



PGK

Petroleum Geologische Kring

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<b>Venue:</b>	PGK's monthly meetings are held at the KIVI building, Prinsessegracht 23, Den Haag. Drinks are served from 17:00 hrs; the lecture starts at 18:00hrs.		<a href="http://www.pgknet.nl">www.pgknet.nl</a>
<b>Membership:</b>	Apply for membership through the PGK website. The annual fee is €15.-		
<b>Accounts:</b>	ABN/AMRO Bank: 88.65.82.733 (PGK, Den Haag)		

## MAY 2011 NEWSLETTER

### **18<sup>th</sup> of May:**

The next PGK meeting will be on **Wednesday, May 18<sup>th</sup>, 2011** at the KIVI building, Prinsessegracht 23, Den Haag. Before the PGK meeting the KNGMG will hold its Annual General Meeting at the same venue.

15:30-16:00 hrs: coffee / tea  
 16:00-17:00 hrs: KNGMG Annual Meeting – including presentation of honorary membership  
 17:00-18:00 hrs: Social hour  
 18:00-19:00 hrs: Three lectures by PhD students:

***Roderic Bosboom (RUU)***

**Late Eocene sea retreat from the Tarim Basin (West China) and concomitant Asian paleoenvironmental change.**

***Suzanne Beglinger (VU)***

**Relating petroleum system & play development to basin evolution.**

***Daria Tetyukhina (Delft)***

**Full elastic seismic data modeling of an outcrop-based high-resolution geological and petrophysical model, Book Cliffs (Utah, USA).**

*Abstracts on separate page*

### **JUNE PGK MEETING:**

The June meeting takes place on **Monday, 20<sup>th</sup> of June 2011**

This meeting will be organised together with the SPE, and will consist of a barbeque and mini-symposium at the Carlton Beach Hotel. There will be two presentations on shallow gas:

*Johan ten Veen* (TNO): Anatomy of the Cenozoic Eridanos Delta and its Shallow Gas Systems.

*Jasper Schmidt* (Chevron): From Drilling Hazard to Successful development: Shallow Gas.

**AAPG DISTINGUISHED LECTURE**

The next AAPG Distinguished Lecturer Program in the Netherland will be:

Lecture title: Deformation Mechanisms and Limits to the Sealing Capacity of Rock Salt: an Integrated, Multi-scale Approach to Salt Basin Evaluation

Lecturer: Peter Kukla (RWTH Aachen University, Germany)

Date: Tuesday, 17 May 2011

Venue: Shell Office – The Hague, Carel van Bylandtlaan 5, The Hague 2596 HP

Time: 15.00-16.00: Village green: (capacity 25, people mainly for Shell staff)  
16.00-17.00: Tablinum II Theatre (capacity 40 people, open for AAPG, KNGMG, PGK members)  
17.00-17.30: Reception with coffee and snacks

**RSVP:** Due to popular topic and limited room capacity you need to register yourself by sending e-mail to Herman Darman ([herman.darman@shell.com](mailto:herman.darman@shell.com)) / Mark Redden ([mark.redden@shell.com](mailto:mark.redden@shell.com)).

**NEW MEMBERS**

Applications for membership have been received from Geert de Bruin (TNO), Jonathan Cole (Shell), Ronald Hoogenboom (consultant), Fresco van Meurs (Burdock), Steve Meyer (Shell), Susanne Nelskamp (TNO), Uisdean Nicholson (Shell), Jan Peeters (RUU), Maartje van Rooij (Fugro), Koen Vogel (Shell), Mei Zhang (TNO), Mart Zijp (TNO). If no objections are received prior to or during the next meeting, they will be admitted as member of our society.

**IN MEMORIAM:**  
**HONG IN THIO 1958 - 2011**

With deep sadness we received the news that Hong In Thio has passed away on April 11th. We shall miss him and we wish his family strength to bear this great loss.

