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A Re-evaluation of Lake Sediment Geochemistry from the Bancroft Region of Ontario
Recognizing Geochemical Background and Sources of Uranium and REE Mineralization

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Introduction

This open file report documents the information from which a geoenvironmental model for U-Th-Mo-REE (Rare Earth Elements) granitic pegmatite deposits can be constructed.

Characterization of environmental risks to ecosystems from uranium resource development requires, as a starting point, knowledge of the geochemical and radiometric signatures of undeveloped mineralization in the context of the geology and weathering processes of the surrounding ecoregion. This baseline knowledge allows regulators and decision-makers to assess the incremental risk from any subsequent mineral resource development. The acquired knowledge concerning the amounts of various minerals present and the concentration of chemical elements of concern in un-developed areas will also assist in setting fair and appropriate goals for site restoration by project proponents.

This open file report documents recent and historical geochemical survey data for the purposes of defining the regional geochemical background and describing zones of increased U-Th-REE geochemical signatures that are associated with past mining activities and areas of potential future prospectivity.

From this initial characterization of the regional geochemistry derived from various sampling media, interpretive methods provide a framework for interpretation.

Figure 1 shows a map of the regional geology derived from a regional compilation (Satterly and Hewitt, 1972), covering parts of NTS sheets Parts of NTS 31C, 31D, 31E and 31F. The figure also shows significant past producers of uranium, thorium and rare earth elements and are listed in Table 1. Figure 2 shows a map of compiled U-Th-REE occurrences and past producing mines that were derived from the Mineral Deposit Inventory (MDI, 2012). These two maps set the context for interpreting the re-analysis of geochemical data in the region.

Methods Sampling and Analytical Methods

The analytical protocols and procedures are documented in McNeil and Friske (2013) where lake sediments were re-analyzed using aqua regia and four-acid digestion by ICP-MS and ICP-ES. The lake sediment material was derived from an initial survey that is documented in Geological Survey of Canada Open Files 899 & 900 (Lund et al., 1984; Hornbrook et al., 1984).

Units of measurement, analytical detection limits and instrumentation for the two methods of digestion are given in Tables 2 and 3. The original water analysis detection limits and instrumentation are shown in Table 4.

Several elements were determined by the two analytical methods (Ag, Al, As, Au, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P Pb, Rb, Re, S Sb, Sc, Sn, Sr, Ta, Th, Ti, U, V, W, Y, Zn, Zr).

Several of the elements for both methods of digestion were reported with a large number of values at less than the lower limit of detection. For the aqua regia digestion, the elements were: B, Ge, Hf, In, Pd, Pt, Re, Ta, Te and W. For the four-acid digestion the following elements were dropped: Au, Be and Ta. The number of observations that were reported at less than the detection limit is listed in Table 6. Elements that were dropped from the dataset are shaded and highlighted. Lattice $H2O^+$ and CO_2 were included with both the four acid and aqua regia digestions datasets.

Major element analytical determinations were made by X-ray fluorescence (XRF), which included Si, Ti, Al, Fe, Mg, Ca, Na and K as documented in OF899.

Data Analysis and Statistical Methods

The geochemical data were treated using the following sequential methodology:

1) **Re-combining Data**
   Si was combined with the elements reported for each of the digestions (four-acid and aqua regia) in an attempt to provide as near a "total" composition as possible.
2) **Data Evaluation**
   Examine the data for missing values and values reported at less than the detection limit. A number of elements were dropped from further consideration because too many values were reported at less than the detection limit. For the four-acid digestion analyses, Au, Be and Ta were dropped. For the aqua regia analyses, B, Ge, Hf, In, Pd, Pt, Re, Ta, Te and W were dropped.
3) **Replacement for Censored/Missing Values**
   Replacement values were determined using the "robCompositions" package (Hron et al. 2010). The function impKNNa, using the "Aitchison" option was used. This was done for the four-acid and aqua regia datasets separately.
4) **Logratio Transforms**
   Following the selection of suitable replacement values for censored data, for each of the digestions, the elements were transformed using the logcentred transform based on:
   $z_i = \log(x_i/g(x_D))$ $(i = 1, \ldots, D)$,
   where $g(x_D)$ is the geometric mean of the composition.
   Additionally, an isometric log transform was carried out on the data using the default ilr balances as described in the function "ilr" that is part of the "Compositions" package in R (van den Boogaart and Tolosana-Delgado, 2008). The generalized form of the ilr transform is:

$$y_i = \sqrt{\frac{i}{i+1}} \ln\frac{g(x_1, \ldots, x_i)}{(x_{i+1})}$$

where g(x) is the geometric mean of the composition.

5) **Generalized Lithologies**
   As part of the evaluation, process recognition can be facilitated through the association of underlying lithologies with the geochemical data. Within the dataset, the field "Geo_Generalized", represents a generalized lithologic characterization of the map area. Short forms were created for each of these generalized lithologies and are shown in Table 7.
6) **Principal Component Analysis**
   A principal component analysis was carried out on the logcentred data using the methodology described by Grunsky (2001). A separate PCA was carried out for each digestion. Principal component screeplots and biplots were created for each of the digestion methods, followed by a geostatistical evaluation of the data using the R package "gstat" (Pebesma, 2004) from which semi-variograms were derived for subsequent kriging of the principal components.
7) **Analysis of Variance**
   Following the application of PCA, an analysis of variance (AOV) was done on the principal components derived from the clr transformed data against the generalized lithologies shown in Table 7. Additionally, an analysis of variance was done on the isometric log transformed data. The AOV was carried out for both digestions.
8) **Linear Discriminant Analysis**
   From the AOV, using the best, first five, discriminating principal components, the data were classified using linear discriminant analysis using the generalized lithologies for determining the predictive power of the geochemical data for determining underlying lithologies.
9) **Regression**
   Uranium, Th and the Rare Earth Elements (REE), composed of
   Ce+Dy+Er+Eu+Gd+Ho+La+Lu+Nd+Pr+Sm+Tb+Yb
   were regressed against the first seven principal components derived from the logcentred data, The first seven principal components likely represent the majority of variation of the above elements that are associated with lithologic variability. Any residuals could be considered to represent under-sampled processes reflected by the components not considered in the regression. The residuals can potentially be associated with U, Th, or REE mineralization.

Results

Analytical totals were determined for both digestions. The totals for the four acid digestion range from 25,800 ppm to 249,000 ppm. The totals for the aqua regia digestion range from 21,500 ppm to 198,000 ppm. It is evident that the compositions represented by these analyses are far from complete. The most likely abundant elements missing from these analyses are Si and O. When Si from XRF was combined with these data, the range of four-acid digestion compositions rose to 489,000 ppm to 962,000 ppm and the range of aqua regia digestion compositions rose from 361,000 ppm to 959,000 ppm.

Two maps of kriged U concentrations derived from 4-acid and aqua regia digestion are shown in Figures 3a,b. The maps are nearly identical as the U values from both digestions are essentially the same. This indicates that minerals containing U are readily dissolved in the weaker (aqua regia) digestion. Increase U concentrations are noted along the southwest trend from Bancroft associated with the past producing mines in the area. Elevated U values are also prevalent in the Tory Hill and Anstruther Lake areas.

Principal Component Analysis on Lake Sediment Geochemistry – Four-acid Digestion

Following adjustments for censoring and transformation to logcentred coordinates, the results of the principal component analysis for the four-acid digestion are shown in Table 8 and Figures 4a-e. Kriged maps of the principal components are shown in Figures 5a-d. A screeplot of the eigenvalues is shown in Figure 4a where it can be seen that the first 6 components account for much of the data variability. The first 6 principal components account for more than 78% of the overall data variation. The biplot of the first two components (Figure 4b) show a contrast between REE-Th-U enriched elements along the negative portion of the first principal component and elements associated with a range of supracrustal clastic metasediments, mafic/felsic volcanic rocks. The REE-enriched samples appear to be associated with mafic/felsic volcanic rocks (MFVR) and early felsic plutonic rocks (EFPR). This trend may also reflect the association of pegamatitic rocks that are not specifically mapped and may be associated with several rock types in the area. The second principal component shows a contrast between carbonate and possibly shale-bearing metasedimentary rocks with relative enrichment in Cd-Cu-S-Zn-Mo-B-Sb-Ag-As-LOI-Ca and a range of lithologies that show relative enrichment in Al-Nb-Ga-Hf-K-Na-Nb-Rb which likely reflects a feldspar enriched environment. Maps of PC1 and PC2 (Figures 5a,b) show these key features. Figure 5a shows negative scores associated with the main area of mineralization in the central part of the map area. The positive PC1 scores are associated with a range of lithologies over the area. Thus, the first PC highlights U-Th-REE mineralization with the negative scores. A map of the second principal component (Figure 5b) shows the negative trend of relative feldspar enrichment with felsic plutonic rocks (EFPR), mafic/ultramafic plutonic rocks (MFPR), carbonate-bearing metasedimentary rocks. Such a diversity of rock types suggests that this feldspar component may reflect the association of pegmatites that occur throughout the area. Positive PC2 scores, which show relative enrichment of Cd-Cu-S-Zn-Mo-B-Sb-Ag-As-LOI-Ca appear to be associated with clastic metasediments but also occurs associated with the felsic igneous rocks. This may represent overlap within the lake sediment catchment area such that several lithologic units are mixed together.

Relative uranium enrichment appears to be associated with negative PC1, negative PC3, and negative PC4 scores. This is also indicated in Table 8 where the relative contributions for PC1, PC2,PC3 and PC4 are 13.8, 14.0,14.7 and 13.7% respectively. Zones of relative U enrichment are shown in the kriged maps of the first four principal components in Figures 5a,b,c,d. Relative U enrichment is highlighted by negative scores on the map of Figure 5a; positive scores on the map of Figure 5b; negative scores on the map of Figures 5c and 5d.

Relative Thorium enrichment is associated with PC1 and PC2 (44.2 and 10.7% relative contributions respectively – Table 8). The Th response is primarily associated with the rare earth elements that are representative of pegmatitic rocks in the area.

The relative enrichment and variability of the rare earth elements is concentrated exclusively with the first principal component (Table 8) where the relative contributions exceed 80% for most of the elements. The exceptions to this are Ce, Hf, with 60% and 17% relative contributions for the first PC. More than 60% of the relative contribution for Hf is accounted for by the second principal component and 74% of Ce variability is accounted for by the first two principal components.

Principal Component Analysis on Lake Sediment Geochemistry – Aqua regia Digestion

Following adjustments for censoring and transformation to logcentred coordinates, the results of the principal component analysis for the four-acid digestion are shown in Table 9 and Figures 6a-g. Kriged maps of the principal components are shown in Figures 7a-g. The screeplot of Figure 6a displays a steep decay similar to that of the four-acid digestion eigenvalue screeplot. However, the rate of decay is not as steep and components 1-2 have lower eigenvalues for the aqua regia PCA than that of the four-acid PCA, which indicates that the variation of the components is greater across amongst the components.

Figure 6b shows a biplot of the first two principal components. Positive PC1 scores are associated with relative enrichment in LOI-Se-Sb-S-Ca-Bi-Sr-Cu-Hg-Cd. Lithologics associated with positive PC1 scores include carbonate and calc-silicate bearing metasedimentary rocks, clastic metasedimentary rocks, early felsic plutonic intrusive rocks and Phanerozoic limestones. Such a diverse range of lithologies suggests that the lake sediments represent a mix of lithologies. Negative PC1 scores show relative enrichment in Rb-Li-Ti-Th-Sc-Fe-Ga-Cr-Nb-V-Co-Si-Ce-Al-La and represent a mix of feldspar rich domains (Ce-Al-La), supracrustal volcanics (Fe-Cr-Ga-Sc) and pegmatitic phases (Ti-Rb-Li-Th). The second principal component shows positive scores showing relative enrichment of Mg-Na-Zr-Cs and negative scores showing relative enrichment of Y-Be-P-U-Zn-Ag-Cd). Lithologies associated with the range of positive PC2 scores include carbonate-bearing and calc-silicate metasediments and negative scores show an association of mafic to felsic volcanic rocks and early felsic plutonic rocks. Figure 7a shows a kriged map of the first principal component. The image of the first principal component appears to cross cut several lithologies suggesting that the lake sediments are a mixture of several lithologies. Figure 7b, shows a kriged image of the second principal component, where the negative scores show an association with early felsic plutonic rocks and mafic to felsic volcanic lithologies. Positive PC2 scores show a clearer association with carbonate-bearing and calc-silicate metasedimentary lithologies.

Relative Uranium enrichment is indicated by the relative contributions in Table 9, most notably for PC2, PC4, PC6, PC7. Negative PC2 and PC3 scores and positive PC4 scores in Figures 7b, 76c and 7d are associated with the Bicroft Mine area. Negative PC6 and PC7 scores show relative U enrichment in the Bicroft mine area and the Appsley area to the south, perhaps representing a different style (skarn type?) of U mineralization.

Relative thorium enrichment is associated primarily with PC1, PC2 and PC7. The biplot of figure 6b shows Th associated with Rb-Li-Ti and suggests a pegmatitic association. Figure 7a shows negative PC1 scores associated with Th in the Bicroft area and Figure 6b illustrates the same trend with some additional regions of positive PC2 scores northeast of the Bicroft Mine area and south of the pluton near the centre of the map sheet. Principal component 7 (Figure 6g) shows a strong negative U-Th trend and a kriged map of the scores (Figure 7f) dominate the western part of the map area. This trend may represent a divide between pegmatite-dominated terrain from a terrain lacking pegmatites. All of the elevated U-Th-REE lake sediment sites, and existing occurrences and mines occur in this western zone defined by the negative PC7 scores.

Rare earth element enrichment is difficult to see in the geochemistry derived from the aqua regia digestion. Only Ce, La, and Y represent the REE signature, which is primarily accounted for in the first two principal components. The biplot of Figure 6b shows the REE signature of Ce-Al-La-Y-Be associated with negative PC1 and negative PC2 scores. A range of lithologies are represented in the trend of points shown in Figure 6b, suggesting a pegmatitic affiliation. The maps of PC1 and PC2 in Figures 7a, 6b reflect this REE representation by negative scores that are mostly associated with the Bicroft Mine area.

Analysis of Variance of the four-acid and aqua regia digestion data

Analysis of variance (AOV) was carried out separately on the four-acid and aqua-regia digestion geochemical data. AOV offers a test to determine if the eight lithologies (Table 7) over the area are statistically unique based on the lake sediment geochemistry. The application of AOV requires that the data be transformed using isometric logratio coordinates (ilr) or additive logratio coordinates (alr). Alternatively, the principal components (PC) derived from a logcentred transform coordinates can be used. As shown above, PC's provide coefficients of the clr transformed elements that typically reflect mineralogy and lithology, thereby reducing the number of variables required to separate the groups and consequently increasing the degrees of freedom that are required in AOV and the application of linear discriminant analysis (LDA). This approach was chosen for the AOV applied in this study. Statistical separation is measured by the F-value derived from the AOV (Venables and Riply, 2002, p.283). Ordered plots of F-values on the ordinate and element or principal component on the abscissa display which of the variables provide the maximum separation between the groups (lithologies) being tested. Figures 8a, b display the results for the four-acid data based on the ilr transformed elements and the principal components derived from the clr transformed elements.

Figure 8a shows that PC1 and PC6 provide maximum discrimination between the lithologies for the four-acid digestion data. Figure 8b shows that PC2, PC8, PC1 and PC5 provide maximum discrimination between the different lithologies. At least 7 variables are required to provide maximum discrimination using the ilr transform for both the four-acid digestion data and the aqua regia digestion data.

Predictive Mapping of Lithologies – Four-acid and aqua regia digestion data

The application of linear discriminant analysis requires that sufficient degrees of freedom are required to provide interpretable results. Table 7 indicates that only one lake sediment site is tagged to the Alkalic plutonic rock suite (AlkPR) and was subsequently dropped from further consideration. A total of 324 sample site observations represented the following map units: (ClasMS, CarbMS, EFPR,MFPR,MFVR,LsPH,Tect).

Linear discriminant analysis (LDA) for the prediction of the 7 map units was carried out using selected principal components (as described above) for the four-acid and aqua-regia digestion data.

Figures 9 and 10 are maps of posterior probabilities of the Mafic-Felsic Volcanic Rocks (MFVR) with values greater than 0.2. Red dotted lines define the outline of the MFVR units. Figure 9 shows the results for the analysis based on 4-acid digestion and Figure 10 shows the results based on aqua regia digestion. Both maps show a poor correspondence of the mapped bedrock with the predicted units. Tables 10 and 11 show an accuracy of prediction at 19.2% and 13.4% respectively. Most of the overlap is associated with early felsic plutonic rocks (EFPR) and carbonate bearing metasedimentary rocks (CarbMS). The best predictions appear to be in the region o fhte Canadian Dymo mine area. An elevated probability of MFVR occurs in southern part of the map area next Wolf Island Provincial Park in both figures. This increase could be due to glacial transport or the presence of MFVR lithologies that are not noted on the map.

The predictions of early felsic plutonic rocks (EFPR) based on 4-acid and aqua regia digestions are shown in Figures 11 and 12. The outline of the unit is shown as a red dotted line. Predictions > 0.5 appear in the west and southwest part of the map area n both figures although the probabilities do not exceed values of 0.6. Tables 10 and 11 show that the accuracy of prediction is 77.5% and 77.0% respectively and that there is overlap with carbonate bearing metasedimentary rocks (11.3% & 22.5%).

Predictions for clastic metasedimentary rocks (ClasMS) is quite low, particularly for the results by 4-acid digestions (Figure 13). The outlines of the unit are shown as red dots. The results from aqua regia digestion (Figure 14) are better but posterior probabilities > 0.6 are restricted to isolated sites. This artifact may be, in part, to the interpolation process. Tables 10 and 11 indicate that the accuracy of prediction is 0% for the 4-acid digestion and 2% for the aqua regia digestion. The units CarbMS and EFPR account for most of the overlap and misclassification of ClasMS.

The predictions of carbonate bearing metasedimentary rocks (Figures 15 and 16) correspond well with the red dot outline that defines the unit boundary on the map. Prediction accuracies are 69% and 70% for the 4-acid and aqua regia digestions respectively (Tables 10 and 11). Overlap is primarily associated with the early felsic plutonic rocks (EFPR).

Predictions for mafic to ultramafic plutonic rocks (MFPR) are low (Figures 17 and 18). Prediction accuracies from Tables 10 and 11 are 9.1% and 9.1% respectively. The prediction of MFPR from 4-acid digestion (Figure 17) only shows up as isolated points

that fall within the red boundaries of the unit on the map. The prediction for the aqua regia digestion is more coherent but restricted to the northeast part of the maps with a predictive accuracy not exceeding 0.4. An isolate grouping of predictions exceeding 0.3 occurs in the north central part of the map, outside of known MFPR boundaries. This may reflect an undocumented MFPR unit or overlap with other units. Tables 10 and 11 show that the greatest overlap is with the CarbMS and EFPR units.
Gneissic units, also mapped and labelled as "tectonites" are restricted to the northern part of the map area. The prediction of gneiss does not exceed 0.3 for 4-acid analyses (Figure 20), while posterior probabilities are close to one for some isolated sites and in the eastern part of the map area for the aqua regia digestion data. The overlap with EFPR is significant and exceeds the predicted accuracies for Gneiss (Tables 10 and 11).

Predictions of Phanerozoic limestone (LsPH) are shown in Figures 21 and 22. This unit is restricted to the southern part of the map area with some isolated prediction outliers close to a value of 1 in the central part of the map area. As shown in Tables 10 and 11, overlap in prediction is about 40% with the CarbMS unit due to the elevated presence of carbonate materials.

Regression Analysis of U, Th and REE's for the Prediction of Potential Mineralization based on 4-acid digestion data

Regression analysis of U, Th and a rare earth element (REE) amalgamation of (Ce+Dy+Er+Eu+Gd+Ho+La+Lu+Nd+Pr+Sm+Tb+Yb) was carried out on the first seven principal components derived from the log-centred transformed data. The strategy behind the use of regression is to determine how much an element of interest is accounted for by dominant trends in the data, usually the first few principal components. In regional scale studies, processes related to mineralization are under-represented in the data. Thus, the residuals from a regression analysis may enhance signatures that are related to processes that include mineralization. In the case of the Bancroft area, the presence of U, Th and rare earth elements are, in part, controlled by lithology and the mineralization may be part of the first few principal components. Caution must be applied to the interpretation of these results. In this study, an evaluation of the screeplot of eigenvalues (Figure 4a) indicated that the dominant geochemical processes are described by principal components 1-7.
Step-wise regression was carried out independently for U, Th and the REEs and the results are shown in Tables 12, 13 and 14. Table 12 shows that the adjusted r^2 coefficient has a value of 0.256 although the p-value is essentially zero. In Table 13, the regression for Th, shows the adjusted r^2 coefficient at 0.6196 with a p-value at zero as well. The REE amalgamation regression (Table 14) shows an adjusted r^2 value of 0.4629 with a p-value of zero. The results for the three commodities indicate that the regression on the first seven principal components is a useful representation of processes that account for their variability. The residuals for these commodities are shown a quantile-quantile plots in Figures 23, 24 and 25. High residual values of U occur in Figure 23 whereas fewer high residual values are observed for Th and REE in figures 24 and 25.

Figure 26 shows a predictive map of U based on the regression applied to the first seven principal components. The map shows elevated U values associated with granitoid rocks throughout the map area as well as values associated with the Greyhawk and Faraday mine areas. A map of the estimated residuals of U is shown in Figure 27 where elevated values occur in the northwest part of the map area, a zone just south of Bancroft as well as isolated values associated with granitoid rocks throughout the area.

Maps of predicted Th and residual Th derived from regression are shown in Figures 28 and 29. Predicted Th (Figure 28) is associated with the felsic plutonic rocks and the mines near Bancroft. There is a notable lower Th abundance in the eastern part of the area and the suprascrustal rocks that surround the felsic plutons. Residual Th (Figure 29) shows elevated values associated with the felsic plutons and the mines near Bancroft as well.

Figure 30 shows a map of predicted REE, that are dominantly associated with the margins of the felsic plutons and have a distinctive association with the U mines southwest of Bancroft. Figure 31 shows a map of residual REE values that are elevated in the Tory Hill and Maynooth areas.

Discussion

A comparison between the lake sediment samples analyzed by 4-acid digestion and aqua regia highlights the differences between dissolution of silicate versus non-silicate minerals. In the case of 4-acid digestion, the first two components account for nearly 60% of the data variation while the first two components account for 43% of the data variation for the aqua regia digestion data. The screeplots of Figures 4a and 6a show that the aqua regia digestion has eigenvalues that may reflect processes that are more subtle than those from the 4-acid digestion.

A comparison of the biplots of Figures 4b and 6b highlight the elemental differences resulting from the different digestion methods, although both methods display the same general trends. There is a clear distinction between felsic plutonic rocks (EFPR) and from Carbonaceous Metasedimentary rocks (CarbMS). The EFPR unit indicates relative enrichment in REE, U and Th, while the CarbMS unit indicates relative enrichment in Mg, Ca S, Cd, As, Na and others. Note, however, that the CarbMS units overlap into the EFPR field in both figures, indicating the presence of material (pegmatite?) that contains REE, Th and U. With the exception of Phanerozoic limestone (LsPH) the other units indicate significant overlap in the biplots of Figures 4c-4f and 6c-6f.

Maps of the principal components were derived from kriging the data. The image of principal component 1 derived from 4-acid digestion is shown in Figure 5a. the negative scores define a region that reflects relative enrichment in REE, U and Th, while the positive scores represent the metasedimentary assemblages. The map of kriged PC1 derived from aqua regia digestion provides a different pattern in which negative scores are associated with felsic plutonic rocks but also a difference in the CarbMS units that may reflect varying degrees of dissolution due to the mineralogy of the unit.

The map of principal component 2 derived from the 4-acid digestion data (Figure 5b) shows positive scores associated with increased LOI, Cu, C, S, Zn, Mo, Sb and Bi. This relative increase reflects the metasedimentary units ClasMS and CarbMS that surround the felsic plutons and limestone LsPH. The map of PC2 derived from aqua regia (Figure 7b) shows positive scores primarily associated with Mg, Na and Zr and negative scores associated with REE and metasediments that are low in alkali elements.

Maps of principal component 3 (Figures 5c, 7c) show distinctive trends. For the 4-acid data, there is a contrast between relative enrichment in Co-V-Fe-Mn-P with relative enrichment in U, Sr, Sn, P, and REE. The former pattern is associated with the metasedimentary assemblages and gneisses, while the latter is associated with a northeast trending corridor that is associated with the mines in the area. The map of PC3 associated with aqua regia digestion shows relative enrichment in Sn-Pb-Bi-Ga-As-Sb but does not reflect any regional trends. This element association may indicate the presence of pegmatitic rocks.

The map of PC4 derived from 4-acid data (Figure 5d) is nearly identical to the aqua digestion PC3 of Figure 7c. This elemental association is likely indicative of a persistent geochemical process that may reflect pegmatitic rocks. The map of PC4 derived from aqua regia digestion shows two broad regional northeast trends. The positive scores reflect relative enrichment in Zr-Y-La-U-Nb-Si-Mo reflecting felsic plutonic suites while the negative scores reflect relative enrichment of Mn-Ba-Fe-P-Co-As-V that is associated with gneissic and metasedimentary rocks.

Figure 7e shows a map of PC5 derived from the aqua regia digestion. The map shows positive scores with relative enrichment in Zn-Tl-Cs-Cd that are associated with clastic metasedimentary rocks and negative scores with relative enrichment in Ba-Sr-Ca that reflect carbonate bearing or calc-silicate rocks

Figures 7f and 7g also reflect regional patterns based on the aqua regia geochemistry. The biplot of Figure 6g shows relative enrichment of Cr-Ni-Ga-Si-Hg-Cu associated with gneissic rocks on the northern part of the map area and relative enrichment in U-Be-Y-Mn-Th-Fe throughout the main U-Th-REE mineralized corridor in Figure 7e. Figure 7f shows a map with a northerly trending relative enrichment of Th-Fe-Zr-Sc-As-Au-V along the east side of the map area and a similar trend with relative enrichment in Cs-U-Sr-Be-Li-Ba-Rb along the west side of the map area.

The analysis of variance applied to both methods of digestion reflect that only 4 or less principal components account for most of the variance between the bedrock types. The results of the linear discriminant analysis applied to the data from both methods of digestion predict the lithologies with same degree of variability. Some of the units are clearly identified in the linear discriminant analysis process (EFPR, CarbMS, Gneiss, LsPH) while others show significant discrepancy (MFVR, MFPR, ClasMS). The differences between the two methods likely reflect the differences in the solubility of silicate minerals within specific lithologies. The fact that the prediction of MFPR is less than 0.2 for the 4-acid method of digestion whereas, it is slightly better for the aqua regia digestion suggests that the geochemical response of the 4-acid digestion with these lithologies is similar to other lithologies as indicated in Tables 10 and 11.

Concluding Remarks and Recommendations

This study has investigated the geochemical response of re-analyzed lake sediment data from the use of two methods of digestion. The primary object of this study is to determine what lithologies or processes are associated with U-Th-REE mineralization and the corresponding geoenvironmental model that can account for the patterns and associations that are observed in the data.

The identification of multi-element patterns is best characterized using multivariate statistical techniques applied to logratio transformed data. The application of principal component analysis to the 4-acid and aqua regia digestion data has demonstrated that specific element patterns are associated with the dominant lithologies and that the patterns of U-Th-REE mineralization has regional trends that are associated with the regional fabric of the lithologies.

The effectiveness of predictive geological mapping in the Bancroft region is limited in its accuracy. This is likely due to the compositional heterogeneity within the described units of the study area. (Table 7). For example the volcanics vary from mafic to felsic in composition and have intercalated units of iron formation and metasediments etc., reflecting a wide range of chemical compositions. All other units are just as variable. A more detailed geology base would likely improve the predictive mapping capabilities of lake sediment data.

The southwest trend along which the mine sites are aligned are best emphasized by PC3 (4-acid digestion) and PC6 (aqua regia). The PC3 trend of Figure 6c is describes relative enrichment in U-Sr-Sn-Lu-Pb. This multi-element trend is independent of any specific lithology (figure 4c) and it likely describes the structurally controlled mineralized environment. In the trend displayed by PC6 (Figure 7e) there is relative enrichment in U-Th-Be-Y-Mn-Fe and also appears to be independent of any specific lithology (Figure 6f). The association of Mn-Fe with this trend may be an artifact of iron/manganese oxhydroxide formation due to local groundwater effects.

This study has demonstrated that various multi-element signatures account for the regional lithologies and multi-element signatures related to U-Th-REE mineralization. Further studies based on a higher density sampling scheme may reveal specific patterns associated with the structural control of the mineralization.

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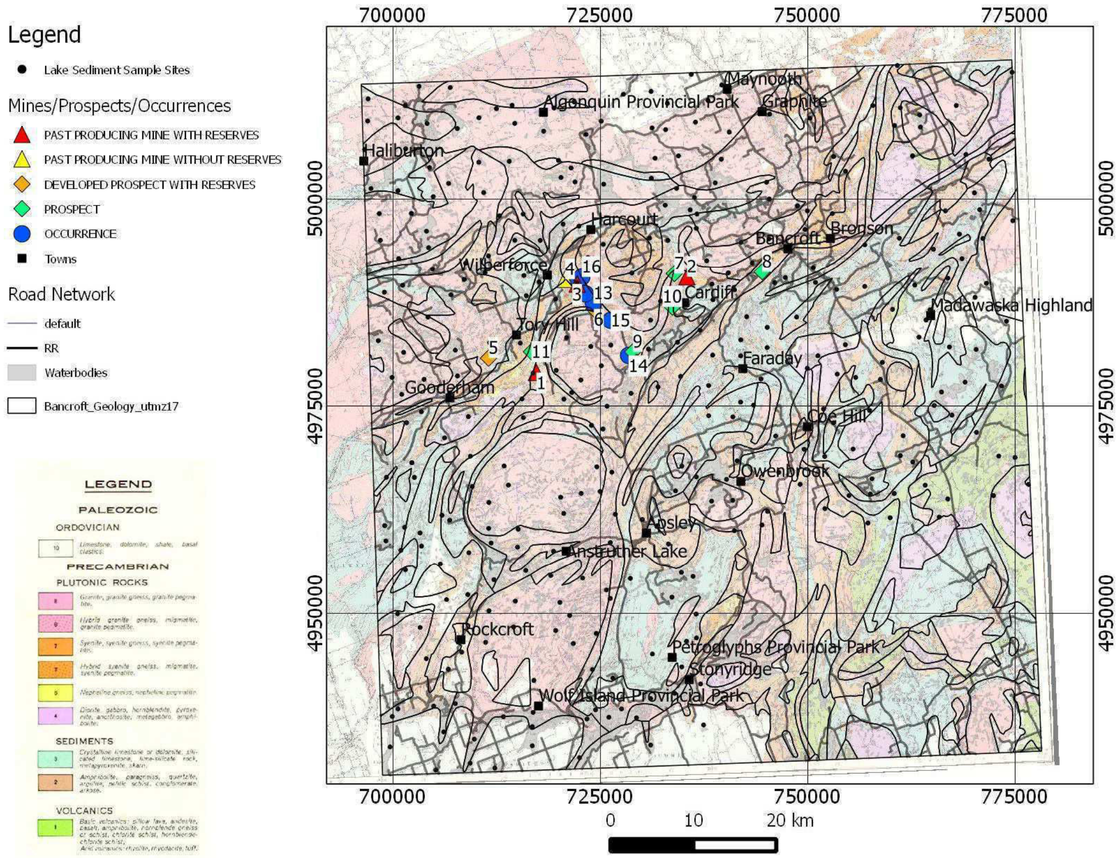

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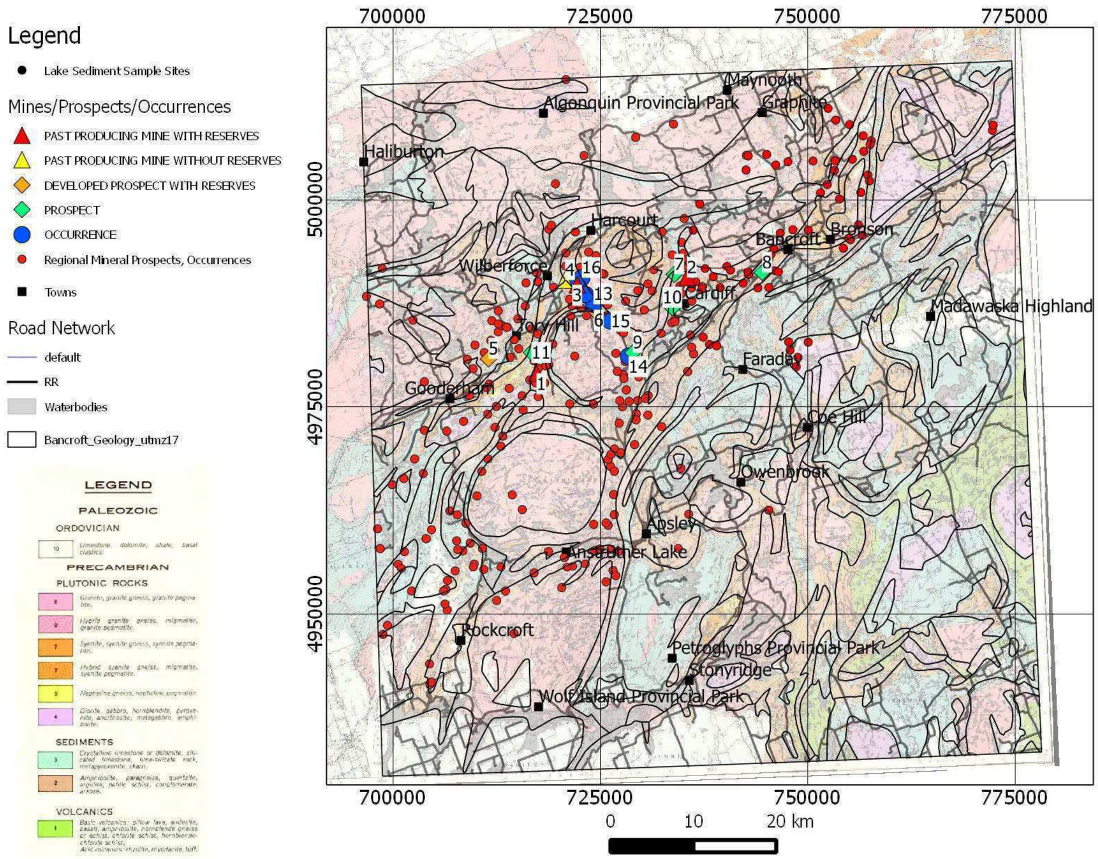

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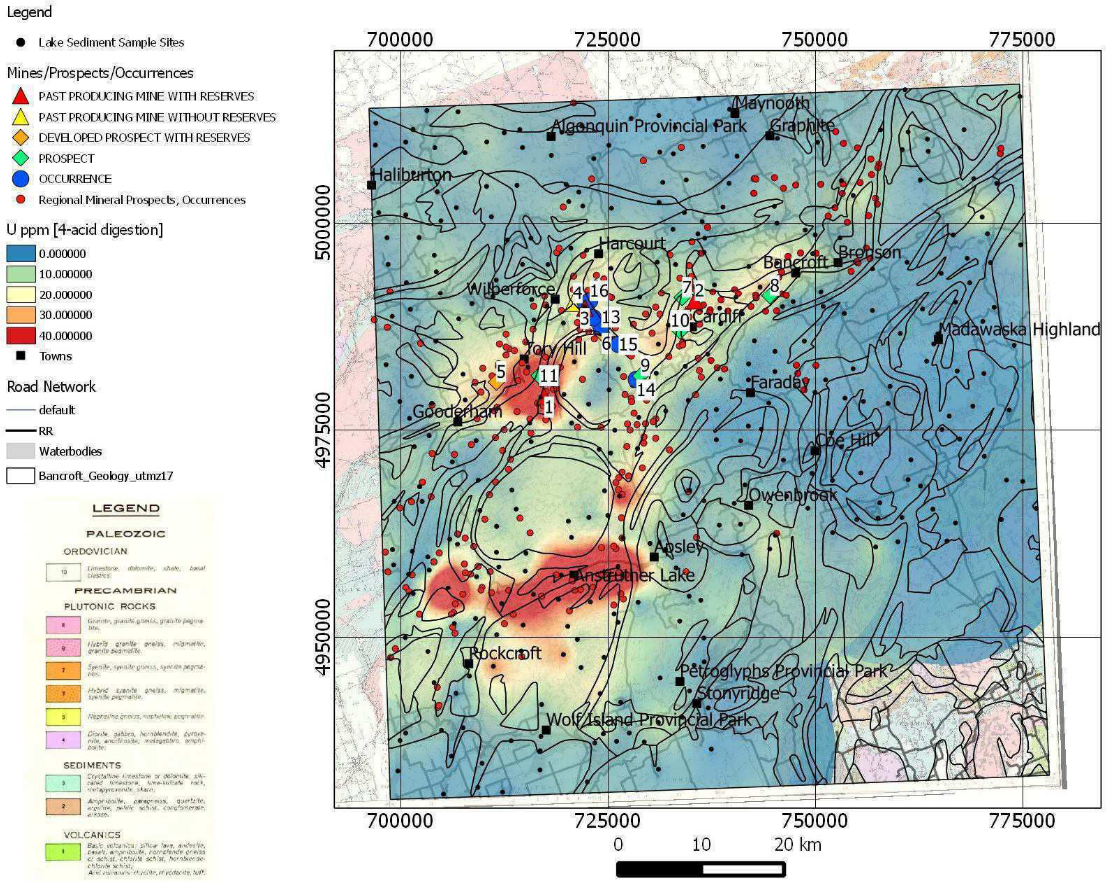

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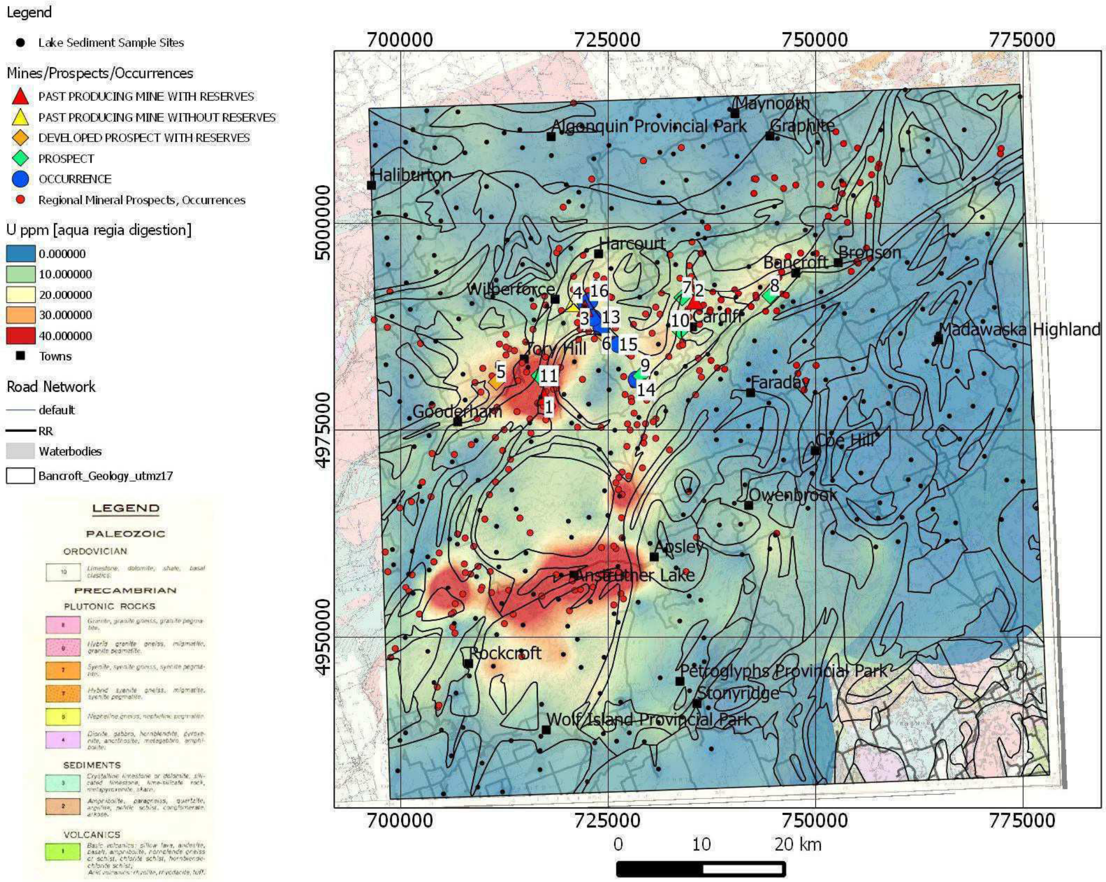

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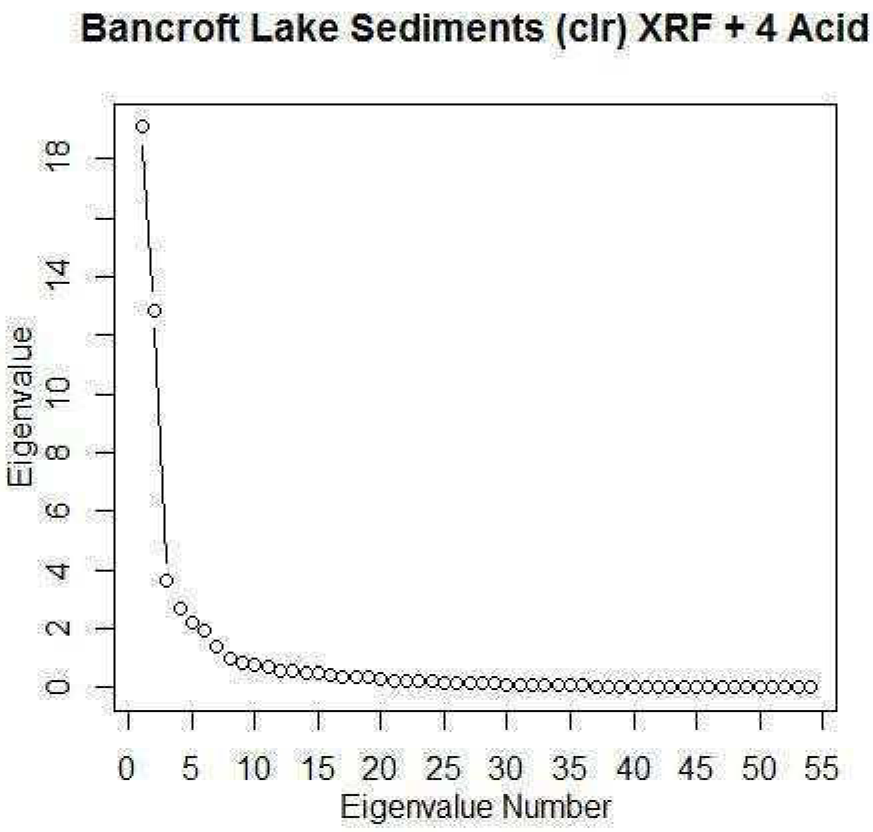

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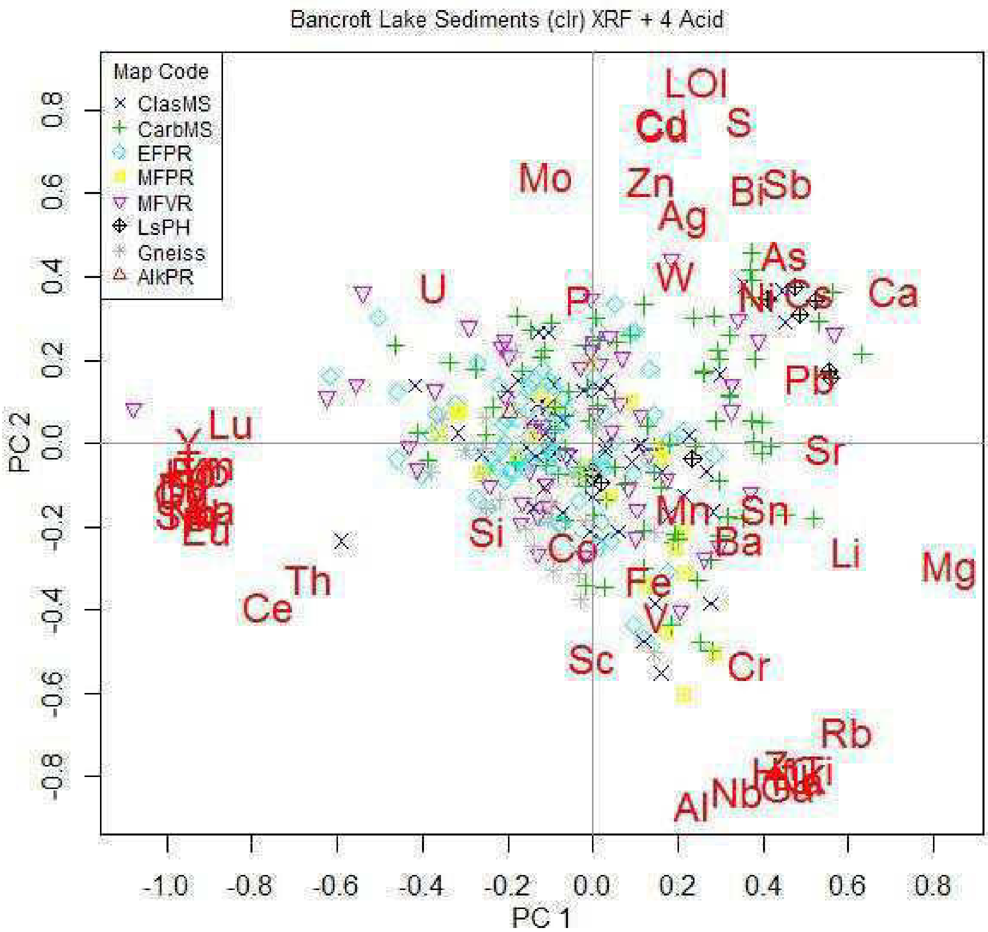

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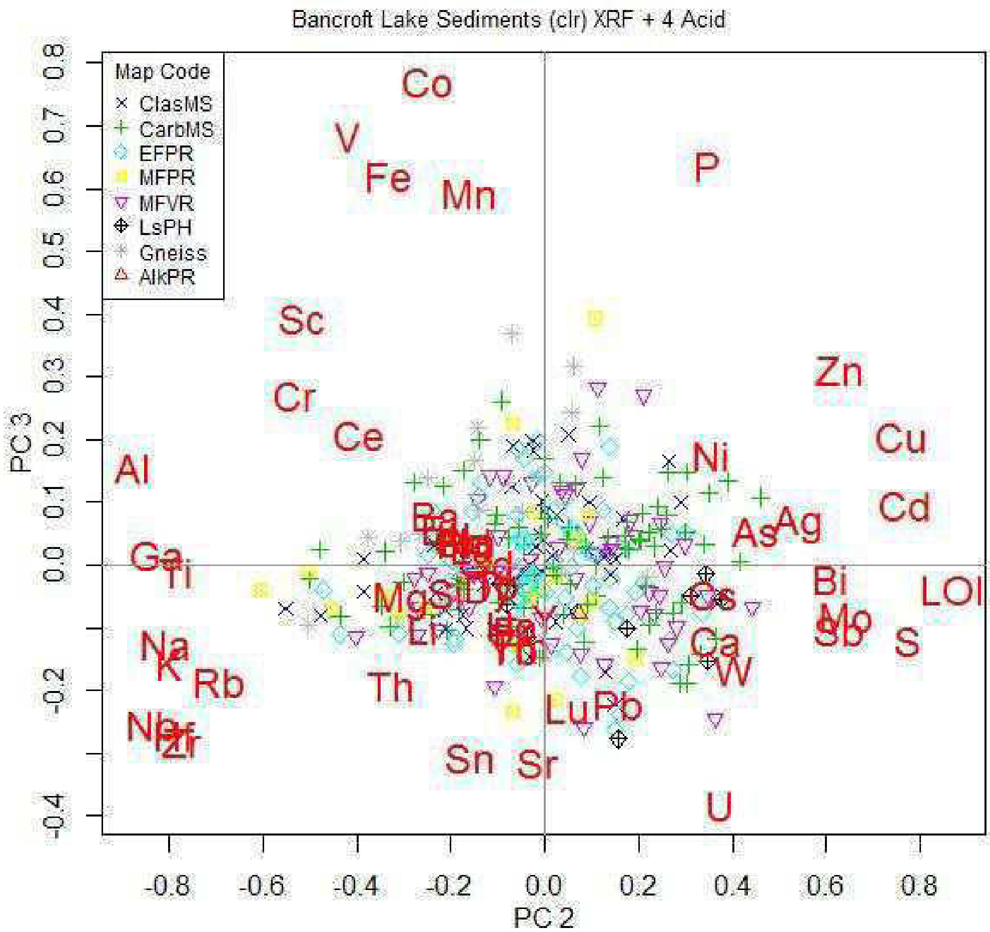

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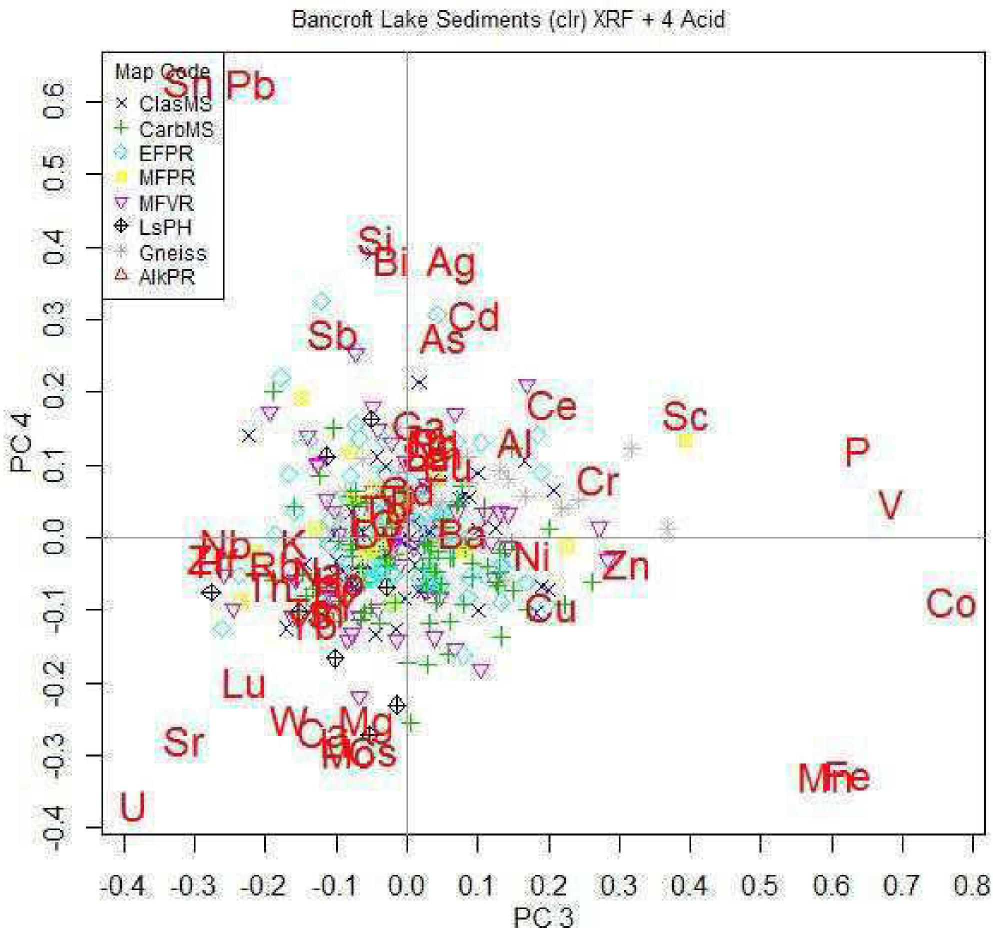

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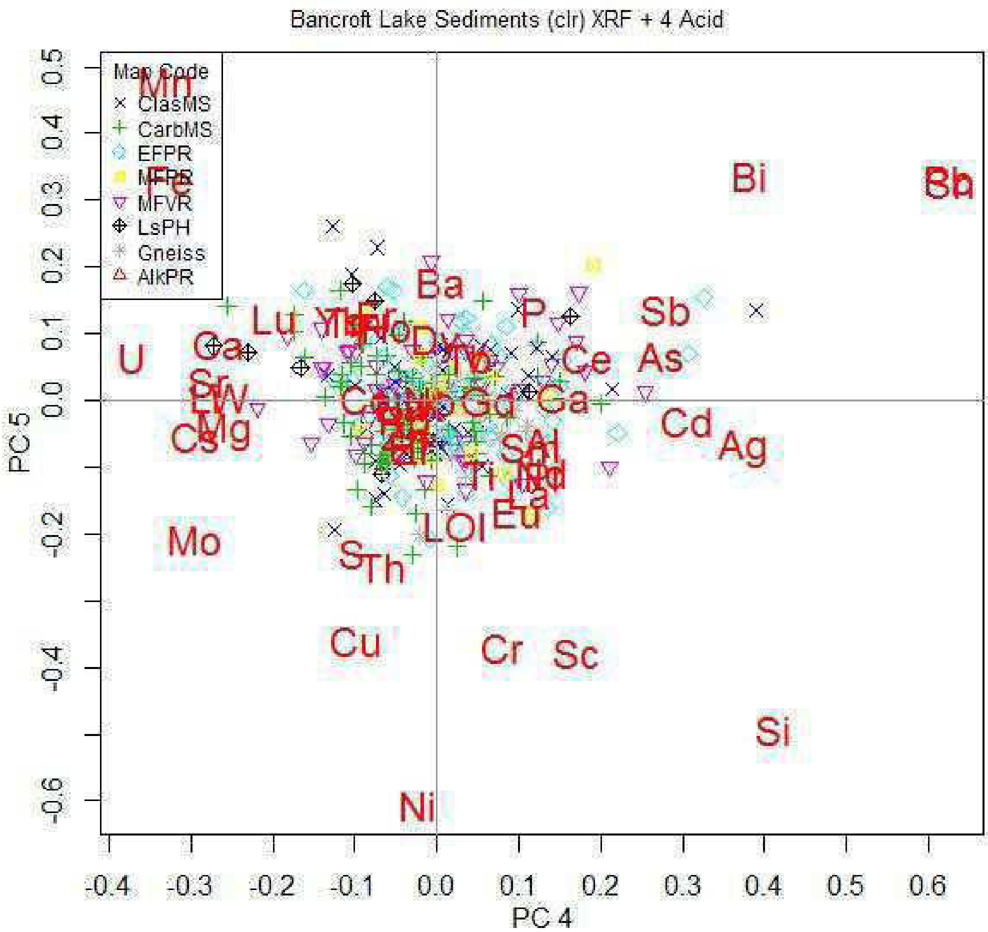

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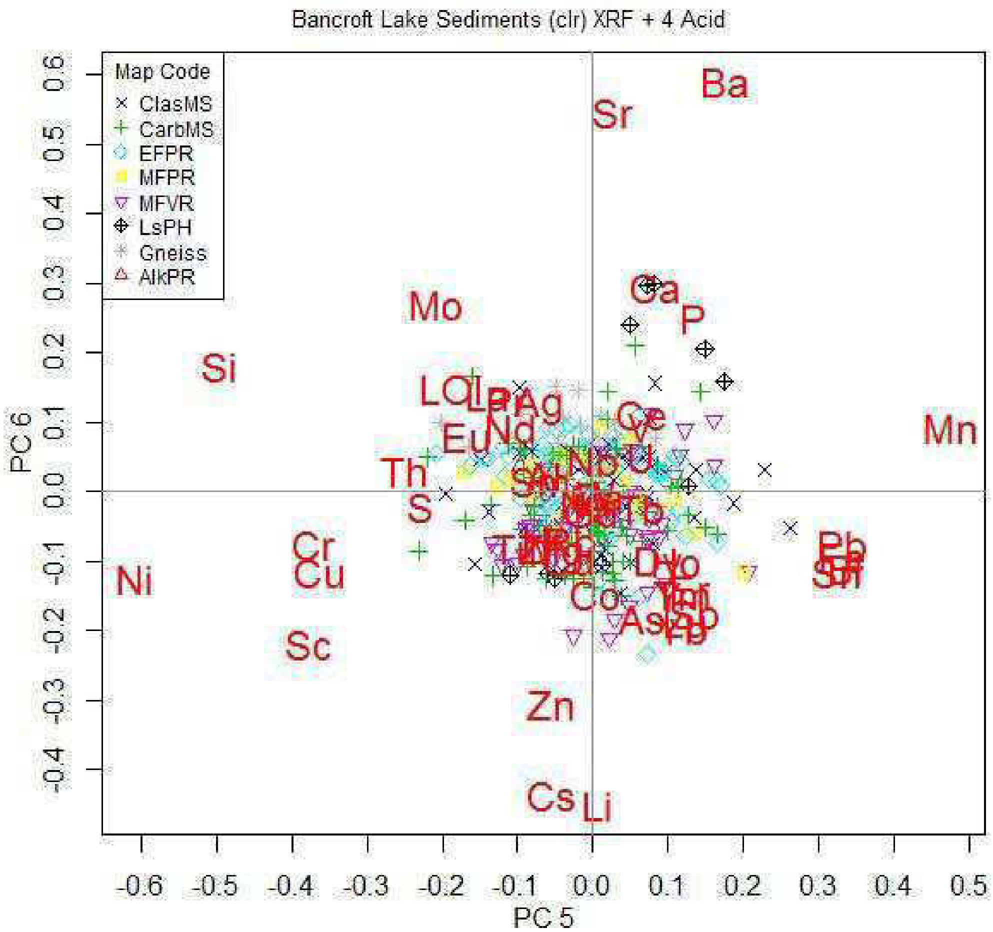

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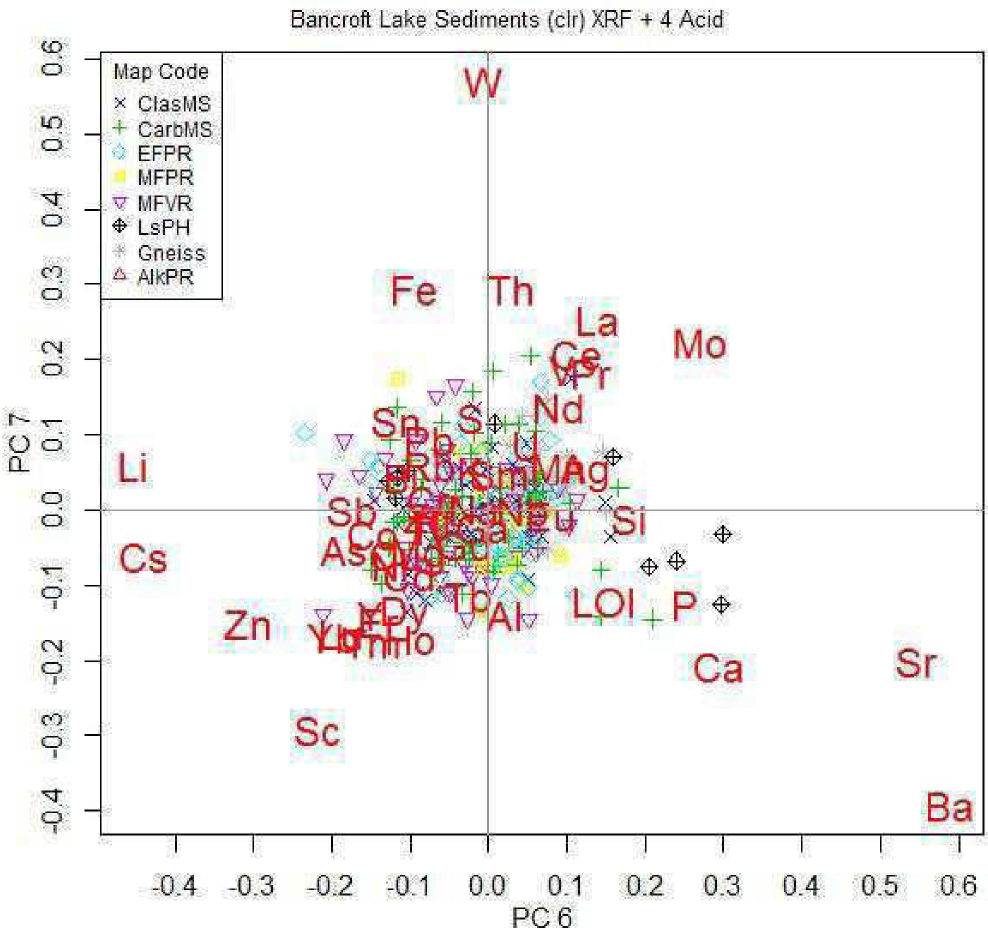

