



## **From westward slab pull to orthogonal plate convergence, active inversion tectonics in the Granada basin, Betics (Western Mediterranean).**

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Subduction rollback under the Alboran basin together with edge delamination under its margins have driven westward-directed extension, magmatism and regional uplift from the Middle Miocene until present in the Western Mediterranean. These processes have been coeval to NW-SE plate convergence between Eurasia and Nubia, which produced the main contractive and transpressive structures observed in the region. Slab-pull has driven W- to SW-directed extensional detachments following a belt of westward-directed thrusts, whilst plate convergence has mostly shortened the unloaded footwalls of the detachments producing ENE/WSW folds and both NW- and SE-directed reverse and strike-slip faults. At present, a diffuse boundary can be drawn in the Betics between regions extended by westward slab-pull processes situated to the west of a highly segmented extensional system and uplifted regions where plate convergence dominates producing folds, reverse faults and inversion of previous extensional-related faults, in the footwall of the aforementioned active extensional system. This boundary has migrated westward since the middle Miocene following the retreating slab and is located at present in the eastern margin of the Granada basin, although, it steps back towards the east along the Alpujarras dextral transfer system before entering the Alboran Sea. In the eastern margin of the Granada basin Plio-Quaternary extension-related structures in the footwall of the main active normal faults of the basin are mostly inactive, the related sedimentary infilling is starting to fold, uplift, and both reverse and strike-slip earthquake focal mechanisms compatible

with NW-SE convergence occur. Meanwhile, structures and focal mechanisms in the hanging-wall respond mostly to westward slab-pull dominated processes producing closely associated SW- to W-directed thrusting and SW-directed extension.