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Supplemental Material

Table S1. LA-ICP-MS zircon U-Pb dating results for Early-Middle Triassic felsic volcanic rocks in the Youjiang Basin

Table S2. In-situ zircon Hf-O isotopes results for Early-Middle Triassic felsic volcanic rocks in the Youjiang Basin

Table S3. Geochemical compositions for Early-Middle Triassic felsic volcanic rocks in the Youjiang Basin

Supplemental Table S1. LA-ICP-MS zircon U-Pb dating results for the Early-Middle Triassic volcanic rocks in the Youjiang Basin

Spot	Th/U	²⁰⁷ Pb/ ²⁰⁶ Pb		²⁰⁷ Pb/ ²³⁵ U		²⁰⁶ Pb/ ²³⁸ U		²⁰⁷ Pb/ ²⁰⁶ Pb		²⁰⁷ Pb/ ²³⁵ U		²⁰⁶ Pb/ ²³⁸ U		Concordance
		Ratios	1σ	Ratios	1σ	Ratios	1σ	Age(Ma)	1σ	Age(Ma)	1σ	Age(Ma)	1σ	
14YJ-03A1 (Dacite)														
14YJ-03A1-01	0.3	0.05162	0.00158	0.27562	0.00898	0.03868	0.00123	333.4	73.1	247.2	7.2	244.7	7.6	98%
14YJ-03A1-02	0.6	0.15970	0.00480	9.46311	0.29673	0.42975	0.01344	2453.7	-148.9	2384.0	28.8	2304.6	60.6	96%
14YJ-03A1-03	1.1	0.05519	0.00169	0.52750	0.01660	0.06931	0.00215	420.4	68.5	430.2	11.0	432.0	12.9	99%
14YJ-03A1-04	0.5	0.05050	0.00155	0.26917	0.00871	0.03866	0.00123	216.7	70.4	242.0	7.0	244.6	7.6	98%
14YJ-03A1-05	0.5	0.05523	0.00171	0.29332	0.00960	0.03852	0.00123	420.4	75.0	261.2	7.5	243.7	7.6	93%
14YJ-03A1-06	0.2	0.05122	0.00159	0.27318	0.00897	0.03865	0.00123	250.1	65.7	245.2	7.2	244.5	7.6	99%
14YJ-03A1-08	0.3	0.05095	0.00157	0.27145	0.00875	0.03866	0.00122	239.0	72.2	243.9	7.0	244.5	7.6	99%
14YJ-03A1-09	0.1	0.05324	0.00162	0.28389	0.00884	0.03870	0.00120	338.9	36.1	253.7	7.0	244.8	7.4	96%
14YJ-03A1-10	0.8	0.07332	0.00221	1.71462	0.05649	0.16947	0.00554	1033.3	61.1	1014.0	21.1	1009.2	30.5	99%
14YJ-03A1-11	0.6	0.05597	0.00177	0.29728	0.00982	0.03849	0.00120	450.0	65.7	264.3	7.7	243.4	7.4	91%
14YJ-03A1-12	0.3	0.05218	0.00163	0.28045	0.01118	0.03867	0.00141	300.1	70.4	251.0	8.9	244.6	8.7	97%
14YJ-03A1-13	0.1	0.05159	0.00157	0.27610	0.00936	0.03880	0.00130	333.4	75.0	247.6	7.4	245.4	8.0	99%
14YJ-03A1-14	0.3	0.06571	0.00198	0.87680	0.03373	0.09644	0.00364	798.2	63.7	639.3	18.3	593.5	21.4	92%
14YJ-03A1-15	0.6	0.05193	0.00159	0.27673	0.00908	0.03860	0.00123	283.4	70.4	248.1	7.2	244.2	7.6	98%
14YJ-03A1-16	0.5	0.05137	0.00157	0.27281	0.00894	0.03854	0.00124	257.5	70.4	244.9	7.1	243.8	7.7	99%
14YJ-03A1-17	0.9	0.05156	0.00158	0.27418	0.00880	0.03857	0.00122	264.9	75.0	246.0	7.0	244.0	7.6	99%
14YJ-03A1-18	0.4	0.05167	0.00158	0.27525	0.00905	0.03867	0.00126	333.4	70.4	246.9	7.2	244.6	7.8	99%
14YJ-03A1-19	0.7	0.05103	0.00159	0.27238	0.00882	0.03880	0.00124	242.7	76.8	244.6	7.0	245.4	7.7	99%
14YJ-03A1-20	2.1	0.05539	0.00181	0.52893	0.01939	0.06935	0.00242	427.8	72.2	431.1	12.9	432.2	14.6	99%
14YJ-03A1-21	0.3	0.05626	0.00178	0.30197	0.01110	0.03857	0.00126	461.2	70.4	267.9	8.7	243.9	7.9	90%
14YJ-03A1-22	0.4	0.05094	0.00157	0.27134	0.00880	0.03864	0.00122	239.0	72.2	243.8	7.0	244.4	7.6	99%
14YJ-03A1-23	0.4	0.05147	0.00160	0.27357	0.00931	0.03859	0.00128	261.2	72.2	245.5	7.4	244.1	8.0	99%
14YJ-03A1-25	0.7	0.05369	0.00167	0.28795	0.01039	0.03856	0.00127	366.7	70.4	256.9	8.2	243.9	7.9	94%
14YJ-03A (Dacite)														

