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1 **Alpine tectono-metamorphic evolution of the Corsica basement**

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24 **Running title: Alpine tectonics of the Corsica basement**

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42 **Abstract**

43 The Alpine orogenic edifice of Corsica (northern Tyrrhenian Sea) offers the possibility to
44 investigate the mode through which continental crust responds to the propagation of regional
45 shortening at convergent plate margins. The geology of Corsica has been traditionally described
46 separating domains affected by the Alpine tectonism (Alpine Corsica) from those that did not
47 experience the Alpine tectono-metamorphic overprint (Hercynian Corsica), but recent studies
48 show that most of Hercynian Corsica was thermally reset in post-Eocene times, questioning this
49 scheme. The continental units formed at the expenses of the stretched continental margin of the
50 European plate and consist of Hercynian granitoid basement rocks and cover sequences (Permian
51 volcanoclastics and Mesozoic sedimentary successions). By integrating meso- and micro-structural
52 investigations with metamorphic thermobarometry and Ar-Ar geochronology along seriate
53 structural transects running across the basement section exposed below the Alpine orogenic
54 wedge, we document middle-late Eocene (ca. 50-33 Ma) westward-verging syn-metamorphic
55 (low-grade blueschist facies) thick-skinned, basement-involved thrusting. Significantly, crustal
56 shortening in the continental basement predated of ca. 15-10 Ma the subduction zone
57 metamorphism in the oceanic-derived Schistes Lustrés Complex. When the P-T-t-deformation
58 history as reconstructed from the Corsica basement is integrated with the regional scenario of the
59 Alpine-Apennine orogeny, a tectonic reconstruction is proposed framing the Alpine orogeny in
60 Corsica within the Apennine-Maghrebian subduction system in the retroside (retrowedge) of the
61 Apennine orogenic wedge.

62

63 **Key words:** Crustal shortening, low-grade metamorphism, Ar-Ar geochronology, Alpine orogeny,
64 Corsica

65

66 **1. Introduction**

67 The mode and timing through which regional convergence is accommodated in the
68 continental crust are key issues to define how orogenic processes and continental accretion occur
69 in space and time. At crustal scale, tectonic shortening can be accommodated through uniform
70 thickening (pure-shear deformation mode) or underthrusting (simple shear deformation mode;
71 e.g. Allmendinger and Gubbels, 1996). Both thin- (basement not involved) and thick-skinned
72 (basement-involved) structural styles are recognized in active and fossil orogenic belts (e.g.,
73 Allmendinger and Gubbels, 1996; Pfiffner, 2006), with implications on continental rheology (e.g.,
74 Babeyko and Sobolev; 2005; Mouthereau et al., 2013; Lowry and Marta Pérez-Gussinye, 2011;
75 Lacombe and Bellhasen, 2016) and the geodynamics at convergent plate margins (e.g., Nemčok et
76 al., 2013; Lacombe and Bellhasen, 2016).

77 As a part of the Eurasia paleomargin during the Alpine Cenozoic convergence processes
78 involving the Eurasian, Iberian and African plates, the island of Corsica in the northern Tyrrhenian
79 Sea (Fig. 1a) (e.g., Faccenna et al., 2001; Rosembaum et al., 2002; Lacombe and Jolivet, 2005;
80 Handy et al., 2010; Molli and Malavieille, 2010; Carminati et al., 2012; Turco et al., 2012; Malusà
81 et al., 2015; Jolivet et al., 2021) is an ideal case study to investigate how the continental
82 lithosphere responds to propagation of regional shortening at convergent plate margins. Plate
83 convergence along the western end of the Alpine orogen and subsequent rifting and drifting has
84 exposed on the island of Corsica a wide swath of crystalline basement complex originally covered
85 by the Alpine orogenic wedge (Jolivet et al., 1990; 1998; Molli and Malavieille, 2010; Vitale
86 Brovarone et al., 2013; Rossetti et al., 2015; Di Rosa et al., 2020a). This has made possible
87 observation on shortening-related structures underlying the Alpine orogenic wedge.

88 The geology of Corsica has been classically described separating domains affected by the
89 Alpine tectonism (Alpine Corsica) from those that did not experience the Alpine tectono-
90 metamorphic overprint (Hercynian Corsica) forming the foreland of the Alpine orogen as a part of
91 the European plate (e.g. Duran Delga, 1984; Rossi et al., 1994; Vitale Brovarone et al., 2013) (Fig.
92 1b). This simplistic subdivision contrasts with the available thermo-chronometric data (Cavazza et
93 al., 2001; Zarki-Jhaki et al., 2004; Fellin et al., 2006; Danisik et al., 2007), which document that
94 most of the Hercynian Corsica was thermally reset, demonstrating that virtually all the island was
95 covered by the Alpine orogenic wedge and/or by foreland basins (Fig. 1c).

96 While the Alpine tectono-metamorphic evolution of the Mesozoic-Cenozoic cover rocks of
97 the former European continental margin has been recently assessed (Di Rosa et al., 2019, 2017;

98 2020a; Malasoma et al., 2020; Marroni et al., 2020), the structural style, timing and thermo-baric
 99 environments of the Alpine deformation in the Hercynian continental basement is still poorly
 100 documented, despite a mounting body of structural, petrographic and geochronological evidence
 101 of Alpine tectonism (Malasoma et al., 2006; 2019; Malasoma and Marroni, 2007; Garfagnoli et al.,
 102 2009; Di Vincenzo et al., 2016; Di Rosa et al., 2017; 2020b; Frassi et al., 2022). Deciphering the
 103 pressure-temperature-time-deformation (P-T-t-d) history of the Corsica basement during the
 104 Alpine orogeny is essential to frame in a coherent scenario the Alpine tectonic/geodynamic
 105 evolution in the hinterland of the Alps-Apennine (see Vitale Brovarone and Herwatz, 2013).

106 In this study, we describe a coherent set of Alpine-age tectono-metamorphic structures
 107 affecting both Alpine and Hercynian Corsica, as traditionally defined (Figs. 1b and 2). We describe
 108 an early-late Eocene (50-33 Ma) westward-verging syn-metamorphic thick-skinned, basement-
 109 involved thrusting. Implications of these results are framed within the regional scenario of the
 110 Alpine-Apennine orogenic system.

111

112 **2. Geological background**

113 Corsica Island is a fragment of the former southern continental margin of the Eurasia plate,
 114 involved first in the formation of the Alpine convergent margin during consumption of the
 115 Mesozoic Alpine Tethys (Ligurian–Piedmont branch) oceanic realm and successively in the
 116 Oligocene-Miocene rifting and drifting processes leading to opening of the Liguro-Provençal and
 117 Tyrrhenian back-arc basins (Doglioni et al., 1997; Rosembaum et al., 2002; Carminati et al., 2012;
 118 Faccenna et al., 2001; Lacombe and Jolivet, 2005; Molli and Malaiveille 2010).

119 The Alpine orogenic construction caused the formation of a west-verging (present-day
 120 coordinates) orogenic wedge (Fig. 2), formed at the expenses of both the ocean-derived and the
 121 former continental margin units, thrust onto the Hercynian Corsica (Vitale Brovarone et al.,
 122 2013; Di Rosa et al., 2002; Jolivet et al., 1990; Molli et al., 2006; Rossetti et al., 2015). The nappe
 123 edifice consists, from top to bottom, of (i) non-metamorphic or slightly metamorphosed ophiolite
 124 units (Balagne, Nebbio and Macinaggio units), (ii) high-pressure (eclogite to blueschist facies)
 125 subduction channel units of the Schistes Lustrés Complex, a tectonic mélange made of oceanic-
 126 and continental units, and (iii) European continental crust tectonic slices, made of the Tenda and
 127 the external continental units (Durand Delga, 1984; Jolivet et al., 1990; Vitale Brovarone et al.,
 128 2013; Di Rosa et al., 2020a). The latter complex of units, also referred to as Lower units, consists of
 129 various tectonic slices made of Permian-Carboniferous igneous rocks intruded into Pan-African

130 metamorphic host rocks, unconformably covered by Permian volcanics and volcanoclastic deposits
131 (Rossi et al., 1994; Paquette et al., 2003; Di Rosa et al., 2020b) and by Mesozoic to Eocene
132 sedimentary successions (e.g., Bezert and Caby, 1988; Rossi et al., 1994; Cavazza et al., 2018; Di
133 Rosa et al., 2020a). These continent-derived tectonic slices are affected by a diffuse Alpine
134 tectono-metamorphic overprint, with peak conditions equilibrated within the low-grade blueschist
135 metamorphic facies (Tribuzio and Giacomini, 2002; Molli et al., 2006; Maggi et al., 2012; Rossetti
136 et al., 2015; Di Rosa et al., 2019).

137 The age of subduction zone HP/LT metamorphism is constrained is late Eocene (ca. 37-34
138 Ma), based on U-Pb zircon (Martin et al., 2011) and Lu-Hf garnet and lawsonite (Vitale Brovarone
139 and Herwatz, 2013) dating of the eclogite- and blueschist facies rocks of the Schistes Lustrés
140 Complex. A minimum late Eocene age (35 Ma) is also indicated by Ar-Ar phengite geochronology
141 from the Schistes Lustrés Complex (Brunet et al., 2000). The tectonic assembly of the ophiolite
142 domain units onto the Hercynian Corsica is primarily constrained by the activity of the ductile-to-
143 brittle East Tenda Shear Zone (ETSZ), the Alpine shear zone boundary between the continental
144 margin of the European plate and the Ligurian-Piedmont ocean. The ETSZ experienced a polyphase
145 tectono-metamorphic evolution, typified by syn-blueschist top-to-the-W thrusting, overprinted by
146 ductile-to-brittle top-to-the-E extension (Gibbons and Horak, 1984; Jolivet. et al., 1990; Gueydan
147 et al., 2003; Maggi et al., 2014; Molli et al., 2006; Rossetti et al., 2015; Beadouin et al., 2020). Most
148 of the available geochronological data on the syn-blueschist shear zones clusters in the latest
149 Eocene-earliest Oligocene (35-32 Ma; Ar-Ar phengite geochronology: Brunet et al., 2000; Beadoin
150 et al., 2020; Rb-Sr geochronology: Rossetti et al. 2015), considered as the age of the terminal
151 Alpine overthrusting (Brunet et al., 2000; Rossetti et al., 2015; Beadouin et al., 2020). Older U-Pb
152 rutile ages (ca. 54 ± 8 Ma; Maggi et al. 2012), together with the maximum Ar-Ar phengite ages (ca.
153 45 Ma; Brunet et al., 2000), suggest an early Eocene stage for the ETSZ nucleation. The post-
154 orogenic top-to-the-E reactivation of the ETSZ culminates during the early Miocene, synchronously
155 with syn-greenschist extensional shearing in the Schistes Lustrés (Rossetti et al., 2015).

156 Tectono-metamorphic data from the frontal, N-S striking thrust zone bounding the contact
157 zone between the oceanic-derived Alpine nappe stack and Hercynian Corsica (here after referred
158 to as Alpine deformation front, ADF; Fig. 2) document a polyphase evolution in the
159 metasedimentary cover units of the Corsica basement, associated with a progressive top-to-the-
160 west ductile-to-brittle shearing, equilibrated under low-grade blueschist to greenschist facies
161 conditions (Di Rosa et al., 2019; 2020a-b). Significantly, distinct pressure–temperature–

162 deformation histories characterize the different tectonic units, indicating different burial and
163 exhumation trajectories during the crustal slicing associated with the overthrusting of the Schistes
164 Lustrés Complex onto the European plate margin (Di Rosa et al., 2019). Petro-tectonic evidence
165 has shown that Alpine deformation and low-grade greenschist to blueschist metamorphism have
166 also affected the Hercynian granitoid basement of Central Corsica, in the footwall of the main
167 Alpine contact (Garfagnoli et al., 2009; Malasoma and Marroni, 2006; Di Vincenzo et al, 2016). Di
168 Vincenzo et al. (2016) documented late Eocene (ca. 37-35 Ma) high-angle, NS-striking mylonitic
169 shear zones, developed under P-T conditions of ≥ 300 °C and 0.5-0.6 GPa, and attributed to Alpine
170 strike-slip reactivation of the Hercynian basement. ^{40}Ar - ^{39}Ar minimum ages of ~ 46 Ma from
171 microstructurally muscovite relics were also assigned to the Alpine tectono-metamorphic
172 evolution (Di Vincenzo et al, 2016).

173 Biostratigraphic data from the Corsica continental margin cover units constrain the Alpine
174 orogenic tectonics to pre-Priabonian (>38 Ma) (Ferrandini et al., 2010) times, although post-
175 Bartonian (<38 Ma) deformation was also reported (Bezert & Caby, 1988). An upper age limit for
176 the ductile Alpine tectono-metamorphic evolution is provided by the sedimentation of the early
177 Miocene deposits of the Saint Florent and Francardo Basins, sealing the early thrust contacts
178 (Dallan & Puccinelli, 1995; Ferrandini et al., 1998; Cavazza et al., 2001). This is in line with the
179 available thermochronological data, indicating exhumation of the deep roots of the Alpine orogen
180 during the late Eocene-Miocene (Fellin et al., 2006 Cavazza et al., 2001; Zarki-Jakni et al., 2004;
181 Danisik et al., 2007).

182

183

184 **3. Materials and Methods**

185 We investigated the structural architecture and the tectono-metamorphic signature of the
186 continental basement of central Corsica along three seriate E-W trending geological transects
187 (transect-1 to -3), running across the ADF into the easternmost portion of the Hercynian basement
188 complex (Fig. 2), with the aim to compare structures and provide ultimate thermobaric and
189 geochronological constraints on the tectono-metamorphic coupling between Alpine and Hercynian
190 Corsica. The geology of the study area is presented in Di Rosa et al. (2017; 2020a) and Malasoma
191 et al. (2020), where the structural architecture of the tectonic boundary zone between the
192 Schistes Lustrés and the external continental units is detailed. We focus our study exclusively on
193 the Hercynian basement units (Hercynian granitoids and Permian volcanic deposits) either

194 exposed at the footwall or in the immediate hanging wall of the ADF (transect-1 to -3 in Fig. 2).
195 The hanging wall units define the so-called Corte slices (Di Rosa et al., 2019, 2020a).

196 The research rationale is based on a multidisciplinary approach that combines field-based,
197 meso- and micro-structural investigation with metamorphic thermobarometry (inverse and
198 forward modelling techniques) and Ar-Ar geochronology. Samples for laboratory work were
199 collected based on the textural and mineralogical evidence at the outcrop scale. Table 1 reports
200 the location, textures and petrography of the studied samples. Appendix-A details the analytical
201 protocols and methods adopted in the study. In the following, mineral abbreviations follow
202 Whitney and Evans (2010), complemented by Wm for white mica.

203

204 **4. Structures in the field**

205 This section describes the structural architecture along the three geological transects and
206 detail the tectono-metamorphic setting of the sampling sites. Transect-1 and transect-2 illustrate
207 the deformation structures across the ADF entering Hercynian Corsica, whilst transect-3 is located
208 exclusively within the Hercynian basement complex (Fig. 2).

209

210 **4.1 Transect-1**

211 Structure in the Lower units (here made of the Castiglione Popolasca unit; Di Rosa et al.,
212 2020a) is characterized by a stack of west-verging ductile-to-brittle thrust slices that involve the
213 Hercynian granitoid rocks and its Permian volcanoclastic covers. Overall, a tectonic doubling of the
214 stratigraphic column is documented. Eocene metabreccias, unconformably covering the basement
215 rocks, are also involved in the compressional deformation (see also Di Rosa et al., 2019) (Fig. 3a).
216 Moving from west to east, a marked increase in the deformation intensity is observed in the
217 Permian volcanoclastics in a transition from D_1 to D_2 deformation (Figs. 3a-b). To the east, the main
218 structural fabric is a penetrative, sub-vertical S_1 , NNW-SSE striking ($N02^\circ$, 83° ; $n=19$) metamorphic
219 foliation that transposes the S_0 layering (S tectonites). The S_1 foliation is axial planar to upright
220 isoclinal folds with sub-horizontal hinge lines, trending sub-parallel to the S_1 foliation ($N353^\circ$, 18° ;
221 $n=23$). The L_1 lineations, defined by Qz-Wm alignments, are poorly evident but systematically
222 trend down-dip (Fig. 3b-d). The S_1 foliation is deformed by a spaced D_2 crenulation cleavage
223 defined by a S_2 foliation trending sub-parallel to S_1 and shallowly dipping to the east ($N353^\circ$, 19° ;
224 $n=16$) (Figs. 3d). To the west, the intensity of the D_2 deformation increases in the Permian

225 volcanoclastics structurally lying below the Hercynian granitoids. There, the S_0 foliation is
 226 transposed by S_1 and progressive transition from east-dipping S_2 crenulation to shear foliation is
 227 observed, with development of a ca. 100 m thick panel of S-L and S-C tectonites, dipping shallowly
 228 (ca. 30°) to the east (S_2 mean strike: N01°, 27°, n= 56). The L_2 stretching lineations are dip-parallel
 229 (N81°, 28°; n=56), and made of Qz-Wm alignments. This shear zone separates two tectonic slices
 230 of Hercynian granitoids (Figs. 3a-b, e). The sense of shear is systematically top-the-W as
 231 documented by the S-C fabric and the asymmetry of F_2 intrafoliar folds (Fig. 3e).

232 The Hercynian granitoid rocks below the major tectonic contact dominantly show primary
 233 equigranular texture. Brittle deformation structures are widespread and mostly characterized by
 234 conjugate sets of sub-vertical NE-SW and NW-SE striking fault systems and joints, with mutual
 235 cross-cutting relationships. Slickenlines, dominantly defined by wear and abrasion tracks, are
 236 either sub-horizontal or dip-parallel (Fig. 3b). Shear criteria, as provided by synthetic Riedel shears,
 237 grooves and abrasion structures, indicate dextral-reverse and sinistral-reverse kinematics for the
 238 NE-SW and NW-SE striking fault systems, respectively. These fault systems overprint subparallel
 239 discrete (up to 5-meter-thick) anastomosing zones of ductile shearing (mylonites and
 240 protomylonites; Fig. 3f-g) that are observed up to ca. 4 km from the ADF. Such ductile zones of
 241 shearing bear oblique stretching lineations, provided by Qz-Wm mica alignments. Shear criteria as
 242 dominantly provided by S-C fabrics and sigma-type porphyroclasts (quartz and K-feldspar)
 243 document dextral-reverse and sinistral-reverse kinematics for the NE-SW and the NW-SE striking
 244 shear zones, respectively (Figs. 3b, f-g). Significantly these ductile shear zones are observed in sites
 245 of extensive structurally controlled fluid flow as documented by a pervasive network of syn-
 246 metamorphic veining and marked alteration halos. The vein filling is dominantly made of Qz-Wm \pm
 247 Cb, whilst the alteration halos consists of Wm-Stp-Ep-Ttn \pm Amp (see below) (Fig. 3h).

248

249 **4.2 Transect-2**

250 Transect-2 runs across the tectonic contacts between the Schistes Lustrés Complex and the
 251 Lower units (here made of the Ghisoni unit; Di Rosa et al., 2020a) and between the latter and the
 252 Hercynian basement (Figs. 2 and 4a). The contact between the Schistes Lustrés and the Lower
 253 units is marked by a dm-thick cataclastic zone striking NNW-SSE, dipping steeply to the ENE.
 254 Entering the Lower units, a NNW-SSE striking S_1 sub-vertical foliation is observed in the Permian
 255 volcanoclastics. Moving towards the west, the Permian volcanoclastics are in tectonic contact with
 256 slightly deformed granitoid rocks, where an incipient subhorizontal, shallowly SE-dipping

257 secondary foliation is observed (CO34 in Fig. 4a). Farther west, isotropic primary igneous fabrics
 258 are predominant within the granitoid rocks. Major ductile shear localisation occurs ca. 3 km west
 259 of the fault-controlled contact between the Schistes Lustrés and the Lower units. Here, a ca. 50 m
 260 thick zone of ductile shearing is defined by strongly mylonitized granitoids with a gneissic texture,
 261 where porphyroclastic Qz-Ksp aggregates occur within a fine-grained white mica matrix (Sample
 262 CO36 in Fig. 4). Finite deformation (D_2) is partitioned between domains of coaxial and non-coaxial
 263 shearing, which deform an early-formed, east-dipping sub-vertical S_1 foliation (Fig. 4b). S_2 foliation
 264 dips shallowly towards the east (mean: $N08^\circ, 31^\circ$; $n=32$), bearing dip-parallel L_2 stretching
 265 lineations ($N78^\circ, 32^\circ$; $n=32$) defined by Qz-Wm aggregates. The sense of shear, as deduced by the
 266 S-C fabric, sigma-type porphyroclasts and fold asymmetry is systematically top-to-the-W (Figs. 4c-
 267 d). To sum-up, the reconstructed structural architecture along Transect-2 documents a major
 268 tectonic doubling of the continental basement units, with major shear strain localization along the
 269 contact between the Hercynian granitoids and the Permian volcanoclastics (Fig. 4a).

270

271 **4.3 Transect-3**

272 Transect-3 runs along the Défilé de l'Inzecca, across the same tectonic units described in Transect-
 273 2. The basement section was already studied by Garfagnoli et al. (2009). Its structural architecture
 274 is dominated by a penetrative sub-vertical D_1 plano-linear fabric with formation of S-L tectonites
 275 that almost completely obliterate the primary igneous fabric in both the Hercynian granitoids and
 276 the Permian volcanoclastics (Fig. 5a). The S_1 foliation strikes NNW-SSE, dipping steeply either to
 277 ENE or WSW (mean: $N153^\circ, 83^\circ$; $n=52$), and bears dip-parallel L_1 stretching lineations (mean:
 278 $N252^\circ, 81^\circ$; $n=42$; Figs. 5b), dominantly made of Qz-Wm associations in gneiss and Ab-Ep in
 279 volcanoclastics. A gneissic texture is well evident in the granitoid rocks, defined by Qz-Fsp
 280 porphyroclast embedded within Wm folia. In section normal to foliation and parallel to the
 281 stretching lineations, cm-sized Qz and Fsp porphyroclasts systems dominantly show phi-type
 282 geometries and both up- and down-dip kinematic criteria (dominantly provided by sigma-type
 283 clasts) are present, attesting dominant coaxial stretching during formation of the composite S_1 - L_1
 284 fabric (Figs. 5c-d). In the Permian volcanoclastics, the D_1 fabric consists of S_1 - L_1 tectonites that
 285 overprint the primary layering. Vertical stretching is documented by L_1 , dip-parallel stretching
 286 lineation as provided by Qz-Pl-Ep associations, boudinage and nearly horizontal quartz veining.
 287 The S_1 foliation is axial planar to subvertical isoclinal folds with sub-horizontal hinge lines, trending
 288 ca. NS (Figs. 5b-g). Various generations of quartz veins are recognized, with early segregated veins

289 that are transposed along the S_1 foliation. A spaced S_2 crenulation foliation is observed to re-fold
 290 the S_1 foliation. The S_2 strikes ca. N-S and dips shallowly to the E (Fig. 5b). As documented by the
 291 decrease in the S_2 spacing, the intensity of the S_2 crenulation increases when moving to the E,
 292 towards the contact with the Schistes Lustrés Complex (Fig. 5a, h)

293

294 **5. Sample microtexture and petrography**

295 Microstructures, petrography and mineral chemistry of representative samples collected
 296 along the three investigated samples are described below. Further details on microstructures are
 297 provided in Supplementary Material#1. Mineral chemistry as obtained from electron microprobe
 298 analyses (EMPA), and the recalculation of the mineral formulas are provided in the Supplementary
 299 Material#2.

300

301 **5.1 Transect-1**

302 Sample CO24 is representative of the S_1 fabric in the Permian volcanoclastics (Fig. 3a, 3d-c).
 303 The sample microfabric is characterized by a penetrative disjunctive foliation, defined by the syn-
 304 kinematic assemblage made of aligned Wm (up to 40% vol.) and fine-grained re-crystallized Qz (in
 305 higher strain domains), Ab, \pm Stp \pm Rt, which envelopes up to mm-sized Qz and Fsp porphyroclasts
 306 (Fig. 6a, 7a). Fracturing of Qz-Fsp porphyroclasts is commonly observed with fracture sealing
 307 largely operated by recrystallized Qz \pm Wm. Residual igneous microstructures are commonly
 308 observed, as documented by preserved twinning in Kfs, oscillatory growth zoning in Pl and
 309 euhedral shapes of the Qz-Fsp grains. Pristine igneous quartz grains show undulatory extinction
 310 and evidence of dynamic recrystallisation, dominantly assisted by bulging recrystallisation. Post-
 311 tectonic growth of Cb (ca. 1-2% vol.) is also commonly documented (Supplementary Material#1).
 312 The Wm (n=36) composition is characterized by Si ranging 3.34-3.49 atoms per formula unit
 313 (apfu), corresponding to $X_{Ms} = 0.41-0.57$, $X_{Cel} = 0.37-0.51$, $X_{Pri} < 0.10$, $X_{Pg} < 0.11$ (Fig. 8a, d-e;
 314 Supplementary Material#2).

315 Sample CO25 is a D_2 S-C tectonite, representative of the progressive shear strain localization
 316 in the Permian volcanoclastics (Table 1; Fig.3a, e). At the thin section scale, the syn-metamorphic
 317 fabric is transpositive and characterized by a significant increase in Wm abundance (up to 70 vol%,
 318 associated with a very fine-grained (average 10 μ m) matrix made of recrystallized Qz (Fig. 6b). Shear
 319 sense criteria are provided by oblique foliation, sigma-type Fsp porphyroclasts and S-C fabrics and
 320 systematically indicate a top-to-the-W sense of shear (Fig. 6b). The metamorphic assemblage is

321 completed by Chl (ca. 10 %vol), Ab, Ep, Stp, Ttn, Ap (< 5% vol). Stp is observed as mostly unoriented
 322 clusters of elongated crystals and along the S_1 foliation. Chl form late clusters in association with
 323 Ttn, Ep, Ap, often forming pseudomorphic replacement at the expenses of former igneous grains
 324 (Fig. 7b). Post-tectonic growth of Cb is also observed. The composition of the syn-tectonic Wm
 325 (n=30) shows Si ranging 3.34-3.51 apfu, corresponding to $X_{Ms} = 0.47-0.64$, $X_{Cel} = 0.34-0.51$, $X_{PrI} < 0.02$,
 326 $X_{Pg} < 0.05$ (Fig. 8d-e). The composition of Stp is characterized by $X_{Mg} = 0.13$ and $X_{Fe^{3+}}$
 327 $[(Fe^{3+}/(Fe^{3+}+Fe^{2+})) = 0.35$. Ep shows $X_{Ps} [Fe^{3+}/(Fe^{3+}+Al^{3+})] = 0.35$ with Mn^{3+} 0.03 apfu, and Chl is
 328 characterized by Si ranging 2.76-2.91 apfu and X_{Mg} between 0.23-0.27 (Supplementary Material#2).

329 Samples CO38 and CO55 are protomylonites, representative of the ductile shear strain
 330 localization in the Hercynian granitoid basement (Table 1; Fig. 3a). At thin section scale, sample
 331 microtextures are characterized by a network of anastomosing array of inter- and intra-grain
 332 fracture network affecting the igneous Fsp-QZ matrix, coexisting with spaced bands (up to 150 μm
 333 in thickness) of ductile shear strain localization (Fig. 6c). The crack-filling mineral assemblage
 334 dominantly consists of $Qz \pm Wm \pm Stp$ and late Cb (Fig. 7c). The vein selvage is made of Bt-Chl-Ttn
 335 $\pm Cb$, Amp, Ep, Ab, Ap associations. Quartz in veins either preserve fibrous textures or document
 336 evidence of dynamic recrystallization and grain size reduction, primarily assisted by bulging
 337 recrystallisation. Igneous quartz exhibits undulose extinction, deformation bands, sub-grain
 338 formation and core-mantle structures indicative of subgrain rotation recrystallisation (Fig. 6c;
 339 Supplementary Material#1). Replacement of igneous Mag by the assemblage made of
 340 stilpnomelane-amphibole-epidote-titanite \pm ilvaite after igneous magnetite is also observed (Fig.
 341 7d). The ductile shear bands are defined by anastomosed fine-grained recrystallized Qz in
 342 association with $Wm \pm Stp$ (Fig. 6c). The Wm is entirely syn-kinematic and commonly oriented
 343 parallel to the mylonitic foliation (Fig. 6c). It occurs in two generations: (i) the Wm1 (n=6),
 344 represented by a minor cluster of cores with lower Si (3.26-3.33 apfu) corresponding to $X_{Ms} = 0.49-$
 345 0.61 , $X_{Cel} = 0.27-0.34$, $X_{PrI} < 0.17$, $X_{Pg} < 0.01$; and (ii) the Wm2 (n=14), forming rims of Wm1 and
 346 main foliation, which show higher Si (3.35-3.50 apfu) and corresponding to $X_{Ms} = 0.38-0.60$, $X_{Cel} =$
 347 $0.36-0.50$, $X_{PrI} < 0.11$, $X_{Pg} < 0.02$ (Fig. 8d-e; Supplementary Material#2). The Stp composition is
 348 characterized by $X_{Mg} = 0.24-0.33$ and $X_{Fe^{3+}} = 0.38-0.45$ apfu. Chl shows $X_{Mg} = 0.20$ and Bt is
 349 characterized by $TiO_2 = 0.55-0.92$ wt% with $X_{Mg} = 0.24-0.25$. The Amp shows low Al_2O_3 (1.07-1.29
 350 wt.%), low CaO (6.38-7.09 wt%), high FeO^t (20.99-21.04 wt.%) and Na_2O (3.19-3.31 wt.%),
 351 belonging to the sodic-calcic group with a chemical composition corresponding to Wnc
 352 (Hawthorne et al., 2012) (Supplementary Material#2).

353

354 **5.2 Transect-2**

355 Sample CO35 is from a fractured granitoid (Table 1). The fracture network is dominantly
 356 inter-grain, with up to 0.5 cm alteration halos, making up to 30% vol. of rock. The fracture filling is
 357 dominantly made of Qz-Wm, with associated Stp-Ep-Amp-Ttn-Ab + Grt, Ap. Two generation of
 358 metamorphic Wm are documented both in the metamorphic matrix and as vein segregation (Fig.
 359 7e). Wm1 (n=8) represents cores showing low Si (3.05-3.29 apfu) and corresponding to $X_{Ms} = 0.68-$
 360 0.89 , $X_{Cel} = 0.06-0.29$, $X_{Pr1} < 0.02$, $X_{Pg} < 0.03$. The Wm2 (n=19) consists of rims and overgrowth,
 361 fracture filling and main foliation. Wm2 has higher Si (3.41-3.59 apfu) corresponding to an increase
 362 of celadonite compound: $X_{Ms} = 0.40-0.56$, $X_{Cel} = 0.42-0.59$, $X_{Pr1} < 0.02$, $X_{Pg} < 0.02$ (Fig. 8d-e;
 363 Supplementary Material#2). Metamorphic Ep is observed to rim early igneous All and Mag, in
 364 association with Grt and late Amph (Figs. 7f). Ep shows Fe^{3+} ranging 0.89-1.19 apfu and Mn^{3+} 0.01-
 365 0.04, respectively, corresponding to $X_{Ps} = 0.30-0.40$. Grt is essentially an Adr-Gr_s (Adr₅₅₋₇₈Gr_{s22-38})
 366 solid solution. The low Si content and low total indicate the presence of hydrogarnet component.
 367 Stoichiometric constraints result in 5 to 10% of SiO₄ tetrahedra being replaced by (OH)₄. The Amp
 368 chemistry corresponds to Na-Amp (Rbk; Supplementary Material#2)

369 Sample CO36 is representative of the D2 mylonitic shear fabrics in the Hercynian granitoids
 370 (Table 1; Fig. 4). The syn-tectonic mineral assemblage consists of Qz-Wm-Stp-Ep, Ttn, Ab. Texturally
 371 late fibrous Amp crystallization and post-tectonic Cb growth are also observed. The microtexture is
 372 dominated by a fine-grained aggregate of recrystallized Qz grains (up to 40% vol.), associated with
 373 syn-tectonic Wm that wrap around and rim Qz-Fsp porphyroclasts and crenulated Wm microlithons
 374 (Fig. 6d). Fsp grains are extensively affected by intragranular fractures that are filled by recrystallized
 375 quartz. Relic igneous quartz grains show evidence of pronounced undulose extinction, distinct
 376 subgrains and core-mantle structures indicative of subgrain rotation recrystallisation
 377 (Supplementary Material#1). Shear senses are dominantly provided by oblique foliation and sigma-
 378 type Fsp-Qz porphyroclasts, systematically pointing to top-to-the-W shearing (Figs 6d-e). Similarly
 379 to sample CO-35, two generations of metamorphic Wm is commonly observed (Fig 7g-h). The Wm1
 380 (n=11) forms the cores showing low-Si (3.02-3.32 apfu) and corresponding to a muscovitic
 381 composition ($X_{Ms} = 0.62-0.90$, $X_{Cel} = 0.03-0.32$, $X_{Pr1} < 0.02$, $X_{Pg} < 0.12$) (Fig. 8a-b). The Wm2 (n=26)
 382 overgrowths Wm1 and defines the main foliation. The Wm2 shows higher Si (3.35-3.58 apfu),
 383 corresponding to $X_{Ms} = 0.39-0.62$, $X_{Cel} = 0.36-0.58$, $X_{Pr1} < 0.04$, $X_{Pg} < 0.01$ (Fig. 8b, d-e; Supplementary
 384 Material#2). The Stp composition is characterized by $X_{Mg} = 0.31-0.36$ and $X_{Fe3+} = 0.41-0.47$ apfu

385 (Supplementary Material #2c). Epidote is characterized by high Fe^{3+} (0.75-0.95), with $X_{\text{Ps}} = 0.25-0.32$.
 386 The Amp corresponds to Act compositions (Supplementary Material#2).

387

388 **5.3 Transect-3**

389 Sample CO42 is representative of the D_1 - D_2 composite fabric in the Hercynian granitoids
 390 (Table 1; Fig. 5). The sample microfabrics is dominated by a continuous foliation (S_1) made of
 391 alternating fine-grained recrystallized Qz grains and Wm folia that envelop fractured Fsp and
 392 highly strained Qz porphyroclast systems (Fig. 6f). Early igneous quartz grains show evidence of
 393 pronounced internal strain and recovery, as documented by undulose extinction, deformation
 394 bands and subgrain formation. Dynamic recrystallisation is dominantly documented by core-and-
 395 mantle structures, defined by fine-grained quartz aggregates surrounding large relic quartz grains
 396 produced by sub grain rotation recrystallisation (Supplementary Material#1). Shear sense
 397 indicators are not univocal, confirming the dominant coaxial nature of D_1 deformation as observed
 398 at the mesoscale (Fig. 5c). Igneous textures are locally preserved. The syn-tectonic mineral
 399 assemblage consists of Wm-Qz- Ab-Stp-Amp + Ep, Ttn, and Ap. Late Cb growth is also observed
 400 (Fig. 7i). Wm composition ($n= 66$) is characterized by Si ranging 3.47-3.61 apfu, corresponding to
 401 $X_{\text{Ms}} = 0.26-0.45$, $X_{\text{Cel}} = 0.47-0.61$, $X_{\text{PrI}} < 0.13$ and negligible $X_{\text{Pg}} (< 0.01)$ (Figure 8c-d; Supplementary
 402 Material#2). Stp shows $X_{\text{Mg}} = 0.25-0.41$ and $X_{\text{Fe}^{3+}} = 0.35-0.48$. Ep shows $X_{\text{Ps}}=0.14-0.19$ with $\text{Mn}^{3+} <$
 403 0.02 apfu. A two-stage Amp crystallization is documented, with Ca-Na-Amph (Wnc) replacing early
 404 segregated Na-Amp (Rbk) (Supplementary Material#2).

