

[CARRUPT Elisabeth](#) et [SCHLUP Micha](#)

Métamorphisme et tectonique du versant sud du Val Bognanco (Pennique, Alpes italiennes)

Metamorphism and tectonics of the south side of the Val Bognanco (Penninic, Italian Alps)

This study deals with an important tectonic knot of the Italian Penninic Alps. The Antrona nappe contains ophiolitic rocks which originated from the Piemont Ocean and is surrounded by nappes from the middle Penninic (Siviez-Mischabel, Portjengrat, Carnughera) and from the sedimentary cover of Monte Rosa (Furgg zone). Lithostratigraphy from the Siviez-Mischabel (Azoglio serie) and Portjengrat nappes shows obvious differences, but also striking analogies with the well known series of the Briançonnais (Barrhorn serie, Gummfluh slice). Due to the lack or the reduction of sediments of middle Triassic age, the Portjengrat zone and the internal part of Siviez-Mischabel nappe can be positioned out of the subsiding basin of the Briançonnais; consequently, the Briançonnais-Ultrabriançonnais limit lies within the Siviez-Mischabel nappe. Mesozoic basaltic dikes occur within the Portjengrat zone, and because these have not been observed in the Siviez-Mischabel nappe, we interpret the origin of this zone to be positioned south of Siviez-Mischabel. The first phase of ductile deformation (D1) is due to a NW-thrusting of the nappes during Eocene time. As results, we now observe isoclinal folds that have a kilometre scale amplitude, and refolded thrust planes. A subsequent phase (D2) is characterised by dextral E-W trending shearing during Oligocene time. This phase has only generated a few visible folds close to the Campo line (indicated by phyllonites), which began its activity at the same time. At about 32 Ma, the area underwent backfolding (D3), which produced S verging folds with subhorizontal axes. Subsequently, a last ductile deformation (D4) affected the pre-existing structures, and was followed by late reactivation of the Campo line (indicated by fault breccias).

The high-pressure eoalpine metamorphic event was obliterated in the Bognanco Valley by an early greenschist facies retrogression. then during D1, prograde metamorphism associated with the mesoalpine phase occurred and was followed by a second metamorphic peak under epidote-amphibolite facies.

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