

SEG | DGS Workshop:
Challenges & New Advances in Velocity Model Building
 9–11 March 2021 | Virtual Workshop

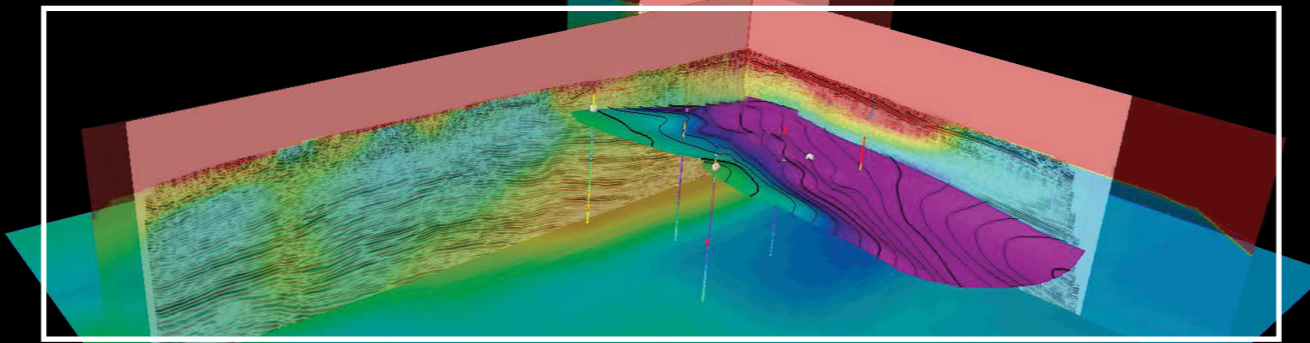


Image source – Cui et al, <https://doi.org/10.1190/tle34121474.1>

PROGRAMME

CENTRAL STANDARD TIME
 (GMT - 6:00)

PRELIMINARY TECHNICAL PROGRAMME

Tuesday, 9 March 2021

CONCURRENT POSTER SESSION 1

Session Chair: Moosa Al-Jahdhami (Petroleum Development Oman)

06:45 - 06:55 **A Velocity Model Building Strategy in the Complex Geological Setting using FWI with OBN Data**
 Krzysztof K. Sliz (Saudi Aramco)

06:55 - 07:05 **Accounting for Interbed Multiples in LSRTM and R-FWI Methods**
 Mikhail Davydenko (Wavekoda)

07:05 - 07:15 **Supervised Machine Learning Algorithms to Predict Velocity Models: Promises and Limitations**
 Tushar Gautam (IIT Roorkee)

07:15 - 07:25 **Considerations for Domain Conversion and Uncertainty Analysis**
 Larry Fink (Halliburton)

07:25 - 07:35 **Uncertainties of Near-surface Static Corrections on Seismic Survey and their Impact on Geologic Interpretation and Well Placement**
 Mohamed Ibrahim Mergany (Saudi Aramco)

CONCURRENT POSTER SESSION 2

Session Chair: Tristram Burley (ION)

06:45 - 06:55 **Elastic Reverse Time Migration Imaging Condition Using Waveform Sensitivity Kernels**
 Hong Liang (Aramco Americas)

06:55 - 07:05 **Computational Aspects of Traveltime Inversion Kernels for Acoustic Wave Equations and its Application to Finite-frequency Traveltime Velocity Inversion of OBN Geometry**
 Houzhu (James) Zhang (Aramco Americas)

07:05 - 07:15 **A Weighting Function Method for Nearly Constant-Q Seismic Modeling**
 Qi Hao (KFUPM)

07:15 - 07:25 **Comparative Analysis of 3D Velocity Model Building Methods for Time Depth Conversion in "swu" Field, Northeast Java Basin**
 Muhamad Joko Tri Prasetyo (Universitas Gadjah Mada)

07:25 - 07:35 **Seismic Traveltime Inversion Tomography: Crustal Velocity Model for the Malay Peninsula**
 Osagie Abel Uyimwen (University of Abuja)

Tuesday, 9 March 2021

All sessions are in Central Standard Time (GMT - 6:00)

03:00 - 04:00 PRE-EVENT NETWORKING & TROUBLESHOOTING

04:00 - 04:10 **Welcome Address by Committee Chairs**
 04:10 - 04:30 **Opening Address by Saleh Saleh (Saudi Aramco)**

