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Geology of the area between Golo and Tavignano Valleys (Central Corsica): a snapshot of the continental metamorphic units of Alpine Corsica.

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ABSTRACT
The area between Golo and Tavignano valleys in Central Corsica (latitudes 42°23′12,18″N to 42°18′24,60″N, longitudes 9°07′49,30″E to 9°11′35,90″E) is characterized by the occurrence of continental metamorphic units belonging to the Lower Units of Alpine Corsica. These units, also known as Corte Slices, represent the fragments of the European continental margin involved in the continental subduction and the subsequent collision, both resulting from the closure of the Ligure-Piemontese oceanic Basin. These units are thus characterized by complex, polyphased deformation history developed under blueschist to greenschist metamorphic facies conditions during the Late Eocene to Early Miocene time span. In the study area, the Corte Slices have been investigated by a multidisciplinary approach consisting of a detailed mapping associated with meso- and micro-structural analyses and estimate of the P-T conditions of the metamorphic events. The 1:10,000 scale geological map illustrates the results of this approach that has provided a detailed snapshot of the stratigraphic and structural setting of Corte Slices.

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KEYWORDS
Alpine Corsica; Corte Slices; HP-LT metamorphism; continental subduction

1. Introduction

From the geological point of view, Corsica Island is depicted as a boudin of continental lithosphere isolated during the Early Oligocene from the neighboring Alpine belt by the opening of the Ligurian-Provencal Basin and then, during the Late Miocene, from the Apennine belt by opening of the Tyrrhenian Basin (Jolivet, Daniel, & Fournier, 1991; Sérrane, 1999; Vigliotti & Kent, 1990). In Corsica Island two geological domains, separated by a tectonic boundary that crosses all the island with a NNW-SSE strike, have been identified since long time.

The western domain is represented by Hercynian (HCY) Corsica consisting of magmatic rocks of Permo-Carboniferous age intruded within Panafrican and Variscan metamorphic host rocks (Durand-Delga & Rossi, 1991; Faure et al., 2014; Ménot & Orsini, 1990; Rossi, Oggiano, & Cocherie, 2009) (Figure 1). The magmatic and metamorphic rocks of HCY Corsica are both covered by sedimentary successions consisting of Mesozoic deposits, mainly carbonates, unconformably topped by siliciclastic turbidites of Tertiary age (Durand-Delga, 1984).

The eastern domain is represented by Alpine (ALP) Corsica formed by a stack of both continental and oceanic units deformed in the Late Cretaceous-Early Tertiary time span (Dallan & Nardi, 1984; Durand-Delga, 1984; Malavieille, Chemenda, & Larroque, 1998; Marroni, Meneghini, & Pandolfi, 2010; Vitale Brovarone, Groppo, Hetényi, Compagnoni, & Malavieille, 2011) (Figure 1). ALP Corsica is regarded as the southern continuation of the Western Alps, separated from this domain by the opening of the Liguro-Provencal Basin leading to the counterclockwise rotation of the Corsica-Sardinia continental block (Muttoni et al., 2000; Speranza et al., 2002).

Along the boundary between two domains, the tectonic units of ALP Corsica are thrust onto HCY Corsica (Durand-Delga, 1984; Marroni & Pandolfi, 2003; Molli, 2008), even if most of this border is reworked by a Late Eocene-Early Oligocene strike-slip fault, known as Central Corsica Shear Zone (CCSZ; Lacombe & Jolivet, 2005).

ALP Corsica has been divided into three groups of units according to their stratigraphical and structural features (Durand-Delga, 1984; Jolivet et al., 1990; Malavieille et al., 1998; Marroni & Pandolfi, 2003; Molli, 2008; Vitale Brovarone et al., 2013). The structurally lowermost group is represented by the Lower Units (Figure 2) that are made up of fragments of the thinned European continental margin deformed and metamorphosed during the Early Tertiary continental subduction (Di Rosa, De Giorgi, Marroni, & Vidal, 2016; Malasoma & Marroni, 2007; Malavieille et al., 1998; Molli, 2008). These units are characterized by a metamorphism ranging from blueschists to very

