

**Fifth meeting of the NECLIME working group
on taxonomy of the Neogene palynomorphs**



Report

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Venue

Faculty of Engineering, Dumlupınar University in Kütahya
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The 5th NECLIME workshop on taxonomy of the Neogene palynomorphs, hosted by M. Serkan Akkiraz, was held at the Engineering Faculty, Dumlupınar University in Kütahya. Totally 14 colleagues participated in the workshop. The program included 5 talks presented on Thursday morning, October 23, and a round table discussion in the afternoon. As usual, the participants exchanged research results and discussed specific taxonomical questions, including also examinations under the microscope. On October 24, a 1-day field trip was organized to the Tunçbilek and Seyitömer sub-basins to understand the stratigraphical and sedimentological aspects of both sub-basins and to discuss Neogene vegetation types. A currently active archaeological excavation of the Mound of Seyitömer site (early Bronze Age to Roman) was visited including an introduction to latest findings and excavation techniques by the archaeologist in charge.

Core topics presented on the workshop were focused on several topics

1. The application of TLM/SEM on the Turkish flora focusing especially on Fagaceae and tricolporate pollen and the comparison with the European and Paratethys realm
2. Modern oaks in the Caucasus and their pollen morphology
3. Short-term climate and vegetation dynamics in the Neogene of Western Anatolia
4. Potential of local strata for possible comparisons with coeval European records

5. Taxodioids of the Anatolian Miocene peat forming vegetation, evidence from macro and micro floral records
6. Opening of the landscape and possible comparisons with European records
7. Neogene lacustrine systems in Western Anatolia
8. Updates of the Palaeoflora database: Morphotaxa and their NLRs included in the volumes of the Atlas of Pollen and Spores of the Polish Neogene (L. Stuchlik, ed.). The last volume of the atlas - 4 (Angiosperms 2) includes 212 species belonging to 75 fossil genera and 55 extant plant families, illustrated on 134 photographic plates

A lot of effort was made concerning the recognition of quercoid pollen, which are of major importance in ecological reconstructions. Additional questions were raised with regard to:

1. Similarity of Turkish and Central European Neogene pollen floras and how they differ
2. New taxa from Turkish Neogene – endemism and speciation processes
3. Orography, palaeogeography, palaeolatitude of Turkey
4. Ecologically important taxa
5. Stratigraphic ranges of fossil taxa
6. Appearance and distribution of new habitats throughout the Neogene, onset of aridification etc.

• Palynomorph records

The presentations focused on palynomorph records of the Eastern Mediterranean and Asia. The reports on the Eastern Mediterranean comprised a published work on the Early-Middle Miocene Tunçbilek and Seyitömer Sub-basins (M. Serkan Akkiraz), a taxonomic study on Miocene-Pliocene quercoid palynomorphs from Turkey using SEM technique, a detailed work focussing on the Neogene *Quercus* record of Bulgaria, including combined TLM/SEM techniques for a better identification of the botanical affinity (Dimiter Ivanov), and a study on the morphology of modern pollen of the genus *Quercus* L. in Southwest Asia (Alla Hayrapetyan, Angela A. Bruch, Torsten Utescher). Isotopic data of spring-fed deposits and implications on palaeoclimate were outlined presenting an example from the Late Pliocene of Central Anatolia (Faruk Ocakoğlu).

Round Table Discussion

- It is planned to apply combined TLM/SEM techniques on Cenozoic Turkish microfloras, focusing especially on Fagaceae and tricolporate pollen. The Turkish record will then be compared with the record of the Northern European Cenozoic and the Paratethys.
 - In the frame of a new project, Central Anatolian palynomorphs will be studied using combined TML/SEM (Marianna Kováčová). Respective co-operations with ongoing palynomorph research in Western Anatolia are intended (Serkan Akkiraz and working group).
 - a list of pollen species with available TML/SEM photo-materials will be published on the web pages of the working group under www.neclime.de, with references and authors indicated (e.g. from ongoing studies by Dimiter Ivanov, Viktoria Hristova, Marianna Kováčová, Nela Dolakova, Alla Hayrapetyan, Angela A. Bruch).
 - It is suggested to make available published SEM/TML photos on the web pages of the working group (can be linked as pdf files). **Please send pdfs of your related papers to D. Ivanov, T. Utescher, or A.K. Kern.**

- The Atlas of Pollen and Spores of the Polish Neogene (Stuchlik, ed.) will be used as standard for the Neogene palynomorph record of Europe. Taxa described in the 4th volume were included in the Palaeoflora database (Torsten Utescher). Moreover, the Nearest Living Relative concept presented in the atlas is recommended for use in palaeoclimate reconstructions. Recently updated database entries are provided on the Web pages of the working group (www.neclime.de). In addition to the NLRs suggested in the Palaeoflora database to be used in palaeoclimate reconstruction, extant species with similar pollen types are listed as cited in the Atlas of Pollen of Spores. These species mainly represent modern examples having similar pollen morphotypes but in general are not recommended to be used in palaeoclimate reconstruction in order to avoid too far-reaching inference regarding past climate conditions.
- Short-term climate and vegetation dynamics in the Neogene of Western Anatolia - potential of local strata for possible comparison with coeval European records

In order to compare short-term vegetation and climate changes in the Miocene of Central Europe, Eastern Paratethys and Western Anatolia, co-operations are appointed (Serkan Akkiraz, Dimiter Ivanov, Torsten Utescher).

- Opening of the landscape and possible comparison with European records

The first appearance of herbaceous taxa in the Anatolian record is considered a crucial factor, especially with respect to palaeo-ecological aspects. Further studies should focus on Ephedraceae, Asteraceae, Poaceae, and *Artemisia* pollen.

- Taxodioids of the Anatolian Miocene peat forming vegetation, evidence from macro and microfloral records

It is strongly suggested to further discriminate different morphotypes of pollen in the Turkish Cenozoic belonging to Taxodioidae. A first related study can be conducted in the Tunçbilek Basın where Taxodoid pollen are very frequently encountered (Funda Akgün, Serkan Akkiraz and work group).

- **Typical transport distances of airborne pollen**

The identification of typical transport distances of airborne pollen is critical when not knowing any details on topography and prevailing winds. In palaeovegetation reconstructions and interpretation of pollen diagrams it is crucial to identify the spatial scales at which data should be interpreted. Due to its large size, the Çankırı Basın of Central Anatolia represents a key region for a case study on transport distances, spatial scales and characteristics of distal and proximal records. MN 12 could be selected as a possible time slice (co-operation appointed: Nurdan Yavuz-Isik, Funda Akgün, Marianna Kováčová).

- **Quaternary deposits of Anatolia**

Early Pleistocene sections are available at Eskişehir and Sivrihisar (Ankara). These sections were proposed for possible palaeoclimate reconstructions (M. Serkan Akkiraz & Faruk Ocakoğlu). Moreover, co-operation on the late Pliocene deposits of Pınarbaşı, Kayseri (Faruk Ocakoğlu) is proposed. The section represents the first pollen record for this time-span in that part of Anatolia and is suitable to establish a standard.

- ***Next meeting of the working group***

Preparations for the next meeting of the working group in 2015 are in progress. A workshop is anticipated to be held in autumn 2015, in Warsaw (Poland), and will be organized by our colleague Barbara Slodkowska.











