**Supplementary Information to**

**40Ar/39Ar age of the onset of high-Ti phase of the Emeishan volcanism strengthens the link with the end-Guadalupian mass extinction**

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**Figure S1.** **Transition from plagioclase-phyric unit (bottom) through few tens centimeter thick tuff unit (middle) to aphyric basalt unit (top) of Qiaojia extrusive section (Yunnan province of China).** The sample QJ 13-1 was collected at N27º4′47′′ E102º59′27′′ about 25 m below the contact and the sample E-X2-14 was collected at N27º4′45′′ E102º59′27′′ about 15 m below the sample QJ 13-1. All samples were taken at outcrops along the road seen in the frontal part of the photograph.

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**Figure S2. Samples QJ 13-1 (left) and E-X2-14 (right) under polarized microscope.** Thin section studies show that the phenocrysts are mainly subhedrual-tabular plagioclases (Pl, 2-7 mm, 15-30 %), xenomorphic pyroxene (Px, 0.3-2 mm, 2-5 %) and olivine (1-2 %). The dark groundmass is characterized by dolerite or intersertal texture with fine-grained plagioclase, clinopyroxene, Fe-Ti oxide and glass. Since plagioclase phenocrysts are very fresh and were therefore selected for 40Ar/39Ar dating analysis.

**Table S1. Argon isotope data for four plagioclase aliquots (Q5, Q6, Q9 and Q10) from the sample QJ 13-1.** The data were analyzed at the Noble Gas Lab, Institute of Geology and Geophysics, Chinese Academy of Sciences (Beijing, China).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Temp | 40Ar | ±σ | 39Ar | ±σ | 38Ar | ±σ | 37Ar | ±σ | 36Ar | ±σ | %40Ar\* | 40Ar\*/39ArK | ± 2σ | Age | ± 2σ | K/Ca |
| (°C) | （volts） | （volts） | （volts） | （volts） | （volts） | （volts） | （volts） | （volts） | （volts） | （volts) |  |  |  | (Ma) | (Ma) |  |
| Q5, 15 mg plagioclase, J = 0.00388628 ± 0.00001205 (1σ) |  |  |  |  |  |  |  |  |  |  |  |
| 760 | 0.0851240 | 0.0005459 | 0.0020186 | 0.0000253 | 0.0000299 | 0.0000003 | 0.0279181 | 0.0004809 | 0.0000369 | 0.0000008 | 89.62 | 38.17533 | 1.13609 | 253.04 | 7.03 | 0.0308 |
| 860 | 0.2237348 | 0.0008740 | 0.0054137 | 0.0000429 | 0.0000748 | 0.0000008 | 0.0765051 | 0.0013406 | 0.0000709 | 0.0000014 | 93.21 | 38.91917 | 0.72843 | 257.63 | 4.49 | 0.0301 |
| 960 | 0.2297791 | 0.0007843 | 0.0057104 | 0.0000399 | 0.0000737 | 0.0000008 | 0.0802545 | 0.0013677 | 0.0000456 | 0.0000009 | 96.80 | 39.35263 | 0.63634 | 260.31 | 3.92 | 0.0303 |
