EUSTATIC CYCLES ACROSS THE P-T BOUNDARY: EVIDENCE FROM THE NW TETHYAN SHELF (WERFEN FORMATION) AND THE PERI-TETHYAN REALM (BUNTSANDSTEIN)

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The Werfen Formation is characterised by repeated lithological changes recording substantial shifts of shorelines and thus, the sea-level history of the NW Tethyan shelf. Highstands are documented by the maximum expansion of marine limestones, whereas lowstands are documented by the maximum progradation of terrestrial to coastal environments. Applying sequence-stratigraphic procedures, maximum expansions of marine strata are considered maximum flooding surfaces (mfs) and maximum progradations of terrestrial strata are considered maximum regression surfaces (mrs). Consequently, the Werfen Formation records three T-R sequences, most probably of 3rd order. Starting with the Bulla Member (Bellerophon Formation) sequence 1 has its mfs in the Mazzin Member and terminates with the mrs in the Andraz Member. Sequence 2 has its mfs in the Seis Member and terminates with the mrs at the top Campil Member and sequence 3 has its mfs in the Val Badia Member and terminates with the mrs at the top San Lucano Member.

Likewise, the Buntsandstein is characterised by repeated changes in lithologies recording substantial shifts of shorelines and thus, the sea-level history of a semi-enclosed inland sea that covered the Central European Basin (CEB). Highstands are documented by the maximum expansion of brackish-marine clastics and limestones and lowstands are documented by the maximum progradation of terrestrial clastics. A basin-scale correlation reveals pronounced stratal pattern architectures of three T-R sequences, most probably of 3rd order. Sequence 1 starts in the upper Fulda Formation (Zechstein), has its mfs in the Calvörde Formation and terminates with the mrs in the upper Calvörde Formation. Sequence 2 has its mfs in the Bernburg Formation and terminates with the mrs in the lower Volpriehausen Formation and sequence 3 has its mfs in the upper Volpriehausen Formation and terminates with the mrs in the Solling Formation.

The correlation of latest Permian - early Triassic T-R sequences indicates synchronised sea-level records of the Tethyan and peri-Tethyan realms. This point to: a) the CEB was covered by a brackish-marine inland sea, b) the inland sea and the Tethyan shelf sea were controlled by eustatic cycles, and c) both were connected via a gate in southern Poland.