Preservation of aeolian deposits: signification of stratigraphic cycles in endoreic and exoreic basins

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Résumé

Using different examples of late Palaeozoic and early Mesozoic, through detailed sedimentological and high-resolution sequence stratigraphic analyses of aeolian deposits, the aims of this to discuss the signification of aeolian deposits preservation and evaluate the significance of the cyclicity observed in endoreic and exoreic context.
Since the early 1990's, the concept of high-resolution sequence stratigraphy, initially defined in marine environments, has been applied to continental environments. Studies on the accumulation and preservation of aeolian deposits have focused mainly on the relationship between dry and wet climatic cycles, as reflected by water-table variations. The development of sequence stratigraphy in aeolian systems involves studying the relationship between water-level, subsidence and change in sediment availability. Several models propose either an interaction between aeolian, fluvial and lacustrine, or aeolian and marine environments. Some models discuss the interaction between all three, aeolian, marine and fluvial deposits and their relation through time and space. Other models at reservoir scale study the interaction between water table and sediment supply changes and dune-field events driven by autogenic mechanisms or allogenic forcing.
New model of landscape evolutions document complex interactions between aeolian, fluvial or marine environments. High-resolution stratigraphic analyses allow to discuss the significance of the cyclicity in a scenario that take into consideration either an endoreic context or sea-level variation for example in the Late Paleozoic Ice Age (LPIA). For some authors the accumulation and preservation induced only by slow rises of the relative water-table due to climate variations driven by Milankovitch-type cyclicity. In the LPIA context, the authors suggest that a full cycle may have been completed in approximately 100–400 kyr and these shorter cycles are superimposed on longer, 106 yr, intervals of global warming and cooling.

Mots-Clés: Sequence stratigraphy, Sea, level variation, Sediment supply, Paleoenvironment, Paleoclimate

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