Table S1

In situ zircon U-Pb dating results for the granodioritedredged from the South China Sea.

Spot	Concentration(μg/g)			Ratio						Age (Ma)						Concordance
	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	
DK52-2-01	19.8	753	885	0.0489	0.0023	0.1286	0.0061	0.0193	0.0003	142.7	113.9	122.8	5.5	123.0	1.8	99%
DK52-2-02	15.2	571	640	0.0544	0.0023	0.1451	0.0056	0.0195	0.0002	387.1	94.4	137.6	5.0	124.8	1.5	90%
DK52-2-03	16.6	536	726	0.0487	0.0015	0.1314	0.0039	0.0196	0.0002	200.1	75.0	125.3	3.5	125.1	1.3	99%
DK52-2-04	12.6	355	557	0.0489	0.0026	0.1315	0.0068	0.0197	0.0003	142.7	122.2	125.5	6.1	125.6	1.9	99%
DK52-2-05	5.15	108	249	0.0501	0.0028	0.1280	0.0067	0.0193	0.0003	211.2	129.6	122.3	6.0	123.0	1.7	99%
DK52-2-06	20.9	848	884	0.0487	0.0020	0.1291	0.0052	0.0193	0.0002	200.1	94.4	123.3	4.7	123.3	1.4	99%
DK52-2-07	10.6	276	484	0.0535	0.0027	0.1428	0.0071	0.0193	0.0003	350.1	113.0	135.5	6.3	123.5	1.7	90%
DK52-2-08	20.2	656	875	0.0503	0.0015	0.1364	0.0040	0.0197	0.0002	209.3	70.4	129.9	3.6	125.5	1.3	96%
DK52-2-09	21.8	1052	852	0.0514	0.0015	0.1381	0.0039	0.0196	0.0002	261.2	66.7	131.4	3.5	124.9	1.2	94%
DK52-2-10	15.1	610	653	0.0465	0.0015	0.1228	0.0041	0.0193	0.0002	33.4	64.8	117.6	3.7	123.1	1.1	95%
DK52-2-11	14.2	491	621	0.0486	0.0016	0.1293	0.0043	0.0194	0.0002	131.6	78.7	123.5	3.9	123.8	1.0	99%
DK52-2-12	11.8	376	525	0.0481	0.0021	0.1267	0.0055	0.0194	0.0002	101.9	109.2	121.1	5.0	123.5	1.4	97%
DK52-2-13	7.38	301	308	0.0499	0.0027	0.1304	0.0071	0.0194	0.0002	190.8	132.4	124.5	6.4	124.0	1.6	99%
DK52-2-14	15.4	401	705	0.0505	0.0028	0.1328	0.0076	0.0193	0.0003	216.7	129.6	126.6	6.8	123.2	1.7	97%
DK52-2-15	18.4	502	821	0.0493	0.0024	0.1317	0.0070	0.0196	0.0002	161.2	114.8	125.6	6.3	124.9	1.4	99%
DK52-2-16	5.78	189	248	0.0499	0.0026	0.1321	0.0070	0.0197	0.0003	187.1	122.2	126.0	6.3	125.5	1.6	99%
DK52-2-17	12.1	309	541	0.0497	0.0028	0.1341	0.0079	0.0197	0.0003	189.0	125.0	127.7	7.1	125.6	1.9	98%
DK52-2-18	2.67	70.2	113	0.0585	0.0035	0.1555	0.0086	0.0206	0.0003	546.3	132.2	146.8	7.6	131.3	1.8	88%
DK52-2-19	4.06	163	170	0.0504	0.0030	0.1290	0.0069	0.0194	0.0003	213.0	132.4	123.2	6.2	123.9	1.8	99%
DK52-2-20	103	75.0	330	0.1036	0.0018	4.1370	0.0806	0.2895	0.0018	1700	31.9	1661.6	15.9	1639.2	9.2	98%
DK52-2-21	15.7	504	695	0.0480	0.0014	0.1271	0.0037	0.0194	0.0002	98.2	65.7	121.5	3.3	123.7	1.2	98%
DK52-2-22	6.93	181	285	0.1084	0.0558	0.2516	0.1073	0.0204	0.0002	1772	1095	227.9	87	130.0	1.5	45%

Table S1

Continued.

