Table S1. Sampling localities. See also Fig. 2.

Area	Locality	Latitude	Longitude
Omogo	Omogo1	33°42′56.5″N	133°01′22.8″E
	Omogo2	33°44′22.8″N	133°02′17.1″E
	Omogo3	33°43′56.3″N	133°01′15.2″E
Namekawa	Namekawa1	33°46′07.3″N	133°00′41.3″E
	Namekawa2	33°46′20.7″N	133°00′20.8″E
Nimyo	Nimyo	33°39′22.8″N	132°50′29.3″E
Tobe	Shojiyama	33°42′48.1″N	132°45′44.2″E
	Choshi dam	33°41′31.8″N	132°47′39.3″E
	Tamatani	33°40′13.1″N	132°47′41.3″E
	Kozuchinomine	33°39′39.9″N	132°49′31.2″E
	Kozaru	33°38′39.0″N	132°48′33.8″E

Table S2. Composition of gravels in conglomerate beds of the Myojin Formation based on counting selected clasts > 3 cm in diameter within a randomly set 10 × 10 m square on the surface of each exposed bed. See Fig. 2 and Table S1 for outcrop locations. Abbreviations: Cgl, conglomerates; Grntd, granitoids; Hor, hornfels; Hpb, hypabyssal rocks; Mst, mudstones; n, total number of clasts; Qtz, quartz; Sch, schists; Sst, sandstones; and Volc, volcanic rocks. Note that – indicates that no gravel of that type were counted at the bed.

Locality	Mst	Sst	Cgl	Grntd	Hpb	Volc	Sch	Qtz	Hor	n
Omogo1	7	36	–	33	27	–	2	–	–	105
Omogo2	5	37	–	50	42	–	6	1	–	141
Omogo3	4	61	–	26	22	–	–	3	–	116
Namekawa1	14	46	1	55	24	–	–	–	–	140
Namekawa2	17	48	–	32	16	–	1	–	2	116
Nimyo	3	97	6	58	4	–	6	–	2	176
Shojiyama	15	29	2	50	6	–	–	1	1	104
Choshi dam	12	55	4	20	–	–	1	1	7	100
Tamatani	–	81	2	6	–	1	12	–	–	102
Kozuchinomine	8	71	4	25	1	–	2	–	2	113
Kozaru	2	90	2	3	–	3	9	2	3	114

Table S3. Composition of igneous rock gravels collected from the Myojin Formation. The numbers in parentheses indicate the number of samples from boulder-sized gravels. See Fig. 2 and Table S1 for sample locations. Abbreviations: Gr, granite; Grd, granodiorite; Hpb, hypabyssal rocks; Qmd, quartz monzodiorite; Qmz, quartz monzonite; Rhy, rhyolite; and Tnl, tonalite. Note that – indicates that no gravels of that type were collected from the locality.

Locality	Gr	Grd	Tnl	Qmz	Qmd	Hpb	Rhy	n
Omogo1	5 (1)	3 (1)	–	–	–	5 (2)	–	13 (4)
Omogo2	4	–	–	–	–	5 (2)	–	9 (2)
Omogo3	2	3	1	–	–	1	–	7
Namekawa1	11 (1)	8	–	–	1	4 (2)	–	24 (3)
Namekawa2	4	4	–	–	–	5	–	13
Nimyo	7 (1)	1 (1)	–	1	1	–	–	10 (2)
Shojiyama	2	–	–	–	–	1	–	3
Choshi dam	1 (1)	–	–	–	–	–	–	1 (1)
Tamatani	5 (1)	–	–	–	–	–	1	6 (1)
Kozuchinomine	5	–	–	–	–	–	–	5
Kozaru	1	1	–	–	–	–	1	3
Total	47 (5)	20 (2)	1	1	2	21 (6)	2	94 (13)

Table S4. Whole rock chemical composition of gravels collected from the Myojin Formation measured by X-ray fluorescence analyses. Sampling localities (see Fig. 2 and Table S1): omg1, Omogo1; omg2, Omogo2; omg3, Omogo3; nam1, Namekawa1; nam2, Namekawa2; and nmo, Nimyo. Note that – indicates below detection limit.

Sample	OMG6	OMG18	OMG20	OMG32	NAM27	NAM29	NAM37	OMG4	OMG5	OMG13
Locality	omg1	omg2	omg2	omg1	nam1	nam1	nam1	omg1	omg1	omg2
Rock	Hypabyssal rock						Granite			
(wt%)										
SiO_2	75.52	75.39	76.34	74.07	76.27	76.26	75.39	76.27	74.63	70.24
TiO_2	0.07	0.10	0.08	0.14	0.04	0.08	0.10	0.11	0.11	0.32
Al_2O_3	13.12	13.54	12.62	13.92	12.93	13.37	13.46	13.07	14.28	15.35
FeO_{total}	1.06	1.57	1.38	2.00	0.55	0.83	0.59	1.06	1.19	2.15
MnO	0.02	0.03	0.03	0.03	0.01	0.02	0.01	0.02	0.02	0.05
MgO	0.08	0.12	0.10	0.16	0.08	0.11	0.14	0.06	0.06	0.51
CaO	0.71	0.91	1.06	0.34	0.52	1.06	0.81	1.10	0.78	2.00
Na_2O	3.97	3.78	3.81	4.14	4.74	3.88	3.30	3.45	3.62	3.27
K_2O	4.02	4.32	3.79	3.19	3.98	3.70	4.90	4.03	5.17	4.35
P_2O_5	0.02	0.02	0.02	0.05	0.02	0.02	0.03	0.03	0.02	0.06
TOTAL	98.58	99.78	99.23	98.03	99.13	99.33	98.73	99.17	99.88	98.30
(ppm)										
V	7.6	6.0	3.4	8.7	7.5	3.4	7.3	8.4	7.6	22.8
Cr	6.3	4.0	4.7	5.3	4.9	5.3	6.2	4.4	4.1	9.1
Co	0.8	0.7	1.3	1.9	2.5	1.2	1.1	1.5	1.4	3.8
Ni	2.3	2.2	2.2	3.1	4.3	2.7	3.4	2.9	2.9	3.8
Cu	1.7	2.1	0.2	1.0	1.5	1.2	1.5	2.3	1.6	1.0
Zn	32.6	56.4	43.2	36.9	15.8	36.6	18.8	32.5	38.1	44.7
Rb	127.8	141.3	117.5	119.4	142.0	104.2	226.5	113.6	154.6	137.4
Sr	98.2	86.2	99.7	124.5	57.3	98.9	68.9	119.7	104.5	189.0
Y	27.7	31.7	27.5	29.6	18.8	28.3	28.5	12.7	16.4	20.3
Zr	90.2	154.7	96.5	108.8	68.5	98.2	60.4	98.9	129.9	103.4
Nb	8.3	10.5	8.2	9.5	6.7	8.0	7.2	6.1	7.6	8.2
Pb	19.6	23.9	22.4	4.5	14.0	22.0	26.7	19.4	22.1	24.4
Th	18.8	16.5	10.6	10.6	10.7	10.0	13.3	13.5	10.8	5.1
ASI*	1.08	1.08	1.03	1.29	0.99	1.09	1.11	1.09	1.11	1.13

