



Miocene tectonics of the Western Alboran domain: from continental lithosphere hyperstretching to westward thrusting

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In the frame of the Africa-Europe convergence, the Mediterranean tectonic system presents a complex interaction between subduction rollback and upper-plate deformation during the Tertiary. The western Mediterranean is characterized by the exhumation of the largest subcontinental mantle massif worldwide (the Ronda Peridotite) and a narrow arcuate geometry across the Gibraltar arc within the Betic-Rif belt (the internal part being called the Alboran domain), where the relationship between slab dynamics and surface tectonics is not well understood. New structural and geochronological data are used to argue for 1/ hyperstretching of the continental lithosphere allowing extensional mantle exhumation to shallow depths, followed by 2/ lower Miocene thrusting. We will also use gravimetric data to show that the second stage of deformation implies the thrusting of an entire hyper-stretched continental lithosphere onto a continental margin (e.g. Iberia). A compilation of ductile shearing, recorded along the crust-mantle extensional shear zone during lithosphere thinning (first stage of deformation), is finally used here to reconstruct the 3D geometry of the Oligo-Miocene continental rift. We propose that the Ronda peridotites were exhumed in an oblique rift system elongated N-S, with several NW-SE rift axes connected by NNE-SSW transform faults. We will finally show that such inherited structures were most probably reactivated during rift inversion in Miocene.