

**78th Society of Exploration  
Geophysicists International  
Exposition and Annual Meeting**

**(SEG LAS VEGAS 2008)**

**Las Vegas, Nevada  
9-14 November 2008**

**Volume 1 of 6**

**ISBN: 978-1-60560-785-6**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2008) by the Society of Exploration Geophysicists  
All rights reserved.

Printed by Curran Associates, Inc. (2009)

For permission requests, please contact the Society of Exploration Geophysicists  
at the address below.

Society of Exploration Geophysicists  
P. O. Box 702740  
Tulsa, Oklahoma 74170-2740

Phone: (918) 497-5554  
Fax: (918) 497-5557

[www.seg.org](http://www.seg.org)

# TABLE OF CONTENTS

## VOLUME 1

### EQUIPMENT METHODS AND MODELS

<b>Wavenumber Correction for the Recording Group Effects in the Seismic Data</b> .....	1
<i>Ashwani Dev, George A. McMechan</i>	
<b>The Correlation Distance of Incoherent Seismic Noise in Geophone Arrays</b> .....	6
<i>Ibrahim A. Alhukail, Saudi Aramco, Abdulatif A. Al-Shuhail</i>	
<b>A New Method for Highly Repeatable Time-lapse Seismic Acquisition</b> .....	11
<i>Dorit Koenitz, Jaafar Ali, Peter Sabel</i>	
<b>A Field Comparison of 3C Land Streamer Versus Planted Geophone Data</b> .....	16
<i>Gabriela M. Suarez, R. Stewart</i>	
<b>2007 Arctic On-ice Seismic Experiment: Operations and Results from a 2D/3D Seismic Program to Investigate Mitigation of the Ice Flexural Wave</b> .....	21
<i>M.E. Davidson, P. Jorgensen, R.L. Rosenblatt, S. Sandroni, G. Del Molino, S. Baudo</i>	
<b>Numerical Modeling of Seismic Acquisition Footprint</b> .....	25
<i>Joanna K. Cooper, Gary F. Margrave, Don C. Lawton</i>	
<b>Elastic-wave Sensitivity Analysis for Seismic Monitoring</b> .....	30
<i>Huseyin Denli, L. Huang</i>	
<b>A Deep Seismic Reflection Study of the Great Sumatra Earthquake Using Schlumberger's Q-marine Technology</b> .....	35
<i>S. Singh, H. Carton, M. Bayly, T. Bunting</i>	

### MARINE

<b>Where is the Center of a Multidepth Marine Source Array?</b> .....	40
<i>Jon-Fredrik Hopperstad, Robert Laws, Ed Kragh</i>	
<b>Building Representative Velocity and Density Models for a Finite-difference Modeling Study in Offshore Nile Delta, Egypt</b> .....	45
<i>N. Kabir, C. Scherschel, E.L. Heureux, G. Johnson, W. Rietveld, B. Barley, J. Keggin</i>	
<b>An Efficient and Effective Multistreamer, Dual-source Parameter Test</b> .....	50
<i>J. Musser, A. Shaikh Mubarak, P. Titley, M. Landais</i>	
<b>An Ocean Bottom Seismic Node Repeatability Study</b> .....	55
<i>David Hays, Ken Craft, Paul Docherty, F. Smit</i>	
<b>Source and Receiver Measurements and Corrections for the Effects of Sea Surface Wave Heights</b> .....	60
<i>Richard Goto, Ed Kragh, Robert Laws, William Geraint Morgan, Robert Phillips</i>	
<b>A Single-vessel Method for Wide-azimuth Towed-streamer Acquisition</b> .....	65
<i>Nick Moldoveanu, Jerry Kapoor, Mark Egan</i>	
<b>Evaluating Infill Requirements When Acquiring a Marine 3D Seismic Survey Along Preplot Lines</b> .....	70
<i>C. Strand, I. Buchan, A. Mostavan, J. Ross, D. Monk</i>	
<b>Wave-equation Based 3D SRME Impact on Wide Azimuth Towed Streamer Survey Design</b> .....	75
<i>Ehsan Sadeghi, Alain Melois, Alain-Christophe Bon</i>	

## **LAND**

<b>Seismic Survey Design, Data Acquisition, and Processing of Complex Andean Structures</b> .....	80
<i>P. Muñoz, F. Ortigosa, J. Uribe, M. Benabentos, C. Rianza</i>	
<b>Practical Issues in Achieving High-quality HFVS Data</b> .....	85
<i>Stephen K. Chiu, Joel Brewer, Peter M. Eick</i>	
<b>Profiling the Vibrator Envelope at Low Frequencies</b> .....	90
<i>Zhouhong Wei</i>	
<b>Alternative Strategies for Tackling Scattered Noise</b> .....	95
<i>Gijs J.O. Vermeer</i>	
<b>Broadband Vibroseis Using Simultaneous Pseudorandom Sweeps</b> .....	100
<i>J. J. Sallas, J. B. Gibson, F. Lin, O. Winter, B. Montgomery, P. Nagarajappa</i>	
<b>Single-sensor Vibroseis Acquisition in Complex Thrust Belt Areas - a Case Study from Dubai</b> .....	105
<i>Peter van Baaren, Frank van Kleef</i>	
<b>Efficient Wave Field Sampling in Vibroseis Operations</b> .....	110
<i>Thomas Bianchi, David Monk, Julien Meunier</i>	
<b>3D Seismic Acquisition in Tierra Del Fuego, Argentina: A Case History</b> .....	115
<i>Mike Yates, Stuart Lake, Dave Monk, Jeff Reck</i>	

## **LAND AND MARINE**

<b>The Footprint Simulation and Analysis for Offshore Seismic Tow-cable Acquisition</b> .....	120
<i>Jingye Li, Jianjun Gao, Xiaohong Chen, Jian Ma</i>	
<b>Over-under Deghosting: 1D, 2D, or 3D Algorithms in the F, FK, or FXY Domains</b> .....	125
<i>Bruno Gratacos</i>	
<b>"Intelligent Infill" for Cost Effective 3D Seismic Marine Acquisitions</b> .....	130
<i>Philippe Capelle, Paul Matthews</i>	
<b>Seismic Acquisition Techniques in Complex Mountainous Areas: Case Study in Kuqa Foreland Basin, Western China</b> .....	134
<i>Y. Liu, J. Yang, X. Liang, Y. Huang, Y. Zhou</i>	
<b>The Estimation of Noise Suppression of 3D Recording Geometry and Its Application</b> .....	139
<i>J. Xia, D. Tang, Y. Huang, X. Luo</i>	
<b>Low Frequencies Using Conventional Sensors</b> .....	144
<i>Joe Dellinger</i>	
<b>Effects of Seismic Blasting in Thickly Populated Areas - an Experimental Study in Upper Assam, India</b> .....	149
<i>R. Dasgupta, P.K. Paul, A. Kumar, P. Pal Roy, C. Sowmliana, R.P. Singh</i>	

## **COMPARISONS AND ANALYSIS**

<b>A New Technology for Optimizing Survey Design on a Real-surface Model</b> .....	153
<i>L. Shi, X. Jiang, Y. Gao, J. Ding, L. Xu</i>	
<b>Target Oriented Illumination Analysis Using Wave Equation</b> .....	158
<i>G.C. Alves, A. Bulcao, D.M. Soares Filho, C.E. Theodoro, L.A. Santos, M.A.G. Guimaraes</i>	

<b>Improving Sensor Technology Brings a New Level of Reservoir Understanding</b> .....	163
<i>Masahiro Kamata, Les Nutt, William Underhill</i>	
<b>Comparison of Single Sensor 3C MEMS and Conventional Geophone Arrays for Deep Target Exploration</b> .....	168
<i>Christian Stotter, Erika Angerer, Erwin Herndler</i>	
<b>Field Data Comparison: 3C-2D Data Acquisition with Geophones and Accelerometers</b> .....	173
<i>G. Hauer, M. Hons, R. Stewart, D. Lawton, M. Bertram</i>	
<b>Reconstructing Head Waves with Virtual Source Method</b> .....	178
<i>M. Tatanova, A. Bakulin, K. Mehta, V. Korneev, B. Kashtan</i>	
<b>Microphone Experiments and Applications in Exploration Seismology</b> .....	183
<i>Alejandro D. Alcudia, R. Stewart</i>	
<b>Illumination of the Subsurface Towards Identifying Shadow Zones and Optimizing Target Images</b> .....	188
<i>Riaz Alai, J. Thorbecke</i>	

## **ADVANCES**

<b>P-wave Azimuthal Anisotropy from a Full-wave Seismic Field Trial in Wamsutter</b> .....	193
<i>Satish Sinha, R. Ramkhelawan</i>	
<b>Azimuthal Anisotropy Characterization with Multicomponent Virtual Shear Sources at Rulison Field, Colorado</b> .....	197
<i>Prajnajyoti Mazumdar, A. Mateeva, A. Bakulin</i>	
<b>Preserving Azimuthal Velocity Information: Experiences with Cross-spread Noise Attenuation and Offset Vector Tile PreSTM</b> .....	202
<i>A. Calvert, E. Jenner, R. Jefferson, R. Bloor, N. Adams, R. Ramkhelawan, C. St. Clair</i>	
<b>Using Geomechanical Modeling and Wide-azimuth Data to Quantify Stress Effects and Anisotropy Near Salt Bodies in the Gulf of Mexico</b> .....	207
<i>Ran Bachrach, Mita Sengupta</i>	
<b>Estimating Subsurface Stress Direction and Intensity from Surface Full Azimuth Land Data</b> .....	212
<i>H. Roende, C. Meeder, J. Allen, S. Peterson, D. Eubanks, C. Ribeiro</i>	
<b>The Benefit of TTI Tomography for Dual Azimuth Data in the Gulf of Mexico</b> .....	217
<i>T. Huang, S. Xu, J. Wang, G. Ionescu, M. Richardson</i>	
<b>STI Media in Practice, Why and When to Use It</b> .....	222
<i>Kaveh Dehghan, Francois Audebert, Johnni Cestari-Cuenca</i>	
<b>Estimating Lateral Positioning Uncertainty After Anisotropic Depth Migration: A Thrust Belt Case History</b> .....	227
<i>Rob A. Holt, Doug Campbell, Devon Canada</i>	

## **AMPLITUDE VARIATION WITH OFFSET**

<b>5D Interpolation, PSTM and AVO Inversion</b> .....	232
<i>J. Downton, B. Durrani, L. Hunt, S. Hadley, M. Hadley</i>	
<b>Overburden-dependent AVO Interpretation</b> .....	237
<i>L. Skopintseva, A. Stovas</i>	

<b>Sensitivity Analysis of Multicomponent Seismic Attributes to Fluid Content and Pore Pressure</b> .....	242
<i>Alireza Shahin, P. Stoffa, Robert H. Tatham, Diana Sava</i>	
<b>Mu-rho Direct Inversion for Volcanic Rock Reservoir Prediction: A Case Study of the Dinan Field, Junggar Basin</b> .....	247
<i>J. Yang, H. Mao, X. Chang, M. Zhu, X. Wang, Y. Zou</i>	
<b>On AVO Gradient</b> .....	251
<i>Quanming Huo, Xinpeng Chen</i>	
<b>Estimation of Interval Anisotropic Attenuation from Reflection Data</b> .....	255
<i>Jyoti Behura, Ilya Tsvankin</i>	
<b>Picking the Sweet Spot Using Rock Physics</b> .....	259
<i>Ken Titchkosky, Richard Thompson</i>	
<b>Converted Wave AVO Inversion for Average Velocity Ratio and Shear Wave Reflection Coefficient</b> .....	264
<i>S. Wei, X.-Y. Li, T. Chen, Y. Ji</i>	

## **RESISTIVITY AND EM**

<b>On Material Averaging in Electromagnetic Simulation</b> .....	269
<i>Alexander Besspalov, Baker Hughes</i>	
<b>Model Study on Through-casing Time-domain Electromagnetic (TEM) Probing</b> .....	274
<i>W. Hu, Z. Xu, L. Yan, J. Wang, G. Yu</i>	
<b>Sensitivity Study and Inversion of the Fully-triaxial Induction Logging in Cross-bedded Anisotropic Formation</b> .....	279
<i>H. Wang, S. Davydycheva, J. Zhou, M. Frey, T. Barber, A. Abubakar, T. Habashy</i>	
<b>Simulation of LWD Tool Response Using a Fast Integral Equation Method</b> .....	284
<i>Xiaochun Nie, Ning Yuan, Richard Liu</i>	
<b>Comparing Tool Eccentricity Effects on LWD Propagation Resistivity for Oil-based and Water-based Muds</b> .....	289
<i>Jing Li</i>	
<b>Practical Implications of Nonlinear Inversion for Crosswell Electromagnetic Data Collected in Cased-wells</b> .....	294
<i>G. Gao, D. Alumbaugh, P. Zhang, H. Zhang, C. Levesque, R. Rosthal, J. Liu, A. Abubakar, T. Habashy</i>	
<b>Nonlinear Inversion Approaches for Cross-well Electromagnetic Data Collected in Cased Wells</b> .....	299
<i>J. Liu, A. Abubakar, T. Habashy, D. Alumbaugh, E. Nichols, G. Gao</i>	
<b>Modeling and Understanding the Triaxial Induction Logging in Borehole Environment with DIP Anisotropic Formation</b> .....	304
<i>H. Wang, P. Wu, R. Rosthal, G. Minerbo, T. Barber</i>	

## **SONIC LOGGING AND ACOUSTIC**

<b>Fracture Compliance Estimation Using a Combination of Image and Sonic Logs</b> .....	309
<i>Romain Prioul, Jeroen Jocker, Philippe Montaggioni</i>	
<b>High-resolution Borehole Acoustic Imaging Through a Salt Dome</b> .....	314
<i>D. Patterson, X. M. Tang, Baker Hughes, J. Ratigan</i>	

<b>Drill Bit As a Seismic Source for Near-well Imaging</b> .....	319
<i>Flavio Poletto, Francesco Miranda, Piero Corubolo, Andrea Schleifer</i>	
<b>Estimation of Borehole Ellipticity Using Cross-dipole Dispersions</b> .....	324
<i>Ergun Simsek, Bikash K. Sinha</i>	
<b>Real-time Completion Monitoring of Deepwater Wells, Part I: Modeling and First Experiments</b> .....	329
<i>A. Bakulin, A. Sidorov, B. Kashtan, M. Jasskelainen</i>	
<b>The Effect of Near-wellbore Yield on Elastic Wave Velocities in Sandstones</b> .....	334
<i>Colin M. Sayers, José Adachi, Arash Dahi Taleghani</i>	
<b>Wavefield Separation for Borehole Acoustic Reflection Surveys Using Parametric Inversion</b> .....	339
<i>Nobuyasu Hirabayashi, W. Scott Leaney, Jakob B. U. Haldorsen</i>	
<b>Passive "Drive-by" Imaging in a Deep Water Production Well Using Permanent Borehole Seismic Sensors</b> .....	344
<i>Brian E. Hornby, Tom Burch</i>	
<b>Prediction Ahead of the Bit Using Borehole Guided Waves</b> .....	348
<i>Olaf Hellwig, Thomas Bohlen</i>	

## **GULF OF MEXICO**

<b>Enhanced Anisotropic Model Building Methodology and Prestack Depth Imaging in Deep Water Gulf of Mexico: A Case History</b> .....	353
<i>W. Whiteside, W. Xu, Z. Li, A. Lundy, I. Chang</i>	
<b>Unlocking the Full Potential of Atlantis with OBS Nodes</b> .....	358
<i>John Howie, Patrice Mahob, David Shepherd, Gerard Beaudoin</i>	
<b>Controlled Beam Migration Applications in the Gulf of Mexico</b> .....	363
<i>Chu-Ong Ting, Daoliu Wang</i>	
<b>Addressing Challenges in Deep-water Gulf of Mexico Depth Imaging Through Geologic Models and Acquisition Simulation - The Tempest Project</b> .....	368
<i>A. Seitchik, David Kessler</i>	
<b>A Realistic Deep Water Gulf of Mexico 3D Simulation and Imaging - the Tempest Simulation, Datasets and Imaging</b> .....	373
<i>D. Kessler, J. Codd, F. Hoxha, C. Pignol, A. Bridge, R. Brietzke, A. Seitchik, D. Jurick</i>	
<b>Evaluating the Accuracy of Deep-water Gulf of Mexico Depth Imaging - The Tempest Results</b> .....	378
<i>Richard Brietzke, Alex Bridge, Dana Jurick, A. Seitchik</i>	
<b>Challenges in Time and Depth: Imaging the Eastern Delta OBC Survey, a Case History</b> .....	383
<i>S. Baldock, B. Miller, C. Reta-Tang, G. Rodriguez, J. Specht</i>	
<b>Comparison of Frequency Attributes from CWT and MPD Spectral Decompositions of a Complex Turbidite Channel Model</b> .....	388
<i>C. I. Puryear, S. Tai, J. Castagna, R. Masters, F. Dwan</i>	

## **INTERNATIONAL OFFSHORE**

<b>Seismic Prediction of Stringer Sands in Offshore Saudi Arabia</b> .....	393
<i>J. Fitzmaurice, T. Tonellot, S. Rahati, W. Zhu, M. Al-Otaibi, H. Soepriatna</i>	