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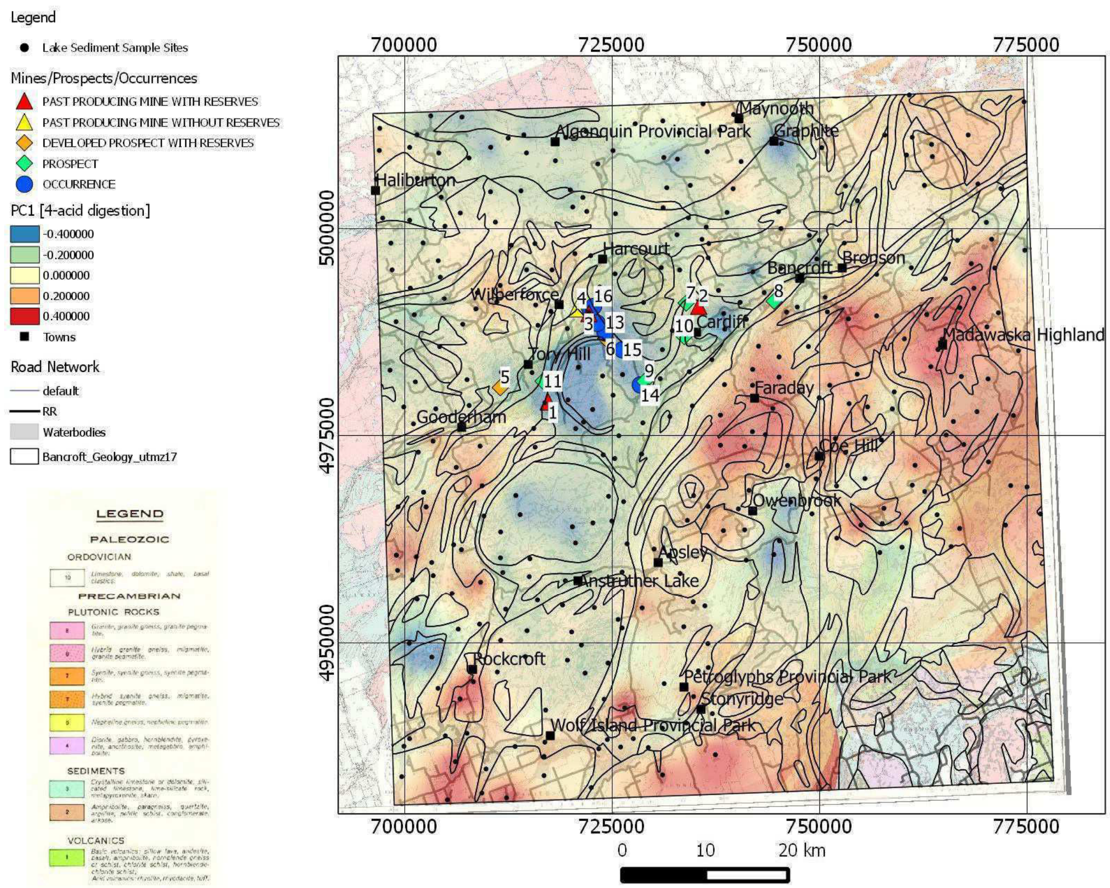

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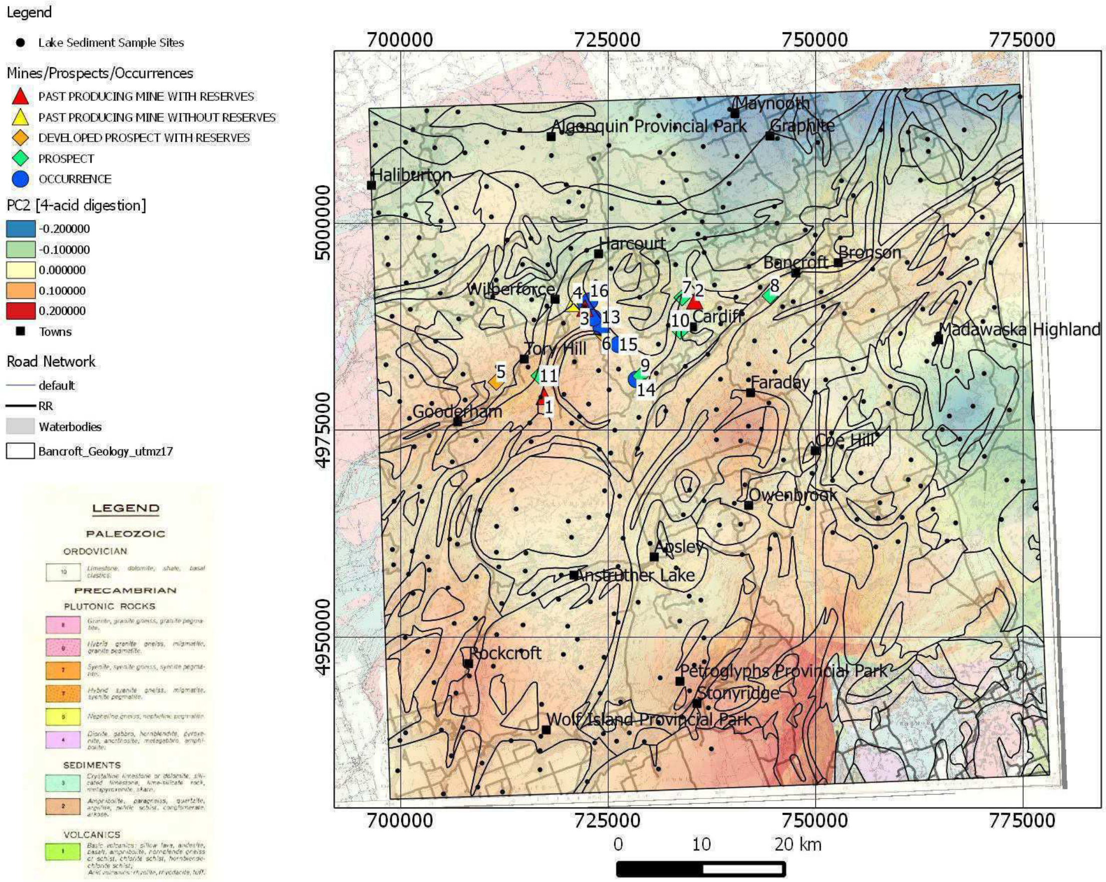

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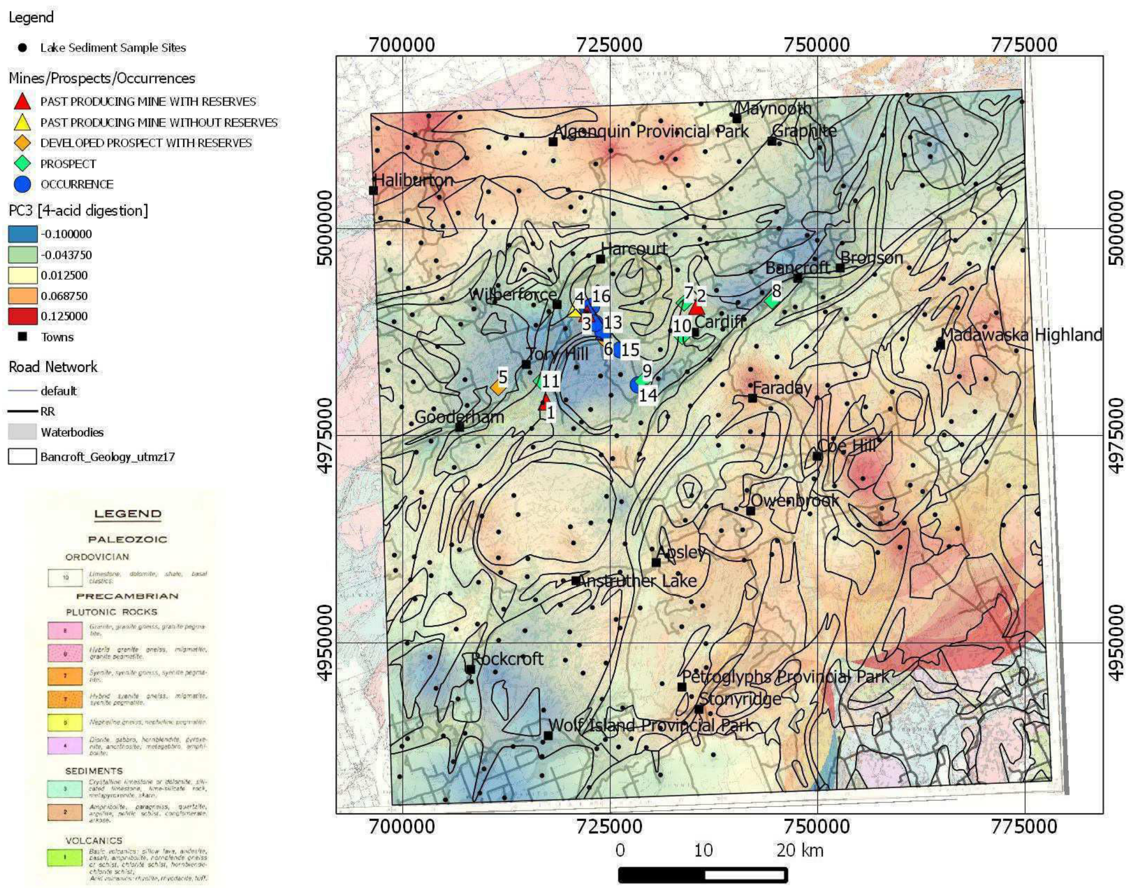

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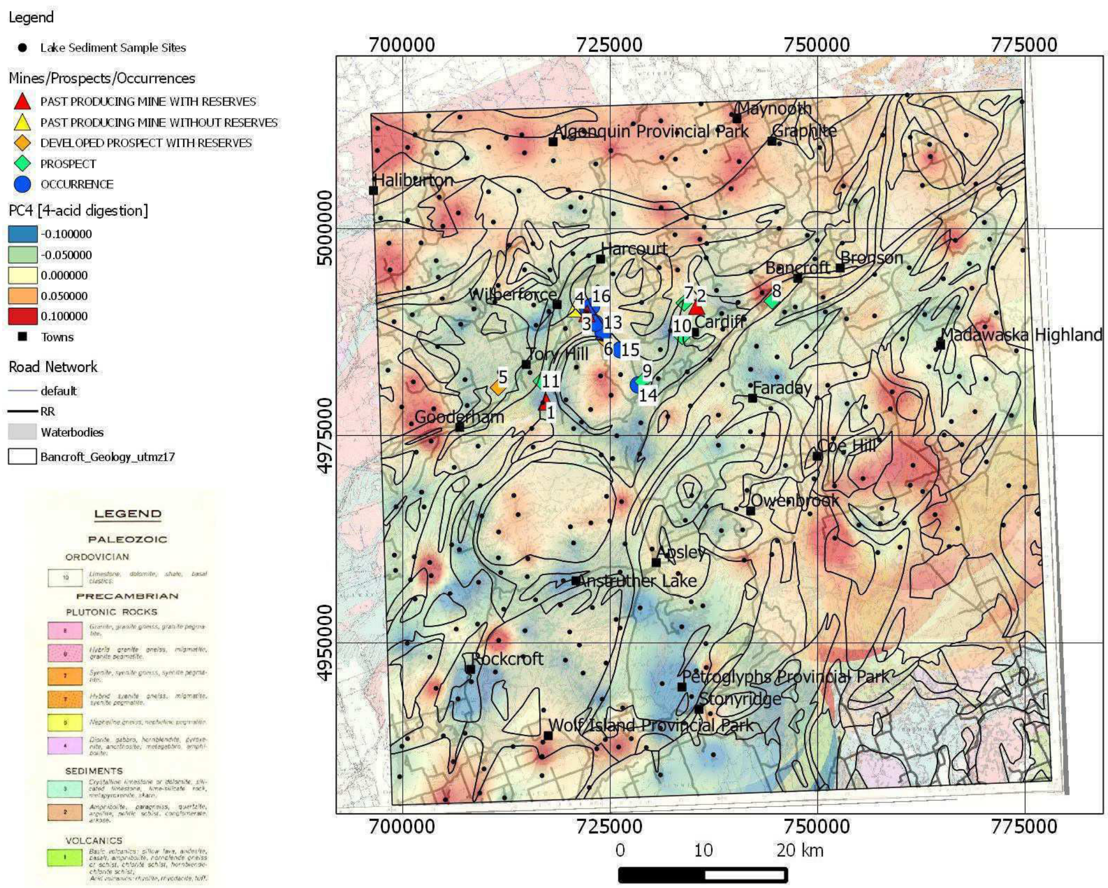

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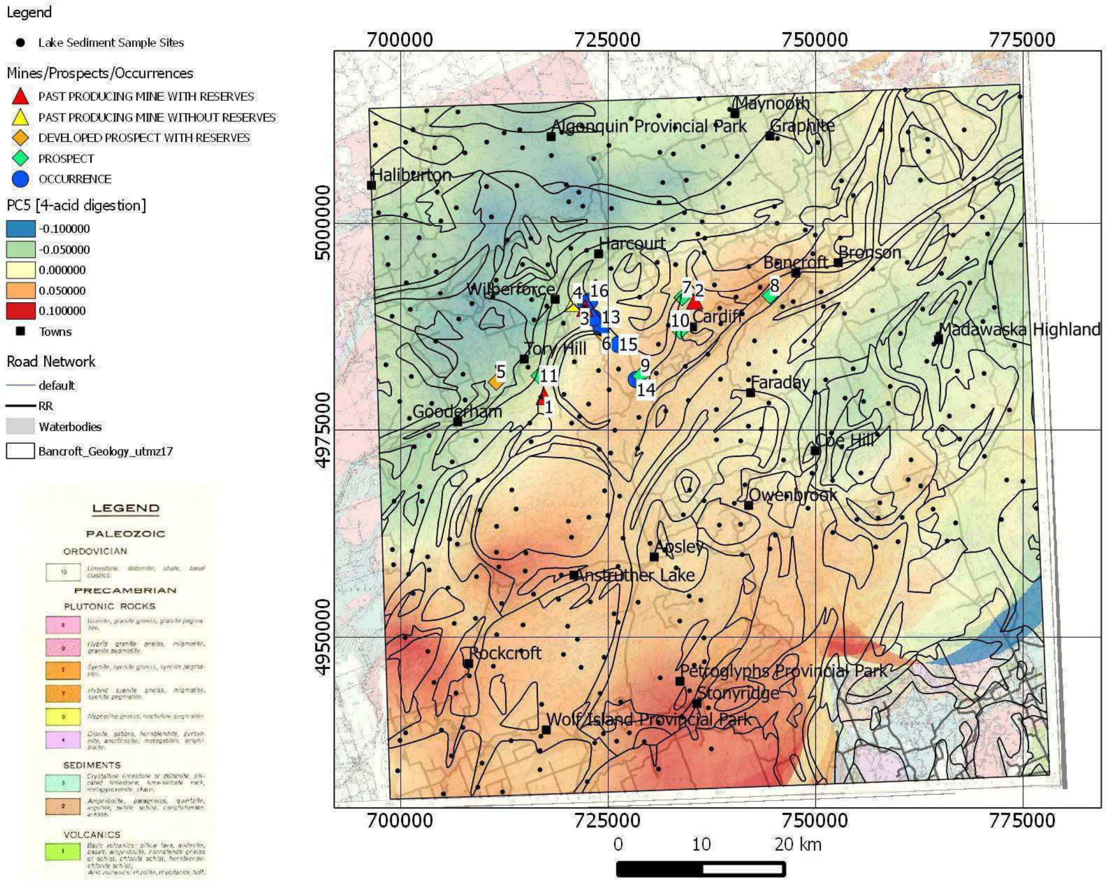

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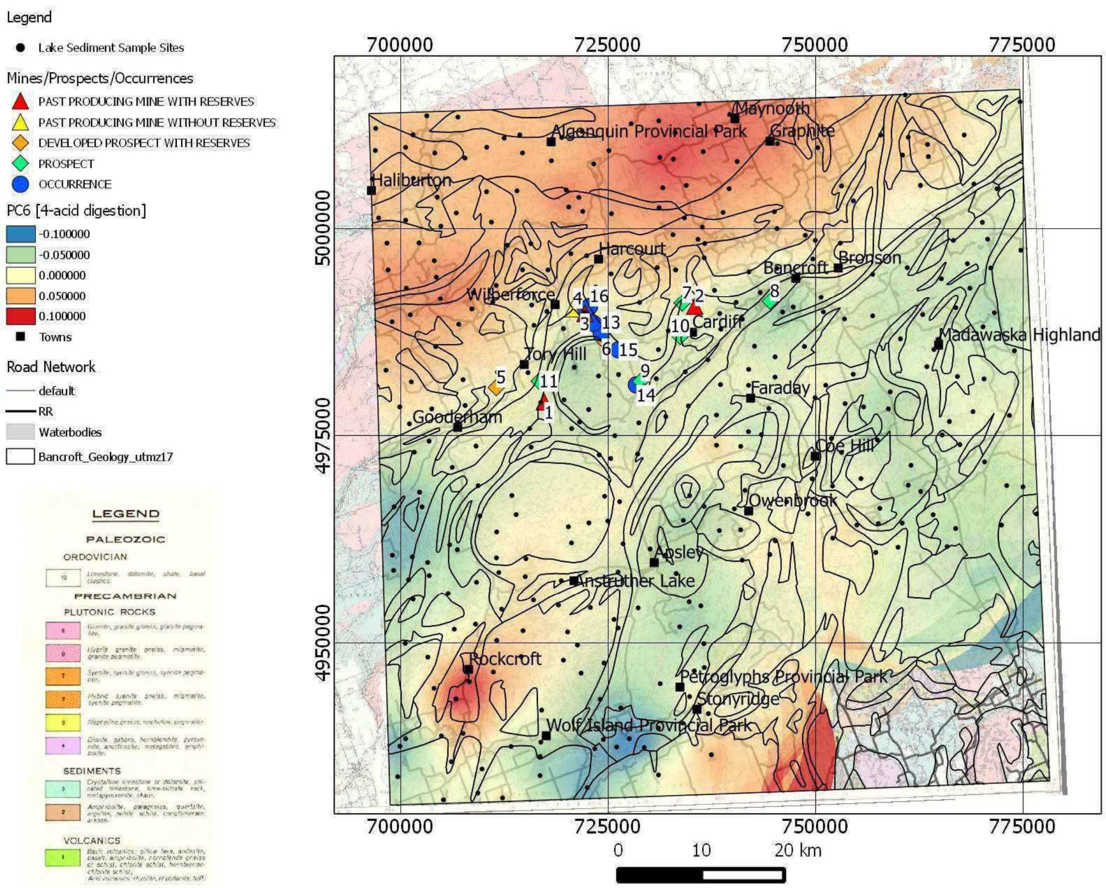

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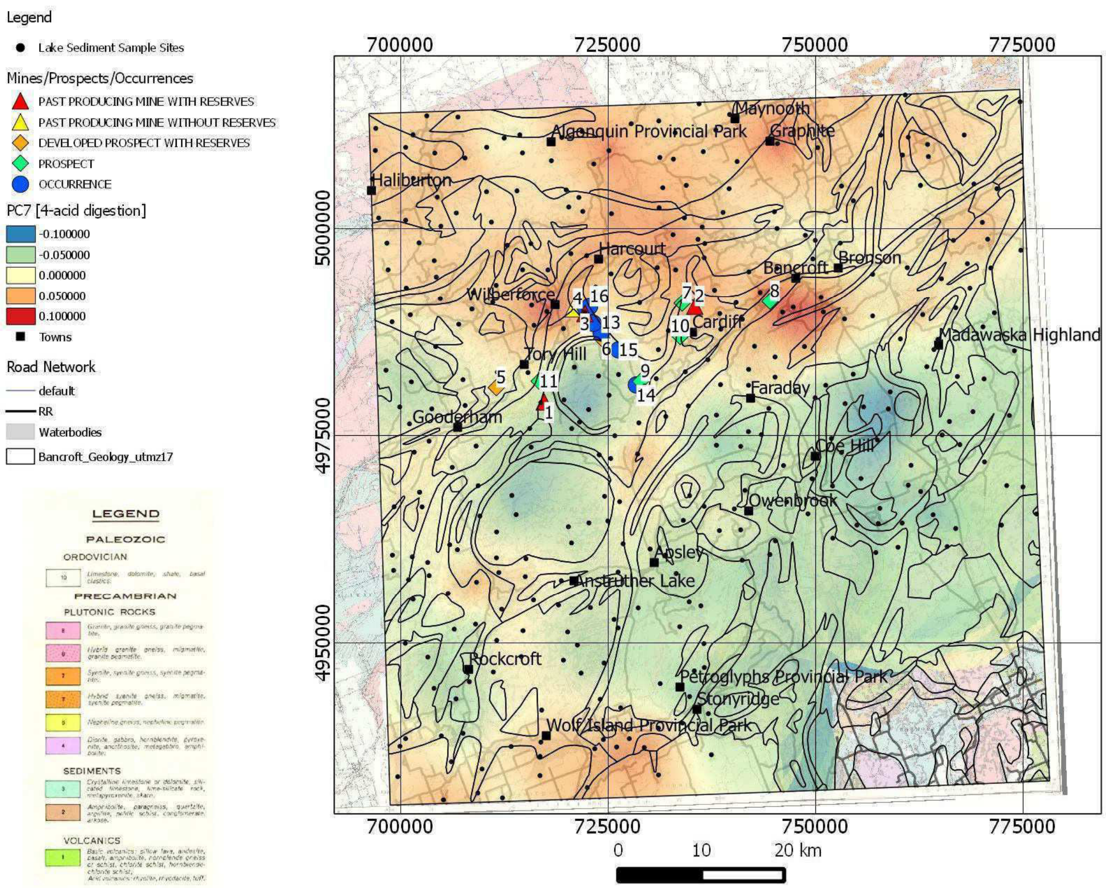

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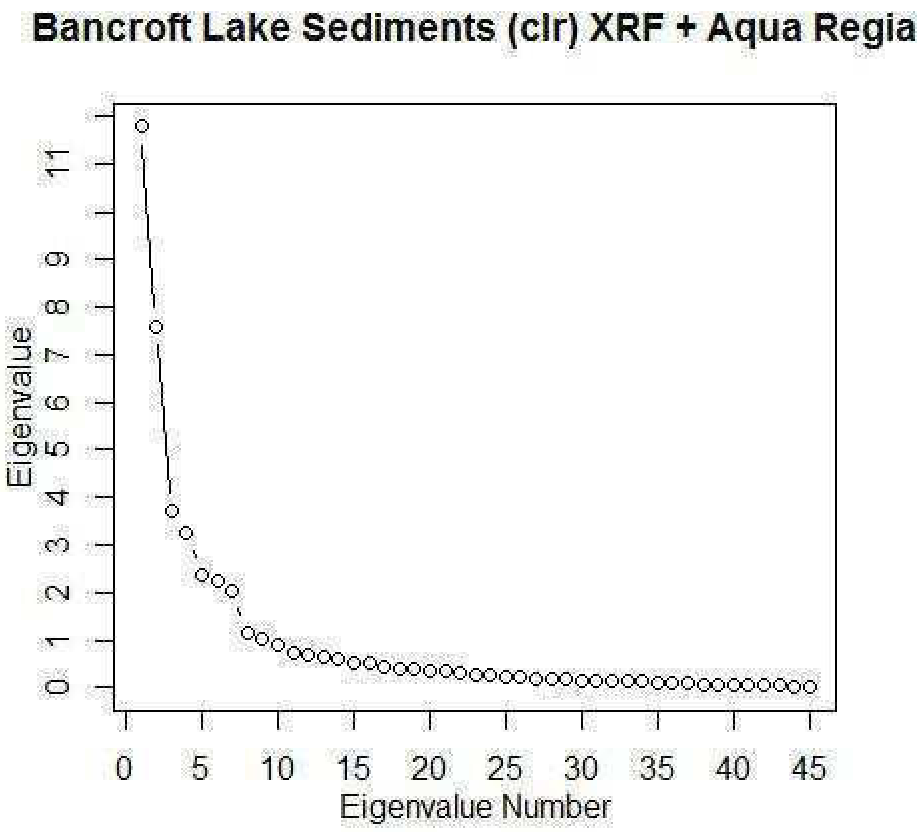

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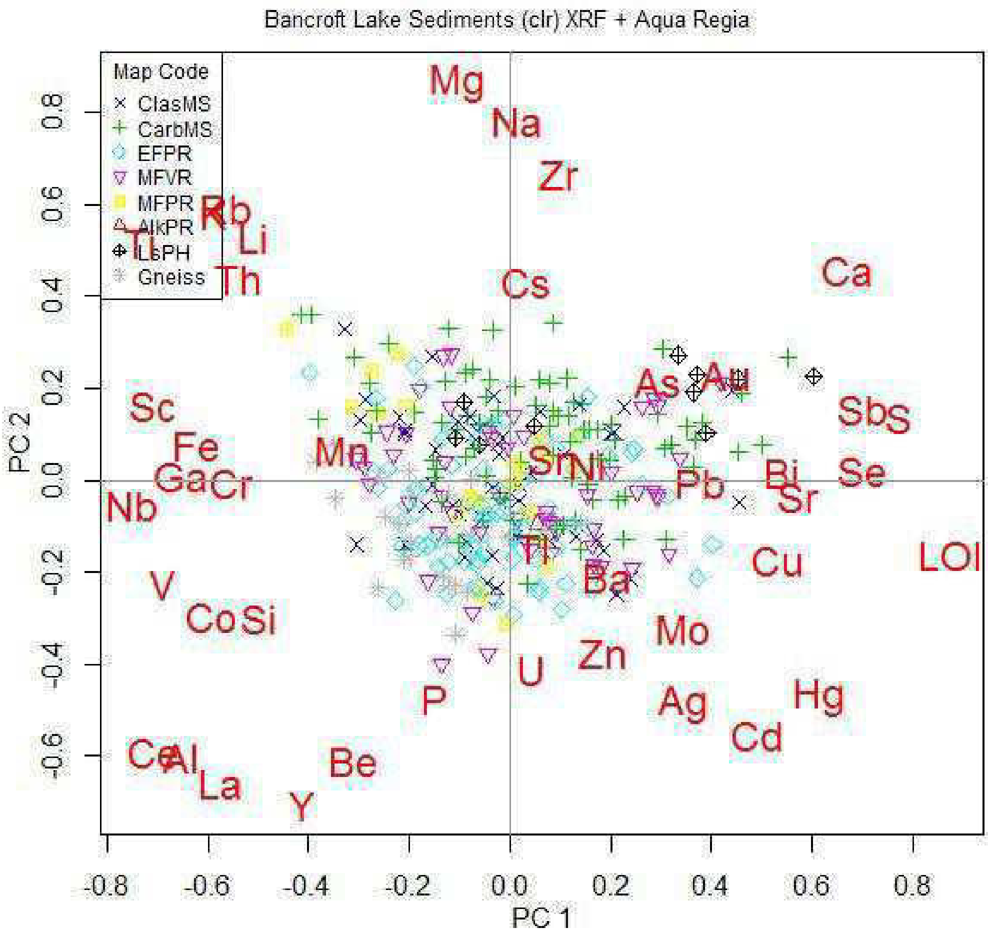

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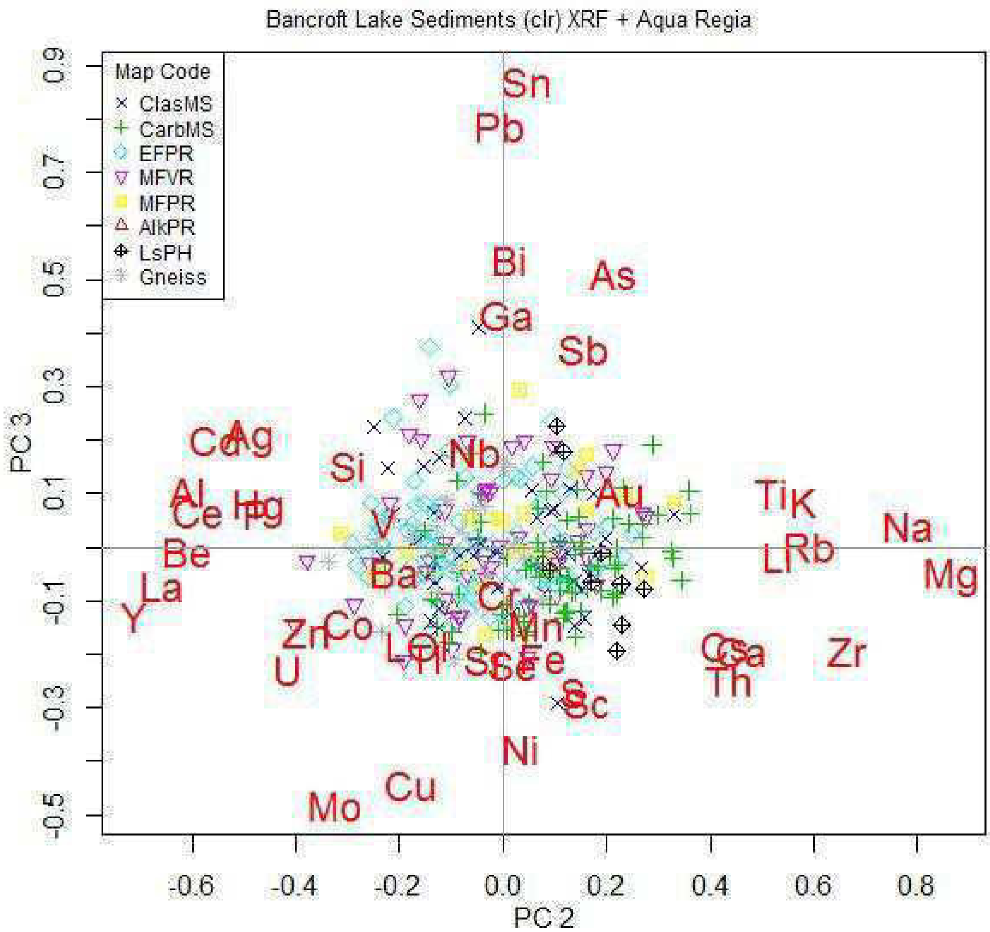

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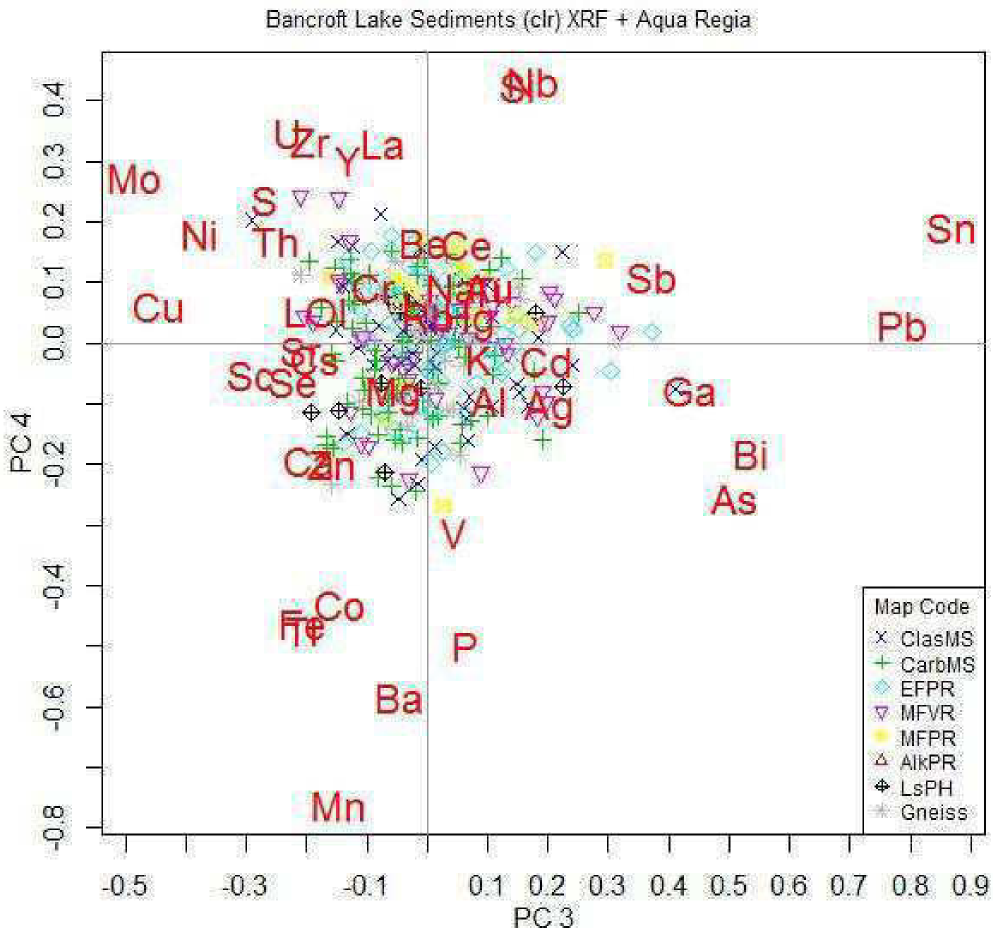

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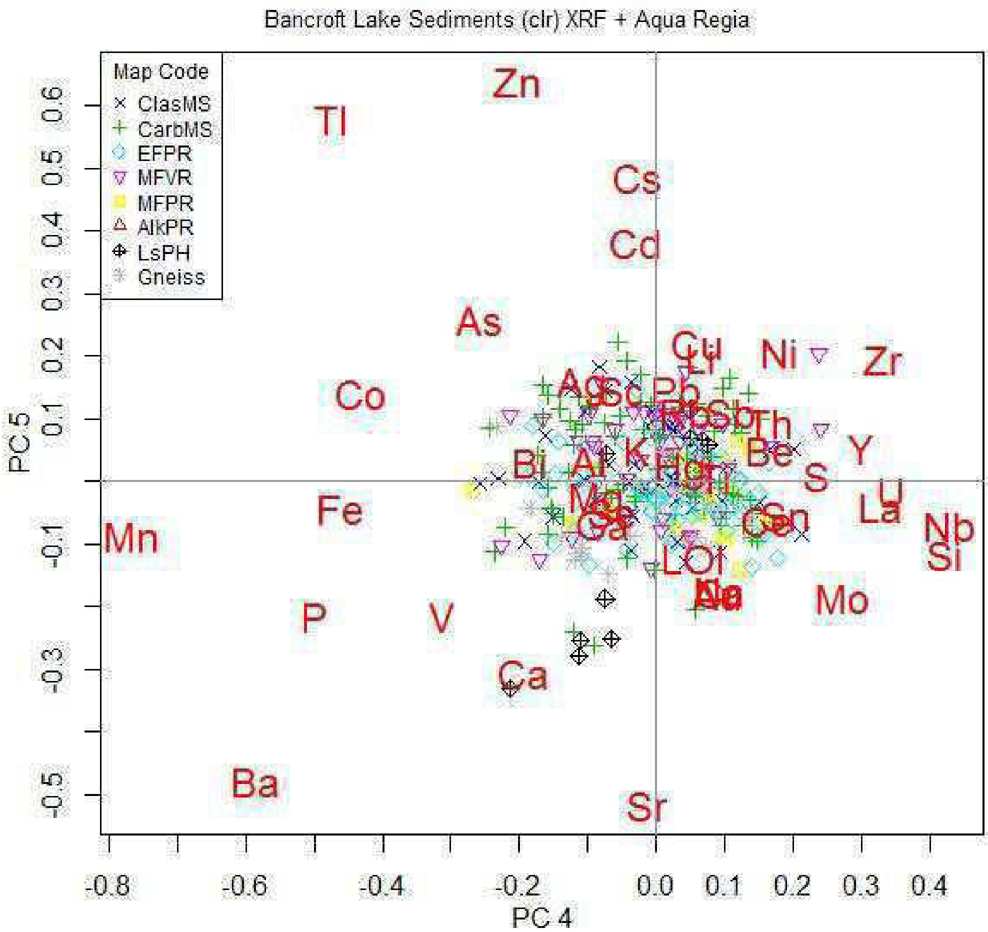

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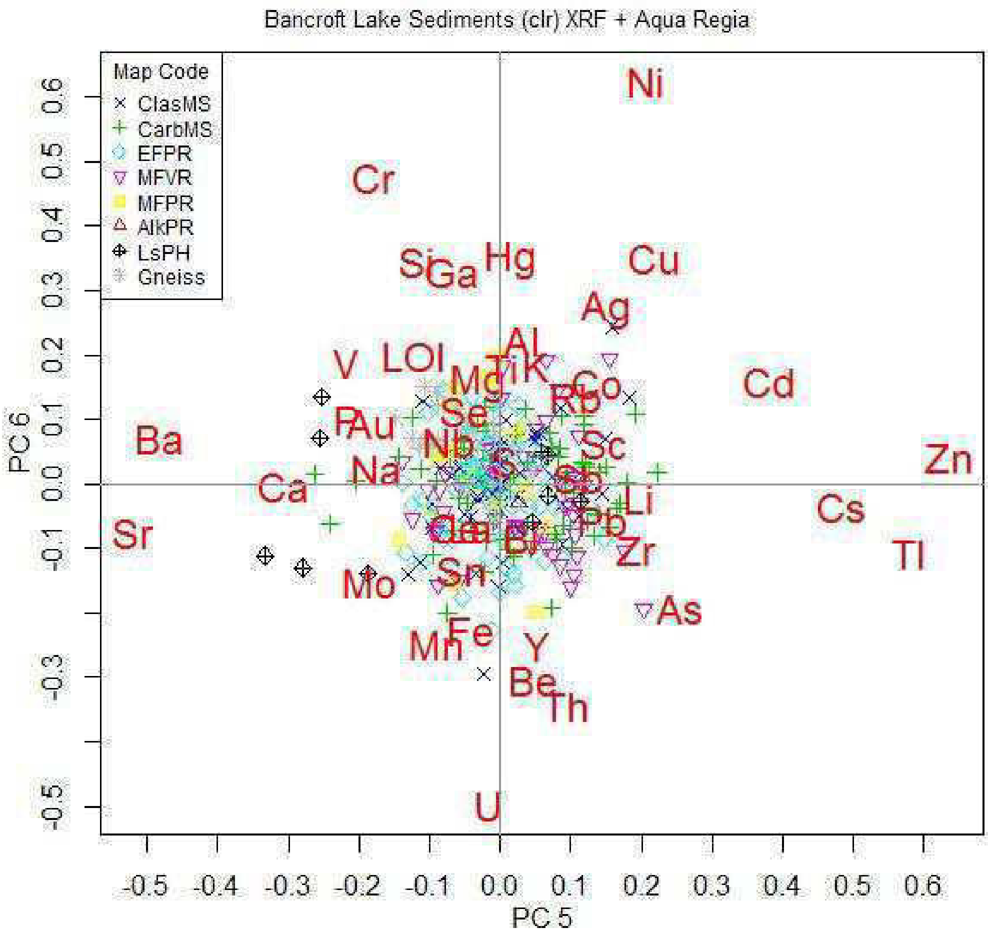

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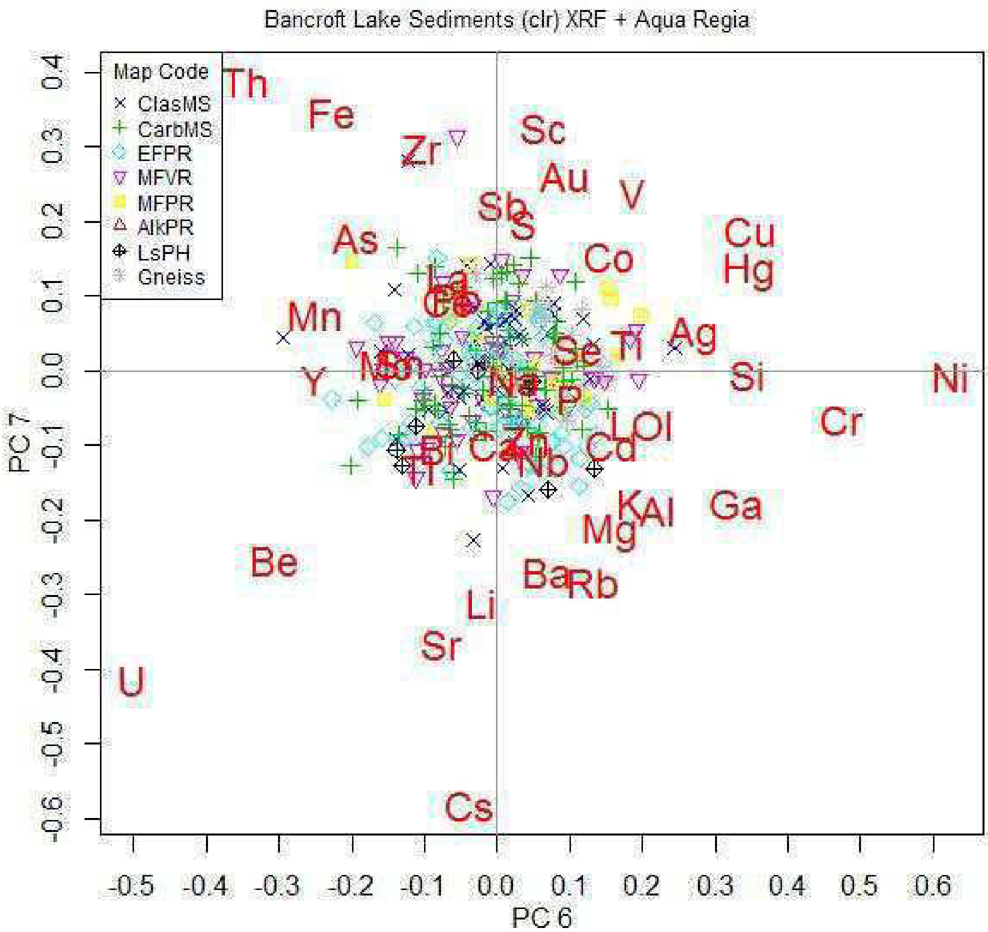

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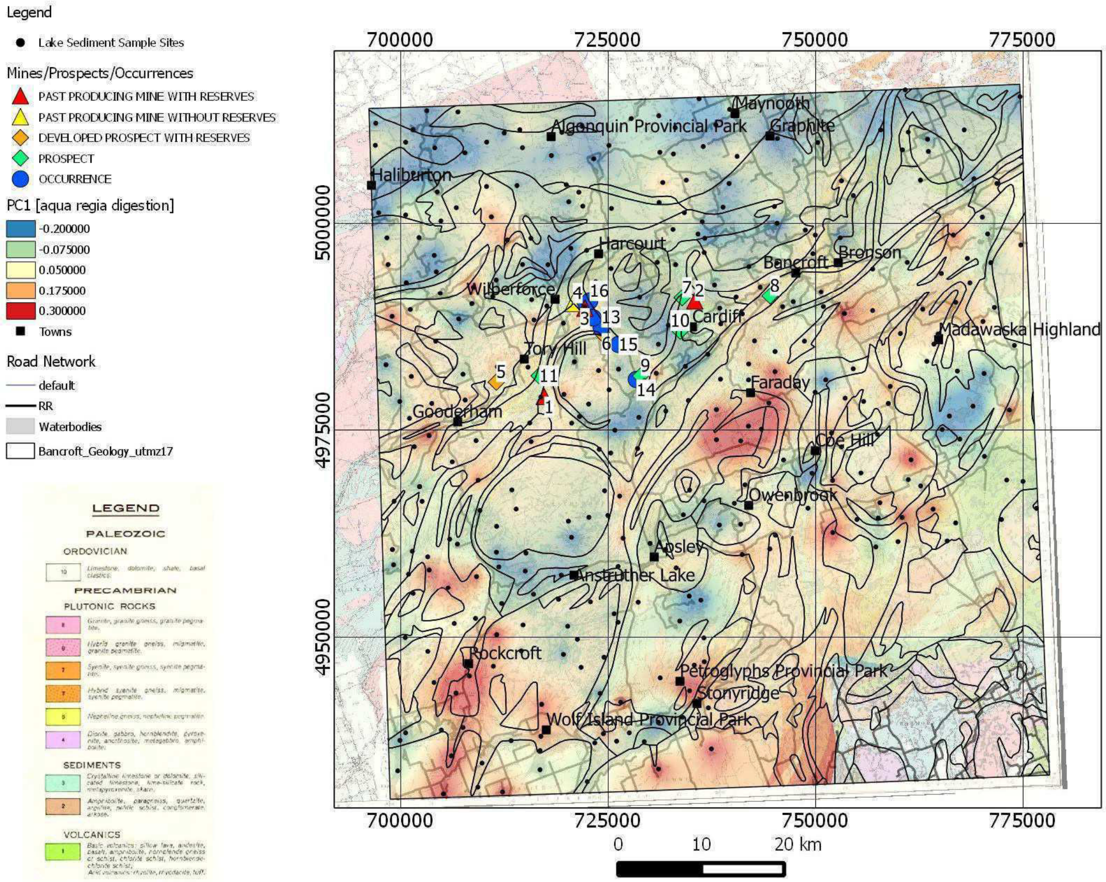

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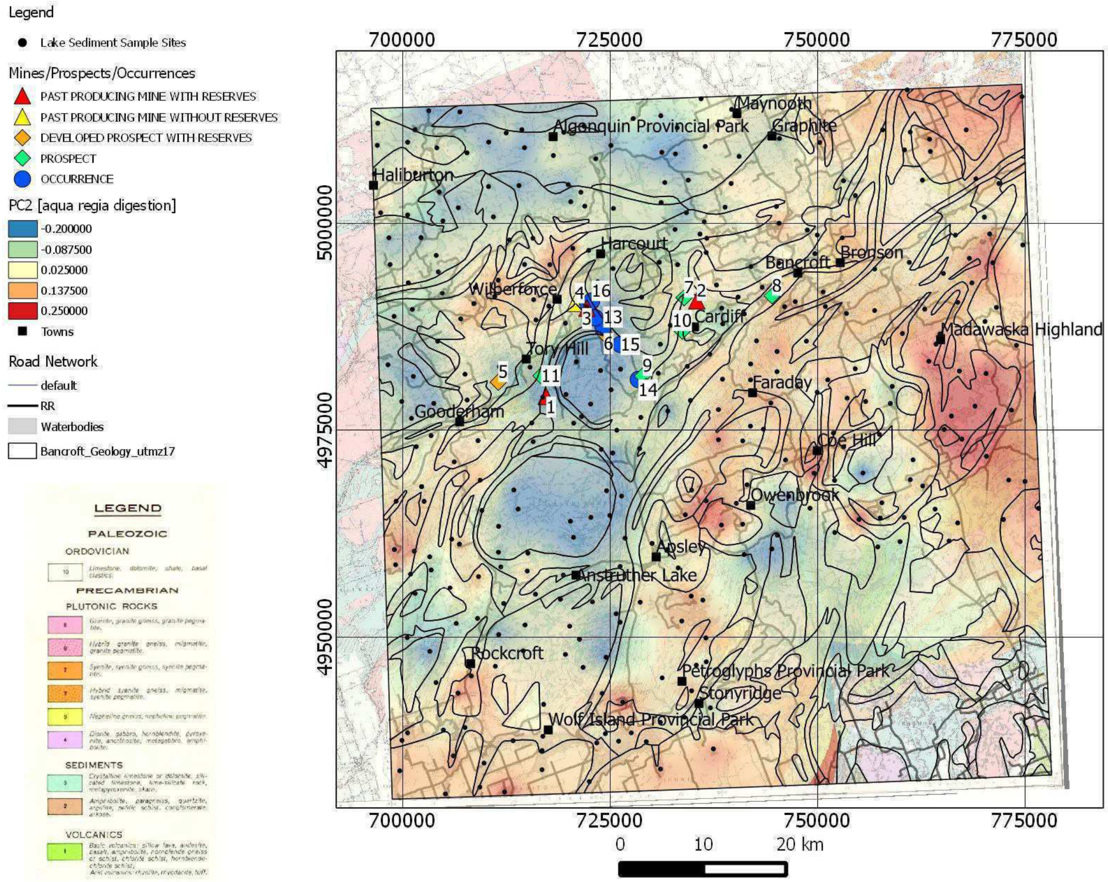

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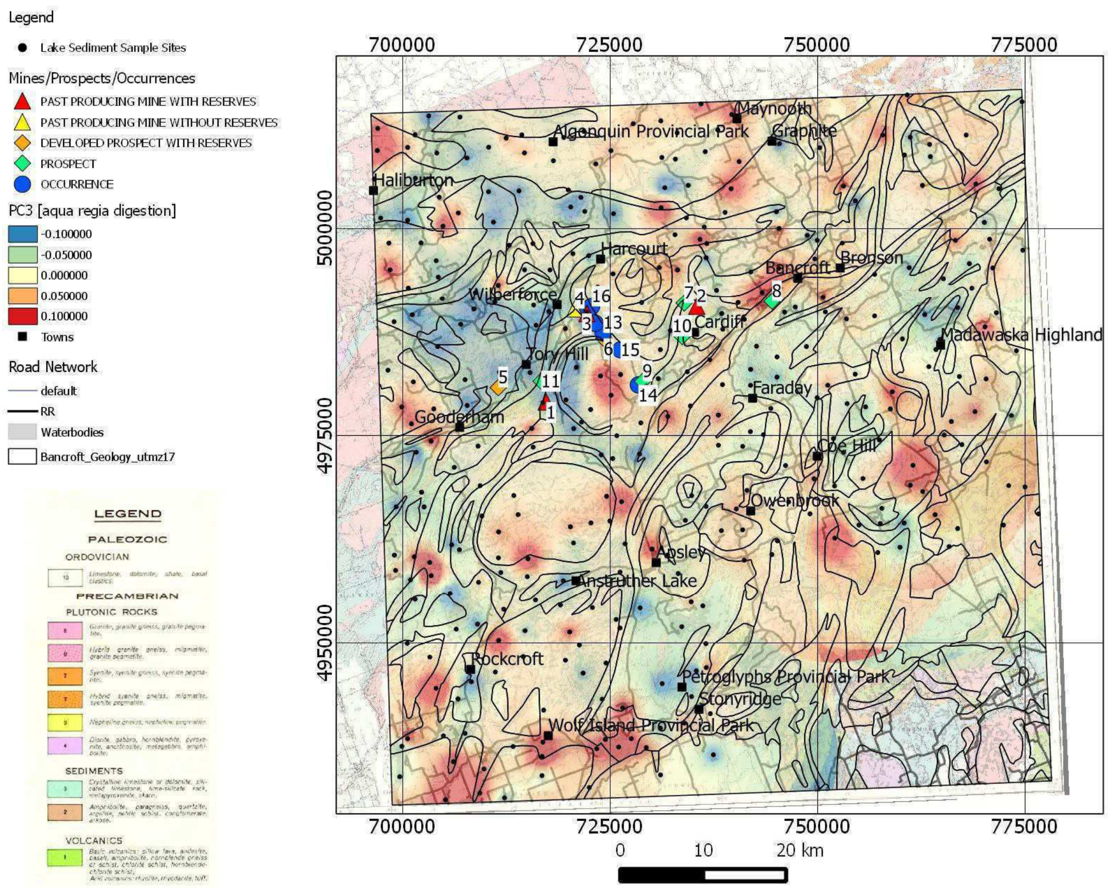

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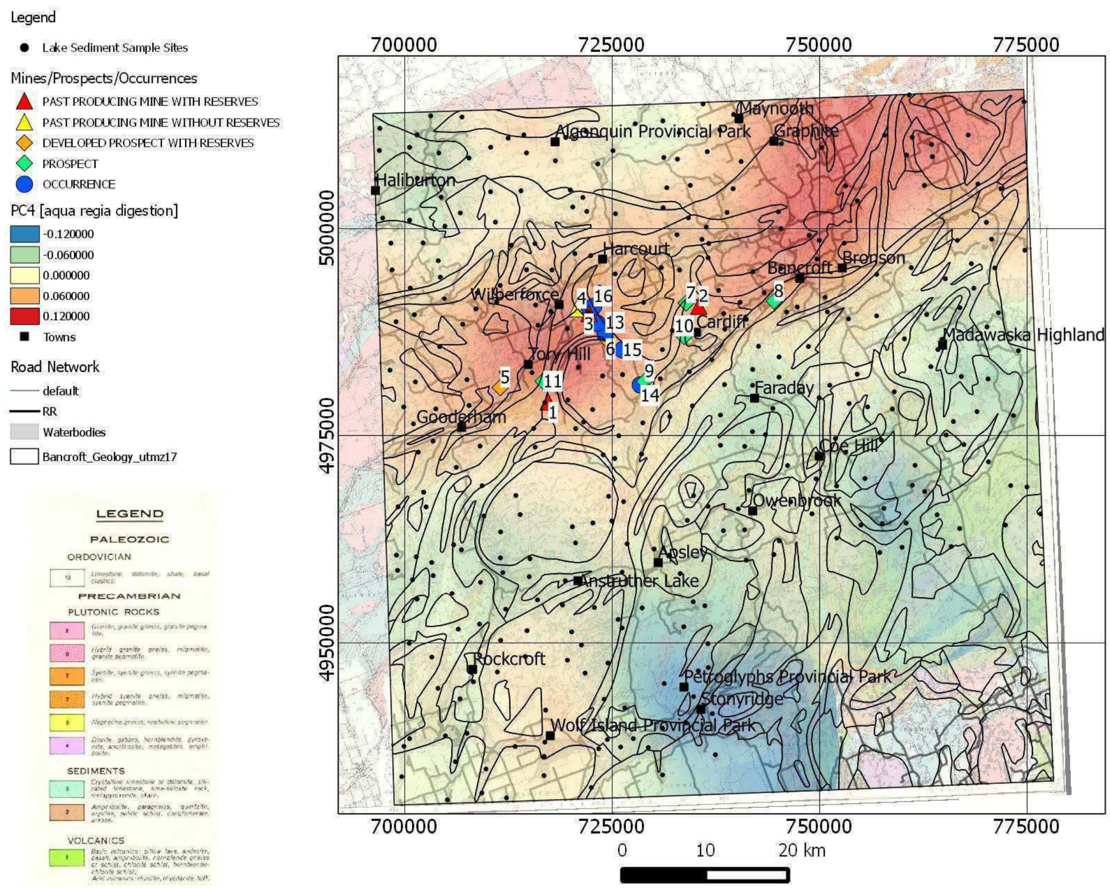

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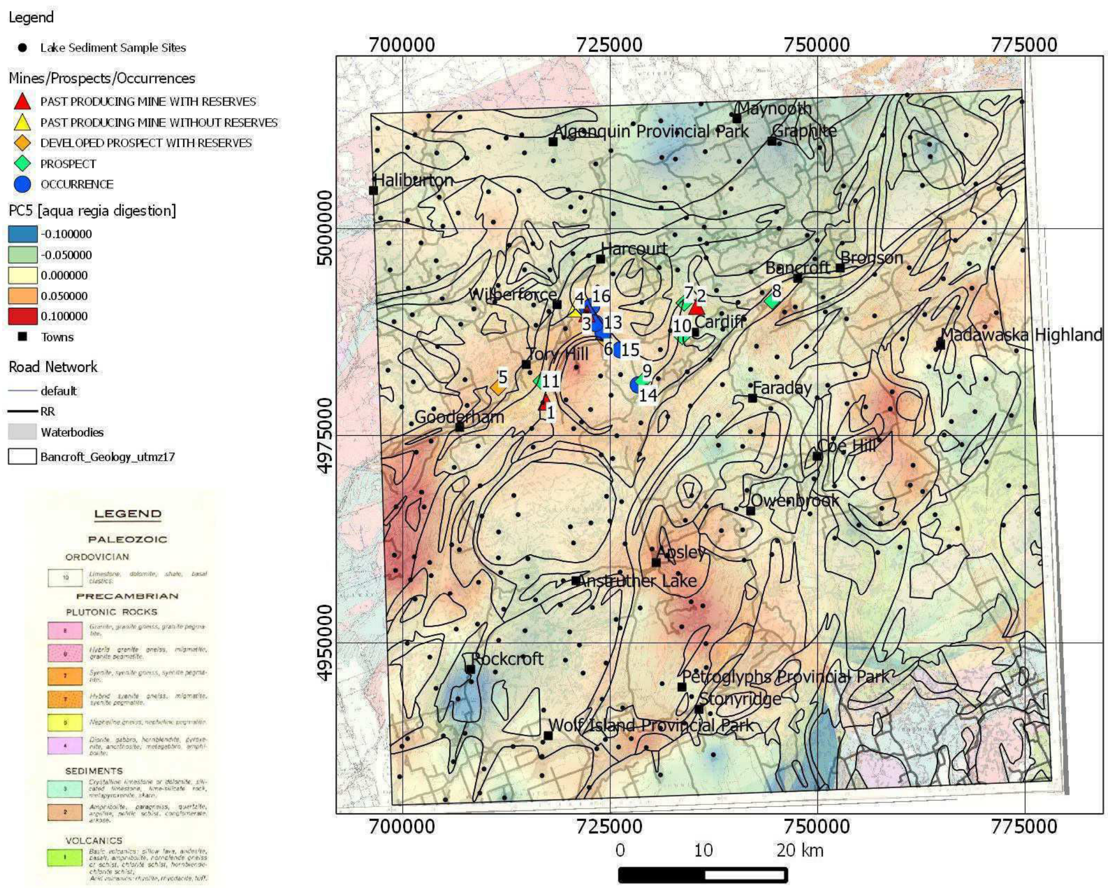

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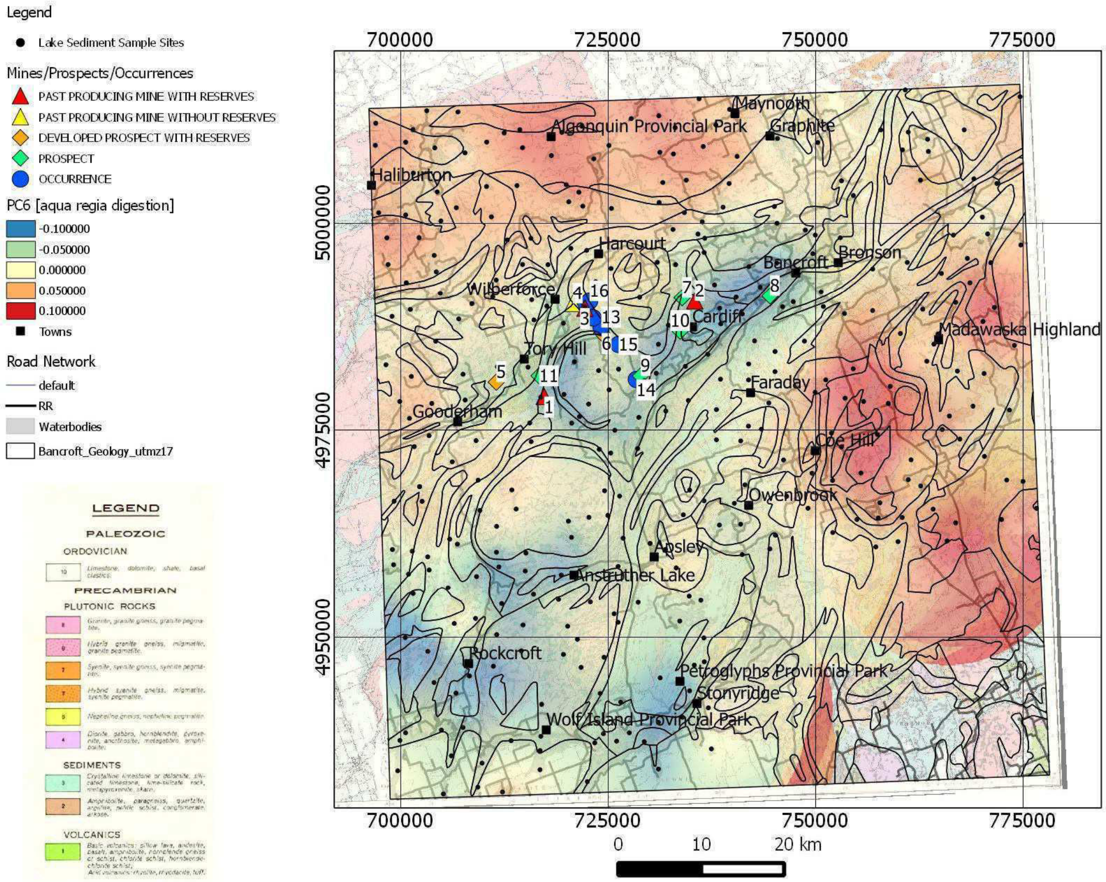

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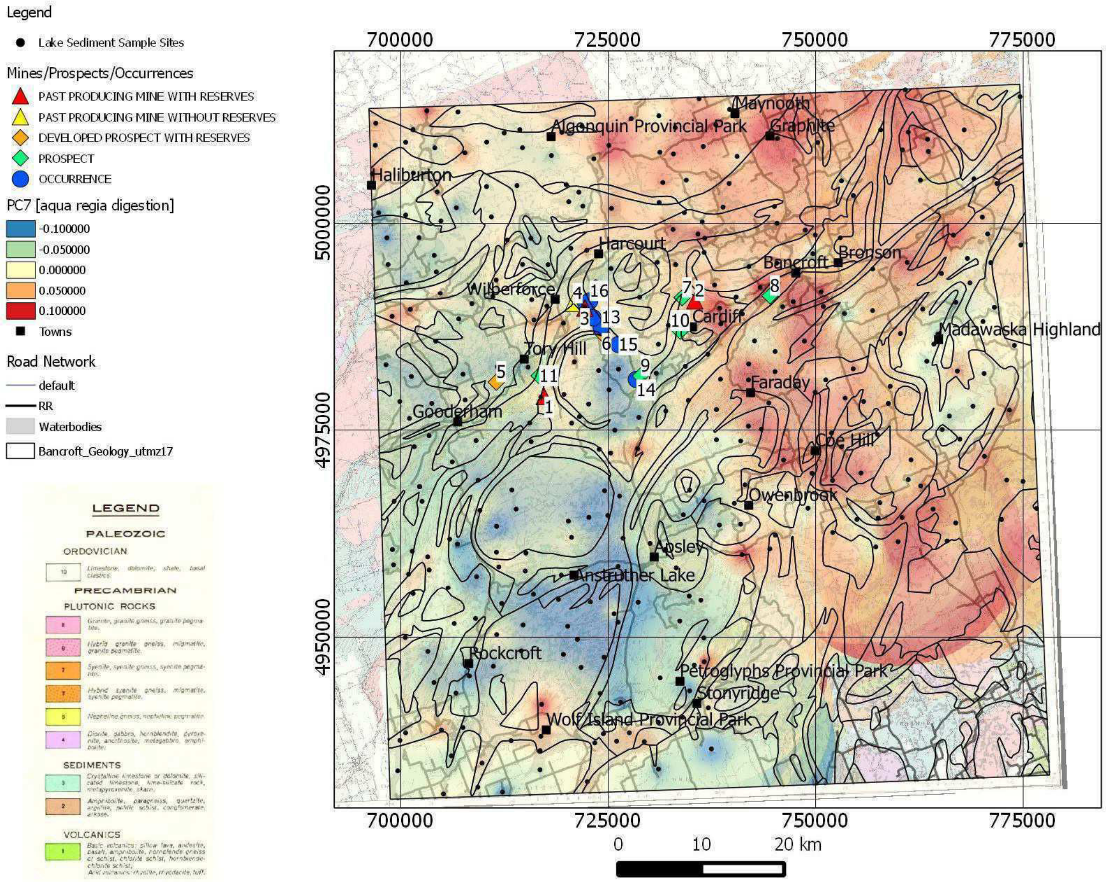

Figure 7g. Map of kriged PC7 for the logcentred aqua regia digestion data.

