**SUPPLEMENTARY MATERIALS**

1. ***Tables***

***Table 1S.*** *Sampling stations around KGI, in Hope Bay and in the Bransfield Strait (Antarctica). The names of the stations are those used during the second leg of the ANTARXXVII campaign.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Station name** | **Longitude** | **Latitude** | **Location** | **Depth (m)** | **Equipment** | **Date** | **ICP-MS** | **FP-XRF** |
| **GANT20-01** | 58°27’00’’ | 62°08’24’’ | Admiralty Bay | 434 | Van Veen grab | 02-02-20 | x | na |
| **GANT20-02** | 57°00’36’’ | 63°22’48’’ | Hope Bay | 315 | Van Veen grab | 03-02-20 | x | x |
| **GANT20-03** | 57°00’36’’ | 63°23’24’’ | Hope Bay | 332 | Van Veen grab | 03-02-20 | x | x |
| **GANT20-04** | 56°58’48’’ | 63°22’48’’ | Hope Bay | 257 | Van Veen grab | 03-02-20 | x | na |
| **GANT20-05** | 56°57’36’’ | 63°23’24’’ | Hope Bay | 258 | Van Veen grab | 04-02-20 | na | x |
| **GANT20-06** | 58°30’40’’ | 62°08’60’’ | Admiralty Bay | 210 | Van Veen grab | 05-02-20 | x | x |
| **GANT20-07** | 58°28’48’’ | 62°08’60’’ | Admiralty Bay | 282 | Van Veen grab | 05-02-20 | x | x |
| **GANT20-08** | 58°50’24’’ | 62°14’24’’ | Collins Bay | 435 | Van Veen grab | 06-02-20 | x | x |
| **GANT20-09** | 58°50’24’’ | 62°12’36’’ | Collins Bay | 266 | Van Veen grab | 07-02-20 | x | x |
| **GANT20-10** | 58°49’48’’ | 62°11’24’’ | Collins Bay | 152 | Van Veen grab | 07-02-20 | x | x |
| **GANT20-11** | 58°40’48’’ | 62°13’48’’ | Potter Cove | 28 | Van Veen grab | 11-02-20 | x | na |
| **GANT20-15** | 61°16’48’’ | 63°09’36’’ | Deception Island | 482 | Van Veen grab | 17-02-20 | x | x |
| **GANT20-17** | 61°36’36’’ | 63°11’24’’ | Deception Island | 476 | Van Veen grab | 17-02-20 | x | na |
| **GANT20-18** | 61°15’36’’ | 63°05’24’’ | Deception Island | 458 | Van Veen grab | 17-02-20 | x | x |
| **GANT20-19** | 61°12’00’’ | 63°04’48’’ | Deception Island | 597 | Van Veen grab | 17-02-20 | x | na |
| **GANT20-20** | 61°12’00’’ | 63°03’36’’ | Deception Island | 429 | Van Veen grab | 18-02-20 | x | x |
| **GANT20-21** | 60°59’24’’ | 63°00’00’’ | Deception Island | 321 | Van Veen grab | 18-02-20 | x | x |
| **GANT20-22** | 60°53’24’’ | 62°58’48’’ | Deception Island | 298 | Van Veen grab | 18-02-20 | x | na |
| **RD 2** | 60°53’84’’ | 63°28’63’’ | Deception Island | 395 | Rock dredge | 18-02-20 | x | na |
| **GANT20-23** | 59°43’48’’ | 62°54’36’’ | Little Point | 936 | Van Veen grab | 18-02-20 | x | x |
| **GANT20-24** | 59°47’24’’ | 62°52’48’’ | Little Point | 673 | Van Veen grab | 19-02-20 | x | x |
| **GANT20-25** | 59°55’12’’ | 62°52’12’’ | Little Point | 468 | Van Veen grab | 19-02-20 | na | x |
| **GANT20-26** | 60°02’60’’ | 62°53’60’’ | Little Point | 938 | Van Veen grab | 19-02-20 | x | x |
| **GANT20-27** | 59°53’60’’ | 62°49’12’’ | Little Point | 675 | Van Veen grab | 19-02-20 | x | x |
| **GANT20-28** | 59°50’24’’ | 62°51’00’’ | Little Point | 542 | Van Veen grab | 19-02-20 | x | x |
| **GANT20-29** | 59°48’36’’ | 62°49’48’’ | Little Point | 602 | Van Veen grab | 21-02-20 | na | x |
| **GANT20-30** | 59°45’00’’ | 62°50’24’’ | Little Point | 904 | Van Veen grab | 21-02-20 | x | x |
| **RD 6** | 58°22’05’’ | 62°26’09’’ | Orca | 736 | Rock dredge | 25-02-20 | x | na |
| **RD 7** | 58°21’34’’ | 62°30’72’’ | Orca | 1316 | Rock dredge | 25-02-20 | x | na |
| **GANT20-31** | 58°16’82’’ | 62°23’32’’ | Orca | 1358 | Van Veen grab | 26-02-20 | x | na |
| **RAUSCHERT 3** | 58°17’03’’ | 62°15’06’’ | Orca | 663 | Rauschert dredge | 26-02-20 | x | na |