SvH

**Program PGK meeting Wednesday 18<sup>th</sup> of May 2011**

**Address:** KIVI Building, Prinsessegracht 23, Den Haag  
**KNGNM AGM:** 16:00 - 17:00  
**Social hour:** 17:00 - 18:00  
**Lectures:** 18:00 - 19:00

**Late Eocene sea retreat from the Tarim Basin (west China) and concomitant Asian paleoenvironmental change**

*Roderic Bosboom (Utrecht University)*

**Abstract**

The Paleogene sediments of the Tarim Basin in western China include the remnants of the easternmost extent of a large epicontinental sea, which extended across the Eurasian continent before it retreated westward and eventually separated as the Paratethys Sea. Climate modeling results suggest that this sea retreat is an important forcing mechanism in the aridification of the Asian continental interior. However, the age and paleogeography of the retreat are poorly constrained, hindering understanding of its cause and impacts. Our research reports litho- and biostratigraphic results from various sections recording the last major regression out of the Tarim Basin. Rich micro- and macrofossil assemblages (including benthic foraminifera, ostracods, bivalves, calcareous nannofossils and dinoflagellate cysts) indicate a shallow, proximal and marine environment and date the last marine sediments as latest Bartonian to earliest Priabonian in age (~37 Ma), time-equivalent to the sea level lowstand at the Bartonian–Priabonian boundary but pre-dating both the Oligocene–Miocene regional uplift of the Pamir and Kunlun Shan and the major eustatic sea-level falls of the Eocene–Oligocene Transition (~34 Ma) and mid-Oligocene (~30 Ma), which are usually held responsible for the sea retreat. Furthermore, a concomitant and significant aridification step at ~36.6 Ma recorded in the Xining Basin along the northeastern Tibetan Plateau suggests that the Tarim Sea served as a significant moisture contributor for the Asian interior.

**Relating Petroleum System- & Play Development to Basin Evolution**

*Suzanne E. Beglinger, Maarten P. Corver, Harry Doust & Sierd Cloetingh (VU Amsterdam)*

**Abstract**

Most oil and gas provinces are becoming increasingly mature with respect to exploration. Therefore, our understanding of petroleum prospectivity of less well explored basins becomes more important. In such areas, the use of mature basins as analogues can contribute to the identification of new hydrocarbon discoveries. We anticipate that the use of analogues will become increasingly valuable in exploration.

The objective of this research is to increase the knowledge of interpreting basin data in order to facilitate prospectivity prediction in new venture exploration through the recognition of patterns of petroleum system- and play development in basin (cycle)s with similar tectonostratigraphic characteristics.

We demonstrate a newly developed method, allowing for more efficient comparisons between basins with a similar geological background, i.e. basins which could act as analogues for exploration purposes. We apply the concept that sedimentary basins can be classified according to their structural genesis and evolutionary history. The classification is based on breaking the basins down into their tectonostratigraphic cycles. Common elements of petroleum systems and plays are linked to these natural cycles in order to improve the prediction of potential petroleum systems and plays occurring in under-explored basins.



## **Full elastic seismic data modeling of an outcrop-based high-resolution geological and petrophysical model, Book Cliffs (Utah, USA)**

*Daria Tetyukhina\*, Stefan M. Luthi and Dries Gisolf ( Delft University of Technology)*

### **Abstract**

Outcrop observations are often used to develop predictive models and provide quantitative parameters describing the architecture and facies distribution of shallow-marine deposits at a sub-seismic scale to aid the development of exploration and production strategy. The focus of this project is to create a high-resolution depositional model that provides realistic geological and petrophysical reservoir information. As a basis for our geological and petrophysical modeling the analog data from the Book Cliffs (Utah) was used. The model is populated with shear velocity properties using regressions based on empirical data and laboratory experiment. The resulting realistic high-resolution geological model was used to create a seismic synthetic full elastic data-set that bridges the gap between seismic and analog data. The predicted seismic response allows to assess the appearance of small scale stratigraphic features on the seismic data. The 'Kennett invariant embedding method' was employed for a forward modeling. The method is exact and calculates all internal multiple reflections and transmission effects, as well as all mode-conversions from P to S and vice-versa. Another potential application of the resulting seismic synthetic full elastic data-set is that the full wave form seismic (linear and non-linear) elastic inversion techniques can be applied/ tested. This inversion can provide insights into understanding and interpreting which geological features can/cannot be resolved from seismic data.

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