

Biostratigraphy and radiometric dating in the Vienna Basin Neogene (Slovak part)

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The calcareous nannoplankton and foraminifers were studied in the lithostratigraphic formations of the Lower and Middle Miocene sediments of the Vienna Basin (Slovak part) as well the molluscs, ostracodes and vertebrata species.

The most useful tool for precise stratigraphy seems to be nannoplankton and planktonic foraminifers species. The study of the nannoplankton assemblages enables (unlike the traditional stratigraphy based on the benthic foraminiferal assemblages – assemblage Zones and ostracods zonation) to define the correlation time slices regardless of paleoenvironment and substratum. The rapidly reproduced calcareous nannoplankton can show the short-term marine incursions and the marine corridors. The main results of this work are as follows:

NN 2, NN3, NN4, NN5 and NN6 nannoplankton zones have been identified there. On the basis of the mentioned zones a correlation with the Paratethys, Mediterranean and with standard zonation is possible (Tab. 1).

The nannoplankton assemblage proves the transgressive marine Otnangian in the Lužice Fm. (upper part). Based on the nannoplankton association the Badenian sediments of the Vienna Basin (Slovak part) could be divided only into two parts – the lower part (NN5) and the upper part (NN6). NN5/NN6 boundary seems to be the most distinct correlation marker in the whole Central Paratethys and it can be identified in the continuous sections of the Vienna Basin. Nannoplankton preservation and occurrence in the studied area are strongly affected by the tectonic activity and by the deltaic system productions.

From the foraminiferal point of view, in the Lower Miocene were found CPN3 - CPN5 zones, with leading planktonic foraminiferal species.

The sediments of the NN4 contain highly diversified foraminiferal associations with *Bulimina elongata* d'Orbigny, *Bulimina schischinskaye* Samoylova dominance, a lot of small *Globigerina* and *Cassigerinella*, common *Globigerina otnangensis* Roegl, *Globorotalia bykovae* (Aisenstat), *Globigerinoides bisphericus* Todd and *Uvigerina graciliformis* Papp et Turnovsky are rare. The association is ranged to the M4 Zone (BERGGREN et al., 1995) and probably to the CPN5 „*Globigerinoides*

sicanus“ Zone sensu CICHÁ ET AL (1975) the *Praeorbulina sicana* (de Stefani) was not identified here. The two Zones sensu GRILL (1943) have been identified in the studied material containing nannoplankton of the NN5. The first one was the upper lagenide Zone rich in planktonic forms, containing mainly *Globorotalia* genus (*G. peripheroronda* Blow et Banner, *G. bykovae* (Aisenstat), *Paragloborotalia mayeri* (Cushman et Ellisor) and *Globigerinoides quadrilobatus* (d'Orbigny) in the north-western part of the basin. The second Zone - *Spiroplectammina carinata* Zone sensu GRILL (1941) = agglutination Zone characterized by agglutinated species as *Spirorutilus carinatus* (d'Orbigny), *Martinotiella communis* (d'Orbigny), *Textularia pala* Czjzek, *T. mariae* d'Orbigny, *Haplophragmoides vasiceki* Cicha et Zapletalova, *Budashewaella wilsoni* (Smith), poor in planktonic foraminifer types (rare *Globigerina bulloides* d'Orbigny and *G. falconensis* (Blow)) developed mainly in the northeastern part of the studied area. Samples with nannoplankton assemblages of the NN6 Zone contain associations of traditional foraminiferal Zones (*Spiroplectammina carinata* Zone sensu Grill 1941 = agglutinated Zone, *Bolivina dilatata* Zone sensu GRILL (1941), *Bulimina* / *Bolivina* Zone sensu PAPP ET TURNOVSKY (1953) and *Rotalia* Zone sensu GRILL (1941)). Nannoplankton and foraminiferal study was depleted by study of the molluscs and ostracods, highly used as stratigraphic marker in the Middle Miocene sediments. As new, relatively good tool for the regional stratigraphy seems to be organic walled dinoflagellate species, which allow us to correlate Pannonian sediments in the Central Paratethys area (Tab.1).

Beside the biostratigraphy, the radiometric methods based on the ⁸⁷Sr/⁸⁶Sr ratio in the foraminiferal shales there were used. Measured isotope ratio was transform into numerical age according to Look – up Table (HOWARTH – MCARTHUR, 1997) as is shown on the Tab. 2. Results relatively good corresponds to them by (RÖGL, 1996, STEININGER, 1999).

