

A Jurassic-Cretaceous intraplate basin in the Panormide Southern Tethyan margin (NW Sicily, Italy), revealed by integrating facies and structural analyses with subsidence history

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We illustrate the tectono-sedimentary evolution of a Jurassic-Cretaceous intraplate basin in a fold and thrust belt present setting (Cala Rossa basin).

Detailed stratigraphy and facies analysis of Upper Triassic-Eocene successions outcropping in the Palermo Mts (NW Sicily), integrated with structural analysis, restoration and basin analysis, led to recognize and describe into the intraplate basin the proximal and distal depositional areas respect to the bordered carbonate platform sectors.

Carbonate platform was characterized by a rimmed reef growing with progradational trends towards the basin, as suggested by the several reworked shallow-water materials interlayered into the deep-water succession. More, the occurrence of thick resedimented breccia levels into the deep-water succession suggests the time and the characters of synsedimentary tectonics occurred during the Late Jurassic.

The study sections, involved in the building processes of the Sicilian fold and thrust belt, were restored in order to obtain the original width of the Cala Rossa basin, useful to reconstruct the original geometries and opening mechanisms of the basin.

Basin analysis allowed reconstructing the subsidence history of three sectors with different paleobathymetry, evidencing the role exerted by tectonics in the evolution of the narrow Cala Rossa basin.

In our interpretation, a transtensional dextral Lower Jurassic fault system, WNW-ESE (present-day) oriented, has activated a wedge shaped pull-apart basin.

In the frame of the geodynamic evolution of the Southern Tethyan rifted continental margin, the Cala Rossa basin could have been affected by Jurassic transtensional faults related to the lateral westward motion of Africa relative to Europe.