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Passive Margin Geodynamic, Insights of Two Examples of Thick Margins with Salt/Gravity Tectonic: Gulf of Guinea and Nova Scotia

On the shelf of passive margins, the stretching is moderate and both tectonic and sedimentary histories as well as heat flow are generally well constraint. Conversely, the structure of the very deep offshore is rarely clear on the conventional data, specially in case of gravity driven tectonic above salt (Gulf of Guinea, Gulf of Mexico, Nova Scotia) or undercompacted clays (Nigeria). There, assumptions concerning possible source rocks and heat flow are less constrained, they depend on:

1. Theoretical models (simple shear, pure shear, with or without delamination, symmetric or asymmetric, numerical or sand boxes). They provide the amount and nature of the thinned crust, and subsequent subsidence. These models are useful to investigate specific parameters, but must be regarded as oversimplifications when compared to the recently acquired data.

2. Plate tectonic reconstructions (based on magnetic anomalies analysis) that give the rate of crustal stretching, the width of thinned crust and the COB location. But these reconstructions do not lead to a ''perfect'' fit and continental overlap and/or residual basins remain often present and testify for a poor knowledge of ''Transition zone'' instead of a narrow COB in the deep offshore.

Two Atlantic margins segments are discussed, (Eastern Canada, and Gulf of Guinea). Both illustrate tens to hundred of kilometers wide domains from the continent till the true ocean, with ''transition zones''. Their geometry and structure are illustrated with potential field, reflection and refraction seismic data. Though apparently rather simple, these margins ask basic questions regarding their geodynamic evolution.