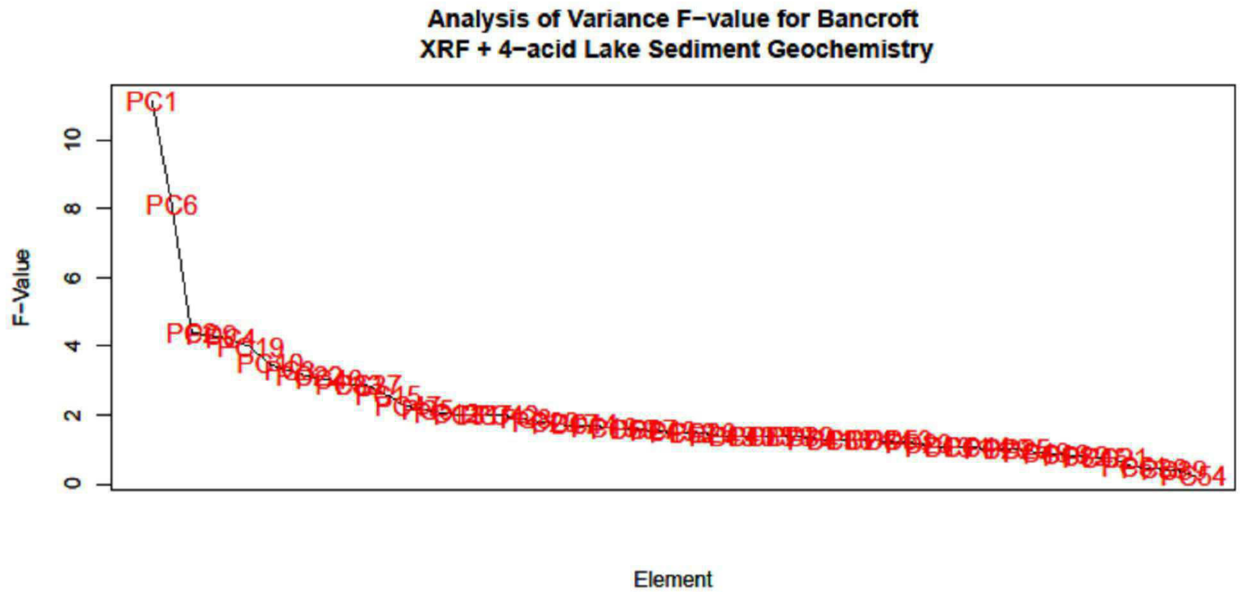

Figure 8a. Ordered plot of F-value versus principal component for the four-acid digestion lake sediment geochemical data.

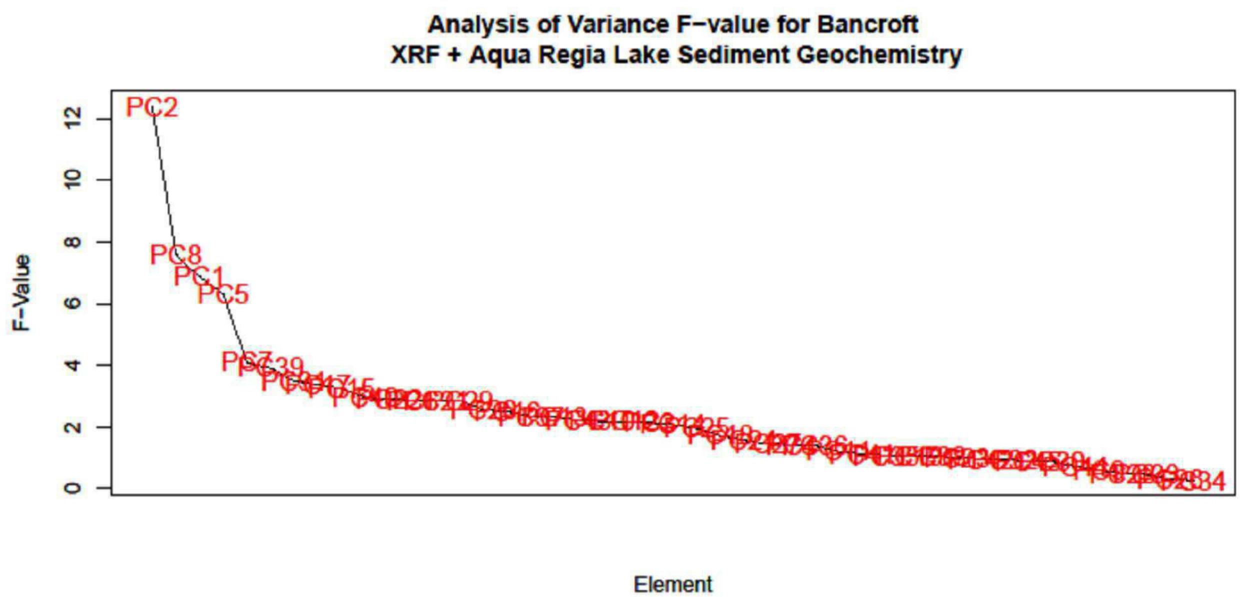

Figure 8b. Ordered plot of F-value versus principal component for the aqua regia digestion lake sediment geochemical data.

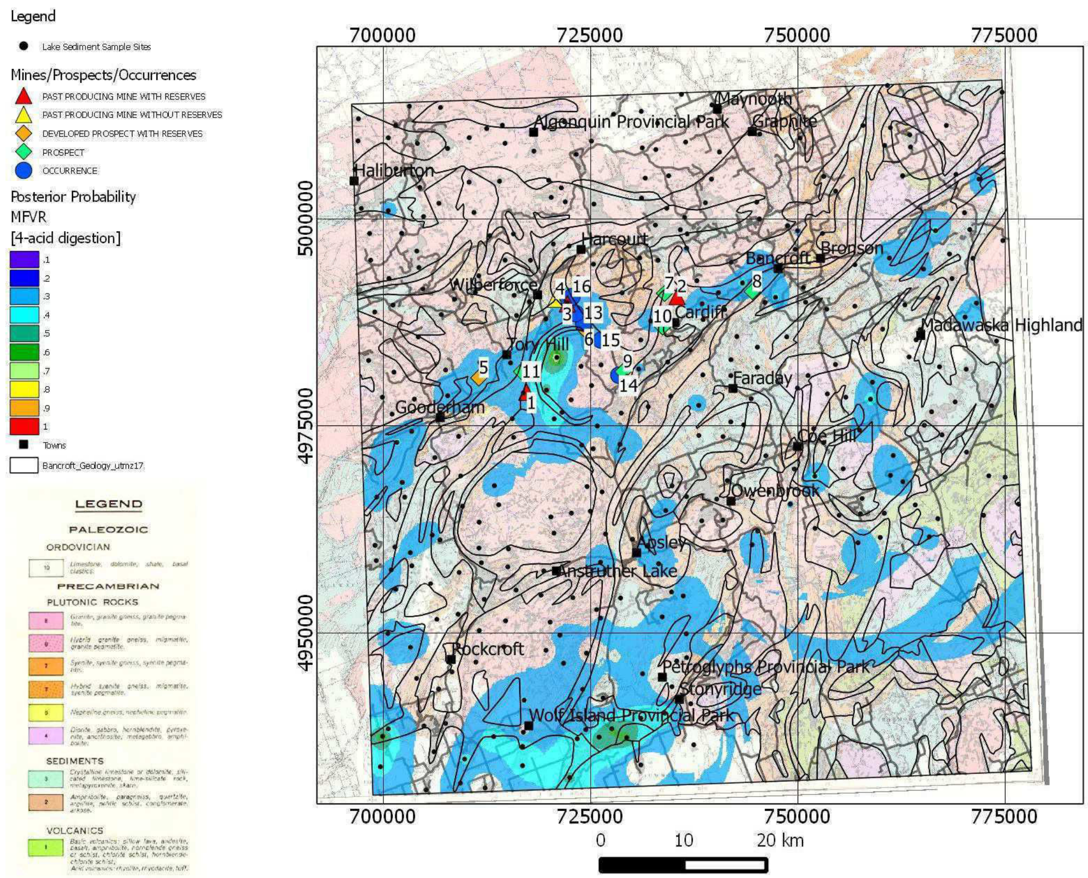

Figure 9. Predictive map of unit MFVR (mafic/felsic volcanic rocks) based on posterior probability and 4-acid digestion of lake sediment material. Probabilities below 0.2 are not shown.

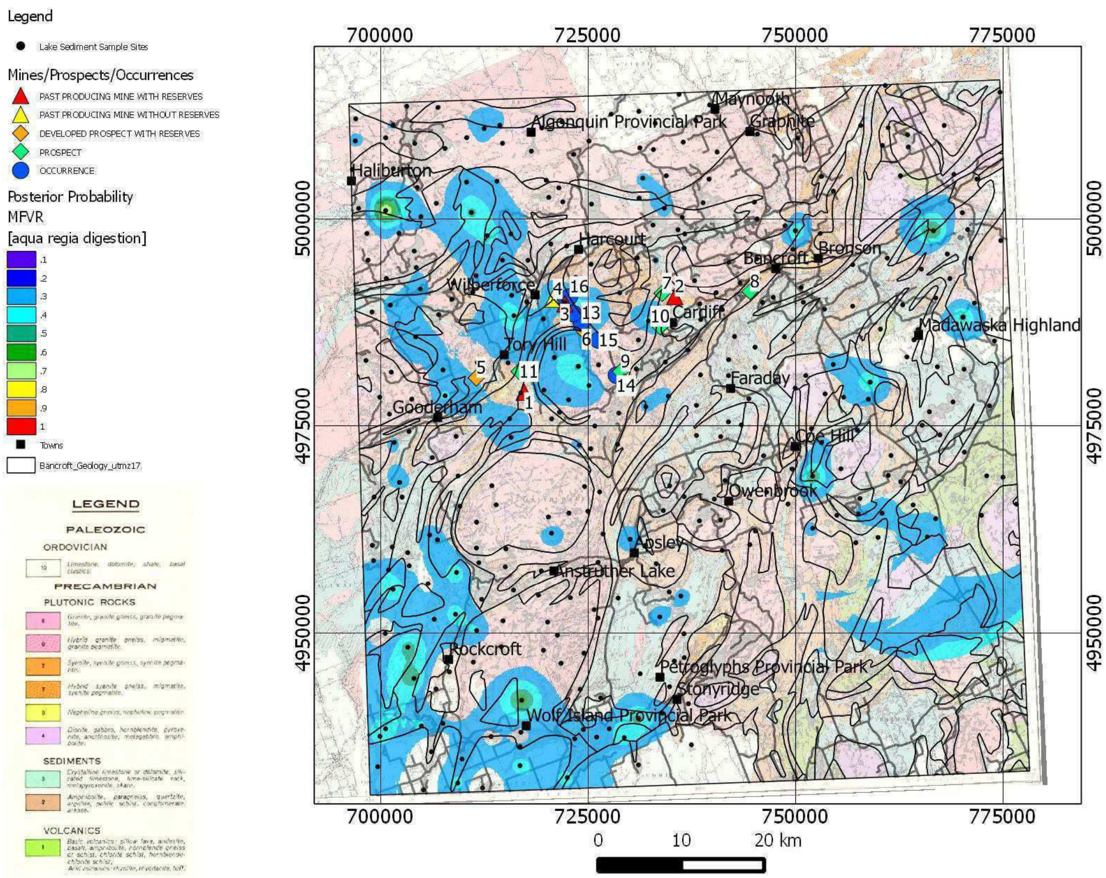

Figure 10. Predictive map of unit MFVR (mafic/felsic volcanic rocks) based on posterior probability and aqua regia digestion of lake sediment material. Probabilities below 0.2 are not shown.

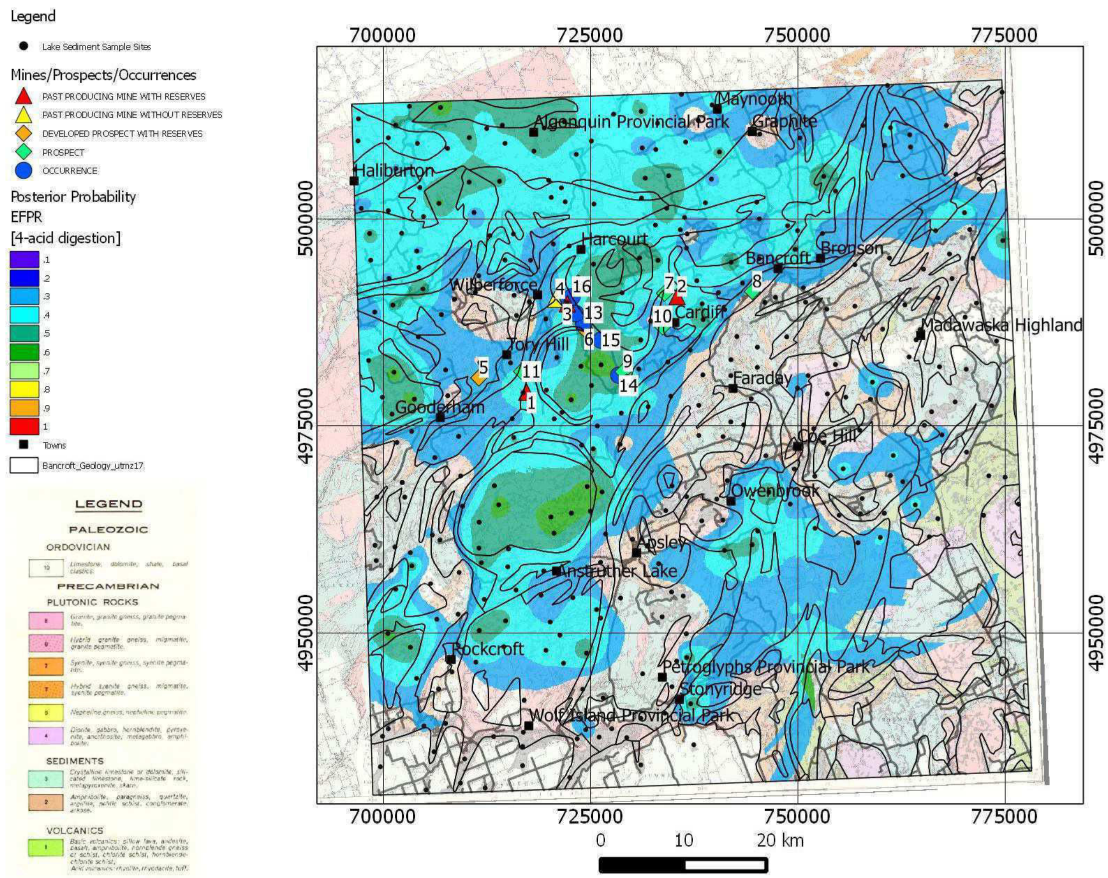

Figure 11. Predictive map of unit EFPR (early felsic plutonic rocks) based on posterior probability and 4-acid digestion of lake sediment material. Probabilities below 0.2 are not shown.

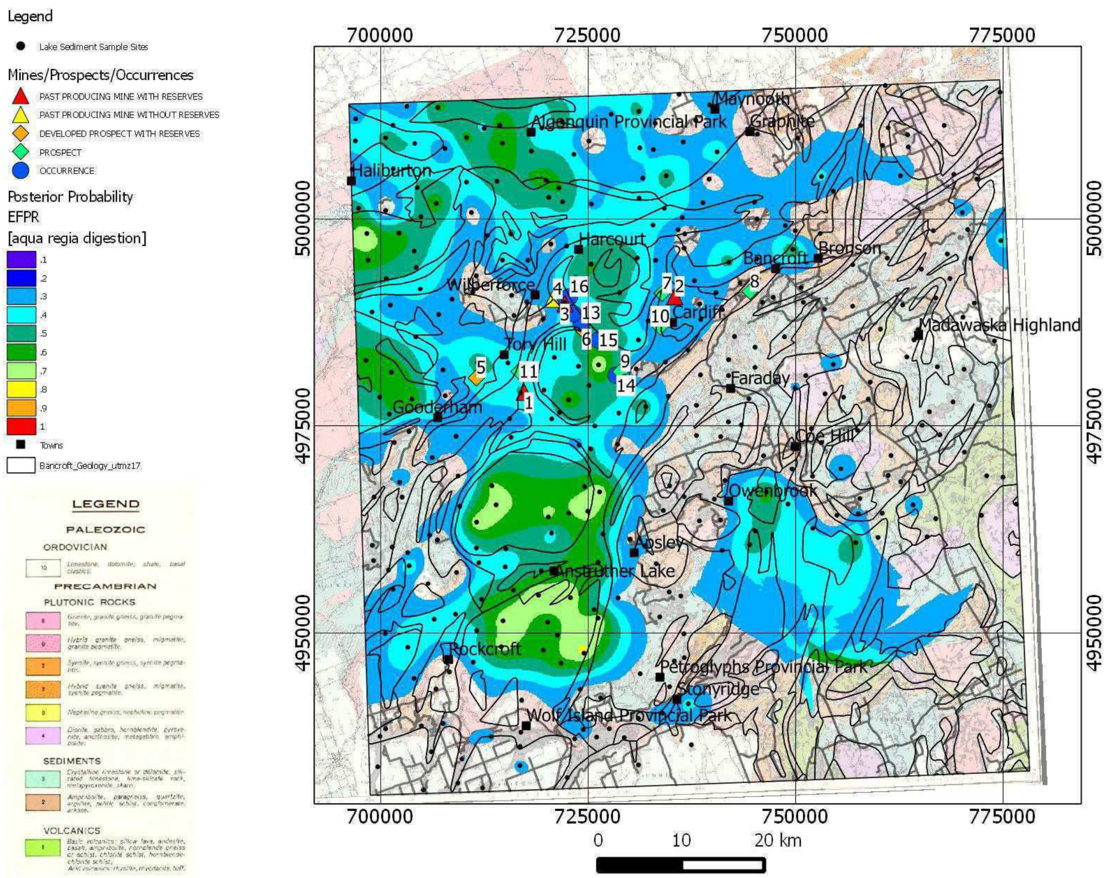

Figure 12. Predictive map of unit EFPR (early felsic plutonic rocks) based on posterior probability and aqua regia digestion of lake sediment material. Probabilities below 0.2 are not shown.

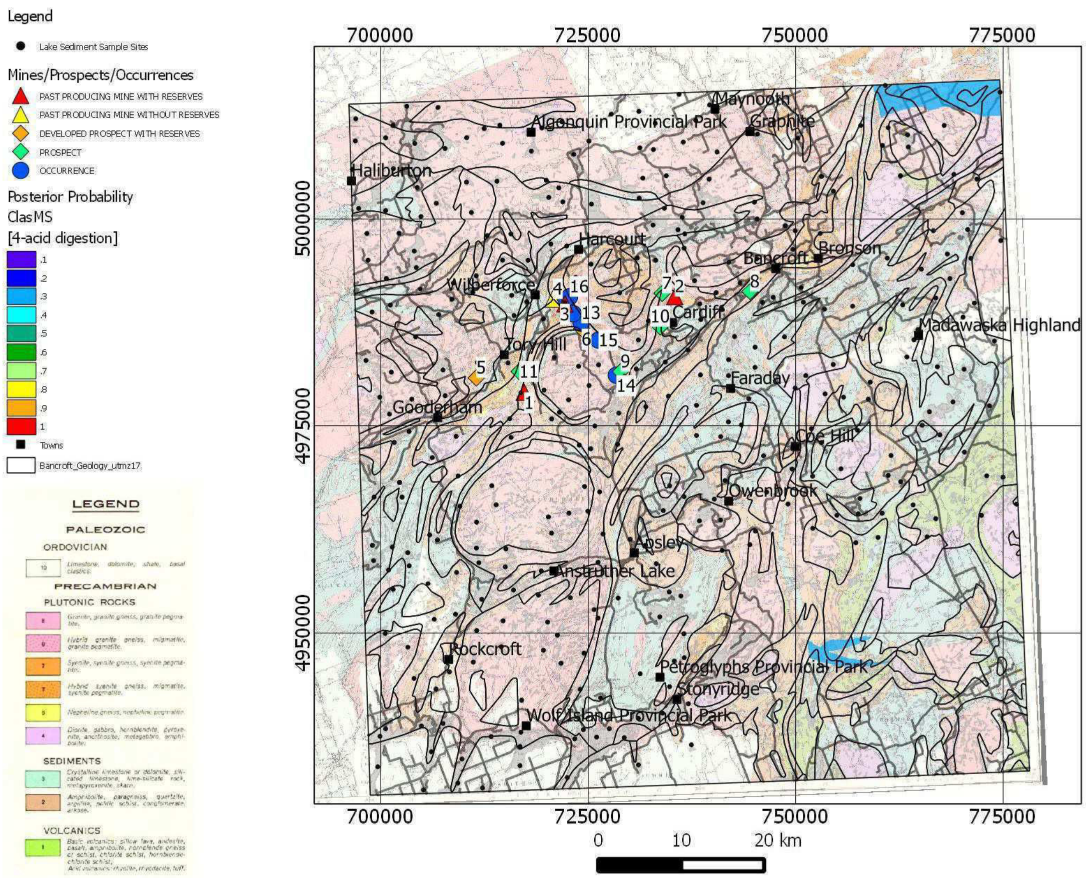

Figure 13. Predictive map of unit ClasMS (clastic metasedimentary rocks) based on posterior probability and 4-acid digestion of lake sediment material. Probabilities below 0.2 are not shown.

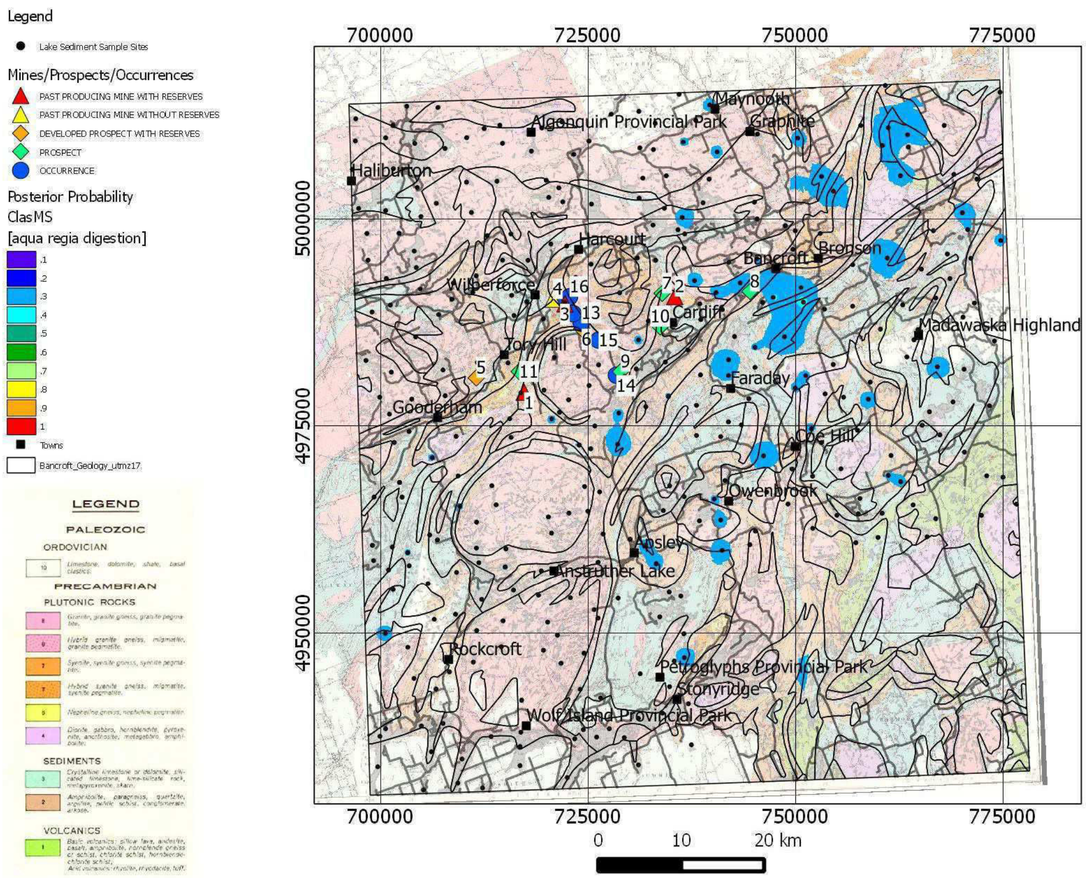

Figure 14. Predictive map of unit ClasMS (clastic metasedimentary rocks) based on posterior probability and aqua regia digestion of lake sediment material. Probabilities below 0.2 are not shown.

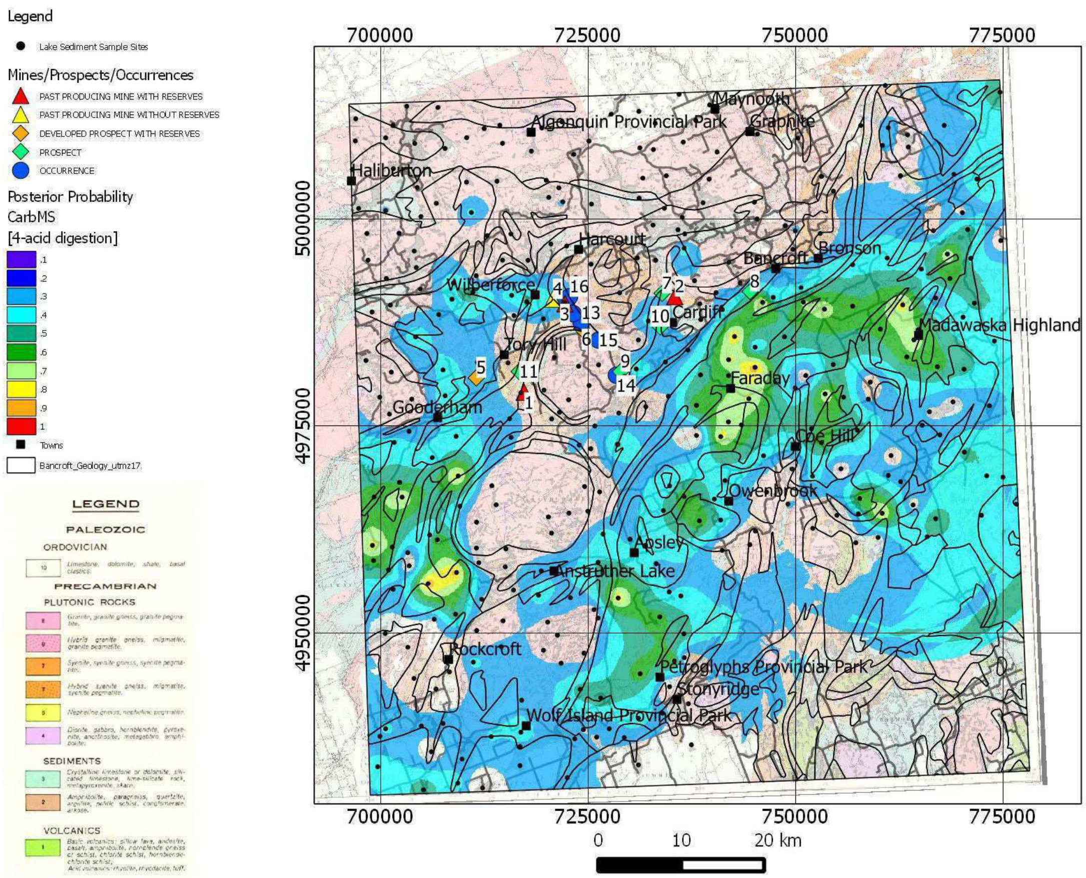

Figure 15. Predictive map of unit CarbMS (carbonate metasedimentary rocks) based on posterior probability and 4-acid digestion of lake sediment material. Probabilities below 0.2 are not shown.

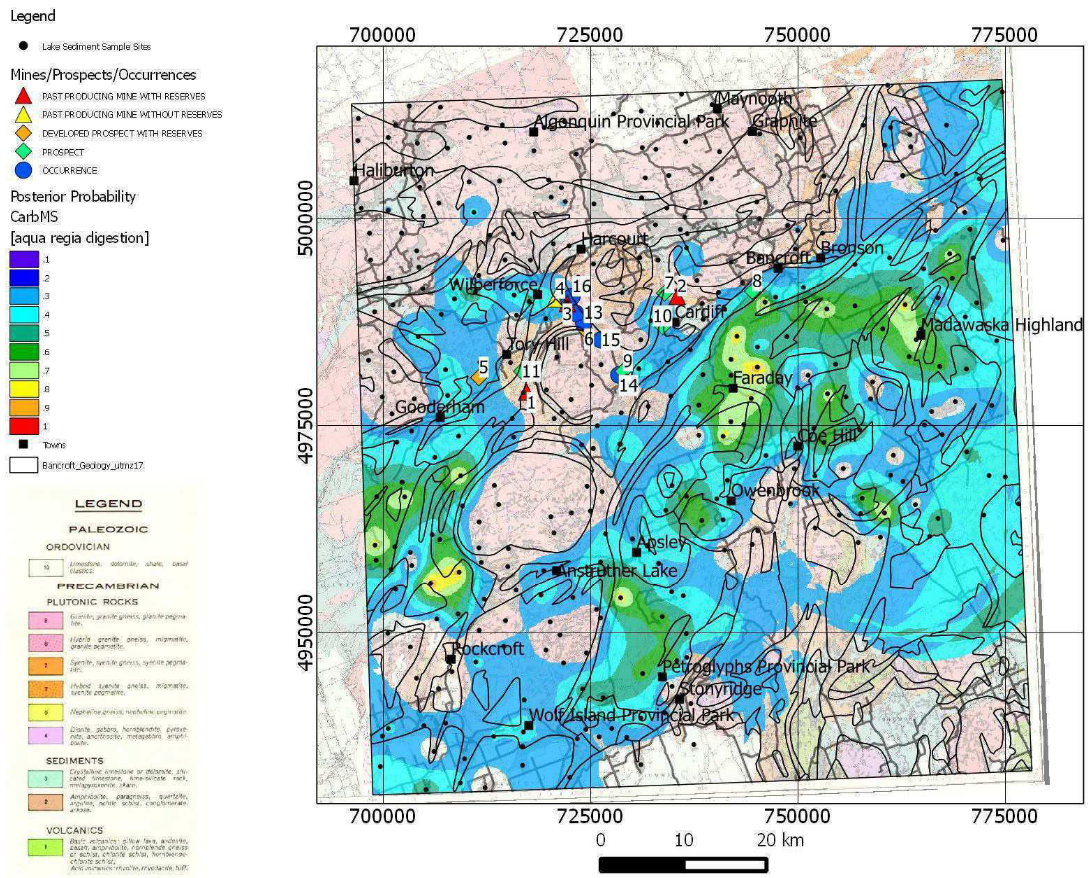

Figure 16. Predictive map of unit CarbMS (carbonate metasedimentary rocks) based on posterior probability and aqua regia digestion of lake sediment material. Probabilities below 0.2 are not shown.

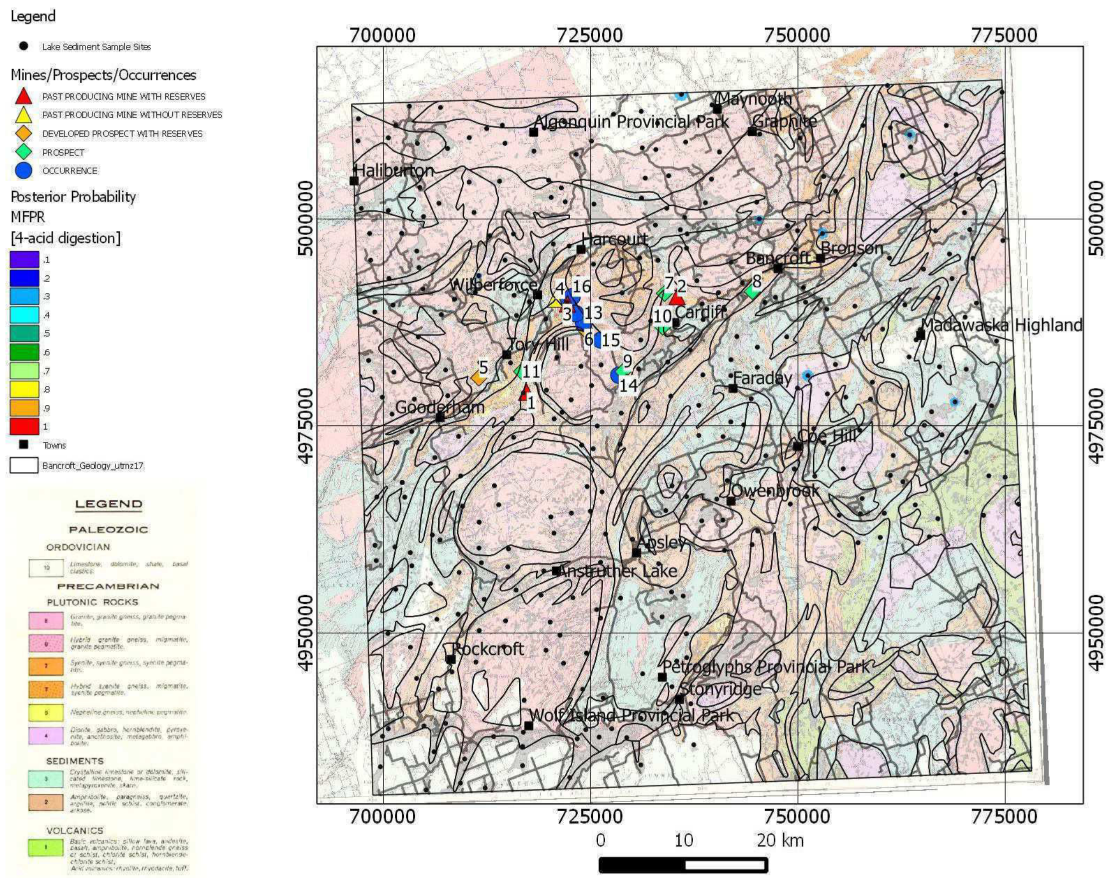

Figure 17. Predictive map of unit MFPR (mafic to ultramafic plutonic rocks) based on posterior probability and 4-acid digestion of lake sediment material. Probabilities below 0.2 are not shown.

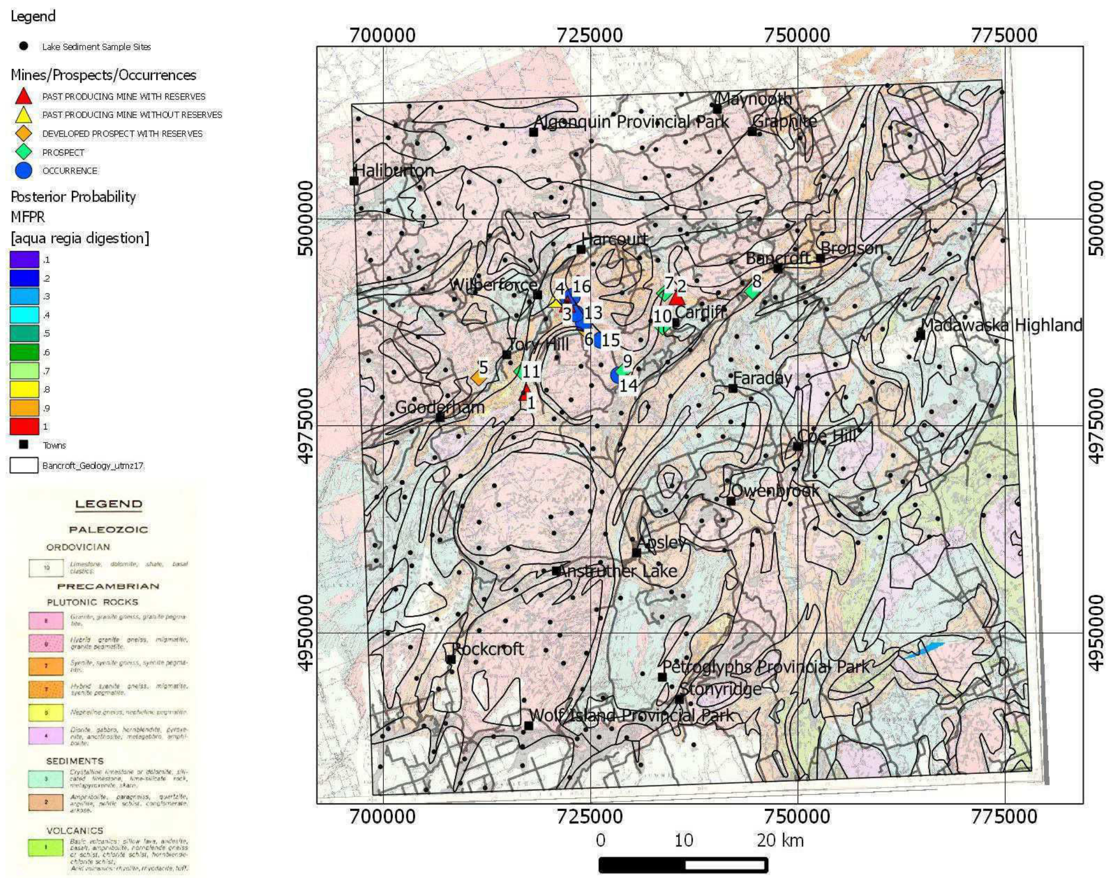

Figure 18. Predictive map of unit MFPR (mafic to ultramafic plutonic rocks) based on posterior probability and aqua regia digestion of lake sediment material. Probabilities below 0.2 are not shown.

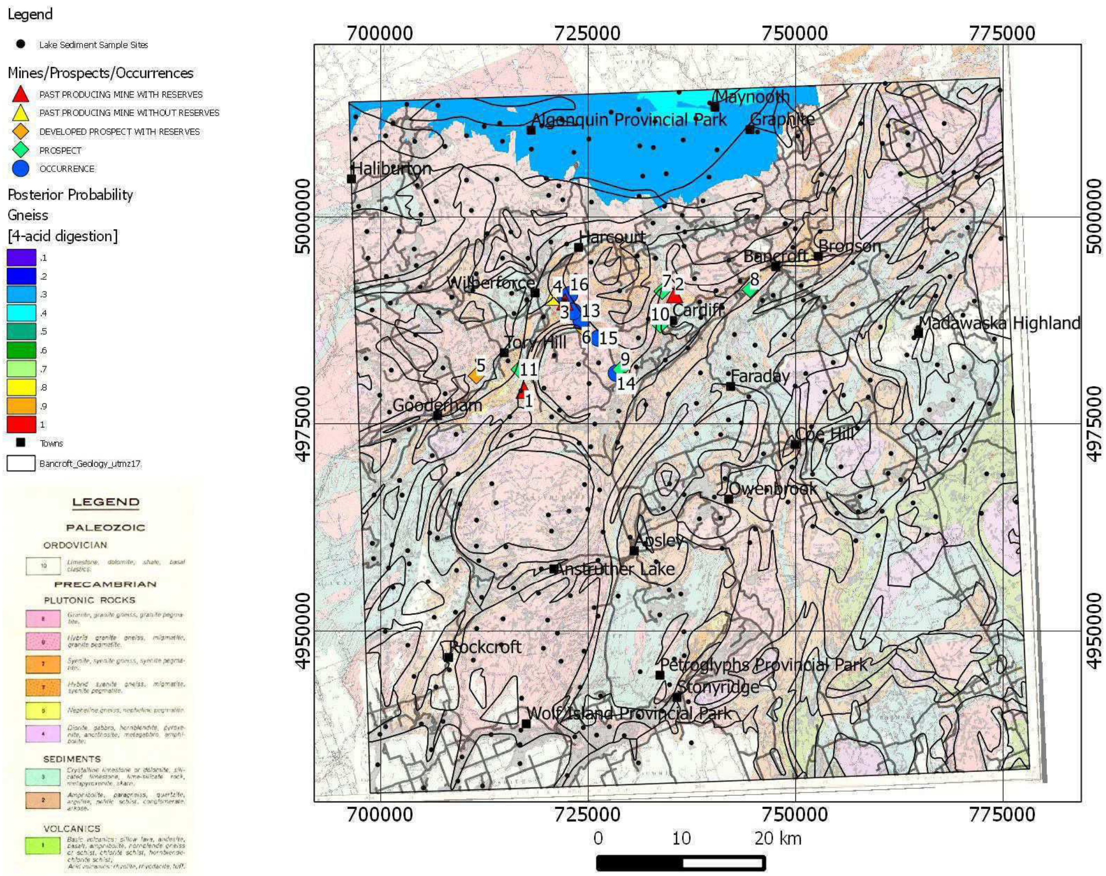

Figure 19. Predictive map of unit Gneiss (gneissic rocks) based on posterior probability and 4-acid digestion of lake sediment material. Probabilities below 0.2 are not shown.

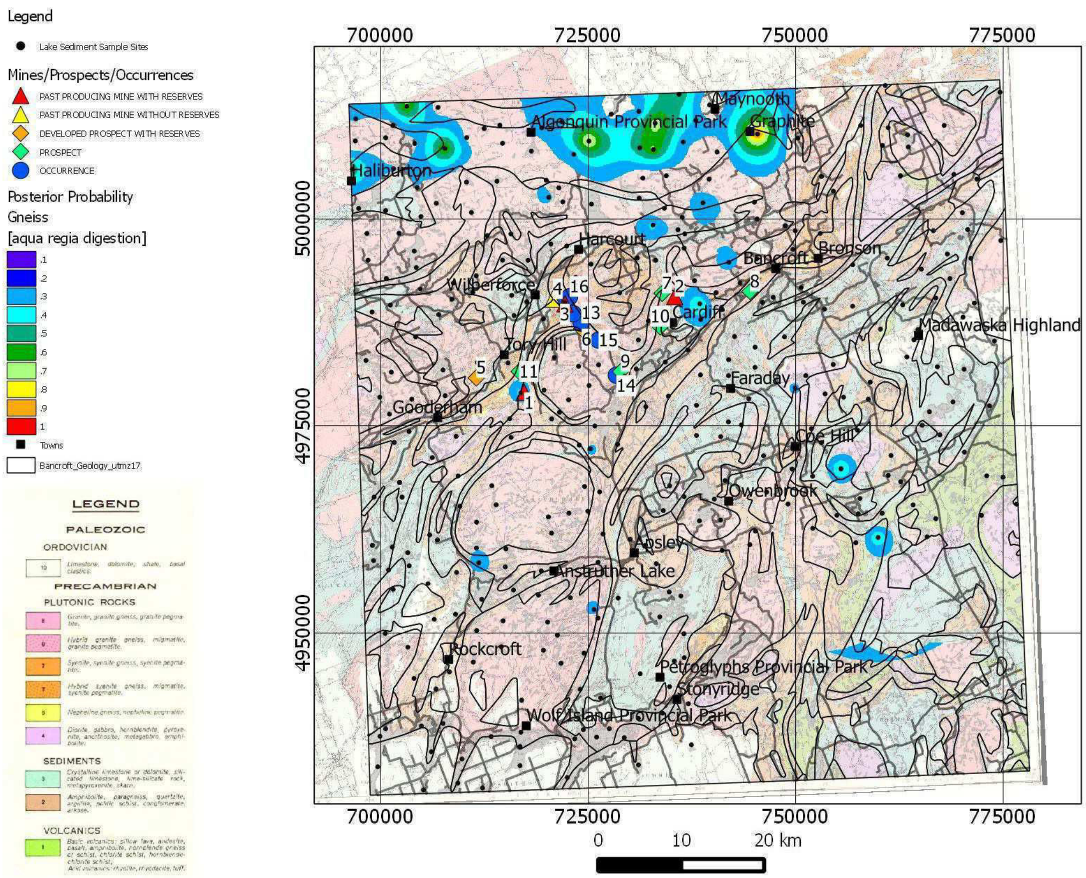

Figure 20. Predictive map of unit Gneiss gneissic rocks) based on posterior probability and aqua regia digestion of lake sediment material. Probabilities below 0.2 are not shown.

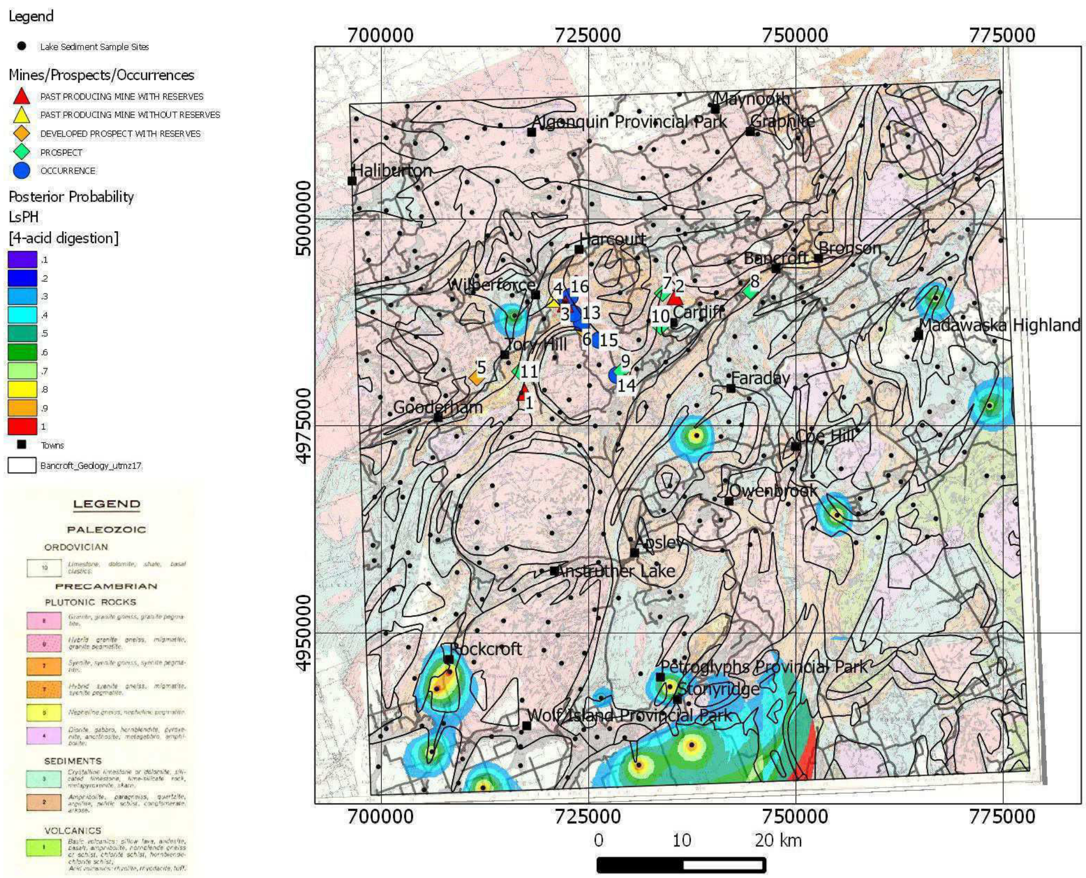

Figure 21. Predictive map of unit LsPH (Phanerozoic limestone) based on posterior probability and 4-acid digestion of lake sediment material. Probabilities below 0.2 are not shown.

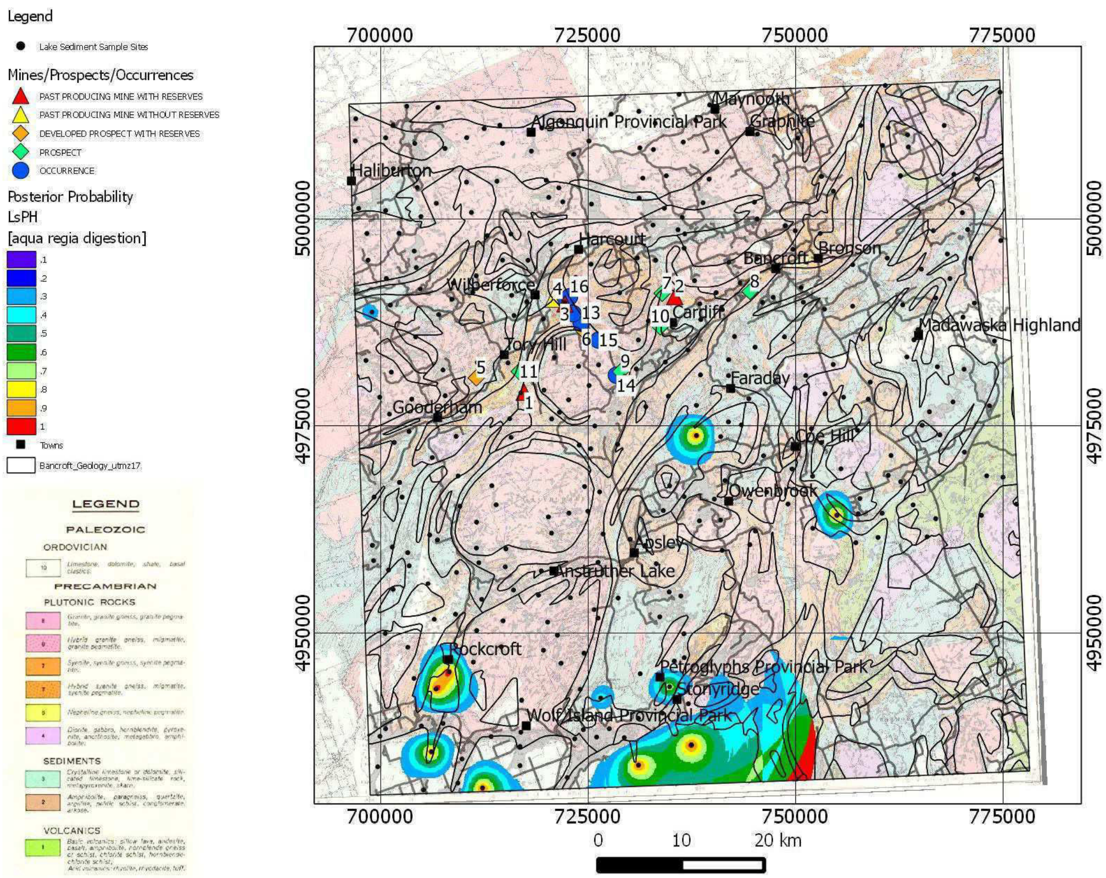

Figure 22. Predictive map of unit LsPH (Phanerozoic limestone) based on posterior probability and aqua regia digestion of lake sediment material. Probabilities below 0.2 are not shown.

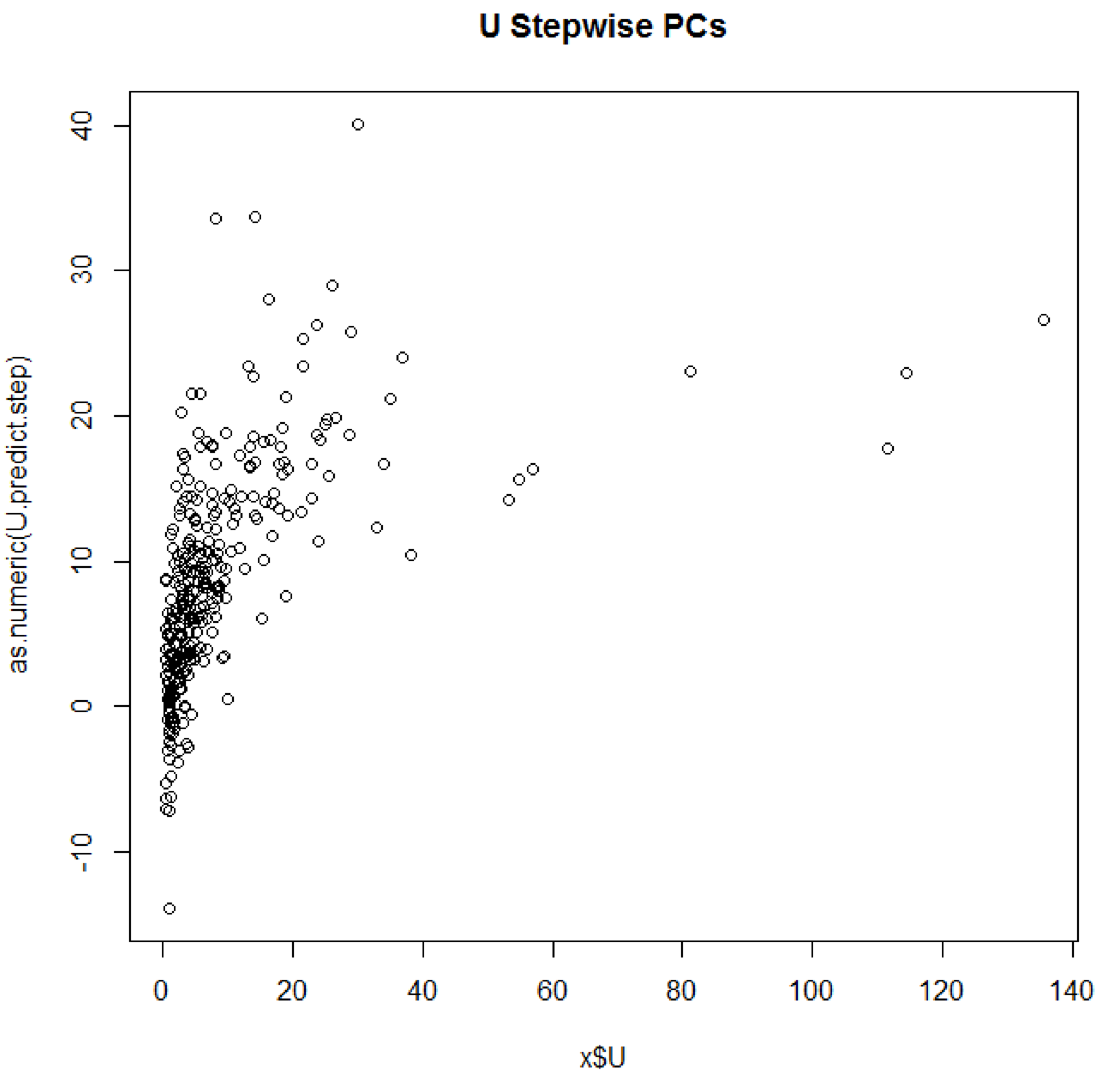

Figure 23. Plot of actual U versus predicted U based on a stepwise regression of the first seven principal components derived from the clr transform.

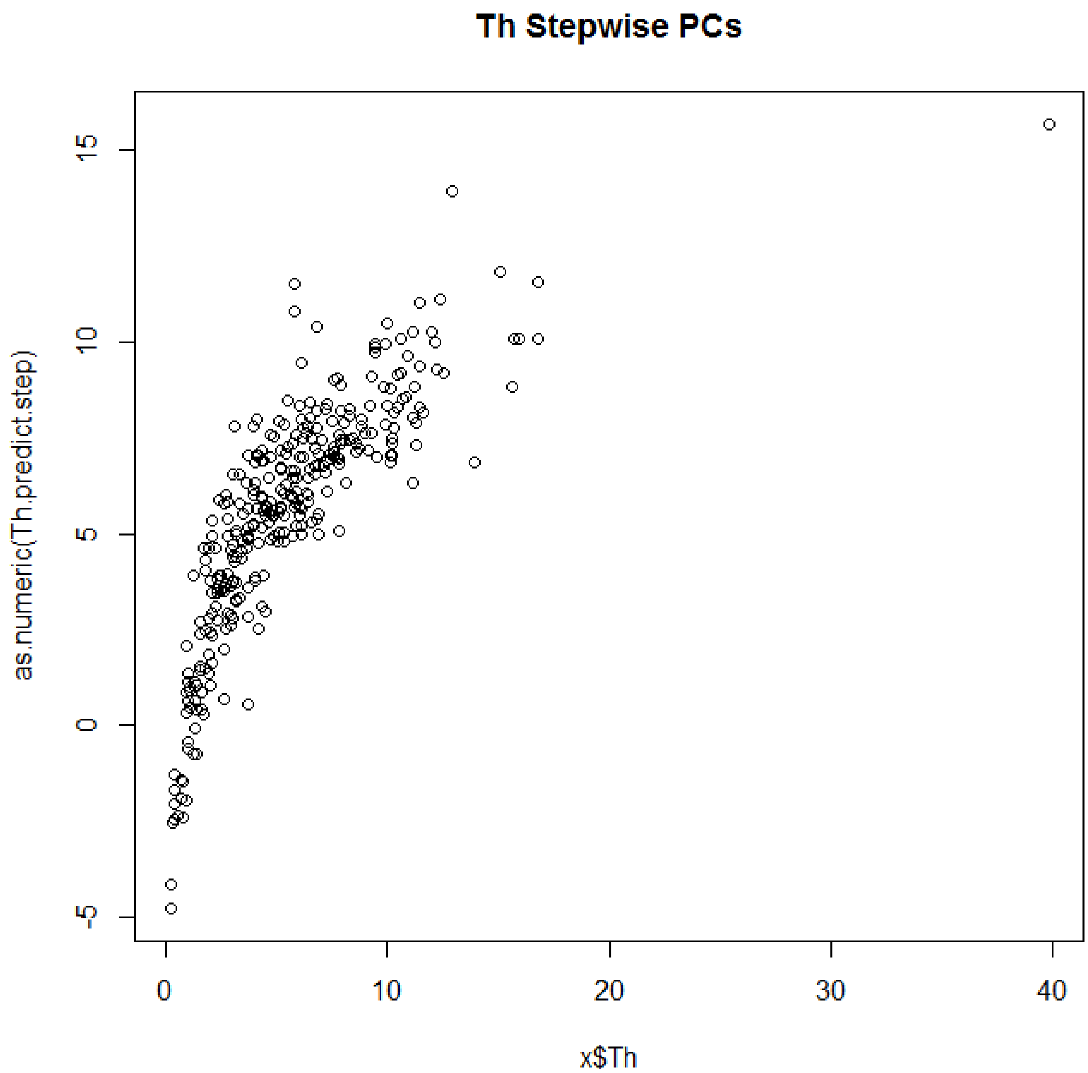

Figure 24. Plot of actual Th versus predicted Th based on a stepwise regression of the first seven principal components derived from the clr transform.

