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Data Repository

Appendix 1. Analytical methods

Appendix 2. Supplementary figure (Figure DR1)

Appendix 3. Supplementary data tables (Tables DR1–DR6)

References cited in this data repository

APPENDIX 1. ANALYTICAL METHODS

Zircon U–Pb dating

Cathodoluminescence (CL) imaging and U–Pb dating of zircons were carried out at the State Key Laboratory of Geological Processes and Mineral Resources (GPMR), China University of Geosciences, Wuhan, China. CL images were obtained on a JEOL Superprobe JXA 8100 under operating conditions of 20 kV and 20 nA. U–Pb dating and trace element analyses of zircons were conducted synchronously by laser ablation–inductively coupled plasma–mass spectrometry (LA-ICP-MS). Detailed operating conditions for the laser ablation system and the ICP-MS instrument and data reduction are the same as the description by Liu et al. (2008, 2010). Laser sampling was performed using a GeoLas 2005. An Agilent 7500a ICP-MS instrument was used to acquire ion-signal intensities. Off-line selection and integration of background and analyte signals, and time-drift correction and quantitative calibration for trace element analyses and U–Pb dating were performed by ICPMSDataCal (Liu et al., 2008, 2010). Zircon 91500 was used as an external standard for U–Pb dating and was analyzed twice every 5 analyses. Time-dependent drifts of U–Th–Pb isotopic ratios were corrected using a linear interpolation (with time) for every five analyses according to the variations of 91500 (Liu et al., 2010). Preferred U–Th–Pb isotopic ratios used for 91500 are from Wiedenbeck et al. (1995). The uncertainty of preferred values for the external standard 91500 was propagated to the ultimate results of the samples. Concordia diagrams and weighted mean calculations were made using Isoplot/Ex_ver3 (Ludwig, 2003). Trace element compositions of zircons were calibrated against multiple-reference materials (BCR-2G and BIR-1G) without applying internal standardization (Liu et al., 2008).

Electron probe microanalysis

Mineral compositions were determined by electron probe microanalysis using a JXA-8230 Superprobe at the Center for Material Research and Analysis, Wuhan University of Technology, Wuhan, China. Microanalysis utilized the following operating conditions: 15 kV accelerating voltage, 20 nA cup current and a 1–5 μm beam. Natural standards were used for the analysis of hornblende and plagioclase (Na–$NaAlSi_3O_8$, K–$KAlSi_3O_8$, Mg, Al and Si–$Mg_3Al_2Si_3O_{12}$, Ca–(Ca, Fe)SiO_3, Mn–$MnSiO_3$, Fe and Ti–$FeTiO_3$).

Major and trace element analysis

Major element analyses were carried out by X-ray fluorescence method at the Australian Laboratory Services (ALS) Laboratory Group's Mineral Division ALS Chemex in Guangzhou, China. The analytical precision is less than 5% for most major elements. Trace elements and rare earth elements were determined by using a Bruker M90 ICP-MS at the Institute of Geochemistry, Chinese Academy of Sciences, Guiyang, China. About 50mg of crushed powders were digested with 1 ml of HF and 0.5 ml of HNO_3 in PTFE-lined stainless steel bombs heated to 200 °C for 12 h. Insoluble residues were dissolved using 6 ml of 40% v/v HNO_3 heated to 140 °C for 3 h. Analytical calibration was accomplished using aqueous standard solutions. Rhodium was used as an internal standard to correct for matrix effects and instrument drift. Precisions were typically better than 5% RSD (Qi and Grégoire, 2000).

Sr–Nd isotope analysis

Sr–Nd isotopic analyses were conducted on a Finnigan MAT-261 mass spectrometer at the Wuhan Isotope Laboratory, Chinese Academy of Geological Sciences, Wuhan, China. Sample powders for Sr–Nd analyses were spiked with mixed isotope tracers, dissolved in Teflon screwtop beakers with HCl +$HClO_4$/HNO_3 acids. Isotopes were separated by conventional cation-exchange techniques. Procedural blanks were below 0.03 ng for Sm and Rb, and below 0.12 ng for Nd and Sr, respectively. Mass fractionation of Sr and Nd isotopic ratios were normalized to $^{86}Sr/^{88}Sr$ of 0.1194 and $^{146}Nd/^{144}Nd$ of 0.7219, respectively. Measured values of standards are as follows: NBS987 gave $^{87}Sr/^{86}Sr = 0.71025 \pm 8$ (2σ), while BCR-2 gave $^{143}Nd/^{144}Nd = 0.512643 \pm 15$ (2σ).

Zircon Hf isotope analysis

Zircon Hf isotope measurements were performed on the dated zircons using a Neptune Plus multicollector–inductively coupled plasma–mass spectrometry (MC-ICP-MS) (Thermo Fisher Scientific, Germany) in combination with a Geolas 2005 excimer ArF laser ablation system (Lambda Physik, Göttingen, Germany), at the GPMR. The analyses were undertaken using a spot size of 44 μm. Detailed operating conditions for the laser ablation system and the MC-ICP-MS instrument and analytical method are the same as the description by Hu et al. (2012). Off-line selection and integration of analyte signals and mass bias calibrations were performed using ICPMSDataCal (Liu et al., 2010). During analyses, the $^{176}Hf/^{177}Hf$ and $^{176}Lu/^{177}Hf$ ratios of the standard zircon (91500) were 0.282312 ± 11 (2σ, n = 12) and 0.00032, similar to the commonly accepted $^{176}Hf/^{177}Hf$ ratio of 0.282308 ± 6 (2σ) measured by the solution method (Blichert-Toft, 2008).

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APPENDIX 2. SUPPLEMENTARY FIGURE

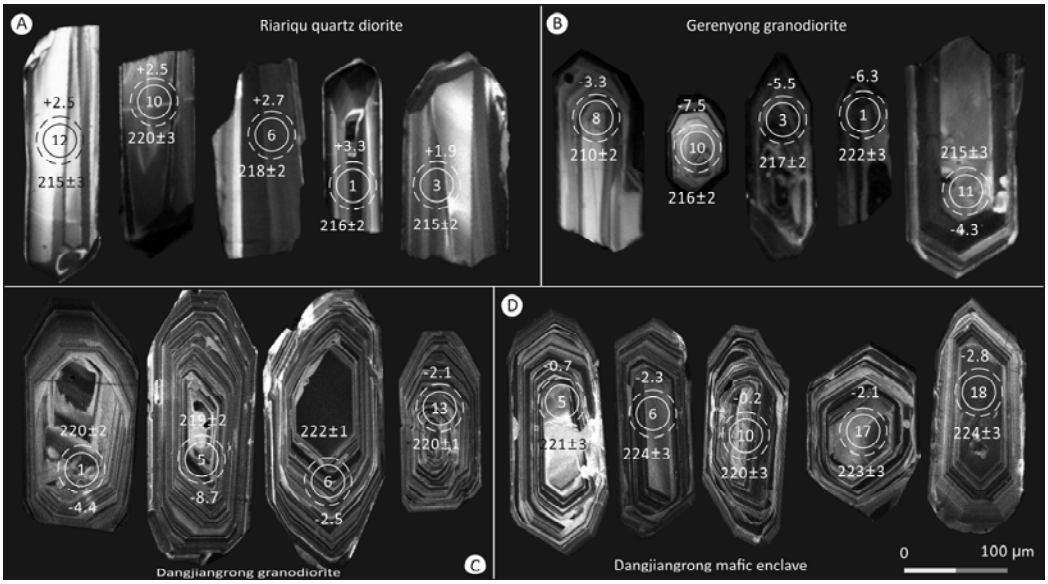

Figure DR1. Morphology and cathodoluminescence (CL) images of representative zircons from quartz diorite (A), granodiorite (B and C) and mafic enclave (D). Solid and dashed circles indicate the location of LA-ICPMS U–Pb analysis with $^{206}Pb/^{238}U$ age and LA-MC-ICP-MS Hf analysis with $\varepsilon_{Hf}(t)$ value, respectively.

APPENDIX 3. SUPPLEMENTARY DATA TABLES

Table DR1. Zircon LA-ICPMS U–Pb data and crystallization temperatures for Late Triassic high-Mg diorites and associated granitoids from the Zhiduo arc belt, northeast Tibetan Plateau.

Spot NO.	Ti	Th	U	Th/U	U-Th-Pb isotopic ratios						Age (Ma)						*T* (°C)
		(ppm)	(ppm)		$^{207}Pb/^{206}Pb$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{206}Pb$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ	
Riariqu quartz diorite (SC6)																	
SC6-01	6.44	750	1194	0.63	0.0535	0.0020	0.2556	0.0099	0.0344	0.0535	350	83	231	8	218	3	752
SC6-02	28.72	1235	1594	0.77	0.0534	0.0020	0.2835	0.0105	0.0383	0.0534	343	88	253	8	242	3	*918*
SC6-03	3.68	442	744	0.59	0.0521	0.0020	0.2482	0.0093	0.0344	0.0521	287	87	225	8	218	2	702
SC6-04	5.84	1803	1755	1.03	0.0534	0.0017	0.2585	0.0080	0.0347	0.0534	346	70	233	6	220	2	743
SC6-05	4.57	242	484	0.50	0.0482	0.0018	0.2292	0.0085	0.0342	0.0482	109	87	210	7	217	3	721
SC6-06	7.00	385	691	0.56	0.0527	0.0023	0.2527	0.0104	0.0345	0.0527	317	98	229	8	219	3	760
SC6-07	3.35	386	760	0.51	0.0531	0.0022	0.2579	0.0103	0.0348	0.0531	345	97	233	8	221	3	694
SC6-08	5.08	199	263	0.76	0.0469	0.0029	0.2332	0.0130	0.0345	0.0469	43	144	213	11	219	4	730
SC6-09	3.65	161	489	0.33	0.0514	0.0022	0.2700	0.0110	0.0378	0.0514	261	94	243	9	239	3	*701*
SC6-10	5.97	806	1235	0.65	0.0520	0.0017	0.2522	0.0083	0.0347	0.0520	287	79	228	7	220	2	745
SC6-11	4.37	364	559	0.65	0.0508	0.0027	0.2496	0.0121	0.0337	0.0508	235	124	226	10	214	3	717
SC6-12	13.26	1570	1592	0.99	0.0516	0.0016	0.2481	0.0077	0.0345	0.0516	265	77	225	6	219	2	826
SC6-13	5.74	1302	1315	0.99	0.0494	0.0018	0.2345	0.0082	0.0341	0.0494	169	86	214	7	216	2	742
SC6-14	5.88	82	145	0.56	0.0525	0.0038	0.2655	0.0167	0.0352	0.0525	309	139	239	13	223	4	744
SC6-15	4.63	152	244	0.62	0.0538	0.0028	0.3503	0.0177	0.0470	0.0538	361	117	305	13	296	3	*722*
SC6-16	-	456	669	0.68	0.0559	0.0021	0.2683	0.0100	0.0345	0.0559	450	83	241	8	218	2	
SC6-17	5.61	645	1088	0.59	0.0496	0.0016	0.2413	0.0078	0.0350	0.0496	176	76	219	6	222	2	739
SC6-18	22.33	1193	1406	0.85	0.0591	0.0020	0.2848	0.0096	0.0346	0.0591	572	74	254	8	219	2	886
SC6-19	3.64	608	849	0.72	0.0523	0.0019	0.2472	0.0087	0.0341	0.0523	298	85	224	7	216	2	701
Gerenyong granodiorite (GS2)																	
GS2-01	13.10	195	265	0.74	0.0542	0.0023	0.2618	0.0107	0.0351	0.0005	389	94	236	9	222	3	825
GS2-02	9.46	283	365	0.77	0.0531	0.0019	0.2525	0.0088	0.0344	0.0004	332	80	229	7	218	2	790
GS2-03	2.39	166	538	0.31	0.0510	0.0013	0.2409	0.0061	0.0343	0.0004	239	55	219	5	217	2	666
GS2-04	10.77	313	337	0.93	0.0528	0.0019	0.2535	0.0087	0.0349	0.0004	320	80	229	7	221	2	804
GS2-05	9.11	548	1111	0.49	0.0543	0.0014	0.2633	0.0077	0.0350	0.0006	383	56	237	6	222	4	787
GS2-06	12.41	109	195	0.56	0.0522	0.0023	0.2495	0.0108	0.0349	0.0005	295	98	226	9	221	3	819