* Alumina saturation index

Table S4. Continued.

Sample	OMG15	NAM28	NMO2	NMO7	OMG8	OMG11	OMG37	NAM13	NMO11	NAM25
Locality	omg2	nam1	nmo	nmo	omg3	omg2	omg3	nam2	nmo	nam1
Rock	Granite				Granodiorite					Qmd**
(wt.%)										
SiO_2	74.24	75.65	75.69	73.79	65.60	73.60	68.25	75.48	71.14	65.51
TiO_2	0.12	0.04	0.13	0.18	0.36	0.21	0.54	0.11	0.33	0.19
Al_2O_3	13.90	13.10	13.22	13.95	16.94	13.91	16.18	14.10	14.20	17.96
FeO_{total}	1.37	0.27	1.30	1.43	2.84	1.95	3.81	0.82	2.22	1.44
MnO	0.03	0.01	0.03	0.04	0.04	0.04	0.05	0.02	0.05	0.03
MgO	0.21	0.06	0.20	0.32	0.36	0.38	0.74	0.05	0.67	0.32
CaO	1.12	0.86	0.95	1.27	2.59	1.19	2.67	0.63	2.11	0.77
Na_2O	3.15	3.39	3.16	3.19	4.42	3.31	3.83	4.14	2.87	7.01
K_2O	5.18	4.82	4.95	4.70	2.62	4.69	2.05	3.43	3.96	4.62
P_2O_5	0.04	0.02	0.03	0.05	0.09	0.05	0.12	0.04	0.08	0.06
TOTAL	99.35	98.21	99.65	98.93	95.85	99.31	98.24	98.81	97.60	97.90
(ppm)										
V	6.1	4.7	10.6	13.1	14.2	14.1	29.6	6.2	26.6	10.0
Cr	5.1	5.5	5.6	6.1	6.0	4.6	8.1	6.6	7.3	7.0
Co	0.8	–	2.4	2.8	4.4	2.8	7.9	1.5	5.6	4.4
Ni	3.2	2.6	4.2	4.1	2.1	2.6	2.8	3.2	6.3	5.2
Cu	0.9	1.6	2.9	0.9	5.6	4.2	2.5	1.3	2.7	0.5
Zn	39.9	15.3	26.5	28.8	73.8	50.6	73.8	26.8	43.9	28.9
Rb	206.3	146.8	180.8	205.6	76.7	149.4	75.6	103.1	152.2	172.8
Sr	107.6	78.6	85.2	91.0	267.0	121.6	205.2	135.0	141.8	116.6
Y	21.4	17.4	22.5	23.6	20.9	17.7	17.5	15.0	20.6	31.7
Zr	105.9	53.6	85.6	79.9	354.5	105.5	229.2	85.9	88.4	120.6
Nb	12.6	5.5	7.5	8.9	10.3	8.5	12.3	6.3	8.0	9.4
Pb	31.6	33.1	25.6	29.8	14.5	25.7	11.2	19.9	25.3	18.8
Th	22.2	17.1	16.8	15.9	19.5	16.2	12.4	7.5	16.5	14.0
ASI*	1.09	1.06	1.08	1.11	1.16	1.11	1.24	1.22	1.12	1.01

* Alumina saturation index

** Quartz monzodiorite

Table S5. U–Pb isotopic data and calculated ages for igneous rock gravels collected from the Myojin Formation. See Fig. 2 and Table S1 for sample locations. All errors are calculated at 1σ. Pb* indicates the radiogenic portions. Weighted mean ages are calculated from (1) ^{207}Pb corrected ages. Abbreviations: CI, confidence interval; and MSWD, mean squared weighted deviation.

