

## **SUPPLEMENTARY MATERIAL**

For the paper

The Cuitzeo granitic xenolith: evidence of an  
Early Miocene magma plumbing system in central Mexico

by:

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Table S2. Trace-element and rare earth element (REE) zircon geochemistry measured by la-ICP-MS.

| Element   | P    | Ti     | Y    | Nb   | La   | Ce    | Pr   | Nd   | Sm   | Eu  | Gd   | Tb   | Dy    | Ho    | Er    | Yb     | Lu    | Hf    | Pb  | Th     | U      |
|-----------|------|--------|------|------|------|-------|------|------|------|-----|------|------|-------|-------|-------|--------|-------|-------|-----|--------|--------|
| (ppm)     |      |        |      |      |      |       |      |      |      |     |      |      |       |       |       |        |       |       |     |        |        |
| Zircon_01 | 220  | 1.7    | 1491 | 6.2  | 0.0  | 20.6  | 0.0  | 0.9  | 2.3  | 0.1 | 19.3 | 7.9  | 111.3 | 47.1  | 240.7 | 555.0  | 123.2 | 11100 | 1.8 | 202.0  | 579.0  |
| Zircon_02 | -300 | 4.2    | 1154 | 3.2  | 0.0  | 14.4  | 0.0  | 1.0  | 2.0  | 0.2 | 16.1 | 6.4  | 85.5  | 36.6  | 183.8 | 418.0  | 93.5  | 10060 | 1.0 | 115.3  | 309.2  |
| Zircon_03 | 150  | 3.1    | 1280 | 3.8  | 1.0  | 20.4  | 0.3  | 2.2  | 2.6  | 0.2 | 18.4 | 7.5  | 97.1  | 41.5  | 204.6 | 441.0  | 96.5  | 10310 | 1.3 | 153.5  | 375.0  |
| Zircon_04 | 250  | 4.1    | 1540 | 3.8  | 0.8  | 24.4  | 0.3  | 2.1  | 3.7  | 0.4 | 23.2 | 9.1  | 120.3 | 49.6  | 237.8 | 508.0  | 106.1 | 10040 | 1.7 | 304.9  | 516.0  |
| Zircon_05 | -380 | 2.8    | 1505 | 4.8  | 0.1  | 18.7  | 0.0  | 1.0  | 2.8  | 0.3 | 20.7 | 8.0  | 111.6 | 48.4  | 244.6 | 563.0  | 122.2 | 10840 | 1.4 | 154.8  | 434.0  |
| Zircon_06 | 1300 | 3.3    | 4270 | 19.4 | 0.0  | 106.3 | 0.2  | 4.3  | 11.3 | 0.3 | 78.4 | 29.8 | 378.4 | 152.9 | 726.0 | 1486.0 | 301.1 | 11610 | 8.1 | 1523.0 | 2473.0 |
| Zircon_07 | 390  | 3.1    | 1111 | 2.7  | 2.7  | 23.2  | 0.8  | 4.2  | 3.1  | 0.2 | 17.6 | 6.7  | 86.6  | 35.5  | 171.4 | 365.5  | 76.3  | 10230 | 1.3 | 200.5  | 402.0  |
| Zircon_08 | 1790 | 7.0    | 1627 | 3.0  | 0.7  | 12.4  | 0.2  | 2.0  | 3.9  | 0.1 | 27.1 | 10.2 | 134.3 | 54.3  | 255.3 | 512.0  | 103.0 | 10120 | 1.1 | 121.5  | 324.0  |
| Zircon_09 | 2790 | 3.2    | 1319 | 4.1  | 8.0  | 40.8  | 2.5  | 11.4 | 5.5  | 0.3 | 21.6 | 8.2  | 104.6 | 42.7  | 204.9 | 429.0  | 89.7  | 10840 | 1.5 | 224.4  | 460.1  |