<b>Stratigraphic and Structural Volume Visualization of a Deltaic Marine Fan Complex, Niger Delta, Nigeria: A Case History</b> .....	398
<i>Charles Ojo, Iyabo Sindiku, Monday Agbuza</i>	
<b>Extending the Limits of Technology to Explore Below the DHI Floor; Successful Application of Spectral Decomposition to Delineate DHI's Previously Unseen on Seismic Data</b> .....	403
<i>W. A. Fahmy, G. Matteucci, J. Parks, M. Matheney, J. Zhang</i>	
<b>Depth Imaging Over Structural Transverse Isotropy (STI) Media in the Presence of Complex Salt Bodies, Offshore West Africa</b> .....	408
<i>Johanni Cestari-Cuenca, Jean Arnaud, Marc Elias</i>	
<b>Validating Models by Geologic and Seismic Modeling for Reducing Risk in Global Exploration - A Case-study from the NCS</b> .....	413
<i>Gerrit Toxopeus, Erik Odegaard, Per Avseth</i>	
<b>Integrated Geology and Geophysics for Subsalt Exploration - A Case Study from Offshore Brazil</b> .....	418
<i>M. Rhodes, S.-K. Foss, B. Dalstrom, C. Gram, A. Welbon</i>	
<b>A Calibrated Dual-sensor Streamer Investigation of Deep Target Signal Resolution and Penetration on the NW Shelf of Australia</b> .....	423
<i>Andrew Long, Dave Mellors, Terry Allen, Avon McIntyre</i>	
<b>Complex Imaging Challenges Offshore Southeast India</b> .....	428
<i>P. Sangvai, A. Biswal, M. Mathur, J. Fruehn, P. Smith, I.F. Jones, D. King, M. Goodwin, V. Valler</i>	
<b>3D Beam Prestack Depth Migration with Examples from Around the World</b> .....	433
<i>John W.C. Sherwood, Kevin Sherwood, Hans Tieman, Karl Schleicher</i>	
 <b><u>ONSHORE</u></b>	
<b>Wide-azimuth Complex Structural Imaging in Liaohe Basin</b> .....	438
<i>P. Guo, W. Zhang, B. Liu, J. Guo, J. Li</i>	
<b>Seismic Data Mapping Scheme Based on Migration/demigration Applied in Overthrust Data Processing: A Case History in Tianshan Mountain</b> .....	443
<i>Yu-Wei Wang, Kai Yang, Liang-Guo Dong</i>	
<b>Integration of Seismic Attribute Analysis and Well Data to Identify Depositional Trends: A Case Study from Kuwait</b> .....	448
<i>Srinivasa Rao Narhari, Mohamed Dawaas Al-Ajmi, Saifullah Khan Tanoli, Bashar Al-Qadeeri</i>	
<b>3D Multiscale Tomography: A Case Study from Oklahoma Mountain Front</b> .....	453
<i>Elive M. Menyoli, Brian Burgess</i>	
<b>Seismic Characterization of Fractured Tight Gas Reservoirs, Piceance Basin, Colorado</b> .....	458
<i>K.T. Lewallen, G. Chen, X. Wu, P. Todd</i>	
<b>Lessons from a World-first Onshore Cableless Full-wavefield 3D Seismic Survey</b> .....	463
<i>Nicki Adams, R. Ramkhelawan</i>	
<b>Successful Gas Hydrate Prospecting Using 3D Seismic - A Case Study for the Mt. Elbert Prospect, Milne Point, North Slope Alaska</b> .....	468
<i>Tanya L. Inks, Warren F. Agena</i>	
<b>Extending the Seismic Bandwidth - A Simultaneous Uncorrelated VSP and Surface Seismic Field Test Study</b> .....	473
<i>P.I. Pecholes, R. Al-Saad, H.B. Heijna, J.B.U. Haldorsen, R.T. Coates, C. Barajas-Olalde, S. Ahmed</i>	



## **CASE STUDIES AROUND THE WORLD**

<b>Rock Physics Modeling Applied to Quantitative Evaluation of Shallow Gas Potential of Plio-peistocene Foreland Basin, Southwestern Taiwan</b> .....	478
<i>Shi-Chie Fuh, Yu-Liang Yang, Shov-Chian Liang, Tzy-Yi Chang, Jen-Yang Lin</i>	
<b>Building an RMS Velocity Model for Seismic Data Recorded on Non-flat Surface Topography: Experience with a Mountainous Area in Southern China</b> .....	483
<i>Yongsheng Ma, Tonglou Guo, Chuanwen Sun</i>	
<b>Well Log and Synthetic Seismogram Analysis of an Oilfield in Assam, India: A 3C Seismic Development Feasibility Study</b> .....	488
<i>R. Stewart, Maria F. Quijada, K.L. Mandal, Romen Borgohain</i>	
<b>Case Studies on Oil and Water Wells Separation and Gas Sand Prediction in a Coal Formation Using Wavelet Selection and Volume-based Seismic Waveform Decomposition</b> .....	493
<i>Ping An</i>	
<b>Noise Attenuation Aspects of Single-sensor Seismic Data, Case Study from Kuwait</b> .....	498
<i>Adel El-Emam, Ayman Shabrawi, Wael Gamal Eldin</i>	
<b>2D Traveltime Inversion for Gas Hydrates in the Kerala-konkan Basin, Western Offshore India</b> .....	503
<i>Sanjeev Rajput, N.K. Thakur, P. Prasada Rao</i>	
<b>Steam Effect on a Merged 3D Seismic Dataset</b> .....	508
<i>Sailendra N. Mahapatra, Matthias G. Imhof</i>	

## **MEDLEY**

<b>Elastic Parameter AVO Approximations and Their Applications</b> .....	513
<i>P. Sun, X. Lu, Y. Li, Y. Yue, H. Chen</i>	
<b>Single Sensors Versus Hard-wired Arrays in Amplitude Analysis</b> .....	518
<i>Razvan Lucian Orza, Ionelia Panea</i>	
<b>Walkaway VSP Data Imaging Using a Multilayered Anisotropic Model</b> .....	523
<i>A. Hou, W. Geng, W. Zhang, B. Wang, H. Wu, W. Wang, N. Lei</i>	
<b>Vector Kirchhoff Migration of Virtual-source VSP Data</b> .....	528
<i>Min Lou, Fran Doherty, James Jackson</i>	
<b>Wide Azimuth P-Wave Fracture Detection Technology and Its Application</b> .....	533
<i>Wang Jiushuan, Yang Jing, Huang Zhi, Shao Linhai, Huo Lina, Xiong Pi</i>	
<b>Research on the Relation Between Pressure and Damage Factor of Cracked Media</b> .....	539
<i>Zhihui Zou, Wenhui Yu</i>	
<b>Velocity Anisotropy and X-ray Imaging of Barnett Shale</b> .....	544
<i>N. Dyaaur, G. Kullmann, A. Ortiz, V. Pena, E. Chesnokov</i>	

## **MODELING AND INVERSION I**

<b>Forward Modeling and Inversion of Multisource TEM Data</b> .....	549
<i>D. Oldenburg, E. Haber, R. Shekhtman</i>	
<b>Three-dimensional Forward Modeling and Inversion of Z-TEM Data</b> .....	554
<i>Elliot Holtham, D. Oldenburg</i>	
<b>Estimation of Cole-Cole Parameters from Time-domain Electromagnetic Data</b> .....	559
<i>Laurens Beran, D. Oldenburg</i>	

<b>Resolution of 3D Marine Magnetotellurics for Base-salt Imaging and a Case Study from the Gulf of Mexico</b> .....	564
<i>Xianghong Wu, Stewart Sandberg, Tom Roper</i>	
<b>Iterative Reconstruction Algorithm for Nonlinear Operators</b> .....	569
<i>Robert A. Eso, Scott Napier, Felix J. Herrmann, D. Oldenburg</i>	
<b>A Three-dimensional Multiplicative-regularized Non-linear Inversion Algorithm for Cross-well Electromagnetic and Controlled-source</b> .....	574
<i>A. Abubakar, J. Liu, T. Habashy, M. Zaslavsky, V. Druskin</i>	
<b>Large-scale Electromagnetic Modeling for Multiple Inhomogeneous Domains</b> .....	579
<i>Masashi Endo, Martin Cuma, M.S. Zhdanov</i>	
<b>Fast 3D Simulation of Transient Electromagnetic Fields by Model Reduction in the Frequency Domain Using KRYLOV Subspace Projection</b> .....	584
<i>Ralph Uwe Börner, Oliver G. Ernst, Klaus Spitzer</i>	

## **MODELING AND INVERSION II**

<b>Probabilistic Joint Inversion of TD-CSEM, MT and DC Data for Hydrocarbon Exploration</b> .....	589
<i>D. Rovetta, Politecnico di Milano-Aresys, A. Lovatini, M. D. Watts</i>	
<b>CSEM Inversion: Impact of Anisotropy, Data Coverage, and Initial Models</b> .....	594
<i>Charlie Jing, Ken Green, Dennis Willen</i>	
<b>Optimal Conductivity Reconstruction Using Three-dimensional Joint and Model-based Inversion for Controlled-source and Magnetotelluric Data</b> .....	599
<i>Michael Commer, Gregory A. Newman</i>	

## **VOLUME 2**

<b>3D Inversion of Marine CSEM Data Using a Fast Finite-difference Time-domain Forward Code and Approximate Hessian-based Optimization</b> .....	604
<i>J.J. Zach, A.K. BJORKE, T. Storen, F. Maaø</i>	
<b>Inversion of 3D Time-domain EM Data for High Conductivity Contrasts</b> .....	609
<i>Greg A. Oldenborger, D. Oldenburg</i>	
<b>Using the Equivalent Source Technique to Estimate Noise in 4D TEM Data</b> .....	614
<i>Kristopher MacLennan, Y. Li</i>	
<b>Three-dimensional Electromagnetic Holographic Imaging in Offshore Petroleum Exploration</b> .....	619
<i>M.S. Zhdanov, Martin Cuma, Takumi Ueda</i>	
<b>Array TEM Sounding and Application for Reservoir Monitoring</b> .....	624
<i>W. Hu, L. Yan, Z. Su, R. Zheng, K. Strack</i>	
<b>1D, 2D, and 3D Modeling and Inversion of 3D CSEM Data Offshore West Africa</b> .....	629
<i>P. Turpin, M. Erbetta, D. Watts, G. Cairns</i>	

## **ACQUISITION, PROCESSING, AND APPLICATIONS**

<b>Inversion Study of a Large Marine CSEM Survey</b> .....	634
<i>J.J. Carazzone, T.A. Dickens, K.E. Green, C. Jing, L.A. Wahrmond, D.E. Willen, M. Commer, G.A. Newman</i>	

<b>Quantifying Factors Affecting Repeatability in CSEM Surveying for Reservoir Appraisal and Monitoring</b> .....	638
<i>Andrei Chuprin, David Andrés, Lucy MacGregor</i>	
<b>Marine Time Domain CSEM: An Emerging Technology</b> .....	643
<i>K. Strack, Norman Allegar, Svein Ellingsrud</i>	
<b>Seismic and EM Rock Physics and Modeling, Norwegian Sea</b> .....	647
<i>Joel Walls, Rone Shu</i>	
<b>Frontier Exploration by Electromagnetic Scanning - A Deep Water Example</b> .....	652
<i>J. Suffert, P. Sangvai, F. Roth, A. Tyagi, R. Bastia</i>	
<b>Successful Transient EM Survey in the North Sea at 100-m Water Depth</b> .....	657
<i>Anton Ziolkowski, D. Wright, Guy Hall, Craig Clarke</i>	
<b>Removal of Sea-surface-related Wavefields and Source Replacement in CSEM Data Processing</b> .....	662
<i>P.M. van den Berg, A. Abubakar, T. Habashy</i>	
<b>Anisotropy of Induced Polarization in the Context of the Generalized Effective-medium Theory</b> .....	667
<i>M.S. Zhdanov, A. Gribenko, V. Burtman, V.I. Dmitriev</i>	
<b>CSEM Survey Design for Successful Imaging</b> .....	672
<i>Scott C. Hornbostel, Ken E. Green</i>	

## **GENERAL**

<b>Born Approximation Inversion for the Marine CSEM Data Set</b> .....	677
<i>Z. Wang, Z. He, W. Sun, Y. Wang, W. Luo</i>	
<b>Lower and Upper Bounding Constraints of Model Parameters in Inversion of Geophysical Data</b> .....	682
<i>Hee Joon Kim, Young Hee Kim</i>	
<b>Possible Source Effects Observed in a Magnetotelluric Monitoring Site in Southern Italy</b> .....	687
<i>M. Balasco, V. Lapenna, G. Romano, A. Siniscalchi, L. Telesca</i>	
<b>De-risking Exploration Prospects Using Controlled Source Electromagnetic Surveys</b> .....	692
<i>A.K. Tyagi, A. Muralikrishna, L. Lorenz, H.E.F. Amundsen, R. Bastia</i>	
<b>Modeling In-line Data for Seabed Logging with 2.5D and 3D Integral Equations</b> .....	696
<i>Ali Moradi Tehrani, E. Slob</i>	
<b>A Sensitivity Analysis of the Sea Bed Logging Technique with Respect to Reservoir Heterogeneities</b> .....	701
<i>Zhong Wang, Leiv-J Gelius, Fan-Nian Kong</i>	

## **4D GRAVITY, BOREHOLE, AND INTERPRETATION**

<b>Borehole Magnetics: Magnetostratigraphy - An Example from UNAM-7, Chicxulub Impact Crater</b> .....	706
<i>William A. Morris, Hernan Ugalde, Bernd Milkereit</i>	
<b>Monitoring Water Front Advancements with Downhole Gravity Sensors</b> .....	711
<i>Thomas J. Meyer</i>	
<b>Joint Inversion of Surface and Borehole 4D Gravity Data for Continuous Characterization of Fluid Contact Movement</b> .....	716
<i>Richard A. Krahenbuhl, Y. Li</i>	

<b>Survey Design and Model Appraisal Based on Resolution Analysis for 4D Gravity Monitoring</b> .....	721
<i>Kristofer Davis, M. Andy Kass, Rich A. Krahenbuhl, Y. Li</i>	
<b>Use of Enhancement Filters in Modeling Magnetic Field Data</b> .....	726
<i>Clive Foss</i>	
<b>Spatial Domain Filtering of Specific Frequencies: Curvature Isolation of Potential Field Signals</b> .....	731
<i>Madeline Lee, Hernan Ugalde, Bill Morris</i>	
<b>Adaptive Learning Gravity Inversion for 3D Salt Body Imaging</b> .....	736
<i>Fernando J.S. Silva Dias, Valéria C.F. Barbosa, João B.C. Silva</i>	
<b>Focusing Inversion of Marine Full-tensor Gradiometry Data in Offshore Geophysical Exploration</b> .....	741
<i>Le Wan, M.S. Zhdanov</i>	

## **GLOBAL MODELS AND INTERPRETATION**

<b>The DNSC07 High-resolution Global Marine Gravity Field</b> .....	746
<i>O.B. Andersen, P. Knudsen, P.A.M. Berry, S. Kenyon, N. Pavlis</i>	
<b>Earth Gravitational Model 2008</b> .....	751
<i>N. Pavlis, S. Kenyon, J. Factor, S. Holmes</i>	
<b>EMAG3: A 3-arc-minute Resolution Global Magnetic Anomaly Grid Compiled from Satellite, Airborne, and Marine Magnetic Data</b> .....	754
<i>S. Maus, J.D. Fairhead, S. Mogren, R.N. Bournas</i>	
<b>Origin and Enhancement of Gravity and Magnetic Signatures of the Continental-oceanic Boundary: Examples from West Africa Passive Margin</b> .....	759
<i>S. Goussev, G. Shields, Fugro Robertson, J. Rowe, Afif Saad</i>	
<b>Gravity, Magnetic, and Seismic Data Integration for Structural Configuration and Its Hydrocarbon Evaluation in the San Juan-tumaco Basins, Offshore Colombia</b> .....	764
<i>Mukesh Jain, S.N. Mohanty, S. V. Yalamanchili, Fugro Robertson</i>	
<b>Magnetic Interpretation Made Easy: The Tilt-depth-dip-(Triangle Delta) K Method</b> .....	769
<i>J.D. Fairhead, A. Salem, S. Williams, E. Samson</i>	
<b>The Effect of Topography in Calculating the Atmospheric Correction in Gravimetry</b> .....	774
<i>J. Miku Ka, I. Maru Iak, R. Pa Tekka, R. Karcol, J. Beno</i>	
<b>3D Magnetic Data-space Inversion with Sparseness Constraints</b> .....	779
<i>Mark Pilkington</i>	
<b>Cluster Analysis of Euler Deconvolution Solutions: New Filtering Techniques and Actual Link to Geological Structure</b> .....	784
<i>Hernan Ugalde, Bill Morris</i>	

## **PROCESSING AND INTERPRETATION**

<b>An Integrated Geophysical Study of the Wet Mountains, Southern Colorado</b> .....	789
<i>Jessica M. Pardo, G. Randy Keller</i>	
<b>Continuous Wavelet Transform of Potential Fields with Different Choices of Analyzing Wavelets</b> .....	794
<i>Maurizio Fedi, Lorenzo Cascone</i>	

## **INTEGRATED STUDIES**

<b>Vent Complex at Heidrun</b> .....	799
<i>P. Garten, M. Houbiers, S. Planke, H. Svensen</i>	
<b>Integrated Geophysical Inversion of a Sedimentary Basement in Northern Deep-water Areas of the China South Sea</b> .....	804
<i>F. Jiang, Jiansheng Wu</i>	
<b>Reinterpretation of VES Data (Saiss Basin, Morocco) Using Geostatistics and 2D Electrical Inversion Methods</b> .....	809
<i>J. Riss, J.-L. Fernández Martínez, C. Sirieix, O. Harmouzi, A. Marache, A. Essahlaoui</i>	
<b>Attribute-aided Interpretation of Common Angle Volumes</b> .....	814
<i>Sean Lewis</i>	
<b>Uncertainty Reduction in Reservoir Modeling by Joint Inversion of Seismic and Geostatistics</b> .....	819
<i>Matthew S. Casey</i>	
<b>How Thin is a Thin Bed? An Alternative Perspective</b> .....	824
<i>Hongliu Zeng, John A. Jackson, Katherine G. Jackson</i>	
<b>Seismic Attributes and Gravity and Magnetic Transformations: The Same Mathematics Under Different Names for Different Geophysical Data Sets</b> .....	829
<i>Xiong Li, Fugro Robertson</i>	
<b>New Structural Mapping of Basement Features in the Fort Worth Basin, Texas, Using High-resolution Aeromagnetic Derivatives and Euler Depth Estimates</b> .....	834
<i>Olubunmi O. Elebiju, G. Randy Keller, K.J. Marfurt</i>	

## **ATTRIBUTES, WORKFLOWS, AND VISUALIZATION**

<b>Geovolume Visualization and Interpretation: What Makes a Useful Visualization Seismic Attribute?</b> .....	839
<i>Tatum M. Sheffield, Barton A. Payne</i>	
<b>Prestack Spectral Blueing: A Tool for Increasing Seismic Resolution</b> .....	844
<i>S. Hesam Kazemeini, Sergey Fomel, Christopher Juhlin</i>	
<b>Detection of Channels in Seismic Images Using the Steerable Pyramid</b> .....	849
<i>John Mathewson, Dave Hale</i>	
<b>Predictive Painting of 3D Seismic Volumes</b> .....	854
<i>Sergey Fomel</i>	
<b>Simulated Annealing for Hierarchical Seismic Pattern Detection</b> .....	859
<i>Kou-Yuan Huang, Ying-Liang Chou</i>	
<b>A Knowledge-based Approach of Seismic Interpretation: Horizon and Dip-fault Detection by Means of Cognitive Vision</b> .....	864
<i>Philippe Verney, Jean-François Rainaud, Michel Perrin, Monique Thonnat</i>	
<b>Confidence and Curvature-guided Level Sets for Channel Segmentation</b> .....	869
<i>Benjamin J. Kadlec, Geoffrey A. Dorn, Henry M. Tufo</i>	
<b>Expanding the Applicability of Curvature Attributes Through Clarification of Ambiguities in Derivation and Terminology</b> .....	874
<i>Jamie Rich</i>	
<b>2D Seismic Sections in 3D Display: Color and Shape</b> .....	879
<i>Vladimir Bashkardin</i>	