14YJ-03A-01	0.5	0.05852	0.00450	0.31309	0.02352	0.03882	0.00087	549.2	159.7	276.6	18.2	245.5	5.4	90%
14YJ-03A-02	0.2	0.05110	0.00280	0.27000	0.01455	0.03833	0.00069	245.4	121.3	242.7	11.6	242.5	4.3	100%
14YJ-03A-03	0.3	0.05153	0.00364	0.27023	0.01869	0.03805	0.00078	264.5	154.2	242.9	14.9	240.7	4.9	99%
14YJ-03A-04	0.2	0.05114	0.00285	0.26949	0.01477	0.03823	0.00069	247.3	123.3	242.3	11.8	241.9	4.3	100%
14YJ-03A-05	0.6	0.06168	0.00218	0.91760	0.03228	0.10795	0.00168	663.1	74.1	661.1	17.1	660.8	9.8	100%
14YJ-03A-08	0.3	0.05153	0.00256	0.27019	0.01321	0.03805	0.00065	264.6	109.8	242.8	10.6	240.7	4.1	99%
14YJ-03A-10	0.3	0.05122	0.00269	0.26721	0.01381	0.03786	0.00067	250.6	116.3	240.5	11.1	239.6	4.2	100%
14YJ-03A-11	0.2	0.06316	0.00177	0.64790	0.01833	0.07445	0.00109	713.6	58.5	507.2	11.3	462.9	6.5	91%
14YJ-03A-12	0.9	0.05988	0.00331	0.60567	0.03285	0.07342	0.00138	599.3	115.3	480.8	20.8	456.7	8.3	95%
14YJ-03A-13	0.3	0.05117	0.00243	0.26819	0.01259	0.03805	0.00065	248.3	105.7	241.2	10.1	240.7	4.0	100%
14YJ-03A-14	0.3	0.05095	0.00211	0.26837	0.01101	0.03824	0.00062	238.4	92.6	241.4	8.8	241.9	3.8	100%
14YJ-03A-15	0.4	0.05224	0.00183	0.29932	0.01048	0.04160	0.00064	296.0	77.8	265.9	8.2	262.7	4.0	99%
14YJ-03A-16	1.1	0.08735	0.00231	2.79615	0.07530	0.23240	0.00340	1368.4	49.9	1354.5	20.1	1347.0	17.8	99%
14YJ-03A-17	0.4	0.05128	0.00330	0.26984	0.01706	0.03820	0.00075	253.4	141.5	242.6	13.6	241.7	4.6	100%
14YJ-03A-18	0.1	0.05123	0.00183	0.26950	0.00962	0.03819	0.00059	251.2	80.0	242.3	7.7	241.6	3.7	100%
14YJ-03A-19	0.4	0.05076	0.00246	0.26668	0.01280	0.03815	0.00066	229.9	108.3	240.0	10.3	241.3	4.1	101%
14YJ-03A-20	0.4	0.05156	0.00263	0.27110	0.01368	0.03818	0.00068	265.7	113.1	243.6	10.9	241.5	4.2	99%
14YJ-03A-21	0.3	0.05124	0.00270	0.26767	0.01393	0.03793	0.00068	251.4	116.8	240.8	11.2	240.0	4.2	100%
14YJ-03A-23	0.3	0.05086	0.00426	0.26796	0.02199	0.03826	0.00089	234.3	182.3	241.1	17.6	242.0	5.5	100%
14YJ-03A-25	0.4	0.05099	0.00287	0.26776	0.01490	0.03814	0.00071	240.2	124.7	240.9	11.9	241.3	4.4	100%

14YJ-03B1 (Rhyolite)

14YJ-03B1-01	0.4	0.05055	0.00155	0.26941	0.00871	0.03868	0.00123	220.4	76.8	242.2	7.0	244.7	7.6	98%
14YJ-03B1-02	0.2	0.06862	0.00207	1.00224	0.03160	0.10597	0.00333	887.0	58.3	704.9	16.0	649.3	19.4	91%
14YJ-03B1-04	0.4	0.05083	0.00156	0.27072	0.00866	0.03865	0.00121	231.6	70.4	243.3	6.9	244.5	7.5	99%
14YJ-03B1-05	0.5	0.07159	0.00216	1.67122	0.05193	0.16937	0.00525	975.9	56.5	997.6	19.7	1008.6	28.9	98%
14YJ-03B1-06	0.5	0.06077	0.00184	0.81106	0.02607	0.09682	0.00309	631.5	64.8	603.0	14.6	595.7	18.2	98%
14YJ-03B1-07	0.6	0.05153	0.00157	0.27370	0.00870	0.03855	0.00121	264.9	68.5	245.7	6.9	243.8	7.5	99%
14YJ-03B1-08	0.8	0.07676	0.00232	1.79141	0.05708	0.16926	0.00536	1116.7	61.1	1042.3	20.8	1008.1	29.5	96%

14YJ-03B1-09	0.3	0.05116	0.00157	0.27303	0.00882	0.03876	0.00124	255.6	70.4	245.1	7.0	245.2	7.7	99%
14YJ-03B1-10	1.1	0.05219	0.00158	0.27861	0.00891	0.03880	0.00125	294.5	63.9	249.6	7.1	245.4	7.7	98%
14YJ-03B1-11	0.4	0.05050	0.00155	0.26958	0.00859	0.03872	0.00121	216.7	70.4	242.4	6.9	244.9	7.5	98%
14YJ-03B1-12	0.4	0.05120	0.00157	0.27391	0.00888	0.03881	0.00123	250.1	72.2	245.8	7.1	245.5	7.6	99%
14YJ-03B1-14	0.6	0.05144	0.00160	0.27418	0.00894	0.03870	0.00123	261.2	72.2	246.0	7.1	244.8	7.6	99%
14YJ-03B1-15	0.3	0.05131	0.00159	0.27445	0.00894	0.03880	0.00123	253.8	67.6	246.2	7.1	245.4	7.6	99%
14YJ-03B1-16	1.1	0.05134	0.00161	0.27325	0.00895	0.03863	0.00122	257.5	69.4	245.3	7.1	244.3	7.6	99%
14YJ-03B1-17	0.1	0.05134	0.00155	0.27360	0.00865	0.03865	0.00121	257.5	70.4	245.6	6.9	244.5	7.5	99%
14YJ-03B1-18	0.2	0.06116	0.00184	0.81761	0.02638	0.09698	0.00312	655.6	60.2	606.7	14.7	596.7	18.3	98%
14YJ-03B1-20	0.5	0.05258	0.00162	0.27875	0.00895	0.03846	0.00121	309.3	75.0	249.7	7.1	243.3	7.5	97%
14YJ-03B1-21	0.8	0.05137	0.00158	0.27465	0.00865	0.03877	0.00119	257.5	70.4	246.4	6.9	245.2	7.4	99%
14YJ-03B1-22	0.4	0.05122	0.00157	0.27332	0.00890	0.03869	0.00123	250.1	65.7	245.3	7.1	244.7	7.6	99%
14YJ-03B1-23	0.2	0.06743	0.00204	0.90144	0.03089	0.09666	0.00323	850.0	67.6	652.5	16.5	594.8	19.0	90%
14YJ-03B1-25	0.4	0.05113	0.00158	0.27271	0.00886	0.03869	0.00122	255.6	72.2	244.9	7.1	244.7	7.6	99%

