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Supplemental Material

Appendix 1. Analytical methods.

Appendix 2. Major, trace elemental and Sr-Nd isotopic data for Wuyu Cenozoic rocks.

Appendix 3. LA-ICP-MS zircon U-Pb age data for Wuyu Cenozoic rocks.

Appendix 4. LA-MC-ICP-MS zircon Hf isotope data for Wuyu Cenozoic rocks.

Appendix 1. Analytical methods

Before preparing the powder samples, we firstly smashed the hand specimens into small chips and grains (size around 0.5–1.0 cm) and then selected those grains without amygdaloid bodies for grinding. ~200-mesh size powder samples were used to conduct whole-rock elemental and Sr-Nd isotopic analyses. Major element oxides were analyzed on fused glass beads with a Rigaku RIX 2000 X-ray fluorescence spectrometer. Calibration lines used in quantification were produced by bivariate regression of data from 36 reference materials encompassing a wide range of silicate compositions and analytical uncertainties are between 1% and 5% (Li et al., 2006).

Trace elements were analyzed with an Agilent 7500a ICP-MS. Analytical procedures were similar to those presented by Li et al. (2006). National rock standards (BHVO-2, GSR-1, GSR-2, GSR-3, AGV-2, W-2, and SARM-4) were used for calibration. Analytical precision is better than 5%. The detection limits are three times the standard deviation of the ten blank analyses [in ppb: Sc, 25.6; V, 5.1;Cr, 99; Co, 1.5; Ni, 27.6; Rb, 1.3; Ba, 6.8; Th, 0.3; U, 0.4; Nb, 10.1; Ta, 0.7; La, 0.5; Ce, 0.5; Pb, 10.9; Pr, 0.2; Sr, 0.3; Nd, 0.4; Zr, 11.3; Hf, 0.3; Sm, 0.8; Eu, 0.9; Ti, 35.8; Gd, 0.6; Tb, 0.1; Dy, 0.3; Y, 0.4; Ho, 0.1; Er, 0.2; Tm, 0.1; Yb, 0.3; Lu, 0.1].

Sr-Nd isotope analyses were conducted by a Micromass Isoprobe multi-collector mass spectrometer. Analytical methods are given in Li et al. (2006, 2007). Measured $^{86}Sr/^{88}Sr$ and $^{143}Nd/^{144}Nd$ are fractionation corrected to $^{86}Sr/^{88}Sr = 0.1194$ and $^{146}Nd/^{144}Nd = 0.7219$, respectively. The $^{87}Sr/^{86}Sr$ ratio of the NBS987 standard and $^{143}Nd/^{144}Nd$ ratio of the Shin Etsu JNdi-1 standard measured were 0.710251 ± 6 (n = 19, 2σ) and 0.512087 ± 3 (n = 11, 2σ), respectively.

Zircon cathodoluminescence (CL) images were taken before U-Pb dating using a JEOL JXA-8100 Superprobe to better inspect internal morphology of individual zircons for selecting analysis positions.

Zircon U-Pb dating was determined with an Agilent 7500a quadruple (Q)-ICPMS and a Neptune multi-collector (MC)-ICPMS with a 193 nm excimer ArF laser-ablation system (GeoLas Plus) (Xie et al., 2008). Zircon standard 91500 was used as an external standard and the $^{207}Pb/^{206}Pb$ and $^{206}Pb/^{238}U$ ratios were calculated using the ICPMSDataCal software. The weighted U-Pb ages and Concordia plots were processed using the Isoplot/Ex v.3.0 program.

In situ Lu-Hf isotopes of zircons were measured on a Neptune Plus multicollector ICP-MS (MC-ICP-MS) system coupled with a RESOlution M-50 193 nm laser ablation system. A detailed description of the instruments can be found in Zhang et al. (2015). The zircons were reablated by a 193 nm ArF Laser system with a spot size of 45 μm, a laser repetition rate of 8 Hz, and an energy density of ~4 J/cm^2. Analyses of the GJ-1 zircon during the course of the measurement of samples yielded a weighted mean of $^{176}Hf/^{177}Hf = 0.282008 \pm 0.000004$ (2SD), which agrees with the values recommended by Morel et al. (2008) within uncertainty.

