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Supplemental Material

Table S1. Zircon U-Pb ages of igneous rocks in the Western Kunlun orogenic belt.

Table S2. Results of whole-rock major (wt%) and trace (ppm) data of three intrusions.

Table S3. Results of zircon U-Pb age of three intrusions.

Table S4. Results of zircons Hf isotope compositions of three intrusions.

Table S5. Results of whole-rock Sr-Nd-Pb isotope compositions of three intrusions.

Table S6. Representative analyses of feldspar, amphibole, and pyroxene from the Aqiang and Yutian intrusions.

Table S7. Dulk partition coefficients used for trace element modelling in Figure 14.

Figure S1. CL images of zircons showing internal textures and ages of $^{206}\text{Pb}/^{238}\text{U}$ (Ma).

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Table S1 Zircon U-Pb ages of igneous rocks in the Western Kunlun orogenic belt, including the North Kunlun, the South Kunlun, the Tianshuihai and Karakorum Terranes.

Location/Name	Petrology	Sample No.	Methods	Minerals	Ages/Ma	Erros	Resources
North Kun							
Buya	Granite		SHRIMP	Zircon	430	12	Ye et al., 2008
Buya			Ar-Ar	Hornblende	420.6	3.6	Ye et al., 2008
Buya			Ar-Ar	Hornblende	419.9	7.5	Ye et al., 2008
Heluositan	Orthogneiss	07HL-51	LA-ICP-MS	Zircon	2257	6	Wang et al., 2014
	Orthogneiss	11XZ-8	LA-ICP-MS	Zircon	2306	10	Wang et al., 2014
Duweituiwei	Orthogneiss	12TK-9	LA-ICP-MS	Zircon	1899	10	Wang et al., 2014
	Orthogneiss	12TK-13	LA-ICP-MS	Zircon	1795	32	Wang et al., 2014
Heluositan complex	Granitic gneiss	13TR05	LA-ICP-MS	Zircon	2386	56	Ye et al., 2016
Heluositan complex	Granitic gneiss		LA-ICP-MS	Zircon	2284	13	Ye et al., 2016
Heluositan complex	Granitic gneiss	13TR07	LA-ICP-MS	Zircon	2365	36	Ye et al., 2016
Heluositan complex	Granitic gneiss		LA-ICP-MS	Zircon	2299	19	Ye et al., 2016
Heluositan complex	Granitic gneiss	14KL02	LA-ICP-MS	Zircon	2339	13	Ye et al., 2016
Heluositan complex			LA-ICP-MS	Zircon	2346	12	Ye et al., 2016
Xuxugou	Mafic dyke	08KL20	SHRIMP	Zircon	802	9	Zhang et al., 2010
Akazi (AP)	Granitic geniss			Zircon	2410	20	Zhang et al., 2007
Xuxugou (XP)	Granitic geniss			Zircon	2340	8.2	Zhang et al., 2007
South Kunlun							
Arkarz	Granodiorite	XKL12-95	LA-ICP-MS	zircon	224	1.5	Zhang Y et al., 2016
Arkarz	Granodiorite	XKL12-96	LA-ICP-MS	zircon	225.5	2.9	Zhang Y et al., 2016
Arkarz	MME	XKL12-95	LA-ICP-MS	zircon	224.8	3.7	Zhang Y et al., 2016
Arkarz	MME	XKL12-117	LA-ICP-MS	zircon	224.6	2.7	Zhang Y et al., 2016
South Kudi	Granite	X10-37	SHRIMP	zircon	215	2.3	Liu et al., 2015
Arkarz	Granodiorite	X10-34-1	SHRIMP	zircon	212.7	3.1	Liu et al., 2015
Bulunkou	Granite	07TS-34	LA-ICP-MS	zircon	236	2	Wang et al., 2016
Bulunkou	MME	07TS-35	LA-ICP-MS	zircon	230	7	Wang et al., 2016
Akazishan	Monzogranite	07TS-57	LA-ICP-MS	zircon	208	1	Wang et al., 2016
Yierba	Monzogranite	X10-16	SHRIMP	zircon	513	7	Liu et al., 2014
North Kudi	Monzogranite	X10-21	SHRIMP	zircon	420.6	6.3	Liu et al., 2014
Datong	Granodiorite	DT-1	SHRIMP	zircon	447.7	5.2	Liao et al., 2010
Datong	Granodiorite	DT-4	SHRIMP	zircon	469.3	5.3	Liao et al., 2010
Datong	Granodiorite	DT-7-1	SHRIMP	zircon	453.6	5	Liao et al., 2010
Datong	MME	DT-7-2	SHRIMP	zircon	448	4.6	Liao et al., 2010
Datong	Granodiorite	DT-15-1	SHRIMP	zircon	465.3	4.8	Liao et al., 2010
Datong	Granodiorite	DT-18-1	SHRIMP	zircon	474.4	5.3	Liao et al., 2010
Datong	Monzonite	DT111-1	LA-ICP-MS	zircon	434.74	0.9	Wang et al., 2017
Datong	Monzonite	DT112-1	LA-ICP-MS	zircon	443.62	0.92	Wang et al., 2017
Datong	Quartz monzonite	DT112-2	LA-ICP-MS	zircon	443.6	1.4	Wang et al., 2017
Datong	Granite	DT111-6	LA-ICP-MS	zircon	426	1	Wang et al., 2017
Taer	Granite	TE-1-1	SHRIMP	zircon	234.2	2.8	Liao et al., 2012
Taer	Monzogabbro	TE-1-2	SHRIMP	zircon	220.3	3.3	Liao et al., 2012

Taer	Granite	TE-2-1	SHRIMP	zircon	224.9	3.9	Liao et al., 2012
Taer	Monzogabbro	TE-2-3	SHRIMP	zircon	226.9	4	Liao et al., 2012
Taer	Quartz monzonite	TE-6-1	SHRIMP	zircon	232.4	4	Liao et al., 2012
Taer	Monzodiorite	TE-6-3	SHRIMP	zircon	233.3	3	Liao et al., 2012
Oytage	Plagiogranite	WYT-5	SHRIMP	zircon	458	14	Jiang et al., 2008
Oytage	Plagiogranite	WYT-5	SHRIMP	zircon	327	4.9	Jiang et al., 2008
Oytage	Plagiogranite	GZ-1	SHRIMP	zircon	337.5	4.1	Jiang et al., 2008
Yuqikapa	Syenogranite	GG-2	SHRIMP	zircon	242.9	2.6	Jiang et al., 2013
Muztaga	Granodiorite	MS-11-1	SHRIMP	zircon	230.3	5	Jiang et al., 2013
Muztaga	MMES	MS-11-4	SHRIMP	zircon	225.9	2.2	Jiang et al., 2013
Taer	Monzogranite	TE-1-1	SHRIMP	zircon	234.2	2.8	Jiang et al., 2013
Taer	Plagiogranite	TE-2-1	SHRIMP	zircon	227.1	4.1	Jiang et al., 2013
Taer	MMES	TE-2-3	SHRIMP	zircon	226.9	4	Jiang et al., 2013
Taer	Monzogranite	TE-6-1	SHRIMP	zircon	232.4	4	Jiang et al., 2013
Taer	MMES	TE-6-3	SHRIMP	zircon	233.3	3	Jiang et al., 2013
Taer	Granite		LA-ICP-MS	zircon	235.7	3.9	Huang et al., 2013
Akazishan	Gneissic pluton	2030	SHRIMP	zircon	1916	7	Zhang et al., 2007
Akazishan	Gneissic pluton		SHRIMP	zircon	2410	20	Zhang et al., 2007
Xuxugou	Gneissic pluton	3009	SHRIMP	zircon	2343	8.2	Zhang et al., 2007
Qitaidaban	Granite		TIMS	zircon	202.2	3.4	Li et al., 2007
Muztaga	Granite		LA-ICP-MS	zircon	229.6	0.8	Kang et al., 2012
Muztaga	Granite		LA-ICP-MS	zircon	232.8	1.5	Kang et al., 2012
Oytage	Granite	10x-01	LA-ICP-MS	zircon	322.8	2.2	Kang et al., 2015
Saluoyi	Granite	10x-04	LA-ICP-MS	zircon	319	1.7	Kang et al., 2015
Oytage	Granite	FAY-5	LA-ICP-MS	zircon	337.5	6.5	Li et al., 2009
Oytage	Granite	FGZ-15	LA-ICP-MS	zircon	339.2	6.5	Li et al., 2009
Datong	Granite	10X10-1	LA-ICP-MS	zircon	470	1.2	Gao et al., 2013
Shangqimugan	Granite	D141-2Zr	LA-ICP-MS	zircon	228.9	1.7	Chen et al., 2014
Shangqimugan	Granite	D145-3Zr	LA-ICP-MS	zircon	222.4	2.6	Chen et al., 2014
Kalaguorumu	Granite	KL-118	LA-ICP-MS	Zircon	189.3	2.8	Wu et al., 2013
Bulong	Granite		LA-ICP-MS	Zircon	441	2	Wang et al., 2013
Yierba	Granitoid		TIMS	Zircon	471	5	Yuan et al., 2002
North Kudi	Granitoid		TIMS	Zircon	405	2	Yuan et al., 2002
Arkarz	Granitoid		TIMS	Zircon	215	1	Yuan et al., 2002
Arkarz	Granitoid		TIMS	Zircon	212	2	Yuan et al., 2002
Kudi Complex	Granite	KL2030	SHRIMP	Zircon	783	10	Zhang et al., 2006
Kudi	Yixieke dacite	Sample 123	SHRIMP	Zircon	492	9	Xiao et al., 2005
Kudi o	Granite	Sample 122	SHRIMP	Zircon	408	8	Xiao et al., 2005
Kudi	Akarz granite	Sample 119	SHRIMP	Zircon	213	3	Xiao et al., 2005
Azibailei	Granite	13TR01	LA-ICP-MS	Zircon	1414	3	Ye et al., 2016
Azibailei	Granite	13TR02	LA-ICP-MS	Zircon	1408	9	Ye et al., 2016
Azibailei	Granite		LA-ICP-MS	Zircon	1405	6	Ye et al., 2016
Azibailei	Granite	13TR03	LA-ICP-MS	Zircon	1412	12	Ye et al., 2016

