

3RD INTERNATIONAL WORKSHOP

NEOGENE OF CENTRAL AND SOUTH-EASTERN EUROPE

CLUJ-NAPOCA, MAY 20-24 2009

ABSTRACT VOLUME

EDITED BY SORIN FILIPESCU



Presă Universitară Clujeană

Descrierea CIP a Bibliotecii Naționale a României
NEOGENE OF CENTRAL AND SOUTH-EASTERN EUROPE.
SIMPOZION INTERNAȚIONAL (3; 2009; CLUJ-NAPOCA)
3rd International Workshop Neogene of Central and South-
Eastern Europe: Cluj-Napoca, May 20-24 2009: Abstract volume /
Edited by Sorin Filipescu. - Cluj-Napoca: Presa Universitară Clujeană, 2009
Bibliogr.
ISBN 978-973-610-873-0
I. Filipescu, Sorin (ed.)
55(063)

© Sorin Filipescu, 2009. All rights reserved.

Babeș-Bolyai University
Cluj University Press
Manager: Codruța Săcelean
51, Hasdeu st.
400371 Cluj-Napoca, Romania
Tel./Fax: (+40)-264-597.401
E-mail: editura@editura.ubbcluj.ro
<http://www.editura.ubbcluj.ro/>

Biostratigraphy of the Middle Miocene stratotype at Baden Sooss (Lower Austria)

Fred RÖGL¹, Stjepan ČORIĆ², Mathias HARZHAUSER¹, Gonzalo JIMENEZ-MORENO³, Andreas KROH¹, Ortwin SCHULTZ¹, Godfried WESSELY⁴, Irene ZORN²

¹ Natural History Museum Vienna, Burgring 7, A 1010 Vienna (fred.roegl@nhm-wien.ac.at);

² Geological Survey, Neulinggasse 38, 1030 Vienna (stjepan.coric@geologie.ac.at; irene.zorn@geologie.ac.at);

³ Departamento de Estratigrafía y Paleontología, Universidad de Granada, Fuente Nueva s/n, E 18002 Granada, Spain;

⁴ Siebenbrunnengasse 29, A-1050 Vienna - geowes@chello.at.

The brickyard of Baden-Sooss, in the Austrian part of the Vienna Basin was selected as the stratotype of the Middle Miocene regional stage Badenian for the Central Paratethys. Stratigraphy and correlation are up-dated, and the present state of the art on fossil groups is shown. The stratotype belongs to the Upper Lagenidae Zone in a regional palaeoecological zonation. For interregional correlation the section belongs to the upper part of calcareous nannoplankton Zone NN5 without *Helicosphaera waltrans*, to dinocyst Zone Cte, and in planktonic foraminiferal zonation by the occurrence of *Orbulina suturalis* to zone M6, and to the middle part of the Langian stage. The sediments of the so-called "Badener Tegel" are part of the Baden Formation, correlated with the Lanžhot Formation in the Czech and Slovak part of the Basin. Deposition of the calcareous silty clays occurred at a water depth of around 200m in a relatively warm, well stratified water column. In a cyclostratigraphic interpretation for the Vienna Basin Middle Miocene sedimentation, the Badenian stratotype and section falls in cycle TB2.4 of third order sequences.

Dinoflagellate cysts. The main components are: *Lingulodinium machaerophorum*, *Operculodinium centrocarpum*, *O. israelianum*, *Cribroperidinium tenuitabulatum*, *Cleistosphaeridium placacanthum*, *Batiacasphaera sphaerica*, and *Spiniferites* spp. The following are of stratigraphical importance: *C. tenuitabulatum*, *Achomosphaera* cf. *andalousiensis*, *Cerebrocysta poulsenii*, *Habibacysta tectata*, *Labyrinthodinium truncatum*, *Palaeocystodinium miocaenicum*, and *Trinovantedinium harpagonium* – dinocyst Zone Cte.

Calcareous nannoplankton. Besides stratigraphical marker *Sphenolithus heteromorphus*, nannoplankton assemblages contain numerous and well preserved forms with: *Braarudosphaera bigelowii*, *Coccolithus pelagicus*, *Coronocyclus nitescens*, *Coronosphaera mediterranea*, *Cyclicargolithus floridanus*, *Holodiscolithus macroporus*, *Sphenolithus moriformis* and *Umbilicosphaera jafari*. Helicoliths are represented by *Helicosphaera carteri* and *H. walbersdorfenis*. Among reticulofenestrids, the most frequently occur small-size forms *Reticulofenestra minuta* and *R. haqi*. Observed were regular occurrences of *Reticulofenestra pseudoumbilica* and *R. gelida* too. Regular occurrences of *S. heteromorphus* and the absence of *H. ampliapertura* together with blooms of small reticulofenestrids are characteristic for NN5 Zone in the Badenian. The absence of *H. waltrans* marks a position in the younger part of NN5. Discoasterids are absent in the investigated profile.

