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The fracture pattern of the Sant Corneli oblique inversion anticline (Spanish Pyrenees).

Stefano Tavani, Jordi Bausa, Joana Mencos, and Josep Anton Muñoz
Barcelona University, Geodynamics and Geophysics, Barcelona, Spain

In this work we present the macro and mesostructural deformation patterns of the Late Cretaceous Sant Corneli oblique inversion anticline (Spanish Pyrenees). This E-W striking and south-verging structure developed by inversion of an Early Cretaceous extensional fault system, formed by WNW-ESE striking faults (oriented perpendicular to the Early Cretaceous stretching direction) and transfer faults. During inversion, the shortening direction was oriented NNW-SSE, i.e. oblique to both basin margin and inherited extensional deformation structures. A pre to early-folding layer-parallel shortening stage (LPS) caused the right-lateral strike-slip reworking of inherited extensional structures and the development of extensional and contractional structures oriented parallel and perpendicular to the shortening direction, respectively. Few structures clearly developed during the late stages of fold growth, in response to a stress field having principal axes parallel to those of the layer parallel shortening event, i.e. oblique to the fold axis. All these assemblages were overprinted by a set of post-folding extensional structures, oriented oblique to the strike of the Sant corneli Anticline too.

Rare WSW-ENE striking joints and veins postdate the LPS pattern and can be associated with a sin-folding layer parallel stretching. These structures strike parallel to few reverse faults that, in both fold limbs, indicate a top to the crest shear sense that we associate with flexural-slip folding. Both layer-parallel stretching and shear sense provided by flexural-slip related elements are not perpendicular to the fold axial trend.

From our data arise that, in the Sant Corneli Anticline, the sin-inversion deformation pattern includes elements that are neither parallel nor perpendicular to the fold axial trend, being the strike of these structures controlled by the inherited extensional structures and the regional shortening direction.