SESSION 1 ROLE OF ACQUISITION

Session Chairs: Khaled Dulaijan (Saudi Aramco) & Fons ten Kroode (Shell)

04:30 - 04:50 **KEYNOTE**

John Etgen
Revitalizing Prolific Hydrocarbon Basins and a Renewed Focus on Adjacent Frontier Basins –The Case of the Northern European Waters
 Adriana Citlali Ramirez (TGS)

04:50 - 05:10 **Resolving the Near-Surface Model Using Distributed Acoustic Sensing in a Shallow Land Well**
 Ali Aldawood (Saudi Aramco)

SESSION 2 NON-SEISMIC METHODS

Session Chairs: Abdulatif Al Shuhail (KFUPM) & Eric Verschuur (Delft University)

05:30 - 05:50 **KEYNOTE: Joint Wavefield Inversion of P-waves with Transient EM and Surface Waves for High-resolution Near-Surface Velocity Modeling**

Daniele Colombo (Saudi Aramco)
Near-Surface Vs Model Building Using Multi-Geophysical Methods
 Pantelis Soupios (KFUPM)

06:10 - 06:30 **EM Methods Aid to Improve Velocity Model in Complex Area**
 Tang Biyan (BGP)

06:30 - 06:45 NETWORKING BREAK – 15 min

CONCURRENT POSTER SESSIONS 1 & 2

*Detailed schedule of poster sessions on the left

SESSION 3 BOREHOLE SEISMIC

Session Chair: Gerard Schuster (KAUST)

07:35 - 07:55 **KEYNOTE: Borehole Seismic Guided Velocity Model Building – Historical Perspective and the Way Forward**

Brian Hornby (Hornby Geophysical Services)
Benefits of Joint Use of Borehole and Surface Seismic Data in Imaging
 Olga Zdraveva (WesternGeco)

08:15 - 08:30 NETWORKING BREAK – 15 min

SESSION 4 NEAR-SURFACE – PART 1

Session Chair: Gerard Schuster (KAUST)

08:30 - 08:50 **KEYNOTE: Effect of Shallow Low-velocity Anomalies on Deep Reflections**
 Sherif Hanafy (KFUPM)
Shear Velocity Model of the Ice Sheet and Upper Crust in Larsemann Hills (Antarctic)

Lei Fu (Southern University of Science and Technology)
Near-Surface Seismic Wave-equation Tomogram
 Jing Li (Jilin University)

09:30 - 10:30 POST EVENT NON-MODERATED FORUM

Wednesday, 10 March 2021

All sessions are in Central Standard Time (GMT - 6:00)

03:00 - 04:00 PRE-EVENT NETWORKING & TROUBLESHOOTING

04:00 - 04:20 **Opening Address by Salem Al Rawahi (Petroleum Development Oman)**

SESSION 5 NEAR-SURFACE – PART 2

Session Chairs: Patrice Guillaume (CGG) & Abdulaziz Saad (Saudi Aramco)

04:20 - 04:40 **Processing for Velocity Model Building in a Desert Environment with Complex Near-Surface**
 Andrey Bakulin (Saudi Aramco)

04:40 - 05:00 **Ambient Noise Seismic Interferometry – 2 Case Studies in Sultanate of Oman**
 Omaima Al-Droushi (Petroleum Development Oman)

05:00 - 05:20 **Wave-path Tracking for Understanding the Near-Surface Shingle Waves**
 Hongwei Liu (Saudi Aramco)

05:20 - 05:40 **Impact of Near-Surface Characterization on Velocity Model Building – Case Study from the Sultanate of Oman**
 Mohammad Sheryar Farooqui (CGG)

05:40 - 06:00 **Refraction Tomography with Uncertainty for Near-Surface**
 Anton Egorov (Aramco Moscow Research)

06:00 - 06:15 NETWORKING BREAK – 15 min

SESSION 6 ANISOTROPIC VELOCITIES

Session Chair: Denes Vigh (Schlumberger)

06:15 - 06:35 **Elastic Velocity Model-building Using FWI with Geologic Constraints**
 Sagar Singh (CSM)

06:35 - 06:55 **Complementary Role of FWI in Anisotropic Model Building Workflows and its Evolution**
 Olga Zdraveva (WesternGeco)

SESSION 7 WAVE EQUATION TOMOGRAPHY

Session Chairs: Khaled Dulaijan (Saudi Aramco) & Moosa Al-Jahdhami (Petroleum Development Oman)

