

# **Third EAGE Eastern Mediterranean Workshop 2021**

Larnaca, Cyprus and Online  
1-3 December 2021

ISBN: 978-1-7138-4237-8

**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© (2021) by the European Association of Geoscientists & Engineers (EAGE)  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2022)

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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## **REGIONAL RESOURCE EVALUATION**

3D Sediments and Crustal Structure of the Eastern Mediterranean Basin Derived from Gravity Data .....	1
<i>J. Makris, J. Papoulia, J. Wang</i>	
Exploration Success and Reservoir Delineation Challenges: Levant Basin, Offshore Cyprus and Israel .....	4
<i>R. Wold, L. Christianson</i>	

## **REGIONAL GEOLOGY AND IMPACT OF SALT**

Deep Water Presalt Prospectivity in the Eastern Mediterranean in the Presence of Complex Messinian Salt .....	7
<i>M. Hamilton</i>	
Application of Salt Outcrop Studies to Offshore Seismic Interpretation in Western Greece .....	10
<i>N. Lykakis, J. A. Muñoz De La Fuente, L. Gagala, P. Granado, D. Spanos, M. Snidero, P. Santolaria</i>	
Messinian Evaporites at the Southern Edge of the Eratosthenes Continental Block – Worth Your Salt! .....	13
<i>S. Van Simaey, M. Sullivan, I. Fabuel-Perez, M. Abdelfattah Mohamed Khalil</i>	
Salt Deformation Patterns in the Eastern Mediterranean: Insights from the Messinian Evaporite in the Herodotus Basin .....	16
<i>A. Mousouliotis, S. Pechlivanidou, K. Albanakis, A. Georgakopoulos, B. Medvedev</i>	

## **REGIONAL GEOLOGY AND SEISMIC INTERPRETATION**

Keynote 2: Applying Seismic Inversion to Characterize the Leviathan Reservoir Structure: Levant Basin, Offshore Israel .....	19
<i>Y. Zhou, L. Christianson, B. Christensen</i>	
Miocene Deep-Water Stratigraphic Architecture and Heterogeneity: Levant Basin, Offshore Cyprus and Israel .....	22
<i>M. Stearman, B. Gergurich, T. Kent, A. Wickard, F. Laugier</i>	
Carbonate Reservoirs of the Mediterranean: A Review and Classification for Producing Assets to Frontier Exploration .....	25
<i>P. R. Shiner, C. Ricci, G. Rusciadelli</i>	
The Zohr Play in the Cyprus EEZ: Geological Observations from Miocene Reef Outcrops and Offshore Seismic .....	28
<i>S. Patruno, I. Abdallah, O. Olanrewaju, V. Scisciani, E. Sarris</i>	

## **REGIONAL GEOLOGY CARBONATES AND SOURCE ROCK UNDERSTANDING**

Dakar Anticline, a Giant Anticline Topped by Interpreted Carbonate Buildup Discovered in the Levant Basin.....	31
<i>Y. Folkman, Y. Kreisserman</i>	
Microfacies Evidence for a Late Cretaceous Apulian-Type Carbonate Platform Paleoenvironment in Kephallonia (Western Greece, Ionian Sea).....	34
<i>I. Mikellidou, S. Patruno, T. Tsourou, F. Pomoni, V. Karakitsios, P. Andriopoulos, A. Argyraki, M. Triantaphyllou</i>	
Source Rocks in Ionian Zone, Western Greece. Discoveries and Revisions from an Outcrop Study .....	37
<i>I. Alexandridis, A. Georgakopoulos, H. Carvajal-Ortiz, T. Gentzis, I. Oikonomopoulos</i>	
Organic Petrography, Geochemistry, and Sulfur Speciation of a New Potential Mesozoic Source Rock in Western Greece .....	40
<i>I. Alexandridis, I. Oikonomopoulos, H. Carvajal-Ortiz, T. Gentzis, S. Kalaitzidis, A. Georgakopoulos, K. Christanis</i>	

## **INTERPRETATION AND ANALYSIS**

New Methods for Evaluating the Temporal Distribution of Late Miocene Reservoirs: A Mediterranean-Wide Probabilistic Analysis.....	43
<i>A. Madof, F. Laugier, C. Bertoni, S. Baumgardner</i>	
Depth Correction Using Seismic Direct Hydrocarbon Indicators of the Gas-Water Contact: Levant Basin, Cyprus and Israel.....	45
<i>T. Kent, B. Christensen, T. O'Donnell, R. Wold</i>	

