DATA REPOSITIORY: ANALYTICAL PROCEDURES

$^{40}Ar/^{39}Ar$ analytical procedures

High purity mineral separates (>99% pure) were prepared from crushed and sized rock chips using conventional heavy liquid and magnetic separation techniques. Mineral separates were wrapped individually in Sn foil, along with biotite standard GA1550 (97.9 Ma, McDougall and Harrison, 1999) used to monitor the neutron dose. Samples were vacuum-sealed in super silica quartz tubes and irradiated for 15 or 20 hours in position L-67 of the Ford Reactor at the University of Michigan.

Argon analyses were performed in the Noble Gas Laboratory at the University of Arizona. Extraction of gas from the samples was accomplished using either a double-vacuum, resistance-heated tantalum furnace or a Liconix 5W argon ion laser. Furnace temperature control is *via* a thermocouple in contact with the bottom of the crucible and mounted on the outer (low) vacuum side of the furnace. For samples heated with the laser, a polarizing attenuator was used to control the incident power. Three SAES getters were used for purification of the extracted gas. Pumping is through either a turbomolecular pump or a Varian ion pump. Isotopic analyses were performed using a VG5400 mass spectrometer with an ion-counting electron multiplier. Machine mass discrimination and sensitivity were determined from repeated analysis of atmospheric argon. Data reduction was completed on a PC using in-house programs**.** Samples were corrected for blanks, neutron-induced interfering isotopes, decay of ^{37}Ar and ^{39}Ar, mass discrimination, atmospheric argon, as well as $H^{35}Cl$, $H^{36}Cl$ and $H^{37}Cl$. Correction factors used to account for interfering nuclear reactions were determined by analyzing argon extracted from irradiated CaF_2 and K_2SO_4 and are $(^{36}Ar/^{37}Ar)_{Ca}$= 0.00027; $(^{38}Ar/^{37}Ar)_{Ca}$ =

0.0001;$(^{39}Ar/^{37}Ar)_{Ca}$ = 0.0009; $(^{40}Ar/^{39}Ar)_{K}$= 0.023; $(^{38}Ar/^{39}Ar)_{K}$ = 0.017. Results of $^{40}Ar/^{39}Ar$ step heating experiments and total fusion experiments are shown in Table A1, and representative age spectra are shown in Figure 4. All ages are calculated using the decay constants recommended by Steiger and Jager (1977). Stated precisions for $^{40}Ar/^{39}Ar$ ages include all uncertainties in the measurement of isotope ratios and are quoted at the 1σ level. The errors do not include an error associated with the J parameter that is < 0.5%.

Electron probe analyses

Electron probe analyses were obtained at the Analytical Facility of Victoria University using a JEOL-733 Superprobe. Accelerating voltage was 15 kV and synthetic oxides and natural minerals were used as standards. For phengite analyses a 10 μm defocused beam at 8 nA was used. Data reduction procedures followed those described in Bence and Albee (1968). Phengite mineral compositions are shown in Table A2.

Fission Track analyses

Apatites were mounted in epoxy on glass slides, ground and polished to reveal an internal surface, and then etched for 20 s at room temperature in 5N HNO_3 to reveal spontaneous fission tracks. Apatite ages were determined using the external detector method and a Kinetek automated stage. Samples were irradiated at the Oregon State University Nuclear reactor in the slow soaker position B-3 (Thermal column #5) that has a Cd for Au ratio of 13.6 at the column face. Mounts were counted at 1250x under a dry 100x objective. Ages were calculated using the zeta calibration method (zeta = 361 ± 10 for dosimeter glass CN5) following the procedures of Hurford and Green (1983) and Green (1985) Analytical errors were calculated using the "conventional method" (Green, 1981).

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Data Repository Table 1. $^{40}Ar/^{39}Ar$ analytical results

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$† (x 10^{-3})	$^{39}Ar_K$ cps	Cum. $\%^{39}Ar$ released	$^{40}Ar^*$ (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC53 phengite (J = 0.0021843; wt = 0.0056 g; 80 - 100 µm)									
550	47.7	0.06	132.0	3161	2.41	17.9	8.73	34.1	2.8
610	11.2	0.02	7.1	3665	5.21	81.3	9.13	35.6	0.7
680	14.8	0.01	20.2	6864	10.46	59.9	8.91	34.8	0.3
720	9.79	0.001	0.0	10367	18.38	100.0	9.84	38.3	0.3
740	9.79	0.005	1.8	12273	27.75	94.6	9.27	36.2	0.0
780	9.90	0.002	1.4	21906	44.49	96.1	9.49	37.0	0.2
805	9.58	0.004	1.6	16986	57.46	95.3	9.13	35.6	0.3
835	9.60	0.006	0.7	15681	69.44	97.6	9.39	36.6	0.1
890	9.62	0.001	1.2	28290	91.05	96.4	9.29	36.2	0.2
950	9.3	0.02	2.4	5413	95.19	92.4	8.6	33.5	0.4
1150	10.1	0.01	0.9	6006	99.77	97.6	9.8	38.2	0.6
1300	19.0	0.01	73.6	297	100	0.0	0.0	-	-
							Integrated age	36.2	0.3
NC65 phengite (J = 0.0021839; wt = 0.0031 g; 80 - 100 µm)									
560	156.5	0.19	496.0	919	1.97	5.7	10.0	42.6	9.9
680	11.2	0.03	2.0	2954	8.32	93.8	10.6	41.1	1.0
730	10.88	0.02	5.3	5535	20.20	84.8	9.3	36.4	0.5
750	10.05	0.017	3.0	7072	35.39	90.9	9.2	35.8	0.5
780	9.43	0.007	1.3	8073	52.72	95.0	9.1	35.4	0.6
800	9.68	0.01	4.1	5228	63.95	86.6	8.5	33.1	0.5
820	10.1	0.02	0.0	3515	71.50	99.2	10.2	39.9	0.9
860	9.44	0.02	2.0	5136	82.53	94.5	8.86	34.6	0.3
900	9.8	0.02	2.2	3129	89.24	92.3	9.2	35.9	0.9
980	10.5	0.09	0.0	1641	92.77	100.0	10.9	42.7	1.3
1150	13.3	0.10	8.3	1463	95.91	89.4	10.0	42.4	4.5
1300	10.8	0.04	4.8	1905	100.00	85.7	9.4	36.7	1.6
							Integrated age	36.6	1.0

