



March
2022



The Leading Edge®

Special Section:
Unconventionals

FIRST BREAK
VOLUME 40 | ISSUE 3 | MARCH 2022

SPECIAL TOPIC
Reservoir Monitoring

EAGE NEWS Join the energy future debate in Madrid
TECHNICAL ARTICLE Digitising Svalbard's geology
INDUSTRY NEWS Norway APA work bonanza

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SGI & SIMP: P50 – TOWARDS MODERN CONCEPTS IN SEISMOTECTONIC MODEL DEFINITION



Dear Colleagues,

The SGI-SIMP (Società Geologica Italiana – Società Italiana di Mineralogia e Petrologia) national meeting entitled "Geosciences for a sustainable future" will take place in Turin from 19 to 21 September 2022. We would like to draw your attention and invite you to submit an abstract to the session: **P50** Towards modern concepts in seismotectonic-model definition and imaging: multidisciplinary and multiscale approaches in different tectonic settings

Description

Seismotectonic studies are key for seismic hazard assessment in tectonically and volcano-tectonically active regions. Defining a seismotectonic model is challenging since sometimes several conditions (e.g., paucity of geological- and surface deformation data) can hamper the accurate definition of active faults geometry, kinematics, and of associated stress- and deformation fields. In addition, areas subjected to these studies are often characterized by low-

level seismicity. Nowadays, advances in technology and scientific computing, allow the acquisition of large amounts of geological data even in formerly unreachable places, make geophysical field data more effective and data processing less demanding, allow enhancing seismic catalogues in areas with low-level seismicity, and provide information from geophysical, geodetic, or remote-sensing analysis. Therefore, improvements in quality data and easier dataset integrations are more and more attainable, and seismotectonic model definition/imaging is increasingly realistic and reliable. This session aims at focussing on seismotectonic models, data, and aspects that contribute to defining them and welcomes contributions on: active faults studies, including multiscale and multidisciplinary geophysical approaches; dataset integration for faults imaging and tectonic-setting definition; high-quality seismological data, field-and remotely-collected data for qualitative and quantitative analysis; numerical and analogue modelling of faulting processes;

innovative methodologies for data collection and analysis.

Conveners

Rita de Nardis (UNICH)
Fabio Luca Bonali (UNIMIB)
Federica Ferrarini (UNICH)
Valeria Paoletti (UNINA)
Debora Presti (UNIME)

<https://geoscienze.org/torino2022/index.php/sessioni/elenco-sessioni-2022#Earth>

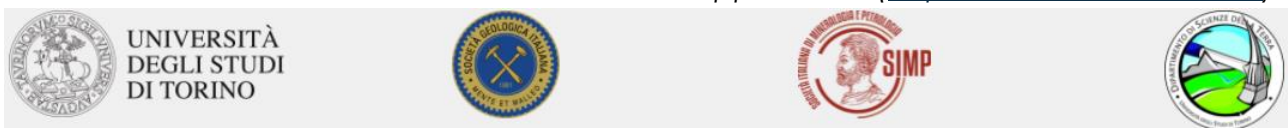
Abstract submission at the website:
<https://www.geoscienze.org/torino2022/i>

[index.php/abstracts/sottomissione-abstracts-pre](https://www.geoscienze.org/torino2022/index.php/abstracts/sottomissione-abstracts-pre)

Please note that the deadline for abstract submission is April 20, 2022.

Early-career scientists and Ph.D. students are particularly encouraged to enrich our session with their contributions.

We are looking forward to seeing you in Turin! Rita, Fabio, Federica, Valeria and Debora. *The session is also sponsored by CRUST - Interuniversity Centre for 3D Seismotectonics with territorial applications* (<https://www.crust.unich.it/>)



PRESIDENTS OF THE CONGRESS

Rodolfo Carosi (SGI) e Daniele Castelli (SIMP).

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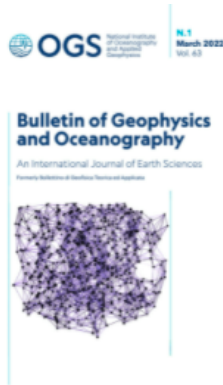
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OGS – BULLETIN OF GEOPHYSICS AND OCEANOGRAPHY

ARTICLE: APPLICATION OF GAUSSIAN AND PERCENTILE FILTERS IN PARTICLE SWARM OPTIMISATION FOR 3D GRAVITY MODELLING AND ITS IMPLEMENTATION ON SINANPASA GRABEN GRAVITY DATA IN SW TURKEY



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Vol. 63, n.1, March 2022

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models with certain properties, such as smooth or sharp boundaries. We demonstrated that controlling the model properties in global optimization schemes is possible through basic image processing filters, and developed a Particle Swarm Optimization (PSO) algorithm that benefits from Gaussian and Percentile filters to avoid ambiguous boundaries that are generally seen in 3D smooth inversions of gravity data. The effectiveness of the algorithm is shown on a synthetic model consisting of two dipping structures with anomalous density contrasts. Thereafter, the algorithm is implemented to recover subsurface density distribution from a field data set. The field data is collected at the south-western part of the Sinanpaşa graben, Turkey. Due to the lack of previous geophysical studies in the area, 3D Euler decomposition, tilt angle, and 3D smooth inversion methods are also implemented to help interpretation and to compare to the model recovered using the PSO algorithm. The developed approach is observed to be resulted with a model, which is more compatible with the known geology of the region.

