**Supplementary Information**

**Table S1.** Eigenvalues, variance, and communalities for trace elements in surface waters from the KBD and non-KBD areas in Longzi County.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Non-KBD |  | KBD |  |  |
|  | PC1 | PC2 | PC3 | PC4 | PC5 | Communalities |  | PC1 | PC2 | PC3 | PC4 | PC5 | PC6 | Communalities |
| Al | 0.82  | -0.01  | -0.01  | -0.34  | 0.15  | 0.81  |  | 0.03  | -0.06  | 0.80  | 0.29  | -0.17  | -0.25 | 0.82  |
| Si | -0.16  | 0.22  | 0.21  | 0.86  | 0.01  | 0.86  |  | 0.87  | -0.19  | 0.03  | -0.11  | -0.16  | 0.05 | 0.84  |
| V | -0.31  | -0.12  | 0.54  | 0.01  | -0.32  | 0.51  |  | 0.02  | -0.13  | 0.05  | 0.15  | 0.87  | 0.23 | 0.85  |
| Mn | 0.84  | -0.09  | 0.09  | -0.23  | -0.05  | 0.77  |  | -0.04  | 0.00  | -0.01  | 0.87  | 0.18  | -0.14 | 0.81  |
| Fe | 0.58  | -0.61  | -0.25  | 0.21  | -0.09  | 0.82  |  | -0.16  | 0.81  | -0.02  | -0.10  | 0.41  | -0.22 | 0.90  |
| Co | 0.74  | -0.04  | -0.04  | 0.56  | -0.04  | 0.87  |  | 0.91  | 0.05  | 0.04  | 0.06  | 0.03  | -0.05 | 0.84  |
| Ni | 0.87  | -0.03  | -0.12  | 0.12  | -0.03  | 0.79  |  | 0.44  | 0.63  | -0.07  | 0.11  | 0.44  | -0.09 | 0.82  |
| Cu | 0.01  | 0.20  | 0.78  | 0.12  | 0.16  | 0.68  |  | 0.13  | -0.02  | 0.26  | 0.75  | -0.03  | 0.30 | 0.74  |
| Zn | 0.03  | 0.02  | 0.52  | -0.20  | -0.34  | 0.42  |  | 0.84  | -0.04  | -0.07  | 0.11  | 0.15  | 0.03 | 0.75  |
| As | -0.03  | 0.84  | 0.06  | 0.12  | 0.24  | 0.78  |  | 0.01  | 0.05  | -0.04  | 0.05  | 0.17  | 0.91 | 0.86  |
| Se | -0.02  | 0.80  | -0.18  | 0.14  | -0.23  | 0.74  |  | -0.02  | 0.86  | 0.04  | -0.02  | -0.20  | 0.03 | 0.78  |
| Mo | -0.02  | 0.03  | 0.03  | -0.03  | 0.89  | 0.80  |  | -0.15  | 0.85  | -0.01  | 0.03  | -0.26  | 0.26 | 0.87  |
| I | 0.01  | -0.22  | 0.72  | 0.27  | 0.18  | 0.67  |  | -0.05  | 0.05  | 0.91  | -0.03  | 0.17  | 0.15 | 0.88  |
| Eigenvalues | 3.43  | 1.89  | 1.83  | 1.23  | 1.14  |  |  | 2.76  | 2.50  | 1.90  | 1.48  | 1.10  | 1.01 |  |
| Variance (%) | 26.40  | 14.50  | 14.04  | 9.49  | 8.80  |  |  | 21.21  | 19.20  | 14.64  | 11.38  | 8.43  | 7.79 |  |
| Cumulative (%) | 26.40  | 40.90  | 54.93  | 64.43  | 73.23  |  |  | 21.21  | 40.41  | 55.05  | 66.43  | 74.86  | 82.65 |  |

**Note:** KMO result is >0.5 and the significance of Bartlett’s test of sphericity is <0.001

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Longzi | Ridang | Liemai | Rerong | Sananqulin | Zhunba | Xuesa | Zhari | Yumai | Jiayu | Douyu |
| NO2– | 0.026 | 0.006 | 0.000 | 0.000 | 0.032 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.026 |
| PO43– | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

**Table S2** Concentrations of anthropogenic input compounds for surface water in the Longzi County, expressed in mg L–1.

**Note:** Values of 0.000 means the concentration of the compounds is not detected or is below the LOD.