



# Fault Zones: Structure, Geomechanics and Fluid Flow

16-18 September 2008

Tuesday 16 September	
08:30	Registration + coffee
09:00	Welcome and opening
09:10	<b>Caine (US Geological Survey)</b> <u>KEYNOTE</u> : New Insight on Structural Inheritance and Fault-Vein Permeability Structures in the Colorado Mineral Belt, USA
Session 1 Structural Properties of Fault Zones	
09:40	<b>Gudmundsson (University of London)</b> Local stresses, fracture apertures, and fluid transport in fault zones
10:00	<b>Reeves (BGS)</b> Repository Excavations and the Self Sealing of the Excavation Damaged Zone (EDZ) in Mudrocks: An Overview
10:20	<b>Shackleton (Midland Valley)</b> Can strain maps be used as an indicator for the extent of fault zone damage?
10:40	<b>Yonkee (Weber State University)</b> Geometry, Kinematics, and Fracture Network Characteristics with Fault Segment Boundaries, Wasatch Fault Zone, Utah, USA
11:00	Tea / Coffee
11:30	<b>Schueller (University of Bergen)</b> Characterization of fault damage zone and deformation band populations based on outcrop data
11:50	<b>Wibberley (Total)</b> Mechanics of fault-zone localisation in high-porosity sandstones and impact on flow efficiency
12:10	<b>McLellan (James Cook University)</b> Strain accumulation and fluid flow in and around basin bounding fault zones of the Leichhardt River Fault Trough, Qld. Australia
12:30	<b>Invernizzi (Universita di Camerino)</b> Pressure solution processes along stylolites in layered carbonate rocks and relationships with the amount of strain





12:50	<b>Agosta (Universita Di Camerino)</b> Structural and statistical analyses of fault-controlled hydrocarbon migration and accumulation
13:10	<b>Lunch</b>
14:00	<b>Schlische (Rutgers University)</b> Experimental modeling of extensional fault domains and fault-domain boundaries (transfer zones / accommodation zones)
14:20	<b>Thornton (Rockfield Software Limited)</b> Predictive Modelling of the Evolution of Fault Zone Structure: 3-D Sandbox and Field Scale Modelling
14:40	<b>Henza (Rutgers University)</b> Influence of pre-existing fabric on normal-fault development: An experimental study
15:00	<b>Granger (Haley &amp; Aldrich, Inc)</b> Fault-surface corrugations: Insights from scaled experimental models of extension
15:20	<b>Nottveit (University of Bergen)</b> Fault Facies modeling; possibilities and difficulties
15:40	<b>Freeman (Badley Geoscience Ltd)</b> Using empirical geological rules to reduce structural uncertainty in seismic interpretation of faults
16:00	<b>Tea / coffee</b>
16:30	<b>Tueckmantel (University of Leeds)</b> Fault seal prediction of seismic-scale normal faults in porous sandstone: A case study from the eastern Gulf of Suez rift, Egypt
16:50	<b>Frost (University of Southern California)</b> Structural analysis of the exhumed SEMP fault zone, Austria: Towards an understanding of fault zone architecture and mechanics throughout the seismogenic crust
17:10	<b>Braathen (University of Bergen)</b> Fault Facies methodology for systematizing analogue outcrop data to 3D fault grids in reservoir models
17:30	<b>Taylor (University of Manchester)</b> A three-dimensional approach to the interpretation of major fault zone properties
17:50	<b>Childs (University College Dublin)</b> <b>KEYNOTE:</b> A geometric model for the development of fault zone and fault rock thickness variations
18:35	<b>Wine Reception</b>





## Wednesday 17 September

08:40	<b>Registration + coffee</b>
09:00	<b>Rice (Harvard University)</b> <b>KEYNOTE:</b> How granulated/cracked fault border zones, and their pore fluids, interact with earthquake rupture dynamics
<b>Session 2</b>	
<b>Fault/fracture mechanisms and mechanics</b>	
09:30	<b>Haimson (University of Wisconsin)</b> The effect of the intermediate principal stress on shear band strike and dip in the siltstone straddling the active Chelungpu Fault, Taiwan
09:50	<b>Greenhough (University of Edinburgh)</b> Geomechanical sensitivity of reservoirs from statistical correlations of flow rates
10:10	<b>Van Marcke (EIG Euridice)</b> Excavation induced fractures in a plastic clay formation: observations at the HADES URF
10:30	<b>Tea / Coffee</b>
11:00	<b>Aydin (Stanford University)</b> Fault growth and the related fundamental physical processes
11:20	<b>Moir (University of Strathclyde)</b> Modelling development of a simple fault zone in the Sierra Nevada
11:40	<b>Kelly (University of Hawaii)</b> Mechanics of sheeting joints
12:00	<b>Ishii (Japan Atomic Energy Agency)</b> Relationship between growth mechanism of faults and permeability variations with depth of siliceous mudstone in northern Hokkaido, Japan
12:20	<b>Welch (University of Leeds)</b> Fault growth in mechanically layered sequences: A modelling approach
12:40	<b>Lunch</b>
13:30	<b>Agar (ExxonMobil)</b> What are the Potential Impacts of Low-offset Faults on Carbonate Reservoir Performance?
13:50	<b>Jostad (Norwegian Geotechnical Institute)</b> Geomechanical integrity of a sealing fault during late life depletion of a petroleum reservoir
14:10	<b>Zhang (GRS)</b> Experimental study on self-sealing of indurated clay





