Supplemental Material

$^{40}Ar/^{39}Ar$ geochronology and the diffusion of ^{39}Ar in phengite-muscovite intergrowths during step-heating experiments *in vacuo*

Marnie Forster and Gordon Lister

APPENDIX B - *eArgon* data files

<eArgon_datafile>
<sample_description>
ALP00-52 MARNIE FORSTER Cime de Bonze omphacite-garnet boudin - CAN 118
</sample_description>

Temp (C)	time (min)	Ar36 (mol)	Ar37 (mol)	Ar39 (mol)	Ar40 (mol)	% Ar40*	Ar40*/Ar39(K)	Cumulative Ar39 (%)	Calculated age (Ma ± 1 s.d.)	Ca/K
<data_from_KArDate_program_plus_time>										
550	15	8.535E-17	2.286E-18	7.036E-16	3.372E-14	25.2	12.053	0.12	57.70 ± 7.17	6.17E-3
600	15	1.037E-16	1.861E-17	1.349E-15	4.867E-14	36.9	13.332	0.35	63.72 ± 2.91	2.62E-2
650	15	1.169E-16	5.014E-17	3.005E-15	7.425E-14	53.4	13.181	0.86	63.01 ± 1.23	3.17E-2
700	15	1.059E-16	9.848E-19	6.726E-15	1.240E-13	74.6	13.754	1.99	65.70 ± 0.58	2.78E-4
750	15	1.076E-16	2.450E-17	1.399E-14	2.312E-13	86.1	14.227	4.36	67.91 ± 0.36	3.33E-3
780	15	8.849E-17	3.805E-17	1.631E-14	2.614E-13	89.8	14.393	7.12	68.69 ± 0.27	4.43E-3
810	15	1.067E-16	8.065E-17	2.211E-14	3.515E-13	90.9	14.444	10.85	68.93 ± 0.23	6.93E-3
840	15	1.676E-16	6.364E-17	3.264E-14	5.248E-13	90.4	14.533	16.37	69.34 ± 0.22	3.70E-3
870	15	5.582E-16	7.978E-17	6.517E-14	1.129E-12	85.2	14.759	27.39	70.40 ± 0.22	2.33E-3
890	15	1.404E-15	1.194E-17	1.148E-13	2.162E-12	80.7	15.197	46.79	72.45 ± 0.39	1.98E-4
910	15	6.882E-16	1.195E-17	1.066E-13	1.774E-12	88.4	14.708	64.81	70.17 ± 0.42	2.13E-4
1030	15	9.220E-16	1.195E-17	1.347E-13	2.297E-12	88.0	15.004	87.59	71.55 ± 0.47	1.69E-4
1070	15	1.180E-16	2.720E-16	2.526E-14	4.186E-13	91.5	15.163	91.86	72.29 ± 0.44	2.05E-2
1120	15	6.945E-17	6.933E-16	1.738E-14	2.845E-13	92.6	15.160	94.80	72.28 ± 0.39	7.58E-2
1200	15	6.032E-17	7.257E-16	1.030E-14	1.700E-13	89.4	14.761	96.54	70.41 ± 0.44	1.34E-1
1450	15	3.078E-16	1.996E-16	2.046E-14	4.039E-13	77.4	15.271	100.00	72.80 ± 0.30	1.85E-2
</data_from_KArDate_program_plus_time>										
Total		5.011E-15	2.285E-15	5.915E-13	1.029E-11		14.865		70.90 ± 0.40	

Lambda K40 = 5.5430E-10 J = 2.6964E-3
</eArgon_datafile>

<eArgon_datafile>
<sample_description>
ALP00-117B MARNIE FORSTER Entrelor shear zone button schist - CAN 118
</sample_description>

