci** *(Italy)*

16:30 Submarine landslide mapping in the Italian Seas. Outcome from the MaGIC project
Francesco Chiocci, Francesca Budillon, Silvia Ceramicola, Fabiano Gamberi, Paolo Orrù *(Italy)*

16:40 A large-scale landslide affecting the southwestern Mediterranean Sea
Gemma Ercilla, Ferran Estrada, Víctor Tendero-Salmerón, Juan Tomás Vázquez, Jesus Galindo-Zaldivar *(Spain)*

16:50 Submarine landslides in high latitude continental margins: the tsunamigenic Storfjorden SL-1 landslide
Jesus Galindo-Zaldivar, María Teresa Pedrosa-González, José Manuel González-Vida, Sergio Ortega, Manuel Castro Diaz, David Casas, Gemma Ercilla *(Spain)*

17:00 Tsunami hazard assessment of complex mass wasting processes through numerical modeling: the case of Assi landslides (Ionian Calabrian Margin, south Italy)
Filippo Zaniboni, Nora Markezic, Silvia Ceramicola, Cesare Angeli, Martina Zanetti, Alberto Armigliato *(Italy)*

17:10 Submarine lateral spreading in the Aguilas High mass flow deposits (Palomares Margin, SW Mediterranean)
José Nespereira[1], Mariano Yenes[1], David Casas[1], Serafín Monterrubio[1], Máximo García[1], Nieves López[1], Ferran Estrada[1], Daniele Casalbore[2], Francesco Chiocci[2], Gemma Ercilla[1], Manuel Teixeira[3] *([1]Spain, [2]Italy, [3]Portugal)*

17:20 Volcanic ash can accommodate frictionless sliding in subaqueous environments
Morelia Urlaub, Christopher Schmidt, Mirja Heinrich, Christian Hensen, Henriette Kolling, Felix Gross *(Germany)*

17:30 3D morphology of basal shear surfaces: fingerprinting long-runout submarine landslides
Nicola Scarselli[1], Silvia Ceramicola[2] *([1]United Kingdom, [2]Italy)*

17:40 *Discussion*

16:30-18:00 | HALL 2A
SESSION 3.1
RECENT ADVANCEMENT IN LABORATORY AND IN-SITU TESTING METHODS FOR LANDSLIDE AND SLOPE ANALYSES (part II)
Chairs: **Binod Tiwari** *(USA)*, **Beena Ajmera** *(USA)*

16:30 Impact of temperature, overburden pressure and plasticity characteristics on the reduction in shear strength of thawing fine-grained soils
Hossein Emami Ahari, Beena Ajmera, Binod Tiwari *(USA)*

16:40 Monitoring of soil strain profile caused by freeze-thaw cycle using fiber optic senser
Zeyu Li, Charles Ng, Yikai Wang, Shuai Zhang, Qi Zhang *(China)*

16:50 Experimental investigation on rate effects of shear-zone soil influencing kinematics of bedding landslides
Xuan Kang[1], Shun Wang[2], Wei Wu[1] *([1]Austria, [2]China)*

17:00 Soil improvement through microbial-induced cementation
Abouzar Sadrekarimi *(Canada)*

17:10 Dynamic response and failure mechanism analysis of a cross-fault slope based on large-scale shaking table test
Tao Wei, Xuanmei Fan, Mingyao Xia *(China)*

17:20 Thephra layered shallow landslides and related geotechnical properties of tephra materials considering the isopach maps
Satoshi Goto *(Japan)*

17:30 Discussion

16:30-18:00 | HALL 3

SESSION 2.11

ENHANCEMENTS IN LANDSLIDE DATA ANALYSIS FOR IMPROVED UNDERSTANDING, FORECASTING AND EARLY WARNING SYSTEMS (part II)

Chairs: **Emanuele Intrieri** *(Italy)*, **Renato Macciotta** *(Canada)*

16:30 Displacement time series analysis for the near-real time detection and assessment of landslide events
Alessandro Valletta, Marco Conciatori, Andrea Carri, Andrea Segalini *(Italy)*

16:40 Pinpointing impending catastrophic failure from space: from single to multi-slopes at regional level
Antoinette Tordesillas[1], Shuo Zhou[1], Emanuele Intrieri[2], Federico Di Traglia[2], Guoqi Qian[1], Filippo Catani[2]
([1]Australia, [2]Italy)

16:50 Analysis of IoT-based field monitoring data for landslide warning at regional scale: a pilot study
Gaetano Pecoraro, Rosa Menichini, Michele Calvello *(Italy)*

17:00 Definition of statistical and probabilistic thresholds for rainfall-induced landslides using an unbalanced dataset: a case study in Shaanxi province (China)
Sen Zhang[1], Gaetano Pecoraro[2], Qigang Jiang[1], Michele Calvello[2] *([1]China, [2]Italy)*

17:10 Development of surface displacement due to the rise and lowering of ground water level in a sandy model slope
Katsuo Sasahara *(Japan)*

17:20 Reactivation dynamics of a dormant earthflow documented by field monitoring
Matteo Berti, Alessandro Simoni *(Italy)*

17:30 Discussion

Wednesday, 15 NOVEMBER 2023

16:30-18:00 | HALL 3A
SESSION 6.5
HYDROLOGICAL MONITORING, MODELLING, AND ANALYSIS OF RAINFALL-INDUCED LANDSLIDES
Chairs: **Benjamin Mirus** *(USA)*, **Elena Leonarduzzi** *(Italy)*

16:30 Low-cost hydrological monitoring system for assessing shallow landslide occurrence along linear infrastructures
Margherita Pavanello, Massimiliano Bordoni, Valerio Vivaldi, Marco Bittelli, Roberto Valentino, Mauro Reguzzoni, Andrea Tamburini, Fabio Villa, Claudia Meisina *(Italy)*

16:40 Relationship between rainfall, water table change and landslide activity in the southern part of Poland
Bartłomiej Warmuz *(Poland)*

16:50 Detecting changes of regime on an active landslide triggered by rainfall, using impulse response deconvolution
Mathieu Le Breton, Éric Larose, Laurent Baillet, Florent Chatelain *(France)*

17:00 Combined seepage-slope stability analysis of a channelized slide-earth flow triggered by heavy rainfall
Marco Del Fabbro, Paolo Paronuzzi *(Italy)*

17:10 Investigating the hydraulic response of a slope under different rainfall conditions through physical modelling
Josip Peranić, Martina Vivoda Prodan, Vedran Jagodnik, Nina Čeh, Željko Arbanas *(Croatia)*

17:20 Evaluation of the failure surface and hydrological influence on Guanghua landslide by material point method
Yi-Pin Peng, Kuo-Hsin Yang, Wei-Lin Lee, Chih-Ping Kuo *(Taiwan)*

17:30 Modeling shallow landslides for susceptibility analysis in Valtellina region (Northern Italy)
Francesco Fusco, Claudia Zito, Luigi Guerriero, Domenico Calcaterra, Pantaleone De Vita, Laura Longoni, Monica Papini *(Italy)*

17:40 Regional rainfall thresholds of landslide activity in the Polish Carpathians based on meteorological and landslide data in the period 1996-2020
Maria Przyłucka, Kamila Karkowska, Izabela Laskowicz *(Poland)*

17:50 Back-analysis of catastrophic events for landslide stability modelling at catchment scale
Monica Corti, Andrea Abbate, Monica Papini, Laura Longoni *(Italy)*

Wednesday, 15 NOVEMBER 2023

16:30-18:00 | HALL 4

SESSION 1.9

LANDSLIDES AND OTHER GROUND FAILURES TRIGGERED BY THE FEBRUARY 6, 2023 M7.7 AND M7.6 TURKEY-KAHRAMANMARAS EARTHQUAKES

Chairs: **Candan Gokceoglu** *(Turkey)*, **Janusz Wasowski** *(Italy)*

16:30 General characteristics of the 6 February 2023 Kahramanmaraş-Türkiye earthquake sequence
Candan Gokceoglu, Kemal Cetin *(Turkey)*

16:40 Inventory of the rockfalls triggered by 6 February 2023 Türkiye Earthquakes and their possible mechanisms along Fevzipaşa-Islahiye Railway Section
Servet Karahan, Candan Gokceoglu *(Turkey)*

16:50 Landslides triggered by the February 6, 2023, Türkiye earthquake sequence and the following rainfall events
Gorum Tolga[1], Hakan Tanyas[2], Furkan Karabacak[1], Abdussamet Yilmaz[1], M. Lutfi Suzen[1], Paula Burgi[3], Kate Allstadt[3] *([1]Turkey, [2]The Netherlands, [3]USA)*

17:00 Impact of various ground failures triggered by the 6 February 2023 Kahramanmaras (Türkiye) earthquakes on natural gas pipelines
Erdinc Orsan Unal, Sultan Kocaman, Candan Gokceoglu *(Turkey)*

17:10 Challenges for a reliable assessment of landslides in seismic microzonation studies: the case of the Daunia Apennines, Italy
Janusz Wasowski, Vincenzo Del Gaudio, Luca Pisano, Nunzio Fazio, Daniela de Lucia, Angelo Ugenti, Veronica Zumpano, Francesco Filice, Francesca Santaloia, Salvatore Gallicchio *(Italy)*

17:20 Discussion

Thursday, 16 NOVEMBER 2023

08:30-10:30 | HALL -1
SESSION 2.9
PAST, PRESENT AND FUTURE OF SATELLITE INTERFEROMETRY FOR LANDSLIDES (part I)
Chairs: **Matteo Del Soldato** *(Italy)*, **Lorenzo Solari** *(Italy)*

08:30 Regional to national scale mapping of active slow-moving landslides based on the European Ground Motion Service products
Nicusor Necula, Mihai Niculita *(Romania)*

08:40 The European Ground Motion Service for updating the Italian Landslide Inventory
Carla Iadanza, Francesco Menniti, Daniele Spizzichino, Luca Guerrieri, Alessandro Trigila *(Italy)*

08:50 A large-scale satellite interferometric observation and activity assessment of deep-seated landslide in Taiwan
Rou-Fei Chen, Chen-Yang Lee, Chi-Jung Chung, Hsiao-Yu Huang, Chun-Lung Wu *(Taiwan)*

09:00 Multi-frequency satellite radar interferometry data processed with multiple techniques for landslide mapping and monitoring: part of the Italian Space Agency's Mefisto Project outcomes
Davide Notti, Martina Cignetti, Davide Cardone, Danilo Godone, Niccolò Dematteis, Daniele Giordan, Simona Verde, Diego Reale, Fabiana Calò, Antonio Pepe, Eugenio Sansosti, Gianfranco Fornaro *(Italy)*

09:10 Sliding giants: InSAR monitoring of large fossil landslides in desert environments
Gökhan Aslan, John Dehls, Yngvar Larsen *(Norway)*

09:20 Remote sensing and field reconnaissance of earthquake induced landslides
Michael Robert Zordan Whitworth[1], Giorgia Giardina[2], Joshua Jones[1], Fatemeh Foroughnia[2], Valentina Macchiarulo[2], Pietro Milillo[3] *([1]United Kingdom, [2]The Netherlands, [3]USA)*

09:30 Multi-temporal interferometric analysis of landslides affecting Uttarakhand mountainous regions, India
Giulia Tessari, Paolo Riccardi, Francesco Holecz *(Switzerland)*

09:40 Identification of unstable slopes in Medellín (Colombia): First results from Sentinel-1 InSAR
Jorge Pedro Galve[1], Anna Barra[1], Johnny Vega[2], Edier Aristizabal[2] *([1]Spain, [2]Colombia)*

09:50 Active landslides detection using integrating remote sensing technologies in the northwestern Sichuan Province, China
Weile Li, Huiyan Lu, Qiang Xu *(China)*

10:00 Application of persistent scatterer Interferometry continuous monitoring for ground displacement detection and classification in an Italian complex scenario
Francesco Barbadori, Silvia Bianchini, Francesco Caleca, Pierluigi Confuorto, Matteo Del Soldato, Davide Festa, Francesco Poggi, Federico Raspini, Nicola Casagli *(Italy)*

10:10 Detection and monitoring of active landslides after the initial impoundment of the Baihetan reservoir (China) using SAR Interferometry
Chaoying Zhao, Xiaosong Feng *(China)*

10:20 Discussion

Thursday, 16 NOVEMBER 2023

08:30-10:30 | HALL 1A
SESSION 1.4
LANDSLIDES AND SOCIETY: CULTURAL, EDUCATIONAL, ETHICAL, AND SOCIAL ASPECTS IN SUSTAINABLE LANDSLIDE RISK REDUCTION (part I)
Chairs: **Matjaž Mikoš** *(Slovenia),* **Irasema Alcántara-Ayala** *(Mexico),*

08:30 Participatory, community-level co-design of a landslide warning system in rural Southeast Alaska, USA
Lisa Busch, Robert Lempert, Annette Patton, Ryan Brown, Tammy Young, Jacyn Schmidt, Joshua Roering, Maxwell Izenberg *(USA)*

08:40 Landslide recognition in a Mexican mountain local context: building community interactions using unmanned aerial vehicles
Ricardo Garnica-Peña, Irasema Alcántara-Ayala*(Mexico)*

08:50 Evaluation of social integration during the development of a landslide early warning system in Medellín, Colombia
Tamara Breuninger[1], Lisa Seiler[1], Carolina Garcia-Londoño[2], Moritz Gamperl[1], John Singer[1], Christian Werthmann[1], Kurosch Thuro[1] *([1]Germany, [2]Colombia)*

09:00 Establishing harmonized steps in setting up community-based early warning system for landslides: Experiences and practice from the Philippines
Harianne Gasmen, Pauline Pagaduan, Melody Teodoro, Karl Daniel Begnotea, Jacquelyn De Asis, Jesusa Paquibot, Roy Albert Kaimo, Arturo Daag, Teresito Bacolcol *(Philippines)*

09:10 Assessing and contextualizing site-specific landslide risk in the Philippines
Kenneth Gesmundo, Cathleen Joyce Cordero, Arturo Daag, Teresito Bacolcol *(Philippines)*

09:20 Rainfall induced shallow landslide hazards prediction (EWS) & monitoring at Ukhiya, Teknaf, Cox's Bazar, Bangladesh
A.T.M. Shakhawat Hossain, Uddin M.S. Uddin, C.S. Debnath, J. Fahmida *(Bangladesh)*

09:30 Building landslide risk culture in Romania: the role of geomorphology within a transdisciplinary approach
Mihai Micu, Irena Mocanu *(Romania)*

09:40 Informed decisions for emergency management to cope with weather-induced landslides: Amalfi test case
Guido Rianna, Carmela De Vivo, Michele Calvello *(Italy)*

09:50 Discussion

Thursday, 16 NOVEMBER 2023

08:30-10:30 | HALL 2
SESSION 5.5
ADVANCES IN EARTHQUAKE-INDUCED LANDSLIDE RESEARCH (part I)
Chairs: **Paolo Frattini** *(Italy)*, **Salvatore Martino** *(Italy)*

08:30 Seismo-tectonic impact on slope processes in the Lake Sevan Basin
Seda Avagyan, Ara Avagyan *(Armenia)*

08:40 Morphometry and high depletion rate of landslides may indicate their coseismic origin
Ivo Baron[1], Jia-Jyun Dong[2], Rostislav Melichar[1], Jan Klimes[1], Filip Hartvich[1], Yichin Chen[2], Chia-Han Tseng[2], Petr Kycl[1], Jan Jelenek[1], Jan Blahůt[1], Martin Šutjak[1], Che-Ming Yang[2], Thanh-Tùng Nguyễn[1], Joanna Mendez[3], Václav Dušek[1], Lenka Kocianova[1] *([1]Czech Republic, [2]Taiwan, [3]Costa Rica)*

08:50 A web GIS database of the scientific literature on earthquake-triggered landslides
Paola Reichenbach, Luca Schilirò, Mauro Rossi, Federica Polpetta, Federica Fiorucci, Carolina Fortunato *(Italy)*

09:00 Multi-temporal inventories of earthquake-induced landslides: damage evolution during seismic sequences
Maria Francesca Ferrario[1], Jeremy Perez[2], Margarita Dizon[2], Franz Livio[1], Jeremy Rimando[3], Alessandro Michetti[1] *([1]Italy, [2]Philippines, [3]Canada)*

09:10 Mapping earthquake induced landslide hazard in Italy
Pierfrancesco Burrato, Nicolò Parrino, Tommaso Piacentini, Caterina Zei, Gabriele Tarabusi, Jacopo Cinosi, Valerio Piattelli, Enrico Miccadei *(Italy)*

09:20 SeismicPY: An application for estimation of seismic-induced landslide hazard maps
José Carlos Román Herrera, Martín Jesús Rodríguez-Peces, Jose Delgado *(Spain)*

09:30 Post-earthquake changes in landslide hazard and the role of debris clearance strategies: a case study from the 2016 Kaikõura, NZ earthquake
Macey Polwart, Tom Robinson, Tim Stahl, Saskia de Vilder, Chris Massey *(New Zealand)*

09:40 Earthquake accelerated landslides: a unique type of earthquake-induced geohazard with long-term effects
Chuang Song[1], Chen Yu[1], Zhenhong Li[1], Stefano Utili[2], Paolo Frattini[3], Giovanni Crosta[3], Jianbing Peng[1] *([1]China, [2]United Kingdom, [3]Italy)*

09:50 Impact of earthquake-triggered landslides on ecosystem organic carbon storage
Jie Liu[1], Xuanmei Fan[1], Xiaolu Tang[1], Tristram Hales[2], Erin Harvey[2], Qiang Xu[1] *([1]China, [2]United Kingdom)*

10:00 Key problems and solutions on debris flow control engineering after Wenchuan Earthquake in China
Yanchao Gao, Yongbo Tie, Hua Ge, Songjiang Zhao *(China)*

10:10 Impact of coseismic landslides on infrastructure systems in Wellington, New Zealand
Julia Harvey, Tom Robinson, Liam Wotherspoon *(New Zealand)*

10:20 Discussion

Thursday, 16 NOVEMBER 2023

08:30-10:30 | HALL 2A
SESSION 6.9
LANDSLIDE STUDIES IN ITALY: STATE OF THE ART AND FUTURE PERSPECTIVES (part I)
Chairs: **Paola Revellino** *(Italy),* **Domenico Calcaterra** *(Italy),*

08:30 Toward Improved characterization of rock slope failure mechanisms
Douglas Stead, Davide Donati, Mirko Francioni, Monica Ghirotti, Lisa Borgatti *(Italy)*

08:40 Complex mass movements related to secondary toppling failure mechanisms of rock slopes along the coastline of Apulia (South Italy)
Gioacchino Francesco Andriani[1], Michel Jaboyedoff[2], Lidia Loiotine[1], Piernicola Lollino[1] *([1]Italy, [2]Switzerland)*

08:50 Slope stability analysis of terraced slopes accounting for state of conservation and physical characteristics of dry-stone walls
Arianna De Simone, Andrea Cevasco, Luigi Guerriero, Giacomo Pepe, Domenico Calcaterra *(Italy)*

09:00 Age and characteristics of another large landslide in the Vajont valley - The Pineda rocklside
Marc Ostermann[1], Julian Lanthaler[1], Susan Ivy-Ochs[2], Christof Vockenhuber[2] *([1]Austria, [2]Switzerland)*

09:10 A simple procedure to calibrate soil parameters for slope stability modelling: the Langhe (1994) case study
Giulia Evangelista, Pierluigi Claps, Monica Barbero, Marta Castelli *(Italy)*

09:20 Kinematic controlling factors analysis of a reactivated and slow moving-landslide in the eastern Liguria region (north-western Italy)
Giacomo Pepe, Barbara Musante, Giovanni Rizzi, Greta Viola, Andrea Vigo, Alessandro Ghirotto, Egidio Armadillo, Andrea Cevasco *(Italy)*

09:30 Slope stability in vineyards with different slope management practices: state of the art in Italy
Claudia Meisina, Domenico Calcaterra, Fulvio Celico, Veronica Tofani, Paola Revellino, Filippo Catani *(Italy)*

09:40 The November 26, 2022, deadly debris flow at Casamicciola Terme (Ischia Island, Italy): insights into predisposing, triggering and propagation conditions
Vincenzo Allocca, Domenico Calcaterra, Pantaleone De Vita, Diego Di Martire, Francesco Maria Guadagno, Luigi Guerriero, Domenico Guida, Sebastiano Perriello Zampelli, Paola Revellino, Rita Tufano, Mario Valiante *(Italy)*

09:50 RETURN Project: ground Instabilities - detection, modelling and scenarios
Salvatore Martino, Francesca Bozzano, Domenico Calcaterra, Diego Di Martire *(Italy)*

10:00 Discussion

Thursday, 16 NOVEMBER 2023

08:30-10:30 | HALL 3
SESSION 4.9
LAND USE AND SLOPE MANAGEMENT PRACTICES WITH LANDSLIDE OCCURRENCE: PAST, RECENT AND FUTURE CHALLENGES AND ADAPTATION STRATEGIES
Chairs: **Claudia Meisina** *(Italy)*, **Filippo Catani** *(Italy)*

08:30 Rheticus displacement to support the design, construction, and maintenaince of infrastructures and consolidation works
Daniela Di Carne, Andrea Doria, Michele Antonicelli, Sergio Samarelli, Davide Nitti, Raffaele Nutricato, Vincenzo Massimi *(Italy)*

08:40 Historical landslide activity and land abandonment in a changing climate: assessing the role of temporal resolution
Sharon Pittau, Mauro Rossi, Francesco Brardinoni *(Italy)*

08:50 Evaluating the role of land cover and its changes in the initiation of rainfall-induced shallow landslides in Italy
Stefano Luigi Gariano, Massimo Melillo, Maria Teresa Brunetti, Silvia Peruccacci, Eleonora Gioia, Marco Lazzeri, Gabriella Speranza *(Italy)*

09:00 Evaluation of the potential benefits of taking into account vineyard inter-row management in landslide susceptibility modelling
Alessia Giarola[1], Claudia Meisina[1], Paolo Tarolli[1], Jeroen Schoorl[2], Jantiene Baartman[2], Francesco Zucca[1], Massimiliano Bordoni[1] *([1]Italy, [2]The Netherland)*

09:10 Landslide hazards on the fragile volcanic mountain Elgon in Eastern Uganda. Do the spatial patterns signify a sustainability paradox or maladaptation?
Yazidhi Bamutaze[1], Henry Bulley[2] *([1]Uganda, [2]USA)*

09:20 Simple method of risk assessment for landslides: a case study of the JICA Project in Honduras
Kiyoharu Hirota[1], Koichi Hasegawa[1], Hugo Medina[2], Takeshi Kuwano[1], Kosuke Uzawa[1], Silvia Becerra[2], Maynor Ruiz[2], Alejandro Flores[2] *([1]Japan, [2]Honduras)*

09:30 Quantitative risk analysis and mitigation selection strategy of landslide-triggered hazard chain in reservoir area: a case study of landslide risk management practices in the Three Gorges Reservoir Area
Ye Li, Kunlong Yin, Lixia Chen, Juan Du, Bo Chai, Qin Chen *(China)*

09:40 Community intervention in landslide scar use in the upper Manafwa catchment in Eastern Uganda
Denis Nseka *(Uganda)*

09:50 Fatal landslides during the January and February 2023 rainstorms in Auckland, New Zealand: slope, legislation and insurance failure
Martin Brook, Chris Nicoll *(New Zealand)*

10:00 Conceptual framework for safety and sustainability of buildings exposed to landslides in hilly terrains of India
Aditi Singh, D.P. Kanungo, Sabine Kast *(India)*

10:10 Preliminary results of anionic polyacrylamide application on reconstituted soils for analysis of properties influencing slope stability
Giulia Frutaz, Massimiliano Bordoni, Claudia Meisina, Rinaldo Sorgenti *(Italy)*

10:20 Discussion

Thursday, 16 NOVEMBER 2023

08:30-10:30 | HALL 3A
SESSION 3.6
LANDSLIDES PREDICTION: ADVANCED TECHNIQUES AND ALTERNATIVE DATA SOURCES FOR UNCERTAINTY ASSESSMENT AND REDUCTION
Chairs: **David Johnny Peres** *(Italy)*, **Elena Leonarduzzi** *(Italy)*

08:30 Understanding the seismic response of debris flows using physical model and numerical simulation
Yan Yan, Yifei Cui, Hui Tang, Xin Tian, Li Li *(China)*

08:40 Using artificial neural networks and reanalysis soil moisture data for deriving triggering thresholds and related uncertainty in Sicily and Norway
Pierpaolo Distefano[1], Luca Piciullo[2], Pietro Scandura[1], Antonino Cancelliere[1], David Johnny Peres[1] *([1]Italy, [2]Norway)*

08:50 Determination of rainfall thresholds triggering landslides and proposal of a new standardization method
Jana Smolíková, Vít Vilímek *(Czech Republic)*

09:00 Deriving hydro-meteorological thresholds for Sicily: an approach based on ERA5-Land multy-layer soil moisture information and principal component analysis
Nunziarita Palazzolo, Enrico Creaco, Antonino Cancelliere, David Johnny Peres *(Italy)*

09:10 Full uncertainty propagation estimates in shallow landslide simulations: from statistics to physically-based modelling
Priscilla Niyokwiringirwa[1], Luigi Lombardo[2], Michael Maerker[1], Bastian van den Bout[2], Ivano Rellini[1] *([1]Italy, [2]The Netherlands)*

