

SEISMIX 2020 TECHNICAL PROGRAM

PRESENTATIONS

Day 1 – Monday 16th March 2020

GLOBAL PROCESSES—COLLISIONS AND ACCRETION

- 09:10–09:35 **Keynote address** – Karol Czarnota, Geoscience Australia (WebEx), Integrated imaging of the lithosphere for resource exploration, K. Czarnota, M. Hoggard, F. Richards, D. L. Huston, A. L. Jaques, S. Ghelichkhan, A. Gorbatov, B. Hejrani, M. Haynes, R. Costelloe, T. Fomin, M. Doublier, A. Clarke, A. Schofield.
- 09:35–09:55 Crustal structure along the fossil margin of Baltica: what we learned from the PolandSPAN project?, M. Malinowski¹, S. Mazur², M. Mezyk¹, ¹Institute of Geophysics PAS, Warsaw, ²Institute of Geological Sciences PAS.
- 09:55–10:15 Marine Seismic Reflection Data Provide Insight Into The Architecture Of A Mesozoic Accretionary Prism, Otago Schist, New Zealand (WebEx), R. L. Kellett¹, T. Sahoo¹, S. Ellis¹, A. P. Martin¹, A. J. Tulloch¹, N. Mortimer¹, A. R. Gorman², ¹GNS Science, ²University of Otago.
- 10:45–11:05 Collisional Orogeny In The Scandinavian Caledonides (COSC): Seismic Imaging Of A “Fossilized” Orogen, C. Juhlin¹, H. Lorenz¹, P. Hedin², B. Almqvist¹, ¹Uppsala University, ²Geological Survey of Sweden.
- 11:05–11:25 High Seismic P-Wave-Speeds, Radial Anisotropy And Fossilised Superplumes, T. Stern¹, S. Lamb¹, J. Moore^{1,2}, D. Okaya³, K. Hochmuth⁴, ¹Victoria University of Wellington, ²Earth Observatory, ³University of Southern California.

NEAR SURFACE SEISMOLOGY – CASE HISTORIES

- 13:00–13:25 **Keynote address** – Jai Kinkela, HiSeis, Hard rock seismic from crustal to deposit scale: case studies from Australia, J. Kinkela¹, J. Neild¹, R. Smith², B. Smith³, ¹HiSeis, ²Roric Advisory, ³Bryan Smith Geosciences.
- 13:25–13:45 High-Resolution Geophysical Imaging Of The Permafrost – The Result Of Two High Arctic Expeditions To Spitsbergen (presented by M. Malinowski), M. Majdanski, A. Marciniak, B. Owoc, Institute of Geophysics PAS, Warsaw.
- 13:45–14:05 Advanced 2D And 3D Seismic Imaging Techniques For The Characterization And Deep-Targeting Of Mineral Deposits – A Case Study From Blötberget (Sweden), L. Bräunig¹, S. Buske¹, F. Hlousek¹, H. Simon¹, M. Markovic², A. Malehmir², E. Bäckström³, P. Marsden³, L. Sito⁴, ¹TU Bergakademie Freiberg, ²Uppsala University, ³Nordic Iron Ore AB, ⁴Geopartner Ltd.
- 14:05–14:25 Reflection Seismic Imaging In The Zinkgruvan Mining Area, Central Sweden, A. Gill¹, A. Malehmir¹, S. Buske², J. Alcalde³, L. Lindskog⁴, B. Spicer⁵, R. Carbonell³, D. Orłowsky⁶, M. Penney⁵, A. Hagerud⁴, ¹Uppsala University, ²Technische Universität Bergakademie Freiberg, ³Institute of

Earth Sciences Jaume Almera, 4Zinkgruvan Mining AB, 5Lundin Mining Corporation, 6DMT GmbH & Co.

- 14:25–14:45 Imaging Crustal Structures In The West Bohemia Seismic Zone, Czech Republic And Germany, C. Alexandrakis¹, L. Bräunig¹, F. Hlousek¹, P. Hrubcová², J. Horálek², S. Buske¹, 1TU Bergakademie Freiberg, 2Academy of Sciences, Czech Republic.
- 14:45–15:05 Shear Wave Sounding In Archaeological Prospecting (WebEx), W. Rabbel, D. Köhn, R. Mecking, K. Rusch, D. Wilken, Kiel University.