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Appendix 2. Major, trace elemental and Sr-Nd isotopic data for Wuyu Cenozoic rocks

Sample	NML01-1	NML01-2	GZ-5	GZ-9	GZ-12	GZ-14	NML02-1	NML03-1	NML03-2	NML04-1	NML04-2	NML05-1	NML05-2
rock type	Eocene lava						Miocene lava						
reference	this study	this study	a	a	a	a	this study	this study	this study	this study	this study	this study	this study
SiO_2	64.92	58.77	69.07	67.38	68.55	66.50	69.03	72.29	72.72	67.96	66.00	66.43	66.06
TiO_2	0.58	0.64	0.50	0.47	0.46	0.47	0.40	0.35	0.38	0.55	0.62	0.59	0.64
Al_2O_3	17.06	18.18	15.63	14.99	15.69	15.45	14.13	14.83	14.29	15.45	16.33	15.63	15.93
Fe_2O_3T	4.69	5.69	4.41	4.05	4.38	4.26	6.46	2.49	2.70	3.49	3.85	3.96	3.98
MnO	0.07	0.15	0.08	0.07	0.09	0.15	0.94	0.09	0.11	0.07	0.07	0.07	0.08
MgO	0.91	1.55	0.59	0.43	0.37	0.45	0.72	0.29	0.35	1.71	1.74	2.12	1.93
CaO	2.60	5.65	1.60	4.39	1.80	4.32	0.44	1.11	1.02	3.60	3.85	3.15	3.46
Na_2O	3.95	5.27	3.09	3.52	3.61	3.68	1.39	3.05	3.16	3.26	3.31	4.38	4.34
K_2O	5.03	3.89	4.85	4.52	4.86	4.57	6.25	5.36	5.08	3.70	4.01	3.46	3.37
P_2O_5	0.20	0.20	0.19	0.18	0.19	0.18	0.21	0.15	0.17	0.19	0.22	0.21	0.22
Sc	8.5	8.3					4.8	4.1	5.2	6.6	6.4	7.2	8.1
V	80.1	75.2					39.7	29.7	33.8	61.5	67.9	69.5	75.8
Cr	12.3	5.6					42.7	21.0	39.0	46.3	61.1	66.1	66.2
Co	8.0	12.9	8.0	5.4	4.9	6.1	22.9	4.1	6.1	9.6	10.5	12.3	12.4
Ni	7.0	8.7					24.9	10.9	19.5	33.2	36.3	42.3	45.0
Ga	19.6	16.2	15.2	12.3	15.1	19.8	19.8	19.5	22.8	21.7	19.7	22.9	22.9
Ge	2.7	1.9					2.6	1.8	2.1	1.9	1.7	1.9	2.0
Cs	22.5	14.5	10.7	9.0	14.8	10.3	11.1	15.4	22.1	15.9	14.7	11.6	11.1
Rb	253	120	176	167	203	167	322	346	365	179	156	162	157
Ba	695	411	884	700	581	639	1930	954	933	981	956	1172	1159
Th	32.9	31.8	24.0	21.8	21.5	21.4	48.0	53.7	58.0	26.9	24.4	26.7	27.2
U	5.6	3.8	3.8	3.9	2.9	4.7	10.5	11.2	14.1	4.1	3.6	4.7	4.5
Nb	18.5	16.3	11.7	11.4	12.8	11.5	9.8	12.5	15.2	6.7	5.8	6.9	7.3

