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CRB Analyse Service GmbH

RFA Ringversuch GeoPT 44, England - ShCX-1, Calcareous Shale

Veranstalter des Ringversuchs:	International Association of Geoanalysts and Geostandards Newsletter - GeoPT44
Ringversuchsmaterial:	ShCX-1, Calcareous Shale
RV geschlossen:	2018 – 7
Literatur:	Report - GeoPT44 Proficiency Testing Round 44 (Laborcode CRB = C85)

Hauptelemente [MA%]

	CRB	RV	1sRV	Z-Score
MgO	0,560	0,490	0,011	3,210
Al_2O_3	1,640	1,560	0,029	1,460
SiO_2	7,770	7,830	0,115	-0,240
P_2O5	0,068	0,061	0,002	2,030
K_2O	0,470	0,460	0,010	0,480
CaO	48,100	47,600	0,532	0,470
TiO_2	0,086	0,080	0,002	1,280
Fe_2O_3tot	0,950	0,955	0,020	-0,140
MnO	0,027	0,023	0,001	2,460
L.O.I. *	39,930	40,120	0,460	-0,210
TC *	12,400	12,400	0,170	0,000
CO_2*	37,200	37,200	0,432	0,000

Spurenelemente [µg/g]

	CRB	RV	1sRV	Z-Score
Sr	298,00	290,00	9,90	0,42
V	75,00	60,00	2,60	2,89
Zn	187,00	193,00	7,00	-0,43

Legende

CRB: Ergebnisse CRB – **RV:** Ergebnisse Ringversuch -- **1s-RV:** Standardabweichung Ringversuch
Z-Score: Differenz des Messwertes vom Mittelwert des Ringversuchs -- * Wert nicht zertifiziert

Geo*PT*44 — AN INTERNATIONAL PROFICIENCY TEST FOR ANALYTICAL GEOCHEMISTRY LABORATORIES — REPORT ON ROUND 44 (Calcareous shale, ShCX-1) / January 2019

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*Keywords: proficiency testing, quality assurance, Geo*PT*, Geo*PT*44, Round 44, ShCX-1, Calcareous shale, USGS*

Abstract

Results are presented for Round 44 of the International Association of Geoanalysts' Proficiency Testing programme for analytical geochemistry laboratories. The test material distributed in this round of Geo*PT* was the Calcareous shale, ShCX-1, supplied by Dr Stephen Wilson of the U.S. Geological Survey. In this report, the data contributed by 94 laboratories are listed, together with an assessment of consensus values, consequent *z*-scores and charts to show the distribution of contributed results and the overall performance of participating laboratories.

Introduction

This forty-fourth round of the international proficiency testing programme, Geo*PT*, was conducted in a similar manner to earlier rounds. The programme is designed to be part of the routine quality assurance procedures employed by analytical geochemistry laboratories. The programme is organised by the International Association of Geoanalysts and is conducted in accordance with a published protocol, recently revised (IAG, 2018). The overall aim of the programme is to provide participating laboratories with *z*-score information for their reported measurement results so that each laboratory can decide whether the quality of their data is satisfactory in relation both to their chosen fitness-for-purpose criteria and to the results submitted by other laboratories contributing to the round. In circumstances where *z*-scores are unsatisfactory, a participating laboratory is encouraged to investigate for unsuspected analytical bias and to take corrective action if this appears justified.

Steering Committee for Round 44: P.C. Webb (results coordinator), M. Thompson (statistical advisor), P.J. Potts, C.J.B. Gowing (analytical advisors) and S.A. Wilson (provision of ShCX-1).

Timetable for Round 44:
Distribution of sample: September 2018
Results submission deadline: 13th December 2018
Release of report: January 2019

Test Material details

Geo*PT*44: The Calcareous shale test material, ShCX-1, was prepared at the U.S. Geological Survey under the direction of Dr Stephen Wilson. The test material was evaluated for homogeneity by the originator, and as a result, the sample was considered suitable for use in this proficiency test.

Submission of results

A total of 3184 results (excluding zeros) were submitted for Geo*PT*44 (ShCX-1) by 94 laboratories as listed in

Table 1. Measurement results that were designated by the participating laboratory as data quality 1 (see ***Z*-score analysis section** below for explanation) are shown in bold and results of data quality 2 are shown underlined. Results from all laboratories submitting data were used to assess respective consensus values. Four laboratories reported values of '0' (i.e. zero) for this round contrary to our ongoing instructions. These values are excluded from consideration in the data assessment process. It is suspected that two laboratories reported both C(org) and C(tot) in g/100g instead of mg/kg and three laboratories made the same form of error in submitting S data. We must remind analysts reporting results that these measurements and those of all trace constituents should be reported in mg/kg. Suspected invalid results cannot be altered or removed once they have been submitted and corresponding *z*-scores will be adversely affected.

Assigned values and results summary

Following procedures described in earlier rounds, and detailed fully in the Geo*PT* protocol (2018), robust statistical procedures were used to derive consensus values for measurands in this test material: these consensus values being judged to be the best available estimates of the true composition. Values were assigned on the basis that: i) sufficient laboratories had contributed data for estimating a measurand, ii) visual assessment gave confidence that a substantial proportion of the results distribution was symmetrically disposed about the consensus, iii) the ratio of the uncertainty in the location estimate to the target precision is an acceptably small value, and iv) an evaluation of measurement results by procedure – including both methods of analysis and sample preparation – indicated no detectable procedural bias among measurement results from which the consensus was derived. Where these criteria are not fully met, values may be credited with 'provisional' rather than 'assigned' status.

These assessments also involve examining the distribution of results from barcharts of data contributed for each measurand (as presented in Figures 1 and 2), and a variety of plots – permitting discrimination of data by procedure of analysis and sample preparation – as developed by Thomas Meisel using the Shiny App (*https://www.shinyapps.io*) linked to the statistical package 'R'. This enables us, when necessary, to refine the selection of consensus values by taking account of data distributions according to analytical procedure.

Some datasets were normally distributed, showing remarkable symmetry with relatively little dispersion of data, and consequently, in 6 cases, the robust mean was used to define an appropriate consensus value. However, for 38 datasets that were very slightly skewed, medians provided a more satisfactory estimator of consensus values. For 14 datasets that were more severely skewed, where the median did not provide a sufficiently symmetrical distribution of data about the consensus, a mode was preferred to estimate the location of the consensus.

Use of modes as location estimators helped to avoid bias due to asymmetric tailing in several datasets. In nine cases, modes were sufficiently well defined by a consensus of results acquired by appropriate techniques to justify their designation as assigned values. Procedures used to determine modes included the estimation of the mass fraction corresponding to the maximum value of the kernel density distribution for the dataset as described by Thompson (2017) and some using the Lientz mode (Lientz, 1969) as provided by the "modeest" package which runs in 'R' (*https://cran.r-project.org/web/packages/modeest/modeest.pdf*). Modes are suitably robust location estimators that can provide consensus values representing the most coherent part of a data distribution where data are symmetrically disposed, although the dataset as a whole may be asymmetric.

In those cases where a mode was considered to be the most appropriate location estimator, it was as a consequence of an overall asymmetric distribution of results involving tails of somewhat variable data. Experience has shown that the reason for a high tail is frequently because measurement results have been reported for mass fractions (e.g. for Co, Cr, Pb, Sc, Sn and W in ShCX-1) close to the detection limit for the technique (e.g. for XRF) with the consequence that those data have poor precision and accuracy. Mode evaluation

can successfully de-emphasise such results when estimating a consensus, but in many of these cases only provisional status could be credited.

For Na_2O the low mass fraction was almost certainly the reason for a high dispersion of data which extended well beyond our fitness-for-purpose targets and therefore no value could be derived for the purpose of calculating *z*-scores.

An unusually low tail was observed for the K_2O dataset, similar to that observed in results contributed for ShTX-1, the calcareous organic-rich shale, which was the subject of Geo*PT*40A. In both cases, the test materials contained relatively low mass fractions of K_2O but high CaO and carbonate components. Following a personal communication from Marcus Burnham (Ontario Geological Survey) with details of an earlier investigation, it is considered possible that volatilisation of potassium may occur when a test sample of this type is calcined at more than 925°C. This may then affect K_2O measurements when elemental analysis is carried out on the test portion already used for loss on ignition determination. Unfortunately, the information about procedures as supplied by most participants is not sufficiently detailed to be able to confirm our understanding of the cause of this effect. We therefore recommend that analysts respond to our plea in the Addendum of this report to update their procedural information so that we have a more complete understanding of the influence of methods on variations in contributed datasets in the future.

Table 2 lists assigned and provisional values for 11 major components and 47 trace elements in Geo*PT*44 (ShCX-1). Barcharts for the 58 measurands of Geo*PT*44 that were judged to have satisfactory distributions for consensus values to be designated as assigned or provisional values are shown in Figure 1. These are: SiO_2, TiO_2, Al_2O_3, Fe_2O_3T, MnO, MgO*, CaO, K_2O*, P_2O_5, CO_2*, LOI, Ag, As, Ba, Be, Bi*, C(tot), Cd, Ce, Co*, Cr, Cs, Cu, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Li, Lu, Mo, Nb, Nd, Ni, Pb*, Pr, Rb, Sb, Sc, Se*, Sm, Sn*, Sr, Ta, Tb, Th, Tl, Tm, U, V, W*, Y, Yb, Zn and Zr. Of these, provisional values were given to the 9 analytes marked '*'. Instances of provisional status were recorded because either: i) a relatively small number of results (<15) contributed to the consensus, or ii) the results were unduly dispersed in relation to the target value, or iii) the distribution of results was significantly skewed.

Bar charts for the 11 analytes: Fe(II)O, Na_2O, H_2O^+, Br, C(org), Cl, F, Ge, Hg, In and S are plotted in Figure 2 for information only, as the data were either insufficient in number, or the distribution was too highly skewed or too variable for the reliable determination of a consensus for the estimation of *z*-scores.

Z-score analysis

As in previous rounds, laboratories were invited to choose one of two performance standards against which their analytical results would be judged:

Data quality 1 for laboratories working to a 'pure geochemistry' standard of performance, where analytical results are designed for geochemical research and where care is taken to provide data of high precision and accuracy, sometimes at the expense of a reduced sample throughput rate. For Geo*PT*44, 1418 results of data quality 1 were submitted.

Data quality 2 for laboratories working to an 'applied geochemistry' standard of performance, where, although precision and accuracy are still important, the main objective is to provide results on large numbers of samples collected, for example, as part of geochemical mapping projects or geochemical exploration programmes. For Geo*PT*44, 1766 results of data quality 2 were submitted.

The target standard deviation (H_a) for each measurand assessed was calculated from a modified form of the Horwitz function as follows:

$$H_a = k.X_a^{0.8495}$$

Where X_a is the mass fraction of the element; the factor k = 0.01 for pure geochemistry laboratories and k = 0.02 for applied geochemistry laboratories.

Z-scores were calculated for each elemental measurement submitted by each laboratory from:

$$z = [X - X_a] / H_a$$

Where X is the contributed measurement result, X_a is the assigned value and H_a is the target standard deviation (all as mass fractions). Z-score values for results contributed to Geo*PT*44 are listed in Table 3. Results designated as data quality 1 are shown in bold: results of data quality 2 are shown underlined. Z-scores derived from provisional values of measurands are shown in italics.

Participating laboratories are invited to assess their performance using the following criteria:–

Z-score results in the range $-2<z<2$ are considered to be 'satisfactory' (in the sense that no action is called for by the participant). If the z-score for any element falls outside this range, especially if it is outside the range $-3<z<3$, laboratories are advised to examine their procedures, and if necessary, take action to ensure that determinations are not subject to unsuspected analytical bias.

Overall performance

A summary of the overall performance of individual laboratories for this round is plotted in multiple z-score charts in Figure 3. In these charts, the z-score performance for each element is distinguished by symbols that make it easy to identify whether the results were satisfactory or gave z-scores that exceeded the action limits. This chart is designed to help individual laboratories judge their overall performance in this proficiency testing round. Participants should always review their z-scores in accordance with their own fitness-for-purpose criteria.

Participation in future rounds

The benefit from proficiency testing arises from regular participation and laboratories are invited to contribute to Round 45, the test sample for which will be distributed during March 2019.

Acknowledgements

The authors thank Cynthia Turner and Andrea Mills (BGS) for much-valued assistance in distributing this sample and Thomas Meisel for development of software which has greatly assisted the investigation of data according to analytical procedure and facilitated analysis of datasets involving modes derived according to Thompson (2017) and as provided in the package "modeest", which is available as an "R" package (*https://cran.r-project.org/web/packages/modeest/modeest.pdf*).

References

IAG (2018) Protocol for the operation of the Geo*PT* Proficiency testing scheme. International Association of Geoanalysts (Keyworth, UK), 18pp. *http://www.geoanalyst.org/wp-content/uploads/2018/06/GeoPT-revised-protocol-2018.pdf*.

Lientz (1969) On estimating points of local maxima and minima of density functions. Nonparametric Techniques in Statistical Inference (ed. M.L. Puri, Cambridge University Press, p.275-282.

Thompson, M. (2017) On the role of the mode as a location parameter for the results of proficiency tests in chemical measurement. *Anal. Methods*, **9**, p.5534-5540.

ADDENDUM
— AN IMPORTANT NOTICE TO ANALYSTS

Explicit advice to analysts regarding reporting of procedures involving ignition and fusion:

For some time we have requested that analysts reporting measurement results for procedures involving fusion, sintering or ignition, particularly LOI determinations, specify the temperature used and where appropriate, the end-point criterion, e.g. the duration of ignition. This information should be supplied, in descriptions of your relevant **Procedures,** as **Additional Details**.

In this round we have seen the possibility that many underestimated K_2O values were the result of volatilisation of potassium, possibly when ignition is undertaken on the test material prior to fusion. Unfortunately it has not been possible to investigate this further, because the relevant details were not included in the procedural details provided by many participating laboratories. We urge analysts to make efforts to provide these details for future rounds, as it will assist in assessing data variations.

Note also, that a large number of laboratories are listing

their procedure for determining LOI as the same as that employed for major elements, rather than providing separate, specific details. It is important to provide information that is appropriate for every analyte.

In addition it would help if details of gravimetric procedures were included under **Analytical Technique details** rather than under **Sample Preparation details**. For gravimetric analysis, other than drying, which should in any case be carried out according to our instructions, there is no other sample preparation involved.

Appendix 1

Publication status of proficiency testing reports. Previous reports are available for download from the IAG website (*http://www.geoanalyst.org/*).

Geo*PT*1
Thompson M., Potts P.J., Kane J.S. and Webb P.C. (1996) Geo*PT*1. International proficiency test for analytical geochemistry laboratories - Report on round 1. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 20, 295-325.

Geo*PT*2
Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson, J.S. (1998) Geo*PT*2. International proficiency test for analytical geochemistry laboratories - Report on round 2. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 22 127-156.

Geo*PT*3
Thompson M., Potts P.J., Kane J.S. and Chappell B.W. (1999a) Geo*PT*3. International proficiency test for analytical geochemistry laboratories - Report on round 3. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 23, 87-121.

Geo*PT*4
Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson J.S. (1999b) Geo*PT*4. International proficiency test for analytical geochemistry laboratories - Report on round 4. Published in the electronic version of Geostandards Newsletter: The Journal of Geostandards and Geoanalysis (Summer 2000).

Geo*PT*5
Thompson M., Potts P.J., Kane J.S., and Wilson S. (1999c) Geo*PT*5. International proficiency test for analytical geochemistry laboratories - Report on round 5. Published in the electronic version of Geostandards Newsletter: The Journal of Geostandards and Geoanalysis (Summer 2000).

Geo*PT*6
Potts P.J., Thompson M., Kane J.S., Webb P.C. and Carignan J. (2000) GEO*PT*6 - an international proficiency test for analytical geochemistry laboratories - report on round 6 (OU-3: Nanhoron microgranite) and 6A (CAL-S: CRPG limestone). International Association of Geoanalysts: Unpublished report.

Geo*PT*7
Potts P.J., Thompson M., Kane J.S., and Petrov L.L. (2000) GEO*PT*7 - an international proficiency test for analytical geochemistry laboratories - report on round 7 (GBPG-1 Garnet-biotite plagiogneiss). International Association of Geoanalysts: Unpublished report.

Geo*PT*8
Potts P.J., Thompson M., Kane J.S., Webb, P.C. and Watson J.S. (2000) GEO*PT*8 - an international proficiency test for analytical geochemistry laboratories - report on round 8 / February 2001 (OU-4 Penmaenmawr microdiorite). International Association of Geoanalysts: Unpublished report.

Geo*PT*9
Potts P.J., Thompson M., Webb, P.C. and Watson J.S. (2001) GEO*PT*9 - an international proficiency test for analytical geochemistry laboratories - report on round 9 / July 2001 (OU-6 Penrhyn slate). International Association of Geoanalysts: Unpublished report.

Geo*PT*10
Potts P.J., Thompson M., Webb, P.C., Watson J.S. and Wang Yimin (2001) GEO*PT*10 - an international proficiency test for analytical geochemistry laboratories - report on round 10 / December 2001 (CH-1 Marine sediment). International Association of Geoanalysts: Unpublished report.

Geo*PT*11
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Watson J.S. (2002) GEO*PT*11 - an international proficiency test for analytical geochemistry laboratories - report on round 11 / July 2002 (OU-5 Leaton dolerite). International Association of Geoanalysts: Unpublished report.

Geo*PT*12
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Batjargal B. (2003) GEO*PT*12 - an international proficiency test for analytical geochemistry laboratories - report on round 12 / January 2003 (GAS Serpentinite). International Association of Geoanalysts: Unpublished report.

Geo*PT*13
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Kaspar H.U. (2003) GEO*PT*13 - an international proficiency test for analytical geochemistry laboratories - report on round 13 / July 2003 (Köln Loess). International Association of Geoanalysts: Unpublished report.

Geo*PT*14
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and B. Batjargal (2004) Geo*PT*14 - an international proficiency test for analytical geochemistry laboratories - report on round 14 / January 2004 (OShBO - alkaline granite). International Association of Geoanalysts: Unpublished report.

Geo*PT*15
Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Wang Yimin (2004) Geo*PT*15 - an international proficiency test for analytical geochemistry laboratories - report on round 15 / June 2004 (Ocean floor sediment MSAN). International Association of Geoanalysts: Unpublished report.

Geo*PT*16
Potts P.J., Thompson M., Webb, P.C. and S.Wilson (2005) Geo*PT*16 - an international proficiency test for analytical geochemistry laboratories - report on round 16 / February 2005 (Nevada basalt, BNV-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*17
Potts P.J., Thompson M., Webb, P.C. and J. Nicholas Walsh (2005) Geo*PT*17 - an international proficiency test for analytical geochemistry laboratories - report on round 17 / July 2005 (Calcareous sandstone, OU-8). International Association of Geoanalysts: Unpublished report.

Geo*PT*18
Webb, P.C., Thompson M., Potts P.J. and L. Paul Bedard (2006) Geo*PT*18 - an international proficiency test for analytical geochemistry laboratories - report on round 18 / Jan 2006 (Quartz Diorite, KPT-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*19
Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2006) Geo*PT*19 - an international proficiency test for analytical geochemistry laboratories - report on round 19 / July 2006 (Gabbro, MGR-N). International Association of Geoanalysts: Unpublished report.

Geo*PT*20
Webb, P.C., Thompson M., Potts P.J. and M. Burnham (2007) Geo*PT*20 - an international proficiency test for analytical geochemistry laboratories - report on round 20 / Jan 2007 (Ultramafic rock, OPY-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*21
Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2007) Geo*PT*21 - an international proficiency test for analytical geochemistry laboratories - report on round 21 / July 2007 (Granite, MGT-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*22
Webb, P.C., Thompson, M., Potts, P.J. and Batjargal, B. (2008) Geo*PT*22 - an international proficiency test for analytical geochemistry laboratories - report on round 22 / January 2008 (Basalt, MBL-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*23
Webb, P.C., Thompson, M., Potts, P.J., Watson, J.S. and Kriete, C. (2008)
Geo*PT*23 - an international proficiency test for analytical geochemistry laboratories - report on round 23 / September 2008 (Separation Lake pegmatite, OU-9) and 23A (Manganese nodule, FeMn-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*24
Webb, P.C., Thompson, M., Potts, P.J. and Watson, J.S. (2009) Geo*PT*24 - an international proficiency test for analytical geochemistry laboratories - report on round 24 / January 2009 (Longmyndian greywacke, OU-10). International Association of Geoanalysts: Unpublished report.

Geo*PT*25
Webb, P.C., Thompson, M., Potts, P.J. and Enzweiler, J. (2009) Geo*PT*25 - an international proficiency test for analytical geochemistry laboratories - report on round 25 / July 2009 (Basalt, HTP-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*26
Webb, P.C., Thompson, M., Potts, P.J. and Loubser, M. (2010) Geo*PT*26 - an international proficiency test for analytical geochemistry laboratories - report on round 26 / January 2010 (Ordinary Portland cement, OPC-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*27
Webb, P.C., Thompson, M., Potts, P.J. and Batjargal, B. (2010) Geo*PT*27 - an international proficiency test for analytical geochemistry laboratories - report on round 27 / July 2010 (Andesite, MGL-AND). International Association of Geoanalysts: Unpublished report.

Geo*PT*28
Webb, P.C., Thompson, M., Potts, P.J. and Wilson, S. (2011) Geo*PT*28 - an international proficiency test for analytical geochemistry laboratories - report on round 28 / January 2011 (Shale, SBC-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*29
Webb, P.C., Thompson, M., Potts, P.J. and Wilson, S. (2011) Geo*PT*29 - an international proficiency test for analytical geochemistry laboratories - report on round 29 / July 2011 (Nephelinite, NKT-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*30
Webb, P.C., Thompson, M., Potts, P.J., Long, D. and Batjargal, B. (2012)
Geo*PT*30 - an international proficiency test for analytical geochemistry laboratories - report on round 30 / January 2012 (Syenite, CG-2) and 30A (Limestone, ML-2). International Association of Geoanalysts: Unpublished report.

Geo*PT*31
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2012) Geo*PT*31 - an international proficiency test for analytical geochemistry laboratories - report on round 31 / July 2012 (Modified river sediment, SdAR-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*32
Webb, P.C., Thompson, M., Potts, P.J and Webber, E. (2013) Geo*PT*32 - an international proficiency test for analytical geochemistry laboratories - report on round 32 / January 2013 (Woodstock Basalt, WG-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*33
Webb, P.C., Thompson, M., Potts, P.J., Prusisz, B., and Young, K. (2013)
Geo*PT*33 - an international proficiency test for analytical geochemistry laboratories - report on round 33 / July-August 2013 (Ball Clay, DBC-1). International Association of Geoanalysts: Unpublished report.

Geo*PT*34
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014) Geo*PT*34 - an international proficiency test for analytical geochemistry laboratories - report on round 34 (Granite, GRI-1) / January 2014. International Association of Geoanalysts: Unpublished report.

Geo*PT*35
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014) Geo*PT*35 - an international proficiency test for analytical geochemistry laboratories - report on round 35 (Tonalite, TLM-1) / August 2014. International Association of Geoanalysts: Unpublished report.

Geo*PT*35A
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014) Geo*PT*35A - an international proficiency test for analytical geochemistry laboratories - report on round 35A (Metalliferous sediment, SdAR-H1) / August 2014. International Association of Geoanalysts: Unpublished report.

Geo*PT*36
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2015) Geo*PT*36 - an international proficiency test for analytical geochemistry laboratories - report on round 36 (Gabbro, GSM-1) / January 2015. International Association of Geoanalysts: Unpublished report.

Geo*PT*36A
Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2015) Geo*PT*36A - an international proficiency test for analytical geochemistry laboratories - report on round 36A (Metal-rich sediment, SdAR-M2) / January 2015. International Association of Geoanalysts: Unpublished report.

Geo*PT*37
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Burnham, M. (2015)
Geo*PT*37 - an international proficiency test for analytical geochemistry laboratories - report on round 37 (Rhyolite, ORPT-1) / July 2015. International Association of Geoanalysts: Unpublished report.

Geo*PT*37A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S. (2015)
Geo*PT*37A - an international proficiency test for analytical geochemistry laboratories - report on round 37A (Blended sediment, SdAR-L2) / July 2015. International Association of Geoanalysts: Unpublished report.

Geo*PT*38
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2016)
Geo*PT*38 - an international proficiency test for analytical geochemistry laboratories - report on round 38 (Gabbro, OU-7) / January 2016. International Association of Geoanalysts: Unpublished report.

Geo*PT*38A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Meisel, T. (2016)
Geo*PT*38A - an international proficiency test for analytical geochemistry laboratories – special report on round 38A (Modified harzburgite, HARZ01) / June 2016. International Association of Geoanalysts: Unpublished report.

Geo*PT*39
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2016)
Geo*PT*39 - an international proficiency test for analytical geochemistry laboratories - report on round 39 (Syenite, SyMP-1) / July 2016. International Association of Geoanalysts: Unpublished report.

Geo*PT*39A
Webb, P.C., Thompson, M., Potts, P.J, and Gowing, C.J.B. (2016)
Geo*PT*39A - an international proficiency test for analytical geochemistry laboratories - report on round 39A (Nepheline syenite, MNS-1) / July 2016. International Association of Geoanalysts: Unpublished report.

Geo*PT*40
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*40 - an international proficiency test for analytical geochemistry laboratories - report on round 40 (Silty marine shale, ShWYO-1) / January 2017. International Association of Geoanalysts: Unpublished report.

Geo*PT*40A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*40A - an international proficiency test for analytical geochemistry laboratories - report on round 40A (Calcareous organic-rich shale, ShTX-1) / January 2017. International Association of Geoanalysts: Unpublished report.

Geo*PT*41
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*41 - an international proficiency test for analytical geochemistry laboratories - report on round 41 (Andesite, ORA-1) / July 2017. International Association of Geoanalysts: Unpublished report.

Geo*PT*41A
Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)
Geo*PT*41A - an international proficiency test for analytical geochemistry laboratories - report on round 41A (Mineralized stream sediment, SSCO-1) / July 2017. International Association of Geoanalysts: Unpublished report.

Geo*PT*42
Webb, P.C., Thompson, M., Potts, P.J., Gowing, C.J.B. and Burnham, M. (2018)
Geo*PT*42 – an international proficiency test for analytical geochemistry laboratories – report on round 42 (Queenston shale, QS-1) / January 2018. International Association of Geoanalysts: Unpublished report.

Geo*PT*43
Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2018)
Geo*PT*43 – an international proficiency test for analytical geochemistry laboratories – report on round 43 (Dolerite, ADS-1) / July 2018. International Association of Geoanalysts: Unpublished report.