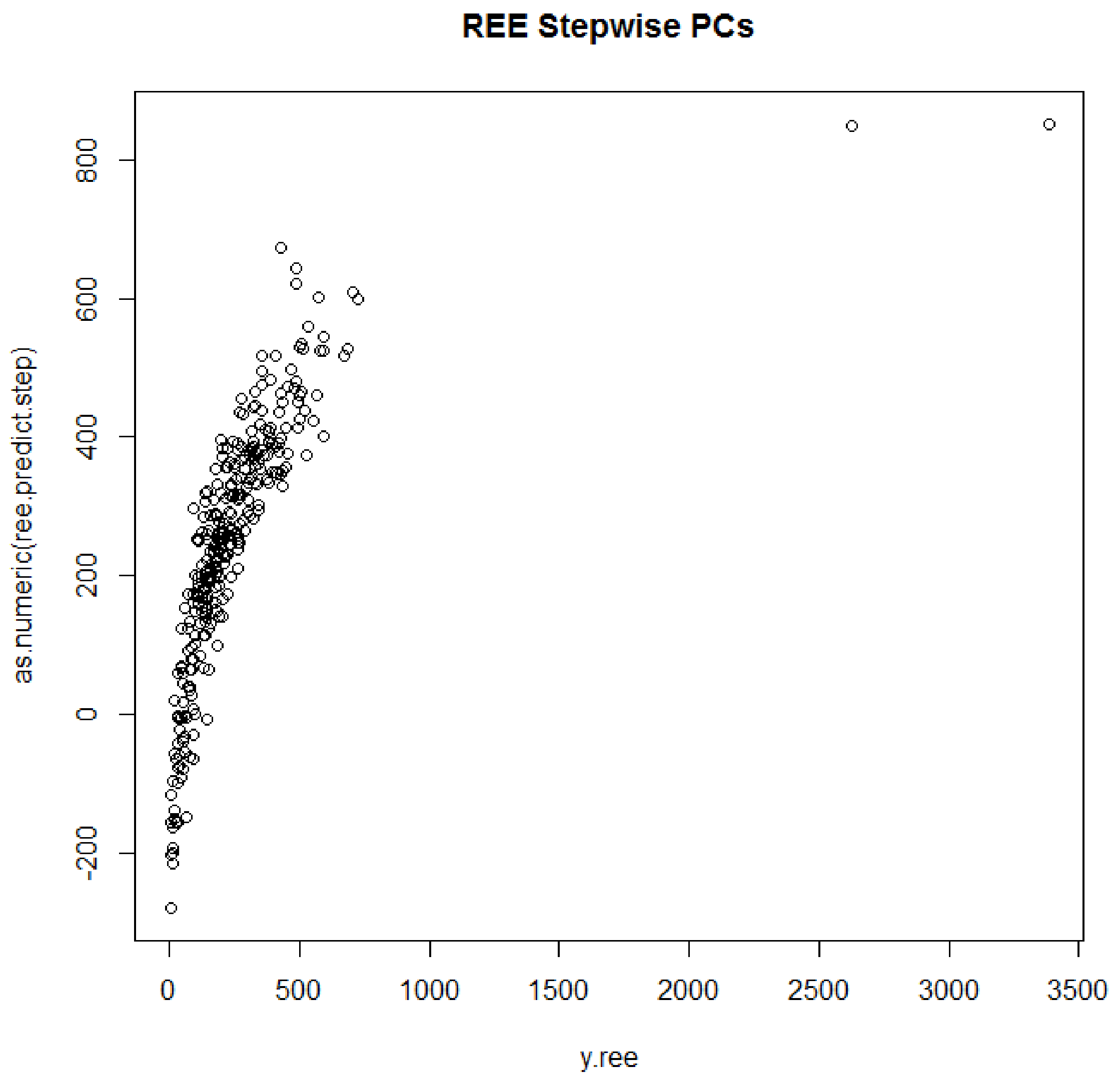

Figure 25. Plot of actual rare earth elements (REE) versus predicted REE based on a stepwise regression of the first seven principal components derived from the clr transform.

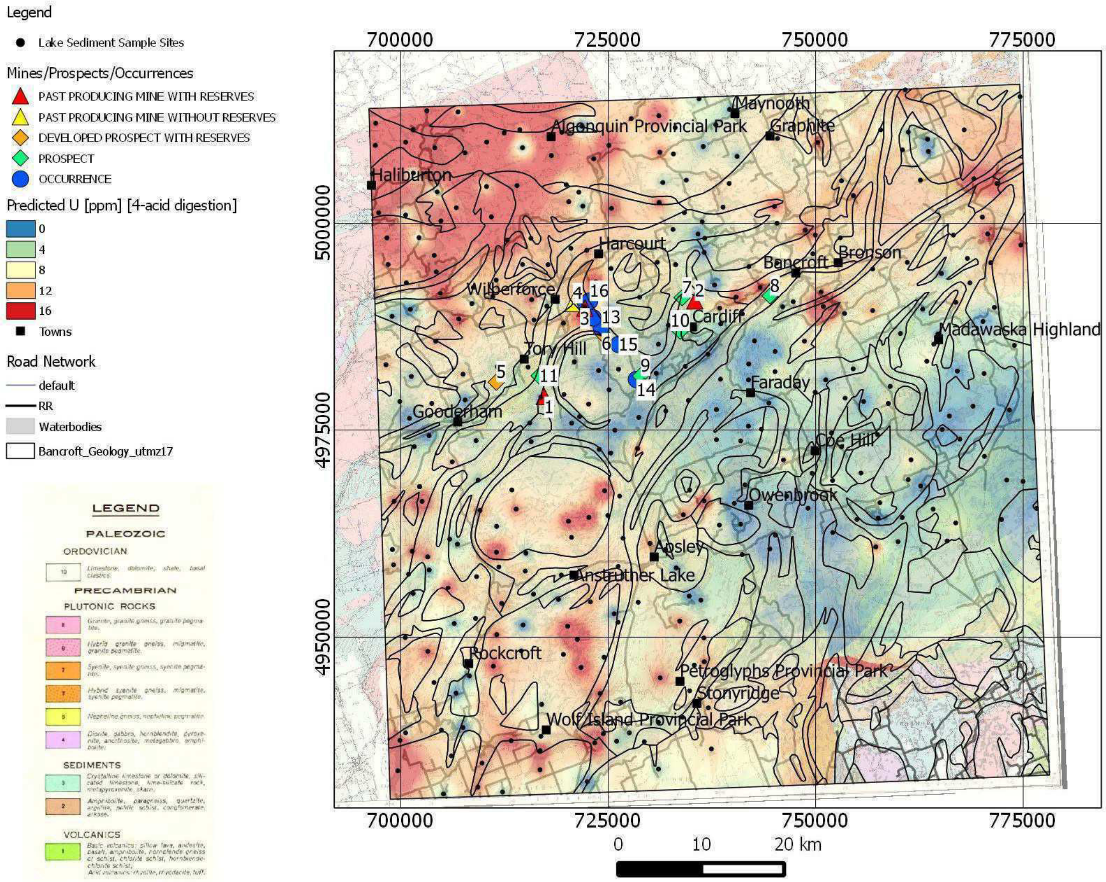

Figure 26. Predictive map of uranium (4-acid digestion) based on a linear regression of U with PC1-PC7 (log-centred transform)

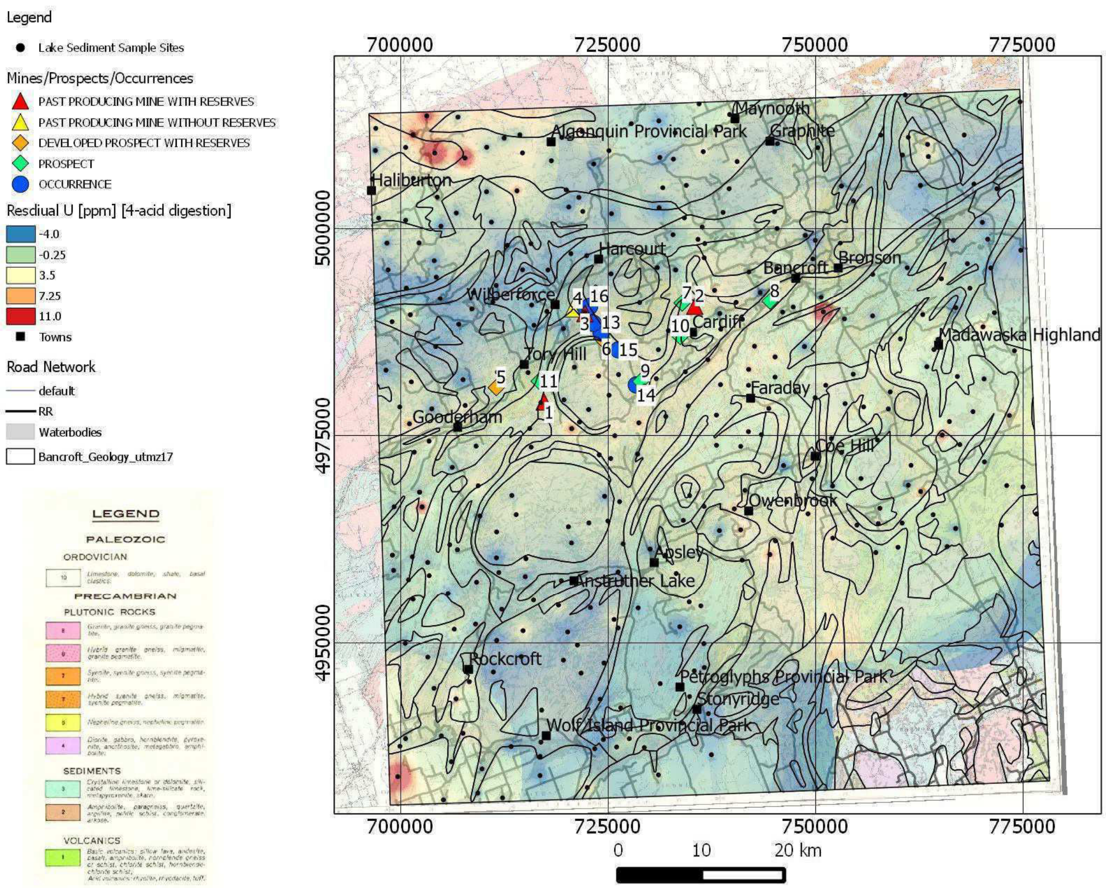

Figure 27. Map of residual uranium based on actual uranium values minus the predicted values.

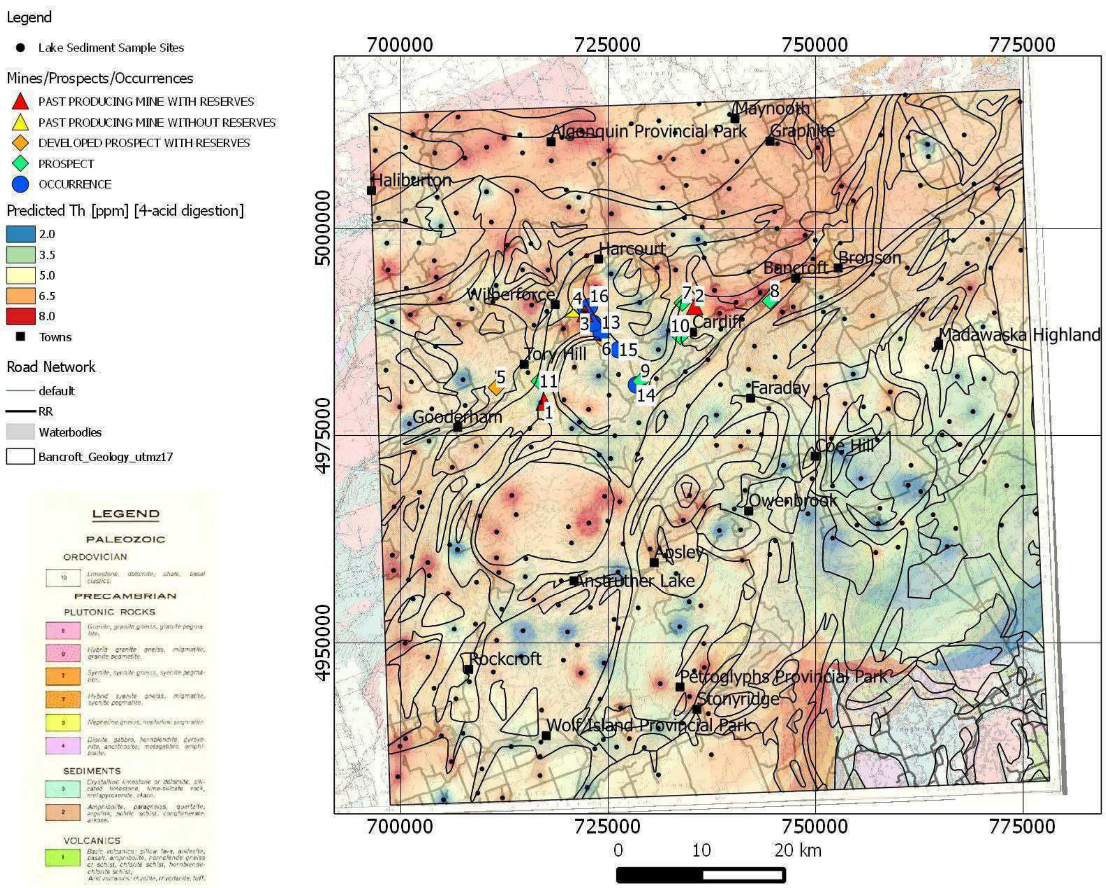

Figure 28. Predictive map of thorium (4-acid digestion) based on a linear regression of Th with PC1-PC7 (log-centred transform)

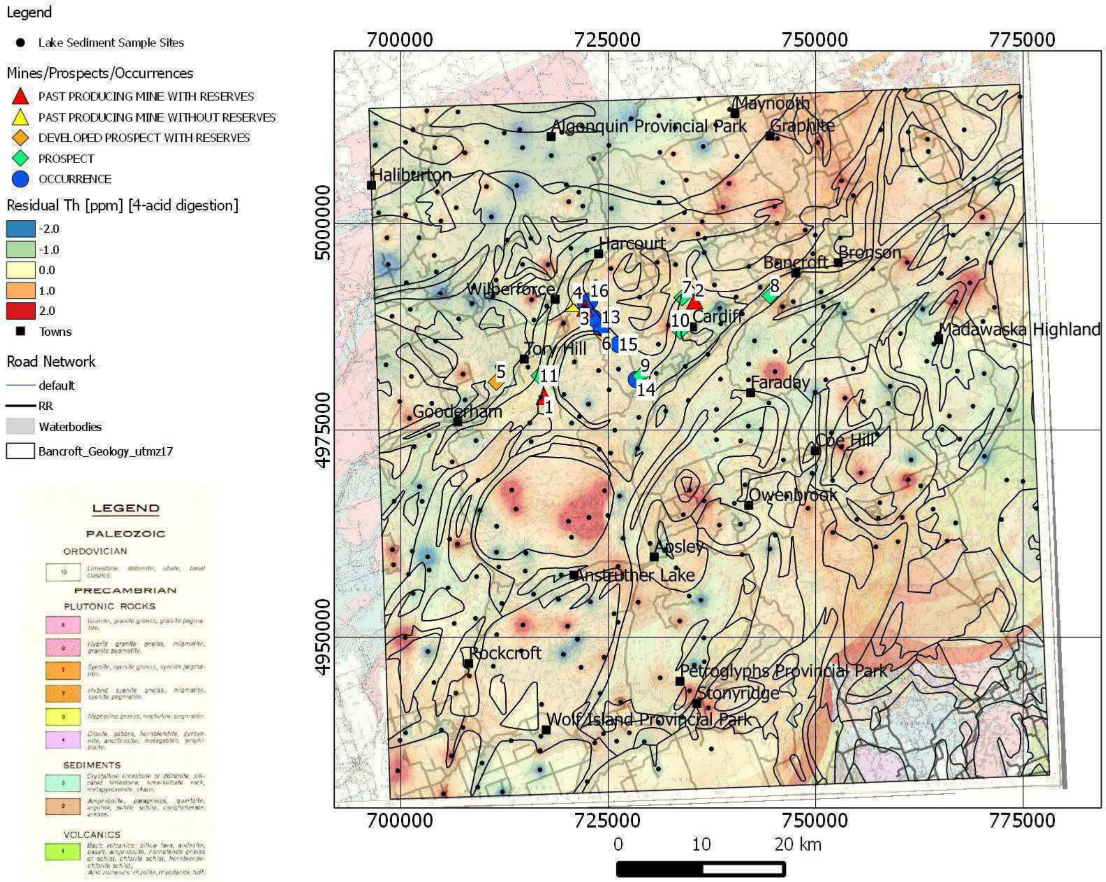

Figure 29. Map of residual thorium based on actual thorium values minus the predicted values.

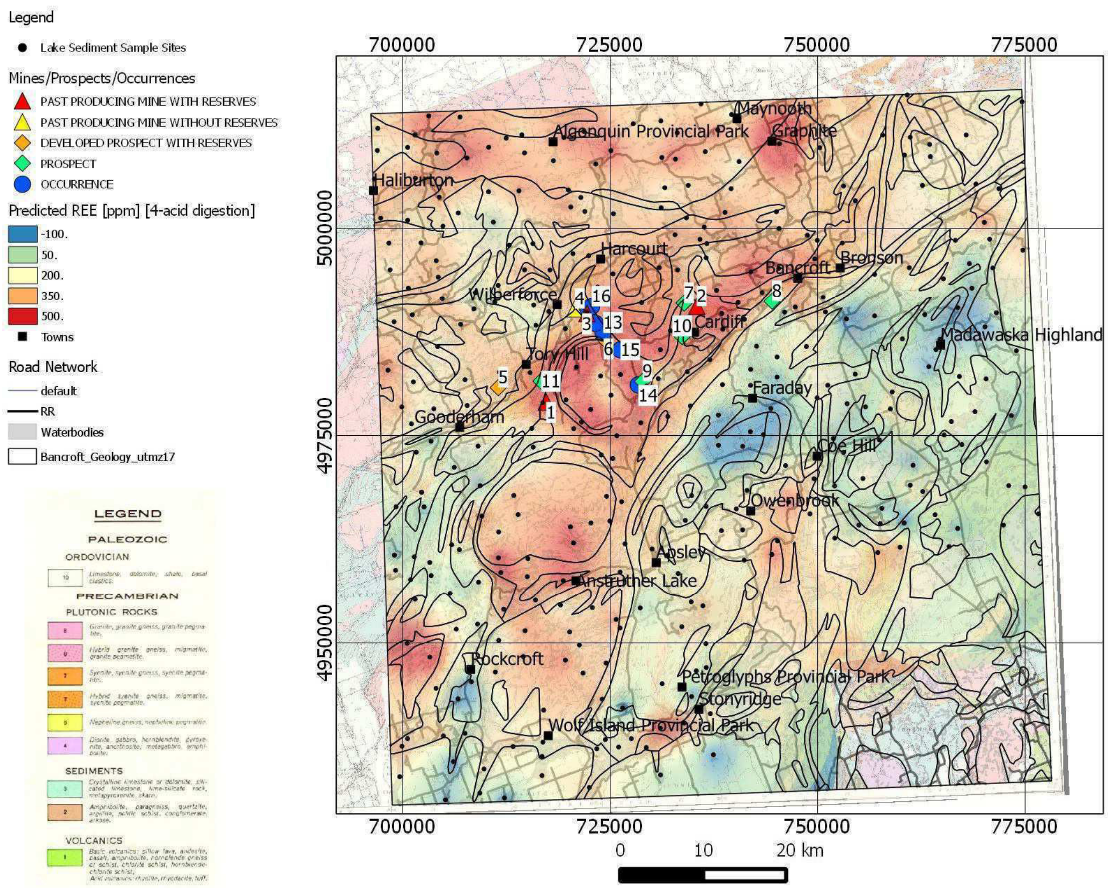

Figure 30. Predictive map of REE elements (Ce+Dy+Er+Eu+Gd+Ho+La+Lu+Nd+Pr+Sm+Tb+Yb) (4-acid digestion) based on a linear regression of REE's with PC1-PC7 (log-centred transform)

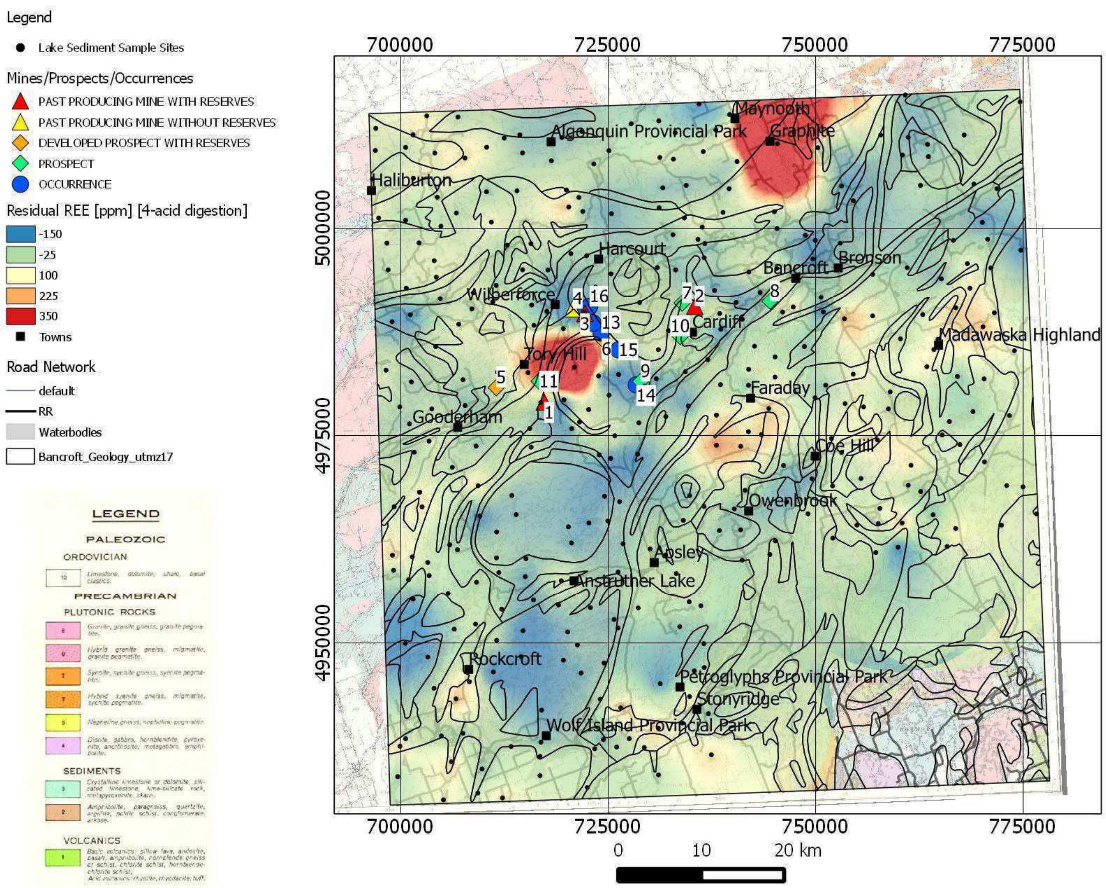

Figure 31. Map of residual REE values based on actual thorium values minus the predicted values.

Table 1. Mineral Occurrences, Developed Prospects, Past producers

Number	Name	Principal Commodity	Status	MDI Number
1	GREYHAWK MINE	Th, U	Past Producting Mine With Reserves	MDI31F04SW00036
2	CANADIAN DYNO	U	Past Producting Mine With Reserves	MDI31D16NE00032
3	BICROFT (CENTRE LAKE)	U	Past Producting Mine With Reserves	MDI31D16NE00043
4	BASIN	Mica, U	Past Producing Mine Without Reserves	MDI31E01SE00054
5	BLUE ROCK	REE	Developed Mineral Prospect With Reserves	MDI31D16NE00143
6	RARE EARTH # 1	Th, U	Developed Mineral Prospect With Reserves	MDI31D16NW00195
7	CANADIAN ALL METALS	U	Prospect	MDI31D16NW00204
8	KENMAC CHIBOUGAMAU	Th, U	Prospect	MDI31D16NE00165
9	HALO #1 ADIT	U	Prospect	MDI31E01SE00221
10	HALO # 2 ADIT	U	Prospect	MDI31E01SE00220
11	BICROFT (CROFT)	U	Prospect	MDI31E01SE00224
12	HALO (SOUTH ZONE)	U	Mineral Occurrence	MDI31E01SE00219
13	CARDIFF PYROCHLORE	Nb	Mineral Occurrence	MDI31D16NE00196
14	CANADA RADIUM	U	Mineral Occurrence	MDI31D16NE00172
15	HALO (PYROXENITE)	U	Mineral Occurrence	MDI31E01SE00218
16	HALO [BALD MOUNTAIN]	U	Mineral Occurrence	MDI31E01SE00258
17	CARDIFF (NORTH ZONE)	U	Mineral Occurrence	MDI31E01SE00234

Element	Detection Limit	Units of Measurement	Analytical Method
Ag	2	PPB[1]	ICP-MS
Al	0.01	PCT[2]	ICP-MS
As	0.1	PPM[3]	ICP-MS
Au	0.2	PPB	ICP-MS
B	20	PPM	ICP-MS
Ba	0.5	PPM	ICP-MS
Be	0.1	PPM	ICP-MS
Bi	0.02	PPM	ICP-MS
Ca	0.01	PCT	ICP-ES
Cd	0.01	PPM	ICP-MS
Ce	0.1	PPM	ICP-MS
Co	0.1	PPM	ICP-MS
Cr	0.5	PPM	ICP-MS
Cs	0.02	PPM	ICP-MS
Cu	0.01	PPM	ICP-MS
Fe	0.01	PCT	ICP-ES
Ga	0.1	PPM	ICP-MS
Ge	0.1	PPM	ICP-MS
Hf	0.02	PPM	ICP-MS
Hg	5	PPB	ICP-MS
In	0.02	PPM	ICP-MS
K	0.01	PCT	ICP-ES
La	0.5	PPM	ICP-MS
Li	0.1	PPM	ICP-MS
Mg	0.01	PCT	ICP-ES
Mn	1	PPM	ICP-ES
Mo	0.01	PPM	ICP-MS

Element	Detection Limit	Units of Measurement	Analytical Method
Na	0.001	PCT	ICP-MS
Nb	0.02	PPM	ICP-MS
Ni	0.1	PPM	ICP-MS
P	0.001	PCT	ICP-MS
Pb	0.01	PPM	ICP-MS
Pd	10	PPB	ICP-MS
Pt	2	PPB	ICP-MS
Rb	0.1	PPM	ICP-MS
Re	1	PPB	ICP-MS
S	0.02	PCT	ICP-MS
Sb	0.02	PPM	ICP-MS
Sc	0.1	PPM	ICP-MS
Se	0.1	PPM	ICP-MS
Sn	0.1	PPM	ICP-MS
Sr	0.5	PPM	ICP-MS
Ta	0.05	PPM	ICP-MS
Te	0.02	PPM	ICP-MS
Th	0.1	PPM	ICP-MS
Ti	0.001	PCT	ICP-MS
Tl	0.02	PPM	ICP-MS
U	0.1	PPM	ICP-MS
V	2	PPM	ICP-MS
W	0.1	PPM	ICP-MS
Y	0.01	PPM	ICP-MS
Zn	0.1	PPM	ICP-MS
Zr	0.1	PPM	ICP-MS

[1] PPB: parts per billion, g/kg   [2] PCT: percent   [3] PPM: parts per million, mg/kg

Table 2

Element	Detection Limit	Units of Measurement	Analytical Method
Ag	20	PPB	ICP-MS
Al	0.02	PCT	ICP-MS
As	0.2	PPM	ICP-MS
Au	100	PPB	ICP-MS
Ba	1	PPM	ICP-MS
Be	1	PPM	ICP-MS
Bi	0.04	PPM	ICP-MS
Ca	0.02	PCT	ICP-ES
Cd	0.02	PPM	ICP-MS
Ce	0.02	PPM	ICP-MS
Co	0.2	PPM	ICP-MS
Cr	1	PPM	ICP-MS
Cs	0.1	PPM	ICP-MS
Cu	0.02	PPM	ICP-MS
Dy	0.1	PPM	ICP-MS
Er	0.1	PPM	ICP-MS
Eu	0.1	PPM	ICP-MS
Fe	0.02	PCT	ICP-ES
Ga	0.02	PPM	ICP-MS
Gd	0.1	PPM	ICP-MS
Hf	0.02	PPM	ICP-MS
Ho	0.1	PPM	ICP-MS
K	0.02	PCT	ICP-ES
La	0.1	PPM	ICP-MS
Li	0.1	PPM	ICP-MS
Lu	0.1	PPM	ICP-MS
Mg	0.02	PCT	ICP-ES
Mn	2	PPM	ICP-ES
Mo	0.05	PPM	ICP-MS
Na	0.002	PCT	ICP-MS
Nb	0.04	PPM	ICP-MS
Nd	0.1	PPM	ICP-MS
Ni	0.1	PPM	ICP-MS
P	0.001	PCT	ICP-MS
Pb	0.02	PPM	ICP-MS
Pr	0.1	PPM	ICP-MS
Rb	0.1	PPM	ICP-MS
S	0.04	PCT	ICP-MS
Sb	0.02	PPM	ICP-MS
Sc	0.1	PPM	ICP-MS
Sm	0.1	PPM	ICP-MS
Sn	0.1	PPM	ICP-MS
Sr	1	PPM	ICP-MS
Ta	0.1	PPM	ICP-MS
Tb	0.1	PPM	ICP-MS
Th	0.1	PPM	ICP-MS
Ti	0.001	PCT	ICP-MS
Tm	0.1	PPM	ICP-MS
U	0.1	PPM	ICP-MS
V	1	PPM	ICP-MS
W	0.1	PPM	ICP-MS
Y	0.1	PPM	ICP-MS
Yb	0.1	PPM	ICP-MS
Zn	0.2	PPM	ICP-MS
Zr	0.2	PPM	ICP-MS

[1] PPB: parts per billion, g/kg [2] PCT: percent [3] PPM: parts per million, mg/kg

Table 3

Table 4 - Units, Lower Limits of Detection (LLD) and Methods for Water Analyses

		LLD	LLD	LLD	LLD	LLD	
Waters	Units	LIF	AAS	Chromat	Alk	ISE	Banrstead
U_w*	PPB	0.02					
U_w (82)	PPB	0.02					
Ca_w	PPM		0.2				
Co_w	PPB		2.0				
Cu_w	PPB		0.5				
Fe_w	PPB		20				
K_w	PPM		0.2				
Mg_w	PPM		0.2				
Mn_w	PPB		10				
Na_w	PPM		0.2				
Ni_w	PPB		2.0				
Pb_w	PPB		5.0				
Zn_w**	PPB		5/0.5				
Br_w	PPM			0.2			
Cl_w	PPM			0.05			
NO3_w	PPM			0.2			
PO4_w	PPM			0.2			
SO4_w	PPM			0.2			
CaCO3_w	PPM				0.2		
F_w	PPB					40	
C-org_w	PPM						0.2

*(76 & Coker)

NGR) & 0.5 (Coker)

Table 4

Table 5 XRF analyses for 2109 lake sediment sites

SiO2	XRF	1	pct	1982	Sed	899&900
Al2O3	XRF	0.1	pct	1982	Sed	899&900
Fe2O3	XRF	0.1	pct	1982	Sed	899&900
MgO	XRF	0.05	pct	1982	Sed	899&900
CaO	XRF	0.1	pct	1982	Sed	899&900
Na2O	XRF	0.1	pct	1982	Sed	899&900
K2O	XRF	0.1	pct	1982	Sed	899&900
TiO2	XRF	0.02	pct	1982	Sed	899&900
P2O5	XRF	0.02	pct	1982	Sed	899&900
CO2	TIT	0.2	pct	1982	Sed	899&900
C-Org	Grav	0.2	pct	1982	Sed	899&900
LOI	x	x	x	x	Sed	Original data
LOI9	Grav	0.2	pct	1982	Sed	899&900

Table 6

Number of observations reported at less than the detection limit for each element

Total number of analyses = 337

Aqua Regia		Four acid	
H2Op	11		
CO2	20		
Ag	2	Ag	8
Al	0	Al	0
As	82	As	32
Au	64	Au	337
B	328		
Ba	0	Ba	0
Be	37	Be	237
Bi	12	Bi	60
Ca	0	Ca	0
Cd	0	Cd	0
Ce	0	Ce	0
Co	0	Co	1
Cr	0	Cr	0
Cs	0	Cs	2
Cu	0	Cu	0
		Dy	0
		Er	1
		Eu	7
Fe	0	Fe	0
Ga	2	Ga	0
Ge	253		
		Gd	0
Hf	151	Hf	0
Hg	0		
		Ho	5
In	223		
K	5	K	1
La	0	La	0
Li	0	Li	0
		Lu	19
Mg	0	Mg	0
Mn	0	Mn	0
Mo	0	Mo	0
Na	1	Na	0
Nb	0	Nb	0
		Nd	0
Ni	0	Ni	0
P	0	P	0
Pb	0	Pb	0

Pd	337		
Pt	285		
		Pr	0
Rb	0	Rb	0
Re	123		
S	0	S	1
Sb	0	Sb	0
Sc	1	Sc	0
Se	2		
		Sm	0
Sn	7	Sn	12
Sr	0	Sr	0
Ta	337	Ta	126
Te	190		
		Tb	10
Th	15	Th	0
Ti	0	Ti	0
Tl	2		
		Tm	20
U	0	U	0
V	3	V	0
W	135	W	15
Y	0	Y	0
		Yb	1
Zn	0	Zn	0
Zr	11	Zr	0

Table 7 Unique Lithologies

Geo_Generalized	MapUnit	Number of sites
Clastic metasedimentary rocks	ClasMS	48
Carbonate metasedimentary rocks	CarbMS	87
Early felsic plutonic rocks	EFPR	80
Mafic to ultramafic plutonic rocks	MFPR	22
Mafic to felsic metavolcanic rocks	MFVR	52
Phaneroizoic Limestone	LsPH	10
Tectonite	Tect	25
Alkalic plutonic rocks	AlkPR	1

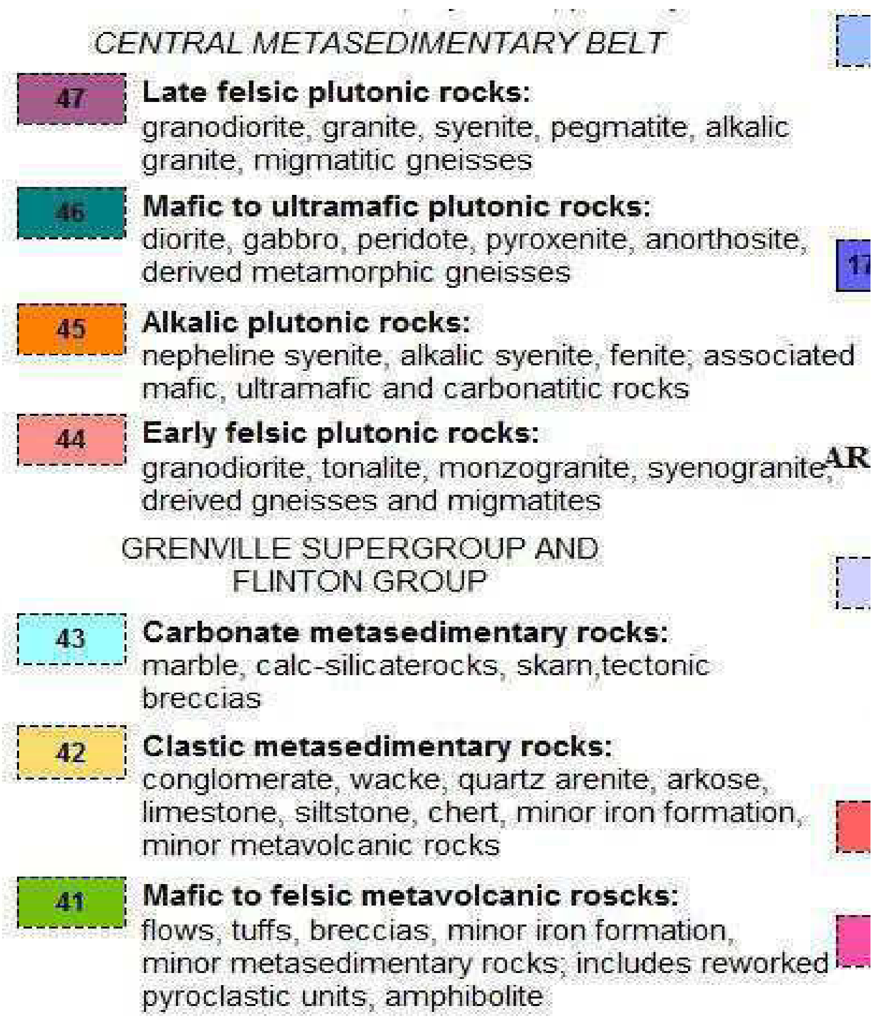

Table 8
Bancroft Lake Sediment Chemistry XRF & 4 Acid Digestion

Eigenvalue	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43
λ	19.0943	12.8554	3.6294	2.6985	2.1902	1.9286	1.4238	0.9665	0.8415	0.7742	0.7290	0.6033	0.6012	0.5175	0.4776	0.4485	0.3807	0.3487	0.3390	0.2740	0.2499	0.2270	0.2128	0.1996	0.1774	0.1669	0.1559	0.1423	0.1309	0.1148	0.1119	0.0958	0.0896	0.0819	0.0772	0.0629	0.0526	0.0479	0.0455	0.0434	0.0349	0.0335	0.0276
λ%	35.4690	23.8797	6.7418	5.0126	4.0685	3.5826	2.6447	1.7954	1.5632	1.4382	1.3542	1.1208	1.1167	0.9614	0.8872	0.8331	0.7072	0.6478	0.6297	0.5090	0.4642	0.4218	0.3953	0.3708	0.3295	0.3101	0.2896	0.2643	0.2431	0.2133	0.2078	0.1779	0.1665	0.1521	0.1434	0.1169	0.0976	0.0890	0.0845	0.0807	0.0648	0.0622	0.0512
Σλ%	35.4690	59.3488	66.0906	71.1032	75.1717	78.7543	81.3990	83.1943	84.7575	86.1957	87.5499	88.6707	89.7874	90.7488	91.6360	92.4690	93.1762	93.8240	94.4537	94.9627	95.4268	95.8486	96.2439	96.6147	96.9442	97.2543	97.5439	97.8082	98.0513	98.2646	98.4725	98.6504	98.8169	98.9690	99.1124	99.2293	99.3269	99.4159	99.5004	99.5811	99.6459	99.7081	99.7593

Eigenvectors

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43
Si	-0.0566	-0.0584	-0.0229	0.2501	-0.3343	0.1307	-0.0101	0.0055	-0.3601	-0.2309	0.2872	-0.3810	0.0796	-0.1109	0.2958	-0.3904	0.1544	-0.0943	0.0881	-0.0203	0.0721	-0.0385	0.0951	0.0467	-0.0009	-0.0179	-0.1151	0.0667	0.0103	0.0061	0.0220	-0.0805	-0.1379	0.0091	0.0173	0.0222	0.0545	0.0335	0.0862	0.0229	-0.0599	-0.0296	-0.0176
LOI	0.0558	0.2423	-0.0195	0.0132	-0.1270	0.1069	-0.1019	-0.0767	-0.0319	0.0087	0.0191	-0.0040	0.0390	0.0324	0.0689	0.1892	-0.1273	-0.1605	0.0688	0.0017	-0.1265	0.0216	0.2120	-0.0014	0.0187	-0.1779	0.2772	0.1398	0.0802	-0.1046	-0.0422	0.1970	0.2326	0.1410	0.0443	0.2544	0.1168	0.1094	0.2977	0.3599	0.3217	0.0692	-0.0992
Ag	0.0499	0.1513	0.0346	0.2292	-0.0474	0.0903	0.0421	-0.0578	-0.1262	0.0112	-0.1319	0.3282	0.7205	0.0388	-0.2788	-0.1861	-0.1361	-0.0476	-0.1398	-0.0419	0.0018	-0.0819	-0.0131	0.0292	-0.0840	0.1101	-0.0945	-0.0418	0.1199	0.0712	0.0904	-0.0620	-0.0102	-0.0155	0.0575	0.0205	0.0099	0.0016	0.0027	-0.0117	-0.0058	-0.0152	0.0122
Al	0.0542	-0.2430	0.0816	0.0802	-0.0422	0.0164	-0.1173	0.0599	-0.0482	-0.0902	-0.0694	-0.0492	0.0504	0.1386	-0.0286	-0.0114	0.0014	-0.0405	0.1068	0.0183	0.0189	0.0157	-0.0028	0.1545	-0.0341	0.1412	0.3490	-0.2412	-0.2861	-0.3106	0.0581	-0.1159	0.0414	0.0677	0.3796	-0.2326	-0.1158	0.0757	-0.3111	0.1231	0.2216	-0.1416	0.0286
As	0.1038	0.1260	0.0285	0.1679	0.0461	-0.1315	-0.0442	-0.0018	0.1468	-0.2560	0.2696	0.0521	-0.2853	0.6318	-0.3056	-0.2111	-0.1115	-0.0874	0.0769	-0.1188	-0.0581	-0.0900	-0.0651	0.0459	0.0636	-0.0778	-0.1550	0.0076	0.0275	0.0097	-0.0140	-0.0063	-0.0355	0.0654	-0.0248	0.0398	-0.0062	0.0085	0.0168	-0.0416	-0.0175	-0.0325	-0.0112
Ba	0.0786	-0.0647	0.0424	0.0038	0.1198	0.4248	-0.3301	0.2878	0.1462	0.0674	-0.0162	-0.1465	-0.0938	-0.2768	-0.2962	-0.0679	0.0895	-0.3512	-0.0340	0.0118	-0.1719	-0.1104	-0.0424	-0.0040	-0.2348	-0.2161	-0.0797	0.0356	0.1044	0.0090	0.0001	-0.0397	0.0783	0.0094	-0.0569	-0.0155	-0.0966	0.0741	-0.1267	-0.1084	-0.0221	0.0149	0.0598
Bi	0.0840	0.1702	-0.0110	0.2325	0.2276	-0.0796	0.0352	0.1144	0.0456	0.0109	-0.0126	-0.1233	-0.0739	-0.0686	-0.0106	0.0671	-0.1733	-0.3326	0.0798	0.3275	0.4205	0.0852	0.1818	-0.3488	0.0074	0.3317	-0.0101	-0.0139	-0.0948	0.1998	-0.0216	0.0122	-0.0807	-0.0184	0.0575	-0.0608	-0.0659	-0.0295	0.0378	0.0069	0.0677	0.0234	0.0149
Ca	0.1623	0.1020	-0.0625	-0.1620	0.0571	0.2123	-0.1744	-0.1381	0.2302	-0.0588	0.0094	-0.0619	0.1026	0.0139	0.0347	0.0870	0.0274	0.0638	0.1215	-0.0358	0.0843	-0.1164	0.0367	0.1542	0.1172	0.0711	0.1095	0.1264	-0.0454	-0.1638	0.0944	0.0095	-0.2033	-0.2839	0.0526	-0.3422	0.3294	-0.2556	0.1975	-0.1040	-0.1238	0.1029	0.0294
Cd	0.0371	0.2145	0.0510	0.1870	-0.0202	-0.0716	-0.0723	0.1567	-0.0703	-0.1765	-0.2607	0.0218	0.0262	-0.0236	0.0188	0.2778	0.2190	0.1394	0.0725	-0.2039	-0.1154	-0.1382	0.2974	-0.0646	0.1805	-0.3147	0.0586	-0.0706	-0.3029	0.3265	0.1046	-0.0834	-0.1410	0.0351	-0.0256	-0.0276	-0.1498	-0.0006	-0.0105	-0.0709	-0.1116	-0.1401	0.0259
Ce	-0.1739	-0.1097	0.1085	0.1118	0.0437	0.0809	0.1729	0.1241	0.1342	-0.0683	-0.0043	-0.0119	0.0241	0.1284	0.1045	0.1277	0.0040	-0.0668	-0.0225	0.0071	-0.1724	0.1244	0.0691	0.0269	0.0688	0.1271	0.1414	-0.0975	0.1306	-0.0710	-0.0296	-0.3215	-0.0350	-0.5780	-0.1674	0.2351	-0.1155	0.2859	0.0559	0.0546	-0.0597	0.0612	0.0501
Co	-0.0106	-0.0693	0.4043	-0.0532	0.0023	-0.1066	-0.0278	0.0840	0.0036	0.1485	-0.3723	-0.0981	0.0466	0.2431	0.1687	-0.1741	0.1384	-0.1772	-0.2290	0.3703	0.1743	-0.0799	-0.1245	0.2707	0.1849	-0.2165	0.0066	0.0577	-0.0128	0.0016	0.0301	0.1664	-0.0294	0.0040	-0.1120	0.0500	-0.0061	-0.0338	0.0567	0.0131	-0.0478	-0.0157	-0.0615
Cr	0.0849	-0.1482	0.1421	0.0492	-0.2493	-0.0539	0.0111	0.1388	0.0995	0.4416	-0.0356	-0.0720	0.0108	0.0860	0.0658	0.0768	-0.2115	-0.1528	-0.0304	-0.6068	0.2652	0.2322	0.1193	0.0326	-0.0256	-0.0478	-0.1308	0.0587	-0.0467	-0.0379	-0.0117	0.0238	-0.0726	0.0237	0.0402	-0.0151	0.0044	0.0388	-0.0079	-0.0535	-0.0395	0.0774	0.0167
Cs	0.1170	0.1011	-0.0240	-0.1784	-0.0367	-0.3149	-0.0513	0.3887	0.0118	0.0039	0.2189	-0.0056	0.1799	-0.1192	0.0790	-0.0414	-0.1383	-0.1001	0.0701	0.1386	-0.3257	0.3646	-0.0952	0.1031	0.2824	-0.0313	0.1218	-0.0128	0.1034	0.1267	-0.0172	-0.1237	-0.0226	0.1371	0.1312	0.0126	0.1068	-0.1318	-0.1164	-0.1398	-0.0922	0.1072	0.0205
Cu	0.0388	0.2126	0.1078	-0.0583	-0.2439	-0.0838	-0.0507	-0.1850	0.0146	0.0698	0.0433	0.1175	-0.1107	-0.2032	-0.1111	0.1217	-0.0874	-0.0111	-0.1384	0.2605	-0.0811	0.0912	0.0936	-0.0406	0.0151	-0.1075	-0.3720	-0.1729	-0.1447	-0.4272	-0.1246	-0.1723	-0.2867	0.0440	0.0391	-0.0104	-0.0509	0.1402	0.0106	0.0965	-0.1363	-0.1074	-0.1214
Dy	-0.2192	-0.0327	-0.0219	0.0003	0.0591	-0.0760	-0.1163	-0.0519	-0.0094	0.0000	-0.0117	-0.0592	0.0352	0.0062	-0.0111	0.0276	-0.0502	0.0086	0.0191	-0.0133	-0.0013	0.0538	-0.0327	-0.0491	-0.0587	-0.0425	-0.0290	-0.0739	-0.0163	0.0783	-0.0241	0.1888	-0.1541	-0.0878	0.0712	-0.0091	0.0309	0.0094	-0.0624	-0.0082	-0.0207	0.0167	0.0131
Er	-0.2157	-0.0187	-0.0542	-0.0451	0.0865	-0.1012	-0.1241	-0.0531	-0.0579	0.0315	-0.0275	-0.0399	0.0287	-0.0203	-0.0113	-0.0400	-0.0357	0.0213	0.0377	-0.0197	-0.0156	-0.0450	0.0059	0.0367	-0.0324	-0.0129	-0.0269	-0.0692	-0.0215	0.0777	-0.0235	0.1143	-0.1613	-0.0434	0.0011	-0.0130	0.0543	0.0495	-0.0671	-0.0365	0.1759	0.0260	-0.1290
Eu	-0.2074	-0.0578	0.0309	0.0601	-0.1134	0.0577	-0.0060	-0.0188	0.1069	-0.0493	0.0176	-0.0100	0.0516	0.0526	-0.0104	0.0666	0.0666	0.0981	-0.0872	0.0703	0.0397	0.0338	-0.1790	-0.1236	0.0738	-0.0006	-0.0157	0.0072	-0.1192	0.0521	-0.0896	-0.1102	0.3709	0.2865	0.1425	-0.2955	-0.1174	0.3119	0.3181	-0.2136	-0.1266	0.2671	-0.0175
Fe	0.0302	-0.0924	0.3265	-0.1987	0.2244	-0.0680	0.2474	-0.1717	0.1190	-0.0515	-0.0402	-0.0100	0.0363	-0.0397	0.0773	-0.1149	-0.0493	0.0209	0.3490	0.0248	-0.0552	0.1221	0.1145	0.1124	-0.4949	-0.1474	-0.0339	-0.0551	0.0294	0.2066	0.0542	-0.2195	-0.0748	0.1798	0.0852	-0.0309	0.0583	0.0300	0.1865	0.0923	-0.0326	-0.0691	0.0449
Ga	0.1050	-0.2300	0.0092	0.0940	0.0037	-0.0045	-0.0202	-0.0091	-0.1192	-0.0202	-0.0319	0.0540	0.0456	0.0492	0.0429	0.1146	-0.0475	-0.0661	0.1241	0.0100	-0.0686	-0.0105	-0.0146	-0.1236	-0.0841	0.0273	0.1342	-0.2713	-0.0352	-0.1035	-0.0470	0.0197	-0.0271	0.0614	-0.3402	-0.0170	0.2671	0.1180	0.1105	-0.3503	-0.0574	0.0423	-0.3422
Gd	-0.2205	-0.0336	0.0012	0.0397	-0.0002	-0.0210	-0.0381	-0.0391	0.0549	-0.0784	-0.0059	-0.0512	0.0330	-0.0139	0.0196	0.0823	-0.0288	-0.0022	-0.0071	-0.0288	0.0178	0.0863	-0.1113	-0.1151	-0.0853	-0.0394	-0.0222	0.0032	0.0453	0.0395	0.0980	0.1483	0.0583	-0.0282	0.0175	0.0377	0.1512	-0.0817	-0.1584	-0.0972	-0.0328	-0.1170	-0.5312
Hf	0.0965	-0.2199	-0.1412	-0.0205	-0.0451	-0.0513	-0.0140	-0.1293	-0.0750	-0.0484	-0.1715	-0.0010	-0.1142	-0.0004	-0.0376	-0.0025	-0.0732	-0.0145	-0.2015	0.0471	0.0281	0.0121	0.1033	-0.0328	0.0273	-0.1047	-0.0464	0.1507	0.0743	0.2172	-0.1891	-0.2589	0.1391	-0.1648	0.3298	-0.0256	0.1044	-0.0305	0.0737	-0.0611	-0.0286	-0.0642	-0.1198
Ho	-0.2157	-0.0195	-0.0500	-0.0367	0.0754	-0.0721	-0.1443	-0.0769	-0.0332	0.0387	0.0015	-0.0445	0.0205	-0.0163	-0.0169	-0.0352	-0.0415	0.0210	0.0154	-0.0467	-0.0934	-0.0010	-0.0047	-0.0002	-0.0184	-0.0031	0.0348	-0.0350	0.0406	0.1317	-0.0781	0.1747	-0.1360	-0.0618	0.1715	-0.0006	-0.1028	0.2063	-0.0177	0.0513	-0.0908	0.0870	-0.0782
K	0.1183	-0.2235	-0.0832	-0.0041	-0.0056	-0.0157	0.0432	-0.0261	-0.0256	-0.1152	-0.0795	0.0631	-0.0700	-0.0568	-0.0521	-0.0172	-0.0359	0.0022	-0.0269	0.0184	-0.1003	0.0714	0.0121	0.0326	0.0008	0.1002	-0.1442	0.0565	-0.1992	0.0307	0.2593	0.1112	0.0356	-0.0268	-0.0690	0.1526	-0.0313	-0.0342	-0.0396	0.0797	0.0528	0.1420	-0.0397
La	-0.2040	-0.0431	0.0151	0.0685	-0.0945	0.0996	0.2112	0.0455	0.1656	-0.0884	0.0403	0.0859	-0.0186	-0.0568	0.0194	0.0803	0.0504	-0.0309	-0.0768	-0.0051	0.0087	0.0552	-0.0467	0.0133	0.0478	-0.0077	-0.0519	0.0550	0.0280	-0.0358	0.0336	-0.1085	-0.0974	0.1037	-0.1499	-0.1375	-0.0237	-0.1925	0.0506	-0.0131	0.1731	0.0642	0.1082
Li	0.1363	-0.0721	-0.0532	-0.1717	0.0040	-0.3259	0.0498	0.1148	0.0260	-0.1200	0.3312	0.0392	0.2203	-0.0706	0.1017	0.2333	0.1259	-0.1935	-0.0997	-0.0808	0.2214	-0.3900	-0.2389	-0.0107	-0.1895	-0.1826	-0.0703	-0.1429	-0.1527	0.0245	-0.1671	-0.0301	0.1203	-0.1692	-0.0313	0.0296	-0.0285	-0.0324	-0.0088	0.1820	0.0350	0.0888	0.0032
Lu	-0.1935	0.0137	-0.1193	-0.1204	0.0842	-0.1344	-0.1371	-0.0605	-0.0333	0.1420	-0.0671	-0.0191	-0.0046	-0.0473	-0.0337	-0.0639	-0.0652	-0.1064	0.1239	-0.0794	0.0755	-0.1836	0.0056	0.0403	0.2070	0.1416	-0.0138	0.1690	-0.0475	0.0331	0.1825	-0.4045	0.1392	0.2052	-0.3751	-0.1146	0.2069	0.1917	-0.1710	0.3106	-0.1261	-0.1012	-0.0332
Mg	0.1922	-0.0849	-0.0286	-0.1568	-0.0309	-0.0638	-0.0503	-0.0274	0.1458	-0.0187	0.0965	-0.0342	0.0733	-0.0540	-0.0096	0.0858	0.1421	0.0823	-0.0521	-0.0513	0.0714	-0.0015	-0.2253	-0.0619	0.0566	0.1612	0.0760	0.3537	0.1769	0.0552	0.2011	0.0237	-0.2664	0.0399	0.1113	0.0599	-0.2994	0.2962	0.1490	-0.0325	0.0408	-0.3675	-0.1487
Mn	0.0497	-0.0441	0.3111	-0.2002	0.3226	0.0662	0.0473	0.0182	0.0007	-0.1917	0.1720	0.1219	0.0287	-0.1927	0.0363	-0.3098	-0.0322	0.2202	-0.1918	-0.1875	0.1901	0.0271	0.2849	-0.2547	0.2664	-0.1063	0.0781	-0.0263	0.0421	-0.1811	-0.0677	0.0962	0.1393	0.0137	-0.0544	0.0117	-0.0489	0.0625	-0.1329	-0.0232	0.0073	0.0189	-0.0451
Mo	-0.0251	0.1788	-0.0425	-0.1803	-0.1399	0.1947	0.1879	-0.0707	-0.2977	0.0404	-0.0820	0.2846	-0.2475	-0.1269	-0.1961	-0.1261	0.1227	-0.1399	0.2332	-0.0985	0.2750	0.1564	-0.3688	0.0418	0.1308	-0.1009	0.2253	-0.1394	-0.0490	0.1335	-0.0829	-0.0404	-0.0452	-0.1163	0.0262	0.0845	-0.0151	0.0150	0.0026	-0.0198	-0.0084	0.0024	-0.0128
Na	0.1103	-0.2251	-0.0656	-0.0268	-0.0060	-0.0126	0.0013	-0.1367	-0.0372	-0.0954	-0.1020	0.0433	-0.0265	0.0168	-0.0283	0.0396	0.1268	-0.0285	-0.1258	-0.0004	-0.0491	-0.0147	-0.0346	-0.1293	-0.0668	0.1234	0.1158	0.1096	-0.1201	-0.0485	0.1415	0.0011	-0.2610	0.2733	-0.0035	0.3371	-0.0140	-0.0416	-0.1114	0.0431	-0.1562	0.4801	0.1303
Nb	0.0777	-0.2327	-0.1339	-0.0045	0.0003	0.0326	-0.0008	0.0943	-0.1787	-0.0270	-0.0604	0.0705	-0.0528	0.0159	0.0064	0.0360	-0.2072	0.0320	0.0761	0.0082	-0.0475	-0.0409	0.0690	0.0683	0.0584	-0.0292	-0.0017	-0.1583	0.3251	0.0454	-0.0773	0.1374	-0.1085	0.0433	-0.1595	-0.3667	-0.4222	-0.1722	0.1173	0.3521	-0.1892	0.1178	-0.1629
Nd	-0.2138	-0.0458	0.0207	0.0782	-0.0726	0.0656	0.1152	0.0237	0.1468	-0.0793	0.0279	0.0488	0.0178	-0.0269	0.0207	0.0780	0.0355	-0.0220	-0.0448	0.0079	-0.0006	0.0632	-0.0632	-0.0436	0.0266	-0.0445	-0.0201	0.0370	0.0420	-0.0074	0.0284	0.0096	-0.0032	0.0703	-0.0102	-0.0557	-0.0020	-0.1646	-0.0525	0.0736	0.1077	-0.0596	0.0458
Ni	0.0884	0.0990	0.0925	-0.0147	-0.4108	-0.0909	-0.0612	0.0687	0.3017	0.1023	-0.1493	0.0467	-0.1504	-0.1050	0.1712	-0.3671	-0.2187	0.1715	0.0016	0.0100	-0.1684	-0.2958	-0.1334	-0.3398	-0.1142	0.0938	0.1633	-0.1472	-0.0424	0.1315	0.0959	-0.0082	0.0358	-0.1272	-0.0296	-0.0138	-0.0186	-0.0662	0.0138	0.0552	0.0514	0.0179	0.0052
P	-0.0076	0.0969	0.3346	0.0729	0.0896	0.1806	-0.1055	0.1252	-0.3793	-0.0298	0.1472	-0.0133	-0.1553	-0.0179	0.1010	0.2802	-0.4564	0.2847	-0.1756	0.0298	0.0166	-0.1022	-0.2613	0.1421	-0.1323	0.0858	-0.0006	0.1523	-0.0755	0.0973	0.0948	-0.0803	-0.0077	-0.0078	-0.0149	0.0190	0.0376	-0.0136	-0.0269	-0.0284	-0.0022	0.0043	0.0796
Pb	0.1165	0.0439	-0.1161	0.3807	0.2249	-0.0546	0.0778	0.0215	0.1183	0.1418	-0.0254	0.0228	-0.0066	-0.1406	0.0446	-0.1895	0.0793	0.1566	-0.0799	-0.0691	-0.1312	0.1178	-0.1599	0.1615	-0.1175	0.0599	0.1465	0.2505	-0.2956	-0.0368	-0.5059	0.0357	-0.0342	0.0266	-0.1422	-0.0159	-0.0006	-0.0442	0.0118	0.1458	-0.0889	-0.0926	-0.1086
Pr	-0.2095	-0.0516	0.0195	0.0800	-0.0772	0.0938	0.1526	0.0408	0.1497	-0.0726	0.0237	0.0598	0.0090	-0.0367	0.0226	0.0735	0.0487	-0.0285	-0.0600	0.0031	0.0205	0.0492	-0.0510	-0.0108	0.0644	-0.0247	-0.0350	0.0402	0.0136	-0.0085	0.0336	-0.0235	-0.0215	0.0801	-0.0229	-0.0940	-0.0279	-0.1993	0.0461	0.0753	0.1416	-0.0216	0.0467
Rb	0.1367	-0.1930	-0.0970	-0.0233	-0.0192	-0.0518	0.0497	0.0624	-0.0161	-0.1040	-0.0289	0.0863	-0.0183	-0.1724	-0.0382	-0.0640	-0.1007	-0.0217	0.0880	0.0326	-0.0838	0.1697	-0.0043	0.1745	0.0908	0.0715	-0.2936	-0.0368	-0.3125	0.0302	0.2423	0.2698	0.2745	-0.1581	-0.1312	-0.0179	-0.0138	0.0875	0.2122	-0.0350	0.1012	-0.2076	0.1041
S	0.0786	0.2159	-0.0634	-0.0630	-0.1548	-0.0164	0.1037	-0.3191	0.0082	-0.0066	-0.0022	-0.0510	0.0740	0.0755	0.1960	0.0729	-0.0644	-0.0523	0.1609	0.1017	-0.0098	0.0420	0.0924	0.0882	-0.1380	-0.0421	0.0101	0.2185	0.0412	-0.0161	-0.0422	0.1339	0.2509	-0.0977	-0.1665	-0.1215	-0.3152	0.0805	-0.4520	-0.2514	-0.1120	0.0794	0.1037
Sb	0.1052	0.1748	-0.0543	0.1702	0.0926	-0.1256	-0.0006	-0.2043	0.0207	0.1466	0.1149	-0.0340	-0.2143	-0.1303	0.0975	0.0232	0.2324	-0.2623	-0.3945	-0.1131	-0.0108	0.0232	0.0692	0.2914	-0.0725	0.1749	0.0970	-0.4138	0.2595	0.1166	0.2321	-0.0101	0.1075	0.1060	-0.0091	-0.0470	0.0258	-0.0065	0.0240	-0.0732	0.0367	-0.0459	0.0326
Sc	-0.0002	-0.1437	0.2067	0.1038	-0.2549	-0.1571	-0.2445	-0.0098	0.0223	0.1453	0.2137	-0.0661	0.0362	-0.0439	-0.4388	0.0638	0.2333	0.3808	0.1451	0.2063	0.2095	0.1660	0.1496	0.0498	-0.0682	0.0127	0.0919	0.0312	0.0570	0.1345	-0.0058	-0.0037	0.1301	-0.1393	-0.1461	0.0559	0.0259	-0.0992	-0.0172	0.1168	-0.0076	0.1092	0.0180
Sm	-0.2182	-0.0466	0.0196	0.0703	-0.0461	0.0104	0.0395	0.0103	0.0909	-0.0604	0.0137	0.0088	0.0133	0.0100	0.0106	0.0865	0.0042	0.0092	-0.0124	-0.0062	-0.0072	0.0950	-0.0852	-0.0967	-0.0728	-0.0868	-0.0344	0.0175	0.0550	0.0192	0.0695	0.0621	0.0091	0.0425	0.0030	0.0383	0.0770	-0.1340	-0.2617	0.0926	0.0365	-0.2175	-0.0520
Sn	0.0926	-0.0436	-0.1610	0.3818	0.2202	-0.0837	0.0986	0.0711	0.0172	0.2447	-0.0365	0.0449	-0.0295	-0.0909	0.1290	-0.0008	0.0008	0.2373	0.3170	0.1019	0.1088	-0.1269	-0.1747	-0.0615	0.1186	-0.3405	-0.1465	-0.0061	0.2235	-0.2418	0.2491	-0.0451	0.0363	-0.0377	0.1997	0.0734	0.0465	0.1063	-0.0483	-0.0165	0.0382	0.1367	0.0542
Sr	0.1252	-0.0036	-0.1646	-0.1698	0.0186	0.3935	-0.1683	0.0312	0.1709	0.0689	-0.0189	-0.0766	0.1404	0.2083	0.2375	0.0388	0.0366	0.2612	0.0889	0.0648	0.1191	0.0674	-0.0525	0.0475	0.1241	0.1229	-0.2939	-0.3219	-0.0279	0.2103	-0.2312	-0.0783	0.0270	0.1517	-0.0165	0.2605	-0.0188	0.0080	-0.1057	0.0951	0.0812	-0.0546	-0.0129
Tb	-0.2193	-0.0289	-0.0162	0.0243	0.0438	-0.0181	-0.0956	-0.0516	0.0337	-0.0261	-0.0136	-0.0394	0.0160	-0.0020	-0.0017	0.0156	-0.0552	-0.0673	-0.0005	-0.0486	-0.0129	0.0177	-0.0670	-0.0720	0.0168	0.0551	0.0508	-0.1224	0.0043	-0.0652	0.0159	0.2250	0.1646	-0.0423	0.1861	0.1183	0.1114	-0.0137	0.0953	0.1904	-0.5704	-0.1965	0.3028
Th	-0.1519	-0.0910	-0.1010	-0.0400	-0.1686	0.0223	0.2466	0.2929	0.1271	-0.0191	0.0331	0.2148	-0.1218	-0.1172	-0.0657	0.0230	-0.0918	0.0659	0.0639	0.1195	0.1279	-0.3791	0.3234	0.3620	-0.0202	0.1503	0.0399	0.0659	0.0739	0.0338	-0.1500	0.1570	-0.0718	0.1366	0.1326	0.1323	0.1414	0.1713	-0.0836	-0.1647	-0.0934	-0.0369	-0.0203
Ti	0.1215	-0.2183	-0.0053	0.0322	-0.0750	-0.0576	-0.0215	-0.0492	-0.1296	0.0475	-0.0095	0.0134	0.0494	0.0561	-0.0097	0.1136	-0.0202	0.0011	0.0372	0.0744	-0.0227	-0.0437	-0.0377	-0.2306	0.0249	-0.0452	0.1548	-0.0358	0.1973	-0.0662	-0.2119	0.0745	-0.0895	0.1730	-0.2271	-0.0139	0.0955	0.0218	0.0464	-0.1757	0.0712	-0.3833	0.4107
Tm	-0.2071	-0.0142	-0.0678	-0.0617	0.0806	-0.1059	-0.1475	-0.0399	-0.0565	0.1067	-0.0185	-0.0495	0.0218	-0.0351	-0.0125	-0.0489	-0.0913	-0.0159	0.1216	-0.0488	0.0473	-0.1388	0.0694	0.0721	-0.0125	0.0720	0.0545	0.0032	-0.0655	-0.2289	-0.0003	-0.2292	0.1538	0.0557	0.0145	0.3507	-0.3916	-0.4619	0.2397	-0.2893	-0.0238	-0.1228	-0.0919
U	-0.0850	0.1045	-0.2014	-0.2252	0.0443	0.0355	0.0720	0.3604	-0.2795	0.2871	0.0616	0.1595	-0.0418	0.3207	0.0798	-0.0835	0.2810	0.1101	-0.1253	0.0914	-0.0800	0.0748	0.1695	-0.2205	-0.3134	0.0399	-0.0427	0.1031	-0.0837	-0.1139	0.1349	0.0015	0.0355	-0.0696	0.0261	-0.1401	0.0375	-0.0169	0.0610	0.0292	-0.0203	-0.0604	-0.0068
V	0.0350	-0.1163	0.3593	0.0292	0.0448	0.0685	0.1573	-0.1719	-0.1362	0.3195	0.1563	0.0406	-0.0303	-0.0010	-0.0126	0.1074	0.2224	-0.1499	0.1934	-0.0412	-0.3714	-0.2639	0.0095	-0.1257	0.2699	0.2645	-0.1923	0.0520	-0.0234	0.1170	-0.1186	0.0837	0.0737	-0.0360	0.1819	-0.0414	0.0166	-0.1241	-0.0599	0.0242	0.0414	0.0084	-0.0685
W	0.0450	0.1129	-0.0867	-0.1531	0.0040	-0.0032	0.4773	0.0639	-0.0552	0.0540	-0.1290	-0.6555	0.0923	0.0031	-0.3808	0.0295	-0.1037	0.1625	-0.0852	-0.0398	-0.0701	-0.0969	-0.0640	-0.0383	0.0578	-0.0091	0.0281	-0.1173	-0.0300	-0.0763	0.0044	0.0434	0.0180	0.0239	-0.0221	0.0149	0.0222	0.0056	0.0024	0.0212	0.0130	0.0026	-0.0256
Y	-0.2163	0.0010	-0.0450	-0.0558	0.0681	-0.1082	-0.1165	-0.0804	-0.0351	0.0474	-0.0124	-0.0365	0.0084	-0.0335	0.0176	-0.0528	-0.0428	0.0253	-0.0032	-0.0445	-0.0298	0.0145	-0.0160	-0.0168	-0.0131	-0.0409	-0.1070	-0.0439	-0.0870	0.0300	-0.0971	0.1025	-0.1563	-0.0420	-0.0311	-0.0202	0.0234	0.0467	0.0667	-0.0984	0.1606	0.1053	0.3221
Yb	-0.2084	-0.0182	-0.0698	-0.0718	0.0811	-0.1416	-0.1412	-0.0635	-0.0579	0.0871	-0.0083	-0.0207	0.0246	-0.0263	-0.0614	-0.1211	-0.0635	0.0249	-0.0124	-0.0223	-0.0756	-0.0761	0.0174	0.0920	0.0732	-0.0052	-0.0138	0.0021	-0.0020	0.0464	-0.0825	-0.0169	-0.1174	-0.0756	-0.0427	-0.0885	-0.0725	0.1512	0.0585	-0.0685	0.3790	0.1067	0.0763
Zn	0.0316	0.1765	0.1637	-0.0216	-0.0352	-0.2203	-0.1257	0.2158	-0.0975	-0.3228	-0.4098	-0.0322	-0.0726	-0.0764	0.0215	0.0664	0.2175	0.0616	0.1644	-0.2049	0.0201	0.0386	-0.1039	0.0081	-0.1134	0.3262	-0.2484	0.0534	0.2922	-0.2098	-0.1868	0.0257	0.1183	0.0113	0.0244	-0.0097	0.0716	0.0022	0.0044	0.0232	0.0823	0.0852	0.0235
Zr	0.1030	-0.2154	-0.1476	-0.0173	-0.0483	-0.0591	-0.0081	-0.1334	-0.1045	-0.0737	-0.1635	0.0012	-0.1120	0.0149	-0.0203	0.0021	-0.0940	0.0016	-0.2018	0.0242	-0.0208	0.0129	0.0881	-0.0612	0.0212	-0.1271	-0.0805	0.1031	0.1152	0.0814	-0.1133	-0.1978	0.1143	-0.1099	0.1069	-0.0034	0.1592	-0.1145	-0.1193	0.0131	0.0917	-0.0420	0.0679

