



**JT C1**

OSLO 2023

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## Opening – Day 1 – 7<sup>th</sup> June (Deichman library, 5<sup>th</sup> floor)

18:00-20:00	<i>Icebreaker</i>
from 18:00	Registration

## Day 2 – 8<sup>th</sup> June (Deichman library, sous-terrain)

08:00-09:15	Registration and morning coffee	
09:15-09:45	Welcome addresses	<p>Dr Lars Andresen <i>Managing Director of NGI</i></p> <p>Prof. Gonghui Wang (video) <i>Chair of the JTC1</i></p> <p>Drs Vittoria Capobianco and Laura Rødvand <i>Organizing committee JTC1 workshop Oslo</i></p>

### Session 1

#### Keynote session

Moderator: Prof. Caterina di Maio (University of Basilicata)

9:45-10:15	Keynote address: "Applications of remote sensing techniques to rock slope stability and risk assessment – Building a toolbox of complementary methods"	Prof. Jean Hutchinson <i>Queen's University, Canada</i>
10:15-10:45	Keynote address: "Recent evolution of geomorphological instabilities in the alpine area"	Prof. Giovanni Crosta <i>University of Milano-Bicocca, Italy</i>
10:45-11:15	<i>Coffee break</i>	

### Session 2

#### Impact of climate-driven perils and climate change on landslide hazard

Moderator: Dr Vittoria Capobianco (NGI)

11:20-11:40	Invited lecture: "Method and case studies on quantifying changes in landslide hazard as a consequence of climate change in Canada"	Prof. Renato Macciotta Pulisci <i>University of Alberta, Canada</i>
11:40-12:25	Oral presentations (see detailed program)	
12:25-12:30	Introduction to ISL2024	
12:30-13:25	<i>Lunch</i>	
13:30-14:00	Keynote address: "Make soil while the sun shines - how plants influence soil cohesion"	Dr Alexia Stokes <i>INRAE, France</i>

<b>Session 3</b> <b>Numerical modelling of landslides</b> Moderator: Dr Jelke Dijkstra (Chalmers University)		
14:00-14:20	Invited lecture: "Potential for remobilization of debris fans"	Prof. Thomas Marcher <i>Graz University of Technology, Austria</i>
14:20-15:20	Oral presentations (see detailed program)	
15:20-15:50	<i>Coffee break</i>	
15:50-17:00	Panel discussion	Moderator: Dr Farrokh Nadim (NGI)

<b>Day 3 – 9<sup>th</sup> June (Deichman library, sous-terrain)</b>		
<b>Session 4</b> <b>Keynote session</b> Moderator: Dr Suzanne Lacasse ( NGI)		
08:00-08:30	Morning coffee	
08:30-09:00	Hutchinson lecture: "Engineered and nature-based solutions against flow-type landslide hazards"	Prof. Clarence Choi <i>University of Hong Kong, Hong Kong</i>
09:00-09:30	Keynote address: "Interdisciplinary investigation of landslides: a path to risk reduction"	Prof. Joseph Wartman <i>University of Washington, USA</i>
09:30-09:55	<i>Coffee break</i>	
09:55-11:00	Poster session (see detailed program)	
<b>Session 5</b> <b>Landslide hazard and risk - Assessment and mitigation</b> Moderator: Michael Porter (BGC)		
11:00-11:20	Invited lecture: "Diagnosis of the landslide mechanism for the assessment of slow-moving landslide hazard and the risk mitigation design"	Prof. Federica Cotecchia <i>Politecnico di Bari, Italy</i>
11:20-12:30	Oral presentations (see detailed program)	
12:30-13:30	<i>Lunch</i>	
13:30-14:00	Keynote address: " Towards a quantitative assessment of landslide risk: challenges and perspectives"	Dr Zhongqiang Liu <i>NGI, Norway</i>

<b>Session 6</b> <b>Landslide mobility, runout and impact forces</b> Moderator: Dr Laura Rødvdand (NGI)		
14:00-14:20	Invited lecture: "Some remarks and issues linked to the landslide runout distance assessment"	Prof. Michel Jaboyedoff <i>University of Lausanne, Switzerland</i>
14:20-15:00	Oral presentations (see detailed program)	
15:00-15:35	<i>Coffee break</i>	
<b>Session 7</b> <b>Monitoring and early warning systems for landslides</b> Moderator: Dr Lars Harald Blikra (NVE)		
15:40-16:00	Invited lecture: "IoT-based slope stability analysis as local landslide early warning"	Dr Luca Piciullo <i>NGI, Norway</i>
16:00-16:50	Oral presentations (see detailed program)	
19:00	<i>Gala dinner (Havsmak restaurant, Oslo Opera House ) Dress code: cocktail attire</i>	

