

Powering the energy transition through subsurface collaboration



The

Geological Society

16 - 18 MAY 2023 P&J LIVE, ABERDEEN

energygeoscienceconf.org #EGC2023



Welcome to the Energy Geoscience Conference – EGC 1

The Energy Geoscience Conference, organised by the Geological Society of London and the Geoscience Energy Society of Great Britain, aims to explore the contribution of geology and geophysics to the low-carbon energy transition. Aberdeen's world-leading role in the energy sector and vision to lead the world towards net zero makes it the standout UK location to launch this new conference series.

EGC is inspired by the long-running and highly influential Petroleum Geology Conference series, led by the GESGB and the Geological Society, which disseminated world-class geoscience over five decades. EGC has been initiated as a key forum for sharing the geoscientific aspects of energy supply as earth scientists grapple with the subsurface challenges of remaking the world's energy system for a low carbon future.

The conference will bring high-quality, energy-related geoscience to a UK and international audience. It aims to address technical challenges and support geoscientists in industry and academia researching, exploring and developing the energy supplies, storage and sequestration facilities demanded through the transition. It will enable collaboration between geoscientists regardless of their particular specialism, promoting sharing of subsurface data, techniques and understanding towards building a single energy





geoscience community. The many challenges of the energy transition demand such an approach and we are delighted to be launching EGC under the banner 'Powering the Energy Transition Through Subsurface Collaboration'.

The conference will feature a wide range of high quality contributions, and provide extensive learning and networking opportunities for delegates, at a very competitive registration cost. The conference will allow delegates both to immerse themselves in their own particular industry or subsurface specialism and to better understand a range of new and emerging fields and techniques. It will also allow attendees to see the broad applicability of their own geoscience skills through the energy transition as new subsurface uses gain prominence in the energy mix and in the employment market.

We would like to express our thanks and gratitude to our sponsors, speakers and poster presenters, to the Geological Society and GESGB and their conference staff, to our Conference Board, and to our Technical Committee supported by a network of geoscientists and company management.

We very much look forward to welcoming you in May 2023!

Caroline Gill (Lead Convenor) John Underhill (Lead Convenor) Graham Goffey (Conference Board Chair) On behalf of the Conference Board and Technical Committee

Who should attend and why

The strong technical programme has been designed to cover the full life-cycle of energy sources from exploration through development, utilisation, re-purposing and abandonment. The programme covers the complete spectrum from oil and gas through geothermal, subsurface storage and geological disposal to shallow geophysics for wind farm siting and exploration for new energy sources and materials. Consequently EGC1 offers extensive learning, networking and professional development opportunities to:

- Energy and engineering geoscientists, analysts, engineers, subject matter experts and technical specialists in government, companies, advisories, consultancies, and industries including oil and gas, geothermal, CCUS, energy storage, radioactive waste disposal and wind farm development;
- Technical assurance, functional and line management including regional business managers, business development, exploration, development, production and operations managers right up to director, country manager and CEO level;

	3 days Technical Programme	3 days Poster Programme	Networking with fellow delegates
Online attendance			
In-person attendance attendance	√	√	✓

Why sponsor EGC1?

Sponsorship of the inaugural event of this exciting new conference series will position your organisation as a supporter of earth science's leading role in finding and developing lower carbon solutions through the energy transition. We have a range of sponsorship opportunities available, all of which can be tailored to meet your specific business objectives. Sponsors will also be featured in the landmark Conference Proceedings, published after the conference by the Geological Society.

For more information and to receive a copy of our sponsorship prospectus, please contact: jenny.boland@geolsoc.org.uk or natalie@ges-gb.org.uk

Energy Group Annual Dinner

The Geological Society's Energy Group dinner will be held at P&J Live, Aberdeen on Wednesday 17 May 2023 to coincide with EGC1. This will see a return to sponsored tables and a ballot to register individual attendees. Contact **energygroup@geolsoc.org.uk** to register interest. More details will be made available shortly by the Energy Group.

EGC1

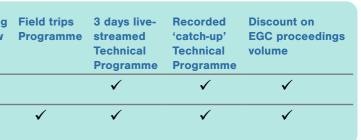
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• Geoscience students and researchers working across the range of energy geosciences in universities and research agencies

Whether you are interested in gaining an up-to-date understanding of developments in your own sector, in learning about the subsurface aspects of emerging energy transition applications such as energy storage and CCS, or considering broadening your career into a different branch of energy geoscience, this conference is aimed squarely at you.





CONFERENCE HIGHLIGHTS

The technical programme has been designed to offer in-depth coverage across a range of broadly overlapping subsurface themes. Talks and posters will cover themes including:

- · Case studies and techniques of resource exploration, screening and siting in the energy transition including hydrocarbons, geothermal, carbon and energy storage, nuclear waste disposal, hydrogen, helium and lithium
- Early life, late life, new life: the efficient development of new hydrocarbon resources, maximisation of existing resources and repurposing of depleted pore space for storage
- Geothermal applications and developments, including geothermal exploration, low enthalpy heating and cooling, mine water geothermal and geothermal resource assessments
- The role of salt in storage, as a seal, repository and hydrocarbon trap
- ·Subsurface storage case studies, techniques, measurement and monitoring technologies for CO2, hydrogen and compressed air storage
- · Subsurface modelling for energy projects, covering applications from reservoir characterisation and simulation, radioactive waste modelling and CO2

injection monitoring to geothermal modelling and geomechanics

- Characterisation and evaluation of containment in hydrocarbon entrapment, storage and radioactive waste disposal including rock-fluid interactions and leakage behaviours
- Fault and fracture characterisation for the energy transition, including modelling and case studies
- ·Geophysics for energy developments including ground modelling in offshore wind projects and geophysical applications in disposal and energy applications

In addition to the core technical programme, the conference will feature:

· Debates on energy-related controversies in addition to panel discussion and lunchtime talks on the trajectory of the energy transition, the changing role of geoscience and of geoscientists

•A suite of expert-led field trips showcasing local geology to examine conference themes including CO2 storage

Conference attendees will also be eligible for a substantial discount on a conference proceedings volume and eBook, planned to include papers on as many talks and posters as possible and which will be published in the Lyell Collection by the Geological Society's widely-respected Publishing House.



