7TH WORLD LANDSLIDE FORUM INDIA 2026

AMRITA VISHWA VIDYAPEETHAM, FARIDABAD | 22-27 NOV 2026



AGENDA

06 Thematic Areas

44 Technical Sessions

13 Focused Workshops

Plenaries | Distinguished Panels | Forum Lectures | Town Halls

www.wlf7.org

7TH WORLD LANDSLIDE FORUM INDIA 2026

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AGENDA BOOKLET

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06 Thematic Areas

44 Technical Sessions

13 Focused Workshops

THEMES

1. Reducing Landslide Disaster Risk
2. Remote Sensing, Site Investigation, Monitoring and Early Warning
3. Testing, Modelling and Mitigation Techniques
4. Landslide Hazard Mapping, Risk Assessment and Management
5. Progress in Landslide Science and Applications
6. Regional Landslide Case Studies



Sri Mata Amritanandamayi Devi (Amma) with the Deep Earth Probe developed for Amrita's landslide early warning system

सत्यमेव जयते

प्रधानमंत्री
Prime Minister
MESSAGE

It is heartening to know that the World Landslide Forum, now in its 7th edition, is being organised in India for the first time. Greetings to Amrita Vishwa Vidyapeetham and the International Consortium on Landslides for bringing this important global forum to our country. I warmly welcome all the national and international delegates participating in this gathering.

Landslides pose a serious challenge across the world, often causing widespread damage to lives and livelihoods. Mountainous regions across the world are particularly vulnerable. India, too, faces this challenge in regions that are vital to our ecological balance and water security. They are also home to people whose livelihoods are closely linked to their natural surroundings.

The impact of disasters can be greatly reduced when we prepare in advance and take timely action. Over the past decade, India has strengthened its disaster management framework, with greater attention to prevention and preparedness through initiatives such as the National Disaster Management Plan and the National Programme for Landslide Risk Mitigation. Scientific mapping has helped identify vulnerable slopes to ensure sustainable planning in hilly areas. Better forecasting and early warning systems are also enabling authorities to alert people in time and take necessary action.

Through the Coalition for Disaster Resilient Infrastructure, India has taken the initiative to bring countries together for a shared global effort towards disaster-resilient infrastructure. We believe that investments in infrastructure must always keep resilience in mind. Infrastructure built today should serve future generations and withstand the challenges posed by natural disasters. The world can become resilient collectively only when every country is resilient individually. This calls for making disaster resilience an integral part of development planning across the world.

I hope this Forum will advance scientific understanding of landslide risks and promote closer cooperation among countries facing similar challenges. May the exchange of knowledge and experience help translate research into practical measures for protecting people in vulnerable regions and giving them a sense of security.

Best wishes again to Amrita Vishwa Vidyapeetham, the International Consortium on Landslides and all stakeholders for the success of the 7th World Landslide Forum.

(Narendra Modi)

New Delhi
कार्तिक 29, शक संवत् 1948
20 November, 2026

WELCOME ADDRESS

Message from the Forum Chair

ॐ अमृतेश्वर्यै नमः

Dear Delegates, Colleagues and Friends,

It is my great pleasure to welcome you to the Seventh World Landslide Forum, hosted by Amrita Vishwa Vidyapeetham under the aegis of the International Consortium on Landslides (ICL). For the first time in its history, the Forum is being held in South Asia, marking an important milestone for international scientific collaboration. With more than 700 papers and abstracts submitted from 75 countries, this historic gathering reflects our shared commitment to advancing landslide science, strengthening resilience and, above all, protecting human lives.

Landslides remain among the world's most destructive and underestimated natural hazards. In 2024, a record 766 fatal landslides claimed 4,933 lives worldwide. In 2025, another 5,091 lives were lost. Across India, Nepal and the wider Himalayan region, disasters from Wayanad to Kishtwar remind us that the devastation extends far beyond the immediate tragedy. Families lose their homes and livelihoods, communities lose essential infrastructure, and recovery often takes years. Climate change, expanding development and vulnerable slopes make our work increasingly urgent.

Advances in science and technology give us unprecedented opportunities to reduce these risks. Satellite monitoring, artificial intelligence, geotechnical engineering and early warning systems are transforming our ability to anticipate and respond to landslide hazards. The challenge now is to translate these advances into effective action. An early warning saves lives only when it reaches those at risk in time to act. A hazard map serves its purpose only when it guides decisions about where and how communities develop.

The WLF7 scientific programme encompasses six thematic areas: landslide disaster risk reduction; remote sensing, site investigation, monitoring, and early warning; testing, modelling, and mitigation techniques; hazard mapping, risk assessment, and management; advances in landslide science and applications; and regional landslide case studies.

For more than two decades, ICL has fostered a global community dedicated to landslide risk reduction. Through the International Programme on Landslides, its World Centres of Excellence, the journal Landslides, and the Kyoto Landslide Commitment 2020, ICL has strengthened the connection between scientific research, the Sendai Framework, and practical disaster risk reduction. The Kyoto Commitment and the proposed Faridabad Declaration offer an important opportunity to establish new priorities and strengthen international cooperation for the years ahead.

Amrita brings to this partnership a vision inspired by our Chancellor, Sri Mata Amritanandamayi Devi (Amma), who inspires us to dedicate education, research, and innovation in serving those most vulnerable.

Guided by this vision, Amrita began its landslide research in 2006, developing the world's first wireless sensor network for landslide early warning in Munnar, Kerala, and subsequently extending AI-enabled monitoring to Sikkim. We are deeply honoured to have served as an ICL World Centre of Excellence for three consecutive terms.

The success of a Forum of this magnitude rests upon extraordinary collaboration. I extend my sincere appreciation to ICL's leadership, our international theme coordinators, session convenors and reviewers, and the dedicated Amrita faculty, researchers, staff and student volunteers whose tireless efforts have shaped a programme of scientific excellence and global relevance.

As we begin our discussions, I encourage you to look beyond the immediate scientific challenges. How do we extend reliable early warnings to remote mountain communities? How do we involve vulnerable populations in decisions affecting their safety? How do we translate research into stronger policies, safer infrastructure and effective preparedness? Most importantly, how do we ensure that our scientific achievements produce measurable reductions in disaster risk?

Landslides do not recognise national boundaries, and neither should our efforts to address them. I urge researchers, students, policymakers, industry leaders and community representatives to forge partnerships across disciplines, institutions and nations. Our greatest advances will come from combining our knowledge, challenging established assumptions and working toward common goals.

I extend our sincere gratitude to our sponsors, national partners and key collaborators, whose generous support has made this Forum possible. I am grateful to ICL's leadership, our theme coordinators, session convenors and reviewers, and the Amrita faculty, staff and student volunteers who shaped this programme.

As we look ahead, I hope WLF7 will be remembered for the discoveries it inspired, the partnerships it established, and the progress it set in motion. Let us leave Faridabad with renewed determination to ensure that advances in landslide science lead to safer communities and fewer lives lost to preventable disasters.

Om Lokah Samastah Sukhino Bhavantu. Om Shanti, Shanti, Shanti.
(May all beings everywhere be happy. Om peace, peace, peace.)

With warm regards,



Prof. Maneesha Vinodini Ramesh
Forum Chair, Seventh World Landslide Forum
Amrita Vishwa Vidyapeetham

SECRETARIAT CO-CHAIR

Message from the Secretariat Co-Chair

Namaste, everyone,

It is my great honour and pleasure to welcome distinguished scientists, researchers, policymakers, practitioners, and students from across the world to the Seventh World Landslide Forum, hosted by Amrita Vishwa Vidyapeetham in Faridabad from 22 to 27 November 2026.

For India, this gathering holds special significance. Nearly 12% of our land is landslide-prone, extending from the Himalayas in the north and northeast to the Western Ghats and Nilgiris in the south. For those living in these regions, landslide risk is part of daily life. But behind this statistic lies a much more personal reality. Every vulnerable hillside is home to families. Every threatened road connects communities. Every landslide warning carries the possibility of saving lives.

At Amrita, our approach to education and research is deeply influenced by the teachings of our Chancellor, Sri Mata Amritanandamayi Devi, lovingly known throughout the world as Amma, who reminds us to have "the eyes of spirituality and the hands of science." She teaches that there are two kinds of education: education for living and education for life. These teachings have particular meaning for this Forum. Education for living gives us the knowledge and skills to become scientists, engineers, and researchers. Education for life asks us to consider how we use those gifts in service to humanity.

A scientific paper may advance our understanding of a landslide. But when that knowledge helps a mother recognize danger and move her children to safety, our research has achieved something immeasurably greater. That is education for life. Landslide science has made extraordinary advances. Yet its greatest value lies in translating knowledge into action that protects lives and communities. Our theme, "Landslide Science and Practice for Safe and Resilient Communities," reflects this shared responsibility and our commitment to making scientific progress meaningful for those most at risk.

The scientific programme will explore six important themes, from disaster risk reduction and early warning systems to hazard mapping, mitigation, advances in landslide science, and lessons drawn from communities around the world. Our Forum speech and lectures, keynote presentations, leadership dialogues, science-policy discussions, town hall, PhD Forum, and hands-on workshops will bring together people whose knowledge and experience are essential to finding lasting solutions.

The Kyoto Landslide Commitment 2020 has helped guide international cooperation toward reducing landslide disaster risk. The Faridabad Declaration offers an opportunity to strengthen this commitment, recognizing that "reducing disaster risk is both a scientific endeavour and a societal responsibility." As we gather here, I encourage each of you to consider one important question: How will the knowledge we share this week change the lives of people who will never attend a scientific conference, never read our research papers, and may never know our names?

I extend my heartfelt gratitude to our organizing and scientific committees, session convenors, reviewers, secretariat, dedicated staff, student volunteers, and all those whose commitment has made this international gathering possible.

May the friendships formed here become lasting partnerships. May the ideas exchanged inspire new discoveries. And may the commitments made lead to safer communities throughout the world.

With gratitude and warmest wishes, I welcome all of you to Amrita Vishwa Vidyapeetham and the Seventh World Landslide Forum.



Dr. Hemalatha T.
Secretariat Co-Chair, WLF7
Amrita Vishwa Vidyapeetham

WLF7

Committees

HONORARY CHAIR

Sri Mata Amritanandamayi Devi (Amma)
Chancellor, Amrita Vishwa Vidyapeetham, India

FORUM CHAIR

Prof. Maneesha Vinodini Ramesh
Pro Vice Chancellor, Amrita Vishwa Vidyapeetham

FORUM CO-CHAIRS

Prof. Željko Arbanas
Professor, Faculty of Civil Engineering, University of Rijeka, Croatia

Prof. Kyoji Sassa
Professor Emeritus, Kyoto University, Secretary-General of ICL, Japan

Prof. Sudesh Kumar Wadhawan
Adjunct Professor, Amrita Vishwa Vidyapeetham, Formerly Director General Geological Survey of India

Prof. Balaji Hariharan
Deputy Director – Research & International Collaborations, and Professor, Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

STEERING COMMITTEE

Dr. Venkat P. Rangan
Vice-Chancellor, Amrita Vishwa Vidyapeetham, India

Dr. Srinivasa Kumar Tummala
Secretary, Ministry of Earth Sciences (MoES), Government of India

Dr. V. Narayanan
Chairman, Indian Space Research Organisation (ISRO), India

Dr. Krishna Vatsa
Member & Head of Department, National Disaster Management Authority (NDMA), India

Shri Dinesh Vitthalrao Ganvir
Director General, Geological Survey of India (GSI)

Dr. Manoranjan Mohanty
Head, Nano & Advanced Materials Division, Department of Science & Technology (DST), Government of India

Prof. Vinod Chandra Menon
Adjunct Professor, Amrita Vishwa Vidyapeetham, India

Mr. Madhyup Vyas
Executive Director, National Institute of Disaster Management (NIDM), India

SECRETARIAT

Prof. Maneesha Vinodini Ramesh
Pro Vice Chancellor, Amrita Vishwa Vidyapeetham

Dr. Hemalatha Thirugnanam
Secretariat Co-Chair

Mr. Sudarshan Navada
Secretariat Co-Chair

SECRETARIAT MEMBERS

Dr. Nirmala Vasudevan
Associate Professor, Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

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Assistant Professor, Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

Dr. Dhanya Madhu
Assistant Professor, Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

Dr. Raji Pushpalatha
Assistant Professor, School for Sustainable Futures, Amrita Vishwa Vidyapeetham, India

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Mr. Balmukund Singh
Research Associate, Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

INTERNATIONAL SCIENTIFIC COMMITTEE

Prof. Shinji Sassa
Head of Soil Dynamics Group and Research Director, National Institute of Maritime, Port and Aviation Technology, Japan

Prof. Irasema Alcántara-Ayala
Professor, Institute of Geography, National Autonomous University of Mexico

Prof. Matjaž Mikoš
Professor, University of Ljubljana, Slovenia

Prof. Kyoji Sassa
Kyoto University, Secretary General of ICL, Japan

Prof. Maneesha Vinodini Ramesh
Pro Vice Chancellor, Amrita Vishwa Vidyapeetham

Dr. Veronica Tofani
Associate Professor, University of Florence, Italy

Dr. Jan Klimeš
Senior Researcher, Institute of Rock Structure and Mechanics, Czech Academy of Sciences, Czech Republic

Prof. Binod Tiwari
Associate Vice President for Research and Sponsored Programs and Professor, California State University, Fullerton, USA

Prof. Sabatino Cuomo
Professor, University of Salerno, Italy

Dr. Beena Ajmera
Associate Professor, Tennessee Technological University, USA

Prof. S. S. Chandrasekaran
Professor, Vellore Institute of Technology, India

Prof. Biljana Abolmasov
Full Professor, University of Belgrade, Serbia

Dr. Mario Parise
Associate Professor, University of Bari Aldo Moro, Italy

Dr. Dhanya Madhu
Assistant Professor, Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

Prof. Željko Arbanas
Full Professor, University of Rijeka, Croatia

Dr. Hemalatha Thirugnanam
Assistant Professor, Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

Prof. Faisal Fathani
Professor, Gadjah Mada University, Indonesia

Dr. Jonathan Chambers
Team Leader, British Geological Survey, UK

Prof. Chih-Chung Chung
Professor, National Central University, Chinese Taipei

Prof. Xuanmei Fan
Professor, Chengdu University of Technology, China

PRACTICAL DETAILS

General Information

FORUM VENUE

Amrita Vishwa Vidyapeetham,
Faridabad Campus

Mata Amritanandamayi Marg, Sector 88
Faridabad, Haryana - 121002
Delhi NCR, India

REGISTRATION DESK

The registration desk at the Forum Venue is open for badge collection and participant kits:

Sat 21 Nov	4:00 pm - 7:00 pm
Sun 22 Nov	7:00 am - 7:00 pm
Mon 23 Nov	7:00 am - 5:00 pm
Tue 24 Nov	9:00 am - 5:00 pm
Wed 25 - Fri 27 Nov	9:00 am - 12:00 pm

WI-FI

A free Wi-Fi network will be available at the Forum Venue for all WLF7 participants.

Network	wlf7_2026
Password	WLF7@Amrita2026!

OFFICIAL LANGUAGE

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

CATERING FACILITIES

Tea breaks	22nd - 27th: Tea breaks, morning and evening, throughout the Venue.
Lunch	22nd - 27th: Simple, delicious Indian vegetarian, non-vegetarian and western food will be available at the Food Court.
Food Court	22nd - 27th: Various cuisines, including Indian chaat, Chinese, Continental and Western food, will also be available for purchase at the Food Court.

CERTIFICATE OF ATTENDANCE

The certificate of attendance will be sent by email after the forum.

AMRITA EVENTHUB APP

WLF7 updates are available live on the Amrita Eventhub app - for Android, Apple and the web.

Web app eventhub.amrita.edu

Android
Google Play Store
Tap or scan

Apple
App Store (iPhone, iPad and MacBook)
Tap or scan

GALA DINNER

Thursday, 26 November · 7:00 pm – 10:00 pm
BPTP Sanctuary Club
Open the location map or scan

ORGANISING SECRETARIAT

Amrita Vishwa Vidyapeetham, India

Secretariat	secretariat@wlf7.org
Scientific programme	programs@wlf7.org
Registration	info@wlf7.org
Sponsors	sponsors@wlf7.org

WHERE THINGS HAPPEN

Venues

Building	Venue	Floor & Room
Auditorium	**Auditorium**	Auditorium
Outdoor Pavilion	**Research and Impact Pavilion**	Research and Impact Pavilion
Medical College	**Board Room**	Ground Floor - Board Room
Medical College	**Presentation Room 1**	Floor 1 - **PR 1**
Medical College	**Presentation Room 2**	Floor 2 - **PR 2**
Medical College	**Presentation Room 3**	Floor 3 - **PR 3**
Medical College	**Presentation Room 4**	Floor 4 - **PR 4**
Medical College	**Presentation Room 5**	Floor 5 - **PR 5**
Medical College	**Presentation Room 6**	Floor 6 - **PR 6**
Medical College	**Presentation Room 7**	Floor 7 - **PR 7**
Medical College	**Presentation Room 8**	Floor 8 - **PR 8**
Medical College	**Presentation Room 9**	Floor 2 - **PR 9**
Medical College	**Presentation Room 10**	Floor 5 - **PR 10**
Medical College	**Presentation Room 11**	Floor 1 - **PR 11**
Medical College	**Presentation Room 12**	Floor 1 - **PR 12**
Medical College	**Presentation Room 13**	Floor 2 - **PR 13**
Medical College	Presentation Room 14	Floor 2 - **PR 14**
Medical College	**Poster Hall**	Ground Floor - Poster Hall
Outdoor Pavilion	**Food Court**	Food Court (lunch every day)

Gala Dinner (Thursday, 26 November, 7:00 pm): **BPTP Sanctuary Club** – see General Information for the map link.

22–27 NOVEMBER 2026

Programme at a Glance

	Sun 22 Pre-Forum	Mon 23 Opening Plenary	Tue 24 Forum Day	Wed 25 Forum Day	Thu 26 Forum Day	Fri 27 Closing
9:00	Pre-Forum Workshops PR 1-6	**Opening Ceremony 9:00 am – 10:35 am · Auditorium**	Parallel Technical Sessions PR 1-8	Parallel Technical Sessions PR 1-8 PhD Forum Board Room	Parallel Technical Sessions PR 1-8 PhD Forum Board Room	Parallel Technical Sessions PR 1-8
10:30	*Tea & Coffee*	**Tea & Coffee 10:35 am**	*Tea & Coffee*	*Tea & Coffee*	*Tea & Coffee*	*Tea & Coffee*
11:00	Workshops continue (one more starts at 11:00 am · PR 6)	**KLC 2020 General Conference 2026 & High-Level Panel Auditorium**	Keynotes 11:20 am · Auditorium	Keynotes PR 11, PR 12 & PR 13	Keynotes PR 11, PR 12 & PR 13	Keynotes PR 11 & PR 12
12:00	Workshops continue PR 3 & PR 6	**KLC 2020 (continues until 12:30 pm) Inaugural Session 12:40 pm – 1:30 pm · Auditorium**	**Inaugural Program WLF7 Asia Leadership Dialogue · Auditorium**	Parallel Technical Sessions PR 1-8	Parallel Technical Sessions PR 1-8	Parallel Technical Sessions PR 1-8
Lunch Food Court	*12:30 pm - 2:00 pm*	**Lunch 1:30 pm – 2:15 pm**	*1:00 pm - 2:00 pm*	*1:00 pm - 2:00 pm*	*1:00 pm - 2:00 pm*	*1:00 pm - 2:00 pm*
1:30 / 2:00	Workshops from 2:00 pm PR 1, 2, 4 & 5 ICL & IPL BoR / GPC Meeting · Board Room	**Faridabad Declaration 2:15 pm – 2:30 pm · Auditorium**	Asia Leadership Dialogue Panel · Auditorium Keynotes · PR 11 & PR 12 Poster Session · Poster Hall ICL Consultation Meeting · Board Room	Townhall · Board Room Science-Policy Discussion · Auditorium Hydromet & EWS Workshop · PR 12	**Inaugural Program & National Leadership Dialogue Panel 2:30 pm · Auditorium Photography Competition · Poster Hall**	**Closing Ceremony 2:00 pm – 3:30 pm · Auditorium**
2:30	Workshop 3:00 pm - 3:30 pm PR 5	**Forum Speech & Forum Lectures 1-3 2:30 pm – 4:15 pm · Auditorium**				
3:30	*Tea & Coffee*	**Tea & Coffee 4:15 pm**	*Tea & Coffee*	*Tea & Coffee*	*Tea & Coffee*	*High Tea*
4:00	Workshops continue until 5:30 pm - 6:00 pm PR 1, 2, 3 & 5	**Recognition & Awards Ceremony 4:45 pm – 6:15 pm · Auditorium**	Parallel Technical Sessions PR 1-8 PhD Forum Board Room Poster Session · Poster Hall	Parallel Technical Sessions PR 1-8 PhD Forum Board Room Hydromet Workshop · PR 12 LARAM School 5:00 pm · PR 14	Parallel Technical Sessions PR 1-8 PhD Forum Board Room	
Evening					Cultural Programme 5:30 pm · Auditorium Gala Dinner 7:00 pm · BPTP Sanctuary Club	Post-Forum Field Visits Sat 28 Nov – Tue 1 Dec · Kerala and Uttarakhand p. 99

24–27 NOVEMBER 2026

Keynotes at a Glance

TUESDAY, 24 NOVEMBER

11:20 am – 11:40 am
Auditorium

Global Promotion of Understanding and Reducing Landslide Disaster Risk: Five Years on P-LRT and Summary of the Strategic Theme 1 Linked with UN Organizations Precursor, Climate Drivers, and a Novel Landslide-Induced Tsunami Flood Mechanism for the 26 August 2026 Nepal Disaster
Shinji Sassa, Head of Soil Dynamics Group and Research Director, National Institute of Maritime, Port and Aviation Technology, Japan
p. 32

11:40 am – 12:00 pm
Auditorium

Anticipate Landslides and Their Consequences
Fausto Guzzetti, Professor of Hazard and Risk, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom; Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova, Italy
p. 33

2:00 pm – 2:20 pm
Floor 1 · PR 11

A Near Real-Time Forecasting System for Shallow Landslides at Regional Scale
Veronica Tofani, Associate Professor, Department of Earth Sciences, University of Florence, Italy
p. 35

2:00 pm – 2:20 pm
Floor 1 · PR 12

Integrated Landslide Hazard Assessment, Modelling and Real-Time Monitoring for Early Warning: Indian Case Studies
Neelima Satyam, Institute Chair Professor, Department of Civil Engineering, IIT Indore, India
p. 36

2:20 pm – 2:40 pm
Floor 1 · PR 11

Landslide Investigation, Modelling and Mitigation: Scientific Approaches and Engineering Solutions
Shantanu Sarkar, Founder Director, Uttarakhand Landslide Mitigation and Management Center (ULMMC), Government of Uttarakhand, Dehradun, India
p. 35

2:20 pm – 2:40 pm
Floor 1 · PR 12

Leveraging High-Resolution Ensemble Rainfall Forecasts and Uncertainty Quantification for Landslide Early Warning in the Himalaya
V. S. Prasad, Scientist-G and Head, National Centre for Medium Range Weather Forecasting (NCMRWF), Ministry of Earth Sciences, India
p. 36

2:40 pm – 3:00 pm
Floor 1 · PR 11

AI-Linked Models: Turning Observations into Action – from Intelligent Sensing to Predictive Landslide Resilience
Hemalatha T., Assistant Professor, and Nitin Kumar M., Research Associate, Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India
p. 36

2:40 pm – 3:00 pm
Floor 1 · PR 12

Seismic Characteristics of the Rock Failure, Debris Flow and Flood of 26 August 2026 at the Nepal Tibet Border Recorded by the National Seismological Network of India
G. Suresh, Director, National Center for Seismology, Ministry of Earth Sciences, India
p. 37

WEDNESDAY, 25 NOVEMBER

11:00 am – 11:20 am
Floor 1 · PR 11

Geotechnical Investigations on Cut Slope Failures and Impact on Infrastructure in the Western Ghats, India
S. S. Chandrasekaran, Professor, School of Civil Engineering, Vellore Institute of Technology (VIT), Vellore, India
p. 53

11:00 am – 11:20 am
Floor 1 · PR 12

Effective Prediction of Earthquake-Induced Slope Displacements, Considering Region-Specific Seismotectonic and Climatic Conditions
Hans-Balder Havenith, Chair en Géologie, Université de Liège, Belgium, and Aadityan Sridharan, Amrita Vishwa Vidyapeetham, India
p. 54

11:00 am – 11:30 am
Floor 2 · PR 13

Building Resilient Roads in Himalayas
Lt. Gen. Harpal Singh, AVSM, VSM, Director General, Border Roads Organisation (BRO), India
p. 55

11:20 am – 11:40 am
Floor 1 · PR 11

Building Reliable Landslide Early Warning Systems: Field Challenges, Operational Experiences, and Future Directions
Sangeeth Kumar, Associate Professor, Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India
p. 53

11:20 am – 11:40 am
Floor 1 · PR 12

CSIR-CRRI Case Studies on Landslide Mitigation: Engineered and Nature-Based Solutions
P. S. Prasad, Chief Scientist, Geotechnical Engineering, CSIR-Central Road Research Institute, New Delhi, India
p. 55

11:30 am – 12:00 pm | Floor 2 · PR 13
Why Do Impact-Based Warnings Matter in Multi-Hazard Scenarios? The Role of Real-Time Dynamic Risk Management Tools and Techniques When Hazards Interact p. 56
Hari Chandana Ekkirala and Dhanya Madhu, Assistant Professors, Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

11:40 am – 12:00 pm | Floor 1 · PR 11
Landslide Disasters: Case Studies and Lessons for Strengthening Policy, Infrastructure Resilience and Capacity Building p. 54
Amir Ali Khan, Professor and Head, Resilient Infrastructure Division, National Institute of Disaster Management (NIDM), India

11:40 am – 12:00 pm | Floor 1 · PR 12
Analysis of the Initiation Mechanism and Activity of an Old Rock Avalanche at the Contact of Limestone and Flysch Rock Mass p. 55
Željko Arbanas, Professor Emeritus, Faculty of Civil Engineering, University of Rijeka, Croatia

THURSDAY, 26 NOVEMBER

11:00 am – 11:20 am | Floor 1 · PR 11
From Static Susceptibility to Dynamic Resilience: Advancing Landslide Hazard Mapping, Risk Assessment, and Management in Mountainous Terrain p. 72
Sahilendra Singh, Deputy Director General & RMH-IV, Northern Region, Geological Survey of India (GSI)

11:00 am – 11:20 am | Floor 1 · PR 12
Remote Sensing to Map, Measure and Monitor Landslides in India p. 73
Tapas Ranjan Martha, Senior Scientist and Head, Geohazards and Mineral Exploration Division, National Remote Sensing Centre (NRSC), ISRO, India

11:00 am – 11:30 am | Floor 2 · PR 13
Role of Indian Standards in Landslide Risk Reduction and Resilient Infrastructure Development p. 74
Dwaipayan Bhadra, Scientist- F & Head, Bureau of Indian Standards, India

11:20 am – 11:40 am | Floor 1 · PR 11
From Sensors to Systems: Modern Geotechnical Instrumentation Applications in Slope Stability Monitoring p. 72
Anuj Sharma, Managing Director, Campbell Scientific India Pvt. Ltd., India

11:20 am – 11:40 am | Floor 1 · PR 12
Interaction of Flow-Like Landslide with Structures: Centrifuge Tests and Numerical Modelling p. 73
Sabatino Cuomo, Professor of Geotechnical Engineering, University of Salerno, Italy

11:30 am – 12:00 pm | Floor 2 · PR 13
Title to be announced p. 74
D. R. Pattanaik, Scientist G & Head, Regional Meteorological Centre, New Delhi, India Meteorological Department (IMD)

11:40 am – 12:00 pm | Floor 1 · PR 11
From Field Measurements to Actionable Warnings: Himalayan Lessons for Scalable Landslide Early Warning p. 72
Kala Venkata Uday, Professor of Geotechnical Engineering, IIT Mandi; Chairperson, C3DAR, India

11:40 am – 12:00 pm | Floor 1 · PR 12
Application of AI and Drone for Landslide Management p. 73
Prabaharan Poornachandran, Professor and Director, Centre for Internet Studies and Artificial Intelligence (CISAI), Amrita Vishwa Vidyapeetham; Innspark Solutions Pvt. Ltd., India

FRIDAY, 27 NOVEMBER

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Between the Borehole and the Warning: Four Gaps in Landslide Risk Reduction p. 92
Nirmala Vasudevan, Associate Professor, Department of Physics, Amrita Vishwa Vidyapeetham, India

11:00 am – 11:20 am | Floor 1 · PR 12
Understanding the Surficial and Subsurface Dynamics in Landslide-Prone Areas in India: A Geophysical, Geological and Remote Sensing Perspective p. 94
E. Chandrasekhar, Professor of Geophysics, Department of Earth Sciences, IIT Bombay, India

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Understanding and Managing Landslide Risk: Insights from AI-Based Modelling, Geotechnical Experiments and Field Investigations for Early Warning and Mitigation p. 93
Sreevalsa Kolathayar, Associate Professor, NIT Karnataka (NITK), Surathkal, India

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Securing the Terrain: PFEPL's Decades-Long Legacy in Landslide Hazard Resilience p. 94
Tabish Kalsekar, Vice President, Pioneer Foundation Engineers Pvt. Ltd. (PFEPL), India

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An Integrated Approach to Landslide Risk Reduction for Climate-Resilient Infrastructure p. 93
Ratnakar R. Mahajan, Director, Technical Excellence, Maccaferri India

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Naval Kishore Ray, Vice President - Geosynthetics, Garware Technical Fibres Ltd., India

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DAY 1 · SUNDAY

22 November 2026

Pre-Forum Workshops & Meetings

AT A GLANCE

9:00 am – 12:30 pm	**Workshop:** Multi-Hazard Risk Assessment (MHRA)	Floor 1 · PR 1
9:00 am – 12:30 pm	**Workshop:** Landslide Prediction, Satellite Data, and Digital Twins	Floor 2 · PR 2
9:00 am – 5:30 pm	**Workshop:** AI for Landslides	Floor 3 · PR 3
9:00 am – 12:30 pm	**Workshop:** From Imagery to Impact: GeoAI and Earth Observation for Smarter Disaster Management	Floor 4 · PR 4
9:00 am – 12:30 pm	**Workshop:** Natural Hazards and Mental Health: Finding Solutions to an Underexplored Issue	Floor 5 · PR 5
9:00 am – 10:30 am	**Workshop:** Strengthening Manuscript Writing Skills: Strategic Tips and Target Journal Fit	Floor 6 · PR 6
11:00 am – 1:00 pm	**Workshop:** Publishing Workshop from a Journal Executive Editor's Perspective	Floor 6 · PR 6
2:00 pm – 5:30 pm	**BoR & GPC Meeting:** Board of Representatives (BoR) and Global Promotion Committee (GPC): Meetings of the International Consortium on Landslides (ICL) and the International Programme on Landslides (IPL)	Ground Floor · Board Room
2:00 pm – 5:30 pm	**Workshop:** Landslide Risk Assessment	Floor 1 · PR 1
2:00 pm – 5:30 pm	**Workshop:** Using InSAR and AI for Slow-Moving Landslides	Floor 2 · PR 2
2:00 pm – 3:30 pm	**Workshop:** Advancing Landslide Mitigation Strategies with TRE ALTAMIRA's Satellite InSAR Framework	Floor 4 · PR 4
3:00 pm – 3:30 pm & 4:00 pm – 6:00 pm	**Workshop:** Psychosocial Care Integration in Landslide Risk Reduction – An Interdisciplinary Approach to Resilience	Floor 5 · PR 5

9:00 am PRE-FORUM WORKSHOPS

Workshop 9:00 am – 12:30 pm — Floor 1 · **PR 1**

Multi-Hazard Risk Assessment (MHRA)

Facilitator 1: Prof. Cees J. van Westen, Full Professor, Multi-Hazard Risk Dynamics, Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, The Netherlands

Facilitator 2: Dr. Ashok Dahal, Assistant Professor, Department of Applied Earth Sciences, Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, The Netherlands

Facilitator 3: Dr. Sai Hari Chandana Ekkirala, Assistant Professor, Amrita Center for Wireless Networks & Applications, Amrita Vishwa Vidyapeetham, India

Workshop 9:00 am – 12:30 pm — Floor 2 · **PR 2**

Landslide Prediction, Satellite Data, and Digital Twins

Facilitator 1: Dr. Maria Teresa Brunetti, Senior Research Scientist, Consiglio Nazionale delle Ricerche (CNR), Istituto di Geoscienze, Italy

Facilitator 2: Dr. Massimo Melillo, Research Scientist, Consiglio Nazionale delle Ricerche (CNR), Istituto di Geoscienze, Italy

Facilitator 3: Dr. Dhanya M., Assistant Professor, Amrita Center for Wireless Networks & Applications, Amrita Vishwa Vidyapeetham, India

Workshop **9:00 am – 5:30 pm** Floor 3 · **PR 3**

AI for Landslides

Facilitator 1: Dr. Ankur Kumar, Research Scientist I, Earth System Science Center, The University of Alabama in Huntsville, NASA IMPACT, USA

Facilitator 2: Dr. Rajat Shinde, Computer Scientist, Office of Data Science and Informatics (ODSI), NASA Marshall Space Flight Center (MSFC); The University of Alabama in Huntsville (UAH), USA

Facilitator 3: Dr. Hemalatha T., Assistant Professor, Amrita Center for Wireless Networks & Applications, Amrita Vishwa Vidyapeetham, India

Workshop **9:00 am – 12:30 pm** Floor 4 · **PR 4**

From Imagery to Impact: GeoAI and Earth Observation for Smarter Disaster Management

Facilitator 1: Smt. Shreya Roy, Manager – Imagery, Esri India

Facilitator 2: Shri Abhishek Yadav, Engineer – Imagery, Esri India

Facilitator 3: Smt. Ishita Monga, Senior Engineer – Imagery, Esri India

Facilitator 4: Shri Shubham Nain, Analyst – GeoAI, Esri India

Workshop **9:00 am – 12:30 pm** Floor 5 · **PR 5**

Natural Hazards and Mental Health: Finding Solutions to an Underexplored Issue

Facilitator 1: Dr. Vinita Sharma, Assistant Professor, Richard M. Fairbanks School of Public Health, Indiana University Indianapolis, USA

Facilitator 2: Dr. Daniel P. Johnson, Associate Professor of Geography and Director of Academic Research, The Polis Center, Indiana University Indianapolis, USA

Facilitator 3: Prof. Stephen L. Boehm, Professor of Psychology and Executive Director, Indiana University Institute for Human Health and Wellbeing, Indiana University Indianapolis, USA

Facilitator 4 (Resource Person): Dr. Shiva Pratap Gopakumar, Associate Professor, Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, India

Workshop **9:00 am – 10:30 am** Floor 6 · **PR 6**

Strengthening Manuscript Writing Skills: Strategic Tips and Target Journal Fit

Facilitator: Prof. Binod Tiwari, Associate Vice President for Research and Sponsored Programs and Professor, Department of Civil and Environmental Engineering, California State University, Fullerton, USA

10:30 am – 11:00 am TEA & COFFEE BREAK Each Floor

11:00 am PRE-FORUM WORKSHOPS

Workshop **11:00 am – 1:00 pm** Floor 6 · **PR 6**

Publishing Workshop from a Journal Executive Editor's Perspective

Facilitator: Prof. Bruce D. Malamud, Wilson Chair of Hazard and Risk, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom

12:30 pm – 2:00 pm LUNCH BREAK Food Court

2:00 pm ICL & IPL BOR / GPC MEETING · PRE-FORUM WORKSHOPS

BoR & GPC Meeting **2:00 pm – 5:30 pm** Ground Floor · **Board Room**

Board of Representatives (BoR) and Global Promotion Committee (GPC): Meetings of the International Consortium on Landslides (ICL) and the International Programme on Landslides (IPL)

Workshop **2:00 pm – 5:30 pm** Floor 1 · **PR 1**

Landslide Risk Assessment

Facilitator 1: Prof. Fausto Guzzetti, Professor of Hazard and Risk, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom; Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova, Italy

Facilitator 2: Dr. Paola Salvati, Senior Research Scientist, Istituto di Ricerca per la Protezione Idrogeologica (IRPI), Consiglio Nazionale delle Ricerche (CNR), Perugia, Italy

Facilitator 3: Prof. Bruce D. Malamud, Wilson Chair of Hazard and Risk, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom

Facilitator 4: Dr. Veronica Tofani, Associate Professor, Department of Earth Sciences, University of Florence, Firenze, Italy

Facilitator 5: Dr. Raji P., Assistant Professor, Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri, India

Workshop **2:00 pm – 5:30 pm** Floor 2 · **PR 2**

Using InSAR and AI for Slow-Moving Landslides

Facilitator 1: Dr. Ashok Dahal, Assistant Professor, Department of Applied Earth Sciences, Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, The Netherlands

Facilitator 2: Dr. Sabari Ramesh, Assistant Professor, Amrita Center for Wireless Networks & Applications, Amrita Vishwa Vidyapeetham, India

Workshop **2:00 pm – 3:30 pm** Floor 4 · **PR 4**

Advancing Landslide Mitigation Strategies with TRE ALTAMIRA's Satellite InSAR Framework

Facilitator 1: Shri Arjun Bhagwat, Business Development Lead, TRE ALTAMIRA, India

Facilitator 2: Dr. Andrea Tamburini, Geologist and Geomatics Specialist, TRE ALTAMIRA, Italy

3:00 pm PRE-FORUM WORKSHOPS

Workshop **3:00 pm – 3:30 pm & 4:00 pm – 6:00 pm** Floor 5 · **PR 5**

Psychosocial Care Integration in Landslide Risk Reduction – an Interdisciplinary Approach to Resilience

Facilitator 1: Dr. Jayakumar C., Additional Professor, Department of Psychosocial Support in Disaster Management, National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, India

Facilitator 2: Smt. Akhila V. R., Doctoral Scholar, Department of Psychosocial Support in Disaster Management, National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, India

3:30 pm – 4:00 pm TEA & COFFEE BREAK Each Floor

OPENING PLENARY

Opening Ceremony

Landslide Science and Practice for Safe and Resilient Communities

9:00 am – 10:35 am AUDITORIUM

9:00 am **Lighting of the Lamp**

9:05 am **Opening Address from the Primary Organisers**

- Welcome Address by Dr. P. Venkat Rangan, Vice Chancellor, Amrita Vishwa Vidyapeetham
- Welcome Address by Prof. Željko Arbanas, President, International Consortium on Landslides (ICL)

9:25 am **Greetings from United Nations Organisations**

- Prof. Tshilidzi Marwala, Under-Secretary-General of the United Nations and Rector, United Nations University (UNU)
- Shri Kamal Kishore, Special Representative of the United Nations Secretary-General for Disaster Risk Reduction and Head, United Nations Office for Disaster Risk Reduction (UNDRR)
- Prof. Celeste Saulo, Secretary-General, World Meteorological Organization (WMO)
- Prof. Denise Pires de Carvalho, Assistant Director-General for Natural Sciences, United Nations Educational, Scientific and Cultural Organization (UNESCO)

9:40 am **Greetings from Scientific Organisations**

- Prof. Alik Ismail-Zadeh – Chair of the Scientific Committee for Integrated Research on Disaster Risk (IRDR), delivering greetings on behalf of the International Science Council (ISC)
- Prof. Hassina Mouri, President, International Union of Geological Sciences (IUGS)
- Dr. Virendra M. Tiwari, Bureau Member, International Union of Geodesy and Geophysics (IUGG)

10:00 am **Welcome Messages from National Agencies**

- Dr. Srinivasa Kumar Tummala, Secretary, Ministry of Earth Sciences (MoES), Government of India
- Dr. Krishna S. Vatsa, Member and Head of Department, National Disaster Management Authority (NDMA), Government of India

10:35 am – 11:00 am **TEA & COFFEE BREAK**

OPENING PLENARY

KLC 2020 General Conference 2026

Kyoto Landslide Commitment 2020 (KLC 2020) General Conference 2026, High-Level Panel Discussion

11:00 am – 12:30 pm **AUDITORIUM**

11:00 am **Forum Speech** by Dr. Soichiro Yasukawa, Chief, Disaster Risk Reduction (DRR) Unit, UNESCO

11:15 am **Announcement of New KLC 2020 Signatories**

Chair: Prof. Kyoji Sassa, Secretary General, KLC 2020

11:30 am **High-Level Panel Discussion: "KLC 2020 Review and Way Forward"**

Chairs: Dr. Soichiro Yasukawa, Chief, Disaster Risk Reduction (DRR) Unit, UNESCO, and Prof. Matjaž Mikoš, Chair, Global Promotion Committee of the International Programme on Landslides and the Kyoto Landslide Commitment (GPC/IPL-KLC)

Panellists from KLC 2020 partners

Prof. Amir Ali Khan, Professor and Head, Resilient Infrastructure Division (RID), National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India

Shri Mriganka Ghatak, Deputy Director General & RMH-IV, Eastern Region, Geological Survey of India (GSI)

Dr. Srinivasa Kumar Tummala, Secretary, Ministry of Earth Sciences (MoES), Government of India

Dr. Krishna S. Vatsa, Member and Head of Department, National Disaster Management Authority (NDMA), Government of India

Prof. Irasema Alcántara-Ayala, President-Elect, International Consortium on Landslides (ICL)

OPENING PLENARY

Inaugural Session

Inaugural Address and Adoption of the Faridabad Declaration

12:40 pm – 1:30 pm **AUDITORIUM**

Chairs: Dr. Soichiro Yasukawa, Chief, Disaster Risk Reduction (DRR) Unit, UNESCO; Prof. Željko Arbanas, President, International Consortium on Landslides (ICL); and Prof. Matjaž Mikoš, Chair, Global Promotion Committee of the International Programme on Landslides and the Kyoto Landslide Commitment (GPC/IPL-KLC)

12:30 pm – 12:40 pm **WELCOME OF THE HON'BLE MINISTER** Auditorium

12:40 pm **Welcome Speech** by Prof. Maneesha Vinodini Ramesh, Pro Vice Chancellor, Amrita Vishwa Vidyapeetham

