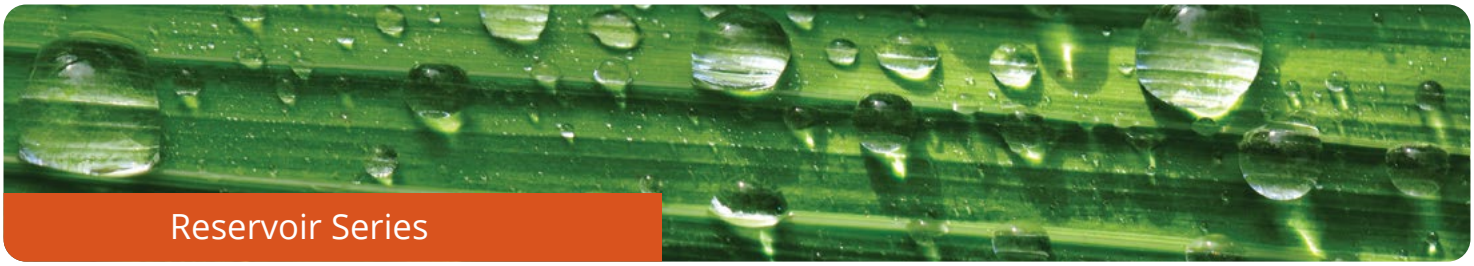


Reservoir Series

Modelling for CCS Projects

Designed for:
Anyone working in an asset team designing or evaluating the subsurface aspects of a CCS project: geoscientists, reservoir engineers, well engineers and team leads.

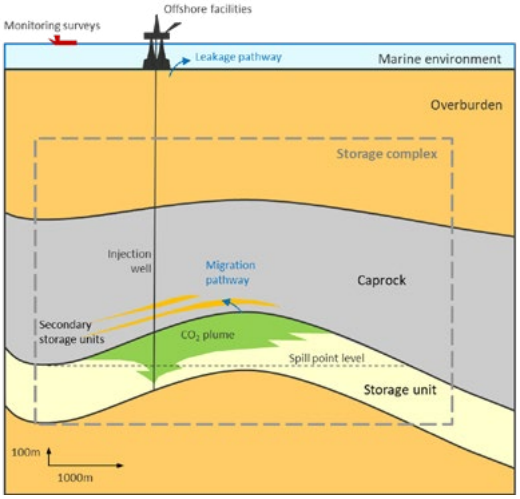
Duration
(days)
1 2 3 4 5
1/2 day sessions

Learning Level:
Skills
Knowledge
Awareness

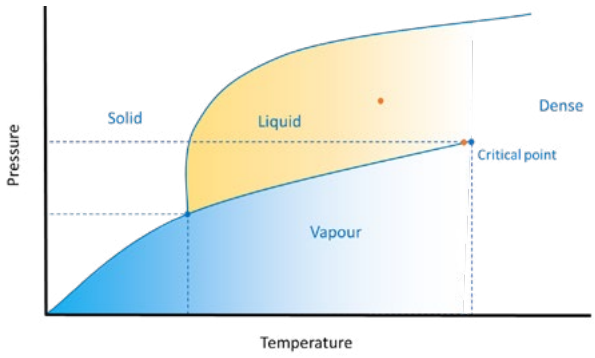
CCS projects have come of age as one of the tools to help meet targets set at the 2015 Paris Agreement. Company partnerships are generating project plans to these ends, but what constitutes a 'good' CCS proposal? What should be covered, and how should the modelling work be undertaken?

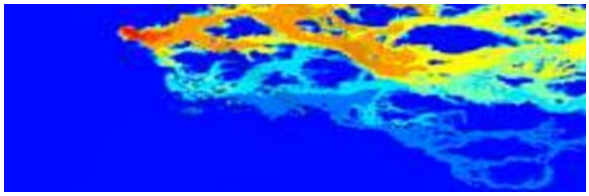
Whilst we can apply many of the skills associated with oil and gas development to CCS projects, the differences between production and storage projects are becoming clearer.

The starting assumption for many people was that oil and gas fields at the end of their life would be logical places to store the sequestered CO2 gas. This is not necessarily the case. Optimal project design draws on considerations of the geomechanics of the entire 'storage complex' around the target reservoir, the effects of multiphase flow under unfavourable mobility ratios, and the re-use and integrity of ageing infrastructure, which calls for representative modelling and monitoring of the system in timespans extending beyond a typical production lifecycle.

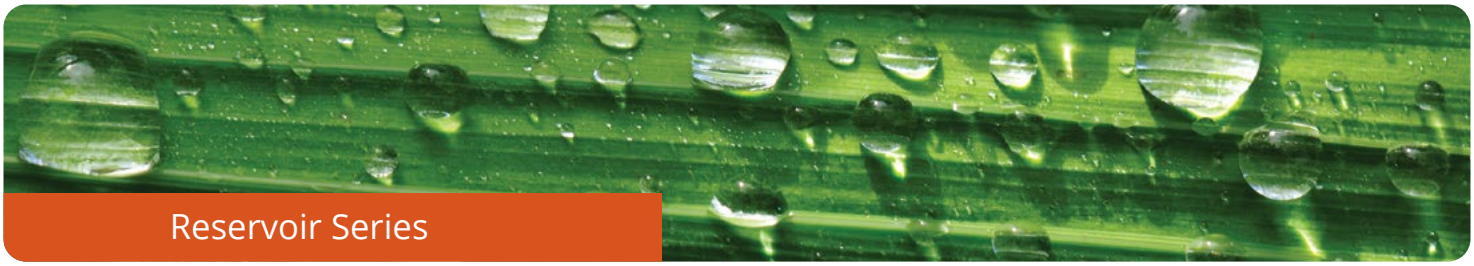


This short, modular course brings together domain experts in their respective fields to highlight areas for evaluation and modelling as part of any proposed CCS project.





Early Development
E&P Overview
Reservoir
Wells
Business & Risk
Open Air
Coaching
Master Class



Reservoir Series

Modelling for CCS Projects continued

Course Content

There are few active CCS projects globally, industry experience is limited and many topics are still subjects of active research. As a result, no single person can claim omniscience in all fields of CCS. Considerable domain expertise is available, however, and this course therefore aims to bring multiple contributors together from industry and academia to share perspectives from their respective disciplines.

Module 1 - Mark Bentley, Jerry Hadwin
The view from asset practitioners: model scale and data sparsity, role of heterogeneity, multi-scale modelling, CO2 properties in the reservoir, storativity and storage efficiency.

Module 2 - Florian Doster, Eric MacKay
Getting physics and chemistry right: pressure and plume evolution, simulation techniques, compositional behaviour, reactive transport, dissolution and mineralisation.

Module 3 - Tim Wynn
Geomechanics: stresses and rock properties, 1D and 3D modelling techniques, seal breach, fault leakage, uplift & tilting.

Module 4 - Steve Jewell
Wells: well types for a CCS project, well design, re-purposing existing wells, well integrity and decommissioning.

Module 5 - Steve Jewell, Colin Macbeth, Mark Bentley
Monitoring wells, monitoring the storage complex using 4D seismic, summary of issues to consider and capturing the resulting uncertainty.

Course Tutors

Mark Bentley
Geoscience
TRACS and Heriot-Watt

Tim Wynn
Principal Geoscientist
TRACS

Jerry Hadwin
Principal Reservoir Engineer
TRACS

Steve Jewell
Managing Director
WellDecom

Florian Doster
Professor,
Reservoir Engineering
Heriot-Watt

Colin Macbeth
Professor, Geophysics
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Eric MacKay
Chair in CCUS
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