<b>Visualizing Spectral Decomposition Using the View Locked Color Image Grand Tour</b> .....	884
<i>Bradley C. Wallet</i>	
<b>Waveform Presentation of Seismic Traces by a Parallel Algorithm</b> .....	889
<i>Kaihong Wei, Jim Ching-Rong Lin</i>	
<b>A Methodology for Structural Analysis of Seismic Folds</b> .....	894
<i>J.L. Fernández Martínez, Richard J. Lisle</i>	
<b>Attribute Illumination of Basement Faults, CUU Long Basin, Vietnam</b> .....	899
<i>Ha T. Mai, K.J. Marfurt</i>	
<b>3D Seismic Visualization of Shelf-margin to Slope Channels Using Curvature Attributes</b> .....	904
<i>Felipe A. Lozano, K.J. Marfurt</i>	
<b>Volumetric Application of Skewed Spectra</b> .....	909
<i>Kui Zhang, K.J. Marfurt, Yanxia Guo</i>	
<b>Coherence Cube Based on Curvelet Transform</b> .....	914
<i>G. Zhang, Jingjing Zheng, Xingyao Yin, Yong Pu</i>	

## **INTEGRATED STUDIES**

<b>Pannotian Breakup (Iapetan Opening) Features in Central Oklahoma</b> .....	919
<i>Brian Toelle, Jason Sitchler, Robert Pfannenstiel</i>	
<b>Prospect Characterization of the First 3D Seismic Survey Offshore Cyprus and Lebanon</b> .....	923
<i>Oystein Lie, Cecilie Skiple, Mark Trayfoot</i>	
<b>Analysis of Tectonic Subsidence of the Colombian Basin, Caribbean Sea</b> .....	928
<i>Esteban Alfaro Sabogal, German Yury Ojeda</i>	
<b>Fracture Recognition Vis-à-vis Structural Styles in a Deep Jurassic Reservoir of Northern Kuwait</b> .....	933
<i>S.A. Abdulmalik, N. Baniq, S. Singh, M. Al-Wadi, M. Al-Dkheel</i>	
<b>Fault and Natural Fracture Identification from Multicomponent Seismic at Rulison Field, Colorado</b> .....	938
<i>Elizabeth A. LaBarre, T.L. Davis</i>	
<b>Stochastic Geocellular Model of Tidal Sands in South Tapti Gas Field Using Field Mapping, Satellite Image, Seismic Mapping, and Well Log Data, Western India</b> .....	943
<i>Subhadeep Chowdhury, Sourav Saha, Stuart Burley</i>	
<b>Attribute Expression of Mass Transport Deposits in an Intraslope Basin - A Case Study</b> .....	948
<i>Supratik Sarkar, K.J. Marfurt, Belinda Ferrero Hodgson, Roger M. Slatt</i>	
<b>Seismic Attribute-assisted Interpretation of Channel Geometries and Infill Lithology: A Case Study of Anadarko Basin Red Fork Channels</b> .....	953
<i>Y. Suarez, K.J. Marfurt, M. Falk</i>	

## **CASE STUDIES AND METHODS**

<b>Analysis of Walkaround VSP Azimuthal Response Using Borehole Images</b> .....	958
<i>J. Jocker, R. Prioul, P. Montaggioni, M. Idrees, E. Loubens, L. Escaré</i>	
<b>Wide-azimuth Techniques for Processing High Density 3D OBC Data</b> .....	963
<i>J.-L. Boelle, P. Hugonnet, S. Navion, A. Soudani, F. Adler, J. Bluteau</i>	
<b>Five Dimensional Seismic Data Interpolation</b> .....	968
<i>Daniel Trad</i>	

<b>Azimuthal Attribute Methodologies: Comparison of NMO Supergathers, Sectored Isotropic Migration, Iterative Azimuthal Migration</b> .....	973
<i>Charles Sicking, Stu Nelan</i>	
<b>Azimuthal Processing for Fracture Prediction and Image Improvement</b> .....	978
<i>Galen Treadgold, Charles Sicking, Victoria Sublette, Gary Hoover</i>	
<b>Constructing an Anisotropic Velocity Model for Ocean Bottom Seismic Node Data</b> .....	983
<i>Alexandre Stopin, Mark Mc Rae, Laura Lepre, Brenda Gaudin</i>	
<b>Seismic Data Acquisition Using Ocean Bottom Seismic Nodes at the Deimos Field, Gulf of Mexico</b> .....	988
<i>F. Smit, Colin Perkins, Laura Lepre, Ken Craft, Reagan Woodard</i>	
<b>Impact of Feathering on Imaging for Wide Azimuth Data</b> .....	993
<i>Laurent Sirgue, Ganyuan Xia</i>	
<b>An Exploration-Scale Wide Azimuth Towed Streamer Case Study</b> .....	998
<i>Eivind Fromyr, Peter Wijnen, R. Van Borselen, P. Aaron, Lynn Comeaux</i>	

## **PARAMETER ESTIMATION**

<b>A New Method to Extract Reliable Density Information from PS Waves</b> .....	1003
<i>Keshan Zou</i>	
<b>A Method for Compensation for Offset-dependent Tuning and Differential Attenuation in Converted-wave Data</b> .....	1008
<i>Rishi Bansal, Vijay Khare, A. Martinez</i>	
<b>PP-PS Dual Inversion Applied to 2D-3C Seismic Data: Xushen Gas Field, Daqing, China</b> .....	1013
<i>L. Shen, J. Liu, D. Mougnot, J. Wang</i>	
<b>Three-component Converted-wave Data Processing and Its Application in a Complicated Area</b> .....	1018
<i>X. Guo, X. Jiang, G. Zhang, Y. Hou, X. Feng, C. Tian</i>	
<b>Case History: Converted-wave Splitting Estimation and Compensation</b> .....	1023
<i>Jim Simmons</i>	
<b>Simultaneous P- and S-wave Interval Velocity Model Building of Near-seafloor Geology Using OBC Data</b> .....	1028
<i>Paul E. Murray, Michael V. DeAngelo</i>	
<b>Automated C-wave Registration by Simulated Annealing</b> .....	1033
<i>Jianxin Jerry Yuan, Girish Nathan, Alex Calvert, Robert Bloor</i>	
<b>Analysis on the Multicomponent Seismic Amplitudes</b> .....	1038
<i>P. Sun, Y. Li, A. Hou, H. Chen, Y. Yue, F. Yu</i>	

## **PROCESSING**

<b>Ground Roll Polarization Filtering with Spatial Smoothness Constraints</b> .....	1043
<i>Kristof De Meersman</i>	
<b>Constrained Polarization Filtering for Surface-wave Mitigation</b> .....	1048
<i>M.S. Diallo, W. Ross, C.E. Krohn, M.L. Johnson, G.C. Szurek, A.P. Shatilo</i>	
<b>Constrained Surface Wave Inversion from 9-Component Seismic Reflection Data</b> .....	1053
<i>C. Calderón-Macías, Jim Simmons</i>	

<b>Salt Dome Flank Imaging with Elastodynamic Interferometric Redatuming</b> .....	1058
<i>R. Lu, M.E. Willis, X. Campman, M.N. Toksöz</i>	
<b>Elastic Interferometry for OBC Data: Theory and Examples</b> .....	1063
<i>J. Gaiser, I. Vasconcelos, C. Calderón-Macias</i>	
<b>Space-frequency Domain Processing of Irregular Dual-sensor Towed Streamer Data</b> .....	1068
<i>Walter Söllner, Anthony Day, Hocine Tabti</i>	
<b>Wavefield Separation for Dual-sensor Data with Local Handling of Aliased Energy</b> .....	1073
<i>Tilman Klüver</i>	
<b>PZ Calibration in Shallow Waters: The Britannia OBS Example</b> .....	1078
<i>Y. Wang, Sergio Grion</i>	

## **METHODOLOGY**

<b>Geological Mapping with Power Line Fields Measured with Megatem Data</b> .....	1083
<i>M.A. Vallée, R.S. Smith, J. Lemieux, P. Keating, P. Houle</i>	
<b>Numerical Modeling of Z-TEM (Airborne AFMAG) Responses to Guide Exploration Strategies</b> .....	1088
<i>Bob Lo, Michael Zang</i>	
<b>Should We Care About Negative Transients in Helicopter TEM Data?</b> .....	1093
<i>Sean E. Walker</i>	
<b>Time-constant Analysis of Frequency-domain EM Data</b> .....	1098
<i>Daniel Sattel, Ken Witherly</i>	
<b>The Effect of Discrete Conductivity Isotropy on Electromagnetic Surveys</b> .....	1103
<i>Peter Walker, Yves Lamontagne</i>	
<b>Minimum-structure Borehole Gravity Inversion</b> .....	1108
<i>Craig R.W. Mosher, Colin G. Farquharson, Charles A. Hurich</i>	
<b>Modeling Archean Diapiric Tectonics: What Can We Learn About Greenstone Belt Metallogeny?</b> .....	1113
<i>Catherine M.I. Robin, Richard C. Bailey</i>	
<b>Optimal Sensor Configuration for Total-field Magnetometers</b> .....	1117
<i>Stephen Billings, D. Wright</i>	

## **METHODOLOGY AND CASE HISTORIES**

<b>The Use of Unmanned Aircraft in Oil, Gas and Mineral E+P Activities</b> .....	1122
<i>Joseph A. Barnard</i>	
<b>Exploration on the Cinco de Mayo Carbonate Replacement Project, Chihuahua, Mexico</b> .....	1127
<i>K. Robertson, P. Megaw, J. McGlasson, D. MacInnis</i>	
<b>Geophysical Signature of the Mt. Milligan Cu/Au Deposit in the Quesnel Porphyry Belt</b> .....	1132
<i>Sergio Espinosa-Corriols, Peter Kowalczyk</i>	
<b>Exploring for Geothermal Reservoirs Using Broadband 2D MT and Gravity in Hungary</b> .....	1137
<i>H. Tulinius, L. Adam, H. Halldórsdóttir, G. Yu, K. Strack, N. Allegar, L. He, Z. He</i>	
<b>Characterizing a Geothermal Reservoir Using Broadband 2D MT Survey in Theistareykir, Iceland</b> .....	1142
<i>G. Yu, K. Strack, N. Allegar, Á. Gunnarsson, H. Tulinius, L. He, Z. He</i>	



<b>The Application of DSU1 High-density 3D in Coal Field Exploration</b> .....	1147
<i>M. Wang, H. Li, Z. Zhang, P. Li</i>	
<b>Integrating Geophysics and Geology in 3D</b> .....	1152
<i>Ken Witherly</i>	
<b>Wavelet and Statistical Investigation of Density and Susceptibility Data from the Bellevue Drill Core and Moordkopje Borehole, Bushveld Complex, South Africa</b> .....	1157
<i>Susan J. Webb, Gordon R.J. Cooper, Lewis D. Ashwal</i>	

## **GPR, EM, ELECTRICAL, & SEISMIC FOR WATER**

<b>Coherency Attribute Algorithm for Polarimetric Ground Penetrating Radar (GPR)</b> .....	1162
<i>Douglas S. Sassen</i>	
<b>An Inverse Scattering Framework for Direct Multiparameter Georadar Inversion</b> .....	1167
<i>K.A. Innanen, P. Routh</i>	
<b>Closed Loop Hydrogeophysical Inversion of Time-lapse GPR Data to Determine Hydraulic Properties of a Sandy Soil</b> .....	1173
<i>E. Slob, S. Lambot, J. Rhebergen, O. Lopera, H. Vereecken</i>	
<b>Inversion of TE and TM Dispersive GPR Data for Properties of a Layered Waveguide</b> .....	1178
<i>Jan van der Kruk, Robert W. Jacob</i>	
<b>Quasi 3D Inversion of Electromagnetic Data</b> .....	1183
<i>E. Auken, A.V. Christiansen, A. Viezzoli, B. Simon</i>	
<b>Characterization of Fracture System of a Shale Aquifer Using Azimuthal Resistivity Survey: A Case History from CAS Campus, Ebonyi State University, Nigeria</b> .....	1188
<i>A.U. Utom, B.I. Odoh, F. Ogala</i>	
<b>Estimation of Water Table from Self-potential Data Using Particle Swarm Optimization (PSO)</b> .....	1193
<i>V. Naudet, J.L. Fernández-Martínez, E. García-Gonzalo, J.P. Fernández-Álvarez</i>	
<b>High-resolution Seismic Reflection to Image Hydrogeologic Sequences</b> .....	1198
<i>Richard D. Miller, J. Xia</i>	

## **VOLUME 3**

<b>Characterization of a Fractured Bedrock Groundwater System for Environmental Remediation Using Borehole Geophysics and 3D Seismic Data</b> .....	1203
<i>Robert Will, Peter Kaufman, Tim Parker, Dieter Hiller</i>	

## **INVERSION & ENGINEERING APPLICATIONS**

<b>Gaining a Geostatistical Advantage in Near-surface Modeling</b> .....	1208
<i>Ralph Bridle</i>	
<b>Constraining Geophysical Inversions with Geologic Information</b> .....	1213
<i>Peter Lelièvre, D. Oldenburg, Nicholas Williams</i>	
<b>Presenting a Free, Highly Flexible Inversion Code</b> .....	1218
<i>Anders Vest Christiansen, Esben Auken</i>	
<b>Application of High-resolution Linear Radon Transform for Rayleigh-wave Dispersive Energy Imaging and Mode Separating</b> .....	1223
<i>Y. Luo, J. Xia, R.D. Miller, J. Liu, Y. Xu, Q. Liu</i>	

<b>Inversion Using Bayesian Hyper-prior Formulation for Sharp Boundaries</b> .....	1228
<i>P. Routh, Mrinal Sen, Dan Whitmore, Phil Anno</i>	
<b>Resistivity Tomography and Borehole Data Analysis in the Detection of Pre-holocene Relief in Pireaus City, Greece</b> .....	1233
<i>G. Apostolopoulos, K. Pavlopoulos, D. Mavrommatis, E. Fouache</i>	
<b>Characterization of Frequency-dependent Magnetic Susceptibility in UXO Electromagnetic Geophysics</b> .....	1238
<i>T. Meglich, Y. Li, L. Pasion, D. Oldenburg, R.L. Van Dam, S. Billings</i>	
<b>UXO Detection and Prioritization Using Combined Airborne Vertical Magnetic Gradient and Time-domain Electromagnetic Methods</b> .....	1243
<i>J. Sheehan, L. Beard, J. Gamey, W. Doll, J. Norton</i>	

## **SEISMIC**

<b>High-resolution Seismic Imaging of Active Strike-slip Faults in Coastal and Offshore Southern California</b> .....	1248
<i>Mark R. Legg, Mike Barth, Robert D. Francis</i>	
<b>Raypath Interferometry: Statics in Difficult Places</b> .....	1253
<i>David C. Henley</i>	
<b>Non-intrusive Monitoring Using Seismic Tomography at the Mont Terri Rock Laboratory</b> .....	1258
<i>E. Manukyan, H. Maurer, S. Marelli, S.A. Greenhalgh, A.G. Green</i>	
<b>Seismic Modeling and Analysis of the Prototype Heated Nuclear Waste Storage Tunnel, Yucca Mountain, Nevada</b> .....	1263
<i>Steven Smith, Roel Snieder</i>	
<b>Acquiring Shear-wave Information in Shallow Water Environment from Field Data Near Ghent, Belgium</b> .....	1268
<i>N. el Allouche, G.G. Drijkoningen, R. Ghose, J. Thorbecke, W. Versteeg</i>	
<b>Scattering of Surface Waves Due to Shallow Heterogeneities</b> .....	1273
<i>Barbara Luke, C. Calderón-Macias</i>	
<b>Application of the Surface-wave Method to the Evaluation of Local Site Effect of an Earthquake</b> .....	1278
<i>Koichi Hayashi, Tsutomu Hirade</i>	
<b>A Trade-off Between Model Resolution and Variance with Selected Rayleigh-wave Data</b> .....	1283
<i>J. Xia, Richard D. Miller, Yixian Xu</i>	

## **GENERAL**

<b>Mapping Salt Tracer Penetration Into the Hyporheic Zone with GPR Attenuation</b> .....	1288
<i>Emily Hinz, John Bradford</i>	
<b>Permittivity Inversion of Borehole Radar Data Measured in the Vadose Zone</b> .....	1293
<i>Hannuree Jang, Hee Joon Kim, Seiichiro Kuroda</i>	
<b>Dip Moveout Processing of Ground-penetrating Radar Data from the Norman Landfill, Norman, OK</b> .....	1298
<i>Nate Johnson, Roger Young</i>	
<b>Mapping Tailings Around Mine Sites with Reverse Polarity Airborne Transient EM Data</b> .....	1303
<i>Richard S. Smith, Li Zhen Cheng, Michel Chouteau</i>	

<b>HEM Calibration and Bird-swing Correction: An Insular Example</b> .....	1308
<i>James Macnae, Yuseen Ley-Cooper, Aaron Davis</i>	
<b>Mapping Mineralization in the Monitor Pass Mining District</b> .....	1313
<i>Jeffrey D. Shoffner, Wendy M. Calvin</i>	
<b>Geophysics and Climate Research: High Resolution 2D Seismic Surveys Recorded at Lake Tana, Ethiopia - The Source of the Blue Nile</b> .....	1318
<i>Dave Phillips, C. Richard Bates</i>	
<b>Seismic Tomography for Near Surface: Uncertainty Analysis</b> .....	1322
<i>Carlos Becerra, William Agudelo, Saul Guevara</i>	

## **EVENT LOCATION AND INTERFEROMETRY**

<b>Traveltimes and Waveforms of Microseismic Data in Heterogeneous Media</b> .....	1327
<i>Hom Nath Gharti, Volker Oye, Michael Roth</i>	
<b>Locating Microseismic Events with Time Reversed Acoustics: A Synthetic Case Study</b> .....	1332
<i>Rongrong Lu, M.N. Toksöz, Mark E. Willis</i>	
<b>Microseismic Inversion by Least-squares Time Reversal and Waveform Fitting</b> .....	1337
<i>W. Scott Leaney</i>	
<b>Microearthquake Monitoring with Sparsely Sampled Data</b> .....	1342
<i>Paul Sava</i>	
<b>Continuous Microseismic Mapping for Real-time Event Detection and Location</b> .....	1347
<i>Gwénola Michaud, S. Leaney</i>	
<b>Source Distribution in Interferometry for Wave and Diffusion</b> .....	1352
<i>Yuanzhong Fan, Roel Snieder</i>	
<b>Seismic Virtual Reflector - Synthesis and Composition of Virtual Wavefields</b> .....	1357
<i>Flavio Poletto, Biancamaria Farina</i>	
<b>Comparing Virtual Versus Real Crosswell Surveys</b> .....	1362
<i>K. Mehta, A. Bakulin, D. Kiyashchenko, J. Lopez</i>	

