

Structure and Tectonic Evolution of the Flysch Trough Thrust Imbricate in the Northern Branch of the Gibraltar Arc Orogenic Wedge

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The Gibraltar Arc accretionary prism, constituted by the Flysch Trough units, is sandwiched between the fold-and-thrust belt derived from the South Iberian and Maghrebian Domain and the metamorphic rocks of the Alboran Domain, on top. In the northern branch of the Gibraltar Arc, the main tectonic unit of this inactive accretionary prism is the Aljibe unit, composed by upper Jurassic to lower Miocene rocks, mainly siliciclastic. It shows a well-organized structure of thrust imbricates, characteristic of a thin-skinned type deformation, produced by an approximately EW shortening event, post-lower Burdigalian in age. The structural style and vergence within this unit permit to recognize three structural domains, separated by major accommodation zones. This can be explained as a consequence of the variations of rock type along the basal décollement. The general architecture of imbricate thrust fan, characteristic of all the structural domains of the Aljibe unit, can locally be affected by late deformations.

The described Aljibe unit organization strongly differs from the chaotic geometry and the gravitational mode of emplacement proposed by previous authors. By contrast, it fits a push-from-behind mechanism for its emplacement, in which the relatively “rigid” back stop would be represented by the Alboran Domain. Since the Flysch Trough units derive from a deep water infill located on a much attenuated lithospheric domain (Flysch Trough), they represent as a whole a particular case of accretionary prism nowadays emplaced onto their neighbouring paleomargins. They also have a special tectonic significance, as a suture marker between the Alboran Domain internal zones and the external zones. Our data provide important constraints to generate more refined reconstructions of the Betic-Rif orogenic building.

Key words: Gibraltar Arc, Flysch Trough Complex, accretionary prism, Aljibe unit, thin-skinned deformation.

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