Abstract

3D Modelling of gravity data is generally performed as a multi-objective optimization, trying to minimize observed-calculated data misfit while providing

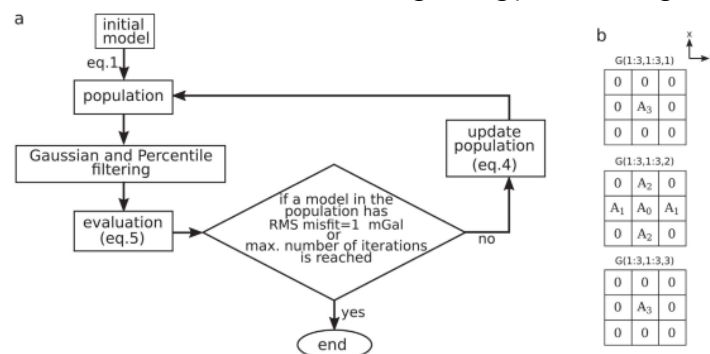
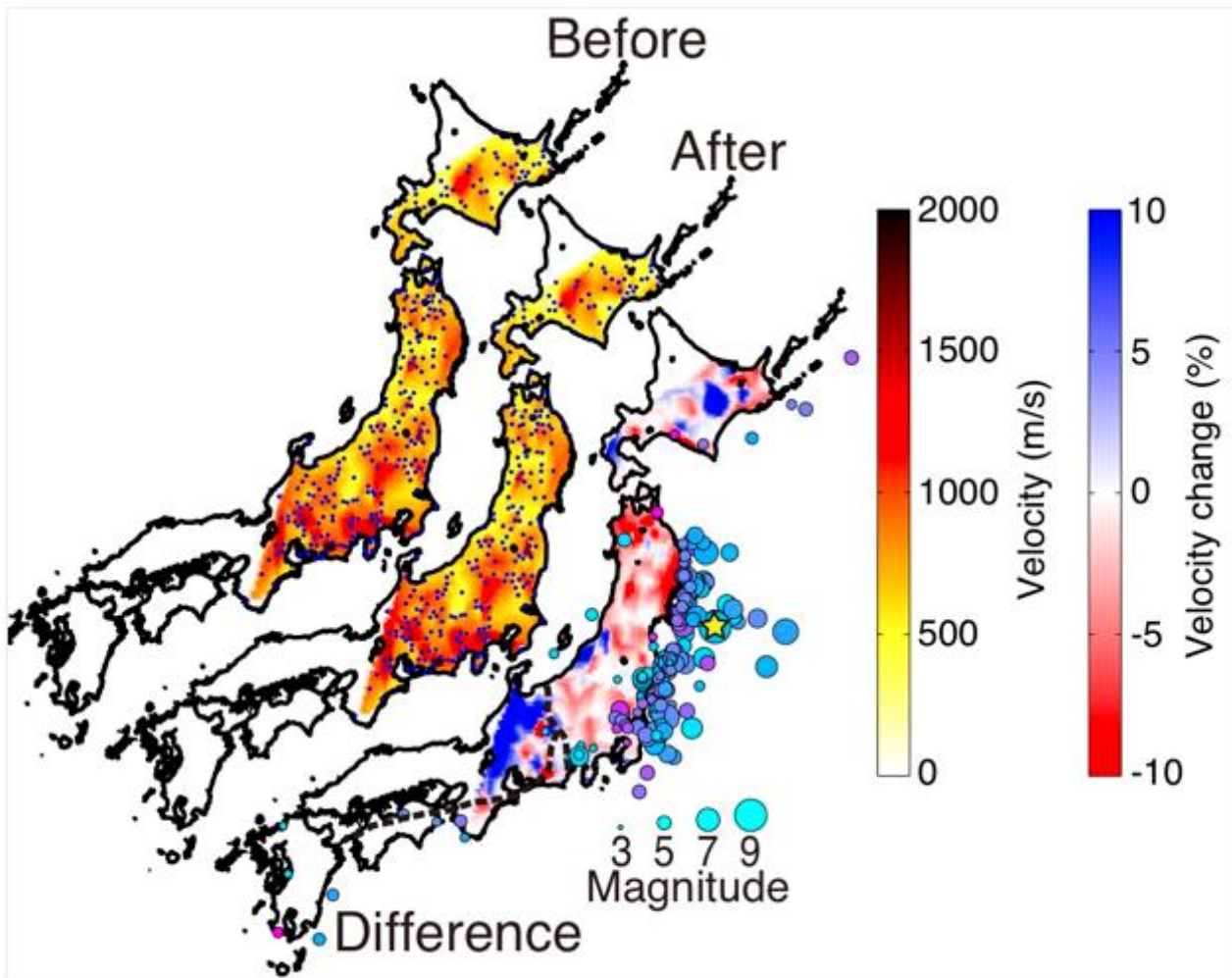


Figure – Flowchart of the PSO algorithm (a) and the graphical representation of the 3D Gaussian kernel (b).

SEG – AAPG DISTINGUISHED LECTURER: MEASURING VARIATIONS IN THE SEISMIC VELOCITY AS A DIAGNOSTIC OF ROCK DAMAGE AND HEALING



Summary



Interferometric methods in seismology have made it possible to detect time-lapse changes in the seismic velocity with an accuracy of about 0.1%. Combined with using noise as a seismic source it is under the right conditions possible to detect such velocity changes on a near-continuous basis. I will show examples of detecting velocity changes in the

laboratory, the earth's near-surface, and engineered structures. Perhaps surprisingly, the seismic velocity is not constant at all, it varies with the seasons, temperature, precipitation, and ground shaking. One of the intriguing observations is that after deformation the seismic velocity recovers logarithmically with time. The reason for this particular time dependence is the presence of healing mechanisms that operate on different time scales. Since multi-scale relaxation is a feature of many physical systems, logarithmic healing is a widespread

behavior that is akin in its generality to the Gutenberg-Richter law.

Biography

Roel Snieder holds the W.M. Keck Distinguished Chair of Professional Development Education at the Colorado School of Mines. He received in 1984 a Master's degree in Geophysical Fluid Dynamics from Princeton University, and in 1987 a PhD in seismology from Utrecht University.