405

406 **6. Metamorphic Thermobarometry**

407 The thermo-baric environment during syn-metamorphic deformation of the Hercynian
 408 basement of Corsica was assessed through phase equilibria (pseudosection) modelling by using
 409 the software Perple_X (Connolly, 2005; <https://www.perplex.ethz.ch/>, version 6.9.1 updated on
 410 March 07 2022). We used the bulk composition of samples CO24, CO36 and CO42, which are
 411 considered representative of the different textures associated with development of the composite
 412 D_1 - D_2 fabric along the three investigated transects (Fig. 2). The bulk sample compositions were
 413 simplified to the $\text{Na}_2\text{O}-\text{CaO}-\text{K}_2\text{O}-\text{FeO}-\text{MgO}-\text{Al}_2\text{O}_3-\text{SiO}_2-\text{H}_2\text{O}-\text{TiO}_2-\text{O}_2$ (NCKFMASHTO) system by
 414 removing MnO (0.01-0.05 wt%) and correcting CaO for the presence of apatite and post-tectonic
 415 calcite (up to 1-2 % vol. in some samples). This procedure completely removes CaO from sample
 416 CO24, and only leaves small amounts of CaO in samples CO36 and CO42 (Table 2). We adopted the

417 hp633ver.dat thermodynamic dataset (Holland & Powell, 2011; 2018), and the following solid
 418 solution models as described in the file solution_model.dat: Bi(W) for biotite, Chl(W) for chlorite,
 419 Mica(W) for white mica (White et al., 2014), Ep(HP11) for epidote (Holland & Powell 2011);
 420 cAmph(G) for clinoamphibole (Green et al., 2016), feldspar for ternary feldspar (Fuhrman &
 421 Lindsley, 1988), Sp(WPC) for spinel (White et al., 2002), Pu for pumpellyite, and Stlp for
 422 stilpnomelane. Quartz, ilmenite, rutile, and titanite were considered as pure phases. The fluid
 423 phase was considered as pure H₂O and considered to be present in excess.

424 We are aware that solid solution models for complex minerals such as mica or amphibole
 425 are poorly known at low T, with particular reference to the role of Fe³⁺ content in silicate minerals.
 426 For stilpnomelane solid solution model, ferric iron is not even considered. In case of amphiboles,
 427 the applied solid solution model fails to predict the analyzed compositions in the considered P-T
 428 range, except for riebeckite. As further complication, the contents of Fe²⁺ and Fe³⁺ in minerals are
 429 not directly analyzed but calculated from microprobe analyses based on stoichiometric
 430 constraints, and are probably of low precision, particularly for white mica, stilpnomelane, and
 431 amphibole. In order to estimate the contents of ferric iron of the whole rock compositions, for
 432 samples Co36 and Co42 we calculated T-Fe₂O₃ pseudosections (at constant P (0.6 GPa, see below);
 433 Supplementary Material#3). Bearing in mind the above-mentioned uncertainties, we consider the
 434 results of the thermodynamic modelling as semi-quantitative.

435

436 **6.1 Sample CO24**

437 Sample CO24 is representative of the thermo-baric environment leading to development of
 438 S₁ foliation in the volcanoclastic covers (Figs. 2, 3a, c-d). The mineral assemblage defining the S₁
 439 foliation consists of Qz-Wm + Stp +Rt, which defines a P-T field restricted by the stability of Stp
 440 that is limited to high temperature by the Bt-in isograd and to high-pressure by the Stp-out
 441 isograds, respectively. Considering the isopleths as defined by the Si content in Wm (3.39-3.49
 442 apfu), the corresponding thermobaric environment is constrained at ca. 0.5-0.6 GPa and T < 350 °C
 443 (Fig. 9a).

444

445 **6.2 Sample CO36**

446 Sample CO36 refers to the D2 progressive shear strain localization in the continental
 447 basement (Figs. 2, 4). The syn-tectonic mineral assemblage is made of Qz-Wm-Stp-Ep-Ttn-Ab.
 448 Choosing a sectioning value of 0.6 GPa, pseudosection modelling in the T-Fe₂O₃ space indicates

449 that a low Fe_2O_3 content <0.1 wt.% is required for the stability of the above assemblage. The
450 temperature range is limited between ca. 300-370 °C, as imposed by the lack of Bt and Pmp in the
451 metamorphic assemblage (Supplementary Material#3). A value of $\text{Fe}_2\text{O}_3 = 0.1$ wt% is therefore
452 considered to construct the P-T pseudosection. Results show that the syn-tectonic metamorphic
453 assemblage made of Wm-Ep-Stp-Ttn occurs within a narrow P-T field of $P=0.45-0.65$ GPa and T of
454 ca. 300-330°C, as constrained by the absence of Amp at high-pressure and absence of Pmp at
455 lower temperature and Bt at higher temperature, respectively (Fig. 9b).

456

457 **6.3 Sample CO42**

458 Sample CO42 is representative of the development of the D_1 fabric in the continental
459 basement (Figs. 2, 5). The syn-tectonic mineral assemblage is made of Qz-Wm-Stp-Ep \pm Amp, Ttn,
460 Ab. The pseudosection modelling in the T- Fe_2O_3 space at constant P of 0.6 GPa shows that the Stp-
461 Amp-Ep assemblage is stable for $0.3 < \text{Fe}_2\text{O}_3 < 0.9$ wt% at temperatures below 350°C, limited by
462 occurrence of Bt in the metamorphic assemblage at higher temperature and Ep at lower
463 temperature, respectively (Supplementary Material#3). A value of $\text{Fe}_2\text{O}_3 = 0.6$ wt% is chosen to
464 construct the P-T pseudosection. Considering the Si isopleths in Wm for this sample (Si apfu
465 ranging 3.50-3.60) and absence of Bt in the metamorphic assemblage, results constrain formation
466 of the S_1 foliation at $P=0.5-0.7$ GPa and T of ca. 300°C (Fig. 9c).

467

468 **7. ^{40}Ar - ^{39}Ar Geochronology**

469 Laser in-situ analyses were completed on the samples used for pseudosection modelling.
470 White mica of sample CO24 (Transect-1) yielded a significant age interval (Fig. 10), in the range of
471 37.6 ± 0.5 Ma to 43.6 ± 0.4 Ma. Some older ages, up to ~ 50 Ma may be due to contamination by K-
472 feldspar, which yielded ages older than 100 Ma where unequivocally identified (Supplementary
473 Material#4). The five younger ages define a weighted mean of 38.0 ± 0.2 Ma. White mica from
474 sample CO36 (Transect-2) gave a younger age interval when compared to white mica from
475 Transect-1, ranging from 32.5 ± 0.2 Ma to 37.8 ± 0.3 Ma. A slightly older age (43.2 ± 1.8 Ma) is
476 affected by a large uncertainty due to the low gas yield, likely due to contamination by a low K
477 phase(s). The first youngest peak in the cumulative plot distribution (Fig. 10) is defined by three
478 analyses, yielding a weighted mean age of 33.3 ± 0.2 Ma. Sample CO42 (Transect-3) gave white-
479 mica ages mainly within 38.6 ± 0.4 to 48.9 ± 0.3 Ma. Some older ages, as old as $\sim 56-60$ Ma,
480 analogously to samples CO24, maybe due to contamination by K-feldspar.

481

482 **8. Discussion**

483 The Alpine tectono-metamorphic evolution reconstructed at the footwall of the ADF is
484 dominated by development of a low-grade, composite D_1 - D_2 ductile plano-linear fabric,
485 characterized by the pervasive development of S-L tectonites that transpose the primary fabrics in
486 the Hercynian granitoid basement and the Permian-Triassic volcanoclastic cover.

487 The D_1 deformation is dominantly attested by formation of a panel of N-S striking
488 subvertical S_1 foliation, sub-parallel to the ADF, and bearing dip-parallel L_1 stretching lineations.
489 Locally, deformation partitioning is documented during development of the D_1 fabrics when
490 moving from the Permian volcanoclastic into the granitoid basement, where conjugate sets of
491 subvertical NE-striking dextral and SE-striking sinistral mylonitic zones are observed to
492 accommodate the D_1 deformation (see also Di Vincenzo et al., 2016; Fig. 3b). Overall, the D_1 finite
493 strain documents pure shear dominated deformation fabrics recording subvertical stretching in
494 response to an E-W directed maximum shortening direction. A continuum of deformation is
495 attested by the progressive overprinting of the quartz veins that, formed orthogonally to the L_1
496 stretching direction, are shortened and folded along the S_1 foliation and later overprinted by new
497 vein generations (Figs. 3c and 5f-h). The D_2 deformation overprints the D_1 fabric in a general
498 regime of simple shear, associated with development of E-dipping foliations and ductile shear
499 zones, accommodating a general top-to-the-W tectonic sense of transport both in the granitoid
500 basement and the Permian volcanoclastic cover. The intensity of the D_2 deformation increases
501 westward approaching the ADF, suggesting a tectonic linkage with the overthrusting of the Alpine
502 Corsica Domain onto the Hercynian Corsica.

503 When integrated with the available literature data (Garfagnoli et al., 2009; Di Rosa et al.,
504 2020a; Malasoma et al., 2006; 2020), the structural data collected in this study point to a
505 continuum of ductile deformation during the Alpine basement-involved thrusting in the Hercynian
506 Corsica. Shortening in the continental crust was first accommodated by (i) pure-shear dominated
507 strain at deeper crustal levels and then (ii) top-to-the-W shear strain localization, evolving from
508 ductile shearing to brittle overthrusting at shallower crustal conditions. Top-to-the-W thrusting
509 involved also the Mesozoic and Cenozoic cover units (see also Di Rosa et al., 2019; 2020a; this
510 study).

511

512 **8.1 Metamorphic environment and deformation conditions**

513 Low-T conditions during the progression of the D₁-D₂ deformation makes the assessment of
514 the corresponding thermo-baric environment through thermodynamic modelling challenging.
515 However, considering (i) the occurrence of Stlp and the absence of Bt in the main syn-tectonic
516 assemblage, which limit the thermal peak to < 400°C; and (ii) the Si-in-Ph isopleths as proxy of the
517 burial pressure, we can conclude that Alpine deformation/metamorphism occurred at ca. 0.5-07
518 GPa and 330-370 °C (Fig. 9). These P-T estimates are in good agreement with those obtained by Di
519 Vincenzo et al. (2016), thus providing a consistent picture of the tectono-metamorphic overprint
520 of Hercynian Corsica at the footwall of the ADF. The restricted Wm composition imposes a cooling
521 exhumation path, similarly to what reconstructed for the ETSZ (Maggi et al., 2012). Similar along-
522 strike peak P conditions are reconstructed at the footwall of the ADF, where progressive burial and
523 exhumation cooling can be proposed for the Hercynian basement of western Corsica (Fig. 9).

524 Considering an average rock density of 2700 kg/km, the peak P-T conditions recovered
525 from the continental basement of Corsica conform to a paleo-geothermal gradient of ca. 11°C/km,
526 typical of the low geotherm in active and fossil convergent plate margins (Penniston-Dorland et
527 al., 2015; Agard et al., 2018). When the P-T estimates are compared with those available from
528 literature, it is evident that the Corsica basement was equilibrated at shallower depths according
529 to a warmer geothermal gradient with respect to the Mesozoic cover rocks (Di Rosa, 2019) and the
530 metamorphic units of the Tenda Massif (Molli et al., 2006; Maggi et al., 2012; Rossetti et al., 2015),
531 but recorded a similar cooling exhumation trajectory at lower pressures (Fig. 11)

532 The low-T deformation environments reconstructed through thermodynamic modelling are
533 in line with the microtextural evidence of the studied samples, which documents, regardless of the
534 strain intensity and fabric type (either D₁ or D₂), brittle deformation in feldspar as opposed to
535 ductile flow and fine-grained dynamic recrystallisation in quartz (Fig. 6 and Supplementary
536 Material#1), and white mica crenulation. Dynamic recrystallization in quartz was dominantly
537 assisted by bulging grain boundary (BLG) and subgrain rotation (SGR) recrystallization in the
538 highest strain domains (sample CO36 and CO42), compatible with environmental temperatures at
539 the transition between the BLG and SGR zones, at about 400 ±30 °C (Stipp et al., 2002). Taken
540 together, these microtextural constraints attests that ductile processes were not activated in Fsp
541 and deformation temperatures were well below 400-450 °C (e.g., O'Hara, 1990; Passchier & Trow,
542 2010).

543 At such low-T conditions, structurally controlled fluid flow and fluid-mediated deformation
544 promoted metamorphic recrystallization and rheological weakening of the Corsica basement

545 during the low-grade Alpine tectono-metamorphic evolution. Significantly, brittle precursor
 546 localized the ductile shearing in the basement units, as documented by the field and microtextural
 547 evidence of extensive fracturing and veining associated with development of the Alpine tectono-
 548 metamorphic fabric (Fig. 3h, 5f-h; .6a, c, e, f), providing further evidence of ductile strain
 549 localization initially controlled by brittle behavior of granitoid rocks (Mancktelow and
 550 Pennacchioni 2005; Füsseis and Handy, 2008; Sarkar et al., 2020). In particular, formation of Ph-
 551 rich bands of deformation and mylonites (Fig. 6) documents that fracturing of feldspar followed by
 552 fluid-assisted breakdown to white mica was the dominant process leading to reaction softening
 553 and shear strain localization in the Corsica basement (e.g., Wintsch et al., 1995; Gueydan et al.,
 554 2003; Holyoke and Tullis, 2006; O'Hara, 2007).

555 A relatively high water/rock ratio during progress of the D₁-D₂ tectono-metamorphic
 556 evolution can be deduced by a general hydration of the granitoid basement rocks, with the diffuse
 557 blastesis of Ph-Amp-Ep associations. Further evidence of fluid-rock interaction is provided by the
 558 occurrence of secondary Ca-rich mineral assemblages (Adr-rich garnet, epidote, Ca-amphibole,
 559 ilvaite and late carbonates), which indicate intensive alteration of the early magmatic
 560 assemblages (Cpx - Mag) in the basement rocks by the chemically reactive infiltrating fluids and
 561 variable redox conditions (e.g., Barton & Berger, 1984; Delgado Martín & Soleri Gil, 2010).

562 Similarly to other studies dealing with formation of microstructures during mylonitization
 563 of granitoid precursors, the fluid-rock interactions, reaction weakening and partitioning of
 564 deformation are recognized key elements for strain softening and localization during shear zone
 565 nucleation and development (e.g., Janecke and Evans, 1988; O'Hara, 1990, 2007; Wintsch et al.,
 566 2005, 2007; Johnson et al., 2008; Goncalves, 2012; Maggi et al., 2014; McAlleer et al., 2017;
 567 Papeschi & Musumeci, 2019).

568
 569

570 **8.2 Age of crustal shortening**

571 Based on the P-T estimates and microtextural evidence, deformation in the investigated
 572 samples developed under temperature conditions insufficient to alter by volume diffusion the Ar
 573 isotope record of white mica. In fact, several field-based studies have documented that Wm can
 574 preserve crystallization ages up to at least ~500 °C (e.g. Di Vincenzo et al. 2004; Augier et al. 2005;
 575 Villa et al. 2014). Given that the strongly peraluminous character of the investigated rock samples
 576 does not represent a primary feature of the igneous protoliths (Di Vincenzo et al., 2016), the ⁴⁰Ar-

577 ^{39}Ar ages from Wm record the time of (re)-crystallization during fluid-assisted deformation. Both
578 samples CO24 (Transect-1) and CO42 (Transect-3) are characterized by deformation features
579 representative of the D_1 fabric, by Wm with phengitic compositions and by the lack of muscovitic
580 Wm relicts. Even excluding ages older than ~ 44 Ma in sample CO24 and ~ 47 Ma in sample CO42,
581 our results extend back the development of Alpine syn-deformational phengitic white mica and
582 consequently crustal shortening of western Corsica to the early Lutetian (at ca. 48 Ma). Sample
583 CO36 from transect-2, is dominated by the D_2 progressive shear deformation and mainly yielded
584 Priabonian ages. This sample is however characterized by the occurrence of two Wm generations,
585 a dominant phengitic Wm2 aligned along the main D_2 foliation and rare muscovitic relicts
586 representing syn-burial remnants. A possible explanation for this apparent inconsistency is that
587 either (1) data record a Priabonian burial or, more likely, (2) muscovitic relicts were coincidentally
588 not sampled during data collection. Following hypothesis (2), ^{40}Ar - ^{39}Ar data constrain the
589 development of the D_2 deformation to the Priabonian (ca. 33-38 Ma) and the last increments of
590 syn- D_2 shearing to not earlier than the Priabonian-Rupelian transition.

591 Ages older than the Bartonian, have been previously reported for phengitic Wm of the
592 Tenda Massif and the Schistes Lustrés Unit (Monte Pinatelle area) by Brunet et al. (2000). More
593 recently, Maggi et al. (2012) reported two Ypresian nominal ages from two poorly-defined U-Pb
594 isochrons using synkinematic rutile fractions and acmite, phengite and oxide-sulfide coating
595 derived from blueschist-facies top-to-the-W phyllonitic shear bands within the East Tenda Shear
596 Zone (Maggi et al., 2012; Fig. 1). Maggi et al. (2012) assigned the excess of scatter in the data
597 arrays to secondary disturbance. On the other hand, the deformation ages recovered in this study
598 only partially overlap with the U-Pb zircon and Lu-Hf garnet and lawsonite ages as derived from
599 eclogites of the Schistes Lustrés, which provided Prabonian-Rupelian ages (ca. 34-37 Ma; Martin et
600 al., 2011; Vitale Brovarone and Herwartz, 2013).

601

602

603 **8.3 Tectonic reconstruction**

604 Our petrotectonic reconstruction frames convergent deformation in the Western Corsica
605 basement during the Eocene-Oligocene. We provide evidence that pure shear dominated
606 deformation of the Corsica basement predated simple shear strain localization. During early-
607 middle Eocene times (ca. 50 to 40 Ma), the Hercynian continental crust was first homogenously
608 shortened during development of a steeply dipping high strain deformation zone in response to a

609 roughly E-W directed maximum compression direction (D_1). Top-to-the-W ductile shearing (D_2)
610 occurred later, with the last shear increments during the early Oligocene at ca. 32-33 Ma,
611 synchronous with activation of the syn-blueschist, top-to-the-W reverse shearing along the ETSZ
612 (Rossetti et al., 2015). Therefore, the coupling between the different tectonic units of the Alpine
613 orogen in Corsica occurred nearly synchronously during the late Eocene-early Oligocene (34-32
614 Ma) and in a restricted P-T interval (ca. 0.5-07 GPa and 300-400°C; Fig. 11), when the deepest and
615 cooler units of the Schistes Lustrés were exhumed at shallower crustal conditions, overthrust and
616 tectonically assembled along the ETSZ onto the W Corsica basement. At this stage, the Alpine
617 shortening was accommodated through non-coaxial shearing and W-directed thrusting along the
618 entire Alpine orogenic system of Corsica, propagating westward across the basement complex.
619 The final tectonic coupling caused formation of a late Eocene-early Oligocene, W-verging nappe
620 stack, characterized by an inverted sequence of metamorphic units (from top to bottom:
621 blueschist- to eclogite-facies Schistes Lustrés, blueschist-facies Tenda Massif, and greenschist-to-
622 blueschist-facies Western Corsica basement) bounded by major, crustal-scale top-to-the-W shear
623 zones, equilibrated under low-grade HP greenschist (W Corsica) to blueschist facies (ETSZ)
624 metamorphic conditions, respectively. The composite Alpine ductile D_1/D_2 fabric in the Corsica
625 basement is truncated by brittle thrusts, related to the later thick-skinned thrusting involving the
626 basement and cover units during continuous shortening (Bezert and Caby, 1988; Rossi et al., 1994;
627 Di Rosa et al., 2020a; Frassi et al., 2022; this study). Transition from orogenic construction to post-
628 orogenic extensional thinning in Corsica occurred during the late Oligocene-early Miocene, as
629 documented by the extensional reactivation of the ETSZ (Rossetti et al., 2015).

630 When integrated at regional scale, the P-T-t-deformation history as reconstructed from the
631 metamorphic units of the Alpine orogen in Corsica has significant implications as to the timing of
632 the subduction zone metamorphism and the tectonic/geodynamic evolution along the Mesozoic-
633 Cenozoic active margin developed during convergence of the African and European plates (see
634 also Vitale Brovarone and Herwatz, 2013). Paleotectonic reconstructions frame the Alpine
635 orogeny in Corsica either as the southward prosecution of the Western Alps governed by
636 southeast-dipping (“Alpine”) subduction (e.g., Doglioni et al., 1998; Molli & Malavieille, 2010;
637 Handy et al., 2010; Carminati et al., 2012; Marroni et al., 2017) or as the retroward tectonic
638 accretion above the backstop of the accretionary wedge produced by the north-dipping
639 (“Apennine-Maghrebian”) subduction (Principi and Treves, 1984; Jolivet et al., 1998; Jolivet &
640 Faccenna, 2000; Faccenna et al., 2001; 2004; Rossetti et al., 2004; Lacombe & Jolivet, 2005; Vitale

641 Brovarone & Hervatz, 2013; van Hinsbergen et al., 2014; Bestani et al., 2016; Jolivet et al., 2021).
642 The first scenario involves a subduction flip during the Cenozoic, with the early structured Alpine
643 belt passively overthrust onto the growing Apennine-Maghrebian orogenic wedge, whereas the
644 second scenario considers a continuous northward subduction in Cenozoic times. In both
645 configurations, the Oligocene-Miocene geodynamics is controlled by the Maghrebian-Apennine
646 slab roll-back and crustal thinning in the back-arc domain.

647 Eocene-Oligocene orogenic metamorphism in the Corsica basement (from ca. 50 to 32 Ma)
648 broadly overlaps (i) with the age of the orogenic metamorphism affecting both the oceanic- and
649 continental-derived units in the hinterland of the Maghrebian-Apennine accretionary wedge, as
650 documented in Calabria (ca. 50-35 Ma; Schenk, 1980; Rossetti et al., 2001a; 2004; Heymes et al.,
651 2010), in the Alboran Domain of the Betic-Rif belt (ca. 50-40 Ma; Augier et al., 2005; Li and
652 Massonne, 2018; Marrone et al., 2021a, b; Bessiere et al., 2022), and the Eastern Kabylia region
653 (ca. 32-21 Ma; Bruguier et al., 2017); and (ii) with the oldest calcalkaline magmatism in Provence,
654 Sardinia, and Alboran Domain, showing Bartonian-Rupelian ages (ca. 40–32 Ma; Lustrino et al.,
655 2009; 2017) (Fig. 1). The Apennine-Maghrebian subduction was thus active since at least Eocene
656 times, a time span compatible with efficient subduction slab retreat and the Oligocene-Miocene
657 back-arc opening of the Liguro-Provençal, Alboran, and Tyrrhenian basins (e.g., Doglioni et al.,
658 1997; Faccenna et al., 2001; Jolivet & Faccenna, 2000; Gattacecca et al., 2007; Lacombe & Jolivet,
659 2005; Malinverno & Ryan, 1986; Seranne et al., 1999; Rosebaum et al., 2002; Royden, 1993).

660 We confirm earlier studies (Maggi et al., 2012) providing evidence that the early-middle
661 Eocene (ca. 50-40 Ma) orogenic metamorphism in the Corsica basement predated of ca. 10-15 Ma
662 the late Eocene subduction zone metamorphism in the oceanic-derived units of the Schistes
663 Lustrés (ca. 37-34 Ma; Martin et al., 2012; Vitale Brovarone and Hervatz, 2013). The latter was
664 instead nearly synchronous with the timing of blueschist metamorphism recorded in the Liguride
665 ophiolites (late Eocene-early Oligocene (ca. 35-28 Ma; Ar-Ar phengite dating in Rossetti et al.,
666 2001a, b) but younger than the Oligocene-early Miocene orogenic metamorphism recorded in the
667 Adria-derived continental units (ca. 30-20 Ma; Ar-Ar phengite dating in Brunet et al., 2000;
668 Rossetti et al., 2004) exposed in the hinterland of the Apennine chain. Moreover, when the Corsica
669 basement was involved in the Alpine orogeny, the Europe-derived continental units were
670 accreted to the Adria plate, as documented in the Calabrian–Peloritani belt of the southern
671 Apennines (Fig.1; Schenk, 1980; Dietrich, 1988; Rossetti et al., 2001; Vignaroli et al., 2008; 2012;
672 Heymes et al., 2010). Finally, similarly to the Corsica case, the transition from orogenic accretion

673 to crustal thinning in the Calabrian–Peloritani belt is late Oligocene–early Miocene (Platt and
674 Compagnoni, 1990; Thomson, 1994; Rossetti et al., 2004; Heymes et al., 2010).

675 Since the orogenic structuration of the Europe-derived basement (foreland of the Alpine
676 orogen) of Corsica pre-dated the subduction zone metamorphism of the oceanic-derived domain
677 (hinterland), the south-dipping “Alpine” subduction setting is not a feasible solution to frame the
678 Alpine orogenic construction in Corsica (see also Vitale Brovarone and Herwatz, 2013). The
679 Cenozoic Apennine–Maghrebian subduction system formed along the convergent margin that
680 accommodated the subduction of the Ligurian branch of the Tethyan realm below the European
681 plate therefore appears as the more appropriate setting. The orogenic structure of Corsica is
682 therefore interpreted as produced in the retrowedge of the E-verging Apennine orogenic wedge,
683 as produced by the retroward-directed accretion against the backstop of the European plate. In
684 this scenario, the transition from pure-shear to simple-shear dominated style of deformation in
685 the Corsica basement - as determined in this paper - is interpreted as the response of continuous
686 shortening in the backstop region of the orogenic wedge, where the upper-plate material is first
687 shortened at depth (buttressing effect), progressively exhumed in the wedge axial zone, and then
688 accreted against the rigid backstop (Fig. 12). The Mesozoic cover rocks were detached from their
689 basement during progress of the Alpine shortening and metamorphosed at depth, similarly to
690 what has been reconstructed for the Oman obduction margin (e.g., Agard et al., 2010). Likewise,
691 the continent-derived units of the Tenda Massif, forming the basal thrust of the obducted Schistes
692 Lustrés Complex (Molli et al., 2006; Rossetti et al., 2015), were part of a crustal sliver separated
693 from the western Corsica basement, confirming previous paleotectonic reconstructions proposing
694 that the Alpine convergent margin overprinted a stretched continental margin (Vitale Brovarone
695 et al. 2013).

696

697 **8.4 Questioning Hercynian Corsica**

698 The traditional subdivision of the island into “Alpine” and “Hercynian” Corsica implies (by
699 definition) the absence of Alpine-age deformation in its western part. These terms and the
700 underlying assumption have largely dominated geological thinking and are ingrained in the
701 literature despite early notice of the existence of significant Alpine deformation within the
702 Hercynian granitoids (e.g. Deprat, 1905). In recent years, a mounting body of structural and
703 radiometric evidence has shown that the Hercynian basement complex of central Corsica and its
704 late Paleozoic cover suffered significant Alpine-age ductile shear (Malasoma et al., 2006, 2019;

705 Malasoma and Marroni, 2007; Garfagnoli et al., 2009; Di Vincenzo et al., 2016; Di Rosa et al., 2017,
706 2019; 2020b; Frassi et al., 2022; this study). Notably, the entire Hercynian basement of Corsica was
707 affected by the thermal (tectono-metamorphic) effects of Alpine-age shortening and/or burial
708 underneath the sediments of the foreland basin (Fig. 1c). Coherent thermochronometric datasets
709 point to the former existence of a widespread tectono-sedimentary cover (up to 7-8 km thick) now
710 lost to erosion (Cavazza et al., 2001; Zarki-Jakni et al., 2004; Fellin et al., 2006; Danisik et al., 2007).
711 The structural, radiometric, and thermochronologic evidence outlined above show that the whole
712 of Corsica was directly affected by the Alpine orogeny. We thus propose the abandonment of the
713 traditional terms “Alpine” and “Hercynian Corsica” as they are altogether incorrect and
714 misleading.

715

716 **9. Conclusions**

717 The P-T-t-deformation history of the Corsica basement presented in this paper indicates
718 that Alpine orogenic construction spans from early/middle Eocene to early Oligocene times (ca. 50
719 to ca. 32 Ma). Crustal shortening in the continental basement predated of ca. 15-10 Ma the
720 subduction zone metamorphism in the oceanic derived Schistes Lustrés Complex. These new
721 structural and temporal constraints frame the Alpine orogeny in Corsica within the Cenozoic
722 Apennine-Maghrebian subduction system, in the retroside of the Apennine orogenic wedge.

723

724 **Acknowledgements**

725 Sara Marrone participated to the field work. We wish to thank Moritz Schmelz for help in
726 thin section preparation.

727

728 **Appendix - A: Analytical protocols and methods**

729 **Electron Microprobe Analyses (EMPA)**

730 Mineral phases were analyzed with a Cameca SX100 electron microprobe at the Faculty of
731 Chemistry, Universität Stuttgart. Operating conditions were 15 kV and 10-15 nA, counting times of
732 20 s both for peak and background, spot sizes of 1-5 μm . Compositions were determined relative to
733 synthetic oxides, and minerals, used also for routine calibration and instrument stability monitoring.
734 Repeated analyses of the standards resulted in one-sigma (1σ) standard deviations close to the ones
735 calculated from counting statistics. For the major minerals, calculated 1σ (%) precisions are (i) better

736 than 1.5 % for Si; (ii) better than 2% for Al; (iii) 1 to 5% for Ca, Mg, Fe, Mn, Ti, Na and K, applying the
 737 above-mentioned conditions. The chemical formulas of white mica (Wm) were calculated on the
 738 basis of 11 oxygens and Σ (Si, Al, Ti, Cr, Mn, Mg, Fe) = 6.02 cations, assuming $Fe^{3+} = [9.96 - 2 * (Si + Ti) -$
 739 $(Al + Cr) - 2 * (Ca + Ba) - (Na + K)]$, and a stoichiometric fixed trioctahedral substitution ($X_{Tri} = 0.02$). The
 740 molar fractions of paragonite ($X_{Pg} = \text{atomic } [Na / (Na + K + Ca + Ba)]$), pyrophyllite ($X_{Pri} = [1 -$
 741 $(Na + K + Ca + Ba)]$), muscovite ($X_{Ms} = Al^{IV} - \{X_{Pg} + X_{Pri} + (X_{Tri} / 2) + Ti + [(Ca + Ba) / (Na + K + Ca + Ba)]\}$) and
 742 celadonite ($X_{Cel} = 1 - \{X_{Ms} + X_{Pg} + X_{Pri} + (X_{Tri} / 2) + Ti + [(Ca + Ba) / (Na + K + Ca + Ba)]\}$) were then calculated. The
 743 chemical formulas of chlorite (Chl) were calculated based on 10 cations (Σ [Si, Al, Ti, Cr, Mn, Mg,
 744 Fe]) assuming $Fe^{3+}(\text{apfu}) = [8 - 2 * (Si + Ti) - Al^{Tot}]$. The chemical formulas of stilpnomelane (Stp) were
 745 calculated on the basis of 120 cations (Σ [Si, Al, Ti, Mn, Mg, Fe]), assuming $(Si + Al^{IV}) = 72$ apfu,
 746 $Fe^{3+} = \{[Al^{Tot} + 2 * Fe^{Tot} + 2 * (Mg + Mn) + 2 * (Si + Ti) + 2 * (Ba + Ca) + K + Na] / 3\} - 64$ and $OH = (Fe^{2+} + Mg + Mn)$. The
 747 chemical formulas of feldspar (Fsp) were calculated based on 8 oxygens assuming $Fe^{3+} = Fe^{Tot}$. The
 748 chemical formulas of titanite (Ttn) were calculated based on 5 oxygens, assuming $Si = 1$ apfu and
 749 $Fe^{3+} = Fe^{Tot}$. The chemical formuls of epidote (Ep) were calculated based on 12.5 oxygens and
 750 assuming $Fe^{3+} = Fe^{Tot}$. The pistacite component ($X_{Ps} = \text{atomic } [Fe^{3+} / (Al + Fe_{3+})]$) was then calculated.
 751 The chemical formulas of biotite (Bt) were calculated based on 11 oxygens assuming $Fe^{2+} = Fe^{Tot}$. The
 752 chemical formulas of ilvaite (Ilv) were calculated based on 8.5 oxygens and assuming $(Al + Fe^{3+}) = 1$
 753 apfu. The chemical formulas of ilmenite (Ilm) were calculated based on 2 cations (Σ [Al, Ti, Mn, Mg,
 754 Fe]) assuming $Fe^{3+}(\text{apfu}) = [2 - (2 * Ti) - Al]$. The chemical formulas of garnet (Grt) were calculated
 755 based on 8 cations with H₂O wt% determined through the deficiency of Si in the tetrahedral site $[Si^{4+}$
 756 $+ (H^+ / 4)] = 3$ apfu. Feldspar, biotite, titanite, ilmenite and magnetite structural formulae were
 757 calculated using existing routines in Calcmin_32 software (Brandelink, 2009). White mica, chlorite,
 758 stilpnomelane, epidote, garnet and ilvaite structural formulae were calculated through opportune
 759 routines compiled during this work and then implemented in the Calcmin_32 software (Brandelik,
 760 2009). The chemical formulae of amphibole were calculated through the ACES2013 Excel
 761 spreadsheet (Locock, 2014), using the 13-CNK normalization scheme and with Fe^{3+} estimation
 762 following the electroneutrality criterion (Hawthorne et al., 2012). Amphibole classification is after
 763 Wintsch et al., (1999) and Hawthorne et al. (2012).

764

765 **Whole-rock geochemistry**

766 Whole-rock major element analyses were performed at the Activation Laboratories (Ontario,
 767 Canada), by means of ICP emission following the 4Lithores analytical protocol (lithium

768 metaborate/tetraborate fusion ICP whole rock) For major elements the precision is estimated better
769 than 2% for values higher than 5 wt %, and better than 5% in the range 0.1-5 wt %. Further details
770 can be found at [https://actlabs.com/geochemistry/lithochem-and-whole-rock-](https://actlabs.com/geochemistry/lithochem-and-whole-rock-analysis/lithochem/#d2c5f444686baec86)
771 [analysis/lithochem/#d2c5f444686baec86](https://actlabs.com/geochemistry/lithochem/#d2c5f444686baec86).

772

773 **⁴⁰Ar–³⁹Ar geochronology**

774 ⁴⁰Ar–³⁹Ar in-situ analyses were completed at IGG-CNR (Pisa, Italy). Following back-scattered
775 electron (BSE) imaging, rock chips ~9 mm in diameter was drilled from polished thick (~0.4 mm
776 thick) sections using a diamond core drill. Samples, after cleaning by alternating deionized water
777 and methanol, were wrapped in aluminum foil and irradiated for 60 hours in the TRIGA reactor at
778 the University of Pavia (Italy), along with the monitor Fish Canyon Tuff sanidine (FCs). In-situ ⁴⁰Ar-
779 ³⁹Ar analyses were completed through an ultraviolet laser beam, produced by a pulsed Nd:YAG
780 laser (frequency quadrupled and Q-switched). The ultraviolet laser, operating at 20 Hz and 0.5–1
781 mJ per pulse, was focused to ~10 μm and repeatedly rastered, by a computer-controlled x–y stage,
782 over areas of ~0.010-0.015 mm² (typical 100x100 μm²) and a few ten micrometres deep. Argon
783 isotope compositions were determined simultaneously through a multi-collector noble gas mass
784 spectrometer ARGUS VI (Thermo Fisher Scientific). Ar isotopes from 40 to 37 were acquired using
785 Faraday detectors, equipped with 10¹² Ω resistors for ⁴⁰Ar and ³⁸Ar and 10¹³ Ω resistors for ³⁹Ar
786 and ³⁷Ar. Faraday detectors were cross calibrated for the slight offset using air shots. ³⁶Ar was
787 measured using a Compact Discrete Dynode (CDD) detector. The CDD was calibrated daily for its
788 yield by measuring four to six air pipettes prior to the first analysis. Blanks were monitored every
789 one to two runs and were subtracted from succeeding sample results. Data corrected for post-
790 irradiation decay, mass discrimination effects, isotope derived from interfering neutron reactions
791 and blank are listed in Supplementary Material#3. Uncertainties on single runs are 2σ analytical
792 uncertainties, including in-run statistics and uncertainties in the discrimination factor, interference
793 corrections and procedural blanks. Uncertainties on weighted means also include the uncertainty
794 on the fluence monitor (2σ internal errors). Ages were calculated using an age of 28.201 Ma for
795 the FCs (Kuiper et al., 2008), using decay constants of Min et al. (2000) and an atmospheric
796 ⁴⁰Ar/³⁶Ar ratio of 298.56 ± 0.31 (Lee et al., 2006). More details about mass spectrometer
797 calibration and analysis can be found in Di Vincenzo et al. (2021).

798

799 **Figure Captions**

800 Figure 1 – (a) The Western Mediterranean region with the main Alpine orogenic belts (red lines
 801 indicating the orogenic fronts) and distribution of the exhumed orogenic roots (purple areas). The
 802 study area is indicated by a yellow rectangle. (b) Geological sketch map of the Corsica Island
 803 (modified after Cavazza et al., 2018); (c) Maximum temperatures experienced by the Corsica rocks
 804 during the Alpine tectonics as derived from low-T thermochronology and Raman spectroscopy of
 805 carbonaceous materials. The areal distribution of maximum temperatures indicates that virtually
 806 all the island was covered either by the Alpine orogenic wedge or by foreland deposits. Source of
 807 data: Cavazza et al. (2001), Zarki-Jhaki et al. (2004), Fellin et al. (2006), Danisik et al. (2007) Vitale
 808 Brovarone et al. (2013), Jourdan et al. (2018).

