



## **Continent-Ocean boundaries: a new model**

Laurent Geoffroy (1), François Chauvet (2), Jean-Claude Ringenbach (3), and Frank Despinos (3)

(1) UMR 6538, IUEM, UBO, Plouzané, FRANCE (laurent.geoffroy@univ-brest.fr), (2) SEDISOR, IUEM, Plouzané, FRANCE (francois.chauvet@sedisor.eu), (3) TOTAL, Pau, FRANCE

More than half of passive margins worldwide are associated with syn-rift volcanics forming SDRs in seismic sections. Those SDRs may be divided in two distinct types: inner SDRs, which clearly develop during continental crust stretching and thinning and outer SDRs which are usually thought to be emplaced in oceanic-ridge setup. This interpretation relies on the fact that outer SDRs are associated with clear linear magnetic anomalies on both conjugate margins. By analyzing a range of deep seismic reflection profiles worldwide -notably from S-Atlantic- we show that this interpretation is debatable. Outer SDRs are often developed in a seaward-thinning crust. When seismic refraction lines are available, the crust with outer SDRs shares similar characteristics, including velocities and seismic facies, with the inner part of the continental margin with inner SDRs. Those features are distinct from those of the oceanic crust developed seaward. In addition outer-SDRs apparently develop over discontinuities, possibly of tectonic origin, which are sub-horizontal or gently dipping continentward. To account for those outer-SDR observations at distal volcanic passive margins, we propose and discuss an alternative model of passive exhumation of highly-mafic and hyper-extended continental lower crust. We also summarize the consequences of this new model on the recognition of the true continent-ocean boundary in oceans.