R-Scores

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43
Si	-0.2475	-0.2092	-0.0436	0.4109	-0.4947	0.1816	-0.0120	0.0054	-0.3303	-0.2032	0.2452	-0.2959	0.0617	-0.0798	0.2044	-0.2614	0.0953	-0.0557	0.0513	-0.0107	0.0360	-0.0183	0.0439	0.0209	-0.0004	-0.0073	-0.0454	0.0252	0.0037	0.0021	0.0074	-0.0249	-0.0413	0.0026	0.0048	0.0056	0.0125	0.0073	0.0184	0.0048	-0.0112	-0.0054	-0.0029
LOI	0.2438	0.8686	-0.0372	0.0217	-0.1879	0.1485	-0.1216	-0.0754	-0.0292	0.0076	0.0163	-0.0031	0.0302	0.0233	0.0476	0.1267	-0.0786	-0.0948	0.0401	0.0009	-0.0632	0.0103	0.0978	-0.0006	0.0079	-0.0727	0.1095	0.0528	0.0290	-0.0354	-0.0141	0.0610	0.0696	0.0403	0.0123	0.0638	0.0268	0.0240	0.0635	0.0750	0.0601	0.0127	-0.0165
Ag	0.2179	0.5426	0.0660	0.3766	-0.0702	0.1254	0.0502	-0.0568	-0.1158	0.0099	-0.1126	0.2549	0.5587	0.0279	-0.1927	-0.1247	-0.0840	-0.0281	-0.0814	-0.0219	0.0009	-0.0390	-0.0060	0.0131	-0.0354	0.0450	-0.0373	-0.0158	0.0434	0.0241	0.0302	-0.0192	-0.0031	-0.0044	0.0160	0.0051	0.0023	0.0004	0.0006	-0.0024	-0.0011	-0.0028	0.0020
Al	0.2368	-0.8713	0.1554	0.1317	-0.0624	0.0227	-0.1400	0.0589	-0.0442	-0.0794	-0.0592	-0.0382	0.0391	0.0997	-0.0197	-0.0076	0.0009	-0.0239	0.0622	0.0096	0.0094	0.0075	-0.0013	0.0690	-0.0144	0.0577	0.1378	-0.0910	-0.1035	-0.1053	0.0194	-0.0359	0.0124	0.0194	0.1055	-0.0584	-0.0265	0.0166	-0.0663	0.0257	0.0414	-0.0259	0.0047
As	0.4534	0.4519	0.0542	0.2758	0.0682	-0.1826	-0.0528	-0.0018	0.1346	-0.2253	0.2302	0.0404	-0.2212	0.4545	-0.2112	-0.1413	-0.0688	-0.0516	0.0448	-0.0622	-0.0290	-0.0429	-0.0300	0.0205	0.0268	-0.0318	-0.0612	0.0029	0.0100	0.0033	-0.0047	-0.0019	-0.0106	0.0187	-0.0069	0.0100	-0.0014	0.0019	0.0036	-0.0087	-0.0033	-0.0059	-0.0019
Ba	0.3434	-0.2321	0.0808	0.0062	0.1774	0.5899	-0.3939	0.2830	0.1341	0.0593	-0.0139	-0.1138	-0.0727	-0.1991	-0.2047	-0.0454	0.0552	-0.2074	-0.0198	0.0062	-0.0859	-0.0526	-0.0195	-0.0018	-0.0989	-0.0883	-0.0315	0.0134	0.0378	0.0030	0.0000	-0.0123	0.0234	0.0027	-0.0158	-0.0039	-0.0221	0.0162	-0.0270	-0.0226	-0.0041	0.0027	0.0099
Bi	0.3669	0.6102	-0.0209	0.3819	0.3368	-0.1105	0.0420	0.1124	0.0418	0.0096	-0.0108	-0.0958	-0.0573	-0.0494	-0.0073	0.0449	-0.1069	-0.1964	0.0465	0.1714	0.2102	0.0406	0.0839	-0.1558	0.0031	0.1355	-0.0040	-0.0052	-0.0343	0.0677	-0.0072	0.0038	-0.0242	-0.0053	0.0160	-0.0153	-0.0151	-0.0065	0.0081	0.0014	0.0126	0.0043	0.0025
Ca	0.7091	0.3659	-0.1190	-0.2661	0.0845	0.2948	-0.2081	-0.1358	0.2112	-0.0517	0.0080	-0.0481	0.0795	0.0100	0.0240	0.0583	0.0169	0.0377	0.0707	-0.0187	0.0421	-0.0555	0.0169	0.0689	0.0493	0.0290	0.0432	0.0477	-0.0164	-0.0555	0.0316	0.0030	-0.0609	-0.0813	0.0146	-0.0858	0.0755	-0.0559	0.0421	-0.0217	-0.0231	0.0188	0.0049
Cd	0.1621	0.7690	0.0971	0.3072	-0.0299	-0.0995	-0.0863	0.1541	-0.0645	-0.1553	-0.2226	0.0170	0.0203	-0.0170	0.0130	0.1861	0.1351	0.0823	0.0422	-0.1068	-0.0577	-0.0658	0.1372	-0.0289	0.0760	-0.1286	0.0231	-0.0266	-0.1096	0.1106	0.0350	-0.0258	-0.0422	0.0101	-0.0071	-0.0069	-0.0343	-0.0001	-0.0022	-0.0148	-0.0208	-0.0256	0.0043
Ce	-0.7599	-0.3932	0.2068	0.1836	0.0647	0.1123	0.2063	0.1220	0.1231	-0.0601	-0.0037	-0.0092	0.0187	0.0924	0.0722	0.0855	0.0025	-0.0395	-0.0131	0.0037	-0.0862	0.0593	0.0319	0.0120	0.0290	0.0519	0.0558	-0.0368	0.0472	-0.0241	-0.0099	-0.0995	-0.0105	-0.1654	-0.0465	0.0590	-0.0265	0.0626	0.0119	0.0114	-0.0112	0.0112	0.0083
Co	-0.0462	-0.2486	0.7701	-0.0874	0.0034	-0.1481	-0.0332	0.0825	0.0033	0.1307	-0.3179	-0.0762	0.0361	0.1749	0.1166	-0.1166	0.0854	-0.1047	-0.1333	0.1938	0.0871	-0.0381	-0.0575	0.1210	0.0779	-0.0884	0.0026	0.0218	-0.0046	0.0005	0.0101	0.0515	-0.0088	0.0011	-0.0311	0.0125	-0.0014	-0.0074	0.0121	0.0027	-0.0089	-0.0029	-0.0102
Cr	0.3709	-0.5313	0.2708	0.0808	-0.3689	-0.0749	0.0133	0.1364	0.0913	0.3885	-0.0304	-0.0559	0.0084	0.0618	0.0454	0.0515	-0.1305	-0.0903	-0.0177	-0.3176	0.1326	0.1107	0.0550	0.0146	-0.0108	-0.0195	-0.0516	0.0221	-0.0169	-0.0129	-0.0039	0.0074	-0.0217	0.0068	0.0112	-0.0038	0.0010	0.0085	-0.0017	-0.0111	-0.0074	0.0142	0.0028
Cs	0.5113	0.3626	-0.0457	-0.2931	-0.0543	-0.4373	-0.0612	0.3822	0.0108	0.0034	0.1869	-0.0044	0.1395	-0.0858	0.0546	-0.0277	-0.0853	-0.0591	0.0408	0.0726	-0.1628	0.1737	-0.0439	0.0461	0.1189	-0.0128	0.0481	-0.0048	0.0374	0.0429	-0.0058	-0.0383	-0.0068	0.0392	0.0365	0.0032	0.0245	-0.0289	-0.0248	-0.0291	-0.0172	0.0196	0.0034
Cu	0.1693	0.7621	0.2054	-0.0958	-0.3610	-0.1164	-0.0605	-0.1818	0.0134	0.0614	0.0370	0.0913	-0.0858	-0.1462	-0.0768	0.0815	-0.0539	-0.0066	-0.0805	0.1364	-0.0406	0.0435	0.0432	-0.0182	0.0064	-0.0439	-0.1469	-0.0652	-0.0523	-0.1448	-0.0417	-0.0533	-0.0858	0.0126	0.0109	-0.0026	-0.0117	0.0307	0.0023	0.0201	-0.0255	-0.0197	-0.0202
Dy	-0.9579	-0.1174	-0.0418	0.0004	0.0875	-0.1055	-0.1387	-0.0510	-0.0086	0.0000	-0.0100	-0.0460	0.0273	0.0045	-0.0077	0.0185	-0.0310	0.0051	0.0111	-0.0069	-0.0006	0.0256	-0.0151	-0.0219	-0.0247	-0.0174	-0.0115	-0.0279	-0.0059	0.0265	-0.0081	0.0584	-0.0461	-0.0251	0.0198	-0.0023	0.0071	0.0021	-0.0133	-0.0017	-0.0039	0.0031	0.0022
Er	-0.9425	-0.0672	-0.1032	-0.0741	0.1280	-0.1406	-0.1481	-0.0522	-0.0531	0.0277	-0.0235	-0.0310	0.0223	-0.0146	-0.0078	-0.0268	-0.0221	0.0126	0.0219	-0.0103	-0.0078	-0.0214	0.0027	0.0164	-0.0137	-0.0053	-0.0106	-0.0261	-0.0078	0.0263	-0.0079	0.0354	-0.0483	-0.0124	0.0003	-0.0033	0.0125	0.0108	-0.0143	-0.0076	0.0328	0.0048	-0.0214
Eu	-0.9061	-0.2072	0.0589	0.0987	-0.1678	0.0801	-0.0071	-0.0185	0.0980	-0.0434	0.0150	-0.0078	0.0400	0.0378	-0.0072	0.0446	0.0411	0.0579	-0.0508	0.0368	0.0198	0.0161	-0.0826	-0.0552	0.0311	-0.0003	-0.0062	0.0027	-0.0431	0.0176	-0.0300	-0.0341	0.1110	0.0820	0.0396	-0.0741	-0.0269	0.0683	0.0678	-0.0445	-0.0237	0.0489	-0.0029
Fe	0.1319	-0.3313	0.6220	-0.3264	0.3321	-0.0944	0.2952	-0.1688	0.1092	-0.0453	-0.0343	-0.0078	0.0281	-0.0286	0.0534	-0.0769	-0.0304	0.0123	0.2032	0.0130	-0.0276	0.0582	0.0528	0.0502	-0.2084	-0.0602	-0.0134	-0.0208	0.0107	0.0700	0.0181	-0.0679	-0.0224	0.0515	0.0237	-0.0078	0.0134	0.0066	0.0398	0.0192	-0.0061	-0.0126	0.0075
Ga	0.4588	-0.8247	0.0176	0.1545	0.0054	-0.0063	-0.0241	-0.0089	-0.1093	-0.0177	-0.0272	0.0419	0.0354	0.0354	0.0296	0.0768	-0.0293	-0.0390	0.0722	0.0052	-0.0343	-0.0050	-0.0067	-0.0552	-0.0354	0.0112	0.0530	-0.1023	-0.0127	-0.0351	-0.0157	0.0061	-0.0081	0.0176	-0.0945	-0.0043	0.0612	0.0258	0.0236	-0.0730	-0.0107	0.0078	-0.0568
Gd	-0.9637	-0.1205	0.0023	0.0652	-0.0003	-0.0291	-0.0454	-0.0384	0.0504	-0.0690	-0.0051	-0.0398	0.0256	-0.0100	0.0136	0.0551	-0.0178	-0.0013	-0.0041	-0.0150	0.0089	0.0411	-0.0513	-0.0514	-0.0359	-0.0161	-0.0088	0.0012	0.0164	0.0134	0.0328	0.0459	0.0174	-0.0081	0.0049	0.0095	0.0347	-0.0179	-0.0338	-0.0202	-0.0061	-0.0214	-0.0882
Hf	0.4216	-0.7883	-0.2691	-0.0336	-0.0667	-0.0712	-0.0167	-0.1271	-0.0688	-0.0426	-0.1465	-0.0008	-0.0886	-0.0003	-0.0260	-0.0017	-0.0451	-0.0086	-0.1173	0.0247	0.0141	0.0058	0.0476	-0.0147	0.0115	-0.0428	-0.0183	0.0568	0.0269	0.0736	-0.0633	-0.0801	0.0416	-0.0472	0.0917	-0.0064	0.0239	-0.0067	0.0157	-0.0127	-0.0053	-0.0117	-0.0199
Ho	-0.9424	-0.0701	-0.0952	-0.0603	0.1115	-0.1002	-0.1722	-0.0756	-0.0305	0.0340	0.0013	-0.0346	0.0159	-0.0117	-0.0117	-0.0235	-0.0256	0.0124	0.0090	-0.0245	-0.0467	-0.0005	-0.0022	-0.0001	-0.0077	-0.0013	0.0138	-0.0132	0.0147	0.0446	-0.0261	0.0541	-0.0407	-0.0177	0.0477	-0.0002	-0.0236	0.0452	-0.0038	0.0107	-0.0170	0.0159	-0.0130
K	0.5171	-0.8014	-0.1585	-0.0067	-0.0083	-0.0218	0.0516	-0.0257	-0.0235	-0.1014	-0.0678	0.0490	-0.0543	-0.0409	-0.0360	-0.0115	-0.0222	0.0013	-0.0157	0.0097	-0.0501	0.0340	0.0056	0.0146	0.0003	0.0409	-0.0569	0.0213	-0.0721	0.0104	0.0867	0.0344	0.0107	-0.0077	-0.0192	0.0383	-0.0072	-0.0075	-0.0084	0.0166	0.0099	0.0260	-0.0066
La	-0.8914	-0.1546	0.0287	0.1126	-0.1398	0.1383	0.2520	0.0447	0.1519	-0.0778	0.0345	0.0667	-0.0144	-0.0408	0.0134	0.0538	0.0311	-0.0182	-0.0447	-0.0027	0.0044	0.0263	-0.0216	0.0059	0.0201	-0.0031	-0.0205	0.0207	0.0101	-0.0121	0.0112	-0.0336	-0.0292	0.0297	-0.0416	-0.0345	-0.0054	-0.0421	0.0108	-0.0027	0.0323	0.0118	0.0180
Li	0.5954	-0.2586	-0.1013	-0.2821	0.0059	-0.4527	0.0594	0.1128	0.0239	-0.1056	0.2828	0.0304	0.1708	-0.0508	0.0703	0.1562	0.0777	-0.1143	-0.0581	-0.0423	0.1107	-0.1859	-0.1102	-0.0048	-0.0798	-0.0746	-0.0277	-0.0539	-0.0552	0.0083	-0.0559	-0.0093	0.0360	-0.0484	-0.0087	0.0074	-0.0065	-0.0071	-0.0019	0.0379	0.0065	0.0163	0.0005
Lu	-0.8456	0.0493	-0.2273	-0.1978	0.1246	-0.1866	-0.1636	-0.0595	-0.0305	0.1249	-0.0573	-0.0149	-0.0035	-0.0340	-0.0233	-0.0428	-0.0403	-0.0628	0.0721	-0.0416	0.0377	-0.0875	0.0026	0.0180	0.0872	0.0578	-0.0054	0.0638	-0.0172	0.0112	0.0610	-0.1252	0.0417	0.0587	-0.1042	-0.0287	0.0474	0.0420	-0.0365	0.0647	-0.0236	-0.0185	-0.0055
Mg	0.8398	-0.3046	-0.0546	-0.2576	-0.0457	-0.0886	-0.0601	-0.0270	0.1338	-0.0165	0.0824	-0.0266	0.0569	-0.0388	-0.0066	0.0575	0.0877	0.0486	-0.0303	-0.0269	0.0357	-0.0007	-0.1039	-0.0277	0.0238	0.0659	0.0300	0.1334	0.0640	0.0187	0.0673	0.0073	-0.0798	0.0114	0.0309	0.0150	-0.0686	0.0649	0.0318	-0.0068	0.0076	-0.0673	-0.0247
Mn	0.2173	-0.1580	0.5926	-0.3289	0.4775	0.0920	0.0565	0.0179	0.0007	-0.1687	0.1469	0.0947	0.0222	-0.1387	0.0251	-0.2075	-0.0199	0.1300	-0.1117	-0.0982	0.0950	0.0129	0.1314	-0.1138	0.1122	-0.0434	0.0308	-0.0099	0.0152	-0.0614	-0.0226	0.0298	0.0417	0.0039	-0.0151	0.0029	-0.0112	0.0137	-0.0283	-0.0048	0.0014	0.0035	-0.0075
Mo	-0.1098	0.6412	-0.0810	-0.2962	-0.2071	0.2704	0.2242	-0.0695	-0.2731	0.0356	-0.0700	0.2211	-0.1919	-0.0913	-0.1355	-0.0845	0.0757	-0.0826	0.1358	-0.0516	0.1375	0.0745	-0.1701	0.0187	0.0551	-0.0412	0.0889	-0.0526	-0.0177	0.0452	-0.0277	-0.0125	-0.0135	-0.0333	0.0073	0.0212	-0.0035	0.0033	0.0006	-0.0041	-0.0016	0.0004	-0.0021
Na	0.4822	-0.8071	-0.1249	-0.0441	-0.0088	-0.0175	0.0015	-0.1344	-0.0342	-0.0839	-0.0871	0.0336	-0.0205	0.0121	-0.0195	0.0265	0.0782	-0.0168	-0.0732	-0.0002	-0.0246	-0.0070	-0.0160	-0.0578	-0.0281	0.0504	0.0457	0.0413	-0.0435	-0.0164	0.0473	0.0003	-0.0781	0.0782	-0.0010	0.0845	-0.0032	-0.0091	-0.0237	0.0090	-0.0292	0.0879	0.0216
Nb	0.3395	-0.8345	-0.2552	-0.0074	0.0004	0.0453	-0.0009	0.0928	-0.1639	-0.0237	-0.0516	0.0548	-0.0410	0.0114	0.0045	0.0241	-0.1279	0.0189	0.0443	0.0043	-0.0237	-0.0195	0.0318	0.0305	0.0246	-0.0119	-0.0007	-0.0597	0.1176	0.0154	-0.0259	0.0425	-0.0325	0.0124	-0.0443	-0.0920	-0.0968	-0.0377	0.0250	0.0734	-0.0353	0.0216	-0.0270
Nd	-0.9341	-0.1643	0.0395	0.1285	-0.1075	0.0911	0.1375	0.0233	0.1347	-0.0698	0.0238	0.0379	0.0138	-0.0194	0.0143	0.0522	0.0219	-0.0130	-0.0261	0.0042	-0.0003	0.0301	-0.0292	-0.0195	0.0112	-0.0182	-0.0079	0.0140	0.0152	-0.0025	0.0095	0.0030	-0.0010	0.0201	-0.0028	-0.0140	-0.0004	-0.0360	-0.0112	0.0153	0.0201	-0.0109	0.0076
Ni	0.3865	0.3548	0.1763	-0.0242	-0.6079	-0.1263	-0.0730	0.0676	0.2767	0.0900	-0.1275	0.0362	-0.1166	-0.0755	0.1183	-0.2458	-0.1350	0.1013	0.0009	0.0052	-0.0842	-0.1410	-0.0615	-0.1518	-0.0481	0.0383	0.0645	-0.0555	-0.0153	0.0445	0.0321	-0.0025	0.0107	-0.0364	-0.0082	-0.0035	-0.0043	-0.0145	0.0029	0.0115	0.0096	0.0033	0.0009
P	-0.0333	0.3473	0.6374	0.1197	0.1325	0.2509	-0.1258	0.1230	-0.3479	-0.0262	0.1256	-0.0103	-0.1204	-0.0129	0.0698	0.1877	-0.2816	0.1681	-0.1022	0.0156	0.0083	-0.0487	-0.1205	0.0635	-0.0557	0.0351	-0.0002	0.0575	-0.0273	0.0330	0.0317	-0.0249	-0.0023	-0.0022	-0.0041	0.0048	0.0086	-0.0030	-0.0057	-0.0059	-0.0004	0.0008	0.0132
Pb	0.5091	0.1576	-0.2211	0.6254	0.3328	-0.0759	0.0928	0.0211	0.1085	0.1247	-0.0217	0.0177	-0.0051	-0.1011	0.0308	-0.1269	0.0489	0.0925	-0.0465	-0.0362	-0.0656	0.0561	-0.0738	0.0722	-0.0495	0.0245	0.0578	0.0945	-0.1069	-0.0125	-0.1692	0.0110	-0.0102	0.0076	-0.0395	-0.0040	-0.0001	-0.0097	0.0025	0.0304	-0.0166	-0.0169	-0.0180
Pr	-0.9153	-0.1851	0.0371	0.1315	-0.1143	0.1303	0.1821	0.0401	0.1374	-0.0639	0.0202	0.0464	0.0070	-0.0264	0.0156	0.0492	0.0300	-0.0169	-0.0349	0.0016	0.0103	0.0235	-0.0235	-0.0048	0.0271	-0.0101	-0.0138	0.0152	0.0049	-0.0029	0.0113	-0.0073	-0.0064	0.0229	-0.0064	-0.0236	-0.0064	-0.0436	0.0098	0.0157	0.0265	-0.0040	0.0078

Rb	0.5971	-0.6920	-0.1849	-0.0384	-0.0284	-0.0719	0.0592	0.0614	-0.0148	-0.0915	-0.0247	0.0670	-0.0142	-0.1240	-0.0264	-0.0429	-0.0621	-0.0128	0.0512	0.0171	-0.0419	0.0809	-0.0020	0.0780	0.0382	0.0292	-0.1159	-0.0139	-0.1131	0.0102	0.0811	0.0835	0.0822	-0.0452	-0.0365	-0.0045	-0.0032	0.0192	0.0452	-0.0073	0.0189	-0.0380	0.0173
S	0.3436	0.7741	-0.1208	-0.1034	-0.2291	-0.0228	0.1237	-0.3138	0.0075	-0.0058	-0.0019	-0.0396	0.0574	0.0543	0.1355	0.0488	-0.0397	-0.0309	0.0937	0.0532	-0.0049	0.0200	0.0426	0.0394	-0.0581	-0.0172	0.0040	0.0824	0.0149	-0.0055	-0.0141	0.0414	0.0751	-0.0280	-0.0463	-0.0305	-0.0723	0.0176	-0.0964	-0.0524	-0.0209	0.0145	0.0172
Sb	0.4596	0.6266	-0.1034	0.2796	0.1371	-0.1745	-0.0007	-0.2008	0.0190	0.1290	0.0981	-0.0264	-0.1661	-0.0937	0.0674	0.0155	0.1434	-0.0155	-0.2297	-0.0592	-0.0054	0.0110	0.0319	0.1302	-0.0305	0.0715	0.0383	-0.1561	0.0939	0.0395	0.0776	-0.0031	0.0322	0.0303	-0.0025	-0.0118	0.0059	-0.0014	0.0051	-0.0153	0.0068	-0.0084	0.0054
Sc	-0.0007	-0.5151	0.3938	0.1705	-0.3772	-0.2181	-0.2917	-0.0097	0.0204	0.1278	0.1825	-0.0514	0.0281	-0.0315	-0.3033	0.0427	0.1439	0.2249	0.0845	0.1080	0.1047	0.0791	0.0690	0.0223	-0.0287	0.0052	0.0363	0.0118	0.0206	0.0456	-0.0020	-0.0011	0.0389	-0.0399	-0.0406	0.0140	0.0059	-0.0217	-0.0037	0.0243	-0.0014	0.0200	0.0030
Sm	-0.9537	-0.1672	0.0373	0.1155	-0.0682	0.0144	0.0471	0.0102	0.0834	-0.0532	0.0117	0.0069	0.0103	0.0072	0.0073	0.0579	0.0026	0.0054	-0.0072	-0.0033	-0.0036	0.0453	-0.0393	-0.0432	-0.0307	-0.0355	-0.0136	0.0066	0.0199	0.0065	0.0232	0.0192	0.0027	0.0121	0.0008	0.0096	0.0177	-0.0293	-0.0558	0.0193	0.0068	-0.0398	-0.0086
Sn	0.4047	-0.1563	-0.3067	0.6272	0.3259	-0.1163	0.1177	0.0699	0.0158	0.2153	-0.0312	0.0349	-0.0229	-0.0654	0.0891	-0.0006	0.0005	0.1401	0.1846	0.0533	0.0544	-0.0605	-0.0806	-0.0275	0.0500	-0.1391	-0.0578	-0.0023	0.0808	-0.0819	0.0833	-0.0139	0.0109	-0.0108	0.0555	0.0184	0.0107	0.0233	-0.0103	-0.0034	0.0071	0.0250	0.0090
Sr	0.5473	-0.0131	-0.3136	-0.2789	0.0275	0.5465	-0.2008	0.0307	0.1567	0.0606	-0.0161	-0.0595	0.1089	0.1499	0.1641	0.0260	0.0226	0.1542	0.0517	0.0339	0.0595	0.0321	-0.0242	0.0212	0.0523	0.0502	-0.1160	-0.1214	-0.0101	0.0713	-0.0773	-0.0242	0.0081	0.0434	-0.0046	0.0653	-0.0043	0.0017	-0.0225	0.0198	0.0152	-0.0100	-0.0021
Tb	-0.9584	-0.1038	-0.0309	0.0399	0.0649	-0.0251	-0.1140	-0.0507	0.0309	-0.0229	-0.0116	-0.0306	0.0124	-0.0014	-0.0012	0.0105	-0.0341	-0.0397	-0.0003	-0.0254	-0.0064	0.0084	-0.0309	-0.0321	0.0071	0.0225	0.0201	-0.0462	0.0016	-0.0221	0.0053	0.0696	0.0493	-0.0121	0.0517	0.0297	0.0255	-0.0030	0.0203	0.0397	-0.1065	-0.0360	0.0503
Th	-0.6639	-0.3264	-0.1924	-0.0656	-0.2496	0.0309	0.2943	0.2880	0.1166	-0.0168	0.0283	0.1669	-0.0945	-0.0843	-0.0454	0.0154	-0.0567	0.0389	0.0372	0.0626	0.0639	-0.1807	0.1492	0.1617	-0.0085	0.0614	0.0158	0.0248	0.0267	0.0115	-0.0502	0.0486	-0.0215	0.0391	0.0369	0.0332	0.0324	0.0375	-0.0178	-0.0343	-0.0174	-0.0067	-0.0034
Ti	0.5310	-0.7827	-0.0101	0.0529	-0.1110	-0.0799	-0.0256	-0.0483	-0.1189	0.0418	-0.0081	0.0104	0.0383	0.0404	-0.0067	0.0761	-0.0125	0.0006	0.0217	0.0389	-0.0114	-0.0208	-0.0174	-0.1030	0.0105	-0.0184	0.0611	-0.0135	0.0714	-0.0224	-0.0709	0.0230	-0.0268	0.0495	-0.0631	-0.0035	0.0219	0.0048	0.0099	-0.0366	0.0133	-0.0702	0.0682
Tm	-0.9050	-0.0508	-0.1292	-0.1013	0.1193	-0.1471	-0.1760	-0.0393	-0.0519	0.0939	-0.0158	-0.0385	0.0169	-0.0252	-0.0086	-0.0327	-0.0563	-0.0094	0.0708	-0.0255	0.0237	-0.0662	0.0320	0.0322	-0.0053	0.0294	0.0215	0.0012	-0.0237	-0.0776	-0.0001	-0.0709	0.0460	0.0159	0.0040	0.0880	-0.0898	-0.1011	0.0511	-0.0603	-0.0044	-0.0225	-0.0153
U	-0.3713	0.3747	-0.3838	-0.3700	0.0656	0.0493	0.0859	0.3543	-0.2564	0.2526	0.0526	0.1239	-0.0324	0.2307	0.0551	-0.0559	0.1734	0.0650	-0.0729	0.0479	-0.0400	0.0357	0.0782	-0.0985	-0.1320	0.0163	-0.0169	0.0389	-0.0303	-0.0386	0.0451	0.0005	0.0106	-0.0199	0.0073	-0.0352	0.0086	-0.0037	0.0130	0.0061	-0.0038	-0.0111	-0.0011
V	0.1529	-0.4170	0.6845	0.0479	0.0663	0.0951	0.1877	-0.1690	-0.1250	0.2811	0.1335	0.0316	-0.0235	-0.0007	-0.0087	0.0719	0.1372	-0.0885	0.1126	-0.0216	-0.1856	-0.1257	0.0044	-0.0562	0.1137	0.1081	-0.0759	0.0196	-0.0085	0.0396	-0.0397	0.0259	0.0221	-0.0103	0.0506	-0.0104	0.0038	-0.0272	-0.0128	0.0050	0.0077	0.0015	-0.0114
W	0.1967	0.4047	-0.1653	-0.2515	0.0060	-0.0044	0.5695	0.0628	-0.0506	0.0475	-0.1101	-0.5092	0.0715	0.0022	-0.2631	0.0197	-0.0640	0.0960	-0.0496	-0.0208	-0.0350	-0.0462	-0.0295	-0.0171	0.0243	-0.0037	0.0111	-0.0442	-0.0109	-0.0259	0.0015	0.0134	0.0054	0.0068	-0.0061	0.0037	0.0051	0.0012	0.0005	0.0044	0.0024	0.0005	-0.0043
Y	-0.9450	0.0036	-0.0858	-0.0916	0.1007	-0.1503	-0.1390	-0.0791	-0.0322	0.0417	-0.0106	-0.0283	0.0065	-0.0241	0.0122	-0.0354	-0.0264	0.0149	-0.0019	-0.0233	-0.0149	0.0069	-0.0074	-0.0075	-0.0055	-0.0167	-0.0422	-0.0165	-0.0315	0.0102	-0.0325	0.0317	-0.0468	-0.0120	-0.0086	-0.0051	0.0054	0.0102	0.0142	-0.0205	0.0300	0.0193	0.0535
Yb	-0.9105	-0.0651	-0.1330	-0.1179	0.1200	-0.1967	-0.1684	-0.0624	-0.0531	0.0767	-0.0071	-0.0161	0.0191	-0.0189	-0.0424	-0.0811	-0.0392	0.0147	-0.0072	-0.0117	-0.0378	-0.0362	0.0080	0.0411	0.0308	-0.0021	-0.0054	0.0008	-0.0007	0.0157	-0.0276	-0.0052	-0.0351	-0.0216	-0.0119	-0.0222	-0.0166	0.0331	0.0125	-0.0143	0.0708	0.0195	0.0127
Zn	0.1379	0.6327	0.3118	-0.0355	-0.0521	-0.3060	-0.1499	0.2121	-0.0894	-0.2840	-0.3499	-0.0250	-0.0563	-0.0550	0.0148	0.0444	0.1342	0.0364	0.0957	-0.1073	0.0101	0.0184	-0.0479	0.0036	-0.0477	0.1333	-0.0981	0.0201	0.1057	-0.0711	-0.0625	0.0080	0.0354	0.0032	0.0068	-0.0024	0.0164	0.0005	0.0009	0.0048	0.0154	0.0156	0.0039
Zr	0.4501	-0.7722	-0.2813	-0.0284	-0.0714	-0.0821	-0.0096	-0.1312	-0.0959	-0.0648	-0.1396	0.0009	-0.0869	0.0107	-0.0140	0.0014	-0.0580	0.0010	-0.1175	0.0127	-0.0104	0.0061	0.0407	-0.0273	0.0089	-0.0519	-0.0318	0.0389	0.0417	0.0276	-0.0379	-0.0612	0.0342	-0.0315	0.0297	-0.0009	0.0365	-0.0251	-0.0254	0.0027	0.0171	-0.0077	0.0113

Relative Contributions

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43
Si	6.1448	4.3920	0.1904	16.9373	24.5468	3.3067	0.0145	0.0030	10.9445	4.1407	6.0298	8.7856	0.3817	0.6381	4.1911	6.8549	0.9104	0.3111	0.2641	0.0114	0.1301	0.0338	0.1929	0.0438	0.0000	0.0054	0.2072	0.0635	0.0014	0.0004	0.0054	0.0623	0.1710	0.0007	0.0023	0.0031	0.0157	0.0054	0.0339	0.0023	0.0125	0.0030	0.0009
LOI	5.9617	75.6756	0.1390	0.0470	3.5421	2.2120	1.4837	0.5702	0.0856	0.0059	0.0268	0.0010	0.0917	0.0545	0.2277	1.6106	0.6192	0.9009	0.1612	0.0001	0.4010	0.0106	0.9591	0.0000	0.0062	0.5299	1.2017	0.2791	0.0845	0.1259	0.0200	0.3730	0.4866	0.1633	0.0152	0.4085	0.0719	0.0575	0.4042	0.5643	0.3621	0.0161	0.0272
Ag	4.7648	29.5357	0.4367	14.2251	0.4937	1.5767	0.2533	0.3235	1.3440	0.0098	1.2714	6.5196	31.3063	0.0780	3.7229	1.5586	0.7077	0.0793	0.6649	0.0482	0.0001	0.1529	0.0037	0.0171	0.1254	0.2029	0.1396	0.0249	0.1888	0.0584	0.0917	0.0369	0.0009	0.0020	0.0256	0.0027	0.0005	0.0000	0.0000	0.0006	0.0001	0.0008	0.0004
Al	5.6237	76.1594	2.4226	1.7394	0.3905	0.0519	1.9651	0.3484	0.1962	0.6325	0.3518	0.1463	0.1531	0.9973	0.0391	0.0058	0.0001	0.0573	0.3878	0.0092	0.0090	0.0056	0.0002	0.4782	0.0207	0.3337	1.9845	0.8304	1.0748	1.1113	0.0379	0.1289	0.0154	0.0376	1.1165	0.3415	0.0707	0.0275	0.4415	0.0660	0.1718	0.0674	0.0023
As	20.6233	20.4837	0.2952	7.6304	0.4664	3.3448	0.2793	0.0003	1.8178	5.0903	5.3170	0.1641	4.9074	20.7251	4.4754	2.0041	0.4751	0.2672	0.2011	0.3879	0.0845	0.1846	0.0906	0.0422	0.0719	0.1014	0.3758	0.0008	0.0099	0.0011	0.0022	0.0004	0.0113	0.0351	0.0047	0.0100	0.0002	0.0003	0.0013	0.0075	0.0011	0.0035	0.0003
Ba	11.8320	5.4044	0.6551	0.0039	3.1550	34.9033	15.5633	8.0327	1.8047	0.3533	0.0193	1.2983	0.5301	3.9777	4.2034	2.2072	0.3059	4.3138	0.0393	0.0038	0.7409	0.2775	0.0383	0.0003	0.9812	0.7819	0.0993	0.0180	0.1431	0.0009	0.0000	0.0151	0.0551	0.0007	0.0251	0.0015	0.0492	0.0264	0.0732	0.0512	0.0017	0.0007	0.0099
Bi	13.5046	37.3507	0.0438	14.6327	11.3772	1.2255	0.1770	1.2683	0.1754	0.0092	0.0117	0.9200	0.3291	0.2445	0.0054	0.2026	1.1466	3.8701	0.2168	2.9474	4.4311	0.1652	0.7055	2.4356	0.0010	1.8421	0.0016	0.0027	0.1179	0.4599	0.0053	0.0014	0.0586	0.0028	0.0256	0.0234	0.0229	0.0042	0.0065	0.0002	0.0160	0.0018	0.0006
Ca	50.4429	13.4284	1.4212	7.1033	0.7160	8.7166	4.3441	1.8502	4.4734	0.2682	0.0064	0.2320	0.6345	0.0101	0.0577	0.3406	0.0288	0.1423	0.5018	0.0352	0.1780	0.3088	0.0287	0.4761	0.2442	0.0846	0.1874	0.2282	0.0271	0.3091	0.1000	0.0009	0.3717	0.6622	0.0214	0.7391	0.5722	0.3139	0.1779	0.0471	0.0537	0.0356	0.0024
Cd	2.6364	59.3249	0.9460	9.4662	0.0896	0.9921	0.7470	2.3820	0.4171	2.4194	4.9715	0.0289	0.0413	0.0289	0.0169	3.4729	1.8319	0.6795	0.1789	1.1432	0.3337	0.4348	1.8882	0.0836	0.5796	1.6587	0.0536	0.0711	1.2045	1.2281	0.1229	0.0668	0.1788	0.0101	0.0051	0.0048	0.1183	0.0000	0.0005	0.0219	0.0435	0.0660	0.0019
Ce	57.9255	15.5087	4.2895	3.3817	0.4194	1.2661	4.2677	1.4923	1.5197	0.3622	0.0014	0.0085	0.0352	0.8558	0.5231	0.7341	0.0006	0.1562	0.0172	0.0014	0.7451	0.3525	0.1019	0.0144	0.0841	0.2705	0.3126	0.1358	0.2238	0.0580	0.0098	0.9928	0.0110	2.7445	0.2171	0.3488	0.0704	0.3930	0.0143	0.0130	0.0125	0.0126	0.0069
Co	0.2143	6.2006	59.4961	0.7656	0.0011	2.2002	0.1107	0.6835	0.0011	1.7122	10.1346	0.5825	0.1309	3.0681	1.3637	1.3640	0.7312	1.0989	1.7824	3.7684	0.7615	0.1455	0.3311	1.4675	0.6082	0.7845	0.0007	0.0475	0.0021	0.0000	0.0102	0.2659	0.0077	0.0001	0.0971	0.0158	0.0002	0.0055	0.0147	0.0007	0.0080	0.0008	0.0105
Cr	13.7968	28.3108	7.3560	0.6548	13.6522	0.5623	0.0176	1.8674	0.8354	15.1419	0.0929	0.3134	0.0070	0.3836	0.2071	0.2657	1.7089	0.8171	0.0314	10.1198	1.7635	1.2283	0.3040	0.0213	0.0116	0.0382	0.2676	0.0492	0.0287	0.0166	0.0015	0.0054	0.0474	0.0046	0.0125	0.0014	0.0001	0.0072	0.0003	0.0124	0.0055	0.0201	0.0008
Cs	26.2241	13.1909	0.2095	8.6148	0.2953	19.1856	0.3752	14.6511	0.0118	0.0012	3.5037	0.0019	1.9527	0.7376	0.2992	0.0770	0.7301	0.3502	0.1673	0.5283	2.6584	3.2077	0.1934	0.2127	1.4189	0.0164	0.2320	0.0023	0.1405	0.1848	0.0033	0.1470	0.0046	0.1544	0.1334	0.0010	0.0601	0.0835	0.0617	0.0851	0.0298	0.0386	0.0012
Cu	2.8763	58.2637	4.2330	0.9208	13.0735	1.3591	0.3675	3.3170	0.0179	0.3784	0.1373	0.8353	0.7385	2.1439	0.5918	0.6668	0.2918	0.0043	0.6508	1.8653	0.1650	0.1896	0.1872	0.0331	0.0041	0.1935	2.1639	0.4265	2.2748	2.1025	0.1743	0.2853	0.7389	0.0159	0.0118	0.0007	0.0136	0.0945	0.0005	0.0405	0.0650	0.0388	0.0407
Dy	92.0415	1.3828	0.1749	0.0000	0.7677	1.1169	1.9308	0.2609	0.0075	0.0000	0.0099	0.2118	0.0748	0.0020	0.0059	0.0342	0.0961	0.0026	0.0124	0.0048	0.0000	0.0658	0.0228	0.0483	0.0613	0.0303	0.0132	0.0779	0.0035	0.0706	0.0065	0.3424	0.2134	0.0634	0.0392	0.0005	0.0050	0.0004	0.0178	0.0003	0.0015	0.0009	0.0005
Er	89.1102	0.4530	1.0690	0.5509	1.6439	1.9831	2.2004	0.2732	0.2825	0.0771	0.0554	0.0966	0.0498	0.0215	0.0061	0.0719	0.0483	0.0107	0.0061	0.0461	0.0007	0.0269	0.0187	0.0028	0.0114	0.0684	0.0061	0.0695	0.0062	0.1255	0.2338	0.0155	0.0000	0.0011	0.0156	0.0118	0.0206	0.0058	0.1082	0.0023	0.0460		
Eu	82.3562	4.3068	0.3480	0.9779	2.8239	0.6443	0.0051	0.0344	0.9639	0.1888	0.0226	0.0061	0.1604	0.1437	0.0052	0.1998	0.1693	0.3367	0.2585	0.1357	0.0394	0.0260	0.6839	0.3057	0.0968	0.0000	0.0038	0.0007	0.1865	0.0312	0.0901	0.1166	1.2369	0.6740	0.1572	0.5510	0.0726	0.4676	0.4615	0.1988	0.0561	0.2397	0.0008
Fe	1.7460	11.0094	38.8068	10.6839	11.0623	0.8939	8.7387	2.8591	1.1957	0.2062	0.1183	0.0061	0.0794	0.0820	0.2865	0.5938	0.0930	0.0152	4.1415	0.0169	0.0765	0.3397	0.2798	0.2527	4.3583	0.3640	0.0180	0.0433	0.0114	0.4915	0.0330	0.4630	0.0503	0.2656	0.0562	0.0060	0.0179	0.0043	0.1587	0.0371	0.0037	0.0160	0.0056
Ga	21.1158	68.2276	0.0311	2.3930	0.0030	0.0040	0.0583	0.0079	1.1992	0.0316	0.0743	0.1763	0.1255	0.1258	0.0882	0.5912	0.0861	0.1527	0.5233	0.0027	0.1178	0.0025	0.0045	0.3061	0.1259	0.0125	0.2814	1.0502	0.0163	0.1235	0.0248	0.0037	0.0066	0.0310	0.8964	0.0018	0.3761	0.0669	0.0557	0.5345	0.0115	0.0060	0.3238
Gd	93.1596	1.4569	0.0005	0.4258	0.0000	0.0851	0.2072	0.1481	0.2544	0.4772	0.0026	0.1587	0.0657	0.0100	0.0185	0.3048	0.0317	0.0002	0.0017	0.0227	0.0079	0.1695	0.2643	0.2653	0.1293	0.0260	0.0077	0.0001	0.0270	0.0179	0.1078	0.2112	0.0305	0.0065	0.0024	0.0090	0.1205	0.0321	0.1144	0.0411	0.0038	0.0460	0.7800
Hf	17.8320	62.3355	7.2632	0.1135	0.4466	0.5085	0.0279	1.6207	0.4745	0.1818	2.1517	0.0001	0.7869	0.0000	0.0676	0.0003	0.2045	0.0074	1.3810	0.0610	0.0199	0.0033	0.2277	0.0216	0.0133	0.1834	0.0336	0.3241	0.0724	0.5433	0.4013	0.6440	0.1739	0.2230	0.8428	0.0041	0.0575	0.0045	0.0248	0.0163	0.0029	0.0138	0.0397
Ho	89.0776	0.4925	0.9092	0.3645	1.2481	1.0662	2.9734	0.5727	0.0930	0.1162	0.0002	0.1201	0.0253	0.0138	0.0137	0.0556	0.0657	0.0154	0.0081	0.0601	0.2187	0.0000	0.0005	0.0000	0.0060	0.0002	0.0190	0.0175	0.0217	0.1999	0.0684	0.2932	0.1662	0.0314	0.2278	0.0000	0.0557	0.2045	0.0014	0.0114	0.0289	0.0254	0.0169
K	26.8230	64.4257	2.5203	0.0045	0.0069	0.0478	0.2666	0.0663	0.0553	1.0313	0.4616	0.2407	0.2954	0.1675	0.1302	0.0132	0.0492	0.0002	0.0246	0.0093	0.2521	0.1160	0.0031	0.0212	0.0000	0.1681	0.3250	0.0456	0.5208	0.0108	0.7548	0.1188	0.0114	0.0059	0.0369	0.1469	0.0052	0.0056	0.0071	0.0277	0.0098	0.0678	0.0044
La	79.7115	2.3971	0.0828	1.2710	1.9618	1.9198	6.3682	0.2009	2.3145	0.6074	0.1191	0.4467	0.0209	0.1673	0.0181	0.2902	0.0971	0.0333	0.2004	0.0007	0.0019	0.0695	0.0466	0.0035	0.0406	0.0010	0.0421	0.0432	0.0103	0.0147	0.0127	0.1131	0.0854	0.0883	0.1740	0.1193	0.0030	0.1781	0.0117	0.0007	0.1048	0.0139	0.0323
Li	35.5587	6.7090	1.0285	7.9806	0.0035	20.5534	0.3538	1.2771	0.0572	1.1191	8.0214	0.0928	2.9279	0.2586	0.4958	2.4479	0.6052	1.3103	0.3382	0.1794	1.2283	3.4647	1.2185	0.0023	0.6387	0.5584	0.0772	0.2914	0.3061	0.0069	0.3135	0.0087	0.1301	0.2352	0.0076	0.0055	0.0043	0.0051	0.0004	0.1442	0.0043	0.0265	0.0000
Lu	71.7204	0.2437	5.1813	3.9245	1.5576	3.4924	2.6845	0.3550	0.0934	1.5652	0.3297	0.0221	0.0013	0.1162	0.0545	0.1838	0.1625	0.3962	0.5221	0.1734	0.1428	0.7680	0.0007	0.0325	0.7628	0.3356	0.0030	0.4078	0.0296	0.0127	0.3738	1.5715	0.1742	0.3460	1.0897	0.0829	0.2256	0.1766	0.1333	0.4203	0.0557	0.0344	0.0030
Mg	70.7437	9.3047	0.2988	6.6554	0.2096	0.7875	0.3619	0.0729	1.7945	0.0272	0.6812	0.0708	0.3243	0.1511	0.0044	0.3314	0.7708	0.2372	0.0924	0.0724	0.1279	0.0001	1.0836	0.0767	0.0570	0.4352	0.0904	1.7856	0.4111	0.0351	0.4539	0.0054	0.6383	0.0131	0.0959	0.0226	0.4725	0.4219	0.1012	0.0046	0.0058	0.4540	0.0611
Mn	4.7360	2.5038	35.2276	10.8524	22.8711	0.8489	0.3201	0.0320	0.0000	2.8541	2.1632	0.8998	0.0495	1.9287	0.0632	4.3176	0.0396	1.6958	1.2513	0.9667	0.9057	0.0167	1.7323	1.2993	1.2628	0.1893	0.0954	0.0098	0.0233	0.3779	0.0514	0.0889	0.1746	0.0015	0.0229	0.0009	0.0126	0.0188	0.0806	0.0023	0.0002	0.0012	0.0456
Mo	1.2104	41.2380	0.6583	8.8030	4.3030	7.3362	5.0413	0.4841	7.4822	0.1269	0.4914	4.9015	3.6943	0.8358	1.8421	0.7155	0.5746	0.6847	1.8486	0.2666	1.8962	0.5571	2.9033	0.0350	0.3046	0.1704	0.7936	0.2775	0.0315	0.2053	0.0772	0.0157	0.0183	0.1111	0.0053	0.0451	0.0012	0.0011	0.0000	0.0017	0.0002	0.0000	0.0005
Na	23.3211	65.3413	1.5653	0.1947	0.0078	0.0306	0.0002	1.8122	0.1170	0.7063	0.7603	0.1133	0.0422	0.0146	0.0383	0.0704	0.6138	0.0283	0.5379	0.0000	0.0605	0.0049	0.0256	0.3347	0.0793	0.2548	0.2097	0.1713	0.1895	0.0271	0.2249	0.0000	0.6126	0.6133	0.0001	0.7169	0.0010	0.0083	0.0566	0.0081	0.0853	0.7746	0.0470
Nb	11.5605	69.8526	6.5303	0.0054	0.0000	0.2060	0.0001	0.8630	2.6960	0.0564	0.2672	0.3007	0.1683	0.0131	0.0020	0.0584	1.6396	0.0357	0.1967	0.0019	0.0565	0.0381	0.1016	0.0935	0.0606	0.0143	0.0000	0.3579	1.3879	0.0238	0.0671	0.1815	0.1058	0.0154	0.1970	0.8484	0.9400	0.1426	0.0628	0.5399	0.1253	0.0466	0.0734
Nd	87.5148	2.7070	0.1565	1.6572	1.1587	0.8332	1.8957	0.0544	1.8198	0.4883	0.0567	0.1444	0.0191	0.0376	0.0206	0.2735	0.0482	0.0169	0.0683	0.0017	0.0000	0.0908	0.0854	0.0381	0.0126	0.0332	0.0063	0.0196	0.0232	0.0006	0.0091	0.0009	0.0001	0.0406	0.0008	0.0196	0.0000	0.1302	0.0126	0.0236	0.0406	0.0119	0.0058
Ni	14.9822	12.6293	3.1165	0.0587	37.0714	1.5990	0.5352	0.4580	7.6819	0.8123	1.6305	0.1318	1.3640	0.5721	1.4042	6.0628	1.8271	1.0290	0.0001	0.0028	0.7106	1.9929	0.3799	2.3124	0.2321	0.1474	0.4171	0.3093	0.0236	0.1991	0.1031	0.0006	0.0116	0.1329	0.0068	0.0012	0.0018	0.0211	0.0009	0.0133	0.0093	0.0011	0.0001
P	0.1113	12.0969	40.7470	1.4377	1.7622	6.3133	1.5883	1.5185	12.1409	0.0689	1.5835	0.0107	1.4552	0.0166	0.4892	3.5327	7.9538	2.8352	1.0487	0.0244	0.0069	2.2377	1.4574	0.4045	3.1155	0.1233	0.0000	0.3311	0.0748	0.1091	0.1009	0.0620	0.0005	0.0005	0.0017	0.0023	0.0075	0.0009	0.0033	0.0035	0.0000	0.0001	0.0175
Pb	25.9934	2.4907	4.9032	39.2363	11.1106	0.5777	0.8644	0.0447	1.1812	1.5607	0.0473	0.0316	0.0027	1.0259	0.0953	1.6161	0.2399	0.8577	0.2170	0.1311	0.4314	0.3160	0.5457	0.5222	0.2457	0.0602	0.3354	0.8954	1.1473	0.0156	2.8722	0.0122	0.0105	0.0058	0.1566	0.0016	0.0000	0.0094	0.0006	0.0925	0.0277	0.0288	0.0326
Pr	84.0269	3.4368	0.1380	1.7342	1.3102	1.7025	3.3273	0.1615	1.8926	0.4095	0.0410	0.2161	0.0048	0.0698	0.0244	0.2429	0.0906	0.0285	0.1225	0.0003	0.0105	0.0552	0.0555	0.0023	0.0737	0.0102	0.0192	0.0231	0.0024	0.0008	0.0127	0.0053	0.0041	0.0527	0.0041	0.0557	0.0041	0.1909	0.0097	0.0247	0.0702	0.0016	0.0060
Rb	35.7665	48.0390	3.4282	0.1475	0.0806	0.5187	0.3521	0.3779	0.0219	0.8399	0.0610	0.4503	0.0202	1.5429	0.0700	0.1844	0.3870	0.0165	0.2635	0.0292	0.1759	0.6562	0.0004	0.6100	0.1467	0.0856	1.3478	0.0193	1.2825	0.0105	0.6591	0.6991	0.6773	0.2052	0.1333	0.0020	0.0010	0.0368	0.2053	0.0053	0.0358	0.1448	0.0300
S	11.8402	60.1040	1.4646	1.0733	5.2634	0.0521	1.5361	9.8744	0.0057	0.0034	0.0004	0.1572	0.3306	0.2956	1.8404	0.2390	0.1583	0.0956	0.8805	0.2843	0.0024	0.0402	0.1824	0.1556	0.3386	0.0297	0.0016	0.6814	0.0223	0.0030	0.0200	0.1721	0.5659	0.0785	0.2147	0.0931	0.5238	0.0312	0.9317	0.2754	0.0439	0.0212	0.0297
Sb	21.1886	39.3836	1.0723	7.8416	1.8850	3.0531	0.0001	4.0463	0.0363	1.6702	0.9654	0.0700	2.7684	0.8811	0.4554	0.0241	2.0632	0.0242	5.2915	0.3514	0.0029	0.0122	0.1021	1.7006	0.0935	0.5122	0.1471	2.4434	0.8839	0.1566	0.6044	0.0010	0.1040	0.0923	0.0006	0.0140	0.0035	0.0002	0.0026	0.0234	0.0047	0.0071	0.0029
Sc	0.0001	26.6196	15.5572	2.9173	14.2728	4.7730	8.5343	0.0094	0.0419	1.6391	3.3409	0.2648	0.0791	0.0998	9.2251	0.1829	2.0785	5.0735	0.7160	1.1696	1.1004	0.6273	0.4778	0.0497	0.0828	0.0027	0.1321	0.0139	0.0426	0.2085	0.0004	0.0001	0.1521	0.1594	0.1654	0.0197	0.0035	0.0473	0.0013	0.0595	0.0002	0.0401	0.0009
Sm	91.2310	2.8050	0.1395	1.3385	0.4664	0.0208	0.2223	0.0104	0.6980	0.2835	0.0138	0.0047	0.0106	0.0052	0.0054	0.3368	0.0007	0.0030	0.0053	0.0011	0.0013	0.2054	0.1549	0.1874	0.0943	0.1262	0.0185	0.0044	0.0397	0.0042	0.0542	0.0371	0.0007	0.0148	0.0001	0.0093	0.0313	0.0863	0.3124	0.0374	0.0047	0.1590	0.0075
Sn	16.4283	2.4491	9.4374	39.4643	10.6510	1.3563	1.3896	0.4895	0.0251	4.6517	0.0974	0.1220	0.0525	0.4285	0.7970	0.0000	0.0000	1.9690	3.4167	0.2852	0.2968	0.3669	0.6513	0.0758	0.2504	1.9418	0.3354	0.0005	0.6557	0.6734	0.6962	0.0195	0.0118	0.0117	0.3090	0.0340	0.0114	0.0543	0.0107	0.0012	0.0051	0.0628	0.0081
Sr	30.0411	0.0172	9.8656	7.7998	0.0759	29.9540	4.0455	0.0944	2.4664	0.3687	0.0261	0.3548	1.1886	2.2531	2.7025	0.0676	0.0512	2.3863	0.2685	0.1153	0.3557	0.1035	0.0589	0.0452	0.2740	0.2528	1.3507	1.4785	0.0102	0.5094	0.6001	0.0589	0.0065	0.1890	0.0021	0.4282	0.0019	0.0003	0.0510	0.0394	0.0230	0.0100	0.0005
Tb	92.1297	1.0799	0.0959	0.1595	0.4220	0.0633	1.3040	0.2579	0.0957	0.0528	0.0135	0.0940	0.0155	0.0002	0.0001	0.0110	0.1164	0.1585	0.0000	0.0648	0.0042	0.0071	0.0958	0.1037	0.0050	0.0509	0.0404	0.2137	0.0002	0.0490	0.0028	0.4862	0.2437	0.0147	0.2684	0.0884	0.0654	0.0009	0.0415	0.1579	1.1384	0.1298	0.2535
Th	44.2124	10.6844	3.7149	0.4323	6.2488	0.0958	8.6882	8.3195	1.3630	0.0283	0.0802	2.7935	0.8950	0.7126	0.2065	0.0238	0.3220	0.1518	0.1390	0.3925	0.4101	3.2736	2.2334	2.6234	0.0072	0.3784	0.0249	0.0619	0.0717	0.0132	0.2527	0.2369	0.0463	0.1532	0.1363	0.1105	0.1054	0.1410	0.0319	0.1181	0.0305	0.0046	0.0011
Ti	28.2884	61.4451	0.0102	0.2805	1.2366	0.6409	0.0658	0.2344	1.4169	0.1752	0.0065	0.0109	0.1474	0.1636	0.0045	0.5802	0.0157	0.0000	0.0471	0.1522	0.0130	0.0435	0.0303	1.0650	0.0110	0.0341	0.3745	0.0183	0.5111	0.0504	0.5038	0.0533	0.0720	0.2460	0.3997	0.0012	0.0481	0.0023	0.0098	0.1345	0.0177	0.4938	0.4664
Tm	82.1643	0.2594	1.6757	1.0290	1.4268	2.1711	3.1089	0.1546	0.2698	0.8846	0.0250	0.1486	0.0287	0.0638	0.0074	0.1074	0.3182	0.0088	0.5029	0.0654	0.0561	0.4390	0.1027	0.1041	0.0028	0.0869	0.0465	0.0001	0.0563	0.6035	0.0000	0.5048	0.2126	0.0254	0.0016	0.7763	0.8085	1.0257	0.2620	0.3646	0.0020	0.0507	0.0234
U	13.8259	14.0844	14.7719	13.7302	0.4316	0.2436	0.7396	12.5945	6.5951	6.3998	0.2777	1.5401	0.1056	5.3400	0.3050	0.3135	3.0147	0.4239	0.5334	0.2298	0.1605	0.1275	0.6130	0.9731	1.7470	0.0266	0.0286	0.1517	0.0919	0.1493	0.2044	0.0000	0.0113	0.0398	0.0053	0.1239	0.0074	0.0014	0.0170	0.0037	0.0014	0.0122	0.0001
V	2.3436	17.4412	46.9946	0.2306	0.4407	0.9076	3.5329	2.8661	1.5666	7.9263	1.7871	0.1000	0.0554	0.0000	0.0076	0.5190	1.8892	0.7865	1.2721	0.0467	3.4567	1.5861	0.0019	0.3163	1.2958	1.1714	0.5781	0.0386	0.0072	0.1575	0.1579	0.0673	0.0488	0.0106	0.2564	0.0108	0.0015	0.0741	0.0164	0.0026	0.0060	0.0002	0.0130
W	3.8801	16.4318	2.7395	6.3428	0.0036	0.0019	32.5330	0.3955	0.2571	0.2264	1.2163	26.0050	0.5134	0.0005	6.9453	0.0391	0.4104	0.9238	0.2467	0.0435	0.1230	0.2137	0.0873	0.0293	0.0594	0.0014	0.0123	0.1963	0.0118	0.0671	0.0002	0.0181	0.0029	0.0047	0.0038	0.0014	0.0026	0.0002	0.0000	0.0020	0.0006	0.0000	0.0018
Y	89.5725	0.0013	0.7379	0.8415	1.0179	2.2669	1.9367	0.6272	0.1040	0.1742	0.0113	0.0804	0.0042	0.0584	0.0149	0.1255	0.0700	0.0223	0.0003	0.0544	0.0223	0.0048	0.0055	0.0056	0.0030	0.0280	0.1789	0.0275	0.0995	0.0104	0.1059	0.1009	0.2198	0.0145	0.0075	0.0026	0.0029	0.0105	0.0203	0.0422	0.0902	0.0372	0.2869
Yb	83.1604	0.4250	1.7739	1.3946	1.4442	3.8791	2.8461	0.3910	0.2831	0.5894	0.0050	0.0259	0.0365	0.0360	0.1806	0.6599	0.1540	0.0216	0.0052	0.0136	0.1433	0.1317	0.0065	0.1695	0.0954	0.0005	0.0030	0.0001	0.0001	0.0248	0.0764	0.0027	0.1239	0.0470	0.0141	0.0494	0.0277	0.1099	0.0156	0.0204	0.5027	0.0383	0.0161
Zn	1.9066	40.1551	9.7537	0.1263	0.2724	9.3903	2.2549	4.5145	0.8021	8.0905	12.2802	0.0628	0.3175	0.3032	0.0221	0.1982	1.8071	0.1325	0.9193	1.1544	0.0102	0.0340	0.2303	0.0013	0.2287	1.7814	0.9646	0.0407	1.1209	0.5070	0.3915	0.0064	0.1259	0.0010	0.0046	0.0006	0.0270	0.0000	0.0001	0.0023	0.0237	0.0244	0.0015
Zr	20.3248	59.8107	7.9348	0.0810	0.5120	0.6761	0.0093	1.7255	0.9220	0.4215	1.9553	0.0001	0.7570	0.0115	0.0197	0.0002	0.3371	0.0001	1.3844	0.0161	0.0109	0.0038	0.1658	0.0749	0.0080	0.2706	0.1014	0.1516	0.1741	0.0763	0.1440	0.3757	0.1175	0.0992	0.0885	0.0001	0.1335	0.0630	0.0649	0.0008	0.0294	0.0059	0.0128