## **INTERPRETATION AND CASE HISTORIES**

<b>Microseismic Monitoring of Nonlinear Fluid-rock Interaction: Hydraulic Fracturing of Geothermic and Hydrocarbon Reservoirs</b> .....	1367
<i>Serge A. Shapiro, Carsten Dinske</i>	
<b>Microseismic Signatures of Nonlinear Pore-pressure Diffusion</b> .....	1372
<i>Nicolas Hummel, Tobias M. Müller</i>	
<b>Interpretation of Microseismicity Induced by a Gel and a Water Fracturing in Tight Gas Reservoir</b> .....	1377
<i>Carsten Dinske, Serge Shapiro, James T. Rutledge</i>	
<b>Microseismic Monitoring of a Middle East Carbonate Reservoir: Minagish Sensitivity Test Results</b> .....	1382
<i>E. Gaucher, C. Maisons, A.Y. Al-Kandari, K. Al-Atroshi, J.M. Al-Kanderi</i>	
<b>Eight Years of Passive Seismic Monitoring at a Petroleum Field in Oman: A Case Study</b> .....	1387
<i>S. Sarkar, H.S. Kuleli, M.N. Toksöz, H. Zhang, O. Ibi, F. Al-Kindy, N. Al Touqi</i>	

<b>Locating Trapped Miners Using Super-stacking and Super-resolution Properties of Time Reversal Mirrors</b> .....	1392
<i>Sherif M. Hanafy, W. Cao, Kim McCarter, G.T. Schuster</i>	

<b>Identification and Interpretation of Solution Mining Features in Bedded Salt Deposits on a Crosswell Reflection Profile</b> .....	1397
<i>S. Boone, M. Monier-Williams, R. Turperning, T. Morgan, K. Tandon, B. Bryans</i>	

<b>Semiautomated Relative Picking of Microseismic Events</b> .....	1401
<i>Daniel Raymer, James Rutledge, Paul Jaques</i>	

## **METHODS IN PASSIVE SEISMIC**

<b>Analysis of Spurious Events in Seismic Interferometry</b> .....	1405
<i>J. Thorbecke, K. Wapenaar</i>	

<b>Estimation of Hydrofracture Source Location with Time Reversal Mirrors</b> .....	1411
<i>W. Cao, T.W. Fei, Y. Luo, M.N. Alfaraj, G.T. Schuster, C. Boonyasirawat</i>	

<b>Microseismic Characterization of Pore Pressure Change in Laboratory Experiments</b> .....	1416
<i>S.B. Turuntaev, E.V. Zenchenko, A.V. Novikov</i>	

<b>Noise Suppression for Detection and Location of Microseismic Events Using a Matched Filter</b> .....	1421
<i>L. Eisner, D. Abbott, W.B. Barker, J. Lakings, M.P. Thornton</i>	

<b>Testing the Ability of Surface Arrays to Locate Microseismicity</b> .....	1426
<i>Kit Chambers, Sverre Brandsberg-Dahl, J-Michael Kendall, Jose Rueda</i>	

<b>Full 3D Relocation of Microseisms for Reservoir Monitoring</b> .....	1431
<i>Aldo Vesnaver, Lara Lovisa, Gualtiero Böhm</i>	

<b>Microseismic Event Azimuth Estimation: Establishing a Relationship Between Hodogram Linearity and Uncertainty in Event Azimuth</b> .....	1436
<i>Julian Drew, Robert White, James Wolfe</i>	

<b>Identification of Microseismic Multiplets in the Frequency Domain and Interpretation of Reservoir Structure at Basel, Switzerland</b> .....	1441
<i>H. Asanuma, Y. Kumano, H. Moriya, H. Niitsuma, U. Schanz, M. Häring</i>	

## **INVERSION: APPLICATION AND UNCERTAINTY**

<b>3D Inversion of Lithological Properties in the Gullfaks Brent Group</b> .....	1446
<i>Anders Dræge, Youness El Ouair</i>	

<b>Increasing the Impedance Bandwidth by Joint Geostatistical Inversion of Conventional and 3DHR Seismic Data</b> .....	1451
<i>Leon Barends, Jan Mersmann</i>	

<b>Deterministic Mapping of Reservoir Heterogeneity in Athabasca Oil Sands Using Surface Seismic Data</b> .....	1456
<i>Yong Xu, Satinder Chopra</i>	

<b>Seismic Attributes Used for Reservoir Simulation: Application to a Heavy Oil Reservoir in Canada</b> .....	1461
<i>Carmen C. Dumitrescu, Larry Lines</i>	

<b>Porosity, Fluid Discrimination, and Monitoring from Prestack Seismic Data: A Case from Campos Basin, Brazil</b> .....	1466
<i>F.S. Moraes, L.G.C.L. Loures, S.A.M. Oliveira, I.L.S. Braga, K. Tomaso, R.J. Carvalho, S.R. Malagutti, E.F. da Costa</i>	

<b>Joint Bayesian Inversion for Reservoir Characterization and Uncertainty Quantification</b> .....	1471
<i>Tiancong Hong, Mrinal K. Sen</i>	
<b>Comparison of Uncertainty Estimates from Deterministic and Geostatistical Inversion</b> .....	1476
<i>Mark Sams, Denis Saussus</i>	
<b>Towards a New Approach for Primary Estimation</b> .....	1481
<i>G.J.A. van Groenestijn, D.J. Verschuur</i>	
<b>Markov Bayes Simulation for Structural Uncertainty Estimation</b> .....	1486
<i>S. Sil, S. Srinivasan, M. Sen, J.J. Ríos López, M. Moreno Vidal, A. Rusic, M. González</i>	

## **MEANINGFUL ATTRIBUTES AND THEIR APPLICATION**

<b>Using Seismic Attributes to Detect Vertical Fractures: A Physical Model Study</b> .....	1491
<i>R.W. Wiley, B.C. Golden, P.H. Wilson, S.W. Peters</i>	
<b>Gleaning Meaningful Information from Seismic Attributes</b> .....	1496
<i>Satinder Chopra, K.J. Marfurt</i>	
<b>The Effects of Seismic Data Conditioning on Prestack Simultaneous Impedance Inversion</b> .....	1501
<i>Scott Singleton</i>	
<b>Evaluation of Fracture Parameters and Fluid Content from Seismic and Well Data</b> .....	1506
<i>Noalwenn Dubos-Sallée, Patrick N.J. Rasolofosaon</i>	
<b>Brazilian Deep-water Carbonate Reservoir Study Using the Wavelet Transform Teager-Kaiser Energy</b> .....	1511
<i>Marcílio Castro de Matos, K.J. Marfurt, Paulo Johann, Joao Adolfo Rosseto</i>	
<b>Use of Spatial, Frequency and Curvature Attributes for Reservoir, Fluid and Contact Predictions</b> .....	1516
<i>W. Flierman, J. Gabe van der Weide, A. Wever, F. Brouwer, A. Huck</i>	
<b>Elastic Impedance Coefficient (EC) for Lithology Discrimination and Gas Detection</b> .....	1521
<i>Hong Cao, Zhifang Yang, Y. Li</i>	
<b>Pitfalls and Tips for Seismic Fracture Analysis</b> .....	1526
<i>Ye Zheng, J. Wang, Mike Perz</i>	

## **MODELING, MONITORING, AND DISPERSION**

<b>Improvements in Reservoir Modeling of Compressional Structures</b> .....	1531
<i>Karen S. Hoffman, John W. Neave, Erik H. Nilsen</i>	
<b>Correlated Fracture Network Modeling Using Simulated Annealing</b> .....	1536
<i>Ravi Shekhar, Richard L. Gibson Jr.</i>	
<b>Reconstruction of Channelized Facies Using Sparsity Constraints</b> .....	1541
<i>Behnam Jafarpour, Vivek K. Goyal, William T. Freeman</i>	
<b>Multiple Prediction and Reservoir Characterization of a Tight Sand Reservoir</b> .....	1546
<i>B. Zhao, F. Brouwer, F. Aminzadeh, S. Morris, R. Harris</i>	
<b>The Wolf Ramp: Early Work on Reflectivity Dispersion</b> .....	1551
<i>Christopher L. Liner, Bernhard Bodman, Gennady Goloshubin</i>	
<b>Time-lapse <math>V_p</math>-<math>V_s</math> Analysis for Pressure Mapping, Rulison Field, Colorado</b> .....	1555
<i>Ramses G. Meza, T.L. Davis, Reinaldo J. Michelena</i>	
<b>Hydraulic Fracture Quality from Time-lapse VSP and Microseismic Data</b> .....	1560
<i>M.E. Willis, D.R. Burns, K.M. Willis, N.J. House, J. Shemeta</i>	

<b>Closer to Real Earth in Reservoir Characterization: A 3D Isotropic/anisotropic PSDM Simulator</b> .....	1565
<i>Isabelle Lecomte, Tina Kaschwich</i>	

## **SEISMIC ATTRIBUTE APPLICATIONS**

<b>Tectonic Thermal Evolution and Oil-gas Reservoir in Bachu Upheaval, Tarim Basin, Northwest China</b> .....	1570
<i>J. Zhang, B. Shi, Z. Gao, W. Li</i>	
<b>An Integrated Approach for 3D Seismic-based Reservoir Characterization: an Example of Northern Chezhen Sag, Shengli Oil Field</b> .....	1575
<i>Jun Li, H. Wang, Shaoguo Yang, J. Yang</i>	
<b>Multispectral Volumetric Curvature Adding Value to 3D Seismic Data Interpretation</b> .....	1580
<i>Satinder Chopra, K.J. Marfurt</i>	
<b>Seismic Attributes for Stratigraphic Feature Characterization</b> .....	1585
<i>Satinder Chopra, K.J. Marfurt</i>	
<b>Comparison of Petrophysical Rock Types from Core and Well-logs Using Poststack 3D Seismic Data: Field Example from Maracaibo, Venezuela</b> .....	1590
<i>Francisco Cheng, Kumar Ramachandran, David Contreras</i>	
<b>Influence of Fault Transmissibility on Seismic Attributes Based on Coupled Fluid-flow and Geomechanical Simulation</b> .....	1595
<i>D.A. Angus, J.P. Verdon, JEM. Kendall, Q.J. Fisher, J. Segura, S. Skachkov, M. Dutko, A.J.L. Crook</i>	
<b>A Synthetic Study to Investigate the 3D Structural Effects on AVAZ Analyses</b> .....	1600
<i>Louis Chérel, Kaveh Dehghan, Pascal Froidevaux</i>	

## **CORE TO FIELD SCALE MEASUREMENTS AND MODELS FOR SHALES AND SANDS**

<b>Elastic Properties of Clay Minerals</b> .....	1605
<i>A. Pal-Bathija, M. Prasad, H. Liang, M. Upmanyu, N. Lu, M. Batzle</i>	
<b>Clay-water Interaction, Intermolecular Forces, and Acoustic Velocity</b> .....	1610
<i>Ali I. Mese</i>	
<b>Effective Stress Coefficient for North Sea Shale: An Experimental Study</b> .....	1615
<i>Rituparna Sarker, Mike Batzle</i>	
<b>Influence of Horizontal and Vertical Stresses on <math>V_p</math>-<math>V_s</math> Trends</b> .....	1620
<i>A. Bakulin, F. Kets, M. Hauser, R. Vines, J. Wieseneck</i>	
<b>Stress and Pore-pressure Dependence of Sound Velocities in Shales: Poroelastic Effects in Time-lapse Seismic</b> .....	1625
<i>A. Bauer, C. Lehr, F. Korndorffer, A. van der Linden, J. Dudley, T. Addis, K. Love, M. Myers</i>	
<b>Elastic Anisotropy, Maturity, and Maceral Microstructure in Organic-rich Shales</b> .....	1630
<i>Tiziana Vanorio, Tapan Mukerji, G. Mavko</i>	
<b>Experimental Investigation of Ultrasonic Cleaning of Drilling and Drill-in Fluids Damage in Berea Sandstone Cores</b> .....	1635
<i>A. Tutuncu, Ali I. Mese</i>	
<b>Electrokinetic Effect: Theory and Measurement</b> .....	1640
<i>F.C. Schoemaker, D.M.J. Smeulders, E. Slob</i>	

## **CARBONATE ROCK PROPERTY MEASUREMENTS AND MODELING**

<b>Effects of Fractures on the Rock Physics of Limestones in Kashagan Field</b> .....	1645
<i>Claudio D'Agosto, Patrizia Cibir, Roberto Miandro, Richard Nolen-Hoeksema, William Murphy</i>	
<b>Carbonate Rock Physics: Geophysical and Petrophysical Pore Types of Carbonate Rocks from an Offshore Carbonate Field</b> .....	1650
<i>R. Sain, G. Chen, S. Xu, M.A. Payne, A. Awas Sultan</i>	
<b>Oomoldic Carbonates: Pore Structure and Fluid Effects on Sonic Velocity</b> .....	1655
<i>G.T. Baechle, G.P. Eberli, A. Boyd, J.-M. DeGrange, L. Al-Kharus</i>	
<b>Factors Affecting the Sensitivity of the Elastic Properties to Pressure on Carbonate Rocks</b> .....	1660
<i>Cinzia Scotellaro, G. Mavko</i>	
<b>Intrinsic P- and S-wave Attenuation of Carbonate Reservoir Rocks from Seismic, Sonic to Ultrasonic Frequencies</b> .....	1665
<i>G. Chen, D. Chu, J. Zhang, S. Xu, M.A. Payne, L. Adam, W.L. Soroka</i>	
<b>How Does Carbonate Cementation in Sandstones Affect Seismic Response?</b> .....	1670
<i>Tanima Dutta, Tapan Mukerji, G. Mavko</i>	
<b>Water Weakening of Elastic Moduli of Carbonates Interpreted by Use of Isoframe Modeling</b> .....	1675
<i>Ida L. Fabricius, Gregor T. Bächle, Gregor P. Eberli</i>	
<b>Rock Physics Interpolation Used for Velocity Modeling of Chalks: Ontong Java Plateau Example</b> .....	1680
<i>Mohammad Reza Saberi, Tor Arne Johansen</i>	

## **UNCONVENTIONALS: HEAVY OIL AND HYDRATE APPLICATIONS AND MODELING**

<b>Velocity and Dispersion of Heavy Oils</b> .....	1685
<i>De-hua Han, J. Liu, Michael Batzle</i>	
<b>Elastic Properties of Heavy-oil Saturated Rocks: Comparison of Modeled and Measured Results</b> .....	1689
<i>Agnibha Das, Michael Batzle</i>	
<b>Fluid Substitution in Heavy Oil Rocks</b> .....	1694
<i>Dina Makarynska, Boris Gurevich</i>	
<b>Seismic Rock Physics of Steam Injection in Bituminous Oil Reservoirs</b> .....	1699
<i>Evan M. Bianco, Sam T. Kaplan, Douglas R. Schmitt</i>	
<b>Elastic Property Changes of Bitumen Reservoir During Steam Injection</b> .....	1704
<i>Ayato Kato, Shigenobu Onozuka, Toru Nakayama</i>	
<b>Shear Thinning Behavior of Heavy Oil Samples: Laboratory Measurements and Modeling</b> .....	1709
<i>M.A. Rojas, J. Castagna, R. Krishnamoorti, D. Han, A. Tutuncu</i>	
<b>An Experimental Study for Removal of Near-wellbore Asphaltene Deposits Using Ultrasonics</b> .....	1714
<i>Azra N. Tutuncu, Robert Joha</i>	
<b>Rock-physics Joint Inversion of Resistivity Log and Seismic Velocity for Hydrate Characterization</b> .....	1719
<i>D. Sava, B. Hardage, P. Murray, M. DeAngelo</i>	
<b>Pore-scale Modeling of Gas Hydrate Formation and Comparison to Lab Experiments</b> .....	1724
<i>Youngseuk Keehm, Pilsun Yoon</i>	

## **APPLIED ROCK PHYSICS MODELS**

<b>Rock Physics As the Basis for Inverting Geophysical Observations</b> .....	1729
<i>M.A. Payne</i>	
<b>Wave Propagation Across Partially Infill Fracture</b> .....	1734
<i>Angel A. Acosta-Colón, Laura J. Pyrak-Nolte</i>	
<b>Amplitude-versus-frequency Variations in Thinly Layered Porous Rocks</b> .....	1739
<i>Haitao Ren, Gennady Goloshubin, Fred Hilterman</i>	
<b>Approximate Fluid Substitution in Weakly Anisotropic VTI Rocks</b> .....	1744
<i>Kaushik Bandyopadhyay, G. Mavko</i>	
<b>Constrained Rock Physics Modeling</b> .....	1749
<i>Anders Dræge</i>	
<b>Fluid-solid Substitution in Rocks with Disconnected Porosity</b> .....	1754
<i>Vladimir Grechka</i>	
<b>Evaluation of an IOR Discovery at the Oseberg Field in the North Sea Using Rock Physics and Seismic Data Analysis</b> .....	1759
<i>Harald Flesche, Helge Rutledal</i>	
<b>Estimating Low Frequency Seismic Impedance from CSEM Resistivity Using Cross-property Rock Physics Relations</b> .....	1764
<i>Tapan Mukerji, G. Mavko, Carmen Gomez</i>	

## **UNCONVENTIONAL RESOURCES AND CARBONATES**

<b>Temperature-dependent Fluid Substitution Analysis of Geothermal Rocks at In-situ Reservoir Conditions</b> .....	1769
<i>M. Jaya, S. Shapiro, D. Bruhn, E. Huenges, O. Flovenz</i>	
<b>Experimental Study of the Matrix Paramagnetic Effects on Nuclear Magnetic Resonance T<sub>2</sub> Measurement for Volcanic Breccia</b> .....	1774
<i>Yuanzhong Zhang</i>	
<b>Seismic Attenuation and Well Log Analysis in a Heavy-oil Field</b> .....	1779
<i>Zimin Zhang, R. Stewart</i>	
<b>Characterizing the Elastic Properties and Seismic Signature of a Heavy Oil Sand Reservoir: Manitou Lake, Saskatchewan</b> .....	1784
<i>Maria F. Quijada, R. Stewart</i>	
<b>The Effect of Fabric-controlled Layering on Compressional and Shear Wave Propagation in Carbonate Rock</b> .....	1789
<i>W. Li, C. Petrovitch, L.J. Pyrak-Nolte, E. Liu, S. Xu</i>	
<b>A Rock Physics Model for Hydrate Bearing Sediments of the Near Surface</b> .....	1794
<i>Zijian Zhang</i>	



<b>Elastic and Flow Properties of Carbonate Core Derived from 3D X Ray-CT Images</b> .....	1799
<i>M.A. Knackstedt, C. Arns, M. Madadi, A.P. Sheppard, S. Latham, R. Sok, G. Bächle, G. Eberli</i>	

