First EAGE Workshop on Basin & Petroleum Systems Modeling

Advances of Basin and Petroleum Systems Modeling in Risk and Resource Assessment

19-22 October 2014
Dubai, UAE

Technical Committee:
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Cedric Griffiths (CSIRO)
Brian Horsfield (GFZ German Research Centre)
Pierre Van Laer (ADCO)
Hanneke Verweij (TNO)
Bjorn Wygrala (Schlumberger)
**Workshop Overview**

The aim of this workshop is to provide a forum for exchange of ideas and encourage cooperation among specialists from industry, academia, research institutes and developers to advance basin and petroleum systems modeling. If you are currently involved in exploring in a basin for conventional or unconventional resources, or if you are developing a reservoir that is strongly affected by processes at the basin scale, then this workshop will be of great interest to you.

Petroleum systems models deal with the integration of hydrocarbon-related geological processes in sedimentary basins over geological time scales. They cover deposition, compaction, heat flow analysis, temperature and pore pressure calculation, hydrocarbon generation, adsorption and expulsion processes, as well as migration and fluid property prediction and analysis. The workshop will provide an opportunity to discuss the current status of petroleum systems modeling and remaining challenges that we want to address with new ideas in research and development that will improve our understanding of the distribution of hydrocarbons in the subsurface. It will highlight the scientific and technical challenges in modeling of both conventional and unconventional petroleum systems. Moreover, it will feature two specialized courses and a poster discussion session on each day.

Join us in Dubai to see how the current knowledge of basin and petroleum systems modeling improves your exploration and reservoir development efforts. You are not only a passenger or a witness of this marvelous journey but you are also a driver to new learning and technological advances.

**Short Courses**

**Short Course 1: Fluid Compositional Prediction in Resource Assessment**

Instructors: Brian Horsfield (GFZ German Research Centre)

Date: Sunday, 19 October 2014 (1-day course)

The course teaches the fundamentals of predicting petroleum fluid properties in sedimentary basins using kinetic and inverse modelling, and is ideally suited for exploration geologists and production engineers alike. Kerogen typing, organofacies, PVT-fluid property assessment, and compositional kinetics, all set in a petroleum systems context, form the theoretical heart of the course. The utility of the model built using this approach, termed PhaseKinetics, has been proven over the past ten years by comparing predicted and actual reservoir fluid compositions. There are two foci - as far as conventional systems are concerned, we shall be laying out how to predict gas-oil ratio and charge volumes ahead of drilling, presenting case-specific compositional kinetic models for predicting bulk petroleum composition and physical state (number of phases, Psat, API gravity) in numerous marine and non-marine settings from around the world. As far as unconventional systems are concerned, we present both regional and reservoir scale assessments. We emphasise the latter because the liquid-to-gas cut-off in shale packages, determined by PVT-properties, must be known precisely, in order to optimise production of petroleum liquids. We outline how a detailed inventory of chemical- and mineralogical heterogeneities can assist in assessing in-place reserves and their physical form (Psat, GOR etc). The course will be conducted in an informal manner, with discussion and exchange of ideas strongly encouraged.

**Short Course 2: Practical Stratigraphic Forward Modelling**

Instructor: Dr. Cedric M. Griffiths (1 day course)

Date: Thursday, 23 October 2014

The goal of the class is to teach the use of stratigraphic forward modelling on realistic geological problems at a variety of scales. The treatment of theory will be limited. Instead, there is a strong emphasis on understanding and using this approach in real-world settings such that their capabilities and limitations are well understood. Copies of the latest demonstration version of Sedsim and documentation will be provided and exercises will assume that participants, either individually or in groups of two or three have access to a laptop in the room. Attendees will understand how to access the data needed to run a stratigraphic forward model, look at case studies from around the world, look at the various processes (marine, aeolian, carbonate, fluvial, vegetation etc.) and how the processes and results can be constrained. They will generate Petrel/RMS/Eclipse input files from the simulations as part of the course. Sedsim stratigraphic forward modelling software (installed on their laptop) will be used, and a take-home working demonstration copy of the software is provided. An overview of the future of stratigraphic modelling will also be discussed.

