

ABSTRACTS RECEIVED

(108 abstracts as of February 14, 2019)

Represented Countries (14): Australia, Brazil, Canada, Chile, Dominican Republic, Germany, Mexico, Panama, Peru, Spain, Switzerland, United Kingdom, Finland and USA

Geotechnics and Dam Safety

(39 abstracts)

(A7) Application of Probabilistic and Deterministic Earthquake Ground Motions to Tailings Dam Design

Marcelo Martínez, Golder Associates, Chile; and Alan Hull, Golder Associates, USA

(A9) Breach Modes and Effects of Failure of Barahona 1 Tailings Dam in 1928

Jorge Troncoso and Natalia Pizarro, Stantec, Chile

(A13) Geometry of Breach Failure of Tailings Dam using Numerical Modeling with PLAXIS 3D

Jhonatan García, Nilton Rivas and Jonathan Carrasco, Solver Engineering, Peru

(A15) Why do we keep using Limit Equilibrium Pseudo-Static Analyses in Chile?

Alistair Cadden, Felipe Urbina and Edgar Bard, Golder Associates, Chile

(A16) Back Analysis of El Torito Tailings Dam Effects of Illapel Earthquake, 15th September 2015

Alistair Cadden, Marcelo Martínez, Alfredo Arenas, Alonso Cubillos and José Burgos, Golder Associates, Chile

(A21) Released Volume Estimation for Dam Break Analysis

Hugo Quelopana, Delfing, Chile

(A22) Shear-Wave Velocity to Evaluate Static Liquefaction Triggering and Failure of Gold Mine Tailings

Guillermo Riveros and Abouzar Sadrekarimi, The University of Western Ontario, Canada

(A24) The Geotechnical Properties of Filtered Tailings: Waste Rock Blends

Ralph Burden and G. Wilson, University of Alberta, Canada; D. Williams, University of Queensland, Australia; and M. Jacobs, Goldcorp, Canada

(A27) A Different View of Run-Out Distance after Tailings Impoundment Failure

István Kovács, Claudio Román, Pablo Galdeano and Marcelo Mussé, Ausenco, Chile

(A38) Dam Break Analysis: State of the Art and Methodology

Raúl Norambuena, Eloy Santos and José Campaña, Arcadis, Chile

(A39) Liquefaction Analysis of Cycloned Tailings based on SCPTu and Laboratory Testing: Two Case Studies

Brahian Román, Anddes Associates, Peru

(A42) Consideration and Consequences of Tailings Storage Facilities Design over Soft Soils

Waldo Huallanca, Myzael Valdivia and Miguel Regalado, Anddes Associates, Peru

(A46) Geotechnical Characterisation of Old Copper Tailings

José Riquelme, Jean Posch and Carolina Palma, SRK Consulting, Chile

(A47) Engineer of Record Role

Marcelo Arenas, Abraham Figueroa and Emilio López, Wood, Chile

(A48) Relevant Aspects for the Development of Run-Out Studies in Tailings Dams

Abraham Figueroa, Roberto León and Juan Carlos Torrejón, Wood, Chile; and Rodrigo Fernández, Codelco, Chile

(A49) Relative Density of Waste Rock According to Results of Compaction Large-Scale Test Fields

Roberto León, Abraham Figueroa and Juan Carlos Torrejón, Wood, Chile; Daniel Warner, Minera Candelaria, Chile

(A58) Isotropic Behaviour of Tailings Sands with Non-Plastic Fines Content at High Pressures

Camilo Córdova, Golder Associates, Chile; Felipe Ochoa, Universidad de Chile; Ramón Verdugo, CMGI, Chile; Roberto Olguín, GDE Consultores Geotécnicos, Chile and Miguel Bravo, IDIEM, Chile

(A59) Geotechnical Characterization of Impounded Slimes and Tailings during Operation

Eloy Santos, Raúl Norambuena and José Campaña, Arcadis, Chile; Patricio Campaña and Rodrigo Silva, Cía. Minera Doña Inés de Collahuasi, Chile

(A63) Mining Dam Safety Regulations: One Decade Later

Marcelo Mussé, Ausenco, Chile; Caius Priscu, Anglo American, Canada; John Lupo, Newmont, USA; Michael Davies, Teck, Canada; Andy Small, Klohn Crippen Berger, Canada; and Miguel Díaz, Asesores Geoambientales del Caribe, Dominican Republic

