



Morphostructural context of gullies in Taroudant, Morocco

Ali Ait Hssaine (1), Hassan Ghafrani (1), Klaus Daniel Peter (2), Sebastian d'Oleire-Oltmanns (3), Johannes B. Ries (2), and Irene Marzolff (3)

(1) Development and Geoenvironment of Arid and Semi-Arid Lands, Department of Geography, University Ibn Zohr Agadir, Morocco (Aithssaine55@gmail.com), (2) Physical Geography, University of Trier, Germany, (3) Remote Sensing & GIS Research Group, Department of Physical Geography, Goethe University, Frankfurt am Main, Germany

The Souss depression is wedged between the High Atlas to the north and the Anti-Atlas to the south. It corresponds to the south atlasic path and opens on the Atlantic Ocean. It is drained by the Souss wadi which flows into the ocean. This depression extends over 160 km in length from east to west and 40 km wide from north to south, its greatest extension is near the city of Taroudant.

Morphologically, the Souss depression is a set of coalescing alluvial fans from the High Atlas and Anti-Atlas, their convergence is highlighted by the Souss or the very low Holocene terrace.

Morphostructurally, the Souss depression is a broad Cretaceous syncline fault, filled with Plio-Quaternary deposits whose thickness can reach about 250 to 300 m near Taroudant. These deposits are in a stepped or inserted position at the outlets of the wadis of the Atlas area and contain coarse material. They become thin and layered (stacked) in the distal part of alluvial fans in the axis of the syncline due to subsidence. These superficial deposits of Holocene age support a speculative agriculture and are heavily used by large agricultural investors.

Currently, at the historic town of Taroudant and around the Wadi el Ouaar, on these superficial deposits (sand, silt and clay) grows a spectacular landscape of gullies moving in all directions and leading to land abandonment.

Two factors are responsible for triggering these gullies: the first is of tectonic order. It is linked to a hidden fault and active which affects the Cretaceous base. Its influence is expressed by the behaviour of the river system (deep-set of Wadi el Ouaar, dissymmetry of the morphological fan of Assif Irguitène). The second is the human factor, related to the introduction of sugar cane and its factories in Taroudant and in the Souss region in the 16th century (deforestation of the argan tree).