|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Supplementary Table 1 Zircon U-Pb dating and zircon in-situ Hf isotope analysis for the studied felsic lava |  |  |  |  |  |
| Spot no. | Th | U | Th/U | Ratios |  | Age | 　 | 　 | 　 | 　 | 　 |
| (ppm) | (ppm) | 207Pb/206Pb | ±1sigma | 207Pb/235U | ±1sigma | 206Pb/238U | ±1sigma | 　 | 207Pb/235U | ±1sigma | 206Pb/238U | ±1sigma | 176Lu/177Hf | 2σ | 176Hf/177Hf | 2σ | εHf(t) |
| 10KMZ01-6-01 | 47.0  | 96.7  | 0.5  | 0.0760  | 0.0023  | 1.8250  | 0.0563  | 0.1747  | 0.0023  |  | 1054  | 20  | 1038  | 13  |  |  |  |  |  |
| 10KMZ01-6-02 | 162  | 172  | 0.9  | 0.0761  | 0.0017  | 1.7880  | 0.0417  | 0.1707  | 0.0022  |  | 1041  | 15  | 1016  | 12  |  |  |  |  |  |
| 10KMZ01-6-03 | 47.0  | 89.1  | 0.5  | 0.0744  | 0.0020  | 1.7910  | 0.0484  | 0.1747  | 0.0024  |  | 1042  | 18  | 1038  | 13  |  |  |  |  |  |
| 10KMZ01-6-04 | 123  | 206  | 0.6  | 0.0740  | 0.0015  | 1.7413  | 0.0383  | 0.1703  | 0.0021  |  | 1024  | 14  | 1014  | 11  | 0.001314  | 0.000013  | 0.282298  | 0.000007  | 5.1 |
| 10KMZ01-6-06 | 107  | 155  | 0.7  | 0.0750  | 0.0018  | 1.7823  | 0.0440  | 0.1724  | 0.0026  |  | 1039  | 16  | 1026  | 14  | 0.001010  | 0.000007  | 0.282367  | 0.000009  | 7.7 |
| 10KMZ01-6-08 | 539  | 627  | 0.9  | 0.0751  | 0.0014  | 1.8199  | 0.0331  | 0.1753  | 0.0019  |  | 1053  | 12  | 1041  | 10  |  |  |  |  |  |
| 10KMZ01-6-11 | 106  | 158  | 0.7  | 0.0732  | 0.0017  | 1.7427  | 0.0441  | 0.1716  | 0.0022  |  | 1024  | 16  | 1021  | 12  | 0.001798  | 0.000029  | 0.282358  | 0.000007  | 6.8 |
| 10KMZ01-6-12 | 133  | 217  | 0.6  | 0.0722  | 0.0015  | 1.7327  | 0.0377  | 0.1736  | 0.0022  |  | 1021  | 14  | 1032  | 12  | 0.001150  | 0.000007  | 0.282317  | 0.000008  | 5.9 |
| 10KMZ01-6-13 | 67.9  | 133  | 0.5  | 0.0718  | 0.0020  | 1.7349  | 0.0449  | 0.1757  | 0.0024  |  | 1022  | 17  | 1044  | 13  |  |  |  |  |  |
| 10KMZ01-6-14 | 303  | 387  | 0.8  | 0.0733  | 0.0013  | 1.7820  | 0.0327  | 0.1758  | 0.0021  |  | 1039  | 12  | 1044  | 12  |  |  |  |  |  |
| 10KMZ01-6-15 | 148  | 230  | 0.6  | 0.0704  | 0.0014  | 1.6667  | 0.0340  | 0.1712  | 0.0021  |  | 996  | 13  | 1019  | 12  |  |  |  |  |  |
| 10KMZ01-6-16 | 170  | 256  | 0.7  | 0.0710  | 0.0014  | 1.6950  | 0.0342  | 0.1723  | 0.0020  |  | 1007  | 13  | 1025  | 11  |  |  |  |  |  |