***Table 2S.*** *Concentrations of trace elements (µg/g) in surface sediments for each station around King George Island, in Hope Bay and in the Bransfield Strait (Antarctica) measured by ICP-MS. The combined precision (*±*1sd) was estimated by analysing duplicate test samples in 7 successive runs as explained in Table 1. Underlined values were considered as outliers.*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| µg/g | Al | As | Cd | Co | Cr | Cu | Fe | Hg | Mn | Ni | Pb | V | Zn |
| Gant20-01 | 62104  ±3568 | 8  ±1 | 0.28  ±0.04 | 19  ±1 | 40  ±2 | 69  ±5 | 33378  ±1376 | 0.031  ±0.004 | 918  ±54 | 19  ±1 | 9  ±0.4 | 206  ±8 | 90  ±6 |
| Gant20-02 | 54857  ±3152 | 5  ±1 | 0.16  ±0.02 | 10  ±1 | 40  ±2 | 12  ±1 | 21328  ±879 | 0.039  ±0.005 | 523  ±30 | 23  ±1 | 8  ±0.4 | 118  ±5 | 45  ±3 |
| Gant20-03 | 53202  ±3056 | 6  ±1 | 0.12  ±0.02 | 10  ±1 | 36  ±1 | 11  ±1 | 21203  ±874 | 0.016  ±0.002 | 522  ±30 | 20  ±1 | 8  ±0.4 | 122  ±5 | 43  ±3 |
| Gant20-04 | 56986  ±3274 | 5  ±1 | 0.16  ±0.02 | 17  ±1 | 76  ±3 | 18  ±1 | 26649  ±1099 | 0.021  ±0.002 | 654  ±38 | 42  ±3 | 9  ±0.4 | 150  ±6 | 64  ±4 |
| Gant20-06 | 56606  ±3252 | 12  ±1 | 0.35  ±0.06 | 19  ±1 | 32  ±1 | 81  ±6 | 35,317  ±1456 | 0.278  ±0.033 | 951  ±55 | 15  ±1 | 10  ±0.5 | 206  ±8 | 89  ±6 |
| Gant20-07 | 61973  ±3560 | 9  ±1 | 0.27  ±0.04 | 19  ±1 | 31  ±1 | 80  ±6 | 32892  ±1356 | 0.022  ±0.003 | 919  ±54 | 15  ±1 | 9  ±0.4 | 207  ±9 | 84  ±6 |
| Gant20-08 | 34214  ±1965 | 5  ±1 | 0.20  ±0.03 | 26  ±1 | 22  ±1 | 41  ±3 | 39057  ±1610 | 0.016  ±0.002 | 1234  ±72 | 15  ±1 | 8  ±0.4 | 258  ±11 | 90  ±6 |
| Gant20-09 | 51373  ±2951 | 8  ±1 | 0.27  ±0.04 | 29  ±2 | 36  ±1 | 51  ±4 | 48372  ±1994 | 0.035  ±0.004 | 2118  ±123 | 21  ±1 | 10  ±0.5 | 299  ±12 | 115  ±8 |
| Gant20-10 | 50701  ±2913 | 11  ±1 | 0.42  ±0.06 | 20  ±1 | 25  ±1 | 78  ±1 | 35459  ±1462 | 0.037  ±0.004 | 879  ±51 | 14  ±1 | 10  ±0.5 | 217  ±9 | 89  ±6 |
| Gant20-11 | 59822  ±3437 | 9  ±1 | 0.21  ±0.03 | 17  ±1 | 17  ±1 | 81  ±6 | 31006  ±1278 | 0.014  ±0.002 | 903  ±53 | 9  ±1 | 7  ±0.3 | 195  ±8 | 74  ±5 |
| Gant20-15 | 46583  ±2676 | 3  ±0.4 | 0.20  ±0.03 | 20  ±1 | 58  ±2 | 35  ±2 | 33369  ±1376 | 0.035  ±0.004 | 1004  ±59 | 25  ±2 | 6  ±0.3 | 203  ±8 | 84  ±6 |
| Gant20-17 | 45730  ±2627 | 4  ±0.5 | 0.22  ±0.03 | 18  ±1 | 61  ±3 | 30  ±2 | 32782  ±1352 | 0.029  ±0.003 | 1000  ±58 | 24  ±1 | 6  ±0.3 | 198  ±8 | 77  ±5 |