Ta	1.3	1.3	0.9	0.9	0.7	0.9	0.9	1.2	1.3	0.5	0.4	0.5	0.5
La	50.7	43.1	26.6	25.1	24.2	27.4	51.8	51.6	51.9	32.5	33.9	33.4	35.7
Ce	103	82	54	46	44	54	102	101	105	67	69	68	74
Pb	17.7	9.4	33.1	19.4	42.3	19.9	52.9	40.5	67.8	41.8	37.6	46.5	46.5
Pr	11.2	9.4	6.5	6.1	6.1	7.0	11.8	11.2	11.3	7.7	8.1	7.9	8.6
Sr	297	349	376	461	370	442	470	269	328	710	691	863	916
Nd	39.7	33.6	22.2	21.5	22.2	23.2	42.7	39.2	38.7	28.7	30.4	29.6	32.4
Zr	350	324	168	177	180	176	172	154	195	116	118	146	151
Hf	8.13	8.06	4.60	4.50	3.90	4.30	5.37	4.87	5.44	3.29	3.59	3.92	3.94
Sm	7.27	5.88	3.92	3.78	3.99	4.10	6.67	5.80	6.02	4.67	4.82	4.83	5.37
Eu	1.40	1.19	0.97	0.98	0.98	1.07	1.19	0.99	1.00	1.02	1.04	1.09	1.20
Gd	5.99	5.03	3.10	3.09	3.15	3.33	4.64	3.91	4.04	3.01	3.13	3.15	3.48
Tb	0.88	0.74	0.48	0.47	0.45	0.51	0.48	0.39	0.42	0.31	0.32	0.32	0.36
Dy	4.98	4.44	2.69	2.58	2.49	2.65	2.28	1.90	1.95	1.46	1.52	1.47	1.69
Y	28.6	24.8	14.7	13.8	14.3	13.7	11.6	9.2	10.5	7.0	6.7	7.2	8.1
Ho	1.01	0.94	0.54	0.53	0.52	0.59	0.39	0.34	0.35	0.25	0.27	0.26	0.28
Er	2.81	2.60	1.67	1.55	1.51	1.74	0.98	0.87	0.90	0.60	0.64	0.63	0.72
Tm	0.42	0.40	0.27	0.25	0.24	0.24	0.14	0.13	0.14	0.09	0.09	0.08	0.09
Yb	2.77	2.54	1.76	1.60	1.48	1.44	0.83	0.83	0.89	0.51	0.55	0.53	0.59
Lu	0.45	0.42	0.26	0.25	0.24	0.23	0.13	0.14	0.15	0.08	0.09	0.08	0.09
$^{143}Nd/^{144}Nd$	0.51261		0.51258	0.51256	0.51258	0.51259		0.51223	0.51222			0.51239	
$^{87}Sr/^{86}Sr$	0.70679		0.70720	0.70614	0.70673	0.70571		0.71106	0.71479			0.70687	
$^{147}Sm/^{144}Nd$	0.1		0.1	0.1	0.1	0.1		0.1	0.1			0.1	
$^{87}Rb/^{86}Sr$	2.5		1.4	1.0	1.6	1.1		3.7	3.2			0.5	
$^{143}Nd/^{144}Nd(t=12)$								0.51222	0.51221			0.51238	
$\varepsilon Nd(t=12)$								-7.88	-8.00			-4.75	
$^{87}Sr/^{86}Sr(t=12)$								0.71043	0.71424			0.70677	
$\varepsilon Nd(t=46)$	-0.03		-0.69	-0.92	-0.61	-0.44							
$^{87}Sr/^{86}Sr(t=46)$	0.70517		0.70633	0.70547	0.70572	0.70501							

Sample	NML06-1	NML06-2	NML07-1	JPT3	JPT4	JPT5.2	JPT8	95RAS11.3	GZ-7	GZ-3	GZ-6	GZ-8	GZ-11
rock type	Miocene lava												
reference	this study	this study	this study	b	b	b	b	b	a	a	a	a	a
SiO_2	65.79	63.76	64.25	64.70	70.30	67.60	75.30	75.90	58.08	74.38	71.69	73.73	74.13
TiO_2	0.72	0.68	0.86	0.70	0.40	0.60	0.40	0.30	1.06	0.30	0.32	0.33	0.32
Al_2O_3	16.15	16.41	17.13	15.70	16.20	16.40	15.10	13.30	17.28	14.98	14.26	14.68	13.90
Fe_2O_3T	5.32	4.37	4.28	4.90	2.00	3.20	2.10	1.60	6.35	1.66	2.21	2.29	1.83
MnO	0.10	0.06	0.06	0.20	0.00	0.00	0.00	0.00	0.09	0.03	0.04	0.03	0.08
MgO	0.64	1.89	0.69	1.30	0.80	1.50	0.60	0.80	2.10	0.35	0.83	0.53	0.48
CaO	3.41	4.76	4.17	4.60	2.80	4.80	0.40	4.20	5.82	0.31	1.74	2.15	0.81
Na_2O	3.94	3.90	4.64	3.20	3.40	0.90	0.80	1.10	4.76	3.31	3.37	2.22	3.31
K_2O	3.67	3.93	3.58	4.60	4.10	4.70	5.20	2.50	3.89	4.57	5.39	3.88	4.98
P_2O_5	0.24	0.24	0.32	0.30	0.10	0.20	0.20	0.10	0.58	0.11	0.14	0.15	0.15
Sc	9.2	7.9	7.7	6.4	2.3	4.8	2.6	1.6					
V	98.4	87.3	79.9	73.9	31.3	61.3	26.4	15.7					
Cr	50.5	43.4	54.6	31.4	41.0	13.0	50.0	17.0					
Co	12.9	10.3	10.4	11.3	3.7	8.6	3.7	3.1	17.1	4.3	5.0	5.1	4.0
Ni	23.3	25.2	30.3	19.5	15.2	4.8	30.4	9.9					
Ga	22.6	22.7	21.3	17.7	16.3	19.0	18.9	11.2	20.0	18.6	18.1	20.1	19.8
Ge	2.4	2.0	1.9										
Cs	22.4	15.8	18.0						39.5	5.7	35.4	29.5	10.7
Rb	178	162	149	116	147	206	315	71	132	248	312	196	326
Ba	1017	1053	1156	914	761	1060	963	877	1524	657	1031	469	792
Th	21.5	19.4	31.5	19.3	16.4	23.9	56.2	17.8	27.3	42.9	46.5	37.1	46.2
U	3.0	4.3	4.7	3.7	3.7	2.2	8.1	4.7	3.4	6.1	13.6	9.0	12.5
Nb	8.9	6.4	8.3	4.7	6.3	14.2	5.8	18.6	18.5	14.2	17.8	10.9	17.2
Ta	0.7	0.4	0.5	0.7	0.4	0.5	1.2	0.5	1.4	0.8	1.1	0.7	1.0