$\lambda = 5.543 \times 10^{-10}$/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$† (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	^{40}Ar* (%)	$^{40}Ar^{*}/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC58 phengite (J = 0.0021718; wt = 0.0014 g; 180 - 250 μm)									
600	53.6	0.02	152.0	4549	20.95	16.1	9.20	35.7	2.6
680	10.4	0.03	2.0	3934	39.07	93.5	9.82	38.1	0.9
710	9.8	0.03	0.2	2644	51.24	97.7	9.77	37.9	1.7
750	9.9	0.05	0.0	3398	66.89	100.0	10.60	41.1	0.8
785	9.7	0.02	2.3	3394	82.52	91.0	9.00	34.9	1.1
825	9.9	0.02	2.7	2401	93.58	93.8	9.13	35.4	1.4
880	10.3	0.05	6.2	987	98.12	56.7	8.54	33.1	10.4
1000	8.0	0.3	0.0	122	98.68	100.0	19.51	74.9	18.1
1350	18.0	2.3	58.0	286	100	12.5	1.68	6.6	9.0
							Integrated age	36.8	2.1
NC25 phengite (J = 0.002311; wt = 0.0112 g; 180 - 250 μm)									
484	156.2	0.0	531.2	2775	0.63	0.5	0.82	3.4	4.6
533	22.37	1.25	4.47	2759	1.26	41.1	9.2	37.9	3.7
615	11.40	0.52	7.98	9388	3.39	79.4	9.04	37.3	1.0
677	10.18	0.0	3.05	39675	12.40	90.5	9.22	38.0	0.3
737	9.67	0.0	1.93	183714	54.12	94.0	9.10	37.5	0.1
750	9.76	0.10	0.98	55800	66.80	96.0	9.36	38.6	0.2
783	9.76	0.20	0.98	41715	76.27	96.3	9.40	38.8	0.3
828	9.68	0.21	0.97	37426	84.77	96.4	9.34	38.5	0.3
895	9.33	0.22	0.93	22950	89.99	96.6	9.00	37.2	0.4
1296	9.49	0.0	0.95	44080	100.00	97.4	9.23	38.1	0.2
							Integrated age	37.7	0.3
NC57e phengite (J = 0.0021453; wt = 0.007 g; 250 - 425 μm)									
550	149.0	0.03	456.3	1132	0.75	9.7	15.1	57.4	6.5
600	14.0	0.00	21.2	1854	1.97	58.0	7.8	30.0	2.1
650	13.0	0.05	7.2	2712	3.76	85.8	10.9	41.6	2.2
680	16.4	0.01	13.8	4126	6.48	74.3	12.3	47.2	1.2
700	15.0	0.01	15.2	6972	11.08	69.0	10.5	40.4	1.2
715	12.26	0.01	5.4	11219	18.47	85.9	10.7	40.8	0.6
740	11.44	0.00	4.6	21051	32.36	87.8	10.08	38.6	0.2
750	11.06	0.005	3.0	16546	43.27	91.5	10.2	39.0	0.4
770	10.96	0.008	3.4	17328	54.69	89.8	9.98	38.2	0.6
800	11.44	0.009	4.9	17617	66.31	86.2	10.0	38.3	0.5
850	11.63	0.009	4.7	23598	81.87	87.2	10.2	39.2	0.4
900	11.1	0.030	4.1	13687	90.90	87.6	9.9	38.0	1.1
970	11.1	0.027	1.8	6071	94.90	92.5	10.5	40.3	1.2
1300	11.1	0.071	3.5	7731	100.00	89.3	10.06	38.5	0.6
							Integrated Age	39.2	0.7

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$† (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	$^{40}Ar^*$ (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC57d phengite (J = 0.0021464; wt = 0.0096 g; >500 μm)									
550	124.3	0.08	400.6	1367	0.57	4.0	6.8	26.2	5.9
680	21.06	0.005	37.9	11491	5.4	46.7	9.94	38.1	0.7
705	14.10	0.005	13.8	18981	13.38	70.6	10.04	38.5	0.4
720	11.71	0.005	4.7	24235	23.56	87.6	10.31	39.5	0.3
750	11.21	0.001	1.0	41733	41.09	91.5	10.28	39.4	0.2
800	11.20	0.003	2.8	54384	63.93	89.2	10.01	38.3	0.1
840	11.84	0.004	4.4	39763	80.64	86.2	10.24	39.2	0.2
900	11.81	0.020	20.1	27153	92.05	87.8	10.40	39.8	0.3
990	11.30	0.034	3.4	7536	95.21	93.4	10.68	40.9	0.5
1100	10.8	0.08	8.2	3205	96.56	77.8	8.60	33.0	1.6
1300	10.90	0.04	3.9	8194	100	96.7	10.62	40.7	0.5
							Integrated age	39.0	0.3
NC57c fuchsite (J = 0.0021396; wt = 0.0090 g; >500μm)									
600	4053	1.76	14032	63	1.39	-	-	-	-
750	43.8	0.05	114.4	1246	28.69	21.5	10.2	39.0	3.6
850	10.8	0.03	0.0	2592	85.5	100.0	11.6	44.4	1.1
1000	13.4	0.9	18.0	354	93.26	37.7	8.1	30.9	13.0
1300	22.0	0.7	28.4	307	100	52.1	13.7	52.2	11.6
							Integrated age	41.8	3.4
NC24 K-feldspar (J = 0.0024141; wt = 0.0110 g; 44 - 53 μm)									
450 (12)	14.50	0.02	20.0	17463	3.93	59.0	8.62	37.2	0.4
500 (12)	8.37	0.010	1.5	29003	10.47	94.4	7.92	34.2	0.2
530 (12)	8.10	0.013	0.6	31178	17.47	97.8	7.94	34.2	0.2
560 (12)	8.15	0.0	0.3	33029	24.91	98.9	8.07	34.8	0.2
590 (12)	8.14	0.007	0.4	33786	32.51	98.2	8.01	34.6	0.2
620 (12)	8.05	0.007	0.4	29845	39.21	98.5	7.94	34.3	0.2
620 (40)	8.27	0.009	0.7	41718	48.61	97.4	8.08	34.8	0.1
620 (120)	8.24	0.007	0.7	46566	59.05	97.3	8.03	34.6	0.1
620 (240)	8.35	0.009	0.9	28481	65.45	97.6	8.17	35.2	0.2
650 (20)	8.1	0.11	4.0	2255	65.97	83.9	6.9	30.0	1.9
700 (12)	8.0	0.06	3.0	3222	66.68	87.4	7.1	30.8	1.3
740 (15)	8.34	0.02	1.2	6305	68.09	94.9	7.99	34.5	1.0
800 (15)	8.35	0.05	0.0	10607	70.47	100.0	8.5	36.5	0.5
840 (15)	8.42	0.02	0.8	10483	72.85	97.0	8.2	35.3	0.5
840 (40)	8.46	0.02	0.7	11206	75.38	97.5	8.26	35.6	0.4
840 (120)	8.66	0.02	0.3	13825	78.50	98.8	8.56	36.9	0.3
840 (240)	8.80	0.02	1.2	12996	81.45	95.9	8.45	36.4	0.4
870 (25)	8.6	0.12	0.5	1917	81.89	96.4	8.5	36.5	2.9
920 (60)	8.35	0.02	0.0	9264	83.92	100.0	8.35	36.0	0.3
980 (60)	8.74	0.01	1.1	14684	87.20	96.1	8.42	36.3	0.3
1000 (60)	8.80	0.02	0.8	11864	89.86	96.9	8.57	36.9	0.4
1020 (60)	8.80	0.02	1.1	9843	92.09	95.9	8.49	36.6	0.6
1050 (60)	9.11	0.04	1.4	9257	94.19	94.8	8.7	37.5	0.7
1080 (40)	8.88	0.0	1.3	6755	95.71	95.1	8.5	36.6	0.7
1120 (20)	9.06	0.03	1.9	4880	96.80	93.3	8.5	36.7	0.8
1250 (12)	9.16	0.01	1.2	14270	99.99	95.9	8.80	37.9	0.3
1550 (12)	2425.1	4.8	7579	30	100.00	7.6	210	740.9	204.9
							Integrated age	35.3	0.5

