SUPPLEMENTARY DATA

for Pe-Piper and Piper, Upper Miocene igneous rocks of Samos: the role of tectonism in petrogenesis in the southeastern Aegean

Table S1. *Petrographic notes for the analysed samples.*

(Samples are organized in order of increasing SiO_2 content for the plutonic and volcanic rocks)

Sam-ple No	Rock type	Phenocrysts*	Groundmass* (for plutonic rocks, this describes the entire rock)	Texture	Alteration	Other features
Plutonic rocks						
SV36	amph-monzo-diorite		hbl (50%), plag (43%), qtz (5%), chl (tr),ap (tr), sph (1%), op (tr), bi (tr)	f.g.-m.g. hypidiomorphic to allotriomorphic	amph→chl(tr); bi→chl (sev); plag→sme(mod)	5% of the rock is mylonitized
SV46	hbl-monzo-diorite		amph (55%), plag (35%), bi (7%), chl (5%), qtz (3%), ap (tr), sph (tr), op (tr)	f.g. hypidiomorphic granular	plag→sme(mild-none) bi→chl(tr);amph→chl(mild)	contains globules of a f.g. trondhjemite
SV42	hbl-bi quartz monzo-diorite		hbl (35%), plag (35%), qtz(<5%), sph (2%), bi (20%), chl (3%)	f.g. equigranular, hypidiomorphic granular	bi→chl (mild-mod)	crosscut by chl veinlets
SV38	hbl-bi monzo-diorite		bi (10%), amph (30%), plag (39%), sph (7%), qtz (<5%), op (3%), chl (5%), ap (1%)	f.g. hypidiomorphic granular,heterogeneous	amph→chl(mod);bi→chl (mod); plag→sme (mod)	chl+plag+qtz enriched lenses within the monzodiorite, cross-cut by chl+ep veins
SV44	hbl-bi quartz monzo-diorite	plag(1%)	plag (47%), amph (25%), bi (15%), qtz (5-10%), sph (3%), op (tr), chl (tr)	jf.g. equigranular,anhedral granular, with tr of plag porphyries	amph→chl (tr); bi→chl (mild)	coarsely banded (patchy) fabric
SV39	hbl-monzo-diorite		hbl (25%), plag (65%), op (3%), sph (3%), bi (tr), chl (tr), qtz (1%), ap (1%)	hypidiomorphic granular,fine to medium grained	hbl→bi (tr), chl (tr)	contains inclusions of f.g. bi-quartz monzodiorite

SV45	hbl-tonalite		hbl(37), chl(10%), plag(35%), qtz(15%), sph(3%), ru(tr)	f.g.equigranular hypidiomorphic granular	hb→chl (mod); plag→sme (mod)	fractures infilled by cc and qtz
SV50	quartz monzo-diorite		amph (30%), plag (44%), bi (10%), qtz (7-10%), sph (1%), chl (5%), ap (tr), op (1%)	f.g. equigranular, hypidiomorphic granular	amph→chl (mild); bi→chl (mod)	
SV37	act-leuco-alkali feldspar granite		kspar (85%), qtz (10-15%), amph (<1%), chl (tr), ep (tr), sph (tr), ep (tr), sph (tr); ap (tr), op (tr), cc (tr)	m.g. inequigranular, anhedral granular	kspar→sme (mild-sev), ep (tr), sph (tr); amph→ep (mod)	
SV47	hbl-bi quartz monzo-diorite/ monzo-diorite		amph (30%), plag (30%), bi (21%), chl (5%), qtz (5%), sph (3%), ep (1%), ap (tr), op (tr)	f.g. equigranular, hypidiomorphic granular	amph→bi (mod-sev), chl (mod), sph (tr); plag→sme (none-mod), ep (tr); bi→chl (mod), ep (tr), sph (tr)	contains plag-enriched pods; is cross-cut by ep veinlets
SV41	leuco-granite		plag+kspar (58%), qtz (30%), chl (2%), bi (tr), ru (tr), all (tr), ep (tr), sph (tr), ap (tr), op (tr)	f.g.-m.g.hypidiomorphic granular	feld→sme (mild),ep (tr); bi→chl (2%)	fractures infilled by chl and ep
SV40	bi leuco-granite		plag+kspar (58%), qtz (40%),bi (2%), sph (tr), all (tr),ap (tr), chl (tr), op (tr)	f.g.-m.g. equigranular, hypidiomorphic granular	plag→sme(tr);bi→chl (mod)	contains inclusions of a f.g. bi-hb-tonalite
Volcanic rocks						
SV32	basalt	cpx(10%),	plag(71%),cpx(1%),op(2%),cpx pseud (1%), brown altered mineral (15%)	porphyritic, amygdaloidal, holocrystalline gr	cpx→brown mineral, cc	cross-cut by cc± zeol veinlets
SV30	basalt	cpx(10%),plag (tr),pseud of ?cpx(2%)	plag (60%),brown altered mineral (20%), op (2%), glass (3%), ep(tr), spher (tr), ap(tr).	porphyritic to glomero-porphyritic, amygdaloidal with hypocrystalline gr	cpx→cc, brown mineral	crosscut by cc±zeol veins; amygdules infilled by zeol
SV29	basalt	plag(1%), cpx (10%), cc pseud (1%)	plag (60%),brown altered mineral (20%), op (7%)	seriate,porphyritic with a trachytic holocrystalline gr	cpx→cc,brown mineral	

