

**Table S1. Zircon LA-ICP-MS U-Pb data of the Keri rhyolites in the EKOB.**

[illegible]

XRD111.3.1	17	267	484	0.55	0.0499	0.0013	0.2362	0.0064	0.0343	0.0002	191	1	215	6	218	2
XRD111.3.2	14	223	412	0.54	0.0531	0.0016	0.2471	0.0077	0.0338	0.0002	331	1	224	7	214	2
XRD111.3.3	22	357	619	0.58	0.0528	0.0012	0.2463	0.0057	0.0338	0.0003	319	1	224	5	215	2
XRD111.3.4	23	386	683	0.57	0.0534	0.0014	0.2363	0.0062	0.0321	0.0002	348	1	215	6	204	2
XRD111.3.5	15	515	350	1.47	0.0508	0.0017	0.2456	0.0082	0.0351	0.0003	231	1	223	7	222	2
XRD111.3.6	67	683	707	0.97	0.3338	0.0040	2.4147	0.0330	0.0524	0.0004	2218	122	1247	17	329	2
XRD111.3.7	14	178	387	0.46	0.0522	0.0014	0.2555	0.0070	0.0355	0.0003	293	1	231	6	225	2
XRD111.3.8	24	401	703	0.57	0.0544	0.0010	0.2393	0.0044	0.0319	0.0002	389	1	218	4	202	1
XRD111.3.9	20	317	584	0.54	0.0516	0.0011	0.2265	0.0052	0.0318	0.0002	270	1	207	5	202	1
XRD111.3.10	24	595	625	0.95	0.0550	0.0011	0.2407	0.0051	0.0318	0.0002	412	1	219	5	201	1
XRD111.3.11	20	280	586	0.48	0.0526	0.0010	0.2289	0.0045	0.0316	0.0002	311	1	209	4	200	1
XRD111.3.12	22	324	636	0.51	0.0517	0.0010	0.2282	0.0046	0.0320	0.0002	273	1	209	4	203	1
XRD111.3.13	21	295	598	0.49	0.0536	0.0011	0.2355	0.0050	0.0319	0.0002	354	1	215	5	202	1
XRD111.3.14	20	283	587	0.48	0.0535	0.0011	0.2329	0.0051	0.0316	0.0002	351	1	213	5	200	1
XRD111.3.15	23	347	639	0.54	0.0515	0.0010	0.2201	0.0044	0.0310	0.0002	264	1	202	4	197	1
XRD111.3.16	23	346	684	0.51	0.0531	0.0015	0.2245	0.0063	0.0307	0.0002	331	1	206	6	195	1
XRD111.3.17	18	236	516	0.46	0.0533	0.0012	0.2315	0.0055	0.0315	0.0002	343	1	211	5	200	1
XRD111.3.18	20	292	592	0.49	0.0527	0.0012	0.2282	0.0054	0.0314	0.0002	315	1	209	5	199	1
XRD111.3.19	20	368	526	0.70	0.0790	0.0024	0.3573	0.0120	0.0325	0.0003	1172	1	310	10	206	2
XRD111.3.20	20	345	596	0.58	0.0492	0.0011	0.2128	0.0051	0.0314	0.0002	159	1	196	5	199	1
XRD111.3.21	16	273	476	0.57	0.0508	0.0013	0.2205	0.0056	0.0315	0.0002	232	1	202	5	200	1

**Table S2. Whole-rock major and trace element data of the Keri rhyolites in the EKOB.**

Sample	XRD110/ 2	XRD110 /3	XRD110 /4	XRD110 /5	XRD110 /6	XRD111 /1	XRD111 /3	XRD111 /4	XRD112 /1	XRD112 /2	XRD112 /3	KR570- 1	KR570- 2	KR570- 3	KR570- 4	KR570- 5
SiO <sub>2</sub>	75.28	75.91	76.02	75.60	75.78	75.84	75.40	75.00	75.72	75.61	75.29	73.26	73.11	72.95	73.56	73.10

