

**DATING THE PENNINIC OCEAN SUBDUCTION: NEW DATA FROM PLANKTONIC FORAMINIFERA  
(SITTENEDOF, LOWER AUSTRIA)**

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The Penninic Ocean was a side tract of the Central Atlantic Oceanic System intercalated between the European and the Austroalpine plates. Its closure started during the Early Cretaceous, as subduction of the oceanic crust beyond the Austroalpine plate. The turnover of the deposition on the Austroalpine shelf from pelagic carbonates into the deep-water siliciclastics correlated with the denudation of the accretionary wedge resulting from that subduction. Within the Bajuvaric Unit of the Upper Austroalpine, this transition is reflected by the lithostratigraphic boundary between the Schrambach and the Tannheim Formation. This boundary is well outcropped in a newly discovered site at Sittendorf, SW of Vienna, bearing around the critical interval an extraordinarily rich planktonic foraminifera assemblage. Along with the biostratigraphic analysis, C<sub>org</sub>, CaCO<sub>3</sub> and S content estimation and the gamma-log outcrop measurement were carried out proving still more accurate stratigraphic interpretation of the section intersecting a small-scale isoclinal fold.

The Schrambach Formation (10 m) comprises pelagic limestones - mudstones to wackestones with matrix dominated by large nannoconid phytoplankton. Radiolarians are partly very abundant, whereas planktonic foraminifera are scattered in most of the formation except for its topmost part. The assemblage is dominated by small, five-

chambered *Praehedbergella*, particularly by *P. infracretacea*. *Blowiella blowi* and *Praehedbergella occulta* traced already in the lower part of the section, allow its correlation with the upper part of the *B. blowi* Interval Zone and dating to the uppermost Barremian and lowermost Aptian. The planktonic foraminifera assemblage of the topmost Schrambach Formation changes radically. From here upwards, zooplankton blooms characterize the succession up to its top. Common *Leupoldina* and large specimens of *Blowiella blowi* point to the *Leupoldina cabri* Acme Zone. The base of the latter Zone superimposes the Lower Aptian Oceanic Anoxic Event "Selli" and has an inferred age of about 124 Ma. Up to now, the presence of a planktonic foraminifera assemblage with *Leupoldina* was unknown from the investigated depositional cycle (Schrambach - Tannheim - Losenstein Formation).

The lower part of the Tannheim Formation is still characterized by the common occurrence of *Leupoldina*, whereby the occurrence of *Praehedbergella luterbacheri* and *Globigerinelloides ferreolensis* point therein to the upper part of the Acme Zone. Upwards the last occurrence of *Leupoldina* allowed the approximation of the Lower/Upper Aptian boundary correlating roughly with the base of the *Globigerinelloides ferreolensis* Interval Zone, whereas the subsequent introduction of

*Globigerinelloides barri* points to the upper part of that zone.

The data from the topmost part of the section demonstrated the position of the section within a slightly northwards overturned, isoclinal syncline fold. Not only the inverse succession of biostratigraphic units but also the inverse gamma log pattern, proved the block for a tectonically inverted structure. Hence above the first fault, the large, thick-walled, 8-chambered (the last whorl) *Hedbergella trocoidea* appear pointing to the Upper Aptian *H. trocoidea* Interval Zone. They are replaced upward by smaller more primitive 7-chambered representatives, accompanied by extremely large specimens of *G. algerianus* proving the stratigraphically older Upper Aptian *G. algerianus* Taxon Range Zone. Finally above the second fault the assemblage of the *Leupoldina cabri* Acme Zone reappears. The stratigraphic discontinuity must be a product of the lateral pressure and the block escape

movements in that southern wing of the syncline.

In conclusion, the range of the section is estimated to be about 10 m.y. and to include 5 Aptian planktonic foraminifera zones. The terrigenous input bounded to initial subduction of the Penninic Ocean under the Austroalpine Microplate started at about 123 Ma (Early Aptian). This date corresponds with that determined for the lithostratigraphic boundary between the Schrambach Formation and the Tannheim Formation. Although the section is discontinuous in its upper part (Tannheim Formation), the studied lithostratigraphic boundary is positioned within the continuous part of the section. Finally, thin slice biostratigraphy of planktonic foraminifera proved, also in the Northern Calcareous Alpidic shelf, to be a powerful tool for stratigraphic dating of Aptian deep-water successions. This paper is a contribution to the Austrian Science Fund Project P-16100.

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Jahr/Year: 2008

Band/Volume: [74](#)

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Artikel/Article: [Dating the Penninic Ocean Subduction: New Data from Planktonic Foraminifera \(Sittenedof Lower Austria\) 73-74](#)