

Supplementary data for article:

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Supplementary materials

Table 1
CF and PLI values of elements in sediment samples

| SL ^a | A5 | Cd | Co | Cr | Cu | Fe | Mn | Ni | Pb | V | Zn | PLI |
|-----------------|---------------------------|------|------|------|-------|------|------|------|------|------|-------|-------|
| | Contamination factor (CF) | | | | | | | | | | | |
| T1 | 2.96 | 3.95 | 1.22 | 0.96 | 4.16 | 1.35 | 1.97 | 1.13 | 1.66 | 1.44 | 4.95 | 1.998 |
| T2 | 0.42 | 3.30 | 2.50 | 1.66 | 5.60 | 2.00 | 1.90 | 1.33 | 2.04 | 2.17 | 5.03 | 2.107 |
| T3 | 1.26 | 3.88 | 2.58 | 1.54 | 6.45 | 1.90 | 2.04 | 1.30 | 2.15 | 2.03 | 5.87 | 2.413 |
| T4 | 0.72 | 3.45 | 2.33 | 1.45 | 5.55 | 1.72 | 2.16 | 1.13 | 2.15 | 1.80 | 5.07 | 2.117 |
| T5 | 0.37 | 4.98 | 2.75 | 1.70 | 7.68 | 1.89 | 2.66 | 1.37 | 1.94 | 2.01 | 5.39 | 2.301 |
| T6 | 0.83 | 5.38 | 2.59 | 1.61 | 7.87 | 2.04 | 3.25 | 1.22 | 2.45 | 2.17 | 6.30 | 2.619 |
| T7 | 0.46 | 4.87 | 2.41 | 1.49 | 6.43 | 1.77 | 2.89 | 1.23 | 1.56 | 1.90 | 5.20 | 2.17 |
| T8 | 0.75 | 4.76 | 2.35 | 1.44 | 6.18 | 1.76 | 2.60 | 1.20 | 2.06 | 1.89 | 5.06 | 2.266 |
| T9 | 1.35 | 5.47 | 2.62 | 1.55 | 7.57 | 1.91 | 2.80 | 1.33 | 2.42 | 2.04 | 6.17 | 2.67 |
| D1 | 0.48 | 1.76 | 1.97 | 1.18 | 2.44 | 1.63 | 2.14 | 0.96 | 1.56 | 1.58 | 2.53 | 1.52 |
| D2 | 3.36 | 1.66 | 1.98 | 1.21 | 2.07 | 1.61 | 1.60 | 1.04 | 1.97 | 1.76 | 2.36 | 1.791 |
| D3 | 0.47 | 1.95 | 2.04 | 1.29 | 2.73 | 1.67 | 1.51 | 1.03 | 1.79 | 1.78 | 3.12 | 1.595 |
| D4 | 0.37 | 1.84 | 1.87 | 1.22 | 2.51 | 1.53 | 1.38 | 1.01 | 2.27 | 1.58 | 3.30 | 1.518 |
| D5 | 0.26 | 2.17 | 2.31 | 1.26 | 3.54 | 1.64 | 2.09 | 1.09 | 1.39 | 1.62 | 3.31 | 1.587 |
| D6 | 0.68 | 4.15 | 2.61 | 1.98 | 3.64 | 1.82 | 1.83 | 2.04 | 2.35 | 1.86 | 3.43 | 2.184 |