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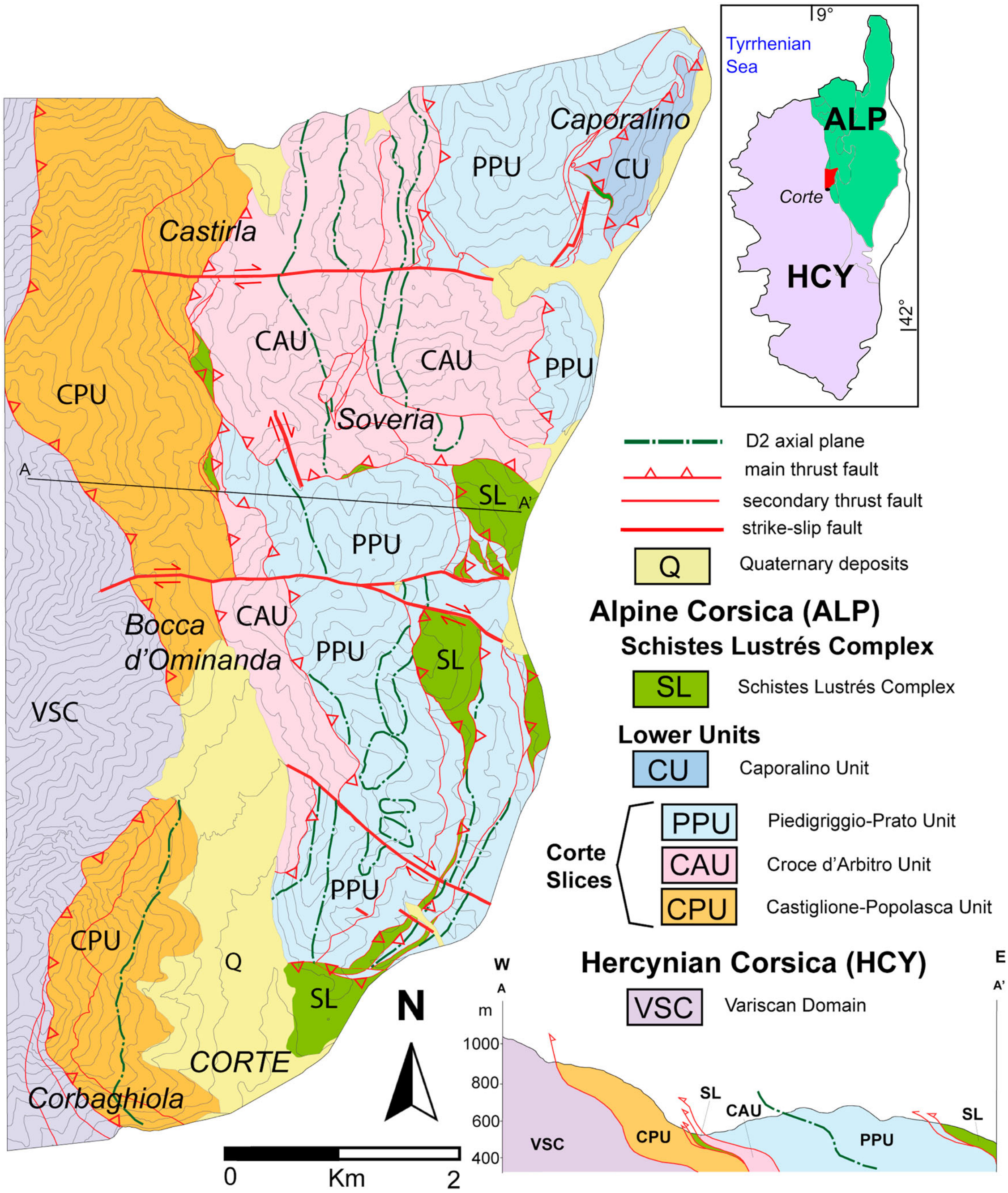

Figure 1. Tectonic sketch map of the area between Castirla, Francardo and Corte. The relationships between the variscan domain, the lower units, here represented by the Castiglione – Popolasca Unit, Croce d'Arbitro Unit and Piedigriggio-Prato Units (i.e. Corte Slices) and the Caporalino Unit, and the Schistes Lustrés Complex are shown.

low-grade facies (Amaudric Du Chaffaut & Saliot, 1979; Bézert & Caby, 1988; Caron, 1994; Malasoma & Marroni, 2007; Malasoma, Marroni, Musumeci, & Pandolfi, 2006; Molli, Tribuzio, & Marquer, 2006). The Lower Units are thrust by the Schistes Lustrés Complex, that includes a thick stack of oceanic and continental units deformed under high pressure P–T metamorphic conditions in a subduction setting (Caron, 1994; Gibbons, Waters, & Warburton, 1986; Levi, Malasoma, Marroni, Pandolfi, & Paperini, 2007; Vitale Brovarone et al., 2013). The top of ALP Corsica is represented by the Upper Units consisting of not metamorphosed Jurassic ophiolites and related sedimentary covers (Dallan & Nardi, 1984; Durand-Delga, 1984; Marroni & Pandolfi, 2003; Pandolfi, Marroni, & Malasoma, 2016).

The relationships between these groups of units are sealed by a Burdigalian-Langhian sedimentary succession that consists of marine and continental deposits as recognized, for instance in Francardo Basin, 3 km north of the study area (Ferrandini et al., 1998).

This paper deals with the structural features of the metamorphic continental units (the so-called Corte Slices) belonging to the Lower Units cropping out in the area between Golo and Tavignano rivers, north of the Corte town in Central Corsica. The associated

