

## Thematic Research

- Beyond Digital Rock Physics
- Enhanced Oil Recovery in Shales
- Flow in Nanoporous Rocks
- Heterogeneity of Fine-grained Reservoirs
- Improved Liquid Recovery in Shales
- Large-scale Geologic Controls on Hydraulic Stimulation
- Production & Economic Analysis of Tight Reservoirs
- Source Rocks of Gondwana Continents & Margins
- Source Rocks in Space & through Time, Phase 2
- "Strike-slip Terrains & Transform Margins" Book
- Thermal History of Transform Margins

# EGI

## Energy & Geoscience Institute

AT THE UNIVERSITY OF UTAH

CONNECT  
ONLINE GLOBAL DATABASE

REGISTER AT [EGIconnect.com](http://EGIconnect.com)

Step 1: Create a user profile with your company email address

Step 2: Click the link in the confirmation email

Step 3: Log in at [EGIconnect.com](http://EGIconnect.com)

(Note: EGIconnect supports Internet Explorer 10+, Google Chrome, Mozilla Firefox & Safari)

Apache

Aramco Services

Berry Petroleum

BHP

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Chevron

CNOOC International

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Devon

Ecopetrol

Encana (Newfield)

Eni

Equinor

ExxonMobil

Hess

Hunt Oil

Husky Energy

Murphy Oil

OXY (Anadarko)

PetroChina

Petronas

Repsol

Santos

Shell

Suncor

Tecpetrol

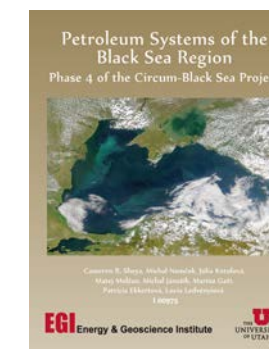
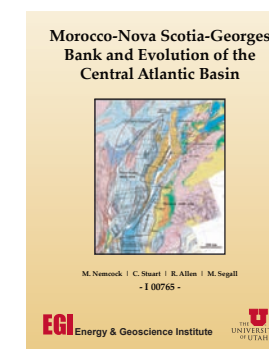
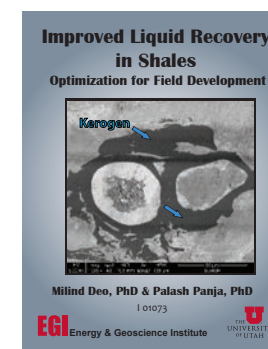
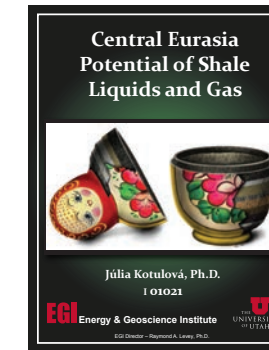
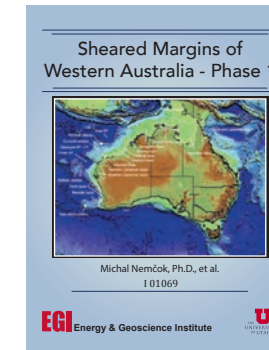
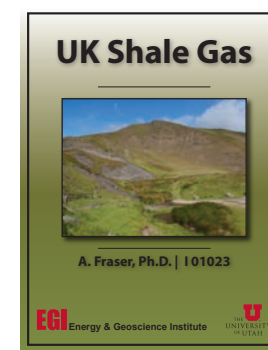
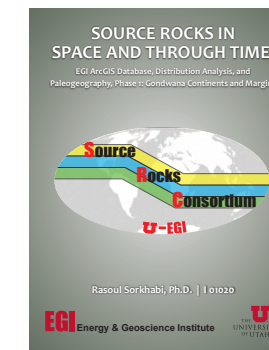
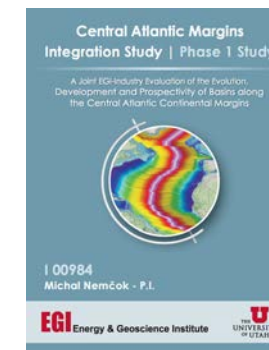
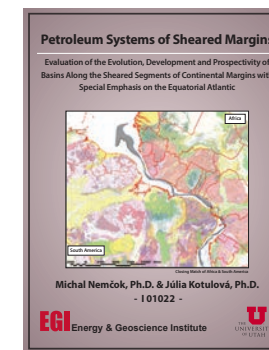
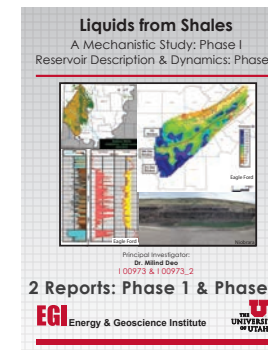
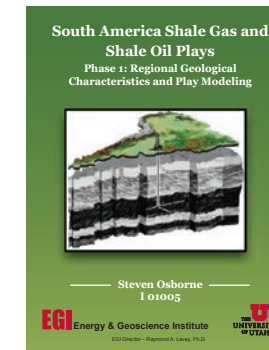
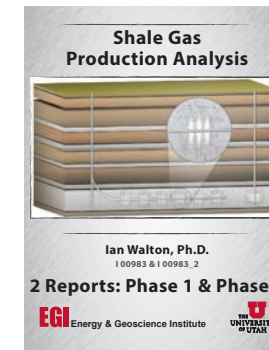
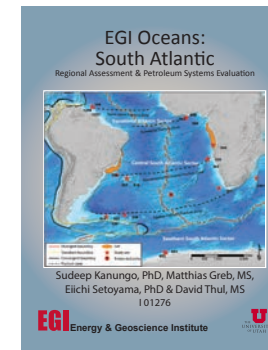
Total