Temp (C)	time (min)	Ar36 (mol)	Ar37 (mol)	Ar39 (mol)	Ar40 (mol)	% Ar40*	Ar40*/Ar39(K)	Cumulative Ar39 (%)	Calculated age (Ma ± 1 s.d.)	Ca/K
<data_from_KArDate_program_plus_time>										
550	15	1.846E-16	2.414E-18	1.063E-16	6.203E-14	12.0	70.278	0.16	318.54 ± 74.53	4.31E-2
600	15	1.213E-16	2.075E-16	2.530E-16	4.038E-14	11.3	17.975	0.55	86.98 ± 27.26	1.56E+0
650	15	8.828E-17	9.149E-16	6.862E-16	3.333E-14	22.0	10.680	1.59	52.18 ± 2.81	2.54E+0
700	15	8.623E-17	8.162E-16	1.686E-15	3.719E-14	31.6	6.973	4.16	34.24 ± 1.39	9.20E-1
750	15	1.134E-16	3.841E-16	3.515E-15	5.942E-14	43.5	7.359	9.52	36.12 ± 0.85	2.08E-1
780	15	1.085E-16	2.371E-16	3.975E-15	6.291E-14	48.9	7.738	15.58	37.96 ± 0.94	1.13E-1
810	15	1.351E-16	3.084E-16	4.953E-15	7.782E-14	48.6	7.628	23.14	37.42 ± 0.72	1.18E-1
840	15	2.145E-16	3.584E-16	6.205E-15	1.104E-13	42.5	7.553	32.60	37.06 ± 0.74	1.10E-1
870	15	2.338E-16	4.799E-16	8.745E-15	1.383E-13	49.9	7.895	45.93	38.72 ± 0.68	1.04E-1
900	15	1.034E-16	2.570E-16	5.221E-15	7.038E-14	56.4	7.610	53.89	37.33 ± 0.72	9.35E-2
930	15	7.740E-17	1.188E-16	4.149E-15	5.579E-14	58.8	7.911	60.22	38.80 ± 0.78	5.44E-2
970	15	9.091E-17	2.398E-16	4.609E-15	6.281E-14	57.1	7.778	67.24	38.15 ± 0.87	9.89E-2
1020	15	1.070E-16	2.757E-16	5.889E-15	7.733E-14	59.0	7.743	76.22	37.98 ± 0.58	8.90E-2
1070	15	1.402E-16	4.726E-16	7.304E-15	9.894E-14	58.0	7.852	87.36	38.51 ± 0.45	1.23E-1
1130	15	8.865E-17	4.308E-16	5.467E-15	7.075E-14	62.8	8.132	95.70	39.87 ± 0.51	1.50E-1
1250	15	6.207E-17	1.820E-16	2.409E-15	3.976E-14	53.8	8.871	99.37	43.45 ± 1.32	1.44E-1
1450	15	3.086E-16	4.093E-17	4.135E-16	9.645E-14	5.4	12.684	100.00	61.81 ± 26.87	1.88E-1
</data_from_KArDate_program_plus_time>										
Total		2.264E-15	5.727E-15	6.559E-14	1.194E-12		7.987		39.17 ± 1.14	

Lambda K40 = 5.5430E-10 J = 2.7478E-3
</eArgon_datafile>

<eArgon_datafile>
<sample_description>
ALP01-159B w.m. MARNIE FORSTER LagoDiCignana CAN 118 greenschist overprint in young shear zone with crenulation
</sample_description>