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C1	C2	C3	C4	C5	C7	C8	C9	C10	C11	C12	C13	C14
SiO2	g 100g-1	7.858	9.59	7.91	8.45	7.87	7.92	4.42	7.87	59.85	7.64	7.937	8.31	7.82
TiO2	g 100g-1	0.075	0.09	0.08	0.12	0.1	0.085	0.050	0.092	0.1	0.08	0.081	0.082	0.1
Al2O3	g 100g-1	1.548	1.8	1.6	1.85	1.43	1.58	1.13	1.61	8.34	1.52	1.572	1.65	2.14
Fe2O3T	g 100g-1	0.95	0.67	0.97	1.38	0.93	0.93	0.572	0.955	1.02	0.96	0.966	0.82	1
Fe(II)O	g 100g-1	0.9	0.3								0.42			0.55
MnO	g 100g-1	0.027	0.02	0.02	0.04	0.02	0.024	0.016	0.028	0.02	0.023	0.023	0.024	0.018
MgO	g 100g-1	0.484	0.65	0.59	0.63	0.39	0.46	0.346	0.601	0.62	0.49	0.491	0.528	0.49
CaO	g 100g-1	47.18	46.29	48.39	46.61	48.17	48.12	28.84	47.463	46.81	48.5	47.75	46	45.58
Na2O	g 100g-1	0.049	0.15	0.08	0.08	0.04		0.019	0.073	0.08	0.03	0.066	0.023	0.01
K2O	g 100g-1	0.461	0.5	0.46	0.63	0.48	0.48	0.284	0.492	0.49	0.47	0.31	0.512	0.49
P2O5	g 100g-1	0.061	0.07	0.06	0.06	0.06	0.058	0.037	0.051	0.06	0.07	0.061	0.066	0.11
H2O+	g 100g-1	1.8												2.57
CO2	g 100g-1	37.8		40.4				22.79						37.18
LOI	g 100g-1	40.2	40.15	40.29	39.96	40.628	39.99	41.188	39.9	40.2	40.16	39.87	40.2	40.07
Ag	mg kg-1	0.34	0.482									0.157		
As	mg kg-1	8.4	5.003			8.6			4	8.8	7	7.849		
Au	mg kg-1													
B	mg kg-1		14.447											
Ba	mg kg-1	63.33	41.989	27		32.3	63	90	41	68	60	71.89		
Be	mg kg-1	0.719	0.505									0.734		
Bi	mg kg-1		0.041											
Br	mg kg-1					3.1								
C(org)	mg kg-1	1.99												
C(tot)	mg kg-1	125000.000								122600.000				
Cd	mg kg-1	2.7	1.356									2.103		
Ce	mg kg-1	23.1	17.005	39	26.55	32.5	24.11		21	42		25.6		
Cl	mg kg-1	230				275		136						
Co	mg kg-1	2.4	3.157		58				3	4		2.992		
Cr	mg kg-1	26	11.63			11.9	13			16	16	20.034		
Cs	mg kg-1	1.5	0.732		1.23	15.2	1.09		15	7		0.64		
Cu	mg kg-1	56.26	30.899	17	38	43	55	104	48	48	88	56.9		
Dy	mg kg-1	4.37	3.334		4.52		4.76					4.861		
Er	mg kg-1	2.66	1.961		2.72		2.56					2.763		
Eu	mg kg-1	1.02	0.736		1.03		1.02					1.07		
F	mg kg-1	293				230			858					
Ga	mg kg-1	2	1.465		5.29	5.2	4		3	1.4		2.386		
Gd	mg kg-1	4.83	3.765		5.24		5.1					5.361		
Ge	mg kg-1		0.228		0.7							0.341		
Hf	mg kg-1		0.398		1.58		0.53					0.481		
Hg	mg kg-1	0.028												
Ho	mg kg-1	0.97	0.688		0.9		0.98					0.971		
I	mg kg-1					1.7								
In	mg kg-1													
Ir	mg kg-1													
La	mg kg-1	18.4	13.25		21.23	22.3	19.2		17	19	33	20.3		
Li	mg kg-1		6.098											
Lu	mg kg-1	0.31	0.25		0.41							0.339		
Mo	mg kg-1	8.71	7.113			7.2			8	7		7.075		
N	mg kg-1									800				
Nb	mg kg-1	1.58	5.741			1.6	1.63			1.2		1.682		
Nd	mg kg-1	17.8	13.128	8	19.09	20.5	18.23		24	26	27	20.18		
Ni	mg kg-1	48	42.593	34	27	33.6	33	35	44	35	38	44.5		
Pb	mg kg-1	5.46	3.094		17	8.3	2.02		3	17	7	3.693		
Pd	mg kg-1													
Pr	mg kg-1	4.16	3.037		4.72		4.28					4.441		
Rb	mg kg-1	16.3	19.491	17	14	13.8	17.5	7	25	16	18	10.471		
Re	mg kg-1													
S	mg kg-1	2190					441	2800	6023	2800		0.311		3447
Sb	mg kg-1	1.3	0.672									1.369		
Sc	mg kg-1		2.971		8	1.5	3.9		64					
Se	mg kg-1		2.075			1.9								
Sm	mg kg-1	4	2.893		4.27	7.3	4.31			3.3		4.397		
Sn	mg kg-1		0.214									0.612		
Sr	mg kg-1	292.5	241	283	228	263.9	317	165	286	271	302	295.448		
Ta	mg kg-1		0.133		0.99	2.5	0.12					0.121		
Tb	mg kg-1	0.7	0.544		0.81		0.81					0.794		
Te	mg kg-1		0.022											
Th	mg kg-1	1.3	0.944		1.72	2.2	1.34		4	1.5	8			
Tl	mg kg-1	0.42	0.279			1.2								
Tm	mg kg-1	0.37	0.264		0.36		0.35					0.371		
U	mg kg-1	4.11	2.923	16	4.04	4.7	4		5	5.5		4.668		
V	mg kg-1	62	51.867	49	14	54.1	65	39	64	60	63	60.5		
W	mg kg-1		0.224							6				
Y	mg kg-1	31.3	27.273	26	31.9	28.4	34.2	9	33	30	53	34.2		
Yb	mg kg-1	2.1	1.626		2.08	2.4	2.05					2.275		
Zn	mg kg-1	199	116	202	208	174.6	184	92	186	168	193	195		
Zr	mg kg-1	25.2	18		28	20.2	24		28	21		16.57		

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27
SiO2	g 100g-1	7.38	8.69	7.91	7.92	7.85	7.82	6.656	8.4	8.218	7.44	8.18		5.71
TiO2	g 100g-1	0.08	0.07	0.08	0.08	0.156	0.09	0.094	0.081	0.074	0.060	0.08	0.078	0.046
Al2O3	g 100g-1	1.79	1.25	1.56	1.55	1.58	1.5	1.548	1.61	1.634	1.138	1.6	1.55	1.26
Fe2O3T	g 100g-1	0.901	0.95	0.95	0.94	1.04	0.93	0.994	1.249	0.994	1.178	0.91		0.36
Fe(II)O	g 100g-1					0.43								
MnO	g 100g-1	0.01	0.03	0.02	0.024	0.023	0.02	0.023	0.023	0.023	0.028	0.02	0.021	0.01
MgO	g 100g-1	0.49	0.55	0.47	0.43	0.54	0.46	0.45	0.537	0.557	0.532	1.18	0.47	1.539
CaO	g 100g-1	48.2	47.25	47.52	48.31	47.06	47.2	49.583	47.28	48.468	44.003	46.27	46	49.9
Na2O	g 100g-1	0.06	0.85		0.038	0.17			0.045		0.110	0.02		0.067
K2O	g 100g-1	0.429	0.42	0.44	0.47	0.41	0.47	0.511	0.538		0.545	0.51	0.95	0.181
P2O5	g 100g-1	0.059	0.09	0.06	0.06	0.054	0.06	0.067	0.026	0.066	0.061	0.07		0.064
H2O+	g 100g-1													
CO2	g 100g-1	36.9				36.65					44.65			
LOI	g 100g-1	40		40.1	40.16	3.94	40.08	39.735	39.9	39.63	38.79	40.28		39.83
Ag	mg kg-1	0.274				0.38		0.078			1.733	0.03		
As	mg kg-1	10				2.65		5.16	9.023		10.252			
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1	59.9	105	60		610		56.23	58.2	58.35	66.387	61.5	2683	46
Be	mg kg-1					0.79			0.767	0.728	1.057	0.72		
Bi	mg kg-1							0.031			11.208			
Br	mg kg-1													
C(org)	mg kg-1	22200												
C(tot)	mg kg-1	123000.000			125000.000						121767.600			
Cd	mg kg-1	3.07				3.9		0.244	1.333		28.151	0.76		
Ce	mg kg-1	23.5	23			16.9		22.66	22.46	23.25	23.945	23.9	22.8	24
Cl	mg kg-1	271				163								
Co	mg kg-1	1.72				1.98			2.23	1.224	5.003	2.91	2.58	
Cr	mg kg-1	15.1	11	15		17.4		8.7	15.48	15.514	30.038	18.1	16.6	17
Cs	mg kg-1							0.589	1.042	1.091	1.329	1.12		
Cu	mg kg-1	52.1	56	51		58.33		47.44	54.98	50.643	260.270	48.4	55.9	51
Dy	mg kg-1	4.4	3			3.1		4.881	4.101	4.26	2.639	4.44	4.09	
Er	mg kg-1	2.61	2			2		2.654	2.317	2.464	1.554	2.53	2.45	
Eu	mg kg-1	0.949	1			0.9		0.896	0.912	0.952	1.150	0.94		
F	mg kg-1	457				600								
Ga	mg kg-1	2.6						1.09	1.859	2.206	2.667	2.14		
Gd	mg kg-1	4.87	4			3.29		5.339	4.63	4.563	2.827	4.76	4.99	
Ge	mg kg-1	1.25									1.082			
Hf	mg kg-1	0.52				4.79		0.545	0.444	0.541	0.319	0.55		
Hg	mg kg-1													
Ho	mg kg-1	0.898				0.71		0.97	0.874	0.888	0.679	0.89	0.84	
I	mg kg-1													
In	mg kg-1										0.158			
Ir	mg kg-1										0.056			
La	mg kg-1	18.3	14			12.32		17.096	17.85	18.864	15.004	19.9	18.3	17
Li	mg kg-1	8.49	8			19			7.618	7.653	37.046			
Lu	mg kg-1	0.321				0.2		0.331	0.292	0.312	0.383	0.33	0.29	
Mo	mg kg-1	6.93				5.44		8.928	8.249	6.775	7.329	8.67		
N	mg kg-1													
Nb	mg kg-1	1.34						1.402	1.608	1.372	1.945	1.79		
Nd	mg kg-1	17.9	13			12.27		17.007	17.27	18.137	14.434	18.7	17.2	
Ni	mg kg-1	54	27	41		45		37.38	45.42	35.893	56.806	53		45
Pb	mg kg-1	4.7				3.1		2.077	4.611	5.016	10.398	5.12	4.89	
Pd	mg kg-1													
Pr	mg kg-1	4.18				2.99		4.219	4.114	4.225	4.050	4.38		
Rb	mg kg-1	18.3				12.8		12.35	16.63	16.208	18.134	16.7		21
Re	mg kg-1											0.02		
S	mg kg-1	2703			3020	2321	914				2161.540			
Sb	mg kg-1	1.16						0.878	1.067		2.557	0.95		
Sc	mg kg-1	2.45				2.79		0.067	2.704		2.113	3.85		
Se	mg kg-1	2.89				1.53								
Sm	mg kg-1	4.07	3			2.61		3.689	3.766	3.961	3.281	4.14	3.77	
Sn	mg kg-1					0.48		0.315	0.344		2.059	0.46		
Sr	mg kg-1	301	283	317		293	309	297.2	290.6	302.590	303.122	299	310	234
Ta	mg kg-1					0.23		0.076	0.099	0.134	0.183	0.14		
Tb	mg kg-1	0.747				0.53		0.874	0.693	0.709	0.464	0.8	0.7	
Te	mg kg-1													
Th	mg kg-1	1.01				1.34		0.995	1.14	1.205	0.959	1.29	1.26	
Tl	mg kg-1	0.42						0.013	0.418		1.705			
Tm	mg kg-1	0.351				0.24		0.351	0.328	0.345	0.229	0.36	0.33	
U	mg kg-1	4.13				3.08		3.677	3.952	3.464	4.260	4.06	3.84	
V	mg kg-1	56.95	57	64		48		50.49	60.09	59.37	57.543	66.3	58.8	47
W	mg kg-1					2.42			0.234		3.021			
Y	mg kg-1	31.4	28			28.5		33.91	29.64	32.088	18.401	33.7	29.1	15
Yb	mg kg-1	2.11	1.5			1.3		2.294	2.007	2.098	1.415	2.17	2.03	
Zn	mg kg-1	199.8	173			177		202.7	183.7		265.905	139	168	134
Zr	mg kg-1	24.2	47					22.49	21.27	20.495	13.227	24.6		34

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C29	C31	C32	C33	C34	C36	C37	C38	C39	C40	C43	C44	C45
SiO2	g 100g-1	7.9	7.74	**7.78**	8.08	8.173	**7.822**	**8.01**	7.81	7.787	**8.08**	7.778	7.7	7.816
TiO2	g 100g-1		0.07	**0.068**	0.074		**0.08**	**0.1**	0.09	0.073	**0.08**	0.127	0.075	0.082
Al2O3	g 100g-1	1.58	1.58	**1.5**	1.48	1.573	**1.568**	**1.67**	1.61	1.515	**1.52**	1.354	1.47	1.564
Fe2O3T	g 100g-1	0.94	0.94	**0.89**	0.84	0.934	**0.938**	**0.84**	0.96	0.959	**0.95**	1.165	1	0.966
Fe(II)O	g 100g-1													
MnO	g 100g-1		0.02	**0.023**	0.022		**0.025**	**0.03**	0.02	0.021		0.028	0.03	0.024
MgO	g 100g-1	0.46	0.48	**0.476**	0.467	0.454	**0.509**	**0.53**	0.52	0.466	**0.46**	0.501	0.66	0.465
CaO	g 100g-1	48.69	47.6	**49.53**	47.19	46.86	**47.461**	**47.2**	47.65	47.944	**47.62**	48.517	45.64	47.87
Na2O	g 100g-1		0.05		0.04		**0.048**	**0.06**	0.07	0.044	**0.05**		0.06	0.062
K2O	g 100g-1	0.43	0.44	**0.459**	0.45		**0.445**	**0.55**	0.46	0.356	**0.4**	0.442	0.42	0.423
P2O5	g 100g-1	0.059	0.063	**0.072**	0.06		**0.061**	**0.06**	0.07	0.051	**0.05**	0.057	0.064	0.064
H2O+	g 100g-1	1.27								0.27	**0.44**			
CO2	g 100g-1				45.436								37.96	
LOI	g 100g-1	40.1	40.21	**40.167**		40.2	**39.83**	**39.6**	40.24	40.13	**40.07**	40.03	39.8	40.12
Ag	mg kg-1	0.316	0.3											
As	mg kg-1	7.75	8.4					**11**		6				
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1	61.1	59	**59.52**	56	57.12	63		60.9	63			56	
Be	mg kg-1	0.81	0.8	**0.776**		0.68			0.853				0.74	
Bi	mg kg-1		0.06							2				
Br	mg kg-1									2.5				
C(org)	mg kg-1													23300
C(tot)	mg kg-1		112400.000								**122200.000**			129000.000
Cd	mg kg-1	2.7	2.44					**1**		2.8				
Ce	mg kg-1	21.9	23.2	**22.98**		21.73			23.9	24.8			22.4	
Cl	mg kg-1							**171**						
Co	mg kg-1	1.51	1.6	**1.503**		1.84		**22**	3.09	2		4	1.56	
Cr	mg kg-1	14.5	17	**14.39**		14.91		**0.4**	15.4	19			16	
Cs	mg kg-1	1.02	1.1	**1.109**					1.11	1.5			0.97	
Cu	mg kg-1	56.8	60	**52.07**	33	56.71	50.6	**29**	57.5	44.1		52	56	
Dy	mg kg-1	4.3	4.5	**4.298**		4.02			4.4				4.1	
Er	mg kg-1	2.52	2.3	**2.441**		2.3			2.52				2.37	
Eu	mg kg-1	0.959	0.9	**0.939**		0.91			0.951				0.93	
F	mg kg-1													
Ga	mg kg-1	2	2.1	**1.881**		2.17	2.9		2.27	1.7			2.08	
Gd	mg kg-1	5.08	4.7	**4.883**		3.96			4.8				4.6	
Ge	mg kg-1		0.3						0.403					
Hf	mg kg-1	0.401	0.5	**0.456**					0.525				0.5	
Hg	mg kg-1							**1**						
Ho	mg kg-1	0.821	0.9	**0.893**		0.83			0.908				0.84	
I	mg kg-1									3.4				
In	mg kg-1													
Ir	mg kg-1													
La	mg kg-1	17.7	18.9	**18.02**	16	16.68	22.9		18.9	20.5			18.3	
Li	mg kg-1	8.6	7.2	**7.907**					9.56				6.8	
Lu	mg kg-1	0.262	0.4	**0.306**		0.28			0.322				0.297	
Mo	mg kg-1	8.75	7.3	**10.38**		7.76				7.5			7.6	
N	mg kg-1													
Nb	mg kg-1	1.505	1.4	**1.518**					1.65	1		4	1.5	
Nd	mg kg-1	18.25	17.3	**17.38**		16.87			18.1	23.3			18.3	
Ni	mg kg-1	42.4	40	**36.82**	24	36.53	38.4	**28**	44.7	36.8		40	38	
Pb	mg kg-1	4.84	5	**4.472**		3.24		**3**	4.86	5.2		8	4.8	
Pd	mg kg-1							**143**						
Pr	mg kg-1	3.9	4.2	**4.104**		3.86			4.09				4.3	
Rb	mg kg-1	16.7	16.3	**16.68**		15.52	15.6		18.9	15.2		15	15.6	
Re	mg kg-1													
S	mg kg-1		2900		2700		1731			2479				2390
Sb	mg kg-1	1.09	1					**5**		1.1			1.12	
Sc	mg kg-1	2.63	3	**2.476**		2.35			3.01				2.5	
Se	mg kg-1									2.2				
Sm	mg kg-1	4.05	4.3	**3.844**		3.73			3.99	5.3			3.8	
Sn	mg kg-1		0.3							0.8				
Sr	mg kg-1	330	303	**288.7**		284.660	271.7		314	272.6		279	270	296.4
Ta	mg kg-1		0.1	**0.107**					0.11				0.11	
Tb	mg kg-1	0.698	0.7	**0.721**		0.62			0.739				0.69	
Te	mg kg-1							**1**						
Th	mg kg-1	1.16	1.22	**1.325**		1.04			1.18				1.12	
Tl	mg kg-1	0.382	0.38					**1**					0.35	
Tm	mg kg-1	0.306				0.32			0.349				0.32	
U	mg kg-1	4.25	3.85	**4.006**		3.62			3.92	3.6			3.8	
V	mg kg-1	58.1	64	**59.03**	60	51.48	68	**7**	64.4	59.3			55	59.99
W	mg kg-1	0.248	0.3							1.2			0.26	
Y	mg kg-1	31.1	29.3	**31.62**	30	26.86	30		35.1	30.4		42	27	
Yb	mg kg-1	2.07	2.3	**2.065**		1.98			2.15	2.5			1.99	
Zn	mg kg-1	213	203		189	193.910	174.5	**111**	179	179.1		171		202.9
Zr	mg kg-1	26	29	**19.04**	21	20.43	35.9		25.3	22.4		8	22.5	

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C47	C48	C49	C50	C51	C52	C53	C54	C58	C60	C61	C62	C63
SiO2	g 100g^{-1}	7.752	7.6	7.847		7.6	8.22		7.96	7.79	7.85		6.747	8.11
TiO2	g 100g^{-1}	0.122	0.08	0.081		0.08	0.067	0.08	0.08	0.08	0.76		0.075	0.08
Al2O3	g 100g^{-1}	1.722	1.49	1.536		1.5	1.64		1.6	1.55	1.56		1.24	1.62
Fe2O3T	g 100g^{-1}	1.017	0.98	0.922		0.88	0.85		0.94	0.95	0.95		0.68	0.96
Fe(II)O	g 100g^{-1}								0.664					
MnO	g 100g^{-1}	0.025	0.023	0.022	0.025	0.03	0.019	0.024	0.023	0.03	0.024		0.03	0.02
MgO	g 100g^{-1}	0.459	0.5	0.462		0.52	0.39		0.49	0.42	0.46		0.46	0.52
CaO	g 100g^{-1}	49.37	48.3	48.298		48.3	47.76		47.63	47.5	47.46		45.311	47.15
Na2O	g 100g^{-1}	0.031		0.022					0.1	0.01			0.028	0.04
K2O	g 100g^{-1}	0.435	0.37	0.473		0.16	0.45		0.48	0.46	0.46		0.376	0.5
P2O5	g 100g^{-1}	0.066	0.061	0.055		0.12	0.057			0.07	0.058		0.039	0.07
H2O+	g 100g^{-1}								1.14					
CO2	g 100g^{-1}													
LOI	g 100g^{-1}		40.14	40.25		40.1	40.3		39.87	40.09				40.1
Ag	mg kg^{-1}	0.278		0.28					0.3	0.31				
As	mg kg^{-1}	8.373		8.04	7.2	8.4			9.38	8.2		6		
Au	mg kg^{-1}													
B	mg kg^{-1}								38.457				20	
Ba	mg kg^{-1}	60.7		68.4	55.9	63.1		58.2	59.4	61.9		58.2	111	88
Be	mg kg^{-1}	0.857		0.89				0.79	0.74	0.78				
Bi	mg kg^{-1}	0.053		0.05					0.05	0.06				
Br	mg kg^{-1}			5.5	6.08								6	5
C(org)	mg kg^{-1}													
C(tot)	mg kg^{-1}	126500.000							120495.000	123000.000				
Cd	mg kg^{-1}	2.531		2.34		2.89			2.39	2.71				
Ce	mg kg^{-1}	23.83		24.23	26.5	23.8		23.1	22.3	23.5		23.4		82
Cl	mg kg^{-1}								180				254	139
Co	mg kg^{-1}	1.88		1.76	2.67	1.8		1.97	1.52	1.8				6
Cr	mg kg^{-1}	17.532	34	22.6	19.6	17.4		15.3	15.3	20			13	32
Cs	mg kg^{-1}	1.155		1.13		0.21		1.02	0.94	1.05		1.02		
Cu	mg kg^{-1}	53.54		64.4	44.6	58.9		54.5	58.3	58		50.2	2	91
Dy	mg kg^{-1}	4.513		4.51		4.63		4.39	4.04	4.49		4.27		
Er	mg kg^{-1}	2.784		2.6		2.7		2.45	2.24	2.48		2.4		
Eu	mg kg^{-1}	0.875		1.01		1.01		0.95	0.915	0.95		0.911		
F	mg kg^{-1}				315				302					126
Ga	mg kg^{-1}	2.028		1.89	2.68	2.12		2.13	2.16	2.4				5
Gd	mg kg^{-1}	5.037		4.57		4.95		4.84	4.15	5.61		4.84		
Ge	mg kg^{-1}	0.47				0.39			0.43					
Hf	mg kg^{-1}	0.492		0.46		0.55		0.51	0.5	0.5		0.499		
Hg	mg kg^{-1}								0.028					
Ho	mg kg^{-1}	0.89		0.92		0.91		0.89	0.847	0.95		0.879		
I	mg kg^{-1}													
In	mg kg^{-1}	0.012								0.01				
Ir	mg kg^{-1}													
La	mg kg^{-1}	19.46		19.38	15.7	19.6		18.5	17.7	18.4		18.1		49
Li	mg kg^{-1}	6.41		8.32				7.07	6.200	7.4				
Lu	mg kg^{-1}	0.25		0.34		0.33		0.31	0.293	0.31		0.311		
Mo	mg kg^{-1}	6.375		9.9	7.27	8.8		8.66	7.25	8.08				
N	mg kg^{-1}													
Nb	mg kg^{-1}			1.5		1.58		1.66	1.29	1.6		1.39		13
Nd	mg kg^{-1}	17.66		18.51		18.8		17.7	16.5	18.1		17.8		34
Ni	mg kg^{-1}	39.06	37	48.1	41.05	42.4		43.4	37.9	39.5				43
Pb	mg kg^{-1}	3.983		5	3.36	3.03		4.96	4.61	4.9			19	6
Pd	mg kg^{-1}													
Pr	mg kg^{-1}	4.07		4.32		4.39		4.12	3.86	4.18		3.93		
Rb	mg kg^{-1}	18.05		19.8	16.23	5.6		16.8	16.3	17.4		15.9	13	24
Re	mg kg^{-1}	0.013								0.016				
S	mg kg^{-1}	2330		0.263		2800			2135	0.28			2163.600	2449
Sb	mg kg^{-1}	1.151		1.14		1.1			0.98	1.17		1.15		
Sc	mg kg^{-1}	2.58	24	2.8		2.8		2.73	2.6	2.61		2.88		35
Se	mg kg^{-1}	2.6								2.2				
Sm	mg kg^{-1}	3.594		4.17		4		3.98	3.74	4.05		3.65		
Sn	mg kg^{-1}	0.313		0.29				0.34	0.43					
Sr	mg kg^{-1}	280.8	289	336	273.6	317		299	287	325		276	234	393
Ta	mg kg^{-1}			0.1		0.1		0.11	0.11	0.1		0.096		
Tb	mg kg^{-1}	0.676		0.77		0.73		0.73	0.656	0.77		0.713		
Te	mg kg^{-1}													
Th	mg kg^{-1}	1.435		1.25	1.57	1.22		1.2	1.12	1.18		1.26		
Tl	mg kg^{-1}	0.356		0.38				0.45		0.425				
Tm	mg kg^{-1}	0.408		0.36				0.34	0.319	0.32		0.337		
U	mg kg^{-1}	0.25		4.04	3.78	4.14		3.99	3.72	4.05		3.92		
V	mg kg^{-1}	68.66	55	83.2	65.91	65.7		62.3	60	69				95
W	mg kg^{-1}	0.393		0.36						0.293				
Y	mg kg^{-1}	33.34		36.8	31.16	32.6		33.7	30.2	31.1		31.7	35	46
Yb	mg kg^{-1}	2.405		2.17		2.14		2.05	1.94	2.15		2		
Zn	mg kg^{-1}	197.9	196	213	183.020	206		193	210	215			144	196
Zr	mg kg^{-1}	30.269		32.3	23.18	23.2		23.2	22.5	24	606	24	4	15

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C64	C65	C66	C67	C68	C69	C71	C73	C74	C75	C76	C77	C78
SiO2	g 100g-1	7.71	7.56	7.72	7.707	7.76	7.642	7.82	7.64		7.829	6.7		7.74
TiO2	g 100g-1	0.09	0.078	0.077	0.082	0.07		0.086			0.064		0.082	0.081
Al2O3	g 100g-1	1.67	1.5	1.65	1.519	1.36		1.6	1.52		1.555	1.45	1.66	1.55
Fe2O3T	g 100g-1	0.99	0.93	0.957	0.941	1.05		0.98	0.919		0.940	1.05	0.969	0.97
Fe(II)O	g 100g-1										0.271			
MnO	g 100g-1	0.03	0.024	0.018	0.022	0.02		0.022	0.023		0.024		0.025	0.024
MgO	g 100g-1	0.56	0.53	0.517	0.478	0.52		0.44	0.445		0.485	0.67	0.53	0.55
CaO	g 100g-1	47.52	44.95	48.56	46.625	46.92		47.04	48.6		47.981	48.25	48.7	47.84
Na2O	g 100g-1	0.03	0.08	0.065	0.036	0.05		0.072			0.044		0.043	0.05
K2O	g 100g-1	0.35	0.26	0.478	0.396	0.34		0.48	0.466		0.320		0.461	0.246
P2O5	g 100g-1	0.06	0.061	0.076	0.057	0.07		0.062	0.066		0.058			0.056
H2O+	g 100g-1					0.42					0.955			
CO2	g 100g-1								38.1					
LOI	g 100g-1	40.32	40.2		40.148	40.1	40.175	39.52	40.16		40.074	40.15		40.13
Ag	mg kg-1							0.32			0.283			
As	mg kg-1	7.57	8					6.53	7.1	7.4			7.8	9
Au	mg kg-1													
B	mg kg-1								37.4					
Ba	mg kg-1	56.4			56.3	85		59.6	61.3	61.176	60.03		62	56
Be	mg kg-1	0.76						0.69	0.76	0.77	0.683			
Bi	mg kg-1	0.055												
Br	mg kg-1		5					2.85					3.15	
C(org)	mg kg-1								18800					
C(tot)	mg kg-1			124900.000				128100.000	122900.000		122766.000			
Cd	mg kg-1	2.66						2.57	2.5	2.991	2.153		3.3	2.2
Ce	mg kg-1	22.7	27					22.9	24.8	23.573	23.31		24.6	22.2
Cl	mg kg-1										151		230	
Co	mg kg-1	1.47	4					1.49		3.98	1.661		1.69	
Cr	mg kg-1	13.1						14.5		12.65	15.52		16.3	17
Cs	mg kg-1	0.93								1.03	1.022		1.25	
Cu	mg kg-1	53.7	48			64		50.8	52	61.023	54.08			59
Dy	mg kg-1	4.2						4.34	3.9	3.666	4.488		4.7	4.22
Er	mg kg-1	2.4						2.54	2.15	1.985	2.496			2.42
Eu	mg kg-1	0.93						1.02	0.84	0.583	0.971		0.992	0.93
F	mg kg-1						288				199			
Ga	mg kg-1	2.26						1.35	2.4	2.79	1.852		2.4	
Gd	mg kg-1	4.32						4.96	4	3.849	4.878			4.63
Ge	mg kg-1													
Hf	mg kg-1	0.94							0.4	0.406	0.48		0.47	
Hg	mg kg-1													
Ho	mg kg-1	0.85						0.88	0.76	0.688	0.906			0.86
I	mg kg-1												5.2	
In	mg kg-1										0.012		0.049	
Ir	mg kg-1													
La	mg kg-1	18.5	13					18.7	18.6	17.983	18.498		18.3	17.4
Li	mg kg-1	8.39							7.9	8.906	6.58			
Lu	mg kg-1	0.31						0.34	0.28		0.316		0.316	0.31
Mo	mg kg-1	7.8	4					7.87	8.2	8.18	7.654		6.9	
N	mg kg-1													
Nb	mg kg-1	1.33	5			2			1.3	1.31	1.421			4
Nd	mg kg-1	17.5						17.8	15.9	16.671	18.542		16.5	15.4
Ni	mg kg-1	46.6	37		32.7	47		37.8	38.8	61.4	39.82			40
Pb	mg kg-1	6.07	4					5.03			4.641			
Pd	mg kg-1													
Pr	mg kg-1	4.07						3.93	3.5	3.798	4.352			3.96
Rb	mg kg-1	16.8	20			19		15.7	17	15.74	15.583		17	15
Re	mg kg-1													
S	mg kg-1			2340							1206			
Sb	mg kg-1	0.36						1.1	0.9	1.08	0.881		1.13	0.9
Sc	mg kg-1	4.41								2.52	2.57		2.6	2.34
Se	mg kg-1							3.89					1.6	
Sm	mg kg-1	3.79						4.1	3.66	3.813	4.227		3.87	3.77
Sn	mg kg-1	0.42									0.26			
Sr	mg kg-1	278	264		254	274			263	287		301.430		300	286
Ta	mg kg-1	0.19									0.11	0.091		
Tb	mg kg-1	0.66						0.78	0.64	0.52	0.748		0.7	0.7
Te	mg kg-1	0.3												
Th	mg kg-1	1.19	4					1.34	0.92	1.17	1.178		1.2	
Tl	mg kg-1	0.39						0.59	0.41	0.408	0.392			
Tm	mg kg-1	0.32						0.38	0.29	0.266	0.347			0.32
U	mg kg-1	3.97	5					4.25	3.6	3.87	3.974		3.8	
V	mg kg-1	60.6	47					62.8	60	60.142	63.68		66	68
W	mg kg-1	0.22									0.245		0.26	
Y	mg kg-1	31.8	32			38		30.4	31	29.863	32.341			27.5
Yb	mg kg-1	2.02						2.09	1.95	1.832	2.136		2.07	2.03
Zn	mg kg-1	188	175		191.1	231		170	211	194.630	194.380		218	204
Zr	mg kg-1	21.9	56		21.5	28		18.6	21.9	15.678	22			24