| 10KMZ01-6-17 | 63.0  | 133  | 0.5  | 0.0727  | 0.0018  | 1.7186  | 0.0406  | 0.1720  | 0.0022  |  | 1016  | 15  | 1023  | 12  | 0.001792  | 0.000032  | 0.282369  | 0.000007  | 7.2 |
| 10KMZ01-6-18 | 181  | 234  | 0.8  | 0.0724  | 0.0016  | 1.7174  | 0.0378  | 0.1717  | 0.0021  |  | 1015  | 14  | 1022  | 12  |  |  |  |  |  |
| 10KMZ01-6-19 | 113  | 201  | 0.6  | 0.0711  | 0.0016  | 1.7049  | 0.0388  | 0.1738  | 0.0022  |  | 1010  | 15  | 1033  | 12  | 0.000950  | 0.000002  | 0.282293  | 0.000007  | 5.1 |
| 10KMZ01-6-20 | 133  | 203  | 0.7  | 0.0735  | 0.0017  | 1.6973  | 0.0410  | 0.1670  | 0.0019  |  | 1008  | 15  | 996  | 10  |  |  |  |  |  |
| 10KMZ01-6-21 | 87.0  | 167  | 0.5  | 0.0714  | 0.0015  | 1.7221  | 0.0372  | 0.1749  | 0.0022  |  | 1017  | 14  | 1039  | 12  | 0.000951  | 0.000009  | 0.282347  | 0.000008  | 7.1 |
| 10KMZ01-6-22 | 240  | 295  | 0.8  | 0.0754  | 0.0015  | 1.7157  | 0.0336  | 0.1652  | 0.0019  |  | 1014  | 13  | 986  | 11  | 0.001339  | 0.000021  | 0.282339  | 0.000009  | 6.5 |
| 10KMZ01-6-23 | 101  | 144  | 0.7  | 0.0742  | 0.0021  | 1.7985  | 0.0499  | 0.1762  | 0.0027  |  | 1045  | 18  | 1046  | 15  | 0.001841  | 0.000012  | 0.282328  | 0.000009  | 5.8 |
| 10KMZ01-6-24 | 69.7  | 145  | 0.5  | 0.0727  | 0.0017  | 1.7586  | 0.0407  | 0.1755  | 0.0023  |  | 1030  | 15  | 1043  | 12  | 0.001373  | 0.000003  | 0.282347  | 0.000007  | 6.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10WDH01-1-01 | 239  | 368  | 0.6  | 0.0977  | 0.0023  | 3.5064  | 0.0858  | 0.2588  | 0.0028  |  | 1529  | 19  | 1484  | 14  |  |  |  |  |  |
| 10WDH01-1-02 | 101  | 284  | 0.4  | 0.1275  | 0.0027  | 5.8968  | 0.1287  | 0.3337  | 0.0034  |  | 1961  | 19  | 1857  | 16  |  |  |  |  |  |
| 10WDH01-1-03 | 73.4  | 133  | 0.6  | 0.0838  | 0.0032  | 1.9897  | 0.0685  | 0.1737  | 0.0023  |  | 1112  | 23  | 1032  | 12  |  |  |  |  |  |
| 10WDH01-1-05 | 75.9  | 256  | 0.3  | 0.0754  | 0.0025  | 1.8052  | 0.0620  | 0.1733  | 0.0025  |  | 1047  | 22  | 1030  | 14  |  |  |  |  |  |
| 10WDH01-1-06 | 88.6  | 144  | 0.6  | 0.0761  | 0.0030  | 1.7910  | 0.0727  | 0.1693  | 0.0024  |  | 1042  | 26  | 1008  | 13  |  |  |  |  |  |
| 10WDH01-1-07 | 67.6  | 137  | 0.5  | 0.0885  | 0.0039  | 2.1381  | 0.0928  | 0.1747  | 0.0029  |  | 1161  | 30  | 1038  | 16  |  |  |  |  |  |
| 10WDH01-1-08 | 221  | 283  | 0.8  | 0.0985  | 0.0026  | 3.9675  | 0.1063  | 0.2909  | 0.0033  |  | 1628  | 22  | 1646  | 17  |  |  |  |  |  |
