

PRO GRA MME



Centre for Sustainable
Subsurface Resources

Annual Conference 2023

12-13 September 2023

Clarion Hotel Bergen Airport



Centre for Sustainable
Subsurface Resources

Day 1 – Net-zero ambitions and the green transition on the NCS

12 September 2023



Location: Clarion Hotel Bergen Airport

Program – Day 1

08:30 Registration and coffee

Welcome

09:10 Welcome and housekeeping

Dr. Aksel Hiorth, *NORCE*

Opening remarks

Sarah Gasda, *CSSR Centre Director, NORCE*

Thor Arne Håverstad, *Chief Executive Officer, NORCE*

Kristine Spildo, *Deputy Dean for Climate and Energy, University of Bergen*

Morning session: Energy security, climate crisis and emerging technology needs

Opening keynote

09:30 Challenges for the energy transition and the role of porous media research

Martin Blunt, *Professor, Earth Science and Engineering, Imperial College London*

On-stage dialogue

10:00 CSSR's impact on knowledge and competence building for the energy transition

Carl Jörg Petersen, *Digitalization & Technology Lead, Wintershall Dea Norge / Chair of CSSR's Executive Board*

Dialogue with: **Sarah Gasda**, *CSSR Centre Director*

10:20 Break

Keynote talks

10:50 The NCS importance for energy security in Europe, and why reduction of GHG emissions continues to be a key priority

Gunnar Hjelmtveit Lille, *Managing Director at OG21, Research Council of Norway*

11:20 Viewpoints, status and trends on the sustainability & competitiveness of the NCS

Stephen Pattie, *Chief Technology Officer, Petoro*

CSSR PhD project pitches

11:50 Robust methodology for sustainable reservoir management

Mathias Nilsen, *NORCE/ University of Bergen*

Iterative coupling of physics-based and data-driven models in reservoir modeling

Peter Moritz von Schultendorff, *University of Bergen*

12:00 Lunch and networking



Afternoon session: Implementation and impact of electrification

Keynote talks

13:15 Gullfaks operational experience using energy from Hywind Tampen wind park
Frode Kversøy, *Leader Offshore Operations, Equinor*

13:45 Climate impact of electrification of the NCS
Berit Tennbakk, *Partner, THEMA Consulting*

14:15 Break

CSSR PhD project pitches

14:45 The Triassic sedimentology of the Horda platform & Utsira High: reservoir characterisation for CO₂ Storage, intermittent H₂ storage and intermittent hydrocarbon production

Kirabo Mugwanya Erismas, *University of Bergen*

Intermittent multiphase fluid flow in porous media and the effect on injectivity and reservoir performance

Tongtong Yu, *NORCE / University of Bergen*

Experimental reservoir physics relevant for underground hydrogen storage in porous media. Understanding microbial induced reactions during short-cycle storage

Raymond Mushabe, *University of Bergen*

Afternoon session 2: Accelerating CCS and underground hydrogen storage

Keynote talks

15:00 Model validation and assessment of forecasting capabilities for long-term CCS operations
Jan Martin Nordbotten, *Professor, University of Bergen / NORCE*

15:30 HYSTORIES: main technical results for renewable hydrogen underground storage
Yann le Gallo, *Senior engineer, Geostock*

Poster reception

16:00 – 17:00

Dinner

18:30 – 22:00

Questions/problems? +47 905 08 106 (CSSR Centre Director, Sarah Gasda)

Note: There will be pictures and videos taken during the annual conference that may later be used and published on webpages, social media account and reports. With respect to the GDPR rules, participants who do not wish to have pictures of themselves published are kindly asked to inform the organizers in writing (forms are available at the event). If no written notification is received by 11. September, we consider the participants to agree to the free usage of pictures and videos.



Centre for Sustainable
Subsurface Resources

Day 2 – Frontiers in subsurface research

13 September 2023



Location: Clarion Hotel Bergen Airport

Program – Day 2

08:30	Registration and coffee	
Welcome		
09:00	Welcome	Centre Director Sarah Gasda, <i>NORCE</i>
Invited talk: External Scientific Advisory Committee		
09:10	Upscaling Multiphase Fluid Flow in Heterogeneous Porous Media using Continuum Models with Embedded Pressure and Saturation Discontinuities	Professor Stephan Matthai, <i>University of Melbourne</i>
10:00 Break		
Deep dive 1: Pore- and core-scale fundamentals Moderator: Dr. Espen Jettestuen, <i>NORCE</i>		
Technical presentations		
10:30	Intermittency and core-scale injectivity: experiments and modeling	Dr. Ketil Djurhuus, <i>NORCE</i>
10:45	Trapping, hysteresis and Ostwald ripening in hydrogen storage: a pore-scale imaging study	Sepideh Goodarzi, <i>Imperial College London</i>
11:00	Ostwald ripening of trapped gas in the presence of oil and water in subsurface storage	Dr. Johan Olav Helland, <i>NORCE</i>
Poster pitches		
11:15	Poster session introduction and pitches	Professor Martin Fernø, <i>Physics and Technology, University of Bergen</i>
11:45 Lunch and poster viewing		
Deep dive 2: Improved understanding of underground hydrogen and CO₂ storage Moderator: Dr. Trine Mykkeltvedt, <i>NORCE</i>		
Keynote presentation		
13:30	Underground Hydrogen Storage	Professor Hadi Hajibeygi, <i>Geoscience and Engineering, TU Delft</i>
Technical presentations		
14:00	“Tiny but mighty” - insights on the microbial potential within underground hydrogen storage	Dr. Annie Biwen An-Stepec, <i>NORCE</i>
14:15	Salt precipitation during intermittent CO ₂ injection	Dr. Nematollah Zamani, <i>NORCE</i>



14:30 Break

Deep dive 3: Simulation and optimization of geo-energy systems

Moderator: Associate Professor Kundan Kumar, *UiB*

Keynote presentation

15:00 Thermochemical heat storage with reaction in porous media - why from REV to pore scale - Professor Rainer Helmig, *University of Stuttgart*

Technical presentations

15:30 Drogon model and survey of approaches to history matching Dr. Tor Harald Sandve, *NORCE*

15:45 Reactive optimization of production strategies based on wind energy Dr. Rolf Johan Lorentzen, *NORCE*

Reception and Departure

16:00 - 17:00

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