06:55 - 07:15 **KEYNOTE: Using all Multiple Scattering in Velocity Estimation via Joint Migration Inversion**

Eric Verschuur (Delft University)
Extracting More from Refraction Traveltime Tomography
 Fuhao Qin (Saudi Aramco)

07:35 - 07:55 **Accelerated Exploration-scale Velocity Model Building Using a Monte Carlo Simulation**
 Tony Martin (PGS)

07:55 - 08:15 **Data-domain Tomography for Initial Model Building on Land with Nonlinear Beamforming**
 Ilya Silvestrov (Saudi Aramco)

08:15 - 08:30 NETWORKING BREAK – 15 min

SESSION 8 BIG DATA AND MACHINE LEARNING

Session Chair: Eric Verschuur (Delft University)

08:30 - 08:50 **KEYNOTE: Build Better Velocity Models with an Iterative Deep Learning – FWI Workflow**
 Aria Abubakar (Schlumberger)

08:50 - 09:10 **KEYNOTE: Artificially Intelligent Velocity Model Building: Higher Resolution and Robustness**
 Tariq AlKhalifah (KAUST)

09:10 - 09:30 **Multi-dimensional Newtonian Machine Learning Inversion**
 Yuqing Chen (CSIRO)

09:30 - 10:30 POST EVENT NON-MODERATED FORUM

Thursday, 11 March 2021

All sessions are in Central Standard Time (GMT - 6:00)

03:00 - 04:00 PRE-EVENT NETWORKING & TROUBLESHOOTING

SESSION 9 WAVEFORM INVERSION – PART 1

Session Chairs: Denes Vigh (Schlumberger) & Krzysztof K. Sliz (Saudi Aramco)

04:00 - 04:20 **KEYNOTE: FWI – Where It's Been and Where It's Going**
 Ian Jones (ION)

04:20 - 04:40 **Towards Elastic FWI in Oman**
 Fons ten Kroode (Shell)

04:40 - 05:00 **Inverting Reflections Using FWI with Inaccurate Starting Models**
 Abdullah Altheyab (Saudi Aramco)

05:00 - 05:20 **An Efficient Workflow for Reflection-inclusive FWI in Frontier Environments**
 Tony Martin (PGS)

05:20 - 05:40 **Reflection FWI with Extended Modeling**
 Chao Wang (ION)

05:40 - 05:55 NETWORKING BREAK – 15 min

SESSION 10 WAVEFORM INVERSION – PART 2

Session Chairs: Fons ten Kroode (Shell) & Tariq AlKhalifah (KAUST)

05:55 - 06:15 **KEYNOTE: Analysis of Different Objective Functions for FWI in Salt Environment**
 Denes Vigh (Schlumberger)

06:15 - 06:35 **Application of Multi-dimensional Optimal Transport FWI in the Sultanate of Oman**
 Diego Carotti (CGG)

06:35 - 06:55 **FWI in PDO: Historic Overview, a Review on Challenges and Update of Recent Successes**
 Moosa Al-Jahdhami (Petroleum Development Oman)

06:55 - 07:15 **The Importance of Preprocessing for the Application of Land FWI in the Sultanate of Oman**
 Ahmed Aziz (CGG)

07:15 - 07:35 **Efficient Land 1.5D FWI in a Surface-consistent Framework**
 Ernesto Sandoval Curiel (Saudi Aramco)

07:35 - 07:50 NETWORKING BREAK – 15 min

SESSION 11 CASE STUDIES

Session Chairs: Daniele Colombo (Saudi Aramco) & Tristram Burley (ION)

07:50 - 08:10 **Benefits of High-resolution Velocity Estimation in Complex Geological Settings**
 Krzysztof K. Sliz (Saudi Aramco)

08:10 - 08:30 **Field Focused Velocity Model Building in PDO: Tips and Pitfalls**
 Said Al-Abri (Petroleum Development Oman)

08:30 - 08:50 **Integrated Velocity Model Building for Subsurface Imaging in Kuqa Depression, Western China**
 Wenrui Jia (BGP)

08:50 - 09:10 **Velocity Model Building Challenges and Available Workflows in PDO**
 Martin Dvorskak (Petroleum Development Oman)

09:10 - 09:30 **Wrap-Up by Arthur Weglein – 20 min**

09:30 - 10:30 POST EVENT NON-MODERATED FORUM