<b>Day 4 – 10<sup>th</sup> June, Case study</b> <b>NGI office (Sandakerveien 140)</b>		
08:30-09:30	JTC1 Committee meeting Hybrid - Meeting Room Peck (2 <sup>nd</sup> floor) and Teams	Prof. Gonghui Wang
10:00-11:15	Gjerdrum quick clay landslide: emergency and evacuation  Gjerdrum Landslide Investigation	Laura Rødvdand, <i>NGI, Norway</i> Luca Agrini, <i>NGI, Norway</i> Bjørn Kalsnes, <i>NGI, Norway</i> Odd Arne Fauskerud, <i>Multiconsult, Norway</i> Inger-Lise Solberg, <i>Landslide Commission and Geological Survey of Norway (NGU), Norway</i>
11:15-11:45	<i>Coffee break</i>	
11:45-13:45	Commission work and remediation measures	Håkon Heyerdahl, <i>NGI, Norway</i> Toril Hofshagen, <i>NVE, Norway</i>
11:45-13:45	Visit NGI's soil/rock laboratory and getting acquainted with quick clay.	Pasquale Carotenuto, <i>NGI, Norway</i>
13:45-14:45	<i>Lunch</i>	

## Detailed program

### Thursday 8<sup>th</sup> June

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#### Session 2 - Impact of climate-driven perils and climate change on landslide hazard

Oral presentations: 11:40 – 12:30

Moderator: Dr Vittoria Capobianco (NGI)

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11:40-11:50      Adaptation to climate changes: a necessary step towards the improvement of landslide prediction models

*E. Šegina, M. J. Auflič, T. Peternel*

11:50-12:00      Including the impact of climate change in quantitative risk analysis: an example from Kaikōura, New Zealand

*S. de Vilder, C. Massey, M. A. Brideau, B. Lukovic, R. Morgenstern, D. Townsend, B. Rosser*

12:00-12:10      A Massive Rockslide and Debris Flow Linked to Climate Change

*M. Gutierrez*

12:10-12:20      The Effect Of Wildfire Wooden Ember Cover On Hydrological Behaviour And Stability Of Silty Volcanic Slopes

*L. Coppola, A. Reder, G. Rianna, A. Tarantino, L Pagano*

12:20-12:30      Introduction to ISL2024

*Véronique Merrien-Soukatchoff*

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#### Session 3 - Numerical modelling of landslides

Oral presentations: 14:20 – 15:20

Moderator: Prof. Jelke Dijkstra (Chalmers University)

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14:20 -14:30      Predicting Annual Displacement Probability of Slow-Moving Landslides through Markov Chain and Monte Carlo Simulation

*M. Porter*

14:30- 14:40      Advantages and challenges of advanced slope stability analyses

*C. Sellin, M. Karlsson, M. Karstunen*

14:40-14:50      Advanced numerical model for landslides: from quick clay to submarine landslides

*Q. A. Tran*

14:50-15:00      Role of positive temperature variations on rock slopes outcrops (a review)

*V. Merrien-Soukatchoff and M. Gasc-Barbier*

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15:00-15:10	Qualitative and Quantitative Analysis of Unstable Rock Mass in Three Gorges Reservoir Area: Bijiashan Case History  <i>W. Zhang, W. Lu, X. Meng, L. Wang</i>
15:10-15:20	Earthquake loading on submarine slopes preconditioned by marine gas: estimating the triggering potential based on stability analyses  <i>P. Kaminski, J. Grabe</i>