SV71 A	basalt	cpx (25%), cc pseud (tr), serp pseud (tr)	cpx(5%), plag (40%),op (10%), glass(20%)	porphyritic with intersertal gr	cpx→cc,serp	
SV71 B	basalt		chl(10%), cc+chl+qtz+dev glass (28%), op(7%), feld(55%)	hypocrystalline with f.g. feld in cryptocrystalline glassy matrix	feld→ser(sev), cc (sev); gr→cc (mod), chl (mod)	altered
SV87	basalt	px pseud (5%), plag (1%)	plag (60%),op (5%), glass(14%), cc (15%)	porphyritic with intersertal gr	px→serp;gr→cc;plag→ser, cc	
SV88	basalt	px pseud(9%), plag(1%)	glass (42%), plag microlites (45%), op (3%)	porphyritic with hypocrystalline gr of plag microlites	plag→cc,chl;gr→op	px pseud=qtz+chl+cc (tr)±op+bi
SV91	basalt	cpx(<5%)	plag(65%),glass(<5%),op(15%), chl(tr),bi(tr),cc(10%),cpx (<5%)	hypocrystalline, porphy-ritic with a trachytic gr	cpx→cc(mild),op (mild),chl(mild)	cross-cut by cc veinlets
SV102	basalt	plag(10%), cpx(3%), ?ol(<1%), bi(<2%), pseud (tr)	plag microlites (51%), f.g.op (3%), dev glass (45%),cpx (2%)	porphyritic to glomero-porphyritic with a hypo-crystalline gr of micro-lites with intersertal dev glass, vesicular	cpx→op(tr),bro (mild-mod)	vesicles (1%), amyg (zel infilled)=2%; pseud made up of acicular cpx+f.g.op+qtz+zeolites
SV19	trachyte	feld(13%),qtz (1%),px pseud (1%)	cryptocrystalline gr(85%)	porphyritic to glomero-porphyritic with a hypo-crystalline, altered gr	plag→kln (sev), cc (sev), ser (mild); gr→kln (sev), op (mod), chl (mild)	px pseud =chl+op+qtz+ep
SV17	trachyte	plag(3%), kspar (7%), qtz (3%), bi (2%), op (tr)	cryptocrystalline gr(85%), cc (3%), ap (tr)	porphyritic to glomeroporphyritic with a hypo-crystalline, intersertal gr	bi→chl (mod); plag→cc (mod); kspar→chl (tr), kln(mod); gr→cc(tr)	
SV105	trachyte	kspar (16%), plag (4%), qtz (<5%), bi(tr), gt(tr)	cryptocrystalline(75%),qtz (<5%),op(tr),chl(tr),mu(tr), ap(tr)	porphyritic to glomeroporphyritic with a cryptocrystalline gr	feld→cc (mod-sev), sme (mod), ser (mod-sev); bi→chl, mu (mod), op (tr), mu(tr)	
SV35	trachyte	kspar (22%), plag (5%), qtz (<1%), bi(1%), op(<1%)	qtz(<1%),op(<1%),cc(tr), microlites+devglass=70%,chl (tr),bi(tr)	porphyritic to glomero-porphyritic with gr microlites and dev glass(hypocrystalline)	feld→chl(tr),cc (mod-sev), sme(mod), ser (mod-mild); bi→chl (mod), gr→cc (mild)	contains a 2-3 mm rounded inclusion of granite
SV103	trachyte	kspar+plag (20%), cpx (5%), amph (1%), bi (1%), op (<2%), qtz (tr)	microlites+devglass=70%,ep (tr), op (<2%), chl (1%), cc (tr), sph (tr)	hypocrystalline, porphyritic to glomeroporphyritic	feld→cc(mod),ep(tr), sme(mod-sev),chl(tr) ;bi→chl(mod);gr→cc (mild),chl(mild)	

SV104	trachyte	kspar (perth) (8%), plag (3%), cpx (3%), qtz (tr), bi (1%), hbl (tr), op (tr)	devglass+microlites (82%), chl (2%), op (1%)	porphyritic to glomero-porphyritic with a hypo-crystalline gr	bi→chl;kspar→kln (mild-mod);plag→chl (tr),sme(mild)	
SV10	rhyolite	plag (2%), kspar (5%), qtz (3%)	bi(tr), op(tr), microcrystalline qtz+feld (90%)	porphyritic to glomero-porphyritic with micro-crystalline, holocrystalline gr	gr→sme(sev);kspar→ sme(sev);plag→sme (sev);bi→chl(sev)	banding
SV11	rhyolite	kspar (1%)	qtz(30%),kspar+plag(69%), op(tr),sph(tr)	porphyritic, f.g. granophyric	feld→sme(mild)	
SV79	rhyolite	qtz (2%), kspar (1%)	glass (92%), ep (tr)	vesicular, porphyritic to glomeroporphyritic with a glassy gr		
SV72	rhyolite		spher(97%),qtz(3%)	banded, spherulitic, cryptocrystalline		
SV77	rhyolite	kspar (tr)	spher(50%),devglass(48.5%), op(1%)	porphyritic (slightly) with a gr of spher in a dev glass matrix		
SV93	rhyolite	kspar (tr), qtz (2%)	op(5%),spher(93%)	spherulitic and porphytic		fractures infilled by zeolites
SV92 B	rhyolite	kspar(tr),qtz (1%)	op(1-2%),devglass(95%), ves(2%)	porphyritic with a vesicular vitrophyric gr		banded gr
SV100 A	rhyolite	qtz (<2%), kspar (tr) plag (tr)	spher+glass(98%)	hypocrystalline, spherulite-rich gr with <2% phenocrysts or glomerocrysts of qz + feldspar		banding

act=actinolite; all=allanite; amph=amphibole; ap=apatite; bi=biotite; cc=calcite; chl=chlorite; cpx=clinopyroxene; ep=epidote; gt=garnet; feld=feldspar; hbl=hornblende; kspar=K-feldspar; sph=sphene; op=opaques; plag=plagioclase; px=pyroxene; qtz=quartz; ru=rutile; ser=sericite; serp=serpentine; sme=smectite; dev=devitrified; f.g.=fine-grained; gr=groundmass; m.g.medium grained; mod=moderate; pseud=pseudomorph; sev=severe; spher=spherulite; tr=trace.

