

# Technical Program

## LEGEND

For easier referencing, all sessions are color coded according to topic.

**BH/RP** BOREHOLE/ROCK PHYSICS

**EM** ELECTROMAGNETICS

**G&M** GRAVITY & MAGNETICS

**NSG** NEAR-SURFACE GEOPHYSICS

**S** SEISMIC

**SS** SPECIAL SESSIONS

**W** WORKSHOPS

### Electromagnetics

- EM 1** Electromagnetics–Modeling and Inversion
- EM 2** Electromagnetics–MT and Controlled Source
- EM 3** Electromagnetics–Logging and Crosshole Studies

### Gravity & Magnetism

- G&M P1** Gravity and Magnetism
- G&M 1** Gravity and Magnetism–Case Histories
- G&M 2** Gravity and Magnetism–Theory and Applications
- G&M 3** Gravity and Magnetism–New Dimensions

### Near Surface

- NSG P1** Near Surface
- NSG 1** Geophysical Characterizations of Near-Surface Reservoir Analogs
- NSG 2** Influence of Soil Properties on Near-Surface Geophysical Measurements
- NSG 3** GPR and Seismic Techniques for Near-Surface Characterization
- NSG 4** Near Surface–Seismic Modeling and Surveying
- NSG 5** Electrical and Electromagnetic Near-Surface Geophysical Studies

### Special Session

- SS 1** Special Session–AAPG Invited Papers
- SS 2** Special Session–Recent Advances and the Road Ahead

## Technical Program Cross Reference

### Borehole/Rock Physics

- BH/RP P1** Borehole/Rock Physics
- BH/RP 1** Borehole/Rock Physics–Seismic Velocity and Attenuation: Modeling & Measurements
- BH/RP 2** Borehole/Rock Physics–Acoustic Logging
- BH/RP 3** Borehole/Rock Physics–Rock Properties from Well Logs
- BH/RP 4** Borehole/Rock Physics–VSP and Well Seismic Ties
- BH/RP 5** Borehole/Rock Physics–Electric Logging
- BH/RP 6** Borehole/Rock Physics–Single Well Imaging/Seismic While Drilling
- BH/RP 7** Borehole/Rock Physics–Characterization of Rock and Fluid Properties

**Seismic Acquisition**

- SACQ 1 Acquisition—Means and Methods
- SACQ 2 Acquisition—Survey Design
- SACQ 3 Acquisition—Survey Design and Project Management

**Seismic AVO and Multicomponent**

- SAVO/MC P1 AVO
- SAVO/MC 1 Multicomponent—Converted Waves
- SAVO/MC 2 Multicomponent—Applications I
- SAVO/MC 3 AVO—Applications I
- SAVO/MC 4 Multicomponent—Applications II
- SAVO/MC 5 AVO—Applications II
- SAVO/MC 6 AVO—Interpretation

**Seismic Interpretation**

- SINT P1 Seismic Interpretation
- SINT 1 Interpretation—Reservoir Characterization Using Seismic Attributes
- SINT 2 Interpretation—Seismic Facies Mapping
- SINT 3 Interpretation—Geophysical Data Management & Fracture Detection and Characterization
- SINT 4 Interpretation—Novel Applications in Interpretation

**Seismic Processing & Depth Imaging**

- SPRO P1 Seismic Processing
- SPRO P2 Seismic Processing—Migration
- SPRO 1 Seismic Data Processing—Multiple Attenuation I
- SPRO 2 Depth Imaging—Case Histories
- SPRO 3 Seismic Processing—Migration
- SPRO 4 Seismic Data Processing
- SPRO 5 Depth Imaging—Innovations
- SPRO 6 Seismic Data Processing—Noise Attenuation
- SPRO 7 Depth Imaging—Velocities

- SPRO 8 Seismic Processing—VSP/Tomography
- SPRO 9 Seismic Data Processing—Deconvolution
- SPRO 10 Seismic Data Processing—Multiple Attenuation II
- SPRO 11 Depth Imaging—Algorithms I
- SPRO 12 Seismic Processing—Inversion
- SPRO 13 Seismic Processing—Case Studies
- SPRO 14 Depth Imaging—Algorithms II

**Seismic Reservoir Characterization**

- SRC 1 Reservoir Characterization
- SRC 2 Reservoir Characterization—Imaging and Velocity for Anisotropic Earth Models
- SRC 3 Reservoir Characterization—Time-Lapse Case History
- SRC 4 Reservoir Characterization—Time-Lapse Interpretation and Feasibility
- SRC 5 Reservoir Characterization—Time-Lapse Repeatability and Processing

**Seismic Theory**

- STHRY P1 Seismic Theory
- STHRY P2 Seismic Theory—Anisotropy
- STHRY 1 Seismic Theory—Migration Velocity Analysis
- STHRY 2 Seismic Theory—Geometrical Rays and Traveltimes
- STHRY 3 Seismic Theory—Inversion Theory
- STHRY 4 Seismic Theory—Modeling I: Wave Theory
- STHRY 5 Seismic Theory—Migration Imaging Theory
- STHRY 6 Seismic Theory—Modeling II: Numerical Methods
- STHRY 7 Seismic Theory—Anisotropy
- STHRY 8 Seismic Theory—Data Compression

## Daily Sessions at a Glance

### Monday Afternoon, 1:30 - 5 p.m.

- BH/RP 1** Borehole/Rock Physics—Seismic Velocity and Attenuation: Modeling and Measurements
- G&M 1** Gravity and Magnetism—Case Histories
- SACQ 1** Acquisition—Means and Methods
- SAVO/MC 1** Multicomponent—Converted Waves
- SPRO 1** Seismic Data Processing—Multiple Attenuation I
- SRC 1** Reservoir Characterization
- SS 1** Special Session—AAPG Invited Papers
- SS 2** Special Session—Recent Advances and the Road Ahead
- STHRY 1** Seismic Theory—Migration Velocity Analysis
- STHRY 2** Seismic Theory—Geometrical Rays and Traveltimes

### Tuesday Morning, 8:30 a.m. - noon

- BH/RP 2** Borehole/Rock Physics—Acoustic Logging
- BH/RP 3** Borehole/Rock Physics—Rock Properties from Well Logs
- EM 1** Electromagnetics—Modeling and Inversion
- G&M 2** Gravity and Magnetism—Theory and Applications
- NSG 1** Geophysical Characterizations of Near-Surface Reservoir Analogs
- SAVO/MC 2** Multicomponent—Applications I
- SINT 1** Interpretation—Reservoir Characterization Using Seismic Attributes
- SPRO 2** Depth Imaging—Case Histories
- SPRO 3** Seismic Processing—Migration
- STHRY 3** Seismic Theory—Inversion Theory

### Tuesday Afternoon, 1:30 - 5 p.m.

- BH/RP 4** Borehole/Rock Physics—VSP and Well Seismic Ties
- EM 2** Electromagnetics—MT and Controlled Source
- G&M 3** Gravity and Magnetism—New Dimensions
- NSG 2** Influence of Soil Properties on Near-Surface Geophysical Measurements
- SACQ 2** Acquisition—Survey Design
- SAVO/MC 3** AVO—Applications I
- SPRO 4** Seismic Data Processing
- SPRO 5** Depth Imaging—Innovations
- SRC 2** Reservoir Characterization—Imaging and Velocity for Anisotropic Earth Models
- STHRY 4** Seismic Theory—Modeling I: Wave Theory

### Wednesday Morning, 8:30 a.m.-noon

- BH/RP 5** Borehole/Rock Physics—Electric Logging
- BH/RP 6** Borehole/Rock Physics—Single Well Imaging/Seismic While Drilling
- NSG 3** GPR and Seismic Techniques for Near-Surface Characterization
- SACQ 3** Acquisition—Survey Design and Project Management
- SAVO/MC 4** Multicomponent—Applications II
- SINT 2** Interpretation—Seismic Facies Mapping
- SPRO 6** Seismic Data Processing—Noise Attenuation
- SPRO 7** Depth Imaging—Velocities
- SRC 3** Reservoir Characterization—Time-Lapse Case History
- STHRY 5** Seismic Theory—Migration Imaging Theory

### Wednesday Afternoon, 1:30 - 5 p.m.

- NSG 4** Near Surface—Seismic Modeling and Surveying
- SAVO/MC 5** AVO—Applications II
- SINT 3** Interpretation—Geophysical Data Management and Fracture Detection and Characterization
- SINT 4** Interpretation—Novel Applications in Interpretation
- SPRO 8** Seismic Processing—VSP/Tomography
- SPRO 9** Seismic Data Processing—Deconvolution
- SPRO 10** Seismic Data Processing—Multiple Attenuation II
- SPRO 11** Depth Imaging—Algorithms I
- SRC 4** Reservoir Characterization—Time-Lapse Interpretation and Feasibility
- STHRY 6** Seismic Theory—Modeling II: Numerical Methods

### Thursday Morning, 8:30 a.m. - noon

- BH/RP 7** Borehole/Rock Physics—Characterization of Rock and Fluid Properties
- EM 3** Electromagnetics—Logging and Crosshole Studies
- NSG 5** Electrical and Electromagnetic Near-Surface Geophysical Studies
- SAVO/MC 6** AVO—Interpretation
- SPRO 12** Seismic Processing—Inversion
- SPRO 13** Seismic Processing—Case Studies
- SPRO 14** Depth Imaging—Algorithms II
- SRC 5** Reservoir Characterization—Time-Lapse Repeatability and Processing
- STHRY 7** Seismic Theory—Anisotropy
- STHRY 8** Seismic Theory—Data Compression

# Technical Program Poster Sessions

(All Technical Program Poster Sessions are held in the George R. Brown Convention Center, Level 3, Ballroom B)

## BH/RP P1 Borehole/Rock Physics

Session Chair: Arthur Cheng

- **BH/RP P1.1**  
Stoneley Index, permeability, and rock quality in fields of the Maturín Sub-basin, Eastern Venezuela Basin  
Francisco Díaz\*, Juan Carlos Porras, Milagrosa Aldana
- **BH/RP P1.2**  
Array laterolog and dual laterolog resistivity measurements in horizontal wells: A comparative model study  
Tsili Wang\*, Lei Xiao, Alberto Mezzatesta
- **BH/RP P1.3**  
High-frequency VSP methodology and its application to the detailed investigation of near-well space  
Emil Blas\*, Liudmila Shavina
- **BH/RP P1.4**  
Bayesian inversion of DC electrical measurements applied to reservoir monitoring  
Alberto Malinverno\*, Carlos Torres-Verdín
- **BH/RP P1.5**  
3-D elastic modeling of VSP surveys in the Gulf of Mexico  
Wei Liu\*, Kay Wyatt, Shawn Larsen, Arthur Cook, John Grieger, Paul Valasek
- **BH/RP P1.6**  
Development of alternative interpretation models and discriminating between them using a borehole gravity survey and a walkaway check-shot survey  
Terry Knighton\*, Stephen Western, Glenn Morton, Robert Fleming, Alan Herring
- **BH/RP P1.7**  
Borehole testing of a micromachined silicon accelerometer  
James Albright\*, Jeffery Gannon, Thomas Fairbanks, James Rutledge
- **BH/RP P1.8**  
Detection of guided waves between gas wells in Gulf Coast formations  
Jorge Parra\*, Christopher Hackert, Anthony Gorody
- **BH/RP P1.9**  
Anisotropic tomography of the Glenn Pool crosswell data  
Gokay Bozkurt\*, Duryodhan Epili, Christopher Liner

## G&M P1 Gravity & Magnetics

Session Chair: Dale Bird

- **G&M P1.1**  
Gravity and magnetic interpretation of the Sunda Shelf and South China Sea  
Dale Bird\*, Richard Gibson
- **G&M P1.2**  
Multiple source Euler deconvolution  
Richard Hansen\*, Laura Suciú

## G&M P1.3

Comparison of a new marine magnetometer system to high-resolution aeromagnetic data—A case study from offshore Oman  
Brian Anderson\*, Mark Longacre, Patrick Quist

## G&M P1.4

Three-dimensional "shape-of-anomaly" inversion of gravity and magnetic fields  
R. M. Rene\*

## G&M P1.5

MT imaging of Taiwan: Thin-skinned collision?  
Chow-Son Chen\*

## NSG P1 Near Surface

Session Chair: Don Steeples

## NSG P1.1

Resistivity interpretation near a trench  
Paul Wolfe\*

## NSG P1.2

Handling near-surface effects in imaging by using common focal point technology  
Cornelius Hindriks\*, Adri Duijndam

