

GeoConvention 2021



geoconvention

Virtual Event **2021**
September 13-15

Technical Session Guide

September 13 - 15, 2021

Virtual Event



CSPG
Canada's Energy Geoscientists



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OUTLINE

GeoConvention 2021 is proud to host a wide variety of content from our non-profit Earth Science partner societies. The following outline will act as a reference to the sessions that will be hosted at GeoConvention 2021. Session **chairs and descriptions are accurate as of April 20, 2021**. If you have any questions at all, please let us know via abstracts@geoconvention.com.

All abstracts are to be submitted to <https://www.geoconvention.com/submitabstract>

Abstract submission closes at 11:59pm Mountain Time on Friday, April 16.

For further information on the submission procedure policies and required template, please visit

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2021 Sessions

| | |
|---|---|
| Acid gas disposal | 4 |
| Advancements in Downhole logging & NMR techniques | 4 |
| Advancements in Geomechanical Characterization and Frack Design for Completion Optimization | 4 |
| Advancements in Operations..... | 4 |
| Advancements in unconventional core analysis for reservoir characterization | 4 |
| Advances from regional to microscale: Geochemical, Geophysical and Engineering Applications to Duvernay Formation Evaluation..... | 4 |
| Advances in Geological Storage of CO2 | 4 |
| Back to the Basics: Geophysics | 4 |
| Broadening our knowledge beyond geology | 4 |
| Carbon capture, utilization and storage | 5 |
| Clastic Sedimentology..... | 5 |
| Deriving the conventional from the unconventional: Geochemical investigations into low permeability reservoirs | 5 |
| Diagenesis of shale and tight reservoirs | 5 |
| Duvernay..... | 5 |
| Emerging Technologies - Seismic Acquisition | 5 |
| Energy Transition | 5 |
| Enhanced recovery from the known plays and mature fields | 5 |
| Field Measurements in Geoscience | 6 |
| From geomodelling to optimization in unconventional..... | 6 |
| Geochemical surface exploration methods | 6 |
| Geomodelling & Production Simulation | 6 |
| Geophysical Reservoir Characterization | 6 |
| Geothermal Exploration and Development in Canada | 6 |
| Groundwater Resource Management | 6 |
| Helium..... | 6 |
| How do reservoirs respond to fluid injection?..... | 7 |
| Hydrodynamics & produced water characterization in unconventional..... | 7 |
| Hydrogen | 7 |
| Hydrogeology..... | 7 |
| In Situ Rock Strength and Stress Measurement..... | 7 |

| | |
|--|----|
| Indigenous Partnerships in Science | 7 |
| Industry Leaders Session..... | 7 |
| International Exploration | 7 |
| Lithium resource assessment and development - an emerging element for decarbonization and Canada’s opportunity..... | 7 |
| Machine Learning applications in unconventional reservoir characterization & operations | 8 |
| Machine Learning in Geoscience/Petrophysics | 8 |
| Managing Transition in a Changing Industry | 8 |
| Mentorship Session | 8 |
| Methane Emission Reductions: Success Stories and Trends | 8 |
| Microseismic/DAS | 8 |
| Montney | 8 |
| New Horizons for Enhanced Oil Recovery in Unconventional and tight Plays..... | 8 |
| Offshore (East Coast) Atlantic Canada Resource Exploration & Economics | 9 |
| Oil Sands and Integrated Oil Sands Case Studies..... | 9 |
| Open Data, Open Source, and Open Geoscience | 9 |
| Petroleum Geochemistry | 9 |
| Petrophysics..... | 9 |
| Production allocation in stacked unconventional reservoirs..... | 9 |
| Rare Earth and Uranium | 9 |
| Reservoir Optimization | 10 |
| Rock Physics | 10 |
| Role of Geomechanics in Thermal Recovery..... | 10 |
| Sedimentology, stratigraphy and paleontology..... | 10 |
| Seismic data processing | 10 |
| Seismic Inversion, AVAZ, VVAZ | 10 |
| Seismic Processing/Seismic Imaging..... | 11 |
| Seismic Signal Processing, Imaging and Inversion: Can Machine Learning replace what we have learned for more than half a century? | 11 |
| Sequence Stratigraphy of Unconventional Reservoirs..... | 11 |
| Skill Fundamentals 101 and Case Studies | 11 |
| South America Basins..... | 12 |
| Tailings and Mine Waste Remediation from a Geotechnical Perspective | 12 |
| The geomechanics of induced seismicity..... | 12 |
| The Steamy Underworld: New Insights into the Behavior of Maturing Thermal Reservoirs..... | 12 |
| Unconventional EOR | 12 |
| Understanding of Salt Tectonics and Relationship with Hydrocarbon Trapping: International Case Studies | 12 |
| Value of Integrated Geosciences | 13 |
| Water Disposal..... | 13 |
| Wellbore Casing Deformation in Unconventionals and Heavy Oil: Causes, Prevention & Remediation..... | 13 |
| Workplace Culture, Diversity and Inclusion..... | 13 |