12:45 pm **Message from the Hon'ble Prime Minister of India, Shri Narendra Modi,** read by Prof. Maneesha Vinodini Ramesh

12:50 pm **Video Message** from Sri Mata Amritanandamayi Devi, Chancellor, Amrita Vishwa Vidyapeetham

1:00 pm **Inaugural Address** by Honourable Union Minister of State Dr. Jitendra Singh, Ministry of Science and Technology and Ministry of Earth Sciences, Government of India

1:15 pm **Launch of Solutions of Landslide Risk Reduction**

1:20 pm **Vote of Thanks** by Prof. Krishnashree Achuthan, Dean of Post Graduate Programs, Amrita Vishwa Vidyapeetham

1:25 pm **Joint Photo on Stage**

1:30 pm – 2:15 pm **LUNCH BREAK** Food Court

2:15 pm **Explanation and Adoption of the Faridabad Declaration on "Landslide Science and Practice for Safe and Resilient Communities"**

Chairs: Prof. Željko Arbanas, President, International Consortium on Landslides (ICL), and Prof. Sudesh Kumar Wadhawan, Adjunct Professor, Amrita Vishwa Vidyapeetham, Formerly Director General Geological Survey of India

OPENING PLENARY

Forum Speech & Forum Lectures

2:30 pm – 4:15 pm AUDITORIUM

2:30 pm FORUM SPEECH

WLF7 Forum Speech by Shri Mriganka Ghatak, Deputy Director General & RMH-IV, Eastern Region, Geological Survey of India (GSI)

WLF7 Forum Lectures · 2:45 pm – 4:15 pm

Chairs: Prof. Shinji Sassa, Head of Soil Dynamics Group and Research Director, National Institute of Maritime, Port and Aviation Technology, Japan, and Shri Mriganka Ghatak, Deputy Director General & RMH-IV, Eastern Region, Geological Survey of India (GSI)

2:45 pm **Forum Lecture 1: Prof. Maneesha Vinodini Ramesh, Pro Vice Chancellor, Amrita Vishwa Vidyapeetham**

> **Talk Title:** Landslide Disaster Risk Reduction through AI-Enabled Early Warning System

3:15 pm **Forum Lecture 2: Prof. Binod Tiwari, Associate Vice President for Research and Sponsored Programs, California State University, Fullerton, USA**

> **Talk Title:** Earthquake-Induced Landslides and Associated Cascading Hazards

3:45 pm **Forum Lecture 3: Prof. Michel Jaboyedoff, Professor, University of Lausanne (UNIL), Switzerland**

> **Talk Title:** Rethinking Varnes' Landslide Classification: From Material and Movement Types to Dynamic Mass-Movement Evolution

4:15 pm – 4:45 pm TEA & COFFEE BREAK

OPENING PLENARY

Recognition and Awards Ceremony

4:45 pm – 6:15 pm AUDITORIUM

Chairs: Prof. Željko Arbanas, President, International Consortium on Landslides (ICL), and Prof. Irasema Alcántara-Ayala, IPL Evaluation Committee

4:45 pm **World Centres of Excellence on Landslide Risk Reduction 2026–2029**

5:15 pm **Varnes Medals**

- 2024 Medal – Prof. Fausto Guzzetti, Professor of Hazard and Risk, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom; Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova, Italy
- 2025 Medal – Prof. Binod Tiwari, Associate Vice President for Research and Sponsored Programs and Professor, Department of Civil and Environmental Engineering, California State University, Fullerton, USA
- 2026 Medal – Prof. Xuanmei Fan, Chengdu University of Technology, China

5:45 pm **IPL–KLC Award for Success**

- To be announced

5:50 pm **Hiroshi Fukuoka IPL Award**

- To be announced

5:55 pm **Oldrich Hungr Awards**

- 2024 Award – Dr. Luqi Wang, Chongqing University, China
- 2026 Award – To be announced

6:00 pm **Best Paper Award of the ICL Journal "Landslides"**

- 2023 Award – Dr. François Noël, University of Lausanne, Switzerland
- 2023 Award – Dr. Jianting Du, The University of Hong Kong, Hong Kong SAR, China
- 2023 Award – Dr. Ankit Tyagi, Indian Institute of Technology Ropar, India
- 2024 Award – Dr. Davide Torre, University of Urbino "Carlo Bo", Italy
- 2024 Award – Dr. Guillaume Meyrat, WSL Institute for Snow and Avalanche Research SLF, Switzerland
- 2024 Award – Dr. Massimiliano Alvioli, Research Institute for Geo-Hydrological Protection (CNR-IRPI), Italy
- 2025 Award – To be announced

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DAY 3 · TUESDAY

24 November 2026

Keynotes · Parallel Sessions · Asia Leadership Dialogue

AT A GLANCE

Parallel sessions	Floor 1 PR 1	Floor 2 PR 2	Floor 3 PR 3	Floor 4 PR 4	Floor 5 PR 5	Floor 6 PR 6	Floor 7 PR 7	Floor 8 PR 8
9:00 am – 10:40 am	S1.1	S5.1	S2.1	S2.9	S3.9	S2.8	S6.3	S4.8
4:00 pm – 5:40 pm	S5.1	S1.2	S2.1	S2.9	S3.3	S2.8	S4.3	S6.3

10:30 am – 11:20 am	TEA & COFFEE BREAK	Research and Impact Pavilion
10:30 am – 11:20 am	Research & Impact Showcase	Research and Impact Pavilion
11:20 am – 12:00 pm	Keynotes	Auditorium
12:00 pm – 1:00 pm	Inaugural Program: WLF7 Asia Leadership Dialogue	Auditorium
1:00 pm – 2:00 pm	LUNCH BREAK	Food Court
2:00 pm – 4:00 pm	Meeting: Consultation Meeting between ICL Potential & Current Members in India and ICL Headquarters	Ground Floor · Board Room
2:00 pm – 3:00 pm	Keynotes	Floor 1 · PR 11
2:00 pm – 3:00 pm	Keynotes	Floor 1 · PR 12
2:00 pm – 3:30 pm	Panel Discussion: WLF7 Asia Leadership Dialogue: Safe Slopes, Resilient Roads, and Communities	Auditorium
2:00 pm – 5:30 pm	Poster Session	Ground Floor · Poster Hall
3:30 pm – 4:00 pm	TEA & COFFEE BREAK	
4:00 pm – 5:30 pm	PhD Forum	Ground Floor · Board Room

9:00 am PARALLEL TECHNICAL SESSIONS

Session 1.1 9:00 am – 10:40 am — Floor 1 · PR 1

International Programme on Landslides and Global and International Activities for the Kyoto Landslide Commitment 2020 (KLC 2020)

Convenors: Shinji Sassa, Irasema Alcántara-Ayala, Matjaž Mikoš, Kyoji Sassa

9:00 am A151 — **IPL221: PS Continuous Streaming for Landslide Monitoring and Mapping**
Federico Raspini, Olga Nardini, Emanuele Intrieri, University of Firenze (Italy); Francesco Poggi, University of Firenze and IREA, Italian National Research Council (Italy); Roberto Montalti, TRE Altamira (Spain); Pierluigi Confuorto, University of Firenze (Italy)

9:12 am A201 — **IPL248: Innovation in Slow-Moving Landslide Risk Assessment of Roads and Urban Sites by Combining Multi-Sensor Multi-Source Monitoring Data**
Dario Peduto, Settimio Ferlisi, Gianfranco Nicodemo, Davide Luongo, University of Salerno (Italy); Biljana Abolmasov, Uroš Đurić, Miloš Marjanović, University of Belgrade (Serbia); Diego Reale, Gianfranco Fornaro, IREA-CNR (Italy)

9:24 am A267 — **IPL269: Research on Landslide Initiation, Evolution and Remediation: Physical and Numerical Modelling**
Željko Arbanas, Josip Peranić, University of Rijeka (Croatia); Sabatino Cuomo, Angela Di Perna, University of Salerno (Italy)

9:36 am	A085	**IPL277: Development of Rock Failures in Coastal Carbonate Cliffs** Isabella Serena Liso, Piernicola Lollino, Mario Parise, University of Bari Aldo Moro (Italy)
9:48 am	A676	**Bridging Landslide Science and Practice with AI: A Retrieval-Augmented Research Assistant for Progress in Landslide Research and Technology** Satyender Yadav, Soichiro Yasukawa, Shinji Sassa, Matjaž Mikoš; Disaster Risk Reduction Unit, Science Sector, UNESCO, Paris (France); National Institute of Maritime, Port and Aviation Technology, Yokosuka (Japan); International Consortium on Landslides, Kyoto (Japan); Faculty of Civil and Geodetic Engineering, University of Ljubljana, Ljubljana (Slovenia)
10:00 am	A492	**IPL278: Multi-Scale Landslide Risk Assessment (MultiLandRisk)** Veronica Tofani, Francesco Caleca, Federico Raspini, Pierluigi Confuorto, Nicola Casagli, University of Florence (Italy)
10:12 am	A084	**IPL279: Integrated Toolsets for the Assessment of Landslide Impact Scenarios (ITALI)** Carlo Esposito, Sapienza University of Rome (Italy); Mario Parise, University of Bari Aldo Moro (Italy); Veronica Tofani, University of Florence (Italy); Isabella Serena Liso, University of Bari Aldo Moro (Italy); Francesca Bozzano, Sapienza University of Rome (Italy); Domenico Calcaterra, Diego Di Martire, University of Naples Federico II (Italy); Salvatore Martino, Sapienza University of Rome (Italy)
10:24 am	ID:17	**IPL280: Landslide Alert and Co-Production of Knowledge in the Otomi Mountains, Mexico** Irasema Alcántara-Ayala, Ricardo J. Garnica-Peña, National Autonomous University of Mexico (UNAM) (Mexico)
10:36 am		*Discussion*

Session 5.1 **9:00 am – 10:40 am** Floor 2 · **PR 2**

Landslide Data in Practice: What We Have, What We Need, and Why It Matters

Convenors: Fausto Guzzetti, Bruce D. Malamud, Rosa Maria Mateos Ruiz, Mriganka Ghatak

9:00 am	A010	**Short- and Long-Term Forecasting of Rainfall-Induced Landslides** Fausto Guzzetti, Institute of Hazard, Risk and Resilience, Durham University (United Kingdom); Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova (Italy); Massimo Melillo, CNR-IRPI (Italy); Alessandro C. Mondini, CNR-IMATI (Italy)
9:12 am	A015	**Evolution of Landslide Risk to the Population of Italy (1950–2024)** Fausto Guzzetti, Institute of Hazard, Risk and Resilience, Durham University (United Kingdom); Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova (Italy); Alessandro C. Mondini, CNR-IMATI (Italy); Paola Salvati, CNR-IRPI (Italy)
9:24 am	A059	**Basin-Scale Ground-Data-Free Soil Thickness Estimation via Global Dataset Calibration** Alessandro Scaioli, Politecnico di Milano (Italy); Ugur Ozturk, University of Vienna (Austria); Samuele Segoni, University of Florence (Italy); Shuhao Liu, China University of Geosciences, Wuhan (China); Xiao Ting, Central South University (China); Xin Liang, Chang'an University (China); Monica Papini, Laura Longoni, Politecnico di Milano (Italy)
9:36 am	A163	**Spatio-Temporal Prediction of Landslide Pattern Using LSTM Networks and CMIP6 Climate Projections (1995–2100)** Ankita Gaur, Raghavendra S P, Tapas R. Martha, I.C. Das, National Remote Sensing Centre (NRSC), ISRO, Hyderabad (India)
9:48 am	A164	**Influence of Hourly Rainfall Reconstruction Methods on Landslide Rainfall Thresholds in a Data-Scarce Mountain Basin** A. L. Achu, IISER Mohali and Kerala University of Fisheries and Ocean Studies (KUFOS) (India); Jobin Thomas, University of Mississippi (USA); C. D. Aju, Indian Institute of Tropical Meteorology (IITM) (India); Girish Gopinath, Kerala University of Fisheries and Ocean Studies (KUFOS) (India); Ali P. Yunus, IISER Mohali (India)
10:00 am	A219	**Formalizing Landslide Conceptual Models (LCM)** Michel Jaboyedoff, University of Lausanne (Switzerland)
10:12 am	A089	**Province-Scale Newmark Analysis Using Multi-Source Slope Data: Leyte, Philippines** Arturo S. Daag, Ken Adrian C. Villarias, DOST-PHIVOLCS (Philippines); Ira Karrel D. L. San Jose, Tohoku University (Japan); John Kent O. Remolador, University of Potsdam (Germany); Mike Gabriel G. Pedrosa, Rayfred P. Ingeniero, Cyrah Gale H. Rocamora, DOST-PHIVOLCS (Philippines); Mark Cristopher N. De Luna, Mines and Geosciences Bureau, DENR (Philippines); Maria Diesa V. Rubis, Margarita P. Dizon, DOST-PHIVOLCS (Philippines); Roland Joseph B. de Leon, National Power Corporation (Philippines); Teresito C. Bacolcol, DOST-PHIVOLCS (Philippines)

10:24 am A115 **Harnessing Community and Institutional Networks for Landslide Data Collection and Landslide Forecast Validation in the Garhwal Himalaya, Uttarakhand, India**
Ankur Kumar Srivastava, Rabisankar Karmakar, Labli Chand Rajan, Gargi Singh, Sumit Kumar, Akshaya Kumar Mishra, Bhupender Singh, Souvik Acharya, Rajkumar M, Harish Bahuguna, Thrideep Kumar N, Rakhi Gopal Retna Kumari, Saibal Ghosh; Geohazard Research and Management Centre, Central Headquarters, Geological Survey of India, Kolkata (India); State Unit-Uttarakhand, Northern Region, Geological Survey of India, Dehradun (India); Training Institute, Headquarters, Geological Survey of India, Hyderabad (India); State Unit-Tamil Nadu, Southern Region, Geological Survey of India, Chennai (India); M IVA-Multidisciplinary Geosciences, Central Headquarters, Geological Survey of India, Kolkata (India); M IV-Multidisciplinary Geosciences, Geological Survey of India, Kolkata (India)

10:36 am *Discussion*

Session 2.1 **9:00 am – 10:40 am** Floor 3 · PR 3

Advances in Earth Observation (EO)-based Landslide Detection and Monitoring

Convenors: Matteo Del Soldato, Lorenzo Solari, John Dehls, Lorenzo Nava, Cristina Reyes-Carmona, Lu Ping

9:00 am ID:27 **Remote Sensing Based Monitoring of a Large Landslide Complex in the Patalganga Valley, Indian Himalaya: From Historical Analysis to High-Resolution Monitoring**
Florian Denzinger, Rajesh Kumar Dash, Debi Prasanna Kanungo, Yves Bühler, Andrea Manconi; WSL Institute for Snow and Avalanche Research SLF (Switzerland); CSIR-Central Building Research Institute (CBRI) (India)

9:12 am A071 **Automated Mapping and Monitoring of Large Slow-Moving Landslides: Case Studies from New Zealand**
Andrew J. Neverman, Harley Betts, Hugh G. Smith, Bioeconomy Science Institute (New Zealand)

9:24 am A144 **Geomorphological Analysis of the Castelfranco Debris Flow on the Belvedere Glacier Using UAV Data**
Vít Vilímek, Charles University (Czech Republic); Irene Maria Bollati, Roberto Sergio Azzoni, University of Milan (Italy); Lukáš Brodský, Jan Kropáček, Arindam Chowdhury, Charles University (Czech Republic)

9:36 am A130 **Comparative Analysis of LEO and GEOSAR Satellite Systems for Landslide Mapping and Temporal Forecasting**
Camilla Medici, Gabriele Fibbi, Matteo Del Soldato, Silvia Bianchini, University of Florence (Italy); Andrea Monti Guarnieri, Politecnico di Milano (Italy)

9:48 am A626 **Evaluating Geospatial Foundation Models for Landslide Detection in the Nepal Himalaya**
Nishon Tandukar, Suraj Gautam; Department of Geomatics Engineering, Kathmandu University, Dhulikhel (Nepal); NAXA Pvt. Ltd., Kathmandu (Nepal); Institute of Himalayan Risk Reduction (IHRR), Lalitpur (Nepal)

10:00 am ID:41 **Multi-Sensor SAR Analysis of the 2023 South Lhonak GLOF (Sikkim Himalaya): Long-Term Evolution, Pre-Failure Instability, and Post-Event Geomorphic Impacts**
Giulia Tessari, Sweta Baidya, Paolo Pasquali, Francesco Holecz; sarmap SA (Switzerland); National Disaster Management Authority (India)

10:12 am A203 **Innovative Use of Corner Reflectors for Enhanced InSAR Analysis of Vegetated Landslides**
Zbigniew Perski, Polish Geological Institute – National Research Institute (Poland); Petar Marinkovic, PPOLabs (The Netherlands); Maria Przyłucka, Michalina Cisło, Tomasz Wojciechowski, Polish Geological Institute - National Research Institute (Poland)

10:24 am A213 **Surface Deformation Monitoring and Mapping around Hydropower Infrastructure in the Indian Himalayas Using the SBAS-InSAR Technique**
Krishan Kumar, Alok Bhardwaj, Dhyan Singh Arya, IIT Roorkee (India)

10:36 am *Discussion*

Session 2.9 **9:00 am – 10:40 am** Floor 4 · PR 4

Remote Sensing and Multi-Dimensional Displacement Analysis for Landslide Mapping, Monitoring, and Failure Predictions

Convenors: Sasahara Katsuo, Suvam Das, Rajesh Kumar Dash

9:00 am A001 **Forecasting Landslide Susceptibility and Land Use Dynamics for Himachal Using Machine Learning**
Aakriti Sharma, Reet Kamal Tiwari, Naveen James, IIT Ropar (India)

9:12 am	A019	**Sediment Movement Monitoring System by Using Multiple Remote Sensing Methods with Different Spatial and Temporal Detection Capabilities** Takumi Sato, Takeshi Kubo, Masahiro Muraki, Ken-ichi Honda, Tomohiro Taguchi, Kokusai Kogyo Co., Ltd. (Japan); Shin-ichiro Hayashi, Takao Oguchi, Yosuke Sugimoto, Masaki Ishihata, Matsumoto Sabo Office, Hokuriku Regional Development Bureau, MLIT (Japan)
9:24 am	A035	**Digital Image Correlation (DIC) for 3D Displacement Mapping in Complex Landslide Scenarios: Analysis and Validation at Brienz/Brinzauls** Nicolas Oestreicher, Florian Denzinger, Andreas Stoffel, Yves Bühler, Andrea Manconi, WSL Institute for Snow and Avalanche Research SLF (Switzerland) and Climate Change, Extremes and Natural Hazards in Alpine Regions Research Centre CERC (Switzerland)
9:36 am	A088	**Predicting Failure Time of a Landslide Based on the Measurement of Multi-Dimensional Displacements** Katsuo Sasahara, Kochi University (Japan)
9:48 am	A149	**Early Detection and Monitoring of Runoff Erosion as a Strategy to Prevent Gully Formation in Tropical Sandy Soils for Infrastructure Development in Kananga, Democratic Republic of the Congo** Carles Raïmat-Quintana, World Bank Group and Kuroba Quatre SL (Spain); Arabela Vega-Aguilar, World Bank Group and Universidad Autónoma de Barcelona (Spain)
10:00 am	A640	**Integrating Remote Sensing and Passive Seismology for Landslide Monitoring: Towards an Early Warning System** Shubham Mishra, Satish Maurya, Department of Earth Sciences, Indian Institute of Technology Bombay, Mumbai, Maharashtra (India)
10:12 am	A158	**Multisensor Analysis of Slow-Moving Landslides in Upper Mustang (Nepal): Mapping and Monitoring Using Remote Sensing** Laureen Maury, Kristen Cook, Institut des Sciences de la Terre (ISTerre), Université Grenoble Alpes (France); Basanta Raj Adhikari, Institute of Engineering, Tribhuvan University (Nepal); Nicolas d'Oreye, National Museum of Natural History / European Center for Geodynamics and Seismology (Luxembourg); Pascal Lacroix, Institut des Sciences de la Terre (ISTerre), Université Grenoble Alpes (France)
10:24 am		*Discussion*

Session 3.9 **9:00 am – 10:40 am** Floor 5 · **PR 5**

Understanding Landslide Dynamics: Geophysical and Geological Modelling

Convenors: Vipin Kumar, Hans-Balder Havenith, Vikram Gupta, Imlirenla Jamir, Won Young Lee

9:00 am	A004	**3D Geophysical and Geological Models of Large Rockslides** Hans-Balder Havenith, Liège University (Belgium); Marie-Luce Chevalier, Institute of Geology, Chinese Academy of Geological Sciences (China); Juliette Goire, Amandine Marée, Héloïse Jordens, Liège University (Belgium); Isakbek Torgoev, Geopribor, Institute of Geomechanics (Kyrgyzstan)
9:12 am	A082	**Modeling Joshimath Landslide, Uttarakhand, India: Displacement and Stress Implications** Vikrant Maurya, Vipin Kumar, Abhisek K. Srivastav, Yaspal Sundriyal, Doon University (India)
9:24 am	A154	**Modeling Rockfall Trajectories and Associated Sensitivity: Case Study from the NE Himalaya** Imlirenla Jamir, Swulika Sheqi, Vipin Kumar, Labani Ray, K. J. P. Lakshmi; CSIR- National Geophysical Research Institute, Hyderabad (India); Department of Geology, Nitya Nand Himalayan Research and Study Centre, Doon University, Dehradun (India)
9:36 am	A298	**Reactivation Mechanism of Dormant Earthflows: Insights from the San Benedetto Landslide (Northern Apennines, Italy)** Matteo Berti, Nicola Dal Seno, Alessandro Zuccarini, Marco Bartola, Giuseppe Ciccarese, University of Bologna (Italy)
9:48 am	A458	**Role of Resonance on Earthquake-Induced Landslide Generation** Ashok Dahal, University of Twente (ITC) (The Netherlands)

10:00 am A468 **Geophysical, InSAR, and Geological Modeling of Deep-Seated Landslide: Bhatwari, Uttarakhand, Himalaya**
Vipin Kumar, Doon University (India); Ankit Kumar, IIT Roorkee (India); Tandrila Sarkar, Wadia Institute of Himalayan Geology and AcSIR (India); Suresh Kannujiya, Indian Institute of Remote Sensing (India); Naman Agarwal, Mrida Geodynamics Pvt. Ltd. (India); Imlirenla Jamir, CSIR-National Geophysical Research Institute (India); Abhisek K. Srivastav, Doon University (India); Ankit Yadav; Vineet K. Gahalaut, Wadia Institute of Himalayan Geology and CSIR-National Geophysical Research Institute (India); Yaspal Sundriyal, Doon University (India); Rajiv Sinha, Lidia Gogoi, Rohit Kumar

10:12 am ID:140 **Landslides in Geothermal Areas of the Kuril-Kamchatka Arc**
Julia Frolova, Oleg Zerkal, Ilya Bolshakov, Lomonosov Moscow State University (Russia)

10:24 am A593 **Large Possibly Seismically-Induced Rockslides in Limestone Dagestan: Back Analysis and OSL Dating**
Daria Shubina, Sergeev Institute of Environmental Geoscience RAS and Russian State University for Geological Prospecting (Russia); Idris Idrisov, Russian State University for Geological Prospecting and Institute of Geology, Dagestan Federal Research Centre RAS (Russia); Mikhail Naumov, Alexander Strom, Russian State University for Geological Prospecting (Russia); Redzhep Kurbanov, Lomonosov Moscow State University and Institute of Geography RAS (Russia); Anzhela Vasilieva, Institute of Geography RAS (Russia)

10:36 am ID:161 **3D Geovisualization and Geomodelling of Old Rockslides and Local Reactivations**
Hans-Balder Havenith, Isakbek Torgoev, Marie-Luce Chevalier, Fucai Liu, Juliette Goire, Amandine Marée, Héloïse Jordens, Liège University (Belgium); Geopribor SE Center (Kyrgyzstan); Institute of Geology, Chinese Academy of Geological Sciences (China)

Session 2.8 **9:00 am – 10:40 am** Floor 6 · **PR 6**

Landslides: Map, Measure and Monitor Using Remote Sensing Data

Convenors: Tapas Ranjan Martha, Priyom Roy, Nirmala Jain

9:00 am A107 **From National to Local: A Multi-Scale Approach to Landslide Risk Management in Georgia through InSAR**
Andrea Tamburini, Manuele Bettoni, Guido Ghilardi, Riccardo Inama, IMAGEO Srl (Italy); George Gaprindashvili, National Environmental Agency (Georgia); Andrea Uttini, Arjun Bhagwat, TRE ALTAMIRA Srl (Italy); Lado Khandolishvili, Tamar Jojua, HydroDiagnostics LLC (Georgia)

9:12 am A121 **Kinematics-Based Regional Landslide Early Warning in India Using Remote Sensing Data and Geospatial Models**
Tapas Ranjan Martha, Priyom Roy, Nirmala Jain, Punit R. Jalan, Ankita Ghoke, Pamir Roy, Ankita Gaur, S. P. Raghavendra, Raghunath Dass, Pritha Das Mohapatra, Iswar Chandra Das, National Remote Sensing Centre (NRSC), ISRO (India)

9:24 am ID:68 **Mind the Gap: Debris-Flow–Debris-Flood Ambiguity in Automatic Landslide Detection**
Erin Lindsay, Helga Holmestad, Martine Sagen Bekken, Noëlie Maurin; SINTEF Community (Norway); SINTEF Digital (Norway); Norwegian Water Resources and Energy Directorate (NVE) (Norway)

9:36 am ID:72 **Landslide Mapping with Deep Learning across Nine Satellite Datasets**
Yuvraj, Jagdish Prasad Sahoo, Gaurav Tiwari, IIT Kanpur (India); Subrat Kumar Acharya, National Remote Sensing Centre (NRSC), ISRO (India)

9:48 am ID:97 **UAV-LiDAR Inventory of Cyclone Remal-Induced Landslides in Aizawl City**
Z. D. Laltanpuia, Lalramdina, Mizoram Remote Sensing Application Centre (MIRSAC) (India)

10:00 am A378 **Temporal Evolution of Landslide-Prone Areas Using Multi-Temporal SAR Data**
Aarathi Radhakrishnan, Hemalatha Thirugnanam, Rohit P, Amrita Vishwa Vidyapeetham (India)

10:12 am A509 **Thirty Years' Displacement Evolution of the Laxiwa Guobu Landslide, China, Measured by Multiple C-Band SAR Images**
Chaoying Zhao, Guangrong Li, Chang'an University (China); Zhigang Wu, SPIC Dam and Hydropower Engineering Technology Center (China)

10:24 am A571 **Baseline Survey of an Active Landslide Using Handheld SLAM LiDAR and DGPS, Prashar, Himachal Pradesh**
Devanshi Sharma, Chander Prakash, Vansheika Thakur, Amit, Inu Hangma Subba, National Institute of Technology Hamirpur (India)

10:36 am *Discussion*

Session 6.3 9:00 am – 10:40 am Floor 7 · PR 7

Extreme Weather Events and Changing Landslide Scenario across Indian and South Asian Landmass

Convenors: Harish Bahuguna, Pankaj Jaiswal, Ashutosh Kainthola, Prakash Kumar Singh, Ratan Das; **Co-Convenor:** Sahilendra Singh

9:00 am	A087	**Landslide Susceptibility and Cut-Slope Instability along the Sakleshpur–Subramanya Railway Corridor, Western Ghats, India** Achan Konyak, Geological Survey of India, SU: KG, Bengaluru (India); R. Sajeev, Geological Survey of India, SR, Hyderabad (India); E Mohanraj, Geological Survey of India, SU: KG, Bengaluru (India)
9:12 am	A029	**Causes, Impacts and Mitigation Strategies of the 2024 Pernote Landslide, Jammu and Kashmir, India** Riyaz Ahmad Mir, Sachchidanand Singh, Ishan Sharma, Rajat Kumar, National Institute of Hydrology, Western Himalayan Regional Centre, Jammu (India)
9:24 am	ID:19	**Strengthening Landslide Research through Geospatial Tools and Techniques: Review of Department of Science and Technology Case Studies of Government of India** Nabamita Chaudhuri, Shubha Pandey and Manoranjan Mohanty, National Geospatial Programme Division, Department of Science and Technology, Ministry of Science and Technology, New Delhi (India)
9:36 am	A330	**Land Use and Hillslope Stability: Insights into Shallow Landslide Risk in the Darjeeling–Sikkim Himalaya** Sayak Sarkar, Koushik Saha, University of North Bengal (India)
9:48 am	A363	**Rainfall-Triggered Landslides 2019–2026: Insights from a 711-Event Indian Inventory** Ramesh Guntha, Amrita Vishwa Vidyapeetham (India)
10:00 am	A368	**Numerical Investigation of Rainfall and Seismic Effects on Soil-Rock Mixture Slope Stability in Western Ghats, Kerala** Sudha Gautam, IIT Palakkad (India); Bhagyalekshmi N., Cochin University of Science and Technology (India); Ankesh Kumar, Sarmistha Singh, IIT Palakkad (India)
10:12 am	A632	**Fatal Landslides and Floods on 16 October 2021 in Idukki and Kottayam Districts, Kerala, India** Kaushik Ramanathan, Nirmala Vasudevan, Amrita Vishwa Vidyapeetham (India)
10:24 am	A633	**The 2024 Shirur Landslide, India: A Highway Cut-Slope Failure with Implications for Road Widening** Kaushik Ramanathan, Nirmala Vasudevan, Amrita Vishwa Vidyapeetham (India)
10:36 am		*Discussion*

Session 4.8 9:00 am – 10:40 am Floor 8 · PR 8

Spatial Landslide Assessments and Beyond: New Challenges in Regional and Global Inventory Mapping, Modelling, Validation and Scenario-Building

Convenors: Thomas Glade, Xuanmei Fan, Alexander Strom, Bianca Carvalho Vieira, Susana Pereira

9:00 am	ID:25	**GeoAI-Based Landslide Detection and Susceptibility Mapping Using Multi-Source Satellite Data: A Case Study of Cyclone Ditwah in Sri Lanka** Deshan Sellahewa, Prabhath Gunatilake, University of Peradeniya (Sri Lanka); Kyoji Sassa, International Consortium on Landslides (Japan); Jagath Gunatilake, University of Peradeniya (Sri Lanka)
9:12 am	A053	**Towards Reliable Rock Avalanche Hazard Prediction Models: Lessons from the Blatten Back-Analysis** Charlotte Wolff, François Noël, Zenan Huo, Marc-Henri Derron, Michel Jaboyedoff; Risk Analysis Group, Institute of Earth Science, University of Lausanne, Lausanne (Switzerland); Landslides and Avalanches Section, Norwegian Water Resources and Energy Directorate, Trondheim (Norway)
9:24 am	ID:5	**Ensemble Machine-Learning-Based Landslide Susceptibility Mapping and InSAR Feasibility Assessment in Wayanad, India** Anu R. Nair, Sabeen Govind P. V., Wilson K. D.; Rajagiri College of Social Sciences (India); CHRIST, Deemed to be University (India)
9:36 am	A150	**Coupling Void Evolution, Saturation, and Heat Generation in Rock–Ice Avalanches: The Cengalo, Fluchthorn, Piz Scerscen and Blatten Events** Yu Zhuang, Rajesh Kumar Dash, Perry Bartelt; College of Civil Engineering, Hunan University, Changsha (China); CSIR-Central Building Research Institute, Roorkee (India); RAMMS AG, Davos Wiesen (Switzerland)

9:48 am	A595	**An Independently Validated and Explainable Machine Learning Framework for Landslide Susceptibility Mapping in the Western Ghats, India** Amit Vijaykumar Shirke, Savitribai Phule Pune University (India); Maria Asim, Indian Military Academy (India); Bhavana Umrikar, Savitribai Phule Pune University (India)
10:00 am	A599	**Analysing Road-Proximity Bias in Machine Learning Based Landslide Susceptibility, the Nilgiris, India** Nandha Kumar Munivel, Surendar Manickam, Sembulichampalayam Sennimalai Chandrasekaran, Sudarshan Nandy; Centre for Disaster Mitigation and Management, Vellore Institute of Technology, Vellore (India); School of Civil Engineering, Vellore Institute of Technology, Vellore (India); School of Computer Science and Engineering, Vellore Institute of Technology, Vellore (India)
10:12 am	A678	**Earthquake-Induced Landslide Susceptibility Mapping in the Michoacán and Oaxaca Regions, Mexico** Gayathri G Reshma, Donadi Akash Bhavani Sankar, Induja B, Sanjeevani K S, Gopika G, Maria Francesca Ferrario, Maria Magdalena Velázquez-Bucio, Aadityan Sridharan; Department of Mathematics, Amrita Vishwa Vidyapeetham, Amritapuri, Kollam, Kerala (India); Dipartimento di Scienza ed Alta Tecnologia, Università degli Studi dell'Insubria, Via Valleggio, Como (Italy); Instituto de Geociencias, Universidad Nacional Autónoma de México, Blvd. Juriquilla, Juriquilla, Querétaro (Mexico); Center for Wireless Networks and Applications (WNA), Amrita Vishwa Vidyapeetham, Amritapuri, Kollam, Kerala (India)
10:24 am	A083	**Mesoscale Landslide Susceptibility and Urban Slope Instability in Madettira–Stuart Hill Sector, Madikeri, Western Ghats, India** R. Sajeev, Geological Survey of India, SR, Hyderabad (India); Achan Konyak, Sovesh Dulal Muduli, Geological Survey of India, SU: KG, Bengaluru (India)
10:36 am		*Discussion*

10:30 am – 11:20 am TEA & COFFEE BREAK Research and Impact Pavilion

Showcase **10:30 am – 11:20 am** Research and Impact Pavilion

Research & Impact Showcase

Showcase of Landslide Inventory, Landslide Early Warning Systems, Landslide Disaster Risk Reduction, LLMs for Landslides, Landslide Case Studies and more.

11:20 am KEYNOTE SESSIONS

Keynote Session **11:20 am – 12:00 pm** Auditorium

Keynote

Tue 24 Nov · 11:20 am – 11:40 am · Auditorium

Global Promotion of Understanding and Reducing Landslide Disaster Risk: Five Years on P-LRT and Summary of the Strategic Theme 1 Linked with UN Organizations
Precursor, Climate Drivers, and a Novel Landslide-Induced Tsunami Flood Mechanism for the 26 August 2026 Nepal Disaster

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

This keynote presents a summary of Strategic Theme 1, linked with UNESCO, WMO, UNDRR, UNU, FAO, ISC, WFEO, IUGS and IUGG; an overview of the global promotion of understanding and reducing landslide disaster risk, based on the ICL open-access book series Progress in Landslide Research and Technology (P-LRT), indexed in Scopus; and the precursor, the climate drivers and a novel landslide-induced tsunami flood mechanism behind the catastrophic Nepal disaster of 26 August 2026.

Keynote

Tue 24 Nov · 11:40 am – 12:00 pm · Auditorium

Anticipate Landslides and Their Consequences

Fausto Guzzetti, Professor of Hazard and Risk, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom; Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova, Italy

Landslides kill thousands of people every year and cause substantial damage to buildings, infrastructure and livelihoods. It is estimated that more than 650 million people live in areas susceptible to landslides. Yet anticipating where they will occur, when, how large they will be, and what their consequences will be remains a scientific and operational challenge. Using Italy as a natural laboratory with about 720,000 mapped landslides and 1,066 dead and missing persons in 1975–2024, I review what landslide science can already anticipate and what is still missing. Landslides do not occur by chance: multi-temporal inventories reveal strong spatial and temporal dependency, and susceptibility models show where landslides are likely, but not when. Rainfall thresholds, machine learning and mechanistic models address timing. Combining multiple probabilistic forecasters, calibrated on thousands of rain gauges, provides hourly forecasts and decadal projections of expected rain-induced landslides, with uncertainty. Landslide size follows consistent statistical distributions regardless of trigger, which allows event magnitude and societal risk to be modelled. All these advances rest on the quality of landslide data. Without systematic detection and mapping, forecasts cannot be validated and risk cannot be quantified. In the talk, I propose a research agenda built on systematic event and multi-temporal inventories; new sensing, including seismic "listening" to landslides; consistent zonings at different scales that account for human action and environmental change; integrated monitoring and distributed slope-stability models; long-term, climate-aware projections for all landslide types; and the quantification of risk and of the benefits of prevention.

INAUGURAL PROGRAM

WLF7 Asia Leadership Dialogue

Safe Slopes, Resilient Roads, and Communities

12:00 pm – 1:00 pm AUDITORIUM

12:00 pm WELCOME ADDRESS

12:05 pm SPECIAL ADDRESS

by

12:40 pm INTRODUCING THE PANEL

Introducing the Panel and Panel Members by Prof. Sanjay Srivastava, Chair Professor, National Institute of Advanced Studies (NIAS), Indian Institute of Science Campus, Bengaluru, India

12:55 pm VOTE OF THANKS

Prof. Bipin Nair, Registrar, Amrita Vishwa Vidyapeetham

1:00 pm – 2:00 pm LUNCH BREAK Food Court

2:00 pm PANEL DISCUSSION · 2:00 PM – 3:30 PM · AUDITORIUM

Chair: Prof. Krishnan Srinivasaraghavan, Head of Exploration, United Nations Development Programme (UNDP) India; Adjunct Professor, Amrita Vishwa Vidyapeetham, India

Co-Chair: Prof. Sanjay Srivastava, Chair Professor, National Institute of Advanced Studies (NIAS), Indian Institute of Science Campus, Bengaluru, India

PANEL MEMBERS

Dr. Natasha Chapplow, Infrastructure Resilience, Policy, and Finance, The World Bank

Mr. Phuntsho Namgyal, Director General, Department of Geology and Mines, Royal Government of Bhutan

Dr. Dhiraj Pradhananga, Associate Professor of Hydrometeorology, Tribhuvan University, Nepal

Dr. Shailesh Nayak, Director, National Institute of Advanced Studies (NIAS), Bengaluru, India

Dr. Harish Bahuguna, Deputy Director General, Mission IVA, Geological Survey of India (GSI)

Dr. Raymond Cheung, Head, Geotechnical Engineering Office (GEO), Civil Engineering and Development Department (CEDD), Hong Kong SAR, China

Dr. Gamini Jayathissa, Senior Scientist, Landslide Research & Risk Management Division, National Building Research Institute, Sri Lanka

1:00 pm – 2:00 pm LUNCH BREAK Food Court

2:00 pm KEYNOTE SESSIONS · MEETING · PANEL DISCUSSION · POSTER SESSION

Meeting 2:00 pm – 4:00 pm Ground Floor · **Board Room**

Consultation Meeting between ICL Potential & Current Members in India and ICL Headquarters

Keynote Session 2:00 pm – 3:00 pm **Floor 1 · PR 11**

Keynote Tue 24 Nov · 2:00 pm – 2:20 pm · Floor 1 · PR 11

A Near Real-Time Forecasting System for Shallow Landslides at Regional Scale

Veronica Tofani, Associate Professor, Department of Earth Sciences, University of Florence, Italy

Shallow rainfall-induced landslides are among the most frequent and damaging hazards in mountain regions. Predicting where and when they will occur is a key requirement for regional early warning. Empirical rainfall thresholds are widely used but have limited transferability and no physical basis. Physically based distributed models describe the hydro-mechanical response of slopes explicitly, but they are rarely used operationally because they need field data and computing time and are difficult to couple with weather forecasts. This keynote presents a methodology to turn a physically based model into an operational forecasting tool. The approach combines field and laboratory characterization of soils, the distributed hydrological and slope stability model HIRESSS with probabilistic treatment of parameter uncertainty, and optimization for real-time computation. Calibration relies on back analysis of past events and on aggregating pixel-based failure probabilities into territorial units, which makes the outputs usable for civil protection decisions. Driven daily by rainfall forecasts, the system provides high-resolution failure probability maps, published on WebGIS. The application in the Aosta Valley (NW Italy) is used to discuss the potential and limits of physically based modelling for landslide early warning, including the role of rainfall forecasts and landslide inventories.

Keynote Tue 24 Nov · 2:20 pm – 2:40 pm · Floor 1 · PR 11

Landslide Investigation, Modelling and Mitigation: Scientific Approaches and Engineering Solutions

Shantanu Sarkar, Founder Director, Uttarakhand Landslide Mitigation and Management Center (ULMMC), Government of Uttarakhand, Dehradun, India

The Himalayan region presents complex challenges in landslide hazard assessment, mitigation and management owing to its diverse geological formations, active tectonic setting, rugged topography, fragile mountain slopes and intense hydrometeorological processes. Uttarakhand, in particular, is highly vulnerable to recurring landslides, slope instability, land subsidence and debris flow events, posing significant threats to human settlements, transportation networks, critical infrastructure and developmental activities. In recent years, extreme rainfall events, cloudbursts and associated debris flows have further aggravated slope instability in several parts of the region. Besides numerous active landslides, many Himalayan towns are experiencing progressive slope deformation and subsidence, highlighting the need for comprehensive scientific investigations and appropriate engineering interventions. Addressing these challenges requires an integrated approach combining advanced investigation techniques, scientific modelling, monitoring and effective mitigation strategies. Systematic landslide investigation involves detailed topographic and engineering geological mapping, assessment of geological structures and geomorphological characteristics, and comprehensive geophysical and geotechnical investigations to understand subsurface conditions and the geological, geotechnical and hydrological factors governing slope instability. Advanced numerical modelling techniques, play a vital role in understanding landslide mechanisms, evaluating slope stability under different geological and hydrological conditions, and developing appropriate site-specific engineering solutions. Such investigations provide the scientific basis for designing effective mitigation measures. Debris flows constitute another major hazard in the Himalayan region, particularly along river channels and steep mountain catchments. Their assessment requires an integrated approach involving high-resolution topographic analysis, remote sensing, field investigations, hydrological assessment and numerical modelling to understand flow dynamics, identify potential runout zones and evaluate risks to vulnerable settlements and infrastructure. Recent advancements in geospatial and monitoring technologies such as remote sensing, high-resolution drone surveys, LiDAR-based terrain mapping, Global Navigation Satellite Systems (GNSS) and InSAR have significantly enhanced the capabilities of landslide investigation, deformation assessment and hazard monitoring. GIS-based hazard and risk assessment, supported by appropriate modelling assumptions and field validation, can provide valuable inputs for land-use

planning, mitigation prioritisation, early warning and disaster risk reduction. Thus, an integrated scientific and engineering framework for landslide investigation, modelling and mitigation, is essential for reducing landslide risks, enhancing infrastructure safety, improving the resilience of vulnerable Himalayan communities and supporting sustainable development in the mountain region.

