

Formation Evaluation Research Consortium

2024 - 24th Annual Technical Meeting

PRELIMINARY AGENDA

This year's Formation Evaluation annual technical meeting will begin on Monday and Tuesday, and continue with a UDAR Consortium update meeting and software training on Wednesday. In addition, an optional UTAPWeLS software training on Wednesday through Friday.

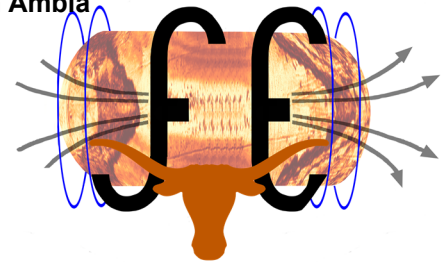
The Monday and Tuesday (August 19th and 20th) *Technical Meeting* will be held at the J. J. Pickle Research Campus-Commons Conference Center, 10100 Burnet Rd Building 137, Austin, TX 78758.
Google Maps: <https://maps.app.goo.gl/YLMu2KcaEi7ka7a9A>

On Wednesday (August 21st), the *UDAR Consortium update meeting and software training* will be held at the Gary L. Thomas Energy Engineering Building, Room GLT 4.102, 210 E 24th St, Austin, TX 78712.
Google Maps: <https://goo.gl/maps/5F49LWn9iWHRf3Y66?coh=178573&entry=t>

Monday, August 19

INTRODUCTION

- 8:30 AM Summary of 2023-2024 Consortium Activities: **Carlos Torres-Verdín**
- 9:00 AM Summary of 2023-2024 UTAPWeLS Developments and Future Plans: **Joaquín Ambía**
- 9:50 AM User Friendliness and Fluid Flow Demo: **Bruce Klappauf**
- 10:20 AM Petrophysical Joint Inversion Demo: **Joaquín Ambía**
- 10:45 AM BREAK**
- 11:00 AM Presentation by sponsors on the usage of UTAPWeLS: **TBD**



TECHNICAL PRESENTATIONS (Part I)

Machine Learning Procedures for the Interpretation of Well Logs and Core Data

- 11:30 AM **Machine Learning-Based Formation Evaluation for Potential CO₂ Storage Site Characterization: well-log baseline correction and core-to-well log rock classification:** *Misael Morales**, Oriyomi Raheem, Murray Christie (2), Vladimir Rabinovic (2), Carlos Torres-Verdín, and Michael Pyrcz (2. S&P Global)
- 12:00 PM LUNCH/BREAK**
- 1:00 PM **Improved Estimation of Two-Phase Capillary Pressure with Nuclear Magnetic Resonance Measurements via Machine Learning:** *Oriyomi Raheem**, Misael M. Morales, and Carlos Torres-Verdín
- 1:30 PM **Anisotropic Resistivity Estimation and Uncertainty Quantification from Borehole Triaxial Electromagnetic Induction Measurements: physics-informed neural network vs. gradient-based inversion:** *Misael Morales**, Ali Eghbali, Oriyomi Raheem, Michael Pyrcz, and Carlos Torres-Verdín

Laboratory Measurements

- 2:00 PM **Rock Classification and Description Using Conventional and Multispectral Drone Imagery:** *Domenico Crisafulli**, Misael Morales, and Carlos Torres-Verdín
- 2:30 PM **Numerical and Experimental Investigation of the Time Evolution of Viscous and Capillary Pressure Effects on Immiscible Fluid Displacement During Mud-Filtrate Invasion Across Shale-Laminated Sandstones:** *Mohamad Abdo** and Carlos Torres-Verdín
- 3:00 PM BREAK**
- 3:15 PM **Shale Concentration and Rock Anisotropy Effects on Frequency-Dependent Dielectric Permittivity Measurements:** *Domenico Crisafulli** and Carlos Torres-Verdín

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PRELIMINARY AGENDA

Monday, August 19 (continued)

Formation Evaluation for the Energy Transition

- 3:45 PM **Detection and Assessment of Lithium Concentration in the Smackover Formation:** *Julio C. Villarroel**, Carlos Torres-Verdin, and Larry W. Lake
- 4:15 PM **Petrophysical and Mechanical Evaluation of Heterogeneous Salt Formations for Hydrogen Storage:** *Alejandro D. Lopez-Rojas**, D. Nicolas Espinoza, and Carlos Torres-Verdin
- 4:45 PM **ADJOURN**
- 6:00 PM **Happy Hour and Dinner at Maggiano's Little Italy, 10910 Domain Dr Suite 100, Austin, TX.**

Tuesday, August 20

TECHNICAL PRESENTATIONS (Part II)