809

810 Figure 2 – Geological map of the study area at the junction between Alpine and Hercynian Corsica
 811 (modified and re-adapted after (Vitale Brovarone et al., 2013), with indicated the three geological
 812 transects and representative samples described in this study. The metamorphic lineations and
 813 associated sense of shear are after Jolivet et al. (1990), Molli et al. (2006), Maggi et al. (2014)
 814 Rossetti et al. (2015); Beaudoin et al. (2020), this study.

815

816 Figure 3 – (a) Geological map of the Ponte Castirla area (modified and readapted after Rossi et al.,
 817 1994) showing distribution of the main ductile and brittle structural fabrics along Transect-1.
 818 West-verging, ductile-to-brittle thrust contacts are mapped out and a tectonic doubling of the
 819 basement stratigraphy is evident. The unconformable Eocene sediments are also involved in
 820 thrusting. The geological cross section illustrates the structural architecture of the Corsica
 821 basement across Transect-1. Location of the studied samples are also shown. Moving westward,
 822 transition from S_1 - L_1 plano-linear fabric to D_2 mylonites (S_2 foliation) is observed in the basement
 823 units. (b) Equal-area (lower-hemisphere projection) stereoplots showing the ductile (D_1 , D_2) and
 824 brittle fabrics reconstructed along Transect -1. (c) Subvertical principal S_1 foliation and incipient E-
 825 dipping S_2 foliation in the Permian volcanoclastics (sample CO24). (d) D_2 S-C tectonites developed
 826 in Permian volcanoclastics (sample CO25). Sense of shear is top-to-the-W. The inset shows D_2
 827 crenulation folding in shear lithons. (e) Protomylonite fabric in Hercynian granitoids (sample Co-
 828 38).

829

830 Figure 4 – (a) Geological cross section illustrative of the structural architecture across Transect-2
 831 and sample location. (b) Characters of the D_2 deformation in the Hercynian granitoids. Transition

832 from D_2 crenulation (lower portion) to ductile shearing (upper portion) is evident. (c) Sigma-type
 833 feldspar porphyroclasts indicating top-to-the-W shearing. (d) Equal-area (lower-hemisphere
 834 projection) stereoplot of the D_2 plano-linear fabric.

835

836 Figure 5 - (a) Geological cross section illustrative of the structural architecture across Transect-3
 837 and sample location. (b) Equal-area (lower-hemisphere projection) stereoplot of the D_1 (left) and
 838 D_2 (right) structures. (c) Gneissic texture (S-L tectonites) in the Hercynian granitoids (exposure
 839 parallel to L_1 and normal to S_1 . Porphyroclastic feldspar (Fsp) – quartz (Qz) systems define the main
 840 S_1 foliation. Kinematic criteria are not univocal, indicating overall pure-shear (coaxial) deformation.
 841 (d) L_1 stretching lineations in granitoids made of Qz- Wm aggregates trending at high angle (pitch
 842 104°) to the S_1 strike. (e) Subvertical S_1 foliation in the Permian volcanoclastics. Note the sub-
 843 horizontal Qz veins and intrafoliar F_1 folds. (f) Detail showing isoclinal F_1 folds in the Permian
 844 volcanoclastics. Note the deformed, early segregated quartz veins. (g) D_1 boundinage and
 845 stretching in Permian volcanoclastics. (h) S_2 foliation, axial planar to W-verging folds, overprinting
 846 a continuous S_1 foliation and early segregated quartz veins in the Permian volcanoclastics.

847

848 Figure 6 - Sample Microtextures. (a) Thin section scan of sample CO24, showing the S_1 foliation as
 849 defined by aligned white mica embedding quartz and fractured feldspar porphyroclasts. Kinematic
 850 criteria as provided by sigma-type clasts are not univocal, indicating overall pure shear (coaxial)
 851 deformation. (b) The sample CO24 at microscale (crossed polars). The S_1 foliation is defined by
 852 aligned white mica layers and finely-recrystallised quartz enveloping fractured feldspar grains.
 853 Post-tectonic calcite (Cc) growth is observed. (c) Oblique foliation and S-C fabric defined by aligned
 854 white mica folia and recrystallized quartz in sample CO25 (crossed polars). Note syn-tectonic
 855 stilpnomelane growth along the C surfaces. (d) Microtexture of sample CO38 (crossed polars),
 856 showing fractured feldspar grains with recrystallized quartz veins. Domains of shear strain
 857 localization formed by fine-grained recrystallized quartz and white mica enveloped the large
 858 feldspar porphyroclasts. In the high strain domains, quartz shows evidence of undulose extinction,
 859 deformation bands and evidence of dynamic recrystallisation, dominantly assisted by grain
 860 boundary bulging (BLG). (e) Microtexture of sample CO36 (crossed polars), showing feldspar
 861 porphyroclasts with recrystallized quartz veins. Relict igneous quartz show evidence of subgrain
 862 formation (SG) and evidence of dynamic recrystallisation dominantly assisted by subgrain rotation.
 863 The shear bands are defined by fine-grained recrystallized quartz and white mica. The sense of

864 shear, as defined by S-C structures, oblique foliation, and sigma-type porphyroclasts, is top-to-the-
 865 W. (f) Thin section scan of sample CO42, showing the S_1 foliation as defined by white mica folia
 866 and quartz ribbons enveloping porphyroclastic feldspar grains. Stilpnomelane is aligned along the
 867 S_1 . (g) Microtexture of sample CO42 (crossed polars) showing fractured igneous quartz and
 868 feldspar grains, embedded in a matrix made of white mica and finely recrystallized quartz that
 869 define the S_1 foliation. The relict quartz show evidence of undulose extinction, subgrain formation
 870 and dynamic recrystallisation. The white mica is crenulated.

871

872 Figure 7 - Sample microtextures. (a) Back-scattered electron (BSE) image of sample CO24, showing
 873 elongated quartz and fractured (igneous) feldspar. White mica defines the main S_1 foliation and
 874 together with quartz fill the cracks in feldspar. (b) BSE image of sample CO25, showing a
 875 pseudomorphic replacement made of white mica, chlorite, titanite, apatite along the main S_1
 876 foliation. (c) BSE image of sample CO55 showing a quartz-white mica- stilpnomelane veins cutting
 877 across a K-feldspar grain. (d) Coronitic overgrowth of the assemblage made of stilpnomelane-
 878 amphibole (winchite)-epidote-titanite after igneous magnetite in sample CO38 (natural light). (e)
 879 BSE image showing chemical zoning of white mica and epidote in sample CO35. (f) The assemblage
 880 epidote-garnet-amphibole (riebekite) overgrowing igneous allanite and magnetite in sample CO35
 881 (natural light). (g) BSE image showing two generations of white mica in sample CO36. (h) BSE
 882 image showing two generation of epidote in sample CO36. (i) Decussate texture defined by
 883 amphibole (riebekite) and stilpnomelane in sample CO42 (natural light).

884

885 Figure 8 – White mica texture and composition in dated samples. (a) sample CO24. (b) Sample
 886 CO36. (c) Sample CO42. (d) Right: Si vs. Al + Fe³⁺ diagram for the analyzed Wm; Left: Celadonite –
 887 Pyrophyllite – Muscovite diagram showing the composition of the analyzed Wm.

888

889 Figure 9 – NCKFMASHTO P–T pseudosections calculated for the dated samples (bulk rock
 890 composition shown in Table 2). The fields are contoured with isopleths of phengite (Si apfu)
 891 compositions. Occurrence of stilpnomelane and absence of pumpellyite at low-T and biotite at
 892 high-T, respectively, constrain the overall thermobaric evolution. Mineral abbreviations are after
 893 Whitney and Evans (2010).

894

895 Figure 10 - Summary of in-situ ^{40}Ar - ^{39}Ar data on rock chips of samples CO24, CO36 and CO42:
896 cumulative probability distribution and ranked distribution. Uncertainties are 2σ . Ages refer to the
897 youngest peak for each sample. Data are compared with the cumulative probability distribution of
898 samples previously investigated by Di Vincenzo et al. (2016).

899

900 Figure 11 – Alpine P-T-t paths of the Corsica basement units as available from the literature
901 compared with the P-T-t data as reconstructed in this study. The tectonic coupling of the different
902 tectonic slices is constrained at ca. 0.4 GPa and T lower than 300°C during continuous cooling and
903 W-directed ductile-to-brittle shearing (thrusting).

904

905 Figure 12. Schematic tectonic reconstruction of the Alpine orogeny in Corsica framed within the
906 retrowedge of the Apennine orogenic wedge (doubly verging orogen). (a) Shortening of the
907 continental margin as induced by buttressing against the rigid backstop of the European plate
908 (upper-plate). In this stage (D_1 deformation, at ca. 50-40 Ma) the basement units were
909 homogeneously horizontally shortened and vertically stretched (yellow strain ellipse). (b)
910 Continuous shortening resulted in the progressive exhumation of the early underplated HP
911 oceanic units (Schistes Lustrés) that were progressively overthrust and assembled against the
912 basement units along the ETSZ. This stage corresponds to the top-to-the-W simple-shear stage
913 (D_2 deformation, at ca. 33-32 Ma) in the early deformed basement units (Not scale; location of
914 structures is only indicative).

915

916 **Supplementary Material#1:** Fsp and Qz microfabrics in the studied samples.

917

918 **Supplementary Material#2:** EMPA and representative chemical formulas of syn-metamorphic
919 mineral phases

920

921 **Supplementary Material#3:** T- Fe₂O₃ pseudosections for samples CO36 and CO42 (calculated at
922 0.6 GPa)

923

924 **Supplementary Material#4:** Ar-Ar in-situ-data

925

926

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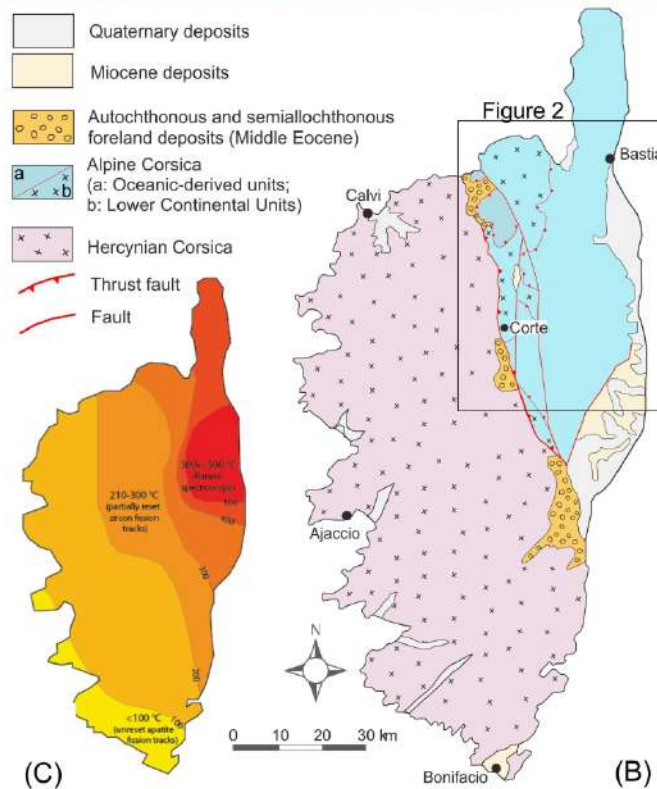
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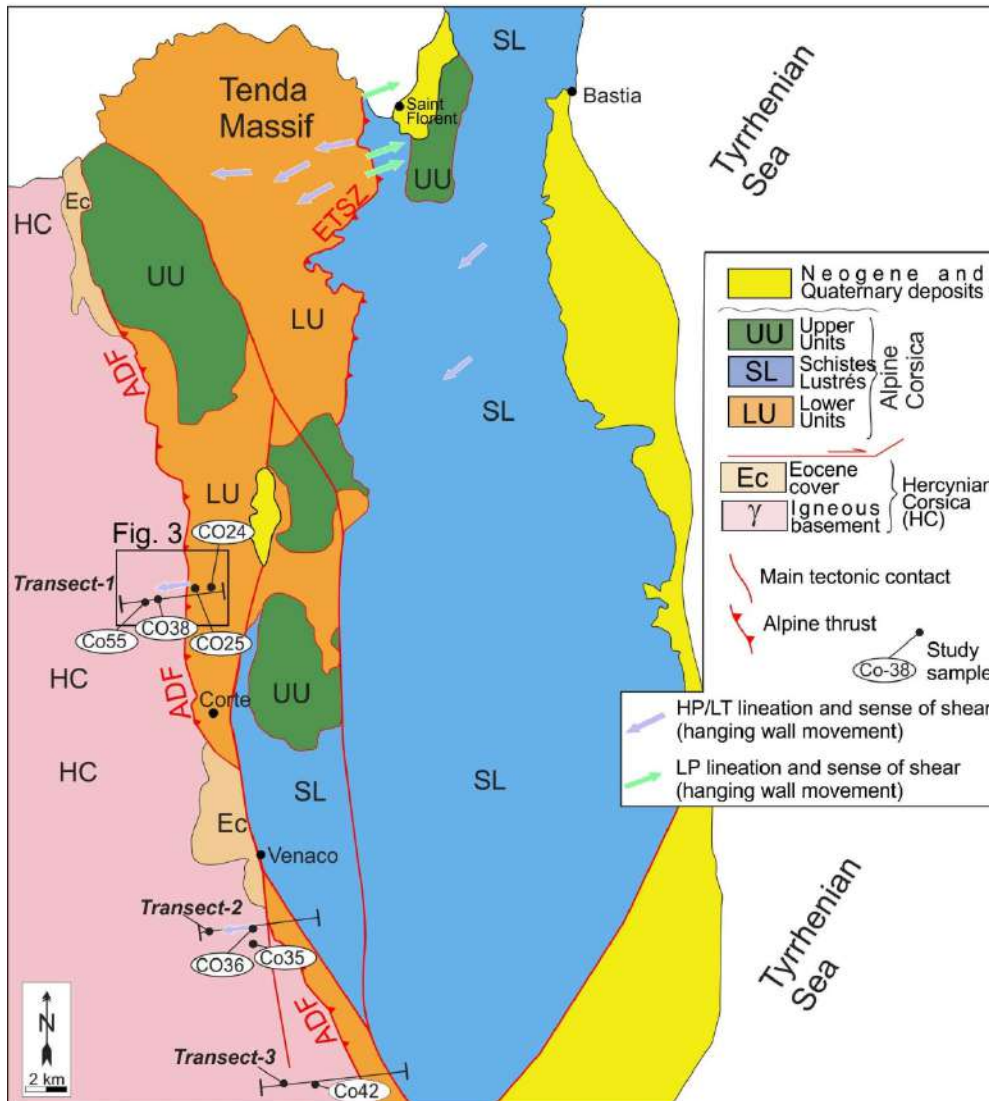
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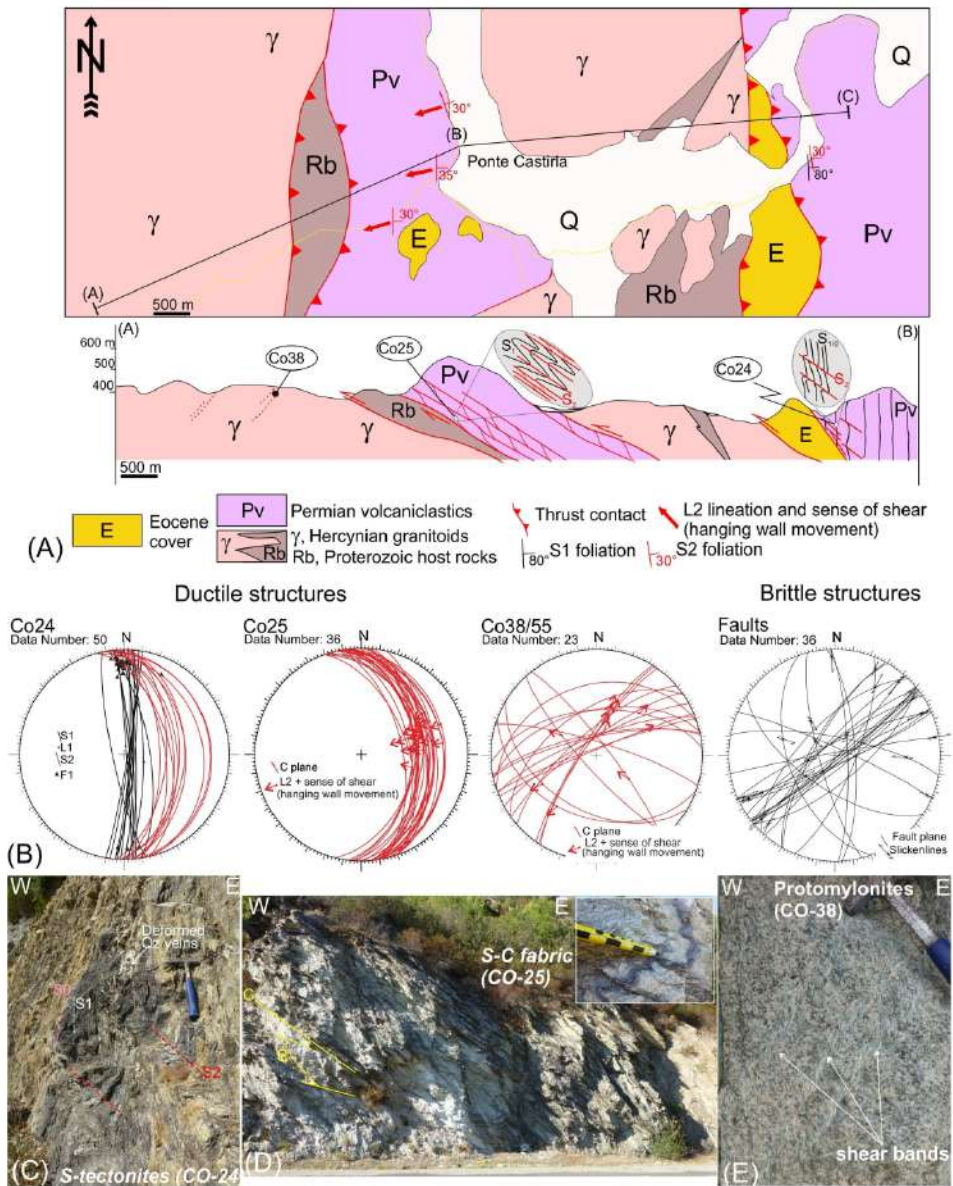
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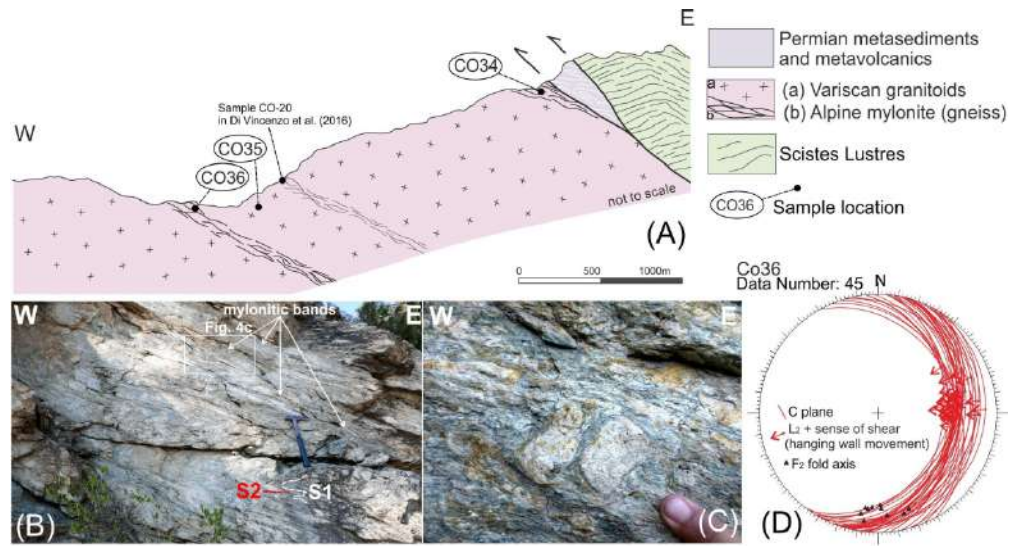
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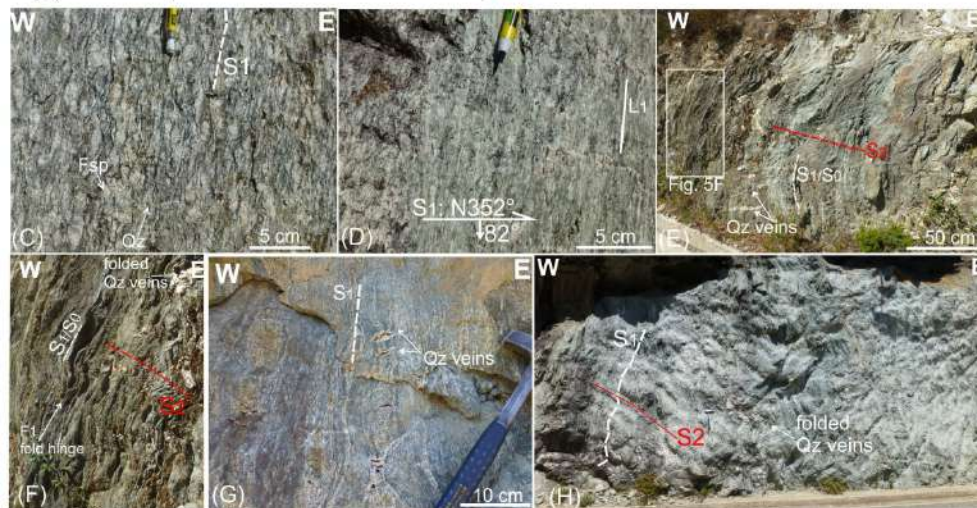
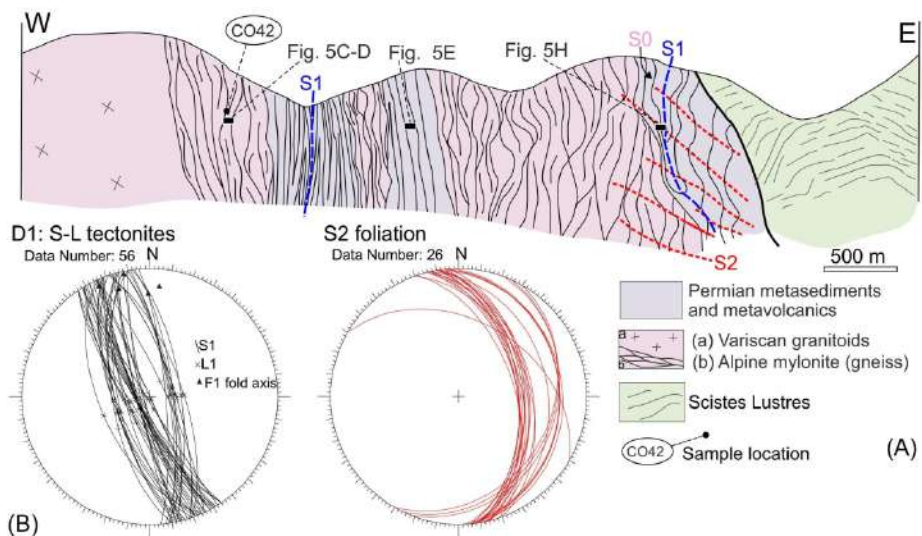
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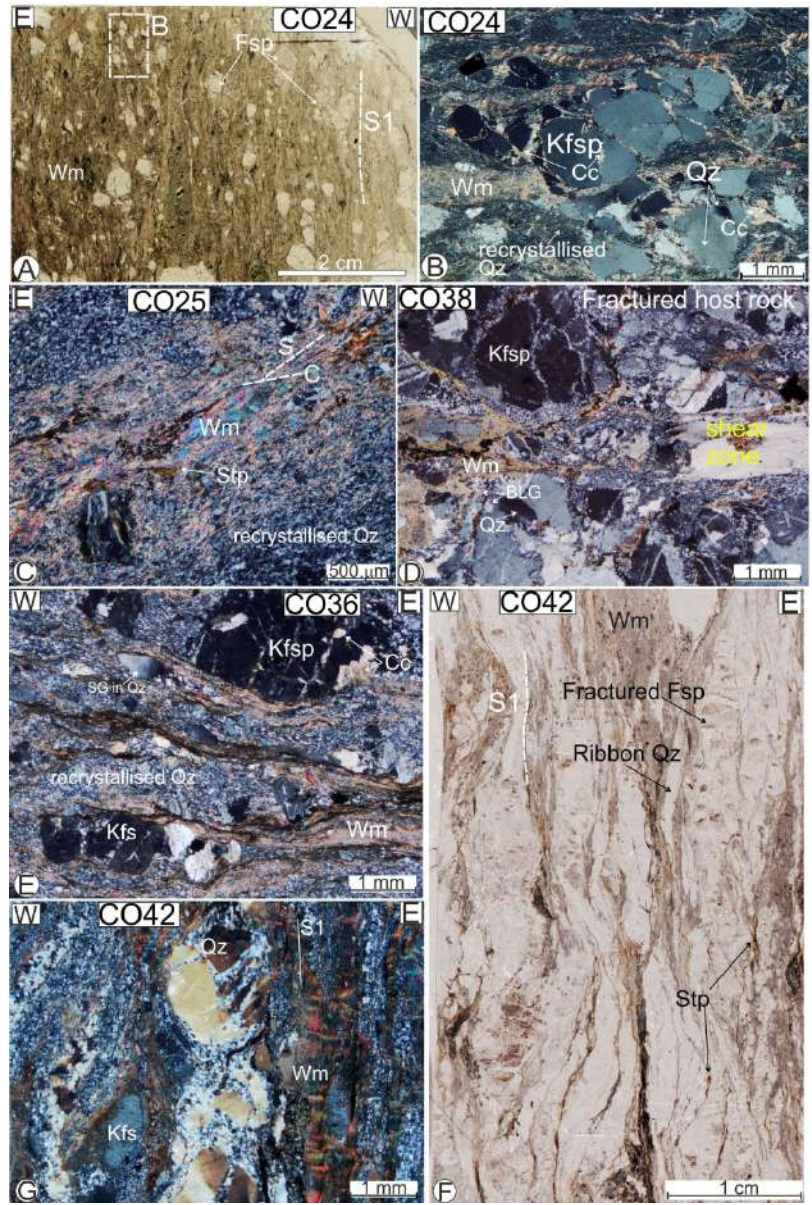
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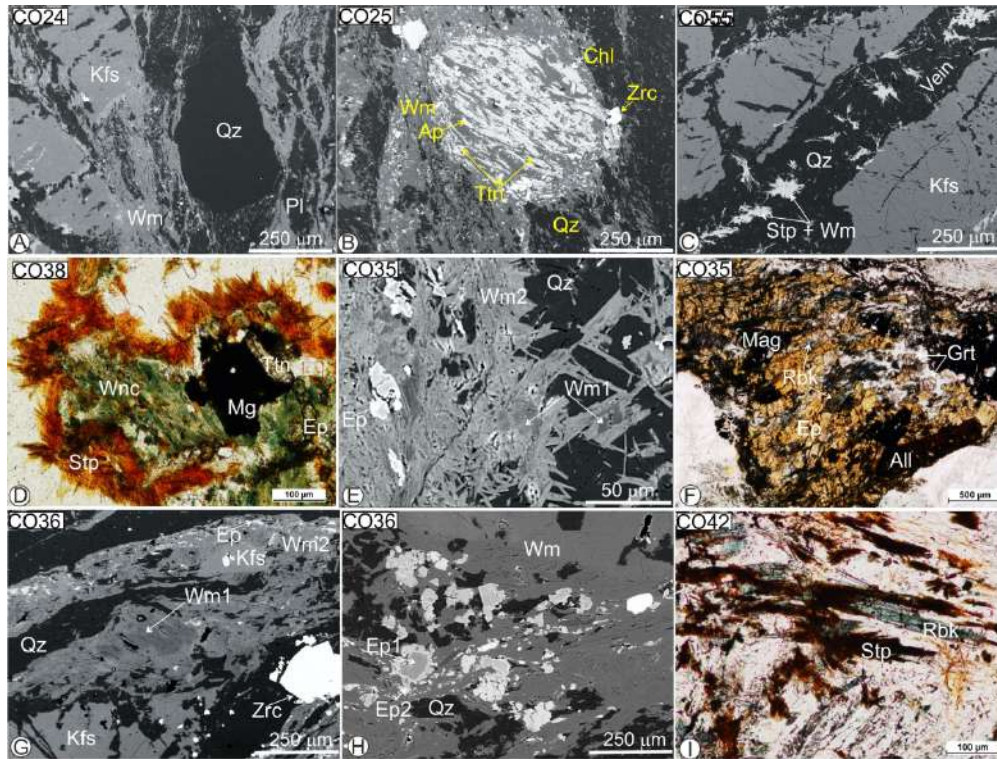
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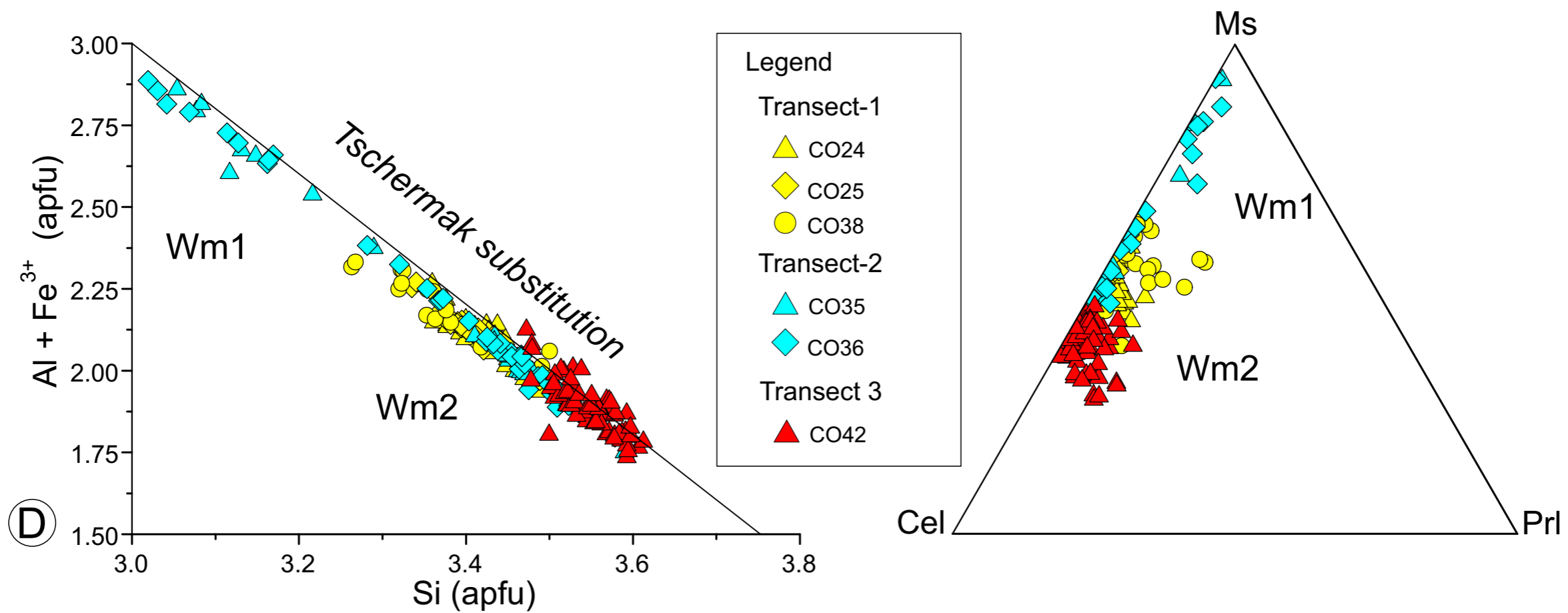
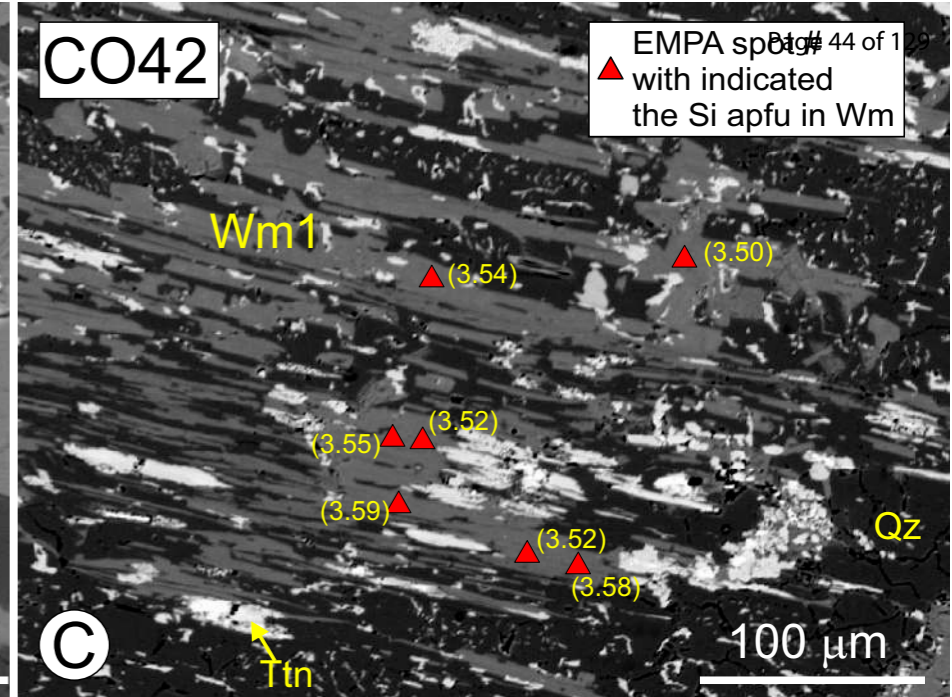
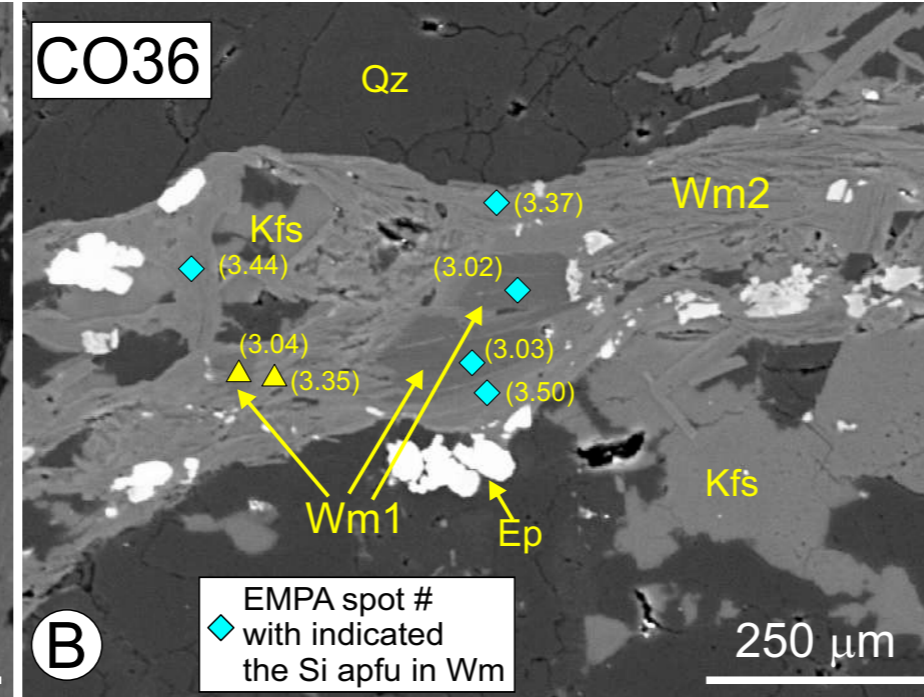
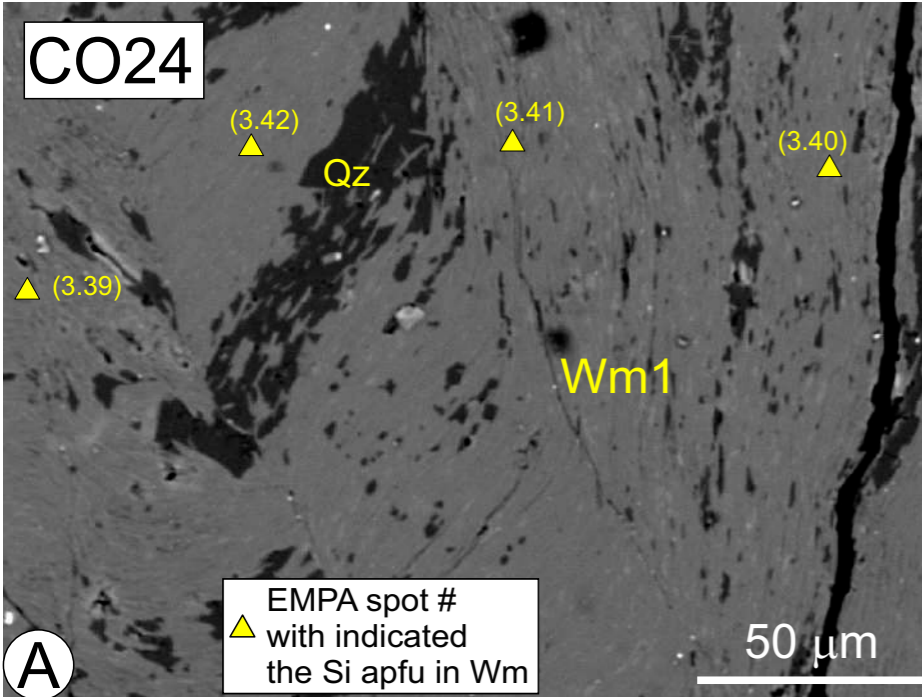
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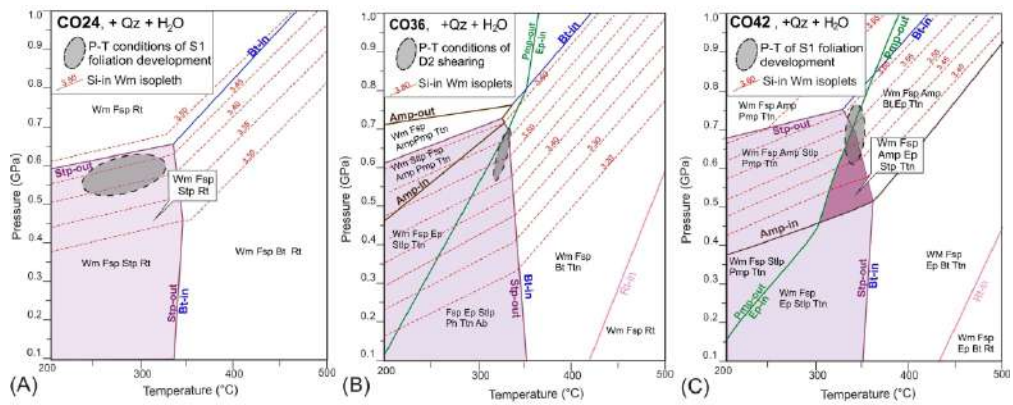


