

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 January 25, 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

<https://www.geoconvention.com/callforabstracts>

2021 Sessions

Acid gas disposal	4
Advancements in Downhole logging & NMR techniques	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 CO ₂	4
AI applications in unconventional reservoir characterization & operations	4
Back to the Basics: Geophysics	4
Broadening our knowledge beyond geology	4
Carbon capture, utilization and storage	5
Casing deformation – assessment and mitigation	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
Enhanced recovery from the known plays and mature fields	5
Field Measurement in Geoscience	6
From slow food to slow geomodeling	6
Geochemical surface exploration methods	6
Geomodelling Modelling & Production simulation	6
Geothermal Exploration and Development in Canada	6
Groundwater	6
How do reservoirs respond to fluid injection?	6
Hydrodynamics & produced water characterization in unconventional	6
Hydrogeology	6
In Situ Rock Strength and Stress Measurement	7
Indigenous Partnerships in Science	7

Industry Leaders Session	7
International Exploration.....	7
Inversion/Reservoir Characterization.....	7
Lithium, Helium, Uranium resource assessment, location selection and operations	7
Machine Learning in Geoscience/Petrophysics.....	7
Managing Transition in a Changing Industry	7
Mechanical Earth and Hydraulic fracture modelling for completions optimization	7
Mentorship Session	7
Methane Emission Reductions: Success Stories and Trends	7
Microseismic/DAS.....	7
Montney	7
New Horizons for Enhanced Oil Recovery in Unconventional and tight Plays	8
Offshore (East Coast) Atlantic Canada Resource Exploration & Economics.....	8
Oil Sands and Integrated Oil Sands Case Studies.....	8
Open Data, Open Source, and Open Geoscience	8
Petroleum Geochemistry.....	8
Petrophysics.....	8
Production allocation in stacked unconventional reservoirs	8
Reservoir Optimization	8
Role of Geomechanics in Thermal Recovery	9
Sedimentology, stratigraphy and paleontology	9
Seismic data processing.....	9
Seismic Processing/Seismic Imaging.....	9
Seismic Signal Processing, Imaging and Inversion: Can Machine Learning replace what we have learned for more than half a century?	9
Sequence Stratigraphic frameworks and depositional facies associations in unconventional	9
Skill Fundamentals 101 and Case Studies.....	9
South America Basins and Development.....	9
Tailings and Mine Waste Remediation from a Geotechnical Perspective.....	9
The geomechanics of induced seismicity	10
The Steamy Underworld: New Insights into the Behavior of Maturing Thermal Reservoirs	10
Unconventional EOR.....	10
Understanding of Salt Tectonics and Relationship with Hydrocarbon Trapping: International Case Studies	10
Value of Integrated Geosciences	10
Water Disposal.....	10
Workplace Culture, Diversity and Inclusion.....	10

Session Title	Chair 1	Chair 2
Acid gas disposal Location selection, reservoir management & regulatory requirements	TBD	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 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	TBD
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
AI applications in unconventional reservoir characterization & operations	Volodymyr Vragov	TBD
Back to the Basics: Geophysics "We've 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	TBD
Broadening our knowledge beyond geology Industry insights into Abandonments, Water recycling, Drilling Waste, Financing, LNG, ESG/Environmental initiatives.	TBD	TBD

Carbon capture, utilization and storage	David Hills	Anne-Louise Halladay
<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>		
Casing deformation – assessment and mitigation	TBD	TBD
Clastic Sedimentology	Jon Noad	Mark Caplan
<p>Range of talks on the theme of clastic sedimentology, ideally some will be oil and gas related</p>		
Deriving the conventional from the unconventional: Geochemical investigations into low permeability reservoirs	Omid H. Ardakani	Jaime Cesar and Andrew Kingston
<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>		
Diagenesis of shale and tight reservoirs	Levi Knapp	TBD
<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 		
Duvernay	Marco Venieri	Levi Knapp
<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>		
Emerging Technologies - Seismic Acquisition	Andrea Crook	TBD
<p>Session would be focused on new and emerging seismic acquisition technologies applicable to Canadian projects.</p>		
Enhanced recovery from the known plays and mature fields	Mahbub (Bob) Alam	TBD
<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>		

Field Measurement 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 slow food to slow geomodeling

Thomas Jerome

TBD

Slow food is an organization that promotes local food and traditional cooking. It is developed as an alternative to fast food. The focus is on people instead of quick automated processes. We believe the same idea is at the core of what makes a geomodeling project successful. So, the expression "slow geomodeling" coined for this session.