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C79	C80	C81	C82	C84	C85	C86	C87	C88	C89	C90	C92	C93
SiO2	g 100g^{-1}	7.94	8.053	7.89	7.27	7.77	7.77	8.5	8.12	7.24	7.96	7.8		
TiO2	g 100g^{-1}	0.112	0.083	0.082	0.056	0.07	0.086	0.093	0.025	0.093		0.08		0.074
Al2O3	g 100g^{-1}	0.749	1.606	1.762	1.37	1.63	1.64	1.7	1.588	1.31	1.53	1.56		1.62
Fe2O3T	g 100g^{-1}	1.023	0.903	0.956	0.96	0.95	0.95	1.03	0.96	1.102	0.95	0.9		0.953
Fe(II)O	g 100g^{-1}													
MnO	g 100g^{-1}	0.02	0.021	0.023	0.036	0.02	0.027	0.023		0.024		0.03		0.024
MgO	g 100g^{-1}	0.564	0.508	0.513	0.45	0.4	0.56	0.55	0.595	0.464	0.47	0.46		0.471
CaO	g 100g^{-1}	53.114	47.273	47.501	45.13	48.16	48.1	46.7	48.275	48.601	48.63	47.6		49.05
Na2O	g 100g^{-1}	0.399	0.058	0.061	0.029	0.08	0.07					0.11		0.051
K2O	g 100g^{-1}	0.44	0.461	0.473	0.42	0.25	0.47	0.52	0.13	0.286	0.43	0.45		0.479
P2O5	g 100g^{-1}	0.008	0.061	0.063	0.055	0.06	0.068	0.064	0.07	0.063	0.07	0.06		0.064
H2O+	g 100g^{-1}				0.115	1.5								
CO2	g 100g^{-1}				33.3		37.2	36.4				10.1		
LOI	g 100g^{-1}	39.95	40.044	40.066	44.82	39.83	39.93	40.2	39.61	40.02	40	40.2		
Ag	mg kg^{-1}				0.256					4.4				0.291
As	mg kg^{-1}				8.61					8.1		10		7.908
Au	mg kg^{-1}				0.035									
B	mg kg^{-1}											41		
Ba	mg kg^{-1}	230	59.17		59.5			60	64.117	42.4		61	49.65	58.72
Be	mg kg^{-1}		0.83		0.615			0.7						0.801
Bi	mg kg^{-1}				0.04			0.07					0.02	0.066
Br	mg kg^{-1}													
C(org)	mg kg^{-1}				2.519		22378							
C(tot)	mg kg^{-1}				11.65		123979.000	124100.000		12.9	126000.000			
Cd	mg kg^{-1}	14			2.66			2.6	2.584	9.6		2.5		2.685
Ce	mg kg^{-1}		23.07		22.8			24.3	24.163	42.7		23.1	15.39	22.3
Cl	mg kg^{-1}	200						300						
Co	mg kg^{-1}	68.78	2.5		1.75			2.2	3.721	2.6		2.4		1.587
Cr	mg kg^{-1}	33.5	15.34		13			36	15.92	15.1				14.99
Cs	mg kg^{-1}		1.03		1.02				1.085	12.5		1.1	1.02	1.063
Cu	mg kg^{-1}	54	52.63		55.4			52	52.59	47.7		58		52.78
Dy	mg kg^{-1}		4.35		4.23			4.4	4.596			4.42	2.29	4.32
Er	mg kg^{-1}		2.38		2.33			2.6	2.848			2.45	1.36	2.497
Eu	mg kg^{-1}		0.95		0.908			0.97	1.036			0.89	0.569	0.944
F	mg kg^{-1}							450						
Ga	mg kg^{-1}		2.23		1.8			2.2	2.257			2.19		1.537
Gd	mg kg^{-1}		4.85		4.54			4.79	5.083			5.16	2.86	4.984
Ge	mg kg^{-1}													
Hf	mg kg^{-1}		0.51		0.819								0.07	0.378
Hg	mg kg^{-1}				0.675			0.027	30.08	0.03				
Ho	mg kg^{-1}		0.87		0.834			0.91	0.945			0.87	0.48	0.887
I	mg kg^{-1}													
In	mg kg^{-1}				0.013				0.013					
Ir	mg kg^{-1}													
La	mg kg^{-1}		18.26		16.72			18.9	18.49	17.5		17.4	12.21	17.481
Li	mg kg^{-1}	39	7.6		7.22			7.7				11	7.61	7.87
Lu	mg kg^{-1}		0.3		0.312			0.31	0.352			0.31	0.16	0.309
Mo	mg kg^{-1}		8.17		7.16			8.1		7.7		8	7.56	8.681
N	mg kg^{-1}													
Nb	mg kg^{-1}		1.66		1.21					1.1			1.29	1.318
Nd	mg kg^{-1}		17.49		17.1			18.7	18.71	21.2		17.2	11.6	18.67
Ni	mg kg^{-1}	56.25	44.02		30			42	54.623	34.3		43		40.038
Pb	mg kg^{-1}	120	4.65		5.78			4.8	6.076	3.4		6	4.49	5.011
Pd	mg kg^{-1}													
Pr	mg kg^{-1}		4.07		3.9			4.3	4.28			4.16	2.85	4.023
Rb	mg kg^{-1}		17.01		15.7			16.7	16.69			16.5	16.58	17.767
Re	mg kg^{-1}				0.019									
S	mg kg^{-1}	2940			2130	8300	1150	2000	1016	0.005	2600	3850		3083
Sb	mg kg^{-1}				1			1.3				1.2		1.116
Sc	mg kg^{-1}		2.57		2.09			2.7	2.083					
Se	mg kg^{-1}				1.19					1.8				1.746
Sm	mg kg^{-1}		3.98		3.79			4.2	4.159			3.8	2.43	4.133
Sn	mg kg^{-1}		0.31		1.74			0.32				1		0.319
Sr	mg kg^{-1}	965	301.180		283	300	298	292	291.733	259.9		280	212.2	281.340
Ta	mg kg^{-1}		0.11		0.08								0.097	0.114
Tb	mg kg^{-1}		0.74					0.73	0.881			0.74	0.38	0.726
Te	mg kg^{-1}				0.052									
Th	mg kg^{-1}		1.21		4.98			1.28	1.349			1		1.179
Tl	mg kg^{-1}		0.44		0.18			0.42	0.452				0.393	0.428
Tm	mg kg^{-1}		0.33		0.317			0.35	0.356			0.33	0.18	0.354
U	mg kg^{-1}		3.92		3.74			3.98	4.607	4		3.86	3.79	4.135
V	mg kg^{-1}		61.79				75	59		46.7		63		64.4
W	mg kg^{-1}	330			9.97					1.5				0.237
Y	mg kg^{-1}		33.27		28.2			34	36.443	28.7		31.1	9.62	31.862
Yb	mg kg^{-1}		2.04		1.95			2.18	2.289	1.6		2	0.98	2.118
Zn	mg kg^{-1}	220	176.380		208	200	187	188	173.9	174.5		191		206
Zr	mg kg^{-1}		22.98		16.2			40		18.9		23.5	2.1	18.23

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C94	C95	C97	C98	C99	C100	C101	C102	C105	C106	C107	C109	C110
SiO2	g 100g-1	8.07		6.837	**7.9**	7.85	5.04	7.6	7.93	7.84	7.83	6.44		6.97
TiO2	g 100g-1	0.082		0.169	**0.077**		0.09	0.083	0.075	0.086	0.08	0.088		0.079
Al2O3	g 100g-1	1.555	**1.5**	1.498	**1.5**	1.54	1.2	1.532	5.7	1.55	1.61	1.53		1.39
Fe2O3T	g 100g-1	0.948	**0.94**	1.927	**1**		1.03	0.855	1.02	0.97	0.99	0.988		0.89
Fe(II)O	g 100g-1													
MnO	g 100g-1	0.021	**0.023**		**0.026**		0.02	0.022	0.025	0.027	0.02	0.023		0.027
MgO	g 100g-1	0.484	**0.474**	0.444	**0.49**	0.49	0.6	0.458		0.52	0.5	0.478		0.42
CaO	g 100g-1	47.62	**45.68**	48.229	**47.5**	47.5	47.98	45.62	44.5	47.78	47.54	49.4		43.2
Na2O	g 100g-1						0.05	0.047			0.08			0.03
K2O	g 100g-1	0.18		0.19	**0.45**	0.45	0.44	0.465	0.395	0.22	0.31	0.513		0.41
P2O5	g 100g-1	0.026		0.048	**0.061**	0.06	0.06	0.065		0.06	0.07	0.067		0.06
H2O+	g 100g-1													
CO2	g 100g-1								35					
LOI	g 100g-1	40.22		40.122	**40.16**	40.4		40.8		40.17	40.12	40.04		**39.94**
Ag	mg kg-1													
As	mg kg-1		**8.56**	2.004				8.523						
Au	mg kg-1													
B	mg kg-1													
Ba	mg kg-1		**60.15**	48.465	**94**			54.78	92.1		17		**58.88**	
Be	mg kg-1			1.294										
Bi	mg kg-1								3					
Br	mg kg-1								4					
C(org)	mg kg-1													
C(tot)	mg kg-1	124600.000												
Cd	mg kg-1			1.591				2.673						
Ce	mg kg-1		**22.27**	22.531	**20.3**			23.017	39.7		28		**22.12**	
Cl	mg kg-1													
Co	mg kg-1		**2.61**	2.115				1.591						
Cr	mg kg-1		**14.8**	9.44	**25**			13.94	19		2			
Cs	mg kg-1		**1.06**		**0.95**								**1.04**	
Cu	mg kg-1		**50.42**	39.795	**64**			55.43	90					
Dy	mg kg-1		**4.27**	4.372	**3.72**			4.433					**4.16**	
Er	mg kg-1		**2.37**	2.467	**2.27**			2.6					**2.37**	
Eu	mg kg-1		**0.902**	0.949	**0.88**			0.958					**0.89**	
F	mg kg-1				**736**									
Ga	mg kg-1		**2.25**	2.979							2		**2.15**	
Gd	mg kg-1		**4.76**	4.84	**3.77**			5.058					**4.18**	
Ge	mg kg-1													
Hf	mg kg-1		**0.46**		**0.44**								**0.53**	
Hg	mg kg-1			0.06										
Ho	mg kg-1		**0.874**	0.906	**0.89**			0.917					**0.87**	
I	mg kg-1								5.7					
In	mg kg-1													
Ir	mg kg-1													
La	mg kg-1		**18.17**	18.045	**18.8**			18.033	26.2		10		**18**	
Li	mg kg-1													
Lu	mg kg-1		**0.307**	0.319	**0.29**			0.342					**0.29**	
Mo	mg kg-1		**7.82**	6.81	7.103			8.238	6.5					
N	mg kg-1													
Nb	mg kg-1		**1.63**		1.58			2.467			1		**1.65**	
Nd	mg kg-1		**17.12**	17.289	**15.6**				14.5				**17.22**	
Ni	mg kg-1		**51.08**	28.77	**51**			46.23	110		1			
Pb	mg kg-1		**5.05**	1.496	**4.23**			5.456	30		8			
Pd	mg kg-1													
Pr	mg kg-1		**4.05**	4.039	**3.64**			4.15					**3.96**	
Rb	mg kg-1		**16.66**	4.426	**13**				18.5		14		**16.49**	
Re	mg kg-1													
S	mg kg-1	2928			2579				5400			1510		
Sb	mg kg-1			1.642										
Sc	mg kg-1		**2.91**		**85**			3.083			9		**2.33**	
Se	mg kg-1			2.034										
Sm	mg kg-1		**3.82**	3.530	**3.91**			4.05					**3.66**	
Sn	mg kg-1							0.789					**0.39**	
Sr	mg kg-1		**298.5**	255.5	**322**			287.030	340		1029	299	**293.140**	
Ta	mg kg-1		**0.104**		0.13								**0.12**	
Tb	mg kg-1		**0.747**	0.708	**0.64**			0.717					**0.75**	
Te	mg kg-1													
Th	mg kg-1		**1.2**	1.359	**1.11**			1.517					**1.17**	
Tl	mg kg-1		**0.427**											
Tm	mg kg-1		**0.332**	0.349	**0.29**			0.35					**0.34**	
U	mg kg-1		**3.72**	4.204	**3.26**			4.233			1		**3.74**	
V	mg kg-1		**58.9**	48.47	**80**			63.979	52		12	175		
W	mg kg-1				0.3				20				**0.84**	
Y	mg kg-1		**34.16**	32.88	**38**			30.592	33		2		**32.14**	
Yb	mg kg-1		**2.06**	2.062	**1.86**			2.067					**2.05**	
Zn	mg kg-1		**181.4**	140.750	**213**			192.8	210		11	223		
Zr	mg kg-1		**20.04**		**35**			23.44	24		9	13.7	**20.06**	

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 1 - GeoPT44 Contributed data for Calcareous shale, ShCX-1. 12/12/2018

Lab Code		C111	C113	C114	-	-	-	-	-	-	-	-	-	-
SiO2	g 100g^{-1}	7.895	8.18	**7.03**										
TiO2	g 100g^{-1}	0.084	0.08	**0.1**										
Al2O3	g 100g^{-1}	1.58	1.62	**1.45**										
Fe2O3T	g 100g^{-1}	0.922	0.94	**0.923**										
Fe(II)O	g 100g^{-1}			**0.14**										
MnO	g 100g^{-1}	0.023	0.02	**0.042**										
MgO	g 100g^{-1}	0.515	0.52	**0.551**										
CaO	g 100g^{-1}	47.72	46.17	**48.27**										
Na2O	g 100g^{-1}	0.07	0.07	**0.075**										
K2O	g 100g^{-1}	0.464	0.47	**0.386**										
P2O5	g 100g^{-1}	0.059	0.06	**0.052**										
H2O+	g 100g^{-1}													
CO2	g 100g^{-1}	53.26		**38.36**										
LOI	g 100g^{-1}	40.354	40.55	**40.22**										
Ag	mg kg^{-1}													
As	mg kg^{-1}													
Au	mg kg^{-1}													
B	mg kg^{-1}													
Ba	mg kg^{-1}	63.5	79.52	395										
Be	mg kg^{-1}		0.8											
Bi	mg kg^{-1}													
Br	mg kg^{-1}													
C(org)	mg kg^{-1}	20440		**20430**										
C(tot)	mg kg^{-1}	127300.000		**125120.000**										
Cd	mg kg^{-1}													
Ce	mg kg^{-1}		22.3											
Cl	mg kg^{-1}													
Co	mg kg^{-1}		2.1											
Cr	mg kg^{-1}		16.6											
Cs	mg kg^{-1}		1											
Cu	mg kg^{-1}	58	46.5											
Dy	mg kg^{-1}		4.1											
Er	mg kg^{-1}		2.3											
Eu	mg kg^{-1}		0.9											
F	mg kg^{-1}			**491**										
Ga	mg kg^{-1}		2.2											
Gd	mg kg^{-1}		4.1											
Ge	mg kg^{-1}													
Hf	mg kg^{-1}		0.5											
Hg	mg kg^{-1}													
Ho	mg kg^{-1}		0.9											
I	mg kg^{-1}													
In	mg kg^{-1}													
Ir	mg kg^{-1}													
La	mg kg^{-1}		18.1											
Li	mg kg^{-1}													
Lu	mg kg^{-1}		0.3											
Mo	mg kg^{-1}		8.4											
N	mg kg^{-1}													
Nb	mg kg^{-1}		1.6											
Nd	mg kg^{-1}		17.2											
Ni	mg kg^{-1}		41.8											
Pb	mg kg^{-1}		0.9											
Pd	mg kg^{-1}													
Pr	mg kg^{-1}		4											
Rb	mg kg^{-1}		16.3											
Re	mg kg^{-1}													
S	mg kg^{-1}	889		**2346**										
Sb	mg kg^{-1}													
Sc	mg kg^{-1}		2.42											
Se	mg kg^{-1}													
Sm	mg kg^{-1}		3.7											
Sn	mg kg^{-1}		1.1											
Sr	mg kg^{-1}		276.810	**263**										
Ta	mg kg^{-1}		0.8											
Tb	mg kg^{-1}		0.7											
Te	mg kg^{-1}													
Th	mg kg^{-1}		1.2											
Tl	mg kg^{-1}		0.3											
Tm	mg kg^{-1}		0.4											
U	mg kg^{-1}		3.7											
V	mg kg^{-1}	59.8	63.2											
W	mg kg^{-1}		0.9											
Y	mg kg^{-1}		31.4											
Yb	mg kg^{-1}		2											
Zn	mg kg^{-1}	196	203.150											
Zr	mg kg^{-1}	111	22.43											

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2

Table 2 - GeoPT44 Assigned values and statistical summary for Calcareous shale, ShCX-1.

	Assigned Value	Uncertainty of assigned value	Horwitz Target Value	Uncertainty/ Target	Number of reported results	Robust Mean of results	Robust SD of results	Median of results	Status of consensus value	Type of consensus value
	X_a	*sdm*	H_a	*sdm/H* $_a$	*n*					
	g 100g^{-1}	g 100g^{-1}	g 100g^{-1}			g 100g^{-1}	g 100g^{-1}	g 100g^{-1}		
SiO2	7.825	0.02103	0.1148	0.1831	84	7.816	0.3022	7.825	Assigned	Median
TiO2	0.08	0.0009884	0.00234	0.4224	81	0.08211	0.01064	0.08	Assigned	Median
Al2O3	1.555	0.01077	0.0291	0.3701	87	1.555	0.1004	1.555	Assigned	Robust Mean
Fe2O3T	0.9555	0.005945	0.01924	0.309	85	0.9555	0.05481	0.95	Assigned	Robust Mean
MnO	0.023	0.0004942	0.0008116	0.609	81	0.02332	0.003666	0.023	Assigned	Median
MgO	0.49	0.004796	0.01091	0.4396	86	0.4998	0.05443	0.49	Provisional	Median
CaO	47.6	0.1073	0.5323	0.2016	87	47.54	1.091	47.6	Assigned	Median
K2O	0.46	0.00263	0.01034	0.2543	83	0.4341	0.07354	0.45	Provisional	Mode
P2O5	0.0605	0.0005802	0.001846	0.3144	80	0.06158	0.006666	0.0605	Assigned	Median
CO2	37.2	0.4171	0.4317	0.9662	17	37.65	4.385	37.2	Provisional	Median
LOI	40.12	0.01616	0.4603	0.0351	76	40.09	0.1875	40.12	Assigned	Median
	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}			mg kg^{-1}	mg kg^{-1}	mg kg^{-1}		
Ag	0.2955	0.00853	0.02839	0.3004	19	0.3021	0.08127	0.3	Assigned	Mode
As	8.2	0.299	0.4778	0.6257	37	7.859	1.497	8.04	Assigned	Mode
Ba	60.02	0.6383	2.592	0.2462	68	61.43	9.492	60.02	Assigned	Median
Be	0.7673	0.01284	0.06387	0.2011	30	0.7673	0.07033	0.7685	Assigned	Robust Mean
Bi	0.055	0.005359	0.006807	0.7874	15	0.05974	0.02687	0.055	Provisional	Median
C(tot)	124000	426.3	1697	0.2511	23	123700	2840	124000	Assigned	Median
Cd	2.63	0.0698	0.1819	0.3838	34	2.533	0.6785	2.592	Assigned	Mode
Ce	23.25	0.1762	1.158	0.1522	59	23.55	1.716	23.25	Assigned	Median
Co	1.75	0.105	0.1287	0.8161	48	2.462	1.026	2.158	Provisional	Mode
Cr	15.52	0.3731	0.8215	0.4541	56	16.09	3.554	15.52	Assigned	Median
Cs	1.06	0.01389	0.08404	0.1653	41	1.083	0.1574	1.06	Assigned	Median
Cu	53.62	0.7993	2.355	0.3394	66	53.36	7.247	53.62	Assigned	Median
Dy	4.38	0.0375	0.2805	0.1337	47	4.279	0.3023	4.32	Assigned	Mode
Er	2.45	0.03093	0.1712	0.1806	46	2.432	0.2084	2.45	Assigned	Median
Eu	0.9416	0.008828	0.076	0.1162	46	0.9416	0.05988	0.942	Assigned	Robust Mean
Ga	2.19	0.04541	0.1557	0.2917	47	2.224	0.4729	2.19	Assigned	Median
Gd	4.845	0.0474	0.3056	0.1551	46	4.648	0.5262	4.795	Assigned	Mode
Hf	0.5	0.01001	0.04439	0.2255	36	0.4897	0.06951	0.5	Assigned	Median
Ho	0.888	0.004862	0.07231	0.06725	45	0.8795	0.05094	0.888	Assigned	Median
La	18.3	0.1519	0.945	0.1607	61	18.18	1.564	18.3	Assigned	Median
Li	7.785	0.1835	0.4572	0.4014	28	7.935	1.221	7.785	Assigned	Median
Lu	0.31	0.003911	0.02957	0.1323	44	0.3099	0.02587	0.31	Assigned	Median
Mo	7.73	0.1202	0.4545	0.2645	46	7.721	0.8356	7.73	Assigned	Median
Nb	1.506	0.039	0.1133	0.3443	44	1.554	0.3029	1.58	Assigned	Mode
Nd	17.66	0.1763	0.9169	0.1923	55	17.64	1.772	17.66	Assigned	Median
Ni	40	0.8275	1.836	0.4506	65	40.71	7.391	40	Assigned	Median
Pb	4.89	0.1813	0.308	0.5887	55	4.971	1.757	4.89	Provisional	Median
Pr	4.08	0.03297	0.2641	0.1248	44	4.08	0.223	4.08	Assigned	Median
Rb	16.5	0.1741	0.8655	0.2011	61	16.37	2.009	16.5	Assigned	Median
Sb	1.11	0.0194	0.0874	0.222	31	1.1	0.1796	1.1	Assigned	Mode
Sc	2.58	0.045	0.1789	0.2515	41	2.855	0.7186	2.7	Assigned	Mode
Se	1.933	0.125	0.14	0.8928	13	2.05	0.5453	2.034	Provisional	Mode
Sm	3.889	0.04374	0.2535	0.1725	50	3.889	0.3093	3.857	Assigned	Robust Mean
Sn	0.318	0.00901	0.03022	0.2981	23	0.4888	0.2636	0.39	Provisional	Mode
Sr	289.8	2.222	9.875	0.225	74	289.2	23.25	289.8	Assigned	Median
Ta	0.1053	0.003	0.01181	0.2539	32	0.1179	0.02678	0.11	Assigned	Mode
Tb	0.7134	0.009656	0.06004	0.1608	45	0.7134	0.06478	0.713	Assigned	Robust Mean
Th	1.21	0.01906	0.09404	0.2027	49	1.254	0.1941	1.21	Assigned	Median
Tl	0.414	0.009246	0.03781	0.2445	28	0.407	0.06151	0.414	Assigned	Median
Tm	0.3385	0.004232	0.03187	0.1328	42	0.3344	0.03075	0.3385	Assigned	Median
U	3.961	0.04055	0.2575	0.1575	54	3.945	0.3315	3.961	Assigned	Median
V	60	0.8091	2.591	0.3122	65	59.74	7.805	60	Assigned	Median
W	0.254	0.0225	0.02497	0.9011	23	1.116	1.292	0.36	Provisional	Mode
Y	31.4	0.3862	1.495	0.2583	65	31.31	3.325	31.4	Assigned	Median
Yb	2.061	0.01613	0.1478	0.1091	50	2.056	0.1534	2.061	Assigned	Median
Zn	193	2.499	6.992	0.3574	69	190.4	20.18	193	Assigned	Median
Zr	22.5	0.5178	1.126	0.4597	62	22.9	6.148	22.5	Assigned	Median

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

Lab Code	C1	C2	C3	C4	C5	C7	C8	C9	C10	C11	C12	C13	C14
SiO2	0.14	7.68	0.74	5.44	0.39	0.82	-14.83	0.39	453.04	-1.62	0.49	2.11	-0.05
TiO2	-1.07	2.14	0.00	17.09	8.55	2.14	-6.50	5.13	8.55	0.00	0.13	0.43	8.55
Al2O3	-0.12	4.21	1.55	10.14	-4.29	0.86	-7.30	1.89	233.17	-1.20	0.29	1.63	20.11
Fe2O3T	-0.14	-7.42	0.75	22.06	-1.32	-1.32	-9.97	-0.03	3.35	0.23	0.27	-3.52	2.31
MnO	2.46	-1.85	-3.70	20.95	-3.70	1.23	-4.50	5.79	-3.70	0.00	0.00	0.62	-6.16
MgO	*-0.27*	*7.33*	***9.17***	***12.83***	***-9.17***	***-2.75***	*-6.60*	***10.17***	***11.91***	***0.00***	*0.05*	*1.74*	***0.00***
CaO	-0.39	-1.23	1.48	-1.86	1.07	0.98	-17.62	-0.26	-1.48	1.69	0.14	-1.50	-3.79
K2O	*0.05*	*1.93*	***0.00***	***16.44***	***1.93***	***1.93***	*-8.51*	***3.09***	***2.90***	***0.97***	*-7.25*	*2.51*	***2.90***
P2O5	0.14	2.57	-0.27	-0.27	-0.27	-1.35	-6.37	-5.15	-0.27	5.15	0.22	1.49	26.82
CO2	*0.69*	*	***7.41***	*	*	*	*-16.69*	*	*	*	*	*	***-0.05***
LOI	0.09	0.03	0.37	-0.35	0.55	-0.28	1.16	-0.48	0.17	0.09	-0.27	0.09	-0.11
Ag	0.78	3.28	*	*	*	*	*	*	*	*	-2.44	*	*
As	0.21	-3.35	*	*	0.84	*	*	-8.79	1.26	-2.51	-0.37	*	*
Ba	0.64	-3.48	-12.74	*	-10.69	1.15	5.78	-7.34	3.08	-0.01	2.29	*	*
Be	-0.38	-2.05	*	*	*	*	*	*	*	*	-0.26	*	*
Bi	*	*-1.03*	*	*	*	*	*	*	*	*	*	*	*
C(tot)	0.30	*	*	*	*	*	*	*	-0.81	*	*	*	*
Cd	0.19	-3.50	*	*	*	*	*	*	*	*	-1.45	*	*
Ce	-0.06	-2.70	13.60	2.85	7.99	0.74	*	-1.94	16.19	*	1.01	*	*
Co	*2.53*	*5.47*	*	***437.18***	*	*	*	***9.72***	***17.49***	*	*4.83*	*	*
Cr	6.38	-2.37	*	*	-4.40	-3.06	*	*	0.59	0.59	2.75	*	*
Cs	2.62	-1.95	*	2.02	168.25	0.36	*	165.87	70.68	*	-2.50	*	*
Cu	0.56	-4.82	-15.55	-6.63	-4.51	0.59	10.69	-2.39	-2.39	14.60	0.70	*	*
Dy	-0.02	-1.86	*	0.50	*	1.35	*	*	*	*	0.86	*	*
Er	0.61	-1.43	*	1.58	*	0.64	*	*	*	*	0.91	*	*
Eu	0.52	-1.35	*	1.16	*	1.03	*	*	*	*	0.84	*	*
Ga	-0.61	-2.33	*	19.91	19.34	11.63	*	5.20	-5.07	*	0.63	*	*
Gd	-0.02	-1.77	*	1.29	*	0.83	*	*	*	*	0.84	*	*
Hf	*	-1.15	*	24.33	*	0.68	*	*	*	*	-0.21	*	*
Ho	0.57	-1.38	*	0.17	*	1.27	*	*	*	*	0.57	*	*
La	0.05	-2.67	*	3.10	4.23	0.95	*	-1.38	0.74	15.55	1.06	*	*
Li	*	-1.84	*	*	*	*	*	*	*	*	*	*	*
Lu	0.00	-1.01	*	3.38	*	*	*	*	*	*	0.49	*	*
Mo	1.08	-0.68	*	*	-1.17	*	*	0.59	-1.61	*	-0.72	*	*
Nb	0.33	18.70	*	*	0.83	1.09	*	*	-2.70	*	0.78	*	*
Nd	0.08	-2.47	-10.54	1.56	3.10	0.62	*	6.91	9.10	10.19	1.37	*	*
Ni	2.18	0.71	-3.27	-7.08	-3.49	-3.81	-1.36	2.18	-2.72	-1.09	1.23	*	*
Pb	*0.93*	*-2.92*	*	***39.32***	***11.07***	***-9.32***	*	***-6.14***	***39.32***	***6.85***	*-1.94*	*	*
Pr	0.15	-1.97	*	2.42	*	0.76	*	*	*	*	0.68	*	*
Rb	-0.12	1.73	0.58	-2.89	-3.12	1.16	-5.49	9.82	-0.58	1.73	-3.48	*	*
Sb	1.09	-2.51	*	*	*	*	*	*	*	*	1.48	*	*
Sc	*	1.09	*	30.29	-6.04	7.38	*	343.27	*	*	*	*	*
Se	*	*0.51*	*	*	***-0.24***	*	*	*	*	*	*	*	*
Sm	0.22	-1.96	*	1.50	13.45	1.66	*	*	-2.32	*	1.00	*	*
Sn	*	*-1.72*	*	*	*	*	*	*	*	*	*4.86*	*	*
Sr	0.14	-2.47	-0.69	-6.26	-2.62	2.75	-6.32	-0.38	-1.90	1.24	0.29	*	*
Ta	*	1.17	*	74.89	202.71	1.25	*	*	*	*	0.67	*	*
Tb	-0.11	-1.41	*	1.61	*	1.61	*	*	*	*	0.67	*	*
Th	0.48	-1.41	*	5.42	10.53	1.38	*	29.67	3.08	72.20	*	*	*
Tl	0.08	-1.79	*	*	20.79	*	*	*	*	*	*	*	*
Tm	0.49	-1.17	*	0.67	*	0.36	*	*	*	*	0.51	*	*
U	0.29	-2.02	46.75	0.31	2.87	0.15	*	4.03	5.98	*	1.37	*	*
V	0.39	-1.57	-4.24	-17.75	-2.28	1.93	-4.05	1.54	0.00	1.16	0.10	*	*
W	*	*-0.60*	*	*	*	*	*	*	***230.12***	*	*	*	*
Y	-0.03	-1.38	-3.61	0.33	-2.01	1.87	-7.49	1.07	-0.94	14.45	0.94	*	*
Yb	0.13	-1.47	*	0.13	2.29	-0.07	*	*	*	*	0.72	*	*
Zn	0.43	-5.51	1.29	2.15	-2.63	-1.29	-7.22	-1.00	-3.58	0.00	0.14	*	*
Zr	1.20	-2.00	*	4.88	-2.04	1.33	*	4.88	-1.33	*	-2.63	*	*

