Evolution and composition of fluid inclusion in the Eclogitic Micaschist Complex (Sesia-Lanzo Zone, Western Italian Alps)

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The Eclogitic Micaschist Complex (EMC) was involved in the subduction processes that led to the development of the European Alps. Their pre-alpine evolution is characterized by an amphibolite-granulite metamorphism that has has been attributed to the Permian due to their relations with Permian-age intrusives. The Permian evolution has been related to the lithospheric weakening and thinning that pre-date Triassic-Jurassic rifting. It is not clear if during Mesozoic the protoliths of the Eclogitic Micaschists Complex were exposed at shallower crustal levels. the Eclogitic Micaschist Complex has been thoroughly re-equilibrated under eclogite-facies conditions during the convergence process. Their prograde and retrograde Pressure - Temperature (PT) paths are both characterized by a low thermal gradient (≤ 15-20°C/km), typical of an active subduction process. We studied the fluid inclusions in the EMC, and in particular in a quartz-rich garnet-, chloritoid-, kyanite-bearing eclogitic micaschist. The rocks are characterized by a penetrative foliation supported by the shape preferred orientation of phengitic white mica, chloritoid, kyanite and garnet. Microstructural analysis allowed to recognize two main inclusions types: fault-related and isolated. All of them are two-phases with an aqueous NaCl-H_2O solution. Among fault-related fluid inclusion, two generations have been separated, one associated with vertical faults and the second with gently dipping faults. Either fault types terminate against the main foliation, suggesting they post-date the eclogite stage. Textural constraints suggest that the some of the isolated fluid inclusions pre-date vertical and inclined faults. From measured data we also calculated the density of the homogenized fluid and the isochores to intercept the pressure-temperature conditions of inclusion formation with the PT evolution reconstructed in the literature.

Mots-Clés : subduction, continental crust, composition

Merci de ne rien inscrire dans cette zone et ne pas modifier les marges des pieds de page et entêtes.