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Supplemental Material

Text S1. Analytical Methods

Figure S1. Zr versus selected element variation diagrams to highlight the effects of alteration and metamorphism for the basalts from Langjiexue area.

Figure S2. (A) Ti/Y versus TiO_2 , and (B) Ti/Y versus MgO diagrams for the basalt samples from the Langjiexue in Tethyan Himalaya.

Table S1. Representative Permian-Triassic magmatic events along the Tethyan Himalaya.

Table S2. Zircon LA-ICP-MS U-Pb in situ analyzing results for zircons from the Langjiexue basalts.

Table S3. Whole-rock major, trace element and Sr-Nd isotope data of Langjiexue basalts.

ANALYTICAL METHODS

Zircon U–Pb dating was performed using LA-ICP-MS at the Key Laboratory of Continental Collision and Plateau Uplift, Institute of Tibetan Plateau Research, Chinese Academy of Sciences (LCPU, ITP CAS). U-Pb analyses of zircon were selected based on cathodoluminescence (CL) imaging, and performed in situ by using a New Wave UP193FX Excimer laser coupled with an Agilent 7500a ICP-MS. We adopted 35 μm ablation pits, 7 Hz repetition, and $\sim 5\text{--}8\text{ J/cm}^2$ energy for all the grains in this study. High-purity argon and helium gases were used as carrier gas, which were mixed via a T-connector before entering the ICP. These carrier gas flows were optimized by ablating NIST 612 to obtain maximum signal intensity for ^{238}U and ^{208}Pb , minimum oxide interference and the most stable signal intensity. Each analysis incorporated a $\sim 15\text{ s}$ gas blank acquisition (warm up), 40 s of data acquisition from the sample aerosol (ablation), and 45 s washout time. The standard zircon Plešovice (337 Ma; Sláma et al. 2008) and 91500 (1064 Ma; Wiedenbeck et al. 1995) were used as external standards for the matrix-matched calibration of U-Pb dating. The results were calculated using Glitter 4.0 (GEMOC, Griffin et al., 2008). Zircon age concordant plots were obtained by using the Isoplot 4.15 program. Individual analyses are presented with 1σ errors in data tables and in concordia diagrams. The U-Pb isotope results are given in Table S2.

The whole-rock major elements were carried out at the Institute of Geology and Geophysics, Chinese Academy of Sciences (IGG CAS). A mixture of 0.5 g sample powders and 5 g of $\text{Li}_2\text{B}_4\text{O}_7$ were heated and fused into glass disks and analyzed by X-ray fluorescence spectrometer (XRF-2400) with an AXIOS Minerals spectrometer. The analytical uncertainties were generally within 0.1%–1% (RSD). Loss on ignition (LOI) was obtained by weighing after 1 h of integration at 1000 °C.

The whole-rock trace elements and Sr-Nd isotopes were conducted at LCPU, ITP CAS. For trace element analyses, whole-rock powders (50 mg) were dissolved using HF and HNO₃ in Teflon beakers for 24 h at ~190 °C. Pure element Rh and Re standard solutions were used for internal calibration. Trace element abundances were determined by Thermo-Scientific X series II inductively coupled plasma-mass spectrometer (ICP-MS), which has analytical uncertainties within 5% for most elements. About 50 mg of powder for each sample was dissolved in Teflon digesting vessel (high-pressure bomb) with equal mixture of sub-boiling distilled HF and HNO₃, for 36h at ~190 °C. An internal standard solution containing single element Rh was used to monitor signal drift during ICP-MS counting. For each sample, three rounds were measured, and results were then averaged. GSR-2 and AGV-2 were analyzed to monitor the analytical quality. The data are given in Table S3.

