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Supplemental Material

Figure S1. Geological map of A, Camlıca-Tire Klippe (Çetinkaplan 1995: Oberhansli et al. 2010; Candan et al. 2011c). B, Birgi (Candan 1996; Oberhansli et al. 2010). The stratigraphy from those studies is modified in this study.

Figure S2. Geological map of A, Yenisehir-Kiraz (Candan et al. 2001). B, Yahyaalcı-Alaşehir (Candan 1994; Candan and Dora 1998; Candan et al. 2011b). The stratigraphy from those studies is modified in this study.

Figure S3. Photomicrographs A, B, Garnet porphyroblast with amphibole inclusions in the garnet amphibolites (Grn-A). C, D, E, F, G, H rutile in the matrix is rimmed by fine-grained titanite in the garnet amphibolitic slices in Yahyaalcı-Alaşehir (Bozdağ Nappe) and Çamlıca-Tire Klippe (Çine Nappe). I, J, Sub-ophitic texture of the biotite bearing meta-gabbros (Bt-MG). K, L, R, S- Garnet porphyroblasts with amphibole inclusions in the retrogressed eclogites (REC). M, N- Rutile in the matrix overgrown by fine-grained titanite in the retrogressed eclogites (REG). O, P- Garnet porphyroblast with clinopyroxene inclusion in the retrogressed eclogites (REC). T, U- Garnet porphyroblast are rimmed by quartz crystals (REC). Grt-garnet, Amp-amphibole, Cpx-clinopyroxene, Bt-biotite, Pl-plagioclase, Rt-rutile, Ttn-titanite. Abbreviations for rock-forming minerals are taken from Whitney and Evans (2010).

Figure S4. CL images of the garnet amphibolite, A- Yahyaalçı-Alaşahir area (Bozdağ Nappe), B- Çamlıca-Tire Klippe area (Çine Nappe).

Figure S5. Rutile U-Pb dating spot locations.

Table S1. GPS locations of the sample locations studied. GPS coordinates are referenced to the Garmin Etrex 30X -WGS84 database.

Table S2. The precision and accuracy of known standard reference material (STD-SO-19) and analysis of sample EC4 by AES and ICP-MS.

Table S3. Electron micro probe analyze results of the minerals of the garnet amphibolite (TKC10) and retrogressed eclogite (K1) samples. The structural formulas were calculated based on 12 anhydrous oxygen for garnet, 6 anhydrous oxygen for clinopyroxene, 23 anhydrous oxygen for calcic amphiboles. $Fe2^{+}$ and Fe^{3+} were re-calculated from $Fe^{(t)}$ by the stoichiometric method of Droop (1987).

Table S4. LA-ICP-MS trace and REE data of garnet-amphibolite-TKC10 and retrogressed eclogite-K1 samples. Concentrations in ppm, calibrated from NIST612 values by reference of Si29 to concentration of SiO_2 determined by electron micro probe analysis.

Table S5. Estimated P&T conditions of the garnet amphibolite sample (TKC10) by amphibole-plagioclase Al-Si partitioning thermo-barometric empirical equations. EPMA mineralogical analysis are from Supplementary Table S3.

Table S6. Estimated retrogression P&T conditions of retrogressed eclogite sample (K1) by amphibole-plagioclase Al-Si partitioning thermo-barometric empirical equations. EPMA mineralogical analysis are from Supplementary Table S3.

Table S7. Zircon U-Pb geochronological results of ATY3 sample (Yahyaalci-Alaşehir area of Bozdağ Nappe).

Table S8. REE data of the dated zircon spots of ATY3, TKC10 and K1 samples.

Table S9. LA-ICP-MS zircon REE data of the garnet amphibolites in Yahyaalci-Alaşehir (Bozdağ Nappe), in Çamlıca-Tire Klippe (Çine Nappe) and retrogressed eclogite in Çamlıca-Tire Klippe (Çine Nappe).

Table S10. Rutile U-Pb geochronological results of TKC10 sample (Çamlıca-Tire Klippe, Çine Nappe).

Table S11. Zircon U-Pb geochronological results of retrogressed eclogite sample (K1) in Yenişehir-Kiraz, Çine Nappe.

Table S12. Geochemical analyse results of the garnet amphibolites, biotite- bearing meta-gabbros and retrogressed eclogites of the Menderes Nappes, Menderes Massif, Turkey (Yahyaalçı-Alaşehir, Bozdağ Nappe; Birgi, Çamlıca-Tire Klippe, Yenişehir-Kiraz, Çine Nappe).

APPENDIX 1. SAMPLE PREPARATIONS

Geochemical analyses (major, minor, trace and rare-earth elements) were realized by lithium borate fusion on inductively coupled plasma atomic emission spectrometry (ICP-OES) and inductively coupled plasma-mass spectrometry (ICP-MS) at Acme Analytical Laboratories (Vancouver, Canada).

After digestion of samples with HF and HCl, REE for Nd isotope studies were enriched through 2 ml volume BioRad AG50 W-X8 (100-200 mesh) resin by using 2.5 N HCl and then collected with 6 N HCl. Neodymium was separated from other REE in 2 ml HDEHP (bis-ethyexyl phosphate) coated biobeads (BioRad) resin with 0.22 N HCl, and loaded on double filaments with dilute H_3PO_4. $^{143}Nd/^{144}Nd$ ratios were normalized with $^{143}Nd/^{144}Nd = 0.7219$ and La Jolla Nd standard was measured as $^{143}Nd/^{144}Nd = 0.511847 \pm 2$ (n = 2), and no bias correction was applied. Isotopic ratios were measured with Thermo-Fisher Triton Thermal Ionization Mass Spectrometer. During the period of analyses, the AGV-2 USGS standard gave $^{143}Nd/^{144}Nd=0.512777\pm5$ (n=2). T_{DM} (Model age) values were calculated after Liew and Hofmann (1988).

Garnet amphibolite samples (ATY3: UTM WGS1984 - coordinate: 35S 0633891/4256486; TKC10: UTM coordinate: 35S 0583104/421404) and one retrogressed eclogite sample (K1: UTM 35S 0608553/4225878) were crushed in a jaw crusher, then in roller crusher and passed over a Gemini water table to remove lower-density minerals from the higher ones in the Sample Preparation Laboratory of Department of Geological Engineering in Middle East Technical University, Ankara-Turkey. The heavy-mineral rich residues were treated with tetrabromethane (bromoform; density, 2.89 g/cm^3) to separate the higher density minerals from the bulk. After that, magnetic minerals in the last phases were removed by using a hand magnet. The remaining heavy mineral rich phases were passed through the Frantz magnetic separator at 0.2 A. 0.4 A., 0.6 A, and 1.0 A. Zircon crystals were handpicked from the zircon-rich heavy mineral separates under a binocular stereo microscope. Cathodoluminescence (CL) imaging of the grains was carried out by using a ZEISS EVO-MA10 with a Gatan Mini CL detector at the Center for Isotope Geoscience, University of Florida (USA). Euhedral/subhedral zircon grains having oscillatory zoning were selected for determining their magmatic crystallization ages. U-Pb LA-ICP-MS zircon and rutile dating studies were performed at the Isotope Geology Lab at the University of Kansas (USA) using a Thermo Fisher Scientific Element II Sector Field ICP-MS couple to a photon machine ANALYTEG.1 193 nm ArF excimer laser ablating 20 µm diameter spots. The details of the working conditions are summarized in Gürsu et al. (2017). Selected zircon references (GJ1-Jackson et al., 2004; Plešovice- Slama et al., 2008; FCSZ- and FCT- Schmitz and Bowring, 2001 for zircon U-Pb dating; R10-Luvizotta et al., 2009 and T139-6- standards for rutile U-Pb dating) were used for the calibration, accuracy, reproducibility and for determining the unknowns during the analyses. Reference zircons of the known ages dated from the GJ1, Plešovice, FCSZ and FTC yielded 601.3±1.2 Ma, 336.9±1.1 Ma, 1072.8±4.2 Ma and 28.05±0.2 Ma concordia ages during measuring the unknowns, respectively. R10 & T139-6 reference rutile standards gave 1091.6±4.3 and 522.7±4.2 Ma, respectively, and were checked for calibration, precision/accuracy and to determine the unknowns during the analyses. Within run reproducibility of the reference, materials were better than 1% on the zircon U-Pb ages, and were propagated into the uncertainty of the unknowns. No results were corrected for common lead (^{204}Pb) in the study. Data processing was performed by using Iolite v2.5 (Paton et al., 2010) and VisualAge (Petrus and Kamber, 2012) operated with IGOR Pro software. Zircon and rutile age calculations were completed by using Isoplot v.4.15 (Ludwig, 2012).

Discordance percentage was determined from the following formula;

If the ^{206}Pb/^{238}U dates are younger than 1000 Ma;

Discordance% = (1 − [($^{207}Pb/^{235}U_{date}$)/($^{206}Pb/^{238}U_{date}$)])*100.

If the $^{206}Pb/^{238}U$ dates are older than 1000 Ma;

Discordance% = (1 − [($^{207}Pb/^{206}Pb_{date}$)/($^{206}Pb/^{238}U_{date}$)])*100.

The spots, which have higher discordance percentage (>±5 %), were considered as discordant age and were ignored in the dating calculations.

Elemental mapping and 2D-line profiles together with back-scattered electron images during in-situ quantitative mineral chemistry analyses were performed using a JEOL JXA-8230 Electron Microprobe (EPMA) at Central Laboratory of METU. 20 kV accelerating voltage, 20 nA probe current and 5 um spot size were applied as the operating conditions during analyses. The analytical precision of the oxides at the level of several weight percent is approximately 1-2 % relative and, for oxides present in lower abundances (<1 wt. %), the precision is 10-20 % relative. Some of the natural and synthetic standards were used for the calibration (Na: Albite, Si: Wollastonite, Al: Al_2O_3, Mg: MgO, Fe: Hematite, Mn: Rhodonite, Ni: Ni-metal, K: Orthoclase, Ca: Wollastonite, Ti: TiO_2, Cr: Chromite, Sr: $SrTiO_3$, Ba: Barite). Microprobe data were reduced using PRZ (XPP-metal/oxide) procedure of the JEOL software (details in Fazeli, et al., 2017). Trace and REE analyses of the garnet and zircon minerals of the samples were performed at the Central Laboratory for Water, Minerals and Rocks at the Graz University, Austria and University of Kansas by using LA-ICP-MS. The procedure described in detail by Jedlicka et al. (2015) was used during the trace and REE analyses of the garnet minerals of garnet amphibolite and retrogressed eclogite samples.

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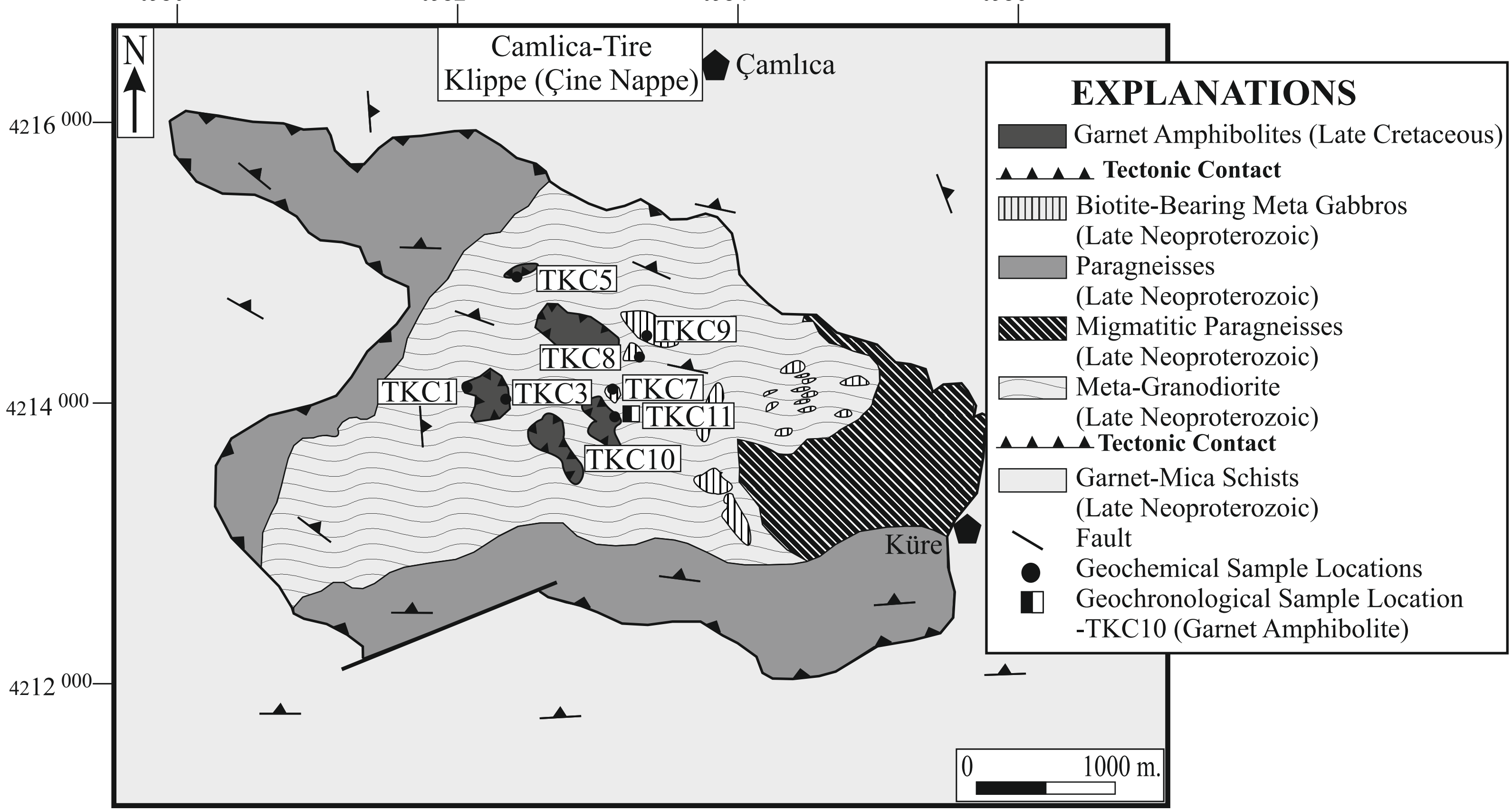
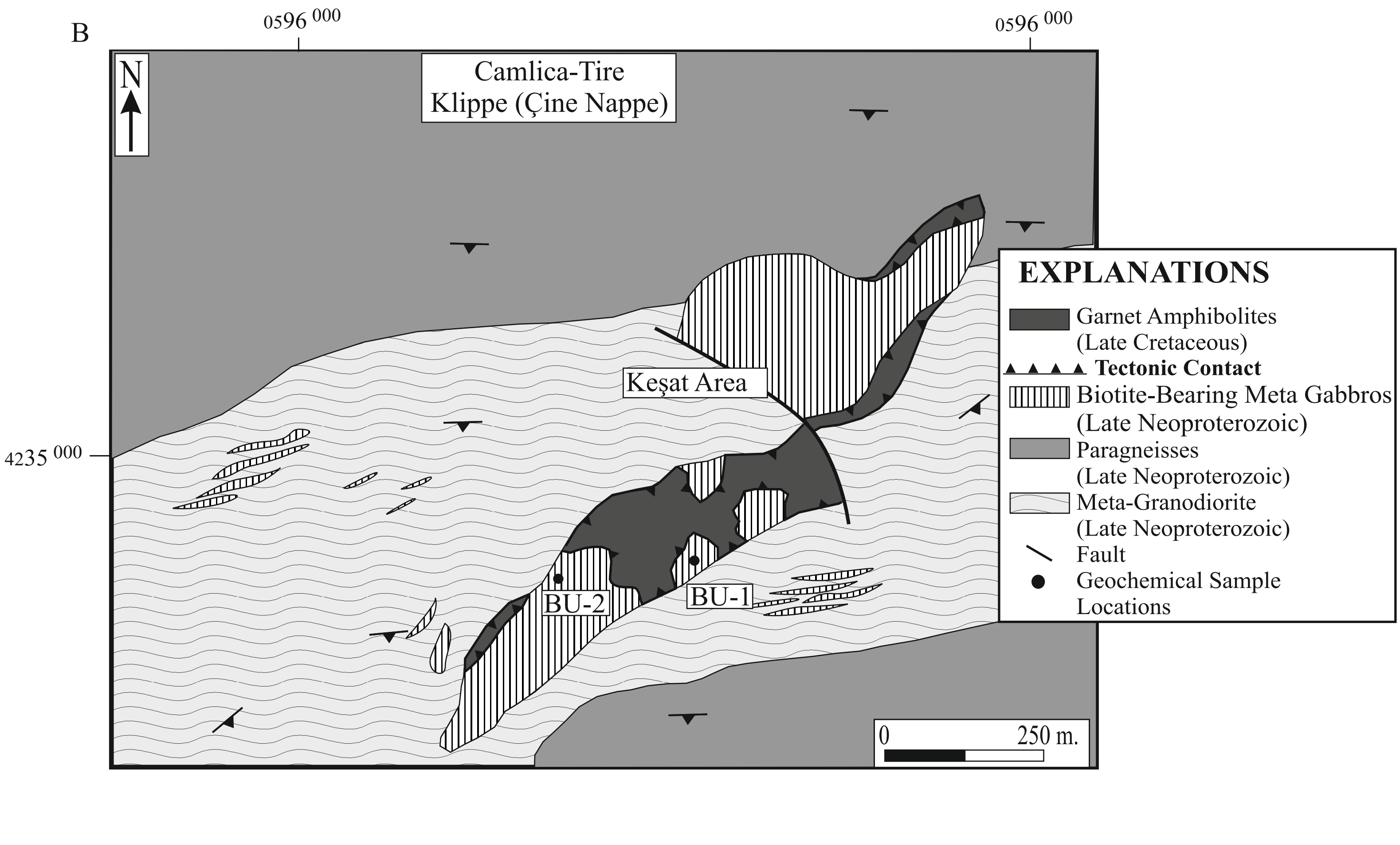


0580 000
0582 000
0584 000
0586 000
4216 000
4214 000
4212 000
N
Camlica-Tire
Klippe (Çine Nappe)
Çamlıca
Küre
TKC5
TKC9
TKC8
TKC1
TKC3
TKC7
TKC11
TKC10
0
1000 m.
EXPLANATIONS
Garnet Amphibolites (Late Cretaceous)
Tectonic Contact
Biotite-Bearing Meta Gabbros
(Late Neoproterozoic)
Paragneisses
(Late Neoproterozoic)
Migmatitic Paragneisses
(Late Neoproterozoic)
Meta-Granodiorite
(Late Neoproterozoic)
Tectonic Contact
Garnet-Mica Schists
(Late Neoproterozoic)
Fault
Geochemical Sample Locations
Geochronological Sample Location
-TKC10 (Garnet Amphibolite)

