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Faulting with different kinematics involving Meso-Cenozoic succession in Eastern-Sardinia (Italy), structural data from a fragment of the southern European margin.

Antonio Funedda (1), Cristina Buttau (1), Fabrizio Cocco (1), Pierluigi Fadda (1), Giacomo Oggiano (2), and Etta Patacca (3)

(1) Università degli studi di Cagliari, Dipartimento di Scienze chimiche e geologiche, Italy (afunedda@unica.it), (2) Università degli studi di Sassari, Dipartimento di Chimica e Farmacia, (3) Università degli studi di Pisa, Dipartimento di Scienze della Terra

The Sardinia-Corsica microplate is a fragment of the European continental lithosphere (probably belonging to the Briançonnais terrane) now located between two stretched and partially oceanized domains (Algero-Provençal and South Tyrrhenian basins). These back arc basins developed during the westward subduction of Adria plate and its progressive, eastward retreat during the last 21 Ma. Sardinia was part of the Oligo-Miocene volcanic arc, which emplaced on the continental European crust above the subducting Adria plate. Strike-slip faults principally affecting the eastern sector of the Island, are the main – and best known - structures associated to the last stage of the Adria convergence. Associated to these faults transpressional and transtensional structures developed, whose age is constrained only by post-Eocene syntectonic conglomerate associated to cataclastic zones and involved in growth folds. Recent structural geological field mapping in the Mesozoic carbonate massif of Supramonte allows to recognize other structures, both faults and folds, that account for a more complex tectonic framework.
i) The oldest structures mapped are low-angle sinistral transtensional faults, dipping less than 40° toward NNE and with kinematic indicators pointing to a top-to-the NW displacement. Along these faults several meters of the Jurassic to Cretaceous succession have been tectonically elided.
ii) The low-angle transtensional faults, in turn, are cut, and sometimes reactivated, by north dipping thrust that developed meter-thick cataclastic shear zones, with S-C foliation that account for a tectonic transport top-to-the SSE. These thrusts are characterized by the development of overturned folds - antiforms in the hangingwall and synforms in the footwall - with east-trending hingeline, north dipping axial surface, decametric wavelength. These folds, that we recently interpreted as possible forced folds, are not probably not directly related to the NE-striking transpressive structures.
iii) The previous structures are cut by the well-known sinistral transpressional faults that involve the post-Eocene conglomerate and accommodate kilometric horizontal displacement and hundred meters of vertical offset.
The age of the several fault systems has not been defined yet, in any case for the first time we are able to distinguish a relative chronology among overprinting structures, which developed in a brittle regime, at shallow structural level, showing a different kinematics. These structures are related to different stress fields and could help in reconstructing a coherent tectonic history of the Sardinia-Corsica microplate and its relationships with the geodynamic evolution of the Western Mediterranean realm.