Keynote

Tue 24 Nov · 2:40 pm – 3:00 pm · Floor 1 · PR 11

AI-Linked Models: Turning Observations into Action – from Intelligent Sensing to Predictive Landslide Resilience

Hemalatha T., Assistant Professor, and Nitin Kumar M., Research Associate, Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

Slopes often exhibit measurable signs of instability long before failure occurs. Rainfall infiltration, changing soil moisture, rising pore-water pressure and progressive deformation provide valuable insights into their evolving behaviour. Capturing these signals requires a scientific approach to understanding what, where, how and when to observe. This keynote explores the evolving landscape of landslide observation, integrating in-situ IoT-enabled sensors, satellite missions such as NISAR and Sentinel, and aerial and geophysical sensing to understand slope behaviour across spatial and temporal scales. The keynote further examines how AI/ML, coupled with physics-based hydrological and geomechanical models, can transform diverse observations into predictive intelligence. Emerging directions in multimodal data fusion, adaptive sensing, physics-informed learning, digital twins and agentic AI offer new opportunities for anticipating slope instability and supporting timely decisions. Ultimately, it envisions an integrated pathway from intelligent observation and predictive modelling to actionable early warnings and resilient communities.

Keynote Session 2:00 pm – 3:00 pm Floor 1 - PR 12

Keynote

Tue 24 Nov · 2:00 pm – 2:20 pm · Floor 1 · PR 12

Integrated Landslide Hazard Assessment, Modelling and Real-Time Monitoring for Early Warning: Indian Case Studies

Neelima Satyam, Institute Chair Professor, Department of Civil Engineering, IIT Indore, India

Landslides pose significant threats to communities and critical infrastructure across the mountainous regions of India. Their occurrence is governed by complex interactions among geological, geomorphological, hydrological and climatic factors, with intense rainfall and seismic activity acting as major triggers. Effective landslide risk reduction therefore requires an integrated approach combining regional hazard assessment, predictive modelling and real-time field monitoring. This presentation highlights research advances and Indian case studies integrating remote sensing, GIS, machine learning, rainfall threshold analysis, geotechnical investigations, numerical modelling and IoT-enabled monitoring. Studies from the Darjeeling Himalayas, Uttarakhand and other landslide-prone regions demonstrate the application of susceptibility assessment, probabilistic forecasting and rainfall-based warning thresholds. Particular emphasis is placed on MEMS-based tilt sensors, soil moisture and pore-pressure monitoring, and data-driven approaches for identifying precursors to slope instability. Numerical and physical modelling of debris flows are also discussed to understand flow dynamics, runout characteristics and potential impacts on infrastructure and settlements. The presentation highlights the importance of integrating geospatial information, geomechanical understanding and real-time observations to develop reliable and scalable landslide early warning systems. The lessons from Indian case studies provide insights into strengthening disaster risk reduction and improving the resilience of vulnerable communities and critical infrastructure.

Keynote

Tue 24 Nov · 2:20 pm – 2:40 pm · Floor 1 · PR 12

Leveraging High-Resolution Ensemble Rainfall Forecasts and Uncertainty Quantification for Landslide Early Warning in the Himalaya

V. S. Prasad, Scientist-G and Head, National Centre for Medium Range Weather Forecasting (NCMRWF), Ministry of Earth Sciences, India

Insights from NCMRWF on how high-resolution numerical weather prediction and rainfall forecasts—along with probabilistic uncertainty quantification and how it can strengthen early warning frameworks for rainfall-induced landslides in the Himalayan region.

Keynote

Tue 24 Nov · 2:40 pm – 3:00 pm · Floor 1 · PR 12

Seismic Characteristics of the Rock Failure, Debris Flow and Flood of 26 August 2026 at the Nepal Tibet Border Recorded by the National Seismological Network of India

G. Suresh, Director, National Center for Seismology, Ministry of Earth Sciences, India

A seismic event was detected near the Nepal–Tibet border on 26 August 2026, Mw 4.9, accompanied by a large ice–rock mass movement, a debris flow, and flooding. This event was recorded at about 60 stations of the National Seismological Network (NSN) in India, providing a good opportunity to examine its seismic characteristics using a dense regional network. In this study, the recorded waveforms are analysed in the time, frequency, and time-frequency domains, and the characteristics of the spectra, power spectral density, particle motion, and wavelet behaviour are discussed. As discriminating seismic events from other events in seismic records is challenging due to unclear phases and overlapping frequency content, the observations are compared with nearby, similarly sized tectonic earthquakes with comparable source-to-station distances, as well as with the seismic characteristics of the seismic event and other mass-movement processes reported earlier. The August 2026 signal consists of a long, complex waveform, several repeating pulses, a relatively weak high-frequency signal, and increasing lower-frequency energy in the latter portion of the signal. The particle-motion analysis shows that the radial–vertical plane is dominated by elliptical retrograde motion, implying that the wave has a strong Rayleigh-wave component. Wavelet analysis also reveals a high degree of non-stationarity in the signal and multiple transient energy packets. The estimated seismic energy released is 7.4×107 J to 1.8×109 J, which corresponds to a seismic-energy conversion efficiency of 10−7 to 2×10−6, referenced to the assumed estimate of the gravitational potential energy. The combination of the results suggests that the seismic signal is not a tectonic earthquake but is more consistent with a long-duration, multi-stage mass-movement process. This study demonstrates the capabilities of dense broadband seismic networks for the rapid identification and characterisation of large-scale hazards associated with ice, rock, and landslides in the Himalayas. Keywords: Mass Movement; Seismic signal; Wavelet analysis; particle motion; Radiated seismic energy; National Seismological Network

2:00 pm – 5:30 pm Ground Floor · **Poster Hall**

Poster Session

A046 **The Role of Landslides in Cascading Geohazards of the Western Mediterranean: The Baraca Project**
Gemma Ercilla, Instituto de Ciencias del Mar (ICM-CSIC) (Spain); Victor Mora-Bajén, University of Granada (Spain); Victor Tendero-Salmerón, University of Cantabria (Spain); Omar Azzouz, University of Oujda (Morocco); Lourdes González-Castillo, University of Granada (Spain); José-Manuel González-Vida, University of Málaga (Spain); Francisco Lamas, Mohamed Makkaoui, University of Granada (Spain); Sergio Ortega, University of Málaga (Spain); José A. Peláez, University of Jaén (Spain); Jesús Galindo-Zaldívar, University of Granada (Spain)

A105 **Coastal Landslide Evolution from Multi-Temporal LiDAR: Stonebarrow Hill and the Landslip, Southern Coast of UK**
Bhargvi Sharan, Benedetta Dini, Jonathan Carey, University of Birmingham (UK)

A235 **Evaluation of Landslide Susceptibility in Kodagu Region of the Western Ghats, India Using GIS-Based Frequency Ratio and Multiparametric Analysis**
Thatikonda Suresh Kumar, S. Kaliraj, National Centre for Earth Science Studies (NCESS) (India); Alen D. Sunil, Tojish Tomy, Central University of Karnataka (India); Sravan Kumar Kotluri, National Centre for Earth Science Studies (NCESS) (India); M. A. Mohammed Aslam, Central University of Karnataka (India)

A250 **Landslide Hazard and Mining System in Italy: A National-Scale Assessment Based on the URBES Project and the National Mining Exploration Programme**
Giada Possamato, Fiorenzo Fumanti, Alessandro Trigila, Carla Iadanza, Federica Ferrigno, Gabriele Leoni, Francesco Menniti, Carlo Cipolloni, Daniele Spizzichino, Italian Institute for Environmental Protection and Research (ISPRA) (Italy)

A390 **Geological Evaluation of High Mountain Road Sustainability in High Caucasus Georgia Khevsureti Region, Using Traditional and Modern Methods**
Martin Dostalik, Jan Novotný, Czech Geological Survey (Czech Republic)

A411 **Subsurface Characterization of a Landslide-Prone Slope in Munnar, Kerala Using Electrical Resistivity Tomography**
Jayakrishnan Ramachandran, Bichu B K Raman, Nitin Kumar Mohanan, Hemalatha Thirugnanam, Amrita Vishwa Vidyapeetham (India)

A418 **Landslide Susceptibility Mapping (LSM) along Badethi–Uttarkashi National Highway (NH-134 & NH-108) and Its Adjoining Areas, Uttarkashi District, Uttarakhand, India**
Aravind S Nair, Somendra K Singh, Amrita Vishwa Vidyapeetham (India)

A429 **Geospatially Enabled Machine Learning Approach for Landslide Susceptibility Mapping along the NH-58 Corridor from Rudraprayag to Gaurikund, Garhwal Himalaya, Uttarakhand, India**
Shivani Negi, HNB Garhwal University (India); Pousali Majumder, Filix School of Education (India); Sarada Prasad Pradhan, IIT Roorkee (India); Tariq Siddique, Aligarh Muslim University (India); Narendra K. Meena, HNB Garhwal University (India)

A476 **Experimental Investigation of Fiber Bragg Grating Based Optical Sensing for Soil Deformation Monitoring**
Anand Prem P K, Ajish U, Suma H, Amrita Vishwa Vidyapeetham (India); Srijith K, IIITDM Kancheepuram (India); Balaji H, Amrita Vishwa Vidyapeetham (India)

A502 **Deep-Learning-Assisted Mapping of Submarine Landslide Morphologies from Bathymetric Data**
Umberto di Laudo, OGS – National Institute of Oceanography and Applied Geophysics and University of Trieste (Italy); Sansar Raj Meena, OGS – National Institute of Oceanography and Applied Geophysics (Italy); Luca Manzoni, University of Trieste (Italy); Silvia Ceramicola, OGS – National Institute of Oceanography and Applied Geophysics (Italy)

A504 **Numerical Assessment of Tsunamigenic Potential from a Multiple Submarine Collapse: The Case of the Assi Landslides, Ionian Calabrian Coast, Italy**
Filippo Zaniboni, University of Bologna (Italy); Nora Markezic, OGS – National Institute of Oceanography and Applied Geophysics (Italy); Alberto Armigliato, Cesare Angeli, University of Bologna (Italy); Silvia Ceramicola, OGS – National Institute of Oceanography and Applied Geophysics (Italy)

A506 **Before the Canyon: The Role of Small-Scale Landslides in Early-Stage Canyon Headwall Development**
Nora Markezic, Silvia Ceramicola, OGS - National Institute of Oceanography and Applied Geophysics (Italy); Marco Terzariol, Nabil Sultan, Geo-Ocean, IFREMER (France); Marco Santulin, OGS – National Institute of Oceanography and Applied Geophysics (Italy); Miros Stavros James Charidemou, National Oceanography Centre (UK); Emanuele Forte, University of Trieste (Italy)

A507 **Towards a Standardized and FAIR Submarine Landslide Inventory for the Italian Seas**
Marco Bianchini, Sapienza University of Rome (Italy); Francesco Latino Chiocci, Sapienza University of Rome and CNR – Institute of Environmental Geology and Geo-Engineering (Italy); Silvia Ceramicola, OGS - National Institute of Oceanography and Applied Geophysics (Italy)

A539 **Hardware-Level Multi-Stage Protection Architecture for Reliable Landslide Monitoring Data Acquisition Systems**
Aswathy Madhu, Anand Prem P. K., Balaji Hariharan, Amrita Vishwa Vidyapeetham (India)

A543 **Virtual Rain: High-Resolution Rainfall Scenarios for Landslide Thresholds under Climate Change**
Salvatore Grimaldi, University of Tuscia (Italy); Elena Volpi, Aldo Fiori, Roma Tre University (Italy)

A574 **Spatial Landslide Assessments and Beyond: New Challenges in Regional and Global Inventory Mapping, Modelling, Validation and Scenario-Building**
Rajni, Chander Prakash, Mahesh Sharma; Department of Civil Engineering, National Institute of Technology Hamirpur, Hamirpur (India); Department of Civil Engineering, University Institute of Technology, Himachal Pradesh University, Shimla (India)

A575 **Optical Screening and Archived InSAR Evidence of Slope Instability at Gulaba and Prashar**
Shrikant Bhatia, Vansheika Thakur, Chander Prakash, Department of Civil Engineering, National Institute of Technology Hamirpur, Himachal Pradesh (India)

A576 **Rainfall Sensitivity and Hydraulic Flood Exposure in the Upper Beas River During July 2023**
Sumit Sharma, Vansheika Thakur, Chander Prakash, Department of Civil Engineering, National Institute of Technology Hamirpur, Himachal Pradesh (India)

A577 **Contrasting Failure Controls at Six Landslide Sites in Kinnaur Himalaya**
Rajni, Chander Prakash, Mahesh Sharma; Department of Civil Engineering, National Institute of Technology Hamirpur, Himachal Pradesh (India); University Institute of Technology, Himachal Pradesh University, Shimla (India)

A590 **Beyond Mapping: Quantifying Submarine Landslides across the Calabrian Continental Margins**
Marco Bianchini, Sapienza University of Rome (Italy); Francesco Latino Chiocci, Sapienza University of Rome and CNR – Institute of Environmental Geology and Geo-Engineering (Italy); Silvia Ceramicola, OGS - National Institute of Oceanography and Applied Geophysics (Italy)

A608 **Detrending Reveals Contrasting Basal Scour Mechanisms in Submarine Landslides**
Nicola Scarselli, Royal Holloway University of London (UK); Silvia Ceramicola, OGS – National Institute of Oceanography and Applied Geophysics (Italy); Giulia Magnarini, Laboratoire de Planétologie et Géosciences, Nantes Université, CNRS (France)

A649 **Preventing Landslides in the Honge Hani Rice Terraces**
Joy D'Angelo, Independent, Fort Worth, Texas (USA); Santosh S. Palmate, Texas A&M El Paso (USA); Luc Descroix, Institut National de Recherche pour le Développement (IRD), Paris (France)

3:30 pm – 4:00 pm TEA & COFFEE BREAK

4:00 pm PARALLEL TECHNICAL SESSIONS · PHD FORUM

Session 5.1 **4:00 pm – 5:40 pm** Floor 1 · **PR 1**

Landslide Data in Practice: What We Have, What We Need, and Why It Matters

Convenors: Fausto Guzzetti, Bruce D. Malamud, Rosa Maria Mateos Ruiz, Mriganka Ghatak

4:00 pm	A234	**Site-Specific Tree-Ring Records of Past 150 Years Flash Flood Events in Singan Nalla, Kinnaur, NW Himalaya** Devi Lal, Central University of Punjab and Birbal Sahni Institute of Palaeosciences (India); Mayank Shekhar, Birbal Sahni Institute of Palaeosciences (India); Pritam Chand, Central University of Punjab (India); Shaktiman Singh, University of Aberdeen (UK); Anupam Sharma, Amalava Bhattacharyya, Birbal Sahni Institute of Palaeosciences (India)
4:12 pm	A240	**Landslide Susceptibility Mapping of Malabar Highlands of Northern Kerala: A Landslide Hotspot from Southern Western Ghats, India** Nandana Unni N., Pondicherry University and National Centre for Earth Science Studies (India); Sravan Kumar Kotluri, National Centre for Earth Science Studies (India); Arka Roy, National Centre for Earth Science Studies (India) and Kiel University (Germany)
4:24 pm	A292	**Map-Derived DEMs for Landslide Analysis in the Polish Carpathians** Konrad Górka, Polish Geological Institute – National Research Institute (Poland)
4:36 pm	A537	**Learning Landslides at Scale: From Regional Inventories to Foundation-Scale EO Models** Sansar Raj Meena, OGS – National Institute of Oceanography and Applied Geophysics (Italy), University of Padova (Italy) and Boston University (USA); Xiaochuan Tang, Chengdu University of Technology (China); Devika Jain, Harvard University (USA); Filippo Catani, University of Padova (Italy)
4:48 pm	A315	**Governance Lessons from a 7-Year Citizen-Augmented Landslide Inventory in India** Ramesh Guntha, Amrita Vishwa Vidyapeetham (India)
5:00 pm	A383	**Empower Community: A Participatory Platform for Landslide Data and Community Monitoring** Aiswarya Aravindakshan, Ramesh Guntha, Maya Presannakumar, Center for Wireless Networks & Applications (WNA), Amrita Vishwa Vidyapeetham, Amritapuri (India)
5:12 pm	A427	**The Role of Volunteer UAV Data Acquisition in the Preliminary Assessment of the 2026 Niscemi Landslide** Gianfranco Di Pietro, Enrico Foti, University of Catania (Italy); Francesco Castelli, University of Enna Kore (Italy); Giuseppe Sappa, Sapienza University of Rome (Italy); Fausto Guzzetti, Institute of Hazard, Risk and Resilience, Durham University (United Kingdom); Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova (Italy); Rosaria Ester Musumeci, Gaetano Ortolano, University of Catania (Italy)
5:24 pm	A147	**Landslide Susceptibility Under Data Constraints: Inventory Completeness, Model Interpretation, and Hazard Screening** Richard Carter, BGC Engineering, Kingston, Ontario (Canada); Kris Holm, Michael Porter, Caio Stringari, BGC Engineering, Vancouver, British Columbia (Canada)
5:36 pm		*Discussion*

Session 1.2 **4:00 pm – 5:40 pm** Floor 2 · **PR 2**

Understanding and Reducing Landslide Disaster Risks as Cascading and Multi-Geohazards

Convenors: Shinji Sassa, Xuanmei Fan, David Huntley, David Tappin

4:00 pm	A039	**Cascading Multi-Geohazards and Mitigation Concept for Offshore Renewable Energy Systems** Shinji Sassa, National Institute of Maritime, Port and Aviation Technology (Japan); Hajime Naruse, Kyoto University (Japan); David Tappin, British Geological Survey (UK); Andreas Roulund, Ørsted (Denmark)

4:12 pm	A048	**Cascading Hazards in the Makran Subduction Zone: Landslides and Tsunami Generation** Mohammad Mokhtari, Amin Rashidi, Mehdi Masoudi, Masoud Barati, Niloofar Abed; International Institute of Earthquake Engineering and Seismology (IIEES), Tehran (Iran); Institute of Geophysics, University of Tehran, Tehran (Iran); Tsunami and Earthquake Research Center, University of Hormozgan, Bandar Abbas (Iran); Amrita Vishwa Vidyapeetham, Amrita School for Sustainable Futures, Amritapuri (India)
4:24 pm	ID:62	**Investigation of Moraine Dam Instability at Tsho Rolpa Glacial Lake under Avalanche-Induced Water Waves** Roshan Babu Thapa, Ram Chandra Tiwari, Aanchal Tiwari, Tribhuvan University (Nepal); Sandeep Sapkota, Universal Engineering and Science College, Pokhara University (Nepal)
4:36 pm	ID:47	**Multi-Sourced Sequential Debris Flow Scenario for 2013 Kedarnath Disaster, Uttarakhand** Nikita Lahiri, IIT Guwahati (India); Mousumi Mukherjee, IIT Mandi (India); Arindam Dey, IIT Guwahati (India)
4:48 pm	A125	**Earthquakes Enhance Ecosystem Organic Carbon Storage Capacity** Jie Liu, Xuanmei Fan, Chengdu University of Technology (China); Tristram Hales, Cardiff University (UK); Kushanav Reeul Bhuyan, Xiaolu Tang, Chengdu University of Technology (China); Erin L. Harvey, Durham University (UK); Qiang Xu, Chengdu University of Technology (China)
5:00 pm	A307	**Multi-Hazard Risk Scenarios and Landslides** Bruce D. Malamud, Durham University (UK)
5:12 pm	ID:163	**Optical Pixel Offset Tracking for Early Warning of Himalayan Landslide-Flood Chains (Pre-Recorded)** Wentao Yang, Beijing Forestry University (China); Shinji Sassa, National Institute of Maritime, Port and Aviation Technology (Japan); Wenwen Qi, National Institute of Natural Hazards, Ministry of Emergency Management (China); Tianchu Wang, Beijing Forestry University (China)
5:24 pm	A127	**Permafrost Significance of Rock Glaciers and Their Role in Mass Movement in the Jhelum Basin, Kashmir Himalaya** Zahid Majeed, Neelima Nizampatnam, Remya S. N., Vivek Venugopal, Muneer Ahmad; Geological Survey of India, Kashmir Office, Srinagar (India); Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri Department of Electronics and Communication Engineering, Amrita School of Engineering Bengaluru, Amrita Vishwa Vidyapeetham (India); Azim Premji University, Bengaluru, Karnataka (India); Geological Survey of India, NCGER, Bengaluru, Karnataka (India)
5:36 pm		*Discussion*

Session 2.1 **4:00 pm – 5:40 pm** Floor 3 · **PR 3**

Advances in Earth Observation (EO)-based Landslide Detection and Monitoring

Convenors: Matteo Del Soldato, Lorenzo Solari, John Dehls, Lorenzo Nava, Cristina Reyes-Carmona, Lu Ping

4:00 pm	A224	**Forensic Geospatial Assessment of Riverbank Stability and Structural Vulnerability along the Varanasi Ghats Using InSAR and Multi-Criteria Analysis** Mainak Dhanantari, The Gandhigram Rural Institute (Deemed to be University) (India)
4:12 pm	A289	**Monitoring Reservoir Water Level-Induced Ground Deformation Using DInSAR: A Case Study at Mousakalle Dam, Sri Lanka** J. Abinaas, Duminda Welikanna, Sabaragamuwa University of Sri Lanka (Sri Lanka)
4:24 pm	A412	**Detection of Slow-Moving Active Landslides in SAR Wrapped Interferograms Using Deep Learning** Alessandro Simoni, University of Bologna (Italy); Alessandro C. Mondini, CNR-IMATI (Italy); Fabio Bovenga, CNR-IREA (Italy); Cristina Reyes-Carmona, University of Milano-Bicocca (Italy); Alessandro Mercurio, University of Bologna (Italy); Federico Agliardi, University of Milano-Bicocca (Italy)
4:36 pm	A155	**A ConvNeXt-Based Content-Aware Framework for Automatic Detection of Active Landslides from MT-InSAR LOS Velocity Maps** Tushar Maru, Ramji Dwivedi, Motilal Nehru National Institute of Technology Allahabad (India); Chandrakant Ojha, IISER Mohali (India)

4:48 pm A074 **A Semi-Automated Multi-Sensor Framework for Mapping Earthquake-Induced Landslides Using Sentinel-1 and Sentinel-2: The 2019 North Cotabato Earthquake, Philippines**
Jay Melvin B. Segales, Arnaldo C. Gagula, Jayrold P. Arcede, Mike Andre B. Puspus, Gio L. Gonzales, Lolly Jade T. Rosil, Mhea Jasmin Recilla, Dinah J. Dumaguing, Hadikka Etabag, Vince Nazario, James Earl Cubillas, Nichole Anthony Pacle, Genevieve E. Quisto, Clark Justine L. Gonzales, Marc Lin F. Abonales, Arturo S. Daag, Margarita P. Dizon, Rhommel N. Grutas, Mark Asch; ML-PREP Project, Caraga State University, Butuan City (Philippines); Department of Geodetic Engineering, Caraga State University, Butuan City (Philippines); Department of Mathematics, Caraga State University, Butuan City (Philippines); ML-PREP Project, Department of Science and Technology – Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), Quezon City (Philippines); Department of Computer Science, Caraga State University, Butuan City (Philippines); Department of Geology, Caraga State University, Butuan City (Philippines); Department of Civil Engineering, Caraga State University, Butuan City (Philippines); Department of Science and Technology – Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), Quezon City (Philippines); University of Picardie Jules Verne, Amiens (France)

5:00 pm *Free slot*

5:12 pm A275 **Rapid Landslide Detection in Low-Coherence Environments: Evaluating PolSAR Against InSAR**
Tusaar Sharma, Manika Gupta, University of Delhi (India)

5:24 pm A487 **Evaluating the Feasibility of Multitemporal Sentinel-1 InSAR and BIOMASS Tomography for Post-Failure Landslide Characterization**
Zbigniew Perski, Maciej Soja; Geohazard Center of Polish Geological Institute – National Research Institute, Warsaw (Poland); Wageningen University & Research, Wageningen (The Netherlands)

5:36 pm *Discussion*

Session 2.9 **4:00 pm – 5:30 pm** Floor 4 · **PR 4**

Remote Sensing and Multi-Dimensional Displacement Analysis for Landslide Mapping, Monitoring, and Failure Predictions

Convenors: Sasahara Katsuo, Suvam Das, Rajesh Kumar Dash

4:00 pm A218 **Multi-Dimensional Displacement Analysis of Landslide Failure Using Remote Sensing Techniques: A Case Study of Yahangala, Kandy, Sri Lanka**
Heshruthi Chandrakumar, K. M. I. Dissanayake, G. W. G. Devinda Danushka, University of Peradeniya (Sri Lanka); A. A. Virajh Dias, University of Peradeniya (Sri Lanka) and Reduction of Landslide Vulnerability by Mitigation Measures Project (RLVMMP), Ministry of Defence (Sri Lanka); Kyoji Sassa, International Consortium on Landslides (Japan); Jagath Gunatilake, University of Peradeniya (Sri Lanka)

4:12 pm A220 **New GNSS Sensor for Shallow Landslide Displacement and Failure Prediction Based on Displacement**
Toshikazu Fukuba, Wataru Sato, Kokusai Kogyo Co., Ltd. (Japan); Katsuo Sasahara, Kochi University (Japan)

4:24 pm A245 **Assessing Long-Term DSGSD Activity in Austria Using Geodetic Fixed Point Time Series**
Marc Ostermann, Tobias Schöffl, Monitorius FlexCo (Austria); Franz Blauensteiner, Federal Office of Metrology and Surveying (BEV) (Austria)

4:36 pm A515 **InSAR-Based Investigation of Creep Deformation and Triggering Mechanisms of Active-Layer Detachment Slides on the Qinghai–Tibet Plateau**
Zhi Wen, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (China); Fei Wang, Tianshui Normal University (China)

4:48 pm A500 **SBAS Network Optimization for Improved InSAR Analysis in Low-Coherence Areas**
Suvam Das, Manabendra Saharia, Indian Institute of Technology Delhi (India); Nirdesh Kumar Sharma, EarthSense Labs Pvt. Ltd., IIT Delhi (India)

5:00 pm *Discussion*

Session 3.3 4:00 pm – 5:40 pm Floor 5 · PR 5

Recent Advancements in Physical and Numerical Modelling of Landslides and Debris Flows

Convenors: Sabatino Cuomo, Beena Ajmera, Clarence Choi

4:00 pm A060 **Rock-Ice Avalanches: Predictive Runout Models in Practice**
Nicolas Oestreicher, WSL Institute for Snow and Avalanche Research SLF and CERC (Switzerland); Jessica Munch, University of Zurich (Switzerland); Livia Pierhöfer, WSL Institute for Snow and Avalanche Research SLF and CERC (Switzerland); Johan Gaume, WSL Institute for Snow and Avalanche Research SLF, CERC and ETH Zurich (Switzerland); Marius Schneider, Jordan Aaron, ETH Zurich (Switzerland); Perry Bartelt, RAMMS AG (Switzerland); Martin Mergili, University of Graz (Austria)

4:12 pm A208 **Modelling Rock-Ice Avalanches: Application of the Physically-Based Model RAMMS to the Solatset Glacier, Valpelline, Italy**
Anne-Kathrin Kappler; Massimiliano Barbolini, University of Pavia (Italy); Perry Bartelt, RAMMS AG (Switzerland); Francesco Stefanini

4:24 pm A229 **Particle-Based Method for Large-Scale Landslide Post-Failure Modelling**
Alessandro Franci, Miguel Masó, CIMNE / Universitat Politècnica de Catalunya (Spain); Andrea Montanino, Pegaso Telematic University (Italy); Bikash Phuyal, Krishna Kumar Shrestha, Prem Bahadur Thapa, Tribhuvan University (Nepal); Massimiliano Cremonesi, Politecnico di Milano (Italy)

4:36 pm A254 **Numerical Investigation and Pseudo-Static Stability Analysis of Roadcut-Induced Composite Slope Failures along NH-13, West Kameng, Arunachal Pradesh**
Sourav Sagar Say, Tabish Rahman, Kripamoy Sarkar, IIT (ISM) Dhanbad (India)

4:48 pm ID:46 **Data-Scarce Landslide Assessment Using SLaDEE: Inabune Landslide**
Takeshi Kusumoto, Toshinori Sakai, Kenji Okajima; National Agriculture and Food Research Organization (NARO) (Japan); Mie University (Japan)

5:00 pm A131 **Integrating Snow/Glacier-Melt and Runoff Forecasting for Multi-Hazard Early Warning in Dudhkoshi River Basin, Nepal**
Umesh Chaudhary, Suraj Lamichhane, Tribhuvan University (Nepal); Simon Allen, University of Zurich (Switzerland); Jakob Steiner, University of Graz (Austria); Vishnu Prasad Pandey, Tribhuvan University (Nepal)

5:12 pm A651 **Seismic Analysis of Non-Vertical Retaining Walls for Landslide Mitigation**
Kishore M S, Krishnan K, and Viswanath Parol, Department of Civil Engineering, Amrita School of Engineering, Coimbatore, Amrita Vishwa Vidyapeetham (India)

5:24 pm ID:14 **Blind Prediction of Hydro-Mechanical Response of Rainfall-Induced Slope Failures**
Rupsa Roy, Iowa State University (USA); Beena Ajmera, Tennessee Tech University (USA); Josip Peranić, Željko Arbanas, University of Rijeka (Croatia)

5:36 pm *Discussion*

Session 2.8 4:00 pm – 5:40 pm Floor 6 · PR 6

Landslides: Map, Measure and Monitor Using Remote Sensing Data

Convenors: Tapas Ranjan Martha, Priyom Roy, Nirmala Jain

4:00 pm A594 **AI-Enabled Geospatial Assessment of Landslide Precursors and Deformation Processes in the Tehri Reservoir Region**
Somalin Nath, Sushant Shekhar, Onkar Dikshit, IIT Kanpur (India)

4:12 pm ID:94 **Toppling Behaviour in Structured Residual Soils: Extending Rock Slope Kinematic Analysis Using Field Evidence**
Ranjan Weerasinghe, Suranga Dissanayaka, Sanchitha Jayakody, National Building Research Organisation (NBRO) (Sri Lanka)

4:24 pm A185 **Addressing Cross-Sensor Inconsistencies in Landslide Mapping Using Radiometric Harmonization of Multi-Sensor Satellite Data**
Shiva Sharma, Punit R Jalan, Tapas Ranjan Martha, National Remote Sensing Centre (NRSC), Indian Space Research Organization (ISRO), Hyderabad, Telangana (India)

4:36 pm	A327	**Deciphering Structural and Anthropogenic Controls on Landslide Susceptibility in the Frontal Darjeeling Himalaya: A Logistic Regression Approach** Koushik Saha, Sayak Sarkar, Abhradeep Bose, Department of Geology, University of North Bengal, Raja Rammohunpur, West Bengal (India)
4:48 pm	A338	**Landslide Prediction Using Geotechnical and GIS Approach along National Corridor-109K, India** Pranshu Mishra, Rajesh Singh, Sravan Kumar Kotluri and TN Singh; National Centre for Earth Science Studies, Ministry of Earth Sciences, Thiruvananthapuram (India); RSRE Laboratory, Department of Geology, University of Lucknow, Lucknow (India); Indian Institute of Technology Patna, Bihar (India)
5:00 pm	A570	**Characterizing Landslide Deformation and Subsurface Phenomenon through UAV Photogrammetry, Time-Series InSAR, and Ground Penetrating Radar** Nitesh Dhiman, Ankit Singh, Kirti Kumar Mahanta, and Dericks Praise Shukla, School of Civil and Environmental Engineering, IIT Mandi, Himachal Pradesh (India)
5:12 pm	A624	**GIS-Based Landslide Susceptibility Mapping Using AHP in East Jaintia Hills, Meghalaya, India** Pranjit Saikia, Atul Kumar Singh and Diganta Barman; Department of Geology, North-Eastern Hill University, Shillong, Meghalaya (India); North Eastern Space Application Centre, NESAC (India)
5:24 pm	A637	**Multi-Dimensional Displacement Analysis of Landslide Failure Using Remote Sensing Techniques: A Case Study of Kovilkanda, Mawanalla, Sri Lanka** K.M.I. Dissanayake, Heshruthi Chandrakumar, G.W.G. Devinda Danushka, A.A.Virajh Dias, Kyoji Sassa and Jagath Gunatilake; Engineering Geology Research Group (EGRG), Department of Geology, University of Peradeniya, Peradeniya (Sri Lanka); Reduction of Landslide Vulnerability by Mitigation Measures Project (RLVMMP), Ministry of Defence (Sri Lanka); International Consortium on Landslides (Japan)
5:36 pm		*Discussion*

Session 4.3 **4:00 pm – 5:40 pm** Floor 7 · **PR 7**

Cascading and Compounding Landslide Hazards in High Mountain Regions

Convenors: Basanta Raj Adhikari, Stella Moreiras, Christian Huggel, Simon Allen, Edier Aristizábal
Co-Convenors: Keshab Sharma, Sergio Sepúlveda, Jessica Munch

4:00 pm	A098	**Slope Unit-Based Random Forest Modeling for Co-Seismic Landslide Susceptibility in Nepal** Tulasi Ram Bhattarai, Netra Prakash Bhandary, Kalpana Pandit, Ehime University (Japan)
4:12 pm	A113	**Influence of Fines and Moisture Content on Triggering and Runout of Mass Movements from the Mountain Cryosphere** Sumit Singh, Srikrishnan Siva Subramanian, IIT Roorkee (India); Ali P. Yunus, IISER Mohali (India)
4:24 pm	A122	**Compounding Triggers of Debris Flows in a Himalayan Catchment: Insights from a Catchment-Scale Numerical Model** Anamika Sekar, Srikrishnan Siva Subramanian, IIT Roorkee (India)
4:36 pm	A132	**Multi-Sensor Analysis of Landslide-Triggered South Lhonak GLOF, Sikkim Himalaya (2023)** Arindam Chowdhury, Vít Vilímek, Jan Kropáček, Jan Balka, Charles University (Czech Republic); Sunil Kumar De, North-Eastern Hill University (India)
4:48 pm	A134	**Landslides as Drivers of Divide Migration, Sediment Cascades, and the Carbon Cycle** Sumit Das, Charles University (Czech Republic)
5:00 pm	A135	**Cascading Landslide Hazard Potential along the Kaligandaki Corridor, Nepal: Integrating Susceptibility Mapping and River Connectivity Analysis** Pratik Gyawali, Dipika Pandey, Basanta Raj Adhikari, M.Sc. Disaster Risk Management, Pulchowk Campus, Institute of Engineering, Tribhuvan University, Lalitpur (Nepal)
5:12 pm	A246	**Morphometric Analysis for Understanding Tectonic Influence in the Parvati Watershed, Himachal Himalaya** Sakshi, Nitesh Dhiman, Ankit Singh, Dericks Praise Shukla, IIT Mandi, Mandi (India)

5:24 pm A146 **Understanding Geo-Hazard Challenges and Resilient Infrastructure Development in the Asian Highland**
Basanta Raj Adhikari, Institute of Engineering, Tribhuvan University (Nepal); Simon Allen, University of Zurich and University of Geneva (Switzerland); Christian Huggel, University of Zurich (Switzerland); Vishnu Prasad Pandey, Suraj Lamichhane, Institute of Engineering, Tribhuvan University (Nepal); Jakob Steiner, University of Graz (Austria); Dharam Raj Upreti, Practical Action (Nepal); Jessica Munch, Ayog Basnyat, University of Zurich (Switzerland); Silvan Ragettli

5:36 pm *Discussion*

Session 8.3 **4:00 pm – 5:40 pm** Floor 8 · **PR 8**

Extreme Weather Events and Changing Landslide Scenario across Indian and South Asian Landmass

Convenors: Harish Bahuguna, Pankaj Jaiswal, Ashutosh Kainthola, Prakash Kumar Singh, Ratan Das; **Co-Convenor:** Sahilendra Singh

4:00 pm ID:243 **Failure Mechanism of Rainfall-Induced Landslide in Kattukuppai, the Nilgiris, India**
Sembulichampalayam Sennimalai Chandrasekaran, Pitchaikani Nivethiha, Ramesh Kesavaram, Rajkumar Andrewwinner, Vaddepalli Santhosh Kumar, Manoharan Sambath, Vellore Institute of Technology (India)

4:12 pm A545 **Beyond Reconstruction: Livelihood Transformation, Social Adaptation and Community Resilience After the 2024 Wayanad Landslides: A Case Study from Kerala, India**
Priyanka Ghosh, Shafeek A., Ashraf Pulikkamath, Ganesh Moolinti, VIT-AP University (India); Karthick V.

