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High-Resolution Genetic Stratigraphy of a Deeper-Water Carbonate Ramp: Upper Jurassic, SW Germany

Epicontinental deeper-water ramp carbonates of the SW-German Upper Jurassic were analysed in terms of micro-, macro-, electrofacies and facies sequences based on 2,5 km of core, 70 borehole gamma-ray logs and 24 quarries. Facies analysis revealed facies belts, situated generally below fair-weather wave base, but in the reach of occasional storm events. Within the same belt, stratigraphic sequences and their high-resolution correlation is straightforward and often possible by using gamma-ray logs. However, high-resolution correlations between different facies belts have so far been difficult. In this study, the approach of genetic stratigraphy was employed for the correlation between wells. Genetic sequences are independent of the local facies and are recognisable over the whole depositional profile and thus form ideal correlation units. In contrast to the often asymmetrical shallow shelf parasequences, the observed genetic sequences are mostly symmetrical and consist of shallowing- and deepening-halfcycles. Time lines are generated by connecting the turnaround-points between shallowing- and deepening-halfcycles. The stacking pattern of genetic sequences defines medium- and large-scale sequences. Sharp sequence boundaries could not be delineated. Thus, it was possible to correlate boreholes between different paleogeographic positions. The basin-wide correlations revealed a subtle clinoform-type stratigraphic architecture along very gentle slopes, rather than a so far assumed "layer-cake" pattern.