

**Supplementary Table 2** Whole-rock major (wt.%) and trace elements (ppm) compositions of the representative plutons

Pluton	Qingduxiang granodiorite						Longge'er gabbro				Standard sample	
Sample	QDX-1	QDX-2	QDX-3	QDX-4	QDX-5	QDX-6	LGR-1	LGR-2	LGR-3	LGR-4	GBW07105	Detection limit
<i>Major elements (wt.%)</i>												
SiO <sub>2</sub>	71.56	71.52	71.85	71.87	71.81	71.11	51.68	51.63	51.74	51.78	44.51	0.010
TiO <sub>2</sub>	0.35	0.33	0.35	0.35	0.33	0.34	1.71	1.71	1.71	1.73	2.35	0.006
Al <sub>2</sub> O <sub>3</sub>	14.36	14.37	14.17	14.16	14.24	14.68	16.09	16.34	16.34	16.42	13.81	0.010
<sup>T</sup> Fe <sub>2</sub> O <sub>3</sub>	2.66	2.51	2.74	2.75	2.6	2.66	6.61	6.38	6.47	6.37	13.29	0.010
<sup>T</sup> FeO	2.39	2.26	2.47	2.47	2.34	2.39	5.95	5.74	5.83	5.73	7.50	0.100
MnO	0.04	0.05	0.07	0.02	0.02	0.04	0.05	0.04	0.05	0.04	0.171	0.004
MgO	0.62	0.6	0.66	0.67	0.6	0.66	5.95	5.93	5.9	5.84	7.68	0.010
CaO	2.22	2.06	2.12	2.25	2.16	2.15	11.84	11.79	11.58	11.61	8.89	0.010
Na <sub>2</sub> O	3.52	3.4	3.41	3.5	3.41	3.44	3.26	3.36	3.31	3.33	3.41	0.010
K <sub>2</sub> O	4.08	4.56	4.08	3.84	4.23	4.32	0.48	0.47	0.5	0.49	2.29	0.010
P <sub>2</sub> O <sub>5</sub>	0.09	0.08	0.09	0.09	0.09	0.09	0.75	0.75	0.74	0.75	0.948	0.006
LOI	0.38	0.41	0.39	0.4	0.39	0.42	1.32	1.34	1.44	1.41		
Total	99.88	99.9	99.93	99.9	99.88	99.91	99.74	99.74	99.78	99.77		
Alkaline	7.6	7.96	7.49	7.34	7.64	7.76	3.74	3.83	3.81	3.82		
A/NK	1.41	1.36	1.41	1.43	1.4	1.42	2.73	2.71	2.73	2.73		
A/CNK	1.01	1.01	1.02	1.01	1.01	1.03	0.59	0.59	0.6	0.6		
Mg <sup>#</sup>	32	32	33	33	32	33	64	65	65	65		
Sample	QDX-1	QDX-2	QDX-3	QDX-4	QDX-5	QDX-6	LGR-1	LGR-2	LGR-3	LGR-4	GBW07312	Detection limit
<i>Trace elements (ppm)</i>												
La	27.4	22.4	29.3	24.0	34.7	32.1	49.3	50.2	49.5	45.2	31.2	0.033
Ce	51.6	69.6	66.1	63.1	71.2	70.4	104.0	106.0	104.0	95.1	59.0	0.059
Pr	6.16	5.20	6.48	5.40	7.22	7.08	13.10	13.50	13.40	12.10	6.76	0.011
Nd	22.4	19.7	23.7	20.0	25.7	26.2	50.7	51.7	51.3	47.0	25.2	0.038
Sm	4.41	4.20	4.64	4.17	5.02	5.33	8.56	8.97	8.64	8.10	4.86	0.011
Eu	0.87	0.91	0.90	0.89	1.01	1.00	1.90	1.97	1.90	1.79	0.564	0.003
Gd	3.38	3.70	3.74	3.54	4.12	4.34	6.68	6.94	6.46	6.36	4.25	0.010
Tb	0.59	0.63	0.63	0.60	0.70	0.74	1.02	1.10	1.00	1.02	0.777	0.005