4:24 pm A553 **Rainfall-Triggered Landslide in Lateritic Terrain Modified by Highway Cutting: A Case Study from Northern Kerala, India**
Rehna C., National Centre for Earth Science Studies (NCESS) (India); Rashmi Chandan, Central University of Kerala (India)

4:36 pm A562 **Kausar Nag Landslide Lake Outburst Flood Modelling: Lake Evolution and Downstream Hazard Assessment**
Chandra Prakash, Riyaz Ahmad Mir, Ishan Sharma, Sachchidanand Singh, Surjeet Singh; National Institute of Hydrology, Western Himalayan Regional Centre, Jammu, Jammu & Kashmir (India); Indian Institute of Technology Ropar, Punjab (India); National Institute of Hydrology, Roorkee, Uttarakhand (India); Indian Institute of Technology Mandi, Himachal Pradesh (India)

4:48 pm ID:68 **An AUC-Driven Model for Landslide Risk and Impact Assessment: A Case Study in Sikkim**
Arjun A., Hari Chandana Ekkirala, Balmukund Singh, Maneesha Vinodini Ramesh, Amrita Vishwa Vidyapeetham (India)

5:00 pm *Free slot*

5:12 pm A603 **When Landslide Scars Do Not Heal: Fifteen Years of Sediment Supply After Typhoon Morakot, Taiwan**
Gopal Kumar, Yu-Chang Chan, Academia Sinica (Taiwan); Cheng-Wei Sun, Academia Sinica and National Taiwan University (Taiwan); Chih-Tung Chen, National Central University (Taiwan); Ya-Ju Hsu, Academia Sinica (Taiwan)

5:24 pm ID:6 **Occurrence of Landslide Including Its Causes, Investigation, Analysis and Mitigation Measures at Paglajhora Area in West Bengal, India**
Avik Kumar Mandal, Sailesh S., Pradyot Biswas, LEA Associates South Asia Pvt. Ltd. (India)

5:36 pm A100 **Urban Drainage System Modification to Reduce Landslide Risk: A Case Study from NH-169, Western Ghats, India**
D. S. Rawat, A. K. Naithani, National Institute of Rock Mechanics (India); L. G. Singh, Manipur University (India); Prasnna Jain, Praveena Das J., M. A. Azad, National Institute of Rock Mechanics (India)

PhD Forum **4:00 pm – 5:30 pm** Ground Floor · **Board Room**

Facilitator(s): Dr. Sabarinath S., Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, India

● **Theme 1 · Reducing Landslide Disaster Risk**

4:00 pm PHD-26-7 **From Risk Models to Response Readiness: A Participatory Decision Support Framework for Multi-Hazard Preparedness, Koshi, Nepal**
Hotrika Joshi, Tribhuvan University (Nepal)

4:20 pm	PHD-26-12	**Measuring Intra- and Inter-Household Capital Inequality in Landslide Resilience: A Case Study in Kerala, India** Athul Joseph, IIT Roorkee (India)
4:40 pm	PHD-26-9	**Deconstructing the 2024 Chooralmala Multi-Hazard Cascade** Kamini Sharma, Delhi Technological University (India) and University of Cambridge (UK)
5:00 pm	PHD-26-19	**Multi-Criteria Risk Analysis of Landslide and Land Subsidence and the Feasibility of Their Insurability: Developing an Insurance Model Based on Comparative Experiences from Karnataka, India and Isfahan, Iran** Usha U, Bangalore University (India)

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DAY 4 · WEDNESDAY

25 November 2026

Keynotes · Parallel Sessions · Side Events

AT A GLANCE

Parallel sessions	Floor 1 PR 1	Floor 2 PR 2	Floor 3 PR 3	Floor 4 PR 4	Floor 5 PR 5	Floor 6 PR 6	Floor 7 PR 7	Floor 8 PR 8
9:00 am – 10:40 am	S2.4	S1.2	S2.5	S2.7	S4.4	S3.2	S5.2	S4.8
12:00 pm – 1:00 pm	S1.4	S1.2	S5.8	S2.7	S3.3	S3.2	S3.5	S4.8
4:00 pm – 5:40 pm	S1.4	S5.8	S1.1	S3.7	S5.7	S4.5	S4.3	S4.8

9:00 am – 10:40 am & 4:00 pm – 5:20 pm	PhD Forum	Ground Floor · Board Room
10:30 am – 11:00 am	TEA & COFFEE BREAK	
11:00 am – 12:00 pm	Keynotes	Floor 1 · PR 11
11:00 am – 12:00 pm	Keynotes	Floor 1 · PR 12
11:00 am – 12:00 pm	Keynotes	Floor 2 · PR 13
1:00 pm – 2:00 pm	LUNCH BREAK	Food Court
2:00 pm – 3:30 pm	Townhall: Future and Innovative Data Needs for Landslide Risk Reduction: Priorities, Technologies and Motivations.	Ground Floor · Board Room
2:00 pm – 3:30 pm	Science-Policy Discussion on Recent Cascading Mountain Disasters: A Science-Policy Dialogue on the Implications for Risk Management	Auditorium
2:00 pm – 6:00 pm	Workshop: Hydrometeorological Thresholds and Early Warning Systems (EWS) under Climate Change	Floor 1 · PR 12
3:30 pm – 4:00 pm	TEA & COFFEE BREAK	
5:00 pm – 6:00 pm	Side Event: International School on Landslide Risk Assessment and Mitigation (LARAM School)	Floor 2 · PR 14

9:00 am PARALLEL TECHNICAL SESSIONS · PHD FORUM

Session 2.4 **9:00 am – 10:30 am** Floor 1 · **PR 1**

Monitoring Landslide Dynamics at Cultural Heritage Sites: From Investigations to Early Warning Plans and Sustainable Mitigation Strategies

Convenors: Stefano Morelli, Claudio Margottini, Daniele Spizzichino, Lihui Li

9:00 am A031 **Multi-Temporal DInSAR for Evidence-Based Monitoring Design and Risk Management at Machu Picchu (Peru)**

Federica Ferrigno, Gabriele Leoni, Francesco Menniti, Daniele Spizzichino, ISPRA – Institute for Environmental Protection and Research (Italy)

9:12 am	A162	**Multidisciplinary Strategy for the Sustainable Management of Cultural Heritage Sites in the Khaybar Oasis (KSA)** Giovanni Crosta, University of Milano-Bicocca (Italy); Filippo De Dominicis, University of L'Aquila (Italy); Paolo Frattini, University of Milano-Bicocca (Italy); José Ignacio Gallego, Royal Commission for AlUla (RCU) (Saudi Arabia); Maurizio Guerra, ISPRA - Institute for Environmental Protection and Research (Italy); Claudio Margottini, University of Florence (Italy); Daniele Spizzichino, ISPRA – Institute for Environmental Protection and Research (Italy)
9:24 am	ID:10	**Remote Sensing Analysis of Rock Mass Stability at Spiš Castle Using High-Resolution 3D Point Cloud** Vladimir Greif, Martin Mal'a, Ján Vlčko, Comenius University in Bratislava (Slovakia); Geokonzult s.r.o. (Slovakia)
9:36 am	A281	**Assessment of Landslide-Induced Damage in Historic Masonry Churches: The SLIDE Project** Chiara Ferrero, Delft University of Technology (The Netherlands); Antonetta Nunziata, Chiara Calderini, University of Genoa (Italy); Giorgia Giardina, Delft University of Technology (The Netherlands)
9:48 am	A311	**Landslide Susceptibility and Hazard Mapping for UNESCO Arctic Heritage Site in West Greenland** Erika Samantha Young, Steffen Ringsø Nielsen, Thomas Ingeman-Nielsen, Technical University of Denmark (Denmark and Greenland); Kristian Svennevig, Geological Survey of Denmark and Greenland (GEUS)(Denmark)
10:00 am	A430	**Mass Movement along Varkala Cliff Geoheritage Site, Kerala, India – Mitigation and Valorisation Strategies for Sustainable Conservation** Sudesh Kumar Wadhawan, Arunkumar J., Nitin Kumar M., Balmukund Singh and Maneesha Vinodini Ramesh; Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, Amritapuri (India); Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala (India)
10:12 am	A592	**Protection of Bogolyubsky Monastery from Landslide Hazard, Vladimir Region, Russia** Daria Shubina, Fedor Bufeev, Sergeev Institute of Environmental Geoscience, Russian Academy of Sciences (IEG RAS) and Russian State University for Geological Prospecting (Russia); Victor Kuvshinnikov, LLC IGIT (Russia)
10:24 am		*Discussion*

Session 1.2 **9:00 am – 10:40 am** Floor 2 · **PR 2**

Understanding and Reducing Landslide Disaster Risks as Cascading and Multi-Geohazards

Convenors: Shinji Sassa, Xuanmei Fan, David Huntley, David Tappin

9:00 am	A501	**Towards an Integrated Workflow for Submarine Landslide Hazard Assessment in the Mediterranean Sea** Silvia Ceramicola, OGS - National Institute of Oceanography and Applied Geophysics (Italy); Marco Bianchini, Sapienza University of Rome (Italy); Umberto Di Laudo, Nora Markezic, Sansar Raj Meena, OGS – National Institute of Oceanography and Applied Geophysics (Italy); Filippo Zaniboni, University of Bologna (Italy)
9:12 am	A518	**Multiresolution Computational Physics of Landslide Disaster Chains** Yong Kong, Qiang Xu, Xuanmei Fan, Chengdu University of Technology (China)
9:24 am	A109	**Construction of a Coastal Highway on an "Earth Block Slide" in the Far East of Russia: Landslide Risks and Their Realization** Alexey Bershov, LLC Petromodeling and Lomonosov Moscow State University (Russia); Sino Paishanbiev, LLC Petromodeling (Russia); Vasily Makhlaev, LLC Petromodeling and Lomonosov Moscow State University (Russia); Roman Zhidkov, LLC Petromodeling (Russia); Natalia Abakumova, LLC Petromodeling and Lomonosov Moscow State University (Russia); Konstantin Frolov, LLC Petromodeling (Russia)
9:36 am	ID:78	**Observations of Sediment Entrainment as a Cascading Process in Sediment Gravity Flows and Their Impacts on Seabed Structures** Ryoya Makino, Junji Miyamoto, Shinji Sassa, Gozo Tsujimoto; Toyo Construction Co., Ltd, (Japan); National Institute of Maritime, Port and Aviation Technology (Japan)
9:48 am	ID:80	**Wave-Induced Progressive Liquefaction Projection under Climate Change and the Liquefied Gravity Flow Impact Assessment on Structures** Junji Miyamoto, Shinji Sassa, Ryoya Makino, Gozo Tsujimoto; Toyo Construction Co., Ltd, (Japan); National Institute of Maritime, Port and Aviation Technology (Japan)
10:00 am	A012	**The Progressive Development of Microfabrics from Initial Deposition to Slump Deformation** Kiichiro Kawamura, Yamaguchi University (Japan)

10:12 am	A428	**Mitigation Models of Chure Landslides, Nepal** Sanjeev Bikram Shah, Anil Pokhrel, Ram Chandra Tiwari, Aanchal Tiwari, Tribhuvan University (Nepal); Sandeep Sapkota, Universal Engineering and Science College, Pokhara University (Nepal)
10:24 am	A017	**Multi-Hazards Affecting Road Networks in Northern Ethiopia: Approaches to Sustainable and Resilient Roads** Kifle Woldearegay, Mekelle University (Ethiopia); Shinji Sassa, National Institute of Maritime, Port and Aviation Technology (Japan)
10:36 am		*Discussion*

Session 2.5 **9:00 am – 10:40 am** Floor 3 · **PR 3**

Application of 3GS (Geotechnical, Geophysical, Geospatial) and Advanced Sensing Technologies for Integrated Landslide Monitoring and Early Warning

Convenors: Alok Bhardwaj, Akanksha Tyagi, N. K. Samadhiya, Anand Prem P K, Praveen K.

9:00 am	A048	**Implicit Neural Multipath Modeling for High-Precision GNSS Landslide Monitoring** Dongxu Li, Yuan Du, Qin Zhang, Guanwen Huang, Le Wang, Chang'an University (China)
9:12 am	A204	**State-Dependent Hydrological Controls on Landslide Acceleration: Insights from a Complex Landslide in Lower Austria** Alejandra Jiménez-Donato, University of Vienna (Austria); Thom Bogaard, Delft University of Technology (The Netherlands); Philipp Marr, Thomas Glade, University of Vienna (Austria)
9:24 am	A313	**UAV-LiDAR Integrated Approach for Rapid Landslide Assessment and Structural Counter Measure Designs** Dhanushka Jayathilake, Sandun Chathuranga, Sashinika Perera, Chathumini Samarakoon, National Building Research Institute (Sri Lanka)
9:36 am	A374	**Mapping of Landslide Susceptibility in Vythiri Taluk of Wayanad District, Kerala State: A Geospatial Perspective on the Wayanad Landslide July 2024** Radha Unnikrishnan Marath, Suresh Subramani, NITTTR Chennai (India)
9:48 am	ID:52	**Study of Transient Hillslope Movements in and around Haflong, Assam, India with an Assessment of Contributing Factors** Kuntala Bhusan, Prakash Biswakarma, Aniket Chakravorty, Sanjay Pandit, Rahul Kumar, K K Sarma, S P Aggarwal, North Eastern Space Applications Centre, Govt of India, Dept of Space, Umiam, Sankala Centre for Climate and Sustainability, Sankala Foundation, N Delhi, Youth Employment and Skill Development Department, Govt of Bihar (India)
10:00 am	A480	**Identification of Instability in Glacial Till Deposits by Integrating in Situ Instrumentation and Advanced Remote-Sensing Technologies (LiDAR, RGB and Multispectral Sensors on RPAS Platforms)** Carles Raimat-Quintana, Mercy Eras-Galarza, Arabela Vega-Aguilar, Jonathan Trujillo, Adrián Riquelme and Roberto Sarro; Kuroba Quatre S.L., Lleida (Spain); Universitat Autònoma de Barcelona, Barcelona (Spain); Department of Civil Engineering, University of Alicante, Alicante (Spain); Department of Geological Hazards and Climate Change, Geological and Mining Institute of Spain (IGME-CSIC), Madrid (Spain)
10:12 am		*Free slot*
10:24 am	ID:40	**Application of Complex Investigation and Monitoring Methods for Flysch Landslide Remedial Projects in Polish Carpathians** Zbigniew Bednarczyk, Poltegor-Institute, Institute of Opencast Mining, Wroclaw (Poland)
10:36 am	ID:58	**Spatially Heterogeneous Motion of the Masuleh Landslide, Northern Iran: Insights from Campaign GPS Observations** Hadi Sabeti-Amirhandeh, Mahdi Motagh, Bahman Akbari; University of Tehran (Iran); GFZ Helmholtz Centre for Geosciences (Germany); Leibniz University Hannover (Germany); Kharazmi University, Tehran (Iran); Natural Resources and Watershed Management Organization (Iran)

Session 2.7 9:00 am – 10:40 am Floor 4 · PR 4

Geophysical Site Investigation and Monitoring of Landslide-Prone Slopes

Convenors: Sabari Ramesh, E. Chandrasekhar, Aravind S. Nair, Nitin Kumar Mohanan, Balmukund Singh

9:00 am A099 **Development of Compact Borehole Inclinometers Capable of Measuring Large Displacements along Sliding Surfaces**
Kenji Iida, Hiroyuki Sugimoto, Public Works Research Institute (Japan); Daisuke Nakano, Oyo Co., Ltd. (Japan); Norihisa Sugahara, Sakatadenki Co., Ltd. (Japan)

9:12 am A238 **Site Characterization of a Creeping Slope in Kelakam, Kerala, Western Ghats**
Sravan Kumar Kotluri, T. Suresh Kumar, Eldhose K, National Centre for Earth Science Studies (India)

9:24 am A255 **Radio Magnetotelluric Investigations in the Landslide-Prone Area, Malin, Pune District, Maharashtra, India**
B. Tezkan, University of Cologne (Germany); E. Chandrasekhar, IIT Bombay (India); Jonathan S. Salas, Sven Burberg, University of Cologne (Germany); Rohit Singh, IIT Bombay (India)

9:36 am ID:33 **Time-Lapse Electrical Resistivity Survey around a Drainage Well in a Landslide Area**
Keisuke Inoue, Daisuke Shoda, Masayoshi Yoshizawa, Takeshi Kusumoto, Institute for Rural Engineering, National Agriculture and Food Research Organization (NARO) (Japan)

9:48 am A362 **Role of Electrical Resistivity Survey for Lunglei College Veng Landslide Analysis, Southern Mizoram, Northeast India**
Lal Dinpuia, Lalhming Sangi, Lal Lawmsanga, Mizoram University (India); Zosangliana Ralte, Van Thangliana, Saitluanga, Pachhunga University College (India)

10:00 am A436 **Post-Debris Flow Geophysical and Geotechnical Investigation of the 2024 Mundakkai-Chooralmala Disaster**
Aravind S Nair, Sabari Ramesh, Balmukund Singh, Akhila PS, Maneesha V Ramesh, Amrita Vishwa Vidyapeetham (India)

10:12 am ID:9 **Application of 2-D Electrical Resistivity Method for Subsurface Characterization and Geotechnical Modelling of Riverine Landslides**
Janaka Wickramasooriya, Udeni Nawagamuwa, University of Moratuwa (Sri Lanka)

10:24 am ID:6 **An Integrated Acoustic Emission-Based Landslide Monitoring and Early Warning System**
Deepak Kumar, Nipun Bansal, Delhi Technological University (India); Sushil Kumar Singh, Solid State Physics Laboratory, DRDO (India)

10:36 am ID:26 **Integrated Geological and Geophysical Investigation of the Pankhar Landslide, Bageshwar District, Kumaon Himalaya, Uttarakhand, India**
Ruchika Tandon, Vishal Vats, Shahnawaz Kashif, Raghuveer Negi, Shantanu Sarkar; Uttarakhand Landslide Mitigation and Management Center (ULMMC), Dehradun (India)

Session 4.4 9:00 am – 10:40 am Floor 5 · PR 5

Rockfalls and Shallow Landslides: Monitoring and Data Collection Methods, Analysis and Modeling, and Use for Hazard Predictions and Risk Assessments

Convenors: Mauro Rossi, Massimiliano Bordoni, Sandra Melzner, Roberto J. Marin, Stella Moreiras
Co-Convenors: Jie Dou, Renato Macciotta

9:00 am A078 **A Quick Assessment of Probable Rockfall Impacted Areas of Chamoli District, Uttarakhand on Regional Scale**
Rabisankar Karmakar, Ankur Kumar Srivastava, Sumit Kumar, Labli Chand Rajan, Bhupender Singh, Harish Bahuguna, Saibal Ghosh; Geohazard Research and Management Centre, Central Headquarters, Geological Survey of India, Kolkata (India); State Unit-Uttarakhand, Northern Region, Geological Survey of India, Dehradun (India); M IVA-Multidisciplinary Geosciences, Central Headquarters, Geological Survey of India, Kolkata (India); M IV-Multidisciplinary Geosciences, Geological Survey of India, Kolkata (India)

9:12 am A136 **GIS-Based Spatial Analysis of Structural Discontinuities for Regional Rock Slope Failure Assessment**
Jagadish Kundu, Earth Sciences New Zealand (New Zealand); Ashok Kr Singh, CSIR-Central Institute of Mining and Fuel Research (India); Kripamoy Sarkar, IIT (ISM) Dhanbad (India)

9:24 am ID:71 **Methodologies to Evaluate Susceptibility to Rock Cliff Failure and Retreat in Coastal Areas**
Isabella Serena Liso, Jawad Niaz, Rosa Colacicco, Mario Parise, Piernicola Lollino, University Aldo Moro, Department of Earth and Environmental Sciences, Bari (Italy)

9:36 am A425 **What Causes Recurrent Rock Slope Failures along National Highway-29, Northeast India? Insights from Kinematic, Deterministic, and Probabilistic Analyses**
Sushikali A. Kuho, IIT Guwahati (India); Debanjan Guha Roy, IIT Jodhpur (India); Sayantan Chakraborty, Vivek Padmanabha, IIT Guwahati (India)

9:48 am A523 **From Rockfall Source Area Identification to Susceptibility Zonation: A Proposed Workflow Tested on El Hierro (Canary Islands, Spain)**
Roberto Sarro, Geological and Mining Institute of Spain (IGME-CSIC)(Spain); Mauro Rossi, Paola Reichenbach, CNR-IRPI (Italy); Rosa María Mateos, Geological and Mining Institute of Spain (IGME-CSIC)(Spain)

10:00 am A445 **Structural and Geomechanical Analysis of the Sainte-Marguerite Chalk Cliff (Normandy, France)**
Antonin Chalé, Fengchang Bu, Michel Jaboyedoff, University of Lausanne (Switzerland); Olivier Maquaire, Stéphane Costa, Université de Caen Normandie (France); Marc-Henri Derron, University of Lausanne (Switzerland)

10:12 am A417 **Assessing Meteorological Conditions Triggering Landslides in New Caledonia: Probabilistic Analysis**
Perrine Yvrard, BRGM (French Geological Survey)(France); Yaël Guyomard, Mathieu Mengin, Geological Survey of New Caledonia (SGNC-DIMENC)(New Caledonia); Bastien Colas, BRGM (French Geological Survey)(France); Olivier Monge, Geological Survey of New Caledonia (SGNC-DIMENC)(New Caledonia); Pierre Maurizot, BRGM (French Geological Survey)(France) and Geological Survey of New Caledonia (SGNC-DIMENC)(New Caledonia); Jean-François Lataste, Université de Bordeaux (France); Yannick Thiery, BRGM (French Geological Survey) (France)

10:24 am A526 **Integrated Rockfall Hazard Assessment and Multi-Level Stabilization of Basaltic Slopes along the Mumbra Bypass, Maharashtra, India**
Rishabh Chaurasia, Pioneer Foundation Engineers Pvt. Ltd. (India); E. C. Kalyani

10:36 am A339 **Numerical Investigation of Rockfall Impact Behaviour and Rebound Characteristics for Site-Specific Hazard Assessment**
Moringkhul Molung Kanshouwa, Dhanesh Sing Das, National Institute of Technology Nagaland (India)

Session 3.2 **9:00 am – 10:40 am** Floor 6 · **PR 6**

Recent Advancements in Slope Stability and Deformation Analysis

Convenors: Binod Tiwari, Sabatino Cuomo, Keshab Sharma

9:00 am A006 **From Groundwater Recharge to Hydro-Mechanical Response: An Integrated Modeling Framework for the Ruinon Landslide**
Andrea Morcioni, Corrado Camera, Francesco Cecinato, Giovanni Beretta, Tiziana Apuani, University of Milan (Italy)

9:12 am A007 **Thermo-Hydro-Mechanical Behaviour of the Ruinon Landslide: Physically-Based Thresholds for Early Warning**
Andrea Morcioni, University of Milan (Italy)

9:24 am A043 **How Mitigation Structures Influence the Sediment Concentration of Flow-Like Landslides**
Mariagiovanna Moscariello, Sabatino Cuomo, Ettore Iannuzzi, Rita Ciaglia, Martin Mergili, Lorenzo Frigo; University of Salerno (Italy); Institute of Geography and Regional Science, University of Graz (Austria); Geosintex s.r.l., Sandrigo (Italy)

9:36 am ID:38 **Seismic Stability Analysis of Composite Roadcut Slope along NH-13, Arunachal Pradesh, India**
Sourav Sagar Say, Tabish Rahman, Kripamoy Sarkar, IIT (ISM) Dhanbad (India)

9:48 am A077 **Scenario-Based Hydro-Mechanical Stability and Remediation Optimization under Rainfall–Seismic Loading**
Dhananjai Verma, Sunandan Basu, K. Lakshmanan, Ranjita Bhattacharjee, Abhishek Kumar, Harish Bahuguna and Saibal Ghosh, Geological Survey of India, Central Headquarters Kolkata, Geological Survey of India, Eastern Region, Kolkata (India)

10:00 am A600 **Identification of Geotechnical Investigation Priority Sites along the Mettupalayam–Coonoor Highway Corridor Using Spatial Slope Stability Screening at Road–Drainage Intersections**
Amal S Ajay, S. S. Chandrasekaran, Surendar Manickam, Vellore Institute of Technology (India); Sandeep Maithani, Indian Institute of Remote Sensing (IIRS) (India); Ganapathy Pattukandan Ganapathy, Vellore Institute of Technology (India)

10:12 am A607 **Estimating Slip Surface Depth and Landslide Volume Using a Spline Interpolation Method**
Jaspreet Singh, BGC Engineering Inc. and Simon Fraser University (Canada); Matthieu Sturzenegger, BGC Engineering Inc. (Canada); Sergio Sepulveda, Simon Fraser University (Canada)

10:24 am ID:11 **Finite Element and Rockfall Analysis of Jointed Rock Slopes along NH-13, Arunachal Pradesh, India**
Praveen Kumar, Kripamoy Sarkar, Suryawanshi Bhavesh Sudhir, Department of Applied Geology, Indian Institute of Technology (ISM) Dhanbad, Jharkhand (India); Geological Survey of India, State Unit Bihar, Patna (India)

10:36 am A110 **Slope Stability Assessment of Nathpa Rockslide: A Classical Example of Planar Failure**
Lalit Mohan, Geological Survey of India, Chandigarh (India); Shreyasi Mahapatra, Geological Survey of India, Kolkata (India)

Session 5.2 **9:00 am - 10:40 am** Floor 7 · PR 7

Next-Generation AI Techniques for Advancing Landslide Science and Applications

Convenors: Hemalatha Thirugnanam, Sansar Raj Meena, Naveen Chandra, Xiaochuan Tang

9:00 am A027 **Multi-Party Collaborative Development of Privacy-Preserving Machine Learning Model for Landslide Research: A Case Study in Landslide Detection**
Xiaochuan Tang, Xuanmei Fan, Ling He, Zhenlei Wei, Chengdu University of Technology (China); Daniel Kibirige, University of Cape Town (South Africa); Alessandro Novellino, British Geological Survey (UK); Sansar Raj Meena, Filippo Catani, University of Padova (Italy)

9:12 am A168 **Landslide Management System Using a Glass-Box Explainable AI Framework**
Raghavendra S. P., Nirmala S. Jain, Tapas Ranjan Martha, Iswar Chandra Das, National Remote Sensing Centre (NRSC), ISRO (India)

9:24 am A251 **Comparing InSAR- and Inventory-Based Random Forest Classification of Unstable Slope Units in Scotland**
Fariba Ghalehnavi, Claudia Meisina, Alessandro Novellino, University of Pavia (Italy)

9:36 am ID:16 **Downslope and Upslope Location Effects on Multi-Horizon Pore-Water Pressure Prediction for Landslide Monitoring**
Amos Silungwe, Hemalatha T., Amrita Vishwa Vidyapeetham (India)

9:48 am A346 **Evaluating the Role of Anthropogenic Factors in Landslide Susceptibility Mapping under Different Validation Techniques across the Mountainous Regions of India**
Mounika Susarla, Avadh Bihari Narayan, A. Murali Krishna, IIT Tirupati (India)

10:00 am A465 **Interpretable AI Models for Earthquake-Induced Landslide Susceptibility Using Symbolic Regression**
Martina Possenelli, University of Bari and University of Trieste (Italy); Luca Manzoni, Stefano Parolai, University of Trieste (Italy)

10:12 am A482 **Interpretable Machine Learning for Landslide Susceptibility, Vulnerability and Risk Assessment**
Soumya Kundu, Somil Swarnkar, IISER Bhopal (India)

10:24 am A487 **Landslide Shape Differences by Triggering Mechanism Using Elliptical Fourier and Ellipse Analysis**
Lucas Pedrosa Soares, Carlos H. Grohmann, Universidade de São Paulo (Brazil)

10:36 am A387 **Enhancing Landslide Detection in Western Ghats of Kerala, India with Deep Learning**
Abhilash Sreekumar, Hemalatha Thirugnanam, Sansar Raj Meena, Maneesha Vinodini Ramesh; Center for Wireless Networks & Applications (WNA), Amrita Vishwa Vidyapeetham, Amritapuri (India); Department of Geosciences Machine Intelligence and Slope Stability Laboratory, University of Padova, Padua (Italy); Center for Remote Sensing Department of Earth and Environment, Boston University, Boston, MA (USA)

Session 4.8 9:00 am – 10:40 am Floor 8 · PR 8

Spatial Landslide Assessments and Beyond: New Challenges in Regional and Global Inventory Mapping, Modelling, Validation and Scenario-Building

Convenors: Thomas Glade, Xuanmei Fan, Alexander Strom, Bianca Carvalho Vieira, Susana Pereira

9:00 am	A280	**Multi-Model Landslide Susceptibility Assessment with Multi-Proxy Validation in the Central Himalaya** Parnab Sarkar, A. P. Krishna, Birla Institute of Technology, Mesra (India)
9:12 am	A304	**SOPO Database and SOPO Application** Paulina Kaczmarska-Ploch, Adam Karol Chaszczewicz, Marcin Kułak, Polish Geological Institute – National Research Institute (Poland)
9:24 am	ID:143	**Event-Specific Landslide Susceptibility Modeling for Hurricane Helene in Western North Carolina** Muhammed Jaseem P. A., Weiwei Zhan, University of Central Florida (USA)
9:36 am	A305	**Twenty Years of the Landslide Counteracting System in Poland (SOPO)** Adam Karol Chaszczewicz, Paulina Kaczmarska-Ploch, Paweł Marciniec, Tomasz Wojciechowski; Polish Geological Institute – National Research Institute, Warsaw (Poland); Polish Geological Institute – National Research Institute, Krakow (Poland)
9:48 am	A317	**Comparing Negative Sampling Strategies for Landslide Susceptibility Mapping in SE Brazil** Marina Santander, Carlos Henrique Grohmann, Universidade de São Paulo (Brazil)
10:00 am	A329	**Comparative Landslide Susceptibility Mapping Using Heuristic, Statistical, and Machine Learning Models along Critical Transportation Corridors in Meghalaya, India** Prakash Biswakarma, Kuntala Bhusan, Kerri Pde, Varun Joshi; Sankala Foundation, New Delhi (India); North Eastern Space Applications Centre, Umiam (India); Amity Institute of Geoinformatics and Remote Sensing, Amity University Noida (India); University School of Environment Management, Guru Gobind Singh Indraprastha University, New Delhi (India)
10:12 am	A386	**GIS-Based Spatial Analysis of Landslide Susceptibility Mapping: A Case Study from Nuwara Eliya District, Sri Lanka** Posoni Himara Hewa Kokawalage, University of Sri Jayewardenepura (Sri Lanka)
10:24 am	A388	**Scenario-Based Landslide Susceptibility Mapping for the Kerala Western Ghats Using Random Forest** Priyajit Kundu, Ajesh Sankar M., Varun Menon, Abhiram Roddannavar, Bolikonda Sai Krishna Charan, Sreevalsa Kolathayar, NIT Karnataka, Surathkal (India)
10:36 am	A641	**Advancing Landslide Susceptibility Assessment through Comparative Modeling in Sikkim, Eastern Himalaya** Parswati Chatterjee, Abhishek Kumar Ojha, Akhouri Pramod Krishna, Department of Remote Sensing and Geoinformatics, Birla Institute of Technology, Mesra, Ranchi (India)

PhD Forum 9:00 am – 10:40 am Ground Floor · Board Room

Facilitator(s): Dr. Sabarinath S., Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, India

Theme 2 · Remote Sensing, Site Investigation, Monitoring and Early Warning

9:00 am	PHD-26-3	**Multi-Scale Seismic Characterisation of Active Rockslides: From Internal Deformation to Mass Movement Dynamics** Bivas Das, Université Côte d'Azur – Géoazur (France)
9:20 am	PHD-26-18	**Development and Field Validation of an Automated Distributed Fibre Optic Sensing (DOFSS) Inclinometer for Real-Time Landslide Deformation Monitoring** Muhammad Farid Bin Ghazali, Universiti Teknologi PETRONAS (Malaysia)

Theme 3 · Testing, Modelling and Mitigation Techniques

9:40 am	PHD-26-2	**Nature-Based Solution (NbS) to Prevent Soil Degradation in Agroforestry Landscape: Monitoring and Environmental Impact Assessment** Ali Hajian, University of Pavia (Italy)

10:00 am	PHD-26-6	ZOODRM_LS: A Hydrogeological Framework for Modelling Soil Saturation Dynamics to Inform Landslide Assessment in the Western Ghats Krishna Priya V. K., University of Kerala (India)
10:20 am	PHD-26-23	Identification and Mitigation Strategies for Landslides along NH 1D from Sonamarg to Kargil, J&K Aadil Manzoor, University of Kashmir (India)

10:30 am – 11:00 am TEA & COFFEE BREAK

11:00 am KEYNOTE SESSIONS

Keynote Session **11:00 am – 12:00 pm** **Floor 1 · PR 11**

Keynote Wed 25 Nov · 11:00 am – 11:20 am · Floor 1 · PR 11

Geotechnical Investigations on Cut Slope Failures and Impact on Infrastructure in the Western Ghats, India

S. S. Chandrasekaran, Professor, School of Civil Engineering, Vellore Institute of Technology (VIT), Vellore, India

Vertical cut slope failures occur frequently in The Western Ghats of India impacting infrastructure and led to death of many people. Vertical cuts are made for constructing residential houses. It has been observed that these cut slopes are not stabilised and left as it is leading to failure during intense rainfall. This talk focuses on three such failures: Peringavu and Kaithakunda in Malappuram district of Kerala, and Lovedale in The Nilgiris district of Tamil Nadu. The residual shear strength parameters are evaluated by the ring shear test. The soil water characteristics curve (SWCC) is developed by unsaturated soil strength parameters. The slope stability and infiltration analysis are carried out with limit equilibrium and finite element methods. Dynamic impact analysis is carried out to examine the effects of the impact of the landslide debris on the building. Utilization of locally available coir geotextiles as a reinforcement for slope stabilization is emphasized.

Keynote Wed 25 Nov · 11:20 am – 11:40 am · Floor 1 · PR 11

Building Reliable Landslide Early Warning Systems: Field Challenges, Operational Experiences, and Future Directions

Sangeeth Kumar, Associate Professor, Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

Developing a reliable, long-term operational landslide early warning system in remote mountainous regions presents significant challenges. This includes steep terrain, dense vegetation, harsh weather, limited connectivity, inadequate solar power, and frequent communication failures. More critically, network reliability is often severely affected during intense rainfall, precisely when continuous monitoring and timely warning dissemination are most essential. This keynote presents the challenges, engineering innovations, and lessons learned from more than a decade of developing and operating real-time landslide monitoring and early warning systems. We discuss how these challenges were addressed through context-aware heterogeneous communication architectures, dynamic network failover, prioritized data delivery, and remote network reconfiguration. A Lightweight Management Framework (LMF) was developed to manage heterogeneous networks, recover from communication failures, and support continuous 24/7 operations. Field deployments demonstrated reliable monitoring of hundreds of geophysical sensors, network failover within one minute, and handling of up to 1,700 sensor readings per second with data delivery latency within 10 seconds. Building on these operational experiences, we introduce a Multi-Criteria Network Digital Twin (MNDT) framework for predictive and proactive network management. By integrating real-time network performance with weather parameters and a supervised bandit learning model, the digital twin predicts communication reliability and enables dynamic selection of the most suitable network before significant degradation occurs. Experimental evaluations demonstrated a 19.66% improvement in packet delivery ratio. The keynote highlights the evolution from reactive fault-tolerant communication to digital twin-enabled predictive resilience, demonstrating a pathway toward reliable, scalable, and sustainable operational landslide early warning systems.

Keynote

Wed 25 Nov · 11:40 am – 12:00 pm · Floor 1 · PR 11

Landslide Disasters: Case Studies and Lessons for Strengthening Policy, Infrastructure Resilience and Capacity Building

Amir Ali Khan, Professor and Head, Resilient Infrastructure Division, National Institute of Disaster Management (NIDM), India

Landslides are a global hazard that claim thousands of lives each year. It displaces and disrupts communities, infrastructure and livelihoods, etc. Landslide risk is increasing due to changing climate with heavier, more erratic rainfall pattern; expanding exposure through urbanization, tourism, mining and unplanned construction practices specially on fragile slopes; and environmental degradation such as deforestation and poor drainage. Case studies play a valuable role for risk reduction when evidence from affected regions is converted into policy decisions, safer infrastructure practices, institutional preparedness and sustained capacity development.

This keynote draws lessons from South Asia (Kedarnath, Malin, Joshimath, Thatri, Kotrupi, Wayanad) and the Asia-Pacific regions (Papua New Guinea, Hong Kong), where common lessons include spatial changes in known hazards, uncontrolled development, weak enforcement, limited early warning and low community awareness. It also draws on the National Institute of Disaster Management's (NIDM) work, including guidance on the safety of buildings on slopes; landslide risk-management training modules; and multi-hazard mapping outcomes from the ongoing Development of National Highways Climate Adaptation Policy and Guidelines (HighCAP) project in the Himalayan region. The keynote sets priorities in three areas:

- Policy: risk-informed planning, stronger enforcement, cross-sectoral integration, investment in prevention to align with the PM's 10 Point Agenda on DRR, Sendai Framework and SDGs;
- Infrastructure resilience: risk-informed construction, slope engineering, drainage, nature-based solutions, monitoring and early warning, redundancy of lifelines, lifecycle maintenance and climate-proofing, etc; and
- Capacity building: technical, community and institutional skills, education, open data, science-policy-practice links, international cooperation and inclusive participation.

Rather than treating case studies as isolated events, it draws out a practical chain of lessons such as translating local evidence into risk-informed planning; integrating slope, drainage, hydrological and climate considerations across the infrastructure life cycle; strengthening monitoring, early warning and post-event learning; and institutionalising multidisciplinary training and capacity building. It concludes with six commitments as understand, plan, build, warn & prepare, include everyone, and cooperate & learn. The central message is that resilient outcomes depend on connecting science, policy, engineering practices and community capacity across the full disaster-risk management cycle.

Keynote Session **11:00 am – 12:00 pm** **Floor 1 · PR 12**

Keynote

Wed 25 Nov · 11:00 am – 11:20 am · Floor 1 · PR 12

Effective Prediction of Earthquake-Induced Slope Displacements, Considering Region-Specific Seismotectonic and Climatic Conditions

Hans-Balder Havenith, Chair en Géologie, Université de Liège, Belgium, and Aadityan Sridharan, Amrita Vishwa Vidyapeetham, India

Earthquake-triggered landslides (ETLs) remain difficult to predict regionally, as regression-based Newmark displacement (ND) equations ignore region- and site-specific conditions. This keynote presents four lines of research. First, a global classification of 50 events shows how seismotectonic, topographic, climatic and geologic factors control landslide event size. Second, the Site-Adaptable Newmark Displacement approach (SAND) incorporates fault type, focal mechanism, hanging-wall/footwall effects, hypocentral depth, topographic amplification, terrain roughness and wetness. Applied to Haiti (2010, 2021), Chi-Chi (1999), Lushan (2013, 2022) and Luding (2022), SAND outperforms the regression-based equation of Jin et al. (2019). Requiring only magnitude, epicentre and focal mechanism, it delivers rapid predictions for emergency response without a landslide inventory. Third, we examine why the 2021 Haiti earthquake triggered over three times the landslide area of 2010, using Sentinel SAR imagery and data-driven trigger classification. Fourth, following Sridharan et al., a Distributed Lag Non-linear Model (DLNM) applied to the 2011 Sikkim earthquake captures non-linear and delayed effects of triggering factors. As a step toward automation, an LLM framework integrating around 55 earthquake-induced landslide inventories complements SAND. Such tools advance not only ETL assessment but also the analysis of earthquake-induced chains of geological hazards.

Keynote

Wed 25 Nov · 11:20 am – 11:40 am · Floor 1 · PR 12

CSIR-CRRI Case Studies on Landslide Mitigation: Engineered and Nature-Based Solutions

P. S. Prasad, Chief Scientist, Geotechnical Engineering, CSIR-Central Road Research Institute, New Delhi, India

Landslides repeatedly disrupt roads all over the world in the hilly regions, threatening lives, infrastructure, and connectivity. CSIR-Central Road Research Institute (CSIR-CRRI) has been actively engaged in landslide-associated research since its inception (1952) and has undertaken several landslide studies across the Himalayan and other hilly regions of the country. Drawing upon the CSIR-Central Road Research Institute's (CRRI) extensive experience in landslide investigation and design of mitigation measures, several have been successfully implemented in the field. The paper discusses two important case studies, i.e., the Lukhbir Landslide on NH 10 (old NH 31A) in Sikkim and landslide studies in the Andaman and Nicobar Islands, India. In both cases, detailed investigation and analysis revealed that drainage plays a significant role in triggering landslides and slope instability. Accordingly, the engineered structures were recommended for mitigating the Lukhbir landslide, whereas a combination of engineered and nature-based solutions was adopted for landslide mitigation at the Andaman and Nicobar Islands. The paper highlights the investigation methodologies, design approaches, mitigation strategies, and successful implementation of these measures at the respective sites.

Keynote

Wed 25 Nov · 11:40 am – 12:00 pm · Floor 1 · PR 12

Analysis of the Initiation Mechanism and Activity of an Old Rock Avalanche at the Contact of Limestone and Flysch Rock Mass

Željko Arbanas, Professor Emeritus, Faculty of Civil Engineering, University of Rijeka, Croatia

Flysch is a sequence of sedimentary rock layers that progress from deep-water and turbidity flow deposits to shallow-water shales and sandstones. Flysch is a remarkable heterogeneous formation, composed mainly of sandstones, soft marls, and sandy shales, extending from Switzerland eastward along the northern Alpine zone and then to the northern flanks of the Carpathians into the Balkan Peninsula. It is present in the Pyrenees (Spain), the Apennines (Italy), the Dinarides (Croatia, Bosnia and Herzegovina), the Caucasus (Southern Russia, Georgia, Armenia, and Azerbaijan), and extends into Asia (Himalayas). Examples are found near the North American Cordillera and in New Zealand. Flysch rock mass deposits are weak, have relatively low strength, and undergo very rapid weathering. It was found that landslides occurring on slopes built in flysch deposits are very common in all flysch areas around the world. In this presentation, the initiation mechanism of large landslides in flysch rock mass in Croatia will be presented. The Rječina River Valley, located in the hinterland of the City of Rijeka, Croatia, contains a large number of landslides, some of which rank among the largest in the Republic of Croatia, with volumes from 3 to 25 million m3. The Rječina Valley is part of a dominant morphostructural unit extending about 150 km in a northwest–southeast direction along the Rječina Valley. Cretaceous and Paleogene limestone are found on the upper slopes, while Paleogene siliciclastic rocks and flysch are situated on the lower slopes and the valley bottom. Along a very short stretch of the Rječina's course and around the Valići reservoir, spanning only a few kilometres, six large landslides have been identified, with numerous smaller, reactivated landslides within them. All the landslides formed at the limestone-flysch contact. Landslides on the north-eastern slope differ from those on the south-western slope in size, sliding-surface depth, and type, style, and triggering mechanism. On the southwestern slope, these are typically slides or complex landslides (rock slumps followed by a rock avalanche), characterized by deep-seated sliding surfaces with depths to 100 m and volumes of up to 25.0 million m^3. The formation characteristics and initiation mechanisms of these landslides will be illustrated using the 1885 Grohovo rock avalanche on the southwestern slope of the valley; this represents a typical shallow- and deep-seated, large-scale landslide within the Rječina River Valley.

Keynote Session 11:00 am – 12:00 pm Floor 2 - PR 13

Keynote

Wed 25 Nov · 11:00 am – 11:30 am · Floor 2 · PR 13

Building Resilient Roads in Himalayas

Lt. Gen. Harpal Singh, AVSM, VSM, Director General, Border Roads Organisation (BRO), India

Mountain infrastructure demands more than conventional engineering; it requires a comprehensive understanding of the dynamic interplay between geology, hydrology, climate and terrain. Drawing upon the extensive field experience of the Border Roads Organisation (BRO), this keynote explores the challenges of planning, constructing, maintaining and restoring connectivity across some of the world's most demanding mountain environments, particularly the Himalayas. With decades of operational experience in high-altitude, landslide-prone and geologically fragile regions, BRO brings a unique engineering perspective where scientific understanding meets the imperatives of strategic connectivity and community resilience. The address examines the practical issues being faced by BRO while undertaking road construction stretch of Himalayas where

strata is weak and unstable. It also suggests way forward to offset the problems being faced in a terrain that is so peculiar and unique. The speaker asserts that while technology is available but it needs to adapt to Himalayan terrain and not otherwise. The central message is to move beyond isolated asset protection towards integrated, risk-informed and resilient mountain corridors for Himalayas.

Keynote

Wed 25 Nov · 11:30 am – 12:00 pm · Floor 2 · PR 13

Why Do Impact-Based Warnings Matter in Multi-Hazard Scenarios? The Role of Real-Time Dynamic Risk Management Tools and Techniques When Hazards Interact

Hari Chandana Ekkirala and Dhanya Madhu, Assistant Professors, Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

Landslide early warning has long rested on a simple premise: if rainfall crosses a threshold, issue a warning. This keynote argues that the premise is failing on two fronts. First, the triggers themselves are moving. Across 517 sub-basins in Kerala's Western Ghats, Southwest Monsoon extremes underwent a regime shift around 2013–2016. Since then, heavy-rain days have become more intense and more clustered, and they are falling on the most landslide-susceptible terrain. In Sikkim, rainfall products disagree so strongly that the trigger itself is uncertain. At the source of the 2026 Bhote Koshi disaster in Nepal, the melt-season mean has risen from 0 °C in the 1950s to +2.27 °C, with no trend in precipitation: the mountain got warmer, not wetter. Thresholds calibrated on past climate now warn for a climate that has already shifted. Second, hazards rarely arrive alone. Drawing on three cascades (Wayanad 2024, South Lhonak 2023 and the 2026 Nepal–China event), we show how slope failures, river blockages, outburst floods and infrastructure losses interact, and how each hazard reshapes the impact of the next. In Nepal, our multi-trigger framework, run retrospectively, flagged thermal conditions 50 days ahead. Yet over the first ~40 km, the flood outran a 38-minute warning chain. We present the tools used to close this gap: regime-shift analysis, hazard interaction matrices, InSAR, rapid exposure mapping, flood-front lead-time modelling and multi-trigger monitoring. We show how they come together in AmritaKripa, a dynamic, hourly, panchayat-scale risk platform. Warnings must state what the hazard will do, to whom, and given what has already happened.

