**Supplementary Data File Table 1**: Summary of Palaeomagnetic results from the Lorne Plateau Lavas and Intrusions, NW Scotland

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Site No. | Field Code/type | Grid ref. | Tilt | N | R | k | α95 | D | I | D’ | I’ |
| 1 | L/S | 1881 7169 | 10/320 | 4 | 3.98 | 152 | 7.5 | 41.6 | -55.7 | 56.4 | -55.9 |
| 2 | L/S | 1876 7169 | 15/320 | 2 | 1.99 | 106 | - | 21.6 | -28.9 | 30.2 | -35.0 |
| 3 | L/S | 1876 7169 | 15/320 | 6 | 5.98 | 262 | 4.1 | 8.6 | -39.6 | 20.5 | -48.4 |
| 4\*\* | L/S | 1872 7176 | 15/320 | 2 | 1.99 | 92 | - | 2.9 | -26.1 | 9.5 | -36.5 |
| 5 | L/S | 1872 7180 | 15/320 | 8 | 7.75 | 28 | 10.7 | 9.0 | -40.2 | 21.2 | -48.9 |
| 6 | L/S | 1879 7206 | 15/190 | 5 | 4.95 | 78 | 8.8 | 39.4 | -53.3 | 32.4 | -39.8 |
| 7 | L/S | 1879 7207 | 15/190 | 4 | 3.95 | 58 | 12.1 | 80.8 | -61.2 | 55.4 | -50.3 |
| 8 | L/S | 1879 7208 | 15/270 | 4 | 3.98 | 172 | 7.0 | 28.5 | -55.2 | 43.5 | -46.3 |
| 9 | L/S | 1979 7209 | 15/270 | 5 | 4.97 | 140 | 6.5 | 10.7 | -48.7 | 25.8 | -43.9 |
| 10 | L/S | 1874 7209 | 12/280 | 4 | 3.95 | 58 | 12.2 | 17.7 | -47.0 | 29.7 | -44.1 |
| 11 | L/S | 1873 7209 | 12/280 | 3 | 2.99 | 391 | 6.2 | 67.2 | -55.6 | 74.3 | -45.1 |
| 12 | L/S | 1874 7210 | 15/280 | 7 | 6.72 | 21 | 13.4 | 28.3 | -38.7 | 38.3 | -32.7 |
| 13 | L/S | 1878 7207 | 12/310 | 5 | 4.99 | 624 | 3.1 | 23.4 | -56.1 | 41.8 | -57.7 |
| 14 | L/S | 1864 7207 | 10/320 | 6 | 5.94 | 84 | 7.4 | 31.7 | -52.8 | 45.2 | -54.8 |
| 15 | L/S | 1863 7207 | 10/325 | 7 | 6.84 | 38 | 9.9 | 25.1 | -46.9 | 35.6 | -51.1 |
| 16 | L/S | 1830 7212 | 10/270 | 8 | 7.85 | 47 | 8.2 | 197.3 | 65.4 | 215.1 | 60.9 |
|  |  |  |  | 8 | 7.88 | 59 | 7.3 | 32.4 | -58.7 | 43.9 | -52.5 |
| 17 | L/S | 1831 7216 | 10/270 | 7 | 6.71 | 21 | 13.5 | 189.6 | 60.5 | 205.5 | 57.5 |
|  |  |  |  | 7 | 6.78 | 28 | 11.7 | 4.6 | -52.4 | 17.0 | -50.5 |
| 18 | L/S | 1827 7223 | 10/270 | 5 | 4.95 | 74 | 8.9 | 182.8 | 58.1 | 204.9 | 54.4 |
|  |  |  |  | 7 | 6.87 | 46 | 9.0 | 359.7 | -66.0 | 30.0 | -62.0 |
| 19 | L/S | 1826 7227 | 15/270 | 7 | 6.52 | 13 | 17.7 | 69.1 | -51.3 | 65.1 | -42.0 |
| 20 | L/S | 1824 7230 | 5/300 | 8 | 7.89 | 64 | 7.0 | 51.7 | -45.6 | 50.8 | -35.7 |
| 21 | L/S | 1823 7234 | 5/300 | 6 | 5.97 | 144 | 5.9 | 57.3 | -45.4 | 55.6 | -35.6 |
| 22 | L/S | 1821 7238 | 5/300 | 10 | 9.82 | 50 | 6.9 | 43.6 | -41.9 | 43.8 | -31.9 |
| 23 | L/S | 1842 7232 | 5/290 | 5 | 4.99 | 549 | 3.3 | 48.0 | -60.7 | 55.2 | -58.1 |