Grain	Spot	Isotopic ratios		^{238}U–^{206}Pb* ages (Ma)		Remarks
		^{238}U/^{206}Pb*	^{207}Pb*/^{206}Pb*	(1)	(2)	
OMG6 (from Omogo1)						
1		69.57 ± 1.52	0.0458 ± 0.0053	92.2 ± 2.0	92.0 ± 2.0	
2		70.08 ± 1.68	0.0476 ± 0.0048	91.4 ± 2.2	91.3 ± 2.2	
3		68.77 ± 1.49	0.0442 ± 0.0027	93.1 ± 2.0	93.1 ± 2.0	
4		67.98 ± 1.82	0.0493 ± 0.0060	94.0 ± 2.5	94.1 ± 2.5	
5		71.02 ± 1.19	0.0492 ± 0.0019	90.0 ± 1.5	90.1 ± 1.5	
6		72.53 ± 1.51	0.0476 ± 0.0025	88.3 ± 1.8	88.3 ± 1.8	
7		67.72 ± 1.33	0.0527 ± 0.0026	93.9 ± 1.9	94.5 ± 1.8	
8		74.65 ± 1.64	0.0448 ± 0.0069	86.1 ± 1.8	85.8 ± 1.9	
9		72.40 ± 1.63	0.0403 ± 0.0056	88.6 ± 1.9	88.4 ± 2.0	
10		65.34 ± 1.39	0.0515 ± 0.0024	97.5 ± 2.1	97.9 ± 2.1	excluded†
11		65.01 ± 1.74	0.0433 ± 0.0057	98.9 ± 2.6	98.4 ± 2.6	excluded†
12		71.08 ± 1.39	0.0485 ± 0.0038	90.0 ± 1.7	90.1 ± 1.7	
13		68.28 ± 1.52	0.0452 ± 0.0029	93.7 ± 2.1	93.7 ± 2.1	
14		69.76 ± 1.42	0.0438 ± 0.0050	92.2 ± 1.9	91.8 ± 1.9	
15		74.33 ± 1.33	0.0483 ± 0.0041	86.1 ± 1.5	86.1 ± 1.5	
16		70.30 ± 1.25	0.0488 ± 0.0052	90.9 ± 1.6	91.1 ± 1.6	
17		72.06 ± 1.34	0.0483 ± 0.0029	88.8 ± 1.7	88.8 ± 1.6	
18		71.53 ± 1.25	0.0496 ± 0.0026	89.3 ± 1.6	89.5 ± 1.6	
19		70.13 ± 1.58	0.0471 ± 0.0060	91.3 ± 2.0	91.3 ± 2.0	
20		69.86 ± 1.54	0.0441 ± 0.0030	91.6 ± 2.0	91.6 ± 2.0	
21	1	72.22 ± 1.33	0.0541 ± 0.0027	87.9 ± 1.6	88.6 ± 1.6	rim
	2	72.71 ± 1.22	0.0433 ± 0.0043	88.3 ± 1.4	88.1 ± 1.5	core
23		71.36 ± 1.36	0.0482 ± 0.0028	89.7 ± 1.7	89.7 ± 1.7	
24		73.93 ± 1.54	0.0470 ± 0.0050	86.7 ± 1.8	86.6 ± 1.8	
Weighted mean age (n = 22; 95% CI): **89.8** ± **1.0 Ma** (MSWD = 1.8)						
OMG11 (from Omogo2)						
1		64.96 ± 1.09	0.0467 ± 0.0029	98.6 ± 1.6	98.5 ± 1.6	
2		65.23 ± 1.11	0.0475 ± 0.0016	98.1 ± 1.7	98.1 ± 1.7	
3		64.41 ± 1.30	0.0489 ± 0.0023	99.2 ± 2.0	99.3 ± 2.0	
4		65.52 ± 1.16	0.0465 ± 0.0022	97.6 ± 1.7	97.6 ± 1.7	
5		64.46 ± 0.97	0.0467 ± 0.0015	99.2 ± 1.5	99.2 ± 1.5	
6		68.41 ± 1.41	0.0440 ± 0.0046	94.0 ± 1.9	93.5 ± 1.9	
7		63.95 ± 1.13	0.0493 ± 0.0024	99.9 ± 1.8	100.0 ± 1.8	
8		64.73 ± 0.96	0.0456 ± 0.0015	98.8 ± 1.4	98.8 ± 1.4	
9		65.75 ± 0.91	0.0506 ± 0.0014	97.0 ± 1.3	97.3 ± 1.3	
10		69.32 ± 0.97	0.0447 ± 0.0028	92.6 ± 1.3	92.3 ± 1.3	
11		68.75 ± 1.50	0.0482 ± 0.0039	93.1 ± 2.1	93.1 ± 2.0	
12		66.12 ± 0.87	0.0481 ± 0.0045	96.7 ± 1.3	96.8 ± 1.3	
13		63.93 ± 1.06	0.0503 ± 0.0019	99.8 ± 1.7	100.1 ± 1.6	
14		66.81 ± 1.00	0.0484 ± 0.0016	95.7 ± 1.4	95.8 ± 1.4	
15	1	68.25 ± 1.40	0.0487 ± 0.0047	93.7 ± 1.9	93.8 ± 1.9	rim
	2	70.83 ± 1.61	0.0457 ± 0.0042	90.6 ± 2.0	90.4 ± 2.0	core
16		68.20 ± 1.34	0.0522 ± 0.0039	93.3 ± 1.8	93.8 ± 1.8	
17	1	62.83 ± 1.27	0.0472 ± 0.0017	101.8 ± 2.0	101.8 ± 2.0	core, excluded†
	2	69.43 ± 1.15	0.0469 ± 0.0015	92.2 ± 1.5	92.2 ± 1.5	rim
Weighted mean age (n = 18; 95% CI): **96.2** ± **1.4 Ma** (MSWD = 3.2)						

(1) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{207}Pb/^{235}U age-concordance.

(2) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{208}Pb/^{232}Th age-concordance.

† Excluded from the calculation of the weighted mean age.

Table S5. Continued.

