

Stratigraphic subdivision of the Coniacian Stage: State of the art

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After more than two decades of studies, the boundary definition of the Coniacian Stage as accepted in Brussels 1995 (see KAUFFMAN et al., 1996), i.e. at the first appearance of *Cremnoceramus deformis erectus* (Meek) [*Cremnoceramus rotundatus* sensu (Tröger non Fiege) at that time] appears to be the best choice available. It became clear (WALASZCZYK and WOOD, 1999, WOOD et al., 2004) that the appearance of this species is a well recorded cladogenetic speciation event and hence an evolutionary phenomenon which represents a good time point.

The first appearance level of *C. deformis erectus* is well recognizable throughout the entire Euramerican biogeographic region and appears to be correlatable to the East African Province (WALASZCZYK et al., 2004) where it probably equates with the base of the *Tethyoceramus madagascarensis* Zone (all biogeographical units after KAUFFMAN, 1973). This Euramerican marker is therefore either valid on its own for recognizing the base of the Coniacian Stage directly, or it enables indirect correlation with other biomarkers in coeval marine successions elsewhere in the world (WALASZCZYK et al., 2010). Carbon-isotope data for the boundary intervals (VOIGT in WALASZCZYK et al., 2010) and for the entire Coniacian are available (e.g., JARVIS et al., 2006; YOO & SAGEMAN, 2014).

Of the stratotype proposals for the base of the Coniacian presented during the Brussels Symposium in 1995 (KAUFFMAN et al., 1996), only the Salzgitter-Salder Quarry section (Lower Saxony, northern Germany), seems to be still worth of considering, in spite of the fact that it was shown to contain hiatuses in the boundary interval (WALASZCZYK & WOOD, 1999; WOOD et al., 2004). Neither the Wagon Mound section (New Mexico, US Western Interior), Słupia Nadbrzeżna (central Poland), nor the Pueblo section (SE Colorado, US Western Interior) appeared suitable (WALASZCZYK et al., 2010, 2012).

Subsequently, the working group had proposed a composite section for the GSSP candidate (WALASZCZYK & WOOD, 2008). This composite section would have combined the succession exposed in Salzgitter–Salder (Lower Saxony, Germany) and in Słupia Nadbrzeżna (central Poland).

The two latest stratotype proposals are: (1) the Hot Springs Trail section, in the Big Bend National Park, in Texas (Dee Ann Cooper, Texas University, Austin, and Roger Cooper, Lamar University) and (2) the El Rosario section, in Coahuila, northeastern Mexico (IFRIM et al., 2014). Both are expanded fossiliferous successions which require, however, further investigation.

The Coniacian substage subdivision, as proposed and accepted during the Brussels Symposium, is in general use since then. The bases of the Middle and of the Upper Coniacian are defined by the first appearances of inoceramid species *Volvicceramus koeneni* and *Magadiceramus subquadratus* respectively. No stratotype was suggested or formally proposed either for the base of the Middle or for the Upper Coniacian substage.