## NSG P1.3

High-resolution seismic survey over a near-surface contamination site  
Diana Dana\*, Colin Zelt, Alan Levander

## NSG P1.4

Comparison of ground-penetrating radar response and rock properties in a sandstone-dominated incised valley-fill deposit  
Alex Martinez, Alan Byrnes, D. Beaty, T. Carr\*, Jim Stiles

## NSG P1.5

Ground-penetrating radar study of dry aeolian environment  
Maksim Bano\*, Ph. Durringer, J. F. Ghienne, M. Schuster

## NSG P1.6

Three-dimensional seismic survey in reclaimed land  
Masato Minegishi\*, Motonori Higashinaka, Naoshi Aoki

## SAVO/MC P1 AVO

Session Chair: Randy McKinght

## SAVO/MC P1.1

Free-surface multiple attenuation of four-component (4-C) seafloor recordings  
Lasse Amundsen\*

## SAVO/MC P1.2

Non-rigid matching of migrated time-lapse seismic  
Michael Nickel\*, Lars Sonneland

## SAVO/MC P1.3

AVO analysis for converted waves  
Katusca Alvarez\*, María Donati, Milagrosa Aldana

## Technical Program Poster Sessions Cont.

### SAVO/MC P1 AVO

- **SAVO/MC P1.4**  
Overpressure prediction using converted modes from base of salt  
Monica Miley\*, Walter Kessinger
- **SAVO/MC P1.5**  
Converted-wave phase stability in seabed seismic data  
Hengchang Dai\*, Colin MacBeth
- **SAVO/MC P1.6**  
Seismic dynamic inversion using multiwave AVO data  
Tatiana Nefedkina\*, Vadim Buzlukov

### SINT P1 Seismic Interpretation

Session Chair: Marc Sbar

- **SINT P1.1**  
New seismic reflection images of the Nankai subduction zone off southwestern Japan from JAMSTEC cruise: Seamount subduction and seismic thrust fault  
Jin-Oh Park\*, Tetsuro Tsuru, Shuichi Kodaira, Narumi Takahashi, Yoshiyuki Kaneda, Hajimu Kinoshita, Yoshiteru Kono
- **SINT P1.2**  
Precambrian mantle plum below Eniseisky Ridge: Geophysical evidences  
Sergey Cherkasov\*
- **SINT P1.3**  
Imaging and modeling seismic data from a physical model of the SEG/EAGE salt structure  
Leigh House\*, Peter Roberts, Xiaoning Yang, Lian-Jie Huang, Robert Wiley, Shawn Larsen
- **SINT P1.4**  
Using wide-angle seismic data for basalt and sub-basalt imaging  
Moritz Fliedner\*, Robert White, Jürgen Frühn
- **SINT P1.5**  
Long-range side-scan sonar imaging of hydrocarbon seeps and sediment mass wasting on the Louisiana continental slope, Gulf of Mexico  
William Sager\*, Ian MacDonald
- **SINT P1.6**  
Effect of mineral  $V_p/V_S$  on rock  $V_p/V_S$   
Keith Katahara\*
- **SINT P1.7**  
Interval velocity slices: A potential lithology tool in deepwater Gulf of Mexico  
Norman Biles\*, Andrew Hannan, George Jamieson
- **SINT P1.8**  
3-D VCM seismic textures: A new technology to quantify seismic interpretation  
Dengliang Gao\*

### SINT P1.9

A model study for the effects of flow on seismic signatures  
Arpita Pal\*, Vinh Phan, Jerry Harris

### SINT P1.10

Rock model-based inversion of saturation and pressure changes from time-lapse seismic data  
Ivar Brevik\*

### SPRO P1 Seismic Processing

Session Chair: Ruben Martinez

### SPRO P1.1

Fast high-resolution parabolic radon transform  
Mauricio Sacchi\*, Milton Porsani

### SPRO P1.2

Land seismic refraction tomography using homogeneous velocity as initial model  
Bagus Bachtiar Nurhandoko\*, Toshifumi Matsuoka, Toshiki Watanabe, Yuzuru Ashida

### SPRO P1.3

Amplitude and phase effect of weather noise  
James Smith\*

### SPRO P1.4

Efficient computation of 3-D DMO responses for 3-D acquisition footprint analysis  
Carlos Calderon\*, Thomas Shirley, James Smith, Dave Hinkley, Phil North

### SPRO P1.5

2-D seismic processing with seismic  $U_n^*x$   
Thomas Benz, Wayne Pennington\*

### SPRO P1.6

Common-offset-vector gathers: An alternative to cross-spreads for wide-azimuth 3-D surveys  
Peter Cary\*

### SPRO P1.7

CFP operator estimation and inversion demonstrated on a field data set, Part II: Velocity estimation  
Rob Hegge\*, John Bolte, Jacob Fokkema, Adri Duijndam

### SPRO P1.8

Geostatistical seismic inversion using well log constraints  
Jonathan Kane\*, William Rodi, Felix Herrmann, M. Toksoz

### SPRO P1.9

Multiple attenuation in the plane wave domain by match filtering  
Reynam Pestana\*, Paul Stoffa, Mrinal Sen

### SPRO P1.10

Multiscale texture segmentation of dip-cube slices using wavelet-domain hidden Markov trees  
Ivan Magrin-Chagnolleau\*, Hyeokho Choi, Rutger van Spaendonck, Philippe Steeghs, Richard Baraniuk

## Technical Program Poster Sessions Cont.

### SPRO P2 Seismic Processing — Migration

Session Chair: Matthew Brzostowski

- **SPRO P2.1**  
Common offset pseudo-screen depth migration  
Shengwen Jin\*, Ru-Shan Wu
- **SPRO P2.2**  
Parallel GSP prestack migration  
Huimin Guan\*, Ru-Shan Wu
- **SPRO P2.3**  
A successful application of 3-D prestack depth migration in SL oilfield  
Jianyu Zhou\*, Yulong Song, Hongzhou Zhang
- **SPRO P2.4**  
3-D traveltimes reflection tomography used for depth conversion and uncertainty evaluation  
Damien Grenie\*, Yves Le Stunff, Sylvain Favard
- **SPRO P2.5**  
The construction of subsurface illumination and amplitude maps via ray tracing  
Glenn Bear\*, Chih-Ping Lu, Richard Lu, Ian Watson, Dennis Willen
- **SPRO P2.6**  
Wide angle screen method applied to prestack migration of a 2-D synthetic saltlike model  
Franck Mignet\*, Xiao-Bi Xie
- **SPRO P2.7**  
Efficient two and one-half dimensional true-amplitude migration  
Joe Dellinger\*, Sam Gray, Gary Murphy, John Etgen, Tong Fei
- **SPRO P2.8**  
Multiangle, multiscale inversion of migrated seismic data: An overview  
Kees Wapenaar\*, Aart-Jan van Wijngaarden, Jeroen Goudswaard
- **SPRO P2.9**  
Least-squares split-step migration using the Hartley transform  
Henning Kuehl\*, Mauricio Sacchi
- **SPRO P2.10**  
A 2-D comparison of Kirchhoff and full-wave migrations over SEG/EAGE physical model  
Manhong Guo\*, Anning Hou, Hua-wei Zhou
- **SPRO P2.11**  
A fast and accurate 3-D prestack Kirchhoff summation time migration  
Wen-Jing Wu\*

### STHRY P1 Seismic Theory

Session Chair: Pravin Shah

- **STHRY P1.1**  
Validity of the long-wave approximation in layered media  
Borge Arntsen\*
- **STHRY P1.2**  
A seismic test facility  
Jeffery Gannon\*, Michael McMahon, Hai Pham, Kevin Speller
- **STHRY P1.3**  
Amplitude preserving offset continuation in lateral varied media  
Mingqiu Luo, Youming Li\*, Hong Liu
- **STHRY P1.4**  
Electromagnetic traveltome tomography using an approximate wavefield transform  
TaeJong Lee\*, Jung Hee Suh, Hee Joon Kim, Yoonho Song, Ki Ha Lee
- **STHRY P1.5**  
3-D elastic scattering by an arbitrarily oriented spheroidal heterogeneity  
Wei Liu\*, Gordon West
- **STHRY P1.6**  
Analysis of seismic wave dynamics by means of integral presentation and method of discontinuities  
Anton Duchkov\*, Sergey Goldin
- **STHRY P1.7**  
Empirical mode decomposition based frequency attributes  
Ivan Magrin-Chagnolleau\*, Richard Baraniuk
- **STHRY P1.8**  
Algorithms of ray tracing for block media  
George Mitrofanov\*, Tatiana Kurdyukova

### STHRY P2 Seismic Theory — Anisotropy

Session Chair: Maartijn deHoop

- **STHRY P2.1**  
Experimental observation of qS-wave propagation in an orthorhombic medium  
Chih-Hsiung Chang\*, Young-Fo Chang
- **STHRY P2.2**  
Analysis of azimuthal variation in P-wave signature from orthogonal streamer lines  
Yi-Jie Liu, Xiang-Yang Li\*, Colin MacBeth, Peter Anderton
- **STHRY P2.3**  
Estimation of seabed sediment anisotropy using vertical cable seismics  
Hejie Wang\*, Colin MacBeth, Xiang-Yang Li
- **STHRY P2.4**  
A comparison between shear-wave birefringence and fractures in west Texas carbonates  
Paul Hatchell\*, David DeMartini



# Technical Program

## Monday, November 1

### BH/RP 1 Monday Afternoon

#### Borehole/Rock Physics — Seismic Velocity and Attenuation: Modeling and Measurements

Room: 301 C, D

Session Chairs: Xiao Ming Tang, Bata Mandal

- 1:30 PM ..... Experimental determination of elastic anisotropy of sandstone samples  
Gang Yu\*, Keeva Vozoff
- 1:55 PM ..... Fluids and frequency dependent seismic velocities of rocks  
Michael Batzle\*, De-hua Han, John Castagna
- 2:20 PM ..... Modeling the coupled effect of frequency and fluid distribution in partially saturated gas sands  
Shiyu Xu\*
- 2:45 PM ..... Study of the coupled effect of pressure, frequency, and fluid content on  $P$ - and  $S$ -wave velocities  
Shiyu Xu\*, Bob Keys
- 3:10 PM ..... Effect of fluid viscosity on elastic-wave attenuation in porous rocks  
Boris Gurevich\*
- 3:35 PM ..... Velocity dispersion, attenuation, and resonant phenomena in unconsolidated sands  
Joseph Molyneaux\*, Douglas Schmitt
- 4:00 PM ..... Attenuation profiles ( $Q_p-1$  &  $Q_s-1$ ) from acoustic logging data  
Xiaoming Tang\*, Xinhua Sun, Arthur Cheng
- 4:25 PM ..... Implementation of a tracking technique for sonic slowness determination  
Henri-Pierre Valero\*, Ram Shenoy, Takeshi Endo

### G&M 1 Monday Afternoon

#### Gravity and Magnetism — Case Histories

Room: 301 B, E

Session Chairs: Osni Bastos de Paula, Chuck Wielchowsky

- 1:30 PM ..... MaFIC—Magnetic interpretation in 3-D using a seismic workstation  
John Rhodes\*, John Peirce
- 1:55 PM ..... Geomagnetic investigations in the Urals for the study of earth crust structure  
Vsevolod Shapiro\*, Natalia Fedorova, Faina Nikonova, Alexander Chursin
- 2:20 PM ..... Aeromagnetic interpretation of the Dianongo Trough HRAM survey, onshore Gabon  
John Peirce\*, Serguei Goussev, Ross McLean, Marc Marshall
- 2:45 PM ..... Aeromagnetic interpretation of basement structure using over 3000 control wells, central Alberta: A case history  
Dale Bird\*, John Nelson
- 3:10 PM ..... Full 3-D geophysical analysis of a massive sulphide Cu discovery—Las Cruces, southern Spain  
Frank Arnott\*, Stephen McIntosh
- 3:35 PM ..... Integrated geophysical surveys for searching of podiform chromite in Albania  
Aleksander Kospiri\*

