DR2005040

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APPENDIX

DR1: Locations and descriptions of dated samples

Two samples were collected from the Lim Paleozoic unit. The sample 1 is a coarse-grained metasandstone, from the upper part of Late Paleozoic molasse-type deposits. The sample 1 has been taken several tens of meters below the thrust boundary to the overlying Triassic limestones, at a road cut ca. 4 km south-west from Prijepolje town. The sample 2 is very low-grade metasandstone from the alternating succession of metasandstone and shale. This sample was collected from the southern part of Late Paleozoic complex, in a road cut ca. 15 km south-west from Brodarevo. The Lim Paleozoic unit was variably overprinted under very low grade to low-grade metamorphic conditions during Late Cretaceous (at ca. 80 Ma; our own unpublished data), resulting in formation of variable amounts of finest-grained sericite along foliation planes.

The sample 3 is a mica-rich Lower Triassic sandstone, taken from the road cut ca. 1 km east of Jabuka village, ca. 10 km west-south-west from Prijepolje.

Three samples were collected from the Dinaride ophiolite belt. Samples 4 and 5 were taken from the graywackes of Dinaride ophiolite belt in the upper part of Zebudja river, ca. 4 km southeast from Prijepolje town, just a few tens of meters above the thrust boundary with the Lim Triassic limestones in the footwall. Sample 6 was collected from the graywackes of ophiolitic mélange exposed along the main road in the city center of Prijepolje, on the right side of the Lim river.

Samples 7 and 8 were taken from the upper sequence of the Vardar “Flysch” in the Ljig river area, ca. 140 km south of Belgrade. In the upper part of the formation, turbiditic sandstones alternate with the siltstones. The samples were taken from the turbiditic sandstones in the outcrop along the main road, 5 km south of city of Ljig, on the right side of Dragobilj river.

Detrital modes of graywackes from the Dinaric ophiolite belt indicate magmatic arc and orogenic sources, whereas those of the Vardar Flysch were derived from orogenic sources (our own unpublished data), as determined through the use of the Dickinson-Gazzi method (Dickinson, 1985).

Reference

Dickinson, W.R., 1985, Interpreting provenance relations from detrital modes of sandstones, *in* Zuffa, G.G., ed., Provenance of arenites: Dordrecht, Reidel, p. 333–361.

DR2: ^{40}Ar/^{39}Ar analytical techniques

^{40}Ar/^{39}Ar analytical techniques largely follow descriptions given in Liu et al. (2001) with modifications described in Handler et al. (2004). Preparation of the samples before and after irradiation, ^{40}Ar/^{39}Ar analyses, and age calculations were carried out at the ARGONAUT Laboratory of the Institute for Geology and Palaeontology at the University Salzburg. Mineral concentrates are packed in aluminium-foil and loaded in quartz vials. For calculation of the J-values, flux-monitors are placed between each 4-5 unknown samples, which yield a distance of ca. 5 mm between adjacent flux-monitors. The sealed quartz vials are irradiated in the MTA KFKI reactor (Debrecen, Hungary) for 16 hours. Correction factors for interfering isotopes were calculated from 10 analyses of two Ca-glass samples and 22 analyses of two pure K-glass samples, and are: $^{36}Ar/^{37}Ar_{(Ca)}$ = 0.00026025, $^{39}Ar/^{37}Ar_{(Ca)}$ = 0.00065014, and $^{40}Ar/^{39}Ar_{(K)}$ = 0.015466. Variation in the flux of neutrons were monitored with DRA1 sanidine standard for which a ^{40}Ar/^{39}Ar plateau age of 25.03 ± 0.05 Ma has been reported (Wijbrans et al., 1995). After irradiation the minerals are unpacked from the quartz vials and the aluminium-foil packets, and hand-picked into 1 mm diameter holes of the one-way Al-sample holders.

^{40}Ar/^{39}Ar analyses are carried out using a UHV Ar-extraction line equipped with a combined MERCHANTEK™ UV/IR laser system, and a VG-ISOTECH™ NG3600 mass spectrometer.

Stepwise heating analyses of samples are performed using a defocused (~1.5 mm diameter) 25 W CO_2-IR laser operating in Tem_{00} mode at wavelengths between 10.57 and 10.63 μm. The laser is controlled from a PC, and the position of the laser on the sample is monitored on the computer screen via a video camera in the optical axis of the laser beam through a double-vacuum window on the sample chamber. Gas clean-up is performed using one hot and one cold Zr-Al SAES getter. Gas admittance and pumping of the mass spectrometer and the Ar-extraction line are computer controlled using pneumatic valves. The NG3600 is a 18 cm radius 60° extended geometry instrument, equipped with a bright Niertype source operated at 4.5 kV. Measurements are performed on an axial electron multiplier in static mode, peak-jumping and stability of the magnet is controlled by a Hall-probe. For each increment the intensities of ^{36}Ar, ^{37}Ar, ^{38}Ar, ^{39}Ar, and ^{40}Ar are measured, the baseline readings on mass 35.5 are automatically subtracted. Intensities of the peaks are back-extrapolated over 16 measured intensities to the time of gas admittance either by a straight line or a curved fit, depending on intensity and type of pattern of the evolving gas. Intensities are corrected for system blanks, background, post-irradiation decay of ^{37}Ar, and interfering isotopes. Isotopic ratios, ages and errors for individual steps are calculated following suggestions by McDougall and Harrison (1999) using decay factors reported by Steiger and Jäger (1977). Definition and calculation of plateau ages has been carried out using ISOPLOT/EX (Ludwig, 2001).

