

OLIGO-MIOCENE WNW-DIRECTED THRUSTING IN THE WESTERN ALPS NORTH AND SOUTH OF THE PELVOUX MASSIF: A COMBINED TECTONIC AND MICRO STRUCTURAL STUDY

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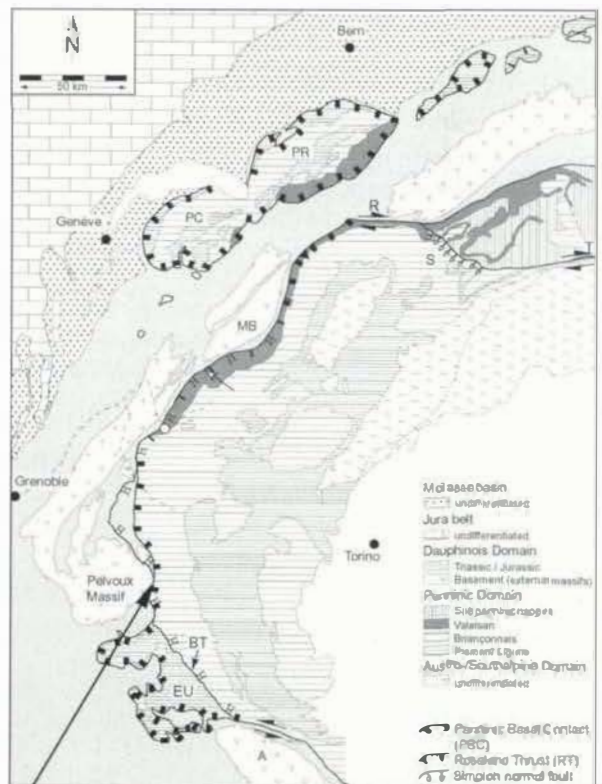
In the Alps, the contact between the Helvetic (or Dauphinois) paleogeographic domain and the internal Penninic domain is the result of a multi-stage tectonic evolution.

N-S shortening in the Eocene led to collision between these two domains as well as the emplacement of detached and unmetamorphosed Penninic nappes. In the western Alps, the end of this collision phase is marked by the transgression of detrital flysch formations, the Priabonian Aiguilles d'Arves and Cheval Noir flysch units (CERIANI et al. 2001).

In the Oligocene the whole pattern of convergence changed dramatically from N-S to WNW-ESE. The earlier formed contact between Penninic and Helvetic units, i.e. the Penninic Basal Contact (PBC), was partly reactivated and WNW-directed thrusting occurred along the Roselend thrust (RT, cf Figure 1). Along strike, from the Mont Blanc to south of the Pelvoux massif different units can be observed on either side of the RT. In the Mont Blanc area the RT reactivates the PBC and carried North Penninic units onto Helvetic units. In the Maurienne area, the RT could be traced within the Helvetic domain, separating Ultra-dauphinois from Dauphinois units (CERIANI et al. 2001). Immediately to the SE of the Pelvoux massif, the Roselend Thrust carried Briançonnais units over the Dauphinois domain. Further to the South, this same structure, reactivates the so-called "Briançonnais Front" (TRICART, P. 1986) in form of an out-of-sequence thrust which carries the Briançonnais units on top of the Embrunais Ubaye nappe stack.

Stretching lineations and related shear sense indicators consistently yielded top to the WNW directed thrusting along the studied portion of the RT from the Mont Blanc massif in the north to south of the Pelvoux massif.

Late Neogene to present NW-SE directed extension affected the whole Western Alps and partly reactivated earlier tectonic contacts (SUE et al. 1999).



Locality of sample 203

Figure 1

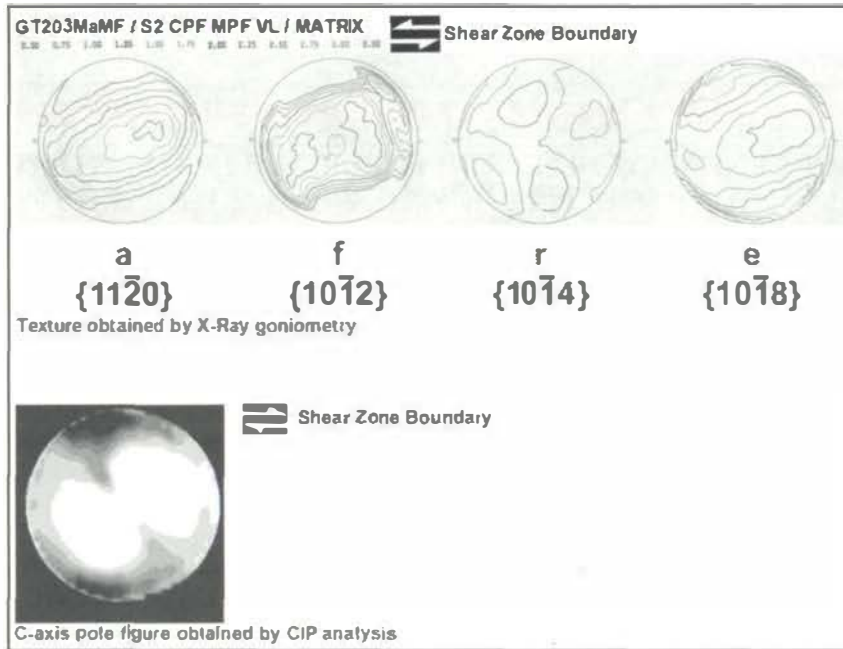


Figure 2

South of the Pelvoux massif, movements along the RT have induced intense shearing of mylonitized sediments. Textures and microstructures of calcite ultramylonites (grain size distribution from 10 to 100 μm) sampled in the autochthonous cover of the Pelvoux massif have been studied using Computer Integrated Polarisation microscopy (CIP) and X-Ray texture goniometry.

Preliminary results (cf Figure 2) indicate a combined contribution of twinning and basal $\langle a \rangle$ -glide deformation to the pole figures.

It remains unclear so far whether this is due to superposition of different deformation phases or to domains displaying distinct grain-size dependent deformation mechanisms.

References

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