



Salt Tectonics in the Energy Transition

23rd – 24th September 2024

HYBRID CONFERENCE PROGRAMME



The
Geological
Society

Monday 23rd September

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| 09:00-09:15 | Opening & Welcome | |
| 09:15-09:35 | Paleogeography and tectono-stratigraphic evolution of the Aptian Ezanga-Loémé evaporites along the proximal domain of the south Gabon-Congo-Cabinda margin | Alexandre Pichat (<i>TotalEnergies / Univeristé de Pau et des Pays de l'Adour</i>) |
| 09:35-09:55 | Depositional models for giant salt deposits and their implications for the safety and stability of hydrogen storage cavern | Frank J Peel (<i>The University of Texas at Austin</i>) |
| 09:55-10:15 | Basinwide development of km-scale gypsum networks: evidence for heterogeneity in evaporitic depositional systems | Jimmy Moneron (<i>University of Oxford</i>) |
| 10:15-10:35 | Salt Tectonics synchronous with salt deposition in the Santos Basin (Ariri formation, offshore Brazil) | Naim Célini (<i>Akkodis</i>) |
| 10:35-11:10 | Break | |
| 11:10-11:30 | Geomechanical Insights into Salt-Bearing Rifted Margins: Numerical Modeling and Implications for Geological Storage | Mahdi Bakhtbidar (<i>Institut de Recerca UB-Geomodels</i>) **Virtual |
| 11:30-11:50 | The Birth, Evolution, and Death of Polygonal Diapir Arrays: Insights from the Norwegian Central North Sea | Mar Moragas (<i>Geosciences Barcelona (GEO3BCN-CSIC), Barcelona, Spain</i>) |
| 11:50-12:10 | 3D Geometry and Evolution of Salt Walls and Surrounding Minibasins: Contrasting Styles from the Norwegian Central North Sea | Umut Isikalp (<i>University of Bergen</i>) |
| 12:10-12:30 | Fifth-order characterisation of sedimentology within halokinetic sequences | Kathryn Amos (<i>Adelaide</i>)**Virtual |
| 12:30-13:30 | Lunch | |
| 13:30-13:50 | Variable diapir origins and histories in the Basque Pyrenees: implications for intrasalt deformation | Mark G Rowan (<i>Rowan Consulting Inc</i>), |
| 13:50-14:10 | The role of intra-salt stratigraphy and lithological variability on the internal and external geometry of salt bodies – a numerical modelling approach | Leonardo Pichel |
| 14:10-14:30 | Architecture and controlling factors of intra-salt layers in diapiric structures: A numerical modelling approach | Manel Ramos (<i>Université de Pau et des Pays de l'Adour / University of Bergen</i>) |
| 14:30-14:50 | Influence of intra-Zechstein Supergroup (ZSG) composition on internal deformation styles: Examples from the United Kingdom and Norwegian Continental Shelves | Harya Dwi Nugraha (<i>University of Bergen / Center Sustainable Geoscience and Outreach (CSGO) / Universitas Pertamina, Indonesia</i>) |
| 14:50-15:10 | A semi-automated method to interpret layered evaporite sequence (LES) lithologies based on well-logs | Gabriela Salomao Martins (<i>Imperial College London (currently at AtkinsRéalis)</i>) |
| 15:10-16:10 | Break | |
| 16:10-16:30 | Welding a layered evaporite sequence | Christopher A.L. Jackson (<i>Imperial College London (currently at WSP)</i>) |
| 16:30-16:50 | Reproducing deformation of complex salt stratigraphies using analogue modelling: new insights in the frame of the energy transition | Naim Célini (<i>Akkodis</i>) |
| 16:50-17:10 | Diversity of turtle anticlines: from seismic examples to field observations | María Carrión-Jiménez (<i>Universitat Autònoma de Barcelona</i>) |
| 17:10-17:30 | Revisiting the structural evolution model of the Gina Krog Field: Implications for near-field exploration in a mature field amidst for the energy transition | Asdrúbal Bernal (<i>Equinor ASA</i>) |
| 17:30 | End of Day One | |