| S1 | 0.44 | 2.70 | 2.64 | 1.80 | 2.78 | 1.49 | 1.58 | 2.70 | 1.54 | 1.45 | 4.06 | 1.857 |
| S2 | 0.53 | 2.36 | 3.47 | 2.47 | 3.17 | 1.89 | 2.71 | 3.63 | 1.99 | 1.78 | 3.20 | 2.241 |
| S3 | 0.45 | 2.92 | 3.21 | 2.26 | 3.16 | 1.79 | 2.56 | 3.42 | 1.95 | 1.72 | 4.07 | 2.22 |
| S4 | 0.59 | 3.66 | 3.32 | 2.33 | 2.73 | 1.86 | 2.81 | 3.43 | 1.90 | 1.86 | 3.19 | 2.293 |
| I1 | 8.08 | 8.23 | 1.65 | 1.65 | 2.52 | 1.50 | 1.39 | 4.10 | 5.51 | 1.19 | 14.21 | 3.202 |
| I2 | 5.96 | 6.50 | 4.40 | 3.71 | 3.43 | 1.94 | 2.09 | 7.89 | 4.55 | 1.67 | 16.43 | 4.272 |
| V1 | 0.73 | 6.18 | 3.92 | 2.74 | 5.70 | 2.25 | 2.68 | 1.23 | 3.15 | 2.14 | 7.49 | 2.856 |
| V2 | 1.45 | 5.33 | 3.37 | 2.46 | 4.61 | 1.90 | 1.89 | 4.50 | 3.14 | 1.82 | 6.74 | 3.333 |
| Z1 | 1.95 | 2.81 | 1.48 | 1.38 | 13.51 | 1.38 | 1.25 | 2.43 | 1.34 | 1.56 | 3.75 | 2.168 |
| Z2 | 1.87 | 5.86 | 3.87 | 3.57 | 4.57 | 1.89 | 1.59 | 6.81 | 3.69 | 1.82 | 9.90 | 3.492 |
| JM | 1.01 | 3.03 | 2.85 | 1.70 | 4.17 | 2.04 | 5.69 | 1.59 | 2.60 | 2.04 | 3.57 | 2.478 |
| N1 | 0.44 | 2.07 | 1.98 | 1.39 | 7.39 | 1.58 | 1.13 | 1.03 | 2.39 | 1.84 | 6.16 | 1.86 |
| N2 | 0.31 | 4.32 | 1.97 | 1.14 | 1.92 | 1.42 | 1.19 | 1.00 | 1.46 | 1.67 | 1.71 | 1.4 |
| Ta | 1.06 | 2.44 | 3.22 | 1.81 | 4.51 | 2.56 | 2.18 | 1.45 | 2.37 | 2.47 | 2.86 | 2.293 |
| Tr | 0.71 | 3.05 | 3.39 | 2.59 | 3.55 | 2.07 | 1.89 | 3.82 | 2.50 | 2.13 | 5.06 | 2.535 |
| Pr | 0.89 | 2.45 | 2.90 | 1.90 | 11.90 | 2.09 | 1.34 | 1.70 | 2.07 | 2.29 | 2.32 | 2.25 |
| Ko | 1.03 | 4.26 | 3.49 | 2.36 | 3.42 | 1.92 | 2.09 | 3.81 | 2.17 | 1.89 | 6.26 | 2.667 |
| Pe | 1.34 | 4.89 | 3.70 | 1.43 | 75.67 | 2.08 | 3.08 | 1.20 | 2.72 | 2.10 | 13.83 | 3.663 |
| To | 0.58 | 4.09 | 3.58 | 2.39 | 4.83 | 2.07 | 2.60 | 3.31 | 2.33 | 2.27 | 2.50 | 2.492 |