Spot	Concentration(μg/g)			Ratio						Age (Ma)						Concordance
	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	
DK52-2-23	10.4	484	430	0.0493	0.0015	0.1305	0.0040	0.0193	0.0002	161.2	74.1	124.6	3.6	123.5	1.2	99%
DK52-2-24	13.1	387	595	0.0473	0.0013	0.1259	0.0035	0.0193	0.0002	64.9	63.0	120.4	3.2	123.2	1.0	97%
DK52-2-25	11.1	325	502	0.0481	0.0014	0.1278	0.0037	0.0193	0.0002	105.6	68.5	122.2	3.3	123.3	1.1	99%
DK52-2-26	19.3	699	842	0.0476	0.0010	0.1267	0.0028	0.0194	0.0001	79.7	47.2	121.1	2.5	123.6	0.9	97%
DK52-2-27	12.8	289	595	0.0486	0.0015	0.1296	0.0038	0.0195	0.0002	131.6	78.7	123.7	3.4	124.5	1.2	99%
DK52-2-28	10.7	321	484	0.0490	0.0015	0.1304	0.0038	0.0194	0.0002	146.4	68.5	124.5	3.4	123.7	1.2	99%
DK52-2-29	15.8	583	684	0.0489	0.0014	0.1295	0.0036	0.0193	0.0002	142.7	68.5	123.6	3.2	123.5	1.1	99%
DK52-2-30	18.0	759	733	0.0509	0.0021	0.1359	0.0055	0.0195	0.0003	235.3	65.7	129.4	4.9	124.8	1.9	96%
DK52-2-31	6.99	182	312	0.0487	0.0020	0.1320	0.0054	0.0196	0.0002	131.6	99.1	125.9	4.8	125.2	1.5	99%
DK52-2-32	11.4	365	510	0.0560	0.0020	0.1475	0.0050	0.0194	0.0002	450.0	79.6	139.7	4.5	123.7	1.5	87%
DK52-2-33	8.30	237	377	0.0478	0.0024	0.1275	0.0062	0.0193	0.0002	87.1	124.1	121.8	5.6	123.2	1.6	98%
DK52-2-34	11.8	430	493	0.0524	0.0022	0.1408	0.0058	0.0195	0.0003	301.9	94.4	133.7	5.1	124.6	1.6	92%
DK52-2-35	9.59	285	426	0.0506	0.0024	0.1331	0.0060	0.0196	0.0002	233.4	102.8	126.8	5.4	124.9	1.5	98%
DK52-2-36	10.5	388	453	0.0505	0.0025	0.1325	0.0061	0.0194	0.0003	220.4	114.8	126.4	5.5	123.8	1.7	97%
DK52-2-37	6.16	161	286	0.0485	0.0030	0.1280	0.0077	0.0194	0.0003	120.5	140.7	122.3	6.9	123.6	1.7	98%
DK52-2-38	13.9	328	639	0.0503	0.0016	0.1353	0.0043	0.0195	0.0002	209.3	75.9	128.9	3.8	124.7	1.4	96%
DK52-2-39	29.6	1167	1209	0.0502	0.0019	0.1353	0.0048	0.0196	0.0003	211.2	82.4	128.8	4.3	124.9	1.8	96%
DK52-2-40	10.9	315	465	0.0586	0.0020	0.1571	0.0049	0.0197	0.0002	553.7	76.8	148.1	4.3	125.7	1.2	83%
DK52-2-41	15.6	537	688	0.0539	0.0015	0.1418	0.0040	0.0191	0.0002	364.9	64.8	134.6	3.6	121.7	1.3	89%
DK52-2-42	11.1	357	487	0.0499	0.0018	0.1327	0.0046	0.0193	0.0002	190.8	83.3	126.5	4.1	123.3	1.4	97%
DK52-2-43	16.7	721	709	0.0524	0.0023	0.1370	0.0061	0.0191	0.0003	301.9	134.2	130.4	5.4	122.3	1.6	93%
DK52-2-44	6.45	220	276	0.0526	0.0024	0.1397	0.0060	0.0195	0.0002	322.3	102.8	132.7	5.4	124.2	1.5	93%

Table S1

Continued.

Spot	Concentration(μg/g)			Ratio						Age (Ma)						Concordance
	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	
DK52-2-45	6.30	244	267	0.0513	0.0018	0.1348	0.0048	0.0192	0.0002	257.5	86.1	128.4	4.3	122.9	1.2	95%
DK52-2-46	8.66	362	351	0.0511	0.0024	0.1372	0.0062	0.0197	0.0003	255.6	111.1	130.6	5.5	125.6	1.8	96%
DK52-2-47	15.2	534	647	0.0496	0.0012	0.1327	0.0031	0.0195	0.0002	176.0	55.5	126.5	2.7	124.4	1.0	98%
DK52-2-48	10.9	478	446	0.0483	0.0013	0.1285	0.0033	0.0194	0.0002	122.3	61.1	122.8	2.9	123.9	1.0	99%
DK52-2-49	8.70	256	386	0.0488	0.0021	0.1305	0.0054	0.0195	0.0002	139.0	98.1	124.6	4.8	124.5	1.5	99%
DK52-2-50	9.94	431	413	0.0538	0.0033	0.1333	0.0071	0.0195	0.0003	361.2	138.9	127.0	6.3	124.3	2.2	97%
DK52-2-51	12.6	751	445	0.0478	0.0018	0.1281	0.0046	0.0197	0.0003	87.1	88.9	122.4	4.2	125.7	1.6	97%
DK52-2-52	7.12	224	306	0.0514	0.0029	0.1357	0.0071	0.0196	0.0003	257.5	132.4	129.2	6.3	124.9	2.1	96%
DK52-2-53	14.2	435	616	0.0507	0.0016	0.1371	0.0044	0.0196	0.0002	227.8	74.1	130.5	3.9	125.3	1.2	95%
DK52-2-54	10.7	408	443	0.0532	0.0017	0.1431	0.0045	0.0196	0.0002	344.5	72.2	135.8	4.0	125.4	1.2	92%
DK52-2-55	10.0	350	429	0.0478	0.0014	0.1270	0.0036	0.0194	0.0002	100.1	75.0	121.4	3.3	124.2	1.1	97%
DK52-2-56	10.6	326	459	0.0503	0.0016	0.1358	0.0042	0.0197	0.0002	209.3	41.7	129.3	3.7	125.8	1.3	97%
DK52-2-57	18.7	786	792	0.0477	0.0014	0.1261	0.0036	0.0192	0.0002	87.1	70.4	120.6	3.3	122.7	1.2	98%
DK52-2-58	6.46	208	285	0.0494	0.0016	0.1300	0.0041	0.0194	0.0002	164.9	75.9	124.1	3.7	123.8	1.3	99%
DK52-2-59	13.4	447	585	0.0489	0.0019	0.1301	0.0050	0.0193	0.0002	142.7	88.0	124.1	4.5	123.4	1.5	99%
DK52-2-60	23.1	1195	908	0.0486	0.0013	0.1289	0.0033	0.0193	0.0002	127.9	61.1	123.1	3.0	123.2	1.1	99%
DK52-2-61	10.0	224	473	0.0509	0.0015	0.1330	0.0036	0.0193	0.0002	235.3	68.5	126.8	3.2	123.2	1.2	97%
DK52-2-62	19.3	728	833	0.0481	0.0009	0.1276	0.0024	0.0193	0.0002	105.6	46.3	122.0	2.1	123.2	1.0	98%
DK52-2-63	17.9	683	767	0.0472	0.0012	0.1256	0.0029	0.0193	0.0002	61.2	-139.8	120.2	2.6	123.5	1.0	97%
DK52-2-64	8.84	321	377	0.0484	0.0014	0.1285	0.0038	0.0194	0.0002	120.5	67.6	122.8	3.4	123.8	1.2	99%
DK52-2-65	15.3	612	647	0.0510	0.0014	0.1348	0.0036	0.0191	0.0002	242.7	56.5	128.4	3.2	122.3	1.2	95%

