Table S4. ICP-MS trace element contents in µg/g (≃ppm) of whole rock samples.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **Li** | **Sc** | **V** | **Cr** | **Co** | **Ni** | **Cu** | **Zn** | **Ga** | **Rb** | **Sr** | **Y** | **Zr** | **Nb** | **Cs** | **Ba** | **La** | **Ce** |
| **Outsider Seamount volcanic rocks** | | | | | | | | | | | | | | | | | | |
| SO199-DR1-1 | 24.3 | 42.0 | 279 | 47.0 | 33.3 | 33.0 | 53.1 | 93.5 | 17.9 | *20.5*† | *292*† | 27.9 | 134 | 17.9 | 0.756 | 200 | 15.7 | 32.9 |
| SO199-DR1-10 |  | 36 | 285 |  | 32.7 | 24.4 | 58.5 | 84 | 17.6 | 20.4 | 319 | 29.8 | 131 | 18.6 | 0.8 | 197 | 16.2 | 34.6 |
| **Investigator Ridge volcanic rocks** | | | | | | | | | | | | | | | | | | |
| SO199-DR2-3 |  | 36 | 259 |  | 38.2 | 88.0 | 79.1 | 70 | 15.7 | 8.2 | 105 | 23.8 | 53.1 | 0.5 | 0.4 | 3 | 2.3 | 5.9 |
| SO199-DR2-4 | 35.7 | 42.4 | 254 | 408 | 29.9 | 97.1 | 88.8 | 108 | 16.9 | 5.98 | 99.5 | 22.6 | 52.4 | 0.697 | 0.432 | 5.64 | 1.65 | 5.16 |
| SO199-DR2-4\* | 35.0 | 41.6 | 250 | 408 | 29.2 | 96.0 | 87.8 | 108 | 16.9 | 5.98 | 99.5 | 22.6 | 52.4 | 0.697 | 0.432 | 5.64 | 1.65 | 5.16 |
| SO199-DR5-1 | 45.8 | 42.2 | 236 | 256 | 41.6 | 148 | 108 | 107 | 17.2 | 7.21 | 182 | 28.6 | 107 | 6.06 | 0.435 | 48.1 | 6.02 | 15.2 |
| SO199-DR6-2 | 9.56 | 46.8 | 284 | 114 | 46.9 | 92.4 | 46.2 | 54.8 | 14.6 | 3.53 | 50.4 | 18.6 | 15.9 | 1.01 | 0.064 | 25.4 | 1.09 | 2.95 |
| SO199-DR6-6 |  | 38 | 278 |  | 39.1 | 61.5 | 15.9 | 24 | 5.8 | 1.5 | 14.4 | 39.2 | 206 | 12.3 | <0.1 | 12 | 9.5 | 29.5 |
| SO199-DR8-1 | 51.7 | 25.3 | 167 | 326 | 40.3 | 164 | 54.6 | 75.4 | 17.3 | 14.7 | 273 | 23.2 | 162 | 16.5 | 0.422 | 115 | 13.7 | 30.8 |
| SO199-DR8-5 |  | 25 | 178 |  | 43.8 | 209 | 59.7 | 85 | 15.4 | 15.8 | 246 | 24.5 | 147 | 12.3 | 0.9 | 80 | 10.8 | 27.2 |
| SO199-DR9-1 | 27.8 | 33.2 | 270 | 150 | 30.1 | 33.7 | 45.5 | 97.0 | 20.0 | 30.6 | 341 | 31.1 | 209 | 37.4 | 0.345 | 257 | 28.3 | 56.9 |
| SO199-DR10-9 |  | 40 | 348 |  | 48.1 | 89.2 | 107 | 102 | 15.0 | 50.6 | 107 | 20 | 61.5 | 4.6 | 1.9 | 31 | 4.2 | 11.5 |
