|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplementary Table 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36Cl data |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sample | Latitude | Longitude | El | Depth | Total Cl | Al2O3 | CaO | Fe2O3 | K2O | MgO | MnO | Na2O | P2O5 | SiO2 | TiO2 | B | Gd | Sm | Th | U |
|   | oN | oW | m | cm | ppm | wt % | wt % | wt % | wt % | wt % | wt % | wt % | wt % | wt % | wt % | ppm | ppm | ppm | ppm | ppm |
| CHU-70 | 61.10906 | 149.55737 | 844 | 3 | 12.91566 | 14.93 | 4.34 | 5.4 | 1.84 | 2.38 | 0.11 | 2.96 | 0.02 | 64.11 | 0.64 | 236 | 2.25 | 2.46 | 2.1 | 1.1 |
| CHU-71 | 61.11004 | 149.55756 | 850 | 5 | 2.024663 | 13.87 | 3.73 | 5.42 | 1.58 | 2.18 | 0.1 | 3.51 | 0.06 | 66.51 | 0.66 | 98 | 2.08 | 2.27 | 2.6 | 0.9 |
| CHU-72 | 61.11015 | 149.55733 | 853 | 6 | 5.268932 | 15.06 | 4.72 | 5.07 | 1.34 | 2.21 | 0.1 | 3.58 | 0.03 | 64.63 | 0.59 | 417 | 2.08 | 2.18 | 1.7 | 0.8 |
| CHU-73 | 61.10957 | 149.55841 | 840 | 3 | 8.889076 | 15.15 | 3.88 | 6.97 | 1.72 | 3.04 | 0.12 | 3.14 | 0.05 | 61.7 | 0.79 | 36 | 2.85 | 2.84 | 2.6 | 1.3 |
| CHU-74 | 61.11004 | 149.55902 | 836 | 4 | 5.759422 | 11.65 | 3.27 | 4.82 | 1.45 | 1.96 | 0.12 | 2.3 | 0.04 | 70.61 | 0.61 | 40 | 2.21 | 2.08 | 2.5 | 1.3 |
| CHU-78 | 61.11858 | 149.66718 | 579 | 4 | 2.053121 | 15.01 | 3.99 | 5.87 | 1.73 | 2.46 | 0.11 | 3.49 | 0.08 | 63.68 | 0.66 | 104 | 2.64 | 2.45 | 2.5 | 1.1 |
| CHU-79 | 61.11921 | 149.66411 | 595 | 4 | 8.297021 | 13.89 | 3.17 | 6.04 | 1.5 | 2.5 | 0.11 | 3.69 | 0.05 | 64.97 | 0.72 | 261 | 2.24 | 2.24 | 2.3 | 1.1 |
| CHU-80 | 61.11902 | 149.66322 | 597 | 4 | 3.930861 | 13.68 | 4.55 | 5.97 | 1.61 | 2.32 | 0.1 | 2.16 | 0.09 | 65.3 | 0.61 | 74 | 2.1 | 2.1 | 2.4 | 0.9 |
| CHU-81 | 61.1201 | 149.60782 | 596 | 4 | 5.426959 | 14.22 | 3.88 | 5.45 | 1.56 | 2.22 | 0.1 | 3.37 | 0.03 | 65.26 | 0.65 | 48 | 2.33 | 2.29 | 2 | 1 |
| CHU-82 | 61.11836 | 149.65909 | 623 | 4 | 8.9516 | 13.69 | 3.33 | 6.17 | 1.37 | 2.42 | 0.1 | 3.68 | 0.03 | 65.4 | 0.81 | 55 | 2.4 | 2.2 | 2 | 0.9 |
| CHU-90 | 61.1163 | 149.59262 | 769 | 5 | 15.36366 | 12.33 | 4.54 | 7.28 | 1.04 | 2.95 | 0.13 | 2.86 | 0.03 | 64.42 | 0.98 | 40 | 2.66 | 2.29 | 2.2 | 1.2 |
