

EARLY EOCENE BENTONITES FROM TWO SECTIONS OF THE EASTERN ALPS (AUSTRIA) AND THEIR CORRELATION WITH THE NORTH SEA REGION

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In the vicinity of the town of Salzburg Paleogene deposits occur in the Northern Calcareous Alps (Untersberg section) as well as in the Rhenodanubian flysch (Anthering section). Around the Paleocene/Eocene-boundary in both sections a short interval with abundant bentonite layers was found. These bentonites occur within nannoplankton zone NP10 (*Tribrachiatos bramlettei*) in the classification of MARTINI 1971 and the vanish just before the first appearance date (FAD) of *Tribrachiatos contortus*.

In the area of Salzburg the Anthering formation (EGGER 1995) forms the youngest part of the Rhenodanubian flysch. Within the Anthering-section turbiditic marls are the dominating rocks which alternate with hemipelagic claystones. The latter prove a deposition of this flysch below of the local CCD. In a 40 m thick part of the section 24 bentonite layers were found which are seen as tuffs of air-fall derivation. The bentonite layers display thicknesses from 2 mm to 3 cm. They are totally converted to smectitic clay. Immobile element concentrations point to an alkali basaltic composition of the original magma. A few of the thicker layers, however, show concentrations typical for highly evolved alkaline ashes. These chemical compositions and the age of the bentonites point to a correlation with bentonites of the North Sea region. According to HEILMANN-CLAUSEN (1997) at Anthering the dinoflagellate cyst *Apectodinium augustum* has its last appearance (LAD) approx. 25m below of the oldest bentonite layer x1. In the North Sea region the LAD of this species is within the "negative" ash series. Therefore the ash-bearing sequence of Anthering may be synchronous with the upper part of the "negative" ash series and/or the "positive" ash series in the North Sea region. It might be possible that the first and thickest layer (x1) at Anthering is correlative to layer +19 in the North Sea region. According to first results by SCHMITZ (unpubl.) the $\delta^{13}\text{C}$ spike should be within outcrop J of the Anthering section, a few meters above of the FAD of *Rhomboaster cuspis* and approx. 40m below of the first bentonite layer x1.

In the Untersberg area usually the Paleogene deposits are formed by marls. Therefore it is remarkable that at the base of the studied section 1.5m of red claystone occur. This claystone might represent the time of the benthic extinction event (BEE) within the nannoplankton-zone NP9 and therefore should be correlative to outcrop J at Anthering. At the top of the claystone 0.5m of clayey marls form a transition zone to nonturbiditic marls which are dominating the rest of the section. In the clayey marls coccoliths are rare (10% or less) and the nannoplankton assemblages mainly consist of *Rhomboaster cuspis* (up to 49%), *Discoaster multiradiatus* (up to 35%) and *Discoaster falcatus* (up to 17%). This composition of the strongly corroded nannoplankton assemblages is interpreted as an effect of carbonate solution which led to a secondary enrichment of species less prone to dissolution. Approx. 25m above of the top of the basal claystone the first bentonites appear. Within 5m of marls 15 bentonite layers were observed. These layers display the same immobile element concentrations as the coeval layers at Anthering. So there is little doubt that the bentonites of both sections belong to the same eruptive volcanic events.