

**AAPG****Geosciences Technology
Workshops 2017**

STRUCTURAL STYLES IN THE MIDDLE EAST

SHANGRI-LA • MUSCAT, OMAN • 8-10 MAY 2017

The structural evolution and the associated structural styles of a given geological province control parameters which have major implications when it comes to hydrocarbon prospectivity. These parameters can be sorted as per the below categories:

- Genesis and evolution of sedimentary basins and hydrocarbon source rocks
- Deposition and maturation of source rocks
- Circulation and trapping of hydrocarbons, structuring of oil and gas reservoirs
- Impact on fault geometries and control on reservoir flow paths

One can trace the structural history of the Middle East back to the assembly of the Rodinia super continent (1200-900 Ma) and to the Middle to Late Proterozoic times (-800 to -650 Ma). Since then, the region went through a long and complex evolution which included several major deformation episodes which explain its present day structural configuration.

This complex history resulted in the creation of distinct provinces dominated by contrasted structural styles. They include an old stable craton (also known as the Arabian Shield) in the western and central part of the Arabian Peninsula. The craton also exists, though poorly exposed, to the east in the Huqf and Dhofar regions of Oman. The eastern boundary of the craton corresponds mainly to ancient, intensely deformed, accreted terranes of Panafrican age. To the west and south west,

the Red Sea and the Gulf of Aden are dominated by present-day extensional systems. The structural style of the western edge of the Arabo-Persic Gulf reflects the results of the Late Cretaceous and Miocene episodes (also known as Alpine I and Alpine II stages). Here structures are most often clearly transtensional and transpressional. Along the eastern border of the Gulf, the Zagros fold and thrust belts and the Makran accretionary complex are the results from the convergence and subduction of the Arabian Plate beneath Iran since the Miocene period. Finally, the south-eastern part of the Arabian Peninsula (South Oman) corresponds to a quite specific structural province where the tectonic styles are essentially controlled by multi-phased halokinesis (related to the thick, Precambrian Ara salt deposits).

Workshop Objectives

The workshop aims at providing a state of the art review of the contrasted structural styles of the Middle East. Based on this review, a focus should be dedicated to the implications of these regional styles and structural evolutions on the region's economical prospectivity in terms of hydrocarbon resources. Among others, the specific challenges occurring during the exploration and production of these resources should be tackled. A critical success factor for such a workshop would be to get contributions from multidisciplinary teams of technical experts, from geologists and engineers from the oil and gas and mining industry, as well as from a solid participation from academic institutions.

REGISTRATION BROCHURE

PROGRAM COMMITTEE

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TECHNICAL PROGRAM

DAY 1 MONDAY, 08 APRIL

- 07.00-08.00 Workshop Registration
- 08.00-08.10 Workshop Chairmen's Welcome and Introduction
- 08.10-08.20 Inaugural Keynote Speech
- 08.20-08.50 Technical Keynote Speech
- 08.50-12.10 SESSION 1: REGIONAL COMPARISON BETWEEN THE STRUCTURAL STYLES OF THE ARABIAN PENINSULA AND IRANIAN ZAGROS AND MAKHRAN PROVINCES**
- This session should present, through clear outcrop and subsurface examples, the contrasted structural characteristics of the Arabian Peninsula and of the Zagros and Makhran provinces. Through the session, the presenters will attempt to delineate the structural histories of these two regions and explain the structural contrasts, using the state of the art regional knowledge. Implications for the exploration and development of associated hydrocarbon resources will be discussed.
- 10.30-10.50 Coffee Break & Posters
- 10.50-11.50 Breakout Session
- 11.50-12.10 Report Back
- 12.10-13.30 Lunch
- 13.30-16.50 SESSION 2: ROLE OF DEEPLY-ROOTED STRUCTURES COMPARED TO DETACHMENT-RELATED STRUCTURES**
- In the Middle-East, the involvement of thick-skin and thin-skin tectonics are responsible of the occurrence of very specific and contrasted structural styles. These deformation mechanisms and the resulting structural styles impact the trapping mechanisms of hydrocarbons as well as the size and geometries of the associated fields. This session aims at discussing recognition criteria and provinces of rooted and detached structural style in the Middle East.
- 15.10-15.30 Coffee Break & Posters
- 15.30-16.30 Breakout Session
- 16.30-16.50 Report Back

DAY 2 TUESDAY, 09 APRIL

- 08.30-12.00 SESSION 3: COMPARISON BETWEEN NORTH, SOUTH AND SOUTH-EAST OMAN**
- North, south and south-east Oman hydrocarbon fields are characterised by much contrasted structural styles. These are essentially related to the respective roles of the various tectonic episodes which have presided to their occurrence, as well as to the rheological variability of the various rocks deformed during these tectonic episodes. Through the observation of recent seismic data, this session aims at pointing out these structural contrasts.
- 10.20-10.40 Coffee Break & Posters
- 10.40-11.40 Breakout Session
- 11.40-12.00 Report Back
- 12.00-13.30 Lunch

