Eustatic control on coeval development of Anisian/Ladinian carbonate platforms at the NW Tethyan shelf and epeiric carbonates in the CEB

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Correlations of Anisian/Ladinian strata from the NW Tethyan shelf (f. e. Dolomites) and the epeiric Central European Basin (CEB) are constrained by only a few biostratigraphic markers. Thus, application of sequence-stratigraphic methods can make valuable contributions to improved correlations. The late Anisian (Illyrian) transgression from Tethyan waters via so-called gates resulted in flooding of the CEB. Superimposed by rapid subsidence the transgressive trend of 3rd order Anisian/Ladinian sequence An 5 resulted in rapid vertical up building of narrow platforms. Subsequent to its maximum flooding surface (MFS) in the latest Anisian *chiesense* subzone the regressive trend forced a pronounced lateral progradation of platforms up to the late Ladinian *archelaus* zone. In the CEB the rapid Illyrian transgression culminated with the MFS of the Upper Muschelkalk Sea in the lower conodont zone 2 (*sequens*/*pulcher* to *philippii*/*robustus* zones) of latest Anisian age. Afterwards regressive trends favoured the step-by-step progradation of coastal to fluvial plain environments extending up to South Germany in the late Ladinian and resulting in the most diachronous facies shift of the entire Germanic Triassic. The correlation of sequence boundaries, systems tracts and MFS reveal a coeval development from aggrading to prograding platforms at the NW Tethyan shelf and from retrogradational to progradational stratal pattern architecture of epeiric carbonates in the CEB.

In the CEB the overall T-R trend of sequence An 5 as well as a stacking pattern of "smaller scale sequences" can be demonstrated by coeval variations in lithofacies, biofacies, Sporomorph Eco Groups (SEG), $\delta^{18}O_P$ values and $^{87}Sr/^{86}Sr$ ratios obtained from fossil bioapatite of fish teeth, semiaquatic amphibian teeth, brachiopods and conodonts. The interval around the MFS is dominated by autochthonous aquatic SEG of marine, lagoonal and brackish-freshwater environments. Towards the top allochtonous terrestrial SEG of coastal, pioneer, drier lowland, wetter lowland, river and upland environments become more dominant. Accordingly, $\delta^{18}O_P$ values of 18.9-21.8 ‰ VSMOW around the MFS in South Germany are comparable with Tethyan $\delta^{18}O_P$ values of 18.3-21.8 ‰ VSMOW (late Anisian) and $^{87}Sr/^{86}Sr$ ratios of 0.7078-0.7079 are only slightly higher than a proposed seawater $^{87}Sr/^{86}Sr$ ratio of 0.7075. Thus, the Upper Muschelkalk Sea at maximum flooding stage can be considered euryhaline marine in South Germany. Higher up $\delta^{18}O_P$ values successively decrease down to 17.6 ‰ VSMOW and $^{87}Sr/^{86}Sr$ ratios rise up to 0.7083. Compared Tethyan $\delta^{18}O_P$ values from the Tethyan of 20.3-21.3‰ VSMOW (late Ladinian) the up to ~3.5 ‰ fractionated $\delta^{18}O_P$ values suggest successive freshening following the stage of maximum flooding. A freshening trend from South Germany towards Thuringia can be deduced from ~1 ‰ fractionated $\delta^{18}O_P$ values within individual time-slices. As this is already the case at the stage of maximum flooding only southern parts of the Upper Muschelkalk Sea can be considered euryhaline marine.