Grain	Spot	Isotopic ratios		^{238}U–^{206}Pb* ages (Ma)		Remarks
		^{238}U/^{206}Pb*	^{207}Pb*/^{206}Pb*	(1)	(2)	
OMG15 (from Omogo2)						
1		64.52 ± 0.98	0.0481 ± 0.0035	99.1 ± 1.5	99.1 ± 1.5	
2	1	66.22 ± 0.90	0.0496 ± 0.0021	96.4 ± 1.3	96.6 ± 1.3	rim
	2	67.19 ± 0.74	0.0464 ± 0.0033	95.4 ± 1.0	95.2 ± 1.0	core
3		71.31 ± 1.39	0.0497 ± 0.0073	89.6 ± 1.7	89.8 ± 1.7	
4		68.49 ± 1.05	0.0506 ± 0.0033	93.1 ± 1.4	93.4 ± 1.4	
5		61.67 ± 1.05	0.0490 ± 0.0030	103.6 ± 1.8	103.7 ± 1.7	
6		63.59 ± 0.97	0.0531 ± 0.0022	100.0 ± 1.5	100.6 ± 1.5	
7		66.25 ± 0.87	0.0463 ± 0.0020	96.6 ± 1.3	96.6 ± 1.3	
8		62.10 ± 0.96	0.0484 ± 0.0062	103.0 ± 1.5	103.0 ± 1.6	
9		63.89 ± 1.33	0.0509 ± 0.0036	99.8 ± 2.1	100.1 ± 2.1	
10		61.75 ± 1.02	0.0500 ± 0.0014	103.3 ± 1.7	103.6 ± 1.7	
11		66.65 ± 0.95	0.0471 ± 0.0015	96.0 ± 1.4	96.0 ± 1.4	
12		68.44 ± 1.01	0.0530 ± 0.0030	92.9 ± 1.4	93.5 ± 1.4	
13		63.22 ± 1.13	0.0496 ± 0.0023	101.0 ± 1.8	101.2 ± 1.8	
14	1	65.59 ± 0.91	0.0452 ± 0.0028	97.9 ± 1.3	97.5 ± 1.3	core
	2	68.20 ± 0.93	0.0503 ± 0.0031	93.6 ± 1.3	93.8 ± 1.3	rim
Weighted mean age (n = 16; 95% CI): **97.0 ± 2.0 Ma** (MSWD = 6.8)						
NAM27 (from Namekawa1)						
1		71.24 ± 0.94	0.0491 ± 0.0026	89.7 ± 1.2	89.9 ± 1.2	
2		68.61 ± 1.00	0.0477 ± 0.0019	93.3 ± 1.4	93.3 ± 1.4	
3		68.56 ± 1.00	0.0479 ± 0.0033	93.3 ± 1.3	93.3 ± 1.4	
4		72.47 ± 1.04	0.0465 ± 0.0018	88.3 ± 1.3	88.3 ± 1.3	
5		71.43 ± 1.12	0.0476 ± 0.0039	89.6 ± 1.4	89.6 ± 1.4	
6		69.68 ± 1.03	0.0483 ± 0.0044	91.8 ± 1.3	91.9 ± 1.3	
7		72.39 ± 1.44	0.0465 ± 0.0034	88.4 ± 1.8	88.4 ± 1.8	
8		69.46 ± 0.93	0.0477 ± 0.0013	92.1 ± 1.2	92.1 ± 1.2	
9		69.02 ± 1.00	0.0460 ± 0.0015	92.7 ± 1.3	92.7 ± 1.3	
10		70.20 ± 0.87	0.0476 ± 0.0028	91.2 ± 1.1	91.2 ± 1.1	
11		69.77 ± 0.90	0.0470 ± 0.0013	91.7 ± 1.2	91.7 ± 1.2	
12		70.08 ± 1.00	0.0474 ± 0.0029	91.4 ± 1.3	91.3 ± 1.3	
13		70.52 ± 0.88	0.0509 ± 0.0033	90.4 ± 1.1	90.8 ± 1.1	
14		73.14 ± 0.94	0.0479 ± 0.0016	87.5 ± 1.1	87.5 ± 1.1	
15		71.15 ± 1.19	0.0456 ± 0.0025	90.0 ± 1.5	90.0 ± 1.5	
16		71.30 ± 0.98	0.0492 ± 0.0018	89.6 ± 1.2	89.8 ± 1.2	
17		68.56 ± 0.93	0.0460 ± 0.0036	93.6 ± 1.2	93.4 ± 1.3	
18		71.63 ± 0.93	0.0499 ± 0.0016	89.1 ± 1.2	89.4 ± 1.2	
19		70.92 ± 0.85	0.0501 ± 0.0026	90.0 ± 1.1	90.3 ± 1.1	
Weighted mean age (n = 19; 95% CI): **90.7 ± 0.9 Ma** (MSWD = 2.0)						
NAM28 (from Namekawa1)						
1	1	67.14 ± 0.72	0.0514 ± 0.0023	94.9 ± 1.0	95.3 ± 1.0	rim
	2	65.15 ± 0.93	0.0475 ± 0.0017	98.2 ± 1.4	98.2 ± 1.4	core
2	1	68.65 ± 0.77	0.0478 ± 0.0011	93.2 ± 1.0	93.2 ± 1.0	core
	2	68.00 ± 0.82	0.0483 ± 0.0015	94.1 ± 1.1	94.1 ± 1.1	rim
3		68.55 ± 0.87	0.0449 ± 0.0034	93.7 ± 1.2	93.4 ± 1.2	
Weighted mean age (n = 5; 95% CI): **94.6 ± 2.1 Ma** (MSWD = 2.3)						

(1) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{207}Pb/^{235}U age-concordance.
(2) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{208}Pb/^{232}Th age-concordance.

Table S5. Continued.