14YJ-10A (Rhyolite)

14YJ-10A-01	0.3	0.05094	0.00283	0.26682	0.01477	0.03802	0.00072	238.2	123.3	240.1	11.8	240.5	4.5	100%
14YJ-10A-02	0.3	0.05109	0.00259	0.26663	0.01351	0.03788	0.00069	244.8	112.8	240.0	10.8	239.7	4.3	100%
14YJ-10A-03	0.3	0.05102	0.00172	0.26765	0.00927	0.03808	0.00062	241.7	76.0	240.8	7.4	240.9	3.8	100%
14YJ-10A-04	0.3	0.05072	0.00242	0.26844	0.01283	0.03842	0.00069	227.9	106.6	241.4	10.3	243.0	4.3	101%
14YJ-10A-05	0.4	0.05182	0.00163	0.29652	0.00964	0.04153	0.00067	277.4	70.4	263.7	7.6	262.3	4.1	99%
14YJ-10A-06	0.4	0.05085	0.00338	0.26448	0.01737	0.03775	0.00078	234.2	146.2	238.3	14.0	238.8	4.8	100%
14YJ-10A-07	0.4	0.05366	0.00192	0.39128	0.01430	0.05292	0.00087	356.9	78.8	335.3	10.4	332.4	5.4	99%
14YJ-10A-08	0.3	0.05067	0.00385	0.26650	0.01999	0.03817	0.00085	225.9	166.9	239.9	16.0	241.5	5.3	101%
14YJ-10A-09	0.4	0.05190	0.00177	0.26976	0.00942	0.03772	0.00061	281.2	76.1	242.5	7.5	238.7	3.8	98%
14YJ-10A-10	0.3	0.05063	0.00356	0.26662	0.01851	0.03822	0.00081	223.9	154.7	240.0	14.8	241.8	5.0	101%
14YJ-10A-11	0.4	0.05092	0.00179	0.26496	0.00950	0.03776	0.00062	237.4	78.9	238.7	7.6	238.9	3.8	100%
14YJ-10A-13	0.2	0.07374	0.00141	1.68680	0.03620	0.16603	0.00251	1034.2	38.3	1003.6	13.7	990.2	13.9	99%
14YJ-10A-14	0.6	0.08958	0.00178	2.99693	0.06613	0.24282	0.00370	1416.4	37.6	1406.8	16.8	1401.3	19.2	100%

14YJ-10A-16	0.5	0.05102	0.00166	0.26578	0.00890	0.03781	0.00061	241.8	73.4	239.3	7.1	239.2	3.8	100%
14YJ-10A-17	0.3	0.05033	0.00140	0.26527	0.00771	0.03825	0.00060	210.3	63.1	238.9	6.2	242.0	3.7	101%
14YJ-10A-18	0.4	0.05163	0.00320	0.26776	0.01646	0.03764	0.00075	268.9	136.4	240.9	13.2	238.2	4.7	99%
14YJ-10A-19	0.3	0.05183	0.00149	0.26827	0.00803	0.03756	0.00059	278.0	64.5	241.3	6.4	237.7	3.7	99%
14YJ-10A-20	0.4	0.05147	0.00166	0.26800	0.00889	0.03779	0.00061	261.7	72.4	241.1	7.1	239.1	3.8	99%
14YJ-10A-21	0.3	0.05123	0.00257	0.26695	0.01337	0.03782	0.00069	251.1	111.5	240.3	10.7	239.3	4.3	100%
14YJ-10A-22	0.3	0.05114	0.00152	0.26732	0.00824	0.03794	0.00060	247.1	67.1	240.5	6.6	240.0	3.8	100%
14YJ-10A-23	0.3	0.05127	0.00156	0.26890	0.00844	0.03806	0.00061	253.0	68.4	241.8	6.8	240.8	3.8	100%
14YJ-10A-24	0.3	0.05103	0.00230	0.26479	0.01195	0.03766	0.00066	242.2	100.5	238.5	9.6	238.3	4.1	100%
14YJ-10A-25	0.3	0.05061	0.00153	0.26554	0.00830	0.03808	0.00061	223.1	68.4	239.1	6.7	240.9	3.8	101%
14YJ-10A-26	0.4	0.05098	0.00349	0.26638	0.01804	0.03792	0.00080	240.1	150.6	239.8	14.5	239.9	5.0	100%
14YJ-10A-27	0.3	0.08477	0.00339	1.91790	0.07786	0.16419	0.00284	1310.2	75.9	1087.3	27.1	980.0	15.7	90%

14YJ-10B1 (Dacite)

14YJ-10B1-01	0.5	0.05082	0.00157	0.26445	0.00867	0.03773	0.00121	231.6	67.6	238.2	7.0	238.7	7.5	99%
14YJ-10B1-02	0.4	0.05135	0.00158	0.26687	0.00861	0.03769	0.00119	257.5	70.4	240.2	6.9	238.5	7.4	99%
14YJ-10B1-03	0.7	0.05145	0.00159	0.26813	0.00885	0.03780	0.00122	261.2	72.2	241.2	7.1	239.2	7.6	99%
14YJ-10B1-04	0.3	0.05178	0.00158	0.26915	0.00874	0.03769	0.00120	276.0	65.7	242.0	7.0	238.5	7.5	98%
14YJ-10B1-05	0.3	0.05085	0.00155	0.26469	0.00849	0.03782	0.00120	235.3	70.4	238.4	6.8	239.3	7.5	99%
14YJ-10B1-06	0.8	0.05163	0.00159	0.26969	0.00868	0.03789	0.00119	333.4	70.4	242.4	6.9	239.8	7.4	98%
14YJ-10B1-07	0.4	0.05106	0.00157	0.26687	0.00869	0.03792	0.00121	242.7	75.0	240.2	7.0	239.9	7.5	99%
14YJ-10B1-08	0.4	0.05186	0.00159	0.26936	0.00870	0.03771	0.00120	279.7	70.4	242.2	7.0	238.6	7.4	98%
14YJ-10B1-09	0.4	0.05166	0.00157	0.27121	0.00885	0.03808	0.00122	333.4	70.4	243.7	7.1	240.9	7.6	98%
14YJ-10B1-10	0.3	0.05133	0.00157	0.26873	0.00879	0.03798	0.00121	253.8	70.4	241.7	7.0	240.3	7.5	99%
14YJ-10B1-11	0.4	0.05259	0.00160	0.27329	0.00865	0.03778	0.00119	322.3	75.0	245.3	6.9	239.1	7.4	97%
14YJ-10B1-12	0.3	0.05098	0.00156	0.26662	0.00858	0.03797	0.00120	239.0	70.4	240.0	6.9	240.3	7.5	99%
14YJ-10B1-13	0.3	0.05084	0.00155	0.26652	0.00850	0.03808	0.00120	235.3	70.4	239.9	6.8	240.9	7.5	99%
14YJ-10B1-15	1.2	0.05334	0.00168	0.31042	0.00982	0.04238	0.00132	342.7	39.8	274.5	7.6	267.6	8.1	97%
14YJ-10B1-16	0.6	0.05077	0.00155	0.26495	0.00877	0.03791	0.00124	231.6	65.7	238.7	7.0	239.9	7.7	99%