Table S2. *Full set of chemical analyses of representative igneous lithologies*

1. Katavasis plutonic rocks

Sample	SV36	SV46	SV42	SV38	SV44	SV39	SV45	SV50	SV47	SV37	SV41	SV40
Lithology	monzodiorite		micro-diorite sill	monzo-diorite	micro-diorite incl	monzo-diorite	fine monzo-diorite	monzodiorite		30 cm vein	granite	
Location	Katavasis											
SiO_2	47.18	48.11	49.2	49.91	49.95	50.00	50.07	50.26	55.40	66.82	67.98	70.86
TiO_2	1.99	1.79	1.48	1.54	1.46	1.57	1.50	1.32	0.76	0.12	0.40	0.23
Al_2O_3	17.51	17.52	17.47	18.31	17.92	17.95	17.50	17.28	13.59	16.65	15.90	15.21
Fe_2O_{3t}	10.79	11.05	9.80	9.57	9.50	9.51	9.65	9.06	6.87	0.50	2.40	1.07
MnO	0.17	0.21	0.16	0.17	0.17	0.14	0.17	0.18	0.15	0.02	0.04	0.03
MgO	5.23	4.85	5.33	3.70	4.87	4.33	4.58	5.28	6.68	1.12	1.51	1.18
CaO	7.92	7.94	8.02	6.17	7.76	7.03	7.02	7.99	7.57	1.21	1.74	1.47
Na_2O	3.49	3.86	3.55	5.09	3.48	4.74	3.90	4.22	2.94	2.80	4.21	3.23
K_2O	2.45	2.04	1.89	3.03	2.05	2.61	2.24	1.62	3.76	10.26	5.02	5.54
P_2O_5	0.51	0.61	0.46	0.85	0.52	0.74	0.50	0.39	0.27	0.04	0.16	0.07
L.O.I.	1.6	1.20	1.40	0.90	1.40	0.60	1.90	1.30	1.20	0.40	0.70	0.60
Total	98.84	99.18	98.76	99.24	99.08	99.22	99.03	98.90	99.19	99.94	100.06	99.49

Trace elements (ppm) XRF												
Ba	828	786	572	1361	754	1078	847	282	817	2432	1160	870
Rb	73	54	73	115	72	88	64	69	109	284	128	130
Sr	697	687	783	796	719	783	727	681	400	398	389	263
Y	40	47	37	38	39	46	37	33	40	<5	18	17
Zr	188	166	195	114	206	225	198	184	236	141	251	171
Nb	21	23	17	20	20	29	18	13	22	<5	17	11
Th	<10	<10	<10	<10	<10	10	<10	11	14	15	35	26
Pb	16	20	15	16	19	17	21	16	16	51	38	43
Ga	20	20	19	20	17	19	17	19	14	13	14	14
Zn	94	120	107	102	92	79	99	109	85	11	27	14
Cu	30	23	14	23	41	22	23	25	9	10	19	<5
Ni	35	15	10	<5	12	8	9	12	89	5	5	<5
V	302	246	255	161	236	220	256	240	147	10	35	11
Cr	<5	<5	<5	<5	<5	<5	5	5	222	<5	<5	8
REE and other trace elements (ppm) by INAA												
La	42.47	50.90	45.64	55.42	n.d.	n.d.	n.d.	44.58	53.49	35.50	n.d.	49.83
Ce	89.63	109	94.46	115	n.d.	n.d.	n.d.	88.68	104	54.64	n.d.	82.31
Nd	43.94	51.88	40.84	55.37	n.d.	n.d.	n.d.	41.79	43.80	12.23	n.d.	24.15
Sm	8.79	9.39	8.58	9.35	n.d.	n.d.	n.d.	7.7	8.79	2.28	n.d.	4.22
Eu	2.59	2.54	2.20	2.47	n.d.	n.d.	n.d.	2.08	1.52	1.10	n.d.	0.88
Tb	0.88	1.02	1.09	0.95	n.d.	n.d.	n.d.	0.89	1.10	1.01	n.d.	1.05
Yb	2.94	3.32	2.49	2.72	n.d.	n.d.	n.d.	2.25	3.24	0.78	n.d.	2.01
Lu	0.42	0.49	0.40	0.40	n.d.	n.d.	n.d.	0.39	0.51	0.16	n.d.	0.37
Cs	1.71	1.53	3.39	2.71	n.d.	n.d.	n.d.	2.61	1.56	5.04	n.d.	1.91
Hf	4.66	4.20	4.42	2.87	n.d.	n.d.	n.d.	4.33	6.07	4.71	n.d.	4.96
Sc	19.65	17.31	17.68	10.65	n.d.	n.d.	n.d.	17.82	23.00	1.28	n.d.	1.58
Ta	1.13	1.28	1.09	0.85	n.d.	n.d.	n.d.	0.90	1.78	0.94	n.d.	1.77
Th	9.64	5.07	12.59	8.81	n.d.	n.d.	n.d.	14.20	19.55	24.59	n.d.	31.12
U	1.88	0.99	2.36	1.28	n.d.	n.d.	n.d.	2.92	2.54	5.46	n.d.	3.54