| Session Title | Chair 1 | Chair 2 |
|---|-----------------------------|--------------------------------|
| Acid gas disposal Location selection, reservoir management & regulatory requirements | Michelle Gaucher | TBD |
| Advancements in Downhole logging & NMR techniques This session focuses on the application of technology to resolve irreducible, mobile water, gas and oil. | Chris Okuku | TBD |
| Advancements in Geomechanical Characterization and Frack Design for Completion Optimization Application of geomechanics has proven to be critical for optimization of production from unconventional shale plays. The talks presented in this session will review the new developments in integrated geomechanical characterization and frack design that can assist with improving the efficiency of subsurface operation in these plays | Mehrdad Soltanzadeh | Juan Arias |
| Advancements in Operations A continuation of last year's panel for discussion of all things Operations Geology: Geosteering, Well Planning, etc. with a focus on case studies, advancements in tools and technology, operational issues | Kurt Armbruster | Mustafa Pasha |
| Advancements in unconventional core analysis for reservoir characterization | Harry Xie | TBD |
| Advances from regional to microscale: Geochemical, Geophysical and Engineering Applications to Duvernay Formation Evaluation This session is a continuation of the 2020 session and will focus on covering the advances of current and new studies of the Duvernay Formation. It will look at presenting the most innovative geoscientific models to shed some light on the study of the complex systems within the Duvernay. This session will depict how useful inorganic, as well as organic geoscientific tools, can be complemented with engineering approaches for assessing practical problem-solving task that may lead us to improve, and even challenge the way we study these systems. | Gabriela Gonzalez Arismendi | Mailyng Aviles and Daniel Shaw |
| Advances in Geological Storage of CO2 This session addresses a variety of issues surrounding geological storage of CO2 in Canada Subthemes: <ul style="list-style-type: none"> • Application of structural geology in conventional and unconventional reservoirs • Faults, natural or induced fracture systems: Imaging, modeling, interaction with reservoir hydraulic and mechanical properties • Advances in structural understanding of geothermal, waste and CO2 storage projects | Noga Vaisblat | Alireza Rangriz Shokri |
| Back to the Basics: Geophysics We have learned many if not all of the basics of our discipline at one point in our career. Can you remember them? The session intends to be both a refresher and an introduction to geophysical methods. Including survey design (reflection, VSP, Microseismic, etc.), foundational techniques and tools (well-ties, interpretation pitfalls, synthetic modelling, time/depth processing, non-seismic methods, etc.), and advanced techniques (AVO principles, prestack inversion, Rock-Physics, geomechanics, machine learning etc.). The talks will cover the nuts and bolts of various methodologies and the associated assumptions. We will discuss aspects of the assumptions, the implications, where can they go wrong, and how to mitigate the risk. We also aim to include subjects involving where we should be doing more to add value to the development of exploitation of resources. | Dennis Ellison | Nathan Fester |
| Broadening our knowledge beyond geology Industry insights into Abandonments, Water recycling, Drilling Waste, Financing, LNG, ESG/Environmental initiatives. | Krista Beavis | TBD |