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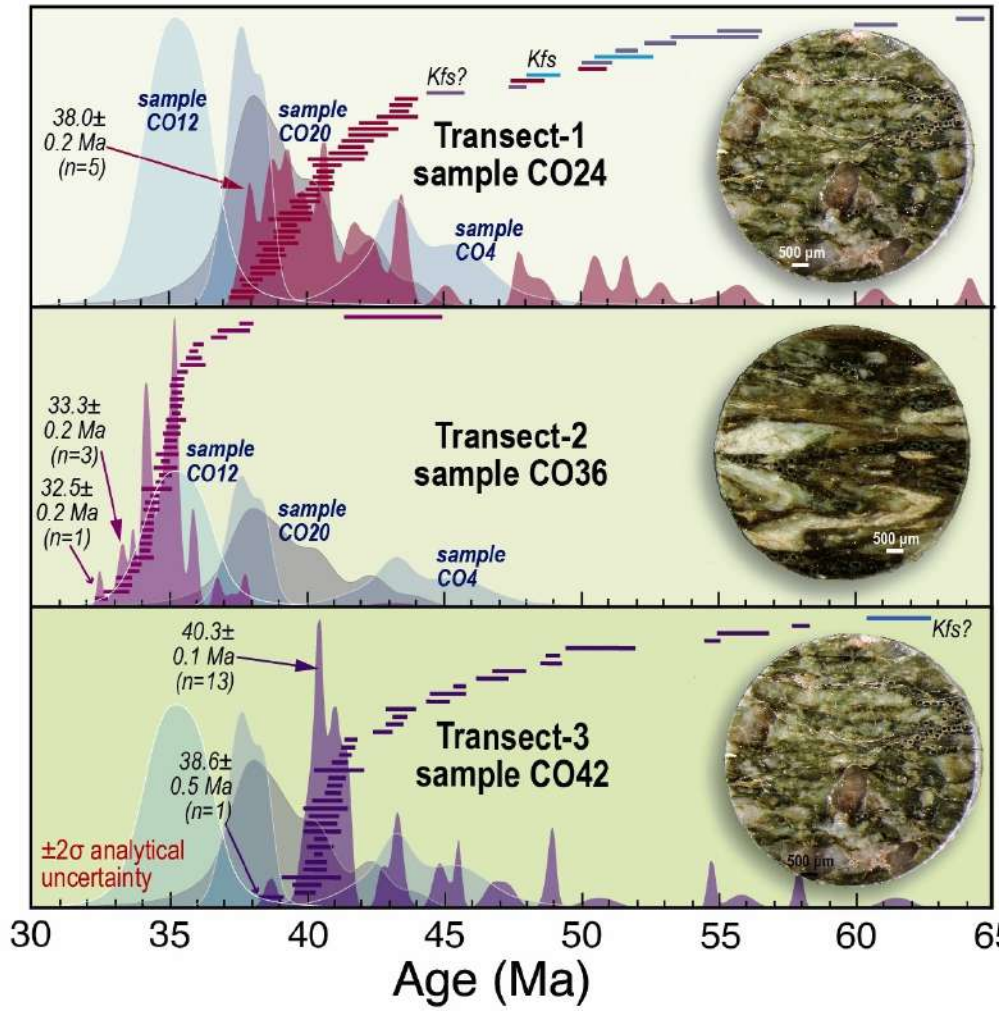


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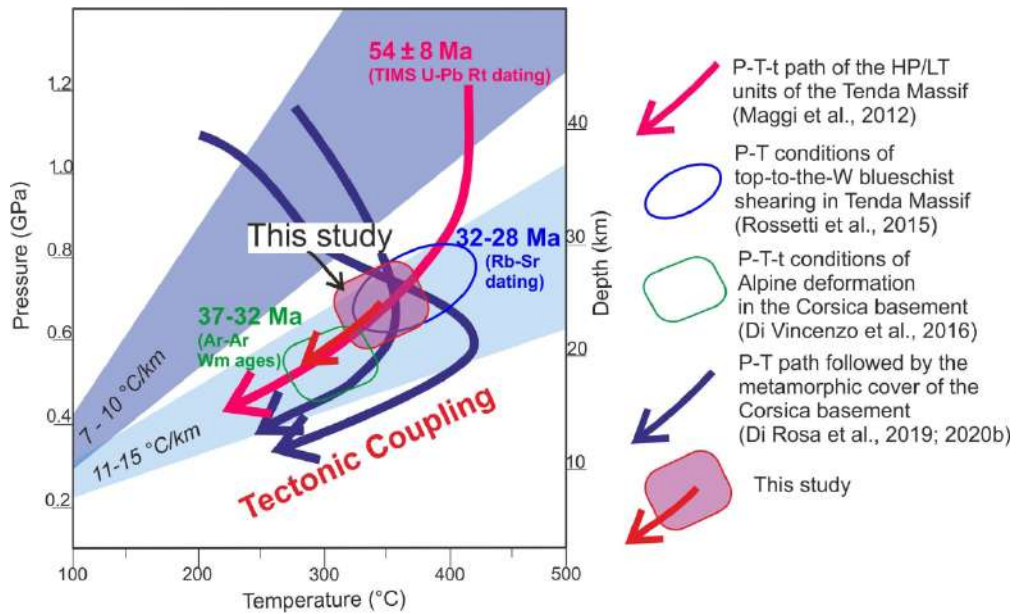




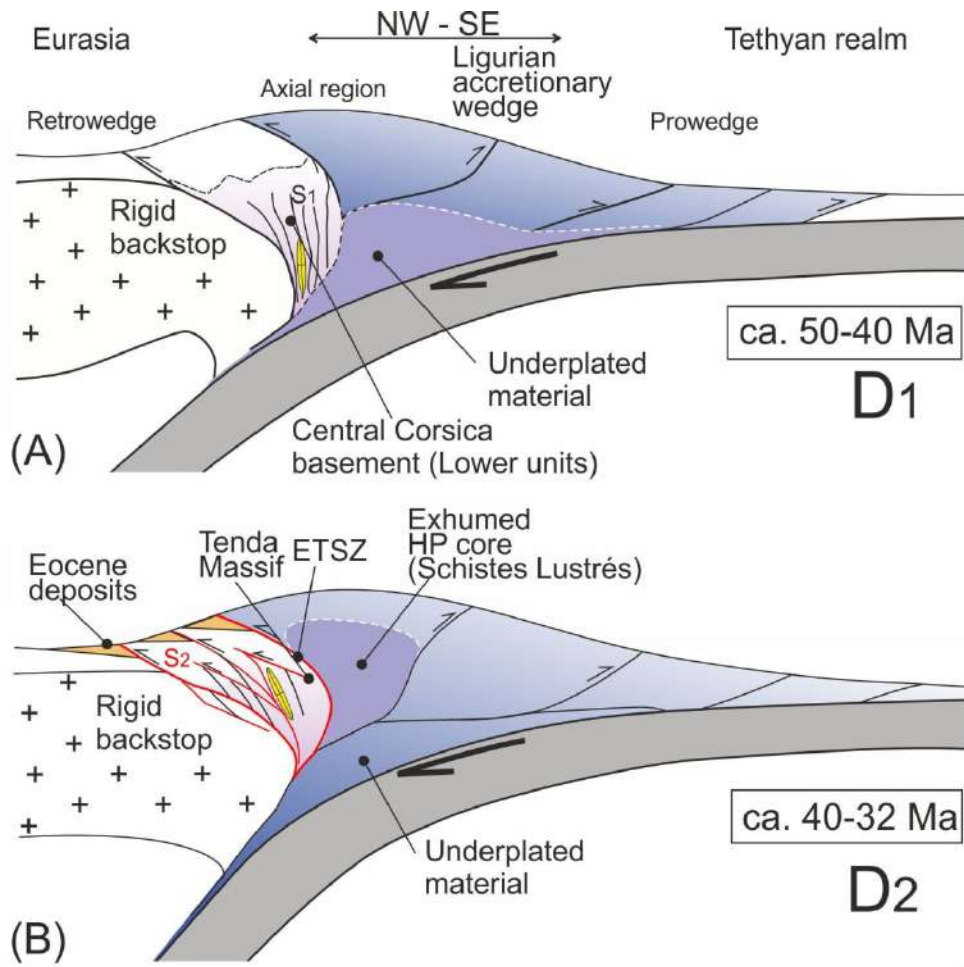
406x163mm (300 x 300 DPI)



318x322mm (96 x 96 DPI)



198x122mm (300 x 300 DPI)



132x130mm (300 x 300 DPI)

Table 1 - List of the Studied Samples, with Geographical Location and Analytical Methods

Sample	Rock Type	Location		Metamorphic Assemblage	Analytical method		
		Latitude (°N)	Longitude (°W)		EMPA	ICP whole rock	⁴⁰ Ar/ ³⁹ Ar in situ dating
CO24	Permian volcanoclastics	42°23' 09.8"	09° 10' 01.5"	Qz-Wm-Ab, Stp, Rt + Cb (late)	X	X	X
CO25	Permian volcanoclastics	42° 22' 52.1"	09°07'59.1"	Qz-Wm-Ab, Chl, Stp, Ep, Ttn, Ap + Cb (late)	X		
CO38	Granitoid	42° 22' 20.0"	09° 06' 44.8"	Qz-Wm-Ab, Stp, Ep, Ch, Ttn, Bt, Amp (Wnc), Ap + Ilv + Cb (late)	X		
Co55	Granitoid	42° 22' 19.4"	09° 06' 43.4"	Qz-Wm-Ab, Stp, Ep, Chl, Ttn, Bt, Ap + Cb (late)			
CO35	Granitoid	42° 10' 24.8"	09° 09' 45.5"	Qz-Wm-Ab, Stp,Ep, Amp (Rbk), Ttn, Ab + Grt (And-Grs), Ap + Cb (late)	X		
CO36	Granitoid	42° 11' 53.9"	09° 10' 17.0"	Qz-Wm-Ab, Stp, Ep, Ttn, Amp (Act), Cb (late)	X	X	X
CO42	Granitoid	42° 06' 12.8"	09° 15' 37.0"	Wm-Qz- Ab-Stp-Amp (Rbk), Ep, Ttn, Ap, Cb (late)	X	X	X

(*) Mineral abbreviations after Whitney and Evans (2010); Wm: white mica

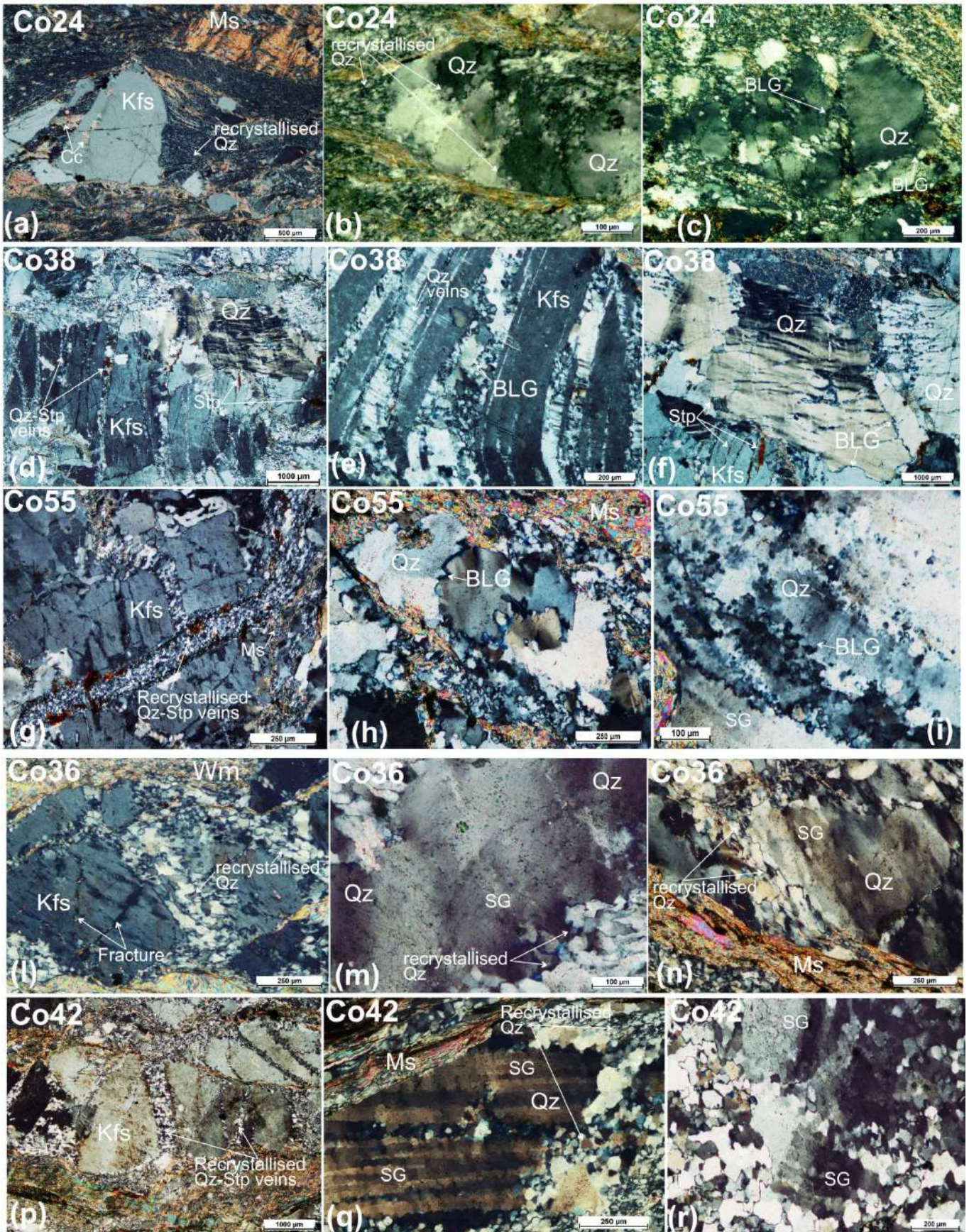
Table 2 - Bulk and recalculated rock compositions used for pseudosection modelling

Sample	XRF data			Recalculated(*)		
	Co-24	Co-36	Co-42	Co-24	Co-36	Co-42
Rock Type	Metavolcanic	Granitoid	Granitoid			
SiO₂	72.08	74.70	71.18	71.73	73.20	69.48
TiO₂	0.26	0.18	0.37	0.26	0.18	0.36
Al₂O₃	13.19	12.26	13.65	13.13	12.01	13.32
Fe₂O₃	2.57	1.09	3.35			
FeO				2.30	0.98	2.94
MnO	0.09	0.04	0.06			
MgO	0.47	0.46	0.45	0.47	0.45	0.44
CaO	1.61	0.25	1.54	0.40	0.17	0.49
Na₂O	2.68	3.25	3.50	2.67	3.18	3.42
K₂O	4.08	4.92	4.60	4.06	4.82	4.49
P₂O₅	0.07	0.06	0.08			
O₂					0.01	0.06
H₂O				5.00	5.00	5.00
Sum	97.10	97.21	98.77	100	100.00	100.00

(*) In the NCKFMASHTO chemical system

]

Supplementary Material#1 – Fsp and Qz microfabrics in the studied samples.



Sample CO24 (Crossed Polars)

(a) Fractured K-feldspar (K-Fsp) porphyroclast (igneous) in fine-grained recrystallized quartz (Qz) and white mica (Wm) shear matrix. Large Wm crystals are crenulated, and post-tectonic growth of calcite (Cc) is observed. (b) – (c) Patchy undulose extinction and dynamic recrystallisation in Qz, dominantly assisted by bulging recrystallisation (BLG).

Sample CO38 (Crossed Polars)

(d) Fractured and strained relic (igneous) K-feldspar-quartz assemblage in a fine-grained recrystallized Qz-Wm matrix. Quartz-stilpnomelane (Stp) veins cut across the K-feldspar-Qz assemblage. (e) Enlargement showing the internal fabric of the Qz veins in K-Fsp. Qz grains show evidence of dynamic recrystallisation assisted by BLG. (f) Healed fractures in relict igneous Qz. Undulose extinction and BLG recrystallisation is observed.

Sample CO55 (Crossed Polars)

(g) Fractured (relic igneous) K-Fsp grains hosting recrystallized Qz veins. (h) – (i). Relic igneous Qz grains showing undulose extinction, deformation lamellae and evidence of dynamic recrystallisation assisted by BLG.

Sample CO36 (Crossed Polars)

(l) Fractured K-Fsp grains surrounded by fine-grained recrystallized Qz grains (early veins). Fracture in K-Fsp do not pass through the recrystallized Qz domains, indicating the differential rheological behavior during rock deformation. (m) Relic (igneous) Qz showing subgrain (SG) formation. (n) Bimodal grain size produced by subgrain rotation recrystallisation in Qz.

Sample CO42 (Crossed Polars)

(o) Fractured K-Fsp grains surrounded by fine-grained recrystallized Qz grains (early veins). (p) – (q) Bimodal grain size produced by subgrain rotation recrystallization in Qz.

Representative EMPA and chemical formulas of White Mica

Locality							
Sample							
Type							
Analysis	#1	#2	#3	#4	#5	#6	#7
SiO ₂ (wt%)	50.77	51.06	50.49	50.71	50.37	49.71	50.59
TiO ₂	0.44	0.48	0.39	0.36	0.47	0.37	0.34
Al ₂ O ₃	25.18	25.52	25.08	25.28	25.08	24.45	25.21
FeOt	6.79	6.83	7.00	6.67	7.25	7.00	6.90
MnO	0.09	0.09	0.07	0.07	<i>bdl</i>	0.07	0.08
MgO	1.60	1.60	1.67	1.60	1.62	1.61	1.65
CaO	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.06	<i>bdl</i>
Na ₂ O	0.05	<i>bdl</i>	<i>bdl</i>	0.05	<i>bdl</i>	0.04	0.05
K ₂ O	10.55	10.79	10.66	10.32	11.04	10.84	10.82
BaO	0.11	0.14	0.09	0.09	0.12	0.08	0.13
Total	95.58	96.52	95.45	95.15	95.95	94.22	95.77
<i>Formula (11 Oxygens)</i>							
Si (apfu)	3.437	3.428	3.425	3.438	3.416	3.435	3.427
Ti	0.022	0.024	0.020	0.018	0.024	0.019	0.017
Al ^{Tot}	2.009	2.019	2.005	2.020	2.005	1.991	2.013
Al ^[IV]	0.563	0.572	0.575	0.562	0.584	0.565	0.573
Al ^[VI]	1.446	1.447	1.430	1.458	1.421	1.426	1.440
Fe ²⁺	0.278	0.283	0.261	0.258	0.308	0.319	0.282
Fe ³⁺	0.107	0.101	0.136	0.120	0.104	0.086	0.109
Mn	0.005	0.005	0.004	0.004	-	0.004	0.005
Mg	0.162	0.161	0.169	0.162	0.164	0.166	0.167
Ca	-	-	-	-	-	-	-
Ba	0.003	0.004	0.003	0.002	0.003	0.002	0.003
Na	0.006	-	-	0.006	-	0.006	0.007
K	0.912	0.924	0.922	0.893	0.956	0.956	0.936
^(a) XPrI	0.08	0.07	0.07	0.10	0.03	0.03	0.05
^(a) XTri	0.02	0.02	0.02	0.02	0.02	0.02	0.02
^(a) XPg	0.01	-	-	0.01	-	0.01	0.01
^(a) XCel	0.46	0.45	0.44	0.46	0.44	0.45	0.44
^(a) XMs	0.44	0.46	0.47	0.43	0.51	0.49	0.48

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit.

(a) White mica molar fractions: XPrI: Pyrophyllite, XTri: Trioctahedral substitution, XPg: Paragonite

#9	#10	#11	#12	#38	#39	#1	#2	#3
50.71	51.06	49.59	50.82	49.57	51.28	50.25	50.09	49.61
0.29	0.25	0.42	0.30	0.09	0.05	0.33	0.29	0.44
24.68	25.30	25.04	24.36	25.80	24.14	23.53	24.17	24.02
7.23	6.85	6.75	8.01	7.00	8.72	7.93	8.01	8.01
0.06	0.10	0.06	0.15	0.08	<i>bdl</i>	0.08	0.05	<i>bdl</i>
1.64	1.53	1.50	1.61	1.63	1.66	1.71	1.70	1.62
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.06	0.10	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
0.07	<i>bdl</i>	0.06	<i>bdl</i>	0.09	0.07	0.06	0.07	0.06
10.71	10.87	10.77	11.31	11.05	10.97	11.35	11.03	11.07
0.10	0.11	0.11	0.10	<i>bdl</i>	<i>bdl</i>	0.07	0.09	0.09
95.50	96.07	94.30	96.68	95.36	96.99	95.30	95.49	94.91
3.447	3.447	3.418	3.438	3.376	3.447	3.458	3.424	3.418
0.015	0.013	0.022	0.015	0.005	0.002	0.017	0.015	0.023
1.977	2.013	2.034	1.942	2.071	1.913	1.909	1.947	1.951
0.553	0.553	0.582	0.562	0.624	0.553	0.542	0.576	0.582
1.425	1.460	1.452	1.380	1.447	1.360	1.367	1.371	1.369
0.302	0.308	0.305	0.324	0.253	0.308	0.366	0.298	0.319
0.109	0.079	0.084	0.129	0.146	0.182	0.090	0.160	0.142
0.004	0.006	0.003	0.009	0.004	-	0.004	0.003	-
0.166	0.154	0.154	0.163	0.165	0.166	0.176	0.173	0.167
-	-	-	-	0.004	0.007	-	-	-
0.003	0.003	0.003	0.003	-	-	0.002	0.002	0.002
0.010	-	0.009	-	0.012	0.009	0.009	0.009	0.007
0.928	0.936	0.947	0.976	0.961	0.941	0.997	0.962	0.973
0.06	0.06	0.04	0.02	0.02	0.04	-	0.03	0.02
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	-	0.01	-	0.01	0.01	0.01	0.01	0.01
0.46	0.46	0.44	0.45	0.38	0.45	0.48	0.44	0.44
0.46	0.47	0.50	0.51	0.57	0.48	0.50	0.51	0.52

nite, XCel: Celadonite; XMs: Muscovite. Trioctahedral substitution is fixed by stoichiometry at XTri=0.02.

CO-24								
Wm1								
#4	#5	#6	#8	#9	#10	#11	#13	#15
50.24	49.26	49.40	49.02	50.03	50.32	50.59	48.27	48.88
0.41	0.53	0.57	0.96	0.35	0.47	0.34	0.50	0.47
22.69	25.39	25.14	25.67	23.43	21.57	21.69	27.67	27.63
8.54	7.12	6.93	6.66	8.25	9.70	9.23	4.58	4.79
0.08	<i>bdl</i>	0.06	0.09	0.09	0.08	0.16	<i>bdl</i>	<i>bdl</i>
1.69	1.51	1.57	1.44	1.61	2.03	2.01	1.24	1.20
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.11	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.18	0.22
0.11	0.06	0.12	0.04	0.05	0.09	0.11	0.45	0.35
11.18	11.35	11.13	11.00	11.12	11.15	11.27	10.24	9.64
<i>bdl</i>	0.13	0.14	0.10	0.07	<i>bdl</i>	<i>bdl</i>	0.07	<i>bdl</i>
94.94	95.35	95.07	95.08	95.00	95.40	95.40	93.21	93.17
3.476	3.377	3.393	3.362	3.450	3.470	3.490	3.343	3.360
0.021	0.027	0.029	0.050	0.018	0.024	0.018	0.026	0.024
1.850	2.051	2.035	2.075	1.905	1.753	1.763	2.258	2.239
0.524	0.623	0.607	0.638	0.550	0.530	0.510	0.657	0.640
1.326	1.429	1.428	1.436	1.355	1.223	1.254	1.600	1.598
0.385	0.321	0.319	0.309	0.345	0.338	0.360	0.265	0.247
0.108	0.087	0.079	0.073	0.130	0.221	0.173	-	0.028
0.005	-	0.004	0.005	0.005	0.005	0.009	-	-
0.174	0.155	0.161	0.147	0.166	0.209	0.207	0.128	0.123
-	-	-	0.008	-	-	-	0.013	0.016
-	0.003	0.004	0.003	0.002	-	-	0.002	-
0.015	0.009	0.015	0.006	0.007	0.012	0.015	0.060	0.046
0.987	0.993	0.976	0.963	0.978	0.980	0.992	0.905	0.845
-	-	0.00	0.02	0.01	0.01	-	0.02	0.09
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.01	0.02	0.01	0.01	0.01	0.02	0.06	0.05
0.50	0.40	0.42	0.41	0.47	0.49	0.51	0.37	0.38
0.48	0.57	0.54	0.54	0.50	0.48	0.47	0.52	0.45

#17	#18	#19	#20	#21	#22	#23	#24	#25
50.32	48.89	48.87	50.10	50.05	49.51	49.62	49.29	49.70
0.29	0.67	0.21	0.28	0.19	0.17	0.14	0.15	0.19
22.07	25.91	25.00	24.83	25.33	24.51	25.03	25.11	24.31
8.94	5.76	6.85	6.59	6.93	7.60	7.46	7.01	7.90
0.07	0.09	<i>bdl</i>	0.08	<i>bdl</i>	0.07	0.08	<i>bdl</i>	0.13
1.97	1.56	1.69	1.56	1.61	1.65	1.57	1.57	1.59
<i>bdl</i>	0.07	<i>bdl</i>	0.04	<i>bdl</i>	<i>bdl</i>	0.07	<i>bdl</i>	<i>bdl</i>
0.09	0.27	0.08	0.84	0.39	0.10	<i>bdl</i>	0.09	0.17
11.21	10.78	11.19	10.40	11.01	11.00	11.09	11.48	10.95
<i>bdl</i>	0.11	0.13	0.07	0.10	0.11	0.10	0.08	0.11
94.94	94.10	94.02	94.79	95.60	94.71	95.16	94.76	95.03
3.482	3.378	3.392	3.448	3.415	3.410	3.400	3.403	3.416
0.015	0.035	0.011	0.014	0.010	0.009	0.007	0.008	0.010
1.800	2.109	2.045	2.014	2.037	1.990	2.021	2.043	1.969
0.518	0.622	0.608	0.552	0.585	0.590	0.600	0.597	0.584
1.281	1.487	1.437	1.462	1.451	1.400	1.421	1.445	1.386
0.352	0.309	0.302	0.380	0.337	0.292	0.291	0.339	0.306
0.165	0.024	0.095	-	0.059	0.146	0.136	0.065	0.148
0.004	0.005	-	0.005	-	0.004	0.005	-	0.007
0.203	0.160	0.175	0.160	0.163	0.169	0.160	0.162	0.163
-	0.005	-	0.003	-	-	0.005	-	-
-	0.003	0.004	0.002	0.003	0.003	0.003	0.002	0.003
0.012	0.036	0.011	0.112	0.052	0.013	-	0.011	0.022
0.990	0.950	0.991	0.913	0.958	0.967	0.970	1.011	0.960
-	0.01	-	-	-	0.02	0.02	-	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.04	0.01	0.11	0.05	0.01	-	0.01	0.02
0.50	0.41	0.40	0.46	0.42	0.42	0.41	0.41	0.43
0.48	0.53	0.57	0.41	0.51	0.54	0.55	0.56	0.52

									Transect-
#26	#27	#2	#4	#5	#9	#11	#15	#16	
48.75	49.67	50.56	49.66	49.85	49.70	49.84	49.61	49.42	
0.46	0.41	0.07	0.10	0.08	0.09	0.08	0.12	0.06	
24.51	24.31	22.88	24.51	24.53	24.47	22.31	23.38	23.58	
7.30	7.33	7.44	7.00	6.91	6.91	7.86	7.52	7.49	
0.07	0.11	0.10	0.04	0.07	0.07	0.08	0.10	0.11	
1.47	1.55	2.77	2.38	2.48	2.46	2.59	2.65	2.39	
0.09	0.06	0.09	<i>bdl</i>	<i>bdl</i>	0.04	<i>bdl</i>	0.05	0.08	
0.39	0.24	0.21	0.08	0.07	0.10	0.07	<i>bdl</i>	0.06	
10.63	10.87	10.86	11.50	11.37	11.24	11.14	11.41	11.20	
0.10	0.08	0.06	0.20	0.14	0.14	0.08	0.10	0.04	
93.76	94.62	95.03	95.47	95.50	95.22	94.05	94.94	94.42	
3.399	3.431	3.458	3.395	3.396	3.395	3.461	3.410	3.412	
0.024	0.021	0.004	0.005	0.004	0.004	0.004	0.006	0.003	
2.015	1.979	1.844	1.975	1.970	1.971	1.825	1.894	1.919	
0.601	0.569	0.542	0.605	0.604	0.605	0.539	0.590	0.588	
1.414	1.410	1.303	1.370	1.366	1.366	1.286	1.304	1.332	
0.344	0.349	0.226	0.244	0.214	0.211	0.257	0.216	0.230	
0.081	0.075	0.200	0.156	0.180	0.184	0.199	0.217	0.202	
0.004	0.006	0.006	0.003	0.004	0.004	0.005	0.006	0.006	
0.152	0.160	0.282	0.242	0.252	0.251	0.268	0.272	0.246	
0.006	0.004	0.007	-	-	0.003	-	0.004	0.006	
0.003	0.002	0.002	0.005	0.004	0.004	0.002	0.003	0.001	
0.053	0.032	0.028	0.011	0.009	0.013	0.009	-	0.007	
0.945	0.958	0.947	1.003	0.988	0.980	0.987	1.001	0.986	
-	0.00	0.02	-	-	0.00	-	-	-	
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
0.05	0.03	0.03	0.01	0.01	0.01	0.01	-	0.01	
0.42	0.45	0.46	0.40	0.40	0.40	0.46	0.42	0.42	
0.50	0.50	0.47	0.57	0.57	0.57	0.51	0.56	0.56	

-1 (Castirla)								
								CO-25
								Wm2
#18	#19	#21	#25	#27	#30	#33	#35	#36
50.77	49.78	49.93	49.56	49.48	49.56	50.07	51.49	49.75
0.08	0.06	0.09	0.08	0.09	0.08	0.13	<i>bdl</i>	0.06
24.58	24.43	24.19	24.29	23.82	24.25	24.48	22.48	24.61
6.22	6.71	6.95	7.08	7.12	6.64	6.52	6.73	6.71
0.10	<i>bdl</i>	0.10	0.14	0.14	0.08	<i>bdl</i>	0.07	0.08
2.67	2.41	2.46	2.26	2.33	2.27	2.53	3.11	2.36
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.11	<i>bdl</i>	<i>bdl</i>	0.13	<i>bdl</i>	<i>bdl</i>
0.06	<i>bdl</i>	0.07	0.13	<i>bdl</i>	0.37	0.10	<i>bdl</i>	<i>bdl</i>
11.27	11.54	11.45	11.04	11.67	11.18	10.93	11.36	11.59
<i>bdl</i>	0.14	0.09	0.16	0.12	0.15	0.07	<i>bdl</i>	0.10
95.75	95.07	95.34	94.85	94.77	94.58	94.96	95.25	95.26
3.432	3.412	3.413	3.403	3.417	3.421	3.415	3.509	3.403
0.004	0.003	0.005	0.004	0.005	0.004	0.007	-	0.003
1.958	1.973	1.949	1.966	1.939	1.973	1.967	1.806	1.984
0.568	0.588	0.587	0.597	0.583	0.579	0.585	0.491	0.597
1.390	1.385	1.361	1.370	1.356	1.394	1.382	1.315	1.387
0.204	0.250	0.234	0.237	0.273	0.294	0.209	0.245	0.242
0.148	0.134	0.163	0.169	0.138	0.090	0.163	0.138	0.142
0.006	-	0.006	0.008	0.008	0.005	-	0.004	0.005
0.269	0.246	0.251	0.231	0.240	0.234	0.258	0.316	0.241
-	-	-	0.008	-	-	0.009	-	-
-	0.004	0.003	0.004	0.003	0.004	0.002	-	0.003
0.008	-	0.010	0.017	-	0.049	0.013	-	-
0.972	1.009	0.999	0.967	1.028	0.984	0.951	0.987	1.012
0.02	-	-	0.00	-	-	0.02	0.01	-
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	-	0.01	0.02	-	0.05	0.01	-	-
0.44	0.42	0.42	0.41	0.42	0.43	0.42	0.51	0.41
0.53	0.57	0.56	0.55	0.56	0.51	0.52	0.47	0.58

#37	#38	#39	#40	#41	#43	#44	#45	#46
48.58	49.20	48.34	49.33	48.74	49.17	48.55	49.09	49.38
0.07	0.11	0.07	0.07	<i>bdl</i>	0.07	0.05	0.06	0.07
24.97	25.23	24.68	24.48	24.82	24.60	24.47	24.30	24.26
7.07	7.06	6.47	6.76	6.44	6.75	6.47	6.67	6.71
0.08	0.05	0.11	0.15	0.10	0.11	0.11	0.09	0.05
2.45	2.49	2.32	2.34	2.23	2.25	2.34	2.36	2.31
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
<i>bdl</i>	0.05	0.05	0.11	0.07	0.07	0.08	0.07	0.08
11.55	11.36	11.56	11.49	11.46	11.41	11.54	11.32	11.33
0.20	0.16	0.16	0.18	0.16	0.18	0.19	0.15	0.20
94.97	95.69	93.76	94.91	94.02	94.62	93.81	94.12	94.39
3.335	3.340	3.367	3.394	3.379	3.390	3.382	3.399	3.413
0.003	0.005	0.004	0.003	-	0.003	0.003	0.003	0.003
2.020	2.019	2.026	1.985	2.028	1.999	2.009	1.982	1.976
0.665	0.660	0.633	0.606	0.621	0.610	0.618	0.601	0.587
1.355	1.359	1.392	1.379	1.408	1.389	1.390	1.381	1.389
0.172	0.149	0.227	0.243	0.236	0.238	0.245	0.232	0.257
0.234	0.252	0.149	0.146	0.137	0.151	0.132	0.154	0.130
0.005	0.003	0.007	0.009	0.006	0.007	0.007	0.005	0.003
0.251	0.252	0.240	0.240	0.231	0.232	0.243	0.244	0.237
-	-	-	-	-	-	-	-	-
0.005	0.004	0.004	0.005	0.004	0.005	0.005	0.004	0.005
-	0.006	0.007	0.015	0.009	0.009	0.011	0.009	0.011
1.011	0.984	1.028	1.009	1.014	1.004	1.025	1.000	0.999
-	0.01	-	-	-	-	-	-	-
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.34	0.35	0.37	0.40	0.38	0.39	0.38	0.40	0.42
0.64	0.63	0.61	0.57	0.60	0.58	0.59	0.57	0.56