(A65) Review of Empirical and Geometric Approaches to Estimate Output Volumes for DBA

Nicolás Úbeda, Alfredo Arenas and Roberto Jamett, Golder Associates, Chile; and Alexandra Halliday, Golder Associates, Australia

(A66) Globalized Tailings Dam Breach Assessment for Enterprise Level Tailings Storage Facility Portfolios

Daley Clohan, Golder Associates, Canada

(A68) Liquefaction Assessment of Deposited Thickened Tailings using CPTu Soundings Calibrated with Laboratory Testing: a Critical State Soil Mechanics Application

Tomás Errázuriz, Camilo Morales and Patricio Santos, Golder Associates, Chile

(A70) Verification of Dynamic Behavior Modeling of Tailing Deposit Dam during Maule Earthquake (27F)

Javiera González, Priscilla Torres, José Campaña and Fabián Leal, Arcadis, Chile

(A79) Dynamic Assessment of a Potential Liquefiable Tailings Dam Foundation and its Mitigation Scenario

Tania Bustamante and J. Cárdenas, Wood, Peru

(A80) Dynamic Characteristics of a Tailings Dam Embankment using a Dense Seismological Array: Preliminary Results

César Pastén and Diana Comte, Universidad de Chile; Gerardo Peña, AMTC, Chile; José Burgos, Anglo American, Chile; and Andreas Rietbrock, Karlsruhe Institute of Technology, Germany

(A82) Dam-Break Analyses: Effect of Tailings Consolidation Rate on Run-Out Distance

Diego Inzunza, José Salomón and Jorge León, Knight Piésold, Chile

(A83) The benefits of Material Volume Meshes in 3D Slope Stability Analysis: a Tailings Dam Case Study
Murray Fredlund, SoilVision Systems, Canada; and Marina Trevizolli, SoilVision Systems, Brazil

(A87) Slope Stability Assessment of a 150-meter-high Rockfill Tailings Dam
José Ccotohuanca, A. José, M. Terán and D. East, Wood, Peru; and L. Dorador, Wood, Chile

(A88) Geotechnical Characterization of a Limestone Rockfill used in a Large Rockfill Tailings Dam
José Ccotohuanca, A. José, M. Terán and D. East, Wood, Peru; and L. Dorador, Wood, Chile

(A90) Assessment and Comparison of Liquefaction Potential with SPT and CPTu Tests of the Foundation of a Tailings Dam in Bolivia
César Osorio, E. Pérez and E. Condori, Wood, Peru

(A91) Techniques for Mitigation of Soil Liquefaction and Stabilization of a Tailings Dam in Post-Earthquake Condition
César Osorio, E. Pérez and E. Condori, Wood, Peru

(A92) Enhancing Predictive Models for Evaluating Potential Impacts of a Tailings Storage Facility Failure
Andy Fourie, Huiting Liu and Scott Draper, The University of Western Australia, Australia

(A94) Bituminous Geomembrane (BGM) Longevity and Past Use for Waterproofing Tailings
Bertrand Breul and Emilio Escobar, Axter, France and Chile

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Daniel Guzmán and María Teresa Zandarín, JRI Ingeniería, Chile

(A97) Impacts of Topography Quality on Dam Breach Assessments
Alexandra Halliday, Golder Associates, Australia; Nicolás Úbeda, Golder Associates, Chile; and Daley Colan, Golder Associates, Canada

(A98) Comparison of Liquefied Shear Strength of Tailings Estimated using Standard Empirical Methods and Post-cyclic Direct Simple Shear Tests
Ganan Nadarajah and David Bleiker, Wood, Canada; and Siva Sivathayalan, Carleton University, Canada

(A101) State-of-the-Practice PMP and Meteorological Parameter Development for Tailings Storage Facilities
Bill Kappel, Applied Weather Associates, USA

(A106) On the Dynamic Properties of Tailings
Rolando Rojas, Miguel Regalado and Renzo Ayala, Anddes Associates, Peru

(A115) Static Liquefaction Susceptibility Estimation for Hydraulically Placed Copper Tailings in Canada
Matthew Schafer, Rosa An and Bradley Russel, BGC Engineering, Canada; and Jorge Troncoso, BGC Engineering, Chile

Hydraulics and Transportation**(4 abstracts)****(A33) Optimization of Maintenance Plans for Tailings Transport Systems**