For each sample preparing for Sr-Nd-Hf isotope analysis, 100 mg powders of selected samples were weighted into a 15-mL PFA beaker and wetted with water. Then after adding 1 ml of HNO₃ and 1 mL of HF, the beaker was tightly capped and heated on a hotplate at 150 °C for 48h. Then, the samples were evaporated to incipient dryness at 120 °C. After an addition of 1 ml of HNO₃ and 1 ml of HF, it was capped again and heated on a hotplate at 150 °C for 24 h in order to completely dissolve the samples. After the sample solution was concentrated at 120 °C to incipient dryness, 1 ml of HNO₃ was added and the sample was evaporated to dryness. Then, 4 ml of 3 mol/L HNO₃–0.15 mol/L H₃BO₃ were added into the beaker to redissolve the residue at 120 °C for 4 h. An appropriate quantity of the sample solution with the amount of Ca ≤5 mg was loaded onto the pre-conditioned TODGA resin column and the column was rinsed with 9 mL of 3 mol/L HNO₃. The column was eluted using 8 mL of 6 mol/L HNO₃ for Sr, 14 mL of 1.8 mol/L HCl for Ce, 8 mL of 1.2 mol/L HCl for Nd. The eluate solutions of 6 mol/L HNO₃ and 1.2 mol/L HCl were diluted for the determination of Sr and Nd isotope ratios by MC-ICP-MS. The method is described in detail by Guan et al. (2019). The analysis was done on a Nu Plasma II multi-collector inductively coupled plasma mass spectrometer (MC-ICP-MS, Nu Instruments Ltd., UK). All measured ⁸⁶Sr/⁸⁸Sr and ¹⁴³Nd/¹⁴⁴Nd ratios are fractionation corrected to ⁸⁶Sr/⁸⁸Sr = 0.1194 and ¹⁴⁶Nd/¹⁴⁴Nd = 0.7219, respectively. During the course of this study, the ⁸⁷Sr/⁸⁶Sr ratios of the NBS 987 standard, and the ¹⁴³Nd/¹⁴⁴Nd ratios of the Shin Etsu JNdi-1 standard measured were 0.710241 ± 19 (2σ), and 0.512112 ± 18 (2σ) respectively. The results are listed in Table S3.

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Figure S1. Zr versus selected element variation diagrams to highlight the effects of alteration and metamorphism for the basalts from Langjiexue area.

Figure S2. (A) Ti/Y versus TiO_2 , and (B) Ti/Y versus MgO diagrams for the basalt samples from the Langjiexue in Tethyan Himalaya.

Table S1 Representative Permian-Triassic magmatic events along the Tethyan Himalaya

Name	Age	Location	Characteristics	References
Panjal Traps basalts	Early Permian (289 Ma)	NW India, Kashmir and Zaskar	Extension, OIB-type, tholeiitic continental flood basalt (CFB)	Chauvet et al., 2008; Shellnutt et al., 2011a
Yunam granites	Early Permian (284 Ma)	SE Zaskar	Within-plate granites	Spring et al., 1993
Parkatchic and Sankoo granites	Middle Permian (270 and 268 Ma)	Western Zaskar	Rifting	Noble et al., 2001
Bhote Kosi basalts	Early Permian	Gyirong	Extension, tholeiitic CFB	Garzanti et al., 1999
Nar-Tsum spilites	Early Permian	Northern Nepal	Extension, tholeiitic CFB	Garzanti et al., 1999
Jilong Formation basalts	Early Permian (280 Ma)	Gyirong	Extension, OIB-type, tholeiitic CFB	Zhu et al., 2010
Selong Formation basalts	Middle-Late Permian (258 Ma)	Gyirong	Extension, OIB type, tholeiitic CFB	Zhu et al., 2010
Dala diabbases	Late Permian (273 Ma)	Yardoi	Extension, OIB-type diabase	Zeng et al., 2012b
Rema Formation basalts	Early Triassic (~245 Ma)	Gyangze	OIB-type, alkali basalt	Zhu et al., 2006

Sangkang Formation basalts	Middle Triassic (~230 Ma)	Gyangze	OIB-type, alkali basalt	Zhu et al., 2006
Nieru Formation basalts	Late Triassic (~215 Ma)	Lhozhaq	Extension, MORB- type, tholeiitic, rifting basin	Zhu et al., 2006
Qiongduojiang gabbro, diabase, and monzonites	Late Triassic (230 Ma, 229Ma and 227 Ma)	Qiongduojiang	Extension, MORB- type tholeiitic, rifting	Huang et al., 2018
Nieru Formation basalts	Middle Triassic (243 Ma and 253 Ma)	Kampa	Tholeiitic back-arc basin basalts	Lin et al., 2020
Songre Formation basalts	Late Triassic (227 Ma)	Langjiexue	Extension, OIB-type	this study

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Table S2 Zircon LA-ICP-MS U-Pb in-situ analyzing results for zircons from the Langjiexue basalts.

