



SLOPE

STABILITY 2026

L I M A - P E R U

PATRON SPONSOR



TECHNICAL PROGRAM

26 - 29 OCTOBER 2026

Lima Convention Center (LCC)

Collaborating Organizations:



Sociedad Peruana de Geoingeniería-SPEG
Grupo Nacional de la ISRM
International Society for Rock Mechanics
and Rock Engineering



TGA
GEOTECHNICAL
ENGINEERING

*"SLOPE FOR SAFETY
PERFORMANCE"*

ABOUT SS2026

SS2026 brings together specialists, consultants, researchers, students, and practicing engineers from many countries to exchange field experience, analytical methods, and current solutions in open-pit slope stability.

That exchange improves design practice, risk management, and the transfer of working knowledge to the next generation of practitioners.

SYMPOSIUM THEMES

- Blasting
- Case studies and Geohazards
- Hydrogeology
- Machine learning, artificial intelligence, and new technologies
- Numerical modeling
- Rock mass characterization and data uncertainty
- Slope monitoring and risk management
- Slope stability models and design optimization.

SYMPOSIUM CHAIRS AND ORGANIZERS



Luis M. Tejada

Manager
Geotechnical
and Hydrogeology
Antamina
Peru



Luis C. Tejada

Manager
Geomechanical
Engineering
Freeport - McMoRan
USA



Antonio Samaniego

Director
SRK Consulting
Peru



Gina Pachao

Women Geotechnical
Engineers in Mining
Southern Copper
Corporation
Cuacone
Peru



Luis Tejada Arata

Young Geotechnical
Engineers in Mining
University of Utah
USA

SYMPOSIUM PROGRAM AT A GLANCE

SAT 24 OCT	SUN 25 OCT	MON 26 OCT	TUE 27 OCT	WED 28 OCT	THU 29 OCT	FRI 30 OCT
Workshops	Workshops	SS2026 SYMPOSIUM & EXHIBITION				Workshops
SOCIAL PROGRAM	Young Geotechnical Engineers in Mining Opening Reception	LOP & Sponsors Reception	Symposium Dinner	Women Geotechnical Engineers in Mining & Reception	Closing Reception	

TECHNICAL PROGRAM

MONDAY, OCTOBER 26, 2026

🕒 9:00 - 18:00 **EXHIBITION OPEN**

🕒 07:00 | **REGISTRATION**

SESSION 1: 📍 SALA LIMA

🕒 07:55 | Welcome and Introductions

🕒 08:00 | **KEYNOTE ADDRESS: Ways Models Can Overpredict Slope Stability**
Loren Lorig, Itasca, USA

🕒 08:50 | **Case Study: A Comparative Assessment and Geotechnical Management of Deep-Seated Toppling and Complex Wedge Slope Instabilities at the Highland Valley Copper Mine, Canada**
Thomas Beiggessner¹, Shannon Blake¹, Carl Diederichs¹, Matthew King², Michael Scholz²
Teck Highland Valley Copper, Canada¹; Piteau Associates, Canada²

🕒 09:20 | **Expert Panel: Beyond Factor of Safety: Managing Moving Slopes.**
Moderator: Marco Arrieta, Piteau Associates
Panelists: Derek Martin, University of Alberta; Teno Siburian, Freeport-McMoRan; Miessa Souza, Vale; Greg Abrahams, BGC Engineering.

🕒 10:10 | **Networking & Refreshment Break**

SESSION 2A: NUMERICAL MODELING 📍 SALA LIMA

🕒 10:40 | Integrating monitoring and modelling: A practical Data Assimilation framework for progressive model updating in open pit slope design
Cristobal Valderrama, Itasca Consulting, Santiago, Chile

🕒 11:00 | Shear Strength Decay in Fault Zones and Design Implications
Evgeny Kostyukov¹, Cameron Clayton¹, Robyn Barnett², Andrew Bidwell²
Tetra Tech Canada Inc., Canada¹; Elk Valley Resources Ltd., Canada²

🕒 11:20 | Integrating geotechnical monitoring and 3D numerical modeling for predictive analysis of time-dependent slope behavior
Gabriel Cerezo¹, Alessandro Tapia¹, Pedro Varona¹, Luis Figueroa¹, Felipe Cardenas², Diego Silva², Luis Olivares², Sigma Epsilon Geocontrol, Chile¹, Codelco, Chile²

🕒 11:40 | Back-analysis of rainfall-triggered large-scale slope instabilities at Freeport-McMoRan's Safford Mine using advanced analysis approaches
Christian Cancino¹, Loren Lorig¹, Paulo Coutinho², Luis C. Tejada², Itasca Consulting, USA¹, Freeport-McMoRan, USA²

SESSION 2B: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION 📍 SALA CAJAMARQUILLA

🕒 10:40 | Bench design analysis of an open pit mine slope utilizing UAV-based photogrammetry and back analysis
Yalin U. Dogan, Gabriel Rezende, Rocscience Inc. Canada

🕒 11:00 | A case study on the structural controls of a slope instability applying coupled Discrete Fracture Network and Limit Equilibrium Analysis
Cristian Guajardo, Santiago Marambio¹, Nicolas Castro¹, Steve Rogers², Fernando Ortiz³, Juan Pablo Mulet³
WSP Mining, Chile¹; WSP Canada²; Escondida, Chile³

🕒 11:20 | Slope stability analysis for the design of a shallow open pit, Eastern Egypt
Harriet Pascoe, Xander Gwynn, SLR Consulting Limited, United

🕒 11:40 | Risk reduction for planar failure in an Open Pit: Bench-Berm Design, UDEC2D Modelling and Monitoring evidence.
Pepe Aynaya, Jhon Palomino, Williams Mendoza, Luis Tejada C., Glencore, Perú