^aSample labels

Table 2
EF values of elements in sediment samples

| SL ^a | As | Cd | Co | Cr | Cu | Fe | Mn | Ni | Pb | V | Zn |
|------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|
| Enrichment factor (EF) | | | | | | | | | | | |
| T1 | 1.981 | 2.637 | 0.815 | 0.643 | 2.779 | 0.901 | 1.316 | 0.755 | 1.106 | 0.966 | 3.312 |
| T2 | 0.238 | 1.877 | 1.418 | 0.944 | 3.183 | 1.136 | 1.081 | 0.757 | 1.161 | 1.235 | 2.855 |
| T3 | 0.630 | 1.935 | 1.288 | 0.769 | 3.213 | 0.948 | 1.019 | 0.647 | 1.071 | 1.012 | 2.927 |
| T4 | 0.345 | 1.653 | 1.116 | 0.697 | 2.662 | 0.825 | 1.036 | 0.542 | 1.031 | 0.865 | 2.432 |
| T5 | 0.344 | 4.596 | 2.543 | 1.569 | 7.089 | 1.748 | 2.454 | 1.270 | 1.794 | 1.862 | 4.981 |
| T6 | 0.443 | 2.879 | 1.384 | 0.859 | 4.211 | 1.092 | 1.741 | 0.653 | 1.311 | 1.164 | 3.367 |
| T7 | 0.640 | 6.719 | 3.322 | 2.062 | 8.882 | 2.442 | 3.985 | 1.703 | 2.157 | 2.629 | 7.175 |
| T8 | 0.382 | 2.408 | 1.191 | 0.729 | 3.128 | 0.892 | 1.314 | 0.606 | 1.045 | 0.960 | 2.558 |
| T9 | 0.587 | 2.371 | 1.136 | 0.672 | 3.283 | 0.828 | 1.215 | 0.579 | 1.047 | 0.886 | 2.675 |
| D1 | 0.395 | 1.440 | 1.616 | 0.968 | 1.996 | 1.339 | 1.754 | 0.784 | 1.276 | 1.297 | 2.069 |
| D2 | 1.371 | 0.675 | 0.807 | 0.492 | 0.843 | 0.658 | 0.652 | 0.423 | 0.803 | 0.717 | 0.960 |
| D3 | 0.313 | 1.287 | 1.352 | 0.851 | 1.804 | 1.102 | 0.999 | 0.682 | 1.185 | 1.178 | 2.065 |
| D4 | 0.218 | 1.072 | 1.090 | 0.715 | 1.467 | 0.892 | 0.808 | 0.588 | 1.328 | 0.924 | 1.927 |
| D5 | 0.408 | 3.360 | 3.566 | 1.953 | 5.473 | 2.544 | 3.229 | 1.690 | 2.149 | 2.506 | 5.123 |
| D6 | 0.458 | 2.789 | 1.755 | 1.331 | 2.450 | 1.224 | 1.229 | 1.372 | 1.579 | 1.256 | 2.303 |
| S1 | 0.357 | 2.214 | 2.162 | 1.474 | 2.279 | 1.217 | 1.295 | 2.210 | 1.261 | 1.189 | 3.322 |
