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HYPOTHESIS FOR THE APPLICATION OF A TRANSPRESSION MODEL IN THE EASTERN LIGURIA, ITALY

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The Monte Antola Unit (Upper Campanian – Paleocene) is the shallowest tectonic unit of the Ligurian stack, overlaying the Internal Ligurian Units. The studied area is located in the oriental Liguria, northern Italy, between the cities of Genova and Chiavari. The Monte Antola Unit has been affected by several deformational events, either brittle – ductile (at least five events) or brittle (at least six events). The purpose of this work is to demonstrate that it might be possible to interpretate the last two brittle - ductile events and the first two brittle events as coeval and related to a regional transpressional field. Beginning from the early Oligocene the western alpine orogen has been affected by an anticlockwise roto-translation, witnessed by the transposition of the External Crystalline Massifs, by the sinistral shear zone of the “Stura Couloir” (Giglia et Al, 1996) and the consequent “poinçonnement” of the western alpine arc towards west, and by several sinistral strike-slip shear zones (Corsi 2003, Carrapa 2002, Di Giulio & Galbiati 1995, Fossati et al 1988, Fanucci, 1984).

Our studies on the tectonical framework of the M. Antola Unit established that the first three brittle – ductile events had taken place before the Oligocene (Corsi et Al., 2001), which means before the regional transpressional field, subject of the present work.

The fourth and fifth brittle-ductile events show evidences of a non coaxial deformational phase, that is oblique thrusts and tabular transected folds, whose cleavage is rotated of about thirty degrees anticlockwise with respect to the axial plane.

The first two brittle events are characterized by wrench shear zones, either sinistral or dextral. Associated to these two brittle events there are calcite veins, characterized by first to third type twinnings (Burkhard, 1993).

These four events seem to be diachronous, but recent studies show how they can be related to a single phase of deformation. This can be explained by a transpressional deformational field, which involves a simultaneous action of pure and simple shearing, generating non coaxial folds (5^{th} brittle ductile event) together with low angle compressive shear zones (4^{th} brittle ductile events) and with vertical strike-slip shear zones (1^{st} and 2^{nd} brittle event).

Tikoff & Teyssier (1994) propose a model to distinguish different influences of pure and simple shear in transpression. They recognize wrench dominated and pure shear dominated transpression by the temporal superimposition of folds, strike-slip and thrust faults.

At present we do not have field evidences about the relationship between the low angle compressional thrust and the wrench strike-slip shear zone, in order to determinate the type of transpression. However, this seems to be the case of a wrench dominated transpression because of the direction of the regional axe of compression, related to the spatial orientation of the involved structures at the moment of the deformation (Corsi, 2003, Séranne, 1999).