

Supplementary Table 1 LA-ICP-MS zircon U–Pb data for the volcanic rocks in the Houay kham area.

Analysis_#	207Pb/235U		206Pb/238U		207Pb/235U		206Pb/238U		Th/U
	Ratio	1 $\delta$	Ratio	1 $\delta$	age	1 $\delta$	age	1 $\delta$	
B1-01	1.63381	0.02187	0.07184	0.00079	983.3	8.43	447.2	4.74	0.64
B1-02	0.56057	0.00712	0.0724	0.0008	451.9	4.63	450.6	4.83	0.39
B1-03	0.72656	0.01264	0.07267	0.00083	554.5	7.43	452.2	5.01	0.48
B1-04	0.55949	0.00875	0.07218	0.00084	451.2	5.7	449.3	5.03	0.54
B1-05	0.55968	0.01214	0.07245	0.00086	451.3	7.9	450.9	5.2	0.47
B1-06	0.51178	0.00877	0.07254	0.00087	419.6	5.89	451.4	5.24	0.38
B1-07	0.45623	0.01558	0.0726	0.00104	381.6	10.86	451.8	6.28	0.36
B1-08	0.50939	0.0194	0.07247	0.00105	418.0	13.05	451	6.31	0.45
B1-09	0.54601	0.02291	0.07257	0.00112	442.4	15.05	451.6	6.7	0.55
B1-10	0.52643	0.02286	0.07198	0.00114	429.4	15.21	448.1	6.87	0.38
B1-11	0.55575	0.02674	0.07259	0.00115	448.8	17.45	451.7	6.88	0.35
B1-12	1.78562	0.05009	0.07903	0.0012	1040.2	18.26	490.3	7.14	0.51
B1-13	2.24885	0.04338	0.08882	0.00121	1196.4	13.56	548.5	7.15	0.63
B1-14	2.70963	0.05808	0.08889	0.00125	1331.1	15.9	549.0	7.4	0.47
B1-15	0.78317	0.04603	0.07242	0.00147	587.3	26.21	450.7	8.84	0.37
B1-16	1.55682	0.0912	0.07901	0.00196	953.2	36.22	490.2	11.72	0.49
B1-18	0.55504	0.01427	0.07221	0.0009	448.3	9.32	449.5	5.44	0.73
B1-19	0.55285	0.01099	0.07237	0.00089	446.9	7.18	450.4	5.33	0.57
B1-20	0.54728	0.01263	0.07074	0.00091	443.2	8.29	440.6	5.5	0.47
B1-21	0.58084	0.01949	0.07215	0.00103	465.0	12.52	449.1	6.22	0.44
B1-22	0.59035	0.01149	0.07215	0.00085	471.1	7.34	449.1	5.12	0.39

B1-23	0.89154	0.01286	0.07216	0.00082	647.2	6.9	449.2	4.92	0.39
B1-24	0.53232	0.01235	0.0722	0.00091	433.3	8.19	449.4	5.47	0.45
B1-25	0.83431	0.01134	0.07241	0.00081	616.0	6.28	450.6	4.87	0.45
B1-26	0.98834	0.02111	0.07242	0.00087	697.9	10.78	450.7	5.23	0.38
B1-27	0.60423	0.0144	0.07263	0.00093	479.9	9.11	452.0	5.61	0.55
B1-28	0.53826	0.00988	0.0725	0.00085	437.3	6.52	451.2	5.14	1.91
B1-29	0.41894	0.0148	0.07243	0.00114	355.3	10.59	450.8	6.84	0.42
B1-30	0.54025	0.0078	0.07217	0.0008	438.6	5.14	449.2	4.8	0.59
B2-01	0.52036	0.00819	0.0667	0.00075	425.4	5.47	416.2	4.55	0.44
B2-02	0.56027	0.01233	0.06678	0.00083	451.7	8.02	416.8	5.02	0.54
B2-03	0.4883	0.00765	0.06686	0.00077	403.7	5.22	417.2	4.63	0.56
B2-04	0.54075	0.0165	0.06681	0.00095	438.9	10.88	416.9	5.75	0.55
B2-05	0.50052	0.01393	0.06691	0.00091	412.1	9.42	417.5	5.49	0.71
B3-01	0.486	0.01138	0.06734	0.00087	402.2	7.77	420.1	5.25	0.55
B3-02	0.58458	0.00781	0.06727	0.00075	467.4	5	419.7	4.55	0.50
B3-03	0.52549	0.00916	0.06725	0.00077	428.8	6.1	419.6	4.65	0.50
B3-04	0.52556	0.0088	0.06724	0.00075	428.9	5.86	419.5	4.53	0.43
B3-05	0.46167	0.01057	0.06726	0.00087	385.4	7.35	419.6	5.28	0.60
B3-06	0.46643	0.01328	0.06761	0.00092	388.7	9.19	421.8	5.57	0.58
B3-07	0.4617	0.01194	0.06727	0.00089	385.4	8.3	419.7	5.4	1.25
B3-08	0.50721	0.01899	0.06719	0.00101	416.6	12.79	419.2	6.11	0.47
B3-09	0.52331	0.00961	0.06726	0.00078	427.4	6.41	419.6	4.74	0.34
B3-10	0.89507	0.02686	0.06717	0.00105	649.1	14.39	419.1	6.34	0.46
B3-11	0.51519	0.01484	0.06701	0.00085	421.9	9.95	418.1	5.14	0.45
B3-12	0.52116	0.02058	0.06714	0.00103	425.9	13.74	418.9	6.2	0.49
B3-13	0.47083	0.01191	0.06724	0.00088	391.8	8.22	419.5	5.3	0.95

