



Strike-slip transfer faults in an extensional system (Granada Depression, Betic Cordillera)

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The Granada depression, located in the Betic-Rift Cordillera, is filled with Neogene and Quaternary sedimentary rocks. Its NE border is limited by normal active faults with a NW-SE orientation. However, there are, also some left-lateral strike-slip subvertical active faults trending N106°-25°E. The Cogollos fault belongs to this strike-slip fault set and is bounded north and southwards by normal NW-SE faults. These normal faults dip smoothly southwestwards and have a minor left-lateral kinematic component. Geometric relationships between the faults indicate that the Cogollos fault acts as a transfer segment between the other two normal faults. A detailed geomorphologic study of the drainage network was carried out to analyze the SLk index. High values of this index in the margin of the depression match up with this fault system. The presence of these SLk anomalies in conjunction with field evidence, such as Quaternary colluvial wedges linked to the fault planes; confirm a recent activity of this fault system. Three gravity profiles made perpendicular to the faults show two marked steps in the Bouguer anomaly. One step coincides in all the profiles with faults of the depression boundary and the other step, located 1 km westwards, could correspond with another fault that does not crop out. The profiles also suggest a throw of up to 500 m, as in other active normal faults in this area. This structure indicates that the NE limit of the Granada depression is an active transpressive border in the context of NW-SE convergence between Iberia and Africa that accommodates the NE-SW extension linked with that compression.