| 1060 | 0.1549140 | 0.0005944 | 0.0039474 | 0.0000397 | 0.0000494 | 0.0000005 | 0.0548626 | 0.0009418 | 0.0000235 | 0.0000005 | 98.23 | 38.94303 | 0.85788 | 257.78 | 5.29 | 0.0306 |
| 1150 | 0.1543648 | 0.0006543 | 0.0038958 | 0.0000396 | 0.0000490 | 0.0000005 | 0.0547405 | 0.0009463 | 0.0000240 | 0.0000005 | 98.12 | 39.27716 | 0.88509 | 259.84 | 5.45 | 0.0303 |
| 1280 | 0.2361965 | 0.0008391 | 0.0059690 | 0.0000395 | 0.0000757 | 0.0000008 | 0.0840915 | 0.0014339 | 0.0000354 | 0.0000008 | 98.30 | 39.29884 | 0.61015 | 259.97 | 3.76 | 0.0302 |
| 1400 | 0.1137727 | 0.0008933 | 0.0028692 | 0.0000318 | 0.0000357 | 0.0000004 | 0.0399208 | 0.0007202 | 0.0000176 | 0.0000004 | 98.12 | 39.30317 | 1.08902 | 260.00 | 6.71 | 0.0306 |
| Q6, 15mg plagioclase, J = 0.00388449 ± 0.00001204 (1σ) |  |  |  |  |  |  |  |  |  |  |  |
| 790 | 0.1396843 | 0.0007681 | 0.0032565 | 0.0000255 | 0.0000496 | 0.0000006 | 0.0442729 | 0.0007883 | 0.0000655 | 0.0000013 | 88.47 | 38.32548 | 0.81531 | 253.86 | 5.04 | 0.0313 |
| 890 | 0.2580414 | 0.0007423 | 0.0063465 | 0.0000403 | 0.0000853 | 0.0000009 | 0.0874399 | 0.0014948 | 0.0000695 | 0.0000014 | 94.61 | 38.85376 | 0.57564 | 257.12 | 3.55 | 0.0309 |
| 1000 | 0.2270623 | 0.0007908 | 0.0057264 | 0.0000482 | 0.0000730 | 0.0000008 | 0.0787573 | 0.0013608 | 0.0000379 | 0.0000008 | 97.72 | 39.13705 | 0.73249 | 258.87 | 4.51 | 0.0310 |
| 1120 | 0.1985615 | 0.0007314 | 0.0050028 | 0.0000330 | 0.0000623 | 0.0000007 | 0.0689980 | 0.0011874 | 0.0000278 | 0.0000006 | 98.54 | 39.50375 | 0.61577 | 261.13 | 3.79 | 0.0309 |
| 1250 | 0.3238544 | 0.0007503 | 0.0081355 | 0.0000454 | 0.0001002 | 0.0000011 | 0.1111867 | 0.0019197 | 0.0000478 | 0.0000010 | 98.28 | 39.51242 | 0.49832 | 261.18 | 3.07 | 0.0312 |
| 1400 | 0.1275630 | 0.0009023 | 0.0031381 | 0.0000254 | 0.0000399 | 0.0000006 | 0.0434129 | 0.0007744 | 0.0000239 | 0.0000005 | 97.06 | 39.85197 | 0.88564 | 263.27 | 5.44 | 0.0308 |
| Q9, 15mg plagioclase, J = 0.00386670 ± 0.00001199 (1σ) |  |  |  |  |  |  |  |  |  |  |  |
| 790 | 0.1028837 | 0.0006387 | 0.0022726 | 0.0000274 | 0.0000388 | 0.0000004 | 0.0307794 | 0.0005553 | 0.0000588 | 0.0000012 | 85.27 | 38.98573 | 1.15333 | 256.83 | 7.08 | 0.0314 |
| 890 | 0.2126233 | 0.0008988 | 0.0051041 | 0.0000367 | 0.0000708 | 0.0000008 | 0.0705884 | 0.0012603 | 0.0000609 | 0.0000012 | 94.04 | 39.57080 | 0.69898 | 260.42 | 4.28 | 0.0308 |
| 1000 | 0.2473243 | 0.0009211 | 0.0061406 | 0.0000399 | 0.0000773 | 0.0000008 | 0.0826393 | 0.0014981 | 0.0000427 | 0.0000009 | 97.45 | 39.63752 | 0.61577 | 260.83 | 3.77 | 0.0316 |
