Evolution and Control of Ordovician Sedimentation in the Western and Central High Atlas (Morocco)

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The detailed Sedimentological study of Ordovician successions in Western High Atlas (Aït Lahsen, Bas Seksaoua, Adrar Amesnir and Adrar Walma) and Central High Atlas (Tizin- Tichka, Imini, Aït Tamlil, and Skoura) leads to several results concerning sedimentary environment, depositional sequences, sedimentation control, transport paths and paleogeographical reconstruction. They also suggest that the Western High Atlas and the Central High Atlas domains were two independent epeiric seas separated by an emergant area which corresponds to the present-day location of the Ouzellagh Massif.

In the Western High Atlas basin, the arenigian transgression induced shoreface erosion and the development of a "Basal Transgressive Sand". The sedimentation occurred in a wave and storm dominated delta (Arenigian) a storm dominated silisilastic offshore (Llanvirnian) and a storm dominated silisilastic offshore and shoreface (Llandeilian) under the control of eustatism and subsidence. During Caradocian-Ashgillian period, the supplies from the Saharan ice sheet were accumulated in waves, storms, and/or tides dominated nearshore under the interplay of the Upper Ordovician glaciation and tectonics.

In the Central High Atlas basin the arenigian transgression leads to the development of glauconitic deposits and the Llanvirnian commenced with a transgressive/regressive cycle which allow the formation of ferruginous ooids. The sedimentation occurred in tide dominated deltas (Arenigian) and tides, waves and fluvial currents influenced deltas with occasional storms (Llanvirnian -Llandeilian), under the control of eustatism and subsidence. During Caradocian-Ashgillian period, the supplies from the Saharan ice sheet were accumulated by tidal currents in macrotidal estuary and by gravity flow processes in troughs under the interplay of the upper Ordovician glaciation and tectonics.

Key-words : Ordovician, High Atlas, Depositional system, Paleogeography, Upper Ordovician glaciation.