09:20 Image recognition algorithms and deep learning for forecasting the surficial displacements of a snow melting affected landslide
Yuting Liu[1], Lorenzo Brezzi[1], Lorenzo Nava[1], Zhipeng Liang[2], Fabio Gabrieli[1], Simonetta Cola[1] *([1]Italy, [2]China)*

09:30 Utilizing ensemble machine learning for landslide susceptibility mapping and the LHASA Model for landslide nowcasting in Nepal Himalaya
Ananta Man Singh Pradhan[1], Sarita Dawadi[1], Yun Tae Kim[2] *([1]Nepal, [2] South Korea)*

09:40 Geostatistical methods and artificial neural networks for landslide hazard prediction – the example of Kraków city
Sylwester Kamieniarz *(Poland)*

09:50 Uncertainty analysis of landslide susceptibility models under the influence of sample size
Xiaoxu Xie, Kunlong Yin, Deying Li, Fasheng Miao, Xin Liang, Yiqing Sun *(China)*

10:00 Numerical modelling of glacier lake outburst floods: processes and related uncertainties
Alessandro Cicoira[1], Claudius Brüniger[1], Zaginaev Vitalii[2], Munch Jessica[2], Guillaume Majerat[2], Bartelt Perry[2], Huggel Christian[1] *([1]Switzerland, [2]Kyrgyzstan)*

10:10 Experiments of modelling subaqueous landslide susceptibility in Lake Albano of Castel Gandolfo
Antonio Patera, Andrea Fabbri *(Italy)*

10:20 Discussion

Thursday, 16 NOVEMBER 2023

08:30-10:30 | HALL 4
SESSION 1.7
CULTURAL HERITAGE THREATENED BY LANDSLIDES: FROM EARTH OBSERVATION AND IN SITU INVESTIGATION TO SUSTAINABLE MITIGATION MEASURES
Chairs: **Claudio Margottini** *(Italy)*, **Stefano Morelli** *(Italy)*

08:30 COSMO-SkyMed for cultural heritage threatened by geohazards: current technologies and return of experience from operational implementation
Deodato Tapete, Maria Virelli, Alessandro Coletta, Francesco Longo, Veronica Tofani, Silvia Bianchini, William Frodella, Anna Palamidessi *(Italy)*

08:40 Satellite monitoring of cultural heritage threaten by landslide in Italy
Daniele Spizzichino, Carlo Cacace, Luca Guerrieri, Carla Iadanza, Paolo Iannelli, Gabriele Leoni, Francesco Menniti, Marica Mercalli, Alessandro Trigila *(Italy)*

08:50 InSAR monitoring of slope instabilities in the Archaeological Park of Phlaegrean Fields
Francesco Menniti, Paolo Maria Guarino, Luca Guerrieri, Gabriele Leoni, Fabio Pagano, Marida Salvatori, Daniele Spizzichino *(Italy)*

09:00 Slope stability assessment of the Nikolskaya mountain in the Mozhaisk Kremlin
Daria Shubina, Igor Fomenko, Fedor Bufeev, Denis Gorobtsov *(Russia)*

09:10 The application of a PB slope stability model for the conservation of cultural heritage: the case study of the archaelogical site of Pietrabbondante
Yaser Peiro, Evelina Volpe, Luca Ciabatta, Elisabetta Cattoni *(Italy)*

09:20 Is the Brazilian precolonial archaeological heritage in danger? Regional-scale landslide susceptibility assessment in the Serra da Capivara (Piauí State) and the Serra do Mar (São Paulo State)
Jose Eduardo Bonini, Bianca Carvalho Vieira, Antonio Carlos de Barros Corrêa *(Brazil)*

09:30 Assessment of recent landslide hazard and block movements at the Serapeum tomb in Saqqara - Egypt
Yasser Elshayeb, Heba Magdy *(Egypt)*

09:40 Landslides risk assessment in Alula archaeological sites (Kingdom of Saudi Arabia)
Claudio Margottini, Daniele Spizzichino *(Italy)*

09:50 Discussion

Thursday, 16 NOVEMBER 2023

11:00-13:00 | HALL -1
SESSION 2.9
PAST, PRESENT AND FUTURE OF SATELLITE INTERFEROMETRY FOR LANDSLIDES (part II)
Chairs: **Matteo Del Soldato** *(Italy)*, **Qingkai Meng** *(China)*

11:00 Tools for an easy exploitation of the Copernicus European Ground Motion Service (EGMS) - The RASTOOL project
Oriol Monserrat[1], Anna Barra[1], María Cuevas[1], José Navarro[1], Riccardo Palamà[1], Marta Béjar Pizarro[1], Jhonatan Steven Rivera Rivera[1], Silvia Bianchini[2], Matteo Del Soldato[2], Federico Raspini[2], Davide Festa[2], Camilla Medici[2], Qi Gao[1], Saeedeh Shahbazi[1], Pablo Ezquerro[1], Guadalupe Bru Cruz[1], Michele Crosetto[1], Rosa María Mateos[1] *([1]Spain, [2]Italy)*

11:10 EGMS to semi-automatically identify areas affected by differential movements and derive the potential damage of urban elements exposed to slow-moving landslides
Anna Barra, Saeedeh Shahbazi, Michele Crosetto, José Navarro, Cristina Reyes-Carmona, Jorge Pedro Galve, Marta Béjar Pizarro, Juan López-Vinielles, Rosa María Mateos, Gerardo Herrera, Oriol Monserrat *(Spain)*

11:20 A methodology for the analysis of A-DInSAR Time Series for the detection of ground deformation events: application to slow-moving landslides
Laura Pedretti, Massimiliano Bordoni, Valerio Vivaldi, Silvia Figini, Matteo Parnigoni, Alessandra Grossi, Luca Lanteri, Mauro Tararbra, Nicoletta Negro, Claudia Meisina *(Italy)*

11:30 Ground motion sensitivity index as supporting information for natural hazards practitioners
Mylene Jacquemart, Andrea Manconi, Christoph Rohner *(Switzerland)*

11:40 Integration of MTInSAR and polarimetric techniques to assess changes in ground deformation trends through machine learning
Camilla Medici[1], Pierluigi Confuorto[1], Silvia Bianchini[1], Matteo Del Soldato[1], Ascanio Rosi[1], Samuele Segoni[1], Nicola Casagli[1], Juan M. Lopez-Sanchez[2] *([1]Italy, [2]Spain)*

11:50 Mapping and characterizing complex landslides through morphometric and interferometric analysis: the case study of the DeBeque Canyon Landslide, Colorado (USA)
Marta Zocchi, Francesco Troiani, Paolo Mazzanti, Gabriele Scarascia Mugnozza *(Italy)*

12:00 A preliminary study on large landslide early warning driven by satellite interferometry
Peng Zeng, Bing Feng *(China)*

12:10 Integration of satellite SAR and optical acquisitions for the characterization of the Lake Sarez landslides in Tajikistan
Olga Nardini[1], Pierluigi Confuorto[1], Emanuele Intrieri[1], Roberto Montalti[2], Thomas Montanaro[2], Javier Garcia Robles[2], Federico Raspini[1] *([1]Italy, [2]Spain)*

12:20 Sequential SBAS-InSAR backward estimation of historical landslide deformation time series
Chaoying Zhao, Ming Yan *(China)*

12:30 Typical landslides deformation responces to climatic disturbance in Pamir and Qinghai-Tibet Plateau using satellite interferometric SAR
Qingkai Meng, Ying Peng *(China)*

12:40 Discussion

Thursday, 16 NOVEMBER 2023

11:00-13:00 | HALL 1A
SESSION 1.4
LANDSLIDES AND SOCIETY: CULTURAL, EDUCATIONAL, ETHICAL, AND SOCIAL ASPECTS IN SUSTAINABLE LANDSLIDE RISK REDUCTION (part II)
Chairs: **Peter T. Bobrowsky** *(Canada)*, **Beena Ajmera** *(USA)*

11:00 Locally led landslide risk reduction: experiences and lessons learned from hilly areas of Nepal
Nabin Shrestha, Sanchita Neupane, Vera exnerova, Prakash Khadka, Chetan Khadka *(Nepal)*

11:10 Improving landslide risk assessment and risk perception for the prioritisation of mitigation measures at regional level - The experience of Lombardy (Italy)
Marco Redaelli *(Italy)*

11:20 Integration of local indigenous knowledge in disaster risk reduction measures: opportunities, challenges and perspectives
Yenny Alejandra Jiménez Donato[1], Vincent Defourny[2] *([1]Austria, [2]Belgium)*

11:30 A collaborative approach for the collection of vulnerability indicators to landslide hazard
Federica Fiorucci, Francesca Ardizzone, Vinicio Balducci, Federico Fugnoli, Mauro Cardinali, Fausto Guzzetti, Ivan Marchesini, Gianluca Rinaldi, Paola Salvati, Michele Santangelo, Ivan Vujica *(Italy)*

11:40 Landslides as a higher education topic and beyond
Matjaž Mikoš *(Slovenia)*

11:50 “Acqua Viva (Alive Water): the Smart Citizens’ Nudge” to act on behaviours to water-related disaster risk reduction
Giovanna Piangiamore, Daniela Garau, Alessandra Maramai *(Italy)*

12:00 Geomorphology is a game: exploiting the capabilities of game engines for immersive landslide experiences
Hanna Pfeffer, Martin Mergili *(Austria)*

12:10 Discussion

Thursday, 16 NOVEMBER 2023

11:00-13:00 | HALL 2
SESSION 5.5
ADVANCES IN EARTHQUAKE-INDUCED LANDSLIDE RESEARCH (part II)
Chairs: **Hans-Balder Havenith** *(Belgium)*, **Giovanni Forte** *(Italy)*

11:00 Regression analysis for developing empirical formulation for estimation of co-seismic landslides considering different characteristics of ground motions
Kumari Sweta, Ritesh Kumar, Ajanta Goswami, Rituraj Nath *(India)*

11:10 Predictive model of regional coseismic landslides's permanent displacement considering uncertainty
Xiewen Hu, Chuanjie Xi, Kun He, Yu Zhang *(China)*

11:20 Using longitudinal models for post-seismic landslides prediction in New Zealand
Aadityan Sridharan, Georg Gutjahr, Sundararaman Gopalan *(India)*

11:30 Dynamic modelling of seismic waves and slope interaction to infer earthquake-induced landslide displacements for multihazard-scenarios renstitutions
Mara Mita[1], Celine Bourdeau[1], Luca Lenti[1], Salvatore Martino[2] *([1]France, [2]Italy)*

11:40 Mechanisms and prediction of earthquake and climate change-induce cascading hazards
Xuanmei Fan *(China)*

11:50 Modeling of the accumulation process of the excess pore water pressure for pyroclastic soils
Martina de Cristofaro[1], Anna Chiaradonna[1], Emilia Damiano[1], Nadia Netti[1], Mohammad Sadeq Asadi[2], Rolando P. Orense[2], Lucio Olivares[1] *([1]Italy, [2]New Zealand)*

12:00 Seismogenic genesis of secondary liquefaction landslides at old large landslides in Uzbekistan
Rustam Niyazov, Bakhtiar Nurtaev, Mansur Tashpulatov, Gany Bimurzaev, Fazlidin Anorboev *(Uzbekistan)*

12:10 Earthquake-triggered rockslides in Central Italy: a new example from 2016 seismic event
Luca Schilirò, Giovanni Forte, Luigi Massaro, Antonio Santo, Paolo Tommasi *(Italy)*

12:20 On the initiation and movement mechanisms of a massive coseismic landslide triggered on an extremely gently slope: a case study in Japan
Gonghui Wang, Hideaki Marui, Fei Liu *(Japan)*

12:30 The difficult prediction of earthquake-induced landslide displacements: the case of Gaggio Montano (Northern Apennines, Italy)
Rodolfo Rani, Gianluigi Di Paola, Giovanni Lattanzi, Matteo Berti, Silvia Castellaro *(Italy)*

12:40 What triggered El Guasimo landslide? Distinct element analysis of a large paleo landslide in the Colombian Andes
Anika Braun[1], Martin Tzschoppe[1], Anne-Sophie Mreyen[2], Katrin Dohmen[1], Fernandez-Steeger Tomás Manuel[1], Edier Aristizabal[3] *([1]Germany, [2]Belgium, [3]Colombia)*

12:50 Earthquake-triggered failures and seismic response of subaqueous slopes in Swiss lakes
Anastasiia Shynkarenko[1], Carlo Cauzzi[1], Katrina Kremer[1], Paolo Bergamo[1], Agostiny Lontsi[1,2], Paulina Janusz[1], Donat Fäh[1] *([1]Switzerland, [2]Germany)*

Thursday, 16 NOVEMBER 2023

11:00-13:00 | HALL 2A
SESSION 6.9
LANDSLIDE STUDIES IN ITALY: STATE OF THE ART AND FUTURE PERSPECTIVES (part II)
Chairs: **Mirko Francioni** *(Italy)*, **Laura Longoni** *(Italy)*

11:00 Data-driven modeling techniques for landslide prediction: present and future challenges
Luigi Lombardo, Ashok Dahal *(The Netherlands)*

11:10 Modelling rainfall-induced landslides at a regional scale, a machine Learning based approach
Stefania Magri, Monica Solimano, Fabio Delogu, Tania Del Giudice, Mauro Quagliati, Francesco Silvestro *(Italy)*

11:20 State of the art of satellite SAR interferometry products for landslide hazard mitigation at regional scale
Benedetta Antonielli, Silvia Bianchini, Diego Di Martire *(Italy)*

11:30 Application of Sentinel-1 Parallel-SBAS data to update the state of activity of Nationwide landslide inventory maps: the experience of Italy
Pierluigi Confuorto, Nicola Casagli, Francesco Casu, Claudio De Luca, Matteo Del Soldato, Davide Festa, Riccardo Lanari, Giovanni Onorato, Federico Raspini *(Italy)*

11:40 Satellite radar analysis for landslide events
Matteo Del Soldato, Davide Festa, Iolanda Iannicella, Alessandro Ferretti, Nicola Casagli *(Italy)*

11:50 Cascade-forward propagation of a complex eart slide /earth flow determined by using Sentinel-2 Digital Image Correlation: the Valoria case study (Northern Apennines, Italy)
Marco Mulas, Francesco Ronchetti, Marco Aleotti2, Alessandro Corsini *(Italy)*

12:00 Shallow landslides regional modelling considering the mechanical effects of vegetation: two Italian case studies
Elena Benedetta Masi[1], Veronica Tofani[1], Guglielmo Rossi[1], Sabatino Cuomo[1], Wei Wu[2], Diana Salciarini[1], Enrica Caporali[1], Filippo Catani[1] *([1]Italy, [2]Austria)*

12:10 Social media and traditional sensor information for detecting natural hazard in Italy
Rachele Franceschini, Ascanio Rosi, Matteo Del Soldato, Filippo Catani, Nicola Casagli *(Italy)*

12:20 The Italian database of earthquake-induced ground failures (CEDIT): new release and developing applications
Salvatore Martino, Patrizia Caprari, Federico Feliziani, Matteo Fiorucci, Gian Marco Marmoni, Gabriele Scarascia Mugnozza *(Italy)*

12:30 Discussion

Thursday, 16 NOVEMBER 2023

11:00-13:00 | HALL 3
SESSION 4.5
ROCKFALL DATA: COLLECTION METHODS, ANALYSIS AND USE FOR HAZARD AND RISK ASSESSMENTS (part I)
Chairs: **Mauro Rossi** *(Italy)*, **Sandra Melzner** *(Austria)*

11:00 Data collection and 3D modeling approaches to support rockfall risk management along roadways in complex geological settings: Yosemite National Park (USA)
Federico Agliardi[1], Paolo Frattini[1], Greg Stock[2], Simone Demonti[1], Federico Franzosi[1], Camilla Lanfranconi[1], Brian Collins[2] *([1]Italy, [2]USA)*

11:10 Correlation of rockfall frequency with overhang dimensions at flysch rocky walls
Olga Mavrouli[1], Amparo Núñez-Andrés[2], Felipe Buill[2], Nieves Lantada[2], Jordi Corominas[2] *([1]Greece, [2]Spain)*

11:20 Rock-toppling and rockfall risk assessment in areas of canyons: the fatal event of January 2022 in Capitólio, Brazil
Victor Cabral[1], Fábio Reis[2], Joana Sanchez[2] *([1]Germany, [2]Brazil)*

11:30 Rockfall characterization and risk evaluation before and after applying mitigation measures along a man-made trench of the Bari-Taranto railway (Apulia, Italy).
Andrea Mastrangelo, Roberto Murtas, Fausto Bianchi, Gianluca Benedetti, Nicola Carretta, Rosa Paciolla, Filippo Marchi, Francesco Moruzzi, Gianluca Cutrera, Lisa Borgatti, Davide Donati *(Italy)*

11:40 Rockfall hazard evaluation of a Himalayan road-cut slope in India
Neeraj Dahiya, Koushik Pandit, Shantanu Sarkar, Anindya Pain *(India)*

11:50 Rockfall susceptibility assessment on rock wall equipped for sport climbing: a case study from Italy
Tommaso Beni, Giovanni Gigli, Luca Lombardi, Tommaso Carlà, Nicola Casagli *(Italy)*

12:00 Automatization of kinematic analysis: a case study
Battista Taboni, Davide Vianello, Gessica Umili, Pietro Mosca, Sabrina Bonetto *(Italy)*

12:10 Discussion

Thursday, 16 NOVEMBER 2023

11:00-13:00 | HALL 3A
SESSION 3.9
GEOTECHNICAL MITIGATION OF LANDSLIDE HAZARD THROUGH NATURE-BASED SOLUTIONS (NBS)
Chairs: **Vittoria Capobianco** *(Italy)*, **Marco Uzielli** *(Italy)*

11:00 Design of nature-based solutions for the mitigation of risks due to shallow landslides
Massimiliano Schwarz[1], Denis Cohen[1], Filippo Giadrossich[1,2], Luuk Dorren[1], Marceline Vuaridel[1], Dominik May[1] *([1]Switzerland, [2]Italy)*

11:10 Community led nature-based solutions: a sustainable landslide risk management practice
G.A. Chinthaka Ganepola, Senaka Basnayake *(Thailand)*

11:20 Do well-structured forests protect better against shallow landslides?
Frank Graf, Kevin Helzel, Alexander Bast *(Switzerland)*

11:30 The role of landslides in instream large wood recruitment: modelling tools for forest management along channels
Marceline Vuaridel, Massimiliano Schwarz, Hollard Niels *(Switzerland)*

11:40 Nature-based solutions for landslide risk mitigation in Italy: statistics from ReNDiS, the monitoring database of the Italian Institute for Environmental Protection and Research (ISPRA)
Alessandro Fraccica, Barbara Dessì, Pier Luigi Gallozzi, Irene Rischia, Daniele Spizzichino *(Italy)*

11:50 Geotechnical analysis of the temporal variability of the performance of a “combined” green-grey slope stabilization intervention
Marco Uzielli[1], Daniela Boni[1], Lorenzo Borselli[2], Federico Preti[1], Stefano Renzi[1] *([1]Italy, [2]Mexico)*

12:00 Stabilising a coarse pyroclastic soil with guar gum as a flowslide risk mitigation measure: a preliminary experimental investigation at laboratory scale
Talenta Pitso[1], Agostino Walter Bruno[1], Marianna Pirone[1], Giuseppe Pedone[1], Adrian DePaoli DePaoli[2], Domenico Gallipoli[1] *([1]Italy, [2]United Kingdom)*

12:10 Amelioration of bauxite resiude to improve soil characteristics to reduce erosion
Vicente Santiago Quinteros Araujo, Mehdi Aagre, Vittoria Capobianco, Yuuki Silveira Miura, Hans Arp, Hogne Stubhaug *(Norway)*

12:20 Application of nature-based solutions in mitigation of hillside unstable road cuts in Sri Lanka
Sardhanee Dias, Madara Dissanayake *(Sri Lanka)*

12:30 Nature-based solutions in the Pyrenees during the H2020 “Phusicos” project
Anders Solheim[1], Didier Vergès[2], Santiago Fabregas[2,3], Carles Räimät[2], Eva Garcia[2], Amy Oen[1], Bjørn Kalsnes[1], Vittoria Capobianco[1], Hervé Vicari[1] *([1]Norway, [2]Spain, [3]France)*

12:40 Discussion

Thursday, 16 NOVEMBER 2023

11:00-13:00 | HALL 4
SESSION 4.8
LANDSLIDE IMPACTS, VULNERABILITY AND QUANTITATIVE RISK ASSESSMENTS OF PEOPLE, COMMUNITIES, STRUCTURES, AND INFRASTRUCTURE (part I)
Chairs: **Dario Peduto** *(Italy)*, **Paola Salvati** *(Italy)*

11:00 Effects of very slow moving graitative deformations on civil infrastructures: the case study of Ischia del Basento
Angelo Doglioni *(Italy)*

11:10 Prioritizing railway stretches requiring risk mitigation measures based on the integrated use of airborne LiDAR and Mobile Mapping data: case studies in central Italy
Settimio Ferlisi, Fabio Matano, Gianfranco Nicodemo, Andrea Tamburini, Fabio Villa, Gabriele Miceli *(Italy)*

11:20 Effects of tunnel construction in landslide-prone areas
Marte Gutierrez, Simon Baeza-Faundez *(USA)*

11:30 Multi-scenario approach for co-seismic landslide assessments across road networks
Amelia Lin, Liam Wotherspoon, Conrad Zorn, Tom Robinson *(New Zealand)*

11:40 Advances in the use of remote sensing for road monitoring in landslide areas
Nicoletta Nappo[1], Olga Mavrouli[2], Dario Peduto[3] *([1]The Netherlands, [2]Greece, [3]Italy)*

11:50 Monitoring/surveying data-based quantitative risk assessment for a road crossing a slow-moving landslide-affected area
Dario Peduto, Gianfranco Nicodemo, Davide Luongo, Settimio Ferlisi, Luisa Oricchio, Gianfranco Fornaro, Diego Reale, Simona Verde, Luigi Aceto, Luigi Borrelli, Giovanni Gullà *(Italy)*

12:00 Quantitative risk assessment for the A82 strategic road in Glen Coe, Scotland
Mike Winter, Tanja Waaser, George Fiddes *(United Kingdom)*

12:10 Characteristics of landslides affecting road networks in Ethiopia: evidence from 25 years documentation, research and practice
Kifle Woldearegay *(Ethiopia)*

12:20 Innovative approach of quantitative risk analysis for slow-moving landslides: a step towards a national assessment
Francesco Caleca, Veronica Tofani, Federico Raspini, Samuele Segoni, Ascanio Rosi, Rachele Franceschini, Filippo Catani, Nicola Casagli *(Italy)*

12:30 Consequence - Frequency matrix as a tool to reduce the landslides risk
Michel Jaboyedoff *(Switzerland)*

12:40 Hazard maps as a basis for multi-scale an target-specific risk analyses in the Autonomous Province of Bolzano - South Tyrol
Volkmar Mair, Daniel Costantini, Pierpaolo Macconi, Kathrin Lang, Susanne Rizzoli, Florian Kammerlander *(Italy)*

12:50 Discussion

Thursday, 16 NOVEMBER 2023

14:30-16:00 | HALL -1

SESSION 2.4

MULTIPLATFORM AND MULTISENSOR APPLICATIONS FOR LANDSLIDES CHARACTERIZATION AND MONITORING (part I)

Chairs: **Stratis Karantanellis** *(USA)*, **Carlo Tacconi Stefanelli** *(Italy)*

14:30 Landslide monitoring based on RFID remote sensing
Charléty Arthur, Mathieu Le Breton, Eric Larose, Laurent Baillet *(France)*

14:40 Integration of robotic total station and digital image correlation to assess the three-dimensional surface kinematics of a landslide
Niccolò Dematteis, Aleksandra Wrzesniak, Daniele Giordan, Davide Bertolo, Paolo Allasia *(Italy)*

14:50 The use of ground-based InSAR radar and drone to monitor and warn successive slides during the response and recovery phase, following the catastrophic quick clay slide in Ask, Gjerdrum, Norway
Graziella Devoli, Ingrid Skrede, Ellen Haugen, Kjetil Indrevær, Lene Kristensen, Martin Jespersen *(Norway)*

15:00 Verification of remote sensing methods for complex landslide inner dynamics characterization: a use of optical and thermal UAV data
Jan Jelenek, Jan Novotny, Martin Kyhos, Lucie Koucka *(Czech Republic)*

15:10 Object-based landslide detection and characterization using ML and UAV photogrammetry
Efstratios Karantanellis[1], Vassilios Marinos[2], Emmanuel Vassilakis[2], George Papathanasiou[2] *([1]USA, [2]Greece)*

15:20 Coastal retreat caused by landslides - mechanism and management
J.C. Lin *(Taiwan)*

15:30 eo4alps-landslides: on-demand tailored geoinformation services for landslide monitoring and hazard assessment
Jean-Philippe Malet[1], Michoud Clément[2], Thierry Oppikofer[2], Provost Floriane[1], Déprez Aline[1], Robles Javier Garcia[3], Henrion Eric[3], Giovanni Crosta[4], Paolo Frattini[4], Foumelis Michael[5], Pacini Fabrizio[4] *([1]France, [2]Switzerland, [3]Spain, [4]Italy, [5]Greece, [6]Italy)*