Grain	Spot	Isotopic ratios		^{238}U–^{206}Pb* ages (Ma)		Remarks
		^{238}U/^{206}Pb*	^{207}Pb*/^{206}Pb*	(1)	(2)	
NAM37 (from Namekawa1)						
1		61.61 ± 1.34	0.0513 ± 0.0034	103.4 ± 2.3	103.8 ± 2.2	
2		68.48 ± 1.21	0.0478 ± 0.0021	93.5 ± 1.6	93.5 ± 1.6	excluded†
3		62.40 ± 1.17	0.0465 ± 0.0015	102.5 ± 1.9	102.5 ± 1.9	
4	1	58.72 ± 1.27	0.0445 ± 0.0069	109.4 ± 2.2	108.8 ± 2.3	core, excluded†
	2	63.24 ± 1.50	0.0385 ± 0.0050	101.8 ± 2.3	101.1 ± 2.4	rim
5		62.27 ± 1.54	0.0465 ± 0.0051	102.9 ± 2.5	102.7 ± 2.5	
6		55.83 ± 1.49	0.0542 ± 0.0041	113.6 ± 3.1	114.4 ± 3.0	excluded†
7	1	64.65 ± 1.38	0.0443 ± 0.0056	99.4 ± 2.0	99.0 ± 2.1	core
	2	64.90 ± 1.38	0.0451 ± 0.0041	98.9 ± 2.1	98.6 ± 2.1	rim
8		64.91 ± 1.41	0.0403 ± 0.0043	99.2 ± 2.1	98.6 ± 2.1	
9		63.37 ± 1.22	0.0479 ± 0.0027	100.9 ± 1.9	100.9 ± 1.9	
10		56.86 ± 0.98	0.0443 ± 0.0028	112.8 ± 1.9	112.4 ± 1.9	excluded†
11		65.35 ± 1.38	0.0457 ± 0.0032	97.9 ± 2.0	97.9 ± 2.0	
12	1	63.52 ± 0.99	0.0454 ± 0.0024	100.8 ± 1.5	100.7 ± 1.6	rim
	2	64.92 ± 1.37	0.0562 ± 0.0025	97.5 ± 2.1	98.5 ± 2.1	core
13		52.91 ± 1.11	0.0471 ± 0.0023	120.7 ± 2.5	120.7 ± 2.5	excluded†
14		63.79 ± 1.03	0.0470 ± 0.0025	100.4 ± 1.6	100.3 ± 1.6	
15		66.56 ± 1.03	0.0534 ± 0.0016	95.5 ± 1.5	96.1 ± 1.5	
16		64.78 ± 1.42	0.0382 ± 0.0067	99.2 ± 2.0	98.8 ± 2.2	
17		58.57 ± 1.18	0.0508 ± 0.0022	108.8 ± 2.2	109.1 ± 2.2	excluded†
18		63.71 ± 1.43	0.0492 ± 0.0038	100.2 ± 2.3	100.4 ± 2.2	
19		58.48 ± 1.48	0.0394 ± 0.0063	110.5 ± 2.8	109.3 ± 2.8	excluded†
20		65.02 ± 1.45	0.0485 ± 0.0028	98.3 ± 2.2	98.4 ± 2.2	
21		66.14 ± 1.45	0.0510 ± 0.0052	96.4 ± 2.1	96.7 ± 2.1	
22		66.60 ± 1.36	0.0414 ± 0.0053	96.9 ± 1.9	96.1 ± 1.9	
23		60.92 ± 1.33	0.0583 ± 0.0073	103.6 ± 2.2	105.0 ± 2.3	
24		65.18 ± 1.05	0.0475 ± 0.0024	98.2 ± 1.6	98.2 ± 1.6	
Weighted mean age (n = 20; 95% CI): **99.4 ± 1.1 Ma** (MSWD = 1.4)						
NMO7 (from Nimyo)						
1		67.82 ± 1.11	0.0486 ± 0.0038	94.3 ± 1.5	94.4 ± 1.5	
2		65.27 ± 0.88	0.0484 ± 0.0016	98.0 ± 1.3	98.0 ± 1.3	
3		69.03 ± 2.04	0.0439 ± 0.0061	92.7 ± 2.7	92.7 ± 2.7	
4		79.76 ± 1.19	0.0521 ± 0.0044	79.9 ± 1.2	80.3 ± 1.2	excluded†
5		68.26 ± 0.88	0.0454 ± 0.0028	94.0 ± 1.2	93.8 ± 1.2	
6		67.27 ± 0.91	0.0447 ± 0.0030	95.5 ± 1.3	95.1 ± 1.3	
7		65.09 ± 0.90	0.0451 ± 0.0013	98.3 ± 1.3	98.3 ± 1.3	
8		66.62 ± 1.48	0.0423 ± 0.0059	96.3 ± 2.0	96.0 ± 2.1	
9	1	3.42 ± 0.04	0.1184 ± 0.0012	1626.6 ± 15.8	1654.5 ± 16.0	core, excluded†
	2	68.82 ± 1.17	0.0454 ± 0.0043	93.3 ± 1.6	93.0 ± 1.6	rim
10		66.89 ± 0.89	0.0486 ± 0.0030	95.6 ± 1.3	95.7 ± 1.3	
11		65.62 ± 1.07	0.0455 ± 0.0043	97.8 ± 1.5	97.5 ± 1.6	
12		68.55 ± 0.98	0.0472 ± 0.0039	93.4 ± 1.3	93.4 ± 1.3	
13		67.52 ± 1.14	0.0492 ± 0.0040	94.6 ± 1.6	94.8 ± 1.6	
14	1	66.48 ± 1.14	0.0483 ± 0.0029	96.2 ± 1.7	96.2 ± 1.6	rim
	2	15.50 ± 0.25	0.0539 ± 0.0016	403.4 ± 6.3	403.0 ± 6.2	core, excluded†
15		65.19 ± 0.94	0.0482 ± 0.0029	98.1 ± 1.4	98.1 ± 1.4	
16		69.11 ± 1.31	0.0524 ± 0.0033	92.1 ± 1.8	92.6 ± 1.7	
17		68.61 ± 1.12	0.0467 ± 0.0032	93.4 ± 1.5	93.3 ± 1.5	
18		66.61 ± 0.93	0.0481 ± 0.0016	96.0 ± 1.3	96.1 ± 1.3	
19		67.09 ± 0.95	0.0453 ± 0.0021	95.5 ± 1.3	95.4 ± 1.3	
Weighted mean age (n = 18; 95% CI): **95.5 ± 0.9 Ma** (MSWD = 1.6)						

(1) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{207}Pb/^{235}U age-concordance.

(2) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{208}Pb/^{232}Th age-concordance.

† Excluded from the calculation of the weighted mean age.

Table S5. Continued.

