



Morphotectonic evolution of the Alhama de Murcia strike-slip fault overprinting drainage systems inherited from Late Miocene extension (Western Mediterranean-Eastern Betics)

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The adaptation of drainage systems to the evolution of tectonic structures offers important clues to the tectonic regime present in an area and to the tectonic changes that have occurred. The development of new mountain fronts can produce the abandonment of earlier drainage networks by way of fluvial captures. We analyse the response of a drainage network inherited from late Miocene extension to tectonic forcing associated to the growth and activity of the Alhama de Murcia sinistral strike-slip in a new transpressive tectonic setting. Rock uplift related to the Alhama de Murcia strike-slip fault and associated structures are conditioning the recent drainage network; overprinting the previous extensional related drainage. We carried out a structural and a qualitative and quantitative relief analysis to understand how the relief has evolved and which are the main active structures that currently control the drainage configuration. We identify river capture sites and we present a geomorphic index analysis using SLk anomalies, hypsometric curves, mountain front sinuosity, the comparison between longitudinal and projected river profiles with the SLk values and the position of active faults and folds, and a slope analysis of the area. The results show: 1) the reactivation of the ending part of the main basins by the current uplift of the Sierra de la Tercia, 2) progressive capture processes related to the growth of the Rambla de Lebor and Totana transverse drainages upon the previous drainage, evidenced by the presence of wind gaps, abrupt changes in flow direction, oblique relationship between current river direction and paleosurfaces maximum slope direction and changes in the lithologic composition of terraces, and 3) basin shapes controlled by the interference between an old NE-SW-directed drainage network controlled by extensional structures and another NW-SE one controlled by the sinistral Alhama de Murcia Fault.