15:40 Photomonitoring of landslides: a national scale project
Gian Marco Marmoni, Antonio Cosentino, Giandomenico Mastrantoni, Giacomo Santicchia, Paolo Mazzanti *(Italy)*

15:50 Discussion

Thursday, 16 NOVEMBER 2023

14:30-16:00 | HALL 1A
SESSION 3.4
PHYSICAL AND NUMERICAL MODELLING OF LANDSLIDE-STRUCTURE-INTERACTION (LSI) (part I)
Chairs: **Sabatino Cuomo** *(Italy)*, **Clarence Edward Choi** *(Hong Kong)*

14:30 Integrated 3D geological and FEM modeling of slow rock slope deformations affecting hydropower structures
Federico Agliardi, Antonio Carnevale, Matteo Andreozzi, Andrea Bistacchi, Margherita Spreafico, Federico Franzosi, Chiara Crippa, Massimo Ceriani, Carlo Rivolta *(Italy)*

14:40 Equalization method of slate discontinuity in discrete element numerical simulation
YouJie Huang, Tai-Tien Wang, Fu-Shu Jeng *(Taiwan)*

14:50 Effect of cyclic fluctuations in reservoir water level on the stability of rim slope
Anoopsingh Chandel[1], Mahendra Singh[1], Vikas Thakur[2] *([1]India, [2]Norway)*

15:00 Semi-analytical framework to simulate triggering and runout of hydraulically induced flowslides
Giuseppe Buscarnera[1], Yanni Chen[2], Ming Yang[1] *([1]USA, [2]China)*

15:10 The effects of the inherent distribution of discontinuities and stress-induced anisotropy on pore water pressure distribution of rock slopes
Chia-Huei Tu, Jia-Jyun Dong, Chia-Yi Liu *(Taiwan)*

15:20 Pore water pressure responses within the landslides wirg complex structures to reservoir water level fluctuations and their influences on landslide reactivation patterns - Constraints from physical model tests
Baoping Wen, Ling Ding, Huisheng Wang, Yujing Zhu *(China)*

15:30 Reduced order modelling of debris resisting flexible barriers for digital twin development
Sunil Poudyal, Charles Wang Wai Ng *(Hong Kong)*

15:40 Overflow and landing dynamics of debris flow interacting with a rigid barrier: two-phase MPM modelling
Zhenyang Jia, Haiming Liu, Charles Ng, Roanga De Silva *(Hong Kong)*

15:50 Discussion

14:30-16:00 | HALL 2

SESSION 6.7

4D HIGH-RESOLUTION TOPOGRAPHIC SURVEYS TO SUPPORT THE ANALYSIS OF SLOPE INSTABILITY PROCESSES IN HIGH-STEEP SLOPE AGRICULTURAL AND FORESTED LANDSCAPES

Chairs: **Elisa Arnone** *(Italy)*, **Sara Cucchiaro** *(Italy)*

14:30 Using pre- and post-event LiDAR datasets to assess eco-hydrologic landslide modeling
Elisa Arnone[1,2], Evren Soylu[2], Stephen Hughes[2], Rafael Bras[2] *([1]Italy, [2]USA)*

14:40 Point clouds for terrain monitoring in vegetated areas
Eleonora Maset *(Italy)*

14:50 Coupling LiDAR and SfM high-resolution DEMs for landslide monitoring in steep hilly areas with mixed land-use
Mihai Niculita, Mărgărint Mihai Ciprian, Necula Nicușor, Văculișteanu Georgiana *(Romania)*

15:00 Quantifying landslides on reservoir bank with topography meter in a model experiment
Xiangzhou Xu *(China)*

15:10 Rock discontinuity sets identification through combined field, remote sensing and high-resolution topographic surveys
Alberto Bolla, Alberto Beinat *(Italy)*

15:20 Monitoring instabilities in terraced cultural landscapes under climate change: opportunities from multitemporal remote sensing
Eugenio Straffelini[1], Sara Cucchiaro[1], Emanuele Raso[1], Guido Paliaga[1], Daniel Joseph Fallu[2], Antony G. Brown[2,3], Paolo Tarolli[1] *([1]Italy, [2]Norway, [3]United Kingdom)*

15:30 Discussion

Thursday, 16 NOVEMBER 2023

14:30-16:00 | HALL 2A
SESSION 2.2
INTEGRATED APPLICATION OF DEFORMATION MONITORING TECHNIQUES AND PROCESS ANALYSES OF DEEP-SEATED LANDSLIDES (part I)
Chairs: **Christine Fey** *(Austria)*, **Christina Rechberger** *(Austria)*

14:30 Multi-source data analysis to assess the kinematics of the Pisciotta Deep-Seated Gravitational Slope Deformation (southern Italy)
Matteo Albano, Michele Saroli, Lisa Beccaro, Marco Moro, Fawzi Doumaz, Marco Emanuele Discenza, Luca Del Rio, Matteo Rompato *(Italy)*

14:40 Detection and preliminary characterization of the St. Cyr Rockslide
Andrew Mitchell, Corey Froese, Tom Stewart, Chase Reid, Chris Daniel, Julia Marsh *(Canada)*

14:50 Using F2S3 to analyse 3D rock slope kinematics from point cloud data
Robert Kenner, Reto Thöny *(Switzerland)*

15:00 Challenges in deformation monitoring of slow-moving deep-seated landslides in high alpine environment with the integration of digital image correlation of high-resolution optic and LiDAR data, continuous GNSS and robotic total station: test sites in South Tyrol (Italy)
Melissa Tondo, Marco Mulas, Giuseppe Ciccarese, Gianluca Marcato, Giulia Bossi, David Tonidandel, Volkmar Mair, Alessandro Corsini *(Italy)*

15:10 Monitoring evolution of the deep-seated landslide in the Lushan area, Taiwan, using particle velosimetry analysis
Meei-Ling Lin, Te-Wei Chen *(Taiwan)*

15:20 Estimation of sliding surface depth from multi-frequency synthetic aperture radar interferometry (InSAR) observations: application to Xiongba landslide, China
Wu Zhu, Qin Zhang, Zhenhong Li *(China)*

15:30 Application of MT-InSAR technique for monitoring the activity of Deep-seated Landslide in Jianshi Township, northern Taiwan
Yi-Chung Chen, Rou-Fei Chen, Suet-Yee Au, Chun-Long Wu2, Chi-Rong Chung, Zhong-Fu Xiao *(Taiwan)*

15:40 Deep-seated landslides' sliding surfaces inferred using satellite interferometry
Emanuele Intrieri, Federico Raspini, William Frodella, Veronica Tofani *(Italy)*

15:50 Discussion

Thursday, 16 NOVEMBER 2023

14:30-16:00 | HALL 3
SESSION 4.5
ROCKFALL DATA: COLLECTION METHODS, ANALYSIS AND USE FOR HAZARD AND RISK ASSESSMENTS (part II)
Chairs: **Sandra Melzner** *(Austria)*, **Mauro Rossi** *(Italy)*

14:30 A combination of a continuos multi-parameter monitoring and a periodic LiDAR survey: Bonifacio coastal cliff case study
Stella Coccia, Klein Emmanuelle, Thoraval Alain, Franck Christian *(France)*

14:40 Multitemporal monitoring of rock walls using topographic methodologies and persistent scatterers interferometry
Andrea Rindinella, Luisa Beltramone, Riccardo Salvini *(Italy)*

14:50 A copula based statistical learning model to study the impact of rainfall on rockfall volume
Farshad Bahootoroody[1], Davide Guccione[1], Klaus Thoeni[1], Vaughan Griffiths[2], Anna Giacomini[1] ([1]Australia, [2]USA)

15:00 Tools for rockfall hazard assessment in Carinthia, Austria - and lessons learned
Franz Goldschmidt, Tanner Dieter *(Austria)*

15:10 Salzburg risk analysis for subordinate traffic routes: development of a software tool for probabilistic modelling of rockfall risks
Stefan Oberndorfer, Gerald Valentin, Ludwig Fegerl, Kevin Lundberg *(Austria)*

15:20 Rockfall risk and lifelines mitigation performance following the 2016 Kaikoura earthquake
Sarah Mabin, Tom Robinson, Liam Wotherspoon, Doug Mason *(New Zealand)*

15:30 Regional assessment of rockfall susceptibility and hazard in the East Macedonia and Thrace, Greece
Maria Taftsoglou, Sotiris Valkaniotis, George Papathanassiou, Sotirios Argyroudis, Nikolaos Klimis, Ioannis Dokas *(Greece)*

15:40 From experimental quantification of the deadwood influece on rockfall dynamics towards rockfall risk assessments, including naturally disturbed forests
Adrian Ringenbach, Marc Christen, Kevin Helzel, Linda Zaugg-Ettlin, Alexander Bast, Peter Bebi, Andrin Caviezel *(Switzerland)*

15:50 Discussion

Thursday, 16 NOVEMBER 2023

14:30-16:00 | HALL 3A
SESSION 3.3
RECENT ADVANCEMENT ON SLOPE STABILITY AND DEFORMATION ANALYSIS (part I)
Chairs: **Binod Tiwari** *(USA)* , **Beena Ajmera** *(USA)*

14:30 Landslide risk assessment at rock slope areas for designing slope strengthening system
Azranasmarazizi Ayob, Tuan Nor Hasanah Binti Tuan Ismail Ismail, Nor Fardzilah Abd Rahman *(Malaysia)*

14:40 An innovative design method for structural flexible facing with steel meshes for surficial instabilities on soil slopes
Luca Gobbin[1], Stefano Cardinali[1], Alberto Grimod[2] *([1]Italy, [2]France)*

14:50 Influence of unsaturated soil properties and rainfall duration on slope stability: a case study
Senthilkumar Vadivel, Bhavithra S *(India)*

15:00 Evaluation of the stability and deformation behavior of partially saturated clay slopes
Rupsa Roy, Binod Tiwari, Beena Ajmera *(USA)*

15:10 Effects of surface water flows on slopes
Vernon Schaefer[1], Caleb Douglas[2], Edward Bromhead[2] *([1]USA, [2]United Kingdom)*

15:20 Slope stability analysis: efficient generate and search for critical slip surface with mathematical approach
Qi Xie, Yangqiang Wang, Yuxin Jie, Wei Wu *(China)*

15:30 Realistic 3D modelling of landslide in soft sensitve clay
Sparsha Sinduri Nagula, Sivasithamparam Nallathamby, Zhongqiang Liu, Laura Rødvand, Hans Petter Jostad *(Norway)*

15:40 Slow gravitative movements and their impacts on infrastructures and bridges
Angelo Doglioni, Giovanna D'Ambrosio, Annalisa Albano, Vincenzo Simeone *(Italy)*

15:50 Discussion

Thursday, 16 NOVEMBER 2023

14:30-16:00 | HALL 4
SESSION 4.8
LANDSLIDE IMPACTS, VULNERABILITY AND QUANTITATIVE RISK ASSESSMENTS OF PEOPLE, COMMUNITIES, STRUCTURES, AND INFRASTRUCTURE (part II)
Chairs: **Olga Mavrouli** *(Greece)*, **Mike Winter** *(United Kingdom)*

14:30 A review of the disaster risk assessment perspectives
Dayan Munasinghe[1], Terrance Fernando[2], Kaushal Keraminiyage[2] *([1]Sri Lanka, [2]United Kingdom)*

14:40 The damage caused by landslides in socio-economic spheres within the Kigezi highlands of South Western Uganda
Denis Nseka *(Uganda)*

14:50 People vulnerability to landslides: an Italian perspective on predictability and perception
Paola Salvati, Cinzia Bianchi, Giuseppe Esposito, Stefano Luigi Gariano, Fausto Guzzetti, Mauro Rossi *(Italy)*

15:00 Liquefaction of granite debris caused by undrained shearing contributing to the long-runout Luanshibao landslide in southeast Tibet
Fawu Wang, Ye Chen *(China)*

15:10 RaStEM: a support tool for planning and design landslides and floods mitigation measures
Barbara Dessì, Pier Luigi Gallozzi, Irene Rischia, Daniele Spizzichino *(Italy)*

15:20 Reconstruction of earthquake-induced landslide scenarios through the PARSIFAL approach in the high-seismicity Lake of Campotosto area
Maria Elena Di Renzo[1], Francesca Bozzano[1], Carlo Esposito[1], Gian Marco Marmoni[1], Salvatore Martino[1], Mara Mita[2] *([1]Italy, [2]France)*

15:30 Predicting river blockage, early identifying the dam forming, rapidly evaluating the hazards of landslide dam - A review
Jia-Jyun Dong *(Taiwan)*

15:40 Vulnerability analaysis of buildings by a large-scale debris-flow-triggered cascade hazards in the southwestern China on 30 August, 2020
Li Wei, Kaiheng Hu *(China)*

15:50 Quantitative risk evaluation of landslides along high-voltage power transmission line, a case study from Three Gorge Reservoir, China
Chenchen Huang, Kunlong Yin, Lei Gui *(China)*

16:30-18:30 | HALL -1

SESSION 2.4

MULTIPLATFORM AND MULTISENSOR APPLICATIONS FOR LANDSLIDES CHARACTERIZATION AND MONITORING (part II)

Chairs: **Guglielmo Rossi** *(Italy)*, **Marco Mulas** *(Italy)*

16:30 Investigation of slow-moving landslides in the Northern Apennines (Italy) by means of integrated techniques
Carlotta Parenti, Giuseppe Ciccarese, Francesca Grassi, Francesca Lugli, Francesco Mancini, Edda Pattuzzi, Paolo Rossi, Mauro Soldati *(Italy)*

16:40 The PATHfinder project: a scalable fleet of drones for landslide monitoring and context awareness
Federico Raspini, Matteo Del Soldato, Teresa Nolesini, Alessandro Ridolfi, Alberto Topini, Alberto Mennella, Marco Nisi *(Italy)*

16:50 Remote sensing based multisensor and multiplatform characterization and monitoring of landslide activity in Southern Kyrgyzstan
Robert Behling, Sigrid Roessner *(Germany)*

17:00 Integration of repeated LiDAR-orthophoto surveys and robotic total station for the assessment of complex movement patterns in large-scale earthslides - earthflows: the Corvara landslide (South Tyrol)
Melissa Tondo, Marco Mulas, Giuseppe Ciccarese, Gianluca Marcato, Giulia Bossi, David Tonidandel, Volkmar Mair, Alessandro Corsini *(Italy)*

17:10 A novel application for remote landslide monitoring
Valerio Vivaldi, Massimiliano Bordoni, Simone Mineo, Matteo Crozi, Giovanna Pappalardo, Claudia Meisina *(Italy)*

17:20 Rapid detection of landslide and slope surface movement based on changes in intensity using ground-based surveillance camera images
Shota Yagi, Soichi Kaihara, Shinji Ibuka, Atsuhiko Kinoshita, Gaku Kitamoto, Megumi Kosugi, Hiroaki Nakaya, Akito Kanazawa *(Japan)*

17:30 Discussion

Thursday, 16 NOVEMBER 2023

16:30-18:30 | HALL 1A
SESSION 3.4
PHYSICAL AND NUMERICAL MODELLING OF LANDSLIDE-STRUCTURE-INTERACTION (LSI) (part II)
Chairs: **Sabatino Cuomo** *(Italy)*, **Clarence Edward Choi** *(Hong Kong)*

16:30 Investigation of flow-bed-barrier interactions in dual flexible barrier systems: physical modelling
Weerakonda Arachchige Roanga K De Silva, Haiming Liu, Charles Wang Wai Ng *(Hong Kong)*

16:40 Modelling flow-like landslides interacting with different structures
Sabatino Cuomo[1], Angela Di Perna[1], Mario Martinelli[2] *([1]Italy, [2] The Netherlands)*

16:50 A smoothed particle hydrodynamics method for modelling the dynamic impact of debris flows against obstacles
Zhitian Qiao[1], Matteo Berti[1], Wei Shen[2], Tonglu Li[2] *([1]Italy, [2]China)*

17:00 The role of fine content on the dynamic response of small-scale slope model
Vedran Jagodnik, Josip Peranić, Nina Čeh, Davor Marušić, Martina Vivoda Prodan, Željko Arbanas *(Croatia)*

17:10 A three-dimensional model of the generation and propagation of ground vibrations caused by large-scale sediment movement
Kazuo Tsutsui, Takayuki Takata, Soichi Kaihara, Gaku Kitamoto, Megumi Kosugi, Atsuhiko Kinoshita, Hiroaki Nakaya, Ken'ichiro Kosugi *(Japan)*

17:20 A landslide prevention project with high capacity single bore multiple anchor in Turkey
Alp Gökalp *(Turkey)*

17:30 Discussion

Thursday, 16 NOVEMBER 2023

16:30-18:30 | HALL 2
SESSION 2.8
EARTH OBSERVATION DATA FOR LANDSLIDE PREDICTION AND RISK ASSESSMENT
Chairs: **Maria Teresa Brunetti** *(Italy)*, **Thomas Stanley** *(USA)*

16:30 Ground deformation detection and assessment of landslide potential damage with support of Copernicus
Mateja Jemec Auflic, Krištof Oštir, Ela Šegina, Tina Peternel, Matjaž Ivačič, Andrej Beden *(Slovenia)*

16:40 Copernicus land monitoring service products in support of landslide risk management
Lorenzo Solari, Joanna Balasis-Levinsen *(Denmark)*

16:50 Identification of slow-moving landslides through automated optical satellite monitoring of surface deformation
Maximillian Van Wyk de Vries[1], Katherine Arrell[1], Gopi Basyal[2], Alexander Densmore[1], Megh Dhital[2], Alexandre Dunant[1], Erin Harvey[1], Ganesh Jimee[2], Mark Kincey[1], Sihan Li[1], Dammar Pujara[2], Ram Shrestha[2], Nick Rosser[1] Simon Dadson[1] *([1]United Kingdom, [2]Nepal)*

17:00 InSAR application for the detection of precursors of the Achoma landslide, Peru
Benedetta Dini[1], Pascal Lacroix[2], Marie Pierre Doin[2] *([1]United Kingdom, [2]France)*

17:10 Creation and updating of landslide inventory integrating European Ground Motion Service and surface geometrical characteristics: the case study of Lombardy Region, Italy.
Rasoul Eskandari, Alireza Alizadeh Javaheri, Marco Scaioni *(Italy)*

17:20 GIS-based landslide susceptibility mapping using logistic regression model in the Gaizi Valley section of China-Pakistan Corridor
Ying Liu *(China)*

17:30 Discussion

Thursday, 16 NOVEMBER 2023

16:30-18:30 | HALL 2A
SESSION 2.2
INTEGRATED APPLICATION OF DEFORMATION MONITORING TECHNIQUES AND PROCESS ANALYSES OF DEEP-SEATED LANDSLIDES (part II)
Chairs: **Christine Fey** *(Austria)*, **Chiara Crippa** *(Italy)*,

16:30 Understanding the landslide dynamics with corner reflector SAR interferometry
Zbigniew Perski, Tomasz Wojciechowski, Maria Przyłucka *(Poland)*

16:40 Landslides vs land subsidence at the perimeter of open pit coal mines. The case of the Anyntaio coal mine, Greece
Constantinos Loupasakis, Ploutarchos Tzampoglou *(Greece)*

16:50 The importance of subosoil measurements to the deep-seated ground deformations interpretation.The esperience with a Robotized Inclinometer System on 240-meter tube length
Paolo Allasia, Danilo Godone, Daniele Giordan, Martina Cignetti, Davide Notti, Giorgio Lollino, Roberto Pizzol, Federica Bardi, Giancarlo Penna, Stefano Rodani *(Italy)*

17:00 Internal deformation of an active, deep-seated, multi-slab rock slide and its control on secondary rock fall processes - case and numerical modelling study of the Wasserradkopf rock slide
Reinhard Gerstner, Severin Simma, Gerald Valentin, Franz Goldschmidt, Christian Zangerl, Markus Keuschnig *(Austria)*

17:10 Reactivation of a deep clay landslide induced by exceptional rainfall events: a case study
Piernicola Lollino, Angelo Ugenti, Daniela de Lucia, Mario Parise, Carmela Vennari, Nunzio Fazio *(Italy)*

17:20 Shear displacement calculation of landslide based on distributed strain sensing technology
Lei Zhang, Yifei Cui, Honghu Zhu, Bin Shi *(China)*

17:30 Discussion

16:30-18:30 | HALL 3
SESSION 4.10
LANDSLIDE RISK MANAGEMENT: THE CHALLENGES OF TRANSDISCIPLINARY RESEARCH IN DATA-SCARCE ENVIRONMENTS
Chairs: **Mihai Micu** *(Romania)*, **Olivier Dewitte** *(Belgium)*

16:30 A review of landslide and cut slope guidelines
Ellen Robson[1], Ashutosh Kumar[2], Ashraf Osman[1], David Toll[1] *([1]United Kingdom, [2]India)*

16:40 The urgent need to protect the world's poor from landslides
Ugur Öztürk[1], Elisa Bozzolan[2], Elizabeth Holcombe[3], Roopam Shukla[4], Francesca Pianosi[3], Thorsten Wagener[1] *([1]Germany, [2]Italy, [3]United Kingdom, [4]India)*

16:50 Landslide susceptibility assessment of very wide areas: the case of Central Asia
William Frodella[1], Ascanio Rosi[1], Nicola Nocentini[1], Francesco Caleca[1], Hans Balder Havenith[2], Alexander Strom[3], Veronica Tofani[1] *([1]Italy, [2]Belgium, [3]Russia)*

17:00 Harmonized methodology for cross-border hazard and risk assessment of earthquake-induced landslides at regional scale
Julijana Bojadjieva[1], Vlatko Sheshov[1], Kemal Edip[1], Radmila Shalic Makreska[1], Marta Stojmanovska[1], Roberta Apostolska[1], Marija Vitanova[1], Goran Jekic[1], Toni Kitanovski[1], Dejan Ivanovski[1], Dimitris Pitilakis[2], Stavroula Fotopoulou[2], Neritan Shkodrani[3], Markel Babaleku[3], Francesca Bozzoni[4], Antonella di Meo[4], Barbara Borzi[4] *([1]Macedonia, [2]Greece, [3]Albania, [4]Italy)*

17:10 Torrential counter measures in the Krvavec ski area against debris floods
Jost Sodnik, Matjaz Mikos, Nejc Bezak *(Slovenia)*

17:20 Reconstructing the surface movements of the Carobbio landslide at two sites along the Parma Torrent at the multi-decadal scale
Giovanni Leonelli, Alessandro Chelli *(Italy)*

17:30 Landslide hydro-meteorological thresholds in data scarce areas of Rwanda
Judith Uwihirwe[1], Markus Hrachowitz[2], Thom Bogaard[2] *([1]Rwanda, [2]The Netherlands)*

17:40 Discussion

16:30-18:30 | HALL 3A
SESSION 3.3
RECENT ADVANCEMENT ON SLOPE STABILITY AND DEFORMATION ANALYSIS (PART II)
Chairs: **Binod Tiwari** *(USA)*, **Beena Ajmera** *(USA)*

16:30 Viscohypoplastic modelling of a creeping slope based on inclinometer and InSAR data: Prackovice landslide area case
Jan Jerman, David Mašín, Ivana Hlaváčová, Jan Kolomazník *(Czech Republic)*

16:40 A particle finite element approach to slope stability analysis
Martina Zanetti, Filippo Zaniboni, Cesare Angeli, Alberto Armigliato *(Italy)*

16:50 Study of landslide on excavatable surfaces using fine resolution discrete element simulation
Jian Chen, Mikito Furuichi, Daisuke Nishiura *(Japan)*

17:00 Debris flow damage prediction by landslide flow modelling
Jai Prakash Mishra, Vipin Maurya, Ramji Dwivedi *(India)*

17:10 r.avaflow goes sliding: extending the scope of the open-source mass flow simulation framework
Martin Mergili *(Austria)*

17:20 Discussion

16:30-18:30 | HALL 4
SESSION 4.8
LANDSLIDE IMPACTS, VULNERABILITY AND QUANTITATIVE RISK ASSESSMENTS OF PEOPLE, COMMUNITIES, STRUCTURES, AND INFRASTRUCTURE (part III)
Chairs: **Olga Mavrouli** *(Greece)*, **Dario Peduto** *(Italy)*

16:30 Quantitative risk assessment of the Shilongmen reservoir landslide in the Three Gorges area of China
Taorui Zeng[1], Kunlong Yin[1], Linfeng Wang[1], Dario Peduto[2], Thomas Glade[3], Yuichi Hayakawa[4], Liyang Wu[1], Bijin Jin[1] *([1]China, [2]Italy, [3]Austria, [4]Japan)*

16:40 Study on failure behavior and vulnerability of masonry structures caused by ground cracks on slow-moving landslides
Qin Chen[1], Lixia Chen[1], Renato Macciotta[2], Kunlong Yin[1], Deying Li[1], Ye Li[1] *([1]China, [2]Canada)*

16:50 Debris-flow structural risk assessment using a mechanical-based vulnerability index method
Giovanna Capparelli, Francesco Salvatore Liguori, Antonio Madeo, Pasquale Versace *(Italy)*

17:10 Multiscale analysis of rockfall impact against stone masonry structure for vulnerability assessment
Maddalena Marchelli, Foad Kiakojouri, Valerio De Biagi *(Italy)*