#47	#48	#49	#1	#2	#8	#9	Wm1	
							#11	#12
49.02	49.23	49.39	50.69	49.67	49.01	49.40	48.61	48.73
0.06	0.05	<i>bdl</i>	0.07	0.11	0.23	0.09	0.10	0.11
24.25	24.49	24.46	22.68	24.58	24.23	25.85	25.43	25.87
6.43	6.45	6.40	6.76	6.89	5.56	4.62	5.41	5.11
0.17	0.14	0.09	0.09	0.13	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
2.39	2.54	2.47	2.87	2.34	4.34	3.83	4.35	4.16
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.04	0.06	0.05	0.13
0.07	<i>bdl</i>	0.08	0.07	<i>bdl</i>	0.05	0.10	0.08	0.06
11.42	11.58	11.48	11.27	11.54	10.97	9.66	9.59	9.70
0.18	0.15	0.16	0.06	0.16	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
93.98	94.63	94.52	94.55	95.42	94.42	93.61	93.62	93.87
3.403	3.390	3.404	3.488	3.394	3.320	3.322	3.263	3.268
0.003	0.003	-	0.003	0.005	0.012	0.005	0.005	0.005
1.984	1.988	1.987	1.840	1.980	1.934	2.049	2.012	2.045
0.597	0.610	0.596	0.512	0.606	0.680	0.678	0.737	0.732
1.387	1.377	1.391	1.328	1.374	1.254	1.372	1.276	1.313
0.239	0.214	0.239	0.259	0.237	-	-	-	-
0.134	0.157	0.130	0.130	0.157	0.315	0.260	0.304	0.287
0.010	0.008	0.005	0.005	0.008	-	-	-	-
0.247	0.261	0.253	0.294	0.239	0.438	0.384	0.435	0.415
-	-	-	-	-	0.003	0.005	0.003	0.010
0.005	0.004	0.004	0.002	0.004	-	-	-	-
0.009	-	0.011	0.009	-	0.007	0.013	0.010	0.008
1.012	1.017	1.009	0.989	1.006	0.948	0.829	0.821	0.830
-	-	-	-	-	0.04	0.15	0.17	0.15
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	-	0.01	0.01	-	0.01	0.01	0.01	0.01
0.41	0.39	0.41	0.49	0.40	0.33	0.33	0.27	0.27
0.57	0.59	0.57	0.48	0.58	0.61	0.49	0.54	0.54

CO-38									Wr
#31	#34	#3	#4	#5	#7	#14	#35	#38	
48.37	48.40	50.16	48.89	49.70	50.09	49.72	49.78	49.15	
0.17	0.41	0.23	0.24	0.28	0.23	0.13	0.41	0.13	
22.11	22.27	22.97	22.22	22.67	24.07	24.80	22.66	22.98	
10.67	10.12	5.72	6.51	6.17	5.03	4.89	7.63	9.18	
0.14	0.14	0.06	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.14	0.11	
2.68	2.78	4.73	4.74	4.80	4.36	4.09	2.94	2.63	
0.16	0.22	0.05	<i>bdl</i>	<i>bdl</i>	0.09	<i>bdl</i>	0.28	<i>bdl</i>	
<i>bdl</i>	0.08	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.04	0.06	0.05	<i>bdl</i>	
10.93	10.99	11.02	10.46	10.65	10.46	10.24	10.98	11.19	
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
95.22	95.39	94.94	93.06	94.28	94.36	93.93	94.87	95.37	
3.325	3.323	3.382	3.353	3.363	3.376	3.354	3.418	3.361	
0.009	0.021	0.012	0.012	0.014	0.011	0.007	0.021	0.006	
1.791	1.802	1.825	1.796	1.808	1.912	1.972	1.834	1.853	
0.675	0.677	0.618	0.647	0.637	0.624	0.646	0.582	0.639	
1.116	1.126	1.207	1.149	1.172	1.287	1.326	1.252	1.214	
0.099	0.117	-	-	-	-	-	0.201	0.137	
0.514	0.464	0.322	0.373	0.349	0.284	0.276	0.237	0.389	
0.008	0.008	0.004	-	-	-	-	0.008	0.006	
0.274	0.284	0.475	0.485	0.484	0.438	0.412	0.301	0.268	
0.012	0.016	0.003	-	-	0.007	-	0.021	0.002	
-	-	-	-	-	-	-	-	-	
-	0.010	-	-	-	0.005	0.007	-	0.003	
0.959	0.963	0.948	0.915	0.920	0.899	0.881	0.962	0.977	
0.02	0.01	0.05	0.08	0.08	0.09	0.11	0.01	0.02	
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
-	0.01	-	-	-	0.01	0.01	-	0.00	
0.33	0.34	0.39	0.37	0.38	0.39	0.36	0.44	0.37	
0.61	0.61	0.54	0.54	0.53	0.50	0.51	0.51	0.60	

n2								
#40	#44	#45	#3	#4	#8	#11	#80	#81
48.92	49.92	50.17	51.43	50.51	51.39	51.44	46.43	47.08
0.29	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.06	0.27	0.12
22.49	22.16	22.29	22.43	22.78	22.90	21.48	33.26	27.61
9.02	8.57	8.37	7.97	6.62	6.91	8.90	2.20	5.51
0.15	0.19	0.15	0.30	0.19	0.34	0.22	0.06	0.11
2.61	2.37	2.37	2.69	2.64	2.78	2.71	1.03	2.49
0.18	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.04	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
0.05	0.05	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.18	0.16
10.87	11.22	11.46	11.37	11.15	10.98	10.29	11.11	10.77
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.23	0.13
94.59	94.48	94.82	96.19	93.89	95.34	95.10	94.76	93.98
3.376	3.458	3.467	3.486	3.495	3.491	3.500	3.132	3.216
0.015	-	-	-	-	-	0.003	0.014	0.006
1.830	1.809	1.816	1.792	1.858	1.834	1.722	2.644	2.223
0.624	0.542	0.533	0.514	0.505	0.509	0.500	0.868	0.784
1.206	1.267	1.283	1.279	1.353	1.325	1.223	1.775	1.439
0.165	0.263	0.286	0.242	0.259	0.213	0.169	0.095	-
0.355	0.234	0.198	0.210	0.124	0.179	0.337	0.029	0.315
0.009	0.011	0.009	0.017	0.011	0.020	0.013	0.003	0.006
0.269	0.244	0.244	0.271	0.272	0.281	0.275	0.103	0.253
0.013	-	-	-	-	0.003	-	-	-
-	-	-	-	-	-	-	0.006	0.004
0.007	0.007	-	-	-	-	-	0.023	0.021
0.957	0.991	1.010	0.983	0.985	0.951	0.893	0.956	0.939
0.02	0.00	0.00	0.02	0.01	0.04	0.11	0.01	0.04
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	-	-	-	-	-	0.02	0.02
0.39	0.46	0.47	0.49	0.50	0.49	0.50	0.15	0.22
0.56	0.52	0.52	0.49	0.48	0.45	0.38	0.80	0.70

Wm1								
#82	#83	#87	#88	#95	#84	#50	#51	#52
45.73	45.27	46.64	45.07	45.60	48.73	49.79	49.77	49.66
0.44	0.04	<i>bdl</i>	0.06	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.06
28.34	35.82	32.74	34.69	35.32	28.82	21.29	21.29	20.49
5.74	1.43	2.91	1.93	1.27	3.57	7.84	7.52	7.63
0.15	<i>bdl</i>	0.17	0.12	0.36	<i>bdl</i>	0.19	0.17	0.09
2.63	0.35	0.92	0.31	0.29	2.32	3.85	3.97	4.04
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
0.18	0.23	0.12	0.20	0.12	0.12	<i>bdl</i>	0.06	<i>bdl</i>
11.10	11.09	11.32	11.16	11.31	11.44	11.34	11.01	11.49
0.27	0.07	0.20	0.08	0.28	0.07	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
94.60	94.31	95.02	93.62	94.54	95.06	94.30	93.79	93.47
3.117	3.054	3.148	3.077	3.083	3.290	3.431	3.435	3.462
0.023	0.002	-	0.003	-	-	-	-	0.003
2.277	2.848	2.604	2.791	2.815	2.293	1.729	1.732	1.684
0.883	0.946	0.852	0.923	0.917	0.710	0.569	0.565	0.538
1.393	1.902	1.752	1.868	1.898	1.583	1.160	1.166	1.146
-	0.069	0.112	0.109	0.072	0.120	0.089	0.060	0.130
0.327	0.012	0.052	0.001	-	0.082	0.363	0.375	0.315
0.009	-	0.010	0.007	0.021	0.002	0.011	0.010	0.005
0.267	0.036	0.092	0.031	0.029	0.234	0.395	0.408	0.420
-	-	-	-	-	-	-	-	-
0.007	0.002	0.005	0.002	0.007	0.002	-	-	-
0.024	0.030	0.016	0.026	0.015	0.016	-	0.008	-
0.965	0.955	0.975	0.972	0.975	0.985	0.997	0.969	1.022
-	0.01	-	-	-	-	-	0.02	-
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.03	0.02	0.03	0.02	0.02	-	0.01	-
0.14	0.06	0.15	0.08	0.08	0.29	0.43	0.44	0.47
0.82	0.89	0.81	0.88	0.88	0.68	0.55	0.52	0.52

CO-35								
Wm2								
#53	#54	#55	#66	#68	#69	#70	#85	#86
50.37	50.41	50.45	51.16	49.04	49.95	51.11	49.90	51.53
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.14	0.05	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
20.93	21.43	21.33	20.74	20.46	21.35	20.02	20.78	21.25
7.64	6.58	7.05	7.07	7.84	6.82	7.61	7.64	6.98
0.10	0.13	0.10	0.20	0.18	0.16	0.07	0.11	0.14
4.00	3.74	4.12	4.05	4.42	3.86	4.17	4.13	4.02
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.09	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
0.10	0.12	0.04	<i>bdl</i>	0.05	<i>bdl</i>	<i>bdl</i>	0.06	<i>bdl</i>
11.51	10.95	11.26	11.30	11.26	11.24	11.30	11.53	11.42
<i>bdl</i>	0.07	<i>bdl</i>	0.06	<i>bdl</i>	0.04	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
94.64	93.43	94.36	94.57	93.49	93.48	94.29	94.15	95.34
3.466	3.494	3.462	3.510	3.410	3.467	3.522	3.451	3.504
-	-	-	-	0.007	0.003	-	-	-
1.698	1.750	1.725	1.677	1.677	1.746	1.626	1.694	1.703
0.534	0.506	0.538	0.490	0.590	0.533	0.478	0.549	0.496
1.164	1.244	1.187	1.187	1.087	1.213	1.148	1.145	1.207
0.142	0.154	0.091	0.143	0.028	0.126	0.149	0.105	0.144
0.297	0.227	0.313	0.263	0.428	0.270	0.290	0.337	0.253
0.006	0.008	0.006	0.011	0.011	0.010	0.004	0.007	0.008
0.410	0.386	0.421	0.414	0.459	0.399	0.429	0.426	0.408
-	-	-	-	0.007	0.003	-	-	-
-	0.002	-	0.002	-	0.001	-	-	-
0.013	0.015	0.006	-	0.007	-	-	0.008	-
1.010	0.968	0.986	0.989	0.999	0.996	0.994	1.017	0.990
-	0.01	0.01	-	-	-	-	-	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.02	0.01	-	0.01	-	-	0.01	-
0.47	0.49	0.46	0.51	0.42	0.47	0.52	0.45	0.50
0.51	0.46	0.51	0.47	0.56	0.51	0.46	0.53	0.48

#91	#92	#93	#96	#100	#101	#102	#7	#10
50.24	49.79	50.62	49.80	50.41	50.32	50.62	45.57	45.18
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.11	0.04	<i>bdl</i>	0.18	0.20
21.30	21.97	21.53	20.34	19.94	20.69	16.99	36.13	36.38
7.33	7.21	6.98	8.12	7.92	7.40	10.88	2.21	1.86
0.08	0.13	0.12	0.14	0.20	0.19	0.20	0.08	0.08
4.07	3.66	3.78	4.17	4.50	4.17	3.34	0.21	0.17
<i>bdl</i>	0.09	<i>bdl</i>	<i>bdl</i>	0.04	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
0.07	<i>bdl</i>	<i>bdl</i>	0.06	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.59	0.51
11.43	11.19	11.39	11.39	11.28	11.61	11.35	11.18	11.12
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
94.53	94.04	94.42	94.02	94.39	94.42	93.37	96.14	95.50
3.452	3.434	3.480	3.449	3.469	3.470	3.590	3.031	3.019
-	-	-	-	0.006	0.002	-	0.009	0.010
1.725	1.786	1.744	1.660	1.617	1.681	1.420	2.832	2.865
0.548	0.566	0.520	0.551	0.531	0.530	0.410	0.969	0.981
1.177	1.220	1.224	1.110	1.086	1.151	1.010	1.863	1.885
0.103	0.113	0.150	0.084	0.063	0.119	0.314	0.099	0.083
0.318	0.303	0.252	0.386	0.393	0.308	0.331	0.024	0.021
0.005	0.007	0.007	0.008	0.011	0.011	0.012	0.005	0.004
0.417	0.376	0.387	0.431	0.461	0.429	0.353	0.021	0.017
-	0.007	-	-	0.003	-	-	-	-
-	-	-	-	-	-	-	-	-
0.010	-	-	0.008	-	-	-	0.075	0.066
1.002	0.985	0.999	1.006	0.990	1.022	1.027	0.949	0.948
-	0.01	-	-	-	-	-	-	-
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	-	-	0.01	-	-	-	0.07	0.07
0.45	0.43	0.48	0.45	0.47	0.47	0.59	0.04	0.03
0.53	0.54	0.51	0.53	0.51	0.52	0.40	0.88	0.90

Transect2 (Vivario-Venaco)								
Wm1								
#12	#23	#6	#7	#8	#10	#11	#1	#2
45.51	48.10	44.24	44.89	46.29	45.25	46.17	49.08	48.31
0.44	0.22	0.26	0.24	0.13	0.22	0.19	<i>bdl</i>	0.05
34.42	33.55	31.07	30.25	30.85	30.43	30.28	24.38	25.01
3.72	1.99	4.30	4.47	3.71	4.32	4.35	6.73	6.77
0.13	<i>bdl</i>	0.21	0.16	0.20	0.17	0.12	0.18	0.14
0.30	1.27	1.31	1.47	1.41	1.40	1.41	3.61	3.36
0.10	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
0.46	0.90	0.31	0.36	0.43	0.44	0.43	0.05	0.05
11.08	9.69	10.38	10.51	10.68	10.48	10.37	11.34	11.53
<i>bdl</i>	0.13	0.07	0.05	<i>bdl</i>	<i>bdl</i>	0.05	<i>bdl</i>	0.04
96.15	95.85	92.14	92.39	93.70	92.70	93.37	95.36	95.26
3.042	3.169	3.069	3.114	3.162	3.127	3.164	3.320	3.282
0.022	0.011	0.013	0.013	0.007	0.011	0.010	-	0.003
2.712	2.605	2.540	2.473	2.484	2.478	2.446	1.944	2.003
0.958	0.831	0.931	0.886	0.838	0.873	0.836	0.680	0.718
1.753	1.775	1.609	1.587	1.646	1.606	1.610	1.264	1.285
0.105	0.056	-	0.006	0.063	0.032	0.052	-	0.005
0.103	0.054	0.250	0.254	0.149	0.218	0.198	0.381	0.380
0.007	-	0.012	0.009	0.012	0.010	0.007	0.010	0.008
0.029	0.124	0.135	0.152	0.144	0.144	0.144	0.364	0.340
0.007	-	-	-	-	-	-	-	-
-	0.003	0.002	0.001	-	-	0.001	-	0.001
0.060	0.115	0.041	0.048	0.057	0.058	0.057	0.007	0.007
0.944	0.815	0.919	0.930	0.931	0.924	0.907	0.979	0.999
0.00	0.07	0.04	0.02	0.01	0.02	0.03	0.01	-
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.06	0.12	0.04	0.05	0.06	0.06	0.06	0.01	0.01
0.06	0.18	0.08	0.13	0.17	0.14	0.17	0.32	0.28
0.86	0.62	0.82	0.79	0.75	0.77	0.72	0.65	0.70

CO-36								
#4	#5	#6	#8	#9	#11	#13	#17	#18
49.91	49.64	51.21	51.71	49.23	50.52	49.04	51.76	50.99
<i>bdl</i>	0.05	<i>bdl</i>	<i>bdl</i>	0.08	<i>bdl</i>	0.06	0.10	0.09
23.92	24.85	23.62	24.16	23.66	24.44	23.45	23.62	23.77
5.64	5.70	6.32	4.69	7.20	5.11	7.52	5.35	5.55
0.11	0.09	0.12	0.15	0.13	0.12	0.14	0.17	0.11
3.24	3.31	3.23	3.10	3.13	3.19	3.29	3.02	3.04
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.06	<i>bdl</i>	0.08	<i>bdl</i>	0.36
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.04	0.05	<i>bdl</i>	<i>bdl</i>	0.05	<i>bdl</i>
11.57	11.55	11.51	12.00	11.23	11.71	11.24	11.94	11.51
<i>bdl</i>	0.05	<i>bdl</i>	0.08	0.06	0.07	<i>bdl</i>	0.05	0.08
94.38	95.24	96.01	95.92	94.83	95.16	94.81	96.06	95.49
3.424	3.367	3.454	3.503	3.369	3.438	3.353	3.509	3.475
-	0.003	-	-	0.004	-	0.003	0.005	0.005
1.934	1.987	1.877	1.929	1.908	1.960	1.890	1.887	1.909
0.576	0.633	0.546	0.497	0.631	0.562	0.647	0.491	0.525
1.358	1.354	1.331	1.432	1.277	1.398	1.244	1.396	1.384
0.168	0.096	0.177	0.266	0.105	0.189	0.069	0.303	0.283
0.155	0.227	0.179	-	0.307	0.102	0.361	0.001	0.033
0.006	0.005	0.007	0.008	0.008	0.007	0.008	0.010	0.006
0.331	0.335	0.324	0.313	0.319	0.324	0.335	0.305	0.309
-	-	-	-	0.004	-	0.006	-	0.026
-	0.001	-	0.002	0.002	0.002	-	0.001	0.002
-	-	-	0.005	0.007	-	-	0.007	-
1.013	1.000	0.990	1.037	0.980	1.017	0.981	1.033	1.001
-	-	0.01	-	0.01	-	0.01	-	-
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	-	-	0.01	0.01	-	-	0.01	-
0.43	0.37	0.45	0.50	0.37	0.44	0.36	0.51	0.48
0.56	0.62	0.53	0.48	0.60	0.55	0.61	0.47	0.48

Wm2								
#19	#24	#25	#3	#4	#12	#13	#14	#15
51.49	51.19	51.24	50.71	51.03	50.49	51.70	49.71	51.33
0.08	0.18	0.06	0.04	<i>bdl</i>	0.05	<i>bdl</i>	0.06	<i>bdl</i>
23.55	23.60	24.22	24.10	23.58	24.38	23.90	25.35	23.58
5.45	6.05	5.44	5.48	5.20	5.35	4.66	5.56	5.03
0.11	0.10	0.08	0.18	0.18	0.12	0.10	<i>bdl</i>	0.12
3.32	3.10	3.10	3.24	3.13	3.16	3.19	2.96	3.25
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.05	<i>bdl</i>
<i>bdl</i>	0.05	0.07	<i>bdl</i>	0.09	0.05	<i>bdl</i>	0.11	0.06
11.48	10.97	11.67	11.34	11.17	11.50	11.44	11.11	11.33
0.08	0.07	0.10	0.06	0.06	0.06	0.06	0.09	0.09
95.56	95.30	95.96	95.15	94.42	95.16	95.04	94.99	94.79
3.486	3.466	3.464	3.441	3.491	3.433	3.512	3.373	3.500
0.004	0.009	0.003	0.002	-	0.002	-	0.003	-
1.879	1.883	1.929	1.927	1.901	1.954	1.913	2.027	1.895
0.514	0.534	0.536	0.559	0.509	0.567	0.488	0.627	0.500
1.366	1.350	1.393	1.369	1.392	1.387	1.426	1.400	1.394
0.206	0.177	0.232	0.155	0.214	0.176	0.244	0.122	0.224
0.103	0.165	0.076	0.156	0.084	0.128	0.021	0.194	0.063
0.006	0.006	0.005	0.011	0.010	0.007	0.006	-	0.007
0.336	0.313	0.312	0.328	0.319	0.320	0.323	0.299	0.330
-	-	-	-	-	-	-	0.003	-
0.002	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.002
-	0.006	0.009	-	0.012	0.007	-	0.014	0.008
0.991	0.948	1.006	0.982	0.975	0.997	0.992	0.961	0.985
0.01	0.04	-	0.01	0.01	-	0.00	0.02	0.00
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	0.01	0.01	-	0.01	0.01	-	0.01	0.01
0.49	0.48	0.47	0.44	0.49	0.44	0.51	0.38	0.50
0.49	0.46	0.51	0.53	0.47	0.55	0.47	0.58	0.47

#16	#17	#18	#19	#20	#21	#22	#30	#15
50.37	50.78	50.58	50.32	51.92	51.26	53.72	52.33	52.68
0.06	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.04	0.04	0.10	0.08	0.06
23.08	23.98	24.00	23.97	23.65	23.63	22.80	23.52	22.38
5.61	5.33	5.57	6.15	4.94	5.62	6.10	5.58	6.41
0.11	0.08	0.13	0.12	0.11	0.09	0.20	0.15	0.15
3.34	3.30	3.52	3.45	3.13	3.42	2.97	2.97	3.16
0.05	<i>bdl</i>	<i>bdl</i>	0.05	0.04	<i>bdl</i>	<i>bdl</i>	0.06	0.05
<i>bdl</i>	0.07	0.06	0.04	0.07	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
11.14	11.47	11.48	11.40	11.53	11.29	11.62	11.36	11.09
0.04	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.05	<i>bdl</i>	0.05	0.11	0.09
93.80	95.00	95.33	95.50	95.49	95.34	97.56	96.15	96.08
3.470	3.455	3.425	3.404	3.523	3.467	3.578	3.527	3.551
0.003	-	-	-	0.002	0.002	0.005	0.004	0.003
1.874	1.922	1.915	1.911	1.891	1.884	1.790	1.868	1.778
0.530	0.545	0.575	0.596	0.477	0.533	0.422	0.473	0.449
1.345	1.377	1.341	1.315	1.414	1.351	1.369	1.395	1.329
0.177	0.183	0.129	0.108	0.278	0.159	0.333	0.278	0.258
0.146	0.120	0.187	0.240	0.002	0.159	0.007	0.036	0.103
0.006	0.004	0.007	0.007	0.006	0.005	0.011	0.008	0.009
0.343	0.334	0.356	0.348	0.317	0.345	0.295	0.299	0.318
0.004	-	-	0.003	0.003	-	-	0.004	0.003
0.001	-	-	-	0.001	-	0.001	0.003	0.002
-	0.009	0.007	0.005	0.009	-	-	-	-
0.979	0.996	0.992	0.984	0.998	0.974	0.988	0.977	0.954
0.01	-	-	0.01	-	0.02	0.01	0.01	0.04
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	0.01	0.01	0.01	0.01	-	-	-	-
0.47	0.46	0.43	0.41	0.53	0.47	0.58	0.53	0.55
0.50	0.52	0.55	0.57	0.45	0.49	0.39	0.44	0.39

#16	#19	#21	#27	#28	#29	#30	#32	#33
51.11	53.29	50.96	52.83	52.41	53.04	52.84	52.20	52.00
0.05	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.05	0.07	0.05	<i>bdl</i>
21.33	22.08	22.43	20.71	18.80	20.74	21.36	19.63	18.78
7.73	7.13	8.03	7.36	8.71	6.54	6.53	7.67	8.33
0.20	0.17	0.18	0.08	0.17	0.12	0.17	0.14	0.22
2.88	3.00	2.73	3.15	4.62	3.90	3.91	3.97	3.90
0.21	0.05	0.12	<i>bdl</i>	0.07	<i>bdl</i>	<i>bdl</i>	0.09	0.08
0.09	0.04	0.05	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.10	<i>bdl</i>
9.54	10.47	9.87	11.16	10.97	11.00	11.02	10.37	10.01
0.11	0.09	0.10	0.08	<i>bdl</i>	0.06	<i>bdl</i>	0.05	0.07
93.24	96.32	94.47	95.37	95.76	95.46	95.89	94.27	93.41
3.528	3.568	3.473	3.607	3.549	3.591	3.554	3.578	3.593
0.003	-	-	-	-	0.002	0.004	0.003	-
1.735	1.743	1.801	1.667	1.500	1.655	1.693	1.586	1.529
0.472	0.432	0.527	0.393	0.451	0.409	0.446	0.422	0.407
1.263	1.311	1.274	1.273	1.049	1.246	1.248	1.164	1.122
0.172	0.231	0.133	0.322	0.094	0.212	0.169	0.163	0.142
0.274	0.168	0.324	0.098	0.399	0.158	0.199	0.277	0.340
0.011	0.010	0.011	0.004	0.010	0.007	0.009	0.008	0.013
0.296	0.300	0.278	0.321	0.467	0.394	0.392	0.405	0.402
0.016	0.003	0.009	-	0.005	-	-	0.007	0.006
0.003	0.002	0.003	0.002	-	0.002	-	0.001	0.002
0.012	0.006	0.007	-	-	-	-	0.014	-
0.840	0.895	0.858	0.972	0.948	0.950	0.946	0.907	0.883
0.13	0.09	0.12	0.02	0.04	0.04	0.05	0.07	0.11
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	0.01	-	-	-	-	0.01	-
0.53	0.57	0.47	0.61	0.55	0.59	0.56	0.58	0.59
0.29	0.31	0.37	0.35	0.39	0.35	0.38	0.31	0.28

#41	#42	#43	#44	#49	#51	#53	#1	#2
54.17	52.84	51.83	52.84	52.16	53.08	52.30	52.41	52.24
<i>bdl</i>	<i>bdl</i>	0.05	<i>bdl</i>	0.08	0.04	<i>bdl</i>	0.04	0.06
21.45	22.11	21.81	21.73	19.41	21.74	22.06	20.90	20.58
6.82	6.16	6.98	6.07	8.80	6.24	7.18	6.76	6.69
0.18	0.10	0.10	0.18	0.15	0.18	0.15	0.12	0.16
3.32	3.30	3.51	3.27	3.54	3.33	3.46	3.81	3.65
0.05	<i>bdl</i>	0.08	<i>bdl</i>	0.37	<i>bdl</i>	<i>bdl</i>	0.05	0.12
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.10	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
11.03	10.40	10.42	11.20	9.75	11.15	10.69	10.93	11.08
0.08	0.11	0.11	0.08	0.05	0.09	0.05	0.04	<i>bdl</i>
97.10	95.02	94.88	95.37	94.41	95.87	95.89	95.07	94.57
3.613	3.571	3.517	3.591	3.574	3.587	3.514	3.565	3.586
-	-	0.003	-	0.004	0.002	-	0.002	0.003
1.686	1.761	1.744	1.741	1.567	1.732	1.747	1.675	1.665
0.387	0.429	0.483	0.409	0.426	0.413	0.486	0.435	0.414
1.299	1.332	1.261	1.332	1.141	1.319	1.261	1.240	1.251
0.283	0.201	0.143	0.288	0.190	0.274	0.146	0.195	0.263
0.097	0.147	0.253	0.057	0.315	0.079	0.258	0.190	0.121
0.010	0.006	0.006	0.010	0.008	0.011	0.008	0.007	0.009
0.330	0.333	0.355	0.331	0.362	0.336	0.346	0.386	0.373
0.004	-	0.006	-	0.027	-	-	0.004	0.009
0.002	0.003	0.003	0.002	0.001	0.002	0.001	0.001	-
-	-	-	-	0.013	-	-	-	-
0.938	0.896	0.902	0.972	0.852	0.962	0.917	0.948	0.971
0.06	0.10	0.09	0.03	0.11	0.03	0.08	0.04	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	-	-	-	0.01	-	-	-	-
0.61	0.57	0.52	0.59	0.58	0.59	0.51	0.57	0.59
0.31	0.31	0.37	0.37	0.26	0.36	0.39	0.37	0.37

#3	#4	#5	#6	#7	#8	#9	#11	#12
50.86	52.20	51.58	51.02	51.59	51.24	51.07	51.19	51.79
0.04	0.05	0.05	<i>bdl</i>	0.06	0.04	<i>bdl</i>	0.05	<i>bdl</i>
19.96	19.96	20.73	22.37	20.77	21.12	22.10	21.79	20.40
7.16	7.20	7.04	6.64	6.56	7.19	7.10	6.92	7.48
0.16	0.13	0.15	0.10	0.20	0.14	0.09	0.10	0.09
3.91	3.74	3.47	3.53	3.53	3.46	3.50	3.43	3.64
0.15	<i>bdl</i>	0.05	0.12	0.09	0.12	0.07	0.11	0.07
<i>bdl</i>	0.07	<i>bdl</i>	0.07	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.05	<i>bdl</i>
10.99	11.22	11.09	10.24	11.18	10.56	10.55	10.62	10.73
<i>bdl</i>	0.06	<i>bdl</i>	0.06	0.14	0.08	0.11	0.07	0.05
93.23	94.63	94.17	94.16	94.11	93.94	94.59	94.32	94.23
3.545	3.593	3.559	3.479	3.568	3.527	3.479	3.507	3.559
0.002	0.003	0.003	-	0.003	0.002	-	0.002	-
1.640	1.619	1.686	1.797	1.693	1.713	1.775	1.759	1.652
0.455	0.407	0.441	0.521	0.432	0.473	0.521	0.493	0.441
1.185	1.212	1.245	1.276	1.262	1.241	1.254	1.266	1.212
0.199	0.262	0.243	0.096	0.267	0.177	0.113	0.167	0.198
0.218	0.153	0.163	0.283	0.112	0.237	0.292	0.229	0.232
0.009	0.008	0.009	0.006	0.012	0.008	0.005	0.006	0.005
0.406	0.384	0.357	0.359	0.364	0.355	0.355	0.350	0.372
0.011	-	0.003	0.009	0.007	0.009	0.005	0.008	0.005
-	0.002	-	0.002	0.004	0.002	0.003	0.002	0.001
-	0.009	-	0.009	-	-	-	0.007	-
0.977	0.985	0.976	0.891	0.986	0.927	0.917	0.928	0.941
0.01	0.00	0.02	0.09	-	0.06	0.07	0.06	0.05
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	0.01	-	0.01	-	-	-	0.01	-
0.55	0.60	0.56	0.48	0.57	0.53	0.48	0.51	0.56
0.42	0.38	0.40	0.40	0.40	0.39	0.43	0.41	0.37

Transect-3 (Inzecca)								
CO-42								
#14	#15	#16	#17	#18	#19	#21	#22	#23
51.34	50.61	50.99	50.91	50.07	51.51	51.24	51.47	50.94
0.22	0.39	0.25	0.34	0.46	0.11	0.33	0.17	0.12
20.01	20.14	20.15	19.85	19.92	20.74	21.02	20.70	20.30
7.87	7.79	7.24	7.93	8.25	6.20	6.83	7.04	7.08
0.16	0.16	0.15	0.22	0.10	0.11	0.10	0.11	0.18
3.96	3.76	3.72	4.12	3.89	3.70	3.73	4.05	3.68
<i>bdl</i>	<i>bdl</i>	0.06	<i>bdl</i>	0.05	0.13	0.27	0.07	<i>bdl</i>
0.07	0.08	0.07	0.07	0.09	0.06	0.06	0.06	<i>bdl</i>
11.20	11.02	10.91	10.95	10.88	10.89	10.70	10.99	11.27
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.05	0.05	0.08	0.08	<i>bdl</i>	0.07
94.84	93.94	93.54	94.44	93.74	93.51	94.35	94.65	93.63
3.524	3.506	3.543	3.502	3.478	3.571	3.521	3.521	3.545
0.012	0.020	0.013	0.018	0.024	0.005	0.017	0.008	0.006
1.618	1.645	1.650	1.609	1.631	1.695	1.702	1.669	1.665
0.476	0.494	0.457	0.498	0.522	0.429	0.479	0.479	0.455
1.142	1.151	1.192	1.111	1.108	1.267	1.223	1.189	1.210
0.178	0.179	0.208	0.118	0.140	0.242	0.199	0.147	0.231
0.274	0.273	0.213	0.338	0.339	0.117	0.193	0.256	0.180
0.009	0.010	0.009	0.013	0.006	0.006	0.006	0.006	0.011
0.405	0.388	0.385	0.423	0.403	0.382	0.382	0.413	0.382
-	-	0.005	-	0.003	0.009	0.020	0.005	-
-	-	-	0.001	0.001	0.002	0.002	-	0.002
0.010	0.011	0.009	0.009	0.012	0.008	0.008	0.008	-
0.980	0.974	0.967	0.961	0.965	0.963	0.938	0.959	1.000
0.01	0.01	0.02	0.03	0.02	0.02	0.03	0.03	-
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-
0.54	0.53	0.56	0.52	0.50	0.58	0.54	0.53	0.55
0.44	0.44	0.40	0.43	0.45	0.38	0.39	0.42	0.43

#24	#25	#26	#27	#28	#29	#31	#32	#33
52.10	51.06	51.96	51.65	50.67	51.47	50.60	50.60	50.69
0.34	0.30	0.20	0.19	1.34	0.14	0.33	0.36	0.30
20.07	20.51	19.97	20.71	20.28	19.17	18.74	18.54	18.70
6.89	7.35	7.04	6.84	7.69	7.96	8.83	8.41	8.74
0.21	0.11	0.14	0.23	0.16	0.09	0.19	0.11	0.12
3.59	3.74	3.87	3.82	3.37	4.08	4.20	4.29	4.15
0.17	0.08	<i>bdl</i>	0.05	0.32	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
<i>bdl</i>	<i>bdl</i>	0.10	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
11.06	11.08	11.01	11.10	10.88	11.04	10.95	11.07	10.97
0.08	0.07	<i>bdl</i>	0.06	0.13	0.09	0.06	0.04	0.06
94.50	94.30	94.29	94.65	94.83	94.04	93.90	93.41	93.73
3.593	3.522	3.578	3.541	3.500	3.562	3.512	3.532	3.526
0.017	0.016	0.010	0.010	0.069	0.007	0.017	0.019	0.015
1.631	1.668	1.621	1.673	1.651	1.563	1.533	1.525	1.533
0.407	0.478	0.422	0.459	0.500	0.438	0.488	0.468	0.474
1.224	1.189	1.199	1.215	1.150	1.126	1.045	1.058	1.059
0.293	0.198	0.224	0.193	0.290	0.189	0.122	0.154	0.148
0.105	0.226	0.181	0.199	0.154	0.272	0.390	0.336	0.360
0.012	0.006	0.008	0.013	0.009	0.005	0.011	0.007	0.007
0.369	0.385	0.398	0.390	0.347	0.421	0.435	0.446	0.430
0.012	0.006	-	0.003	0.024	-	-	-	-
0.002	0.002	-	0.002	0.004	0.002	0.002	0.001	0.002
-	-	0.013	-	-	-	-	-	-
0.973	0.975	0.967	0.971	0.958	0.975	0.969	0.986	0.973
0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	-	0.01	-	-	-	-	-	-
0.61	0.54	0.59	0.55	0.57	0.57	0.53	0.55	0.54
0.35	0.43	0.37	0.41	0.38	0.40	0.43	0.42	0.42

