Activity *vs.* Stability: a multi-proxy approach to reconstruct fluvial morphodynamics of Wadi Selloum in the vicinity of the rock shelter Ifri n'ammar (Morocco)

Instabilite *vs*. Stabilite: une approche multi-proxy pour reconstituer les morphodynamiques fluviales dans l'oued Selloum a proximite de la grotte d'Ifri n'ammar (Maroc)

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The impact of environmental changes on the emergence and dispersal of anatomically modern humans (AMH) is particularly important in North Africa, since the Straits of Gibraltar might have served as western migration route for AMH from Africa to Europe. The prehistoric rock shelter of Ifri n'Ammar in NE Morocco reveals discontinuous Middle and Late Palaeolithic occupation phases since ~170 ka.

Our study focuses on Wadi Selloum deposits to unravel palaeoenvironmental features and geomorphological aspects of the direct vicinity of Ifri n'Ammar. As a tributary of the Moulouya River, the catchment area of this ephemeral stream amounts to ~290 km², spanning elevations between ~700 and 200 m above sea level. Headwaters of the 35 km long Wadi Selloum drain Mesozoic limestone and dolomite.

The application of luminescence dating techniques on Wadi Selloum deposits yielded burial ages between 1.3 ± 0.2 ka and 78 ± 7 ka, covering morphodynamically stable and active phases. Overbank fines include well-developed soil horizons as evidence of stability and of more humid periods than today around 80 ka and during the Holocene. This is supported by pedofeatures discovered in thin sections as well as the composition of clay minerals of the wadi sediments. Disordered clay minerals and partly illite/chlorite mixed-layer characterize the soil levels. Levels relatively rich in chlorite, illite, ankerite and quartz are interpreted as corresponding to relatively dry periods, while more humid periods lead to more intensive weathering and consequently to the dominance of clay minerals more advanced in the relative stability scale, such as kaolinite. Smectite is taken to indicate a climate with contrasting seasons and a pronounced dry season.

In contrast, coarse-grained deposits, which are partly characterised by calcrete layers, point to drier conditions after 80 ka and 14 ka. In addition, the lack of palaeosols confirms morphodynamic activity during these periods.

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