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serving science, profession & society

We aim to be an inclusive and thriving Earth science community advancing knowledge, addressing global challenges, and inspiring future generations. Our strategy, mission and values can be found here

out more.

CONFERENCE CONVENORS

- Dr Charlotte Adams. Coal Authority
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- Dr Neil Frewin, Shell
- Dr Caroline Gill. Shell UK Ltd.
- Graham Goffey, Soliton Resources
- Jon Gutmanis, Independent
- Prof. Cathy Hollis, University of Manchester
- Prof. Mads Huuse, University of Manchester
- Dr. Mark Ireland, University of Newcastle

CONFERENCE ORGANISERS



technologies.

This member led organisation serves our industry by providing great value, networking and knowledge-sharing events, conferences and workshops as well as a programme which supports the education of earth sciences in the wider community. Though careers in 'energy' are constantly evolving, the GESGB aims to be relevant, useful and beneficial to members at every stage of their careers within the 'energy' industry.

overseas.

Emma Jude, BP Lucinda Layfield, Equinor Prof. Bruce Levell, University of Oxford Dr Gwilym Lynn, Shell UK Ltd. Katie May, Shell UK Ltd. Simon Norris, Radioactive Waste Management Ltd. David Offer, RPS Energy Nick Prowse, Orsted Prof. John Underhill, University of Aberdeen Lucy Williams, Rockhopper Dr Kirstie Wright, North Sea Core CIC Dr. Tim Wynn, TRACS

To advance, for public benefit, education in the scientific and technical aspects of subsurface energy and related

The GESGB was established in 1964 by a group of like-minded professionals keen to create a community of geoscientists for networking and sharing ideas. Over 50 years on, we have a growing membership across the world.

The Geological Society is the UK's national society for geoscience, providing support to c.11,600 members in the UK and

Find out more about our diverse offering of events as well as other key activities including careers & education, membership & Chartership, publications, policy and outreach. Visit our website to find



EGC 2023 PROGRAMME: DAY 1 - Tuesday 16 May - Morning

HALL 1 HALL 2 HALL 08.00 Registration, refreshments, networking and poster viewing **Introduction and Plenary Talks** Welcome and Introduction Graham Goffey (Soliton Resources), 09.20 Conference Chair Plenary Talk 1 - TITLE TBC 09.30 Professor Lorraine Whitmarsh, Director Centre for Climate Change and Social Transformations, University of Bath Plenary Talk 2 - TITLE TBC 09.55 Professor Gideon Henderson, Chief Scientific Adviser and DG Science and Analyis - DEFRA 10.25 Move to sessions Exploration in the Energy **Geoscience in CCUS Emerging Geo** Transition Hydrocarbon Perspectives **Overview and Regional Screening Minewater Geo** * * Reduce, re-use, resilier Themes from the last decade. use of the onshore min A hydrocarbon exploration 10.30 subsurface for low tem retrospective from the **CCS: Dynamic Geoscience** heating and thermal sto **UK Continental Shelf** Owain Tucker, Shell Alison Monaghan, John Seedhouse, North Sea Transition British Geological Survey Authority * Assessment of Flooded Shafts for Thermal Ene Role of Play Based Exploration Daniel Whittington, Univer (PBE) Methods in the search for, Sand Injectites: a developing Strathclyde 10.55 and critical evaluation of, safe hydrocarbon play and more... subsurface carbon stores Professor Andrew Hurst, University of Addressing challenges Professor John Underhill, University of Aberdeen of mine water heating, Aberdeen and thermal storage sc Sally Jack, University of Strathclyde 11.20 Refreshments, networking and poster viewing **Deepwater Hydrocarbon Exploration** Appraisal of mine shaft 50 years of Petroleum Exploration within **Scottish coalfields** Europe - an early look at CCS the Faroe-Shetland Basin: the past, 11.50 Neil Burnside, University Johannes Kalunka, ExxonMobil present and future of a frontier basin Strathclyde Professor Nick Schofield, University of Aberdeen **Evaluating containment volumes** Deep-water slope stratigraphic traps and leakage risks for geologic of the Upper Cretaceous of the carbon sequestration across Repurposing a Legacy, 12.15 Guvana-Suriname and CDI-Ghana brownfield and greenfield opportunities: head Mine Heat Schem margins: structural control and con-An assessment of the Charlotte Adams tainment by mass-transport deposits Moray Firth Basin, North Sea Bryan Cronin, Tullow Rene Jonk, APA Corp. 12.40 Lunch, networking and poster viewing **Future Outlooks Lunchtime Talk** Ten Themes for Exploration and the 13.30 **Geosciences in the Next Ten Years** Graeme Bagley, Westwood Global Energy