Omar Mejías, Ausenco, Chile

(A56) Tailings Spigots Hydraulic Scale Modelling

Vanessa Veloso, Ray Martinson and Leonardo Olavarría, Paterson & Cooke, Chile

(A57) Tailings Distribution Systems Operating with Spigots Discharges: Benefits and Challenges

Paulo Eriz, Carlos Salinas and Ray Martinson, Paterson & Cooke, Chile

(A113) Methodology for Tailings Runout Distance Prediction Considering Dynamics Models

Rodolfo Morales, Rodrigo Ossandon and Maria Zandarin, JRI Ingeniería, Chile

Seepage and Water Management**(6 abstracts)****(A4) Experiences of Geomembranes in Mining Projects**

Gabriella Vaschetti, Marco Bacchelli and Alberto Scuero, Carpi Tech, Switzerland; and Pascual Perazzo, Carpi Tech, Panama

(A45) Integrated Methodology and Tools to Estimate and Manage Infiltration in Tailings Storage Facilities

Agustín Álvarez and Jorge Guarda, Ausenco, Chile

(A50) Mining and Reuse of Tailings: How to Deal with Dewatering of Low Permeability Media

Eduardo Ruíz, Jorge Bueno and Lizardo Huamaní, Amphos 21, Peru; Carlos Jiménez and Yuri Gallo, Minsur, Peru

(A60) Mixed-in-Place Techniques to Improve Dam Safety and Reduce Seepage

Hans Schwarzweller, BAUER Fundaciones, Panama

(A76) Measuring Evaporation Losses using the Eddy Covariance Method

Sebastián Fernández, Ward Wilson and Saulo Castro, University of Alberta, Canada

(A108) Ion Exchange Treatment of Seepage Water from a Former Uranium Ore Processing TMF-Site

Andrea Kassahun, Jan Laubrich and Michael Paul, WISMUT, Germany

Rheological and Chemical Aspects**(4 abstracts)****(A2) Tailings Dam Runout Sensitivity to the Rheological Formulations using a Two-dimensional Flexible-Mesh Model**

Reinaldo García, Hydronia, USA; Mario Morales, Pilar Garcia-Navarro, Javier Murillo and Carmelo Juez, Universidad Zaragoza, Spain

(A73) Characterization of the Effect of Clay Mineralogy and Content on the Rheological Behavior of Copper Sulfide Tailings

Sebastián Contreras, Claudia Castillo, Christian Ihle and Gabriel Méndez, Universidad de Chile

(A85) Determination of the Rheology of Liquefied Tailings from a Dam Break

Roxana Ugaz and Gordon McPhail, WWL Engineering, Australia

(A114) Quantification of the Impact of Clay Presence in the Solid-Liquid Separation Stage of Copper Sulphide Tailings, in Continental and Sea Water

Catalina López-Espejo, Sebastian Contreras and Christian Ihle, Universidad de Chile

Innovations in Conventional Tailings Design and Studies**(11 abstracts)****(A3) Resilience in Tailings Management**

Sergio Barrera, Delfing, Chile

(A18) Innovative Process Engineering to Create Better Tailings Facilities

Christian Kujawa, Jeff Winterton, Rachel Jansen and Robert Cooke, Paterson & Cooke, USA

(A26) Dust Emission from Dry Tailings Beaches

Gonzalo Galeas, Gonzalo Ríos and Loreto Zúñiga, Ausenco, Chile

(A44) Copper Tailings Reprocessing: A Case of Study of Chilean TSF

Jean Posch, Carolina Palma and José Riquelme, SRK Consulting, Chile

(A61) GOLDSET-Spatial: Multicriteria Analysis for Sustainable Management of Mine Waste Facilities

Eduardo Salfate and Jorge Campos, Golder Associates, Chile

(A77) An Introduction to Oil Sands Tailings: Innovations and Challenges

Ward Wilson and Nicholas Beier, University of Alberta, Canada

(A93) Minimizing Environmental Impact through the Elimination of Tailings from Mining Operations

Carlos Motta, Knowledge Direction do Brasil; Marcus Fonseca, Universidade Federal do Rio de Janeiro; Daniel Pereira, Juliana Monteiro, Livia Mello, Maria Fernanda Siqueira, Rodrigo Gomes and Thaiza Bissacot, Nexa Resources, Brazil