## Friday 9<sup>th</sup> June

Poster Session: 09:30 – 11:00

Moderator: Dr Rosa Maria Palau Berastegui

### Area A - Rock mass degradation and landslide initiation

A1	Active Layer Detachment Slides Kluane Ranges, Southwest Yukon <i>C. M. Ackerson, B. Ward, K. Kennedy</i>
A2	What causes creep bursts in the Åknes landslide, Norway <i>A. Aspaas, P. Lacroix, L. Kristensen, B. Etzelmüller &amp; F. Renard</i>
A3	Degradation of Hard Clays under Freezing and Thawing Cycles <i>K. Bočková, J. Vaunat, J. Moya</i>
A4	Mechanism of Deep Groundwater Inflow into Landslide Mass based Ground Temperature Monitoring in the Metamorphic Area, Japan <i>G. Furuya, D. Habashita, K. Nawa, A. Suemine, G. Wang</i>
A5	Preliminary Stages of a Landslide-Generated Tsunami Hazard Assessment of Glacier Bay National Park and Preserve, Alaska USA <i>C. Hulst, J. Coe, N. Avdievitch, J. W. Kim, Z. Lu, D. Staley</i>
A6	Water input changes in the Kulcs landslide area <i>Cs. Király, Gy. Varga, D. Cseresznyés, G. Jakab, T. Földes, N. Magyar, Z. Szalai</i>
A7	Seasonal and climatic controls on unstable rockslopes in Norway <i>L. Kristensen, I. Skrede, K. Indrevær, I. Penna, A. Aspaas, G. Pless</i>

### Area B - Climate and anthropogenic impact on landslide risk in various geographic regions, including the Arctic

B1	Alaska's Unstable Slopes: A Look at Three Examples of Increasing Instability with a Warming Climate <i>M. M. Darrow, D. M. Capps, R. P. Daanen</i>
B2	Landslides and Hydrological Environment of Sedimentary Rock Slope in north Greenland <i>S. Yamasaki, T. Watanabe</i>
B3	Full-scale slope monitoring and back-analysis of a weather-induced landslide with and without the effect of vegetation: preliminary insights <i>S. E. Donvito, V. Capobianco, Y. Shin, L. Piciullo, V. Tagarelli</i>
B4	Woody macrofossils excavated from landslide-related deposits as proxies for palaeoclimate and mass-movements <i>R. Yamada, Y. Kariya, T. Kimura, M. Sano, Z. Li, T. Nakatsuka</i>

## Area C - Prediction of landslide mobility and inundation, including landslides initiated at mine tailings storage facilities

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| C1 | Numerical Modelling of the Initiation of progressive failure in Eastern Canadian sensitive clay<br><i>A. Kirstein, A. Locat G. Grimstad, H. P. Jostad</i>              |
| C2 | The effect of rock fragmentation on rockfall barriers<br><i>G. Matas, J. Gill, N. Lantada, J. Corominas</i>  |
| C3 | Runout of landslides in quick clays<br><i>M. Metral, A. Ferrari, H. Heyerdahl, Z. Liu</i>  |
| C4 | Numerical simulation for runout behaviour of sensitive clay landslides using the Material Point Method<br><i>Z.Q. Liu, M.L. Zhou, M. Lu, A. DiBiagio, H. Heyerdahl</i> |
| C5 | Characteristics of Fluidized Landslides in the Niigata Area, Japan<br><i>N. Watanabe, N. Aiba, G. Furuya</i>   |

## Area D - Application of modern remote sensing technologies to landslide risk assessment

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| D1 | A rock glacier inventory of the central Alaska Range, Alaska<br><i>K. Kelkar, L. Farquharson, M. Darrow, D. Mann, S. Zwieback, D. Capps</i>  |
| D2 | Rock Avalanches in Northeastern Baffin Island: Understanding low occurrence in a region with high hazard potential<br><i>M. Matthew, J. Gosse, R. Hermanns, A. Normandeau</i>  |
| D3 | A Methodology To Detect Ground Deformation Events In A-DInSAR Time Series: Application To Slow-Moving Landslides<br><i>L. Pedretti, M. Bordoni, V. Vivaldi, S. Figini, M. Parnigoni, A. Grossi, L. Lanteri, M. Tarabra, N. Negro, C. Meisina</i> |
| D4 | InSARTrac as a novel tool for landslide monitoring and failure mechanism assessment<br><i>C. Zambanini, D. Scott Kieffer</i>   |

## Area E - Landslide risk reduction strategies: risk mitigation, including early warning and nature-based solutions

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| E1 | Study on the potential of Nature Based Solutions for the protection of a rockfall site at Artouste (French Pyrenees)<br><i>C. Lévy, B. Colas, S. Bernardie, A. Pignalosa, F. Pugliese, C. Gerundo, J. C. R. Sánchez, S. Fàbregas, J. A. Ballesteros Canovas</i> |
| E2 | NBS Methods for Hydrological Correction in a Glacier Deposit Torrent to Avoid Recurrent Debris Flows into The Urban Area of Erill-La-Vall (Lleida Province-Spain)<br><i>C. Raimat, J. Trujillo, A. Solheim</i>  |
| E3 | From macro to micro-scale: exploring the role of vegetation cover towards shallow landslides using molecular and elemental spectroscopies<br><i>L. Marzini, D. Ciofini, J. Agresti, L. Ciaccheri, S. Siano, L. Disperati, I. Osticioli</i>                      |
| E4 | Application of a GIS-based tool for detection of shallow landslides<br><i>S. B. Mickovski, A. G. Ollauri</i>  |
| E5 | Meteorological Thresholds for Regional Scale Rockfall Early Warning in Norway<br><i>R. M. Palau, K. G. Gislås, G. L. Gilbert, A. Solheim</i>  |
| E6 | Low-cost Methods For Monitoring Shallow Landslide Occurrence Along Linear Infrastructures   |