B3-14	0.61379	0.01128	0.06713	0.00078	485.9	7.1	418.9	4.74	0.72
B3-15	0.52609	0.01109	0.06728	0.00079	429.2	7.38	419.8	4.79	0.69
B3-16	0.55926	0.01251	0.0671	0.00079	451.0	8.15	418.6	4.76	0.80
B3-17	0.60058	0.01678	0.06718	0.00087	477.6	10.64	419.1	5.26	0.56
B3-18	0.42961	0.01754	0.06747	0.00103	362.9	12.46	420.9	6.22	0.95
B3-19	0.48914	0.0179	0.06739	0.00099	404.3	12.21	420.4	5.96	0.62
B3-20	0.69733	0.01291	0.06741	0.00081	537.2	7.72	420.5	4.87	0.58
B3-21	0.7356	0.01365	0.06746	0.0008	559.8	7.98	420.8	4.8	0.50
B3-22	1.11866	0.01611	0.06721	0.0008	762.3	7.72	419.3	4.81	0.94
B3-23	0.58557	0.01392	0.06726	0.0008	468.0	8.91	419.6	4.86	0.62
B3-24	0.48599	0.01151	0.06741	0.00086	402.2	7.86	420.5	5.19	0.54
B3-25	0.53135	0.01586	0.06736	0.00093	432.7	10.51	420.2	5.64	0.58
B3-26	0.52824	0.02244	0.0674	0.00106	430.6	14.91	420.5	6.42	0.52
B3-27	0.58346	0.0106	0.0674	0.00081	466.7	6.8	420.5	4.89	0.48
B3-28	0.68072	0.01027	0.06733	0.00077	527.2	6.2	420.1	4.67	0.59
B3-29	0.93128	0.01375	0.06733	0.00078	668.3	7.23	420.1	4.69	0.48
B3-30	0.62526	0.01209	0.0674	0.00081	493.1	7.55	420.5	4.87	0.53
B3-31	0.71719	0.01313	0.06743	0.0008	549.0	7.76	420.7	4.82	0.73
B3-32	0.53918	0.01726	0.06734	0.00096	437.9	11.38	420.1	5.8	0.50
B3-33	0.66483	0.01701	0.06786	0.00086	517.6	10.37	423.2	5.17	0.55
B3-34	0.5525	0.01086	0.06739	0.00077	446.6	7.1	420.4	4.68	0.52
B3-35	0.60178	0.0107	0.06765	0.0008	478.4	6.78	422.0	4.82	0.42
B3-36	0.58077	0.01287	0.06722	0.00084	465.0	8.26	419.4	5.09	1.04
B3-37	0.48605	0.01007	0.06737	0.00089	402.2	6.88	420.3	5.35	0.35
B3-38	0.52352	0.01729	0.06775	0.00097	427.5	11.52	422.6	5.88	0.95
B3-39	0.60467	0.01464	0.06742	0.00087	480.2	9.26	420.6	5.27	0.71