Spot	Concentrations(ppm)			Th/U	U-Pb isotopic ratios						Ages(Ma)					
	Pb*	Th	U		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
17LJX03																
17LJX03-01	6.93	258.03	151.97	1.70	0.05017	0.00302	0.24238	0.01421	0.03504	0.00048	203	109	220	12	222	3
17LJX03-02	15.60	343.79	362.26	0.95	0.05577	0.00297	0.27594	0.01423	0.03589	0.00049	443	91	247	11	227	3
17LJX03-03	12.10	263.92	287.92	0.92	0.05787	0.00251	0.29189	0.01214	0.03659	0.00043	525	71	260	10	232	3
17LJX03-04	6.09	116.54	152.52	0.76	0.05003	0.00339	0.24936	0.01649	0.03615	0.00056	196	122	226	13	229	3
17LJX03-05	12.88	296.63	313.17	0.95	0.05266	0.00211	0.26084	0.01004	0.03593	0.00037	314	69	235	8	228	2
17LJX03-06	8.53	257.86	184.23	1.40	0.05314	0.00263	0.26697	0.0128	0.03644	0.00045	335	86	240	10	231	3
17LJX03-07	42.43	581.00	637.47	0.91	0.05507	0.0012	0.4398	0.00871	0.05793	0.00043	415	31	370	6	363	3
17LJX03-08	31.19	1011.52	665.21	1.52	0.05366	0.00173	0.26288	0.008	0.03553	0.00033	357	52	237	6	225	2
17LJX03-09	4.61	90.40	113.67	0.80	0.05177	0.00416	0.25684	0.02018	0.03599	0.00063	275	147	232	16	228	4
17LJX03-11	30.95	133.65	336.24	0.40	0.0543	0.002	0.43162	0.01523	0.05765	0.0006	384	61	364	11	361	4
17LJX03-12	5.71	83.92	123.56	0.68	0.0519	0.0029	0.25654	0.01405	0.03587	0.00038	281	107	232	11	227	2
17LJX03-13	18.85	68.61	436.50	0.16	0.05137	0.00115	0.25458	0.00526	0.03596	0.00026	257	34	230	4	228	2
17LJX03-14	38.01	162.40	398.93	0.41	0.06169	0.00131	0.81689	0.0157	0.09605	0.00074	663	28	606	9	591	4
17LJX03-15	5.85	156.89	138.32	1.13	0.05267	0.00447	0.25574	0.02123	0.03522	0.00065	315	155	231	17	223	4
17LJX03-16	43.87	222.33	591.63	0.38	0.05733	0.00153	0.40362	0.0101	0.05106	0.00043	504	40	344	7	321	3
17LJX03-17	23.80	479.81	595.84	0.81	0.05218	0.00278	0.25654	0.01329	0.03568	0.00045	293	96	232	11	226	3
17LJX03-18	50.64	86.31	287.65	0.30	0.07565	0.00138	1.84377	0.02959	0.17679	0.00135	1086	20	1061	11	1049	7
17LJX03-19	22.57	40.60	207.38	0.20	0.06188	0.00167	0.96748	0.02446	0.1134	0.00103	670	38	687	13	692	6
17LJX03-21	12.80	33.34	83.38	0.40	0.07191	0.00244	1.49853	0.04863	0.15115	0.00176	983	47	930	20	907	10