B



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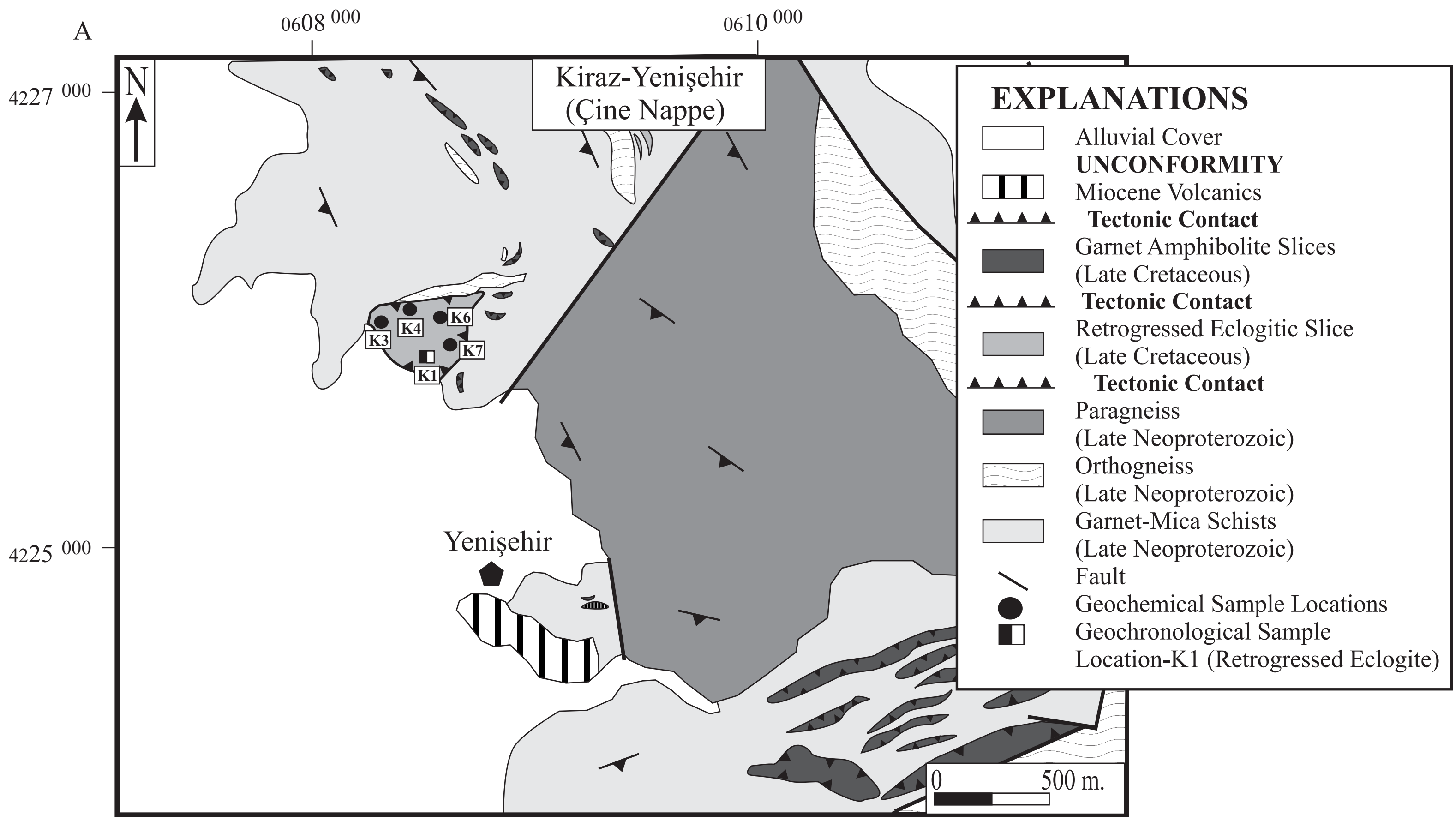
0596 000
4235 000
N
Camlica-Tire
Klippe (Çine Nappe)
Keşat Area
BU-2
BU-1
0
250 m.
EXPLANATIONS
Garnet Amphibolites
(Late Cretaceous)
Tectonic Contact
Biotite-Bearing Meta Gabbros
(Late Neoproterozoic)
Paragneisses
(Late Neoproterozoic)
Meta-Granodiorite
(Late Neoproterozoic)
Fault
Geochemical Sample
Locations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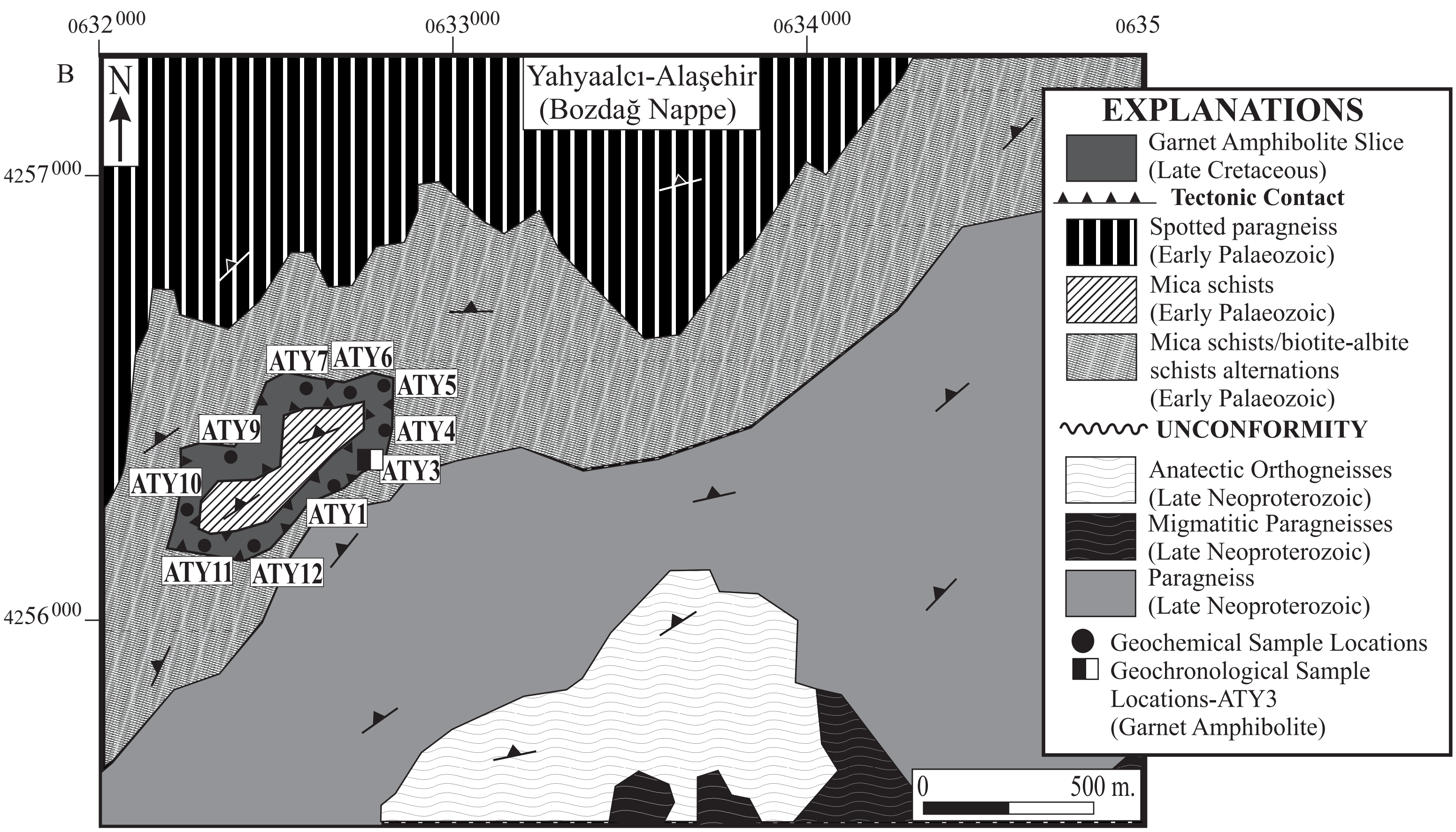
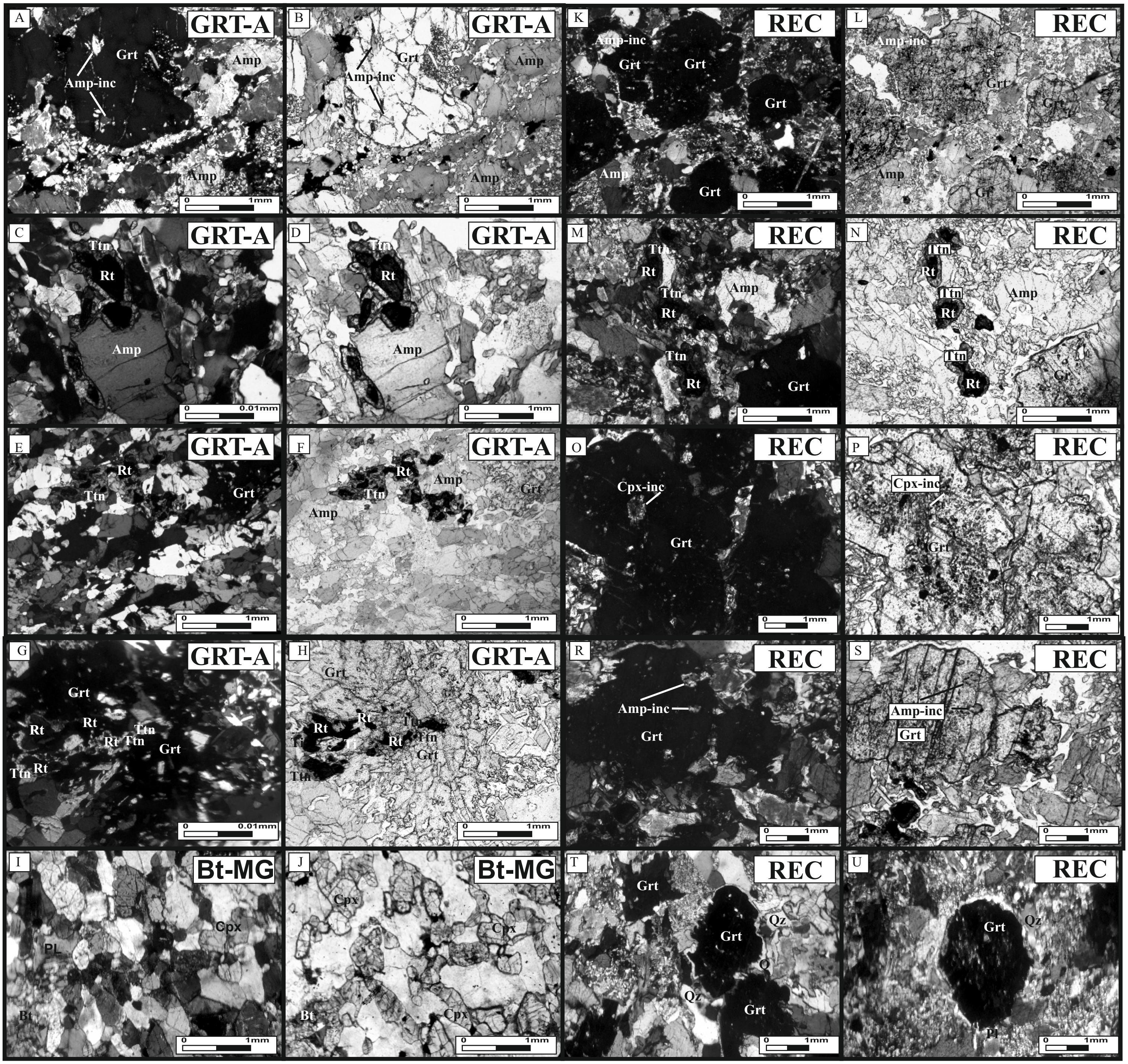
0610 000
4227 000
4225 000
N
Kiraz-Yenişehir
(Çine Nappe)
K3
K4
K6
K7
K1
Yenişehir
0
500 m.
EXPLANATIONS
Alluvial Cover
UNCONFORMITY
Miocene Volcanics
Tectonic Contact
Garnet Amphibolite Slices
(Late Cretaceous)
Tectonic Contact
Retrogressed Eclogitic Slice
(Late Cretaceous)
Tectonic Contact
Paragneiss
(Late Neoproterozoic)
Orthogneiss
(Late Neoproterozoic)
Garnet-Mica Schists
(Late Neoproterozoic)
Fault
Geochemical Sample Locations
Geochronological Sample
Location-K1 (Retrogressed Eclogite)


B
0632 000
0633000
0634 000
0635
4257000
4256000
N
Yahyaalcı-Alaşehir
(Bozdağ Nappe)
ATY7
ATY6
ATY5
ATY4
ATY3
ATY9
ATY10
ATY1
ATY11
ATY12
0
500 m.
EXPLANATIONS
Garnet Amphibolite Slice
(Late Cretaceous)
Tectonic Contact
Spotted paragneiss
(Early Palaeozoic)
Mica schists
(Early Palaeozoic)
Mica schists/biotite-albite
schists alternations
(Early Palaeozoic)
UNCONFORMITY
Anatectic Orthogneisses
(Late Neoproterozoic)
Migmatitic Paragneisses
(Late Neoproterozoic)
Paragneiss
(Late Neoproterozoic)
Geochemical Sample Locations
Geochronological Sample
Locations-ATY3
(Garnet Amphibolite)



A
GRT-A
Grt
Amp
Amp-inc
Amp
0 1mm
B
GRT-A
Amp-inc
Grt
Amp
Amp
0 1mm
K
REC
Amp-inc
Grt
Grt
Grt
Amp
Grt
0 1mm
L
REC
Amp-inc
Grt
Amp
0 1mm
C
GRT-A
Ttn
Rt
Amp
0 0.01mm
D
GRT-A
Ttn
Rt
Amp
0 1mm
M
REC
Ttn
Rt
Ttn
Rt
Amp
Ttn
Rt
Grt
0 1mm
N
REC
Ttn
Rt
Ttn
Rt
Amp
Ttn
Rt
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E
GRT-A
Rt
Ttn
Grt
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F
GRT-A
Rt
Amp
Ttn
Amp
Grt
0 1mm
O
REC
Cpx-inc
Grt
0 1mm
P
REC
Cpx-inc
Grt
0 1mm
G
GRT-A
Grt
Rt
Rt
Ttn
Rt
Ttn
Grt
Ttn
Rt
0 0.01mm
H
GRT-A
Grt
Rt
Rt
Ttn
Ttn
Rt
Grt
Ttn
0 1mm
R
REC
Amp-inc
Grt
0 1mm
S
REC
Amp-inc
Grt
0 1mm
I
Bt-MG
Cpx
PL
Bt
0 1mm
J
Bt-MG
Cpx
Cpx
Bt
Cpx
0 1mm
T
REC
Grt
Grt
Qz
Qz
Grt
0 1mm
U
REC
Grt
Qz
Pl
0 1mm


A
ATY3-Garnet Amphibolite-Bozdağ Nappe
ATY3-109
523.7±8.1 Ma
ATY3-136
523.7±9.5 Ma
ATY3-37r
542.2±8.3 Ma
ATY3-39c
523.8±8.6 Ma
ATY3-103
525.9±9.9 Ma
ATY3-161b
527.7±9.1 Ma
ATY3-133c
531.1±9.1 Ma
ATY3-132
528.4±9.6 Ma
ATY3-70
531.1±8.8 Ma
ATY3-106
532.1±9.6 Ma
ATY3-149
532.7±8.6 Ma
ATY3-116r
536.2±8.2 Ma
ATY3-111
536.7±7.7 Ma
ATY3-147
537.1±8.1 Ma
ATY3-53m
551.3±8.6 Ma
ATY3-52r
538.1±8.5 Ma
ATY3-54c
548.2±9.1 Ma
ATY3-84
538.4±8.9 Ma
ATY3-62
538.7±8.7 Ma
ATY3-99r
538.9±9.0 Ma
ATY3-100c
547.4±8.7 Ma
ATY3-141
538.9±8.9 Ma
ATY3-140
548.6±8.5 Ma
ATY3-165
541.5±9.4 Ma
ATY3-176r
538.9±9.3 Ma
ATY3-65
539.3±8.6 Ma
ATY3-110
540.1±9.0 Ma
ATY3-87
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ATY3-63
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ATY3-131
541.4±8.0 Ma
ATY3-128r
541.7±9.3 Ma
ATY3-47m
549.2±9.8 Ma
ATY3-48c
542±11 Ma
ATY3-46r
553.2±8.4 Ma
ATY3-56m
542.4±8.8 Ma
ATY3-55
548.5±9.3 Ma
ATY3-57c
548±8.8 Ma
ATY3-115
543.4±9.8 Ma
ATY3-77r
543.5±8.5 Ma
ATY3-42c
543.6±8.9 Ma
ATY3-41m
54.7±9.2 Ma
ATY3-40r
543.4±8.5 Ma
ATY3-135
542.9±11 Ma
ATY3-72
542.5±8.7 Ma
0 100 μ
B
TKC10-Garnet Amphibolite-Cine Nappe
TKC10-96
535.8±6.9 Ma
TKC10-10
536±11 Ma
TKC10-67
536.4±7.5 Ma
TKC10-04
533.8±9.3 Ma
TKC10-105
537.1±8.7 Ma
TKC10-62
537.6±7 Ma
TKC10-73
537.6±6.4 Ma
TKC10-72
527.9±7 Ma
TKC10-02
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TKC10-03
537.8±6.6 Ma
TKC10-101
538.1±8.1 Ma
TKC10-95
538.2±6.7 Ma
TKC10-68
533.6±9.5 Ma
TKC10-61
530.3±7.0 Ma
TKC10-60
538.4±8.9 Ma
TKC10-111
538.4±7.4 Ma
TKC10-56
538.7±6.9 Ma
TKC10-117
539.6±8 Ma
TKC10-66
539.8±9.7 Ma
TKC10-115
539.9±8.3 Ma
TKC10-114
539.8±7.6 Ma
TKC10-52
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TKC10-53
527.2±7.8 Ma
TKC10-108
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TKC10-91
540.4±9.4 Ma
TKC10-113
540.4±7.3 Ma
TKC10-97
540.8±7.0 Ma
TKC10-109
546.5±7.7 Ma
TKC10-110
540.9±7.4 Ma
TKC10-89
541±6.9 Ma
TKC10-103
545.2±6.9 Ma
TKC10-104
541±7.1 Ma
TKC10-08
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TKC10-59
541.7±6.9 Ma
TKC10-54
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TKC10-77
543.2±9.2 Ma
TKC10-69
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TKC10-65
543.8±6.9 Ma
TKC10-64
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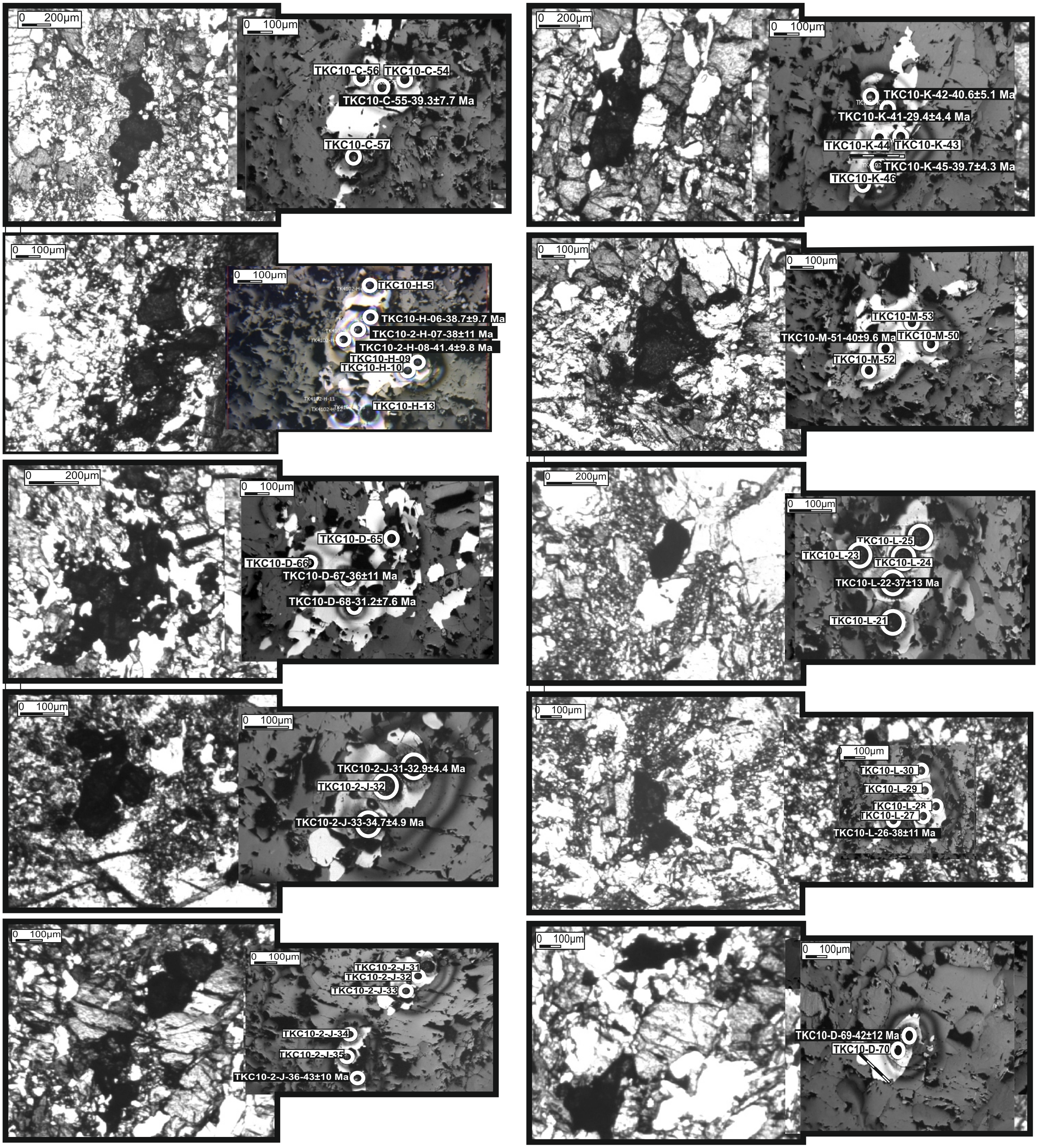
TKC10-63
543.9±7.5 Ma
TKC10-76
543.9±7.5 Ma
TKC10-79
544.5±8.6 Ma
TKC10-90
545.2±11 Ma
TKC10-106
545.3±7.7 Ma
TKC10-112
546.9±7.6 Ma
TKC10-20
548±8.9 Ma
0 200 μ



0 200µm
0 100µm
TKC10-C-56
TKC10-C-54
TKC10-C-55-39.3±7.7 Ma
TKC10-C-57
0 200µm
0 100µm
TKC10-K-42-40.6±5.1 Ma
TKC10-K-41-29.4±4.4 Ma
TKC10-K-44
TKC10-K-43
TKC10-K-45-39.7±4.3 Ma
TKC10-K-46
0 100µm
0 100µm
TKC10-H-5
TKC10-H-06-38.7±9.7 Ma
TKC10-2-H-07-38±11 Ma
TKC10-2-H-08-41.4±9.8 Ma
TKC10-H-09
TKC10-H-10
TKC10-H-13
0 100µm
0 100µm
TKC10-M-53
TKC10-M-51-40±9.6 Ma
TKC10-M-50
TKC10-M-52
0 200µm
0 100µm
TKC10-D-65
TKC10-D-66
TKC10-D-67-36±11 Ma
TKC10-D-68-31.2±7.6 Ma
0 200µm
0 100µm
TKC10-L-25
TKC10-L-23
TKC10-L-24
TKC10-L-22-37±13 Ma
TKC10-L-21
0 100µm
0 100µm
TKC10-2-J-31-32.9±4.4 Ma
TKC10-2-J-32
TKC10-2-J-33-34.7±4.9 Ma
0 100µm
0 100µm
TKC10-L-30
TKC10-L-29
TKC10-L-28
TKC10-L-27
TKC10-L-26-38±11 Ma
0 100µm
0 100µm
TKC10-2-J-31
TKC10-2-J-32
TKC10-2-J-33
TKC10-2-J-34
TKC10-2-J-35
TKC10-2-J-36-43±10 Ma
0 100µm
0 100µm
TKC10-D-69-42±12 Ma
TKC10-D-70

Table S1. GPS locations of the samples studied. GPS coordinates are referenced to the Garmin Etrex 30X -WGS84 database.

