Geophysical Research Abstracts
Vol. 15, EGU2013-6913-2, 2013
EGU General Assembly 2013

The Meliata and Piemont-Ligurian rifted margins: stratigraphic record and tectonic evolution of polyphase rift systems

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The Late Permian to Late Jurassic paleogeographic evolution of the Alpine domain was strongly controlled by the formation of polyphase rift systems. If these rift systems are the result of a single, long lasting rifting event or if they are generated by two distinct rift pulses, is still a matter of debate. Recent studies seem to agree on the second hypothesis, supporting two distinct rift events: one Early-Middle Triassic (Meliata s.l.) and one Early to Middle Jurassic (Piemont-Liguria s.l.). Nevertheless major incertitudes arise on the interpretations of the evolution of the former rifting, which lead to multiple or single, continuous oceanic branches. This uncertainity is mainly due to the successive orogenic overprint related to the formation of the Alpine belt and of the Western Mediterranean domain. The aim of this work is to explore how rifting events are recorded by the stratigraphic and structural evolution using both the vast existing literature and own observations. Selected areas belonging to different paleogeographic domains in the Alpine realm (Southalpine, Brianconnais s.l. and Austroalpine) will be studied in order to define relevant time-marker levels to map and correlate the temporal and spatial evolution of rift events. With this "basinal" approach we point to major tectonic events, filtering smaller-scale tectonics and minor environmental controlling factors on sedimentation. Our final goal is to identify "fingerprints" for major rifting events that may reveal the location and timing of hyper-extended domains. The evaporitic successions, the development of thick carbonate platforms, their demise or drowning, the iron-manganese hardgrounds sedimentation that could represent a response of hydrothermal circulation associated with hyper-extension, may correspond to correlable and mappable residues of large-scale, hyper-extended rift events. This data, together with subsidence analysis, basement and volcanics data provide a major, well constrained framework that can be used to compare the evolution of these two fossil rift systems with that of present-day potential analogues.