Bolboforma, phytoplankton incertae sedis In the fine fraction of some samples from Baden-Sooss abundant tests of *Bolboforma moravica* and *B. reticulata* are present. These species are indicative for the *Bolboforma reticulata* Biozone.

Foraminifera. Planktonic foraminifera: *Globigerina concinna*, *G. diplostoma*, *Globoturborotalita woodi*, *Globigerinella regularis*, *Globigerinoides trilobus*, *Orbulina suturalis* – planktonic foraminifera Zone M6. Benthic foraminifera: *Amphistegina mammilla*, *Bolivina dilatata*, *B. viennensis*, *Borelis melo melo*, *B. melo curdica*, *Planostegina costata*, *Uvigerina grilli*, *U. semiornata*. For palaeoecological interpretations, the common occurrences of miliolids

(*Cycloforina*, *Quinqueloculina*, *Triloculina*), textulariids from the shelf (*Gaudryina*, *Textularia*, *Spirorutilus*), lenticulinas, siphonodosarias, bolivinids, uvigerinds, and cibicidids are important. The environment is interpreted as an outer shelf habit with partly dysoxic conditions at the sediment-water interface, as also indicated by pyrite, and with transported material from the near-shore.

Ostracoda. Main elements of the ostracoda fauna are *Cytherella* with several species, e.g. *Cytherella compressa* and *C. dilatata*, *Parakrithe crystallina*, *Krithe oertlii*, *Pterygocythereis jonesii*, *Henryhowella asperrima*, *Bosquetina carinella*, *Cytheropteron vespertilio*, *Buntonia subulata* and *Argilloecia acuminata*. This assemblage indicates an environment at the outer shelf with water depths more than 200 m, which is also confirmed by the rare occurrence of *Pseudocythere armata* and *P. mediterranea*. In the Central Paratethys the occurrence of several species is stratigraphically restricted to the Badenian, such as *Aurila angulata*, *Bosquetina carinella*, *Cnestocythere lamellicosta* and *Cytheridea acuminata*.

Mollusca. The moderately deep soft bottom environment was settled mainly by thin-shelled infaunal borrowing bivalves such as *Nuculana fragilis*, *Nuculana nucleus* and *Solemya doderleini* along with the thin-shelled epifaunal pectinids *Costellamussiopecten cristatum badense* and *Costellamussiopecten spinulosus*. The deep water oyster *Neopycnodonte navicularis* and the chemosymbiont-bearing lucinids *Megaxinus incrassata* and *Saxolucina suessi* are further typical autochthonous elements. Scaphopods such as *Antalis bouei*, *Fissidentalium badense* and *Gadilina jani*, and carnivorous and scavenging naticids, nassariid and turrid gastropods are abundant. Most of the molluscs, however, derive from shallow water and near-shore settings and became transported by storms together with sand. Typical are the bivalves *Glycymeris pilosa* and *Megacardita jouanneti* and the gastropod *Strombus bonellii*. The pectinid fauna displays a typical Middle Miocene character with taxa such as *Propeamussium felsineum*, *Pseudamussium septemradiatum*, *Aequipecten malvinae*, *Costellamussiopecten spinulosus*, and *Flabellipecten besserii* which are restricted to the Badenian stage.

Echinoderms. At the holostratotype Baden-Sooss, the silty clays of the "Badener Tegel" yielded only sparse echinoderm remains. Most records consist of fragmented cidaroid (*Stylocidaris* ? *polyacantha*) and spatangoid spines (*Spatangoida* indet.). Additionally, tiny dwarf urchins (*Echinocyamus transylvanicus*) and deformed coronas or moulds of the burrowing heart urchin *Schizaster karreri* are documented in the collections. Lenticular sand intercalations interpreted as distal storm deposits contain an allochthonous death assemblage derived from nearby shallow-water habitats: *Eucidaris zeamays*, Diadematidae indet., *Genocidaris* sp., *Schizechinus* sp. *Tripneustes* sp., Clypeasteroid indet., and Cassiduloida indet. The echinoderm palaeocommunity of the "Badener Tegel" as outlined above is characteristic for low-energy mud-bottoms below the photic zone.

Bryozoa. In the "Badener Tegel" bryozoan are scarce and low in diversity. Free-living bryozoans like *Cupuladria* and *Batopora* are the taxa most commonly found. In the sand lenses a rich, transported shallow-water bryozoan fauna consisting of incrusting colonies on coralline red algae debris and erect forms are preserved.

Fishes. A small fish fauna, mainly sharks is observed by isolated teeth: *Notorhynchus primigenius*, *Carcharias cuspidatus*, *Megaselachus megalodon*, *Galeocerdo aduncus*, *Carcharhinus priscus*. The most common species, documented by otoliths is *Colliolus friedbergi*, followed by *Palaeogadus emarginatus*, *Merluccius vulgaris*, *Urophycis tenuis*, *Coelorhynchus toulai*, and *Macruridarum labiatum*. Dominant are neritic species, but meso- to bathypelagic species of the genera *Diaphus* and *Coelorhynchus* are immigrants from the deeper sea.