#34	#35	#36	#37	#38	#39	#40	#41	#42
51.01	52.01	51.27	51.67	51.63	51.87	51.64	51.10	51.25
0.26	0.08	0.13	0.10	0.12	0.11	0.08	0.16	0.16
20.97	20.34	19.97	20.72	20.60	21.02	20.52	20.87	21.05
6.86	6.39	8.03	6.47	6.41	6.35	6.65	6.70	6.40
0.06	0.12	0.08	0.15	0.12	0.14	0.14	0.16	0.07
3.96	3.77	3.86	4.04	4.02	3.80	3.89	3.94	4.04
<i>bdl</i>	0.05	0.05	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.05	0.07	<i>bdl</i>	0.07	0.07	0.05
10.86	11.29	11.01	11.00	11.25	11.27	10.63	10.95	10.85
0.05	0.08	0.06	<i>bdl</i>	0.05	<i>bdl</i>	0.07	<i>bdl</i>	<i>bdl</i>
94.03	94.13	94.46	94.19	94.29	94.56	93.68	93.95	93.86
3.505	3.594	3.530	3.546	3.554	3.556	3.559	3.518	3.522
0.013	0.004	0.007	0.005	0.006	0.006	0.004	0.008	0.008
1.698	1.657	1.620	1.676	1.671	1.698	1.666	1.694	1.705
0.495	0.406	0.470	0.454	0.446	0.444	0.441	0.482	0.478
1.204	1.251	1.150	1.222	1.225	1.254	1.225	1.213	1.227
0.134	0.273	0.180	0.162	0.201	0.219	0.167	0.149	0.138
0.260	0.097	0.282	0.209	0.168	0.145	0.216	0.237	0.230
0.004	0.007	0.005	0.009	0.007	0.008	0.008	0.009	0.004
0.405	0.388	0.396	0.413	0.413	0.388	0.399	0.404	0.413
-	0.004	0.004	-	-	-	-	-	-
0.001	0.002	0.002	-	0.001	-	0.002	-	-
-	-	-	0.007	0.009	-	0.010	0.010	0.007
0.952	0.995	0.967	0.963	0.988	0.985	0.935	0.961	0.951
0.04	-	0.02	0.03	0.00	0.01	0.05	0.03	0.04
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-	-	-	0.01	0.01	-	0.01	0.01	0.01
0.52	0.60	0.54	0.55	0.56	0.56	0.56	0.53	0.53
0.42	0.38	0.42	0.40	0.42	0.41	0.36	0.42	0.41

#43	#44	#45	#46	#49	#50	#51	#53	#54
51.88	51.90	51.52	52.28	51.37	50.96	51.58	51.82	51.90
0.06	0.08	0.05	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.07	0.05
20.65	20.73	21.68	20.41	21.65	21.44	21.18	21.48	20.58
6.67	6.39	6.34	6.58	6.60	6.41	6.46	6.75	6.64
0.20	0.14	0.15	0.18	0.13	0.13	0.18	0.14	0.16
3.45	3.67	3.44	3.67	3.47	3.39	3.60	3.29	3.63
0.12	0.06	0.10	0.16	0.11	0.14	0.14	0.09	0.07
0.05	0.06	0.07	0.07	0.05	0.05	0.09	<i>bdl</i>	<i>bdl</i>
10.81	11.18	9.67	10.55	10.35	10.51	10.59	10.34	10.38
0.07	0.06	0.06	<i>bdl</i>	0.05	0.04	0.05	0.07	<i>bdl</i>
93.94	94.28	93.08	93.90	93.78	93.07	93.86	94.06	93.40
3.584	3.578	3.538	3.598	3.526	3.535	3.550	3.551	3.579
0.003	0.004	0.003	-	-	-	-	0.004	0.002
1.681	1.684	1.755	1.656	1.751	1.753	1.718	1.735	1.673
0.416	0.422	0.462	0.402	0.474	0.465	0.450	0.449	0.421
1.265	1.262	1.293	1.254	1.277	1.289	1.268	1.285	1.252
0.260	0.260	0.115	0.234	0.157	0.199	0.197	0.196	0.186
0.125	0.108	0.249	0.144	0.222	0.173	0.175	0.190	0.197
0.011	0.008	0.008	0.010	0.007	0.007	0.010	0.008	0.009
0.356	0.377	0.352	0.376	0.355	0.351	0.369	0.336	0.373
0.009	0.004	0.008	0.012	0.008	0.010	0.010	0.007	0.005
0.002	0.002	0.002	-	0.001	0.001	0.001	0.002	-
0.007	0.008	0.009	0.010	0.007	0.007	0.012	-	-
0.952	0.983	0.847	0.926	0.906	0.930	0.929	0.904	0.913
0.03	-	0.13	0.05	0.08	0.05	0.05	0.08	0.08
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-
0.59	0.58	0.54	0.60	0.53	0.54	0.55	0.55	0.58
0.36	0.39	0.29	0.32	0.37	0.38	0.37	0.34	0.32

#55	#56
52.42	51.85
<i>bdl</i>	0.07
20.13	20.68
6.89	7.02
0.19	<i>bdl</i>
3.79	3.47
0.10	0.23
0.05	0.05
10.44	9.79
0.05	0.05
94.07	93.19
3.597	3.574
-	0.003
1.628	1.680
0.403	0.426
1.225	1.253
0.197	0.182
0.198	0.222
0.011	-
0.388	0.356
0.008	0.017
0.001	0.001
0.006	0.007
0.914	0.860
0.07	0.11
0.02	0.02
0.01	0.01
0.60	0.58
0.30	0.27

Representative EMPA and chemical formulas of Feldspar

Locality	Transect 1 (Casti)					
Sample	CO-24		CO-25			
Type	Igneous	Metamorphic	Igneous	Metamorphic	Igne	
Analysis	#13	#14	#14	#26	#1	#37
SiO ₂ (wt%)	64.34	69.70	62.07	67.34	64.45	64.16
Al ₂ O ₃	18.56	19.94	18.85	19.53	18.36	18.63
FeOt	<i>bdl</i>	0.06	0.83	<i>bdl</i>	0.08	0.47
CaO	<i>bdl</i>	0.28	<i>bdl</i>	0.05	<i>bdl</i>	0.09
Na ₂ O	0.12	10.84	0.51	11.73	0.20	0.19
K ₂ O	16.83	0.31	15.94	0.09	17.11	17.06
BaO	0.47	<i>bdl</i>	0.36	<i>bdl</i>	0.04	0.10
Total	100.31	101.13	98.56	98.74	100.25	100.70
<i>Fe₂O₃</i>	0.00	0.07	0.93	-	0.09	0.53
<i>Formula (8 Oxygens)</i>						
Si (apfu)	2.983	3.002	2.923	2.981	2.986	2.963
Al	1.014	1.012	1.046	1.019	1.003	1.014
Fe ³⁺	-	0.002	0.033	-	0.003	0.018
Ba	0.008	-	0.007	-	0.001	0.002
Ca	-	0.013	-	0.002	-	0.004
Na	0.012	0.905	0.046	1.007	0.018	0.017
K	0.996	0.017	0.957	0.005	1.011	1.005
XAn	-	0.01	0.01	0.00	-	0.01
XAb	0.02	0.97	0.05	0.99	0.02	0.02
XOr	0.98	0.02	0.95	0.00	0.98	0.98

* FeOt total iron reported as FeO; apfu: atoms per formula unit; *bdl*: below detection limit.

** TiO₂, MnO and MgO always below detection limit.

irla)						Transect	
CO-38						CO-35	
Sous		Metamorphic				Metamorphic	
#42	#14	#2	#43	#1	#2	#94	#97
64.27	64.56	68.35	67.04	70.68	67.84	68.31	67.86
18.69	18.24	19.79	20.09	20.24	19.86	19.66	19.89
0.05	0.14	0.15	0.10	0.27	0.22	0.16	0.10
<i>bdl</i>	<i>bdl</i>	0.07	0.62	0.66	0.41	<i>bdl</i>	0.44
0.34	0.27	11.78	10.88	8.68	11.84	11.88	11.61
17.12	16.86	0.08	0.30	1.24	0.15	0.14	0.12
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
100.47	100.08	100.22	99.02	101.76	100.31	100.15	100.02
0.05	0.16	0.17	0.11	0.30	0.24	0.17	0.11
2.974	2.993	2.981	2.961	3.016	2.964	2.983	2.969
1.019	0.997	1.017	1.046	1.018	1.023	1.012	1.026
0.002	0.006	0.005	0.004	0.010	0.008	0.006	0.004
-	-	-	-	-	-	0.000	0.000
-	-	0.003	0.029	0.030	0.019	-	0.021
0.031	0.024	0.996	0.932	0.718	1.003	1.006	0.985
1.010	0.997	0.005	0.017	0.067	0.008	0.008	0.007
-	-	0.00	0.03	0.04	0.02	-	0.02
0.03	0.02	0.99	0.95	0.88	0.97	0.99	0.97
0.97	0.98	0.00	0.02	0.08	0.01	0.01	0.01

ct-2 (Vivario-Venaco)			transect-3 (Inzecca)				
CO-36			CO-42				N
Igneous		Metamorphic	Igneous				
#1	#27	#23	#25	#37	#47	#9	#26
64.71	65.18	69.23	64.01	63.87	63.70	64.25	69.35
18.34	18.21	19.28	18.11	18.46	18.30	18.30	19.56
<i>bdl</i>	0.08	0.05	0.51	0.54	0.08	<i>bdl</i>	0.11
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
<i>bdl</i>	0.25	11.31	0.20	0.32	0.14	0.21	11.98
16.23	17.08	0.09	17.15	16.91	17.05	16.79	0.08
0.21	0.11	<i>bdl</i>	<i>bdl</i>	0.24	0.15	0.12	<i>bdl</i>
99.48	100.91	99.97	99.99	100.34	99.41	99.67	101.07
-	0.09	0.05	0.57	0.60	0.09	-	0.12
3.003	2.999	3.016	2.980	2.966	2.981	2.991	2.997
1.003	0.987	0.990	0.994	1.011	1.009	1.004	0.996
-	0.003	0.002	0.020	0.021	0.003	-	0.004
0.004	0.002	0.000	-	0.004	0.003	0.002	-
-	-	-	-	-	-	-	-
-	0.022	0.956	0.018	0.029	0.012	0.019	1.004
0.964	1.003	0.005	1.019	1.002	1.018	0.997	0.004
-	-	-	-	-	-	-	-
-	0.02	0.99	0.02	0.03	0.01	0.02	1.00
1.00	0.98	0.01	0.98	0.97	0.99	0.98	-

Metamorphic	
#3	#10
70.09	69.87
19.50	19.06
0.18	<i>bdl</i>
<i>bdl</i>	<i>bdl</i>
11.47	10.98
<i>bdl</i>	0.05
<i>bdl</i>	<i>bdl</i>
101.24	99.96
0.20	-
3.014	3.034
0.988	0.975
0.006	-
-	-
-	-
0.957	0.925
-	0.003
-	-
1.00	1.00
-	-

Representative EMPA and chemical formulas of Stilpnomela

Locality	Tra					
Sample	CO-24	CO-25				
Analysis	#36	#37	#14	#15	#16	#17
SiO ₂ (wt%)	43.93	43.99	44.54	46.28	43.98	42.84
TiO ₂	<i>bdl</i>	<i>bdl</i>	0.24	0.19	0.12	0.15
Al ₂ O ₃	5.85	6.08	5.87	5.75	6.42	7.09
FeOt	34.19	33.90	29.96	29.52	29.52	29.61
MnO	0.45	0.41	2.19	2.24	2.17	2.12
MgO	2.07	1.91	3.25	3.16	3.46	3.51
CaO	0.10	0.13	0.23	0.22	0.12	0.20
Na ₂ O	0.21	0.37	0.53	0.52	0.48	0.49
K ₂ O	2.04	2.19	1.98	1.84	2.44	2.96
Total	88.83	88.98	88.79	89.72	88.71	88.98
<i>FeO</i>	22.45	22.07	17.81	17.22	17.54	17.63
<i>Fe₂O₃</i>	13.05	13.16	13.50	13.66	13.32	13.31
<i>Formula (120 Cations)</i>						
Si (apfu)	63.60	63.83	64.09	65.73	63.34	61.86
Al ^[IV]	8.40	8.17	7.91	6.27	8.66	10.14
Ti	-	-	0.26	0.20	0.13	0.17
Al ^[VI]	1.58	2.23	2.05	3.36	2.24	1.92
Fe ²⁺	27.18	26.78	21.43	20.46	21.12	21.29
Fe ³⁺	14.22	14.36	14.62	14.60	14.43	14.47
Mn	0.55	0.50	2.67	2.70	2.64	2.59
Mg	4.46	4.13	6.97	6.68	7.43	7.56
Ca	0.15	0.20	0.35	0.33	0.19	0.32
Na	0.58	1.03	1.47	1.44	1.34	1.37
K	3.77	4.06	3.64	3.34	4.47	5.46
(OH)	32.19	31.41	31.08	29.84	31.20	31.44

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit

** (OH) by stoichiometry

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ansect-1 (Castirla)

CO-38								
#18	#19	#23	#24	#25	#5	#6	#7	#19
44.44	43.80	47.20	43.59	42.78	45.47	45.47	44.29	47.62
0.13	<i>bdl</i>	0.17	0.12	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
6.46	6.23	5.69	6.52	6.46	5.86	5.51	5.46	6.44
30.77	29.92	29.16	30.85	31.09	29.68	29.86	27.89	27.58
2.02	2.00	2.05	2.00	2.21	1.86	2.20	3.41	3.21
3.57	3.90	2.91	3.85	3.40	3.60	3.54	4.41	4.40
0.23	0.23	1.00	0.44	0.11	0.23	0.26	0.20	0.19
0.48	0.57	0.61	0.59	0.50	0.62	0.36	0.34	0.12
2.34	1.95	2.02	1.92	1.86	1.62	1.33	1.53	0.64
90.45	88.61	90.82	89.88	88.40	88.94	88.52	87.51	90.19
18.50	17.87	16.01	18.63	19.41	17.52	17.86	15.93	16.06
13.63	13.39	14.62	13.59	12.98	13.51	13.33	13.28	12.80
62.80	62.80	67.03	61.83	61.60	64.83	64.90	63.64	65.27
9.20	9.20	4.97	10.17	10.40	7.17	7.10	8.36	6.73
0.14	-	0.18	0.12	-	-	-	-	-
1.55	1.33	4.55	0.73	0.57	2.68	2.17	0.88	3.67
21.87	21.43	19.01	22.09	23.37	20.89	21.32	19.15	18.41
14.50	14.45	15.63	14.51	14.06	14.50	14.32	14.36	13.21
2.42	2.43	2.46	2.41	2.69	2.25	2.65	4.15	3.72
7.53	8.33	6.16	8.14	7.30	7.66	7.53	9.44	8.99
0.35	0.35	1.52	0.67	0.17	0.35	0.39	0.30	0.28
1.33	1.59	1.69	1.61	1.40	1.70	1.01	0.93	0.31
4.22	3.56	3.66	3.48	3.41	2.95	2.42	2.80	1.12
31.81	32.19	27.64	32.64	33.36	30.80	31.51	32.74	31.12

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Transect-2 (Vivario-Venaco)								
CO-36								
#20	#21	#22	#24	#25	#26	#34	#35	#13
47.03	48.56	46.55	47.14	46.90	46.75	49.04	47.33	48.76
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.07
5.98	6.92	5.74	5.94	5.93	5.95	5.97	5.87	7.83
28.00	25.84	28.89	28.50	28.38	28.15	28.37	28.61	24.25
3.58	3.32	3.55	3.82	3.86	3.64	3.55	3.20	1.02
4.54	4.29	4.49	4.46	4.40	4.17	4.07	4.43	4.88
0.29	0.16	0.20	0.23	0.21	0.32	0.17	0.29	0.31
0.08	0.87	0.09	0.09	0.10	0.10	0.08	0.20	0.19
0.91	1.17	0.94	0.87	0.96	0.70	0.88	1.04	2.35
90.41	91.12	90.45	91.05	90.73	89.77	92.12	90.97	89.65
16.12	13.73	16.96	16.57	16.47	16.44	16.35	16.49	12.52
13.21	13.45	13.26	13.26	13.23	13.02	13.36	13.47	13.03
64.66	66.58	64.08	64.38	64.36	64.77	66.21	64.90	67.68
7.34	5.42	7.92	7.62	7.64	7.23	5.79	7.10	4.32
-	-	-	-	-	-	-	-	0.07
2.34	5.76	1.38	1.94	1.95	2.49	3.71	2.38	8.49
18.53	15.75	19.52	18.93	18.90	19.05	18.46	18.91	14.54
13.66	13.88	13.73	13.63	13.66	13.58	13.57	13.90	13.61
4.17	3.85	4.14	4.42	4.48	4.27	4.05	3.72	1.20
9.30	8.76	9.22	9.08	9.00	8.62	8.20	9.05	10.09
0.43	0.23	0.29	0.34	0.30	0.47	0.25	0.42	0.46
0.21	2.32	0.25	0.24	0.26	0.26	0.21	0.52	0.50
1.60	2.04	1.66	1.51	1.68	1.24	1.51	1.82	4.16
32.00	28.36	32.88	32.42	32.39	31.93	30.71	31.68	25.83

Transect-3 (Inzecca)								
CO-42								
#58	#59	#14	#20	#23	#24	#34	#35	#36
45.59	47.37	46.29	44.86	45.93	44.78	47.28	46.22	45.97
0.06	<i>bdl</i>	<i>bdl</i>	0.07	0.04	0.14	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
6.63	7.80	5.90	10.87	7.88	8.16	6.51	6.51	6.24
26.25	26.58	30.83	25.67	28.18	31.67	30.15	30.61	31.50
1.48	1.38	1.19	0.98	1.45	0.89	1.02	0.88	1.07
4.84	5.75	4.13	4.11	5.10	3.89	4.97	5.08	4.93
0.34	0.15	0.15	0.42	0.30	0.66	0.35	0.41	0.32
0.22	<i>bdl</i>	0.08	0.22	0.19	0.33	0.16	0.19	0.26
0.71	1.15	0.98	3.06	1.36	0.43	0.47	0.55	0.66
86.10	90.17	89.55	90.27	90.45	90.96	90.93	90.46	90.95
15.16	15.38	19.16	14.91	16.78	20.46	18.41	18.83	19.54
12.32	12.44	12.97	11.96	12.67	12.46	13.05	13.09	13.28
65.23	64.19	64.42	62.49	62.88	61.38	64.14	63.16	62.74
6.77	7.81	7.58	9.51	9.12	10.62	7.86	8.84	9.26
0.06	-	-	0.08	0.04	0.15	-	-	-
4.41	4.65	2.10	8.32	3.60	2.56	2.56	1.64	0.77
18.14	17.43	22.31	17.37	19.21	23.45	20.88	21.52	22.31
13.27	12.69	13.58	12.53	13.05	12.85	13.32	13.47	13.64
1.79	1.59	1.41	1.16	1.68	1.04	1.17	1.02	1.24
10.33	11.62	8.58	8.54	10.42	7.95	10.06	10.35	10.04
0.52	0.21	0.22	0.62	0.44	0.97	0.51	0.61	0.47
0.62	-	0.20	0.61	0.51	0.88	0.43	0.50	0.68
1.29	1.99	1.73	5.45	2.38	0.76	0.82	0.96	1.16
30.26	30.64	32.29	27.07	31.31	32.44	32.12	32.89	33.59

#45	#46	#54
45.80	45.37	46.41
0.08	0.04	<i>bdl</i>
6.20	6.13	6.72
29.66	29.89	29.53
1.01	1.69	1.01
5.02	5.41	4.83
0.30	0.19	0.28
0.10	0.05	0.38
0.54	0.47	1.19
88.71	89.25	90.33
18.15	18.40	17.62
12.79	12.77	13.23
63.68	62.50	63.96
8.32	9.50	8.04
0.09	0.05	-
1.84	0.45	2.87
21.10	21.20	20.31
13.38	13.23	13.72
1.19	1.97	1.17
10.40	11.11	9.92
0.44	0.29	0.42
0.27	0.13	1.01
0.96	0.83	2.08
32.69	34.27	31.40

Representative EMPA and chemical formulas of Biotite

Locality Sample Analysis	Transect1 (Castirla)			
	CO-38			
	#26	#27	#39	#41
SiO ₂ (wt%)	39.03	39.56	35.99	37.17
TiO ₂	0.55	0.58	0.68	0.92
Al ₂ O ₃	17.86	18.93	16.88	17.18
FeOt	22.50	21.56	26.69	24.42
MnO	0.30	0.30	0.47	0.40
MgO	4.01	3.90	5.08	4.37
CaO	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
Na ₂ O	<i>bdl</i>	0.04	0.06	<i>bdl</i>
K ₂ O	10.44	10.49	8.29	10.05
Total	94.71	95.37	94.15	94.51
<i>Formula (11 Oxygens; Fe_{total} = Fe²⁺)</i>				
Si (apfu)	3.019	3.015	2.858	2.925
Al ^[IV]	0.981	0.985	1.142	1.075
Ti	0.032	0.033	0.041	0.055
Al ^[VI]	0.647	0.715	0.438	0.518
Fe ²⁺	1.455	1.374	1.772	1.607
Mn	0.020	0.019	0.031	0.027
Mg	0.463	0.443	0.602	0.512
Ca	-	-	-	-
Na	-	0.007	0.009	-
K	1.030	1.020	0.840	1.009
^(a) XMg	0.24	0.24	0.25	0.24

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit.

(a) XMg as [Mg/(Mg+Fe²⁺)]

Representative EMPA and chemical formulas of Chlorite

Locality	Transect1 (Castirla)					
	CO-25					
Sample	#7	#8	#10	#12	#14	#20
Analysis	#7	#8	#10	#12	#14	#20
SiO ₂ (wt%)	25.04	24.57	24.61	24.86	25.52	24.61
TiO ₂	<i>bdl</i>	<i>bdl</i>	0.04	0.05	0.05	<i>bdl</i>
Al ₂ O ₃	18.33	18.60	18.57	17.63	17.63	17.96
FeOt	35.45	35.49	36.57	36.52	35.31	36.68
MnO	1.22	1.15	1.08	1.00	1.01	1.16
MgO	7.74	7.26	7.44	7.34	7.39	6.74
CaO	<i>bdl</i>	0.06	0.04	0.34	0.45	<i>bdl</i>
Na ₂ O	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
K ₂ O	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.07	<i>bdl</i>
Total	87.77	87.13	88.34	87.74	87.42	87.15
<i>Formula (14 Oxygens)</i>						
Si (apfu)	2.818	2.793	2.762	2.825	2.909	2.812
Al ^[IV]	1.182	1.207	1.238	1.175	1.091	1.188
Ti	-	-	0.003	0.005	0.004	-
Al ^[VI]	1.249	1.285	1.218	1.185	1.277	1.232
Fe ²⁺	3.336	3.373	3.418	3.471	3.366	3.506
Fe ³⁺	-	-	0.014	-	-	-
Mn	0.116	0.111	0.103	0.096	0.097	0.112
Mg	1.298	1.230	1.245	1.243	1.255	1.148
^(a) XMg	0.27	0.26	0.26	0.26	0.27	0.24

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit

(a) XMg as [Mg / (Mg + Fe²⁺)].

		CO-38
#23	#32	#22
24.55	24.85	24.12
0.10	0.17	0.10
18.59	17.39	16.41
36.82	36.89	39.94
0.90	0.78	1.29
6.81	6.43	5.82
0.15	0.35	0.85
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
<i>bdl</i>	0.18	<i>bdl</i>
87.91	87.04	88.53
2.782	2.871	2.782
1.218	1.129	1.218
0.008	0.015	0.009
1.265	1.238	1.012
3.490	3.564	3.664
-	-	0.189
0.086	0.076	0.126
1.151	1.107	1.000
0.24	0.23	0.20

nit.

Representative EMPA and chemical formulas of Epidote

Locality Sample Analysis	Transect-1					
	CO-25	CO-38				
	#2	#36	#71	#72	#73	#74
SiO ₂ (wt%)	36.34	37.33	36.65	36.19	36.47	36.50
TiO ₂	<i>bdl</i>	0.10	0.04	<i>bdl</i>	<i>bdl</i>	0.04
Al ₂ O ₃	20.34	20.93	21.76	18.63	19.59	19.03
FeOt	15.13	15.32	13.12	17.19	16.05	16.84
MnO	0.35	0.29	0.64	0.18	0.16	0.23
MgO	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	0.07
CaO	22.55	21.54	22.65	22.78	23.02	23.00
Total	94.72	95.52	94.86	94.97	95.29	95.71
<i>Fe₂O₃</i>	16.82	17.04	14.59	19.11	17.83	18.72
<i>Mn₂O₃</i>	0.39	0.33	0.71	0.20	0.18	0.25
<i>Formula (12.5 Oxygens)</i>						
Si (apfu)	2.983	3.021	2.987	2.984	2.988	2.985
Ti	-	0.006	0.003	-	-	0.003
Al ^{Tot}	1.968	1.996	2.090	1.810	1.891	1.834
Fe ³⁺	1.039	1.037	0.894	1.185	1.099	1.152
Mn ³⁺	0.025	0.020	0.044	0.013	0.011	0.016
Mg	-	-	-	-	-	0.008
Ca	1.984	1.867	1.978	2.012	2.020	2.015
^(a) XPs	0.35	0.34	0.30	0.40	0.37	0.39

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit.

** Na₂O and K₂O always below detection limit.

(a) XPs: Pistacite as $[\text{Fe}^{3+} / (\text{Fe}^{3+} + \text{Al}^{3+})]$ atomic ratio.

Transect-2 (Vivario-Venaco)								
CO-35						CO-36		
#98	#6	#7	#11	#12	#17	#2	#15	#21
36.78	36.59	36.34	37.93	36.47	36.93	37.39	37.19	37.22
<i>bdl</i>	0.07	0.08	0.04	0.05	<i>bdl</i>	0.18	0.11	0.12
20.71	20.65	19.51	21.32	20.99	21.86	21.65	21.85	21.72
14.36	14.53	16.22	14.67	14.82	13.50	13.95	13.49	14.15
0.28	0.31	0.50	0.21	0.16	0.22	0.20	0.06	0.09
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
22.61	22.69	22.62	22.75	22.96	23.19	23.18	23.16	23.47
94.75	94.83	95.27	96.92	95.45	95.69	96.55	95.87	96.77
15.99	16.15	18.03	16.30	16.47	15.01	15.53	15.01	15.73
0.31	0.34	0.55	0.23	0.18	0.24	0.22	0.07	0.10
3.009	2.993	2.978	3.025	2.968	2.987	2.996	2.999	2.981
-	0.004	0.005	0.003	0.003	-	0.011	0.007	0.007
1.997	1.991	1.885	2.005	2.013	2.083	2.045	2.077	2.050
0.983	0.994	1.112	0.978	1.009	0.913	0.935	0.910	0.947
0.019	0.021	0.035	0.014	0.011	0.015	0.013	0.004	0.006
-	-	-	-	-	-	-	-	-
1.982	1.989	1.986	1.944	2.003	2.009	1.991	2.001	2.016
0.33	0.33	0.37	0.33	0.33	0.30	0.31	0.30	0.32

		Transect-3 (Inzecca)	
		CO-42	
#31	#32	#105	#106
37.18	37.29	37.42	38.53
0.16	0.26	<i>bdl</i>	0.18
23.49	23.66	26.00	28.22
11.01	11.45	8.45	6.41
0.37	0.25	0.26	0.06
<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
21.18	22.20	23.67	24.14
93.39	95.11	95.81	97.55
12.26	12.74	9.40	7.13
0.42	0.28	0.29	0.07
3.035	3.002	2.976	2.987
0.010	0.016	-	0.010
2.260	2.245	2.437	2.578
0.752	0.771	0.562	0.415
0.026	0.017	0.018	0.004
-	-	-	-
1.852	1.915	2.017	2.005
0.25	0.26	0.19	0.14

Representative EMPA and chemical formulas of Garnet

Locality						
Sample						
Analysis	#56	#57	#60	#62	#63	#77
SiO ₂ (wt%)	33.96	33.70	34.32	34.76	34.13	33.65
TiO ₂	0.24	0.08	1.12	0.19	0.18	0.17
Al ₂ O ₃	5.61	5.13	6.89	8.85	6.49	6.23
FeOt	20.22	20.94	17.64	17.02	18.71	19.52
MnO	0.43	0.40	1.39	2.54	0.68	0.66
MgO	0.05	0.05	<i>bdl</i>	0.05	<i>bdl</i>	0.10
CaO	34.49	34.35	33.02	32.59	33.86	32.93
Total	94.99	94.65	94.36	95.99	94.06	93.25
<i>Fe₂O₃</i>	<i>22.47</i>	<i>23.27</i>	<i>19.01</i>	<i>18.69</i>	<i>20.79</i>	<i>21.68</i>
<i>FeO</i>	<i>-</i>	<i>-</i>	<i>0.54</i>	<i>0.20</i>	<i>-</i>	<i>0.01</i>
<i>H₂O</i>	<i>1.62</i>	<i>1.68</i>	<i>1.11</i>	<i>1.45</i>	<i>1.22</i>	<i>1.33</i>
<i>Formula (8 Cations)</i>						
Si (apfu)	2.779	2.770	2.847	2.805	2.831	2.814
H /4	0.221	0.230	0.153	0.195	0.169	0.186
Ti	0.015	0.005	0.070	0.012	0.011	0.011
Al ^{Tot}	0.541	0.497	0.674	0.842	0.634	0.614
Fe ³⁺	1.384	1.439	1.187	1.135	1.298	1.365
Fe ²⁺	-	-	0.037	0.014	-	0.001
Mn ³⁺	0.030	0.028	0.098	0.174	0.048	0.047
Mg	0.006	0.006	-	0.006	-	0.013
Ca	3.024	3.025	2.935	2.818	3.009	2.951
^(a) Grs	0.275	0.247	0.341	0.365	0.317	0.294
^(a) Hgr	0.074	0.077	0.051	0.065	0.056	0.062
^(a) Adr	0.713	0.742	0.615	0.571	0.668	0.686
^(a) Alm	-	-	0.012	0.005	-	-
^(a) Prp	0.002	0.002	-	0.002	-	0.004
^(a) Sps	0.010	0.009	0.032	0.058	0.016	0.016

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit

** Na₂O and K₂O always below detection limit.

(a) Grs: Grossular; Hgr: Hydrogrossular; Adr: Andradite; Alm: Almandine; Prp: Pyrope; Sp

Transect-2 (Vivario-Venaco)								
CO-35								
#78	#3	#4	#5	#6	#9	#10	#13	#14
34.53	33.45	34.70	34.30	35.63	34.71	34.78	34.78	33.73
0.19	0.43	0.31	0.18	0.41	0.06	0.13	<i>bdl</i>	<i>bdl</i>
6.83	7.05	8.32	6.35	8.98	4.50	7.92	5.53	8.16
19.32	19.11	17.59	20.18	16.83	22.05	17.81	20.70	17.77
0.34	0.44	1.05	0.34	3.79	0.37	1.05	1.29	0.41
0.15	<i>bdl</i>	<i>bdl</i>	0.07	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
33.50	34.83	34.02	34.48	30.97	33.92	34.16	33.81	35.18
94.86	95.32	95.99	95.89	96.62	95.62	95.85	96.11	95.24
21.22	21.22	19.35	22.43	17.73	24.51	19.79	23.00	19.75
0.23	0.02	0.18	-	0.87	-	-	-	-
1.15	2.36	1.53	1.68	0.71	0.93	1.39	1.14	2.27
2.842	2.684	2.794	2.774	2.903	2.871	2.813	2.844	2.698
0.158	0.316	0.206	0.226	0.097	0.129	0.187	0.156	0.302
0.012	0.026	0.019	0.011	0.025	0.004	0.008	-	-
0.663	0.667	0.790	0.605	0.862	0.439	0.755	0.533	0.769
1.314	1.281	1.173	1.365	1.087	1.525	1.205	1.416	1.189
0.016	0.001	0.012	-	0.060	-	-	-	-
0.024	0.030	0.072	0.023	0.262	0.026	0.072	0.089	0.028
0.018	-	-	0.008	-	-	-	-	-
2.954	2.995	2.935	2.987	2.704	3.006	2.960	2.962	3.015
0.320	0.341	0.380	0.301	0.343	0.216	0.364	0.244	0.384
0.053	0.105	0.069	0.075	0.032	0.043	0.062	0.052	0.101
0.661	0.649	0.592	0.689	0.551	0.775	0.612	0.727	0.607
0.005	-	0.004	-	0.020	-	-	-	-
0.006	-	-	0.003	-	-	-	-	-
0.008	0.010	0.024	0.008	0.087	0.009	0.024	0.029	0.009

mit.

ps: Spessartine.

#15	#16	#19
33.29	33.12	33.95
<i>bdl</i>	<i>bdl</i>	0.11
7.61	5.73	5.73
18.68	20.94	20.75
0.52	0.63	0.60
<i>bdl</i>	0.09	0.23
34.92	34.42	33.91
95.02	94.93	95.27
20.76	23.27	23.06
-	-	-
2.51	2.38	1.72
2.666	2.679	2.766
0.335	0.321	0.234
-	-	0.007
0.718	0.546	0.550
1.251	1.417	1.414
-	-	-
0.035	0.043	0.041
-	0.011	0.028
2.996	2.983	2.960
0.353	0.261	0.260
0.112	0.107	0.078
0.635	0.722	0.717
-	-	-
-	0.004	0.009
0.012	0.014	0.014

Representative EMPA and chemical formulas of Amphibole

Locality Sample Analysis	Transect-1		Transect-2		
	CO-38		CO-35	CO-36	
	#28	#29	#13	#29	#33
SiO ₂ (wt%)	53.36	53.36	52.98	55.13	57.28
TiO ₂	0.10	0.09	0.37	0.05	0.05
Al ₂ O ₃	1.29	1.07	1.48	0.56	0.55
FeOt	21.04	20.99	29.32	20.13	18.18
MnO	0.92	0.90	0.39	0.75	0.82
MgO	9.24	9.50	4.52	9.46	10.39
CaO	6.38	7.09	0.22	10.80	11.38
Na ₂ O	3.31	3.19	6.61	0.16	0.15
K ₂ O	0.85	0.79	0.25	0.13	0.06
Total	96.49	96.98	96.15	97.17	98.85
<i>Normalization Scheme: 13-CNK</i>					
Si (apfu)	7.625	7.608	7.953	8.000	8.000
Al	0.375	0.392	0.047	0.000	0.000
ΣT	8.000	8.000	8.000	8.000	8.000
Ti	0.018	0.018	0.042	0.006	0.005
Al	0.074	0.090	0.215	0.095	0.090
Fe ³⁺	1.196	1.173	1.705	1.101	1.488
Mn ²⁺	0.115	0.108	0.050	0.092	0.097
Fe ²⁺	2.598	2.689	1.976	1.343	0.636
Mg	0.999	0.922	1.012	2.046	2.163
ΣC	5.000	5.000	5.000	4.683	4.479
Ca	1.021	0.962	0.036	1.680	1.702
Na	0.873	1.013	1.924	0.046	0.040
ΣB	1.894	1.975	1.960	1.726	1.742
Na	-	-	-	0.000	0.000
K	0.153	0.157	0.048	0.023	0.110
ΣA	0.153	0.157	0.048	0.023	0.110
O (non-W)	22.000	22.000	22.000	22.000	22.000
W (OH)	2.000	2.000	2.000	2.000	2.000
$\Sigma(T, C, B, A)$	15.047	15.132	15.008	14.432	14.331
^(a) Species	Wnc	Wnc	Rbk	Act	Act

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit.

(a) IMA-2012 classification (Hawthorne et al., 2012), amphibole abbreviation follow Whitn

Transect-3								
CO-42								
#11	#12	#1	#2	#5	6	#7	8	#17
52.03	52.11	53.36	53.36	52.87	54.02	52.47	53.71	52.80
0.31	0.18	0.10	0.09	0.07	0.09	0.09	0.00	0.07
1.74	2.13	1.29	1.07	1.29	0.84	1.29	0.96	1.30
30.33	30.35	21.04	20.99	21.94	20.45	21.93	21.71	21.72
0.30	0.38	0.92	0.90	0.97	1.00	0.87	0.95	0.78
4.33	4.08	9.24	9.50	8.87	9.82	8.89	8.89	8.50
0.71	0.52	6.38	7.09	6.33	8.08	6.51	7.12	7.08
6.00	6.03	3.31	3.19	3.59	2.70	3.24	3.14	3.55
0.32	0.29	0.85	0.79	0.93	0.76	1.09	1.17	0.88
96.06	96.06	96.49	96.98	96.86	97.75	96.38	97.66	96.68
7.830	7.827	7.964	7.957	7.915	8.000	7.896	8.000	7.993
0.170	0.173	0.036	0.043	0.085	0.000	0.104	0.000	0.007
8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000
0.035	0.021	0.012	0.010	0.008	0.010	0.010	0.001	0.008
0.139	0.205	0.190	0.145	0.142	0.146	0.125	0.169	0.224
1.922	1.950	0.663	0.539	0.677	0.385	0.709	0.492	0.258
0.038	0.048	0.117	0.113	0.123	0.126	0.111	0.119	0.100
1.895	1.863	1.963	2.079	2.070	2.148	2.052	2.212	2.491
0.972	0.914	2.055	2.113	1.980	2.168	1.995	1.975	1.919
5.001	5.001	5.000	4.999	5.000	4.983	5.002	4.968	5.000
0.114	0.083	1.019	1.133	1.016	1.283	1.049	1.136	1.149
1.751	1.755	0.959	0.867	0.984	0.717	0.945	0.864	0.851
1.865	1.838	1.978	2.000	2.000	2.000	1.994	2.000	2.000
-	-	-	0.055	0.057	0.059	-	0.043	0.191
0.061	0.055	0.162	0.151	0.177	0.143	0.208	0.223	0.170
0.061	0.055	0.162	0.206	0.234	0.202	0.208	0.266	0.361
22.000	22.000	22.000	22.000	22.000	22.000	22.000	22.000	22.000
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
14.927	14.894	15.140	15.205	15.234	15.185	15.204	15.234	15.361
Rbk	Rbk	Wnc	Wnc	Wnc	Wnc	Wnc	Wnc	Wnc

ey and Evans (2010): riebeckite (Rbk), winchite (Wnc), actinolite (Act).