2. Ambelos volcanic center

Sample	SV19	SV22	SV17	SV105	SV35	SV103	SV104	SV10	SV11
Lithology	trachyte		inclusion in trachyte	trachyte				rhyolite	
Location	Ambelos								
SiO_2	61.41	61.60	63.86	61.41	61.49	61.59	61.84	73.86	74.88
TiO2	0.47	0.45	0.37	0.46	0.41	0.45	0.46	0.09	0.08
Al_2O_3	18.03	17.88	16.82	17.51	17.35	17.51	17.51	13.41	13.21
Fe_2O_{3t}	3.60	3.41	2.80	3.49	3.04	3.44	3.57	1.39	1.36
MnO	0.10	0.09	0.12	0.10	0.10	0.10	0.10	0.04	0.01
MgO	1.51	1.72	1.52	1.67	1.41	1.57	1.48	1.02	1.22
CaO	1.67	1.99	1.37	1.51	1.89	1.81	1.80	0.66	0.05
Na_2O	5.05	5.39	5.26	4.25	4.77	5.21	4.94	4.43	3.45
K_2O	5.60	5.69	6.19	6.42	5.98	6.15	5.80	4.75	4.32
P_2O_5	0.19	0.18	0.12	0.18	0.15	0.18	0.18	0.02	0.01
L.O.I.	1.60	1.60	1.80	2.20	2.40	1.10	1.30	1.00	2.30
Total	99.23	100.00	100.23	99.20	98.99	99.11	98.98	100.67	100.89
Trace elements (ppm) by XRF									
Ba	1134	1074	848	1218	980	1211	1205	66	11
Rb	213	210	269	260	255	232	220	416	524
Sr	323	325	244	321	251	346	380	27	13
Y	26	23	23	23	23	25	25	23	8
Zr	299	294	309	296	297	291	295	334	275
Nb	30	31	37	29	32	31	32	86	92
Th	44	44	65	40	52	40	40	112	99
Pb	10	12	13	30	33	28	37	38	7
Ga	16	15	17	17	15	18	19	23	21
Zn	45	44	42	50	40	45	48	39	30
Cu	6	<5	<5	5	<5	5	6	<5	<5
Ni	<5	<5	<5	5	<5	7	6	<5	<5
V	21	26	23	27	23	21	26	6	<5
Cr	5	<5	7	<5	10	7	9	6	9

REE and other trace elements (ppm) by INAA									
La	n.d.	n.d.	n.d.	64.64	n.d.	68.40	65.75	48.06	59.37
Ce	n.d.	n.d.	n.d.	118	n.d.	122	121	75.91	78.04
Nd	n.d.	n.d.	n.d.	38.50	n.d.	40.19	39.19	15.60	12.07
Sm	n.d.	n.d.	n.d.	7.09	n.d.	7.20	7.14	5.52	3.09
Eu	n.d.	n.d.	n.d.	1.69	n.d.	1.70	1.68	0.15	0.19
Tb	n.d.	n.d.	n.d.	0.67	n.d.	0.74	0.72	0.20	2.26
Yb	n.d.	n.d.	n.d.	2.26	n.d.	2.25	2.34	3.23	3.21
Lu	n.d.	n.d.	n.d.	0.38	n.d.	0.37	0.41	0.48	0.59
Cs	n.d.	n.d.	n.d.	3.40	n.d.	3.50	3.88	4.65	8.33
Hf	n.d.	n.d.	n.d.	6.26	n.d.	6.41	6.48	11.92	11.47
Sc	n.d.	n.d.	n.d.	2.62	n.d.	2.59	2.61	0.63	b.d.
Ta	n.d.	n.d.	n.d.	2.00	n.d.	2.09	2.01	4.76	4.16
Th	n.d.	n.d.	n.d.	37.25	n.d.	40.25	40.52	100	98.19
U	n.d.	n.d.	n.d.	8.37	n.d.	9.59	9.29	39.28	15.38

3. Basin-margin basalt and rhyolite

Sample	SV32	SV30	SV29	SV71A	SV71B	SV87	SV88	SV91	SV102	SV79	SV72	SV77A	SV93A	SV92B
Lithology	basalt									rhyolite				
				fresh	altered									
Location	Agios Panteleimon			Koumeika		Pirgos			Ag. Geo.	Koumeika				
SiO_2	47.31	47.32	47.54	47.58	48.80	46.12	46.16	46.99	50.25	77.06	77.08	77.09	77.60	78.28
TiO_2	1.39	1.39	1.42	1.26	0.76	1.31	1.34	1.29	1.27	0.06	0.06	0.06	0.06	0.06
Al_2O_3	16.78	16.60	16.47	15.56	18.86	16.07	15.92	15.75	16.13	12.88	12.19	12.08	12.40	11.89
Fe_2O_{3t}	7.62	7.92	8.27	7.82	7.41	8.50	7.92	8.78	5.46	0.35	0.17	0.72	0.43	0.57
MnO	0.12	0.13	0.14	0.13	0.13	0.12	0.12	0.13	0.27	0.01	0.01	0.01	0.01	0.01
MgO	5.74	5.09	5.90	6.45	7.54	4.39	5.12	5.29	3.76	0.77	0.78	0.79	0.71	0.69
CaO	10.17	10.39	10.74	11.56	3.03	8.50	8.57	10.10	10.84	0.10	0.06	0.07	0.07	0.04
Na_2O	3.10	3.20	2.89	3.44	4.15	2.15	2.90	3.25	3.37	3.51	2.05	2.44	3.22	1.70
K_2O	1.04	1.02	1.07	1.37	2.97	3.57	2.33	1.41	2.64	5.08	6.72	6.24	5.88	6.71
P_2O_5	0.58	0.58	0.58	0.79	0.31	0.58	0.58	0.57	0.47	0.01	0.01	0.01	0.01	0.01
L.O.I.	5.60	7.10	4.80	3.80	6.10	10.10	10.30	6.90	4.90	0.90	0.40	1.10	0.60	0.70
Total	99.45	100.74	99.82	99.76	100.06	101.41	101.26	100.46	99.36	100.73	99.53	100.61	100.99	100.66