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| <p>Carbon capture, utilization and storage</p> <p>Carbon sequestration into the geological domain is gaining traction as workable solution to the global problem of greenhouse gas emissions. Advances in capture technology, investment in CO₂ infrastructure, identification of storage zones, and better monitoring techniques are incrementally removing the barriers, scientific and economic, to enable this emerging sector to become prominent in the coming years. Adoption of carbon accountability through the implementation of a credit system has also changed the economic landscape of CCUS, prompting development processes and technologies to verify injection volumes. This session addresses the current state of the sector, challenges that are being overcome and projects both planned and in operation.</p> | <p>David Hills</p> | <p>Anne-Louise Halladay</p> |
| <p>Clastic Sedimentology</p> <p>Range of talks on the theme of clastic sedimentology, ideally some will be oil and gas related</p> | <p>Jon Noad</p> | <p>Mark Caplan</p> |
| <p>Deriving the conventional from the unconventional: Geochemical investigations into low permeability reservoirs</p> <p>Emerging research and development into the geochemical characterization of low-permeability reservoirs, including unconventional hydrocarbon resources, is changing our understanding of the processes at play in these systems. For example, we now know that despite being a low-permeability system, migration plays a fundamental role in fluid distribution and overprinting of original (or primary) geochemical signatures within these plays. Similarly, the stable isotope composition of gases do not follow expected kinetic isotope effect pathways, but instead tend towards isotope equilibrium. In addition, investigation of diagenetic processes in fine-grained unconventional resources led to novel analytical methods for analyzing those resources. These new ideas are evolving our fundamental understanding of the mechanisms responsible for geochemical transformations in tight reservoirs and therefore our strategies for resource development.</p> <p>In this session we welcome all geochemical investigations into low-permeability and unconventional reservoirs based on field, laboratory, or numerical modelling approaches. Specific topics of interest include, however are not limited to: 1) gas (alkanes and H₂S) and condensate geochemistry; 2) inorganic geochemistry (e.g. elemental analysis of sediments); 3) the development and application of novel analytical techniques; and 4) modelling and mapping of geochemical parameters within low permeability systems.</p> | <p>Omid H. Ardakani</p> | <p>Jaime Cesar and Andrew Kingston</p> |
| <p>Diagenesis of shale and tight reservoirs</p> <p>This session would showcase recent research on the complex diagenetic processes that take place in shale and tight hydrocarbon reservoirs, and their impacts on reservoir quality. An ideal range of topics would include:</p> <ul style="list-style-type: none"> • advances in analytical methods for investigating diagenesis in shale and tight reservoirs • diagenetic processes • relationships between mineral diagenesis and organic matter transformation • impact of diagenesis on compaction history, porosity/permeability, fluid mobility, geomechanical properties, petrophysical properties, drilling, hydraulic fracturing, and production • applied case studies for reservoir characterization and evaluation | <p>Levi Knapp</p> | <p>Isabelle Zelazny</p> |
| <p>Duvernay</p> <p>With several hundred producing wells drilled in the last 7 years, the Duvernay Formation is currently one of Alberta's hottest plays. This session will showcase novel studies that improve our understanding of the exciting and challenging Duvernay source rock reservoir, with particular focus on how to deploy old and new techniques for multi-scale characterization. How have syn- and post-depositional processes influenced present day rock and fluid properties and their distribution? What are the most effective techniques for mapping and predicting reservoir properties? How does geology influence drilling, stimulation, and production strategies and effectiveness? Which criteria should be considered to determine the most suitable landing zone for horizontal wells? How can geological, geophysical, and engineering data be correlated for multi-disciplinary characterization? This session aims to address these and other issues that are of interest to both industry and academic audiences.</p> | <p>Marco Venieri</p> | <p>Levi Knapp</p> |
| <p>Emerging Technologies - Seismic Acquisition</p> <p>Session would be focused on new and emerging seismic acquisition technologies applicable to Canadian projects.</p> | <p>Andrea Crook</p> | <p>Richard Gray</p> |
| <p>Energy Transition</p> <p>This panel session will highlight the latest advancements in the energy industry with a focus on change and transformation</p> | <p>TBD</p> | <p>TBD</p> |
| <p>Enhanced recovery from the known plays and mature fields</p> <p>The session will cover the conventional and/ or unconventional production enhancement schemes, such as frac, injection /fluid flooding, infill drilling or re-completion of other potential zones in the same well. The main focus is reservoir characterization including geological and /or geophysical aspects for doing the above-mentioned techniques.</p> | <p>Mahbub (Bob) Alam</p> | <p>Colin Thiessen</p> |

Field Measurements in Geoscience

Adam MacDonald

Gary Bugden

Our interpretation is only as good as our data reconnaissance. Applying the right measurement to identify successful parameters in a reservoir is not always clear. There is valuable data in rock / core observation, geochemistry, geomechanics and petrophysics. However there are also pitfalls in not applying the right measurement especially at the most opportune time.

From geomodelling to optimization in unconventional

Pippa Murphy

David Wetta

As subsurface professionals one of the desired outcomes of the work that we do is to support optimization across our organizations to increase production, reduce costs and/or address hazards. Traditionally in the geomodelling realm the word optimization conjures images of experimental design using a “most likely” statistical estimation of the reservoir properties derived by analysing uncertainty of the resource in place, usually driven by a lack of well control. For unconventional resource plays optimization can mean many different things. These include, but are not limited to, stacking/spacing, pad layout, targeting and completion optimization. During this session we will explore how geostatistical modelling has directly or indirectly impacted these optimization projects and resulted in more favourable economic results.

Geochemical surface exploration methods

Mahdi AbuAli

TBD

Geochemical exploration methods are gaining momentum in current exploration programs due to their low cost and effective results. Various methods such as soil-gas, bacteria DNA, and others can reduce hydrocarbon charge risk and increase the discovery chance of success when properly used and integrated with other geologic and geophysical methods. Examples of success and failure can be discussed with factors favoring each category. Geochemical exploration should be promoted in the oil industry as a first-step to explore for hydrocarbons by screening different areas before embarking upon a major exploration program with huge expenditures.

Geomodelling & Production Simulation

Alexandra Ashrafi

Matthew Minnett

This session will focus on workflows related to geomodelling for the purposes of production simulation. Topics to be explored will include: determining drill locations including survey errors and survey correction methods; preparing geomodels for export to production simulation; mergers and acquisitions; and reserve assessment. We welcome case studies that highlight attaining the balance between engineering and geology, and on reconciling the two disciplines to maximize productivity and profit.

Geophysical Reservoir Characterization

Bahaa Beshry

Raúl Cova

Seismic reservoir characterization plays an essential role in exploration, play exploitation, and advanced reservoir studies. A primary goal is to provide an optimal understanding of the reservoir’s internal architecture by mapping properties such as thickness, mineral content, pore fluid, porosity, permeability, and water saturation. In order to produce a valid output, seismic reservoir characterization requires a solid understanding of the rock physics, appropriate well data integration, seismic data conditioning, and seismic inversion. Successful characterization results in a quantitative output that requires minimal interpretation. Applications can be seen in play exploration, development, enhanced recovery, and CO2 sequestration.