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$† (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	$^{40}Ar^*$ (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
SG12 phengite (J = 0.0022096; wt = 0.0081 g; 250 - 425 µm)									
550	28.0	0.54	63.1	3458	5.19	32.3	9.5	37.4	1.5
590	13.49	0.029	12.4	4030	11.24	70.7	9.9	38.9	1.4
620	12.17	0.025	9.2	6159	20.49	75.2	9.5	37.4	1.3
650	10.77	0.019	6.2	6730	30.6	80.9	8.9	35.3	1.0
680	10.40	0.015	4.4	7651	42.09	85.2	9.1	36.0	1.1
720	10.02	0.011	4.2	9597	56.5	86.8	8.78	34.7	0.4
740	10.23	0.013	3.8	5676	65.02	86.3	9.1	36.0	1.1
780	10.07	0.011	2.6	10073	80.15	90.4	9.3	36.7	0.9
830	10.28	0.019	3.0	7558	91.5	89.0	9.4	37.1	1.0
900	12.31	0.08	4.9	2030	94.55	81.1	10.9	42.9	3.8
1150	13.37	0.2	11.3	3319	99.53	70.8	10.1	39.7	2.3
1350	18.4	0.98	57.4	314	100	0.0	1.58	6.3	13.0
							Integrated age	36.6	1.2
CS38 phengite (J = 0.0021901; wt = 0.0046 g; 250 - 425 µm)									
550	40.8	0.092	111.6	2925	4.42	18.7	8.1	31.8	2.5
600	13.55	0.024	11.6	3268	9.36	71.4	10.1	39.6	2.0
630	11.72	0.012	7.3	8387	22.04	80.2	9.6	37.5	0.8
660	10.82	0.014	4.9	6845	32.39	84.9	9.4	36.7	0.8
690	10.35	0.010	4.2	10103	47.66	86.7	9.1	35.7	0.6
715	10.32	0.013	4.2	6111	56.89	85.5	9.1	35.5	1.1
730	10.10	0.014	2.3	5929	65.86	91.1	9.4	36.9	1.1
760	10.13	0.011	2.5	8808	79.17	91.1	9.4	36.7	0.6
810	9.87	0.009	1.8	9512	93.55	92.8	9.3	36.5	0.8
900	10.5	0.035	3.1	2029	96.62	83.4	9.6	37.6	3.3
1150	11.4	0.155	6.5	2163	99.88	76.0	9.5	37.0	3.7
1350	16.2	0.91	0.0	77	100	100.0	28.9	110.6	58.9
							Integrated age	36.6	1.2
KO142 phengite (J = 0.0021977; wt = 0.0059 g; 250 - 425 µm)									
550	20.48	0.012	32.27	9660	7.24	52.1	10.9	42.6	1.2
600	11.20	0.004	4.4	24337	25.48	87.8	9.91	38.9	0.4
640	10.41	0.007	2.0	16610	37.92	93.4	9.8	38.6	0.5
660	10.48	0.009	2.6	11684	46.68	91.1	9.7	38.1	0.7
680	10.44	0.009	1.9	10118	54.26	93.0	9.9	38.7	0.8
710	10.60	0.012	2.3	10696	62.27	92.5	9.9	39.0	0.6
750	10.60	0.011	2.5	15908	74.19	92.1	9.9	38.7	0.4
850	10.43	0.015	1.5	21687	90.44	95.0	10.0	39.2	0.4
1050	10.37	0.040	1.2	5569	94.62	94.9	10.0	39.3	0.8
1250	10.33	0.017	0.5	6719	99.65	96.2	10.2	39.9	0.9
1350	11.4	0.15	4.3	463	100	61.0	10.2	39.9	12.2
							Integrated age	39.1	0.6

λ = 5.543 x 10-^{10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$† (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	$^{40}Ar^*$ (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
KO143A phengite (J = 0.0021929; wt = 0.01284 g; >500μm)									
550	52.2	0.014	143.0	6390	2.03	19.1	10.2	40.1	1.8
640	18.80	0.0015	29.5	50965	18.25	53.6	10.15	39.7	0.2
660	11.20	0.0004	4.9	59589	37.21	87.0	9.76	38.2	0.1
680	10.62	0.0007	3.8	44762	51.46	89.1	9.49	37.2	0.1
705	10.94	0.0008	4.1	45465	65.92	88.9	9.75	38.2	0.1
730	11.07	0.0023	4.4	37720	77.93	88.1	9.79	38.3	0.1
760	11.23	0.003	4.8	20412	84.42	86.9	9.80	38.4	0.3
805	11.01	0.009	5.3	20556	90.96	85.5	9.46	37.0	0.4
860	11.14	0.038	4.1	9179	93.88	87.6	9.93	38.9	0.8
960	11.69	0.103	6.3	3619	95.04	81.9	9.83	38.5	1.3
1120	10.98	0.078	6.5	2614	95.87	80.5	9.07	35.5	1.6
1220	10.43	0.014	1.6	10167	99.1	94.2	9.96	39.0	0.5
1300	10.11	0.026	5.0	2820	100	81.4	8.63	33.8	1.7
							Integrated age	38.3	0.3
KO143B phengite (J = 0.00217043; wt = 0.0039 g; 425 - 250μm)									
550	37.5	0.04	98.9	2502	3.84	20.6	8.5	32.9	2.5
620	13.26	0.005	11.1	13243	24.14	74.6	10.0	38.8	0.5
645	10.66	0.006	3.7	9218	38.28	88.0	9.6	37.1	0.7
665	10.53	0.009	3.9	6581	48.37	87.2	9.4	36.4	0.9
700	10.71	0.009	2.4	7710	60.19	90.4	10.0	38.7	1.2
740	10.74	0.011	3.2	9934	75.42	89.2	9.8	37.9	0.8
780	10.69	0.022	2.9	6262	85.02	89.0	9.8	38.1	1.3
840	11.26	0.061	3.4	3428	90.28	87.0	10.3	39.8	1.9
950	11.2	0.24	15.6	1479	92.55	50.0	6.6	25.7	4.2
1100	10.7	0.11	6.7	1411	94.71	68.7	8.7	33.8	5.1
1220	10.38	0.037	2.9	2958	99.25	87.5	9.5	36.9	1.9
1350	11.9	0.28	24.4	491	100	4.3	4.8	18.5	16.5
							Integrated age	37.3	1.3
KO173A phengite (J = 0.0021693; wt = 0.0072 g)									
550	38.99	0.023	97.5	5540	3.2	25.1	10.4	40.2	2.0
600	14.58	0.007	14.6	17730	13.45	69.7	10.31	39.9	0.5
640	11.78	0.0040	5.1	32577	32.28	86.6	10.29	39.8	0.4
655	11.11	0.005	3.9	21577	44.75	88.6	9.96	38.6	0.5
670	11.27	0.007	4.0	17469	54.84	88.3	10.10	39.1	0.6
795	11.09	0.0116	2.6	40020	77.97	92.7	10.34	40.0	0.2
810	11.25	0.030	3.2	20329	89.72	90.6	10.3	39.9	0.5
850	11.12	0.048	1.3	7191	93.88	93.0	10.7	41.5	1.5
950	11.0	0.099	2.1	3065	95.65	80.7	10.4	40.2	5.8
1180	11.07	0.113	2.4	3807	97.85	87.4	10.4	40.1	2.6
1250	10.6	0.070	3.9	2789	99.46	80.0	9.4	36.6	4.0
1350	11.6	0.104	9.3	933	100	56.3	8.8	34.3	9.1
							Total age	39.7	0.8