17:10 A deep neural network model for the failure of masonry walls due to rockfalls
Olga Mavrouli[1], Athanasia D. Skentou[1], Josep Maria Carbonell[2], Markos Z. Tsoukalas[1], Ma Amparo Núñez-Andrés[2], Panagiotis G. Asteris[1] *([1]Greece, [2]Spain)*

17:20 An integrated multi-source data analysis for the assessment of consequences on the slow-moving landslides-affected built-up environment
Gianfranco Nicodemo, Davide Luongo, Luisa Oricchio, Settimio Ferlisi, Gianfranco Fornaro, Diego Reale2, Simona Verde, Luigi Borrelli, Giovanni Gullà, Dario Peduto *(Italy)*

17:30 Quantitative assessment of buildings exposure to landslides using basic Census units
Sérgio Cruz Oliveira, Carlos Alves, Pedro Santos, Raquel Melo, Ricardo A.C. Garcia, Susana Pereira, Eusébio Reis, Jose Zezere *(Portugal)*

17:40 Quantitative vulnerability assessment of buildings susceptible to slow-kinematic landslide
Francesco Poggi, Francesco Caleca, Davide Festa, Francesco Barbadori, Olga Nardini, Matteo Del Soldato, Claudio De Luca, Manuela Bonano, Riccardo Lanari, Nicola Casagli, Federico Raspini *(Italy)*

08:30-10:30 | HALL -1
SESSION 2.12
LANDSLIDE EARLY WARNING SYSTEMS: INNOVATIONS AND APPLICATIONS (part I)
Chair: **Annette Patton** *(France)*, **Manfred Stähli** *(Switzerland)*

08:30 Landslide detection using total gray level method
Sudhan Regmi, Shih-Chao Wei, Ko-Fei Liu *(Taiwan)*

08:40 Laboratary testing of effects caused by landslides triggered by earthquakes through utilizing fiber optic methods
Haluk Akgün, Mustafa Koçkar, Arzu Arslan Kelam, Cem Demir, Barış Ural, Ahmet Karabulut, Yunus Kaya, Gokhan Şahin, Ahmet Temiz, Abdullah Özşimşir *(Turkey)*

08:50 HelloMac: an innovative early warning system for rockfall protection systems and events
Luca Gobbin[1], Domenico Paldino[1], Alberto Grimod[2] *([1]Italy, [2]France)*

09:00 A new method for identifying the onset of landslide acceleration based on the exponential moving average
Wang Jiazhu *(China)*

09:10 Smart boulders to track the activity on a slow-moving landslide. Insights from lab experiments
Alessandro Sgarabotto[1], Irene Manzella[1,2], Kyle Roskilly[1], Chunbo Luo[1], Miles Clark[1], Aldina Franco[1], Georgina Bennett[1], Alison Raby[1] ([1]United Kingdom, [2]The Netherlands)

09:20 Review of pre-warning system of large-scale landslide in Taiwan
Yuan-Jung Tsai, Fang-Tsz Syu, Yi-Jing Chen *(Taiwan)*

09:30 Permanent slope monitoring using the on-board data processing capability of state-of-the-art terrestrial laser scanners
Thomas Gaisecker *(Austria)*

09:40 Deep learning for landslide displacement forecasting: A comparative study
Lorenzo Nava[1], Edoardo Carraro[2], Cristina Reyes-Carmona[3], Silvia Puliero[1], Kushanav Bhuyan[1], Ascanio Rosi[1], Oriol Monserrat[3], Mario Floris[1], Sansar Raj Meena[1], Jorge Pedro Galve[3], Filippo Catani[1] *([1]Italy, [2]Austria, [3]Spain)*

09:50 Akhdefo Software: a tool for land deformation monitoring using daily satellite optical imagery
Mahmud Muhammad, Glyn Williams-Jones, Doug Stead *(Canada)*

10:00 Rainfall thresholds for debris flow occurrence in four catchments of Camonica Valley, Italian Alps
Elena Ioriatti, Velio Coviello, Mauro Reguzzoni, Edoardo Reguzzoni, Massimo Ceriani, Marco Redaelli, Luca Beretta, Matteo Berti *(Italy)*

10:10 Discussion

08:30-10:30 | HALL 1A

SESSION 1.3

CASCADING MULTI-HAZARD RISKS: SUBMARINE LANDSLIDES, TSUNAMIS, AND IMPACTS ON INFRASTRUCTURES (part I)

Chairs: **Shinji Sassa** *(Japan)*, **Finn Lovholt** *(Norway)*

08:30 Topography effects on landslide dynamics and generated tsunamis
Anne Mangeney[1], Peruzzetto Marc[1], Francois Bouchut[1], Gilles Grandjean[1], Clara Levy[1], Yannick Thiery[1], Antoine Lucas[1], Poulain Pablo[1], Enrique Fernandez-Nieto[2], Manuel Castro Diaz[2], Anne Le Friant[1] *([1]France, [2]Spain)*

08:40 Modeling volcanic mass movements and associated tsunamis at Stromboli volcano (Aeolian islands, Italy)
Tomaso Esposti Ongaro[1], Matteo Cerminara[1], Mattia de' Michieli Vitturi[1], Jorge Macias Sanchez[2], Manuel Castro Diaz[2] *([1]Italy, [2]Spain)*

08:50 Research on dynamic models of wave generation considering landslide-water interactions for landslide generated waves and its numerical simulation
Lili Xiao[1], Steven Ward[2], Jiajia Wang[1] *([1]China, [2]USA)*

09:00 A dual earthquake and coastal landslides source model for the 2018 Palu tsunami Indonesia
Loi Doan, Ryosuke Uzuoka, Kyohei Ueda *(Japan)*

09:10 On dominant submarine landslide component of the tsunami source mechanism at 1923 Great Kanto Earthquake, Japan
Kazuki Murata, Toshikazu Ebisuzaki, Shinji Sassa, Tomohiro Takagawa, Koichi Masuda, Takujiro Miyamoto, Masato Ohno *(Japan)*

09:20 Methodology to assess cascading multihazards in Norwegian fjords and their impacts on infrastructure
Brian Carlton, Petter Fornes, Ragnhild Hansen, Cathinka Forsberg, Finn Lovholt, Maarten Vanneste, Carl Fredrik Forsberg *(Norway)*

09:30 Coupled CFD-MPM analysis of the earthquake induced submarine landslides
Quoc Anh Tran[1], Erik Sørlie[1], Gudmund Eiksund[1], Gustav Grimstad[1], Hidenori Takahashi[2], Shinji Sassa[2] *([1]Norway, [2]Japan)*

09:40 Dynamic and destructive slope failure of the subduction zone: geological constrains by submarine researches from the Japan trench
Kiichiro Kawamura *(Japan)*

09:50 Discussion

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08:30-10:30 | HALL 2
SESSION 6.4
MACHINE LEARNING APPLICATIONS IN LANDSLIDE SCIENCE (part I)
Chairs: **Filippo Catani** *(Italy)*, **Maneesha Vinodini Ramesh** *(India)*

08:30 An automatic debris slope mapping method based on transformer algorithm
Chengyong Fang, Xuanmei Fan, Wang Xin *(China)*

08:40 A procedure for generating ground truth dataset for machine learning classification of deformation processes
Claudia Masciulli, Carlo Alberto Stefanini, Giorgia Berardo, Michele Gaeta, Gian Marco Marmoni, Francesca Bozzano, Paolo Mazzanti *(Italy)*

08:50 Proof of concept: testing the potential for an automated, regional-scale landslide mapping tool after severe weather events or earthquakes: case study New Zealand
Catherine Pennington[1], Alessandro Novellino[1], Rémy Bossu[2], Muhammad Imran[3], Kathryn Leeming[1], Itahisa Gonzalez Alvarez[1], Sophie Taylor[1], Ferda Ofli[3], Umair Qazi[3], Vanessa Banks[1], Julien Roch[2] *([1]United Kingdom, [2]France, [3]Qatar)*

09:00 Generate and use of synthetic database to train machine learning models for landslide monitoring using geotechnical instrumentation
Norbey Arcila Quintero, Hernán Martinez Carvajal, Juan David Herrera *(Colombia)*

09:10 Development of AI algorithms for landslides prediction (Emilia-Romagna Region, Italy)
Nicola Dal Seno, Matteo Berti *(Italy)*

09:20 Detecting trend changes in persistent scatterer interferometry displacement time series: a comparative study and application in landslide detection
Ebrahim Ghaderpour, Francesca Bozzano, Gabriele Scarascia Mugnozza, Paolo Mazzanti *(Italy)*

09:30 Statistical analysis of InSAR time series using a multi method approach for landslides in the Alpine region
Serena Rigamonti, Francesca Colombo, Giovanni Crosta, Paolo Frattini *(Italy)*

09:40 Automatic detection of landslides from multi-temporal InSAR analysis
Alessio Rucci, Federico Ricciuti, Chiara Gervasi, Matteo Matteucci2, Francesco Lattari *(Italy)*

09:50 Relationship between conditioning factors and the rainfall intensity necessary for triggering shallow landslides in Portugal
Caio Villaça, Jose Zezere, Pedro Santos *(Portugal)*

10:00 AI vs. human cognitive abilities: evaluating the performance of landslide inventories in hazard and risk scenarios
Sansar Raj Meena, Lorenzo Nava, Kushanav Bhuyan, Silvia Puliero, Ascanio Rosi, Mario Floris, Filippo Catani *(Italy)*

10:10 Discussion

Friday, 17 NOVEMBER 2023

08:30-10:30 | HALL 2A
SESSION 3.5
ROCK FALLS AND ROCK AVALANCHES (part I)
Chairs: **Giovanni Crosta** *(Italy)*, **Anna Giacomini** *(Australia)*

08:30 Geotechnical solutions for unstable ror unstable rock mass at Kuala Temoyong, Pulau Langkawi, Kedah
Wan Ahmad Syauqi Wan Abdul Rahim, Nor Fardzilah Abd Rahman *(Malaysia)*

08:40 Quantifying uncertainty in three-dimensional rock slope failure
Michael Gardner, Yuval Keissar, Nicholas Sitar *(USA)*

08:50 Efficiency of kinematic analysis in demarcating rockfall source zone along jointed rock slope: the case study of Poggio Baldi Natural Lab, Italy
Jagadish Kundu, Giandomenico Mastrantoni, Giacomo Santicchia, Antonio Cosentino, Gabriele Scarascia Mugnozza, Paolo Mazzanti *(Italy)*

09:00 Investigation of predisposing factors for rock slope failure in Slovenia
Ela Šegina, Tina Peternel, Jernej Jež, Mateja Jemec Auflic *(Slovenia)*

09:10 Comparison between methods for assessing block volume and shape distributions
Gessica Umili, Battista Taboni, Anna Maria Ferrero *(Italy)*

09:20 Factors influencing the depth of undercutting of flysch beds in the coastal cliffs of Slovenia and the resulting rockfall
Timotej Verbovšek, Boštjan Rožič, Matej Dolenec, Galena Jordanova, Mateja Božič, Karmen Fifer Bizjak *(Slovenia)*

09:30 Falls, slides and avalanches: a back-analysis of landslide events to differentiate between movement types
Anne-Laure Argentin[1,2], Efstratios Karantanellis[1], Sébastien Lenard[2] *([1]USA, [2]France)*

09:40 Effects of grain diameter on rapid sliding of debris flows
Chiara Cesali, Francesco Federico *(Italy)*

09:50 Dating of the deposits of rock avalanches in the context of the climate change in the dry mountain region, Pamiro-Alay Mts., Tajikistan
Pawel Kroh, Piotr Dolnicki *(Poland)*

10:00 Reconstruction of a large-scale composite landslide and debris flow hazard - A case study of Luanshibao
Kuo-Lung Wang, I-Chun Jeng *(Taiwan)*

10:10 Discussion

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08:30-10:30 | HALL 3
SESSION 4.1
REGIONAL AND GLOBAL LANDSLIDE INVENTORIES: PARAMETERS AND PRINCIPLES OF COMPILATION
Chairs: **Alexander Strom** *(Russian Federation),* **Xuanmei Fan** *(China),*

08:30 A landslide data base model for CliRtheRoads Project in Serbia
Biljana Abolmasov, Ranka Stanković, Nikola Vulović, Miloš Marjanović, Uroš Đurić *(Serbia)*

08:40 Compilation of a geomorphology-based landslide inventory for Eastern Macedonia and Thrace region, Greece
Sotiris Valkaniotis, Maria Taftsoglou, George Papathanassiou, Nikolaos Klimis, Ioannis Dokas *(Greece)*

08:50 National landslide database of the Hellenic territory: An effective tool for landslide hazard management
Natalia Spanou, Emmanuel Apostolidis, Garyfalia Konstantopoulou, Katerina Kavoura, Panagiotis Paschos, Nikolaos Nikolaou, Alexandros Kepas, Vasileios Ieronymakis, Foteini Panagiotidou *(Greece)*

09:00 Towards a systematic update of the Cyprus landslide inventory using Copernicus satellite data
Marios Tzouvaras[1], Stavroula Alatza[2], Kyriaki Fotiou[1], Christos Theocharidis[1], Maria Prodromou[1], Athanasios Argyriou[1], Constantinos Loupasakis[2], Alex Apostolakis[2], Thomaida Polydorou[1], Mariza Kaskara[2], Charalampos Kontoes[2], Diofantos Hadjimitsis[1] *([1]Cyprus, [2]Greece)*

09:10 Towards a national overview for rock avalanche potential
Martina Böhme[1], François Noël[1], Vanja Haugsnes[1], Jacob Bendle[1], Reginald L Hermanns[1], Ivanna Penna[1], Pierrick Nicolet[1], Odd Andre Morken[1], Thierry Oppikofer[2] *([1]Norway, [2]Switzerland)*

09:20 Magnitude of regional episodes of landslides in the catalan Pyrennees
Pere Buxó, Pere Oller, Jordi Marturià, Ivan Fabregat, Daniel Xifre *(Spain)*

09:30 Regional inventories of deep-seated gravitational slope deformations: focus on the central Apennines
Emiliano Di Luzio, Michele Saroli, Marco Moro, Marco Emanuele Discenza, Matteo Albano, Carlo Esposito, Michele Delchiaro, Matteo Fiorucci, Daniela Guglietta, Gabriele Scarascia Mugnozza, Gianluca Valensise, Enrica Zullo *(Italy)*

09:40 A new large landslide inventory of European Alps
Paolo Frattini, Giovanni Crosta, Elena Valbuzzi *(Italy)*

09:50 Earthquake-induced landslides: from historical data to new empirical relationships
Caterina Zei, Gabriele Tarabusi, Cecilia Ciuccarelli, Dante Mariotti, Sofia Baranello, Giulia Sgattoni, Valerio Piattelli, Jacopo Cinosi, Tommaso Piacentini, Enrico Miccadei, Pierfranceso Burrato *(Italy)*

10:00 Coseismic landslides caused by subduction zone earthquakes in Solomon and Vanuatu Islands
Aadityan Sridharan, Sundararaman Gopalan *(India)*

10:10 Sentinel-1 SAR backscatter products for event landslide mapping
Michele Santangelo, Mauro Cardinali, Francesco Bucci, Federica Fiorucci, Alessandro Mondini *(Italy)*

10:20 Discussion

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08:30-10:30 | HALL 3A
SESSION 3.2
NATURAL FIELD LABORATORIES ON LANDSLIDES
Chairs: **Salvatore Martino** *(Italy)*, **Chiara Colombero** *(Italy)*,

08:30 Collaborative center for landslides geohazards
Rafael Bras, Karl Lang, Frances Rivera-Hernandez, Evren Soylu, Michelle Powell, Sonia Alvarez-Robinson, Stephen Hughes, Alesandra Morales, Ismael Pagan-Trinidad, Gregory Tucker *(USA)*

08:40 Field monitoring of hydraulic soil conditions in a landslide-prone terraced slope: insights from Monterosso al Mare (Italy)
Matteo Fiorucci, Giacomo Pepe, Gian Marco Marmoni, Jagadish Kundu, Diego Di Martire, Giuseppe Bausilio, Luigi Guerriero, Enza Vitale, Emanuele Raso, Luca Raimondi, Andrea Cevasco, Domenico Calcaterra, Gabriele Scarascia Mugnozza *(Italy)*

08:50 Artificial neural network approach to provide failure precursors in jointed rock mass at the Acuto Field Lab
Matteo Fiorucci, Gian Marco Marmoni, Gabriele Amato, Lorenzo Palombi, Salvatore Martino *(Italy)*

09:00 Debrisflow modelling in Kakheti region (Georgia) on the example of riv. Kisiskhevi and riv. Khodasheni
Ramaz Koberidze, George Gaprindashvili, Otar Kurtsikidze, Anzor Giorgadze, Bakur Jinoria, Nikoloz Kapanadze *(Georgia)*

09:10 DAEMON Resistivity System: an advanced approach to the monitoring of active landslides
Petr Taborik, Jakub Stemberk, Filip Hartvich *(Czech Republic)*

09:20 The development of a long-term landslide field laboratory: experience from the Hollin Hill Landslide Observatory, UK
Jonathan Chambers[1], Paul Wilkinson[1], Philip Meldrum[1], Oliver Kuras[1], James Boyd[1], Harry Harrison[1], Russell Swift[1], Ben Dashwood[1], Adrian White[1], Mihai Cimpoiasu[1], Alessandro Novellino[1], Lee Jones[1], Dave Morgan[1], Jim Whiteley[1], Sebastian Uhlemann[2], Arnaud Watlet[3], Mike Kendall[1], Shane Donohue[4], Andrew Binley[1]
([1]United Kingdom, [2]USA, [3]Belgium, [4]Ireland)

09:30 Thermally induced modifications in site stability: lessons learned from the natural field laboratories of the NW Italian Alps
Chiara Colombero, Cesare Comina, Alberto Godio, Farbod Khosro Anjom, Sergio Vinciguerra *(Italy)*

09:40 Quantification of the seismic response of unstable slopes and its time variability
Donat Fäh, Mauro Häusler, Franziska Glueer *(Switzerland)*

09:50 Landslide monitoring through the use of multispectral monitoring tools: the case study of the Poggio Baldi monitoring laboratory
Giacomo Santicchia, Giandomenico Mastrantoni, Antonio Cosentino, Jagadish Kundu, Paolo Mazzanti *(Italy)*

10:00 Weathering influence on durability of fine-grained lithological flysch components in Istria Peninsula, Croatia
Martina Vivoda Prodan, Željko Arbanas *(Croatia)*

10:10 Discussion

Friday, 17 NOVEMBER 2023

08:30-10:30 | HALL 4
SESSION 4.4
SHALLOW LANDSLIDES: MONITORING, MODELING, PREDICTING
Chairs: **Massimiliano Bordoni** *(Italy)*, **Jie Dou** *(China)*

08:30 Debris flow susceptibility mapping using Flow-R model in Mae Phin watershed, Uttaradit province, Northern Thailand
Namphon Khampilang, Mallika NIllorm, Sarun Kaewmuangmoon *(Thailand)*

08:40 Modelling exposure to debris flows in Marlborough, New Zealand
Hanna Lyford, Tom Robinson *(New Zealand)*

08:50 On the use of RAMMS::Debrisflow for modelling the runout of shallow, unchanneled landslides in Norway
Andrea Taurisano, Kalle Kronholm *(Norway)*

09:00 Automated delimitation of shallow landslide hazard indication zones using high-resolution slope stability and runout modeling at regional scale
Christoph Schaller, Massimiliano Schwarz, Luuk Dorren *(Switzerland)*

09:10 Multidisciplinary approach for analysis of collapse processes and triggering thresholds update in a downscaled shallow landslides simulator
Lorenzo Panzeri, Laura Longoni, Monica Corti, Monica Papini *(Italy)*

09:20 Influence of soil piping on hydro-mechanical response of shallow landslides
Jack Montgomery, Olaniyi Afolayan, Anna Lancaster *(USA)*

09:30 The impact of soil depth estimation in physically based shallow landslide modelling
Alessia Giarola[1], Massimiliano Bordoni[1], Paolo Tarolli[1], Jeroen Schoorl[2], Jantiene Baartman[2], Francesco Zucca[1], Claudia Meisina[1] *([1]Italy, [2]The Netherlands)*

09:40 Implementation of a slope stability method for rainfall-induced shallow landslides in the CRITERIA-3D model and analysis of a case study in Oltrepò pavese
Giada Sannino, Fausto Tomei, Marco Bittelli, Massimiliano Bordoni, Claudia Meisina, Roberto Valentino *(Italy)*

09:50 Improved landslide susceptibility maps - example from the Entremont district (Valais, Switzerland)
Thierry Oppikofer[1], Clément Michoud[1], Emmanuel Wyser[1], Jean-Philippe Malet[2] *([1]Switzerland, [2]France)*

10:00 Discussion

Friday, 17 NOVEMBER 2023

11:00-13:00 | HALL -1
SESSION 2.12
LANDSLIDE EARLY WARNING SYSTEMS: INNOVATIONS AND APPLICATIONS (part II)
Chairs: **Graziella Devoli** *(Italy)*, **Samuele Segoni** *(Italy)*

11:00 Probabilistic landslide predictions and hazard communication in data-sparse regions of Southeast Alaska, USA
Annette Patton[1], Ryan Brown[1], Lisa Busch[1], Maxwell Izenberg[1], Jeff Frankl[1], Ron Heintz[1], Klaas Hoekema[1], Robert Lempert[1], Lisa Luna[2], Joshua Roering[1], Jacyn Schmidt[1], Stephanie Wall[1], Tammy Young[1] *([1]United States, [2]Germany)*

11:10 Identifying critical rainfall indices and developing probabilistic rainfall thresholds for rain induced landslides in Sri Lanka
Mihira Lakruwan[1,2], Akiyoshi Kamura[1], Motoki Kazama[1] *([1]Japan, [2]Sri Lanka)*

11:20 First experiences from the Inform@Risk landslide early warning system for informal settlements operated in Medellín Colombia
John Singer[1], Moritz Gamperl[1], Kurosch Thuro[1], Melqui David Cerón Hernández[2], Edward Alexander Guerra Valencia[2], Claudia Patricia Pelaez Mesa[2] *([1]Germany, [2]Colombia)*

11:30 National-wide Landslide early-warning system in the Republic of Korea
Song Eu, Choongshik Woo, Changwoo Lee *(South Korea)*

11:40 Implementation of people-centered approach to early warning system for landslide in the Philippines
Roy Albert Kaimo, Cathleen Joyce Cordero, Pauline Pagaduan, Kennex Razon, Arturo Daag, Renato Solidum Jr, Teresito Bacolcol *(Philippines)*

11:50 The Catalan Early Warning System for rainfall-induced landslides. New online platform and experiences gathered during the testing phase
Marcel Hürlimann, Marc Berenguer, Liza Tapia, Jordi Marturià, Pere Buxó, Marc Janeras *(Spain)*

12:00 End-to-end evaluation of territorial early warning systems: an Italian case study
Michele Calvello[1], Guido Rianna[1], Brian Golding[2] *([1]Italy, [2]United Kingdom)*

12:10 Development and application of an innovative methodology for spatio-temporal prediction of landslides though a machine learning technique
Nicola Nocentini[1], Ascanio Rosi[1], Samuele Segoni[1], Zhongqiang Liu[2], Luca Piciullo[2] *([1]Italy, [2]Norway)*

12:20 Moving towards near-real time forecasting of rainfall-induced landslides
Mahnoor Ahmed[1,2], Luigi Lombardo[2], Hakan Tanyaş[2], Mirko Francioni[1] *([1]Italy, [2]The Netherlands)*

12:30 Integration of antecedent rainfall to improve the performane of 3D thresholds for landslide early warning system: a case study in Wanzhou District, China
Xin Liang[1], Francesco Barbadori[2], Kunlong Yin[1], Ting Xiao[1], Shuhao Liu[1], Xiaoxu Xie[1], Samuele Segoni[2] *([1]China, [2]Italy)*

12:40 Towards a national Landslide Early Warning System for Switzerland: a pilot study to assess the use of soil wetness information and physically-based modelling
Manfred Stähli, Adrian Wicki, Hugo Raetzo, Tobias Halter, Peter Lehmann *(Switzerland)*

12:50 Discussion

11:00-13:00 | HALL 1A
SESSION 1.3
CASCADING MULTI-HAZARD RISKS: SUBMARINE LANDSLIDES, TSUNAMIS, AND IMPACTS ON INFRASTRUCTURES (part II)
Chairs: **Shinji Sassa** *(Japan)*, **Finn Lovholt** *(Norway)*,

11:00 The 1977 Gioia Tauro tsunamigenic landslide (Italy) as an example of cascading multi-hazard risk
Francesco Chiocci, Daniele Casalbore, Angela Alla *(Italy)*

11:10 Submarine landslide hazard in the Alboran Sea
Sara Lafuerza[1], Elia D'Acremont[1], Alain Rabaute[1], Maud Thomas[1], Jacques Sainte Marie[1], Laurent Emmanuel[1], Anne Mangeney[1], Lea Vidil[1], Sylvie Leroy[1], Christain Gorini[1], Gemma Ercilla[2] *([1]France, [2]Spain)*

11:20 Large-scale gravitational collapse in the Crotone province (central Mediterranean)
Giacomo Mangano, Massimo Zecchin, Dario Civile, Salvatore Critelli *(Italy)*

11:30 An approach towards susceptibility analysis for tsunamigenic landslides in Indonesia
Katrin Dohmen, Anika Braun, Fernandez-Steeger Tomás Manuel *(Germany)*