| Zircon_10 | 250  | 2.5    | 1720 | 2.4  | 0.0  | 14.9  | 0.1  | 1.7  | 5.3  | 0.3 | 33.6 | 12.0 | 148.5 | 58.5  | 267.7 | 517.0  | 104.3 | 9840  | 1.1 | 175.4  | 344.7  |
| Zircon_11 | 530  | 1.4    | 2580 | 4.3  | 0.1  | 34.4  | 0.1  | 3.8  | 8.1  | 0.3 | 51.9 | 19.7 | 235.0 | 95.2  | 444.0 | 887.0  | 174.0 | 12450 | 2.8 | 560.0  | 1020.0 |
| Zircon_12 | -10  | 2.1    | 1949 | 3.5  | 0.0  | 19.4  | 0.1  | 2.3  | 5.8  | 0.4 | 35.7 | 12.5 | 159.1 | 64.4  | 309.8 | 644.0  | 135.7 | 10500 | 1.4 | 228.0  | 454.0  |
| Zircon_13 | 310  | 3.1    | 1710 | 1.7  | 0.0  | 15.0  | 0.1  | 2.4  | 6.0  | 0.7 | 34.7 | 12.4 | 151.0 | 59.8  | 275.0 | 541.0  | 110.0 | 10570 | 1.0 | 195.0  | 324.0  |
| Zircon_14 | 1810 | 3.5    | 1368 | 4.1  | 9.9  | 38.3  | 3.3  | 17.3 | 6.6  | 0.3 | 25.2 | 9.2  | 113.2 | 45.9  | 209.5 | 412.4  | 85.1  | 9950  | 1.2 | 152.7  | 346.1  |
| Zircon_15 | 1450 | 2.4    | 1275 | 4.1  | 10.4 | 43.2  | 3.4  | 15.8 | 5.2  | 0.2 | 21.5 | 7.8  | 102.0 | 41.9  | 202.5 | 428.3  | 89.5  | 11620 | 1.4 | 184.9  | 461.5  |
| Zircon_16 | 70   | 2.3    | 1078 | 3.2  | 0.0  | 16.5  | 0.0  | 0.9  | 2.2  | 0.2 | 15.4 | 6.4  | 82.4  | 35.3  | 172.4 | 381.1  | 78.9  | 10840 | 1.2 | 176.0  | 393.3  |
| Zircon_17 | 720  | 1.0    | 1602 | 4.4  | 0.0  | 18.5  | 0.1  | 1.1  | 3.5  | 0.1 | 25.3 | 9.8  | 130.3 | 53.6  | 250.8 | 517.0  | 106.6 | 11440 | 1.4 | 184.2  | 437.0  |
| Zircon_18 | 260  | 2.5    | 1580 | 4.9  | 0.0  | 20.9  | 0.1  | 1.4  | 4.0  | 0.1 | 26.4 | 10.3 | 130.4 | 53.0  | 246.6 | 481.0  | 99.0  | 11200 | 1.5 | 192.3  | 417.0  |
| Zircon_19 | 7300 | 4.5    | 1417 | 4.2  | 51.0 | 138.0 | 16.5 | 74.0 | 18.5 | 0.9 | 32.7 | 9.1  | 110.9 | 45.0  | 227.2 | 512.0  | 113.2 | 10640 | 1.2 | 132.0  | 342.7  |
| Zircon_20 | 2190 | 4.0    | 2539 | 11.0 | 3.2  | 71.9  | 1.0  | 6.9  | 8.1  | 0.4 | 50.9 | 18.7 | 227.8 | 89.7  | 411.4 | 795.0  | 162.0 | 10380 | 4.5 | 1627.0 | 1383.0 |
| Zircon_21 | 510  | 5.5    | 1758 | 4.3  | 0.0  | 24.5  | 0.1  | 1.5  | 3.8  | 0.4 | 26.1 | 10.2 | 134.0 | 56.2  | 274.6 | 577.0  | 122.1 | 9780  | 1.7 | 330.9  | 549.0  |
| Zircon_22 | 260  | 3.3    | 1203 | 3.7  | 1.0  | 16.7  | 0.4  | 2.5  | 3.2  | 0.1 | 19.5 | 7.6  | 96.9  | 39.9  | 192.5 | 386.0  | 79.6  | 11410 | 1.0 | 110.1  | 285.0  |