EGC 2023 PROGRAMME: DAY 1 - Tuesday 16 May - Afternoon

3		HALL 1	HALL
		Exploration in the Energy Transition (continued)	Geoscience
		Deepwater Hydrocarbon Exploration	contir) Overview and Regi
	13.55	Gas Exploration Potential in the Northern Faroe-Shetland Basin, UK Atlantic Margin: Aiding the UK Net Zero 2050 Strategy Alice Hall, University of Aberdeen	A New Understanding of in the UK SNS: Implicati remaking prospectivity a transition Laura-Jane Fyfe, Heriot-Wa
	14.20	Exploring an igneous intrusive province in the West of Shetlands <i>Rob Gooder, BP</i>	Adapting an existing hyd screening workflow to th challenge of objectively carbon storage resource Joseph Jennings, Hallibur
		Progressing Hydrocarbon Plays	CCS Case Studies a
thermal	14.45	The Z2 Haupt Dolomite – Imaging, Mapping and Understanding Porosity Distribution On The Frontier Margin of the Southern Gas Basin Peter Browning-Stamp, Horizon	The Endurance CO2 Sto characterising injectivity and capacity of the UK's aquifer store Catherine Gibson-Poole, B
othermal nt: shared ned perature orage	15.10	Depositional evolution of the Lower Carboniferous in the Southern North Sea area: A cross-border perspective on stratigraphic synchronisation and source rock potential Alexander Houben, TNO	Sherwood Sandstone ou analogues study in the C Basin: how to better com potential and CO2 inject oil and gas fields in the Liverpool Bay Carbon Ca Rodrigo de Sainz Simpson Manchester
	15.35	Ref	reshments, networki
d Mine argy Storage rsity of for uptake cooling,	16.05	ljssel discovery: an integrated approach to characterisation of an unusual reservoir type; an example of Upper- Jurassic greensands in the Netherlands Rob Lengkeek, One Dyas	Could the Lower Carbon of northern England be Geological Carbon Sequ Michael Sims, Imperial Co
ts in of	16.30	The impact of Salt controlled minibasins on Triassic stratigraphy, Central Graben, Norway Alexandra Tatayo Muzo, University of Aberdeen Dynamics and Filling Histories of Triassic Minibasins: An Example from the Egersund Basin, Central North Sea. Umut Isikalp, University of Bergen	Deep marine reservoirs CCS targets Ian Kane, University of Ma
	16.55		Range of Carbon Storag in Saline Aquifer, a Simu Sensitivity Study Pipat Likanapaisal, ExxonN
the Gates- e	17.20	NET ZERO CHALLENGES PANEL DISCUSSION Communicating during a complex energy transition	The Application of SRMS Assessment of Geologic Projects Gordon Taylor, RPS
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HALL 2	HALL 3
oscience in CCUS (continued)	Emerging Geothermal (continued)
and Regional Screening	Low Enthalpy Geothermal
anding of the Zechstein Implications for pectivity and the energy Heriot-Watt University	Repurposing the Newcastle Science Central Deep Geothermal Borehole as a Borehole Heat Exchanger: Understanding Modes of Operation and Scalability Christopher Brown, University of Glasgow
isting hydrocarbon flow to the jectively ranking resource s, Halliburton	Driving towards net zero carbon emissions targets: A case study tailored to local industry Eshagh Goudarzi, London South Bank University
CO2 Storage Complex: injectivity, containment the UK's largest saline	The Dutch SCAN Geothermal Exploration Program: Seismic acquisition, processing and reprocessing Johannes Rehling, EBN
Istone outcrop y in the Cheshire etter constrain CCS O2 injectability in depleted Is in the context of the carbon Capture Project. Simpson, University of	Deep geothermal resource potential of the Early Carboniferous limestones in Central and Southern Britain <i>Tim Kearsey, BGS</i>
etworking and poster vi	ewing
	Geothermal Case Studies and Applications
er Carboniferous Shales Jland be used as a bon Sequestration Target? Aperial College, London	Low enthalpy geothermal resources in Southern Thailand Helmut Duerrast, Prince of Songkla University
eservoirs as viable sity of Manchester	Re-evaluating Glasgow's Geothermal Dataset to account for the effect of palaeoclimate on heat flow <i>Sean Watson, University of Glasgow</i>
on Storage Performance er, a Simulation y al, ExxonMobil	Review of Geothermal Energy Potential of Pakistan from Oil and Gas Wells Saif Ur Rehman, University of the Punjab
of SRMS in the Geological Storage PS	Structural and stratigraphic control on carbonate platform growth of the upper Mississippian, Irish Sea Basin: implications for onshore geothermal projects Maulana Aditama, University of Manchester Development of an unparalleled database for existing Hot Sedimentary Aquifers projects Maëlle Brémaud, University of Strathclyde