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$† (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	$^{40}Ar^*$ (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
KO173B fuchsite (J = 0.0021727; wt = 0.015 g)									
600	22.46	0.009	42.0	9638	2.68	43.9	10.1	39.3	1.1
650	11.92	0.0020	5.1	37022	12.98	86.9	10.41	40.3	0.3
680	10.72	0.0008	1.70	56917	28.82	95.3	10.23	39.7	0.1
700	10.56	0.0012	0.75	64068	46.65	97.9	10.34	40.1	0.04
720	10.46	0.0010	1.27	57866	62.75	96.4	10.12	39.2	0.2
750	10.66	0.0010	1.45	48318	76.20	95.9	10.25	39.7	0.2
800	10.76	0.0018	1.6	45099	88.74	95.1	10.29	39.9	0.2
850	10.80	0.004	0.5	26371	96.08	98.1	10.64	41.2	0.2
920	10.54	0.015	0.0	6686	97.94	100.0	10.8	41.9	1.1
1000	10.9	0.02	0.0	2184	98.55	100.0	11.3	43.8	1.9
1180	16.1	0.04	7.4	1419	98.95	80.6	13.9	53.8	4.0
1350	11.27	0.019	0.0	3789	100.00	98.6	11.4	44.3	1.3
							Total age	40.0	0.2
NC32 phengite (J = 0.0021345; wt = 0.046 g; 180-250µm)									
550	19.84	0.02	32.0	7315	7.63	51.8	10.4	39.8	1.2
600	10.89	0.007	1.9	8120	16.1	93.7	10.3	39.4	0.7
640	10.51	0.006	2.3	11167	27.74	92.5	9.8	37.5	0.5
680	10.44	0.006	1.6	12068	40.33	94.6	10.0	38.0	0.5
720	10.34	0.003	1.9	24272	65.64	93.9	9.78	37.3	0.3
750	10.16	0.008	0.2	9496	75.54	98.2	10.1	38.5	0.6
810	10.16	0.004	0.85	14680	90.85	97.6	10.0	38.2	0.5
900	10.23	0.012	0.0	5584	96.67	99.0	10.4	39.6	1.1
1150	13.2	0.02	4.0	2878	99.67	87.6	12.0	45.8	2.0
1350	13.7	0.19	10.5	313	100	79.3	13.6	51.5	12.8
							Total age	38.5	0.7
NC41 phengite (J = 0.0021133; wt = 0.051 g; 106-212 µm)									
550	23.3	0.042	49.9	5543	4.86	37.1	8.9	33.7	1.5
600	11.16	0.010	8.7	6693	10.72	75.5	8.6	32.6	0.8
640	11.05	0.005	6.3	10976	20.34	82.0	9.2	34.7	0.5
680	10.65	0.002	3.7	27196	44.16	89.2	9.55	36.0	0.2
720	10.67	0.005	2.9	12111	54.77	91.1	9.8	37.1	0.4
750	10.76	0.008	4.0	9210	62.84	87.8	9.6	36.2	0.6
810	10.26	0.003	2.8	27288	86.75	91.6	9.43	35.6	0.2
900	10.03	0.014	1.2	7898	93.67	94.8	9.7	36.5	0.7
1000	10.54	0.03	2.4	3193	96.47	89.5	9.8	37.1	1.6
1200	10.99	0.05	1.6	3721	99.73	91.3	10.5	39.7	1.9
1350	12.0	0.23	15.2	310	100	52.5	10.5	39.6	14.6
							Integrated age	35.8	0.6

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$1 (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	^{40}Ar* (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC52 phengite (J = 0.0020755; wt = 0.082 g; 80 - 100 µm)									
550	12.98	0.008	46.7	24701	16.29	0.0	0.0	-	-
600	10.65	0.002	29.0	18975	28.8	19.2	2.14	8.0	0.3
640	10.70	0.005	17.1	16431	39.64	52.4	5.67	21.1	0.3
680	10.50	0.004	9.9	21705	53.96	71.7	7.60	28.2	0.4
720	10.71	0.007	5.7	13586	62.92	83.6	9.05	33.6	0.4
750	10.57	0.008	5.7	13233	71.64	82.9	8.91	33.1	0.6
790	10.55	0.006	4.0	22877	86.73	88.5	9.39	34.8	0.2
840	10.47	0.005	5.7	13855	95.87	83.3	8.79	32.6	0.3
940	10.93	0.03	42.0	2973	97.83	0.0	0.0	-	-
1150	11.05	0.03	34.0	3124	99.89	5.2	0.96	3.6	1.6
1350	14.5	0.30	62.0	169	100	0.0	0.0	-	-
							Integrated age	21.5	0.3
NC13 phengite (J = 0.0012709; wt = 0.01284 g; 180 - 250 µm)									
550	256.0	0.006	814.0	2554	2.73	6.1	17.5	39.6	3.2
630	41.0	0.01	78.0	3475	6.45	43.9	18.0	40.9	0.7
690	26.6	0.029	33.0	6700	13.62	63.1	16.9	38.4	0.6
740	23.0	0.033	19.3	19893	34.90	75.2	17.32	39.3	0.8
780	19.4	0.018	8.6	15269	51.23	86.8	16.89	38.3	0.2
820	19.1	0.018	7.1	12901	65.03	89.0	17.0	38.7	0.3
880	18.4	0.015	5.1	14853	80.92	91.7	16.9	38.3	0.2
950	20.7	0.040	13.5	6010	87.35	80.1	16.7	38.0	0.6
1050	21.3	0.082	16.2	8192	96.12	77.3	16.5	37.5	0.5
1350	46.2	0.24	97.2	3630	100.00	37.2	17.7	40.2	1.3
							Integrated age	38.7	0.4
NC14 phengite (J = 0.0012861; wt = 0.0107 g; 180 - 250 µm)									
450	383.3	0.0	1240.0	1752	0.33	4.1	18.1	41.6	6.5
500	34.0	0.0	58.8	1910	0.69	49.8	17.2	39.6	1.4
550	24.6	0.0	23.3	5182	1.66	71.9	17.7	40.7	0.6
600	19.1	0.002	7.4	11444	3.82	88.5	16.9	38.8	0.9
630	19.13	0.0	5.2	15206	6.68	92.0	17.6	40.40	0.01
660	19.3	0.00	7.6	32230	12.75	88.4	17.1	39.30	0.01
685	18.0	0.000	3.2	68640	25.67	94.8	17.12	39.3	0.1
700	18.19	0.000	2.1	63787	37.67	96.6	17.58	40.3	0.1
730	18.09	0.000	2.0	71452	51.12	96.4	17.44	40.0	0.1
760	18.30	0.0006	2.4	83080	66.75	96.1	17.60	40.4	0.1
780	18.46	0.0013	2.9	54408	76.99	95.4	17.62	40.4	0.1
830	18.17	0.0033	2.6	61366	88.54	95.7	17.40	39.9	0.1
950	18.4	0.006	2.4	26480	93.53	96.2	17.69	40.6	0.1
1150	18.7	0.011	4.8	10598	95.52	92.4	17.2	39.6	0.3
1350	19.2	0.003	4.7	23788	100	92.8	17.8	40.9	1.2
							Integrated age	40.1	0.2