| Gant20-18 | 31279  ±1797 | 5  ±0.6 | 0.19  ±0.03 | 29  ±2 | 59  ±2 | 39  ±3 | 36393  ±1501 | 0.019  ±0.002 | 1273  ±74 | 28  ±2 | 6  ±0.3 | 242  ±10 | 80  ±5 |
| Gant20-19 | 47083  ±2705 | 4  ±0.5 | 0.15  ±0.02 | 20  ±1 | 62  ±3 | 37  ±3 | 34156  ±1408 | 0.040  ±0.005 | 1089  ±63 | 26  ±2 | 7  ±0.3 | 195  ±8 | 90  ±6 |
| Gant20-20 | 32555  ±1870 | 3  ±0.4 | 0.17  ±0.03 | 22  ±1 | 44  ±2 | 37  ±3 | 34180  1409 | 0.021  ±0.002 | 1238  ±72 | 21  ±1 | 7  ±0.3 | 226  ±9 | 87  ±6 |
| Gant20-21 | 36473  ±2095 | 5  ±0.6 | 0.17  ±0.03 | 27  ±2 | 77  ±3 | 40  ±3 | 33877  ±1397 | 0.017  ±0.002 | 1046  ±61 | 49  ±3 | 6  ±0.3 | 210  ±9 | 82  ±5 |
| Gant20-22 | 34785  ±1998 | 17  ±2.0 | 0.22  ±0.03 | 25  ±1 | 34  ±1 | 38  ±3 | 37886  ±1562 | 0.020  ±0.002 | 1106  ±64 | 16  ±1 | 5  ±0.2 | 238  ±10 | 80  ±5 |
| Gant20-23 | 48348  ±2777 | 6  ±0.7 | 0.28  ±0.04 | 14  ±1 | 44  ±2 | 40  ±3 | 29088  ±1199 | 0.059  ±0.007 | 652  ±38 | 20  ±1 | 11  ±0.5 | 157  ±6 | 97  ±6 |
| Gant20-24 | 41873  ±2405 | 4  ±0.5 | 0.18  ±0.03 | 17  ±1 | 37  ±2 | 40  ±3 | 31321  ±1291 | 0.034  ±0.004 | 796  ±46 | 17  ±1 | 8  ±0.4 | 186  ±8 | 92  ±6 |
| Gant20-26 | 36735  ±2110 | 5  ±0.6 | 0.19  ±0.03 | 28  ±2 | 27  ±1 | 43  ±3 | 41090  ±1694 | 0.020  ±0.002 | 1280  ±75 | 16  ±1 | 8  ±0.4 | 274  ±11 | 94  ±6 |
| Gant20-27 | 43980  ±2526 | 8  ±0.9 | 0.24  ±0.04 | 17  ±1 | 26  ±1 | 64  ±5 | 29476  ±1215 | 0.034  ±0.004 | 776  ±45 | 13  ±1 | 7  ±0.3 | 183  ±8 | 75  ±5 |
| Gant20-28 | 45509  ±2614 | 11  ±1.3 | 0.25  ±0.04 | 19  ±1 | 39  ±2 | 66  ±5 | 33752  ±1392 | 0.025  ±0.003 | 898  ±52 | 17  ±1 | 8  ±0.4 | 209  ±9 | 86  ±6 |
| Gant20-30 | 37149  ±2134 | 4  ±0.5 | 0.19  ±0.03 | 25  ±1 | 24  ±1 | 38  ±3 | 38788  ±1599 | 0.016  ±0.002 | 1158  ±68 | 12  ±1 | 7  ±0.3 | 260  ±11 | 88  ±6 |
| Gant20-31 | 49019  ±2816 | 6  ±0.7 | 0.19  ±0.03 | 20  ±1 | 40  ±2 | 44  ±3 | 36477  ±1504 | 0.053  ±0.006 | 1025  ±60 | 19  ±1 | 14  ±0.7 | 220  ±9 | 102  ±7 |
| RAUSCHERT 3 | 47620  ±2736 | 5  ±0.6 | 0.23  ±0.04 | 19  ±1 | 46  ±2 | 52  ±4 | 31657  ±1305 | 0.025  ±0.003 | 911  ±53 | 19  ±1 | 8  ±0.4 | 206  ±8 | 83  ±6 |
| RD 2 | 32094  ±1844 | 9  ±1.1 | 0.25  ±0.04 | 23  ±1 | 28  ±1 | 29  ±2 | 31301  ±1291 | 0.075  ±0.009 | 989  ±58 | 14  ±1 | 6  ±0.3 | 218  ±9 | 73  ±5 |
| RD 6 | 38191  ±2194 | 4  ±0.5 | 0.23  ±0.04 | 22  ±1 | 34  ±1 | 46  ±3 | 39229  ±1617 | 0.034  ±0.004 | 1146  ±67 | 16  ±1 | 7  ±0.3 | 218  ±9 | 101  ±7 |
| RD 7 | 45891  ±2636 | 6  ±0.7 | 0.20  ±0.03 | 16  ±1 | 43  ±2 | 46  ±3 | 31322  ±1291 | 0.074  ±0.009 | 795  ±46 | 19  ±1 | 10  ±0.5 | 181  ±7 | 97  ±6 |