### SACQ 1 Monday Afternoon

#### Acquisition — Means and Methods

Room: Ballroom A

Session Chairs: Duncan Riley, Mike Reblin

- 1:30 PM ..... Deviations from the Delft method in quality control for streamer shaping  
Erik Hupkens\*, Stan Zachary
- 1:55 PM ..... A new air gun design for an efficient, high acoustic output source array  
Stephen Chelminski, Paul Chelminski, Michael Saunders\*, H. Jensen
- 2:20 PM ..... "Zero-field" air-gun measurements for improved efficiency in marine seismic acquisition  
Anton Ziolkowski\*
- 2:45 PM ..... Marine production levels in land 3-D seismic  
Patrick Burger\*, Douglas Wasmuth, Bart Duijndam
- 3:10 PM ..... Harmonic distortion in slip sweep records  
Paul Ras\*, Mark Daly, Baeten Guido
- 3:35 PM ..... High fidelity vibratory seismic in a difficult geologic area  
Nick Moldoveanu\*, Glen Tite, Jay May
- 4:00 PM ..... The ghost in the spectrum  
Nasser Hamarbatan, Gary Margrave\*
- 4:25 PM ..... Field test of a micromachined, electromechanical, digital seismic sensor  
Steven Roche\*, Peter Maxwell

### SAVO/MC 1 Monday Afternoon

#### Multicomponent — Converted Waves

Room: General Assembly A

Session Chairs: Mark Boyd, Dave Carlson

- 1:30 PM ..... Characterizing reservoir by using jointly  $P$ - and  $S$ -wave AVO analysis  
Side Jin\*
- 1:55 PM ..... Anisotropic prestack depth migration of converted-wave data from the Gulf of Mexico  
Bertram Nolte\*, Dwight Sukup, Kevin Bishop
- 2:20 PM ..... 3-D converted-wave processing over the Valhall Field  
Matthew Brzostowski\*, Xianhuai Zhu, Suat Altan, Leon Thomsen, Olav Barkved, Borge Rosland
- 2:45 PM ..... Enhanced  $PS$ -wave images and attributes using prestack azimuth processing  
James Gaiser\*
- 3:10 PM ..... Converted-wave binning analysis: In search of gamma  
Claudio Bagaini, Richard Bale\*, Philippe Caprioli, Shuki Ronen
- 3:35 PM ..... Lithologic  $P$ - $S$  weighted stacking inversion: A synthetic example  
Maria Donati\*, Nicolas Martin
- 4:00 PM ..... Shear velocities in the  $tau$ - $p$  domain from mode-converted waves  
Lucie Pautet\*, William Kuperman, LeRoy Dorman
- 4:25 PM ..... Imaging beneath high velocity layers  
Neil Jones\*, James Gaiser

# Technical Program

## Monday, November 1

### SPRO 1 Monday Afternoon

#### Seismic Data Processing — Multiple Attenuation I

Room: 303 A, B

Session Chairs: Ruben Martinez, Josef Paffenholz

- 1:30 PM ..... Processing issues in applying surface multiple attenuation to a 3-D Gulf of Mexico data set  
**Bill Dragoset\***, Necati Gulunay, Diana Pattberg
- 1:55 PM ..... Multiple attenuation using eigenvalue decomposition  
**Jianwu Jiao\***, Dan Negut, Brian Link
- 2:20 PM ..... A comparison of pattern and series-based multiple suppression  
**J. Bednar\***, G. Neale
- 2:45 PM ..... Inverse scattering internal multiple attenuation: Results from complex synthetic and field data examples  
**Kenneth Matson\***, Dennis Corrigan, Arthur Weglein, Chi-Yuh Young, Paulo Carvalho
- 3:10 PM ..... Elimination of free surface-related multiples without need of the source wavelet  
**Lasse Amundsen\***
- 3:35 PM ..... 3-D surface-related multiple prediction and data reconstruction  
**Ewoud van Dedem\***, Michel Schonewille, Dirk Verschuur
- 4:00 PM ..... Fast 2-D synthetic seismograms for testing multiple removal algorithms  
**David Taylor\***, Rodney Johnston
- 4:25 PM ..... Removal of intrabed multiples via source-signature invariant inversion  
**Gennady Ryzhikov\***, Marina Biryulina

### SRC 1 Monday Afternoon

#### Reservoir Characterization

Room: Ballroom C

Session Chairs: Guy Purnell, Steve Roche

- 1:30 PM ..... Detecting reservoir seal integrity using seismic methods  
**Stan Lee\***, Jesse Shaw, Rachel Ho
- 1:55 PM ..... Three-dimensional calculation and visualization of fault gouge ratio  
**Karen Hoffman\***, John Neave
- 2:20 PM ..... Reservoir characterization on thin sands in South West Ampa 21 area (BLK 11) using inversion  
**Mohamad Seruddin Salleh\***, Sagar Ronghe
- 2:45 PM ..... North Sea reservoir characterization using rock physics, seismic attributes, and neural networks: A case history  
**Joel Walls\***, M. Taner, Tom Guidish, Gareth Taylor, David Dumas, Naum Derzhi
- 3:10 PM ..... Trace-based and geostatistical inversion of 3-D seismic data for thin-sand delineation: An application to San Jorge Basin, Argentina  
**Carlos Torres-Verdin\***, Marcos Victoria, Germán Merletti

- 3:35 PM ..... Quantitative reservoir characterization at B Field, Java Sea: A statistical approach and a model-based approach  
**Dennis Cooke\***, Teteng Muryanto
- 4:00 PM ..... A strategy to select optimal seismic attributes for reservoir property estimation: Application of information theory  
**Isao Takahashi\***, Tapan Mukerji, Gary Mavko
- 4:25 PM ..... What is the best seismic attribute for quantitative seismic reservoir characterization?  
**Dennis Cooke\***, Arcangelo Sena, Greg O'Donnell, Teteng Muryanto, Vaughn Ball

### SS 1 Monday Afternoon

#### Special Session — AAPG Invited Papers

Room: 302 B, C, D, E

Session Chairs: John Walsh, Roy Nurmi

- 1:30 PM ..... Systems, sequences and regimes  
**William L. Fisher**
- 1:55 PM ..... New exploration concepts for the Edwards and Sligo Margins: Cretaceous of onshore Texas  
**Dale A. Fritz**, Terry W. Belsher, James M. Medlin, John L. Stubbs, Robert P. Wright, Paul M. Harris
- 2:20 PM ..... Classification of syndepositional structural systems, northern Gulf of Mexico  
**Robert C. Shoup**, John F. Karlo
- 2:45 PM ..... 3-D modeling of erosion, transport, and deposition from shelf edge to basin floor  
**Stuart Hardy**, Rob Gawthorpe, Ritchie Bryant, David Hunt
- 3:10 PM ..... Evaluation of structural models for deepwater fold belt evolution in the northern Gulf of Mexico  
**Stephen H. Hall**, Stephen J. Mathews, Timothy G. Bevan, Mario Valderrama
- 3:35 PM ..... Subsalt Turtle Play, Walker Ridge area, deepwater Gulf of Mexico  
**F. C. Snyder**, D. W. Burge, R. L. Nagy, L. H. Purnell

### SS 2 Monday Afternoon

#### Special Session — Recent Advances and the Road Ahead

Room: General Assembly C

Session Chairs: Sven Treitel, Laurent Meister

- 1:30 PM ..... Recent Advances show the Road Ahead for the electric oilfield very clearly  
**Ian G. Jack**, Leon Thomsen
- 1:55 PM ..... More -D: Multicomponent seismology for reservoir assessment  
**Robert R. Stewart**
- 2:20 PM ..... Time-lapse measurements in reservoir management: A summary of the SEG 1999 D&P Forum  
**Philip A.F. Christie**, Dan Ebrom





# Technical Program

## Tuesday, November 2

### BH/RP 2 Tuesday Morning

#### Borehole/Rock Physics — Acoustic Logging

Room: 301 C, D

Session Chairs: Gopa De, Doug Patterson

- 8:30 AM.....Determination of permeability from flexural waves in dipole acoustic logging  
**Kexie Wang\***, Jun Ma, Xian-yun Wu, Bi-xing Zhang
- 8:55 AM.....Shear-wave anisotropy from a single dipole source  
**Batakrishna Mandal\***
- 9:20 AM.....Effects of a vertical fluid-filled fracture on borehole dipole logs  
**Pei-cheng Xu\***, Jorge Parra
- 9:45 AM.....A study of stress-induced anisotropy using the 'relaxation' method on synthetic core  
**Troy Thompson\***, Brian Evans
- 10:10 AM....A finite-difference formulation of borehole wave propagation in prestressed formations  
**Bikash Sinha\***, Qing Liu, Thomas Plona, Kenneth Winkler
- 10:35 AM....Formation stress estimation using standard acoustic logging  
**Xiaojun Huang\***, Bikash Sinha, M. Toksoz, Daniel Burns
- 11:00 AM....Formation stress determination from borehole acoustic logging: A theoretical foundation  
**Xiaoming Tang\***, Ningya Cheng, Arthur Cheng

### BH/RP 3 Tuesday Morning

#### Borehole/Rock Physics — Rock Properties from Well Logs

Room: Ballroom A

Session Chairs: Dan Burns, Mike Batzle

- 8:30 AM.....Interwell porosity and permeability from Biot-Gassmann with shear and compressional tomography and crossplots  
**James Justice\***, J. Woerpel, George Watts, Wade Waddell
- 8:55 AM.....Calibration of rock properties for deepwater seismic  
**Fred Hilterman**, Richard Verm, Mark Wilson, Luh Liang\*
- 9:20 AM.....Techniques for improving seismic attribute versus well-log property cross plots with synthetic and real data examples from Prudhoe Bay Field  
**Dennis Cooke\***
- 9:45 AM.....Three-parameter AVO crossplotting in anisotropic media  
**He Chen\***, John Castagna, Raymon Brown, Antonio Ramos
- 10:10 AM....Quantifying uncertainties in AVO forward modeling  
**Ayon Dey\***, Chandra Rai, Carl Sondergeld
- 10:35 AM....Looking for links between deterministic and statistical methods for porosity and clay-content estimation  
**Li-Yun Fu\***
- 11:00 AM....Velocity-porosity trends in well log data  
**Svein Johnstad**, Jack Dvorkin\*

### EM 1 Tuesday Morning

#### Electromagnetics — Modeling and Inversion

Room: 302 A, F

Session Chairs: James Carazzone, Michael Zhdanov

- 8:30 AM.....2.5-D electromagnetic forward modeling in the time and frequency domains using the finite-element method  
**Yongliang Meng**, Weidong Li\*, Michael Zhdanov, Yanzhong Luo
- 8:55 AM.....2.5-dimensional modeling and inversion of CSEM data  
**Yuji Mitsuhashi\***, Toshihiro Uchida
- 9:20 AM.....3-D inversion of DC resistivity data using an L-curve criterion  
**Yaoguo Li\***, Douglas Oldenburg
- 9:45 AM.....Transient field solution for a thin layer of finite thickness on a resistive homogeneous half-space  
**Benson Singer\***, Andrew Green
- 10:10 AM....Inversion of coincident loop TEM data for layered polarizable ground using neural networks  
**Hesham El-Kaliouby\***, Mary Poulton, Essam El-Diwany
- 10:35 AM....Automatic model reparameterization—A novel approach to analyzing ambiguous data  
**Hansruedi Maurer\***, David Boerner
- 11:00 AM....3-D electromagnetic modeling based on quasi-analytical series  
**Gabor Hursan\***, Michael Zhdanov
- 11:25 AM....Modeling of complex electromagnetic targets using advanced nonlinear approximator techniques  
**Ian Murray\***, Catalina Alvarez, Ross Groom

### G&M 2 Tuesday Morning

#### Gravity and Magnetics — Theory and Applications

Room: 301 B, E

Session Chairs: Ed Biegert, Manik Talwani

- 8:30 AM.....Resolution and efficient inversion of gravity gradiometry  
**Francis Condi\***, Manik Talwani
- 8:55 AM.....Finding the configuration of a 3-D body by structural inversion of gravity data  
**Pavel Ditmar\***
- 9:20 AM.....Compression in inverse problem solution  
**Oleg Portniaguine\***, Michael Zhdanov
- 9:45 AM.....Three-dimensional gravity inversion based on the simulated annealing algorithm for constraining diapiric roots of salt canopies  
**Seiichi Nagihara\***, Silvia Urizar, Stuart Hall
- 10:10 AM....Rapid construction of equivalent sources using wavelets  
**Yaoguo Li\***, Douglas Oldenburg
- 10:35 AM....Differential reduction of magnetic anomalies to the pole on a massive parallel computer  
**Richard Lu\***, John Mariano, Dennis Willen
- 11:00 AM....Gradient-enhanced total field gridding  
**C. Hardwick\***