14:30	<b>Muhuri (Chevron)</b> Kinetics of Time-dependent Processes in Fault Zones: Implications for Fault Seal Analysis
14:50	<b>Niemeijer (Pennsylvania State University)</b> Strong velocity weakening in fault gouges: results from rock analogue experiments
15:10	<b>Zhang (Chinese Academy of Sciences)</b> Characterisation of fault sealing for hydrocarbon migration and entrapment
15:30	Tea/Coffee
<b>Session 3</b> <b>Fault Structure and Earthquakes</b>	
16:00	<b>Bennington (University of Wisconsin)</b> Constrained Inversions of Geophysical Data in the Parkfield Region of California
16:20	<b>Cooke (University of Massachusetts)</b> The role of slip-weakening friction in damage zone geometry
16:40	<b>De Paola (University of Durham)</b> The Nucleation of Large Earthquakes Within Overpressured Fault Zones in Evaporitic Sequences
17:00	<b>Evans (Utah State University)</b> The nature of the San Andreas Fault at seismogenic depths: Insight from direct access via the SAFOD boreholes
17:20	<b>Wojtal (Oberlin College)</b> Displacement field in the borderlands of the San Andreas Fault, Durmid Hill, CA and the origin of late sinistral faults
17:40	<b>Nicol (GNS Science, New Zealand)</b> Fault Interactions and the Growth of Faults on Earthquake and Geological Timescales
18:00	<b>Cowie (University of Edinburgh)</b> <b>KEYNOTE:</b> Quantifying Fault Slip rates and Earthquake Clustering along Active Normal Faults in Central Italy: Insights from Cosmogenic Exposure Dating and Numerical Modelling
19:00	<b>Conference Dinner</b> <i>Please note this is a ticketed event. Please contact Kerri Deegan, Event Co-ordinator (<a href="mailto:kerri.deegan@geolsoc.org.uk">kerri.deegan@geolsoc.org.uk</a>) to purchase tickets.</i>





## Thursday 18 September

08:40	Registration + coffee
09:00	<b>Talwani (University of South Carolina)</b> <u>KEYNOTE</u> : Seismogenic Permeability
<b>Session 3 contd</b> <b>Fault Structure and Earthquakes</b>	
09:30	<b>Pitarelo (Universita degli Studi di Padova)</b> Energy partitioning during seismic slip in pseudotachylite-bearing faults (Gole Larghe Fault, Adamello, Italy)
09:50	<b>Balsamo (Universita Roma Tre)</b> Particle size distribution analysis in pristine and faulted quartz-rich, poorly cohesive sandstones: influence of analytical procedures in laser diffraction analysers
10:10	<b>Spivak</b> Rigidity of tectonic faults and their temporal variation
10:30	<b>El Hariri (University of Boston)</b> The role of fluids in triggering earthquakes: Observations from reservoir induced earthquakes
10:50	Tea / Coffee
<b>Session 4</b> <b>Faults and fluids</b>	
11:15	<b>Medeiros (UFRN, Natal)</b> Results from field pumping experiments testing connectivity across deformation bands in Tucano Basin, NE Brazil
11:35	<b>Guillemot (Andra)</b> Different scales of fracturing in the Callovo-Oxfordian argillite of the Meuse /Haute-Marne Andra URL area, France
11:55	<b>Liberty (Boise State University)</b> Fault imaging in the western US using high resolution seismic reflection methods
12:15	<b>Brinton (University of Idaho)</b> The influence of regional stress on geostatistical patterns of fault permeability at Smith Creek Hot Springs, Nevada, USA
12:35	<b>Masset (Swiss Federal Institute of Technology)</b> Large scale Hydraulic Properties of Faults and Fault Zones of the Central Aar and Gotthard Massifs (Switzerland)
12:55	Lunch