11:40 Tsunamigenic flank failure assessment of Cumbre Vieja Volcano, La Palma, and associated hazard for Morocco and the North Atlantic Basin
Mohamed Outiskt[1], Jack Dignan[2], Soufiane Tichli[1], Zainab Fajri[1], Said El Moussaoui[1], Maria Ana Viana-Baptista[3], Khadija Aboumaria[1] *([1]Morocco, [2]United Kingdom, [3]Portugal)*

11:50 Assessment of current and future multi-risk interactions and cascading impacts across Europe: a case study in Oslo, Norway
Camilla Lanfranconi[1], Florencia Victoria De Maio[1], Rita De Stefano[1], Ruben Valsecchi[1], Fabio Bolletta[1], Paolo Basso[1], Marcello Cademartori[1], Chen Huang[2], Ivan Van Bever[2], Abdelghani Meslem[2], Osman Ibrahim[2], Volker Oye[2], Johannes Schweitzer[2] *([1]Italy, [2]Norway)*

12:00 Discussion

Friday, 17 NOVEMBER 2023

11:00-13:00 | HALL 2
SESSION 6.4
MACHINE LEARNING APPLICATIONS IN LANDSLIDE SCIENCE (part II)
Chairs: **Filippo Catani** *(Italy)*, **Xuanmei Fan** *(China)*

11:00 From voice recognition to landslide triggering: assessing the potential use of artificial intelligence to identify landslide initiation conditions
Ascanio Rosi, Lorenzo Nava, Sansar Raj Meena, Silvia Puliero, Kushanav Bhuyan, Rajeshwari Bhookya, Mario Floris, Filippo Catani *(Italy)*

11:10 Social media for landslide event detection and situational awareness
Hemalatha T, Krishnendu K, Maneesha Ramesh *(India)*

11:20 Uncovering landslide failure mechanisms using advanced 3D topological data analysis
Kushanav Bhuyan[1], Kamal Rana[2], Lorenzo Nava[1], Sansar Raj Meena[1], Ugur Ozturk[3], Cees Van Westen[4], Mario Floris[1], Filippo Catani[1] *([1]Italy, [2]USA, [3]Germany, [4]The Netherlands)*

11:30 Slope failure prediction using convolutional neural network
Fu-Hsuan Yeh[1], Wei Liang[1], Louis Ge[1], Cheng-Hsi Hsiao[2], Yu-Wei Hwang[1], Chi-Chin Tsai[1], Shih-Hao Cheng[1]
([1]Taiwan, [2]USA)

11:40 Machine learning-based prediction of mudstone soil strength treated with sugarcane press mud: a case study
Febi Satria Gumanta, HanYuan Xu, Ching Hung, Guan-Wei Lin *(Taiwan)*

11:50 Using explainable artificial intelligence to understand landslide susceptibility
Ashok Dahal, Luigi Lombardo *(The Netherlands)*

12:00 Coupling corrected precipitation models with landscape characteristics to forecast shallow landslides occurence in Puerto Rico with machine learning
Said Mejia Manrique[1], Kenneth Hughes Merz[2], Carlos Ramos-Scharrón[1], Reza Khanbilvardi[1], Jorge González-Cruz[1] *([1]USA, [2]Puerto Rico)*

12:10 LAND-SUITE a set of tools for statistically-based landslide susceptibility zonation
Mauro Rossi[1], Txoin Bornaetxea[2], Paola Reichenbach[1] *([1]Italy, [2]Spain)*

12:20 Discussion

11:00-13:00 | HALL 2A
SESSION 3.5
ROCK FALLS AND ROCK AVALANCHES (part II)
Chairs: **Giovanni Crosta** *(Italy),* **Anna Giacomini** *(Australia)*

11:00 Numerical modeling of rock and ice avalanche air blasts accounting for turbulent fluctuations
Yu Zhuang[1,2], Marc Christen[1], Perry Bartelt[1] *([1]Switzerland, [2]China)*

11:10 Modelling rock-scree interaction in a rigid body and hard contact framework
Joël Borner[1], Perry Bartelt[1], Remco Leine[2] *([1]Switzerland, [2]Germany)*

11:20 Topographic controls on rockfall runout distances within sandstone canyon terrain in AlUla, Kingdom of Saudi Arabia
Joshua Jones, Alkis Gkouvailas, Michael Whitworth, Scott Davidson, Alex Conrad *(United Kingdom)*

11:30 Dependence of the runout distance on the shape and orientation of rocks
Shiyake Ryota, Dominik Krengel, Kikumoto Mamoru *(Japan)*

11:40 Tree-integration into flexible rockfall barriers: feasibility, implementation and structural design
Maximilian Kramer[1,2], Adrian Ringenbach[2], Jürgen Suda[1] *([1]Austria, [2]Switzerland)*

11:50 The Innonet project: understanding the capacity and limitations of flexible protection systems against rockfall in natural terrain
Helene Lanter, Andreas Lanter, Manuel Eicher, Andrin Caviezel2, Jessica Munch, Perry Bartelt *(Switzerland)*

12:00 An analytical model for rockfall barriers energy dissipating devices
Francesco Pimpinella, Maddalena Marchelli, Valerio De Biagi *(Italy)*

12:10 Failure values of rockfall earth protection embankments: a proposal for the ultime limit state design
Stefano Vigna, Maddalena Marchelli, Valerio De Biagi, Daniele Peila *(Italy)*

12:20 Discussion

11:00-13:00 | HALL 3
SESSION 4.3
WEAK POINTS IN LANDSLIDE SUSCEPTIBILITY MODELLING (part I)
Chairs: **Anika Braun** *(Germany)*, **Ivan Marchesini** *(Italy)*

11:00 Influence of the landslide inventory completeness on the accuracy of the landslide susceptibility modelling: a case study from the City of Zagreb (Croatia)
Sanja Bernat Gazibara, Marko Sinčić, Martin Krkač, Petra Jagodnik, Hrvoje Lukačić, Snježana Mihalić Arbanas *(Croatia)*

11:10 Is any inventory valid for susceptibility? Exploring available landslide inventories in Gipuzkoa province (Spain)
Txomin Bornaetxea, Juan Remondo, Jaime Bonachea, Pablo Valenzuela *(Spain)*

11:20 Data-driven landslide susceptibility assessment: challenges, flaws, and workarounds - Examples from the project "Mass Movements in Germany"
Jewgenij Torizin, Michael Fuchs, Dirk Balzer, Dirk Kuhn, Nick Schüßler, Claudia Gunkel *(Germany)*

11:30 Assessment of benchmark datasets for landslide susceptibilty zonation
Massimiliano Alvioli[1], Marco Loche[2], Liesbet Jacobs[3], Carlos Grohmann[4] *([1]Italy, [2]Czech Republic, [3]The Netherlands, [4]Brazil)*

11:40 Compilation of inventory and characterization of landslides for landslide susceptibility modelling in western Canada
Andree Blais-Stevens *(Canada)*

11:50 The accuracy of the susceptibility mapping in man-developed areas
Anna Małka, Izabela Laskowicz, Dariusz Grabowski *(Poland)*

12:00 Cell size influences through different landslide typologies in landslide susceptibility modelling
Chiara Martinello, Claudio Mercurio, Chiara Cappadonia, Christian Conoscenti, Giampiero Mineo, Edoardo Rotigliano *(Palermo)*

12:10 Influence of landslide conditioning factor selection on landslide susceptibility modelling in large scale
Marko Sinčić, Sanja Bernat Gazibara, Gabrijela Šarić, Martin Krkač, Snježana Mihalić Arbanas *(Croatia)*

12:20 Updated landslide susceptibility zone map of the United States
Benjamin Mirus, Gina Belair, Jeanne Jones, Nate Wood *(USA)*

12:30 Is susceptibility just a spatial assessment? A theoretical modeling endeavor on the importance of temporal data reconstruction!
Aiding Kornejady[1], Luigi Lombardo[2] *([1]Iran, [2]The Netherlands)*

12:40 Discussion

11:00-13:00 | HALL 3A
SESSION 5.2
LANDSLIDES IN THE COLD REGIONS AND EXTREMES (part I)
Chairs: **Mylene Jacquemart** *(Switzerland)*, **Costanza Morino** *(France)*

11:00 Stability of freshly deglaciated moraine in the High Arctic - Hornsund Fjord, Svalbard
Jan Blahůt, Filip Hartvich, Jan Najser, Jakub Roháč, Ondřej Racek, Josef Stemberk, Marco Loche *(Czech Republic)*

11:10 Permafrost controls long-term displacement activity of large unstable rock slopes in arctic and subarctic Norway
Paula Snook[1], Reginald Hermanns[1], Justyna Czekirda[1], Kristin Sæterdal[1], John Gosse[2], Bernd Etzelmüller[1] *([1]Norway, [5]Canada)*

11:20 Kinematic evolution of a paraglacial landslide emphasizes the need for regular hazard re-evaluation
Lauren Schaefer, Jeffrey Coe, Katreen Wikstrom Jones, Brian Collins, Dennis Staley, Michael West, Ezgi Karasozen, Charles Miles, Gabriel Wolken, Ronald Daanen *(USA)*

11:30 Paraglacial landslide response to glacier debuttressing in southern Alaska
Jane Walden[1], Mylene Jacquemart[1], Bretwood Higman[2], Romain Hugonnet[2], Andrea Manconi[1], Daniel Farinotti[1] *([1]Switzerland, [2]USA)*

11:40 Anticipating high alpine permafrost rock slope failures during paraglacial transition by using a rock-ice-mechanical model
Felix Pfluger[1], Michael Krautblatter[1], Christian Zangerl[2], Philipp Mamot[1] *([1]Germany, [2]Austria)*

11:50 Reliability and repeatability of geoelectrical surveys: a multi-method approach to decipher permafrost and fluid flow in fractures
Maike Offer[1], Markus Keuschnig[2], Riccardo Scandroglio[1], Michael Krautblatter[1] *([1]Germany, [2]Austria)*

12:00 Monitoring permafrost-affected rockwalls, an approach combining permafrost modelling, geophysical surveying and runout simulations. The case of Etache rockfall (Savoy, France)
Maëva Cathala, Florence Magnin, Ludovic Ravanel, Josué Bock, Matan Ben Asher, André Revil, Thierry Faug, Guillaume Chambon, Jean Yves Josnin, Richard Jessy, Philip Deline, Kim Génuite *(France)*

12:10 Multi-cryospheric-hazard susceptibility modeling in Svalbard: testing spatial transferability techniques of slope failures occurrence probabilities in permafrost degraded soils
Letizia Elia[1], Luigi Lombardo[2], Ionut Cristi Nicu[3], Lena Rubensdotter[3], Silvia Castellaro[1] *([1]Italy, [2]The Netherlands, [3]Norway)*

12:20 Discussion

Friday, 17 NOVEMBER 2023

11:00-13:00 | HALL 4
SESSION 4.6
LANDSLIDES IN URBAN ENVIRONMENTS (part I)
Chairs: **Mateja Jemec Auflic** *(Slovenia),* **Roberto Sarro** *(Spain)*

11:00 Interplay between urban expansion and national hydro-geomorphological emergencies at municipality level in Italy
Alessio Gatto, Stefano Clò, Federico Martellozzo, Samuele Segoni *(Italy)*

11:10 Urban landslides: historical and recent landslide dynamics of the Istanbul Megacity
Abdussamet Yilmaz, Gorum Tolga, M. Lütfi Suzen, Furkan Karabacak, Deniz Inan, Tarik Talay, Isra Bostancioglu *(Turkey)*

11:20 Landslide risk reduction in Medea city
Rafa Sid Ali, Rouaz Idriss, Bennoui Imad, Hadj Brahim M *(Algeria)*

11:30 Unstable ground: assessing urban landslide risk in Uttarakhand, India
John Dehls[1], Gökhan Aslan[1], Vikram Gupta[2], Yngvar Larsen[1], Marie Bredal[1] *([1]Norway, [2]India)*

11:40 Landslide and debrisflow hazard assessment in Tbilisi (Georgia)
George Gaprindashvili, Merab Gaprindashvili *(Georgia)*

11:50 The large San Vito Romano (central Italy) landslide system three-dimensional geological-technical model
Francesco Seitone, Alessio Argentieri, Mauro Bonasera, Giandomenico Fubelli *(Italy)*

12:00 Geotechnical analysis of the susceptibility to traslational sliding experienced by the 'El Rincón' Rock Massif on a High Capacity Higway situated in the Capital of Gran Canaria
Jorge Yepes, Martín Rodríguez-Peces, Julio Garzón-Roca *(Spain)*

12:10 Seismically-induced slope instability in San Salvador municipality (El Salvador, Central America): the seismic scenario of the 13 January 2001
Chiara Faraone[1], Marco Di Clemente[1], Luis Alfonso Castillo Ramos[2], José Alexander Chávez[2], Mario Luigi Rainone[1], Giovanna Vessia[1] *([1]Italy, [2]El Salvador)*

12:20 Back-analysis of the co-seismic Las Colinas flowslide at Santa Tecla (San Salvador, El Salvador)
Ilaria Primofiore[1] Chiara Faraone[1], Luis Castillo Ramos[2], José Alexander Chávez[2], Mario Luigi Rainone[1], Giovanna Vessia[1] *([1]Italy, [2]El Salvador)*

12:30 Discussion

14:30-16:00 | HALL 1A
SESSION 2.3
PROACTIVE RISK MANAGEMENT BASED ON INNOVATIVE MONITORING METHODS
Chairs: **Daniele Giordan** *(Italy)*, **Jean-Philippe Malet** *(France)*

14:30 Integration of surface and subsoil displacement data in the field of slow kinematic landslide. The experience with innovative robotic systems for topographic and inclinometric measurement
Danilo Godone, Paolo Allasia, Diego Guenzi, Alessandro Corsini, Marco Mulas, Giuseppe Ciccarese, Giulia Mereu, Ghiselli Irene, Armando Moretti, Giovanni Truffelli *(Italy)*

14:40 Integrated monitoring for landslide risk mitigation and for the development of sustainable torrent barriers: the case of the Hahnebaum landslide
Diego Guenzi, Paolo Allasia, Danilo Godone, Robert Hofmann, Simon Berger, Fabio De Polo *(Italy)*

14:50 Proactive landslide prevention in quick-clay areas using machine learning and GIS analysis
Cristian Godoy *(Norway)*

15:00 ANSIP_ICS: a 3D scenario illustration platform for preliminary landslide scarp assessment
Yih-Chin Tai, Hock-Kiet Wong, Chih-Ling Wang, Po-Chih Chen *(Taiwan)*

15:10 Use of a ground-based Doppler radar to regulate traffic along a road critically exposed to rockfall hazards
Tommaso Carlà, Giovanni Gigli, Luca Lombardi, Massimiliano Nocentini, Nicola Casagli (Italy)

15:20 Monitoring the surface displacements of a landslide using photogrammetry, convolutional neural network and cross correlation algorithms
Lorenzo Brezzi, Edoardo Carraro, Fabiola Gibin, Fabio Gabrieli, Simonetta Cola, Antonio Galgaro *(Italy)*

15:30 A model for interpreting the deformation mechanism of reservoir landslides in the Three Gorges Reservoir area, China
Zongxing Zou *(China)*

15:40 Discussion

Friday, 17 NOVEMBER 2023

14:30-16:00 | HALL 2A
SESSION 5.6
LANDSLIDES, EARTH DAM AND LEVEE FAILURES DURING RECENT EXTREME PRECIPITATION EVENTS
Chairs: **Daniel Pradel** *(USA)*, **Vít Vilímek** *(Czech Republic)*

14:30 Landslide stabilisation: a case study in the New Forest National Park
Dante Tedesco, Edward Bromhead, Robert Higginson, Nicolas Lambert *(United Kingdom)*

14:40 Perspective from 5 years (2017-2022) of widespread landslide events in Puerto Rico
Stephen Hughes, Alesandra Morales *(Puerto Rico)*

14:50 Failure mechanism of Edenville Dam
Daniel Pradel *(USA)*

15:00 Finite volume method for coupled surface-subsurface flows with geotechnical stability evaluation
Nathan Delpierre, Rattez Hadrien, Soares Frazao Sandra *(Belgium)*

15:10 Flume model test on granular materials flowing into a small fill dam
Yusuke Sonoda, Kotone Tsujimoto, Takeru Matsumoto, Yutaka Sawada *(Japan)*

15:20 Mechanism study of sliding zone formation and fluidization in fine grained soil layers of a rainfall-induced landslide based on ring shear test
Bo Zhang, Fawu Wang, Kongming Yan, Weichao Liu, Jie Gao *(China)*

15:30 Discussion

14:30-16:00 | HALL 3
SESSION 4.3
WEAK POINTS IN LANDSLIDE SUSCEPTIBILITY MODELLING (part II)
Chairs: **Txomin Bornaetxea** *(Spain)*, **Anika Braun** *(Germany)*

14:30 From hillslopes to rivers, accounting for the entire landslide spectrum for inventory, susceptibility and exposure evaluation
Antoine Dille[1], Olivier Dewitte[1], Jente Broeckx[1], Koen Verbist[2], Andile Dube[1], Jean Poesen[1], Matthias Vanmaercke[1] *([1]Belgium, [2]Zimbabwe)*

14:40 2023 National Susceptibility Map of Debris Flows in Norway: new topographical dataset and revised methodology.
Jose Santiago Pullarello, Lena Rubensdotter, Knut Stalsberg *(Norway)*

14:50 Evaluating the posterior predictive capability of landslide susceptibility maps; A case study from Kerala (India)
Kushanav Bhuyan[1], Tanuj Pareek[2], A. Rajaneesh[3], Cees Van Westen[2], Luigi Lombardo[2], K. Sajinkumar[3] *([1]Italy, [2]The Netherlands, [3]India)*

15:00 Beyond model performance: exploring limitations of using a single quantitative performance measure as the primary indicator of model quality
Stefan Steger[1], Alexander Brenning[2], Volkmar Mair[1], Rainer Bell[2], Mateo Moreno[1,2], Pedro Lima[3], Thomas Glade[3], Massimiliano Pittore[1] *([1]Italy, [2]Germany, [3]The Netherlands, [6]Austria)*

15:10 Comparing over and under sampling methods for landslide susceptibility assessment using machine learning models: A case study of Djebahia, Northern Algeria
Zakaria Matougui, Djerbal Lynda, Bahar Ramdane *(Algeria)*

15:20 Including climate and urban change in landslide susceptibility maps: scaling-up mechanistic hillslope-scale modelling using stochastic methods
Elisa Bozzolan[1], Elizabeth Holcombe[2], Francesca Pianosi[2], Thorsten Wagener[3], Ivan Marchesini[1], Massimiliano Alvioli[1] *([1]Italy, [2]United Kingdom, [3]Germany)*

15:30 Landslide hazard assessment in the Colombian Andes
Edier Aristizabal, Edwin García *(Colombia)*

15:40 Discussion

14:30-16:00 | HALL 3A
SESSION 5.2
LANDSLIDES IN THE COLD REGIONS AND EXTREMES (part II)
Chairs: **Costanza Morino** *(France)*, **Giulia Magnarini** *(United Kingdom)*

14:30 Landslide susceptibility zonation in permafrost regions of Northeast China considering the influence of permafrost thaw
Wei Shan, Yan Wang, Ying Guo *(China)*

14:40 Mass wasting on planetary bodies - the role of volatiles
Susan Conway *(France)*

14:50 Combining numerical and machine learning models for the detection of landslides inside lunar craters
Vasil Yordanov *(Italy)*

15:00 Understanding slope instability mechanisms in permafrost environments
Sylvain Fiolleau, Sebastian Uhlemann, Stijn Wielandt, Baptiste Dafflon *(USA)*

15:10 Multistage evolution, a long prehistory and permafrost degradation - Revisiting the giant tsunamigenic 2000 AD Paatuut landslide in Greenland
Kristian Svennevig[1], Marie Keiding[1], Costanza Morino[2], Erik Sørensen[1], Finn Lovholt[3], Sylfest Glimsdal[3]
([1]Denmark, [2]France, [3]Norway)

15:20 Movement process, dynamic characteristics and engineering countermeasures of landslides caused by permafrost thawing in Northeastern China - a case study in K178+550 landslide of Beian-Heihe Expressway
Ying Guo, Yating Du, Yan Wang, Wei Shan *(China)*

15:30 Discussion

Friday, 17 NOVEMBER 2023

14:30-16:00 | HALL 4
SESSION 4.6
LANDSLIDES IN URBAN ENVIRONMENTS (part II)
Chairs: **Roberto Sarro** *(Spain)*, **Mateja Jemec Auflic** *(Slovenia)*

14:30 Rain-triggered landslides in urban contexts of Coastal South-Central Chile
Francisco Castro, Edilia Jaque, Alfonso Fernández *(Chile)*

14:40 The water level fluctuation effect in landslide stability and triggering in dams, susceptibility mapping: a case study in Beni Haroun dam (Mila, Algeria)
Hallal Nassim, Hamidatou Mouloud *(Algeria)*

14:50 Impact of greening irrigation on potential slope instability surrounding urban areas: a case study on a mudstone landslide in September 2022, Qinghai, China
Ye Chen, Fawu Wang, Kongming Yan *(China)*

15:00 Assessing the impact of deforestation and forestry industry on landslide probabilty in chile's wildland-urban interface: a case study of Palomares Basin in the metropolitan area of Concepción
Emiliano Vega, Edilia Jaque, Alfonso Fernández, Ianire Galilea *(Chile)*

15:10 Smoothed particle hydrodynamics based numerical modelling of internal erosion-induced subsidence and consequent landslides in hilly regions
Nadia Mubarak, Ritesh Kumar *(India)*

15:20 Adaptation of the vulnerability assessment on geologically complex coast
Sanja Dugonjić Jovančević, Igor Ružić, Nino Krvavica, Čedomir Benac *(Croatia)*

15:30 Unveiling the reliability of multi-scale landslide susceptibility maps and maximizing their potential through fusion
Giandomenico Mastrantoni, Gian Marco Marmoni, Carlo Esposito, Francesca Bozzano, Gabriele Scarascia Mugnozza, Paolo Mazzanti *(Italy)*

15:40 Discussion

Friday, 17 NOVEMBER 2023

16:00-17:00 | HALL 2
CLOSING CEREMONY
Chairs: **Snježana Mihalić Arbanas** - *Chair ICL Network Committee* and **Faisal Fathani** - *ICL Vice-President*

16:00 Bestow of WLF6 PhD Award
for the best oral presentation held by a PhD student

16:10 Speech by the WLF6 Forum Chair and Certificates to new ICL Members
Nicola Casagli - *ICL President and Chair of the 6th WLF*

16:30 Speech by the new ICL President and Introduction of the new ICL officers
Željko Arbanas - *ICL Incoming President*

16:50 Welcome Address to WLF7
Jia-Jyu Dong and **Chih-Chung Chung** - *Chair and Organizer of the 7th World Landslide Forum*

E-POSTER SESSION

THEME 1 - KYOTO LANDSLIDE COMMITMENT FOR SUSTAINABLE DEVELOPMENT

P1.1 Development of landslide susceptibility map for rain-induced landslide by introdusing the factor of safety model in Sri Lanka
Sajith Bandaranayake, Satoshi Goto, Sandaruwan Karunarathne *(Japan)*

P1.2 Observation of slope deformation around the landslide in Athwelthota in Sri Lanka
Shiho Asano, Shogo Morita, Masayuki Ootsuka, D.M.D. Suranga Dissanayake, A.G.R.P. Weerasinghe, S.H.S. Jayakody *(Japan)*

P1.3 Experiments on submarine gravity flows of liquefied sand in a drum centrifuge
Junji Miyamoto, Shinji Sassa, Hikaru Ito, Ryoya Makino *(Japan)*

P1.4 Landslide research and technology in patents and international standards
Matjaž Mikoš *(Slovenia)*

P1.5 Different perceptions and actions of landslide-prone communities with established early-warning systems in the Philippines
Julius Gopez, Kenneth Gesmundo, Arturo Daag, Teresito Bacolcol *(Philippines)*

P1.6 Critically reflecting on engaging communities for establishing community-based early warning systems for landslides
Jesusa Paquibot, Harianne Gasmen, Karl Daniel Begnotea, Jacquelyn De Asis, Melody Teodoro, Roy Albert Kaimo, Pauline Pagaduan, Arturo Daag, Teresito Bacolcol *(Philippines)*

P1.7 The search for little ice age landslides in Britain
Edward Bromhead, Maia-Laura Ibsen, Mark Lee *(United Kingdom)*

P1.8 Landslides in popular culture in the British Isles: examples from fiction
Alan Dykes, Edward Bromhead (United Kingdom)

P1.9 Landslides and risks to cultural heritagE. Arcos de la Frontera and its tangible, landscape and intangible heritage
Marga Zango-Pascual, María-Teresa Gíl-Muñoz, Pilar Montero Vilar, César Velandia Silva *(Spain)*

P1.10 Adopting behavioural theories for landslide risk reduction studies: and overview and future challenges
Pavel Raška *(Czech Republic)*

P1.12 Catastrophic landslides and Victimology. Comparative legal responde in Spain and Italy
Marga Zango-Pascual, Víctor Macías Caro, Pastora García Álvarez, Marta Díaz Vega *(Spain)*

P1.13 Sensitivity analysis of shallow landslide predisposing factors on terraced slopes in the Douro Valley
Susana Pereira, Carlos Bateira, Pablo Valenzuela, Pedro Capella, Fernando Alves, Mário Natário, Joana Valente *(Portugal)*