Azibailei	Granite		LA-ICP-MS	Zircon	1401	5	Ye et al., 2016
Tianshuihai							
Mazha		X10-29	SHRIMP	Zircon	209.2	3.7	Liu et al., 2015
Dahongliutan	Granite		LA-ICP-MS	Zircon	209.6	1.3	Wei et al., 2017
Dahongliutan	Granite		SHRIMP	Zircon	220	2.2	Qiao et al., 2015
Dahongliutan	Granite		SHRIMP	Zircon	217.4	2.2	Qiao et al., 2015
Chalukou	Granite	1311QE.TW1	SHRIMP	Zircon	99.1	1.7	Zhou et al., 2016
Chalukou	Granite		SHRIMP	Zircon	92.3	1.1	Zhou et al., 2016
Dahongliutan	Monzonite	DHLTNP-7	LA-ICP-MS	Zircon	484.5	2.7	Hu et al., 2016
Dahongliutan	Monzonite	DHLTNP	LA-ICP-MS	Zircon	527	2.8	Hu et al., 2016
Dahongliutan	Meta-gabbro	SC	LA-ICP-MS	Zircon	532.3	3.1	Hu et al., 2016
Suruyidier	Granodiorite		LA-ICP-MS	Zircon	12.7	0.13	Yu et al., 2012
Kalaguorumu	Granite	KL-118	LA-ICP-MS	Zircon	189.3	2.8	Wu et al., 2013
Bandiershirehong	Granodiorite		LA-ICP-MS	Zircon	239	1.5	Lu et al., 2015
Mazha	Meta-rhyolite	2015D056	LA-ICP-MS	Zircon	1970	41	Zhang et al., 2018
	Meta-rhyolite		LA-ICP-MS	Zircon	2523	23	Zhang et al., 2018
	Meta-rhyolite	2015d038	LA-ICP-MS	Zircon	2520	31	Zhang et al., 2018
	Granite	2015d029	LA-ICP-MS	Zircon	840	3.2	Zhang et al., 2018
		2015d035	LA-ICP-MS	Zircon	839	3.1	Zhang et al., 2018
		2015d037	LA-ICP-MS	Zircon	838.4	3.1	Zhang et al., 2018
		2015d070	LA-ICP-MS	Zircon	835.4	3.1	Zhang et al., 2018
		2015d032-1	LA-ICP-MS	Zircon	834.1	2.7	Zhang et al., 2018
		2015d032-2	LA-ICP-MS	Zircon	836.2	3.3	Zhang et al., 2018
Bulunkou Group	Meta-volcanic rocks	2015D046	LA-ICP-MS	Zircon	515	1.7	Zhang et al., 2018
	Meta-volcanic rocks	2015D041	LA-ICP-MS	Zircon	508	2	Zhang et al., 2018
	Meta-volcanic rocks	2015D039	LA-ICP-MS	Zircon	518.8	2.3	Zhang et al., 2018
	Gneissic intrusions	2015D05-2	LA-ICP-MS	Zircon	510.8	2.1	Zhang et al., 2018
	Gneissic intrusions	2015D029	LA-ICP-MS	Zircon	513.2	3.7	Zhang et al., 2018
	Gneissic intrusions	2015D030	LA-ICP-MS	Zircon	486.1	10	Zhang et al., 2018
	Gneissic intrusions	2015D040	LA-ICP-MS	Zircon	245.2	0.98	Zhang et al., 2018
	Gneissic intrusions	2015D051-1	LA-ICP-MS	Zircon	200.5	1.3	Zhang et al., 2018
	Gneissic intrusions	2015D052	LA-ICP-MS	Zircon	192.88	0.65	Zhang et al., 2018
	Gneissic intrusions	2015D053	LA-ICP-MS	Zircon	186.7	1.4	Zhang et al., 2018
Ageladaban Complex	Monzogranite	D3219	LA-ICP-MS	Zircon	78	0.3	Liu et al., 2017
	Monzonite	YM61-1	LA-ICP-MS	Zircon	80.4	0.4	Liu et al., 2018
			LA-ICP-MS	Zircon	108.1	0.5	Liu et al., 2019
Karakorum							
Karibasheng	Monzogranite	SB-1	SHRIMP	Zircon	11.74	0.2	Jiang et al., 2012
Kuzigan	Granite	KZ-4	SHRIMP	Zircon	10.45	0.24	Jiang et al., 2012
Kuzigan	diopside syenite	KZ-1	SHRIMP	Zircon	10.46	0.25	Jiang et al., 2012
Konjirap	Granite		LA-ICP-MS	Zircon	107.2	0.9	Kang et al., 2012
Kuzigan	Alkali complex	A019H	SHRIMP	Zircon	11	0.59	Ke et al., 2008
		A019J	SHRIMP	Zircon	11.1	0.3	Ke et al., 2009

		A019I	SHRIMP	Zircon	11	0.3	Ke et al., 2010
		A018U	SHRIMP	Zircon	11.3	0.6	Ke et al., 2011
		A019M	SHRIMP	Zircon	11.3	0.4	Ke et al., 2012
Kalaqitu	Granite	KL-3	SHRIMP	Zircon	114.1	2.7	Jiang et al., 2014
Aranbaotai	Granite	AR-1	SHRIMP	Zircon	110	2.4	Jiang et al., 2015
Hongqilapu	Granite	HQ	SHRIMP	Zircon	102.2	1.4	Jiang et al., 2016

Name	Age/Ma	Area/Km
Akazi	2400	22.2
Heluositan complex	2336	163
Duweituiwei	1899	104
Azibailedi	1408	23.5
Mazar granitic intrusions	837	108
Buya	423	7.7
Yierba	513	47.1
North Kudi	420.6	11.9
Datong	450	800
Dahongliutang	515	292
Oytage	337.5	76.2
Saluoyi	319	19
Muztaga	232.8	1807
Arkarz	224	1588
Bulunkou	233	72
Taer	228	75
Yuqikapa	242.9	70
Shangqimugan	224	117
Mazha	209	78
Karibasheng	11	513
Ageladaban Complex	88	500
Yutian complex	450	37
Aqiang	470	22
Note, area is from 1:250000 maps		

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Table S2 Results of whole-rock major (wt.%) and trace (ppm) data of three intrusions

Table S2 Results of whole-rock major (wt.%) and trace (ppm) data of three intrusions																		
	Yutian complex												Aqiang			North Yutian		
Location	Monzogranite						enclave	Monzogabbro						Granodiorite			Quartz diorite	
Sample No.	17WP29-1	17WP30	17WP32	17WP33	17WP28-2	17WP40	17WP34-1	17WP35	17WP36	17WP37	17WP38	17WP39	17WP15	17WP16	17WP17	17WP23	17WP48	17WP49
SiO ₂	65.6	65.3	68.3	66.9	57.2	59.0	53.6	44.7	44.2	44.0	44.5	44.2	67.0	65.1	65.8	63.1	54.1	52.6
TiO ₂	0.43	0.52	0.39	0.44	0.8	0.49	0.97	1.34	1.32	1.32	1.31	1.34	0.41	0.48	0.42	0.67	1.08	1.32
Al ₂ O ₃	14.8	15.3	14.4	15.1	16.1	18.7	14.9	14.0	13.4	13.7	13.2	13.2	15.0	15.0	15.0	15.9	16.9	17.1
Fe ₂ O ₃	4.23	4.16	3.47	3.71	7.04	5.27	10.43	15.97	15.39	15.35	14.7	15.22	3.71	4.2	3.81	2.63	8.07	9.08
MnO	0.07	0.07	0.06	0.07	0.11	0.07	0.18	0.27	0.21	0.21	0.21	0.22	0.06	0.08	0.07	0.08	0.14	0.16
MgO	1.67	1.74	1.2	1.55	3.83	1.61	4.19	6.19	6.09	5.96	5.97	6.16	1.22	1.82	1.87	2.04	4.96	5.29
CaO	2.95	3.11	2.69	2.29	6.37	5.97	7.9	10.08	12.53	12.3	12.58	12.32	5.25	3.34	2.89	5.25	8.41	8.59
Na ₂ O	3.23	3.39	2.78	3.27	3.03	4.54	3.4	2.42	1.69	2	1.52	1.69	3.67	3.78	3.09	6.96	2.29	2.33
K ₂ O	4.89	4.9	5.37	4.7	3.07	2.71	2.22	1.82	2.03	1.8	2.52	2.2	2.47	3.03	4.06	0.56	2.12	1.46
P ₂ O ₅	0.18	0.19	0.13	0.15	0.29	0.18	0.88	1.18	1.15	1.14	1.12	1.14	0.11	0.12	0.11	0.17	0.23	0.27
LOI	1.41	1.61	1.06	1.35	1.28	0.67	1.32	1.59	1.31	1.33	1.65	1.44	1.71	3.14	2.73	2.47	1.74	2
TOTAL	99.5	100.3	99.8	99.5	99.1	99.3	99.9	99.6	99.3	99.0	99.2	99.2	100.6	100.1	99.9	99.8	100.0	100.2
ASI	0.94	0.94	0.95	1.04	0.89	0.82	0.7	0.61	0.51	0.52	0.49	0.5	0.83	0.98	1.03	0.74	0.8	0.82
A/NK	1.4	1.41	1.38	1.44	1.94	1.8	1.86	2.36	2.68	2.61	2.51	2.55	1.72	1.59	1.58	1.32	2.78	3.16
Mg#	43.9	45.2	40.6	45.3	51.9	37.7	44.34	43.42	43.94	43.49	44.56	44.5	39.37	46.22	49.29	60.52	54.88	53.57
Li	11.7	13.6	13.4	27.3	14.3	9.8	17.9	24.0	26.9	25.6	28.8	29.1	11.5	22.3	25.1	1.2	15.7	20.4
Be	3.71	4.02	4.76	3.96	3.38	5.39	7.09	3.93	3.21	3.57	3.01	3.45	1.63	2.02	2.47	1.96	1.66	1.83
Sc	10.7	9.8	11.0	8.7	20.5	11.7	25.2	33.5	33.9	37.0	32.6	38.4	11.5	12.3	10.7	10.9	28.6	32.5
V	74.4	76.4	60.6	66.5	149.0	94.1	237.7	332.9	347.1	376.9	329.7	370.5	73.7	73.7	67.9	86.1	183.8	216.5
Cr	15.7	15.0	11.7	18.4	77.3	22.7	11.3	20.7	21.3	19.3	22.5	25.9	12.6	14.3	13.2	23.4	75.9	77.8
Mn	498	483	465	537	850	584	1506	2120	1706	1891	1701	1959	435	546	493	623	1168	1339
Co	10.5	10.6	8.0	8.8	20.7	10.9	31.7	46.0	46.8	49.7	40.6	46.9	7.4	9.2	8.0	6.9	27.6	29.8

Ni	9.24	9.35	7.36	7.5	34.22	7.56	17.87	28.18	24.64	26.27	22.57	26.3	3.36	3.82	3.3	6.5	15.56	17.06
Cu	17.1	6.5	4.2	19.5	27.9	47.1	265.8	98.3	143.1	192.3	113.9	173.3	10.8	5.1	8.2	13.8	19.2	15.8
Zn	40.5	38.9	34.5	45.4	66.6	39.6	90.5	182.2	118.3	124.5	117.5	126.0	26.7	51.4	50.0	42.0	78.8	93.2
Ga	20.4	21.8	24.1	24.7	27.4	27.7	33.4	25.8	27.5	30.1	27.1	30.6	19.8	18.9	18.8	21.6	22.2	23.3
As	4.12	4.16	6.34	5.16	5.04	6.46	12.78	8.83	9.39	10.51	9.37	10.74	17.35	6.92	5.61	19.06	5.46	6.06
Se	0.91	1.03	1.08	0.69	1.7	1.03	2.5	2.04	2.28	2.79	2.54	2.61	0.83	0.7	0.73	1.14	0.91	0.92
Rb	233	232	284	215	110	105	175	86	117	106	133	126	70	126	168	25	98	57
Sr	366	355	317	372	395	860	441	700	917	1014	1036	1009	598	263	232	220	364	373
Y	20	19.99	25.43	16.14	42.61	22.23	43.14	32.63	36.74	41.43	38.85	41.89	23.49	20.43	19.94	33.93	22.93	26.01
Zr	206	207	269	205	296	224	310	69	81	70	65	81	155	158	153	251	171	178
Nb	17.0	21.7	18.7	14.9	27.0	18.6	22.7	10.6	12.4	13.2	13.6	13.1	9.5	10.9	10.1	13.6	13.7	16.3
Mo	0.36	0.61	0.45	0.36	0.30	0.50	0.94	1.05	0.66	0.66	0.70	0.63	0.18	0.22	0.10	0.28	0.58	0.55
Cs	3.90	4.05	7.22	4.59	2.00	3.16	2.50	2.40	2.52	2.17	3.09	2.41	1.08	5.29	5.40	2.09	4.21	2.47
Ba	1131	1133	1033	1159	1166	1792	572	2420	2858	2675	3255	3340	636	761	940	113	770	686
La	45.7	42.5	63.4	55.8	90.4	43.9	100.6	60.0	65.9	65.0	67.5	65.3	42.9	37.0	36.3	23.1	24.5	27.8
Ce	90.1	93.1	109.0	99.2	169.9	89.0	196.6	133.6	150.9	149.8	155.3	149.7	80.5	69.4	67.9	65.2	52.9	60.6
Pr	9.89	10.42	11.42	9.89	18.07	9.96	21.81	16.96	19.18	19.41	19.89	19.3	8.47	7.24	7.13	8.09	6.21	7.26
Nd	35.8	38.0	42.9	33.6	64.7	37.9	85.1	71.1	79.8	85.4	83.7	84.7	29.9	25.4	25.1	32.4	25.1	29.6
Sm	6.41	6.62	7.21	4.83	10.88	6.19	14.31	13.99	15.75	15.95	16.58	15.63	5.37	4.51	4.53	5.96	4.47	5.26
Eu	1.27	1.35	1.11	1.11	2.13	2.31	2.76	2.96	3.46	3.6	3.63	3.59	1.07	0.92	0.94	1.5	1.43	1.52
Gd	4.94	5.08	5.86	3.67	8.76	4.97	11.47	10.9	12.35	12.98	13.1	12.9	4.52	3.91	3.82	5.45	4.19	4.84
Tb	0.71	0.72	0.83	0.5	1.33	0.68	1.51	1.43	1.61	1.65	1.71	1.61	0.71	0.6	0.61	0.89	0.63	0.74
Dy	3.63	3.6	4.31	2.55	7.27	3.56	7.41	6.68	7.61	7.88	8.17	7.69	4	3.38	3.44	5.29	3.61	4.18
Ho	0.69	0.69	0.83	0.5	1.45	0.69	1.36	1.18	1.35	1.39	1.44	1.37	0.81	0.68	0.69	1.12	0.74	0.85
Er	1.92	1.95	2.26	1.42	4.16	1.94	3.7	2.93	3.35	3.42	3.57	3.37	2.3	1.95	2	3.26	2.08	2.39
Tm	0.28	0.29	0.32	0.21	0.62	0.29	0.51	0.37	0.43	0.42	0.46	0.43	0.35	0.29	0.3	0.5	0.3	0.35