La	32.7	29.9	39.1	30.9	22.8	33.3	22.3	26.8	58.3	14.5	43.8	27.5	36.9
Ce	69	62	82	64	42	66	89	51	107	38	88	49	67
Pb	32.9	36.8	43.4	33.0	36.5	44.2	60.5	41.2	50.7	48.8	67.6	29.3	48.0
Pr	8.2	7.3	9.7	7.8	4.8	8.0	3.5	5.6	12.9	4.1	9.9	6.9	8.4
Sr	911	993	1014	803	651	472	158		808	139	487	203	282
Nd	31.5	27.7	37.2	31.1	17.0	30.0	11.4	19.4	46.8	13.6	33.4	23.4	28.3
Zr	144	133	181	122	27	79	47	51	209	156	173	162	171
Hf	3.90	3.58	4.83	3.50	1.20	2.50	2.10	1.90	4.80	4.30	5.40	4.40	5.20
Sm	5.66	4.64	6.28	5.30	2.60	4.70	1.60	2.90	6.89	2.20	5.03	3.67	4.38
Eu	1.31	1.08	1.43	1.20	0.60	1.00	0.40	0.50	1.59	0.45	0.93	0.72	0.82
Gd	3.83	3.04	3.97	3.70	1.80	3.10	1.10	2.00	4.36	1.33	3.04	2.23	2.70
Tb	0.43	0.32	0.42	0.40	0.20	0.30	0.10	0.20	0.55	0.16	0.40	0.28	0.36
Dy	2.09	1.52	1.90	2.10	0.90	1.50	0.70	1.20	2.34	0.85	1.75	1.26	1.60
Y	10.1	7.5	8.3	11.0	4.8	7.4	4.5	7.1	9.9	4.4	8.4	6.1	8.0
Ho	0.37	0.27	0.32	0.40	0.20	0.20	0.10	0.20	0.43	0.17	0.34	0.24	0.31
Er	0.90	0.65	0.78	0.90	0.40	0.60	0.40	0.60	0.96	0.48	0.85	0.60	0.80
Tm	0.13	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.14	0.09	0.14	0.10	0.13
Yb	0.77	0.56	0.63	0.80	0.40	0.50	0.60	0.60	0.77	0.49	0.83	0.59	0.74
Lu	0.12	0.08	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.13	0.09	0.12
^{143}Nd/^{144}Nd	0.51240	0.51239	0.51232	0.51236	0.51243	0.51231	0.51203		0.51244	0.51228	0.51221	0.51228	0.51226
^{87}Sr/^{86}Sr	0.70688	0.70652	0.70715	0.70669	0.70676	0.70695	0.71137		0.707037	0.709504	0.71002	0.70801	0.71043
^{147}Sm/^{144}Nd	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1
^{87}Rb/^{86}Sr	0.6	0.5	0.4	0.4	0.7	1.3	5.8		0.5	5.2	1.9	2.8	3.3
^{143}Nd/^{144}Nd(t=12)	0.51239	0.51239	0.51231	0.51235	0.51242	0.51230	0.51202		0.51243	0.51227	0.51220	0.51227	0.51225
εNd(t=12)	-4.55	-4.63	-6.05	-5.34	-3.88	-6.30	-11.73		-3.72	-6.91	-8.25	-6.91	-7.25
^{87}Sr/^{86}Sr(t=12)	0.70678	0.70644	0.70707	0.70662	0.70665	0.70673	0.71039		0.70696	0.70862	0.70970	0.70754	0.70986
εNd(t=46)													
^{87}Sr/^{86}Sr(t=46)													

Reference:

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b: Williams, H.M., Turner, S.P., Pearce, J.A., Kelley, S.P., Harris, N.B.W., 2004. Nature of the source regions for post-collisional, potassic magmatism in southern and northern Tibet from geochemical variations and inverse trace element modelling. Journal of Petrology 45, 555-607.