Grain	Spot	Isotopic ratios		^{238}U–^{206}Pb* ages (Ma)		Remarks
		^{238}U/^{206}Pb*	^{207}Pb*/^{206}Pb*	(1)	(2)	
NMO11 (from Nimyo)						
1		68.38 ± 1.92	0.0473 ± 0.0078	93.7 ± 2.6	93.6 ± 2.6	
2		67.79 ± 1.84	0.0473 ± 0.0042	94.4 ± 2.5	94.4 ± 2.5	
3	1	67.34 ± 1.25	0.0442 ± 0.0040	95.5 ± 1.8	95.0 ± 1.8	core
	2	69.12 ± 1.41	0.0465 ± 0.0037	92.6 ± 1.9	92.6 ± 1.9	rim
4		70.64 ± 1.93	0.0532 ± 0.0047	90.0 ± 2.5	90.6 ± 2.5	
5		65.90 ± 1.30	0.0475 ± 0.0025	97.1 ± 1.9	97.1 ± 1.9	
6		65.98 ± 1.62	0.0489 ± 0.0040	96.9 ± 2.4	97.0 ± 2.4	
7		67.01 ± 1.29	0.0464 ± 0.0025	95.5 ± 1.8	95.5 ± 1.8	
8		66.56 ± 1.69	0.0484 ± 0.0034	96.1 ± 2.5	96.1 ± 2.4	
9		70.43 ± 2.21	0.0556 ± 0.0048	90.0 ± 2.9	90.9 ± 2.8	
10	1	69.69 ± 1.64	0.0537 ± 0.0035	91.2 ± 2.2	91.9 ± 2.1	core
	2	64.77 ± 1.26	0.0484 ± 0.0030	98.7 ± 1.9	98.8 ± 1.9	rim
11	1	64.79 ± 1.49	0.0406 ± 0.0049	99.6 ± 2.2	98.7 ± 2.3	core
	2	63.88 ± 1.58	0.0411 ± 0.0060	100.3 ± 2.4	100.1 ± 2.5	rim
12		64.74 ± 2.23	0.0423 ± 0.0059	98.8 ± 3.4	98.8 ± 3.4	
13		66.90 ± 1.28	0.0469 ± 0.0022	95.6 ± 1.8	95.6 ± 1.8	
14		64.48 ± 1.18	0.0568 ± 0.0021	98.1 ± 1.8	99.2 ± 1.8	
15	1	64.81 ± 1.20	0.0489 ± 0.0019	98.6 ± 1.8	98.7 ± 1.8	core
	2	70.49 ± 1.28	0.0521 ± 0.0021	90.3 ± 1.6	90.8 ± 1.6	rim
16		69.06 ± 1.70	0.0529 ± 0.0035	92.1 ± 2.3	92.7 ± 2.3	
17		65.46 ± 1.25	0.0522 ± 0.0051	97.2 ± 1.8	97.7 ± 1.8	
18		65.50 ± 1.20	0.0485 ± 0.0025	97.6 ± 1.8	97.7 ± 1.8	
19		65.24 ± 1.52	0.0508 ± 0.0031	97.7 ± 2.3	98.1 ± 2.3	
20		66.05 ± 1.88	0.0539 ± 0.0055	96.1 ± 2.8	96.9 ± 2.7	
21		65.27 ± 1.19	0.0497 ± 0.0024	97.8 ± 1.8	98.0 ± 1.8	
22		55.17 ± 1.50	0.0421 ± 0.0037	115.8 ± 3.1	115.8 ± 3.1	excluded†
23		69.68 ± 1.23	0.0522 ± 0.0046	91.4 ± 1.6	91.9 ± 1.6	
24		71.62 ± 1.92	0.0522 ± 0.0044	88.9 ± 2.4	89.4 ± 2.4	
25		67.47 ± 1.43	0.0561 ± 0.0052	93.9 ± 2.0	94.8 ± 2.0	
Weighted mean age (n = 28; 95% CI): **95.2 ± 1.2 Ma** (MSWD = 2.4)						

(1) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{207}Pb/^{235}U age-concordance.
(2) Common Pb corrected by assuming ^{206}Pb/^{238}U-^{208}Pb/^{232}Th age-concordance.
† Excluded from the calculation of the weighted mean age.

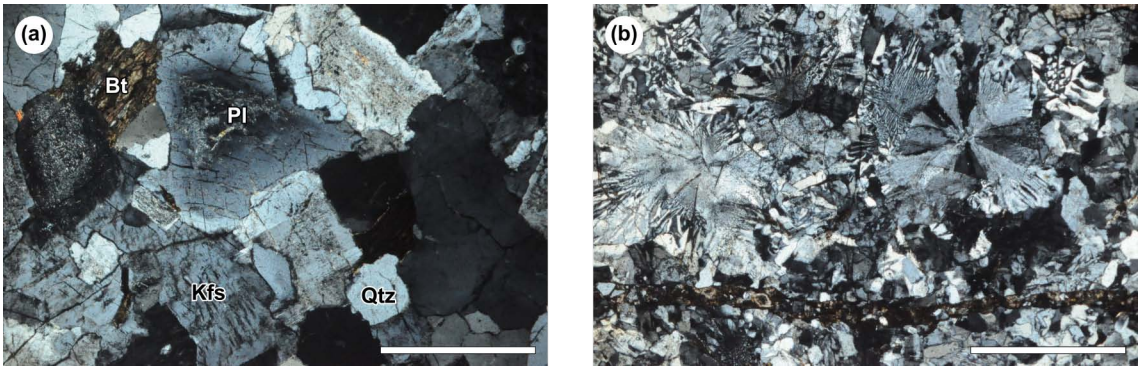

Fig. S1. Photomicrographs of igneous rock gravels collected from the Myojin Formation under cross-polarized light: **(a)** granite from Nimyo, **(b)** felsite from Namekawa2, **(c)** granite from Omogo2, **(d)** granodiorite from Omogo3, **(e)** tonalite from Omogo3, **(f)** quartz monzonite from Nimyo, **(g)** quartz monzodiorite from Namekawa1, **(h)** granite porphyry from Omogo1, **(i)** quartz porphyry from Omogo2, and **(j)** rhyolite from Tamatani. See Fig. 2 and Table S1 for sample locations. **(a, b)** Color images of Fig. 6a, b. The scale bar for **(i)** is 0.5 mm and 1 mm for the others. Abbreviations: Bt, biotite; Cal, calcite; Kfs, K-feldspar; Pl, plagioclase; Qtz, quartz; and Zrn, zircon.