SAMPE NAMES	LOCATIONS	UTM1984-GPS LOCATIONS
TKC2	ÇAMLICA-TİRE KLIPPE	35S 0582351/4214192
TKC3	ÇAMLICA-TİRE KLIPPE	35S 0582377/4214127
TKC4	ÇAMLICA-TİRE KLIPPE	35S 0582475/4214292
TKC5	ÇAMLICA-TİRE KLIPPE	35S 0582459/4214940
TKC6	ÇAMLICA-TİRE KLIPPE	35S 0583475/4214960
TKC7	ÇAMLICA-TİRE KLIPPE	35S 0583118/4214280
TKC8	ÇAMLICA-TİRE KLIPPE	35S 0583298/4214292
TKC9	ÇAMLICA-TİRE KLIPPE	35S 0583369/4214507
TKC10	ÇAMLICA-TİRE KLIPPE	35S 0583104/4214040
TKC11	ÇAMLICA-TİRE KLIPPE	35S 0583150/4214135
ATY1	YAHYAALCI-ALAŞEHİR	35S 0633886/4256456
ATY2	YAHYAALCI-ALAŞEHİR	35S 0633883/4256443
ATY3	YAHYAALCI-ALAŞEHİR	35S 0633891/4256486
ATY4	YAHYAALCI-ALAŞEHİR	35S 0633820/4256444
ATY5	YAHYAALCI-ALAŞEHİR	35S 0633757/4256421
ATY6	YAHYAALCI-ALAŞEHİR	35S 0633679/4256441
ATY7	YAHYAALCI-ALAŞEHİR	35S 0633595/4254601
ATY9	YAHYAALCI-ALAŞEHİR	35S 0633517/4256493
ATY10	YAHYAALCI-ALAŞEHİR	35S 0633517/4256369
ATY11	YAHYAALCI-ALAŞEHİR	35S 0633559/4256317
K1	YENİŞEHIR-KİRAZ	35S 0608553/4225878
K3	YENİŞEHIR-KİRAZ	35S 0608372/4225822
K4	YENİŞEHIR-KİRAZ	35S 0608523/4225839
K6	YENİŞEHIR-KİRAZ	35S 0608554/4225816
K7	YENİŞEHIR-KİRAZ	35S 0608515/4225732
BÜ1	BİRGİ	35S 0596308/4234662
BÜ2	BİRGİ	35S 0596473/4234661

Table S2. The precision and accuracy of known standard reference material (STD-SO-19) and analysis of sample EC4 by ICP-OES and ICP-MS. SD-standard deviations; RSD %- relative standard deviations.

Major and Trace Elements	Accuracy (Reference Material-STD-SO-19) (± SD)	Accuracy (Reference Material-STD-SO-19) (± RSD %)	Precision (Sample EC4) (± SD)	Precision (Sample EC4) (± RSD %)
SiO_2	60.5±0.014	60.5±0.023	50.80±0.14	50.80±0.276
Al_2O_3	13.965±0.049	13.965±0.351	17.30±0.0	17.30±0.0
Fe_2O_3	7.47±0.014	7.47±0.187	7.39±0.1342	7.29±1.815
CaO	2.915±0.007	2.915±0.240	11.15±0.070	11.15±0.628
MgO	5.945±0.021	5.945±0.353	9.45±0.028	9.45±0.300
Na_2O	4.015±0.007	4.015±0.174	2.44±0.0	2.44±0.0
K_2O	1.275±0.021	1.275±1.647	0.20±0.0	0.20±0.0
MnO	0.13±0.0	0.13±0.0	0.12±0.0	0.12±0.0
TiO_2	0.70±0.0	0.70±0.0	0.415±0.007	0.415±1.69
P_2O_5	0.315±0.005	0.315±1.587	0.04±0.0	0.04±0.0
Cr_2O_3	0.4985±0.002	0.4985±0.401	0.07±0.0	0.07±0.0
Ba	452±4.240	452±0.938	103.5±3.530	103.5±3.41
Co	23.6±0.707	23.6±2.995	42.4±0.420	42.4±1.0
Cs	4.35±0.070	4.35±1.609	0.5±0.0	0.5±0.0
Ga	16.6±0.424	16.6±2.554	15.8±0.420	15.8±2.66
Hf	3.3±0.0	3.3±0.0	2.0±0.140	2.0±7.0
Nb	69.4±0.0	69.4±0.0	3.95±0.070	3.95±1.77
Rb	19.8±0.0	19.8±0.0	9.3±0.280	9.3±3.01
Sr	304.6±2.960	304.6±0.971	153.1±1.280	153.1±0.83
Ta	4.8±0.0	4.8±0.0	2.5±0.070	2.5±2.8
Th	12.75±0.354	12.75±2.776	0.6±0.140	0.6±23.33
U	18.35±0.212	18.35±1.155	0.1±0.0	0.1±0.0
V	163±4.243	163±2.603	272±2.820	272±1.030
Zr	113.6±0.424	113.6±0.373	69.1±2.120	69.1±3.070
Y	34.35±0.495	34.35±1.441	19.35±0.350	19.35±1.810
La	65.5±0.566	65.5±0.864	5.55±0.045	5.55±0.82
Ce	151.5±0.869	151.5±0.573	14.3±0.420	14.3±2.940
Pr	18.945±0.077	18.945±0.406	1.99±0.021	1.99±1.050
Nd	74.25±0.636	74.25±0.856	9.1±0.140	0.91±1.540
Sm	13.115±0.318	13.115±2.425	2.44±0.09	2.44±3.690
Eu	3.585±0.007	3.585±0.1972	0.875±0.035	0.875±4.00
Gd	10.94±0.067	10.94±0.612	3.045±0.021	3.045±0.689
Tb	1.365±0.007	1.365±0.5130	0.54±0.0	0.54±0.0
Dy	7.285±0.2334	7.285±3.2038	3.365±0.077	3.365±2.288
Ho	1.37±0.0141	1.37±1.029	0.765±0.007	0.765±0.915
Er	3.705±0.035	3.705±0.9446	2.295±0.09	2.295±3.921
Tm	0.505±0.0212	0.505±4.198	0.315±0.0212	0.315±6.730
Yb	3.44±0.08485	3.44±2.4665	2.05±0.042	2.05±2.048
Lu	0.53±0.01414	0.53±2.6679	0.315±0.007	0.315±2.222

Table S3. Electron micro probe analyze results of the minerals of the garnet amphibolite (TKC10) and retrogressed eclogite (K1) samples. The structural formulas were calculated based on 12 anhydrous oxygen for garnet, 6 anhydrous oxygen for clinopyroxene, 23 anhydrous oxygen for calcic amphiboles. $Fe2^{+}$ and Fe^{3+} were re-calculated from $Fe^{(t)}$ by the stoichiometric method of Droop (1987).

	Garnet	Garnet	Garnet	Garnet	Garnet	Garnet
Sample Retrogressed Eclogite	K1-B 6-gr	K1-B 7-gr	K1-B 8-gr	K1-E 11-gr	K1-E 12-gr	K1-E 13-gr
	rim	center	middle	rim	center	middle
% web						
SiO_2	38.28	38.18	38.19	38.39	38.28	38.32
TiO_2	0.17	0.20	0.27	0.13	0.25	0.25
Al_2O_3	20.93	20.75	20.56	20.92	20.83	20.58
$FeO_{(t)}$	24.85	25.48	26.38	25.14	25.20	25.14
Fe_2O_3 (calculated)	0.67	0.93	1.09	0.35	0.82	0.81
FeO (calculated)	24.24	24.64	25.40	24.82	24.46	24.41
MnO	0.64	1.01	1.00	0.51	0.95	1.04
MgO	4.69	4.74	5.01	4.86	4.91	4.92
CaO	9.77	9.18	8.24	8.93	9.17	8.83
Cr_2O_3	0.01	0.05	0.09	0.06	0.08	0.02
Total	99.40	99.68	99.85	98.97	99.75	99.18
Cations						
Si	3.00	3.00	3.00	3.02	3.00	3.02
Ti	0.01	0.01	0.02	0.01	0.01	0.01
Al	1.94	1.92	1.90	1.94	1.92	1.91
Cr	0.00	0.00	0.01	0.00	0.01	0.00
Fe^{3+}	0.04	0.06	0.06	0.02	0.05	0.05
Fe^{2+}	1.59	1.62	1.67	1.63	1.60	1.61
Mn	0.04	0.07	0.07	0.03	0.06	0.07
Mg	0.55	0.55	0.59	0.57	0.57	0.58
Ca	0.82	0.77	0.69	0.75	0.77	0.74
Total	8.00	8.00	8.00	7.99	8.00	7.99
End Members						
Almandine	52.34	53.03	54.52	53.96	52.58	52.63
Andradite	2.01	2.78	3.28	1.07	2.45	2.44
Grossular	25.67	23.07	19.88	24.30	23.25	22.87
Pyrope	18.51	18.69	19.82	19.34	19.34	19.66

Spessartine	1.45	2.26	2.24	1.15	2.13	2.36
Uvarovite	0.03	0.17	0.27	0.18	0.26	0.05

	Cpx	Cpx	Cpx	Cpx
Sample Retrogressed Eclogite	K1-E 15-cpx inclusion	K1-E 19-cpx rim	K1-E 16-cpx rim	K1-E 16-cpx center
% web				
SiO_2	56.94	53.89	54.79	59.94
TiO_2	0.08	0.02	0.10	0.02
Al_2O_3	10.90	0.69	2.45	19.18
$FeO_{(t)}$	4.40	7.47	6.29	1.36
Fe_2O_3 (calculated)	0.00	0.00	0.00	0.00
FeO (calculated)	4.40	7.47	6.29	1.36
MnO	0.03	0.12	0.04	0.01
MgO	8.46	13.16	13.31	2.17
CaO	13.80	23.69	22.38	9.21
Na_2O	6.36	0.30	1.34	7.09
K_2O	0.00	0.00	0.00	0.04
Cr_2O_3	0.12	0.03	0.02	0.01
Total	101.09	99.37	100.73	99.03
Cations				
Si	2.002	2.012	1.998	2.055
Ti	0.453	0.031	0.107	0.817
Al	0.453	0.031	0.105	0.817
Fe^{3+}	0.000	0.000	0.000	0.000
Fe^{2+}	0.130	0.234	0.192	0.041
Mn	0.001	0.004	0.001	0.000
Mg	0.445	0.736	0.725	0.117
Ca	0.522	0.952	0.876	0.357
Na	0.435	0.021	0.095	0.497
K	0.000	0.000	0.000	0.002
Cr	0.003	0.001	0.001	0.000
Total	6.00	6.00	6.00	6.00
End Members				
Pyroxene quadrilateral Jadeite	55.76	97.82	90.42	33.08
Acmite	0.00	0.00	0.00	0.00
Wollastonite	47.58	49.53	48.86	67.79
Enstatite	40.58	38.28	40.43	23.78
Ferrosilite	11.84	12.19	10.72	8.43

	Amp	Amp	Amp	Amp	Amp	Amp	Amp
Sample Retrogressed Eclogite	K1-B 1-amp matrix	K1-B 5-amp inclusion	K1-E 4-amp matrix	K1-B 7-amp matrix	K1-E 8-amp matrix	K1-E 9-amp matrix	K1-E 18-amp matrix
% web							
SiO_2	44.34	49.93	47.06	39.38	42.69	43.34	46.60
TiO_2	0.63	0.33	0.41	0.50	0.74	0.74	0.56
Al_2O_3	12.68	9.18	11.08	19.06	14.73	12.40	11.21
$FeO_{(t)}$	13.44	10.58	11.63	14.82	12.79	12.56	11.51
MnO	0.11	0.098	0.134	0.096	0.11	0.12	0.084
MgO	11.49	15.24	12.89	7.88	10.91	12.24	13.07
CaO	11.98	11.78	10.50	11.72	11.48	11.55	11.33
Na_2O	1.89	1.27	1.76	2.05	2.10	1.92	1.63
K_2O	0.29	0.000	0.38	0.50	0.41	0.36	0.35
Cr_2O_3	0.088	0.04	0.066	0.13	0.094	0.095	0.12
NiO	0.023	0.006	0.014	0.021	0.000	0.03	0.011
Total	96.97	98.46	95.92	96.16	96.06	95.35	96.97
Cations							
Si	6.527	7.003	6.832	5.914	6.325	6.442	6.768
Ti	0.070	0.035	0.045	0.056	0.083	0.083	0.061
Al	2.200	1.517	1.896	3.374	2.572	2.172	1.919
Fe^{3+}	0.222	0.516	0.512	0.205	0.275	0.468	0.361
Fe^{2+}	1.433	0.726	0.900	1.656	1.309	1.093	1.037
Mn	0.014	0.012	0.016	0.012	0.014	0.015	0.010
Mg	2.521	3.187	2.790	1.764	2.410	2.712	2.830
Ca	1.890	1.770	1.633	1.886	1.822	1.839	1.763
Na	0.539	0.346	0.495	0.597	0.603	0.553	0.459
K	0.056	0.000	0.069	0.096	0.077	0.067	0.065
Cr	0.010	0.005	0.008	0.015	0.011	0.011	0.013
Ni	0.003	0.001	0.002	0.003	0.000	0.004	0.001

	Garnet	Garnet	Garnet	Garnet	Garnet	Garnet	Garnet
Garnet Amphibolite	TKC10-B 15-gr	TKC10-C 1-gr	TKC10-C 2-gr-m	TKC10-C 3-gr-o	TKC10-D 9-gr-k	TKC10-D 10-gr-o	TKC10-D 11-gr-m
% web							
SiO_2	38.19	38.56	38.27	37.98	38.07	38.71	38.26
TiO_2	0.14	0.06	0.17	0.17	0.16	0.06	0.15
Al_2O_3	20.51	21.04	20.82	20.83	20.74	21.07	20.60
$FeO_{(t)}$	26.14	26.88	25.49	26.22	25.69	23.44	25.00
$Fe_2O_{3(calculated)}$	1.08	0.97	0.88	0.90	1.06	0.01	1.04
$FeO_{(calculated)}$	25.16	26.01	24.70	25.41	24.74	23.43	24.06
MnO	1.13	0.36	0.53	0.66	0.57	0.77	0.96
MgO	3.35	4.99	3.66	3.33	3.75	3.49	3.98
CaO	10.48	8.67	11.02	10.76	10.86	11.59	10.67
Cr2O3	0.01	0.00	0.00	0.03	0.00	0.00	0.00
Total	100.07	100.66	100.04	100.06	99.94	99.13	99.73
Cations							
Si	3.01	3.00	3.00	2.99	2.99	3.04	3.01
Al iv	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Al vi	1.91	1.93	1.93	1.93	1.92	1.95	1.91
Ti	0.01	0.00	0.01	0.01	0.01	0.00	0.01
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.06	0.06	0.05	0.05	0.06	0.00	0.06
Fe^{2+}	1.66	1.69	1.62	1.67	1.63	1.54	1.58
Mn	0.08	0.02	0.03	0.04	0.04	0.05	0.06
Mg	0.39	0.58	0.43	0.39	0.44	0.41	0.47
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.88	0.72	0.93	0.91	0.91	0.98	0.90
Total	8.00	8.01	8.00	8.01	8.01	7.98	8.00
End Members							
Almandine	54.18	55.52	53.15	54.98	53.24	50.97	51.65
Andradite	3.26	2.86	2.61	2.68	3.16	0.04	3.13
Grossular	26.65	21.40	28.61	27.68	27.57	33.28	27.28
Pyrope	13.32	19.42	14.43	13.11	14.76	13.96	15.78
Spessartine	2.55	0.80	1.18	1.47	1.27	1.75	2.16
Uvarovite	0.04	0.00	0.01	0.08	0.00	0.01	0.00

	Amp	Amp	Amp	Amp	Amp	Amp	Amp	Amp
Garnet Amphibolite	TKC10-B 6-amp	TKC10-C 4-amp	TKC10-C 5-amp	TKC10-C 7-amp	TKC10-D 1-amp	TKC10-D 2-amp	TKC10-D-3-amp	TKC10-D 13-amp matrix
% web								
SiO_2	42.42	42.63	42.52	48.48	42.83	43.54	43.14	43.37
TiO_2	0.84	0.87	0.97	0.50	0.88	0.73	0.71	0.85
Al_2O_3	13.15	13.60	11.49	6.82	13.83	13.97	13.33	12.73
$FeO_{(t)}$	15.60	14.87	18.11	15.37	13.97	15.88	14.78	13.91
MnO	0.11	0.09	0.12	0.12	0.08	0.08	0.099	0.07
MgO	10.30	10.37	9.07	12.30	11.33	10.32	10.81	11.34
CaO	10.77	10.90	10.56	11.41	11.43	11.06	10.89	11.70
Na_2O	2.27	2.16	2.08	1.42	2.21	2.30	2.20	1.97
K_2O	0.95	1.02	0.91	0.35	0.94	0.98	0.90	0.88
Cr_2O_3	0.01	0.01	0.08	0.04	0.00	0.007	0.00	0.00
NiO	0.01	0.00	0.00	0.00	0.00	0.00	0.011	0.00
Total	98.18	98.29	97.63	98.68	99.30	100.68	98.64	98.60
Cations								
Si	6.334	6.349	6.456	7.144	6.296	6.339	6.377	6.435
Ti	0.094	0.097	0.111	0.055	0.097	0.080	0.079	0.096
Al	2.314	2.387	2.056	1.184	2.396	2.397	2.322	2.226
Fe^{3+}	0.543	0.423	0.577	0.337	0.410	0.482	0.518	0.260
Fe^{2+}	1.405	1.429	1.722	1.557	1.307	1.452	1.309	1.466
Mn	0.014	0.011	0.015	0.015	0.010	0.010	0.012	0.009
Mg	2.293	2.302	2.053	2.702	2.483	2.240	2.382	2.508
Ca	1.723	1.739	1.718	1.802	1.800	1.725	1.725	1.860
Na	0.657	0.624	0.612	0.406	0.630	0.649	0.630	0.567
K	0.181	0.194	0.176	0.066	0.176	0.182	0.169	0.166
Cr	0.001	0.001	0.010	0.005	0.000	0.001	0.000	0.000

	Plj	Plj	Plj	Plj	Plj	Plj	Plj	Plj
Garnet Amphibolite	TKC10-D 12-fsp matrix	TKC10-D 5-fsp	TKC10-D 4-fsp	TKC10-C 6-fsp	TKC10-B 14-fsp2	TKC10-B 3-fsp	TKC10-B 2-fsp	TKC10-B 1-fsp
% web								
SiO_2	67.31	65.75	66.57	66.54	65.5	64.77	66.39	66.52
TiO_2	0	0	0	0	0	0	0	0
Al_2O_3	21.01	21.32	20.72	21.14	21.3	22.6	20.67	20.65
MgO	0	0	0	0	0	0	0	0
CaO	2.05	2.7	2.06	2.21	2.74	3.74	1.94	1.86
MnO	0	0	0	0	0	0	0	0
$FeO_{(t)}$	0.123	0.361	0.191	0.151	0.423	0.206	0.085	0.063
BaO	0.019	0.052	0.042	0.05	0.064	0	0	0
Na_2O	9.97	9.6	10.02	10.01	9.8	9.17	10.51	10.17
K_2O	0.208	0.243	0.167	0.195	0.213	0.241	0.205	0.236
Total	100.68	100.02	99.76	100.29	100.04	100.73	99.8	99.26
Cations								
Si	2.93	2.89	2.93	2.91	2.88	2.84	2.92	2.93
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.72	0.74	0.72	0.73	0.74	0.78	0.71	1.07
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.19	0.25	0.19	0.21	0.26	0.35	0.18	0.09
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.03	0.01	0.01	0.03	0.02	0.01	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	1.68	1.64	1.71	1.70	1.67	1.56	1.79	0.87
K	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.01
Total	5.56	5.57	5.58	5.58	5.60	5.57	5.63	4.97
End Members								
An	10.20	13.45	10.20	10.87	13.38	18.39	9.26	9.18
Ab	89.80	86.55	89.80	89.13	86.62	81.61	90.74	90.82

Table S4. Laser ablation-inductively coupled plasma-mass spectrometry trace and REE data of garnet-amphibolite-TKC10 and retrogressed eclogite-K1 samples. Concentrations in ppm, calibrated from NIST612 values by reference of Si29 to concentration of SiO_2 determined by electron micro probe analysis.