Yb	1.8	1.87	2.01	1.4	3.85	1.89	3.25	2.21	2.49	2.47	2.63	2.43	2.26	1.91	1.97	3.18	1.93	2.19
Lu	0.27	0.29	0.3	0.22	0.56	0.3	0.49	0.33	0.35	0.35	0.37	0.35	0.35	0.29	0.3	0.49	0.29	0.33
Hf	5.41	5.51	6.93	4.96	6.87	5.28	6.97	2.24	2.55	2.26	2.24	2.52	4.13	4.23	4.22	5.98	3.83	3.88
Ta	1.47	2.02	1.54	0.77	1.23	1.32	1.19	0.4	0.62	0.65	0.72	0.69	0.87	0.89	0.95	0.77	0.76	0.95
Pb	23.8	17.3	17.5	17.8	22.9	13.5	10.9	12.2	7.7	7.9	8.9	7.6	14.3	16.8	18.9	13.7	9.7	9.9
Th	73.5	26.6	36.9	32.2	25.5	18.4	28.1	8.1	7.8	7.7	8.1	7.5	23.6	27.6	26.3	16.3	5.7	6.2
U	7.24	5.38	4.14	3.01	2.32	3.35	8.68	2.39	2.53	2.43	2.59	2.41	5.39	4.2	3.34	2.89	1.32	1.43
ΣREE	204	206	252	215	384	204	451	325	364	370	378	368	183	158	155	156	128	148
LREE	189	192	235	204	356	189	421	299	335	339	347	338	168	144	142	136	115	132
HREE	14.2	14.5	16.7	10.5	28.0	14.3	29.7	26.03	29.54	30.56	31.45	30.15	15.3	13.01	13.13	20.18	13.77	15.87
LREE/HREE	13.3	13.3	14.1	19.5	12.7	13.2	14.2	11.5	11.3	11.1	11.0	11.2	11.0	11.1	10.8	6.8	8.3	8.3
LaN/YbN	18.2	16.3	22.6	28.6	16.8	16.7	22.2	19.5	19.0	18.9	18.4	19.3	13.6	13.9	13.2	5.2	9.1	9.1
δEu	0.66	0.68	0.51	0.77	0.65	1.23	0.64	0.71	0.73	0.74	0.73	0.75	0.65	0.65	0.67	0.79	0.99	0.9
δCe	0.99	1.05	0.92	0.95	0.97	1	0.98	1.01	1.03	1.02	1.03	1.02	0.97	0.98	0.97	1.17	1.03	1.02

Table S3 Results of zircon U-Pb age of three intrusions.

No.	Th/ppm	U/ppm	Ratios						Ages					
			$^{207}\text{Pb}/^{206}\text{Pb}$	σ	$^{207}\text{Pb}/^{235}\text{U}$	σ	$^{206}\text{Pb}/^{238}\text{U}$	σ	$^{207}\text{Pb}/^{206}\text{Pb}$	σ	$^{207}\text{Pb}/^{235}\text{U}$	σ	$^{206}\text{Pb}/^{238}\text{U}$	σ
17WP28-1-1	223	428	0.0561	0.0009	0.5626	0.0095	0.0724	0.0007	457	40	453	6	450	4
17WP28-1-2	354	797	0.0556	0.0008	0.5566	0.0086	0.0722	0.0007	439	36	449	6	450	4
17WP28-1-3	326	505	0.0554	0.0010	0.5432	0.0097	0.0710	0.0007	428	45	441	6	442	5
17WP28-1-4	176	346	0.0567	0.0011	0.5569	0.0114	0.0710	0.0008	480	43	450	7	442	5
17WP28-1-5	285	434	0.0560	0.0010	0.5518	0.0103	0.0711	0.0007	454	44	446	7	443	4
17WP28-1-6	160	270	0.0548	0.0012	0.5435	0.0122	0.0718	0.0008	406	44	441	8	447	5
17WP28-1-7	146	215	0.0555	0.0014	0.5507	0.0133	0.0721	0.0008	432	56	445	9	449	5
17WP28-1-8	252	345	0.0553	0.0012	0.5426	0.0122	0.0712	0.0008	433	50	440	8	443	5
17WP28-1-9	85	291	0.0567	0.0011	0.5583	0.0116	0.0714	0.0008	480	44	450	8	445	5
17WP28-1-10	159	245	0.0543	0.0013	0.5353	0.0135	0.0714	0.0008	383	56	435	9	445	5
17WP28-1-11	327	744	0.0566	0.0009	0.5535	0.0095	0.0708	0.0008	476	35	447	6	441	5
17WP28-1-12	997	910	0.0558	0.0010	0.5515	0.0102	0.0715	0.0008	443	39	446	7	445	5
17WP28-1-13	292	823	0.0567	0.0009	0.5566	0.0098	0.0711	0.0008	480	37	449	6	443	5
17WP28-1-14	415	533	0.0563	0.0010	0.5518	0.0104	0.0708	0.0007	465	34	446	7	441	5
17WP28-1-15	137	289	0.0559	0.0011	0.5548	0.0107	0.0719	0.0007	450	44	448	7	448	4
17WP28-1-16	240	365	0.0559	0.0010	0.5469	0.0103	0.0708	0.0007	456	39	443	7	441	4
17WP28-1-17	814	957	0.0577	0.0008	0.5653	0.0098	0.0707	0.0008	517	30	455	6	440	5
17WP28-1-18	104	163	0.0550	0.0014	0.5460	0.0141	0.0721	0.0008	409	64	442	9	449	5
17WP28-1-19	184	280	0.0564	0.0012	0.5525	0.0117	0.0709	0.0008	478	42	447	8	442	5
17WP29-2-1	156	929	0.0566	0.0009	0.5635	0.0095	0.0721	0.0007	476	35	454	6	449	4
17WP29-2-2	155	271	0.0566	0.0013	0.5646	0.0134	0.0721	0.0006	476	47	455	9	449	4
17WP29-2-3	304	855	0.0555	0.0009	0.5476	0.0091	0.0714	0.0006	432	40	443	6	444	4

17WP29-2-4	177	268	0.0554	0.0015	0.5445	0.0137	0.0714	0.0008	432	57	441	9	445	5
17WP29-2-5	279	562	0.0559	0.0010	0.5560	0.0105	0.0720	0.0007	450	45	449	7	448	4
17WP29-2-6	187	611	0.0562	0.0009	0.5592	0.0094	0.0720	0.0007	457	31	451	6	448	4
17WP29-2-7	381	741	0.0566	0.0010	0.5523	0.0095	0.0708	0.0007	476	44	447	6	441	4
17WP29-2-8	191	304	0.0554	0.0014	0.5480	0.0136	0.0716	0.0007	428	54	444	9	446	4
17WP29-2-9	93	176	0.0566	0.0014	0.5646	0.0135	0.0722	0.0007	476	54	455	9	449	4
17WP29-2-10	189	321	0.0600	0.0014	0.5966	0.0131	0.0723	0.0008	611	52	475	8	450	5
17WP29-2-11	339	836	0.0551	0.0008	0.5419	0.0079	0.0711	0.0007	413	36	440	5	443	4
17WP29-2-12	262	1081	0.0555	0.0008	0.5427	0.0083	0.0706	0.0007	432	-1	440	5	440	4
17WP29-2-13	396	1129	0.0554	0.0008	0.5452	0.0092	0.0710	0.0007	428	33	442	6	442	4
17WP29-2-14	302	680	0.0571	0.0009	0.5663	0.0097	0.0716	0.0007	494	35	456	6	446	4
17WP29-2-15	307	603	0.0547	0.0010	0.5476	0.0102	0.0724	0.0008	398	36	443	7	451	5
17WP29-2-16	466	821	0.0577	0.0014	0.5632	0.0123	0.0707	0.0007	520	45	454	8	440	4
17WP29-2-17	234	446	0.0567	0.0010	0.5655	0.0108	0.0721	0.0007	480	41	455	7	449	4
17WP29-2-18	217	1075	0.0549	0.0008	0.5394	0.0087	0.0710	0.0008	409	33	438	6	442	5
17WP29-2-19	234	503	0.0564	0.0010	0.5619	0.0106	0.0720	0.0007	478	39	453	7	448	4
17WP29-2-20	267	1235	0.0556	0.0008	0.5453	0.0084	0.0709	0.0007	435	36	442	6	441	4
17WP29-2-21	362	773	0.0581	0.0010	0.5749	0.0100	0.0717	0.0007	532	37	461	6	446	4
17WP29-2-22	214	331	0.0577	0.0014	0.5784	0.0152	0.0723	0.0008	520	54	463	10	450	5
17WP29-2-23	379	1183	0.0559	0.0009	0.5501	0.0096	0.0711	0.0008	450	35	445	6	443	5
17WP29-2-24	276	790	0.0557	0.0010	0.5514	0.0103	0.0716	0.0007	439	6	446	7	446	4
17WP34-2-1	500	1363	0.0548	0.0008	0.4848	0.0071	0.0639	0.0005	406	31	401	5	399	3
17WP34-2-2	1846	1514	0.0545	0.0007	0.4837	0.0086	0.0641	0.0009	391	30	401	6	400	6
17WP34-2-3	660	941	0.0550	0.0009	0.4999	0.0082	0.0657	0.0007	413	40	412	6	410	4
17WP34-2-4	747	1194	0.0554	0.0008	0.5052	0.0082	0.0659	0.0007	428	31	415	6	412	4

17WP34-2-5	388	951	0.0561	0.0008	0.5201	0.0076	0.0671	0.0006	454	25	425	5	418	4
17WP34-2-6	532	1318	0.0559	0.0009	0.5184	0.0111	0.0672	0.0011	456	35	424	7	419	6
17WP34-2-7	158	966	0.0553	0.0009	0.5163	0.0085	0.0675	0.0007	433	35	423	6	421	4
17WP34-2-8	227	917	0.0562	0.0008	0.5278	0.0086	0.0678	0.0007	461	33	430	6	423	4
17WP34-2-9	180	866	0.0560	0.0008	0.5388	0.0087	0.0697	0.0007	450	33	438	6	434	4
17WP34-2-10	226	962	0.0547	0.0008	0.5307	0.0085	0.0700	0.0007	467	33	432	6	436	4
17WP34-2-11	429	1345	0.0558	0.0007	0.5421	0.0080	0.0701	0.0006	456	28	440	5	437	4
17WP34-2-12	69	1004	0.0556	0.0008	0.5453	0.0095	0.0706	0.0007	439	3	442	6	440	4
17WP34-2-13	87	894	0.0551	0.0008	0.5389	0.0083	0.0706	0.0006	417	36	438	5	440	4
17WP34-2-14	79	974	0.0551	0.0008	0.5391	0.0087	0.0706	0.0007	417	33	438	6	440	4
17WP34-2-15	136	991	0.0551	0.0008	0.5385	0.0082	0.0707	0.0007	417	31	437	5	440	4
17WP34-2-16	84	912	0.0556	0.0008	0.5436	0.0085	0.0707	0.0007	435	6	441	6	440	4
17WP34-2-17	71	984	0.0561	0.0009	0.5486	0.0092	0.0707	0.0007	454	40	444	6	441	4
17WP34-2-18	71	968	0.0551	0.0008	0.5405	0.0088	0.0707	0.0007	417	36	439	6	441	4
17WP34-2-19	87	1023	0.0540	0.0008	0.5289	0.0086	0.0708	0.0007	369	61	431	6	441	4
17WP34-2-20	84	1022	0.0546	0.0008	0.5339	0.0084	0.0708	0.0007	394	33	434	6	441	4
17WP34-2-21	109	937	0.0553	0.0008	0.5419	0.0087	0.0708	0.0007	433	31	440	6	441	4
17WP34-2-22	100	763	0.0542	0.0009	0.5308	0.0095	0.0708	0.0007	376	39	432	6	441	4
17WP34-2-23	88	1050	0.0543	0.0008	0.5316	0.0090	0.0708	0.0008	383	35	433	6	441	5
17WP34-2-24	131	229	0.0543	0.0014	0.5310	0.0133	0.0709	0.0007	383	57	432	9	442	4
17WP34-2-25	82	973	0.0551	0.0009	0.5406	0.0093	0.0709	0.0008	417	39	439	6	442	5
17WP34-2-26	143	901	0.0546	0.0008	0.5370	0.0086	0.0710	0.0007	394	33	436	6	442	4
17WP34-2-27	137	957	0.0549	0.0009	0.5402	0.0089	0.0710	0.0007	409	42	439	6	442	4
17WP34-2-28	375	547	0.0555	0.0010	0.5451	0.0105	0.0711	0.0007	435	41	442	7	443	4
17WP34-2-29	121	950	0.0545	0.0008	0.5362	0.0089	0.0711	0.0007	391	27	436	6	443	4
17WP34-2-30	126	220	0.0538	0.0012	0.5321	0.0127	0.0715	0.0008	361	52	433	8	445	5