| SO199-DR10-15 |  | 43 | 347 |  | 29.7 | 52.0 | 99.9 | 124 | 18.2 | 16.7 | 123 | 29.3 | 113 | 6.8 | 0.4 | 30 | 7.9 | 15.1 |
| SO199-DR10-16 |  | 47 | 533 |  | 37.9 | 30.0 | 97.6 | 142 | 20.7 | 18.7 | 119 | 51.3 | 156 | 13.5 | 0.5 | 74 | 12.5 | 28.4 |
| SO199-DR30-6 |  | 40 | 244 |  | 46.5 | 140 | 71.9 | 59 | 13.2 | 4.7 | 78.0 | 21.9 | 43.8 | 1.1 | 0.3 | 8 | 1.9 | 5.7 |
| **Investigator Ridge plutonic rocks** | | | | | | | | | | | | | | | | | | |
| SO199-DR6-8 | 48.4 | 17.3 | 141 | 543 | 21.6 | 162 | 8.44 | 35.5 | 4.59 | 1.54 | 358 | 6.85 | 6.61 | 0.489 | 0.010 | 33.0 | 0.849 | 2.43 |
| SO199-DR6-8\* | 47.0 | 17.0 | 141 | 537 | 21.6 | 161 | 8.29 | 36.0 | 4.54 | 1.54 | 358 | 6.85 | 6.61 | 0.489 | 0.010 | 33.0 | 0.849 | 2.43 |
| SO199-DR10-1 | 26.0 | 47.5 | 165 | 841 | 44.4 | 319 | 106 | 62.2 | 7.33 | 11.4 | 67.5 | 4.24 | 5.83 | 0.439 | 0.424 | 11.2 | 0.452 | 1.21 |
| SO199-DR10-2 |  | 33 | 141 |  | 29.1 | 112 | 14.9 | 25 | 8.5 | 1.7 | 127 | 7.1 | 13.5 | 0.5 | <0.1 | 52 | 1.0 | 2.8 |
| SO199-DR11-4 | 5.76 | 27.3 | 109 | 274 | 25.1 | 119 | 3.18 | 18.5 | 11.6 | 1.57 | 261 | 6.25 | 9.29 | 0.795 | 0.045 | 41.4 | 1.63 | 4.38 |
| SO199-DR23-1A |  | 30 | 143 |  | 37.8 | 101 | 73.9 | 9 | 10.2 | 2.8 | 181 | 6.6 | 5.5 | 0.2 | 0.1 | 17 | 0.5 | 1.6 |
| SO199-DR23-14 | 26.7 | 33.0 | 128 | 459 | 24.7 | 229 | 14.4 | 51.1 | 9.2 | 3.19 | 268 | 6.32 | 5.89 | 0.473 | 0.099 | 17.9 | 0.763 | 2.15 |
| SO199-DR23-15 | 21.2 | 31.7 | 132 | 582 | 22.8 | 169 | 4.27 | 35.5 | 10.0 | 1.79 | 230 | 7.01 | 7.06 | 1.39 | 0.067 | 13.5 | 1.02 | 2.80 |
| SO199-DR23-19 | 81.0 | 29.7 | 108 | 529 | 21.7 | 254 | 20.6 | 73.3 | 10.2 | 5.57 | 21.2 | 6.43 | 6.89 | 0.528 | 0.083 | 11.0 | 1.01 | 3.04 |
| SO199-DR23-19\* | 81.4 | 29.9 | 107 | 534 | 21.9 | 261 | 21.0 | 74.7 | 10.3 | 5.57 | 21.2 | 6.43 | 6.89 | 0.528 | 0.083 | 11.0 | 1.01 | 3.04 |
| SO199-DR29-1 | 19.5 | 25.5 | 186 | 290 | 43.6 | 241 | 71.3 | 94.1 | 15.3 | 1.55 | 154 | 18.2 | 53.3 | 7.96 | 0.070 | 34.1 | 6.09 | 14.1 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **Pr** | **Nd** | **Sm** | **Eu** | **Gd** | **Tb** | **Dy** | **Ho** | **Er** | **Tm** | **Yb** | **Lu** | **Hf** | **Ta** | **Pb** | **Th** | **U** |