Sample Locations:

NML01-1, 01-2: N29°42′12.3″; E89°34′30.7″

NML02-1: N29°42′20.4″; E89°34′22.3″

NML03-1, 03-2: N29°42′30.9″; E89°34′20.5″

NML04-1, 04-2: N29°41′54.3″; E89°34′42.0″

NML05-1, 05-2: N29°41′50.5″; E89°34′44.9″

NML06-1, 06-2: N29°41′42.2″; E89°34′49.2″

NML07-1: N29°41′33.2″; E89°34′59.4″

Appendix 3. LA-ICP-MS zircon U-Pb age data for Wuyu Cenozoic rocks

Analysis	isotopic ratios						isotopic ages (Ma)			
	$^{207}Pb/^{206}Pb$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ
NML01-1 01	0.05072	0.00453	0.04 24	0.00417	0.00704	0.00022	49	4	45	1
NML01-1 02	0.05429	0.01042	0.05494	0.01024	0.00734	0.00035	54	10	47	2
NML01-1 03	0.05392	0.00532	0.05258	0.00492	0.00707	0.0 024	52	5	45	2
NML01-1 04	0.03755	0.00983	0.03797	0.00980	0.00733	0.00034	38	10	47	2
NML01-1 05	0.04721	0.00924	0.04804	0.00913	0.00738	0.00036	48	9	47	2
NML01-1 06	0.05371	0.00805	0.05166	0.00745	0.00697	0.00030	51	7	45	2
NML01-1 07	0.05447	0.00804	0.05370	0.00759	0.00715	0.00032	53	7	46	2
NML01-1 08	0.05431	0.00780	0.05308	0.00735	0.00709	0.00029	53	7	46	2
NML01-1 09	0.04472	0.00794	0.04355	0.00753	0.00706	0.00030	43	7	45	2
NML01-1 10	0.05784	0.00540	0.05534	0.00488	0.00694	0.00023	55	5	45	1
NML01-1 11	0.05300	0.00650	0.05286	0.00623	0.00723	0.00027	52	6	46	2
NML01-1 12	0.06343	0.00472	0.06234	0.00431	0.00712	0.00022	61	4	46	1
NML01-1 13	0.04102	0.00844	0.04248	0.00857	0.00751	0.00032	42	8	48	2
NML01-1 14	0.05987	0.00593	0.06193	0.00572	0.00750	0.00029	61	5	48	2
NML01-1 15	0.06029	0.00840	0.05866	0.00786	0.00705	0.00029	58	8	45	2
NML01-1 16	0.04638	0.00730	0.04640	0.00709	0.00725	0.00029	46	7	47	2
NML01-1 17	0.05719	0.00463	0.05288	0.00400	0.00670	0.00022	52	4	43	1
NML01-1 18	0.05848	0.00817	0.06046	0.00810	0.00750	0.00032	60	8	48	2
NML01-1 19	0.04071	0.00909	0.04013	0.00877	0.00715	0.00034	40	9	46	2
NML01-1 20	0.06640	0.00833	0.06441	0.00766	0.00703	0.00030	63	7	45	2
NML01-1 21	0.05020	0.00958	0.05096	0.00946	0.00736	0.00034	50	9	47	2
NML01-1 22	0.06130	0.00741	0.05973	0.00682	0.00706	0.00030	59	7	45	2