INNOVATIVE SEISMIC ACQUISITION AND PROCESSING TECHNIQUES

- 15:30–15:55 **Keynote address** – Bojan Brodic, Uppsala University, Utilizing exploration tunnels for in-mine seismic imaging via novel GPS-time transmitter system and a broadband e-vibe, B. Brodic¹, A. Malehmir¹, N. Pecheco², L. Dynesius¹, J. van den Berg³, R. de Kunder⁴, J. Carvahlo⁵, G. Donoso¹, T. Sjölund⁶, V. Araujo², 1Uppsala University, 2Somincor Lundin Mining Corporation, 3Delft University of Technology, 4Seismic Mechatronics, 5Laboratório Nacional de Energia e Geologia.
- 15:55–16:15 Uncertainty Driven Geophysical Imaging Of Near Surface – Application And Challenges (presented by M. Malinowski), A. Marciniak¹, B. Owoc¹, S. Kowalczyk², M. Majdanski¹, 1Institute of Geophysics Warsaw, 2University of Warsaw.
- 16:15–16:35 Towards An Open Access Data Policy For Deep Seismic Sounding Data (Webex), I. DeFelipe¹, J. Alcalde¹, R. Carbonell¹, M. Ivandic², R. Roberts², 1Institute of Earth Sciences Jaume Almera, 2Uppsala University.
- 16:35–16:55 Post-Critical, Pre-Critical, And Critical Seismic Reflections Using Virtual Sources, Part I: Overview, W. Chen, China University of Geosciences.
- 16:55–17:15 Imaging The Crustal Structure Of The Spanish Central System (Webex), J. Andrés^{1,3}, P. Ayarza², M. Schimmel¹, D. Draganov³, I. Palomeras², J. Alcalde¹, M. Ruiz¹, R. Carbonell¹, 1Institut of Earth Science Jaume Almera, 2University of Salamanca, 3Delft University of Technology.

Day 2 – Tuesday 17th March 2020

UNUSUAL CASE HISTORIES

08:30–08:50 Integrated 3D Mineral Exploration In The Flin Flon Belt, Canada (WebEx), D. J. White, G. Bellefleur, E. Schetselaar, Geological Survey of Canada

ACTIVE CONTINENTAL MARGINS AND SUBDUCTION ZONES

- 08:50–09:10 Seismic Imaging The Slow-Slip Inter-Plate Boundary In The Northern Cascadia Subduction Zone (WebEx), A. J. Calvert¹, G. Savard², M. G. Bostock², M. J. Unsworth³, ¹Simon Fraser University, ²University of British Columbia, ³University of Alberta.
- 09:10–09:30 The Structural Architecture Of The Whataroa Valley And The Alpine Fault (New Zealand) From First-Arrival Seismic Tomography And Imaging Using An Extended 3D VSP Survey, V. Lay¹, S. Buske¹, S. Bodenbarg¹, J. Townend², R. Kellett³, M. Savage², D. R. Schmitt⁴, A. Constantinou⁵, J. Eccles⁶, D. Lawton⁷, M. Bertram⁷, K. Hall⁷, A. Gorman⁸, R. Kofman⁹, ¹TU Bergakademie Freiberg, ²Victoria University Wellington, ³GNS Science, ⁴University West Lafayette, ⁵Schlumberger Riboud Product Centre, ⁶University of Auckland, ⁷University of Calgary, ⁸University of Otago, ⁹University of Alberta.
- 09:30–09:50 New Insights On Managing Hydrocarbon Prospectivity In The Subduction Zones And Their Linked Continental Basin Margin Areas, Shastri. L. Nimmagadda¹, Anatoly Aseev², Andrew Ochan³, and Torsten Reiners¹, ¹Curtin University, ²Stanford University, ³National Petroleum Company.
- 09:50–10:10 Orogenic Structure From Comparison Of Deep Reflection Profiles With Subsequent Receiver Function Observations (Webex), Larry D. Brown, Cornell University.
- 10:45–11:05 Active Seismic Surveys To Site The Drilling The Ivrea Zone (DIVE) Drill-Holes, Val Sesia And Val d'Ossola, Italy, A. Greenwood^{1,2}, L. Baron¹, G. Hetényi¹, M. Pistone^{1,3}, Y. Liu¹, K. Holliger¹, L. Ziberna⁴, A. Zanetti⁵, O. Müntener¹, M. Urosevic⁶, S. Ziramov⁶, ¹University of Lausanne, ²Montanuniversität Leoben, ³University of Georgia, ⁴Università degli studi di Trieste, ⁵IGG-CNR & Università degli studi di Pavia, ⁶Curtin University.
- 11:05–11:25 The Mid Crustal Reflector Detected By VSP Method And Seismicity In Iwaki Area, Northeastern Japan, T. Iidaka¹, Y. Usuda¹, E. Kurashimo¹, S. Sakai¹, T. Igarashi¹, K. Obara¹, A. Kato¹, T. Takeda², S. Nakagawa¹, ¹University of Tokyo, ²National Research Institute for Earth Science and Disaster Resilience.
- 11:25–11:45 Depth Varying Deformation Within The Nazca Slab From Seismic Anisotropy, S. Agrawal¹, C. M. Eakin¹, D. E. Portner^{2,3}, E. E. Rodriguez², S. L. Beck², ¹The Australian National University. ²University of Arizona, ³Carnegie Institution of Washington.