References

Handler, R., Neubauer, F., Velichkova, S.H., and Ivanov, Z., 2004, $^{40}Ar/^{39}Ar$ age constraints on the timing of magmatism and post-magmatic cooling in the Panagyurishte region, Bulgaria: Schweizerische Mineralogische und Petrographische Mitteilungen, v. 84, no. 1.

Liu, Y., Genser, J., Handler, R., Friedl, G., and Neubauer, F., 2001, $^{40}Ar/^{39}Ar$ muscovite ages from the Penninic/Austroalpine plate boundary, eastern Alps: Tectonics, v. 20, p. 526–547.

Ludwig, K. R., 2001, Isoplot/Ex - A Geochronological Toolkit for Microsoft Excel. Berkeley Geochronological Center Special Publication No. 1a.

McDougall, I., and Harrison, M.T., 1999, Geochronology and Thermochronology by the $^{40}Ar/^{39}Ar$ Method: 2nd ed, Oxford Oxford, University Press, 269 pp.

Steiger, R.H., and Jäger, E., 1977, Subcommission on geochronology: Convention on the use of decay constants in geo-and cosmochronology: Earth and Planetary Science Letters, v. 36, p. 359-362.

Wijbrans, J.R., Pringle, M.S., Koopers, A.A.P., and Schveers, R., 1995, Argon geochronology of small samples using the Vulkaan argon laserprobe: Proc. Koninklijke Academie Wetenschappen, v. 98, no. 2, p. 185-218.

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APPENDIX Tables DR 1 and DR 2

APPENDIX TABLE DR1. $^{40}Ar/^{39}Ar$ STEP-WISE HEATING RESULTS OF DETRITAL WHITE MICA. GRAIN NO. REFERS TO DIAGRAMS SHOWN FIGURE 2.

SAMPLE 1, grain A, *Lim Paleozoic molasse (sandstone) (Pennsylvanian); grain size: 160-200 µm; J-value:* 0.01820 ± 0.00018										
step	$^{36}Ar/^{39}Ar^{a}$	+/-	$^{37}Ar/^{39}Ar^{b}$	+/-	$^{40}Ar/^{39}Ar^{a}$	+/-	$\%^{40}Ar^{*}$	$\%^{39}Ar$	Age [Ma]	+/- [1σ]
1	0.00158	0.00018	0.0099	0.0002	6.966	0.054	93.3	40.8	201.3	2.5
2	0.00153	0.00015	0.0108	0.0002	11.223	0.044	96.0	44.1	322.6	3.2
3	0.00528	0.00203	0.0503	0.0021	12.514	0.602	87.5	4.3	327.6	16.8
4	0.00025	0.00094	0.0273	0.0009	11.935	0.278	99.4	9.9	352.3	8.2
5	0.02710	0.00946	0.9409	0.0100	19.817	2.805	59.6	0.9	352.9	75.8
Total									277.6	2.6
SAMPLE 2, grain B, (margarite or paragonite?) *Lim Paleozoic molasse (Pennsylvanian); grain size: 355-500 µm; J-value:* 0.01820 ± 0.00018										
1	0.00227	0.00007	3.932	0.0001	7.904	0.022	91.5	45.7	232.0	2.3
2	0.00166	0.00012	7.138	0.0001	9.580	0.035	94.9	29.6	292.4	2.9
3	0.00065	0.00050	27.07	0.0006	9.871	0.148	98.0	6.6	355.2	5.1
4	0.00085	0.00025	13.58	0.0003	9.977	0.073	97.5	16.3	325.1	3.6
5	0.02517	0.00231	131.9	0.0023	10.976	0.683	32.2	1.7	434.3	18.1
Steps										
SAMPLE 2, grain C, *Lim Paleozoic molasse (sandstone) (Pennsylvanian); grain size: 355-500 µm; J-value:* 0.01820 ± 0.00018										
1	0.00471	0.00024	0.0218	0.0002	9.264	0.070	85.0	6.8	241.1	3.0
2	0.00039	0.00002	0.0026	0.0001	10.865	0.007	98.9	57.6	322.0	3.0
3	0.00008	0.00010	0.0004	0.0001	10.955	0.028	99.8	17.9	326.9	3.1
4	0.00032	0.00013	0.0060	0.0001	11.053	0.038	99.2	13.2	327.7	3.2
5	0.00009	0.00032	0.0085	0.0004	12.272	0.096	99.8	4.5	362.6	4.2
Steps 2-4								93.2	325.3	6.0
SAMPLE 2, grain D, *Lim Paleozoic molasses (sandstone) (Pennsylvanian); grain size: 355-500 µm; J-value:* 0.01820 ± 0.00018										
1	0.00215	0.00017	0.0025	0.0001	10.418	0.049	93.9	16.0	295.2	3.1
2	0.00022	0.00006	0.0008	0.0001	10.891	0.018	99.4	45.8	324.0	3.0
3	0.00387	0.00099	0.0023	0.0010	12.479	0.295	90.8	2.6	337.9	8.6
4	0.00010	0.00013	0.0012	0.0001	11.268	0.038	99.7	18.5	335.3	3.2
5	0.00013	0.00014	0.0015	0.0002	11.323	0.040	99.7	17.1	336.6	3.3
Steps 2-5								84.0	331.6	6.1
SAMPLE 3, grain E, *Lim Triassic sandstone (Lower Triassic); grain size: 200-250 µm; J-value:* 0.01820 ± 0.00018										
1	0.01018	0.00460	0.0047	0.0049	11.927	1.361	74.8	2.8	270.9	38.5
2	0.00198	0.00036	0.0004	0.0004	12.133	0.106	95.2	34.1	343.8	4.3