EGC 2023 PROGRAMME: DAY 2 - Wednesday 17 May - Morning

EGC 2023 PROGRAMME: DAY 2 - Wednesday 17 May - Afternoon

	HALL 1	HALL 2	HALL 3	HALL 4		HALL 1	HALL 2	HALL 3	HALL 4
08.00	R	egistration, refreshments,	networking and poster viewi	ng	12.35		Lunch, network	ing and poster viewing	
	Exploration in the Energy Transition (continued)	Emerging Geothermal (continued)	Containment	Fault and Fracture Characterisation for the Energy Transition	13.25		Future Outlooks Lunchtime Talk: Characterizing the subsurface: a critical element of the energy transition		
	Developing New Prospects in Mature Basins The Selene prospect:	How can the geothermal potential of low-mid temperature sedimentary	Seal Integrity for C02 Seal integrity evaluation of	The role of chemistry in fracture pattern development: applications			Professsor Mike Simmons, Halliburton		
09.00	Quantifying depth uncertainty in a mature basin to unlock a missed opportunity. Tom Cafferkey, Deltic Energy	basins be realized? An integrated overview. Simon Todd, Causeway Geothermal	potential CO2 storage sites in depleted oil fields using mud gas logs and leakage phenomena Henrik I. Petersen, GEUS	to the energy transition Stephen Laubach, University of Texas Austin		Exploration in the Energy Transition (continued) Exploration, Screening and	Subsurface Modelling for Energy Projects (continued) Diverse Modelling	Containment (continued) Interactions Between Rocks	Salt as Store, Seal, Trap and Repository
09.25	* * Alwyn East ex- ploration well Jose Luis Megchun Rivera, TotalEnergies	An Update on the United Downs Geothermal Power Project, Cornwall, UK Hazel Farndale, Geothermal Engineering Ltd	Caprock Wettabilty Under CO2 GeoStorage Conditions Alex Lee, ExxonMobil	Modelling Fractures in Geoenergy Applications <i>Professor Sebastian Geiger,</i> <i>TU Delft</i>	13.50	Siting Across the Energy Spectrum (continued) A Workflow for Carbon Storage Site Exploration, and its Similarities and Differences with Traditional Oil and Gas Exploration Dominic Skinner, ERCE	Applications Integration of Geological Process Modeling (GPM) for achieving realistic history matching scenarios for an Eocene Carbonate Field in the Middle East	and Fluid The Geomechanical Challenges of Massive Scale CO2 Sequestration Professor Mark Zoback, Stanford University	The Role of Salt Tectonics in the Energy Transition: An Overview and Future Challenges Oliver Duffy, Bureau of Economic Geology University of Texas at Austin
09.50	The Isolde prospect and Central North Sea welded diapir evolution: quantifying a previously invisible trap and understanding hydrocarbon containment Graham Goffey, Soliton Resources	The characterisation of hypogenic void systems in Mississippian carbonates (UK) and implications for geothermal heat production Prof. Cathy Hollis, University of Manchester	Using inherent geochemical fingerprints to verify the security of CO2 storage Stuart Gilfillan, University of Edinburgh	Structure and Tectonics is at the centre of the Energy Transition Douglas Paton, TectonKnow	14.15	Oil & Gas Industry Seismic Interpretation Best Practice for Nuclear Waste Repository site selection and characterization: Why not? An example from Northern Switzerland	Ammar Ahmed, SLB Unconventional Fractal Modelling and Simulation of Heterogeneous and Anisotropic Reservoirs Professor Paul Glover, University of Leeds	Safe underground Hydrogen storage in porous subsurface reservoirs (SHINE): a new European interdisciplinary projec aiming at exploring the hydrogen interaction with porous reservoir Katriona Edlmann, Edinburgh	Salt as a Storage Medium Sustainable underground hydrogen storage in salt caverns: An integrated multi- scale approach to salt cavern operations and abandonment Tobias Baumann, Smart
10.15	The Dutch Q-blocks: creating exploration and appraisal opportunities to accelerate low-carbon- footprint gas production	Performance analysis of a CO2-plume geothermal system in 2D fluvial formations using subsurface metrics Amir Norouzi, University of Manchester Decarbonising Heat at the University of Manchester. Understanding the geothermal	heterogeneity on mudrock seals to CO2 storage reservoirs, via the multiscale- multiproxy characterisation of the well-exposed Lower Jurassic Redcar Mudstone	Cutting-Edge Technology in 3d Modelling of Fault and Fracture Systems: How close can we get to the geological reality? Janpieter van Dijk, OCRE	14.40	Valantina Zampetti, NAGRA The Dutch SCAN Geothermal Exploration Well Campaign: from leads to wells Marten ter Borgh, EBN	How to represent fracture systems volumetrically in an upscaled model? Mohammed Saiful Islam, Amer. University of Middle East.	University The Effect of Authigenic Clays on Fault Zone Permeability Natalie Farrell, University of Manchester	Tectonics Zechstein stratigraphy and facies variability in the Forth Approaches Basin, UKCS: Implications for salt cavern storage Rachel Brackenridge, University of Aberdeen
	through quantitative seismic interpretation and modelling. Kike Beintema, Kistos	potential of GreaterManchester throughsubsurface geologicalmodellingDavid Johnstone,University of Manchester	Formation, Cleveland Basin, UK. Colm Pierce, CASP	Geoscience Services		Cornish Lithium: Exploration for lithium-enriched	Pore-scale Modelling of Polymeric Solutions in Porous Medium Amna Al-Qenae, University of Manchester	Modelling the impact of hydrodynamic flow on	Utilising publicly available datasets for identifying offshore salt strata and developing salt caverns for hydrogen storage Craig Allsop, University of
10.40		Refreshments, networl	king and poster viewing		15.05	geothermal waters in Southwest England	Conceptualization of the sustainability of heat recovery	capillary seals using the	Strathclyde
	Exploration, Screening and Siting Across the Energy Spectrum	Subsurface Modelling For Energy Projects	Leakage - Recognition and Solution	**		Alexander Hudson, Cornish Lithium	from mine-water reservoirs: what does really matter? Mylène Receveur,	Manzocchi & Childs model: Theory and Application Neil Grant, ConocoPhillips	Compressed Air Energy and Hydrogen Storage Potential in Salt Structures
11.20	A methodology for regional assessment of subsurface	The Evolution of Modelling	Analysis and modelling of	Analogues to fault integrity in CO2 containment studies			University of Edinburgh		in the UK Sector of the Southern North Sea Sjastri Hansen, Royal
	energy and CO2 storage resources in underexplored	Same subsurface, different fluids, new	Analysis and modelling of leakage above gas fields	from hydrocarbon column traps against active faults	15.30		Refreshments, networ	rking and poster viewing	Holloway University London
	basins: a case-study of the Irish Atlantic margin Conor O'Sullivan, Jacobs	purposes (so what's different for modellers?) Professor Mark Bentley, TRACS & Heriot-Watt University	Martino Foschi, University of Oxford	Chris Wibberley, Total Energies	10.00	A holistic mindset -	Modelling for Hydrocarbons, CO2 Storage and Nuclear Waste Disposal	Geomicrobiology in Storage and Exploration	Please DON'T pass the salt! How a long-ignored
11.45	Evaluating the Carbon Storage Potential of Depleted Gas Fields in the Dutch Offshore Sector of the Southern North Sea Martha Vinhais Gutierrez, Heriot-	State of the art in modelling for geothermal - similarities and differences with oil and gas modelling John O'Sullivan, University of Aukland	A novel approach to quantify the risk of CO2 leakage through legacy wells in a CO2 storage site Ali Mojaddam Zadeh, Equinor ASA	Microfracture detection in microscopic images using an object-based machine learning approach Issac Sujay Anand John Jayachandran, Texas A and M	16.00	knowledge transfer applied from hydrocarbon exploration to mineral systems Graeme Nicoll, Halliburton	Dynamic assessment of fault and fracture stability using in- tegrated structural modelling and CO2 injection simulation Leah Swan, Petroleum Experts	Microbiological impacts of subsurface engineering Sophie Nixon, University of Manchester	geological formation is now becoming the centre of attention for underground storage. Edward Henden, Atkins
	Watt University		Rapid sealing of bed rock	University		How exportise in exismic	Closing the loop: bringing	Using molecular biological	Imaging Advances and Structural Evolution
12.10	Deep geological disposal of nuclear waste - recent progress with the programme in England and Wales Jonathan Turner, Nuclear Waste Services	The role of subsurface models to evaluate geo-containment for safe storage of CO2 – A case study of the Porthos CCS project in the Netherlands Gloria Thurschmid, EBN	a new technology for sealing	Time-lapse synchrotron imaging and quantification of fracture initiation and propagation in shales and mudstones Lin Ma, University of Manchester	16.25	How expertise in seismic reflection data and basin analysis can help in metals exploration Taija Torvela, University of Leeds	back geological and geophysical features into an automatic history matched model - Buchan Redevelopment (UK) Helene Nicole, Jersey Oil & Gas	techniques for hydrocarbon prospecting – The PROSPECTOMICS Project Jens Kallmeyer, GFZ German Research Centre for Geosciences	CNS Salt like you've never seen it before: Using OBN seismic to unlock the secrets of the East Central Graben Ben Twigger, BP