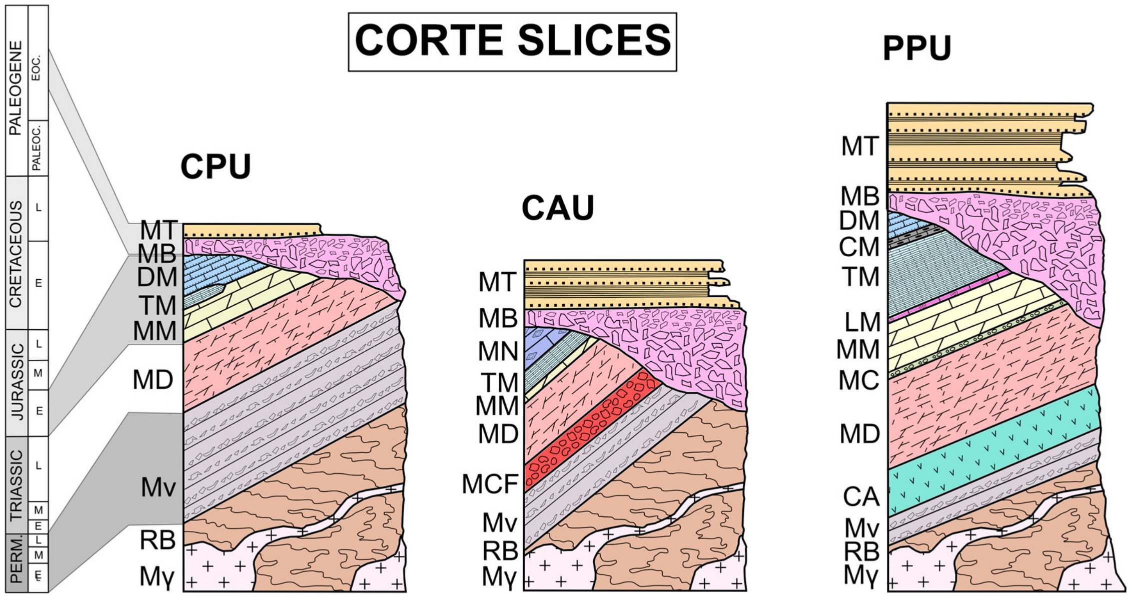

Figure 2. Stratigraphic log of the Corte Slices by integration of stratigraphic data from the study area and the neighbouring localities. RB: Roches Brunes Fm., Mγ: Metagranitoids, MV: Metavolcanites and Metavolcanoclastites Fm., MCF: Fonde-Fuata Metaconglomerates Fm., CA: Carniole Fm., MD: Metadolomites Fm., MC: Metaconglomerates Fm., MM: Metalimestones and Metadolomites Fm., LM: Lumachella Metalimestones Fm., TM: Thin-bedded Metalimestones Fm., CM: Cherty Metalimestones Fm., DM: Detritic Metalimestones Fm., eNM: Nummulites-bearing Metalimestones Fm., eMB: Metabreccias Fm., eMT: Metaturbidites Fm.

geological map is the result of an integrate approach of field survey at 1:5000 scale, metamorphism study and associated micro- and meso-structural analyses. This approach has been able to provide a clear picture of the study area, that is regarded the southern extension of the Brianconnais and Prepiemontais domains of the Western Alps. However, differently from the Western Alps, in Alpine Corsica the shortening stopped in the Early Oligocene thus providing an interesting image of the Alps frozen at this time.

2. Methods

In order to update the geology on the base of the actual outcrops and to improve the structural dataset of the area, the geological units of the study area have been mapped according to the techniques of classic geological field survey. Thanks to the thermobarometric analysis made in the last decade (Di Rosa et al., 2016; Malasoma & Marroni, 2007; Malasoma et al., 2006) the units have been distinguished considering the metamorphic imprint. Structural elements documented in the field, namely syn-metamorphic foliations (S), fold axes (A) and mineral lineations (L) are represented in the map using a representation that allows to chronological differentiation of each deformation phase. To highlight their spatial orientation, each family of structural elements recognized in the field is also represented using stereographic projections (for each tectono-metamorphic unit).

The topographic base employed for the main map (see supplementary materials) was modified from the topographic map IGN – Corte Monte Cinto issued in the 2012 by Institut National de l'Information Géographique et Forestière, France. The mapped area and the related geological cross sections were subsequently digitized.

3. The geology of the study area

The study area, about 50 km^2 wide, is characterized by a north-south trending stack of three continental metamorphic units belonging to the Corte Slices, that are thrust onto HCY Corsica (Figure 1). Slices of Schistes Lustrés Complex have been mapped along the shear zones at the boundaries of the Corte Slices. Eastward, the CCSZ separates the Corte Slices from the not metamorphic Caporalino-Sant'Angelo Unit.

In the main map, HCY Corsica is mainly represented by Permian monzogranites with calc-alkaline affinity represented by leucocratic and biotite-bearing monzogranites with dykes of metabasalts. The monzogranites, belonging to the Popolasca intrusive complex (Paquette, Ménot, Pin, & Orsini, 2003), are intruded into polymetamorphic and polydeformed rocks, known as Roches Brunes Fm. (Rossi et al., 1994). A thin slice of not metamorphosed conglomerates and turbidites of Eocene age found at the top of the monzogranites represent the detached sedimentary cover of HCY Corsica (Rossi et al., 1994).

The Corte Slices are known in the study area, from the bottom to the top, as Castiglione-Popolasca, Croce d'Arbitro and Piedigriggio-Prato Units, showing similar lithostratigraphic features but different P–T metamorphic paths.

The weakly metamorphic Caporalino-Sant'Angelo Unit, that also it belongs to the Lower Units, is located in the northeasternmost side of the study area and consists of Setonia Sandstones and the Omessa Fms., both of Middle Eocene in age (Puccinelli, Perilli, & Cascella, 2012). In the study area, the Omessa Fm. is characterized by clast-supported breccia and huge slide blocks of carbonates of Middle to Late Jurassic in age (the so-called Caporalino Limestones; Durand-Delga, 1984).

The Schistes Lustrés Complex is made up of metaophiolites and related metasedimentary cover that in the mapping area are represented by some thin slices of metaserpentinites, metagabbros, metabasalts and Calcschists (Rossi et al., 1994). These rocks registered variable metamorphic degrees: the units located along the tectonic contacts among the Corte Slices are intensely deformed and show a blueschists facies metamorphism (Vitale Brovarone et al., 2013).

4. Lithostratigraphy of the Corte Slices

The Castiglione-Popolasca Unit (Figure 2) is constituted by a Permo-Carboniferous basement unconformably covered by a Mesozoic metasedimentary succession, which is in turn unconformably topped by a Tertiary siliciclastic metabreccias and metaturbidites (Rossi et al., 1994). The basement consists of a set of polymetamorphic rocks (micaschists, amphibolites, paragneisses and quartzites), i.e. the so-called Roches Brunes Fm. (e.g. Funtana di Minaghiu, Figure 3(a)), intruded by Metagranitoids of Permo-Carboniferous age (e.g. west of Pian de Pigno, Figure 3(b)) and covered by a thick package of Metavolcanites and Metavolcaniclastites Fm. of Permian age (e.g. Centrale électrique de Castirla, Figure 3(c)). The Mesozoic succession start with the Norian Metadolomites Fm. (e.g. east of Mandriola, Figure 3(d)), which consists of a thick beds of gray metadolomites interspersed with levels of red pelites interpreted as paleosoils. The Metadolomites Fm. are topped by the Hettangian-Sinemurian Metalimestones and Metadolomites Fm. (e.g. east of Corbaghiola), represented by an alternance of thin to thick layer of gray metalimestones and light-gray metadolomites. At the top of the Metalimestones and Metadolomites Fm. (Figure 3(e)), a discontinuous layer of Thin-bedded Metalimestones Fm. of Liassic age (e.g. east of Corbaghiola, Figure 3(f)) was found. The Mesozoic succession ends with the Detritic Metalimestones Fm. (e.g. east of Corbaghiola, Figure 3(g)), which consists of a matrix-supported polymict metabreccias, often characterized by well-graded beds. The Mesozoic succession is unconformably covered by the Metabreccias Fm. (e.g. Corbaghiola, Figure 3(h)), which shows a gradual transition to the Metaturbidites Fm. (Figure 3(i)). The Metabreccias is represented by subrounded to subangular clasts of orthogneisses, paragneisses, micaschists, quartzites, marbles and metagranites enclosed in a fine-grain matrix. The Metaturbidites Fm. consists of well bedded, medium layers of metapelites and metarenites, where the intervals of Bouma sequence are still preserved. These two formations are attributed to the Middle to Late Eocene, according to the occurrence of *Nummulites* sp. found in the Metaturbidites Fm.