14YJ-10B1-17	0.2	0.05039	0.00155	0.26277	0.00859	0.03785	0.00121	213.0	72.2	236.9	6.9	239.5	7.5	98%
14YJ-10B1-18	1.5	0.05425	0.00177	0.28317	0.01004	0.03773	0.00118	388.9	74.1	253.2	7.9	238.8	7.3	94%
14YJ-10B1-19	0.4	0.05006	0.00153	0.26168	0.00863	0.03796	0.00123	198.2	104.6	236.0	6.9	240.2	7.6	98%
14YJ-10B1-20	0.4	0.05067	0.00155	0.26502	0.00869	0.03796	0.00122	233.4	70.4	238.7	7.0	240.2	7.6	99%
14YJ-10B1-21	0.3	0.05029	0.00155	0.26299	0.00858	0.03796	0.00120	209.3	39.8	237.1	6.9	240.1	7.5	98%
14YJ-10B1-22	1.3	0.05464	0.00166	0.28391	0.00921	0.03797	0.00127	398.2	68.5	253.8	7.3	240.2	7.9	94%
14YJ-10B1-23	0.2	0.05862	0.00177	0.73725	0.02340	0.09129	0.00288	553.7	64.8	560.8	13.7	563.1	17.0	99%
14YJ-10B1-25	0.4	0.05096	0.00156	0.26664	0.00866	0.03798	0.00121	239.0	70.4	240.0	6.9	240.3	7.5	99%

14YJ-14A (Rhyolite)

14YJ-14A-01	0.9	0.10613	0.00320	4.38201	0.13954	0.29986	0.00950	1800.0	55.2	1709.0	26.3	1690.6	47.1	98%
14YJ-14A-02	0.4	0.05060	0.00155	0.26652	0.00849	0.03825	0.00120	233.4	75.0	239.9	6.8	242.0	7.4	99%
14YJ-14A-04	0.3	0.05124	0.00159	0.27120	0.00918	0.03825	0.00122	250.1	65.7	243.7	7.3	242.0	7.5	99%
14YJ-14A-05	1.0	0.05122	0.00156	0.26993	0.00882	0.03830	0.00124	250.1	65.7	242.6	7.1	242.3	7.7	99%
14YJ-14A-07	0.4	0.05090	0.00160	0.26670	0.00860	0.03800	0.00120	235.0	70.4	240.0	6.9	241.0	7.5	99%
14YJ-14A-08	0.5	0.05220	0.00170	0.27690	0.01000	0.03830	0.00120	300.0	74.0	248.0	7.9	243.0	7.6	97%
14YJ-14A-09	1.5	0.06470	0.00200	1.20860	0.03780	0.13540	0.00420	765.0	63.0	805.0	17.4	819.0	23.8	98%
14YJ-14A-10	0.4	0.10270	0.00310	3.32250	0.11270	0.23360	0.00750	1673.0	56.0	1486.0	26.5	1353.0	39.4	90%
14YJ-14A-11	0.3	0.05100	0.00160	0.26760	0.00870	0.03810	0.00120	239.0	70.4	241.0	7.0	241.0	7.5	99%
14YJ-14A-12	0.4	0.05100	0.00160	0.26520	0.00860	0.03780	0.00120	239.0	70.4	239.0	6.9	239.0	7.5	99%
14YJ-14A-13	1.7	0.05220	0.00160	0.28240	0.00990	0.03910	0.00130	295.0	63.9	253.0	7.8	248.0	8.2	97%
14YJ-14A-14	0.3	0.04980	0.00150	0.26130	0.00850	0.03820	0.00120	187.0	67.6	236.0	6.8	242.0	7.5	97%
14YJ-14A-15	1.1	0.07440	0.00230	1.83990	0.06380	0.18030	0.00610	1052.0	66.8	1060.0	22.8	1069.0	33.3	99%
14YJ-14A-16	0.8	0.04860	0.00150	0.25340	0.00830	0.03810	0.00120	128.0	70.4	229.0	6.7	241.0	7.5	95%
14YJ-14A-18	0.7	0.06180	0.00190	0.60210	0.02040	0.07090	0.00230	733.0	66.7	479.0	12.9	441.0	13.7	91%
14YJ-14A-19	0.7	0.04630	0.00140	0.24980	0.00830	0.03940	0.00130	9.4	74.1	226.0	6.8	249.0	7.8	90%
14YJ-14A-20	1.7	0.05000	0.00170	0.26580	0.01070	0.03810	0.00120	198.0	75.0	239.0	8.6	241.0	7.6	99%
14YJ-14A-22	0.9	0.04990	0.00170	0.37920	0.01340	0.05540	0.00170	191.0	112.0	326.0	9.9	347.0	10.5	93%
14YJ-14A-23	1.7	0.05440	0.00170	0.44010	0.01510	0.05890	0.00190	391.0	72.2	370.0	10.6	369.0	11.4	99%