Geothermal Exploration and Development in Canada

Yannick

Champollion

Sochi Iwuoha

A number of geothermal projects are advancing, particularly in Western Canada. This session will provide exciting updates in the field of geothermal in Canada.

Groundwater Resource Management

Blake Hiebert

Nathan Green

Groundwater is a vital source for drinking water, and for industrial, commercial, and agricultural uses. Best practices in management and its use are critical to keeping water supplies available and safe for future generations. This session’s theme focusses on responsible groundwater management. Contributions at all scales are invited, from urban water management to energy production, and from water rights to water reuse and storage. Topic may include, but are not limited to, groundwater availability, water law and policy, water reuse and recycling, aquifer storage and recovery, groundwater monitoring, wellhead protection, planning, large datasets and continuous time-series data, long-term monitoring networks, and groundwater modeling applications. Aspects of hydrogeologic hazards and risks, innovative remediation technologies, and dewatering are also encouraged. This session differs from the Hydrogeology session which is focused on hydrogeologic characterization and geochemical systems.

Helium

Brad Maynes

TBD

How do reservoirs respond to fluid injection?

Rebecca Salvage Thomas Eyre

Reservoirs respond in different ways to fluid injection depending upon the confining stresses, rock properties and injection parameters. Resulting effects may include the fracturing of rock and generation of seismicity, slow deformation and significant changes in the geomechanical properties of the reservoir. New technologies are allowing us to fully explore these phenomena on a number of different time and spatial scales through enhanced monitoring and modelling techniques. This session aims to bring together the latest research and understanding on how reservoirs respond to fluid injection, including changes in strain, reservoir properties, and the generation of fractures as well as slip on pre-existing faults. We therefore welcome contributions on DAS, passive seismology (including ambient noise tomography, VSP monitoring, induced seismicity and microseismic monitoring) and reservoir modelling of fluid injection.

Hydrodynamics & produced water characterization in unconventional

Allison Gibbs

Gavin Phinney

Petroleum hydrodynamics examines the how fluids interact with rock environments through rock characterization, examination of reservoir conditions and analysis of fluid chemistry. It is integral to all aspects of oil and gas exploration and development in unconventional systems: from the system's evolution; to liquids distribution in the play; to the relationship between fluid saturation, mobility and well deliverability; to identifying formation water, characterizing flowback water and determining load fluid recovery from an individual well. Our aim in this session is to provide an engaging series of presentations that will take the audience from regional analyses to well-level experiences.

Hydrogen

Mia Costigan

TBD

Hydrogeology

Steve Sturrock

Samantha Murphy

Hydrogeologic characterization, aquifer testing, and geochemical systems focussing on the subsurface and groundwater-dependent environments are the primary themes for this session. Topics include: geology of aquifer systems, hydrostratigraphy, aquifer mapping, aquifer testing, isotopic analysis, age dating, modeling, naturally occurring contaminants, reactive contaminants, emerging contaminants, contaminant fate and transport, groundwater-surface water interaction, and wetlands. This session focuses on characterization of the subsurface and differs from the Groundwater Resource Management session which is focused on sustainable water management. Contributions from academia and industry are encouraged.

In Situ Rock Strength and Stress Measurement

Babak Heidari

Shunde Yin

Making sound engineering decisions for the drilling of safe and stable wells or tunnels, ensuring successful frac operations or long-term stability of boreholes, reservoirs or underground construction requires high quality downhole rock strength and stress magnitude measurements. It has been proven that utilizing even well-established correlations to estimate those parameters from petrophysical logs or core lab testing does not achieve the high level of required accuracy. To overcome this challenge, in situ downhole measurements are becoming a preferred source of rock strength properties and stress anisotropy data. During this session, the history of this technique will be reviewed and new developments and proposed workflows will be discussed among the panel participants.

Indigenous Partnerships in Science

Celia Kennedy

Chelsea Benally

This would entail a series of presentations stemming from the U.Calgary's graduate (REDEVELOP) and undergraduate (NIYAK) programs involving energy-sector and hydrology projects with a number Indigenous communities in Alberta and BC. REDEVELOP is a multi-university program (U.Calgary, U.Alberta, U.Toronto, U.Waterloo, U.Western).

Industry Leaders Session

Discussion of Career Paths

Alison Essery

Daniela Waldbott von Bassenheim

International Exploration

Ian Dawes

TBD

Lithium resource assessment and development - an emerging element for decarbonization and Canada's opportunity

Eric Pelletier

Courtney Reimert

The shift towards decarbonization continues to accelerate and with it, new demands in strategic elements. Lithium presents a significant opportunity in Canada and this session will cover the exploration and production of this novel emerging and re-emerging resource deemed necessary for energy transformation. The session will aim to emphasize new opportunities and optimized exploration and production methods.