Absolute Contributions

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43
Si	0.3208	0.3406	0.0523	6.2573	11.1728	1.7093	0.0102	0.0030	12.9657	5.3316	8.2456	14.5166	0.6330	1.2293	8.7482	15.2379	2.3838	0.8894	0.7768	0.0414	0.5192	0.1483	0.9037	0.2185	0.0001	0.0321	1.3251	0.4451	0.0106	0.0037	0.0484	0.6480	1.9014	0.0082	0.0299	0.0494	0.2970	0.1123	0.7438	0.0523	0.3584	0.0878	0.0309
LOI	0.3113	5.8686	0.0382	0.0174	1.6122	1.1434	1.0389	0.5881	0.1015	0.0075	0.0366	0.0016	0.1521	0.1050	0.4752	3.5803	1.6215	2.5754	0.4740	0.0003	1.5998	0.0465	4.4928	0.0002	0.0350	3.1643	7.6852	1.9557	0.6434	1.0934	0.1785	3.8825	5.4113	1.9881	0.1960	6.4731	1.3635	1.1972	8.8628	12.9548	10.3495	0.4792	0.9833
Ag	0.2488	2.2905	0.1199	5.2553	0.2247	0.8150	0.1773	0.3337	1.5922	0.0126	1.7387	10.7725	51.9145	0.1503	7.7710	3.4647	1.8532	0.2267	1.9555	0.1753	0.0003	0.6714	0.0171	0.0854	0.7049	1.2116	0.8928	0.1747	1.4376	0.5073	0.8166	0.3846	0.0105	0.0240	0.3301	0.0420	0.0099	0.0003	0.0007	0.0138	0.0034	0.0230	0.0149
Al	0.2936	5.9061	0.6654	0.6426	0.1777	0.0268	1.3760	0.3594	0.2325	0.8144	0.4811	0.2417	0.2540	1.9211	0.0817	0.0129	0.0002	0.1638	1.1406	0.0336	0.0357	0.0247	0.0008	2.3883	0.1162	1.9927	12.1801	5.8181	8.1860	9.6480	0.3376	1.3422	0.1710	0.4579	14.4133	5.4124	1.3406	0.5723	9.6806	1.5160	4.9112	2.0052	0.0817
As	1.0767	1.5885	0.0811	2.8190	0.2123	1.7290	0.1956	0.0003	2.1536	6.5544	7.2708	0.2711	8.1378	39.9226	9.3416	4.4549	1.2440	0.7637	0.5914	1.4113	0.3370	0.8104	0.4242	0.2110	0.4041	0.6056	2.4031	0.0058	0.0757	0.0094	0.0197	0.0040	0.1261	0.4279	0.0613	0.1582	0.0038	0.0073	0.0282	0.1730	0.0308	0.1055	0.0126
Ba	0.6178	0.4191	0.1799	0.0014	1.4361	18.0418	10.8975	8.2854	2.1380	0.4549	0.0264	2.1453	0.8790	7.6622	8.7739	0.4606	0.8011	12.3317	0.1156	0.0138	2.9560	1.2183	0.1795	0.0016	5.5146	4.6693	0.6350	0.1264	1.0901	0.0081	0.0000	0.1573	0.6125	0.0088	0.3238	0.0241	0.9325	0.5495	1.6041	1.1754	0.0486	0.0221	0.3574
Bi	0.7051	2.8965	0.0120	5.4059	5.1785	0.6335	0.1239	1.3082	0.2078	0.0118	0.0159	1.5201	0.5458	0.4709	0.0113	0.4503	3.0025	11.0634	0.6375	10.7239	17.6782	0.7252	3.3047	12.1652	0.0055	11.0009	0.0103	0.0192	0.8980	3.9930	0.0468	0.0150	0.6516	0.0339	0.3302	0.3702	0.4349	0.0868	0.1433	0.0048	0.4583	0.0547	0.0222
Ca	2.6336	1.0414	0.3904	2.6242	0.3259	4.5057	3.0418	1.9084	5.2995	0.3453	0.0088	0.3833	1.0522	0.0194	0.1205	0.7572	0.0753	0.4069	1.4758	0.1282	0.7101	1.3560	0.1345	2.3781	1.3727	0.5051	1.1988	1.5988	0.2062	2.6834	0.8910	0.0091	4.1340	8.0621	0.2763	11.7133	10.8529	6.5307	3.9003	1.0817	1.5335	1.0587	0.0863
Cd	0.1376	4.6006	0.2598	3.4972	0.0408	0.5128	0.5230	2.4570	0.4941	3.1153	6.7984	0.0477	0.0685	0.0557	0.0354	7.7200	4.7970	1.9424	0.5262	4.1594	1.3314	1.9090	8.8445	0.4177	3.2577	9.9056	0.3430	0.4984	9.1739	10.6623	1.0946	0.6953	1.9888	0.1235	0.0654	0.0762	2.2436	0.0000	0.0110	0.5021	1.2446	1.9624	0.0672
Ce	3.0243	1.2027	1.1782	1.2493	0.1909	0.6544	2.9883	1.5392	1.8004	0.4664	0.0019	0.0141	0.0583	1.6485	1.0919	1.6319	0.0016	0.4467	0.0505	0.0050	2.9724	1.5477	0.4774	0.0722	0.4729	1.6156	1.9992	0.9514	1.7048	0.5038	0.0873	10.3352	0.1227	33.4138	2.8031	5.5280	1.3348	8.1751	0.3126	0.2981	0.3564	0.3741	0.2507
Co	0.0112	0.4809	16.3424	0.2829	0.0005	1.1373	0.0775	0.7050	0.0013	2.2047	13.8588	0.9625	0.2170	5.9101	2.8466	3.0322	1.9147	3.1413	5.2423	13.7108	3.0382	0.6389	1.5511	7.3294	3.4182	4.6851	0.0043	0.3327	0.0163	0.0003	0.0908	2.7679	0.0861	0.0016	1.2536	0.2502	0.0037	0.1143	0.3217	0.0170	0.2283	0.0245	0.3781
Cr	0.7203	2.1955	2.0205	0.2419	6.2140	0.2906	0.0124	1.9261	0.9897	19.4969	0.1270	0.5179	0.0117	0.7390	0.4324	0.5905	4.4749	2.3358	0.0923	36.8198	7.0357	5.3932	1.4238	0.1066	0.0654	0.2283	1.7113	0.3447	0.2184	0.1440	0.0136	0.0565	0.5266	0.0560	0.1616	0.0229	0.0020	0.1503	0.0062	0.2858	0.1560	0.5985	0.0278
Cs	1.3692	1.0229	0.0575	3.1826	0.1344	9.9172	0.2627	15.1120	0.0140	0.0015	4.7912	0.0031	3.2380	1.4209	0.6245	0.1712	1.9119	1.0010	0.4921	1.9220	10.6060	13.2943	0.9058	1.0625	7.9744	0.0981	1.4840	0.0164	1.0702	1.6043	0.0297	1.5298	0.0512	1.8794	1.7218	0.0160	1.1397	1.7376	1.3539	1.9534	0.8510	1.1499	0.0422
Cu	0.1502	4.5183	1.1627	0.3402	5.9506	0.7026	0.2574	3.4214	0.0212	0.4872	0.1877	1.3801	1.2247	4.1298	1.2353	1.4822	0.7641	0.0124	1.9141	6.7867	0.6584	0.8326	0.8769	0.1651	0.0229	1.1554	13.8390	2.9882	2.0929	18.2533	1.5529	2.9697	8.2181	0.1933	0.1527	0.0108	0.2588	1.9661	0.0112	0.9306	1.8573	1.1533	1.4734
Dy	4.8055	0.1072	0.0481	0.0000	0.3494	0.5773	1.3520	0.2691	0.0089	0.0000	0.0136	0.3500	0.1241	0.0039	0.0124	0.0759	0.2517	0.0075	0.0364	0.0176	0.0002	0.2890	0.1069	0.2410	0.3447	0.1807	0.0842	0.5461	0.0265	0.6129	0.0582	3.5646	2.3739	0.7717	0.5064	0.0083	0.0957	0.0088	0.3899	0.0067	0.0429	0.0279	0.0171
Er	4.6525	0.0351	0.2936	0.2035	0.7483	1.0251	1.5407	0.2818	0.3347	0.0992	0.0757	0.1596	0.0825	0.0414	0.0128	0.1599	0.1278	0.0453	0.1419	0.0390	0.0245	0.2024	0.0035	0.1345	0.1053	0.0167	0.0726	0.4792	0.0464	0.6031	0.0552	1.3062	2.6004	0.1881	0.0001	0.0169	0.2954	0.2451	0.4508	0.1330	3.0931	0.0674	1.6640
Eu	4.2998	0.3340	0.0956	0.3613	1.2853	0.3331	0.0036	0.0355	1.1419	0.2431	0.0309	0.0101	0.2661	0.2767	0.0108	0.4441	0.4432	0.9626	0.7604	0.4938	0.1573	0.1140	3.2037	1.5269	0.5439	0.0000	0.0245	0.0052	1.4201	0.2710	0.8024	1.2134	13.7569	8.2055	2.0298	8.7321	1.3776	9.7271	10.1205	4.5630	1.6040	7.1321	0.0307
Fe	0.0912	0.8538	10.6595	3.9471	5.0352	0.4621	6.1189	2.9490	1.4165	0.2654	0.1617	0.0101	0.1317	0.1580	0.5981	1.3200	0.2435	0.0436	12.1805	0.0616	0.3052	1.4914	1.3108	1.2623	24.4950	2.1736	0.1148	0.3035	0.0867	4.2671	0.2940	4.8196	0.5589	3.2342	0.7262	0.0955	0.3397	0.0898	3.4799	0.8520	0.1064	0.4776	0.2017
Ga	1.1025	5.2910	0.0085	0.8841	0.0014	0.0021	0.0408	0.0082	1.4206	0.0407	0.1016	0.2913	0.2081	0.2424	0.1840	1.3142	0.2254	0.4366	1.5392	0.0099	0.4699	0.0110	0.0212	1.5287	0.7077	0.0745	1.7996	7.3581	0.1241	1.0722	0.2205	0.0390	0.0732	0.3772	11.5718	0.0290	7.1345	1.3925	1.2207	12.2695	0.3291	0.1793	11.7122
Gd	4.8639	0.1130	0.0002	0.1573	0.0000	0.0440	0.1451	0.1528	0.3014	0.6145	0.0035	0.2622	0.1090	0.0192	0.0385	0.6776	0.0831	0.0005	0.0051	0.0827	0.0316	0.7444	1.2380	1.3249	0.7268	0.1550	0.0495	0.0010	0.2054	0.1558	0.9606	2.1988	0.3395	0.0796	0.0307	0.1424	2.2854	0.6680	2.5088	0.9441	0.1078	1.3683	28.2144
Hf	0.9310	4.8341	1.9951	0.0419	0.2033	0.2629	0.0195	1.6716	0.5621	0.2341	2.9425	0.0001	1.3049	0.0000	0.1411	0.0006	0.5354	0.0210	4.0618	0.2220	0.0792	0.0146	1.0667	0.1079	0.0746	1.0952	0.2151	2.2704	0.5516	4.7168	3.5755	6.7035	1.9343	2.7152	10.8798	0.0657	1.0907	0.0929	0.5435	0.3737	0.0817	0.4119	1.4350
Ho	4.6508	0.0382	0.2498	0.1346	0.5681	0.5201	2.0820	0.5907	0.1102	0.1497	0.0002	0.1984	0.0420	0.0266	0.0286	0.1236	0.1721	0.0442	0.0239	0.2185	0.8727	0.0001	0.0022	0.0000	0.0337	0.0009	0.1214	0.1225	0.1649	1.7351	0.6094	3.0522	1.8488	0.3819	2.9412	0.0000	1.0566	4.2544	0.0314	0.2628	0.8246	0.7569	0.6112
K	1.4004	4.9962	0.6923	0.0017	0.0031	0.0247	0.1867	0.0684	0.0655	1.3280	0.6312	0.3978	0.4899	0.3227	0.2717	0.0295	0.1289	0.0005	0.0724	0.0340	1.0059	0.5095	0.0146	0.1061	0.0001	1.0041	2.0788	0.3194	3.9663	0.0941	6.7248	1.2363	0.1268	0.0716	0.4760	2.3280	0.0977	0.1167	0.1566	0.6355	0.2787	2.0172	0.1576
La	4.1618	0.1859	0.0227	0.4696	0.8930	0.9924	4.4590	0.2072	2.7420	0.7821	0.1628	0.7382	0.0347	0.3223	0.0378	0.6451	0.2542	0.0952	0.5895	0.0026	0.0076	0.3050	0.2182	0.0177	0.2281	0.0059	0.2692	0.3024	0.0784	0.1279	0.1131	1.1778	0.9493	1.0755	2.2458	1.8913	0.0564	3.7050	0.2559	0.0171	2.9960	0.4122	1.1700
Li	1.8565	0.5203	0.2825	2.9484	0.0016	10.6242	0.2477	1.3173	0.0678	1.4409	10.9691	0.1533	4.8552	0.4982	1.0349	5.4415	1.5847	3.7457	0.9947	0.6527	4.9003	15.2131	5.7078	0.0115	3.5894	3.3347	0.4937	2.0413	2.3316	0.0601	2.7928	0.0909	1.4468	2.8636	0.0977	0.0877	0.0814	0.1052	0.0078	3.3113	0.1227	0.7885	0.0010
Lu	3.7445	0.0189	1.4232	1.4499	0.7090	1.8052	1.8797	0.3662	0.1107	2.0154	0.4508	0.0366	0.0021	0.2238	0.1137	0.4085	0.4256	1.1325	1.5355	0.6310	0.5696	3.3721	0.0031	0.1623	4.2869	2.0039	0.0190	2.8569	0.2256	0.1099	3.3307	16.3592	1.9374	4.2121	14.0675	1.3139	4.2794	3.6744	2.9235	9.6492	1.5909	1.0246	0.1101

Mg	3.6936	0.7216	0.0821	2.4588	0.0954	0.4071	0.2534	0.0752	2.1259	0.0350	0.9315	0.1169	0.5378	0.2911	0.0093	0.7367	2.0183	0.6781	0.2717	0.2636	0.5104	0.0002	5.0756	0.3831	0.3206	2.5987	0.5782	12.5103	3.1309	0.3048	4.0444	0.0561	7.0986	0.1593	1.2382	0.3585	8.9628	8.7758	2.2198	0.1056	0.1664	13.5081	2.2102
Mn	0.2473	0.1942	9.6763	4.0093	10.4101	0.4388	0.2241	0.0331	0.0001	3.6750	2.9582	1.4867	0.0822	3.7152	0.1320	9.5978	0.1037	4.8477	3.6802	3.5173	3.6131	0.0735	8.1144	6.4894	7.0975	1.1307	0.6098	0.0689	0.1774	3.2811	0.4581	0.9255	1.9416	0.0187	0.2960	0.0136	0.2394	0.3906	1.7664	0.0537	0.0054	0.0356	0.2038
Mo	0.0632	3.1980	0.1808	3.2522	1.9586	3.7921	3.5300	0.4993	8.8641	0.1633	0.6720	8.0988	6.1262	1.6101	3.8450	1.5905	1.5046	1.9573	5.4370	0.9699	7.5651	2.4462	13.5998	0.1747	1.7121	1.0177	5.0754	1.9440	0.2401	1.7828	0.6876	0.1631	0.2040	1.3522	0.0688	0.7148	0.0228	0.0224	0.0007	0.0392	0.0070	0.0006	0.0163
Na	1.2176	5.0672	0.4300	0.0719	0.0035	0.0158	0.0002	1.8692	0.1387	0.9094	1.0397	0.1872	0.0700	0.0281	0.0799	0.1565	1.6073	0.0810	1.5820	0.0000	0.2414	0.0217	0.1200	1.6718	0.4459	1.5217	1.3410	1.2005	1.4431	0.2349	2.0035	0.0001	6.8132	7.4674	0.0012	11.3616	0.0197	0.1730	1.2402	0.1860	2.4390	23.0488	1.6987
Nb	0.6036	5.4170	1.7937	0.0020	0.0000	0.1065	0.0001	0.8901	3.1940	0.0727	0.3654	0.4969	0.2791	0.0253	0.0041	0.1298	4.2935	0.1021	0.5785	0.0068	0.2253	0.1674	0.4757	0.4671	0.3407	0.0852	0.0003	2.5072	10.5703	0.2062	0.5981	1.8890	1.1770	0.1879	2.5427	13.4443	17.8294	2.9664	1.3769	12.3945	3.5797	1.3874	2.6535
Nd	4.5692	0.2099	0.0430	0.6122	0.5274	0.4307	1.3274	0.0561	2.1559	0.6287	0.0776	0.2385	0.0316	0.0724	0.0430	0.6079	0.1262	0.0482	0.2008	0.0063	0.0000	0.3989	0.3998	0.1904	0.0709	0.1980	0.0404	0.1371	0.1768	0.0055	0.0809	0.0092	0.0010	0.4937	0.0105	0.3098	0.0004	2.7090	0.2754	0.5412	1.1601	0.3550	0.2094
Ni	0.7822	0.9794	0.8560	0.0217	16.8736	0.8266	0.3748	0.4724	9.1006	1.0459	2.2296	0.2178	2.2618	1.1021	2.9311	13.4770	4.7844	2.9416	0.0003	0.0100	2.8348	8.7504	1.7795	11.5497	1.3046	0.8804	2.6678	2.1667	0.1797	1.7283	0.9188	0.0067	0.1285	1.6177	0.0879	0.0191	0.0347	0.4384	0.0190	0.3047	0.2644	0.0319	0.0027
P	0.0058	0.9381	11.1924	0.5311	0.8021	3.2634	1.1122	1.5663	14.3831	0.0887	2.1654	0.0177	2.4131	0.0320	1.0211	7.8530	20.8274	8.1048	3.0844	0.0887	0.0277	1.0435	6.8269	2.0203	1.7508	0.7364	0.0000	2.3200	0.5699	0.9475	0.8992	0.6452	0.0059	0.0061	0.0222	0.0360	0.1415	0.0185	0.0722	0.0808	0.0005	0.0018	0.6337
Pb	1.3571	0.1931	1.3468	14.4955	5.0571	0.2986	0.6052	0.0461	1.3993	2.0096	0.0647	0.0522	0.0044	1.9762	0.1988	3.5926	0.6281	2.4519	0.6382	0.4770	1.7211	1.3876	2.5562	2.6083	1.3810	0.3593	2.1451	6.2733	8.7384	0.1354	25.5898	0.1273	0.1171	0.0705	2.0220	0.0254	0.0000	0.1949	0.0138	2.1245	0.7910	0.8574	1.1801
Pr	4.3871	0.2665	0.0379	0.6407	0.5964	0.8800	2.3298	0.1665	2.2421	0.5273	0.0560	0.3570	0.0080	0.1345	0.0509	0.5400	0.2372	0.0814	0.3603	0.0009	0.0421	0.2424	0.2599	0.0117	0.4144	0.0610	0.1228	0.1620	0.0185	0.0072	0.1131	0.0554	0.0460	0.6420	0.0524	0.8832	0.0776	3.9706	0.2128	0.5677	2.0060	0.0468	0.2185
Rb	1.8674	3.7254	0.9417	0.0545	0.0367	0.2681	0.2465	0.3898	0.0260	1.0815	0.0834	0.7440	0.0335	2.9720	0.1462	0.4099	1.0134	0.0470	0.7748	0.1061	0.7017	2.8813	0.0019	3.0465	0.8245	0.5110	8.6193	0.1352	9.7676	0.0914	5.8725	7.2775	7.5330	2.4981	1.7214	0.0320	0.0191	0.7659	4.5026	0.1226	1.0234	4.3096	1.0838
S	0.6182	4.6610	0.4023	0.3965	2.3957	0.0269	1.0756	10.1850	0.0067	0.0044	0.0005	0.2597	0.5483	0.5694	3.8415	0.5313	0.4145	0.2734	2.5897	1.0345	0.0096	0.1767	0.8542	0.7774	1.9031	0.1776	0.0103	4.7743	0.1699	0.0260	0.1783	1.7918	6.2936	0.9552	2.7719	1.4751	9.9354	0.6486	20.4290	6.3215	1.2537	0.6303	1.0743
Sb	1.1063	3.0542	0.2945	2.8970	0.8580	1.5782	0.0000	4.1736	0.0430	2.1505	1.3202	0.1156	4.5908	1.6973	0.9505	0.0537	5.4025	0.0691	15.5628	1.2786	0.0117	0.0537	0.4783	8.4940	0.5253	3.0587	0.9408	17.1192	6.7322	1.3598	5.3853	0.0102	1.1561	1.1240	0.0082	0.2211	0.0666	0.0043	0.0578	0.5361	0.1344	0.2109	0.1062
Sc	0.0000	2.0643	4.2733	1.0778	6.4965	2.4672	5.9758	0.0097	0.0497	2.1105	4.5685	0.4375	0.1311	0.1923	19.2558	0.4066	5.4427	14.5036	2.1059	4.2556	4.3902	2.7545	2.2380	0.2481	0.4652	0.0163	0.8445	0.0975	0.3245	1.8098	0.0034	0.0013	1.6918	1.9401	2.1348	0.3124	0.0671	0.9834	0.0296	1.3651	0.0058	1.1936	0.0325
Sm	4.7632	0.2175	0.0383	0.4945	0.2123	0.0108	0.1557	0.0107	0.8269	0.3650	0.0189	0.0078	0.0176	0.0100	0.0112	0.7487	0.0017	0.0085	0.0155	0.0039	0.0052	0.9020	0.7256	0.9361	0.5302	0.7539	0.1185	0.0307	0.3027	0.0368	0.4831	0.3857	0.0082	0.1802	0.0009	0.1469	0.5929	1.7955	6.8508	0.8577	0.1334	4.7319	0.2707
Sn	0.8577	0.1899	2.5923	14.5797	4.8480	0.7011	0.9730	0.5049	0.0297	5.9896	0.1332	0.2016	0.0870	0.8254	1.6635	0.0001	0.0001	5.6288	10.0488	1.0377	1.1842	1.6110	3.0506	0.3788	1.4075	11.5961	2.1449	0.0037	4.9937	5.8466	6.2026	0.2032	0.1316	0.1422	3.9885	0.5384	0.2161	1.1299	0.2336	0.0273	0.1461	1.8686	0.2942
Sr	1.5685	0.0013	2.7099	2.8816	0.0346	15.4835	2.8327	0.0973	2.9196	0.4747	0.0357	0.5863	1.9711	4.3401	5.6411	0.1502	0.1340	6.8216	0.7897	0.4194	1.4190	0.4544	0.2757	0.2257	1.5400	1.5098	8.6379	10.3588	0.0776	4.4222	5.3467	0.6131	0.0727	2.3008	0.0273	6.7852	0.0354	0.0063	1.1176	0.9041	0.6587	0.2976	0.0167
Tb	4.8101	0.0837	0.0263	0.0589	0.1921	0.0327	0.9131	0.2660	0.1133	0.0680	0.0185	0.1553	0.0256	0.0004	0.0003	0.0245	0.3048	0.4530	0.0000	0.2358	0.0166	0.0314	0.4486	0.5178	0.0283	0.3038	0.2583	1.4975	0.0019	0.4250	0.0252	5.0609	2.7101	0.1790	3.4644	1.4007	1.2402	0.0187	0.9090	3.6246	32.5330	3.8618	9.1687
Th	2.3083	0.8286	1.0204	0.1597	2.8442	0.0495	6.0835	8.5813	1.6147	0.0364	0.1097	4.6157	1.4842	1.3726	0.4311	0.0529	0.8431	0.4340	0.4087	1.4282	1.6363	14.3739	10.4618	13.1029	0.0406	2.2596	0.1594	0.4340	0.5460	0.1145	2.2512	2.4658	0.5153	1.8653	1.7595	1.7510	2.0000	2.9332	0.6985	2.7121	0.8717	0.1359	0.0414
Ti	1.4769	4.7650	0.0028	0.1036	0.5629	0.3313	0.0461	0.2418	1.6786	0.2256	0.0090	0.0181	0.2444	0.3152	0.0094	1.2897	0.0410	0.0001	0.1386	0.5537	0.0517	0.1912	0.1419	5.3192	0.0621	0.2039	2.3951	0.1284	3.8930	0.4378	4.4889	0.5546	0.8011	2.9944	5.1595	0.0195	0.9119	0.0476	0.2156	3.0879	0.5063	14.6941	16.8712
Tm	4.2898	0.0201	0.4603	0.3802	0.6494	1.1223	2.1768	0.1594	0.3196	1.1390	0.0341	0.2455	0.0475	0.1230	0.0155	0.2388	0.8332	0.0252	1.4790	0.2381	0.2240	1.9276	0.4812	0.5200	0.0157	0.5190	0.2973	0.0010	0.4290	5.2397	0.0000	5.2545	2.3645	0.3098	0.0211	12.3015	15.3346	21.3381	5.7456	8.3693	0.0564	1.5091	0.8449
U	0.7219	1.0922	4.0576	5.0725	0.1965	0.1259	0.5179	12.9907	7.8131	8.2404	0.3797	2.5447	0.1751	10.2864	0.6367	0.6968	7.8941	1.2119	1.5689	0.8361	0.6405	0.5598	2.8715	4.8603	9.8189	0.1588	0.1827	1.0626	0.6998	1.2965	1.8210	0.0002	0.1261	0.4845	0.0681	1.9640	0.1409	0.0287	0.3719	0.0854	0.0411	0.3645	0.0046
V	0.1224	1.3526	12.9085	0.0852	0.2006	0.4691	2.4738	2.9562	1.8559	10.2061	2.4438	0.1652	0.0918	0.0001	0.0159	1.1538	4.9470	2.2482	3.7413	0.1698	13.7906	6.9643	0.0091	1.5796	7.2826	6.9951	3.6969	0.2701	0.0546	1.3677	1.4067	0.7008	0.5430	0.1296	3.3101	0.1717	0.0276	1.5410	0.3592	0.0586	0.1710	0.0071	0.4688
W	0.2026	1.2743	0.7525	2.3433	0.0016	0.0010	22.7798	0.4080	0.3046	0.2915	1.6633	42.9685	0.8514	0.0009	14.4971	0.0869	1.0747	2.6409	0.7257	0.1584	0.4908	0.9384	0.4090	0.1464	0.3337	0.0083	0.0788	1.3751	0.0899	0.5826	0.0019	0.1887	0.0325	0.0573	0.0489	0.0221	0.0493	0.0031	0.0006	0.0448	0.0169	0.0007	0.0656
Y	4.6766	0.0001	0.2027	0.3109	0.4633	1.1718	1.3561	0.6469	0.1232	0.2243	0.0155	0.1329	0.0070	0.1126	0.0310	0.2790	0.1832	0.0638	0.0010	0.1980	0.0891	0.0210	0.0257	0.0282	0.0170	0.1672	1.1440	0.1925	0.7576	0.0900	0.9433	1.0500	2.4443	0.1765	0.0968	0.0410	0.0547	0.2184	0.4443	0.9685	2.5778	1.1079	10.3768
Yb	4.3418	0.0330	0.4872	0.5152	0.6573	2.0051	1.9929	0.4033	0.3354	0.7589	0.0069	0.0427	0.0606	0.0693	0.3769	1.4668	0.4033	0.0618	0.0153	0.0497	0.5716	0.5784	0.0304	0.8464	0.5359	0.0027	0.0190	0.0005	0.0004	0.2155	0.6810	0.0284	1.3779	0.5720	0.1823	0.7829	0.5261	2.2871	0.3426	0.4689	14.3669	1.1388	0.5824
Zn	0.0995	3.1140	2.6792	0.0467	0.1240	4.8539	1.5789	4.6565	0.9502	10.4174	16.7929	0.1037	0.5265	0.5840	0.0461	0.4405	4.7319	0.3789	2.7036	4.2003	0.0406	0.1491	1.0788	0.0066	1.2852	10.6383	6.1690	0.2852	8.5369	4.4013	3.4877	0.0663	1.4003	0.0127	0.0594	0.0094	0.5127	0.0005	0.0019	0.0537	0.6777	0.7255	0.0550
Zr	1.0612	4.6383	2.1795	0.0299	0.2331	0.3495	0.0065	1.7797	1.0923	0.5427	2.6739	0.0001	1.2553	0.0222	0.0410	0.0004	0.8828	0.0003	4.0716	0.0586	0.0435	0.0166	0.7765	0.3740	0.0449	1.6162	0.6488	1.0621	1.3263	0.6626	1.2829	3.9107	1.3068	1.2080	1.1429	0.0012	2.5329	1.3103	1.4227	0.0173	0.8407	0.1764	0.4616

PC44	PC45	PC46	PC47	PC48	PC49	PC50	PC51	PC52	PC53	PC54
0.0261	0.0215	0.0188	0.0148	0.0127	0.0121	0.0094	0.0077	0.0045	0.0020	0.0000
0.0486	0.0400	0.0349	0.0274	0.0237	0.0224	0.0174	0.0143	0.0084	0.0037	0.0000
99.8079	99.8478	99.8827	99.9101	99.9338	99.9562	99.9736	99.9880	99.9963	100.0000	100.0000

PC44	PC45	PC46	PC47	PC48	PC49	PC50	PC51	PC52	PC53	PC54	NA
-0.0176	-0.0331	-0.0105	-0.0149	-0.0184	-0.0072	-0.0020	-0.0030	-0.0015	-0.0047	-0.0971	
-0.0218	0.0411	-0.0354	0.0609	0.0158	-0.0254	-0.0285	-0.0259	-0.0284	-0.0264	-0.2028	
-0.0244	0.0202	-0.0094	0.0246	-0.0086	-0.0055	-0.0118	0.0031	0.0018	0.0002	-0.1155	
-0.0114	0.0753	-0.0285	0.0803	0.0173	0.0640	0.0037	0.0076	0.0007	-0.0146	-0.0876	
-0.0023	0.0230	0.0227	0.0175	0.0185	-0.0011	0.0109	0.0072	0.0081	0.0030	-0.1882	
-0.0062	0.0141	-0.0036	0.0070	0.0319	0.0121	0.0001	-0.0080	0.0107	0.0110	-0.1388	
0.0048	-0.0045	-0.0260	-0.0554	-0.0414	0.0039	0.0064	0.0367	-0.0222	-0.0074	-0.1370	
-0.0871	-0.1078	0.0573	-0.0489	-0.1044	-0.0593	-0.0304	0.0529	-0.0237	0.0044	-0.2612	
-0.0060	-0.0101	-0.0425	-0.0357	0.0018	0.0452	0.0241	0.0127	-0.0019	-0.0094	-0.1087	
-0.1743	-0.0387	0.0321	-0.0030	0.0145	-0.0350	-0.0088	0.0429	0.0011	0.0157	-0.1181	
0.0142	0.0161	-0.0081	0.0084	-0.0402	-0.0040	-0.0169	0.0023	-0.0084	-0.0123	-0.1046	
-0.0127	-0.0383	0.0249	-0.0560	-0.0025	0.0123	-0.0040	0.0074	0.0002	-0.0009	-0.0674	
-0.0090	0.0030	-0.0148	-0.0093	0.0128	0.0085	-0.0222	-0.0129	0.0075	0.0194	-0.1267	
-0.0214	-0.0387	0.0174	-0.0235	0.0004	0.0116	0.0059	0.0033	0.0116	0.0096	-0.1385	
-0.1609	-0.0755	-0.0228	0.3041	0.0694	-0.2944	0.2123	-0.7204	0.0266	-0.1390	-0.1128	
-0.1489	0.2187	0.2616	-0.4360	0.5299	-0.1167	-0.3783	0.0202	-0.0402	0.0334	-0.1085	
-0.2365	-0.0940	-0.0242	-0.1163	-0.0588	-0.1132	-0.0893	-0.0262	-0.0426	0.0057	-0.1021	
-0.0409	-0.0283	-0.0168	-0.0450	-0.0172	0.0360	0.0306	-0.0001	0.0046	0.0021	-0.1214	
0.4191	0.1573	-0.1909	0.0008	-0.0088	-0.1124	-0.0060	-0.0563	0.0646	0.0424	-0.1032	
-0.3858	-0.0648	-0.0315	0.1140	0.0068	0.4531	0.2202	0.2062	0.0093	-0.0301	-0.1186	
0.2628	-0.1612	0.1809	0.3799	0.2909	0.0080	-0.1346	0.0853	0.0437	-0.0154	-0.1221	
0.2596	0.2195	0.4885	0.0073	-0.5679	0.0636	-0.0001	0.0791	-0.0634	0.0139	-0.1103	
-0.0219	-0.2779	-0.0775	-0.0677	-0.2384	0.2708	-0.5294	-0.3000	0.1536	0.1415	-0.1448	
0.1846	0.2724	0.0198	0.1440	0.0566	0.3155	-0.1389	-0.1482	-0.4411	-0.3986	-0.1373	
-0.0007	-0.0174	0.0279	-0.0009	-0.0271	0.0228	-0.0076	0.0000	-0.0103	-0.0034	-0.1015	
-0.0257	0.0374	0.0634	0.1226	-0.0142	-0.0266	0.0099	-0.0362	0.0481	0.0056	-0.0926	
0.0794	0.1447	-0.2121	-0.0162	0.0533	-0.0375	-0.0191	-0.0496	0.0264	0.0070	-0.1361	
0.0186	0.0062	0.0125	0.0325	0.0206	-0.0186	-0.0164	-0.0209	-0.0015	-0.0015	-0.1913	
-0.0444	-0.0209	-0.0254	-0.0236	-0.0294	-0.0054	-0.0097	-0.0055	0.0049	0.0016	-0.1834	
-0.0634	-0.0344	0.1041	0.0192	0.1539	-0.1032	0.2658	0.2006	-0.0764	-0.0565	-0.1920	
-0.1047	-0.0343	-0.1027	0.0390	0.0545	-0.0426	-0.0007	0.0946	-0.0041	-0.0093	-0.0873	
0.1536	-0.0361	0.0783	-0.1521	-0.0427	-0.1413	0.0321	0.1140	0.7328	-0.3970	-0.1325	
-0.0002	0.0224	0.0178	0.0193	0.0187	-0.0118	0.0126	-0.0057	-0.0081	-0.0067	-0.0892	
0.0426	0.0110	0.0295	-0.0054	0.0170	0.0094	0.0263	0.0084	0.0123	-0.0002	-0.1136	
-0.0421	-0.0062	-0.0291	-0.0173	-0.0027	-0.0040	-0.0041	-0.0180	-0.0010	-0.0037	-0.1534	
0.1585	0.0888	0.1406	-0.0029	0.1029	0.0419	0.2445	-0.1245	0.0877	0.7691	-0.1377	
-0.0439	0.0950	0.1896	0.0469	0.0684	-0.1673	0.2718	0.1642	-0.1056	-0.1042	-0.1110	
0.1017	0.0293	-0.0060	0.0053	0.0920	0.0385	0.0058	-0.0226	0.0217	0.0308	-0.2282	
-0.0504	-0.0311	0.0193	0.0336	-0.0218	-0.0296	-0.0111	-0.0009	0.0136	0.0057	-0.2083	
0.0509	0.0613	-0.0187	0.0076	0.0185	0.0299	0.0084	0.0140	0.0026	0.0012	-0.0631	
0.0881	-0.3099	-0.1497	-0.0026	-0.1833	-0.5251	-0.2129	0.2538	-0.3840	0.0612	-0.1275	
0.0243	0.0163	0.0229	0.0237	0.0214	0.0279	0.0050	-0.0050	-0.0040	-0.0066	-0.1200	
0.0430	0.0048	-0.0123	0.0061	0.0117	0.0534	0.0290	-0.0106	-0.0075	-0.0202	-0.1535	
0.2382	0.0201	-0.2181	-0.1841	0.1981	0.2285	-0.0112	-0.0188	-0.0403	-0.0133	-0.1121	
-0.0779	-0.0172	-0.0727	0.0111	-0.0355	-0.0204	0.0120	-0.0012	0.0124	0.0098	-0.0882	
-0.2486	-0.2062	0.3141	0.0071	-0.0693	0.1530	-0.0595	-0.0117	-0.0051	0.0183	-0.1114	
-0.0358	0.0166	0.0369	-0.0032	-0.0854	-0.0756	-0.0218	-0.0306	-0.0106	-0.0160	-0.1062	
0.0197	0.0077	0.0127	-0.0012	0.0025	0.0189	0.0214	-0.0048	0.0102	-0.0092	-0.2264	
-0.0325	0.0236	-0.0545	0.0126	0.0138	-0.0241	0.0101	0.0004	-0.0207	-0.0231	-0.0911	
0.0311	0.0134	0.0040	0.0230	0.0000	-0.0185	-0.0016	0.0078	0.0105	-0.0011	-0.1329	
-0.1491	0.2812	-0.4011	0.4297	-0.0487	0.0080	-0.2064	0.3258	0.1906	0.1471	-0.1081	
0.2651	-0.4966	-0.2256	-0.2463	0.0402	0.2102	0.3104	0.0539	-0.0989	-0.0592	-0.1047	
0.0404	-0.0137	0.0394	0.0153	-0.0040	-0.0084	-0.0019	-0.0175	0.0018	0.0046	-0.0957	
-0.1782	0.3738	-0.2742	-0.4127	-0.2768	-0.0559	0.1894	-0.1265	-0.0571	-0.0094	-0.1301	

PC44	PC45	PC46	PC47	PC48	PC49	PC50	PC51	PC52	PC53	PC54	NA
-0.0028	-0.0049	-0.0014	-0.0018	-0.0021	-0.0008	-0.0002	-0.0003	-0.0001	-0.0002	0.0000	
-0.0035	0.0060	-0.0049	0.0074	0.0018	-0.0028	-0.0028	-0.0023	-0.0019	-0.0012	0.0000	
-0.0040	0.0030	-0.0013	0.0030	-0.0010	-0.0006	-0.0011	0.0003	0.0001	0.0000	0.0000	
-0.0018	0.0111	-0.0039	0.0098	0.0020	0.0070	0.0004	0.0007	0.0000	-0.0006	0.0000	
-0.0004	0.0034	0.0031	0.0021	0.0021	-0.0001	0.0011	0.0006	0.0005	0.0001	0.0000	
-0.0010	0.0021	-0.0005	0.0009	0.0036	0.0013	0.0000	-0.0007	0.0007	0.0005	0.0000	
0.0008	-0.0007	-0.0036	-0.0067	-0.0047	0.0004	0.0006	0.0032	-0.0015	-0.0003	0.0000	
-0.0141	-0.0158	0.0079	-0.0059	-0.0118	-0.0065	-0.0029	0.0046	-0.0016	0.0002	0.0000	
-0.0010	-0.0015	-0.0058	-0.0043	0.0002	0.0050	0.0023	0.0011	-0.0001	-0.0004	0.0000	
-0.0282	-0.0057	0.0044	-0.0004	0.0016	-0.0038	-0.0009	0.0038	0.0001	0.0007	0.0000	
0.0023	0.0024	-0.0011	0.0010	-0.0045	-0.0004	-0.0016	0.0002	-0.0006	-0.0005	0.0000	
-0.0021	-0.0056	0.0034	-0.0068	-0.0003	0.0014	-0.0004	0.0006	0.0000	0.0000	0.0000	
-0.0015	0.0004	-0.0020	-0.0011	0.0014	0.0009	-0.0022	-0.0011	0.0005	0.0009	0.0000	
-0.0035	-0.0057	0.0024	-0.0029	0.0000	0.0013	0.0006	0.0003	0.0008	0.0004	0.0000	
-0.0260	-0.0111	-0.0031	0.0369	0.0078	-0.0324	0.0206	-0.0632	0.0018	-0.0062	0.0000	
-0.0241	0.0321	0.0359	-0.0530	0.0598	-0.0128	-0.0366	0.0018	-0.0027	0.0015	0.0000	
-0.0382	-0.0138	-0.0033	-0.0141	-0.0066	-0.0124	-0.0086	-0.0023	-0.0029	0.0003	0.0000	
-0.0066	-0.0042	-0.0023	-0.0055	-0.0019	0.0040	0.0030	0.0000	0.0003	0.0001	0.0000	
0.0678	0.0231	-0.0262	0.0001	-0.0010	-0.0124	-0.0006	-0.0049	0.0043	0.0019	0.0000	
-0.0624	-0.0095	-0.0043	0.0139	0.0008	0.0498	0.0213	0.0181	0.0006	-0.0013	0.0000	
0.0425	-0.0237	0.0248	0.0462	0.0328	0.0009	-0.0130	0.0075	0.0029	-0.0007	0.0000	
0.0420	0.0322	0.0669	0.0009	-0.0641	0.0070	0.0000	0.0069	-0.0043	0.0006	0.0000	
-0.0035	-0.0408	-0.0106	-0.0082	-0.0269	0.0298	-0.0513	-0.0263	0.0103	0.0063	0.0000	
0.0298	0.0400	0.0027	0.0175	0.0064	0.0347	-0.0135	-0.0130	-0.0296	-0.0177	0.0000	
-0.0001	-0.0026	0.0038	-0.0001	-0.0031	0.0025	-0.0007	0.0000	-0.0007	-0.0002	0.0000	
-0.0042	0.0055	0.0087	0.0149	-0.0016	-0.0029	0.0010	-0.0032	0.0032	0.0003	0.0000	
0.0128	0.0212	-0.0291	-0.0020	0.0060	-0.0041	-0.0019	-0.0044	0.0018	0.0003	0.0000	
0.0030	0.0009	0.0017	0.0040	0.0023	-0.0020	-0.0016	-0.0018	-0.0001	-0.0001	0.0000	
-0.0072	-0.0031	-0.0035	-0.0029	-0.0033	-0.0006	-0.0009	-0.0005	0.0003	0.0001	0.0000	
-0.0103	-0.0050	0.0143	0.0023	0.0174	-0.0113	0.0257	0.0176	-0.0051	-0.0025	0.0000	
-0.0169	-0.0050	-0.0141	0.0047	0.0061	-0.0047	-0.0001	0.0083	-0.0003	-0.0004	0.0000	
0.0248	-0.0053	0.0107	-0.0185	-0.0048	-0.0155	0.0031	0.0100	0.0492	-0.0176	0.0000	
0.0000	0.0033	0.0024	0.0024	0.0021	-0.0013	0.0012	-0.0005	-0.0005	-0.0003	0.0000	
0.0069	0.0016	0.0040	-0.0007	0.0019	0.0010	0.0025	0.0007	0.0008	0.0000	0.0000	
-0.0068	-0.0009	-0.0040	-0.0021	-0.0003	-0.0004	-0.0004	-0.0016	-0.0001	-0.0002	0.0000	
0.0256	0.0130	0.0193	-0.0004	0.0116	0.0046	0.0237	-0.0109	0.0059	0.0342	0.0000	

-0.0071	0.0139	0.0260	0.0057	0.0077	-0.0184	0.0263	0.0144	-0.0071	-0.0046	0.0000
0.0164	0.0043	-0.0008	0.0006	0.0104	0.0042	0.0006	-0.0020	0.0015	0.0014	0.0000
-0.0082	-0.0046	0.0026	0.0041	-0.0025	-0.0033	-0.0011	-0.0001	0.0009	0.0003	0.0000
0.0082	0.0090	-0.0026	0.0009	0.0021	0.0033	0.0008	0.0012	0.0002	0.0001	0.0000
0.0142	-0.0455	-0.0205	-0.0003	-0.0207	-0.0577	-0.0206	0.0223	-0.0258	0.0027	0.0000
0.0039	0.0024	0.0031	0.0029	0.0024	0.0031	0.0005	-0.0004	-0.0003	-0.0003	0.0000
0.0069	0.0007	-0.0017	0.0007	0.0013	0.0059	0.0028	-0.0009	-0.0005	-0.0009	0.0000
0.0385	0.0029	-0.0299	-0.0224	0.0224	0.0251	-0.0011	-0.0016	-0.0027	-0.0006	0.0000
-0.0126	-0.0025	-0.0100	0.0014	-0.0040	-0.0022	0.0012	-0.0001	0.0008	0.0004	0.0000
-0.0402	-0.0302	0.0430	0.0009	-0.0078	0.0168	-0.0058	-0.0010	-0.0003	0.0008	0.0000
-0.0058	0.0024	0.0051	-0.0004	-0.0096	-0.0083	-0.0021	-0.0027	-0.0007	-0.0007	0.0000
0.0032	0.0011	0.0017	-0.0002	0.0003	0.0021	0.0021	-0.0004	0.0007	-0.0004	0.0000
-0.0053	0.0035	-0.0075	0.0015	0.0016	-0.0026	0.0010	0.0000	-0.0014	-0.0010	0.0000
0.0050	0.0020	0.0005	0.0028	0.0000	-0.0020	-0.0002	0.0007	0.0007	0.0000	0.0000
-0.0241	0.0413	-0.0550	0.0522	-0.0055	0.0009	-0.0200	0.0286	0.0128	0.0065	0.0000
0.0429	-0.0728	-0.0309	-0.0299	0.0045	0.0231	0.0301	0.0047	-0.0066	-0.0026	0.0000
0.0065	-0.0020	0.0054	0.0019	-0.0005	-0.0009	-0.0002	-0.0015	0.0001	0.0002	0.0000
-0.0288	0.0548	-0.0376	-0.0502	-0.0312	-0.0061	0.0183	-0.0111	-0.0038	-0.0004	0.0000

PC44	PC45	PC46	PC47	PC48	PC49	PC50	PC51	PC52	PC53	PC54	NA
0.0008	0.0024	0.0002	0.0003	0.0004	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	
0.0012	0.0036	0.0024	0.0055	0.0003	0.0008	0.0008	0.0005	0.0004	0.0001	0.0000	
0.0016	0.0009	0.0002	0.0009	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	
0.0003	0.0122	0.0015	0.0095	0.0004	0.0050	0.0000	0.0000	0.0000	0.0000	0.0000	
0.0000	0.0011	0.0010	0.0005	0.0004	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	
0.0001	0.0004	0.0000	0.0001	0.0013	0.0002	0.0000	0.0000	0.0001	0.0000	0.0000	
0.0001	0.0000	0.0013	0.0045	0.0022	0.0000	0.0000	0.0010	0.0002	0.0000	0.0000	
0.0199	0.0251	0.0062	0.0035	0.0139	0.0043	0.0009	0.0022	0.0003	0.0000	0.0000	
0.0001	0.0002	0.0034	0.0019	0.0000	0.0025	0.0005	0.0001	0.0000	0.0000	0.0000	
0.0796	0.0032	0.0019	0.0000	0.0003	0.0015	0.0001	0.0014	0.0000	0.0000	0.0000	
0.0005	0.0006	0.0001	0.0001	0.0021	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	
0.0004	0.0032	0.0012	0.0046	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	
0.0002	0.0000	0.0004	0.0001	0.0002	0.0001	0.0005	0.0001	0.0000	0.0001	0.0000	
0.0012	0.0032	0.0006	0.0008	0.0000	0.0002	0.0000	0.0000	0.0001	0.0000	0.0000	
0.0679	0.0123	0.0010	0.1369	0.0062	0.1051	0.0424	0.4010	0.0003	0.0038	0.0000	
0.0581	0.1032	0.1289	0.2815	0.3587	0.0165	0.1346	0.0003	0.0007	0.0002	0.0000	
0.1467	0.0191	0.0011	0.0200	0.0044	0.0155	0.0075	0.0005	0.0008	0.0000	0.0000	
0.0044	0.0017	0.0005	0.0030	0.0004	0.0016	0.0009	0.0000	0.0000	0.0000	0.0000	
0.4607	0.0534	0.0686	0.0000	0.0001	0.0153	0.0000	0.0025	0.0019	0.0004	0.0000	
0.3904	0.0091	0.0019	0.0193	0.0001	0.2488	0.0456	0.0329	0.0000	0.0002	0.0000	
0.1811	0.0561	0.0616	0.2137	0.1081	0.0001	0.0170	0.0056	0.0009	0.0000	0.0000	
0.1768	0.1040	0.4495	0.0001	0.4118	0.0049	0.0000	0.0048	0.0018	0.0000	0.0000	
0.0013	0.1667	0.0113	0.0068	0.0726	0.0888	0.2636	0.0695	0.0107	0.0040	0.0000	
0.0894	0.1602	0.0007	0.0307	0.0041	0.1206	0.0182	0.0170	0.0880	0.0315	0.0000	
0.0000	0.0007	0.0015	0.0000	0.0009	0.0006	0.0001	0.0000	0.0000	0.0000	0.0000	
0.0017	0.0030	0.0076	0.0223	0.0003	0.0009	0.0001	0.0010	0.0010	0.0000	0.0000	
0.0166	0.0452	0.0847	0.0004	0.0036	0.0017	0.0003	0.0019	0.0003	0.0000	0.0000	
0.0009	0.0001	0.0003	0.0016	0.0005	0.0004	0.0003	0.0003	0.0000	0.0000	0.0000	
0.0052	0.0009	0.0012	0.0008	0.0011	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	
0.0105	0.0026	0.0204	0.0005	0.0302	0.0129	0.0664	0.0311	0.0026	0.0006	0.0000	
0.0287	0.0025	0.0199	0.0023	0.0038	0.0022	0.0000	0.0069	0.0000	0.0000	0.0000	
0.0619	0.0028	0.0116	0.0342	0.0023	0.0242	0.0010	0.0100	0.2429	0.0312	0.0000	
0.0000	0.0011	0.0006	0.0006	0.0004	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000	
0.0048	0.0003	0.0016	0.0000	0.0004	0.0001	0.0007	0.0001	0.0001	0.0000	0.0000	
0.0046	0.0001	0.0016	0.0004	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	
0.0659	0.0170	0.0373	0.0000	0.0135	0.0021	0.0562	0.0120	0.0035	0.1172	0.0000	
0.0051	0.0195	0.0677	0.0033	0.0060	0.0339	0.0695	0.0208	0.0050	0.0022	0.0000	
0.0271	0.0019	0.0001	0.0000	0.0108	0.0018	0.0000	0.0004	0.0002	0.0002	0.0000	
0.0067	0.0021	0.0007	0.0017	0.0006	0.0011	0.0001	0.0000	0.0001	0.0000	0.0000	
0.0068	0.0081	0.0007	0.0001	0.0004	0.0011	0.0001	0.0002	0.0000	0.0000	0.0000	
0.0204	0.2073	0.0422	0.0000	0.0429	0.3342	0.0426	0.0498	0.0667	0.0007	0.0000	
0.0015	0.0006	0.0010	0.0008	0.0006	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	
0.0048	0.0000	0.0003	0.0001	0.0002	0.0035	0.0008	0.0001	0.0000	0.0001	0.0000	
0.1488	0.0009	0.0896	0.0502	0.0501	0.0633	0.0001	0.0003	0.0007	0.0000	0.0000	
0.0159	0.0006	0.0100	0.0002	0.0016	0.0005	0.0001	0.0000	0.0001	0.0000	0.0000	
0.1622	0.0918	0.1858	0.0001	0.0061	0.0284	0.0033	0.0001	0.0000	0.0001	0.0000	
0.0034	0.0006	0.0026	0.0000	0.0093	0.0069	0.0004	0.0007	0.0001	0.0001	0.0000	
0.0010	0.0001	0.0003	0.0000	0.0000	0.0004	0.0004	0.0000	0.0000	0.0000	0.0000	
0.0028	0.0012	0.0056	0.0002	0.0002	0.0007	0.0001	0.0000	0.0002	0.0001	0.0000	
0.0025	0.0004	0.0000	0.0008	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	
0.0583	0.1707	0.3029	0.2735	0.0030	0.0001	0.0401	0.0820	0.0164	0.0043	0.0000	
0.1844	0.5323	0.0959	0.0898	0.0021	0.0535	0.0906	0.0022	0.0044	0.0007	0.0000	
0.0043	0.0004	0.0029	0.0003	0.0000	0.0001	0.0000	0.0002	0.0000	0.0000	0.0000	
0.0833	0.3016	0.1416	0.2523	0.0979	0.0038	0.0337	0.0124	0.0015	0.0000	0.0000	

