

Paper Number: 2899

## Nearshore to offshore facies correlation of the Turonian-Coniacian stage boundary in the Bohemian Cretaceous Basin (Czech Republic)

Čech, S.<sup>1</sup>, Uličný, D.<sup>2</sup>

<sup>1</sup>Czech Geological Survey, Klárov 3, 118 21 Prague, [stanislav.cech@geology.cz](mailto:stanislav.cech@geology.cz)

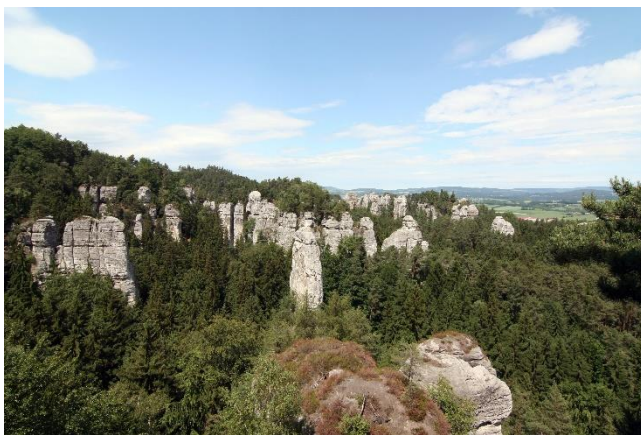
<sup>2</sup>Institute of Geophysics, The Czech Academy of Sciences, Boční II, 141 31 Prague, [ulicny@ig.cas.cz](mailto:ulicny@ig.cas.cz)

---

In the Bohemian Cretaceous Basin (BCB), the Turonian-Coniacian boundary (Upper Cretaceous) falls into an interval characterized by increased rates of tectonic subsidence compensated by high clastic supply (Uličný et al., 2009). As a result, steep, Gilbert-type deltas developed at the basin margin and prograded into depths locally exceeding 100 meters. The sandstone bodies formed by the deltaic systems represent regionally important hydrogeological aquifers, whereas the offshore mudstones and marlstones are typical aquicludes. Until recently, the coverage by subsurface data was insufficient for detailed characterization of the extent of the sandstone aquifer bodies and, in particular, the nature of their transition into offshore fine-grained deposits. During the project “Review of the Groundwater Resources in the Czech Republic”, 50 new cored boreholes were drilled in the BCB in 2014-2015, in order to improve the current understanding of the depositional geometry of the aquifer bodies. Several boreholes focused on a nearshore-offshore transect, across the Turonian-Coniacian stage boundary. In addition to the main goal – characterization of the extent of the aquifer sandstones - the boreholes brought new data also for reconstruction of the relative sea-level change history and basin tectonics.

Tracing of the continuity of foreset, bottomset, and offshore strata in individual delta bodies, at high stratigraphic resolution, was made possible by a combination of the study of stratigraphic architecture, well-log data, and a succession of biostratigraphic markers.

The basis of the biostratigraphic framework was the establishment of the same succession of inoceramid bivalves and other molluscan marker taxa as that in Salzgitter-Salder (Germany) and Slupia Nadbrzezna (Poland), localities currently considered candidates for a combined type section for the Turonian-Coniacian boundary (Walasczyk et al., 2010). All the faunal markers were found both in the



nearshore and offshore facies. Thus, the Turonian-Coniacian interval in the BCB complements the existing key sections in Europe and together with them constitutes a broader type region for definition of the T-C boundary.

*Figure 1: Sandstone Rock City of the UNESCO Geopark of the Bohemian Paradise, deltaic sandstone body with marked clinofolds and chute channels.*

Combination of earlier outcrop and subsurface data with the new boreholes made it possible to trace individual clinofolds along dip, into offshore facies, and document the pinchout of the main progradational sandstone body, which occurred over an interval of a few hundred metres due to the

steepness of deltaic clinoforms. Several phases of progradation and flooding were recognized in the nearshore sandstones and tied to the physical and biostratigraphic framework also in the offshore strata, showing a relatively complex history of relative sea-level changes that probably includes both high-frequency eustatic changes and tectonic deformation of the basin margin.

*References:*

- [1] Uličný D et al. (2009) *Sedimentology* 56: 1077-1114
- [2] Walaszczyk et al. (2010) *Acta geologica Polonica* 60: 445-477