ACTIVE AND PASSIVE SEISMIC INTERFEROMETRY

- 13:10 – 13:35 **Keynote address** – Erdinc Saygin, CSIRO (WebEx), Imaging Earth Across Scales With Correlation Wavefield, E. Saygin, CSIRO
- 13:35–13:55 Towards Retrieval Of Reflections Using Ambient-Noise Recorded During Drilling Operations Iron Ore Formation Imaging In Pilbara, Western Australia, M.Chamarczuk¹, M. Malinowski¹, M. Asgharzadeh², M. Urosevic², A. Grant³, ¹Institute of Geophysics, ²Curtin University ³BHP.
- 13:55–14:15 Joint Inversion Of Scattered Teleseismic Body Waveforms For Constraining The Receiver-Side Crustal Structure (Webex), M. T. Qashqai, E. Saygin, CSIRO.
- 14:15–14:35 Integrating Active And Passive Seismic Methods To Constrain Crustal Architecture (WebEx), A. Gorbatov, M. Doublier, K. Czarnota, B. Hejrani, A. Medlin, T. Fomin, R. Costelloe, Geoscience Australia.

UNUSUAL CASE HISTORIES

- 14:35–15:00 **Keynote address** – Raymond Durrheim, University of the Witwatersrand, Seismic Imaging Of A Recent M5.5 Earthquake Rupture Beneath Moab Khotsong Gold Mine, South Africa, R. J. Durrheim, University of the Witwatersrand.

SEISMIC IMAGING AND INVERSION METHODS

- 15:30–15:50 Seismic Inversion By Newtonian Machine Learning (WebEx), Y. Chen¹, E. Saygin¹, G. Schuster², ¹CSIRO, ²King Abdullah University of Science and Technology.
- 15:50–16:10 Combining Arrival Classification And Velocity Model Inference (WebEx), C. Martinez, J. Gunning, J. Hause, CSIRO.
- 16:10–16:30 Seismic Interferometry For Near Surface Imaging, M. Asgharzadeh, P. Ahmadi, M. Urosevic, Curtin University.
- 16:30–16:50 FWI Schemes On High-Resolution 3D Seismic Data, Using Born And Rytov Wave-Equation Tomography, S. Ziramov, S. Glubokovskikh, M. Urosevic, Curtin University.
- 16:50–17:10 The Mid-Crustal Seismic Discontinuity In The Iberian Massif (Webex), P. Ayarza¹, A. Martínez², J. Alcalde², D. Martí², J. Andrés^{1,2}, I. Palomeras¹, R. Carbonell², J. R Martínez Catalán¹, ¹Salamanca University, ²Institute of Earth Science Jaume Almera.
- 17:10–17:30 Seismic Attenuation In Porous Rocks: Mechanisms And Models, B. Gurevich, S. Glubokovskikh, A. Pirogova, R. Pevzner, Curtin University.

Day 3 – Wednesday 18th March 2020

SEISMIC IMAGING AND INVERSION METHODS

09:10–09:30 Integrated Seismic Imaging Of Crystalline Crust In Canada's Superior Archean Province: Progress With The Metal Earth Project (WebEx), M. Naghizadeh¹, ¹Laurentian University.

NEW DEVELOPMENTS AND ADVANCES IN DAS APPLICATIONS

09:30–09:50 Surface Seismic For Mineral Exploration Using Distributed Acoustic Sensing, A. Bona, S. Ziramov, R. Pevzner, K. Tertyshnikov, M. Urosevic, Curtin University.

09:50–10:10 P-Wave Anisotropy Estimation From 3D VSP Data Acquired With Geophones And DAS At Otway Site, S. Popik^{1,2}, R. Pevzner^{1,2}, A. Bona^{1,2}, ¹Curtin University, ²CO2CRC.

