

Quaternary evolution of the Marrakech High Atlas

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Pleistocene deposits lithofacies and geomorphology of central MHA are the results of a combination of regional uplift (i.e. Atlas orogen) with Quaternary climatic fluctuations. Tectonic uplift is registered by the TTFZ activity which is expressed: 1) in the Upper Ourika drainage basin by highly deformed Pleistocene slope and debris flow deposits; 2) in the central drainage basin, by the stepped sequences of fluvial terraces; 3) in the southern border Haouz piedmont by tilted and segmented alluvial fans. We also showed that the Upper Ourika River has been periodically blocked by thick catastrophic rockslide debris and consequently responded by cutting a steep re-incised gorge. Earthquake-induced rockfalls are probably responsible for a significant fraction of large, catastrophic landslides along the TTFZ.

Another result is the combination of Quaternary uplift tectonic with fluctuations in runoff recorded by stratigraphy and lithofacies of deposits stored in the Ourika Valley. The fill is represented by debris flows and fluvial channel gravels interstratified, rockslide-debris avalanche, stratified slope deposits and terrace gravels deposits.

We anticipate this work to be a starting point for: 1) the radiochronometric dating of the deposits and morphologies in order to quantify “absolute” uplift rate of the ongoing orogenesis of the High Atlas in the area of Marrakech; and, 2) improvement of our knowledge of catastrophic flood event in the catchment area.

Keywords: Drainage basins; Tectonic geomorphology, geomorphic indices, Tizi N'Test fault Zone; Marrakech High Atlas; Morocco