Table S2

In situ zircon Hfisotope results for the granodioritedredged from the South China Sea.

Spot	Age (Ma)	$^{176}Yb/^{177}Hf$	$^{176}Lu/^{177}Hf$	$^{176}Hf/^{177}Hf$	± 2σ	$\varepsilon_{Hf}(t)$	± 2σ	T_{DM}^{C}(Ma)
DK52-2-01	123.0	0.032713	0.001311	0.282593	0.000022	-3.8	0.8	1415
DK52-2-03	125.1	0.027293	0.001020	0.282786	0.000010	3.1	0.4	979
DK52-2-04	125.6	0.050788	0.001632	0.282642	0.000011	-2.0	0.4	1305
DK52-2-05	123.0	0.019886	0.000729	0.282793	0.000013	3.4	0.4	963
DK52-2-06	123.3	0.026719	0.000953	0.282834	0.000009	4.8	0.3	871
DK52-2-07	123.5	0.038754	0.001334	0.282699	0.000011	0.0	0.4	1177
DK52-2-10	123.1	0.038666	0.001174	0.282653	0.000011	-1.6	0.4	1278
DK52-2-11	123.8	0.036283	0.001286	0.282696	0.000010	-0.1	0.3	1183
DK52-2-12	123.5	0.029221	0.000946	0.282803	0.000011	3.7	0.4	941
DK52-2-13	124.0	0.039572	0.001170	0.282600	0.000012	-3.5	0.4	1399
DK52-2-16	125.5	0.022394	0.000763	0.282842	0.000010	5.2	0.4	851
DK52-2-19	123.9	0.032988	0.000967	0.282660	0.000011	-1.3	0.4	1263
DK52-2-21	123.7	0.034350	0.001246	0.282615	0.000011	-2.9	0.4	1364
DK52-2-24	123.2	0.029238	0.001016	0.282801	0.000011	3.7	0.4	944
DK52-2-25	123.3	0.020834	0.000767	0.282785	0.000010	3.1	0.4	979
DK52-2-26	123.6	0.023422	0.000779	0.282822	0.000010	4.4	0.3	896
DK52-2-27	124.5	0.030310	0.001059	0.282690	0.000010	-0.3	0.4	1195
DK52-2-28	123.7	0.036587	0.001300	0.282685	0.000011	-0.5	0.4	1207
DK52-2-29	123.5	0.032107	0.001211	0.282728	0.000011	1.0	0.4	1112
DK52-2-30	124.8	0.027594	0.000974	0.282784	0.000010	3.1	0.4	983
DK52-2-31	125.2	0.014440	0.000531	0.282770	0.000011	2.6	0.4	1013
DK52-2-34	124.6	0.028373	0.000945	0.282780	0.000010	3.0	0.3	991
DK52-2-36	123.8	0.026933	0.000899	0.282823	0.000012	4.4	0.4	896
DK52-2-37	123.6	0.017669	0.000726	0.282791	0.000012	3.3	0.4	966
DK52-2-38	124.7	0.023916	0.000808	0.282801	0.000010	3.7	0.3	945
DK52-2-39	124.9	0.022677	0.000772	0.282790	0.000009	3.3	0.3	968
DK52-2-40	125.7	0.019948	0.000747	0.282797	0.000011	3.6	0.4	953
DK52-2-41	121.7	0.024249	0.000887	0.282781	0.000010	2.9	0.4	991
DK52-2-42	123.3	0.025012	0.000951	0.282748	0.000012	1.8	0.4	1064
DK52-2-46	125.6	0.032747	0.001243	0.282650	0.000010	-1.7	0.4	1284
DK52-2-48	123.9	0.040511	0.001353	0.282636	0.000011	-2.2	0.4	1319
DK52-2-49	124.5	0.029589	0.000947	0.282765	0.000009	2.4	0.3	1027
DK52-2-50	124.3	0.037971	0.001204	0.282732	0.000011	1.2	0.4	1101
DK52-2-51	125.7	0.056857	0.001735	0.282625	0.000011	-2.6	0.4	1344
DK52-2-52	124.9	0.037748	0.001128	0.282637	0.000011	-2.1	0.4	1313
DK52-2-55	124.2	0.042874	0.001420	0.282619	0.000010	-2.8	0.4	1357
DK52-2-57	122.7	0.033454	0.001165	0.282629	0.000012	-2.5	0.4	1333
DK52-2-58	123.8	0.024831	0.000787	0.282763	0.000011	2.3	0.4	1030
DK52-2-59	123.4	0.034159	0.001174	0.282672	0.000009	-0.9	0.3	1236
DK52-2-60	123.2	0.041534	0.001349	0.282735	0.000010	1.3	0.4	1096
DK52-2-61	123.2	0.034212	0.001085	0.282643	0.000013	-1.9	0.5	1300