In 1993 he was appointed as professor of seismology at Utrecht University, where from 1997-2000 he served as Dean of the Faculty of Earth Sciences. Roel served on the editorial boards of *Geophysical Journal International*, *Inverse Problems*



Journal, *Reviews of Geophysics*, the *Journal of the Acoustical Society of America*, and the *European Journal of Physics*. In 2000 he was elected as a Fellow of the

American Geophysical Union. He is the author of the textbooks **A Guided Tour of Mathematical Methods for the Physical Sciences**, **The Art of Being a Scientist**, and **The Joy of Science** published by Cambridge University Press. In 2011 he was elected as Honorary Member of the Society of Exploration Geophysicists, and in 2014 he received a research award from the Alexander von Humboldt Foundation. In 2016 Roel received the Beno Gutenberg Medal from the European Geophysical Union and the Outstanding Educator Award from the Society of Exploration Geophysicists. In 2020, he received the Ange Melagro Prize for his outstanding class **Science and Spirituality**. From 2000-2014 he was a firefighter in **Genesee Fire Rescue** where he served for two years as Fire Chief.

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3RD EAGE GLOBAL ENERGY TRANSITION CONFERENCE & EXHIBITION



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TOPICS

Scroll down this page for an overview of suggested subtopics, grouped by:

- The uses of the subsurface for the energy transition: Offshore Wind Energy, CCUS, Energy Storage and Geothermal Energy;
- The synergies between different uses of the subsurface: Integration and Cross-Uses;
- The interactions between energy transition uses and the society and the environment: Environment & Sustainability and Solutions & Society.

Good to keep in mind for future editions, if you wish to submit a paper that you feel is relevant to this Energy Transition Conference but the related topic is not shown in this list, we still encourage you to submit your paper (using the closest suggested topic) which will be reviewed by our review committee.

OFFSHORE WIND ENERGY

The discussion on the role of geoscientists and engineers in the energy transition is expanded at GET2022 by considering other energy sources. In particular, the contribution of the subsurface disciplines to the development and deployment of the offshore wind industry is introduced as a topic, with the aim to foster the debate on the technologies and the skills that can be applied to support it.

The following topics are highlighted (but not limited to) for your abstract submission:

- Novel data acquisition strategies and technologies for wind farm sites to plan and execute surveys, combine available survey data with new acquisitions in order to optimize time and resources
- Techniques for geohazard mapping in offshore wind energy: boulder and UXO detection, automated cable routing, etc.
- How can geophysics support geotechnics? High-resolution seismic acquisition and inversion, data extrapolation, synthetic CPT data

- Applications of AI and Machine Learning to the offshore wind: Metocean data processing, “big data” multi-sensor acquisition, hosting, and analyses for performance and yield optimization of turbine arrays
- Offshore wind farm monitoring and maintenance: predictive maintenance based on existing technology to perform structural health monitoring and lifecycle management
- The implementation of parc pilot and control system design capable of performing the Asset Management of multi-site portfolios with a mix of solar- and wind assets.

CCUS

Geological storage of CO₂ will be an essential component to reach the Paris climate goals. This strategy has been demonstrated in many projects, but challenges remain, not least in relation to how to upscale capacities from currently Megatons to Gigatons as required according to world energy and emission outlooks.

At GET2022, we welcome presentations about recent advances related to the exploration of the storage resource, its definition and characterization, the reservoir and pressure management, risk assessment and monitoring technologies. We particularly invite presentations about ongoing projects, from trials to commercial projects, to stimulate knowledge sharing and to establish and foster the connection between researchers and CO₂ practitioners.

The theme also includes ‘utilization’ of CO₂ in a subsurface context, including, but not limited to CO₂ EOR. Non-technical risks as well as commercial and societal aspects will be discussed in the theme “Society and solutions”.

The following topics are highlighted (but not limited to) for your abstract submission:

- Exploration and geographical mapping of CO₂ storage resources
- Geological storage characterization and CO₂ storage resource estimation;
- Reservoir and pressure management
- Assessment, mitigation and remediation of subsurface risks
- Monitoring technologies for CCS
- Lessons learned from active CO₂ injection sites (large-scale, pilots, test-beds);
- Carbon Utilization (e.g. CO₂ EOR).

ENERGY STORAGE

To integrate renewable energy into the energy structure, energy storage plays an important role. Energy storage allows to maintain grid security by compensating the enormous increase of fluctuating renewable energies. Most of the renewable energy sources, notably solar and wind produce variable power. Electrical energy has to be stored during times when electricity is plentiful and later returned to the grid when the demand is high.

The conversion of energy systems is an indispensable prerequisite for this, and the massively increasing technological supply of distributed renewable resources, efficiency systems and energy storage systems ideally position us for this. The development and systemic integration of storage systems will lead to an increased usage of the earth's subsurface, which has to be handled safely and environmentally friendly.

The following topics are highlighted (but not limited to) for your abstract submission:

- Mineralogical, geochemical and diagenetic considerations for storage

- Seal characterization and containment risk assessment (cyclic injection-depletion, caprock/salt geomechanics)
- Storage site performance (e.g. fluid transport, mixing)
- Hydrogen storage (salt caverns, pore storage in depleted reservoirs)
- Compressed air storage
- Underground thermal energy storage (including aquifer/borehole/cavern thermal energy storage)

GEOHERMAL ENERGY

Geothermal energy could play a key role in the energy transition as a widely available source of baseload power, and its versatility needs no demonstration, from power generation from high-enthalpy resources to shallow developments for heating and cooling. GET2022 aims at addressing the technical issues and the risks that impact the exploration success and the exploitation performance, proposing solutions and skills that can unlock the geothermal potential and support its growth.

The following topics are highlighted (but not limited to) for your abstract submission:

- Geothermal resource mapping and assessment: approaches and criteria for Europe and beyond
- High-resolution geothermal exploration and characterization: predicting reservoir performance and quality
- Seismic risk assessment and mitigation: tools and solutions for enhanced geothermal systems
- Processes, materials and equipment to mitigate the scaling and corrosion in the geothermal wells
- Closed-loop technologies: more cost-efficient, more sustainable?
- Green technologies for drilling and completion of geothermal wells

INTEGRATION

An integral perspective on energy generation, use and infrastructure will be crucial for designing a net-zero emissions system. Exploiting synergies from smartly combining uses and technologies across classical and new energy sectors, as well as within these sectors, can boost efficiency and economic viability. For the subsurface, combining multiple uses may even turn out mandatory in view of the increasing demands on a limited resource.