Trace elements (ppm) by XRF														
Ba	1134	1137	1136	1449	295	1667	1195	1136	747	12	88	19	23	22
Rb	117	291	309	62	40	217	146	51	83	319	484	439	420	478
Sr	889	917	896	906	233	486	502	863	710	12	14	8	29	9
Y	30	27	22	31	22	27	29	32	33	24	17	21	9	16
Zr	189	192	192	248	49	177	181	183	197	166	147	138	134	131
Nb	17	19	16	20	21	17	18	17	22	61	72	63	59	59
Th	<10	<10	11	<10	<10	15	11	<10	16	68	79	73	44	64
Pb	25	23	20	23	<10	27	22	18	21	47	36	52	34	51
Ga	16	15	17	19	14	16	15	18	15	16	16	16	15	15
Zn	65	72	66	69	62	78	83	74	68	13	7	65	7	17
Cu	40	46	47	44	91	29	26	31	33	<5	<5	<5	<5	<5
Ni	60	56	59	55	32	49	56	67	48	<5	5	<5	<5	<5
V	203	200	209	189	334	181	208	203	144	<5	<5	<5	<5	<5
Cr	151	141	179	144	41	155	164	149	137	<5	<5	<5	5	5
REE and other trace elements (ppm) by INAA														
La	n.d.	n.d.	50.38	36.13	28.41	n.d.	n.d.	52.32	46.47	n.d.	n.d.	24.44	n.d.	13.11
Ce	n.d.	n.d.	95.04	78.74	48.75	n.d.	n.d.	104	91.14	n.d.	n.d.	67.69	n.d.	34.71
Nd	n.d.	n.d.	44.01	39.32	18.87	n.d.	n.d.	48.59	39.21	n.d.	n.d.	29.31	n.d.	19.51
Sm	n.d.	n.d.	8.53	8.04	3.97	n.d.	n.d.	8.63	7.8	n.d.	n.d.	8.16	n.d.	5.71
Eu	n.d.	n.d.	2.22	2.22	1.50	n.d.	n.d.	2.43	2.09	n.d.	n.d.	0.06	n.d.	0.06
Tb	n.d.	n.d.	0.84	0.97	0.52	n.d.	n.d.	0.98	1.05	n.d.	n.d.	1.03	n.d.	0.74
Yb	n.d.	n.d.	2.03	2.16	1.76	n.d.	n.d.	2.15	2.50	n.d.	n.d.	2.94	n.d.	2.66
Lu	n.d.	n.d.	0.32	0.33	0.28	n.d.	n.d.	0.32	0.38	n.d.	n.d.	0.42	n.d.	0.41
Cs	n.d.	n.d.	8.83	29.85	1.81	n.d.	n.d.	8.87	3.32	n.d.	n.d.	5.01	n.d.	11.64
Hf	n.d.	n.d.	3.66	5.79	1.20	n.d.	n.d.	3.89	4.42	n.d.	n.d.	6.87	n.d.	6.39
Sc	n.d.	n.d.	21.56	23.88	34.89	n.d.	n.d.	20.73	18.76	n.d.	n.d.	1.07	n.d.	0.95
Ta	n.d.	n.d.	1.09	0.89	0.96	n.d.	n.d.	1.12	1.38	n.d.	n.d.	6.21	n.d.	5.97
Th	n.d.	n.d.	12.55	14.38	2.68	n.d.	n.d.	14.42	16.52	n.d.	n.d.	71.09	n.d.	58.64
U	n.d.	n.d.	3.67	3.48	0.76	n.d.	n.d.	2.55	3.93	n.d.	n.d.	17.75	n.d.	15.45

Table S3. *Pb, Sr and Nd/Sm isotopic data for representative igneous rocks*

Sample	Rock Type	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$	Sm ppm	Nd ppm	$^{147}Sm/^{144}Nd$	$^{143}Nd/^{144}Nd$	$^{143}Nd/^{144}Nd$ initial	ε_{Nd}	T_{DM}	$^{87}Sr/^{86}Sr_i$
SV38	monzo-diorite	18.931	15.700	39.020	9.4	51.65	0.1101	0.51258	0.51257	-1.0	0.86	0.7069
SV42	monzo-diorite	18.928	15.703	39.045								
SV50	monzo-diorite	18.898	15.696	38.998								
SV40	granite	18.862	15.689	38.951	3.64	24.21	0.091	0.51253	0.51253	-2.0	0.78	0.7062
SV7C	basalt	18.912	15.694	38.967								
SV71A	basalt	19.041	15.702	39.043	7.42	37.41	0.12	0.51256	0.51255	-1.4	0.98	0.7063
SV102	basalt	18.921	15.695	39.007								
SV35	trachyte	18.924	15.696	38.998	5.27	32.65	0.0978	0.51258	0.51257	-1.0	0.77	0.7052
SV103	trachyte	18.932	15.696	39.008								
SV11	rhyolite	19.102	15.708	39.210	0.81	6.21	0.0796	0.51241	0.5124	-4.3	0.86	
SV77A	rhyolite	18.956	15.715	39.124	6.04	24.72	0.1479	0.51232	0.51232	-6.2	1.94	
SV77AR	rhyolite	18.921	15.695	39.007								