Table S2

Continued.

Spot	Age (Ma)	$^{176}Yb/^{177}Hf$	$^{176}Lu/^{177}Hf$	$^{176}Hf/^{177}Hf$	± 2σ	$\varepsilon_{Hf}(t)$	± 2σ	T_{DM}^{C}(Ma)
DK52-2-62	123.2	0.029987	0.001011	0.282766	0.000010	2.4	0.3	1024
DK52-2-63	123.5	0.035523	0.001011	0.282701	0.000011	0.1	0.4	1170
DK52-2-64	123.8	0.024352	0.000702	0.282795	0.000015	3.5	0.5	958
DK52-2-65	122.3	0.039149	0.001313	0.282720	0.000011	0.7	0.4	1129

Table S3

$^{40}Ar/^{39}Ar$ dating results of the Nb-enriched basalt dredged from the South China Sea.

Incremental Heating		$^{36}Ar(a)$	$^{37}Ar(ca)$	$^{38}Ar(cl)$	$^{39}Ar(k)$	$^{40}Ar(r)$	Age	± 1σ	$^{40}Ar(r)$
Step	Laser	[fA]	[fA]	[fA]	[fA]	[fA]	(Ma)		(%)
142A-001	4.0 %	0.9270	308.5	8.965	334.25	295.39	172.0	± 3.6	51.81
142A-002	5.0 %	0.7083	899.8	16.701	757.55	513.80	133.5	± 1.6	70.88
142A-003	5.5 %	0.7112	1404.4	22.784	1108.45	739.28	131.3	± 1.4	77.65
142A-004	6.0 %	0.5124	1493.1	22.396	1123.93	737.77	129.3	± 1.2	82.73
142A-005	6.5 %	0.4012	1396.8	19.531	1002.80	654.42	128.6	± 1.1	84.41
142A-006	7.0 %	0.3617	2834.2	31.890	1750.29	1112.41	125.4	± 1.0	90.93
142C-001	7.5 %	0.3612	2887.9	31.385	1773.96	1115.41	124.1	± 1.0	90.96
142C-002	8.0 %	0.3241	3463.5	33.448	1978.01	1244.65	124.1	± 1.0	92.54
142C-003	9.0 %	0.4779	4255.3	36.671	2289.23	1427.63	123.1	± 1.0	90.69
142C-004	10.0 %	0.3820	4432.0	33.180	2246.72	1402.37	123.2	± 1.1	92.23
142C-005	12.0 %	0.5541	3272.8	28.696	1898.49	1113.34	116.0	± 1.1	86.88
142E-001	15.0 %	0.0518	1401.0	6.467	484.26	273.84	112.0	± 1.3	94.34
142E-002	18.0 %	0.0000	415.3	0.000	84.44	55.59	129.7	± 0.7	99.65

T1 = 124.0 ± 0.8 Ma, T2 = 125.2± 0.7 Ma,T3 = 119.7 ± 5.7 Ma, T4 = 118.4 ± 5.9 Ma; J = 0.112938

T1: Weighted plateau age, *T2*: Total fusion age, *T3*: Isochron age, *T4*: Inverse isochron age.

Table S4

Major (wt%) and trace (μg/g) element compositions of the granitoids and NEBs from the South China Sea.

