**Supplementary table 3** Trace-element compositions of meta-sedimentary rocks from the Wuguan Complex

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | SL1-1 | SL3-1 | SL7-1 | XS004 | XS27 | XN8 | PAASa | UCCb | Total Crust | AMIS0304 | OREAS-105 | Detection limit  (μg/g) |
| Sc | 7.22 | 4.33 | 15.54 | 15.5 | 14.2 | 15 | 16 | 14 | 21.9 | 19.3 | 12.8 | 0.1 |
| V | 47.3 | 28.4 | 105.3 | 105 | 102 | 103 | 150 | 97 | 138 | 400 | 30 | 5 |
| Cr | 38.8 | 26.7 | 94.4 | 110 | 90 | 90 | 110 | 92 | 135 | 90 | 50 | 10 |
| Ga | 12 | 5.5 | 20.6 | 19 | 18.4 | 20 | ＜0.1 | 17.5 | 16 | 52.9 | 25.2 | 0.1 |
| Rb | 86.3 | 50.5 | 148.8 | 153.5 | 124.5 | 151.5 | 160 | 82 | 49 | 10.5 | 103.5 | 0.2 |
| Sr | 166.4 | 88.6 | 155.5 | 197 | 193.5 | 169 | 200 | 320 | 320 | 3510 | 89.2 | 0.1 |
| Y | 19.11 | 9.93 | 20.67 | 22.4 | 33.3 | 24 | 27 | 21 | 19 | 411 | 63.8 | 0.5 |
| Zr | 272 | 319.1 | 299.9 | 359 | 214 | 187 | 210 | 193 | 132 | 1160 | 226 | 2 |
| Nb | 8.9 | 5.3 | 12.1 | 15.7 | 15.1 | 14.6 | 19 | 12 | 8 | >2500 | 40.7 | 0.2 |
| Cs | 6.59 | 2.47 | 10.61 | 12.4 | 3.35 | 9.96 | 15 | 4.9 | 2 | 0.38 | 2.03 | 0.01 |
| Ba | 666 | 289.4 | 1218.5 | 911 | 595 | 640 | 650 | 628 | 456 | 2710 | 691 | 0.5 |
| Hf | 6 | 6.6 | 6.6 | 9.4 | 5.6 | 5 | 5 | 5.3 | 3.7 | 27.3 | 6.5 | 0.2 |
| Ta | 0.77 | 0.63 | 0.85 | 1.3 | 1.2 | 1.2 | 1.28 | 0.9 | 0.7 | 13.0 | 4.5 | 0.1 |
| Th | 9.8 | 5.6 | 13.3 | 17.3 | 15.2 | 13.7 | 14.6 | 10.5 | 5.6 | 441 | 375 | 0.05 |
| U | 1.74 | 0.91 | 2.66 | 2.22 | 3.46 | 3.25 | 3.1 | 2.7 | 1.3 | 23.3 | 534 | 0.05 |
| La | 27.42 | 13.3 | 36.25 | 28.3 | 42 | 38 | 38.2 | 31 | 20 | 3500 | 48.1 | 0.5 |
| Ce | 45.58 | 23.99 | 64.09 | 43.1 | 82.9 | 72.6 | 79.6 | 63 | 43 | 8520 | 115.0 | 0.5 |
| Pr | 6.02 | 3.28 | 7.85 | 6.22 | 9.76 | 8.23 | 8.83 | 7.1 | 4.9 | >1000 | 14.75 | 0.03 |
| Nd | 22.97 | 12.45 | 29.03 | 23.3 | 36.9 | 29.8 | 33.9 | 27 | 20 | 3960 | 63.3 | 0.1 |
| Sm | 4.25 | 2.35 | 5.12 | 4.63 | 7.43 | 6.26 | 5.55 | 4.7 | 3.9 | 596 | 14.95 | 0.03 |
| Eu | 1.05 | 0.54 | 1.41 | 0.99 | 1.41 | 1.2 | 1.08 | 1 | 1.1 | 147.5 | 1.48 | 0.03 |
| Gd | 3.97 | 2.14 | 4.68 | 4.01 | 6.44 | 4.92 | 4.66 | 4 | 3.7 | 336 | 12.25 | 0.05 |
| Tb | 0.6 | 0.32 | 0.68 | 0.63 | 1.01 | 0.76 | 0.774 | 0.7 | 0.6 | 33.7 | 1.98 | 0.01 |
| Dy | 3.6 | 1.94 | 4.03 | 3.88 | 5.93 | 4.37 | 4.68 | 3.9 | 3.6 | 133.5 | 12.20 | 0.05 |
| Ho | 0.7 | 0.37 | 0.79 | 0.83 | 1.23 | 0.87 | 0.991 | 0.83 | 0.77 | 17.75 | 2.47 | 0.01 |
| Er | 1.99 | 1.12 | 2.37 | 2.57 | 3.43 | 2.53 | 2.85 | 2.3 | 2.1 | 34.7 | 7.52 | 0.03 |
| Tm | 0.27 | 0.16 | 0.34 | 0.41 | 0.51 | 0.38 | 0.405 | 0.3 | 0.28 | 3.54 | 1.13 | 0.01 |
| Yb | 1.78 | 1.09 | 2.39 | 2.86 | 3.23 | 2.44 | 2.82 | 2 | 1.9 | 16.65 | 7.18 | 0.03 |
| Lu | 0.26 | 0.17 | 0.36 | 0.48 | 0.49 | 0.4 | 443 | 0.31 | 0.3 | 2.11 | 1.03 | 0.01 |
| REE | 120.46 | 63.22 | 159.39 | 122.21 | 202.67 | 172.76 | 185 | 148 | 106.15 | - | - | - |
| δEu/Eu\* | 0.78 | 0.74 | 0.88 | 0.7 | 0.62 | 0.66 | 0.63 | 0.69 | 0.93 | - | - | - |
| Ce/Ce\* | 0.85 | 0.87 | 0.91 | 0.78 | 0.99 | 0.99 | 1.02 | 1 | 1.05 | - | - | - |
| (Gd/Yb)N | 1.8 | 1.58 | 1.58 | 1.13 | 1.61 | 1.63 | 1.37 | 1.65 | 1.57 | - | - | - |
| (La/Yb)N | 10.39 | 8.23 | 10.23 | 6.67 | 8.77 | 10.5 | 9.72 | 11.12 | 7.10 | - | - | - |

**Note:** The AMIS0304 and OREAS-105 are standard samples for data quality monitoring in trace elements testing.