The Croce d'Arbitro Unit (Figure 2) shows a basement similar to that of the previous unit (e.g. Punta di Malerso, described by Rossi et al., 1994), but includes moreover metaconglomerates deposits of fluvial origin (Fonde-Fuata Metaconglomerates Fm., e.g. Fuata) at the top of the Permian Metavolcanites and Metavolcaniclastites Fm. (e.g. Soveria). The Mesozoic succession (Rossi et al., 1994) is reduced and consists of a thin level of Thin-bedded Metalimestones Fm. (e.g. west of Colletta a Sualello) unconformably topped by the Nummulites-bearing Metalimestones Fm. (e.g. Fuata) of Middle Lutetian age and then by the Metabreccias and Metaturbidites Fms. of Middle to Late Eocene age (e.g. Cima di Campo Tondo). The Tertiary formations unconformably cover the basement, the Metavolcanites and Metavolcaniclastites and the Fonde-Fuata Metaconglomerates Fm.

Compared to the previous two units, the Piedigriggio-Prato Unit (Figure 2) is characterized by a more complete and thick Mesozoic succession (Rossi et al., 1994). The main differences (Di Rosa et al., 2016) are the occurrence of the Carniole Fm. (e.g. east of Mazzola) of Carnian age at the base of Metadolomites Fm. (Durand-Delga, 1984) and the presence of Norian Metaconglomerates Fm. (e.g. south-east of Monte Cecu), consisting of fragments of metadolomites and metavolcanites in a carbonatic matrix, between the Metadolomites and the Metalimestones and Metadolomites Fms. Another relevant difference is represented by the discontinuous levels of Lumachella Metalimestones Fm. (e.g. north of Santa Marione) of Hettangian-Sinemurian age and Cherty Metalimestones Fm. (e.g. south-east of Monte Cecu) of Liassic age, that were found, respectively, at the base and at the top of the Thin-bedded Metalimestones Fm.

5. Deformation history of the Corte Slices

The meso- and micro-structural analysis indicate that the Castiglione-Popolasca, Croce d'Arbitro and Piedigriggio-Prato Units are affected by the same polyphasic deformation history of Tertiary age which can be divided into three phases, respectively, referred as D1, D2 and D3 phases (Bézert & Caby, 1988; Di Rosa et al., 2016; Malasoma & Marroni, 2007; Malasoma et al., 2006).

The D1 is characterized by rarely preserved isoclinal F1 folds with acute to sub-acute hinges. Sheath folds have been observed in Castiglione-Popolasca and