17WP34-2-31	131	253	0.0563	0.0014	0.5592	0.0132	0.0721	0.0007	465	54	451	9	449	4
17WP34-2-32	136	731	0.0542	0.0009	0.5417	0.0087	0.0723	0.0007	389	37	440	6	450	4
17WP35-1	176	346	0.0571	0.0011	0.5703	0.0126	0.0724	0.0008	494	75	458	8	451	5
17WP35-2	185	249	0.0582	0.0014	0.5774	0.0147	0.0718	0.0008	539	50	463	9	447	5
17WP35-3	171	316	0.0579	0.0011	0.5718	0.0111	0.0717	0.0007	524	44	459	7	446	4
17WP35-4	328	616	0.0561	0.0009	0.5612	0.0102	0.0723	0.0007	457	37	452	7	450	4
17WP35-5	493	798	0.0572	0.0008	0.5668	0.0086	0.0717	0.0007	498	25	456	6	446	4
17WP35-6	311	528	0.0553	0.0009	0.5521	0.0099	0.0722	0.0007	433	37	446	7	449	4
17WP35-7	480	556	0.0570	0.0010	0.5655	0.0117	0.0718	0.0009	494	39	455	8	447	5
17WP35-8	829	1295	0.0570	0.0009	0.5658	0.0096	0.0717	0.0007	500	33	455	6	447	4
17WP35-9	968	1012	0.0570	0.0008	0.5663	0.0082	0.0718	0.0006	494	31	456	5	447	4
17WP35-10	362	528	0.0578	0.0010	0.5758	0.0101	0.0723	0.0008	520	41	462	6	450	5
17WP35-11	334	549	0.0568	0.0010	0.5587	0.0099	0.0712	0.0007	483	34	451	6	444	4
17WP35-12	368	595	0.0572	0.0009	0.5676	0.0095	0.0718	0.0007	498	35	456	6	447	4
17WP35-13	245	414	0.0552	0.0011	0.5518	0.0109	0.0724	0.0007	420	43	446	7	451	4
17WP35-14	561	862	0.0583	0.0009	0.5774	0.0095	0.0715	0.0007	543	33	463	6	445	4
17WP35-15	192	405	0.0576	0.0012	0.5742	0.0118	0.0722	0.0007	522	44	461	8	449	4
17WP35-16	178	284	0.0584	0.0014	0.5808	0.0143	0.0719	0.0007	546	52	465	9	447	5
17WP35-17	204	332	0.0557	0.0013	0.5576	0.0144	0.0723	0.0008	443	54	450	9	450	5
17WP35-18	571	723	0.0582	0.0009	0.5774	0.0098	0.0717	0.0007	539	33	463	6	447	4
17WP35-19	283	482	0.0547	0.0010	0.5460	0.0105	0.0723	0.0007	398	36	442	7	450	4
17WP35-20	312	558	0.0573	0.0010	0.5675	0.0111	0.0716	0.0007	506	39	456	7	446	4
17WP35-21	141	189	0.0583	0.0016	0.5784	0.0158	0.0721	0.0009	543	64	463	10	449	5
17WP35-22	540	717	0.0550	0.0009	0.5436	0.0097	0.0715	0.0007	413	37	441	6	445	4

17WP36-1	355	463	0.0581	0.0011	0.5773	0.0112	0.0720	0.0007	532	36	463	7	448	4
17WP36-2	422	562	0.0574	0.0010	0.5718	0.0105	0.0720	0.0007	506	32	459	7	448	4
17WP36-3	283	535	0.0569	0.0010	0.5656	0.0105	0.0719	0.0007	500	39	455	7	448	4
17WP36-4	385	509	0.0579	0.0009	0.5700	0.0089	0.0713	0.0006	528	33	458	6	444	4
17WP36-5	274	546	0.0565	0.0010	0.5557	0.0105	0.0712	0.0007	472	45	449	7	444	4
17WP36-6	716	892	0.0574	0.0009	0.5661	0.0098	0.0712	0.0007	506	33	455	6	443	4
17WP36-7	247	392	0.0574	0.0012	0.5673	0.0117	0.0717	0.0007	506	44	456	8	446	4
17WP36-8	219	374	0.0559	0.0012	0.5545	0.0122	0.0719	0.0008	450	16	448	8	448	5
17WP36-9	472	594	0.0583	0.0010	0.5702	0.0095	0.0708	0.0006	543	42	458	6	441	4
17WP36-10	404	565	0.0555	0.0010	0.5430	0.0095	0.0709	0.0006	432	44	440	6	442	4
17WP36-11	167	285	0.0568	0.0011	0.5654	0.0117	0.0720	0.0007	483	43	455	8	448	4
17WP36-12	486	526	0.0543	0.0010	0.5422	0.0105	0.0722	0.0007	383	43	440	7	450	4
17WP36-13	395	696	0.0556	0.0009	0.5489	0.0089	0.0714	0.0007	439	3	444	6	444	4
17WP36-14	476	648	0.0562	0.0009	0.5508	0.0096	0.0709	0.0007	457	37	446	6	442	4
17WP36-15	627	789	0.0567	0.0009	0.5628	0.0094	0.0718	0.0007	480	40	453	6	447	4
17WP36-16	259	449	0.0550	0.0011	0.5385	0.0110	0.0707	0.0007	413	44	437	7	440	4
17WP36-17	290	542	0.0566	0.0010	0.5612	0.0102	0.0716	0.0007	476	42	452	7	446	4
17WP36-18	521	568	0.0588	0.0010	0.5836	0.0098	0.0717	0.0007	561	35	467	6	446	4
17WP36-19	216	421	0.0559	0.0010	0.5541	0.0106	0.0716	0.0006	456	41	448	7	446	4
17WP36-20	342	458	0.0573	0.0011	0.5656	0.0107	0.0714	0.0007	502	41	455	7	444	4
17WP36-21	413	531	0.0560	0.0009	0.5587	0.0103	0.0719	0.0007	454	42	451	7	447	4
17WP36-22	290	438	0.0570	0.0011	0.5638	0.0111	0.0715	0.0008	494	75	454	7	445	5
17WP36-23	239	433	0.0563	0.0010	0.5608	0.0108	0.0718	0.0007	465	36	452	7	447	4
17WP36-24	386	467	0.0563	0.0011	0.5583	0.0109	0.0718	0.0008	461	43	450	7	447	5
17WP36-25	420	529	0.0570	0.0010	0.5618	0.0100	0.0713	0.0006	500	39	453	7	444	4
17WP36-26	129	221	0.0567	0.0013	0.5603	0.0126	0.0716	0.0007	480	50	452	8	446	4

17WP36-27	425	707	0.0561	0.0009	0.5526	0.0094	0.0711	0.0006	454	42	447	6	443	4
17WP36-28	248	394	0.0576	0.0011	0.5719	0.0114	0.0718	0.0008	522	47	459	7	447	5
17WP36-29	245	459	0.0581	0.0013	0.5695	0.0127	0.0707	0.0007	600	51	458	8	441	4
17WP40-1	262	454	0.0551	0.0010	0.5444	0.0109	0.0715	0.0007	417	43	441	7	445	4
17WP40-2	457	712	0.0547	0.0009	0.5404	0.0098	0.0715	0.0008	467	37	439	6	445	5
17WP40-3	133	273	0.0555	0.0012	0.5509	0.0120	0.0721	0.0008	432	45	446	8	449	5
17WP40-4	252	411	0.0551	0.0011	0.5392	0.0107	0.0708	0.0007	417	44	438	7	441	4
17WP40-5	976	1013	0.0545	0.0008	0.5399	0.0091	0.0715	0.0008	391	33	438	6	445	5
17WP40-6	312	431	0.0555	0.0011	0.5496	0.0107	0.0716	0.0007	432	44	445	7	446	4
17WP40-7	552	626	0.0555	0.0009	0.5484	0.0094	0.0715	0.0007	432	42	444	6	445	4
17WP40-8	520	628	0.0551	0.0009	0.5389	0.0093	0.0707	0.0007	417	32	438	6	440	4
17WP40-9	714	837	0.0543	0.0009	0.5332	0.0089	0.0709	0.0007	383	35	434	6	442	4
17WP40-10	299	514	0.0565	0.0009	0.5646	0.0097	0.0721	0.0007	472	35	455	6	449	4
17WP40-11	270	445	0.0552	0.0010	0.5445	0.0101	0.0715	0.0007	420	34	441	7	445	4
17WP40-12	378	556	0.0563	0.0009	0.5562	0.0089	0.0715	0.0006	465	35	449	6	445	4
17WP40-13	133	223	0.0573	0.0015	0.5682	0.0145	0.0721	0.0008	506	53	457	9	449	5
17WP40-14	391	621	0.0562	0.0009	0.5575	0.0086	0.0718	0.0006	461	31	450	6	447	4
17WP40-15	322	508	0.0557	0.0010	0.5558	0.0099	0.0722	0.0007	439	39	449	6	449	4
17WP40-16	344	607	0.0567	0.0009	0.5661	0.0093	0.0722	0.0007	480	33	455	6	449	4
17WP40-17	376	583	0.0570	0.0009	0.5656	0.0095	0.0719	0.0007	500	37	455	6	447	4
17WP40-18	303	672	0.0579	0.0010	0.5755	0.0106	0.0719	0.0008	524	37	462	7	448	5
17WP48-1	148	304	0.0583	0.0013	0.5751	0.0129	0.0713	0.0007	539	44	461	8	444	4
17WP48-2	231	245	0.0568	0.0013	0.5564	0.0124	0.0711	0.0007	483	50	449	8	443	4
17WP48-3	489	493	0.0557	0.0010	0.5432	0.0105	0.0708	0.0008	439	41	441	7	441	5

17WP48-4	653	777	0.0550	0.0009	0.5369	0.0091	0.0707	0.0007	409	40	436	6	440	4
17WP48-5	324	354	0.0576	0.0012	0.5594	0.0116	0.0703	0.0007	517	44	451	8	438	4
17WP48-6	266	387	0.0557	0.0011	0.5482	0.0121	0.0711	0.0007	443	44	444	8	443	4
17WP48-7	447	533	0.0585	0.0011	0.5706	0.0111	0.0709	0.0007	546	43	458	7	442	4
17WP48-8	288	300	0.0575	0.0012	0.5614	0.0127	0.0709	0.0008	509	46	452	8	442	5
17WP48-9	384	392	0.0560	0.0010	0.5472	0.0107	0.0710	0.0007	454	43	443	7	442	4
17WP48-10	405	478	0.0561	0.0010	0.5475	0.0108	0.0707	0.0007	457	41	443	7	440	4
17WP48-11	402	477	0.0571	0.0010	0.5561	0.0108	0.0707	0.0007	494	71	449	7	440	4
17WP48-12	357	570	0.0559	0.0011	0.5442	0.0109	0.0707	0.0007	450	47	441	7	440	4
17WP48-13	286	319	0.0555	0.0013	0.5388	0.0129	0.0707	0.0008	432	47	438	9	440	5
17WP48-14	574	723	0.0565	0.0010	0.5504	0.0103	0.0709	0.0008	472	39	445	7	442	5
17WP48-15	243	274	0.0561	0.0013	0.5455	0.0133	0.0707	0.0008	454	19	442	9	440	5
17WP48-16	284	321	0.0563	0.0012	0.5472	0.0125	0.0707	0.0008	465	53	443	8	441	5
17WP48-17	264	280	0.0559	0.0011	0.5450	0.0116	0.0706	0.0007	450	47	442	8	440	4
17WP48-18	189	261	0.0576	0.0014	0.5692	0.0133	0.0719	0.0007	522	52	457	9	448	5
17WP48-19	264	276	0.0577	0.0014	0.5685	0.0137	0.0716	0.0007	520	52	457	9	446	4
17WP48-20	396	443	0.0560	0.0011	0.5515	0.0111	0.0713	0.0008	454	41	446	7	444	5
17WP48-21	272	297	0.0566	0.0013	0.5502	0.0124	0.0707	0.0007	476	47	445	8	440	4
17WP48-22	401	451	0.0581	0.0012	0.5729	0.0116	0.0715	0.0007	532	44	460	8	445	4
17WP15-1	446	967	0.0587	0.0009	0.6125	0.0115	0.0757	0.0010	554	35	485	7	470	6
17WP15-2	710	809	0.0576	0.0010	0.5975	0.0108	0.0752	0.0008	522	39	476	7	468	5
17WP15-3	381	822	0.0593	0.0009	0.6206	0.0113	0.0756	0.0009	589	33	490	7	470	5
17WP15-4	316	740	0.0601	0.0017	0.6241	0.0169	0.0756	0.0011	609	94	492	11	470	7
17WP15-5	677	1327	0.0577	0.0009	0.6058	0.0104	0.0760	0.0007	517	33	481	7	472	4
17WP15-6	637	1028	0.0585	0.0011	0.6071	0.0129	0.0752	0.0009	546	41	482	8	467	5