12:00 pm PARALLEL TECHNICAL SESSIONS

Session 1.4 12:00 pm – 1:00 pm

Floor 1 · **PR 1**

Tools and Solutions for Landslide Preparedness and Response in Emergency Scenarios

Convenors: Roberto Sarro, Mateja Jemec Auflič, Mauro Rossi, Guadalupe Bru, Eleftheria Poyiadji

12:00 pm	A075	**Monitoring of the Kleines Nesthorn Before, During and After the Rock Avalanche in Blatten** Vijay Chandel, Hexagon Geosystems (India); Maxence Carrel, Johannes Gassner, GEOPRAEVENT AG (Switzerland)
12:12 pm	A227	**Legislation and Practices of Landslide Risk Reduction in Aizawl, Mizoram, Northeast India** Lal Dinpuia, Lal Lawmsanga, Mizoram University (India); Jessy, Lal Hlimpuia, C Lalchhanhima, Aizawl Municipal Corporation (India); V Vanthangliana, Saitluanga, C Lalremruatfela, Pachhunga University College (India); Lal Hmingsangi, Mizoram University (India)
12:24 pm	A398	**Participatory Decision Support Framework for Multi Hazard Preparedness: Koshi, Nepal** Hotrika Joshi, Tribhuvan University (Nepal)
12:36 pm	A596	**Landslide Impact Assessment through Ontology-Based Hazard Information Extraction from Web Data: A Case Study of Nepal 2026** Lakshmi S. Gopal, Hemalatha Thirugnanam, Amrita Vishwa Vidyapeetham (India); Tejal Shah, Newcastle University (UK); Maneesha Vinodini Ramesh, Amrita Vishwa Vidyapeetham (India)
12:48 pm	A597	**Trust-Based Community Hubs for Resource Sharing and Disaster Resilience** Vipindev P, Adam Keller, Ramesh Guntha, Amrita Vishwa Vidyapeetham (India)

Session 1.2 12:00 pm – 1:00 pm — Floor 2 · PR 2

Understanding and Reducing Landslide Disaster Risks as Cascading and Multi-Geohazards

Convenors: Shinji Sassa, Xuanmei Fan, David Huntley, David Tappin

12:00 pm A022 — **Understanding Cascading Geohazards to Enhance Landslide Disaster Risk Reduction in South-Central British Columbia, Canada**
David H. Huntley, Geological Survey of Canada (Canada)

12:12 pm A205 — **The 2025 Blatten Rock-Ice Avalanche: Scientific Process Understanding, Risk Management and Post-Disaster Resettlement of the Village**
Christian Huggel, University of Zurich (Switzerland); Jordan Aaron, ETH Zürich (Switzerland); Jan Beutel, University of Innsbruck (Austria); Julien Brondex, University of Grenoble Alpes (France); Xiaoqiang Cheng, Chang'an University (China); Radhika De Silva, ETH Zürich (Switzerland); Daniel Farinotti, ETH Zürich and WSL (Switzerland); Olivier Gagliardini, University of Grenoble Alpes (France); Valentin Gischig, ETH Zürich (Switzerland); Wilfried Haeberli, University of Zurich (Switzerland); Mylène Jacquemart, ETH Zürich and WSL (Switzerland); Martin Mergili, University of Graz (Austria); Veruska Muccione, University of Zurich and WSL (Switzerland); Marius Schneider, Sonia Seneviratne, Raffaele Spielmann, ETH Zürich (Switzerland); Samuel Weber, WSL Institute for Snow and Avalanche Research SLF (Switzerland)

12:24 pm A613 — **Flexible Land Use to Reduce Disaster Risk**
Mats Eriksson, Lisa van Well, Swedish Geotechnical Institute (Sweden)

12:36 pm — *Discussion*

Session 5.8 12:00 pm – 1:00 pm — Floor 3 · PR 3

Landslides in Partially Saturated Slopes

Convenors: Josip Peranić, Željko Arbanas, Sabatino Cuomo, Vito Tagarelli, Beena Ajmera

12:00 pm ID:15 — **Parametric Study of Rainfall-Induced Slope Failures in Unsaturated Soil**
Rupsa Roy, Iowa State University (USA); Beena Ajmera, Tennessee Tech University (USA); Binod Tiwari, California State University, Fullerton (USA)

12:12 pm A148 — **Process-Based Physical and Numerical Modelling of Rainfall Infiltration and Initiation Mechanisms of Shallow Debris Slides**
Manish Dewrari, Srikrishnan Siva Subramanian, IIT Roorkee (India)

12:24 pm A278 — **Mineralogical and Geotechnical Characterization of an Actively Creeping Slope along the Adimali–Munnar Corridor, Koompanapara, Kerala, India**
Alka Gond, Sravan Kumar Kotluri, National Centre for Earth Science Studies (NCESS) (India); Mayank Joshi, National Centre for Earth Science Studies (NCESS) (India) and G. B. Pant National Institute of Himalayan Environment (India); Tiju I. Varghese, Prasobh P. Rajan, Rajappan S., Nandakumar V., National Centre for Earth Science Studies (NCESS) (India)

12:36 pm A399 — **Effects of Coarse-Grained Soil Near Slip Surface on Rainfall-Induced Shallow Landslide: A Case Study**
Gonghui Wang, Jiajin Zhao, Kou Sugita, Jiangkun He, Makoto Matsuzawa, Kyoto University (Japan)

12:48 pm ID:147 — **An Integrated Experimental–Numerical Framework for Investigating Rainfall-Induced Hydro-Mechanical Slope Response**
Josip Peranić, Željko Arbanas, Dora Štiberc, Alen Babajić, University of Rijeka (Croatia)

Session 2.7 12:00 pm – 1:00 pm — Floor 4 · PR 4

Geophysical Site Investigation and Monitoring of Landslide-Prone Slopes

Convenors: Sabari Ramesh, E. Chandrasekhar, Aravind S. Nair, Nitin Kumar Mohanan, Baimukund Singh

12:00 pm A493 — **Seismic Monitoring of the Spitze Stei Rockslide: From Event Detection to Internal Slope Dynamics**
Bivas Das, Gabriela Arias, Martijn van den Ende, Juan-Sebastián Osorno-Bolivar, Université Côte d'Azur – Géoazur (France); Michelle Sasson, ETH Zurich (Switzerland); Françoise Courboulex, Université Côte d'Azur – Géoazur (France); Fabian Walter, Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) (Switzerland); Christian Kienholz, GEOTEST AG (Switzerland); Nils Hählen, Natural Hazard Division, Canton of Bern (Switzerland); Małgorzata Chmiel, Université Côte d'Azur – Géoazur (France)

12:12 pm	ID:3	**Application of Reverse-Time Framework for Automatic Detection of the Himalayan Avalanches** Anupa Chakraborty, Mukat Lal Sharma, S. C. Gupta, IIT Roorkee (India)
12:24 pm	A591	**Comparative Assessment of Subsurface Resistivity in Unvegetated and Vegetated Sites Using Electrical Resistivity Tomography** Hrudya S. Nair, Bichu B K Raman, Sabari Ramesh, Amrita Vishwa Vidyapeetham (India)
12:36 pm	ID:3	**Integrated Geophysical and Geotechnical Characterization of Landslide around Mansa Devi Hill Bypass Road, Haridwar, India** Vishal, Raghuveer Negi, Pramod Tiwari, Ruchika Tandon, Shantanu Sarkar, Mohd. Shanawaz Kashif; Uttarakhand Landslide Mitigation and Management Center (ULMMC), Dehradun (India)
12:48 pm		*Discussion*

Session 3.3 **12:00 pm – 1:00 pm** Floor 5 · **PR 5**

Recent Advancements in Physical and Numerical Modelling of Landslides and Debris Flows

Convenors: Sabatino Cuomo, Beena Ajmera, Clarence Choi

12:00 pm	A448	**Markov Switching Models and Their Applications in Modeling Landslides and Debris Flows** Aadityan Sridharan, Georg Gutjahr, Sundararaman Gopalan; Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, Amritapuri (India); Department of Health Science Research, Amrita Institute of Medical Sciences and Research Center, Kochi (India); Department of Electronics and Communication Engineering, Amrita Vishwa Vidyapeetham, Amritapuri (India)
12:12 pm	A479	**Role of Rainfall Duration on Hillslope Stability: A Land–Climate Interaction Perspective** Ajoy Paul, Mohammad Shariful Islam, Bangladesh University of Engineering and Technology (BUET) (Bangladesh)
12:24 pm	ID:173	**Learnings from Controlled Landslide Experiments: Microseismic Signatures of Progressive Failure Onset and Multi-Feature Evolution** Indukala P K, Maneesha Vinodini Ramesh, Amrita Vishwa Vidyapeetham (India)
12:36 pm	A376	**Antecedent Rainfall for Landslide Prediction Using Random Forest and Logistic Regression Models in the Western Himalayas** Aadil Manzoor, Anisa Mehraj, University of Kashmir (India)
12:48 pm	A410	**Pre-Conditioning and Physics-Informed Modelling of Earthquake-Triggered Landslides: Implications for Hazard, Risk, and Landscape Evolution** Sarah Boulton, Suryodoy Ghoshal, Amy Beswick, University of Plymouth (UK); Michael Whitworth, AECOM (UK); T. C. Hales, Cardiff University (UK); Georgio Bennett, University of Exeter (UK); Martin Stokes, Zoë Mildon, University of Plymouth (UK); Joshua Jones, AECOM (UK); Benjamin Campforts, Vrije Universiteit Amsterdam (The Netherlands)
12:50 pm	ID:9	**Analysis of Mudflow Mechanisms: From Laboratory Tests to Numerical Modelling** Yixin Guo, Lorenzo Panzeri, Monica Papini, Simon Liesse, Alessandro Scaioli, Laura Longoni; Politecnico di Milano (Italy); Université catholique de Louvain (Belgium)

Session 3.2 **12:00 pm – 1:00 pm** Floor 6 · **PR 6**

Recent Advancements in Slope Stability and Deformation Analysis

Convenors: Binod Tiwari, Sabatino Cuomo, Keshab Sharma

12:00 pm	A379	**Influence of Excavation Rate on the Stability of Unsupported Vertical Cuts in the Vadose Zone** Geeshpati Yanamandra, BGC Engineering (Canada)
12:12 pm	ID:28	**Rock Mass Characterization and Stability Assessment of Rock Slopes along the Mandi–Bajaura NH-03 Corridor, Himachal Pradesh, India** Aman Sharma, Ashutosh Kumar, IIT Mandi (India); Deepanshu Shirole, IIT Delhi (India)
12:24 pm	A567	**A Constitutive Modelling Approach for Predicting the Deformation Dynamics of the Joshimath Landslide, Uttarakhand, India** Plavita Baruah, Pinom Ering, IIT Bombay (India)
12:36 pm	ID:55	**Slope Stability Assessment on Road-Cut Sections of Rishikesh–Gangotri Roadway, Northern India** Tanmoy Dandapat, Jitendra Kumar, Mrinal Kanti Mukherjee, Anil Kumar Gupta, IIT (ISM) Dhanbad (India)

12:48 pm	A319	**2D Versus 3D Slope Stability Analyses of a Failed Slope** Majed Noorbakhsh Saleh, Melia K. Talagi, Phillip Ooi, University of Hawaii at Manoa (USA)
1:00 pm	A568	**Numerical Investigation of Tunnel-Induced Landslide at Soil-Rock Interface on Western Himalayan Hill Slope** Shuvankar Das, Kala Venkata Uday, Indian Institute of Technology Mandi (India)

Session 3.5 **12:00 pm – 1:00 pm** Floor 7 · PR 7

Physical and Numerical Modelling of Landslide-Structure Interaction (LSI)

Convenors: Sabatino Cuomo, Vikas Thakur, Clarence Choi, Mario Martinelli

12:00 pm	A028	**Performance of Geosynthetics-Reinforced Embankments Against Multiple Surges of Flow-Like Landslides** Rita Ciaglia, Sabatino Cuomo, Angela Di Perna, Antonio Barra, Mariagiovanna Moscariello, Mario Martinelli, Lorenzo Frigo; Geotechnical Engineering Group (GEG), University of Salerno (Italy); SPERI spa, Roma, Italy former Deltares, Delft (The Netherlands); Geosintex s.r.l., Sandrigo (Italy)
12:12 pm	A081	**Particle Shape and Basal Undulation Effects on Granular Flow Behavior Against Slit-Dams** Prity Dhanai, Debayan Bhattacharya, IIT Delhi (India)
12:24 pm	A528	**Effect of Boundary Friction and Aspect Ratio on Granular Flow Impact Against Rigid Barrier** Priti Sharma, Debayan Bhattacharya, Deepanshu Shirole, Bappaditya Manna, IIT Delhi (India)
12:36 pm	A642	**Finite Element Modelling of Rockfall Impact on Flexible Barriers: Simulation of Deformation and Failure Mechanism** Kavya M S, Prateek Negi, NIT Calicut (India)
12:48 pm		*Discussion*

Session 4.8 **12:00 pm – 1:00 pm** Floor 8 · PR 8

Spatial Landslide Assessments and Beyond: New Challenges in Regional and Global Inventory Mapping, Modelling, Validation and Scenario-Building

Convenors: Thomas Glade, Xuanmei Fan, Alexander Strom, Bianca Carvalho Vieira, Susana Pereira

12:00 pm	A156	**Assessing the Impact of Dynamic Landslide Susceptibility on Climate Change: A Case Study in the Province of Belluno (Veneto Region, NE Italy)** Rajeshwari Bhookya, Ascanio Rosi, Sansar Raj Meena, Mario Floris, University of Padova (Italy)
12:12 pm	A181	**Grfin Tools: Software Tools for Modeling Landslide Runout and Debris-Flow Growth and Inundation** Collin Cronkite-Ratcliff, Mark E. Reid, Dianne L. Brien, Jonathan P. Perkins, U.S. Geological Survey, Moffett Field, California (USA)
12:24 pm	A287	**Does Inventory Shape Matter? Disturbed vs. Undisturbed Parameters in Susceptibility Modeling** Edyta Rycio, Polish Geological Institute – National Research Institute, Kraków (Poland)
12:36 pm	A583	**Landslide Susceptibility Zonation Using Analytical Hierarchy Process (AHP) in Melthum-Hlimen, Aizawl, Mizoram, India** Vanlalhlimpui, Jimmy Lalnunmawia, Mizoram University (India)
12:48 pm	A586	**Geospatial Assessment of Landslide Hazard in Kotrupi, Himachal Pradesh** Ruchika, Rajeshwar Singh Banshtu, Chander Prakash, National Institute of Technology Hamirpur (India)
1:00 pm	ID:39	**Probabilistic Regional Landslide Susceptibility Assessment Integrating Spatial Heterogeneity** Shivam Yadav, Sreelekshmi A, Abhijith Ajith Kumar, Rakesh J Pillai; Indian Institute of Technology Palakkad (India); Ground Engineering, WSP India (India)

1:00 pm – 2:00 pm LUNCH BREAK Food Court

2:00 pm TOWNHALL · SCIENCE-POLICY DISCUSSION · WORKSHOP

Townhall 2:00 pm – 3:30 pm — Ground Floor · **Board Room**

Future and Innovative Data Needs for Landslide Risk Reduction: Priorities, Technologies and Motivations.

Facilitators: Prof. Bruce D. Malamud, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom; Prof. Fausto Guzzetti, Professor of Hazard and Risk, Institute of Hazard, Risk and Resilience, Durham University, United Kingdom; Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche (CNR), Genova, Italy

Science-Policy Discussion 2:00 pm – 3:30 pm — **Auditorium**

Science-Policy Discussion on Recent Cascading Mountain Disasters: A Science-Policy Dialogue on the Implications for Risk Management

Facilitator: Prof. Christian Huggel, University of Zurich, Switzerland

Workshop 2:00 pm – 6:00 pm — Floor 1 · **PR 12**

Hydrometeorological Thresholds and Early Warning Systems (EWS) under Climate Change

Facilitator(s): Prof. Thom Bogaard, Delft University of Technology, Netherlands, and Kasetsart University, Thailand; Mr. Nitin Kumar Mohanan, Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, India

3:30 pm – 4:00 pm TEA & COFFEE BREAK

4:00 pm PARALLEL TECHNICAL SESSIONS · PHD FORUM

Session 1.4 4:00 pm – 5:30 pm — Floor 1 · **PR 1**

Tools and Solutions for Landslide Preparedness and Response in Emergency Scenarios

Convenors: Roberto Sarro, Mateja Jemec Auflič, Mauro Rossi, Guadalupe Bru, Eleftheria Poyiadji

4:00 pm	A423	**An Impact-Based Dynamic Landslide Risk Mapping Platform for Regional Early Warning in Kerala, India** Hari Chandana Ekkirala, Nitin Kumar M, Balmukund Singh, Hemalatha T, Amrita Jayakumar, Maneesha Vinodini Ramesh; Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, Amritapuri (India); Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri (India)
4:12 pm	A512	**Meeting an Unprecedented Landslides Crisis: Institutional Strategy and Response to Cyclone Ditwah** Imaya Ariyarathna, Gamini Jayathissa, National Building Research Institute (Sri Lanka)
4:24 pm	A546	**Smart Emergency Deployment System for Landslide Response: A 9-Stage CCCS Model** Ratnesh Gupta, Government ITI Datia (India)
4:36 pm	A598	**Voice-Based Emergency Assistance for Disaster Response** Vipindev P, Adam Keller, Ramesh Guntha, Amrita Vishwa Vidyapeetham (India)
4:48 pm	A670	**Assessing the Potential of 3D-Printed Construction for Post-Landslide Housing Reconstruction: A Scoping Review of Opportunities, Constraints and Contextual Suitability** Sri Vallaba Manoharan, Pratheek Sudhakaran, Sakuntala A, Nivethitha V; Assistant Professor, Amrita School of Architecture, Coimbatore (India); Associate Professor, Amrita School of Architecture, Coimbatore (India); Principal, Amrita School of Architecture, Coimbatore (India); Assistant Professor, Amrita School of Architecture, Coimbatore (India)
5:00 pm		*Discussion*

Session 5.8 4:00 pm – 5:30 pm Floor 2 · PR 2

Landslides in Partially Saturated Slopes

Convenors: Josip Peranić, Željko Arbanas, Sabatino Cuomo, Vito Tagarelli, Beena Ajmera

4:00 pm	ID:142	**Field Monitoring and Soil Characterization for Improved Slope Stability Modelling at the Havišće Bay Test Site (Croatia)** Josip Zorčić, Josip Peranić, Igor Ružić, Željko Arbanas, University of Rijeka (Croatia)
4:12 pm	A414	**Climate-Driven Changes in Hydro-Mechanical Stability of Slopes under Varying Saturation Conditions** Juby Thomas, Andrea Bassi, University of Udine (Italy); Antonio Francipane, University of Palermo (Italy); Elisa Arnone, University of Udine (Italy)
4:24 pm	A443	**Hydro-Meteorological Characteristics of Landslide-Triggering Rainfall over the Western Ghats, India** A.Vyshnavi, Dhanya Madhu; Department of Physics, Amrita Vishwa Vidyapeetham, Amritapuri (India); Centre for Wireless Networks & Applications, Amritapuri (India)
4:36 pm	A471	**Influence of Intra-Day Rainfall Variability on Rainfall-Induced Slope Failure: A Coupled Transient Seepage–Slope Stability Based Investigation** Manohara K. N., Arindam Dey, Rishikesh Bharti, IIT Guwahati (India)
4:48 pm	A622	**Hydromechanical Characterisation of Unsaturated Lateritic Soil for Slope Modelling** Jayakrishnan Menon T. V., Renjitha Mary Varghese, National Institute of Technology Calicut (India)
5:00 pm		*Discussion*

Session 1.1 4:00 pm – 5:40 pm Floor 3 · PR 3

International Programme on Landslides and Global and International Activities for the Kyoto Landslide Commitment 2020 (KLC 2020)

Convenors: Shinji Sassa, Irasema Alcántara-Ayala, Matjaž Mikoš, Kyoji Sassa

4:00 pm	A263	**IPL283: Hierarchical Integration of Field-Based Geomorphological Evidence of Rockfall Trajectories** A. A. Virajh Dias, University of Peradeniya and Ministry of Defence (Sri Lanka); Jagath Gunatilake, University of Peradeniya (Sri Lanka); Kyoji Sassa, International Consortium on Landslides (Japan)
4:12 pm	A196	**Developing a Global Youth Engagement Framework within the International Consortium on Landslides** Giovanna Capparelli, Daniela Biondi, University of Calabria (Italy); Rossella Ciacci, Tech4You Research Ecosystem, country not stated
4:24 pm	A371	**WCoE of Engineering Geology Research Group (EGRG), Sri Lanka** Jagath Gunatilake, University of Peradeniya (Sri Lanka); H.W.G.P.T. Gamage, Vidushi Gunatilake, National
4:36 pm	ID:164	**Community-Based Landslide Disaster Risk Assessment in Aranayake: Evaluating Effectiveness, Limitations, and Opportunities for Enhancement** Tania Munasinghe, Deepthi Wickramsinghe, Kumiko Fujita, Miwa Abe, Imaya Ariyarathna, Kazuo Konagai and Toyohiko Miyagi, Department of Zoology and Environmental Sciences, P.O Box, University of Colombo, Colombo (Sri Lanka), International Consortium on Landslides – Tanaka-Asukai cho, Sakyo-ku, Kyoto – (Japan), Tokai University, Kumamoto – (Japan), National Building Research Institute, Colombo (Sri Lanka)
4:48 pm	ID:27	**Landslide Management: Emergency Response Team of the Hellenic Geological Survey** Natalia Spanou, Katerina Kavoura, Eleftheria Poyiadji, Christina Gallousi, Lampros Pyrgiotis, Stavroula Pavlitsa, Hellenic Survey of Geology and Mineral Exploration (Greece)
5:00 pm	A464	**The Recurrence of Landslides: Case Studies from the Kii and Noto Peninsulas, Japan** Doan Huy Loi, Institute of Transport Science and Technology (Vietnam) and International Consortium on Landslides (Japan); Kyoji Sassa, Toyohiko Miyagi, International Consortium on Landslides (Japan)
5:12 pm	A038	**Global Promotion of Understanding and Reducing Landslide Disaster Risk: Five Years on P-LRT** Shinji Sassa, National Institute of Maritime, Port and Aviation Technology (Japan)

5:24 pm A183 **UAV-Based Thermal Imaging for Detection of Rockfall Instability Along the Apulian Coast, Italy**
Jawad Niaz, Piernicola Lollino, Mario Parise, University Aldo Moro, Bari (Italy)

5:36 pm *Discussion*

Session 3.7 **4:00 pm – 5:30 pm** Floor 4 · PR 4

Landslide and Debris Flow Monitoring and Modelling Using the Latest Technologies and Computational Advances

Convenors: Łukasz Pawlik, Akshay Raj Manocha, Dinesh Kumar Sahu, Paweł Kroh

4:00 pm A161 **The Role of Slip Surface Mesotopography in Rainfall-Induced Landslides in Northern Vietnam**
Paweł Kroh, University of the National Education Commission, Kraków (Poland); Łukasz Pawlik, University of Silesia in Katowice (Poland); Pham Van Tien, Vietnam Academy of Science and Technology (Vietnam); Hieu Trung Tran, Vietnam Academy of Science and Technology (Vietnam) and University of Silesia in Katowice (Poland); Witold Jucha, University of the National Education Commission, Kraków (Poland); Le Hong Luong, Institute of Transport Science and Technology, Ministry of Transport (Vietnam)

4:12 pm ID:86 **Kinematic Characterization and Consequence Analysis of Slow-Moving Landslides Affecting Urban Areas: The Lago Case Study (Calabria, Italy)**
Davide Luongo, Gianfranco Nicodemo, Luisa Oricchio, Luigi Borrelli, Gino Cofone, Diego Reale, Settimio Ferlisi, Gianfranco Fornaro, Giovanni Gullà, Dario Peduto, Department of Civil Engineering, University of Salerno, Via Giovanni Paolo II, Fisciano, SA (Italy), Research Institute for Geo-Hydrological Protection, IRPI – CNR, National Research Council of Italy, Via Cavour n. /, Cosenza (Italy), Institute for Electromagnetic Sensing of the Environment, IREA – CNR, National Research Council of Italy, Via Diocleziano, Naples (Italy)

4:24 pm A192 **Debris-Flow Dynamics and Hazard Implications in the NW and Central Himalaya**
Neha Chauhan · Vipin Kumar · Yaspal Sundriyal · Sameeksha Kaushik · Srikrishnan Siva Subramanian · Raquel Melo · Naresh Rana; HNB Garhwal University, Srinagar Uttarakhand (India); Doon University, Dehradun (India); Centre of Excellence in Disaster Mitigation & Management, IIT Roorkee, Roorkee (India); Institute of Geography and Spatial Planning, University of Lisbon, Lisbon, Portugal Department of Geology, University of Delhi, Delhi (India)

4:36 pm A200 **Tracking Landslide and Debris Flow Formation: Lessons Learned in Various Environmental Conditions**
Łukasz Pawlik, Akshay Raj Manocha, University of Silesia in Katowice (Poland); Hieu Tran Trung, University of Silesia in Katowice (Poland) and Vietnam Academy of Science and Technology (Vietnam); Paweł Kroh, University of the National Education Commission, Kraków (Poland); Janusz Godziek, Dinesh Kumar Sahu, University of Silesia in Katowice (Poland)

4:48 pm ID:30 **Process-Based Probabilistic Modeling of Shallow Landslides Using Satellite-Derived Inputs and Geotechnical Parameters in Himalayan Mountain Environment: A Case Study for Lahaul-Spiti Valley**
Sudhanshu Raghubanshi, Ritesh Agrawal, Jayaprasad P., Rajesh B. Upadhyaya, Space Applications Centre (SAC), ISRO (India)

5:00 pm ID:91 **Field-Informed Hybrid DOFSS–FBG Framework for Angular-Boundary-Constrained Landslide Deformation Reconstruction**
Muhammad Farid bin Ghazali, Hisham Mohamad, Muhammad Yusoff bin Mohd Nasir, Afiqah binti Mohd Nasri, Universiti Teknologi PETRONAS (Malaysia)

5:12 pm *Discussion*

Session 5.7 **4:00 pm – 5:30 pm** Floor 5 · PR 5

Nexus Approach to Understand Landslides Using Open-Source Tools and Inventories

Convenors: Alok Bhardwaj, Mahdi Motagh, Mir Matin

4:00 pm A351 **Retrospective Detection of a Slow-Moving Landslide in Sikkim Himalaya Using SBAS-InSAR Analysis**
Kajal, Varun Saxena, Navdeep Agrawal, Harsh Kumar, Netaji Subhas University of Technology (India)

4:12 pm	A484	**A QGIS-Based Plugin for Automated Execution of the TRIGRS Model: Development, Implementation, and Validation for Rainfall-Induced Landslide Assessment in the Chatten Watershed, North Sikkim, India** Pratik Chaturvedi, Defence Geoinformatics Research Establishment (DRDO) (India); Vikhyat Agarwal, NMIMS Mukesh Patel School of Technology Management and Engineering (India); Swagat Kar, Praveen Mishra, Snehmani, Defence Geoinformatics Research Establishment (DRDO) (India)
4:24 pm	A542	**An Interactive 3D SLBL Tool for Landslide Failure-Surface and Volume Estimation** Gokcen Gokceoglu, Michel Jaboyedoff, University of Lausanne (Switzerland)
4:36 pm		*Free slot*
4:48 pm	A045	**Landslide Susceptibility Assessment of the Kohima–Mokokchung Region in Northeast India Using an Ensemble Machine Learning Approach** Devika Maisnam, Manoj Kumar Phukan, V. M. Tiwari, CSIR-North East Institute of Science and Technology, Jorhat, Assam (India); Sarbajit Dash, CSIR-National Geophysical Research Institute, Hyderabad, Telangana (India)
5:00 pm		*Discussion*

Session 4.5 **4:00 pm - 5:40 pm** Floor 6 · **PR 6**

Landslide Detection and Mapping for Hazard and Risk Assessment in Data-Scarce Environments

Convenors: Silvia Bianchini, Valerio Vivaldi, Roberta Boni, Guadalupe Bru, Olivier Dewitte, Laura Pedretti
Co-Convenors: Veronica Zumpano, Judith Uwihirwe, Philip LeSueur, Stefano Morelli

4:00 pm	A018	**Landslide Inventory and Mapping of Zones Susceptible to Landslide Incidents in Kivu Catchment of Rwanda** Ma-Lyse Nema, Université Félix Houphouët-Boigny (Côte d'Ivoire); Assiel Mugabe, University of Rwanda (Rwanda)
4:12 pm	A044	**Application of Japan's Yellow and Red Zone Concept to Site-Specific Landslide Risk Zoning in Quito, Ecuador** Pucai Yang, Jie Zhang, Tomoyuki Nishikawa, Nippon Koei Co., Ltd. (JICA Expert Team) (Japan)
4:24 pm	ID:44	**A Cloud-Based Geospatial Framework for Automated Landslide Susceptibility Mapping and Real-Time Early Warning in the Chittagong Hill Tracts of Bangladesh** Faozia Anzum Itu, Rabiul Awal, Pritom Bose Aapon, Md Saiful Islam, University of Dhaka (Bangladesh)
4:36 pm	A055	**A Proposed Classification System for Landslide Hazard Maps with Comparison of Types Using a Case Study** Philip LeSueur, Geological Survey of Canada, Natural Resources Canada, and University of British Columbia (Canada); Scott McDougall, University of British Columbia (Canada); Laurent Roberge, Geological Survey of Canada, Natural Resources Canada (Canada)
4:48 pm	A066	**Volumetric Analysis of Historical Coastal Landslides in Wales Using Aerial Photographs** Badal Mohanty, Tristram Hales, Crispin H. V. Cooper, Cardiff University (UK); Gwyn Nelson, Wales Coastal Monitoring Centre (UK); Joel C. Gill, Cardiff University (UK)
5:00 pm	A116	**Inventory Mapping of Deep-Seated Landslides in the Central Part of the Lower Himalaya in Nepal and Its Implication on Geomorphological Evolution** Hiroshi Yagi, Nippon Koei Co., Ltd. (Japan); Go Sato, Tokyo City University (Japan)
5:12 pm	A118	**Modelling Shallow Landslides under Limited Data in the Northern Andes** Paula Cortes, University of Vienna (Austria); Erkan Istanbulluoglu, University of Washington (USA); Johnny Vega, Universidad de Medellín (Colombia); Alessandro Scaioli, Politecnico di Milano (Italy); Robert Reinecke; Edier Aristizábal; Ugur Ozturk, University of Vienna (Austria)
5:24 pm	A631	**Geospatial Analysis of July 2026 Rainfall-Induced Landslides in Bangladesh** Md Saiful Islam, Faozia Anzum Itu, University of Dhaka (Bangladesh); Md. Akhfaruzzaman, Javed Meandad, Save the Children in Bangladesh (Bangladesh)
5:36 pm		*Discussion*

Session 4.3 4:00 pm – 5:40 pm Floor 7 · PR 7

Cascading and Compounding Landslide Hazards in High Mountain Regions

Convenors: Basanta Raj Adhikari, Stella Moreiras, Christian Huggel, Simon Allen, Edier Aristizábal
Co-Convenors: Keshab Sharma, Sergio Sepúlveda, Jessica Munch

4:00 pm A170
Multi-Regime Modelling of the 2021 Chamoli Rock–Ice Avalanche Cascade
Rajesh Kumar Dash, CSIR-Central Building Research Institute (CBRI)(India); Perry Bartelt, RAMMS AG (Switzerland); Yu Zhuang, Hunan University (China); Yves Bühler, WSL Institute for Snow and Avalanche Research SLF and CERC (Switzerland); D. P. Kanungo, CSIR-Central Building Research Institute (CBRI)(India)

4:12 pm A303
SEGRAIN: A Novel Automated Toolbox for Debris Flow Grain Size Analysis – Case Results from Wayanad Landslides
Anaha Joy, IISER Mohali and Aligarh Muslim University (India); Ali P. Yunus, IISER Mohali (India); Haris Hasan Khan, Armugha Khan, Aligarh Muslim University (India)

4:24 pm A393
Integrated Remote Sensing and Field Reconnaissance of Earthquake-Induced Landslides and Accessibility Impacts Following the 2023 Al Haouz, Morocco Earthquake
M. R. Z. Whitworth, AECOM (UK); M. Stokes, University of Plymouth (UK); K. Adams, London South Bank University (UK); A. Belfoul, Ibn Zohr University (Morocco); S. Boulton, University of Plymouth (UK); S. Chen, National University of Singapore (Singapore); M. Feldbrugge, F. Foroughnia, Delft University of Technology (The Netherlands); F. Freddi, University College London (UK); J. Jones, AECOM (UK); V. Novelli, Cardiff University (UK); Redaelli, Gruner Italia S.r.l. (Italy)

4:36 pm A258
Potential Glacial Lake Outburst Flood Modelling Scenarios and Associated Hazards of Gya Lake, Ladakh Himalaya
Arshad Reza, Suraj Mal, Jawaharlal Nehru University (India)

4:48 pm A212
From Concept to Practice: A Multi-Hazard Risk Assessment Framework for the Hindu Kush Himalaya
Keshab Sharma, BGC Engineering Inc. (Canada); Emily Mark, BGC Engineering Inc. (Canada); Alex Strouth, BGC Engineering Inc. (USA)

5:00 pm A178
Orogenic Volume Coupling in the NW Himalaya: Tectonic Uplift Versus Mass Wasting
Priyom Roy, National Remote Sensing Centre (NRSC), ISRO, and IIT Roorkee (India); Sareer Mir, NIT Rourkela (India); Tapas R. Martha, National Remote Sensing Centre (NRSC), ISRO (India); Ajanta Goswami, IIT Roorkee (India)

5:12 pm A435
Impacts of Climate Change on Individual and Cascading Hazards in the Upper Ormots Valley, Eastern Switzerland
Amalia Gutierrez, Marc-Henri Derron, Christian Gerber, Nicolas Gendre, Gabriela Werren, Charlotte Wolff and Michel Jaboyedoff; Risk-group – Institute of Earth Sciences - University of Lausanne; GEOPOLIS - ; CH-Lausanne - Switzerland; Unité des Dangers Naturels (UDN), Direction Générale de l'Environnement, Canton de Vaud - Avenue de Valmont b, Lausanne (Switzerland)

5:24 pm A581
Cascading High-Altitude Rock-Ice Avalanche and Outburst Flooding in Northern Nepal: The September 2026 Disaster
Pavan Kumar B S, Rimjhim Padam Singh, Department of Computer Science & Engineering, Amrita School of Computing, Bengaluru, Amrita Vishwa Vidyapeetham (India)

5:30 pm A369
GIS-Based Landslide Susceptibility Mapping Using Index of Entropy and Certainty Factor Models along the Bandipora–Gurez Corridors, J&K, India
Aadil M. Nanda, Pervez Ahmed, Tasawoor A. Kanth, Syeed Bashir Ahmad Veeri; Govt Degree College Anantnag (India); University of Kashmir (India); Legislative Assembly, UT of Jammu & Kashmir (India)

Session 4.8 4:00 pm – 5:40 pm Floor 8 · PR 8

Spatial Landslide Assessments and Beyond: New Challenges in Regional and Global Inventory Mapping, Modelling, Validation and Scenario-Building

Convenors: Thomas Glade, Xuanmei Fan, Alexander Strom, Bianca Carvalho Vieira, Susana Pereira

4:00 pm A394
Landslide Susceptibility Modelling – a Case Study from the A83 Glen Kinglas, UK
M. R. Z. Whitworth, J. N. Jones, K. Braun, AECOM Ltd. (UK); C. Czarnomski, R. Fitzgerald, R. Moore, Jacobs Engineering Group Inc. (UK); M. G. Winter, Winter Associates Ltd. (UK); T. Waaser, Transport Scotland (UK)

4:12 pm	A403	**Multi-Temporal Satellite-Based Landslide Mapping Overcoming Cloud Cover: A Case Study in Cauca Valley, Colombia** Nishan Kumar Biswas, Pukar Amatya, Thomas A. Stanley, University of Maryland, Baltimore County, and NASA Goddard Space Flight Center (USA); Chris Chiesa, Daniel Morath, Pacific Disaster Center (USA)
4:24 pm	A413	**Global Rainfall-Induced Landslide Susceptibility under Climate Change** Ruoshen Lin, Fuxiao Jiang, Michel Jaboyedoff, Tianxin Lu, University of Lausanne (Switzerland)
4:36 pm	ID:37	**Physics-Informed and Data-Driven Machine Learning for Earthquake-Induced Landslide Susceptibility Mapping in North Cotabato, Philippines** Jayrold Arcede, Gio Gonzales, James Earl Cubillas, Jay Melvin Segales, Vince Joven Nazario, Mike Andre Puspus, Hadikka Etabag, Lolly Jade Rosil, Mhea Jasmin Recilla, Dinah Dumaguing, Arnaldo Gagula, Nicole Anthony Pacle, Clark Justine Gonzales, Genevieve Quisto, Marc Lin Abonales, Arturo Daag, Margarita Dizon, Rhommel Grutas, Mark Asch; Caraga State University (Philippines); DOST-PHIVOLCS (Philippines); University of Picardie Jules Verne (France)
4:48 pm	A431	**Disaster-Derived Screening of Landslide-Prone Plantation Forest Slopes in Japan** Takashi Kato, Netra Prakash Bhandary, Ehime University (Japan)
5:00 pm	A447	**Machine Learning and AHP-Driven Landslide Susceptibility Mapping of Kodagu, Karnataka Using a Multi-Event Temporal Inventory** Rashmi Chandan, K. Sandeep, Central University of Kerala (India); Chandan Kumar Boraiah, Central University of Kerala and IISER Tirupati (India)
5:12 pm	A173	**Influence of Vegetation on Pore Water Pressure Characteristics: A Case Study from Idukki** Writwika Manna, Athira P., Divya P. V., IIT Palakkad (India)
5:24 pm	ID:20	**Open-Data Driven Landslide Susceptibility Mapping Using Google Earth Engine: A Multi-Criteria Assessment of Ditwah Cyclone-Induced Landslides in Kandy District, Sri Lanka** Isini Kokawalage, Pavithra Jayasinghe, University of Sri Jayewardenepura (Sri Lanka)
5:36 pm	A348	**Advanced Machine Learning–Driven Landslide Susceptibility Modelling with SHAP-Based Explainability in the NE Himalayas** Ankush Sagwal, Sambit Prasanajit Naik, Naveen Chandra, Devanshu Ghildiyal; Wadia Institute of Himalayan Geology, Dehradun (India); University of Petroleum and Energy Studies (UPES), Dehradun (India)

PhD Forum **4:00 pm – 5:20 pm** Ground Floor · **Board Room**

Facilitator(s): Dr. Sabarinath S., Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, India

● **Theme 4 - Landslide Hazard Mapping, Risk Assessment and Management**

4:00 pm	PHD-26-14	**Multi-Model Landslide Susceptibility Assessment with Multi-Proxy Validation in the Central Himalaya** Parnab Sarkar, Birla Institute of Technology, Mesra (India)
4:20 pm	PHD-26-16	**Road Network Exposure to Earthquake-Induced Landslide Susceptibility in the Chamoli-Rudraprayag Corridor, Uttarakhand** Kanak K. Khan, Amity University Uttar Pradesh (India)
4:40 pm	PHD-26-22	**A Field-Based Hydro-Mechanical Framework for Rainfall-Induced Landslide Susceptibility of Unsaturated Lateritic Slopes in Kerala's Western Ghats** Jayakrishnan Menon T. V., NIT Calicut (India)
5:00 pm	PHD-26-21	**From Regional Susceptibility to Local Mechanisms: A Comprehensive Multi-Scale Framework for Rainfall-Induced Landslide Hazard Assessment** Manohara K. N., IIT Guwahati (India)

5:00 pm SIDE EVENT

Side Event **5:00 pm – 6:00 pm** Floor 2 - **PR 14**

International School on Landslide Risk Assessment and Mitigation (LARAM School)

Facilitator: Prof. Sabatino Cuomo, University of Salerno, Italy

26

DAY 5 · THURSDAY

26 November 2026

Keynotes · Parallel Sessions · National Leadership Dialogue

AT A GLANCE

Parallel sessions	Floor 1 PR 1	Floor 2 PR 2	Floor 3 PR 3	Floor 4 PR 4	Floor 5 PR 5	Floor 6 PR 6	Floor 7 PR 7	Floor 8 PR 8
9:00 am – 10:40 am	S1.3	S1.5	S2.3	S5.5	S3.6	S4.1	S4.5	S6.2
12:00 pm – 1:00 pm	S3.9	S5.6	S2.3	S2.8	S3.6	S4.1	S4.3	S4.8
4:00 pm – 5:40 pm	S1.3	S2.2	S2.3	S5.3 & S5.4	S3.4	S4.1	S4.5	S4.2

9:00 am – 10:40 am & 4:00 pm – 5:30 pm	PhD Forum	Ground Floor · Board Room
10:30 am – 11:00 am	TEA & COFFEE BREAK	
11:00 am – 12:00 pm	Keynotes	Floor 1 · PR 11
11:00 am – 12:00 pm	Keynotes	Floor 1 · PR 12
11:00 am – 12:00 pm	Keynotes	Floor 2 · PR 13
1:00 pm – 2:00 pm	LUNCH BREAK	Food Court
2:00 pm – 3:30 pm	Inaugural Program (2:00 pm) and Panel Discussion (2:30 pm): National Leadership Dialogue: Indian Landslide Scenario: Challenges & Best Practices	Auditorium
2:00 pm – 5:30 pm	Competition: Photography Competition	Ground Floor · Poster Hall
3:30 pm – 4:00 pm	TEA & COFFEE BREAK	
5:30 pm – 6:30 pm	Cultural Programme	Auditorium
7:00 pm – 10:00 pm	Gala Dinner	BPTP Sanctuary Club

9:00 am PARALLEL TECHNICAL SESSIONS · PHD FORUM

Session 1.3 **9:00 am – 10:40 am** Floor 1 · **PR 1**

Landslides and Society: Cultural, Educational, Ethical, Social and Policy Aspects in Sustainable Landslide Risk Reduction

Convenors: Matjaž Mikoš, Irasema Alcántara-Ayala, Beena Ajmera, Giuseppe Di Capua

9:00 am	A023	**Geomorphometry Coupled Artificial Intelligence in Landslide Science** Kushanav Bhuyan, Xuanmei Fan, Chengdu University of Technology (China)
9:12 am	A441	**MountainSafe 3D: A Participatory 3D Learning Platform for Landslide Resilience** Chinh Luu, Quynh Duy Bui, Hang Ha, Pham Quynh Anh, Tran Mai Phuong, Hanoi University of Civil Engineering (Vietnam); Matthieu Kervyn, Vrije Universiteit Brussel (Belgium)
9:24 am	ID:90	**Risk-Informed Contract Management Strategies for Landslide Mitigation Projects under Economic Volatility** H M R K Bandara, G K T Weerasekara and A A Virajh Dias, Reduction of Landslide Vulnerability by Mitigation Measures, PMU / National Building Research Institute (NBRI) (Sri Lanka)