| 10WDH01-1-09 | 65.3  | 122  | 0.5  | 0.0771  | 0.0030  | 1.8278  | 0.0702  | 0.1723  | 0.0023  |  | 1055  | 25  | 1025  | 13  |  |  |  |  |  |
| 10WDH01-1-10 | 105  | 342  | 0.3  | 0.1037  | 0.0024  | 4.5639  | 0.1101  | 0.3186  | 0.0042  |  | 1743  | 20  | 1783  | 21  |  |  |  |  |  |
| 10WDH01-1-11 | 53.1  | 113  | 0.5  | 0.0769  | 0.0029  | 1.8322  | 0.0684  | 0.1730  | 0.0025  |  | 1057  | 25  | 1029  | 14  |  |  |  |  |  |
| 10WDH01-1-12 | 423  | 381  | 1.1  | 0.0832  | 0.0022  | 2.6123  | 0.0724  | 0.2272  | 0.0027  |  | 1304  | 20  | 1320  | 14  |  |  |  |  |  |
| 10WDH01-1-15 | 111  | 215  | 0.5  | 0.1062  | 0.0026  | 4.5517  | 0.1170  | 0.3091  | 0.0035  |  | 1740  | 21  | 1736  | 17  |  |  |  |  |  |
| 10WDH01-1-16 | 41.7  | 104  | 0.4  | 0.0684  | 0.0029  | 1.6026  | 0.0643  | 0.1712  | 0.0023  |  | 971  | 25  | 1019  | 13  |  |  |  |  |  |
| 10WDH01-1-17 | 509  | 282  | 1.8  | 0.0996  | 0.0027  | 3.7220  | 0.1012  | 0.2694  | 0.0033  |  | 1576  | 22  | 1538  | 17  |  |  |  |  |  |
| 10WDH01-1-18 | 133  | 327  | 0.4  | 0.0897  | 0.0026  | 3.0552  | 0.0895  | 0.2454  | 0.0034  |  | 1422  | 22  | 1415  | 18  |  |  |  |  |  |
| 10WDH01-1-19 | 215  | 257  | 0.8  | 0.0816  | 0.0025  | 2.1373  | 0.0650  | 0.1888  | 0.0021  |  | 1161  | 21  | 1115  | 12  |  |  |  |  |  |
| 10WDH01-1-20 | 40.5  | 87.6  | 0.5  | 0.0827  | 0.0030  | 1.9518  | 0.0728  | 0.1703  | 0.0025  |  | 1099  | 25  | 1014  | 14  |  |  |  |  |  |
| 10WDH01-1-21 | 124  | 135  | 0.9  | 0.1020  | 0.0028  | 3.9217  | 0.1092  | 0.2773  | 0.0032  |  | 1618  | 23  | 1578  | 16  |  |  |  |  |  |
| 10WDH01-1-22 | 45.4  | 110  | 0.4  | 0.0836  | 0.0031  | 2.0159  | 0.0779  | 0.1743  | 0.0026  |  | 1121  | 26  | 1036  | 14  |  |  |  |  |  |
| 10WDH01-1-24 | 30.0  | 79.8  | 0.4  | 0.0813  | 0.0041  | 1.8869  | 0.0937  | 0.1697  | 0.0030  |  | 1076  | 33  | 1011  | 17  |  |  |  |  |  |
| 10WDH01-1-25 | 70.0  | 137  | 0.5  | 0.0695  | 0.0026  | 1.7186  | 0.0653  | 0.1796  | 0.0027  |  | 1015  | 24  | 1065  | 15  |  |  |  |  |  |
| 10WDH01-1-26 | 126  | 231  | 0.5  | 0.0979  | 0.0026  | 3.4440  | 0.0953  | 0.2548  | 0.0037  |  | 1514  | 22  | 1463  | 19  |  |  |  |  |  |
| 10WDH01-1-27 | 163  | 194  | 0.8  | 0.0991  | 0.0025  | 3.7085  | 0.1039  | 0.2688  | 0.0033  |  | 1573  | 22  | 1535  | 17  |  |  |  |  |  |
| 10WDH01-1-29 | 27.7  | 78.3  | 0.4  | 0.0837  | 0.0037  | 2.0358  | 0.0909  | 0.1763  | 0.0026  |  | 1128  | 30  | 1047  | 14  |  |  |  |  |  |
