

## **Silurian and Devonian Sequence Stratigraphy of North Africa: Regional Correlation and Sedimentology (Morocco, Algeria, Libya)**

*Lubeseder, S. & Redfern, J. – North Africa Research Group. University of Manchester,*

Silurian and Devonian sequences have been studied from Morocco, Algeria and Libya integrating new outcrop data, subsurface well-logs and published descriptions of sections into a regional sequence stratigraphic framework.

The studied succession developed on the stable Saharan craton of northern Gondwana, affected by only subtle tectonic movements during the Middle and Late Devonian. A combined biostratigraphic, sequence stratigraphic and lithostratigraphic approach allows correlation over very large distances, relating areas with predominant pelagic deposits to those with predominant continental deposits. Correlation is assisted by an almost continuous Palaeozoic outcrop belt ranging for approximately 3000 km from the Anti-Atlas of Morocco to the Ougarta Arch and northern Hoggar region in Algeria to the circum Murzuk Basin outcrops in Libya. The Silurian and Devonian eustatic sea-level curve is very well displayed on the Saharan craton, where extensive unconformities can be correlated to conformable lowstand deposits in the pelagic realm. Long-term sea-level changes include the latest Ordovician glacial eustatic lowstand, mid Silurian highstand, latest Silurian to earliest Devonian lowstand, Early Devonian stillstand, Middle Devonian sea-level rise, Late Devonian highstand and a latest Devonian glacial eustatic lowstand. The long-term sea-level changes are superimposed on fourteen higher-order sequences, whose duration ranges between 3 to 10 Ma. Almost all of these coincide well with the known Silurian eustatic sea-level lowstands and highstands and the Devonian eustatic 'transgressive events'. The comparison also shows that Middle to Late Devonian tectonics only modified the palaeogeography, but did not obliterate the eustatic signature of the observed relative sea-level changes.

Results of this study are illustrated in a series of new chronostratigraphic charts. The charts display the craton-wide facies distribution and coastal offlap and onlap in the sequence stratigraphic framework. Higher-order sequences have been correlated from the generally better dated pelagic carbonate facies realm of Morocco into the successively less well dated neritic and continental facies realm in Libya, providing new age constraints on the latter formations.