

## Facing confrontation in coaxial deformation during the main Variscan tectonic event; SW Portuguese sector of Centro-Iberian Zone

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The SW sector of the Centro-Iberian Zone, which corresponds to the inner domain of the Iberian Variscides, is affected by a penetrative variscan progressive coaxial deformation. During the first and main Variscan deformation event ( $D_1$ ) the strong flattening in a NE-SW direction induces the pervasive folding of Cambrian to Silurian metasediments.

This deformation is more complex in the Cambrian metaturbidites of the Beiras Group, where the fold hinges can attain high plunges ( $70-80^\circ$ ) with a strong dispersion in their orientation. In the overlying quartzitic-shale layers of the Ordovician-Silurian succession the fold hinges (well exposed in the quartzites of the Armorican Formation) are sub-horizontal with a NW-SE direction. The folding event is coeval with a  $S_1$  cleavage which is the most penetrative structure at regional scale. This foliation is axial planar to the folds, which usually present an upright geometry giving rise to intersection lineations  $L_1$  with a low dispersion and sub-parallel to the fold hinges of the Ordovician-Silurian formations. However, in the Cambrian Beiras Group,  $L_1$  shows a strong dispersion. The contrast of the variscan deformation geometries between the Cambrian and Ordovician-Silurian metasediments is the result of the transient Sardic deformation event. Considering the stretching lineations ( $X_1$ ) associated with the  $D_1$  Variscan event, they are always sub-perpendicular to the fold hinges of the Ordovician-Silurian formations, following the kinematic **a** axis. This behavior changes in the vicinity of the contact with the Ossa-Morena Zone, where  $X_1$  tend to be subhorizontal, following the kinematic **b** axis of the folds developed in the Ordovician-Silurian metasediments. This fact could be explained by the strong influence of the sinistral regional movement along the major Tomar-Badajoz-Cordova shear zone.

Spatially related with the main regional  $D_1$  folds are complex reverse faults which affect both limbs of the main Serra do Moradal-Fajão and Vila Velha de Ródão variscan synclines; such faults are also considered to be  $D_1$  variscan structures. The transport direction associated with these reverse faults is always sub-perpendicular to the fold hinges. The vergence of these reverse faults, as well as the facing of some second order related folds, is always towards the core of the first order regional folds; in the SW limb they are facing NE, while in the NE limb they have a SW vergence. This geometry induces a situation of confrontation in the inner domains of the orogeny during the main Variscan deformation event. Such geometry should be understood in the regional context. Indeed, the studied domain is developed between 2 first order asymmetric flower structures: the northern Douro and a southern one close to the boundary between the Ossa-Morena and Centro-Iberian Zones.

During the end of  $D_1$  the limits between the regional synclines are rejected by dextral (Sobreira Formosa) or sinistral (Ceira) shear zones. The existence of a tight confrontation area in the inner part of the SW sector of Centro-Iberian Zone suggests an inverse reactivation of syn-sedimentary faults of the Precambrian to Cambrian basement with NW-SE orientations. It conditioned the activity of the principal reverse faults during the Variscan orogenesis.