GS2-07	7.81	98	165	0.59	0.0545	0.0035	0.2570	0.0151	0.0348	0.0006	391	144	232	12	220	4	771
GS2-08	6.91	426	578	0.74	0.0501	0.0019	0.2297	0.0083	0.0332	0.0003	211	81	210	7	210	2	759
GS2-09	8.80	70	150	0.47	0.0519	0.0026	0.2449	0.0121	0.0349	0.0005	283	115	222	10	221	3	783
GS2-10	5.42	1508	1825	0.83	0.0506	0.0010	0.2388	0.0051	0.0341	0.0004	220	79	217	4	216	2	736
GS2-11	5.45	54	145	0.37	0.0509	0.0031	0.2340	0.0137	0.0339	0.0005	235	136	214	11	215	3	737
GS2-12	8.12	170	219	0.78	0.0501	0.0020	0.2329	0.0095	0.0336	0.0004	211	97	213	8	213	2	775
GS2-13	7.55	84	179	0.47	0.0515	0.0027	0.2464	0.0118	0.0350	0.0005	261	88	224	10	222	3	768
GS2-14	17.35	155	516	0.30	0.0591	0.0014	0.4776	0.0148	0.0579	0.0012	572	56	396	10	363	7	*856*
GS2-15	5.10	99	200	0.49	0.0714	0.0015	1.5914	0.0375	0.1605	0.0021	969	44	967	15	960	12	*731*
GS2-16	10.21	124	218	0.57	0.0509	0.0024	0.2429	0.0114	0.0347	0.0005	239	111	221	9	220	3	798
GS2-17	2.86	1363	1944	0.70	0.0508	0.0010	0.2407	0.0044	0.0342	0.0003	232	44	219	4	217	2	681
GS2-18	6.41	806	1155	0.70	0.0580	0.0012	0.2747	0.0056	0.0342	0.0003	532	46	246	4	217	2	752
GS2-19	10.53	161	202	0.80	0.0516	0.0025	0.2446	0.0115	0.0347	0.0005	333	113	222	9	220	3	801
GS2-20	8.31	202	280	0.72	0.0499	0.0019	0.2320	0.0089	0.0337	0.0004	191	89	212	7	214	2	777
Dangjiangrong granodiorite (B6067-1)																	
B6067-1-01	3.03	91	274	0.33	0.0506	0.0018	0.2423	0.0092	0.0347	0.0506	223	83	220	8	220	3	685
B6067-1-02	27.56	258	606	0.42	0.0507	0.0012	0.2432	0.0069	0.0348	0.0507	229	55	221	6	220	3	912
B6067-1-03	13.18	232	513	0.45	0.0505	0.0012	0.2421	0.0069	0.0348	0.0505	219	56	220	6	220	3	825
B6067-1-04	7.72	156	400	0.39	0.0500	0.0012	0.2420	0.0069	0.0351	0.0500	196	56	220	6	222	3	770
B6067-1-05	5.16	119	385	0.31	0.0506	0.0013	0.2411	0.0071	0.0346	0.0506	221	59	219	6	219	3	732
B6067-1-06	3.78	147	441	0.33	0.0508	0.0012	0.2456	0.0072	0.0351	0.0508	230	58	223	6	222	3	704
B6067-1-07	1.83	234	613	0.38	0.0520	0.0016	0.2479	0.0087	0.0346	0.0520	286	74	225	7	219	3	645
B6067-1-08	3.40	185	416	0.44	0.0500	0.0014	0.2426	0.0080	0.0352	0.0500	194	69	221	7	223	3	695
B6067-1-09	3.54	166	424	0.39	0.0508	0.0013	0.2459	0.0073	0.0351	0.0508	234	59	223	6	222	3	698
B6067-1-10	3.27	276	655	0.42	0.0490	0.0017	0.2339	0.0088	0.0346	0.0490	148	81	213	7	219	3	692
B6067-1-11	14.37	110	354	0.31	0.0507	0.0013	0.2434	0.0072	0.0348	0.0507	226	60	221	6	221	3	835
B6067-1-12	-	159	439	0.36	0.0504	0.0017	0.2423	0.0090	0.0349	0.0504	212	80	220	7	221	3	
B6067-1-13	6.90	182	522	0.35	0.0506	0.0012	0.2422	0.0068	0.0347	0.0506	223	55	220	6	220	3	759
B6067-1-14	3.71	295	689	0.43	0.0525	0.0015	0.2506	0.0079	0.0346	0.0525	309	64	227	6	219	3	703
B6067-1-15	43.26	174	454	0.38	0.0508	0.0016	0.2425	0.0084	0.0346	0.0508	234	73	220	7	219	3	973
B6067-1-16	4.02	444	749	0.59	0.0520	0.0014	0.2484	0.0079	0.0346	0.0520	285	64	225	6	220	3	709
B6067-1-17	6.42	405	631	0.64	0.0508	0.0015	0.2447	0.0080	0.0350	0.0508	230	68	222	7	221	3	752
B6067-1-18	3.92	374	627	0.60	0.0510	0.0013	0.2453	0.0074	0.0349	0.0510	239	61	223	6	221	3	707

B6067-1-19	2.54	195	519	0.38	0.0508	0.0012	0.2439	0.0071	0.0348	0.0508	233	57	222	6	221	3	671
B6067-1-20	7.00	322	731	0.44	0.0508	0.0017	0.2444	0.0090	0.0349	0.0508	229	79	222	7	221	3	760
Dangjiangrong mafic enclave (B6067-2)																	
B6067-2-01	9.46	213	503	0.42	0.0505	0.0017	0.2453	0.0091	0.0352	0.0005	219	82	223	7	223	3	790
B6067-2-02	2.74	132	373	0.35	0.0510	0.0013	0.2454	0.0074	0.0349	0.0005	241	62	223	6	221	3	677
B6067-2-03	18.22	187	423	0.44	0.0503	0.0015	0.2457	0.0081	0.0354	0.0005	211	70	223	7	224	3	862
B6067-2-04	3.08	120	392	0.31	0.0512	0.0013	0.2453	0.0074	0.0348	0.0005	248	61	223	6	220	3	687
B6067-2-05	4.82	240	585	0.41	0.0509	0.0017	0.2446	0.0087	0.0349	0.0005	235	77	222	7	221	3	726
B6067-2-06	4.43	221	474	0.47	0.0508	0.0014	0.2478	0.0079	0.0354	0.0005	229	66	225	6	224	3	718
B6067-2-07	2.27	105	328	0.32	0.0507	0.0017	0.2453	0.0091	0.0351	0.0005	228	80	223	7	222	3	662
B6067-2-08	2.87	119	317	0.38	0.0508	0.0013	0.2440	0.0073	0.0348	0.0005	234	61	222	6	221	3	681
B6067-2-09	20.51	213	537	0.40	0.0513	0.0014	0.2449	0.0077	0.0347	0.0005	253	64	222	6	220	3	876
B6067-2-10	3.36	151	407	0.37	0.0535	0.0016	0.2563	0.0084	0.0347	0.0005	351	67	232	7	220	3	694
B6067-2-11	3.54	228	567	0.40	0.0510	0.0013	0.2472	0.0076	0.0351	0.0005	242	61	224	6	223	3	698
B6067-2-12	1.76	148	362	0.41	0.0513	0.0013	0.2459	0.0076	0.0347	0.0005	256	60	223	6	220	3	642
B6067-2-13	5.28	215	380	0.57	0.0507	0.0014	0.2459	0.0077	0.0352	0.0005	229	63	223	6	223	3	734
B6067-2-14	3.61	116	341	0.34	0.0499	0.0013	0.2399	0.0074	0.0349	0.0005	188	62	218	6	221	3	700
B6067-2-15	-	176	462	0.38	0.0513	0.0013	0.2457	0.0075	0.0347	0.0005	256	60	223	6	220	3	
B6067-2-16	2.84	152	364	0.42	0.0510	0.0022	0.2447	0.0112	0.0348	0.0006	239	102	222	9	221	3	680
B6067-2-17	5.40	165	463	0.36	0.0510	0.0013	0.2468	0.0074	0.0351	0.0005	239	58	224	6	223	3	736
B6067-2-18	3.97	200	422	0.47	0.0510	0.0013	0.2492	0.0075	0.0354	0.0005	242	59	226	6	224	3	708
B6067-2-19	11.14	135	446	0.30	0.0510	0.0014	0.2454	0.0081	0.0349	0.0005	242	67	223	7	221	3	807
B6067-2-20	4.89	213	450	0.47	0.0499	0.0015	0.2413	0.0081	0.0350	0.0005	192	69	219	7	222	3	727

Note: - invalid data; Temperatures were calculated following the revised calibration of Ferry and Watson (2007): [log (ppm Ti-in-zircon) + logαSiO_2 − logαTiO_2] = A_2 + B_2/T, where A2 = 5.711 ± 0.072; B2 = −4,800 ± 86;

α is activity. Petrography shows that all the studied samples have quartz but no rutile (Fig. 3). The activity of SiO_2 and TiO_2 thus were set as 1 and 0.6, respectively (Watson and Harrison, 2005).

Table DR2. Chemical compositions (wt.%) and structural formulae of amphiboles in Late Triassic high-Mg diorites and associated granitoids from the Zhiduo arc belt, northeast Tibetan Plateau.

