

## Around the Early/Middle Miocene (Karpatian/Badenian) Boundary in the Austrian Neogene Basins. A Story of Gaps.

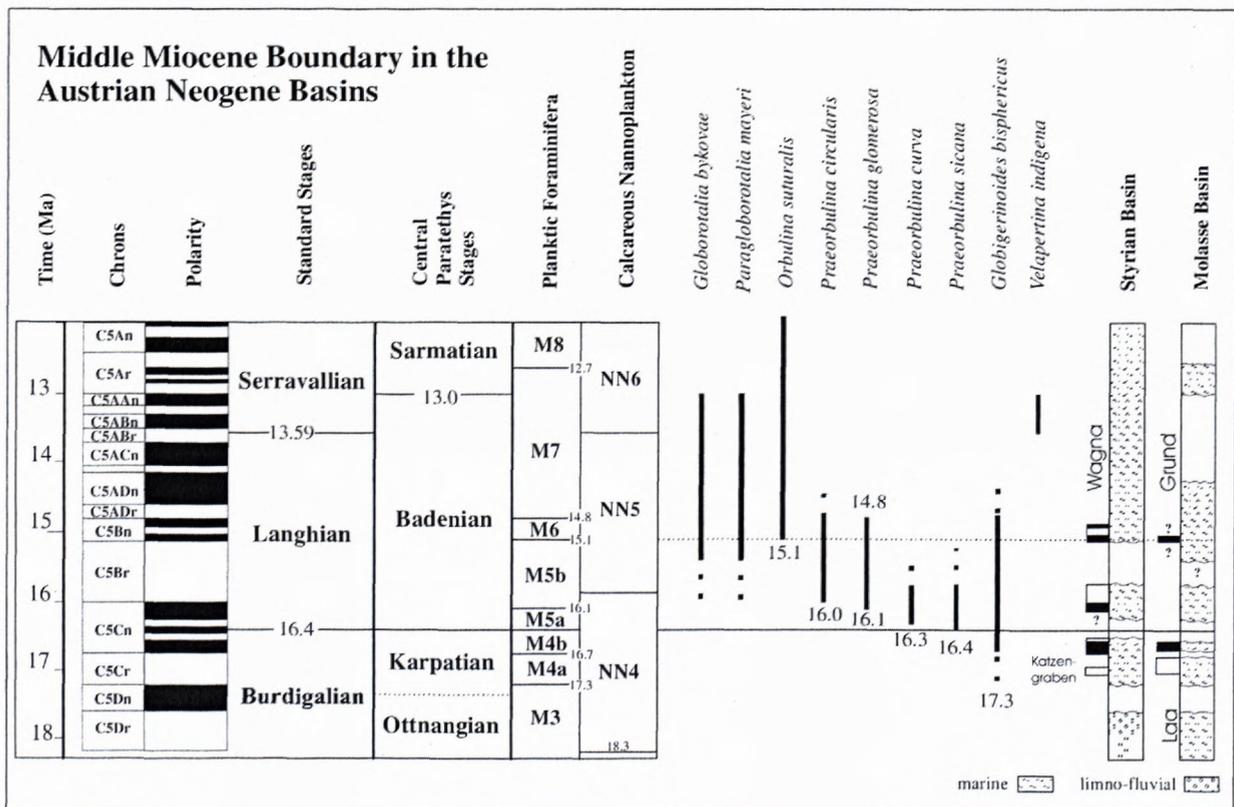
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Investigations of sedimentary sequences around the Karpatian - Badenian boundary were carried out on sections in the Austrian part of the Alpine-Carpathian Fore-deep (Molasse Basin), the southern Vienna Basin, and predominantly the Styrian Basin. Results are based on calcareous nannoplankton, planktonic foraminifera, and palaeomagnetic measurements. No continuous sedimentation between the Karpatian and Badenian has been recorded. In response to the Styrian tectonic phase the Lower Badenian similarly shows a series of gaps.

In the Wagna section (Styrian Basin) the Karpatian is represented by calcareous shales and interbedded dolomitic -sideritic limestone beds from an upper bathyal environment. Stratigraphic results show NN 4, *Globige-*

*rinoides bisphericus*, and for the most part normal magnetization, with a short reversal at the top. The Lower Badenian sediments follow with a slight angular unconformity, with silts and fine sands of littoral environment, and a clay pebble layer at the base; dated as NN 4, with very scarce *Praeorbulina sicana*, and no paleomagnetic signal. Higher up, the fine sands are rich in biogeneous detritus, and have a small coral patch reef intercalated; stratigraphy is still NN 4 and a zone of normal and reversed magnetization. Discordantly follow knobby calcareous sandstones (very rich mollusc fauna in casts) and fine sands; these are dated as NN 5 and fall in a normal chron. Apparently there exists a long gap, spanning most of chron C5Br, with a duration of about 600 000 yrs. The



upper part of the sequence belongs to the „Leithakalk“, coralline limestones and marls lying on fine sands of the arenitic sequence, probably with a short gap. Stratigraphically, the „Leithakalk“ belongs to NN 5, yielding *Po. glomerosa* s.l. and in the uppermost part also *Orbulina suturalis*. The lower part of the limestones still lies in a normal chron, followed by a short reversal, and again a normal magnetization on top.

In the southern Vienna Basin a drill site for mineral water was studied. The Badenian transgressed on Mesozoic dolomites with a non-fossiliferous breccia. For the first time NN 4 is recorded here. The lowermost soft sediments are brown marls, with a rich assemblage of *Helicosphaera ampliaperta*, and blue-grey silty marls („Badener Tegel“) which belong to NN 5. In both sediments the *Po. glomerosa* group occurs, and in the blue-grey marl also *O. suturalis* (Lower Lagenidae Zone).

Karpatian sediments were studied in the Molasse Basin north of the Danube (Alpine-Carpathian Foredeep) at Laa an der Thaya, brickyard and drill site. The blue-grey calcareous shales of the Laa Formation belong to NN 4 and are reversed magnetized. Discordantly follow green-

ish clays and yellowish brown fine sands, which are normally magnetized. The normal chron is correlated with the Karpatian of the Korneuburg Basin, and dated as C5Cn.2n.

The Grund Formation was studied at the type locality, where the layered fine sands and silts are deeply cut by mollusc bearing channels. Nannoplankton with *Helicosphaera waltrans* gives a zonation of NN 5, which is supported by the rare occurrence of *Po. glomerosa circularis*. The extent of the Grund Fm. is verified in the OMV drill site Roggendorf-1, where clastics and gravels transgress at a drill depth of 360 m on the Laa Fm. The clastic sequence is dated as NN 4, whereas the higher part with finer sediments belongs to NN 5. Only the topmost part contains a rich benthic and planktonic foraminiferal fauna with *Po. glomerosa circularis* and *O. suturalis*. Additionally the Badenian transgression was dated in prospecting drill sites in the Krems embayment, where the basal conglomerates are equally dated as NN 4, together with *Po. glomerosa*. Palaeomagnetic measurements in the Grund type locality show a normal polarisation, and are correlated with chron C5Bn.2n.