Tullow Oil

Winchester

Wintershall DEA

## Examples of Project Reports Available to All Members



## YOUR MEMBERSHIP BENEFITS



## MISSION & VISION

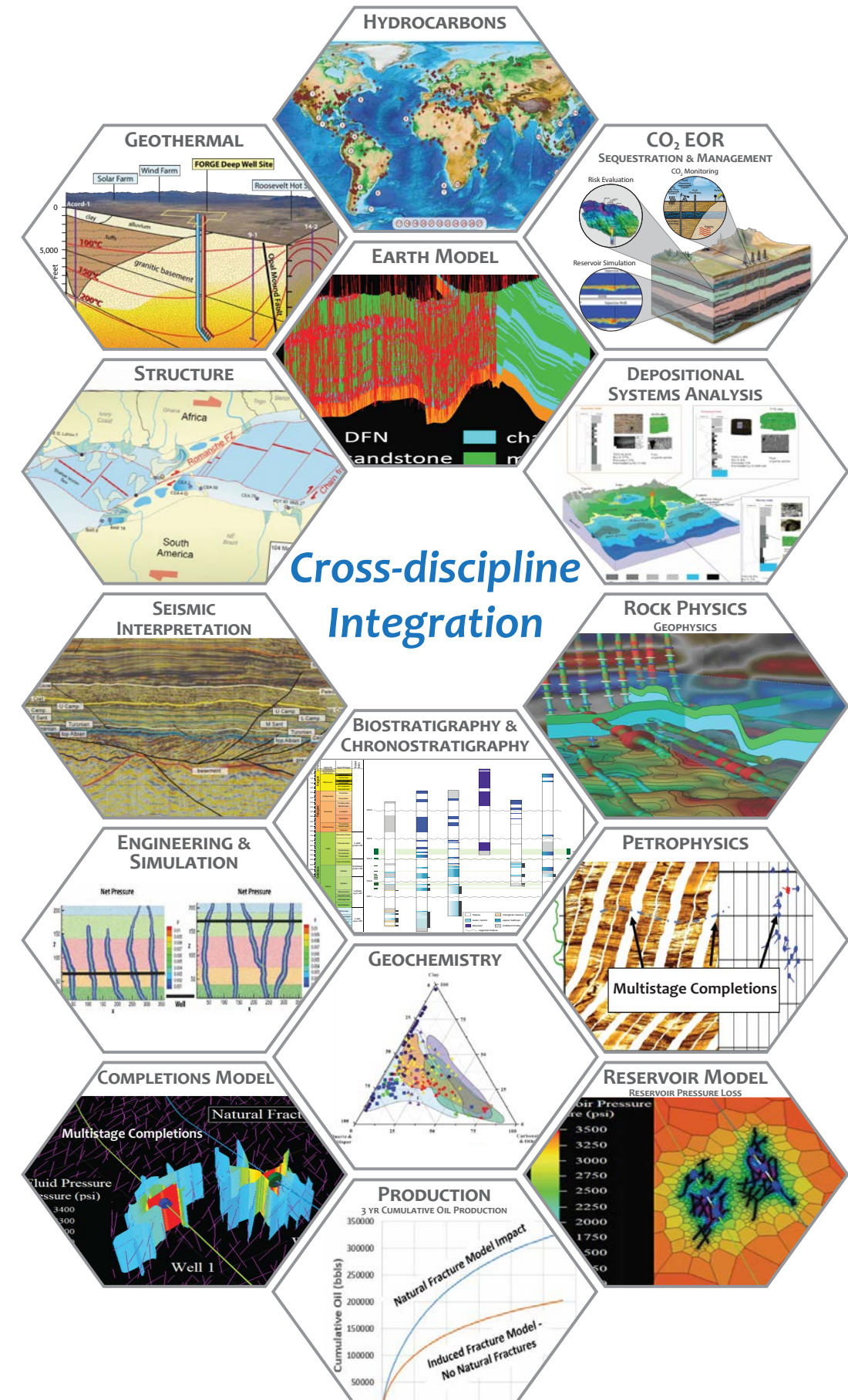
**EGI... the science to inspire new ideas to explore for and produce the Earth's energy resources.**