B3-40	0.76548	0.01244	0.06716	0.00079	577.2	7.16	419.0	4.79	0.63
B3-41	0.71098	0.01277	0.06723	0.00083	545.3	7.58	419.4	5	0.78
B3-42	0.51284	0.0145	0.06726	0.00092	420.4	9.73	419.6	5.54	0.46
B3-43	0.51091	0.0099	0.06725	0.00076	419.1	6.65	419.6	4.61	0.60
B3-44	0.50644	0.01827	0.06728	0.001	416.0	12.31	419.7	6.02	0.54
B3-45	0.56623	0.00941	0.06729	0.00077	455.6	6.1	419.8	4.67	0.46
B3-46	0.56579	0.01119	0.0673	0.00082	455.3	7.26	419.9	4.97	0.52
B3-47	0.54946	0.02796	0.06731	0.00115	444.6	18.32	419.9	6.95	0.57
B3-48	0.616	0.01031	0.06733	0.00078	487.3	6.48	420.1	4.7	0.35
B3-49	0.60362	0.01987	0.06742	0.00092	479.5	12.58	420.6	5.56	0.36
B3-50	0.53998	0.00901	0.06747	0.00077	438.4	5.94	420.9	4.66	0.34
B3-51	0.5006	0.02092	0.06752	0.00104	412.1	14.16	421.2	6.28	0.52
B3-52	0.48708	0.0321	0.06703	0.00125	402.9	21.92	418.3	7.57	0.46
B3-53	0.58699	0.01665	0.06711	0.0009	468.9	10.65	418.7	5.43	0.39
B3-54	0.51213	0.0078	0.06732	0.00079	419.9	5.24	420.0	4.78	0.47
B3-55	0.52532	0.0138	0.06731	0.00089	428.7	9.19	419.9	5.35	0.43
B3-56	0.45956	0.0093	0.06732	0.00083	384.0	6.47	420.0	5.03	0.62
B3-57	0.48906	0.01149	0.06677	0.00083	404.3	7.84	416.6	5	0.50
B3-58	0.45458	0.01364	0.06747	0.00092	380.5	9.52	420.9	5.57	0.41
B3-59	1.08474	0.04303	0.06711	0.00115	745.9	20.96	418.7	6.97	0.45
B3-60	0.56571	0.00994	0.06718	0.00076	455.2	6.44	419.2	4.59	0.76
B3-61	0.54239	0.00779	0.06726	0.00076	440.0	5.13	419.6	4.58	0.59
B3-62	0.45968	0.01226	0.06705	0.00089	384.0	8.53	418.3	5.4	0.47
B3-63	0.50423	0.03315	0.0674	0.00129	414.6	22.38	420.5	7.8	0.46
B3-64	0.51508	0.00691	0.06738	0.00077	421.9	4.63	420.3	4.64	0.48

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B1: Dacitic tuff samples; B2: Fine-grained diorite sample ; B3: Brecciated rhyolite tuff sample

Supplementary Table 2 Major and trace element data for pyroclastic rocks in the Houay kham area (major oxide in wt.%, trace element in ppm).