| 24 | L/S | 1847 7233 | 10/270 | 3 | 3.00 | 785 | 4.4 | 60.7 | -62.9 | 67.8 | -53.9 |
| 25 | L/S | 1842 7240 | 15/270 | 3 | 2.98 | 109 | 11.9 | 66.1 | -71.2 | 76.2 | -57.0 |
| 26 | L/S | 1872 7259 | 15/135 | 5 | 4.98 | 168 | 5.9 | 37.3 | -53.5 | 19.2 | -49.1 |
| 27 | I | 1832 7281 | 10/300 | 6 | 5.83 | 29 | 12.6 | 200.6 | 66.9 | 224.0 | 66.5 |
|  |  |  |  | 10 | 9.53 | 19 | 11.4 | 36.6 | -63.6 | 55.0 | -60.8 |
| 28 | I | 1807 7264 | (10/330)\* | 7 | 6.78 | 27 | 11.8 | 34.3 | -36.9 | (41.8/-40.7)\* | |
| 29\*\* | I | 1806 7262 | (10/130)\* | 5 | 4.99 | 389 | 3.9 | 137.1 | -58.2 | (140.1/-68.1)\* | |
| 30\*\* | I | 1803 7256 | (50/130)\* | 3 | 2.98 | 110 | 11.8 | 196.4 | -2.9 | (197.2/-6.9)\* | |
| 31 | I | 1803 7258 | (20/300)\* | 5 | 4.93 | 55 | 10.4 | 352.4 | -46.7 | (15.1/-55.8)\* | |
| 32\*\* | I | 1807 7262 | (15/270)\* | 6 | 5.68 | 16 | 17.5 | 131.9 | -16.7 | (129.9/-5.3)\* | |
| 33 | I | 1803 7259 | (10/330)\* | 8 | 7.93 | 94 | 5.7 | 29.9 | -65.0 | (52.0/-68.3)\* | |
| 34 | I | 1806 7264 | (10/130)\* | 9 | 8.76 | 33 | 9.1 | 56.2 | -34.3 | (63.1/-34.4)\* | |
| 35 | I | 1807 7264 | (10/330)\* | 7 | 6.69 | 19 | 14.1 | 50.0 | -56.8 | (67.3/-54.4)\* | |
| 36 | I | 1803 7259 | (20/225)\* | 5 | 4.99 | 271 | 4.7 | 359.4 | -85.5 | (36.9/-66.6)\* | |
| 37 | L/S | 1785 7267 | 20/280 | 5 | 4.98 | 171 | 5.9 | 63.0 | -70.4 | 74.7 | -61.8 |
| 38 | L/S | 1788 7275 | 20/280 | 10 | 9.79 | 43 | 7.5 | 59.2 | -35.2 | 63.0 | -27.4 |
| 39 | L/S | 1789 7276 | 20/280 | 6 | 5.75 | 20 | 15.5 | 35.8 | -29.0 | 40.2 | -24.3 |
| 40\*\* | L/S | 1743 7178 | 10/300 | 6 | 5.99 | 398 | 3.4 | 85.3 | -53.8 | 91.5 | -45.3 |
| 41 | L/S | 1743 7178 | 10/300 | 13 | 11.95 | 213 | 3.0 | 343.6 | -60.1 | 359.2 | -66.4 |
| 42 | L/S | 1750 7173 | 10/300 | 2 | 1.93 | 15 | - | 12.6 | -50.0 | 24.8 | -52.0 |
| 43 | L/S | 1957 7217 | 10/135 | 5 | 4.91 | 45 | 11.5 | 48.0 | -48.0 | 37.0 | -47.6 |
| 44 | L/S | 1957 7217 | 10/135 | 5 | 4.99 | 588 | 3.2 | 81.9 | -75.7 | 38.6 | -78.5 |
| 45 | L/S | 1950 7233 | 10/130 | 4 | 3.97 | 119 | 8.5 | 16.2 | -63.6 | 0.8 | -58.3 |
| 46 | L/S | 1947 7235 | 10/130 | 5 | 4.98 | 205 | 5.5 | 64.6 | -56.9 | 49.0 | -59.8 |
| 47 | L/S | 1948 7248 | 15/135 | 6 | 5.90 | 52 | 9.4 | 61.4 | -26.0 | 53.7 | -29.3 |
| 48 | L/S | 1949 7249 | 15/135 | 2 | 2.00 | 201 | - | 52.7 | -28.4 | 44.4 | -29.3 |
| 49+ | L/S | 1964 7263 | 15/135 | 5 | 4.72 | 14 | 21.0 | 357.0 | 40.5 | 350.5 | 28.8 |
