Practical Sequence Stratigraphy of the Lower Devonian series Aoulef-Akabli axe (The occidental Ahnet basin, Saharian Platform, Algeria)

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Abstract

Our study area is a part of the pre-Tassilian country of the Western Ahnet basin, located in the region of Aoulef and Akabli. The Lower Devonian series crops out with essentially clayey-sandstone lithology. It has allowed us to distinguish three formations: *Ain Ech-cheikh clay Formation*, *Sebkha Mekerrhane sandstone formation* and the *clayey-sandstone-carbonate formation*.
The lithostratigraphic study of two sections conducted in the Aoulef and Akabli sectors includes the analysis of the sedimentary structures generated by the hydrodynamic conditions and the facies. The results allowed us to identify four characteristic associations representing different bathymetric zones on a detrital platform ranging from *foreshore to offshore*.

The Ain Ech-cheikh clay Formation constitutes a distal mudflat presenting an *Offshore to Offshore*-transition environment. The Sebkha Mekerrhane sandstone formation was deposited in the proximal part of a detrital platform in the form of an alternation between an *Offshore-transition* environment to *Shoreface* in the lower member and another in the *foreshore* in the upper member. The clayey-sandstone-carbonate formation presents a distal to medium position oscillating between the *Offshore-transition to Shoreface.*
In terms of sequence stratigraphy the succession shows 4th Order transgressive-regressive (T/R) sequences grouped into two third-Order sequences determining two T/R cycles whose duration is estimated at approximately 9.5 Ma.

Keywords: Key words: Pre, Tassilian country, Aoulef, lithostratigraphy, Ain Ech, cheikh, Sebkha Mekerrhane, Lower Devonian, sequence stratigraphy.

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