17LJX03-22	25.33	318.57	589.25	0.54	0.04933	0.00112	0.23956	0.00501	0.03524	0.00026	164	35	218	4	223	2
17LJX03-23	44.33	129.89	322.03	0.40	0.06801	0.00135	1.27413	0.02276	0.13589	0.00106	869	24	834	10	821	6
17LJX03-24	53.21	258.76	630.68	0.41	0.06443	0.00129	0.76395	0.01372	0.08599	0.00065	756	25	576	8	532	4
17LJX03-26	23.06	257.16	533.56	0.48	0.0502	0.00229	0.24796	0.011	0.03584	0.00034	204	86	225	9	227	2
17LJX03-27	9.06	3.01	109.14	0.03	0.0644	0.00449	0.80149	0.05438	0.09027	0.00179	755	110	598	31	557	11
17LJX03-28	16.11	453.43	352.19	1.29	0.05405	0.0018	0.27485	0.00869	0.03688	0.00034	373	55	247	7	233	2
17LJX03-29	10.27	72.57	38.94	1.86	0.07839	0.00327	2.02062	0.08165	0.18697	0.00278	1157	56	1122	27	1105	15
17LJX03-31	14.46	43.33	156.51	0.28	0.05132	0.0012	0.2967	0.00637	0.04193	0.00032	255	35	264	5	265	2
17LJX03-32	70.09	301.47	769.53	0.39	0.05839	0.00102	0.72809	0.01104	0.09044	0.00062	544	21	555	6	558	4
17LJX03-33	12.67	25.63	144.85	0.18	0.05074	0.00148	0.37144	0.01019	0.05309	0.00046	229	47	321	8	333	3
17LJX03-34	17.92	56.34	72.80	0.77	0.08555	0.00232	2.5711	0.06582	0.21797	0.00236	1328	33	1292	19	1271	12
17LJX03-35	38.75	66.90	326.41	0.20	0.06531	0.00147	1.10003	0.02328	0.12216	0.00094	784	48	753	11	743	5
17LJX03-36	96.74	135.99	563.05	0.24	0.07386	0.00107	1.79152	0.02112	0.17592	0.00118	1038	13	1042	8	1045	6
17LJX03-37	7.45	129.12	185.57	0.70	0.05273	0.00315	0.2656	0.01542	0.03653	0.00052	317	107	239	12	231	3
17LJX03-38	37.19	122.27	164.56	0.74	0.08156	0.00164	2.2686	0.04144	0.20175	0.00171	1235	23	1203	13	1185	9
17LJX03-39	60.39	276.30	648.95	0.43	0.05838	0.00105	0.73925	0.01172	0.09184	0.00064	544	22	562	7	566	4
17LJX03-40	25.33	107.59	235.42	0.46	0.06105	0.00154	0.88404	0.0208	0.10503	0.00091	641	36	643	11	644	5

17LJX12

17LJX12-01	46.01	659.35	693.35	0.95	0.05779	0.00109	0.45277	0.00859	0.05683	0.00065	522	22	379	6	356	4
17LJX12-02	82.02	205.21	1251.58	0.16	0.05831	0.00084	0.56205	0.00831	0.06991	0.00077	541	15	453	5	436	5
17LJX12-03	13.19	155.44	375.07	0.41	0.05546	0.00346	0.27398	0.01656	0.03583	0.00056	431	107	246	13	227	3
17LJX12-04	11.37	143.72	273.88	0.52	0.0516	0.00182	0.29563	0.00992	0.04156	0.00039	268	60	263	8	262	2
17LJX12-05	19.64	105.74	95.96	1.10	0.07095	0.00179	1.63449	0.0411	0.16711	0.00211	956	31	984	16	996	12
17LJX12-06	190.58	1245.81	2968.90	0.42	0.05745	0.00071	0.51285	0.00661	0.06475	0.0007	509	13	420	4	404	4