| 50+ | L/S | 1963 7261 | 5/110 | 4 | 3.73 | 29 | 28.9 | 11.1 | 30.7 | 8.2 | 29.8 |
| 51+ | L/S | 1963 7260 | 5/110 | 3 | 2.95 | 43 | 29.1 | 355.2 | 42.1 | 351.3 | 39.9 |
| 52 | L/S | 1946 7282 | 5/120 | 4 | 3.98 | 197 | 6.6 | 47.9 | -29.1 | 45.2 | -30.5 |
| 53 | L/S | 1947 7284 | 5/120 | 5 | 4.99 | 513 | 3.4 | 46.5 | -22.2 | 44.5 | -23.5 |
| 54 | L/S | 1947 7284 | 5/120 | 8 | 7.89 | 62 | 7.1 | 24.7 | -40.8 | 20.5 | -40.2 |
| 55 | L/S | 1947 7285 | 10/075 | 8 | 7.88 | 58 | 7.3 | 35.7 | -16.6 | 34.2 | -17.0 |
| 56 | L/S | 1947 7286 | 5/120 | 4 | 3.90 | 29 | 17.4 | 52.3 | -62.6 | 42.8 | -64.1 |
| 57 | L/S | 1947 7286 | 5/120 | 4 | 3.92 | 33 | 16.0 | 29.2 | -49.7 | 23.3 | -49.4 |
| 58 | L/S | 1947 7286 | 5/120 | 3 | 2.98 | 122 | 11.2 | 90.5 | -21.5 | 89.4 | -25.8 |
| 59\*\* | L/S | 1947 7296 | 5/120 | 2 | 1.94 | 17 | - | 174.7 | -15.7 | 176.0 | -18.6 |
| 60\*\* | L/S | 1985 7321 | 20/110 | 4 | 3.91 | 33 | 16.1 | 320.4 | -84.2 | 296.9 | -84.8 |
| 61 | L/S | 1965 7324 | 5/100 | 6 | 5.94 | 84 | 7.4 | 39.4 | -55.3 | 32.6 | -57.6 |
| 62 | L/S | 1956 7332 | 5/100 | 4 | 3.94 | 49 | 13.2 | 44.4 | -34.8 | 41.3 | -37.5 |
| 63 | L/S | 1932 7226 | 10/120 | 5 | 4.97 | 136 | 6.6 | 73.5 | -47.5 | 64.0 | -53.8 |
| 64 | L/S | 1930 7228 | 10/120 | 3 | 2.99 | 351 | 6.5 | 78.6 | -28.1 | 74.3 | -35.4 |
| 65 | L/S | 1921 7238 | 10/120 | 4 | 3.64 | 34 | 8.4 | 70.4 | -39.5 | 63.0 | -45.5 |
| 66 | L/S | 1914 7242 | 10/120 | 7 | 6.92 | 73 | 7.1 | 63.6 | -48.5 | 32.7 | -53.3 |
| 67 | L/S | 1922 7378 | 10/120 | 7 | 6.87 | 45 | 9.1 | 50.0 | -11.4 | 46.5 | -16.1 |
| 68 | L/S | 1919 7378 | 15/120 | 9 | 8.78 | 36 | 8.7 | 38.8 | -23.0 | 32.2 | -24.5 |
| 69 | L/S | 1916 7379 | 15/120 | 3 | 2.98 | 132 | 10.8 | 47.7 | -49.6 | 29.4 | -51.9 |
| 70 | L/S | 1912 7379 | 15/120 | 5 | 4.95 | 83 | 8.5 | 58.8 | -43.9 | 43.9 | -49.4 |
| 71 | L/S | 1911 7382 | 15/120 | 2 | 2.00 | 280 | - | 60.3 | -56.5 | 36.4 | -61.4 |
| Mean result, in situ: | | | | | | | | | | | |
| 58 Sites | | D/I = 42.3/-49.4° | | R = 53.21 | | | α95 = 4.7° | | k = 16.7 | |  |
| Palaeomagnetic Pole: 319.0°E, 3.8°N, (dp/dm = 4.4/6.7°) | | | | | | | | | | | |
| Mean result, tilt adjusted: | | | | | | | | | | | |
| 58 Sites | | D’/I’ = 43.7/-47.4° | | R = 55.50 | | | α95 = 4.0° | | k = 22.7 | |  |
| Palaeomagnetic Pole: 317.3°E, 2.7°N, (dp/dm = 3.8/5.8°) | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |

