

## **The role of salt tectonics in the evolution of the northeastern Pyrenees**

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Evaporites can play a major role in controlling the architecture of external orogenic belts, both during extensional and subsequent compressional phases. However, salt can also ‘hide’ deformation due to its ability to flow and dissolve. The challenge is to recognise the imprint of its past presence and influence. In the NE Pyrenees multiple deformation phases have been identified based on locally anomalous stratigraphic and structural relationships. This has resulted in complex, sometimes incoherent and often conflictual models of orogenic history. For example, a pre-Cenomanian deformation phase has been interpreted as either extensional or compressional. As part of the ANR-PYRAMID project, we have re-examined key localities around the eastern Mouthoumet massif, in the Corbières foreland and along the Corbières thrust front to reconstruct a coherent deformation history involving salt tectonics.

Keuper (Carnian – Rhetian) evaporitic deposits gave rise to diapirs and detachments that were particularly active during Early to Late Cretaceous extension and later during Late Cretaceous to Eocene compression. Growth unconformities and rapid thickness changes in the Aptian Quillan basin indicate that it developed as a salt controlled minibasin. Olistoliths, gypsum breccias and presence of bipyramidal quartz in Albian strata preserved as footwall imbricates along the North Pyrenean thrust front (e.g. around Cucugnan) attest to the proximity of a large diapiric body. Below the Cenomanian unconformity, rotated fault blocks of Liassic to Albian strata lie above a Keuper detachment. These extensional fault blocks have already been recognised at the Serre de Bouchard. They are also preserved north of Cucugnan, in the Montagne de Tauch and in the Fontfroide massif with little or no alpine inversion.

In the Corbières foreland area salt-influenced extensional and compressional deformation generated growth folds, with completely overturned limbs (flaps), welds, growth unconformities and pinched salt-cored anticlines. Several of these structures have generated considerable controversy in the past (Pinède de Durban, Boutenac anticline, Ripaud syncline). In the light of new advances in understanding salt-related stratal and fault geometries we propose a new interpretation of these foreland structures integrating halokinesis, which leads to a new coherent regional tectonic history.