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SESSION 2C: GEOHAZARDS SALA MATEO SALADO

-  **10:40** | Proactive Risk Management of Cutback Overspill Rockfall Hazards
Phil J.H. de Graaf, Giraffe Mining Consultants, Australia
-  **11:00** | Remote Sensing and Change Detection to Develop Detailed Rockfall Activity Profiles for Large Open
Julian Solano, Teresa Gierc, Matin Mahdizadeh, Renato Macciotta
University of Alberta, Canada
-  **11:20** | ROFRAMS: Digital Transformation of Rockfall Risk Management for Safer, Smarter Surface Mining
Marnus Bester, T. Russell, T. Dlokweni, T. Mabote
Anglo American, South Africa
-  **11:40** | Rockfall Hazard Risk Assessment For Open Pit Slopes
Eric Jaczkowski¹, Andrew Verok², Luiz Castro¹
WSP, Canada¹; Rio Tinto Iron Ore Company of Canada²

 **12:00** | **LUNCH**

SESSION 3: SALA LIMA

-  **13:25** | Welcome and Introductions
-  **13:30** | **KEYNOTE ADDRESS: Challenges And Opportunities In Linking Geotechnics With Drilling And Blasting, Breaking Paradigms**
Carlos Scherpenisse, Geoblast, Chile
-  **14:20** | **Invited Speaker: Knowing A Slope Is Moving Is Not Enough: From Monitoring Data To Failure Mechanism In Open Pit Mines**
Paolo Farina, Geoapp, Italy
-  **14:50** | **Invited Speaker: Not Replaced, But Empowered: AI As A Enabler Of Engineering Judgment In Geotechnical Practice**
Reginald Hammah, Rocscience, Canada

 **15:20** | **Networking & Refreshment Break**

SESSION 4A: ROCK MASS CHARACTERIZATION AND DATA UNCERTAINTY SALA LIMA

-  **15:50** | Improving and Reducing the Uncertainty of the Geotechnical Characterization at the Esperanza Sur Pit, Chile
Esteban Hormazabal, Nicolas Zegpi, SRK Consulting, Chile
-  **16:10** | Advancing geomechanical characterization with in-house block modeling of GSI, RQD and Hardness at Freeport-McMoRan
Rachel Rapprecht, Aman Soni, Luis C. Tejada, Peder Skollingsberg
Freeport-McMoRan, USA
-  **16:30** | Improving slope deformation and stability predictions in anisotropic rock masses: A strain and confinement dependent dilation model for ubiquitous joints
Farahmand, K.¹, Rahjoo, M.²
Knight Piesold, Canada¹; University of British Columbia, Canada²
-  **16:50** | Geometric modeling of mudstone lenses for improved slope stability assessment
Ryan Peterson¹, Ludo Gabanakgosi², Goitsemodimo Ramoleko²
Itasca, USA¹; Debswana, Botswana²
-  **17:10** | Interpretable Machine Learning Model for Optimized Prediction of Slope Stability and Factor of Safety in Mining
Shiraz Baloch¹, Muhammad Yaqoob¹, Maliha Mehar Qambrani¹, Edward Ponce Galvez², Muhammad Arif
Barrick Mining Corporation, Pakistan¹; Universidad Nacional Daniel Alcides Carrión, Peru²

 **17:30** | **Adjourn**

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SESSION 4B: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION SALA CAJAMARQUILLA

-  **15:50** | **Invited Speaker: Supporting and Promoting Slope Stability 2026 and the Large Open Pit Project**
Erik Wunder, IAEG representative and ABGE President, Brazil
-  **16:10** | Improving interpretation of direct shear tests under low normal stress conditions for open pit slope applications
Bryan Tatone¹, Omid Mahabadi¹, Marco Arrieta², Christian Obregon³, Andrea Lisjak¹, Johnson Ha¹
Geomecanica Inc., Canada¹; Piteau Associates, Canada²; Elk Valley Resources, Canada³
-  **16:30** | Improved reliability in bench-scale slope stability analysis through stochastic discrete fracture network modelling
Pedro Ojeda, Yaniv Fogel, Steve Rogers
WSP, Canada Inc, Canada
-  **16:50** | Geotechnical Stability Assessment and Risk Management Framework for In-Pit Waste Platform at Los Bronces Mine
Jean Azorin¹, Rodrigo Ortiz¹, Danko Díaz², Edmundo Bermedo²
WSP Mining, Chile¹; Anglo American, Chile²
-  **17:10** | Stability Assessment and Management of Large-Scale Dump Leach Stockpile Under Variable Leaching Irrigation Conditions at Freeport-McMoRan Morenci Operations
Juan Marca Flores, Michelle Montague, Freeport-McMoRan, USA

 **17:30** | **Adjourn**

SESSION 4C: MACHINE LEARNING, ARTIFICIAL INTELLIGENCE, AND NEW TECHNOLOGIES SALA MATEO SALADO

-  **15:50** | 3D structural domains based on unsupervised clustering for validation of geotechnical analyses
Gian Ticona Jove, Kevin F. Silloca Guevara, José F. Castillo Suni
Amphos21, Peru
-  **16:10** | AI assisted GSI characterization from drone imagery: A case study at Hidden Valley Mine
Lianne McKenzie¹, Paulina Paredes², Yush Rajcoomar², Richard Yang²
Harmony Australasia, Australia¹; Stratum AI, Canada²
-  **16:30** | Machine Learning for Automated Televue Imagery Analysis: Revolutionizing Subsurface Characterization
Jason Furtney¹, Geoff Owen², Luke Longridge², Neil Seifert³, Cristian Castro Álvarez⁴, Mikala Hammerl, Chris Thielsen¹
ITASCA, USA¹; Teck, Canada²; Deep Core Technology³, Squamish, Canada; ControlExpert GmbH, Langenfeld, Germany⁴
-  **16:50** | Slope optimization for an open pit copper-porphyry mine using machine learning and 2D/3D FDEM numerical modelling
Nikolaos Grendas, K. Botsialas
AuroraGeo Consulting, Greece
-  **17:10** | Machine Learning in Geotechnics: Opportunities, Challenges, and Case Insights
Milad Barzegar, Tom Lynch, Time Cartledge, Alex Hossack
Cartledge Mining & Geotechnical, Australia

