Geophysical Research Abstracts, Vol. 9, 11179, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-11179

Zircon fission track data in the continental crust rocks of Southern Apennines

S. Laurita (1), M. L. Balestrieri (2), G. Bigazzi (2), G. Prosser (1), G. Rizzo (1)

(1) Dipartimento di Scienze Geologiche, Università della Basilicata, Campus Macchia Romana, Potenza, ITALY, (2) – C.N.R. – Istituto di Geoscienze e Georisorse, Sezione di Pisa, ITALY (salvatore.laurita@unibas.it / Phone: +39-0971-205833)

In this study we report the first results of zircon FT analyses in the garnet gneiss and garnet-biotite gneiss from the Frido Unit (Southern Apennines), to obtain information on the cooling history of continental crust slices enclosed in the Liguride accretionary wedge. The Southern Apennines developed along the Apulian-Adriatic passive margin of the Neotethys realm. The Frido Unit is mainly composed of low grade metamorphic rocks and includes fragments of both continental and oceanic crust. The garnet gneisses show a weakly foliated granoblastic texture, with porphyroclasts of garnet in the quartz matrix. The pre-Alpine mineral association of medium-high metamorphic grade is grt+qtz+pl (Pl1)+kfs±bt±ms. The minerals tipycal of Alpine overprint are chl+ep±stp±prh±pmp±albitic pl (Pl2). Accessory minerals are zrn±ap±ttn±rt+opaque minerals. The garnet-biotite gneisses are weakly foliated. The pre-Alpine association include grt+bt±qtz+pl+ms±rt, whereas the minerals diagnostic of Alpine overprint are prh+ep+chl±stp±lws. Accessory minerals are zrn±ap±ttn±opaque minerals. The Alpine mineral assemblage suggests greenschist facies conditions following an high pressure overprint, as documented by the presence of crossite in the amphibolites enclosed in the gneisses. Zircon fission-track analyses have been used to detect the cooling history after the Alpine low-T high-P overprint. All the grain age distributions of the studied zircon samples pass the χ^2test, indicating that the crystals of each sample belong to a unique age population. The obtained cooling ages range between 56.3 and 64.8 Ma. This suggests that the most probable thermal history experienced by the rocks subject of this study is a cooling process following total resetting of spontaneous tracks determined by the Alpine heating event at relatively high temperatures.