L/S = lava or sheet, I = intrusion. D(D’) and I(I’) are the mean direction in situ (tilt adjusted) derived from N ChRM directions yielding a resultant vector of length R, Fisher precision parameter k (=(N-1)/(N-R) and radius of cone of 95% confidence about the vector given by α95.  The National Grid block is NM. \*These sites emplaced in wet sediments within narrow NE-SW down faulted block on Kerrera. +Possible Tertiary-Recent overprints. \*\* Intermediate, possible transitional, directions excluded from overall mean.

**Supplementary Data File TABLE 2**: Rock Magnetic results from Lorne Lavas

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Site | IRM | | Mrs | Mrs/Ms | Bcr/Bc | Hysteresis Curve Shape | Curie Point  (oC) |
|  | Bcr | Saturation  @ 300mT | Am2/kgx10-5 |  |  |
| 1 | 66.7 | 0.63 | 0.126 | 0.12 | 5.34 | ww | 580 |
| 2 | 34.4 | 0.98 | 14.3 | 0.05 | 6.66 | pb | 535 |
| 4 | 41.9 | 0.94 | 7.73 | 0.08 | 3.76 | pb | 535 |
| 5 | 38.5 | 1.00 | 13.6 | 0.05 | 6.13 | pb | 565 |
| 11 | 35.4 | 1.01 | 17.2 | 0.07 | 4.57 | pb | 550 |
| 15 | 67.5 | 1.00 | 23.3 | 0.16 | 3.99 | pb | 580 |
| 20 | 91.2 | 0.87 | 3.31 | 0.28 | 2.63 | pb | 580 |
| 25 | 63.8 | 0.98 | 14.9 | 0.14 | 3.67 | pb | 560 |
| 64 | 71.3 | 0.95 | 8.26 | 0.13 | 4.53 | pb | 555 |
| 65 | 109.5 | 0.69 | 3.03 | 0.33 | 2.95 | ww | 580 |
| 67 | 27.97 | 0.97 | 14.3 | 0.04 | 5.44 | pb | 530 |
| 69 | 96.18 | 0.83 | 3.2 | 0.18 | 3.85 | pb | 550 |
| 70 | 214.2 | 0.67 | 3.66 | 0.40 | 3.54 | pb | 630 |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Footnote: ww=wasp waisted hysteresis, pb=pot-bellied hysteresis.

**Supplementary Data File Table 3**: Sites from 1973 a.f. demagnetised study of Latham and Briden (1975) before and after revised tilt adjustments

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Site-Grid ref. | Tilt | D/I *in situ* | D/I tilt adj. | Site-Grid ref. | Tilt | D/I *in situ* | | D/I tilt adj. |
| 1-867316 | 15/150 | 52/-29 | 40/-35 | 15-901205 | 15/320 | 35/-5 | | 37/-9 |
| 2-859278 | 15/130 | 46/-39 | 34/-39 | 16-865202 | 10/300 | 46/-18 | | 49/-15 |
| 3-863277 | 15/130 | 52/-25 | 43/-36 | 17-858203 | 10/320 | 7/-37 | | 14/-43 |
| 4-869240 | 10/300 | 26/-71 | 53/-69 | 18-925342\* | 10/110 | 36/-38 | | 28/-40 |
| 5-865266 | 15/130 | 48/-41 | 35/-41 | 19-955333\* | 5/100 | 36/-47 | | 31/-49 |
| 6-889339 | 20/140 | 44/-44 | 27/-39 | 20-983322 | 20/110 | 21/-43 | | 3/-40 |
| 7-902342 | 10/130 | 36/-39 | 28/-38 | 21-005309\* | 10/130 | 31/-58 | | 16/-55 |
| 8-910344 | 10/130 | 44/-47 | 33/-47 | 22-008305 | 10/130 | 15/-61 | | 1/-56 |
| 9-857234 | 15/280 | 23/-60 | 44/-54 | 28-844155\* | 15/320 | 24/-44 | | 39/-49 |
| 10-854233 | 10/280 | 16/-43 | 29/-40 | 29-854165\* | 15/320 | 357/-37 | | 6/-48 |
| 11-854235 | 10/280 | 38/-61 | 56/-52 | 30-856185\* | 15/320 | 359/-65 | | 33/-74 |
| 12-836227 | 10/280 | 18/-69 | 36/-63 | 31-747173 | 10/300 | 55/-73 | | 77/-67 |
| 13-836227 | 10/280 | 39/-64 | 49/-56 |  |  |  | |  |
| 14-826218 | 10/300 | 35/-52 | 47/-50 |  |  |  | |  |
| 32-808213 | 10/300 | 30/-66 | 51/-64 |  |  |  | |  |
| Mean result, in situ: | | | | | | | | |
| 21 Sites | D/I = 35.7/-48.0° | | R = 19.74 | α95 = 8.2° | k = 15.9 | |  |  |
| Palaeomagnetic Pole: 323.9°E, 0.5°N, (dp/dm = 7.0/10.7°) | | | | | | | | |
| Mean result, tilt adjusted: | | | | | | | | |
| 21 Sites | D/I = 36.1/-46.6° | | R = 19.92 | α95 = 7.6° | k = 18.6 | |  |  |
| Palaeomagnetic Pole: 323.2°E, 0.5°S, (dp/dm = 6.3/9.7°) | | | | | | | | |

\*These sites largely or wholly untreated and excluded from the mean calculation.