The Devonian sequences are under investigations, and some preliminary results on biostratigraphy are already obtained. *Eodevonaria* brachiopod fauna have been find in the Soutar section (identifications by D. Brice), marking the boundary between the Givetian and Frasnian Stage.

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The Siluro – Devonian sedimentary record of the Tassili n'Ajjer (SE Algeria): new insights from sedimentology and stratigraphy

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Abstract

The Silurian and the Devonian are two periods of interest throughout North Africa basins and Middle East, because sediments and organic-rich shales deposited in many places and formed important hydrocarbon reservoirs and source rocks (Beuf et al., 1971; Boot et al., 1998 & Lüning et al., 2000).

The study areas during this project are the Illizi-Berkine basins and Tassili n'Ajjer outcrops.

In the prolific Illizi-Berkine basins (Western Ghadames, Algeria) a basin-wide approach is needed, especially with the new "shale gas and shale oil" frontier in the upcoming years, in order to capture regional trends and re-assessment the Siluro-Devonian successions.

Wireline-logs from more than 146 (Berkine – Illizi Basin) Algerian petroleum exploration wells have been studied. Furthermore, a complete logging of spectacular large-scale and well exposed outcrops of the Siluro-Devonian sediments was carried out at the south margin (SE, Tassili n'Ajjer) of the Illizi-Berkine basins. The following analysis incorporates biostratigraphic, ichnological, sedimentological, magnetic susceptibility and high resolution stratigraphic data.

We present here a reference section for the Siluro-Devonian successions with an update on sedimentology and stratigraphy interpretation.

Silurian Facies from subsurface and outcrops, are ranging from offshore to deltaic deposits. The Silurian sequences can be subdivided into 6 main sequences, which are in stratigraphic order: (Si-1) Black 'Hot' Shale of Oued Imihrou Formation, organic-rich shales with nodular cabonates; (Si-2) Atafaïtafa Formation 500 to 650 m thick in subsurface with HCS, gutter casts and *Cruziana* Ichnofacies; (Si-3) and (Si-4) corresponds to 'Zone de passage' or 'M units' in the subsurface, which shows respectively increasing content of silts and sands then overlaid by clays of the M2 unit The M units with Storm-wave dominated interpreted to reflect deltaic origin, and environment framework prograding from prodelta to mouth bar; (Si-5) 'Barre inférieur' is coarsening-shallowing-upward unit, with large braided channels, conformably overlies the 'M unis' but with an erosional surface; Finally the (Si-6) corresponding to "Talus à Tigillites" or B units is mostly characterized by *Skolithos*, well developed on the delta-plain, and the topmost part of this sequence (B2) is truncated by the Caledonian unconformity.

Devonian Facies from subsurface and outcrops, are ranging from fluvial to normal-marine depositional conditions, and much more complex.