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

Lab Code	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27
SiO2	-1.94	7.53	0.37	0.82	0.21	-0.02	-10.18	5.00	3.42	-1.68	3.09	*	-9.21
TiO2	0.00	-4.27	0.00	0.00	32.48	2.14	5.81	0.43	-2.56	-4.18	0.00	-0.43	-7.27
Al2O3	4.04	-10.48	0.09	-0.17	0.86	-0.94	-0.24	1.89	2.72	-7.16	1.55	-0.08	-5.07
Fe2O3T	-1.42	-0.28	-0.14	-0.80	4.39	-0.66	2.00	15.25	2.00	5.79	-2.36	*	-15.47
MnO	-8.01	8.63	-1.85	1.23	0.00	-1.85	0.00	0.00	0.00	2.90	-3.70	-1.23	-8.01
MgO	*0.00*	***5.50***	*-0.92*	***-5.50***	***4.58***	*-1.37*	***-3.67***	***4.31***	***6.14***	*1.93*	*63.24*	*-0.92*	*48.07*
CaO	0.56	-0.66	-0.08	1.33	-1.01	-0.38	3.73	-0.60	1.63	-3.38	-2.50	-1.50	2.16
K2O	*-1.50*	***-3.87***	*-0.97*	***0.97***	***-4.84***	*0.48*	***4.93***	***7.54***	*	*4.09*	*4.84*	*23.69*	*-13.49*
P2O5	-0.41	15.98	-0.14	-0.27	-3.52	-0.14	3.47	-18.69	2.98	0.16	5.15	*	0.95
CO2	*-0.35*	*	*	*	***-1.27***	*	*	*	*	*8.63*	*	*	*
LOI	-0.13	*	-0.02	0.09	-78.59	-0.04	-0.84	-0.48	-1.06	-1.44	0.35	*	-0.31
Ag	-0.38	*	*	*	2.98	*	-7.66	*	*	25.31	-9.35	*	*
As	1.88	*	*	*	-11.61	*	-6.36	1.72	*	2.15	*	*	*
Ba	-0.02	17.36	-0.00	*	212.19	*	-1.46	-0.70	-0.64	1.23	0.57	505.98	-2.70
Be	*	*	*	*	0.35	*	*	-0.01	-0.62	2.27	-0.74	*	*
Bi	*	*	*	*	*	*	***-3.53***	*	*	*819.23*	*	*	*
C(tot)	-0.29	*	*	0.60	*	*	*	*	*	-0.65	*	*	*
Cd	1.21	*	*	*	6.98	*	-13.12	-7.13	*	70.16	-10.28	*	*
Ce	0.11	-0.22	*	*	-5.48	*	-0.51	-0.68	0.00	0.30	0.56	-0.19	0.32
Co	*-0.12*	*	*	*	***1.79***	*	*	***3.73***	***-4.09***	*12.64*	*9.02*	*3.23*	*
Cr	-0.25	-5.50	-0.31	*	2.29	*	-8.30	-0.05	-0.00	8.84	3.14	0.66	0.90
Cs	*	*	*	*	*	*	-5.60	-0.21	0.37	1.60	0.71	*	*
Cu	-0.32	1.01	-0.56	*	2.00	*	-2.62	0.58	-1.26	43.87	-2.22	0.48	-0.56
Dy	0.04	-4.92	*	*	-4.56	*	1.79	-0.99	-0.43	-3.10	0.21	-0.52	*
Er	0.47	-2.63	*	*	-2.63	*	1.19	-0.78	0.08	-2.62	0.47	0.00	*
Eu	0.05	0.77	*	*	-0.55	*	-0.60	-0.39	0.14	1.37	-0.02	*	*
Ga	1.32	*	*	*	*	*	-7.07	-2.13	0.10	1.53	-0.32	*	*
Gd	0.04	-2.77	*	*	-5.09	*	1.62	-0.70	-0.92	-3.30	-0.28	0.24	*
Hf	0.23	*	*	*	96.65	*	1.01	-1.26	0.92	-2.03	1.13	*	*
Ho	0.07	*	*	*	-2.46	*	1.13	-0.19	0.00	-1.45	0.03	-0.33	*
La	0.00	-4.55	*	*	-6.33	*	-1.27	-0.48	0.60	-1.74	1.69	0.00	-0.69
Li	0.77	0.47	*	*	24.53	*	*	-0.37	-0.29	32.00	*	*	*
Lu	0.19	*	*	*	-3.72	*	0.71	-0.61	0.07	1.23	0.68	-0.34	*
Mo	-0.88	*	*	*	-5.04	*	2.64	1.14	-2.10	-0.44	2.07	*	*
Nb	-0.73	*	*	*	*	*	-0.92	0.90	-1.18	1.94	2.51	*	*
Nd	0.13	-5.08	*	*	-5.88	*	-0.71	-0.43	0.52	-1.76	1.13	-0.25	*
Ni	3.81	-7.08	0.27	*	2.72	*	-1.43	2.95	-2.24	4.58	7.08	*	1.36
Pb	*-0.31*	*	*	*	***-5.81***	*	***-9.13***	***-0.91***	***0.41***	*8.94*	*0.75*	*0.00*	*
Pr	0.19	*	*	*	-4.13	*	0.53	0.13	0.55	-0.06	1.14	*	*
Rb	1.04	*	*	*	-4.28	*	-4.80	0.15	-0.34	0.94	0.23	*	2.60
Sb	0.29	*	*	*	*	*	-2.65	-0.49	*	8.28	-1.83	*	*
Sc	-0.36	*	*	*	1.17	*	-14.04	0.69	*	-1.31	7.10	*	*
Se	*3.42*	*	*	*	***-2.88***	*	*	*	*	*	*	*	*
Sm	0.36	-3.51	*	*	-5.04	*	-0.79	-0.48	0.28	-1.20	0.99	-0.23	*
Sn	*	*	*	*	***5.36***	*	***-0.10***	***0.86***	*	*28.80*	*4.70*	*	*
Sr	0.57	-0.69	1.38	*	0.32	0.97	0.75	0.08	1.30	0.67	0.93	1.02	-2.83
Ta	*	*	*	*	10.56	*	-2.48	-0.53	2.43	3.31	2.94	*	*
Tb	0.28	*	*	*	-3.06	*	2.67	-0.34	-0.07	-2.08	1.44	-0.11	*
Th	-1.06	*	*	*	1.38	*	-2.29	-0.74	-0.05	-1.34	0.85	0.27	*
Tl	0.08	*	*	*	*	*	-10.60	0.11	*	17.07	*	*	*
Tm	0.20	*	*	*	-3.09	*	0.39	-0.33	0.20	-1.72	0.67	-0.13	*
U	0.33	*	*	*	-3.42	*	-1.10	-0.03	-1.93	0.58	0.38	-0.23	*
V	-0.59	-1.16	0.77	*	-4.63	*	-3.67	0.03	-0.24	-0.47	2.43	-0.23	-2.51
W	*	*	*	*	***86.75***	*	*	***-0.80***	*	*55.40*	*	*	*
Y	0.00	-2.27	*	*	-1.94	*	1.68	-1.18	0.46	-4.35	1.54	-0.77	-5.48
Yb	0.17	-3.79	*	*	-5.15	*	1.58	-0.37	0.25	-2.18	0.74	-0.10	*
Zn	0.49	-2.86	*	*	-2.29	*	1.39	-1.33	*	5.21	-7.72	-1.79	-4.22
Zr	0.75	21.75	*	*	*	*	-0.01	-1.09	-1.78	-4.12	1.86	*	5.10

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

Lab Code	C29	C31	C32	C33	C34	C36	C37	C38	C39	C40	C43	C44	C45
SiO2	0.32	-0.37	**-0.40**	1.11	1.51	**-0.03**	**1.61**	-0.07	-0.17	2.22	-0.21	-0.55	-0.04
TiO2	*	-2.14	**-5.13**	-1.28	*	**0.00**	**8.55**	2.14	-1.50	0.00	10.04	-1.07	0.43
Al2O3	0.43	0.43	**-1.89**	-1.29	0.31	**0.45**	**3.96**	0.95	-0.69	-1.20	-3.45	-1.46	0.16
Fe2O3T	-0.40	-0.40	**-3.40**	-3.00	-0.56	**-0.91**	**-6.00**	0.12	0.09	-0.28	5.44	1.16	0.27
MnO	*	-1.85	**0.00**	-0.62	*	**2.46**	**8.63**	-1.85	-1.23	*	3.08	4.31	0.37
MgO	*-1.37*	*-0.46*	***-1.28***	*-1.05*	*-1.65*	***1.74***	***3.67***	*1.37*	*-1.10*	*-2.75*	*0.50*	*7.79*	*-1.13*
CaO	1.02	0.00	**3.63**	-0.39	-0.70	**-0.26**	**-0.75**	0.05	0.32	0.04	0.86	-1.84	0.25
K2O	*-1.45*	*-0.97*	***-0.10***	*-0.48*	*	***-1.45***	***8.70***	*0.00*	*-5.03*	*-5.80*	*-0.87*	*-1.93*	*-1.77*
P2O5	-0.41	0.68	**6.23**	-0.14	*	**0.27**	**-0.27**	2.57	-2.57	-5.69	-0.95	0.95	0.95
CO2	*	*	*	*9.54*	*	*	*	*	*	*	*	*0.88*	*
LOI	-0.02	0.10	**0.10**	*	0.09	**-0.63**	**-1.13**	0.13	0.01	-0.11	-0.10	-0.35	0.00
Ag	0.36	0.08	*	*	*	*	*	*	*	*	*	*	*
As	-0.47	0.21	*	*	*	*	**5.86**	*	-2.30	*	*	*	*
Ba	0.21	-0.20	**-0.19**	-0.77	-0.56	0.58	*	0.17	0.58	*	*	-0.77	*
Be	0.33	0.26	**0.14**	*	-0.68	*	*	0.67	*	*	*	-0.21	*
Bi	*	*0.37*	*	*	*	*	*	*	*142.87*	*	*	*	*
C(tot)	*	-3.41	*	*	*	*	*	*	*	-1.05	*	*	1.48
Cd	0.19	-0.52	*	*	*	*	**-8.96**	*	0.47	*	*	*	*
Ce	-0.58	-0.02	**-0.23**	*	-0.66	*	*	0.28	0.67	*	*	-0.37	*
Co	*-0.93*	*-0.58*	***-1.92***	*	*0.35*	*	***157.39***	*5.21*	*0.97*	*	*8.74*	*-0.74*	*
Cr	-0.62	0.90	**-1.37**	*	-0.37	*	**-18.40**	-0.07	2.12	*	*	0.29	*
Cs	-0.24	0.24	**0.58**	*	*	*	*	0.30	2.62	*	*	-0.54	*
Cu	0.68	1.35	**-0.66**	-4.38	0.66	-0.64	**-10.45**	0.82	-2.02	*	-0.34	0.51	*
Dy	-0.14	0.21	**-0.29**	*	-0.64	*	*	0.04	*	*	*	-0.50	*
Er	0.20	-0.44	**-0.05**	*	-0.44	*	*	0.20	*	*	*	-0.23	*
Eu	0.11	-0.27	**-0.03**	*	-0.21	*	*	0.06	*	*	*	-0.08	*
Ga	-0.61	-0.29	**-1.98**	*	-0.06	2.28	*	0.26	-1.57	*	*	-0.35	*
Gd	0.38	-0.24	**0.12**	*	-1.45	*	*	-0.07	*	*	*	-0.40	*
Hf	-1.12	0.00	**-0.99**	*	*	*	*	0.28	*	*	*	0.00	*
Ho	-0.46	0.08	**0.07**	*	-0.40	*	*	0.14	*	*	*	-0.33	*
La	-0.32	0.32	**-0.30**	-1.22	-0.86	2.43	*	0.32	1.16	*	*	0.00	*
Li	0.89	-0.64	**0.27**	*	*	*	*	1.94	*	*	*	-1.08	*
Lu	-0.81	1.52	**-0.14**	*	-0.51	*	*	0.20	*	*	*	-0.22	*
Mo	1.12	-0.47	**5.83**	*	0.03	*	*	*	-0.25	*	*	-0.14	*
Nb	-0.00	-0.47	**0.11**	*	*	*	*	0.64	-2.23	*	11.01	-0.03	*
Nd	0.32	-0.20	**-0.31**	*	-0.43	*	*	0.24	3.08	*	*	0.35	*
Ni	0.65	0.00	**-1.73**	-4.36	-0.94	-0.44	**-6.53**	1.28	-0.87	*	0.00	-0.54	*
Pb	*-0.08*	*0.18*	***-1.36***	*	*-2.68*	*	***-6.14***	*-0.05*	*0.50*	*	*5.05*	*-0.15*	*
Pr	-0.34	0.23	**0.09**	*	-0.42	*	*	0.02	*	*	*	0.42	*
Rb	0.12	-0.12	**0.21**	*	-0.57	-0.52	*	1.39	-0.75	*	-0.87	-0.52	*
Sb	-0.11	-0.63	*	*	*	*	**44.51**	*	-0.06	*	*	0.06	*
Sc	0.14	1.17	**-0.58**	*	-0.64	*	*	1.20	*	*	*	-0.22	*
Se	*	*	*	*	*	*	*	*	*0.95*	*	*	*	*
Sm	0.32	0.81	**-0.18**	*	-0.31	*	*	0.20	2.78	*	*	-0.18	*
Sn	*	*-0.30*	*	*	*	*	*	*	*7.97*	*	*	*	*
Sr	2.04	0.67	**-0.11**	*	-0.26	-0.92	*	1.23	-0.87	*	-0.55	-1.00	0.33
Ta	*	-0.22	**0.15**	*	*	*	*	0.20	*	*	*	0.20	*
Tb	-0.13	-0.11	**0.13**	*	-0.78	*	*	0.21	*	*	*	-0.20	*
Th	-0.27	0.05	**1.22**	*	-0.90	*	*	-0.16	*	*	*	-0.48	*
Tl	-0.42	-0.45	*	*	*	*	**15.50**	*	*	*	*	-0.85	*
Tm	-0.51	*	*	*	-0.29	*	*	0.16	*	*	*	-0.29	*
U	0.56	-0.22	**0.17**	*	-0.66	*	*	-0.08	-0.70	*	*	-0.31	*
V	-0.37	0.77	**-0.37**	0.00	-1.64	1.54	**-20.45**	0.85	-0.14	*	*	-0.96	-0.00
W	*-0.12*	*0.92*	*	*	*	*	*	*	*18.94*	*	*	*0.12*	*
Y	-0.10	-0.70	**0.15**	-0.47	-1.52	-0.47	*	1.24	-0.33	*	3.55	-1.47	*
Yb	0.03	0.81	**0.03**	*	-0.27	*	*	0.30	1.48	*	*	-0.24	*
Zn	1.43	0.72	*	-0.29	0.07	-1.32	**-11.73**	-1.00	-0.99	*	-1.57	*	0.71
Zr	1.55	2.89	**-3.07**	-0.67	-0.92	5.95	*	1.24	-0.04	*	-6.44	0.00	*

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

Lab Code	C47	C48	C49	C50	C51	C52	C53	C54	C58	C60	C61	C62	C63
SiO2	-0.32	-1.96	0.19	*	-1.96	1.72	*	1.17	-0.15	0.11	*	-4.70	2.48
TiO2	8.97	0.00	0.43	*	0.00	-2.78	0.00	0.00	0.00	145.30	*	-1.07	0.00
Al2O3	2.87	-2.23	-0.65	*	-1.89	1.46	*	1.55	-0.08	0.09	*	-5.41	2.24
Fe2O3T	1.60	1.27	-1.74	*	-3.92	-2.74	*	-0.80	-0.14	-0.14	*	-7.16	0.23
MnO	1.23	0.00	-1.23	0.97	8.63	-2.46	1.23	0.00	4.31	0.62	*	4.31	-3.70
MgO	*-1.42*	***0.92***	***-2.57***	*	***2.75***	*-4.58*	*	***0.00***	*-3.21*	*-1.37*	*	*-1.37*	***2.75***
CaO	1.66	1.32	1.31	*	1.32	0.15	*	0.06	-0.09	-0.13	*	-2.15	-0.85
K2O	*-1.21*	***-8.70***	***1.26***	*	***-29.01***	*-0.48*	*	***1.93***	*0.00*	*0.00*	*	*-4.04*	***3.87***
P2O5	1.49	0.27	-2.98	*	32.24	-0.95	*	*	2.57	-0.68	*	-5.74	5.15
CO2	*	*	*	*	*	*	*	*	*	*	*	*	*
LOI	*	0.04	0.28	*	-0.04	0.20	*	-0.54	-0.03	*	*	*	-0.04
Ag	-0.31	*	-0.55	*	*	*	*	0.16	0.26	*	*	*	*
As	0.18	*	-0.33	-1.05	0.42	*	*	2.47	0.00	*	-4.60	*	*
Ba	0.13	*	3.23	-0.79	1.19	*	-0.70	-0.24	0.36	*	-0.70	9.84	10.80
Be	0.70	*	1.92	*	*	*	0.35	-0.43	0.10	*	*	*	*
Bi	*-0.15*	*	***-0.73***	*	*	*	*	***-0.73***	*0.37*	*	*	*	*
C(tot)	0.74	*	*	*	*	*	*	-2.05	-0.29	*	*	*	*
Cd	-0.27	*	-1.59	*	1.43	*	*	-1.32	0.22	*	*	*	*
Ce	0.25	*	0.85	1.40	0.47	*	-0.13	-0.82	0.11	*	0.13	*	50.73
Co	*0.51*	*	***0.08***	*3.58*	***0.39***	*	***1.71***	***-1.79***	*0.19*	*	*	*	***33.03***
Cr	1.23	22.50	8.62	2.49	2.29	*	-0.26	-0.26	2.73	*	*	-1.53	20.07
Cs	0.57	*	0.83	*	-10.11	*	-0.48	-1.43	-0.06	*	-0.48	*	*
Cu	-0.02	*	4.58	-1.91	2.24	*	0.37	1.99	0.93	*	-1.45	-10.96	15.87
Dy	0.24	*	0.46	*	0.89	*	0.04	-1.21	0.20	*	-0.39	*	*
Er	0.98	*	0.88	*	1.46	*	0.00	-1.23	0.09	*	-0.29	*	*
Eu	-0.44	*	0.90	*	0.90	*	0.11	-0.35	0.06	*	-0.40	*	*
Ga	-0.52	*	-1.93	1.57	-0.45	*	-0.39	-0.19	0.67	*	*	*	18.05
Gd	0.31	*	-0.90	*	0.34	*	-0.02	-2.27	1.25	*	-0.02	*	*
Hf	-0.09	*	-0.90	*	1.13	*	0.23	0.00	0.00	*	-0.02	*	*
Ho	0.01	*	0.44	*	0.30	*	0.03	-0.57	0.43	*	-0.12	*	*
La	0.61	*	1.14	-1.38	1.38	*	0.21	-0.63	0.05	*	-0.21	*	32.49
Li	-1.50	*	1.17	*	*	*	-1.56	-3.47	-0.42	*	*	*	*
Lu	-1.01	*	1.01	*	0.68	*	0.00	-0.57	0.00	*	0.03	*	*
Mo	-1.49	*	4.77	-0.51	2.35	*	2.05	-1.06	0.39	*	*	*	*
Nb	*	*	-0.05	*	0.65	*	1.36	-1.91	0.41	*	-1.03	*	101.48
Nd	0.00	*	0.93	*	1.24	*	0.04	-1.27	0.24	*	0.15	*	17.82
Ni	-0.26	-1.63	4.41	0.29	1.31	*	1.85	-1.14	-0.14	*	*	*	1.63
Pb	*-1.47*	*	***0.36***	*-2.48*	***-6.04***	*	***0.23***	***-0.91***	*0.02*	*	*	*22.90*	***3.60***
Pr	-0.02	*	0.91	*	1.17	*	0.15	-0.83	0.19	*	-0.57	*	*
Rb	0.90	*	3.81	-0.16	-12.59	*	0.35	-0.23	0.52	*	-0.69	-2.02	8.67
Sb	0.23	*	0.34	*	-0.11	*	*	-1.49	0.34	*	0.46	*	*
Sc	0.00	119.71	1.23	*	1.23	*	0.84	0.11	0.08	*	1.68	*	181.19
Se	*2.38*	*	*	*	*	*	*	*	*0.95*	*	*	*	*
Sm	-0.58	*	1.11	*	0.44	*	0.36	-0.59	0.32	*	-0.94	*	*
Sn	*-0.08*	*	***-0.93***	*	*	*	***0.73***	***3.71***	*	*	*	*	*
Sr	-0.46	-0.08	4.68	-0.82	2.75	*	0.93	-0.28	1.78	*	-1.40	-2.83	10.45
Ta	*	*	-0.44	*	-0.44	*	0.40	0.40	-0.22	*	-0.78	*	*
Tb	-0.31	*	0.94	*	0.28	*	0.28	-0.96	0.47	*	-0.01	*	*
Th	1.20	*	0.43	1.91	0.11	*	-0.11	-0.96	-0.16	*	0.53	*	*
Tl	-0.77	*	-0.90	*	*	*	0.95	*	0.15	*	*	*	*
Tm	1.09	*	0.67	*	*	*	0.05	-0.61	-0.29	*	-0.05	*	*
U	-7.20	*	0.31	-0.35	0.70	*	0.11	-0.94	0.17	*	-0.16	*	*
V	1.67	-1.93	8.95	1.14	2.20	*	0.89	0.00	1.74	*	*	*	13.51
W	*2.78*	*	***4.25***	*	*	*	*	*	*0.78*	*	*	*	*
Y	0.65	*	3.61	-0.08	0.80	*	1.54	-0.80	-0.10	*	0.20	1.20	9.77
Yb	1.16	*	0.74	*	0.53	*	-0.07	-0.82	0.30	*	-0.41	*	*
Zn	0.35	0.43	2.86	-0.71	1.86	*	0.00	2.43	1.57	*	*	-3.50	0.43
Zr	3.45	*	8.70	0.30	0.62	*	0.62	0.00	0.67	259.02	1.33	-8.21	-6.66

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

Lab Code	C64	C65	C66	C67	C68	C69	C71	C73	C74	C75	C76	C77	C78
SiO2	-1.01	-1.16	-0.46	-1.03	-0.57	-0.80	-0.05	-0.81	*	0.02	-4.90	*	-0.37
TiO2	4.27	-0.43	-0.64	0.90	-2.14	*	2.56	*	*	-3.50	*	0.73	0.21
Al2O3	3.96	-0.94	1.63	-1.23	-6.70	*	1.55	-0.60	*	0.00	-1.80	3.61	-0.08
Fe2O3T	1.79	-0.66	0.04	-0.75	4.91	*	1.27	-0.95	*	-0.40	2.46	0.70	0.38
MnO	8.63	0.62	-3.08	-1.36	-1.85	*	-1.23	0.00	*	0.41	*	2.34	0.62
MgO	*6.42*	*1.83*	*1.24*	*-1.10*	*1.37*	*	*-4.58*	*-2.06*	*	*-0.23*	*8.25*	*3.67*	*2.75*
CaO	-0.15	-2.49	0.90	-1.83	-1.28	*	-1.05	0.94	*	0.72	0.61	2.07	0.23
K2O	*-10.64*	*-9.67*	*0.87*	*-6.19*	*-11.60*	*	*1.93*	*0.29*	*	*-6.76*	*	*0.10*	*-10.35*
P2O5	-0.27	0.14	4.20	-1.90	5.15	*	0.81	1.49	*	-0.70	*	*	-1.22
CO2	*	*	*	*	*	*	*	*1.04*	*	*	*	*	*
LOI	0.43	0.09	*	0.06	-0.04	0.06	-1.30	0.04	*	-0.05	0.03	*	0.01
Ag	*	*	*	*	*	*	0.86	*	*	-0.23	*	*	*
As	-1.32	-0.21	*	*	*	*	-3.49	-1.15	-1.67	*	*	-0.84	0.84
Ba	-1.39	*	*	-1.43	4.82	*	-0.16	0.25	0.45	0.00	*	0.77	-0.77
Be	-0.11	*	*	*	*	*	-1.21	-0.06	0.04	-0.66	*	*	*
Bi	*0.00*	*	*	*	*	*	*	*	*	*	*	*	*
C(tot)	*	*	0.27	*	*	*	2.43	-0.32	*	-0.36	*	*	*
Cd	0.16	*	*	*	*	*	-0.33	-0.36	1.98	-1.31	*	3.68	-1.18
Ce	-0.47	1.62	*	*	*	*	-0.30	0.67	0.28	0.03	*	1.17	-0.45
Co	*-2.18*	*8.74*	*	*	*	*	*-2.02*	*	*17.33*	*-0.35*	*	*-0.47*	*
Cr	-2.94	*	*	*	*	*	-1.24	*	-3.49	0.00	*	0.95	0.90
Cs	-1.55	*	*	*	*	*	*	*	-0.36	-0.23	*	2.26	*
Cu	0.03	-1.19	*	*	4.41	*	-1.20	-0.34	3.14	0.10	*	*	1.14
Dy	-0.64	*	*	*	*	*	-0.14	-0.86	-2.55	0.19	*	1.14	-0.29
Er	-0.29	*	*	*	*	*	0.53	-0.88	-2.72	0.13	*	*	-0.09
Eu	-0.15	*	*	*	*	*	1.03	-0.67	-4.72	0.19	*	0.66	-0.08
Ga	0.45	*	*	*	*	*	-2.70	0.67	3.85	-1.09	*	1.35	*
Gd	-1.72	*	*	*	*	*	0.38	-1.38	-3.26	0.05	*	*	-0.35
Hf	9.91	*	*	*	*	*	*	-1.13	-2.12	-0.23	*	-0.68	*
Ho	-0.53	*	*	*	*	*	-0.11	-0.89	-2.77	0.12	*	*	-0.19
La	0.21	-2.80	*	*	*	*	0.42	0.16	-0.34	0.10	*	0.00	-0.48
Li	1.32	*	*	*	*	*	*	0.13	2.45	-1.32	*	*	*
Lu	0.00	*	*	*	*	*	1.01	-0.51	*	0.10	*	0.20	0.00
Mo	0.15	-4.10	*	*	*	*	0.31	0.52	0.99	-0.08	*	-1.83	*
Nb	-1.55	15.42	*	*	4.36	*	*	-0.91	-1.73	-0.37	*	*	11.01
Nd	-0.17	*	*	*	*	*	0.15	-0.96	-1.08	0.48	*	-1.27	-1.23
Ni	3.59	-0.82	*	-3.98	1.91	*	-1.20	-0.33	11.65	-0.05	*	*	0.00
Pb	*3.83*	*-1.44*	*	*	*	*	*0.45*	*	*	*-0.40*	*	*	*
Pr	-0.04	*	*	*	*	*	-0.57	-1.10	-1.07	0.51	*	*	-0.23
Rb	0.35	2.02	*	*	1.44	*	-0.46	0.29	-0.88	-0.53	*	0.58	-0.87
Sb	-8.58	*	*	*	*	*	-0.11	-1.20	-0.34	-1.31	*	0.23	-1.20
Sc	10.23	*	*	*	*	*	*	*	-0.34	-0.03	*	0.11	-0.67
Se	*	*	*	*	*	*	*13.98*	*	*	*	*	*-2.38*	*
Sm	-0.39	*	*	*	*	*	0.83	-0.45	-0.30	0.67	*	-0.07	-0.23
Sn	*3.38*	*	*	*	*	*	*	*	*	*-0.96*	*	*	*
Sr	-1.19	-1.31	*	-3.63	-1.60	*	-1.36	-0.14	*	0.59	*	1.03	-0.19
Ta	7.17	*	*	*	*	*	*	*	0.40	-0.61	*	*	*
Tb	-0.89	*	*	*	*	*	1.11	-0.61	-3.22	0.28	*	-0.22	-0.11
Th	-0.21	14.83	*	*	*	*	1.38	-1.54	-0.43	-0.17	*	-0.11	*
Tl	-0.63	*	*	*	*	*	4.65	-0.05	-0.16	-0.29	*	*	*
Tm	-0.58	*	*	*	*	*	1.30	-0.76	-2.27	0.13	*	*	-0.29
U	0.03	2.02	*	*	*	*	1.12	-0.70	-0.35	0.03	*	-0.63	*
V	0.23	-2.51	*	*	*	*	1.08	0.00	0.05	0.71	*	2.32	1.54
W	*-1.36*	*	*	*	*	*	*	*	*	*-0.18*	*	*0.24*	*
Y	0.27	0.20	*	*	2.21	*	-0.67	-0.13	-1.03	0.31	*	*	-1.30
Yb	-0.28	*	*	*	*	*	0.20	-0.38	-1.55	0.25	*	0.06	-0.10
Zn	-0.72	-1.29	*	-0.27	2.72	*	-3.29	1.29	0.23	0.10	*	3.58	0.79
Zr	-0.53	14.87	*	-0.89	2.44	*	-1.73	-0.27	-6.06	-0.22	*	*	0.67

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

Lab Code	C79	C80	C81	C82	C84	C85	C86	C87	C88	C89	C90	C92	C93
SiO2	1.00	1.98	0.28	-4.84	-0.24	-0.24	2.94	1.28	-2.55	0.59	-0.11	*	*
TiO2	13.68	1.28	0.43	-10.26	-2.14	1.28	2.78	-11.75	2.78	*	0.00	*	-1.28
Al2O3	-27.70	1.76	3.56	-6.35	1.29	1.46	2.49	0.57	-4.21	-0.43	0.09	*	1.12
Fe2O3T	3.49	-2.73	0.01	0.23	-0.14	-0.14	1.94	0.12	3.81	-0.14	-1.44	*	-0.06
MnO	-3.70	-2.46	0.00	16.02	-1.85	2.46	-0.12	*	0.62	*	4.31	*	0.62
MgO	*6.78*	*1.65*	*1.05*	*-3.67*	*-4.12*	*3.21*	*2.75*	*4.81*	*-1.19*	*-0.92*	*-1.37*	*	*-0.87*
CaO	10.36	-0.61	-0.09	-4.64	0.53	0.47	-0.85	0.63	0.94	0.97	0.00	*	1.36
K2O	*-1.93*	*0.10*	*0.63*	*-3.87*	*-10.15*	*0.48*	*2.90*	*-15.96*	*-8.41*	*-1.45*	*-0.48*	*	*0.92*
P2O5	-28.45	0.27	0.68	-2.98	-0.14	2.03	0.95	2.57	0.68	2.57	-0.14	*	0.95
CO2	*	*	*	*-9.03*	*	*0.00*	*-0.93*	*	*	*	*-31.39*	*	*
LOI	-0.37	-0.17	-0.06	10.21	-0.31	-0.21	0.09	-0.55	-0.11	-0.13	0.09	*	*
Ag	*	*	*	-1.39	*	*	*	*	72.28	*	*	*	-0.08
As	*	*	*	0.86	*	*	*	*	-0.10	*	1.88	*	-0.31
Ba	65.58	-0.33	*	-0.20	*	*	-0.00	0.79	-3.40	*	0.19	-2.00	-0.25
Be	*	0.98	*	-2.39	*	*	-0.53	*	*	*	*	*	0.26
Bi	*	*	*	*-2.20*	*	*	*1.10*	*	*	*	*	*-2.57*	*0.81*
C(tot)	*	*	*	-73.03	*	0.00	0.04	*	-36.52	0.60	*	*	*
Cd	62.52	*	*	0.16	*	*	-0.08	-0.13	19.16	*	-0.36	*	0.15
Ce	*	-0.16	*	-0.39	*	*	0.45	0.39	8.40	*	-0.06	-3.39	-0.41
Co	*520.96*	*5.83*	*	*0.00*	*	*	*1.75*	*7.66*	*3.30*	*	*2.53*	*	*-0.63*
Cr	21.89	-0.22	*	-3.06	*	*	12.47	0.25	-0.25	*	*	*	-0.32
Cs	*	-0.36	*	-0.48	*	*	*	0.15	68.06	*	0.24	-0.24	0.02
Cu	0.16	-0.42	*	0.76	*	*	-0.34	-0.22	-1.26	*	0.93	*	-0.18
Dy	*	-0.11	*	-0.53	*	*	0.04	0.39	*	*	0.07	-3.73	-0.11
Er	*	-0.41	*	-0.70	*	*	0.44	1.16	*	*	0.00	-3.18	0.14
Eu	*	0.11	*	-0.44	*	*	0.19	0.62	*	*	-0.34	-2.45	0.02
Ga	*	0.26	*	-2.51	*	*	0.03	0.22	*	*	0.00	*	-2.10
Gd	*	0.02	*	-1.00	*	*	-0.09	0.39	*	*	0.52	-3.25	0.23
Hf	*	0.23	*	7.19	*	*	*	*	*	*	*	-4.84	-1.37
Ho	*	-0.25	*	-0.75	*	*	0.15	0.39	*	*	-0.12	-2.82	-0.01
La	*	-0.04	*	-1.67	*	*	0.32	0.10	-0.42	*	-0.48	-3.22	-0.43
Li	68.27	-0.40	*	-1.24	*	*	-0.09	*	*	*	3.52	-0.19	0.09
Lu	*	-0.34	*	0.07	*	*	0.00	0.71	*	*	0.00	-2.54	-0.02
Mo	*	0.97	*	-1.25	*	*	0.41	*	-0.03	*	0.30	-0.19	1.05
Nb	*	1.36	*	-2.61	*	*	*	*	-1.79	*	*	-0.95	-0.83
Nd	*	-0.19	*	-0.61	*	*	0.57	0.57	1.93	*	-0.25	-3.30	0.55
Ni	8.85	2.19	*	-5.45	*	*	0.54	3.98	-1.55	*	0.82	*	0.01
Pb	*373.72*	*-0.78*	*	*2.89*	*	*	*-0.15*	*1.93*	*-2.42*	*	*1.80*	*-0.65*	*0.20*
Pr	*	-0.04	*	-0.68	*	*	0.42	0.38	*	*	0.15	-2.33	-0.11
Rb	*	0.59	*	-0.92	*	*	0.12	0.11	*	*	0.00	0.05	0.73
Sb	*	*	*	-1.26	*	*	1.09	*	*	*	0.51	*	0.03
Sc	*	-0.06	*	-2.74	*	*	0.34	-1.39	*	*	*	*	*
Se	*	*	*	*-5.31*	*	*	*	*	*-0.47*	*	*	*	*-0.67*
Sm	*	0.36	*	-0.39	*	*	0.61	0.53	*	*	-0.18	-2.88	0.48
Sn	*	*-0.26*	*	*47.05*	*	*	*0.03*	*	*	*	*11.28*	*	*0.02*
Sr	68.37	1.15	*	-0.69	0.52	0.42	0.11	0.10	-1.51	*	-0.50	-3.93	-0.43
Ta	*	0.40	*	-2.14	*	*	*	*	*	*	*	-0.35	0.37
Tb	*	0.44	*	*	*	*	0.14	1.40	*	*	0.22	-2.78	0.10
Th	*	0.00	*	40.09	*	*	0.37	0.74	*	*	-1.12	*	-0.16
Tl	*	0.69	*	-6.19	*	*	0.08	0.50	*	*	*	-0.28	0.19
Tm	*	-0.27	*	-0.67	*	*	0.18	0.27	*	*	-0.13	-2.49	0.24
U	*	-0.16	*	-0.86	*	*	0.04	1.25	0.08	*	-0.20	-0.33	0.34
V	*	0.69	*	*	*	2.89	-0.19	*	-2.57	*	0.58	*	0.85
W	*13206.06*	*	*	*389.12*	*	*	*	*	*24.95*	*	*	*	*-0.34*
Y	*	1.25	*	-2.14	*	*	0.87	1.69	-0.90	*	-0.10	-7.28	0.15
Yb	*	-0.14	*	-0.75	*	*	0.40	0.77	-1.56	*	-0.21	-3.66	0.19
Zn	3.86	-2.38	*	2.15	0.50	-0.43	-0.36	-1.37	-1.32	*	-0.14	*	0.93
Zr	*	0.43	*	-5.59	*	*	7.77	*	-1.60	*	0.44	-9.06	-1.90