3	0.00066	0.00034	0.0013	0.0003	11.788	0.101	98.4	41.8	345.0	4.2
4	0.00319	0.00076	0.0021	0.0008	12.928	0.226	92.7	16.5	355.5	6.9
5	0.00212	0.00337	0.1247	0.0035	12.687	0.999	95.1	4.0	357.9	27.1
6	0.00786	0.01668	1.2688	0.0151	15.315	4.945	84.8	0.8	385.4	131.2
steps 2-5								92.4	345.5	9.5
SAMPLE 4, grain F, *Dinaric ophiolite belt (graywake) (Middle-Late Jurassic); grain size: 250-500 µm; J-value:* 0.01820 ± 0.00018										
1	0.03861	0.00496	0.2514	0.0060	12.919	1.469	11.7	0.9	49.0	46.9
2	0.00760	0.00147	0.1254	0.0014	10.714	0.436	79.0	3.6	258.5	12.6
3	0.00145	0.00014	0.0096	0.0001	9.678	0.041	95.6	42.0	280.3	2.8
4	0.00289	0.00026	0.0232	0.0002	10.201	0.077	91.6	20.0	283.1	3.4
5	0.00156	0.00020	0.0412	0.0002	9.900	0.060	95.4	26.0	285.7	3.1
6	0.00620	0.00071	0.0986	0.0006	11.366	0.209	83.9	7.6	288.5	6.4
Steps 2-6								99.2	282.6	5.6
SAMPLE 6, grain G, *Dinaric ophiolite belt (graywake) (Middle-Late Jurassic); grain size: 250-500 µm: J-value:* 0.01818 ± 0.00018										
1	0.00951	0.00221	2.1561	0.0020	12.886	0.654	78.2	4.1	308.1	18.3
2	0.00158	0.00014	0.1337	0.0001	12.965	0.041	96.4	62.1	369.3	3.5
3	0.00279	0.00033	0.3068	0.0002	13.537	0.097	93.9	27.5	375.4	4.2
4	0.00037	0.00203	1.6679	0.0015	13.804	0.602	99.2	4.9	404.5	16.2
5	0.00049	0.00670	5.8822	0.0108	13.806	1.987	99.0	1.4	413.1	52.0
Steps								95.9	372.0	10.0
SAMPLE 6, grain H, *Dinaric ophiolite belt (graywake) (Middle-Late Jurassic); grain size: 250-500 µm: J-value:* 0.01818 ± 0.00018										
1	0.01309	0.00347	0.4695	0.0033	14.345	1.027	73.0	4.6	315.2	28.4
2	0.01034	0.00249	0.0330	0.0026	14.919	0.741	79.5	6.1	352.0	20.2
3	0.00287	0.00030	0.0042	0.0003	13.981	0.089	93.9	49.7	385.9	4.2
4	0.00863	0.00155	0.0888	0.0020	15.763	0.461	83.8	8.6	388.1	12.7
5	0.01254	0.00211	0.0011	0.0022	16.861	0.627	78.0	7.6	386.4	16.9
6	0.00539	0.00108	0.0341	0.0012	14.758	0.320	89.2	14.6	386.8	9.2
7	0.00988	0.00184	0.0312	0.0020	16.092	0.547	81.9	8.7	387.0	14.9
Steps 2-7								95.3	384.0	13.0
SAMPLE 7, Grain I, *Vardar Flysch (sandstone) (Late Cretaceous); grain size: 355-500 µm; J-value:* 0.01797 ± 0.00018										
1	0.06768	0.00256	0.0405	0.0027	31.239	0.770	36.0	1.6	331.6	20.8
2	0.00092	0.00014	0.0035	0.0001	11.513	0.042	97.6	28.6	331.6	2.0
3	0.00288	0.00061	0.0109	0.0005	12.182	0.182	93.0	7.1	334.0	5.2
4	0.00072	0.00035	0.0032	0.0004	11.606	0.104	98.2	11.6	335.6	3.3
5	0.00310	0.00200	0.0636	0.0020	12.339	0.591	92.6	2.2	336.6	16.0
6	0.00314	0.00010	0.0029	0.0001	11.248	0.029	91.8	48.9	306.5	1.8
Steps 1-5								51.1	332.0	5.7
SAMPLE 7, grain J, *Vardar Flysch (sandstone) (Late Cretaceous); grain size: 355-500 µm; J-value:* 0.01797 ± 0.00018										
1	0.00050	0.00005	0.0001	0.0001	9.518	0.015	98.5	56.9	280.4	1.5
2	0.00014	0.00010	0.0036	0.0001	9.436	0.029	99.6	32.2	281.0	1.7
3	0.00372	0.00037	0.0136	0.0004	10.758	0.111	89.8	8.6	288.3	3.4