DAY 3 WEDNESDAY, 10 APRIL

- 08.30-12.00 SESSION 4: KINEMATICS INDICATORS OF ALPINE I AND II TECTONIC PHASES ACROSS THE MIDDLE EAST**
- The Late Cretaceous (Alpine I) and Miocene (Alpine II) tectonic phases are responsible of some of the most prominent structural features one can observe across the region. Their influence can also be more subtle. This session aims at describing the different types and scales of kinematic indicators that can be related to these two important stages of the regional structuring as well as their implications on hydrocarbon resources.
- 10.10-10.40 Coffee Break & Posters
- 10.40-11.40 Breakout Session
- 11.40-12.00 Report Back
- 12.00-13.30 Lunch



TECHNICAL PROGRAM

13.30-17.10 **SESSION 5: OVERVIEW OF THE KEY STRUCTURAL TOOL FOR SEISMIC INTERPRETATION AND STRUCTURAL MODEL QC**

Having a good understanding of the regional structural styles and associated concepts as they will be described in the previous sessions enables to define series of tools and guidelines that geologists and seismologists can use to guide their interpretation and to QC their models. This session aims at reviewing these tools and concepts and to provide a summary of best practices which can be used on a daily basis in the oil and gas industry.

- 15.10-15.30 Coffee Break & Posters
- 15.30-16.30 Breakout Session
- 16.30-16.50 Report Back
- 16.50-17.10 Wrap Up and Workshop Adjournment

WORKSHOP GUIDELINES

FORMAT

The workshop will be 3 days, consisting of technical presentations, poster presentations and breakout sessions, where participants can discuss and investigate a specific theme that is of mutual interest. The first day will feature an inaugural keynote speech and technical keynote speech by high-profile professionals from the industry.

ATTENDANCE

Registrations are invited from all relevant disciplines with experience and/or knowledge of the subject areas being addressed in the workshop. Registrations will be accepted on a first-come, first-served basis.

CALL FOR POSTERS

You are invited to prepare a poster display for presentation. If you are interested in participating, please send a short abstract along with the poster artwork (in JPEG or PDF high resolution format) to akuzmenko@aapg.org by **6 April 2016**. All posters will be produced as pull-up banners and delivered by AAPG. There will not be any other format available for poster display. Please ensure that the poster artwork measurements are **85 cm (width) x 165 cm (height)**. Please provide the topic with a short abstract of the proposed poster, along with permission to publish your abstract or it will not be included on the abstract USB.

DOCUMENTATION

All accepted abstracts will be published on the workshop "Abstracts USB" and distributed to delegates onsite.

REGISTRATION TYPES & FEES

Fees are inclusive of onsite documentation, coffee breaks and luncheons. To register as a 'Student / Young Professional' you must either be a current student or a young professional under the age of 35 with less than 10 years of work experience.

REGISTRATION DEADLINE

To guarantee your seat, please make sure to register by **1 May 2016**.

WORKSHOP LOCATION

Shangri-La Barr Al Jissah Resort and Spa, Muscat, Sultanate of Oman
Tel: + 968 2477 6666

CANCELLATION POLICY

AAPG will refund the tuition, less a \$100 processing fee, if the request is received no later than 30 days prior to the workshop. Cancellations must be made in writing. The registrar will accept cancellation notices by telephone, but all such notices must be followed up by fax or e-mail. No refund will be made for cancellations received less than 30 days prior to a workshop being given. Nonpayment of tuition does not constitute automatic cancellation. If no cancellation notice is received by 30 days prior to a workshop, participants are liable for full tuition. AAPG reserves the right to cancel a workshop if enrollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future workshop if the request is received prior to the 30 day cut-off date.



REGISTRATION FORM STRUCTURAL STYLES IN THE MIDDLE EAST

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Last Name

First Name

Nickname for Name Tag

Male

Female

Company

E-mail (required)

Business Address

Business Telephone

Job Title

City

State/Province

Post Code

Country

Alternative Telephone

Fax

AAPG Member? Yes No Member N° I am also a member of: EAGE SEG SPE Other

REGISTRATION TYPE & FEES

Member (\$ 1500) Non-Member (\$ 1700) Join & Save (\$ 1700) Students/Young Professionals (\$ 500)

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Card Holder Name

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Credit card charges will be processed in US dollars.

Complete this form and send to: Anastasia Kuzmenko

American Association of Petroleum Geologists Middle Events Coordinator

Email: akuzmenko@aapg.org | Tel: +971 4 372 4198 | Fax: +971 4 372 4204

Invoices must be paid within 10 days of receipt. Should your application be received six weeks prior to the commencement of the workshop, please note that we will only accept credit card payment. AAPG will refund the tuition, less a \$100 processing fee, if request is received no later than 30 days prior to the workshop. Cancellation must be made in writing. The registrar will accept cancellation notices by telephone, but all such notices must be followed up by fax or e-mail. No refund will be made for cancellations received less than 30 days prior to a workshop being given. Nonpayment of tuition does not constitute automatic cancellation. If no cancellation notice is received by 30 days prior to a workshop, participant is liable for full tuition. AAPG reserves the right to cancel a workshop if enrollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future workshop if the request is received prior to the 30 day cut-off date. The American Association of Petroleum Geologists (AAPG) does not endorse or recommend any products and services that may be cited, used or discussed in AAPG publications or in presentations at events associated with AAPG.



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