#18

51.61

1.58

1.94

21.97

0.84

7.50

8.19

2.77

0.80

97.19

7.848

0.152

8.000

0.181

0.196

-

0.108

2.794

1.699

4.978

1.334

0.666

2.000

0.149

0.156

0.305

22.000

2.000

15.283

Wnc

Representative EMPA and chemical formula of Titanite

Locality Sample Analysis	Transect-1						
	CO-24	CO-25		CO-38			
	#6	#22	#34	#6	#12	#13	#30
SiO ₂ (wt%)	30.27	29.09	29.71	29.74	30.30	29.72	30.28
TiO ₂	39.30	40.19	25.68	31.45	35.27	30.91	34.28
Al ₂ O ₃	1.29	1.96	8.25	5.08	2.94	5.02	2.89
Fe ₂ O ₃	0.69	0.95	6.70	2.54	1.39	2.11	2.37
Mn ₂ O ₃	<i>bdl</i>	<i>bdl</i>	0.21	<i>bdl</i>	<i>bdl</i>	0.12	0.09
CaO	28.04	26.61	23.33	27.46	27.92	26.56	26.92
Total	100.76	100.04	94.70	97.28	98.98	95.40	97.87
<i>Formula (5 Oxygens; Si = 1 apfu)</i>							
Si (apfu)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Al	0.050	0.079	0.327	0.201	0.114	0.199	0.112
Ti	0.977	1.039	0.650	0.795	0.876	0.782	0.852
Fe ³⁺	0.017	0.025	0.170	0.064	0.035	0.054	0.059
Ca	0.993	0.980	0.841	0.989	0.987	0.958	0.952

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit.

Transect-2							
CO-35							CO-36
#58	#59	#61	#64	#75	#79	#8	#3
31.83	30.58	30.72	30.30	29.21	31.10	31.12	30.29
26.37	29.71	27.34	28.44	32.83	29.43	27.82	36.51
5.68	4.20	6.53	5.68	6.00	4.70	6.76	2.62
4.84	4.15	3.08	2.99	4.83	3.98	3.14	0.39
0.17	0.07	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
26.79	28.62	27.90	28.16	22.72	27.69	28.35	27.50
96.55	98.21	96.41	96.43	96.57	97.85	98.04	98.38
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.210	0.162	0.251	0.221	0.242	0.178	0.256	0.102
0.623	0.731	0.669	0.706	0.846	0.712	0.672	0.906
0.114	0.102	0.075	0.074	0.124	0.096	0.076	0.010
0.902	1.003	0.973	0.996	0.834	0.954	0.976	0.973

Transect-3
CO-42
#60

27.78

30.15

4.40

7.07

0.06

23.88

94.22

1.000

0.187

0.816

0.191

0.921

Representative EMPA and chemical formulae of Ilvaite

Locality	Transect-1 (Castirla)						
Sample	CO-38						
Analysis	#1	#2	#5	#7	#10	#20	#21
SiO ₂ (wt%)	28.68	29.24	29.13	28.85	28.72	29.06	28.91
TiO ₂	0.20	0.42	0.11	0.49	0.40	0.21	0.18
Al ₂ O ₃	0.23	<i>bdl</i>	0.09	0.38	0.07	0.14	0.18
FeOt	49.06	48.73	49.59	48.40	49.82	48.74	48.08
MnO	2.86	3.02	3.11	2.90	2.97	2.67	2.77
MgO	0.18	0.11	0.14	0.25	0.11	0.16	0.16
CaO	13.54	13.68	13.50	13.20	13.51	13.87	13.52
Total	94.75	95.21	95.67	94.47	95.59	94.85	93.79
<i>FeO</i>	33.03	32.26	33.21	32.53	33.46	32.50	32.06
<i>Fe₂O₃</i>	17.82	18.30	18.21	17.64	18.18	18.05	17.81
<i>Formula (8.5 Oxygens; Al + Fe³⁺ = 1 apfu)</i>							
Si (apfu)	2.096	2.119	2.110	2.104	2.087	2.114	2.123
Al	0.020	-	0.008	0.032	0.006	0.012	0.016
Ti	0.011	0.023	0.006	0.027	0.022	0.012	0.010
Fe ²⁺	2.018	1.955	2.011	1.983	2.033	1.977	1.969
Fe ³⁺	0.980	0.998	0.992	0.968	0.994	0.988	0.984
Mn	0.177	0.185	0.191	0.179	0.183	0.165	0.172
Mg	0.019	0.012	0.015	0.027	0.012	0.017	0.017
Ca	1.060	1.062	1.047	1.031	1.052	1.081	1.064

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit.

** Na₂O and K₂O always below detection limit.

Representative EMPA and chemical formula of Magnetite and Il

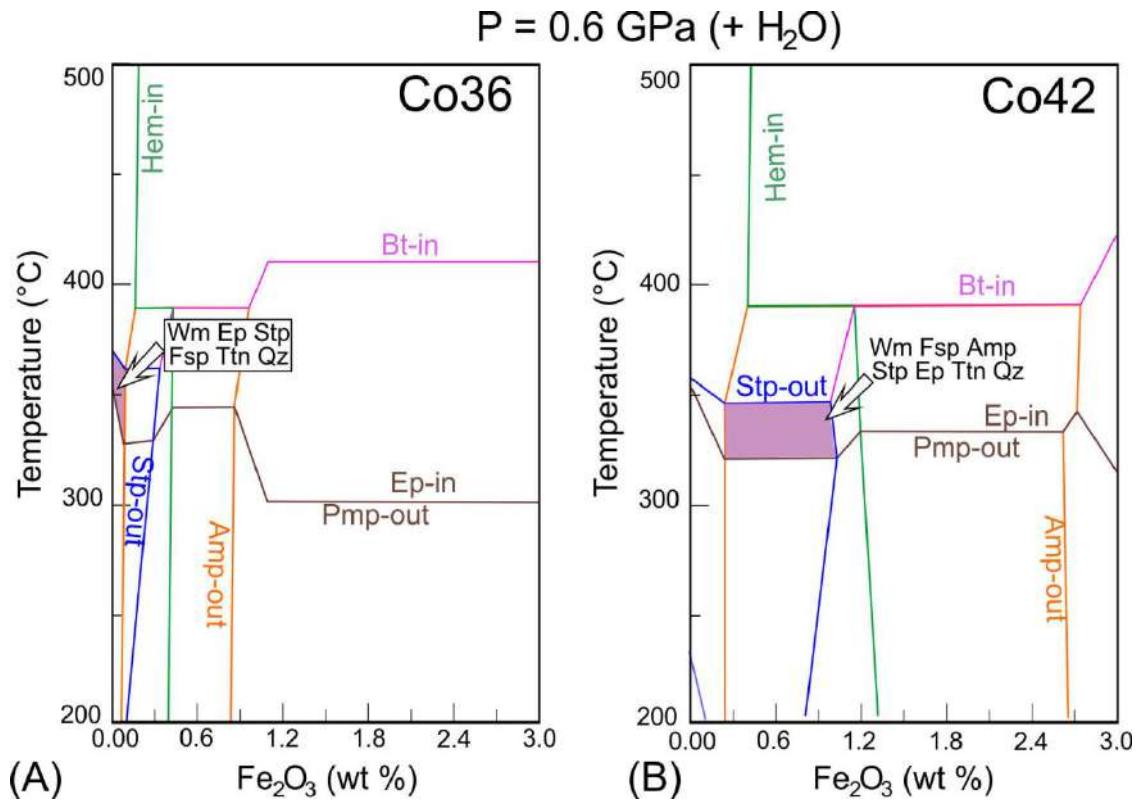
Locality	Transect-1 (Castirla)		
Sample	CO-38		
Analysis	#8	#9	#11
SiO ₂ (wt%)	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>
TiO ₂	51.24	51.88	51.96
Al ₂ O ₃	<i>bdl</i>	<i>bdl</i>	0.16
FeOt	39.50	38.45	37.09
MnO	7.90	7.90	8.06
MgO	0.03	0.03	0.03
Total	98.67	98.26	97.29
<i>FeO</i>	38.03	38.45	37.09
<i>Fe₂O₃</i>	1.64	-	-
<i>Formula (3 cations)</i>			
Si (apfu)	-	-	-
Ti	0.984	1.002	1.013
Al	-	-	0.005
Fe ³⁺	0.031	-	-
Fe ²⁺	0.812	0.825	0.804
Mn	0.171	0.172	0.177
Mg	0.001	0.001	0.001
Ca	-	-	-

* FeOt total iron reported as FeO; apfu: atoms per formula unit; bdl: below detection limit.

** CaO, BaO, Na₂O and K₂O always below detection limit.

Imenite

Supplementary Material#3 – T- Fe₂O₃ pseudosections calculated at 0.6 GPa for samples CO36 and CO42.



The FeO content (wt.%) is calculated as $\text{FeO} = \text{FeO}(\text{total}) - (\text{Fe}_2\text{O}_3/1.11135)$ (wt.%). Accordingly, the surplus O₂ used in P-T pseudosection calculation (Table 2) is obtained as in Fe₂O₃ as $\text{O}_2 = \text{Fe}_2\text{O}_3/(1.11125 * 0.11135) = 0.100193$ (rounded: 0.1).

Supplementary Material#4 - Ar-Ar in-situ data, Relative abundances.

	area	description	³⁶ Ar	%1σ	³⁷ Ar	%1σ	³⁸ Ar	%1σ	³⁹ Ar	%1σ	⁴⁰ Ar	%1σ
	μm ²		[fA]		[fA]		[fA]		[fA]		[fA]	
CO24 (J = 0.00577542±0.00000347, ±1σ)												
101G	60x160	Wm	0.0104	10.5	0.0075	861	0.2189	15	14.633	0.10	55.885	0.059
101H	60x160	Wm	0.0097	8.9	0.0130	390	0.1031	36	7.697	0.16	34.085	0.082
101J	100x100	Wm	0.0039	15.5	0.0375	139	0.1043	25	13.451	0.11	50.104	0.053
101K	60x160	Wm	0.0011	56.6	0.0320	134	0.0528	59	9.463	0.15	35.398	0.076
101L	60x160	Wm	0.0015	43.7	0.0759	48	0.0887	32	10.623	0.12	39.979	0.084
101N	60x160	Wm	0.0016	41.7	0.0257	261	0.1591	16	13.896	0.10	52.904	0.063
101O	60x160	Wm	0.0053	12.0	0.0025	2540	0.1105	29	11.100	0.12	47.786	0.080
101P	100x100	Wm	0.0020	30.1	0.0073	956	0.1671	15	12.186	0.12	48.187	0.083
101R	60x160	Wm	0.0436	1.6	0.0485	118	0.1383	18	12.604	0.09	61.110	0.044
101S	100x100	Wm	0.1545	0.5	0.0159	362	0.2289	10	14.964	0.07	104.382	0.027
101T	60x160	Wm	0.0021	30.0	0.0716	81	0.1336	26	10.482	0.10	40.004	0.069
101V	100x100	K-Fsp?	0.0350	2.0	0.1165	43	0.0866	33	6.972	0.21	61.019	0.064
101W	100x100	Wm	0.0028	29.6	0.0065	925	0.1575	15	12.903	0.11	54.603	0.079
216B	~60x200	Wm	-0.0003	220.5	0.5996	40	0.1050	29	5.798	0.22	23.947	0.171
216H	100x100	Wm	0.0023	24.9	0.1543	177	0.0976	39	9.162	0.12	39.040	0.064
216I	60x160	Wm	0.0097	7.1	0.2530	104	0.1286	28	8.648	0.17	34.163	0.097
216K	60x160	Wm	0.0080	8.1	0.0690	486	0.1463	18	8.577	0.15	35.664	0.100
216L	60x160	Wm	0.0162	4.5	0.1332	185	0.1219	25	8.935	0.18	39.048	0.092
216O	60x160	K-Fsp?	-0.0023	34.2	-0.0274	1256	0.1141	28	6.724	0.21	38.658	0.073
216P	100x100	K-Fsp	-0.0050	13.8	0.0894	573	0.1247	28	7.355	0.20	32.865	0.083
216R	100x100	Wm	0.0063	9.4	0.1428	284	0.0775	38	6.523	0.20	28.071	0.105
216S	100x100	Wm	0.0044	15.1	0.1416	250	0.1354	21	8.366	0.11	34.699	0.086
216U	100x100	K-Fsp	0.0346	2.0	0.6038	37	0.1980	14	12.462	0.11	180.459	0.019
216V	100x100	Wm	0.0034	18.8	0.2614	133	0.0614	58	6.780	0.16	32.277	0.105
216X	60x160	Wm	-0.0011	47.2	0.1469	207	0.0977	39	6.894	0.24	33.065	0.112
216Y	100x100	Wm(±K-Fsp?)	-0.0008	71.9	0.1523	163	0.1430	27	11.750	0.15	53.590	0.072
216Z	100x100	K-Fsp?	0.0038	17.3	0.0604	556	0.1385	26	9.824	0.20	61.924	0.062
217E	~60x160	Wm	0.0073	9.4	0.1630	197	0.0597	49	6.385	0.32	26.029	0.164
217F	30x200	K-Fsp?	0.0119	4.7	0.5410	60	0.1071	31	6.470	0.25	36.422	0.090
217H	~100x100	K-Fsp?	0.0167	3.3	0.1919	238	0.1298	25	10.295	0.15	56.088	0.053
217I	~100x100	K-Fsp?	0.0177	3.2	0.4439	98	0.0256	137	6.442	0.17	36.572	0.076
217K	~160x50	K-Fsp?	0.0060	12.2	-0.0259	1217	0.0836	50	3.046	0.46	17.851	0.247
217L	100x100	K-Fsp	0.0079	8.6	-0.0883	389	0.0620	73	4.201	0.32	23.179	0.158
217N	100x100	Wm	0.0013	42.3	0.0985	388	0.1015	38	8.692	0.14	32.033	0.090
217O	50x200	Wm	0.0004	139.8	0.1916	142	0.0499	76	4.936	0.28	18.744	0.230
217T	~60x160	Wm	0.0124	4.8	0.0715	539	0.0962	32	7.087	0.25	29.908	0.121
217U	100x100	Wm	0.0134	3.3	0.3041	91	0.0923	37	7.628	0.21	33.299	0.114
217W	100x100	Wm	-0.0021	23.5	0.1228	291	0.0893	49	7.058	0.24	25.950	0.133
217X	100x100	Wm	0.0025	25.6	0.3170	77	0.1139	32	7.646	0.20	29.098	0.123
218A	100x100	Wm	0.0035	17.7	0.1586	164	0.0972	35	9.267	0.22	35.138	0.124
218B	100x100	Wm	0.0056	9.1	0.1440	288	0.0497	66	7.908	0.22	32.399	0.123
218D	100x100	Wm(±K-Fsp?)	0.0005	107.2	0.0919	391	0.0588	68	5.387	0.24	23.449	0.154
218E	100x100	Wm	0.0022	21.4	0.1230	147	0.0393	122	4.557	0.32	18.821	0.176
218G	~160*65	K-Fsp?	0.0066	12.0	0.2895	83	0.1157	32	6.498	0.26	36.830	0.108
218H	100x100	Wm	0.0058	12.5	0.1409	150	0.1206	31	9.227	0.23	37.782	0.091
218J	100x100	Wm	0.0013	46.9	0.3835	75	0.1239	34	6.618	0.20	25.482	0.115
218K	100x100	Wm	0.0044	14.2	0.3705	87	0.1203	27	7.774	0.16	32.940	0.111
218Q	60x160	Wm	0.0026	30.3	0.0399	898	0.0808	44	4.787	0.29	19.622	0.182
218R	100x100	Wm	0.0037	19.5	0.1152	202	0.0719	49	4.911	0.24	21.078	0.124

	area	description	³⁶ Ar	%1σ	³⁷ Ar	%1σ	³⁸ Ar	%1σ	³⁹ Ar	%1σ	⁴⁰ Ar	%1σ
	μm ²		[fA]		[fA]		[fA]		[fA]		[fA]	
CO36 (J=0.00577996±0.00000231, ±1σ)												
84A	100x100	Wm	0.0134	5.0	0.3587	7.94	0.1940	15	17.584	0.1	63.060	0.04
84B	100x100	Wm	0.0048	13.1	0.0023	1203.51	0.0929	36	10.588	0.1	35.906	0.06
84C	100x100	Wm	0.0187	2.6	1.4755	2.33	0.2302	12	20.425	0.1	75.577	0.04
84E	~200x60	Wm	0.0166	4.1	0.5207	4.89	0.2463	11	20.071	0.1	67.299	0.04
84F	100x100	Wm	0.0169	4.7	0.2520	11.18	0.2752	11	23.560	0.1	81.973	0.04
84G	100x100	Wm	0.0214	3.3	0.7907	3.92	0.3375	8	25.376	0.0	93.870	0.03
84I	~100x100	Wm	0.0107	7.6	1.4448	2.09	0.1372	31	12.221	0.1	44.987	0.07
84J	60x60	Wm	0.0078	9.0	0.2672	11.14	0.0726	41	7.757	0.2	27.913	0.11
84N	100x100	Wm	0.0149	4.5	0.6922	3.15	0.2343	11	16.699	0.1	60.798	0.05
84O	200x60	Wm	0.0167	3.3	1.0071	2.49	0.3304	8	24.660	0.0	85.830	0.03
84Q	~200x60	Wm	0.0099	6.6	1.4072	2.21	0.2499	14	18.754	0.1	65.353	0.06
84R	~200x60	Wm	0.0117	5.6	0.4379	6.79	0.2106	15	18.463	0.1	62.959	0.05
84S	~100x100	Wm	0.0252	3.5	0.8151	3.18	0.2127	17	17.174	0.1	63.865	0.05
84U	~100x100	Wm	0.0192	2.5	0.8859	2.92	0.1727	16	19.197	0.1	69.682	0.04

84V	~100x100	Wm	0.0209	3.6	0.7972	3.85	0.2449	14	23.686	0.1	86.167	0.04
84W	~100x100	Wm	0.0393	1.9	1.3369	2.24	0.2774	10	26.452	0.0	98.845	0.04
84Z	~100x60	Wm	0.0440	1.6	0.8061	3.69	0.2281	10	17.634	0.1	70.748	0.05
85A	100x100	Wm	0.0072	9.8	0.2735	11.30	0.2199	13	16.303	0.1	54.146	0.06
85B	~300x30	Wm	0.0243	2.3	2.3917	1.32	0.2165	14	14.452	0.1	59.391	0.05
85G	~100x60	Wm	0.0161	4.0	1.6908	1.96	0.2177	12	19.086	0.1	69.024	0.04
85H	100x100	Wm	0.0145	4.9	1.1291	2.76	0.2809	8	23.229	0.1	82.663	0.04
85I	100x100	Wm	0.0181	2.9	0.2022	13.35	0.2641	11	24.008	0.1	84.997	0.03
85K	200x60	Wm	0.0234	4.1	2.8140	0.95	0.1650	19	13.863	0.1	53.078	0.05
85L	100x100	Wm	0.0139	5.5	2.6793	1.08	0.2473	11	24.051	0.1	82.528	0.04
85M	100x100	Wm	0.0209	3.4	1.2726	2.71	0.3257	9	29.053	0.1	104.047	0.03
85O	100x100	Wm	0.0355	2.0	3.2612	0.83	0.3183	15	25.368	0.0	93.080	0.04
85P	100x100	Wm	0.0159	4.5	3.0275	0.87	0.2636	16	17.783	0.1	64.088	0.05
85Q	100x100	Wm	0.0140	4.5	3.8033	0.67	0.2093	22	14.507	0.1	54.935	0.07
235A	160x60	Wm	0.0036	20.9	0.6046	105.33	0.0373	75	2.770	0.6	12.478	0.21
235C	100x100	Wm	0.0104	5.1	1.6528	26.06	0.1515	27	9.764	0.1	35.847	0.09
235D	100x100	Wm	0.0050	11.3	0.5859	73.28	0.1017	35	9.451	0.1	32.961	0.09
235F	100x100	Wm	0.0108	5.8	1.6621	36.61	0.2250	14	14.618	0.1	49.690	0.06
235G	100x100	Wm	0.0129	5.3	0.7949	75.97	0.2720	11	18.580	0.1	66.484	0.04
235I	100x100	Wm	0.0186	2.9	0.9965	33.30	0.2481	12	18.096	0.1	66.907	0.06
235J	~200x60	Wm	0.0178	2.5	0.8791	37.38	0.1290	21	9.783	0.1	38.829	0.08
235O	100x100	Wm	0.0049	12.8	0.2563	262.88	0.1599	19	9.126	0.1	30.332	0.11
235P	100x100	Wm	0.0099	6.4	0.1753	335.10	0.2310	15	17.391	0.1	59.851	0.05
235R	100x100	Wm	0.0214	3.4	0.1201	422.30	0.0372	101	0.157	7.9	6.897	0.32
235S	100x100	Wm	0.0275	2.2	1.9890	24.27	0.1611	22	15.192	0.1	58.001	0.06
235U	100x100	Wm	0.0282	2.4	1.2144	49.58	0.2712	13	23.625	0.1	84.561	0.04
235V	200x50	Wm	0.0198	2.8	0.8121	76.57	0.1356	30	11.237	0.1	43.548	0.08
235X	200x50	Wm	0.0520	1.3	1.3289	25.64	0.2993	9	20.704	0.1	84.820	0.04
235Y	100x100	Wm	0.0054	9.4	0.1872	325.50	0.0968	29	6.058	0.2	23.266	0.14

area	description	³⁶ Ar	%1σ	³⁷ Ar	%1σ	³⁸ Ar	%1σ	³⁹ Ar	%1σ	⁴⁰ Ar	%1σ	
μm ²		[fA]		[fA]		[fA]		[fA]		[fA]		
CO42 (J=0.00577784±0.00000347, ±1σ)												
91A	100x100	Wm	0.0050	12.4	0.0253	111.68	0.1883	20	12.285	0.1	52.292	0.07
91B	100x100	Wm	0.0087	6.9	0.0177	218.10	0.1802	18	11.981	0.1	51.621	0.09
91P	100x100	Wm	0.0006	141.5	0.0202	146.70	0.1956	21	17.353	0.1	68.167	0.06
91Q	100x100	Wm	0.0038	17.7	0.0720	40.06	0.1327	32	13.068	0.1	52.542	0.07
91S	100x100	Wm	0.0063	11.6	0.0386	92.68	0.0911	31	7.044	0.2	29.189	0.13
91T	100x100	Wm	0.0069	10.5	0.1198	29.82	0.2628	7	21.568	0.1	87.459	0.04
91U	100x100	Wm	0.0167	3.7	0.6444	6.73	0.0648	39	7.098	0.2	34.419	0.11
91W	100x100	Wm	0.0020	33.8	0.1960	22.08	0.2105	13	18.824	0.1	75.504	0.04
91X	100x100	Wm	0.0028	20.2	0.0293	99.99	0.2388	16	21.127	0.1	82.518	0.04
91Y	100x100	Wm	0.0028	21.0	0.0090	400.12	0.2143	12	17.441	0.1	76.909	0.04
92A	100x100	Wm	0.0058	11.0	0.1488	24.06	0.2340	16	15.338	0.1	62.175	0.06
92B	50x50	Wm	0.0018	39.3	-0.0020	2102.11	0.0960	27	7.453	0.2	34.365	0.10
92C	50x50	Wm	0.0028	25.3	0.0346	109.15	0.0844	38	4.988	0.3	27.586	0.14
92I	50x50	Wm	0.0005	147.8	0.0858	41.07	0.1262	32	6.193	0.2	24.261	0.14
92J	100x100	Wm	0.0046	13.6	0.8148	5.25	0.0816	56	6.274	0.2	28.407	0.11
92K	100x100	Wm	0.0065	11.0	0.0919	33.62	0.1593	29	8.537	0.2	35.208	0.11
92M	100x100	Wm	0.0017	36.6	0.0800	36.18	0.1154	22	13.248	0.1	74.278	0.03
92N	100x100	Wm	0.0061	11.7	0.1307	27.37	0.0170	160	8.739	0.2	35.247	0.10
92O	100x100	Wm	0.0048	14.2	0.0321	110.57	0.1256	22	14.483	0.1	58.274	0.05
92Q	100x100	Wm	0.0047	13.5	0.0426	68.20	0.1748	31	9.652	0.1	38.599	0.08
92R	~100x60	Wm	0.0159	2.9	0.0242	118.97	0.0532	101	5.331	0.3	28.624	0.10
233C	100x100	Wm	0.0006	110.1	0.3107	152.53	0.0480	105	3.539	0.4	17.350	0.38
233D	100x100	Wm	0.0055	12.7	0.1102	479.74	0.0682	67	4.297	0.3	18.146	0.26
233F	100x100	Wm	0.0070	9.0	0.4934	84.09	0.1544	16	10.329	0.2	46.358	0.11
233G	100x100	Wm	0.0136	4.6	0.8773	48.81	0.0916	33	7.477	0.2	33.030	0.13
233I	100x100	K-Fsp?	0.0088	7.7	0.2768	133.51	0.0498	117	3.924	0.3	25.830	0.16
233J	100x100	Wm	0.0020	36.5	0.1174	293.60	0.1624	37	11.871	0.1	56.194	0.07
233M	100x100	Pl	0.0095	6.4	0.4393	104.78	0.0293	120	0.061	22.5	4.676	0.71
233N	100x100	Wm	0.0048	12.2	0.0122	4607.78	0.1102	30	8.777	0.1	33.918	0.10
233Q	~200x65	Wm	0.0121	6.8	0.4346	134.25	0.1012	30	5.969	0.2	27.104	0.15
233R	100x100	Wm	0.0033	19.1	0.7987	66.68	0.2088	14	16.404	0.1	87.185	0.04
233T	100x100	Wm	0.0037	19.5	-0.4818	147.98	0.1890	16	16.672	0.1	70.385	0.04
233V	100x100	Wm	0.0017	44.8	-0.2066	306.22	0.1713	21	12.596	0.1	48.634	0.06
233X	100x100	Wm	0.0039	16.5	0.3795	198.79	0.0960	30	7.591	0.1	30.554	0.14
233Y	100x100	Wm	0.0024	19.3	0.1122	691.54	0.1275	22	8.286	0.2	32.666	0.12
234A	100x100	Wm	0.0037	15.6	0.3115	196.46	0.1691	28	15.054	0.1	59.392	0.06
234B	~100x100	Wm	0.0085	9.1	0.3768	169.12	0.2299	22	20.868	0.1	85.339	0.04
234H	100x100	Wm	0.0005	161.6	0.3347	217.40	0.1527	27	9.937	0.2	38.595	0.09
234I	100x100	Wm	0.0094	7.1	0.3371	153.37	0.2474	17	17.916	0.1	86.906	0.05
234K	160x60	K-Fsp?	-0.0011	64.4	0.5661	113.63	0.0066	775	1.747	0.9	11.537	0.33

Decay Constant 40K = 5.463 ± 0.214 E-10 1/a

Decay Constant 39Ar = 2.940 ± 0.016 E-07 1/h

Decay Constant 37Ar = 8.230 ± 0.012 E-04 1/h

Atmospheric Ratio 40/36(a) = 298.56 ± 0.30

Atmospheric Ratio 38/36(a) = 0.1869 ± 0.0003

Production Ratio 39/37(ca) = 0.000696 ± 0.000015

Production Ratio 38/37(ca) = 0.000058 ± 0.000005

Production Ratio 36/37(ca) = 0.000269 ± 0.000005

Production Ratio 40/39(k) = 0.00973 ± 0.00012

Production Ratio 38/39(k) = 0.01265 ± 0.00014

$^{40}\text{Ar}^*/^{39}\text{Ar}_{(\text{K})}$	$\pm 2\sigma$	Age (Ma)	$\pm 2\sigma$	$^{40}\text{Ar}^*$ (%)	$^{39}\text{Ar}_{(\text{K})}$ (%)	K/Ca	$\pm 2\sigma$
3.5978	0.0453	37.64	0.47	94.2	3.5	1037	17864
4.0420	0.0685	42.24	0.71	91.3	1.9	313	2440
3.6285	0.0282	37.96	0.29	97.4	3.2	190	530
3.6980	0.0399	38.68	0.41	98.9	2.3	157	421
3.7133	0.0373	38.84	0.39	98.7	2.6	74	72
3.7631	0.0302	39.36	0.31	98.8	3.3	287	1499
4.1527	0.0363	43.38	0.37	96.5	2.7	2330	118378
3.8946	0.0322	40.71	0.33	98.5	2.9	881	16831
3.8071	0.0339	39.81	0.35	78.5	3.0	138	325
3.8828	0.0343	40.59	0.36	55.7	3.6	498	3598
3.7483	0.0366	39.20	0.38	98.2	2.5	78	125
7.2462	0.0686	75.03	0.70	82.8	1.7	32	27
4.1568	0.0402	43.42	0.42	98.2	3.1	1045	19342
4.1453	0.0738	43.31	0.76	100.4	1.4	5	4
4.1774	0.0396	43.64	0.41	98.0	2.2	31	112
3.6080	0.0499	37.75	0.52	91.3	2.1	18	38
3.8715	0.0478	40.48	0.49	93.1	2.1	66	641
3.8192	0.0518	39.94	0.54	87.4	2.2	36	132
5.8428	0.0758	60.74	0.78	101.6	1.6	-130	3264
4.6632	0.0607	48.64	0.62	104.4	1.8	44	500
4.0060	0.0580	41.87	0.60	93.1	1.6	24	138
3.9829	0.0491	41.63	0.51	96.0	2.0	31	156
13.6460	0.0459	138.81	0.45	94.2	3.0	11	8
4.6045	0.0596	48.04	0.61	96.7	1.6	14	37
4.8368	0.0529	50.43	0.54	100.8	1.7	25	103
4.5725	0.0332	47.71	0.34	100.3	2.8	41	133
6.1780	0.0483	64.17	0.49	98.0	2.4	86	958
3.7271	0.0702	38.98	0.73	91.4	1.5	21	82
5.0767	0.0585	52.89	0.60	90.2	1.6	6	8
4.9551	0.0363	51.64	0.37	90.9	2.5	28	135
4.8521	0.0563	50.59	0.58	85.5	1.5	8	15
5.2667	0.1541	54.84	1.58	89.9	0.7	-62	1518
4.9483	0.1040	51.57	1.07	89.7	1.0	-25	196
3.6311	0.0411	37.99	0.43	98.5	2.1	47	363
3.7664	0.0754	39.39	0.78	99.2	1.2	14	39
3.6870	0.0548	38.57	0.57	87.4	1.7	53	567
3.8325	0.0404	40.07	0.42	87.8	1.8	13	24
3.7559	0.0467	39.28	0.48	102.2	1.7	30	177
3.7002	0.0541	38.70	0.56	97.2	1.8	13	20
3.6708	0.0442	38.40	0.46	96.8	2.2	31	102
3.8783	0.0440	40.55	0.45	94.7	1.9	29	167
4.3172	0.0638	45.08	0.66	99.2	1.3	31	243
3.9760	0.0695	41.56	0.72	96.3	1.1	20	58
5.3576	0.0793	55.78	0.81	94.5	1.6	12	20
3.8977	0.0513	40.75	0.53	95.2	2.2	35	104
3.7868	0.0588	39.60	0.61	98.3	1.6	9	14
4.0630	0.0507	42.46	0.52	95.9	1.9	11	19
3.9310	0.1014	41.09	1.05	95.9	1.2	64	1142
4.0626	0.0899	42.45	0.93	94.6	1.2	23	91
$^{40}\text{Ar}^*/^{39}\text{Ar}_{(\text{K})}$	$\pm 2\sigma$	Age (Ma)	$\pm 2\sigma$	$^{40}\text{Ar}^*$ (%)	$^{39}\text{Ar}_{(\text{K})}$ (%)	K/Ca	$\pm 2\sigma$
3.35	0.02	35.12	0.25	93.5	2.4	26.0	4.9
3.25	0.04	34.03	0.38	95.7	1.5	2490	59933
3.42	0.02	35.87	0.16	92.5	2.8	7.34	0.81
3.10	0.02	32.50	0.22	92.4	2.8	20.4	2.9
3.26	0.02	34.13	0.22	93.6	3.2	50	12
3.44	0.02	36.04	0.18	93.0	3.5	17.0	2.2
3.42	0.04	35.84	0.43	92.9	1.7	4.48	0.49
3.29	0.06	34.51	0.58	91.5	1.1	15.4	3.8
3.37	0.02	35.28	0.26	92.5	2.3	12.8	1.5
3.27	0.01	34.29	0.15	94.0	3.4	13.0	1.5
3.32	0.02	34.83	0.22	95.4	2.6	7.06	0.77
3.21	0.02	33.68	0.23	94.2	2.5	22.3	3.8
3.27	0.03	34.32	0.32	88.0	2.4	11.2	1.3
3.33	0.02	34.85	0.17	91.6	2.6	11.5	1.3

3.37	0.02	35.29	0.20	92.6	3.3	15.7	2.0
3.29	0.02	34.45	0.18	88.0	3.6	10.5	1.1
3.26	0.02	34.19	0.26	81.3	2.4	11.6	1.4
3.18	0.03	33.35	0.28	95.8	2.2	31.6	7.8
3.61	0.02	37.81	0.26	87.8	2.0	3.20	0.33
3.36	0.02	35.22	0.22	92.9	2.6	5.98	0.64
3.37	0.02	35.27	0.20	94.6	3.2	10.9	1.2
3.31	0.01	34.65	0.15	93.4	3.3	63	18
3.33	0.04	34.91	0.44	87.0	1.9	2.61	0.27
3.26	0.02	34.15	0.20	94.9	3.3	4.76	0.49
3.36	0.02	35.22	0.16	93.8	4.0	12.1	1.4
3.25	0.02	34.09	0.18	88.6	3.5	4.12	0.42
3.34	0.02	35.02	0.26	92.7	2.4	3.11	0.32
3.51	0.03	36.78	0.28	92.7	2.0	2.02	0.20
4.13	0.17	43.16	1.79	91.6	0.4	2.4	5.1
3.36	0.03	35.20	0.36	91.5	1.3	3.1	1.7
3.32	0.04	34.84	0.40	95.3	1.3	8.5	12.6
3.18	0.03	33.33	0.29	93.5	2.0	4.7	3.4
3.36	0.02	35.26	0.24	94.0	2.6	12	19
3.39	0.02	35.47	0.20	91.6	2.5	9.6	6.5
3.42	0.03	35.86	0.31	86.2	1.3	5.9	4.4
3.15	0.04	33.08	0.46	94.9	1.3	19	99
3.26	0.02	34.19	0.24	94.8	2.4	53	352
3.34	2.85	35.03	29.63	7.6	0.0	0.7	5.9
3.28	0.03	34.36	0.27	85.9	2.1	4.0	2.0
3.22	0.02	33.73	0.19	89.9	3.2	10.3	10.3
3.35	0.03	35.07	0.33	86.4	1.5	7.3	11.3
3.34	0.02	35.02	0.21	81.6	2.8	8.3	4.3
3.57	0.06	37.33	0.58	92.8	0.8	17	112