TiO <sub>2</sub>	0.11	0.10	0.11	0.11	0.11	0.11	0.11	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.11
Al <sub>2</sub> O <sub>3</sub>	12.47	12.54	12.50	12.48	12.02	12.46	12.34	12.38	12.45	12.50	12.43	13.14	13.30	13.30	13.14	12.93
TFe <sub>2</sub> O <sub>3</sub>	1.90	1.87	1.88	1.74	2.05	1.77	1.82	1.84	1.86	1.85	1.84	1.75	1.85	1.75	1.77	1.76
MnO	0.03	0.03	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.03	0.02	0.03	0.04	0.03	0.03	0.04
MgO	0.01	0.05	0.05	0.03	0.01	0.01	0.08	0.03	0.01	0.01	0.04	0.08	0.05	0.05	0.06	0.05
CaO	0.50	0.54	0.47	0.36	0.36	0.44	0.54	0.39	0.47	0.52	0.47	0.50	0.54	0.44	0.57	0.44
Na <sub>2</sub> O	3.77	2.97	3.39	2.12	2.85	3.71	3.47	3.64	3.90	3.68	3.64	2.73	4.04	2.77	3.75	2.07
K <sub>2</sub> O	4.90	5.58	4.98	6.78	5.88	5.03	5.24	5.27	4.63	5.01	5.13	6.94	5.65	7.26	5.79	8.03
P <sub>2</sub> O <sub>5</sub>	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LOI	0.45	0.53	0.64	0.42	0.40	0.44	0.70	0.52	0.37	0.57	0.55	0.86	0.64	0.70	0.70	0.90
Total	99.43	100.13	100.08	99.67	99.50	99.85	99.73	99.20	99.55	99.90	99.53	99.41	99.34	99.37	99.48	99.43
A/CNK	1.00	1.05	1.06	1.09	1.03	1.01	1.00	1.00	1.01	1.01	1.00	1.02	0.97	1.01	0.98	1.00
A/NK	1.08	1.15	1.14	1.15	1.09	1.08	1.08	1.06	1.09	1.09	1.08	1.09	1.04	1.07	1.06	1.07
σ	2.33	2.22	2.12	2.43	2.32	2.33	2.34	2.48	2.22	2.32	2.38	3.09	3.12	3.36	2.98	3.39
AR	5.03	4.77	4.64	5.52	5.78	5.20	5.18	5.62	4.89	5.01	5.25	5.87	5.67	6.41	5.58	7.18
Li	11.10	10.26	9.72	10.31	12.89	6.50	6.78	5.14	11.30	6.99	8.58	21.40	35.30	20.30	32.70	22.20
Be	6.71	7.01	7.28	5.76	9.42	9.65	6.04	5.74	7.03	6.43	6.53	7.62	7.89	8.18	7.16	7.27
Sc	1.67	1.69	1.67	1.62	2.94	1.56	1.69	1.53	1.48	1.51	1.53	0.35	0.35	0.47	0.46	1.67
V	0.95	0.70	0.68	0.63	0.31	0.59	0.90	0.58	1.43	0.65	0.56	1.74	1.58	1.29	1.25	1.40
Cr	1.11	3.77	2.28	0.39	0.79	30.64	1.48	2.22	1.45	1.62	1.73	1.18	1.59	1.18	1.34	1.31
Ni	19.99	20.54	20.47	15.94	19.61	37.57	19.95	21.10	20.73	19.45	19.72	0.30	0.32	0.42	0.36	0.42
Co	0.16	0.14	0.13	0.17	0.08	0.80	0.18	0.27	0.33	0.36	0.34	0.05	0.04	0.03	0.03	0.06
Cu	3.57	4.83	3.31	4.30	12.18	4.92	3.46	4.81	3.01	1.58	3.36	5.80	7.66	7.07	7.80	9.01
Zn	116.49	91.99	157.21	95.80	126.64	145.58	111.45	90.00	65.41	80.39	88.19	115.00	126.00	121.00	116.00	110.00
Ga	24.78	24.66	24.71	21.88	24.37	25.82	24.77	25.80	25.06	23.85	24.36	30.20	31.30	30.50	30.00	29.90
Rb	430.15	534.38	436.01	717.57	610.21	409.73	402.49	415.23	404.31	408.40	411.14	389.00	280.00	387.00	290.00	458.00

