

## PRECISIONS SUR LA CAMPAGNE SANBA

### ORGANISMES PARTICIPANTS :

The **SanBa** (Santos Basin- Seismic Research experiment) research experiment is a joint project of the Department of Marine Geosciences (IFREMER: Institut Français de Recherche pour l'Exploitation de la MER, France), the Laboratory of «Oceanic Domain» (IUEM: Institut Universitaire et Européen de la Mer, France), the Faculdade de Ciências da Universidade de Lisboa (Lattex and CGUL, Portugal), the Universidade de Brasília (Brazil) and PETROBRAS.

### OBJECTIFS :

#### **Global scientific objectives**

The SanBa Project takes place in a more general reflexion conducted by our teams on process of thinning of the continental crust which built passive margins and intracontinental basins. The project will allow a comparison between the deep structure of the wide Santos margin (with its conjugate, narrow Namibe margin) and the adjacent Espirito Santo-Angolan system on which the team already did extensive studies (Moulin 2003; Moulin *et al.*, 2005; Aslanian *et al.*, 2009; Moulin *et al.*, 2010a, 2010b). The Sanba Project will be a new part of the ongoing typology for a general characterization of different margin types that we are building, taking into account the margins tectonic history, the general and regional geodynamics and the influence of the mantle segmentation (Moulin *et al.*, 2006; Aslanian *et al.*, 2009). Its aim is to test existing models and/or propose a new model for the history of the margin that takes into account all the geophysical, geodynamical and geological observations.

#### **Local scientific objectives**

Depth dependent conservative thinning model on the Iberian-Newfoundland system implies mantle exhumation (Lavie & Manatschal, 2006). But this model does not satisfy the kinematic and seismic data for the Central segment of the South Atlantic Ocean. In this part of the ocean, it seems that lower crust exhumation process and mantle-lower continental crust exchanges are involved in the thinning process and the formation of the basin, rather than serpentinized mantle exhumation (Aslanian *et al.*, 2009). Furthermore, the presence of shallow-environment deposited salt layer and of carbonates overlying the salt layer demonstrates that this shallow environment lasted throughout the margin formation and even after the salt deposition (as on Spitsberg Margin, Ritzmann, *et al.*, 2004, or on Iberia-Newfoundland Margins, Peron-Pivindic & Manatschal, 2008). This occurrence shows that the thermal process, which probably maintained the margin in a high position, is a general parameter in the thinning continental crust process. The subsidence rate then seems to increase rapidly. These two points are in disagreement with current conservative thinning models and have drastic consequences on the thermal evolution of the system and therefore on the formation of hydrocarbons.

The Santos-Namibe system is highly asymmetric, due to an eastward ridge jump after chron M0 (Ponte and Asmus, 1976; Kumar *et al.*, 1977; Kumar and Gambôa, 1979; Sibuet *et al.*, 1984; Gladchenko *et al.*, 1998) or due to an asymmetric split after rifting (Bassi *et al.*, 1993) that put the rupture zone on the African side. Recently, Moulin *et al.* (2011 ; EPSL submitted) proposed that the opening direction of the Santos Basin - São Paulo Plateau (SSPS) system was oblique to the general opening motion of the South American and African plates and produced

this asymmetric system: this difference in direction could explain the wide SSPS in a divergent context, and the narrow Namibe margin, which as appears to be a transform margin, explaining its very abrupt geometry.

The nature of the substratum in the deep central basin is an essential key for the understanding of its formation. The aim of SanBa project is to try, with reflection and refraction seismic acquisition, to constrain this nature and to test and decipher (to falsify) between the proposed hypotheses.