TECHNICAL PROGRAM

## Technical Program

### Tuesday, November 2

#### NSG 1 Tuesday Morning

##### Geophysical Characterizations of Near-Surface Reservoir Analogs

Room: 301 A, F

Session Chairs: Don Steeples, Chris Schmeissner

- 8:30 AM.....Hydrocarbon investigation based on near-surface magnetic anomalies  
Miroslav Starcevic, Aleksandar Djordjevic, Dejan Sekulic\*
- 8:55 AM.....Imaging of turbidite outcrop analogs using ground-penetrating radar  
Roger Young\*, Ben Peterson, Roger Slatt
- 9:20 AM.....Using MASW to map bedrock in Olathe, Kansas  
Richard Miller\*, Jianghai Xia, Choon Park, Julian Ivanov, Eric Williams
- 9:45 AM.....Evaluation of the MASW technique in unconsolidated sediments  
Jianghai Xia\*, Richard Miller, Choon Park, James Hunter, James Harris
- 10:10 AM....Velocity-independent datuming of seismic data  
Panos Kelamis\*, Dirk Verschuur, Augustinus Berkhout, Kevin Erickson
- 10:35 AM....Feasibility of high resolution  $P$ - and  $S$ -wave seismic reflection to detect methane hydrate  
Richard Miller, James Hunter\*, William Doll, Bradley Carr, Robert Burns, Ronald Good, David Laffen, Marten Douma, Michael Riedel
- 11:00 AM....Predicting traveltimes anomalies in missing offsets and deeper reflectors  
Nicola Bienati\*, Paolo Ruffo
- 11:25 AM....Removing rugged-topography scattering effects in surface seismic data  
Li-Yun Fu\*, Ru-Shan Wu, Huimin Guan

- 10:35 AM....Improved structural and stratigraphic definition from 3-D/4-C data—Statfjord Field  
Hege Rognoe\*, Aage Kristensen, Lasse Amundsen
- 11:00 AM....Simultaneous demultiple of 4-C OBC data  
Wenjie Dong\*, Mark Ponton
- 11:25 AM....Characterization of seismic anomalies using seabed 2-D/4-C acquisition: A case history from the East Natuna Basin (Indonesia)  
Lotfi Ben Brahim\*, Ronan Petton, Michel Couderc, Agus Djamhoer

#### SINT 1 Tuesday Morning

##### Interpretation — Reservoir Characterization Using Seismic Attributes

Room: Ballroom C

Session Chairs: Mark Williams, Ajay Badachhape

- 8:30 AM.....Seismic attributes past, present, and future  
Arthur Barnes\*
- 8:55 AM.....Convergence of 3-D seismic attribute-based reservoir property prediction and geologic interpretation as a risk reduction tool: A case study from a Permian intraslope basin  
Robin Pearson\*, Bruce Hart
- 9:20 AM.....Finding untested compartments by integrated seismic and production analyses: A case study from Ship Shoal 274, Gulf of Mexico  
Joel Watkins\*, Chris Kulander, Lee Williams, C. Decker
- 9:45 AM.....An integrated study of the Lihua 11-1 Field using an ultrahigh resolution 3-D seismic data set: South China Sea  
Chip Story\*, Patrick Peng, Christoph Heubeck, Claire Sullivan, Jian Lin
- 10:10 AM....Central role of geophysics in 21st century exploration and production success  
Jeffery Johnson\*
- 10:35 AM....Sierra Chata Field, Argentina: The mapping of a stratigraphic trap  
William Louder\*, Kevin Woller
- 11:00 AM....Mapping of thin reservoir layers within the Hibernia formation using a full 3-D stratigraphic inversion  
Rakesh Walia\*, Todd Mojesky, Larry Sydora, John Evans
- 11:25 AM....Role of seismic attributes in finding new reserves: Cambay Basin, India  
A. K. Srivastava\*, J. D. Rao, Virendra Singh, S. N. Singh, Mahesh Chandra

#### SAVO/MC 2 Tuesday Morning

##### Multicomponent — Applications I

Room: General Assembly A

Session Chairs: Keith Wrolstad, Guy Purnell

- 8:30 AM.....Anisotropic processing of 4-C seabed seismic data: A case example from West Africa  
Laurent Godin, Colin MacBeth\*, Jean Arnaud
- 8:55 AM.....AVO analysis by simultaneous  $PP$  and  $PS$  weighted stacking applied to 3-C-3-D seismic data  
Jeffrey Larsen\*, Gary Margrave, Han-xing Lu
- 9:20 AM.....The Alba Field OBC seismic survey  
Mark MacLeod\*, Rex Hanson, Mike Hadley, Kelvin Reynolds, David Lumley, Steve McHugo, Tony Probert
- 9:45 AM.....Radial-transverse ( $SV-SH$ ) coordinates for 9-C 3-D seismic reflection data analysis  
James Simmons Jr.\*, Milo Backus
- 10:10 AM....Anisotropic velocity analysis for 4-C seismic data: A case study  
Xiang-Yang Li\*, Jianxin Yuan



## Technical Program

### Tuesday, November 2

#### BH/RP 4 Tuesday Afternoon

##### Borehole/Rock Physics — VSP and Well Seismic Ties

Room: 301 C, D

Session Chairs: Roger Turpening, Rick Gibson

- 1:30 PM ..... Vertical seismic profile in the Mallik 2L-38 Gas Hydrate Research Well in the Canadian Arctic  
Yanpeng Mi\*, Rakesh Walia, Roy Hyndman, Akio Sakai
- 1:55 PM ..... VSP mapping error for dipping horizons using a horizontally layered model  
Genmeng Chen\*, Luis Canales, Janusz Peron
- 2:20 PM ..... Rock property estimates from walkaway VSP surveys  
Volker Dirks\*, John Dangerfield
- 2:45 PM ..... First constant angle 3-D circular borehole profile on Ekofisk  
John Dangerfield\*, Vincent Clochard, Volker Dirks, Peter Dillon
- 3:10 PM ..... Simultaneous acquisition of 3-D surface seismic and 3-C, 3-D VSP data  
Steven Roche\*, Mark Holland, Paul Constance, Paul Bicquart, B. Bryans, J. G. Ralph, Robert Bloor, S. Gelinsky
- 3:35 PM ..... Integrated surface and borehole seismic applied to deep target exploration in Saudi Arabia  
Clement Kostov\*, Abdul Nasser Khusheim, Panos Kelamis, Magda Filbrandt, Krish Gunaratnam, Dick Ireson
- 4:00 PM ..... Anisotropy correction for deviated well sonic logs: Application to seismic well tie  
Brian Hornby\*, John Howie, Donald Ince
- 4:25 PM ..... How to resolve the problem of the match between well and time-migrated seismic data?  
Stefan Kaculini\*

#### EM 2 Tuesday Afternoon

##### Electromagnetics — MT and Controlled Source

Room: 302 A, F

Session Chairs: Leonard Smka, H. Frank Morrison

- 1:30 PM ..... Three-dimensional inversion of magnetotelluric data collected for hydrocarbon exploration in the overthrust area in Japan  
Nikolay Golubev\*, Michael Zhdanov, Koichi Matsuo
- 1:55 PM ..... Magnetotelluric inversion of blocky geoelectrical structures using the minimum-support method  
Salah Mehane\*, Michael Zhdanov
- 2:20 PM ..... The VIBROTEM method  
Stefan Helwig\*, Tilman Hanstein, Andreas Hördt
- 2:45 PM ..... Effects of topography in LOTEM data recorded at Vesuvius Volcano, Italy  
Andreas Hördt\*, Martin Müller
- 3:10 PM ..... Simultaneous inversion of TDEM data for anomalous conductivity and magnetic permeability  
Dmitriy Pavlov\*, Michael Zhdanov

- 3:35 PM ..... Array TDEM survey in Dexie Valley  
Toru Mogi\*, Akira Jomori, Nobuhide Jomori, Donald Lippert, John Clyde, Donald Rock
- 4:00 PM ..... 3-D parameters-space electromagnetic mapping using helicopter-borne systems  
Haoping Huang\*, Douglas Fraser
- 4:25 PM ..... The application of airborne EM to minerals discovery: The Canadian camp experience  
Ken Witherly\*

#### G&M 3 Gravity & Magnetics

##### Gravity and Magnetics — New Dimensions

Room: 301 B, E

Session Chairs: Guy Moinet, Ron Phair

- 1:55 PM ..... HeliGrav helicopter long-line transported land gravity versus traditional land gravity acquisition—Survey efficiency and results from an Australian regional survey  
Bob Lo\*, Peter Johnson, Terence McConnell, Alastair Ryder-Turner
- 2:20 PM ..... Deep penetration density: A new borehole gravity meter  
Mark Ander\*, James Govro, Jianfeng Shi, Daniel Aliod
- 2:45 PM ..... The bold new world of borehole gravimetry  
David Chapin\*, Ethan Mann
- 3:10 PM ..... Time-lapse gravity gradiometry  
Manik Talwani\*, Mel Schweitzer, Walter Feldman, Dan DiFrancesco, William Konig
- 3:35 PM ..... Three-dimensional gradient magnetics—Geologic applications  
Terence McConnell\*, Zeev Berger, Bob Lo, Alastair Ryder-Turner
- 4:00 PM ..... Magnetic imaging using extended Euler deconvolution  
Martin Mushayandebvu\*, Peter van Driel, Alan Reid, Derek Fairhead
- 4:25 PM ..... Model-independent depth estimation with the SPI (tm) method  
Jeff Thurston\*, Richard Smith, Jean-Claude Guillon

#### NSG 2 Tuesday Afternoon

##### Influence of Soil Properties on Near-Surface Geophysical Measurements

Room: 301 A, F

Session Chairs: Greg Baker, Mike Knoll

- 1:30 PM ..... Finite-difference modeling of borehole georadar data  
Klaus Holliger\*, Tim Bergmann
- 1:55 PM ..... Electrical properties of sand-clay mixtures: The effect of microstructure  
Dorthe Wildenschild\*, Jeffery Roberts, Eric Carlberg
- 2:20 PM ..... Laboratory studies to assess the use of nuclear magnetic resonance for near-surface applications  
Rosemary Knight\*, Traci Bryar, Chris Daughney

# Technical Program

## Tuesday, November 2

### NSG 2 Tuesday Afternoon (continued)

#### Influence of Soil Properties on Near-Surface Geophysical Measurements

- 2:45 PM ..... High resistivities associated with an LNAPL plume imaged by geoelectric tomography  
Chieh-Hou Yang\*, Jiunn-I You
- 3:10 PM ..... Planetary telescience: Characterization of the resource potential of lunar and martian soil using human-assisted robotics  
Bonnie Cooper\*, Frank Sager, Carlton Allen, John Hoffman, David McKay

### SACQ 2 Tuesday Afternoon

#### Acquisition — Survey Design

Room: Ballroom A

Session Chairs: Stuart Wright, Carl Regone

- 1:30 PM ..... Model-based simulation for survey planning and optimization  
Victor Pereyra\*, Laura Carcione, Alfredo Muñoz, Fermín Ordaz, Eduardo Yañez, Rober Yibirin
- 1:55 PM ..... The benefits of 3-D ray tracing in acquisition feasibility  
Christophe Sassolas\*, Pascal Nicodeme, Guillaume Lescoffit
- 2:20 PM ..... Efficient and accurate modeling of 3-D seismic illumination  
William Schneider Jr.\*, Graham Winbow
- 2:45 PM ..... Acquisition geometry footprints removal  
Necati Gulunay\*
- 3:10 PM ..... Footprint analysis of land and TZ acquisition geometries using synthetic data  
Nick Moldoveanu\*, Shuki Ronen, Scott Michell
- 3:35 PM ..... Converted waves: Properties and 3-D survey design  
Gijs Vermeer\*
- 4:00 PM ..... Analysis of the effectiveness of 3-C receiver arrays for converted-wave imaging  
Brian Hoffe\*, Henry Bland, Gary Margrave, Peter Manning, Darren Foltinek
- 4:25 PM ..... Using seismic data to verify 3-D geometry—Some new approaches to field QC  
James Galbraith\*