Temp (C)	time (min)	Ar36 (mol)	Ar37 (mol)	Ar38 (mol)	Ar39 (mol)	Ar40 (mol)	%Ar40*	Ar40*/Ar39(K)	Cumulative Ar39(%)	Calculated_Age (Ma±1s.d.)	Ca/K	Cl/K
<data_from_Noble_program_plus_time>												
550	15	9.294E-17	1.969E-20	6.163E-17	2.148E-16	2.978E-14	7.7	10.741	0.02	51.86 ± 7.23	1.74E-4	1.22E-2
650	15	1.053E-16	1.438E-17	1.033E-16	5.025E-16	3.481E-14	10.6	7.343	0.08	35.62 ± 3.30	5.44E-2	6.60E-3
750	15	1.219E-16	2.233E-18	2.560E-16	1.452E-15	4.913E-14	26.6	8.996	0.23	43.54 ± 1.19	2.92E-3	5.79E-3
800	15	1.012E-16	1.631E-17	4.192E-16	2.693E-15	5.186E-14	42.2	8.123	0.52	39.36 ± 0.53	1.15E-2	4.08E-3
850	15	1.332E-16	1.974E-20	1.058E-15	6.651E-15	9.319E-14	57.5	8.062	1.23	39.07 ± 0.34	5.64E-6	5.05E-3
900	15	1.331E-16	1.411E-17	2.167E-15	1.358E-14	1.491E-13	73.3	8.052	2.69	39.02 ± 0.15	1.97E-3	5.39E-3
940	15	2.114E-16	1.768E-17	3.716E-15	2.343E-14	2.496E-13	74.7	7.957	5.20	38.56 ± 0.13	1.43E-3	5.27E-3
970	15	3.977E-16	1.622E-17	4.822E-15	3.031E-14	3.608E-13	67.2	7.995	8.45	38.75 ± 0.17	1.02E-3	5.23E-3
990	15	6.103E-16	2.605E-17	7.093E-15	4.474E-14	5.313E-13	65.8	7.816	13.24	37.89 ± 0.21	1.11E-3	5.14E-3
1010	15	1.163E-15	5.534E-17	1.892E-14	1.196E-13	1.289E-12	73.1	7.875	26.06	38.17 ± 0.17	8.79E-4	5.19E-3
1030	15	6.901E-16	3.359E-17	2.055E-14	1.313E-13	1.256E-12	83.4	7.982	40.13	38.68 ± 0.11	4.86E-4	5.08E-3
1050	15	6.670E-16	6.387E-17	2.188E-14	1.401E-13	1.317E-12	84.7	7.966	55.15	38.61 ± 0.10	8.66E-4	5.04E-3
1070	15	7.218E-16	9.586E-17	1.884E-14	1.203E-13	1.175E-12	81.5	7.963	68.04	38.59 ± 0.10	1.51E-3	5.07E-3
1090	15	7.276E-16	3.323E-17	1.585E-14	1.004E-13	1.020E-12	78.6	7.989	78.80	38.72 ± 0.13	6.29E-4	5.23E-3
1110	15	6.184E-16	4.464E-17	1.350E-14	8.575E-14	8.706E-13	78.7	7.991	87.99	38.73 ± 0.12	9.89E-4	5.15E-3
1130	15	2.559E-16	3.337E-17	7.147E-15	4.528E-14	4.408E-13	82.5	8.034	92.84	38.93 ± 0.11	1.40E-3	5.25E-3
1160	15	1.785E-16	3.369E-20	6.371E-15	4.049E-14	3.809E-13	85.8	8.074	97.18	39.12 ± 0.08	1.58E-6	5.22E-3
1190	15	1.219E-16	2.282E-17	2.535E-15	1.626E-14	1.681E-13	78.3	8.098	98.92	39.24 ± 0.19	2.67E-3	4.94E-3
1230	15	7.909E-17	2.490E-17	8.154E-16	5.214E-15	6.490E-14	63.8	7.935	99.48	38.46 ± 0.44	9.08E-3	4.79E-3
1270	15	1.057E-16	2.361E-17	4.420E-16	2.700E-15	5.300E-14	40.9	8.032	99.77	38.92 ± 0.81	1.66E-2	5.19E-3
1330	15	1.785E-16	5.624E-18	2.670E-16	1.503E-15	6.591E-14	19.9	8.735	99.93	42.29 ± 1.78	7.11E-3	5.05E-3
1450	15	7.612E-17	3.375E-20	1.188E-16	6.302E-16	2.702E-14	16.7	7.148	100.00	34.68 ± 4.51	1.02E-4	6.53E-3
</data_from_Noble_program_plus_time>												
Total		7.490E-15	5.440E-16	1.469E-13	9.331E-13	9.677E-12		7.970		38.62 ± 0.15		