HALL 3	

EGC 2023 PROGRAMME: DAY 2 - Wednesday 17 May - Afternoon

EGC 2023 PROGRAMME: DAY 3 - Thursday 18 May - Morning

	HALL 1	HALL 2	HALL 3	HALL 4		HALL 1	HALL 2	HALL 3	HALL 4
		Subsurface Modelling for Energy Projects	Containment (continued)	Salt as Store, Seal, Trap and Repository	08.00			, networking and poster viewi	
		(continued) Modelling Geothermal, Nuclear Waste Disposal and	Geomicrobiology in Storage	(continued) Imaging Advances and Structural Evolution		Early Life, Late Life, New Life	Geophysics and Geoscience for Energy Developments	Exploration in the Energy Transition (continued)	Fault and Fracture Characterisation for the Energy Transition (continued)
		CO2 Storage (continued)	and Exploration (continued) Geochemical detection	(continued)			Ground Modelling for Offshore Wind	Natural Hydrogen and Helium	
16.50	Carbon storage: Are barriers to successful implementation technical, regulatory, political or	Prediction of Formation Compressibility and Secondary Gas Cap Development from Seabed and Downhole Tidal Pressure	of hydrocarbon reservoirs from marine surface sediments Ellen Schnabel, GFZ German Research Centre for Geosciences	Systematic regional kinematic classification of multi-stage salt structures in the Southern North Sea salt basin	09.00	The UKCS in Transition. Some- thing Borrowed, Something Blue Nick Richardson, North Sea Transition Authority	Why more geoscience is crucial to the sustainable development of offshore wind Professor David Hodgson, University of Leeds	Professor Jon Gluyas, Durham Energy Institute	Quantifying fault stability for the energy transition Professor David Healy, University of Aberdeen
	EXPERT PANEL: TBC	Energy Plc	The Geomicrobiology of Hydrogen Storage Aidan Jaques, Newcastle University	Gerardo Gaitan, Royal Holloway University, London	09.25	The Arran Field Development – New Gas Production in the CNS David Webster, Shell UK Ltd.	Conceptualisation of possible ground model interpretations for the St Brieuc Offshore Wind Farm Offshore Substation Jordan Geear, Atkins Global		Integrated structural- geomechanical fault integrity risk assessment for CCS Kevin Bisdom, Shell
17.15		Comparative modelling of advective gas flow Elena Tamayo-Mas, British	diversity in pristine oil reservoirs Armando Alibrandi, GFZ German	Between Pre-Salt and Post-Salt Faults Across the Southern North Sea Basin Anna Preiss, Royal Holloway University, London		*	Linking geophysical and geotechnical data from a glaciated landscape; to optimise front-end engineering design for		Multisople characterie "
17.40		End of day 2				Successful exploitation of Shallow Gas Field in the Netherlands Quad A and B area. Nick Dancer, Petrogas	offshore renewable energy projects Hannah Gandley, Bangor University Working smarter in offshore wind site characterization and ground modelling: integration, integration, integration! Hannah Petrie, University of Bergen	,	Multiscale characterization of the fault and fracture networks of granitic rocks and implications for deep geoenergy Gianluca Amicarelli, Newcastle University
		A REAL PROPERTY OF			10.15	Pre- and post-injection dynamic modelling of CO2 injection in a depleted oil field - the Greensand CO2 storage project, Danish North Sea Kasia Dominek, INEOS Energy	seismic inversion algorithm for use in shallow subsurface site characterisation Ana Somoza, Cegal	Unlocking Tanzania's Helium Province Lorna Blaisse, HeliumOne	Using new spatial arrangement methods to document fractures in hydrocarbon and geothermal reservoirs and reservoir outcrop analogs Qiqi Wang, University of Texas, Austin
	Alexander - Julia	A A A A A A A A A A A A A A A A A A A	and supported to		10.40			rking and poster viewing	The important
					11.20	The Basal Rotliegend, a wind-powered gas development and multi-TCF follow-up target - Dutch/ German Offshore border area Richard Huisin 't Veld, ONEDyas	Ground modelling of geohazards in offshore wind farm development James Moore, Orsted	Identifying the mechanism of Primary N2-He gas field formation Anran Cheng, University of Oxford	The importance of understanding hydrothermal alteration in fault related geothermal systems in Cornwall Nathaniel Forbes Inskip, Heriot- Watt University
				6.3°	11.45	The Evelyn field development, UKCS. Forty years in the making Richard Hiney, Tailwind Energy	Subsea cables on deglaciated continental shelves: key geological and geoengineeing considerations Bartosz Kurjanski, Atkins Global	Native hydrogen and helium exploration: A new frontier in the energy transition Ranald Kelly, CGG	fractures and pattern reconstruction Mahmood Shakiba, University of Texas
			1.35 F			Integration of high		Hydrogen Habitats and Exploration	Numerical investigation of surface wave anisotropy for fault characterisation in
					12.10	quality data into subsurface models to maximise the economic recovery of the Culzean Field Chris Bugg, TotalEnergies	Capturing uncertainty in quantitative ground models for offshore renewables Mark Vardy, SAND Geophysics	Natural hydrogen in Australia Emanuelle Frery, CSIRO	geothermal fields Heather Kennedy, Aberdeen University Numerical Modeling of Natural Fracture Pattern Using 3D Coupled Model Byungtark Lee, University of Texas at Austin