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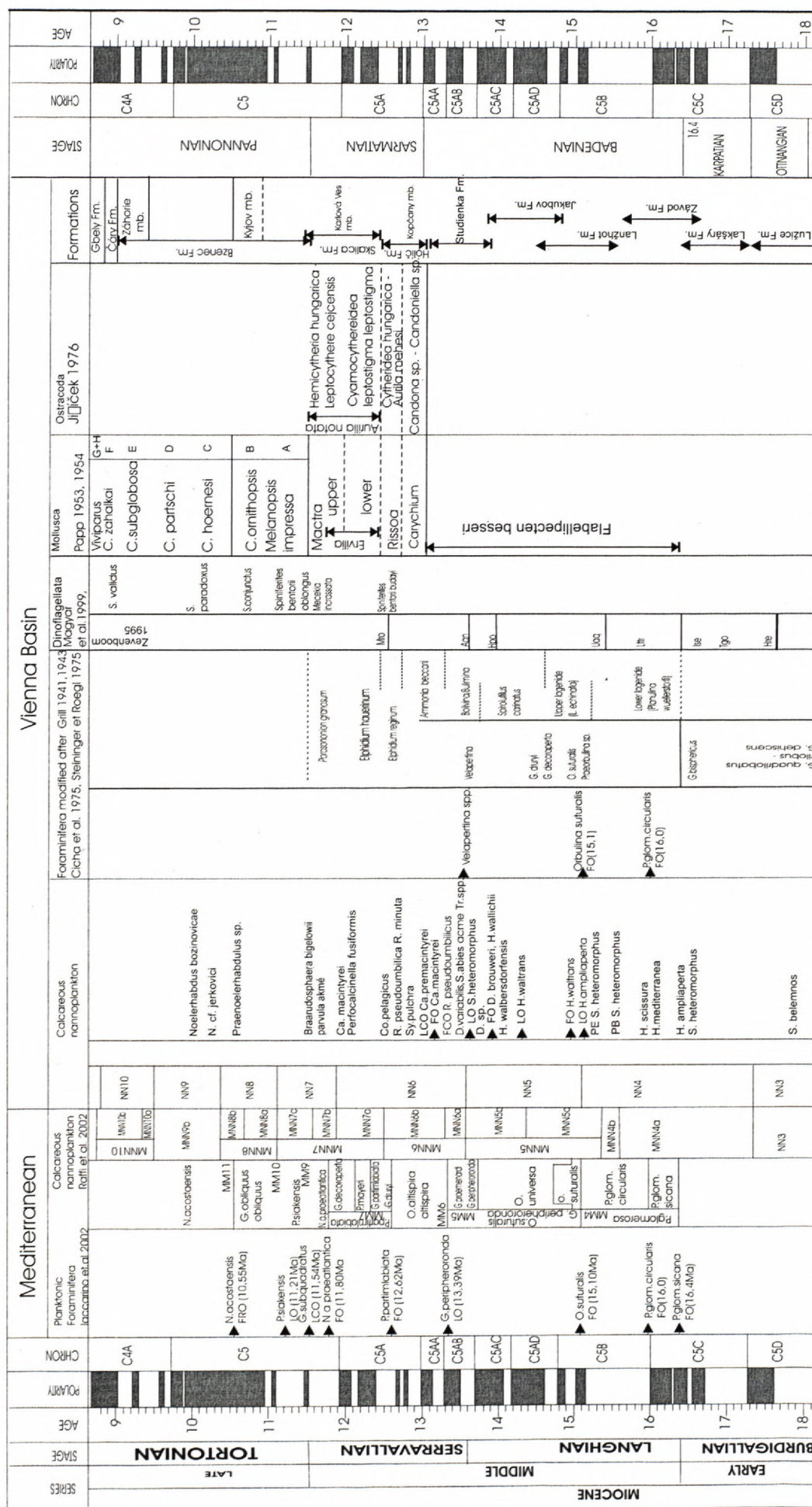


Table 2 Radiometric ages and processed material

Borehole, number	Deep (m)	NN Zones-	Stage	Foraminifera shales – 5mg/sample	Range with deviation	Registered
Cunín 21	930–935	NN3	Ottnagian	<i>Pappina breviformis</i> , <i>Amphicoryna ottnangiensis</i>	16.9–17.01	16.95
Gbely 100	1100–1105	NN4	Karpatian	<i>Lenticulina melvili</i>	15.9–16.3	16.05
Moravský Ján 3	1251.9–1258	NN4	Early Badenian	<i>Lenticulina echinata</i> (? calcite fill)	14.21–14.52	14.36
Kúty 45	506.4	NN6	Late Badenian	<i>Amphistegina mammila</i>	13.58–13.91	13.73
Devínska Nová Ves	clay pit	NN6	Late Badenian	<i>Pappina neudorfensis</i>	13.39–13.70	13.54
Široké Diely	outcrop		Sarmatian	<i>Elphidium spp.</i>	12.12–12.40	12.25

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