4	0.00555	0.00246	0.1838	0.0020	11.329	0.728	85.5	1.5	289.6	20.2
5	0.00192	0.00451	0.3099	0.0041	10.662	1.337	94.7	0.8	301.0	36.7
Steps 1-4								99.2	281.4	3.3
SAMPLE 7, grain K, *Vardar Flysch (sandstone) (Late Cretaceous); grain size: 355-500 µm; J-value:* 0.01797 ± 0.00018										
1	0.00027	0.00009	0.0025	0.0001	3.618	0.027	97.8	51.3	110.8	1.0
2	0.00217	0.00105	0.0126	0.0011	4.222	0.309	84.8	4.2	112.1	9.4
3	0.00073	0.00043	0.0052	0.0004	3.941	0.128	94.6	11.1	116.5	3.9
4	0.00075	0.00014	0.0035	0.0001	5.426	0.042	95.9	31.6	160.8	1.5
5	0.00311	0.00368	0.0931	0.0033	4.411	1.089	79.2	1.3	109.6	33.2
6	0.01306	0.00970	0.1037	0.0106	9.372	2.871	58.8	0.5	170.2	84.7
Steps 1-3								66.6	110.8	1.2

a) measured

b) corrected for post irradiation decay of ^{37}Ar (half-live = 35.1 days)