## VOLUME 4

### NEW APPLICATIONS

<b>Rock Physics Modeling of Soft Sedimentary and Hard Crystalline Rocks</b> .....	1805
<i>Toru Takahashi, Soichi Tanaka</i>	
<b>Acoustic Properties of Coal from Lab Measurement</b> .....	1810
<i>Qiuliang Yao, De-hua Han</i>	
<b>Analyzing Thresholds for 3D Reconstruction of Rock from CT-scan Images</b> .....	1815
<i>Tapan Mukerji, G. Mavko</i>	
<b>Granular Dynamics Simulation for Estimating Elastic Properties of Loose Unconsolidated Frictional Packs</b> .....	1820
<i>Ratnanabha Sain, Tapan Mukerji, G. Mavko</i>	
<b>Contribution to the Understanding of Field-specific Seismic Attenuation</b> .....	1825
<i>Didier Rappin, Christophe Barnes</i>	
<b>Elastic Anisotropy of Clay</b> .....	1830
<i>K. Bandyopadhyay, T. Vanorio, G. Mavko, H.-R. Wenk, M. Voltolini</i>	
<b>Direct Laboratory Observation of Velocity-saturation Relation Transition During Rocks Saturation</b> .....	1835
<i>M. Lebedev, B. Gurevich, J. Toms, B. Clennel, M. Pervukhina, T. Mueller</i>	
<b>Nonlinear Seismic Response of Rock Saturated with Multiple Fluids</b> .....	1840
<i>Mark Chapman</i>	

### APPLICATIONS

<b>Prestack Seismic Inversion Based Case Study on Tight Laminated Sands from the East Coast of India</b> .....	1845
<i>R.K. Mallick, A. Mukherjee, C. Shepherd, S. Assefa, S. Rajput, S. Dubey</i>	
<b>Seismic Inversion to Map the Hard Streak Layer and Porosity Distribution in Carbonate Reservoir: A Case Study from the Western Offshore Basin of India</b> .....	1850
<i>S.K. Pokhriyal, S. Dotiwala, A. Sanyal, P.S. Basak, A. Deb</i>	
<b>Towards Direct Detection of Gold Bearing Rock Formations from Seismic Data: St. Ives Gold Camp, Western Australia</b> .....	1855
<i>Christopher Harrison, M. Urosevic</i>	
<b>Near-surface Imaging with Traveltime and Waveform Inversion</b> .....	1860
<i>Priyank Jaiswal, Colin A. Zelt, Rahul Dasgupta</i>	
<b>Joint Seismic and Well-log Inversion for the Estimation of Water Saturation, Porosity and Acoustic Impedance in a Gas Reservoir</b> .....	1865
<i>M. Bosch, C. Carvajal, J. Rodríguez, A. Torres, M. Aldana, J. Sierra</i>	
<b>Interbed Multiple Attenuation in Seismic Inversion: Case Study of Mutriba Gas Field, Kuwait</b> .....	1870
<i>O. Al-Khaled, J. Al-Jenaie, I. Mohamed, G. Lecante, S. Nguyen</i>	

<b>High-resolution Reservoir Characterization by 2D Model-driven Seismic Bayesian Inversion: an Example from a Tertiary Deltaic Clinof orm System in the North Sea</b> .....	1875
<i>Daria Tetyukhina, Stefan M. Luthi, Lucas J. van Vliet, K. Wapenaar</i>	
<b>A Global Acoustic Impedance Inversion for Porosity and Lithology Prediction in Northern Gulf of Mexico</b> .....	1880
<i>A. Koesoemadinata, N. Banik, V. Agarwal, S. Singh, J. Durrani</i>	

## **THEORY, TIME DOMAIN**

<b>Comparisons for Waveform Inversion, Time Domain or Frequency Domain?</b> .....	1885
<i>Denes Vigh, E. William Starr</i>	
<b>Full-waveform Inversion Results When Using Acoustic Approximation Instead of Elastic Medium</b> .....	1890
<i>Christophe Barnes, Marwan Charara</i>	
<b>3D Waveform Inversion Based on Reverse-time Migration Engine</b> .....	1895
<i>Bin Gong, G. Chen, David Yingst, Robert Bloor</i>	
<b>Full Elastic Waveform Inversion: Future of Quantitative Seismic Imaging</b> .....	1900
<i>S. Singh, T. Sears, M. Roberts, A. Gosselet, G. Royle, P. Baton</i>	
<b>Combining the Gradual Deformation Method with Seismic Forward Modeling to Constrain Reservoir Models</b> .....	1905
<i>Audrey Neau, Pierre Thore, Béatrice de Voogd</i>	
<b>Stochastic Seismic Inversion Using Both Waveform and Traveltime Data and Its Application to Time-lapse Monitoring</b> .....	1910
<i>Youli Quan, Jerry M. Harris</i>	
<b>One-dimensional Prestack Seismic Waveform Inversion Using Ensemble Kalman Filter</b> .....	1915
<i>Long Jin, Mrinal K. Sen, P. Stoffa</i>	
<b>Velocity Analysis with Multiples - NMO Modeling for Layered Velocity Structures</b> .....	1920
<i>T. Van Leeuwen, W.A. Mulder</i>	

## **THEORY, FREQUENCY DOMAIN**

<b>A Comparative Study of Cascaded Frequency-selection Strategies for 2D Frequency-domain Acoustic Waveform Inversion</b> .....	1925
<i>Hobum Cho, D.J. Min, Young Ho Cha, Changsoo Shin, Seungwon Ko</i>	
<b>2-D Frequency-domain Waveform Inversion of Coupled Acoustic-elastic Media with an Irregular Interface</b> .....	1930
<i>Myung Hoon Kim, Yoonseok Choi, Young Ho Cha, Changsoo Shin</i>	
<b>Subsalt Imaging by Full-waveform Inversion: A Parameter Analysis</b> .....	1935
<i>C. Ravaut, M. Alerini, S. Pannetier-Lescoffit, E. Thomassen</i>	
<b>3D Frequency-domain Full-waveform Tomography Based on a Domain Decomposition Forward Problem</b> .....	1940
<i>Hafedh Ben-Hadj-Ali, S. Operto, Jean Virieux, Florent Sourbier</i>	
<b>Full Waveform Inversion Based on Reverse Time Propagation</b> .....	1945
<i>Yu Zhang, Fuchun Gao</i>	
<b>An Iterative Multilevel Method for Computing Wavefields in Frequency-domain Seismic Inversion</b> .....	1951
<i>Yogi A. Erlangga, Felix J. Herrmann</i>	

<b>A Local Contrast Source Inversion Algorithm for Cross-well Time-lapse Seismic Applications</b> .....	1956
<i>W. Hu, A. Abubakar, T. Habashy, P.M. Van Den Berg</i>	

<b>Improved Logarithmic Waveform Inversion Considering the Power-spectrum of the Wavefield</b> .....	1961
<i>Youngseo Kim, Young Ho Cha, Changsoo Shin, Seungwon Ko, Youngtak Seo</i>	

### **AVO, LAPLACE, OTHERS...**

<b>Estimation of Facies Probabilities on the Snorre Field Using Geostatistical AVA Inversion</b> .....	1966
<i>Sebastian Ng, Pal Dahle, Ragnar Hauge, Odd Kolbjorsen</i>	

<b>3D Elastic Full Waveform Inversion in the Laplace Domain</b> .....	1971
<i>S. Pyun, C. Shin, H. Lee, D. Yang</i>	

<b>The Direct-removal Method of Waveform Inversion in the Laplace Domain for Deep-sea Environments</b> .....	1976
<i>Dongkweon Lee, Young Ho Cha, Changsoo Shin</i>	

<b>Imaging with Complex Decomposition: Numerical Applications to Seismic Processing in Difficult Areas</b> .....	1981
<i>A. Lau, M. Roque-Sol, C.M. Lapilli, J. Perdomo, C. Shih, A. González, L. Canales</i>	

<b>Wavelet Estimation Using a Very Fast Simulated Annealing and Spline Based Parameterization</b> .....	1986
<i>Abhijit Gangopadhyay, Long Jin</i>	

<b>Deconvolution with Curvelet-domain Sparsity</b> .....	1991
<i>Vishal Kumar, Felix J. Herrmann</i>	

<b>Fluid Discrimination and Reservoir Characterization from Onshore Niger Delta</b> .....	1996
<i>L.M. Omudu, J.O. Ebeniro, M. Xynogalas, Nedo Osayande, Sam Olotu</i>	

<b>Reservoir Prediction Technology Based on Prestack Radon Field Attributes and Its Applications</b> .....	2001
<i>C. Teng, Z. Shen, H. Xu, Y. Li, B. Jiang, J. Guo, Y. Liu</i>	

### **GENERAL**

<b>Lithological Constraints from Seismic Waveforms: Application to the Opal-A to Opal-CT Transition</b> .....	2006
<i>Mohammad Maysami, Felix J. Herrmann</i>	

<b>2D Frequency-domain Elastic Full-waveform Inversion Using a P<sub>0</sub> Finite Volume Forward Problem</b> .....	2011
<i>Romain Brossier, Jean Virieux, S. Operto</i>	

<b>Stack Impedance</b> .....	2016
<i>Hongbing Li, XingFu Cui, WenFeng Huang</i>	

<b>Global Multiwell Wavelet Estimation</b> .....	2021
<i>Alex Malkin, Anat Canning</i>	

<b>Frequency-domain Elastic Waveform Inversion with Irregular Surface Topography</b> .....	2026
<i>Ugeun Jang, D.J. Min, Yunseok Choi, Changsoo Shin</i>	

<b>Preconditioning for Linearized Inversion of Attenuation and Velocity Perturbations</b> .....	2031
<i>Bobby Hak, Wim A. Mulder</i>	

<b>A Novel Prestack AVO Inversion and Its Application</b> .....	2036
<i>Xingyao Yin, Peijie Yang, G. Zhang</i>	
<b>Nonlinear Shaping Regularization in Geophysical Inverse Problems</b> .....	2041
<i>Sergey Fomel</i>	
<b>Velocity Analysis of Surface Seismic Data with VSP Data As Constraints</b> .....	2047
<i>Yonghwan Joo, Soon Jee Seol, Joongmoo Byun</i>	

## **NUMERICAL MODELING OF SEISMIC WAVE PROPAGATION USING DISCRETE METHODS**

<b>Numerical Solution of the Constant Density Acoustic Wave Equation by Implicit Spatial Derivative Operators</b> .....	2052
<i>Dan Kosloff, Reynam Pestana, Hillel Tal-Ezer</i>	
<b>Finite-difference Simulation of Elastic Waves Propagation in Multiscale Media on the Base of Local Grid Refinement</b> .....	2057
<i>J. Guilbot, V.G. Khaidukov, E. Landa, G.V. Reshetova, V.A. Tcheverda</i>	
<b>A Mimetic Finite-difference Method for Acoustic-wave Modeling on Arbitrary Meshes</b> .....	2062
<i>Konstantin Lipnikov, L. Huang</i>	
<b>Grid Dispersion of the Discontinuous Galerkin Method for Elastic Wave Propagation</b> .....	2067
<i>Jonás D. De Basabe, Mrinal K. Sen, Mary F. Wheeler</i>	
<b>Gridding Requirements for Accurate Finite Difference Simulation</b> .....	2072
<i>William W. Symes, Igor S. Terentyev, Tetyana W. Vdovina</i>	
<b>A New Pseudoacoustic Wave Equation for TI Media</b> .....	2077
<i>Robin Fletcher, Xiang Du, Paul J. Fowler</i>	
<b>A Pseudospectral-finite Difference Hybrid Approach for Large-scale Seismic Modeling and RTM on Parallel Computers</b> .....	2082
<i>Chunlei Chu, P. Stoffa</i>	
<b>Finite Difference Modeling of Elastic Wave Propagation on Curvilinear Grid: A Generalized Rotated Operator Approach</b> .....	2087
<i>Marwan Charara, Artyom Myasnikov, Denis Sabitov</i>	

## **GENERAL SEISMIC MODELING OF STRUCTURES**

<b>Simulations of Acoustic and Elastic Wave-fields: A Robust NAD Algorithm with Automatically Eliminating Numerical Dispersion</b> .....	2092
<i>Dinghui Yang, Biaolong Hua, Henri Calandra, Bertrand Denel</i>	
<b>Full Azimuth Seismic Modeling in the Norwegian Sea</b> .....	2097
<i>M. Houbiers, B. Arntsen, J. Mispel, E. Hager, G. Brown, D. Hill</i>	
<b>Efficient Seismic Forward Modeling Using Simultaneous Random Sources and Sparsity</b> .....	2102
<i>R. Neelamani, C.E. Krohn, J.R. Krebs, M. Deffenbaugh, J.E. Anderson, J.K. Romberg</i>	
<b>Modeling Mesoscopic Attenuation in a Highly Heterogeneous Biot's Medium Employing an Equivalent Viscoelastic Model</b> .....	2107
<i>Juan E. Santos, J. Germán Rubino, Claudia L. Ravazzoli</i>	
<b>Seismic Models of Reflections from Attenuating Layers</b> .....	2112
<i>Richard L. Gibson Jr.</i>	
<b>Interpolating Solutions of the Helmholtz Equation with Compressed Sensing</b> .....	2117
<i>Tim T.Y. Lin, Evgeniy Lebed, Yogi A. Erlangga, Felix J. Herrmann</i>	

<b>Modeling of "Dirty Salt"</b> .....	2122
<i>Jon André Haugen, B. Arntsen, Joachim Mispel</i>	
<b>Wave Equation Illumination Using Sparse-frequency One-way Wavefield Extrapolation</b> .....	2127
<i>John T. Etgen</i>	

## **GENERAL SEISMIC MODELING**

<b>2D Acoustic-elastic Coupled Modeling Using the Cell-based Finite-difference Method</b> .....	2132
<i>S.C. Lim, H.Y. Lee, D.J. Min, B.D. Kwon</i>	
<b>Finite-difference Modeling of 3D Seismic Wave Propagation in High-contrast Media</b> .....	2137
<i>Leiph A. Preston, David F. Aldridge, Neill P. Symons</i>	
<b>Frequency-domain Full-waveform Modeling Using a Hybrid Direct-iterative Solver Based on a Parallel Domain Decomposition Method: a Tool for 3D Full-waveform Inversion?</b> .....	2142
<i>F. Sourbier, A. Haidar, L. Giraud, S. Operto, J. Virieux</i>	
<b>Seismic Attenuation Modeling of Fluid-filled Porous Media</b> .....	2147
<i>Xiaojun Xiong, Zhenhua He, Deji Huang</i>	
<b>Kinematic Characteristics of the Factorized Model</b> .....	2151
<i>A. Stovas</i>	
<b>3D Anisotropic Ray Tracing by Raypath Optimization</b> .....	2156
<i>L. Casasanta, G. Drufuca, C. Andreoletti, J. Panizzardi</i>	
<b>Assembling a Nevada 3D Velocity Model: Earthquake-wave Propagation in the Basin &amp; Range, and Seismic Shaking Predictions for Las Vegas</b> .....	2161
<i>John N. Louie</i>	
<b>3D Sonic Log in Multiscale Viscoelastic Media: Finite-difference Simulation</b> .....	2166
<i>Dimitry V. Pissarenko, Galina V. Reshetova, Vladimir A. Tcheverda</i>	

## **FRONTIERS**

<b>Separation, Imaging, and Velocity Analysis of Seismic Diffractions Using Migrated Dip-angle Gathers</b> .....	2171
<i>Evgeny Landa, Sergey Fomel, Moshe Reshef</i>	
<b>Imaging by Target-oriented Wave-equation Inversion: 3D Field Data Results</b> .....	2176
<i>Alejandro A. Valenciano, Biondo L. Biondi, Robert G. Clapp</i>	
<b>Acoustic VTI Wave Equations and Their Application for Anisotropic Reverse-time Migration</b> .....	2181
<i>Eric Duveneck, Paul Milcik, Peter M. Bakker, Colin Perkins</i>	
<b>Elastic Wavefield Separation for VTI Media</b> .....	2186
<i>Jia Yan, Paul Sava</i>	
<b>Reverse Time Migration in 3D Heterogeneous TTI Media</b> .....	2191
<i>H. Zhang, Yu Zhang</i>	
<b>Wave-equation Hessian by Phase Encoding</b> .....	2196
<i>Yaxun Tang</i>	
<b>Efficient Compensation for Attenuation Effects Using Pseudo Q Migration</b> .....	2201
<i>Lorie Bear, J. Liu, Peter Traynin</i>	
<b>Curvelet-based Migration Preconditioning</b> .....	2206
<i>Peyman P. Moghaddam, Cody Brown, Felix J. Herrmann</i>	

## **ILLUMINATION AND IMAGE ATTRIBUTES**

<b>Target Oriented Full-wave Equation Based Illumination Analysis</b> .....	2211
<i>Hui Yang, Xiao-Bi Xie, Mingqiu Luo, Shengwen Jin</i>	
<b>Full-azimuth Angle Domain Imaging</b> .....	2216
<i>Z. Koren, I. Ravve, E. Ragoza, A. Bartana, D. Kosloff</i>	
<b>Angle-domain Common-image Gathers in Generalized Coordinates</b> .....	2221
<i>Jeff Shragge</i>	
<b>Optimizing the Grouping of Shots for Shot-record Migration</b> .....	2226
<i>Scott Morton, Mingjuan Shi, Jacques Leveille, Mike Oyler</i>	
<b>Gaussian Beam Migration: Prestack, Common-shot, TTI, True Amplitude in Angular Domain</b> .....	2231
<i>Massimo Virgilio, Simone Re, Daniele Colombo</i>	
<b>Simultaneous Time Imaging, Velocity Estimation, and Multiple Suppression Using Local Event Slopes</b> .....	2236
<i>Dennis Cooke, Andrej Bóna, Benn Hansen</i>	
<b>Local-angle Domain Illumination for Full-wave Propagators</b> .....	2241
<i>Jun Cao, Ru-Shan Wu</i>	
<b>Wave Equation Depth Migration - A New Method of Solution</b> .....	2247
<i>L. Amundsen, B. Arntsen, A. Reitan, E.O. Dischler, B. Ursin</i>	

## **COMPUTATIONAL METHODS**

<b>3D Reverse-time Migration with Hybrid Finite Difference-pseudospectral Method</b> .....	2252
<i>A.-C. Lesage, H. Zhou, M. Araya-Polo, J.-M. Cela, F. Ortigosa</i>	
<b>Phase-shift Time-stepping for Reverse-time Migration</b> .....	2257
<i>Ben D. Wards, Gary F. Margrave, Michael P. Lamoureaux</i>	
<b>Computational Strategies for Reverse-time Migration</b> .....	2262
<i>E. Dussaud, W.W. Symes, P. Williamson, L. Lemaistre, P. Singer, Bertrand Denel, Adam Cherrett</i>	
<b>Two-step Explicit Marching Method for Reverse Time Migration</b> .....	2267
<i>Robert Soubaras, Yu Zhang</i>	
<b>An Antidispersion Wave Equation for Modeling and Reverse-time Migration</b> .....	2272
<i>Faqi Liu, G. Zhang, Scott A. Morton, Jacques P. Leveille</i>	
<b>Increasing the Parallelism in Common Azimuth Migration with Overlap Domain Decomposition</b> .....	2277
<i>Sean Crawley</i>	
<b>A Fast and Accurate Interpolation Algorithm for One-way Wave Equation Migration</b> .....	2282
<i>Weihong Fei, Paul Williamson</i>	
<b>Asymptotically True-amplitude One-way Wave Equations in T: Modeling, Migration, and Inversion</b> .....	2287
<i>Norman Bleistein, Yu Zhang, G. Zhang</i>	

