PETROLEUM GEOLOGISCHE KRING

KONINKLIJK NEDERLANDS GEOLOGISCH MIJNBOUWKUNDIG GENOOTSCHAP PGK

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Venue:	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.		**www.pgknet.nl**
Membership:	Apply for membership by contacting the secretariat. The annual fee is €15.-		
Accounts:	Fortis Bank: 88.65.82.733 (PGK, Den Haag)		

OCTOBER 2010 NEWSLETTER

20th of OCTOBER:

The next PGK meeting will be on **Wednesday, October, the 20th, 2010**.

17:00-18:00 hrs: Social hour
18:00-19:00 hrs: Lecture by:
Timme Donders (TNO / University of Utrecht)
Title:
Drilling the Central Arctic:
From a Paleogene "Pond" to a Neogene Ocean

Abstract on separate page

NOVEMBER PGK MEETING:

The November meeting takes place on **Wednesday, 17th of November 2010**. Lecture by Prof. Brian Williams (University of Aberdeen) on "Triassic Basins, N-Atlantic Borderlands: Understanding the break-up of Pangea in the search for oil and gas"

NEW MEMBERS

Applications for membership have been received from Mirko Barone (Fugro Roberson B.V.), Ben Dewever (PanTerra Geoconsultants B.V.), Andreas Hofmann (SGS Horizon), Allard van der Molen (Shell), Rob Faas (MWH B.V.). If no objections are received prior to or during the next meeting, they will be admitted as member of our society.

NEW SECRETARY

As Christian Derer is no longer available, the position of secretary is taken over by Shirley van Heck (retired from Shell). We thank Christian for the work he has done!

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Monthly meeting: **Wednesday 20th of October 2010**
Address: **KIVi** Building, Prinsessegracht 23, Den Haag

Social hour: Between 17:00 and 18:00 hrs
Lecture: 18:00-19:00

Drilling the Central Arctic: From a Palaeogene 'Pond' to a Neogene Ocean

Francesca Sangiorgi[1,2], Appy Sluijs[1], Stefan Schouten[2], Timme Donders[1,3], Judith Barke[1], Eveline Speelman[4], Gert-Jan Reichart[4], Jaap S. Sinninghe Damsté[2,4] Henk Brinkhuis[1]

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2 - Royal Netherlands Institute for Sea Research, Department of Marine Biogeochemistry and Toxicology, P.O. Box 59, 1790 AB Den Burg, Texel, the Netherlands
3 – TNO, Geological Survey of the Netherlands, PO Box 80015, 3508 TA Utrecht, the Netherlands
4 - Department of Earth Sciences, Utrecht University, Budapestlaan 4, 3584 CD Utrecht, the Netherlands

In September 2004, the first-ever drilling of the Lomonosov Ridge (Arctic Coring Expedition, ACEX, or IODP Expedition 302) recovered unprecedented sedimentary records of the central Arctic Ocean spanning the past ~56 Ma. Age-assessment, largely based on dinoflagellates, includes the recognition of some ~200m each of upper Neogene, and middle Palaeogene deposits, with a conspicuous ~26 Ma hiatus separating these units. The Neogene record has relatively low sedimentation rates and perennial glacial conditions starting from 14 Ma. In contrast, the Palaeogene is a story of waxing and waning of freshwater influence, warm conditions, and relatively high accumulation rates of organic-rich sediments.
Palynological analyses have revealed the successful recovery of the Paleocene - Eocene transition, with the occurrence of an *Apectodinium augustum* acme at the Paleocene Eocene Thermal Maximum (PETM) some 55.5 Ma ago. This finding contrasts predictions, which had placed the base of the sediment column, above Cretaceous basement, at 50 Ma. During the PETM our dinocyst and TEX_{86} palaeothermometer records show combined increased runoff and sea level rise and a subtropical Arctic Ocean, with temperatures of ~23ºC.
Other Palaeogene highlights also include the recovery of the Eocene Thermal Maximum 2 (aka ELMO ~53.5 Ma). Dinocyst assemblages show a freshening of Arctic Ocean surface waters, while TEX_{86}-derived paleotemperatures rise from ~18 – ~22 °C and palm vegetation suggests frost-free winters. At the early – middle Eocene transition (~49 Ma) stunning concentrations of remains of the fresh water fern *Azolla* and freshwater tolerant dinocysts suggest that, at least episodically, completely fresh surface water settings characterized the Arctic Basin. During the middle Eocene, shifts in salinity and in ice-rafted debris follow a strong orbitally driven cyclical pattern. Moreover, dinocyst stratigraphy was instrumental in recognizing and assessing the ~26 Ma hiatus, which marks the transition from the greenhouse world to the icehouse world. Sediment erosion and/or non-deposition that generated the hiatus were likely due to a progressive shoaling of the Lomonosov Ridge. Above the hiatus, a new Miocene dinocyst genus *Arcticacysta* and higher than expected sea surface temperatures (15-19ºC) mark the recovery of sedimentation on the Lomonosov Ridge near the Miocene Climatic Optimum.

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