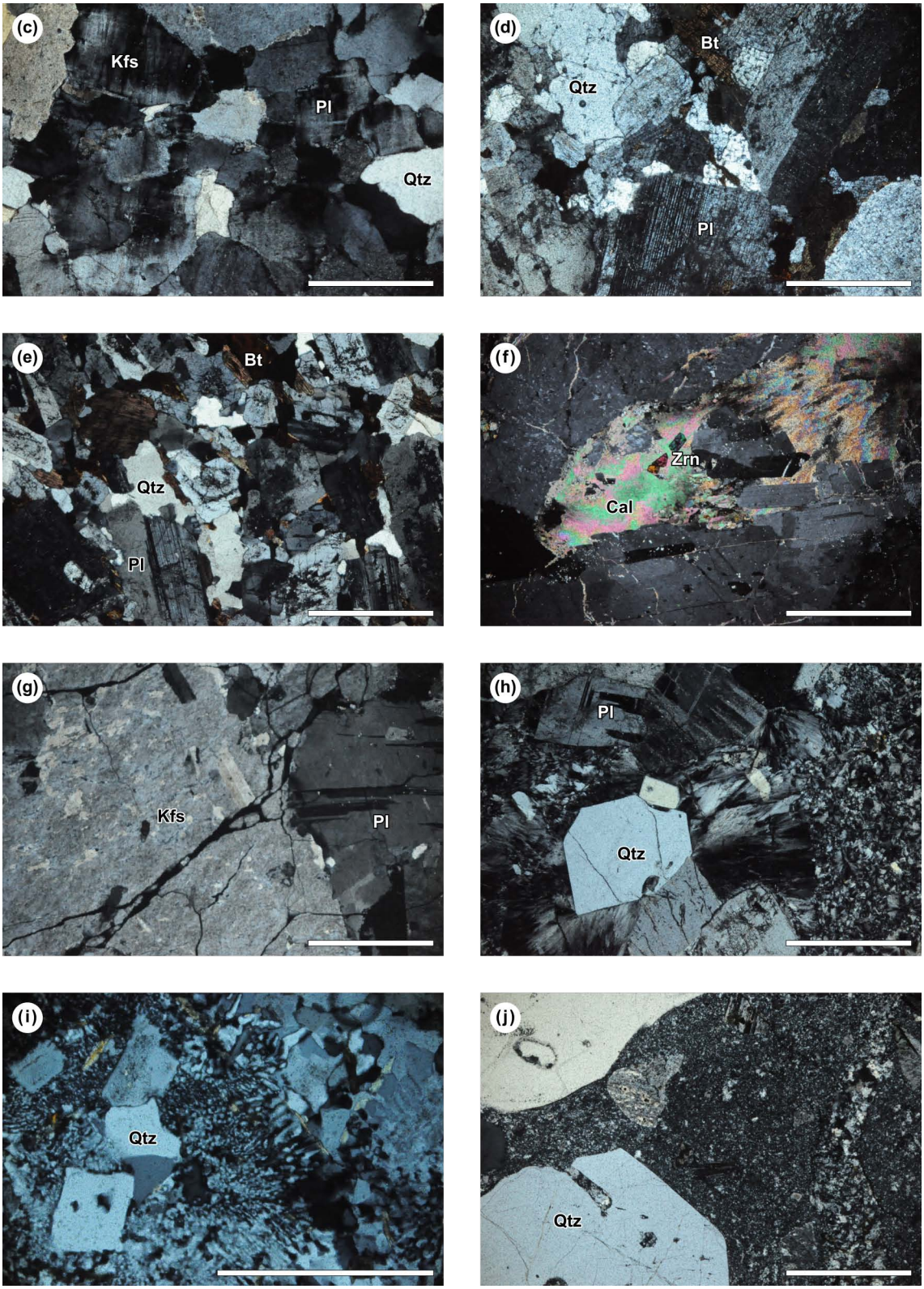

Fig. S1. Continued.

