

1st EAGE Atlantic Geoscience Resource Exploration & Development 2025

Marrakech, Morocco
5-7 May 2025

ISBN: 979-8-3313-2084-3

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



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

Copyright© (2025) by the European Association of Geoscientists & Engineers (EAGE)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact by the European Association of Geoscientists & Engineers (EAGE)
at the address below.

European Association of Geoscientists & Engineers (EAGE)
PO Box 59
3990 DB Houten
The Netherlands

Phone: +31 88 995 5055
Fax: +31 30 634 3524

eage@eage.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

1A ORAL SESSION: TECTONIC EVOLUTION I | SESSION CHAIRS: MIKE MCCONNELL & ATIKA KARIM

Evolution of Rifting and Paleobathymetry During the Opening of Central Atlantic Ocean.....	1
<i>J. Tugend, G. Mohn, N. Kuszniir, M. Deptuck, K. Kendell, F. D. Keppie, N. Macadam</i>	
Variations in Magma Budget, Extensional Rate, and Style Along the Deep-Water Conjugate Moroccan-Scotian Margins	4
<i>J. Kraus, G. Karner, A. Benarchid, V. Torres, R. Adamec, K. Garcia</i>	

1A ORAL SESSION: TECTONIC EVOLUTION II | SESSION CHAIRS: MIKE MCCONNELL & ATIKA KARIM

Influence of Syn-Rift Structure on Linked Kinematic Systems, Offshore Essaouira Basin, Morocco.....	7
<i>H. Chebli, M. R. Hudec, A. Benarchid</i>	
Observational Evidence for Early Jurassic Restricted and Isolated Shallow Water Depositional Environments of the Central Atlantic	10
<i>G. Karner, J. Kraus, R. Adamec, K. Garcia, V. Torres, J. Teasdale</i>	
High Resolution Plate Tectonic Modelling in the Central Atlantic: A Key to Understanding Hydrocarbon Accumulations	13
<i>J. Teasdale, G. Karner, J. Kraus, M. Sullivan</i>	

1A POSTER SESSION: TECTONIC EVOLUTION

Surfing the Waves of Time: Unveiling Scotian Basin Mega-Sequences Through a Novel Phanerozoic Sea-Level Curve	16
<i>D. Van Der Meer, D. Dutton</i>	
Active Faulting and Stress Regime in the High Atlas: New Seismological Insights.....	19
<i>B. Oujane, L. El Moudnib, M. Zeckra, S. Badrane, A. Nouayti</i>	
"Gravimetric Investigation of Tectonic Structures and Mineralization Zones in the Central High Atlas (Morocco): Bibliometric Approaches"	22
<i>S. Assoussi, Y. Hahou, K. Malki, F. Saadaoui</i>	
Lithology and Structural-Deformation Control Fracture-Intensity, Topology, and Geometry in Triassic Red-Beds, Argana Corridor, High Atlas, Morocco	25
<i>S. Amarir, R. Krutz, H. Skikra, A. Duval-Arnould, O. Raji, M. Alaeddine Belfoul</i>	
Crustal Stretching, Thinning and Post-Rift Moho Depth Evolution During Mesozoic Rifting in the Moroccan High Atlas.....	28
<i>M. Ankach, R. Kurtz, O. Raji, M. Ouabid</i>	
Continental Crustal Structure of Northern Morocco from Teleseismic Receiver Functions: Insights into Structural Variations and Compositional Properties.....	31
<i>H. Zakarya, L. El Moudnib, S. Badrane, M. Zeckra, S. Lharti</i>	

Positives and Negatives of Exploring on Oceanic Crustal Margins	34
<i>J. Iliffe</i>	

Seismic Imaging of the High Atlas Crust: Unveiling Moho Depth and Elastic Properties using Receiver Functions	37
<i>A. Najim, Y. Timoulali, M. El Hilali, M. Bouiflane</i>	

1B ORAL SESSION: STRATIGRAPHY | SESSION CHAIRS: NORELIS & BRYAN GILL

Unravelling Presalt Depositional Setting Integrating Multiscale Well Data and Seismic Features of the Kwanza Basin, Angola	45
<i>M. Uzcategui, A. Sarkar, S. Tewari</i>	

Distribution of the Late Jurassic Dykes of the Central High Atlas and Tectonic Implications.....	48
<i>F. Medina, H. Ibouh, N. Youbi, M. A. Boumehdi, A. Marzoli, H. Bertrand</i>	