### SAVO/MC 3 Tuesday Afternoon

#### AVO — Applications I

Room: General Assembly A

Session Chairs: Randy McKnight, Yafei Wu

- 1:30 PM ..... Interpreting AVO responses  
Douglas Foster, Robert Keys\*
- 1:55 PM ..... Integrating seismic lithofacies prediction and depositional geometry analysis for reservoir delineation in a North Sea turbidite field  
Per Avseth\*, Tapan Mukerji, Gary Mavko, Jorunn Tyssekvam

- 2:20 PM ..... AVO lithology prediction using multiple seismic attributes  
Daniel Hampson\*, Todor Todorov
- 2:45 PM ..... Pushing AVO inversion beyond linearized approximation: A new parameterization and crossplotting  
Benoit Lavaud, M. M. Nurul Kabir\*, Guy Chavent
- 3:10 PM ..... Essentials of Geomodulus method  
Xinping Chen\*
- 3:35 PM ..... The impact of multiple suppression on AVO analysis  
Warren Ross\*
- 4:00 PM ..... Azimuthally dependent amplitude versus offset in 3-D seismic: An automated statistical measurement and case study  
Derek Skoyles\*, John DeWildt, Joseph Erickson, Henk Innemee, David Monk
- 4:25 PM ..... Azimuthal offset-dependent attributes (AVO and FVO) applied to fracture detection  
Feng Shen\*, Jesús Sierra, Dan Burns, Nafi Toksoz

### SPRO 4 Tuesday Afternoon

#### Seismic Data Processing

Room: Ballroom C

Session Chairs: Marcelo Solano, Sonny Lin

- 1:30 PM ..... Marine vibrator motion correction in the frequency-space domain  
Tony Noss, Graham Johnson, Shuki Ronen\*, Paul Allen, Mike Jenkerson, Rich Houck
- 1:55 PM ..... Fast computation of the sliding-window radon transform applied to 3-D seismic attribute extraction  
Philippe Steeghs\*
- 2:20 PM ..... Automated phase-based moveout correction  
Eugene Lichman\*
- 2:45 PM ..... Interpolation with smoothly nonstationary prediction-error filters  
Sean Crawley\*, Robert Clapp, Jon Claerbout
- 3:10 PM ..... Automatic picking of seismic events  
Alexander Zamorouev\*
- 3:35 PM ..... Robust estimation of dense 3-D stacking velocities from automated picking  
Frank Adler\*, Simon Brandwood
- 4:00 PM ..... Robust and stable velocity analysis using the Huber function  
Antoine Guitton\*, William Symes
- 4:25 PM ..... Stationary-phase conversions of seismic data  
Yevgenit Tsatsko\*

TECHNICAL PROGRAM



# Technical Program

## Wednesday, November 3

### BH/RP 5 Wednesday Morning

#### Borehole/Rock Physics — Electric Logging

Room: 301 B, E

Session Chairs: Ingo Geldmacher, Max Peeters

- 8:30 AM.....Forward and inversion of azimuthal lateral resistivity logs  
Wei Yang, Guo Tao\*
- 8:55 AM.....Fast-forward modeling simulation of resistivity well logs using neural network  
Lin Zhang\*, Mary Poulton, Zhiyi Zhang, Alberto Mezzatesta, Srinivasa Chakravarthy
- 9:20 AM.....Reconstruction of resistivity structure from 2-D inversion of resistivity logging data using equality and inequality constraints  
Zhiyi Zhang\*, Michael Jervice, Raghu Chunduru, Alberto Mezzatesta
- 9:45 AM.....Joint inversion of MWD and wireline measurements  
Raghu Chunduru\*, Alberto Mezzatesta, Hal Meyer, Zhiyi Zhang, Rainer Busch, Tom Maher
- 10:10 AM.....Neural-network-based layer picking for unfocused resistivity-log parameterization  
Lin Zhang\*, Mary Poulton, Alberto Mezzatesta
- 10:35 AM.....Detection of layer boundaries from array induction tool responses using neural networks  
Srinivasa Chakravarthy\*, Raghu Chunduru, Alberto Mezzatesta, Otto Fanini
- 11:00 AM.....Seismoelectric and seismomagnetic measurements in fractured borehole models  
Zhenya Zhu\*, M. Nafi Toksoz

### BH/RP 6 Wednesday Morning

#### Borehole/Rock Physics — Single Well Imaging/Seismic While Drilling

Room: 301 C, D

Session Chairs: Chris Payton, Stephan Gelinsky

- 8:30 AM.....Fracture imaging from sonic reflections and mode conversion  
Hiroaki Yamamoto, Jakob Haldorsen\*, Hitoshi Mikada, Shin'ichi Watanabe
- 8:55 AM.....A field experiment of single-well seismic imaging at a heterogeneous rock site  
Toru Takahashi\*, Takashi Imayoshi, Tomoyoshi Takeda
- 9:20 AM.....Determination of tube-wave to body-wave ratio for Conoco borehole orbital source  
Anton Ziolkowski\*, Zander Sneddon, Larry Walter
- 9:45 AM.....Hybrid modeling of conical wave effect in stratified media  
Tao Zhen\*, James Rector
- 10:10 AM.....Optimization of receiver pattern in seismic-while-drilling  
Lorenzo Petronio\*, Flavio Poletto, Francesco Miranda, Giuliano Dordolo

10:35 AM.....Velocities before, during, and after drilling  
David Bartel\*

11:00 AM.....Are pore-pressure-related drilling problems predictable? The value of using seismic before and while drilling  
Raghavendra Kulkarni\*, Jörg Meyer, David Sixta

### NSG 3 Wednesday Morning

#### GPR and Seismic Techniques for Near-Surface Characterization

Room: 301 A, F

Session Chairs: Roger Young, Mike Powers

- 8:30 AM.....Ground-penetrating radar inversion for fracture orientation  
AbdulFattah Al-Dajani\*, Philip Reppert, Dale Morgan
- 8:55 AM.....Fracture detection using crosshole borehole radar in Kamaishi  
Hui Zhou\*, Motoyuki Sato
- 9:20 AM.....On coincident seismic and radar imaging  
Gregory Baker\*, Don Steeples, Chris Schmeissner
- 9:45 AM.....Ultra shallow seismic reflection in depth: Examples from 3-D and 2-D ultrashallow surveys with application to joint seismic and GPR imaging  
Ran Bachrach\*, James Rickett
- 10:10 AM.....Seismic techniques to delineate dissolution features in the upper 1000 ft at a power plant site  
Richard Miller\*, Jianghai Xia, Choon Park, William Shefchik, Laura Moore
- 10:35 AM.....Surface-wave group-velocity tomography applied to shallow structures at a waste site  
Leland Long\*, Argun Kocaoglu, William Doll, Xiuqi Chen, Jeffrey Martin
- 11:00 AM.....Imaging through a badly weathered near surface: A case history at Elk Hills  
William Bailey, Jack Weyer, Guillaume Cambois\*, Joel Scott, Neville Manderson, Mike Fenton
- 11:25 AM.....Prestack migration residual statics analysis using equivalent offset mapping  
Xinxiang Li\*, John Bancroft

### SACQ 3 Wednesday Morning

#### Acquisition — Survey Design and Project Management

Room: Ballroom A

Session Chairs: Doug Bremner, Steve Cook

- 8:30 AM.....Enhanced spatial resolution measures: An alternative to conventional illumination analysis  
Constantinos Tzimeas\*, Richard Gibson Jr.
- 8:55 AM.....Analysis of 3-D seismic acquisition geometries by focal beams  
Arno Volker\*, Gerrit Blacquiere
- 9:20 AM.....3-D physical modeling for acquisition geometry studies  
Gerrit Blacquiere\*, Arno Volker, Leo Ongkiehong

# Technical Program

## Wednesday, November 3

### SACQ 3 Wednesday Morning (continued)

#### Acquisition — Survey Design and Project Management

- 9:45 AM.....From elephant gun to vacuum cleaner: The evolving role of SPARSE 3-D in efficient extraction of remaining resource in a mature basin  
Jack Bouska\*, Gordon Cain
- 10:10 AM....The client's role in the HSE management of geophysical operations  
Alan Dolezal\*
- 10:35 AM....Command and control of seismic operations  
Todd Porter\*, John Archer
- 11:00 AM....The information age seismic crew  
Robert Dart\*, Gary Crews, James Musser
- 11:25 AM....The future is random: Archiving seismic data to random access media  
Eleanor Jack\*

### SAVO/MC 4 Wednesday Morning

#### Multicomponent — Applications II

- Room: General Assembly A*  
*Session Chairs: John O'Brien, Roger Entralgo*
- 8:30 AM.....Anisotropic velocity analysis using marine 4-C seismic data  
Colin Sayers\*, Tony Johns
  - 8:55 AM.....Multicomponent imaging with reciprocal shot records  
Michael O'Brien\*, N. D. Whitmore, Gary Murphy, John Ethen
  - 9:20 AM.....Shear-wave splitting: Tutorial, issues, and implications for 9-C 3-D seismic reflection data  
James Simmons Jr.\*, Milo Backus
  - 9:45 AM.....Case history: 3-D shear-wave processing and interpretation in radial-transverse (SV-SH) coordinates  
James Simmons Jr.\*, Milo Backus, Bob Hardage, Robert Graebner
  - 10:10 AM....Anisotropy from waveform inversion of multicomponent seismic data using a hybrid method  
Ying Ji\*, Satish Singh
  - 10:35 AM....Prestack elastic waveform inversion using a priori information  
Thierry Tonellot\*, Daniele Mace, Vincent Richard, Michel Cueur
  - 11:00 AM....Seismic synthetics study of 4 components for seafloor reflection  
Chen Yao\*, Xiangguo Chen, Jun Lei
  - 11:25 AM....Multicomponent seismic interpretation: Data integration issues  
Rex Hanson\*, Mark MacLeod, Christopher Bell, Christopher Thompson, Jorgen Somod

### SINT 2 Wednesday Morning

#### Interpretation — Seismic Facies Mapping

- Room: Ballroom C*  
*Session Chairs: Linda Sternbach, Richard Heaney*
- 8:30 AM.....Seismic constrained facies modeling using stochastic seismic inversion and indicator simulation, a North Sea example  
Tien-when Lo\*, Thomas Fisher, William Bashore
  - 8:55 AM.....A new methodology based on seismic facies analysis and lithoseismic modeling: The Elkhorn Slough Field pilot project, Solano County, California  
Manuel Poupon\*, Konstantin Azbel, George Palmer
  - 9:20 AM.....The chimney cube, an example of semiautomated detection of seismic objects by directive attributes and neural networks, Part I: Methodology  
Paul Meldahl\*, Roar Heggland, Paul de Groot, Bert Brill
  - 9:45 AM.....The chimney cube, an example of semiautomated detection of seismic objects by directive attributes and neural networks, Part II: Interpretation  
Roar Heggland\*, Paul Meldahl, Bril Bert, Paul de Groot
  - 10:10 AM....Pseudowell methodology: A guiding tool for lithoseismic interpretation  
Caroline Joseph\*, Frederique Fournier, Sylviane Vernassa
  - 10:35 AM....Identifying stratigraphic units by seismic patterns  
Peter Whitehead\*, Robert Wentland, John Fairborn
  - 11:00 AM....Neural network for robust pattern recognition in real seismic data  
Kou-Yan Huang\*

### SPRO 6 Wednesday Morning

#### Seismic Data Processing — Noise Attenuation

- Room: 302 A, F*  
*Session Chairs: Necati Gulunay, Dave Carlson*
- 8:30 AM.....The radial trace transform: An effective domain for coherent noise attenuation and wavefield separation  
David Henley\*
  - 8:55 AM.....Effects of seismic interference on 3-D data  
Mike Jenkerson\*, H. Clark, Richard Houck, Stefan Seyb, Matthew Walsh
  - 9:20 AM.....Noise suppression analysis and 3-D data acquisition geometries  
Arno Volker\*, Gerrit Blacquiere, Leo Ongkiehong
  - 9:45 AM.....3-D geometry, velocity filtering, and scattered noise  
Julien Meunier\*
  - 10:10 AM....Attenuation of marine wave swell noise by stacking in the wavelet packet domain  
Doyle Watts\*, Andrew Deighan, Carsten Riedel