 **17:30** | **Adjourn**

 **18:00** | **LOP & Sponsors Reception at LCC**

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TECHNICAL PROGRAM

TUESDAY, OCTOBER 27, 2026

🕒 9:00 - 18:00 **EXHIBITION OPEN**

🕒 07:00 | **REGISTRATION**

SESSION 1: 📍 SALA LIMA

🕒 07:55 | Welcome and Introductions

🕒 08:00 | **KEYNOTE ADDRESS: Open Pit Hydrogeology: State Of Practice**
Geoff Beale, Piteau Associates, UK.

🕒 08:50 | Case Study: Managing Slope Stability at Freeport-McMoRan
Aman Soni, Luis C. Tejada, Hanjalika Hawwezwe, Teno Siburian, Freeport-McMoRan, USA

🕒 09:20 | **Expert Panel: Choosing the right approach for slope stability analysis: 2D vs 3D modeling.**
Moderator: Hanjalika Hazwezwe, Freeport-McMoRan.
Panelists: Nick Asbury, Call & Nicholas, Cristian Cancino, Itasca Consulting, Jeremy Dowling, Piteau Associates, Arturo Maldonado, BHP

🕒 10:10 | **Networking & Refreshment Break**

SESSION 2A: SLOPE MONITORING, INSTRUMENTATION, AND RISK MANAGEMENT 📍 SALA LIMA

🕒 10:40 | An alternative method of radar alarm threshold determination for monitoring ductile and brittle failures in pit slopes
Jemima Alphonso¹, Kyle Thompson¹, Clifford Preston²
Teck Highland Valley Copper, Canada¹; IDS GeoRadar, USA of America²

🕒 11:00 | From Data to Decisions: Geomechanical Data Integration and Analysis at Freeport McMoRan
Aman Soni¹, Darwin Torres², Luis C. Tejada¹
Freeport-McMoRan USA¹, Sociedad Minera Cerro Verde S.A.A., Peru²

🕒 11:20 | Deep Slope Monitoring Using an FBG-Based Multipoint Fiber Optic Extensometer System in a Brazilian Open-Pit Mine
Juan Manuel Girao Sotomayor¹, Irvyn Laurence Paniz¹, Simei Lima²
Vale Institute of Technology, Brazil¹; Vale, Brazil²

🕒 11:40 | Monitoring bench scale instabilities in open pits: practical constraints and tactics for reliable radar based early warning
Paolo Farina, Luca Lombardi
Geoapp SRL, Italy

SESSION 2B: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION 📍 SALA CAJAMARQUILLA

🕒 10:40 | Integrated Optimization-Based Assessment of Infinite Slope Stability Under Seepage and Seismic Loading: Sensitivity to Pore-Pressure Build-Up
Primož Jelušič, Borut Macuh, University of Maribor, Slovenia

🕒 11:00 | Geotechnical Characterization and Slope Stability Assessment in an Iron Ore Pit, Quadrilatero Ferífero
Alice dos Santos Cruz Dias, Monielle Virginia Coimbra Martins, Marina Avellar, Renan Costa Fernandes
Vale, Brasil

🕒 11:20 | Pit slope design optimization in very strong rock masses using ground support and discrete fracture network modeling
Katie Goguen¹, Eric Jaczkowski², Luiz Castro², Agnico Eagle Mines Ltd., Canada¹; WSP Canada²

🕒 11:40 | 3D or not 3D; Does 2D slope stability analysis sufficiently represent toppling failure in a multi-layer rock mass?
Tafadzwa Chindedza¹, Andres Huaman², Christoph Tuitz¹, Desmond Mossop¹
SRK Consulting, South Africa¹; Newmont Corporation, Canada²

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SESSION 2C: INTERDISCIPLINARY SALA MATEO SALADO

-  **10:40** | A step forward in the resilience of flexible rockfall protection systems
Roberto Luis-Fonseca¹, Werner Gerber², Remo Dudler¹, Helene Lanter¹, Rolando Romero³
Geobrugg AG, Switzerland¹; Formerly WSL, Switzerland²; Geobrugg Andina, Peru³
-  **11:00** | Fit-for-Purpose Structural Models for Geotechnical Design: A Practical Framework for Bench-to-pit Scale Planning
Geoff Owen, Teck Resources, Vancouver, Canada; Wayne Barnett, SRK Consulting, Vancouver, Canada
-  **11:20** | PLT-UCS Correlation in Altered Porphyry Systems: Evaluation of the K Factor and Implications for Geomechanical Characterization
Franklin Pongo, Edwin A. Huarache, Ruben Villarreal
Sociedad Minera Cerro Verde, Peru
-  **11:40** | Integrated Wall Control Management Framework: towards closed-loop geotechnical governance
Hector Garcia¹, Guillermo Gleisner²
HEGATRUX, Peru¹; HEGATRUX, Chile²
-  **12:00** | **LUNCH**