Formation Evaluation for the Energy Transition

- 8:30 AM **Exploring Induced Fracture Geometry with Borehole Electromagnetic Measurements in Enhanced Geothermal Systems:** *Axel Jeconiah**, Wardana Saputra, and Carlos Torres-Verdin
- 9:00 AM **Imaging the Spatial Distribution of Injected CO₂ in Saline Aquifers: influence of shale laminations via time-lapse X-ray micro-CT imaging and numerical simulations:** *Nadia Mouedden**, Mohamad Abdo, and Carlos Torres-Verdin
- 9:30 AM **BREAK**
- 9:45 AM **Effects of Temperature-Dependent Rock Thermal Properties on Heat Harvesting in a Closed-Loop Geothermal System:** *Cristian Dominguez**, Mohamad Abdo, and Carlos Torres-Verdin

Petrophysical Interpretation of Well Logs and Core Data

- 10:15 PM **Disparate Fluid Distributions of Stacked Gas-Washed Reservoirs are Successfully History-Matched via Forward Modeling of Fluid-Mixing Processes:** *Tarek S. Mohamed**, Morten Kristensen (2), Carlos Torres-Verdin, and Oliver C. Mullins (2) (2. SLB)
- 10:45 PM **Petrophysically Consistent Joint Compositional Inversion of Well Logs Across Invaded Formations:** *Joaquin Ambía**, Ali Eghbali, David González Isaza, and Carlos Torres-Verdin
- 11:15 AM **Forward Modeling the Formation of Viscous Oils and Tar Mats over Geologic Time via History-Matching of Reservoir Charge:** *Tarek S. Mohamed**, Morten Kristensen (2), Carlos Torres-Verdin, and Oliver C. Mullins (2) (2. SLB)
- 11:45 AM **Selection of Optimal Rock-Core Sampling Points by Inverting Petrophysical Properties from Well Logs with 3D UTAPWeLS:** *Oriyomi Raheem**, Wen Pan (2), and Carlos Torres-Verdin (2. Shell USA)
- 12:15 PM **LUNCH/BREAK**
- 1:15 PM **Fractional Flow Modeling and Monitoring for the Assessment of Comingled Fluid Production Across Thinly Laminated Formations:** *Daria Olszowska** and Carlos Torres-Verdin
- 1:45 PM **Molecular Modeling of the Structure and Electrical Conductivity of Ionic Aqueous Solutions in Nanoporous Media:** *Jorge Ivan Amaro-Estrada** and Carlos Torres-Verdin

Deep-Sensing Borehole Electromagnetic Measurements

- 2:15 PM **Status of the UDAR Sub-Consortium: technical developments and way forward:** *Carlos Torres-Verdin**

Elastic and Mechanical Properties of Rocks

- 2:45 PM **Interpretation of Borehole Acoustic Measurements via the Eikonal Equation: from theory to practice:** *Feiyue Xia**, Alexei Bolshakov (2), and Carlos Torres-Verdin (2. Chevron USA)
- 3:15 PM **BREAK**

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Tuesday, August 20 (*continued*)

[Elastic and Mechanical Properties of Rocks](#) (*continued*)

- 3:30 PM **Stress-Induced Rock Anisotropy Along Confining and Deviatoric Stress-Paths: effects on nonlinear elasticity and estimation of anisotropic mechanical properties:** *Gabriel Gallardo-Giozza**, D. Nicolas Espinoza, and Carlos Torres-Verdín
- 4:00 PM Closing Remarks: **Carlos Torres-Verdín**
- 4:30 PM **ADJOURN**

UDAR CONSORTIUM UPDATE MEETING

Wednesday, August 21

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INTRODUCTION

- 9:00 AM Welcome, Organization, Vision, Progress Report, and Deliverables: **Carlos Torres-Verdín**
- 9:45 AM **BREAK**

[Advancements in 3D and 2D Simulation of UDAR Measurements](#)

- 10:00 AM **Part I: BAI_EM Solver:** *Jörn Zimmerling**, Sofia Davydycheva, Ivan Davydychev, Vladimir Druskin, Wardana Saputra, Michael Rabinovich (2), and Carlos Torres-Verdín (2. bp)
- 10:30 AM **Part II: Fortran 2D/3D Software Package with HDFqI Library: applications and test cases:** *Jörn Zimmerling*, *Sofia Davydycheva**, Ivan Davydychev, Vladimir Druskin, Wardana Saputra, Michael Rabinovich (2), and Carlos Torres-Verdín (2. bp)

[Advancements in the Inversion of UDAR Measurements](#)

- 11:00 AM **Inversion of UDAR Measurements via Tensorial Sensitivity Functions:** *Wardana Saputra** and Carlos Torres-Verdín
- 11:30 AM **Fast Stochastic Inversion of UDAR Measurements via Guided Multi-Grid Simulated Annealing:** *Nazanin Jahani** (2), Wardana Saputra, and Carlos Torres-Verdín (2. NORCE)
- 12:00 PM **LUNCH/BREAK**

[Sponsor Presentations](#)

- 1:00 PM Presentations by a Service-Company Representatives: TBD
- 1:30 PM Presentations by an Operating-Company Representatives: TBD
- 2:00 PM Training - UDAR Software: TBD
- 5:00 PM Discussion of Future Plans and Concluding Comments: **Carlos Torres-Verdín**
- 5:30 PM **ADJOURN**