| 10WDH01-1-30 | 47.8  | 115  | 0.4  | 0.0763  | 0.0032  | 1.7918  | 0.0710  | 0.1707  | 0.0022  |  | 1042  | 26  | 1016  | 12  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10HCQ1-1-1 | 142  | 190  | 0.7  | 0.0876  | 0.0028  | 2.6722  | 0.0867  | 0.2205  | 0.0045  |  | 1321  | 24  | 1285  | 24  |  |  |  |  |  |
| 10HCQ1-1-6 | 123  | 236  | 0.5  | 0.0941  | 0.0031  | 3.3459  | 0.1184  | 0.2575  | 0.0062  |  | 1492  | 28  | 1477  | 32  |  |  |  |  |  |
| 10HCQ1-1-11 | 44.0  | 244  | 0.2  | 0.1086  | 0.0018  | 4.6628  | 0.1136  | 0.3087  | 0.0066  |  | 1761  | 20  | 1734  | 33  | 0.000767  | 0.000007  | 0.281676  | 0.000010  | -0.1 |
| 10HCQ1-1-12 | 34.4  | 89.6  | 0.4  | 0.0739  | 0.0031  | 1.7352  | 0.0731  | 0.1720  | 0.0037  |  | 1022  | 27  | 1023  | 20  |  |  |  |  |  |
| 10HCQ1-1-13 | 41.6  | 102  | 0.4  | 0.0771  | 0.0030  | 1.8124  | 0.0681  | 0.1702  | 0.0025  |  | 1050  | 25  | 1013  | 14  |  |  |  |  |  |
| 10HCQ1-1-14 | 68.7  | 262  | 0.3  | 0.0758  | 0.0018  | 1.8116  | 0.0466  | 0.1718  | 0.0018  |  | 1050  | 17  | 1022  | 10  |  |  |  |  |  |
| 10HCQ1-1-15 | 93.4  | 255  | 0.4  | 0.0721  | 0.0018  | 1.7018  | 0.0423  | 0.1701  | 0.0017  |  | 1009  | 16  | 1013  | 9  |  |  |  |  |  |
| 10HCQ1-1-16 | 48.1  | 132  | 0.4  | 0.1166  | 0.0028  | 5.3757  | 0.1285  | 0.3327  | 0.0040  |  | 1881  | 20  | 1852  | 19  |  |  |  |  |  |
| 10HCQ1-1-18 | 108  | 169  | 0.6  | 0.0971  | 0.0028  | 3.2537  | 0.0990  | 0.2429  | 0.0046  |  | 1470  | 24  | 1402  | 24  |  |  |  |  |  |
| 10HCQ1-1-19 | 86.9  | 260  | 0.3  | 0.0736  | 0.0024  | 1.7468  | 0.0572  | 0.1713  | 0.0023  |  | 1026  | 21  | 1019  | 13  |  |  |  |  |  |
| 10HCQ1-1-20 | 71.1  | 142  | 0.5  | 0.0851  | 0.0038  | 2.0224  | 0.0936  | 0.1708  | 0.0024  |  | 1123  | 31  | 1017  | 13  |  |  |  |  |  |
| 10HCQ1-1-21 | 95.9  | 201  | 0.5  | 0.1040  | 0.0024  | 4.6274  | 0.1157  | 0.3200  | 0.0037  |  | 1754  | 21  | 1790  | 18  |  |  |  |  |  |
| 10HCQ1-1-22 | 43.8  | 116  | 0.4  | 0.0710  | 0.0032  | 1.6732  | 0.0773  | 0.1705  | 0.0027  |  | 998  | 29  | 1015  | 15  |  |  |  |  |  |
| 10HCQ1-1-23 | 50.9  | 126  | 0.4  | 0.0714  | 0.0025  | 1.7051  | 0.0608  | 0.1735  | 0.0029  |  | 1010  | 23  | 1031  | 16  |  |  |  |  |  |