| **Outsider Seamount volcanic rocks** | | | | | | | | | | | | | | | | | | |
| SO199-DR1-1 | 4.08 | *17.5*† | *4.26*† | 1.48 | 4.78 | 0.803 | 4.99 | 1.02 | 2.79 | 0.407 | 2.67 | *0.387*† | *3.08*† | 1.08 | *2.23*† | *2.70*† | *0.755*† |
| SO199-DR1-10 | 4.32 | 18.1 | 4.13 | 1.46 | 4.77 | 0.86 | 5.13 | 1.05 | 2.99 | 0.43 | 2.78 | 0.41 | 3.2 | 1.0 | 1.6 | 3.1 | 0.9 |
| **Investigator Ridge volcanic rocks** | | | | | | | | | | | | | | | | | | |
| SO199-DR2-3 | 1.11 | 5.7 | 2.20 | 0.86 | 3.37 | 0.63 | 4.21 | 0.92 | 2.61 | 0.4 | 2.41 | 0.37 | 1.5 | <0.1 | 0.4 | <0.2 | 0.1 |
| SO199-DR2-4 | 0.973 | 5.70 | 2.14 | 0.858 | 3.00 | 0.572 | 3.91 | 0.835 | 2.35 | 0.354 | 2.33 | 0.341 | 1.51 | 0.061 | 0.650 | 0.095 | 0.075 |
| SO199-DR2-4\* | 0.973 | 5.70 | 2.14 | 0.858 | 3.00 | 0.572 | 3.91 | 0.835 | 2.35 | 0.354 | 2.33 | 0.341 | 1.51 | 0.061 | 0.650 | 0.095 | 0.075 |
| SO199-DR5-1 | 2.38 | 12.0 | 3.62 | 1.34 | 4.43 | 0.792 | 5.08 | 1.06 | 2.90 | 0.428 | 2.80 | 0.412 | 2.65 | 0.377 | 0.632 | 0.533 | 0.216 |
| SO199-DR6-2 | 0.513 | 2.95 | 1.22 | 0.491 | 1.94 | 0.405 | 2.97 | 0.686 | 1.99 | 0.314 | 2.17 | 0.324 | 0.587 | 0.076 | 0.129 | 0.082 | 0.083 |
| SO199-DR6-6 | 4.23 | 19.5 | 5.30 | 1.61 | 6.27 | 1.11 | 6.88 | 1.47 | 4.36 | 0.62 | 4.15 | 0.63 | 4.5 | 0.9 | 1.4 | 0.9 | 0.3 |
| SO199-DR8-1 | 3.98 | 17.4 | 4.17 | 1.51 | 4.51 | 0.731 | 4.38 | 0.864 | 2.34 | 0.341 | 2.24 | 0.325 | 3.38 | 1.01 | 1.25 | 1.37 | 0.441 |
| SO199-DR8-5 | 3.51 | 14.8 | 3.85 | 1.37 | 4.44 | 0.78 | 4.43 | 0.89 | 2.50 | 0.39 | 2.49 | 0.38 | 3.2 | 0.7 | 0.9 | 1.2 | 0.3 |
| SO199-DR9-1 | 6.95 | 29.1 | 6.41 | 2.09 | 6.59 | 1.02 | 5.88 | 1.15 | 2.99 | 0.421 | 2.72 | 0.392 | 4.69 | 2.23 | 2.01 | 3.48 | 0.838 |
| SO199-DR10-9 | 1.52 | 7.0 | 2.18 | 0.84 | 3.12 | 0.57 | 3.71 | 0.77 | 2.11 | 0.34 | 2.12 | 0.33 | 2.0 | 0.2 | 0.2 | 0.4 | 0.6 |
| SO199-DR10-15 | 2.50 | 11.3 | 3.58 | 1.26 | 4.74 | 0.82 | 5.39 | 1.08 | 3.18 | 0.5 | 3.06 | 0.47 | 3.2 | 0.5 | 0.9 | 0.7 | 0.5 |