SESSION 3: SALA LIMA

-  **13:25** | Welcome and Introductions
-  **13:30** | **Invited Speaker: Continuum or discontinuum modelling, instantaneous or progressive failure of rock slopes**
Nick Barton, NB&A, Norway
-  **14:00** | **Invited Speaker: The Guidelines for Heap and Dump Leach Design**
Mark Smith, RRD International LLC, USA
-  **14:30** | **Invited Speaker: Is Geochemistry a Key Factor in Long-term Stability**
David Arcos, Amphos 21, Spain
-  **15:00** | **Integrated 3D stability analysis and design optimization for rock slopes**
A. Mikroutsikos¹, K. Botsialas², K. Mavrogeorgis³, G. Verouchis⁴, S. Tenorio⁵, F. Carnero⁶
AuroraGeo¹, Athens, Greece, AuroraGeo², Athens, Greece, AuroraGeo³, Athens, Greece, AuroraGeo⁴, Athens, Greece, Tharsis Mining⁵, Huelva, Spain, Tharsis Mining⁶, Huelva, Spain
-  **15:20** | **Networking & Refreshment Break**

SESSION 4A: HYDROGEOLOGY SALA LIMA

-  **15:50** | Mine Dewatering and Pit Slope Depressurization for Improved Slope Performance at Freeport-McMoRan Bagdad Mine.
Jeremy Dowling¹, Aman Soni², Amos Wamweya², Esperanza Reano³, Nick Robinette¹
Piteau Associates, USA¹; Freeport-McMoRan, USA²; Piteau Associates, Spain³
-  **16:10** | A probabilistic approach for hydrogeological pore pressure modelling
German Ibarra¹, Jeff Randall², Bijan Peik³, Karl Lawrence³
Equilibrium Mining, Chile¹; Equilibrium Mining, Canada²; Equilibrium Mining, USA³
-  **16:30** | Piezometer Interpretation: Coal Mine Footwalls
Alex Duran¹, Dubier Cardona Lopez², Herman Uribe Peña², Andres Torres²
PSM, Australia¹; Colombia²
-  **16:50** | Geological and Geotechnical Criteria for Open Pit Depressurization
Jorge Dueñas, Pablo Meza, Salome Chacon
Universidad Nacional de San Agustín, Peru
-  **17:10** | Antecedent rainfall analysis in open pit mining
Julie Loreti¹, Phil de Graaf², Angus Rowland¹, Travis White³, Felipe Capdeville⁴
Piteau Associates, South Africa¹; Giraffe Mining Consultants²; Gold fields Ltd, South Africa³
-  **17:30** | **Adjourn**

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SESSION 4B: SLOPE MONITORING, INSTRUMENTATION, AND RISK MANAGEMENT- SALA CAJAMARQUILLA

- 🕒 15:50 | Hierarchical Cell-Scale Clustering and Threshold Optimization for Slope Monitoring
Rachael Barnes, Jorge Calderon
BHP, Australia
- 🕒 16:10 | Determination of rainfall alert thresholds based on historical failure events
Jose Richard Ordonez¹, E. Tasilla¹, J. Fiestas¹, R. Velasquez¹, R. Ccalachua¹, P. Andrews²
Goldfields, Peru¹; Goldfields, Australia²
- 🕒 16:30 | An integrated monitoring data-based methodology for 3D slope displacement and stability assessment in open-pit mines
Gabriel Cerezzo, Pedro Varona, Alessandro Tapia
Sigma Epsilon Geocontrol, Chile
- 🕒 16:50 | Enhancing slope stability assessment with SARDrone: daily 3D displacement monitoring without geometrical constrains
Ruben Iglesias Gonzalez, Gerard Ruiz-Carregal, Eduard Makhoul, Dani Monells, Marc Lort Cuenca, Luis Yam, Gerard Masalias, Antonio Heredia, Giuseppe Centolanza, Azadeh Faridi, Nieves Pasqualotto, Fernando Chacón, Lucas Carvalho, Javier Duro
DARES TECHNOLOGY, Spain
- 🕒 17:10 | 3D InSAR time series for operational displacement monitoring
Kristof Bognar¹, David Mackenzie¹, Todd MacKenzie¹, David Holden¹, Jon Leighton¹, Craig Stringham², Shaunak De², Gordon Farquharson²
3vGeomatics, Canada¹, Capella Space, USA²

🕒 17:30 | **Adjourn**

SESSION 4C: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION 📍 SALA MATEO SALADO

- 🕒 15:50 | Success Case in the Risk Management of East Wall Instability - Phase 2, Quellaveco Open Pit
Edgar Contreras, Newton Huamani, Eddy Valencia
Anglo American Quellaveco, Peru
- 🕒 16:10 | Current and future challenges in open-pit mine design: Slope stability as a core element for geotechnical resilience and sustainability
Alex Calderon, Geoblast S.A., Chile
- 🕒 16:30 | Framework for pit slope instability analysis and risk management
A case study in structurally complex conditions
Bradley Lecomte¹, Meg Sharp², Andrew Bidwell¹, Matthew Weiss²
Elk Valley Resources, Canada¹; Tetra Tech Canada, Canada²
- 🕒 16:50 | Application of Design Acceptance Criteria (DAC) Methodology for Geotechnical Risk Management of Open-Pit Mine Slopes
Laura Frota Horta¹, LACASSE, S², FERREIRA, A.M.³, MAIA, J.A.C.³
ITV, Brazil¹; Norwegian Geotechnical Institute, Norway²; Vale S.A. Brazil³
- 🕒 17:10 | Slope design optimization at Mina Justa open pit mine
Freddy Castro¹, N. Quispe¹, R. Pozo², E. Hormazabal³
Marcobre, Peru¹; SRK Consulting, Peru²; SRK Consulting, Chile³