17WP15-7	994	1244	0.0578	0.0009	0.6050	0.0110	0.0757	0.0008	520	33	480	7	471	5
17WP15-8	501	1179	0.0579	0.0008	0.6049	0.0108	0.0757	0.0010	524	36	480	7	470	6
17WP15-9	589	1247	0.0570	0.0011	0.5971	0.0110	0.0761	0.0008	500	38	475	7	473	5
17WP15-10	470	1024	0.0584	0.0014	0.6149	0.0149	0.0763	0.0008	543	47	487	9	474	5
17WP15-11	244	611	0.0617	0.0011	0.6427	0.0111	0.0756	0.0007	661	34	504	7	470	4
17WP15-12	410	407	0.0574	0.0008	0.6013	0.0099	0.0757	0.0008	509	30	478	6	470	5
17WP15-13	321	656	0.0590	0.0010	0.6224	0.0125	0.0762	0.0008	569	39	491	8	473	5
17WP15-14	1588	1884	0.0582	0.0009	0.6099	0.0100	0.0758	0.0007	600	31	483	6	471	4
17WP15-15	687	1420	0.0596	0.0010	0.6261	0.0105	0.0759	0.0006	591	40	494	7	472	4
17WP15-16	483	720	0.0573	0.0008	0.6017	0.0095	0.0758	0.0007	506	62	478	6	471	4
17WP15-17	36	228	0.0588	0.0010	0.6196	0.0114	0.0762	0.0009	561	35	490	7	473	5
17WP15-18	430	844	0.0694	0.0013	1.4875	0.0276	0.1555	0.0016	911	38	925	11	932	9
17WP23-1	438	365	0.0593	0.0010	0.6169	0.0107	0.0758	0.0006	576	37	488	7	471	4
17WP23-2	219	256	0.0560	0.0011	0.5859	0.0121	0.0763	0.0006	450	44	468	8	474	4
17WP23-3	268	325	0.0571	0.0009	0.5926	0.0098	0.0756	0.0006	494	35	473	6	470	4
17WP23-4	471	415	0.0584	0.0009	0.6142	0.0099	0.0762	0.0006	546	40	486	6	474	4
17WP23-5	395	286	0.0577	0.0011	0.6023	0.0118	0.0759	0.0006	517	44	479	8	472	4
17WP23-6	334	322	0.0554	0.0011	0.5828	0.0115	0.0762	0.0006	428	43	466	7	474	4
17WP23-7	349	312	0.0576	0.0010	0.6051	0.0111	0.0762	0.0006	517	39	480	7	473	4
17WP23-8	560	416	0.0561	0.0009	0.5910	0.0095	0.0765	0.0006	454	40	472	6	475	4
17WP23-9	502	375	0.0598	0.0010	0.6246	0.0107	0.0756	0.0006	598	35	493	7	470	3
17WP23-10	185	223	0.0582	0.0013	0.6073	0.0128	0.0760	0.0006	539	44	482	8	472	4
17WP23-11	342	354	0.0603	0.0011	0.6302	0.0111	0.0760	0.0006	613	38	496	7	472	4
17WP23-12	305	293	0.0586	0.0010	0.6113	0.0111	0.0756	0.0006	554	34	484	7	470	4
17WP23-13	353	351	0.0571	0.0010	0.6021	0.0111	0.0761	0.0006	498	71	479	7	473	4

17WP23-14	487	362	0.0561	0.0009	0.5856	0.0099	0.0757	0.0006	454	42	468	6	470	4
17WP23-15	416	343	0.0556	0.0010	0.5818	0.0106	0.0756	0.0006	435	39	466	7	470	4
17WP23-16	218	225	0.0570	0.0012	0.5934	0.0128	0.0757	0.0007	500	79	473	8	470	4
17WP23-17	870	870	0.0589	0.0007	0.6931	0.0091	0.0851	0.0006	565	26	535	5	526	4
17WP23-18	43	280	0.1149	0.0010	5.6595	0.0579	0.3567	0.0027	1877	17	1925	9	1966	13
17WP23-19	413	617	0.0590	0.0008	0.7510	0.0128	0.0915	0.0010	565	28	569	7	565	6

Table S4 Results of zircons Hf isotope compositions of three intrusions.

No.	$^{176}\text{Yb}/^{177}\text{Hf}$	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Hf}/^{177}\text{Hf}$	$^{176}\text{Hf}/^{177}\text{Hf}_i$	$\pm 2\sigma$	$\epsilon_{\text{Hf}}(0)$	$\epsilon_{\text{Hf}}(t)$	T_{DM}	T_{DM}^{C}	$f_{\text{Lu/Hf}}$
Yutian Complex										
17WP28-1-1	0.011953	0.000476	0.282457	0.282453	0.000008	-11.1	-1.6	1109	1525	-0.99
17WP28-1-2	0.010205	0.000387	0.282443	0.282440	0.000008	-11.6	-2.1	1127	1555	-0.99
17WP28-1-3	0.018947	0.000671	0.282407	0.282402	0.000008	-12.9	-3.4	1184	1640	-0.98
17WP28-1-4	0.017733	0.000762	0.282434	0.282427	0.000009	-12.0	-2.5	1150	1583	-0.98
17WP28-1-5	0.016262	0.000590	0.282453	0.282448	0.000008	-11.3	-1.8	1118	1536	-0.98
17WP28-1-6	0.015277	0.000576	0.282404	0.282400	0.000009	-13.0	-3.5	1186	1645	-0.98
17WP28-1-7	0.021385	0.000736	0.282429	0.282422	0.000007	-12.1	-2.7	1157	1594	-0.98
17WP28-1-8	0.011517	0.000446	0.282443	0.282440	0.000008	-11.6	-2.1	1128	1555	-0.99
17WP28-1-9	0.013890	0.000560	0.282438	0.282433	0.000008	-11.8	-2.5	1138	1576	-0.98
17WP28-1-10	0.015631	0.000584	0.282436	0.282431	0.000008	-11.9	-2.4	1142	1574	-0.98
17WP28-1-11	0.012006	0.000492	0.282470	0.282466	0.000008	-10.7	-1.3	1092	1502	-0.99
17WP40-1	0.013319	0.000540	0.282419	0.282414	0.000008	-12.5	-2.8	1164	1606	-0.98
17WP40-2	0.009217	0.000341	0.282455	0.282452	0.000009	-11.2	-1.4	1109	1522	-0.99
17WP40-3	0.006071	0.000278	0.282451	0.282448	0.000007	-11.4	-1.7	1113	1533	-0.99
17WP40-4	0.010190	0.000393	0.282450	0.282447	0.000008	-11.4	-1.7	1117	1537	-0.99
17WP40-5	0.010271	0.000409	0.282413	0.282409	0.000008	-12.7	-3.0	1169	1619	-0.99
17WP40-6	0.009807	0.000402	0.282448	0.282445	0.000008	-11.4	-1.7	1120	1538	-0.99
17WP40-7	0.012109	0.000509	0.282430	0.282425	0.000007	-12.1	-2.6	1149	1587	-0.98
17WP40-8	0.010477	0.000410	0.282446	0.282442	0.000008	-11.5	-1.9	1123	1546	-0.99
17WP40-9	0.018219	0.000752	0.282450	0.282444	0.000008	-11.4	-1.7	1127	1540	-0.98
17WP40-10	0.013100	0.000535	0.282430	0.282425	0.000007	-12.1	-2.5	1149	1585	-0.98
17WP40-11	0.011666	0.000493	0.282411	0.282406	0.000007	-12.8	-3.3	1175	1630	-0.99
17WP40-12	0.017474	0.000699	0.282406	0.282400	0.000008	-12.9	-3.4	1187	1643	-0.98
17WP40-13	0.010410	0.000425	0.282462	0.282459	0.000008	-11.0	-1.3	1101	1509	-0.99
17WP40-14	0.014917	0.000596	0.282452	0.282447	0.000008	-11.3	-1.6	1120	1532	-0.98
17WP40-15	0.013509	0.000543	0.282418	0.282413	0.000007	-12.5	-3.0	1166	1615	-0.98
17WP40-16	0.010506	0.000408	0.282458	0.282455	0.000008	-11.1	-1.4	1106	1516	-0.99
17WP40-17	0.010368	0.000468	0.282437	0.282433	0.000008	-11.9	-2.3	1137	1569	-0.99
17WP40-18	0.009016	0.000339	0.282470	0.282467	0.000009	-10.7	-0.9	1088	1489	-0.99
17WP40-1	0.047278	0.001898	0.282407	0.282391	0.000007	-12.9	-3.5	1224	1656	-0.94
17WP40-2	0.041718	0.001706	0.282419	0.282404	0.000009	-12.5	-3.2	1201	1631	-0.95
17WP40-3	0.019679	0.000807	0.282445	0.282438	0.000010	-11.6	-2.0	1136	1555	-0.98
17WP40-4	0.011659	0.000481	0.282415	0.282411	0.000008	-12.6	-3.2	1168	1622	-0.99
17WP40-5	0.013534	0.000567	0.282443	0.282438	0.000008	-11.7	-2.0	1132	1554	-0.98
17WP40-6	0.016605	0.000697	0.282472	0.282466	0.000009	-10.6	-1.1	1096	1496	-0.98
17WP40-7	0.046957	0.001845	0.282419	0.282404	0.000009	-12.5	-3.2	1205	1632	-0.94
17WP40-8	0.014188	0.000627	0.282411	0.282406	0.000008	-12.8	-3.1	1178	1627	-0.98
17WP40-9	0.029809	0.001227	0.282423	0.282412	0.000009	-12.4	-2.9	1181	1613	-0.96
17WP40-10	0.029203	0.001220	0.282404	0.282394	0.000008	-13.0	-3.7	1206	1657	-0.96
17WP40-11	0.034041	0.001383	0.282433	0.282421	0.000010	-12.0	-2.7	1171	1596	-0.96
17WP40-12	0.025967	0.001119	0.282403	0.282393	0.000009	-13.1	-3.5	1205	1654	-0.97