PC44	PC45	PC46	PC47	PC48	PC49	PC50	PC51	PC52	PC53	PC54	NA
0.0309	0.1097	0.0110	0.0223	0.0338	0.0052	0.0004	0.0009	0.0002	0.0022	0.9434	
0.0476	0.1688	0.1254	0.3713	0.0251	0.0648	0.0813	0.0671	0.0807	0.0698	4.1132	
0.0597	0.0409	0.0087	0.0605	0.0074	0.0031	0.0140	0.0010	0.0003	0.0000	1.3351	
0.0130	0.5675	0.0814	0.6447	0.0300	0.4096	0.0014	0.0057	0.0000	0.0213	0.7676	
0.0005	0.0528	0.0517	0.0308	0.0344	0.0001	0.0119	0.0051	0.0066	0.0009	3.5408	
0.0038	0.0199	0.0013	0.0049	0.1018	0.0145	0.0000	0.0063	0.0115	0.0120	1.9274	
0.0023	0.0020	0.0677	0.3071	0.1712	0.0015	0.0041	0.1349	0.0493	0.0055	1.8769	
0.7592	1.1611	0.3286	0.2395	1.0906	0.3517	0.0921	0.2797	0.0562	0.0019	6.8223	
0.0036	0.0102	0.1805	0.1278	0.0003	0.2043	0.0579	0.0162	0.0004	0.0089	1.1826	
3.0365	0.1500	0.1033	0.0009	0.0211	0.1225	0.0078	0.1841	0.0001	0.0246	1.3952	
0.0202	0.0260	0.0066	0.0071	0.1616	0.0016	0.0286	0.0005	0.0071	0.0151	1.0934	
0.0162	0.1464	0.0621	0.3133	0.0006	0.0151	0.0016	0.0054	0.0000	0.0001	0.4549	
0.0081	0.0009	0.0220	0.0087	0.0164	0.0072	0.0493	0.0166	0.0057	0.0377	1.6062	
0.0456	0.1501	0.0302	0.0553	0.0000	0.0133	0.0035	0.0011	0.0134	0.0092	1.9169	
2.5873	0.5707	0.0519	9.2466	0.4819	8.6689	4.5073	51.8954	0.0709	1.9327	1.2719	
2.2157	4.7831	6.8451	19.0082	28.0823	1.3609	14.3088	0.0406	0.1616	0.1119	1.1774	
5.5937	0.8839	0.0586	1.3516	0.3452	1.2814	0.7967	0.0686	0.1811	0.0033	1.0425	
0.1676	0.0802	0.0281	0.2025	0.0296	0.1295	0.0938	0.0000	0.0022	0.0004	1.4728	
17.5645	2.4729	3.6424	0.0001	0.0077	1.2627	0.0036	0.3172	0.4167	0.1794	1.0645	
14.8834	0.4197	0.0990	1.3005	0.0047	20.5304	4.8495	4.2536	0.0086	0.0907	1.4059	
6.9038	2.5997	3.2717	14.4292	8.4639	0.0064	1.8108	0.7277	0.1911	0.0238	1.4914	
6.7403	4.8192	23.8631	0.0054	32.2470	0.4043	0.0000	0.6250	0.4023	0.0193	1.2169	
0.0479	7.7246	0.5999	0.4579	5.6852	7.3309	28.0255	9.0012	2.3600	2.0030	2.0959	
3.4074	7.4214	0.0392	2.0729	0.3199	9.9540	1.9304	2.1970	19.4569	15.8918	1.8853	
0.0001	0.0303	0.0781	0.0001	0.0735	0.0520	0.0058	0.0000	0.0106	0.0012	1.0305	
0.0662	0.1396	0.4018	1.5030	0.0202	0.0705	0.0098	0.1311	0.2316	0.0032	0.8580	

0.6312	2.0925	4.4985	0.0261	0.2837	0.1406	0.0365	0.2459	0.0696	0.0049	1.8510
0.0345	0.0038	0.0156	0.1058	0.0423	0.0346	0.0269	0.0437	0.0002	0.0002	3.6589
0.1973	0.0437	0.0646	0.0557	0.0867	0.0029	0.0093	0.0030	0.0024	0.0003	3.3636
0.4019	0.1184	1.0834	0.0369	2.3685	1.0656	7.0649	4.0234	0.5835	0.3188	3.6848
1.0961	0.1178	1.0556	0.1522	0.2967	0.1811	0.0000	0.8944	0.0017	0.0087	0.7625
2.3590	0.1306	0.6136	2.3124	0.1826	1.9977	0.1031	1.3006	53.7005	15.7574	1.7558
0.0000	0.0503	0.0318	0.0374	0.0351	0.0139	0.0160	0.0032	0.0066	0.0045	0.7959
0.1812	0.0121	0.0868	0.0029	0.0287	0.0089	0.0693	0.0070	0.0152	0.0000	1.2904
0.1770	0.0039	0.0845	0.0299	0.0007	0.0016	0.0016	0.0323	0.0001	0.0014	2.3545
2.5134	0.7881	1.9780	0.0009	1.0591	0.1758	5.9790	1.5496	0.7696	59.1558	1.8958
0.1930	0.9018	3.5929	0.2202	0.4680	2.7989	7.3852	2.6971	1.1162	1.0862	1.2310
1.0347	0.0857	0.0036	0.0028	0.8462	0.1483	0.0034	0.0510	0.0470	0.0952	5.2092
0.2544	0.0970	0.0371	0.1127	0.0476	0.0878	0.0123	0.0001	0.0186	0.0033	4.3382
0.2595	0.3761	0.0349	0.0058	0.0342	0.0893	0.0071	0.0196	0.0007	0.0001	0.3987
0.7763	9.6052	2.2417	0.0007	3.3601	27.5764	4.5336	6.4421	14.7447	0.3749	1.6262
0.0589	0.0266	0.0524	0.0561	0.0458	0.0781	0.0025	0.0025	0.0016	0.0044	1.4396
0.1845	0.0023	0.0151	0.0037	0.0138	0.2856	0.0839	0.0113	0.0056	0.0407	2.3576
5.6724	0.0402	4.7568	3.3885	3.9256	5.2226	0.0127	0.0353	0.1627	0.0176	1.2577
0.6068	0.0296	0.5286	0.0124	0.1263	0.0414	0.0144	0.0001	0.0153	0.0097	0.7785
6.1821	4.2512	9.8638	0.0050	0.4805	2.3413	0.3544	0.0137	0.0026	0.0336	1.2412
0.1283	0.0275	0.1364	0.0010	0.7288	0.5711	0.0474	0.0935	0.0112	0.0255	1.1282
0.0386	0.0060	0.0162	0.0002	0.0006	0.0358	0.0456	0.0023	0.0104	0.0084	5.1243
0.1054	0.0556	0.2966	0.0158	0.0191	0.0580	0.0103	0.0000	0.0427	0.0535	0.8296
0.0968	0.0179	0.0016	0.0529	0.0000	0.0344	0.0003	0.0060	0.0109	0.0001	1.7666
2.2235	7.9089	16.0844	18.4663	0.2371	0.0065	4.2601	10.6173	3.6310	2.1641	1.1686
7.0297	24.6641	5.0912	6.0649	0.1619	4.4165	9.6367	0.2907	0.9775	0.3500	1.0954
0.1631	0.0187	0.1549	0.0235	0.0016	0.0071	0.0004	0.0307	0.0003	0.0021	0.9150
3.1752	13.9731	7.5198	17.0353	7.6634	0.3120	3.5873	1.6014	0.3265	0.0088	1.6923

Table 9
Bancroft Lake Sediment Chemistry XRF & Aqua Regia Digestion

Eigenvalue

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43	PC44	PC45
λ	11.7717	7.6052	3.7103	3.2537	2.3620	2.2572	2.0150	1.1335	1.0127	0.8884	0.7338	0.6982	0.6327	0.6179	0.5226	0.4996	0.4221	0.4098	0.3736	0.3450	0.3318	0.3143	0.2846	0.2679	0.2325	0.2245	0.1978	0.1814	0.1762	0.1574	0.1495	0.1368	0.1331	0.1216	0.1148	0.1097	0.0890	0.0743	0.0677	0.0607	0.0572	0.0538	0.0389	0.0210	0.0000
λ%	26.2400	16.9526	8.2706	7.2528	5.2651	5.0314	4.4916	2.5267	2.2573	1.9802	1.6358	1.5564	1.4104	1.3774	1.1649	1.1137	0.9409	0.9135	0.8328	0.7690	0.7396	0.7006	0.6343	0.5972	0.5183	0.5005	0.4409	0.4044	0.3928	0.3509	0.3333	0.3049	0.2968	0.2711	0.2558	0.2445	0.1985	0.1656	0.1508	0.1354	0.1275	0.1200	0.0866	0.0468	0.0000
Σλ%	26.2400	43.1926	51.4632	58.7159	63.9810	69.0124	73.5040	76.0307	78.2880	80.2683	81.9040	83.4604	84.8708	86.2483	87.4131	88.5268	89.4677	90.3813	91.2141	91.9831	92.7227	93.4233	94.0576	94.6548	95.1731	95.6736	96.1144	96.5189	96.9117	97.2625	97.5958	97.9007	98.1975	98.4685	98.7243	98.9688	99.1673	99.3329	99.4837	99.6191	99.7466	99.8666	99.9532	100.0000	100.0000

Eigenvectors

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43	PC44	PC45
Si	-0.1445	-0.1085	0.0786	0.2350	-0.0757	0.2296	-0.0032	-0.1316	0.2107	-0.0214	0.0412	-0.1484	0.1462	-0.4001	0.0684	-0.0544	0.1021	-0.0443	-0.0980	-0.0260	0.4239	0.0829	0.1604	-0.1477	-0.1808	-0.0945	0.0977	0.0813	0.1919	0.2120	0.0608	-0.1279	-0.2208	-0.1259	-0.2081	-0.0212	0.0705	0.0414	0.1183	0.0979	0.0258	0.0230	0.0136	0.0164	0.1265
LOI	0.2550	-0.0596	-0.0961	0.0298	-0.0794	0.1323	-0.0507	-0.0233	-0.0412	-0.0881	-0.1133	0.0206	-0.0262	0.0731	0.0147	-0.0519	-0.0376	0.0604	0.0135	-0.0951	0.1989	0.0020	-0.0532	-0.0482	-0.0171	0.0060	0.0547	-0.2199	-0.0891	-0.1980	-0.0826	-0.1708	0.0639	0.1085	0.0875	0.1626	-0.0487	-0.0739	-0.2364	0.6498	0.2969	-0.0437	0.0950	0.0874	0.1620
Ag	0.1018	-0.1761	0.1068	-0.0589	0.0992	0.1816	0.0350	0.0812	-0.4019	0.3380	0.0009	0.0285	-0.0159	-0.2852	-0.0157	-0.0114	0.1377	0.0545	-0.1698	-0.2635	-0.3350	0.4485	-0.0698	0.1578	-0.0237	-0.1218	0.0243	0.0068	0.1342	0.0122	0.0498	-0.0307	0.0437	0.0356	-0.0439	0.0551	0.0447	0.0875	-0.0408	0.0246	0.0498	0.0374	-0.0106	0.0229	0.0955
Al	-0.1898	-0.2192	0.0545	-0.0525	0.0215	0.1484	-0.1305	0.0625	-0.0088	-0.0272	-0.0879	0.0933	0.0089	0.0923	0.0079	-0.0140	0.0164	0.0634	0.0277	0.1218	0.1577	-0.0472	0.0751	0.1235	-0.0395	0.0801	0.1531	-0.1139	0.0277	0.0325	0.0621	0.1089	0.0075	0.3103	0.0393	0.0798	-0.2731	0.2701	-0.0988	-0.2490	0.3816	0.2232	-0.4142	-0.0797	0.1181
As	0.0864	0.0778	0.2654	-0.1420	0.1673	-0.1276	0.1257	0.0804	0.0019	-0.2073	0.1651	-0.1628	0.4577	0.2086	0.0107	0.1509	0.5202	0.0681	-0.0836	0.0680	-0.0088	-0.0944	-0.0987	0.1053	-0.1570	-0.1794	0.0099	0.0703	0.0067	-0.1123	0.0359	-0.0134	0.0157	0.0372	-0.0509	0.0530	-0.0234	-0.0715	-0.0067	0.0205	0.0286	0.0251	0.0185	0.0070	0.2214
Au	0.1259	0.0831	0.0545	0.0516	-0.1169	0.0637	0.1838	-0.2219	0.3287	0.4653	0.0229	0.4799	0.1255	0.1689	-0.0899	-0.1158	0.1278	-0.2260	0.1750	0.1861	0.0323	0.2024	-0.0894	-0.0026	-0.0289	-0.0032	0.0701	0.0606	-0.0566	-0.0780	-0.0104	0.0588	-0.0042	-0.0345	0.0445	-0.0147	-0.0265	0.0158	0.0109	-0.0291	0.0116	0.0214	0.0459	0.0293	0.1895
Ba	0.0569	-0.0761	-0.0235	-0.3244	-0.3126	0.0473	-0.1899	0.1942	0.1080	0.1080	-0.2620	0.0434	0.0030	-0.0528	0.0060	0.2064	0.0763	0.1900	0.1641	-0.1391	0.1049	-0.0221	0.0530	-0.1647	0.1941	-0.2513	-0.2994	0.3218	-0.1275	-0.0528	0.1202	-0.2396	-0.0628	0.0075	0.1049	0.0423	-0.0515	0.0026	0.0913	-0.0993	-0.0243	0.0410	-0.0023	-0.0203	0.1312
Be	-0.0907	-0.2211	-0.0033	0.0924	0.0314	-0.2031	-0.1774	0.0149	-0.0704	0.0025	-0.3192	0.1258	-0.0099	0.4230	-0.0049	0.1590	-0.0620	-0.2832	-0.2877	-0.1610	-0.0323	0.0381	0.1838	0.1329	-0.1467	0.0676	0.1850	0.1001	0.0715	0.0510	0.0460	-0.2819	-0.1368	-0.0498	-0.0336	-0.2434	-0.0180	-0.0732	0.0466	0.0489	-0.0887	-0.0017	0.0728	-0.0436	0.1422
Bi	0.1583	0.0055	0.2789	-0.1016	0.0201	-0.0547	-0.0723	0.0737	-0.0442	0.1242	-0.0655	0.0455	0.2454	0.0439	-0.0111	-0.6109	-0.1127	0.0816	-0.3253	-0.1078	0.0903	-0.2328	0.1398	-0.1042	0.2628	0.0749	-0.1015	-0.0843	-0.0463	0.1545	0.0462	0.0539	0.1145	0.0095	0.0186	-0.0779	0.0645	0.0350	0.0378	-0.0136	-0.0909	-0.0546	-0.0401	0.0050	0.1463
Ca	0.1960	0.1665	-0.1013	-0.1074	-0.1994	-0.0024	-0.0703	0.0991	0.0824	-0.1352	-0.0867	0.1085	-0.0577	-0.0934	0.1048	0.0539	0.0192	-0.1286	-0.0151	-0.1305	-0.1081	-0.0865	-0.0147	0.0283	-0.1111	0.0176	0.1450	-0.1815	-0.0158	0.0682	-0.2886	0.0213	0.0086	0.1133	-0.4177	0.2922	-0.0861	0.2798	0.0234	-0.1016	-0.3153	-0.1813	-0.0247	-0.0804	0.2624
Cd	0.1439	-0.2008	0.1033	-0.0156	0.2487	0.1064	-0.0704	0.0173	0.1440	-0.0495	-0.1239	-0.0528	-0.2479	-0.0778	0.0740	-0.0752	0.1684	-0.0036	0.1076	0.1495	-0.1337	-0.1286	-0.1839	-0.1794	0.2055	0.0113	0.3645	-0.2696	0.0556	-0.1774	0.1649	-0.3099	0.0265	-0.2546	0.0528	0.0571	0.0834	-0.1156	0.1230	-0.1891	-0.0696	0.0385	-0.0493	0.0004	0.0985
Ce	-0.2063	-0.2142	0.0342	0.0906	-0.0407	-0.0440	0.0670	0.0868	0.0406	-0.0868	-0.0565	0.0094	0.0274	-0.1070	0.0253	-0.0051	-0.0501	0.0368	-0.1034	0.0263	-0.0174	-0.0059	-0.2110	0.0695	0.0240	-0.0227	0.0480	0.0156	-0.2847	0.0019	-0.0021	0.1565	-0.2162	-0.1169	0.1995	0.0295	-0.1582	0.1196	-0.2622	-0.0123	-0.2971	0.0233	0.0367	0.6003	0.1650
Co	-0.1725	-0.1077	-0.0745	-0.2393	0.0903	0.1038	0.1081	0.0173	0.1298	-0.2001	0.2228	0.1708	-0.0014	0.0666	-0.2286	0.0100	-0.1374	0.0902	0.0652	-0.0928	0.1098	0.1472	0.1624	0.3938	0.4068	-0.0918	-0.0214	-0.2033	0.1277	-0.1037	0.1452	0.0586	-0.1592	-0.0508	-0.2190	0.0013	-0.0450	-0.1112	0.1243	0.0699	-0.0620	-0.0875	0.1190	-0.0035	0.1176
Cr	-0.1602	-0.0020	-0.0454	0.0504	-0.1160	0.3159	-0.0450	0.3786	0.0328	-0.0156	0.1707	-0.0238	-0.0723	0.3487	0.2532	-0.2326	-0.0955	0.1036	0.0108	0.1600	-0.1325	0.1692	-0.0175	-0.1111	-0.3298	-0.1996	-0.2087	-0.1728	0.1038	-0.0141	-0.0241	-0.0353	0.0211	-0.1428	0.0369	-0.0820	-0.1021	-0.0597	0.1554	0.0084	-0.0444	-0.1354	-0.0301	0.0270	0.0820
Cs	0.0096	0.1559	-0.0955	-0.0145	0.3158	-0.0234	-0.4106	-0.0431	-0.1091	0.0151	-0.0388	-0.0147	0.2294	-0.0008	0.0583	-0.0484	-0.2483	0.1054	0.2256	-0.1399	0.2466	0.2151	-0.0763	0.0188	-0.1268	-0.1991	0.2348	0.0465	-0.2745	-0.1365	-0.0318	0.1648	0.1017	-0.2200	-0.0552	-0.0875	0.0682	-0.0059	-0.0653	-0.1679	0.0058	-0.0420	0.0590	-0.0913	0.1075
Cu	0.1555	-0.0635	-0.2296	0.0344	0.1433	0.2331	0.1326	-0.1502	-0.1983	0.1423	-0.0373	0.0497	0.2295	-0.0200	-0.0258	0.2205	-0.1838	0.0785	-0.0159	0.0784	-0.1618	-0.4208	0.0908	-0.1106	0.0724	-0.1339	0.0204	0.0973	0.2009	-0.0400	-0.1499	0.0982	-0.0055	-0.2610	-0.0656	-0.1552	-0.3255	0.0599	0.1286	0.0622	0.0627	-0.0370	-0.0783	0.1018	0.1077
Fe	-0.1813	0.0274	-0.1073	-0.2558	-0.0276	-0.1509	0.2443	0.0107	-0.1266	-0.1127	-0.0571	-0.0175	-0.1031	0.0159	0.0252	-0.2134	-0.0622	-0.1510	0.0198	-0.1136	0.1658	-0.0190	-0.2208	0.0377	-0.1300	0.1677	0.0206	0.2812	0.2175	-0.1786	0.1356	0.0268	0.2019	-0.3186	0.0959	0.1991	0.0144	0.3074	0.2219	0.1096	0.0644	0.0831	-0.0047	-0.0195	0.1319
Ga	-0.1908	0.0031	0.2263	-0.0426	-0.0450	0.2190	-0.1249	-0.1504	-0.2071	-0.1094	0.0364	0.0983	-0.1360	0.0915	-0.1749	0.0794	0.1096	-0.0691	0.0527	-0.1612	0.0698	-0.0109	0.0115	-0.3367	0.0064	0.0352	0.1869	0.0991	0.1446	0.1209	0.0257	0.2785	0.1647	0.1727	0.1952	0.1734	-0.1863	-0.2802	0.0711	-0.0479	-0.1143	-0.2492	0.1933	0.0326	0.0987
Hg	0.1796	-0.1701	0.0377	0.0209	0.0112	0.2323	0.0948	-0.1148	-0.0022	-0.0421	-0.1379	-0.0251	0.0071	0.1533	0.1496	0.0429	0.0812	0.2782	0.2962	-0.2202	-0.0391	-0.0542	-0.0688	0.1073	-0.1701	0.5325	-0.1696	0.0210	-0.1117	0.1805	0.1972	0.1739	-0.0918	-0.0861	-0.1771	-0.1061	0.1321	-0.0727	0.0225	-0.0270	-0.0277	0.0016	0.0299	0.0049	0.1028
K	-0.2133	0.2103	0.0447	-0.0148	-0.0326	0.1216	-0.1249	-0.1005	-0.0038	0.2163	-0.1843	-0.2567	-0.0740	-0.0695	-0.1963	0.0766	0.0444	0.0122	-0.0772	0.1593	0.0714	-0.1126	-0.2593	0.1842	0.0501	0.0354	-0.1752	-0.1564	0.0939	0.0980	0.0258	-0.1349	-0.0230	-0.0141	-0.0123	-0.0663	0.0423	0.2771	-0.0962	-0.1499	0.2193	-0.3767	-0.3368	0.0467	0.1070
La	-0.1675	-0.2390	-0.0380	0.1825	-0.0269	-0.0449	0.0896	0.1055	0.0176	0.0563	-0.0284	-0.0096	0.0595	-0.1890	0.0743	0.0067	0.0206	-0.0282	-0.0657	0.0756	-0.0913	-0.1182	-0.0932	0.0533	0.0349	-0.0061	-0.0578	-0.0627	-0.2433	-0.0241	0.0417	0.1806	-0.0674	-0.0667	0.1786	0.0549	-0.1695	-0.0239	-0.0213	0.1056	-0.0641	-0.0164	0.2551	-0.6883	0.1822
Li	-0.1492	0.1924	-0.0090	0.0361	0.1278	-0.0140	-0.2187	-0.0709	-0.1680	-0.0849	0.1819	0.3055	0.0200	-0.1567	0.3915	-0.0499	0.0044	-0.1427	0.0887	0.0963	-0.1456	-0.1410	0.0359	-0.1110	0.0614	0.0888	-0.1617	0.0953	0.0931	-0.1765	0.3828	-0.1354	-0.0890	0.2052	-0.1597	-0.0908	-0.0395	0.0873	-0.1874	0.0575	-0.0001	0.0430	0.1783	0.0644	0.1203
Mg	-0.0295	0.3147	-0.0280	-0.0476	-0.0197	0.1043	-0.1511	0.0287	0.0345	-0.0559	-0.0093	0.1013	-0.0295	-0.0361	0.2455	-0.0019	0.0444	0.0096	-0.1366	-0.0113	-0.1935	-0.0656	0.1153	0.2118	0.0995	0.0638	0.1391	0.0830	-0.0717	0.1760	-0.2021	0.1099	-0.3148	-0.1369	0.2809	0.2283	0.1894	-0.1401	0.2568	-0.0081	0.3417	0.1305	0.1013	0.0838	0.1166
Mn	-0.0963	0.0236	-0.0747	-0.4236	-0.0569	-0.1652	0.0533	-0.0379	-0.0327	0.0803	-0.0493	-0.2123	0.0815	-0.0512	0.2015	0.1304	0.0103	-0.1747	-0.0315	0.0757	0.0445	0.2680	-0.0302	-0.3387	0.1408	0.2261	-0.0524	-0.2805	0.1158	-0.0096	-0.1890	0.1798	-0.1529	-0.0471	-0.0108	-0.2755	-0.0237	-0.1425	-0.1070	0.0062	0.0654	0.0726	-0.0615	-0.0168	0.2004
Mo	0.0999	-0.1173	-0.2510	0.1513	-0.1208	-0.1016	0.0068	-0.1819	-0.0167	0.2232	0.2481	-0.4004	-0.2190	0.2314	0.1516	-0.0943	0.1588	-0.1127	0.0522	-0.2401	0.0210	-0.1167	0.2318	-0.0048	0.1024	-0.2154	0.0520	-0.0355	-0.0571	-0.1620	0.1471	0.2093	-0.0637	0.1227	0.0317	0.0272	0.0883	0.1313	0.0468	-0.1133	0.0207	0.0271	0.0608	0.0868	0.1783
Na	0.0043	0.2835	0.0210	0.0512	-0.1139	0.0154	-0.0086	-0.1794	0.2488	0.0402	-0.0141	-0.1082	-0.1739	-0.0302	-0.0123	0.0719	-0.1277	0.4303	-0.4639	0.0161	-0.0743	0.1221	-0.0558	-0.0027	-0.0597	0.1383	0.1266	0.1399	-0.0014	-0.3304	0.1636	0.0536	0.0789	0.0767	-0.0878	-0.0895	-0.1977	-0.1176	0.0424	-0.0135	-0.0577	0.0805	-0.0597	-0.0530	0.1509
Nb	-0.2178	-0.0190	0.0923	0.2390	-0.0463	0.0440	-0.0847	-0.1799	-0.0130	-0.1956	0.0138	0.0148	0.0069	-0.0049	-0.1283	-0.0305	0.1362	-0.0719	0.0333	-0.1717	-0.1350	0.0815	-0.0148	-0.0841	0.1423	0.0478	-0.2636	-0.1202	-0.2433	-0.0950	-0.3173	-0.1329	0.3088	-0.0727	-0.1560	-0.1414	-0.1035	0.0856	0.2599	-0.0561	0.1289	0.3458	0.1230	0.0949	0.1144
Ni	0.0450	0.0117	-0.1950	0.1002	0.1337	0.4154	-0.0056	0.3433	0.1854	-0.0292	0.1283	-0.2139	0.1990	0.0747	-0.1420	0.0604	-0.1069	-0.3189	-0.1051	-0.0427	-0.0504	0.0633	-0.0389	-0.0829	0.2186	0.2845	0.0238	0.3094	-0.0170	-0.1060	-0.0354	-0.0407	0.0964	0.1137	0.0144	0.0622	0.1537	0.0015	-0.1696	-0.0753	-0.0318	0.0391	-0.0091	-0.0262	0.0835
P	-0.0439	-0.1732	0.0325	-0.2764	-0.1408	0.0677	-0.0255	-0.3873	0.0631	-0.1200	-0.0313	-0.2394	0.2294	-0.0845	-0.1200	-0.1615	-0.2945	-0.0658	0.1331	0.1958	-0.3652	0.0291	0.2396	0.0759	-0.2613	-0.0141	0.0139	0.0178	-0.0532	-0.0422	0.0381	-0.1783	0.0450	0.1003	0.1176	0.1558	0.0776	-0.0547	-0.0514	-0.0629	-0.0333	0.0055	0.0912	0.0078	0.1092
Pb	0.1098	-0.0017	0.4088	0.0160	0.0947	-0.0372	0.0691	0.1741	-0.0578	0.0713	0.0708	-0.1527	-0.1371	-0.1282	0.0607	0.0979	-0.2288	-0.0894	0.2327	0.1343	0.0693	0.0018	0.0299	0.1183	0.0007	0.0833	0.0956	0.1261	-0.1321	-0.1414	-0.1307	-0.0089	-0.0742	0.3042	0.0726	-0.2649	-0.0210	0.1272	0.4198	0.1800	-0.0358	-0.1474	-0.0224	0.0619	0.1582
Rb	-0.1640	0.2147	0.0016	0.0244	0.0709	0.0894	-0.1990	-0.0380	-0.1231	0.2731	-0.1531	-0.1960	-0.0342	0.0400	-0.1046	0.0074	0.0047	-0.1626	0.1031	0.1255	0.0616	-0.1291	-0.1131	0.1996	0.0033	-0.0440	-0.1566	-0.0946	0.0233	0.0822	0.1048	0.0527	0.0035	0.0217	-0.1056	0.2109	-0.0108	-0.2650	0.0823	0.2678	-0.3391	0.3450	-0.2755	0.0061	0.0988
S	0.2255	0.0499	-0.1401	0.1305	0.0050	0.0240	0.1385	-0.1183	-0.1665	-0.1654	0.0006	0.0459	-0.0383	-0.1314	0.0207	-0.1657	-0.0503	-0.1033	-0.0131	-0.1211	0.2383	-0.0160	-0.2088	0.2107	-0.0865	-0.0236	-0.2427	-0.0099	0.1671	-0.1163	-0.1694	-0.1958	-0.1581	0.1604	0.2418	-0.0827	-0.1184	-0.3190	-0.0249	-0.3801	-0.0562	-0.0134	-0.0800	-0.0457	0.1872
Sb	0.2046	0.0561	0.1931	0.0612	0.0717	0.0062	0.1570	-0.1122	0.0146	-0.0799	0.1469	0.0168	-0.0862	0.0923	0.2358	0.3822	-0.2979	-0.0677	-0.1194	0.0602	0.1338	0.1312	0.0731	0.0129	0.0987	-0.1060	-0.1453	-0.1216	-0.0350	0.3453	0.1827	-0.0768	0.3180	-0.1366	0.1668	0.1524	0.0351	0.1070	-0.0893	-0.0723	-0.0393	0.1194	-0.0035	-0.0249	0.2094
Sc	-0.2065	0.0589	-0.1509	-0.0286	0.0955	0.0428	0.2306	0.1784	-0.0795	0.1807	-0.1400	0.0833	-0.0127	-0.0789	0.0960	0.0453	0.1282	0.2681	0.0645	0.1003	0.1841	-0.1019	0.3954	0.0888	-0.0914	0.1042	0.1182	-0.0919	0.0845	-0.0976	-0.1996	-0.0971	0.2994	0.1181	0.1184	-0.0374	0.1954	-0.0353	-0.0974	-0.0896	-0.2075	0.1552	0.2720	0.0753	0.0994
Se	0.2050	0.0072	-0.1144	-0.0353	-0.0326	0.0750	0.0209	0.0142	-0.4129	-0.1524	0.0148	0.0439	-0.2323	0.0286	-0.2727	-0.0674	0.1539	-0.0264	-0.1527	0.4901	0.1414	0.1344	0.2176	-0.1029	-0.0238	0.0579	-0.0585	0.1216	-0.3165	-0.0108	0.0681	0.0432	-0.1451	-0.1417	-0.1668	0.0196	0.0594	0.0265	0.0150	-0.0616	0.0037	0.0096	0.0167	-0.0224	0.1242
Sn	0.0250	0.0175	0.4513	0.1055	-0.0349	-0.0890	0.0077	0.1609	0.0440	0.0420	-0.0117	-0.0324	-0.2240	0.0154	-0.1421	-0.0080	-0.1598	-0.0253	0.1442	-0.0735	-0.0568	-0.1238	0.1803	-0.0230	-0.0755	-0.0448	-0.1160	0.0954	0.2289	-0.2268	-0.1762	0.1363	-0.1497	-0.2738	-0.1740	0.1115	0.0424	-0.0904	-0.4028	-0.0915	0.1524	0.1425	0.0578	-0.0496	0.1265
Sr	0.1667	-0.0128	-0.1087	-0.0065	-0.3377	-0.0505	-0.2574	0.1818	0.0776	-0.1338	0.0937	0.0563	-0.0425	-0.2376	-0.1933	0.0345	0.0893	-0.1055	0.0472	0.0725	-0.0794	-0.1266	-0.0528	0.2139	-0.0966	-0.0411	0.1027	-0.0494	0.1637	0.1306	0.1707	0.2168	0.3174	-0.0870	0.1052	-0.4196	0.1221	-0.0720	-0.0497	0.0557	0.0687	0.0703	0.0006	0.0645	0.1874
Th	-0.1568	0.1588	-0.1290	0.0935	0.0606	-0.2294	0.2732	0.1647	0.0230	0.0689	-0.0569	-0.1078	-0.0545	-0.0987	-0.0131	-0.1304	-0.0032	-0.0276	0.1767	-0.0637	-0.1308	0.0283	0.1030	-0.0017	0.0465	-0.0018	0.1080	0.1172	-0.2078	0.2829	0.1377	-0.1816	0.1619	-0.0224	-0.2004	0.0291	-0.2524	-0.3135	-0.0733	-0.0294	0.2744	-0.2425	-0.1417	0.0951	0.2243
Ti	-0.2135	0.1882	0.0527	0.0486	0.0035	0.1209	0.0264	-0.1709	-0.0248	-0.0838	0.0492	0.0793	-0.0445	-0.0262	-0.0682	0.0623	0.1745	0.0193	0.0425	-0.1579	-0.0909	-0.0214	0.2018	0.0088	0.0379	0.0248	-0.0588	-0.0374	-0.1009	-0.1276	-0.0517	-0.0950	-0.0304	-0.1775	0.2693	-0.1551	0.2226	0.1682	-0.1659	0.1297	-0.1360	-0.3265	-0.5215	-0.1481	0.1389
Tl	0.0139	-0.0538	-0.1068	-0.2629	0.3772	-0.0709	-0.0922	0.0715	0.2021	0.1779	0.3289	0.1234	-0.1858	-0.1219	-0.2842	0.0810	-0.0180	-0.0310	-0.1434	-0.2067	0.0180	-0.1925	0.0327	-0.1579	-0.3951	0.0931	-0.1766	-0.1316	-0.1695	0.0753	0.0164	-0.0791	-0.0881	0.0238	0.0869	0.0254	-0.0359	0.0001	0.0730	0.0117	0.0526	0.0669	0.0222	0.0457	0.0875
U	0.0127	-0.1499	-0.1184	0.1924	-0.0098	-0.3327	-0.2910	-0.0216	-0.0478	0.0810	0.3263	-0.0147	0.0647	0.0849	-0.1071	-0.0166	0.0044	0.3491	0.1515	0.1616	-0.0336	0.1294	-0.0730	-0.0511	0.1435	0.2409	0.0051	0.1398	0.2697	0.1719	-0.2051	-0.1798	-0.0487	-0.0225	0.0853	0.1661	-0.0124	0.0774	0.0067	0.0700	-0.0988	-0.0258	-0.0438	-0.0312	0.2407
V	-0.2005	-0.0826	0.0247	-0.1732	-0.1404	0.1251	0.1677	-0.1061	-0.1324	0.0327	0.2259	0.0788	-0.1395	0.1356	0.0315	-0.0248	-0.1441	0.1183	-0.0498	-0.0169	0.0093	-0.2233	-0.3698	-0.0561	0.0337	-0.2113	0.2249	0.1607	-0.1352	0.1811	-0.1729	-0.1436	-0.0398	0.1332	-0.2060	-0.1797	0.3315	-0.0737	-0.1402	0.0242	0.0295	0.1529	-0.0239	-0.1174	0.1134
Y	-0.1201	-0.2575	-0.0668	0.1667	0.0343	-0.1666	-0.0087	0.0073	0.0204	0.0183	-0.1526	0.1618	0.0906	-0.0719	0.0330	0.1625	-0.1194	0.0061	-0.1550	0.1177	-0.0062	-0.0449	-0.0905	-0.0928	-0.0347	-0.0562	-0.2183	-0.0523	0.0252	-0.2108	0.0222	0.2131	0.1296	0.1272	-0.1496	0.2143	0.4596	-0.1857	0.1972	-0.0672	0.1661	-0.2549	-0.1668	0.1287	0.1509
Zn	0.0549	-0.1365	-0.0814	-0.1109	0.4150	0.0283	-0.0654	-0.1599	0.2891	-0.1553	-0.2188	-0.0218	-0.2991	0.0055	0.1454	-0.1780	0.1539	0.0027	-0.0232	0.1328	-0.0712	0.0966	0.0207	0.0730	0.0520	-0.2064	-0.1802	0.3135	0.1139	0.1687	-0.2205	0.1943	0.1228	0.1141	-0.0230	-0.1114	-0.0226	0.0364	-0.1164	0.1566	-0.0471	-0.0379	0.0023	-0.0300	0.0825
Zr	0.0290	0.2416	-0.0997	0.1847	0.1265	-0.0675	0.2097	0.0935	0.0114	-0.1966	-0.2699	0.0202	0.0601	0.0663	-0.3014	-0.0415	-0.1142	0.1292	0.1404	-0.0784	-0.1706	0.0988	-0.0453	-0.2976	-0.0221	-0.1870	0.0325	-0.1302	0.1435	0.1248	0.1855	0.0867	-0.2460	0.2217	0.1171	-0.0735	0.1628	0.2035	0.0733	0.0360	-0.0158	0.2190	0.0629	-0.0463	0.1913

R-Scores

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43	PC44	PC45
Si	-0.4957	-0.2993	0.1513	0.4238	-0.1163	0.3450	-0.0046	-0.1401	0.2120	-0.0201	0.0353	-0.1240	0.1163	-0.3145	0.0495	-0.0384	0.0663	-0.0283	-0.0599	-0.0153	0.2441	0.0464	0.0855	-0.0764	-0.0872	-0.0448	0.0435	0.0346	0.0805	0.0841	0.0235	-0.0473	-0.0806	-0.0439	-0.0705	-0.0070	0.0210	0.0113	0.0308	0.0241	0.0062	0.0053	0.0027	0.0024	0.0000
LOI	0.8751	-0.1644	-0.1851	0.0538	-0.1220	0.1987	-0.0720	-0.0248	-0.0415	-0.0831	-0.0971	0.0172	-0.0208	0.0575	0.0106	-0.0367	-0.0244	0.0387	0.0083	-0.0559	0.1146	0.0011	-0.0284	-0.0250	-0.0082	0.0028	0.0243	-0.0937	-0.0374	-0.0785	-0.0320	-0.0632	0.0233	0.0378	0.0296	0.0539	-0.0145	-0.0202	-0.0615	0.1601	0.0710	-0.0101	0.0187	0.0127	0.0000
Ag	0.3493	-0.4855	0.2057	-0.1062	0.1524	0.2728	0.0497	0.0864	-0.4044	0.3186	0.0007	0.0238	-0.0126	-0.2242	-0.0113	-0.0081	0.0894	0.0349	-0.1038	-0.1548	-0.1930	0.2514	-0.0372	0.0817	-0.0114	-0.0577	0.0108	0.0029	0.0563	0.0048	0.0193	-0.0113	0.0160	0.0124	-0.0149	0.0182	0.0133	0.0238	-0.0106	0.0061	0.0119	0.0087	-0.0021	0.0033	0.0000
Al	-0.6512	-0.6045	0.1050	-0.0948	0.0331	0.2230	-0.1852	0.0666	-0.0088	-0.0256	-0.0753	0.0780	0.0070	0.0726	0.0057	-0.0099	0.0106	0.0406	0.0169	0.0715	0.0908	-0.0264	0.0400	0.0639	-0.0190	0.0380	0.0681	-0.0485	0.0116	0.0129	0.0240	0.0403	0.0027	0.1082	0.0133	0.0264	-0.0815	0.0736	-0.0257	-0.0614	0.0913	0.0518	-0.0817	-0.0115	0.0000
As	0.2964	0.2146	0.5113	-0.2561	0.2571	-0.1918	0.1785	0.0856	0.0019	-0.1954	0.1415	-0.1360	0.3641	0.1640	0.0078	0.1067	0.3380	0.0436	-0.0511	0.0399	-0.0050	-0.0529	-0.0526	0.0545	-0.0757	-0.0850	0.0044	0.0299	0.0028	-0.0446	0.0139	-0.0050	0.0057	0.0130	-0.0172	0.0175	-0.0070	-0.0195	-0.0018	0.0051	0.0068	0.0058	0.0037	0.0010	0.0000
Au	0.4321	0.2293	0.1049	0.0931	-0.1797	0.0958	0.2609	-0.2362	0.3307	0.4386	0.0196	0.4010	0.0999	0.1328	-0.0650	-0.0819	0.0830	-0.1447	0.1069	0.1093	0.0186	0.1135	-0.0477	-0.0013	-0.0140	-0.0015	0.0312	0.0258	-0.0238	-0.0310	-0.0040	0.0217	-0.0015	-0.0120	0.0151	-0.0049	-0.0079	0.0043	0.0028	-0.0072	0.0028	0.0050	0.0091	0.0042	0.0000
Ba	0.1953	-0.2098	-0.0453	-0.5851	-0.4805	0.0710	-0.2696	0.2068	0.1086	0.1018	-0.2244	0.0362	0.0024	-0.0415	0.0043	0.1459	0.0496	0.1216	0.1003	-0.0817	0.0604	-0.0124	0.0283	-0.0852	0.0936	-0.1191	-0.1332	0.1371	-0.0535	-0.0209	0.0465	-0.0886	-0.0229	0.0026	0.0355	0.0140	-0.0154	0.0007	0.0238	-0.0245	-0.0058	0.0095	-0.0005	-0.0029	0.0000
Be	-0.3110	-0.6097	-0.0063	0.1667	0.0482	-0.3051	-0.2518	0.0159	-0.0708	0.0024	-0.2734	0.1051	-0.0079	0.3325	-0.0035	0.1124	-0.0403	-0.1813	-0.1759	-0.0945	-0.0186	0.0214	0.0981	0.0688	-0.0707	0.0320	0.0823	0.0427	0.0300	0.0202	0.0178	-0.1043	-0.0499	-0.0174	-0.0114	-0.0806	-0.0054	-0.0200	0.0121	0.0121	-0.0212	-0.0004	0.0144	-0.0063	0.0000
Bi	0.5431	0.0153	0.5372	-0.1833	0.0309	-0.0822	-0.1026	0.0784	-0.0445	0.1170	-0.0561	0.0380	0.1952	0.0345	-0.0080	-0.4318	-0.0732	0.0522	-0.1988	-0.0633	0.0520	-0.1305	0.0746	-0.0539	0.1267	0.0355	-0.0452	-0.0359	-0.0194	0.0613	0.0179	0.0199	0.0418	0.0033	0.0063	-0.0258	0.0192	0.0095	0.0098	-0.0034	-0.0217	-0.0127	-0.0079	0.0007	0.0000
Ca	0.6726	0.4592	-0.1950	-0.1937	-0.3064	-0.0036	-0.0998	0.1055	0.0829	-0.1275	-0.0743	0.0907	-0.0459	-0.0735	0.0757	0.0381	0.0125	-0.0823	-0.0093	-0.0767	-0.0623	-0.0485	-0.0078	0.0147	-0.0536	0.0084	0.0645	-0.0773	-0.0066	0.0271	-0.1116	0.0079	0.0032	0.0395	-0.1415	0.0968	-0.0257	0.0763	0.0061	-0.0250	-0.0754	-0.0420	-0.0049	-0.0116	0.0000
Cd	0.4938	-0.5538	0.1990	-0.0281	0.3822	0.1599	-0.1000	0.0184	0.1449	-0.0467	-0.1061	-0.0442	-0.1972	-0.0611	0.0535	-0.0532	0.1094	-0.0023	0.0658	0.0878	-0.0770	-0.0721	-0.0981	-0.0928	0.0991	0.0054	0.1621	-0.1149	0.0233	-0.0704	0.0637	-0.1146	0.0097	-0.0888	0.0179	0.0189	0.0249	-0.0315	0.0320	-0.0466	-0.0166	0.0089	-0.0097	0.0001	0.0000
Ce	-0.7077	-0.5907	0.0659	0.1635	-0.0625	-0.0662	0.0951	0.0925	0.0408	-0.0818	-0.0484	0.0078	0.0218	-0.0841	0.0183	-0.0036	-0.0325	0.0236	-0.0632	0.0154	-0.0100	-0.0033	-0.1126	0.0360	0.0116	-0.0108	0.0213	0.0066	-0.1195	0.0008	-0.0008	0.0579	-0.0789	-0.0408	0.0676	0.0098	-0.0472	0.0326	-0.0682	-0.0030	-0.0711	0.0054	0.0072	0.0870	0.0000
Co	-0.5917	-0.2971	-0.1435	-0.4317	0.1388	0.1559	0.1535	0.0185	0.1306	-0.1886	0.1908	0.1427	-0.0011	0.0523	-0.1652	0.0071	-0.0893	0.0578	0.0398	-0.0545	0.0633	0.0825	0.0866	0.2038	0.1961	-0.0435	-0.0095	-0.0866	0.0536	-0.0411	0.0561	0.0217	-0.0581	-0.0177	-0.0742	0.0004	-0.0134	-0.0303	0.0323	0.0172	-0.0148	-0.0203	0.0235	-0.0005	0.0000
Cr	-0.5496	-0.0055	-0.0874	0.0909	-0.1782	0.4747	-0.0638	0.4031	0.0330	-0.0147	0.1462	-0.0199	-0.0575	0.2741	0.1831	-0.1644	-0.0620	0.0663	0.0066	0.0940	-0.0763	0.0949	-0.0093	-0.0575	-0.1590	-0.0946	-0.0928	-0.0736	0.0436	-0.0056	-0.0093	-0.0130	0.0077	-0.0498	0.0125	-0.0272	-0.0305	-0.0163	0.0404	0.0021	-0.0106	-0.0314	-0.0059	0.0039	0.0000
Cs	0.0330	0.4300	-0.1840	-0.0262	0.4853	-0.0352	-0.5829	-0.0459	-0.1098	0.0142	-0.0333	-0.0123	0.1824	-0.0007	0.0421	-0.0342	-0.1613	0.0674	0.1379	-0.0821	0.1421	0.1206	-0.0407	0.0097	-0.0612	-0.0943	0.1044	0.0198	-0.1152	-0.0542	-0.0123	0.0609	0.0371	-0.0767	-0.0187	-0.0290	0.0203	-0.0016	-0.0170	-0.0414	0.0014	-0.0098	0.0116	-0.0132	0.0000
Cu	0.5335	-0.1751	-0.4422	0.0621	0.2202	0.3503	0.1883	-0.1599	-0.1996	0.1341	-0.0320	0.0415	0.1826	-0.0157	-0.0187	0.1559	-0.1194	0.0502	-0.0097	0.0460	-0.0932	-0.2359	0.0485	-0.0572	0.0349	-0.0634	0.0091	0.0414	0.0843	-0.0159	-0.0580	0.0363	-0.0020	-0.0910	-0.0222	-0.0514	-0.0971	0.0163	0.0335	0.0153	0.0150	-0.0086	-0.0154	0.0147	0.0000
Fe	-0.6222	0.0756	-0.2066	-0.4614	-0.0424	-0.2267	0.3468	0.0114	-0.1274	-0.1063	-0.0489	-0.0146	-0.0820	0.0125	0.0182	-0.1509	-0.0404	-0.0966	0.0121	-0.0667	0.0955	-0.0106	-0.1178	0.0195	-0.0627	0.0795	0.0092	0.1198	0.0913	-0.0708	0.0524	0.0099	0.0737	-0.1111	0.0325	0.0659	0.0043	0.0838	0.0577	0.0270	0.0154	0.0193	-0.0009	-0.0028	0.0000
Ga	-0.6546	0.0085	0.4358	-0.0769	-0.0691	0.3291	-0.1772	-0.1601	-0.2084	-0.1031	0.0312	0.0821	-0.1082	0.0719	-0.1264	0.0561	0.0712	-0.0442	0.0322	-0.0947	0.0402	-0.0061	0.0061	-0.1743	0.0031	0.0167	0.0831	0.0422	0.0607	0.0480	0.0100	0.1030	0.0601	0.0602	0.0661	0.0574	-0.0556	-0.0764	0.0185	-0.0118	-0.0273	-0.0578	0.0381	0.0047	0.0000
Hg	0.6161	-0.4691	0.0727	0.0378	0.0172	0.3490	0.1346	-0.1222	-0.0022	-0.0397	-0.1181	-0.0209	0.0057	0.1205	0.1082	0.0303	0.0528	0.1781	0.1811	-0.1293	-0.0225	-0.0304	-0.0367	0.0555	-0.0820	0.2523	-0.0754	0.0089	-0.0469	0.0716	0.0762	0.0643	-0.0335	-0.0300	-0.0600	-0.0351	0.0394	-0.0198	0.0059	-0.0067	-0.0066	0.0004	0.0059	0.0007	0.0000
K	-0.5878	0.5799	0.0861	-0.0267	0.0502	0.1827	-0.1773	-0.1069	-0.0039	0.2038	-0.1579	-0.2145	-0.0588	-0.0546	-0.1419	0.0541	0.0289	0.0078	-0.0472	0.0936	0.0412	-0.0632	-0.1383	0.0954	0.0241	0.0168	-0.0779	-0.0666	0.0394	0.0389	0.0100	-0.0499	-0.0084	-0.0049	-0.0042	-0.0220	0.0126	0.0755	-0.0250	-0.0370	0.0525	-0.0874	-0.0664	0.0068	0.0000
La	-0.5747	-0.6590	-0.0732	0.3292	-0.0413	-0.0674	0.1272	0.1124	0.0177	0.0531	-0.0243	-0.0080	0.0473	-0.1486	0.0537	0.0047	0.0134	-0.0181	-0.0402	0.0444	-0.0526	-0.0663	-0.0497	0.0276	0.0168	-0.0029	-0.0257	-0.0267	-0.1021	-0.0096	0.0161	0.0668	-0.0246	-0.0232	0.0605	0.0182	-0.0506	-0.0065	-0.0055	0.0260	-0.0153	-0.0038	0.0503	-0.0997	0.0000
Li	-0.5119	0.5307	-0.0174	0.0651	0.1964	-0.0211	-0.3104	-0.0755	-0.1691	-0.0800	0.1559	0.2553	0.0159	-0.1231	0.2830	-0.0353	0.0029	-0.0914	0.0542	0.0565	-0.0838	-0.0791	0.0191	-0.0574	0.0296	0.0421	-0.0719	0.0406	0.0391	-0.0700	0.1480	-0.0501	-0.0325	0.0716	-0.0541	-0.0301	-0.0118	0.0238	-0.0488	0.0142	0.0000	0.0100	0.0352	0.0093	0.0000
Mg	-0.1013	0.8678	-0.0540	-0.0858	-0.0302	0.1568	-0.2144	0.0305	0.0347	-0.0527	-0.0080	0.0846	-0.0235	-0.0284	0.1775	-0.0014	0.0289	0.0061	-0.0835	-0.0066	-0.1115	-0.0368	0.0615	0.1096	0.0480	0.0302	0.0619	0.0354	-0.0301	0.0698	-0.0781	0.0407	-0.1149	-0.0477	0.0952	0.0756	0.0565	-0.0382	0.0668	-0.0020	0.0817	0.0303	0.0200	0.0121	0.0000
Mn	-0.3303	0.0651	-0.1439	-0.7641	-0.0874	-0.2482	0.0756	-0.0404	-0.0329	0.0757	-0.0422	-0.1774	0.0648	-0.0403	0.1456	0.0922	0.0067	-0.1119	-0.0193	0.0445	0.0256	0.1502	-0.0161	-0.1753	0.0679	0.1071	-0.0233	-0.1195	0.0486	-0.0038	-0.0731	0.0665	-0.0558	-0.0164	-0.0037	-0.0912	-0.0071	-0.0388	-0.0278	0.0015	0.0156	0.0169	-0.0121	-0.0024	0.0000
Mo	0.3426	-0.3234	-0.4834	0.2729	-0.1856	-0.1526	0.0096	-0.1936	-0.0168	0.2104	0.2126	-0.3346	-0.1742	0.1819	0.1096	-0.0667	0.1032	-0.0722	0.0319	-0.1410	0.0121	-0.0654	0.1237	-0.0025	0.0494	-0.1021	0.0231	-0.0151	-0.0240	-0.0643	0.0569	0.0774	-0.0232	0.0428	0.0107	0.0090	0.0263	0.0358	0.0122	-0.0279	0.0050	0.0063	0.0120	0.0126	0.0000
Na	0.0149	0.7818	0.0404	0.0924	-0.1750	0.0232	-0.0123	-0.1910	0.2503	0.0379	-0.0120	-0.0905	-0.1383	-0.0238	-0.0089	0.0508	-0.0830	0.2755	-0.2836	0.0095	-0.0428	0.0684	-0.0297	-0.0014	-0.0288	0.0655	0.0563	0.0596	-0.0006	-0.1311	0.0633	0.0198	0.0288	0.0267	-0.0297	-0.0296	-0.0590	-0.0320	0.0110	-0.0033	-0.0138	0.0187	-0.0118	-0.0077	0.0000
Nb	-0.7472	-0.0524	0.1778	0.4311	-0.0712	0.0662	-0.1203	-0.1916	-0.0131	-0.1843	0.0118	0.0123	0.0055	-0.0038	-0.0928	-0.0216	0.0885	-0.0460	0.0204	-0.1008	-0.0778	0.0457	-0.0079	-0.0435	0.0686	0.0227	-0.1172	-0.0512	-0.1021	-0.0377	-0.1227	-0.0492	0.1127	-0.0253	-0.0528	-0.0468	-0.0309	0.0233	0.0676	-0.0138	0.0308	0.0802	0.0242	0.0137	0.0000
Ni	0.1545	0.0324	-0.3756	0.1807	0.2054	0.6241	-0.0079	0.3655	0.1865	-0.0275	0.1099	-0.1787	0.1583	0.0587	-0.1026	0.0427	-0.0695	-0.2042	-0.0642	-0.0251	-0.0290	0.0355	-0.0208	-0.0429	0.1054	0.1348	0.0106	0.1318	-0.0071	-0.0420	-0.0137	-0.0150	0.0352	0.0397	0.0049	0.0206	0.0459	0.0004	-0.0441	-0.0186	-0.0076	0.0091	-0.0018	-0.0038	0.0000
P	-0.1506	-0.4776	0.0626	-0.4986	-0.2164	0.1018	-0.0362	-0.4124	0.0635	-0.1131	-0.0268	-0.2001	0.1825	-0.0664	-0.0867	-0.1142	-0.1913	-0.0421	0.0813	0.1150	-0.2104	0.0163	0.1278	0.0393	-0.1260	-0.0067	0.0062	0.0076	-0.0224	-0.0168	0.0147	-0.0660	0.0164	0.0350	0.0398	0.0516	0.0231	-0.0149	-0.0134	-0.0155	-0.0080	0.0013	0.0180	0.0011	0.0000
Pb	0.3767	-0.0047	0.7874	0.0289	0.1456	-0.0559	0.0981	0.1854	-0.0581	0.0672	0.0606	-0.1276	-0.1091	-0.1008	0.0439	0.0692	-0.1486	-0.0572	0.1422	0.0789	0.0399	0.0010	0.0159	0.0612	0.0003	0.0395	0.0425	0.0537	-0.0554	-0.0561	-0.0505	-0.0033	-0.0271	0.1061	0.0246	-0.0877	-0.0063	0.0347	0.1092	0.0444	-0.0086	-0.0342	-0.0044	0.0090	0.0000
Rb	-0.5626	0.5922	0.0032	0.0439	0.1089	0.1344	-0.2824	-0.0405	-0.1238	0.2574	-0.1311	-0.1638	-0.0272	0.0315	-0.0756	0.0052	0.0031	-0.1041	0.0630	0.0737	0.0355	-0.0724	-0.0603	0.1033	0.0016	-0.0208	-0.0696	-0.0403	0.0098	0.0326	0.0405	0.0195	0.0013	0.0076	-0.0358	0.0698	-0.0032	-0.0722	0.0214	0.0660	-0.0811	0.0800	-0.0543	0.0009	0.0000
S	0.7736	0.1377	-0.2698	0.2355	0.0078	0.0360	0.1967	-0.1260	-0.1676	-0.1559	0.0006	0.0384	-0.0304	-0.1033	0.0150	-0.1171	-0.0327	-0.0662	-0.0080	-0.0712	0.1373	-0.0090	-0.1114	0.1091	-0.0417	-0.0112	-0.1079	-0.0042	0.0702	-0.0461	-0.0655	-0.0724	-0.0577	0.0559	0.0819	-0.0274	-0.0353	-0.0869	-0.0065	-0.0937	-0.0135	-0.0031	-0.0158	-0.0066	0.0000
Sb	0.7020	0.1547	0.3720	0.1104	0.1102	0.0093	0.2229	-0.1195	0.0147	-0.0753	0.1258	0.0141	-0.0686	0.0726	0.1705	0.2701	-0.1936	-0.0434	-0.0730	0.0354	0.0771	0.0735	0.0390	0.0067	0.0476	-0.0502	-0.0646	-0.0518	-0.0147	0.1370	0.0707	-0.0284	0.1160	-0.0476	0.0565	0.0505	0.0105	0.0292	-0.0232	-0.0178	-0.0094	0.0277	-0.0007	-0.0036	0.0000
Sc	-0.7086	0.1624	-0.2906	-0.0516	0.1468	0.0643	0.3273	0.1899	-0.0800	0.1704	-0.1200	0.0696	-0.0101	-0.0620	0.0694	0.0320	0.0833	0.1716	0.0395	0.0589	0.1061	-0.0571	0.2109	0.0459	-0.0441	0.0494	0.0525	-0.0391	0.0355	-0.0387	-0.0772	-0.0359	0.1092	0.0412	0.0401	-0.0124	0.0583	-0.0096	-0.0253	-0.0221	-0.0496	0.0360	0.0536	0.0109	0.0000
Se	0.7033	0.0197	-0.2204	-0.0636	-0.0500	0.1126	0.0297	0.0151	-0.4155	-0.1436	0.0126	0.0367	-0.1848	0.0224	-0.1971	-0.0477	0.1000	-0.0169	-0.0933	0.2879	0.0814	0.0754	0.1161	-0.0532	-0.0115	0.0274	-0.0260	0.0518	-0.1329	-0.0043	0.0263	0.0160	-0.0530	-0.0494	-0.0565	0.0065	0.0177	0.0072	0.0039	-0.0152	0.0009	0.0022	0.0033	-0.0032	0.0000
Sn	0.0857	0.0483	0.8693	0.1903	-0.0537	-0.1337	0.0109	0.1713	0.0443	0.0396	-0.0100	-0.0271	-0.1781	0.0121	-0.1027	-0.0057	-0.1038	-0.0162	0.0881	-0.0432	-0.0327	-0.0694	0.0962	-0.0119	-0.0364	-0.0212	-0.0516	0.0406	0.0961	-0.0900	-0.0681	0.0504	-0.0546	-0.0955	-0.0589	0.0369	0.0126	-0.0246	-0.1048	-0.0225	0.0365	0.0331	0.0114	-0.0072	0.0000
Sr	0.5720	-0.0352	-0.2094	-0.0117	-0.5190	-0.0759	-0.3654	0.1936	0.0781	-0.1261	0.0803	0.0470	-0.0338	-0.1868	-0.1397	0.0244	0.0580	-0.0676	0.0289	0.0426	-0.0457	-0.0710	-0.0282	0.1107	-0.0466	-0.0195	0.0457	-0.0210	0.0687	0.0518	0.0660	0.0802	0.1158	-0.0303	0.0356	-0.1390	0.0364	-0.0196	-0.0129	0.0137	0.0164	0.0163	0.0001	0.0093	0.0000
Th	-0.5381	0.4379	-0.2486	0.1686	0.0931	-0.3446	0.3877	0.1753	0.0232	0.0649	-0.0487	-0.0901	-0.0433	-0.0776	-0.0095	-0.0922	-0.0021	-0.0176	0.1080	-0.0374	-0.0753	0.0159	0.0549	-0.0009	0.0224	-0.0008	0.0480	0.0499	-0.0872	0.1122	0.0533	-0.0672	0.0591	-0.0078	-0.0679	0.0096	-0.0753	-0.0854	-0.0191	-0.0073	0.0656	-0.0563	-0.0279	0.0138	0.0000
Ti	-0.7325	0.5191	0.1015	0.0877	0.0053	0.1817	0.0374	-0.1820	-0.0250	-0.0790	0.0422	0.0662	-0.0354	-0.0206	-0.0493	0.0441	0.1134	0.0124	0.0260	-0.0928	-0.0524	-0.0120	0.1076	0.0045	0.0183	0.0118	-0.0262	-0.0159	-0.0424	-0.0506	-0.0200	-0.0351	-0.0111	-0.0619	0.0912	-0.0514	0.0664	0.0458	-0.0432	0.0320	-0.0325	-0.0757	-0.1028	-0.0214	0.0000
Tl	0.0479	-0.1484	-0.2057	-0.4743	0.5797	-0.1065	-0.1308	0.0762	0.2033	0.1677	0.2817	0.1031	-0.1478	-0.0958	-0.2055	0.0572	-0.0117	-0.0198	-0.0876	-0.1214	0.0104	-0.1079	0.0175	-0.0817	-0.1905	0.0441	-0.0786	-0.0561	-0.0712	0.0299	0.0064	-0.0293	-0.0321	0.0083	0.0294	0.0084	-0.0107	0.0000	0.0190	0.0029	0.0126	0.0155	0.0044	0.0066	0.0000
U	0.0437	-0.4134	-0.2281	0.3471	-0.0150	-0.4999	-0.4131	-0.0230	-0.0481	0.0764	0.2795	-0.0123	0.0515	0.0668	-0.0774	-0.0117	0.0028	0.2235	0.0926	0.0949	-0.0193	0.0725	-0.0389	-0.0264	0.0692	0.1141	0.0023	0.0595	0.1132	0.0682	-0.0793	-0.0665	-0.0178	-0.0078	0.0289	0.0550	-0.0037	0.0211	0.0017	0.0173	-0.0236	-0.0060	-0.0086	-0.0045	0.0000
V	-0.6880	-0.2277	0.0475	-0.3124	-0.2157	0.1879	0.2381	-0.1129	-0.1332	0.0308	0.1935	0.0658	-0.1110	0.1066	0.0228	-0.0176	-0.0936	0.0757	-0.0304	-0.0099	0.0054	-0.1252	-0.1973	-0.0290	0.0163	-0.1001	0.1000	0.0685	-0.0568	0.0719	-0.0669	-0.0531	-0.0145	0.0465	-0.0698	-0.0595	0.0989	-0.0201	-0.0365	0.0060	0.0071	0.0355	-0.0047	-0.0170	0.0000
Y	-0.4122	-0.7100	-0.1287	0.3007	0.0527	-0.2504	-0.0124	0.0078	0.0205	0.0173	-0.1307	0.1352	0.0720	-0.0565	0.0238	0.1149	-0.0776	0.0039	-0.0947	0.0691	-0.0036	-0.0252	-0.0483	-0.0480	-0.0167	-0.0266	-0.0971	-0.0223	0.0106	-0.0836	0.0086	0.0788	0.0473	0.0444	-0.0507	0.0710	0.1372	-0.0506	0.0513	-0.0166	0.0397	-0.0591	-0.0329	0.0186	0.0000
Zn	0.1884	-0.3764	-0.1568	-0.2000	0.6378	0.0425	-0.0928	-0.1702	0.2909	-0.1463	-0.1875	-0.0182	-0.2379	0.0044	0.1051	-0.1258	0.1000	0.0017	-0.0142	0.0780	-0.0410	0.0541	0.0111	0.0378	0.0251	-0.0978	-0.0801	0.1335	0.0478	0.0669	-0.0853	0.0719	0.0448	0.0398	-0.0078	-0.0369	-0.0067	0.0099	-0.0303	0.0386	-0.0113	-0.0088	0.0004	-0.0043	0.0000
Zr	0.0995	0.6662	-0.1920	0.3331	0.1945	-0.1014	0.2976	0.0995	0.0114	-0.1853	-0.2312	0.0169	0.0478	0.0521	-0.2179	-0.0293	-0.0742	0.0827	0.0858	-0.0460	-0.0983	0.0554	-0.0242	-0.1540	-0.0107	-0.0886	0.0145	-0.0555	0.0602	0.0495	0.0717	0.0321	-0.0897	0.0773	0.0397	-0.0244	0.0486	0.0555	0.0191	0.0089	-0.0038	0.0508	0.0124	-0.0067	0.0000