9:36 am A489 **Beyond Physical Damage: Household Economic Vulnerability and Recovery Following the 2024 Wayanad Landslides, Kerala**
Drishti Marwaha, Francis Njogu Tirus, Sriram V, Sudha Arlikatti: Department of Social Sciences, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala (India); Symbiosis Centre for Urban Studies, Symbiosis School of Economics, Symbiosis International, Deemed University, Pune, Maharashtra (India)

9:48 am A217 **A Gamified Educational Module on Landslide Risk for High School Students**
Michele Calvello, University of Salerno (Italy); Guido Rianna, Euro-Mediterranean Centre on Climate Change (CMCC) Foundation (Italy); Maria Vittoria Gargiulo, University of Salerno (Italy); Laurens J.N. Oostwegel, GFZ German Research Centre for Geosciences (Germany)

10:00 am A408 **From Community Risk Maps to GIS-Based Anticipatory Action for Landslide Preparedness in Bangladesh**
Md. Mohsin Kabir, Javed Meadad, Save the Children (Bangladesh)

10:12 am A609 **From Landslide Susceptibility Maps to Building-Level Risk Management: A GIS-BIM-VR Framework for Wayanad**
Drishya Jayakrishnan, Sneha Srenivasan, Assistant Professor, Amrita School of Architecture, Coimbatore (India)

10:24 am A638 **From Vulnerability to Agency: Disability-Inclusive Landslide Resilience in Wayanad, Kerala**
Sooraj Santhosh Kumar, Vivek S., Veena Suresh: Research Scholar, PhD in Social Work, Department of Social Science, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala (India); Assistant Professor, Department of Social Science, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala (India); Assistant Professor, Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri Campus, Kollam, Kerala (India)

10:36 am A602 **Land Subsidence as a Structural Risk to Sustainable Himalayan Development: Case Studies from Joshimath and Thatri 2023 Land Subsidence in the Indian Himalayan Region**
Amir Ali Khan, Resilient Infrastructure Division, National Institute of Disaster Management, Delhi (India); Yogita Garbyal, Toushif Jaman, Nirbhav, HighCAP Project, National Institute of Disaster Management, Delhi (India)

Session 1.5 **9:00 am – 10:30 am** Floor 2 · PR 2

Grounded Solutions for Community-Centric Landslide Risk Reduction: Blending Local Knowledge with Modern Science and Technology

Convenors: Basanta Raj Adhikari, Antoinette Tordesillas, Federico Raspini, Maximillian Van Wyk de Vries, Sanjaya Devkota, Dharam Raj Upreti, Austin Lord

9:00 am A184 **Building Integrated Anticipatory Action Chain for Landslide Risk Reduction in Nepal's Hill Regions**
Kabin Maharjan, Sanchita Neupane, Nabin Shrestha, Astha Pradhanang, People in Need (PIN) (Nepal)

9:12 am A359 **Short Film: "Maporomoko: When the Slopes Move – Local Landslide Perspectives from Murang'a, Kenya"**
Maryanne Muriuki, Arkansas State University (USA)

9:24 am A551 **Learning from a Slope Failure: Is Vegetation the Key to Success in Soil-Water Bioengineering Interventions Against Shallow Landslides?**
Alejandro Gonzalez-Ollauri, Slobodan B. Mickovski, Glasgow Caledonian University (UK)

9:36 am *Discussion*

Session 2.3 **9:00 am – 10:40 am** Floor 3 · PR 3

Landslide Early Warning Systems: Innovations and Applications

Convenors: Samuele Segoni, Graziella Devoli, Ting Xiao, Stefano Luigi Gariano, Neelima Satyam

9:00 am ID:35 **Advancing Landslide Early Warning Using Soil Water Index (SWI) in the Kalu Ganga Basin**
Gihan Madusanka, Imaya Ariyarathna, Pramodh Gamage, Abeetha Wanasundhara, Gamini Jayathissa, Suminda Rathnayake, Wasantha Senadhera, Mihira Lakruwan, National Building Research Institute (Sri Lanka)

9:12 am A020 **Accumulated Geotechnical Deterioration (AGD): A Dynamic Framework for Assessing the Temporal Evolution of Slope Stability**
Carlos Andrés Buenahora Ballesteros, Antonio Miguel Martínez-Graña, Mariano Yenes, University of Salamanca (Spain)

9:24 am	A047	**Development of Acoustic Emission Based Landslide Early Warning System** Sushil Kumar Singh, Solid State Physics Laboratory, DRDO (India)
9:36 am	A052	**An Intelligent UAV-Deployed GNSS Framework for Real-Time Landslide Monitoring and Early Warning** Qin Zhang, Yuan Du, Guanwen Huang, Li Wang, Dongxu Li, Le Wang, Chang'an University (China)
9:48 am	A093	**Sikkim Glacial Lake Outburst Flood Monitoring** Vijay Chandel, Hexagon Geosystems (India); Christoph Haemmig, GEOTEST Ltd. (Switzerland); Maxence Carrel, Théo St.Pierre, GEOPRAEVENT AG (Switzerland); Christian Kuster, Hexagon Geosystems (India); Prabhakar Rai, Sikkim State Disaster Management Authority (SSDMA) (India); Divya Mohan, Swiss Development and Cooperation Agency (SDC) (India)
10:00 am	A096	**A Near Real-Time Forecasting System for Shallow Landslides at Regional Scale** Veronica Tofani, Elena Benedetta Masi, University of Florence (Italy); Guglielmo Rossi, Civil Protection Centre, University of Florence (Italy)
10:12 am	A572	**Deciphering the Impact of Road Cutting on Landslide Susceptibility in Young Mountainous Region Using Support Vector Machine** Nitesh Dhiman, Avnish Verma, Ankit Singh, and Dericks Praise Shukla, School of Civil and Environmental Engineering, IIT Mandi, Himachal Pradesh (India)
10:24 am	A618	**From Reactive to Proactive Warnings: Agentic AI Framework for Landslide Early Warning** Siddharth Vinayak Bahl, Maneesha Vinodini Ramesh, Hari Chandana Ekkirala; Amrita School of Computing, Amrita Vishwa Vidyapeetham, Amritapuri (India); Center for Wireless Networks and Applications (WNA), Amrita Vishwa Vidyapeetham, Amritapuri (India); Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri (India)
10:36 am		*Discussion*

Session 5.5 **9:00 am – 10:40 am** Floor 4 · **PR 4**

AI for Landslide Risk and Engineering Geology: From Theory to Practice

Convenors: Sansar Raj Meena, Filippo Catani, Xiaochuan Tang

9:00 am	A108	**Intelligent Routing of Mountain Roads Considering Risks of Development and Activation of Slope Processes: A Case Study from Eastern Siberia** Roman Zhidkov, LLC Petromodeling (Russia); Alexey Bershov, LLC Petromodeling and Lomonosov Moscow State University (Russia); Konstantin Frolov, Sino Paishanbiev, LLC Petromodeling (Russia); Vitaly Rekun, Elizaveta Romanova, LLC Petromodeling and Sergeev Institute of Environmental Geoscience RAS (Russia)
9:12 am	A536	**From Susceptibility to Activity: AI and InSAR for Landslide Mapping in South Sikkim** Saurabh Singh, Sansar Raj Meena, OGS – National Institute of Oceanography and Applied Geophysics (Italy)
9:24 am	ID:110	**Projection of Landslide Susceptibility in Kottayam District under Future Climate Scenarios Using Ensemble Machine Learning Approaches** Thenmozhi M., Vaishakh Satheesh, Centre for Water Resources Development and Management (CWRDM) (India); Manoj P. Samuel, ICAR-Central Institute of Fisheries Technology (India); Vivek B., Arun P. R., Centre for Water Resources Development and Management (CWRDM) (India); Riya K. R.
9:36 am	A538	**From Susceptibility to Nowcasting: Machine Learning for Operational Landslide Early Warning** Ankit Singh, IIT Mandi (India) and OGS – National Institute of Oceanography and Applied Geophysics (Italy); Nitesh Dhiman, Dericks Praise Shukla, IIT Mandi (India); Sansar Raj Meena, OGS – National Institute of Oceanography and Applied Geophysics (Italy)
9:48 am	ID:59	**Ensemble Machine Learning-Based Landslide Susceptibility Mapping of Thaha Municipality, Nepal** Bishal Kumar Rayamajhi, Nepal Open University (Nepal); Siddhant Baral, Division Forest Office, Rupandehi (Nepal)
10:00 am	A558	**Recurrent Landslides in Western Ghats of Kerala: Mapping, Monitoring and Modelling** Girish Gopinath, Kerala University of Fisheries and Ocean Studies (KUFOS) (India); Achu A. L., IISER Mohali (India)
10:12 am	A611	**Hierarchical Multimodal Learning Framework for Dynamic Landslide Risk Prediction (Recorded Presentation)** Tejasvi KNS, Pritika Gatike, Gayathri N P, Geena Prasad; Department of Mechanical Engineering Amrita Vishwa Vidyapeetham, Amritapuri Campus, Kollam (India); Department of Mechanical Engineering Amrita Vishwa Vidyapeetham, Amritapuri Campus, Kollam (India); Department of Mechanical Engineering Amrita Vishwa Vidyapeetham, Amritapuri Campus, Kollam (India); Department of Mechanical Engineering Amrita Vishwa Vidyapeetham, Amritapuri Campus, Kollam (India)

10:24 am A606 **LLM-Based Extraction and Validation of Landslide Events from English-Language Indian News**
Sathya Rajendra Singh, Charitha Sree Jangam, Rishitha B, School of Computing, Amrita Vishwa Vidyapeetham, Amaravati (India)

Session 3.8 **9:00 am – 10:40 am** Floor 5 · **PR 5**

Nature-Based Solutions for Landslide Mitigation and Slope Resilience

Convenors: Sabari Ramesh, Sudesh Kumar Wadhawan, Viswanth P, Krishnan K

9:00 am A024 **Preventing and Removing Clogging in Groundwater Drainages through the Reduction of Ferric Oxyhydroxide Using Magnesium Alloys: An Approach Based on Laboratory Experiments**
Naoki Watanabe, Niigata University (Japan); Hodaka Sato, Ofunato Regional Development Center, Iwate Prefectural Government (Japan); Shohei Dobashi, Takuma Heshikiri, Saigata Metalworks Co., Ltd. (Japan); Masaru Tohei, Public Works Research Institute (Japan)

9:12 am A211 **Mitigation of Soil Erosion on Fire-Affected Slopes Using Traditional Japanese Hillside Terracing**
Kiyoharu Hirota, Takashi Kimura, Ehime University (Japan)

9:24 am A231 **Fungal-Induced Stabilization of Sandy Soil under Laboratory Landslide Simulation (NbS Approach)**
Ali Hajian, University of Pavia (Italy); Lorenzo Panzeri, Politecnico di Milano (Italy); Kimia Saber Sichani, University of Pavia (Italy); Solveig Tosi, University of Pavia and National Biodiversity Future Center (Italy); Monica Corti, Monica Papini, Laura Longoni, Politecnico di Milano (Italy); Massimiliano Bordoni, Valerio Vivaldi, Claudia Meisina, University of Pavia (Italy)

9:36 am A232 **Biopolymer Stabilization of Clayey Soils in Landslide-Affected Areas: A Laboratory Study**
Kimia Saber Sichani, Ali Hajian, University of Pavia (Italy); Solveig Tosi, University of Pavia and National Biodiversity Future Center (Italy); Massimiliano Bordoni, Valerio Vivaldi, Claudia Meisina, University of Pavia (Italy)

9:48 am ID:127 **Hydro-Mechanical Modeling of Bioengineered Slopes Subjected to Anisotropic Water Flow**
Amirhossein Ahmadi, Hamed Sadeghi, Sharif University of Technology (Iran)

10:00 am A271 **Performance of Bamboo Check Dams in Bioengineered Slope**
Aachal Tamang, Roshan Rai, Namoshri Rai, Darjeeling Himalaya Initiative (DHI) (India)

10:12 am A291 **Effectiveness of Ecological Restoration in the Mitigation of Unstable Slopes in Sri Lanka**
Madara Dissanayake, Prabath Liyanaarachchi, Hudson Silva, Kanishka Dissanayake, Sandeepani Thilakaratne, National Building Research Organisation (NBRO) (Sri Lanka)

10:24 am A377 **Recovery and Rehabilitation of Degraded Landscape Due to Mass Wasting in Munnar Region of Western Ghats in Kerala, India**
Sudesh Kumar Wadhawan, Balmukund Singh, Nitin Kumar M., Sabari Ramesh and Maneesha Vinodini Ramesh; Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, Amritapuri (India); Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala (India)

10:36 am *Discussion*

Session 4.1 **9:00 am – 10:40 am** Floor 6 · **PR 6**

Landslide Impacts, Vulnerability and Quantitative Risk Assessment of People, Communities, Structures and Infrastructure in Urban and Rural Environments

Convenors: Dario Peduto, Claudia Meisina, Olga Mavrouli, Mike Winter, Paola Salvati, Roberto Sarro Trigueros, Mateja Jemec Auflič
Co-Convenors: Filippo Catani, Yazidhi Bamutaze, Rosa Maria Mateos Ruiz, Eleftheria Poyiadji, Thomas Glade

9:00 am ID:23 **Insights of Climate-Informed Landslide Propensity along Colombian Andean Road Corridors**
Johnny Vega, Janet Barco, César Hidalgo, Universidad de Medellín (Colombia)

9:12 am ID:37 **Risk Impact Assessment of Landslides on the Hydropower Sector: Case Studies**
Narasimham, NHDC Ltd, Indira Sagar Pump Storage Scheme (India)

9:24 am A101 **Assessment of Earthquake-Induced Landslide Hazards Based on a Case Study of the 2024 Noto Peninsula Earthquake**
Hiroyuki Sugimoto, Joko Kamiyama, Public Works Research Institute (Japan); Joe Okazaki, Nippon Koei Co., Ltd. (Japan); Kazunori Hayashi, Okuyama Boring Co., Ltd. (Japan); Katsuo Sasahara, Kochi University (Japan); Research Group for the Development of a Simple Assessment Method for Landslide Disaster Risk due to Earthquakes, Japan Landslide Society (Japan)

9:36 am	A104	**Semi-Quantitative Landslide Risk Assessment for the Char Dham Shrine Districts, India** Sumit Kumar, Ankur Kumar Srivastava, Rabisankar Karmakar, Souvik Acharya, Ramen Das, Bhupender Singh, Harish Bahuguna, Saibal Ghosh, Geological Survey of India, Kolkata (India)
9:48 am	A627	**Ghats360: A Multi-Scale Landslide Risk Decision Support Platform for the Western Ghats, India** Akshay Ajith, Mahua Mukherjee, Ajanta Goswami, IIT Roorkee (India)
10:00 am	A635	**A Numerical Study on Landslide-Induced Base Tilt and Seismic Response of Vernacular Masonry Piers** Gokul Krishnan, Prabakaran Kesavan, Department of Civil Engineering, Amrita School of Engineering, Coimbatore, Amrita Vishwa Vidyapeetham (India)
10:12 am	A646	**Probabilistic Landslide Hazard and Economic Risk Assessment in Kerala, India** Shafique Ahmed, Niva Srivastava; RMSI Pvt Limited, New Delhi (India); RMSI Pvt Limited, New Delhi (India)
10:24 am	A671	**Urban Morphology and Landslide Exposure in Aizawl and Madikeri, India** Vinyas Vardhan P G, Baby Lalvenhimi Khawlhring; Amrita Vishwa Vidyapeetham, School of Architecture, Coimbatore (India); Amrita Vishwa Vidyapeetham, School of Architecture, Coimbatore (India)
10:36 am		*Discussion*

Session 4.5 **9:00 am – 10:40 am** Floor 7 · PR 7

Landslide Detection and Mapping for Hazard and Risk Assessment in Data-Scarce Environments

Convenors: Silvia Bianchini, Valerio Vivaldi, Roberta Boni, Guadalupe Bru, Olivier Dewitte, Laura Pedretti
Co-Convenors: Veronica Zumpano, Judith Uwihirwe, Philip LeSueur, Stefano Morelli

9:00 am	A138	**Potential Damage Zone Prediction of Rain-Induced Rapid Long-Traveling Landslides Based upon Debris Flow Analysis Combining Cellular Automaton and Multi-Agent Models** Sandaruwan Karunarathna, National Building Research Organisation (NBRO)(Sri Lanka); Satoshi Goto, University of Yamanashi (Japan)
9:12 am	A195	**Comparative Analysis of Quantitative and Semi-Quantitative Approaches for Landslide Hazard Assessment along Bandipora–Gurez Road Corridor, Kashmir Himalaya: Implications to Landslide Risk Reduction** Iftikhar Hussain Beigh, Syed Kaiser Bukhari, NIT Srinagar (India)
9:24 am	ID:43	**Post-Disaster Landslide Susceptibility in Data-Scarce Environments: Automated ML for Cyclone Ditwah** Pramodh Gamage, Hasali Hemasingha, Gamini Jayathissa, Kyoji Sassa, Jagath Gunatilake; National Building Research Organisation (NBRO)(Sri Lanka); University of Peradeniya (Sri Lanka); International Consortium on Landslides (Japan)
9:36 am	A654	**Terrain Analysis of Uttarakhand Himalayas: An Integrated Approach of Geology, GIS and Machine Learning** Pratyush Pandey and E Chandrasekhar, Department of Earth Sciences, Indian Institute of Technology Bombay, Powai, Mumbai (India)
9:48 am	A656	**Chaotic CNN: Quick Landslide Identification for Data Sparse Regions** Anusree M, Akhila Henry, Pramod P Nair, Akash Bhavani Sankar, Department of Mathematics, Amrita Vishwa Vidyapeetham, Amritapuri Campus, Kollam, Kerala (India)
10:00 am	A601	**Multi-Hazard Exposure and Vulnerability Mapping in a Lesser Himalayan Rural Municipality** J. R. Panthi, B. Manna, IIT Delhi (India)
10:12 am	A331	**Landslide Inventory Mapping along the Gangotri–Yamunotri Pilgrimage Route, Uttarakhand, India** Arnab Chowdhury, Pavan Sharma, Indrakant Behera, Alok Bhardwaj, IIT Roorkee (India); Pratik Chaturvedi, H. S. Negi, Defence Geoinformatics Research Establishment (DRDO)(India)
10:24 am	A345	**Scenario-Based Assessment of Co-Seismic Landslide Susceptibility Using Modified Newmark Model: Evidence from the 2011 Mw 6.9 Earthquake** Upendra Bhatt, Kuntala Bhusan, Northeastern Space Applications Centre, Umiam, Meghalaya Northeastern Space Applications Centre, Umiam, Meghalaya (India)
10:36 am		*Discussion*

Session 6.2 **9:00 am – 10:40 am** Floor 8 · **PR 8**

Leveraging Landslide Resilience through Local and Indigenous Knowledge: Strategies and Best Practices

Convenors: Neegar Sultana, Md. Farhad Hossen, Arafat Hossain, Humaira Tabassum Raiyan, Md. Mahamodul Hasan Noman

9:00 am	A179	**Identifying Coping and Adaptation Strategies as Pathways to Enhanced Household Resilience Against Landslide Risk: Evidence from Bengali and Indigenous Communities in Rangamati Hill District of Bangladesh** Neegar Sultana, Humaira Tabassum Raiyan, Jagannath University (Bangladesh)
9:12 am	A188	**Event-Based Assessment of Landslide Susceptibility in Tea Plantation–Dominated Slopes: Insights from Darjeeling District, West Bengal** Pritha Das Mahapatra, Ankita Gaur, Tapas R. Martha, I. C. Das, National Remote Sensing Centre (NRSC), ISRO, Hyderabad (India)
9:24 am	ID:12	**Occurrence of Rockfalls in Rocky and Hilly Terrains: A Case Study of Yaoundé and Its Environs (Cameroon)** Roger Bissaya, Mero Yannah, Bah Dahmane; University of Yaoundé 1 (Cameroon); Institute of Geological and Mining Research (Cameroon); M'Hamed Bougara University of Boumerdes (Algeria)
9:36 am	A260	**Analysis of the Causes of Landslides** Rolf Katzenbach, Christiane Bergmann, Ingenieursozietät Professor Dr.-Ing. Katzenbach GmbH (Germany)
9:48 am	A384	**A Digital Platform for Capturing and Mobilizing Indigenous and Local Knowledge for Landslide Resilience: The Heritage Management System** Maya Presannakumar, Ramesh Guntha, Amrita Vishwa Vidyapeetham (India)
10:00 am	A451	**When Familiar Land Became Unfamiliar: Experiences of Indigenous Tribes in Wayanad Landslides** Isaac Thomas, Yenepoya (Deemed to be University) (India); Shalini Aiyappa, St Aloysius (Deemed to be University) (India); Edmond Fernandes, CHD Group and Edward & Cynthia Institute of Public Health (India)
10:12 am	A579	**Indigenous and Local Knowledge for Assessing Landslide-Related Non-Economic Losses in Wayanad** P. S. Haripriya, Sabari Ramesh, Amrita Vishwa Vidyapeetham (India); Shalini Dhyani, CSIR-National Environmental Engineering Research Institute (India)
10:24 am	A658	**Translating Traditional Knowledge into Resilient Built Form: A Scenario-Based Analysis and Vernacular Case Study in Ziro Valley, Arunachal Pradesh** Rithanya S, Amrita Vishwa Vidyapeetham, Amrita School of Architecture, Coimbatore (India)
10:36 am		*Discussion*

PhD Forum **9:00 am – 10:40 am** Ground Floor · **Board Room**

Facilitator(s): Dr. Sabarinath S., Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, India

● **Theme 5 · Progress in Landslide Science and Applications**

9:00 am	PHD-26-5	**Machine Learning-Driven Landslide Nowcasting for Operational Early Warning in the Himalayan Region** Ankit Singh, IIT Mandi (India)
9:20 am	PHD-26-13	**An Independently Validated and Explainable Machine Learning Framework for Landslide Susceptibility Mapping in the Western Ghats, India** Amit Vijaykumar Shirke, Savitribai Phule Pune University (India)
9:40 am	PHD-26-15	**AI-Powered Hazard Risk Prediction: Modeling of Rainfall-Induced Slope Stability for Landslide and Flood Risk Assessment** Amos Silungwe, Amrita Vishwa Vidyapeetham (India)
10:00 am	PHD-26-17	**Ensemble Machine-Learning-Based Landslide Susceptibility Mapping and InSAR Feasibility Assessment in Wayanad, India** Anu R. Nair, Rajagiri College of Social Sciences (India)
10:20 am	PHD-26-20	**Interpretable Machine Learning for Landslide Susceptibility, Vulnerability and Risk Assessment** Soumya Kundu, IISER Bhopal (India)

10:30 am – 11:00 am TEA & COFFEE BREAK

11:00 am KEYNOTE SESSIONS

Keynote Session 11:00 am – 12:00 pm **Floor 1 · PR 11**

Keynote Thu 26 Nov · 11:00 am – 11:20 am · Floor 1 · PR 11

From Static Susceptibility to Dynamic Resilience: Advancing Landslide Hazard Mapping, Risk Assessment, and Management in Mountainous Terrain

Sahilendra Singh, Deputy Director General & RMH-IV, Northern Region, Geological Survey of India (GSI)

Landslide hazard mapping is a critical geospatial tool for mitigating slope instability and reducing disaster risk in mountainous regions. This talk outlines the foundational workflow of landslide mapping, integrating historical landslide inventories, static terrain conditioning factors, and dynamic triggers such as extreme rainfall and seismic activity through heuristic, statistical, machine learning, and physically based methodologies. It examines the progression of cartographic outputs—from basic inventory and susceptibility maps to quantitative hazard and risk assessments—categorized across macro-regional to site-specific engineering scales. Furthermore, this talk details the quantification of disaster risk by evaluating physical, social, economic, and institutional vulnerability dimensions. Drawing on practical applications from the Geological Survey of India's National Landslide Susceptibility Mapping (NLSM) program, the review illustrates how spatial data informs infrastructure alignment, land-use zoning, and resource allocation. Finally, it highlights the paradigm shift in contemporary landslide research beyond static zonation toward real-time early warning systems, Interferometric Synthetic Aperture Radar (InSAR) monitoring, 3D geotechnical modelling, climate-change coupling, artificial intelligence, and community-centred risk governance.

Keynote Thu 26 Nov · 11:20 am – 11:40 am · Floor 1 · PR 11

From Sensors to Systems: Modern Geotechnical Instrumentation Applications in Slope Stability Monitoring

Anuj Sharma, Managing Director, Campbell Scientific India Pvt. Ltd., India

Slope instability presents a significant challenge to infrastructure, mining operations, transportation networks, dams, and communities located in mountainous and landslide-prone regions. As project owners seek greater safety and resilience, slope monitoring has evolved from periodic inspections to continuous, data-driven monitoring systems capable of detecting early signs of failure and supporting timely intervention. This keynote explores the journey from individual geotechnical sensors to integrated monitoring systems for effective slope stability assessment. It highlights the application of key instruments such as inclinometers, piezometers, extensometers, tilt sensors, crack meters, GNSS receivers, weather stations, and TDR technologies in measuring deformation, pore water pressure, rainfall, and environmental influences on slope behaviour. The presentation will demonstrate how modern data loggers, telemetry networks, cloud-based platforms, and real-time analytics transform field measurements into actionable engineering insights and early warning information. Through examples from dams, transportation corridors, hydropower projects, open-pit mines, and critical infrastructure, attendees will gain practical understanding of monitoring system design, sensor integration, automated alarming, and data interpretation. By connecting sensing technologies with intelligent monitoring and decision-support tools, the session showcases how modern geotechnical instrumentation enables proactive risk management, improved infrastructure resilience, and enhanced public safety through reliable, continuous slope stability monitoring.

Keynote Thu 26 Nov · 11:40 am – 12:00 pm · Floor 1 · PR 11

From Field Measurements to Actionable Warnings: Himalayan Lessons for Scalable Landslide Early Warning

Kala Venkata Uday, Professor of Geotechnical Engineering, IIT Mandi; Chairperson, C3DAR, India

Landslide early warning in mountainous regions demands the integration of field observations, intelligent predictive models, and adaptive decision-making frameworks. The Indian Himalaya provides a challenging environment for developing scalable systems combining Internet of Things (IoT) sensors, satellite remote sensing, and Artificial Intelligence/Machine Learning (AI/ML) approaches. Operational case studies from Himachal Pradesh demonstrate the progression from low-cost, field-deployable monitoring and lightweight predictive models to long-term, multi-source data integration. The developments focus on identifying precursory slope behaviour, establishing adaptive warning thresholds, and translating real-time measurements into actionable alerts for vulnerable infrastructure and communities. Field experiences highlight challenges associated with sensor

reliability, site-specific variability, predictive uncertainty, and warning dissemination. Integrating local monitoring intelligence with regional satellite observations and AI/ML-driven forecasting offers opportunities for scalable, context-sensitive early warning systems. These developments establish a pathway from site-specific monitoring to regional risk assessment and globally transferable frameworks for landslide disaster risk reduction. Keywords: Landslide Early Warning Systems; IoT; AI/ML; Satellite Remote Sensing; Multi-Sensor Integration; Adaptive Thresholding; Actionable Warnings; Himalayan Case Studies.

Keynote Session **11:00 am – 12:00 pm** **Floor 1 · PR 12**

Keynote Thu 26 Nov · 11:00 am – 11:20 am · Floor 1 · PR 12

Remote Sensing to Map, Measure and Monitor Landslides in India

Tapas Ranjan Martha, Senior Scientist and Head, Geohazards and Mineral Exploration Division, National Remote Sensing Centre (NRSC), ISRO, India

Remote sensing data has an inherent advantage of observing landslides, which mostly occur in inaccessible and remote mountain terrains. National Remote Sensing Centre (NRSC) of Indian Space Research Organisation (ISRO) is lead center in India for receiving Indian Remote Sensing (IRS) optical and SAR satellite data at Hyderabad, India and use the data for variety of Societal applications. NRSC/ISRO has been working in the field of landslide disasters since last 25 years using various satellite data (both Indian and foreign) and geospatial models under ISRO's disaster management support programme. Emergency response using satellite data to some of the major landslide disasters in India includes 2013 Kedarnath disaster, 2018 Kerala disaster, 2021 Chamoli disaster, 2024 Wayanad disaster etc. A database of ~1,17,000 landslides (polygon) was created and Landslide Atlas of India was prepared by NRSC/ISRO in 2023. Similarly, in 2001, landslide susceptibility Atlas on 1:25,000 scale in tourist and pilgrim routes in Himachal Pradesh and Uttarakhand states of India was prepared using remote sensing data and geospatial models. SILAAS project is a new initiative by NRSC/ISRO to give high resolution short range (24 hr, 48 hr and 72 hr) landslide forecasts using an indigenously developed 3T model. The model addresses three key components of landslide occurrence – Terrain, Trigger and Translation (3T). Terrain factors such as lithology, geological structure, slope, soil depth, land use etc. are responsible for susceptibility of an area to landslide occurrences. If landslide susceptibility in an area is high, then in the presence of triggering factors (e.g., rainfall), the probability of slope failure is also high. It is important to monitor the past translatory movement of hill slopes, i.e. kinematic behaviour, to issue accurate forecast. Using new techniques such as AI/ML, InSAR, Flow models with advanced computational infrastructure, and in collaboration with state remote sensing centres, academic and government organisations, NRSC/ISRO has so-far issued village-level landslide forecast for 49 districts in India in 2026 and continuously working towards a safe and landslide risk resilient society in India.

Keynote Thu 26 Nov · 11:20 am – 11:40 am · Floor 1 · PR 12

Interaction of Flow-Like Landslide with Structures: Centrifuge Tests and Numerical Modelling

Sabatino Cuomo, Professor of Geotechnical Engineering, University of Salerno, Italy

The lecture will show how the interaction of flow-like landslides with structures can be investigated under realistic stress conditions, enabling a physically consistent analysis of both flow kinematics and impact loading. To this aim it will present a series of centrifuge tests under 40g acceleration, and Material Point Method analyses implemented using a two-phase hydro-mechanical formulation. Various slope–structures arrangements and two soils will be used as test cases.

Keynote Thu 26 Nov · 11:40 am – 12:00 pm · Floor 1 · PR 12

Application of AI and Drone for Landslide Management

Prabaharan Poornachandran, Professor and Director, Centre for Internet Studies and Artificial Intelligence (CISAI), Amrita Vishwa Vidyapeetham; Innspark Solutions Pvt. Ltd., India

Landslides pose significant threats to human life, infrastructure, ecosystems in geologically vulnerable and mountainous regions. The integration of Unmanned Aerial Vehicles (UAVs) / Drones, with AI could compliment the effort towards landslide detection, risk mitigation, disaster assessment, and post-landslide rescue operations. We explore an interdisciplinary technologies combining drone-based remote sensing, photogrammetry, LiDAR, multispectral imaging, and AI-driven analytical techniques towards landslide management. ML & DL/AI algorithms can process high-resolution aerial imagery and terrain data captured by the Drones to identify potential landslide-prone zones, detect ground deformation, classify failure patterns, and support predictive hazard modelling. GIS and digital elevation models captured by drones could help in susceptibility mapping, risk assessment leading to Early-warning. For post-landslide emergencies, autonomous and semi-autonomous drones equipped

with thermal cameras, LiDAR sensors, and computer vision systems can rapidly survey inaccessible terrain, identify potential survivors, assess structural damage, and support search-and-rescue teams through real-time geospatial intelligence provide medical and other essential and emergency supplies till the rescue team arrives. This technological integration along with the existing body of knowledge in the area of Landslide management and preparedness could minimize the risk to human life.

Keynote Session **11:00 am – 12:00 pm** **Floor 2 · PR 13**

Keynote Thu 26 Nov · 11:00 am – 11:30 am · Floor 2 · PR 13

Role of Indian Standards in Landslide Risk Reduction and Resilient Infrastructure Development

Dwaipayan Bhadra, Scientist- F & Head, Bureau of Indian Standards, India

Landslides are a frequent natural calamity in India, especially in the Himalayas, the north eastern ranges, and the Ghats. According to the Geological Survey of India, nearly 15 percent of the country's landmass is vulnerable, with more than 66 percent of the Himalayan belt and around 12.6 percent of the North-Eastern hills prone to such hazards. Landslides are being increasingly viewed as an important natural hazard due to large scale damages inflicted by them every year. It is a known fact that a majority of the landslides are triggered by natural causes including concentrated rain falls, cloud bursts, earthquakes and other related factors and hence are difficult to predict their occurrences. However, the landslide problems have considerably increased in recent times due to unplanned man-made activities as well. Large-scale construction works including construction of houses and extensive expansion of road networks as well as deforestation, often encroached into the fragile eco-system of the hills, leading to instability of hill slopes. At the same time, consistently increasing requirements for modern living including uninterrupted communication systems to far flung areas, road and rail networks and urbanization initiatives cannot be completely overlooked. Recognising this, the Bureau of Indian Standards (BIS) has developed a comprehensive set of standards under a specialized Technical Committee devoted to Hill Area Development Engineering, CED 56. These standards cover various aspects of landslide including hazard assessment, risk evaluation, slope stabilization, retaining walls and other related aspects. These codes provide professionals and policymakers with a structured framework to ensure safer development practices in landslide-prone regions leading to landslide risk reduction and resilient infrastructure development.

Keynote Thu 26 Nov · 11:30 am – 12:00 pm · Floor 2 · PR 13

Title to be announced

D. R. Pattanaik, Scientist G & Head, Regional Meteorological Centre, New Delhi, India Meteorological Department (IMD)

12:00 pm PARALLEL TECHNICAL SESSIONS

Session 3.9 **12:00 pm – 1:00 pm** Floor 1 · **PR 1**

Understanding Landslide Dynamics: Geophysical and Geological Modelling

Convenors: Vipin Kumar, Hans-Balder Havenith, Vikram Gupta, Imlirenla Jamir, Won Young Lee

12:00 pm ID:109 **Debris-Flow Impact Variability across Basins: Vital Role of Energy, Roughness, and Geomorphic Setting**
Harish Bahuguna, Sumit Kumar, Rabisankar Karmakar, Ankur Kumar Srivastava, Bhupender Singh, Labli Chand Rajan, Souvik Acharya, Ramen Das, Saibal Ghosh, Geological Survey of India, Central Headquarters, Kolkata, Geological Survey of India, SU: Uttarakhand, Dehradun (India)

12:12 pm A358 **Assessment of Rockfall Dynamics in the NW Himalaya: Insights from Trajectory Modelling in Uttarakhand, India**
Sameeksha Kaushik, Vipin Kumar, Neha Chauhan, Sandeep Kumar, Yaspal Sundriyal; Watershed Management Directorate, Dehradun (India); Department of Geology, Nityanand Himalayan Research & Study Centre, Doon University, Dehradun (India); Uttarakhand state disaster management Authority, Dehradun (India); Sonipat Metropolitan Development authority, Sonipat, Haryana (India)

12:24 pm A625 **Joshimath to Neighbouring Hillslopes: Paleo-Landslide Evidence, Slope History and Evolution**
Shobhana Lakhera, Michel Jaboyedoff, University of Lausanne (Switzerland); Ajanta Goswami, Pradeep Srivastava, IIT Roorkee (India)

12:36 pm ID:69 **SEM-Based Analysis of the Langtang Snow Avalanche during the 2015 Gorkha Earthquake (Mw 7.8), Nepal**
Kiran Acharya, Ram Chandra Tiwari, Aanchal Tiwari, Institute of Engineering, Thapathali Campus, Tribhuvan University (Nepal)

12:48 pm ID:32 **SEM-Based Seismic Slope Stability Charts after Michalowski (1998 and 2010)**
Ram Chandra Tiwari, Basudev Khanal, Aanchal Tiwari, Institute of Engineering, Pulchowk and Thapathali Campuses, Tribhuvan University (Nepal)

Session 5.8 **12:00 pm – 1:00 pm** Floor 2 · PR 2

UAV, Radars and IoT Approaches for Landslide Studies

Convenors: Sangeeth Kumar, Maneesha Vinodini Ramesh, Sethuraman N Rao

12:00 pm A264 **UAV-Based Periodic Monitoring and OBIA-Assisted Landslide Boundary Delineation of Himalayan Highway (NH-7) Slope**
Sahil Kundal, Alok Bhardwaj, IIT Roorkee (India)

12:12 pm A297 **Development of a Platform for Real-Time Slope Instability Warning for Malaysia**
Slobodan B. Mickovski, Sinan Sinanovic, Titus Mutunga, Alejandro Gonzalez-Ollauri, Glasgow Caledonian University (UK)

12:24 pm ID:44 **ML-Driven Landslide Early Warning System Utilizing Acoustic Emission-Based Active Waveguide System**
Sumit Vashista, Solid State Physics Laboratory, DRDO (India); Anju Agrawal, University of Delhi (India); Devendra Verma, Acharya Narendra Dev College, University of Delhi (India); Sushil Kumar Singh, Solid State Physics Laboratory, DRDO (India)

12:36 pm A309 **Green Mesh Radar Internet of Things Architecture for Landslide Early Warning System**
Praveen K., Sangeeth Kumar, Maneesha Vinodini Ramesh, Amrita Vishwa Vidyapeetham (India)

12:48 pm A514 **InSARLite: Democratizing Time-Series InSAR Analysis for Landslide Monitoring and Early Warning**
Muhammad Badar Munir, Hakan Tanyas, Ling Chang, Cees van Westen, Ashok Dahal, Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Enschede (The Netherlands)

Session 2.3 **12:00 pm – 1:00 pm** Floor 3 · PR 3

Landslide Early Warning Systems: Innovations and Applications

Convenors: Samuele Segoni, Graziella Devoli, Ting Xiao, Stefano Luigi Gariano, Neelima Satyam

12:00 pm A139 **Estimation of Rainfall-Induced Landslides along a Major Transportation Corridor in the Darjeeling Himalayas Using a Physically Based Model**
Nimai Singha, Shraban Sarkar, Cooch Behar Panchanan Barma University (India)

12:12 pm A190 **Developing a Landslide Early Warning System (LEWS) for Rainfall-Induced Landslides Using Machine Learning Techniques in Bandarban Sadar, Bandarban Hill District, Bangladesh**
Arafat Hossain, Neegar Sultana, Jagannath University (Bangladesh)

12:24 pm A191 **AI-Enhanced InSAR Time Series Modeling for Advanced Slope Failure Prediction Using LSTM and Inverse Velocity Analysis**
Sumit Pandey, MNNIT Allahabad (India); Vipin Kumar Maurya, GEOFEM (Cyprus); Ramji Dwivedi, MNNIT Allahabad (India); Shivam Chawla, Chandrakant Ojha, IISER Mohali (India)

12:36 pm A193 **Towards Improved Landslide Early Warning: Integrating Hydrological Triggers and Terrain Controls in the Himalayas**
Sudhanshu Dixit, Srikrishnan Siva Subramanian, Sumit Sen, IIT Roorkee (India)

12:48 pm A119 **Geostability Monitoring Applications Using IoT-Driven Alert System for Landslide-Prone Terrains**
Roshan R.S.V, Rudra Budhbhatti, Maccaferri Environmental Solutions Pvt Ltd. (India); Pierluigi Bassetto, NESA Srl (Italy); Fabien Gazado, Officine Maccaferri SpA (Italy)

Session 2.8 12:00 pm – 1:00 pm — Floor 4 · PR 4

Landslides: Map, Measure and Monitor Using Remote Sensing Data

Convenors: Tapas Ranjan Martha, Priyom Roy, Nirmala Jain

12:00 pm	A159	**Monitoring Landslides Using Slope Deformation Time Series by Statistical Method** Punit R. Jalan, Priyom Roy, Ankita Ghoke, Tapas R. Martha, I. C. Das, Geohazards and Mineral Exploration Division, Geosciences Group, National Remote Sensing Centre, Indian Space Research Organisation, Telangana, Hyderabad (India)
12:12 pm	A160	**Validity of the Aspect Flow Assumption-Based Decomposed InSAR Vertical Velocities** Punit R Jalan, Pamir Roy, Himanshu Sonare, Priyom Roy, Tapas R. Martha, I. C. Das, Geohazards and Mineral Exploration Division, Geosciences Group, National Remote Sensing Centre, Indian Space Research Organisation, Telangana, Hyderabad (India)
12:24 pm	A175	**Estimation of Reactivation Probability of Active Landslides Using AI Techniques** Duniya Raj V S, Raghavendra S P, Nirmala S Jain, Supong Temjen, Tapas Ranjan Martha, National Remote Sensing Centre, Indian Space Research Organisation Nagaland State GIS & Remote Sensing Centre, Nagaland (India)
12:36 pm	A334	**Analysis of Deformation Velocities of the Carare Road Landslide in Colombia Using SBAS DInSAR** Henry Alejandro Silva, Guillermo Eduardo Ávila, Universidad Nacional de Colombia, Bogotá (Colombia); Jhonny Alexander Vega, Universidad de Medellín (Colombia)
12:48 pm		*Discussion*

Session 3.8 12:00 pm – 1:00 pm — Floor 5 · PR 5

Nature-Based Solutions for Landslide Mitigation and Slope Resilience

Convenors: Sabari Ramesh, Sudesh Kumar Wadhawan, Viswanth P, Krishnan K

12:00 pm	A400	**Slope Stabilization and Erosion Control Using Biotechnical Methods for Sustainable Geotechnics** Josif Josifovski, Aleksandra N. Atanasovska, Bojan Susinov, Sead Abazi, Ss. Cyril and Methodius University in Skopje (North Macedonia)
12:12 pm	A475	**Field Performance of Roadside Bioengineering at Tare Bhir Landslide, Nepal** Biwash Adhikari, Manish Man Shakya, Department of Roads, Ministry of Infrastructure Development (Nepal)
12:24 pm	A554	**Hybrid Nature-Based Solutions for Riverbank Mitigation Using Gabions and Native Plants in Sri Lanka** M. D. J. P. Wickramasooriya, U. P. Nawagamuwa, M. A. Pallewattha, University of Moratuwa (Sri Lanka)
12:36 pm	A564	**Influence of Root Geometry on the Pullout Resistance of Plant Roots** Charu Chauhan, Akhil Sharma, Kala Venkata Uday; Research scholar, School of Civil and Environmental Engineering, Indian Institute of Technology Mandi (India); Associate Professor, School of Civil and Environmental Engineering & Center for Climate Change and Disaster Management, Indian Institute of Technology Mandi, Himachal Pradesh (India)
12:48 pm	A662	**Nature-Informed Multi-Scalar Strategies for Landslide Risk Reduction in Mountain Landscapes** Aravinth A, Pratheek Sudhakaran, Sakuntala A, Sanjana S, Shivane SM, Amrita School of Architecture, Amrita Vishwa Vidyapeetham, Coimbatore, Tamil Nadu (India)