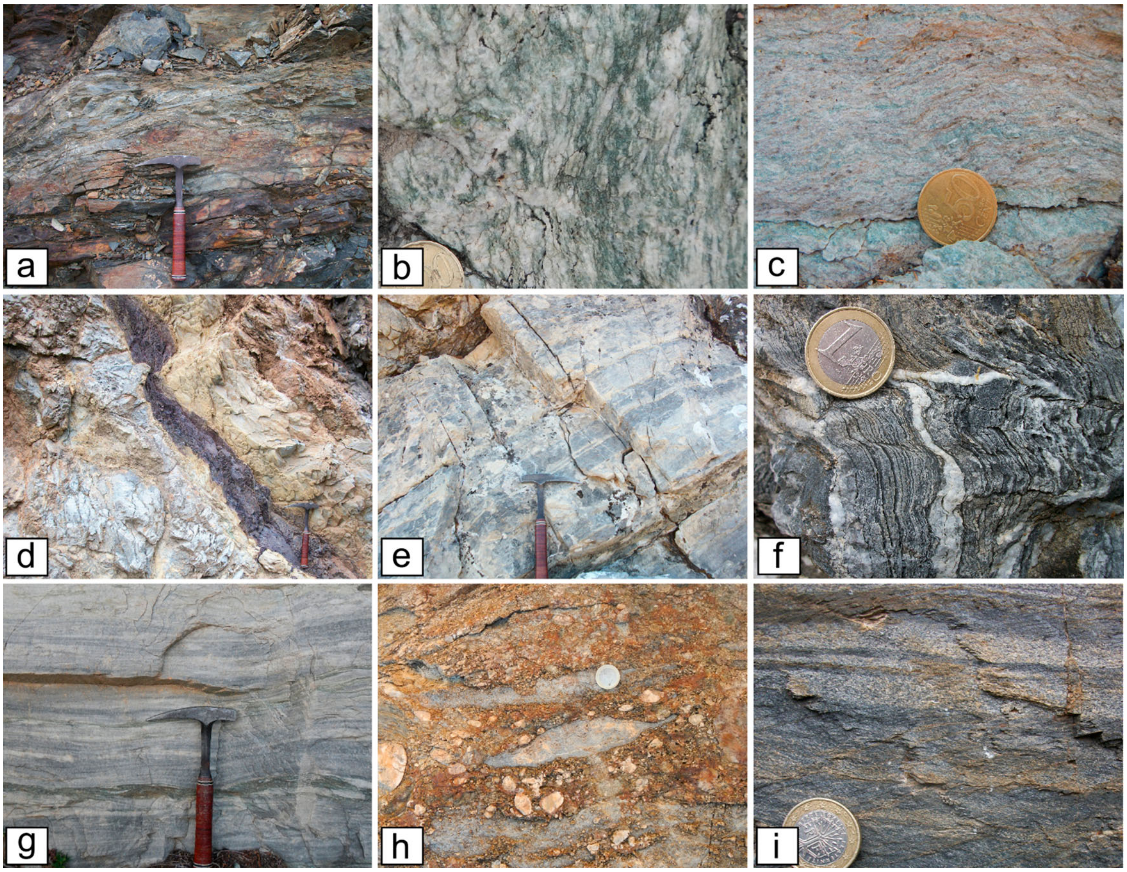

Figure 3. (a) Roches Brunes Fm., (b) Metagranitoids, (c) Metavolcanites and Metavolcanoclastites Fm., (d) Metadolomites Fm., (e) Metalimestones and Metadolomites Fm., (f) Thin-bedded Metalimestones Fm., (g) Detritic Metalimestones Fm., (h) Metabreccias Fm. and (i) Metaturbidites Fm.

Piedigriggio-Prato Units (Figure 4(a)). The F1 folds are associated with S1 foliation, seldom observed in the outcrops but well recognized in thin section of the metapelites (Figure 5(a)). The S1 foliation is constituted by a Chl+Phg+Qtz+Cal assemblage of metamorphic origin, and is observable in the microlithons along the S2 foliation (Figure 4(b) and 5(b)).

The D2 phase is characterized by west-verging, sub-isoclinal to isoclinal F2 folds (Figure 4(c)) with NNE-SSW trend of the A2 axes (Figure 6). At both meso- and map-scale, the F2 folds show limbs often affected by necking and boudinage. The F2 folds are associated with well-developed NNE-SSW striking S2 foliation that represents the main surface identified in the field. The S2 foliation transposes the previous S1 and only in the F2 hinge zones, the S1/S2 relationship are preserved. On the S2 foliation, the ESE-WNW trending L2 mineral and stretching lineations have been measured. In the metapelites, the L2 mineral lineation is represented by elongated chlorite, quartz and white mica grains, whereas in the metalimestones and in the metadolomites are prevailing the L2 stretching lineations represented by boudinaged millimetric pyrite and quartz grains. In the thin sections of metapelites, the S2 foliation is a crenulation cleavage characterized by a new generation of Chl+Phg+Qtz+Alb+Cal (Figure 5(c–e)).

The D3 phase produced east-verging, open to close F3 folds with NNE-SSW trend (Figure 4(d)) and low-angle shear zones due to the vertical shortening of the tectonic stack. The associated S3 foliation can be classified as a disjunctive cleavage (Figure 4(e)). Only recrystallizations of calcite and quartz have been observed in thin section (Figure 5(f)).

It is important to outline that at the boundary, but also inside the mapped units, top-to-west shear zones represented by cataclasites with well-developed S-C structures have been identified. These shear zones have the same strike of the S2 foliation and are deformed by the F3 folds. Thus the stacking of the Corte Slices is regarded as developed during the late stage of the D2 phase.

Owing to the lack of radiometric datings, the age constraints for D1, D2 and D3 phases of the Corte Slices is provided by the youngest age of the rocks involved in the deformation, i.e. Metaturbidites Fm. regarded as Middle to Late Eocene in age (Rossi et al., 1994), and the age of the sediments that unconformably seal the stack of the tectonic units, i.e. the marine to continental sedimentary succession cropping out in the Francardo area, whose base has been assigned to Burdigalian by Alessandri, Magné, Pilot, and Samuel (1977). Thus, the deformation and metamorphism detected in the Corte Slices seem to be