Sample	B035-1	B035-2	B39	B49-1	B49-2	B034-1	B034-2	B047	B016	B25	B26	B22	B23	B28	BHVO-2	
	dacitic	dacitic	diorite	diorite	diorite	dacitic	dacitic	dacitic	brecciated	brecciated	brecciated	brecciated	brecciated	brecciated		Detected
	tuff	tuff				tuff	tuff	tuff	rhyolite	rhyolite	rhyolite	rhyolite	rhyolite	rhyolite	Standard	limits
elements									tuff	tuff	tuff	tuff	tuff	tuff		
Al <sub>2</sub> O <sub>3</sub>	13.2	12.3	16.7	17.8	17.0	12.4	12.4	12.7	6.62	10.0	10.1	13.0	13.4	12.9	13.5	0.20
CaO	1.42	1.78	5.41	6.59	7.87	1.47	2.07	0.15	0.05	0.02	0.02	0.03	0.02	0.06	11.2	0.20
TFe <sub>2</sub> O <sub>3</sub>	3.07	2.73	6.85	6.46	7.13	1.98	1.99	1.84	3.09	1.34	6.46	1.97	2.27	1.37	12.5	0.20
K <sub>2</sub> O	2.75	2.84	3.88	4.30	3.82	2.77	2.78	2.77	1.88	3.08	2.93	3.92	4.06	3.10	0.53	0.01
MgO	0.44	0.37	2.74	2.29	2.36	0.33	0.34	0.27	0.10	0.17	0.18	0.27	0.28	0.31	7.18	0.08
MnO	0.06	0.06	0.24	0.19	0.24	0.04	0.05	0.07	0.01	0.01	0.05	0.01	0.01	0.03	0.17	0.01
Na <sub>2</sub> O	3.68	3.36	3.04	1.87	2.10	2.56	2.48	3.40	0.03	0.03	0.05	0.12	0.12	0.34	2.23	0.02
P <sub>2</sub> O <sub>5</sub>	0.07	0.06	0.28	0.31	0.31	0.04	0.04	0.02	0.02	0.01	0.01	0.02	0.03	0.01	0.25	0.01
SiO <sub>2</sub>	71.9	73.6	49.0	48.7	46.7	75.0	73.9	76.6	86.5	83.0	77.5	77.7	76.7	78.6	49.7	0.50
TiO <sub>2</sub>	0.33	0.27	0.81	0.86	0.84	0.21	0.19	0.21	0.07	0.07	0.16	0.18	0.19	0.19	2.71	0.05
LOI	2.79	2.93	10.5	9.86	10.8	2.90	3.29	1.43	1.38	1.89	2.08	2.25	2.31	2.39		
Total	99.7	100	99.5	99.3	99.3	99.7	99.6	99.5	99.7	99.7	99.6	99.6	99.5	99.4		
Al <sub>2</sub> O <sub>3</sub> #	13.8	12.8	19.6	20.7	20.1	12.9	13.0	13.1	6.85	10.3	10.8	13.5	14.0	13.4		
CaO#	1.49	1.85	6.34	7.67	9.30	1.53	2.17	0.15	0.05	0.02	0.02	0.03	0.02	0.06		
FeO#	1.45	1.28	3.61	3.38	3.79	0.93	0.94	0.85	1.44	0.62	3.09	0.92	1.06	0.64		
K <sub>2</sub> O#	2.89	2.96	4.55	5.00	4.52	2.89	2.92	2.85	1.94	3.17	3.12	4.07	4.23	3.22		
MgO#	0.46	0.39	3.21	2.67	2.79	0.34	0.36	0.28	0.10	0.17	0.19	0.28	0.29	0.32		
MnO#	0.06	0.06	0.28	0.22	0.28	0.04	0.05	0.07	0.01	0.01	0.05	0.01	0.01	0.03		
Na <sub>2</sub> O#	3.86	3.50	3.56	2.18	2.48	2.67	2.60	3.50	0.03	0.03	0.05	0.12	0.13	0.35		
P <sub>2</sub> O <sub>5</sub> #	0.07	0.06	0.33	0.36	0.37	0.04	0.04	0.02	0.02	0.01	0.01	0.02	0.03	0.01		
SiO <sub>2</sub> #	75.5	76.7	57.5	56.7	55.2	78.3	77.7	78.9	89.4	85.5	82.4	80.7	80.0	81.7		