(A99) Unsaturated Geotechnical Characterization in Tailings Reprocessing

José Ale and C. Luna, Wood, Peru; J. McCord, FloSolutions, Peru; and C. Jiménez, Minsur, Peru

(A103) Reducing Leakage Risks on a Tailings Pond by Using a Flexible Ballast Layer as Covering System: Case History

Daniel Fernandez, HUESKER, Brazil; and Melchior Briers, HUESKER, USA

(A104) Optimization of Tailings through Mineral Processing

Päivi Kauppila, Antti Taskinen, Marja Lehtonen, Neea Heino, Matti Kurhila and Mia Tiljander, Geological Survey of Finland, Finland

(A111) Main Challenges in Tailings Dams Risk Management

Luis Valenzuela, Independent geotechnical consultant, Chile

Thickened and Paste Tailings**(6 abstracts)****(A6) Slurry Dewatering for the Disposal in Tailing Dams**

Rubén Olcay and Christian Hernández, Universidad Arturo Prat, Chile; and George Valadão, Universidade Federal de Minas Gerais, Brazil

(A51) Considerations for Preparing Design Criteria for Dewatered Tailings

Juan José Moreno and Sam Kendall, SRK Consulting, Australia

(A67) Integrating Site Conditions, Rate of Rise and Deposition Sequence to Beach Slope Estimations for High Thickened Tailings

Tomás Errázuriz, Golder Associates, Chile

(A72) Evolution of Tailings Management: Using Engineered Fill to Increase Storage Capacity

Janis Drozdiak, Golder Associates, Canada; Jay Norwood, Golder Associates, USA; Eduardo Salfate and Ricardo Yáñez, Golder Associates, Chile

(A100) Thickened Tailings: A Review of Design and Considerations

Ali Hooshair, Ausenco, Canada

(A109) Accelerated Mechanical Consolidation (AMC) to Improve Tailings Storage Sustainability

David Smirk, Phibion, Australia

Filtered and Centrifuged Tailings Design and Studies**(5 abstracts)****(A28) High Efficiency Filters for Tailings Applications**

Kenneth Rahal, Dave Hanfland and Todd Wisdom, FLSmidth, USA

(A30) Considerations for Surface Disposal of Filtered Tailings

John Lupo, Newmont, USA; and Marcelo Mussé, Ausenco, Chile

(A32) Economic Drivers for High-Capacity Tailings Pressure Filtration

Matthew Pyle and Greg Lane, Ausenco, Australia; and Richard Whittering, Ausenco, United Kingdom

(A62) Experience on the Geotechnical Design of a Large Height Filtered Tailings Deposit

Priscilla Torres, Daniela Puma, José Campaña and Manuel Troncoso, Arcadis, Chile

(A112) Geotechnical Considerations for Design, Construction and Operation of Filtered Tailings Deposits in High-Andean Regions

Jorge Chávez and José Sierra, Golder Associates, Peru

Technologies and Instrumentation for Monitoring and Surveillance**(14 abstracts)****(A5) Satellite Displacement Monitoring with InSAR: towards an Operative Service to Support Remote Hazard Mapping**

Miguel Verdugo, C. Sanchez, J. Morgan and D. Colombo, TRE ALTAMIRA, Chile

(A8) Next Step of Remote Sensing Tools for Tailings Dam Monitoring: the Importance of Predicting and Reporting

Javier Duro and Rubén Iglesias, Dares Technology, Spain

(A17) Satellite Monitoring of Supernatant Volumes and Beach Moisture Estimations within Tailings Storage Facilities

Luis Navarro, Gabriel Aravena and Jon Engels, Tailpro Consulting, Chile; and Jim Turner, Photosat, Canada

(A19) Using Technology to Identify Seepage Flow Paths Through, Under and Around Tailings Impoundments

Arturo Fahrenkrog, HydraMetrix, Chile

(A41) Geotechnical Instrumentation: Monitoring Planning

Sergio Vergara, Fernando Morales, José Illanes and José Campaña, Arcadis, Chile

(A52) Management of Geotechnical Instrumentation in Tailings Storage Facilities

Francisco Vera, Emilio López, Abraham Figueroa, and Gian Carla Armijo, Wood, Chile

(A74) New Virtualization Technologies Applied to Tailings Disposal Projects

Roberto Squillaci and Mauricio Arriaran, Ausenco, Chile

(A75) Monitoring of Pore Pressure Response during Moderate Seismic Events Induced by Mining Activities