Tuesday 24th September

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| 09:00-09:05 | Opening words | |
| 09:05-09:35 | Microphysics of rocksalt deformation: State of the art and implications for solution mining and energy storage | Chris Spiers |
| 09:35-09:55 | Internal Deformation of a thin Layered Evaporite Sequence: Implications for hydrogen storage (Neuquén Basin, Argentina) | Rodolfo Uranga (<i>Universitat de Barcelona</i>) |
| 09:55-10:15 | A lifecycle approach to hydrogen storage cavern design and execution – examples from Project HyStock in The Netherlands | Allard Van der Molen (<i>Nobian</i>) |
| 10:15-10:35 | Subsurface Energy Storage Potential in Salt Structures in the UK and Dutch Sectors of the Southern North Sea | Sjastri Hansen (<i>Royal Holloway, University of London</i>) |
| 10:35-11:10 | Break | |
| 11:10-11:30 | The Seismic Imageability of Internal Salt Architectures and Inclusions | Chris Willacy (<i>Shell Research Limited</i>) |
| 11:30-11:50 | On the role of thermal stresses in salt caverns for fast cyclic hydrogen storage | Herminio Tasinafo Honorio |
| 11:50-12:10 | Potential and challenges of offshore salt caverns for energy storage in the southern North Sea | David Waltham (<i>Royal Holloway, University of London</i>) |
| 12:10-12:30 | The energy potential in salt | Jørgen Clausen (<i>SaltPower</i>) |
| 12:30-13:30 | Lunch | |
| 13:30-13:50 | Underground Hydrogen Storage in salt– views and lessons from a mining authority | Elisenda Bakker (<i>State Supervision of Mines</i>) |
| 13:50-14:10 | 3D Geological Modelling of the Internal Structure of the Asse Salt Diapir, Germany | York Fisser (<i>Federal Institute for Geosciences and Natural Resources (BGR)</i>) |
| 14:10-14:30 | Salt as a Host Rock for Caverns and Radioactive Waste Storage: Multiscale Challenges and Insights from Coupled Numerical Modeling | Tobias S. Baumann (<i>smartTectonics GmbH</i>) |
| 14:30-15:10 | Salt-embedded basins as geothermal reservoirs: a petrological and thermophysical study of the sedimentary succession of the Estopanyà and Boix synclines (South-Central Pyrenees, NE Spain) | Pedro Ramirez-Perez (<i>SGR Geologia Sedimentària / IR Geomodels, Universitat de Barcelona (UB)</i>) **Virtual |
| 15:10-15:50 | Break | |
| 15:50-16:10 | Understanding the riddles of energy and CO2 geostorage in and around salt structures from field examples in Portugal. | Pedro Barreto (<i>Geo Logica XYZ</i>) |
| 16:10-16:30 | Tectono-Stratigraphy Of The Norwegian-Danish Basin: Halokinetic Control On The Plays For CO2 Storage | Simon Blondel (<i>University of Oslo</i>) |
| 16:30-16:50 | Salt diapirs and minibasins of the Hummer Fault Zone, offshore Southern Norway – structural evolution and CO2-storage perspectives | Torsten Hundebøl Hansen (<i>University of Oslo</i>) |
| 16:50-17:10 | Catastrophic leakage through thick evaporite seals | Joe Cartwright (<i>University of Oxford</i>) |
| 17:10-17:30 | Closing Remarks | |
| 17:30 | End of Day Two | |

| Author | Poster Title |
|---|---|
| Sophie Godefroy (<i>SLB</i>) | Simulating long-term CO2 geological storage in depleted reservoirs and aquifers |
| Emma Bedda (<i>British Geological Survey</i>) | Zechstein halites as a potential hydrogen storage solution – Interim Results |
| Naomi Van Den Ameele (<i>Delft University of Technology</i>) | Quantification of the probability of induced seismicity associated with large-scale underground hydrogen storage in Dutch salt formations |
| Rachel E. Brackenridge (<i>University of Aberdeen</i>) | A drill down into the Zechstein: learnings from legacy hydrocarbon wells to understand drilling and salt cavern placement hazards. |
| Naïm Célini (<i>Akkodis</i>) | Reproducing deformation of complex salt stratigraphies using analogue modelling: new insights in the frame of the energy transition |
| Antonio Teixell (<i>Universitat Autònoma de Barcelona</i>) | High-resolution structure and salt-sediment interaction around an exposed salt sheet |
| Prosper Deitch (<i>Vrije Universiteit Amsterdam</i>) | Discovery of Palaeogene Halokinesis in the North Sea Basin |
| Daniele Blancone (<i>University of Stavanger</i>) | Hydrogen storage in salt caverns: a first screening of the potential in the Southern Norwegian North Sea |

Co-convenors:

Dr. Gonzalo Zamora (Repsol, Spain)
Dr. Oliver Duffy (Chevron, Houston, USA)
Dr. Oriol Ferrer (University of Barcelona, Spain)
Dr. Sian Lianne Evans (University of Oslo, Norway)
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THANK YOU

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