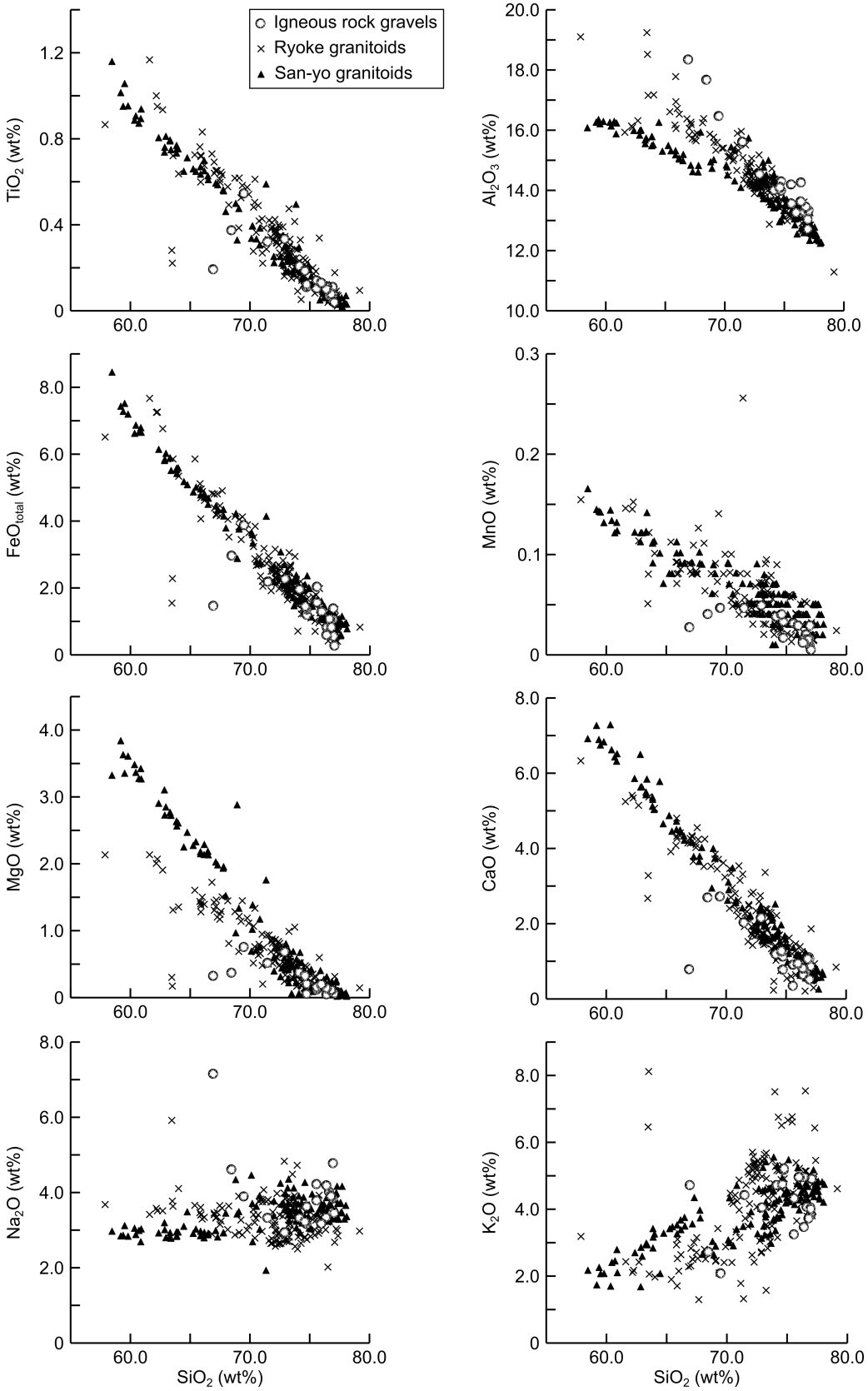

Fig. S2. Harker variation diagrams showing whole-rock major and trace element variations in igneous rock gravels of the Myojin Formation (this study) and the Ryoke and San-yo granitoids (Tomonari, 1974; Tenpaku, 1982; Ishihara, 2003; Taga et al., 2004; Akasaki et al., 2013; Ishihara and Ohno, 2016; Ikeda et al., 2019).

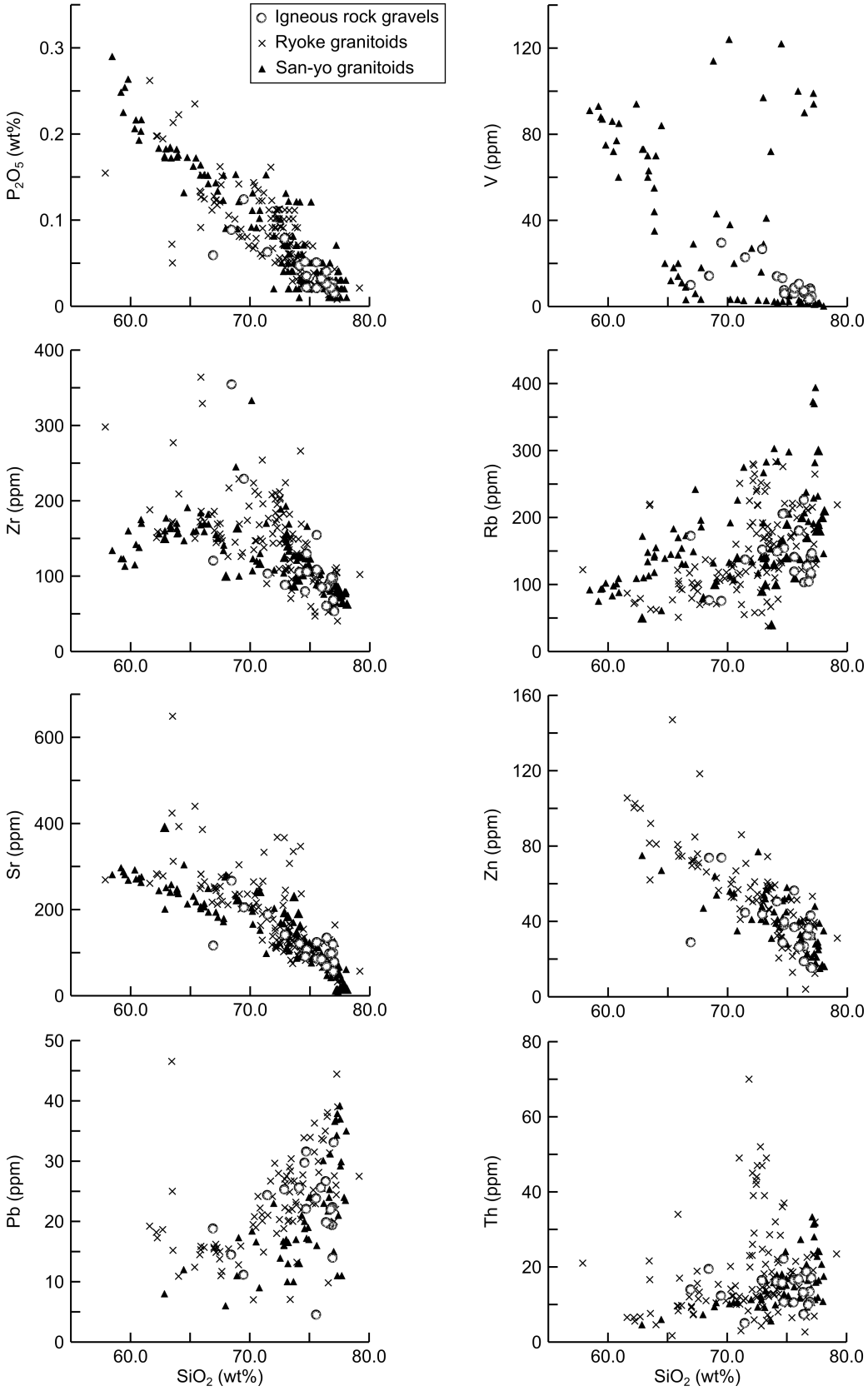

Fig. S2. Continued.

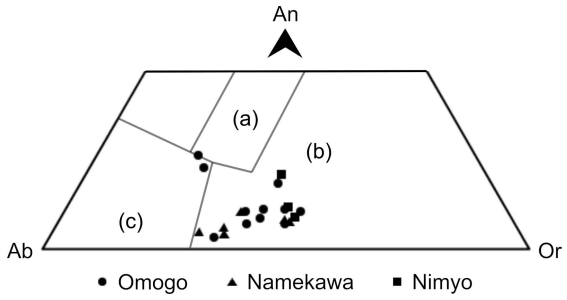

Fig. S3. Anorthite (An)–albite (Ab)–orthoclase (Or) normative ternary diagram of igneous rock gravels of the Myojin Formation collected from the Omogo, Namekawa, and Nimyo areas. Plutonic rock fields are shown for (a) granodiorite, (b) granite, and (c) trondhjemite, based on Barker (1979).