Machine Learning applications in unconventional reservoir characterization & operations

Volodymyr Vragov **Brian Emmerson**

This session will focus on the presentations that highlight recent developments in the application of machine learning techniques to improve accuracy and efficiency of the reservoir characterization & operations in unconventional. We also encourage submissions of the abstracts that showcase novel applications of feature selection, outlier analysis or validation techniques for better performance of machine learning models for use in the reservoir characterization. Finally, adoption of AutoML tools is growing worldwide and examples of successful use of such tools in reservoir characterization domain are of interest as well.

Machine Learning in Geoscience/Petrophysics

Kelly Skuce **Farrukh Hamza**

Petrophysics is going through a revival with the use of machine learning methodologies. These methodologies help fill in the gaps with respect to missing data, core-log relationships, and correction of poor data. Geoscientists are now pushing these boundaries to encompass more than just helping derive mapping parameters to the creation of the maps and volumes themselves. This session should encompass all types of machine learning methodologies available for use by most geoscience and petrophysical professionals.

Managing Transition in a Changing Industry

Karena Brawley **Carrie Youzwishen**

The session is devoted to presentations aimed at supporting, training, and coaching professionals and leaders in a changing industry, whether they have lost employment or they are adapting to a new role within their company. The topics will include managing a career pivot, shifting corporate culture, as well as inspiring leadership, performance, morale, and motivation.

Mentorship Session

Wendy Shier **Andre Mu-Chin Chow**

Methane Emission Reductions: Success Stories and Trends

Cooper Robinson **TBD**

The impacts of atmospheric methane on global warming are 25 times that of carbon dioxide, making methane emissions reductions one of the most important issues faced by many industries today. Many advances in emissions offsets, technology, and research have been made over the past 5 years. In this panel discussion, we'll share examples of what companies are doing (and have already done) to reduce methane emissions. We will take you through a variety of topics, including pneumatics in the oil and gas sector and combustion work, capping orphaned and abandoned wells, and technology advances and research taking place within the methane space. We'll also provide some insight into some greenhouse gas (GHG) accounting basics and how the emissions markets work.

Microseismic/DAS

Barry Fish **Johnny Wentzel**

This session invites people to share their findings and ideas about innovative applications of microseismicity monitoring. Microseismicity has been an important part of oil and gas exploration for years. But have we fully explored the potential in microseismicity? Will DAS fibre recording open up new fields of investigation? How about passive recording of carbon sequestration sites? No matter whether it is theoretical or applied case-study, any creative ideas demonstrating the application of microseismic data are welcomed.

Montney

Calin Dragoie **Richard Harris**

The Montney Formation is one of the most prolific producers in Canada, driven by horizontal drilling and multi-stage fracking. Large development projects are taking place in British Columbia and Alberta alike, with stacked wells targeting multiple stratigraphic horizons for gas and condensate. But what drives productivity in the Montney? This session looks for answers in diverse disciplines, from reservoir characterization to drilling and completions strategies.

New Horizons for Enhanced Oil Recovery in Unconventional and tight Plays

Majid Faskhoodi **Kyoung Suk Min**

Focusing in how to get more out of unconventional and tight reservoirs with current level of investment

Robinson
Olugbemiro **Martin Fowler**

Offshore (East Coast) Atlantic Canada Resource Exploration & Economics

"Despite recent downturn and in anticipation of pending industry upswing, there have been encouraging exploration efforts (new & appraisal) in offshore Atlantic Canada in recent times.

This session is proposed to share perspectives and for further insights into the subsurface resources (proven & yet-to-find) in the offshore East Coast Canada basins - previous exploration discoveries recorded and recent activities in the Orphan, Carson, Flemish & offshore Nova Scotia basins, not ignoring the relatively better-known Jeanne D'Arc basin. A holistic evaluation of the interplay between the hydrocarbon systems (models) and structuration is anticipated.

The (break-even) economics and sustainability of the hydrocarbon resources in these offshore basins have not had sufficient attention in geosciences fora. This session will discuss and evaluate the commerciality of these offshore resources."

Oil Sands and Integrated Oil Sands Case Studies **Lori Barth** **Darren Hinks**

Open Data, Open Source, and Open Geoscience **Tanya Yeomans** **Janaki Vamaraju**

There is an ever-increasing amount of open data available to the public, and as people explore these rich data sources, many of them are doing so with open-source software. Today's geoscientist can construct maps and models, perform petrophysical analyses, and interpret seismic without needing to purchase software or pay for subscriptions to data services. This technical session will be a chance to share research, processes, ideas, and more through open data and open-source software. It is also a space for organizations that provide open data to talk about the data they have available and how it can be accessed.