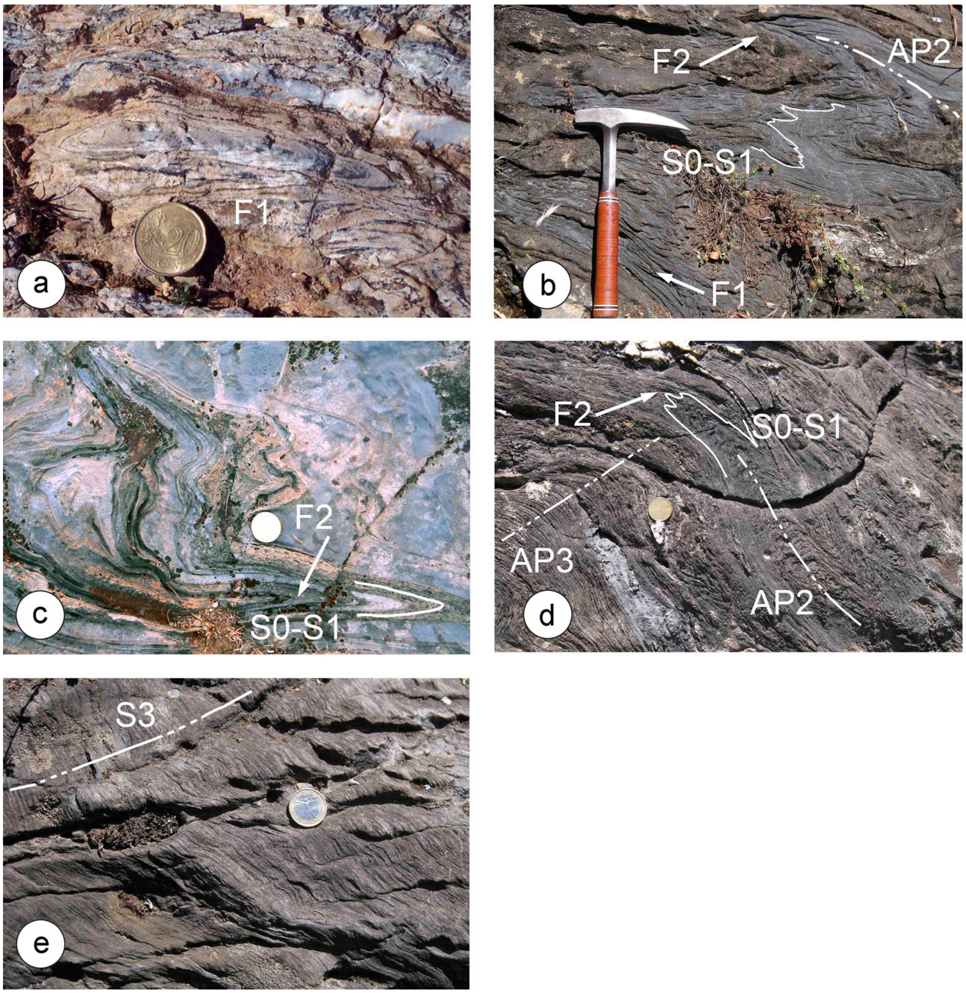

Figure 4. Deformation features in the Detritic Metalimestones Fm. (a) F1 sheath folds; (b) S0-S1 foliation folded by AP2 axial plane; (c) F2 isoclinal fold which folds the S0-S1 foliation; (d) F2 fold and AP3 axial plane interference pattern and (e) S2–S3 foliations interference pattern.

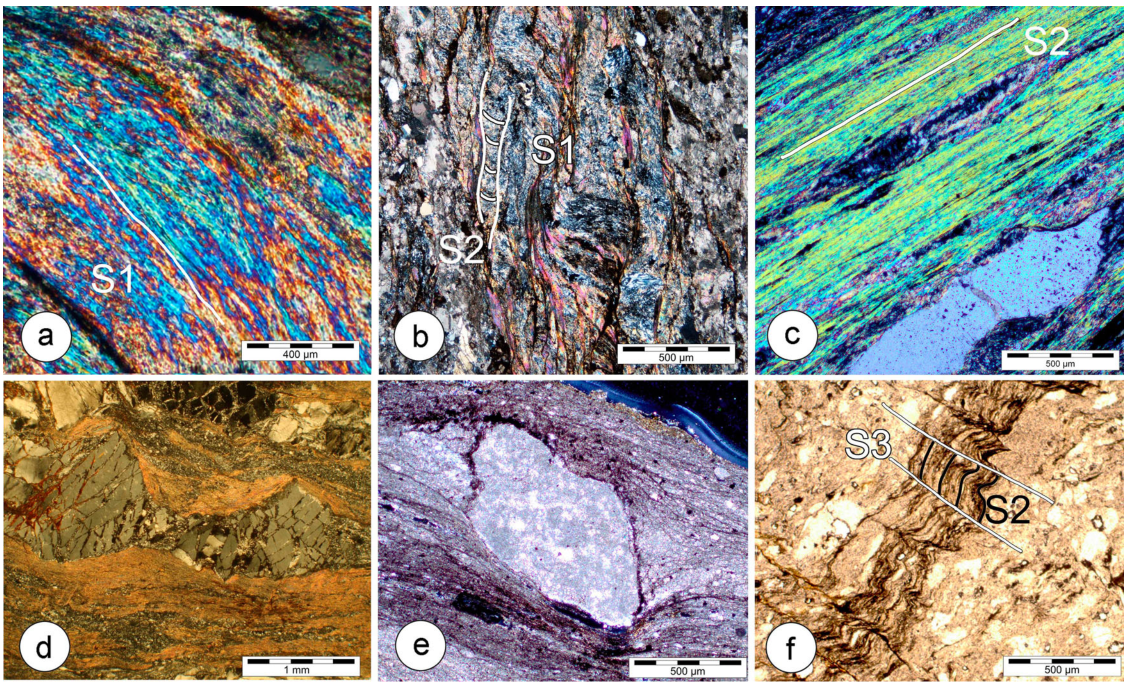

Figure 5. Pictures of the Metabreccias Fm. in thin section. (a) S1 foliation (sample CM21); (b) S1–S2 interference pattern (sample CM4); (c) S2 foliation (sample CM22B); (d) Boudinated quartz level along the S2 foliation (sample CM33); (e) Rotated porphyroclast in the pelitic matrix (sample CM3) and (f) S2–S3 foliations interference pattern (sample CM23B).

