

**Koninklijk Nederlands Geologisch en Mijnbouwkundig Genootschap
Koninklijke Nederlandse Botanische Vereniging**

PALYNOLOGISCHE KRING

ons nummer: PK06052013
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Beste collega,

Hierbij nodig ik u uit voor de 44^e jaarvergadering en het aansluitende lezingenprogramma van de Palynologische Kring op donderdag 6 juni 2013. De bijeenkomst vindt plaats in het auditorium van TNO, Princetonlaan 6 te Utrecht. Het programma ziet er als volgt uit:

Jaarvergadering (13:30-14:30)

1. Opening, vaststelling agenda en mededelingen.
2. Notulen van de jaarvergadering van 21 juni 2012 (zie bijlage).
3. Jaarverslag over 2012 (zie bijlage).
4. Financieel overzicht 2012 en begroting 2013 (worden nagezonden).
5. Voorstel jaarlijks budget studentenbeurs (zie bijlage).
6. I.F.P.S. mededelingen
7. Activiteiten van de Palynologische Kring (Palynologendagen, Jongmanspenning, website vernieuwen)
8. Rondvraag.
9. Sluiting.

Lezingenmiddag (14:30-16:30)

- 14:30 – 15:00 Marjolein Bouman en Hanneke Bos (ADC): *“Looking at the small scale, 3D- vegetation reconstruction off a dune in north Flevoland during the Mesolithic”*
- 15:00 – 15:15 Pauze
- 15:15 – 15:45 Peter Vos (TNO/Deltares): *“Efficient stepped approach to site investigation for underwater archaeological studies, a case study: Yangtzehaven – Port of Rotterdam (the Netherlands)”*
- 15:45 – 16:15 Frederike Verbruggen (BIAX/A-PEX): *“The hunt for human influence in Mesolithic landscapes: gathering botanical evidence from Yangtzehaven, Rotterdam”*
- 16:15– Aansluitend borrel

Voor een routebeschrijving kunt u terecht op de onderstaande website:

http://www.tno.nl/content.cfm?context=overtno&content=overtno_locatie&laag1=38&item_id=29

Voor informatie en nieuws met betrekking tot de Palynologische Kring kunt u terecht op onze website:

<http://www.palynologischekring.nl> Volg ons ook op facebook!

Groeten,

Marjolein van der Linden
Secretaris

Afleveringen van PALYNOS zijn te vinden op <http://www.geo.arizona.edu/palynology/ifps.html>

Looking at the small scale

3D-vegetation reconstruction of a dune in north Flevoland during the Mesolithic

M.T.I.J. Bouman & J.A.A. Bos (ADC)

In north Flevoland the former Pleistocene coversand surface is buried beneath layers of Holocene peat and clay. Hidden underneath these Holocene deposits near Swifterbant is a small Pleistocene dune which was inhabited during the Mesolithic period. Due to a rising sea-level this Mesolithic surface was covered by peat, thereby conserving and preserving these archaeological remains. During the summer and fall of 2010 this dune was excavated by Archol BV and ADC Archeoprojecten. During the excavations the overlying peat layer and top of the coversand was sampled for palynological analyses at multiple locations. From this extensive dataset we were able to make a 3D reconstruction of the vegetation on the dune for different time intervals. The start of the reconstruction coincides with the final phase of human activities on the dune. During the earlier phase of human activities no peat was formed and therefore no palynological record could be reconstructed. Despite the small available area on the dune the palynological reconstructions show that vegetation patterns on the dune varied spatially. These variations could be linked to the distribution of hearth pits and likely to human activities.

