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Structural evolution of Mt. Cetona Ridge (Southern Tuscany, Italy)

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We describes the structural setting of a southern-segment of M. Cetona Ridge (Souther Toscany) , representing an important regional morpho-tectonic feature, oriented NNW-SSE and over half hundred kilometres long. The M. Cetona Ridge separates the Radicofani Neogene Basin (to the west) from Valdichiana Neogene-Quaternary Basin (to the east). The southern sector of the M. Cetona have been examined in order to unravel the structural evolution and the relationships between the Tuscan Succession and the overthrusted S. Fiora Unit. Tuscan Succession is mainly composed of Triassic-Oligocene lithostratigraphic units while S. Fiora Unit, formed by shales and calcareous, representing the external ligurian Unit. Six tectonic phases are detected by superimposition of structures:

- D1: develops some structures with an antiappenninic trend (N50-N90) and is been revealed only in S. Fiora Unit.
- D2: represent the thrusting of the S. Fiora Unit above the Tuscan Succession and develops a tectonic melange with angular clasts of Tuscan and S. Fiora Units.
- D3: develops a hectometer east-verging synclinal fold, oriented NNW-SSE with axial plane sub-horizontal and smaller folds in Tuscan Succession; this Appenninic-trend deforms the thrust with S. Fiora Unit and interferers with D1.
- D4: develops open folds with vertical axial plane clear in Tuscan Succession.
- D5: is the phase represented with high-angle normal and strike-slip faults oriented N160˚-N170˚ and N40˚-N70˚ and are the cause of the formation of Horst (M. Cetona) and Graben (Radicofani and Val di Chiana basins).

- D6: develops left and right lateral strike-slip faults oriented N 70- N110 observable in Tuscan Succession and S. Fiora Unit.

This study allowed us to propose for this area, a new tectonic evolution based on the following lithostratigraphic and structural observations:

- The uppermost of Tuscan Succession Nappe is not in stratigraphic contact with the older formations. It is incorporated into tectonic melange between Tuscan and S. Fiora Units.
- Inside tectonic melange are present some opaque minerals probably connected to Quaternary hydrothermal activity.
- The M. Cetona structure considered at now a overturned big antiform is really formed by a deep hectometer synclinal too.