***Table 3S****. Concentrations of trace elements (µg/g) in surface sediments for each station around King George Island, in Hope Bay and in the Bransfield Strait (Antarctica) measured by FP-XRF.*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| µg/g | As | Ca | Co | Cr | Cu | Fe | Mo | Mn | Nb | Ni | Pb | Rb | Sb | Sn | Sr | Th | Ti | Y | Zn | Zr |
| Gant20-02 | 6 | 10197 | 10 | 23 | - | 23418 | 29 | 316 | 6 | 10 | 8 | 62 | 5 | 2 | 238 | 6 | 2249 | 23 | 85 | 122 |
| Gant20-03 | 7 | 10737 | 8 | 13 | 2 | 20671 | 34 | 306 | 6 | 9 | 8 | 60 | 6 | 3 | 246 | 6 | 2413 | 18 | 105 | 129 |
| Gant20-04 | 6 | 9944 | 13 | 23 | - | 26711 | 34 | 343 | 5 | 16 | 9 | 56 | 5 | 2 | 209 | 5 | 2675 | 22 | 87 | 108 |
| Gant20-05 | 6 | 9825 | 10 | 24 | - | 24693 | 29 | 329 | 5 | 12 | 8 | 65 | 7 | 3 | 216 | 6 | 2369 | 21 | 83 | 86 |
| Gant20-06 | 7 | 13123 | 15 | 8 | 28 | 34048 | 32 | 520 | 4 | 4 | 9 | 37 | 5 | 2 | 226 | 4 | 2678 | 24 | 109 | 82 |
| Gant20-07 | 6 | 13825 | 13 | 17 | 25 | 33294 | 36 | 508 | 4 | 3 | 9 | 30 | 5 | 2 | 294 | 4 | 2845 | 22 | 103 | 72 |
| Gant20-08 | 7 | 15389 | 14 | 19 | 21 | 35402 | 34 | 512 | 4 | 6 | 9 | 30 | 5 | 2 | 234 | 4 | 3211 | 25 | 91 | 71 |
| Gant20-09 | 7 | 12617 | 23 | 7 | 27 | 37124 | 42 | 501 | 3 | - | 8 | 30 | 5 | 2 | 205 | 3 | 2792 | 24 | 110 | 65 |
| Gant20-10 | 7 | 11081 | 15 | 15 | 25 | 32752 | 46 | 462 | 3 | 5 | 8 | 29 | 5 | 2 | 175 | 4 | 2610 | 23 | 97 | 59 |
| Gant20-15 | 8 | 19130 | 19 | 11 | 13 | 38886 | 25 | 636 | 4 | 9 | 8 | 25 | 5 | 2 | 218 | 3 | 3655 | 28 | 132 | 90 |
| Gant20-18 | 7 | 13972 | 16 | - | 6 | 36172 | 34 | 555 | 4 | 6 | 8 | 20 | 7 | 3 | 218 | 3 | 3192 | 24 | 110 | 73 |
| Gant20-20 | 9 | 16086 | 13 | - | 5 | 28571 | 27 | 798 | 2 | 2 | 14 | 21 | 6 | 3 | 263 | 3 | 2937 | 25 | 106 | 79 |
| Gant20-21 | 7 | 15583 | 17 | 8 | 12 | 38238 | 32 | 566 | 3 | 7 | 8 | 22 | 6 | 3 | 228 | 3 | 3413 | 25 | 113 | 75 |
| Gant20-23 | 7 | 8778 | 10 | 5 | - | 24809 | 47 | 332 | 4 | 3 | 8 | 34 | 5 | 3 | 125 | 4 | 2363 | 25 | 101 | 72 |
| Gant20-24 | 8 | 15753 | 18 | - | 13 | 39316 | 25 | 531 | 4 | 3 | 8 | 21 | 5 | 2 | 215 | 3 | 4205 | 28 | 133 | 97 |
| Gant20-25 | 8 | 17584 | 22 | - | 13 | 40116 | 38 | 596 | 3 | - | 8 | 17 | 6 | 3 | 215 | 3 | 4174 | 27 | 115 | 94 |
| Gant20-26 | 7 | 9045 | 11 | 5 | 4 | 27113 | 49 | 350 | 4 | 1 | 9 | 32 | 6 | 3 | 129 | 4 | 2485 | 23 | 90 | 70 |
| Gant20-27 | 8 | 18881 | 21 | - | 16 | 41914 | 29 | 612 | 3 | - | 7 | 18 | 5 | 3 | 226 | 3 | 4406 | 28 | 127 | 100 |
| Gant20-28 | 8 | 15775 | 17 | - | 16 | 38208 | 30 | 539 | 4 | 3 | 8 | 21 | 5 | 3 | 210 | 3 | 4067 | 27 | 121 | 98 |
| Gant20-29 | 9 | 11892 | 23 | 42 | 41 | 38645 | 23 | 549 | 9 | 14 | 7 | 31 | 6 | 2 | 257 | 5 | 2872 | 33 | 159 | 131 |
| Gant20-30 | 8 | 10823 | 18 | 4 | 7 | 35715 | 30 ± | 499 | 3 | 5 | 8 | 23 | 6 | 3 | 198 | 3 | 2946 | 28 | 117 | 90 |