17WP40-13	0.024940	0.001032	0.282427	0.282418	0.000009	-12.2	-2.2	1168	1584	-0.97
17WP40-14	0.016810	0.000699	0.282416	0.282410	0.000008	-12.6	-3.0	1173	1617	-0.98
17WP40-15	0.020919	0.000860	0.282418	0.282411	0.000009	-12.5	-3.0	1175	1617	-0.97
17WP40-16	0.014775	0.000576	0.282407	0.282402	0.000009	-12.9	-3.8	1182	1652	-0.98
17WP40-17	0.030034	0.001269	0.282402	0.282391	0.000008	-13.1	-3.6	1211	1658	-0.96
17WP40-18	0.027602	0.001115	0.282420	0.282410	0.000009	-12.5	-3.0	1181	1617	-0.97
17WP40-19	0.022808	0.000917	0.282397	0.282390	0.000008	-13.2	-3.6	1206	1661	-0.97
17WP40-20	0.035850	0.001389	0.282391	0.282379	0.000008	-13.5	-4.0	1231	1685	-0.96
17WP40-21	0.049643	0.001854	0.282438	0.282423	0.000009	-11.8	-2.9	1178	1598	-0.94
17WP40-22	0.023484	0.000899	0.282415	0.282408	0.000009	-12.6	-3.0	1180	1622	-0.97
17WP40-23	0.024982	0.001031	0.282509	0.282500	0.000008	-9.3	0.2	1053	1415	-0.97
17WP40-24	0.022060	0.000896	0.282412	0.282404	0.000008	-12.7	-3.1	1185	1628	-0.97
17WP34-2-1	0.010280	0.000427	0.282434	0.282430	0.000007	-12.0	-2.4	1141	1575	-0.99
17WP34-2-2	0.004866	0.000232	0.282453	0.282451	0.000008	-11.3	-1.7	1108	1529	-0.99
17WP34-2-3	0.003759	0.000188	0.282475	0.282474	0.000009	-10.5	-0.9	1076	1479	-0.99
17WP34-2-4	0.007825	0.000316	0.282482	0.282479	0.000011	-10.3	-0.6	1071	1466	-0.99
17WP34-2-5	0.005089	0.000230	0.282464	0.282462	0.000008	-10.9	-1.7	1093	1516	-0.99
17WP34-2-6	0.011424	0.000536	0.282475	0.282471	0.000009	-10.5	-1.0	1086	1486	-0.98
17WP34-2-7	0.009836	0.000434	0.282437	0.282433	0.000009	-11.9	-2.3	1136	1568	-0.99
17WP34-2-8	0.005884	0.000301	0.282463	0.282461	0.000009	-10.9	-1.3	1096	1507	-0.99
17WP34-2-9	0.007756	0.000366	0.282456	0.282453	0.000008	-11.2	-1.7	1108	1528	-0.99
17WP34-2-10	0.010340	0.000435	0.282476	0.282472	0.000010	-10.5	-0.7	1083	1477	-0.99
17WP34-2-11	0.005659	0.000257	0.282468	0.282466	0.000008	-10.7	-1.1	1088	1496	-0.99
17WP34-2-12	0.005032	0.000253	0.282463	0.282461	0.000009	-10.9	-1.3	1094	1507	-0.99
17WP34-2-13	0.007672	0.000313	0.282473	0.282470	0.000009	-10.6	-1.4	1084	1498	-0.99
17WP34-2-14	0.016665	0.000667	0.282461	0.282456	0.000008	-11.0	-1.5	1109	1518	-0.98
17WP34-2-15	0.008635	0.000376	0.282458	0.282455	0.000008	-11.1	-1.5	1105	1520	-0.99
17WP34-2-16	0.012661	0.000476	0.282449	0.282445	0.000008	-11.4	-1.9	1121	1543	-0.99
17WP34-2-17	0.007605	0.000316	0.282467	0.282464	0.000009	-10.8	-1.1	1092	1498	-0.99
17WP34-2-18	0.007189	0.000315	0.282448	0.282446	0.000008	-11.5	-1.9	1117	1541	-0.99
17WP34-2-19	0.009184	0.000348	0.282445	0.282442	0.000008	-11.6	-2.0	1122	1548	-0.99
17WP34-2-20	0.006836	0.000335	0.282464	0.282461	0.000009	-10.9	-1.3	1096	1507	-0.99
17WP34-2-21	0.006398	0.000292	0.282456	0.282454	0.000008	-11.2	-1.6	1106	1524	-0.99
17WP34-2-22	0.004882	0.000200	0.282448	0.282446	0.000009	-11.5	-1.8	1114	1540	-0.99
17WP34-2-23	0.018582	0.000703	0.282463	0.282457	0.000007	-10.9	-1.4	1109	1515	-0.98
17WP35-1	0.013232	0.000533	0.282456	0.282452	0.000010	-11.2	-1.4	1113	1522	-0.98
17WP35-2	0.013353	0.000527	0.282443	0.282438	0.000010	-11.6	-1.6	1131	1543	-0.98
17WP35-3	0.022107	0.000851	0.282435	0.282428	0.000010	-11.9	-2.3	1152	1578	-0.97
17WP35-4	0.023115	0.000800	0.282441	0.282434	0.000010	-11.7	-2.1	1142	1563	-0.98
17WP35-5	0.008127	0.000351	0.282450	0.282447	0.000008	-11.4	-1.6	1115	1532	-0.99
17WP35-6	0.012611	0.000507	0.282441	0.282437	0.000007	-11.7	-2.0	1133	1558	-0.98
17WP35-7	0.009159	0.000389	0.282443	0.282439	0.000008	-11.7	-1.9	1127	1550	-0.99
17WP35-8	0.030485	0.001165	0.282440	0.282430	0.000008	-11.7	-2.3	1154	1572	-0.96
17WP35-9	0.010557	0.000405	0.282456	0.282453	0.000007	-11.2	-1.5	1109	1521	-0.99

17WP35-10	0.036502	0.001513	0.282475	0.282462	0.000008	-10.5	-1.1	1115	1501	-0.95
17WP35-11	0.023470	0.000946	0.282448	0.282440	0.000008	-11.4	-1.8	1136	1547	-0.97
17WP35-12	0.020098	0.000837	0.282447	0.282440	0.000009	-11.5	-2.0	1134	1551	-0.97
17WP35-13	0.014276	0.000549	0.282449	0.282445	0.000007	-11.4	-1.7	1122	1540	-0.98
17WP35-14	0.013948	0.000589	0.282451	0.282446	0.000009	-11.4	-1.6	1122	1535	-0.98
17WP35-15	0.029879	0.001139	0.282436	0.282426	0.000009	-11.9	-2.3	1159	1579	-0.97
17WP35-16	0.017199	0.000682	0.282461	0.282455	0.000009	-11.0	-1.4	1110	1516	-0.98
17WP35-17	0.015597	0.000599	0.282425	0.282420	0.000012	-12.3	-2.6	1158	1594	-0.98
17WP35-18	0.016937	0.000679	0.282441	0.282435	0.000010	-11.7	-2.1	1138	1561	-0.98
17WP35-19	0.012168	0.000481	0.282425	0.282421	0.000007	-12.3	-2.5	1154	1590	-0.99
17WP36-1	0.015866	0.000626	0.282440	0.282434	0.000007	-11.8	-2.1	1138	1562	-0.98
17WP36-2	0.013712	0.000526	0.282419	0.282415	0.000007	-12.5	-2.8	1163	1606	-0.98
17WP36-3	0.013839	0.000556	0.282441	0.282437	0.000008	-11.7	-2.0	1134	1557	-0.98
17WP36-4	0.016956	0.000622	0.282439	0.282433	0.000011	-11.8	-2.2	1139	1567	-0.98
17WP36-5	0.012733	0.000493	0.282411	0.282407	0.000009	-12.8	-3.1	1174	1625	-0.99
17WP36-6	0.018430	0.000757	0.282455	0.282448	0.000011	-11.2	-1.7	1121	1535	-0.98
17WP36-7	0.016168	0.000578	0.282436	0.282431	0.000008	-11.9	-2.3	1142	1572	-0.98
17WP36-8	0.017018	0.000638	0.282476	0.282470	0.000011	-10.5	-1.0	1089	1486	-0.98
17WP36-9	0.013133	0.000500	0.282446	0.282441	0.000008	-11.5	-2.0	1126	1550	-0.98
17WP36-10	0.012980	0.000520	0.282450	0.282445	0.000009	-11.4	-1.7	1121	1537	-0.98
17WP36-11	0.024251	0.000938	0.282448	0.282440	0.000009	-11.5	-1.9	1136	1548	-0.97
17WP36-12	0.010857	0.000438	0.282434	0.282430	0.000007	-12.0	-2.3	1140	1573	-0.99
17WP36-13	0.021319	0.000809	0.282456	0.282449	0.000008	-11.2	-1.6	1121	1530	-0.98
17WP36-14	0.007869	0.000323	0.282459	0.282456	0.000010	-11.1	-1.4	1102	1514	-0.99
17WP36-15	0.020578	0.000771	0.282435	0.282428	0.000010	-11.9	-2.3	1149	1577	-0.98
17WP36-16	0.019075	0.000744	0.282439	0.282433	0.000008	-11.8	-2.2	1143	1567	-0.98
17WP36-17	0.013930	0.000568	0.282448	0.282443	0.000009	-11.5	-1.8	1125	1544	-0.98
17WP36-18	0.015061	0.000613	0.282456	0.282451	0.000008	-11.2	-1.5	1114	1525	-0.98
17WP36-19	0.013452	0.000525	0.282458	0.282454	0.000008	-11.1	-1.5	1109	1520	-0.98
17WP36-20	0.015602	0.000597	0.282451	0.282445	0.000009	-11.4	-1.7	1122	1537	-0.98
17WP36-21	0.011479	0.000436	0.282458	0.282454	0.000008	-11.1	-1.4	1107	1519	-0.99
17WP36-22	0.012081	0.000462	0.282467	0.282463	0.000010	-10.8	-1.1	1096	1499	-0.99
17WP36-23	0.014470	0.000576	0.282468	0.282463	0.000009	-10.8	-1.1	1097	1499	-0.98
17WP36-24	0.021724	0.000836	0.282480	0.282473	0.000007	-10.3	-0.7	1088	1476	-0.97
North Yutian										
17WP48-1	0.012380	0.000439	0.282342	0.282338	0.000008	-15.2	-5.6	1267	1780	-0.99
17WP48-2	0.019277	0.000689	0.282357	0.282351	0.000008	-14.7	-5.0	1255	1747	-0.98
17WP48-3	0.022774	0.000812	0.282347	0.282340	0.000008	-15.0	-5.6	1273	1777	-0.98
17WP48-4	0.024369	0.000818	0.282342	0.282336	0.000008	-15.2	-5.7	1280	1788	-0.98
17WP48-5	0.022712	0.000821	0.282337	0.282330	0.000008	-15.4	-6.0	1287	1801	-0.98
17WP48-6	0.025958	0.000883	0.282381	0.282374	0.000010	-13.8	-4.5	1228	1705	-0.97
17WP48-7	0.011311	0.000426	0.282338	0.282334	0.000007	-15.4	-5.8	1273	1790	-0.99
17WP48-8	0.013270	0.000477	0.282349	0.282345	0.000007	-14.9	-5.1	1259	1759	-0.99
17WP48-9	0.015054	0.000559	0.282323	0.282319	0.000007	-15.9	-6.3	1297	1825	-0.98
17WP48-10	0.025864	0.000882	0.282367	0.282360	0.000009	-14.3	-4.9	1247	1733	-0.97

17WP48-11	0.031822	0.001164	0.282357	0.282347	0.000008	-14.7	-5.3	1271	1761	-0.96
17WP48-12	0.018788	0.000669	0.282338	0.282332	0.000008	-15.4	-5.9	1281	1796	-0.98
17WP48-13	0.021958	0.000794	0.282328	0.282321	0.000008	-15.7	-6.3	1299	1820	-0.98
17WP48-14	0.018179	0.000669	0.282343	0.282338	0.000007	-15.2	-5.7	1273	1784	-0.98
17WP48-15	0.022296	0.000789	0.282328	0.282321	0.000007	-15.7	-6.3	1299	1820	-0.98
17WP48-16	0.023923	0.000834	0.282324	0.282317	0.000007	-15.9	-6.4	1306	1830	-0.97
17WP48-17	0.022455	0.000781	0.282343	0.282337	0.000008	-15.2	-5.7	1277	1785	-0.98
17WP48-18	0.017866	0.000628	0.282335	0.282330	0.000008	-15.5	-6.0	1283	1801	-0.98