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

Lab Code	C94	C95	C97	C98	C99	C100	C101	C102	C105	C106	C107	C109	C110
SiO2	1.06	*	-4.30	**0.65**	0.11	-12.13	-0.98	0.46	0.06	0.02	-6.03	*	-3.72
TiO2	0.43	*	19.02	**-1.28**	*	2.14	0.66	-1.07	1.28	0.00	1.69	*	-0.21
Al2O3	0.00	**-1.89**	-0.98	**-1.89**	-0.26	-6.10	-0.39	71.22	-0.08	0.95	-0.43	*	-2.83
Fe2O3T	-0.19	**-0.80**	25.25	**2.31**	*	1.94	-2.61	1.68	0.38	0.90	0.84	*	-1.70
MnO	-1.23	**0.00**	*	**3.70**	*	-1.85	-0.74	1.23	2.46	-1.85	-0.06	*	2.46
MgO	*-0.27*	***-1.47***	*-2.11*	***0.00***	*0.00*	*5.04*	*-1.47*	*	*1.37*	*0.46*	*-0.55*	*	*-3.21*
CaO	0.02	**-3.61**	0.59	**-0.19**	-0.09	0.36	-1.86	-2.91	0.17	-0.06	1.69	*	-4.13
K2O	*-13.54*	*	*-13.06*	***-0.97***	*-0.48*	*-0.97*	*0.24*	*-3.14*	*-11.60*	*-7.25*	*2.56*	*	*-2.42*
P2O5	-9.35	*	-3.39	**0.27**	-0.14	-0.14	1.30	*	-0.14	2.57	1.71	*	-0.14
CO2	*	*	*	*	*	*	*	*-2.55*	*	*	*	*	*
LOI	0.11	*	0.00	**0.09**	0.30	*	0.74	*	0.05	0.00	-0.09	*	**-0.39**
Ag	*	*	*	*	*	*	*	*	*	*	*	*	*
As	*	**0.75**	-6.48	*	*	*	0.34	*	*	*	*	*	*
Ba	*	**0.05**	-2.23	**13.11**	*	*	-1.01	6.19	*	-8.30	*	**-0.44**	*
Be	*	*	4.12	*	*	*	*	*	*	*	*	*	*
Bi	*	*	*	*	*	*	*	*216.33*	*	*	*	*	*
C(tot)	0.18	*	*	*	*	*	*	*	*	*	*	*	*
Cd	*	*	-2.86	*	*	*	0.12	*	*	*	*	*	*
Ce	*	**-0.85**	-0.31	**-2.55**	*	*	-0.10	7.10	*	2.05	*	**-0.98**	*
Co	*	***6.68***	*1.42*	*	*	*	*-0.62*	*	*	*	*	*	*
Cr	*	**-0.87**	-3.70	**11.54**	*	*	-0.96	2.12	*	-8.23	*	*	*
Cs	*	**0.00**	*	**-1.31**	*	*	*	*	*	*	*	**-0.24**	*
Cu	*	**-1.36**	-2.93	**4.41**	*	*	0.38	7.72	*	*	*	*	*
Dy	*	**-0.39**	-0.01	**-2.35**	*	*	0.09	*	*	*	*	**-0.78**	*
Er	*	**-0.47**	0.05	**-1.05**	*	*	0.44	*	*	*	*	**-0.47**	*
Eu	*	**-0.52**	0.05	**-0.81**	*	*	0.11	*	*	*	*	**-0.68**	*
Ga	*	**0.39**	2.53	*	*	*	*	*	*	-0.61	*	**-0.26**	*
Gd	*	**-0.28**	-0.01	**-3.52**	*	*	0.35	*	*	*	*	**-2.18**	*
Hf	*	**-0.90**	*	**-1.35**	*	*	*	*	*	*	*	**0.68**	*
Ho	*	**-0.19**	0.12	**0.03**	*	*	0.20	*	*	*	*	**-0.25**	*
La	*	**-0.14**	-0.13	**0.53**	*	*	-0.14	4.18	*	-4.39	*	**-0.32**	*
Li	*	*	*	*	*	*	*	*	*	*	*	*	*
Lu	*	**-0.10**	0.15	**-0.68**	*	*	0.54	*	*	*	*	**-0.68**	*
Mo	*	**0.20**	-1.01	-0.69	*	*	0.56	-1.35	*	*	*	*	*
Nb	*	**1.09**	*	0.33	*	*	4.24	*	*	-2.23	*	**1.27**	*
Nd	*	**-0.59**	-0.20	**-2.25**	*	*	*	-1.72	*	*	*	**-0.48**	*
Ni	*	**6.03**	-3.06	**5.99**	*	*	1.70	19.06	*	-10.62	*	*	*
Pb	*	***0.52***	*-5.51*	***-2.14***	*	*	*0.92*	*40.76*	*	*5.05*	*	*	*
Pr	*	**-0.11**	-0.08	**-1.67**	*	*	0.13	*	*	*	*	**-0.45**	*
Rb	*	**0.18**	-6.98	**-4.04**	*	*	*	1.16	*	-1.44	*	**-0.01**	*
Sb	*	*	3.04	*	*	*	*	*	*	*	*	*	*
Sc	*	**1.84**	*	**460.64**	*	*	1.41	*	*	17.94	*	**-1.40**	*
Se	*	*	*0.36*	*	*	*	*	*	*	*	*	*	*
Sm	*	**-0.27**	-0.71	**0.08**	*	*	0.32	*	*	*	*	**-0.90**	*
Sn	*	*	*	*	*	*	*7.79*	*	*	*	*	***2.38***	*
Sr	*	**0.88**	-1.74	**3.26**	*	*	-0.14	2.54	*	37.43	0.47	**0.34**	*
Ta	*	**-0.11**	*	1.05	*	*	*	*	*	*	*	**1.25**	*
Tb	*	**0.56**	-0.05	**-1.22**	*	*	0.03	*	*	*	*	**0.61**	*
Th	*	**-0.11**	0.79	**-1.06**	*	*	1.63	*	*	*	*	**-0.43**	*
Tl	*	**0.34**	*	*	*	*	*	*	*	*	*	*	*
Tm	*	**-0.20**	0.16	**-1.52**	*	*	0.18	*	*	*	*	**0.05**	*
U	*	**-0.94**	0.47	**-2.72**	*	*	0.53	*	*	-5.75	*	**-0.86**	*
V	*	**-0.42**	-2.22	**7.72**	*	*	0.77	-1.54	*	-9.26	22.19	*	*
W	*	*	*	*0.92*	*	*	*	*395.41*	*	*	*	***23.47***	*
Y	*	**1.85**	0.49	**4.41**	*	*	-0.27	0.54	*	-9.83	*	**0.49**	*
Yb	*	**-0.01**	0.00	**-1.36**	*	*	0.02	*	*	*	*	**-0.07**	*
Zn	*	**-1.66**	-3.74	**2.86**	*	*	-0.01	1.22	*	-13.02	2.15	*	*
Zr	*	**-2.18**	*	**11.10**	*	*	0.42	0.67	*	-5.99	-3.91	**-2.17**	*

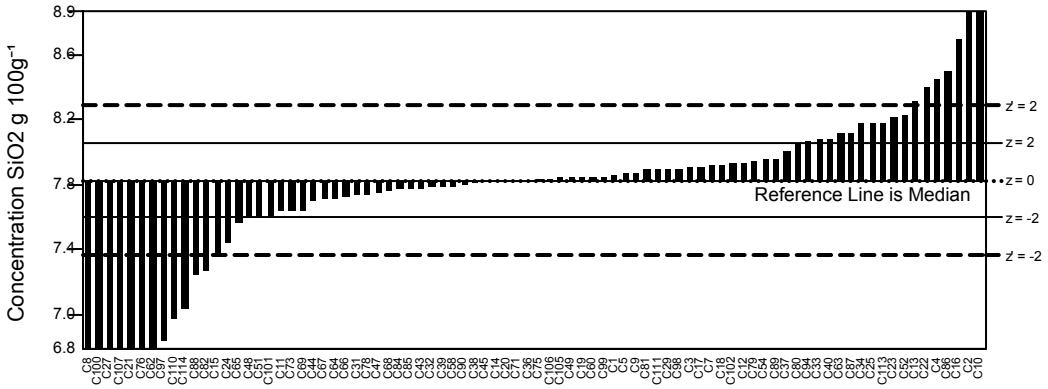
Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

Table 3 - GeoPT44 Z-scores for Calcareous shale, ShCX-1. 12/12/2018

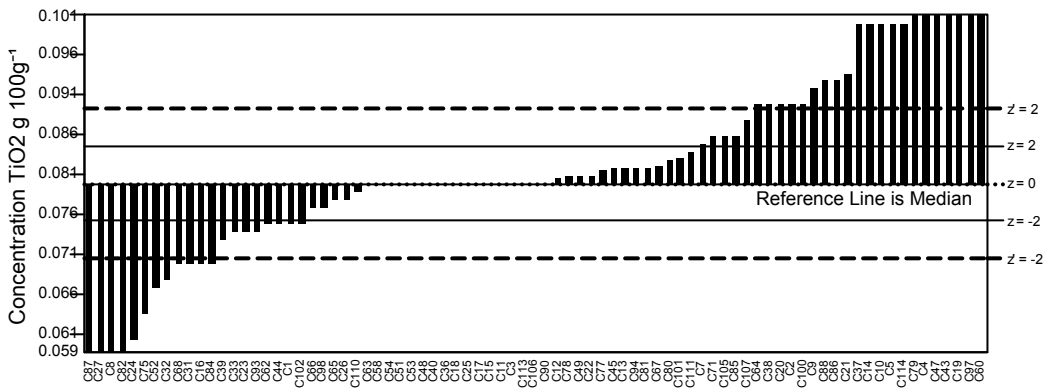
Lab Code	C111	C113	C114
SiO2	0.30	1.54	**-6.93**
TiO2	0.85	0.00	**8.55**
Al2O3	0.43	1.12	**-3.61**
Fe2O3T	-0.87	-0.40	**-1.69**
MnO	0.00	-1.85	**22.80**
MgO	*1.15*	*1.37*	***5.59***
CaO	0.11	-1.34	**1.26**
K2O	*0.19*	*0.48*	***-7.16***
P2O5	-0.41	-0.14	**-4.55**
CO2	*18.60*	*	***2.69***
LOI	0.25	0.47	**0.22**
Ag	*	*	*
As	*	*	*
Ba	0.67	3.76	64.62
Be	*	0.26	*
Bi	*	*	*
C(tot)	0.98	*	**0.67**
Cd	*	*	*
Ce	*	-0.41	*
Co	*	*1.36*	*
Cr	*	0.66	*
Cs	*	-0.36	*
Cu	0.93	-1.51	*
Dy	*	-0.50	*
Er	*	-0.44	*
Eu	*	-0.27	*
Ga	*	0.03	*
Gd	*	-1.22	*
Hf	*	0.00	*
Ho	*	0.08	*
La	*	-0.11	*
Li	*	*	*
Lu	*	-0.17	*
Mo	*	0.74	*
Nb	*	0.41	*
Nd	*	-0.25	*
Ni	*	0.49	*
Pb	*	*-6.48*	*
Pr	*	-0.15	*
Rb	*	-0.12	*
Sb	*	*	*
Sc	*	-0.45	*
Se	*	*	*
Sm	*	-0.37	*
Sn	*	*12.94*	*
Sr	*	-0.66	**-2.71**
Ta	*	29.40	*
Tb	*	-0.11	*
Th	*	-0.05	*
Tl	*	-1.51	*
Tm	*	0.96	*
U	*	-0.51	*
V	-0.04	0.62	*
W	*	*12.94*	*
Y	*	0.00	*
Yb	*	-0.21	*
Zn	0.21	0.73	*
Zr	39.29	-0.03	*

Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - *Entries in italics* are derived from Provisional Values.