***Table 4S.*** *p-values for ANOVA, Kruskal-Wallis, Tukey and Dunn’s tests for differences in trace element concentrations (ICP-MS) around KGI, in Hope Bay and in the Bransfield Strait (Antarctica). Significant differences are indicated by bold numbers and non-normally distributed elements are indicated by a \*.*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Al | As\* | Cd\* | Co | Cr\* | Cu\* | Fe | Hg\* | Mn\* | Ni | Pb | V | Zn\* |
| *ANOVA/ Kruskal-Wallis* | **≤ 0.001** | 0.27 | **0.01** | **0.02** | **0.03** | **≤ 0.001** | **≤ 0.01** | 0.69 | **0.05** | **0.02** | **0.01** | **≤ 0.01** | **0.02** |
| *Tukey/Dunn* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Admiralty Bay - Collins Bay* | 0.07 | na | 0.59 | 0.51 | 0.46 | 0.37 | 0.31 | na | 0.30 | 1.00 | 1.00 | 0.35 | 0.37 |
| *Admiralty Bay - Deception Island* | **≤ 0.001** | na | **0.01** | 0.76 | 0.10 | **≤ 0.001** | 1.00 | na | 0.22 | 0.20 | 0.06 | 1.00 | 0.36 |
| *Collins Bay - Deception Island* | 0.57 | na | 0.07 | 0.98 | **0.01** | **0.03** | 0.18 | na | 0.98 | 0.30 | 0.08 | 0.38 | **0.05** |
| *Admiralty Bay - Hope Bay* | 0.93 | na | **≤ 0.001** | 0.36 | 0.30 | **≤ 0.001** | **0.03** | na | 0.11 | 0.59 | 1.00 | **0.05** | **0.04** |
| *Collins Bay - Hope Bay* | 0.45 | na | **0.01** | **0.01** | 0.07 | **0.01** | **≤  0.001** | na | **0.01** | 0.72 | 1.00 | **≤ 0.001** | **≤ 0.01** |
| *Deception Island - Hope Bay* | **0.01** | na | 0.13 | **0.01** | 0.70 | 0.29 | **0.01** | na | **≤ 0.001** | 1.00 | 0.23 | **≤ 0.01** | 0.11 |
| *Admiralty Bay - Little Point* | **0.00** | na | 0.11 | 1.00 | 0.91 | 0.09 | 1.00 | na | 0.91 | 1.00 | 0.98 | 1.00 | 0.80 |
| *Collins Bay - Little Point* | 0.99 | na | 0.34 | 0.51 | 0.46 | 0.51 | 0.18 | na | 0.19 | 1.00 | 0.99 | 0.31 | 0.44 |
| *Deception Island - Little Point* | 0.87 | na | 0.29 | 0.76 | **0.03** | 0.06 | 1.00 | na | 0.09 | **0.04** | 0.11 | 1.00 | 0.14 |
| *Hope Bay - Little Point* | 0.07 | na | **0.02** | 0.13 | 0.19 | **0.01** | **0.01** | na | 0.09 | 0.36 | 1.00 | **0.01** | **0.01** |
| *Admiralty Bay - Orca* | **0.04** | na | 0.12 | 1.00 | 0.35 | 0.25 | 1.00 | na | 0.84 | 0.98 | 1.00 | 1.00 | 0.32 |
| *Collins Bay - Orca* | 1.00 | na | 0.33 | 0.50 | 0.08 | 0.84 | 0.37 | na | 0.36 | 1.00 | 1.00 | 0.28 | 0.97 |
| *Deception Island - Orca* | 0.50 | na | 0.41 | 0.75 | 0.52 | **0.03** | 1.00 | na | 0.26 | 0.56 | **0.01** | 1.00 | **0.02** |
| *Hope Bay - Orca* | 0.34 | na | **0.05** | 0.24 | 0.86 | **0.01** | **0.01** | na | 0.06 | 0.93 | 0.97 | **0.03** | **≤ 0.001** |
| *Little Point - Orca* | 0.99 | na | 0.92 | 1.00 | 0.22 | 0.63 | 1.00 | na | 0.72 | 0.92 | 0.88 | 1.00 | 0.37 |
| *Admiralty Bay - Potter Cove* | 1.00 | na | 0.29 | 1.00 | 0.28 | 0.92 | 0.99 | na | 0.75 | 0.51 | 0.90 | 1.00 | 0.25 |
| *Collins Bay - Potter Cove* | 0.38 | na | 0.50 | 0.56 | 0.57 | 0.46 | 0.32 | na | 0.29 | 0.42 | 0.93 | 0.52 | 0.07 |
| *Deception Island - Potter Cove* | **0.03** | na | 0.65 | 0.76 | **0.03** | **0.03** | 0.98 | na | 0.26 | **0.02** | 0.99 | 0.99 | 0.50 |
| *Hope Bay - Potter Cove* | 0.99 | na | 0.19 | 0.94 | 0.07 | **0.01** | 0.57 | na | 0.42 | 0.06 | 0.99 | 0.48 | 0.75 |
| *Little Point - Potter Cove* | 0.13 | na | 0.93 | 0.99 | 0.28 | 0.22 | 0.99 | na | 0.79 | 0.48 | 0.99 | 1.00 | 0.16 |
| *Orca - Potter Cove* | 0.33 | na | 0.98 | 1.00 | 0.08 | 0.37 | 0.98 | na | 0.64 | 0.21 | 0.81 | 1.00 | 0.06 |