14YJ-14K (Rhyolite)														
14YJ-14K-01	0.4	0.05207	0.00269	0.26749	0.01364	0.03729	0.00065	288.5	114.0	240.7	10.9	236.0	4.1	98%
14YJ-14K-02	0.2	0.05128	0.00258	0.27271	0.01355	0.03861	0.00067	253.3	111.6	244.9	10.8	244.2	4.2	100%
14YJ-14K-03	0.6	0.05136	0.00342	0.27334	0.01789	0.03863	0.00076	256.9	146.2	245.4	14.3	244.4	4.7	100%
14YJ-14K-05	1.2	0.05570	0.00200	0.51007	0.01834	0.06648	0.00104	439.9	78.2	418.5	12.3	414.9	6.3	99%
14YJ-14K-07	0.2	0.05223	0.00364	0.27463	0.01878	0.03817	0.00078	295.5	151.3	246.4	15.0	241.5	4.9	98%
14YJ-14K-08	0.2	0.05197	0.00269	0.27356	0.01401	0.03821	0.00068	284.1	114.3	245.5	11.2	241.7	4.2	98%
14YJ-14K-09	0.3	0.05108	0.00447	0.26484	0.02274	0.03763	0.00089	244.6	189.8	238.6	18.3	238.1	5.6	100%
14YJ-14K-10	0.2	0.05126	0.00247	0.27032	0.01291	0.03827	0.00066	252.6	107.0	242.9	10.3	242.1	4.1	100%
14YJ-14K-11	0.3	0.05137	0.00352	0.26934	0.01814	0.03805	0.00078	257.6	150.1	242.2	14.5	240.8	4.8	99%
14YJ-14K-12	0.3	0.05158	0.00410	0.26963	0.02104	0.03794	0.00085	267.0	172.5	242.4	16.8	240.0	5.3	99%
14YJ-14K-13	0.3	0.05116	0.00348	0.26800	0.01793	0.03802	0.00078	248.3	149.4	241.1	14.4	240.5	4.8	100%
14YJ-14K-14	0.4	0.05200	0.00452	0.27208	0.02317	0.03797	0.00091	285.6	186.6	244.4	18.5	240.3	5.6	98%
14YJ-14K-16	0.3	0.05096	0.00606	0.26639	0.03100	0.03794	0.00113	238.8	252.6	239.8	24.9	240.1	7.0	100%
14YJ-14K-17	0.3	0.05150	0.00456	0.26807	0.02329	0.03778	0.00091	263.3	191.1	241.1	18.7	239.1	5.6	99%
14YJ-14K-19	0.2	0.05156	0.00216	0.26971	0.01134	0.03796	0.00065	266.0	93.2	242.5	9.1	240.2	4.0	99%
14YJ-14K-21	0.3	0.05245	0.00327	0.27501	0.01700	0.03805	0.00076	305.2	136.0	246.7	13.5	240.7	4.7	98%
14YJ-14K-22	0.2	0.05394	0.00296	0.35992	0.01960	0.04843	0.00092	368.4	118.4	312.2	14.6	304.9	5.7	98%
14YJ-14K-23	0.3	0.05124	0.00402	0.26603	0.02056	0.03768	0.00085	251.6	170.9	239.5	16.5	238.4	5.3	100%

Supplemental Table S2. In-situ zircon Hf-O isotopes results for the Early-Middle Triassic volcanic rocks in the Youjiang Basin

Spot	Age (Ma)	$^{176}\text{Yb}/^{177}\text{Hf}$	2σ	$^{176}\text{Lu}/^{177}\text{Hf}$	2σ	$^{176}\text{Hf}/^{177}\text{Hf}$	2σ	$^{176}\text{Hf}/^{177}\text{Hf}_i$	$\varepsilon\text{Hf}(t)$	T_{DM} (Ma)	T_{DM}^{C} (Ma)	$\delta^{18}\text{O}$	2σ
14YJ-03A (Dacite)													
14YJ-03A-01	241.4	0.0482	0.0013	0.001418	0.000034	0.282358	0.000027	0.282351	-9.6	1278	1880	9.7	0.2
14YJ-03A-02	241.4	0.0679	0.0006	0.002066	0.000018	0.282252	0.000021	0.282243	-13.4	1453	2122	10.9	0.1
14YJ-03A-03	241.4	0.0543	0.0003	0.001634	0.000005	0.282395	0.000019	0.282387	-8.3	1233	1800	10.6	0.2
14YJ-03A-04	241.4	0.0515	0.0010	0.001530	0.000030	0.282392	0.000020	0.282385	-8.4	1234	1805	10.3	0.1
14YJ-03A-05	660.8											10.9	0.2
14YJ-03A-08	241.4	0.0488	0.0003	0.001423	0.000010	0.282360	0.000019	0.282354	-9.5	1275	1875	9.9	0.1
14YJ-03A-10	241.4	0.0454	0.0005	0.001346	0.000012	0.282406	0.000026	0.282400	-7.9	1207	1771	9.9	0.2
14YJ-03A-11	462.9											10.6	0.2
14YJ-03A-12	456.7											9.9	0.2
14YJ-03A-13	241.4	0.0606	0.0004	0.001780	0.000013	0.282396	0.000021	0.282388	-8.3	1237	1799	11.3	0.2
14YJ-03A-14	241.4	0.0771	0.0006	0.002238	0.000016	0.282394	0.000018	0.282384	-8.4	1254	1807	11.0	0.2
14YJ-03A-17	241.4	0.0405	0.0005	0.001209	0.000012	0.282375	0.000020	0.282370	-8.9	1247	1839	11.8	0.2
14YJ-03A-18	241.4	0.0386	0.0003	0.001110	0.000008	0.282279	0.000021	0.282274	-12.3	1379	2054	11.4	0.2
14YJ-03A-19	241.4	0.0414	0.0001	0.001244	0.000002	0.282344	0.000018	0.282338	-10.0	1292	1909	9.8	0.2
14YJ-03A-20	241.4	0.0387	0.0003	0.001170	0.000006	0.282388	0.000018	0.282383	-8.5	1227	1810	10.7	0.2
14YJ-03A-21	241.4	0.0505	0.0003	0.001499	0.000011	0.282392	0.000018	0.282385	-8.4	1232	1804	10.7	0.2
14YJ-03A-23	241.4	0.0733	0.0004	0.002179	0.000014	0.282305	0.000019	0.282295	-11.6	1381	2005	11.3	0.2
14YJ-03A1 (Dacite)													
14YJ-03A1-01	244.3	0.0646	0.0006	0.001982	0.000020	0.282440	0.000008	0.282431	-6.7	1180	1700		
14YJ-03A1-02	244.3	0.0385	0.0003	0.001258	0.000007	0.282311	0.000010	0.282305	-11.2	1339	1981		
14YJ-03A1-03	244.3	0.0479	0.0002	0.001508	0.000001	0.282384	0.000008	0.282377	-8.6	1244	1820		
14YJ-03A1-04	593.0	0.0101	0.0001	0.000350	0.000001	0.281428	0.000009	0.281424	-34.7	2508	3707		
14YJ-03A1-06	244.3	0.0286	0.0002	0.000893	0.000007	0.282376	0.000009	0.282372	-8.8	1236	1833		
14YJ-03A1-07	244.3	0.0284	0.0003	0.000898	0.000005	0.282297	0.000009	0.282293	-11.6	1345	2009		
14YJ-03A1-09	244.3	0.0411	0.0004	0.001316	0.000009	0.282452	0.000008	0.282446	-6.2	1141	1666		
14YJ-03A1-10	244.3	0.0468	0.0004	0.001498	0.000008	0.282441	0.000007	0.282434	-6.6	1163	1693		
14YJ-03A1-11	432.0	0.0404	0.0003	0.001269	0.000006	0.282375	0.000007	0.282365	-4.9	1249	1728		