TiO <sub>2</sub> #	0.35	0.28	0.95	1.00	0.99	0.22	0.20	0.22	0.07	0.07	0.17	0.19	0.20	0.20		
Ag	0.07	0.05	0.08	0.12	0.12	0.10	0.10	0.07	0.10	0.23	1.57	0.16	0.11	0.02		
As	3.20	3.60	13.9	10.0	8.80	10.8	10.2	5.50	105	20.0	37.0	4.40	4.60	1.80	3.01	2.00
Ba	500	600	330	300	280	310	290	480	30.0	80.0	100	180	180	470	131	5.00
Be	1.53	1.64	1.80	2.41	2.12	1.28	1.32	1.55	0.57	0.84	0.78	1.65	1.60	1.20	1.13	0.05
Bi	0.09	0.10	0.03	0.04	0.04	0.10	0.10	0.13	0.49	0.28	0.36	0.24	0.18	0.14		0.01
Cd	#N/A	0.03	0.09	0.08	0.09	0.05	0.06	0.10	0.02	<0.02	0.02	<0.02	<0.02	0.04	0.05	0.02
Ce	46.6	38.7	22.4	20.7	23.4	54.0	54.8	49.6	17.9	12.7	28.3	68.8	72.1	86.7	37.0	0.50
Co	2.80	2.40	18.9	15.3	17.9	2.10	2.10	2.00	0.30	0.10	0.50	1.50	1.40	3.30	47.0	0.09
Cr	38.0	17.0	60.0	41.0	51.0	27.0	122	19.0	70.0	15.0	51.0	12.0	12.0	30.0	312	1.00
Cs	3.82	3.83	9.98	12.4	10.7	3.60	3.61	2.79	1.22	5.09	2.46	3.35	3.60	4.82	0.10	0.05
Cu	2.60	2.70	79.4	107	103	2.90	3.10	3.40	3.40	7.40	41.7	6.50	6.60	3.40	140	1.00
Dy	2.71	2.55	1.78	2.02	2.16	3.09	3.30	3.16	2.55	3.30	2.16	2.78	2.86	3.44	5.24	0.30
Er	1.81	1.79	0.95	1.01	1.10	1.98	1.96	2.15	1.98	2.73	2.16	1.98	2.01	2.25	2.46	0.50
Eu	0.97	0.73	0.76	0.85	0.98	0.89	0.85	0.77	0.39	0.20	0.48	0.69	0.72	0.98	2.01	0.20
Ga	15.3	13.8	19.2	20.4	19.3	15.3	15.6	15.5	7.85	11.9	14.2	15.9	16.3	13.1	21.6	0.20
Gd	3.36	2.71	2.12	2.48	2.74	3.57	3.46	3.38	2.36	1.70	1.48	2.78	2.83	4.23	6.03	0.50
Ge	0.07	0.08	0.11	0.12	0.14	0.08	0.08	0.08	0.06	0.05	0.12	0.11	0.12	0.10	1.54	0.03
Hf	2.60	2.60	1.10	1.10	1.10	2.50	2.40	2.70	2.40	3.40	3.80	2.80	2.80	2.90	4.26	0.20
Ho	0.59	0.59	0.34	0.38	0.42	0.65	0.70	0.68	0.85	0.70	0.48	0.61	0.59	0.72	0.96	0.01
In	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.03	0.07	0.08	0.04	0.04	0.04		0.02
La	23.8	20.1	10.4	9.10	10.6	28.2	29.1	25.4	9.00	7.60	15.9	38.3	41.0	38.8	15.1	3.00
Li	4.20	3.90	4.50	15.2	18.0	6.10	6.10	8.00	21.0	7.60	8.20	47.8	42.4	4.20	4.73	4.00
Lu	0.33	0.33	0.13	0.13	0.14	0.36	0.35	0.39	0.32	0.49	0.40	0.39	0.39	0.41	0.28	0.05
Mo	2.64	1.47	0.30	0.22	0.29	2.79	3.28	1.69	4.39	1.49	1.64	1.06	0.93	0.31	11.5	0.20
Nb	6.30	6.40	4.20	4.00	4.00	6.70	6.60	6.80	4.30	8.30	8.30	7.90	7.40	9.90	19.2	1.00

