

The Middle Eocene Transgression on the southern European Shelf (Adelholzen Beds, Eastern Alps, Bavaria)

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The shallow water sedimentary record of the Helvetic shelf of the southern European Plate (northwestern Tethyan margin) is punctuated by a number of stratigraphic gaps, which become more pronounced northwards, in direction to the continent. In the North-Helvetic realm, Paleocene deposits are absent because there the Middle Eocene (Adelholzen beds) rests with an erosional unconformity on the Upper Cretaceous. The Wimmern section near Teisendorf (Bavaria) is the only known outcrop where this transgressional contact is exposed. There, dark grey claystone of the Gerhardsreith Formation (Maastrichtian) is overlain by 4 m thick glauconite rich sand of the lower Adelholzen beds. Poorly preserved calcareous nannoplankton assemblages from the basal 50 cm of the sand contain *Chiasmolithus grandis*, *Chiasmolithus solitus*, *Cyclicargolithus floridanus*, *Nannotetrina cristata*, and *Sphenolithus spiniger*, indicating calcareous nannoplankton Sub-Zone NP14b.

The poor preserved planktonic foraminifera assemblage from the glauconitic sand at the base of the section yields *Acarinina coalingensis*, *A. esnehensis*, *A. interposita*, *Igorina broedermanni*, and *Pseudohastigerina wilcoxensis*. Fifty centimetres above the transgression *Acarinina bullbrookii*, *A. cuneicamerata*, and *Pseudohastigerina micra* have their first occurrences. The assemblage suggests an assignment to planktonic foraminiferal Zone E7 in the zonation scheme of Wade et al. (2011).

Three samples from the Adelholzen beds were processed for palynology and contained abundant organic-walled dinoflagellate cysts (dinocysts), and few terrestrial palynomorphs (pollen and spores). Dinocyst assemblages were dominated by near-shore, lagoonal species, such as *Cleistosphaeridium* and *Homotryblium*, but also species characteristic for transgressive facies such as *Glaphyrocysta* and *Areoligera*. Age-diagnostic species include *Areoligera sentosa* and *A. tauloma*, *Areosphaeridium diktyoplokus* and *Achilleodinium biformoides*, the co-occurrence of which suggests a Lutetian age for the sequence (based on correlation to Southern England (Eaton 1976).

The age of the transgression of the Adelholzen beds (which is called Bürgen Formation in Switzerland) is equivalent to the age of the transgression of the Lutetian at the Lutetian stratotype (St. Leu d'Esserent in the Paris Basin) where Aubry (1991) attributed the base of the type Lutetian to calcareous nannoplankton Subzone NP14b.

References:

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