14YJ-03A1-12	244.3	0.0420	0.0003	0.001322	0.000003	0.282377	0.000008	0.282371	-8.8	1247	1834
14YJ-03A1-13	244.3	0.0426	0.0002	0.001348	0.000003	0.282323	0.000009	0.282317	-10.7	1325	1956
14YJ-03A1-14	244.3	0.0341	0.0002	0.001075	0.000001	0.282363	0.000008	0.282358	-9.3	1260	1864
14YJ-03A1-15	1772	0.0451	0.0001	0.001442	0.000003	0.282384	0.000007	0.282336	24.1	1242	935
14YJ-03A1-16	244.3	0.0452	0.0003	0.001435	0.000012	0.282319	0.000008	0.282313	-10.9	1333	1964

14YJ-10A (Rhyolite)

14YJ-10A-01	239.9	0.0386	0.0001	0.001319	0.000005	0.282361	0.000008	0.282355	-9.5	1271	1874
14YJ-10A-02	239.9	0.0460	0.0002	0.001550	0.000002	0.282395	0.000007	0.282388	-8.3	1230	1799
14YJ-10A-03	239.9	0.0415	0.0002	0.001423	0.000001	0.282397	0.000007	0.282390	-8.2	1223	1794
14YJ-10A-04	239.9	0.0369	0.0002	0.001296	0.000002	0.282366	0.000007	0.282360	-9.3	1263	1862
14YJ-10A-06	239.9	0.0518	0.0002	0.001795	0.000007	0.282428	0.000009	0.282420	-7.2	1191	1728
14YJ-10A-07	332.4	0.0359	0.0003	0.001230	0.000003	0.282410	0.000007	0.282402	-5.8	1199	1709
14YJ-10A-08	239.9	0.0405	0.0003	0.001397	0.000002	0.282406	0.000008	0.282400	-7.9	1209	1772
14YK-10A-09	239.9	0.0720	0.0003	0.001921	0.000006	0.282412	0.000017	0.282404	-7.8	1217	1763
14YJ-10A-10	239.9	0.0464	0.0006	0.001620	0.000010	0.282367	0.000008	0.282360	-9.3	1272	1863
14YJ-10A-11	239.9	0.0516	0.0003	0.001764	0.000005	0.282386	0.000008	0.282378	-8.7	1250	1821
14YK-10A-13	990.2	0.0756	0.0002	0.001889	0.000007	0.282184	0.000014	0.282149	-0.2	1543	1853
14YK-10A-14	1401	0.0444	0.0003	0.001204	0.000009	0.281861	0.000017	0.281829	-2.3	1966	2299
14YK-10A-16	239.9	0.0647	0.0006	0.001765	0.000012	0.282395	0.000014	0.282387	-8.4	1238	1802
14YK-10A-17	239.9	0.0577	0.0001	0.001562	0.000007	0.282381	0.000015	0.282374	-8.8	1251	1831
14YK-10A-18	239.9	0.0524	0.0008	0.001435	0.000019	0.282407	0.000014	0.282401	-7.9	1209	1771
14YK-10A-20	239.9	0.0427	0.0007	0.001192	0.000017	0.282274	0.000017	0.282268	-12.6	1389	2067
14YK-10A-21	239.9	0.0540	0.0006	0.001485	0.000012	0.282390	0.000013	0.282384	-8.5	1234	1808
14YK-10A-22	239.9	0.0641	0.0003	0.001784	0.000004	0.282399	0.000014	0.282391	-8.2	1232	1793
14YK-10A-23	239.9	0.0631	0.0003	0.001747	0.000005	0.282354	0.000015	0.282346	-9.8	1296	1894
14YK-10A-24	239.9	0.0968	0.0004	0.002684	0.000012	0.282395	0.000015	0.282383	-8.5	1268	1809
14YK-10A-25	239.9	0.0625	0.0002	0.001714	0.000004	0.282371	0.000014	0.282363	-9.2	1270	1854
14YJ-10A-26	239.9	0.0435	0.0005	0.001494	0.000009	0.282374	0.000008	0.282368	-9.0	1257	1844

14YJ-10B1 (Dacite)

14YJ-10B1-01	239.7	0.0381	0.0004	0.001198	0.000006	0.282357	0.000007	0.282352	-9.6	1271	1880
14YJ-10B1-02	239.7	0.0639	0.0011	0.001949	0.000035	0.282440	0.000009	0.282431	-6.8	1179	1703

