TECHNISCHE UNIVERSITÄT BERGAKADEMIE FREIBERG

O. Elicki & J. W. Schneider (Hrsg.)

Fossile Ökosysteme

Wissenschaftliche Mitteilungen

INSTITUT FÜR GEOLOGIE

36

Freiberg

2007

TECHNISCHE UNIVERSITÄT BERGAKADEMIE FREIBERG
Institut für Geologie

Wissenschaftliche Mitteilungen

36

Freiberg
2007

O. Elicki & J. W. Schneider (Hrsg.)

Fossile Ökosysteme
77. Jahrestagung der Paläontologischen Gesellschaft

Kurzfassungen der Vorträge und Poster

FREIBERG 2007

77. Jahrestagung der Paläontologischen Gesellschaft

am

Geologischen Institut der TU Bergakademie Freiberg

Freiberg, 17.-19. September 2007

the available original material. With the present contribution the authors would like to stimulate this discussion.

New data of the Permian-Triassic transition on the Russian platform

Golubev, V.K. & Sennikov, A.G.

Paleontological institute, Russian Academy of Sciences, Profsoyuznaya str., 123, Moscow 117647, Russia; vg@paleo.ru, sennikov@paleo.ru.

It is traditionally believed that a stratigraphic hiatus exists between the Late Permian and the Early Triassic in European Russia. But there are no any stratigraphic evidences for it. Moreover transitional Permian-Triassic biotic assemblage was recently discovered in the latest Permian. Rich and diverse fossils – plants, bivalves, conchostracans, ostracodes, insects, and vertebrates – were found in the Late Permian (the Late Vyatkian substage) alluvial sands and clays near the town of Vyazniki (Vladimir Region, Central Russia).

The Vyazniki macroflora assemblage is new, so far unknown in Eastern Europe, generally similar to the West European Zechstein assemblage of the terminal Permian. It includes the peltasperm seed ferns *Pursongia meyenii*, *Vjaznikopteris rigida*, *Peltaspermum capitatum*, but also ferns as *Prynadaeopteris* and others, the arthrophytes *Neocalamites* cf. *mansfeldicus*, the ginkgophytes *Stiphorus ovatum*, *Sphenobaiera*, *Ginkgoites* sp., and conifers as *Ullmannia* cf. *frumentaria*.

The rich palynoassemblage is transitional from the Permian to the Triassic ones and includes elements characteristic of the Permian and of the Triassic, and a few taxa restricted to the Vyazniki time. It is similar to the assemblage from the upper part of the Lower Guodikeng Formation, Dalongkou, Xinjiang, China. The bivalve assemblages are typical for the Late Permian of the East Russian Platform. The composition of the ostracod assemblage is mostly characteristic for the Triassic, but includes a few Permian elements. The insect assemblage comprises the grylloblattids Tomiidae (*Chauliodites)*, beetles, cockroaches and many other groups. It corresponds to the terminal Permian, probably close to the Permian–Triassic boundary. The fish fauna includes both the Late Permian hybodont sharks (*Xenosynechodus* sp., *Sphenacanthus* sp., *Hybodus* sp.) and diverse paleonisciforms (*Geryonichthys*, *Mutovinia stella*, *M. sennikovi*, *Toyemia blumentalis*, *Toyemia*, *Isadia*, *Varialepis*) and the typical Triassic actinopterygian *Saurichthys*.

The Vyazniki tetrapod assemblage comprises dvinosaurid temnospondyls (*Dvinosaurus egregious*), microsaurs, kotlassiomorph parareptilians (*Karpinskiosaurus*), elginiid pareiasaurs (*Obirkovia*), Elginiidae gen. indet., bystrowianid (*Bystrowiana permira*) and chroniosuchid (*Uralerpeton tverdochlebovae*), anthracosaurs, proterosuchid thecodonts (*Archosaurus rossicus*), dicynodonts and diverse therocephalians (*Moschowhaitsia vjuschkovi*, *Hexacynodon purlensis*, *Malasaurus germanus*, Whaitsiidae, Moschorhinidae). Dvinosaurs, kotlassiomorphs, chroniosuchids, elginiids, therocephalians, and dicynodontids are the typical Late Permian elements of the assemblage. But bystrowianids and proterosuchids are the conspicuous Triassic forms.

The most important feature of the Vyazniki tetrapod community was the disappearance of the pareiasaur–gorgonopian coadaptive pair and the appearance of new top predators, the thecodont archosaurs. The Vyazniki assemblage documents the beginning of the major faunal replacement at the Permian–Triassic boundary and during the Triassic, that is, the replacement of therapsids by archosaurs. In its food chain structure, the Vyazniki terrestrial commu-

nity was the first thecodont–dicynodont one. In this respect, the Vyazniki terrestrial community is more similar to Triassic communities.
This research was supported by the Russian Foundation for Basic Research (project no. 05-05-65146, 06-05-39015, 07-04-00907), the Leading Scientific Schools NSh-6228.2006.4, and by the Program of the Presidium of the Russian Academy of Sciences N. 18 “Biosphere Origin and Evolution”, Subprogram 2.

Reconstruction of atmospheric CO_2 and climate based on fossil plants from the Messel Formation (Middle Eocene): Project presentation and preliminary results

Grein, M.

Institute for Geosciences, University of Tuebingen, Sigwartstr. 10, D-72076 Tuebingen, Germany; michaela.grein@uni-tuebingen.de

In this project, atmospheric CO_2 and climate of the middle Eocene will be reconstructed by using fossil plant material from the Messel Formation (Messel Pit, near Darmstadt, Germany). Detailed knowledge of palaeoatmospheric CO_2 and its change is essential for exploring the coupling of atmospheric CO_2 and global climate change. It has been observed that many plants change the stomatal density (the number of stomatal pores per unit leaf area) of their leaves inversely with atmospheric CO_2 in order to optimize photosynthesis by maximizing assimilation and minimizing transpiration through open stomata. Hence, stomata have attracted considerable interest as a CO_2 proxy for past climates. In order to analyze the variation of stomatal frequency induced by CO_2 change, a mechanistic model was developed. This model operates on the evolutionary time scale and consists of three submodels coupling:

1) the biochemical process of photosynthesis,
2) the process of diffusion through the epidermis and the plant tissue, and
3) an optimisation principle relating carbon gain and water loss.

Climate reconstruction will be carried out by using stomatal frequency, carbon isotope data, Leaf Margin Analysis (LMA) and the Coexistence Approach (CA). In order to achieve the probable error ranges of atmospheric CO_2 levels, preliminary studies on extant representatives are necessary. In this contribution, the project and preliminary results are presented.

Hochauflösende Ostracodenlogs und hochfrequente Periodizitäten im Pannon See (Ober-Miozän, Steirisches Becken)

Gross, M.[1]; Minati, K.[2,3] & Piller, W.E.[2]

[1] Abteilung für Geologie & Paläontologie, Landesmuseum Joanneum, Raubergasse 10, A-8010 Graz, Austria; martin.gross@museum-joanneum.at
[2] Institut für Erdwissenschaften, Bereich Geologie und Paläontologie, Karl-Franzens-Universität Graz, Heinrichstraße 26, A-8010 Graz, Austria; werner.piller@uni-graz.at
[3] Institut für Limnologie, Österreichische Akademie der Wissenschaften, Mondseestraße 9, A-5310 Mondsee, Austria; klaus.minati@oeaw.ac.at