| 1120 | 0.1711314 | 0.0007964 | 0.0042962 | 0.0000463 | 0.0000527 | 0.0000006 | 0.0567224 | 0.0010043 | 0.0000250 | 0.0000005 | 98.23 | 39.50706 | 0.94593 | 260.03 | 5.80 | 0.0323 |
| 1250 | 0.2470505 | 0.0009015 | 0.0061614 | 0.0000466 | 0.0000748 | 0.0000008 | 0.0806436 | 0.0014243 | 0.0000371 | 0.0000008 | 98.07 | 39.69750 | 0.68559 | 261.20 | 4.20 | 0.0325 |
| 1400 | 0.1464656 | 0.0008202 | 0.0037187 | 0.0000335 | 0.0000448 | 0.0000005 | 0.0502029 | 0.0009420 | 0.0000145 | 0.0000005 | 99.71 | 39.66057 | 0.85719 | 260.97 | 5.25 | 0.0315 |
| Q10, 15mg plagioclase, J = 0.00385152 ± 0.00001194 (1σ) |  |  |  |  |  |  |  |  |  |  |  |
| 800 | 0.1163697 | 0.0008639 | 0.0027400 | 0.0000291 | 0.0000397 | 0.0000005 | 0.0344904 | 0.0007011 | 0.0000496 | 0.0000010 | 89.59 | 38.39944 | 1.06777 | 252.30 | 6.55 | 0.0338 |
| 890 | 0.2255059 | 0.0011505 | 0.0053988 | 0.0000454 | 0.0000734 | 0.0000008 | 0.0729595 | 0.0014800 | 0.0000627 | 0.0000013 | 94.23 | 39.74694 | 0.81893 | 260.55 | 5.00 | 0.0315 |
| 1000 | 0.2333267 | 0.0011773 | 0.0057287 | 0.0000558 | 0.0000735 | 0.0000008 | 0.0758678 | 0.0015122 | 0.0000460 | 0.0000010 | 96.65 | 39.74657 | 0.89647 | 260.54 | 5.47 | 0.0322 |
| 1120 | 0.1960595 | 0.0011328 | 0.0048072 | 0.0000519 | 0.0000603 | 0.0000007 | 0.0631505 | 0.0012870 | 0.0000347 | 0.0000008 | 97.22 | 40.03387 | 1.00389 | 262.30 | 6.12 | 0.0324 |
| 1250 | 0.3241557 | 0.0007897 | 0.0080880 | 0.0000498 | 0.0000996 | 0.0000011 | 0.1059922 | 0.0020563 | 0.0000526 | 0.0000011 | 97.71 | 39.53464 | 0.54487 | 259.25 | 3.33 | 0.0325 |
| 1400 | 0.1300147 | 0.0008381 | 0.0032754 | 0.0000291 | 0.0000375 | 0.0000006 | 0.0403435 | 0.0008266 | 0.0000141 | 0.0000011 | 99.19 | 39.72626 | 0.90659 | 260.42 | 5.53 | 0.0346 |
| Notes: Signals in this table have been corrected for blank, mass discrimination and radioactive decay of 37Ar and 39Ar. |  |  |  |  |  |  |  |

**Table S2. Argon isotope data for plagioclase from the sample E-X2-14**. The data were analyzed at the Center for Geodynamics and Geochronology of the Institute of the Earth’s Crust, Siberian Branch of the Russian Academy of Sciences (Irkutsk, Russia).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Temp | 40Ar | ±σ | 39Ar | ±σ | 38Ar | ±σ | 37Ar | ±σ | 36Ar | ±σ | %40Ar\* | 40Ar\*/39ArK | ± 2σ | Age | ± 2σ | K/Ca |
| (°C) | （fA） | （fA） | （fA） | （fA） | （fA） | （fA） | （fA） | （fA） | （fA） | （fA） |  |  |  | (Ma) | (Ma) |  |