Delivering high quality research, knowledge, and data to solve subsurface problems in global collaboration with academic, industry, and government organizations.

## WHO WE ARE

EGI is the world's largest University-based global consortium for industry cost-shared upstream E&P research, with 850+ applied technology reports and geoscience research solutions available for 24/7 online access by our member companies.

**Yearly Membership is \$55k (USD)**  
**New members agree to join for 2 years**

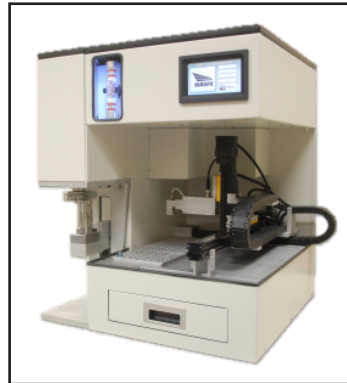


**Technical Competencies**

Improved Research Services are expanding our knowledge base and EGI expertise, offering unique access to unparalleled source rock & high-resolution reservoir characterization technology, petrological analysis & interpretation & high-pressure equipment to evaluate tight formations.

### PETROLEUM GEOCHEMISTRY

#### HAWK™ Hydrocarbon Analyzer with Kinetics



The HAWK™ Analyzer provides S1, S2, S3, and TOC data as well as Tmax information. The specially designed instrument has better free petroleum (S1) sensitivity for improved identification of pay in resource plays and adds a new level of sophistication for specialized analysis and integrated interpretation.

#### Hydrous Pyrolysis Parr Pressure Vessels

Provides source rock kinetic information while evolving fluid and gas for characterization by GC, GC-MS, and GC-IRMS. Analysis by hydrous pyrolysis and evaluation of pyrolysates enables careful calibration of maturity indicators, fluid types and generation-expulsion relationships.



### GEOMECHANICS



#### Triaxial Rock Mechanics Loading Frame

The Schlumberger Rock Mechanics Triaxial Test System is a computer controlled system designed to simulate in-situ stress and strain for the determination of physical properties of geotechnical core samples. The system simulates in-situ conditions and characterizes a test sample's behavior under those conditions. Axial load, horizontal stress (confining pressure), and pore pressure can be precisely controlled. In-vessel instrumentation, directly in contact with the rock sample, accurately measures the sample's response to testing variables.

### PETROPHYSICS

#### High Precision Petrophysical Characterization

EGI is using high-resolution high-pressure equipment to evaluate the porosity, saturations, and relative permeabilities of tight formations. Called the "EGI Shale Interrogator," the apparatus is capable of high pressure and high temperature studies that provide accurate measurements useful for petrophysical model calibrations. High precision, low volume pumping capability allows this advanced instrument to provide steady-state data previously not readily available. Finally, the capability to conduct evaluations of liquids-producing formations makes this service unique in the world.



