

Abstract

The Cotiella Massif consists, due to their exposure and high structural relief, in an exceptional seismic scale outcrop of a passive margin tectonically inverted and incorporated into the Pyrenean orogen. The geological map and representative cross-sections of the central parts of the Cotiella sub-basin done in this study lead to a reinterpretation of its evolution. The basin was controlled by gravity driven salt tectonics of upper Triassic Keuper materials, that generated Cotiella and Armeña passive diapirs and associated growth strata middle Coniacian to lower Santonian in age. Structural and sedimentological observations, such as facies distribution and halokinetic geometries, lead to reject the rollover origin of the growth strata caused by listric fault presence that was suggested by previous authors. The tectonic inversion, that started on late Santonian, produced the welding of both Cotiella and Armeña diapirs, which were subsequently replayed as thrusts. Diapir associated structures described in the Cotiella sub-basin, the Cotiella Megaflap and the Reduno downward-facing anticline, were also affected by the tectonic inversion, that modified their geometry and hinder their recognition. Therefore, this study contributes to the structural characterisation of fold-and-thrust belts with an extensional salt tectonics inheritance.