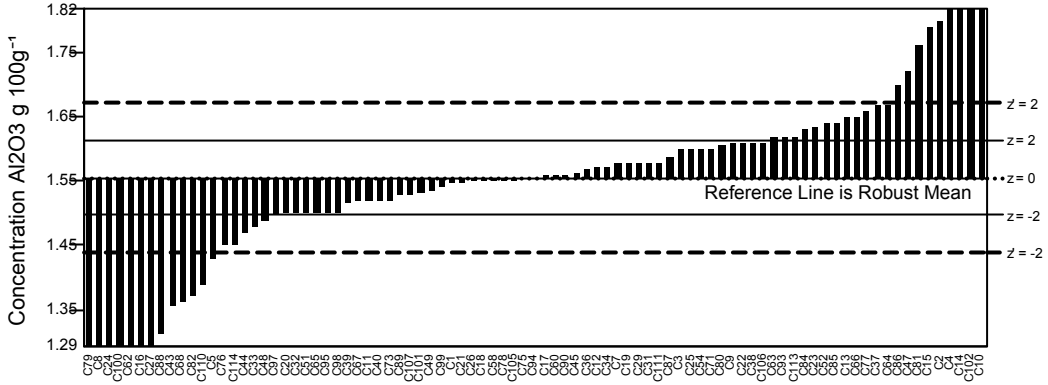
GeoPT44 - Barchart for SiO2



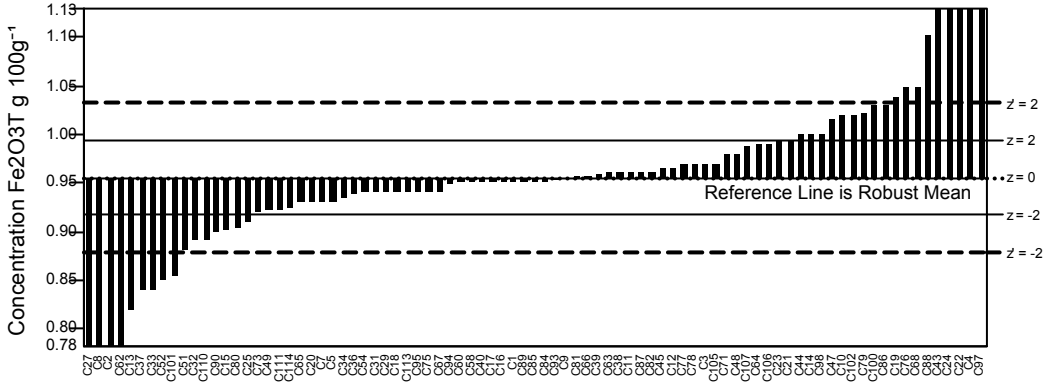
GeoPT44 - Barchart for TiO2



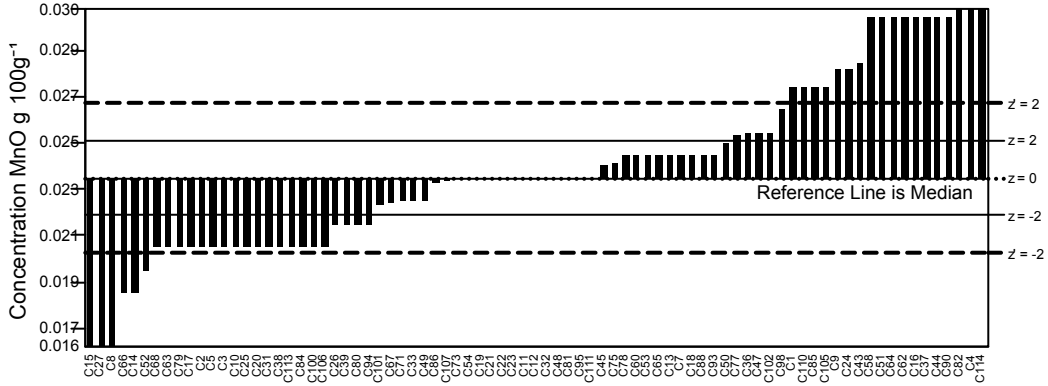
GeoPT44 - Barchart for Al2O3



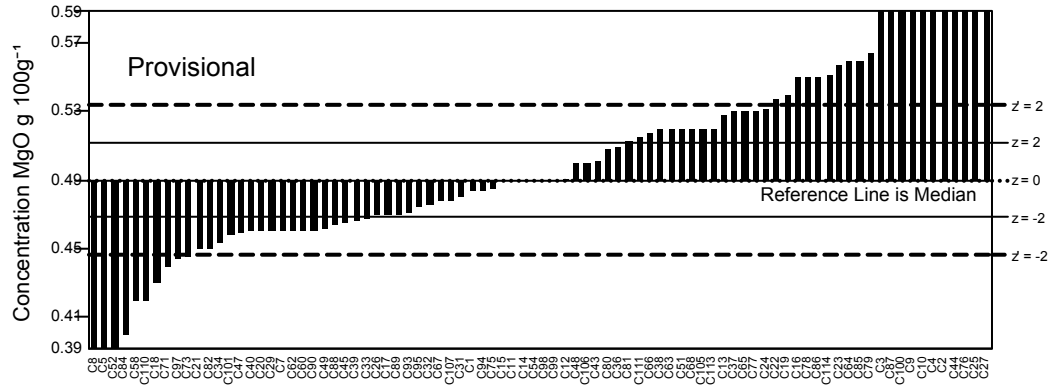
GeoPT44 - Barchart for Fe2O3T



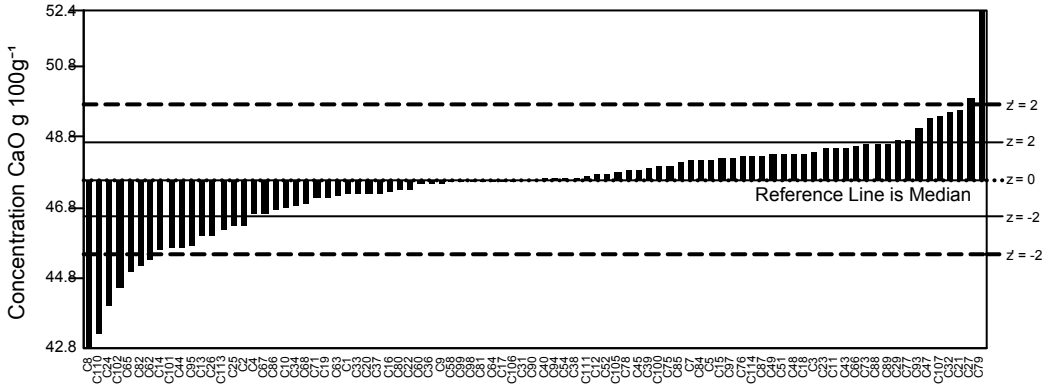
GeoPT44 - Barchart for MnO



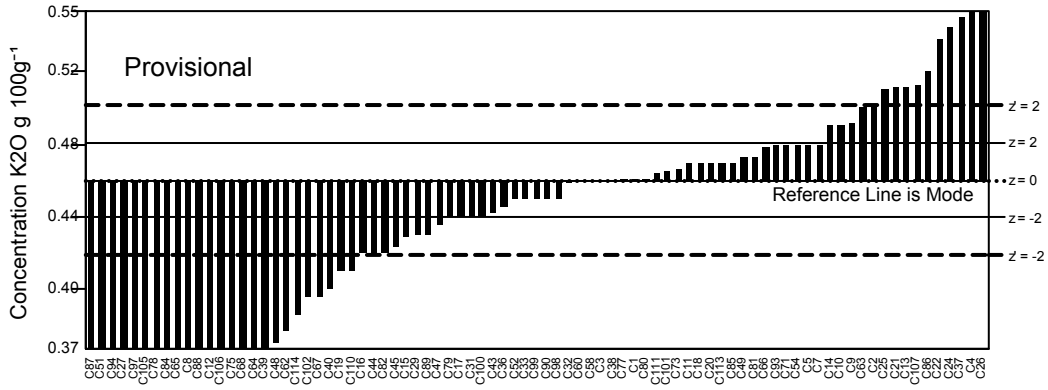
GeoPT44 - Barchart for MgO



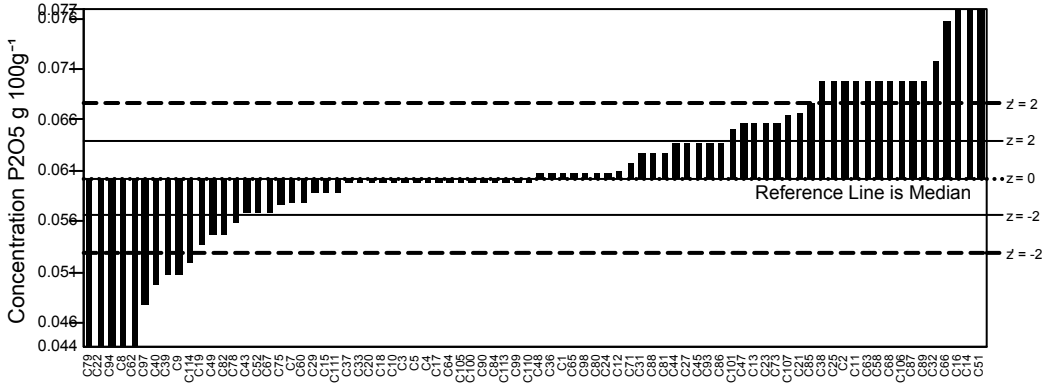
GeoPT44 - Barchart for CaO



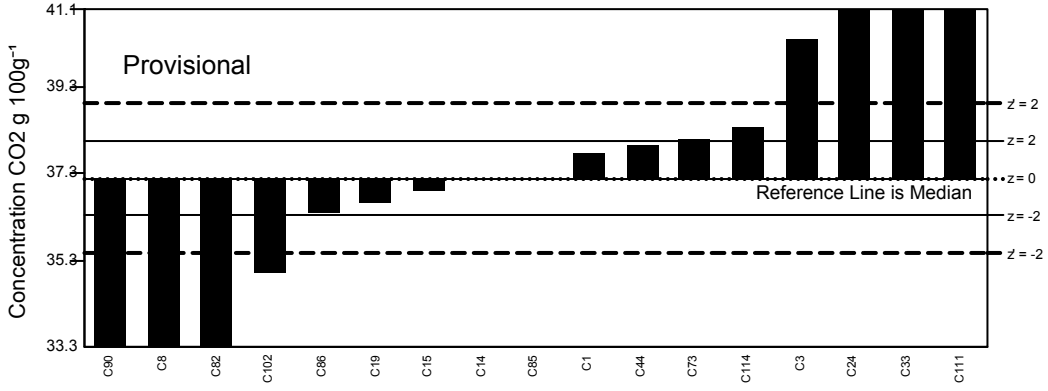
GeoPT44 - Barchart for K2O



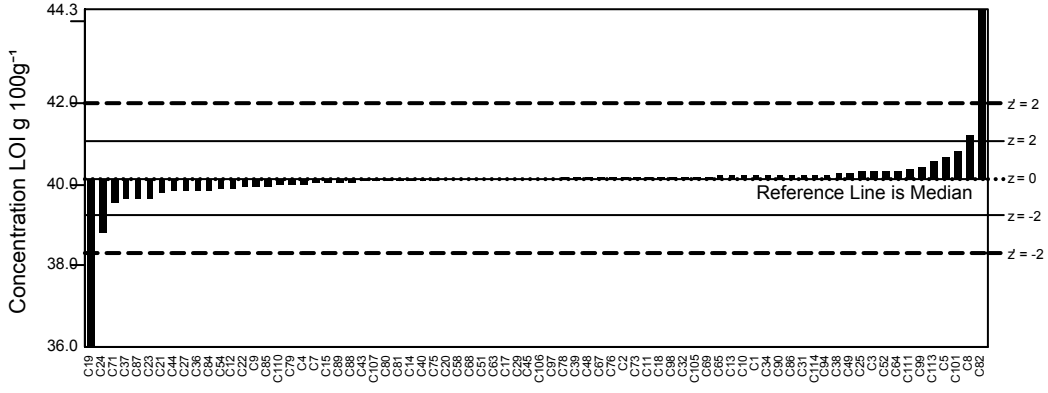
GeoPT44 - Barchart for P2O5



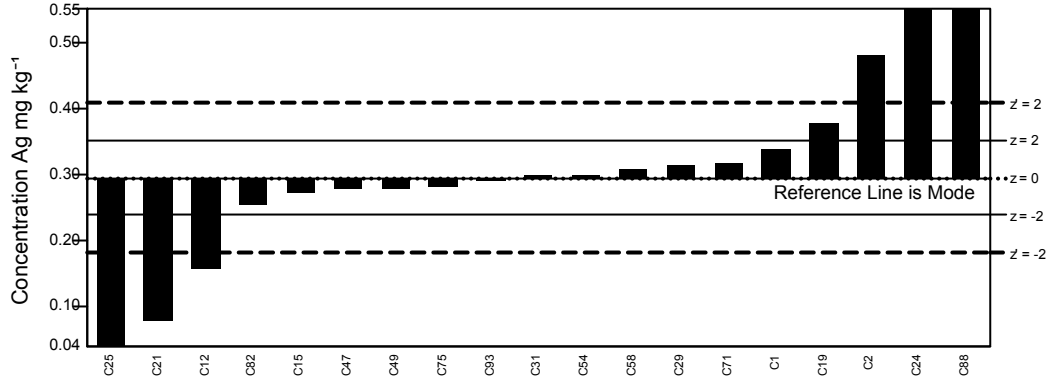
GeoPT44 - Barchart for CO2



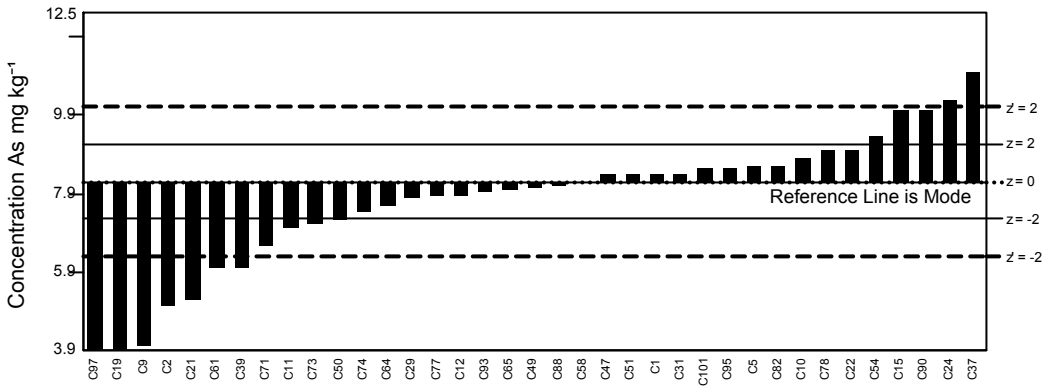
GeoPT44 - Barchart for LOI



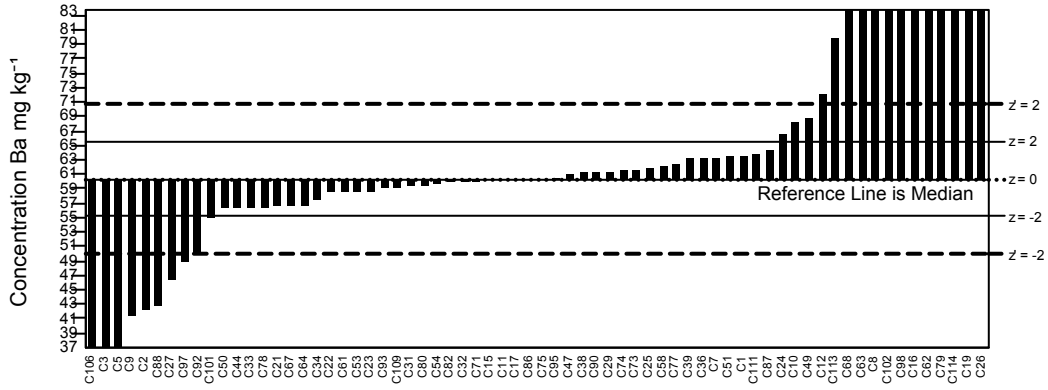
GeoPT44 - Barchart for Ag



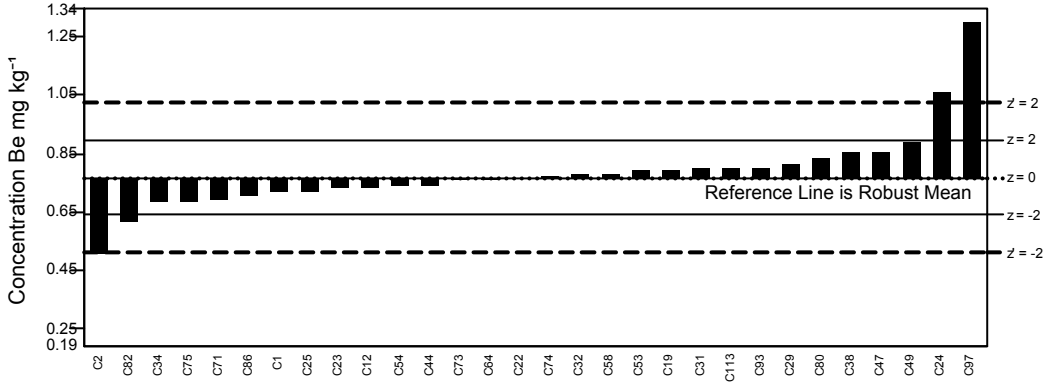
GeoPT44 - Barchart for As



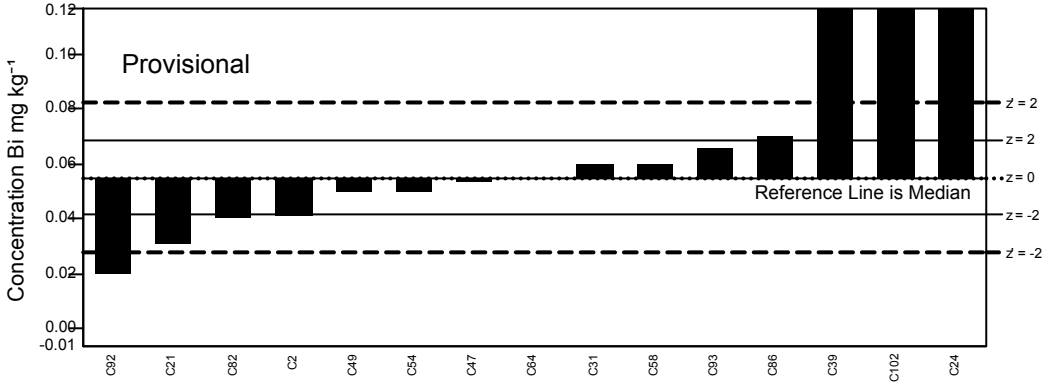
GeoPT44 - Barchart for Ba



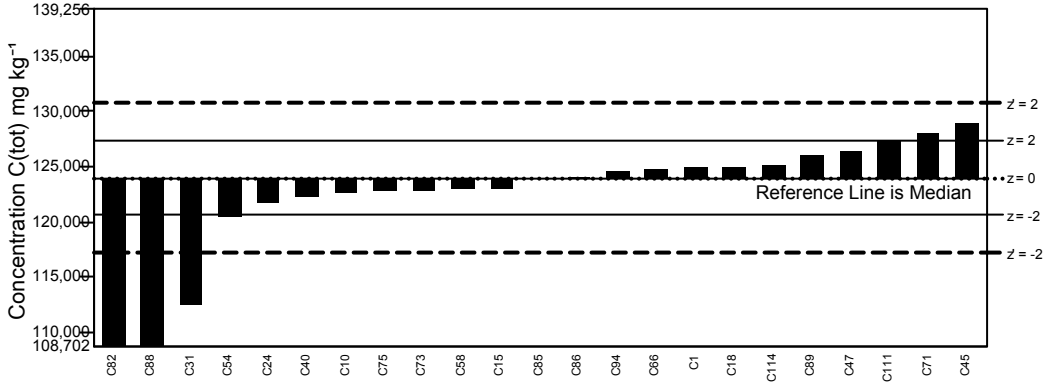
GeoPT44 - Barchart for Be



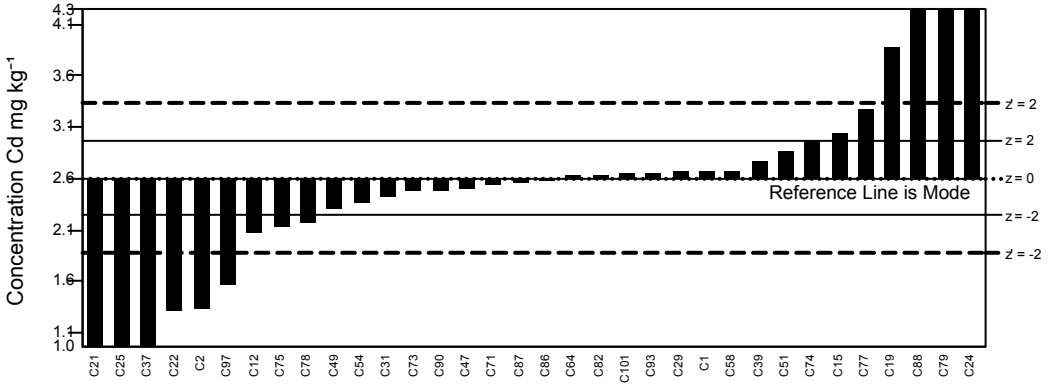
GeoPT44 - Barchart for Bi



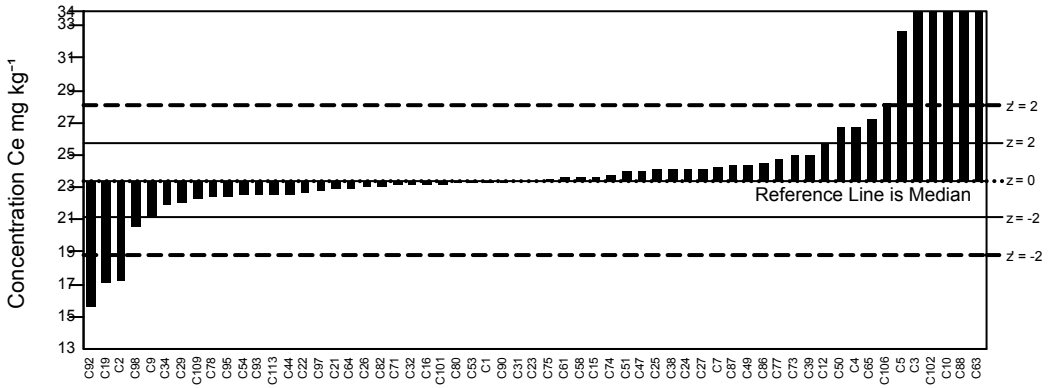
GeoPT44 - Barchart for C(tot)



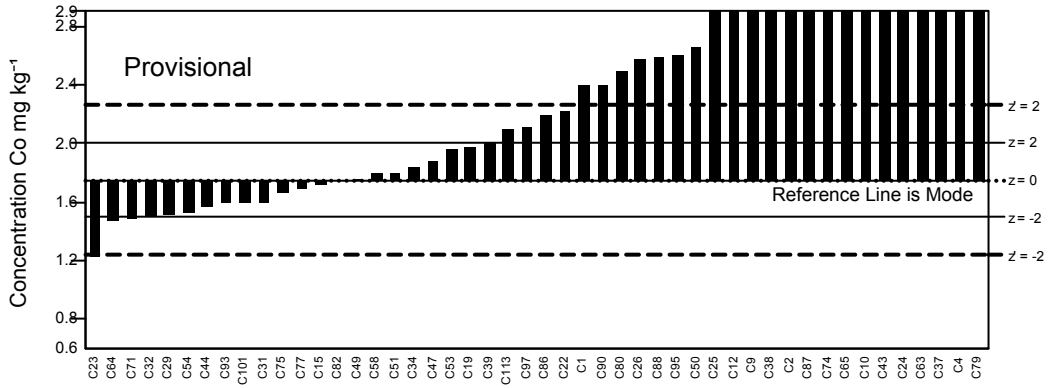
GeoPT44 - Barchart for Cd



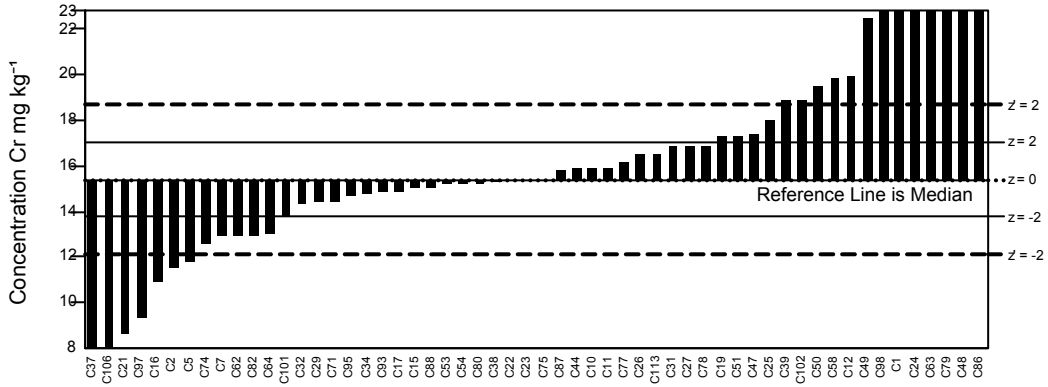
GeoPT44 - Barchart for Ce



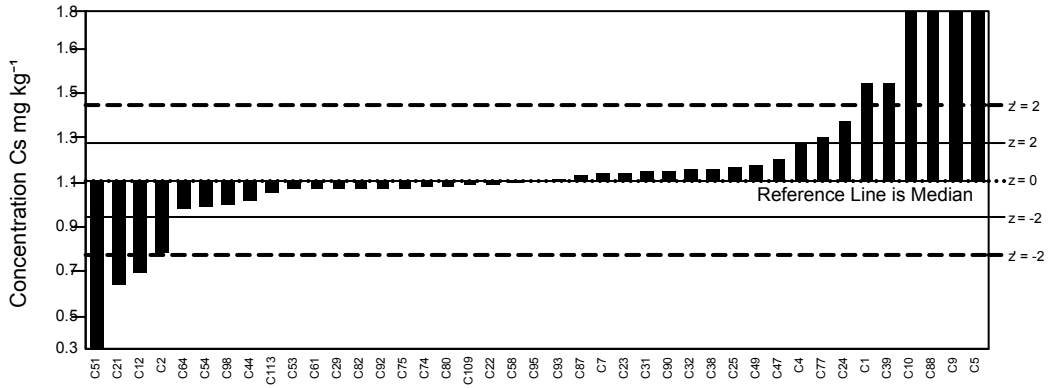
GeoPT44 - Barchart for Co



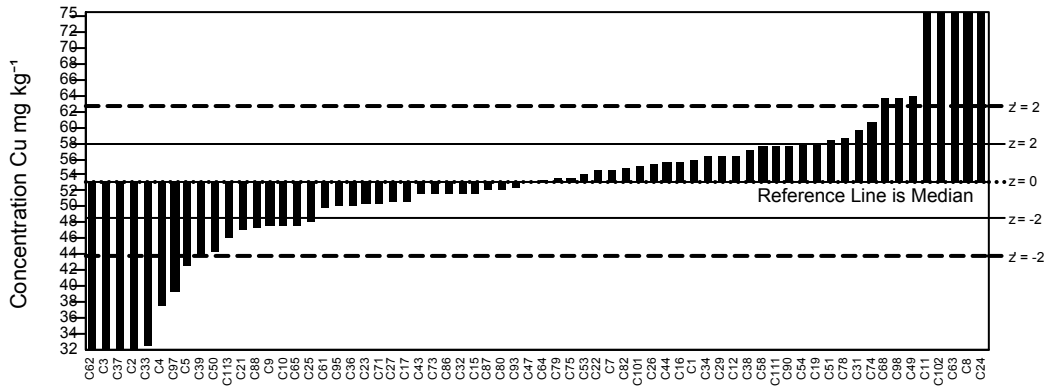
GeoPT44 - Barchart for Cr



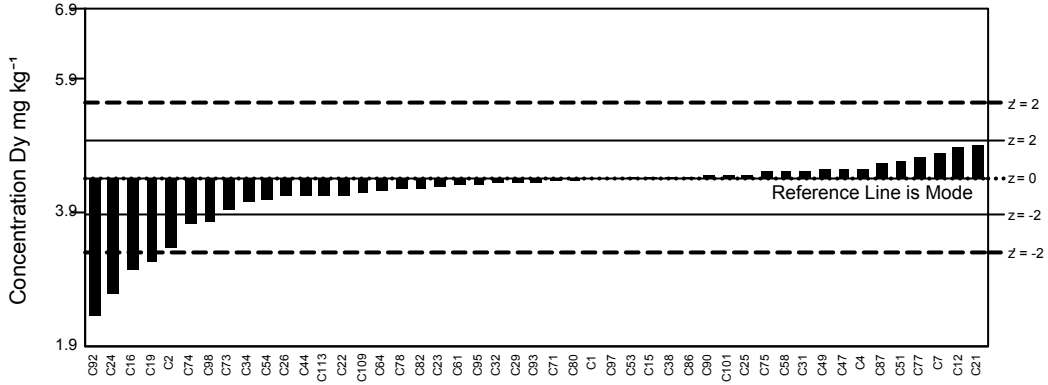
GeoPT44 - Barchart for Cs

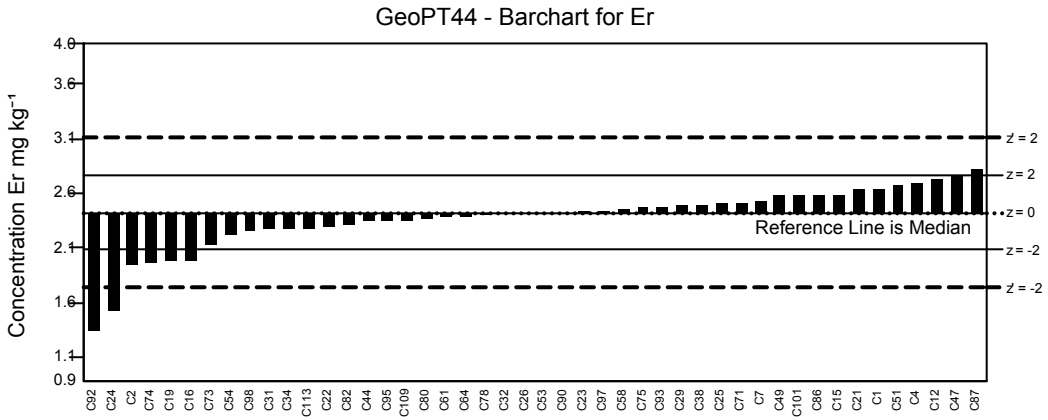


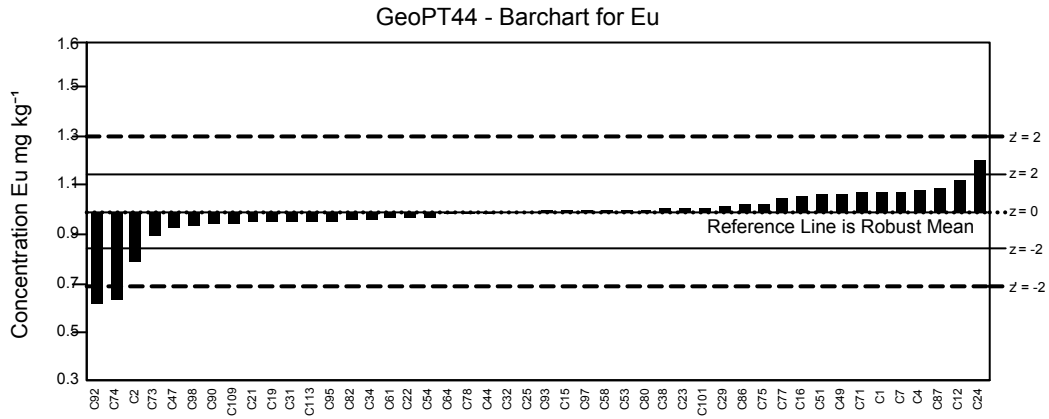
GeoPT44 - Barchart for Cu

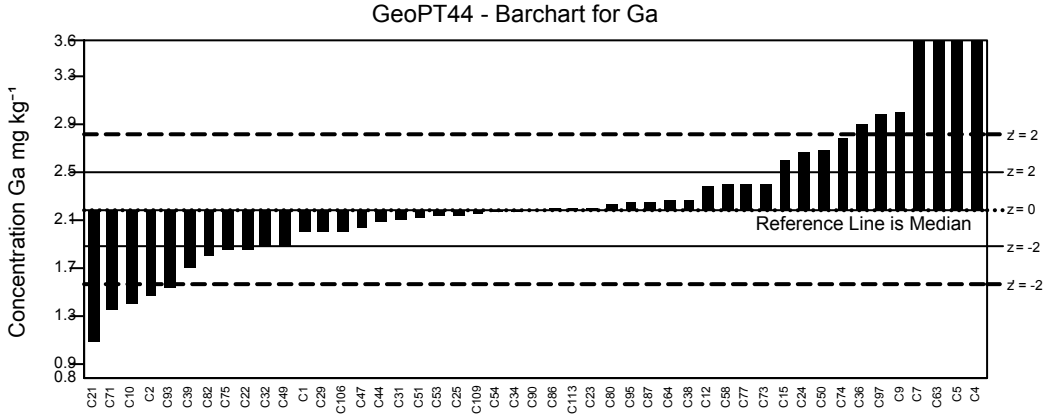


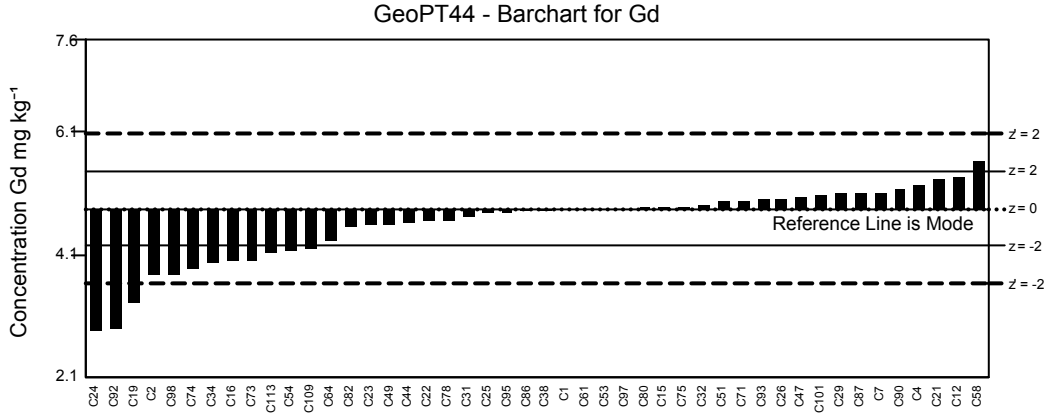
GeoPT44 - Barchart for Dy

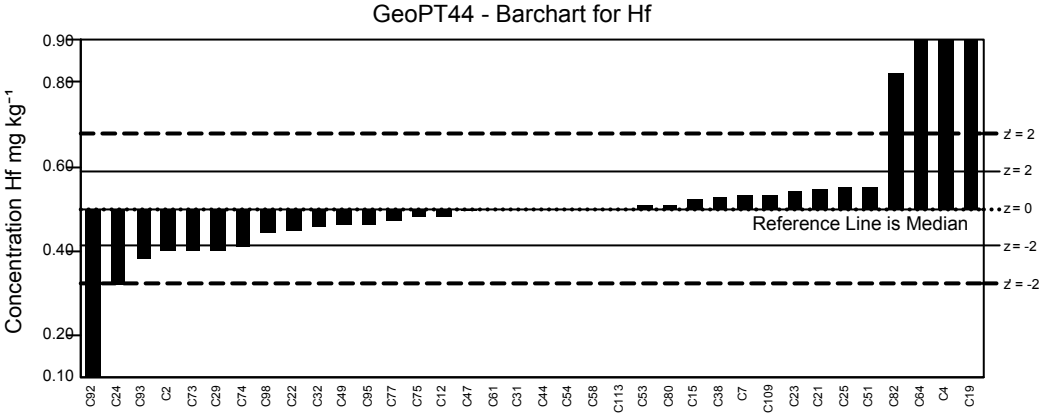


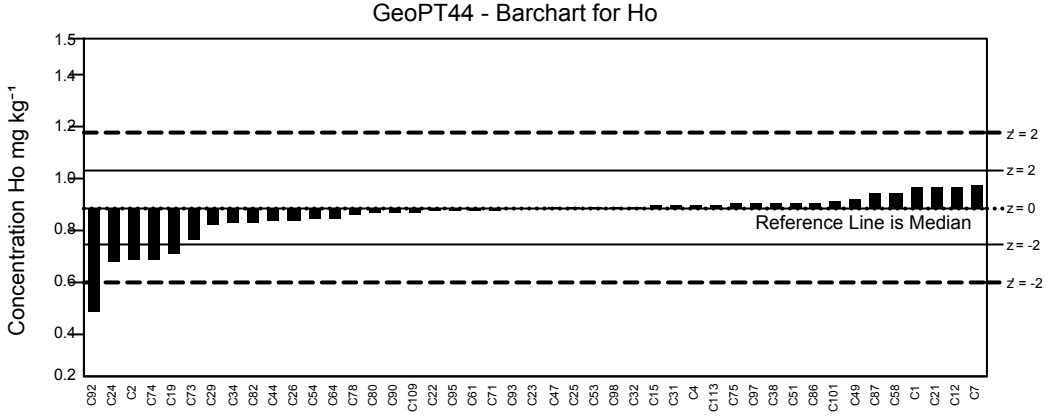

GeoPT44 - Barchart for Er
Concentration Er mg kg⁻¹
Reference Line is Median
z' = 2
z = 2
z = 0
z = -2
z' = -2


GeoPT44 - Barchart for Eu
Concentration Eu mg kg⁻¹
Reference Line is Robust Mean
z' = 2
z = 2
z = 0
z = -2
z' = -2

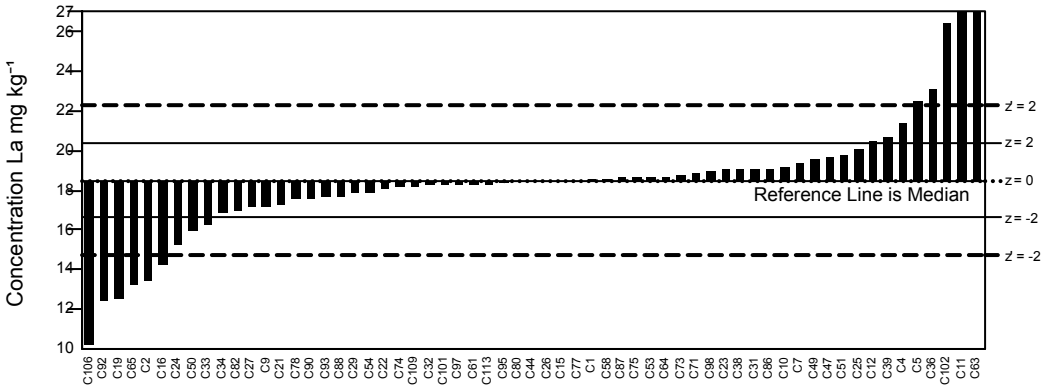

GeoPT44 - Barchart for Ga
Concentration Ga mg kg⁻¹
Reference Line is Median
z' = 2
z = 2
z = 0
z = -2
z' = -2


GeoPT44 - Barchart for Gd
Concentration Gd mg kg⁻¹
Reference Line is Mode
z' = 2
z = 2
z = 0
z = -2
z' = -2

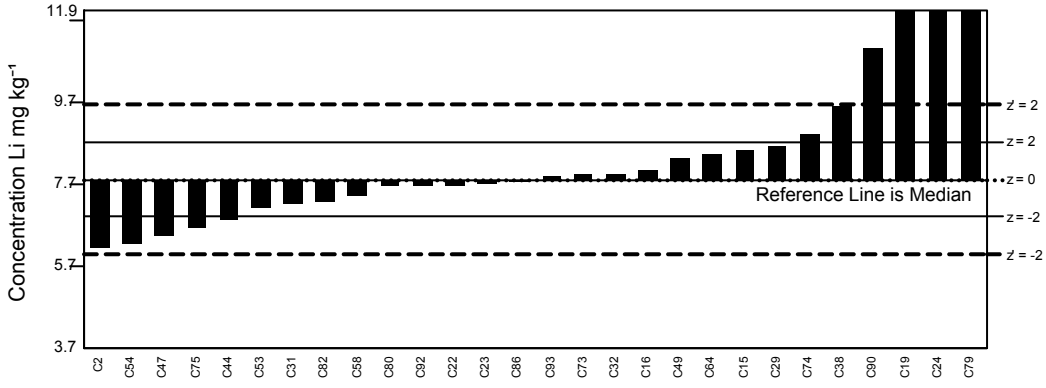

GeoPT44 - Barchart for Hf
Concentration Hf mg kg⁻¹
Reference Line is Median
z' = 2
z = 2
z = 0
z = -2
z' = -2


GeoPT44 - Barchart for Ho
Concentration Ho mg kg⁻¹
Reference Line is Median
z' = 2
z = 2
z = 0
z = -2
z' = -2