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$1 (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	^{40}Ar* (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC22 phengite (J = 0.0012919; wt = 0.00995 g; 180 - 250 µm)									
550	99.1	0.012	279.0	9570	1.89	16.6	17.0	39.2	1.1
600	20.2	0.003	9.9	10395	3.94	85.6	17.2	39.7	0.4
640	18.4	0.003	5.3	17993	7.49	91.4	16.8	38.8	0.2
680	17.9	0.0013	4.2	73495	21.99	93.1	16.6	38.3	0.2
700	17.0	0.0011	1.6	105930	42.88	97.2	16.5	38.0	0.1
710	17.0	0.0006	1.5	52596	53.26	97.4	16.5	38.1	0.1
730	17.1	0.0004	1.80	38155	60.78	96.8	16.5	38.1	0.1
770	17.0	0.0010	1.5	35407	67.77	97.2	16.5	38.0	0.1
820	16.9	0.0010	1.5	50213	77.68	97.4	16.4	37.9	0.1
950	16.9	0.034	1.1	56420	88.8	98.0	16.5	38.2	0.1
1140	17.0	0.044	1.0	46776	98.03	98.1	16.6	38.4	0.1
1350	19.7	0.015	10.0	9975	100	84.8	16.7	38.6	0.5
							Integrated age	38.2	0.2
NC30 phengite (J = 0.0012827; wt = 0.008631 g; 150 - 180 µm)									
550	55.8	0.003	132.0	13932	3.45	29.8	16.9	38.8	0.7
600	19.5	0.003	7.5	14114	6.94	88.6	17.3	39.6	0.3
650	18.6	0.003	5.1	24421	12.99	91.8	17.14	39.2	0.2
680	18.6	0.001	5.0	37126	22.17	92.0	17.15	39.3	0.1
700	17.79	0.0001	2.4	51816	35.00	96.0	17.09	39.1	0.1
720	17.4	0.00	1.8	48193	46.93	96.9	16.8	38.50	0.01
750	17.62	0.003	1.9	40725	57.01	96.9	17.08	39.1	0.1
800	17.8	0.001	2.3	62874	72.57	96.2	17.1	39.2	0.6
940	17.71	0.0041	2.3	92693	95.51	96.1	17.02	39.0	0.1
1140	23.6	0.015	22.0	12541	98.61	72.4	17.1	39.3	0.4
1350	29.9	0.0022	41.4	5611	100.00	58.9	17.7	40.6	1.3
							Integrated age	39.1	0.2
NC17 phengite (J = 0.0012721; wt = 0.01284 g; 180 - 250 µm)									
550	182.8	0.011	579.5	6745	1.20	6.3	12.8	29.2	3.1
600	23.6	0.002	24.0	10970	3.14	69.6	16.6	37.7	0.5
650	19.3	0.001	8.9	19158	6.54	86.3	16.7	37.9	0.3
690	19.6	0.002	9.9	36533	13.02	85.1	16.75	38.0	0.2
720	17.95	0.001	4.2	82808	27.72	93.0	16.71	37.9	0.1
735	17.3	0.002	2.2	57987	38.01	96.0	16.63	37.8	0.2
760	17.4	0.001	2.9	60707	48.78	95.1	16.54	37.6	0.1
790	17.5	0.002	3.5	57593	58.99	94.1	16.46	37.4	0.1
820	17.4	0.0012	3.4	64835	70.50	94.2	16.37	37.2	0.1
850	17.20	0.0032	2.6	73474	83.53	95.4	16.43	37.3	0.1
880	17.1	0.003	1.6	41584	90.91	97.1	16.63	37.8	0.1
1050	17.90	0.027	3.0	18489	94.19	95.2	17.09	38.8	0.1
1350	20.3	0.051	11.7	32730	100.00	82.9	16.86	38.3	0.1
							Integrated age	37.6	0.2

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$1 (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	^{40}Ar* (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC18 phengite (J = 0.0012688; wt = 0.011078 g; 350 - 450 µm)									
550	196.2	0.005	597.0	4229	0.78	10.0	21.0	47.4	2.4
600	27.1	0.004	36.0	4957	1.7	60.7	16.6	37.6	0.4
650	21.6	0.000	13.9	11886	3.89	81.1	17.5	39.7	0.3
690	19.4	0.000	7.3	36612	10.66	88.8	17.3	39.1	0.3
720	18.2	0.001	3.6	56616	21.12	94.1	17.15	38.8	0.1
740	17.80	0.000	2.5	76877	35.32	95.8	17.06	38.6	0.1
790	17.61	0.000	2.3	88106	51.59	96.2	16.94	38.40	0.04
820	17.66	0.0006	3.3	76343	65.7	94.6	16.70	37.8	0.1
900	17.65	0.0036	2.6	102792	84.69	95.6	16.88	38.20	0.04
1050	17.4	0.014	1.6	33279	90.83	97.2	16.92	38.3	0.1
1350	18.4	0.007	5.2	49611	100	91.7	16.87	38.2	0.2
							Integrated age	38.5	0.1
NC19 phengite (J = 0.0012282; wt = 0.006924 g; 180 - 250 µm)									
550	158.0	0.000	480.0	3256	1.21	10.1	17.0	37.2	2.8
600	23.0	0.00	23.0	5006	3.06	70.5	16.4	36.0	0.5
650	19.5	0.004	9.0	11868	7.46	85.9	16.8	36.8	0.2
690	18.6	0.000	5.0	38327	21.67	92.1	17.11	37.5	0.1
720	17.7	0.000	2.4	45183	38.42	96.0	16.99	37.3	0.1
820	18.0	0.002	3.0	52397	57.85	95.1	17.09	37.5	0.1
900	17.79	0.0052	2.2	69848	83.74	96.3	17.14	37.6	0.1
1050	17.4	0.012	1.0	21877	91.85	98.4	17.10	37.5	0.1
1350	18.5	0.009	4.8	21970	100	92.3	17.04	37.4	0.2
							Integrated age	37.4	0.2
NC27 phengite (J = 0.0012524; wt = 0.00642 g; 106 - 150 µm)									
500	568.0	0.05	1892	1664	0.69	1.5	12.8	28.8	7.0
550	31.0	0.00	50.0	2133	1.57	53.0	16.9	37.8	1.4
600	21.1	0.00	12.0	5528	3.85	83.1	17.6	39.3	0.6
640	19.8	0.006	8.0	10223	8.07	88.0	17.4	38.9	0.3
680	20.4	0.001	11.9	22654	17.43	82.7	16.9	37.7	0.3
710	19.1	0.000	6.4	23004	26.94	90.2	17.18	38.4	0.2
740	18.7	0.002	5.7	26514	37.89	91.0	17.0	38.1	1.5
800	18.78	0.0113	6.0	83784	72.5	90.5	17.01	38.0	0.1
880	18.41	0.046	4.9	39217	88.7	92.0	16.97	37.9	0.1
1140	18.7	0.136	3.8	14163	94.55	94.9	17.73	39.6	0.2
1350	19.4	0.014	5.8	13199	100	91.0	17.7	39.5	0.3
							Integrated age	38.2	0.4