## **PRACTICAL SOLUTIONS**

<b>Preprocessing Considerations for Reverse Time Migration</b> .....	2292
<i>I.F. Jones</i>	

<b>Seismic Imaging Through Gas Clouds: A Data-driven Imaging Strategy</b> .....	2297
<i>A.R. Ghazali, D.J. Verschuur, A. Gisolf</i>	
<b>Modeling Case Study of a Subsalt Exploration Concept</b> .....	2302
<i>John Sinton, Jim Blackerby, Steve Whitney, Steve Sloan</i>	
<b>Multiarriival Kirchhoff Beam Migration</b> .....	2306
<i>J. Liu, Gopal Palacharla</i>	
<b>Application of One-way Wave-equation Migration in Tilted Coordinates to Salt-model Building at Atlantis</b> .....	2311
<i>B. Nolte, I. Ahmed, P. Mahob, D. Shepherd, R. Faerber, J. Howie</i>	
<b>Velocity Sensitivity of Reverse-time Migration</b> .....	2316
<i>Guojian Shan, Lin Zhang, Y. Wang, Tamas Nemeth, W. Liu</i>	
<b>Target-oriented Reverse Time Migration for Two-way Prestack Depth Imaging</b> .....	2321
<i>W. Liu, Y. Wang</i>	
<b>Localized Reverse Time Migration for Salt Model Building</b> .....	2326
<i>K. Yoon, B. Wang, Young Kim, Huimin Guan</i>	
<b>Hybrid One-way and Full-way Wave Equation Propagator and Prestack Migration</b> .....	2331
<i>Mingqiu Luo, Shengwen Jin</i>	

## **TECHNIQUES**

<b>A Multistep Approach for Efficient Reverse-time Migration</b> .....	2336
<i>H. Guan, Z. Li, B. Wang, Y. Kim</i>	
<b>Elastic-wave Reverse-time Migration with a Wavefield-separation Imaging Condition</b> .....	2341
<i>Huseyin Denli, L. Huang</i>	
<b>Wave-equation Extended Images for Semblance and Depth Focusing Velocity Analysis</b> .....	2346
<i>Tongning Yang, Paul Sava</i>	
<b>Methods for Expediting the Computation of Angle Gathers During Shot Record Migration</b> .....	2351
<i>Steve Kelly, Junru Jiao</i>	
<b>Imaging Diffraction Points Using the Local Image Matrix in Prestack Migration</b> .....	2356
<i>Xiaosan Zhu, Ru-Shan Wu</i>	
<b>Least Squares Datuming with the Wave Equation</b> .....	2361
<i>Yanwei Xue, G.T. Schuster</i>	
<b>Obliquity Correction for Reverse Time Migration</b> .....	2366
<i>F.A. Silva Neto, J.C. Costa, M. Rian, J. Schleicher, A. Novais</i>	
<b>Focused Gaussian Beams for Seismic Imaging</b> .....	2371
<i>Robert L. Nowack</i>	

## **APPLICATIONS**

<b>Spatial Sampling Considerations for Wide-azimuth Streamer Data</b> .....	2376
<i>Adam Cherrett</i>	
<b>Improving Bandwidth in the Claerbout-Lumley-Bevc Antialiasing Method</b> .....	2381
<i>Stewart A. Levin</i>	
<b>Imaging of Steep Flanks by Focal Sources</b> .....	2386
<i>J. Thorbecke</i>	

<b>A Fast and Accurate Migration from Topography Via Coarse Step Downward Wavefield Extrapolation</b> .....	2392
<i>Mark Ng</i>	
<b>Computation of Kinematic Attributes for Prestack Time Migration</b> .....	2397
<i>G. Lambare, P. Herrmann, J.-P. Toure, E. Suaudeau, D. Lecerf</i>	
<b>A Phase Shift Plus Interpolation Algorithm for Prestack Time Migration</b> .....	2402
<i>Jianhua Pan, Dan Negut</i>	

## VOLUME 5

<b>Amplitude and Bandwidth Recovery Beneath Gas Zones Using Kirchhoff Prestack Depth Q-migration</b> .....	2407
<i>Peter Traynin, J. Liu, J.M. Reilly</i>	
<b>Choosing a Good Set of Beams for Rapid Prestack Depth Migration</b> .....	2412
<i>Dave Nichols, Andre Tran</i>	

### **SURFACE MULTIPLE PREDICTION AND SUBTRACTION**

<b>Interpolation of Near Offsets with Multiples and Prediction-error Filters</b> .....	2416
<i>William Curry, Guojian Shan</i>	
<b>3D General Surface Multiple Prediction: An Algorithm for All Surveys</b> .....	2421
<i>B. Dragoset, I. Moore, M. Yu, W. Zhao</i>	
<b>True-azimuth Versus Zero-azimuth 3D Multiple Prediction in WATS Processing</b> .....	2426
<i>P. Aaron, R. O'Toole, S. Barnes, R. Hegge, R. Van Borselen</i>	
<b>Application of True-azimuth 3D SRME in the Northwest Shelf, Australia</b> .....	2431
<i>Richard Bisley, Malcolm MacNeill</i>	
<b>Multiple Prediction by Wavefield Extrapolation in Common-P Domain</b> .....	2436
<i>B. Wang, Y. Kim, H. Guan, S. Sen, M. Guo, K. Yoon</i>	
<b>Shallow Water 3D Surface-related Multiple Modeling, Case Study</b> .....	2441
<i>P. Plasterie, M. Gayne, M. Lange, I. Sarjono, A. Pica, S. Leroy, G. Poulain, R. Bril, C. Faulkner, C. Mosher</i>	
<b>A New Multiple Subtraction Method Using the Attributes of Predicted Multiples</b> .....	2446
<i>M. Guo, Y. Kim, S. Sen, J. Xu, J. Xie, B. Wang</i>	
<b>LS-DIP: An Adaptive Dip-based Subtraction of Predicted Multiples</b> .....	2451
<i>D. Donno, F. Rocca, S. Costagliola, P. Mazzucchelli, E. Loinger</i>	

### **INTERNAL MULTIPLES AND NOVEL APPROACHES**

<b>Subsalt Imaging with Internal Multiples</b> .....	2456
<i>Alison E. Malcolm, Bjorn Ursin, Maarten V. de Hoop</i>	
<b>An Upside-down Approach to Efficient Surface-related and Interbed Multiple Prediction</b> .....	2461
<i>Anatoly Baumstein</i>	
<b>Inverse Scattering Internal Multiple Elimination: Leading-order and Higher-order Closed Forms</b> .....	2466
<i>A.C. Ramírez, A.B. Weglein</i>	



<b>Wave Equation Based Internal Multiple Modeling in 3D</b> .....	2471
<i>Antonio Pica, Laurie Delmas</i>	
<b>The Underlying Unity of Distinct Processing Algorithms for (1) the Removal of Free Surface and Internal Multiples, (2) Q Compensation (without Q), (3) Depth Imaging, and (4) Nonlinear AVO, That Derive from the Inverse Scattering Series</b> .....	2476
<i>A.B. Weglein, A.C. Ramírez, K.A. Innanen, F. Liu, J.E. Lira, S. Jiang</i>	
<b>High Resolution 3D Parabolic Radon Filtering</b> .....	2482
<i>Pierre Hugonnet, Jean-Luc Boelle, Majda Mihoub</i>	
<b>Seismic Wavefield Inversion with Curvelet-domain Sparsity Promotion</b> .....	2487
<i>Felix J. Herrmann, Deli Wang</i>	

## **CASE HISTORIES**

<b>3D Multiple Attenuation in the F-XY Domain: A Case History from Abu Dhabi</b> .....	2492
<i>M.S. Ben Marouf, M.S. Al Nahhas, W. Soroka, A. Leveque, S. Spitz</i>	
<b>Poststack Driven Prestack Deconvolution (PPDEC) for Noisy Land Data and Radial Trace Mixing for Signal Enhancement</b> .....	2497
<i>Necati Gulunay, Nigel Benjamin</i>	
<b>Delft = Inverse Scattering Surface-related Multiple Attenuation in Three Lines</b> .....	2502
<i>Stewart A. Levin</i>	
<b>Multiple Attenuation on Wide Azimuth Towed Streamer Data with a Model-based Two-way Wave-equation Approach</b> .....	2507
<i>Zhiyong Jiang</i>	
<b>Multiple Attenuation Using Inverse Data Processing in the Plane-wave Domain</b> .....	2512
<i>Jitao Ma, Mrinal K. Sen, Xiaohong Chen</i>	
<b>Application of Cascaded Multiple Attenuation on a Land 3D Data Set, Southeast Abu Dhabi</b> .....	2517
<i>Mohamed Samir Al Nahhas, David Barwick, Mokhtar Raafat</i>	
<b>A Multiple Suppression Method Via CRS Attributes</b> .....	2521
<i>Stefan Dümmong, Dirk Gajewski</i>	
<b>Surface-related Multiple Elimination Based on Data-consistence: A Case History</b> .....	2526
<i>Xinwu Huang, Bing Zhao, Teng Li</i>	

## **COHERENT NOISE SUPPRESSION**

<b>Attenuation of Coherent Noise Using Localized-adaptive Eigenimage Filter</b> .....	2531
<i>Stephen K. Chiu, Jack E. Howell</i>	
<b>Model-based Noise Suppression Using Nonstationary Filters</b> .....	2536
<i>Saleh M. Al-Saleh</i>	
<b>Antialias Spatial Filtering: A Slowness-frequency Approach</b> .....	2541
<i>Ashwani Dev, George A. McMechan</i>	
<b>Characterization of Spatially Varying Surface Waves in a Land Seismic Survey</b> .....	2546
<i>W. Ross, S. Lee, M.S. Diallo, M.L. Johnson, A.P. Shatilo, J.E. Anderson, A. Martinez</i>	
<b>3D Mitigation of Surface-wave Noise in Spatially Inhomogeneous Media</b> .....	2551
<i>Sunwoong Lee, W. Ross</i>	

<b>Retrieval and Suppression of Surface Waves Using Interferometry by Correlation and by Deconvolution</b> .....	2556
<i>Ivan Vasconcelos, J. Gaiser, Alex Calvert, C. Calderón-Macías</i>	
<b>Seismic Exploration on Ice: The Flexural Wave Noise Challenge</b> .....	2561
<i>G. Del Molino, D. Rovetta, P. Mazzucchelli, S. Sandroni, F. Rizzo, C. Andreoletti</i>	
<b>Bayesian Ground-roll Separation by Curvelet-domain Sparsity Promotion</b> .....	2566
<i>Carson Yarham, Felix J. Herrmann</i>	
<b>Seismic Data Analysis with One-dimensional Seislet Frame</b> .....	2571
<i>Sergey Fomel, Y. Liu</i>	

## **RANDOM NOISE ATTENUATION**

<b>F-xy Cadzow Noise Suppression</b> .....	2576
<i>Stewart Trickett</i>	
<b>Random and Coherent Noise Attenuation by Empirical Mode Decomposition</b> .....	2581
<i>Maiza Bekara, Mirko van der Baan</i>	
<b>Seismic Data Enhancement with Common Reflection Surface (CRS) Stack Method</b> .....	2586
<i>Mikhail Baykulov, Dirk Gajewski</i>	
<b>A Statistical Technique for High Amplitude Noise Detection: Application to Swell Noise Attenuation</b> .....	2591
<i>Maza Bekara, Analiese Ferreira, Mirko van der Baan</i>	
<b>Mountain Front Seismic Processing</b> .....	2596
<i>C. Duque, J. Checa, H. Alfonso, E. Chalar, D. Pastore, C. Pedraza</i>	
<b>A Case Study for Structural and Stratigraphical Enhancement in the Western Sahara Desert</b> .....	2601
<i>M.S. Donati, P. Muñoz, A. O. BenGheit, L. Abushaala, F. Ortigosa, A.M. Washah</i>	
<b>Frequency Dependent, Structurally Conformable Filtering</b> .....	2607
<i>David N. Whitcombe, Linda Hodgson, Henning Hoerber, Zhou Yu</i>	
<b>De-noising Seismic Data in the Time-frequency Domain</b> .....	2612
<i>Thomas Elboth, Hamid Hayat Qaisrani, Thomas Hertweck</i>	

## **NOISE ATTENUATION AND WAVELETS**

<b>Adaptive F-X Interpolation of Curved Seismic Events Via Exponentially Weighted Recursive Least Squares (EWRLS)</b> .....	2617
<i>Mostafa Naghizadeh, Mauricio D. Sacchi</i>	
<b>Prestack Coherent Noise Suppression in the 2D Wavelet Domain</b> .....	2622
<i>Zhan Yi, Zhao Bo, Liu Jianhong, Wang Chengxiang</i>	
<b>Comparison of Some Algorithms for Acquisition Footprint Suppression and Their Effect on Attribute Analysis</b> .....	2627
<i>M. Cvetkovic, N. Pralica, S. Falconer, K.J. Marfurt, S. Chávez-Pérez</i>	
<b>Structurally Consistent F-X Filtering</b> .....	2632
<i>Y. Traonmilin, P. Herrmann</i>	
<b>Swell-noise Attenuation Using an Iterative FX Prediction Filtering Approach</b> .....	2637
<i>Michel Schonewille, Alan Vigner, Alan Ryder</i>	

<b>Pressure Wave-field Deghosting for Nonhorizontal Streamers</b> .....	2642
<i>C.D. Riyanti, R. Van Borselen, P.M. van den Berg, J.T. Fokkema</i>	
<b>The Factorial Kriging Technique: A Geostatistical Tool for Acquisition Footprints Removal - A Case Study</b> .....	2647
<i>Pierre-Yves Raya, Xiao-Ping Li</i>	
<b>Comparison of Wavelet Selection and Band-pass Filtering for Noise Removal for Seismic Data Processing</b> .....	2652
<i>Ping An</i>	
<b>Attribute-driven Footprint Suppression</b> .....	2657
<i>Scott Falconer, K.J. Marfurt</i>	

## **RECENT ADVANCES AND THE ROAD AHEAD**

<b>Directional Resistivity Tools and Their Business Impacts</b> .....	2662
<i>Ian Zhang</i>	
<b>Geophysical Fluid Pressure Prediction in the Presence of Multiple Pressure Mechanisms and Complex Geology with Applications to Deep Wells</b> .....	2663
<i>Alan R. Huffman, Richard W. Lahann</i>	
<b>Sub-basalt Depth Imaging Using Simultaneous Joint Inversion of Seismic and Electromagnetic (MT) Data: A CRB Field Study</b> .....	2664
<i>D. Colombo, M. Mantovani, S. Hallinan, M. Virgilio</i>	
<b>Seismic Imaging is in the Mind and at the Fingertips: The Future of the Seismic Imaging Business</b> .....	2669
<i>F. Ortigosa</i>	

## **HYDROGEOPHYSICS IN PRACTICE**

<b>Understanding the Relationship Between Audiomagnetotelluric Data and Models, and Borehole Data in a Hydrological Environment</b> .....	2674
<i>Darcy K. McPhee, Louise Pellerin</i>	
<b>Integrated Use of Geophysics, Drillings, Logs, and Geochemistry in Large-scale Groundwater Mapping</b> .....	2679
<i>Verner H. Søndergaard, Esben Auken</i>	
<b>The Application of Latest Borehole Geophysical Technologies for the Feasibility and Pilot Testing ASR</b> .....	2684
<i>Ibrahim Shawky</i>	
<b>Characterization of the Lower Quebrada De Oro, Mayagüez Aquifer System Using Surface Geophysical Techniques</b> .....	2689
<i>Deborah T. Abrams Rivera</i>	
<b>Mapping the Nitrate Plume at Hanford's BC Cribs with Electrical Resistivity</b> .....	2694
<i>Dale F. Rucker</i>	
<b>Site Characterization for Groundwater Using Controlled-source Electromagnetics</b> .....	2699
<i>C.R. Miller, P. Routh, T. Brosten, P. Donaldson</i>	
<b>A Multiscale Stratigraphic Analysis of Shallow Unconsolidated Sediments: A New Approach for Hydrogeophysical Characterization in Heterogeneous Environments for Contaminant Remediation</b> .....	2704
<i>Antonio E. Cameron-González, Camelia Knapp, Adrian Addison, Michael Waddell</i>	

<b>Geophysical and Geochemical Attenuated Signatures Associated with Hydrocarbon Contaminated Site Undergoing Bioremediation</b> .....	2709
<i>Vukenkeng Che-Alota, Estella Atekwana, Eliot Atekwana, William A. Sauck, Silvia Rossbach, Jay Nolan, Lee Slater, Dale Werkema</i>	

## **INNOVATIONS IN GEOPHYSICS: A TRIBUTE TO RODNEY CALVERT**

<b>Always Looking to Improve Things is Fun</b> .....	2714
<i>Ken Lerner</i>	
<b>Virtual Source Method: Overview of History and Development</b> .....	2716
<i>Andrey Bakulin, Rodney Calvert</i>	
<b>Seismic Interferometry by Crosscorrelation Or Deconvolution?</b> .....	2721
<i>K. Wapenaar, J. van der Neut, E. Ruigrok, D. Draganov, E. Slob, J. Thorbecke, R. Snieder</i>	
<b>The Critical Angle in Seismic Interferometry</b> .....	2727
<i>K. van Wijk, A. Calvert, M. Haney, D. Mikesell, R. Snieder</i>	
<b>Source Strength Variations and 4D Seismic</b> .....	2732
<i>Martin Landro</i>	
<b>Innovation in Geophysics</b> .....	2737
<i>Ian Jack</i>	
<b>The Effect of Low Aspect Ratio Pores on the Seismic Anisotropy of Shales</b> .....	2740
<i>Colin M. Sayers</i>	
<b>The Dawn of Nonlinear Geophysics in Exploration</b> .....	2745
<i>Dirk Smit</i>	