🕒 17:30 | **Adjourn**

🕒 18:00 | **Symposium Dinner at LCC**

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TECHNICAL PROGRAM

WEDNESDAY, OCTOBER 28, 2026

🕒 9:00 - 18:00 **EXHIBITION OPEN**

🕒 07:00 | **REGISTRATION**

SESSION 1: 📍 SALA LIMA

🕒 07:55 | Welcome and Introductions

🕒 08:00 | **KEYNOTE ADDRESS: From Real World With Fundamental Rock And Soil Mechanics To Digital Geotechnical Twins That Revolutionize Decision-Making**
Teofilo Costa, Vale, Brazil

🕒 08:50 | Case Study: Geotechnical risk assessment of successful mining cases in talus over 45 m high
Fausto Chirinos, L. Estremadoyro, Y. Mejia, E. Espinoza, L. Tejada C
Independent, Peru

🕒 09:20 | **Expert Panel: Implementing and Managing Operational Controls**
Moderator: Eduardo Medina, Glencore.
Panelists: Fabiana Cruz, Vale; Eddy Valencia, Anglo American Quellaveco; Luis Olivares, Codelco.

🕒 10:10 | **Networking & Refreshment Break**

SESSION 2A: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION 📍 SALA LIMA

🕒 10:40 | Computational tools for the estimation of factor of safety and location of the critical failure surface for slopes in rock masses that satisfy the Generalized Hoek-Brown failure criterion
Carlos Carranza¹, Esteban Hormazabal²
University of Minnesota, USA¹; SRK Consulting, Chile²

🕒 11:00 | Quantification of the improvement in rock mass strength through the application of resins in open-pit mining
Matias Sepulveda Gonzalez¹, Kimie Suzuki Morales²
ITASCA¹ / University of Chile, Chile²

🕒 11:20 | Evaluation of the Effect of Resin Injection in Rock Masses through Laboratory Tests and Numerical Modeling
Mauricio Cofre¹, Cristobal Valderrama², Luis Olivares¹
Codelco, Chile¹; Itasca Consulting, Chile²

🕒 11:40 | Optimizing Bench Configuration Impacted by Rock Mass Heterogeneity: A Canadian Iron Mine Case Study
Joseph Mukendi Kabuya¹, Abbas Kamalibandpey¹, Antoine Caron¹, Luiz Castro², Vincent Riendeau²
ArceMittal Exploitation Minière, Canada¹; WSP Canada Inc., Canada²

SESSION 2B: ROCK MASS CHARACTERIZATION AND DATA UNCERTAINTY 📍 SALA CAJAMARQUILLA

🕒 10:40 | Integrated 3D structural domain identification and slope mass rating mapping for rock slopes
Antonis Mikroutsikos¹, K. Botsialas¹, K. Mavrogeorgis¹, G. Verouchis¹, S. Tenorio², F. Carnero²
AuroraGeo, Greece¹; Tharsis Mining, Spain²

🕒 11:00 | Estimation of Uniaxial Compressive Strength (UCS) from Point Load Test (PLT) data: Methodological approach and local calibration of conversion factors in large-scale geotechnical databases
Rodrigo Aguirre¹, Karla Olcese², Itasca, Chile¹; Itasca, Perú²

🕒 11:20 | Considerations for appropriate representation of heterogeneous rock masses in slope stability analysis models
Jaya Mylvaganam¹, Ian de Bruyn¹, James Jung², Diane Walker¹, Debbie Casparis², Sameh Shahin²
SRK Consulting, Australia¹; Rio Tinto, Australia²

🕒 11:40 | Plastic confining strain for evaluating damage in brittle rock mass
Rodrigo Silva, Diego Acevedo, Itasca, Chile

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SESSION 2C: SLOPE MONITORING, INSTRUMENTATION, AND RISK MANAGEMENT SALA MATEO

-  **10:40** | A multi-scale velocity analysis for alarms thresholds validation and optimization using slope stability radar deformation monitoring data
Andrei Torres¹, Albert Cabrejo²
GroundProbe, Colombia¹; Grounprobe, USA²
-  **11:00** | Designing Visibility: GIS Framework for GB-Radar Allocation Based on Life-of-Mine Topography
Pablo Marin, P. Alvarez, M. Conislla, A. Cornelio
Marcobre, Peru
-  **11:20** | Enhancing Slope Failure Early Warning in Open-Pit Mines using Multi-Parametric Conditioned Alerting
Paolo Farina, Davide Colombo
GEOAPP, Italy
-  **11:40** | Reducing Bias in Macro Wedge Identification Through Complementary Vector Based Kinematic Analysis
Santiago Marambio, Nicolás Alviña T., Meychol Torres C.
WSP, Chile; WSP, Peru

 **12:00** | **LUNCH**

SESSION 3: SALA LIMA

-  **13:25** | Welcome and Introductions
-  **13:30** | **KEYNOTE ADDRESS: Beyond Mine Dewatering: Integrating Hydrogeology, Geotechnics, and Long-Term Planning in Open-Pit Operations**
Carmen Perez, DHI, Spain
-  **14:20** | **Case Study: Geotechnical decision-making at the world's deepest open pit mine: a framework from Bingham Canyon**
Serdar Ergun¹, John Morkeh², Jeff Telfer³
Rio Tinto Kennecott, USA¹; Rio Tinto Simandou, UK²; Rio Tinto Winu, AUS³
-  **14:50** | **Invited Speaker: Applying Leps 2.0 To Rockfill And Mine Waste Rock Materials: Workflow And Mine Waste Dump Stability Examples**
John Cuning, WSP, UK

