



Lateral interaction between metamorphic core complexes and less-extended, tilt-block domains: the Alpujarras strike-slip transfer Fault Zone (Betics, SE Spain)

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The Alpujarras area in south-east Spain exhibits one of the scant documented examples of extension related strike-slip faults bordering core complexes in the world. Faults of the Alpujarras fault zone define a regional-scale complex ENE-striking transfer zone that marks the boundary among the Sierra Nevada elongated dome, a highly-extended, constricted core-complex, and a less-extended domain formed by large-scale tilted blocks. Detailed mapping and structural analysis show that the Alpujarras fault zone is an integral part of the WSW-directed normal fault systems which thinned the Betic hinterland during the middle Miocene to Recent time. Fault patterns and palaeostress analysis both indicate that dextral movement along the strike-slip faults was induced by a local stress field with a sub-horizontal E-W to ESW-WNW-trending maximum principal stress axis, which is synchronous with the regional stress field driving the normal fault systems. Palaeostress analysis and structural analysis also indicate subsequent variations in the stress field with a sub-horizontal NW-SE to N-S-trending principal stress axis, thus producing both the tectonic inversion of the northern fault of the Alpujarras system and shortening of the unloaded extensional detachment footwall. A simplified kinematic model for the tectonic evolution of the Alpujarras area from the middle Miocene to Recent emphasizes the kinematic coupling of normal faults and strike-slip transfer zones in the extensional process.