Michel Julien, Pascal Lavoie and Edouard Masengo, Agnico Eagle Mines, Canada

(A89) Implementation of Geographic Information Systems for Geotechnical Studies

José Manuel Azócar and Arianna González, Ausenco, Chile

(A105) Estimation of Heavy Metal Concentrations Using High-Resolution Satellite Data and Machine Learning

Diego Soza, Idania Briceño, Patricia Oliva and Waldo Pérez, Universidad Mayor, Chile

(A107) Integrated Monitoring of Tailings - EIT STINGS

Karsten Zimmermann and Daniel Schröder, Engineering Surveying and Geomonitoring, Germany

(A110) Satellite-Based Monitoring System for Abandoned Tailings Dams

Cristóbal Girardi and Angela Oblasser, Fundación Chile; Carlos Sierralta and Ariel Russel, Superintendency of the Environment; Rayner De Ruyt, INRIA Chile; and Paula Olea, National Geology and Mining Service- Chilean Government, Chile

(A117) Monitoring Instrumentation Integration for Laguna Seca Tailing Dam Surveillance. An Innovation Betting

Nicolle Correia and Cristian Roa, Minera Escondida, BHP, Chile; Carlo Calderón and Mauricio Vargas, Timining, Chile

(A124) Tailing Dams Monitoring System

Eduardo Viera, Cristian Soto and Esteban Figueroa, FVF Ingeniería, Chile

Inclusion of Stakeholders in Tailings Planning**(1 abstract)****(A1) Quantification of Risks in Tailings Deposits**

Juan Rayo, JRI, Chile

Governance and Operational Experiences**(7 abstracts)****(A35) Construction Quality Assurance Audits: an Effective Tailings Governance Tool**

Jorge Troncoso, BGC Engineering, Chile; and Daniel Warner, Minera Candelaria, Chile

(A40) Approach and Considerations for OMS Manual Development

Ivette De Jesús, Quebrada Blanca, Teck, Chile; and Paul Bedell, Golder Associates, Canada

(A43) Complex Engineering Projects in Tailings Dams: Interdisciplinary Integration and its Impact on the Implementation of Efficiency Methods

Karen Aguilera and Julio Fernández, Golder Associates, Chile

(A55) Experience in Engineer of Record in Chilean Tailings Storage Facility

Francisco Vera, Esteban Barría, Marcelo Arenas and Alejandra Neira, Wood, Chile

(A71) Management of Tailings Storage Facility Operational Data: Lessons Learned

Esteban Barría, Gian Armijo, Marcelo Arriagada and Alejandra Neira, Wood, Chile

(A84) Los Diques Tailings Storage Facility: Construction and Quality Assurance

Daniel Warner, Minera Candelaria, Chile; and Victor Soto, Wood, Chile

(A116) Tailings Management Facilities Gap Analysis According the Last Best Practices

Rubén Vargas, Solange Paihua and Israel Aliaga, Knight Piésold Consultores, Perú

Tailings Closure Management**(5 abstracts)****(A23) The Use of Mobile Paste Technology for Crown Pillar Stabilization in a Flooded Stope**

Sue Longo, Thomas Skocir and Jonathon Taylor, Golder Associates, Canada

(A86) Assessment and Applicability of CDA's Dam Safety Guidelines to Classify Inactive Historic Tailing Dams

José Ccotohuanca, J. Ale, E. Condori, M. Terán, and D. East, Wood, Peru; and B. Wang, Wood, Canada

(A96) Peat Valorization Potential as Organic Cover for the Reclamation of Gold Mine Tailings

Tsiverihasina Rakotonimaro, Marie Guittonny, Carmen Neculita and Bruno Bussière, University of Québec in Abitibi-Témiscamingue; and France Trépanier and Geneviève Pépin, Goldcorp Eleonore Mine, Canada

(A102) Utilizing Mining Tailings in Ceramic Industry

Soili Solismaa and Marja Lehtonen, Geological Survey of Finland; Arnold Ismailov and Erkki Levänen, Tampere University; Marjaana Karhu, Juha Lagerbom and Päivi Kivikytö-Reponen, Technical Research Centre of Finland; Harisankar Sreenivasan, Paivo Kinnunen and Mirja Illikainen, University of Oulu