***Table 5S****. Enrichment Factor in surface sediments (green: deficiency to minimal enrichment; light yellow: moderate enrichment; yellow: significant enrichment), Geo-accumulation index (green: uncontaminated; light green: uncontaminated to moderately contaminated; light yellow: moderately contaminated; yellow: moderately to heavily contaminated) and Ecological Risk Index (RI) (green: low ecological risk; light yellow: moderate ecological risk) for stations around KGI, in Hope Bay and in the Bransfield Strait (Antarctica).*

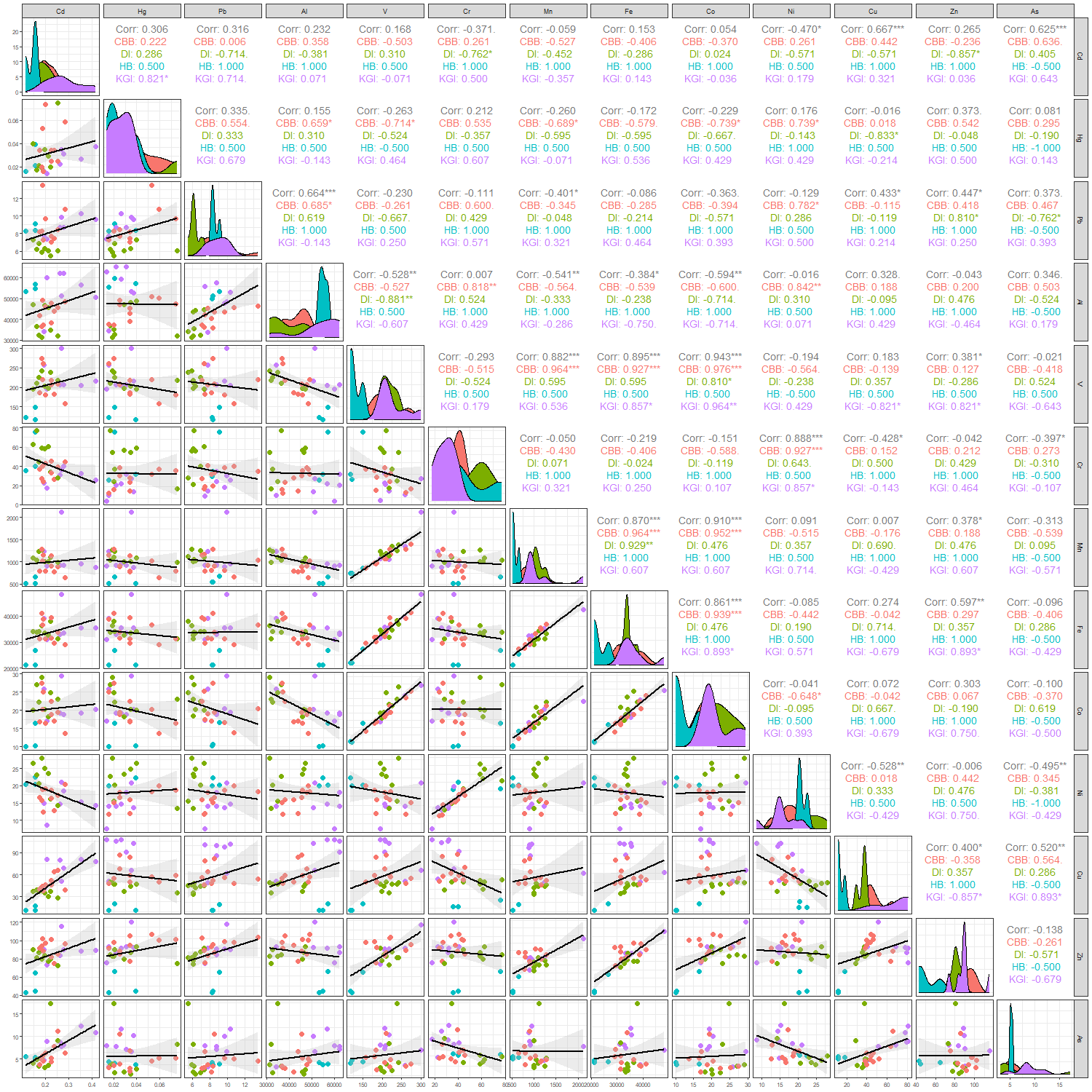
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Enrichment Factor** | | | | | | | | **Geo-accumulation Index** | | | | | | | | **RI** |
|  | **As** | **Cd** | **Hg** | **Cu** | **Zn** | **Pb** | **Cr** | **Ni** | **As** | **Cd** | **Hg** | **Cu** | **Zn** | **Pb** | **Cr** | **Ni** |
| *GANT20-01* | 5.03 | 3.41 | 0.68 | 6.01 | 0.64 | 0.64 | 1.44 | 1.24 | 1.43 | 0.87 | -1.46 | 1.68 | 0.20 | -1.54 | -0.38 | -0.59 | 179.9 |
| *GANT20-02* | 3.57 | 2.17 | 0.99 | 1.14 | 1.21 | 0.69 | 1.62 | 1.71 | 0.75 | 0.04 | -1.10 | -0.89 | -0.81 | -1.61 | -0.39 | -0.31 | 115.1 |
| *GANT20-03* | 4.05 | 1.65 | 0.41 | 1.16 | 1.21 | 0.71 | 1.48 | 1.59 | 0.89 | -0.40 | -2.42 | -0.91 | -0.85 | -1.63 | -0.56 | -0.46 | 87.8 |
| *GANT20-04* | 3.60 | 2.11 | 0.52 | 1.72 | 1.69 | 0.73 | 2.94 | 3.07 | 0.82 | 0.05 | -1.98 | -0.25 | -0.27 | -1.49 | 0.53 | 0.59 | 114.0 |
| *GANT20-06* | 8.35 | 4.75 | 0.65 | 7.76 | 2.33 | 0.83 | 1.26 | 1.12 | 2.03 | 1.21 | -1.66 | 1.92 | 0.18 | -1.31 | -0.71 | -0.87 | 223.2 |
| *GANT20-07* | 5.43 | 3.25 | 0.48 | 6.96 | 2.01 | 0.64 | 1.11 | 0.99 | 1.53 | 0.79 | -1.96 | 1.89 | 0.10 | -1.54 | -0.76 | -0.93 | 174.6 |
| *GANT20-08* | 5.24 | 4.32 | 0.63 | 6.43 | 3.92 | 1.03 | 1.45 | 1.80 | 0.63 | 0.35 | -2.42 | 0.92 | 0.21 | -1.72 | -1.23 | -0.91 | 115.1 |
| *GANT20-09* | 5.81 | 3.98 | 0.94 | 5.38 | 3.35 | 0.88 | 1.56 | 1.71 | 1.36 | 0.82 | -1.26 | 1.25 | 0.57 | -1.37 | -0.53 | -0.40 | 173.4 |
| *GANT20-10* | 8.26 | 6.25 | 1.01 | 8.32 | 2.63 | 0.87 | 1.11 | 1.18 | 1.85 | 1.45 | -1.18 | 1.86 | 0.20 | -1.40 | -1.05 | -0.96 | 240.4 |
| *GANT20-11* | 5.72 | 2.61 | 0.32 | 7.32 | 1.84 | 0.56 | 0.65 | 0.59 | 1.56 | 0.43 | -2.61 | 1.91 | -0.08 | -1.79 | -1.59 | -1.71 | 149.7 |
| *GANT20-15* | 2.62 | 3.22 | 1.03 | 4.10 | 2.68 | 0.62 | 2.78 | 2.23 | 0.07 | 0.37 | -1.28 | 0.72 | 0.10 | -2.01 | 0.16 | -0.16 | 124.5 |
