Viséan Basin Fill of the Jerada Synclinorium (NE Morocco) – Sedimentary Dynamics and Geodynamic Implications

Hans-Georg Herbig and Markus Aretz
Universität zu Köln, Institut für Geologie und Mineralogie, Zülpicher Str. Morocco – Carboniferous – basin fill – basin architecture – geodynamic model

The Carboniferous Jerada Synclinorium is one of the Variscan massifs of the Eastern Moroccan Meseta. A mostly Viséan basin fill megacycle (Herbig et al. 2006) is unconformably overlain by a paralic Namurian–Westphalian C succession. The basin fill sequence starts with rhyolithic, andesitic and dacitic volcanosedimentary rocks (Oued Defla Formation). They are bound to roughly W-E trending, syndepositional active fault systems and either formed a submarine palaeorelief and/or intruded onto an inclined basin floor. Overlying bedded cherts and intercalated pyroclastics (Çafçaf Formation) started to level the relief. The Oued El Koriche Formation on top is a toe-of-slope deposit. It contains up to hectameter sized limestone olistolites at the southern flank of the Jerada synclinorium, indicating reworking of a southern carbonate platform at an active fault system. Water depth increased towards the N-NE, since at the northern flank only calciturbiditic fines occur. Goniatite-bearing, predominantly shaly slope deposits follow (Oued Es-Sassi Formation), which according to increasing fossil content and decreasing grain sizes again indicate more basinal conditions in the northeast. The basin fill is completed by prograding shallow-marine carbonate facies including different reef facies (Aretz et al., this meeting) and first local input of siliclastic sediment from the north (Koudiat Es-Senn Formation). Emersion at the end of the Viséan is well shown by a cartographic unconformity at the southern flank of the synclinorium. At the northern flank, emersion is proved by a subaerial ignimbrite and the erosive base of lower Namurian siliciclastics. The geodynamic setting of the Jerada Basin is controversial. Obviously, it is part of a larger basin comprising at least parts of the eastern Meseta. Basin fill and basin dynamics point to a continental margin type back arc basin, which is strongly dissected by strike-slip fault systems due to oblique, south-directed subduction occurring further north, resp. northwest.

Herbig, H.-G. et al. (2006): The Viséan of the Jerada synclinorium (NE Morocco): lithostratigraphy, facies, and depositional setting. – Kölner Forum Geol. Paläont., 15, 36-37.