 **15:20** | **Networking & Refreshment Break**

SESSION 4A: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION SALA LIMA

-  **15:50** | Large Open Pit Stability: Overcoming 3D Numerical Modelling Challenges
Tatyana Katsaga¹, Loren Lorig², Agnico Eagle Mines, Canada¹; Itasca North America, USA²
-  **16:10** | Dynamic Pit Shell Design for Challenging Slope Conditions at Jwaneng Mine Driven by 3D Numerical Modelling
C. Rekopanye¹, O. Barei¹, K. Gabanakgosi², C. Alvarez³, L. Lorig⁴
Debswana Diamond Company, Botswana¹; Formerly Debswana Diamond Company, Botswana²; Itasca, Chile³; Itasca, USA⁴
-  **16:30** | Spatial Variability Effects on Rock Fill Dump Stability
Alison McQuillan¹, Jiwoo Ahn¹, Neil Bar²
Rocscience, Inc., Australia¹; Gecko Geotechnics, Saint Vincent and the Grenadines²
-  **16:50** | Weathering effects on the Hoek-Brown failure criterion applied to a syenogranite
Carolina dos Santos Lemos¹, Eduardo Antonio Gomes Marques¹, Cibebe Clauver¹, Flavio Antonio Ferreira¹, Ana Carolina Dias Baêso², Thaynara Claudyane Castro Sales¹
Federal University of Viçosa, Brazil¹; Pontifical Catholic University of Rio de Janeiro, Brazil²
-  **17:10** | **Case Study: Optimizacion multiescalar en tajo Pampacancha: Integracion de teoria de bloques, DFN y voladura de precision para la maximizacion del IRA**
Eder Lagos, Paulo Alcazar, Alexander Benites, Adan Urquizo, Hudbay, Peru

 **17:30** | **Adjourn**

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SESSION 4B: CASE STUDIES SALA CAJAMARQUILLA

-  **15:50** | Geotechnical Management and Remedial Slope Designs for a Massive (300 Mt) Ancient Landslide Deposit in the Valley Pit at the Teck Highland Valley Copper Mine, Canada
Carl Diederichs¹, Thomas Beiggessner¹, Matt King, Ignacio Solis²
Teck Resources Limited, Canada¹, Piteau Associates, Canada²
-  **16:10** | Freeport-McMoRan Case Study Regarding the Management of Potential Slope Instability Within the Western Copper Pit, Morenci Operations, Arizona
Prayetno Siburian, Jeffrey Johnson, Michelle Montague
Freeport-McMoRan, USA
-  **16:30** | From Fragmentation to Stability: The Strategic Role of Pre-Split Blasting in Slope Performance
Daniel Azevedo¹, Edmundo Bermedo², Daniel Raposo³, Thaisa Souza⁴
Independent¹, Belo Horizonte, Brazil², Anglo American³, Belo Horizonte, Brazil⁴
-  **16:50** | "Full Control" Methodology for Mining Slopes and Its Impact on the Stability of Open-Pit Mining at Codelco
Luis Olivares, Mauricio Cofré, Codelco, Chile
-  **17:10** | Case Studies of Optimizing Bench-Berm Design in Jointed Rock
GS Esterhuizen, Esteban Hormazábal, SRK Consulting, Chile

 **17:30** | **Adjourn**

SESSION 4C: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION SALA MATEO SALADO

-  **15:50** | Integration of Three-Dimensional Geological and Hydrogeological Models for Slope Stability Assessment at the Quellaveco Open Pit.
Jhoana Elena Garcia Neciosup, María del Carmen Delgado Callata, Gisber Mamani Colca
Anglo American Quellaveco, Peru.
-  **16:10** | Multiscale hyperspectral sensing to detect instability-prone areas in active mines: the Escondida case study
Andrea Russo¹, Anna Sorrentino², Juan Pablo Mulet³, Bruno Casarotto⁴, Matteo Massironi⁴, Nicola Mondillo²
SRK Consulting, Chile¹; University of Naples "Federico II", Italy²; Minera Escondida Ltda, Chile³; University of Padua, Italy⁴
-  **16:30** | 3D stability analysis of a waste dump: Influence of the geometry of a clayey residual soil lens in the foundation
Sergio Castro, Anddes, Peru
-  **16:50** | Objective Geotechnical-Geometric Assessment System for Post-Blast Rock Slopes Using 3D Modeling and Measurable Physical Parameters: Application at Salobo Copper Mine
Felipe Campolina Barbosa, Riquett Bezerra D. Oliveira, Jean Lucas De Souza Lima, Adriano Melo, Adriano Melo, Carlos Lima, Joao Paulo Rodrigues
Vale Base Metals, Brazil
-  **17:10** | Operationalizing Machine Learning for Rock Mass Characterization
Geoff Owen, Kev Clarke, Teck Resources, Vancouver, Canada; Neil Seifert, Deep Core Technology, Squamish, Canada; Lucas Vall, ALS Geoanalytics, Vancouver, Canada; Jan Jaroling, Tetra Tech, Vancouver, Canada

 **17:30** | **Adjourn**

 **18:00** | **Women Geotechnical Engineers in Mining & Reception at LCC - Private Events**

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TECHNICAL PROGRAM

THURSDAY, OCTOBER 29, 2026

🕒 9:00 - 18:00 **EXHIBITION OPEN**

🕒 07:00 | **REGISTRATION**

SESSION 1: 📍 SALA LIMA

🕒 07:55 | Welcome and Introductions

🕒 08:00 | **KEYNOTE ADDRESS: The Large Open Pit Project: Collaboration, Innovation, Guidance and Education**
Mark Hawley, Large Open Pit, Canada

🕒 08:50 | **Case Study: Slope Monitoring, Instrumentation, And Risk Management In Critical Mining Assets**
*Juan Carlos Meza Cuadros¹, Luis Martin Tejada Cervantes², Jhon Palomino²
Las Bambas, Peru¹; Compañía Minera Antapaccay, Peru²*

