

FRACMAN[®]

The Leading Fracture Modeling Software for:
Case Study Applications

- ▶ Radioactive Waste Management
- ▶ Groundwater Reservoirs
- ▶ Hard Rock Tunneling
- ▶ Environmental Restoration
- ▶ Foundations and Abutments
- ▶ Subsidence and Faulting
- ▶ Earthquake Hazard Analysis

Realistic Discrete Fracture Networks (DFN)

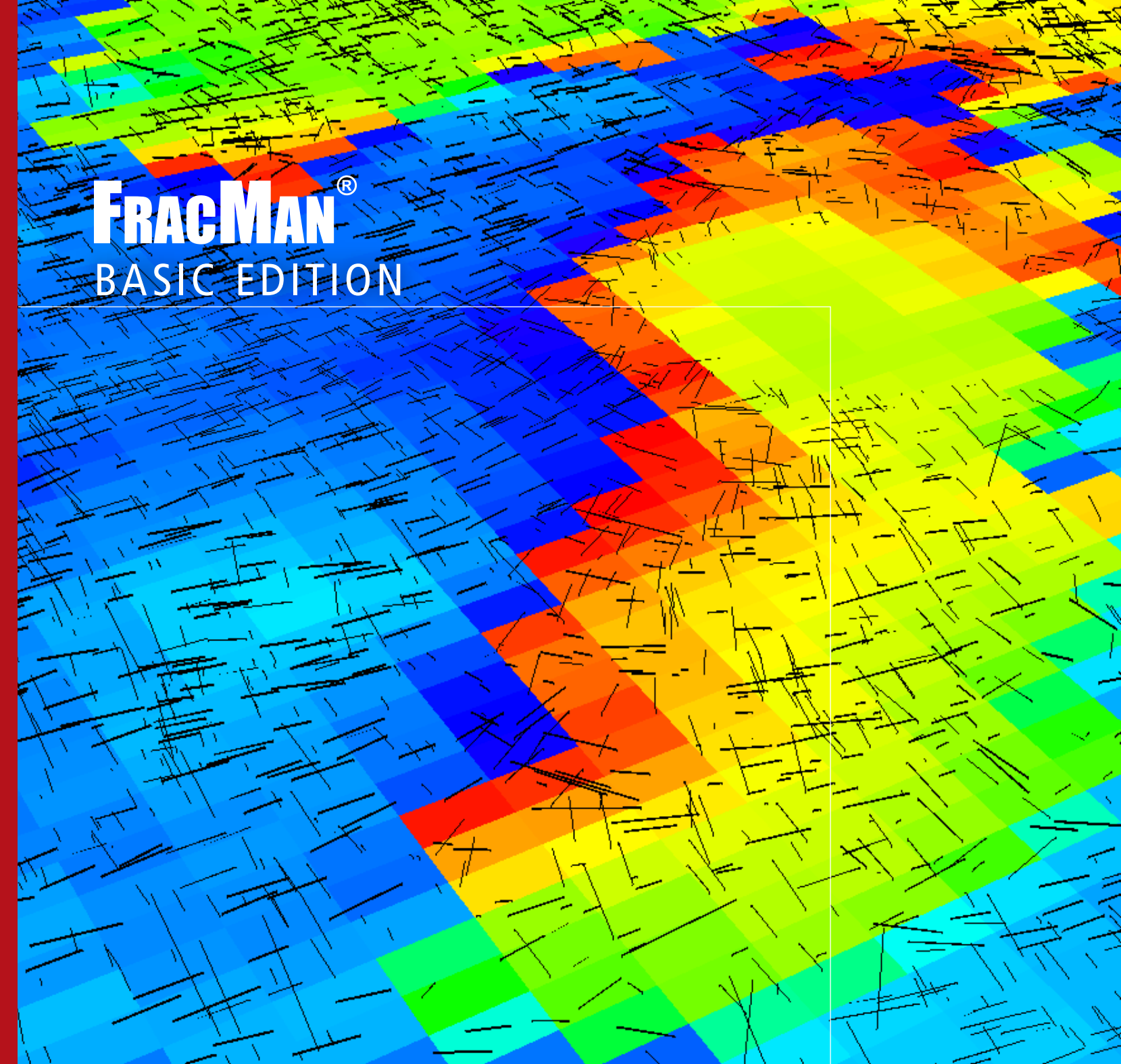
- ▶ Geological Models
- ▶ Stress and Paleostress Coupling
- ▶ Faulting and Transformation
- ▶ Stratigraphic and Structural Models
- ▶ Wellbore Conditioning
- ▶ Geocellular Models