Lambda K40=5.5430E-10 J=2.7153E-3
</eArgon_datafile>

<eArgon_datafile>
<sample_description>
Marnie Forster ALP00-32 CAN 118, Ivrea gneiss minuti/EMS/2DK, VG1200
</sample_description>

Temp (C)	time (min)	Ar36 (mol)	Ar37 (mol)	Ar39 (mol)	Ar40 (mol)	% Ar40*	Ar40*/Ar39(K)	Cumulative Ar39 (%)	Calculated age (Ma ± 1 s.d.)	Ca/K
<data_from_KArDate_program_plus_time>										
550	15	1.025E-16	2.071E-18	1.268E-15	4.314E-14	29.7	10.101	0.16	48.75 ± 3.11	3.10E-3
650	15	9.288E-17	7.216E-17	5.617E-15	8.691E-14	68.3	10.561	0.88	50.94 ± 0.76	2.44E-2
750	15	1.121E-16	1.319E-16	1.959E-14	2.468E-13	86.4	10.881	3.40	52.46 ± 0.22	1.28E-2
800	15	9.344E-17	4.260E-17	2.393E-14	2.908E-13	90.3	10.973	6.46	52.90 ± 0.18	3.38E-3
850	15	2.325E-16	1.202E-16	4.463E-14	5.696E-13	87.7	11.198	12.19	53.97 ± 0.26	5.12E-3
870	15	1.427E-16	2.107E-18	5.067E-14	6.190E-13	93.0	11.359	18.69	54.73 ± 0.15	7.90E-5
890	15	1.259E-16	1.235E-16	6.426E-14	7.727E-13	95.0	11.419	26.93	55.02 ± 0.16	3.65E-3
910	15	1.252E-16	2.175E-16	7.823E-14	9.333E-13	95.8	11.430	36.96	55.07 ± 0.29	5.28E-3
930	15	1.326E-16	2.269E-16	8.470E-14	9.983E-13	95.8	11.296	47.83	54.43 ± 0.14	5.09E-3
950	15	1.415E-16	5.237E-16	8.515E-14	1.013E-12	95.6	11.378	58.75	54.82 ± 0.15	1.17E-2
970	15	1.192E-16	6.023E-16	7.597E-14	9.152E-13	95.9	11.557	68.49	55.67 ± 0.16	1.51E-2
990	15	1.104E-16	3.287E-16	6.690E-14	8.101E-13	95.8	11.596	77.07	55.85 ± 0.15	9.34E-3
1010	15	8.309E-17	1.967E-16	5.826E-14	7.095E-13	96.3	11.730	84.55	56.49 ± 0.18	6.42E-3
1040	15	7.704E-17	2.729E-16	5.102E-14	6.225E-13	96.1	11.727	91.09	56.48 ± 0.19	1.02E-2
1080	15	4.555E-17	8.240E-16	3.061E-14	3.797E-13	96.3	11.942	95.02	57.49 ± 0.21	5.11E-2
1130	15	4.461E-17	1.062E-15	1.462E-14	1.929E-13	93.0	12.277	96.89	59.08 ± 0.23	1.38E-1
1200	15	5.786E-17	9.256E-16	9.200E-15	1.330E-13	87.0	12.579	98.07	60.51 ± 0.27	1.91E-1
1350	15	1.875E-16	5.121E-16	1.501E-14	2.431E-13	77.1	12.474	100.00	60.01 ± 0.39	6.48E-2
1450	15	4.181E-16	2.194E-18	3.165E-17	1.274E-13	3.0	121.634	100.00	514.24 ± 1744.75	1.32E-1
</data_from_KArDate_program_plus_time>										
Total		2.445E-15	6.189E-15	7.797E-13	9.707E-12		11.497		55.39 ± 0.27	