🕒 09:20 | **Expert Panel: Three Chairs, One Slope**
*Moderators: Luis Tejada Arata, University of Utah; Aman Soni, Freeport-McMoRan
Panelists: Bill Estes, GEOKON; Cristian Alvarez, Geoblast; Tomas Gonzales, Sociedad Minera Cerro Verde S.A.A.*

🕒 10:10 | **Networking & Refreshment Break**

SESSION 2A: HYDROGEOLOGY 📍 SALA LIMA

🕒 10:40 | Critical Water Level TARP and dashboard development for an open pit copper mine utilising integrated pore pressure simulations and VWP monitoring
*Tom Jarman¹, Mark Raynor¹, Sheila Imrie¹, Felipe Sanz¹, Adam Bennett¹, Diane Walker²
SRK Consulting, United Kingdom¹; SRK Consulting, Australia²*

🕒 11:00 | Identification and evaluation of hydromechanical coupling events in pore pressure data as hydrogeological precursors to slope failure
*Jim Weigell¹, Nick Gorski²
Rio Tinto Kennecott, USA¹, WSP Global Inc., Canada²*

🕒 11:20 | Directional Drilling Solutions for Highwall Depressurization
*Aman Soni¹, Luis C. Tejada¹, Amos Wamweya¹, Juan Burola¹, Ben Shriver², Dan Brunner²
Freeport-McMoRan, USA¹; REI Drilling, Inc., USA²*

🕒 11:40 | Pit dewatering and pore pressure uncertainty analysis of a 3D FEFLOW groundwater model at geologically complex mine sites in Peru
*Robin Marc Dufour¹, Carlos Aguirre², Mauro Sanchez², Pablo Sáez Martínez³, Luis Camilo Suescún³, Alexia Carpentier⁴, Edith Oré³
DHI, Switzerland¹; Compañía Minera Antamina S.A. Peru²; DHI, Peru³; DHI, Spain⁴*

SESSION 2B: GEOHAZARDS AND CLOSURE 📍 SALA CAJAMARQUILLA

🕒 10:40 | Influence of dimensionality and modelling methods on rockfall simulations:
A case study at kilometer 98 of the Central Highway in Peru
Joaquin Indacochea, Maccaferri, Peru

🕒 11:00 | Dynamic Rockfall Analysis for Hazard Assessment in Fractured Slopes in Mining
*Guilherme Passos Ribas, Ramon Danilo de Souza, João Paulo Monticelli, Alexandre Gontijo
MecRoc, Brazil*

🕒 11:20 | Considerations for Rockfall Analysis in Open Pit Mine Slopes
*Jiwoo Ahn¹, Alison McQuillan¹, Dudley Thomas², Kaipale Pano³
Rocscience, Australia¹; Newmont, Papua New Guinea²; TrueNorth Geotechnics, Australia³*

🕒 11:40 | Numerical assessment of mine closure in a pit-cave environment: Renard Mine case study
*Christian Cancino¹, Miguel Fuenzalida¹, Patrick Sevigny², Raphael Perrault²
ITASCA, USA¹; Les Diamants Stornoway, Canada²*

SESSION 2C: SLOPE STABILITY MODELS AND DESIGN OPTIMIZATION SALA MATEO SALADO

-  **10:40** | An Empirical Framework for Open Pit Slope Design in Hydrothermally Altered Rocks:
Case Studies from the Peruvian Andes
Milton Teran¹, Niels Figueroa², Ricardo Ccalle², Luiz Castro¹
WSP, Canada¹; WSP, Perú²
-  **11:00** | Optimization of operational slope angles in open-pit mines through geotechnical sectoring
Anderson Rocha, Pedro Severino, Renan Conceição, Victor Timo
VALE S/A, Brazil
-  **11:20** | Geotechnical and Hydrogeological Assessment of the Madneuli Open-Pit Mine
for In-Pit Tailings Placement (Bolnisi, Georgia)
Keti Benashvili¹, Miriani Makadze¹, Revaz Menabde¹, Geoff Beale², Anna Perry³, Colin Hume³
JSC RMG Copper, Georgia¹; Piteau Associates UK limited, England², RockEng Inc., Canada³
-  **11:40** | 3D Numerical Modeling and Stability Analysis of the East Wall - Phase 4: El Soldado Mine (ES)
Felipe Orellana¹, Rodrigo Silva¹, Carlos Trista², Alejandro Amaya², Edmundo Bermedo², Manuel Schellman³
Itasca, Chile¹; Anglo American, Chile²; MSM Ingeniería SpA, Chile³
-  **12:00** | **LUNCH**

SESSION 3: SALA LIMA

-  **13:25** | Welcome and Introductions
-  **13:30** | **KEYNOTE ADDRESS: Mining Geomechanics: What is it and how ISRM can help?**
Sergio Fontoura, ISRM, Brazil
-  **14:00** | Case Study: Run-Out Analysis Of Large-Scale Granular Waste Using Material Point Method (MPM):
A Case Study From A Copper Operation In Peru
Pepe Aynaya, Jhon Palomino, Williams Mendoza, Luis Tejada C., Glencore, Perú
-  **14:30** | **Invited Speaker: Developing An Open Pit Closure Plan**
Phil De Graaf and Geoff Beale, Giraffe Mining Consultants Pty. Ltd. Australia and Piteau Associates, UK
-  **15:00** | The shear strength of shale bedding, partings in the Pilbara banded iron formations
for open-pit slope stability
Arturo Maldonado, University of Western Australia, Perth, Australia
-  **15:20** | Advancing Continuum-Discontinuum Integration:
A new Joint Logic for Large-Scale Open Pit Slope Modelling in FLAC3D
Gys Basson
Itasca Consulting Group, Minneapolis, USA