EGC 2023 PROGRAMME: DAY 3 - Thursday 18 May - Afternoon

	HALL 1	HALL 2	HALL 3	HALL 4
12.35		Lunch, networkin	g and poster viewing	
13.25		Future Outlooks Lunchtime Talk Be an Energy Geoscientist - make a difference Professors: Bernie Vining, Royal Holloway University London, Jon Redfern University of Manchester, Joe Court, Shell		
	Early Life, Late Life, New Life (continued)	Geophysics and Geoscience for Energy Developments (continued)	Exploration in the Energy Transition (continued)	Salt as Store, Seal, Trap and Repository (continued)
		Geophysics in Geological Disposal and Energy	Hydrogen Habitats and Exploration (continued)	Heatflow, Modelling and Geomechanics
13.50	Geological considerations when repurposing a depleted gas field for CO2 storage – examples from the Porthos CCS project Allard Van der Molen, EBN	The role of seismic ** reservoir characterization in the evaluation of a carbon storage site: An integrated seismic- simulation case study from the Bunter Formation, UK SNS Nick Lee, PGS	Exploring for natural (gold) hydrogen as a societal resource Professor Chris Ballentine, University of Oxford	Salt intrusions and their relevance for geothermal exploration Alexandros Daniilidis, TU Delft
14.15	Geological and Dynamic Controls on Captain Sandstone Reservoir Correlation, Connectivity & Architecture as part of the Acorn Project Site Characterisation Julie Coughtrie, Shell	A porpoise and a geophysicist – how can the eSource please these two mammals at the same time? Nick Hall, ONEDyas	The Bourakebougou natural hydrogen reservoirs in MaliOmar Maiga, IFPHydrogen and the Amadeus Basin Thomas Renshaw, University of Oxford	Coupled Modelling of Brine Availability in Salt-Based Disposal Facilities – Learning from DECOVALEX 2023 Steven Benbow, Quintessa
14.40	The Cygnus field - New strategies for maximising economic recovery Calvin Roberts, Neptune E & P	The UK's first high density nodal joint active and passive seismic survey for geothermal exploration Mark Ireland, University of Newcastle	The Strategic Search for Subsurface Hydrogen: Defining New Play Concepts Owen Sutcliffe, Halliburton	Intra- and post-salt structural variability in rifted margins - a geodynamic modelling approach Leonardo Pichel, University of Bergen
15.05	Case Study: Onshore Tight Gas Development Success in Khazzan Field, Oman Khalil Al Rashdi, BP	The use of 1980s legacy data to image shallow geology in the Irish Sea Christian Strand, Nuclear Waste Services	* * Natural Hydrogen – a Review of Habitats, Subsurface Systems and Exploration Potential Owain Jackson, H2Au	Stress and pore pressure in mudrocks bounding salt systems Maria Nikolinakou, Bureau of Economic Geology, University of Texas Austin
15.30		Refreshments, network	ing and poster viewing	
		Subsurface Modelling for Energy Projects (continued)	Containment (continued)	Seal Characterisation and Capability
16.00	* NET ZERO	Modelling for Geothermal Nuclear Waste Disposal and CO2 Storage	Monitoring	Core to seismic scale characterisation of the internal heterogeneity of evaporite sequences and
	CHALLENGES DEBATE Hydrogen: this house believes that hydrogen, in all its colours, is being oversold as a decarbonisation solution	Sub-surface challenges: Modelling key processes in mine water heating and storage systems Fiona Todd, University of Edinburgh	MMV Performance at the Quest CCS Facility Simon O'Brien, Shell Canada	the implications for carbon capture storage and saltcavern development Hector Barnett, Newcastle University
16.25	EXPERT PANEL: TBC	Shallow Geothermal Resources Assessment: 3D Geological modelling and 3D geothermal resources assessment Vaiva Cypaite, Seequent	Feasibility of 4D microgravimetric monitoring of a CO2 flood in a depleted gas reservoir Marth Lien, Reach Subsea	Study of field analogues fractured megaflaps: anticipating the seal capability and drilling hazards by understanding their multi-scale damage and kinematics Marine Lartingu University Pau

EGC 2023 PROGRAMME: DAY 3 - Thursday 18 May - Afternoon

Closing Plen Dr Karen Hanghøj,	6.55
Awards and Professor John Underhill, Univer	7.20
Confe	7.45

PROGRAMME OVERVIEW

Tuesday 16 May

16

08.00-09.20 - Registration | arrival refreshments 11.20-11.50 – Mid-morning refreshments 12.40-13.30 - Lunch | poster viewing 15.35-16.05 - Afternoon refreshments 17.45-19.15 – Networking reception 19.30 - End of day 1

Wednesday 17 May

08.00-09.00 – Arrival refreshments 10.40-11.20 – Mid-morning refreshments 12.35-13.25 - Lunch | poster viewing 15.30-16.00 - Afternoon refreshments 17.40 – End of day 2

Thursday 18 May

08.00-09.00 – Arrival refreshments 10.40-11.20 – Mid-morning refreshments 12.35-13.25 – Lunch | poster viewing 15.30-16.00 – Afternoon refreshments 17.45 - End of EGC 2023 Conference

TECHNICAL POSTERS

Posters will be available to view at all times and a schedule will be developed to facilitate poster presentations and dialogue with poster presenters. It is also intended that a number of posters will include relevant slabbed core displays. A full list of posters can be found on the following pages.