| E-X2-14, 46 mg plagioclase, MSWD = 0.4, J = 0.004677 ± 0.000024 (1σ) |  |  |  |  |  |  |  |  |  |  |  |
| 550 | 477.68  | 1.59  | 6.60  | 0.19  | 0.31  | 0.15  | 76.78  | 1.49  | 1.02  | 0.17  | 36.46 | 26.38  | 3.71  | 212.93 | 29.94 | 0.0232 |
| 640 | 2840.07  | 9.65  | 31.39  | 0.27  | 1.95  | 0.16  | 397.16  | 2.33  | 6.46  | 0.18  | 32.10 | 29.05  | 0.85  | 233.14 | 6.81 | 0.0214 |
| 715 | 1835.25  | 5.97  | 51.77  | 0.29  | 1.19  | 0.17  | 662.99  | 2.86  | 0.52  | 0.17  | 91.55 | 32.45  | 1.73  | 258.61 | 13.76 | 0.0211 |
| 830 | 3225.80  | 10.50  | 91.68  | 0.36  | 1.79  | 0.16  | 1163.08  | 4.32  | 0.66  | 0.17  | 93.91 | 33.04  | 1.01  | 262.99 | 8.03 | 0.0213 |
| 935 | 2974.50  | 9.85  | 84.20  | 0.39  | 2.06  | 0.16  | 1065.08  | 4.01  | 0.68  | 0.19  | 93.22 | 32.93  | 1.24  | 262.18 | 9.86 | 0.0214 |
| 1100 | 3174.99  | 10.47  | 85.38  | 0.40  | 2.46  | 0.17  | 1073.86  | 4.08  | 1.36  | 0.16  | 87.23 | 32.44  | 0.95  | 258.50 | 7.54 | 0.0215 |
| 1275 | 3708.32  | 12.46  | 109.07  | 0.42  | 2.30  | 0.16  | 1374.43  | 5.05  | 0.22  | 0.16  | 98.22 | 33.39  | 0.90  | 265.60 | 7.15 | 0.0215 |
| 1395 | 3338.41  | 11.39  | 95.95  | 0.40  | 2.43  | 0.16  | 1197.22  | 4.44  | 0.62  | 0.16  | 94.47 | 32.87  | 0.93  | 261.72 | 7.42 | 0.0217 |
| 1525 | 2789.28  | 9.32  | 74.89  | 0.35  | 2.29  | 0.15  | 932.87  | 3.63  | 1.17  | 0.16  | 87.50 | 32.59  | 1.08  | 259.64 | 8.63 | 0.0217 |
| 1655 | 2147.29  | 7.35  | 12.03  | 0.28  | 2.73  | 0.17  | 120.38  | 1.86  | 6.89  | 0.18  | 4.20 | 7.50  | 0.40  | 63.11 | 3.38 | 0.0270 |
| Notes: Signals in this table have been corrected for blank, mass discrimination and radioactive decay of 37Ar, 39Ar |  |  |  |  |  |  |  |

**Table S3. Summary of reported ages from the ELIP (updated after Shellnutt (**2014**)).**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sample | Rock type | Method | Material | Original Ages (Ma) | Recalculated Ages (Ma) | Reference |
| JW-1 | Felsic Ignimbrite | U-Pb CA-TIMS | Zircon | 259.1 ± 0.5 |  | Zhong *et al.* (2014) |
| GS03-111 | Mafic dyke | U-Pb CA-TIMS | Zircon | 257.6 ± 0.5 |  | Shellnutt *et al.* (2012) |
| GS05-005 | Mafic dyke | U-Pb CA-TIMS | Zircon | 259.2 ± 0.4 |  | Shellnutt *et al.* (2012) |
| GS03-105 | Mafic dyke | U-Pb CA-TIMS | Zircon | 259.5 ± 0.8 |  | Shellnutt *et al*. (2012) |
| GS05-067 | Syenite | U-Pb CA-TIMS | Zircon | 259.6 ± 0.5 |  | Shellnutt *et al*. (2012) |
| DHS-1 | Syenite | U-Pb CA-TIMS | Zircon | 259.1 ± 0.5 |  | Shellnutt *et al*. (2012) |