Intrusion	Riariqu																
Type Note	Quartz diorite (sample SC2)																
Spot No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1
SiO_2	44.07	46.14	46.71	47.89	47.68	47.25	47.30	47.61	47.36	47.21	47.51	46.73	45.49	46.61	45.33	45.24	43.51
TiO_2	1.18	1.05	1.00	1.60	1.36	1.53	1.64	1.24	1.31	1.24	1.26	1.45	1.25	1.41	1.05	1.22	1.06
Al_2O_3	10.12	8.51	8.09	6.12	6.34	6.68	6.56	6.77	6.46	6.91	6.67	7.42	8.41	7.41	9.04	8.88	11.24
Cr2O3	0.03	0.01	0.02	0.07	0.04	0.05	0.12	0.09	0.11	0.11	0.04	0.06	0.05	0.05	0.02	0.01	0.00
FeO	16.85	18.09	17.28	17.37	17.31	17.33	17.25	17.55	16.93	17.25	16.62	18.19	17.69	17.91	17.74	17.78	17.36
MnO	0.39	0.45	0.40	0.49	0.42	0.47	0.41	0.52	0.47	0.45	0.49	0.47	0.44	0.49	0.42	0.44	0.38
MgO	9.15	10.17	10.53	11.13	11.39	11.14	11.17	10.87	11.21	10.56	11.00	10.37	10.39	10.42	9.91	9.77	9.06
CaO	12.03	11.51	11.80	11.30	11.59	11.61	11.51	11.35	11.63	11.70	11.40	10.87	11.51	11.41	11.79	11.64	12.42
Na_2O	1.13	1.11	0.94	0.91	0.88	0.96	1.02	0.92	0.88	0.84	0.85	1.06	1.11	1.13	1.10	1.10	1.11
K_2O	0.58	0.39	0.35	0.17	0.19	0.26	0.24	0.28	0.24	0.29	0.27	0.37	0.42	0.40	0.45	0.46	0.64
Total	95.53	97.42	97.11	97.04	97.21	97.27	97.22	97.20	96.60	96.56	96.11	96.97	96.76	97.22	96.86	96.54	96.77
$Mg^{\#}$	49.47	56.80	56.94	60.24	61.23	59.76	59.73	59.50	59.94	56.21	59.48	59.42	58.39	56.74	54.65	54.18	49.47
T site																	
Si	6.74	6.85	6.94	7.08	7.04	6.99	7.01	7.04	7.05	7.06	7.09	6.93	6.79	6.94	6.79	6.80	6.59
^{IV}Al	1.26	1.15	1.06	0.92	0.96	1.01	0.99	0.96	0.95	0.94	0.91	1.07	1.21	1.06	1.21	1.20	1.41
C site																	
^{IV}Al	0.57	0.33	0.36	0.15	0.15	0.16	0.15	0.22	0.18	0.28	0.27	0.22	0.27	0.23	0.39	0.38	0.59
Fe^{3+}	0.02	0.53	0.38	0.53	0.55	0.49	0.48	0.54	0.45	0.32	0.41	0.69	0.56	0.47	0.39	0.38	0.11
Ti	0.14	0.12	0.11	0.18	0.15	0.17	0.18	0.14	0.15	0.14	0.14	0.16	0.14	0.16	0.12	0.14	0.12
Cr	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00
Mn	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.05
Mg	2.09	2.25	2.33	2.45	2.51	2.46	2.47	2.40	2.49	2.36	2.45	2.29	2.31	2.31	2.21	2.19	2.04
Fe^{2+}	2.13	1.71	1.76	1.62	1.59	1.66	1.66	1.63	1.66	1.83	1.67	1.57	1.65	1.76	1.84	1.85	2.09
B site																	
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	1.97	1.83	1.88	1.79	1.83	1.84	1.83	1.80	1.86	1.87	1.82	1.73	1.84	1.82	1.89	1.87	2.01

Na	0.03	0.17	0.12	0.21	0.17	0.16	0.17	0.20	0.14	0.13	0.18	0.27	0.16	0.18	0.11	0.13	
A site																	
Na	0.31	0.15	0.15	0.05	0.09	0.12	0.12	0.06	0.11	0.12	0.07	0.03	0.16	0.14	0.21	0.20	0.34
K	0.11	0.07	0.07	0.03	0.04	0.05	0.05	0.05	0.05	0.06	0.05	0.07	0.08	0.08	0.09	0.09	0.12
P (Kbar)	5.67	4.07	3.73	2.07	2.25	2.54	2.44	2.60	2.38	2.79	2.58	3.16	4.03	3.17	4.59	4.48	6.53

Table DR2 (continued)

Intrusion	Riariqu														Gerenyong		
Type Note	Quartz diorite (sample SC3)														Granodiorite (sample HS3)		
Spot No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3
SiO_2	43.68	44.03	44.09	45.64	44.39	48.10	50.27	49.08	48.06	48.86	48.95	48.63	46.68	46.07	50.31	47.83	49.37
TiO_2	1.09	1.09	1.16	0.88	0.88	1.00	0.65	0.83	0.95	1.05	1.02	1.17	1.39	1.28	0.63	0.97	0.70
Al_2O_3	11.63	10.99	10.69	9.31	10.31	6.20	5.03	5.51	5.59	5.79	5.59	5.95	7.77	8.43	5.83	7.35	5.91
Cr2O3	0.00	0.00	0.06	0.04	0.09	0.15	0.08	0.09	0.08	0.07	0.10	0.07	0.03	0.05	0.04	0.07	0.07
FeO	17.90	17.15	17.90	17.46	17.60	17.30	16.38	16.90	16.32	16.85	16.30	16.85	17.35	17.39	15.08	15.25	15.57
MnO	0.34	0.35	0.37	0.37	0.27	0.54	0.45	0.46	0.40	0.47	0.46	0.43	0.43	0.48	0.35	0.42	0.43
MgO	8.84	9.11	9.53	10.53	10.01	12.04	12.72	11.94	12.24	11.98	11.83	11.86	10.73	10.54	11.91	11.81	11.66
CaO	12.24	12.13	12.24	12.24	12.28	11.45	11.62	11.46	11.34	11.37	11.45	11.63	11.69	11.63	12.79	12.46	12.24
Na_2O	1.14	1.08	1.05	0.97	0.97	0.75	0.57	0.64	0.59	0.74	0.73	0.72	0.96	1.05	0.57	0.67	0.59
K_2O	0.73	0.65	0.61	0.44	0.53	0.24	0.16	0.19	0.24	0.25	0.23	0.24	0.34	0.42	0.52	0.42	0.55
Total	97.60	96.59	97.71	97.87	97.32	97.78	97.93	97.10	95.81	97.43	96.66	97.55	97.36	97.32	98.03	97.27	97.09
$Mg^{\#}$	48.96	50.03	53.06	57.48	55.75	67.20	67.09	64.33	67.69	64.91	62.60	63.15	58.35	58.42	55.35	59.95	57.18
T site																	
Si	6.55	6.65	6.58	6.75	6.62	7.01	7.28	7.20	7.13	7.15	7.23	7.13	6.91	6.83	7.40	7.07	7.32
^{IV}Al	1.45	1.35	1.42	1.25	1.38	0.99	0.72	0.80	0.87	0.85	0.77	0.87	1.09	1.17	0.60	0.93	0.68
C site																	
^{IV}Al	0.61	0.61	0.46	0.37	0.44	0.08	0.14	0.16	0.10	0.14	0.20	0.15	0.27	0.30	0.41	0.35	0.35
Fe^{3+}	0.18	0.12	0.36	0.44	0.43	0.83	0.64	0.63	0.73	0.65	0.46	0.55	0.46	0.50		0.15	0.00
Ti	0.12	0.12	0.13	0.10	0.10	0.11	0.07	0.09	0.11	0.12	0.11	0.13	0.16	0.14	0.07	0.11	0.08
Cr	0.00	0.00	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01
Mn	0.04	0.04	0.05	0.05	0.03	0.07	0.05	0.06	0.05	0.06	0.06	0.05	0.05	0.06	0.04	0.05	0.05
Mg	1.98	2.05	2.12	2.32	2.23	2.62	2.75	2.61	2.71	2.61	2.60	2.59	2.37	2.33	2.61	2.60	2.58
Fe^{2+}	2.06	2.05	1.88	1.72	1.77	1.28	1.35	1.45	1.29	1.41	1.56	1.51	1.69	1.66	2.11	1.74	1.93
B site																	
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	1.97	1.96	1.96	1.94	1.96	1.79	1.80	1.80	1.80	1.78	1.81	1.83	1.85	1.85	2.02	1.97	1.94

Na	0.03	0.04	0.04	0.06	0.04	0.21	0.20	0.20	0.20	0.22	0.19	0.17	0.15	0.15		0.03	0.06
A site																	
Na	0.30	0.28	0.26	0.22	0.24	0.00					0.02	0.03	0.13	0.15	0.18	0.17	0.11
K	0.14	0.13	0.12	0.08	0.10	0.05	0.03	0.04	0.04	0.05	0.04	0.05	0.06	0.08	0.10	0.08	0.10
P (Kbar)	6.78	6.31	5.94	4.71	5.62	2.06	1.08	1.52	1.64	1.74	1.62	1.88	3.45	4.00	1.80	3.08	1.90

Table DR2 (continued)

Intrusion	Gerenyong																
Type Note	Granodiorite (sample HS3)																
Spot No.	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SiO_2	49.04	45.68	48.07	47.10	46.61	47.03	47.35	47.14	47.12	47.97	47.24	48.98	44.18	49.75	49.78	51.24	49.83
TiO_2	0.84	1.19	1.54	1.70	2.08	2.25	2.26	2.07	1.91	1.54	1.51	1.28	1.66	1.16	0.99	0.24	0.68
Al_2O_3	5.78	7.28	6.76	7.39	7.61	7.49	7.29	7.62	7.49	6.75	7.46	6.01	8.69	5.23	5.65	4.51	5.70
Cr2O3	0.09	0.20	0.21	0.12	0.14	0.17	0.19	0.23	0.26	0.15	0.17	0.11	0.36	0.11	0.07	0.10	0.07
FeO	15.27	15.95	15.47	15.88	16.06	16.49	16.31	16.21	16.27	16.18	16.25	15.60	16.28	15.67	15.49	14.96	15.27
MnO	0.41	0.47	0.46	0.41	0.44	0.46	0.43	0.39	0.44	0.46	0.40	0.41	0.45	0.51	0.52	0.34	0.38
MgO	11.51	12.84	11.41	10.74	11.03	10.75	11.00	10.96	10.79	11.28	11.01	11.75	12.94	12.10	11.81	12.90	12.20
CaO	12.19	12.29	12.25	12.03	11.76	11.52	11.95	11.67	11.71	11.45	11.78	12.32	11.36	12.11	12.49	13.06	13.12
Na_2O	0.67	0.65	0.72	0.92	1.06	1.03	1.25	1.09	1.08	0.97	1.05	0.69	0.91	0.70	0.55	0.35	0.45
K_2O	0.55	0.48	0.49	0.58	0.57	0.56	0.55	0.55	0.55	0.40	0.55	0.44	0.44	0.31	0.39	0.21	0.43
Total	96.35	97.04	97.38	96.87	97.36	97.74	98.58	97.94	97.61	97.16	97.42	97.60	97.27	97.64	97.74	97.91	98.11
$Mg^{\#}$	55.90	71.12	56.88	54.08	57.35	56.40	54.77	56.83	55.69	59.42	56.97	57.48	81.52	59.61	56.99	59.65	56.95
T site																	
Si	7.34	6.73	7.13	7.05	6.92	6.96	6.98	6.96	6.99	7.09	7.01	7.23	6.44	7.31	7.33	7.50	7.33
^{IV}Al	0.66	1.27	0.87	0.95	1.08	1.04	1.02	1.04	1.01	0.91	0.99	0.77	1.56	0.69	0.67	0.50	0.67
C site																	
^{IV}Al	0.36	0.00	0.31	0.36	0.26	0.26	0.25	0.28	0.30	0.27	0.31	0.28		0.22	0.31	0.28	0.32
Fe^{3+}		0.82	0.01		0.18	0.21	0.01	0.17	0.12	0.30	0.18	0.01	1.35	0.13			
Ti	0.09	0.13	0.17	0.19	0.23	0.25	0.25	0.23	0.21	0.17	0.17	0.14	0.18	0.13	0.11	0.03	0.07
Cr	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.01	0.04	0.01	0.01	0.01	0.01
Mn	0.05	0.06	0.06	0.05	0.05	0.06	0.05	0.05	0.05	0.06	0.05	0.05	0.06	0.06	0.06	0.04	0.05
Mg	2.57	2.82	2.52	2.40	2.44	2.37	2.42	2.41	2.39	2.49	2.44	2.59	2.81	2.65	2.59	2.81	2.68
Fe^{2+}	2.03	1.15	1.91	2.04	1.82	1.83	2.00	1.83	1.90	1.70	1.84	1.91	0.64	1.80	1.96	1.90	2.02
B site																	
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	1.96	1.94	1.95	1.93	1.87	1.83	1.89	1.85	1.86	1.81	1.87	1.95	1.77	1.91	1.97	2.05	2.07