SESSION KEY

Marine Lartigau, University Pau

- (_) Early career highlight talk
- No post-event online catchup video *
- ** No live stream or post-event online video

ary Talk - TITLE TBC i, British Geological Survey

nd Closing Remarks ersity of Aberdeen and Caroline Gill, Shell

erence Close

EGC 2023 POSTERS

EXPLORATION IN THE ENERGY TRANSITION

Renewed Hydrocarbon Exploration and Preliminary Assessments of CCS and Geothermal Potential in the Kura-Kartli Basin, Onshore Central Georgia Paolo Pace. PACE Geosciences

Carbon storage options in the Inde Shelf and Cleaver Bank areas. Southern North Sea Ellen Mears, Heriot-Watt University

Probabilistic Assessment on the Role of Structural Features Related to Helium Occurrences in the Four Corners Region of the Colorado Plateau, USA Daniel Halford, University of Oxford

Geological characterization of the "Fonts-Bouillants" helium discovery - France Emma Russier, 458 Energy

Late Devonian to Early Carboniferous tectonostratigraphy and paleogeography in the British, Norwegian, Danish, German and Dutch sectors of the Central and Southern North Sea Renaud Bourellec, TNO

Differential deformation in the southern Sichuan Basin and its influence on hydrocarbon accumulation Guimin Feng. China University of Petroleum, Beijing

FAULT AND FRACTURE **CHARACTERISATION FOR THE ENERGY TRANSITION**

Spatial analysis of fractures and pattern reconstruction Mahmood Shakiba, University of Texas at Austin

Using rigid block DEM to asses the impact of fault geometry and rock properties on fault reactivation Janis Aleksans, University College Dublin Is aspect ratio enough to separate microfractures and pores in thin-section images? A tiered multi-dimensional object-classification approach using unsupervised and supervised machine learning Issac Sujay Anand John Jayachandran, Texas A and M

Characterising a rock fracture rough surface using spatial continuity and kriging: from semi-variograms and an upscaled surface Goncalo Cunha, University of Edinburgh

Quantification of spatial arrangement in two dimensions using fracture trace and barycenter Rodrigo Correa, University Texas Austin

Mapping fracture trace patterns in outcrop analogs for low-enthalpy geothermal targets: the role of contingent nodes Stephanie Forstner, University Texas Austin

GEOPHYSICS AND GEOSCIENCE FOR ENERGY DEVELOPMENTS

Using seismic modelling to explore pattern similarities between fluid conduits and near-surface velocity effects Saad Almaki, University of Mancs

Improving Reservoir Characterization using new Seismic frequency enhancement technique and Pre-stack direct elastic properties Inversion-North Sea examples Can Yang, Seismic Image Processing

Leveraging the use of repurposed Oil and Gas 2D seismic data to de-risk offshore wind farm development projects. A case study from the Central North Sea Clement Tam, Atkins Global

Low-cost time-lapse seismic monitoring with sparse acquisition Afsaneh Mohammadzaheri, University of Leeds

Powering the energy transition through subsurface collaboration

From reservoir characterisation to site investigation: retrofitting a stochastic, facies - based seismic inversion algorithm for use in shallow subsurface site characterisation Ana Somoza, Cegal

WEB-AVO inversion for geothermal project development: a 3D Triassic reservoir characterization case study in the West Netherlands Basin Lennart Hanemaaijer, EBN

Karstic related ground risk and remedialmanagement in existing assets using an integrated geophysical approach Shekhar Majumdar, Fugro

Where is my bedrock? Bartosz Kurjanski, Atkins

CenoStore: Understanding the Late Cenozoic succession of the North Sea Basin and implications for subsurface CO2 containment Georgina Heldreich, University of Manchester

EMERGING GEOTHERMAL

Modelling & Optimization of Geothermal Energy in the Gulf of Suez Amira Abdelhafez, University of Manchester

Geothermal Energy Opportunities and Challenges in Puerto Rico Melody Cosme Morales, University of Puerto Rico Mayaguez

Geological setting of the Hui Nam Ron hot spring in Ranong and Surat Thani, Southern Thailand Pitsanupong Kanjanapayont, Chulalongkorn University, Bangkok

EGC 2023 POSTERS

De-risking Dutch geothermal plays by acquiring subsurface data - the SCAN borehole data-acquisition strategy Adriaan Janszen, EBN

Investigating and quantifying the geothermal energy potential from mine water of abandoned coalfields within the Greater Leeds area in the UK Professor Sandra Piazolo, University of Leeds

The Potential of Sherwood Sandstone Group as an Aquifer for Aquifer Thermal Energy Storage Shuangyi Gong, University of Manchester

GEOSCIENCE IN CCUS

Geomechanical Simulation Case Study of CO2 Injection in a Carbonate Reservoir Stephen Morgan, ExxonMobil

Natural CO2 accumulations and the implications for prospective storage sites in the northern East Irish Sea Basin, UK Sam Head, Heriot-Watt University

The Lower to Middle Triassic Bunter Sandstone CO2 storage complex of the Southern North Sea: multi-disciplinary reservoir and seal investigation Niall W. Paterson, CASP

The potential of in-situ CO2 mineralisation within onshore UK formations Angus Montgomery, University of Edinburgh

Feasibility study of geological CO2 storage in the Khorat Plateau. Thailand: from seismic and well data to 3D modeling Piyaphong Chenrai, Chulalongkorn University, Bangkok

CO2-brine-rock interactions from Pha Nok Khao reservoir rock: implications for geological CO2 storage Thitiphan Assawincharoenkij, Chulalongkorn University, Bangkok

The importance of estimating vertical permeability in Bunter Sandstone reservoirs Keith Milne, TRACS

Outcrop-based fracture characterisation of Permian carbonate reservoir in NE Thailand with implication for geological storage of CO2 Sukonmeth Jitmahantakul, Chulalongkorn University, Bangkok

Seismic Characterization of Intraformation Layers in CO2 Storage Assesment Applying Machine Learning Approach Daniel Rendon Hernandez, AspenTech

Methodology for the development of consistent relative permeability and capillary pressure models for reservoir simulation of CCS projects Lisa Lun, ExxonMobil

Pore Scale Assessment of Potential Subsurface Carbon Storage Reservoirs Using Digital Image Analysis Domenico Chiarella, Royal Holloway University of London

SUBSURFACE MODELLING FOR **ENERGY PROJECTS**

Process-based modelling of development of hypogene void systems and implications for subsurface flow and the energy transition Wenwen Wei, University of Bristol

Reflection Seismic Thermometry: application in the North Viking Graben for CCS characterisation Arka Dvuti Sarkar. University of Manchester

Using numerical modelling for derisking mine water geothermal energy: application to the UK Geoenergy Observatory in Glasgow Andres Gonzalez Quiros, British Geological Survey

Quantifying the uncertainties in the rate of extractable heat from mine-water reservoirs: example of the Bilston Glen mine, Scotland Mylène Receveur, University of Edinburgh

