Three-steps exhumation for the Corte Slices (Alpine Corsica)

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In latest Upper Eocene-Early Miocene time, the European continental margin was involved in the Alpine processes of subduction and exhumation, as detected in the western Alps as well as in the Alpine Corsica. In the Corte area, central Corsica, several strongly deformed and metamorphosed tectonic units (*i.e.*, the Corte Slices) provide a full record of these processes. The Corte Slices are characterized by a polyphase deformation history consisting of three phases, from D1 to D3.

The investigated samples from the Corte Slices are fine grained metapelites composed of chlorite (25-30 vol%), phengite (30 vol%), quartz, feldspars, calcite and many accessory minerals. These rocks show a complex microtectonic fabric including two well developed foliations (S1 and S2) defined by the dynamic recrystallization of three generations of chlorite-phengite-quartz-albite (two in the S1, one in the S2), and a late phase of folding (S3) to which is not associated any metamorphic recrystallization. Chlorite and phengite are 100 µm long when oriented along the S1 foliation, but only up to 50 µm along the S2. The mineral compositions of the phyllosilicates strongly vary depending on their textural position: the oldest phases that constitutes the S1 foliation consist in a Si-rich phengite (celadonite) and Mg-rich chlorite (Mg-amesite), whereas the thinner phases grew along the S2 foliation are K-poor phengite (pyrophyllite) and Al-rich chlorite (Mg-sudoite). The systematic variation in chemical composition of these minerals reflects changings in the *P*-*T* conditions during their growth. Particularly, all the samples are characterized by three points in the *P*/*T* diagram where the chlorite are thermodynamically in equilibrium with phengite: a *P*-peak (*HP*-*LT*) and *T*-peak (*LP*-*HT*) events related to the first and the second generations of chlorite-phengite contained in the S1 foliation, and another equilibrium condition (*LP*-*LT*) related to the chlorite-phengite contained in the S2 foliation.

According to the pressure decrease within the S1 foliation, the onset of the rise up of the Corte Slices already happened at the end of the D1 phase. Furthermore, differences in the *P*-peak and *T*-peak values among these tectonic units suggest that they were coupled at the end of the D2 phase, and then exhumed together during the D3 phase.

The three-steps exhumation presumed for the Corte Slices is therefore framed out by the metamorphism: a blueschists facies is reached by the units at the end of their underthrusting (12.2 – 7.5 kbar, 250-365°C), quickly followed by rising with the *P*-decrease and *T*-increase (8.2-5.6 kbar, 280-435°C) already during the D1 phase. Subsequently, a decrease of *P* and *T* occurred (4.5-2.1 kbar, 310-180°C) during the D2 phase whereas during the D3 phase the Corte Slices are deformed together (D3 phase) in a *P*-*T* conditions too low for a new generation of chlorite-white mica, compatible with their parking at very shallow levels.