SEISMIC IMAGING AND INVERSION METHODS

10:10–10:30 Seismic Images Of The Upper Crust In Northern Finland, S. Buske¹, S. Heinonen², F. Hlousek¹, T. Jusri¹, E. Kozlovskaya³, ¹TU Bergakademie Freiberg, ²Geological Survey of Finland, ³University of Oulu.

11:00–11:20 Shallow Active-Source Seismic Tomographic Modeling In 2-D And 3-D Of Old Faithful Geyser In The Upper Geyser Basin Of Yellowstone National Park, J. R. Caylor¹, M. Karplus¹, J. Farrell², J. Chaput¹, S. Veitch¹, G. Kaip¹, R. Smith², ¹The University of Texas at El Paso, ²University of Utah.

11:20–11:40 Seismic Depth Imaging Workflow For Imaging The Vicinity Of The COSC-1 Borehole, Central Sweden, H. Simon¹, S. Buske¹, P. Hedin², C. Juhlin³, F. Krauß⁴, R. Giese⁴, ¹TU Bergakademie Freiberg, ²Geological Survey of Sweden, ³Uppsala University, ⁴GFZ German Research Centre for Geosciences.

11:40–12:00 Can We Use Sparse 3D Seismics In Mineral Exploration? Takeaways From COGITO-MIN Project, B. Singh¹, M. Malinowski¹, F. Hloušek², E. Koivisto³, S. Heinonen⁴, O. Hellwig², S. Buske², M. Chamarczuk¹, S. Juurela⁵, ¹Polish Academy of Sciences, ²TU Bergakademie Freiberg, ³University of Helsinki, ⁴Geological Survey of Finland, ⁵Boliden FinnEx.

13:20–13:40 Full wave seismic modeling for Deep Seismic Profiling, A. Kostyukevych, V. Merschij, V. Tulchinsky, Tesser Technologies Inc. (No abstract provided)

COMPREHENSIVE GEOLOGICAL INTERPRETATION

13:40–14:00 Geophysical Characterisation Of Crustal Scale Mineral Systems: A Passive Seismic Experiment Across World-Class Orogenic Gold Deposits, Kalgoorlie Area, Western Australia, R. Tian^{1,2}, M. Dentith², R. Murdie³, H. Yuan^{2,3,4}, K. Gessner³, ¹Chengdu University of Technology, ²University of Western Australia, ³Geological Survey of Western Australia ⁴Macquarie University.

- 14:00–14:20 Imaging The Cratonisation Of Western Australia Using Passive Seismic Methods, R. Murdie¹, H. Yuan^{1,2,3}, S. Johnson¹, K. Gessner¹, M. Dentith², X. Xu⁴, ¹Geological Survey of Western Australia, ²University of Western Australia, ³Macquarie University, ⁴Chinese Academy of Sciences.
- 14:20–14:40 AusLAMP – Imaging The Australian Lithosphere For Resource Potential (WebEx), J. Duan, D. Kyi, W. Jiang, A. Kirkby, Geoscience Australia.
- 14:40–15:00 A Unique Wide-Angle Reflection/Refraction Survey Across The Central Fennoscandian Shield, Sweden, S. Buntin¹, A. Malehmir¹, M. Malinowski², H. Thybo³, D. Wójcik², T. Janik², I. Artemieva⁴, K. Högdahl¹, and S. Buske⁵, ¹Uppsala University, ²Polish Academy of Sciences, ³Istanbul Technical University, ⁴Stanford University, ⁵Technical University Bergakademie Freiberg.
- 15:30–15:50 Continent-Ocean Transition Or Boundary? Crowd-Sourced Seismic Interpretations Of The East-India Margin (WebEx), J. Alcalde¹, C. E. Bond², R. Carbonell³, R. W.H. Butler², ¹Institute of Earth Sciences Jaume Almera, ²University of Aberdeen, ³ION Geophysical Corporation.
- 15:50–16:10 Subcrustal Reflectivity Beneath Central And South-West Iberia (WebEx), I. Palomeras¹, P. Ayarza¹, J. Díaz², J. Andrés², A. Alvarez-Valero¹, J. Gomez-Barreiro¹, R. Carbonell², ¹University of Salamanca, ²Institute of Earth Science Jaume Almera.
- 16:10–16:30 Revised Seismic Stratigraphy For The Mentelle Basin Based On The Results Of IODP Expedition 369 (WebEx), O. J. Oye, R. W. Hobbs, Durham University.
- 16:30 – 16:50 Multitechnique Regional Seismic Imaging – A Case Study From The Tokai Area, Japan (presented by M. Malinowski), A. Gorszczyk^{1,2}, S. Operto³, S. Sambollian³, ¹University Grenoble Alpes, ²Polish Academy of Sciences, ³University Nice Sophia-Antipolis.