TECHNICAL PROGRAM

# Technical Program

## Wednesday, November 3

### SPRO 6 Wednesday Morning (continued)

#### Seismic Data Processing — Noise Attenuation

- 10:35 AM....Neural network approach to seismic crew noise identification in marine surveys  
Vinton Buffenmyer\*, Mary Poulton, Roy Johnson, Simon Spitz
- 11:00 AM....Filtering surface waves using 2-D discrete wavelet transform  
Minh-Quy Nguyen\*, Jerome Mars
- 11:25 AM....f<sub>xy</sub> projection filtering using helical transformation  
Ahmet Ozdemir, Ali Ozbek\*, Ralf Ferber, Kamil Zerouk

### SPRO 7 Wednesday Morning

#### Depth Imaging — Velocities

- Room: General Assembly B  
Session Chairs: Uwe Albertin, Bob Bruce
- 8:30 AM....Migration-based velocity analysis in 2-D laterally heterogeneous media  
Herve Chauris\*, Mark Noble, Gilles Lambare, Pascal Podvin
- 8:55 AM....Model-based depth imaging by migration-based traveltimes  
Jean-Marc Cognet\*, Yann-Herve De Roeck, Guy Chavent, Herve Nouze
- 9:20 AM....Application of 3-D tetrahedral anisotropic ray tracing for prestack depth migration  
Brian Macy\*, Paul Valasek
- 9:45 AM....Tomographic velocity model updating for prestack depth migration  
Robert Bloor\*, Alfonso Gonzalez, Uwe Albertin, David Yingst
- 10:10 AM....Residual tomographic updating  
J. Bednar\*, L. Vinson, J. Thorson
- 10:35 AM....3-D local tomography-residual interval velocity analysis on a depth solid model  
Zvi Koren\*, Uri Zackhem, Dan Kosloff
- 11:00 AM....Constrained nonlinear velocity inversion of seismic reflection data  
Side Jin\*
- 11:25 AM....Traveltimes calculation in 3-D media with arbitrary velocity distribution  
Huazhong Wang\*, Zaitian Ma, Peter Hubral

### SRC 3 Wednesday Morning

#### Reservoir Characterization — Time-Lapse Case History

- Room: General Assembly C  
Session Chairs: David Lumley, Dan Ebrum
- 8:30 AM....Staffjord field-time-lapse seismic interpretation using a 4-D earth model  
Nazih Al-Najjar, Ivar Brevik, Leif Kvamme, David Psaila, Philippe Doyen\*
- 8:55 AM....Schiehallion: A 3-D time-lapse processing case history  
Suat Altan\*, Xianhuai Zhu, Chris Walker, Gary Dillon, Matthew Brzostowski
- 9:20 AM....Meren Field, Nigeria: A 4-D seismic case study  
David Lumley\*, Alan Nunn, Guy Delorme, A. Adeogba, Michel Bee
- 9:45 AM....Foinaven active reservoir management: Towed streamer and buried seabed detectors in deep water for 4-D seismic  
Mike Cooper, Peter Westwater, Ed Thorogood, Pål Kristiansen\*, Philip Christie
- 10:10 AM....Foinaven active reservoir management: The benefits from the baseline surveys  
Mike Cooper, Peter Westwater, Ed Thorogood\*, Pål Kristiansen, Tony Probert, Philip Christie
- 10:35 AM....Foinaven active reservoir management: The time-lapse signal  
Mike Cooper\*, Ed Thorogood, Andrew O'Donovan, Pål Kristiansen, Philip Christie
- 11:00 AM....Time-lapse imaging of steam and heat movement in the Cymric 36W Cyclic Steam Pilot using crosswell seismology  
Robert Langan\*, Fred Bair, Scott Johnson, Dale Julander, Jeff Meyer, John Washbourne
- 11:25 AM....4-D crosswell seismic imaging in complex structure  
John Washbourne\*, Jeff Meyer

### STHRY 5 Wednesday Morning

#### Seismic Theory — Migration Imaging Theory

- Room: 302 B, C, D, E  
Session Chairs: N/A
- 8:30 AM....3-D common-offset migration and irregularities in seismic data acquisition  
Frederic Assouline\*
- 8:55 AM....The Kirchhoff-Helmholtz integral pair  
Martin Tygel\*, Jörg Schleicher, Lucio Santos, Peter Hubral
- 9:20 AM....Common-reflection-point trajectory in inhomogeneous media  
Po Zhang\*, Hong Liu, Mingqiu Luo, Youming Li
- 9:45 AM....Applications of the common-reflection-surface stack  
Jürgen Mann\*, Thilo Mueller, Rainer Jäger, German Hoecht, Peter Hubral
- 10:10 AM....Prestack  $V(z)$   $f_k$  migration for PP and PS seismic data  
Xinxiang Li\*, Gary Margrave



# Technical Program

## Wednesday, November 3

### SINT 3 Wednesday Afternoon

#### Interpretation — Geophysical Data Management and Fracture Detection and Characterization

Room: 301 B, E

Session Chairs: Ed Mozer, Dave Reynolds

- 1:30 PM .....Editing and rapidly updating a 3-D earth model  
Nicolas Euler\*, Charles Sword Jr.,  
Jean Claude Dulac
- 1:55 PM .....Interoperability of geoscience applications  
M. Rahi\*
- 2:20 PM .....Seismic processing on commodity supercomputers  
Scott Morton\*, Jeffrey Davis, Harry Duffey,  
Gary Donathan, Steven Checkles
- 2:45 PM .....Bringing the seismic archive to the desktop  
Kathy Taerum\*, Rod Neumann
- 3:10 PM .....Estimation of fracture parameters of HTI media from  
surface *P* and *PS* data  
Andrey Bakulin\*, Vladimir Grechka, Ilya Tsvankin
- 3:35 PM .....Role of dip and azimuth attributes in delineation of  
subtle faults  
Ramji Pathak\*, Satendra Singh, Mahesh Chandra,  
Sachchida Badola
- 4:00 PM .....Fracture detection using marine streamer data: A case  
study  
Thomas Kühnel\*, Xiang-Yang Li,  
Jens-Petter Kvarstein
- 4:25 PM .....Shear-wave reflection moveout for azimuthally  
anisotropic media  
AbdulFattah Al-Dajani\*, Nafi Toksoz

### SINT 4 Wednesday Afternoon

#### Interpretation — Novel Applications in Interpretation

Room: Ballroom A

Session Chairs: Robert Schneider, Paul Ware

- 1:30 PM .....Soft computing: Tools for intelligent reservoir  
characterization  
Masoud Nikravesh\*, Raymond Levey, Roy Adams,  
Douglas Ekart
- 1:55 PM .....Application of nonlinear discriminate function in oil-gas  
prediction  
Yingjun Feng\*, Xuefeng Wang, Yanlai Li, Shi Chen
- 2:20 PM .....3-D WARRP design for exploration targets  
Duryodhan Epili\*, Warren Neff, John Grieger
- 2:45 PM .....WARRP (Wide Aperture Reflection and Refraction  
Profiling): The principle of successful data acquisition  
where conventional seismic fails  
Jannis Makris\*, Frank Egloff, Roland Rihm
- 3:10 PM .....Examination of seafloor reflection phase change in the  
Northland Basin, New Zealand  
David McCorkindale\*
- 3:35 PM .....Structural and stratigraphic analysis of 3-D seismic  
attributes applied to mine planning: Target gold  
deposit, South Africa  
Graham Stuart\*, Stephen Jolley, Louis Polome, Neil Grey

- 4:00 PM .....Statistical analysis and empirical trends in *P*- and *S*-  
wave stacking velocities  
Harilal\*, Lavendra Kumar, Naresh Chandra,  
N. C. Sharma
- 4:25 PM .....The prospectivity of the Rovuma Basin, Mozambique  
Huw Edwards\*, Sarah Lainchbury

### SPRO 8 Wednesday Afternoon

#### Seismic Processing — VSP/Tomography

Room: 301 C, D

Session Chairs: Don Pham, Steve Roche

- 1:30 PM .....Determination of anisotropic parameters, in situ, using a  
multi-offset vertical seismic profile  
Jennifer Leslie\*, Don Lawton
- 1:55 PM .....Anisotropic seismic velocity models from modeling and  
inversion of walkaway VSP data  
Stephan Gelinsky\*, John Parkin
- 2:20 PM .....Velocity analysis of offset VSP using two-eikonal  
migration/imaging technique  
Cemal Erdemir\*
- 2:45 PM .....Equivalent offset migration for vertical receiver arrays  
John Bancroft\*, Yong Xu
- 3:10 PM .....Refraction tomography without ray tracing  
Konstantin Osypov\*
- 3:35 PM .....3-D reflection tomography in time-migrated space  
Pierre Hardy\*, Jean-Paul Jeannot
- 4:00 PM .....Characterization of the ambiguities in anisotropic  
reflection tomography  
Kenneth Bube\*, Mark Meadows
- 4:25 PM .....On a continuation approach to regularization for  
crosswell tomography  
Kenneth Bube\*, Robert Langan

### SPRO 9 Wednesday Afternoon

#### Seismic Data Processing — Deconvolution

Room: 302 A, F

Session Chairs: Luis Canales, Hans Meinardus

- 1:30 PM .....Phase inversion deconvolution for surface consistent  
processing and multiple attenuation  
Eugene Lichman\*
- 1:55 PM .....Applying minimum relative entropy spectrum deconvolution  
John Parrish\*
- 2:20 PM .....Colored reflectivity compensation for increased vertical  
resolution  
Scott Haffner\*, Scott Cheadle
- 2:45 PM .....Walkaway *Q* inversion  
W. Scott Leaney\*
- 3:10 PM .....Geological-based seismic deconvolution  
L. Paul Dennis\*, Fred Peterson, Brian Link,  
Stewart Trickett
- 3:35 PM .....A unified framework for the deconvolution of traces of  
nonwhite reflectivity  
M. Saggaf\*

# Technical Program

## Wednesday, November 3

### SPRO 10 Wednesday Afternoon

#### Seismic Data Processing — Multiple Attenuation II

Room: Ballroom C

Session Chairs: Ted Shuck, Leon Hu

- 1:30 PM .....Prestack imaging, modeling, and multiple suppression on a Beowulf cluster  
J. Bednar\*, C. Bednar, G. Neale, Jeff Thorson
- 1:55 PM .....Multiple removal based on signal reconstruction from stacking velocity  
Wenkai Lu\*, Xuegong Zhang, Yanda Li
- 2:20 PM .....Near-offset multiple suppression  
Eduardo Filpo\*, Martin Tygel
- 2:45 PM .....Removal of internal multiples  
A. Berkhout\*, Dirk Verschuur
- 3:10 PM .....Antialiasing multiple prediction beyond 2-D  
Yalei Sun\*
- 3:35 PM .....Surface multiple attenuation for multicomponent ocean bottom seismometer data  
Faqi Liu\*, Mrinal Sen, Paul Stoffa
- 4:00 PM .....Benefits of source signature measurements for multiple removal in streamer and OBC data  
Rodney Johnston\*, Anton Ziolkowski
- 4:25 PM .....Integration of OBS data and surface data for OBS multiple removal  
Dirk Verschuur\*, Erik Neumann

### SPRO 11 Wednesday Afternoon

#### Depth Imaging — Algorithms I

Room: General Assembly B

Session Chairs: Karl Schleicher, Joe Higginbotham

- 1:30 PM .....Reduction of 3-D acquisition footprints in 3-D migration/inversion  
Philippe Jousset\*, Philippe Thierry, Gilles Lambare
- 1:55 PM .....Aspects of true amplitude migration  
Uwe Albertin\*, Herman Jaramillo, David Yingst, Robert Bloor, Wenfong Chang, Craig Beasley, Everett Mobley
- 2:20 PM .....Equalized prestack depth migration  
Robert Bloor\*, Uwe Albertin, Herman Jaramillo, Dave Yingst
- 2:45 PM .....Application of the Li correction to explicit depth-extrapolation methods  
John Etgen\*, Dave Nichols
- 3:10 PM .....A practical implementation of depth migration by nonstationary phase shift  
Robert Ferguson\*, Gary Margrave
- 3:35 PM .....Equivalent offset migration (EOM) applied to a synthetic foothills data set: A case study  
John Bancroft\*, M. Graziella Kirtland Grech

- 4:00 PM .....Quasi-linear extended local Born Fourier migration method  
Lian-Jie Huang\*, Michael Fehler
- 4:25 PM .....Parsimonious Kirchhoff depth migration  
Biao-Long Hua\*, George McMechan