P1.14 An open-source workflow for the classification and monitoring of river embankments: a case study from the Arno River (Florence, Italy)
Gabriele Fibbi, Stefano Morelli, Riccardo Fanti *(Italy)*

P1.15 Complex monitoring system for the protection of rock-cut cultural monuments of Georgia affected by geo-hydrological hazards
Claudio Margottini[1], Daniele Spizzichino[1], Daniele Giordan[1], Paolo Allasia[1], Martina Cignetti[1], Davide Notti[1], Danilo Godone[1], Giorgi Kirkitadze[2], Tea Munchava[2], Mikheil Lobjanidze[2], Akaki Nadaraia[2], Mikheil Elashvili[2]
([1]Italy, [2]Georgia)

E-POSTER SESSION

P1.16 30 years of cultural heritage landslides and block movements risk assessment: case studies from Egypt
Yasser Elshayeb *(Egypt)*

P1.18 Integrated InSAR monitoring of ground displacement on archaeological structures at the ancient Port of Classe (Ravenna, Italy)
Gabriele Leoni, Federica Ferrigno, Luca Guerrieri, Francesco Menniti, Benedetto Porfidia, Daniele Spizzichino *(Italy)*

P1.19 Multi-scale protection and conservation of UNESCO cultural heritage affected by geo-hydrological hazards
Anna Palamidessi, William Frodella, Emanuele Intrieri, Silvia Bianchini, Veronica Tofani, Riccardo Fanti *(Italy)*

P1.20 Mapping ground instability in medieval villages using combined technologies for the definition of potential landslides scenarios
Stefano Morelli, Mirko Francioni, Roberta Bonì, Mauro De Donatis *(Urbino)*

P1.21 Multisensor remote surveys for the study of landslides affecting the UNESCO World Heritage "Tempio di Giunone" slopes ("Valle dei Templi", Sicily)
Giovanna Pappalardo[1], Simone Mineo[1], Davide Caliò[1], Renato Macciotta[2], Sohrab Sharifi[2], Luigi Maria Caliò[1], Maria Concetta Parello[1] *([1]Italy, [2]Canada)*

THEME 2 - REMOTE SENSING, MONITORING AND EARLY WARNING

P2.1 Fully integrated UAV LIDAR for the monitoring of landslides in Emilia-Romagna region
Giovanni Bertolini *(Italy)*

P2.2 An integrated approach for the study of a large landslide in the Emilia Apennines
Giovanni Bertolini *(Italy)*

P2.3 Long-term monitoring and early-warning of the Sifangbei landslide in the Three Gorges Reservoir Area
Taorui Zeng[1], Kunlong Yin[1], Dario Peduto[2], Thomas Glade[1], Linfeng Wang[1], Zizheng Guo[1], Hongwei Jiang6, Bijin Jin[1], Liyang Wu[1] *([1]China, [2]Italy)*

P2.4 Comparison of C-, X- and L-band differential interferometry response: Dobkovičky landslide case study
Kateřina Fárová, Jan Jelének *(Czech Republic)*

P2.5 Smart boulders for monitoring landslides - A case study from Nepal
Benedetta Dini[1], Georgina Bennett[2], Michael Robert Zordan Whitworth[2], Aldina Franco[2]
([1]France, [2]United Kingdom)

P2.6 Complex slope deformation and displacement patterns in a fjord setting (Vestland county, Norway)
Paula Snook, Thomas Scheiber, Lukas Schild, Stig Frode Samnøy, Alexander Maschler, Lene Kristensen, Hallvard Haanes *(Norway)*

P2.7 Multidisciplinary monitoring of active landslide - Case Study of Ruska Nova Ves Landslide, Eastern Slovakia
Vladimir Greif, Martin Maľa, Jaroslav Buša, Ivan Dostál *(Slovakia)*

P2.8 Analysis of landslide kinematics through Satellite Interferometry: a case study of the Mendatica landslide, Western Liguria, Italy
Saduni Melissa Dahanayaka, Matteo Del Soldato, Francesco Barbadori, Giacomo Pepe, Fabio Arrighetti, Tommaso Macciò, Roberto Macciò, Andrea Cevasco *(Italy)*

P2.9 Landslide monitoring in the town of Seyðisfjörður in the aftermath of the destructive landslide cycle in 2020
Jón Kristinn Helgason, Martina Stefani, Esther Jensen *(Iceland)*

P2.10 Applying LoRa technology on a wide-stream monitoring for landslide
Chihping Kuo, Chihming Liao *(Taiwan)*

E-POSTER SESSION

P2.11 Structural effect of geological setting on slow-moving landslide displacement pattern
Nicusor Necula[1], Silvia Puliero[2], Luca Gandolfo[1], Rinaldo Genevois[1], Mario Floris[1] *([1]Romania, [2]Italy)*

P2.12 Rapid SAR-based landslide detection and mapping
Erin Lindsay, Regula Frauenfelder *(Norway)*

P2.13 Monitoring and early warning of landslides in the Philippines: a case study of rainfall-triggered landslides in Iloilo Province during 2022 severe tropical storm Nalgae
Nathan Azriel Veracruz, Aletheia Amandy, Chad Lowe Aquino, Ann Nichole Dela Victoria, Chatty Mae Go, Rasty Rastrullo, Cathleen Joyce Cordero, Arturo Daag, Teresito Bacolcol *(Philippines)*

P2.14 Determination of landslide kinematics based on UAV photogrammetry with natural field details
Krzysztof Karwacki *(Poland)*

P2.15 Application of statistical clustering technique to diagnose sub-zone activities in potential deep-seated landslide sites
Pi-Wen Tsai, Chih-Yu Kuo, Rou-Fei Chen *(Taiwan)*

P2.16 Subsurface fracture ventilation and gas emission and their relation to rock slope deformation
Alexander Maschler, Paula Snook, Thomas Scheiber, Lukas Schild, Stig Frode Samnøy, Hallvard Haanes, Lene Kristensen *(Norway)*

P2.17 Understanding and reconstruction of the evolution process of the slow-moving landslides in steep canyon
Yao Li, Yifei Cui *(China)*

P2.18 Retrieving two-dimensional kinematics of landslides in Tena Valley using ascending and descending Sentinel-1 datasets
Hengyi Chen[1,2], Roberto Tomas[2], Chaoying Zhao[1] *([1]China, [2]Spain)*

P2.19 Integrated groundwater and slope movements monitoring for the characterization of complex hydrogeoloical processes in deep-seated landslides: an example in the Northern Apennines (Italy)
Marco Mulas, Francesco Ronchetti, Giuseppe Ciccarese, Giovanni Bertolini, Alessandro Corsini *(Italy)*

P2.20 A slope stability analysis of Yusui Stream in Southern Taiwan with mulit-stage remote sensing data
Rou-Fei Chen, Chris Li, Chia-Hsing Chang, Ching-Hsiung Wang, Cheng-Wei Chen *(Taiwan)*

P2.21 Deep-seated landslide activity monitoring of coastal highway in eastern Taiwan using adaptive time-series InSAR with integrating Sentinel-1 and remote sensing data
Ching-Fang Lee, Chen-Wei Lan, Cheng-Han Tsou, Zhao-Wei Chen, Jien-Shiun Jou, Cheng-En Hsieh, Ching-Hsiung Wang *(Taiwan)*

P2.22 Seismic monitoring of karst hydrostructures for geological risk management: preliminary findings from Le Capore and Peschiera springs in the Central Apennines, Italy
Yawar Hussain, Danilo D'Angiò, Guglielmo Grechi, Roberto Iannucci, Gian Marco Marmoni, Stefano Rivellino, Salvatore Martino, Simona Battaglia, Claudio Mineo, Anna Varriale *(Italy)*

P2.23 Field monitoring and kinematic behavior of a multi-sliding zones landslide in the Three Gorges Reservoir area
Chu Xu, Xinli Hu *(China)*

P2.24 Updating landslides' inventory maps in mining areas by integrating InSAR with LiDAR datasets
Liuru Hu[1], Roberto Tomas[1], Xinming Tang[2], Juan López-Vinielles[1], Gerardo Herrera[1], Tao Li[2], Zhi Zhang[2], Xin Li[2] *([1]Spain, [2]China)*

P2.25 Aerial photogrammetry and infrared thermography for the non-contact characterization of rock masses
Simone Mineo, Davide Caliò, Giovanna Pappalardo *(Italy)*

E-POSTER SESSION

P2.26 Analysing multi-temporal 3D point clouds from a permanent terrestrial laser scanner: an application for slow-moving landslides monitoring
Edoardo Carraro[1], Ding Xia[2], Yenny Alejandra Jiménez Donato[1], Francisca Antonia Soto Bravo[1], Robert Kanta[1], Philipp Marr[1], Thomas Glade[1] *([1]Austria, [2]China)*

P2.27 A study on the morphological evolution of Hongye landslide after the 2016 Morantis typhoon event using the airborne LiDAR derived DEM and MT-InSAR techniques
Suet-Yee Au, Guan Wei Lin, Rou-Fei Chen, Chih-Chiao Lin, Yu-Hui Kao, Chun-Lung Wu *(Taiwan)*

P2.28 Measuring slow-moving landslide modifications in bi-temporal Digital Surface Models obtained from historical aerial photographs
Michele Santangelo[1], Lulin Zhang[2], Ewelina Rupnik[2], Marc Deseilligny[2], Mauro Cardinali[1] *([1]Italy, [2]France)*

P2.29 Ambient-noise shear-wave tomography for landslide structural models retrieval from dense seismological arrays
Rimpôt Joachim, Lajaunie Myriam, Zigone Dimitri, Broucke Céleste, Jean-Philippe Malet, Clément Hibert, Catherine Bertrand *(France)*

P2.30 Sparse gradient array: a new approach to self-potential landslide monitoring
Oziel Araujo, Mara Rossi, Massimo Giorgi, Stefano Picotti, Nicola Pellinghelli, Roberto G. Francese *(Italy)*

P2.31 A prediction method for initiation locations of landslides and slope failures by the earthquakes and intense rainfalls
Takashi Saito *(Japan)*

P2.32 Multiparameter geophysical surveys for the site characterization of landslides along the Hockai Fault Zone, East Belgium
Agnese Innocenti[1], Valmy Dorival[2], Yawar Hussain[1], David Caterina[2], Anne-Sophie Mreyen[2], Lena Cauchie[2], Veronica Pazzi[1], Hans-Balder Havenith[2], Riccardo Fanti[1] *([1]Italy, [2]Belgium)*

P2.33 Mobile applications of L-band synthetic aperture radar in alpine environments
Andrea Manconi, Yves Bühler, Othmar Frey, Charles Werner, Urs Wegmüller *(Switzerland)*

P2.34 Regional characterization of periglacial features in alpine environment based on DInSAR phase and permafrost extent
Chiara Crippa, Federico Franzosi, Daniele Codara, Federico Agliardi *(Italy)*

P2.35 Analysis of the unstable slope above Portage Glacier (Alaska) through conventional and remote sensing approaches
Emilie Lemaire[1], Anja Dufresne[1], Pooya Hamdi[1], Bretwood Higman[2], Mylene Jacquemart[3], Jane Walden[3], Florian Amann[1] *([1]Germany, [2]USA, [3]Switzerland)*

P2.36 Global inventory of landslides mobilising ice-cemented ground and their associated landforms
Costanza Morino, Susan Conway *(France)*

P2.38 Erosion dynamics and debris flow hazard in a changing climate: the case of the Dar river, an alpine torrent in Switzerland
Amalia Gutierrez, Marc-Henri Derron, Nicolas Gendre, Christian Gerber, Michel Jaboyedoff, Gabriela Werren *(Switzerland)*

P2.39 Dynamics and connectivity of slow-moving landslides in changing tropical landscapes
Antoine Dille, Matthias Vanmaercke, Benoît Smets, Olivier Dewitte *(Belgium)*

P2.40 The capability of county-level ground motion interferometric services of detecting and monitoring landslides in Alpine regions: the case of Switzerland
Giulia Tessari, Paolo Riccardi, Paolo Pasquali *(Switzerland)*

P2.41 Multi-temporal SAR interferometry technique for studying slope instability phenomena and their evolution
Fabio Bovenga, Ilenia Argentiero, Alberto Refice, Raffaele Nutricato, Davide Nitti, Guido Pasquariello, Giuseppe Spilotro *(Italy)*

E-POSTER SESSION

P2.42 Evaluating unsupervised analysis of large satellite InSAR dataset in the Italian Alpine and Apennine mountain regions
Istvan Szakolczai[1], Davide Festa[1], Tommaso Carlà[1], Federico Raspini[1], Alessandro Novellino[2] *([1]Italy, [2]United Kingdom)*

P2.43 InSAR-based monthly updated ground motion Time Series for detecting velocity changes on active landslides
Séverine Bernardie[1], Marcello De Michele[1], Daniel Raucoules[1], Michael Foumelis[1] *([1]France, [2]Greece)*

P2.44 Analysis of different operational rainfall datasets and their impact on slope stability
Sara Galeazzi, Luca Ciabatta, Diana Salciarini, Luca Brocca, Evelina Volpe *(Italy)*

P2.45 Surface soil moisture estimate by integration of remote sensing and low-cost field sensor network
Alessandro Iacopino, Rossella Bovolenta, Tiziano Cosso, Bianca Federici *(Italy)*

P2.46 A near-real-time and dynamic landslide hazard forecasting framework for the Lower Mekong Region
Nishan Kumar Biswas[1], Miguel Laverde-Barajas[2], Thomas Stanley[1], Chinaporn Meechaiya[2], Pukar Amatya[1], Dalia Kirschbaum[1] *([1]United States, [2]Thailand)*

P2.47 Attempts to determine ground surface displacement using inclinometers on deep-seated landslides risk areas. The case of Nagano Prefecture, Japan, in the Jurassic accretionary prism area
Makoto Matsuzawa *(Japan)*

P2.48 Cell size effect on landslide susceptibility map of Tasikmalaya Regency, West Java Province, Indonesia
Twin Hosea Widodo Kristyanto, Agus Lingga, Urwatul Wusqa *(Indonesia)*

P2.49 Variable suction and its effect on stability at the Ripley landslide near Ashcroft, British Columbia, Canada
Kelvin Sattler, David Elwood, Michael Hendry *(Canada)*

P2.50 Estimation method of long-term landslide movement based on combining tank model and lumped mass damper model
Eisaku Hamasaki[1], Hideaki Marui[1], Gen Huruya[1], Martin Krkač[2], Snježana Arbanas[2] *([1]Japan, [2]Croatia)*

P2.51 Numerical modeling of limestone cliffs at a site of high touristic value
Isabella Serena Liso[1], Lidia Loiotine[1], Gioacchino Francesco Andriani[1], Marc-Henri Derron[2], Giuseppe Diprizio[1], Michel Jaboyedoff[2], Piernicola Lollino[1], Antonella Marsico[1], Mario Parise[1] *([1]Italy, [2]Switzerland)*

P2.52 A catalog for landslide early warning systems
Hiroaki Nakaya[1], Graziella Devoli[2], Mauro Rossi[3], Angel Valdiviezo[4] *([1]Japan, [2]Norway, [3]Italy, [4]Ecuador)*

P2.53 Hydrologic soil monitoring stations installed in Puerto Rico motivated by landsliding during Hurricane Maria
Mason Einbund[1], William Schulz[1], Stephen Hughes[2], Kelli Baxstrom[1], Tania Figueroa[2], Kiara Cunillera[2], Jonathan Perez[2] *([1]USA, [2]Puerto Rico)*

P2.54 A nation-wide prototype warning system for Italy combining rainfall thresholds and landslide risk indicators
Samuele Segoni, Ascanio Rosi, Nicola Nocentini, Francesco Barbadori, Camilla Medici *(Italy)*

P2.55 Prediction of rainfall-induced shallow landslides in pyroclastic deposits through hydrologic controls of slope response to precipitations
Daniel Romàn Quintero, Roberto Greco, Pasquale Marino, Giovanni Santonastaso *(Italy)*

P2.56 Near-real-time seismic monitoring improves deep-seated landslides early warning, Jiuxianping, China
Liang Feng, Bingyu Xin, Xuekun Xiang *(China)*

P2.57 Application of empirical approaches for fast landslide hazard management: the case study of Theilly (Italy)
Alessio Gatto, Francesco Barbadori, Samuele Segoni *(Italy)*

P2.58 Developing a spatiotemporal model to integrate landslide susceptibility and critical rainfall conditions. A practical model applied to Rio de Janeiro municipality
Pedro Henrique Muniz Lima[1], Mateo Moreno[2,3], Stefan Steger[2], Pedro Ivo Camarinha[4], Luiz Carlos Teixeira Coelho[4], Felipe C. Mandarino[4], Thomas Glade[1] *([1]Austria, [2]Italy, [3]The Netherlands, [4]Brazil)*

P2.59 Implementation of an operational Landslide Early Warning System tool for variable antecedent soil hydrological conditions in Campania region (Italy)
Rita Tufano, Daniele Lepore, Domenico Calcaterra, Francesco Fusco, Pantaleone De Vita *(Italy)*

P2.60 Thresholds definition for site-specific landslide with intermittent deformation in reservoir area: a case study at the Shuiwenzhan landslide (China)
Shuangshuang Wu *(China)*

P2.61 Improving the operational effectiveness of physically based models for landslide forecasting through a multi-criterial parametrization of soil properties and evaluation of slope stability risk scenarios: the Florence case study
Greta Morreale, Nicola Nocentini, Elena Benedetta Masi *(Italy)*

THEME 3 - TESTING, MODELLING AND MITIGATION TECHNIQUES

P3.1 Simulating effects of catch pits by analyzing groundwater and slope displacement
Ching-Jiang Jeng, Ta-Cheng Yi, Chihcheng Chen, Chia-Han Tseng *(Taiwan)*

P3.2 On the rheological properties of sedimentary and volcanic soils involved in landslide runout processes
Piernicola Lollino, Fabio Dioguardi, Giovanna Capparelli, Isabella Liso, Francesco Neglia, Roberto Sulpizio, Mario Parise, Pierfrancesco Dellino *(Italy)*

P3.3 A 4D photogrammetric system for laboratory investigation of flow-like landslides
Zhiwei He, Dongfang Liang *(United Kingdom)*

P3.4 Accuracy of soil mechanics laboratory tests and its influence on the results of slope stability analysis
Jakub Roháč, Petr Kycl *(Czech Republic)*

P3.5 Analysis of the infiltration processes on the stability of pyriclastic soil
Giovanna Capparelli, Pasquale Versace, Gennaro Spolverino *(Italy)*

P3.6 Požáry rock field laboratory in Central Czechia - new insights on rock behaviour from multiparametric monitoring
Jan Blahůt, Ondřej Racek, Filip Hartvich, Marco Loche, Matěj Petružálek *(Czech Republic)*

P3.7 Deformation characteristics and failure mechanism of a cut slope in Butuo County, China
Ruichen Zhou, Xiewen Hu, Kun He, Bo Liu, Chuanjie Xi, Yu Zhang *(China)*

P3.8 Study on design and calculation method of double row piles without coupling beam in binary slope
Hua Zhao, Rusong cheng, Xuefeng Tang, Weiguang Yuan *(China)*

P3.9 Paraglacial rock slope failures conditioned by repeated seismicity in Prince William Sound, Alaska
Molly McCreary, Jeff Moore, Erin Jensen, Brian Collins *(USA)*

P3.10 A resistance model considering sliding-flow transformation for rock avalanche dynamics
Jian Guo, Yifei Cui *(China)*

P3.11 A coupled discrete element and Peridynamic model for the rock slope failure simulation
Tao Ni, Xuanmei Fan, Zetao Feng, Jing Zhang *(China)*

P3.12 Detection of dynamic fragmentation in rockfalls: importance of small fragments in fragmentation patterns and deposit distribution
Camilla Lanfranconi, Paolo Frattini, Giovanni Crosta, Fabio De Blasio, Giuseppe Dattola *(Italy)*

P3.13 The Spitze Stei rock instability in Switzerland: modeling and danger assessment using a novel material point method tool
Michael Lukas Kyburz, Betty Sovilla, Robert Kenner, Johan Gaume *(Switzerland)*

E-POSTER SESSION

P3.14 Rockfall hazard mitigation on infrastructures in volcanic slopes using statistical back-analysis. The case study of Gran Canaria, Spain
Mauro Antón-Bayona, Martín Rodríguez-Peces, Jorge Yepes *(Spain)*

P3.15 Experimental and numerical study on the impact force excerted by dry granular flow
Arka Prava Das, Matsushima Takashi, Dominik Krengel *(Japan)*

P3.16 Weakening mechanism of elastic wave-induced grain vibration in rock avalanche
Wei Hu, Huaixiao Gou, Yuangshuai Zheng *(China)*

P3.17 Delimiting rockfall runout zones using reach probability values simulated with Rockyfor3D
Luuk Dorren[1], Frédéric Berger[1,2], Franck Bourrier[2], Nicolas Eckert[2], Charalampos Saroglou[3], Massimiliano Schwarz[1], Markus Stoffel[1], Daniel Trappmann[4], Hans-Heini Utelli[1], Christine Moos[1] *([1]Switzerland, [2]France, [3]Greece, [4]Germany)*

P3.18 Dynamics of erosion and entrainment of the Rock Avalanche Boundary: a large-scale experimental and modeling study
Shilin Zhang[1], Martin Meigili[2], Yueping Yin[1], Xiewen Hu[1], Wenpei Wang[1] *([1]China, [2]Austria)*

P3.19 Landslide in urbanised, data-scarce locations under climate change: how can we quantify the uncertainty in their assessment to support hazard mitigation?
Elisa Bozzolan[1], Elizabeth Holcombe[2], Francesca Pianosi[2], Thorsten Wagener[3] *([1]Italy, [2]United Kingdom, [3]Germany)*

THEME 4 - MAPPING, HAZARD, RISK ASSESSMENT AND MANAGEMENT

P4.1 Landslide evolution in the upper most watershed of Ohmigawa river, central Japan, based on inventory mapping and precise radio carbon dating
Hiroshi Yagi, Go Sato, Ryuji Yamada, Masato Sato *(Japan)*

P4.2 Databases of rock slope failures; setup and experiences from Norway
Vanja Haugsnes, Martina Böhme, Reginald L. Hermanns, Bo Nordahl, Maria Huse Kvam, Ivanna Penna, Jacob Bendle, Marie Bredal, Francoise Noél *(Norway)*

P4.3 The Landslide Counteracting System as a tool for landslide risk reduction and support for public administration in Poland
Paweł Marciniec, Zbigniew Perski, Tomasz Wojciechowski *(Poland)*

P4.4 Landslides triggered by an extraordinary rainfall event in Central Italy on September 15, 2022
Federica Fiorucci, Marco Donnini, Francesco Bucci, Michele Santangelo, Mauro Cardinali, Francesca Ardizzone, Stefano Luigi Gariano, Ivan Marchesini, Massimo Melillo, Paola Salvati, Giuseppe Esposito, Txomin Bornaetxea, Massimiliano Alvioli, Maria Teresa Brunetti, Silvia Peruccacci, Susanna Grita, Omar Althuwaynee, Mina Yazdani *(Italy)*

P4.5 Distribution of shallow landslides in tropical mountains based on high-resolution satellite data and UAV surveys: examples from Caldas and Risaralda Departments, Andes, Colombia
Aleksandra Tomczyk, Marek Ewertowski *(Poland)*

P4.6 Assessment method to the potential landslide barrier lake based on the goemorphological characteristics in Kaoping River, Southern Taiwan
Tien-Chien Chen, Wen-Chi Chang *(Taiwan)*

P4.7 Landslide susceptibility evaluation using the integration approach of physically based analysis results and data-driven method
JungHyun Lee, Hyuck-Jin Park, Minhwan Song, Jeehyeong Kim, Hyoseon Kye, YounTae Kim, JungWon Cha, DongWon Lee, DongHoon Ha *(South Korea)*

E-POSTER SESSION

P4.8 Detecting landslides and flash flood events in data-scarce regional contexts: a methodology developed over the East-African tropics
Axel Deijns[1], David Michea[2], Aline Deprez[2], Olivier Dewitte[1], François Kervyn[1], Wim Thiery[1], Jean-Philippe Malet[2] *([1]Belgium, [3]France)*

P4.9 GIS tools for debris flows runout assessment through geometric approach
Luca Falconi, Lorenzo Moretti, Alessandro Peloso, Claudio Puglisi, Gaia Righini, Augusto Screpanti *(Italy)*

P4.10 Debris flow modelling for flood risk management plans
Matilde Welber, Lorenzo Paci, Matteo Facchini, Carlo Gregoretti, Michele Ferri *(Italy)*

P4.11 Using Python to automatically draw the landslide susceptibility map of earthquake-induced landslides - A case study of the Chi-Chi Earthquake landslide inventory
Kai-Ting Shen, Jia-Jyun Dong, Chia-Han Tseng, Chyi-Tyi Lee, Chen-Yang Lee, Hsiao-Yuan Yin *(Taiwan)*

P4.12 Proposing a top-down data-driven framework to improve NASA's landslide situational awareness system
Aiding Kornejady[1], Iman Islami[1], Meisam Samadi[1], Luigi Lombardo[2] *([1]Iran, [2]Italy)*