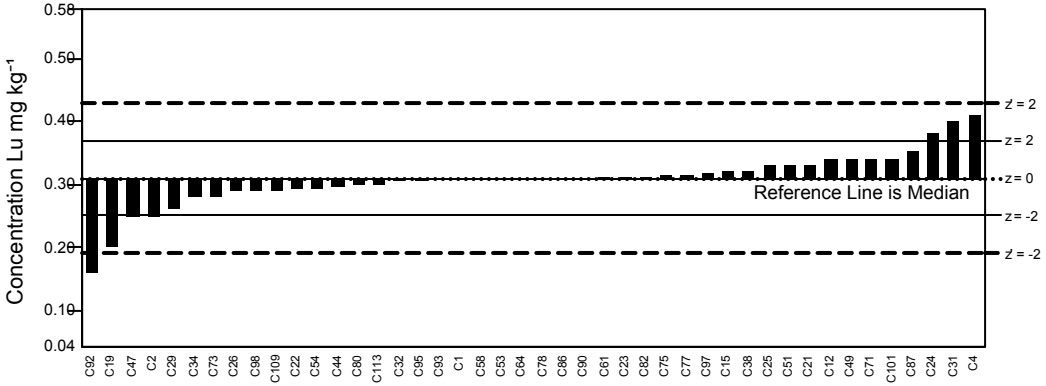
GeoPT44 - Barchart for La



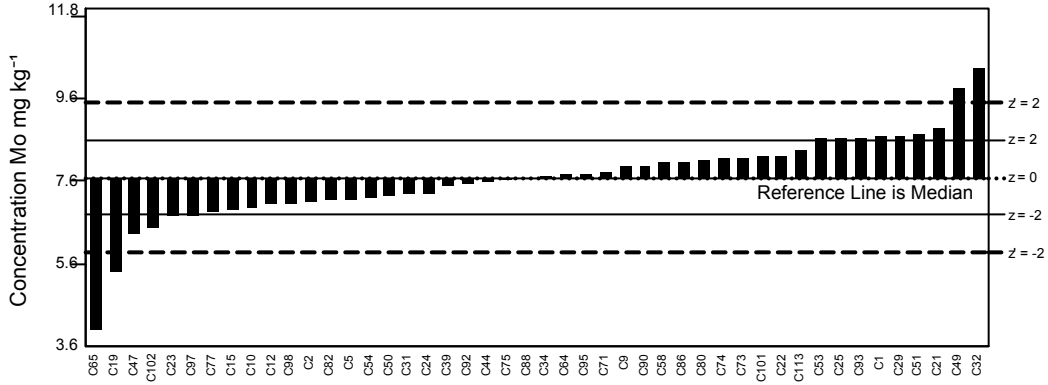
GeoPT44 - Barchart for Li



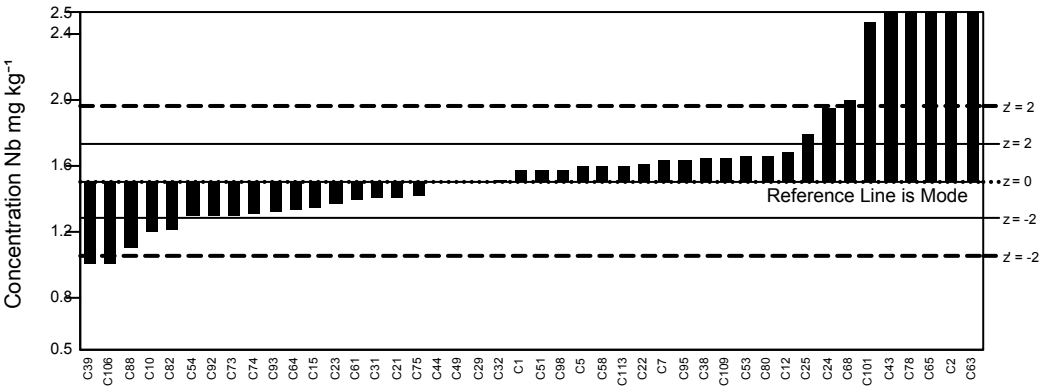
GeoPT44 - Barchart for Lu



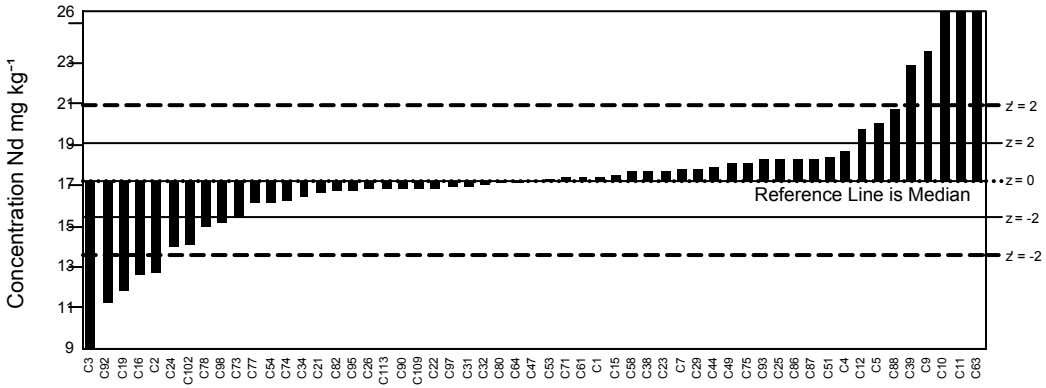
GeoPT44 - Barchart for Mo



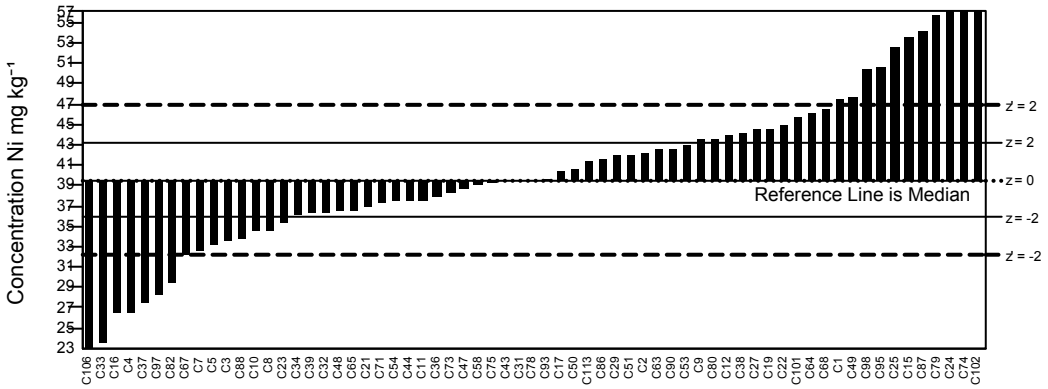
GeoPT44 - Barchart for Nb



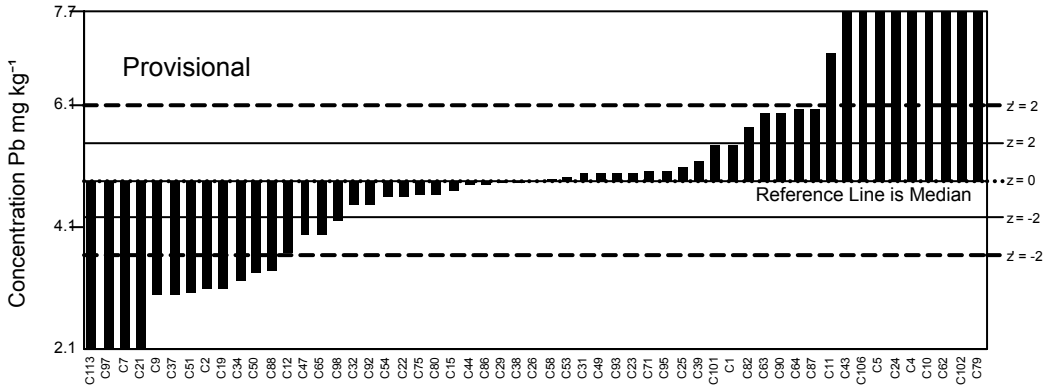
GeoPT44 - Barchart for Nd



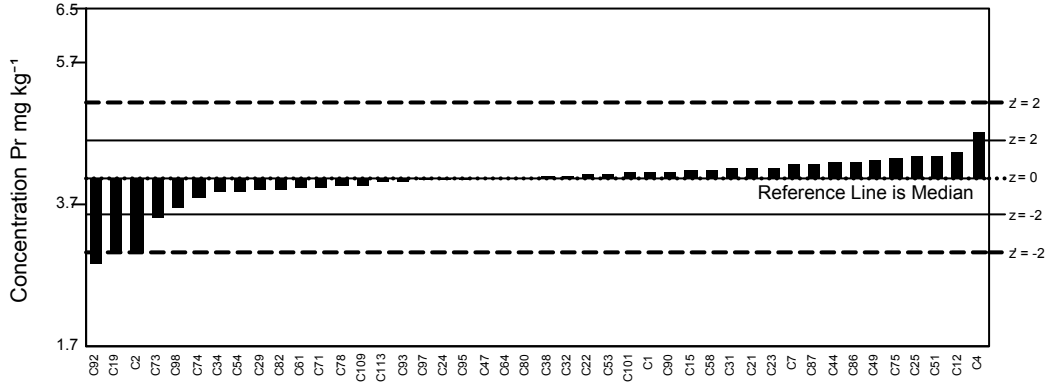
GeoPT44 - Barchart for Ni



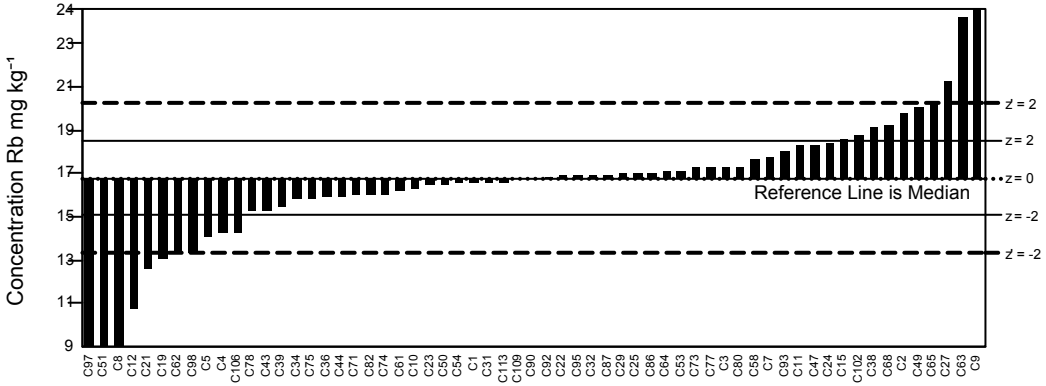
GeoPT44 - Barchart for Pb



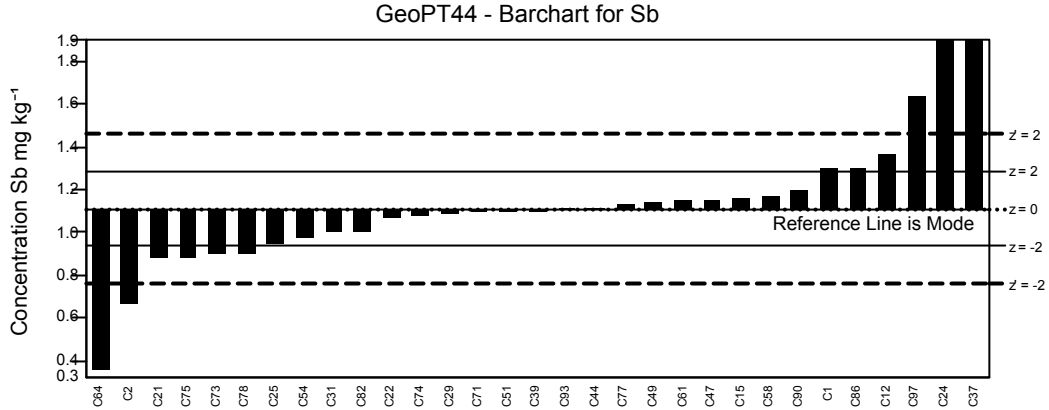
GeoPT44 - Barchart for Pr



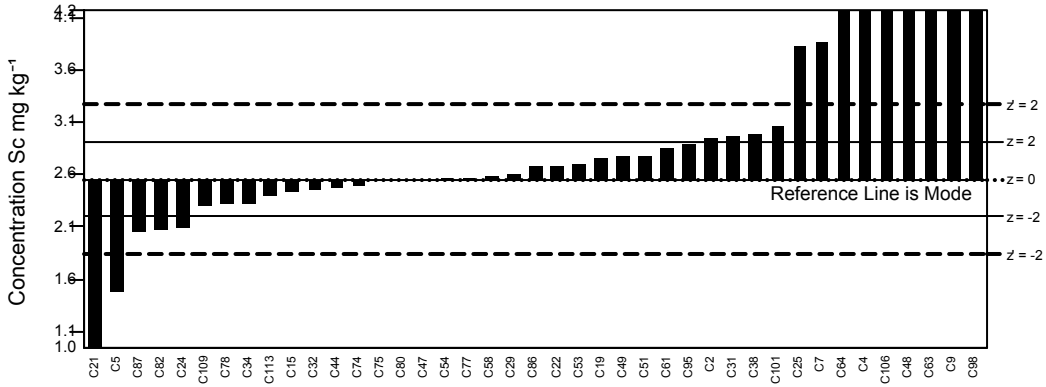
GeoPT44 - Barchart for Rb



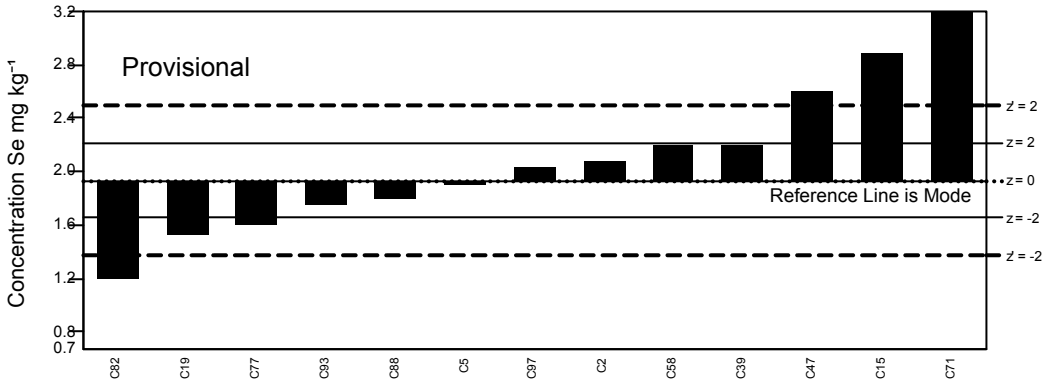
GeoPT44 - Barchart for Sb



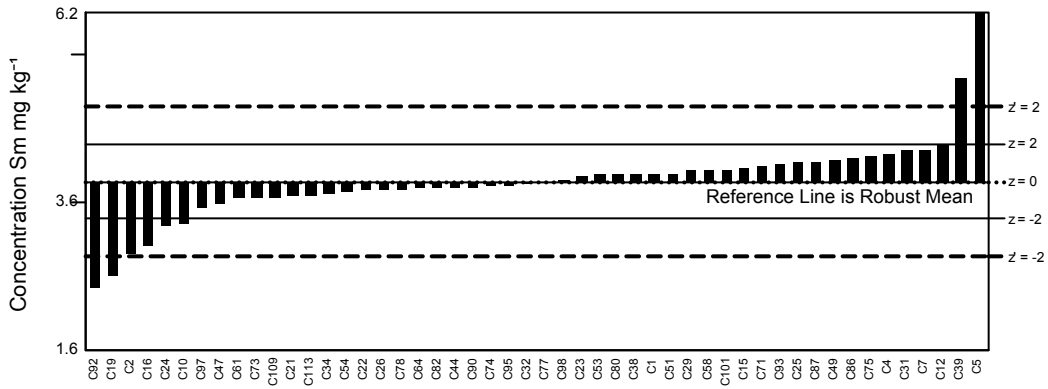
GeoPT44 - Barchart for Sc



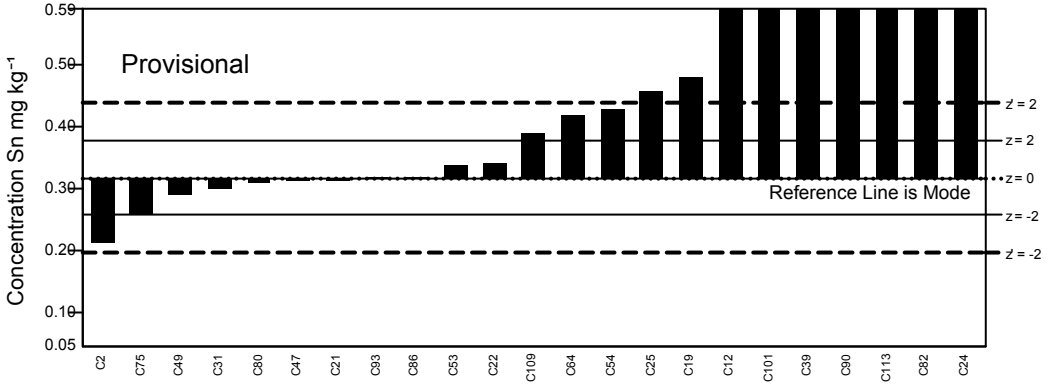
GeoPT44 - Barchart for Se



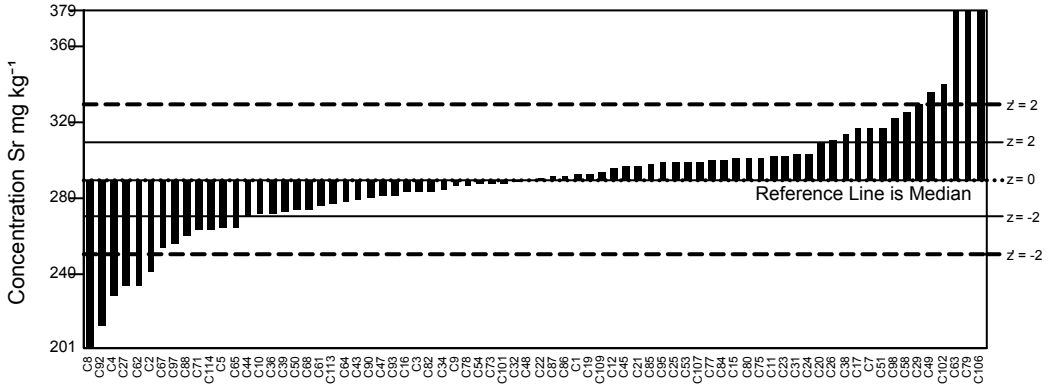
GeoPT44 - Barchart for Sm



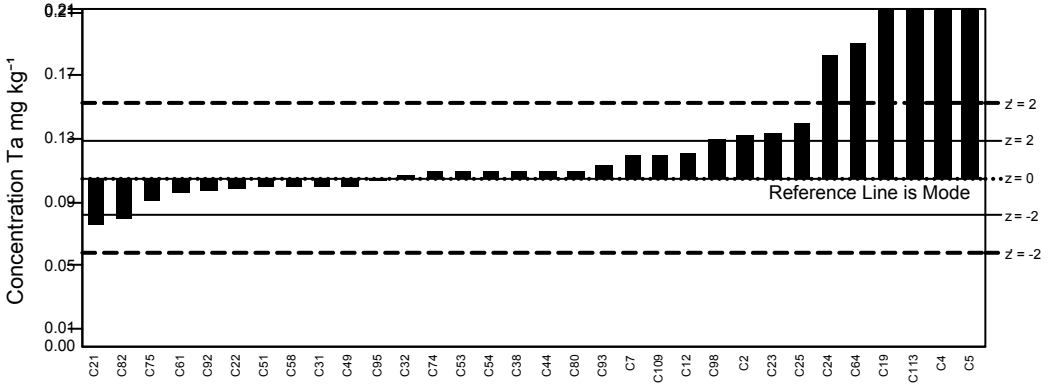
GeoPT44 - Barchart for Sn



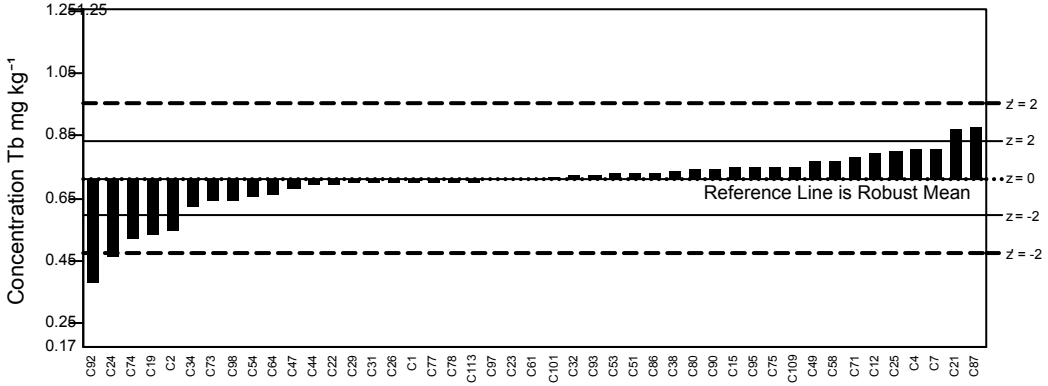
GeoPT44 - Barchart for Sr



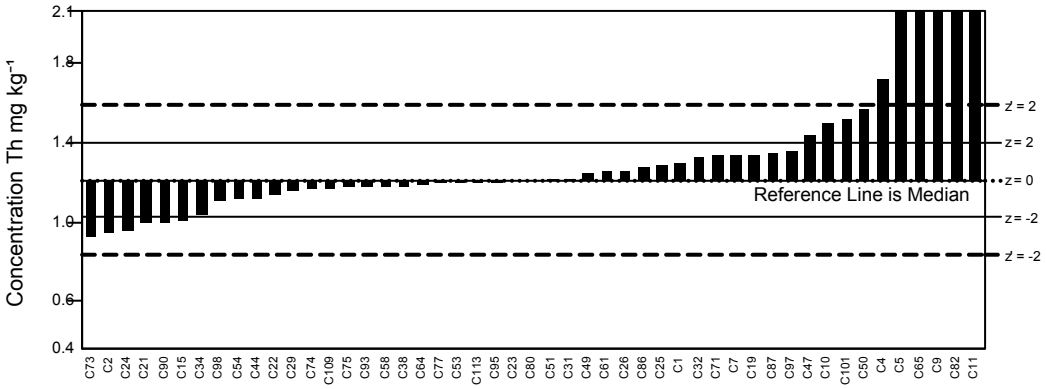
GeoPT44 - Barchart for Ta



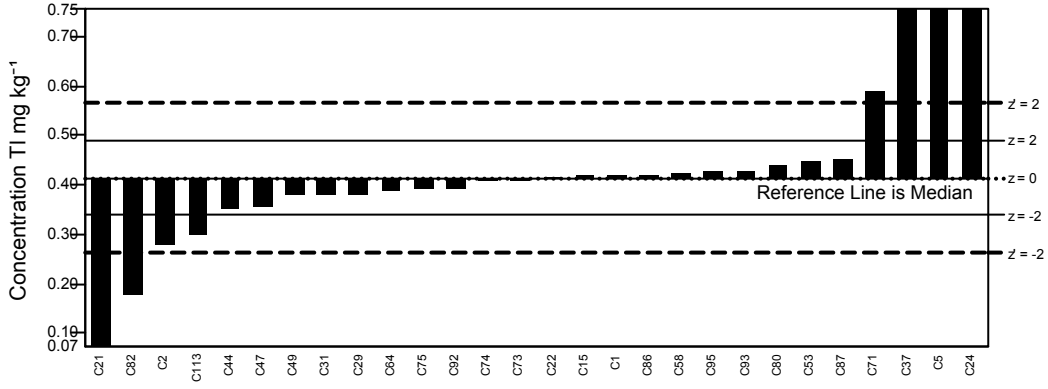
GeoPT44 - Barchart for Tb



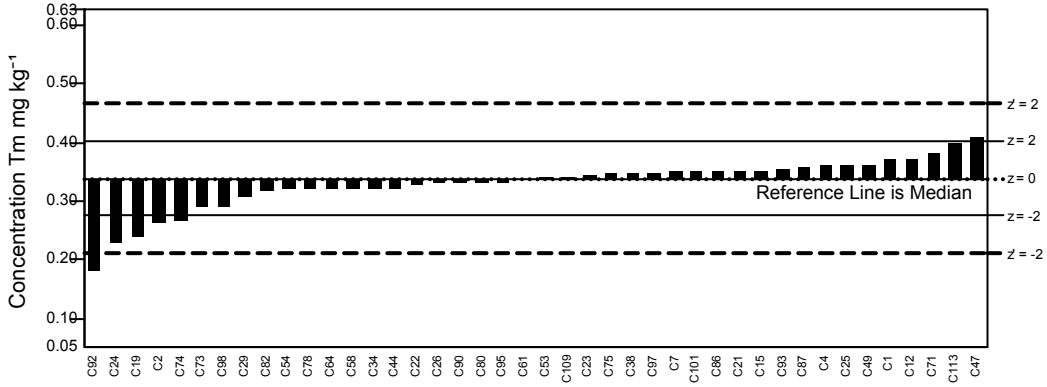
GeoPT44 - Barchart for Th



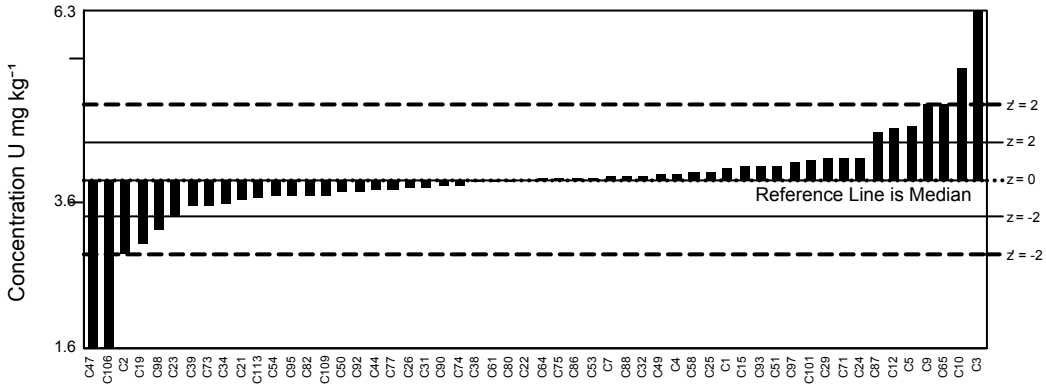
GeoPT44 - Barchart for Tl



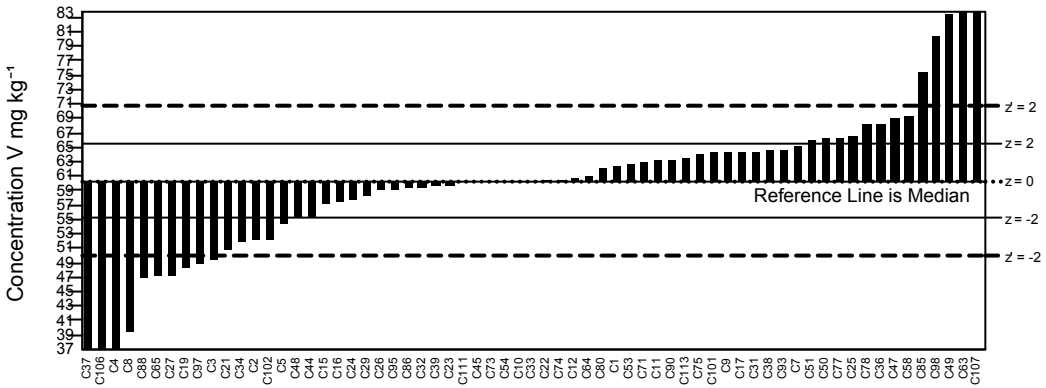
GeoPT44 - Barchart for Tm



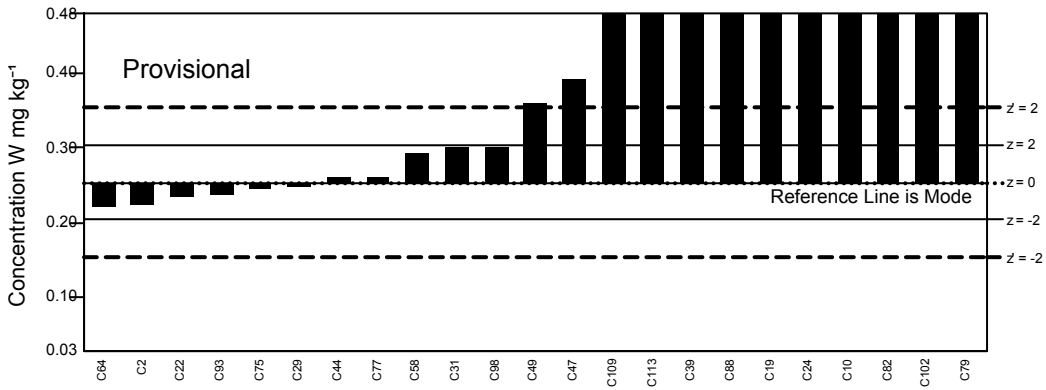
GeoPT44 - Barchart for U

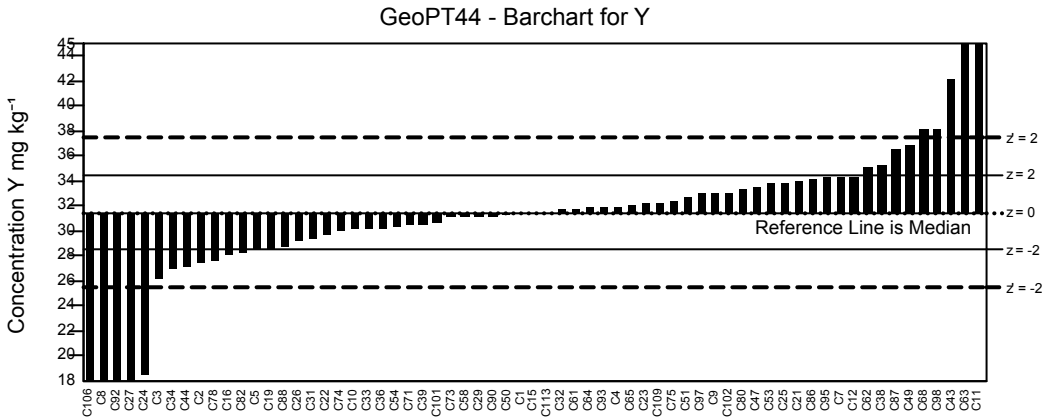


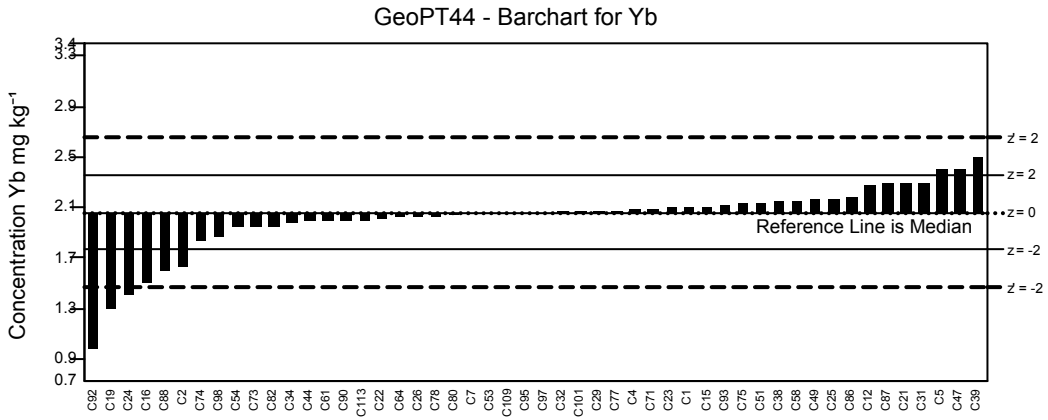
GeoPT44 - Barchart for V

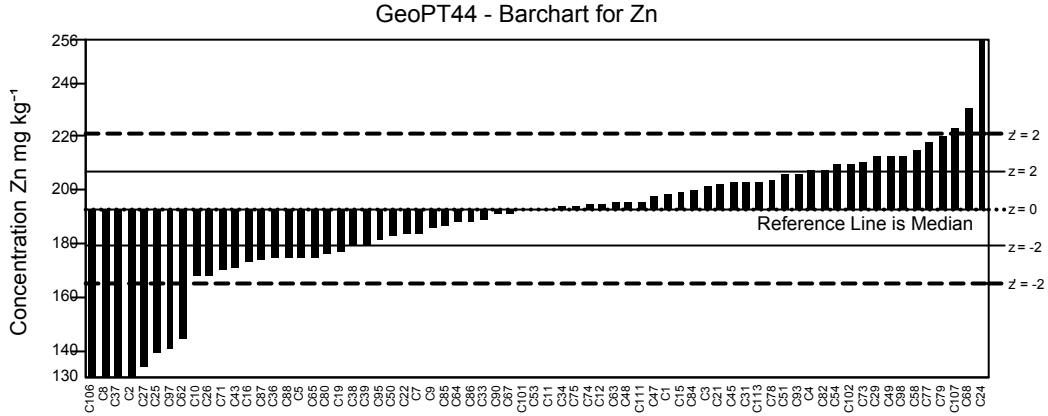


GeoPT44 - Barchart for W









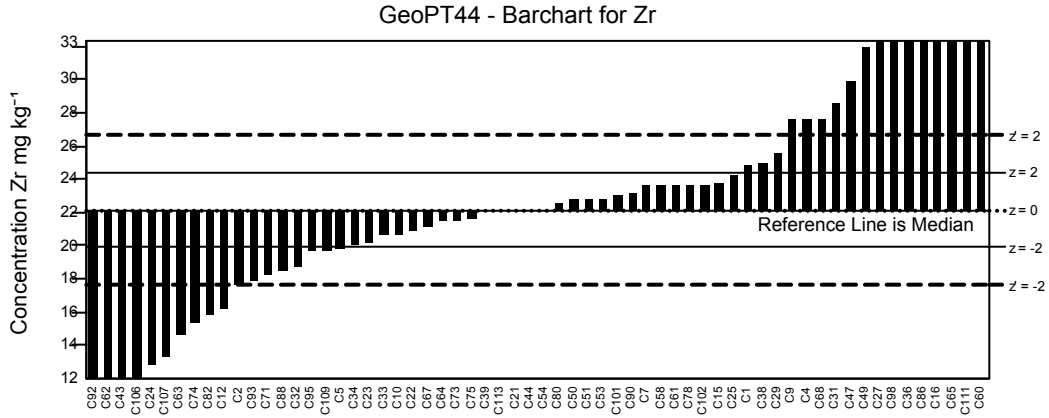
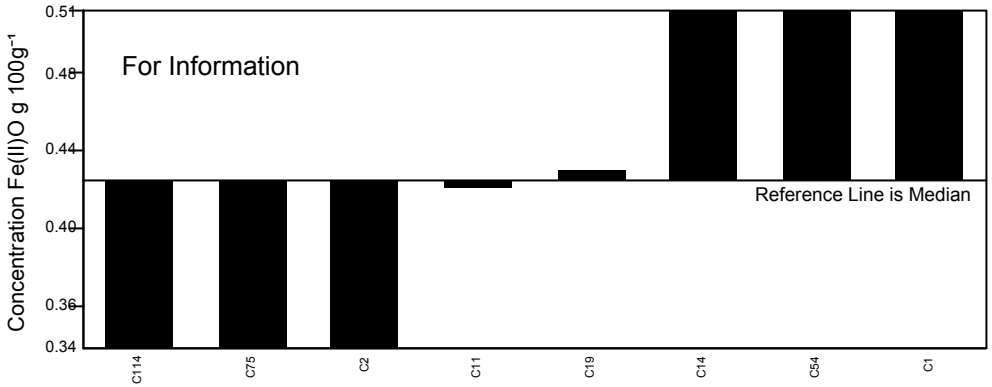
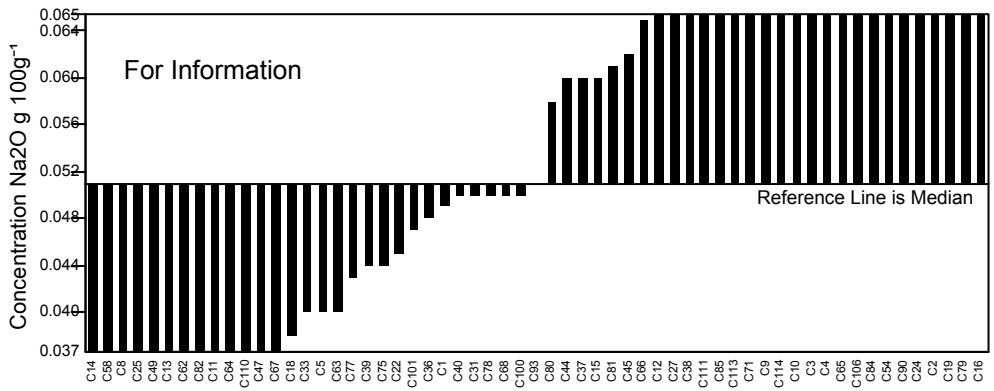


Figure 1: GeoPT44 - Calcareous shale, ShCX-1. Data distribution charts for elements for which values were assigned or provisional values given for guidance. Horizontal lines show the limits for -2<z<2 for pure geochemistry labs (solid lines) and -2<z'<2 for applied geochemistry labs (pecked lines).