*M. Pavanello, M. Bordoni, V. Vivaldi, M. Reguzzoni, A. Tamburini, F. Villa, C. Meisina*

E7

Selection of appropriate landslide mitigation measures – LaRiMiT (Landslide Risk Mitigation Toolbox)

*V. Capobianco, B. Kalsnes, E. Briseid Storrøsten*

## Session 5 - Landslide hazard and risk - Assessment and mitigation

Oral presentations: 11:20 – 12:20

Moderator: Michael Porter (BGC)

11:20 -11:30	Risk before failure for the Alta and Gjerdrum landslides in Norway <i>J. L'Heureux, S. Lacasse and Z. Liu</i>
11:30- 11:40	Time-dependent shallow landslide hazard mapping using an event-based machine learning approach <i>A. Edrich, A. Yildiz, R. Roscher, J. Kowalski</i>
11:40-11:50	Probabilistic analysis of the performance of a road network affected by slow-moving landslides <i>S. Ferlisi, A. Marchese, D. Peduto, P. Gehl</i>
11:50-12:00	An efficient reliability-based design approach to reduce rockfall risk below a target threshold <i>M. Marchelli, V. De Biagi</i>
12:00-12:10	Towards a generic methodology to assess instabilities and retreat rate in flysch seacliffs <i>L. Guillen, Y. Thiery, T. Dewez, C. Levy, P. Bourbon, S. Caritg, P. Razin, L. Martins, C. Garnier, A. Cuccurullo, D. Gallipoli</i>
12:10-12:20	When soil heterogeneity helps the geotechnical design: the case of drainage trenches <i>L. Comegna, M. Pirone, L. Picarelli, G. Urciuoli</i>
12:20-12:30	Negative Poisson's Ratio Auxetic Structures to Arrest Geophysical Granular Flows: Experimental Insights <i>T. Han, J. Zhang, C. E. Choi</i>

## Session 6 - Landslide mobility, runout and impact forces

Oral presentations: 14:20 – 15:00

Moderator: Dr Laura Rødvang (NGI)

14:20 -14:30	Effects of Soil Burn Temperature and Organic Content on Post-wildfire Debris Flow Mobility <i>F. Gao, C. E. Choi</i>
14:30- 14:40	A simplified procedure to assess the potential effects of climate change on the mobility of a slow active earthflow in Southern Italy

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*G. Rianna, A. Reder, L. Comegna, G. Urciuoli, L. Picarelli*

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14:40-14:50 Rainfall-induced Landslides and subsequently Debris Flows in Regional-scale Areas

*S. Jeong, M. Hong*

14:50-15:00 Geo-Infrastructure Vulnerability to Landslide Hazards and Climate Change in the UK: Predictable Consequences?

*R. Moore, H. Reeves*

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## Session 7 - Monitoring and early warning systems for landslides

Oral presentations: 16:00 – 16:50

Moderator: Dr Lars Harald Blikra (NVE)

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16:00-16:10 A Pilot Study in the Napf-Region (Central Switzerland) for an Upcoming National Landslide Early Warning System

*M. Stähli, T. Halter, F. Walter, A. Wicki, P. Lehmann*

16:10-16:20 Calibration of coupled finite element analyses for early warning system: the case of an unsaturated slope in Norway

*V. Mangraviti, V. Capobianco, L. Piciullo, J. Dijkstra*

16:20-16:30 In Situ and Satellite Monitoring of a Landslide and of a Drainage System

*J. De Rosa, C. Di Maio, R. Vassallo, G. Cutrera, R. Murtas, G.V. Pandiscia, F. Trillo,*

16:30-16:40 Combining distributed fibre optic sensing with passive seismic interferometry for advanced monitoring applications

*S. Ouellet, J. Dettmer, M. Karrenbach, G. Olivier, M. Lato*

16:40-16:50 Enhanced Discontinuity Set Extractor (eDSE): An AI Tool for Classifying and Characterising Rock Discontinuities and Rock Masses from 3D Point Cloud Datasets

*D. HY Wong, S. Millis, WK Leung*

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