P4.14 The national IdroGEO web platform for landslide data collection and sharing
Alessandro Trigila, Carla Iadanza *(Italy)*

P4.15 Mapping release and propagation areas of permafrost-related rockslope failures in the French Alps to identify hot spots for hazard assessment
Maëva Cathala[1], Florence Magnin[1], Ludovic Ravanel[1], Luuk Dorren[2], Zuanon Nicolas[1], Frédéric Berger[1], Franck Bourrier[1], Philip Deline[1] *([1]France, [2]Switzerland)*

P4.16 Study of estimation methods and development of a system for estimating areas at high risk of sediment transport
Naoki Nishimura, Masayuki Matsuda, Hiroaki Nakaya *(Japan)*

P4.17 Update landslide susceptibility modelling - A new framework to compare and update a regional scale landslide susceptibility model
Pedro Henrique Muniz Lima[1], Stefan Steger[2], Helene Petschko[3], Jason Goetz[3], Joachim Schweigl[1], Michael Bertagnoli[1], Thomas Glade[1] *([1]Austria, [2]Italy, [3]Germany)*

P4.18 Upscaling and downscaling landslide susceptibility maps
Miloš Marjanović, Cvjetko Sandić, Uroš Đurić, Biljana Abolmasov *(Serbia)*

P4.19 Exploring functional regression for dynamic modeling of shallow landslides in South Tyrol, Italy
Mateo Moreno[1,2], Thomas Opitz[3], Stefan Steger[1], Luigi Lombardo[2], Alice Crespi[1], Massimiliano Pittore[1], Cees Van Westen[2] *([1]Italy, [2]The Netherlands, [3]France)*

P4.20 Deep Learning-based landslide mapping using multi-sensor satellite imagery
Aiym Orynbaikyzy, Frauke Albrecht, Wei Yao, Simon Plank, Mahdi Motagh, Wandi Wang, Sandro Martinis *(Germany)*

P4.21 Role of baseline landslide inventory on the sensitivity of susceptibility models
Ugur Öztürk *(Germany)*

P4.22 Influence of geo-environmental factors on shallow landslide susceptibility in different environments
Micol Fumagalli, Paolo Frattini, Giovanni Crosta *(Italy)*

P4.23 How to gain knowledge about unconsolidated hillslope material for regional landslide susceptibility studies?
Kurka Margit *(Austria)*

P4.24 Definition of rainfall thresholds for shallow landslides in Colombian tropical mountainous catchments acopling physically-based model TRIGRS and probability density function
Ricardo Jaramillo-Gonzalez, Edier Aristizabal, Edwin García, Roberto José Marín Sánchez *(Colombia)*

P4.25 Calibration and validation of physically based distributed models for shallow landslides prediction
Nicolò Brilli[1], Elena Benedetta Masi[1], Veronica Tofani[1], Federico Di Traglia[2] *([1]Florence, [2]Naples)*

E-POSTER SESSION

P4.26 Data-driven susceptibility assessment integrating predisposing factors derived from engineering geological mapping
Enrico D'Addario[1], Eduardo Oliveira[2], Emanuel D'Eramo[1], Lorenzo Marzini[1], Michele Amaddii[1], Riccardo Giusti[1], Francesco Manetti[1], Leonardo Disperati[1] *([1]Italy, [2]Portugal)*

P4.27 Release areas for shallow landslides on open slope in Norwegian Landscape: method development for landslide risk assessment
Jose Santiago Pullarello, Raymond Eilertsen, Knut Stalsberg, Kari Sletten *(Norway)*

P4.28 The use of rockfall data in statistical analysis and for the validation of rockfall hazard zoning
Sandra Melzner[1], Johannes Hüb[1], Marco Conedera[2], Mauro Rossi[3] *([1]Austria, [2]Switzerland, [4]Italy)*

P4.29 Importance of discontinuity trace mapping in rockfall susceptibility assessments using high-resolution 3D point cloud analysis
Hrvoje Lukačić[1], François Noël[2], Snježana Mihalić Arbanas[1], Michel Jaboyedoff[3], Martin Krkač[1] *([1]Croatia, [2]Norway, [3]Switzerland)*

P4.30 Investigation of the rockfall triggering mechanisms in Slovenia, Europe
Nejc Bezak, Mateja Jemec Auflic, Ula Segina, Matjaz Mikos, Jost Sodnik *(Slovenia)*

P4.31 Source area definition and rockfall modelling in El Hierro (Canary Islands, Spain)
Roberto Sarro[1], Mauro Rossi[2], Paola Reichenbach[2], Rosa María Mateos[1] *([1]Spain, [2]Italy)*

P4.32 Using multi-temporal digital twins of Navagio beach (Zakynthos Island, Greece) for the detection of rock displacements after the 8.9.2022 earthquake
Aliki Konsolaki[1], Emmanuel Vassilakis[1], Stratis Karantanellis[2], Konstantina Asimakopoulou[1], Efthimios Lekkas[1] *([1]Greece, [2]USA)*

P4.33 Technical-economic feasibility study for the reduction of rockfall risk in the locality of St. Magdalena, municipality of Bolzano (Autonomous Province of Bolzano - South Tyrol)
Daniel Costantini, Volkmar Mair, David Mosna *(Italy)*

P4.34 Active landslide mapping in urban mountainous settings through advanced-differential interferometry synthetic-aperture radar time series
Davide Caliò, Simone Mineo, Diego Di Martire, Domenico Calcaterra, Giovanna Pappalardo *(Italy)*

P4.35 Debris flows in urban environments: combining hazard and exposure toward a tailored emergency evacuation response
Raquel Melo[1], José Luís Zêzere[1], Sérgio C. Oliveira[1], Ricardo A.C. Garcia[1], Sandra Oliveira[1], Susana Pereira[1], Aldina Piedade[1], Pedro P. Santos[1], Theo van Asch[2,3] *([1]Portugal, [2]The Netherlands, [3]China)*

P4.36 Qualitative hazard assessment as first step for landslide consideration in urban planning
Jordi Marturià, Pere Buxó, Marc Janeras, Marcel Barbera, Jordi Ripoll *(Spain)*

P4.37 Gestión del riesgo por deslizamientos por lluvias extremas en la ciudad de Arequipa en Perú
Joel Ccanccapa Puma, Alejandro Víctor Hidalgo Valdivia *(Peru)*

P4.38 Risk management for landslides caused by extreme rains in the city of Arequipa in Peru
Joel Ccanccapa Puma, Alejandro Víctor Hidalgo Valdivia *(Peru)*

P4.39 Establishment of mountain disaster prevention countermeasures through landslide risk assessment around mountain wind power generation site
Man-Il Kim, Nam Gyun Kim *(South Korea)*

P4.40 Debris flows risk analysis in the Giampilieri and Briga river basins (SIcily, Italy)
Luca Falconi, Valerio Baiocchi, Lorenzo Moretti, Maurizio Pollino, Claudio Puglisi, Gaia Righini, Giulio Vegliante *(Italy)*

E-POSTER SESSION

P4.41 Physical vulnerability mapping of debris flow in urban areas of Busan, Korea: a hazard level-based rainfall approach using rainfall thresholds, suscepbility maps, and vulnerability curves
Ji Sung Lee[1], Chang Ho Song[1], Ananta Man Singh Pradhan[2], Yun Tae Kim[1] *([1]South Korea, [2]Nepal)*

P.4.42 Semi-quantitative vulnerability of slope-units in terms of building aggregation for potential landslide runout
Ananta Man Singh Pradhan[1], Yun Tae Kim[2], Suchita Shrestha[1], Ji Sung Lee[2] *([1]Nepal, [2]South Korea)*

P4.43 Landslide distribution on Nepalese hill roads: role of existing construction practices and challenge for sustainable development
Prakash Chandra Ghimire *(Nepal)*

P4.44 The rising risk of settlements on large slow-moving landslides
Joaquin Vicente Ferrer, Oliver Korup *(Germany)*

P4.45 Landslide Hazard mapping in Dui Pui Village, Chiang Mai, Thailand
Sato Go[1], Akihiko Wakai[1], Jessada Karnjiana[2], Peerapong Jisangiam[2], Osamu Yokoyama[1], Takatsugu Ozaki[1], Nanaha Kitamura[1] *([1]Japan, [2]Thailand)*

P4.46 Multidisciplinary approach in evaluating hydrogeological risk affecting linear infrastructures: strategies for risk definition and mitigation
Federica Bardi, Marco Bello, Leonardo Bordo, Andrea Cintioni, Flavio Conato, Elena Conigliaro, Gemma Di Martino, Nicla Di Stefano, Federico Draetta, Vincenzo Federico, Verdiana Iorio, Giorgia Ingegneri, Roberto Pizzol, Stefania Vagnozzi, Sara Padulosi *(Italy)*

P4.47 A nation-wide evaluation of the indirect impacts of hydro-geological events on local economies
Samuele Segoni, Stefano Clò, Francesco David *(Italy)*

P4.48 A web application for field data collection aimed at landslide-induced damage assessment
Debora Voltolina[1], Ivan Marchesini[1], Simone Sterlacchini[1], Marco Zazzeri[1], Susanna Grita[1], Marco Donnini[1], Luigi Gariano[1], Massimiliano Alvioli[1], Christian Gencarelli[1], Mohammed Hammouti[1], Txomin Bornaetxea[2], Maria Teresa Brunetti[1], Giuseppe Esposito[1], Paola Salvati[1] *([1]Italy, [2]Spain)*

P4.49 Seamount instabilities of the Mallorca Channel (Western Mediterránean)
Olga Sánchez Guillamón, Juan Tomás Vázquez, Gemma Ercilla, David Casas, Desirée Palomino, Patricia Bárcenas, Natalia Martínez-Carreño, Luis Miguel Fernández-Salas, Maria Gomez-Ballesteros *(Spain)*

P4.50 Grasp submarine landslides: combining geomorphological parameters and geostatistical analyses to assess geohazards in the Italian seas
Marco Bianchini, Nora Markezic, Daniele Casalbore, Daniele Spatola, Silvia Ceramicola, Francesco Latino Chiocci *(Italy)*

P4.51 Geohazard assessment of submarine landslides along the Squillace canyon headwalls, offshore Calabria (Ionian Sea)
Nora Markezic, Silvia Ceramicola, Emanuele Forte, Danilo Morelli *(Italy)*

P4.52 Submarine sedimentary instabilities on the Palomares Continental Margin (W Mediterranean)
David Casas[1], Leire Retegui[1], Ferran Estrada[1], Mariano Yenes[1], José Nespereira[1], Daniele Casalbore[2], Nieves López[1], Gemma Ercilla[1], Francesco Chiocci[2], Javier Idarraga[3], Manuel Teixeira[4], Jackeline Ramos[3] *([1]Spain, [2]Italy, [3]Colombia, [4]Portugal)*

P4.53 Landslides on Mid-Ocean ridges: the Bight Fracture Zone (N Atlantic)
Ferran Estrada, Gemma Ercilla, Irene Alejo, Marta Pérez Arlucea, Miguel Nombela, Maria Copete, Tatiana Glazkova, María Alvarez, Anxo Mena *(Spain)*

P4.54 Characterization of the submarine S- Eufemia slide (Calabro-Tyrrhenian margin, Italy) through the analysis of morpho-bathymetric and seismic data
Daniele Casalbore, Eleonora Martorelli, Alessandro Bosman, Francesco Chiocci *(Italy)*

P4.55 A spatio-temporal approach to evaluate rockfall exposure in Mallorca (Balearic Islands, Spain)
Juan López-Vinielles, Roberto Sarro, Rosa María Mateos, Mónica Martínez Corbella, Cristina Reyes-Carmona, Anna Barra, María Cuevas-González, Juan Antonio Luque, Jorge Pedro Galve, José Miguel Azañón, Oriol Monserrat *(Spain)*

E-POSTER SESSION

P4.56 Efficient intensity measure for landslide vulnerability assessment of hillside buildings
Mahipal Kulariya, Sandip Saha *(India)*

P4.57 A nonstationary extreme value approach to estimating the temporal probability of rainfall induced shallow landslides under climate change
Hyuck-Jin Park, Han-Bin Kim, Jung-Hyun Lee, Jin-Ho Lee, Kwang-Youn Lee *(South Korea)*

THEME 5 - CLIMATE CHANGE, EXTREME WEATHER, EARTHQUAKES AND LANDSLIDES

P5.1 Interconnection of landslides' activation with Mediterranean cyclones. The case of Cephalonia Island, Greece
Constantinos Nefros, Constantinos Loupasakis, Gianna Kitsara, Christos Giannakopoulos *(Greece)*

P5.2 Potential Instability of gas hydrate vs climate change: Chilean margin case study
Umberta Tinivella[1], Michela Giustiniani[1], Ivan Vargas-Cordero[2], Giulia Alessandrini[1] *([1]Italy, [2]Chile)*

P5.3 Effect of warming surface temperature on the occurrence of soil landslides
G.A. Chinthaka Ganepola *(Thailand)*

P5.4 Impact of extreme events related to climate change in montain areas: preliminary results from the Abruzzo region (central Italy)
Andrea Sembroni, Paola Molin *(Italy)*

P5.5 Estimating landslide hazard at the regional scale considering distinct climate change scenarios
Jose Zezere, Eusébio Reis, Susana Pereira, Pedro Santos, Sérgio Oliveira, Ricardo Garcia, Raquel Melo *(Portugal)*

P5.6 Rock slope spatio-temporal strain evolution: from field data to numerical modeling
Ondřej Racek[1], Andrea Morcioni[2], Jan Blahůt[1], Tiziana Apuani[2] *([1]Czech Republic, [2]Italy)*

P5.7 Extreme debris flows events recorded on Roya River triburaties : what challenges does this type of event pose for risk management ?
Raphaël Kerverdo, Marchiel Adrien, Gorini Christian, Lafuerza Sara, Fouache Eric *(France)*

P5.8 Reconstructing changes in debris flow activity on alluvial fans at Plansee (Tyrol, AT) using amphibious methods
Carolin Kiefer, Michael Krautblatter *(Germany)*

P5.9 Projections of landslide hazard across High Mountain Asia
Thomas Stanley, Rachel Soobitsky, Pukar Amatya, Dalia Kirschbaum *(USA)*

P5.10 Characterise thermal properties and quantify non-conductive heat fluxes in mountain permafrost
Samuel Weber, Cicoira Alessandro *(Switzerland)*

P5.11 Can long runout landslides with longitudinal ridges be used as paleoclimatic marker in Iceland and on Mars?
Giulia Magnarini[1], Anya Champagne[1], Costanza Morino[2], Calvin Beck[2], Meven Philippe[2], Francesco Salese[3], Alberto Fairén[3], Armelle Decaulne[2], Susan Conway[2] *([1]United Kingdom, [2]France, [3]Spain)*

P5.12 Flow behaviors and basal normal stresses of rock-ice avalanches in rotating drum expriments
Zhibo Dong, Lijun Su *(China)*

P5.13 Insights from monsoon-triggered landslide timing information derived from Sentinel-1
Katy Burrows[1], Odin Marc[2], Christoff Andermann[3] *([1]Italy, [2]France, [3]Germany)*

P5.14 Numerical calculations and scenario reconstruction of the February 7th, 2021, Chamoli Event
Shobhana Lakhera[1], Michel Jaboyedoff[1], Marc-Henri Derron[1], Ajanta Goswami[2] *([1]Switzerland, [2]India)*

P5.15 Investigating the influence of wildfire on the geotechnical properties of sloping pyroclastic soils
Luca Iervolino, Vito Foresta, Giuseppe Esposito, Fabio Matano, Dario Peduto *(Italy)*

P5.16 Reconstructing landslide history in tephra-mantled hillslopes: an examination of links between seismotectonic activity and landslide frequency
Takashi Kimura, Naoki Sakai *(Japan)*

P5.17 Estimation of seismic parameters of historical earthquakes based on a back-analysis of the Güevéjar landslide, Granada (Spain)
Martín Jesús Rodríguez-Peces, Julio Garzón-Roca, Jose Delgado, José Carlos Román Herrera *(Spain)*

P5.18 A study on preventive measures for earthquake-induced landslides in Republic of Korea
Junpyo Seo, Song Eu, Choongshik Woo *(South Korea)*

P5.19 Regional scale landslide activity intensification inferred from satellite SAR interferometry after triggering events and preparation of following landslide scenario
Benedetta Antonielli, Francesca Bozzano, Patrizia Caprari, Maria Elena Di Renzo, Matteo Fiorucci, Ebrahim Ghaderpour, Roberta Marini, Gian Marco Marmoni, Salvatore Martino, Paolo Mazzanti *(Italy)*

P5.20 Risk assessment and prediction of debris flow disaster in Bailong River Basin, China
Dongxia Yue, Yanyan Zhou *(China)*

P5.21 Using multi-temporal airborne LiDAR digital elevation model for the post-landslide evolution of a deep-seated landslide
Che-Ming Yang, Ting Chen, Yu-Chen Cheng, Jyh-Jong Liao, Yii-Wen Pan *(Taiwan)*

P5.22 Field experiment on the spatial - temporal evolution of soil moisture of a rainfall induced loess landslide: implication for early warning
Shiqiang Bian, Guan Chen, Xingmin Meng, Yan Chong, Yunpeng Yang *(China)*

P5.23 Causes of creeping landslide under long-term disturbances: a case study of the Likan Highway Landslide
Shufen Zhao, Runqiang Zeng, Zonglin Zhang, Xingmin Meng *(China)*

P5.24 Effect of strength attenuation on failure during slope failure evolution
Zonglin Zhang, Runqiang Zeng, Xingmin Meng, Shufen Zhao, Jianhua Ma *(China)*

P5.25 Geomorphological features, evolution process and hazard of potential landslides in complex mountaious landscapes
Wangcai Liu, Yi Zhang, Xingmin Meng, Yuanxi Li, Aijie Wang *(China)*

P5.26 Climate crisis and influence on snowfall in the Italian physical territory in the last thirty years - CLINO1991-2020
Massimiliano Fazzini, Luca Baione, Adriano Raspanti, Paolo Capizzi, Nicola Casagli *Italy)*

THEME 6 - PROGRESS IN LANDSLIDE SCIENCE AND APPLICATIONS

P6.1 A preliminary study on 3D elastic dislocation inversion using high density surface displacement data
Chih-Yu Kuo *(Taiwan)*

P6.2 Basal pore water pressure evolution of rapid fine-grained material flows
Chiara Cesali, Francesco Federico *(Italy)*

P6.3 Exploring different numerical methods to improve the understanding of slow-moving landslides dynamics in Lower Austria
Yenny Alejandra Jiménez Donato[1], Sabatino Cuomo[2], Edoardo Carraro[1], Angela Di Perna[2], Francisca Soto - Bravo[1], Robert Kanta[1], Philipp Marr[1], Thomas Glade[1] *([1]Austria, [2]Italy)*

P6.4 The rock-tower failure mechanism of the Mt. Catiello rock avalanche (Amalfi Peninunsula, southern Italy)
Miriam Limongiello, Domenico Calcaterra, Diego Di Martire, Pantaleone De Vita *(Italy)*

P6.5 Integrated approach for the investigation of slow kinematic landslides: the Vicari case study (Southern Italy)
Chiara Cappadonia, Diego Di Martire, Marco Rosone *(Italy)*

E-POSTER SESSION

P6.6 Numerical modelling of a retrogressive failure in the source area of the Montaguto landslide
Jlenia Cocca, Rita Tufano, Luigi Guerriero, Francesco Maria Guadagno, Paola Revellino *(Italy)*

P6.8 Machine-learning for detection and prediction of cliff failures on the Baltic Sea coast in Mecklenburg–Western Pomerania (Federal Republic of Germany)
Nick Schüßler, Jewgenij Torizin, Michael Fuchs, Karsten Schütze, Kai Hahne, Dirk Kuhn, Claudia Gunkel, Dirk Balzer *(Germany)*

P6.9 Does random forest outperform the generalized additive model? An evaluation based on rainfall-triggered landslides in the Styrian Basin, Austria
Raphael Knevels[1], Zhihao Wang[1], Herwig Proske[2], Philip Leopold[2], Alexander Brenning[1] *([1]Germany, [2]Austria)*

P6.10 Deep learning-based landslide occurrence time detection using SAR
Wandi Wang, Mahdi Motagh, Simon Plank, Aiym Orynbaikyzy, Sigrid Roessner, Zhuge Xia *(Germany)*

P6.11 Detection of precursors to the triggering of gravitational instabilities: multi-parameter chronicles, artificial intelligence and modelling
Olivier Maillard, Catherine Bertrand, Jean-Philippe Malet *(France)*

P6.12 Shallow landslide multi-temporal digital mapping in north-western Italy: a machine Learning approach
Michele Camillo Gabriele Licata, Stefano Faga, Giandomenico Fubelli *(Italy)*

P6.13 Applying extreme gradient boosting model for landslide susceptibility assessments
Paraskevas Tsangaratos, Aikaterini Alexandra Chrysafi, Ioanna Ilia *(Greece)*

P6.14 Constructing real-time monitoring system for roadside landslide prone slope through seismic spectrograms by deep neural network
Jui-Ming Chang, Wei-An Chao, Ming-Wan Huang *(Taiwan)*

P6.15 A coupled hydrological and hydrodynamic modelling approach for estimating the rainfall thresholds of debris flows occurrence
Zhenlei Wei *(China)*

P6.16 Hydrological characteristics triggering a landslide in a natural forested headwater in Taiwan
Wei-Li Liang *(Taiwan)*

P6.17 Estimation of landslide aquifer permeability changes using water level response to atmospheric loading
Zixuan Qin, Jian Guo, Mo Xu *(China)*

P6.18 Stability analysis of the 2019 Brumadinho dam failure
Abouzar Sadrekarimi, Guillermo Riveros *(Canada)*

P6.19 Case study on the impact of vegetation on a landslide initiation under torrential storms
Alessandro Fraccica[1], Enrique Romero[2] *([1]Italy, [2]Spain)*

P6.20 Bioclastesis as triggering factor for rockfalls and rockslides
Angelo Doglioni, Annalisa Albano, Giovanna D'Ambrosio, Vincenzo Simeone *(Italy)*

P6.21 Effect of *Chrysopogon zizanioides* growth on hill slope stability
Vishnu G, Bharat TV *(India)*

P6.22 Volcanic debris avalanche propagation mechanisms and dynamics: field evidence and analogue experiments
Symeon Makris[1], Irene Manzella[2], Matteo Roverato[3,4], Pablo Dávila Harris[5], Alejandro Lomoschitz[6], Paul Cole[1], Alessandro Sgarabotto[1] *([1]United Kingdom, [2]The Netherlands, [3]Italy, [4]Switzerland, [5]Mexico, [6]Spain)*

P6.23 The case study of the big landslide of Pomarico (Basilicata, southern Italy)
Filomena Canora, Angelo Doglioni, Francesco Sdao, Vincenzo Simeone *(Italy)*

E-POSTER SESSION

P6.24 FABRE Consortium activity on landslide risk for bridges according to the Italian guidelines for the risk evaluation and the management for bridges
Lorenzo Brezzi, Francesca Dezi, Angelo Doglioni, Laura Longoni, Fabio Gabrieli, Fabiola Gibin, Nicola Perilli, Erica Cernuto, Arianna Lupattelli, Elisa Mammoliti, Monica Papini, Diana Salciarini, Vincenzo Simeone, Nunziante Squeglia, Paolo Simonini *(Italy)*

P6.25 The Montaguto earth flow: review of the achievements in the last 16-year period (2006-2022) and insights for predicting future activities
Paola Revellino, Daniele Cifaldi, Jlenia Cocca, Christian Formato, Luigi Guerriero2, Rita Tufano, Francesco Maria Guadagno *(Italy)*

P6.26 Remote sensing monitoring of earth-flows: insights and lessons learned from the Pietrafitta case study (Southern Italy)
Davide Mazza, Saverio Romeo, Antonio Cosentino, Paolo Mazzanti, Francesco Maria Guadagno, Paola Revellino *(Italy)*

P6.27 The peculiar case study of Pietracamela, Italy, a village simultaneously affected by rockfalls and deep seated phenomena
Mirko Francioni, Domenico Calcaterra, Diego Di Martire, Luigi Guerriero, Gabriele Scarascia Mugnozza, Nicola Sciarra *(Italy)*

P6.28 Collection and regimentation system for surface and meteoric waters applied directly on the slopes, both sils and rocks in any pedoclimatic condition
Marcello Zarotti *(Italy)*

SIDE EVENTS

Tuesday, 14 NOVEMBER 2023 - PALAZZO DEI CONGRESSI

Wednesday, 15 - Thursday, 16 - Friday, 17 NOVEMBER - PALAZZO DEGLI AFFARI, SECOND FLOOR

EXHIBITION
THE KNOWLEDGE OF THE VAJONT LANDSLIDE THROUGH THE PHOTOS OF EDOARDO SEMENZA

Edited by **Monica Ghirotti, Francesco M. Guadagno, Giovanni Masè, Michele Semenza, Paolo Semenza, Pietro Semenza** and **John J. Clague**

The "Vajont disaster" of 9 October 1963, a paradigm of the catastrophe of human origin, is illustrated through the exceptional photos taken by Prof. Edoardo Semenza before and immediately after the event.
Edoardo Semenza was an engineering-geologist and one of Italian leading landslide researchers. He put his distinctive mark on the understanding of the Alpine range structure, making original contributions to the geology, tectonics and geomorphology of the Dolomites.
Semenza was the geologist who discovered that an ancient landslide mass was present on the southern side of the Vajont valley upstream from the reservoir under construction, years before the beginning of its initial mobilization.
In the images shown in the thirteen roll-ups, the intuitions, growing awareness, and sense of urgency of the man who first recognized the existence of the ancient landslide become evident. They reveal his "mente et malleo" approach, which allowed him to develop a model of the slope and what today we call risk scenarios.
His discovery was immediately taken into consideration by the designer and project managers of the dam, albeit only as a hypothesis to be verified with follow-up research and investigations. Unfortunately, his work, which lasted until 1961, did not prevent the disaster from taking place.
Semenza's photographs therefore allow us to access both his intimate and personal, and professional dimensions.
The landslide is still today the subject of debate and scientific reflection, due to the extraordinary amount of data available, as well as to the corpus of memories, stories, and testimonies that affected communities preserve and continue to build. A part of these materials, taken from the volume and CD "The photos of the Vajont landslide" and from Edoardo Semenza's book on the landslide, is shown in the roll-up banners, and constitutes a contribution to the discussion. Texts, images and captions are selected and adapted from these two publications.
Through this exhibition and a renewed attention to Semenza's work we hope to raise awareness on the fundamental role that the knowledge of geology holds for the respect and protection of the environment.
This exhibition is organized by the Italian Association of Applied and Environmental Geology (AIGA-Associazione Italiana di Geologia Applicata e Ambientale) on the occasion of the 6th World Landslide Forum for the sixtieth anniversary of the Vajont disaster.

