



On the tectonic evolution of the Tyrrhenian basin: new data from detrital zircons sampled in the Sardinia-Corsica Block and in the Calabria-Peloritain Arc

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Geodynamic models and palinspastic reconstructions of peri-Tyrrhenian terranes in the Western Mediterranean area are still extremely complex and speculative (Stampfli & Borel 2002, Trombetta et al., 2004; Alvarez & Shimabukuro, 2009; Carminati et al., 2012). A contribution can be done by considering the relationships between Sardinia-Corsica Block (SCB) and Calabria-Peloritain Arc (CPA). They shared a similar Variscan evolution and were the western part of the Briançonnais plate until the opening of the Algero-Provençal Basin during Burdigalian and then were separated in Late Tertiary during the spreading of South-Tyrrhenian Basin. During this period the CPA moved southeastward, with respect to the SCB, driven by a progressive roll-back of the subducted slab. However, is still ambiguous if the CPA was a single terrane during the Middle and Late Tertiary (Amodio Morelli et alii, 1976) or formed by the amalgamation of two or more continental "terrane" that collided during the Tertiary (Bonardi et al., 1980; Scandone, 1982; Alvarez & Shimabukuro, 2009).

The data about the paleo-tectonic linkages, the terranes derivations, and the tectonic setting of the SCB and CPA as peri-Tyrrhenian blocks during Tertiary are still poor. Some evidence of their early evolution could be found in coeval Tertiary deposits cropping out both in the SCB and CPA. These deposits represent the early stage of the extensional event developed in the Tyrrhenian region during late Oligocene-Lower Miocene in a broader regional context dominated by the opening of Atlantic Ocean and the resulting convergence of Europe and Apulia microplate (Oggiano et al., 2009).

To improve the knowledge on this topic, combined U-Pb and Lu-Hf analyses on zircons from Tertiary detrital sediments from Sardinia, Corsica, and both North and South Calabria have been performed using a Thermo-Fisher Neptune MC-ICP-MS coupled with a Nd:YAG UP213 New Wave laser ablation system, at the Laboratory of Geochronology of the University of Brasília. In this way the source areas of these terranes can be compared.

The sampled formations are: in Eastern Sardinia, the Cuccuru 'e Flores Conglomerate (CFC); in the Eastern Corsica, the Solaro Flysch (SF); in the Southern Calabria (Aspromonte sub-region), the Stilo Capo d'Orlando Fm. (SCOF) and in the Northern Calabria (Sila subregion), the Paludi Fm. (PF).

The data about Northern CPA (NCPA) and SCB show similar zircons population inputs suggesting an analogous source areas. Zircons from the Southern CPA (SCPA) show different input spectra. In SCPA lack at all the Grenvillian ages (0.9-1.8 Ga) and an important crustal signature. These data suggest a different position during the tectonic evolution of the Gondwana margin of SCPA respect of NCPA and SCB. Following these data is it possible to infer the SCPA a North Africa derivation, well fitting with the Gondwanan European Variscan terranes, characterized by the lacking of mesoproterozoic age (KÖBER et alii, 2004).