| CHU-91 | 61.11602 | 149.59254 | 771 | 5 | 12.54854 | 14 | 3.16 | 8.34 | 1.35 | 2.8 | 0.18 | 3.12 | 0.07 | 61.75 | 0.93 | 407 | 2.17 | 2.26 | 1.5 | 0.9 |
| CHU-92 | 61.11529 | 149.59087 | 777 | 4 | 4.308323 | 14.99 | 2.25 | 5.59 | 1.55 | 2.46 | 0.11 | 4.4 | 0.02 | 65.01 | 0.68 | 55 | 2.2 | 2.25 | 1.8 | 0.8 |
| CHU-93 | 61.11472 | 149.59059 | 776 | 4 | 4.774955 | 15.31 | 4.04 | 6.53 | 1.76 | 2.79 | 0.11 | 2.89 | 0.06 | 62.14 | 0.71 | 45 | 2.62 | 2.7 | 2.9 | 1.4 |
| CHU-94 | 61.11628 | 149.59283 | 766 | 4 | 5.046526 | 15.27 | 4.57 | 5.94 | 1.69 | 2.54 | 0.11 | 3.25 | 0.04 | 62.42 | 0.63 | 467 | 2.31 | 2.28 | 2.3 | 1.1 |
| CHU-95 | 61.11824 | 149.61067 | 738 | 7 | 10.36802 | 14.3 | 3.93 | 6.14 | 1.26 | 2.47 | 0.11 | 3.85 | 0.05 | 62.19 | 0.75 | 234 | 2.2 | 2.2 | 1.7 | 0.6 |
| CHU-96 | 61.12097 | 149.61987 | 713 | 6 | 38.37738 | 12.82 | 2.26 | 5.48 | 2.08 | 2.07 | 0.11 | 2.99 | 0.05 | 67.82 | 0.53 | 58 | 2.09 | 2.1 | 2.3 | 0.8 |
| CHU-97 | 61.12125 | 149.6225 | 710 | 4 | 18.57016 | 12.66 | 2.62 | 6.14 | 1.69 | 2.3 | 0.11 | 3.05 | 0.04 | 66.63 | 0.75 | 33 | 2.25 | 2.17 | 2.4 | 0.7 |
| CHU-98 | 61.1207 | 149.62357 | 709 | 5 | 8.68109 | 14.75 | 4.72 | 5.66 | 1.53 | 2.3 | 0.11 | 3.05 | 0.08 | 63.62 | 0.6 | 35 | 3.03 | 2.99 | 2.9 | 1.4 |
| CHU-99 | 61.12048 | 149.62395 | 701 | 4 | 9.926192 | 12.78 | 3.9 | 6.74 | 1.45 | 2.66 | 0.13 | 2.54 | 0.05 | 64.99 | 0.75 | 33 | 2.4 | 2.1 | 2.3 | 0.9 |
| CHU-107 | 61.11358 | 149.06629 | 568 | 4 | 39.19432 | 13.48 | 5.43 | 8.07 | 0.72 | 2.67 | 0.12 | 2.9 | 0.04 | 61.87 | 0.85 | 27 | 2.58 | 2.6 | 2.4 | 1 |
| CHU-108 | 61.11483 | 149.66137 | 628 | 5 | 27.40139 | 15.5 | 2.46 | 5.21 | 1.66 | 2.37 | 0.09 | 4.61 | 0.08 | 64.81 | 0.57 | 24 | 2.45 | 2.42 | 2.2 | 1.2 |
| CHU-109 | 61.11677 | 149.65822 | 637 | 6 | 8.497765 | 12.97 | 3.19 | 6.14 | 0.91 | 2.24 | 0.12 | 3.5 | 0.08 | 67.27 | 0.65 | 20 | 2.07 | 2.08 | 1.8 | 0.8 |
| CHU-110 | 61.11551 | 149.66243 | 616 | 6 | 0.788267 | 12.99 | 4.05 | 6.26 | 1.69 | 2.5 | 0.11 | 2.34 | 0.04 | 66.04 | 0.74 | 49 | 2.23 | 2.18 | 2.1 | 1 |
| CHU-111 | 61.11359 | 149.66283 | 615 | 5 | 0.982656 | 14.42 | 4.26 | 5.62 | 1.57 | 2.36 | 0.1 | 2.9 | 0.04 | 64.59 | 0.67 | 40 | 2.49 | 2.53 | 2.2 | 1.2 |