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Facies developments on the southwestern Vienna Basin margin (Badenian, Middle Miocene) and their paleoecological and paleogeographical significance

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New aspects of facies development, depositional history, palaeogeographic and stratigraphic settings of classical Middle Miocene fossil lagerstätte at Gainfarn in SW Vienna Basin (Austria) became available due to a series of artificial outcrops.

The composite section comprises three parasequences. The two superposed coarsening upward cycles in its lower part are superposed by a muddy sequence reflecting the environmental overturn in its upper part. A quantitative and qualitative analysis of mollusks which dominate the macrofossil record as well as the consideration of sedimentological features, allow us to interpret the succession as result of repeated fluctuations in water energy and oscillating sea-level.

Two basal cycles reflect coarsening and shallowing upward trends. Both start with calm, muddy environments below wavebase and terminate in well agitated shoreface facies, hosting a highly diverse mollusc fauna. Conspicuous Vermetid-Oyster communities indicating protected lagoonal habitats and increasing turbidity load develop at the base of the topmost third cycle. Upward a distinct shift from Vermetid-Oyster facies towards infaunal dominated assemblage is due to the deepening of the depositional environment within that topmost cycle.

Age inference by biostratigraphical and sequence stratigraphical methods allowed cautious correlation of the environmental overturn at the base of the third parasequence with the boundary of Lagenidae and Spiroplectamina ecozones in the Vienna Basin. That boundary coincides with the Lower / Middle Badenian transition marking

the upper part of the Langhian Standard Stage.