Relative Contributions

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23
Si	24.6488	8.9830	2.2973	18.0172	1.3569	11.9377	0.0021	1.9677	4.5086	0.0407	0.1251	1.5428	1.3573	9.9206	0.2455	0.1482	0.4416	0.0806	0.3599	0.0233	5.9790	0.2164	0.7340
LOI	76.8103	2.7098	3.4351	0.2907	1.4933	3.9612	0.5200	0.0617	0.1726	0.6922	0.9449	0.0297	0.0435	0.3313	0.0114	0.1349	0.0599	0.1500	0.0068	0.3132	1.3166	0.0001	0.0809
Ag	12.2361	23.6467	4.2431	1.1317	2.3298	7.4644	0.2477	0.7494	16.4045	10.1788	0.0001	0.0570	0.0160	5.0410	0.0129	0.0065	0.8024	0.1223	1.0811	2.4022	3.7358	6.3422	0.1391
Al	42.5364	36.6523	1.1052	0.9010	0.1100	4.9870	3.4414	0.4448	0.0078	0.0658	0.5685	0.6099	0.0050	0.5282	0.0033	0.0099	0.0114	0.1651	0.0287	0.5130	0.8273	0.0702	0.1609
As	8.8140	4.6205	26.2207	6.5791	6.6324	3.6891	3.1948	0.7355	0.0004	3.8297	2.0075	1.8561	13.2980	2.6977	0.0060	1.1411	11.4564	0.1905	0.2617	0.1600	0.0026	0.2809	0.2780
Au	18.7304	5.2722	1.1039	0.8692	3.2387	0.9197	6.8276	5.5981	10.9732	19.2931	0.0385	16.1267	1.0004	1.7678	0.4239	0.6722	0.6916	2.0991	1.1474	1.1984	0.0348	1.2920	0.2280
Ba	3.8251	4.4151	0.2055	34.3405	23.1545	0.5057	7.2920	4.2899	1.1840	1.0392	5.0521	0.1317	0.0006	0.1728	0.0019	2.1352	0.2468	1.4841	1.0093	0.6693	0.3660	0.0154	0.0802
Be	9.7040	37.2839	0.0040	2.7874	0.2332	9.3400	6.3620	0.0253	0.5028	0.0006	7.4984	1.1090	0.0062	11.0890	0.0012	1.2663	0.1627	3.2981	3.1025	0.8965	0.0346	0.0458	0.9647
Bi	29.5877	0.0234	28.9525	3.3687	0.0955	0.6771	1.0565	0.6169	0.1986	1.3737	0.3154	0.1451	3.8211	0.1196	0.0064	18.7012	0.5379	0.2738	3.9658	0.4021	0.2712	1.7091	0.5575
Ca	45.3822	21.1520	3.8157	3.7650	9.4187	0.0013	0.9995	1.1171	0.6893	1.6298	0.5539	0.8251	0.2115	0.5412	0.5753	0.1458	0.0156	0.6798	0.0086	0.5894	0.3889	0.2360	0.0061
Cd	24.4566	30.7664	3.9728	0.0792	14.6551	2.5652	1.0026	0.0339	2.1061	0.2186	1.1300	0.1956	3.8994	0.3747	0.2872	0.2834	1.2002	0.0005	0.4337	0.7730	0.5951	0.5215	0.9649
Ce	50.2453	34.9989	0.4354	2.6801	0.3918	0.4391	0.9074	0.8575	0.1673	0.6717	0.2349	0.0062	0.0475	0.7099	0.0335	0.0013	0.1063	0.0556	0.4007	0.0239	0.0100	0.0011	1.2714
Co	35.1179	8.8511	2.0661	18.6914	1.9337	2.4372	2.3623	0.0342	1.7101	3.5680	3.6529	2.0434	0.0001	0.2746	2.7385	0.0050	0.7994	0.3346	0.1592	0.2979	0.4015	0.6831	0.7529
Cr	30.3011	0.0031	0.7665	0.8284	3.1863	22.5999	0.4089	16.2993	0.1090	0.0216	2.1441	0.0396	0.3319	7.5370	3.3615	2.7121	0.3860	0.4410	0.0043	0.8863	0.5842	0.9031	0.0087
Cs	0.1094	18.5466	3.3962	0.0690	23.6226	0.1241	34.0767	0.2116	1.2083	0.0203	0.1110	0.0151	3.3389	0.0000	0.1781	0.1175	2.6107	0.4564	1.9066	0.6769	2.0246	1.4583	0.1664
Cu	28.5460	3.0755	19.6173	0.3867	4.8622	12.3075	3.5564	2.5660	3.9945	1.8046	0.1026	0.1730	3.3430	0.0248	0.0350	2.4376	1.4301	0.2531	0.0095	0.2126	0.8712	5.5816	0.2356
Fe	38.8288	0.5736	4.2830	21.3552	0.1800	5.1533	12.0660	0.0131	1.6279	1.1325	0.2397	0.0215	0.6752	0.0158	0.0332	2.2827	0.1639	0.9369	0.0147	0.4467	0.9145	0.0113	1.3916
Ga	42.9801	0.0073	19.0546	0.5929	0.4788	10.8610	3.1514	2.5721	4.3552	1.0656	0.0977	0.6763	1.1738	0.5185	1.6031	0.3157	0.5085	0.1961	0.1042	0.8987	0.1624	0.0038	0.0037
Hg	38.0733	22.0719	0.5296	0.1432	0.0296	12.2204	1.8176	1.4988	0.0005	0.1582	1.3999	0.0440	0.0032	1.4569	1.1737	0.0921	0.2792	3.1822	3.2881	1.6780	0.0508	0.0926	0.1352
K	34.6634	33.7364	0.7442	0.0712	0.2523	3.3487	3.1540	1.1473	0.0015	4.1674	2.5003	4.6157	0.3473	0.2994	2.0195	0.2941	0.0835	0.0061	0.2233	0.8787	0.1699	0.4000	1.9193
La	33.1295	43.5635	0.5376	10.8690	0.1713	0.4558	1.6237	1.2662	0.0313	0.2828	0.0594	0.0064	0.2245	2.2146	0.2894	0.0023	0.0179	0.0328	0.1618	0.1978	0.2777	0.4407	0.2479
Li	26.2845	28.2486	0.0302	0.4246	3.8676	0.0447	9.6666	0.5719	2.8679	0.6418	2.4368	6.5375	0.0253	1.5211	8.0338	0.1247	0.0008	0.8373	0.2952	0.3207	0.7052	0.6269	0.0368
Mg	1.0302	75.5445	0.2925	0.7380	0.0917	2.4653	4.6125	0.0936	0.1207	0.2785	0.0064	0.7184	0.0554	0.0808	3.1589	0.0002	0.0835	0.0038	0.6988	0.0044	1.2460	0.1355	0.3796
Mn	10.9413	0.4256	2.0767	58.5600	0.7658	6.1798	0.5739	0.1636	0.1086	0.5752	0.1788	3.1557	0.4214	0.1627	2.1277	0.8523	0.0045	1.2550	0.0373	0.1983	0.0659	2.2640	0.0260
Mo	11.7769	10.4914	23.4438	7.4695	3.4560	2.3356	0.0093	3.7603	0.0282	4.4394	4.5318	11.2286	3.0439	3.3201	1.2052	0.4458	1.0674	0.5226	0.1022	1.9952	0.0147	0.4291	1.5337
Na	0.0222	61.3052	0.1635	0.8571	3.0736	0.0538	0.0151	3.6604	6.2861	0.1440	0.0145	0.8207	1.9186	0.0567	0.0080	0.2588	0.6902	7.6116	8.0649	0.0090	0.1839	0.4697	0.0887
Nb	55.9995	0.2757	3.1701	18.6420	0.5084	0.4391	1.4510	3.6814	0.0171	3.4083	0.0140	0.0153	0.0030	0.0015	0.8635	0.0467	0.7860	0.2126	0.0416	1.0202	0.6067	0.2097	0.0062
Ni	2.3955	0.1053	14.1516	3.2744	4.2332	39.0717	0.0063	13.4021	3.4898	0.0758	1.2111	3.2039	2.5146	0.3462	1.0564	0.1831	0.4841	4.1808	0.4140	0.0631	0.0846	0.1261	0.0433
P	2.2743	22.8789	0.3931	24.9347	4.6966	1.0386	0.1312	17.0563	0.4050	1.2826	0.0719	4.0151	3.3412	0.4428	0.7548	1.3072	3.6713	0.1782	0.6635	1.3270	4.4391	0.0267	1.6384
Pb	14.2327	0.0022	62.1955	0.0836	2.1263	0.3135	0.9654	3.4475	0.3388	0.4527	0.3686	1.6328	1.1933	1.0186	0.1933	0.4805	2.2156	0.3288	2.0288	0.6243	0.1600	0.0001	0.0255
Rb	31.7494	35.1805	0.0010	0.1937	1.1896	1.8113	8.0022	0.1642	1.5383	6.6439	1.7253	2.6916	0.0741	0.0993	0.5739	0.0027	0.0009	1.0863	0.3982	0.5449	0.1265	0.5257	0.3652
S	60.0297	1.9023	7.3043	5.5621	0.0060	0.1303	3.8795	1.5917	2.8163	2.4390	0.0000	0.1478	0.0929	1.0709	0.0225	1.3755	0.1069	0.4390	0.0065	0.5078	1.8902	0.0081	1.2443
Sb	49.4378	2.4021	13.8826	1.2221	1.2183	0.0086	4.9830	1.4323	0.0216	0.5692	1.5884	0.0198	0.4718	0.5285	2.9150	7.3203	3.7585	0.1886	0.5341	0.1254	0.5956	0.5425	0.1525
Sc	50.3664	2.6470	8.4716	0.2666	2.1621	0.4141	10.7468	3.6188	0.6423	2.9109	1.4433	0.4857	0.0102	0.3858	0.4829	0.1028	0.6956	2.9539	0.1561	0.3480	1.1285	0.3274	4.4632
Se	49.6128	0.0390	4.8726	0.4058	0.2510	1.2729	0.0884	0.0229	17.3155	2.0696	0.0160	0.1352	3.4251	0.0505	3.8979	0.2278	1.0030	0.0286	0.8735	8.3131	0.6650	0.5695	1.3515
Sn	0.7366	0.2344	75.7964	3.6332	0.2888	1.7939	0.0119	2.9434	0.1966	0.1573	0.0101	0.0737	3.1832	0.0147	1.0588	0.0032	1.0808	0.0264	0.7792	0.1869	0.1075	0.4834	0.9277
Sr	32.8178	0.1245	4.3970	0.0136	27.0156	0.5785	13.3939	3.7598	0.6122	1.5943	0.6461	0.2216	0.1146	3.4996	1.9581	0.0598	0.3379	0.4580	0.0836	0.1818	0.2098	0.5055	0.0797
Th	29.0405	19.2307	6.1981	2.8503	0.8687	11.9140	15.0806	3.0825	0.0540	0.4229	0.2380	0.8137	0.1882	0.6036	0.0090	0.8525	0.0004	0.0312	1.1697	0.1404	0.5691	0.0253	0.3028
Ti	53.8188	27.0270	1.0328	0.7718	0.0028	3.3100	0.1404	3.3226	0.0627	0.6257	0.1785	0.4399	0.1257	0.0427	0.2440	0.1947	1.2894	0.0154	0.0678	0.8632	0.2750	0.0144	1.1623
Tl	0.2298	2.2101	4.2429	22.5662	33.7072	1.1368	1.7169	0.5819	4.1473	2.8197	7.9611	1.0661	2.1915	0.9214	4.2348	0.3287	0.0137	0.0395	0.7705	1.4780	0.0108	1.1681	0.0306
U	0.1916	17.1420	5.2213	12.0870	0.0225	25.0634	17.1208	0.0531	0.2318	0.5850	7.8364	0.0152	0.2657	0.4471	0.6017	0.0138	0.0008	5.0097	0.8602	0.9035	0.0375	0.5278	0.1520
V	47.4834	5.1995	0.2262	9.7864	4.6682	3.5416	5.6876	1.2797	1.7798	0.0952	3.7554	0.4349	1.2357	1.1403	0.0521	0.0309	0.8795	0.5753	0.0930	0.0099	0.0029	1.5720	3.9039
Y	17.0460	50.5687	1.6624	9.0699	0.2791	6.2877	0.0153	0.0061	0.0422	0.0300	1.7145	1.8325	0.5205	0.3204	0.0569	1.3238	0.6036	0.0015	0.9004	0.4792	0.0013	0.0635	0.2339
Zn	3.5616	14.2130	2.4650	4.0138	40.8084	0.1808	0.8641	2.9070	8.4908	2.1478	3.5249	0.0331	5.6783	0.0019	1.1088	1.5878	1.0024	0.0003	0.0201	0.6103	0.1686	0.2941	0.0123
Zr	0.9940	44.5178	3.6972	11.1309	3.7936	1.0318	8.8866	0.9935	0.0131	3.4457	5.3615	0.0285	0.2291	0.2724	4.7608	0.0861	0.5517	0.6866	0.7392	0.2127	0.9683	0.3075	0.0586

	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43	PC44	PC45
Si	0.5863	0.7620	0.2011	0.1895	0.1202	0.6508	0.7097	0.0554	0.2245	0.6512	0.1933	0.4983	0.0049	0.0444	0.0128	0.0949	0.0584	0.0038	0.0028	0.0007	0.0006	0.0000
LOI	0.0626	0.0068	0.0008	0.0594	0.8799	0.1404	0.6188	0.1024	0.4005	0.0546	0.1436	0.0882	0.2909	0.0212	0.0407	0.3791	2.5724	0.5060	0.0103	0.0352	0.0161	0.0000
Ag	0.6688	0.0131	0.3343	0.0117	0.0008	0.3184	0.0023	0.0372	0.0129	0.0255	0.0155	0.0221	0.0334	0.0178	0.0570	0.0113	0.0037	0.0142	0.0075	0.0004	0.0011	0.0000
Al	0.4101	0.0364	0.1446	0.4651	0.2362	0.0135	0.0167	0.0578	0.1628	0.0007	1.1744	0.0177	0.0700	0.6663	0.5437	0.0662	0.3777	0.8359	0.2690	0.6688	0.0134	0.0000
As	0.2981	0.5747	0.7249	0.0019	0.0899	0.0008	0.1991	0.0193	0.0025	0.0033	0.0169	0.0298	0.0309	0.0049	0.0381	0.0003	0.0026	0.0047	0.0034	0.0013	0.0001	0.0000
Au	0.0002	0.0195	0.0002	0.0975	0.0668	0.0567	0.0961	0.0016	0.0474	0.0002	0.0145	0.0228	0.0024	0.0063	0.0019	0.0008	0.0052	0.0008	0.0025	0.0082	0.0018	0.0000
Ba	0.7288	0.8789	1.4222	1.7787	1.8850	0.2875	0.0440	0.2166	0.7878	0.0527	0.0007	0.1267	0.0197	0.0237	0.0000	0.0566	0.0601	0.0034	0.0091	0.0000	0.0009	0.0000
Be	0.4750	0.5019	0.1030	0.6787	0.1825	0.0903	0.0410	0.0318	1.0905	0.2499	0.0303	0.0130	0.6517	0.0029	0.0400	0.0148	0.0146	0.0452	0.0000	0.0207	0.0040	0.0000
Bi	0.2915	1.6107	0.1262	0.2045	0.1294	0.0379	0.3770	0.0320	0.0399	0.1751	0.0011	0.0040	0.0668	0.0371	0.0091	0.0097	0.0011	0.0474	0.0161	0.0063	0.0001	0.0000
Ca	0.0216	0.2879	0.0070	0.4172	0.5994	0.0044	0.0735	1.2491	0.0062	0.0010	0.1567	2.0088	0.9392	0.0663	0.5832	0.0037	0.0629	0.5705	0.1774	0.0024	0.0136	0.0000
Cd	0.8648	0.9850	0.0029	2.6354	1.3231	0.0546	0.4972	0.4076	1.3178	0.0094	0.7908	0.0320	0.0358	0.0621	0.0996	0.1027	0.2179	0.0278	0.0080	0.0095	0.0000	0.0000
Ce	0.1298	0.0134	0.0116	0.0457	0.0044	1.4324	0.0001	0.0001	0.3360	0.6242	0.1667	0.4583	0.0096	0.2236	0.1066	0.4666	0.0009	0.5066	0.0029	0.0052	0.7586	0.0000
Co	4.1680	3.8590	0.1897	0.0091	0.7524	0.2881	0.1697	0.3161	0.0471	0.3384	0.0315	0.5520	0.0000	0.0181	0.0922	0.1049	0.0298	0.0221	0.0413	0.0552	0.0000	0.0000
Cr	0.3320	2.5365	0.8970	0.8643	0.5432	0.1905	0.0032	0.0087	0.0171	0.0059	0.2488	0.0157	0.0740	0.0931	0.0266	0.1638	0.0004	0.0113	0.0990	0.0035	0.0015	0.0000
Cs	0.0095	0.3752	0.8929	1.0933	0.0393	1.3317	0.2942	0.0152	0.3726	0.1381	0.5902	0.0351	0.0842	0.0415	0.0003	0.0290	0.1719	0.0002	0.0095	0.0136	0.0175	0.0000
Cu	0.3286	0.1223	0.4035	0.0082	0.1723	0.7132	0.0253	0.3370	0.1323	0.0004	0.8310	0.0496	0.2651	0.9466	0.0267	0.1123	0.0235	0.0225	0.0074	0.0239	0.0218	0.0000
Fe	0.0382	0.3943	0.6336	0.0084	1.4395	0.8363	0.5035	0.2756	0.0099	0.5444	1.2381	0.1059	0.4361	0.0019	0.7039	0.3340	0.0732	0.0238	0.0373	0.0001	0.0008	0.0000
Ga	3.0462	0.0010	0.0280	0.6933	0.1787	0.3698	0.2307	0.0099	1.0640	0.3623	0.3640	0.4386	0.3309	0.3100	0.5849	0.0343	0.0140	0.0750	0.3351	0.1457	0.0022	0.0000
Hg	0.3094	0.6747	6.3863	0.5709	0.0080	0.2206	0.5144	0.5832	0.4148	0.1126	0.0904	0.3609	0.1239	0.1558	0.0393	0.0034	0.0044	0.0044	0.0000	0.0035	0.0001	0.0000
K	0.9121	0.0585	0.0282	0.6087	0.4450	0.1559	0.1518	0.0100	0.2496	0.0071	0.0024	0.0017	0.0484	0.0160	0.5723	0.0629	0.1370	0.2761	0.7660	0.4422	0.0046	0.0000
La	0.0763	0.0284	0.0008	0.0662	0.0716	1.0467	0.0092	0.0261	0.4477	0.0606	0.0542	0.3673	0.0332	0.2568	0.0043	0.0031	0.0679	0.0236	0.0015	0.2538	0.9971	0.0000
Li	0.3308	0.0880	0.1775	0.5187	0.1652	0.1532	0.4919	2.1972	0.2514	0.1059	0.5136	0.2936	0.0906	0.0140	0.0568	0.2384	0.0201	0.0000	0.0100	0.1240	0.0087	0.0000
Mg	1.2058	0.2308	0.0917	0.3837	0.1255	0.0909	0.4891	0.6123	0.1658	1.3235	0.2286	0.9082	0.5735	0.3206	0.1462	0.4474	0.0004	0.6702	0.0920	0.0400	0.0148	0.0000
Mn	3.0837	0.4621	1.1515	0.0544	1.4321	0.2372	0.0015	0.5357	0.4438	0.3122	0.0271	0.0014	0.8349	0.0050	0.1514	0.0778	0.0002	0.0245	0.0285	0.0147	0.0006	0.0000
Mo	0.0006	0.2446	1.0451	0.0535	0.0230	0.0576	0.4144	0.3245	0.6008	0.0542	0.1835	0.0116	0.0081	0.0696	0.1285	0.0148	0.0782	0.0025	0.0040	0.0144	0.0159	0.0000
Na	0.0002	0.0832	0.4307	0.3177	0.3560	0.0000	1.7237	0.4016	0.0394	0.0831	0.0717	0.0886	0.0880	0.3493	0.1030	0.0122	0.0011	0.0191	0.0350	0.0139	0.0059	0.0000
Nb	0.1899	0.4724	0.0515	1.3782	0.2630	1.0460	0.1425	1.5099	0.2423	1.2737	0.0644	0.2801	0.2198	0.0957	0.0546	0.4585	0.0192	0.0954	0.6455	0.0590	0.0189	0.0000
Ni	0.1848	1.1147	1.8227	0.0113	1.7420	0.0051	0.1773	0.0188	0.0227	0.1240	0.1578	0.0024	0.0425	0.2110	0.0000	0.1952	0.0346	0.0058	0.0083	0.0003	0.0014	0.0000
P	0.1550	1.5928	0.0045	0.0038	0.0058	0.0501	0.0282	0.0217	0.4364	0.0270	0.1228	0.1592	0.2671	0.0537	0.0223	0.0179	0.0241	0.0064	0.0002	0.0324	0.0001	0.0000
Pb	0.3758	0.0000	0.1564	0.1813	0.2892	0.3083	0.3159	0.2561	0.0011	0.0736	1.1289	0.0607	0.7718	0.0039	0.1206	1.1961	0.1973	0.0074	0.1173	0.0020	0.0081	0.0000
Rb	1.0705	0.0003	0.0436	0.4863	0.1628	0.0096	0.1068	0.1647	0.0382	0.0002	0.0057	0.1284	0.4892	0.0010	0.5232	0.0460	0.4370	0.6598	0.6424	0.2959	0.0001	0.0000
S	1.1930	0.1744	0.0126	1.1685	0.0018	0.4936	0.2134	0.4306	0.5263	0.3336	0.3138	0.6729	0.0752	0.1252	0.7581	0.0042	0.8804	0.0182	0.0010	0.0249	0.0044	0.0000
Sb	0.0045	0.2273	0.2532	0.4188	0.2689	0.0217	1.8825	0.5008	0.0810	1.3501	0.2277	0.3201	0.2554	0.0110	0.0853	0.0541	0.0318	0.0089	0.0769	0.0000	0.0013	0.0000
Sc	0.2117	0.1949	0.2448	0.2770	0.1536	0.1261	0.1505	0.5972	0.1295	1.1967	0.1701	0.1614	0.0154	0.3410	0.0093	0.0643	0.0489	0.2472	0.1300	0.2885	0.0119	0.0000
Se	0.2843	0.0132	0.0754	0.0679	0.2691	1.7710	0.0018	0.0695	0.0256	0.2813	0.2450	0.3202	0.0042	0.0316	0.0052	0.0015	0.0232	0.0001	0.0005	0.0011	0.0011	0.0000
Sn	0.0143	0.1329	0.0452	0.2668	0.1655	0.9263	0.8121	0.4654	0.2548	0.2993	0.9143	0.3485	0.1369	0.0160	0.0608	1.1010	0.0510	0.1334	0.1097	0.0130	0.0052	0.0000
Sr	1.2298	0.2175	0.0381	0.2092	0.0443	0.4738	0.2692	0.4371	0.6449	1.3455	0.0924	0.1274	1.9373	0.1331	0.0387	0.0167	0.0189	0.0271	0.0267	0.0000	0.0088	0.0000
Th	0.0001	0.0505	0.0001	0.2314	0.2500	0.7636	1.2633	0.2845	0.4526	0.3502	0.0061	0.4623	0.0093	0.5691	0.7323	0.0365	0.0053	0.4323	0.3174	0.0783	0.0190	0.0000
Ti	0.0021	0.0334	0.0139	0.0687	0.0254	0.1801	0.2573	0.0401	0.1238	0.0124	0.3845	0.8351	0.2646	0.4427	0.2108	0.1868	0.1026	0.1062	0.5754	1.0604	0.0461	0.0000
Tl	0.6700	3.6402	0.1951	0.6190	0.3153	0.5080	0.0895	0.0041	0.0859	0.1036	0.0069	0.0868	0.0071	0.0115	0.0000	0.0362	0.0008	0.0159	0.0242	0.0019	0.0044	0.0000
U	0.0702	0.4801	1.3065	0.0005	0.3556	1.2854	0.4668	0.6310	0.4435	0.0317	0.0062	0.0838	0.3035	0.0014	0.0446	0.0003	0.0299	0.0560	0.0036	0.0075	0.0020	0.0000
V	0.0846	0.0265	1.0060	1.0037	0.4700	0.3232	0.5180	0.4483	0.2831	0.0211	0.2165	0.4885	0.3552	0.9817	0.0405	0.1335	0.0036	0.0050	0.1263	0.0022	0.0290	0.0000
Y	0.2312	0.0281	0.0710	0.9450	0.0498	0.0112	0.7015	0.0074	0.6229	0.2243	0.1974	0.2575	0.5054	1.8870	0.2569	0.2640	0.0275	0.1584	0.3507	0.1085	0.0348	0.0000
Zn	0.1432	0.0630	0.9590	0.6443	1.7885	0.2295	0.4492	0.7293	0.5179	0.2015	0.1588	0.0061	0.1366	0.0046	0.0099	0.0919	0.1494	0.0127	0.0078	0.0000	0.0019	0.0000
Zr	2.3797	0.0114	0.7878	0.0210	0.3085	0.3640	0.2461	0.5163	0.1032	0.8078	0.5995	0.1580	0.0595	0.2366	0.3087	0.0365	0.0079	0.0014	0.2588	0.0154	0.0045	0.0000

Absolute Contributions

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18	PC19	PC20	PC21	PC22	PC23
Si	2.0875	1.1775	0.6173	5.5204	0.5727	5.2725	0.0010	1.7306	4.4385	0.0457	0.1699	2.2028	2.1386	16.0049	0.4683	0.2956	1.0429	0.1961	0.9602	0.0674	17.9651	0.6865	2.5714
LOI	6.5049	0.3552	0.9230	0.0891	0.6303	1.7495	0.2573	0.0543	0.1699	0.7769	1.2836	0.0424	0.0686	0.5345	0.0217	0.2693	0.1416	0.3648	0.0182	0.9050	3.9561	0.0004	0.2832
Ag	1.0363	3.0997	1.1401	0.3468	0.9833	3.2968	0.1225	0.6591	16.1493	11.4228	0.0001	0.0814	0.0253	8.1326	0.0246	0.0130	1.8951	0.2976	2.8848	6.9418	11.2248	20.1160	0.4874
Al	3.6023	4.8045	0.2970	0.2761	0.0464	2.2026	1.7027	0.3912	0.0077	0.0738	0.7724	0.8708	0.0078	0.8522	0.0063	0.0197	0.0269	0.4016	0.0765	1.4826	2.4859	0.2226	0.5635
As	0.7464	0.6057	7.0453	2.0158	2.7993	1.6294	1.5806	0.6468	0.0004	4.2977	2.7273	2.6502	20.9524	4.3521	0.0115	2.2770	27.0575	0.4635	0.6982	0.4624	0.0077	0.8910	0.9738
Au	1.5862	0.6911	0.2966	0.2663	1.3669	0.4062	3.3780	4.9234	10.8025	21.6511	0.0523	23.0259	1.5763	2.8519	0.8086	1.3413	1.6335	5.1061	3.0616	3.4629	0.1045	4.0979	0.7987
Ba	0.3239	0.5788	0.0552	10.5218	9.7728	0.2234	3.6077	3.7729	1.1656	1.1662	6.8633	0.1880	0.0009	0.2788	0.0036	4.2606	0.5828	3.6101	2.6932	1.9342	1.0997	0.0489	0.2808
Be	0.8218	4.8873	0.0011	0.8541	0.0984	4.1252	3.1476	0.0222	0.4950	0.0006	10.1865	1.5835	0.0098	17.8897	0.0024	2.5269	0.3843	8.0227	8.2787	2.5906	0.1040	0.1452	3.3795
Bi	2.5057	0.0031	7.7793	1.0322	0.0403	0.2991	0.5227	0.5425	0.1956	1.5416	0.4285	0.2072	6.0205	0.1930	0.0123	37.3167	1.2705	0.6661	10.5821	1.1620	0.8147	5.4211	1.9531
Ca	3.8433	2.7727	1.0252	1.1536	3.9754	0.0006	0.4945	0.9825	0.6785	1.8290	0.7524	1.1781	0.3333	0.8732	1.0975	0.2910	0.0370	1.6537	0.0229	1.7033	1.1685	0.7486	0.0215
Cd	2.0712	4.0330	1.0675	0.0243	6.1855	1.1330	0.4961	0.0299	2.0733	0.2453	1.5351	0.2793	6.1439	0.6045	0.5480	0.5656	2.8347	0.0013	1.1571	2.2339	1.7880	1.6542	3.3802
Ce	4.2552	4.5878	0.1170	0.8212	0.1654	0.1939	0.4489	0.7542	0.1647	0.7538	0.3191	0.0088	0.0749	1.1453	0.0638	0.0026	0.2509	0.1353	1.0693	0.0691	0.0301	0.0034	4.4540
Co	2.9741	1.1602	0.5551	5.7270	0.8162	1.0765	1.1688	0.0300	1.6835	4.0041	4.9625	2.9176	0.0002	0.4430	5.2242	0.0100	1.8880	0.8138	0.4249	0.8607	1.2064	2.1666	2.6374
Cr	2.5661	0.0004	0.2059	0.2538	1.3448	9.9817	0.2023	14.3350	0.1074	0.0242	2.9128	0.0565	0.5229	12.1594	6.4127	5.4118	0.9116	1.0728	0.0116	2.5613	1.7553	2.8643	0.0305
Cs	0.0093	2.4312	0.9125	0.0211	9.9704	0.0548	16.8596	0.1861	1.1895	0.0228	0.1507	0.0215	5.2608	0.0001	0.3398	0.2344	6.1659	1.1101	5.0875	1.9560	6.0833	4.6253	0.5829
Cu	2.4175	0.4031	5.2710	0.1185	2.0522	5.4359	1.7596	2.2568	3.9324	2.0252	0.1394	0.2471	5.2672	0.0400	0.0667	4.8640	3.3775	0.6156	0.0254	0.6144	2.6177	17.7038	0.8253
Fe	3.2883	0.0752	1.1508	6.5432	0.0760	2.2761	5.9697	0.0115	1.6026	1.2709	0.3257	0.0307	1.0638	0.0254	0.0633	4.5548	0.3872	2.2789	0.0394	1.2909	2.7479	0.0359	4.8749
Ga	3.6399	0.0010	5.1198	0.1817	0.2021	4.7970	1.5592	2.2621	4.2874	1.1958	0.1327	0.9657	1.8494	0.8365	3.0582	0.6300	1.2009	0.4770	0.2782	2.5971	0.4878	0.0119	0.0131
Hg	3.2244	2.8933	0.1423	0.0439	0.0125	5.3974	0.8993	1.3182	0.0005	0.1775	1.9017	0.0629	0.0051	2.3504	2.2390	0.1837	0.6595	7.7409	8.7737	4.8491	0.1527	0.2937	0.4738
K	2.9356	4.4223	0.2000	0.0218	0.1065	1.4790	1.5605	1.0091	0.0015	4.6768	3.3967	6.5903	0.5473	0.4831	3.8526	0.5869	0.1973	0.0149	0.5958	2.5391	0.5105	1.2688	6.7235
La	2.8057	5.7105	0.1445	3.3302	0.0723	0.2013	0.8033	1.1136	0.0308	0.3174	0.0807	0.0091	0.3538	3.5728	0.5521	0.0045	0.0423	0.0798	0.4316	0.5716	0.8345	1.3977	0.8684
Li	2.2260	3.7029	0.0081	0.1301	1.6324	0.0197	4.7826	0.5030	2.8233	0.7202	3.3104	9.3343	0.0399	2.4540	15.3260	0.2488	0.0019	2.0367	0.7876	0.9269	2.1189	1.9885	0.1288
Mg	0.0872	9.9027	0.0786	0.2261	0.0387	1.0889	2.2821	0.0823	0.1189	0.3125	0.0087	1.0257	0.0873	0.1303	6.0262	0.0004	0.1973	0.0092	1.8646	0.0127	3.7439	0.4298	1.3297
Mn	0.9266	0.0558	0.5580	17.9426	0.3232	2.7294	0.2839	0.1438	0.1069	0.6455	0.2429	4.5057	0.6640	0.2625	4.0590	1.7007	0.0105	3.0528	0.0995	0.5730	0.1979	7.1811	0.0912
Mo	0.9974	1.3753	6.2991	2.2886	1.4587	1.0316	0.0046	3.3071	0.0278	4.9820	6.1565	16.0323	4.7959	5.3562	2.2991	0.8896	2.5211	1.2712	0.2727	5.7655	0.0443	1.3610	5.3727
Na	0.0019	8.0361	0.0439	0.2626	1.2973	0.0238	0.0075	3.2192	6.1883	0.1616	0.0198	1.1718	3.0230	0.0914	0.0152	0.5163	1.6302	18.5154	21.5202	0.0260	0.5526	1.4898	0.3109
Nb	4.7425	0.0361	0.8518	5.7118	0.2146	0.1939	0.7179	3.2378	0.0168	3.8249	0.0190	0.0218	0.0047	0.0024	1.6473	0.0932	1.8563	0.5171	0.1111	2.9481	1.8229	0.6650	0.0219
Ni	0.2029	0.0138	3.8024	1.0033	1.7867	17.2568	0.0031	11.7870	3.4355	0.0851	1.6453	4.5745	3.9620	0.5585	2.0153	0.3654	1.1434	10.1699	1.1048	0.1823	0.2543	0.4001	0.1515
P	0.1926	2.9991	0.1056	7.6399	1.9823	0.4587	0.0649	15.0008	0.3987	1.4393	0.0977	5.7328	5.2644	0.7144	1.4400	2.6085	8.6708	0.4335	1.7704	3.8347	13.3381	0.0848	5.7396
Pb	1.2053	0.0003	16.7114	0.0256	0.8975	0.1385	0.4776	3.0320	0.3335	0.5080	0.5008	2.3314	1.8802	1.6433	0.3688	0.9589	5.2327	0.7997	5.4137	1.8040	0.4807	0.0003	0.0892
Rb	2.6888	4.6116	0.0003	0.0593	0.5021	0.8000	3.9591	0.1444	1.5144	7.4558	2.3438	3.8431	0.1167	0.1601	1.0948	0.0054	0.0022	2.6425	1.0626	1.5745	0.3800	1.6674	1.2793
S	5.0838	0.2494	1.9626	1.7042	0.0025	0.0575	1.9194	1.3999	2.7725	2.7371	0.0000	0.2110	0.1464	1.7277	0.0429	2.7447	0.2526	1.0678	0.0173	1.4675	5.6796	0.0257	4.3591
Sb	4.1868	0.3149	3.7301	0.3744	0.5142	0.0038	2.4654	1.2597	0.0213	0.6388	2.1579	0.0283	0.7434	0.8526	5.5609	14.6071	8.8767	0.4588	1.4251	0.3623	1.7897	1.7207	0.5344
Sc	4.2654	0.3470	2.2762	0.0817	0.9125	0.1829	5.3171	3.1827	0.6323	3.2667	1.9608	0.6935	0.0161	0.6224	0.9213	0.2051	1.6429	7.1854	0.4167	1.0056	3.3909	1.0384	15.6353
Se	4.2016	0.0051	1.3092	0.1243	0.1060	0.5622	0.0437	0.0202	17.0461	2.3225	0.0218	0.1930	5.3966	0.0815	7.4359	0.4546	2.3689	0.0696	2.3307	24.0226	1.9980	1.8064	4.7346
Sn	0.0624	0.0307	20.3658	1.1132	0.1219	0.7923	0.0059	2.5887	0.1935	0.1765	0.0137	0.1052	5.0154	0.0237	2.0198	0.0064	2.5525	0.0642	2.0791	0.5402	0.3231	1.5332	3.2500
Sr	2.7793	0.0163	1.1814	0.0042	11.4025	0.2555	6.6267	3.3067	0.6027	1.7892	0.8777	0.3164	0.1806	5.6459	3.7355	0.1193	0.7981	1.1140	0.2231	0.5253	0.6303	1.6033	0.2791
Th	2.4594	2.5208	1.6654	0.8733	0.3666	5.2621	7.4612	2.7110	0.0531	0.4746	0.3233	1.1618	0.2966	0.9737	0.0172	1.7010	0.0011	0.0760	3.1212	0.4057	1.7098	0.0802	1.0609
Ti	4.5578	3.5428	0.2775	0.2365	0.0012	1.4619	0.0695	2.9222	0.0617	0.7021	0.2425	0.6281	0.1980	0.0689	0.4655	0.3885	3.0454	0.0374	0.1808	2.4945	0.8262	0.0458	4.0718
Tl	0.0195	0.2897	1.1400	6.9142	14.2268	0.5021	0.8494	0.5118	4.0828	3.1644	10.8152	1.5222	3.4529	1.4865	8.0788	0.6558	0.0324	0.0960	2.0559	4.2711	0.0323	3.7049	0.1071
U	0.0162	2.2470	1.4029	3.7034	0.0095	11.0697	8.4706	0.0467	0.2282	0.6565	10.6457	0.0217	0.4186	0.7213	1.1478	0.0276	0.0019	12.1861	2.2954	2.6109	0.1128	1.6741	0.5326
V	4.0213	0.6816	0.0608	2.9985	1.9703	1.5642	2.8140	1.1255	1.7522	0.1069	5.1018	0.6210	1.9469	1.8396	0.0994	0.0617	2.0773	1.3993	0.2480	0.0285	0.0087	4.9862	13.6759
Y	1.4436	6.6287	0.4467	2.7790	0.1178	2.7771	0.0076	0.0054	0.0416	0.0336	2.3291	2.6165	0.8200	0.5169	0.1086	2.6415	1.4256	0.0037	2.4025	1.3849	0.0038	0.2013	0.8193
Zn	0.3016	1.8631	0.6623	1.2298	17.2240	0.0798	0.4275	2.5567	8.3587	2.4103	4.7886	0.0473	8.9467	0.0031	2.1152	3.1684	2.3674	0.0007	0.0536	1.7635	0.5067	0.9327	0.0430
Zr	0.0842	5.8356	0.9934	3.4105	1.6011	0.4557	4.3967	0.8738	0.0129	3.8668	7.2836	0.0407	0.3609	0.4395	9.0822	0.1719	1.3031	1.6702	1.9725	0.6146	2.9096	0.9754	0.2053

	PC24	PC25	PC26	PC27	PC28	PC29	PC30	PC31	PC32	PC33	PC34	PC35	PC36	PC37	PC38	PC39	PC40	PC41	PC42	PC43	PC44	PC45
Si	2.1816	3.2673	0.8929	0.9550	0.6604	3.6818	4.4948	0.3697	1.6360	4.8763	1.5849	4.3290	0.0449	0.4974	0.1712	1.3991	0.9587	0.0668	0.0527	0.0185	0.0269	1.6008
LOI	0.2328	0.0292	0.0036	0.2994	4.8350	0.7941	3.9191	0.6830	2.9189	0.4089	1.1769	0.7658	2.6444	0.2371	0.5467	5.5862	42.2193	8.8167	0.1909	0.9026	0.7646	2.6252
Ag	2.4888	0.0563	1.4843	0.0590	0.0047	1.8011	0.0148	0.2481	0.0940	0.1911	0.1268	0.1924	0.3032	0.1995	0.7649	0.1667	0.0604	0.2476	0.1398	0.0111	0.0525	0.9117
Al	1.5261	0.1559	0.6418	2.3443	1.2977	0.0765	0.1059	0.3852	1.1866	0.0056	9.6279	0.1541	0.6362	7.4588	7.2975	0.9758	6.1989	14.5654	4.9828	17.1541	0.6356	1.3943
As	1.1092	2.4641	3.2185	0.0097	0.4940	0.0045	1.2612	0.1289	0.0180	0.0247	0.1385	0.2588	0.2808	0.0549	0.5108	0.0045	0.0422	0.0816	0.0628	0.0343	0.0049	4.9012
Au	0.0007	0.0838	0.0010	0.4913	0.3669	0.3205	0.6085	0.0109	0.3455	0.0017	0.1189	0.1983	0.0217	0.0701	0.0250	0.0118	0.0849	0.0135	0.0460	0.2109	0.0856	3.5926
Ba	2.7120	3.7685	6.3146	8.9659	10.3579	1.6264	0.2785	1.4445	5.7421	0.3943	0.0056	1.1003	0.1791	0.2649	0.0007	0.8343	0.9859	0.0591	0.1685	0.0005	0.0413	1.7215
Be	1.7674	2.1521	0.4574	3.4213	1.0030	0.5106	0.2599	0.2118	7.9478	1.8713	0.2481	0.1131	5.9235	0.0326	0.5365	0.2176	0.2394	0.7871	0.0003	0.5304	0.1904	2.0213
Bi	1.0847	6.9062	0.5603	1.0308	0.7110	0.2145	2.3878	0.2134	0.2906	1.3110	0.0091	0.0348	0.6073	0.4158	0.1222	0.1428	0.0185	0.8265	0.2979	0.1608	0.0025	2.1418
Ca	0.0803	1.2342	0.0311	2.1030	3.2937	0.0248	0.4653	8.3288	0.0452	0.0075	1.2848	17.4508	8.5360	0.7418	7.8279	0.0550	1.0321	9.9413	3.2857	0.0611	0.6464	6.8869
Cd	3.2179	4.2234	0.0129	13.2845	7.2705	0.3090	3.1488	2.7180	9.6047	0.0705	6.4826	0.2784	0.3257	0.6948	1.3373	1.5129	3.5768	0.4840	0.1483	0.2433	0.0000	0.9710
Ce	0.4829	0.0574	0.0517	0.2304	0.0243	8.1036	0.0004	0.0004	2.4489	4.6740	1.3665	3.9816	0.0868	2.5030	1.4310	6.8752	0.0150	8.8279	0.0543	0.1346	36.0401	2.7212
Co	15.5099	16.5461	0.8422	0.0457	4.1345	1.6301	1.0749	2.1077	0.3433	2.5339	0.2583	4.7954	0.0002	0.2029	1.2374	1.5456	0.4890	0.3848	0.7659	1.4169	0.0012	1.3833
Cr	1.2353	10.8757	3.9826	4.3568	2.9847	1.0779	0.0200	0.0582	0.1243	0.0445	2.0395	0.1360	0.6721	1.0420	0.3568	2.4144	0.0071	0.1969	1.8340	0.0909	0.0731	0.6721
Cs	0.0354	1.6086	3.9643	5.5109	0.2159	7.5341	1.8629	0.1014	2.7153	1.0341	4.8381	0.3048	0.7657	0.4647	0.0035	0.4269	2.8207	0.0033	0.1767	0.3485	0.8336	1.1549
Cu	1.2227	0.5245	1.7916	0.0414	0.9469	4.0347	0.1603	2.2468	0.9642	0.0030	6.8122	0.4308	2.4093	10.5973	0.3584	1.6550	0.3864	0.3927	0.1366	0.6128	1.0367	1.1593
Fe	0.1421	1.6907	2.8131	0.0424	7.9098	4.7315	3.1884	1.8379	0.0719	4.0764	10.1496	0.9198	3.9639	0.0208	9.4481	4.9219	1.2020	0.4146	0.6914	0.0023	0.0379	1.7406
Ga	11.3355	0.0041	0.1242	3.4949	0.9819	2.0923	1.4609	0.0663	7.7548	2.7130	2.9838	3.8099	3.0078	3.4704	7.8501	0.5056	0.2291	1.3067	6.2079	3.7365	0.1066	0.9732
Hg	1.1515	2.8930	28.3552	2.8778	0.0439	1.2478	3.2579	3.8886	3.0230	0.8431	0.7410	3.1348	1.1258	1.7445	0.5280	0.0508	0.0730	0.0769	0.0003	0.0893	0.0024	1.0561
K	3.3940	0.2508	0.1251	3.0681	2.4453	0.8820	0.9612	0.0668	1.8195	0.0530	0.0199	0.0151	0.4397	0.1788	7.6809	0.9262	2.2482	4.8103	14.1905	11.3426	0.2180	1.1444
La	0.2840	0.1219	0.0037	0.3336	0.3934	5.9213	0.0583	0.1741	3.2629	0.4540	0.4443	3.1905	0.3014	2.8746	0.0573	0.0454	1.1141	0.4112	0.0269	6.5098	47.3708	3.3179
Li	1.2311	0.3774	0.7880	2.6147	0.9078	0.8667	3.1150	14.6507	1.8323	0.7930	4.2107	2.5504	0.8239	0.1562	0.7617	3.5137	0.3302	0.0000	0.1847	3.1794	0.4151	1.4463
Mg	4.4869	0.9896	0.4070	1.9342	0.6897	0.5140	3.0975	4.0829	1.2084	9.9109	1.8741	7.8899	5.2124	3.5888	1.9619	6.5927	0.0066	11.6776	1.7040	1.0260	0.7025	1.3588
Mn	11.4749	1.9813	5.1128	0.2743	7.8694	1.3419	0.0092	3.5719	3.2345	2.3378	0.2221	0.0117	7.5883	0.0563	2.0319	1.1460	0.0038	0.4271	0.5277	0.3779	0.0282	4.0145
Mo	0.0023	1.0488	4.6400	0.2699	0.1262	0.3260	2.6242	2.1637	4.3791	0.4059	1.5045	0.1004	0.0737	0.7792	1.7240	0.2186	1.2839	0.0429	0.0737	0.3693	0.7532	3.1800
Na	0.0007	0.3565	1.9123	1.6016	1.9560	0.0002	10.9167	2.6776	0.2869	0.6225	0.5882	0.7701	0.8002	3.9104	1.3829	0.1797	0.0183	0.3327	0.6483	0.3565	0.2807	2.2760
Nb	0.7066	2.0255	0.2286	6.9470	1.4449	5.9178	0.9026	10.0681	1.7662	9.5377	0.5281	2.4331	1.9981	1.0709	0.7332	6.7565	0.3148	1.6618	11.9577	1.5123	0.8999	1.3096
Ni	0.6876	4.7795	8.0930	0.0569	9.5724	0.0289	1.1230	0.1254	0.1653	0.9287	1.2939	0.0206	0.3865	2.3619	0.0002	2.8767	0.5672	0.1009	0.1529	0.0083	0.0684	0.6979
P	0.5767	6.8292	0.0199	0.0193	0.0317	0.2835	0.1784	0.1449	3.1807	0.2022	1.0069	1.3832	2.4280	0.6017	0.2992	0.2637	0.3952	0.1109	0.0031	0.8309	0.0060	1.1930
Pb	1.3984	0.0001	0.6944	0.9139	1.5890	1.7444	2.0003	1.7073	0.0079	0.5509	9.2546	0.5275	7.0146	0.0440	1.6182	17.6258	3.2384	0.1284	2.1727	0.0500	0.3827	2.5031
Rb	3.9835	0.0011	0.1936	2.4511	0.8946	0.0544	0.6761	1.0984	0.2781	0.0012	0.0470	1.1155	4.4459	0.0117	7.0216	0.6771	7.1721	11.4979	11.9006	7.5895	0.0038	0.9770
S	4.4393	0.7478	0.0558	5.8900	0.0099	2.7927	1.3517	2.8713	3.8356	2.4985	2.5723	5.8453	0.6839	1.4018	10.1751	0.0618	14.4495	0.3164	0.0179	0.6396	0.2086	3.5038
Sb	0.0166	0.9747	1.1242	2.1110	1.4779	0.1225	11.9218	3.3394	0.5902	10.1103	1.8667	2.7809	2.3216	0.1232	1.1443	0.7971	0.5223	0.1547	1.4251	0.0012	0.0621	4.3850
Sc	0.7878	0.8359	1.0867	1.3960	0.8440	0.7135	0.9533	3.9823	0.9437	8.9611	1.3941	1.4019	0.1396	3.8176	0.1244	0.9480	0.8031	4.3074	2.4075	7.3990	0.5668	0.9874
Se	1.0579	0.0567	0.3348	0.3422	1.4789	10.0193	0.0116	0.4637	0.1868	2.1062	2.0084	2.7817	0.0386	0.3532	0.0704	0.0226	0.3800	0.0014	0.0093	0.0280	0.0503	1.5426
Sn	0.0530	0.5699	0.2007	1.3451	0.9094	5.2402	5.1428	3.1030	1.8572	2.2414	7.4951	3.0275	1.2443	0.1795	0.8163	16.2232	0.8368	2.3238	2.0318	0.3346	0.2462	1.6011
Sr	4.5762	0.9325	0.1691	1.0547	0.2437	2.6806	1.7052	2.9149	4.7002	10.0759	0.7573	1.1070	17.6079	1.4901	0.5189	0.2467	0.3105	0.4721	0.4938	0.0000	0.4157	3.5136
Th	0.0003	0.2164	0.0003	1.1662	1.3736	4.3199	8.0008	1.8972	3.2986	2.6222	0.0500	4.0158	0.0847	6.3715	9.8283	0.5372	0.0866	7.5322	5.8805	2.0074	0.9043	5.0300
Ti	0.0077	0.1433	0.0616	0.3462	0.1395	1.0190	1.6294	0.2677	0.9021	0.0925	3.1519	7.2548	2.4051	4.9557	2.8297	2.7525	1.6833	1.8506	10.6599	27.2006	2.1920	1.9281
Tl	2.4931	15.6080	0.8664	3.1203	1.7327	2.8739	0.5668	0.0270	0.6259	0.7759	0.0565	0.7544	0.0647	0.1292	0.0000	0.5329	0.0137	0.2768	0.4475	0.0492	0.2085	0.7648
U	0.2611	2.0585	5.8010	0.0026	1.9540	7.2722	2.9563	4.2077	3.2327	0.2372	0.0506	0.7278	2.7581	0.0155	0.5985	0.0045	0.4905	0.9759	0.0665	0.1915	0.0971	5.7927
V	0.3150	0.1136	4.4665	5.0595	2.5829	1.8285	3.2808	2.9894	2.0631	0.1581	1.7750	4.2442	3.2282	10.9902	0.5433	1.9668	0.0583	0.0872	2.3389	0.0571	1.3772	1.2867
Y	0.8603	0.1205	0.3153	4.7635	0.2734	0.0635	4.4429	0.0493	4.5399	1.6798	1.6186	2.2369	4.5935	21.1250	3.4481	3.8900	0.4520	2.7596	6.4976	2.7834	1.6556	2.2763
Zn	0.5327	0.2703	4.2581	3.2475	9.8278	1.2982	2.8450	4.8629	3.7746	1.5089	1.3016	0.0528	1.2417	0.0511	0.1327	1.3547	2.4515	0.2220	0.1439	0.0005	0.0900	0.6809
Zr	8.8553	0.0489	3.4977	0.1059	1.6951	2.0590	1.5586	3.4427	0.7524	6.0493	4.9145	1.3722	0.5407	2.6491	4.1430	0.5376	0.1294	0.0251	4.7944	0.3958	0.2139	3.6595

Table 10 Prediction Accuracy - Lake Sediment Geochemistry - Four-acid digestion

	Accuracy (counts)						
	CarbMS	ClasMS	EFPR	LsPH	MFPR	MFVR	Gneiss
CarbMS	**60**	0	20	3	2	2	0
ClasMS	18	**0**	21	2	0	2	5
EFPR	9	0	**62**	0	1	6	2
LsPH	4	0	0	**5**	0	1	0
MFPR	6	1	11	0	**2**	1	1
MFVR	15	0	24	2	1	**10**	0
Gneiss	0	0	19	0	1	0	**5**

	Accuracy (%)						
	CarbMS	ClasMS	EFPR	LsPH	MFPR	MFVR	Gneiss
CarbMS	**68.97**	0.00	22.99	3.45	2.30	2.30	0.00
ClasMS	37.50	**0.00**	43.75	4.17	0.00	4.17	10.42
EFPR	11.25	0.00	**77.50**	0.00	1.25	7.50	2.50
LsPH	40.00	0.00	0.00	**50.00**	0.00	10.00	0.00
MFPR	27.27	4.55	50.00	0.00	**9.09**	4.55	4.55
MFVR	28.85	0.00	46.15	3.85	1.92	**19.23**	0.00
Gneiss	0.00	0.00	76.00	0.00	4.00	0.00	**20.00**

Overall Accuracy (%) 44.44

Table 11 Prediction Accuracy - Lake Sediment Geochemistry - Aqua regia digestion

	Accuracy (counts)						
	CarbMS	ClasMS	EFPR	LsPH	MFPR	MFVR	Gneiss
CarbMS	**61**	2	13	4	0	5	2
ClasMS	24	**1**	18	0	1	3	1
EFPR	18	0	**56**	0	0	6	0
LsPH	4	0	0	**5**	0	1	0
MFPR	8	2	7	0	**2**	2	1
MFVR	19	1	23	1	0	**7**	1
Gneiss	0	0	16	0	0	0	**9**

	Accuracy (%)						
	CarbMS	ClasMS	EFPR	LsPH	MFPR	MFVR	Gneiss
CarbMS	**70.11**	2.30	14.94	4.60	0.00	5.75	2.30
ClasMS	50.00	**2.08**	37.50	0.00	2.08	6.25	2.08
EFPR	22.50	0.00	**70.00**	0.00	0.00	7.50	0.00
LsPH	40.00	0.00	0.00	**50.00**	0.00	10.00	0.00
MFPR	36.36	9.09	31.82	0.00	**9.09**	9.09	4.55
MFVR	36.54	1.92	44.23	1.92	0.00	**13.46**	1.92
Gneiss	0.00	0.00	64.00	0.00	0.00	0.00	**36.00**

Overall Accuracy (%) 43.52

Table 12. Regression of U on PC1-PC7

```
Call:
lm(formula = U ~ PC1 + PC2 + PC3 + PC4 + PC5 + PC6 + PC7, data = x)

Residuals:
    Min      1Q  Median      3Q     Max
-25.333  -4.533  -1.331   1.651 108.896

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   8.5669     0.6916  12.387  < 2e-16 ***
PC1         -18.4764     2.8517  -6.479 3.54e-10 ***
PC2           6.0308     3.4728   1.737 0.083433 .
PC3         -24.7040     6.5399  -3.777 0.000189 ***
PC4         -47.1487     7.5844  -6.216 1.61e-09 ***
PC5          30.1130     8.4295   3.572 0.000409 ***
PC6         -19.2731     8.9671  -2.149 0.032369 *
PC7          17.7170    10.4392   1.697 0.090651 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 12.45 on 316 degrees of freedom
Multiple R-squared:  0.2721,    Adjusted R-squared:  0.256
F-statistic: 16.88 on 7 and 316 DF,  p-value: < 2.2e-16
```

Table 13. Regression of Th on PC1-PC7

```
Call:
lm(formula = Th ~ PC1 + PC2 + PC3 + PC4 + PC5 + PC6 + PC7, data = x)

Residuals:
    Min      1Q  Median      3Q     Max 
-5.7010 -1.2923 -0.1573  0.9506 24.1048 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept)   5.5112     0.1331  41.399  < 2e-16 ***
PC1          -8.5724     0.5489 -15.617  < 2e-16 ***
PC2          -9.1154     0.6685 -13.637  < 2e-16 ***
PC3          -2.8252     1.2588  -2.244 0.025505 *  
PC4          -7.3398     1.4599  -5.028 8.33e-07 ***
PC5           5.7450     1.6226   3.541 0.000459 ***
PC6          -9.4480     1.7260  -5.474 8.99e-08 ***
PC7          10.9854     2.0094   5.467 9.31e-08 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2.396 on 316 degrees of freedom
Multiple R-squared:  0.6278,    Adjusted R-squared:  0.6196 
F-statistic: 76.14 on 7 and 316 DF,  p-value: < 2.2e-16
```

Table 14. Regression of REE's on PC1-PC7

```
Call:
lm(formula = REE ~ PC1 + PC2 + PC4 + PC5 + PC7, data = y)

Residuals:
    Min      1Q  Median      3Q     Max
-245.59  -66.63  -21.98   39.69 2529.93

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   244.29      10.82  22.568  < 2e-16 ***
PC1          -644.73      44.63 -14.445  < 2e-16 ***
PC2          -345.09      54.35  -6.349 7.47e-10 ***
PC4          -177.33     118.71  -1.494 0.136213
PC5           565.49     131.93   4.286 2.41e-05 ***
PC7           598.31     163.39   3.662 0.000293 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 194.8 on 318 degrees of freedom
Multiple R-squared:  0.4712,    Adjusted R-squared:  0.4629
F-statistic: 56.67 on 5 and 318 DF,  p-value: < 2.2e-16
```