Lambda K40 = 5.5430E-10 J = 2.7116E-3
</eArgon_datafile>

<eArgon_datafile>
<sample_description>
AG 03-13 Faros, within SZ rim
</sample_description>

Temp (C)	Ar36 (mol)	Ar37 (mol)	Ar39 (mol)	Ar40 (mol)	% Ar40*	Ar40*/Ar39(K)	Cumulative Ar39 (%)	Calculated age (Ma ± 1 s.d.)	Ca/K
<data_from_KArDate_program>									
500	2.566E-17	2.493E-17	1.697E-16	9.117E-15	16.8	9.038	0.10	19.22 ± 8.71	2.79E-1
550	2.119E-17	3.808E-17	2.942E-16	9.286E-15	32.5	10.262	0.28	21.81 ± 3.82	2.46E-1
600	2.036E-17	1.333E-16	6.739E-16	1.342E-14	55.1	10.985	0.68	23.33 ± 1.47	3.76E-1
650	1.949E-17	1.697E-16	1.481E-15	2.445E-14	76.4	12.605	1.58	26.75 ± 0.51	2.18E-1
700	3.008E-17	6.379E-17	2.884E-15	4.567E-14	80.4	12.728	3.31	27.01 ± 0.33	4.20E-2
750	3.565E-17	7.255E-17	5.209E-15	7.700E-14	86.1	12.734	6.45	27.02 ± 0.26	2.65E-2
790	4.747E-17	9.492E-18	8.069E-15	1.227E-13	88.4	13.436	11.30	28.50 ± 0.24	2.24E-3
820	8.292E-17	3.280E-17	1.811E-14	2.864E-13	91.3	14.432	22.21	30.59 ± 0.15	3.44E-3
840	7.356E-17	1.536E-18	2.660E-14	4.200E-13	94.7	14.945	38.22	31.67 ± 0.11	1.10E-4
860	5.085E-17	1.089E-17	1.703E-14	2.809E-13	94.5	15.581	48.47	33.01 ± 0.12	1.21E-3
880	5.017E-17	1.538E-18	1.344E-14	2.322E-13	93.5	16.146	56.56	34.19 ± 0.13	2.17E-4
900	4.803E-17	1.539E-18	1.534E-14	2.593E-13	94.4	15.949	65.79	33.78 ± 0.18	1.91E-4
920	4.734E-17	1.540E-18	1.919E-14	3.029E-13	95.2	15.024	77.35	31.84 ± 0.16	1.52E-4
940	3.663E-17	1.541E-18	1.719E-14	2.451E-13	95.4	13.599	87.70	28.84 ± 0.15	1.70E-4
970	2.237E-17	1.792E-17	9.844E-15	1.233E-13	94.4	11.822	93.62	25.10 ± 0.12	3.46E-3
1000	1.959E-17	2.469E-17	5.081E-15	5.993E-14	90.1	10.629	96.68	22.58 ± 0.14	9.23E-3
1050	2.149E-17	4.128E-17	3.656E-15	4.582E-14	85.9	10.770	98.88	22.88 ± 0.18	2.15E-2
1100	2.111E-17	1.608E-18	9.759E-16	1.854E-14	66.2	12.583	99.47	26.70 ± 0.99	3.13E-3
1200	2.819E-17	6.326E-17	7.774E-16	1.897E-14	56.0	13.674	99.94	29.00 ± 0.91	1.55E-1
1350	5.428E-17	5.452E-17	9.524E-17	1.728E-14	7.2	13.061	99.99	27.71 ± 44.21	1.09E+0
1450	1.138E-16	1.107E-17	1.007E-17	3.351E-14	-0.4	0.001	100.00	0.002 ±3128.238	2.09E+0
</data_from_KArDate_program>									
Total	8.703E-16	7.776E-16	1.661E-13	2.646E-12		14.351		30.42 ± 0.40	