14YJ-10B1-03	239.7	0.0593	0.0002	0.001857	0.000014	0.282392	0.000008	0.282384	-8.5	1244	1809		
14YJ-10B1-04	239.7	0.0497	0.0002	0.001553	0.000003	0.282428	0.000008	0.282421	-7.1	1183	1725		
14YJ-10B1-05	239.7	0.0448	0.0004	0.001403	0.000007	0.282377	0.000008	0.282370	-8.9	1251	1839		
14YJ-10B1-06	239.7	0.0509	0.0003	0.001594	0.000006	0.282420	0.000008	0.282412	-7.5	1196	1744		
14YJ-10B1-07	239.7	0.0483	0.0001	0.001523	0.000006	0.282374	0.000008	0.282367	-9.1	1259	1846		
14YJ-10B1-08	239.7	0.0309	0.0002	0.000975	0.000001	0.282349	0.000008	0.282345	-9.9	1275	1896		
14YJ-10B1-09	239.7	0.0566	0.0002	0.001780	0.000002	0.282440	0.000007	0.282432	-6.8	1173	1700		
14YJ-10B1-10	239.7	0.0516	0.0002	0.001625	0.000007	0.282449	0.000007	0.282442	-6.4	1155	1678		
14YJ-10B1-11	239.7	0.0763	0.0004	0.002343	0.000017	0.282442	0.000008	0.282431	-6.8	1189	1702		
14YJ-10B1-12	239.7	0.0600	0.0006	0.001864	0.000010	0.282423	0.000008	0.282415	-7.4	1200	1738		
14YJ-10B1-13	239.7	0.0523	0.0002	0.001646	0.000004	0.282429	0.000008	0.282421	-7.2	1185	1725		
14YJ-14K (Rhyolite)													
14YJ-14K-01	240.6	0.0503	0.0002	0.001453	0.000007	0.282353	0.000018	0.282347	-9.8	1286	1891	10.5	0.2
14YJ-14K-02	240.6	0.0391	0.0003	0.001161	0.000007	0.282303	0.000020	0.282298	-11.5	1346	2000	10.7	0.2
14YJ-14K-03	240.6	0.0409	0.0002	0.001206	0.000006	0.282409	0.000021	0.282403	-7.8	1199	1764	10.5	0.1
14YJ-14K-04	414.9											10.4	0.2
14YJ-14K-08	240.6	0.0822	0.0010	0.002414	0.000029	0.282317	0.000022	0.282306	-11.2	1372	1981	10.7	0.2
14YJ-14K-09	240.6	0.0738	0.0003	0.002180	0.000004	0.282223	0.000024	0.282213	-14.5	1499	2188	10.7	0.2
14YJ-14K-10	240.6	0.0416	0.0001	0.001242	0.000004	0.282322	0.000020	0.282316	-10.8	1323	1960	10.5	0.2
14YJ-14K-11	240.6	0.0413	0.0002	0.001268	0.000003	0.282311	0.000020	0.282305	-11.2	1339	1984	10.8	0.2
14YJ-14K-12	240.6	0.0500	0.0004	0.001540	0.000021	0.282391	0.000021	0.282384	-8.4	1235	1808	11.2	0.2
14YJ-14K-13	240.6	0.0617	0.0003	0.001878	0.000007	0.282328	0.000019	0.282320	-10.7	1336	1951	10.5	0.1
14YJ-14K-14	240.6	0.0475	0.0018	0.001439	0.000047	0.282381	0.000022	0.282375	-8.8	1246	1828	10.6	0.2
14YJ-14K-16	240.6	0.0638	0.0007	0.001906	0.000016	0.282387	0.000019	0.282378	-8.7	1254	1821	10.0	0.2
14YJ-14K-17	240.6	0.0485	0.0002	0.001513	0.000014	0.282330	0.000023	0.282323	-10.6	1321	1943	11.6	0.2
14YJ-14K-19	240.6	0.1496	0.0041	0.004743	0.000169	0.282264	0.000037	0.282242	-13.5	1549	2122	10.7	0.2
14YJ-14K-22	304.9											9.9	0.2
14YJ-14K-23	240.6	0.0648	0.0012	0.002127	0.000050	0.282313	0.000031	0.282304	-11.3	1367	1987	10.4	0.1

Supplemental Table S3. Geochemical compositions for the Early-Middle Triassic volcanic rocks in the Youjiang Basin

Sample	14YJ-03A1	14YJ-03B1	14YJ-03A	14YJ-03C	14YJ-03E	14YJ-03F	14YJ-03K	14YJ-10A	14YJ-10C	14YJ-10F	14YJ-10H	14YJ-14A	14YJ-14C	14YJ-14H	14YJ-14K
	Dacite-rhyolite in the Nazhen area							Dacite-rhyolite in the Baihe area				Rhyolite in the Fengle area			
SiO ₂	67.77	69.80	69.37	70.09	69.23	72.17	69.45	71.16	71.41	70.72	69.67	70.17	70.34	66.81	
TiO ₂	0.72	0.70	0.66	0.68	0.69	0.63	0.63	0.41	0.42	0.41	1.06	0.68	0.71	0.74	
Al ₂ O ₃	12.45	12.60	12.82	12.96	12.76	13.55	12.91	14.52	14.36	14.92	12.86	12.19	12.51	13.37	
Fe ₂ O _{3t}	6.41	6.09	6.03	5.52	6.16	3.06	5.57	2.70	2.71	2.82	5.86	5.46	5.11	6.55	
MgO	0.76	0.82	0.56	0.55	0.66	0.25	0.47	0.83	0.92	0.98	1.34	0.45	0.51	0.48	
CaO	2.72	1.30	1.84	2.09	2.06	1.62	1.94	1.73	1.53	1.66	1.76	0.40	0.40	0.39	
K ₂ O	3.38	4.26	4.30	4.18	4.15	4.85	4.34	4.71	4.70	4.68	0.50	4.43	5.01	4.93	
Na ₂ O	2.31	2.26	2.40	2.39	2.33	2.36	2.49	2.39	2.21	2.41	4.26	2.56	2.23	2.77	
P ₂ O ₅	0.16	0.15	0.14	0.15	0.14	0.14	0.14	0.12	0.12	0.13	0.14	0.16	0.16	0.16	
MnO	0.08	0.07	0.07	0.05	0.07	0.03	0.05	0.03	0.02	0.02	0.10	0.06	0.05	0.07	
L.O.I	3.33	1.66	1.33	1.25	1.38	1.19	1.49	1.00	1.43	1.31	2.30	3.00	2.89	3.05	
Total	100.09	99.71	99.52	99.91	99.64	99.85	99.48	99.60	99.83	100.07	99.85	99.55	99.93	99.31	
FeO _t /MgO	7.6	6.6	9.7	9.1	8.4	11.1	10.7	2.9	2.7	2.6	3.9	11.0	9.0	12.2	
A/CNK	1.00	1.18	1.07	1.06	1.06	1.12	1.05	1.19	1.25	1.24	1.20	1.25	1.27	1.26	
A/NK	1.67	1.52	1.49	1.53	1.53	1.48	1.47	1.61	1.65	1.65	1.71	1.35	1.38	1.35	
A.R.	1.28	1.28	1.29	1.28	1.28	1.27	1.30	1.26	1.24	1.26	1.78	1.35	1.28	1.35	
Sc	13.6	13.2	16.6	15.1	16.1	16.6	16.5	9.8	8.5	10.0	13.7	13.4	15.7	14.1	16.8
V	32.1	31.9	34.2	30.2	27.5	30.4	29.0	26.6	25.6	28.0	99.9	29.7	33.6	40.8	35.3
Cr	13.7	12.7	18.9	20.9	17.3	109	15.5	16.5	19.3	22.4	65.4	17.9	18.8	18.4	19.2
Co	5.79	7.19	6.97	5.56	6.58	6.37	6.45	4.87	4.62	8.26	13.9	6.86	7.50	7.74	7.41
Ni	6.54	8.71	11.6	12.4	10.5	12.3	9.07	8.49	9.22	13.0	35.2	9.55	11.0	10.1	10.7
Ga	18.4	19.6	19.7	18.9	21.5	20.9	19.7	18.8	18.0	19.0	13.5	15.8	17.9	18.4	20
Rb	133	199	178	210	204	205	204	210	177	188	19	157	196	166	168
Sr	170	92	111	118	109	106	116	108	114	104	284	44	49	41	31
Y	52.9	63.3	56.8	84.4	70.6	64.2	63.5	37.5	34.8	38.6	22.2	42.2	48.3	40.9	58.3
Zr	282	300	306	332	321	318	311	218	207	225	297	288	292	301	314
Nb	13.5	13.7	14.9	15.4	14.9	15.6	14.8	11.1	10.8	11.4	15.4	13.8	14.1	14.8	15.1
Ba	617	646	621	775	666	671	647	836	859	795	127	668	925	671	756
La	43.0	46.1	44.7	55.5	49.3	48.2	46.1	43.5	39.8	42.8	30.9	28.4	33.5	36.9	27.6