## **PROSPECTIVITY & DE-RISKING**

Exploration Potential in Association to Sealing Capacity in Kyparissiakos Area, Offshore Western Greece (Block 10) .....	49
<i>A. Stathopoulou, A. Del Pino Sanchez, Q. Fisher, C. Pontikou, E. Tripsanas, D. Spanos</i>	
Fault Seal De-Risking Within the Tamar Sands, Offshore Israel .....	52
<i>Y. Tsiantis, L. Gouliotis, G. Ghiglione, P. Konstantopoulos, V. Korakas, D. Anestoudis, D. Di Biase</i>	
Reservoir Characterization of Thin Beds of the Alam El Bueib Formation .....	55
<i>R. Findlay, T. Molnar, B. Nagl, A. Krešič</i>	
Aquifer Flow Dynamics in High-Permeability, Heterogeneous, Gas Reservoirs, Utilizing a Gas Reservoir as a Case Study .....	58
<i>Y. Gellman, S. Geiger, P. Corbett</i>	

## **ENABLING THE ENERGY TRANSITION & NEW TECHNOLOGIES**

The Tamar Emission Reduction Project .....	61
<i>Y. Marig, Z. Karcz, N. Sorek</i>	
Resistivity Property Prediction for Subsurface Characterization Using Neural Network Inversion .....	64
<i>S. Barh, C. Msika, R. Findlay, D. Mouliere</i>	

A Quantitative Interpretation of the Aphrodite Gas Field, Offshore Cyprus: Lessons Learned for Future Seismic Acquisition .....	67
<i>E. Efthymiou, P. Doulgeris, A. Zenonos</i>	

## **POSTER SESSION**

A New Drilling Technology to Improve Drilling Performance for the Libyan Reservoir (Case Study) .....	71
<i>V. Korakas, J. Butt</i>	
Implementing SEM, Image-Pro-plus and SPSS Software for Discovery of Moisture Influence on Shale Pores .....	73
<i>K. Gu, Z. Ning</i>	
Deep-Seated Cenozoic and Mesozoic Sediments of the Mediterranean Ridge: Biostratigraphic and Geochemical Evidence from Mud Volcanoes .....	76
<i>A. Nikitas, G. Makrodimitras, M. Triantaphyllou, N. Pasadakis, K. Christanis, A. Gogou, I. Panagiotopoulos, G. Rousakis, A. Stefatos</i>	
Accurate Determination of Shear Wave Velocity Using LSSVM-GA Algorithm Based on Petrophysical Log.....	79
<i>H. Ghorbani, S. Davoodi, A. Davarpanah</i>	
CarbMed GIS: A GIS Project for Basin and Play Focus Exploration of the Mediterranean Carbonates.....	85
<i>C. Ricci, P.R. Shiner, G. Rusciadelli</i>	
Preliminary Results on Thermal and Maturity Modeling of Kyparissiakos Gulf, Offshore Peloponnese, Western Greece .....	88
<i>I. Oikonomopoulos, E. Tripsanas, A. Stathopoulou, S. Sotiropoulos, C. Turrini</i>	

## **CASE STUDIES**

3D Model of South Crete Offshore Area by Seismic Constrained Gravity Inversion.....	91
<i>D. Sampietro, M. Capponi, K. Oikonomopoulos, D. Ktenas, E. Tartaras, A. Stefatos</i>	
The Importance of Ultra Far Angle for a Successful AVO Inversion Offshore Israel .....	94
<i>V. Korakas, J. Butt</i>	
Effects of Automatically Extracted Horizons on Rock Property Estimation: A Myra Block Example.....	97
<i>D. Moulière, A. Canning, Y. Weiss, J. Zambrini, F. Vizeu</i>	

## **ADDITIONAL PAPERS**

Improving the Imaging of pre-Messinian in the Eastern Mediterranean Sea - a Case Study Using FWI.....	100
<i>J. Kumar, M. Bell, M. Mohamed, T. Martin</i>	
3D Sequence Stratigraphic Framework for Assessing Hydrocarbon Potential of Plio-Pleistocene Successions in Offshore North Sinai, Egypt.....	103
<i>Z. Albarbary, V. Spiess, E. Bassiouni, M. El-Boukhary, H. Farouk Ewida</i>	
3D Geological Modelling and Carbon Storage Potential of Central Sumatra Basin .....	107
<i>M.R. Luthfan, A. Haris, A. Riyanto, J.R. Samosir</i>	

## **Author Index**