In this conference, we aim at highlighting geoscience and engineering contributions to unlock the integration opportunities. We invite presentations across the full range of possible combinations. This includes the combination of different technologies in the energy transition space for energy generation, storage, or raw material supply. Examples are CO₂ plume geothermal, lithium brine mining, or blue hydrogen. But is also covers “dual play” opportunities arising from the integration of elements of novel energy elements into existing oil and gas infrastructure. We explicitly encourage presentations about technical and business examples.

Together with the “cross-use theme”, this theme is an invitation for a cross-over between the classical subsurface uses, which lies at the heart of the GET conferences.

The following topics are highlighted (but not limited to) for your abstract submission:

- Mineral exploitation from geothermal resources: combined heat, power and metals
- Dual play: hybrid oil and gas and geothermal energy solutions Re-use of oil and gas platforms and equipments

- Integration of traditional and novel energy systems: technical and business examples
- Geothermal with CCS and energy storage: the path to net-zero energy projects?
- CCS and hydrogen (blue hydrogen)

CROSS-USES

While the theme “Integration” focuses on facilities and infrastructure, the theme “Cross-use” addresses synergies from transferring technologies, workflows, and knowledge across businesses and disciplines. Building on proven methods from traditional energy systems, in particular the Oil & Gas business, offers routes to fast-track the development and to implement new subsurface energy components.

In this conference, we invite presentations highlighting opportunities but also limitations and challenges of re-utilizing established geoscience technologies. Topics include, but are not limited to, play-based approaches for exploring and mapping resources for the energy transition, subsurface modeling techniques, monitoring technologies with a specific focus on geothermal energy systems, and data acquisition and drilling technologies. The theme also extends to digitalization, and we welcome abstracts on the integration of AI approaches to subsurface data acquisition, analysis, and visualization.

Presentations around geoscience skills for the energy transition and all aspects of training are welcome under the “Solutions and Society’ theme.

The following topics are highlighted (but not limited to) for your abstract submission:

- 4D visualisation and planning for a sustainable use of the subsurface

- Energy transition subsurface modeling: overlaps and differences with O&G;
- Data mining and AI approaches for the ET;
- Play-based approaches for the ET
- Cost-effective drilling and data acquisition for the ET: new technologies and best practices
- Monitoring techniques for geothermal projects
- Geosciences and engineering for nuclear energy: from mineral supply to radioactive waste storage.

ENVIRONMENT & SUSTAINABILITY

During this conference energy sources and techniques suitable for the energy transition are considered. The main focus is to meet the climate targets towards a net-zero emission. But what are other aims for the energy transition? Will these energy sources meet the future energy demand? How sustainable are the alternative energy sources and techniques?

In this conference, we aim to discuss sustainable resource management, addressing their respective environmental impact and the trade-offs required by their place in the energy mix, considering both the positive as well as negative influences on the ecosystem services.

The following topics are highlighted (but not limited to) for your abstract submission:

- Sustainability of the alternative energy trends to enable the energy transition
- Impact of alternative energy uses, resources and technologies on the environment
- Trade-offs of alternative energy resources
- What are the benefits and drawbacks of the energy transition on the ecosystem services?

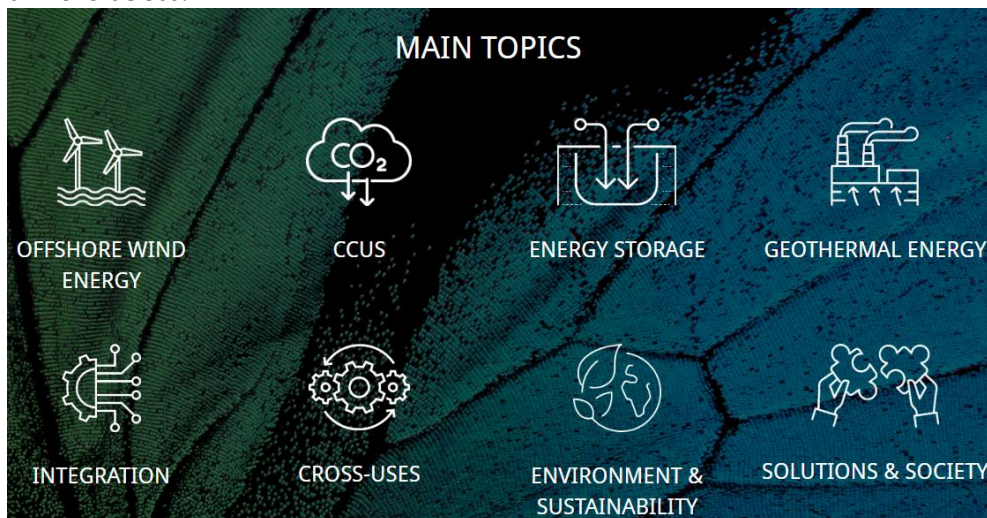
- What are the environmental risks associated with the energy transition?
- What will be the energy demand and delivery over 100 years? - Predictions towards the future
- What is the aim of the energy transition?
- Risk assessment.

SOLUTIONS & SOCIETY

Beyond the technical solutions and the technical synergies that can accelerate the energy transition, GET2022 will be an occasion to evaluate the role that all stakeholders in society can play in this transition. The governance of subsurface projects, the policies related to resource use, the skills and career paths needed to work on the transition, the business approaches to reduce the risk and improve the profitability, are the aspects that we wish to discuss.

The following topics are highlighted (but not limited to) for your abstract submission:

- Current economy and market dynamics in European Renewables
- Risk mitigation and insurance: the right scheme for my market
- Skills and expertises for the ET: transfer, upskill, or shift?
- Regulatory framework: barriers and improvements;
- Application of renewables in the food-supply chain;
- Social Governance of the subsurface in an evolving world;
- Just Energy Transition and the Green New Deal;
- How geoscience can support the social license to operate
- Non-technical risks (market development, public/regulatory acceptance).