| *GANT20-17* | 3.03 | 3.57 | 0.88 | 3.56 | 2.52 | 0.60 | 2.94 | 2.15 | 0.25 | 0.49 | -1.52 | 0.49 | -0.01 | -2.07 | 0.21 | -0.24 | 125.7 |
| *GANT20-18* | 6.32 | 4.50 | 0.84 | 6.68 | 3.81 | 0.86 | 4.16 | 3.73 | 0.77 | 0.28 | -2.14 | 0.85 | 0.04 | -2.11 | 0.16 | 0.01 | 121.4 |
| *GANT20-19* | 3.38 | 2.37 | 1.19 | 4.29 | 2.85 | 0.71 | 2.93 | 2.34 | 0.46 | -0.06 | -1.05 | 0.80 | 0.21 | -1.81 | 0.25 | -0.08 | 120.4 |
| *GANT20-20* | 4.12 | 4.06 | 0.87 | 6.18 | 3.96 | 0.96 | 3.02 | 2.63 | 0.21 | 0.19 | -2.03 | 0.79 | 0.15 | -1.89 | -0.24 | -0.44 | 108.0 |
| *GANT20-21* | 5.15 | 3.44 | 0.63 | 5.91 | 3.34 | 0.77 | 4.69 | 5.59 | 0.69 | 0.11 | -2.35 | 0.89 | 0.07 | -2.04 | 0.56 | 0.81 | 119.5 |
| *GANT20-22* | 19.25 | 4.86 | 0.80 | 5.85 | 3.43 | 0.72 | 2.19 | 1.93 | 2.53 | 0.54 | -2.05 | 0.81 | 0.04 | -2.22 | -0.61 | -0.79 | 189.0 |
| *GANT20-23* | 5.03 | 4.46 | 1.70 | 4.45 | 2.98 | 1.01 | 2.04 | 1.75 | 1.07 | 0.89 | -0.50 | 0.89 | 0.31 | -1.24 | -0.24 | -0.46 | 184.3 |
| *GANT20-24* | 3.40 | 3.21 | 1.13 | 5.16 | 3.26 | 0.89 | 1.97 | 1.65 | 0.30 | 0.21 | -1.30 | 0.89 | 0.23 | -1.64 | -0.49 | -0.75 | 119.6 |
| *GANT20-26* | 5.07 | 3.86 | 0.74 | 6.37 | 3.82 | 1.03 | 1.63 | 1.78 | 0.68 | 0.29 | -2.10 | 1.01 | 0.27 | -1.61 | -0.95 | -0.83 | 118.1 |
| *GANT20-27* | 6.80 | 4.12 | 1.07 | 7.84 | 2.54 | 0.77 | 1.31 | 1.21 | 1.36 | 0.64 | -1.30 | 1.57 | -0.06 | -1.78 | -1.01 | -1.13 | 163.9 |
| *GANT20-28* | 9.53 | 4.22 | 0.76 | 7.85 | 2.80 | 0.85 | 1.90 | 1.57 | 1.90 | 0.73 | -1.75 | 1.62 | 0.13 | -1.59 | -0.43 | -0.70 | 182.3 |
| *GANT20-30* | 4.66 | 3.90 | 0.60 | 5.59 | 3.53 | 0.90 | 1.44 | 1.40 | 0.57 | 0.32 | -2.38 | 0.84 | 0.18 | -1.80 | -1.12 | -1.16 | 111.9 |
| *GANT20-31* | 4.54 | 2.91 | 1.50 | 4.90 | 3.10 | 1.26 | 1.82 | 1.60 | 0.94 | 0.29 | -0.66 | 1.05 | 0.39 | -0.91 | -0.38 | -0.57 | 150.7 |
| *RAUSCHERT 3* | 4.15 | 3.60 | 0.74 | 5.94 | 2.58 | 0.74 | 2.12 | 1.63 | 0.77 | 0.56 | -1.72 | 1.28 | 0.08 | -1.72 | -0.20 | -0.58 | 139.9 |
| *RD 2* | 11.00 | 5.98 | 3.25 | 4.86 | 3.39 | 0.86 | 1.92 | 1.84 | 1.60 | 0.72 | -0.15 | 0.43 | -0.10 | -2.08 | -0.91 | -0.98 | 192.5 |
| *RD 6* | 4.38 | 4.50 | 1.22 | 6.53 | 3.94 | 0.84 | 1.94 | 1.80 | 0.53 | 0.57 | -1.31 | 1.10 | 0.37 | -1.85 | -0.65 | -0.76 | 138.8 |
| *RD 7* | 5.37 | 3.32 | 2.22 | 5.42 | 3.16 | 0.96 | 2.08 | 1.74 | 1.09 | 0.39 | -0.19 | 1.10 | 0.32 | -1.39 | -0.28 | -0.54 | 171.9 |