| S2 | 0.330 | 1.479 | 2.174 | 1.548 | 1.984 | 1.186 | 1.701 | 2.275 | 1.249 | 1.120 | 2.006 |
| S3 | 0.286 | 1.837 | 2.017 | 1.419 | 1.988 | 1.123 | 1.610 | 2.150 | 1.226 | 1.086 | 2.561 |
| S4 | 0.392 | 2.431 | 2.201 | 1.548 | 1.808 | 1.237 | 1.863 | 2.275 | 1.260 | 1.239 | 2.117 |
| I1 | 8.040 | 8.183 | 1.641 | 1.640 | 2.508 | 1.493 | 1.387 | 4.083 | 5.482 | 1.189 | 14.13 |
| I2 | 3.660 | 3.989 | 2.699 | 2.275 | 2.102 | 1.190 | 1.280 | 4.839 | 2.791 | 1.028 | 10.08 |
| V1 | 0.888 | 7.543 | 4.790 | 3.346 | 6.957 | 2.750 | 3.267 | 1.500 | 3.847 | 2.613 | 9.146 |
| V2 | 0.863 | 3.162 | 2.003 | 1.457 | 2.733 | 1.126 | 1.123 | 2.672 | 1.864 | 1.083 | 3.997 |
| Z1 | 1.501 | 2.159 | 1.136 | 1.058 | 10.369 | 1.058 | 0.957 | 1.862 | 1.026 | 1.203 | 2.876 |
| Z2 | 1.186 | 3.710 | 2.453 | 2.262 | 2.894 | 1.198 | 1.009 | 4.311 | 2.335 | 1.154 | 6.267 |
| JM | 0.495 | 1.487 | 1.399 | 0.833 | 2.043 | 1.001 | 2.793 | 0.779 | 1.274 | 1.005 | 1.752 |
| N1 | 0.267 | 1.267 | 1.212 | 0.850 | 4.526 | 0.966 | 0.691 | 0.633 | 1.461 | 1.131 | 3.770 |
| N2 | 0.262 | 3.664 | 1.670 | 0.966 | 1.631 | 1.205 | 1.007 | 0.845 | 1.235 | 1.418 | 1.448 |
| Ta | 0.403 | 0.924 | 1.222 | 0.685 | 1.709 | 0.969 | 0.826 | 0.550 | 0.900 | 0.939 | 1.084 |
| Tr | 0.491 | 2.117 | 2.350 | 1.796 | 2.463 | 1.432 | 1.311 | 2.649 | 1.732 | 1.477 | 3.509 |
| Pr | 0.445 | 1.220 | 1.446 | 0.948 | 5.938 | 1.042 | 0.669 | 0.848 | 1.031 | 1.144 | 1.159 |
| Ko | 0.602 | 2.496 | 2.047 | 1.382 | 2.007 | 1.128 | 1.223 | 2.230 | 1.274 | 1.109 | 3.670 |
| Pe | 0.619 | 2.264 | 1.715 | 0.661 | 35.026 | 0.961 | 1.427 | 0.555 | 1.259 | 0.973 | 6.399 |
| To | 0.613 | 4.303 | 3.775 | 2.513 | 5.090 | 2.179 | 2.739 | 3.489 | 2.455 | 2.392 | 2.634 |