Session 4.1 12:00 pm – 1:00 pm — Floor 6 · PR 6

Landslide Impacts, Vulnerability and Quantitative Risk Assessment of People, Communities, Structures and Infrastructure in Urban and Rural Environments

Convenors: Dario Peduto, Claudia Meisina, Olga Mavrouli, Mike Winter, Paola Salvati, Roberto Sarro Trigueros, Mateja Jemec Auflič
Co-Convenors: Filippo Catani, Yazidhi Bamutaze, Rosa María Mateos Ruiz, Eleftheria Poyiadji, Thomas Glade

12:00 pm	A252	**Using Fragility Curves Derived from Logistic and Log-Normal Functions for Landslide Risk Assessment on the Colombian Road Network** Johnny Vega, Miguel Ospina, César Hidalgo, Ricardo Bonett, Universidad de Medellín (Colombia)
12:12 pm	A256	**Towards a Landslide Risk Assessment for the Road Network at the Regional Scale** Francesco Caleca, Veronica Tofani, Pierluigi Confuorto, Elena Benedetta Masi, Nicola Casagli, University of Florence (Italy)

12:24 pm ID:56 **Deep-Seated Gravitational Slope Deformations Hazard in Central Sardinia: Implications for Risk Assessment in Urban Areas**
Valentino Demurtas, Paolo Emanuele Orrù, Giacomo Deiana, University of Cagliari (Italy)

12:36 pm A261 **Probabilistic Evaluation of the Hazard Posed by a Glacial Lake Outburst Flood**
Rolf Katzenbach, Technical University of Darmstadt and Ingenieursozietät Professor Dr.-Ing. Katzenbach GmbH (Germany); Christiane Bergmann, Ingenieursozietät Professor Dr.-Ing. Katzenbach GmbH (Germany); Johannes Hübl, Erik Kuschel, BOKU University (Austria)

12:48 pm A277 **Ensuring Landslide Risk Maps Are Not Only Informed by Hazards, but Also Determined by Resource-Based Vulnerabilities of Communities: A Case of Uttarkashi, India**
Gokul R. Kamath, Roopam Shukla, IIT Roorkee (India)

Session 4.3 **12:00 pm – 1:00 pm** Floor 7 · PR 7

Cascading and Compounding Landslide Hazards in High Mountain Regions

Convenors: Basanta Raj Adhikari, Stella Moreiras, Christian Huggel, Simon Allen, Edier Aristizábal
Co-Convenors: Keshab Sharma, Sergio Sepúlveda, Jessica Munch

12:00 pm A401 **Hillslope-Torrential Hazard Cascades in Tropical Mountains**
Maria Isabel Arango-Carmona, University of Potsdam (Germany); Marcel Hürlimann, UPC-BarcelonaTECH (Spain); Edier Aristizábal, Universidad Nacional de Colombia, Medellín (Colombia); Oliver Korup, University of Potsdam (Germany)

12:12 pm A527 **Multi-Hazard Assessment in Alpine Regions: Insights from Valle d'Aosta, Northwestern Italy**
Davide Cardone, University of Twente (Netherlands) and CNR-GEO, Torino (Italy); Bastian van den Bout, University of Twente (Netherlands); Danilo Godone, CNR-GEO and University of Turin (Italy); Daniele Giordan, CNR-GEO, Torino (Italy); Francesco Nex, Cees van Westen, University of Twente (Netherlands)

12:24 pm A573 **Estimating Sediment Transport and Consequences of the 2025 Dharali Debris Flow in the Western Himalayas**
Ananya Hoda, Aritra Ganguly, Madhav Sankar, Bhoomika Thekkatte, Miraya Choudhuri Kashyap, Krish Karnik, Rohit Kumar, Rahul Devrani, Devpriya Sarkar, O.P. Jindal Global University, Sonipat (India)

12:36 pm A681 **Rock-Ice Avalanches in a Warming Himalaya Triggering Cascading Downstream Disasters**
Ravinder Singh, National Institute of Disaster Management (NIDM), Delhi (India); Saswata Sanyal, ICIMOD, Kathmandu (Nepal); Anurag Sinha, Rishabh Singh Chandel, Harshvardhan Lakhera, Dipanshu Upadhyay, Prashant Gautam, Anshul Mishra, Satyam Pratap Singh, HestaBit Technologies Private Limited, Noida, Uttar Pradesh (India)

12:48 pm A565 **Seismic Precursors and Failure-Time Forecasting of the August 2026 Tsangbu Ri–Rasuwa–Trishuli Collapse**
Sibashish Dash, Stephen P. Hicks, Clément Hibert, Joachim Rimpot, Kristen L. Cook, Shiba Subedi, György Hetényi, Marianne S. Karplus, Niels Hovius; GFZ German Research Centre for Geosciences, Potsdam (Germany); University of Potsdam, Potsdam (Germany); Department of Earth Science, University College London (UK); Institut Terre & Environnement de Strasbourg (ITES), CNRS UMR 7063, University of Strasbourg/EOST, Strasbourg (France); IRD, ISTerre, Université Grenoble Alpes (France); Seismology at School in Nepal, Pokhara (Nepal); Institute of Earth Sciences, University of Lausanne, Lausanne (Switzerland); Earth, Environmental, and Resource Sciences, University of Texas at El Paso, El Paso, Texas (USA)

Session 4.8 **12:00 pm – 1:00 pm** Floor 8 · PR 8

Spatial Landslide Assessments and Beyond: New Challenges in Regional and Global Inventory Mapping, Modelling, Validation and Scenario-Building

Convenors: Thomas Glade, Xuanmei Fan, Alexander Strom, Bianca Carvalho Vieira, Susana Pereira

12:00 pm A669 **Testing the Cryosphere–Landslide Link in Himachal Pradesh: Elevation and Inventory Coverage**
Mirothali Chand, Indian Institute of Information Technology Kottayam, Kerala (India); K V Uday, Varun Dutt, Indian Institute of Technology Mandi, Himachal Pradesh (India)

12:12 pm ID:74 **Landslide Susceptibility Mapping Using Machine Learning Models over Imbalanced Class Dataset**
Aaditya Vijay Vats, Institute of Engineering & Technology, Lucknow (India); Vivek Saxena, Defence Geoinformatics Research Establishment (DRDO) (India)

12:24 pm	A532	**Influence of Non-Landslide Data Points in Assessing Change in Landslide Susceptibility Maps**	Sachchidanand Kushwaha, Naveen James, IIT Ropar (India); Biswajeet Pradhan, University of Technology Sydney (Australia); Sagar Rohidas Chavan, IIT Ropar (India)
12:36 pm	ID:74	**Stability Assessment of Ash Mound Using Traditional and Advanced GIS-Enabled Modelling Approaches**	Avinash Sajwan, Graphic Era (Deemed to be University) (India); G. V. Ramana, IIT Delhi (India)
12:48 pm	A589	**GIS-Multicriteria Evaluation and Assessment of AHP Model for Landslide Susceptibility Mapping of Saitual District, Mizoram, India**	C. Lalremruati, Jimmy Lalnunmawia, Mizoram University (India); Lalhruatitluanga, Joel Lalrindika, Lalenkawli
12:50 pm	A675	**Landslide Hazard Assessment and Numerical Modelling in Arunachal Pradesh Using Remote Sensing & GIS**	Lisa Das, Saurodeep Chatterjee; Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal (India)

1:00 pm - 2:00 pm	LUNCH BREAK	Food Court

INAUGURAL PROGRAM

National Leadership Dialogue

Indian Landslide Scenario: Challenges & Best Practices

2:00 pm – 3:30 pm **AUDITORIUM**

2:00 pm WELCOME ADDRESS

INTRODUCING THE PANEL

Introducing the Panel and Panel Members

2:10 pm SPECIAL ADDRESS

Inaugural Address by Honourable Union Minister of State Dr. Raj Bhushan Choudhary, Ministry of Jal Shakti, Government of India

2:25 pm VOTE OF THANKS

Prof. Maneesha Vinodini Ramesh, Pro Vice Chancellor, Amrita Vishwa Vidyapeetham

2:30 pm PANEL DISCUSSION | 2:30 PM – 3:30 PM | AUDITORIUM

Chair: Prof. Sudesh Kumar Wadhawan, Adjunct Professor, Amrita Vishwa Vidyapeetham, Formerly Director General Geological Survey of India

PANEL MEMBERS

Dr. D. R. Pattanaik, Scientist G & Head, Regional Meteorological Centre, New Delhi, IMD

Dr. Manoranjan Mohanty, Scientist G; Head of the Autonomous Institute and Nano Mission Division at the Department of Science and Technology (DST), Government of India

Prof. Vinod Sharma, Vice Chairman, Sikkim State Disaster Management Authority

Dr. Sekhar Lukose Kuriakose, Member Secretary (ex officio), Kerala State Disaster Management Authority (KSDMA)

Dr. D.P. Kanungo, Chief Scientist & Head GEGH Group, CSIR-CBRI

Wing Commander Praful Rao (Retd.), Founder & President, Save the Hills | President, Darjeeling Himalaya Initiative

2:00 pm COMPETITION

Competition 2:00 pm – 5:30 pm — Ground Floor · **Poster Hall**

Photography Competition

3:30 pm – 4:00 pm TEA & COFFEE BREAK

4:00 pm PARALLEL TECHNICAL SESSIONS · PHD FORUM

Session 1.3 4:00 pm – 5:40 pm — Floor 1 · **PR 1**

Landslides and Society: Cultural, Educational, Ethical, Social and Policy Aspects in Sustainable Landslide Risk Reduction

Convenors: Matjaž Mikoš, Irasema Alcántara-Ayala, Beena Ajmera, Giuseppe Di Capua

4:00 pm	A272	**Living with Landslides: Rethinking Risk and Response in the Darjeeling Himalaya** Namoshri Rai, Roshan Rai, Aachal Tamang, Darjeeling Himalaya Initiative (DHI)(India)
4:12 pm	A438	**Decoding Landslide Risk: The Insurance Perspective on Closing the Protection Gap** Ritu Raj Nath, Devjyoti Mitra, Moody's Insurance Solutions (USA)
4:24 pm	A062	**Connecting the Road Asset Management System and Landslide Risk Assessment with Climate Change Conditions** Biljana Abolmasov, Miloš Marjanović, University of Belgrade (Serbia); Igor Peševski, Ss. Cyril and Methodius University in Skopje (North Macedonia); Dario Peduto, University of Salerno (Italy)
4:36 pm	ID:137	**Integrated Landslide Risk Management for Cultural Heritage Sites: Case of Kyiv-Pechersk Lavra** Tetiana Kril, Institute of Geological Sciences, National Academy of Sciences of Ukraine (Ukraine); Iryna Cherevko, National Reserve Kyiv-Pechersk Lavra (Ukraine)
4:48 pm	A032	**Multidisciplinary Analysis of Long-Term Landslide Montilla Castle Hill, Southern Iberia** Jesús Galindo-Zaldívar, University of Granada (Spain); Francisco J. Jiménez-Espejo, Instituto Andaluz de Ciencias de la Tierra (CSIC)(Spain); Lourdes González-Castillo, Francisco Lamas, University of Granada (Spain); Francisco José Martínez-Moreno, Complutense University of Madrid (Spain); Jon Camuera, University of Granada (Spain); Sergio Moyano, Museo Histórico Local de Montilla (Spain); José A. Peláez, University of Jaén (Spain); José Luis Urbano, Museo Histórico Local de Montilla (Spain); Mónica Camacho Calderón, Autonomous University of Madrid (Spain); Raimundo Ortiz, Cabildo Catedral de Córdoba (Spain)
5:00 pm	A433	**Disaster Experiences, Challenges, and Lessons Learned: Insights from Aranayake, Sri Lanka** Imaya Ariyarathna, National Building Research Institute (Sri Lanka); Tania Munasinghe, ICL SATREPS Office (Sri Lanka); Katsuo Sasahara, Kochi University (Japan); Jayalath Edirisinghe, University of Peradeniya (Sri Lanka)
5:12 pm	A174	**Perceived Stress to PTSD among Informal First Responders Following 2024 Wayanad Landslide: A Two-Wave Biopsychosocial Study** VR Akhila, C Jayakumar, National Institute of Mental Health and Neurosciences (NIMHANS)(India); David Petley, Nottingham Trent University (UK); Senthil Amudhan, Manjunatha M V, National Institute of Mental Health and Neurosciences (NIMHANS)(India); Sigamani Panneer, Jawaharlal Nehru University (JNU)(India)
5:24 pm	A680	**Living with Landslides and Water Scarcity in Tribal Hamlets of the Bhimashankar Region, India** V. Ravikumar Pandi, Sajithkumar K J, Anoop S, Venkata Manoj Venigalla, Varalakshmi M P, B Roopa Ravali, Gokul Panicker, Renjith Mohan, Amrita Vishwa Vidyapeetham, Amritapuri (India)
5:36 pm	ID:66	**Landslide Risk Governance from Open Data to Decision with Agentic AI** Matjaž Mikoš, University of Ljubljana, UNESCO Chair on Water-related Disaster Risk Reduction (Slovenia); Joao Pita Costa, International Research Centre on AI under the Auspices of UNESCO (IRCAI)(Slovenia)

Session 2.2 4:00 pm – 5:40 pm Floor 2 · PR 2

Toward Continental and Global InSAR Ground Motion Services for Landslide Risk Reduction

Convenors: John F. Dehls, Laura Pedretti, Vikram Gupta, Maria I. Navarro-Hernández, Ebrahim Ghaderpour

4:00 pm	A467	**Operational InSAR Ground Motion Services for Landslide Risk Reduction: Lessons from Norway and Europe** John F. Dehls, Gökhan Aslan, Marie Bredal, Geological Survey of Norway (Norway); Yngvar Larsen, NORCE (Norway); Dag Anders Moldestad, Norwegian Space Agency (Norway)
4:12 pm	A137	**InSAR-Based Himalayan Slope Motion Monitoring Portal (HSMMP) for Landslide Hazard Assessment in India** Himanshu Sonare, Priyom Roy, Tapas R. Martha, I.C. Das, National Remote Sensing Centre (NRSC), ISRO, Hyderabad (India)
4:24 pm	A496	**Towards a Rwanda Ground Motion Service: Assessing the Feasibility of Sentinel 1 InSAR** Zbigniew Perski, Maria Przyłucka, Petar Marinkovic, Joseph Mugabo; Polish Geological Institute – National Research Institute, Warsaw (Poland); PPOLabs, The Hague (The Netherlands); Rwanda Mines, Petroleum and Gas Board, Kigali (Rwanda)
4:36 pm	A459	**Spatiotemporal Risk Inference from Deformation Evidence for Landslides** Xiao Feng, Thom Bogaard, Delft University of Technology (The Netherlands)
4:48 pm	A316	**InSAR-Based Slope Deformation and Instability Assessment: Implications for Disaster Risk Management in the Bhagirathi Valley, Northwest Himalaya, India** Anand Kumar Gupta, Khayingshing Luirei, Academy of Scientific and Innovative Research (AcSIR) and Wadia Institute of Himalayan Geology (India); Vikram Gupta, Sikkim University (India); Mohd Shawez, Academy of Scientific and Innovative Research (AcSIR) and Wadia Institute of Himalayan Geology (India)
5:00 pm	A091	**Monitoring South Lhonak Lake and Surrounding Slopes (North Sikkim, India) Using Persistent Scatterer InSAR** Prodip Mandal, Vikram Gupta, Sikkim University (India)
5:12 pm	A647	**Monitoring Permafrost Thaw-Induced Deformation Using Multi-Temporal SAR Interferometry** Kirti Kumar Mahanta, Ipshita Priyadarsini Pradhan, Ankit Singh, Nitesh Dhiman, Avnish Verma, Dericks Praise Shukla, School of Civil and Environmental Engineering, Indian Institute of Technology Mandi (India)
5:24 pm	A236	**Geodetic Insights into Strain Localization and Landslide Clustering in the Northwestern Himalaya, India** Abhishek Lakhote, Maheshreddy Gade, J. Dhanya, IIT Mandi (India)
5:36 pm		*Discussion*

Session 2.3 4:00 pm – 5:40 pm Floor 3 · PR 3

Landslide Early Warning Systems: Innovations and Applications

Convenors: Samuele Segoni, Graziella Devoli, Ting Xiao, Stefano Luigi Gariano, Neelima Satyam

4:00 pm	A222	**Innovation Trajectories in India's Landslide Early Warning Systems: Evidence from Patent Disclosures** Hashim Mohammed S, National Institute of Advanced Studies and Manipal Academy of Higher Education (India); V. V Binoy, National Institute of Advanced Studies (India)
4:12 pm	A244	**Machine Learning–Driven Landslide Nowcasting for Operational Early Warning in the Himalayan Region** Ankit Singh, Nitesh Dhiman, Bhawna Pathak, and Dericks Praise Shukla, Indian Institute of Technology Mandi, School of Civil and Environmental Engineering (India)
4:24 pm	A290	**Slip and Microearthquakes Reveal the Onset of Runaway Acceleration and Improve Time-To-Failure Prediction in a Rockslide** Sibashish Dash, GFZ German Research Centre for Geosciences and University of Potsdam (Germany); Michael Dietze, University of Göttingen (Germany); Jens M. Turowski, Peter Makus, GFZ German Research Centre for Geosciences (Germany); Fabian Walter, Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) (Switzerland); Marcel Fulde, Geo Inventure (Switzerland); Niels Hovius, GFZ German Research Centre for Geosciences and University of Potsdam (Germany)

4:36 pm	A561	**From Landslide Forecasts to Life-Saving Action: A Global Desk-Based Review of Early-Warning Gaps** Dilshara M.M.S, Wijeseekara S, University of Kelaniya (Sri Lanka)
4:48 pm	A556	**ALERT: A Planetary Scale Satellite Rainfall-Driven Automated Landslide Early Risk Tracker for Data-Scarce Regions** Ali P. Yunus, E.S Faizah, Achu A.L, IISER Mohali (India); K.S Sajinkumar, University of Kerala (India)
5:00 pm	A034	**Spatially Heterogeneous Rainfall Thresholds for Landslide Early Warning** Wenlong He, Li Wang, Bao Shu, Chang'an University (China); Guoming Zheng, Institute of Geological Sciences of Fujian (China); Cuiling Xu, Qin Zhang, Chang'an University (China)
5:12 pm	A050	**Assessing Landslide Instability Using Fracture-Induced Electromagnetic Radiation (FEMR)** Shreeja Das, Institute of Geological Sciences, Polish Academy of Sciences (Poland); Vladimir Frid, Sami Shamoon College of Engineering (Israel); Raymond Duraiswami, Savitribai Phule Pune University (India); Stanislaw Mazur, Institute of Geological Sciences, Polish Academy of Sciences (Poland)
5:24 pm		*Discussion*

Session 5.3 & 5.4 **4:00 pm – 5:30 pm** Floor 4 · **PR 4**

Session 5.3: Geosynthetics for Slope Stabilization

Convenors: Sabatino Cuomo, Josip Peranić, Riya Bhowmik, Željko Arbanas

Session 5.4: Physics-Informed and Hybrid AI for Seismic Hazard Mapping, Landslide Processes, Thresholds, and Forecasting

Convenors: Ashok Dahal, Gerardo Grelle, Hemalatha T., Aadityan Sridharan

4:00 pm	ID:211	**Implementation of Advanced Slope Protection Measures: An Indian Case Study from Eastern Himalayas** Sahil Sardana, Roshan R.S.V, Rudra Budhbhatti, Maccaferri Environmental Solutions Pvt Ltd. (India)
4:12 pm	A167	**PIML-Based Landslide Susceptibility Mapping in the Bhagirathi Basin** Madhukar Dwivedi, Srikrishnan Siva Subramanian, Kamal Jain, IIT Roorkee (India)
4:24 pm	A340	**Groundwater-Table Rise and Slope Instability: 3D Numerical Modelling of the Kotropi Landslide** Soumya Darshan Panda, Arindam Basu, IIT Kharagpur (India)
4:36 pm	A391	**Modeling the Spatial and Temporal Susceptibility of Post-Seismic Landslides in Papua New Guinea** Gayathri G Reshma, Aadityan Sridharan, Georg Gutjahr; Department of Mathematics, Amrita Vishwa Vidyapeetham Amritapuri, Amritapuri (India); Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, Amritapuri (India); Department of Health Science Research, Amrita Institute of Medical Sciences and Research Center, Kochi (India)
4:48 pm	A395	**Hybrid AI for Multi-Depth Pore Pressure Forecasting in Munnar, Kerala** Namitha Narayan, Hemalatha T., Maneesha Vinodini Ramesh, Center for Wireless Networks & Applications (WNA) Amrita Vishwa Vidyapeetham Amritapuri (India)
5:00 pm	A442	**Physics-Informed Spatiotemporal Graph Neural Network to Estimate Landslide Hazard** Donadi Akash Bhavani Sankar, Aadityan Sridharan, Maneesha Vinodini Ramesh; Department of Mathematics, Amrita Vishwa Vidyapeetham, Amritapuri (India); Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, Amritapuri (India)
5:12 pm	A466	**Cyclone-Induced Landslide Mapping in Data-Scarce Regions: A Multi-Source Attention U-Net Approach for the Eastern Ghats, India** Lakshmi Muraleedharan Sabarinivas, Hemalatha Thirugnanam, Abhilash Sreekumar, Drisya S: Center for Wireless Networks & Applications (WNA), Amrita Vishwa Vidyapeetham, Amritapuri (India)
5:24 pm	A462	**Characterization and Monitoring of the Calita Landslide (Italy) in a Complex Geo-Structural Context** Alessandro Fraccica, Mauro Bonasera, Danilo D'Angio, Gianluigi Di Paola, Matteo Maggi, Vittorio Chiessi, Gennaro Maria Monti, Federica Pellegrini, Nicola De Simone, Roberto Spagni; ISPRA – Italian Institute for Environmental Protection and Research, Rome (Italy); Agenzia Regionale per la Sicurezza Territoriale e la Protezione Civile, Emilia-Romagna, Reggio Emilia (Italy)

Session 3.4 4:00 pm – 5:30 pm Floor 5 · PR 5

Recent Advancements in Landslide and Debris Flow Mitigation Techniques

Convenors: S. S. Chandrasekaran, Binod Tiwari, Josip Peranić

4:00 pm	ID:65	**Development and Implementation of Flexible Debris Flow Barriers** Corinna Wendeler, Mountain Hazard Engineering AG (Switzerland); Matthias Denk, Roberto Luis-Fonseca, Geobrugg AG (Switzerland); Jitin Mukheja, Sumit Sharma, Geobrugg India Private Limited (India)
4:12 pm	A026	**Analytical and Numerical Models of Landslide Impact Against Net Flexible Barriers** Raffaele Orazzo, Sabatino Cuomo, Rita Ciaglia, Mario Martinelli, Rosa Maria Stefania Maiorano, Stefano Aversa; Geotechnical Engineering Group (GEG), University of Salerno (Italy); SPERI spa, Roma, Italy former Deltares, Delft (The Netherlands)
4:24 pm	A079	**Risk Reduction of Coseismic Landslides by Structural Measures and Benefit-Cost Assessment** Senro Kuraoka, Yuichi Nakashima, Ryo Fujimoto, Nippon Koei Co., Ltd. (Japan)
4:36 pm	A481	**The Portainé Torrent (Central Pyrenees): Geomorphological and Functional Assessment of a Stepped Flexible-Barrier System After Almost Two Decades of Service** Carles Raïmat-Quintana, Carles Fañanàs-Aguilera, Jona Trujillo-Moreno, Arabela Vega-Aguilar and Mercy Eras-Galarza; Department of Agriculture, Livestock, Fisheries and Food, Government of Catalonia (Spain); Kuroba Quatre S.L., Lleida (Spain); World Bank Group and Universitat Autònoma de Barcelona (Spain)
4:48 pm	A525	**Integrated Geotechnical Stabilization and Multi-Hazard Mitigation for a Complex Sinking Zone along the Rohtang Tunnel South Portal Approach, NW Himalayas, India** Rishabh Chaurasia, Pioneer Foundation Engineers Pvt. Ltd. (India); E. C. Kalyani
5:00 pm	ID:135	**Rockfall Mitigation for Mumbai–Pune Expressway Ghat Section: Design to Implementation Lessons** Roshan R.S.V. Rudra Budhbhatti, Maccaferri Environmental Solutions Pvt Ltd. (India); Fabien Gazado, Officine Maccaferri SpA (Italy)
5:12 pm	A293	**Reconstructing Landslide Evolution and Back-Analysis of the 2015 Event: A Case Study of Phesama Landslide, Nagaland, India** Megotsohe Chasie, Geological Survey of India, Pune (India); P. K. Theophilus, Geological Survey of India, Shillong (India)
5:24 pm		*Discussion*

Session 4.1 4:00 pm – 5:30 pm Floor 6 · PR 6

Landslide Impacts, Vulnerability and Quantitative Risk Assessment of People, Communities, Structures and Infrastructure in Urban and Rural Environments

Convenors: Dario Peduto, Claudia Meisina, Olga Mavrouli, Mike Winter, Paola Salvati, Roberto Sarro Trigueros, Mateja Jemec Auflič
Co-Convenors: Filippo Catani, Yazidhi Bamutaze, Rosa Maria Mateos Ruiz, Eleftheria Poyiadji, Thomas Glade

4:00 pm	A324	**Current Problems of Natural and Hydraulic Engineering Systems of the Vakhsh HPP Cascade (Tajikistan)** Olga Barykina, Oleg Zerkal, Alexander Tarbeev, Lomonosov Moscow State University (Russia)
4:12 pm	ID:52	**Development of Empirical Vulnerability Curves from a Multi-Event Building Damage Inventory for the Philippines** Lestelle Torio-Kaimo, John Romel Flora, Chelsey Valderama, University of the Philippines Diliman (Philippines)
4:24 pm	A367	**Highway-Corridor Landslide Impacts in Monsoon India: 325 Events with Damage Observations** Ramesh Guntha, Amrita Vishwa Vidyapeetham (India)
4:36 pm	A420	**Measuring Intra- and Inter-Household Capital Inequality in Landslide Resilience: A Case Study in Kerala, India** Athul Joseph, IIT Roorkee (India); Sekhar Lukose Kuriakose, Kerala State Disaster Management Authority (KSDMA) (India); Subir Sen, IIT Roorkee (India)
4:48 pm	A421	**Multi-Hazard Vulnerability and Risk Assessment in the Bhagirathi Valley, Uttarakhand** Neha Gupta, Moody's Analytics India (India); D. P. Kanungo, CSIR-Central Building Research Institute (CBRI) (India); Josodhir Das, IIT Roorkee (India)

5:00 pm	A295	**A Framework for Evacuating Tourists under Extreme Event-Induced Floods and Landslides: A Study from the Darjeeling Himalaya** Somnath Bera, Pritha Ghosh, Anwesha Dutta, Central University of South Bihar (India); Swapan Talukdar, Asutosh College, University of Calcutta (India)
5:12 pm	A664	**RiskChanges: An Open-Source Online Tool for Dynamic Multi-Hazard Risk Assessment** Cees van Westen, Faculty ITC, University of Twente (Netherlands)
5:24 pm		*Discussion*

Session 4.5 **4:00 pm - 5:30 pm** Floor 7 - **PR 7**

Landslide Detection and Mapping for Hazard and Risk Assessment in Data-Scarce Environments

Convenors: Silvia Bianchini, Valerio Vivaldi, Roberta Boni, Guadalupe Bru, Olivier Dewitte, Laura Pedretti
Co-Convenors: Veronica Zumpano, Judith Uwihirwe, Philip LeSueur, Stefano Morelli

4:00 pm	A347	**Multi-Source Spatio-Temporal Deep Learning Framework for Landslide Assessment in India** Srijita Bhowmick, Sudharsana V. Iyenger, Ramaiah University of Applied Sciences (India)
4:12 pm	ID:1	**Probabilistic Landslide Hazard in Bimsoils under Combined Rainfall and Seismic Scenarios with Variable Block Proportion** Melissa Parra, Johnny Vega, Universidad de Medellin (Colombia); Maria Isabel Hurtado, Universidad Nacional de Colombia (Colombia); César Hidalgo, Universidad de Medellin (Colombia)
4:24 pm	A206	**Spatial Distribution of Landslide Susceptibility Mapping along the Road Network of Bandarban Hill District in Bangladesh** Neegar Sultana, Md. Farhad Hossen, Md. Mahamodul Hasan Noman, Jagannath University (Bangladesh)
4:36 pm	ID:2	**Semi-Automatic Mapping of 2025 Landslides across Geological and LULC Settings in Da Nang, Vietnam** Linh Xuan Trinh, Hang Ha, Chinh Luu, Quynh Duy Bui, Matthieu Kervyn, Hanoi University of Civil Engineering, Faculty of Hydraulic Engineering, Hanoi (Vietnam), Vrije Universiteit Brussel, Department of Geography, Brussels (Belgium)
4:48 pm	A585	**LoRA-Tabular: Landslide Susceptibility Mapping via NLP Mining and Spatial Block CV in Araku** B. Sathvigaa, Prasada Kumari K. S., Amrita Vishwa Vidyapeetham, Amaravati (India)
5:00 pm	A356	**Multi-Thematic Geofactor Analysis for Landslide Susceptibility Mapping along the Gaurikund–Kedarnath Trek Route, Uttarakhand** Aditya C., Rajan L. C., Negi Ravi, Singh C. D., Rana Haritabh, Geological Survey of India, Dehradun, Uttarakhand (India)
5:12 pm	A095	**Landslide Seismology for Detecting and Locating Monsoonal Landslides in Arunachal Pradesh, India** Himangshu Paul, CSIR-National Geophysical Research Institute (India)

Session 4.2 **4:00 pm - 5:40 pm** Floor 8 - **PR 8**

Taming Landslides: Towards Comprehensive, Seamless Approaches for Catchment Geomorphology and Landslide Risk Assessment, Mitigation and Management

Convenors: Sudesh Kumar Wadhawan, Massimiliano Alvioli, Federica Fiorucci, Paola Salvati, Aadityan Sridharan, Balmukund Singh, Aravind S Nair
Co-Convenors: Ivan Marchesini, Mauro Rossi, Sabari Ramesh

4:00 pm	A064	**Geomorphological Interpretation for Hill Road Planning in Darjeeling Himalayas** Yoshinori Kawamura, Oriental Consultants Global Co., Ltd. and Tokyo City University (Japan); Go Sato, Akari Yamaguchi, Tokyo City University (Japan)
4:12 pm	A123	**Spatial Assessment of Landslide Hazards in the Upper Teesta Basin Using Geomorphic Indices and Morphometric Parameters** Ankita Borah, Vikram Gupta, Sikkim University (India)
4:24 pm	ID:29	**From Slope to Channel Dynamics: Sub-Surface Evidence and Earthflow Propagation in a Flysch Landslide** Alejandra Donato, Benedikt Müller, Alexander Penz, Thomas Glade, University of Vienna (Austria)

4:36 pm	A450	**Beyond Susceptibility Mapping: A Catchment-Scale Process Representation Framework for Understanding Landslide Emergence in the Western Ghats, India** Balmukund Singh, Hari Chandana Ekkirala, Nitin Kumar M., Sabari Ramesh, Sudesh Kumar Wadhawan, Maneesha Vinodini Ramesh, Amrita Vishwa Vidyapeetham (India)
4:48 pm	A474	**Morphotectonic Features Influencing Mass Wasting and Remobilization of Paleo-Debris Flow Deposits in Channel Confined Long Runout in Punnapuzha River Basin, Wayanad Region, Kerala, India** Sudesh Kumar Wadhawan; Balmukund Singh; Anjli Dileep; Aadityan Sridharan and Maneesha Vinodini Ramesh; Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham, Amritapuri (India); Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, Amritapuri, Kerala (India)
5:00 pm	A615	**Relooking at Landslide Initiation, Inventory and Its Morphology in Kalimpong Region, Himalayas, India** Balamurugan Guru, Central University of Tamil Nadu (India); Somnath Bera, Central University of South Bihar (India); Keshav Ganesh Singh, Central University of Tamil Nadu (India); Malay Mukul, IIT Bombay (India); Praful Rao, Save The Hills (India)
5:12 pm	A296	**Landslide Risk Mapping Using Weighted Overlay and Machine Learning Techniques in Bangladesh** Roquia Salam, Bayes Ahmed, Peter Sammonds, University College London (UK)
5:24 pm	ID:22	**Satellite-Driven Machine Learning Pipeline for Post-Wildfire Debris Flow Prediction** Subash Poudel, Nawa Raj Pradhan, Yogesh Bhattarai, Rocky Talchabhadel; Jackson State University (USA); U.S. Army Engineer Research and Development Center (ERDC), Vicksburg (USA); Howard University, Washington DC (USA)
5:36 pm	A619	**Pre-Event Sediment-Connectivity Conditions along the 2025 Dharali Debris-Flow Pathway and Their Implications for Hazard Assessment** Faisal Imam Umrani, O.P. Jindal Global University and Indira Gandhi National Open University (India); Rahul Devrani, O.P. Jindal Global University (India); Ankit Yadav, IIT Kanpur (India); Rohit Kumar, O.P. Jindal Global University (India); Rajiv Sinha, IIT Kanpur (India); K. Sreelash, National Centre for Earth Science Studies, Thiruvananthapuram (India); Benidhar Deshmukh, Indira Gandhi National Open University (India); Vipin Kumar, Doon University, Dehradun (India)

PhD Forum **4:00 pm – 5:30 pm** Ground Floor · **Board Room**

Facilitator(s): Dr. Sabarinath S., Amrita School for Sustainable Futures, Amrita Vishwa Vidyapeetham, India

Theme 6 · Regional Landslide Case Studies

4:00 pm	PHD-26-11	Joshimath to Neighbouring Hillslopes: Paleo-Landslide Evidence, Slope History and Evolution Shobhana Lakhera, University of Lausanne (Switzerland)
4:20 pm	PHD-26-25	Redefining Landslide Prediction: Enhancing Accuracy by Integrating Geotechnical Aspects in RS and GIS-Based Models Priyajit Kundu, NIT Karnataka, Surathkal (India)
4:40 pm	PHD-26-24	Co-Seismic Landslide Hazard Assessment: Susceptibility Mapping and Directionality-Dependent Slope Displacement Predictive Models Navuluri Jayasri, IIT Mandi (India)

5:30 pm CULTURAL PROGRAMME

5:30 pm – 6:30 pm **Auditorium**

Cultural Programme

7:00 pm GALA DINNER

7:00 pm – 10:00 pm **BPTP Sanctuary Club**

Gala Dinner

Open the location map or scan for BPTP Sanctuary Club

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DAY 6 · FRIDAY

27 November 2026

Keynotes · Parallel Sessions · Closing Ceremony

AT A GLANCE

Parallel sessions	Floor 1 PR 1	Floor 2 PR 2	Floor 3 PR 3	Floor 4 PR 4	Floor 5 PR 5	Floor 6 PR 6	Floor 7 PR 7	Floor 8 PR 8
9:00 am – 10:40 am	S1.6	S2.3	S2.6	S3.7	S3.3	S4.1	S4.8	S3.1
12:00 pm – 1:00 pm	S3.10	S1.2	S2.3	S2.1	S4.6	S3.8	S4.8	S4.7

10:30 am – 11:00 am	TEA & COFFEE BREAK	
11:00 am – 12:00 pm	Keynotes	Floor 1 · PR 11
11:00 am – 12:00 pm	Keynotes	Floor 1 · PR 12
1:00 pm – 2:00 pm	LUNCH BREAK	Food Court
2:00 pm – 3:30 pm	Closing Ceremony	Auditorium
3:30 pm – 4:00 pm	HIGH TEA	

9:00 am PARALLEL TECHNICAL SESSIONS

Session 1.6 9:00 am – 10:30 am — Floor 1 - PR 1

Structured and Non-Structured Measures for Rainfall-Induced Landslides

Convenors: Tadikonda Venkata Bharat, Claudia Zapata, Partha Das, Dhanesh Sing Das

9:00 am A009 — **A Moisture-Driven Landslide Threshold Atlas for the Northwestern and Northeastern Himalayas**
Danish Monga, Poulomi Ganguli, IIT Kharagpur (India)

9:12 am A172 — **Effect of Unit Weight on the Performance of the Capillary Barrier System for Rainfall-Induced Landslide Mitigation**
Jain Suzan Zachariah, Senthilkumar Vadivel, National Institute of Technology Puducherry (India)

9:24 am A274 — **Geotechnical Controls and Failure Mechanisms of Rockfall Protection Systems in Jointed Rock Slopes: A Case Study from Ududumbara, Sri Lanka**
I A N D Idirimanna, U K N P Dharmasena, P S P S W De Seram, A. A. Virajh Dias: Senior Engineer, National Building Research Institute, Colombo (Sri Lanka); Senior Geotechnical Engineer, Reduction of Landslide Vulnerability by Mitigation Measures Project, Colombo (Sri Lanka); Geotechnical Engineer, Engineering Services Private Ltd, Boralesgamuwa (Sri Lanka); Project Director, Reduction of Landslide Vulnerability by Mitigation Measures (RLVMMP), Ministry of Defence (Sri Lanka)

9:36 am A660 — **A Landscape Framework and Design Decisions for Landslide Mitigation in Hilly Zones: A Case of Kodaikanal, Tamil Nadu**
Anbuchchelvi I, Dinesh M, Sakuntala A, Amrita School of Architecture, Amrita Vishwa Vidyapeetham, Tamil Nadu (India)

9:48 am A667 — **Building Design Solutions for Reducing Landslide Disaster Risk: Case Study from Wayanad – Mundakkai-Chooralmala Landslide, 2024**
Akshay Sanyal, Krishnapriya V Nair, Mukunthan T M, Amrita School of Architecture, Coimbatore (India)

10:00 am A284 **Field Performance Evaluation of Surface and Subsurface Drainage Systems in Landslide Mitigation Sites in Sri Lanka**
P A D T Thilakarathna, S O A D M Lakruwan, A A Virajh Dias; Geotechnical Engineer, Reduction of Landslide Vulnerability by Mitigation Measures Project (RLVMMP), Colombo (Sri Lanka); Senior Engineer, National Building Research Institute, Colombo (Sri Lanka); Project Director, Reduction of Landslide Vulnerability by Mitigation Measures (RLVMMP), Colombo (Sri Lanka)

10:12 am *Discussion*

Session 2.3 **9:00 am – 10:40 am** Floor 2 · PR 2

Landslide Early Warning Systems: Innovations and Applications

Convenors: Samuele Segoni, Graziella Devoli, Ting Xiao, Stefano Luigi Gariano, Neelima Satyam

9:00 am ID:8 **Beyond Rainfall Thresholds: Storm Structure Controls Shallow Landslide Triggering**
Maurizio Lazzari, National Research Council – Institute of Cultural Heritage Sciences (Italy); Marco Piccarreta, Italian Ministry of Education, University and Research (Italy)

9:12 am A299 **Video and Geophone Monitoring of Debris Flows for Early Warning in an Alpine Catchment**
Matteo Berti, Alessandro Zuccarini, Elena Ioriatti, University of Bologna (Italy)

9:24 am A405 **IoT-Driven Geophone-Based Microseismic Sensing and Monitoring Platform for Real-Time Landslide Detection and Early Warning**
Indukala P K, Maneesha Vinodini Ramesh, Amrita Vishwa Vidyapeetham (India)

9:36 am A432 **Improving Weather Radar Estimates of Heavy Rainfall for Operational EWS in Mountainous Thailand**
Thom Bogaard, Kasetsart University (Thailand) and Delft University of Technology (The Netherlands); Punpim Puttaraksa Mapiam, Tanabadee Budrach, Kasetsart University (Thailand)

9:48 am A469 **What Is Required to Implement a Stable Operational Landslide Early Warning System?**
Graziella Devoli, Norwegian Water Resources and Energy Directorate (NVE) (Norway); Minu Treesa Abraham, Norwegian Geotechnical Institute (NGI) (Norway); Corey Froese, Wavelength Advisory Services (Canada); Luca Piciullo, Norwegian Geotechnical Institute (NGI) (Norway); Christian Arnhardt, British Geological Survey (UK); Davide Tiranti, Regional Agency for Environmental Protection of Piedmont (Arpa Piemonte) (Italy)

10:00 am A491 **From Early Warning to Impact-Oriented Landslide Risk Management: Lessons from Cyclone Ditwah in Sri Lanka**
Sanchitha Jayakody, S.O.A.D.M. Lakruwan, Anuruddha Vijekumara, Asiri Karunawardena, H.A.G. Jayathissa, National Building Research Institute (Sri Lanka)

10:12 am A516 **Real-Time Model Selection for Probabilistic Landslide Time-Of-Failure Prediction**
Bing Feng, Peng Zeng, Chengdu University of Technology (China)

10:24 am A524 **A Framework for Territorial Landslide Early Warning Systems**
Mauro Rossi, Ivan Marchesini, Silvia Peruccacci, Maria Teresa Brunetti, Massimo Melillo, Stefano Luigi Gariano, Vinicio Balducci, Istituto di Geoscienze (IRPI-GEO), Via Madonna Alta, Perugia (Italy)

10:36 am *Discussion*

Session 2.8 **9:00 am – 10:30 am** Floor 3 · PR 3

Landslide Catalogues and Inventories: Advances in Data Collection, Standardization, and Sharing for Landslide Prediction and Hazard Mitigation