| GS05-059 | Syenite | U-Pb CA-TIMS | Zircon | 258.9 ± 0.7 |  | Shellnutt *et al*. (2012) |
| GS04-143 | Granite | U-Pb CA-TIMS | Zircon | 258.4 ± 0.6 |  | Shellnutt *et al*. (2012) |
| HGF-01 | Gabbro | U-Pb TIMS | Zircon | 259.3 ± 1.3 |  | Zhong and Zhu (2006) |
| DS-01 | Gabbro | U-Pb TIMS | Zircon | 260 ± 0.8 |  | Zhong and Zhu (2006) |
| HG-0701 | Gabbro | U-Pb Probe (SIMS) | Zircon | 258.7 ± 2 |  | Zhong *et al*. (2011) |
| HG-0703 | Gabbro | U-Pb Probe (SIMS) | Zircon | 258.9 ± 2.1 |  | Zhong *et al.* (2011) |
| GS04-077 | Mafic dyke | U-Pb Probe (SHRIMP) | Zircon | 261 ± 5 |  | Shellnutt and Jahn (2011a) |
| GS03-092 | Syenite | U-Pb Probe (SHRIMP) | Zircon | 259 ± 5 |  | Shellnutt *et al.* (2009) |
| GS04-016 | Syenite | U-Pb Probe (SHRIMP) | Zircon | 258 ± 4 |  | Shellnutt *et al.* (2009) |
| GS05-056B | Gabbro | U-Pb Probe (SHRIMP) | Zircon | 261 ± 2 |  | Shellnutt et al. (2009) |
| WB-0604 | Syenite | U-Pb Probe (SHRIMP) | Zircon | 253 ± 2 |  | Zhong *et al*. (2009) |
| Jinbaoshan | Wehrlite | U-Pb Probe (SHRIMP) | Zircon | 260.6 ± 3.5 |  | Tao *et al.* (2009) |
| Jinbaoshan | Hornblendite | U-Pb Probe (SHRIMP) | Zircon | 260.7 ± 5.6 |  | Tao *et al*. (2009) |
| TH-14 | Granite | U-Pb Probe (SHRIMP) | Zircon | 261 ± 2 |  | Xu *et al.* (2008) |
| MY-5 | Pyroxene syenite | U-Pb Probe (SHRIMP) | Zircon | 260 ± 4 |  | Xu *et al.* (2008) |
| HG-1 | Granite | U-Pb Probe (SHRIMP) | Zircon | 255 ± 4 |  | Xu *et al.* (2008) |
| SL-2 | Diorite | U-Pb Probe (SHRIMP) | Zircon | 260 ± 4 |  | Xu *et al.* (2008) |
| HC-2 | Quartz syenite | U-Pb Probe (SHRIMP) | Zircon | 266 ± 5 |  | Xu *et al*. (2008) |
| BC-Tu#-3 | Rhyolitic tuff | U-Pb Probe (SHRIMP) | Zircon | 238 ± 3 |  | Xu *et al.* (2008) |
| 20BS-116 | Basalt | U-Pb Probe (SHRIMP) | Zircon | 260 ± 5 |  | Fan *et al*. (2008) |
| 20BS-76 | Basalt | U-Pb Probe (SHRIMP) | Zircon | 259 ± 4 |  | Fan *et al*. (2008) |
| LM18 | Gabbro | U-Pb Probe (SHRIMP) | Zircon | 263 ± 3 |  | Zhou *et al.* (2008) |
| Zb4 | Diorite | U-Pb Probe (SHRIMP) | Zircon | 261 ± 1 |  | Zhou *et al.* (2008) |
| MY6 | Syenite | U-Pb Probe (SHRIMP) | Zircon | 262 ± 2 |  | Zhou *et al.* (2008) |
| GS03-122 | Syenite | U-Pb Probe (SHRIMP) | Zircon | 252 ± 3 |  | Shellnutt and Zhou (2008a) |
| GS04-119 | Mafic dyke | U-Pb Probe (SHRIMP) | Zircon | 242 ± 2 |  | Shellnutt *et al.* (2008b) |
| LQ-3 | Nepheline syenite | U-Pb Probe (SHRIMP) | Zircon | 262 ± 4 |  | Luo *et al*. (2007) |
