

**9 3****Space-time-dissociated differential sedimentation and its relationship with the rate of relative sea-level change: the Lower Ordovician Mungok Formation, Korea.**

최용석, 한국석유공사

Hierarchically controlled sequence stratigraphic analysis shows that the Lower Ordovician mixed carbonate-siliciclastic Mungok Formation, Korea consists of three depositional sequences: T1, T2, and T3. Sequence boundaries are generally marked by abrupt transition from coarse-grained shallow-water carbonates to fine-grained deeper-water carbonates mixed with fine-grained siliciclastics, and show indication of subaerial exposure such as karstification. Within this sequence stratigraphic framework, facies characteristics indicate that the Mungok sequences were mostly deposited in subtidal ramp environments. High-frequency cycles consist of upward-shallowing facies successions. Cycles of shallow-water and basinal deposits are not represented well, probably due to cycle amalgamation. Cycle stacking patterns do not show a consistent thickness change that reflects a large-scale sea-level change due to unfilled accommodation space.

The Mungok sequences show that many factors including relative sea-level change and topography are involved in controlling sequence development on carbonate ramps. The depositional setting evolved from the high-energy ramps in the sequences T1 and T2 into the low-energy ramp in the sequence T3. Topography is interpreted to have been responsible for the different energy regimes of the carbonate ramps in the Mungok sequences. The high ramp gradient in the sequences T1 and T2 seems to be caused by space-time-dissociated differential sedimentation resulting in spatially narrow distribution of sediment filling, which in turn may be related to high rate of relative sea-level change. In contrast, low ramp gradient was maintained in the sequence T3 during slow changes of relative sea level resulting in broad distribution of sediment filling.