Petroleum Geochemistry **Zied Ouled Ameer** **Andy Mort**

Topics that will covered are: Time Lapse Geochemistry, Geochemical Characterization Of Conventional Source Rocks and Unconventional Plays, Oils and Gas Geochemistry, Seepage, Production Allocation, Reservoir Connectivity and Heterogeneities, Hydrogen Sulfide (H₂S), Thermal (SAGD) Scale & Corrosion, Water Isotopic Tracers in thermal operations (SAGD), Water Management, Geochemical Modeling cases studies towards de-risking oil sands operations (advanced tools) and Environmental footprints.

Petrophysics **Nasir Rahim** **Draga Talinga**

Petrophysics, Log Analysis. Data Science, Pitfalls in Reserve Evaluation

Production allocation in stacked unconventional reservoirs **Raja Ramanathan** **Elizabeth Watt**

The understanding of Stimulated Rock Volume (SRV) vs Drained Rock Volume (DRV) is becoming increasingly important while drilling wells in unconventional rocks. Well interference has caused operators to rethink completion strategies. Production allocation methods such as fingerprinting techniques, injected tracers, microseismic, DAS Fiber, production logging, or production simulation can be useful in estimating the SRV and DRV. Differences between production allocation in conventional wells vs unconventional wells must be discussed. A clear method design and data analysis through statistical methods are required to efficiently maximize the reserves from the operator's acreage. This session will cover all novel aspects of production allocation methods and data analysis relating to unconventional wells. It will also present case studies and potential pitfalls associated with the different allocation methods.

Rare Earth and Uranium **Dave Marsh** **Andy Dyke**

The increasing demand for technology metals such as Rare Earth is generating significant interest in identifying and exploiting potential resources. However, the processing of these resources to extract the metals is highly complex and generally very mineral specific.

Similarly, Uranium also appears to be entering a growth phase and deposits containing <500ppm U₃O₈ are now considered potential resources, providing the mineralogy meets certain criteria.

This session looks at the various types of "new resources" being considered and what impact their characteristics have on the final metal production route

Reservoir Optimization

Jordan Wilson

Xiaojun (Albert) Cui

Reservoir optimization is now more important than ever for successful resource exploration and exploitations. This session invites people to share their ideas, experiences and practices on critical properties, phenomena and problems that detrimentally affect the performance of a reservoir for oil & gas exploitation (conventional, unconventional, tight-sand, shale, or oil sand reservoirs), geothermal development or wastewater disposal. Revealing challenging problems and then trying to understand them based on fundamental science and technologies are key steps towards mitigation of the problems and optimization of lifecycles of reservoirs. We encourage you to submit theoretical, laboratory and field case studies with the aim of advancing our understanding of fundamentals that lead to optimized reservoir performance. The following topics are relevant ideas but should not limit potential ideas for talks:

1. Fundamental and advanced understanding of measurements of rock properties and associated techniques of routine and special core analyses that lead to better reservoir characterization and production optimization;
2. Fundamental and advanced understanding of hydrodynamics, geochemical and PVT properties of reservoir fluids to optimize reservoir management through stimulation, depletion, water flooding and EOR applications;
3. Fundamentals of formation damages associated to hydro-mechanical effects of stress or pressure changes and thermally-induced mechanical and chemical effects during drilling, stimulation and production, alterations of capillary pressures and interfacial tension and relative-permeability, scaling and other detrimental or beneficial effects of incompatibility between foreign fluids and reservoir fluids and/or reservoir rocks.

Rock Physics

Darren Kondrat

Anastasya Teitel

The field of Rock Physics includes many scientific challenges: how to integrate geology and geophysics, bridge the gap between the different scales, or optimally calibrate the models.

This session invites people to share their ideas, experiences, and practices on the recent advances in rock physics modelling and its applications in exploration, development, and reservoir monitoring.

Demonstrations are requested on how artificial intelligence techniques are used to help overcome rock physics challenges as well.

We are looking forward to discuss the following topics and encourage you to submit theoretical, laboratory and field case studies:

1. Unconventional Resources
2. Artificial Intelligence / Machine Learning
3. Quantitative Seismic Interpretation & Uncertainty
4. Experimental Rock Physics
5. CO₂-EOR and Time-Lapse Rock Physics
6. Rock Physics Modelling

Role of Geomechanics in Thermal Recovery

Sheng Yang

Maojie Chai

During a thermal recovery process, injected hot steam not only directly affect reservoir properties, but also impact the safety of operation. This session topic will cover lab measurement of rock mechanical properties, geomechanical effects on reservoir properties, cap rock integrity and other geomechanical topics associated with unconventional reservoirs.

Sedimentology, stratigraphy and paleontology

Erin Pemberton

Sean Fletcher

Seismic data processing

Aaron Stanton

Svetlana Bidikhova

Highlighting recent advances in the field of seismic data processing including coherent and incoherent noise attenuation, interpolation, imaging, and more.

Seismic Inversion, AVAZ, VVAZ

Azer Mustaqeem

Bill Goodway

Seismic Inversion has been a critical part of the exploration and development since its introduction in the 70s. Seismic Inversion is extended and re-invented to take advantage of ever-increasing speed of computers. Deterministic, stochastic, probabilistic, and neural network inversions are now becoming everyday required tools for a seismic interpreter. This session intends to cover practical use of seismic inversion and new methodologies along with quantification of uncertainties.