### SRC 4 Wednesday Afternoon

#### Reservoir Characterization — Time-Lapse Interpretation and Feasibility

Room: General Assembly C

Session Chairs: John Eastwood, Keith Hirsche

- 1:30 PM .....Discrimination between pressure and fluid saturation changes from time-lapse seismic data  
Martin Landro\*
- 1:55 PM .....Estimating pressure and saturation changes from time-lapse AVO data  
Ali Tura\*, David Lumley
- 2:20 PM .....Discriminating seismic signatures of steam injection from lithology variations: Feasibility study in a Venezuela heavy oil reservoir  
Ezequiel González\*, Tapan Mukerji, Gary Mavko
- 2:45 PM .....A feasibility study of time-lapse seismic monitoring using stochastic reservoir models  
Sung Yuh\*, Kari Nordaas, Richard Gibson Jr., Akhil Datta-Gupta
- 3:10 PM .....Coupled geomechanics and flow simulation for time-lapse seismic modeling  
Susan Minkoff\*, Charles Stone, J. Arguello, Steve Bryant, Joe Eaton, Malgo Peszynska, Mary Wheeler
- 3:35 PM .....Seismic resolution and uncertainty in time-lapse studies  
Peter Harris\*, Frank Adler
- 4:00 PM .....Acoustic daylight imaging via spectral factorization: Helioseismology and reservoir monitoring  
James Rickett\*, Jon Claerbout

### STHRY 6 Wednesday Afternoon

#### Seismic Theory — Modeling II: Numerical Methods

Room: 302 B, C, D, E

Session Chairs: N/A

- 1:30 PM .....An efficient method for calculating finite-difference seismograms after model alterations  
Johan Robertsson\*, Chris Chapman
- 1:55 PM .....The symplectic geometric description and algorithm of seismic wave propagation  
Mingqiu Luo, Youming Li\*, Hong Liu



# Technical Program

## Thursday, November 4

### NSG 5 Thursday Morning

#### Electrical and Electromagnetic Near-Surface Geophysical Studies

Room: 301 A, F

Session Chairs: Jeff Wynn, Scott Holladay

- 8:30 AM.....Multiconfiguration ground-penetrating radar data  
Jean-Paul Van Gestel\*, Paul Stoffa
- 8:55 AM.....Development and applications of geometric-sounding electromagnetic (EM) systems  
Richard Taylor\*
- 9:20 AM.....Characterization of shallow karst terrain using multifrequency electromagnetic induction: Two examples from eastern Pennsylvania  
Jonathan Nyquist\*, Mary Roth, John Petruccione
- 9:45 AM.....The application of broadband airborne time domain electromagnetic data to mapping shallow stratigraphy  
John Slade\*
- 10:10 AM....Real-time experimental design: Application to 3-D high-resolution DC resistivity and IP surveys  
Peter Stummer\*, Hansruedi Maurer, David Boerner
- 10:35 AM....Multifrequency ground-penetrating radar data to characterize spatial variability  
Rosemary Knight\*, Paulette Tercier, Harry Jol
- 11:00 AM....Radiation consistent ground-penetrating radar imaging  
Xander Campman\*, Evert Slob
- 11:25 AM....Detection of vertical fractures in geologic formations using the polarization properties of ground-penetrating radar signal  
Georgios Tsofilias\*, Jean-Paul Van Gestel, Paul Stoffa, Mrinal Sen

### SAVO/MC 6 Thursday Morning

#### AVO — Interpretation

Room: General Assembly A

Session Chairs: Sharma Tadepalli, Randy Utech

- 8:30 AM.....AVO and velocity analysis  
Debashish Sarkar\*, Bill Lamb, John Castagna
- 8:55 AM.....3-D common diffracting angle migration/inversion for AVA analysis  
Philippe Thierry\*, Gilles Lambare, Sheng Xu
- 9:20 AM.....Improving AVO attributes with robust regression and quality control  
Alexandra Ferre\*, Frederique Fournier, Nathalie Lucet
- 9:45 AM.....Bridging the gap: Using AVO to detect changes in fundamental elastic constants  
F. Gray\*, William Goodway, Taiwen Chen
- 10:10 AM....A methodology for ocean-bottom AVOA analysis using common-receiver data  
Stephen Hall\*, J. Michael Kendall
- 10:35 AM....Well calibration of seabed seismic data  
Martin Landro\*, Kenneth Duffaut, Hege Rogno

- 11:00 AM....Fault whispers: Transmission distortions on prestack seismic reflection data  
Paul Hatchell\*

### SPRO 12 Thursday Morning

#### Seismic Processing — Inversion

Room: 301 B, E

Session Chairs: Xianhuai Zhu, Brian Sumner

- 8:30 AM.....Hybrid seismic inversion: A reconnaissance exploration tool  
Subhashis Mallick\*, Jeffrey Lauve, Riaz Ahmad, Khushroo Patel, Steven Dobbs
- 8:55 AM.....3-D migration/inversion in complex media  
Sheng Xu\*, Gilles Lambare, Philippe Thierry
- 9:20 AM.....2-D full wavefield inversion of wide angle real marine seismic data  
Richard Shipp\*, Edgardo Di Nicola-Carena, Satish Singh
- 9:45 AM.....Data regularization by inversion to common offset (ICO)  
Nizar Chemingui\*, Biondo Biondi
- 10:10 AM....Seismic traveltome tomography using Fresnel volume approach  
Toshiki Watanabe\*, Toshifumi Matsuoka, Yuzuru Ashida
- 10:35 AM....First-arrival time calculation in 3-D media using finite-difference method  
Chaoguang Zhou\*, Lanbo Liu
- 11:00 AM....Upwind finite-difference traveltome for anisotropic media  
Jianliang Qian\*, William Symes
- 11:25 AM....Fast traveltome tomography and analysis of real data using a semiautomated picking procedure  
Edgardo Di Nicola-Carena\*, Richard Shipp, Satish Singh

### SPRO 13 Thursday Morning

#### Seismic Processing — Case Studies

Room: Ballroom C

Session Chairs: Damon Simons, Matthew Brzostowski

- 8:30 AM.....Seria high resolution 3-D survey revives the fortunes of a mature oil field  
Paul Wood\*, Svend Pettersson, David Gibson, Wilson Rowe
- 8:55 AM.....Seismic methods for delineating complex structures in coal seams  
Christopher Walton\*, Brian Evans, Milovan Urosevic
- 9:20 AM.....Seismic tomography technique for diamond pipes prospecting  
Anton Kolonin\*
- 9:45 AM.....Long offset acquisition and processing for sub-basalt imaging  
Richard Wombell\*, Elwyn Jones, Dave Priestly, Gareth Williams

TECHNICAL PROGRAM

# Technical Program

## Thursday, November 4

### SPRO 13 Thursday Morning (continued)

#### Seismic Processing — Case Studies

- 10:10 AM....The effects of basalt heterogeneities on seismic imaging of deeper reflectors  
Claude Lafond\*, Stefan Kaculini, Francesca Martini
- 10:35 AM....Processing seismic reflection data from high fold, crooked-line surveys in crystalline geological terrain  
Mladen Nedimovic\*, Gordon West
- 11:00 AM....A general reconstruction scheme for dominant azimuth 3-D seismic data  
Adri Duijndam\*, Michel Schonewille, Remco Romijn, Alexander Koek, Leo Ongkiehong
- 11:25 AM....Detection of short period interbed multiples and enhancement of surface seismic resolution—A case study  
A. K. Dubey\*, Virendra Singh, A. K. Srivastava, D. P. Sinha

### SPRO 14 Thursday Morning

#### Depth Imaging — Algorithms II

Room: General Assembly B  
Session Chairs: Mihai Popovici, Young Kim

- 8:30 AM.....Experimenting with the hybrid pseudoscreen migration  
Shengwen Jin\*, Chengbin Peng
- 8:55 AM.....Scalar generalized-screen algorithms in transversely isotropic media with a vertical axis of symmetry  
Jerome Le Rousseau\*, Maartijn de Hoop
- 9:20 AM.....Scalar reverse-time depth migration of prestack elastic data  
Robert Sun\*
- 9:45 AM.....An explicit, symmetric wavefield extrapolator for depth migration  
Gary Margrave\*, Robert Ferguson
- 10:10 AM....Wave equation datuming from irregular surface using finite-difference scheme  
Kai Yang\*
- 10:35 AM....Prestack depth migration with common-shot and synthesis-shot records  
Guanquan Zhang\*, Wensheng Zhang, Xianjun Hao
- 11:00 AM....Pseudospectral prestack depth migration of common shot gathers  
Anning Hou\*, Hua-wei Zhou

### SRC 5 Thursday Morning

#### Reservoir Characterization—Time-Lapse Repeatability and Processing

Room: General Assembly C  
Session Chairs: Bob Will, Brian Cerney

- 8:30 AM.....Improvements in 4-D legacy data quality and repeatability through reprocessing, Lena Field  
Robert Vauthrin\*, Bruce Bird, Bob Will, John Eastwood, David Johnston
- 8:55 AM.....Time-lapse 3-D seismic with analogue sandbox models  
Donald Sherlock\*, Brian Evans
- 9:20 AM.....Nonlinear cross-equalization of seismic surveys acquired with different bandwidths  
Paul Davies\*, Mike Warner
- 9:45 AM.....A finite-difference injection approach to modeling of seismic fluid flow monitoring  
Johan Robertsson\*, Sarah Ryan-Grigor, Colin Sayers, Chris Chapman
- 10:10 AM....Repeatability of seabed multicomponent data  
Shuki Ronen\*, Ronald van Waard, Jim Keggin
- 10:35 AM....Co-location of 4-D seismic data in the presence of navigational and timing errors  
Richard Leggott, R. Williams\*, Mark Skinner
- 11:00 AM....Reprocessing of time-lapse seismic data improves seismic history matching  
Xuri Huang\*, Thaddeus Jones, Albert Berni

### STHRY 7 Thursday Morning

#### Seismic Theory — Anisotropy

Room: 302 B, C, D, E  
Session Chairs: N/A

- 8:30 AM.....On eikonal solvers for anisotropic traveltimes  
Seongjai Kim\*
- 8:55 AM.....Estimation of fracture parameters of orthorhombic media from reflection seismic data  
Andrey Bakulin\*, Vladimir Grechka, Ilya Tsvankin
- 9:20 AM.....Inversion of normal moveout for monoclinic media  
Vladimir Grechka\*, Pedro Contreras, Ilya Tsvankin
- 9:45 AM.....Kinematics in a 3-D anisotropic medium  
Bill Vetter\*
- 10:10 AM....Model study of anisotropic effects on full and partial stacks  
He Chen\*
- 10:35 AM....Numerical modeling energy reflection in stratified anisotropic media  
Chen Yao\*, Xiangguo Chen
- 11:00 AM....Calculation and comparison between group-propagation (energy) reflection and phase-propagation reflection in strong transverse anisotropic media  
Xiangguo Chen\*, Chen Yao



# Technical Program

**Thursday, November 4**

**STHRY 8 Thursday Morning**

## Seismic Theory — Data Compression

Room: Ballroom A

Session Chairs: N/A

8:30 AM.....Development of seismic data compression methods for reliable, low-noise performance  
Paul Donoho\*, Ray Ergas, Robert Polzer

8:55 AM.....A new class of filter banks for seismic data compression  
Laurent Duval\*, Jacques Oksman, Truong Nguyen

9:20 AM.....Compression of field data within system specifications  
Peter Vermeer\*

9:45 AM.....Prestack imaging of compressed seismic data: A Monte Carlo approach  
Ernesto Bonomi\*, Luca Cazzola

10:10 AM....2-D semiadapted local cosine/sine transform applied to seismic data compression and its effects on migration  
Yongzhong Wang\*, Ru-Shan Wu

10:35 AM....Facies recognition using wavelet-based fractal analysis on compressed seismic data  
Juan Jiménez, Adrián Peinado, Reinaldo Michelena\*

## Notes

## Notes

TECHNICAL PROGRAM

## Workshops at a Glance

### Sunday, October 31

- W 1** The Cost of Land Seismic Data Acquisition During the Recording Process  
8:30 AM – 5 PM, George R. Brown Convention Center, Grand Ballroom A

