

Title: Role of rifting-related structural inheritance in localizing deformation in orogenic systems

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Research program

Inheritances are increasingly recognized as a key factor controlling the structural style of orogenic systems. Faults and rheological heterogeneities inherited from previous rifting events can control the localization of deformation, forcing a time-space evolution of thrust systems that are barely understandable without an adequate knowledge of the rift's architecture.

The aim of this research project is that of deciphering the relationships between the 3D architecture of rifted margins and the time-space evolution of deformation in orogenic systems deforming them, with focus on the migration of the subduction interface.

Research will focus on the Apennines and Zagros belts, to accurately reconstruct, throughout structural and stratigraphic constraints implemented in balanced cross sections, how and why the subduction interface relocalizes at different depths during the transition from subduction to collision, as a function of the reology and architecture of the different rifting domains involved in the deformation.

Proposal for a PhD position

The project will involve construction of balanced cross sections in the Apennines and in the Zagros. Cross sections construction will be based on available data and review of previous interpretations in the two belts, supported by knowledge from modern rifted margins. Field activity and structural mapping is foreseen in the Apennines and, possibly, in the Kermanshah Radiolarite basin of the Zagros. The project will be carried out in collaboration with the universities of Strasbourg and Barcelona, and the student will spend a period of research at these universities.

The PhD candidates must hold a Master Degree in Geology and are expected to have a solid background in thrust tectonics, balanced cross sections construction, and field mapping skill.