

Towards General Rules for the Continental Thinning Process Through Studies in South Atlantic, Central Atlantic and West Mediterranean Sea?

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Horizontal movement is a crucial key parameter for the study of the passive margins genesis. Detailed and precise reconstructions, that use all available geological and geophysical constraints, give paleogeographical maps that constrain ages and movement quantity. On the other hand the study of the sediments gives some important information on paleoenvironments and paleobathymetry of the system at key time periods. Together with wide angle and reflection seismic studies, this allows us to reconstruct the evolution of the whole system during the first steps of the passive margins formation (both horizontally and vertically).

No margin can give alone the general rules of the thinning process. We therefore detail and compare here three studies applying the approach described above in three different segments of passive margins (the central segment of South Atlantic, the Morocco segment in the Central Atlantic, and the Liguro-Provencal Basin in the Western Mediterranean Sea) that present very different geodynamical context and structural morphologies.

This comparison shows similar trends and geometries in the three initial systems with a large thinned basin in a high position until at least the break-up, and emphasise the fact that it seems most improbable that the continental crust maintains its integrity throughout the thinning process. The thinning process seems mainly to concern the lower and/or middle continental crust. The diversity of the final structural morphology seems therefore to be a matter of tectonic heritage, geodynamic context and probably mantle heat segmentation, which add their effect to the main thinning process.