Table S4. *Representative electron microprobe analyses of clinopyroxenes*

Sample	SV46	SV103			SV102			SV29		SV4B					
rock	monzo-diorite	trachyte			basalt										
crystal		Ph	Ph	Ph	Ph	Ph	Ph	Ph	Ph			zoned Ph			
position		c	r	c	c	i	r	c	r	c(gr)	r(cl)	c	i	i	r
SiO_2	52.64	51.01	49.52	51.19	52.65	52.05	49.20	49.40	50.15	46.07	47.36	53.07	51.07	53.12	52.57
TiO_2	0.06	0.54	0.63	0.46	0.62	0.26	1.56	0.56	0.52	1.79	1.31	0.26	0.85	0.27	0.62
Al_2O_3	0.80	1.20	1.90	0.76	3.13	1.26	8.01	4.19	3.81	8.64	7.66	2.30	4.29	1.92	2.86
FeO_t	11.71	10.39	8.89	15.64	6.95	15.23	6.93	11.02	11.20	9.01	7.52	3.73	6.44	4.09	5.21
MnO	0.38	1.18	0.80	2.68	0.14	0.41	0.16	0.29	0.30	0.14	0.17	0.00	0.13	0.00	0.00
MgO	10.82	12.85	13.58	8.50	16.52	11.00	14.64	12.04	12.44	11.42	12.66	16.47	14.97	16.68	15.85
CaO	23.38	22.96	23.22	21.14	19.90	20.11	20.65	21.10	20.61	23.51	23.57	23.71	23.40	23.60	23.65
Na_2O	0.41	0.76	0.78	1.15	0.59	0.45	0.69	0.67	0.64	0.12	0.13	0.00	0.00	0.00	0.00
K_2O	0.00	0.08	0.09	0.08	0.00	0.00	0.00	0.00	0.00	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cr_2O_3	0.01	0.03	0.03	0.02	n.a.	n.a.	n.a.	0.04	0.07	0.1	0.21	0.90	0.11	0.63	0.14
Total	100.21	101.00	99.44	101.62	100.50	100.77	101.84	99.31	99.74	100.8	100.59	100.44	101.26	100.31	100.90
Structural Formulae on the basis of O=6															
Si	1.993	1.922	1.887	1.965	1.924	1.974	1.784	1.879	1.895	1.725	1.763	1.933	1.868	1.939	1.916
Ti	0.002	0.015	0	0.13	0.017	0.007	0.043	0.016	0.015	0.050	0.037	0.007	0.023	0.007	0.017
Al	0.036	0.053	0.085	0.034	0.135	0.056	0.342	0.188	0.170	0.381	0.336	0.099	0.185	0.083	0.123
Fe	0.371	0.327	0.283	0.502	0.212	0.483	0.210	0.351	0.354	0.282	0.234	0.114	0.197	0.125	0.159
Mn	0.012	0.038	0.026	0.087	0.004	0.013	0.005	0.009	0.010	0.004	0.005	0.000	0.004	0.000	0.000
Mg	0.611	0.722	0.771	0.486	0.900	0.622	0.791	0.682	0.701	0.637	0.702	0.894	0.816	0.907	0.861
Ca	0.948	0.927	0.948	0.870	0.779	0.817	0.802	0.860	0.835	0.943	0.940	0.925	0.917	0.923	0.924
Na	0.030	0.056	0.058	0.086	0.042	0.033	0.049	0.049	0.047	0.009	0.009	0.000	0.000	0.000	0.000
K	0.000	0.004	0.004	0.004	0.000	0.000	0.000	0.000	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