NML04-1 01	0.05075	0.00930	0.01339	0.00238	0.00191	0.00009	14	2	12.3	0.6
NML04-1 02	0.04322	0.00634	0.01096	0.00156	0.00184	0.00007	11	2	11.9	0.5
NML04-1 03	0.05301	0.01006	0.01433	0.00264	0.00196	0.00010	14	3	12.6	0.6
NML04-1 04	0.05176	0.00757	0.01421	0.00200	0.00199	0.00008	14	2	12.8	0.5
NML04-1 05	0.04605	0.00237	0.01212	0.00044	0.00191	0.00007	12.2	0.4	12.3	0.4
NML04-1 06	0.04825	0.01162	0.01223	0.00289	0.00184	0.00009	12	3	11.9	0.6
NML04-1 07	0.06079	0.00880	0.01593	0.00221	0.00190	0.00008	16	2	12.2	0.5
NML04-1 08	0.04605	0.00269	0.01144	0.00048	0.00180	0.00007	11.5	0.5	11.6	0.5
NML04-1 09	0.04605	0.00285	0.01201	0.00055	0.00189	0.00008	12.1	0.6	12.2	0.5
NML04-1 10	0.05061	0.00793	0.01287	0.00195	0.00184	0.00008	13	2	11.9	0.5
NML04-1 11	0.04605	0.00184	0.01341	0.00038	0.00211	0.00006	13.5	0.4	13.6	0.4
NML04-1 12	0.04605	0.00192	0.01162	0.00035	0.00183	0.00005	11.7	0.3	11.8	0.3
NML04-1 13	0.04605	0.01565	0.01803	0.00578	0.00284	0.00032	18	6	18	2
NML04-1 14	0.02065	0.01612	0.00531	0.00413	0.00186	0.00012	5	4	12	0.8
NML04-1 15	0.05368	0.00568	0.01447	0.00146	0.00195	0.00007	15	1	12.6	0.5
NML04-1 16	0.04736	0.00201	0.02539	0.00100	0.00389	0.00008	25.5	1	25	0.5
NML04-1 17	0.03591	0.01709	0.00855	0.00402	0.00173	0.00012	9	4	11.1	0.8
NML04-1 18	0.05564	0.01038	0.01464	0.00264	0.00191	0.00009	15	3	12.3	0.6
NML04-1 19	0.05766	0.01006	0.01635	0.00275	0.00206	0.00010	16	3	13.3	0.6
NML04-1 20	0.04605	0.00225	0.01275	0.00044	0.00201	0.00007	12.9	0.4	12.9	0.4
NML04-1 21	0.04605	0.00195	0.01314	0.00040	0.00207	0.00006	13.3	0.4	13.3	0.4
NML04-1 22	0.04340	0.00829	0.01103	0.00205	0.00184	0.00008	11	2	11.9	0.5
NML04-1 23	0.05002	0.00679	0.01249	0.00163	0.00181	0.00007	13	2	11.7	0.5
NML04-1 24	0.05097	0.01384	0.01257	0.00333	0.00179	0.00011	13	3	11.5	0.7
NML05-2 01	0.05780	0.00747	0.01431	0.00180	0.00179	0.00006	14	2	11.5	0.4
NML05-2 02	0.04605	0.00222	0.01124	0.00043	0.00177	0.00005	11.3	0.4	11.4	0.3
NML05-2 03	0.04935	0.00893	0.02033	0.00362	0.00299	0.00011	20	4	19.2	0.7
NML05-2 04	0.05456	0.00976	0.01361	0.00238	0.00181	0.00007	14	2	11.7	0.5
NML05-2 05	0.05839	0.01045	0.01366	0.00239	0.00170	0.00007	14	2	10.9	0.5

NML05-2 06	0.04605	0.00350	0.01060	0.00059	0.00167	0.00009	10.7	0.6	10.8	0.6
NML05-2 07	0.04605	0.00228	0.01141	0.00041	0.00180	0.00006	11.5	0.4	11.6	0.4
NML05-2 08	0.04605	0.00276	0.01186	0.00054	0.00187	0.00007	12	0.5	12	0.5
NML05-2 09	0.04242	0.01353	0.01050	0.00332	0.00179	0.00008	11	3	11.5	0.5
NML05-2 10	0.04605	0.00284	0.01095	0.00052	0.00173	0.00007	11.1	0.5	11.1	0.4
NML05-2 11	0.04605	0.00309	0.01087	0.00052	0.00171	0.00008	11	0.5	11	0.5
NML05-2 12	0.04605	0.00241	0.01058	0.00040	0.00167	0.00006	10.7	0.4	10.7	0.4
NML05-2 13	0.05270	0.00613	0.01359	0.00154	0.00187	0.00006	14	2	12	0.4
NML05-2 14	0.05289	0.01733	0.01345	0.00435	0.00184	0.00010	14	4	11.9	0.6
NML05-2 15	0.04495	0.00928	0.01303	0.00265	0.00210	0.00008	13	3	13.5	0.5
NML05-2 16	0.06073	0.00834	0.01473	0.00197	0.00176	0.00006	15	2	11.3	0.4
NML05-2 17	0.04605	0.00193	0.01150	0.00034	0.00181	0.00005	11.6	0.3	11.7	0.3
NML05-2 18	0.04605	0.00212	0.01220	0.00041	0.00192	0.00006	12.3	0.4	12.4	0.4
NML05-2 19	0.04605	0.00411	0.01168	0.00077	0.00184	0.00011	11.8	0.8	11.9	0.7
NML05-2 20	0.04239	0.01426	0.01154	0.00385	0.00197	0.00009	12	4	12.7	0.6
NML05-2 21	0.04605	0.00720	0.01423	0.00211	0.00224	0.00011	14	2	14.4	0.7
NML05-2 22	0.06059	0.01611	0.01632	0.00427	0.00195	0.00010	16	4	12.6	0.6
NML05-2 23	0.03756	0.01808	0.00957	0.00458	0.00185	0.00010	10	5	11.9	0.6
NML05-2 24	0.04605	0.00197	0.01175	0.00037	0.00185	0.00005	11.9	0.4	11.9	0.3