Na	0.04	0.06	0.05	0.07	0.13	0.17	0.11	0.15	0.14	0.19	0.13	0.05	0.23	0.09	0.03		
A site																	
Na	0.15	0.13	0.15	0.20	0.18	0.12	0.25	0.16	0.17	0.09	0.17	0.15	0.03	0.10	0.13	0.15	0.19
K	0.10	0.09	0.09	0.11	0.11	0.10	0.10	0.10	0.10	0.08	0.10	0.08	0.08	0.06	0.07	0.04	0.08
P (Kbar)	1.84	3.01	2.61	3.20	3.33	3.21	3.02	3.30	3.22	2.59	3.20	1.97	4.09	1.30	1.66	0.69	1.69

Table DR2 (continued)

Intrusion					Dangjiangrong												
Type Note					Granodiortie (sample B6063)												
Spot No.	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	12	13
SiO_2	49.34	48.39	48.88	49.49	47.92	49.81	47.05	46.43	46.87	45.83	46.61	46.46	46.76	46.72	46.15	46.04	46.31
TiO_2	0.88	0.97	0.94	0.63	0.66	0.46	0.81	0.82	0.82	0.98	0.83	0.92	0.92	0.84	0.99	0.97	0.90
Al_2O_3	6.59	6.32	6.58	6.63	6.21	5.13	7.46	7.96	7.22	8.44	7.50	7.58	7.57	7.57	7.92	8.03	7.42
Cr2O3	0.05	0.01	0.03	0.12	0.01	0.01	0.02	0.03	0.01	0.00	0.02	0.04	0.04	0.06	0.00	0.01	0.00
FeO	15.22	15.58	15.64	15.06	18.98	17.99	19.29	18.82	19.06	19.10	19.11	19.30	18.36	18.98	19.26	19.23	18.85
MnO	0.43	0.41	0.42	0.41	0.73	0.58	0.69	0.74	0.71	0.69	0.66	0.71	0.71	0.71	0.71	0.69	0.65
MgO	11.55	11.87	11.72	11.86	9.52	10.69	9.09	9.34	9.22	8.75	9.23	9.09	9.29	9.32	8.66	8.64	9.04
CaO	12.97	12.74	12.63	12.68	12.06	12.44	11.90	11.74	12.00	11.64	11.81	12.01	12.12	12.06	12.30	12.06	11.80
Na_2O	0.57	0.53	0.54	0.46	0.73	0.44	0.88	0.94	0.91	1.13	0.95	0.87	0.87	0.78	0.90	0.95	0.94
K_2O	0.41	0.51	0.47	0.47	0.62	0.37	0.68	0.64	0.58	0.58	0.57	0.60	0.66	0.69	0.75	0.76	0.69
Total	98.00	97.32	97.86	97.80	97.44	97.90	97.88	97.46	97.39	97.14	97.29	97.57	97.30	97.73	97.65	97.37	96.58
$Mg^{\#}$	54.47	57.90	57.47	57.72	48.39	52.35	47.64	50.61	47.96	47.43	49.08	48.00	47.84	49.10	44.34	44.91	47.51
T site																	
Si	7.28	7.18	7.20	7.27	7.21	7.39	7.05	6.96	7.06	6.92	7.01	6.99	7.05	7.01	6.99	6.98	7.04
^{IV}Al	0.72	0.82	0.80	0.73	0.79	0.61	0.95	1.04	0.94	1.08	0.99	1.01	0.95	0.99	1.01	1.02	0.96
C site																	
^{IV}Al	0.42	0.28	0.34	0.42	0.31	0.28	0.37	0.36	0.34	0.42	0.34	0.33	0.40	0.34	0.40	0.41	0.37
Fe^{3+}		0.02	0.02		0.11	0.08	0.18	0.32	0.16	0.23	0.26	0.22	0.04	0.22		0.04	0.13
Ti	0.10	0.11	0.10	0.07	0.07	0.05	0.09	0.09	0.09	0.11	0.09	0.10	0.10	0.10	0.11	0.11	0.10
Cr	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Mn	0.05	0.05	0.05	0.05	0.09	0.07	0.09	0.09	0.09	0.09	0.08	0.09	0.09	0.09	0.09	0.09	0.08
Mg	2.54	2.62	2.57	2.60	2.13	2.36	2.03	2.09	2.07	1.97	2.07	2.04	2.09	2.08	1.95	1.95	2.05
Fe^{2+}	2.12	1.91	1.90	1.90	2.28	2.15	2.23	2.04	2.25	2.18	2.15	2.21	2.28	2.16	2.45	2.39	2.26
B site																	
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	2.05	2.03	1.99	2.00	1.94	1.98	1.91	1.88	1.94	1.88	1.90	1.94	1.96	1.94	2.00	1.96	1.92

Na			0.01	0.00	0.06	0.02	0.09	0.12	0.06	0.12	0.10	0.06	0.04	0.06	0.00	0.04	0.08
A site																	
Na	0.21	0.18	0.15	0.13	0.16	0.10	0.17	0.16	0.20	0.21	0.18	0.19	0.21	0.16	0.26	0.24	0.20
K	0.08	0.10	0.09	0.09	0.12	0.07	0.13	0.12	0.11	0.11	0.11	0.11	0.13	0.13	0.15	0.15	0.13
P (Kbar)	2.44	2.25	2.43	2.45	2.23	1.26	3.26	3.68	3.09	4.14	3.32	3.39	3.39	3.36	3.72	3.82	3.32

Table DR2 (continued)

Intrusion	Dangjiangrong													Dangjiangrong			
Type Note	Granodiortie (sample B6063)													Mafic enclave (sample DJR2)			
Spot No.	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4
SiO_2	46.18	47.83	46.12	46.35	45.95	48.13	47.03	47.09	47.31	48.18	48.53	48.95	48.58	48.25	47.84	48.30	47.85
TiO_2	0.98	0.66	1.05	1.01	1.21	0.83	1.04	1.08	1.11	0.61	0.53	0.53	0.40	0.57	0.68	0.61	0.92
Al_2O_3	7.94	5.96	7.98	7.79	8.19	6.25	7.28	6.88	6.70	6.28	5.70	5.10	5.54	6.54	6.69	6.34	6.70
Cr2O3	0.01	0.04	0.03	0.04	0.02	0.02	0.00	0.01	0.07	0.03	0.03	0.01	0.03	0.00	0.00	0.01	0.02
FeO	19.14	19.01	19.03	19.20	19.14	17.88	18.09	18.62	18.03	18.90	18.27	18.74	18.93	17.67	17.56	17.67	17.79
MnO	0.73	0.66	0.69	0.73	0.68	0.66	0.71	0.73	0.66	0.76	0.64	0.71	0.74	0.58	0.56	0.65	0.61
MgO	8.93	9.32	8.90	8.82	8.73	9.70	9.46	9.28	9.57	9.55	10.31	10.09	9.90	10.12	10.17	10.54	10.33
CaO	11.70	12.59	12.14	11.77	12.06	12.17	12.25	12.09	11.92	12.08	12.49	12.28	11.85	12.33	12.49	12.34	12.25
Na_2O	0.90	0.65	0.90	0.95	1.00	0.75	0.81	0.86	0.88	0.70	0.51	0.57	0.63	0.59	0.67	0.55	0.70
K_2O	0.67	0.53	0.75	0.66	0.73	0.52	0.65	0.53	0.55	0.55	0.50	0.42	0.48	0.61	0.62	0.54	0.62
Total	97.17	97.26	97.58	97.31	97.71	96.89	97.31	97.16	96.81	97.64	97.50	97.40	97.07	97.26	97.28	97.55	97.78
$Mg^{\#}$	48.32	45.57	46.26	46.90	45.47	48.13	47.90	47.39	48.80	48.73	51.25	50.09	51.25	50.61	50.31	53.40	52.35
T site																	
Si	6.96	7.25	6.96	6.99	6.94	7.27	7.09	7.11	7.15	7.22	7.26	7.34	7.29	7.23	7.19	7.20	7.13
^{IV}Al	1.04	0.75	1.04	1.01	1.06	0.73	0.91	0.89	0.85	0.78	0.74	0.66	0.71	0.77	0.81	0.80	0.87
C site																	
^{IV}Al	0.37	0.32	0.38	0.38	0.39	0.38	0.39	0.34	0.34	0.33	0.27	0.24	0.27	0.39	0.37	0.31	0.31
Fe^{3+}	0.27		0.08	0.18	0.06			0.03	0.02	0.12	0.10	0.10	0.27	0.01		0.16	0.13
Ti	0.11	0.08	0.12	0.12	0.14	0.09	0.12	0.12	0.13	0.07	0.06	0.06	0.05	0.06	0.08	0.07	0.10
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.09	0.09	0.09	0.09	0.09	0.08	0.09	0.09	0.08	0.10	0.08	0.09	0.09	0.07	0.07	0.08	0.08
Mg	2.01	2.11	2.00	1.98	1.96	2.18	2.13	2.09	2.16	2.13	2.30	2.26	2.22	2.26	2.28	2.34	2.30
Fe^{2+}	2.15	2.52	2.33	2.25	2.36	2.35	2.31	2.32	2.26	2.25	2.19	2.25	2.11	2.21	2.25	2.04	2.09
B site																	
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	1.89	2.04	1.96	1.90	1.95	1.97	1.98	1.96	1.93	1.94	2.00	1.97	1.90	1.98	2.01	1.97	1.95

Na	0.11		0.04	0.10	0.05	0.03	0.02	0.04	0.07	0.06	0.00	0.03	0.10	0.02		0.03	0.05
A site																	
Na	0.15	0.24	0.23	0.18	0.24	0.19	0.21	0.21	0.19	0.14	0.15	0.14	0.09	0.15	0.20	0.13	0.16
K	0.13	0.10	0.14	0.13	0.14	0.10	0.12	0.10	0.11	0.11	0.09	0.08	0.09	0.12	0.12	0.10	0.12
P (Kbar)	3.70	2.06	3.75	3.59	3.92	2.28	3.15	2.82	2.67	2.27	1.78	1.28	1.65	3.70	2.06	3.75	3.59

Table DR2 (continued)

