



Upper Pleistocene - Holocene activity of the Carrascoy Fault (Murcia, SE Spain): preliminary results from paleoseismological research.

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The Carrascoy Fault is located in the Internal Zones of the Betic Cordillera (Southern Spain). In particular, the Carrascoy Fault is one of the major faults forming the Eastern Betic Shear Zone, the main structure accommodating the convergence between Nubian and Eurasian plates in the westernmost Mediterranean. So far, the Carrascoy Fault has been defined as a left-lateral strike-slip fault. It extends for at least 31 km in a NE-SW trend from the village of Zeneta (Murcia) at its northeastern tip, to the Cañaricos village, controlling the northern edge of the Carrascoy Range and its linkage to the Guadalentin Depression towards the southwest. This is an area of moderate seismic activity, but densely populated, the capital of the region, Murcia, being settled very close to the fault. Hence, the knowledge of the structure and kinematics of the Carrascoy Fault is essential for assessing reliably the seismic hazard of the region.

We present a detailed-scale geological and geomorphological map along the fault zone created from a LIDAR DEM combined with fieldwork, and geological and geophysical information. Furthermore, a number of trenches have been dug across the fault at different locations providing insights in the fault most recent activity as well as paleoseismic data. Preliminary results suggest that the Carrascoy Fault has recently changed its kinematic showing a near pure reverse motion. According to this, the fault can be divided into two distinct segments, the eastern one: Zeneta – Fuensanta, and the western one: Fuensanta – Cañaricos, each one having its own characteristic style and geodynamics. Some new active strands of the fault locate at the foot of the very first relief towards the North of the older strand, forming the current southern border of the Guadalentin Depression. These new faults show an increasingly reverse component westwards, so that the Fuensanta - Cañaricos segment is constituted by thrusts, which are blind at its western end, evidenced by the folding of Middle-Upper Pleistocene alluvial fans. This change in the fault kinematics suggests that Shmax (maximum horizontal shortening) direction progressively passed from NNW-SSE, responsible for the sinistral strike-slip fault movement since the Upper Tortonian, to a NW-SE direction, inducing an increase in the reverse component of the fault. Preliminary observations from the trenches dug, suggest that the change in Shmax occurred about 210 ka (upper part of the Middle Pleistocene), and that the last surface rupture event took place less than 17 ka.