Sample	DK-52-1	DK-52-2	DK-52-3	DK-52-4	SG01a	SG01b	SG04	SG07a	SG07b	SG10a	SG10b
Rock type	adakite	adakite	NEB	NEB	arc	arc	adakite	arc	arc	arc	arc
Age (Ma)	124.0				115.2	115.2	101.7	113	113	136.5	136.5
SiO_2	67.40	67.63	50.34	50.65	71.8	72.16	66.1	60.94	60.78	76.76	72.37
TiO_2	0.46	0.45	2.34	2.38	0.23	0.23	0.09	0.97	0.97	0.13	0.22
Al_2O_3	15.50	15.44	15.27	15.32	14.07	14.12	17.13	15.46	15.44	12.13	13.81
FeO_T	3.95	3.86	12.09	12.21	1.54	1.53	2.88	4.69	4.65	0.46	0.62
MnO	0.07	0.06	0.37	0.35	1.55	1.6	1.17	6.63	6.58	1.44	1.74
MgO	1.77	1.70	5.21	5.26	5.2	5.22	4.19	2.39	2.39	4.68	5.35
CaO	2.44	2.48	6.27	6.15	0.6	0.85	3.24	1.92	1.83	1.27	1.57
Na_2O	3.59	3.58	3.52	3.54	0.46	0.45	0.63	3.3	3.29	0.3	0.47
K_2O	3.39	3.31	1.18	1.15	0.05	0.05	0.12	0.13	0.13	0.05	0.07
P_2O_5	0.15	0.15	0.20	0.23	3.56	3.58	3.75	2.95	2.95	2.81	2.76
LOI	1.25	1.18	2.58	2.44	0.06	0.06	0.04	0.38	0.38	0.04	0.08
Total	99.96	31.76	99.37	99.68	99.12	99.85	99.34	99.76	99.39	100.07	99.06
Rb	96.59	93.38	26.50	27.52	144.6	145.1	84.7	53.6	52.9	167.6	192.4
Ba	730.2	758.86	233.65	234.44	395	389	1107	1293	1278	791	941
Ce	38.61	35.96	23.53	22.85	47.42	47.01	28.8	84.66	84.61	43.77	61.57
Dy	1.808	1.83	4.95	4.77	3.47	3.41	1.43	6.34	6.45	2.39	4.22
Er	0.949	0.93	2.68	2.57	2.17	2.21	0.79	3.84	3.77	1.37	2.56
Eu	0.818	0.81	1.67	1.60	0.56	0.57	0.53	1.81	1.77	0.6	0.81
Gd	2.52	2.34	4.74	4.67	3.18	3.15	1.71	6.53	6.52	2.45	3.87
Hf	3.88	3.72	3.97	4.09	4.55	4.64	1.69	13.82	13.93	2.39	4.66
Ho	0.354	0.34	1.00	0.96	0.75	0.74	0.29	1.33	1.34	0.51	0.89
La	20.36	18.00	12.49	12.12	24.05	23.9	15.33	38.66	38.46	24.49	33.88
Lu	0.143	0.14	0.40	0.38	0.4	0.39	0.12	0.64	0.66	0.25	0.47
Nb	8.23	9.34	16.18	16.67	10.92	10.75	6.56	11.81	11.82	7.46	12.02
Nd	17.06	16.03	15.11	14.81	17.91	17.7	10.99	36.32	36.8	15.27	22.19
Pb	15.25	15.94	8.97	8.91	24.58	24.81	27.66	12.07	12.12	16.95	21.96
Pr	4.581	4.05	3.21	3.10	5.24	5.16	3.14	10.01	10.04	4.6	6.5
Sm	3.014	2.84	3.85	3.80	3.42	3.53	2.09	7.24	7.23	2.94	4.43
Sr	344	358	315	315	139	139	296	402	401	107	114
Ta	0.825	0.72	0.94	0.96	0.87	0.86	0.44	0.8	0.79	0.75	1.21
Tb	0.34	0.32	0.77	0.74	0.54	0.54	0.25	1.03	1.05	0.39	0.69
Th	8.231	5.88	1.89	1.84	25.72	25.07	3.72	8.1	8.23	14.45	22.86
Tm	0.142	0.15	0.41	0.40	0.35	0.35	0.11	0.6	0.59	0.23	0.42
U	1.855	1.41	0.51	0.51	4.14	4.2	0.5	1.98	2	2.89	5.45
V	72.09	62.70	247.42	243.06	21	21	4	135	133	8	15
Y	9.897	9.67	27.56	26.91	20.72	20.66	7.81	36.65	36.62	13.81	24.98
Yb	0.93	0.93	2.59	2.49	2.35	2.33	0.75	3.96	3.99	1.54	2.9

Zr	136.6	135.5	167.04	166.24	142	144	56	555	561	81	158
Refs	this study							Xu et al., 2016			

Table S4

Continued.