Intrusion	Dangjiangrong														
Type Note	Mafic enclave (sample DJR2)														
Spot No.	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
SiO_2	47.61	47.83	46.93	44.83	45.18	45.90	47.18	47.29	47.12	46.79	46.90	47.30	48.50	48.28	47.70
TiO_2	0.95	1.04	1.40	1.70	1.89	1.52	1.17	1.42	1.12	1.41	0.91	0.89	0.64	0.60	0.57
Al_2O_3	6.58	6.56	7.24	9.27	9.79	8.10	7.35	7.32	7.24	7.50	7.44	7.39	6.65	6.57	6.78
Cr2O3	0.03	0.01	0.01	0.00	0.03	0.03	0.02	0.05	0.03	0.01	0.02	0.03	0.04	0.01	0.05
FeO	17.41	17.39	18.05	18.58	18.28	17.70	17.85	17.68	18.02	17.37	17.78	18.14	17.97	17.66	17.05
MnO	0.66	0.63	0.71	0.65	0.59	0.59	0.60	0.64	0.67	0.61	0.62	0.59	0.64	0.59	0.60
MgO	10.53	10.45	10.02	9.17	8.34	9.47	10.10	10.00	9.89	9.71	10.03	10.17	10.11	10.58	10.65
CaO	12.05	11.75	11.50	11.90	12.01	12.16	11.62	12.15	12.30	11.97	12.09	12.34	12.07	12.14	12.30
Na_2O	0.71	0.74	0.92	1.17	1.25	0.76	0.87	0.89	0.78	0.78	0.87	0.73	0.73	0.61	0.72
K_2O	0.49	0.39	0.41	0.65	0.84	0.68	0.47	0.51	0.57	0.54	0.61	0.52	0.44	0.60	0.63
Total	97.02	96.77	97.18	97.91	98.19	96.92	97.22	97.96	97.74	96.69	97.26	98.09	97.78	97.63	97.04
$Mg^{\#}$	54.58	54.98	54.53	49.90	43.13	49.30	54.19	51.02	50.54	50.34	52.07	52.53	51.69	54.29	53.93
T site															
Si	7.12	7.15	7.00	6.71	6.80	6.94	7.03	7.04	7.05	7.06	7.03	7.02	7.21	7.17	7.14
^{IV}Al	0.88	0.85	1.00	1.29	1.20	1.06	0.97	0.96	0.95	0.94	0.97	0.98	0.79	0.83	0.86
C site															
^{IV}Al	0.28	0.30	0.27	0.35	0.54	0.38	0.32	0.33	0.32	0.39	0.34	0.32	0.37	0.32	0.34
Fe^{3+}	0.22	0.27	0.39	0.27		0.04	0.33	0.07	0.09	0.04	0.17	0.22	0.14	0.22	0.10
Ti	0.11	0.12	0.16	0.19	0.21	0.17	0.13	0.16	0.13	0.16	0.10	0.10	0.07	0.07	0.06
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Mn	0.08	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.09	0.08	0.08	0.07	0.08	0.07	0.08
Mg	2.35	2.33	2.23	2.05	1.87	2.13	2.24	2.22	2.21	2.18	2.24	2.25	2.24	2.34	2.38
Fe^{2+}	1.95	1.91	1.86	2.06	2.47	2.19	1.90	2.13	2.16	2.15	2.06	2.03	2.09	1.97	2.03
B site															
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	1.93	1.88	1.84	1.91	1.94	1.97	1.86	1.94	1.97	1.93	1.94	1.96	1.92	1.93	1.97

Na	0.07	0.12	0.16	0.09	0.06	0.03	0.14	0.06	0.03	0.07	0.06	0.04	0.08	0.07	0.03
A site															
Na	0.14	0.09	0.10	0.25	0.30	0.19	0.11	0.20	0.20	0.16	0.19	0.17	0.13	0.11	0.18
K	0.09	0.07	0.08	0.12	0.16	0.13	0.09	0.10	0.11	0.10	0.12	0.10	0.08	0.11	0.12
P (Kbar)	2.51	2.49	3.05	4.78	5.26	3.86	3.13	3.11	3.07	3.34	3.25	3.15	2.53	2.46	2.68

Note: Formula calculations are based on 23 oxygen, and ferric/ferrous ratios are calculated using 13-cations normalization and charge balance (Leake et al. 1997). P estimation method is from Schmidt (1992). $Mg^{\#}$=Cationic (Mg×100/Mg+Fe).

Table DR3. Chemical compositions (wt.%) and end-member mole ratios (XAb, XOr, and XAn) of plagioclases in Late Triassic high-Mg diorites and associated granitoids from the Zhiduo arc belt, northeast Tibetan Plateau.

Intrusion	Riariqu														Dangjiangrong		
Type Note	Quartz diorite (sample SC1)														Granodiorite (sample B6054)		
Spot No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3
SiO_2	56.13	56.16	57.26	56.54	55.46	57.38	57.57	55.23	56.47	55.49	56.24	56.99	57.00	56.76	55.45	55.80	56.41
TiO_2	0.03	0.00	0.01	0.00	0.10	0.11	0.08	0.10	0.09	0.11	0.02	0.11	0.07	0.08	0.08	0.01	0.03
Al_2O_3	27.15	27.00	26.54	26.54	27.48	26.26	26.38	26.07	26.85	26.77	27.21	26.71	27.28	27.15	27.98	27.83	27.72
Cr_2O_3	0.01	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.00	0.02	0.01	0.00
FeO	0.05	0.07	0.08	0.09	0.08	0.06	0.08	0.77	0.06	0.09	0.00	0.07	0.06	0.03	0.02	0.04	0.04
MnO	0.02	0.00	0.01	0.01	0.00	0.00	0.04	0.01	0.00	0.03	0.00	0.00	0.04	0.03	0.00	0.00	0.00
MgO	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.04	0.00	0.00	0.00	0.01	0.01	0.00	0.01
CaO	9.94	10.37	9.55	9.69	10.58	9.80	9.23	11.05	10.11	10.24	10.05	10.01	9.95	9.80	10.85	10.60	10.63
Na_2O	6.08	5.84	6.28	6.29	5.82	5.54	6.50	5.73	6.02	6.02	5.74	6.17	6.00	6.29	5.31	5.77	5.50
K_2O	0.16	0.15	0.17	0.18	0.16	0.20	0.20	0.12	0.13	0.15	0.13	0.10	0.11	0.07	0.19	0.17	0.20
Total	99.57	99.60	99.93	99.33	99.70	99.38	100.07	99.10	99.72	98.98	99.39	100.16	100.54	100.22	99.91	100.23	100.55
X_{Ab}	52.06	50.07	53.81	53.48	49.44	49.95	55.38	48.08	51.49	51.11	50.42	52.46	51.83	53.53	46.43	49.17	47.81
X_{Or}	0.90	0.83	0.97	0.99	0.89	1.21	1.12	0.66	0.71	0.82	0.77	0.53	0.65	0.39	1.10	0.95	1.15
X_{An}	47.05	49.09	45.22	45.53	49.66	48.84	43.51	51.26	47.80	48.07	48.81	47.01	47.52	46.08	52.47	49.88	51.04

Table DR3 (continued)

Intrusion	Dangjiangrong															Dangjiangrong	
Type Note	Granodiorite (sample B6054)															Mafic enclave (sample DRJ1)	
Spot No.	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	1	2
SiO_2	52.24	54.72	55.18	56.58	55.56	55.89	56.56	54.28	57.69	52.23	56.31	54.61	54.92	57.01	56.08	57.13	57.03
TiO_2	0.03	0.09	0.08	0.09	0.09	0.07	0.10	0.07	0.08	0.09	0.11	0.05	0.11	0.06	0.06	0.08	0.06
Al_2O_3	29.63	28.28	27.89	27.66	28.16	28.04	27.31	28.72	27.13	30.65	27.29	28.91	28.37	27.30	27.63	27.00	26.99
Cr_2O_3	0.00	0.03	0.00	0.02	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.01
FeO	0.04	0.06	0.03	0.04	0.04	0.03	0.07	0.03	0.00	0.00	0.04	0.04	0.08	0.04	0.05	0.02	0.02
MnO	0.00	0.02	0.02	0.03	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.02
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
CaO	13.22	11.38	11.10	10.42	11.32	11.13	9.99	11.52	9.72	13.58	10.13	11.82	11.04	9.63	10.51	9.62	9.67
Na_2O	4.32	5.09	5.49	5.61	5.42	5.51	6.13	4.99	5.46	3.94	6.15	4.39	5.50	6.21	5.72	6.42	6.46
K_2O	0.13	0.17	0.21	0.24	0.21	0.20	0.26	0.21	0.18	0.11	0.19	0.35	0.17	0.20	0.23	0.13	0.12
Total	99.60	99.84	100.00	100.69	100.81	100.87	100.47	99.81	100.29	100.61	100.23	100.18	100.20	100.47	100.29	100.41	100.37
X_{Ab}	36.91	44.29	46.71	48.67	45.87	46.75	51.84	43.41	49.88	34.24	51.79	39.38	46.95	53.24	48.96	54.34	54.36
X_{Or}	0.71	0.99	1.16	1.38	1.17	1.11	1.46	1.22	1.09	0.63	1.06	2.04	0.97	1.13	1.28	0.70	0.69
X_{An}	62.38	54.72	52.13	49.96	52.96	52.14	46.69	55.36	49.03	65.14	47.15	58.58	52.08	45.63	49.76	44.96	44.96

Table DR3 (continued)

Intrusion	Dangjiangrong														
Type Note	Mafic enclave (sample DRJ1)														
Spot No.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
SiO_2	56.26	56.43	56.83	55.44	56.56	57.40	56.46	55.56	55.80	58.56	56.27	56.84	56.62	55.36	56.38
TiO_2	0.08	0.07	0.05	0.07	0.10	0.09	0.12	0.07	0.10	0.10	0.06	0.05	0.08	0.05	0.05
Al_2O_3	27.74	27.53	27.09	27.84	26.92	26.62	27.63	27.66	27.83	26.06	27.89	27.67	27.00	28.23	27.69
Cr_2O_3	0.02	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.02	0.02	0.01	0.02	0.01	0.04	0.02
FeO	0.00	0.00	0.00	0.04	0.03	0.04	0.02	0.00	0.04	0.00	0.00	0.04	0.03	0.04	0.06
MnO	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
MgO	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00
CaO	10.68	10.52	9.60	10.96	10.03	9.51	10.57	10.32	10.51	8.62	10.76	10.57	9.27	10.83	10.11
Na_2O	5.79	6.02	6.27	5.71	6.11	6.46	5.76	6.00	5.55	5.31	5.52	5.53	6.31	5.60	6.19
K_2O	0.13	0.09	0.16	0.12	0.10	0.14	0.12	0.18	0.26	1.08	0.10	0.46	0.15	0.14	0.15
Total	100.70	100.66	100.03	100.18	100.00	100.27	100.69	99.78	100.13	99.75	100.61	101.19	99.49	100.30	100.65
X_{Ab}	49.15	50.62	53.68	48.23	52.12	54.74	49.28	50.75	48.15	49.26	47.87	47.37	54.72	47.96	52.11
X_{Or}	0.73	0.47	0.92	0.64	0.56	0.76	0.70	0.99	1.47	6.59	0.55	2.59	0.86	0.80	0.85
X_{An}	50.12	48.91	45.40	51.13	47.32	44.50	50.02	48.26	50.38	44.15	51.57	50.04	44.42	51.24	47.04

Table DR4. Major (wt.%) and trace element (ppm) geochemical data for Late Triassic high-Mg diorites and associated granitoids from the Zhiduo arc belt, northeast Tibetan Plateau.