CONTACT US



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For questions regarding registration.



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For general questions regarding EAGE.

SEG 2022 NEAR SURFACE GLOBAL LECTURER: A WATERSHED MOMENT FOR CRITICAL ZONE GEOPHYSICS



Summary

The critical zone is an extremely important veneer of our Earth that influences water resources, agricultural productivity, and the carbon cycle. Hydrogeological, geochemical, and biological processes in the critical zone occur across a range of scales and across bedrock-through-canopy compartments, rendering characterization using traditional methods challenging. Additionally, land-use change, environmental trends, and abrupt disturbances are significantly reshaping interactions within critical zones at a time when population growth and resource-intensive lifestyles are increasingly relying on benefits provided by the Earth's critical zone.

This presentation will focus on recently developed constructs to conceptualize and tractably quantify hydrobiogeochemical critical zone behaviors using geophysical methods. The constructs include a functional zone approach that uses diverse, remotely sensed datasets to rapidly characterize the organization of a terrestrial system and simultaneous above-and-below ground geophysical monitoring strategies to quantify how terrestrial systems respond to press and pulse disturbances. The constructs will be described using case

studies from a Colorado mountainous watershed, an Arctic permafrost ecosystem, and vineyard agriculture sites. The presentation will emphasize how geophysical data combined with emerging technologies (such as low-cost distributed sensors, machine learning, 5G wireless communications, and computational capacity) are starting to reveal their value for greatly enhancing the predictive understanding of critical zone behaviors. With new scientific and technological advances, we now have the opportunity to seize this 'Watershed Moment' for accelerating our understanding and management of the Earth's critical zone.

Biography



Susan Hubbard is the deputy for science and technology at Oak Ridge National Laboratory, where she oversees one of the nation's most extensive portfolios

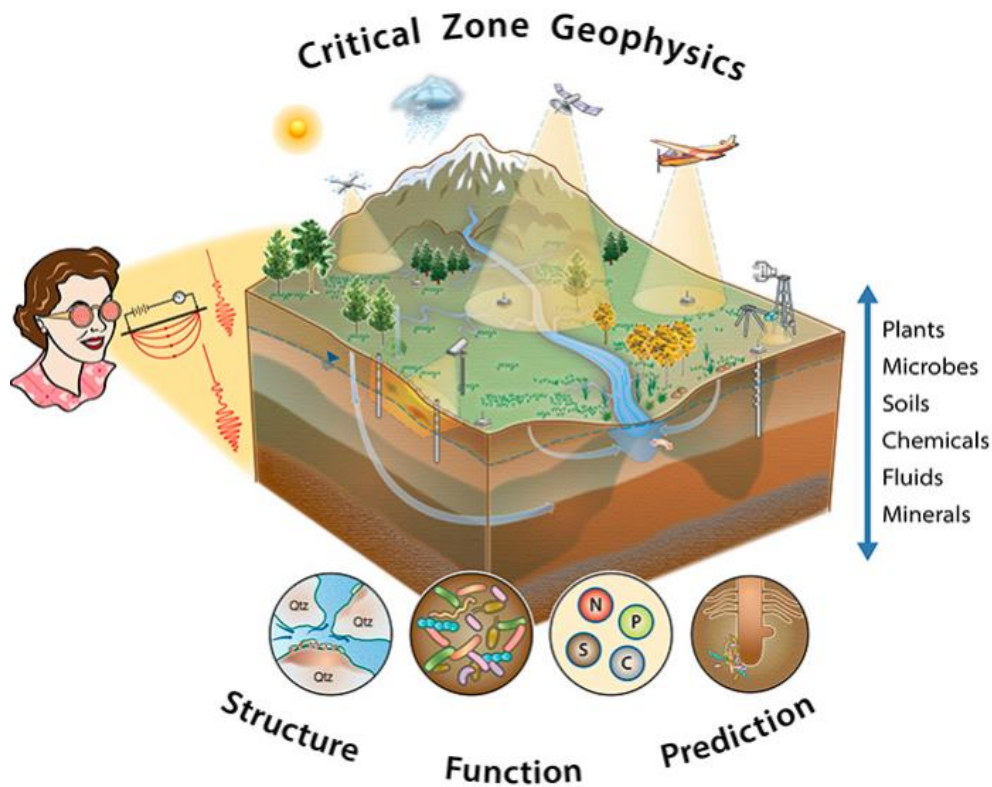
of research and development. Prior to joining Oak Ridge National Laboratory, Susan was the founding associate lab director of the Berkeley Lab's Earth and Environmental Sciences Area and its environmental geophysics group, a geologist at the U.S. Geological Survey, and a geophysicist in the oil and gas industry.

Susan's research focuses on quantifying terrestrial system dynamics, with an emphasis on development of geophysical approaches and data integration strategies to provide insights about how hydrological, geochemical, and

biological processes interact and influence water availability, water quality, carbon cycling, and agriculture system behaviors. She is a member of the National Academy of Engineering and a Fellow of the American Academy of Arts and Sciences, the American Geophysical Union (AGU), and the Geological Society of America (GSA). She has received the SEG Frank Frischknecht Leadership Award, the SEG Harold Mooney Award, the American Institute of Hydrology Robert G. Wetzel Award, and the GSA Birdsall Dreiss Distinguished Lecturer Award. She was the

founding chair of the AGU Hydrogeophysical Technical Committee and is currently the Chair of the Hydrosphere and Atmosphere Section of the American Association for the Advancement of Science (AAAS). Susan earned her PhD in civil and environmental engineering at UC Berkeley, her masters in geophysics at Virginia Tech, and her bachelor's in geology at UC Santa Barbara.

