

# **Shear Zones in the extending lithosphere**

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Deformation of lithosphere is characteristically heterogeneous and localized linked fault and shear zone systems represent a common feature in contractional as well as extensional tectonic settings.

Localization of deformation occurs in a wide range of ambient conditions from the upper crust of continental- and oceanic-types down to the lithospheric mantle, and this leads to major changes in fault and shear zone deformation products, process and rheology.

Key factors such as the degree and type of coupling between crust and mantle and the geometry of the network of discontinuities i.e. the overall architecture of the systems represent important attributes to link grain- to lithospheric-scale process. This is the reason why geodynamic models of lithosphere extension from rifting to continental breakup have to include blocks separated by faults (in the upper crust with time-independent deformation) and shear zones (in the lower crust and mantle, where deformation is time dependent) with the bulk rheology of the system dominated by the type, architecture and evolution of the mechanical behaviour of the faults and shear zones.

In this contribution examples of structures coming from the Ligurian realm will be discussed and critically analyzed in terms of micro- and mesostructural features, their syn-tectonic evolution and the overall geometry of the faults and shear zones.