

## **An Unusual Sedimentary and Stratigraphic System: the 1<sup>st</sup> Bani Group (Middle Ordovician, Anti-atlas, Morocco) – Lower Paleozoic vs. Present-Day Platforms?**

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During the Ordovician, very large siliciclastic platforms (1000-3000 km wide) characterised the northern side of the “great” continent Gondwana. Those “giant” platforms have no equivalent in present-day and meso-cenozoic sedimentary basins. The Middle Ordovician sediments (1st Bani Group) of Moroccan Anti-Atlas (Akka and Zagora areas) are one of the best outcrops for those types of platforms.

- The sedimentary system of the Zagora area corresponds to a large marine deltaic complex, evolving during a stratigraphic cycle from flood-dominated to storm-dominated systems. Compared to the present-day systems, the Zagora deltaic complex displays several differences.
- The progradational trend of the cycles is characterised by low energy sheet floods deposits (current ripples beddings). No mouth bar deposits, similar to the present-day environments, have been identified.

The retrogradational trend or transgressive systems tract (TST) is characterised by high energy storm deposits. The Zagora system shows untypical erosional structures, exclusively fill up by storm deposits. They correspond to multiple superimposed large incisions (few hundreds of metres to one kilometre large) with a finite vertical amplitude reaching 70 m.

If most of the deltas are dominated by flood-deposits during progradation, the occurrence of storm deposits during retrogradation is unusual. The complex storm erosional surface, located at base progradation, corresponds to the ravinement surface. In this case, and this is original compare to all other published case examples, this surface records the storm wave-base and not the fair-weather one.

Those specificities have to be explained taking into account the flat (?) topography of the system. But other parameters such as the high paleolatitude of the system or unusual relative sea-level amplitudes at third order scale can be other ways of research.