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$1 (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	^{40}Ar* (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC28 phengite (J = 0.0013160; wt = 0.013884 g; 350 - 450 µm)									
550	492.0	0.0000	1645	3685	0.49	1.2	9.7	22.9	5.9
600	32.5	0.0000	54.0	7970	1.55	51.2	16.7	39.3	0.7
650	24.0	0.0000	26.5	16403	3.73	67.5	16.2	38.1	0.4
680	18.82	0.0004	7.5	62100	12.00	88.2	16.61	39.0	0.1
700	17.17	0.0002	2.4	93008	24.37	95.9	16.47	38.7	0.05
710	17.13	0.0000	1.9	72788	34.06	96.7	16.56	38.9	0.1
730	17.19	0.0006	2.2	68219	43.13	96.2	16.53	38.8	0.1
770	17.31	0.0000	2.5	74052	52.99	95.8	16.59	39.0	0.1
830	17.55	0.007	2.9	135564	71.02	93.7	16.69	39.2	0.2
890	17.70	0.0010	2.6	129605	88.27	94.3	16.93	39.7	0.2
940	18.1	0.0011	2.8	28092	92.00	95.2	17.27	40.5	0.1
1140	19.1	0.0000	7.0	23879	95.18	89.1	17.04	40.0	0.2
1350	21.6	0.0025	17.2	36212	100.00	76.1	16.6	38.9	0.4
							Integrated age	39.1	0.2
NC67 phengite (J = 0.0013531; wt = 0.003075g; 106 - 180 µm)									
550	281.0	0.048	901.0	6314	4.86	5.2	16.7	40.4	3.6
600	24.0	0.01	26.2	5043	8.75	68.1	16.5	39.9	0.6
650	19.1	0.01	10.8	7487	14.51	83.3	15.9	38.4	0.8
700	18.0	0.006	6.8	19617	29.62	88.8	15.98	38.6	0.2
730	17.0	0.000	4.1	31414	53.82	92.8	15.76	38.1	0.1
770	16.9	0.000	3.6	18441	68.02	93.7	15.8	38.2	0.3
850	16.4	0.000	2.4	25338	87.54	95.7	15.69	37.9	0.2
940	15.9	0.012	0.1	6114	92.24	99.7	15.8	38.3	0.5
1140	16.2	0.026	1.9	9479	99.55	96.5	15.6	37.7	0.3
1350	64.43	0.000	160.0	591	100	26.2	17.2	41.6	6.1
							Integrated age	38.3	0.4
NC11 phengite (J = 0.0016642; wt = 0.004331 g; 180 - 250 µm)									
550	34.01	0.236	73.0	28634	36.16	36.5	12.6	37.4	0.5
630	15.6	0.048	4.2	11152	50.25	91.9	14.4	42.6	1.1
700	14.0	0.040	2.0	17803	72.73	95.9	13.4	39.8	0.7
740	13.7	0.048	1.2	8400	83.34	97.4	13.4	39.8	1.4
800	13.4	0.038	3.8	7027	92.22	91.6	12.3	36.6	1.6
860	14.5	0.075	4.9	4054	97.34	90.0	13.1	38.8	2.9
950	16.5	0.59	20.0	1594	99.35	64.1	10.7	31.8	7.3
1350	146.8	10.16	477.0	515	100	3.5	6.9	20.6	22.6
							Integrated age	38.7	1.2

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Temp (^{o}C)	$^{40}Ar/^{39}Ar$†	$^{37}Ar/^{39}Ar$§	$^{36}Ar/^{39}Ar$1 (x 10^{-3})	$^{39}Ar_K$ cps	Cum. %^{39}Ar released	^{40}Ar* (%)	$^{40}Ar^*/^{39}Ar_K$	Age (Ma)	±1 s.d.
NC12 phengite (J = 0.0016893; wt = 0.004014 g; 106 - 180 μm)									
550	43.9	0.065	103.3	3070	15.16	30.6	13.6	41.1	4.4
630	15.2	0.006	3.4	4006	34.95	93.2	14.2	42.9	3.0
700	13.4	0.001	0.9	3550	52.48	98.1	13.1	39.6	3.4
750	11.5	0.000	0.0	1936	62.05	100.0	15.0	45.2	6.1
800	11.9	0.000	0.0	2780	75.78	100.0	12.1	36.5	4.2
920	12.4	0.004	0.0	3750	94.30	100.0	13.0	39.3	3.2
1050	12.74	0.15	0.0	1029	99.39	100.0	14.4	43.5	11.4
1350	247	5.4	685	124	100.00	18.2	46.0	134.9	93.4
							Integrated age	41.3	4.8
NC20 phengite (J = 0.001700; wt = 0.005255 g; 75-106 μm)									
500	118.0	0.42	499	1766	2.92	0.0	0.0	-	-
600	16.6	0.067	12.2	2509	7.07	78.0	13.02	39.5	3.1
700	14.3	0.034	4.7	7698	19.81	90.4	12.97	39.4	0.9
780	13.45	0.021	1.7	22074	56.33	96.2	12.95	39.3	0.3
850	13.13	0.019	2.0	16166	83.08	95.4	12.54	38.0	0.4
950	13.3	0.051	2.5	6421	93.70	94.5	12.58	38.2	1.1
1100	14.5	0.99	3.6	3430	99.37	92.3	13.43	40.7	2.4
1350	75.5	5.7	162	379	100.00	36.0	28.0	83.8	19.0
							Integrated age	38.1	0.8
NC24 phengite (J = 0.003209; wt = 0.01130 g; 50-80 μm)									
560	411.2	0.0	1399	4890	0.68	0.2	0.809	4.7	15.2
640	26.79	0.0	69	7563	1.74	24.5	6.544	37.5	3.4
688	10.83	0.0	15.7	9940	3.13	57.6	6.223	35.7	0.4
720	8.01	0.0	5.2	18077	5.67	81.2	6.485	37.2	0.4
745	7.65	0.0	3.4	39177	11.16	87.2	6.649	38.1	0.2
800	7.31	0.0	2.6	116968	27.55	90.0	6.544	37.5	0.1
820	7.38	0.001	2.7	149406	48.49	89.7	6.592	37.8	0.1
850	7.42	0.0	2.8	141598	68.34	89.1	6.583	37.7	0.1
930	7.05	0.034	1.6	84852	80.23	93.8	6.583	37.7	0.2
1000	6.97	0.106	1.4	59626	88.59	94.5	6.553	37.5	0.3
1400	7.146	0.060	1.7	81395	100.00	93.4	6.644	38.1	0.2
							Integrated age	37.5	0.3
NC50 phengite (J = 0.0016421; wt = 0.000312 g; 106 - 150 μm)									
1350	35.49	0.0173	79.54	9899	100	33.8	12.13	35.6	0.9
PP19 phengite (J = 0.0021524; wt = 0.00150 g; 250 - 425 μm)									
1350	13.02	0.003	10.9	27840	100	75.4	9.81	37.7	0.3
KO173c biotite (J = 0.0021859; wt = 0.00050 g)									
1350	20.44	0.06	44.5	5917	100	36.2	7.40	28.9	1.4
KO152 phengite (J = 0.0022064; wt = 0.00070 g; 106 - 150 μm)									
1350	20.09	0.05	31.2	5771	100	54.4	10.94	43.0	1.0
PP01 phengite (J = 0.0021822; wt = 0.00050 g; 180 - 250 μm)									
PP01	32.5	0.02	80.2	5726	100	27.7	9.0	35.1	0.9

λ = 5.543 x 10^{-10}/yr; †Corrected for line blank; §Corrected for line blank and ^{37}Ar decay.