Elements (ppm)	GARNET AMPHIBOLITE (TKC10)								RETROGRESSED ECLOGITE (K1)				
	TK18	TK17	TK14	TK12	TK4	TK11	TK10	TK9	TK47	TK49	TK51	TK53	TK54
Li7	12.98	13.17	13.59	11.4	15.26	14.37	12.83	11.11	5.62	5.37	6.59	4.86	6.25
Be9	0.087	<0.105	<0.00	<0.082	<0.198	<0.064	<0.090	0.038	<0.113	<0.101	<0.115	0.041	<0.106
B11	1.1	1.11	0.91	0.93	<0.62	<0.58	<0.57	<0.62	<0.66	0.56	0.72	<0.47	<0.59
Al27	100716	109907	113131	92837	113199	115512	113072	113275	116362	105051	98053	94057	116790
Si29	179029	179029	179029	179029	179029	179029	179029	179029	179029	179029	179029	179029	179029
P31	36.65	47.18	40.81	27.61	36.77	31.24	33.6	45.48	22.36	40.04	55.14	33.4	37.82
Ca43	66386	74119	76328	62403	74292	77482	75153	73812	65932	60805	54769	53416	65734
Ti49	1258.6	1642	1350.01	1017.76	1139.32	1187.58	1133.87	1168.03	696	1783	2946	1700	1122
V51	139.02	118.59	143.83	157.1	156.7	175.85	167.13	139.61	85.02	131.95	156.26	115.65	97.47
Cr53	19.96	7.17	13.54	30.17	15.85	17.12	17.36	23.26	220.24	460.77	663.78	417.33	306.13
Mn55	6712.86	8114.91	4579.88	3249.24	3791.15	3789.87	3701.57	3663.3	3366.4	4709.63	5719.69	3929.51	3475.13
Co59	20.51	22.56	23.41	18.28	22.92	23.45	22.52	23.02	40.81	35.91	36.9	33.81	42.09
Ni60	0.94	0.31	0.227	0.3	0.305	0.307	0.27	0.289	4.25	6.57	10.87	24.99	84.7
Cu65	1.52	0.6	<0.58	0.76	<0.53	<0.51	<0.51	<0.48	9.22	21.68	23.79	27.27	136.17
Zn66	46.53	47.5	57.95	42.02	49.99	49.76	49.72	49.16	47.04	39.06	37.37	36.46	49.96
Ga71	7.6	8.29	8.79	6.93	8.54	8.85	8.77	8.4	6.15	5.6	4.83	4.72	5.81
Rb85	0.705	<0.172	<0.160	<0.136	<0.153	<0.141	<0.154	<0.156	<0.192	<0.155	<0.149	<0.136	0.294
Sr88	2.16	1.025	0.414	0.683	0.067	0.088	0.074	0.106	0.0316	0.233	0.233	0.496	0.418
Y89	130.76	139.36	90.38	75.91	80.86	81.22	91.46	110.17	64.69	46.23	19.46	70.51	65.8
Zr90	7.49	10.08	8.54	6.11	5.83	5.94	6.28	8.81	3.44	3.78	9.89	2.54	16.3
Nb93	<0.0192	0.112	<0.0194	0.0091	0.0165	<0.0242	<0.0097	<0.0141	<0.0171	0.125	0.321	0.208	0.11
Cs133	<0.114	0.142	<0.113	<0.090	<0.113	<0.105	<0.095	<0.102	<0.123	<0.110	0.135	<0.093	0.223
Ba137	11.73	3.94	<0.108	0.951	<0.085	<0.078	<0.094	<0.096	0.147	0.98	0.91	1.77	2.44
Hf178	0.096	0.141	0.15	0.139	0.117	0.128	0.12	0.152	0.12	0.113	0.293	0.089	0.523
Ta181	0.0094	<0.0121	<0.0104	<0.0083	<0.0082	0.0085	<0.0074	0.0066	0.0117	<0.0114	0.0253	0.0164	0.0118
Pb208	3.07	0.353	0.068	0.498	0.085	0.034	0.037	<0.031	0.035	0.149	0.191	0.396	2.47
Th232	0.0075	<0.0146	<0.0118	<0.0114	<0.0113	0.0058	<0.0114	<0.0105	<0.0088	<0.0125	<0.0103	0.0064	<0.0058

U238	<0.0050	<0.0090	<0.0072	<0.0070	0.0057	<0.0078	<0.0063	<0.0102	<0.0054	0.0045	<0.0090	<0.0073	<0.0071
La139	0.081	0.033	0.093	0.154	<0.0104	0.025	0.026	0.014	0.0113	0.0213	0.0682	0.076	0.126
Ce140	0.129	0.097	0.342	0.299	<0.0142	0.0434	0.0289	0.0685	<0.0157	0.0327	0.047	0.0368	0.067
Pr141	0.0308	0.0207	0.021	0.0594	0.0057	<0.0121	0.0105	0.0151	<0.0113	0.0077	0.0229	0.0195	0.0333
Nd146	0.398	<0.051	0.193	0.274	0.089	0.101	0.134	0.117	0.054	0.06	0.097	0.076	0.269
Sm147	0.49	0.267	0.424	0.633	0.568	0.543	0.63	0.573	0.081	0.044	0.114	0.058	0.137
Eu153	0.344	0.37	0.639	0.501	0.677	0.678	0.647	0.744	0.039	0.055	0.05	0.068	0.072
Gd157	3.63	4.03	4.92	4.43	5.64	5.83	5.6	6.01	0.844	0.466	0.779	0.727	0.751
Tb159	1.769	1.918	1.905	1.664	1.98	2.084	2.094	2.23	0.582	0.293	0.259	0.507	0.579
Dy163	18.76	18.98	15.25	13.92	14.93	15.1	17.28	18.61	8.35	4.76	2.73	7.73	8.52
Ho165	4.9	5.27	3.54	2.98	3.07	3.07	3.56	4.18	2.43	1.537	0.706	2.6	2.5
Er166	15.46	16.74	9.62	8.12	8.47	8.24	9.9	12.54	8.02	5.43	2.34	8.73	8.01
Tm169	2.19	2.5	1.369	1.089	1.14	1.123	1.228	1.688	1.185	0.853	0.324	1.288	1.109
Yb172	15.29	18.07	8.95	7.06	7.45	7.34	8.22	11.41	7.03	6.01	2.57	8.72	7.5
Lu175	2.27	2.63	1.39	1.035	1.045	1.053	1.177	1.69	1.146	0.802	0.365	1.149	1.037

Table S5. Estimated P&T conditions of the garnet amphibolite sample (TKC10) by amphibole-plagioclase Al-Si partitioning thermo-barometric empirical equations. EPMA mineralogical analysis are from Supplementary Table 3.

				Amphibole Minerals							
		Sample No		TKC-10-B-6	TKC-10-C-4-amp	TKC-10-C-5-amp	TKC10-C7-amp	TKC10-D1-amp	TKC10-D2-amp	TKC10-D3-amp	TKC10-D-13-amp
		Analysis	**XT1 Si**	0.587	0.588	0.618	0.779	0.575	0.587	0.597	0.607
			XT1 Al	0.413	0.412	0.382	0.221	0.425	0.413	0.403	0.393
			XM2 Al	0.334	0.371	0.267	0.148	0.349	0.374	0.358	0.326
			XA K	0.181	0.194	0.177	0.176	0.176	0.182	0.170	0.166
			XA □	0.407	0.432	0.464	0.455	0.383	0.422	0.447	0.422
			XA Na	0.412	0.374	0.359	0.369	0.440	0.396	0.383	0.411
		X Ab	**Y Ab**	**Temperature (°C)**							
Plagioclase	TKC10-12-fsp-matrix	0.887	0.00	635	627	655	629	642	613	617	622
	TKC10-D-5-fsp	0.853	0.00	641	633	660	634	648	619	622	628
	TKC10-D-4-fsp	0.889	0.00	634	627	654	629	642	613	616	622
	TKC10-C-6-fsp	0.881	0.00	636	628	656	630	643	614	618	623
	TKC10-B14-fsp2	0.856	0.00	640	633	660	634	648	619	622	627
	TKC10-B3-fsp	0.805	0.00	650	642	669	642	658	628	631	637
	TKC10-B2-fsp	0.897	0.00	633	625	653	627	640	612	615	620
	TKC10-B1-fsp	0.896	0.00	633	626	653	628	640	612	615	620
			T(°C)	613	619	613	614	619	631	612	612
				Pressure (kb)							
			P (kbar)	9	10	8	8	9	10	10	10

3.

Table S6. Estimated retrogression P&T conditions of retrogressed eclogite sample (K1) by amphibole-plagioclase Al-Si partitioning thermo-barometric empirical equations. EPMA mineralogical analysis are from Supplementary Table 3.

				Amphibole				
			Sample No	K1-B-1-amp	K1-E-4-amp	K1-B-7-amp	K1-E-9-amp	K1-E-18-amp
		Analysis	**XT1 Si**	0.630	0.711	0.476	0.580	0.692
			XT1 Al	0.370	0.289	0.524	0.420	0.308
			XM2 Al	0.358	0.372	0.637	0.445	0.344
			XA K	0.054	0.071	0.096	0.077	0.065
			XA □	0.549	0782	0.462	0.521	0.726
			XA Na	0.397	0.148	0.442	0.402	0.210
				Temperature (°C)				
		X Ab	**Y Ab**					
Plagioclase	K1-E-B9-py-k	0.746	0.00	628	569	655	618	605
	K1-E6-py-k	0.743	0.00	628	569	656	618	605
	K1-E19-py-k	0.783	0.00	621	564	646	611	599
	K1-E17-py-k	0.764	0.00	624	566	651	614	602
			T(°C)	621	564	646	611	599
				Pressure (kb)				
			P (kb)	11	11	13	11	11

Table S7. Zircon U-Pb geochronological results of garnet amphibolite sample -ATY3 (Yahyaalci-Alaşehir area of Bozdağ Nappe), Menderes Massif, Turkey.

	Isotopic Ratios			Apparent Ages								
SAMPLE NUMBERS	$^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	$^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	Discor-dance %	U (ppm)	2SE	Th (ppm)	2SE	Th/U
ATY3-GARNET AMPHIBOLITE												
ATY3-17	0.514±0.017	0.0595±0.0019	0.0626±0.0017	421.1±12	373±12	688±58	11.4	508	27	139	28	0.27
ATY3-156	0.516±0.028	0.0598±0.0013	0.0638±0.0036	421±19	374.2±8.1	730±110	11.1	404.9	8.2	233.8	3.8	0.58
ATY3-90	0.57±0.019	0.06279±0.0011	0.0662±0.0016	458±12	392.5±6.9	807±50	14.3	134.7	7	61.5	2.6	0.46
ATY3-172m	0.5144±0.012	0.06395±0.0011	0.05817±0.00089	421.1±8.2	399.5±6.8	540±34	5.1	443	14	168.2	5.7	0.38
ATY3-174	0.5368±0.012	0.06627±0.0011	0.05894±0.00094	436.1±8.2	413.6±6.4	568±34	5.2	587	45	389	32	0.66
ATY3-02	0.536±0.017	0.0663±0.0014	0.0584±0.0011	436±11	414.7±8.9	557±43	4.9	243.9	9.7	142.6	3	0.58
ATY3-161	0.573±0.024	0.07±0.0018	0.0607±0.0021	460±15	435.9±11	619±74	5.2	432	24	183	8	0.42
ATY3-171r	0.583±0.017	0.0704±0.0015	0.0599±0.0013	466.3±11	438.7±8.9	596±45	5.9	657.6	9.4	794	21	1.21
ATY3-96	0.604±0.018	0.0757±0.0014	0.0581±0.0014	480.6±11	470.3±8.4	526±51	2.1	161.1	5.8	93.6	1.2	0.58
ATY3-52r	0.621±0.017	0.0772±0.0016	0.05892±0.00086	490.4±11	479.1±9.6	570±28	2.3	965	44	448	20	0.46
ATY3-17b	0.641±0.019	0.0785±0.0022	0.0594±0.0011	502.3±12	487±13	576±40	3.0	444	27	158	22	0.36
ATY3-153	0.658±0.02	0.0804±0.0016	0.0597±0.0015	512.7±12	498.6±9.4	583±55	2.8	246	17	124	8	0.50
ATY3-92	0.669±0.017	0.0808±0.0014	0.0597±0.0012	519.7±10	500.8±8.2	590±43	3.6	241	15	167.8	8.8	0.70
ATY3-116m	0.659±0.018	0.08141±0.0013	0.0583±0.0012	514.2±11	504.5±7.5	553±46	1.9	199	10	90.2	3.7	0.45
ATY3-15	0.655±0.017	0.0815±0.0018	0.0581±0.0011	511.5±11	504.9±11	537±43	1.3	873	85	256	18	0.29
ATY3-105c	0.6593±0.014	0.08173±0.0014	0.05854±0.00079	514±8.8	506.4±8.2	546±29	1.5	684	77	646	83	0.94
ATY3-35	0.654±0.017	0.0818±0.0021	0.0581±0.0013	511±11	507±13	545±43	0.8	1127	84	361	12	0.32
ATY3-14	0.654±0.017	0.08223±0.0014	0.0579±0.0011	510.6±10	509.4±8.5	518±42	0.2	401	52	163	11	0.41
ATY3-24	0.6703±0.016	0.08239±0.0013	0.05931±0.00093	520.6±9.6	510.3±7.8*,**	574±35	2.0	502	19	338.6	7.5	0.67

ATY3-177c	0.663±0.015	0.08301±0.0013	0.05798±0.00084	516.2±8.9	514±8.0*,**	535±31	0.4	381	22	194	11	0.51
ATY3-12	0.673±0.016	0.0832±0.0018	0.0583±0.00096	523.4±10	515±11*,**	545±38	1.6	2800	210	357	26	0.13
ATY3-175	0.674±0.022	0.08321±0.0014	0.059±0.0017	524±13	515.2±8.3*,**	551±63	1.7	213.8	9.8	160.4	7.6	0.75
ATY3-125	0.664±0.016	0.08372±0.0013	0.05804±0.0008	518±9.6	518.3±8.0*,**	528±30	-0.1	456	21	36	1.2	0.08
ATY3-109	0.6821±0.016	0.08464±0.0014	0.05865±0.00084	527.7±9.5	523.7±8.1*,**	557±33	0.8	332	20	223	12	0.67
ATY3-136	0.682±0.022	0.0846±0.0016	0.058±0.0019	527±13	523.7±9.5*,**	522±75	0.6	141	14	77	10	0.55
ATY3-39c	0.683±0.017	0.08465±0.0014	0.0588±0.0012	528.2±10	523.8±8.6*,**	562±46	0.8	558	14	343.7	9.6	0.62
ATY3-10	0.681±0.017	0.08486±0.0014	0.05834±0.001	528.3±9.9	525±8.6*,**	536±38	0.6	243.2	6.1	81.4	2.5	0.33
ATY3-103	0.6908±0.016	0.085±0.0017	0.0589±0.0012	533.1±9.6	525.9±9.9*,**	559±45	1.4	385	20	237	13	0.62
ATY3-161b	0.695±0.025	0.0853±0.0015	0.0587±0.0016	535±15	527.7±9.1*,**	550±59	1.4	175	11	107.6	7.1	0.61
ATY3-132r	0.68±0.02	0.0854±0.0016	0.0584±0.0015	526.4±12	528.4±9.6*,**	557±51	-0.4	222.1	8.1	151	11	0.68
ATY3-29	0.682±0.018	0.08549±0.0015	0.058±0.0011	528.3±10	528.8±8.8*,**	532±41	-0.1	285	55	8.48	0.4	0.03
ATY3-21	0.699±0.018	0.0856±0.0017	0.05975±0.00098	537.3±11	529.4±10*,**	587±36	1.5	261	15	197	16	0.75
ATY3-70	0.695±0.018	0.08587±0.0015	0.0588±0.0011	536.5±11	531.1±8.8*,**	553±41	1.0	470	39	331	28	0.70
ATY3-133c	0.691±0.021	0.0857±0.0016	0.05850.0013	533±13	531.1±9.1*,**	554±50	0.4	289	11	184.5	9	0.64
ATY3-106	0.692±0.019	0.0861±0.0016	0.0581±0.0013	534.9±11	532.1±9.6*,**	538±48	0.5	354	16	211	11	0.60
ATY3-149	0.699±0.016	0.08614±0.0015	0.05918±0.00084	538.1±9.8	532.7±8.6*,**	570±31	1.0	683	26	485	20	0.71
ATY3-91	0.699±0.022	0.08616±0.0015	0.059±0.0015	538±13	532.8±8.6*,**	568±54	1.0	89.2	3.1	35.7	1.3	0.40
ATY3-03	0.702±0.016	0.08646±0.0014	0.05861±0.00099	539.8±9.8	534.5±8.2*,**	546±37	1.0	383	17	238.9	3.9	0.62
ATY3-27	0.697±0.018	0.0868±0.0021	0.0586±0.0011	536.5±11	536±13*,**	547±40	0.1	3050	350	1029	40	0.34
ATY3-116r	0.705±0.018	0.08674±0.0014	0.0588±0.0012	543.6±11	536.2±8.2*,**	558±44	1.4	233	11	105.5	4	0.45
ATY3-111	0.7007±0.014	0.08683±0.0013	0.05845±0.00066	539.1±8.5	536.7±7.7*,**	547±25	0.4	907	36	764	24	0.84
ATY3-147c	0.713±0.017	0.0869±0.0014	0.05971±0.001	546.2±10	537.1±8.1*,**	597±37	1.7	256	23	121	10	0.47
ATY3-52r_b	0.714±0.018	0.08706±0.0014	0.05935±0.00096	547±10	538.1±8.5*,**	575±36	1.6	565	22	289	11	0.51
ATY3-84	0.7068±0.016	0.08712±0.0015	0.05878±0.00088	542.6±9.5	538.4±8.9*,**	562±34	0.8	354	10	221.4	8.5	0.63
ATY3-62	0.7029±0.016	0.08716±0.0015	0.05886±0.00094	540.3±9.6	538.7±8.7*,**	557±35	0.3	422	38	268	22	0.64

ATY3-99r	0.707±0.016	0.0872±0.0015	0.05959±0.00088	542.5±9.8	538.9±9.0*,**	589±31	0.7	382	21	243	9.6	0.64
ATY3-141c	0.708±0.017	0.08719±0.0015	0.05883±0.001	544.7±9.9	538.9±8.9*,**	559±36	1.1	391	19	253.7	9.5	0.65
ATY3-176r	0.693±0.021	0.0872±0.0016	0.0584±0.0015	534±13	538.9±9.3*,**	547±56	-0.9	278	12	190.1	7	0.68
ATY3-65	0.7001±0.016	0.08726±0.0014	0.05855±0.00084	538.7±9.4	539.3±8.6*,**	552±31	-0.1	437	26	125.4	6	0.29
ATY3-110	0.718±0.02	0.08739±0.0015	0.0594±0.0015	550±12	540.1±9.0*,**	581±54	1.8	134.9	5.6	89.5	2.4	0.66
ATY3-87	0.7102±0.016	0.08739±0.0014	0.05904±0.00073	544.6±9.3	540.6±8.6*,**	565±27	0.7	520	50	311	29	0.60
ATY3-63	0.706±0.017	0.0876±0.0013	0.05867±0.00099	542.8±9.8	541.3±8.0*,**	564±37	0.3	259.3	8.1	111.2	1.9	0.43
ATY3-131	0.71±0.017	0.08763±0.0014	0.0588±0.00084	546±9.6	541.4±8.0*,**	558±31	0.8	343	21	243	17	0.71
ATY3-165	0.706±0.017	0.0876±0.0016	0.05878±0.00097	543.2±10	541.5±9.4*,**	558±35	0.3	420	25	252.7	9	0.60
ATY3-128r	0.72±0.02	0.0877±0.0016	0.0594±0.0014	551.6±12	541.7±9.3*,**	577±53	1.8	233	15	117.9	5.6	0.51
ATY3-48c	0.703±0.019	0.0877±0.0018	0.0582±0.0011	540±11	542±11*,**	558±38	-0.4	949	60	563	39	0.59
ATY3-37r	0.71±0.017	0.08775±0.0014	0.05882±0.00081	544.5±9.9	542.2±8.3*,**	561±31	0.4	532	30	349	15	0.66
ATY3-56m	0.708±0.017	0.08779±0.0015	0.05855±0.00094	542.9±10	542.4±8.8*,**	550±36	0.1	346	16	247.9	8.9	0.72
ATY3-72	0.714±0.018	0.0878±0.0015	0.0589±0.0012	546.8±11	542.5±8.7*,**	561±43	0.8	171	12	86.3	4.7	0.50
ATY3-16	0.696±0.021	0.0879±0.0019	0.0575±0.0015	536.9±12	542.9±11*	513±58	-1.1	133	4.8	55.3	1.6	0.42
ATY3-135	0.7013±0.016	0.08787±0.0014	0.05819±0.00091	540.2±9.6	542.9±8.1*	540±33	-0.5	490	40	249	25	0.51
ATY3-40r	0.7072±0.015	0.08796±0.0014	0.05795±0.00083	542.9±8.9	543.4±8.5*	522±31	-0.1	380	42	260	33	0.68
ATY3-115	0.705±0.017	0.088±0.0017	0.0581±0.0011	541.6±10	543.4±9.8*	523±42	-0.3	201	11	88.4	2.7	0.44
ATY3-77r	0.71±0.017	0.08798±0.0014	0.05841±0.00096	544.5±10	543.5±8.5*	547±35	0.2	313	22	208	13	0.66
ATY3-89	0.72±0.018	0.088±0.0016	0.05947±0.001	550.9±11	543.5±9.2*	577±37	1.3	209	12	66.3	2.9	0.32
ATY3-42c	0.7133±0.016	0.08799±0.0015	0.05887±0.0008	546.5±9.6	543.6±8.9*	559±30	0.5	507	20	351.1	8.7	0.69
ATY3-75	0.706±0.02	0.088±0.0014	0.0583±0.0014	542.8±12	543.7±8.4*	526±54	-0.2	143.4	8.3	98.4	5.2	0.69
ATY3-83	0.715±0.017	0.08801±0.0014	0.05874±0.00085	547.2±9.9	543.7±8.4*	561±31	0.6	373	25	272	16	0.73
ATY3-04	0.707±0.019	0.088±0.0016	0.0584±0.0011	542.5±11	543.9±9.7*	555±45	-0.3	316	17	25.1	1.3	0.08
ATY3-82	0.717±0.018	0.08793±0.0015	0.05903±0.001	548.6±11	544±9.0*	568±38	0.8	187	18	77.9	7	0.42
ATY3-107	0.721±0.018	0.0881±0.0016	0.0594±0.0014	550.7±11	544.2±9.4*	589±50	1.2	323	21	217	12	0.67

