

DATING THE PENNINIC OCEAN SUBDUCTION - NEW DATA FROM PLANKTONIC FORAMINIFERA

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The study deals with the transition between the Schrambach and the Tannheim Formation of the Lower Bajuvarikum in the northeastern Northern Calcareous Alps. This transition marks a distinct change in the sedimentary regime where enhanced input of fine grained siliciclastics into the deepwater basin starts. Thereby a late Jurassic to earliest Cretaceous predominantly carbonate deposition cycle ("Aptych Limestone" and Schrambach Formation) grades into a coarsening and shallowing upward cycle predominated by siliciclastics (Tannheim Fm. - marls and marly limestones; Losenstein Fm. - sandstones and conglomerates).

The turnover of the depositional regime in the basins of the Lower Bajuvaricum marks the large scale changes of the geodynamic environment on the Austroalpine Microcontinent. Due to the starting Penninic Ocean subduction, its northern boundary changes from the passive into the active continental margin. This led to the formation of the transpressional accretionary wedge and accelerated exhumation of the Central Austroalpine body triggering the weathering forced detritus output toward neighboring depocenters.

Whereas the Tannheim Formation marks the initial siliciclastic input due to beginning Penninic Ocean subduction the coarser Losenstein Formation marks already the tectonic inversion and shortening of the Bajuvaricum basins, in consequence to advanced phase of the Austroalpine plate transpressional regime. The piggy back and slope apron deposition of the Losenstein Formation marks the progressive thrusting of the frontal parts of the Northern Calcareous Alps. In the following the whole complex of the northern Austroalpine gets overthrust, bringing the Northern Calcareous Alps to its actual position.

The actual biostratigraphic data on the transition between the Schrambach and the Tannheim Formation are very scarce. The reason is given with the absence of identifiable ammonoid macrofossil fauna as well as in absence or bad preservation of microfossils. Thus the most valuable information is now available from the newly discovered outcrop NW Sittendorf in the southwestern Vienna Wood. That about 20 m thick pelagic succession displays in its central part the gradual transition between two formations accompanied by extraordinary rich accumulations of planktonic foraminifera. A detailed biostratigraphic analysis of their taxonomic content could for the first time prove the placement of the given lithostratigraphic boundary into the Lower Aptian. In contrast the previous data indicated its younger stratigraphic position within different biostratigraphic horizons of the Upper Aptian.

The following interpretation is based on the thin slice studies - the sieving of marly interlayers achieved only for one sample scattered and badly preserved microfossils. The Schrambach Formation comprises the lower 10 m of the section. Those pelagic limestones and marly limestones are mudstones to wackestones with matrix dominated by large nannoconid phytoplankton. Among microplankton radiolarians are partly abundant especially in its topmost portions. Planktonic foraminifera are except for the topmost part scattered, in its lower part still small sized, getting upwards distinctly larger. The assemblage is dominated by small, five-chambered *Praehedbergella*, particularly by the *P. infracretacea*. The presence of *Blowiella blowi* together with *Praehedbergella occulta* already in the lower part of the section allow its placement into the upper part of the *B. blowi* Interval Zone and correlation with the uppermost Barremian and lowermost Aptian.

The uppermost part of the Schrambach Formation already displays marly intercalations and also the C_{org} measures show sudden restriction from previously throughout

enhanced values (1-2%) to distinctly lowered ones (<1%), continuing upward into the Tannheim Formation. Conspicuously also the planktonic foraminifera undergo therein a radical change, not only by taxonomical content, size and wall thickness but particularly by its abundance. Hence from here upwards a zooplankton blooms characterize the succession up to its top. The planktonic foraminifera assemblage is characterized by the common *Leupoldina* and large specimens of *Blowiella blowi* defining its stratigraphic position within the *Leupoldina cabri* Acme Zone. The base of the latter Zone superposes the Lower Aptian Oceanic Anoxic Event "Selli" and has inferred age of about 124 Ma. Up to now the presence of planktonic foraminifera assemblage with *Leupoldina* was unknown from the investigated depositional cycle (Schrambach/Tannheim/Losenstein Formation).

The larger part of the succession within the lower portion of the Tannheim Formation is characterized by the common occurrence of *Leupoldina*. For the upper part of the Acme Zone characteristic is the occurrence of *Praehedbergella luterbacheri* and *Globigerinelloides ferreolensis*. With the last occurrence of *Leupoldina* in the section, the base of the *Globigerinelloides ferreolensis* Interval Zone is approximated, correlating roughly with the Lower/Upper Aptian boundary. The presence of the upper part of the Interval Zone is indicated by the introduction of the *Globigerinelloides barri*. This species with 9 chambers in the last whorl represents the limb in the gradual evolution from *G. ferreolensis* (7-8) to *G. algerianus* (10 to 12).

Up to now the biostratigraphic data proved the continuous section, the superimposed samples, however, confirm the presence of two larger scale faults disturbing its uppermost part. Above the first fault, the large, thick-walled *Hedbergella trocoidea* with 8 chambers in the last wall characterize the assemblage, replaced upward by the smaller, 7 chambered representatives. Furthermore this upper part includes also the extremely large specimens of *G. algerianus* proving the exact correlation with the Upper Aptian *G. algerianus* Taxon Range Zone. The absence of latter taxon together with the presence of highly evolved *Hedbergella trocoidea* specimens indicates the possible position of samples within the stratigraphically younger Upper Aptian *H. trocoidea* Interval Zone. If so, this particular part of the section would represent a tectonically inverted block. Finally the strong tectonic impact of the upper part of the Sittendorf section is proved by its uppermost samples indicating therein the reoccurrence of the *Leupoldina cabri* Acme Zone.

VERGLEICHENDE FLORISTISCHE UNTERSUCHUNGEN AN OBERMIOZÄNEN FLOREN OSTÖSTERREICHS

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Aus obermiozänen Sedimentationsgebieten im Osten Österreichs werden 5 Samen- und Fruchtfloren vorgestellt, verglichen und die Gemeinsamkeiten und Unterschiede diskutiert. Es wird versucht, die taphonomischen Prozesse und die lokalen edaphischen Bedingungen, die neben den klimatischen Bedingungen die Zusammensetzung der fossilen Pflanzenvergesellschaftungen ebenfalls steuern, zu erkennen, um paläoklimatische Vergleiche zwischen dem Molassebecken (Hausruck, Oberösterreich), dem Wiener Becken (Niederösterreich) und dem Steirischen Becken (Steiermark) zu ermöglichen.

Die Basis der Untersuchungen bilden die Samen- und Fruchtfloren aus Mataschen, im SE des Steirischen Tertiärbeckens, aus der Region um Weiz, am N-Rand des Steirischen Beckens, aus Pellendorf, am NW-Rand des Wiener Beckens und aus Hinterschlag und Eberschwang, im Molassebecken. Stratigraphisch sind die Samen und Früchte führenden

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