

Biostratigraphy and Palaeoenvironment of the Lower Gosau Subgroup of Eisenbach Brook in Salzkammergut (Upper Austria)

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Abstract

Basically silty fossiliferous grey marls, including “black shales”, with subordinate sandstone and marly limestone intercalations dominate the sequence of the Eisenbach Lower Gosau Subgroup. The bulk mineral composition of the grey marl sample EB 8 shows a rather low quartz content of 14 mass-% as well as the complete absence of feldspars. Layer silicates (mica, chlorite, etc.) are the predominant mineral group in this sample. Carbonate minerals are represented mainly by calcite, dolomite can only be found in rather low amounts. The clay mineralogical composition of the (<2µm fraction) is dominated by illite with 76 mass-%. Furthermore, chlorite and small amounts of kaolinite can be found. Samples from Eisenbach are generally poor in foraminifers without stratigraphic significance. Only the occurrence of *Marginotruncana schneegansi* in sample EB 8 gives evidence to include this assemblage to planktonic zone *Marginotruncana schneegansi* sensu ROBASZYNSKI & CARON (1995). The foraminiferal assemblages from other samples belong, by the character of assemblage, to the Turonian–Coniacian. Shallow-water condition of open sea with the influence of boreal realm (presence of agglutinated species *Gaudryina*, *Dorothia*, etc.) is characteristic for the environment of all studied samples. Shallow marine conditions with low oxygen content and the local change of salinity characterize the “black shale”-type sediments EB 1 and EB 2. Nannofossil species *Eiffellithus eximius* and *Lucianorhabdus quadrifidus* give evidence for zone UC8b that is correlated with the Middle Turonian. The first occurrence of *Micula staurophora* is correlated with zone UC10 that is attributed to the Middle Coniacian (sample No. EB 26). The nannofossil genus *Lucianorhabdus* and fragments of *Braarudosphaera bigelowii* reflect shallow-marine sedimentation. Moreover, poor nannofossils and rare occurrence of species which formed the component of Turonian assemblages may reflect a pioneer character of nanoflora during marine transgression. First occurrence of biostratigraphically important angiosperm pollen *Trudopollis* is correlated with Middle Turonian (sample EB8). The palynofacies is characterized by the prevalence and diversity of *Complexiopollis* pollen. Such a level of angiospermous pollen diversification/composition accords with that found in other microfloras of Middle Turonian age. The composition of the dinoflagellate assemblage and the presence of microforaminifers indicate shallow marine conditions. Reworked gymnosperm pollen of Permian age (from “Haselgebirge”) were observed in the “black shale”-type sample EB 1. Also the ostracod fauna indicates a shallow marine environment. The ostracod fauna contains *Brachycythere*, *Cytherella*, *Dolocytheridea*, *Dordoniella* and *Schuleridea* and indicates a shallow marine environment. The bivalve assemblage is clearly dominated by infaunal shallow-burrowing forms and consists of relatively few taxa if compared to other benthic assemblages of the Lower Gosau Subgroup.

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