Azimuthal AVO (AVAZ) and Velocity Variation with Azimuth (VVAZ) are proven to provide greater insight to the geomechanical framework and are extremely helpful in analyzing fracture anisotropy. We encourage you to submit the advancement in theories, applications of AVAZ and VVAZ, and new methods in integrating fracture characterization to quantitative interpretation.

Seismic Processing/Seismic Imaging

Svetlana Bidikhova Felix Oghenekohwo

This session will include the diverse variety of topics from seismic data loading to statics, noise attenuation, multiple suppression bridging into migration and post-processing. The papers will include both offshore and onshore examples as well as practical case studies. The topics of anisotropy and FWI will be covered as well as VSP processing. The non-oil and gas related applications of seismic processing and imaging techniques are accepted and welcome, as they widen the horizons for future growth and implementation of accumulated, proven seismic processing expertise in the new emerging fields.

This session will include papers covering the following topics:

- Seismic Processing
- Seismic Noise Attenuation
- Near-surface tomography and statics for onshore seismic data
- Multiples attenuation for offshore seismic data
- Deconvolution
- New Seismic processing techniques for onshore projects
- New Seismic processing techniques for offshore projects
- Seismic Processing applications for non-Oil and Gas related emerging technologies
- Seismic Imaging
- Migration
- Velocity Model Building for PSDM
- Well and other data integration for seismic processing
- Case studies on onshore and offshore PSDM and PSTM projects
- Case studies on Anisotropic PSDM projects
- Azimuthal seismic processing
- VSP processing
- Seismic Processing Modeling
- FWI

Seismic Signal Processing, Imaging and Inversion: Can Machine Learning replace what we have learned for more than half a century?

Mauricio Sacchi Nasser Kazemi

This session's main topic is to explore how Machine Learning (ML) and Artificial Intelligence (AI) could support the future development of signal processing and imaging techniques for exploration seismology. Typical processing and imaging frameworks result from at least 50 years of steady research work. Some fundamental processes, such as noise attenuation, resolution enhancement, and seismic trace reconstruction, are rooted in classical signal processing concepts often related to linear models and Fourier theory. Similarly, imaging has evolved, accompanying our understanding of wave propagation principles rooted in more than two centuries of work in the field of Mathematical Physics. With the advent of ML and AI as a force dominating many aspects of today's technology, the question remains if ML inspired processing or imaging will replace many of the traditional algorithms currently in use for processing and imaging. This session intends to bring together researchers and practitioners of seismic data processing and imaging. The goal is to showcase applications of ML and AI methods to incoherent and coherent noise attenuation, resolution enhancement, survey regularization, and imaging. Moreover, this session will discuss how existing technology will have to be adapted to benefit from ML and AI's adoption.

Sequence Stratigraphy of Unconventional Reservoirs

Dallin Laycock Emma Percy

Sequence stratigraphy has expanded beyond its' roots in conventional reservoirs, and now plays an important role in understanding finer grained unconventional reservoirs. Applications have played important roles in exploration of new basins, improving development within existing resources, and using analogues to gain a better understanding of our world. The purpose of this session is to examine how recent work has improved understanding of stratigraphic architecture, facies associations, their relationship with environmental changes over time, impacts on exploration and development of unconventional reservoirs, and other creative or emerging applications. This session will ideally showcase the application of sequence stratigraphic principles to a variety of fine grained reservoir datasets including, but not limited to, well logs, core, outcrops and seismic.

Skill Fundamentals 101 and Case Studies

Shelley Leggitt Brian Zaitlin
Kathleen Dorey David Gray

In these two half-day sessions, three geology and three geophysics skill topics will be presented.

South America Basins

Nanna Eliuk

Shaun Addison

The South American Basins session will provide insight to a spectrum of geoscience themes, with integrated G&G case studies from various basins within the Latin American region, both onshore and offshore. Despite political and social concerns, exploration discoveries have made recent headlines, and while 2020 did not spare producers, there were encouraging signs of development and activity in many Latin American countries. Major players in the region are also making commitments to address ESG challenges. This session will promote geoscience knowledge with case studies, relevant to prospectivity for exploration and development in South American Basins

Tailings and Mine Waste Remediation from a Geotechnical Perspective

Brent Nassichuk

Jason Tucker

Tailings and mine waste remediation is a critical issue in the development of natural resources. With a growing focus on sustainability, dealing with waste material is fundamental in the design and operations of mining projects. This session purposes to allow the discussion and presentation of ideas, experiences and best practices with regards to any tailings and mine waste remediation projects. By understanding the challenges and hazards posed, the industry can take strides to mitigate the negative effects of mine waste and tailings and improve overall efficiency, safety and reduce environmental impacts. We encourage you to submit theoretical, laboratory and field case studies to support the advancement and awareness of tailings and mine waste remediation.

