

Stratigraphic architecture and evolution of post-Messinian alluvial systems at the southern margin of the Taza-Guercif basin, Morocco

Chiara Zuffetti¹, Fabrizio Felletti¹, Simone Reguzzi¹, Clarissa Cuccureddu¹ and Luca Trombino¹

¹ Department of Earth Sciences, University of Milan, via Mangiagalli 34, 20133 Italy. chiara.zuffetti@unimi.it; fabrizio.felletti@unimi.it; simonre.reguzzi@unimi.it; clarissa.cuccureddu@studenti.unimi.it; luca.trombino@unimi.it

Abstract: *Architectural models of stratigraphic sequences of Neogene continental basins necessitate the comprehension of basin evolution and provide essential frameworks for the evaluation, management, and preservation of the resources they host. The stratigraphy and evolution of Neogene-Quaternary alluvial systems of North Africa remain poorly documented, despite exceptional outcrop exposures due to arid climate conditions that enable extensive geological mapping. Developing architectural models of alluvial systems for these regions becomes crucial, as river valleys constitute both primary sources of potable water and farmed areas in the arid regions.*

This work aims to reconstruct the architecture and evolution of the post-Messinian alluvial sequences of the Taza-Guercif foreland basin, located north of the Middle Atlas Mountains and dissected by the Zobzit River, which has generated a succession of stacked terraces and palaeovalleys.

Geological and geomorphological mapping at 1:5000 scale, stratigraphic, sedimentological, geopedological, petrographic, and morpho-structural analyses show the increments of alluvial landscape evolution. Location of unconformable stratigraphic vs. conformable morphological boundaries, pinch-out and cross-cutting relationships among sedimentary units, the cannibalization of pre-existing alluvial clastics and colluvial wedges suggest drainage patterns responded to tectonics and/or major climate turnovers.

The stratigraphic architecture permits interpretation of the following evolutionary stages: i) northward-draining mountain front alluvial fans passing distally into an extensive braid plain; ii) subsequent baselevel reduction generating a south-north trending axial braided river system, interacting with valley-confined alluvial fans incised into the preexisting braid plain and the Atlas highlands; iii) progressive incision of the Zobzit River canyon following renewed baselevel fall, concentrating sedimentation within the axial river system and enhancing cannibalization of antecedent alluvial fan and river terraces.

The ongoing research will constrain the sequential phases of basin continentalization, by investigating the relations between palaeoclimatic events and Rif-Atlas tectonic interference from the Neogene to present.

Key words: *alluvial fan, baselevel, braid plain, overbank, palaeosol*