ATTEND VIRTUAL LECTURE FOR FREE



SOCIETY OF EXPLORATION
 GEOPHYSICISTS

GEOTECH – THE SECOND EAGE GEOSCIENCE TECHNOLOGIES AND APPLICATIONS CONFERENCE AND EXHIBITION 2022



WELCOME FROM LOCAL ADVISORY CHAIR

Subsurface & the Energy Transition: Challenging the Status Quo

With gas and advantaged oil continuing to underpin evolving energy portfolios for decades to come and the need for carbon storage rising, coupled with growing footprints in renewable energy such as wind and geothermal, the need for subsurface talent will remain strong.

EAGE GeoTech 2022 plans to bring together a diverse audience of experts to focus on key challenges across the subsurface domain. This year's workshops

will seek to address how we optimise our maturing fields, advance the dial in Carbon Capture and Storage (CCS) and explore the role of fibre in monitoring and verification.

Topics

The topics for EAGE GeoTech 2022 are listed below. For detailed topics list please visit the individual workshop pages.

Sixth EAGE Workshop on CO2 Geological Storage

1. Industrial-scale CO2 storage projects – beyond demonstration;

2. Storage hub concept – upscaling from 1 MTPa to 10 MTPa and beyond;
3. Saline Aquifer Storage;
4. Depleting and Depleted Hydrocarbon Field Storage;
5. Storage Monitoring;
6. Storage Safety;
7. Strategic priorities and future evolution of the CCUS industry.

9. New skills and approaches for the energy transition.

Registration

Registration for this event is now open!

EAGE registration fees differentiate between EAGE membership recognition levels and non-members. In the table below you can see what the different fees are. First year members have Green membership status which gives you a € 50 discount (€ 25 for students) on the Non-member fee for each EAGE event registration; starting from Bronze status, you can benefit from an even greater reduced EAGE member registration fee. Find [here](#) for more information on the membership recognition programme.

Third EAGE Workshop on Distributed Fibre Optic Sensing

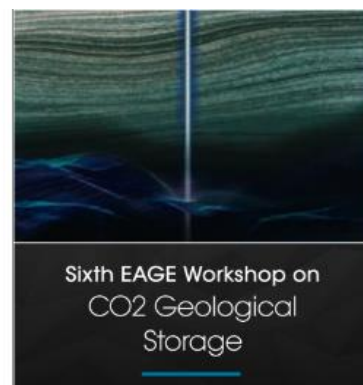
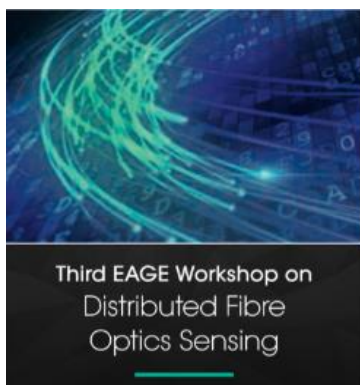
1. Surveillance;
2. Geotechnical;
3. Integration;
4. Flow Measurements;
5. Current Challenges and Needs;
6. New Emerging Applications.

First EAGE Workshop on Reservoir Management of Mature Fields

1. Wells;
2. Reservoir;
3. Production monitoring and surveillance;
4. Optimal modelling techniques for mature fields;
5. Production data analytics;
6. Net-Zero options;
7. Decommissioning;
8. Case studies;

Please note!

Registration will not be accepted unless accompanied by full payment. After receipt of registration and payment, delegates will receive a registration confirmation e-mail, which should be exchanged on-site for a badge if a valid/unique e-mail address is supplied. No entrance is granted to unregistered, or unpaid guests. For companies that want to do a group booking/payment, please contact the registration department at registration@eage.org.



SEISMIC SOUNDOFF: IN DEPTH CONVERSATIONS IN APPLIED GEOPHYSICS

SEG – NEWS & RESOURCES, PODCAST



Episode 140: Applying seismic to CCUS applications

Seismic Soundoff

Amine Ourabah discusses carbon capture, utilization, and storage (CCUS) from the January 2022 special section on seismic acquisition in *The Leading Edge*. Amine explains why CCUS is at the center of the net-zero-emission conversation, the need for cheaper and easier-to-use technology, and the unique innovations explored in his field trial. This conversation lays out the seismic and technological needs and innovations to move carbon capture and renewable energies forward.

Biography

Amine Ourabah is Head of Processing at STRYDE. His main role is to pass on R&D experience to the new development team, ensure seismic data integrity, provide clients with expertise on HD land seismic acquisition and processing, and lead external technical communications and collaborations to deliver the best quality service to our clients. In parallel, he is building processing capabilities to respond to clients' demands for faster turnaround and more affordable processing fees, especially in the non-oil and gas industries.



Episode 141: breaking down the life cycle of a well

Seismic Soundoff

Sue Carr and Patrick Meroney discuss the life of the well from the February 2022 special section in *The Leading Edge*. Sue and Patrick discuss the importance of a shared definition of a well, spotlight the most important well component for geophysicists, highlight the five life cycles of a well, and break down why well logs are the key piece for successful drilling. This conversation will help geophysicists better connect their work across the entire production chain and support their work in being more useful and practical to others.

Sue Carr is Solutions Manager, Subsurface Consulting at Katalyst Data Management. Patrick Meroney is Vice President, US Operations and Professional Services at Katalyst Data Management.



Episode 142: How to technologically scale CCUS

Seismic Soundoff

Don Lawton of Carbon Management Canada and Mark Tinker of Quantum Technology Sciences discuss the latest

technological advances for carbon capture, utilization, and storage (CCUS).

In this cutting-edge conversation on the state of technology for CCUS, Don and Mark highlight the need to accelerate the development and implementation of CCUS technologies, illustrate what better carbon storage monitoring technologies would mean for the climate, and outline how to overcome the challenges to scale CCUS. Mark also discusses real-field applications of the latest technology and the unique opportunities Carbon Management Canada offers to develop new tools to address a net-zero emission future.

Biography

Dr. Don Lawton is a Professor of Geophysics in the Department of Geoscience at the University of Calgary. In 2013, he was appointed Director of CMC's Containment and Monitoring Institute to lead research into improved monitoring technologies for secure geological carbon storage. Decades ago, Don had a vision for a research facility where measurement and monitoring equipment could be developed and demonstrated. In the fall of 2017, he saw this dream realized with the official opening of CMCRI's Field Research Station near Brooks.