Sample	SC-1	SC-5	SC-7	SC-9	SC-2	SC-3	SC-4	SC-6	SC-8	HS-1	HS-3
Intrusion	Riariqu	Riariqu	Riariqu	Riariqu	Riariqu	Riariqu	Riariqu	Riariqu	Riariqu	Gerenyong	Gerenyong
Type note	Quartz diorite	Quartz diorite	Quartz diorite	Quartz diorite	Quartz diorite	Quartz diorite	Quartz diorite	Quartz diorite	Quartz diorite	Granodiorite	Granodiorite
SiO_2	56.27	53.71	57.40	56.38	62.06	57.96	53.02	57.43	57.50	70.13	63.01
TiO_2	0.64	0.89	0.54	0.55	0.59	0.51	1.01	0.49	0.69	0.37	0.45
Al_2O_3	17.44	16.97	16.48	16.72	15.93	15.84	16.94	17.00	16.75	14.25	16.89
Fe_2O_3	7.03	9.04	7.07	7.38	6.56	6.81	9.36	6.30	7.13	3.03	4.42
MnO	0.12	0.16	0.13	0.14	0.13	0.14	0.18	0.14	0.14	0.07	0.10
MgO	4.43	4.55	4.69	5.28	3.31	5.66	5.06	5.06	4.55	2.01	3.30
CaO	8.02	8.58	7.96	8.71	6.71	8.54	8.94	7.91	8.07	3.36	6.76
Na_2O	3.09	2.65	2.82	2.37	2.94	2.34	2.56	2.69	2.84	2.87	2.83
K_2O	0.87	1.26	1.06	0.64	0.92	0.94	1.27	1.13	0.92	3.08	1.29
P_2O_5	0.09	0.04	0.07	0.07	0.07	0.06	0.04	0.05	0.12	0.04	0.06
LOI	1.45	1.74	1.50	1.36	0.60	1.36	1.58	1.18	1.43	0.53	0.82
Total	99.45	99.59	99.72	99.60	99.89	100.25	100.00	99.46	100.20	99.84	100.00
$Mg^{\#}$	55.5	49.9	56.8	58.6	50.0	62.2	51.7	61.4	54.8	56.8	59.7
Li	8.7	10.2	9.9	15.9	13.1	9.8	11.2	14.1	12.5	21.4	13.5
Be	1.23	0.86	0.99	0.94	1.13	1.02	0.84	0.81	0.96	1.69	1.72
Sc	31.0	29.0	27.7	27.7	27.6	32.0	33.2	28.9	27.9	12.0	19.8
V	190.0	361.0	178.0	196.0	149.4	169.4	397.9	179.6	168.5	44.1	90.9
Cr	70.1	41.1	96.9	100.0	33.4	176.6	37.0	33.9	73.0	53.0	105.0
Co	93.7	52.8	95.6	64.9	17.4	23.8	30.7	20.8	21.9	7.7	14.3
Ni	29.8	18.9	35.1	31.8	13.3	43.6	15.9	18.7	23.8	15.3	29.4
Cu	231.0	17.2	4.3	34.1	42.7	29.7	17.8	23.4	11.6	5.2	22.9
Zn	60.8	68.3	72.0	60.7	57.1	52.3	64.8	56.5	57.8	36.9	58.8
Ga	17.5	16.1	15.7	15.4	15.8	14.6	16.4	14.2	15.8	13.0	15.8
Rb	24.6	48.9	41.7	46.3	33.9	38.0	47.8	44.8	35.4	133.1	48.4
Sr	211	192	189	181	169	157	187	190	197	97	171
Y	24.4	11.0	15.6	14.8	24.6	16.6	12.3	12.6	17.2	19.9	18.4
Zr	68.6	33.2	52.9	57.3	80.6	56.1	30.8	31.7	58.8	95.7	37.2

Nb	3.58	2.44	3.10	3.29	4.36	3.40	3.18	2.19	3.73	9.27	6.53
Cs	2.14	2.91	1.17	2.32	1.90	2.98	2.70	2.45	1.11	3.89	2.56
Ba	170	237	217	206	249	191	202	202	182	422	286
La	8.72	9.19	10.20	9.10	8.73	8.42	8.81	7.34	11.18	11.16	17.05
Ce	21.9	15.6	21.2	18.9	20.4	16.7	14.1	13.6	21.9	23.8	33.4
Pr	2.92	1.75	2.50	2.21	2.78	2.07	1.70	1.56	2.70	2.40	3.80
Nd	13.4	6.6	9.9	8.9	11.7	8.6	6.7	6.1	10.4	8.9	14.6
Sm	3.70	1.54	2.28	2.21	3.12	2.16	1.56	1.50	2.31	2.33	3.07
Eu	0.90	0.58	0.76	0.67	0.75	0.62	0.55	0.59	0.74	0.58	0.87
Gd	4.05	1.66	2.40	2.37	3.34	2.32	1.64	1.66	2.35	2.65	2.90
Tb	0.69	0.28	0.41	0.40	0.60	0.41	0.30	0.31	0.42	0.49	0.49
Dy	4.45	1.87	2.63	2.55	3.80	2.66	1.95	2.01	2.79	3.13	3.07
Ho	0.96	0.41	0.57	0.56	0.85	0.56	0.41	0.42	0.58	0.65	0.63
Er	2.64	1.20	1.68	1.56	2.44	1.65	1.21	1.29	1.70	1.88	1.79
Tm	0.39	0.18	0.26	0.24	0.36	0.24	0.19	0.18	0.25	0.29	0.28
Yb	2.52	1.27	1.76	1.62	2.38	1.63	1.33	1.28	1.79	1.99	1.68
Lu	0.38	0.20	0.28	0.25	0.35	0.26	0.22	0.20	0.27	0.30	0.26
Hf	1.95	1.11	1.62	1.65	2.26	1.63	1.05	1.28	1.76	3.23	1.26
Ta	0.52	0.32	0.55	0.42	0.28	0.25	0.22	0.43	0.26	0.94	0.42
Tl	0.11	0.21	0.18	0.20	0.18	0.19	0.23	0.22	0.18	0.64	0.28
Pb	4.71	6.15	5.57	4.93	5.86	4.67	5.48	8.16	8.17	23.22	14.72
Th	1.73	2.40	1.96	2.60	1.07	2.83	2.09	5.26	1.98	10.65	6.25
U	0.54	0.61	0.68	0.54	0.40	0.75	0.55	1.53	0.66	1.06	0.60

Table DR4 (continued)

Sample	HS-4	HS-5	HS-6	HS-13	B6052-1	B6054-1	B6055-1	B6056-1	B6057-1	B6059-1	B6063-1
Intrusion	Gerenyong	Gerenyong	Gerenyong	Gerenyong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong
Type note	Granodiorite	Granodiorite	Granodiorite	Granodiorite	Granodiorite	Granodiorite	Granodiorite	Granodiorite	Granodiorite	Granodiorite	Granodiorite
SiO_2	62.51	59.03	66.28	67.10	66.90	65.00	64.20	62.90	61.30	63.90	63.60
TiO_2	0.60	0.67	0.56	0.49	0.28	0.44	0.50	0.54	0.60	0.53	0.52
Al_2O_3	15.34	15.99	14.61	15.18	16.00	15.85	16.30	16.55	17.05	16.10	16.10
Fe_2O_3	5.75	6.77	5.19	4.08	3.36	4.72	5.14	5.67	6.09	5.33	5.31
MnO	0.12	0.14	0.11	0.09	0.07	0.10	0.10	0.11	0.11	0.11	0.11
MgO	4.27	5.01	3.08	2.45	1.36	1.76	1.98	2.15	2.47	2.07	2.08
CaO	6.37	7.45	5.43	4.82	4.12	4.73	5.16	5.34	5.66	4.96	5.03
Na_2O	2.36	2.31	2.43	2.59	2.91	2.79	2.74	2.75	2.80	2.76	2.69
K_2O	1.52	1.37	1.43	2.20	3.17	2.32	2.24	2.24	2.05	2.49	2.49
P_2O_5	0.08	0.09	0.07	0.07	0.06	0.09	0.10	0.11	0.12	0.09	0.09
LOI	0.84	0.93	0.71	0.77	0.74	1.08	0.69	0.61	1.20	0.88	0.87
Total	99.85	99.84	99.98	99.94	99.12	99.02	99.30	99.13	99.62	99.36	99.06
$Mg^{\#}$	59.5	59.4	54.0	54.3	44.5	42.5	43.3	42.9	44.5	43.5	43.7
Li	21.5	21.6	20.1	33.6	21.7	22.2	23.1	21.0	21.7	20.9	22.4
Be	1.49	1.28	1.50	1.93	1.59	1.56	1.48	1.46	1.43	1.47	1.43
Sc	23.2	30.1	18.8	15.3	11.1	11.9	12.7	13.2	15.5	12.6	13.3
V	113.0	162.9	76.8	56.4	49.1	59.1	64.2	70.8	79.1	67.5	67.8
Cr	135.1	132.6	93.3	58.4	9.4	10.7	13.5	11.8	13.8	10.6	13.9
Co	18.7	22.6	13.0	10.8	144.0	100.0	80.0	73.8	94.4	78.8	145.0
Ni	38.2	40.6	31.8	16.6	70.6	39.7	35.3	35.5	37.6	33.6	73.5
Cu	15.8	20.9	4.2	9.3	5.4	7.9	16.2	8.9	29.8	9.3	16.6
Zn	62.4	80.5	52.7	46.3	99.0	96.6	125.4	125.4	125.4	136.4	114.4
Ga	15.1	16.2	14.7	15.0	14.0	15.3	16.0	16.4	16.9	16.1	15.7
Rb	67.0	54.3	59.7	95.2	93.2	83.5	88.8	90.2	81.2	96.7	95.5
Sr	145	158	138	137	154	179	184	187	191	168	180
Y	20.8	25.6	16.4	18.7	14.0	16.9	15.8	16.7	19.7	17.3	17.7
Zr	77.3	73.4	107.0	104.4	83.2	99.2	118.0	120.0	165.0	94.6	99.9

Nb	7.80	8.33	7.44	9.04	4.88	7.07	7.40	7.63	7.93	7.63	7.19
Cs	2.97	3.72	3.28	4.63	3.75	4.74	3.41	3.09	3.17	3.08	3.28
Ba	243	273	297	376	471	383	385	407	371	389	445
La	9.64	11.50	22.90	21.43	15.30	26.30	17.80	15.80	18.80	24.50	20.50
Ce	23.8	28.0	40.4	40.3	30.6	48.4	34.5	30.2	34.9	44.8	40.6
Pr	3.24	3.87	4.06	4.43	3.31	5.05	3.52	3.33	3.79	4.51	3.90
Nd	13.3	16.6	14.5	16.1	11.6	16.8	12.0	11.7	13.8	14.6	12.5
Sm	3.28	4.02	2.89	3.14	2.49	3.27	2.65	2.72	3.19	2.89	2.76
Eu	0.81	0.86	0.79	0.81	0.63	0.71	0.74	0.73	0.74	0.70	0.70
Gd	3.21	3.92	2.78	3.00	2.06	2.80	2.36	2.53	2.79	2.52	2.44
Tb	0.55	0.67	0.46	0.49	0.32	0.43	0.38	0.39	0.46	0.40	0.39
Dy	3.38	4.34	2.75	3.01	1.99	2.50	2.32	2.46	2.73	2.43	2.35
Ho	0.67	0.86	0.56	0.59	0.45	0.53	0.49	0.50	0.58	0.50	0.50
Er	2.03	2.55	1.58	1.78	1.34	1.58	1.45	1.52	1.80	1.54	1.52
Tm	0.31	0.37	0.23	0.27	0.22	0.24	0.22	0.23	0.27	0.23	0.23
Yb	1.96	2.56	1.52	1.83	1.52	1.65	1.49	1.56	1.78	1.60	1.48
Lu	0.30	0.37	0.23	0.29	0.25	0.27	0.23	0.23	0.28	0.25	0.23
Hf	2.46	2.36	3.14	3.03	2.55	2.53	2.86	2.84	3.80	2.27	2.31
Ta	0.60	0.62	0.47	0.73	2.05	1.56	1.28	1.22	1.26	1.15	1.75
Tl	0.40	0.32	0.31	0.50	0.34	0.31	0.31	0.31	0.27	0.33	0.31
Pb	12.50	26.67	9.84	19.24	33.08	21.70	20.30	18.03	16.01	24.33	18.03
Th	2.30	1.53	8.31	8.54	10.01	14.10	8.89	7.78	8.22	12.83	11.66
U	0.57	1.04	0.63	0.78	1.70	1.03	2.42	1.37	1.02	0.90	0.74