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17WP15-1	0.032266	0.001320	0.282376	0.282364	0.000009	-14.0	-4.1	1249	1706	-0.96
17WP15-2	0.030855	0.001230	0.282376	0.282365	0.000009	-14.0	-4.1	1246	1703	-0.96
17WP15-3	0.021569	0.000885	0.282350	0.282342	0.000008	-14.9	-4.9	1272	1756	-0.97
17WP15-4	0.028704	0.001123	0.282365	0.282355	0.000008	-14.4	-4.3	1258	1724	-0.97
17WP15-5	0.028632	0.001151	0.282340	0.282330	0.000008	-15.3	-5.5	1295	1788	-0.97
17WP15-6	0.054265	0.002082	0.282331	0.282318	0.000009	-15.6	-9.0	1340	1904	-0.94
17WP15-7	0.016775	0.000674	0.282335	0.282329	0.000008	-15.5	-5.3	1286	1784	-0.98
17WP15-8	0.033761	0.001458	0.282384	0.282371	0.000008	-13.7	-3.8	1242	1688	-0.96
17WP15-9	0.013938	0.000574	0.282360	0.282355	0.000008	-14.6	-4.4	1247	1726	-0.98
17WP15-10	0.040949	0.001658	0.282354	0.282340	0.000008	-14.8	-4.9	1291	1757	-0.95
17WP15-11	0.043112	0.001761	0.282364	0.282349	0.000008	-14.4	-4.6	1281	1738	-0.95
17WP15-12	0.028346	0.001191	0.282334	0.282324	0.000008	-15.5	-5.5	1303	1795	-0.96
17WP15-13	0.050996	0.001996	0.282377	0.282363	0.000009	-14.0	-6.2	1271	1769	-0.94
17WP15-14	0.026713	0.001018	0.282361	0.282352	0.000008	-14.5	-4.6	1260	1734	-0.97
17WP15-15	0.040257	0.001510	0.282357	0.282344	0.000008	-14.7	-4.8	1282	1750	-0.95
17WP15-16	0.034083	0.001364	0.282377	0.282365	0.000008	-14.0	-4.0	1249	1703	-0.96
17WP15-17	0.022691	0.000842	0.282345	0.282338	0.000007	-15.1	-5.0	1277	1763	-0.97

17WP23-1	0.051337	0.001957	0.282426	0.282409	0.000009	-12.2	-2.4	1198	1602	-0.94
17WP23-2	0.041864	0.001615	0.282426	0.282412	0.000009	-12.2	-2.4	1187	1597	-0.95
17WP23-3	0.041171	0.001698	0.282449	0.282434	0.000009	-11.4	-1.5	1158	1547	-0.95
17WP23-4	0.043459	0.001751	0.282410	0.282395	0.000013	-12.8	-3.0	1215	1637	-0.95
17WP23-5	0.053188	0.002082	0.282431	0.282412	0.000009	-12.1	-2.3	1196	1595	-0.94
17WP23-6	0.050496	0.001838	0.282400	0.282384	0.000010	-13.2	-3.4	1232	1660	-0.94
17WP23-7	0.048074	0.001853	0.282423	0.282407	0.000010	-12.3	-2.5	1200	1607	-0.94
17WP23-8	0.049452	0.001901	0.282409	0.282392	0.000009	-12.8	-3.0	1222	1640	-0.94
17WP23-9	0.046645	0.001746	0.282403	0.282388	0.000009	-13.1	-3.4	1225	1657	-0.95
17WP23-10	0.039919	0.001522	0.282406	0.282392	0.000009	-12.9	-3.0	1213	1639	-0.95
17WP23-11	0.053274	0.002012	0.282389	0.282371	0.000009	-13.5	-3.8	1254	1689	-0.94
17WP23-12	0.036652	0.001447	0.282418	0.282405	0.000010	-12.5	-2.6	1194	1611	-0.96
17WP23-13	0.047606	0.001894	0.282380	0.282363	0.000010	-13.9	-4.1	1263	1706	-0.94

$\epsilon_{\text{Hf}(t)} = 10000 \times \{[(^{176}\text{Hf}/^{177}\text{Hf})_S - (^{176}\text{Lu}/^{177}\text{Hf})_S \times (e^{\lambda t} - 1)] / [(^{176}\text{Hf}/^{177}\text{Hf})_{\text{CHUR},0} - (^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}} \times (e^{\lambda t} - 1)] - 1\}$.
 $T_{\text{DM1}} = 1/\lambda \times \ln\{1 + [(^{176}\text{Hf}/^{177}\text{Hf})_S - (^{176}\text{Hf}/^{177}\text{Hf})_{\text{DM}}] / [(^{176}\text{Lu}/^{177}\text{Hf})_S - (^{176}\text{Lu}/^{177}\text{Hf})_{\text{DM}}]\}$. $T_{\text{DM2}} = t_{\text{DM}} - (t_{\text{DM}} - t) \times [(f_{\text{cc}} - f_s) / (f_{\text{cc}} - f_{\text{DM}})]$. $f_{\text{Lu}}/\text{Hf} = (^{176}\text{Lu}/^{177}\text{Hf})_S / (^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}} - 1$. Where, $\lambda = 1.867 \times 10^{-11} \text{ year}^{-1}$; $(^{176}\text{Lu}/^{177}\text{Hf})_S$ and $(^{176}\text{Hf}/^{177}\text{Hf})_S$ are the measured values of the samples; $(^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}} = 0.0332$, $(^{176}\text{Hf}/^{177}\text{Hf})_{\text{CHUR},0} = 0.282772$, $(^{176}\text{Lu}/^{177}\text{Hf})_{\text{DM}} = 0.0384$ and $(^{176}\text{Hf}/^{177}\text{Hf})_{\text{DM}} = 0.28325$; $(^{176}\text{Lu}/^{177}\text{Hf})_{\text{mean crust}} = 0.015$. $f_{\text{cc}} = [(^{176}\text{Lu}/^{177}\text{Hf})_{\text{mean crust}} / (^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}}] - 1$; $f_s = f_{\text{Lu}}/\text{Hf}$; $f_{\text{DM}} = [(^{176}\text{Lu}/^{177}\text{Hf})_{\text{DM}} / (^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}}] - 1$; $t =$ crystallization time of zircon.

Table S5 Results of whole-rock Sr-Nd-Pb isotope compositions of the Yutian complex and Hetian granites

	Monzogranite		Enclave		Gabbro				Hetian					
Sample No.	17WP30	17WP33	17WP34-1	17WP35	17WP36	17WP37	17WP38	17WP39	17WP73	17WP76	17WP77	17WP91	17WP93	17WP94
Rb(ppm)	232	215	175	86	117	106	133	126	219	221	203	188	126	140
Sr(ppm)	355	372	441	700	917	1014	1036	1009	872	604	849	1104	844	881
Sm(ppm)	6.62	4.83	14.31	13.99	15.75	15.95	16.58	15.63	2.45	2.14	2.51	6.87	6.55	6.59
Nd(ppm)	37.98	33.6	85.14	71.07	79.81	85.44	83.68	84.68	13.04	12.75	13.59	41.63	40.93	42.16
⁸⁷ Rb/ ⁸⁶ Sr	1.90	1.67	1.15	0.36	0.37	0.30	0.37	0.36	0.73	1.06	0.69	0.49	0.43	0.46
⁸⁷ Sr/ ⁸⁶ Sr	0.727305	0.726906	0.723078	0.716461	0.716427	0.71618	0.716823	0.716582	0.711750	0.713774	0.711562	0.710274	0.710469	0.710525
(⁸⁷ Sr/ ⁸⁶ Sr) _t	0.715426	0.716409	0.715866	0.714223	0.714106	0.714285	0.714489	0.714318	0.707184	0.707132	0.707219	0.707190	0.707770	0.707635
¹⁴⁷ Sm/ ¹⁴⁴ Nd	0.105363	0.086873	0.101638	0.118968	0.119307	0.112866	0.119781	0.111566	0.113606	0.101525	0.111442	0.099694	0.096694	0.094567
¹⁴³ Nd/ ¹⁴⁴ Nd	0.512111	0.511998	0.512157	0.512187	0.512185	0.512193	0.512201	0.51219	0.512084	0.512037	0.512082	0.512048	0.512072	0.512057
(¹⁴³ Nd/ ¹⁴⁴ Nd) _t	0.511804	0.511744	0.511863	0.511839	0.511837	0.511864	0.511851	0.511864	0.511758	0.511746	0.511762	0.511762	0.511795	0.511786
εNd(t)	-5.16	-6.33	-4.05	-4.43	-4.49	-3.97	-4.21	-3.96	-6.14	-6.38	-6.07	-6.07	-5.43	-5.60
T _{DM} (Ga)	1.46	1.38	1.35	1.55	1.56	1.45	1.54	1.43	1.68	1.70	1.67	1.67	1.62	1.63
²⁰⁶ Pb/ ²⁰⁴ Pb	20.281	19.816	24.053	19.462	20.137	20.055	19.902	20.03						
²⁰⁷ Pb/ ²⁰⁴ Pb	15.726	15.739	15.959	15.698	15.735	15.727	15.714	15.711						
²⁰⁸ Pb/ ²⁰⁴ Pb	39.904	40.298	43.085	39.413	39.948	39.854	39.688	39.794						
(²⁰⁶ Pb/ ²⁰⁴ Pb) _i	19.87	19.59	19.97	18.55	18.58	18.6	18.53	18.52						
(²⁰⁷ Pb/ ²⁰⁴ Pb) _i	15.69	15.7	15.71	15.72	15.72	15.73	15.73	15.94						
(²⁰⁸ Pb/ ²⁰⁴ Pb) _i	37.56	37.54	38.79	38.41	38.41	38.37	38.31	38.27						

⁸⁷Rb/⁸⁶Sr and ¹⁴⁷Sm/¹⁴⁴Nd ratios are calculated based on Rb, Sr, Sm and Nd contents. $^{87}\text{Sr}/^{86}\text{Sr}_{(t)} = (^{87}\text{Sr}/^{86}\text{Sr})_{\text{sample}} - (^{87}\text{Rb}/^{86}\text{Sr})_{\text{sample}} \times (e^{\lambda t} - 1)$; $^{143}\text{Nd}/^{144}\text{Nd}_{(t)} = (^{143}\text{Nd}/^{144}\text{Nd})_{\text{sample}} - (^{147}\text{Sm}/^{144}\text{Nd})_{\text{sample}} \times (e^{\lambda t} - 1)$; $\epsilon_{\text{Nd}(t)} = \{[(^{143}\text{Nd}/^{144}\text{Nd})_{\text{sample}} - (^{147}\text{Sm}/^{144}\text{Nd})_{\text{sample}}] \times (e^{\lambda t} - 1)\} / \{[(^{143}\text{Nd}/^{144}\text{Nd})_{\text{CHUR}(0)} - (^{147}\text{Sm}/^{144}\text{Nd})_{\text{CHUR}(0)}] \times (e^{\lambda t} - 1)\}$; $T_{\text{DM}} = 1/\lambda \times \ln\{[1 + (^{143}\text{Nd}/^{144}\text{Nd})_{\text{sample}} - 0.51315] / [(^{147}\text{Sm}/^{144}\text{Nd}) - 0.2137]\}$; where $t = 440$ Ma, $(^{143}\text{Nd}/^{144}\text{Nd})_{\text{CHUR}(0)} = 0.512638$, $(^{147}\text{Sm}/^{144}\text{Nd})_{\text{CHUR}(0)} = 0.1967$; T_{DM} values are calculated using present-day $(^{147}\text{Sm}/^{144}\text{Nd})_{\text{DM}} = 0.2137$ and $(^{143}\text{Nd}/^{144}\text{Nd})_{\text{DM}} = 0.51315$, $\lambda^{147}_{\text{Sm}} = 6.54 \times 10^{-12} \text{ year}^{-1}$; $\lambda^{87}_{\text{Rb}} = 1.42 \times 10^{-11} \text{ year}^{-1}$. $^{206}\text{Pb}/^{204}\text{Pb}_{(0)} = ^{208}\text{Pb}/^{204}\text{Pb}_{(0)} + ^{232}\text{Th}/^{204}\text{Pb} \times (e^{\lambda t} - 1)$; $^{207}\text{Pb}/^{204}\text{Pb}_{(0)} = ^{207}\text{Pb}/^{204}\text{Pb}_{(0)} + ^{235}\text{U}/^{204}\text{Pb} \times (e^{\lambda t} - 1)$; $^{206}\text{Pb}/^{204}\text{Pb}_{(0)} = ^{206}\text{Pb}/^{204}\text{Pb}_{(0)} + ^{238}\text{U}/^{204}\text{Pb} \times (e^{\lambda t} - 1)$; $\lambda^{232}_{\text{Th}} = 1.4 \times 10^{-10} \text{ year}^{-1}$; $\lambda^{235}_{\text{U}} = 7.04 \times 10^{-8} \text{ year}^{-1}$; $\lambda^{238}_{\text{U}} = 4.46 \times 10^{-9} \text{ year}^{-1}$.

Table S6 Representative analyses of feldspar, amphibole, and pyroxene from the Aqiang and Yutian intrusions.