Convenors: Maria Teresa Brunetti, Silvia Peruccacci, Mateja Jemec Auflič

9:00 am A021 **AIDE4LAND: AI-Based Extraction of Information on Rainfall-Induced Landslides from Textual Sources**
Elisabetta Napolitano, Maria Teresa Brunetti, Stefano Luigi Gariano, Massimo Melillo, Cinzia Bianchi, Silvia Peruccacci, Research Institute for Geo-Hydrological Protection (CNR-IRPI) (Italy)

9:12 am A126 **Emerging Landslides in Mid-Western Greenland**
Steffen Ringsø Nielsen, Technical University of Denmark (Greenland and Denmark); Thomas Ingeman-Nielsen, Technical University of Denmark (Denmark); Kristian Svennevig, Geological Survey of Denmark and Greenland (GEUS) (Denmark)

9:24 am A294 **A Multi-Region Citizen-Augmented Landslide Inventory of 642 Events across India**
Ramesh Guntha, Amrita Vishwa Vidyapeetham (India)

9:36 am	A604	**From Forms to Conversations: AI-Assisted Citizen Reporting of Landslides** Adam Keller, Ramesh Guntha, Center for Wireless Networks & Applications (WNA), Amrita Vishwa Vidyapeetham, Amritapuri (India)
9:48 am	A643	**Automated Dating & Spatio-Temporal Characterization of Landslides in Champawat, District Uttarakhand** Niva Srivastava, Vartika Singh, Shafique Ahmed, Amity University, Noida, Uttar Pradesh Amity University, Noida, Uttar Pradesh RMSI Pvt Limited, New Delhi (India)
10:00 am	A103	**Spatiotemporal Characterization of Landslides in the Garhwal Himalayas: Insights from the 2025 Monsoon** Labli Chand Rajan, Geological Survey of India, SU: Uttarakhand, Dehradun (India); Rabisankar Karmakar, Ankur Kumar Srivastava, Bhupender Singh, Geological Survey of India, GHRM, Central Headquarters, Kolkata (India)
10:12 am	A094	**Cross-Border Harmonization of Landslide Susceptibility Mapping via Advanced Hybrid Machine Learning** Hazem Ghassan Abdo, Rachele Franceschini, Gisela Domej, Domen Turk, Sahar Mohammed Richi, Antonella Peresan: OGS – National Institute of Oceanography and Applied Geophysics (Italy); Tartous University (Syria); Geological Survey of Slovenia (Slovenia)

Session 3.7 **9:00 am – 10:40 am** Floor 4 · **PR 4**

Landslide and Debris Flow Monitoring and Modelling Using the Latest Technologies and Computational Advances

Convenors: Łukasz Pawlik, Akshay Raj Manocha, Dinesh Kumar Sahu, Paweł Kroh

9:00 am	A033	**ZOODRM_LS: Modelling Soil Saturation Dynamics to Inform Landslide Assessment in the Western Ghats** V. K. Krishnapriya, University of Kerala (India); Majdi Mansour, Vanessa Banks, Nikhil Nedumpallile Vasu, British Geological Survey (UK); V. R. Rani, Central Ground Water Board, Kerala Region (India); A. Rajaneesh, University of Kerala (India); K. S. Sajinkumar, University of Kerala (India) and Michigan Technological University (USA); Ali P. Yunus, IISER Mohali (India); Srikrishnan Siva Subramanian, IIT Roorkee (India); Souvik Acharya
9:12 am	A056	**Lithological and Geometric Characteristics of Rainfall-Induced Landslides in Northwest Vietnam** Tran Trung Hieu, University of Silesia in Katowice (Poland) and Vietnam Academy of Science and Technology (Vietnam); Łukasz Pawlik, University of Silesia in Katowice (Poland); Nguyen Cong Quan, Pham Van Tien, Vietnam Academy of Science and Technology (Vietnam)
9:24 am	A070	**High-Resolution Data-Driven Modelling of Rainfall-Induced Shallow Landslides for Land and Water Planning in New Zealand** Andrew Neverman, Hugh Smith, Anatolii Tsyplenkov, Harley Betts, Simon Vale, Bioeconomy Science Institute (New Zealand)
9:36 am	ID:128	**A Parametric Study of Flexible Barrier Response to Debris-Flow Impact Using Fractional Calculus** Anahita Aghagoli, Hamed Sadeghi, Sharif University of Technology (Iran)
10:00 am	A124	**InSAR-Assisted Machine Learning Approach for Refining Landslide Susceptibility Mapping in Mandi District, Himalayan Terrain, India** Akshay Raj Manocha, Tran Trung Hieu, Łukasz Pawlik, University of Silesia in Katowice (Poland); Paweł Kroh, University of the National Education Commission, Kraków (Poland)
10:12 am	A140	**Multi-Sensor Remote Sensing Framework for Rainfall- and Seismically Triggered Landslide Detection and Early Warning in Jammu and Kashmir, NW Himalaya** Dinesh Kumar Sahu, Łukasz Pawlik, Akshay Raj Manocha, University of Silesia in Katowice (Poland)
10:24 am		*Discussion*

Session 3.3 9:00 am – 10:40 am Floor 5 · PR 5

Recent Advancements in Physical and Numerical Modelling of Landslides and Debris Flows

Convenors: Sabatino Cuomo, Beena Ajmera, Clarence Choi

9:00 am A111 **A Multi-Model Framework for Himalayan Cascading Hazards from Rock Avalanche to Multi-Lake GLOF**
Jessica Munch, University of Zurich (Switzerland); Simon Allen, University of Zurich and University of Geneva (Switzerland); Jakob Steiner, University of Graz (Austria); C. Scott Watson, University of Leeds (UK); Tenzing Chogyal Sherpa, Utrecht University (Netherlands); Yan Zhong, University of Geneva (Switzerland); Christina Salzmann, University of Bern (Switzerland); Ashim Sattar, IIT Bhubaneswar (India); Jordan Aaron, ETH Zurich (Switzerland); Martin Mergili, University of Graz (Austria); Basanta Raj Adhikari, Vishnu Prasad Pandey, Institute of Engineering, Tribhuvan University, Lalitpur (Nepal); Ayog Basnyat, Christian Huggel, University of Zurich (Switzerland)

9:12 am A157 **Seismic Topographic Amplification: Enhancing Earthquake-Induced Landslide Hazard Assessment in the Province of Abra, Philippines**
Margarita P. Dizon, Dan Gil S. Fermo, Gilbert A. Ramilo, Reynaldo M. San Jose, Koreen G. Dorado, Bianca Louise Q. Bautista, Alyssa Nicole P. Labuan, Arturo S. Daag, Rhommel N. Grutas, Winchelle Ian I. Sevilla, Jeffrey S. Perez, Paulo P. Sawi, Ken Adrian Villarias, Teresito C. Bacolcol, Department of Science and Technology – Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), Quezon City (Philippines)

9:24 am A266 **The Influence of Remobilization on Rockfall Propagation Modelling**
Raj Kiran Dhiman, Panjab University, Chandigarh (India); Franck Bourrier, Univ. Grenoble Alpes, INRAE, CNRS, IRD, Grenoble INP, IGE, Grenoble (France); Mahesh Thakur, Panjab University, Chandigarh (India)

9:36 am A270 **Large-Scale Experimental Investigations on Debris Flows in the Sarno Area: Soil Moisture Analysis and Its Implications**
Letizia Pace, University of Bari "Aldo Moro", Bari and University of Calabria, Rende (Italy); Fabio Dioguardi, University of Bari "Aldo Moro", Bari (Italy); Giovanna Capparelli, University of Calabria, Rende (Italy); Roberto Greco, Emilia Damiano, Lucio Olivares, University of Campania, Aversa (Italy); Gabriele Clausi, Damiano Trausi, University of Calabria, Rende (Italy); Alexis Bougouin, University of Calabria, Rende (Italy) and Université Clermont Auvergne, Clermont-Ferrand (France); Maria Lacalamita, Roberto Sulpizio, Domenico Capolongo, Pierfrancesco Dellino, University of Bari "Aldo Moro", Bari (Italy)

9:48 am A336 **Decoding Rainfall-Induced Roadside Landslides in the Himalaya: A Coupled Geophysical–Geotechnical Framework for Slope Stability along Mechi Highway, Nepal**
Rajan KC, Geoinfra Research Institute, Lalitpur and Universal Engineering and Science College, Lalitpur (Nepal); Biraj Ojha, Geoinfra Research Institute, Lalitpur (Nepal); Mandip Subedi, Geoinfra Research Institute, Lalitpur and Universal Engineering and Science College, Lalitpur (Nepal); Nitesh Thakur, Geoinfra Research Institute, Lalitpur (Nepal); Kalpana Adhikari, Department of Roads, Government of Nepal (Nepal)

10:00 am A521 **Numerical Investigation of Seismic Slope Response Governed by Shallow and Deep Failure Mechanisms**
Sunita Kalyan, N Jayasri, Maheshreddy Gade, IIT Mandi (India)

10:12 am ID:53 **Integration of Time-Dependent Post-Peak Softening with Delayed Retrogression in Sensitive Clay Landslides: A Proof-of-Concept Framework**
Aparna Kanth, Ali Saeidi, Université du Québec à Chicoutimi, Chicoutimi, Québec (Canada)

10:24 am A354 **The Dharali Debris Flow of 5 August 2025: Field Investigation, Numerical Simulation and Hazard Assessment in the Kheer Gad Catchment, Bhagirathi Valley, NW Himalaya**
Rana Haritabh, Joshi Akanksha, Aditya C., Negi Ravi, Geological Survey of India, Dehradun, Uttarakhand (India)

Session 4.1 9:00 am – 10:30 am Floor 6 · PR 6

Landslide Impacts, Vulnerability and Quantitative Risk Assessment of People, Communities, Structures and Infrastructure in Urban and Rural Environments

Convenors: Dario Peduto, Claudia Meisina, Olga Mavrouli, Mike Winter, Paola Salvati, Roberto Sarro Trigueros, Mateja Jemec Auflič
Co-Convenors: Filippo Catani, Yazidhi Bamutaze, Rosa Maria Mateos Ruiz, Eleftheria Poyiadji, Thomas Glade

9:00 am A477 **AI-Enabled Dynamic Risk Assessment for Cascading and Compounding Hazards Associated with Landslides**
Sanjay Kumar Srivastava, National Institute of Advanced Studies (India)

9:12 am	ID:45	**Component-Level Damage Assessment Framework for Buildings Impacted by Rapid Flow-Type Landslides** Lestelle Torio-Kaimo, Chelsey Valderama, John Romel Flora, University of the Philippines Diliman (Philippines)
9:24 am	A557	**Road Network Exposure to Earthquake-Induced Landslide Susceptibility in the Chamoli–Rudraprayag Corridor, Uttarakhand** Kanak K. Khan, Maya Kumari, Amity University Uttar Pradesh (India); Shivangi Somvanshi, CEPT University (India)
9:36 am	ID:20	**InSAR-Based Building Damage Proxy and Future Risk Assessment in the Subsidence-Prone Town of Joshimath, Central Himalaya, India** Bo Zhang, Tongji University (China) and GFZ Helmholtz Centre for Geosciences (Germany); Mahdi Motagh, GFZ Helmholtz Centre for Geosciences and Leibniz University Hannover (Germany); Fawu Wang, Tongji University (China); Sigrid Roessner, GFZ Helmholtz Centre for Geosciences (Germany)
9:48 am	A580	**Cascading Impacts of Debris Flow-Induced Road Disruptions on Food Security in the Sikkim Himalaya** Shivam Priyadarshi, Somnath Bera, Pritha Ghosh, Central University of South Bihar (India)
10:00 am	A587	**Landslide Hazard, Vulnerability, and Risk Analysis (HVRA) Using Machine Learning and AI: A Case Study from Darma Valley, Kumaun Himalaya, India** Mohd Shawez, Wadia Institute of Himalayan Geology and AcSIR (India); Sandeep Kumar, Wadia Institute of Himalayan Geology (India); Vikram Gupta, Wadia Institute of Himalayan Geology and Sikkim University (India); Parveen Kumar, Gautam Rawat, Wadia Institute of Himalayan Geology and AcSIR (India)
10:12 am		*Discussion*

Session 4.9 **9:00 am – 10:40 am** Floor 7 · **PR 7**

Landslides at the Human–Climate Interface: A Science-Policy Dialogue on Processes, Impacts and Risk Management, with a Special Emphasis on the Hindu Kush Himalayan (HKH) Region

Convenors: Yunus Ali Pulpadan, Christian Huggel, Sajin Kumar, Dou Jie, Srikrishnan Siva Subramanian, Sumit Das

9:00 am	A117	**Identifying Landslide Source Zones and Debris Flow Dynamics: Insights from the 2025 Dharali Flash Flood, India** Nirmala S. Jain, Priyom Roy, Ankita Gaur, Tapas Ranjan Martha, Iswar Chandra Das, Prakash Chauhan, National Remote Sensing Centre (NRSC), Indian Space Research Organisation (ISRO), Hyderabad (India)
9:12 am	A273	**The Case of Continual Landslides in the Teesta River Basin and Myopic Responses** Roshan Rai, Aachal Tamang, Namoshri Rai, Darjeeling Himalaya Initiative (DHI) (India)
9:24 am	ID:35	**Integrating Carbon Emission Proxies with Explainable AI for Enhanced Landslide Susceptibility Modelling under a Changing Climate** Jibran Qadri, Francesca Ceccato, University of Padova (Italy)
9:36 am	A283	**Surface–Subsurface Interactions in Debris-Flow Deposition and Fan Development: Insights from the Dharali Disaster** Sahil Kaushal, Yunus Ali Pulpadan, IISER Mohali (India)
9:48 am	A470	**Automated Reconstruction of Pre-Failure Topography from Post-Event High-Resolution DEMs: A Comparative Assessment** Shah Masudul Islam, Yunus Ali Pulpadan, IISER Mohali (India)
10:00 am	A666	**Multi-Temporal Landslide Susceptibility and Land-Use Change in the Mukteshwar Watershed** Hanuth Saxena, Kanak K. Khan, Maya Kumari, Shivangi Somvanshi; Department of Natural Resources and Sustainable Development, Amity Institute of Environment and Sustainability, Amity University Uttar Pradesh, Noida (India); Department of Geoinformatics and Remote Sensing, Amity Institute of Environment and Sustainability, Amity University Uttar Pradesh, Noida (India); Centre for Applied Geomatics, CEPT Research and Development Foundation, CEPT University, Ahmedabad (India)
10:12 am	A673	**From Disaster Scenario to Landslide Risk Reduction: The Aizawl Experience of Transforming Urban Governance in a Vulnerable Hill City, India** Hari Kumar; GeoHazards International / GeoHazards Society; Rinpuii Tlau, GeoHazards International, Zomingthanga, Mizoram PWD (India)

10:24 am	A397	**Dharali 2025: A Himalayan Warning from the Kheer Ganga Valley** Sandeep Kumar, Mohd Shawez, Tariq Anwar Ansari, Haritabh Rana, Wadia Institute of Himalayan Geology, Dehradun Sonipat Metropolitan Development Authority, Sonipat Academy of Scientific and Innovative Research, Ghaziabad Geological Survey of India, Dehradun Division (India)
10:36 am		*Discussion*

Session 3.1 **9:00 am – 10:30 am** Floor 8 · PR 8

Recent Advancement in Laboratory and In-Situ Testing Methods for Landslide and Slope Analyses

Convenors: Beena Ajmera, S. S. Chandrasekaran, Mandip Subedi

9:00 am	A016	**Leachate Geochemistry of Borehole Cores as Indicators of Subsurface Disturbance and Groundwater Behaviour in Landslide Bodies** Koovakkadan Biju Krishnaveni, Naoki Watanabe, Rika Kiyose, Hiyori Kobayashi, Niigata University (Japan); Hitoshi Takeuchi, Teruhisa Numazawa, Hisanori Sato, NISSAKU Co., Ltd. (Japan); Gen Furuya, Toyama Prefectural University (Japan)
9:12 am	ID:43	**Density-Dependent Organization of Deformation Behavior Expression in Rainfall-Induced Instability** Xin Qin, Masamitsu Fujimoto, Yoshifumi Satofuka, Ritsumeikan University (Japan)
9:24 am	ID:34	**Towards Mapping Residual Shear Strength Using Shortwave Infrared Spectroscopy** Om Prasad Dhakal, Lukas Brodsky, Marco Loche, Gianvito Scaringi, Charles University (Czech Republic); Institute of Rock Structure & Mechanics, Czech Academy of Sciences (Czech Republic)
9:36 am	A623	**Applicability of Field Penetration Resistance in Evaluation of Lateritic Slope Stability** Jayakrishnan Menon T. V., Renjitha Mary Varghese, National Institute of Technology Calicut (India)
9:48 am	A679	**Strength Degradation in Kaolinite Due to Repeated Cyclic Loads** Yagnoosha Koluguri, Beena Ajmera, Tennessee Technological University, Cookeville, Tennessee (USA)
10:00 am		*Discussion*

10:30 am – 11:00 am TEA & COFFEE BREAK

11:00 am KEYNOTE SESSIONS

Keynote Session **11:00 am – 12:00 pm** **Floor 1 · PR 11**

Keynote Fri 27 Nov · 11:00 am – 11:20 am · Floor 1 · PR 11

Between the Borehole and the Warning: Four Gaps in Landslide Risk Reduction

Nirmala Vasudevan, Associate Professor, Department of Physics, Amrita Vishwa Vidyapeetham, India

Landslide science has advanced considerably in laboratory testing, numerical modelling, and early warning. Many of the remaining challenges in reducing landslide risk lie not in these methods themselves but in the gaps between what we measure, record, or hear and what is actually happening on the slope. Drawing on our wireless sensor network–based landslide early warning systems at Munnar in Kerala and Gangtok in Sikkim, as well as investigations of several other landslide sites across India, this keynote examines four such gaps. Three concern the data on which we rely, while the fourth concerns the communities who live on these slopes. The first gap lies between the field and the laboratory. Weak layers that may control failure, such as clay seams or highly weathered zones, can lie hidden beneath hard rock or dense vegetation, and they are often the hardest material to recover intact, even from a borehole. The material that matters most may therefore be the least well characterised. Samples collected at a landslide site do not necessarily come from the slip surface, which can itself be difficult to identify. On a slope that has not yet failed, the potential slip surface has to be inferred rather than directly sampled. Once collected, samples are often tested using the methods available rather than those that best replicate field conditions. In conventional direct-shear and triaxial tests, for example, specimens are sheared to failure under constant normal or confining stress, whereas during rainfall infiltration, a slope may approach failure as pore pressure rises under approximately constant shear stress. Specimen condition also matters: in one pair of direct-shear tests on the same sample at the same normal stress, a remoulded specimen mobilised a

maximum shear stress about one-third lower than that of an undisturbed specimen. Differences arising from sampling and testing can influence estimates of shear strength, infiltration behaviour, and pore-pressure development, with consequences for predicted slope stability, mitigation design, and physically based rainfall thresholds for early warning. The second gap lies between the rain gauge and the slope: storms can be highly localised, while rain gauges are often many kilometres away, so the rainfall that triggers landslides, even fatal ones, may go unmeasured. The third lies between landslide occurrence and the landslide record: non-fatal landslides, even large ones, often go unrecorded, so inventories based on reported events, and the susceptibility maps and rainfall thresholds built on them, can be biased towards fatal events. The fourth lies between development and the communities who live with its consequences, whose concerns about slope instability following infrastructure works too often go unheard. The talk outlines practical responses, many of which are within the reach of researchers with limited resources, including students with little or no funding. Before sampling, walkover surveys and examination of fresh landslide scarps and road cuts, together with shared borehole logs and borrowed geophysical equipment, can help characterise subsurface conditions. Reporting transparently how, where, and at what depth samples were taken, and how they were tested, lets others judge how far the results apply. Low-cost, calibrated rain gauges, which students can build and residents can read, should be placed closer to slopes at risk. Freely available satellite imagery, combined with local knowledge, makes it possible to record landslides more completely. Above all, the talk calls for sustained, two-way engagement with communities in their own languages, built into infrastructure planning from the outset, so that residents' concerns are heard and addressed. Together, these measures can narrow the gaps between what we measure, record, or hear and what is actually happening on the slope, so that landslide science and practice help make communities safer and more resilient.

Keynote

Fri 27 Nov · 11:20 am – 11:40 am · Floor 1 · PR 11

Understanding and Managing Landslide Risk: Insights from AI-Based Modelling, Geotechnical Experiments and Field Investigations for Early Warning and Mitigation

Sreevalsa Kolathayar, Associate Professor, NIT Karnataka (NITK), Surathkal, India

Landslides pose significant risks to mountain communities, infrastructure and ecosystems, necessitating integrated approaches for effective hazard assessment, early warning and mitigation. This keynote presents advances in landslide susceptibility mapping using geospatial techniques and artificial intelligence, complemented by physics-based geotechnical modelling and experimental investigations. The role of instrumented flume studies, rainfall monitoring and intelligent prediction systems in understanding landslide initiation and developing early warning strategies will be discussed. Drawing upon field investigations and case studies from the Western Ghats, the lecture will highlight practical mitigation measures, sustainable engineering interventions and community-driven, bottom-up solutions. Emphasis will be placed on bridging scientific research, technological innovations and local knowledge to develop resilient mountain communities.

Keynote

Fri 27 Nov · 11:40 am – 12:00 pm · Floor 1 · PR 11

An Integrated Approach to Landslide Risk Reduction for Climate-Resilient Infrastructure

Ratnakar R. Mahajan, Director, Technical Excellence, Maccaferri India

The increasing frequency and intensity of extreme weather events associated with climate change are significantly elevating landslide risks in mountainous regions worldwide. In India, the Himalayan belt has become particularly vulnerable due to a combination of fragile geology, intense rainfall, rapid infrastructure development, and growing traffic demands. Traditional approaches to landslide management, which largely rely on slope excavation and valley-side dumping of debris, often provide temporary relief while inadvertently increasing long-term slope instability and environmental degradation. This paper presents an integrated and sustainable framework for landslide risk reduction developed and implemented along critical highway corridors in the Himalayan region of Uttarakhand, including sections of the strategically important Char Dham route. Following the devastating 2013 disaster, several chronic landslide locations were identified for rehabilitation with the objective of ensuring long-term infrastructure resilience and year-round connectivity. The approach combined detailed geological and geotechnical investigations, hydrological assessments, terrain analysis, and climate-responsive engineering interventions. Particular emphasis was placed on understanding natural drainage systems and controlling both surface and subsurface water, which are key drivers of slope failures in the Himalayas. Site-specific solutions included drainage management, rock slope stabilization using anchoring systems, rockfall protection measures employing high-energy absorption steel mesh barriers, reinforced soil structures, gravity retaining systems, and innovative valley-side retention schemes that minimized disturbance to already fragile hill slopes. A notable case study from Lambgarh near Badrinath demonstrates how retaining structures exceeding 40 metres in height were successfully integrated with river protection measures to withstand both landslide activity and flash-flood impacts from the Alaknanda River. The project illustrates how engineering design can work with natural terrain processes rather than against them. The outcomes demonstrate that an integrated, risk-based and climate-resilient approach can significantly improve slope stability, enhance road safety, reduce maintenance requirements, and ensure reliable transportation links for

communities and pilgrims in high-risk mountain environments. The lessons learned provide a replicable framework for developing resilient infrastructure across the Himalayan region and other mountainous areas facing increasing climate-related geohazards.

Keynote Session **11:00 am - 12:00 pm** **Floor 1 - PR 12**

Keynote Fri 27 Nov · 11:00 am – 11:20 am · Floor 1 · PR 12

Understanding the Surficial and Subsurface Dynamics in Landslide-Prone Areas in India: A Geophysical, Geological and Remote Sensing Perspective

E. Chandrasekhar, Professor of Geophysics, Department of Earth Sciences, IIT Bombay, India

Knowledge of the surficial and subsurface dynamics in landslide-prone areas is of paramount importance towards correct understanding of the morphology of landslides in a broader perspective. While the geological investigations, remote sensing techniques, geomechanical and environmental studies provide vital information about surficial dynamics in landslide zones, information about the dynamics of the subsurface (which actually are responsible for the landslide triggering mechanisms) can be unequivocally obtained by employing non-invasive geophysical techniques such as, electromagnetic radio magnetotelluric (RMT) technique, electrical resistivity (ERT) technique and seismological studies. In this lecture, I highlight the necessity of having the knowledge of surficial and subsurface dynamics at highly vulnerable zones for an overall understanding of the dynamics of landslide mechanism in a broader perspective in Indian context. This is very important for the next step of proper deployment of continuous monitoring and early warning systems for landslide hazard mitigation.

Keynote Fri 27 Nov · 11:20 am – 11:40 am · Floor 1 · PR 12

Securing the Terrain: PFEPL's Decades-Long Legacy in Landslide Hazard Resilience

Tabish Kalsekar, Vice President, Pioneer Foundation Engineers Pvt. Ltd. (PFEPL), India

Landslides are among the most recurrent and damaging geohazards in India's Himalayan, northeastern and Western Ghats regions. They threaten lives, highways, defence infrastructure, railways, pipelines and settlements. This keynote traces how Pioneer Foundation Engineers Pvt. Ltd. (PFEPL) has built landslide hazard resilience over decades. The work spans geotechnical investigation, slope stability assessment and the design of mitigation measures. More recently it has added geospatial and digital technologies. The talk shows how drone photogrammetry and LiDAR, remote sensing, GIS-based susceptibility and risk mapping, and 3D terrain modelling have changed landslide assessment. It covers the shift from reactive repair to proactive, data-driven risk reduction. Case studies from national highway corridors and critical defence infrastructure in the northeast and the Himalayan belt show how investigation, modelling, mitigation design and monitoring fit into one integrated approach in difficult terrain. The talk closes with lessons from field implementation and current gaps. It also looks ahead to early warning and digital solutions, and invites collaboration with the global ICL community. Key takeaways – 1) An integrated investigate-model-mitigate-monitor approach to landslide risk reduction. 2) Practical use of geospatial and digital technology in hazard mitigation. 3) Lessons from highway and defence projects in the Himalayan and northeastern terrain

Keynote Fri 27 Nov · 11:40 am – 12:00 pm · Floor 1 · PR 12

Rockfall, Debris Accumulation and Landslide Monitoring System (RoDLaMS®)

Naval Kishore Ray, Vice President – Geosynthetics, Garware Technical Fibres Ltd., India

The topic of this keynote address is a composite system called RoDLaMS® – Rockfall, Debris Accumulation and Landslide Monitoring System. This for sure resonates with Theme of WLF-7 "Landslide Science and Practice for Safe and Resilient Communities". This system is a combination of Geo-hazard mitigation engineering solutions combined with IoT, DA & AI to provide protection & monitoring of rockfall, debris flow and landslide events with an early warning. It will address in brief the development journey spread over above 2 and half years from proof of concept, field trials, modelling, evaluation, certification to final commercial implementation of this system for the intended purpose. It will acknowledge and explain the role of organizations namely South Western Railway (SWR) & Indian Institute of Science (IISc), Bangalore; which were instrumental in the study and development of RoDLaMS®. It will discuss on the current requirements, guidelines and mandates for structural health monitoring of different assets laid by Central government organisations and research bodies and how this system fulfils the objective and help protect lives and infrastructure from accidents and disasters. The address will conclude with the way

forward and co-operation required from different stake holders for large scale adoption of this system for asset protection and structural health monitoring.

12:00 pm PARALLEL TECHNICAL SESSIONS

Session 3.10 **12:00 pm – 1:00 pm** Floor 1 · **PR 1**

Mountain Hazard Process Chains, Multi-Hazard Interactions, and Early Warning: Lessons from the 26 August 2026 China–Nepal Transboundary Cascading Geo-Disaster

Convenors: Maneesha Vinodini Ramesh, Dhiraj Pradhananga, Hari Chandana Ekkirala, Netra Prakash Bhandary, Bhesh Raj Thapa, Sunil Poudyal, Kalpana Adhikari, Rajan KC, Mandip Subedi

Session 1.2 **12:00 pm – 1:00 pm** Floor 2 · **PR 2**

Understanding and Reducing Landslide Disaster Risks as Cascading and Multi-Geohazards

Convenors: Shinji Sassa, Xuanmei Fan, David Huntley, David Tappin

12:00 pm	A404	**Recent Disasters in Himachal Pradesh (May–September 2025): Causes and Recommendations** Arun Kumar, Manipur University (former) (India)
12:12 pm	A243	**Integrated Dynamic Multi-Hazard Risk Management Framework for GLOFs, Landslides and Floods** Hari Chandana Ekkirala, Maneesha Vinodini Ramesh, Amrita Vishwa Vidyapeetham (India)
12:24 pm	A407	**Deconstructing the 2024 Chooralmala Multihazard Cascade** Kamini Sharma, Delhi Technological University (India) and University of Cambridge (UK); Kailash Chandra Tiwari, Delhi Technological University (India); Maximillian Van Wyk De Vries, University of Cambridge (UK)
12:36 pm		*Discussion*

Session 2.3 **12:00 pm – 1:00 pm** Floor 3 · **PR 3**

Landslide Early Warning Systems: Innovations and Applications

Convenors: Samuele Segoni, Graziella Devoli, Ting Xiao, Stefano Luigi Gariano, Neelima Satyam

12:00 pm	A262	**Rainfall-Induced Landslide Early Warning Framework Using Event-Based Spatiotemporal Analytics** Rocky Talchabhadel, Saurav Bhattarai, Subash Poudel, Jackson State University (USA); Nawa Raj Pradhan, US Army Engineer Research and Development Center, Vicksburg (USA)
12:12 pm	A440	**A Community-Centered Landslide Prediction Framework Using Satellite Data and WRF Rainfall Modeling** Sadia Afrin Sayfa Negaban, Shamima Ferdousi Sifa, University of Dhaka (Bangladesh); Farabi Akash, Mithun Dutta, Javed Meandad, Simon Rahman, Save the Children in Bangladesh (Bangladesh); Mohammad Fahimul Islam, University of Dhaka (Bangladesh)
12:24 pm	A510	**Early-Warning Indicators of Slope Failure from Creep Acceleration: Integrated Monitoring of the Aranayaka Landslide, Sri Lanka** D.M.D.S. Dissanayaka, A.R.P. Weerasinghe, National Building Research Institute (Sri Lanka)
12:36 pm	A389	**IoT and AI-Based Systems for Landslide Early Warnings in Vietnam** Do Minh Duc, University of Science, Vietnam National University, Hanoi (Vietnam); Dinh Thi Quynh, Institute of Geotechnology and Environment, Hanoi (Vietnam); Dang Quang Khang, Duong Thi Toan, University of Science, Vietnam National University, Hanoi (Vietnam); Dao Minh Duc, Institute of Earth Sciences, Vietnam Academy of Science and Technology, Hanoi (Vietnam)
12:48 pm		*Discussion*

Session 2.1 12:00 pm – 1:00 pm — Floor 4 · PR 4

Advances in Earth Observation (EO)-based Landslide Detection and Monitoring

Convenors: Matteo Del Soldato, Lorenzo Solari, John Dehls, Lorenzo Nava, Cristina Reyes-Carmona, Lu Ping

12:00 pm	A177	**Remote Sensing Approaches for Long-Term Monitoring of the La Traversaz Landslide** Olga Nardini, Tommaso Beni, Silvia Bianchini, Matteo Del Soldato, University of Florence (Italy)
12:12 pm	A628	**From Glacier Instability to River Outburst: NISAR Evidence from Rasuwa, Nepal** Athif Sayyaf, University of Padova (Italy); Sansar Raj Meena, National Institute of Oceanography and Applied Geophysics – OGS, Trieste (Italy)
12:24 pm		*Discussion*

Session 4.6 12:00 pm – 1:00 pm — Floor 5 · PR 5

Landslide Dams—Characterization, Prediction, and Emergency Management

Convenors: Paola Revellino, Corrado Cencetti, Mariano Focareta, Mirko Francioni

12:00 pm	A145	**Spatio-Temporal Assessment of Kuwari Landslide: A Case Study of Landslide Dam in Uttarakhand, India** Shivani Joshi, Srikrishnan Siva Subramanian, IIT Roorkee (India)
12:12 pm	A312	**Occlusion of the River Valley by Aliyan Landslide, Sirmour, Himachal Pradesh, India** Mahesh Thakur, Birendra P. Singh, Panjab University (India)
12:24 pm	A242	**Potential Rockslides in the Vitim River Valley and Their Consequences** Pavel N. Novikov, Oleg V. Zerkal, Moscow State University (Russia)
12:36 pm	A612	**High-Resolution Terrain Modelling of Cascading Mountain Hazards** Sushmita Gautam, Yonas Gebrewubet, CPMU-DRIP-CWC, EMC SMEC (India)
12:48 pm	A194	**A New Approach for Evaluation of Landslide Dam Susceptibility at the Watershed Scale** Guido Leone, Paola Revellino, Daniele Cifaldi, Christian Formato, University of Sannio, Benevento (Italy); Mariano Focareta, MapSAT S.r.l., Benevento (Italy); Claudia Meisina, Massimiliano Bordoni, Alessio Rozzoni, Sara Savi, University of Pavia (Italy); Mirko Francioni, Stefano Morelli, University of Urbino Carlo Bo (Italy); Massimo Mangifesta, Nicola Sciarra, University of Chieti-Pescara Gabriele d'Annunzio (Italy); Corrado Cencetti, University of Perugia (Italy)
1:00 pm	A486	**A Modelling Framework for Landslide Dam Breach and Downstream Flood Hazard Simulation** Navin Kumar J, Srikrishnan Siva Subramanian, Sumit Sen, Indian Institute of Technology Roorkee (India)

Session 3.8 12:00 pm – 1:00 pm — Floor 6 · PR 6

Linking Geotechnical Testing to Landslide Modelling and Predictions: Perspectives of Young Researchers

Convenors: Beena Ajmera, Josip Peranić

12:00 pm	A180	**Integrating In-Situ and Laboratory Testing of Debris Material for Numerical Modelling of Landslide: A Case Study** Akshat Vashistha, Srikrishnan Siva Subramanian, IIT Roorkee (India)
12:12 pm	A237	**Subsurface Hydrogeology and Mineralogical Controls on the Irshalwadi Landslide: A Multi-Disciplinary Investigation Using Raman Spectroscopy and Numerical Modeling** Shivapriya S., Kotluri Sravan Kumar, National Centre for Earth Science Studies (India); Bipin Peethambaran, Institute of Geological and Nuclear Sciences (New Zealand); V. Nandakumar, National Centre for Earth Science Studies (India)
12:24 pm	A288	**Structurally Controlled Rainfall-Induced Failure of the Sai Landslide, Solan, Himachal Pradesh, India: Finite Element Modelling Approach** Shefali Thakur, Mahesh Thakur, Panjab University (India)
12:36 pm	A426	**Influence of Stress-State Anisotropy on Slope Stability and Landslide Risk Assessment** Revathy Manohar, Sireesh Saride, IIT Hyderabad (India)
12:48 pm		*Discussion*

Session 4.9 12:00 pm - 1:00 pm Floor 7 - PR 7

Landslides at the Human-Climate Interface: A Science-Policy Dialogue on Processes, Impacts and Risk Management, with a Special Emphasis on the Hindu Kush Himalayan (HKH) Region

Convenors: Yunus Ali Pulpadan, Christian Huggel, Sajin Kumar, Dou Jie, Srikrishnan Siva Subramanian, Sumit Das

12:00 pm	A530	**Satellite-Driven Permafrost Mapping in the Hindu Kush Himalayan (HKH) Region with a Focus on Nepal** Sriyanka Rauniyar, Indra Prasad Acharya, Pulchowk Campus, Institute of Engineering, Tribhuvan University (Nepal)
12:12 pm	A282	**An Integrated Landslide Susceptibility Mapping (ILSM) across the Yamuna-Tons (YT) Watersheds, India, for Population Exposure and Infrastructure Vulnerability Assessment** Shubhesh Sharma, Indian Institute of Technology Roorkee (India)
12:24 pm		*Discussion*

Session 4.7 12:00 pm - 1:00 pm Floor 8 - PR 8

Landslide Hazard and Risk in Subduction Zones

Convenors: Giovanna Vessia, Nicola Sciarra, Mario Luigi Rainone, Christian Conoscenti

12:00 pm	A494	**Tonga 2022: Delayed Submarine Caldera Subsidence Caused Extreme Tsunami Hazard in the Near Field** Shane J. Cronin, University of Auckland (New Zealand); Emile A. Okal, Northwestern University (USA); José C. Borrero, University of Southern California (USA); Bastian Steinke, University of Auckland (New Zealand)
12:12 pm	A073	**Quantitative Characterization of Earthquake-Induced Landslides Using Multi-Parameter Evaluation** Lolly Jade T. Rosil, Jay Melvin B. Segales, Arnaldo C. Gagula, Genevieve E. Quisto, Jayrold P. Arcede, Mike Andre B. Puspus, Gio L. Gonzales, Mhea Jasmin Recilla, Dinah J. Dumaguing, Hadikka Etabag, Vince Nazario, James Earl Cubillas, Nichole Anthony Pacle, Clark Justine L. Gonzales, Marc Lin F. Abonales, Arturo S. Daag, Margarita P. Dizon, Rhommel N. Grutas, Mark Asch; ML-PREP Project, Caraga State University, Butuan City (Philippines); Department of Geodetic Engineering, Caraga State University, Butuan City (Philippines); Department of Mathematics, Caraga State University, Butuan City (Philippines); ML-PREP Project, Department of Science and Technology – Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), Quezon City (Philippines); Department of Computer Science, Caraga State University, Butuan City (Philippines); Department of Geology, Caraga State University, Butuan City (Philippines); Department of Civil Engineering, Caraga State University, Butuan City (Philippines); Department of Science and Technology - Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), Quezon City (Philippines); University of Picardie Jules Verne, Amiens (France)
12:24 pm		*Discussion*

1:00 pm - 2:00 pm **LUNCH BREAK** Food Court

VALEDICTORY

Closing Ceremony

Passing the baton to the 8th World Landslide Forum

2:00 pm - 3:30 pm **AUDITORIUM**

Chairs: Prof. Shinji Sassa, Chair, ICL Network Committee, and Prof. Matjaž Mikoš, Chair, Global Promotion Committee of the International Programme on Landslides and the Kyoto Landslide Commitment (GPC/IPL-KLC)

2:00 pm - 2:15 pm **Summary of WLF7 Program** by Prof. Maneesha Vinodini Ramesh, Pro Vice Chancellor, Amrita Vishwa Vidyapeetham, and Dr. Hemalatha T., Secretariat Co-Chair, Assistant Professor, Center for Wireless Networks & Applications (Amrita WNA), Amrita Vishwa Vidyapeetham, Amritapuri

2:30 pm - 2:40 pm **Bestowal of WLF7 Photo Awards**

2:40 pm - 2:50 pm **Bestowal of Certificates to New ICL Members** by Prof. Željko Arbanas, President, International Consortium on Landslides (ICL)

2:50 pm - 3:00 pm **Bestowal of ICL Book Article Award** by Prof. Binod Tiwari, Chair, Award Committee of the ICL Book Series "Progress in Landslide Research and Technology" (P-LRT), California State University, Fullerton, USA

3:00 pm - 3:15 pm **Speech** by Prof. Irasema Alcántara-Ayala, New President, International Consortium on Landslides (ICL), and Introduction of the New ICL Officers

3:15 pm - 3:25 pm **Welcome Address by the WLF8 Forum Chairs, Prof. Qiang Xu and Prof. Xuanmei Fan, State Key Laboratory of Geohazard Prevention and Geoenvironment Protection, Chengdu University of Technology, China**

3:25 pm - 3:30 pm **Vote of Thanks** by Prof. Maneesha Vinodini Ramesh, Pro Vice Chancellor, Amrita Vishwa Vidyapeetham

3:30 pm – 4:00 pm **High Tea**

POST-FORUM

Field Visits

Four days, three nights in the Western Ghats or the Northern Himalayas

28 Nov – 1 Dec 2026 AFTER THE FORUM

Field Visit 1 — Western Ghats, Kerala

Sites: Munnar Landslide Early Warning System, Munnar College landslide (bio-mitigation), Pettimudi landslide, Amrita Landslide Laboratory and Varkala Cliff

- **28 Nov** Assemble at Delhi Airport at 5:00 am; flight IX 1811 to Kochi (arrives 10:35 am); by road to Munnar; briefing at 6:30 pm
- **29 Nov** Munnar Landslide Early Warning System (8:45 am – 12:30 pm); Munnar College landslide site
- **30 Nov** Pettimudi landslide (10:00 am – 1:00 pm); by road to Kollam (arrives about 6:00 pm)
- **1 Dec** Amrita Landslide Laboratory (8:30 am – 12:00 pm); Varkala Cliff; flight AI 1830 from Trivandrum at 7:35 pm, arriving in Delhi at 11:05 pm

Field Visit 2 — Northern Himalayas, Uttarakhand

Sites: Varunavat landslide mitigation project, a small landslide nearby and the Dharali landslide and debris-flow site

- **28 Nov** Bus leaves Faridabad Campus at 7:45 am, after breakfast; arrives in Uttarkashi about 7:00 pm
- **29 Nov** Varunavat mitigation site (8:30 am – 12:30 pm); small landslide nearby (2:15 – 4:00 pm)
- **30 Nov** Dharali landslide and debris-flow site (1:30 – 5:00 pm) with group discussions; back in Uttarkashi about 8:30 pm
- **1 Dec** Leaves Uttarkashi at 8:00 am; drop-off at Delhi Airport between 8:30 and 10:30 pm

Good to know

Fees cover travel from Delhi (Field Visit 1) or Faridabad (Field Visit 2) to the sites and back to Delhi, accommodation, food and the field-visit guidebook.

Registration after 15 November is on request, subject to seat availability: my.wlf7.org

Ending your journey elsewhere (for example, flying home from Kochi or Trivandrum)? Tell the organisers when you register.

Enquiries: programmes@wlf7.org

Thank you, and welcome to the 7th World Landslide Forum.

This Forum would not have been possible without the generous support of our sponsors, national partners and key collaborators, acknowledged in full in this booklet, and the dedication of ICL, the reviewers and our organising team, to whom I am deeply grateful.

Prof. Maneesha Vinodini Ramesh, Forum Chair

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