### Thursday, November 4

- W 2** Is True Amplitude Processing & Imaging Possible in 3-D?  
1:30 – 5 PM, Westin Galleria, Galleria II, III
- W 3** Next Generation of Electromagnetic Instruments for Near-Surface Investigations  
1:30 – 5 PM, Westin Galleria, Galleria IV
- W 4** Time-Lapse Measurements in Reservoir Management  
1:30 – 5 PM, Westin Galleria, Galleria I

### Friday, November 5

- W 5** The Next SEG/EAGE Seismic Model  
8:30 AM – noon, Westin Galleria, Galleria II
- W 6** Recent Advances in Logging Methods  
8:30 AM – noon, Westin Galleria, Plaza Ballroom I
- W 7** Dynamic Reservoir Characterization and Seismically Constrained Production Optimization  
8:30 AM – noon, Westin Galleria, Galleria I
- W 8** Fracture Characterization and Imaging  
8:30 AM – noon, Westin Galleria, Plaza Ballroom II
- W 9** Research in Visualization  
8:30 AM – noon, Westin Galleria, Galleria III
- W 10** The Seismic Link: Reducing Risk  
8:30 AM – noon, Westin Galleria, Galleria IV

## Workshops

### Sunday, October 31, 8:30 AM – 5 PM

#### **W 1** The Cost of Land Seismic Data Acquisition During the Recording Process

George R. Brown Convention Center, Grand Ballroom A

*Organized by Tom Davis, CSM; Bob Albers, Sercel, Inc.; Bob Graebner, Univ. of Texas; Steve Roche, Input/Output; George Wood, Sercel, Inc.; Ian Jack, BP Amoco*

In past years, data processing and new methods such as shear-wave recording have been topics of more interest than conventional 3-D recording. We now believe that the industry is right and waiting for the opportunity to discuss the primary acquisition process that fuels most of our business and to seek ways that might reduce our costs to the eventual users. In a like manner these cost reductions might also serve to keep our crews in the field through more difficult times.

The format of the meeting will include individual speakers in each segment followed by panel interaction in open discussion at the end of each segment.

Workshop segments will include:

- Instrumentation and sensors
- Vibrator technology
- 3-D/3-C design
  - Geophone groups versus single geophones
  - Spatial sampling
- The business of cost reduction
- What's next?

**Workshops (continued)****Thursday, November 4, 1:30 — 5 PM****W 2 Is True Amplitude Processing & Imaging Possible in 3-D?**

Westin Galleria, Galleria II, III

*Organized by Simon Spitz, CGG; Fabio Rocca, POLIMI; and Graham Winbow, Exxon, through support of the SEG Research Committee*

For a long time, seismic data have been successfully analyzed in terms of the kinematics of *PP* reflections. Such an analysis has led to the discovery of giant fields. However, the modern requirements of exploration and production are pressuring practitioners to extract more information from the data. Fine interpretation of the attributes extracted from the seismic trace, close examination of the prestack depth imaged sections, and the emergence of new methodologies such as time-lapse seismic, require the amplitudes of the seismic traces to be reliable. But are the prestack or poststack amplitudes at the reservoir level reliable and consistent?

Ignoring physical laws (anisotropy, absorption, *P* to *S* conversions) can conspire with the various steps of the seismic flow to perturb the amplitudes of the target events. Irregular acquisition patterns can hinder the amplitude of seismic reflections beyond recovery. Statics, the removal of coherent noise, errors in the velocity model leading to incorrect stacking and incorrect positioning can dramatically affect the amplitudes needed in the delineation of subtle features. This half-day workshop will try to identify the state of the art in amplitude recovery and assess the reliability of the recorded amplitudes in different seismic environments.

**W 3 The Next Generation of Electromagnetic Instruments for Near-Surface Investigations**

Westin Galleria, Galleria IV

*Organized by Vic Labson, US Geological Survey, and Les Beard, Geological Survey Norway, through support of the Near-Surface Geophysics Section*

Many of the targets of near-surface investigations have electrical properties that differ significantly from background. These include man-made wastes, as well as contaminants or geologic features that might constrain contaminant migration. As a result, much effort has been directed toward development of improved time domain and frequency domain instruments. In this workshop, we shall begin with a tutorial on the state of the art and then discuss the desirable attributes and technological challenges that must be overcome in developing improved instrumentation for near-surface investigations.

**W 4 Development & Production Workshop:  
"Time-Lapse Measurements in Reservoir Management"**

Westin Galleria, Galleria I

*Organized by the SEG Development and Production Committee*

*Contacts: Dan Ebrom, Texaco EPTD; Phil Christie, Schlumberger Geco-Prakla; and John Eastwood, Exxon Production Research Co.*

The 1999 SEG D&P Forum was held July 11-16, in Kananaskis, Canada. The two key goals for this year's forum were a critical appraisal of the impact of time-lapse projects on reservoir economics and the identification of the road ahead. A sampling of sessions from the forum will be presented: The Reservoir Engineer's Perspective, Data Integration in Building Earth Models, Time-Lapse Feasibility, Acquisition Technology and Repeatability, Nonsurface Seismic Techniques, Processing for Time-Lapse, and Interpretation Methods.

This annual forum is specifically designed to bring forth new and emerging technologies and to discuss how we best can apply these technologies to benefit our industry and profession. The meeting is strictly "off the record" and active discussion by all participants is not only encouraged, it is required. More information regarding this annual event can be obtained through the SEG Business Office.

## Workshops (continued)

Friday, November 5, 8:30 AM — noon

### **W 5** The Next SEG/EAGE Seismic Model

Westin Galleria, Galleria II

*Organized by Leon Thomsen, BP Amoco, and Leigh House, LANL, through support of the SEG Research Committee*

Numerical data from the first SEG/EAGE modeling project has been available for some time now and is being used by researchers from many organizations. Now that this large modeling effort has been finished, it is timely to evaluate the models that were used and the data set produced to decide whether a new modeling effort is needed. Among the concerns that have been expressed about the first data set are:

- Is the predominant frequency (15 Hz) of that data set too low?
- Is elastic modeling needed to more realistically represent wave propagation?
- Do the models (salt and overthrust) capture or adequately represent realistic imaging challenges?
- Is the full size data set, as was calculated for the first project, really needed?
- Could these data set be useful for AVO and reservoir modeling and engineering, as well as for exploration?

The computing power that is now available makes additional numerical data computations feasible. Yet, the computing that would be needed to produce an elastic model data set may be still beyond reach. This workshop will discuss these and related questions, and attempt to decide what, if anything, should be done next.

### **W 6** Recent Advances in Logging Methods

Westin Galleria, Plaza Ballroom I

*Organized by Kurt Strack, Baker Atlas, and H. H. Yuan, Shell, through support of the SEG Research Committee*

During the past decade numerous new logging techniques have emerged. Some of them give us fundamentally new measurements (NMR) and others give spatial resolution (like the array resistivity tools). In addition, as interpretation techniques have matured other measurements (such as formation testing) become of interest to the geophysicist. This workshop will review the advances in new logging technologies that were made during the past 10 years. In addition it will preview some future technologies. Emphasis will be given to linking the technologies to the usefulness for the geophysicist by showing the path of integration and information value.

### **W 7** Dynamic Reservoir Characterization and Seismically Constrained Production Optimization

Westin Galleria, Galleria I

*Organized by Ali Tura, 4th Wave Imaging, and Fred Aminzadeh, FACT, through support of the SEG Research Committee*

In the first part of the workshop we will focus on dynamic reservoir characterization. Field examples using various approaches will be highlighted. How reservoir characterization evolves as more data are introduced and issues such as sealed fault blocks, impermeable zones, and model upscaling/downscaling will be discussed. We will also solicit examples of dynamic reservoir characterization, discussing modification of well logs and seismic data to account for production-related effects and how one can construct a true (preproduction) earth model.

The second part of the workshop will concentrate on seismically constrained production optimization. Once the reservoir model is built, it is upscaled and used in reservoir simulation. The objective is to update the simulation model until the simulated production data match the observed production data. This is a nonunique problem and one that benefits from additional constraints such as those provided by seismic data. In seismically constrained production optimization, the objective is to obtain a reservoir model that when simulated matches not only production data but also time-lapse seismic, and in the long range, any other time-lapse data (such as well log data). The role of conventional statistical approaches such as cokriging and unconventional methods such as fuzzy logic and neural networks in production optimization will also be reviewed.

**Workshops (continued)****Friday, November 5, 8:30 a.m. — noon****W 8 Fracture Characterization and Imaging**

Westin Galleria, Plaza Ballroom II

Organized by Mike Schoenberg, Schlumberger; Ilya Tsvankin, CSM; and Colin Sayers, Schlumberger, through support of the SEG Research Committee

The behavior of fluids in the subsurface depends significantly on the presence and extent of subsurface fracturing. This workshop is concerned with how to model fractures in rock (for the forward problems of wave propagation and fluid flow) and how to invert seismic, electrical, NMR, or pressure data to image fractures and/or sets of fractures, and to extract their properties. Experimental work and field test examples are welcome. Examples of time-lapse seismics to "see" changes in fracture behavior are of special interest.

As well as seismic methods emphasizing applications of *P*-waves and mode-converted waves in fracture detection and specification, we encourage the discussion of nonseismic measurements to identify the fluids within the fractures and to estimate the contribution of the fracturing to overall permeability. In addition, attention will be paid to work on scale-dependent effects, fracture guided waves, and influence of cementation, clay content, and stress on fracture properties.

**W 9 Research in Visualization**

Westin Galleria, Galleria III

Organized by Geoff Dorn and Tracy Stark, ARCO, and Huw James, Paradigm, through support of the SEG Research Committee

Immersive 3-D visualization is rapidly developing as a breakthrough technology in the oil industry. Since the opening of the first visualization centers in the industry in 1997 at ARCO, Texaco, and Norsk Hydro, many major oil companies and service companies have opened visualization centers. Typically these centers rapidly become heavily booked with business because of the immediate benefits of the large screen displays for collaboration and communication. In order to reap the full range of potential benefits from these systems, significant research and development progress is required in a number of aspects of the technology that supports immersive environments.

Numerous workshops and meetings over the last two years have focused on the potential value of large immersive visualization and examples of the application of these systems to upstream problems in the oil industry. The focus of this workshop will be on the open, sometimes controversial issues that require further R&D to realize the full value of these environments.

A partial list of key areas for research and development includes:

- Environment geometry
- Human/machine interaction – user interface
  - 1) Audio control and feedback
  - 2) Haptic feedback
  - 3) Immersive interface design
- Data representation
  - 1) Stereo display
  - 2) Audio representation of data
  - 3) Haptic response to data
- Telepresence
- Telecollaboration
- Stereo hardcopy

This half-day workshop will be comprised of a series of presentations and panel discussions. The presentations will focus on an overview of the state of the art in each area, and a review some of the open, unresolved issues. The panel discussions, involving the speakers and other experts in the field, will focus on the open issues and contrasting approaches to these problems. The panel discussions are intended to be open round table discussions among the panel members and between the panel and the rest of the workshop attendees.



**Workshops (continued)**

**Friday, November 5, 8:30 a.m. — noon**

**W 10 The Seismic Link: Reducing Risk**

Westin Galleria, Galleria IV

*Organized by John Bain, Galileo Geophysics, Inc., and Pat Millegan, Marathon Oil Company through support of the SEG Gravity & Magnetism Committee*

Advancements in geophysical data acquisition and processing have improved data quality to such an extent that far more information is available to the interpreter. Simultaneously, geologic problems have become more difficult and time consuming with crude oil prices low, or cyclic.

A panel of speakers including Fred Hilterman (Geophysical Development Corporation), Joel Watkins (Texas A&M University), Larry Lines (University of Calgary), Manik Talwani (Rice University), Ed Biegert (Shell Oil Company), Glenn Bixler (Mobil Exploration & Production US, Inc.), Mike Alexander (IGC), Elizabeth A. Johnson (Unocal Corp.), David Chapin (LaCoste & Romberg LLC), Dave Muerdter (Diamond Geoscience Research), and others will discuss innovative ways to improve seismic interpretation, 3-D prestack depth migration, reservoir monitoring, production efficiencies, and better ways to analyze controls on the development of regional petroleum systems. Presentations will range from prospect level case studies, to regional interpretations, to thought provoking raytrace/gravity/magnetic/MT modeling.

**Notes**

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TECHNICAL PROGRAM