Don's research interests include acquisition, processing and interpretation of multicomponent seismic data, seismic anisotropy, integrated geophysical and geological studies in complex geological settings, and in advancing monitoring methods for the geological storage of CO₂. He's an Associate Director of the Consortium for Research in Elastic Wave

Exploration Seismology (CREWES). A highly regarded expert, he was awarded the Canadian Society of Exploration Geophysicists (CSEG) Medal in 2000 and received Honorary Membership in the Society in 2014.

Dr. Mark Tinker serves as CEO and officer of Quantum Technology Sciences, a wholly-owned subsidiary of Geospace Technologies. Mark's entire career has focused on transforming the way energy propagating within the earth can be reduced to information and exploited to society's benefit.

As CEO, Mark led Quantum through an \$8M private equity raise to formally commercialize Quantum's offerings before overseeing the company's acquisition in 2018 by Geospace Technologies, a geophysical data acquisition company (NASDAQ: GEOS). Today, Quantum and Geospace are positioned to deploy fully automated ground-based information systems into both the Security & Surveillance market as well as the Energy market.

Mark earned his Ph.D. in geophysics (focus on nuclear seismology) from the University of Arizona, and he is grateful to the U.S. Air Force for providing the vast majority of his funding.



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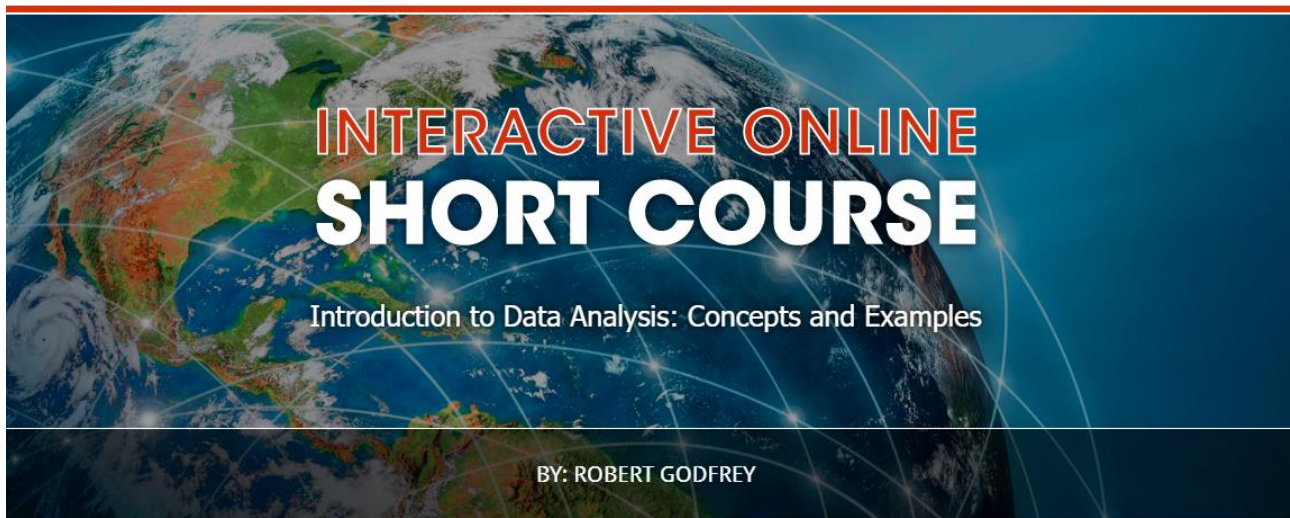
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EAGE - INTRODUCTION TO DATA ANALYSIS: CONCEPTS AND EXAMPLES

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Instructor

Dr Robert Godfrey
(Robert Godfrey Geophysics Inc.,
Canada)



Duration

16,18,19 & 20 May 2022:
4:00PM-8:00PM CEST
4 hours/day



Disciplines

Geophysics – Seismic Processing



Level

Foundation



Language

English



EurGeol

10 CPD points

Course Outline

The following steps in seismic data processing will be discussed:

- 1) Signal Processing
- 2) Novel Seismic Acquisition
- 3) Multiple Attenuation
- 4) Pre-Stack Depth Migration
- 5) AVO & Rock Physics
- 6) Quantitative Interpretation
- 7) Time-Lapse Seismic
- 8) The Road Ahead

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About the Instructor

Robert J. Godfrey received a Bachelor of Applied Science degree in geological engineering from UBC in 1975 followed by a Ph.D. in geophysics in 1979 from Stanford University. He was a member of the Stanford



Exploration Project founded by Jon Claerbout.

Following his graduation, he began his career with Mobil Field Research Lab in Dallas and then joined Digicon in London for 8 years where he worked in research and development. This was followed by a 25-year stint with Schlumberger where he worked in Calgary, Austin, London and Cairo, primarily in the fields of reservoir characterization and later in seismic monitoring. In 2015, he established Robert Godfrey Geophysics Inc., and is currently working as a geophysical consultant in seismic technology, geophysical education, and undertakes short-term assignments. He is a member emeritus of the SEG.

Course Description

The course covers a range of advanced data analysis topics including novel signal processing techniques, pre-stack depth migration, reservoir characterization, time lapse analysis and the road ahead.

The free on-line books by Jon F. Claerbout, material from SEG Wiki and papers published in Geophysics, The Leading Edge and SEG Expanded Abstracts are used to provide technical background for the course topics.

Course Objectives

1. Suggest acquisition strategies to (a) broaden spectrum (both low and high) (b) reduce acquisition cost where appropriate (c) provide superior illumination and (d) improve conventional wave imaging using shear waves to highlight faults/fractures, low compressional wave impedance contrasts and gas-affected areas.
2. Advise and recommend key steps in data processing workflows.
3. Choose appropriate pre-stack depth migration algorithms to image expected dip range (e.g. Kirchhoff, Beam, RTM).
4. Advise on velocity-depth model building workflows (e.g. Grid Tomography or FWI).
5. Decide on the applicability of applying AVO and what elastic attributes to estimate.
6. Define optimal petrophysical parameters to be estimated using elastic attributes and an associated workflow including probability analysis if appropriate.