| 10HCQ1-1-24 | 43.8  | 104  | 0.4  | 0.0769  | 0.0035  | 1.7901  | 0.0801  | 0.1706  | 0.0027  |  | 1042  | 29  | 1016  | 15  | 0.000837  | 0.000002  | 0.281971  | 0.000007  | -6.4 |
| 10HCQ1-1-25 | 58.7  | 159  | 0.4  | 0.0722  | 0.0026  | 1.7892  | 0.0652  | 0.1787  | 0.0025  |  | 1042  | 24  | 1060  | 14  |  |  |  |  |  |
| 10HCQ1-1-26 | 37.1  | 97.7  | 0.4  | 0.0749  | 0.0032  | 1.7454  | 0.0749  | 0.1699  | 0.0026  |  | 1025  | 28  | 1011  | 14  |  |  |  |  |  |
| 10HCQ1-1-27 | 48.7  | 123  | 0.4  | 0.0784  | 0.0031  | 1.8509  | 0.0740  | 0.1705  | 0.0022  |  | 1064  | 26  | 1015  | 12  |  |  |  |  |  |
| 10HCQ1-1-28 | 143  | 86.7  | 1.7  | 0.1007  | 0.0033  | 3.9457  | 0.1295  | 0.2843  | 0.0040  |  | 1623  | 27  | 1613  | 20  |  |  |  |  |  |
| 10HCQ1-1-29 | 85.2  | 278  | 0.3  | 0.0723  | 0.0019  | 1.6971  | 0.0467  | 0.1694  | 0.0018  |  | 1007  | 18  | 1009  | 10  | 0.000256  | 0.000010  | 0.282171  | 0.000007  | 0.9 |
| 10HCQ1-1-30 | 36.3  | 92.9  | 0.4  | 0.0723  | 0.0031  | 1.6961  | 0.0745  | 0.1707  | 0.0024  |  | 1007  | 28  | 1016  | 13  | 0.000868  | 0.000004  | 0.282068  | 0.000008  | -3.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10XSX-02-4-01 | 498  | 524  | 1.0  | 0.0698  | 0.0011  | 1.6387  | 0.0267  | 0.1701  | 0.0011  |  | 985  | 10  | 1013  | 6  | 0.002914  | 0.000005  | 0.282605  | 0.000010  | 14.7 |
| 10XSX-02-4-02 | 93.1  | 184  | 0.5  | 0.0721  | 0.0014  | 1.7099  | 0.0353  | 0.1718  | 0.0014  |  | 1012  | 13  | 1022  | 7  | 0.001447  | 0.000018  | 0.282491  | 0.000009  | 11.7 |
| 10XSX-02-4-03 | 388  | 420  | 0.9  | 0.0707  | 0.0011  | 1.6677  | 0.0279  | 0.1707  | 0.0012  |  | 996  | 11  | 1016  | 7  | 0.003231  | 0.000016  | 0.282613  | 0.000009  | 14.8 |
| 10XSX-02-4-04 | 133  | 162  | 0.8  | 0.0716  | 0.0016  | 1.6857  | 0.0384  | 0.1707  | 0.0014  |  | 1003  | 15  | 1016  | 8  | 0.002286  | 0.000007  | 0.282551  | 0.000011  | 13.2 |
| 10XSX-02-4-05 | 335  | 593  | 0.6  | 0.0712  | 0.0012  | 1.6642  | 0.0286  | 0.1691  | 0.0012  |  | 995  | 11  | 1007  | 7  | 0.002471  | 0.000003  | 0.282537  | 0.000010  | 12.6 |
| 10XSX-02-4-06 | 497  | 426  | 1.2  | 0.0721  | 0.0013  | 1.7072  | 0.0296  | 0.1717  | 0.0013  |  | 1011  | 11  | 1022  | 7  | 0.002096  | 0.000029  | 0.282542  | 0.000010  | 13.0 |
| 10XSX-02-4-08 | 593  | 499  | 1.2  | 0.0723  | 0.0011  | 1.6872  | 0.0269  | 0.1689  | 0.0011  |  | 1004  | 10  | 1006  | 6  | 0.002446  | 0.000004  | 0.282543  | 0.000010  | 12.8 |