SIDE EVENTS

Wednesday, 15 NOVEMBER 2023

08:30-13:00 | PALAZZO DEGLI AFFARI - LIMONAIA

MULTI-RISK SCIENCE FOR RESILIENT COMMUNITIES UNDER A CHANGING CLIMATE - GROUND INSTABILITIES: FROM BACK LEARNING TO FORWARD SCENARIOS IN A MULTIHAZARD RESILIENCE PERSPECTIVE

Speakers: **Salvatore Martino, Francesca Bozzano, Domenico Calcaterra, Diego Di Martire** - *Fondazione RETURN*

The RETURN Project (multi-Risk sciEnce for resilienT commUnities undeR a changiNg climate project) includes research activities on ground instabilities. The objective is returning multihazard scenarios referred to ground instabilities that can be used to plan counter-measures to increase the resilience of urban areas, infrastructures and communities with a view to greater sustainability.
The RETURN project has a three-year duration and began on 1 December 2022. The RETURN activities have now reached the end of the first year which saw a wide selection of previous case studies on the national and international territory, managed to transfer contents learned in terms of know-how and rationales distinguished by process inducing ground instabilities (landslides, subsidence, sinkhole and liquefaction) and by kinematic category (slow or fast). These processes refer to subaerial and underwater environments as well as to different contexts, from mountain to near shore, passing through hilly sectors, plains and coastal areas. The effort to rationalize the learning cases has led to the identification and structuring of functional tools to return degrees of severity (with classes or indices) or intensity (through analytical or functional algorithms) of predisposing, preparatory and triggering factors for ground instabilities, considering the first as time-invariant (i.e., factors controlling the ground instability process) while the second and third as time-dependent respect time windows of medium-long and long duration respectively (i.e., causative processes).
The event is a project workshop opened to the participants of the Return project registered to WLF6 and it is organized to communicate the ongoing results, opening a discussion within the assembly of researchers involved in the project on how to apply the tools identified to date to the reconstruction of scenarios, through the design of a Proof of Concept that expresses the operation in an integral form by type and category of process.

The workshop is open to all the WLF6 participants. A pre-registration is not required, but due to the limited capacity of the meeting room, participants can attend the workshop on a first come first served basis.

SIDE EVENTS

Wednesday, 15 NOVEMBER 2023

13:00-14:00 | PALAZZO DEGLI AFFARI - HALL 1A

ADVANCING GEOHAZARD MONITORING: LEVERAGING SATELLITE RADAR DATA FROM WIDE AREA ANALYSIS TO TARGETED LOCAL STUDIES

Iolanda Iannicella – *TRE ALTAMIRA*

After a slow uptake, spaceborne radar interferometry is becoming a key tool for wide area ground deformation mapping and for monitoring programs. Wide Area Processing (WAP) has enabled users to gain synoptic insights into displacement phenomena across vast territories, exemplified by the achievements of the European Ground Motion Service. These results are paving the way for new environmental monitoring programs, providing information on a variety of natural and anthropogenic hazards. The expanding array of satellite data sources has opened up unprecedented opportunities for interferometric applications, prompting a shift from a static view of the Earth's surface to a continuous stream of space-based ground motion measurements. While WAP primarily relies on medium-resolution Synthetic Aperture Radar (SAR) acquisitions, such as those from the ESA Sentinel-1 constellation or L-Band satellites, it serves as a valuable foundation for identifying unstable regions prone to events like landslides, sinkholes, and subsidence. High-resolution SAR imagery from satellites like COSMO-SKyMed, TerraSAR-X, and PAZ complements Sentinel-1 data, offering a more comprehensive understanding of geohazards. This workshop aims to showcase the potential of satellite interferometric data as potent tools for monitoring and risk management. Through a series of compelling case studies, we will demonstrate how these data can raise awareness among local and regional authorities about the critical need for proactive geohazard mitigation.

A box lunch will be offered to the participants. A pre-registration is required to attend this workshop.

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SIDE EVENTS

Thursday, 16 NOVEMBER 2023

13:00-14:00 | PALAZZO DEGLI AFFARI - HALL 4
LARAM ALUMNI EVENT - FROM 2006, TO TODAY, TOWARDS THE FUTURE

Speakers:
Settimio Ferlisi - *LARAM School, President*
Michele Calvello - *LARAM School, Coordinator*
Sabatino Cuomo - *LARAM School, Coordinator*
Dario Peduto - *LARAM School, Chair Technical Committee*
Past-students of LARAM School - *from 2006*

After attending the LARAM School organized by the University of Salerno (Italy), many lecturers and students of the different annual courses have been meeting, here and there, at various scientific events, including recurrent conferences such as the World Landslide Forums, the International Symposiums on Landslides and the assemblies of the European Geosciences Union. Of particular note is an event organised in 2012 by the University of Salerno in Ravello, Italy, in the form of a general meeting of lecturers and experts related to LARAM, to highlight possible future trends for teaching and research in landslide risk assessment, zoning and management.
At WLF6 in Florence, we decided to gather with (as many as possible) LARAM Alumni. To this aim, the LARAM School is organizing a lunchtime brainstorming session with former LARAM students who are still active in the field and, as such, are participating in this important scientific event. Many of you have achieved prestigious positions in academic institutes or other institutional settings after a few years from the participation in the LARAM course, and therefore face the problems and challenges of landslides on a daily basis.
It will be a rather short lunchtime meeting, but it will be hopefully long enough to launch some topics. A short initial presentation about who we are (who you are now, former LARAM-students), and a word cloud with some ideas will trigger the discussion. Then, we will say goodbye, confident that some of you may take part in the next editions of the LARAM courses as a lecturer, while with the others we will meet in research projects or conferences.

A box lunch will be offered to the participants. A pre-registration is required to attend this workshop.

SIDE EVENTS

Friday, 17 NOVEMBER 2023

13:00-14:00 | PALAZZO DEGLI AFFARI - HALL 2A

HEXAGON "TOTAL MONITORING": USE CASES, NEW TOOLS AND CHALLENGES IN NATURAL HAZARD MONITORING

Speakers:
Matthias Twardzik - *GEO Monitoring / IDS GeoRadar*
Paolo Dallocchio - *Leica Geosystems Italia*
Susanne Wahlen - *Geopraevent AG*

Hexagon AB is the global leader in digital reality solutions, combining sensor, software and autonomous technologies. IDS GeoRadar, Geopraevent and Leica Geosystems represent Hexagon Geosystems' core in terms of technologically advanced solutions, combining monitoring technologies to deliver real-time movement insights: a compound experience of several thousand monitoring projects in over one hundred countries.
During this talk, participants will have the opportunity to acknowledge the Total Monitoring, a concept of using a combination of different technologies to provide reliable information about movements in the monitored area and the most advanced technologies to enhance early-warning and situational awareness: Total Stations, GbInSAR, Radar Doppler, high-end deformation cameras and relevant software.

A box lunch will be offered to the participants. A pre-registration is required to attend this workshop.

HEXAGON

SIDE EVENTS

Friday, 17 NOVEMBER 2023

14:30-16:00 | PALAZZO DEGLI AFFARI - HALL -1

NEW TECHNOLOGIES FOR LANDSLIDE MONITORING AND MAPPING

Speakers:
Luca Guerrieri - *ISPRA*
Giovanni Battista Crosta, Paolo Frattini - *University of Milano Bicocca*
Federico Raspini - *OGS - University of Florence*
Paolo Mazzanti, Gian Marco Marmoni - *Sapienza University*
Rita Tufano - *University of Napoli Federico II*
Chiara Martinello - *University of Palermo*
Settimio Ferlisi - *University of Salerno*

GeoSciences IR is a project funded by NextGenerationEU programme, with the goal of establishing a research infrastructure for the Italian Network of Regional Geological Surveys. The project involves the participation of 16 partners from academic and research institutions.
The GeoSciences IR event at WLF6 aims to present innovative landslide monitoring techniques, methods for landslide mapping and inventories updating, landslide risk analysis and mitigation measures under implementation in the project.

The workshop is open to all the WLF6 participants. A pre-registration is not required, but due to the limited capacity of the meeting room, participants can attend the workshop on a first come first served basis.

GeoSciencesIR

SIDE EVENTS

Saturday, 18 NOVEMBER 2023

10:00-10:30 | EARTH TECHNOLOGY EXPO - FORTEZZA DA BASSO
"LOOKING BEYOND" EXHIBITION

Looking Beyond" is the satellite imagery exhibition promoted by the Italian Ministry of Foreign Affairs and International Cooperation together with the Italian Space Agency and Telespazio/e GEOS and curated by Filippo Maggia.
The exhibition provides an opportunity to reflect on the contribution of satellite technologies to Earth observation, the promotion of sustainable development and the protection of natural and cultural heritage.
The exhibition, made up of images of the COSMO SkyMed satellite constellation from the Telespazio/e GEOS database and the Italian Space Agency, is part of the initiatives promoted by the Ministry of Foreign Affairs and International Cooperation for the integrated promotion of Italy and Made in Italy, travelling around the world to more than 50 countries.
The project will be presented in both physical and digital format at Earth Technology Expo 2023 as part of the promotion of the International Astronautical Congress 2024 in Milan.
The exhibition will be divided into four themes/sections: Agriculture , Cities , Climate Change and Water. The selection of satellite images processed and distributed by e-GEOS – an ASI/Telespazio company and exclusive worldwide distributor of COSMO SKyMed radar data – covering the entire planet, combines the spectacular aspect of the images with their relevance as a study and analysis tool.

The event is hosted by Earth Technology Expo and is therefore free of charge.

EARTH
TECHNOLOGY EXPO

SIDE EVENTS

HERE BE LANDSLIDES: FLORENCE FROM ROMANS UP TO NOW

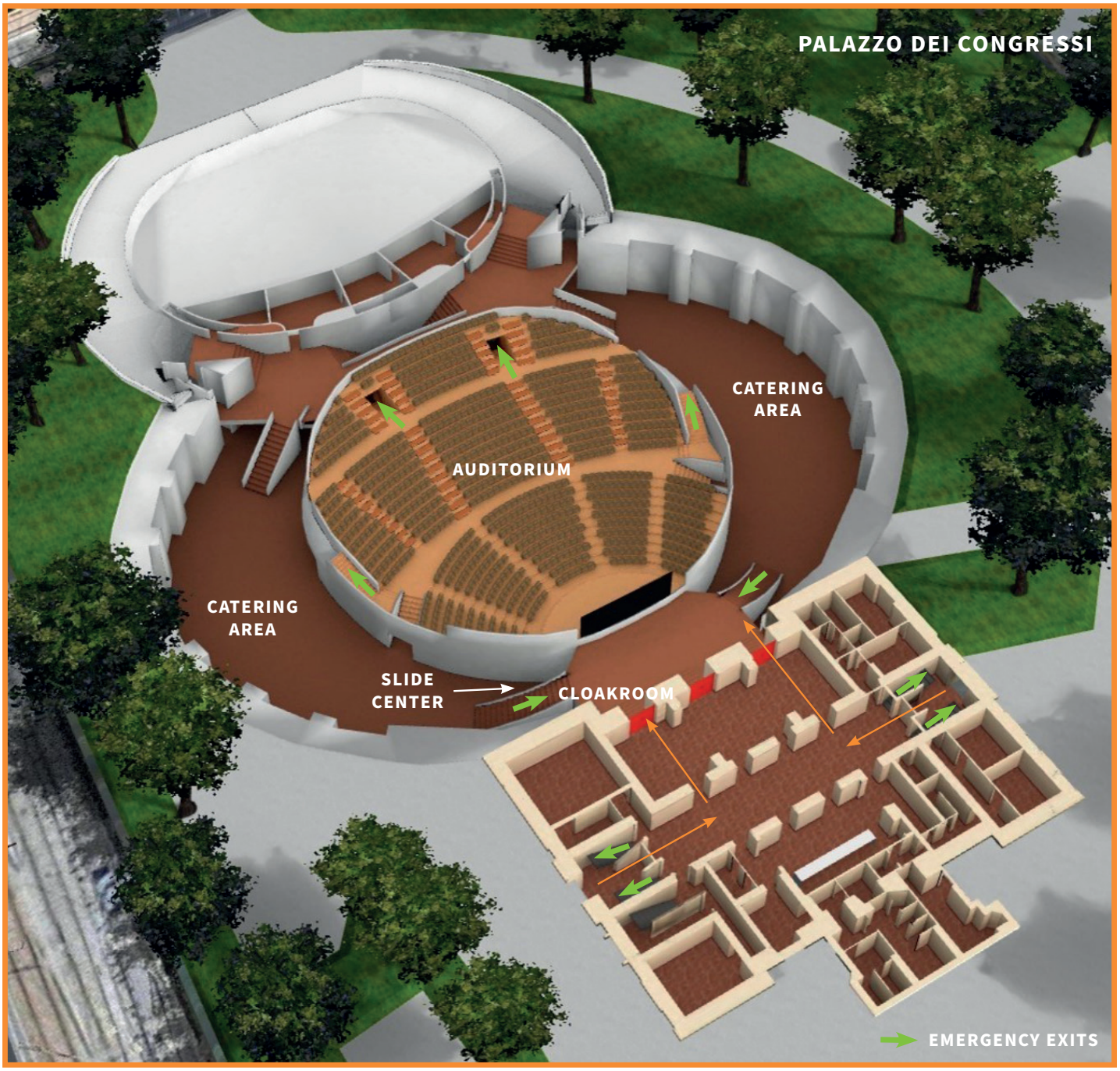
Join our researchers turned local guides in a breathtaking 3-hours walk through striking monuments, anecdotes and spots of Florence. Following the historical footsteps of Leonardo Da Vinci and the powerful Medici family, a non-technical and interactive tour will show the deep interconnections between the local geology and the history of Florence, from its foundation to present time, highlighting some of the most remarkable monuments and palaces built since medieval time: their very stones can tell a fascinating story, often forgotten by the Florentine people, and show hidden scars of ancient and recent hazardous events like floods and landslides.

The visit consists in a short walk in Florence historical center and its surroundings, lasting approximatively 3 hours. The hills nearby "the Old Bridge" (Ponte Vecchio) have been historically affected by landslides that damaged the surroundings of Florence at least since the Renaissance. The lives of several prominent historical figures, including noblemen, artists, and scientists (e.g., Leonardo da Vinci) crossed somehow these landslides: some of these men proposed solutions that are still valid, other risked their lives during a landslide event.
The participants will be shown the local geology of the Florence plain from the most famous panoramic viewpoint of Florence and will be informed of the landslides, floods and construction stones that have shaped the historical city center, their impacts on cultural heritage, and ancient but clever remedial works.
The walk is also a nice and informal stroll through history, anecdotes and even legends featuring UNESCO cultural heritage, sightseeing and beautiful landscapes. If needed, the local guides, geoscientists from the University of Florence, can use an easy and not-technical language, to encourage the participation of accompanying persons.

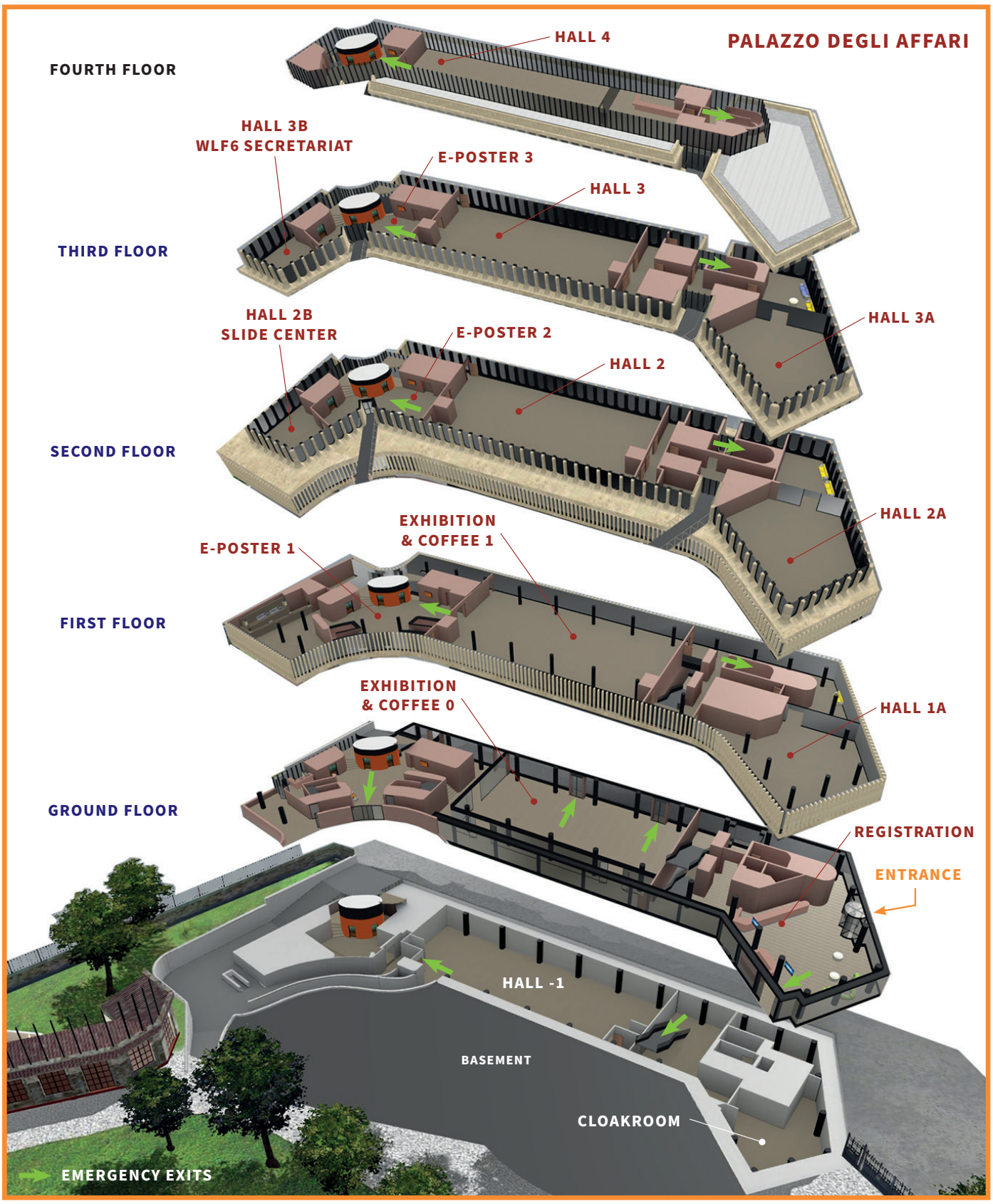
Synthetic Programme:
- Florence 2000 years ago: Romans vs Etrurians in a peculiar geomorphological setting.
- Florence and its river between opportunities and disasters, with memories that only trained eyes can see.
- The spectacular "Piazzale Michelangelo" and its incredible history, forgotten even by Florence people (spoiler: landslides involved).
- High exposure: how humanity risked living without ice cream because of a landslide (or how a landslide gave us ice cream).
- Palaces and churches: the story of famous ancient buildings spoken by their very stones.

Organization:
- This side event is free from charge, but a pre-registration is required.
- The meeting point is in front of the main entrance of Pitti Palace, located in Piazza Pitti. The tour is a loop and will finish near to the meeting point.
- The visit will take place in the following time slots:
  - Monday 13 November – morning (09:30-13:00)
  - Monday 13 November – afternoon (14:00-17:30)
  - Saturday 18 November – morning (09:30-13:00)
  - Saturday 18 November – afternoon (14:00-17:30)

CONGRESS MAP

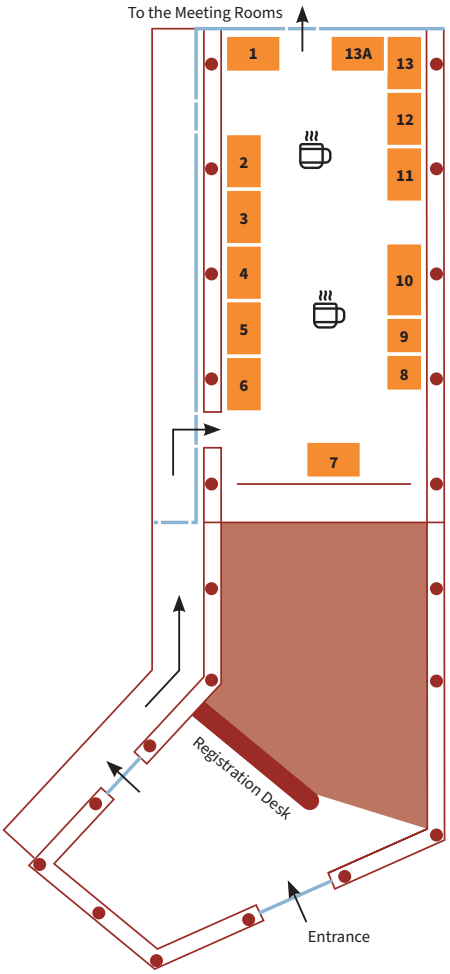


CONGRESS MAP

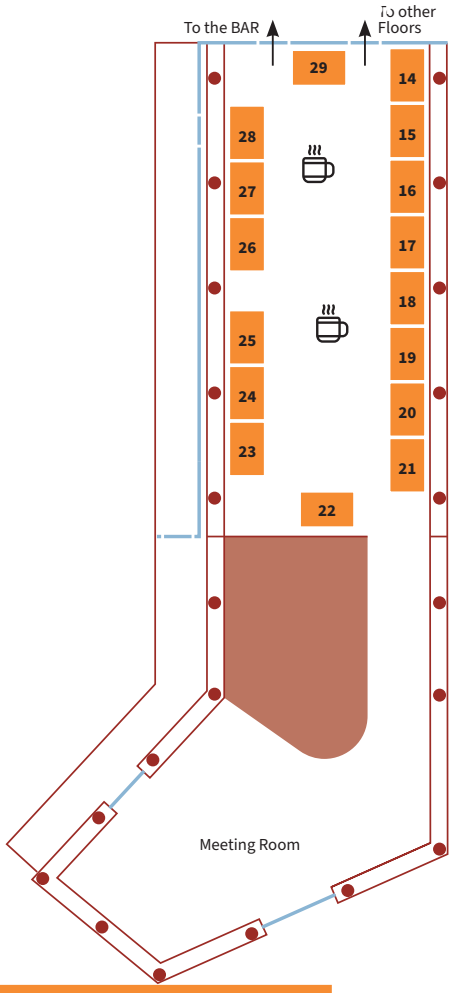


CONGRESS MAP

EXHIBITION AREA 0 - GROUND FLOOR



EXHIBITION AREA 1 - FIRST FLOOR



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NATIONAL INSTITUTE OF OCEANOGRAPHY AND APPLIED GEOPHYSICS – OGS	6
CSG	7
GEORISK ENGINEERING	8
METER	9
LISALAB	10
MICROGEO	11
HEXAGON	12+13+13A
INTERNATIONAL CHARTER SPACE AND MAJOR DISASTERS	14
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Booth 12-13-13A, Ground floor

Friday 17th November H 13.00
"Hexagon Total Monitoring workshop"

LISALAB

THE 20TH ANNIVERSARY

or its 20th anniversary, LISALAB is looking forward meeting you at the World Landslide Forum which ill be held from 14 to 17 November 2023 in Florence, Booth 10 Ground floor.

SALAB, a brand of Ellegi srl, since 2003 produces ground-based synthetic aperture interferometric adar and provides services for monitoring natural hazards and structures. In the last 20 years has ffered its monitoring products and services throughout the world, both in normal operations and in risis and emergency situations.

he WLF will also be an opportunity to present the important restyling of the logo, website and nformation materials. A workshop sharing our twenty years experience in natural hazard and ndslide monitoring will be held on Thursday 16 November 2023 at 13:00.

ome and visit us.

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6th WORLD LANDSLIDE FORUM

2023 FLORENCE ITALY