Salt Tectonics, and Depositional Dynamics of Jurassic Carbonate Platform (Essaouira and Agadir Offshore Basin, Morocco).	51
<i>B. Cherradi, A. Ait Salem, M. Farssi, A. Benarchid, N. M'Hammedi</i>	

Equatorial Atlantic Conjugate Margins: Comparing Early Stratigraphic Architectures and Depositional Histories	54
<i>K. Reuber, H. Houllevigue</i>	

Late Triassic to Early Jurassic Sedimentological and Geochemical Evolution of the Syn-Rift Series of Berrechid Sub-Basin	57
<i>S. Ajrrough, H. Boutarouine, E. H. El Arabi</i>	

1B POSTER SESSION: STRATIGRAPHY

Aeromagnetic and Gravimetric Contributions to Geological Structures and Lineaments, Global and High Atlas (Morocco): Bibliometric Analysis	60
<i>F. Saadaoui, Y. Hahou, L. Ousaid, S. Assoussi</i>	

Palynology and Depositional Palaeoenvironment of the Agadir-Tarfaya Area (Morocco) During the Albian.....	63
<i>W. Maatouf, T. Hssaida, K. Chafai, H. Khaffou</i>	

Depositional and Sea-Level Evolution of the Tarfaya-Laayoune-Dakhla Basin, Southwestern Morocco: Insights from XRF Scanner-Derived Elemental Data and Bulk Carbonate Stable Isotopes	66
<i>E. H. Chellai, M. Aquit, W. Kuhnt, A. Holbourn</i>	

Onshore Diapirism in Atlas Mountains (Morocco): Example of Triassic High Atlas	69
<i>E. H. Chellai</i>	

2A ORAL SESSION: HYDROCARBON RESOURCES AND EXPLORATION I | SESSION CHAIRS: DUNCAN WALLACE, GAL HARTMAN & JOHN ARGENT

Modern Seismic Data Vs Past Geological Model Driven Exploration in the Atlantic Margin.....	72
<i>K. Rodriguez, N. Hodgson</i>	

Hydrocarbon Prospectivity of the Moroccan Atlantic Margin: Insights from the Newly Developed Prospectivity Atlas.....	76
<i>A. Karim</i>	

High Impact Exploration on the Atlantic Conjugate Margins	80
<i>B. Gill</i>	
Hydrocarbon Prospectivity of the Accretionary Wedge in the Gharb Offshore Basin: A Frontier Play	83
<i>M. A. Manar, A. Benarchid, A. Ait Salem</i>	
A Re-Evaluation of Petroleum Systems of the Tarfaya Basin, Offshore Morocco	86
<i>A. Mangione, J. Redfern, K. Owusu, G. Jones</i>	

2A ORAL SESSION: HYDROCARBON RESOURCES AND EXPLORATION II | SESSION CHAIRS: DUNCAN WALLACE, GAL HARTMAN & JOHN ARGENT

Unlocking the Uruguay and Southern Brazil's Exploration Potential	89
<i>Y. Balabekov, B. Conti, P. Gristo</i>	
Exploring Deeper in Uruguay: Could Namibia's Successful Cretaceous Play Be Chased in Uruguay's Deepwater?	92
<i>C. Watkins, R. Juncken, L. Hunt, Z. Yang</i>	
The Lower Congo Basin: Expanding Play Fairways and Exploring the Deeper Potential	95
<i>M. Plummer, A. Maioli, L. Sebastião, B. Cristina, V. Agar</i>	
From Seismic Acquisition to Well Placement: A Fast Track Example in Deep Water Namibia.....	98
<i>C. Demangeot, T. Lassaigue, E. Crouzy, L. Gicquel, M. Spencer, A. Cunningham, P. Prat, C. Fleury, B. Gatignol, G. Rimmele</i>	