17LJX12-07	25.38	485.36	634.82	0.76	0.05161	0.00129	0.25413	0.00633	0.03572	0.00042	268	36	230	5	226	3
17LJX12-08	25.17	504.96	597.77	0.84	0.05372	0.00215	0.25756	0.01015	0.03478	0.00048	359	64	233	8	220	3
17LJX12-10	4.18	72.94	105.86	0.69	0.05008	0.00347	0.24618	0.01677	0.03565	0.00063	199	122	223	14	226	4
17LJX12-11	50.78	193.24	612.87	0.32	0.05708	0.00109	0.65668	0.01256	0.08345	0.00095	495	23	513	8	517	6
17LJX12-12	20.85	568.73	484.77	1.17	0.05065	0.0015	0.25332	0.00706	0.03628	0.0003	225	49	229	6	230	2
17LJX12-13	19.19	81.64	254.58	0.32	0.05848	0.00137	0.60353	0.01406	0.07487	0.00089	548	30	479	9	465	5
17LJX12-14	16.44	567.93	353.29	1.61	0.0525	0.00207	0.25507	0.00963	0.03524	0.00036	307	67	231	8	223	2
17LJX12-15	54.48	228.27	438.28	0.52	0.06845	0.00107	1.09571	0.01742	0.11612	0.0013	882	16	751	8	708	8
17LJX12-16	24.78	71.64	174.94	0.41	0.06891	0.00161	1.3136	0.03051	0.13827	0.00169	896	28	852	13	835	10
17LJX12-17	48.98	1028.07	681.20	1.51	0.05196	0.00098	0.40187	0.0067	0.05611	0.00037	284	26	343	5	352	2
17LJX12-18	123.02	71.33	452.29	0.16	0.09729	0.00117	3.72737	0.04689	0.27791	0.00305	1573	11	1577	10	1581	15
17LJX12-19	5.23	145.14	122.13	1.19	0.05036	0.00417	0.24731	0.02003	0.03562	0.00063	212	150	224	16	226	4
17LJX12-21	19.47	112.55	225.30	0.50	0.05739	0.00139	0.64921	0.01569	0.08206	0.00098	507	32	508	10	508	6
17LJX12-22	28.11	127.59	306.77	0.42	0.05817	0.00122	0.71273	0.01498	0.08888	0.00103	536	26	546	9	549	6
17LJX12-23	15.55	349.49	386.62	0.90	0.0548	0.00598	0.26447	0.02813	0.03501	0.00092	404	191	238	23	222	6
17LJX12-24	31.09	59.28	245.25	0.24	0.07106	0.00131	1.28006	0.0237	0.13067	0.00151	959	20	837	11	792	9
17LJX12-25	19.89	640.91	424.03	1.51	0.0507	0.00229	0.25148	0.01093	0.03598	0.00041	227	79	228	9	228	3
17LJX12-26	71.78	113.19	459.92	0.25	0.07554	0.00106	1.6318	0.02354	0.1567	0.00174	1083	13	983	9	938	10
17LJX12-27	14.68	322.70	370.99	0.87	0.04672	0.00245	0.23207	0.01179	0.03603	0.00044	35	86	212	10	228	3
17LJX12-28	29.47	141.01	127.43	1.11	0.07924	0.00156	2.02636	0.03993	0.1855	0.00221	1178	21	1124	13	1097	12
17LJX12-29	14.48	252.83	302.89	0.83	0.05489	0.00168	0.32907	0.00948	0.04349	0.00037	408	49	289	7	274	2
17LJX12-30	12.32	84.55	125.78	0.67	0.05954	0.0018	0.72033	0.02152	0.08775	0.00113	587	42	551	13	542	7
17LJX12-31	43.29	426.22	716.33	0.60	0.05461	0.00099	0.4456	0.00706	0.05919	0.00039	396	24	374	5	371	2
17LJX12-32	12.31	33.46	69.22	0.48	0.07121	0.00199	1.65479	0.04576	0.16857	0.00219	963	35	991	18	1004	12

17LJX12-33	15.80	49.57	194.92	0.25	0.0589	0.00152	0.6721	0.01716	0.08277	0.00101	563	35	522	10	513	6
17LJX12-34	44.81	118.84	400.57	0.30	0.0613	0.00105	0.95474	0.01655	0.11298	0.00128	650	19	681	9	690	7
17LJX12-35	14.76	327.99	375.53	0.87	0.05328	0.00201	0.25629	0.00923	0.03489	0.00035	341	63	232	7	221	2
17LJX12-37	14.02	108.05	307.34	0.35	0.05337	0.00152	0.334	0.00942	0.0454	0.00056	345	42	293	7	286	3
17LJX12-38	55.91	128.92	207.21	0.62	0.091	0.00134	3.0442	0.04576	0.24265	0.00275	1447	13	1419	11	1400	14
17LJX12-39	21.26	225.05	524.52	0.43	0.05313	0.00247	0.29964	0.01343	0.04091	0.00049	334	80	266	10	258	3
17LJX12-40	26.44	63.20	216.64	0.29	0.07118	0.0019	1.1808	0.03115	0.12032	0.00154	963	33	792	15	732	9

Pb* :Radiogenic lead. $Pb^* = 0.241 \times {}^{206}Pb + 0.221 \times {}^{207}Pb + 0.524 \times {}^{208}Pb$; ${}^{207}Pb^*/{}^{235}U = (e^{\lambda^{235}t} - 1) / \lambda^{235}$, decay constant of ${}^{235}U$ }. Isotopic ratios and ages were corrected by common lead, following the methods reported by Andersen (2002). For magmatic crystallization zircons in the granitoid samples, concordance degree is restricted between 90% and 110%. Concordance degree calculation: for zircons with age < 10Ga, concordance degree = $age({}^{207}U/{}^{235}Pb) / age({}^{206}U/{}^{238}Pb)$; for zircons with age > 10Ga, concordance degree = $age({}^{207}Pb/{}^{206}Pb) / age({}^{206}U/{}^{238}Pb)$. For zircons with ages > 10Ga, ${}^{207}Pb/{}^{206}Pb$ ages were used; For zircons with ages < 10Ga, ${}^{206}Pb/{}^{238}U$ ages were used.