Appendix 4. LA-MC-ICP-MS zircon Hf isotope data for Wuyu Cenozoic rocks

Sample-Spot	Age (Ma)	$^{176}Yb/^{177}Hf$	$^{176}Lu/^{177}Hf$	$^{176}Hf/^{177}Hf$	2σ	$^{176}Hf/^{177}Hf(i)$	εHf(t)	2σ	$T^{DM}C$ (Ma)	2σ	$f_{Lu/Hf}$
NML01-1@01	45	0.040196	0.001649	0.282863	0.000015	0.282862	4.2	0.5	854	17	-0.95
NML01-1@02	47	0.016494	0.000707	0.282838	0.000016	0.282837	3.3	0.6	909	18	-0.98
NML01-1@03	45	0.039604	0.001605	0.282852	0.000019	0.282851	3.8	0.7	879	18	-0.95
NML01-1@04	47	0.021391	0.000865	0.282871	0.000017	0.282870	4.5	0.6	835	17	-0.97
NML01-1@05	47	0.013864	0.000577	0.282849	0.000014	0.282849	3.7	0.5	884	18	-0.98
NML01-1@06	45	0.024286	0.001004	0.282817	0.000016	0.282816	2.6	0.6	957	19	-0.97
NML01-1@07	46	0.030865	0.001283	0.282862	0.000017	0.282861	4.2	0.6	856	17	-0.96
NML01-1@08	46	0.021344	0.000955	0.282867	0.000015	0.282866	4.3	0.5	844	17	-0.97
NML01-1@09	45	0.021117	0.000858	0.282881	0.000021	0.282880	4.8	0.7	812	16	-0.97
NML01-1@10	45	0.041302	0.001706	0.282827	0.000018	0.282826	2.9	0.6	936	19	-0.95
NML01-1@11	46	0.029510	0.001256	0.282836	0.000018	0.282835	3.2	0.6	915	18	-0.96
NML01-1@12	46										
NML01-1@13	48	0.022676	0.000917	0.282877	0.000019	0.282876	4.7	0.7	821	16	-0.97
NML01-1@14	48	0.021372	0.000888	0.282854	0.000016	0.282853	3.9	0.6	873	17	-0.97
NML01-1@15	45	0.026078	0.001111	0.282853	0.000016	0.282852	3.8	0.6	876	18	-0.97
NML01-1@16	47	0.019543	0.000828	0.282860	0.000018	0.282859	4.1	0.6	860	17	-0.98
NML01-1@17	43	0.024093	0.001008	0.282844	0.000019	0.282843	3.5	0.7	896	18	-0.97
NML01-1@18	48										
NML01-1@19	46	0.025839	0.00106	0.282850	0.000018	0.282849	3.7	0.6	883	18	-0.97
NML01-1@20	45	0.015134	0.000614	0.282840	0.000015	0.282839	3.4	0.5	904	18	-0.98
NML01-1@21	47	0.020139	0.000858	0.282837	0.00002	0.282836	3.3	0.7	912	18	-0.97
NML01-1@22	45	0.029977	0.001233	0.282876	0.000019	0.282875	4.6	0.7	824	16	-0.96
NML04-1@01	12.3										
NML04-1@02	11.9										
NML04-1@03	12.6										