ATY3-150	0.716±0.017	0.08821±0.0015	0.05893±0.001	548.7±9.8	544.9±8.7*	566±37	0.7	225	18	117.6	9	0.52
ATY3-88	0.7167±0.015	0.08828±0.0014	0.05859±0.00071	548.5±9.1	545.3±8.4*	553±26	0.6	749	32	671	21	0.90
ATY3-126	0.7111±0.016	0.08829±0.0014	0.05845±0.00085	545.1±9.5	545.4±8.1*	548±32	-0.1	449	27	331	15	0.74
ATY3-127	0.722±0.017	0.08833±0.0014	0.05929±0.00085	552.4±10	545.6±8.5*	584±32	1.2	266	11	195.8	4	0.74
ATY3-41m	0.714±0.017	0.0883±0.0015	0.05827±0.001	546.8±10	545.7±9.2*	539±39	0.2	482	17	340.9	6.6	0.71
ATY3-68c	0.7154±0.015	0.08834±0.0013	0.05902±0.00074	549±9.5	545.7±7.8*	564±28	0.6	832	45	616	25	0.74
ATY3-117	0.721±0.018	0.0884±0.0016	0.0593±0.0011	551.2±11	546.2±9.3*	573±39	0.9	505	20	368	12	0.73
ATY3-154	0.7059±0.016	0.08844±0.0015	0.05789±0.00082	542.9±10	546.2±8.8*	522±31	-0.6	355	21	215	16	0.61
ATY3-147r	0.7059±0.016	0.08844±0.0014	0.0576±0.00088	542.8±9.4	546.3±8.2*	514±33	-0.6	353	27	241	14	0.68
ATY3-113	0.7201±0.016	0.0885±0.0016	0.05927±0.00084	551.9±9.7	546.5±9.5*	579±31	1.0	384	22	311	15	0.81
ATY3-93	0.721±0.017	0.0885±0.0016	0.05955±0.00098	550.7±10	546.6±9.8*	587±35	0.7	260	13	139.5	6.8	0.54
ATY3-79	0.709±0.018	0.08842±0.0014	0.05834±0.001	544.6±11	546.8±8.4*	547±40	-0.4	159.8	9.9	103.2	4.8	0.65
ATY3-143	0.714±0.024	0.0885±0.0021	0.059±0.0019	549±13	547±12*	579±69	0.4	139	6.3	1.71	0.14	0.01
ATY3-121c	0.7139±0.016	0.08861±0.0014	0.05858±0.00077	546.7±9.3	547.3±8.1*	550±29	-0.1	372	17	144.8	4.3	0.39
ATY3-100c	0.7186±0.016	0.08864±0.0015	0.05912±0.00087	549.6±9.4	547.4±8.7*	570±33	0.4	388	17	259.1	7.6	0.67
ATY3-130	0.7222±0.016	0.0887±0.0015	0.05869±0.00074	551.8±9.4	547.8±8.8*	55328	0.7	950	170	581	47	0.61
ATY3-57C	0.719±0.017	0.08873±0.0015	0.05884±0.00087	551.3±10	548±8.8*	564±31	0.6	345	17	273	11	0.79
ATY3-54c	0.719±0.017	0.0888±0.0015	0.05882±0.00088	550.7±9.7	548.2±9.1*	566±31	0.5	305	19	173	10	0.57
ATY3-55r	0.706±0.018	0.0888±0.0016	0.058±0.0011	543±11	548.5±9.3*	539±41	-1.0	210	4.5	120	5.8	0.57
ATY3-36	0.725±0.021	0.0889±0.002	0.0594±0.0016	552.7±12	548.6±12*	574±57	0.7	166	14	18.9	0.51	0.11
ATY3-104r	0.7255±0.016	0.08884±0.0014	0.05935±0.0008	554.4±9.7	548.6±8.5*	576±29	1.0	657	35	509	20	0.77
ATY3-140r	0.716±0.017	0.08883±0.0014	0.05881±0.00089	547.8±9.9	548.6±8.4*	557±32	-0.1	302	22	151	16	0.50
ATY3-67r	0.7198±0.015	0.08891±0.0014	0.05873±0.00064	550.9±8.8	549±8.2*	560±23	0.3	815	57	579	30	0.71
ATY3-125b	0.729±0.048	0.0889±0.0026	0.0593±0.0035	554±29	549±15*	550±130	0.9	57.8	1.5	22.82	0.74	0.39
ATY3-166	0.72±0.015	0.08891±0.0014	0.05889±0.00074	550.5±9.0	549±8.4*	563±28	0.3	607	28	183.2	6.1	0.30
ATY3-47m	0.714±0.017	0.0889±0.0017	0.05808±0.00076	546.9±10	549.2±9.8*	530±28	-0.4	949	42	644	25	0.68

ATY3-137r	0.7133±0.016	0.08893±0.0015	0.05793±0.00093	547.4±10	549.2±8.7*	523±35	-0.3	378	16	374	15	0.99
ATY3-120r	0.7259±0.015	0.08897±0.0013	0.05885±0.0007	554.5±9.0	549.4±7.8*	567±27	0.9	583	30	439	20	0.75
ATY3-159	0.725±0.019	0.08901±0.0015	0.0591±0.0011	553.1±11	549.7±8.7*	568±40	0.6	247.2	8.8	154.1	6.5	0.62
ATY3-124	0.729±0.018	0.08903±0.0014	0.0596±0.0011	555.4±11	549.8±8.5*	582±39	1.0	375	21	249	11	0.66
ATY3-162	0.7236±0.015	0.08905±0.0013	0.05917±0.00067	553.1±9.0	549.9±7.8	570±25	0.6	843	56	652	29	0.77
ATY3-112	0.713±0.019	0.0891±0.0019	0.0583±0.00098	546.2±11	550.1±11*	536±37	-0.7	340	38	235	26	0.69
ATY3-163	0.724±0.018	0.0892±0.0015	0.05925±0.0009	552.5±10	550.5±9.2*	576±32	0.4	548	28	405	16	0.74
ATY3-167	0.725±0.02	0.0892±0.0018	0.05898±0.00094	553.1±12	550.5±11*	567±33	0.5	518	20	358.3	8.5	0.69
ATY3-38m	0.7252±0.016	0.08926±0.0014	0.05848±0.00082	553.6±9.2	551.1±8.4*	552±31	0.5	468	18	306.8	9.9	0.66
ATY3-53m	0.723±0.016	0.08929±0.0015	0.05866±0.0009	552.2±9.5	551.3±8.6*	550±33	0.2	750	34	487	16	0.65
ATY3-139	0.718±0.019	0.08932±0.0014	0.05854±0.00099	549.9±11	551.5±8.4*	549±36	-0.3	287	18	201	10	0.70
ATY3-138c	0.7199±0.017	0.08947±0.0014	0.05886±0.00084	552±9.8	552.4±8.3*	558±32	-0.1	526	29	395	18	0.75
ATY3-46r	0.7246±0.016	0.08961±0.0014	0.059±0.00085	553.2±9.3	553.2±8.4*	564±32	0.0	1065	47	756	29	0.71
ATY3-134	0.729±0.018	0.08962±0.0015	0.05884±0.00096	555.5±11	553.2±8.9*	556±36	0.4	412	27	225	17	0.55
ATY3-86	0.7231±0.016	0.08963±0.0014	0.05858±0.00087	552.2±9.7	553.3±8.5*	556±33	-0.2	318	20	223	11	0.70
ATY3-01	0.737±0.025	0.0897±0.0018	0.0596±0.0018	562±15	553.5±11*	609±68	1.5	89.9	8.6	19.8	2.2	0.22
ATY3-15b	0.724±0.017	0.0897±0.0016	0.05883±0.00092	552.5±10	554±9.6*	557±34	-0.3	407	12	103	11	0.25
ATY3-33	0.7228±0.015	0.08982±0.0013	0.05875±0.0007	552.2±8.7	554.4±7.9*	557±26	-0.4	721	68	504	37	0.70
ATY3-151	0.72±0.018	0.08981±0.0015	0.0581±0.0013	551.5±11	554.4±9.1*	541±47	-0.5	274	20	173	14	0.63
ATY3-122r	0.732±0.021	0.09±0.0017	0.0594±0.0015	558.4±13	555.3±10*	578±53	0.6	121.4	6.5	54.1	3.6	0.45
ATY3-170	0.726±0.018	0.08998±0.0015	0.05857±0.00098	553.6±11	555.3±8.9*	550±38	-0.3	229.6	9.9	127	4	0.55
ATY3-142	0.732±0.016	0.09022±0.0014	0.05911±0.00071	557.5±9.2	556.8±8.3*	568±26	0.1	1037	68	781	50	0.75
ATY3-168r	0.719±0.018	0.0906±0.0015	0.05785±0.001	550.6±11	559±9.0*	525±38	-1.5	216	13	145.4	6.6	0.67
ATY3-158	0.746±0.022	0.09101±0.0015	0.0597±0.0013	565.4±13	561.5±9.0*	591±46	0.7	139	9.8	70.2	5.6	0.51
ATY3-85	0.7401±0.017	0.09153±0.0015	0.05884±0.00077	562.1±9.7	564.6±8.8*	563±28	-0.4	391	21	215	10	0.55
ATY3-35b	0.756±0.023	0.09-24±0.0026	0.0602±0.0013	571±14	570±15	608±48	0.2	306	40	140	15	0.46

ATY3-48c_b	0.762±0.024	0.0935±0.0022	0.0599±0.0018	576±13	576±13	585±66	0.0	103.5	7.5	50.3	4.8	0.49
ATY3-07	0.803±0.021	0.0959±0.0021	0.06099±0.00085	598.3±12	590.1±12	637±30	1.4	585	90	108	11	0.18
ATY3-06	0.862±0.02	0.103±0.0017	0.0607±0.00068	631±11	632±10	628±24	-0.2	796	61	162	18	0.20

The discordance % of the analyses, determined from the following formula;
For $^{206}Pb/^{238}U$ dates younger than 1.0 Ga, discordance %=(1-[($^{207/235}U_{date}$)/($^{206}Pb/^{238}U_{date}$)]*100; for $^{206}Pb/^{238}U$ dates older than 1.0 Ga, discordance %=(1-[($^{207/206}Pb_{date}$)/($^{206}Pb/^{238}U_{date}$)])*100.
* Used for discordia diagram, ** Used for calculation of likely crystallization concordia age of the protholit,

Table S8. Laser ablation-inductively coupled plasma-mass spectrometry zircon REE data of the garnet amphibolites (Yahyaalci-Alaşehir, Bozdağ Nappe and Çamlıca-Tire Klippe, Çine Nappe) and retrogressed eclogite in Yenişehir-Kiraz, Çine Nappe, Menderes Massif, Turkey.

LA-ICP-MS zircon REE data ATY3-GARNET AMPHIBOLITE											
Sample Numbers Used in Concordia Diagram	La-ppm	Ce-ppm	Pr-ppm	Nd-ppm	Sm-ppm	Eu-ppm	Gd-ppm	Dy-ppm	Er-ppm	Yb-ppm	Lu-ppm
ATY3-24	0.090	4.51	0.041	0.84	1.81	0.337	11	55.30	96.90	206	36.20
ATY3-177c	0.0089	4.31	0.297	2.72	3.59	0.72	18.9	88	148	282	48.70
ATY3-12	0.0010	29.90	0.237	4.56	10.70	0.32	63.60	344	557	1130	163
ATY3-175	0.0050	3.52	0.104	1.16	1.67	0.55	11.30	52.20	93	194	35.80
ATY3-125	0.018	0.92	0.012	0.090	0.21	0.080	0.73	7.50	20.50	75.90	13.80
ATY3-109	0.005	4.50	0.183	2.25	3.34	0.61	18.90	84.40	137	262	42.90
ATY3-136	0.003	3.26	0.086	1.37	2.10	0.39	11.50	51.10	87.10	180.30	30.60
ATY3-39c	0.003	4.33	0.162	2.51	3.46	0.74	16.90	72.80	124.5	261	41.70
ATY3-10	0.015	4.09	0.11	2.23	3.17	0.75	15.80	59	96	191	30.9
ATY3-103	0.02	3.27	0.054	0.59	1.06	0.226	5.20	30.70	53.4	120	20.70
ATY3-161b	0.0018	1.56	0.011	0.39	0.44	0.13	2.90	16.40	29.10	66.60	11.70
ATY3-132r	0.035	4.10	0.175	1.82	1.94	0.44	11.50	58.60	102	225	37.80
ATY3-29	0.002	0.234	0.011	0.182	1.17	0.072	10.31	95.50	184	405	66.60
ATY3-21	0.013	3.06	0.087	0.41	0.81	0.21	6.80	24.9	46.30	93.60	18.7
ATY3-70	0.0013	8.36	0.044	1.24	2.47	0.351	14.40	80	150	332	57.90
ATY3-133c	0.035	4.78	0.042	1.26	2.26	0.44	10.80	59.30	99	217	35.90
ATY3-106	0.012	4.27	0.088	0.83	2.00	0.51	12.90	58.80	100.90	201.60	33.90
ATY3-149	0.048	9.14	0.401	3.45	4.84	0.75	24.90	116.8	200	416	64.20
ATY3-91	0.060	2.61	0.061	0.63	1.04	0.19	7.70	32.60	57.10	127.30	23.40
ATY3-03	0.029	5.10	0.079	1.10	2.18	0.48	12	59.50	114	247	45.50
ATY3-27	0.030	9.00	0.148	1.57	2.85	0.66	15.80	89.50	166	374	64.90
ATY3-116r	0.014	3.28	0.043	0.52	1.08	0.203	6.60	36.10	66.80	145	24.40
ATY3-111	0.008	10.98	0.410	4.06	5.87	1.08	31.20	157	291	559	91.50
ATY3-147c	0.0113	4.55	0.097	0.67	2.11	0.46	11.40	55.50	88.70	181.80	30.50
ATY3-52r	0.0052	5.28	0.102	0.93	1.73	0.33	9.01	42.40	77.60	162	28.10
ATY3-84	0.013	4.03	0.043	0.33	1.67	0.34	11.10	47.90	82.50	157.30	26.70
ATY3-62	0.0011	4.08	0.169	1.71	2.48	0.59	15.10	63.80	114.50	236.60	39.40
ATY3-99r	0.014	4.52	0.214	2.38	3.00	0.78	16.50	69	115.40	232.10	37.97
ATY3-141c	0.024	3.23	0.269	2.09	3.28	0.57	14.60	64.30	108.90	218.90	34.50
ATY3-65	0.0048	2.13	0.104	0.69	1.16	0.243	5.75	30.50	54.70	130.60	24.60
ATY3-110	0.012	2.08	0.038	0.46	1.25	0.388	8.42	39.50	60.50	115.80	19.03
ATY3-87	0.020	5.78	0.237	2.35	3.32	0.72	17.10	79.60	133.40	268	46.20
ATY3-63	0.0011	4.08	0.169	1.71	2.48	0.59	15.10	63.80	114.50	236.60	39.40
ATY3-131	0.045	2.91	0.129	0.29	1.07	0.33	8.70	38	65.10	128.60	21.20
ATY3-165	0.0037	5.00	0.220	1.59	2.78	0.58	16.50	68.10	112.80	233	36.50
ATY3-128r	0.0030	2.41	0.061	0.03	0.62	0.094	2.98	18.60	36.20	85	14.71
ATY3-48c	0.0033	4.18	0.119	2.09	2.56	0.50	14.60	64	121	256	41.80
ATY3-37r	0.0090	6.01	0.271	3.22	3.75	0.89	20.80	90.40	170.30	348	58.90
ATY3-56m	0.0059	3.72	0.198	2.59	3.33	0.73	16.20	70.70	119.80	233	38.50
ATY3-72	0.036	2.48	0.075	0.28	0.57	0.129	4.03	21.80	39.20	94.70	15.35
LA-ICP-MS zircon REE data TKC10-Garnet Amphibolite											
TKC10-68	0.0143	6.43	0.195	3.09	4.58	0.56	21.60	78.60	107.40	188	30.60
TKC10-107	0.009	2.92	0.0097	0.225	0.36	0.072	1.87	10.58	20.88	48.70	8.30
TKC10-30	0.0122	5.27	0.134	1.99	3.46	0.477	17.90	62.90	94.50	169	27
TKC10-04	0.0024	5.38	0.055	1.09	2.06	0.362	14.81	64.90	100.20	191.50	30.40
TKC10-91	0.012	3.99	0.036	0.65	0.99	0.258	6.05	29.42	48.20	102.20	17.55
TKC10-19	0.0154	7.06	0.334	4.80	6.35	0.764	23.60	78	107.40	191.80	31.60

TKC10-74	0.0032	5.02	0.059	1.30	2.00	0.317	9.42	38.50	61.20	121.30	20.67
TKC10-89	0.0112	6.26	0.047	0.84	1.62	0.235	8.360	35.80	56	113.70	18.92
TKC10-84	0.0036	2.86	0.0113	0.207	0.49	0.098	2.41	12.64	23	55.50	9.08
TKC10-108	0.0073	3.65	0.036	0.79	1.23	0.327	7.14	28.80	45.50	93.10	14.51
TKC10-70	0.0010	2.63	0.0158	0.313	0.534	0.12	2.98	14.94	27.11	65.20	10.84
TKC10-05	0.0033	4.79	0.074	1.10	1.96	0.318	9.45	37.10	55.10	113.60	19.23
TKC10-55	0.0073	4.05	0.042	0.90	1.55	0.213	8.60	34	52.10	105.30	17.10
TKC10-81	0.032	6.85	0.307	4.62	5.87	0.76	24	86	122.50	225.50	36.10
TKC10-27	0.0015	3.94	0.0241	0.57	0.90	0.125	5.42	24.30	42.60	93.60	16.69
TKC10-72	0.0073	5.77	0.037	0.828	1.55	0.241	8.02	33.10	52.20	105.30	17.81
TKC10-02	0.0019	3.69	0.0317	0.58	1.08	0.129	5.25	22.32	36.50	79.50	13.88
TKC10-08	0.0010	3.35	0.013	0.227	0.366	0.092	2.29	12.18	22.37	53.70	9.46
TKC10-22	0.0024	4.45	0.0302	0.523	1.01	0.166	7.94	36.80	60.70	122	21.25
TKC10-10	0.0030	4.53	0.048	0.74	1.84	0.274	10.56	41.60	64.90	127.50	20.16
TKC10-90	0.0109	3.16	0.037	0.45	0.84	0.146	4.50	18.40	31.40	72.30	12.50
TKC10-101	0.001	4.12	0.029	0.439	0.82	0.17	4.42	23.03	41.50	91.70	16.01
TKC10-97	0.0003	5.11	0.040	0.77	1.72	0.252	8.54	39.50	61.90	116.60	20.34
TKC10-28	0.022	7.06	0.288	4.49	5.18	0.551	24	80	111.90	203.70	34.10
TKC10-62	0.049	6.21	0.441	5.51	6.04	0.66	22.9	75.50	108.10	196.70	31.80
TKC10-105	0.0051	3.50	0.0172	0.409	0.66	0.201	3.71	18.70	33.80	76.40	12.94
TKC10-60	0.0032	3.90	0.029	0.433	0.98	0.192	5.56	23	39.60	85.70	14.45
TKC10-03	0.0021	4.97	0.076	1.68	2.96	0.332	13.80	46.80	67.60	130	20.70
TKC10-73	0.0046	4.81	0.053	1.16	2.71	0.346	14.20	56.30	87.40	162.20	27.40
TKC10-117	0.0098	4.00	0.025	0.371	0.91	0.173	4.98	22.90	43.10	93.80	16.59
TKC10-52	0.0025	5.01	0.046	0.65	1.43	0.19	7.69	35.90	61.60	126.60	21.20
TKC10-106	0.011	4.73	0.044	0.62	1.09	0.183	5.19	23.80	45.30	101.40	17.11
TKC10-111	0.006	3.90	0.035	0.401	0.82	0.122	4.62	20.64	36.90	80.10	13.38
TKC10-67	0.0005	6.33	0.135	2.01	4.37	0.49	21.20	78.60	113.80	205.30	32.70
TKC10-104	0.080	7.45	0.374	5.24	5.63	0.699	23.35	92.50	164.20	313	50.70
TKC10-116	0.0120	4.78	0.026	0.665	1.45	0.215	7.40	33.60	55.10	115	19.83
TKC10-115	0.0012	3.08	0.0062	0.244	0.402	0.083	2.54	13.40	24.61	54.40	9.70
TKC10-114	0.0170	3.12	0.0109	0.269	0.50	0.083	2.91	14.77	27.60	61	10.55
TKC10-56	0.0362	7.16	0.404	5.26	6.26	0.776	23.70	77.90	112.70	206	32.80
TKC10-77	0.0065	3.95	0.0212	0.466	1.00	0.202	6.75	29.83	52.20	110.10	18.64
TKC10-66	0.0133	2.70	0.031	0.56	0.89	0.158	4.07	19.30	32.70	68.80	12.41
TKC10-06	0.0428	7.48	0.416	5.24	6.33	0.694	23.49	78.60	111.20	212.80	33.40
TKC10-54	0.0092	1.98	0.0199	0.28	0.49	0.112	4.40	20.50	39	69	12
TKC10-113	0.0140	3.73	0.023	0.64	1.08	0.244	5.83	26.30	44.10	94.70	15.98
TKC10-59	0.0039	4.79	0.0436	0.76	1.64	0.255	8.00	34.10	53.60	107.20	17.36
TKC10-63	0.0092	5.09	0.0363	0.56	1.26	0.225	6.48	33.20	54.50	114.90	18.61
TKC10-110	0.0210	7.42	0.275	4.28	6.44	0.879	24	83	113.90	211.30	33
TKC10-65	0.0037	3.19	0.0078	0.338	0.51	0.110	2.92	14.71	25.80	58.10	10.63
TKC10-79	0.0068	6.15	0.123	1.51	1.79	0.293	9.87	37.70	62.20	122.50	20.73
TKC10-69	0.0130	7.06	0.272	4.65	6.03	0.765	24.5	82	110.60	202.70	31.80
TKC10-76	0.0018	4.38	0.0292	0.503	0.97	0.165	6.06	27.30	46.60	99.20	16.71
TKC10-103	0.048	6.92	0.314	4.52	5.38	0.783	21.8	76.50	114.80	213.80	34.80
TKC10-64	0.0066	3.05	0.0253	0.322	0.447	0.070	3.29	15.54	26.20	61.30	10.72
TKC10-112	0.0012	4.14	0.023	0.56	1.17	0.195	8.00	38.10	65.20	130	21.70
TKC10-109	0.010	4.88	0.070	1.26	2.62	0.324	11	41.60	66.60	130	20.20
LA-ICP-MS zircon REE data											
K1-Retrogressed Eclogite											
K1-23	0.031	2.66	0.167	3.82	6.64	0.35	35.40	202	327	630	104
K1-28	0.036	0.243	0.004	0.037	0.053	0.058	2.82	21	62.5	203	44
K1-3	0.035	0.021	0.008	0.06	0.017	0.056	0.73	3.89	13.90	56.6	15.30
K1-34	0.12	0.25	0.017	0.34	1.58	0.060	14	150.90	335	830	144.80
K1-35	0.19	0.392	0.060	0.79	2.30	0.060	24	189	381	872	142
K1-53	0.56	0.342	0.014	0.45	1.74	0.133	14.70	119.10	243.10	524	82.60
K1-58	0.032	3.35	0.035	0.93	3.44	0.047	24.70	156	325	725	126
K1-69r	0.023	0.54	0.035	0.81	2.30	0.098	21.10	167.5	337	729	119
K1-70m	0.071	0.346	0.051	0.76	1.72	0.029	15.100	128.3	255	574	89.60