(A118) Use of Mining Materials in Covers to Reclaim Acid-Generating Mine Sites

Bruno Bussière, Chloé Larochelle, Alex Kalonji, Marie-Pier Ethier, Nicolas Rey, Vincent Boulanger-Martel, Fannie Lessard and Isabelle Demers, University of Québec in Abitibi-Témiscamingue; and Thomas Pabst, Research Institute on Mines and the Environment, Canada

Pending Classification**(6 abstracts)****(A119) Experience in Retreatment of Old Tailings with Gold Content in Dynamic Leach Pads**

Andres Leon, Anddes, and Patricio Daneri, Independent Consultant, Chile

(A120) Coloso Concentrate Thickener Audit and Recommissioning: Case Study

Lars Martinson, David Benavente and David Romo, Paterson & Cooke; and Maria Luisa Zamora, Ricardo Cortés and Karen Toro, Minera Escondida, BHP, Chile

(A121) Using Seismic Records to Calibrate Material Parameters of a Tailings Dam Embankment: First results

Nicolle Correia, Minera Escondida, BHP, Chile, and César Pasten, Universidad de Chile

(A122) Estimation of the Environmental Impact of Tailings through the Use of Geochemical Indexes

J.P Salazar-Giraldo and J.M Morales-Quinchia, Sena-Antioquia; and J.E López-Correa, University of Medellín, Colombia

(A123) Hydraulic Disposal of Sand on the Dam

Pablo Vásquez, SHIMIN Ingeniería, Chile

(A125) Peña Colorada Achievements in the Last 2 Years in Terms of Dam Safety and Instrumentation: a Testimony to what's Possible with Dedication and Commitment

Marco Reyes and Crystopher Pérez, Peña Colorada, Mexico; and Mark Donald, ArcelorMittal, UK

ABSTRACT DISTRIBUTION**Mining Companies****(15 abstracts)**

Newmont, USA (1)
Minera Candelaria, Chile (3)
Quebrada Blanca, Teck, Chile (1)
Cía. Minera Doña Inés de Collahuasi, Chile (1)
Agnico Eagle Mines, Canada (1)
Teck, Canada
Anglo American, Canada
Goldcorp, Canada
Minsur, Peru (1)
Anglo American, Chile
Nexa Resources (1)
Goldcorp Eleonore Mine, Canada (1)
WISMUT, Germany (1)

Minera Escondida, BHP, Chile (3)
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Peña Colorada, Mexico

Engineering and Consulting Companies

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JRI, Chile (3)
Hydronia, USA (1)
Delfing, Chile (2)
Stantec, Chile (1)
Solver Engineering, Peru (1)
Golder Associates, Chile (9)
Tailpro Consulting, Chile (1)
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Knight Piésold, Chile (1)
WWL Engineering, Australia (1)
BGC Engineering, Chile
GDE Consultores Geotécnicos, Chile
Asesores Geoambientales del Caribe, Dominican Republic
Golder Associates, Australia (1)
Golder Associates, USA
Wood, Canada (1)
Wood Environment and Infrastructure Solutions, Canada (1)
FloSolutions, Peru
Ausenco, Canada (1)
Applied Weather Associates, USA (1)
Engineering Surveying and Geomonitoring, Germany (1)
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FVF Ingeniería, Chile (1)

Supplier Companies

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TRE ALTAMIRA, Chile (1)

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HydraMetrix, Chile (1)
FLSmith, USA (1)
Paterson & Cooke, Chile (2)
BAUER Fundaciones, Panama (1)
SoilVision Systems, Canada (1)
SoilVision Systems, Brazil
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Universities and Research Centers

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AMTC, Chile
Karlsruhe Institute of Technology, Germany
The University of Western Australia (1)
Universidade Federal do Rio de Janeiro
Carleton University, Canada
University of Québec in Abitibi-Témiscamingue (1)
Tampere University, Finland
Technical Research Centre of Finland, Finland
University of Oulu, Pentti Kaiteran katu, Finland
Universidad Mayor, Chile (1)
INRIA Chile
Sena-Antioquia, Colombia (1)
University of Medellín, Colombia

Fiscal institutions, NGOs and government agencies

(3 abstracts)

Geological Survey of Finland, Finland (2)
Fundación Chile, Chile (1)
Superintendency of the Environment, Chile
National Geology and Mining Service- Chilean Government