ANALYTICAL TECHNIQUE	INSTRUMENT	METHODOLOGY	APPLICATIONS & DELIVERABLES
<b>Optical Microscopy (thin section)</b> <i>Millimeter scale</i>	Zeiss Axio Scope A1	<ul style="list-style-type: none"> <li>Petrographical assessment of samples providing quantitative analysis of minerals and organic material.</li> <li>Characterization of rock fabrics, textures and fractures.</li> </ul>	<ul style="list-style-type: none"> <li>Lithofacies classification.</li> <li>Assessment of brittle/ductile behavior of samples.</li> <li>Depositional environment characterization and evolution</li> </ul>
<b>Mineralogical Mapping</b> <i>Micrometer scale</i>	Zeiss MinScan	<ul style="list-style-type: none"> <li>Automated petrological analysis of samples providing quantitative analysis of minerals.</li> <li>Advanced characterization of rock fabrics, textures and fractures.</li> </ul>	<ul style="list-style-type: none"> <li>Lithofacies classification.</li> <li>Assessment of brittle/ductile behavior of samples.</li> <li>Micro-depositional environment characterization and evolution.</li> </ul>
<b>X-ray Diffraction (XRD)</b> <i>Bulk analysis</i>	D8 ADVANCE Bruker XRD	<ul style="list-style-type: none"> <li>Rapid analysis of crystalline phases/material.</li> <li>Advanced characterization of minerals including clay species within rocks.</li> </ul>	<ul style="list-style-type: none"> <li>Quantitative analysis of minerals, including clay species.</li> <li>Assessment of brittle/ductile behavior of samples.</li> <li>Lithofacies characterization.</li> </ul>
<b>X-ray Fluorescence (XRF) Mapping</b> <i>Micrometer scale</i>	Eagle III Microspot XRF	<ul style="list-style-type: none"> <li>Advanced (non-destructive) elemental characterization of rock fabrics and textures.</li> <li>'Large' sample characterization on centimeter-scale samples (i.e., core).</li> </ul>	<ul style="list-style-type: none"> <li>Assessment of brittle/ductile zones within samples.</li> <li>Qualitative analysis of elemental signatures within samples.</li> <li>Lithofacies characterization.</li> </ul>
<b>Argon-ion Milling</b> 	Fischione 1060 SEM Mill	<ul style="list-style-type: none"> <li>'Atomic-scale' polishing of samples using high-powered argon ions.</li> <li>Shear force-free polishing allowing for an artifact-free surface.</li> </ul>	<ul style="list-style-type: none"> <li>Artifact-free polished surface allowing accurate high-resolution (SEM) imaging and assessment of shales.</li> <li>Preservation of shale features down to the nano-scale.</li> </ul>
<b>Scanning Electron Microscopy (SEM)</b> <i>Micrometer- to nano-scale</i>	FEI Quanta 600 FEG SEM	<ul style="list-style-type: none"> <li>Electron imaging including backscatter (BSE) and secondary electron (SE) analysis.</li> <li>Energy dispersive x-ray (EDS/EDX) analysis allowing point and mapping of samples.</li> </ul>	<ul style="list-style-type: none"> <li>Accurate fracture and porosity characterization.</li> <li>Assessment of mineralogy and mineralogical associations.</li> <li>Organic matter characterization.</li> </ul>
<b>High-Resolution Composite Mapping (MAPS™)</b> <i>Micrometer- to nano-scale</i>	FEI Quanta 600 FEG SEM	<ul style="list-style-type: none"> <li>Automated acquisition of high resolution SEM images from 'large' areas across samples.</li> <li>Data is exported as interactive, composite image datasets.</li> </ul>	<ul style="list-style-type: none"> <li>Correlation of features (i.e., sedimentological cyclicity).</li> <li>Allows a larger, more representative area of a sample to be evaluated and correlated with complimentary techniques.</li> </ul>
<b>Focused ion Beam SEM (FIB-SEM)</b> <i>Micrometer- to nano-scale</i>	Dual Beam FIB, FEI Helios NanoLab 650	<ul style="list-style-type: none"> <li>Dual-beam microscopy allowing focused ion beam (FIB) milling and SEM imaging.</li> <li>Automated sequential milling and imaging of samples allows reconstruction of 3D volumes.</li> </ul>	<ul style="list-style-type: none"> <li>Three-dimensional cube modeling allowing shale space to be accurately assessed.</li> <li>Precise assessment of nano-scale rock properties (i.e., pore/permeability characterization).</li> </ul>
<b>Scanning Transmission Electron Microscopy (STEM)</b> <i>Nano- to atomic-scale</i>	JEM-2800 Transmission Electron Microscope	<ul style="list-style-type: none"> <li>Ultra-high-resolution imaging and ultrasensitive elemental mapping (EDS) for chemical analysis.</li> <li>FIB-SEM slicing used as preparation method.</li> </ul>	<ul style="list-style-type: none"> <li>Precise nano-scale assessment of rock properties (i.e., pore/permeability characterization).</li> <li>Nano-scale chemical mapping (EDS) of samples.</li> </ul>

The global experience, expertise, and industry-relevant geoscience research conducted by EGI researchers and engineers are the fundamental building blocks for the knowledge, design, and delivery of Field & Short Courses offered to EGI members. Course participants are taught by thought-leaders in the energy sector who bring an independent perspective to the major challenges facing the industry today.