APPENDIX TABLE DR2. RESULTS OF TOTAL FUSION DATING OF SINGLE GRAINS

SAMPLE 1, *Lim Paleozoic molasses (sandstone) (Pennsylvanian); grain size: 160-200 µm; J-value:* 0.01820 ± 0.00018										
Step	$^{36}Ar/^{39}Ar^{a}$	+/-	$^{37}Ar/^{39}Ar^{b}$	+/-	$^{40}Ar/^{39}Ar^{a}$	+/-	$\%^{40}Ar^{*}$	$\%^{39}Ar$	Age [Ma]	+/- [1σ]
1	0.00064	0.00009	3.9218	0.0001	11.179	0.028	98.3	10.8	329.0	3.1
2	0.00467	0.00021	13.7421	0.0001	12.048	0.063	88.6	5.2	320.1	3.4
3	0.00211	0.00009	5.3799	0.0001	9.832	0.025	93.7	14.3	279.6	2.7
4	0.00271	0.00023	6.4971	0.0002	9.820	0.068	91.9	4.9	274.2	3.2
5	0.00406	0.00023	0.5163	0.0002	12.137	0.068	90.1	4.6	327.5	3.5
6	0.00676	0.00029	7.9072	0.0003	11.787	0.085	83.1	3.8	295.8	3.6
7	0.00169	0.00011	1.7096	0.0001	11.141	0.033	95.5	9.5	319.4	3.1
8	0.00222	0.00016	1.8996	0.0001	11.271	0.046	94.2	7.0	318.7	3.2
9	0.00306	0.00027	7.7874	0.0003	10.916	0.080	91.7	3.8	301.9	3.6
10	0.00048	0.00031	12.8601	0.0004	8.457	0.091	98.3	3.2	254.2	3.5
11	0.00223	0.00005	0.1196	0.0001	8.581	0.016	100.8	23.1	263.7	2.5
12	0.00015	0.00027	1.7098	0.0002	12.504	0.079	99.7	4.0	368.7	4.0
SAMPLE 2, *Lim Paleozoic molasses (sandstone) (Pennsylvanian); grain size: 355-500 µm; J-value:* 0.01820 ± 0.00018										
1	0.00027	0.00003	0.9496	0.0001	10.710	0.008	99.3	10.5	320.9	2.9
2	0.00059	0.00005	1.9920	0.0001	11.049	0.015	98.4	5.1	329.9	3.0
3	0.00185	0.00011	4.2969	0.0001	10.570	0.034	94.8	2.6	311.8	3.0
4	0.00157	0.00007	17.8392	0.0001	11.323	0.021	95.9	4.0	366.0	3.4
5	0.00064	0.00003	1.1258	0.0001	10.863	0.008	98.3	10.8	322.4	3.0
6	0.00335	0.00015	4.0072	0.0001	12.3174	0.043	92.0	1.7	346.9	3.4
7	0.00079	0.00005	2.0474	0.0001	9.974	0.015	97.7	5.6	298.8	2.8
8	0.00093	0.00002	0.7595	0.0001	8.444	0.005	96.7	15.7	251.4	2.4
9	0.00080	0.00004	1.4004	0.0001	10.551	0.010	97.8	8.6	313.2	2.9
10	0.00045	0.00004	1.8911	0.0001	10.402	0.010	98.7	6.9	313.1	2.9
11	0.00107	0.00007	1.0945	0.0001	10.986	0.020	97.1	4.4	322.3	3.0
12	0.00174	0.00010	0.8595	0.0001	7.453	0.031	93.1	2.4	213.4	2.2
13	0.00040	0.00008	0.6142	0.0001	11.101	0.025	98.9	3.9	329.7	3.1
14	0.00053	0.00002	0.2110	0.0001	10.327	0.006	98.5	15.6	306.4	2.8
15	0.00127	0.00011	3.1729	0.0001	11.476	0.031	96.7	3.3	338.8	3.2
SAMPLE 3, *Lim Triassic sandstone (Lower Triassic); grain size: 200-250 µm; J-value:* 0.01820 ± 0.00018										
1	0.00080	0.00006	0.7346	0.0001	10.819	0.017	97.8	18.4	319.0	3.0
2	0.00170	0.00029	5.7496	0.0003	11.918	0.087	95.8	4.0	353.3	4.0
3	0.01702	0.00876	37.1613	0.0091	21.437	2.601	76.5	0.1	553.4	63.0
4	0.00008	0.00015	1.2378	0.0002	10.780	0.045	99.8	7.8	325.0	3.2
5	0.00091	0.00008	1.1006	0.0001	11.056	0.023	97.6	16.5	325.5	3.0
6	0.00035	0.00068	4.7496	0.0008	13.155	0.202	99.2	1.8	373.8	6.4
7	0.01009	0.00125	21.2196	0.0013	18.534	0.372	83.9	0.9	496.6	10.2