$^{40}\text{Ar}^*/^{39}\text{Ar}_{(\text{K})}$	$\pm 2\sigma$	Age (Ma)	$\pm 2\sigma$	$^{40}\text{Ar}^*$ (%)	$^{39}\text{Ar}_{(\text{K})}$ (%)	K/Ca	$\pm 2\sigma$
4.13	0.03	43.12	0.33	96.9	2.8	257	576
4.08	0.03	42.68	0.34	94.8	2.8	359	1568
3.91	0.03	40.88	0.30	99.5	4.0	455	1335
3.92	0.03	41.05	0.33	97.6	3.0	96	78
3.87	0.07	40.45	0.67	93.3	1.6	97	179
3.95	0.02	41.30	0.22	97.4	5.0	95	58
4.15	0.06	43.32	0.57	85.5	1.6	5.8	1.0
3.97	0.02	41.52	0.23	99.0	4.4	51	23
3.86	0.02	40.34	0.18	98.7	4.9	382	764
4.35	0.02	45.46	0.22	98.7	4.0	1021	8175
3.93	0.03	41.12	0.27	97.0	3.6	55	27
4.53	0.06	47.28	0.62	98.2	1.7	-1978	83151
5.36	0.09	55.78	0.93	96.8	1.2	76	167
3.88	0.08	40.62	0.80	99.1	1.4	38	32
4.31	0.06	45.04	0.65	95.2	1.5	4.08	0.59
3.89	0.05	40.67	0.54	94.3	2.0	49	33
5.56	0.03	57.87	0.31	99.2	3.1	88	64
3.82	0.05	39.94	0.52	94.7	2.0	35	20
3.92	0.03	40.94	0.31	97.3	3.4	239	529
3.84	0.04	40.20	0.42	96.1	2.2	120	164
4.47	0.06	46.68	0.60	83.3	1.2	117	277
4.85	0.12	50.60	1.24	99.0	0.8	6	18
3.83	0.10	40.09	1.08	90.8	1.0	21	198
4.28	0.04	44.72	0.42	95.4	2.4	11	19
3.88	0.05	40.54	0.57	87.7	1.7	4.5	4.4
5.91	0.11	61.45	1.16	89.8	0.9	8	20
4.68	0.04	48.79	0.40	98.8	2.8	54	315
31.22	15.41	303.34	137.81	40.3	0.0	0.07	0.16
3.69	0.04	38.62	0.45	95.5	2.0	383	35263
3.93	0.09	41.10	0.90	86.5	1.4	7	20
5.25	0.03	54.69	0.27	98.8	3.8	11	15
4.14	0.03	43.30	0.29	98.1	3.9	-18	54
3.81	0.04	39.86	0.39	98.7	2.9	-32	198
3.87	0.05	40.45	0.56	96.1	1.8	11	42
3.85	0.04	40.25	0.41	97.6	1.9	39	541
3.86	0.03	40.42	0.26	97.9	3.5	26	101
3.96	0.02	41.40	0.24	96.8	4.8	29	99
3.86	0.05	40.41	0.49	99.5	2.3	16	68
4.69	0.02	48.90	0.26	96.6	4.2	28	86
6.81	0.28	70.62	2.84	103.1	0.4	1.6	3.7

Table SM 1. Ar-Ar in-situ data. Relative abundances.

	area	description	³⁶ Ar	%1σ	³⁷ Ar	%1σ	³⁸ Ar	%1σ	³⁹ Ar	%1σ	⁴⁰ Ar	%1σ
	μm ²		[fA]		[fA]		[fA]		[fA]		[fA]	
CO24 (J = 0.00577542±0.00000347, ±1σ)												
101G	60x160	WM	0.0104	10.5	0.0075	861	0.2189	15	14.633	0.10	55.885	0.059
101H	60x160	WM	0.0097	8.9	0.0130	390	0.1031	36	7.697	0.16	34.085	0.082
101J	100x100	WM	0.0039	15.5	0.0375	139	0.1043	25	13.451	0.11	50.104	0.053
101K	60x160	WM	0.0011	56.6	0.0320	134	0.0528	59	9.463	0.15	35.398	0.076
101L	60x160	WM	0.0015	43.7	0.0759	48	0.0887	32	10.623	0.12	39.979	0.084
101N	60x160	WM	0.0016	41.7	0.0257	261	0.1591	16	13.896	0.10	52.904	0.063
101O	60x160	WM	0.0053	12.0	0.0025	2540	0.1105	29	11.100	0.12	47.786	0.080
101P	100x100	WM	0.0020	30.1	0.0073	956	0.1671	15	12.186	0.12	48.187	0.083
101R	60x160	WM	0.0436	1.6	0.0485	118	0.1383	18	12.604	0.09	61.110	0.044
101S	100x100	WM	0.1545	0.5	0.0159	362	0.2289	10	14.964	0.07	104.382	0.027
101T	60x160	WM	0.0021	30.0	0.0716	81	0.1336	26	10.482	0.10	40.004	0.069
101V	100x100	Kfs?	0.0350	2.0	0.1165	43	0.0866	33	6.972	0.21	61.019	0.064
101W	100x100	WM	0.0028	29.6	0.0065	925	0.1575	15	12.903	0.11	54.603	0.079
216B	~60x200	WM	-0.0003	220.5	0.5996	40	0.1050	29	5.798	0.22	23.947	0.171
216H	100x100	WM	0.0023	24.9	0.1543	177	0.0976	39	9.162	0.12	39.040	0.064
216I	60x160	WM	0.0097	7.1	0.2530	104	0.1286	28	8.648	0.17	34.163	0.097
216K	60x160	WM	0.0080	8.1	0.0690	486	0.1463	18	8.577	0.15	35.664	0.100
216L	60x160	WM	0.0162	4.5	0.1332	185	0.1219	25	8.935	0.18	39.048	0.092
216O	60x160	Kfs?	-0.0023	34.2	-0.0274	1256	0.1141	28	6.724	0.21	38.658	0.073
216P	100x100	WM(±Kfs?)	-0.0050	13.8	0.0894	573	0.1247	28	7.355	0.20	32.865	0.083
216R	100x100	WM	0.0063	9.4	0.1428	284	0.0775	38	6.523	0.20	28.071	0.105
216S	100x100	WM	0.0044	15.1	0.1416	250	0.1354	21	8.366	0.11	34.699	0.086
216U	100x100	Kfs	0.0346	2.0	0.6038	37	0.1980	14	12.462	0.11	180.459	0.019
216V	100x100	WM	0.0034	18.8	0.2614	133	0.0614	58	6.780	0.16	32.277	0.105
216X	60x160	WM	-0.0011	47.2	0.1469	207	0.0977	39	6.894	0.24	33.065	0.112
216Y	100x100	WM(±Kfs?)	-0.0008	71.9	0.1523	163	0.1430	27	11.750	0.15	53.590	0.072
216Z	100x100	Kfs?	0.0038	17.3	0.0604	556	0.1385	26	9.824	0.20	61.924	0.062
217E	~60x160	WM	0.0073	9.4	0.1630	197	0.0597	49	6.385	0.32	26.029	0.164
217F	30x200	Kfs?	0.0119	4.7	0.5410	60	0.1071	31	6.470	0.25	36.422	0.090
217H	~100x100	Kfs?	0.0167	3.3	0.1919	238	0.1298	25	10.295	0.15	56.088	0.053
217I	~100x100	Kfs?	0.0177	3.2	0.4439	98	0.0256	137	6.442	0.17	36.572	0.076
217K	~160x50	Kfs?	0.0060	12.2	-0.0259	1217	0.0836	50	3.046	0.46	17.851	0.247
217L	100x100	Kfs	0.0079	8.6	-0.0883	389	0.0620	73	4.201	0.32	23.179	0.158
217N	100x100	WM	0.0013	42.3	0.0985	388	0.1015	38	8.692	0.14	32.033	0.090
217O	50x200	WM	0.0004	139.8	0.1916	142	0.0499	76	4.936	0.28	18.744	0.230
217T	~60x160	WM	0.0124	4.8	0.0715	539	0.0962	32	7.087	0.25	29.908	0.121
217U	100x100	WM	0.0134	3.3	0.3041	91	0.0923	37	7.628	0.21	33.299	0.114
217W	100x100	WM	-0.0021	23.5	0.1228	291	0.0893	49	7.058	0.24	25.950	0.133
217X	100x100	WM	0.0025	25.6	0.3170	77	0.1139	32	7.646	0.20	29.098	0.123
218A	100x100	WM	0.0035	17.7	0.1586	164	0.0972	35	9.267	0.22	35.138	0.124
218B	100x100	WM	0.0056	9.1	0.1440	288	0.0497	66	7.908	0.22	32.399	0.123
218D	100x100	WM(±Kfs?)	0.0005	107.2	0.0919	391	0.0588	68	5.387	0.24	23.449	0.154
218E	100x100	WM	0.0022	21.4	0.1230	147	0.0393	122	4.557	0.32	18.821	0.176
218G	~160*65	Kfs?	0.0066	12.0	0.2895	83	0.1157	32	6.498	0.26	36.830	0.108
218H	100x100	WM	0.0058	12.5	0.1409	150	0.1206	31	9.227	0.23	37.782	0.091
218J	100x100	WM	0.0013	46.9	0.3835	75	0.1239	34	6.618	0.20	25.482	0.115
218K	100x100	WM	0.0044	14.2	0.3705	87	0.1203	27	7.774	0.16	32.940	0.111
218Q	60x160	WM	0.0026	30.3	0.0399	898	0.0808	44	4.787	0.29	19.622	0.182
218R	100x100	WM	0.0037	19.5	0.1152	202	0.0719	49	4.911	0.24	21.078	0.124
	area	description	³⁶ Ar	%1σ	³⁷ Ar	%1σ	³⁸ Ar	%1σ	³⁹ Ar	%1σ	⁴⁰ Ar	%1σ
	μm ²		[fA]		[fA]		[fA]		[fA]		[fA]	
CO36 (J=0.00577996±0.00000231, ±1σ)												
84A	100x100	WM	0.0134	5.0	0.3587	7.94	0.1940	15	17.584	0.1	63.060	0.04
84B	100x100	WM	0.0048	13.1	0.0023	1203.51	0.0929	36	10.588	0.1	35.906	0.06
84C	100x100	WM	0.0187	2.6	1.4755	2.33	0.2302	12	20.425	0.1	75.577	0.04
84E	~200x60	WM	0.0166	4.1	0.5207	4.89	0.2463	11	20.071	0.1	67.299	0.04
84F	100x100	WM	0.0169	4.7	0.2520	11.18	0.2752	11	23.560	0.1	81.973	0.04
84G	100x100	WM	0.0214	3.3	0.7907	3.92	0.3375	8	25.376	0.0	93.870	0.03
84I	~100x100	WM	0.0107	7.6	1.4448	2.09	0.1372	31	12.221	0.1	44.987	0.07
84J	60x60	WM	0.0078	9.0	0.2672	11.14	0.0726	41	7.757	0.2	27.913	0.11
84N	100x100	WM	0.0149	4.5	0.6922	3.15	0.2343	11	16.699	0.1	60.798	0.05
84O	200x60	WM	0.0167	3.3	1.0071	2.49	0.3304	8	24.660	0.0	85.830	0.03
84Q	~200x60	WM	0.0099	6.6	1.4072	2.21	0.2499	14	18.754	0.1	65.353	0.06
84R	~200x60	WM	0.0117	5.6	0.4379	6.79	0.2106	15	18.463	0.1	62.959	0.05
84S	~100x100	WM	0.0252	3.5	0.8151	3.18	0.2127	17	17.174	0.1	63.865	0.05
84U	~100x100	WM	0.0192	2.5	0.8859	2.92	0.1727	16	19.197	0.1	69.682	0.04

84V	~100x100	WM	0.0209	3.6	0.7972	3.85	0.2449	14	23.686	0.1	86.167	0.04
84W	~100x100	WM	0.0393	1.9	1.3369	2.24	0.2774	10	26.452	0.0	98.845	0.04
84Z	~100x60	WM	0.0440	1.6	0.8061	3.69	0.2281	10	17.634	0.1	70.748	0.05
85A	100x100	WM	0.0072	9.8	0.2735	11.30	0.2199	13	16.303	0.1	54.146	0.06
85B	~300x30	WM	0.0243	2.3	2.3917	1.32	0.2165	14	14.452	0.1	59.391	0.05
85G	~100x60	WM	0.0161	4.0	1.6908	1.96	0.2177	12	19.086	0.1	69.024	0.04
85H	100x100	WM	0.0145	4.9	1.1291	2.76	0.2809	8	23.229	0.1	82.663	0.04
85I	100x100	WM	0.0181	2.9	0.2022	13.35	0.2641	11	24.008	0.1	84.997	0.03
85K	200x60	WM	0.0234	4.1	2.8140	0.95	0.1650	19	13.863	0.1	53.078	0.05
85L	100x100	WM	0.0139	5.5	2.6793	1.08	0.2473	11	24.051	0.1	82.528	0.04
85M	100x100	WM	0.0209	3.4	1.2726	2.71	0.3257	9	29.053	0.1	104.047	0.03
85O	100x100	WM	0.0355	2.0	3.2612	0.83	0.3183	15	25.368	0.0	93.080	0.04
85P	100x100	WM	0.0159	4.5	3.0275	0.87	0.2636	16	17.783	0.1	64.088	0.05
85Q	100x100	WM	0.0140	4.5	3.8033	0.67	0.2093	22	14.507	0.1	54.935	0.07
235A	160x60	WM	0.0036	20.9	0.6046	105.33	0.0373	75	2.770	0.6	12.478	0.21
235C	100x100	WM	0.0104	5.1	1.6528	26.06	0.1515	27	9.764	0.1	35.847	0.09
235D	100x100	WM	0.0050	11.3	0.5859	73.28	0.1017	35	9.451	0.1	32.961	0.09
235F	100x100	WM	0.0108	5.8	1.6621	36.61	0.2250	14	14.618	0.1	49.690	0.06
235G	100x100	WM	0.0129	5.3	0.7949	75.97	0.2720	11	18.580	0.1	66.484	0.04
235I	100x100	WM	0.0186	2.9	0.9965	33.30	0.2481	12	18.096	0.1	66.907	0.06
235J	~200x60	WM	0.0178	2.5	0.8791	37.38	0.1290	21	9.783	0.1	38.829	0.08
235O	100x100	WM	0.0049	12.8	0.2563	262.88	0.1599	19	9.126	0.1	30.332	0.11
235P	100x100	WM	0.0099	6.4	0.1753	335.10	0.2310	15	17.391	0.1	59.851	0.05
235R	100x100	WM	0.0214	3.4	0.1201	422.30	0.0372	101	0.157	7.9	6.897	0.32
235S	100x100	WM	0.0275	2.2	1.9890	24.27	0.1611	22	15.192	0.1	58.001	0.06
235U	100x100	WM	0.0282	2.4	1.2144	49.58	0.2712	13	23.625	0.1	84.561	0.04
235V	200x50	WM	0.0198	2.8	0.8121	76.57	0.1356	30	11.237	0.1	43.548	0.08
235X	200x50	WM	0.0520	1.3	1.3289	25.64	0.2993	9	20.704	0.1	84.820	0.04
235Y	100x100	WM	0.0054	9.4	0.1872	325.50	0.0968	29	6.058	0.2	23.266	0.14

area	description	³⁶ Ar	%1σ	³⁷ Ar	%1σ	³⁸ Ar	%1σ	³⁹ Ar	%1σ	⁴⁰ Ar	%1σ	
μm ²		[fA]		[fA]		[fA]		[fA]		[fA]		
CO42 (J=0.00577784±0.00000347, ±1σ)												
91A	100x100	WM	0.0050	12.4	0.0253	111.68	0.1883	20	12.285	0.1	52.292	0.07
91B	100x100	WM	0.0087	6.9	0.0177	218.10	0.1802	18	11.981	0.1	51.621	0.09
91P	100x100	WM	0.0006	141.5	0.0202	146.70	0.1956	21	17.353	0.1	68.167	0.06
91Q	100x100	WM	0.0038	17.7	0.0720	40.06	0.1327	32	13.068	0.1	52.542	0.07
91S	100x100	WM	0.0063	11.6	0.0386	92.68	0.0911	31	7.044	0.2	29.189	0.13
91T	100x100	WM	0.0069	10.5	0.1198	29.82	0.2628	7	21.568	0.1	87.459	0.04
91U	100x100	WM	0.0167	3.7	0.6444	6.73	0.0648	39	7.098	0.2	34.419	0.11
91W	100x100	WM	0.0020	33.8	0.1960	22.08	0.2105	13	18.824	0.1	75.504	0.04
91X	100x100	WM	0.0028	20.2	0.0293	99.99	0.2388	16	21.127	0.1	82.518	0.04
91Y	100x100	WM	0.0028	21.0	0.0090	400.12	0.2143	12	17.441	0.1	76.909	0.04
92A	100x100	WM	0.0058	11.0	0.1488	24.06	0.2340	16	15.338	0.1	62.175	0.06
92B	50x50	WM	0.0018	39.3	-0.0020	2102.11	0.0960	27	7.453	0.2	34.365	0.10
92C	50x50	WM	0.0028	25.3	0.0346	109.15	0.0844	38	4.988	0.3	27.586	0.14
92I	50x50	WM	0.0005	147.8	0.0858	41.07	0.1262	32	6.193	0.2	24.261	0.14
92J	100x100	WM	0.0046	13.6	0.8148	5.25	0.0816	56	6.274	0.2	28.407	0.11
92K	100x100	WM	0.0065	11.0	0.0919	33.62	0.1593	29	8.537	0.2	35.208	0.11
92M	100x100	WM	0.0017	36.6	0.0800	36.18	0.1154	22	13.248	0.1	74.278	0.03
92N	100x100	WM	0.0061	11.7	0.1307	27.37	0.0170	160	8.739	0.2	35.247	0.10
92O	100x100	WM	0.0048	14.2	0.0321	110.57	0.1256	22	14.483	0.1	58.274	0.05
92Q	100x100	WM	0.0047	13.5	0.0426	68.20	0.1748	31	9.652	0.1	38.599	0.08
92R	~100x60	WM	0.0159	2.9	0.0242	118.97	0.0532	101	5.331	0.3	28.624	0.10
233C	100x100	WM	0.0006	110.1	0.3107	152.53	0.0480	105	3.539	0.4	17.350	0.38
233D	100x100	WM	0.0055	12.7	0.1102	479.74	0.0682	67	4.297	0.3	18.146	0.26
233F	100x100	WM	0.0070	9.0	0.4934	84.09	0.1544	16	10.329	0.2	46.358	0.11
233G	100x100	WM	0.0136	4.6	0.8773	48.81	0.0916	33	7.477	0.2	33.030	0.13
233I	100x100	Kfs?	0.0088	7.7	0.2768	133.51	0.0498	117	3.924	0.3	25.830	0.16
233J	100x100	WM	0.0020	36.5	0.1174	293.60	0.1624	37	11.871	0.1	56.194	0.07
233M	100x100	PI	0.0095	6.4	0.4393	104.78	0.0293	120	0.061	22.5	4.676	0.71
233N	100x100	WM	0.0048	12.2	0.0122	4607.78	0.1102	30	8.777	0.1	33.918	0.10
233Q	~200x65	WM	0.0121	6.8	0.4346	134.25	0.1012	30	5.969	0.2	27.104	0.15
233R	100x100	WM	0.0033	19.1	0.7987	66.68	0.2088	14	16.404	0.1	87.185	0.04
233T	100x100	WM	0.0037	19.5	-0.4818	147.98	0.1890	16	16.672	0.1	70.385	0.04
233V	100x100	WM	0.0017	44.8	-0.2066	306.22	0.1713	21	12.596	0.1	48.634	0.06
233X	100x100	WM	0.0039	16.5	0.3795	198.79	0.0960	30	7.591	0.1	30.554	0.14
233Y	100x100	WM	0.0024	19.3	0.1122	691.54	0.1275	22	8.286	0.2	32.666	0.12
234A	100x100	WM	0.0037	15.6	0.3115	196.46	0.1691	28	15.054	0.1	59.392	0.06
234B	~100x100	WM	0.0085	9.1	0.3768	169.12	0.2299	22	20.868	0.1	85.339	0.04
234H	100x100	WM	0.0005	161.6	0.3347	217.40	0.1527	27	9.937	0.2	38.595	0.09
234I	100x100	WM	0.0094	7.1	0.3371	153.37	0.2474	17	17.916	0.1	86.906	0.05
234K	160x60	Kfs?	-0.0011	64.4	0.5661	113.63	0.0066	775	1.747	0.9	11.537	0.33

$^{40}\text{Ar}^*/^{39}\text{Ar}_{(\text{K})}$	$\pm 2\sigma$	Age	$\pm 2\sigma$	$^{40}\text{Ar}^*$	$^{39}\text{Ar}_{(\text{K})}$	K/Ca	$\pm 2\sigma$
		(Ma)		(%)	(%)		
3.5978	0.0453	37.64	0.47	94.2	3.5	1037	17864
4.0420	0.0685	42.24	0.71	91.3	1.9	313	2440
3.6285	0.0282	37.96	0.29	97.4	3.2	190	530
3.6980	0.0399	38.68	0.41	98.9	2.3	157	421
3.7133	0.0373	38.84	0.39	98.7	2.6	74	72
3.7631	0.0302	39.36	0.31	98.8	3.3	287	1499
4.1527	0.0363	43.38	0.37	96.5	2.7	2330	118378
3.8946	0.0322	40.71	0.33	98.5	2.9	881	16831
3.8071	0.0339	39.81	0.35	78.5	3.0	138	325
3.8828	0.0343	40.59	0.36	55.7	3.6	498	3598
3.7483	0.0366	39.20	0.38	98.2	2.5	78	125
7.2462	0.0686	75.03	0.70	82.8	1.7	32	27
4.1568	0.0402	43.42	0.42	98.2	3.1	1045	19342
4.1453	0.0738	43.31	0.76	100.4	1.4	5	4
4.1774	0.0396	43.64	0.41	98.0	2.2	31	112
3.6080	0.0499	37.75	0.52	91.3	2.1	18	38
3.8715	0.0478	40.48	0.49	93.1	2.1	66	641
3.8192	0.0518	39.94	0.54	87.4	2.2	36	132
5.8428	0.0758	60.74	0.78	101.6	1.6	-130	3264
4.6632	0.0607	48.64	0.62	104.4	1.8	44	500
4.0060	0.0580	41.87	0.60	93.1	1.6	24	138
3.9829	0.0491	41.63	0.51	96.0	2.0	31	156
13.6460	0.0459	138.81	0.45	94.2	3.0	11	8
4.6045	0.0596	48.04	0.61	96.7	1.6	14	37
4.8368	0.0529	50.43	0.54	100.8	1.7	25	103
4.5725	0.0332	47.71	0.34	100.3	2.8	41	133
6.1780	0.0483	64.17	0.49	98.0	2.4	86	958
3.7271	0.0702	38.98	0.73	91.4	1.5	21	82
5.0767	0.0585	52.89	0.60	90.2	1.6	6	8
4.9551	0.0363	51.64	0.37	90.9	2.5	28	135
4.8521	0.0563	50.59	0.58	85.5	1.5	8	15
5.2667	0.1541	54.84	1.58	89.9	0.7	-62	1518
4.9483	0.1040	51.57	1.07	89.7	1.0	-25	196
3.6311	0.0411	37.99	0.43	98.5	2.1	47	363
3.7664	0.0754	39.39	0.78	99.2	1.2	14	39
3.6870	0.0548	38.57	0.57	87.4	1.7	53	567
3.8325	0.0404	40.07	0.42	87.8	1.8	13	24
3.7559	0.0467	39.28	0.48	102.2	1.7	30	177
3.7002	0.0541	38.70	0.56	97.2	1.8	13	20
3.6708	0.0442	38.40	0.46	96.8	2.2	31	102
3.8783	0.0440	40.55	0.45	94.7	1.9	29	167
4.3172	0.0638	45.08	0.66	99.2	1.3	31	243
3.9760	0.0695	41.56	0.72	96.3	1.1	20	58
5.3576	0.0793	55.78	0.81	94.5	1.6	12	20
3.8977	0.0513	40.75	0.53	95.2	2.2	35	104
3.7868	0.0588	39.60	0.61	98.3	1.6	9	14
4.0630	0.0507	42.46	0.52	95.9	1.9	11	19
3.9310	0.1014	41.09	1.05	95.9	1.2	64	1142
4.0626	0.0899	42.45	0.93	94.6	1.2	23	91

1	WM	37.64	0.47
2	WM	37.75	0.52
3	WM	37.96	0.29
4	WM	37.99	0.43
5	WM	38.40	0.46
6	WM	38.57	0.57
7	WM	38.68	0.41
8	WM	38.70	0.56
9	WM	38.84	0.39
10	WM	38.98	0.73
11	WM	39.20	0.38
12	WM	39.28	0.48
13	WM	39.36	0.31
14	WM	39.39	0.78
15	WM	39.60	0.61
16	WM	39.81	0.35
17	WM	39.94	0.54
18	WM	40.07	0.42
19	WM	40.48	0.49
20	WM	40.55	0.45
21	WM	40.59	0.36
22	WM	40.71	0.33
23	WM	40.75	0.53
24	WM	41.09	1.05
25	WM	41.56	0.72
26	WM	41.63	0.51
27	WM	41.87	0.60
28	WM	42.24	0.71
29	WM	42.45	0.93
30	WM	42.46	0.52
31	WM	43.31	0.76
32	WM	43.38	0.37
33	WM	43.42	0.42
34	WM	43.64	0.41
35	WM(\pm Kfs?)	45.08	0.66
36	WM(\pm Kfs?)	47.71	0.34
37	WM	48.04	0.61
38	Kfs	48.64	0.62
39	WM	50.43	0.54
40	Kfs?	50.59	0.58
41	Kfs	51.57	1.07
42	Kfs?	51.64	0.37
43	Kfs?	52.89	0.60
44	Kfs?	54.84	1.58
45	Kfs?	55.78	0.81
46	Kfs?	60.74	0.78
47	Kfs?	64.17	0.49
48	Kfs?	75.03	0.70
49	Kfs	138.81	0.45

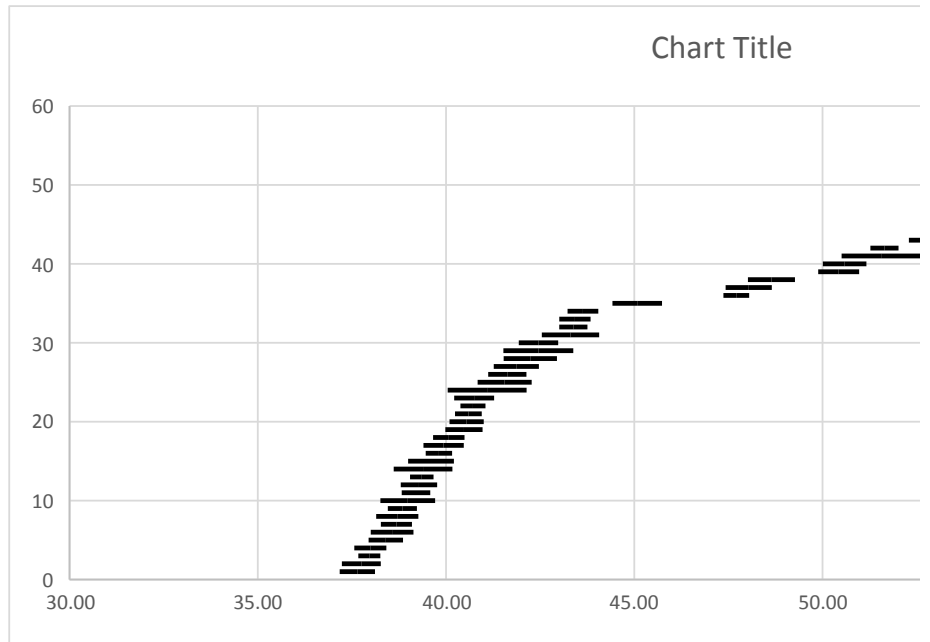
$^{40}\text{Ar}^*/^{39}\text{Ar}_{(\text{K})}$	$\pm 2\sigma$	Age	$\pm 2\sigma$	$^{40}\text{Ar}^*$	$^{39}\text{Ar}_{(\text{K})}$	K/Ca	$\pm 2\sigma$
		(Ma)		(%)	(%)		
3.35	0.02	35.12	0.25	93.5	2.4	26.0	4.9
3.25	0.04	34.03	0.38	95.7	1.5	2490	59933
3.42	0.02	35.87	0.16	92.5	2.8	7.34	0.81
3.10	0.02	32.50	0.22	92.4	2.8	20.4	2.9
3.26	0.02	34.13	0.22	93.6	3.2	50	12
3.44	0.02	36.04	0.18	93.0	3.5	17.0	2.2
3.42	0.04	35.84	0.43	92.9	1.7	4.48	0.49
3.29	0.06	34.51	0.58	91.5	1.1	15.4	3.8
3.37	0.02	35.28	0.26	92.5	2.3	12.8	1.5
3.27	0.01	34.29	0.15	94.0	3.4	13.0	1.5
3.32	0.02	34.83	0.22	95.4	2.6	7.06	0.77
3.21	0.02	33.68	0.23	94.2	2.5	22.3	3.8
3.27	0.03	34.32	0.32	88.0	2.4	11.2	1.3
3.33	0.02	34.85	0.17	91.6	2.6	11.5	1.3

1	32.50	0.22
2	33.08	0.46
3	33.33	0.29
4	33.35	0.28
5	33.68	0.23
6	33.73	0.19
7	34.03	0.38
8	34.09	0.18
9	34.13	0.22
10	34.15	0.20
11	34.19	0.26
12	34.19	0.24
13	34.29	0.15
14	34.32	0.32

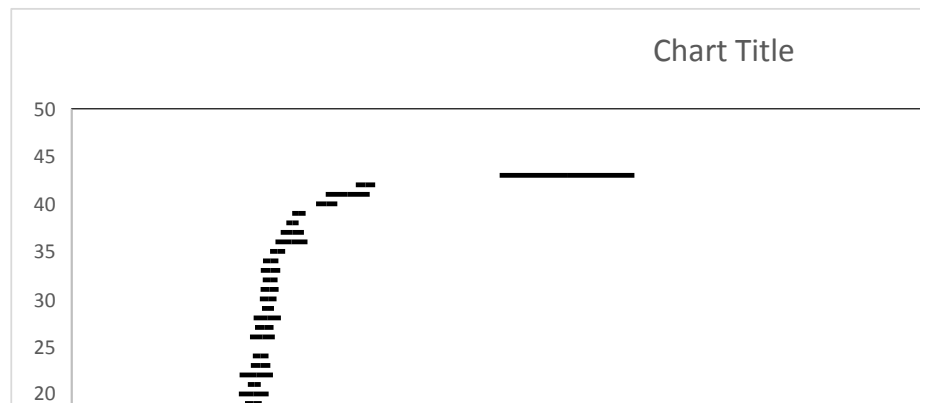
3.37	0.02	35.29	0.20	92.6	3.3	15.7	2.0	15	34.36	0.27
3.29	0.02	34.45	0.18	88.0	3.6	10.5	1.1	16	34.45	0.18
3.26	0.02	34.19	0.26	81.3	2.4	11.6	1.4	17	34.51	0.58
3.18	0.03	33.35	0.28	95.8	2.2	31.6	7.8	18	34.65	0.15
3.61	0.02	37.81	0.26	87.8	2.0	3.20	0.33	19	34.83	0.22
3.36	0.02	35.22	0.22	92.9	2.6	5.98	0.64	20	34.84	0.40
3.37	0.02	35.27	0.20	94.6	3.2	10.9	1.2	21	34.85	0.17
3.31	0.01	34.65	0.15	93.4	3.3	63	18	22	34.91	0.44
3.33	0.04	34.91	0.44	87.0	1.9	2.61	0.27	23	35.02	0.26
3.26	0.02	34.15	0.20	94.9	3.3	4.76	0.49	24	35.02	0.21
3.36	0.02	35.22	0.16	93.8	4.0	12.1	1.4	25	35.07	0.33
3.25	0.02	34.09	0.18	88.6	3.5	4.12	0.42	26	35.12	0.25
3.34	0.02	35.02	0.26	92.7	2.4	3.11	0.32	27	35.20	0.36
3.51	0.03	36.78	0.28	92.7	2.0	2.02	0.20	28	35.22	0.16
4.13	0.17	43.16	1.79	91.6	0.4	2.4	5.1	29	35.22	0.22
3.36	0.03	35.20	0.36	91.5	1.3	3.1	1.7	30	35.26	0.24
3.32	0.04	34.84	0.40	95.3	1.3	8.5	12.6	31	35.27	0.20
3.18	0.03	33.33	0.29	93.5	2.0	4.7	3.4	32	35.28	0.26
3.36	0.02	35.26	0.24	94.0	2.6	12	19	33	35.29	0.20
3.39	0.02	35.47	0.20	91.6	2.5	9.6	6.5	34	35.47	0.20
3.42	0.03	35.86	0.31	86.2	1.3	5.9	4.4	35	35.84	0.43
3.15	0.04	33.08	0.46	94.9	1.3	19	99	36	35.86	0.31
3.26	0.02	34.19	0.24	94.8	2.4	53	352	37	35.87	0.16
3.34	2.85	35.03	29.63	7.6	0.0	0.7	5.9	38	36.04	0.18
3.28	0.03	34.36	0.27	85.9	2.1	4.0	2.0	39	36.78	0.28
3.22	0.02	33.73	0.19	89.9	3.2	10.3	10.3	40	37.33	0.58
3.35	0.03	35.07	0.33	86.4	1.5	7.3	11.3	41	37.81	0.26
3.34	0.02	35.02	0.21	81.6	2.8	8.3	4.3	42	43.16	1.79
3.57	0.06	37.33	0.58	92.8	0.8	17	112			

$^{40}\text{Ar}^*/^{39}\text{Ar}_{(\text{K})}$	$\pm 2\sigma$	Age (Ma)	$\pm 2\sigma$	$^{40}\text{Ar}^*$ (%)	$^{39}\text{Ar}_{(\text{K})}$ (%)	K/Ca	$\pm 2\sigma$				
4.13	0.03	43.12	0.33	96.9	2.8	257	576	1	WM	38.62	0.45
4.08	0.03	42.68	0.34	94.8	2.8	359	1568	2	WM	39.86	0.39
3.91	0.03	40.88	0.30	99.5	4.0	455	1335	3	WM	39.94	0.52
3.92	0.03	41.05	0.33	97.6	3.0	96	78	4	WM	40.09	1.08
3.87	0.07	40.45	0.67	93.3	1.6	97	179	5	WM	40.20	0.42
3.95	0.02	41.30	0.22	97.4	5.0	95	58	6	WM	40.25	0.41
4.15	0.06	43.32	0.57	85.5	1.6	5.8	1.0	7	WM	40.34	0.18
3.97	0.02	41.52	0.23	99.0	4.4	51	23	8	WM	40.41	0.49
3.86	0.02	40.34	0.18	98.7	4.9	382	764	9	WM	40.42	0.26
4.35	0.02	45.46	0.22	98.7	4.0	1021	8175	10	WM	40.45	0.67
3.93	0.03	41.12	0.27	97.0	3.6	55	27	11	WM	40.45	0.56
4.53	0.06	47.28	0.62	98.2	1.7	-1978	83151	12	WM	40.54	0.57
5.36	0.09	55.78	0.93	96.8	1.2	76	167	13	WM	40.62	0.80
3.88	0.08	40.62	0.80	99.1	1.4	38	32	14	WM	40.67	0.54
4.31	0.06	45.04	0.65	95.2	1.5	4.08	0.59	15	WM	40.88	0.30
3.89	0.05	40.67	0.54	94.3	2.0	49	33	16	WM	40.94	0.31
5.56	0.03	57.87	0.31	99.2	3.1	88	64	17	WM	41.05	0.33
3.82	0.05	39.94	0.52	94.7	2.0	35	20	18	WM	41.10	0.90
3.92	0.03	40.94	0.31	97.3	3.4	239	529	19	WM	41.12	0.27
3.84	0.04	40.20	0.42	96.1	2.2	120	164	20	WM	41.30	0.22
4.47	0.06	46.68	0.60	83.3	1.2	117	277	21	WM	41.40	0.24
4.85	0.12	50.60	1.24	99.0	0.8	6	18	22	WM	41.52	0.23
3.83	0.10	40.09	1.08	90.8	1.0	21	198	23	WM	42.68	0.34
4.28	0.04	44.72	0.42	95.4	2.4	11	19	24	WM	43.12	0.33
3.88	0.05	40.54	0.57	87.7	1.7	4.5	4.4	25	WM	43.30	0.29
5.91	0.11	61.45	1.16	89.8	0.9	8	20	26	WM	43.32	0.57
4.68	0.04	48.79	0.40	98.8	2.8	54	315	27	WM	44.72	0.42
31.22	15.41	303.34	137.81	40.3	0.0	0.07	0.16	28	WM	45.04	0.65
3.69	0.04	38.62	0.45	95.5	2.0	383	35263	29	WM	45.46	0.22
3.93	0.09	41.10	0.90	86.5	1.4	7	20	30	WM	46.68	0.60
5.25	0.03	54.69	0.27	98.8	3.8	11	15	31	WM	47.28	0.62
4.14	0.03	43.30	0.29	98.1	3.9	-18	54	32	WM	48.79	0.40
3.81	0.04	39.86	0.39	98.7	2.9	-32	198	33	WM	48.90	0.26
3.87	0.05	40.45	0.56	96.1	1.8	11	42	34	WM	50.60	1.24
3.85	0.04	40.25	0.41	97.6	1.9	39	541	35	WM	54.69	0.27
3.86	0.03	40.42	0.26	97.9	3.5	26	101	36	WM	55.78	0.93
3.96	0.02	41.40	0.24	96.8	4.8	29	99	37	WM	57.87	0.31
3.86	0.05	40.41	0.49	99.5	2.3	16	68	38	Kfs?	61.45	1.16
4.69	0.02	48.90	0.26	96.6	4.2	28	86	39	Kfs?	70.62	2.84
6.81	0.28	70.62	2.84	103.1	0.4	1.6	3.7	40	Pl	303.34	137.81

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