Day 4 – Thursday 19th March 2020

ET RESOURCE POTENTIAL

17:00–17:25 Keynote address – Eleanor Sansom, Curtin University (WebEx), Insight At Mars – Seismicity And Meteorite Strikes, E. K. Sansom et.al, Curtin University.

MOHO IN 3D

17:25–17:45 Seismic full waveform inversion of wide-aperture Moho reflection (PmP) using a trans-dimensional Bayesian method (WebEx), P. Guo¹, S. Singh², V. Vaddineni², G. Visser¹, E. Saygin¹, ¹CSIRO, ²Institut de Physique du Globe de Paris, France.

POSTER PRESENTATIONS

Spectral Decomposition For Seismic Imaging, Sunjay Sunjay.

Vintage crustal-scale seismic profiling data made available for future applications: DEKORP 1984 – 1999, Laretta Kaerger.

Imaging the roots of geothermal systems using seismic attenuation, ambient noise and body-wave inversion, and conductivity, Taupo Volcanic Zone, New Zealand, Stephen Bannister.

Ocean Bottom Seismic Survey in the Knipovich Ridge area, Wojciech Czuba.

TTZ-South seismic profile reveals the lithospheric structure along the SW border of the East European Craton in SE Poland and NW Ukraine, Tomasz Janik.

Assessing the coherence of fiber-optic strain data, Manfred Stiller.

Coherent diffraction imaging of faults and fractures, Manfred Stiller.

Multi-disciplinary data contribution to EPOS e-infrastructure, Ramon Carbonell.

Seismic imaging technologies for mineral exploration. The SIT4ME project, Juan Alcalde.

The Transition From An Intraoceanic Submarine Accretionary Prism To The Onland Fold-And-Thrust Belt In The Taiwan Arc-Continent Collision, Juan Alcalde.

Signal-theoretical study of wireline DAS-VSP coupling noise, Evgeniia Martuganova.

Mitigating the nonlinearity of crustal-scale full waveform inversion through the graph space optimal transport misfit function, Andrzej Górszczyk.

GO_3D_OBServer – Offshore Benchmark of Subduction Environment in Realistic Visco-Elastic Representation, Andrzej Górszczyk.

Geophysical Characterization of BSUIN Underground Laboratories: Geophysics at the Research and Education Mine Reiche Zeche in Freiberg, Germany, Vera Lay.

Plate bending and drops in P-wave speeds for the crust and upper mantle of the Hikurangi Oceanic Plateau as it subducts beneath southeastern North Island, New Zealand, Tim Stern.

A probabilistic crustal shear-wave velocity model of the east Albany-Fraser Orogen, West Australian Craton, Tingzi Li.

Unsupervised learning used in automatic detection and classification of ambient-noise recordings from a large-N array, Michał Chamarczuk.

Towards an integrated depth imaging workflow for hardrock seismic data employing full-waveform inversion: case study from the Kylylahti massive sulfide deposit, Finland, Michal Malinowski.

Imaging the Hikurangi subduction megathrust using ambient noise and passive-source body waves, Raukumara, New Zealand, Stephen Bannister.

Ligurian Basin: Transition from continental to oceanic crust, Martin Thorwart.

Crustal structure underneath the Browse Basin (North-West Australia): a new look from vintage refraction and wide-angle seismic data, Martin Thorwart.

High-resolution seismic profiling of quaternary sediments affected by the plate-bounding alpine fault, Whataroa Valley, New Zealand, Andrew Gorman.

Post-Critical, Pre-Critical, And Critical Seismic Reflections Using Virtual Sources, Part II: Further Examples Of Applications, Wang-Ping Chen.

Nodal Acquisition Seismic Experiment in the highlands of Victoria/NSW, Australia, and challenges in processing of the data, Ross Costelloe.

Deep structure of North-East Eurasian margin on geotranssect “Arctic Ocean – Pacific Ocean”, Ilya Vinokurov.

Constraints on Archean tectonic processes from deep seismic reflection surveys in the Yilgarn, Pilbara, and Superior cratons, Andrew J. Calvert.

Development of seismic S-wave sources for near-surface applications at the Leibniz Institute for Applied Geophysics (LIAG), Sonja Halina Wadas.

Improved seismic imaging of Quaternary overdeepened valleys in the European Alps, Sonja Halina Wadas.