

Providing a **bedrock** for structural geology



Fracture modelling in a structural context

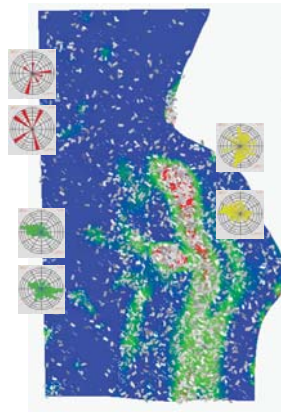
4DFrac is a module of 4DMove providing automated 3D Discrete Fracture Network (DFN) modelling with direct output for reservoir simulation. This workflow driven approach allows rapid scenario testing and the development of multiple models for sensitivity testing in the reservoir model. 4DFrac complements the Move toolkit with full integration with structural analysis and modelling providing a unique capability to build and test geologically valid fracture systems as well as using an advanced statistical approach.

4DFrac is a stand alone modelling workflow for geologists working in fractured reservoirs requiring additional technical knowledge to make cost effective drilling decisions. The advanced fracture modelling tool provides fracture network characterisation giving insight into compartmentalisation issues as well as direct volumetric and directional outputs for reservoir simulation.

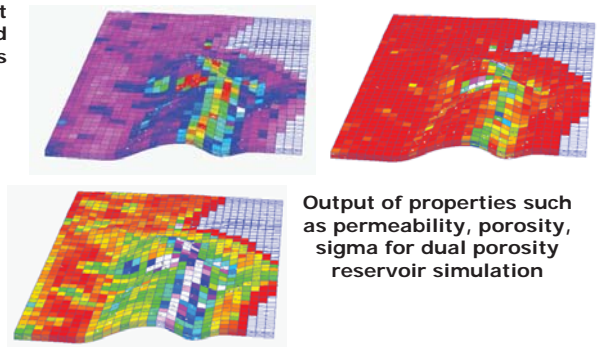
2DMove & 3DMove combined with 4DFrac provides the user with the 'Fractured Reservoir Modelling Combination': established 2D & 3D structural modelling with leading edge fracture modelling capability and direct output for Reservoir Simulation – for both new or existing 2DMove and 3DMove users who are looking at optimal well planning strategies as well as those working to optimise production in Fractured Reservoirs. The combination of Move components gives the user the capability to perform:

- Fracture modelling integrated with advanced 2d & 3d structural systems modelling.
- DFN Generation on appropriate (palaeo)geometries for optimal modelling results.
- Diverse DFN parameter controls including strain and geocellular properties.
- Direct output of permeability tensor, porosity, sigma and block size for reservoir simulation.

Discrete fracture network generation, analysis and direct output for dual porosity reservoir simulation.



Fracture modelling within structurally constrained earth models. Input of properties derived from variety of sources including strain.



Output of properties such as permeability, porosity, sigma for dual porosity reservoir simulation

Functional benefits of 4DFrac

- 'Pick-up & Use' Automated Workflow - designed with clear, stepped modelling stages reducing training requirements and catering for infrequent users.
- Flexible data inputs - use of horizons, the geocellular model and well data to constrain the DFN with 3D Seeding.
- DFN Generation and Visualisation - with multiple fracture sets visualised and analysed for communication, QC, DFN characterisation and comparison/calibration with additional data.
- Fracture network characterisation using connectivity analysis and extensive graphical displays.
- Scenario based modelling with batch mode capability to identify suitable DFN configurations for simulation.
- Quantitative Analysis with Volumetric and Directional outputs for reservoir simulation - porosity, sigma, block size and permeability property's outputs for SGrid and Eclipse.
- Seamless integration with Move components for advanced structural modelling workflows & analysis. Communicate results to colleagues and business partners using MoveViewer.
- Intelligent defaults - for effective modelling by both the generalist and specialist user.
- Data input/output, management, visualisation and additional analysis using 4DMove.

Further information on 4DFrac can be found in the software pages of our website, www.mve.com or contact help@mve.com.