

Abstract

New stratigraphic data along a profile from the Helvetic Gotthard massif to the remnants of the North Penninic basin in eastern Ticino and Graubünden are presented. The stratigraphic record together with existing geochemical and structural data, motivate a new interpretation of the fossil European distal margin.

We introduce a new group of Triassic facies, the North-Penninic-Triassic (NPT), which is characterised by the Ladinian “dolomie bicolori”. The NPT was located in-between the Briançonnais carbonate platform and the Helvetic lands. The observed horizontal transition, coupled with the stratigraphic superposition of a Helvetic Liassic on a Briançonnais Triassic in the Luzzzone-Terri nappe, links, prior to Jurassic rifting, the Briançonnais paleogeographic domain at the Helvetic margin, south of the Gotthard. Our observations suggest that the Jurassic rifting separated the Briançonnais domain from the Helvetic margin by complex and protracted extension.

The syn-rift stratigraphic record in the Adula nappe and surroundings suggests the presence of a diffuse rising area with only moderately subsiding basins above a thinned continental and proto-oceanic crust. Strong subsidence occurred in a second phase following protracted extension and the resulting delamination of the rising area.

The stratigraphic coherency in the Adula's Mesozoic questions the idea of a lithospheric mélange in the eclogitic Adula nappe, which is more likely to be a coherent alpine tectonic unit. The structural and stratigraphic observations in the Piz Terri–Lunschana zone suggest the activity of syn-rift detachments. During the alpine collision these faults are reactivated (and inverted) and played a major role in allowing the Adula subduction, the “Penninic Thrust” above it and in creating the structural complexity of the Central Alps.