Session 4 contd Faults and fluids	
13:45	<b>Woods (BP Institute)</b> Buoyancy driven gas dispersion along an inclined low permeability boundary
14:05	<b>Amano (Japan Atomic Energy Agency)</b> 3D Structures of Permeable and Impermeable Faults in Granite: A Case Study in the Mizunami Underground Research Laboratory, Japan
14:25	<b>Tveranger (University of Bergen)</b> Volumetric fault zone modelling using fault facies
14:45	<b>Wilson (Stanford University)</b> Using outcrop observations, 3D discrete feature network (DFN) fluid flow simulations, and subsurface data to constrain the impact of normal faults and opening mode fractures on the migration and concentration of hydrocarbons in an active asphalt mine
15:05	<b>Rocher (IRSN, France)</b> Differential fracturing pattern in clay/limestone alternations at Tournemire (Aveyron, France) and in the Maltese Islands
15:25	<b>Caine (US Geological Survey)</b> Contrasting Styles of Faults and Fault Rocks in the Rio Grande Rift of Central New Mexico, USA: Their Relationships to Rift Architecture and Groundwater Resources
15:45	<b>Tea/Coffee</b>
16:30	<b>Lunn (University of Strathclyde)</b> Assessing temporal changes in fault permeability for radioactive waste disposal
16:50	<b>Simms (John Hopkins University)</b> Fault zone control of fluid flow in extensional basins
17:10	<b>Peacock (Fugro Robertson Ltd)</b> Pull-aparts, scaling and fluid flow
17:30	<b>Cuisat (Norwegian Geotechnical Institute)</b> Fault formation in uncemented sediments. Insight from laboratory experiments
17:30	<b>Younger (University of Newcastle)</b> <u>KEYNOTE</u> : Extraordinary permeability associated with major W-E rock-mass discontinuities cutting Carboniferous strata in northern England and central Scotland - some cautionary tales
18:00	<b>Conference end</b>





## Posters

### Tuesday 16 September

**Bastesen**

Extensional fault cores in carbonates; thickness-displacement relationships

**Novakova (tbc)**

Reactivation of brittle tectonic structures in the Sudetic Marginal Fault vicinity (in north east of Bohemian Massif)

**Cunningham (SRK Consulting)**

The role of faulting in the concentration of Fe and Zn-Pb ores within the Paleoproterozoic Earraheedy Basin, Western Australia

**Bell (National Oceanography Centre)**

Fault development and control on rift basin evolution in the Gulf of Corinth, Greece

**Müller (University of Vienna)**

Fault zone characteristics of a low-angle normal fault on northern Kea (Western Cyclades, Greece)

**Alessandroni (Universita di Camerino)**

Statistical analysis of stylolites and sheared stylolites in layered carbonate rocks: an attempt for a new methodological approach

**Kanjanapayont (University of Vienna)**

Kinematics of the Klong Marui continental wrench fault, southern Thailand

### Wednesday 17 September

**Ikari (tbc)**

Pore pressure generation in sheared marine sediments

**Arnould (Ecole des Mines)**

Joints Networks and Syn-Sedimentary Faults in Marine Clays and Mudstones. Importance for Underground Storage of Radioactive Waste

**Smith (Durham)**

Laboratory measurements of the frictional strength of a natural low-angle normal fault: the Zuccale fault, Elba Island, Italy

**Storti (Universita Roma Tre)**

Influence of analytical methods on fault core rock particle size distributions obtained from laser-aided analysers





**Mitterpergher (Museo Tridentino di Scienze Naturali)**

Effects of fault orientation on fault rock assemblages of exhumed seismogenic sources

**Haimson (University of Wisconsin)**

The effect of the intermediate principal stress on shear band strike and dip in the siltstone straddling the active Chelungpu Fault, Taiwan

**Sehhati (Washington State University)**

Porosity and particle shape changes leading to shear localization in small-displacement faults

## Thursday 18 September

**Lawther (University of Glasgow)**

Fluid-fault-rock interactions in faults exhumed from seismogenic depths

**Kirkpatrick (University of Glasgow)**

Fault structure, slip and fluid flow interactions; insights from small seismogenic faults

**Fachri (University of Bergen)**

Sensitivity of fluid flow to faulted siliciclastic reservoir configurations

**Pittarello (Università degli Studi di Padova)**

Deep-seated pseudotachylytes from the Ivrea Zone metagabbros (Southern Alps, Italy)

**Mitterpergher (Museo Tridentino di Scienze Naturali)**

Hydrogen isotopes in natural and experimental pseudotachylyte-bearing faults: the origin of fluids at seismogenic depth