| GS05-065 | Syenite | U-Pb Probe (SHRIMP) | Zircon | 260 ± 2 |  | Shellnutt and Zhou (2007) |
| ALH-0401 | Granite | U-Pb Probe (SHRIMP) | Zircon | 251 ± 6 |  | Zhong *et al*. (2007) |
| CD-0401 | Granite | U-Pb Probe (SHRIMP) | Zircon | 261 ± 4 |  | Zhong *et al.* (2007) |
| JW-1 | Felsic ignimbrite | U-Pb Probe (SHRIMP) | Zircon | 263 ± 4 |  | He *et al*. (2007) |
| CT-2 | Clayey tuff | U-Pb Probe (SHRIMP) | Zircon | 260 ± 4 |  | He *et al*. (2007) |
| ZJ-3 | Sediments | U-Pb Probe (SHRIMP) | Zircon | 257 ± 3 |  | He *et al*. (2007) |
| SW-5 | Sediments | U-Pb Probe (SHRIMP) | Zircon | 260 ± 5 |  | He *et al*. (2007) |
| FL44 | Diorite | U-Pb Probe (SHRIMP) | Zircon | 258 ± 3 |  | Zhou *et al*. (2006) |
| FL7 | Diabase | U-Pb Probe (SHRIMP) | Zircon | 260 ± 3 |  | Zhou *et al*. (2006) |
| PZH72 | Leucogabbro | U-Pb Probe (SHRIMP) | Zircon | 263 ± 3 |  | Zhou *et al.* (2005) |
| 20BS-76 | Basalt | U-Pb Probe (SHRIMP) | Zircon | 253.7 ± 6.1 |  | Fan *et al.* (2004) |
| SCHL-66 | Ultramafic dyke | U-Pb Probe (SHRIMP) | Zircon | 262 ± 3 |  | Guo *et al.* (2004) |
| Xinjie | Gabbro | U-Pb Probe (SHRIMP) | Zircon | 259 ± 3 |  | Zhou *et al*. (2002) |
| Mianhuadi | Metagabbro | U-Pb Probe (LA-ICPMS) | Zircon | 259.6 ± 0.8 |  | Zhou *et al*. (2013) |
| Panzhihua | Picritic dyke | U-Pb Probe (LA-ICPMS) | Zircon | 261.4 ± 4.6 |  | Hou *et al*. (2013) |
| Guanxi | Basalt | U-Pb Probe (LA-ICPMS) | Zircon | 257 ± 9 |  | Lai *et al.* (2012) |
| TH-1 | Gabbro | U-Pb Probe (LA-ICPMS) | Zircon | 264 ± 3 |  | Shellnutt *et al.* (2011b) |
| CD-0701 | Mafic enclave | U-Pb Probe (LA-ICPMS) | Zircon | 259.5 ± 2.7 |  | Zhong *et al*. (2011) |
| CD-0703 | Mafic enclave | U-Pb Probe (LA-ICPMS) | Zircon | 259 ± 3.1 |  | Zhong *et al.* (2011) |
| BM-0703 | Gabbro | U-Pb Probe (LA-ICPMS) | Zircon | 258.2 ± 2.2 |  | Zhong *et al.* (2011) |
| TJ-0602 | Syenite | U-Pb Probe (LA-ICPMS) | Zircon | 258.5 ± 2.3 |  | Zhong *et al*. (2011) |
| TJ-0401 | Syenite | U-Pb Probe (LA-ICPMS) | Zircon | 257.8 ± 2.6 |  | Zhong *et al*. (2011) |
| CD-0401 | Granite | U-Pb Probe (LA-ICPMS) | Zircon | 256.2 ± 1.5 |  | Zhong *et al.* (2011) |
| WB-0703-1 | Gabbro | U-Pb Probe (LA-ICPMS) | Zircon | 257.9 ± 2.4 |  | Zhong *et al.* (2011) |
| WB-0703-1 | Gabbro | U-Pb Probe (LA-ICPMS) | Zircon | 255.4 ± 3.1 |  | Zhong *et al.* (2011) |
| WB-0701-1 | Syenodiorite | U-Pb Probe (LA-ICPMS) | Zircon | 259.4 ± 1.1 |  | Zhong *et al*. (2011) |
| WB-0701-6 | Syenodiorite | U-Pb Probe (LA-ICPMS) | Zircon | 259.2 ± 1.3 |  | Zhong *et al*. (2011) |