K1-79r	0.0063	0.44	0.085	0.74	2.63	0.126	20.9	177	347	769	126.1
K1-80m	0.0010	0.439	0.036	0.45	2.45	0.093	18	152	313	688	109.6
K1-83r	0.0061	0.45	0.045	0.73	2.86	0.103	24.20	191	374	824	126.7
K1-84c	0.023	0.81	0.25	2.80	5.40	0.041	33.20	243	467	1050	164.6
K1-2	0.0290	2.10	0.005	0.039	0.24	0.370	4.40	59	169	550	106
K1-85m	0.0114	0.44	0.038	0.53	2.68	0.038	20.40	184.1	377	842	136.9
K1-88	0.030	4.80	0.24	3.9	7.50	0.305	41.30	208	358	730	115

Table S9. Zircon U-Pb geochronological results of garnet amphibolite sample-TKC10 (Çamlıca-Tire Klippe, Çine Nappe), Menderes Massif, Turkey.

SAMPLE NUMBERS	$^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	$^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	Discor-dance %	U (ppm)	2SE	Th (ppm)	2SE	Th/U
	Isotopic Ratios			Apparent Ages								
TKC10 GARNET AMPHIBOLITE												
TKC10-99	0.599±0.019	0.0751±0.0012	0.0584±0.0022	475±12	466.5±7*	502±80	1.8	44.6	2.4	30.2	1.6	0.68
TKC10-33	0.648±0.037	0.0807±0.016	0.0586±0.0034	511±21	500.1±9.6*	560±110	2.1	65.8	2.5	40.7	1.3	0.62
TKC10-32	0.621±0.018	0.078±0.0011	0.0585±0.0016	490±11	484.2±6.4*	550±64	1.2	124.3	5.8	155.8	6.2	1.25
TKC10-48	0.656±0.019	0.0812±0.0012	0.0585±0.0018	511±12	502.9±7.1*	540±68	1.6	82.9	4.3	94.5	4.6	1.14
TKC10-94	0.663±0.018	0.0814±0.0015	0.0593±0.0018	516±11	504.2±8.9*	563±67	2.3	123.8	3.4	154.5	3.8	1.25
TKC10-87	0.65±0.017	0.0815±0.0011	0.058±0.0016	510. 3±9.8	504.9±6.3*	514±64	1.1	90.5	5.7	128.3	8.4	1.42
TKC10-42	0.668±0.024	0.0815±0.0011	0.0599±0.0022	517±15	505.2±6.7*	569±80	2.3	54.1	3.5	45.9	3	0.85
TKC10-86	0.664±0.02	0.0817±0.0012	0.0597±0.002	518±13	506.5±7.1*	585±70	2.2	58.6	3.2	68.4	3.7	1.17
TKC10-46	0.651±0.02	0.08162±0.00098	0.0582±0.0017	507±12	505.7±5.8*	508±62	0.3	74.9	5	59.9	3.3	0.80
TKC10-17	0.657±0.035	0.082±0.0018	0.0579±0.003	510±21	508±11*	520±110	0.4	39.2	1.1	22.8	0.37	0.58
TKC10-43	0.669±0.018	0.08241±0.00089	0.0589±0.0016	521±11	510.4±5.3*	557±58	2.0	66.6	3.1	74.4	2.9	1.12
TKC10-25	0.682±0.021	0.0832±0.00098	0.0602±0.0023	527±13	515.2±5.8	593±84	2.2	82.7	3.9	89.9	3.8	1.09
TKC10-33	0.683±0028	0.0833±0.0018	0.0591±0.0021	529±17	516±11*	541±80	2.5	37.1	1.6	27.9	1.8	0.75
TKC10-82	0.676±0.014	0.08338±0.0094	0.0592±0.0013	524. 9±8.9	516.2±5.6*	571±49	1.7	106.7	5.7	131	6.2	1.23
TKC10-92	0.655±0.024	0.0835±0.0019	0.0561±0.0025	511±15	517±11*	440±98	-1.2	62.5	2.6	47.8	2	0.76
TKC10-13	0.678±0.029	0.0837±0.0011	0.0588±0.0017	524±12	518.1±6.4*	555±60	1.1	93	4.6	140.7	7.5	1.51
TKC10-23	0.681±0.016	0.0839±0.001	0.0595±0.0015	528±10	519.1±5.9*	578±55	1.7	92.6	5	85.9	3.2	0.93

TKC10-31	0.672±0.015	0.08404±0.00091	0.059±0.0015	523.1±9.3	520.1±5.4*	594±50	0.6	105.5	5.1	126	6	1.19
TKC10-24	0.676±0.025	0.0841±0.001	0.0583±0.0022	522±15	520.6±5.9*	553±85	0.3	66.8	3.4	88.5	3.9	1.32
TKC10-93	0.684±0.02	0.0841±0.0012	0.059±0.0017	529±12	520.6±7.1*	559±60	1.6	71.4	5.6	77.9	6.3	1.09
TKC10-36	0.676±0.014	0.0842±0.001	0.0583±0.0013	525.7±8.3	521.8±6.1*	559±60	0.7	104.4	6.8	137.4	8.4	1.32
TKC10-102	0.688±0.024	0.0843±0.0013	0.0588±0.0019	529±14	521.8±7.6*	522±51	1.4	47.3	3.2	55.5	3.5	1.17
TKC10-20	0.672±0.032	0.0843±0.0018	0.0574±0.0032	520±19	522±11*	555±70	-0.4	45.65	0.6	39.51	0.5	0.87
TKC10-34	0.678±0.021	0.0844±0.0012	0.0587±0.0017	527±13	523.4±7.3*	510±130	0.7	60.8	6.6	56.3	7.4	0.93
TKC10-15	0.686±0.017	0.0845±0.0011	0.0582±0.0015	529±10	522.8±6.7*	538±64	1.2	56.4	3.5	40	1.4	0.71
TKC10-40	0.681±0.014	0.0845±0.00092	0.059±0.0013	526. 7±8.4	522.9±5.5*	531±600	0.7	113.7	6.6	148.4	8	1.31
TKC10-41	0.669±0.012	0.0845±0.00086	0.0572±0.0012	519.4±7.6	523.2±5.1*	552±48	-0.7	104.5	6.7	136.3	8.2	1.30
TKC10-14	0.678±0.019	0.0846±0.0011	0.0592±0.0018	529±11	523.5±6.8*	498±44	1.0	73.1	4.6	99.6	6.2	1.36
TKC10-98	0.67±0.028	0.0846±0.0014	0.058±0.0027	520±17	523.6±8.2*	556±66	-0.7	34.3	2.2	23.8	1.5	0.69
TKC10-16	0.672±0.015	0.0846±0.00075	0.0576±0.0013	520.8±9	523.7±4.5*	503±99	-0.6	95.5	3.6	110.9	3.9	1.16
TKC10-49	0.692±0.016	0.0847±0.0012	0.0583±0.0015	534.2±9.3	523.9±7.1*	505±48	1.9	107	5.1	92.7	3.5	0.87
TKC10-37	0.689±0.021	0.0847±0.001	0.0589±0.0017	532±12	524.2±6.2*	559±57	1.5	57.1	4.1	43.9	2.9	0.77
TKC10-07	0.686±0.017	0.0848±0.00084	0.0583±0.0016	530.9±9.9	524.4±5*	547±66	1.2	148.1	5.4	160.1	6.1	1.08
TKC10-18	0.696±0.017	0.0850±0.00097	0.0595±00017	538±11	525.8±5.8*	550±58	2.3	76.4	3	79	3.9	1.03
TKC10-35	0.687±0.019	0.085±0.0012	0.0577±0.0017	531±12	527±7.4*	575±62	0.8	67.9	4.6	49.1	3.3	0.72
TKC10-85	0.681±0.015	0.0851±0.00082	0.058±0.0014	526.5±9.3	526.4±4.9*	508±65	0.0	78	3.9	80.7	3.8	1.03
TKC10-39	0.694±0.0018	0.0851±0.0015	0.0598±0.0018	534±11	526.5±8.8*	516±53	1.4	81.6	4.4	105.3	5.7	1.29
TKC10-47	0.693±0.022	0.0851±0.0012	0.0587±0.0019	534±13	527.4±7.1*	578±66	1.2	52.1	3.9	32.3	2.2	0.62
TKC10-83	0.696±0.017	0.0852±0.001	0.0596±0.0017	539±10	527.3±6.1*	550±68	2.2	66.9	3.3	63.3	2.9	0.95
TKC10-26	0.691±0.017	0.0853±0.001	0.0599±0.0015	533±10	527.4±6.1*	585±59	1.1	117.2	7.1	144.7	6.6	1.23
TKC10-44	0.692±0.013	0.0853±0.001	0.0588±0.0011	533.3±7.8	527.7±6*	602±49	1.1	182	11	183.9	8.9	1.01

TKC10-45	0.693±0.024	0.0853±0.0013	0.058±0.0021	533±14	527.7±7.9*	549±41	1.0	49.8	2.4	57.2	4.2	1.15
TKC10-53	0.692±0.017	0.0853±0.0012	0.0586±0.0015	533±10	527.8±6.9*	506±81	1.0	81.3	7.8	92.5	8.2	1.14
TKC10-58	0.681±0.013	0.0854±0.00081	0.0578±0.0013	526.6±7.7	528±4.8*	553±57	-0.3	117.6	5.8	140.6	6.3	1.20
TKC10-29	0.697±0.015	0.0856±0.00094	0.0597±0.0015	537±9	529.2±5.6*	531±47	1.5	92.3	3.8	106.3	5.6	1.15
TKC10-21	0.678±0.015	0.0857±0.00088	0.0582±0.0013	525.99±	529.8±5.2*	593±54	-0.7	102.8	5.1	101	4.5	0.98
TKC10-50	0.678±0.02	0.0857±0.0011	0.0571±0.0017	525±12	529.8±6.4*	525±49	-0.9	78.2	3.6	102.5	4.7	1.31
TKC10-72	0.696±0.02	0.0858±0.00098	0.0585±0.0017	535±12	530.6±5.8*	495±68	0.8	86.6	3.8	89.8	3.2	1.04
TKC10-71	0.695±0.019	0.0858±0.00085	0.0589±0.0016	534±11	530.7±5*	546±65	0.6	72.2	3.9	69	3.1	0.96
TKC10-61	0.69±0.014	0.08583±0.0009	0.0584±0.0013	531.9±8.3	530.7±5.5*	548±58	0.2	104.9	3.7	135.1	5.2	1.29
TKC10-57	0.696±0.017	0.0858±0.00095	0.0592±0.0017	536±10	530.9±5.6*	557±50	1.0	78.4	4.7	85.6	4.8	1.09
TKC10-38	0.692±0.019	0.0859±0.0012	0.0582±0.0016	533±11	531.2±7.1*	547±61	0.3	75.5	5.5	70	12	0.93
TKC10-95	0.699±0.014	0.0859±0.0009	0.0587±0.0013	537.4±8.5	531.2±5.3*	533±61	1.2	162.3	9.7	233	12	1.44
TKC10-01	0.679±0.022	0.0859±0.0011	0.057±0.0019	525±13	531.3±6.4*	540±47	-1.2	75.5	5.5	85.5	7.1	1.13
TKC10-100	0.69±0.018	0.0859±0.0012	0.0582±0.0016	531±11	531.4±6.9*	480±74	-0.1	77	3.1	97.9	5.1	1.27
TKC10-96	0.688±0.019	0.0859±0.00094	0.0581±0.0016	532±11	531.2±5.6*	521±59	0.2	62.3	5.2	82.6	7.6	1.33
TKC10-68	0.691±0.014	0.086±0.0013	0.0586±0.0015	532.8±8.6	531.8±7.6*,**	538±62	0.2	130.6	9.8	171	14	1.31
TKC10-107	0.69±0.0129	0.0861±0.0014	0.0588±0.0023	531±17	532±8.1*,**	552±53	-0.2	38.3	1.7	23.28	0.7	0.61
TKC10-30	0.692±0.016	0.0861±0.001	0.0596±0.0016	533±9.7	532.2±6*,**	535±89	0.2	87	5.7	108.4	6.6	1.25
TKC10-04	0.694±002	0.0861±0.0011	0.0583±0.0016	534±12	532.6±6.4*,**	601±56	0.3	115.3	5.1	143.1	6.2	1.24
TKC10-91	0.702±0.027	0.0862±0.014	0.0583±0.0016	534±12	532.6±6.4*,**	543±63	1.5	62.2	3.4	65	2.9	1.05
TKC10-19	0.69±0.017	0.0862±0.0012	0.059±0.0023	541±15	532.7±8.3*,**	548±82	0.0	92.7	4.5	118.5	5.1	1.28
TKC10-74	0.683±0.02	0.0862±0.0011	0.0587±0.0017	533±10	533±7.2*,**	531±63	-0.8	51.2	2.9	60.3	3	1.18
TKC10-89	0.7±0.016	0.0863±0.0009	0.0574±0.0017	529±12	533.2±6.4*,**	523±65	0.9	89.6	5.1	85.9	4.4	0.96
TKC10-84	0.713±0.024	0.0863±0.0013	0.0586±0.0015	538. 1±9.3	533.3±5.5*,**	550±55	2.3	46.1	2.3	30.9	1.4	0.67

TKC10-108	0.693±0.034	0.0863±0.0013	0.0592±0.0022	546±14	533.6±7.5*,**	537±81	-0.3	36.4	1.5	40.2	1.7	1.10
TKC10-70	0.694±0.026	0.0863±0.0013	0.0572±0.0029	532±21	533.6±8*,**	480±110	0.2	34.3	1.6	22.4	1.1	0.65
TKC10-05	0.7±0.022	0.08639±0.001	0.0581±0.0024	535±16	533.7±7.5*,**	537±89	0.5	52.3	3	61.2	3.1	1.17
TKC10-55	0.695±0.022	0.0864±0.0012	0.0589±0.002	537±13	534.1±5.9*,**	543±76	0.6	47.1	2	39.8	1.3	0.85
TKC10-81	0.702±0.015	0.08645±0.001	0.0584±0.0021	537±13	533.9±6.9*,**	544±75	0.9	109.4	5.8	141.8	6.6	1.30
TKC10-27	0.715±0.002	0.0865±0.0011	0.0591±0.0014	539.2±13	534.5±5.2*,**	563±55	2.2	77.9	3.3	59.5	2.4	0.76
TKC10-78	0.691±0.014	0.0865±0.0009	0.0606±0.0022	547±9.3	535±6.7*,**	621±78	-0.5	109.9	6.9	104	6.5	0.95
TKC10-02	0.7±0.022	0.0866±0.0012	0.0581±0.0012	532.6±8.6	535±5.4*,**	524±43	0.7	53.4	3.6	41.4	2.3	0.78
TKC10-08	0.709±0.036	0.0868±0.0015	0.0591±0.002	539±13	535.2±7.1*,**	561±76	1.0	58.3	2	37.8	1.2	0.65
TKC10-22	0.686±0.016	0.0869±0.0008	0.0582±0.0029	542±22	536.5±9*,**	510±110	-1.5	107.9	5.4	130.4	4.6	1.21
TKC10-10	0.691±0.022	0.0869±0.0017	0.0579±0.0014	529.1±9.4	536.9±5*,**	505±52	-0.8	120.8	4	162.3	5.2	1.34
TKC10-90	0.706±0.027	0.0869±0.0016	0.0585±0.0017	533±13	537±10*,**	539±63	0.5	37.7	1.4	34.2	4	0.91
TKC10-101	0.696±0.021	0.0869±0.0012	0.0583±0.0024	540±16	537.3±9.2*,**	523±90	-0.3	57.3	3.4	42.9	2.3	0.75
TKC10-97	0.708±0.021	0.08691±0.001	0.0588±0.0019	536±13	537.4±7.2*,**	534±71	0.8	95.4	4.7	89.9	3.5	0.94
TKC10-28	0.708±0.015	0.08697±0.0083	0.059±0.0018	542±12	537.9±5.8*,**	539±65	1.2	115	6.4	150.8	8	1.31
TKC10-62	0.7±0.016	0.087±0.001	0.0598±0.0013	544±8.9	537.5±4.9*,**	601±48	0.1	100.3	4.3	117.9	6.5	1.18
TKC10-105	0.695±0.024	0.087±0.0012	0.0583±0.0015	537.9±9.7	537.6±5.9*,**	518±56	-0.3	44.7	3.1	46.6	2.5	1.04
TKC10-60	0.687±0.022	0.087±0.0013	0.058±0.0021	536±15	537.6±7.3*,**	507±78	-1.3	47.4	1.5	40.8	2.2	0.86
TKC10-03	0.69±0.015	0.0871±0.00091	0.0567±0.0019	531±13	537.7±7.8*,**	463±76	-1.2	95.5	7.6	134.7	9.9	1.41
TKC10-73	0.698±0.017	0.08708±0.0008	0.0577±0.0014	531.7±9.2	538.2±5.4*,**	500±52	-0.4	87.9	6.5	105.3	8.5	1.20
TKC10-10	0.703±0.028	0.0871±0.0017	0.0578±0.0014	536±10	538.2±4.9*,**	532±54	0.2	72.6	2.9	96.7	2.9	1.33
TKC10-117	0.681±0.026	0.0872±0.0011	0.0583±0.0025	539±17	538±10*,**	511±96	-2.6	60.3	2.9	51.6	2	0.86
TKC10-52	0.703±0.018	0.0872±0.0012	0.0561±0.0023	525±16	538.8±6.8*,**	443±90	0.0	69.2	3.6	61.3	2.5	0.89
TKC10-106	0.689±0.023	0.0872±0.0012	0.0582±0.0016	539±11	539±7*,**	528±61	-1.5	63.5	5.1	81.2	9.5	1.28