Table DR4 (continued)

Sample	B6064-1	B6065-1	B6066-1	DJR-1	DJR-2	DJR-4	DJR-5	DJR-6	DJR-7	DJR-8	DJR-9
Intrusion	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong	Dangjiangrong
Type note	Granodiorite	Granodiorite	Granodiorite	Mafic enclave	Mafic enclave	Mafic enclave	Mafic enclave	Mafic enclave	Mafic enclave	Mafic enclave	Mafic enclave
SiO_2	64.70	65.80	64.30	60.50	58.90	55.90	52.60	55.60	53.40	57.80	59.50
TiO_2	0.50	0.47	0.48	0.62	0.62	0.84	0.70	0.70	0.80	0.66	0.69
Al_2O_3	16.20	16.00	16.20	17.30	16.20	18.05	17.95	17.85	17.95	16.70	16.80
Fe_2O_3	5.02	4.91	5.05	6.39	7.71	7.26	9.35	8.53	9.87	8.05	7.22
MnO	0.10	0.10	0.10	0.13	0.16	0.18	0.22	0.19	0.24	0.18	0.14
MgO	1.96	1.88	1.89	2.55	3.82	4.31	4.48	3.95	4.31	3.82	3.41
CaO	4.96	4.80	4.94	5.44	6.55	8.40	7.54	7.22	7.27	6.64	5.98
Na_2O	2.78	2.70	2.86	2.88	2.54	2.15	2.95	3.20	2.99	2.76	2.71
K_2O	2.28	2.58	2.36	2.60	1.86	1.14	1.91	1.74	2.11	1.72	1.94
P_2O_5	0.08	0.09	0.09	0.10	0.09	0.10	0.08	0.10	0.10	0.10	0.10
LOI	1.01	0.69	0.66	0.94	1.08	1.20	1.08	1.10	1.16	0.86	1.13
Total	99.74	100.16	99.07	99.59	99.71	99.71	99.06	100.33	100.44	99.44	99.77
$Mg^{\#}$	43.6	43.1	42.6	44.1	49.5	54.0	48.7	47.8	46.4	48.5	48.3
Li	22.2	20.2	24.5	28.3	32.9	11.2	34.3	38.0	32.5	30.8	34.9
Be	1.40	1.49	1.45	1.65	1.11	1.03	1.67	1.57	1.48	1.32	1.28
Sc	11.3	11.7	12.0	15.3	23.5	25.9	32.5	32.1	24.9	23.9	18.6
V	61.0	64.0	60.5	80.9	132.0	156.0	171.0	180.0	121.0	121.0	105.0
Cr	10.3	10.5	12.0	10.3	25.4	26.8	18.1	23.6	13.0	37.7	32.0
Co	112.0	81.4	136.0	89.1	90.7	58.8	60.5	58.2	63.6	65.1	75.4
Ni	46.0	36.6	66.2	38.1	51.2	39.4	34.1	34.3	29.0	35.1	41.0
Cu	10.9	15.7	17.8	8.3	170.5	28.1	248.6	333.3	42.1	81.4	96.4
Zn	112.2	103.5	133.1	127.6	191.4	184.8	234.3	199.1	162.8	152.9	137.5
Ga	15.2	16.1	15.6	17.2	15.7	16.6	19.0	18.1	17.4	16.6	16.8
Rb	87.3	83.7	92.9	110.0	81.5	52.2	99.8	84.9	87.0	81.6	93.0
Sr	165	173	171	172	171	205	169	172	178	172	177
Y	14.6	16.1	17.2	22.1	23.7	26.9	41.6	36.0	26.8	28.1	20.3
Zr	92.8	117.0	96.4	91.1	109.0	54.8	92.8	88.7	93.6	109.0	93.3

Nb	6.71	7.09	7.56	8.83	6.58	6.76	11.00	7.85	7.39	7.70	7.55
Cs	1.92	2.73	2.73	4.12	4.91	4.24	4.40	3.90	3.42	3.65	4.35
Ba	389	367	352	412	339	243	260	281	252	260	318
La	10.70	19.60	6.46	17.40	19.90	15.10	4.88	21.40	10.80	6.13	5.14
Ce	24.2	37.3	13.2	39.4	44.3	33.8	13.3	48.2	28.5	18.8	14.5
Pr	2.34	3.82	1.66	3.80	4.96	4.10	2.61	5.70	3.57	3.13	2.29
Nd	8.3	12.9	6.6	14.2	19.5	17.8	14.6	23.4	15.6	15.6	11.2
Sm	2.09	2.64	2.06	3.65	4.48	4.90	5.90	6.14	4.54	4.72	3.36
Eu	0.63	0.66	0.63	0.82	0.87	1.02	0.93	1.04	0.99	0.95	0.87
Gd	1.88	2.31	2.02	3.63	4.23	4.95	6.96	6.32	4.53	4.86	3.44
Tb	0.32	0.37	0.35	0.58	0.67	0.82	1.20	1.03	0.73	0.78	0.54
Dy	1.97	2.18	2.23	3.69	4.14	4.94	7.56	6.48	4.72	5.00	3.48
Ho	0.42	0.45	0.47	0.77	0.89	1.10	1.59	1.39	1.01	1.06	0.73
Er	1.24	1.40	1.45	2.34	2.59	2.92	4.73	4.12	3.00	3.18	2.26
Tm	0.19	0.21	0.21	0.36	0.39	0.41	0.70	0.59	0.45	0.48	0.33
Yb	1.33	1.47	1.53	2.47	2.52	2.66	4.49	4.02	3.01	3.16	2.27
Lu	0.20	0.23	0.24	0.38	0.37	0.38	0.65	0.59	0.45	0.48	0.35
Hf	2.08	2.61	2.42	2.82	2.89	1.78	2.89	2.68	2.67	3.11	2.70
Ta	1.34	1.33	2.12	1.71	1.26	1.11	1.62	1.11	1.22	1.22	1.22
Tl	0.29	0.26	0.32	0.45	0.36	0.22	0.44	0.46	0.38	0.37	0.39
Pb	17.85	18.90	21.00	25.20	17.15	18.03	22.40	24.85	26.43	22.93	16.77
Th	6.52	10.60	2.68	11.02	8.28	7.13	0.84	9.26	4.10	0.75	0.71
U	0.83	0.83	0.77	0.92	1.25	0.89	3.73	1.48	1.09	0.77	0.66

Note: $Mg^{\#}$=Cationic (Mg×100/Mg+Fe).

Table DR5. Rb–Sr and Sm–Nd isotopic compositions for Late Triassic high-Mg diorites and associated granitoids from the Zhiduo arc belt, northeast Tibetan Plateau.

Sample	Rb (ppm)	Sr (ppm)	$^{87}Rb/^{86}Sr$	$^{87}Sr/^{86}Sr$	2σ	Sm (ppm)	Nd (ppm)	$^{147}Sm/^{144}Nd$	$^{143}Nd/^{144}Nd$	2σ	$^{87}Sr/^{86}Sr$ (t)	$^{143}Nd/^{144}Nd$ (t)	ε_{Nd} (t)	T_{2DM} (Ma)
Riariqu quartz diorite														
SC-2	33.9	169	0.58075	0.709209	0.000004	3.12	11.7	0.16088	0.512332	0.000002	0.70741	0.51210	-5.0	1398
SC-3	38.0	157	0.70237	0.710082	0.000006	2.16	8.6	0.15164	0.512290	0.000002	0.70790	0.51207	-5.5	1444
SC-4	47.8	187	0.74085	0.709431	0.000005	1.56	6.7	0.14008	0.512343	0.000003	0.70713	0.51214	-4.2	1334
SC-6	44.8	190	0.68022	0.708998	0.000004	1.50	6.1	0.14950	0.512437	0.000014	0.70689	0.51222	-2.6	1206
SC-8	35.4	197	0.51964	0.708445	0.000006	2.31	10.4	0.13490	0.512469	0.000003	0.70683	0.51228	-1.6	1122
Gerenyong granodiorite														
HS-1	133.1	97	3.97749	0.724582	0.000002	2.33	8.9	0.15864	0.512103	0.000007	0.71231	0.51188	-9.4	1755
HS-3	48.4	171	0.81724	0.714819	0.000004	3.07	14.6	0.12691	0.512085	0.000004	0.71230	0.51190	-8.9	1712
HS-4	67.0	145	1.33454	0.716922	0.000005	3.28	13.3	0.14903	0.512084	0.000005	0.71280	0.51187	-9.5	1763
HS-5	54.3	158	0.99644	0.713736	0.000005	4.02	16.6	0.14631	0.512180	0.000003	0.71066	0.51197	-7.5	1606
HS-6	59.7	138	1.24957	0.715727	0.000005	2.89	14.5	0.12078	0.512124	0.000006	0.71187	0.51195	-7.9	1637
HS-13	95.2	137	2.01217	0.719606	0.000004	3.14	16.1	0.11793	0.512042	0.000019	0.71340	0.51187	-9.4	1760
Dangjiangrong granodiorite														
B6052-1	93.2	154	1.75209	0.714188	0.000008	2.49	11.6	0.12955	0.512186	0.000013	0.70868	0.51200	-6.9	1559
B6054-1	83.5	179	1.34808	0.712968	0.000005	3.27	16.8	0.11755	0.512171	0.000004	0.70873	0.51200	-6.9	1555
B6055-1	88.8	184	1.39928	0.712793	0.000007	2.65	12.0	0.13354	0.512178	0.000003	0.70839	0.51198	-7.2	1581
B6057-1	81.2	191	1.22803	0.712633	0.000005	3.19	13.8	0.13973	0.512189	0.000003	0.70877	0.51199	-7.2	1578
B6059-1	96.7	168	1.66336	0.713764	0.000005	2.89	14.6	0.11978	0.512165	0.000002	0.70854	0.51199	-7.1	1570
Dangjiangrong mafic enclave														
DJR-2	81.5	171	1.38370	0.712947	0.000006	4.48	19.5	0.13878	0.512153	0.000003	0.70858	0.51195	-7.8	1632
DJR-4	52.2	205	0.73856	0.713290	0.000005	4.90	17.8	0.16623	0.512129	0.000003	0.71096	0.51189	-9.1	1733

DJR-6	84.9	172	1.43217	0.712877	0.000005	6.14	23.4	0.15856	0.512219	0.000005	0.70836	0.51199	-7.1	1574
DJR-8	81.6	172	1.37647	0.712582	0.000006	4.72	15.6	0.18286	0.512246	0.000004	0.70824	0.51198	-7.3	1587
DJR-9	93.0	177	1.52014	0.713203	0.000004	3.36	11.2	0.18108	0.512232	0.000004	0.70840	0.51197	-7.5	1605

The $^{147}Sm/^{144}Nd$ and $^{143}Nd/^{144}Nd$ ratios of chondrite and depleted mantle at the present day are 0.1967 and 0.512638, 0.2137 and 0.51315, respectively. $\lambda_{Rb} = 1.42\times10^{-11}$ $year^{-1}$ (Steiger and Jäger, 1977), $\lambda_{Sm} = 6.54\times10^{-12}$ $year^{-1}$ (Lugmair and Marti, 1978). t=crystallization age of zircon.