Ce	86.1	95.3	87.4	89.8	90.4	91.2	89.6	83.1	71.0	79.3	51.6	51.1	69.0	69.5	59.3
Pr	10.6	11.8	10.2	11.5	10.8	10.8	10.6	9.47	8.76	9.09	5.63	6.62	8.13	8.75	7.66
Nd	40.8	45.5	38.0	44.0	42.1	42.4	40.8	33.7	31.5	33.7	21.4	25.7	31.0	33.1	30.4
Sm	8.73	9.75	8.43	10.1	9.28	8.85	8.90	6.83	6.19	7.03	4.18	5.64	6.16	7.10	7.23
Eu	1.54	1.61	1.49	1.88	1.58	1.54	1.57	1.16	1.10	1.14	1.08	1.00	0.79	1.00	1.39
Gd	8.90	10.1	8.89	11.0	9.88	9.38	9.56	6.60	5.80	6.51	3.93	6.16	6.90	6.81	8.48
Tb	1.46	1.67	1.49	1.94	1.67	1.56	1.58	1.07	0.96	1.03	0.61	1.10	1.15	1.11	1.50
Dy	9.00	10.39	9.05	12.3	10.5	9.72	9.77	6.28	5.65	6.16	3.65	6.84	7.32	7.08	9.51
Ho	1.93	2.26	1.94	2.63	2.12	2.03	1.98	1.25	1.13	1.23	0.74	1.43	1.48	1.49	1.96
Er	5.38	6.35	5.50	7.83	6.31	5.88	5.87	3.51	3.25	3.54	2.16	4.19	4.43	4.45	5.88
Tm	0.78	0.94	0.81	1.17	0.96	0.87	0.87	0.50	0.47	0.51	0.31	0.62	0.66	0.64	0.82
Yb	5.09	6.02	5.24	7.65	5.96	5.67	5.50	3.10	2.93	3.19	2.17	3.98	4.17	4.19	5.19
Lu	0.77	0.93	0.78	1.20	0.90	0.84	0.82	0.45	0.41	0.45	0.33	0.61	0.63	0.63	0.78
Hf	7.79	8.27	7.90	8.74	8.34	8.38	7.98	5.77	5.29	5.88	6.97	7.22	7.16	7.78	8.29
Ta	1.15	1.17	1.22	1.35	1.30	1.31	1.29	1.06	0.98	1.07	1.15	1.17	1.19	1.29	1.33
Pb	26.1	26.6	29.1	28	27.8	28.9	27.2	30.1	29.4	29.8	13.6	8.65	5.26	5.05	15.1
Th	21.4	22.5	20.7	18.3	22.3	22.6	22.3	23.6	22.1	23.1	6.16	16.7	20.3	18.3	25.3
U	4.72	4.99	4.40	4.23	4.91	5.05	4.92	5.00	4.42	4.69	1.48	3.54	4.38	4.12	5.48
10000*Ga/Al	2.7	2.9	2.9	2.7	3.1	2.9	2.8	2.4	2.3	2.4	1.9	2.4	2.6	2.5	
Zr+Nb+Ce+Y	434	472	465	522	497	489	479	350	324	354	386	395	423	426	447
T_{Zr} (°C)	832	857	848	855	851	860	847	827	827	833	857	861	864	861	
$^{87}\text{Rb}/^{86}\text{Sr}$			4.65			5.61		5.64		5.24		10.34	11.74		
$^{87}\text{Sr}/^{86}\text{Sr}$			0.731677			0.733497		0.737308		0.736354		0.745444	0.749983		
Is			0.000010			0.000009		0.000009		0.000010		0.000007	0.000008		
$(^{87}\text{Sr}/^{86}\text{Sr})_i$			0.715535			0.714026		0.718046		0.718448		0.709708	0.709567		
$^{147}\text{Sm}/^{144}\text{Nd}$			0.13			0.13		0.12		0.13		0.13	0.12		
$^{143}\text{Nd}/^{144}\text{Nd}$			0.512006			0.512035		0.511893		0.511901		0.511990	0.511997		
Is			0.000005			0.000005		0.000003		0.000004		0.000005	0.000003		
$T_{\text{DM}}(\text{Ga})$			2.19			1.94		2.10		2.17		2.18	1.88		
$(^{143}\text{Nd}/^{144}\text{Nd})_i$			0.511792			0.511833		0.511701		0.511703		0.511779	0.511806		
$\varepsilon\text{Nd}_{(t)}$			-10.4			-9.6		-12.3		-12.2		-10.7	-10.1		