TKC10-111	0.71±0.017	0.0872±0.0011	0.0577±0.0022	531±14	539±6.8*,**	495±81	0.9	75	4.2	71.3	3.5	0.95
TKC10-67	0.708±0.02	0.0873±0.0011	0.059±0.0016	544±10	539±6.3*,**	581±59	0.5	64	3.5	49.6	2.5	0.78
TKC10-104	0.707±0.013	0.0873±0.0012	0.0586±0.0018	542±12	539.3±6.4*,**	514±60	0.6	132.4	5.3	139.4	4.6	1.05
TKC10-116	0.687±0.023	0.0873±0.0018	0.0596±0.0014	542.8±7.8	539.5±6.9*,**	589±53	-1.9	67.5	2	54.3	1.3	0.80
TKC10-115	0.706±0.028	0.0874±0.0013	0.0576±0.0024	530±14	540±11*,**	520±85	0.5	58.5	3	38.6	1.7	0.66
TKC10-114	0.705±0.023	0.0874±0.0011	0.0588±0.0024	543±16	540.1±7.5*,**	552±94	-0.1	52	2.8	36	1.8	0.69
TKC10-56	0.71±0.014	0.08745±0.0009	0.0584±0.0019	540±14	540.3±6.6*,**	512±70	0.7	111.4	4.1	132.3	5.4	1.19
TKC10-77	0.714±0.02	0.0876±0.0014	0.0586±0.0011	544.1±8.4	540.4±5.4*,**	565±45	0.9	106.4	6.2	93.5	5.2	0.88
TKC10-66	0.691±0.023	0.0877±0.0015	0.0599±0.0019	546±12	541.1±8.6*,**	594±67	-1.8	58.4	6.2	70.3	9	1.20
TKC10-06	0.714±0.037	0.0877±0.0013	0.0569±0.002	532±14	541.6±8.8*,**	483±79	-0.7	66.7	1.8	64.9	1.6	0.97
TKC10-54	0.715±0.019	0.0877±0.0012	0.0591±0.0032	538±15	542±7.9*,**	504±85	0.7	61.5	1.7	63.8	3.9	1.04
TKC10-113	0.707±0.021	0.0877±0.001	0.0595±0.0018	543±13	542.1±6.2*,**	557±66	0.2	62	3.3	69.7	3.5	1.12
TKC10-59	0.72±0.019	0.08784±0.00098	0.0593±0.0017	551±12	543.5±5.7*,**	560±64	1.4	72.9	4.4	77.9	3.8	1.07
TKC10-63	0.714±0.018	0.0879±0.0011	0.0584±0.0016	547±11	542.8±6.6*,**	546±59	0.8	73.2	2.8	66.5	1.6	0.91
TKC10-110	0.716±0.018	0.0879±0.0011	0.059±0.0014	548±10	543.1±6.4*,**	572±52	0.9	106.6	6.5	148.5	8	1.39
TKC10-65	0.708±0.019	0.08795±0.00092	0.0574±0.0016	542±11	543.3±5.5*,**	502±60	-0.2	70.8	4.6	67.3	6.3	0.95
TKC10-79	0.718±0.017	0.0882±0.0012	0.06±0.0015	550±10	544.5±7*,**	595±52	1.0	124.9	4.5	136.1	4.2	1.09
TKC10-69	0.7±0.021	0.0883±0.0012	0.0578±0.0016	534±11	545.2±7.2*,**	502±56	-2.1	101.6	5.3	141.3	7.7	1.39
TKC10-76	0.713±0.019	0.0884±0.0013	0.0588±00015	548±11	546±7.6*,**	556±55	0.4	59.1	4.2	49.5	4.1	0.84
TKC10-103	0.71±0.02	0.0884±0.0097	0.0586±0.0019	543±12	546±5.7*,**	522±69	-0.6	79.7	3.9	89.5	3.6	1.12
TKC10-64	0.712±0.021	0.0887±0.0011	0.0583±0.0018	547±13	547.8±6.4*,**	524±67	-0.1	60.7	2.8	42.3	1.4	0.70
TKC10-112	0.72±0.017	0.0889±0.0011	0.0588±0.0016	549±10	548.8±6.6*,**	546±60	0.0	66.7	1.8	54.4	3.7	0.82
TKC10-109	0.71±0.021	0.0889±0.0011	0.0576±0.0018	543±13	548.9±6.6*,**	498±72	-1.1	60.2	1.2	52.5	1.8	0.87
TKC10-92	0.724±0.021	0.09±0.0015	0.0579±0.0019	554±13	555.3±8.7*	525±71	-0.2	76.9	3.7	102.3	5.3	1.33

TKC10-20	0.746±0.034	0.0902±0.0018	0.0593±0.0029	567±20	557±10*	580±110	1.8	75.2	4.1	61.2	3.2	0.81

*used for calculation of likely crystallization Concordia age of the protoliths,
The discordance % of the analyses, determined from the following formula;
For $^{206}Pb/^{238}U$ dates younger than 1.0 Ga, discordance %=(1-[($^{207}/^{235}U_{date}$)/($^{206}Pb/^{238}U_{date}$)]*100; for $^{206}Pb/^{238}U$ dates older than 1.0 Ga, discordance %=(1-[($^{207}/^{206}Pb_{date}$)/($^{206}Pb/^{238}U_{date}$)])*100.
* Used for discordia diagram, ** Used for calculation of likely crystallization concordia age of the protholit,

Table S10. Rutile U-Pb geochronological results of garnet amphibolite sample-TKC10 (Çamlıca-Tire Klippe, Çine Nappe), Menderes Massif, Turkey.

SAMPLE NUMBERS	Isotopic Ratios $^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	Apparent Ages $^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	Discor-dance %	U (ppm)	2SE	Pb (ppm)	2SE
TKC10-GARNET AMPHIBOLITE											
TK4102-K-41	0.099±0.039	0.00458±0.00069	0.08±0.15	87±36	29.4±4.4*	400±1200	66	0.954	0.024	0.084	0.067
TK4102-D-682	0.106±0.071	0.0049±0.0012	0.11±.0.22	71±63	31.2±7.6*	-6000±6000	56	0.481	0.013	0.107	0.096
TK4102-J-312	0.126±0.043	0.00512±0.00069	0.267±0.099	110±35	32.9±4.4*	800±1300	70	1.111	0.023	0.078	0.064
TK4102-J-332	0.19±0.1	0.00541±0.00076	0.04±0.2	123±34	34.7±4.9*	1200±2600	72	1.033	0.03	0.132	0.075
TK4102-D-672	0.21±0.11	0.0056±0.0017	0.43±0.24	200±88	36±11*	900±2900	82	0.417	0.012	0.08	0.16
TK4102-L-222	0.23±0.15	0.0058±0.002	0.25±0.39	170±120	37±13*	700±4500	78	0.2874	0.0068	0.21	0.16
TK4102-L-262	0.21±0.11	0.006±0.0017	0.3±0.34	155±91	38±11*	-4200±3600	75	0.3367	0.0082	0.076	0.058
TK4102-H-072	0.2±0.12	0.0059±0.0018	0.2±0.25	210±100	38±11*	-6700±5800	82	0.293	0.01	0.09	0.065
TK4102-H-062	0.25±0.13	0.006±0.0015	0.02±0.31	187±89	38.7±9.7*	-700±5300	79	0.447	0.017	0.083	0.078
TK4102-C-552	0.276±0.092	0.0061±0.0012	0.57±0.47	196±66	39.3±7.7 *	-2400±6400	80	0.541	0.022	0.31	0.12
TK4102-K-452	0.175±0.041	0.00618±0.00067	0.246±0.074	158±34	39.7±4.3*	2270±640	75	1.554	0.041	0.421	0.097
TK4102-M-512	0.11±0.057	0.0062±0.0015	0.06±0.2	101±49	40±9.6*	-5000±6300	60	0.522	0.017	0.04	0.12
TK4102-K-422	0.139±0.043	0.00633±0.0008	0.206±0.099	123±38	40.6±5.1*	1540±790	67	1.223	0.039	0.35	0.11
TK4102-H-082	0.221±0.1	0.0065±0.0015	0.16±0.25	220±91	41.4±9.8*	-3500±4500	81	0.344	0.014	0.023	0.048
TK4102-D-692	0.29±0.11	0.0065±0.0019	0.31±0.23	263±99	42±12*	2400±2400	84	0.517	0.015	0.3	0.2
TK4102-J-362	0.07±0.093	0.0067±0.0016	0.2±0.39	42±91	43±10*	-3200±4300	-2	0.47	0.012	0.11	0.14
TK4102-D-652	0.57±0.2	0.0082±0.0026	0.21±0.72	360±80	52±17*	600±3100	86	0.4503	0.0072	0.29	0.13
TK4102-E-752	0.41±0.2	0.0081±0.0021	0.36±0.67	260±160	52±14*	1800±4000	80	0.2546	0.0088	0.23	0.17
TK4102-J-322	0.26±0.073	0.0085±0.0035	0.323±0.07	202±35	54±21*	3110±390	73	1.497	0.049	0.49	0.18
TK4102-E-722	0.53±0.25	0.0086±0.002	0.53±0.23	360±130	55±13*	3300±1600	85	0.499	0.015	0.52	0.16
TK4102-E-742	0.48±0.29	0.0091±0.0034	0.16±0.25	290±160	58±22*	-6300±5500	80	0.1734	0.0049	0.02	0.12
TK4102-G-192	0.28±0.15	0.0097±0.0035	0.15±0.2	220±110	62±23*	-2700±4100	72	0.2298	0.008	-0.009	0.084
TK4102-H-102	0.69±0.41	0.0107±0.004	0.3±0.46	370±200	68±25*	-100±4400	82	0.1334	0.0047	0.141	0.071
TK4102-C-562	0.96±0.1	0.0114±0.0015	0.78±0.14	673±52	73.1±9.5*	4830±380	89	0.564	0.018	0.92	0.11

TK4102-H-152	1.15±036	0.0121±0.0042	0.67±0.85	660±150	77±27*	600±6200	88	0.1452	0.0049	0.155	0.069
TK4102-L-292	0.71±0.12	0.0126±0.0019	0.6±0.18	553±74	81±12*	4100±540	85	0.453	0.015	0.52	0.14
TK4102-L-302	1.5±0.3	0.0156±0.0024	0.72±0.1	850±110	100±15*	4650±280	88	0.576	0.016	1.25	0.32
TK4102-M-532	1.41±0.12	0.0167±0.0013	0.602±0.056	898±49	106.7±8.2*	4450±150	88	0.609	0.018	1.43	0.15
TK4102-C-542	1.62±0.27	0.0182±0.0034	0.77±0.19	950±110	116±22*	4810±470	88	0.354	0.014	0.99	0.21
TK4102-H-122	3.34±0.41	0.0385±0.0064	0.8±0.2	1453±91	242±39*	5300±1200	83	0.1774	0.0079	0.77	0.11
TK4102-J-342	5.49±0.83	0.0505±0.0072	0.772±0.028	1810±110	315±43*	4909±62	83	1.743	0.062	12.3	1.7
TK4102-L-232	15.9±1.5	0.156±0.017	0.846±0.045	2871±95	926±20*	5060±100	68	0.2661	0.0088	6.07	0.63
TK4102-I-042	36.9±5.2	0.352±0.052	0.79±0.13	3660±130	1980±230*	4930±300	46	0.044	0.0032	1.98	0.52
TK4102-C-57b	24.4±2.2	0.203±0.013	0.871±0.063	3271±87	1188±69*	5120±140	64	0.415	0.013	17.1	1.8
TK4102-F-482	27.8±2.5	0.269±0.028	0.745±0.08	3396±96	1520±140*	4810±190	55	0.0611	0.0033	2.82	0.25
TK4102-J-392	37.8±2.7	0.314±0.024	0.873±0.047	3694±69	1740±120*	5130±110	53	0.1108	0.0035	5.86	0.37
TK4102-I-04c	39.8±2.8	0.333±0.023	0.836±0.049	3763±72	1868±100*	5040±110	50	0.3185	0.0099	16.1	1.1
TK4102-D-70b	39.8±5.5	0.346±0.054	0.858±0.048	3710±140	1880±250*	5090±110	49	0.342	0.016	31.3	6.1
TK4102-I-042	36.9±5.2	0.352±0.052	0.79±0.13	3660±130	1980±230*	4930±300	46	0.044	0.0032	1.98	0.52
TK4102-A-62b	62.7±7.8	0.581±0.08	0.801±0.068	4190±120	2900±320*	5000±140	31	0.1793	0.0055	22	3.5
TK4102-D-69b	76±5.7	0.66±0.037	0.829±0.039	4404±75	3270±140*	5029±89	26	0.335	0.023	53.4	1.4
TK4102-B-592	75.6±9.4	0.668±0.072	0.841±0.036	4400±130	3320±270*	5054±82	25	0.1606	0.0064	19.9	1.8

The discordance % of the analyses, determined from the following formula;
For $^{206}Pb/^{238}U$ dates younger than 1.0 Ga, discordance %=(1-[($^{207/235}U_{date}$)/($^{206}Pb/^{238}U_{date}$)]*100; for $^{206}Pb/^{238}U$ dates older than 1.0 Ga, discordance %=(1-[($^{207/206}Pb$ date)/($^{206}Pb/^{238}U$date)])*100.
*, [a] -Used for discordia diagram.

Table S11. Zircon U-Pb geochronological results of retrogressed eclogite sample-K1 (Yenişehir-Kiraz, Çine Nappe), Menderes Massif, Turkey.

	Isotopic Ratios			Apparent Ages								
SAMPLE NUMBERS	$^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	$^{207}Pb/^{235}U$ ± (2SE)	$^{206}Pb/^{238}U$ ± (2SE)	$^{207}Pb/^{206}Pb$ ± (2SE)	Discor-dance %	U (ppm)	2SE	Th (ppm)	**2SE**	**Th/U**
K1 RETROGRESSED ECLOGITE												
K1-47r	0.0895±0.0027	0.01343±0.00023	0.0482±0.0012	87±2.5	86±1.5*	111±52	1.1	441	18	167.2	3.8	0.38
K1-47c	0.0933±0.0037	0.01263±0.00024	0.0543±0.0022	85±3.4	80.9±1.5*	368±83	4.8	500	28	234	15	0.47
K1-43	0.276±0.0057	0.0386±0.0019	0.0459±0.0091	244±46	244±12*	10±360	0.0	15.4	1.8	1.64	0.26	0.11
K1-31	0.36±0.13	0.0453±0.0049	0.049±0.017	294±91	285±30*	180±600	3.1	3.83	0.28	0.245	0.052	0.06
K1-25	0.412±0.059	0.0541±0.0022	0.0549±0.0073	349±50	340±14*	300±260	2.6	6.77	0.37	0.595	0.051	0.09
K1-81r	0.437±0.02	0.0569±0.0013	0.0565±0.0023	373±14	356.6±7.9*	486±91	4.4	59.5	5.6	7.45	0.88	0.13
K1-82c	0.503±0.024	0.0642±0.0014	0.0574±0.0027	412±16	401.2±8.7*	460±100	2.6	33.3	3.5	3.04	0.3	0.09
K1-02	0.559±0.051	0.0745±0.0026	0.0553±0.0058	469±34	465±16*	410±200	0.9	9.31	0.92	0.7	0.14	0.08
K1-62	0.63±0.033	0.0769±0.002	0.0585±0.0027	495±21	477±12*	530±100	3.6	98.8	2.4	11.09	0.36	0.11
K1-77	0.629±0.055	0.0773±0.0027	0.058±0.0055	505±31	480±16*	560±180	5.0	8.24	0.9	0.721	0.071	0.09
K1-39	0.625±0.021	0.0776±0.0016	0.0591±0.002	494±13	481.8±9.4*	567±76	2.5	93.7	5.7	10.8	0.86	0.12
K1-59	0.656±0.048	0.0794±0.0026	0.0581±0.0044	504±29	492±15*	530±160	2.4	13.5	1.4	1.76	0.12	0.13
K1-36	0.637±0075	0.0796±0.0037	0.0594±0.0072	498±47	493±22*	450±240	1.0	6.79	0.21	0.655	0.043	0.10
K1-42	0.654±0.019	0.0797±0.0017	0.0596±0.0015	510.8±12	495.2±9.7*	588±55	3.1	181.4	5	22.01	0.52	0.12
K1-78	0.653±0.054	0.08±0.0024	0.0591±0.0049	502±33	496±14*	490±170	1.2	14.94	0.59	1.574	0.086	0.11
K1-89	0.674±0.057	0.08±0.0023	0.061±0.0053	520±37	496±14*	560±180	4.6	9.35	0.65	1.097	0.092	0.12
K1-64	0.666±0.047	0.0802±0.0029	0.0607±00043	516±29	497±17*	570±50	3.7	13.99	0.48	0.987	0.045	0.07
K1-00	0.6375±0.013	0.08071±0.0013	0.05745±0.00067	500.7±8.2	500.3±7.6*	506±26	0.1	760	39	130	29	0.17

K1-13	0.6±0.03	0.081±0.0023	0.0557±0.0028	479±18	503±13*	410±100	-5.0	21.37	0.99	1.426	0.061	0.07
K1-03	0.672±0.074	0.0826±0.0028	0.0612±0.008	508±44	511±17*,**	510±220	-0.6	5.42	0.22	0.552	0.029	0.10
K1-08	0.661±0.025	0.0826±0.0015	0.0588±0.0019	523±16	511.4±8.9*,**	551±70	2.2	251	11	31.4	3.4	0.13
K1-29	0.664±0.018	0.083±0.0014	0.0584±0.0012	518.1±11	514±8.3*,**	547±43	0.8	301	18	32.6	3.3	0.11
K1-67	0.703±0.063	0.0832±0.0034	0.0633±0.006	535±38	515±20*,**	620±200	3.7	14.5	1.3	1.81	0.13	0.12
K1-04	0.669±0.018	0.08365±0.0014	0.058±0.0012	519.6±11	517.9±8.2*,**	536±45	0.3	133.5	9.1	17.6	1.6	0.13
K1-79r	0.688±0.019	0.0842±0.0017	0.0608±0.0016	532.7±12	521.1±10*,**	618±57	2.2	155.2	6.7	21	1.9	0.14
K1-28	0.693±0.082	0.0853±0.0027	0.0586±0.0065	542±47	528±16*,**	560±210	2.6	7.75	0.73	0.701	0.077	0.09
K1-62	0.69±0.023	0.0851±0.0016	0.0583±0.0018	532±14	528.3±9.2*,**	519±68	0.7	73.2	3.8	8.37	0.54	0.11
K1-61	0.68±0.031	0.0855±0.0019	0.0569±0.0026	526±19	528.6±11*,**	477±97	-0.5	28.5	1.2	2.62	0.11	0.09
K1-72m	0.688±0.023	0.0855±0.0019	0.0591±0.0018	531±14	529±12*,**	557±67	0.4	143.5	2.9	16.57	0.55	0.12
K1-19	0.721±0.045	0.0857±0.0021	0.0616±0.0038	545±27	530±13*,**	590±130	2.8	14.7	1.6	0.85	0.1	0.06
K1-01	0.679±0.04	0.0859±0.0022	0.059±0.0038	526±25	531±13*,**	520±130	-1.0	16.6	1.6	1.52	0.15	0.09
K1-58	0.693±0.017	0.08608±0.0013	0.05895±0.00091	534.6±10	532.3±7.9*,**	559±34	0.4	238.2	6.2	28.82	0.91	0.12
K1-37	0.69±0.021	0.08617±0.0015	0.0585±0.0017	532.1±12	532.8±8.8*,**	542±62	-0.1	97.2	2.7	11.74	0.39	0.12
K1-76	0.7±0.063	0.0862±0.0025	0.0573±0.0049	534±36	533±15*,**	440±170	0.2	8.91	0.63	0.426	0.024	0.05
K1-75	0.691±0.016	0.08631±0.0014	0.05839±0.001	533.1±9.7	533.7±8.3*,**	547±35	-0.1	346	9.4	31.02	0.36	0.09
K1-83r	0.692±0.017	0.08632±0.0014	0.05815±0.001	533.7±10	534.3±8*,**	542±38	-0.1	199.8	3.1	21.54	0.56	0.11
K1-23	0.704±0.022	0.0867±0.002	0.0588±0.0012	541±13	535.9±12*,**	557±45	0.9	215.2	8.6	43.7	1.6	0.20
K1-35	0.7±0.019	0.0871±0.0019	0.05756±0.00099	537.9±12	538.4±11*,**	515±38	-0.1	206	20	21.4	1.1	0.10
K1-69r	0.711±0.018	0.0874±0.0015	0.0593±0.0012	545.6±11	540.1±8.7*,**	567±44	1.0	120.3	3.7	11.11	0.2	0.09
K1-85m	0.696±0.018	0.08745±0.0015	0.0571±0.0011	535.7±11	540.4±8.6*,**	490±42	-0.9	156.9	5.3	17.4	1.5	0.11
K1-70m	0.713±0.019	0.08756±0.0014	0.0588±0.0012	546.7±11	541±8.4*,**	556±43	1.0	153.8	7.1	10.5	0.58	0.07
K1-34	0.712±0.017	0.08758±0.0014	0.05942±0.00098	546±10	541.2±8.1*,**	580±35	0.9	299	20	41.1	4.4	0.14
K1-80m	0.711±0.018	0.08761±0.0014	0.0591±0.0012	546.8±11	541.4±8.6*,**	570±41	1.0	158.3	7.1	25.1	2.5	0.16