c=core; r=rim; i=intermediate; gr=green; cl=colorless; Ph=phenocryst

Table S5. *Representative electron microprobe analyses of amphiboles*

Sample	SV42				SV47		SV38				SV40		SV37	
rock	quartz monzodiorite						monzodiorite				leucogranite			
position	c	r	c	r	c	r	c	r	c	r	c	r	c	r
SiO_2	41.68	48.88	52.59	53.25	43.23	40.75	42.79	43.15	41.01	40.93	49.34	50.07	52.08	53.01
TiO_2	1.72	0.10	0.09	0.06	1.01	1.31	0.85	0.96	0.99	0.84	0.51	0.39	0.22	0.06
Al_2O_3	12.04	5.92	1.71	2.25	10.52	12.64	9.93	9.36	10.65	11.07	5.64	4.67	3.02	0.86
FeO_t	18.67	18.78	18.40	17.09	18.89	19.58	20.27	20.01	21.60	21.93	17.85	17.88	18.21	20.34
MnO	0.24	0.24	0.4	0.29	0.26	0.25	0.35	0.37	0.38	0.34	0.38	0.37	0.30	0.25
MgO	8.39	10.20	11.46	12.72	9.15	7.69	8.91	9.21	7.92	7.77	11.47	11.85	11.21	10.37
CaO	12.27	12.62	12.31	12.29	11.54	11.93	12.06	12.00	11.07	11.69	12.22	12.12	12.55	12.65
Na_2O	1.53	0.39	0.15	0.26	1.59	1.58	1.15	1.23	1.39	1.30	0.78	0.72	0.21	0.05
K_2O	1.54	0.15	0	0.00	1.11	1.48	1.04	0.98	1.25	1.32	0.31	0.24	0.00	0.00
Cl	0.13	0.01	0.04	0.00	0.05	0.05	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
F	0.06	0.05	0.03	0.00	0.08	0	0.02	0.07	0.06	0.04	0.03	0.03	0.01	0
Total	98.39	97.35	97.18	98.21	97.43	97.29	97.37	97.35	96.32	97.25	98.55	98.35	97.85	97.62
Structural Formulae* based on O=23														
Si	6.335	7.295	7.826	7.762	6.560	6.263	6.502	6.558	6.346	6.290	7.250	7.355	7.697	7.936
Ti	0.197	0.011	0.010	0.007	0.115	0.151	0.097	0.110	0.115	0.097	0.056	0.043	0.024	0.007
$^{\{4\}}Al$	1.67	0.70	0.17	0.24	1.44	1.74	1.50	1.44	1.65	1.71	0.75	0.65	0.30	0.06
$^{\{6\}}Al$	0.49	0.34	0.13	0.15	0.44	0.55	0.28	0.23	0.29	0.30	0.23	0.16	0.22	0.09
Fe^{3+}	0.008	0.189	0.027	0.093	0.226	0.153	0.544	0.503	0.675	0.678	0.214	0.251	0.000	0.000
Fe^{2+}	2.365	2.155	2.263	1.991	2.171	2.364	2.031	2.04	2.121	2.141	1.980	1.945	2.251	2.547
Mn	0.031	0.030	0.050	0.036	0.033	0.033	0.045	0.048	0.05	0.044	0.047	0.046	0.038	0.032
Mg	1.900	2.269	2.541	2.763	2.069	1.762	2.018	2.086	1.827	1.78	2.512	2.594	2.469	2.314
Ca	2.015	2.018	1.963	1.920	1.876	1.965	1.964	1.954	1.836	1.925	1.924	1.908	1.988	2.029
Na	0.451	0.113	0.043	0.073	0.468	0.471	0.339	0.362	0.417	0.387	0.222	0.205	0.060	0.015
K	0.299	0.029	0.000	0.000	0.215	0.290	0.202	0.190	0.247	0.259	0.058	0.045	0.000	0.000

* Structural formulae calculated using crystal-chemical constraints according to the method described by Stout (1972) and Robinson et al. (1982). Following the arguments of Pe-Piper (1988) we report the mean values of the two methods of calculation (13 and 15 total cations). In this and all subsequent mineral analyses tables: n.a.=not analysed and zero values indicate concentrations below detection limit.

Table S6. *Representative electron microprobe analyses of biotite phenocrysts*

Sample	SV36 monzodiorite		SV42 quartz monzodiorite		SV38 monzodiorite		SV41 leucogranite			SV103 trachyte	
position	c	r	c	r	c	r	c	r	r	c	r
SiO_2	37.08	36.97	36.22	35.96	35.75	35.71	35.91	35.75	39.38	36.31	35.65
TiO_2	2.86	2.72	3.14	3.20	4.29	4.74	4.21	4.60	2.80	5.86	5.63
Al_2O_3	14.61	14.05	14.77	14.67	13.80	14.04	14.27	14.20	15.19	14.04	13.55
FeO_t	18.53	18.79	22.15	22.43	21.58	21.31	21.96	21.35	19.76	15.14	14.89
MnO	0.17	0.11	0.14	0.13	0.28	0.26	0.15	0.15	0.11	0.24	0.23
MgO	12.63	12.06	9.54	9.11	9.76	8.88	8.98	8.84	7.44	14.51	14.31
CaO	0.02	0.04	0.08	0.04	0.00	0.02	0.06	0.01	0.00	0.00	0.17
Na_2O	0.06	0.05	0.12	0.06	0.11	0.11	0.08	0.12	0.11	0.78	0.81
K_2O	9.40	9.91	9.43	9.63	8.29	8.90	9.95	10.16	11.05	8.50	7.96
F	0.33	0.38	0.24	0.25	0.11	0.06	0.26	0.32	0.23	n.a.	n.a.
Total	95.81	95.18	95.83	95.49	93.98	94.07	95.83	95.52	96.07	95.38	93.20
Structural Formulae (method of Laird and Albee (1981) (total cations less K-site normalized to 14)											
Si	5.704	5.787	5.707	5.713	5.682	5.738	5.728	5.745	6.330	5.540	5.556
Ti	0.331	0.320	0.372	0.382	0.513	0.573	0.505	0.556	0.338	0.672	0.660
$^{\{4\}}Al$	2.296	2.213	2.293	2.287	2.318	2.262	2.272	2.255	1.670	2.460	2.444
$^{\{6\}}Al$	0.353	0.380	0.450	0.461	0.268	0.397	0.411	0.435	1.208	0.065	0.045
Fe^{3+}	0.281	0.193	0.099	0.061	0.025	0.000	0	0.000	0.000	0.050	0.079
Fe^{2+}	2.102	2.267	2.820	2.920	2.844	2.863	2.930	2.87	2.656	1.882	1.862
Mn	0.022	0.015	0.019	0.017	0.038	0.035	0.020	0.02	0.015	0.031	0.030
Mg	2.895	2.813	2.240	2.157	2.312	2.126	2.135	2.117	1.782	3.299	3.324
Ca	0.003	0.007	0.014	0.007	0	0.003	0.010	0.002	0.000	0.000	0.028
Na	0.018	0.015	0.037	0.018	0.034	0.034	0.025	0.037	0.034	0.231	0.245
K	1.845	1.979	1.896	1.952	1.681	1.824	2.025	2.083	2.266	1.655	1.583