Sample	SG14a	SG14b	SG15a	SG15b	SG18a	SG18b	SG19a	SG19b	SG20a	SG20b	SG06a
Rock type	arc	arc	arc	arc	arc	arc	arc	arc	adakite	adakite	arc
Age/Ma	118.6	118.6	117.2	117.2	114.2	114.2	128.2	128.2	104.4	104.4	161.6
SiO_2	69.89	70.03	67.44	66.65	60.11	61.44	56.34	56.35	68.7	69.18	59.05
TiO_2	0.24	0.23	0.24	0.24	0.91	0.8	0.89	0.89	0.39	0.4	1.01
Al_2O_3	14.71	14.72	16.08	15.94	16.18	16.87	16.26	16.25	15.98	16.09	20.95
FeO_T	2.22	2.24	2.46	2.43	5.86	5.38	5.16	5.16	1.46	1.46	5.45
MnO	2.4	2.42	2.21	2.18	7.05	6.29	8.19	8.15	1.87	1.89	0.1
MgO	4.27	4.27	5.02	4.97	1.55	1.57	2.6	2.61	5.42	5.44	1.52
CaO	1.1	1.1	3.06	3.15	1.17	1.28	2.06	2.44	1.21	1.23	0.83
Na_2O	0.61	0.61	0.5	0.51	2.9	2.38	4.38	4.4	0.46	0.45	1.69
K_2O	0.09	0.09	0.07	0.07	0.18	0.15	0.21	0.21	0.02	0.02	5.31
P_2O_5	3.76	3.76	2.79	2.78	3.5	3.85	2.88	2.87	3.63	3.66	0.07
LOI	0.09	0.09	0.08	0.08	0.38	0.22	0.42	0.42	0.11	0.11	2.31
Total	99.38	99.56	99.95	99	99.79	100.23	99.39	99.75	99.25	99.93	98.29
Rb	126.4	125.9	173.4	172.8	35.4	39.2	73.4	73.2	171.8	172.8	153.7
Ba	890	885	1026	1040	700	712	426	419	1351	1348	1029
Ce	49.07	49.55	47.25	47.96	39.63	46.88	64.4	64.4	45.21	44.71	184.54
Dy	3.46	3.45	4.15	4.23	5.64	4.99	7.23	7.26	1.34	1.34	14.13
Er	1.91	1.91	2.39	2.36	3.06	2.68	4.19	4.2	0.58	0.57	7.41
Eu	0.9	0.9	0.95	0.95	1.63	1.58	1.81	1.81	0.9	0.9	1.39
Gd	3.37	3.35	3.68	3.78	5.76	5.2	7.37	7.28	2.04	2.05	15.68
Hf	3.02	3.07	4.15	4.19	7.39	5.28	4.68	4.73	4.08	4.09	11.11
Ho	0.69	0.69	0.85	0.84	1.11	1	1.52	1.5	0.22	0.23	2.87
La	26.1	26.36	24.88	25.16	16.89	21.67	29.82	29.65	24.75	24.56	82.84
Lu	0.29	0.29	0.38	0.38	0.42	0.37	0.63	0.64	0.09	0.09	0.95
Nb	8.81	8.8	11.69	11.74	12.5	11.66	10.92	11.05	8.53	8.54	20.66
Nd	19.25	19.21	19.3	19.53	23.58	24.79	33.52	33.46	18.06	17.88	82.26
Pb	21.66	21.74	21.44	21.71	12.07	12.08	7.12	7.11	25.66	25.4	38.81
Pr	5.42	5.48	5.39	5.41	5.44	6.05	8.23	8.21	5.06	5.03	21.39
Sm	3.77	3.72	4.23	4.1	5.9	5.58	7.79	7.82	3.04	2.99	18.17
Sr	311	309	195	194	625	678	428	432	346	353	174
Ta	0.71	0.7	0.98	0.98	0.84	0.81	0.71	0.7	0.57	0.57	2.21
Tb	0.55	0.57	0.65	0.67	0.95	0.85	1.2	1.19	0.27	0.26	2.39
Th	10.07	10.15	9.94	10.2	2.77	3.35	8.69	8.7	7.41	7.59	53.5
Tm	0.29	0.29	0.37	0.36	0.44	0.38	0.62	0.62	0.08	0.08	1.04
U	2.64	2.66	3.15	3.15	1.6	1.2	2.27	2.29	1.17	1.16	5.52
V	20	22	20	21	139	116	163	164	25	25	119
Y	19.47	19.5	23.32	23.54	29.84	25.51	40.21	40.44	5.66	5.7	74.27
Yb	1.78	1.8	2.33	2.4	2.79	2.36	3.98	3.9	0.54	0.54	6.18

Zr	108	107	143	143	292	210	172	172	138	137	385
Refs	Xu et al., 2016										

Table S4

Continued.