2A POSTER SESSION: HYDROCARBON RESOURCES AND EXPLORATION

Petrophysical Study of Miocene Reservoirs in Rharrb Basin using Borehole Logs and Principal Component Analysis.....	101
<i>A. Bouri, A. Mridekh, E. B. Mohammed, A. Logbani, E. M. Bouabid, K. Malika</i>	
Field Evidence for Extreme Wave Events in Coastal Boulder Deposition at Sidi Moussa Sale Morocco	105
<i>E. Q. Alae Eddine</i>	
Re-Zipping the South Atlantic Margin: Observations on Generative Systems.....	108
<i>Y. Kedzierski, C. Nielsen, F. Sany</i>	
Piecing Together the Puzzle; Understanding Late Miocene Reservoirs of the Rharrb Basin from Source to Sink	111
<i>M. Chin, D. Wallace, R. Fox, N. Moore</i>	
Hydrocarbon Potential of the Underexplored Cretaceous Plays Offshore Moroccan Southern Atlantic	114
<i>M. Elad, G. Hartman</i>	
Hydrocarbon Generation Potential in Pelotas Basin: Insights from Seismic and Source Rock Modeling	117
<i>M. Cruz, T. Girelli, H. Oliveira, M. Rizzi, H. Serratt, C. Teixeira, I. Lehn, F. Chemale</i>	
Geological Characterization and Assisted Seismic Interpretation of the Southern Santos Basin	120
<i>M. Cruz, T. Girelli, S. Kalil, A. Wilson, F. Chemale</i>	

Where is Suriname's African Conjugate?	123
<i>B. Sayers</i>	
Integrating Seep Geochemistry and 2D Seismic for 3D Basin Petroleum Systems Modelling in the MSGBC Basin.....	126
<i>D. Gardiner, F. Winter, M. Nuzzo, T. Cunha</i>	
Using the Volcanic Georesources of the Moroccan Middle Atlas to Produce a Lightweight Ecological Mortar.....	129
<i>B. Balizi, A. Aziz, A. Bellil, A. El Khadiri</i>	

2B ORAL SESSION: SOURCE ROCK TOPICS | SESSION CHAIRS: MARJOSBET UZCATEGUI & KARYNA RODRIGUEZ

Elements of Characterization of the Kudu Shale Source Rock in the Orange Basin.....	133
<i>V. Delgorgue</i>	
Where has the Aptian Source Rock Gon(dwana): A Journey from Brazil (Pelotas) to Mozambique (Angoche).....	136
<i>W. Prendergast, R. Teehan</i>	
Impact of Climate and Tectonic on the Distribution of the Source Rock in the Atlantic Oceans.....	139
<i>A. Chaboureau, V. Delhaye-Prat, C. Nielsen, F. Sany, S. Tenepalli, J. Bourget, C. Lanteaume, B. Isabelle, J. Gaillot, M. Laugie</i>	
Global Anoxic Events and Local Variability in Source Rock Quality: Leveraging Our Experience from Liberiabeibe	142
<i>R. Norelis, R. Zhao</i>	

2C ORAL SESSION: STRATIGRAPHIC TRAPS TOPICS | SESSION CHAIRS: MARJOSBET UZCATEGUI & KARYNA RODRIGUEZ

De-Risking Stratigraphic and Combination Traps with Newly Re-Imaged Depth Data in the Orange Basin, Namibia	145
<i>E. Kay</i>	
Stratigraphic Trapping Leading to Success on Both Sides of the Atlantic: Lessons from Guyana-Suriname and Namibia	148
<i>J. Bourget, V. Delhaye-Prat, V. Delgorgue, J. Pelletier</i>	

2D ORAL SESSION: RESERVOIR TOPICS

SANAM Superbasin: Antecedent Structural Controls on Cretaceous Reservoir Systems Offshore South Africa and Namibia	151
<i>E. Prescott, M. Clutterbuck, T. Younis, A. Hunt</i>	
Palaeogeographic and Provenance Implications for Conjugate Late Cretaceous Slope Play Reservoirs on the Equatorial Atlantic Margins.....	154
<i>C. Watkins, D. Carruthers, M. Isakov, R. Juncken, E. Leaubon, M. Bhattacharya, M. Fry</i>	
Reservoir Quality and Provenance of the Late Cretaceous Channelized Turbidites of the Walvis Basin, Offshore Namibia.	157
<i>R. Fox, D. Wallace</i>	

Seismic and Well Results Shedding Light on Offshore Atlantic Margin Turbidites.....	160
<i>K. Guernouche, O. Es-Sarrar, A. Benarchid, A. Ait Salem</i>	

Late Triassic Deposition Within Moroccan Rift Basins: Controls on Reservoir Distribution and Quality Within the Evolving Fluvial Systems	163
<i>J. Redfern, J. Lovell-Kennedy, I. Fabuel-Perez, J. Argent</i>	