Table S7. *Representative electron microprobe analyses of Fe-Ti oxides*

Sample	SV37	SV103	SV102	SV102	SV102	SV29
rock type	leucogranite	trachyte	basalt			
mineral	ilm	mgt	chr	mgt	ilm	mgt
SiO_2	0.93	0.20	0.00	0.28	1.29	0.89
TiO_2	53.15	8.35	1.10	15.37	38.87	22.18
Al_2O_3	0.00	2.87	23.55	2.54	0.43	2.02
FeO_t	40.02	77.53	37.52	67.23	52.18	66.80
MnO	5.41	1.80	0.68	3.05	3.69	0.58
MgO	0.00	0.32	4.08	0.08	0.49	1.14
CaO	0.11	0.00	0.16	0.16	0.32	0.23
Na_2O	0.13	0.37	0.00	0.00	0.00	0.00
Cr_2O_3	n.a.	n.a.	33.46	8.45	0.43	0.54
Total	99.75	91.44	100.62	97.16	97.70	94.38

ilm=ilmenite; mgt=magnetite; chr=chromite

Table S8. *Representative electron microprobe analyses of titanite*

Sample	SV39 monzodiorite				SV38 monzodiorite		SV41 leucogranite		SV37 leucogranite	
position	c	r	c	r	c	r	c	r	c	r
SiO_2	29.67	29.82	30.12	30.31	30.20	30.07	30.38	30.08	30.83	31.24
TiO_2	35.05	34.81	34.46	35.38	35.59	35.36	35.39	36.05	35.22	34.12
Al_2O_3	1.32	1.21	1.40	1.44	1.38	1.38	2.25	1.94	2.83	3.46
FeO_t	1.66	1.74	1.81	1.49	1.56	1.77	0.59	0.62	0.62	0.69
CaO	27.90	27.91	28.25	29.09	29.37	29.13	28.84	28.37	29.88	30.13
ThO_2	0.28	0.27	0.15	0.09	0.08	0.16	0.05	0.11	0.04	0.07
Y_2O_3	0.37	0.38	0.19	0.23	0.11	0.09	1.02	1.13	0.00	0.00
La_2O_3	0.48	0.44	0.41	0.28	0.11	0.11	0.00	0.03	0.00	0.01
Ce_2O_3	1.64	1.51	1.21	1.02	0.47	0.54	0.46	0.38	0.20	0.18
Pr_2O_3	0.20	0.12	0.10	0.13	0.04	0.00	0.00	0.04	0.00	0.03
Nd_2O_3	0.68	0.49	0.41	0.29	0.00	0.00	0.12	0.19	0.00	0.00
Sm_2O_3	0.13	0.20	0.00	0.00	0.10	0.00	0.05	0.15	0.00	0.00
ΣREE	3.13	2.76	2.13	1.72	0.72	0.65	0.63	0.79	0.20	0.22
Total	99.39	98.89	98.51	99.75	99.00	98.60	99.14	99.08	99.63	99.92

SV39, SV38:monzodiorite; SV41, SV37:leucogranite

Table S9. *Representative electron microprobe analyses of allanite*

Sample	SV41 leucogranite				
position	c	i	r	c	r
SiO_2	31.93	32.08	32.46	32.03	31.46
TiO_2	0.68	0.71	0.20	1.05	0.82
Al_2O_3	17.40	17.23	19.23	16.25	16.07
FeO	11.82	11.88	10.64	12.80	12.75
MnO	0.17	0.19	0.16	0.23	0.46
MgO	0.61	0.60	0.32	0.71	0.80
CaO	12.43	12.53	14.02	12.18	10.60
ThO_2	3.75	3.24	2.50	2.42	3.61
Y_2O_3	0.15	0.09	0.26	0.19	0.46
La_2O_3	4.95	5.78	4.18	5.72	5.62
Ce_2O_3	9.81	10.56	8.65	10.87	11.26
Pr_2O_3	0.50	0.50	0.25	0.61	0.72
Nd_2O_3	2.61	2.17	2.43	2.56	3.03
Σ REE	17.87	19.01	15.51	19.76	20.63
Total	96.81	97.57	95.30	97.60	97.67

Table S10. *Representative electron microprobe analyses of apatite*

Sample	SV39 monzodiorite				SV37 leucogranite	
FeO_t	0.09	0.07	0.00	0.05	0.03	0.00
MnO	0.07	0.04	0.03	0.02	0.02	0.02
CaO	54.72	55.12	55.26	54.86	56.35	56.21
Na_2O	0.16	0.08	0.05	0.06	0.00	0.00
P_2O_5	41.00	41.93	43.22	42.69	41.13	40.77
F	3.44	3.37	1.92	1.99	3.34	3.29
Cl	0.43	0.34	0.24	0.23	0.15	0.06
La_2O_3	0.20	0.16	0.05	0.10	0.03	0.00
Ce_2O_3	0.39	0.28	0.14	0.26	0.13	0.00
Nd_2O_3	0.14	0.09	0.00	0.06	0.10	0.00
Y_2O_3	0.00	0.00	0.00	0.03	0.10	0.01
ΣREE	0.73	0.53	0.19	0.42	0.26	0.00
Total	100.64	101.48	100.92	100.36	101.64	100.36

Pr_2O_3 below detection limit in all samples

Additional references for supplementary material

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