DFN Data Analysis

- ▶ Fracture Spatial Analysis
- ▶ Intensity of Conductive and Flow Barrier Fractures
- ▶ Fracture Hydraulic and Mechanical Properties
- ▶ Orientation Statistics
- ▶ Fracture Size Analysis
- ▶ Geophysical Features

DFN Static Analysis Tools

- ▶ Field Scale Fracture Extrapolation
- ▶ DFN Architecture Assessment
- ▶ Well Trajectory Optimization
- ▶ Upscaling of Fracture Permeability
- ▶ Upscaling of Mechanical Properties
- ▶ Fracture Porosity Analysis
- ▶ Stress/Permeability Coupling
- ▶ Anisotropy and Heterogeneity
- ▶ Uncertainty Analysis
- ▶ Monte Carlo Simulation and Postprocessing



FRACMAN[®] BASIC EDITION

Discrete Fracture
Network Modeling



▶ USA +1 425 883 0777 Canada +1 604 296 4200 UK/Europe +44 1628 586200

▶ www.fracturedreservoirs.com ▶ fracman@golder.com



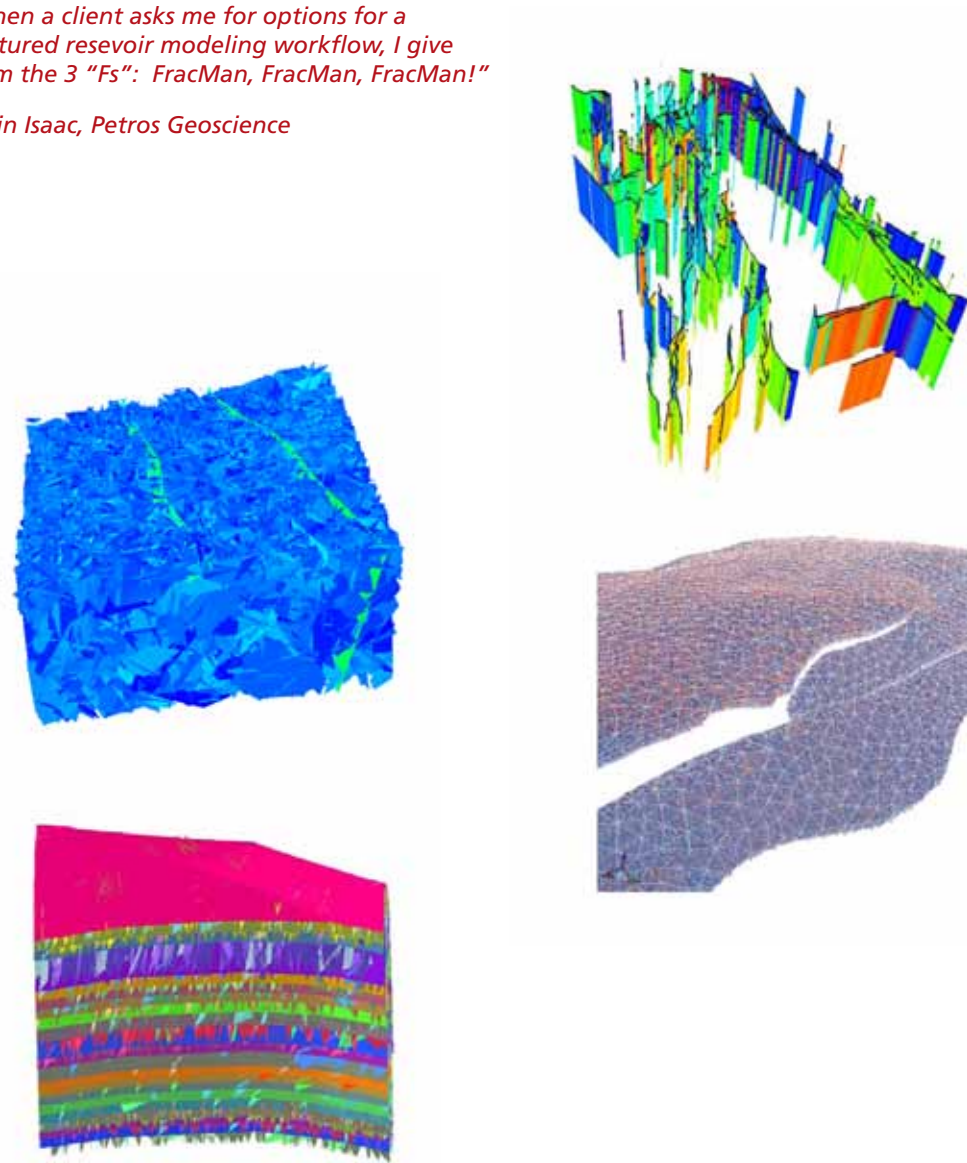


Discrete Fracture Networks

FracMan 7 generates 3-D fracture network models to provide a more realistic description of the pattern of faults, fractures, solution features, and stratigraphic contacts in fractured rock. FracMan 7 provides a range of approaches for generation of fracture patterns to suit every geology, including stochastic models, fault and fold geological models, geocellular models, and stress tensor