| 10XSX-02-4-09 | 150  | 314  | 0.5  | 0.0753  | 0.0013  | 1.7728  | 0.0310  | 0.1705  | 0.0013  |  | 1036  | 11  | 1015  | 7  | 0.002035  | 0.000007  | 0.282548  | 0.000010  | 13.3 |
| 10XSX-02-4-10 | 104  | 223  | 0.5  | 0.0745  | 0.0014  | 1.7256  | 0.0344  | 0.1680  | 0.0015  |  | 1018  | 13  | 1001  | 8  |  |  |  |  |  |
| 10XSX-02-4-11 | 46.1  | 83.2  | 0.6  | 0.0754  | 0.0021  | 1.7633  | 0.0458  | 0.1704  | 0.0017  |  | 1032  | 17  | 1015  | 9  | 0.000981  | 0.000005  | 0.282469  | 0.000012  | 11.2 |
| 10XSX-02-4-12 | 812  | 556  | 1.5  | 0.0745  | 0.0012  | 1.7753  | 0.0290  | 0.1725  | 0.0012  |  | 1036  | 11  | 1026  | 6  |  |  |  |  |  |
| 10XSX-02-4-13 | 860  | 630  | 1.4  | 0.0751  | 0.0012  | 1.8184  | 0.0308  | 0.1750  | 0.0015  |  | 1052  | 11  | 1040  | 8  |  |  |  |  |  |
| 10XSX-02-4-14 | 417  | 458  | 0.9  | 0.0733  | 0.0011  | 1.7370  | 0.0276  | 0.1714  | 0.0011  |  | 1022  | 10  | 1020  | 6  |  |  |  |  |  |
| 10XSX-02-4-15 | 41.6  | 87.7  | 0.5  | 0.0734  | 0.0021  | 1.7478  | 0.0479  | 0.1734  | 0.0018  |  | 1026  | 18  | 1031  | 10  |  |  |  |  |  |
| 10XSX-02-4-16 | 67.7  | 132  | 0.5  | 0.0729  | 0.0018  | 1.7590  | 0.0451  | 0.1751  | 0.0019  |  | 1030  | 17  | 1040  | 10  |  |  |  |  |  |
| 10XSX-02-4-17 | 192  | 290  | 0.7  | 0.0722  | 0.0012  | 1.7442  | 0.0316  | 0.1747  | 0.0015  |  | 1025  | 12  | 1038  | 8  |  |  |  |  |  |
| 10XSX-02-4-18 | 315  | 337  | 0.9  | 0.0715  | 0.0013  | 1.6770  | 0.0317  | 0.1696  | 0.0013  |  | 1000  | 12  | 1010  | 7  |  |  |  |  |  |
| 10XSX-02-4-19 | 324  | 292  | 1.1  | 0.0712  | 0.0013  | 1.6810  | 0.0324  | 0.1709  | 0.0014  |  | 1001  | 12  | 1017  | 8  |  |  |  |  |  |
| 10XSX-02-4-20 | 187  | 349  | 0.5  | 0.0703  | 0.0012  | 1.6511  | 0.0275  | 0.1699  | 0.0013  |  | 990  | 11  | 1012  | 7  |  |  |  |  |  |
| 10XSX-02-4-21 | 550  | 435  | 1.3  | 0.0710  | 0.0010  | 1.7167  | 0.0264  | 0.1748  | 0.0013  |  | 1015  | 10  | 1038  | 7  |  |  |  |  |  |
| 10XSX-02-4-22 | 210  | 197  | 1.1  | 0.0708  | 0.0013  | 1.6826  | 0.0323  | 0.1717  | 0.0013  |  | 1002  | 12  | 1021  | 7  |  |  |  |  |  |
| 10XSX-02-4-23 | 246  | 247  | 1.0  | 0.0708  | 0.0012  | 1.6672  | 0.0296  | 0.1701  | 0.0014  |  | 996  | 11  | 1013  | 8  |  |  |  |  |  |
| 10XSX-02-4-24 | 209  | 381  | 0.5  | 0.0717  | 0.0012  | 1.7087  | 0.0283  | 0.1723  | 0.0012  | 　 | 1012  | 11  | 1025  | 7  | 　 | 　 | 　 | 　 | 　 |