1. ***Figures***

*Chart

Description automatically generated*

***Figure 1S.*** *Weighted Deming regressions of the concentrations (µg/g) of As, Co, Cr, Cu, Fe, Mn, Ni, Pb and Zn measured by FP-XRF and ICP-MS. P-values are: As = 0.373, Co = 0.041, Cr = 0.741, Cu = 0.000, Fe = 0.032, Mn = 0.115, Ni = 0.012, Pb = 0.823, Zn = 0.289.*

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***Figure 2S.*** *Pairwise regressions (lower triangle) and Spearman rank values (upper triangle) of trace elements (ICP-MS) at sampling stations calculated over the entire study area and by geochemically distinct region. DI = Deception Island, HB = Hope Bay, KGI = King George Island, CBB = Central Bransfield Basin (including Orca and Little Point). Stars indicate significant values.*

***Map

Description automatically generated***

***Figure 3S****. Relative importance of the enrichment factors (for Hg, Cd, As, Cu, Pb, Cr and Zn) in surface sediments at each sampling station around King George Island, in Hope Bay and in the Bransfield Strait (Antarctica). The gradient of colours reflects the toxicity of the elements based on the TEF (Toxicity Equivalency Factor; from light yellow – least toxic (TEF = 1) to dark red – more toxic (TEF = 40)) and the size of the pie chart is proportional to the value of the Ecological Risk Index. KGI = King George Island, DI = Deception Island.*