| WB-0702 | Syenodiorite | U-Pb Probe (LA-ICPMS) | Zircon | 257.8 ± 2.3 |  | Zhong *et al*. (2011) |
| WB-0705 | Syenodiorite | U-Pb Probe (LA-ICPMS) | Zircon | 259.8 ± 1.6 |  | Zhong *et al*. (2011) |
| WB-0604 | Syenite | U-Pb Probe (LA-ICPMS) | Zircon | 255.8 ± 1.8 |  | Zhong *et al*. (2011) |
| ALH-0401 | Granite | U-Pb Probe (LA-ICPMS) | Zircon | 256.8 ± 2.8 |  | Zhong *et al*. (2011) |
| ALH-0702 | Granite | U-Pb Probe (LA-ICPMS) | Zircon | 256.2 ± 3 |  | Zhong *et al*. (2011) |
| TH-0701 | Gabbro | U-Pb Probe (LA-ICPMS) | Zircon | 258.8 ± 2.3 |  | Zhong *et al*. (2011) |
| 20BS-71 | Basalt | 40Ar/39Ar | Whole rock | 253.6 ± 0.4 | 256.1 ± 0.4 | Fan *et al*. (2004) |
| 20BS-99 | Basalt | 40Ar/39Ar | Whole rock | 255.4 ± 0.4 | 258 ± 0.4 | Fan *et al*. (2004) |
| 20BS-119 | Basalt | 40Ar/39Ar | Whole rock | 256.2 ± 0.8 | 258.8 ± 0.8 | Fan *et al*. (2004) |
| EM-90 | Basalt | 40Ar/39Ar | Whole rock | 251.5 ± 0.9 | 253.2 ± 0.9 | Lo e*t al*. (2002) |
| EM-PZH01 | Syenite | 40Ar/39Ar | Biotite | 254.6 ± 1.3 | 256.4 ± 1.3 | Lo *et al*. (2002) |
| EM-37 | Basalt | 40Ar/39Ar | Whole rock | 252 ± 1.3 | 253.7 ± 1.3 | Lo *et al*. (2002) |
| EM-MMG05 | Syenite | 40Ar/39Ar | Biotite | 252 ± 1.3 | 253.7 ± 1.3 | Lo *et al*. (2002) |
| EM-PZH11 | Syenite | 40Ar/39Ar | Biotite | 251.6 ± 1.6 | 253.3 ± 1.6 | Lo *et al*. (2002) |
| EM-86 | Trachyte | 40Ar/39Ar | Hornblende | 252.8 ± 1.3 | 254.5 ± 1.3 | Lo *et al.* (2002) |
| EM-15 | Basalt | 40Ar/39Ar | Whole rock | 255.9 ± 5.7 | 257.7 ± 5.8 | Lo *et al.* (2002) |
| EM-52 | Basalt | 40Ar/39Ar | Whole rock | 252.1 ± 1.4 | 253.8 ± 1.5 | Lo *et* *al.* (2002) |
| Ch-97-90 | Pyroxeneite | 40Ar/39Ar | Phlogopite | 254 ± 5 | 256.4 ± 5 | Boven *et al.* (2002) |
| Q 13-1 Q5 | Basalt | 40Ar/39Ar | Plagioclase | 259.3 ± 2.4 |  | This study |
| Q 13-1 Q6 | Basalt | 40Ar/39Ar | Plagioclase | 259.7 ± 2.5 |  | This study |
| Q 13-1 Q9 | Basalt | 40Ar/39Ar | Plagioclase | 260.5 ± 2.5 |  | This study |
| Q 13-1 Q10 | Basalt | 40Ar/39Ar | Plagioclase | 260.2 ± 2.6 |  | This study |
| E-X2-14 | Basalt | 40Ar/39Ar | Plagioclase | 261.7 ± 3.4 |  | This study |
|  |  |  |  |  |  |  |
| Note: Fan *et al.* (2004) used the ZBH-25 40Ar/39Ar standard, which was not intercalibrated against any other international standards. So, we recalculated the ages from Fan *et al.* (2004) by assuming that they should be 1% older.  |

**Supplementary References**

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