

**7th workshop of the NECLIME working group
on taxonomy of the Neogene palynomorphs**



Report

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The 7th workshop of the NECLIME working group on taxonomy of the Neogene palynomorphs, was held on November 29 – 30 at the Faculty of Natural Sciences of Comenius University, Bratislava, Slovak Republic. The working group meeting was kindly hosted by Marianna Kováčová. 7 colleagues attended the meeting. The program included presentations and round table discussions.

We are very grateful to Marianna Kováčová and her team for providing all facilities, and for greatly supporting NECLIME for another time.

Topics presented on the workshop

The meeting was opened by a report on NECLIME conferences in 2016, and the latest activities of the network (Torsten Utescher).

The participation of Boglárka Erdei as a representative of the NECLIME macro working group was highly appreciated. In her talk Boglárka presented an outline on the application of the PFT (Plant Functional Type) approach in Cenozoic vegetation reconstruction, its advantages and flaws. As

sources of major uncertainties in the application of the method, the biomization procedure and the climatic calibration of biomes were identified, even when interpreting modern vegetation in terms of PFTs. It was concluded that more ecological research on the plant fossil record is required, in order to provide a more complete classification in our database containing fossil taxa. Also, the usefulness of a scoring system in the classification of fossil taxa in terms of PFTs, as used in the application of the 40 PFT system on Pannonian floras (Utescher et al., 2016), was discussed. It was suggested to make available scores for more fossil plant taxa for any future applications. It is planned to extend the number of climatic variables when classifying modern plant taxa into PFTs. This will be discussed in more detail on our next workshop on digital plant distribution, held in Liège, in May 2017, how these data will be retrieved and made available. Further co-operations were appointed in the frame of an agreed project on PFT-based vegetation reconstruction from Paleogene floras of the Central Paratethys (Hungarian Scientific Fund, B. Erdei).

Nela Doláková presented pollen records from the Karpatian - Lower Badenian of the Carpathian Foredeep. These data provide a detailed view on climate and vegetation evolution at the transition of the Mid-Miocene Climatic Optimum (MMCO) and the Mid-Miocene Climatic Transition (MMCT), both covering the time-span between 17.5 and 13.9 Ma, coinciding with the growth of the East Antarctic Ice Sheet (EAIS). Palynological results were correlated with other paleontological, sedimentological, and geochemical data. Cyclic changes of the palynospectra, as well as oscillations in the availability of nutrients, temperature, salinity, quantity of faunal elements, high-nutrient / oligotrophic-markers, warm / cold-water, and stress markers (good ventilation / stratification of water column, increased surface water salinity) were recorded.

Details on Serravallian (Volhynian) palynology and vegetation in the Eastern Paratethys were presented by Dimiter Ivanov and Marianna Kováčová. The studied palynomorph assemblages originate from brackish sediments, dated by fossil fauna. Apart from a well-preserved microflora which is currently studied using combined TML / SEM techniques, the Rouzhintsi site provides as well macroflora and hence allows for an integrated palaeo-vegetation reconstruction. The preliminary palynological data suggest a flora that comprises more than 80 taxa of fossil spores and pollen. It is represented mainly by trees and shrubs, thus testifying the domination of forest-type vegetation over Northwest Bulgaria during the middle Miocene (Volhynian). The most frequent pollen is that of Pinaceae, mainly *Pinus diploxylon* type, *Pinus haploxylon* type, *Cathaya* and *Tsuga*. From Magnoliophytes the better represented genera are *Carya* and *Fagus*. Pollen analysis shows that mixed mesophytic forests were dominant in the study area. An important role in the structure of these forests played a group of trees from genera associated mainly with the subtropical zone, e. g. *Engelhardia*, *Reevesia*, *Chloranthus*, *Corylopsis*, and *Symplocos*. Ongoing, more detailed taxonomic

and palaeoclimatic analyses, as well as quantitative climate reconstructions will bring about new insight into vegetation evolution and climate dynamics in the late middle Miocene of the eastern Paratethys.

Müge Atalar presented a pollen record spanning a transect from the northern to the northwestern margin of the Central Anatolian Plateau. The main objective of this study is figuring out paleoclimate changes and palaeovegetation distribution in this tectonically active region.

A very instructive record of palynomorphs recovered from Siberian coprolites (Mid-Last Glacial stage ca. 42-20 ka BP) was presented by Nela Dolakova. The palynospectra were studied based on samples taken from coprolites of *Bisonus* and *Rhinoceros*, as well as surroundings sediments. A combination of LM/SEM methods was used for precise taxonomical determination, especially concerning the Poaceae and Caryophyllaceae families.

Discussion

- Palynomorph record of the Tuz golu area, Turkey

Based on photo series provided by Funda Agkün (LM), pollen morphotypes recovered from the southern part of the Tuz golu area of Central Turkey were assessed in detail by the participants. State of art taxonomy revealed probable Cretaceous and Eocene terrestrial forms, reworked into Miocene peat facies. However, the presented photo-documentations were considered insufficient for sound taxonomic decisions, and the participants agreed upon the necessity to use microscopic slides for the revision of some critical taxa.

- EU project TRENDS

Four participants attending the workshop (M. Kováčová (B), B. Erdei (AP), D. Ivanov (AP), T. Utescher (B)) are involved as Beneficiaries (B) and Associated Partners (AP) in the Marie-Curie Action - ITN Horizon 2020 program proposal 'Temporal Reconstruction of the Ecosystems of the Neogene, a Dynamic Scenario – TRENDS' which is now submitted as part of the Innovative Training Network 2017 call. The respective intended work packages (A 1: Vegetation reconstruction during the MMCO and MMCT based on pollen data and A 3: European climate and vegetational patterns during the Mid-Miocene Climatic Optimum) were discussed in detail and objectives were updated. These work packages will be conducted in close relation to NECLIME and to its working groups if the proposal is successful.

Next Meeting of the working group

Our next meeting is planned for the end of November 2017 and will be hosted by Nela Doláková. A first circular will be sent to the working group and NECLIME members at the end of March.

We are very grateful for being invited by Nela to meet at the Masaryk University, Brno, Czech Republic, a renowned place of palaeobotanical research providing ample facilities, also regarding the study of macro-remains. The meeting is intended as a joint workshop of the macro- and micro working groups. More details on the programme will be provided in the circular.

Data and databases

The working group aims to extend our database on reference materials made available on the NECLIME website.

New literature resources that should be very helpful for all those working on South American pollen or low latitude spectra in general, are provided by Andrea Kern. Please contact Andrea for more specific questions and advice.

Modern pollen

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Palynology of the Mangrove ecosystem in general

- Thanikaimoni, G., 1987. Mangrove Pollen. UNDP/UNESCO regional project on training and research on mangrove ecosystems, RAS/79/002 and the French Institute, Pondicherry.

Participants

Müge Atalar

Jiřina Dařková

Nela Doláková

Boglárka Erdei

Dimiter Ivanov

Marianna Kováčová

Torsten Utescher