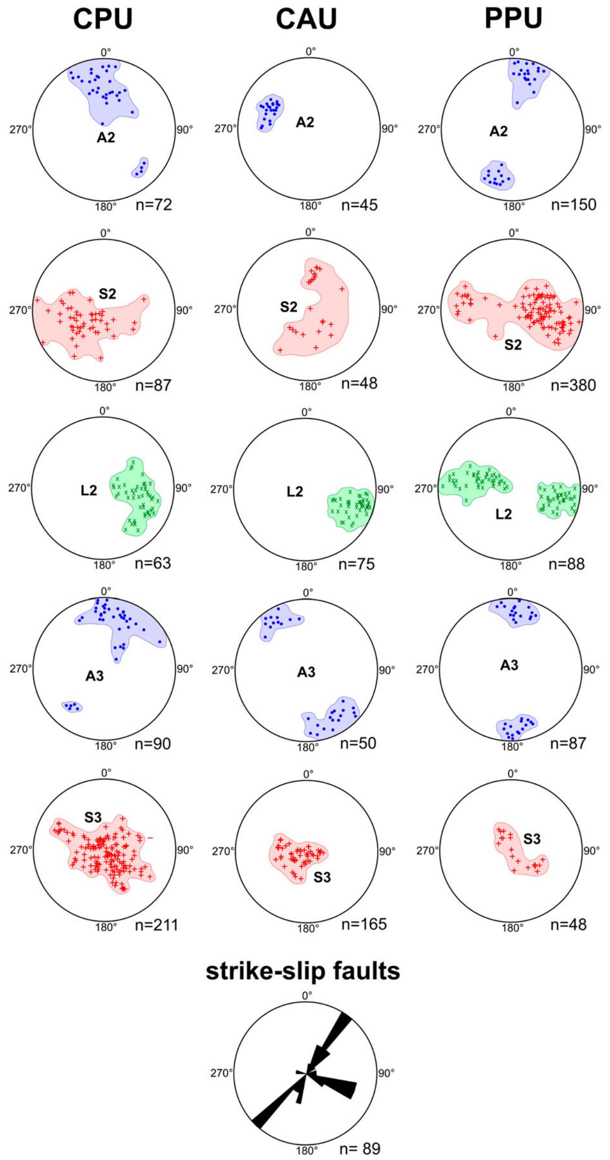

Figure 6. Stereographic plots of structural data collected in the study area (Schmidt net projection. lower hemisphere). Faults belonging to the CCSZ are shown (the length of the black sectors is proportional to the number of strike measures).

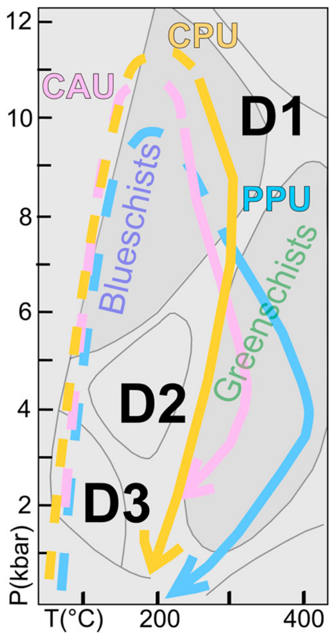

Figure 7. P–T path obtained by the metamorphic study of the Corte Slices (after Malasoma & Marroni, 2007; Di Rosa et al., 2016). The paths were obtained using the method described by Vidal and Parra (2000) which allows to determinate the P-T equilibrium conditions of the chlorite-phengite pairs, quantifying the abundance of their related end-members grown within the microstructures of the pelitic matrix of the Metabreccias Fm.

developed in about 17 Ma time span from Late Eocene to Early Miocene.

The post-D3 deformation is mainly represented by a complex network of brittle deformations related to the CCSZ. These deformations include not only a well-developed riedel system of strike-slip faults with NNE-SSW and SE-NW trend (Figure 6), but also NNE-SSW trending splay thrusts, like the one along which the Caporalino-Sant'Angelo is over the Piedigriggio-Prato Unit.

6. Metamorphism estimate in the Corte Slices

The most significant difference existing among the different units of the Corte Slices is the grade of the metamorphism. The estimate of the metamorphic pressure (P) and temperature (T) conditions reached in each units during the D1 and D2 phases was made possible thanks to the coexistence of several chlorite and phengite generations with different compositions and occurring in different micro-structural sites. These features were used to constrain the P–T evolution by the approach proposed by Parra, Vidal, and Agard (2002), Vidal et al. (2006) and Lanari et al. (2014). This approach was applied to the pelitic matrix of several samples of the Metabreccias Fm. collected in Castiglione-Popolasca, Croce d'Arbitro and Piedigriggio-Prato Units.

The Castiglione-Popolasca Unit shows the highest values of pressure peak (6–15 kbar) reached during the D1 phase (Malasoma & Marroni, 2007), whereas Di Rosa et al. (2016) have described a more complex picture for the D1 phase in the Piedigriggio-Prato Unit, characterized by two phengite-chlorite pairs growth along the same S1 foliation (Figure 7). The first growth corresponds to the P-T metamorphic conditions of to 6.2–7.5 kbar and 290–310°C whereas the second one provides conditions of 5.1–6 kbar and 350–400°C. These data indicate that the S1 foliation developed under decreasing pressure and increasing temperature conditions, suggesting that the D1 phase was acquired during the exhumation of Piedigriggio-Prato Unit. About the Croce d'Arbitro Unit, the metamorphic peak was estimated by Malasoma et al. (2006) as 5–8 kbar and 300–370°C.

All these units are affected by a retrograde path during the D2 phase that developed under greenschists

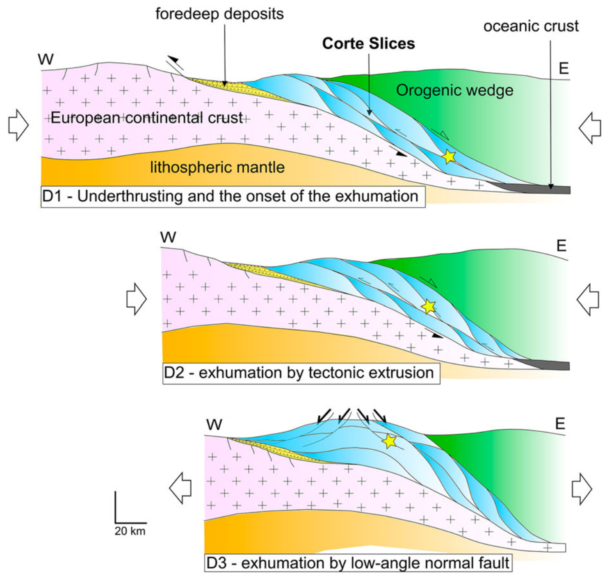

Figure 8. Cartoon illustrating the tectono-metamorphic evolution of the Corte Slices during the Late Eocene – Oligocene time spam. From the top to the bottom: underthrusting of the Corte Slices at depth of 30 km into the tectonic wedge during the continental subduction and onset of the exhumation (D1 phase); continuous exhumation from ∼ 30 to ∼ 10 km of depth (D2 phase) and final stage of exhumation produced by the extensional tectonics driven by low-angle normal faults (D3 phase). Arrows legend: black full arrows indicate thrust kinematics, empty arrows indicate normal kinematics associated with the extrusion and thick black arrows indicate the D3 low-angle normal faults. Yellow stars indicate the position of the three units (CPU, CAU and PPU) during the three stage of the exhumation.

facies metamorphic conditions. For instance in the Piedigriggio-Prato Unit, Di Rosa et al. (2016) estimated for the D2 phase P–T conditions of 2.3–3.8 kbar and 240–300°C.