^aSample labels

Table 3

Igeo values of elements in sediment samples

| SL ^a | As | Cd | Co | Cr | Cu | Fe | Mn | Ni | Pb | V | Zn |
|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Index of geoaccumulation (Igeo) | | | | | | | | | | | |
| T1 | 0.68 | 0.97 | <0 | <0 | 1.02 | <0 | 0.27 | <0 | 0.10 | <0 | 1.19 |
| T2 | <0 | 0.79 | 0.51 | <0 | 1.32 | 0.29 | 0.24 | <0 | 0.31 | 0.37 | 1.21 |
| T3 | <0 | 0.95 | 0.54 | <0 | 1.46 | 0.24 | 0.31 | <0 | 0.36 | 0.30 | 1.36 |
| T4 | <0 | 0.83 | 0.44 | <0 | 1.31 | 0.14 | 0.36 | <0 | 0.36 | 0.18 | 1.22 |
| T5 | <0 | 1.20 | 0.61 | <0 | 1.63 | 0.23 | 0.57 | <0 | 0.26 | 0.29 | 1.28 |
| T6 | <0 | 1.28 | 0.54 | <0 | 1.66 | 0.31 | 0.77 | <0 | 0.49 | 0.37 | 1.43 |
| T7 | <0 | 1.18 | 0.47 | <0 | 1.46 | 0.17 | 0.65 | <0 | 0.04 | 0.24 | 1.24 |
| T8 | <0 | 1.15 | 0.45 | <0 | 1.42 | 0.16 | 0.55 | <0 | 0.32 | 0.23 | 1.22 |
| T9 | <0 | 1.29 | 0.56 | <0 | 1.62 | 0.24 | 0.63 | <0 | 0.48 | 0.31 | 1.41 |
| D1 | <0 | 0.16 | 0.27 | <0 | 0.49 | 0.09 | 0.36 | <0 | 0.04 | 0.05 | 0.52 |
| D2 | 0.81 | 0.10 | 0.28 | <0 | 0.32 | 0.07 | 0.06 | <0 | 0.27 | 0.16 | 0.45 |
| D3 | <0 | 0.26 | 0.31 | <0 | 0.60 | 0.11 | 0.01 | <0 | 0.18 | 0.17 | 0.73 |
| D4 | <0 | 0.20 | 0.22 | <0 | 0.52 | 0.02 | <0 | <0 | 0.42 | 0.05 | 0.79 |
| D5 | <0 | 0.37 | 0.43 | <0 | 0.86 | 0.09 | 0.33 | <0 | <0 | 0.07 | 0.79 |
| D6 | <0 | 1.02 | 0.55 | <0 | 0.89 | 0.19 | 0.20 | 0.31 | 0.45 | 0.22 | 0.83 |
| S1 | <0 | 0.59 | 0.57 | <0 | 0.62 | <0 | 0.05 | 0.59 | 0.03 | <0 | 0.99 |
| S2 | <0 | 0.45 | 0.84 | <0 | 0.75 | 0.23 | 0.59 | 0.88 | 0.28 | 0.17 | 0.76 |
| S3 | <0 | 0.67 | 0.76 | <0 | 0.75 | 0.17 | 0.54 | 0.82 | 0.26 | 0.14 | 1.00 |
| S4 | <0 | 0.89 | 0.79 | <0 | 0.60 | 0.22 | 0.63 | 0.83 | 0.24 | 0.22 | 0.75 |
| I1 | 1.68 | 1.70 | 0.10 | <0 | 0.52 | 0.00 | <0 | 1.01 | 1.30 | <0 | 2.25 |
| I2 | 1.38 | 1.47 | 1.08 | 0.20 | 0.83 | 0.26 | 0.33 | 1.66 | 1.11 | 0.11 | 2.39 |
| V1 | <0 | 1.42 | 0.96 | <0 | 1.34 | 0.41 | 0.58 | <0 | 0.74 | 0.35 | 1.61 |
| V2 | <0 | 1.27 | 0.81 | <0 | 1.12 | 0.24 | 0.23 | 1.10 | 0.74 | 0.19 | 1.50 |
| Z1 | 0.26 | 0.63 | <0 | <0 | 2.20 | <0 | <0 | 0.48 | <0 | 0.04 | 0.92 |
| Z2 | 0.22 | 1.36 | 0.95 | 0.16 | 1.11 | 0.23 | 0.06 | 1.51 | 0.90 | 0.19 | 1.89 |
| JM | <0 | 0.70 | 0.64 | <0 | 1.02 | 0.31 | 1.33 | 0.06 | 0.55 | 0.31 | 0.87 |
| N1 | <0 | 0.32 | 0.28 | <0 | 1.60 | 0.05 | <0 | <0 | 0.46 | 0.21 | 1.41 |
| N2 | <0 | 1.06 | 0.27 | <0 | 0.25 | <0 | <0 | <0 | <0 | 0.11 | 0.13 |
| Ta | <0 | 0.49 | 0.77 | <0 | 1.10 | 0.53 | 0.37 | <0 | 0.46 | 0.50 | 0.65 |
| Tr | <0 | 0.71 | 0.82 | <0 | 0.86 | 0.32 | 0.23 | 0.94 | 0.51 | 0.35 | 1.22 |
| Pr | <0 | 0.49 | 0.66 | <0 | 2.07 | 0.33 | <0 | 0.13 | 0.32 | 0.42 | 0.44 |
| Ko | <0 | 1.04 | 0.85 | <0 | 0.83 | 0.25 | 0.33 | 0.93 | 0.37 | 0.23 | 1.43 |
| Pe | <0 | 1.18 | 0.90 | <0 | 3.92 | 0.32 | 0.72 | <0 | 0.59 | 0.34 | 2.22 |
| To | <0 | 1.00 | 0.87 | <0 | 1.17 | 0.32 | 0.55 | 0.79 | 0.44 | 0.41 | 0.51 |