Sample	SG06b	SG11a	SG11b	SG11c	SG12a	SG12b	SG13a	SG13b	SG17a	SG17b	SG17c
Rock type	arc	arc	arc	arc	arc	arc	arc	arc	arc	arc	arc
Age/Ma	161.6	151	151	151	149.2	149.2	151.7	151.7	148.2	148.2	148.2
SiO_2	59.22	65.68	64.59	63.97	61.29	68.48	65.6	66.01	75.07	70.96	70.77
TiO_2	1.01	0.52	0.65	0.64	0.43	0.42	0.44	0.44	0.14	0.29	0.28
Al_2O_3	21.04	15.51	15.26	15.06	18	15.05	15.92	15.98	12.85	14.49	14.44
FeO_T	5.33	4.43	5.09	5.04	2.4	3.42	3.65	3.59	1.79	2.69	2.54
MnO	0.11	0.11	0.13	0.13	0.09	0.14	0.07	0.07	0.04	0.06	0.06
MgO	1.53	0.98	1.23	1.2	0.3	1.08	1.31	1.32	0.18	0.33	0.32
CaO	0.84	3.16	3.42	3.4	3.06	1.66	2.3	2.3	0.34	0.44	0.44
Na_2O	1.7	4.37	3.78	3.76	6.12	5.34	3.12	3.14	3.56	3.71	3.7
K_2O	5.34	2.8	3.65	3.62	5.28	2.37	4.57	4.59	5.01	5.8	5.79
P_2O_5	0.07	0.19	0.44	0.44	0.14	0.19	0.13	0.13	0.03	0.06	0.06
LOI	2.46	1.57	1.64	1.64	1.48	1.27	2.1	2.24	0.56	0.66	0.66
Total	98.65	99.32	99.88	98.9	98.59	99.42	99.21	99.81	99.57	99.49	99.06
Rb	153.1	110.1	132.4	132.5	64	63.2	148.2	147.5	149.2	174.1	175.2
Ba	1031	851	1081	1076	832	807	1465	1474	309	414	415
Ce	180.07	116.1	132.98	132.12	82.79	80.99	71.31	71.87	67.5	183.3	179.59
Dy	13.75	7.76	10.67	10.81	5.79	5.94	4.75	4.77	5.22	10.46	10.63
Er	7.38	4.07	5.86	5.87	3.55	3.59	2.46	2.47	2.81	5.43	5.49
Eu	1.4	1.52	1.74	1.72	1.4	1.34	1.27	1.28	0.52	0.97	0.97
Gd	15.62	8.05	10.86	10.76	5.5	5.36	5.02	5.01	5.27	11.97	11.97
Hf	11.02	7.65	13.22	13	8.18	8.42	6.08	6.11	4.73	10.09	10.25
Ho	2.82	1.52	2.17	2.2	1.27	1.27	0.92	0.92	1.02	2.04	2.05
La	82.18	61.57	67.94	67.54	41.65	40.93	37.2	37.33	33.33	88.89	88.03
Lu	0.93	0.58	0.86	0.85	0.55	0.57	0.36	0.36	0.44	0.86	0.83
Nb	20.55	17.59	18.68	18.64	12.2	11.96	10.13	10.23	11.16	23.06	23.06
Nd	80.62	46.63	56.06	55.85	31.47	30.66	28.89	28.51	27.96	70.62	69.53
Pb	38.93	16.43	18.87	18.75	36.89	37.2	25.16	25.38	20.27	24.8	24.83
Pr	21.04	13	15.21	15.24	9.05	8.89	7.98	8.1	7.77	19.73	19.57
Sm	17.88	9.18	11.71	11.83	5.82	5.74	5.69	5.67	6.21	14.57	14.64
Sr	172	324	293	296	285	283	249	248	47	55	54
Ta	2.2	1	0.76	0.75	0.85	0.86	0.76	0.76	1.01	2.09	2.04
Tb	2.39	1.3	1.76	1.77	0.92	0.94	0.79	0.8	0.87	1.86	1.87
Th	52.74	17.5	19.7	19.65	20.72	20.15	12.27	12.45	13.42	33.55	34.52
Tm	1.04	0.59	0.86	0.86	0.52	0.53	0.36	0.37	0.44	0.81	0.8
U	5.53	3.32	4.15	4.05	6.15	5.69	2.81	2.87	3.22	6.71	7.02
V	117	35	42	39	*20*	31	43	45	7	8	9
Y	73.2	40	56.77	57.48	39.98	39.27	24.39	24.4	26.31	50.03	50.4
Yb	6.15	3.75	5.36	5.33	3.29	3.42	2.28	2.28	2.86	5.2	5.25

Zr	379	288	493	492	304	304	233	230	151	326	335
Refs	Xu et al., 2016										

Table S4

Continued.

Sample	S08-32-1	S08-32-2	S08-32-3	S08-32-4	S08-32-5	S08-32-6	S08-32-7	S08-18-2	S08-18-4
Rock type	adakite	adakite	adakite	adakite	adakite	arc	adakite	arc	arc
Age/Ma	153.6	127.2						159.1	157.8
SiO_2	69.3	70.1	69.96	57.27	71.59	59.43	70.68	60.1	61.44
TiO_2	0.33	0.26	0.24	0.68	0.23	0.73	0.25	0.7	0.86
Al_2O_3	15.4	14.9	15.32	19.55	14.96	18.46	15.08	17.58	17.09
FeO_T	2.85	2.34	2.23	6.14	2.20	6.00	2.27	7.12	5.88
MnO	0.13	0.07	0.06	0.14	0.07	0.13	0.07	0.12	0.13
MgO	0.73	0.63	0.6	1.99	0.57	2.17	0.57	3.17	2.7
CaO	3.02	2.37	1.88	6.18	2.11	4.56	2.46	4.62	5.64
Na_2O	4.04	3.8	3.95	5.43	3.74	5.14	3.72	3.28	3.88
K_2O	3.05	3.96	4.18	1.35	4.28	1.34	3.88	2.31	1.74
P_2O_5	0.12	0.09	0.09	0.3	0.08	0.31	0.08	0.21	0.23
LOI	0.47	0.76	0.8	0.47	0.29	1.36	0.51	1.07	0.6
Total	99.29	99.15	99.19	99.15	100	99.29	99.46	99.76	99.81
Rb	100	117.5	109	36.2	136	61.9	117	96	52.6
Ba	727	931	1109	263	739	260	844	614	548
Ce	50.5	48.7	44.3	60.7	42.4	92.4	51.2	78.4	42.95
Dy	1.94	1.66	1.7	4.13	1.8	4.12	1.63	5.73	2.33
Er	1.04	0.97	1.03	2.35	1.09	2.41	0.94	4.55	1.25
Eu	0.78	0.72	0.79	1.46	0.76	1.41	0.76	2.11	1.11
Gd	2.3	2.17	2.14	4.42	2.24	4.86	2.17	5.46	3.04
Hf	4.04	2.79	2.98	5.75	2.67	6.14	3.08	9.49	2.97
Ho	0.34	0.31	0.35	0.78	0.35	0.79	0.31	1.29	0.41
La	29.9	29	25.6	25	24.7	44.2	31.2	44.3	23.45
Lu	0.18	0.15	0.18	0.39	0.17	0.32	0.16	0.8	0.16
Nb	11.5	9.95	8.8	19.7	10.2	18.7	9.48	12.2	9.31
Nd	18.1	16.5	15.9	28.5	16	39.3	17.4	32.6	19.7
Pb	19.3	34.2	16.4	11.6	20.8	11.2	20	16.7	13.1
Pr	5.17	4.85	4.64	7.35	4.53	10.8	5.27	8.82	5.08
Sm	2.97	2.66	2.71	5.42	2.83	6.45	2.91	6.11	3.88
Sr	451	482	498	774	384	751	444	470	624
Ta	0.85	0.7	0.79	1.57	0.77	1.17	0.79	0.75	0.59
Tb	0.32	0.29	0.32	0.67	0.33	0.74	0.29	0.89	0.43
Th	5.75	6.03	6.72	4.92	7.11	5.86	6.53	14	5.75
Tm	0.16	0.13	0.16	0.34	0.15	0.34	0.13	0.71	0.16
U	0.94	1.03	0.89	1.94	0.62	1.44	0.81	1.19	1.32
V	37.1	26.8	24.3	87.8	23.3	75.1	28.7	126	112
Y	10.1	9.33	9.96	22.1	10.1	22	9	35.2	11.65
Yb	1.03	0.9	1.02	2.37	1.01	2.09	0.93	4.9	0.99

