Geophysical Research Abstracts
Vol. 19, EGU2017-16770, 2017
EGU General Assembly 2017

Active tectonics and drainage evolution in the Tunisian Atlas driven by interaction between crustal shortening and slab pull

Miquel Camafort (1), Guillermo Booth-Rea (2), Jose Vicente Pérez-Peña (1), Fetheddine Melki (3), Eulalia Gracia (1), Jose Miguel Azañón (2), and César R. Ranero (4)

(1) Institut de Ciències del Mar, CSIC, Barcelona, Spain, (2) University of Granada, Geodinámica, Granada, Spain (gbooth@ugr.es), (3) Department of Earth Sciences, Tunis El Manar University, Tunis, Tunisia, (4) ICREA at Institut de Ciències del Mar, CSIC, Barcelona, Spain

Active tectonics in North Africa is fundamentally driven by NW-SE directed slow convergence between the Nubia and Eurasia plates, leading to a region of thrust and strike-slip faulting. In this paper we analyze the morphometric characteristics of the little-studied northern Tunisia sector. The study aimed at identifying previously unknown active tectonic structures, and to further understand the mechanisms that drive the drainage evolution in this region of slow convergence. The interpretation of morphometric data was supported with a field campaign of a selection of structures. The analysis indicates that recent fluvial captures have been the main factor rejuvenating drainage catchments. The Medjerda River, which is the main catchment in northern Tunisia, has increased its drainage area during the Quaternary by capturing adjacent axial valleys to the north and south of its drainage divide. These captures are probably driven by gradual uplift of adjacent axial valleys by reverse/oblique faults or associated folds like El Alia-Teboursouk and Dkhila faults. Our fieldwork found that these faults cut Holocene colluvial fans containing seismites like clastic dikes and sand volcanoes, indicating recent seismogenic faulting. The growth and stabilization of the axial Medjerda River against the natural tendency of transverse drainages might be caused by a combination of dynamic topography and transpressive tectonics. The orientation of the large axial Medjerda drainage that runs from eastern Algeria towards northeastern Tunisia into the Gulf of Tunis, might be the associated to negative buoyancy caused by the underlying Nubia slab at its mouth, together with uplift of the Medjerda headwaters along the South Atlassic dextral transfer zone.