ORAL SESSION ADVANCEMENTS IN GEOSCIENCE TECHNOLOGIES I | SESSION

CHAIR: LAURA

Enhancing Deepwater Reservoir Identification in the Lagzira Offshore License using Novel Spatiotemporal Visualization Technique	166
<i>A. Elghorori, G. Elliott, L. Tortarolo</i>	

Imaging of Challenging Hydrocarbon Reservoirs in Brazil with Multiparameter Full Waveform Inversion.....	169
<i>J. Burren, E. Frugier, Ø. Korsmo, J. Brittan</i>	

Improving Pre-Salt Imaging using Heritage Seismic Data in the Offshore Kwanza Basin.....	172
<i>A. Cooke, M. Kalita, S. Madden, M. Matta, A. Kanrar</i>	

High Resolution Deep Water FWI Velocity - A West Africa Example	175
<i>A. Meffre, L. Janot, G. Gigou, M. Retailleau, P. Charron, S. Whitehead, M. Van De Rijzen, N. Benfield, J. Pi Alperin</i>	

ORAL SESSION ADVANCEMENTS IN GEOSCIENCE TECHNOLOGIES II | SESSION

CHAIR: LAURA

Structural Relationships Between Inherited Structures and Gravity-Driven Deformation Highlighted by AI-Based Fault Detection (Campos Basin).ral	178
<i>L. Tortarolo, A. Cosson, E. Legeay</i>	

Unlocking Exploration Opportunities Offshore Equatorial Guinea using Innovative MP-FWI Imaging Technology.....	181
<i>L. Fullarton, C. Johnston, C. Knight, N. Lee, J. Clough, J. Chaloner, J. Simionescu, A. King</i>	

Enhancing Imaging in Low Signal-To-Noise Environments using Advanced CRS Techniques	184
<i>S. Torabi, R. Fox, G. Höcht, L. Schweizer</i>	

Revisiting Block Potential using Cutting-Edge Multi-Parameter Full Waveform Inversion (MP-FWI) Imaging.....	187
<i>O. Shitrit, L. Bornatici, M. Ligtendag, A. Pavlov, J. Chaloner</i>	

High-Resolution and Rapid Estimation of P2O5 and MgO in Sedimentary Phosphate Cores using Infrared Hyperspectral Imaging.....	190
<i>M. Mazigh, O. Raji, M. Benzaazoua</i>	

ORAL SESSION ENERGY TRANSITION

The Atlantic Margin: A Review of a Nascent Natural Hydrogen Industry	193
<i>A. Driscoll</i>	

A Holistic Approach for Carbon Site Screening and Ranking.....	196
<i>S. Kisra, V. Di Gennaro, C. Halloway, A. Hermes</i>	

First Results of a Natural Hydrogen Exploration Evaluation of Morocco.....	199
<i>D. Tierney, M. Harland, L. Wilson, A. Redmile, W. A. Heins, N. Wrobel, J. Argent, M. Brouwers</i>	

POSTER SESSION: ADVANCEMENTS IN GEOSCIENCE TECHNOLOGIES & ENERGY TRANSITION

Automatic Detection and Depth Estimation of Subsurface Voids using Ground Penetrating Radar and Convolutional Neural Network.....	202
<i>A. Mojahid, D. El-Ouai, K. El Amraoui, K. El-Hami, H. Ait Benamer, J. Verrelst, P. M. Barone</i>	
Using the Full Wavefield in Shallow Water Offshore Equatorial Guinea with MP-FWI Imaging	206
<i>A. Pavlov, J. Chaloner, H. Dodwell, M. Pomfret, J. Shinol, M. Lahr, R. Christensen, S. E. O. Abegue</i>	
Machine Learning System for Multimodal Seismic Search	209
<i>P. Mishra, S. Benslimane, A. Aseev, P. Sheth</i>	
Cation-Exchange Capacity – A Fast Approach to Quantify Alteration Within Hydrothermal Systems	212
<i>T. Weisenberger</i>	
Integrated Assessment of Geothermal Potential Along the Atlantic Margin: Insights from Southern Morocco	215
<i>M. Boumehdi, N. E. Berkat, M. Magoua, J. Carneiro, A. Correia, O. Sadki, M. Chaib, Y. Hahou</i>	
A Case Study of Quantitative Integration of Geophysical and Geotechnical Data for Site Characterization.....	218
<i>D. Rovetta, F. Balestrini, A. Boleve, M. Flidner, F. Janod, S. Sol, R. Eddies</i>	

Author Index