| SO199-DR10-16 | 4.11 | 19.2 | 5.61 | 1.89 | 7.92 | 1.42 | 8.78 | 1.90 | 5.68 | 0.83 | 5.11 | 0.76 | 4.8 | 0.8 | 1.1 | 1.3 | 0.7 |
| SO199-DR30-6 | 0.92 | 5.4 | 1.74 | 0.71 | 2.82 | 0.53 | 3.51 | 0.80 | 2.40 | 0.37 | 2.23 | 0.37 | 1.3 | <0.1 | 0.2 | <0.2 | 0.1 |
| **Investigator Ridge plutonic rocks** | | | | | | | | | | | | | | | | | | |
| SO199-DR6-8 | 0.404 | 2.20 | 0.782 | 0.444 | 1.07 | 0.196 | 1.30 | 0.271 | 0.739 | 0.106 | 0.680 | 0.097 | 0.233 | 0.044 | 0.382 | 0.093 | 0.026 |
| SO199-DR6-8\* | 0.404 | 2.20 | 0.782 | 0.444 | 1.07 | 0.196 | 1.30 | 0.271 | 0.739 | 0.106 | 0.680 | 0.097 | 0.233 | 0.044 | 0.382 | 0.093 | 0.026 |
| SO199-DR10-1 | 0.201 | 1.09 | 0.395 | 0.171 | 0.558 | 0.109 | 0.754 | 0.164 | 0.453 | 0.069 | 0.445 | 0.069 | 0.167 | 0.046 | 0.307 | 0.045 | 0.047 |
| SO199-DR10-2 | 0.42 | 2.2 | 0.75 | 0.46 | 1.17 | 0.21 | 1.29 | 0.28 | 0.70 | 0.11 | 0.69 | 0.11 | 0.4 | <0.1 | 0.1 | 0.2 | 0.1 |
| SO199-DR11-4 | 0.633 | 2.97 | 0.819 | 0.679 | 1.00 | 0.177 | 1.15 | 0.241 | 0.657 | 0.098 | 0.631 | 0.094 | 0.284 | 0.062 | 0.414 | 0.089 | 0.03 |
| SO199-DR23-1A | 0.26 | 1.8 | 0.56 | 0.53 | 1.06 | 0.18 | 1.22 | 0.26 | 0.73 | 0.1 | 0.65 | 0.11 | 0.3 | <0.1 | 0.2 | <0.2 | <0.1 |
| SO199-DR23-14 | 0.350 | 1.92 | 0.666 | 0.362 | 0.91 | 0.171 | 1.16 | 0.248 | 0.677 | 0.099 | 0.637 | 0.093 | 0.212 | 0.041 | 0.275 | 0.047 | 0.039 |
| SO199-DR23-15 | 0.441 | 2.35 | 0.791 | 0.390 | 1.05 | 0.194 | 1.29 | 0.273 | 0.743 | 0.109 | 0.689 | 0.101 | 0.250 | 0.100 | 0.236 | 0.052 | 0.028 |
| SO199-DR23-19 | 0.505 | 2.52 | 0.763 | 0.216 | 0.965 | 0.178 | 1.16 | 0.247 | 0.669 | 0.101 | 0.649 | 0.095 | 0.218 | 0.060 | 0.296 | 0.096 | 0.056 |
| SO199-DR23-19\* | 0.505 | 2.52 | 0.763 | 0.216 | 0.965 | 0.178 | 1.16 | 0.247 | 0.669 | 0.101 | 0.649 | 0.095 | 0.218 | 0.060 | 0.296 | 0.096 | 0.056 |
| SO199-DR29-1 | 1.97 | 9.31 | 2.58 | 0.942 | 3.03 | 0.522 | 3.28 | 0.670 | 1.82 | 0.267 | 1.72 | 0.255 | 1.35 | 0.514 | 0.304 | 0.570 | 0.139 |
| \*Trace element replicate analysis on separate sample dissolution.  †Published in Hoernle et al. (2011a). | | | | | | | | | | | | | | | | | | |