In our mind, successful geomodeling projects are about excellent teamwork and smart integration of the different data and interpretations. When needed, modern workflows are used of course. But many projects often only require a good balance of manual interpretation and good old-school algorithms. Too often, such projects are not deemed useful to present. After all, they do not showcase modern fancy tools, so what is the point talking about them?

In this session, we want to hear about these projects. We are looking for case studies showing how using automated quick workflows lead to misunderstanding of the reservoir. We want to hear about how bringing people at the centre of the game lead to success. We are looking for projects which were about finding balance between the different experts and their work. We want to hear about your take on the idea of... slow geomodeling.

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 Modelling & Production simulation

TBD

TBD

Workflows for - Drilling location selection, M&A and reserve assessment.

Geothermal Exploration and Development in Canada

Yannick

Champollion

TBD

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

TBD

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

TBD

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.

Hydrogeology

Steve Sturrock

TBD

<p>In Situ Rock Strength and Stress Measurement</p> <p>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.</p>	<p>Babak Heidari</p>	<p>TBD</p>
<p>Indigenous Partnerships in Science</p> <p>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).</p>	<p>Celia Kennedy</p>	<p>TBD</p>
<p>Industry Leaders Session Discussion of Career Paths</p>	<p>TBD</p>	<p>TBD</p>
<p>International Exploration</p>	<p>Ian Dawes</p>	<p>TBD</p>
<p>Inversion/Reservoir Characterization</p>	<p>Bahaa Beshry</p>	<p>TBD</p>
<p>Lithium, Helium, Uranium resource assessment, location selection and operations</p>	<p>Eric Pelletier</p>	<p>TBD</p>
<p>Machine Learning in Geoscience/Petrophysics</p> <p>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.</p>	<p>Kelly Skuce</p>	<p>TBD</p>
<p>Managing Transition in a Changing Industry</p> <p>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.</p>	<p>Karena Brawley</p>	<p>TBD</p>
<p>Mechanical Earth and Hydraulic fracture modelling for completions optimization Faults, fractures, curvature, core, stress</p>	<p>TBD</p>	<p>TBD</p>
<p>Mentorship Session</p>	<p>Wendy Shier</p>	<p>TBD</p>
<p>Methane Emission Reductions: Success Stories and Trends</p> <p>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.</p>	<p>Cooper Robinson</p>	<p>TBD</p>
<p>Microseismic/DAS</p> <p>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.</p>	<p>Barry Fish</p>	<p>Johnny Wentzel</p>
<p>Montney</p>	<p>TBD</p>	<p>TBD</p>

New Horizons for Enhanced Oil Recovery in Unconventional and tight

Plays

Majid Faskhoodi

TBD

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

Robinson

Offshore (East Coast) Atlantic Canada Resource Exploration & Economics

Olugbemiro

TBD

"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

TBD

TBD

Open Data, Open Source, and Open Geoscience

Tanya Yeomans

TBD

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

Trevor Dufresne

Topics that will be 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

TBD

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

Production allocation in stacked unconventional reservoirs

TBD

TBD

(DRV vs SRV) using naturally occurring or injected tracers, microseismic, DAS Fiber, production logging, or production simulation

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 waste water 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.

Role of Geomechanics in Thermal Recovery

Sheng Yang

TBD

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

TBD

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

Seismic Processing/Seismic Imaging

Svetlana Bidikhova

TBD

New and advanced techniques and methods in seismic processing. Interesting processing results sharing. It would be also great to include some interesting results on depth imaging.

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

Mauricio Sacchi

TBD

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 Stratigraphic frameworks and depositional facies associations in unconventional

TBD

TBD

Skill Fundamentals 101 and Case Studies

Shelley Leggitt

TBD

Brian Zaitlin

TBD

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

South America Basins and Development

Nanna Eliuk

TBD

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

TBD

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

TBD

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 in-situ 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

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

TBD

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

Location selection, reservoir management & regulatory requirements

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.