Sr	14.87	31.18	28.47	38.99	23.47	7.90	15.97	9.21	18.73	11.27	12.84	46.80	30.10	34.50	33.70	44.40
Y	11.62	15.34	10.57	8.46	10.85	12.10	14.11	14.10	11.93	11.71	15.51	59.30	61.30	58.80	57.40	61.70
Zr	337.04	339.29	331.30	322.92	583.08	313.32	320.94	320.44	305.28	313.78	316.40	316.00	314.00	316.00	322.00	317.00
Nb	77.29	70.64	70.02	61.48	87.54	69.58	75.65	71.21	69.31	71.27	73.31	82.40	86.80	83.10	80.70	84.00
Cd	0.51	0.24	0.31	0.33	0.36	0.19	0.20	0.20	0.17	0.18	0.20	0.11	0.04	0.07	0.07	0.34
Cs	2.80	5.45	3.39	4.74	4.46	1.47	2.86	1.78	2.52	2.70	2.26	5.93	4.19	6.24	5.97	7.42
Ba	3.70	5.66	5.18	4.18	3.30	6.71	35.84	5.85	6.32	7.22	8.84	23.80	17.20	15.50	15.10	23.90
La	25.22	29.13	24.51	35.94	35.42	32.68	28.69	36.94	27.10	33.25	39.76	65.30	65.60	68.80	64.30	68.30
Ce	75.93	79.72	69.51	81.86	85.15	74.71	71.59	80.44	64.10	78.47	85.43	138.00	141.00	142.00	140.00	140.00
Pr	5.11	5.92	5.13	6.22	6.95	6.53	5.81	6.97	5.65	6.59	7.55	15.90	16.30	16.50	15.40	16.20
Nd	21.06	24.81	21.12	25.51	29.10	26.95	24.37	30.82	23.23	27.64	33.39	55.90	57.80	58.00	56.50	57.10
Sm	4.20	5.14	4.15	4.59	5.87	5.40	4.98	6.06	4.79	5.49	6.72	12.40	12.90	13.10	12.60	12.80
Eu	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.06	0.05	0.06	0.05	0.06
Gd	4.15	4.96	3.96	3.96	5.15	4.79	4.82	5.67	4.50	4.89	6.10	10.80	10.90	11.30	10.80	11.10
Tb	0.38	0.47	0.37	0.32	0.45	0.44	0.44	0.50	0.43	0.44	0.57	1.93	1.94	1.92	1.94	1.97
Dy	2.08	2.65	1.97	1.64	2.25	2.31	2.43	2.64	2.29	2.29	2.98	10.60	10.90	10.90	10.40	11.00
Ho	0.40	0.51	0.37	0.30	0.40	0.43	0.48	0.51	0.44	0.43	0.55	2.00	2.03	2.00	1.97	2.06
Er	1.12	1.43	1.00	0.75	1.04	1.18	1.33	1.34	1.20	1.11	1.49	5.72	5.71	5.72	5.60	5.80
Tm	0.15	0.19	0.13	0.10	0.12	0.15	0.18	0.17	0.16	0.14	0.19	0.84	0.86	0.86	0.84	0.89
Yb	0.88	1.21	0.76	0.54	0.76	0.92	1.08	1.06	0.95	0.86	1.09	5.02	5.14	5.21	4.96	5.24
Lu	0.13	0.17	0.11	0.08	0.11	0.13	0.16	0.15	0.13	0.13	0.16	0.77	0.80	0.78	0.76	0.82
Hf	7.30	7.14	7.03	7.01	12.08	6.82	7.05	6.96	6.69	6.89	6.85	10.70	11.00	10.80	11.30	10.80
Ta	2.18	1.36	1.54	1.51	0.92	1.40	2.44	1.98	1.73	1.93	2.70	5.71	5.98	5.80	5.70	5.87
Pb	27.80	25.75	26.77	36.06	84.72	32.33	17.70	29.30	13.40	12.31	11.42	52.00	72.50	46.50	78.70	62.10
Bi	0.11	0.10	0.09	0.10	0.10	0.10	0.10	0.09	0.10	0.10	0.10	0.15	0.16	0.22	0.13	0.24
Th	8.29	9.06	7.88	9.66	27.81	13.36	8.45	16.35	9.41	15.56	17.58	30.80	31.30	30.20	29.90	31.00

U	3.92	2.92	2.71	3.44	6.64	2.76	2.70	2.63	2.83	3.31	3.18	5.53	5.74	5.84	4.87	5.88
10000Ga/ Al	3.75	3.71	3.73	3.31	3.83	3.91	3.79	3.94	3.80	3.60	3.70	4.34	4.45	4.33	4.31	4.37
(La/Sm) <sub>N</sub>	3.88	3.66	3.82	5.05	3.90	3.91	3.72	3.94	3.65	3.91	3.82	3.40	3.28	3.39	3.29	3.44
(La/Yb) <sub>N</sub>	20.47	17.31	23.04	47.64	33.60	25.39	19.14	24.89	20.45	27.60	26.09	9.33	9.15	9.47	9.30	9.35
δEu	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02

Note: LOI, loss on ignition; subscript N-chondrite normalized value; A/CNK = (Al<sub>2</sub>O<sub>3</sub>)/(CaO + K<sub>2</sub>O+Na<sub>2</sub>O) molar ratio; A/NK = (Al<sub>2</sub>O<sub>3</sub>)/(K<sub>2</sub>O+Na<sub>2</sub>O) molar ratio; δEu= (Eu)<sub>N</sub>/[(Sm)<sub>N</sub> × (Gd)<sub>N</sub>]<sup>1/2</sup>;  
Chondrite REE values are after Sun et al. [\[72\]](#).