The geomechanics of induced seismicity

Adam Baig

Amy Fox

Induced seismicity is a large problem for operations of hydraulic completions in the WCSB and beyond. Not only does the regulatory management this issue sometimes force shut downs of stimulations, but arguably more detrimentally, it negatively impacts the “social licence to operate.” While traffic light systems represent a reactive approach to managing this issue, the most efficient path is managing the risk of induced seismicity is to proactively monitor the risk with an understanding of the geomechanics of the reservoir, and how that impacts the potential for surrounding faults to slip. In this session, we request abstracts discussion how induced seismicity risk can be managed with an increased resolution and understanding of the geomechanical processes that may trigger induced seismicity.

The Steamy Underworld: New Insights into the Behavior of Maturing

Thermal Reservoirs

Graham Spray

Draga Talinga

In-situ heavy oil and bitumen reservoirs have been producing in Alberta for 2-3 decades now, with big surges in in-situ investment in the mid-2000s and early 2010s yielding a current high in production of almost a quarter million barrels per day. The technologies involved in thermal insitu bitumen exploitation have evolved tremendously over this time, and are still in development. Earlier projects are now maturing, nearing the end of their lifecycles and depletion of recoverable bitumen. As these earlier projects approach their conclusion or move to post-production phases of operation, we can take the opportunity to investigate how effectively these reservoirs have performed under the technologies applied.

Have models effectively captured reservoir behaviour? Did steam chambers develop as expected? Has oil been recovered through shale barriers? Can we dispose water or even CO2 into depleted reservoirs?

This session aims to permit a discussion of discoveries made by investigating maturing and depleted in-situ projects, ideally with a diversity of speakers and topics broadly in the following fields:

- Macro-Scale: steam propagation, chamber development, monitoring, reservoir modeling
- Meso-Scale: barriers/baffles actual outcomes, biomarker analysis, scaling issues, core capture and analysis
- Micro-Scale: Textural and mineralogical changes induced by SAGD conditions, formation damage sensitivity, impacts of high-T conditions on oil chemistry and biomarkers
- Management side: production optimization, SOR performance, reservoir management, wind-down, post-production applications of in-situ reservoirs

Unconventional EOR

Alex Renaud

Peter Liang

Unconventional oil and gas production has had far-reaching impacts on the global oil and gas industry landscape. This session will explore a diverse variety of topics related to unconventional EOR including reservoir characterization, PVT studies (lab tests, field trials), operations (what are the key performance drivers, what data and tools are recommended for success, precautions), pilot case studies (showcase what has worked in the past and lessons learned), and field development considerations (upfront capital investment, project economics, regulatory compliance, etc.)

Understanding of Salt Tectonics and Relationship with Hydrocarbon Trapping: International Case Studies

Shabeer Ahmed
Abbasi

Muhammad Akram
Qureshi

Theme is concerned with the geometries and processes associated with the presence of significant thicknesses of evaporites containing rock salt within a stratigraphic sequence of rocks and relationship of associated structural traps in hydrocarbon potential. Global related case studies will be highly appreciated for submission.

Value of Integrated Geosciences

John Duhault

Julia McElgunn

Four to six executives from throughout the energy industries will be gathered in a panel format to talk about how applied geoscience tools have a) changed their business model, b) and increased the profitability of their respective companies and c) where they see the role of geoscientists in the future for the energy industry

The panelists will come from many disciplines and will be moderated and challenged by Danielle Smith, past Wildrose Party Leader and current radio 770 Newstalk show host.

Water Disposal

Kim Kingsmith

Kelly Kingsmith

The Water Disposal Session will offer a wide range of perspectives and information relating to oil and gas waste and water disposal in Western Canada. Presentations from Provincial Regulators and industry will cover a wide variety of topics from induced seismicity, disposal caverns, to the geology of what makes a good disposal formation.

Wellbore Casing Deformation in Unconventionals and Heavy Oil: Causes, Prevention & Remediation

Pat McLellan

Sobhi Alhashwa

Wellbore casing deformations are occurring in selected wells in unconventional resources and heavy oil developments. In unconventional wells it is commonly characterized as ovalization that interferes with wellbore access and plug setting during hydraulic fracturing operations or instances that range from buckling to complete collapse, shearing or parting of the casing. Many causes for this phenomenon have been identified, including geomechanical, thermal, cement, tubular strength, and operational factors. In both CHOPS and thermal wellbores producing heavy oil, casing deformations and failures have troubled the industry for decades. When casing deformations or failures occur, access to some or all of the wellbore may be impaired leading to reduced production and ultimately the value of the asset. The purpose of this session is to present and discuss case histories of casing deformations with the intent of improving our understanding of its potential causes, prevention and remediation techniques.

Workplace Culture, Diversity and Inclusion

Alicia Bjarnason

TBD

For 2021, we will dig deeper into many of the topics that the sessions have already touched on - equity, EDI, the effects culture have on the workplace, keeping a diverse workforce engaged and innovative, gendered work spaces, conflict resolution, indigenous relations, BLM, LGBTQ2S+, and on and on. The morning could be designed through 3 panel discussions.