K1-74	0.702±0.019	0.0877±0.0016	0.058±0.0014	540.7±12	542±9.6*,**	532±52	-0.2	114.3	6.6	13.32	0.74	0.12
K1-71r	0.701±0.018	0.08814±0.0014	0.058±0.0013	539.1±11	544.5±8.5*,**	524±49	-1.0	162.1	4.7	21.72	0.8	0.13
K1-84c	0.718±0.018	0.08815±0.0015	0.05911±0.00094	550.1±11	544.6±8.8*,**	577±35	1.0	198	6.4	19.52	0.63	0.10
K1-15	0.752±0.064	0.0882±0.0026	0.0621±0.0052	564±36	545±15*,**	620±180	3.4	8.8	0.23	0.651	0.035	0.07
K1-88	0.714±0.022	0.0883±0.0017	0.0588±0.0012	547±13	545.5±10*,**	553±47	0.3	416	31	159	24	0.38
K1-50	0.686±0.062	0.0885±0.003	0.0564±0.005	528±36	546±18*,**	420±160	-3.4	9.53	0.91	0.822	0.079	0.09
K1-53	0.736±0.027	0.0885±0.0033	0.0605±0.0018	559±16	546±19*,**	627±67	2.3	307	11	152.8	5.3	0.50
K1-87	0.726±0.019	0.0886±0.0016	0.0599±0.0011	553. 9±11	547.3±9.5	591±39	1.2	143.1	7.3	13.52	0.32	0.09
K1-60	0.73±0.018	0.08879±0.0014	0.0596±0.0011	556.4±11	548.4±8.4	589±40	1.4	247.1	4.6	6.04	0.45	0.02
K1-12	0.714±0.018	0.0891±0.0017	0.05759±0.00091	546.8±11	550.2±9.9	512±35	-0.6	291	25	21	1.6	0.07
K1-66	0.715±0.063	0.0888±0.0032	0.057±0.0053	535±38	551±20	440±190	-3.0	12.9	2.8	1.24	0.31	0.10
K1-40	0.7282±0.016	0.08969±0.0013	0.059260.00074	555.2±9.5	553.7±7.9	573±27	0.3	360	31	27.4	2.1	0.08
K1-14	0.726±0.018	0.08983±0.0015	0.0588±0.0012	553.9±11	554.5±9	553±44	-0.1	192.4	4.1	31.08	0.73	0.16
K1-55	0.73±0.027	0.09±0.0028	0.05817±0.001	556±16	555±17	533±38	0.2	340	23	24.1	0.88	0.07
K1-09	0.731±0.019	0.0902±0.0017	0.059±0.0011	556.6±11	556.4±10	569±42	0.0	350	16	28.2	1.8	0.08
K1-54	0.735±0.018	0.0904±0.0015	0.0592±0.00094	559.3±10	557.9±8.9	574±35	0.3	294	13	24.24	0.81	0.08
K1-42	0.74±0.031	0.0905±0.0023	0.06±0.0018	561±18	558±14	593±67	0.5	124.6	3.4	17.79	0.84	0.14
K1-46	0.756±0.059	0.0906±0.0023	0.0603±0.0044	568±33	559±13	590±150	1.6	16.4	1.3	1.273	0.086	0.08
K1-26	0.736±0.019	0.09081±0.0014	0.0585±0.0013	560.3±11	560.3±8.5	546±46	0.0	129.7	2.8	18.77	0.49	0.14
K1-24	0.738±0.018	0.09087±0.0014	0.05933±0.00099	560.8±10	560.6±8.4	577±36	0.0	252.9	8.3	25.41	0.91	0.10
K1-41	0.769±0.031	0.0911±0.0018	0.0613±0.0022	582±17	562.1±10	654±75	3.4	49	2.7	4.17	0.21	0.09
K1-72m	0.751±0.023	0.092±0.0019	0.0595±0.0015	568±14	567.3±11	584±60	0.1	110.2	2.8	28.4	1.3	0.26
K1-08	0.803±0.035	0.0953±0.002	0.0614±0.0026	598±19	586.9±12	663±95	1.9	129	14	37.3	2.7	0.29
K1-38	0.788±0.018	0.09632±0.0015	0.05976±0.00083	590.8±10	592.8±8.8	597±29	-0.3	567.4	5.7	211.3	4.5	0.37
K1-41	0.37±0.19	0.0433±0.0072	0.052±0025	300±140	273±45	70±840	9.0	7.6	1.7	0.44	0.16	0.06

K1-43	0.415±0.025	0.0459±0.0012	0.0569±0.0035	353±17	289.2±7.5	530±130	18.1	24.68	0.87	2.5	0.17	0.10
K1-73	0.46±0.015	0.05826±0.0011	0.0577±0.0017	387.1±11	365±6.6	504±65	5.7	94.3	9.2	12.7	1	0.13

The discordance % of the analyses, determined from the following formula;
For $^{206}Pb/^{238}U$ dates younger than 1.0 Ga, discordance %=(1-[($^{207}/^{235}U_{date}$)/($^{206}Pb/^{238}U_{date}$)]*100; for $^{206}Pb/^{238}U$ dates older than 1.0 Ga, discordance %=(1-[($^{207}/^{206}Pb$ date)/($^{206}Pb/^{238}U$date)])*100.
* Used for discordia diagram, ** Used for calculation of likely crystallization concordia age of the protholit,

Table S12. Geochemical analyse results of the garnet amphibolites, biotite-bearing meta-gabbros and retrogressed eclogites of the Menderes Nappes, Menderes Massif, Turkey (Yahyaalçı-Alaşehir, Bozdağ Nappe; Birgi, Çamlıca-Tire Klippe, Yenişehir-Kiraz, Çine Nappe).

Sample Definition	Garnet Amphi-bolite	Garnet Amphi-bolite	Garnet Amphi-bolite	Garnet Amphi-bolite	Garnet Amphi-bolite	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Red. Eclogite	Red. Eclogite	Red. Eclogite	Red. Eclogite	Red. Eclogite
Sample Numbers	TKC-1 Tire	TKC-3 Tire	TKC-5 Tire	TKC-10 Tire	TKC-11 Tire	BU-1 Birgi	BU-2 Birgi	TKC-7 Tire	TKC-8 Tire	TKC-9 Tire	EC-8 Çine	K1 Kiraz	K3 Kiraz	K4 Kiraz	K6 Kiraz	K7 Kiraz
SiO_2 (%)	67.10	51.20	55.90	47.90	47.50	48.90	53.10	51.50	50.80	51.60	65.70	49.90	49.32	49.47	50.36	49.50
TiO_2 (%)	0.78	3.12	2.42	2.14	3.81	0.79	1.19	0.86	1.37	1.04	0.78	1.25	1.58	1.23	1.29	1.28
Al_2O_3 (%)	14.40	15.50	15.20	15.10	13.80	18.60	16.60	16.20	16.00	16.50	15.20	15.50	14.65	15.43	14.49	14.89
Fe_2O_3 (%)	6.37	13.60	12.10	15.50	17.70	9.14	12.90	8.64	12.50	9.68	7.99	10.10	12.50	11.63	11.28	11.80
MnO (%)	0.09	0.20	0.18	0.23	0.26	0.13	0.20	0.15	0.19	0.16	0.05	0.14	0.20	0.17	0.16	0.18
MgO (%)	2.66	3.81	3.13	6.33	4.94	9.31	6.56	8.96	7.94	8.27	2.71	7.56	7.72	6.95	7.50	7.72
CaO (%)	1.23	5.87	6.07	9.11	7.74	10.50	6.33	11.30	9.39	9.40	0.64	11.60	9.96	11.48	10.53	10.77
Na_2O (%)	2.74	3.04	3.37	2.94	2.64	2.40	3.24	2.23	2.04	2.44	2.00	2.87	3.23	2.78	2.99	2.43
K_2O (%)	2.68	0.93	0.91	0.33	0.45	0.46	0.51	0.26	0.28	0.58	0.90	0.23	0.18	0.14	0.20	0.16
P_2O_5 (%)	0.21	0.69	0.65	0.14	0.47	0.11	0.23	0.11	0.20	0.15	0.10	0.12	0.13	0.10	0.14	0.11
Cr_2O_3 (%)	0.01	0.01	0.01	0.01	0.01	0.04	0.02	0.008	0.05	0.02	0.02	0.05	0.035	0.054	0.044	0.045
LOI (%)	1.24	0.53	0.30	0.16	0.60	0.15	0.48	0.13	0.21	0.49	1.47	0.16	0.3	0.4	0.8	1.0
Trace (ppm)																
Ba	602	494	866	159	340	173	540	168	261	288	1668	183	148	27	70	128
Co	17.8	32.9	22.7	49.8	43.3	49.1	31.2	38.1	47.8	44.1	15.1	44.8	36.2	45.5	49.4	45.0
Cs	4.3	0.4	0.6	0.3	0.7	0.7	0.1	0.1	0.1	1.0	7.0	0.3	0.2	0.1	0.1	0.1
Ga	18.2	21.0	19.7	21.3	21.0	15.8	21.4	14.3	17.9	15.5	21.3	19.2	16.9	15.2	14.3	15.9
Hf	6.1	6.2	5.4	3.0	11.8	1.9	3.4	1.7	3.5	2.7	4.7	2.0	2.9	2.2	2.1	2.4
Nb	11.4	30.3	18.4	6.2	29.6	3.6	11.6	5.0	9.6	7.4	11.8	1.3	2.0	1.7	1.8	1.9
Rb	102.2	17.9	18.2	6.3	8.0	15.6	2.7	3.3	3.8	11.1	104.6	3.9	2.4	0.6	2.9	1.9
Sr	166.1	316.3	260.7	140.1	325.0	165.4	255.7	209.1	164.2	194.4	191.1	180.0	100.8	155.7	116.7	157.1
Ta	0.9	1.7	1.1	0.4	1.7	0.2	0.6	0.3	0.6	0.6	1.0	0.1	0.1	0.1	0.1	0.1
Th	1.4	2.4	2.5	1.2	1.4	1.9	0.2	0.2	0.2	0.7	11.7	0.2	0.2	0.2	0.2	0.2
U	2.7	0.3	0.3	0.1	1.2	0.1	0.1	0.1	0.1	0.1	2.8	0.1	0.1	0.2	0.1	0.1
V	116	303	163	451	406	159	209	216	227	192	182	300	334	268	305	308
W	0.7	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	1.1	0.7	1.5	0.5
Zr	216.8	256.5	217.3	115.1	196.9	75.2	134.7	63.2	146.0	103.6	177.1	74.2	107.2	88.7	79.0	80.3
Y	45.4	39.8	37.2	29.7	52.8	17.8	20.4	15.6	27.9	20.9	34.2	28.9	39.6	29	30.4	33.4
Ti	4676	18704	14508	12829	22841	4736	7134	5156	8213	6235	4676	7493	9470	7373	7732	7672

Table 2 (Continue)

Sample Definition	Garnet Amphi -bolite	Garnet Amphi-bolite	Garnet Amphi-bolite	Garnet Amphi-bolite	Garnet Amphi-bolite	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Biotite-Bearing Meta-Gabbro	Red. Eclogite	Red. Eclogite	Red. Eclogite	Red. Eclogite	Red. Eclogite
Sample Numbers	TKC-1 Tire	TKC-3 Tire	TKC-5 Tire	TKC-10 Tire	TKC-11 Tire	BU-1 Birgi	BU-2 Birgi	TKC-7 Tire	TKC-8 Tire	TKC-9 Tire	EC-8 Çine	K1 Kiraz	K3 Kiraz	K4 Kiraz	K6 Kiraz	K7 Kiraz
REE (ppm)																
La	35	32.4	35.2	9.1	27.6	7.2	22.6	8.5	15.6	11.5	38.0	2.8	3.9	3.3	2.9	2.7
Ce	71.1	71.6	80.9	22.5	63.6	16.2	44.5	18.6	34.9	25.2	68.3	9.3	12.2	10.0	9.0	8.6
Pr	8.54	9.72	10.81	3.03	9.81	2.24	5.36	2.55	4.57	3.18	9.12	1.77	2.07	1.70	1.52	1.44
Nd	33.2	43.0	43.1	14.0	46.5	9.9	20.4	11.9	20.3	13.2	34.3	9.4	11.6	9.4	8.2	8.4
Sm	6.65	9.15	8.49	3.76	10.68	2.48	4.03	2.81	4.54	3.31	6.48	3.56	3.82	2.99	2.73	2.91
Eu	1.28	2.06	2.37	1.35	2.89	0.77	1.84	0.98	1.28	1.12	1.10	1.55	1.38	1.09	1.05	1.11
Gd	6.82	9.41	8.35	4.81	11.12	2.74	4.22	2.97	5.16	3.66	5.92	5.28	5.39	4.27	4.14	4.32
Tb	1.19	1.35	1.23	0.83	1.77	0.50	0.66	0.49	0.84	0.63	0.92	0.91	1.0	0.78	0.78	0.82
Dy	8.16	7.86	6.97	5.42	10.22	3.18	4.00	3.00	5.20	4.00	5.67	5.59	6.82	4.91	5.13	5.56
Ho	1.72	1.56	1.39	1.17	2.08	0.71	0.81	0.62	1.09	0.87	1.25	1.10	1.51	1.07	1.15	1.23
Er	4.90	4.29	3.86	3.44	5.77	2.06	2.58	1.89	3.13	2.51	3.78	3.21	4.42	3.22	3.41	3.71
Tm	0.70	0.56	0.54	0.48	0.83	0.28	0.37	0.26	0.45	0.37	0.56	0.46	0.63	0.46	0.51	0.56
Yb	4.45	3.68	3.48	3.01	5.29	1.85	2.64	1.60	2.85	2.14	3.63	3.00	4.04	2.93	3.13	3.39
Lu	0.66	0.56	0.55	0.46	0.83	0.28	0.42	0.24	0.43	0.33	0.56	0.45	0.64	0.47	0.47	0.54
∑REE	499.37	197.2	207.24	73.36	198.99	50.39	114.43	56.41	100.34	72.02	179.59	48.38	59.42	46.59	44.12	45.29
Nb/Th	1.00	12.63	7.36	5.17	74.00	1.89	58.00	25.00	48.00	10.57	1.01	6.5	10.0	8.5	9.0	9.5
Nb/Zr	0.05	0.12	0.08	0.05	0.06	0.05	0.09	0.08	0.07	0.07	0.07	0.02	0.019	0.019	0.023	0.024
Nb/Ta	12.67	17.82	16.73	15.50	17.41	18.00	19.33	16.67	16.00	12.33	11.80	13	20	17	18	19
Zr/Yb	48.72	69.70	62.44	38.24	93.93	40.65	51.02	39.50	51.23	48.41	48.79	24.73	26.53	30.27	25.24	23.69
Ti/Zr	21.57	72.92	66.76	111.46	45.97	62.98	52.96	81.58	56.25	60.18	26.40	101.00	88.34	83.12	97.87	95.54
Th/Zr	0.05	0.01	0.01	0.01	0.00	0.03	0.00	0.00	0.00	0.01	0.07	0.00	0.002	0.002	0.003	0.002
Y/Zr	0.21	0.16	0.17	0.26	0.11	0.24	0.15	0.25	0.19	0.20	0.19	0.39	0.37	0.33	0.38	0.42
$(La/Yb)_N$	53.43	5.98	6.87	2.05	29.23	2.64	5.82	3.61	3.72	3.65	7.11	0.63	0.69	0.81	0.66	0.57
$(La/Sm)_N$	32.87	2.21	2.59	1.51	13.31	1.81	3.50	1.89	2.15	2.17	3.66	0.49	0.61	0.66	0.63	0.55
$(Gd/Yb)_N$	1.24	2.07	1.94	1.29	1.70	1.20	1.29	1.50	1.46	1.38	1.32	1.42	1.05	1.06	1.13	1.11
$(Eu/Eu)_N$	0.62	0.68	0.85	0.97	0.68	0.90	1.36	1.05	0.80	0.98	0.54	1.09	0.93	0.93	0.95	1.0

Table (Continue)

Sample Definition	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite
Sample Numbers	ATY-1 Alaşehir	ATY-9 Alaşehir	ATY-3 Alaşehir	ATY-4 Alaşehir	ATY-5 Alaşehir	ATY-6 Alaşehir	ATY-7 Alaşehir	ATY-10 Alaşehir	ATY-11 Alaşehir
SiO_2 (%)	51.90	53.10	50.90	52.50	50.10	53.50	50.00	52.40	52.50
TiO_2 (%)	0.70	0.57	0.42	0.88	1.03	0.47	0.86	0.70	0.42
Al_2O_3 (%)	13.40	16.10	17.30	18.00	15.70	16.80	16.60	16.00	16.30
Fe_2O_3 (%)	8.43	7.22	7.42	4.29	10.70	6.40	9.17	7.28	6.78
MnO (%)	0.14	0.14	0.12	0.08	0.18	0.11	0.16	0.13	0.13
MgO (%)	10.40	8.34	9.47	7.16	8.15	8.09	8.46	8.65	9.16
CaO (%)	11.00	11.30	11.20	12.20	10.70	12.30	11.20	11.10	12.30
Na_2O (%)	2.40	2.02	2.44	2.65	1.98	1.76	2.39	2.87	1.96
K_2O (%)	0.24	0.19	0.01	0.05	0.49	0.003	0.21	0.15	0.16
P_2O_5 (%)	0.08	0.04	0.04	0.06	0.12	0.04	0.02	0.02	0.01
Cr_2O_3 (%)	0.06	0.04	0.07	0.04	0.05	0.06	0.06	0.05	0.06
LOI (%)	1.21	1.07	0.97	1.08	1.09	0.85	1.03	0.85	0.98
Trace (ppm)									
Ba	40	169	21	109	97	105	70	73	38
Co	27.9	24.5	28.5	14.0	46.2	22	27.1	30.1	25.2
Cs	0.1	1.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Ga	13.8	14.3	13.8	15.7	14.6	13.9	15.0	14.0	13.9
Hf	0.7	1.4	0.5	1.3	1.0	0.6	1.3	0.5	0.5
Nb	2.2	1.0	0.6	4.9	3.1	0.6	2.4	0.9	1.3
Rb	3.8	4.5	2.6	1.0	7.8	0.6	2.0	1.5	1.5
Sr	259.4	218.7	263.5	395.3	180.4	225.2	235.7	289.8	222.0
Ta	0.2	0.1	0.1	0.4	0.2	0.1	0.2	0.1	0.1
Th	0.2	0.5	0.2	1.2	0.3	0.2	0.3	0.3	0.2
U	0.4	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.1
V	242	285	199	130	258	275	233	323	207
W	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Zr	22.7	59.9	14.8	53.6	40.7	16.5	46.9	12.1	13.3
Y	11.8	13.5	9.4	15.1	13.3	8.4	15.0	11.8	10.1
Ti	4197	3417	2518	5276	6175	2818	5156	4197	2518

Table (Continue)

Sample Definition	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite	Garnet Amphibolite
Sample Numbers	ATY-1 Alaşehir	ATY-9 Alaşehir	ATY-3 Alaşehir	ATY-4 Alaşehir	ATY-5 Alaşehir	ATY-6 Alaşehir	ATY-7 Alaşehir	ATY-10 Alaşehir	ATY-11 Alaşehir
REE (ppm)									
La	2.7	2.6	2.0	5.5	5.1	7.4	3.5	1.4	1.4
Ce	6.4	6.8	4.6	12.8	10.1	13.2	9.2	4.3	4.1
Pr	1.02	1.08	0.70	1.78	1.56	1.53	1.32	0.70	0.65
Nd	5.0	5.3	3.4	7.8	7.0	6.9	5.9	3.6	3.5
Sm	1.37	1.66	0.99	2.25	1.76	1.50	1.85	1.35	1.17
Eu	0.65	0.78	0.57	0.91	1.02	0.79	0.83	0.79	0.57
Gd	1.58	2.03	1.28	2.35	2.32	1.74	2.50	1.66	1.48
Tb	0.29	0.36	0.25	0.40	0.39	0.28	0.44	0.33	0.28
Dy	2.02	2.38	1.73	2.55	2.41	1.65	2.84	2.21	1.86
Ho	0.43	0.53	0.39	0.55	0.52	0.37	0.58	0.46	0.39
Er	1.34	1.45	1.11	1.68	1.56	1.02	1.79	1.48	1.25
Tm	0.20	0.22	0.17	0.24	0.22	0.13	0.23	0.21	0.17
Yb	1.30	1.45	1.11	1.55	1.48	0.92	1.56	1.38	1.01
Lu	0.23	0.21	0.16	0.26	0.21	0.14	0.23	0.21	0.16
∑REE	24.53	26.85	18.46	40.62	35.65	37.57	32.77	20.08	17.99
Nb/Th	11.00	2.00	3.00	4.08	10.33	3.00	8.00	3.00	6.50
Nb/Zr	0.10	0.02	0.04	0.09	0.08	0.04	0.05	0.07	0.10
Nb/Ta	11.00	10.00	6.00	12.25	15.50	6.00	12.00	9.00	13.00
Zr/Yb	17.46	41.31	13.33	34.58	27.50	17.93	30.06	8.77	13.17
Ti/Zr	184.89	57.05	170.14	98.43	151.72	170.79	109.94	346.86	189.32
Th/Zr	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02
Y/Zr	0.52	0.23	0.64	0.28	0.33	0.51	0.32	0.98	0.76
$(La/Yb)_N$	1.41	1.22	1.22	2.41	2.34	5.46	1.52	0.69	0.94
$(La/Sm)_N$	1.23	0.98	1.26	1.53	1.81	3.08	1.18	0.65	0.75
$(Gd/Yb)_N$	0.98	1.13	0.93	1.23	1.27	1.53	1.30	0.97	1.19
$(Eu/Eu)_N$	1.35	2.6	1.55	1.21	1.54	1.49	3.5	1.4	1.4