Efficient stepped approach to site investigation for underwater archaeological studies, a case study: Yangtzehaven – Port of Rotterdam (the Netherlands)

Peter C. Vos (Deltares)

The Port of Rotterdam (PoR) is expanding the Maasvlakte harbor area into the sea. A new channel, the Yangtze harbor, will be dug out to connect the Maasvlakte area with the harbor area under construction. The new channel of the Yangtze harbor will be dredged out to a depth of 20 m below sea level. The upper part of the sediments, which was dredged out to create the new channel, consists primarily of marine offshore sands. In the lower part at a depth of about 17 – 22 m below the Dutch Ordnance Level (DOL) Late Weichselian fluvial and aeolian sands and early Holocene deltaic deposits of the Rhine – Meuse were present. From earlier dredging activities in the Maasvlakte area it was known that the late Weichselian /early Holocene deposits contain late Paleolithic and Early Mesolithic artifacts. The deepening of the Yangtze harbor will affect the Late-Weichselian / early Holocene deposits and destroy the archeology in these layers. The aim of the archeological Yangtze harbor project was to predict the locations where Stone Age archeology could be found. A geological - geogenetic approach has been applied to determine the optimal palaeo-environmental locations for man. The 3D palaeolandscape model was constructed of the harbor area, which was 0.4 km wide and 3 km long. On the basis of the palaeolandscape model, the potential archaeological sites were selected. The multidisciplinary prospection research has been carried out in several steps. After each research step the strategy of the following research phase was determined. First step was to make a primarily 3D lithological model of the harbor area from the existing data of soundings and bore hole information; data which was generated for the construction of the harbor. The next step was a seismic field survey (side scan sonar, Xstar-ship) in the harbor area which was already dredged to a depth of 17 m –DOL. Based on the seismic data, locations were selected for vibrocore drillings and soundings to verify the interpretations of the seismic measurements. After this step two promising archeological areas (river dunes) were selected (200 ha) for further detailed seismic and drilling research. In the sediments of the bore holes small artifacts and bones were found which proved that the selected dune was a Mesolithic site. In November 2011 an underwater excavation was carried out using an accurate dredging crane on a pontoon, which was normally used to remove polluted underwater soils. The soil samples taken from the crane were administered carefully (position and stratigraphy), put in big bags and then sieved for further archaeological investigation. The results will be shown in the presentation. The Yangtze harbor project was a unique project because for the first time that a 3D palaeolandscape research was carried out to find prehistoric archeology in the Early Holocene delta deposits at a depth of 17 – 22 m below DOL. Particular was that archaeological investigations could be very well integrated with the engineering plans of the harbor work. A consortium of the harbor authorities (PoR), the Cultural Heritage Agency (CHA), engineering company (PUMA) and geological and archaeological research institutions (Deltares, BOOR and ADC) carried out the archaeological project.

The hunt for human influence in Mesolithic landscapes: gathering botanical evidence from Yangtzehaven, Rotterdam

Frederike Verbruggen (A-PEX archeobotanie), Lucy Kubiak-Martens (BIAX Consult) en Laura I. Kooistra (BIAX Consult)

As part of the expansion of the harbor in Rotterdam a shipping connection between the first and second Maasvlakte area was established. Any archaeological remains present in the subsurface of this area would most likely have been destroyed by the subsequent dredging. Therefore, a multi-disciplinary archaeological study was carried out before the establishment of the connection to document evidence of human activity in the Mesolithic in this former sand dune area. A combined archaeobotanical study revealed vegetation dynamics at the site, whereas ¹⁴C dates provided an accurate time frame for the Boreal and Atlantic sediments in three studied cores.

Evidence for human impact in archaeological pollen studies is often based on the presence of pollen of anthropogenic indicators, such as cereals. However, agricultural activities in the Netherlands did not commence until the Neolithic. It can, therefore, be a challenge to discern human influence in Mesolithic pollen diagrams, especially if no other proxies are available. At Yangtzehaven we conducted an elaborate pollen analysis in combination with analysis of botanical macroremains, such as seeds, fruits, berries, roots, tubers and their parenchyma on the one hand and macroscopic charcoal on the other hand. Moreover, we explored the possibilities of using microscopic charcoal fragments in pollen slides to study past fire histories in relation to human activities. Consequently, we compared all available proxies and concluded that human activities at this site concentrated around the Boreal/Atlantic transition. At ~7000 cal BP the river dune was located in a marsh environment. The dune itself provided a dry place for humans to stay, whereas the marsh offered a suitable location for hunting and fishing, and was a rich source for edible plants.