



Fault and fold patterns associated with the Monte Faito low-angle normal fault system (Sorrento peninsula, Italy)

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The Monte Faito extensional system of the southern Apennines is introduced in this work. It is a fault and fold system exposed in a 4x4 km area of the Lattari Mts, in the inner portion of the Neogene southern Apennines fold and thrust belt. The extensional system consists of a set of high-angle extensional faults splaying from a main low-angle normal fault, with associated hanging wall and footwall folds, affecting Cretaceous shallow-water carbonates of the Apennine Carbonate Platform. The low-angle normal fault is displaced by a younger extensional fault, which divides it into a northern and southern portions. Field study and remote sensing analysis were integrated in both portions, in order to build a comprehensive 3D model of the extensional system and to define its kinematics and timing.

The northern portion of the extensional system is characterised by an hanging wall ramp on footwall flat geometry. There, Upper Cretaceous layers in the hanging wall are N-S and E-W striking, with a dip ranging from 20° to 80°. Lower Cretaceous layers, albeit slightly folded, are almost parallel to the sub-horizontal extensional fault. The southern portion of the system displays a more complex framework. The hanging wall and footwall still expose Upper and Lower Cretaceous layers, respectively, but the main extensional fault is folded. Despite the folding, two different panels are identified, displaying hanging wall ramp on footwall flat and hanging wall flat on footwall ramp geometries, respectively. In the latter domain, the apparent displacement along the low-angle fault is reverse, both in its present orientation and after restoring the footwall bedding to the horizontal, but it has a younger-on-older nature. This highlights the truncation of a preexisting footwall fold. The analysis of meso-structural data indicates S-ward extension, with the 3D reconstruction pointing to a displacement in the range of hundred meters. Field evidence of soft-sediment deformation in the Upper Cretaceous strata of the northern portion of the low-angle normal fault, indicates that the extensional system was formed in Late Cretaceous, probably in response to the collapse of the carbonate platform margin.