Table S3 Whole-rock major, trace element and Sr-Nd isotope data of Langjiexue basalts.

Sample	17LJX01	17LJX02	17LJX03	17LJX04	17LJX05	17LJX11	17LJX12	17LJX13	17LJX14	17LJX15
XRF major elements (wt.%)										
SiO ₂	50.60	51.40	51.27	51.31	50.26	50.93	51.79	50.40	50.65	51.32
TiO ₂	3.08	3.13	3.14	3.5	3.27	3.33	2.89	3.13	3.22	3.31
Al ₂ O ₃	13.18	13.32	13.38	14.03	14.24	14.03	12.94	13.07	13.14	13.29
TFe ₂ O ₃	12.90	13.05	12.97	12.84	12.48	12.73	12.33	12.90	12.96	13.04
MnO	0.19	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.18	0.17
MgO	4.44	4.76	4.57	3.86	4.46	3.89	4.98	5.23	4.40	4.51
CaO	8.43	7.76	8.04	5.54	8.43	5.44	7.75	8.01	8.54	8.17
Na ₂ O	2.78	2.86	2.68	3.51	2.46	3.53	2.79	2.42	2.76	2.62
K ₂ O	0.22	0.81	0.98	0.21	1.34	0.22	1.01	1.28	0.22	0.98
P ₂ O ₅	0.38	0.38	0.38	0.41	0.34	0.39	0.34	0.34	0.39	0.39
LOI	3.30	2.30	2.30	5.05	2.2	5.04	2.54	2.46	3.33	2.43
TOTAL	99.49	99.94	99.88	100.44	99.64	99.70	99.51	99.40	99.79	100.22
Mg#	40.10	41.50	40.66	36.9	41	37.28	43.99	44.09	39.77	40.21
ICP-MS trace elements (ppm)										
Sc	30.70	29.42	28.44	19.46	18.62	29.43	27.99	28.70	16.92	21.26
V	352.32	346.86	338.70	291.69	295.68	351.78	322.29	346.55	303.96	320.55
Cr	34.62	35.56	30.43	28.17	26.38	36.98	43.64	47.30	21.87	33.15
Co	37.96	37.11	35.10	35.41	33.08	28.10	33.81	36.69	33.48	27.49
Ni	29.83	21.34	16.16	28.1	15.63	20.29	18.83	20.79	16.11	20.48
Ga	22.28	21.56	22.12	18.79	18.86	22.01	21.45	21.83	19.15	18.82
Rb	26.35	23.27	24.74	26.2	23.29	27.48	26.47	31.43	33.20	27.08

Sr	755.29	410.90	584.27	692.99	539.4	413.66	460.42	556.07	636.27	406.37
Y	30.47	30.95	30.53	28.52	28.54	33.95	29.62	29.54	25.63	31.89
Zr	287.24	290.97	299.08	260.65	260.45	304.98	295.84	277.83	234.65	277.85
Nb	20.44	20.84	21.06	22.02	22.46	22.39	19.61	20.22	20.60	24.09
Ba	303.52	255.17	376.51	306.6	389.89	314.56	240.31	294.56	359.55	318.14
La	22.93	23.55	23.57	24.21	24.45	20.72	22.74	21.41	20.97	21.81
Ce	53.47	55.05	54.81	56.09	56.31	51.18	52.46	50.31	48.82	53.43
Pr	7.05	7.24	7.21	7.43	7.44	7.07	6.84	6.66	6.48	7.36
Nd	31.77	32.30	32.48	33.76	33.58	31.89	30.63	29.91	29.45	33.68
Sm	7.46	7.67	7.63	8.02	7.95	7.76	7.16	7.21	7.07	8.19
Eu	2.45	2.47	2.47	2.61	2.6	3.04	2.25	2.42	2.39	3.26
Gd	7.22	7.36	7.23	8.52	8.46	7.45	6.91	6.82	7.51	8.92
Tb	1.21	1.23	1.21	1.2	1.18	1.29	1.17	1.15	1.05	1.28
Dy	5.74	5.89	5.84	6.42	6.29	6.32	5.59	5.56	5.63	6.97
Ho	1.22	1.25	1.22	1.19	1.18	1.33	1.18	1.18	1.05	1.30
Er	2.81	2.84	2.84	3.19	3.15	3.07	2.72	2.75	2.82	3.48
Tm	0.43	0.43	0.43	0.41	0.42	0.46	0.42	0.41	0.38	0.46
Yb	2.39	2.46	2.46	2.63	2.63	2.55	2.35	2.37	2.34	2.82
Lu	0.37	0.38	0.37	0.37	0.36	0.39	0.36	0.36	0.33	0.39
Hf	7.57	7.56	7.51	6.54	6.56	8.01	7.82	7.36	5.96	7.08
Ta	1.54	1.55	1.54	1.68	1.7	1.64	1.53	1.52	1.55	1.81
Pb	4.16	3.55	3.69	4.23	3.99	2.96	3.83	3.55	3.49	1.47
Th	3.47	3.47	3.43	3.29	3.29	3.77	3.61	3.27	2.82	3.64
U	0.81	0.82	0.79	0.76	0.76	0.90	0.85	0.82	0.66	0.87
Eu*	1.02	1.00	1.02	0.96	0.97	1.22	0.98	1.05	1.00	1.17