8	0.00451	0.00033	6.0618	0.0003	11.820	0.098	88.7	3.7	328.8	4.0
9	0.00009	0.00019	8.5133	0.0002	11.947	0.058	99.8	5.9	373.2	3.7
10	0.00359	0.00033	19.8327	0.0004	11.156	0.097	90.5	3.4	349.8	4.1
11	0.03695	0.00343	166.218	0.0048	19.721	1.021	44.6	0.3	658.1	23.9
12	0.00224	0.00018	64.5437	0.0002	11.461	0.052	94.2	6.9	472.2	4.4
13	0.07083	0.00020	47.6081	0.0002	34.407	0.063	39.2	9.3	503.0	4.7
14	0.07118	0.00027	7.1060	0.0002	33.710	0.080	37.6	6.9	390.2	4.1
15	0.00841	0.00015	7.3768	0.0001	12.770	0.043	80.5	9.3	326.2	3.2
16	0.00421	0.00013	3.7496	0.0001	11.171	0.038	88.9	11.0	290.3	2.9
SAMPLE 4, *Dinaric ophiolite belt (graywake) (Middle-Late Jurassic); grain size: 250-500 μm; J-value:* 0.01820 ± 0.00018										
1	0.00045	0.00004	0.0121	0.0001	9.900	0.012	98.7	3.5	294.8	2.7
2	0.00005	0.00002	0.0062	0.0001	9.259	0.005	99.9	8.2	280.2	2.6
3	0.00029	0.00003	0.0445	0.0001	10.351	0.010	99.2	4.2	308.6	2.8
4	0.00023	0.00002	0.0214	0.0001	10.673	0.007	99.4	6.1	318.1	2.9
5	0.00046	0.00002	0.0882	0.0001	9.695	0.007	98.6	5.4	289.2	2.7
6	0.00005	0.00004	0.1323	0.0001	9.827	0.012	99.9	4.4	296.3	2.8
7	0.00005	0.00002	0.0121	0.0001	10.547	0.006	99.9	8.9	315.9	2.9
8	0.00007	0.00003	0.1301	0.0001	9.771	0.009	99.8	5.2	294.6	2.7
9	0.00004	0.00013	1.3600	0.0002	10.274	0.038	99.9	1.0	311.7	3.0
10	0.00012	0.00001	0.0679	0.0001	10.710	0.004	99.7	8.8	319.8	2.9
11	0.00030	0.00003	0.0789	0.0001	10.047	0.008	99.1	3.6	300.0	2.8
12	0.00013	0.00003	0.0179	0.0001	10.119	0.009	99.6	4.1	303.5	2.8
13	0.00086	0.00012	5.2447	0.0001	10.400	0.036	97.6	0.9	317.5	3.1
14	0.00120	0.00008	7.2452	0.0001	10.124	0.024	96.5	1.3	311.6	2.9
15	0.00049	0.00002	1.1317	0.0001	9.582	0.007	98.5	4.7	288.2	2.7
16	0.00006	0.00004	0.7539	0.0001	9.651	0.012	99.8	3.1	292.8	2.7
17	0.00052	0.00002	0.1909	0.0001	9.532	0.005	98.4	8.8	284.3	2.6
18	0.00018	0.00005	1.2207	0.0001	9.809	0.015	99.5	2.4	297.3	2.8
19	0.00015	0.00006	1.9284	0.0001	10.240	0.019	99.6	3.2	311.1	2.9
20	0.00027	0.00004	0.5208	0.0001	9.871	0.011	99.2	3.2	296.6	2.8
21	0.00059	0.00006	1.1835	0.0001	10.949	0.017	98.4	2.1	325.4	3.0
22	0.00038	0.00004	0.5396	0.0001	9.799	0.011	98.9	3.1	293.8	2.7
23	0.00031	0.00004	0.0285	0.0001	9.549	0.010	99.0	3.8	286.2	2.7
SAMPLE 5, *Dinaric ophiolite belt (graywake) (Middle-Late Jurassic); grain size: 250-500 μm; J-value:* 0.01819 ± 0.00018										
1	0.00056	0.00003	0.1866	0.0001	9.879	0.009	98.3	12.4	293.5	2.7
2	0.01045	0.00041	2.0934	0.0004	13.076	0.122	76.4	0.9	305.6	4.4
3	0.00170	0.00008	0.1162	0.0001	11.358	0.025	95.6	4.4	325.0	3.0
4	0.00299	0.00011	1.3721	0.0001	12.259	0.032	92.8	3.6	342.0	3.2
5	0.00357	0.00015	3.2029	0.0002	11.473	0.044	90.8	2.6	320.1	3.1
6	0.00018	0.00006	0.2082	0.0001	11.674	0.017	99.5	6.9	346.0	3.1
7	0.00044	0.00003	0.1230	0.0001	12.103	0.009	98.9	13.0	355.3	3.2