Data Repository Table 2. White mica mineral compositions

	NC-18 phengite	NC-67 phengite	NC-50 phengite	NC-11 phengite	NC-20 phengite	NC-58 phengite	NC-53 phengite	NC-24 phengite	NC-25 phengite
SiO_2	46.85	50.17	49.70	49.52	46.29	48.52	50.04	48.412	51.653
TiO_2	0.31	0.25	0.12	0.10	0.18	0.12	0.18	0.197	0.264
Al_2O_3	28.60	27.36	28.19	26.60	29.19	27.88	28.98	26.266	28.198
Cr_2O_3	0.04	0.01	0.04	0.03	0.00	0.09	0.03	0.051	0.105
MgO	3.19	3.98	2.75	4.13	2.55	2.85	3.81	1.409	1.941
FeO*	2.96	2.40	3.47	3.49	3.80	4.40	2.34	6.079	6.310
MnO	0.04	0.03	0.03	0.04	0.13	0.16	0.08	0.171	0.444
CaO	0.23	0.08	0.05	0.09	0.05	0.10	0.04	0.004	0.093
BaO	0.40	0.15	0.31	0.69	0.43	0.46	0.61	0.572	0.767
Na_2O	1.16	0.45	0.51	0.32	0.61	0.43	0.69	0.204	0.108
K_2O	9.99	10.62	10.65	10.14	10.41	10.19	9.51	10.983	6.316
F	0.62	0.54	0.27	0.00	0.11	0.39	0.46	0.173	0.425
Cl	0.02	0.01	0.01	0.01	0.00	0.07	0.02	0.004	0.007
total	94.42	96.07	96.10	95.15	93.73	95.67	96.80	94.524	96.631
Si	3.223	3.356	3.335	3.353	3.203	3.297	3.309	3.363	3.408
Al	2.318	2.157	2.229	2.122	2.380	2.233	2.258	2.150	2.192
Ti	0.016	0.012	0.006	0.005	0.010	0.006	0.009	0.010	0.013
Cr	0.002	0.003	0.002	0.002	0.000	0.005	0.002	0.003	0.005
Mg	0.327	0.396	0.275	0.416	0.263	0.289	0.376	0.146	0.191
Fe^{+2}	0.170	0.134	0.195	0.197	0.219	0.250	0.130	0.353	0.348
K	0.877	0.906	0.911	0.875	0.918	0.883	0.802	0.973	0.531
Na	0.154	0.058	0.066	0.042	0.081	0.056	0.089	0.027	0.014
Ba	0.011	0.004	0.008	0.018	0.012	0.012	0.016	0.016	0.020
Ca	0.017	0.006	0.004	0.007	0.003	0.007	0.003	0.000	0.007
F	0.134	0.114	0.056	0.000	0.023	0.084	0.096	0.038	0.089
Cl	0.002	0.001	0.001	0.001	0.000	0.008	0.002	0.000	0.001

	KO-142 phengite	SG-12 phengite	KO-173 phengite	CS-38 phengite	KO-143 phengite	PP-01* phengite	PP-01* paragonite	PP-19* phengite	PP-19* paragonite
SiO_2	47.8	48.7	47.6	48.5	48.3	47.5	47.4	46.3	46
TiO_2	0.33	0.44	0.34	0.34	0.28	0.36	0.25	1	1.04
Al_2O_3	27.9	27.5	27.8	27.6	26.4	30.8	37.1	26.9	32.3
Cr_2O_3	0.06	0.01	0.1	0.07	0.11	0.01	0.02	0.01	0.02
MgO	2.5	3.54	3.05	3.03	3.86	2.38	0.57	3.57	1.43
FeO*	4.24	1.84	3.14	4.35	2.98	1.34	0.42	1.62	2.37
MnO	0.06	0.01	0.02	0.02	0.05	0.05	0.01	0.02	0.05
CaO	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.04
Na_2O	0.54	0.82	0.82	0.65	0.37	1.48	5.06	0.52	3.13
K_2O	10.4	9.54	9.89	9.35	10.0	7.33	2.06	8.68	4.54
total	93.93	92.24	92.85	93.95	92.51	91.3	92.94	88.6	90.94
Si	3.289	3.345	3.289	3.311	3.346	6.503	6.198	6.601	6.299
Al	2.259	2.226	2.265	2.222	2.154	4.965	5.721	4.517	5.204
Ti	0.017	0.022	0.018	0.017	0.014	0.036	0.024	0.106	0.107
Cr	0.003	0.001	0.005	0.003	0.006	0.000	0.002	0.000	0.002
Mg	0.256	0.361	0.313	0.307	0.398	0.483	0.110	0.757	0.290
Fe^{+2}	0.243	0.105	0.181	0.248	0.172	0.153	0.045	0.193	0.270
K	0.914	0.837	0.869	0.813	0.888	1.277	0.342	1.576	0.791
Na	0.071	0.082	0.109	0.086	0.049	0.392	1.281	0.144	0.827
Ca	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.005

	NC-28* phengite	NC-14* phengite	NC-13* phengite	NC-30 phengite	NC-19 phengite	NC-41 phengite	NC-57 >500µm phengite	NC-27 phengite	NC-12 phengite
SiO_2	47.75	52.68	51.17	46.73	48.05	48.09	46.60	51.51	47.51
TiO_2	0.42	0.19	0.37	0.20	0.27	0.23	0.28	0.23	0.19
Al_2O_3	29.12	27.68	28.77	27.33	27.82	27.59	27.36	27.67	27.58
Cr_2O_3	0.05	0.12	0.01	0.01	0.10	0.00	0.51	0.06	0.09
MgO	3.33	3.72	3.35	3.10	3.26	3.47	3.60	3.67	2.93
FeO*	2.44	4.22	2.50	3.99	3.34	2.23	2.87	1.99	2.79
MnO	0.00	0.11	0.02	0.11	0.07	0.24	0.07	0.06	0.00
CaO	0.03	0.03	0.04	0.08	0.07	0.10	0.02	0.04	0.08
BaO	n.a.			0.56	0.37	0.48	0.08	0.35	1.32
Na_2O	0.75	0.25	0.50	0.77	0.73	0.73	0.70	0.78	0.55
K_2O	9.97	9.74	10.11	10.11	10.27	9.78	10.41	10.12	9.54
F	na	na	na	0.08	0.07	0.33	1.03	0.20	0.38
Cl	na	na	na	0.00	0.04	0.02	0.22	0.01	0.00
total	94.84	98.73	96.85	93.08	94.45	93.30	93.75	96.69	92.95
Si	6.549	6.804	6.708	3.261	3.284	3.311	3.249	3.395	3.306
Al	4.609	4.212	4.444	2.247	2.240	2.239	2.248	2.149	2.262
Ti	0.042	0.019	0.036	0.011	0.014	0.012	0.014	0.011	0.010
Cr	0.005	0.012	0.001	0.001	0.005	0.000	0.028	0.003	0.005
Mg	0.666	0.716	0.654	0.322	0.331	0.356	0.374	0.360	0.304
Fe^{+2}	0.274	0.456	0.274	0.233	0.191	0.128	0.167	0.109	0.162
K	1.707	1.604	1.690	0.899	0.895	0.859	0.925	0.851	0.847
Na	0.195	0.061	0.127	0.105	0.096	0.097	0.095	0.100	0.074
Ba	na	na		0.015	0.010	0.013	0.002	0.009	0.036
Ca	0.004	0.004	0.005	0.006	0.005	0.007	0.001	0.003	0.006
F	na	na	na	0.018	0.016	0.073	0.226	0.042	0.084
Cl	na	na	na	0.000	0.005	0.002	0.026	0.001	0.000
(OH)	na	na	na						