**Technical Programme**

**Sunday 19 October 2014**

Icebreaker Reception 18:00-20:00 hrs

NEOS, Address Downtown

All speakers have been invited to bring key slides from their presentations in poster format - at the end of each session time has been allocated for discussion around these posters.

**Monday 20 October 2014**

**Diamond Ballroom I & II**

**OPENING SESSION**

08:00 BPM01 - Opening Remarks - Welcome, Aims & Objectives - I. Al-Ghamdi, Co-Chairman* (Saudi Aramco) & J. Wendebourg, Co-Chairman (Total)

08:10 BPM02 - Opening Address - I. Assaadan* (Saudi Aramco)

**EXPLORATION & RISK ASSESSMENT**

A. Bell (Shell) & P.Y. Chenet (Beicip)

08:30 BPM03 - Keynote Presentation - The Role of Petroleum Systems Modelling in Exploration: Current Use & Future Needs - J.W. Wendebourg* (Total)
09:10 BPM04 - Geodynamics and Petroleum Systems Modeling of the Salt Province and Outer Atlantic Margin Offshore Essaouira (Morocco) - M. Neumaier* (Schlumberger), R. Litke (RWTH Aachen), S. Back (RWTH Aachen), P. Kukla (RWTH Aachen), A. Kleine (Schlumberger), M. Schnabel (BGR Hannover) & C. Reichert (BGR Hannover)

09:35 BPM05 - Komombo Petroleum Systems Modeling Study - Western Desert, Egypt - A. Agam* (Schlumberger), D. Schenk (Schlumberger), A. Bouhil (Schlumberger), A. Gabr (Komombo Petroleum Company (KOPCO)) & A. Abdel-Hady (Cheiron Petroleum Corporation)

10:00 BPM06 - Sensitivity Analysis of Controlling Factors in Biogenically Charged Petroleum Systems - A Case Study from the Leventive Basin - B.P. Wygrala* (Schlumberger), M. Neumaier (Schlumberger), C. Clayton (Geochemistry Services), T. Hantschel (Schlumberger), A. Kleine (Schlumberger), A. Al-Balushi (Imperial College), A. Fraser (Imperial College) & C. Jackson (Imperial College)

10:25 Coffee Break

11:00 BPM07 - New Exploration Concepts Applied to Mature Areas Added Value of Sedimentary and Petroleum System Modeling in West Siberia - Y. Chenet* (Beicip-Franlab), V. Volkov (V.I. Shpilman Institute), A. Shpilman (Sib GeoProject) & M. Saint Gérons (Beicip GeoTechnologies)

11:25 BPM08 - A Quest for Nonstructural traps within a Brown-Field (West Siberian Mega Basin): Remaining Hydrocarbon Potential of the - D.S. Spahic* (Schlumberger), O. Bodanov (Lukoil Engineering), S. Istorin (Schlumberger), V.N. Koloskov (Lukoil Engineering), A. Shuvaev (Lukoil Engineering) & K.K. Musakhin (Lukoil Engineering)


12:15 Lunch

EXPLORATION & RISK ASSESSMENT PART 2

13:45 BPM10 - Petroleum Properties from Basin Modelling: Success Stories from Conventional and Unconventional Settings - R. di Primo (Helmholtz Centre Potsdam) & B.Horsfield* (Helmholtz Centre Potsdam)


15:00 Poster Discussion Session

16:00 Day 1 Close

Tuesday 21 October 2014

Diamond Ballroom I & II

08:00 Introduction Day 2

RESERVOIR DESCRIPTION & FIELD DEVELOPMENT

08:05 BPM14 - Keynote Presentation - Basin Modelling for Reservoir Prediction & Field Development - P. Van Laer* (ADNOC) & P. Nederlof (Oman Geoconsultants)

08:45 BPM15 - Accounting for the Effects of Lateral Stress in Basin and Reservoir Quality Modeling in a Compressive Tectonic Environment - D. Rajmon* (GeoSophic) & L. Hathon (Shell)

09:10 BPM16 - Basin Modeling and Diagenetic Study for Reservoir Quality Prediction in Oligocene Sands, Offshore Niger Delta - O.K. Chudi* (Heriot-Watt University), H. Lewis (Heriot-Watt University) & D.A.V. Stow (Heriot-Watt University)