Based on microstructural methods, samples of shear zones related to D2 phase in the metagranitoids of Castiglione-Popolasca and Croce d'Arbitro Units show a transition from fragile to ductile behavior, mainly controlled by quartz and feldspar that indicate a temperature range of 300–400°C (e.g. Stipp, Stünitz, Heilbronner, & Schmid, 2002). These data are consistent with those obtained for the Piedigriggio-Prato Unit with the study of the chlorite and phengite pairs (Di Rosa et al., 2016).

7. Map-scale structures

The polyphased history of the deformation detected at meso- and micro-scale is also noticeable at the map-scale, as testified the complex interference macrostructures of the geological map. However, no structure related to the D1 phase was identified in the field and, consequently, this interference pattern is produced by the overprinting of the structures of the D3 phase on those of the D2 phase.

The structure related to the D2 phase can be described as a stack of tectonic units bounded by shear zones. Inside each tectonic unit, the D2 phase is represented by isoclinal antiforms and synforms with well-developed reverse limbs. The D2 phase structures are deformed by folds of the D3 phase and the related interference pattern can be classified as type 3 (Ramsay, 1967) deriving from the overprinting of two systems of folds, both with N-S trending axes. The interference between the D2 and D3 phases is shown in the map by the trend of the axial planes of F2 and F3 folds.

An example of this setting is provided by the Monte Cecu area, in the southern part of the map. In this area both the Croce D'Arbitro and Piedigriggio-Prato Units crop out. The latter unit is characterized by an antiform related to D2 phase is well exposed along the southern side of Monte Cecu. From Santa Marione runs for about 3 km an isoclinal fold, with at the core the Metadolomites Fm., with an N-S trending axis and an axial plane general E-dipping, refolded by a later D3 synform. Two synforms with the Metaturbidites Fm. at the core have been identified in the western side of Monte Cecu. All these structures are characterized by a good continuity and can be recognized northward of Monte Cecu for about 3 km up to Colla a Posta.

An other important feature of the mapped area is the distribution of the Croce d'Arbitro Unit, that crops out over a very large area in the northern part of the mapped area, whereas in the southern one this unit occurs with reduced thickness and sandwiched between the Castiglione-Popolasca and the Piedigriggio-Prato Units. The boundary between the two areas occurs southward in correspondence of a lateral ramp belonging to the shear zone that represents the surface along which the Croce d'Arbitro Unit is thrust onto the Castiglione-Popolasca Unit. This lateral ramp can be easily identified in the map according to the attitude of the structural elements as F2 fold axes and strikes of the S2 foliations that change from N-S to E-W, i.e. from perpendicular to parallel to the predominant sense of movement in the Corte Slices.

In the north-western part of the mapped area, the shear zones among the different units of the Corte Slices are characterized by slices of metaophiolites and metasediments belonging to the Schistes Lustrés Complex. These metaophiolites and metasediments as well as the shear zones are deformed by the F3 folds. Thus, the coupling between the Corte Slices and the Schistes Lustrés Complex seems to be developed at the latest during the last stage of the D2 phase, i.e. during the stacking of the Corte Slices.

8. Conclusions

The geological map enclosed in this paper is devoted to highlight the tectonic setting of the Corte Slices in a key area located between Golo and Tavignano Valleys (Central Corsica). The Corte Slices consist of three metamorphic continental units, known as Castiglione-Popolasca, Croce d'Arbitro and Piedigriggio-Prato Units, all regarded as fragments of the European continental margin involved in the continental subduction and the following collision.

The meso- and micro-structural analysis associated with a detailed geological mapping indicates that the Corte Slices are affected by a polyphasic deformation history of Tertiary age which can be divided into three phases. Whereas the D1 phase can be recognized only at micro- and meso-scale, the D2 and D3 phase has produced meso- to map-scale structures that are well identifiable in the field. The main difference among the Corte Slices, is represented by the P–T conditions of the metamorphism developed during the D1 and D2 phase. Despite these differences, all the Corte Slices are affected by a retrograde metamorphism ranging from blueschists facies during the D1 phase to greenschists facies during the D2 phase.

The polyphasic history of the deformation detected at meso- and micro-scale resulted in a complex map-scale geological structures, mainly derived from the overprinting of the structures of the D3 phase on those of the D2 phase.

According to Di Rosa et al. (2016), the features of the deformations and the P–T conditions of metamorphism suggest that structural framework of the Corte Slices was acquired by ductile extrusion tectonics during their exhumation in a transition setting from continental subduction to continental collision, during which these units are exhumed up to surface before their covering by the Miocene deposits (Malasoma & Marroni, 2007; Malavieille et al., 1998; Molli, 2008) (Figure 8).

During this exhumation the coupling of the Corte Slices with the Schistes Lustrés Complex occurred, according to the occurrence of metaophiolites and related metasediments along the boundaries of the Corte Slices.

On the whole, this study has provided useful insights for the understanding of the structural setting featuring this key area, that can be regarded as a snapshot of the Brianconnais and Prepiemontais domains of the Western Alps frozen in the Early Oligocene, i.e. the timing of stop of the shortening in Alpine Corsica.

Software

The geological map and the tectonic sketch were drawn using ESRI ArcGIS 10.0 and Illustrator. The stereographic projections were realized with Stereo32. The cross sections and the pictures were created using Inkscape and GIMP.

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No potential conflict of interest was reported by the authors.

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