

Sedimentary Dynamic in the Triassis Series of Imini and Ighrem n'Ougdal Area (Hight Atlas of Marrakech, Morocco)

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The area of Imini and Ighrem n'ougdal is located approximately at 80km to the north of Ourazazate in a sector which belongs to the southern subatlasic zone of the High- Atlas of Marrakech.

The Triassic series of this area, is represented by facies with detrital predominance, made up primarily of conglomerates, coarse to fine sandstones, clays and siltstones, with an intercalation of gypsum levels then basaltic lava on the top of the series. A detailed sedimentological study allows to subdivide the series in four formations :

The E1 formation, thick of 20m, consists of a succession of purplished conglomerates and microconglomerats with centimetric to pluricentimetric elements of schist and rhyolite from the substratum with dominated through cross bedding. It is overlaid by coarse sandstones with planar cross bedding and horizontal bedding, with also mud cracks and burrows in the top.

These facies correspond respectively to deposits of channel lag with scour and fill movements, the deposits of transverse bars whose sedimentary bodies settle for the periods of raising of the water level and in the shallow places of the channel. The current was enough strong to allow avalanches deposits. The caliche palaeo-soils are present in the conglomeratic levels and are pilot of a carbonated epigenesis. The sequences are plurimetric, thinning and fining upwards. This formation is typically continental showing the installation of a relatively proximal braided system.

The E2 formation, thick of about thirty meters, consists of unorganized conglomerates, rich in silty matrix, corresponding to debris flows, becoming chenalized upwards. These conglomerates are overlaid by siltstones and red clays with vegetable remains and mud cracks at the top. It is about a deposit by vertical accretion in the calm zone of the floodplain, with a fast lowering of the water section towards the end of the rising. These fine deposits temporarily receive sandy clastic rocks at the time of the brutal phases of flood: overbank flooding. These facies contain some sandy channels. The top of the formation is characterized by the appearance of stromatolitic levels pilot of a algae epigenesis in a floodplain. The sequences are plurimetric in majority, thinning and fining upwards. This formation thus shows the deposit in proximal braided system passing to a more distal one.

The E3 formation thick of about twenty meters is silty sandy where the horizontal bedding with parting lineation pilot of a upper flow regim are dominate. These facies correspond to frequent sand flat deposits in the sandy fluvial systems.

The E4 formation, thick of a hundred meters, is sandy at the base and silty to clayey at the top. It is characterized by the presence of evaporites in the form of fibrous laminate but discontinuous gypsum. The sequences are metric, thinning and fining upwards. The presence of the gypsum is the index of the containment of the generating basin of local sursalures.

The Triassic formations of the buttonhole of Imini thus correspond to continental deposits at the base which were done by sometimes brutal discharges on a Paleozoic substratum where there were still reliefs, then by more regular currents. Containment is specified at the top with the levels with evaporates.