Table DR6. Zircon Lu–Hf isotopic compositions for Late Triassic high-Mg diorites and associated granitoids from the Zhiduo arc belt, northeast Tibetan Plateau.

Sample NO.	Age (Ma)	$^{176}Yb/^{177}Hf$	2σ	$^{176}Lu/^{177}Hf$	2σ	$^{176}Hf/^{177}Hf$	2σ	εHf(0)	εHf(t)	T_{DM1}	T_{DM2}	$f_{Lu/Hf}$
Riariqu quartz diorite (GS1)												
GS1-1	216	0.040342	0.000651	0.001593	0.000020	0.282739	0.000016	-1.2	+3.3	739	1254	-0.95
GS1-2	216	0.122941	0.004681	0.005140	0.000217	0.282777	0.000028	0.2	+4.2	756	1185	-0.85
GS1-3	215	0.059901	0.001166	0.002365	0.000042	0.282701	0.000018	-2.5	+1.9	810	1372	-0.93
GS1-4	218	0.097411	0.002674	0.003780	0.000135	0.282728	0.000024	-1.6	+2.7	802	1308	-0.89
GS1-5	219	0.058426	0.001246	0.002366	0.000062	0.282723	0.000020	-1.7	+2.7	778	1305	-0.93
GS1-6	218	0.087875	0.002430	0.003424	0.000074	0.282725	0.000019	-1.6	+2.7	797	1311	-0.90
GS1-7	219	0.091459	0.002637	0.003621	0.000085	0.282724	0.000019	-1.7	+2.6	805	1318	-0.89
GS1-8	220	0.155260	0.004208	0.005705	0.000159	0.282723	0.000025	-1.7	+2.3	857	1344	-0.83
GS1-9	219	0.064672	0.003631	0.002539	0.000136	0.282736	0.000018	-1.3	+3.2	762	1269	-0.92
GS1-10	220	0.076566	0.001239	0.002974	0.000049	0.282717	0.000021	-1.9	+2.5	800	1329	-0.91
GS1-12	215	0.059580	0.000958	0.002327	0.000038	0.282718	0.000020	-1.9	+2.5	784	1322	-0.93
GS1-13	220	0.068762	0.001733	0.002733	0.000042	0.282748	0.000019	-0.9	+3.6	749	1238	-0.92
GS1-15	217	0.111351	0.007057	0.004048	0.000243	0.282743	0.000021	-1.0	+3.2	785	1270	-0.88
GS1-16	218	0.066719	0.001521	0.002618	0.000044	0.282716	0.000018	-2.0	+2.4	793	1328	-0.92
GS1-17	219	0.040670	0.000711	0.001623	0.000032	0.282707	0.000017	-2.3	+2.3	785	1341	-0.95
GS1-18	219	0.066433	0.003796	0.002509	0.000135	0.282728	0.000019	-1.6	+2.9	774	1293	-0.92
GS1-19	220	0.050325	0.000849	0.002092	0.000044	0.282764	0.000033	-0.3	+4.3	712	1184	-0.94
Gerenyong granodiorite (GS2)												
GS2-1	222	0.028438	0.000589	0.001076	0.000019	0.282460	0.000015	-11.0	-6.3	1122	2034	-0.97
GS2-2	218	0.040342	0.002054	0.001499	0.000069	0.282467	0.000018	-10.8	-6.2	1124	2022	-0.95
GS2-3	217	0.032765	0.001024	0.001258	0.000039	0.282488	0.000015	-10.1	-5.5	1088	1963	-0.96
GS2-4	221	0.024067	0.000668	0.000989	0.000032	0.282460	0.000020	-11.0	-6.3	1120	2034	-0.97

GS2-5	222	0.035192	0.000691	0.001425	0.000021	0.282455	0.000015	-11.2	-6.5	1139	2052	-0.96
GS2-6	221	0.040789	0.000768	0.001490	0.000028	0.282442	0.000017	-11.7	-7.0	1160	2090	-0.96
GS2-7	220	0.027584	0.000330	0.001145	0.000017	0.282451	0.000015	-11.3	-6.7	1136	2061	-0.97
GS2-8	210	0.031127	0.001208	0.001195	0.000044	0.282552	0.000014	-7.8	-3.3	996	1787	-0.96
GS2-9	221	0.020638	0.000188	0.000779	0.000008	0.282429	0.000013	-12.1	-7.4	1156	2119	-0.98
GS2-10	216	0.019441	0.000871	0.000819	0.000038	0.282428	0.000023	-12.2	-7.5	1159	2128	-0.98
GS2-11	215	0.050636	0.000319	0.001829	0.000011	0.282523	0.000015	-8.8	-4.3	1054	1870	-0.94
GS2-12	213	0.038864	0.002020	0.001396	0.000070	0.282448	0.000017	-11.5	-7.0	1148	2080	-0.96
GS2-13	222	0.023647	0.000605	0.000873	0.000021	0.282429	0.000016	-12.1	-7.4	1159	2118	-0.97
GS2-16	220	0.036962	0.000696	0.001409	0.000028	0.282455	0.000017	-11.2	-6.6	1140	2055	-0.96
GS2-17	217	0.037722	0.000282	0.001436	0.000011	0.282483	0.000016	-10.2	-5.7	1100	1978	-0.96
GS2-18	217	0.055503	0.002560	0.002045	0.000083	0.282485	0.000019	-10.2	-5.7	1116	1979	-0.94
GS2-19	220	0.028010	0.001186	0.001015	0.000037	0.282415	0.000015	-12.6	-7.9	1183	2162	-0.97
GS2-20	214	0.028534	0.000892	0.001110	0.000029	0.282421	0.000023	-12.4	-7.9	1178	2154	-0.97
Dangjiangrong granodiorite (B6067-1)												
B6067-1-1	220	0.016651	0.000159	0.000781	0.000006	0.282514	0.000018	-9.1	-4.4	1038	1879	-0.98
B6067-1-3	220	0.021952	0.000152	0.001002	0.000007	0.282538	0.000018	-8.3	-3.6	1010	1814	-0.97
B6067-1-4	222	0.029091	0.000592	0.001296	0.000025	0.282499	0.000020	-9.6	-5.0	1073	1925	-0.96
B6067-1-5	219	0.018379	0.000103	0.000817	0.000004	0.282393	0.000022	-13.4	-8.7	1208	2224	-0.98
B6067-1-6	222	0.028113	0.000386	0.001300	0.000017	0.282568	0.000024	-7.2	-2.5	976	1731	-0.96
B6067-1-9	222	0.019989	0.000825	0.000883	0.000035	0.282561	0.000024	-7.5	-2.7	975	1747	-0.97
B6067-1-10	219	0.022778	0.000414	0.001001	0.000016	0.282561	0.000025	-7.5	-2.8	978	1751	-0.97
B6067-1-11	221	0.013619	0.000144	0.000600	0.000006	0.282521	0.000025	-8.9	-4.1	1023	1857	-0.98
B6067-1-12	221	0.024206	0.000868	0.000976	0.000033	0.282574	0.000028	-7.0	-2.3	959	1711	-0.97
B6067-1-13	220	0.020897	0.000121	0.000910	0.000004	0.282579	0.000023	-6.8	-2.1	950	1696	-0.97

B6067-1-14	219	0.020978	0.000225	0.000881	0.000010	0.282443	0.000031	-11.6	-6.9	1139	2082	-0.97
B6067-1-16	220	0.026008	0.000724	0.001127	0.000027	0.282601	0.000023	-6.1	-1.4	925	1637	-0.97
B6067-1-17	221	0.025463	0.000784	0.001029	0.000025	0.282520	0.000019	-8.9	-4.2	1036	1865	-0.97
B6067-1-18	221	0.021071	0.001214	0.000949	0.000059	0.282532	0.000020	-8.5	-3.8	1018	1831	-0.97
B6067-1-19	221	0.017320	0.000242	0.000741	0.000011	0.282510	0.000020	-9.3	-4.5	1043	1890	-0.98
Dangjiangrong mafic enclave (B6067-2)												
B6067-2-2	221	0.020264	0.000193	0.000823	0.000007	0.282575	0.000030	-7.0	-2.2	953	1705	-0.98
B6067-2-3	224	0.024951	0.000421	0.001045	0.000024	0.282522	0.000034	-8.9	-4.1	1034	1857	-0.97
B6067-2-4	220	0.031022	0.000464	0.001195	0.000018	0.282593	0.000024	-6.3	-1.7	938	1661	-0.96
B6067-2-5	221	0.032106	0.000125	0.001288	0.000006	0.282622	0.000026	-5.3	-0.7	899	1579	-0.96
B6067-2-6	224	0.021634	0.000457	0.000878	0.000019	0.282573	0.000025	-7.0	-2.3	958	1710	-0.97
B6067-2-7	222	0.018444	0.000106	0.000775	0.000004	0.282580	0.000017	-6.8	-2.0	945	1690	-0.98
B6067-2-8	221	0.021749	0.000260	0.000854	0.000011	0.282559	0.000026	-7.5	-2.8	976	1751	-0.97
B6067-2-9	220	0.017664	0.000204	0.000731	0.000008	0.282611	0.000019	-5.7	-1.0	900	1603	-0.98
B6067-2-10	220	0.028618	0.000444	0.001166	0.000019	0.282634	0.000024	-4.9	-0.2	879	1544	-0.96
B6067-2-11	223	0.030039	0.000267	0.001169	0.000008	0.282597	0.000021	-6.2	-1.5	931	1645	-0.96
B6067-2-12	220	0.027537	0.000613	0.001182	0.000025	0.282584	0.000035	-6.6	-2.0	950	1685	-0.96
B6067-2-13	223	0.023649	0.000339	0.000965	0.000015	0.282583	0.000022	-6.7	-1.9	947	1684	-0.97
B6067-2-14	221	0.018011	0.000222	0.000766	0.000011	0.282580	0.000020	-6.8	-2.0	945	1691	-0.98
B6067-2-15	220	0.022996	0.000309	0.000950	0.000012	0.282429	0.000030	-12.1	-7.4	1161	2122	-0.97
B6067-2-16	221	0.023039	0.000220	0.000967	0.000010	0.282585	0.000028	-6.6	-1.9	943	1679	-0.97
B6067-2-17	223	0.026486	0.000275	0.001098	0.000010	0.282579	0.000026	-6.8	-2.1	955	1696	-0.97
B6067-2-18	224	0.020769	0.000375	0.000886	0.000014	0.282558	0.000028	-7.6	-2.8	978	1751	-0.97

The parameter used in our calculations: $(^{176}Hf/^{177}Hf)_{CHUR}$ = 0.282772, $(^{176}Lu/^{177}Hf)_{CHUR}$ = 0.0332 (Blichert-Toft and Albarède, 1997); $(^{176}Hf/^{177}Hf)_{DM}$ = 0.28325, $(^{176}Lu/^{177}Hf)_{DM}$ = 0.0384 (Griffin et al., 2000); $\lambda(^{176}Lu) = 1.867\times10^{-11}\ a^{-1}$ (Söderlund et al., 2004).