8	0.00268	0.00036	4.1285	0.0004	13.118	0.106	94.0	1.1	373.9	4.4
9	0.00024	0.00005	0.0869	0.0001	11.472	0.014	99.4	7.3	339.7	3.1
10	0.00235	0.00019	0.1182	0.0002	13.570	0.057	94.9	1.8	376.8	3.7
11	0.00319	0.00092	38.1492	0.0012	13.536	0.274	93.0	0.3	458.5	8.0
12	0.00027	0.00011	0.4104	0.0001	9.706	0.032	99.2	3.5	291.6	2.8
13	0.00064	0.00006	0.0701	0.0001	12.015	0.018	98.4	6.2	351.2	3.2
14	0.00093	0.00007	1.1300	0.0001	13.042	0.021	97.9	4.7	378.9	3.4
15	0.00077	0.00005	1.2176	0.0001	10.773	0.015	97.9	7.1	319.0	2.9
16	0.00139	0.00008	2.2714	0.0001	11.900	0.025	96.5	4.3	347.1	3.2
17	0.01207	0.00049	17.0581	0.0005	15.510	0.145	77.0	0.7	393.2	5.2
18	0.00234	0.00011	2.8660	0.0001	12.959	0.032	94.7	3.5	369.5	3.4
19	0.00526	0.00019	6.0419	0.0001	12.442	0.056	87.5	1.8	339.4	3.4
20	0.00231	0.00011	3.1721	0.0001	8.704	0.032	92.2	3.4	252.7	2.5
21	0.00040	0.00004	0.2230	0.0001	10.062	0.011	98.8	7.3	300.1	2.8
22	0.00147	0.00017	0.3109	0.0001	13.701	0.050	96.8	2.0	390.3	3.7
23	0.00159	0.00026	1.5828	0.0003	12.130	0.076	96.1	1.2	350.2	3.8
SAMPLE 6, *Dinaric ophiolite belt (graywake) (Middle-Late Jurassic); grain size: 250-500 μm: J-value:* 0.01818 ± 0.00018										
1	0.00015	0.00007	0.0001	0.0001	10.943	0.021	99.6	5.4	326.2	3.0
2	0.00027	0.00012	0.0001	0.0002	11.579	0.037	99.3	3.0	342.5	3.2
3	0.00004	0.00018	0.0001	0.0002	15.170	0.054	99.9	2.1	439.1	4.1
4	0.00006	0.00005	0.0001	0.0001	10.933	0.016	99.8	7.4	326.6	3.0
5	0.00067	0.00011	0.0001	0.0001	14.193	0.032	98.6	3.6	409.0	3.7
6	0.00074	0.00014	0.0001	0.0002	8.263	0.042	97.4	2.9	246.3	2.6
7	0.00042	0.00013	0.0001	0.0001	7.978	0.040	98.4	3.2	240.8	2.5
8	0.00078	0.00008	0.0001	0.0001	9.776	0.024	97.6	5.4	288.7	2.7
9	0.00200	0.00030	0.0001	0.0003	13.531	0.090	95.6	1.5	381.2	4.2
10	0.00022	0.00004	0.3741	0.0001	10.908	0.012	99.4	9.8	324.6	3.0
11	0.00070	0.00005	2.7563	0.0001	10.847	0.014	98.1	8.2	319.0	2.9
12	0.00252	0.00012	11.4611	0.0002	11.760	0.036	93.7	2.7	329.4	3.1
13	0.00181	0.00044	8.1102	0.0005	12.099	0.131	95.6	0.8	344.3	4.7
14	0.00166	0.00018	13.5857	0.0002	12.109	0.054	96.0	1.8	345.7	3.4
15	0.00188	0.00012	8.9785	0.0001	11.717	0.036	95.2	3.0	333.3	3.2
16	0.00050	0.00026	1.7781	0.0003	9.947	0.077	98.5	1.6	295.8	3.4
17	0.00218	0.00025	3.7463	0.0002	14.917	0.074	95.7	1.7	416.2	4.1
18	0.00006	0.00009	0.9430	0.0001	13.988	0.026	99.9	4.4	408.3	3.7
19	0.00169	0.00012	0.6709	0.0001	10.634	0.035	95.3	3.2	305.0	2.9
20	0.00201	0.00024	6.7849	0.0002	12.018	0.070	95.1	1.5	340.5	3.6
21	0.00329	0.00020	3.5864	0.0002	13.536	0.059	92.8	1.7	371.1	3.7
22	0.00257	0.00021	4.3872	0.0002	15.302	0.061	95.0	1.7	423.2	4.1
23	0.00185	0.00016	5.5417	0.0002	11.478	0.047	95.2	2.2	327.0	3.2
24	0.00026	0.00004	1.4807	0.0001	9.238	0.013	99.2	10.3	277.9	2.6

