

## **Extensional deformation of the Guadalquivir Basin: rate of WSW-ward tectonic displacement from Upper Tortonian sedimentary rocks**

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The Guadalquivir Basin (Upper Tortonian-Quaternary sedimentary infilling) has been considered the foreland basin of the Betic Orogen built up during its collision with the Sudiberian margin. The basin is currently restricted to its westernmost sector, in the Cadiz Gulf, because the Neogene-Quaternary uplift of the Betic Cordillera has produced the emersion of their central and eastern parts. The upper Tortonian chronostratigraphic unit is the oldest one and it was indistinctly deposited on the South Iberian paleomargin and the External units from the Betic Cordillera. However, these rocks are undeformed on the Sudiberian paleomargin while they are deeply affected by brittle deformation on the External Betic Zone. Outcrops of Upper Tortonian sedimentary rocks on External Betic Zone are severely fragmented showing allocthonous characters with regard to those located on the Sudiberian paleomargin. This post- Upper Tortonian deformation is not well known in the External Zones of the Cordillera where the most prominent feature is the ubiquity of a highly deformed tecto-sedimentary unit outcropping at the basement of the Guadalquivir sedimentary infilling. This tecto-sedimentary unit belongs to the Mass Wasting Extensional Complex (Rodríguez-Fernández, 2014) formed during the collision and westward migration of the Internal Zone of the Betic Cordillera (15-8,5 Ma). In the present work, we show an ensemble of tectonic, geophysical and cartographic data in order to characterize the post-Upper Tortonian deformation. For this, seismic reflection profiles have been interpreted with the help of hydrocarbon boreholes to define the thickness of the Upper Tortonian sedimentary sequence. All these data provide an estimation of the geometrical and kinematic characteristics of the extensional faults, direction of movement and rate of displacement of these rocks during Messinian/Pliocene times.

### References

Rodríguez-Fernández, J., Roldan, F. J., J.M. Azañón y Garcia-Cortes, A. 2013. EL colapso gravitacional del frente orogénico alpino en el Dominio Subbético durante el Mioceno medio-superior: El Complejo Extensional Subbético. *Boletín Geológico y Minero*, 124 (3): 477-504