NML04-1@04	12.8	0.008438	0.000382	0.282868	0.000016	0.282868	3.7	0.6	861	17	-0.99
NML04-1@05	12.3	0.010206	0.000466	0.282821	0.000015	0.282821	2.0	0.5	967	19	-0.99
NML04-1@06	11.9	0.012535	0.000569	0.282853	0.000016	0.282853	3.1	0.6	895	18	-0.98
NML04-1@07	12.2	0.008732	0.000415	0.282800	0.000017	0.282800	1.2	0.6	1014	20	-0.99
NML04-1@08	11.6	0.013979	0.000615	0.282838	0.000017	0.282838	2.6	0.6	929	19	-0.98
NML04-1@09	12.2	0.011677	0.000528	0.282853	0.000016	0.282853	3.1	0.6	895	18	-0.98
NML04-1@10	11.9										
NML04-1@11	13.6	0.013776	0.000567	0.282842	0.000013	0.282842	2.7	0.5	920	18	-0.98
NML04-1@12	11.8	0.055094	0.00228	0.282863	0.000019	0.282862	3.5	0.7	873	17	-0.93
~~NML04-1@13~~	~~18~~	~~0.008628~~	~~0.000356~~	~~0.282796~~	~~0.000014~~	~~0.282796~~	~~1.1~~	~~0.5~~	~~1023~~	~~20~~	~~-0.99~~
NML04-1@14	12	0.004253	0.000169	0.282675	0.000013	0.282675	-3.2	0.5	1294	26	-0.99
NML04-1@15	12.6										
~~NML04-1@16~~	~~25~~	~~0.017307~~	~~0.000703~~	~~0.282681~~	~~0.000013~~	~~0.282681~~	~~-3.0~~	~~0.5~~	~~1281~~	~~26~~	~~-0.98~~
NML04-1@17	11.1	0.009176	0.000423	0.282856	0.000013	0.282856	3.2	0.5	888	18	-0.99
NML04-1@18	12.3	0.00739	0.000347	0.282852	0.000012	0.282852	3.1	0.4	897	18	-0.99
NML04-1@19	13.3	0.019372	0.000871	0.282832	0.000014	0.282832	2.4	0.5	942	19	-0.97
NML04-1@20	12.9	0.025853	0.001124	0.282870	0.000014	0.282870	3.7	0.5	857	17	-0.97
NML04-1@21	13.3	0.010687	0.000468	0.282874	0.000013	0.282874	3.9	0.5	848	17	-0.99
NML04-1@22	11.9	0.016509	0.000724	0.282842	0.000014	0.282842	2.7	0.5	920	18	-0.98
NML04-1@23	11.7	0.007306	0.000338	0.282867	0.000012	0.282867	3.6	0.4	863	17	-0.99
NML04-1@24	11.5	0.010441	0.000489	0.282829	0.000013	0.282829	2.3	0.5	949	19	-0.99
NML05-2@01	11.5	0.012394	0.000552	0.282893	0.000088	0.282893	4.5	3.1	805	16	-0.98
NML05-2@02	11.4	0.016261	0.000713	0.282854	0.000022	0.282854	3.2	0.8	893	18	-0.98
~~NML05-2@03~~	~~19.2~~	~~0.004923~~	~~0.000258~~	~~0.282868~~	~~0.000018~~	~~0.282868~~	~~3.7~~	~~0.6~~	~~861~~	~~17~~	~~-0.99~~
NML05-2@04	11.7	0.011736	0.00055	0.282831	0.000016	0.282831	2.3	0.6	945	19	-0.98
NML05-2@05	10.9	0.011499	0.000509	0.282819	0.000018	0.282819	1.9	0.6	972	19	-0.98
NML05-2@06	10.8	0.012277	0.000526	0.282783	0.000014	0.282783	0.6	0.5	1053	21	-0.98
NML05-2@07	11.6	0.013195	0.000617	0.282834	0.000016	0.282834	2.5	0.6	938	19	-0.98
NML05-2@08	12	0.008941	0.000407	0.282816	0.00002	0.282816	1.8	0.7	978	20	-0.99

NML05-2@09	11.5	0.014322	0.000657	0.282881	0.000016	0.282881	4.1	0.6	832	17	-0.98
NML05-2@10	11.1	0.014023	0.000604	0.282873	0.000014	0.282873	3.8	0.5	850	17	-0.98
NML05-2@11	11	0.00861	0.000414	0.282835	0.000015	0.282835	2.5	0.5	935	19	-0.99
NML05-2@12	10.7	0.007004	0.000332	0.282837	0.000015	0.282837	2.6	0.5	931	19	-0.99
NML05-2@13	12	0.015994	0.000702	0.282838	0.000015	0.282838	2.6	0.5	929	19	-0.98
NML05-2@14	11.9	0.011952	0.000509	0.282810	0.000015	0.282810	1.6	0.5	992	20	-0.98
NML05-2@15	13.5	0.012327	0.000595	0.282859	0.000015	0.282859	3.3	0.5	881	18	-0.98
NML05-2@16	11.3	0.010496	0.000462	0.282838	0.000012	0.282838	2.6	0.4	929	19	-0.99
NML05-2@17	11.7	0.014898	0.00065	0.282855	0.000014	0.282855	3.2	0.5	891	18	-0.98
NML05-2@18	12.4	0.016143	0.000742	0.282825	0.000013	0.282825	2.1	0.5	958	19	-0.98
NML05-2@19	11.9	0.003821	0.000156	0.282743	0.000015	0.282743	-0.8	0.5	1142	23	-1.00
NML05-2@20	12.7	0.014916	0.000664	0.282842	0.000014	0.282842	2.7	0.5	920	18	-0.98
~~NML05-2@21~~	~~14.4~~	~~0.005101~~	~~0.000241~~	~~0.282814~~	~~0.000015~~	~~0.282814~~	~~1.7~~	~~0.5~~	~~983~~	~~20~~	~~-0.99~~
NML05-2@22	12.6	0.029802	0.001235	0.282821	0.000015	0.282821	2.0	0.5	967	19	-0.96
NML05-2@23	11.9	0.012569	0.000548	0.282847	0.000014	0.282847	2.9	0.5	908	18	-0.98
NML05-2@24	11.9	0.008592	0.0004	0.282811	0.000015	0.282811	1.6	0.5	989	20	-0.99