Zr	136.7	80.7	82.7	236.7	71.7	277.7	84.7	416.7	85.2
Refs					Yan et al., 2010				

Table S5

Sr-Nd-Pb isotope compositions of granitoids and NEBs from the South China Sea.

Sample	DK-52-1	DK-52-2	DK-52-3	DK-52-4	S08-18-2	S08-18-4	S08-32-1	S08-32-2	S08-32-3	S08-32-4	S08-32-5	S08-32-6	S08-32-7
Rb	96.6	93.4	26.5	27.5	96	52.6	100	117.5	109	36.2	136	61.9	117
Sr	344	358	315	315	470	624	451	482	498	774	384	751	444
$^{87}Rb/^{86}Sr$	0.7847	0.7293	0.2350	0.2442	0.5703	0.2354	0.6191	0.6806	0.6111	0.1306	0.9889	0.2301	0.7358
$^{87}Sr/^{86}sr$	0.706792	0.706797	0.703841	0.703837	0.711624	0.707330	0.706596	0.706543	0.706927	0.705902	0.706001	0.707323	0.707323
2σ	0.000005	0.000003	0.000003	0.000004	0.000011	0.000012	0.000011	0.000012	0.000025	0.000011	0.00001	0.000014	0.000007
$^{87}Sr/^{86}Sr(i)$	0.70541	0.70551	0.70343	0.70341	0.71033	0.70680	0.70524	0.70531	0.70582	0.70567	0.70421	0.70691	0.70599
Nd	17.1	16.0	15.1	14.8	32.6	19.7	18.1	16.5	15.9	28.5	16.0	39.3	17.4
Sm	3.01	2.84	3.85	3.80	6.11	3.88	2.97	2.66	2.71	5.42	2.83	6.45	2.91
$^{147}Sm/^{144}Nd$	0.1086	0.1090	0.1566	0.1576	0.1152	0.1211	0.1009	0.0991	0.1048	0.1169	0.1088	0.1009	0.1028
$^{143}Nd/^{144}Nd$	0.512386	0.5123813	0.5127557	0.512755	0.51203	0.512331	0.512523	0.512548	0.512501	0.512524	0.512484	0.512488	0.512533
2σ	0.000008	0.000007	0.000006	0.000007	0.000013	0.000012	0.000012	0.000015	0.000013	0.000014	0.000013	0.000014	0.000012
$\varepsilon_{Nd}(t)$	-3.52	-3.62	2.93	2.90	-10.21	-4.47	-0.37	-0.17	-1.18	-0.93	-1.58	-1.37	-0.52
T_{DM} (Ga)	1.112	1.123	1.055	1.077	1.739	1.352	0.850	0.803	0.911	0.989	0.970	0.897	0.851
$^{206}Pb/^{204}Pb$	18.7713	18.7811	19.1477	19.1471	18.884	18.787	18.844	18.745	18.729	18.977	18.693	18.599	18.702
2σ	0.0003	0.0002	0.0002	0.0003	0.001	0.001	0.001			0.001			
$^{207}Pb/^{204}Pb$	15.6444	15.6448	15.6727	15.6731	15.720	15.669	15.716	15.643	15.667	15.692	15.646	15.644	15.659
2σ	0.0002	0.0002	0.0002	0.0003	0.001	0.002	0.001			0.001			
$^{208}Pb/^{204}Pb$	38.8912	38.8909	39.2669	39.2664	39.295	38.949	39.063	38.770	38.778	39.038	38.631	38.498	38.694
2σ	0.0005	0.0005	0.0006	0.0005	0.001	0.002	0.001			0.001			
Refs	this study							Yan et al., 2010, 2011, 2014					