## **BEST OF AAPG**

<b>Extension, Shortening, and Salt Tectonics at a Paleozoic Transcurrent Plate Boundary: Cumberland</b> .....	2747
<i>John W.F. Waldron, Michael C. Rygel</i>	
<b>Seismic Stratigraphy and Seismic Geomorphology of a Slope Depositional Environment: Case Study from Offshore Angola, West Africa</b> .....	2752
<i>H.W. Posamentier, N. Drinkwater, J. Clark, A. Fildani, T. McHargue, M. Pyrcz, B. Romans, M. Sullivan</i>	
<b>Turbidity Current Flow Out of Channels and Its Contribution to Constructing the Continental Slope</b> .....	2757
<i>Kyle M. Straub, David Mohrig, James Buttles</i>	
<b>New Velocity Model Building Techniques to Reduce Subsalt Exploration Risk</b> .....	2762
<i>R. Stephan Petmecky, M.L. Albertin, Nick Burke</i>	
<b>Seismic Reservoir Characterization of a Gas Shale Azimuthal Seismic Data Processing, Prestack Seismic Inversion and Ant Tracking</b> .....	2767
<i>D. Paddock, C. Stolte, J. Young, P. Kist, L. Zhang, J. Durrani</i>	
<b>The Relationship Between Deepwater Deposition and an Active Accretionary Wedge, Ultradeep Water, Trinidad</b> .....	2772
<i>P.N. Eisner, M. Etemadi, L. Benkovic, L. Anzulovich, D. Jones, J. Gerard</i>	
<b>Interpretation of Seismic Data in the Wheeler Domain: Integration with Well Logs, Regional Geology, and Analogs</b> .....	2776
<i>F. Brouwer, Geert de Bruijn, Paul de Groot, David Connolly</i>	

<b>Characterization of the Sligo (Lower Cretaceous- Aptian) Platform Margin in South Texas: Understanding Facies Distribution Using 3D Seismic and Modern Analogs</b> .....	2781
<i>Christopher J. Modica, David J. Katz</i>	

## **SIMULTANEOUS SOURCES: RECENT ADVANCES AND APPLICATION TO WIDE AZIMUTH**

<b>Simultaneous Sources: A Technology Whose Time Has Come</b> .....	2786
<i>Craig J. Beasley</i>	
<b>Simultaneous Source Separation by Sparse Radon Transform</b> .....	2791
<i>P. Akerberg, G. Hampson, J. Rickett, H. Martin, J. Cole</i>	
<b>Simultaneous Source Separation Using Dithered Sources</b> .....	2796
<i>I. Moore, B. Dragoset, T. Ommundsen, D. Wilson, C. Ward</i>	
<b>Simultaneous Source Separation: A Prediction-subtraction Approach</b> .....	2801
<i>Simon Spitz, Gary Hampson, Antonio Pica</i>	
<b>Acquisition Using Simultaneous Sources</b> .....	2806
<i>Gary Hampson, Joe Stefani, Fred Herkenhoff</i>	
<b>Flam - A Simultaneous Source Wide Azimuth Test</b> .....	2811
<i>Eivind Fromyr, Guillaume Cambois, Ruth Loyd, Jack Kinkead</i>	
<b>Independent Simultaneous Sweeping - A Method to Increase the Productivity of Land Seismic Crews</b> .....	2816
<i>Dave Howe, Mark Foster, Tony Allen, Brian Taylor, Ian Jack</i>	
<b>From Simultaneous Shooting to Blended Acquisition</b> .....	2821
<i>A.J. Berkhout, Gerrit Blacquière, Eric Verschuur</i>	

## **SITE CHARACTERIZATION AND GEOPHYSICAL MONITORING FOR CO<sub>2</sub> STORAGE**

<b>Multiphase Flow of CO<sub>2</sub> and Brine in Saline Aquifers</b> .....	2829
<i>Sally M. Benson</i>	
<b>Seismic Monitoring of CO<sub>2</sub> Geosequestration: Realistic Capabilities and Limitations</b> .....	2831
<i>D. Lumley, D. Adams, R. Wright, D. Markus, S. Cole</i>	
<b>Geophysical Monitoring in the IEA GHG Weyburn-Midale CO<sub>2</sub> Monitoring and Storage</b> .....	2836
<i>D.J. White</i>	
<b>Thief Zone Identification Through Seismic Monitoring of a CO<sub>2</sub> Flood, Weyburn Field, Saskatchewan</b> .....	2840
<i>Alexandre W. Araman, Matthew Hoffman, T.L. Davis</i>	
<b>Integration of 3D Seismic with Satellite Imagery at in Salah CO<sub>2</sub> Sequestration Project, Algeria</b> .....	2846
<i>S. Raikes, A. Mathieson, D. Roberts, P. Ringrose</i>	
<b>Application of Geophysical Monitoring Within the Otway Project SE Australia</b> .....	2849
<i>M. Urosevic, A. Kopic, D. Sherlock, T. Daley, B. Freifeld, S. Sharma, K. Dodds</i>	
<b>Integration of Crosswell CASSM (Continuous Active Source Seismic Monitoring) and Flow Modeling for Imaging of a CO<sub>2</sub> Plume in a Brine Aquifer</b> .....	2854
<i>Thomas M. Daley, Jonathan B. Ajo-Franklin, Christine Doughty</i>	
<b>The Effects of Geomechanical Deformation on Seismic Monitoring of CO<sub>2</sub> Sequestration</b> .....	2859
<i>J.P. Verdon, D.A. Angus, J.-M. Kendall, J. Segura, S. Skachkov, Q.J. Fisher</i>	

## **HIGH-PERFORMANCE COMPUTING**

- An Implementation of the Acoustic Wave Equation on FPGAs** ..... 2864  
*T. Nemeth, J. Stefani, W. Liu, R. Dimond, O. Pell, Ray Ergas*
- Evaluation of 3D RTM on HPC Platforms** ..... 2869  
*F. Ortigosa, M. Araya-Polo, F. Rubio, M. Hanzich, R. de la Cruz, J.M. Cela*
- Seismic Wave Field Modeling Using High Performance Computing** ..... 2874  
*M. Käser, J. de al Puente, C. Castro, V. Hermann, Michael Dumbser, Orlando Rivera*

## **NEAR REAL-TIME UXO DISCRIMINATION**

- Initiatives in Advanced Geophysical Analysis for Munitions Response at ESTCP and SERDP** ..... 2879  
*Anne Andrews*
- ALLTEM UXO Detection and Discrimination** ..... 2882  
*T.H. Asch, D. Wright, C.W. Moulton, T.P. Irons, M.N. Nabighian*
- UXO Discrimination Using a Multiple-component AEM System** ..... 2887  
*E. Gasperikova, J.T. Smith, H.F. Morrison, A. Becker, K. Kappler*
- An Assessment of Three Dipole-based Programs for Estimating UXO Target Parameters with Induction EM** ..... 2892  
*D.D. Snyder, D.C. George, S.C. MacInnes, J.T. Smith*
- EMI Array for Cued UXO Discrimination** ..... 2897  
*T. Bell, H. Nelson, D. George, J. Kingdon, D. Keiswetter*
- Identification of Unexploded Ordnance from Clutter Using Neural Networks** ..... 2902  
*Anna Szidarovszky, Mary Poulton, Scott MacInnes*

## **INTERFEROMETRY AND ANISOTROPY**

- Deriving, Explicating, and Extending Interferometric Methods Using Green's Theorem** ..... 2907  
*A.C. Ramirez, A.B. Weglein*
- The Effects of Time-gating and Radiation Correction on Virtual Source Data** ..... 2912  
*Joost van der Neut, Andrey Bakulin*
- Generalized Representations of Perturbed Fields - Applications in Seismic Interferometry and Migration** ..... 2917  
*Ivan Vasconcelos*
- The Use of Effective Medium Theories for Seismic Wave Propagation and Fluid Flow in Fractured Reservoirs Under Applied Stress** ..... 2922  
*Yang Zhang, Colin M. Sayers, José Adachi*
- Interpretation of Angle Gathers for Transversely Isotropic Medium** ..... 2927  
*Subhashis Mallick*
- Seismic Anisotropy for Polar Media and an Extended Thomsen Formulation for Longer Offsets** ..... 2932  
*James G. Berryman*
- Anisotropic Slowness Inversion Using 3D VSP Data** ..... 2937  
*S. Horne, B. Borland, S. Ali, G. Mercado, H. Ikawa*
- 3D Velocity-independent Elliptically Anisotropic Moveout Correction** ..... 2942  
*William Burnett, Sergey Fomel*

## **LAYERED MEDIA, SAMPLING AND WAVE PROPOGATION**

<b>Direct Nonlinear Q Compensation of Primaries in Layered Media: Theory and Synthetic Examples</b> .....	2947
<i>K.A. Innanen, J.E. Lira</i>	
<b>Dynamic Aspects of Apparent Attenuation and Wave Localization in Layered Media</b> .....	2953
<i>Matthew M. Haney, Kasper van Wijk</i>	
<b>Estimation of Subtuned Reservoir Thickness from Amplitudes at Different Seismic Bandwidths - A Time-domain Approach</b> .....	2958
<i>Vijay Khare, A. Martinez</i>	
<b>Variable Bit and Variable Bandwidth Sampling</b> .....	2963
<i>F. Sherrill, M. Bayly, R. Tomich, J. Moeller, A. Tran</i>	
<b>Quality Control and Bandwidth Optimization of Compact Fourier Interpolation Operators</b> .....	2968
<i>I. Moore, Ralf Ferber, Bob Vauthrin</i>	
<b>Seismic Wave Propagation and Imaging Using Time-space Wavelets</b> .....	2973
<i>Ru-Shan Wu, Bangyu Wu, Yu Geng</i>	
<b>Reconstruction of Pressure Wavefields in the Crossline Direction Using Multicomponent Streamer Recordings</b> .....	2978
<i>J.O.A. Robertsson, I. Moore, A. Özbek, M. Vassallo, K. Özdemir, D.-J. Van Manen</i>	
<b>A Gaussian Beam Analysis of the Radon Transform</b> .....	2983
<i>William Burnett, Sergey Fomel</i>	

## **INTERFEROMETRY, IMAGING, AND ATTRIBUTES**

<b>On the Estimation of Local Slopes</b> .....	2988
<i>J. Schleicher, J.C. Costa, L.T. Santos, A. Novais, M. Tygel</i>	
<b>Dip-angle Common-image Gathers by Wave-equation Migration</b> .....	2993
<i>Thomas J. Browaeys</i>	
<b>Controlled-source Seismic Interferometry by Multidimensional Deconvolution: Stability Aspects with Various Numbers of Sources and Receivers</b> .....	2998
<i>Joost van der Neut, Jürg Hunziker, K. Wapenaar, E. Slob</i>	
<b>Interferometric Extrapolation of OBS and SSP Data</b> .....	3003
<i>Shuqian Dong, G.T. Schuster</i>	

## **VOLUME 6**

<b>Demonstration of Super-resolution and Super-stacking Properties of Time Reversal Mirrors</b> .....	3008
<i>W. Cao, G.T. Schuster, G. Zhan, S.M. Hanafy, C. Boonyasirawat</i>	
<b>Estimating Frequency-dependent Seismic Attributes by Matching Pursuit: A Case Study</b> .....	3013
<i>T. Zhang, X.-Y. Li, M. Chapman</i>	

## **VELOCITY ANISOTROPY OR HETEROGENEITY?**

<b>Direct Nonlinear Traveltime Inversion in Layered VTI Media</b> .....	3018
<i>P.J. Fowler, A. Jackson, J. Gaffney, D. Boreham</i>	

<b>Estimating HTI in the Presence of Strong VTI</b> .....	3023
<i>Victoria Sublette, Charles Sicking, Galen Treadgold</i>	
<b>Near-surface Complexity Could Masquerade As Anisotropy</b> .....	3028
<i>X. Zhu, S. Shaw, B. Roy, M. Hall, M. Gurch, D. Whitmore, P. Anno</i>	
<b>New Life in Old Data? Unlocking the Value in Existing Narrow Azimuth Seismic Data</b> .....	3033
<i>Glenn B. Raney, David Walraven</i>	
<b>Velocity Updating Around Salt Bodies Using Stress Modeling Solutions and Nonlinear Elasticity</b> .....	3038
<i>Mita Sengupta, Ran Bachrach</i>	
<b>A Practical Approach to Compensate for Diodic Effects of PS Converted Waves</b> .....	3043
<i>Hengchang Dai, X.-Y. Li</i>	
<b>Automatic Nonhyperbolic Velocity Analysis</b> .....	3048
<i>Björn Ursin, Brahim Abbad, Didier Rappin</i>	
<b>Interval Anisotropic Parameter Estimation Using Velocity-independent Layer Stripping</b> .....	3053
<i>Xiaoxiang Wang, Ilya Tsvankin</i>	

## **MODEL BUILDING FOR COMPLEX IMAGING**

<b>Angle-domain Common-image Gatherers for Steep Reflectors</b> .....	3058
<i>Guojian Shan, Biondo Biondi</i>	
<b>Beam-based Interactive Imaging for Salt Interpretation and Salt Model Building</b> .....	3063
<i>B. Wang, J. Ji, C. Mason, S. Gajawada, Y. Kim</i>	
<b>Velocity Model Building with Wave Equation Migration Velocity Focusing Analysis</b> .....	3068
<i>Morgan P. Brown, Joseph H. Higginbotham, Robert G. Clapp</i>	
<b>Wave Equation Migration Velocity Focusing Analysis</b> .....	3073
<i>Joseph H. Higginbotham, Morgan P. Brown, Robert G. Clapp</i>	
<b>Image Segmentation for Velocity Model Construction and Updating</b> .....	3078
<i>Adam D. Halpert, Robert G. Clapp, Jesse Lomask, Biondo Biondi</i>	
<b>A Wave-equation Migration Velocity Analysis Approach Based on the Finite-frequency Sensitivity Kernel</b> .....	3083
<i>Xiao-Bi Xie, Hui Yang</i>	
<b>Wavepath Tomography for Model Building and Hazard Detection</b> .....	3088
<i>D. Bevc, M.M. Fliedner, B. Biondi</i>	
<b>Tomographic Migration-velocity Analysis Using Common Angle Image Gatherers</b> .....	3093
<i>Fan Xia, Yiqing Ren, Shengwen Jin</i>	

## **PRESTACK MODELING AND INVERSION**

<b>Seismic Modeling Application on Structure Interpretation, Sipororo Field, Venezuela</b> .....	3098
<i>Q. Liao, W. Cai, M. la Cruz, L. Benkovis, F. Ortigosa</i>	
<b>Velocity Analysis and Quality Control from Substacks</b> .....	3103
<i>Roy White, Chris Page</i>	
<b>Offset-dependant NMO Correction</b> .....	3108
<i>Zhengyun Zhou, Fred Hilterman</i>	
<b>Array Forming and Prestack Stereotomography</b> .....	3113
<i>Cezar Iacob, Ionelia Panea</i>	



<b>Automatic Migration Velocity Analysis and Multiples</b> .....	3118
<i>Wim A. Mulder, Tristan van Leeuwen</i>	
<b>Time Migration Velocity Analysis by Image-wave Propagation of Common-image Gathers</b> .....	3123
<i>J. Schleicher, J.C. Costa, A. Novais</i>	

## **CASE STUDIES**

<b>Use of Descriptive Statistics with Repeatability Data</b> .....	3128
<i>Jan H. Kommedal</i>	
<b>Time-lapse Noise Characterization by Inversion</b> .....	3133
<i>P. Routh, Phil D. Anno</i>	
<b>First Dual-vessel High-repeat GOM 4D Shows Development Options at Holstein Field</b> .....	3138
<i>H. Ebaid, A. Tura, M. Nasser, P. Hatchell, F. Smit, N. Payne, D. Herron, D. Stanley, J. Kaldy, C. Barousse</i>	
<b>A Snorre Field Case Study Demonstrating a 3D Multidisciplinary Time-lapse Seismic Project</b> .....	3143
<i>F. Aanvik, R. Aurvag, R.K. Tonnessen, R. Myklebust, G.V. Brustad, L. Lie, M. Andersen, O. Lyse, L. Kollbotn</i>	
<b>The Benefits of Early 4D Seismic Monitoring to Understand Production Related Effects at Enfield, Northwest Shelf, Australia</b> .....	3149
<i>M. Smith, A. Gerhardt, B. Mee, T. Ridsdill-Smith, A. Wulff, L. Bourdon</i>	
<b>A Reliable 4D Seismic Attribute for Joint Inversion of Seismic and Production Data</b> .....	3154
<i>Dhananjay Kumar, Jorge L. Landa</i>	
<b>Apparent Horizontal Displacements in Time-lapse Seismic Images</b> .....	3159
<i>Dave Hale, Barbara Cox, Paul Hatchell</i>	
<b>On the Presence, and Possible Causes, of Apparent Lateral Shifts Below the Norne Reservoir</b> .....	3164
<i>Victor Aarre</i>	

## **LAND, CO<sub>2</sub>, AND NEW DEVELOPMENTS**

<b>Tight Gas Sandstone Seismic Monitoring, Rulison Field, Colorado</b> .....	3169
<i>T.L. Davis, Robert D. Benson</i>	
<b>Thief Zone Identification Through Seismic Monitoring of a CO<sub>2</sub> Flood, Weyburn Field, Saskatchewan</b> .....	3174
<i>Alexandre W. Araman, Matthew Hoffman, T.L. Davis</i>	
<b>Numerical Modeling of Time-lapse Monitoring of CO<sub>2</sub> Sequestration in a Layered Basalt Reservoir</b> .....	3179
<i>Murari Khatiwada, Kasper van Wijk, William P. Clement, Matt Haney</i>	
<b>Ultrasonic Experiments for Time-lapse Monitoring of CO<sub>2</sub> Sequestration</b> .....	3184
<i>D. Sijacic, K.H.A.A. Wolf, J. Spetzler</i>	
<b>Using the Coda-wave Interferometry Method and Time-lapse VSP Data to Estimate Velocity Changes from Geological Carbon Sequestration in a Brine Aquifer</b> .....	3189
<i>R. Zhou, L. Huang, J. Rutledge, T.M. Daley, E.L. Majer</i>	
<b>Imaging and Monitoring with Virtual Sources on a Synthetic 3D Dataset from the Middle East</b> .....	3194
<i>Valeri Korneev, Andrey Bakulin, J. Lopez</i>	

**The Impact of Subseismic Shale Layers on the Reservoir's Stress Sensitivity** ..... 3199  
*Colin MacBeth, Karl Stephen, Andy Gardiner*

**The Combination of Wavelet Transform and Nonlinear Filtering for Time-lapse Seismic Difference Analysis** ..... 3204  
*Long Jin, Xiaohong Chen*

## **MIGRATION VELOCITY ANALYSIS AND REFRACTION TOMOGRAPHY**

**Speeding Up RTM Velocity Model Building Beyond Algorithmics** ..... 3209  
*F. Ortigosa, Q. Liao, A. Guitton, W. Cai*

**First-break Deformable-layer Tomostatics Constrained by Shallow Reflections** ..... 3214  
*Hua-Wei Zhou, Hui Liu, F. Jiang, Peiming Li*

**Refraction Tomography Mapping of Near-surface Dipping Layers Using Landstreamer Data at East Canyon Dam, Utah** ..... 3219  
*J. Ivanov, R.D. Miller, R.D. Markiewicz, J. Xia*