-  **15:40** | **Networking & Refreshment Break**

-  **18:00** | **SS2026 SYMPOSIUM CLOSING AND SS2028 ANNOUNCEMENT - SALA LIMA**
SS2026 CLOSING RECEPTION AT LCC

-  **19:00** | **Adjourn**

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POSTERS

SLOPE STABILITY 2026

Posters / Author and Co-author

1 Tunnel-Induced Slope Failure in Clast-Supported Colluvial Deposits: Bogotá-Villavicencio Case

Miguel Castilla-Barbosa - Universidad Santo Tomás, Colombia
Manuel Ocampo-Terreros - Pontificia Universidad Javeriana, Colombia
Orlando Rincón - WSP Colombia, Colombia

2 Riverbank Protection and Slope Stabilization of the Rímac River in the Critical Zarumilla Sector, Li

Silvana Ramos Camero, Perú
Hugo Egoavil Perea, Perú
Roberto Chacon Alvarez, Perú

3 The Unified Geotechnical Method: unify your geotechnical data capture to unlock the benefits of Artificial Intelligence

Christopher Mears Mining One, United Kingdom
Iñaki Garcia SRK Consulting, United Kingdom
Adrienne Joaquim SRK Consulting, United Kingdom

4 Analysis and risk assessment of landslide risk from a waste rock dump under hypothetical considerations in Andean areas

Miguel Justiniano - Amphos 21, Perú
Paul Febre - Amphos 21, Perú
Juan Macedo - Amphos 21, Perú

5 Influence of explicit discontinuity modeling with interface elements in Rock and Soil (RS2) on the strength reduction factor estimation in rock

Joseph Andrew Soria Medina, Universidad Nacional de Ingeniería, Perú
José Alberto Ayala Córdova, Universidad Nacional de Ingeniería, Perú
Gonzalo Adolfo Bernabe Castro, Universidad Nacional de Ingeniería, Perú

6 Geotechnical design for lithium extraction in weathered granite: A case study from the Trelavour Lithium Project, Cornwall, United Kingdom

Xander Gwynn, SLR Consulting, United Kingdom
Peter Hornsby, SLR Consulting, United Kingdom

7 Unique hydrogeological and geotechnical insights using barometric, gravitational earth tide, and moisture loading signals hidden in pore pressure records

Nick Gorski WSP Global Inc., Canada
Jim Weigel Rio Tinto Kennecott, United States

8 Impact of Climate Change on the Stability of an Open Pit in the Semi-Arid Southern Andean Region of Peru

Marcio Alfonso Salaverry Fognoli WSP, Perú
Arturo Ufey Paniagua Ticona WSP, Perú

Posters / Author and Co-author

9 Proactive Slope Stability and Fall-of-Ground Management Through Collaborative Use of Geohazard Forecast Maps by Technical Services and Mining Operations

Marc Rougier WSP Canada Inc, Canada
Athena Pirayehgar WSP Canada Inc, Canada
Crystal Mann, De Beers Group, Canada
Alpha Keita De Beers Group, Canada
Abdallah Zampou, De Beers Group, Canada

10 Geomechanical Modelling of Breccias at Jwaneng Mine

Álvarez C., Sepúlveda M., - ITASCA, Chile
Lorig L., - ITASCA, USA
Rekopanye C., Barei O., - Debswana Diamond Company, Botswana
Gabanagosi K., - Formerly Debswana Diamond Company, Botswana

11 Discontinuity mapping for stability analysis in fractured rock slopes

Guilherme Passos Ribas MecRoc, Brazil
Ramon Danilo de Souza MecRoc, Brazil
João Paulo Monticelli MecRoc, Brazil
Alexandre Gontijo MecRoc, Brazil

12 Geotechnical Trade-Off Intelligence driving safer and more profitable mines

Daniel Azevedo¹, Edmundo Bermedo², Daniel Raposo³, Lesley Munsamy⁴
¹Independent, Belo Horizonte, Brasil / ²Anglo American, Chile / ³Anglo American, Brazil / ⁴Lesley Munsamy

13 Applicability of Fully-Grouted Piezometers in Water & Tailings Dams and Rock Formations Including Open Pit Slopes

Pierre Choquet | RST Instruments (Orica Digital Solutions), Canada

14 Geotechnical Characterization of Phyllite Saprolites: Influence of Metamorphic Foliation on Strength and Deformation Behaviour

Silas Salgado¹, Eduardo Antonio Gomes Marques², Mônica Alvarez Pires³
¹DF+ Engenharia, Brazil / ²Universidade Federal de Vicosa, Brazil / ³VALE S/A, Brazil

15 Influence of geometric design, mining sequence and operational decisions on the real geotechnical performance of open pit slopes

Jhon Cuaresma, Rony Garibay, German Tello
IMSS, Lima, Perú

16 Estimation of Discontinuity Shear Strength applying isoline map and FoS Regression

José F. Castillo Suni - Amphos 21, Perú
Gian Ticona Jove - Amphos 21, Perú
Kevin F. Silloca Guevara - Amphos 21, Perú

17 Deformation forecasting through numerical model validation using slope deformation monitoring data

Sebastian Hortberg¹, Jennifer Hellberg², Jonny Sjöberg¹, Anton Bergman³
¹ITASCA, Luleå, Sweden / ²ITASCA, Stockholm, Sweden / ³Boliden Mineral AB, Boliden, Sweden



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THANK YOU!

For being part of Slope Stability 2026

We sincerely thank all attendees, speakers, sponsors, exhibitors, and collaborators for being part of Slope Stability 2026.

We hope you enjoyed your stay in Lima, Peru, and the opportunity to share knowledge, experience, and innovation with the global geotechnical and mining community.

This symposium reaffirmed the importance of collaboration, technical excellence, and knowledge exchange in advancing slope stability for safer and more efficient mining operations.

We look forward to welcoming you again at future editions.

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