09:35 BPM17 - Compositional Basin Model of Lower Fars Reservoir, Northern Fields, Kuwait - A. Khamiss* (Kuwait Oil Company (KOPCO)) & F. Monnier (Beicip-Franlab)

10:00 Coffee Break

UNCONVENTIONALS

I. Al Ghamdi (Saudi Aramco) & B. Horsfield (GFZ German Research Centre)


11:15 BPM20 - Petroleum System Modeling-based Resource Assessment for Conventional and Unconventional Hydrocarbons - A. Bhullar* (Saudi Aramco)

11:40 BPM21 - From Rock Evaluation Pyrolysis to Basin Modeling: an Innovative Workflow for Evaluating Oil and Gas Shale Plays - B. Carpenter* (IPFEN), V. Crombez (IPFEN), K. Labat (IPFEN), M.F. Romero-Sarmiento (IPFEN), M. Ducros (IPFEN), B. Garcia (IPFEN), S. Pegaz-Fironet (IPFEN), S. Wolf (IPFEN), M.C. Cacas-Stentz (IPFEN) & T. Euzen (IFP Canada)

12:05 BPM22 - Characterization and Spatial Uncertainty Quantification for Unconventional Gas Resources in Piceance Basin, Colorado - Y. Teng* (Stanford University), T. Mukerji (Stanford University) & A. Scheirer (Stanford University)

12:30 Lunch

14:00 Round Table Discussions

15:00 Coffee Break

15:30 BPM23 - Focus on Shallow Gas Systems - J.M. Verweij* (TNQ) & S. Nelskamp (TNQ)

15:55 BPM24 - Prediction of Low-Maturity Gas and Heavy Oil: Biogenic Gas and Biodegraded Oil Modeling - M. Dubille* (Beicip-Franlab), F. Schneider (Beicip-Franlab), L. Montadert (Beicip-Franlab) & P.Y. Chenet (Beicip-Franlab)

16:20 Poster Discussion Session

17:00 Day 2 Close

Wednesday 22 October 2014

Diamond Ballroom I & II

08:00 Introduction Day 3

RESEARCH & DEVELOPMENT

K. Peters (Schlumberger) & A. Al Khamiss (Kuwait Oil Company)

08:05 BPM26 - Keynote Presentation - T.B.C. Speaker

08:45 BPM27 - Petroleum Generation Kinetics Based on One- vs. Multiple-Heating Ramp Open-System Pyrolysis - K.E. Peters* (Schlumberger Information Solutions)

09:10 BPM28 - H2S Risk Assessment: Hydrogeochanical 3D Reactive Mass Transport Modeling and Mass Balancing of Acid Gas Generation and Distribution in Anhydrite-Sealed Oil and Gas Reservoirs - W. van Berk* (Clausthal University of Technology), H.M Schultz (GFZ German Research Centre for Geosciences) & Y. Fu (GFZ German Research Centre for Geosciences)

09:35 BPM29 - A New Approach to Visualize Molecular Organic Geochemical Data in Basin Modeling Software - M Alipour* (Shahid Chamran University of Ahwaz), S. Mirzaie (Petrosar Technology Ltd), S. Shakib (Petrosar Technology Ltd), J. HassanPour (Petrosar Technology Ltd) & A.R. Mohabbi (Petrosar Technology Ltd)

10:00 Coffee Break

10:30 BPM30 - Global Sensitivity Analysis of Geochemical Compaction in a Sedimentary Basin - P. Ruffo* (Eni E&P Division), G.M. Porta (Politecnico di Milano), A. Scotti (Politecnico di Milano) & A. Guadagnini (Politecnico di Milano)


11:20 BPM32 - A Quantitative Calculation Method of Hydrocarbon Generation in Finite Space - Y.F. Chen (Wuxi Institute of Petroleum Geology,SINOPEC), X.G. Jiang* (Wuxi Institute of Petroleum Geology,SINOPEC) & C.P. Tan (Wuxi Institute of Petroleum Geology,SINOPEC)

11:45 BPM33 - Reservoir Classification and Rock Characterization in the Qaidam Basin - Y. Tong* (Stanford University), T. Mukerji (Stanford University) & B.P. Wygrala* (Schlumberger)