Nd	19.5	16.2	10.5	10.9	11.9	22.0	22.2	20.4	8.50	6.00	10.8	27.3	28.1	30.7	24.4	0.10
Ni	2.30	1.80	35.7	35.9	40.3	1.60	2.80	1.40	1.00	0.50	1.10	1.70	1.50	4.00	125	0.80
Pb	8.20	7.80	9.80	7.70	9.80	9.20	9.90	15.7	108	9.30	173	23.1	23.4	17.0	1.37	1.20
Pr	5.20	4.30	2.62	2.53	2.83	5.95	6.15	5.60	2.18	1.58	3.02	7.62	7.95	8.40	5.34	0.03
Rb	92.0	95.1	124	108	110	112	114	109	56.7	100	102	131	130	104	9.68	0.20
Sb	1.11	0.88	1.33	1.57	1.56	1.23	1.54	0.84	3.52	2.63	2.41	8.86	5.85	1.89	0.18	0.10
Sc	9.20	8.50	18.8	17.8	19.2	6.90	6.70	7.60	6.10	7.60	12.6	7.10	7.10	5.60	32.0	0.80
Sm	3.68	3.04	2.16	2.37	2.62	4.23	4.22	4.01	1.89	1.47	1.81	4.83	4.57	5.43	6.01	0.03
Sn	1.40	1.40	0.50	0.50	0.50	1.70	1.80	1.80	1.50	1.90	1.80	1.90	2.10	2.00	1.58	0.03
Sr	150	148	274	160	187	87.3	90.8	76.0	9.60	6.00	20.9	41.1	37.8	56.7	405	1.50
Ta	0.46	0.50	0.26	0.26	0.25	0.55	0.53	0.53	0.34	0.67	0.56	0.60	0.58	0.72	1.16	0.20
Tb	0.47	0.46	0.31	0.35	0.39	0.54	0.50	0.55	0.35	0.41	0.30	0.40	0.42	0.59	0.93	0.20
Th	6.83	7.64	0.96	0.78	0.89	8.97	9.27	9.38	4.78	9.81	8.65	10.7	10.3	11.8	1.22	1.00
Ti	0.18	0.15	0.48	0.49	0.48	0.12	0.11	0.11	0.04	0.04	0.10	0.11	0.11	0.11	17752	0.01
Tl	0.50	0.54	0.90	0.86	0.77	0.59	0.60	0.57	0.38	0.61	0.65	0.84	0.82	0.67		0.30
Tm	0.30	0.29	0.13	0.14	0.16	0.33	0.32	0.35	0.30	0.45	0.32	0.33	0.34	0.36	0.33	0.20
U	1.80	1.90	0.30	0.30	0.20	2.10	2.20	2.40	2.20	2.30	2.40	3.40	3.30	2.60	0.40	0.10
V	190	16.0	172	197	177	14.0	13.0	13.0	7.00	3.00	7.00	10.0	12.0	7.00	335	2.00
W	1.30	1.10	1.20	1.20	1.30	1.10	1.00	0.70	1.00	0.80	1.00	1.30	1.10	0.70	0.25	0.20
Y	16.0	16.3	9.70	10.8	12.5	19.2	18.8	19.8	16.6	21.1	15.6	18.4	18.5	21.4	27.1	0.50
Yb	1.97	2.03	0.86	0.86	0.93	2.28	2.39	2.43	2.05	3.16	2.45	2.38	2.48	2.54	4.26	0.20
Zn	49.0	43.0	74.0	71.0	82.0	36.0	36.0	66.0	30.0	69.0	40.0	74.0	71.0	45.0	104	5.00
Zr	87.7	87.9	41.5	38.8	41.7	80.2	77.9	85.9	85.1	91.4	142	84.2	86.4	83.1	175	5.00
Ce/Ce*	0.87	0.87	0.89	0.90	0.89	0.87	0.85	0.87	0.84	0.76	0.85	0.84	0.83	1.00		
Eu/Eu*	0.94	0.87	1.21	1.20	1.25	0.78	0.76	0.71	0.63	0.43	1.00	0.64	0.68	0.70		
ΣREE	111	93.8	55.4	53.8	60.3	128	130	118	50.5	42.4	70.0	159	166	185		

LREE	99.7	83.0	48.8	46.4	52.3	115	117	105	39.8	29.5	60.3	147	154	171
HREE	11.5	10.8	6.62	7.37	8.04	12.8	12.9	13.0	10.7	12.9	9.75	11.6	11.9	14.5
(La/Yb) <sub>N</sub>	7.17	5.88	7.18	6.28	6.77	7.34	7.23	6.21	2.61	1.43	3.85	9.55	9.82	9.07
(La/Sm) <sub>N</sub>	4.04	4.13	3.01	2.40	2.53	4.17	4.31	3.96	2.98	3.23	5.49	4.96	5.61	4.47
(Gd/Yb) <sub>N</sub>	1.05	0.82	1.51	1.77	1.81	0.96	0.89	0.85	0.71	0.33	0.37	0.72	0.70	1.02
SM/Th	0.54	0.40	2.25	3.04	2.94	0.47	0.46	0.43	0.40	0.15	0.21	0.45	0.45	0.46
Th/Y	0.43	0.47	0.10	0.07	0.07	0.47	0.49	0.47	0.29	0.46	0.55	0.58	0.55	0.55
Ba/Th	73.2	78.5	343	384	314	34.5	31.2	51.1	6.28	8.15	11.5	16.8	17.5	39.8
Ba/La	21.0	29.8	31.7	32.9	26.4	10.9	9.97	18.9	3.33	10.5	6.29	4.70	4.39	12.1
Ba/Nb	79.3	93.7	78.5	75.0	70.0	46.3	43.9	70.5	6.98	9.64	12.0	22.7	24.3	47.4
Th/Ce	0.15	0.20	0.04	0.04	0.04	0.17	0.17	0.19	0.27	0.77	0.31	0.16	0.14	0.14

Note: FeO\*Ztotal iron as FeO, LOI=loss on ignition. Major elements (#) have been normalized to 100 wt % on the basis of volatile free.