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Applying Forward Stratigraphic & Assisted Property Modeling for Predicting & Evaluating Shallow Surface Sedimentation for Offshore Wind Farms Ammar Ahmad, Schlumberger

Geothermal Potential Assessment Through an Integrated and Agile Modeling Solution Astrid Jonet, AspenTech

MISCELLANEOUS

Multi-scale and multiapproach investigation of subsurface hydrogen storage Heather Braid, University of Manchester

Clay grain coat identification and quantification using Microfocus X-Ray Computed Tomography (MXCT) – A case study from a deeply buried sandstone, Norwegian North Sea James Houghton, University of Liverpool

The Geological Evaluation of Low Carbon Energy Solutions in North-East England. Rifky Wijanarko, Heriot-Watt University

Primary REE potential related to granitic rocks in Thailand: Evidence from mineral chemistry and geochemistry Alongkot Fanka, Chulalongkorn University, Bangkok

Lithofacies classification and identification using artificial neural networks in the Bunter Sandstone Formation of the UK Southern North Sea Zhenghong Li, Univ. of Manchester

Application of Digital Enablers to the Siting of Radioactive Waste Disposal Facilities Antonia Newlands, Mott MacDonald

Making onshore subsurface data accessible to all Malcolm Butler, UK Onshore Geophysical l ibrarv

Are We Fully Utilising an Easily Accessible World Class Geoscience Resource in the Energy Transition? #ScotlandsGeoLab Steve Adams, Balgownie Geoscience



EGC 2023 POSTERS (continued)

CONTAINMENT

A Methodology for Deciding on Well Seal Options for Abandonment *Renato Zagorscak, Quintessa*

Development of tufa deposits associated with the dewatering of a radioactive waste disposal facility *Graeme Morgan, Dounreay Site Restoration Ltd.*

The Effect of Authigenic Clays on Fault Zone Permeability Natalie Farrell, University of Manchester

Seismic modelling of nearsurface velocity effects Saad Almalki, University of Manchester

Insights in metagenomic diversity in pristine oil reservoirs *Armando Alibrandi, GFZ German Centre for Geoscience Research*

Incorporating Rock Matrix Diffusion in SafetyAssessment Models for Radioactive WasteDisposal in Porous Ro cks *Richard Metcalfe, Quintessa* Quantifying the predicted seismic response of CO2 injection into a depleted gas reservoir *Sarah Harrington, Schlumberger*

3D Visualization of hydrogen storage in sandstones at reservoir conditions *Zaid Jangda, Heriot Watt University*

Monitoring Seal Integrity Using Self-Growing Neural Network (SGNN) Classification *Ross Findlay, AspenTech*

Subsurface Radioactive Waste Disposal Successes Antonia Newlands, Mott MacDonald

SALT AS A STORE, SEAL, TRAP AND REPOSITORY

Regional variability of mobilisation and kinematics of salt tectonics in the Mesozoic and Cenozoic Southern North Sea sub basins *Christopher Brennan, Royal Holloway University of London*

Regional Subsurface Mapping of the Cheshire Basin Salt Beds for Underground Storage of Hydrogen David Johnstone, University of Manchester



EGC1

Powering the energy transition through subsurface collaboration

energygeoscienceconf.org #EGC2023 Fluid flow in the central Algerian basin: interaction between the Mediterranean Salt Giant, volcanic basement and fluid circulation *Simon Blondel, University Oslo*

3D Seismic classification of salt structure morphologies across the Southern North Sea *Christopher Brennan, Royal Holloway University of London*

Mapping and Analysing Presalt Fault Trends – Example from the Southern North Sea Anna Preiss, Royal Holloway, University of London

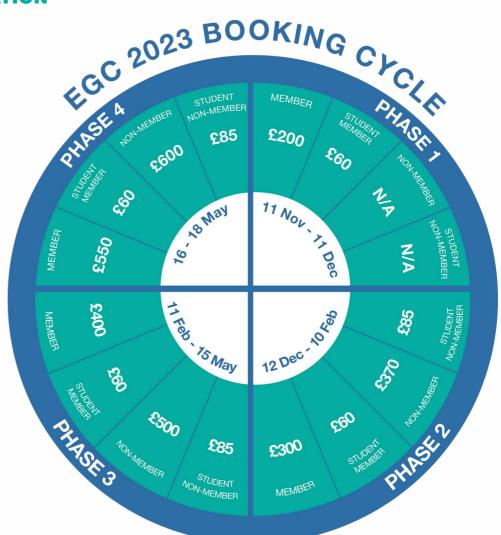
Optimising Site Selection for CO2 Storage in Salt Basins: the Norwegian-Danish Basin, a future European energy hub Sian Evans, University of Oslo

Development of a regional model for the geometry, origin, and kinematics of Triassic salt diapirs and minibasins in the Central North Sea *Mar Moragas, University of Bergen*

The Role of Compositional Variations in the Zechstein Supergroup on Styles of Salt Tectonics: An Example from the Ling Depression, Norwegian Central North Sea Tarek Galhom, University of Bergen

Potential for Hydrogen Storage in Salt Caverns in the Kish Bank Basin Sam Irwin, SLR

REGISTRATION



Please note: all rates exclude VAT Online tickets and group bookings available Visit the registration page on the EGC 2023 website for more information.

https://www.energygeoscienceconf.org/events/energy-geoscience-conference-2023/

FIELD TRIPS & WORKSHOPS

An exciting suite of field trips and workshops reflecting the conference themes are being planned for Monday 15 May, Wednesday 17 May (evening), and Friday 19 May. These include day trips to the Old Red Sandstone and to the Permo-Triassic Hopeman Sandstone Fm. (CO2 storage oriented) and an evening trip to the Highland Boundary Fault, followed by fish and chip supper. Details are progressively being added to the conference website, with booking arrangements to follow.

ACCOMMODATION

We are working with the accommodation agency Reservation Highway to provide discounted hotel accommodation at hotels close to P&J Live Aberdeen, exclusively for EGC 2023 attendees.

Web: www.reservation-highway.co.uk/egc23 Tel: +44 (0) 1423 525577 Email: admin@reservation-highway.co.uk

