



The Landes Parentis area (SW France) – a key zone to understand the far-field deformation of an inherited rift system.

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The "Landes-Parentis area" (LPA) is located at the transition between the eastern end of the abyssal plain of the Bay of Biscay to the west, the Aquitaine basin to the east and the highly inverted Basque-Cantabrian basin (BCB) to the south, which represents the main, but distant, Pyrenean deformation front. The LPA includes the Meso-Cenozoic Parentis basin (PB) bordered to the south by a Paleozoic high named the "Landes High" (LH). The purpose of the study is to describe the reactivation of an aborted rift following the Late Jurassic to Late Cretaceous extension and then during inversion from the Upper Cretaceous onward. One also questions the importance of the presence of a rigid block in the setting up of this system.

We analyzed seven regional 2D seismic lines through the LPA: EW lines from the coast to the abyssal plain and NS lines from the LH to the Armorican margin. We mapped the main structures and picked the stratigraphic unconformities. We used PB well data for the age dating of the different unconformities.

The maps show that the Mesozoic cover observed in the PB extends to the foot of the continental slope while the Jurassic and Lower Cretaceous series lack or are very reduced on the LH. On the contrary, Tertiary deposits are present throughout the study area. The LPA is crossed by a NW-SE oriented, sinistral accident: the Landes transfer zone (LTZ), which correlates to a set of NW-SE normal faults on the LH. This LTZ segments the LPA in two distinct domains, an eastern and a western area. In the eastern domain, the contact area between the PB and LH presents an asymmetry between a gentle south dipping northern flank and a steep and faulted southern flank in a direct contact with LH. The southern flank of the PB shows EW-oriented anticlinal structures, attributed to salt ripples, normal faults inverted during the Tertiary and ramp anticlines. A major mid-albian unconformity truncates the sediment pile. In the western domain, the southern flank presents a different structural scheme with two tilted blocks limited by EW-oriented crustal faults with a north-dipping normal movement. The Upper Cretaceous to Tertiary sedimentary deposits seal these faults with no mid-albian unconformity. The structural scheme is mainly extensive.

The lateral partitioning of the local deformation is strongly influenced by the presence of LH that play the role of a rigid block and of the LTZ that segments the basin in two different domains aligned on the South Armorican direction. This LTZ could be an heritage of the Mesozoic opening of the Bay of Biscaye.