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The Society of Exploration Geophysicists (SEG), the American Association of Petroleum Geologists (AAPG) and in conjunction with the Society for Sedimentary Geology (SEPM) are excited to host, IMAGE 2021 - the International Meeting for Applied Geoscience & Energy. The three societies agreed earlier this year to hold this integrated annual meeting over the next five years, the first of which will be a hybrid event held from 26 September to 1 October 2021, at the Colorado Convention Center in Denver, Colorado and online.

As global leaders in disseminating high-quality applied-geoscience knowledge and data, SEG, AAPG, and SEPM have joined forces to create this powerhouse

event bringing together multiple disciplines of the geosciences sector. IMAGE '21 combines all the great elements from each society's previous annual meetings under one roof to offer a better experience and increased value for the industry.

IMAGE '21 will welcome speakers, exhibitors, and attendees to participate in-person or online, or both. The comprehensive technical program will feature more than 1,000 presentations, nearly 200 sessions, 14 post-convention workshops, 10 special sessions, five field trips, countless networking opportunities, and a joint exhibition showcasing the latest geoscience products and technologies. One registration will give delegates access to the core technical sessions, the exhibition, and several other events.

Don't miss the ultimate learning and networking event for applied geoscience and energy.

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12 Reazioni 1 commento

Reazioni

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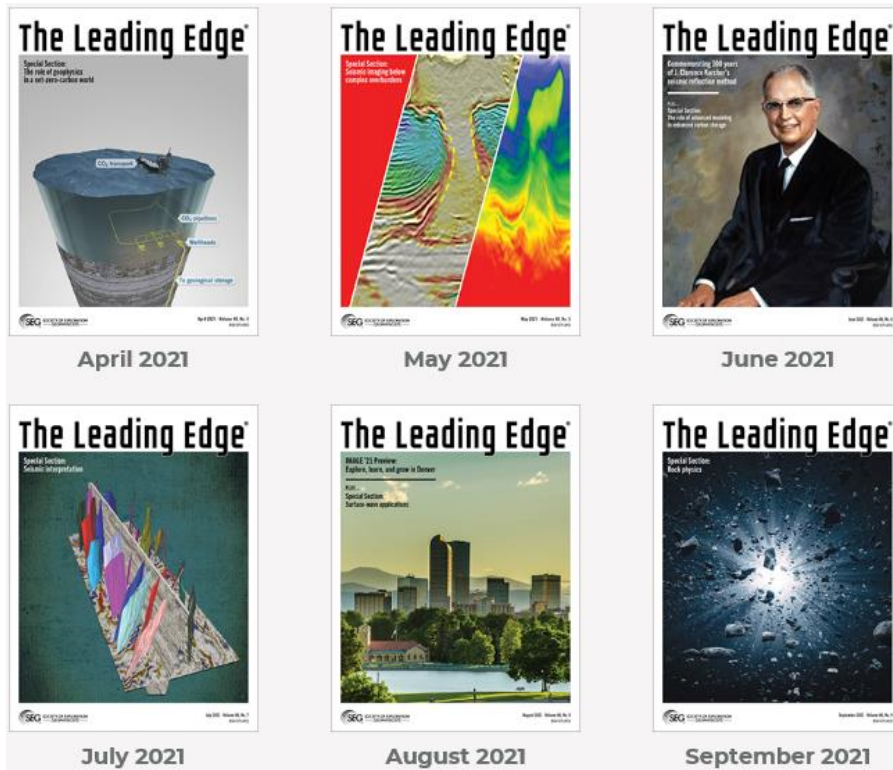
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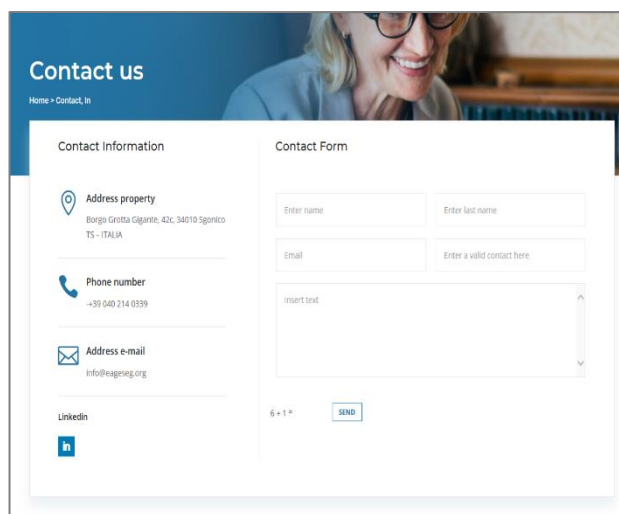
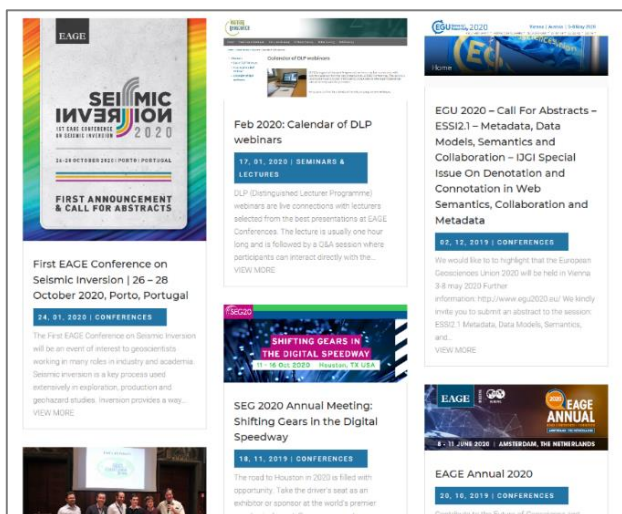
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