Sr-Nd isotope compositions									
⁸⁷ Sr/ ⁸⁶ Sr	0.706525	0.705624	0.705600	0.705674	0.706561	0.708878	0.705675	0.705640	0.705601
σ(StdErr)	0.000007	0.000009	0.000010	0.000006	0.000008	0.000009	0.000008	0.000009	0.000008
(⁸⁷ Sr/ ⁸⁶ Sr) _i	0.706198	0.705093	0.705203	0.705184	0.706206	0.708254	0.705135	0.705109	0.705195
¹⁴³ Nd/ ¹⁴⁴ Nd	0.512695	0.512677	0.512694	0.512682	0.512687	0.512641	0.512668	0.512668	0.512685
σ(StdErr)	0.000007	0.000008	0.000006	0.000004	0.000004	0.000007	0.000007	0.000007	0.000004
(¹⁴³ Nd/ ¹⁴⁴ Nd) _i	0.512483	0.512463	0.512483	0.512465	0.512473	0.512422	0.512457	0.512450	0.512472
ε _{Nd} (t)	2.71	2.31	2.69	2.35	2.51	1.51	2.19	2.06	2.48
T _{DM} (Ga)	0.97	1.03	0.97	1.04	1.01	1.17	1.02	1.08	1.00

LOI = loss on ignition. $Mg^{\#} = 100 \times Mg^{2+}/(Mg^{2+}+TFe^{2+})$, $TFeO^* = 0.8998 \times TFe_2O_3$. $Eu^* = Eu/0.058/(Sm/0.153 \times Gd/0.2055)^{1/2}$.

Corrected formulas are as follows:

$$(^{87}Sr/^{86}Sr)_i = (^{87}Sr/^{86}Sr)_{sample} - (^{87}Rb/^{86}Sr) \times (e^{\lambda t} - 1), \lambda_{Rb-Sr} = 0.0142 \text{ Ga}^{-1}, ^{87}Rb/^{86}Sr = (Rb/Sr) \times 2.8956.$$

$$(^{143}Nd/^{144}Nd)_i = (^{143}Nd/^{144}Nd)_{sample} - (^{147}Sm/^{144}Nd) \times (e^{\lambda t} - 1), \lambda_{Sm-Nd} = 0.00654 \text{ Ga}^{-1}, ^{147}Sm/^{144}Nd = (Sm/Nd) \times 0.60456.$$

$$\epsilon_{Nd}(t) = [(^{143}Nd/^{144}Nd)_{sample} / (^{143}Nd/^{144}Nd)_{CHUR} - 1] \times 10000, (^{143}Nd/^{144}Nd)_{CHUR} = 0.512638 - 0.1967 \times (e^{\lambda t} - 1).$$

$$T_{DM} \text{ (Ga)} = 1/\lambda_{Sm-Nd} \times \ln \{1 + [(^{143}Nd/^{144}Nd)_{sample} - 0.51315] / [(^{147}Sm/^{144}Nd)_{sample} - 0.2136]\}. t = 227 \text{ Ma}.$$