Lambda K40 = 5.5430E-10 J = 1.1850E-3

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</eArgon_datafile>

<eArgon_datafile>
<sample_description>
Age spectrum data
AG03-19 In river bed below the GSD and marble contact
Schist with small garnet
M4
</sample_description>

Temp (C)	Ar36 (mol)	Ar37 (mol)	Ar39 (mol)	Ar40 (mol)	% Ar40*	Ar40*/Ar39(K)	Cumulative Ar39 (%)	Calculated age (Ma ± 1 s.d.)	Ca/K
<data_from_KArDate_program>									
500	1.645E-16	1.185E-18	1.703E-16	5.449E-14	10.8	34.459	0.08	72.00 ± 19.80	1.32E-2
550	8.553E-17	1.920E-17	2.317E-16	2.897E-14	12.7	15.923	0.18	33.63 ± 11.35	1.57E-1
600	6.673E-17	3.873E-17	5.226E-16	2.570E-14	23.2	11.423	0.43	24.19 ± 3.98	1.41E-1
650	4.523E-17	1.505E-17	1.148E-15	2.974E-14	55.0	14.244	0.95	30.11 ± 0.54	2.49E-2
700	4.941E-17	1.824E-17	2.508E-15	4.862E-14	69.8	13.535	2.11	28.62 ± 0.52	1.38E-2
750	6.053E-17	1.665E-17	4.934E-15	8.640E-14	79.1	13.860	4.37	29.31 ± 0.39	6.41E-3
790	7.908E-17	1.735E-17	8.638E-15	1.509E-13	84.4	14.737	8.35	31.15 ± 0.17	3.82E-3
820	1.144E-16	1.339E-18	2.469E-14	4.293E-13	92.0	15.990	19.70	33.77 ± 0.10	1.03E-4
840	9.945E-17	1.340E-18	3.982E-14	6.797E-13	95.5	16.303	38.01	34.42 ± 0.13	6.39E-5
860	6.522E-17	2.786E-17	3.005E-14	5.093E-13	96.1	16.281	51.82	34.38 ± 0.14	1.76E-3
880	5.660E-17	1.457E-18	2.184E-14	3.713E-13	95.3	16.213	61.86	34.23 ± 0.12	1.27E-4
900	5.629E-17	1.457E-18	2.422E-14	4.113E-13	95.8	16.269	73.00	34.35 ± 0.10	1.14E-4
920	4.500E-17	1.536E-18	2.181E-14	3.525E-13	96.1	15.523	83.03	32.79 ± 0.12	1.34E-4
940	3.317E-17	1.537E-18	1.623E-14	2.374E-13	95.7	13.999	90.49	29.60 ± 0.15	1.80E-4
970	3.063E-17	1.445E-18	1.076E-14	1.423E-13	93.4	12.357	95.44	26.15 ± 0.20	2.55E-4
1000	1.962E-17	6.802E-18	3.941E-15	5.829E-14	89.9	13.292	97.25	28.11 ± 0.14	3.28E-3
1050	2.125E-17	1.286E-18	1.494E-15	3.026E-14	79.1	16.024	97.93	33.84 ± 0.32	1.64E-3
1100	5.836E-17	3.151E-17	1.158E-15	3.838E-14	55.0	18.224	98.47	38.44 ± 1.41	5.17E-2
1200	2.842E-17	1.449E-18	2.006E-15	4.273E-14	80.2	17.091	99.39	36.07 ± 0.47	1.37E-3
1350	5.926E-17	2.223E-17	1.313E-15	4.137E-14	57.6	18.144	99.99	38.27 ± 0.89	3.22E-2
1450	1.102E-16	1.451E-18	1.616E-17	3.660E-14	11.0	249.018	100.00	465.32 ± 755.22	1.71E-1
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Total	1.349E-15	2.291E-16	2.175E-13	3.806E-12		15.637		33.03 ± 0.25	

Lambda K40 = 5.5430E-10 J = 1.1816E-3

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