	NC-22* phengite	NC-32 phengite	NC-17 phengite
SiO_2	49.0	49.8	49.6
TiO_2	0.32	0.38	0.6
Al_2O_3	29.4	28.9	28.6
Cr_2O_3	0.04	0.04	0.02
MgO	1.27	2.86	3.27
FeO*	6.77	3.16	2.5
MnO	0.16	0.03	0.05
CaO	0.01	0.01	0.01
Na_2O	0.13	0.52	1.07
K_2O	10.8	9.1	9.06
total	94.97	94.82	94.47
Si	6.744	6.657	6.661
Al	4.280	4.560	4.471
Ti	0.033	0.038	0.060
Cr	0.004	0.004	0.001
Mg	0.259	0.569	0.653
Fe^{+2}	0.778	0.352	0.280
K	1.900	1.551	1.549
Na	0.033	0.133	0.278
Mn	0.018	0.003	0.005
Ca	0.000	0.000	0.000

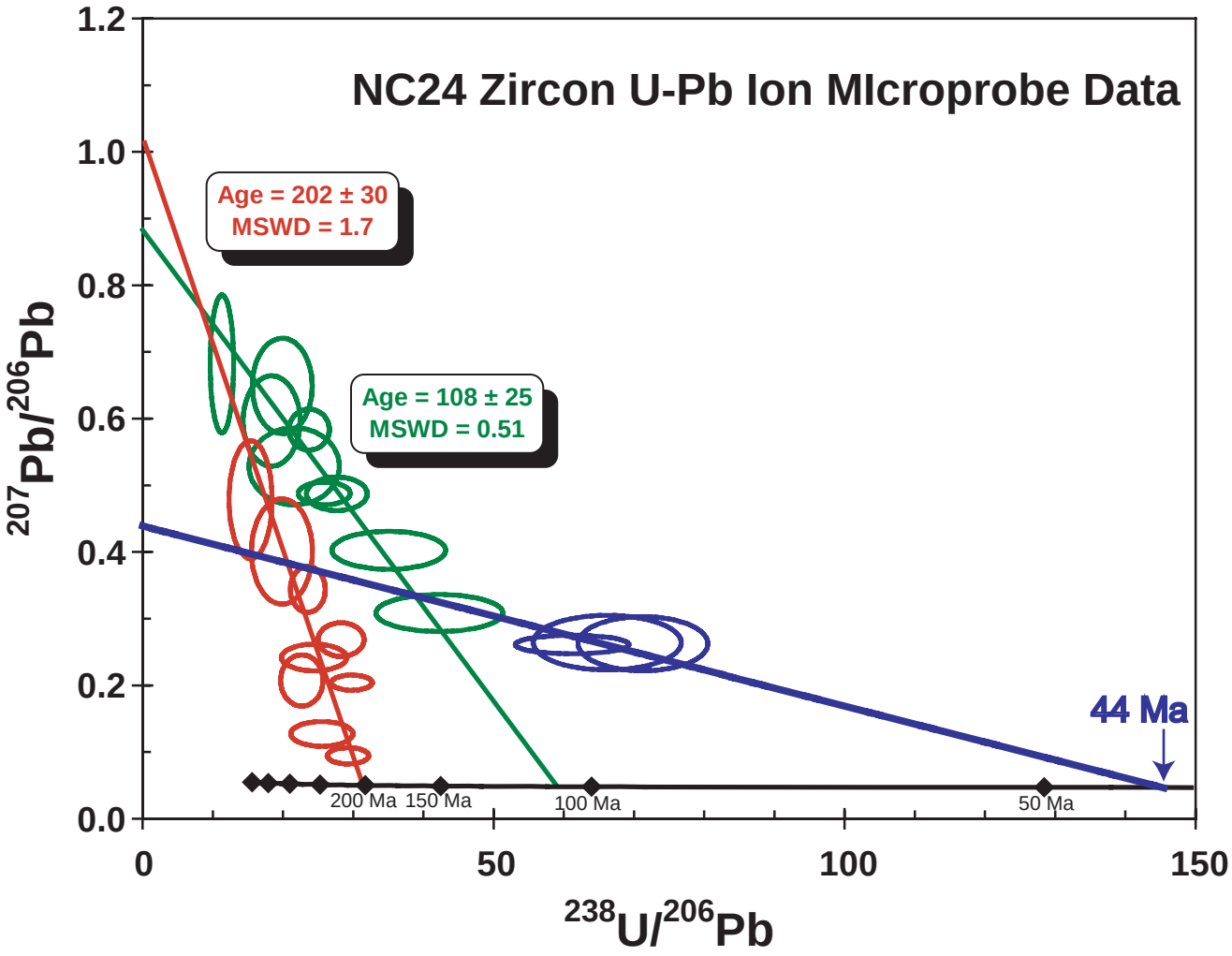

Figure DR3: Tera-Wasserburg plot of ion microprobe analyses of 3 grains from sample NC24. Each spot analysis yields three ellipses, each representing a block of 5 analytical cycles from a total of 15. Red ellipses are blocks of data from NC24 grain 2, spots a, b and c. Green ellipses are blocks of data from NC24 grain 1, spot 1a, 1b, and 1c and grain 3, spots a, b and c. Blue ellipses are blocks of data from grain 1, spot 1a.1, which represent repeated drilling into spot 1a. Error ellipses are 1σ. All data are plotted without common Pb correction. Red and green lines are best fit linear regressions on corresponding data representing simple two-component mixing between purely radiogenic Pb (concordia) and non-radiogenic Pb (y-axis). Intersection of best-fit lines with concordia (black line) indicate determined age (shown with 1σ error and MSWD). Blue line represents best-fit linear regression of line through blocks of data for spot 1a.1, pinned to intersect concordia at 44 Ma. An age of 44 Ma (Spandler et al., 2005) for spot analysis 1a.1 would require a non-radiogenic $^{207}Pb/^{206}Pb$ ratio of 0.439.