



The syn-rift stratigraphic record across fossil hyper-extended rifted margins: Examples from the Alpine Tethys margins

Charlotte Ribes, Gianreto Manatschal, and Jean-François Ghienne
IPGS-EOST, CNRS-UMR 7516, Université de Strasbourg, France (cribes@unistra.fr)

The crustal-scale architecture of magma-poor rifted margins is defined by characteristic building blocks that can be distinguished on the basis of stratigraphic architecture, crustal type and thickness, geometry and history of faults, intra-crustal detachment levels and occurrence of characteristic mantle reflections. Mapping of these building blocks help define proximal, necking, hyper-extended and mantle exhumation domains. Although the structural evolution of rifted margins is relatively well known, the tectono-stratigraphic evolution is less well understood, in particular in the more distal hyper-extended and exhumed parts of margins. Indeed, most of the sedimentary models of syn-tectonic extensional basins are focused on studies of tilted-block/half-graben structures in the proximal domain. In this context, characterizing and understanding the depositional environments, facies distribution, stratal architecture, or vertical stacking overlying thin crust and/or exhumed subcontinental mantle along rifted margins is a new challenge.

In this presentation, we present a synthesis of field observations from the fossil Alpine Tethys margins exposed in the Western and Central Alps to propose a general overview of the chrono-tectono-stratigraphic framework for the syn-rift successions. We document facies distribution and stratigraphic architecture within the different rift domains through time and identify correlative surfaces related to both internal and external controls. We discuss sedimentation controls exerted by the rifting process, in particular the structural compartmentalization of the rifted margin and its influence on sediment distribution. The aim of this work is to use the unique data set derived from field observations of well exposed remnants of a fossil rifted margin that enable to characterize and understand the overall spatial and temporal evolution of its sedimentary system from the stretching phase to mantle exhumation.