

SYNSEDIMENTARY AND PYRENEAN DEFORMATIONS IN QUERCY (FRANCE). COMBINATION OF FIELD, PETROGRAPHY AND GEOCHEMICAL ANALYSES.

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The direction of two major hercynian faults in southcentral France plays a large role in the sedimentation and tectonic deformation in the eastern Aquitaine Basin: the N20° Villefranche-Toulouse fault and the N150° West Quercynois accident. These major faults delimit the West-Quercynois Jurassic sub-basin (Dauch 1988). This study combines structural fieldwork with petrography and geochemical analyses with the aim to better spatially characterize the kinematics of the structures with the nature of the associated synkinematic fluids.

In this zone relatively far from the Pyrenean orogen, fieldwork observations show three principal directions of structures in the area, whatever the scale: E-W reverse faults, NW-SE dextral strike-slip faults and NE-SW sinistral strike-slip fault, as documented by multiple authors (Bonijoly 1980, Pélissié 1982, Dauch 1988). Paleostress inversions (Angelier, 1994) evidence that these structures are kinematically coherent, all with a nearly N-S sigma 1, and formed at the same time, likely during the Pyrenean Tertiary compression.

Moreover, extensional synsedimentary faulting exists in several places in the field as well. The latter, less documented in the literature, corresponds mainly to E-W dip-slip normal faulting characterizing a N-S extension stress state.

In order to conduct a petrographic and geochemical study, 30 thin sections are made from calcite cement samples collected from faults and fractures. Observations of thin-sections with alizarin-potassium ferricyanide staining and by cathodoluminescence microscopy allows for precise documentation of the cement stages that precipitated within fractures and faults. Coupled with $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ analyses, it allows for the identification of the type (meteoric vs marine) and relative history of the fluids circulating at different locations in the West-Quercynois sub-basin. The goal is to associate a specific fluid with each deformational phase as well as, if possible, each type of fracture.

The project is a final internship for a Master 2 engineering student at ENSEGID (Ecole Nationale Supérieure en Environnement, Géoressources et Développement Durable) in Talence. It is part of the collaborative project Convergence – Source to Sink between the BRGM (Bureau de Recherche Géologique et Minières) and Total.

Mots-Clés: far field deformations, synsedimentary faults, calcite petrography, fluids, geochemistry, Quercy, Aquitaine Basin