



CONFERENCES GEOSCIENCES RENNES



UP- AND DOWN-SCALING FIELD AND SEISMIC OBSERVATIONS TO TEST MODELS OF RIFTED MARGINS FORMATION

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Recent advances in the understanding of rifted margins resulted from the development of new, high-resolution seismic imaging methods, drilling at deep water rifted margins, and field studies of fossil examples in mountain belts. The development of new modelling techniques enabled simultaneously experimentations of some of the parameters controlling the rift evolution. However, the parameters and boundary conditions used in numerical and geophysical models are often not ground truth with direct observations. In the case of deep-water rifted margins, the problem is that drill hole data is expensive, rare and only available from a handful of examples worldwide. In contrast, remnants of former deep-water rifted margins have been described from internal parts of collisional orogens, such as the Alps or the Pyrenees, where kilometre-scale outcrops preserving primary structures of the former distal rifted margins are well exposed. Access to these large-scale outcrops provides direct observations on mantle and crustal rocks and the associated sedimentary sequences and magmatic additions formed in former distal rifted margins. The combination of world-class outcrops, classical field-based mapping and analytical methods in combination with seismic observations of present-day rifted margins enables the testing and calibration of rift models.

In my presentation we will combine seismic and field observations from both present-day rifted margins and fossils analogues preserved in the Alps and the Pyrenees. I will mainly focus on the description of deformation and magmatic processes and on the relation to the sedimentary architecture during final rifting. Key questions addressed are related to the strain and magmatic distribution and the bulk rheological evolution during rifting in the crust and sub-continental mantle and the way these processes are recorded in the overlying stratigraphic record.

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