No	Feldspar	SiO ₂	TiO ₂	Al ₂ O ₃	Cr ₂ O ₃	FeO	MnO	MgO	CaO	Na ₂ O	K ₂ O	Total	Ab	An	Or
	Aqiang	67.99	—	19.26	—	—	—	—	0.32	11.35	0.11	99.03	97.86	1.53	0.61
2	Aqiang	64.05	—	17.38	—	0.04	—	—	0.01	0.48	16.07	98.04	4.36	0.04	95.60
3	Aqiang	67.40	—	19.15	0.02	0.02	0.02	0.01	0.49	14.15	0.19	101.46	97.27	1.86	0.86
4	Aqiang	68.84	—	19.35	0.04	0.09	—	—	0.25	13.12	0.09	101.77	98.50	1.04	0.46
5	Aqiang	67.11	0.01	19.60	0.02	0.08	—	—	0.00	12.98	0.06	99.86	99.67	0.01	0.32
6	Aqiang	67.61	0.02	19.43	0.00	0.07	0.01	—	0.50	14.07	0.08	101.79	97.72	1.92	0.36
7	Aqiang	67.38	—	19.55	0.01	0.14	0.04	0.01	0.52	12.97	0.11	100.74	97.30	2.17	0.53
8	Aqiang	67.44	—	19.59	—	0.02	0.01	—	0.00	14.40	0.06	101.52	99.73	0.02	0.26
9	Aqiang	67.19	—	19.55	0.04	0.17	0.02	—	0.39	14.05	0.12	101.52	97.98	1.49	0.53
10	Aqiang	67.96	—	19.72	—	0.08	0.01	—	0.42	13.54	0.13	101.85	97.72	1.67	0.61
11	Aqiang	67.45	0.03	19.75	0.01	0.04	0.04	—	0.02	14.47	0.07	101.87	99.62	0.06	0.33
19	Yutian granodiorite	62.68	—	22.33	0.01	0.06	—	0.01	4.01	9.42	0.28	98.80	79.74	18.71	1.55
20	Yutian granodiorite	60.05	—	22.34	—	1.28	0.04	0.73	—	9.45	3.11	97.01	82.19	0.02	17.79
21	Yutian diorite	57.10	—	24.49	0.01	0.21	—	—	7.69	9.94	0.15	99.59	69.60	29.73	0.67
22	Yutian diorite	61.31	0.03	22.72	0.01	0.04	0.04	0.01	4.94	12.05	0.09	101.23	81.20	18.39	0.42
23	Yutian diorite	56.81	—	24.90	0.01	0.11	—	—	7.95	9.85	0.14	99.76	68.72	30.65	0.63
24	Yutian diorite	57.15	—	24.49	—	0.08	—	—	7.72	9.78	0.15	99.36	69.16	30.15	0.69

	1	2	3	4	5	6	7	8	9	10
Amphibole	Aqiang	Aqiang	Aqiang	Aqiang	Aqiang	Aqiang	Aqiang	Aqiang	Aqiang	Aqiang
SiO ₂	41.51	42.34	40.97	42.61	40.61	42.45	42.79	42.59	42.40	42.73
TiO ₂	0.88	1.10	0.38	0.93	0.90	0.54	0.75	0.75	0.72	0.78
Al ₂ O ₃	9.62	9.04	10.77	8.28	10.05	8.69	8.77	8.79	9.31	9.00
Cr ₂ O ₃	—	—	—	0.02	0.01	0.02	0.01	—	0.03	0.01
FeO	23.07	21.42	24.20	23.29	23.73	22.79	22.97	22.27	22.33	22.56
MnO	0.49	0.62	0.43	0.53	0.42	0.54	0.67	0.49	0.46	0.56
MgO	8.03	7.75	7.11	8.58	7.31	8.73	9.11	8.97	8.73	8.89
CaO	10.72	10.03	11.15	9.65	11.00	10.84	9.84	10.94	10.96	11.01
Na ₂ O	1.11	1.82	1.18	1.14	1.15	1.03	0.96	1.10	1.06	0.99
K ₂ O	0.69	0.59	0.84	0.53	0.94	0.63	0.54	0.71	0.63	0.61
F	—	—	—	—	—	—	—	—	—	—
Cl	0.21	0.00	0.15	0.28	0.15	0.15	0.18	0.22	0.16	0.15
Total	96.29	94.71	97.14	95.76	96.23	96.38	96.55	96.78	96.76	97.25
Si(T)	6.33	6.57	6.25	6.46	6.27	6.44	6.39	6.44	6.41	6.42
Al(IV)(T)	1.67	1.43	1.75	1.48	1.73	1.55	1.54	1.56	1.59	1.58
Ti(T)	0.00	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.00
Al(VI)(C)	0.06	0.22	0.19	0.00	0.09	0.00	0.00	0.01	0.07	0.01
Ti(c)	0.10	0.13	0.04	0.04	0.10	0.06	0.02	0.09	0.08	0.09
Cr (C)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feiii (C)	1.43	0.96	1.31	1.83	1.26	1.48	1.98	1.37	1.38	1.44
Mg (C)	1.83	1.79	1.62	1.94	1.68	1.98	2.03	2.02	1.97	1.99
Feii (C)	1.51	1.82	1.78	1.13	1.80	1.41	0.89	1.45	1.44	1.40
Mn (C)	0.06	0.08	0.06	0.07	0.05	0.07	0.08	0.06	0.06	0.07
Ca(C)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.94	4.78	4.81	5.00	4.91	5.00	5.00	4.99	4.93	4.99
Mg(B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feii(B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn(B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca(B)	1.75	1.67	1.82	1.57	1.82	1.76	1.57	1.77	1.77	1.77
Na (B)	0.25	0.33	0.18	0.43	0.18	0.24	0.43	0.23	0.23	0.23
Na (A)	0.08	0.21	0.17	-0.10	0.16	0.07	-0.15	0.10	0.08	0.06
K (A)	0.13	0.12	0.16	0.10	0.19	0.12	0.10	0.14	0.12	0.12
K(A)+Na(A)	0.22	0.33	0.34	0.00	0.35	0.19	-0.05	0.23	0.21	0.18
(Ca+Na)B	2	2	2	2	2	2	2	2	2	2
NaB	0.25	0.33	0.18	0.43	0.18	0.24	0.43	0.23	0.23	0.23
Mg#	0.55	0.50	0.48	0.63	0.48	0.58	0.69	0.58	0.58	0.59

	11	12	13	14	15	16	17	18	19	20
Yutian Complex										
Amphibole	Diorite				Granodiorite			Enclave		
SiO ₂	42.27	42.56	42.26	40.93	40.46	42.38	41.60	41.34	42.48	41.49
TiO ₂	1.48	1.35	1.43	1.21	0.95	1.48	1.14	1.38	1.30	1.28
Al ₂ O ₃	9.26	8.92	8.95	10.24	9.41	8.30	8.93	9.00	8.56	10.04
Cr ₂ O ₃	0.02	0.03	—	—	0.03	—	—	0.01	—	—
FeO	16.42	16.62	17.24	17.85	19.30	16.76	18.99	18.92	17.82	17.48
MnO	0.37	0.31	0.23	0.31	0.39	0.32	0.29	0.28	0.36	0.27
MgO	10.51	10.59	11.71	11.04	11.29	12.19	10.63	10.65	10.29	11.32
CaO	10.92	10.96	11.34	11.37	10.03	11.07	11.25	11.36	11.00	11.67
Na ₂ O	1.87	1.66	1.42	1.61	1.24	1.42	1.49	1.45	1.89	1.41
K ₂ O	1.45	1.34	1.38	1.37	1.10	1.35	1.46	1.57	1.39	1.68
F	—	—	—	—	0.24	0.08	0.06	0.36	—	0.22
Cl	0.00	0.00	0.17	0.23	0.18	0.29	0.39	0.42	—	0.50
Total	94.56	94.34	96.09	96.11	94.47	95.55	96.10	96.49	95.10	97.15
Si(T)	6.54	6.58	6.39	6.22	6.15	6.43	6.37	6.33	6.57	6.27
Al(IV)(T)	1.46	1.42	1.59	1.78	1.68	1.48	1.61	1.62	1.43	1.73
Ti(T)	0.00	0.00	0.01	0.00	0.11	0.09	0.02	0.05	0.00	0.00
Al(VI)(C)	0.23	0.21	0.00	0.05	0.00	0.00	0.00	0.00	0.13	0.06
Ti(c)	0.17	0.16	0.15	0.14	0.00	0.08	0.11	0.11	0.15	0.15
Cr (C)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feiii (C)	0.42	0.50	0.94	1.01	1.96	1.05	0.98	0.94	0.52	0.86
Mg (C)	2.42	2.44	2.64	2.50	2.56	2.75	2.42	2.43	2.37	2.55
Feii (C)	1.71	1.65	1.24	1.26	0.48	1.08	1.45	1.48	1.78	1.35
Mn (C)	0.05	0.04	0.03	0.04	0.00	0.04	0.04	0.04	0.05	0.03
Ca(C)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.77	4.79	5.00	4.95	5.00	5.00	5.00	5.00	4.87	4.94
Mg(B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feii(B)	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Mn(B)	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00
Ca(B)	1.81	1.82	1.84	1.85	1.63	1.80	1.85	1.86	1.82	1.89
Na (B)	0.19	0.18	0.16	0.15	0.37	0.20	0.15	0.14	0.18	0.11
Na (A)	0.37	0.31	0.25	0.33	0.00	0.22	0.29	0.29	0.39	0.30
K (A)	0.29	0.26	0.27	0.27	0.21	0.26	0.28	0.31	0.27	0.32
K(A)+Na(A)	0.66	0.58	0.52	0.59	0.21	0.48	0.57	0.60	0.66	0.63
(Ca+Na)B	2	2	2	2	2	2	2	2	2	2
NaB	0.19	0.18	0.16	0.15	0.37	0.20	0.15	0.14	0.18	0.11
Mg#	0.59	0.60	0.68	0.67	0.84	0.72	0.63	0.62	0.57	0.65

Pyroxene	1	2	3	4	5	6
	Yutian	Yutian	Yutian	Yutian	Yutian	Yutian
	granodiorite	granodiorite	granodiorite	gabbro	gabbro	gabbro
SiO ₂	48.98	50.65	53.09	49.08	49.83	51.14
TiO ₂	0.28	—	0.01	0.23	0.22	0.12
Al ₂ O ₃	2.30	1.44	0.90	1.88	1.76	1.00
Cr ₂ O ₃	0.01	—	—	0.02	—	—
FeO	10.36	17.34	12.47	9.70	9.65	9.34
MnO	0.24	0.39	0.23	0.31	0.38	0.36
MgO	13.82	13.41	17.63	13.19	12.95	14.46
CaO	20.92	11.72	11.74	22.02	22.81	22.68
Na ₂ O	0.31	0.29	0.12	0.40	0.47	0.38
K ₂ O	—	0.07	0.07	—	0.01	—
Cl	—	0.01	0.03	0.02	0.01	—
Total	97.22	95.31	96.26	96.83	98.09	99.48
En	39.71	42.18	53.12	38.09	37.03	39.94
Fs	17.10	31.31	21.46	16.22	16.10	15.04
wo	43.20	26.51	25.42	45.69	46.87	45.02
Mg[#]	0.81	0.55	0.66	0.82	0.83	0.86

Table S7 Dulk partition coefficients used for trace element modelling in Figure 14.

	La	Sm	Yb
Starting point	5.35	3.21	3.08
Mineral	D_{La}	D_{Sm}	D_{Yb}
Grt	0.39	2.04	43.50
Cpx clinopyroxene	0.15	0.46	0.65
Amp	0.50	3.00	2.10
Pl	0.38	0.17	0.09
Ampibolite			
Grt (30%)+Amp (60%)+Pl (10%)	0.46	2.43	14.30
Grt (5%)+Amp (50%)+Pl (45%)	0.44	1.68	3.27
Amp (70%)+Pl (30%)	0.46	2.15	1.50
Amp (50%)+Pl (50%)	0.44	1.58	1.10
Grt (10%)+Amp (50%)+Pl (40%)	0.44	1.77	5.39
Grt (10%)+Amp (80%)+Pl (10%)	0.48	2.62	6.04
Grt (30%)+Amp (70%)+Pl (20%) D	0.54	2.75	14.54
Eclogite			
Grt (10%)+Amp (40%)+Cpx(50%) D	0.31	1.63	5.52

Rollinson, H.R., 1993. Using geochemical data: evaluation, presentation, interpretation. Geochemistry series Longman Scientific and Technical, Harlow, UK.

Yutian

17WP28-1 Quartz monzodiorite

17WP40 Quartz monzodiorite

17WP29-2 Monzogranite

17WP34-2 Dioritic enclave

17WP35 Monzoabbro

17WP36 Monzoabbro

North Yutian quartz diorite

17WP48

Aiqang

17WP15

17WP23