^aSample labels

Table 4
Er, RI and CPI values of elements in sediment samples

| SL ^a | As | Cd | Cr | Cu | Ni | Pb | Zn | RI | CPI (mCd) |
|-----------------------------|------|-------|------|--------|-------|-------|-------|--------|--------------|
| Ecological risk factor (Er) | | | | | | | | | |
| T1 | 29.6 | 118.5 | 1.92 | 20.8 | 5.65 | 8.3 | 4.95 | 189.72 | 2.341 |
| T2 | 4.2 | 99 | 3.32 | 28 | 6.65 | 10.2 | 5.03 | 156.4 | 2.541 |
| T3 | 12.6 | 116.4 | 3.08 | 32.25 | 6.5 | 10.75 | 5.87 | 187.45 | 2.818 |
| T4 | 7.2 | 103.5 | 2.9 | 27.75 | 5.65 | 10.75 | 5.07 | 162.82 | 2.503 |
| T5 | 3.7 | 149.4 | 3.4 | 38.4 | 6.85 | 9.7 | 5.39 | 216.84 | 2.976 |
| T6 | 8.3 | 161.4 | 3.22 | 39.35 | 6.1 | 12.25 | 6.3 | 236.92 | 3.246 |
| T7 | 4.6 | 146.1 | 2.98 | 32.15 | 6.15 | 7.8 | 5.2 | 204.98 | 2.746 |
| T8 | 7.5 | 142.8 | 2.88 | 30.9 | 6 | 10.3 | 5.06 | 205.44 | 2.732 |
| T9 | 13.5 | 164.1 | 3.1 | 37.85 | 6.65 | 12.1 | 6.17 | 243.47 | 3.203 |
| D1 | 4.8 | 52.8 | 2.36 | 12.2 | 4.8 | 7.8 | 2.53 | 87.29 | 1.657 |
| D2 | 33.6 | 49.8 | 2.42 | 10.35 | 5.2 | 9.85 | 2.36 | 113.58 | 1.875 |
| D3 | 4.7 | 58.5 | 2.58 | 13.65 | 5.15 | 8.95 | 3.12 | 96.65 | 1.762 |
| D4 | 3.7 | 55.2 | 2.44 | 12.55 | 5.05 | 11.35 | 3.3 | 93.59 | 1.716 |
| D5 | 2.6 | 65.1 | 2.52 | 17.7 | 5.45 | 6.95 | 3.31 | 103.63 | 1.880 |
| D6 | 6.8 | 124.5 | 3.96 | 18.2 | 10.2 | 11.75 | 3.43 | 178.84 | 2.399 |
| S1 | 4.4 | 81 | 3.6 | 13.9 | 13.5 | 7.7 | 4.06 | 128.16 | 2.107 |
| S2 | 5.3 | 70.8 | 4.94 | 15.85 | 18.15 | 9.95 | 3.2 | 128.19 | 2.473 |
| S3 | 4.5 | 87.6 | 4.52 | 15.8 | 17.1 | 9.75 | 4.07 | 143.34 | 2.501 |
| S4 | 5.9 | 109.8 | 4.66 | 13.65 | 17.15 | 9.5 | 3.19 | 163.85 | 2.516 |
| I1 | 80.8 | 246.9 | 3.3 | 12.6 | 20.5 | 27.55 | 14.21 | 405.86 | 4.548 |
| I2 | 59.6 | 195 | 7.42 | 17.15 | 39.45 | 22.75 | 16.43 | 357.8 | 5.325 |
| V1 | 7.3 | 185.4 | 5.48 | 28.5 | 6.15 | 15.75 | 7.49 | 256.07 | 3.474 |
| V2 | 14.5 | 159.9 | 4.92 | 23.05 | 22.5 | 15.7 | 6.74 | 247.31 | 3.383 |
| Z1 | 19.5 | 84.3 | 2.76 | 67.55 | 12.15 | 6.7 | 3.75 | 196.71 | 2.985 |
| Z2 | 18.7 | 175.8 | 7.14 | 22.85 | 34.05 | 18.45 | 9.9 | 286.89 | 4.131 |
| JM | 10.1 | 90.9 | 3.4 | 20.85 | 7.95 | 13 | 3.57 | 149.77 | 2.754 |
| N1 | 4.4 | 62.1 | 2.78 | 36.95 | 5.15 | 11.95 | 6.16 | 129.49 | 2.491 |
| N2 | 3.1 | 129.6 | 2.28 | 9.6 | 5 | 7.3 | 1.71 | 158.59 | 1.646 |
| Ta | 10.6 | 73.2 | 3.62 | 22.55 | 7.25 | 11.85 | 2.86 | 131.93 | 2.448 |
| Tr | 7.1 | 91.5 | 5.18 | 17.75 | 19.1 | 12.5 | 5.06 | 158.19 | 2.796 |
| Pr | 8.9 | 73.5 | 3.8 | 59.5 | 8.5 | 10.35 | 2.32 | 166.87 | 2.895 |
| Ko | 10.3 | 127.8 | 4.72 | 17.1 | 19.05 | 10.85 | 6.26 | 196.08 | 2.973 |
| Pe | 13.4 | 146.7 | 2.86 | 378.35 | 6 | 13.6 | 13.83 | 574.74 | 10.185 |
| To | 5.8 | 122.7 | 4.78 | 24.15 | 16.55 | 11.65 | 2.5 | 188.13 | 2.777 |

^aSample labels