**Sensitivity Kernels and Fresnel Volumes for Transmitted Waves** ..... 3224  
*Y. Liu, Lianguo Dong*

**3D Tomographic Amplitude Inversion for Compensating Amplitude Attenuation in the Overburden** ..... 3229  
*K. Xen, B. Hung, S. Birdus, J. Sun*

**Uncertainty and Resolution Analysis for Anisotropic Tomography Using Iterative Eigendecomposition** ..... 3234  
*K. Osypov, D. Nichols, M. Woodward, O. Zdraveva, C.E. Yarman*

**Velocity Update for Prestack Time Migration** ..... 3240  
*G. Lambaré, J.-P. Touré, J. Le Moigne, S. Zimine, P. Herrmann, S. Carbonara, F. Federici*

**The First-arrival Tomographic Inversion and Its Application to Identify Thick Near-surface Structures** ..... 3245  
*Chen Baofu, Xiong Dingyu, Ren Xiaoqiao, Cheng Chunhua*

## **MIGRATION VELOCITY ANALYSIS**

**True Geometry Tomography for Velocity Model Building with Applications to WATS Seismic Data** ..... 3250  
*C. Zhou, J. Ramos-Martínez, S. Lin, J. Jiao, S. Brandsberg-Dahl*

**Subsalt Velocity Update Using RTM-based DT Scan** ..... 3255  
*B. Wang, C. Mason, M. Guo, H. Guan, K. Yoon, Z. Li*

**Fast Velocity Model Building by Plane-wave Migration in Tilted Coordinates, Automated Volume-based Picking, and Tomography** ..... 3260  
*A. Guitton, M. Fliedner, B. Biondi, F. Ortigosa*

**Wave-like Rays in Traveltime Tomography** ..... 3265  
*J.K. Washbourne, K.P. Bube, P.L. Carrillo, C.M. Addington*

**Optimized Design of Frequency-domain Acoustic Waveform Tomography Experiments** ..... 3270  
*Hansruedi Maurer, Stewart A. Greenhalgh*

**Resolving Near-seabed Velocity Anomalies: Deep Water Offshore Southeast India** ..... 3275  
*J. Fruehn, I.F. Jones, V. Valler, P. Sangvai, A. Biswal, M. Mathur*

<b>Seismic Depth Processing Using the CRS Technique - A 3D Land Data Example from Mexico</b> .....	3280
<i>S. Frehers, J. Pruessmann, G. Gierse, R. Ballesteros, A. Caballero, G. Clemente</i>	
<b>Multidomain and Multiscale Tomography for Precise Reservoir Imaging</b> .....	3285
<i>B. Duquet, L. Lemaistre, Y. Le Stunff, S. Gancarski, J.C. Camez</i>	

## **VELOCITY MODEL BUILDING**

<b>Imaging Permafrost Velocity Structure Using High-resolution 3D Seismic Tomography</b> .....	3290
<i>K. Ramachandran, T. Brent, G. Bellefleur, S. Dallimore, M. Riedel</i>	
<b>First Arrival Stochastic Tomography: Automatic Background Velocity Estimation Using Beam Semblances and VFSA</b> .....	3295
<i>Chaoshun Hu, P. Stoffa, Kirk McIntosh</i>	
<b>Restoring Velocity Variations Below Sea Floor with Complex Topography by Geomechanical Modeling</b> .....	3300
<i>Sergey Birdus</i>	
<b>Resolving Small Objects Using Seismic Traveltime Tomography</b> .....	3305
<i>David C. Loveday, John A. Hole, Matthias G. Imhof</i>	
<b>Checkshot-Sonic Microscale Tomography</b> .....	3310
<i>Rui Zhang, J. Castagna</i>	
<b>Regularization in Slope Tomography</b> .....	3315
<i>J.C. Costa, F.J. C. Silva, E.N.S. Gomes, J. Schleicher, A. Melo, D. Amazonas</i>	
<b>3D Wavefield Tomography: Synthetic and Field Data Examples</b> .....	3320
<i>Mike Warner, Ivan Stekl, Adrian Umpleby</i>	
<b>Application of 2-D Deformable-layer Tomostatics in Western China</b> .....	3325
<i>P. Li, Z. Yan, Y. He, H. Zhou, H. Liu, F. Jiang</i>	

## **3D VSP, ACQUISITION, PROCESSING AND INTERPRETATION**

<b>3D VSP Acquisition and 3C Processing on a Deep Subsalt Prospect in the Gulf of Mexico</b> .....	3330
<i>J. Graves, S. Checkles, J. Leveille, A. Campbell, S. Leaney, C.P. Deri</i>	
<b>Preservation of High Frequencies in Wide-aperture 3D VSP Data from the Middle East</b> .....	3335
<i>A. Goertz, J. Andres Chavarria, B. Paulsson, M. Karrenbach, K. Müller, W. Soroka, S. Marmash, M. Al-Baloushi</i>	
<b>AVO-VSP Velocity Analysis and 3-C 3-D VSP Automatic Wavefield Separation</b> .....	3340
<i>E. Blias</i>	
<b>Reverse Time Migration of P-wave and C-wave Data from a 3D VSP Over a Deep Subsalt Prospect in the Gulf of Mexico</b> .....	3345
<i>J. Leveille, S. Checkles, J. Graves, S. Randazzo, P. Farmer, J. Tinnin, A. McGrail</i>	
<b>Acquisition, Processing, and Interpretation of a Very Large 3D VSP Using New Technologies: Risks, Tradeoffs, and Rewards</b> .....	3350
<i>N.J. House, B. Fuller, D. Behrman, K.P. Allen</i>	
<b>VSP Source-receiver Consistent Deconvolution</b> .....	3355
<i>Dongjie Cheng, Min Lou, Fran Doherty</i>	
<b>Subsalt Pore Pressure Prediction from Spiral 3D VSP</b> .....	3360
<i>J.E. Gumble, M.L. Albertin, J.P. Blangy, D.A. Ebrom, R.A. Clarke, S. Sugianto</i>	

<b>Analysis and Interpretation of the Largest US Onshore 3D VSP</b> .....	3365
<i>R. Ramkhelawan, Brian Hornby, Hans Sugianto, John Younger</i>	

<b>Modeling in Situ 4d Seismic Response for Otway Basin CO<sub>2</sub> Sequestration Project</b> .....	3370
<i>A. Gendrin, L. Dahlhaus, S. Nakanishi, S. Tcherkashnev, P. Wisman, M. Urosevic</i>	

## **2D VSP DATA ENHANCEMENT AND IMAGING TECHNIQUES**

<b>A Strategy for Attenuating VSP Migration Artifacts: Local Beam Migration</b> .....	3375
<i>Jianhua Yu, Brian Hornby</i>	

<b>Target-oriented Velocity Improvement by VSP Interferometric CMP Gatherers</b> .....	3380
<i>R. He, A. Goertz, M. Karrenbach, V. Soutyrine, A. Chavarria</i>	

<b>Velocity Calibration and Wavefield Decomposition for Walkover VSP Data</b> .....	3385
<i>Markus von Steht, Juergen Mann</i>	

<b>Local Migration with Extrapolated VSP Green's Functions</b> .....	3390
<i>Xiang Xiao, G.T. Schuster</i>	

<b>VSP Data-referenced-only Migration Without Overburden</b> .....	3395
<i>Ruiqing He, M. Karrenbach, Bjorn Paulsson</i>	

<b>Application of Virtual Source Technology to the Zuidwending Gas Storage Project</b> .....	3400
<i>J. Ferrandis, A. Mateeva, P. Jorgensen, J. Lopez, H. Dijkerman</i>	

<b>Estimating Interval Shear-wave Splitting from Multicomponent Virtual Shear Checkshots</b> .....	3405
<i>Andrey Bakulin, A. Mateeva</i>	

<b>Velocity Analysis for VSP Data Using Multiples</b> .....	3410
<i>D. Nasyrov, D. Kiyashchenko, Y. Kiselev, B. Kashtan, V. Troyan</i>	

## **W4: INTEGRATION OF MULTISCALE DATA: UPSCALING AND DATA FUSION**

<b>High Frequency Restoration of Surface Seismic Data Based on System Identification</b> .....	3415
<i>Haojie Liu, Y. Wang, Wengong Han, Xianjun Meng, Qingfeng Kong</i>	

<b>Geostatistical Travel-time Tomography Conditioned to Well Data</b> .....	3419
<i>Y. Liu, Andre G. Journel, Tapan Mukerji</i>	

<b>Reservoir Modeling Accounting for the Scale and Precision of Seismic Data - Application to a Carbonate Reservoir</b> .....	3423
<i>Mrinal K. Sen, Sanjay Srinivasan</i>	

<b>Integrating Seismic and Geomechanical Information: Principles and Applications</b> .....	3425
<i>Ran Bachrach, Konstantin Osypov</i>	

<b>A Data-domain Correlation Approach for Joint Inversion of Time-lapse Hydraulic Head, Fluid Conductivity, and Electrical Resistivity Data</b> .....	3427
<i>Timothy C. Johnson, Roelof J. Versteeg, Hai Huang</i>	

<b>Multi-scale Data Integration in Crosswell EM Imaging and Interpretation</b> .....	3431
<i>D. Alumbaugh, Jean-Marc Donadille, G. Gao, Cyrille Levesque, Ajay Nalonnil, Lawrence Reynolds, Michael Wilt, Ping Zhang</i>	

<b>Data Integration: The Good, The Bad and The Future</b> .....	3435
<i>Chris Hopkins</i>	

## **W5: OCEAN-BOTTOM GEOPHYSICS**

<b>Improved Prestack Depth Imaging by Ocean Bottom Node Data</b> .....	3436
<i>Barbel Traub, M. Alerini, Celine Ravaut</i>	
<b>Deep Ocean Measurements of Gravity</b> .....	3440
<i>Mark Zumberge</i>	
<b>Seabed Logging : Rapid Technology Evolution Addresses New Challenges</b> .....	3442
<i>Dave Ridyrd, Pal Gabrielsen, Friedrich Roth</i>	
<b>The BP OBS Node Experience: Deepening the Reach of Ocean Bottom Seismic</b> .....	3446
<i>Gerard Beaudoin, Allan Ross</i>	
<b>Past Experience and Near Term Prospects of Sea Floor Geophysical Observations: A Major Oil Company</b> .....	3450
<i>Michael W. Norris, M.L. Johnson</i>	

## **W6: UNCERTAINTY ANALYSIS IN GEOPHYSICAL IMAGING, ESTIMATION AND INVERSE PROBLEMS**

<b>Structural Uncertainty: A Necessary Step in Geosciences Risk Analysis</b> .....	3454
<i>Emmanuel Chavanne, Ranga A. Brahmantio, Anthony Douillard, Alan Irving</i>	
<b>Particle Swarm Optimization: A Simple and Powerful Algorithm Family for Geophysical Inversion</b> .....	3458
<i>J.L. Fernandez-Martinez, J.P. Fernandez-Alvarez, M.E. Garcia-Gonzalo, C.O. Menendez Perez, Heidi A. Kuzma</i>	
<b>How Correct is a Velocity Model?</b> .....	3462
<i>Vladimir Glogovsky, Sergey Langman, Evgeny Landa</i>	
<b>Resolution and Uncertainty in Geophysical Inverse Problem: A Practical Approach</b> .....	3467
<i>P. Routh</i>	
<b>Using Deformation for Reservoir Monitoring and Characterization: INSAR Surveillance of CO<sub>2</sub> Injection at the Krechba Field, Algeria</b> .....	3468
<i>D.W. Vasco, A. Ferretti, F. Novali, F. Rocca</i>	
<b>Uncertainty Analysis in Geophysical Imaging</b> .....	3472
<i>D. Oldenburg, R. Eso</i>	

## **W7: GRAVITY IN MOTION**

<b>Advantages of Multi-tensor, High Resolution Gravity Gradient Data</b> .....	3477
<i>Gary Barnes, Joseph Barraud, John Lumley, Mark Davies</i>	
<b>High Altitude Aerogravity Collection As a Part of the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) Project</b> .....	3481
<i>Daniel R. Roman, Vicki A. Childers, Y. Wang, Dru A. Smith, Daniel Winester</i>	

## **W8: THE STATE OF THE SCIENCE IN THE USE OF SEISMIC METHODS FOR MINERAL EXPLORATION**

<b>Reflection Seismology for Potash and Oil Sands in Canada</b> .....	3485
<i>Balazs Nemeth, Douglas R. Schmitt</i>	
<b>Acoustic Impedance Inversion for Geotechnical Evaluation in Underground Coal Mining</b> .....	3490
<i>Peter Hatherly, Binzhong Zhou, Troy Peters, M. Urosevic</i>	

<b>Prospect and Regional Seismic Reflection Imaging in Australian Gold Provinces</b> .....	3494
<i>Leonie E. A. Jones</i>	
<b>Nickel Exploration with 3D seismic - Lake Lefroy, Kambalda, WA</b> .....	3497
<i>M. Urosevic, Anton Kepic, Somealy Sheppard, David Johnson</i>	
<b>2D/3D Multicomponent Seismic Imaging in the Flin Flon Mining Camp, Canada</b> .....	3499
<i>D.J. White, M. Malinowski, P. Cary, D. Secord</i>	
<b>Hard Rock Seismic Exploration of Ore Deposits in Australia</b> .....	3503
<i>M. Urosevic, Anton Kepic, Christopher Juhlin, Edward Stolz</i>	
<b>Application of Seismic Methods for Siting of Radioactive Waste Repositories in Crystalline Rock</b> .....	3505
<i>Christopher Juhlin, Calin Cosma, Eero Heikinen</i>	
<b>3D Seismic Reflection and VSP for Hydrogeology</b> .....	3509
<i>Brett Harris, M. Urosevic, Anton Kepic</i>	
<b>3D Seismic Imaging of Massive Sulfides: Seismic Modeling, Data Acquisition and Processing</b> .....	3511
<i>Erick Adam, Elizabeth L'Heureux, Emmanuel Bongajum, Bernd Milkereit</i>	
<b>3D Seismic Reflection Imaging of VHMS Deposits: Insights from Re-processing of the Halfmile Lake Data, New Brunswick, Canada</b> .....	3515
<i>Alireza Malehmir, Gilles Bellefleur, Christof Mueller, Sharon Taylor</i>	
<b>The Role of 3D Earth Models in Seismic Reflection Methods Applied to Mineral Exploration</b> .....	3519
<i>Gervais Perron, Calin Cosma</i>	

## **W9: ADAPTIVE CANCELLATION OF NOISE**

<b>Advanced Multiple Elimination: A Matter of Accurate Prediction and Careful Subtraction</b> .....	3522
<i>R. Van Borselen, Rob Hegge, P. Aaron</i>	
<b>Application of Amplitude Thresholding to Aid Minimum Energy Adaptive Subtraction for Multiple Attenuation</b> .....	3525
<i>Paul Wellington, Bruce Hartley, Anton Kepic</i>	
<b>Adaptive Multiple Subtraction Using Regularized Nonstationary Regression</b> .....	3529
<i>Sergey Fomel</i>	
<b>Curvelet-domain Matched Filtering</b> .....	3533
<i>Felix J. Herrmann</i>	
<b>Complex Curvelet-based Adaptive Subtraction of Several Noise Templates</b> .....	3540
<i>Ramesh Neelamani, Anatoly Baumstein, W. Ross</i>	
<b>From Multiple Subtraction to Primary Estimation by Inversion</b> .....	3546
<i>G.J.A. van Groenestijn, D.J. Verschuur</i>	
<b>Bayesian Ground-roll Separation by Curvelet-domain Sparsity Promotion</b> .....	3552
<i>Carson Yarham, Felix J. Herrmann</i>	
<b>Adaptive Noise Attenuation</b> .....	3557
<i>David Le Meur, Yann Traonmilin</i>	

## **W10: ADVANCED VELOCITY MODEL BUILDING TECHNIQUES FOR DEPTH IMAGING**

<b>Velocity Model Building in Complex Settings: Combining the Strengths of Tomography and Wave-equation PreSDM</b> .....	3561
<i>Francois Audebert, Pierre Jusselin, Bertrand Duquet, Kaveh Dehghan, Yves Le Stunff</i>	
<b>3D Land Tomography and Imaging of the South Louisiana New Opportunities, A Case History</b> .....	3565
<i>Scott Scholz, Zhiming Li, Gary Rodriguez</i>	
<b>Rapid Velocity Model Building Utilizing a Fast Beam Platform and Integrated Visualization</b> .....	3569
<i>Sverre Brandsberg Dahl, Kevin Sherwood, Jostein Lima, Peter Wijnen</i>	
<b>Resolving Near-Seabed Velocity Anomalies: Deep Water Offshore South East India</b> .....	3570
<i>J. Fruehn, I.F. Jones, V. Valler, Pranaya Sangvai, A. Biswal, M. Mathur</i>	
<b>Impacts of Seismic Anisotropy and Subsalt Velocity Updates in Imaging, Deepwater Gulf of Mexico</b> .....	3574
<i>Zhiming Li, B. Wang, Wenlong Xu, Gary Rodriguez, Chuck Mason, K. Yoon</i>	
<b>Case Study: Anisotropic Pre-Stack Depth Migration on the Louisiana Shelf</b> .....	3575
<i>Lev Nayvelt, Lorie K. Bear</i>	
<b>Kinematic Invariants: An Efficient and Flexible Approach for Velocity Model Building</b> .....	3577
<i>Patrice Guillaume, Gilles Lambare, Olivier Leblanc, Pierre Mitouard, Jose Le Moigne, Jean-Philippe Montel, Tony Prescott, Risto Siliqi, Nicolas Vidal, Xiaoming Zhang, Serge Zimine</i>	
<b>Velocity Model Building for Subsalt Imaging Using Wide and Rich Azimuth Data</b> .....	3583
<i>Jerry Kapoor, Marta Woodward</i>	
<b>WAZ Wavefield De-remigration Illumination Analysis and Sub-salt Model Building</b> .....	3587
<i>Alexander Droujinine, Boudewijn Salomons, Diederik van Daalen, Frans Kuiper</i>	
<b>Wide-Azimuth Datasets for Velocity Analysis: Is Bigger Better?</b> .....	3591
<i>Jennifer L. Lewis, Yuli Zhang, Tim Williams, Mingya Chen</i>	
<b>Applications of the Model Resolution Matrix</b> .....	3592
<i>John T. Etgen</i>	
<b>An Application of Time-Domain Multiscale Waveform Tomography to Marine Data</b> .....	3594
<i>C. Boonyasiriwat, Paul Valasek, P. Routh, Brian Macy, W. Cao, G.T. Schuster</i>	

## **W11: UNCONVENTIONAL TIME-LAPSE GEOPHYSICS**

<b>Time-lapse ERT Monitoring and Measures of Model Reliability for an Injection/Withdrawal Experiment in a Near-surface Aquifer</b> .....	3599
<i>Greg A. Oldenborger, P. Routh, Michael D. Knoll</i>	

**Author Index**