Open Air Series

Fractured Reservoir Development (Sicily)

Designed for:

Geoscientists, petroleum engineers and decision-makers working on modelling and development of naturally fractured reservoirs: any people providing input to, or receiving output from, fractured reservoir development plans. The event is particularly useful for geoscience-engineering teams working fractured reservoir problems together.

Duration
(days)

1 2 3 4

Learning Level:

Skills
Knowledge
Awareness

Complex Problem, Simple Solution?

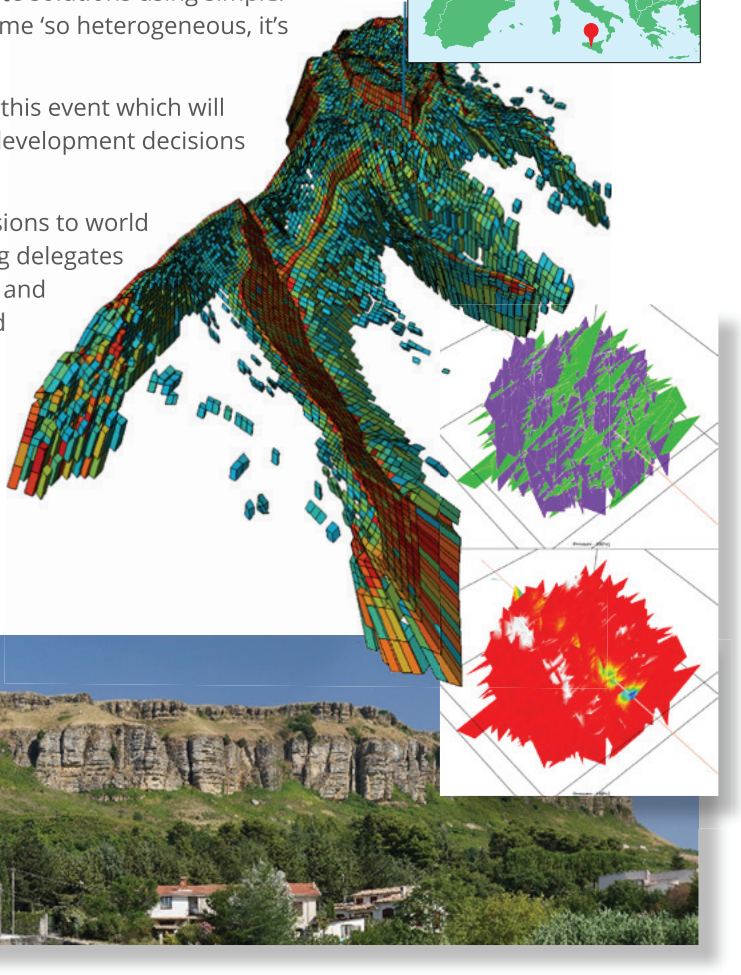
Naturally fractured reservoirs compound the familiar modelling and development issues of matrix-only reservoirs with the complexities of open fracture systems. The software required to model these dual porosity/ permeability systems is more complex than that for matrix-only systems and the ability to forecast accurately to support decisions is often poor.

The question is whether to invest time modelling the complexity with a risk of significant forecast inaccuracy or seek approximate solutions using simpler workflows. At what point does the reservoir become 'so heterogeneous, it's homogeneous'?

These issues and options will be explored during this event which will focus on the subsurface work required to make development decisions in fractured reservoirs.

This event blends classroom teaching with excursions to world class, reservoir scale carbonate outcrops, allowing delegates to discuss the issues associated with interpreting and modelling fractured reservoirs. The reservoir and simulation models of the analogue outcrops are used as background case material to support these discussions.

Ultimately, all systems can be characterised to some degree of accuracy – the question is how to achieve that characterisation most practically and usefully.



Early Development
E&P Overview
Reservoir
Wells

Business & Risk
Open Air
Coaching
Master Class

Fractured Reservoir Development (Sicily) continued

Course Content:

Fundamentals of Fractured Reservoirs
- The fractured reservoir challenge
- Structural geological fundamentals
- Essential geomechanics
- Fluid flow in fractured reservoirs: imbibition vs drainage

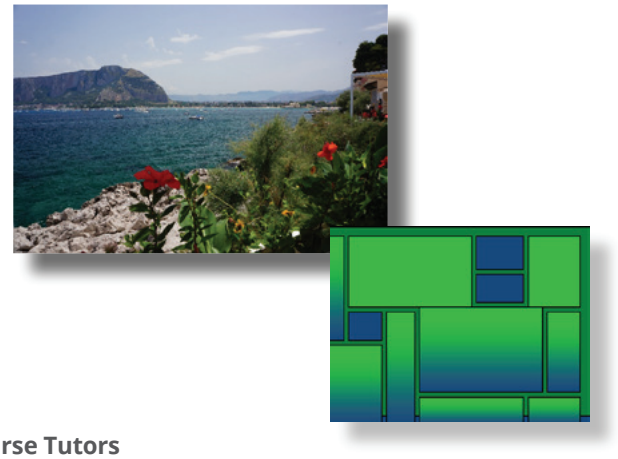
Characterisation & Analysis
- Small scale fracture processes: jointing, shearing, lithology control,
- Large scale fracture architecture: fault vs fold controls
- Fracture connectivity: to other fractures, to wells and to matrix. Impact of scale
- Measurements: Static vs dynamic data, what's useful and what isn't
- Fracture porosity and permeability: How can you quantify it?

Concepts & Modelling
- Appropriate concepts of fractures plus matrix plus fluids
- Optimal inputs to modelling and simulation
- Useful modelling and simulation workflows: small scale and large scale
- Scaling up data to modelling and simulation scales

Development
- Large scale development questions, well spacing, production mechanisms
- Drilling and stimulation techniques
- Handling uncertainty and development risk
- Decision-making in naturally fractured reservoirs

Courses available from this series:

Moray Firth-based Events (Scotland)
Northumberland-based Events (England)
Yorkshire-based Events (England)
Derbyshire -based Events (England)
Dorset-based Events (England)
Pembrokeshire-based Events (SW Wales)
Somerset-based Events (England)
County Clare-based Events (Ireland)
Annot-based Events (France)
Provence-based Events (France)
Tabernas-based Events (Spain)
Pyrenees-based Events (Spain)
Utah-based Events (USA)
East Kentucky-based Events (USA)
Sicily-based Events (Italy)



Course Tutors

Richard Oxlade MEng

Main Series tutoring: Reservoir, Early Development, Master Class (business)
Industry experience: over 30 years, commercial, reservoir engineering
Career background: BP, AGR and TRACS
Personal: Global advisor, business planning and economic analysis

Tim Wynn PhD

Main Series tutoring: Reservoir, Master Class (fractured reservoirs)
Industry experience: over 25 years, geoscience
Career background: British Gas, GeoScience, ICE, AGR and TRACS
Personal: SPE technical editor, technical paper author, geoscience publications

Mark Bentley PhD

Main Series tutoring: Reservoir, E&P Overview, Open Air and Master Class
Industry experience: over 25 years, geoscience
Career background: Shell, AGR and TRACS
Personal: Author 'Reservoir Model Design', SPE and EAGE distinguished lecturer, AGR & TRACS Training director, associate professor Heriot-Watt University

Maggie Murison

Main Series tutoring: Open Air
Industry experience: 20 years
Career background: TRACS, AGR, Peckhams Ltd, Kings Foods, KLM Airlines
Personal: Open Air events lead & course coordinator, HSE certified for field events

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