| Zircon_23 | -300 | 12.1   | 1188 | 2.9  | 0.4  | 17.9  | 0.1  | 1.2  | 2.8  | 0.3 | 17.5 | 6.9  | 92.5  | 37.9  | 189.3 | 405.0  | 87.0  | 10060 | 1.1 | 178.9  | 334.0  |
| Zircon_24 | 3180 | 4.5    | 1660 | 3.6  | 8.1  | 37.6  | 2.2  | 12.1 | 6.3  | 0.4 | 29.3 | 10.5 | 131.4 | 54.3  | 259.4 | 521.0  | 106.0 | 10100 | 1.4 | 202.6  | 391.5  |
| Zircon_25 | 560  | 2.3    | 1591 | 4.5  | 0.0  | 21.5  | 0.0  | 1.3  | 3.0  | 0.3 | 23.6 | 9.3  | 120.8 | 52.1  | 253.4 | 558.0  | 122.5 | 9680  | 1.7 | 244.0  | 472.0  |
| Zircon_26 | 1050 | 2.6    | 2285 | 2.6  | 1.6  | 18.7  | 0.7  | 6.6  | 9.4  | 0.5 | 52.4 | 17.7 | 209.2 | 81.7  | 363.0 | 639.0  | 125.6 | 10160 | 1.3 | 210.2  | 385.0  |
| Zircon_27 | 3690 | 6.6    | 1710 | 3.5  | 3.1  | 30.4  | 1.0  | 5.9  | 4.6  | 0.5 | 27.5 | 10.9 | 133.6 | 55.5  | 264.7 | 539.0  | 114.9 | 9210  | 2.0 | 513.0  | 601.0  |
| Zircon_28 | 1850 | 4.7    | 1522 | 2.7  | 0.0  | 13.8  | 0.1  | 1.4  | 3.4  | 0.4 | 22.8 | 8.8  | 117.1 | 48.4  | 242.7 | 523.0  | 113.0 | 9720  | 1.0 | 134.4  | 311.0  |
| Zircon_29 | 730  | 4.1    | 1950 | 3.8  | 0.1  | 27.3  | 0.2  | 3.6  | 6.4  | 0.7 | 42.6 | 14.9 | 177.0 | 67.2  | 305.0 | 585.0  | 118.1 | 10370 | 1.7 | 408.0  | 517.0  |
| Zircon_30 | 1230 | 3.3    | 1942 | 2.9  | 0.3  | 17.9  | 0.2  | 3.2  | 5.9  | 0.7 | 32.3 | 12.0 | 155.8 | 63.6  | 307.5 | 645.0  | 134.7 | 10380 | 1.3 | 217.2  | 400.0  |
| Zircon_31 | 170  | 5360.0 | 1420 | 5.1  | 0.3  | 18.8  | 0.2  | 1.9  | 3.1  | 0.2 | 21.4 | 8.5  | 107.1 | 45.8  | 224.9 | 488.0  | 104.4 | 10750 | 1.3 | 151.9  | 340.0  |
| Zircon_32 | 790  | 3.2    | 1644 | 3.0  | 6.1  | 30.2  | 2.3  | 12.4 | 7.2  | 0.2 | 31.8 | 11.7 | 140.8 | 55.7  | 254.6 | 481.0  | 97.9  | 11210 | 1.2 | 156.0  | 349.0  |
| Zircon_33 | 1130 | 2.1    | 2034 | 3.7  | 7.3  | 32.4  | 2.3  | 13.3 | 8.3  | 0.3 | 41.8 | 14.7 | 176.2 | 69.4  | 313.0 | 582.0  | 116.4 | 10460 | 1.5 | 214.0  | 405.0  |
| Zircon_34 | 1140 | 470.0  | 3430 | 8.3  | 0.1  | 52.3  | 0.3  | 5.4  | 12.4 | 1.1 | 73.8 | 27.6 | 324.0 | 127.1 | 569.0 | 1101.0 | 223.6 | 9800  | 3.8 | 1085.0 | 1232.0 |
| Zircon_35 | 1020 | 1.3    | 1572 | 2.8  | 0.0  | 11.7  | 0.1  | 1.5  | 4.2  | 0.2 | 28.7 | 10.5 | 133.9 | 54.0  | 250.7 | 483.0  | 101.8 | 10440 | 1.1 | 118.2  | 291.4  |

Note:  $^{29}\text{Si}$  was used as internal standard, whereas NIST610 glass was used as external calibrant. LA-ICP-MS—laser ablation—inductively coupled plasma—mass spectrometry.