models. Fracture patterns can include planar and non-planar faults, and can be conditioned to field observations. FracMan 7 has been applied successfully in carbonate, fractured till, crystalline, and clastic geologies.

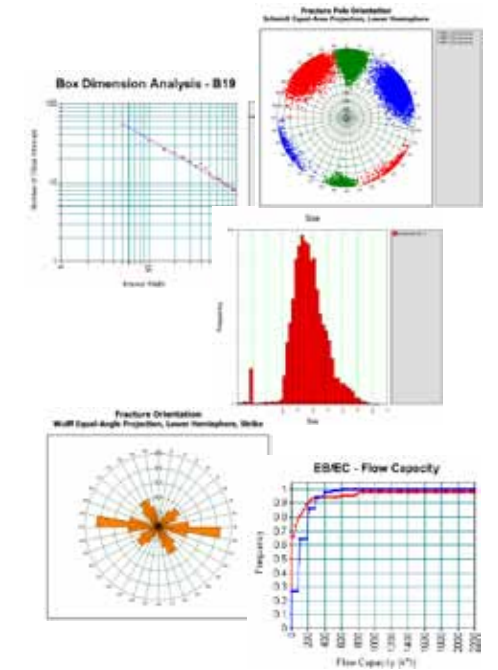
“When a client asks me for options for a fractured reservoir modeling workflow, I give them the 3 “Fs”: FracMan, FracMan, FracMan!”

Kevin Isaac, Petros Geoscience



FracMan® Basic Features

- Custom discrete fracture network (DFN) models for Crystalline, Sedimentary, and Volcanic Rocks
- Spatial Control of Intensity, orientation, and properties, including correlations to curvature and structural position
- Sealing and Partially Sealing Faults, including simulation of fault core and offsets
- Conductive Fault Damage Zones
- Variation of flow and transport properties at fracture intersection zones to support alternative channeling approaches
- Variability of properties within fractures and fracture zones using statistical, geostatistical, and fractal approaches
- Analysis of grout injection for tunnel inflow control
- Linkage of fracture hydraulic properties to in situ stress according to critical stress and σ_{rmax} approaches



FracMan offers a rich array of fracture analysis tools