25	0.00148	0.00007	0.7891	0.0001	11.378	0.021	96.2	6.4	327.3	3.0
26	0.00118	0.00020	0.0001	0.0002	11.434	0.059	101.3	35.1	344.8	3.5
27	0.00048	0.00013	0.0001	0.0001	11.593	0.039	98.8	58.9	341.2	3.3
28	0.00056	0.00013	0.0001	0.0001	11.856	0.040	98.6	59.3	347.7	3.3
29	0.00010	0.00018	0.0001	0.0002	12.594	0.053	99.8	41.9	371.2	3.6
SAMPLE 7, *Vardar Flysch (sandstone) (Late Cretaceous); grain size: 355-500 µm; J-value:* 0.01797 ± 0.00018										
1	0.00037	0.00003	0.3886	0.0001	10.930	0.009	99.0	4.9	320.6	1.7
2	0.00237	0.00011	1.9626	0.0001	11.645	0.031	94.0	1.5	323.9	1.9
3	0.00026	0.00004	0.4886	0.0001	4.228	0.012	98.2	3.9	129.8	0.8
4	0.00083	0.00003	0.1413	0.0001	4.010	0.033	93.9	6.1	118.2	1.2
5	0.00077	0.00002	0.0426	0.0001	10.334	0.007	97.8	6.5	301.0	1.6
6	0.00109	0.00003	0.4386	0.0001	10.761	0.008	97.0	6.4	310.2	1.6
7	0.00068	0.00002	0.1822	0.0001	9.131	0.006	97.8	8.6	268.5	1.4
8	0.00291	0.00011	0.1914	0.0002	10.497	0.033	91.8	1.4	288.1	1.7
9	0.00280	0.00014	0.2837	0.0001	11.058	0.041	92.5	1.4	304.5	1.9
10	0.00020	0.00003	0.7086	0.0001	7.008	0.008	99.1	6.6	212.2	1.1
11	0.00103	0.00014	3.4331	0.0001	11.541	0.042	97.4	1.2	331.8	2.0
12	0.00102	0.00007	1.4401	0.0001	11.078	0.021	97.3	2.4	319.3	1.7
13	0.00508	0.00021	0.3686	0.0002	6.463	0.061	76.8	0.7	154.1	2.0
14	0.00372	0.00030	8.8720	0.0003	12.140	0.089	90.9	0.5	326.5	2.9
15	0.00616	0.00009	0.1535	0.0001	11.341	0.027	84.0	1.5	285.0	1.6
16	0.00014	0.00004	0.2535	0.0001	8.443	0.011	99.5	4.4	253.7	1.4
17	0.00013	0.00006	4.8688	0.0001	3.648	0.018	98.9	2.5	113.4	0.8
18	0.00443	0.00005	1.4501	0.0001	12.059	0.015	89.1	3.2	318.6	1.7
19	0.00243	0.00002	1.3834	0.0001	10.986	0.006	93.5	6.7	305.5	1.6
20	0.00093	0.00001	0.3535	0.0001	5.610	0.004	95.1	12.8	165.2	0.9
21	0.00093	0.00003	1.8948	0.0001	10.887	0.010	97.5	5.0	314.9	1.6
22	0.00100	0.00004	3.0031	0.0001	10.910	0.012	97.3	4.0	315.0	1.6
23	0.00077	0.00004	4.1005	0.0001	8.750	0.013	97.4	3.7	257.1	1.4
24	0.00145	0.00007	1.4723	0.0001	11.207	0.021	96.2	2.6	319.4	1.7
25	0.00036	0.00003	0.2335	0.0001	8.647	0.008	98.8	53.8	257.6	1.4
26	0.00054	0.00004	0.0255	0.0001	9.990	0.010	98.4	40.3	293.5	1.5
27	0.00139	0.00005	3.3535	0.0001	10.224	0.017	96.0	22.9	293.0	1.6
SAMPLE 8, *Vardar Flysch (sandstone) (Late Cretaceous); grain size: 355-500 µm; J-value:* 0.01771 ± 0.00018										
1	0.00143	0.00005	0.7925	0.0001	10.915	0.014	96.1	3.3	308.8	2.9
2	0.00099	0.00006	0.7483	0.0001	11.155	0.018	97.4	2.5	318.7	3.0
3	0.00079	0.00006	0.9503	0.0001	7.690	0.018	96.9	2.4	225.5	2.2
4	0.00194	0.00005	0.2240	0.0001	4.145	0.014	86.2	3.0	110.7	1.2
5	0.00079	0.00003	0.0070	0.0001	10.609	0.008	97.8	4.9	303.9	2.8
6	0.00073	0.00002	0.1229	0.0001	9.695	0.005	97.8	10.5	279.8	2.6
7	0.00110	0.00002	0.2657	0.0001	10.778	0.007	97.0	7.0	306.6	2.8

8	0.00070	0.00005	0.5214	0.0001	10.855	0.015	98.1	3.5	312.4	2.9
9	0.00335	0.00012	0.0154	0.0001	5.381	0.035	81.6	1.3	134.7	1.7
10	0.00013	0.00005	0.0029	0.0001	10.673	0.014	99.6	2.9	274.1	2.6
11	0.00014	0.00002	0.0229	0.0001	9.605	0.007	99.6	5.3	260.6	2.4
12	0.00026	0.00027	1.9521	0.0002	6.889	0.078	98.9	0.5	209.6	3.0
13	0.00023	0.00003	0.3039	0.0001	10.376	0.008	100.1	4.8	303.4	2.8
14	0.00284	0.00038	13.5687	0.0003	8.532	0.111	90.2	0.4	261.3	3.9
15	0.00473	0.00043	0.7484	0.0004	9.421	0.127	85.2	0.3	227.1	4.2
16	0.00140	0.00011	0.8783	0.0001	10.263	0.033	96.0	1.4	283.3	2.8
17	0.00002	0.00008	0.5214	0.0001	5.725	0.023	99.9	2.0	171.0	1.8
18	0.00044	0.00003	1.3959	0.0001	12.546	0.008	99.0	5.8	361.3	3.3
19	0.00109	0.00004	2.4304	0.0001	5.271	0.011	93.9	3.9	156.8	1.5
20	0.00260	0.00011	6.8441	0.0001	11.024	0.033	93.0	1.4	316.2	3.0
21	0.00116	0.00002	1.2025	0.0001	10.657	0.005	96.8	9.3	304.9	2.8
22	0.00052	0.00002	0.1214	0.0001	10.757	0.005	98.6	9.0	309.7	2.8
23	0.00089	0.00002	0.3650	0.0001	10.258	0.008	97.4	6.1	294.4	2.7
24	0.00215	0.00002	0.4882	0.0001	10.957	0.007	94.2	6.9	303.6	2.8
25	0.00323	0.00009	5.4503	0.0001	8.846	0.027	89.2	1.7	248.2	2.4

a) measured

b) corrected for post irradiation decay of ^{37}Ar (half-live = 35.1 days)