12:15 Lunch

13:00 Poster Discussion Session

14:00 Poster Discussion Session

14:30 Poster Discussion Session

15:00 Poster Discussion Session

15:30 Poster Discussion Session

16:00 Poster Discussion Session

17:00 Day 3 Close
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11:45 BPM33 - 3 Examples of Recent Advances in Petroleum System Modelling - M.C. Cacas-Stentz* (IFPEN), I. Fallie (IFPEN), L. Agelas (IFPEN), A. Pujol (IFPEN), X. Guichet (IFPEN), Y. Teles (IFPEN), J.F. Lecomte (IFPEN) & A. Benabbou (IFPEN)

12:10 Lunch

RESEARCH & DEVELOPMENT PART 2
C. Griffiths (CSIRO) & H. Verweij (TNO)

13:45 BPM34 - Scenario-Based Assessment of Hydrocarbon Charge Volumes - G. Port* (Wintershall Holding GmbH)

14:10 BPM35 - 3D Petroleum Systems Model using Restored Paleo-Geometries - C. Castagnac (Schlumberger), E. Mavridou* (Schlumberger), G. Badalini (BG), M. Moktar Mohamed (Rashpetco), S. Ahmed Mousa (Rashpetco), J. McQuilken (BG) & A. Yehya El Amir (Rashpetco)

14:35 BPM36 - Some Fundamental Petrophysical Properties of Mudstones and Their Practical Applications in Petroleum System Analysis - Y. Yang* (Saudi Aramco)

15:00 BPM37 - Linking Basin Modeling with Seismic Attributes through Rock Physics - W. AlKawai* (Stanford University), T. Mukerji (Stanford University) & S. Graham (Stanford University)

15:25 Poster Discussion Session

16:30 Closing Session

17:00 Day 3 Close

Registration

Overview of registration fees

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<th>Description</th>
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Members please note: To qualify for the member registration fee, your EAGE membership dues for 2014 must have been paid and confirmed. The processing time for membership applications or renewals is 10 working days. Please note that EAGE reserves the right to cancel the event due to low participation. In this case, payment will be refunded in full.

1. To qualify for the reduced registration fee, a copy of your student identification card for a geoscience institute must be submitted together with this registration form.
2. The non-member fee includes EAGE membership for the remainder of 2014.
3. Please note that the EAGE reserves the right to cancel the Workshop due to low participation. In this case, payment will be refunded in full.

How to register

We recommend that you register via the online registration form on the EAGE website (www.eage.org). However, a downloadable registration form, which should be completed and returned to the EAGE Head Office, is also available on the EAGE website.

Visa requirements

Visas are required to enter the UAE except for nationals from the Gulf Cooperation Council States. For many passport holders it is possible to get a visa on arrival at Dubai International Airport. Please refer to the UAE Ministry of Foreign Affairs website for full details www.mofa.gov.ae.

Please note that it is the participant’s responsibility to enquire about the latest visa requirements which apply to his/her nationality.

Venue

The workshop will be held at the Address Dubai Mall, Dubai.

EAGE have negotiated rates with the hotel for participants attending the Basin & Petroleum Systems Modeling Workshop. To book a room please use the booking form found on the workshop website, or email middle_east@eage.org for a copy. Accommodation is not included in the delegate fee, and participants are not obliged to stay at the venue, alternative accommodation can be sourced close by, details of which can be found on our website.

The Address Dubai Mall Room Rate (inc Breakfast & Taxes)
Deluxe Room (Single Occupancy) AED1475
Deluxe Room (Double Occupancy) AED1575

Social Programme

Sunday 19 October 2014
Icebreaker Reception 18:00-20:00 hrs
Delegates are invited to join us at the Address Downtown for the icebreaker reception. Located on the 63rd floor, Neos offers stunning city views over the iconic Burj Khalifa and the dancing Dubai Fountain.

Tuesday 22 October 2014
Workshop Dinner
Details for the workshop dinner will be announced shortly via the event website.

Sponsors

We would like to thank our sponsors:

Platinum Sponsor

Contact

For more information or enquiries about this workshop please visit the event’s website (www.eage.org) or contact the EAGE Regional Middle East Office via middle_east@eage.org or telephone +971 4 369 3897.

We look forward to seeing you in Dubai!