Dy	3.68	4.12	3.96	3.82	4.48	4.82	5.92	6.38	5.71	6.04	4.44	0.012
Ho	0.75	0.85	0.80	0.78	0.90	0.98	1.12	1.22	1.08	1.15	0.879	0.005
Er	2.24	2.61	2.45	2.39	2.77	3.00	3.10	3.39	3.03	3.20	2.64	0.007
Tm	0.36	0.41	0.38	0.37	0.43	0.48	0.43	0.47	0.42	0.44	0.512	0.005
Yb	2.31	2.71	2.56	2.48	2.87	3.14	2.56	2.76	2.58	2.69	3.46	0.007
Lu	0.33	0.39	0.37	0.36	0.40	0.45	0.33	0.36	0.33	0.33	0.512	0.004
Y	21.1	25.3	23.8	23.2	26.2	28.8	31.0	33.4	29.6	31.5	26.2	0.050
Rb	149.2	163.0	147.3	146.1	163.5	162.1	27.1	28.7	26.7	29.0	275	0.070
Ba	668	802	643	598	728	652	44	49	48	49	194	0.441
Th	9.4	8.7	27.3	10.0	14.6	15.3	5.0	5.4	5.1	5.1	20.3	0.013
U	1.6	2.3	7.4	2.3	3.4	3.0	0.8	0.9	0.8	0.8	7.87	0.010
Nb	9.1	9.0	9.8	9.5	9.9	11.0	18.5	18.8	16.2	21.2	16.3	0.010
Ta	0.5	0.6	0.7	0.6	0.8	0.8	0.9	1.0	0.8	1.1	3.15	0.004
Pb	19.0	18.6	18.9	18.2	19.1	18.3	12.8	14.1	10.8	11.7	277	0.030
Sr	167	162	209	198	229	210	629	680	594	629	22.5	0.791
Zr	10	14	13	11	13	11	172	186	192	183	227	0.048
Hf	0.5	0.6	0.7	0.6	0.6	0.6	4.4	4.4	4.7	4.1	7.33	0.004
Ni	1.4	0.7	5.9	1.0	1.2	0.8	74.8	71.7	66.4	67.7	14.4	0.023
Co	3.0	2.9	3.1	3.1	2.9	3.3	12.9	13.4	11.9	12.0	8.95	0.007
Cr	1.5	0.9	1.7	0.9	2.0	2.0	175.0	165.0	142.0	151.0	35.3	0.005
ΣREE	126.45	137.4	145.96	131.85	161.47	160.03	248.66	254.9	249.3	230.56		
LREE/HREE	8.27	7.91	8.8	8.19	8.69	7.92	10.75	10.27	11.1	9.86		
(La/Yb) <sub>N</sub>	8.06	5.62	7.78	6.57	8.21	6.94	13.08	12.36	13.03	11.41		
Eu/Eu*	0.66	0.69	0.64	0.69	0.66	0.62	0.74	0.74	0.75	0.73		
Ce/Ce*	0.93	1.51	1.11	1.29	1.04	1.08	0.97	0.97	0.96	0.97		

Notes: LOI = loss on ignition,  ${}^T\text{FeO} = \text{FeO} + 0.8998 \times \text{Fe}_2\text{O}_3$ ,  ${}^T\text{Fe}_2\text{O}_3 = 1.111 \times \text{FeO} + \text{Fe}_2\text{O}_3$ , alkaline (wt.%) =  $\text{Na}_2\text{O} + \text{K}_2\text{O}$ ,  $\text{A/CNK} = \text{Al}_2\text{O}_3/(\text{CaO} + \text{Na}_2\text{O} + \text{K}_2\text{O})$  molar,  $\text{A/NK} = \text{Al}_2\text{O}_3/(\text{Na}_2\text{O} + \text{K}_2\text{O})$  molar,  $\text{Mg}^\# = 100 \times \text{molar Mg}^{2+}/(\text{Mg}^{2+} + {}^T\text{Fe}^{2+})$ ,  $\text{Eu/Eu}^* = 2 \times w(\text{Eu})_N/[w(\text{Sm})_N + w(\text{Gd})_N]$ ,  $\text{Ce/Ce}^* = 2 \times w(\text{Ce})_N/[w(\text{La})_N + w(\text{Pr})_N]$ ,  $(\text{La/Yb})_N$  = chondrite-normalized La/Yb ratio. N denotes normalization to chondrite values, using the chondrite compositions from [Sun and McDonough \(1989\)](#).

Sun, S.S., and McDonough, W.S., 1989, Chemical and isotopic systematics of oceanic basalts: implications for mantle composition and processes: Geological Society, London, Special Publications, v. 42, p. 313-345. <https://doi.org/10.1144/GSL.SP.1989.042.01.19>