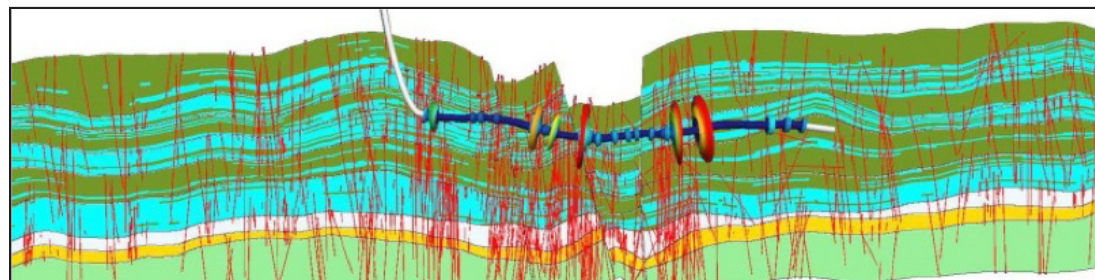


## PETROLEUM SYSTEMS, EXPLORATION & DEVELOPMENT

- Thrustbelts
- Rifts & Passive Margins
- Strike-slip Settings & Transform Margins
- Exploration for Unconventional Oil & Gas
- Introduction to Petroleum Systems Analysis
- Microscopy of Tight Reservoirs
- Geologic Characterization & Production of Shale Plays
- Introduction to Petroleum Exploration & Production
- Techniques in Play Fairway Analysis
- Chronostratigraphic Applications of the Composite Standard DB for Exploration

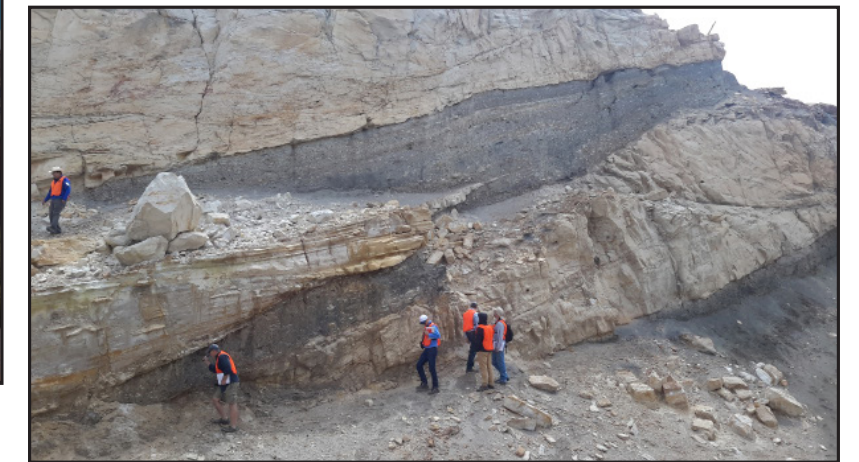
## ENGINEERING & PRODUCTION

- Introduction to Natural Fracture Analysis Modeling
- Introduction to Geomechanics in Low Mobility Plays
- Petroleum Geomechanics: Fundamentals & Applications
- Introduction to Reservoir Simulation



## DEPOSITIONAL SYSTEMS & STRATIGRAPHY

- Rocky Mountain Depositional Systems (Conventional & Tight)
- Utah Field Course
- Carbonate Sedimentology & Sequence Stratigraphy



## MASTERS OF SCIENCE IN PETROLEUM ENGINEERING

EGI, in collaboration with the Department of Chemical Engineering at the University of Utah, launched a Masters of Science degree program in Petroleum Engineering in the 2013 fall semester. Understanding that one of the most significant challenges facing humanity is the depletion of natural resources we recognize the valuable contributions to be made by Petroleum Engineers to meet mankind's energy needs while safeguarding the environment. Equally satisfying, petroleum engineers also gain responsibility faster and supervise important projects sooner than those in other engineering fields. **Learn more at <http://www.che.utah.edu/pe/>**