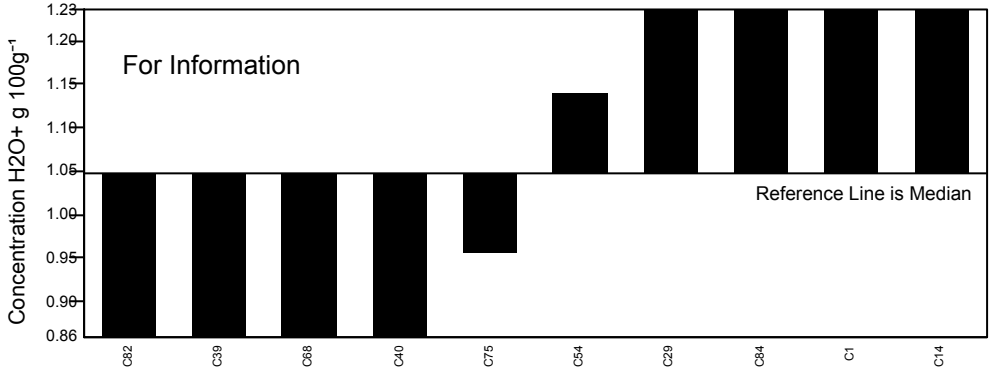
GeoPT44 - Barchart for Fe(II)O



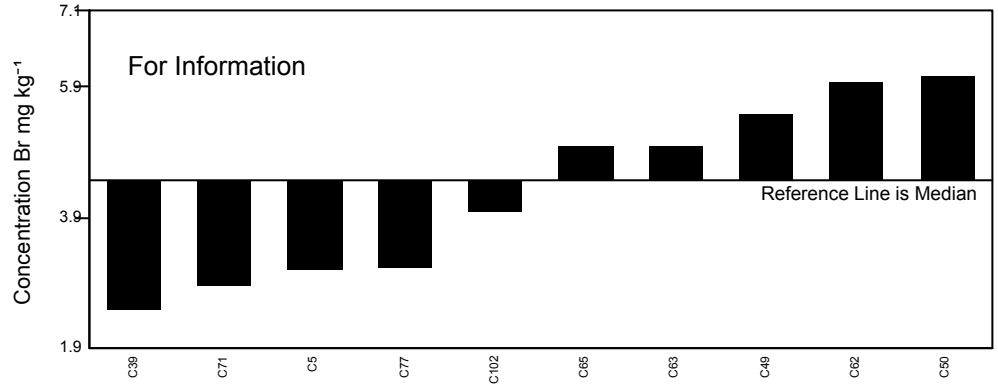
GeoPT44 - Barchart for Na2O



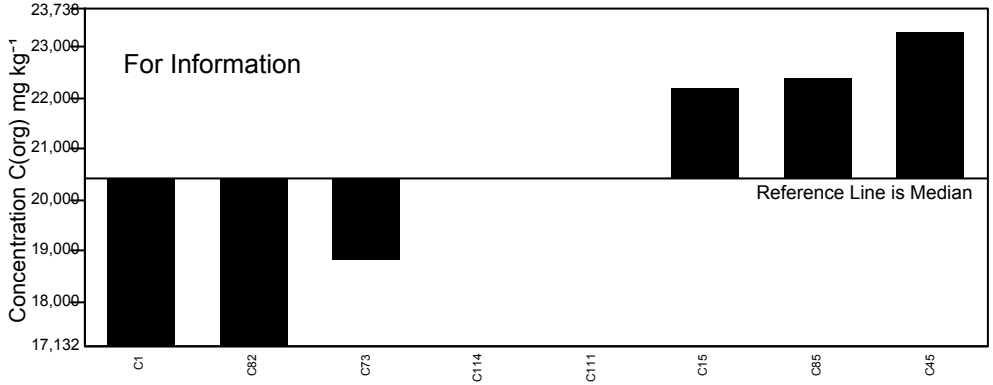
GeoPT44 - Barchart for H2O+



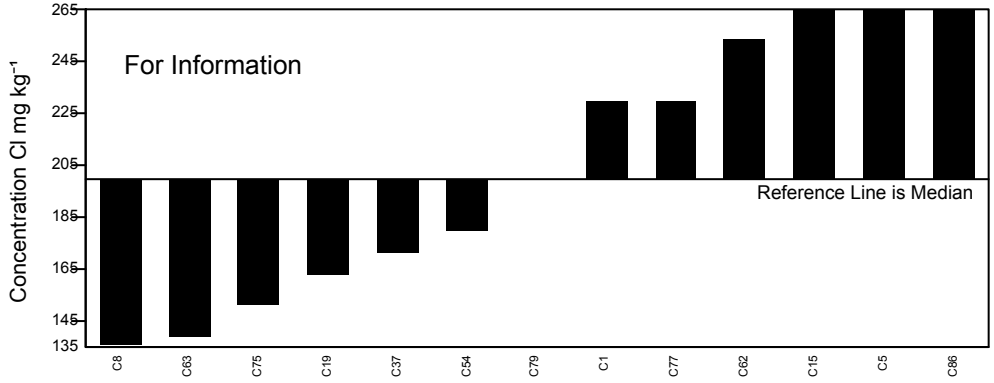
GeoPT44 - Barchart for Br

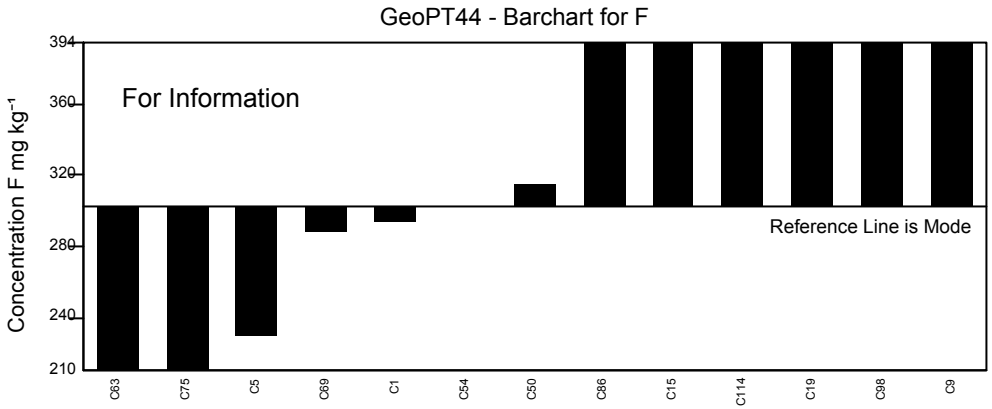


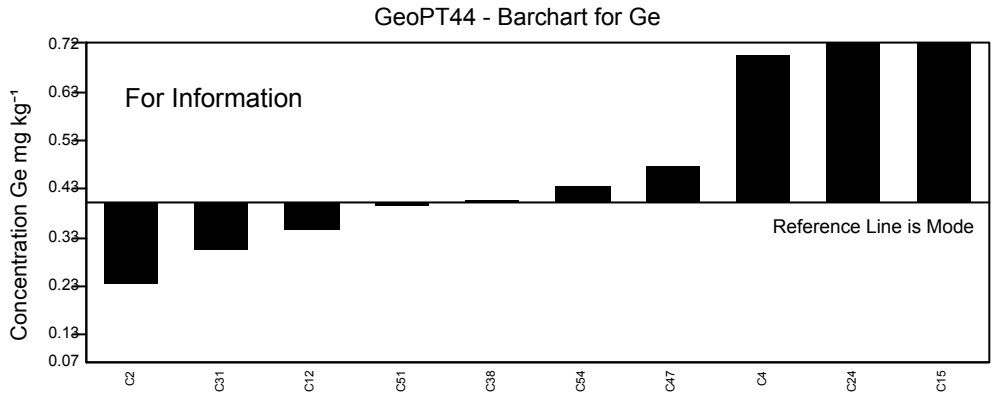
GeoPT44 - Barchart for C(org)

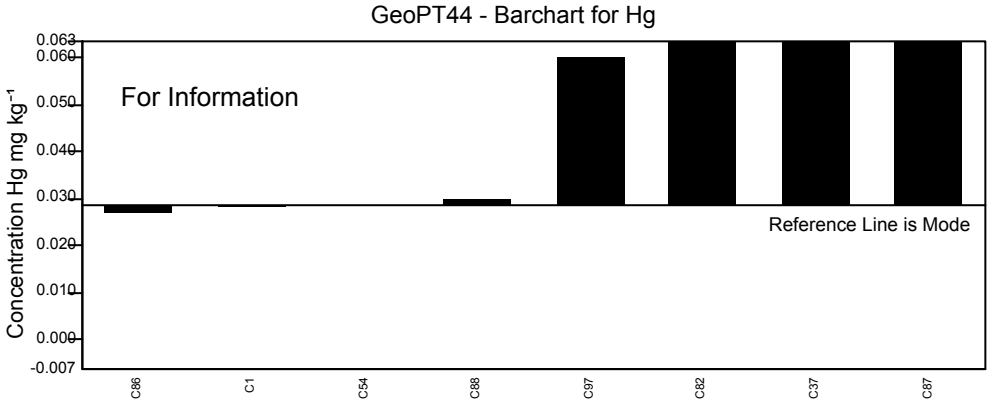


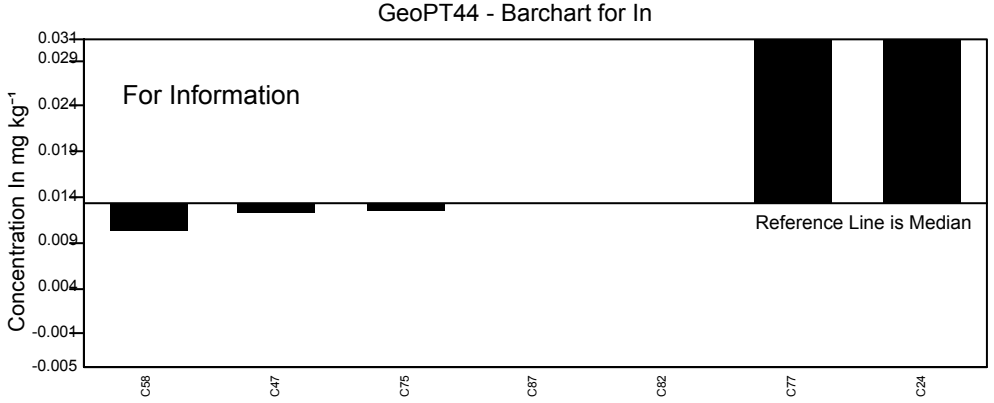
GeoPT44 - Barchart for Cl











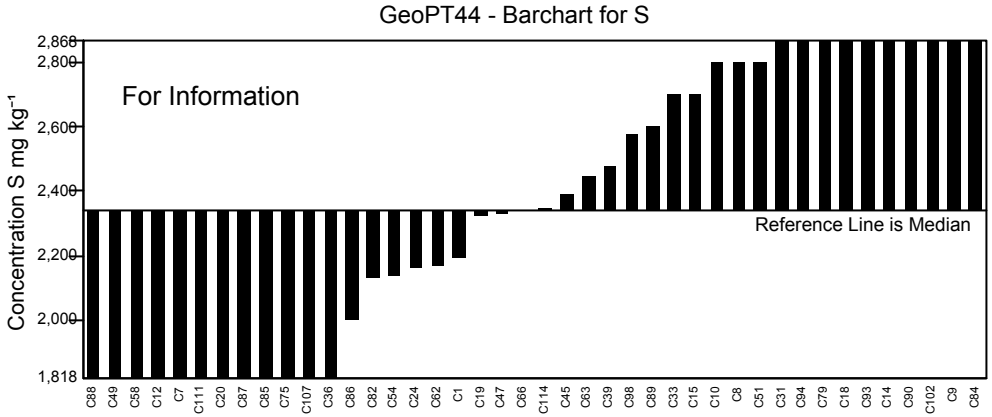
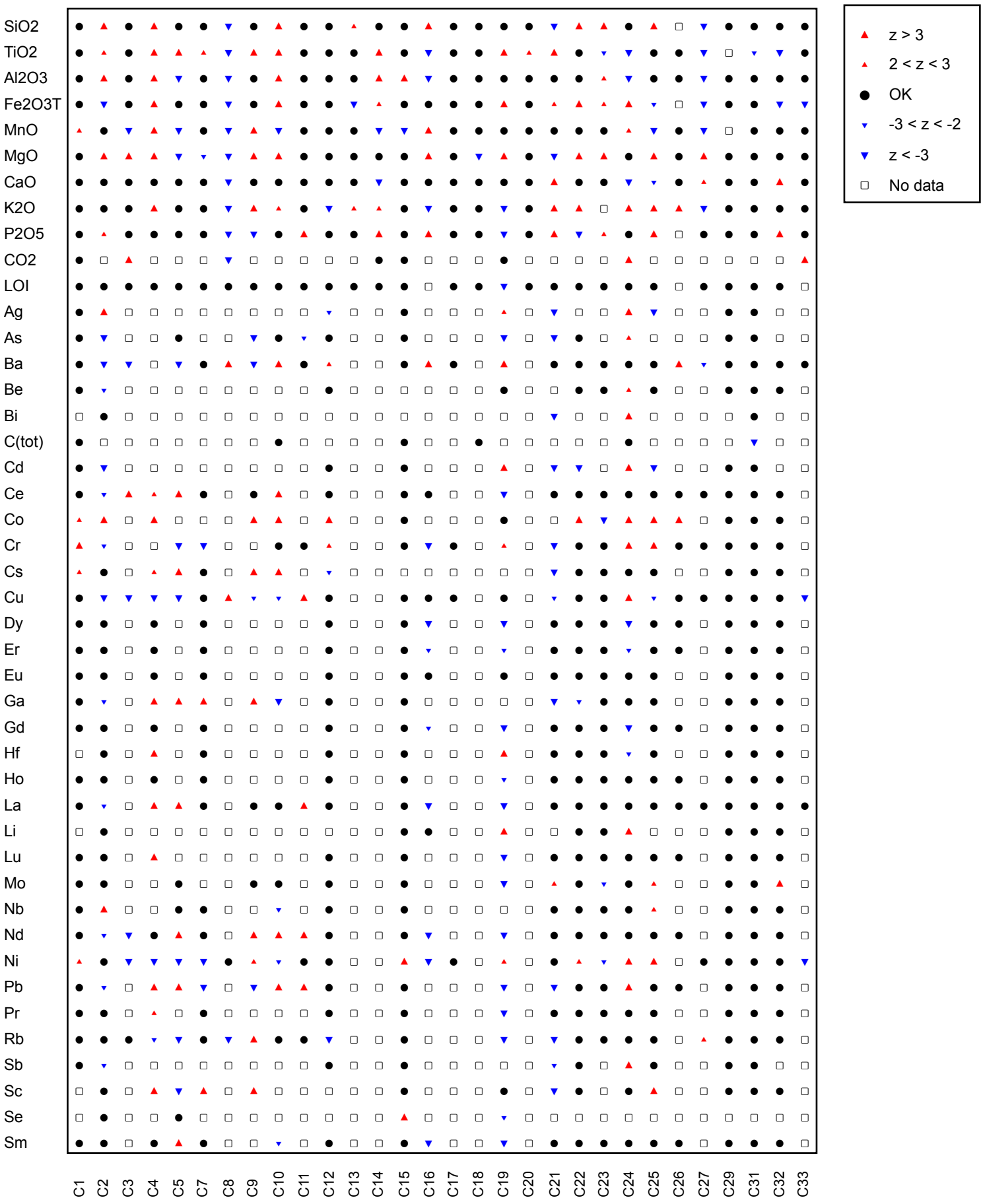


Figure 2: GeoPT44 - Calcareous shale, ShCX-1. Data distribution charts provided for information only for elements for which values could not be assigned.

Multiple Z-Score Chart for GeoPT44



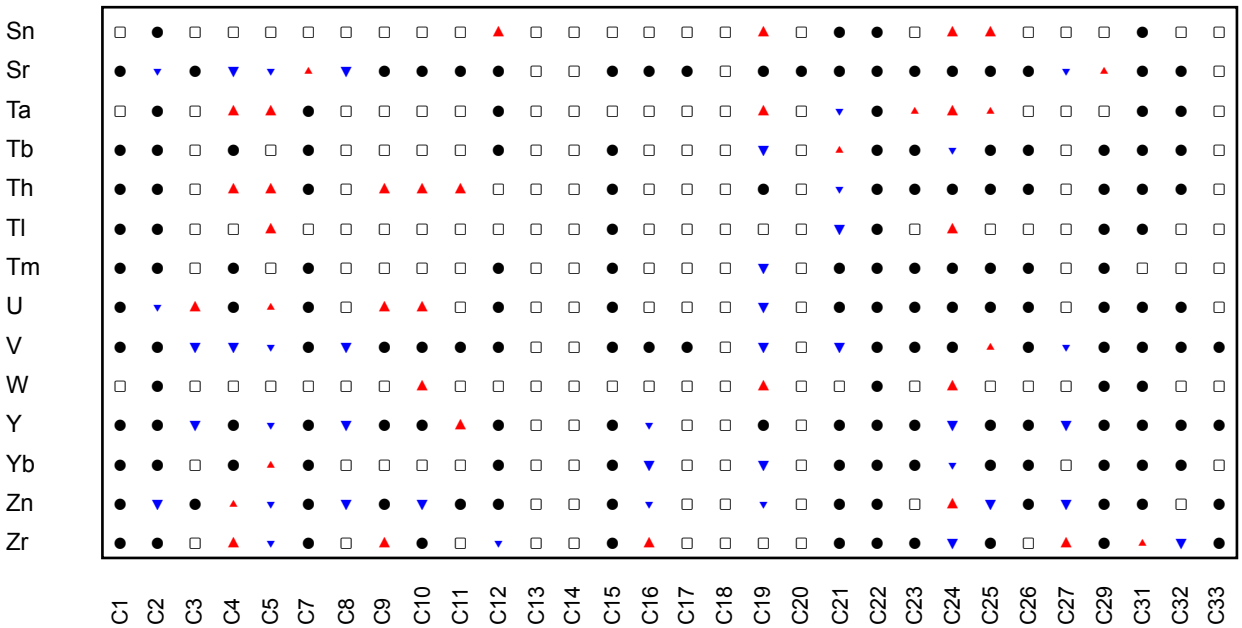
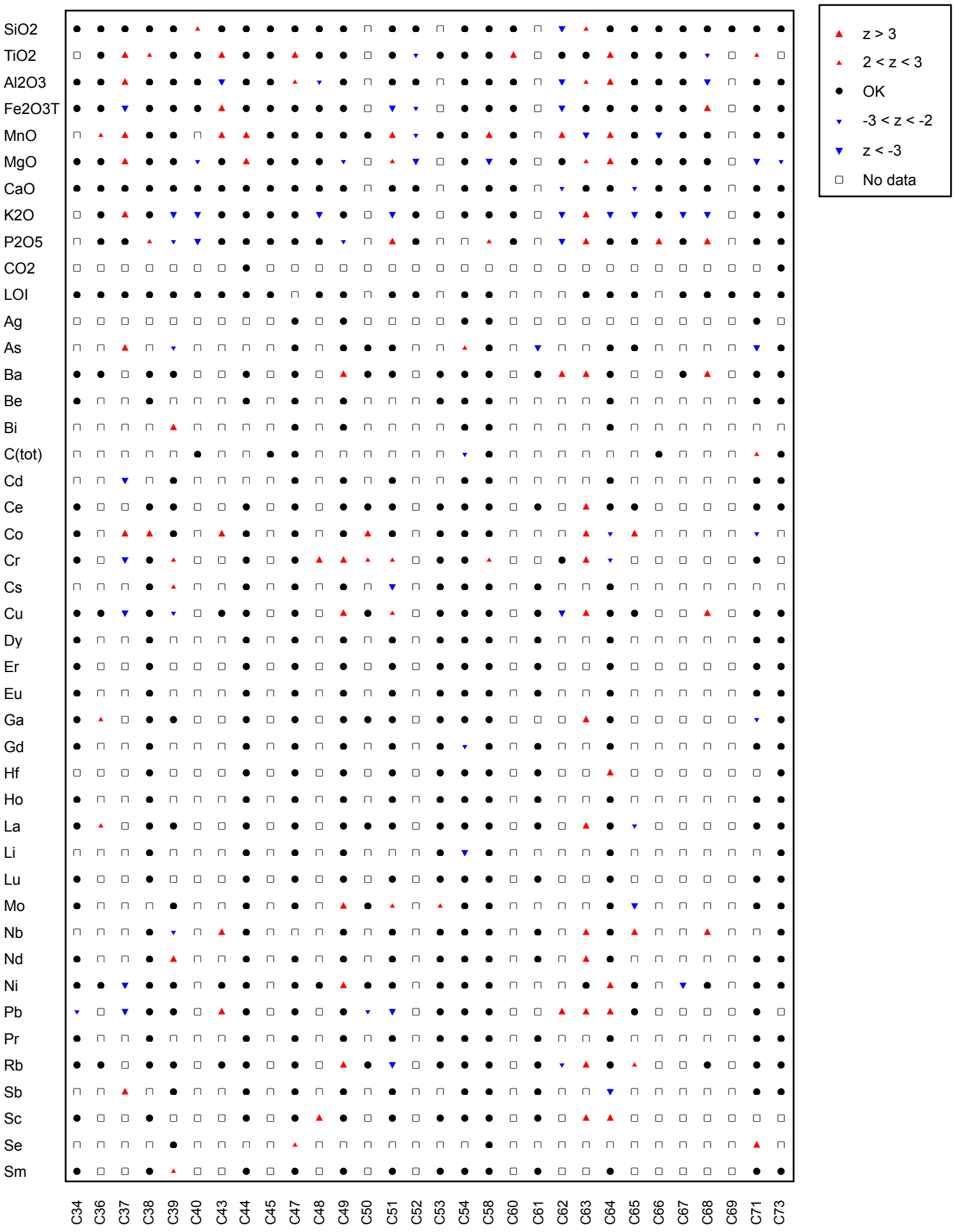


Figure 3: GeoPT44 - Calcareous shale, ShCX-1. Multiple z-score charts for laboratories participating in the GeoPT44 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT44



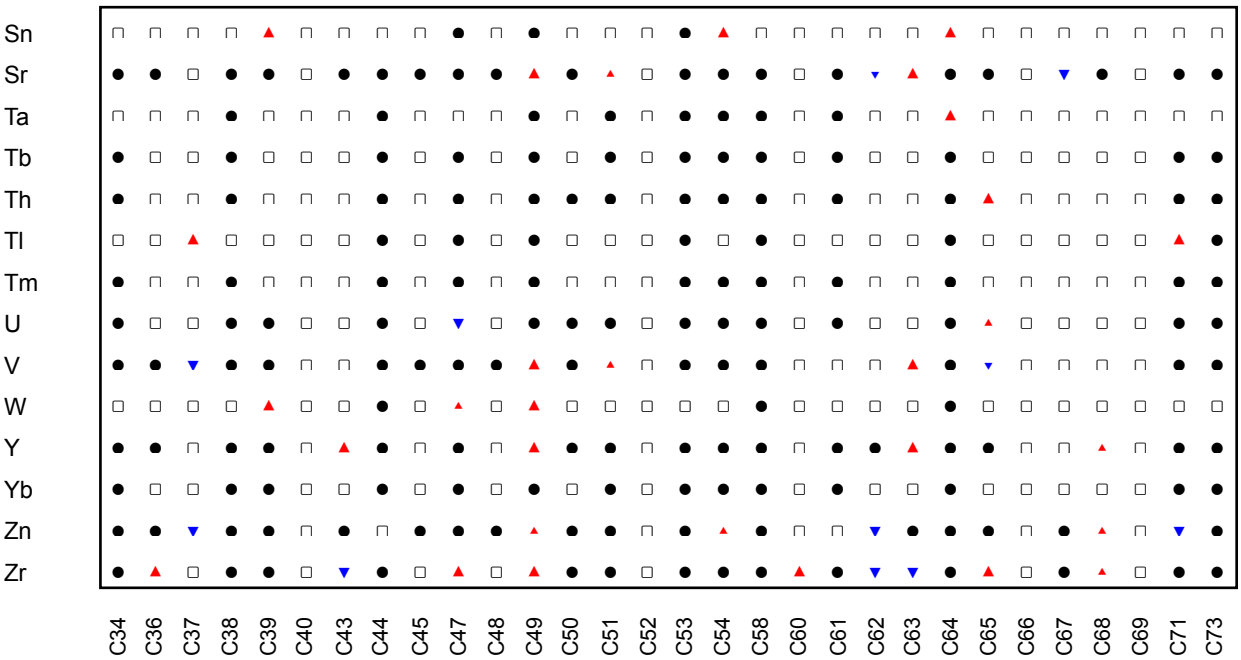
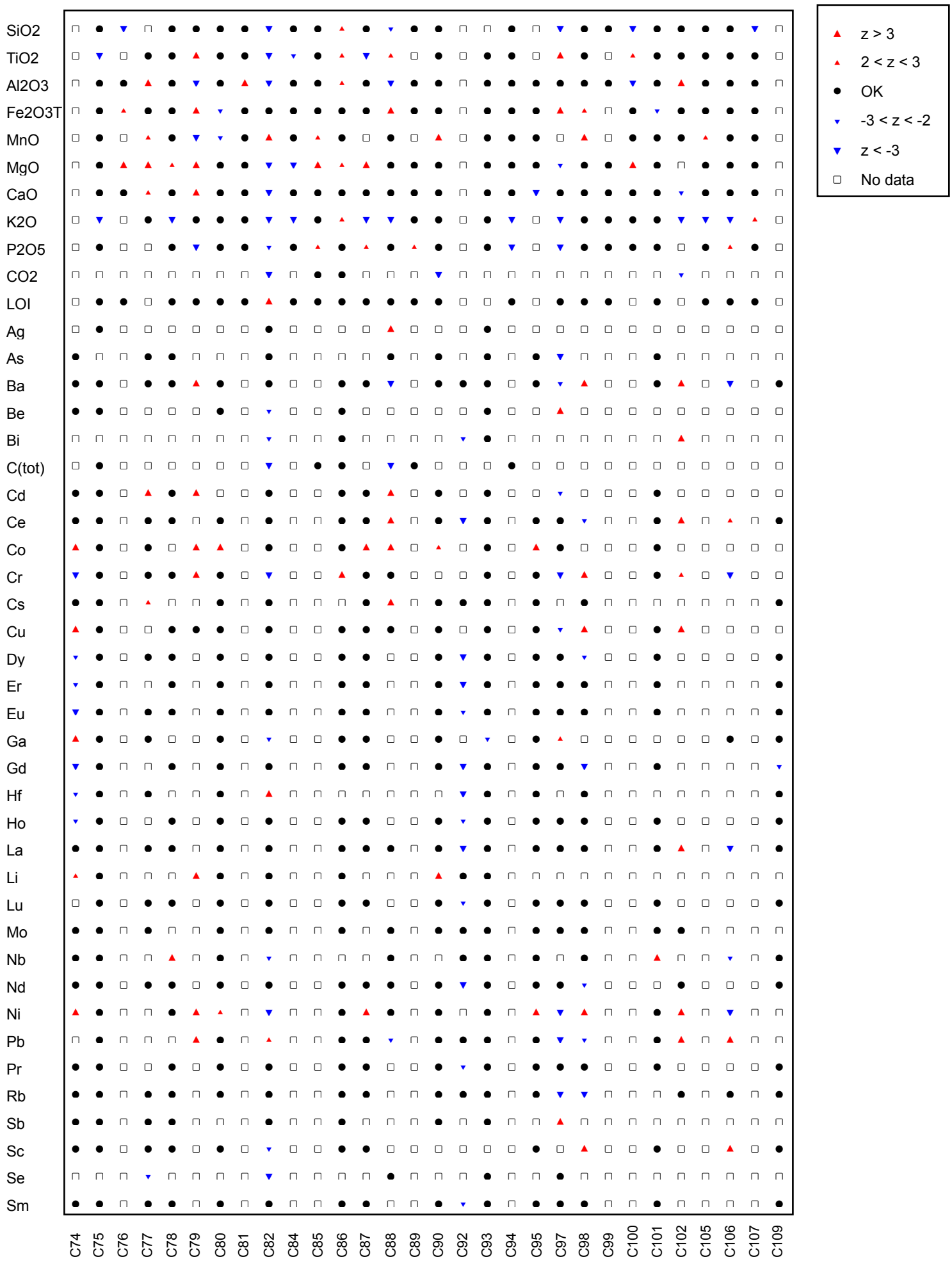


Figure 3: GeoPT44 - Calcareous shale, ShCX-1. Multiple z-score charts for laboratories participating in the GeoPT44 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT44



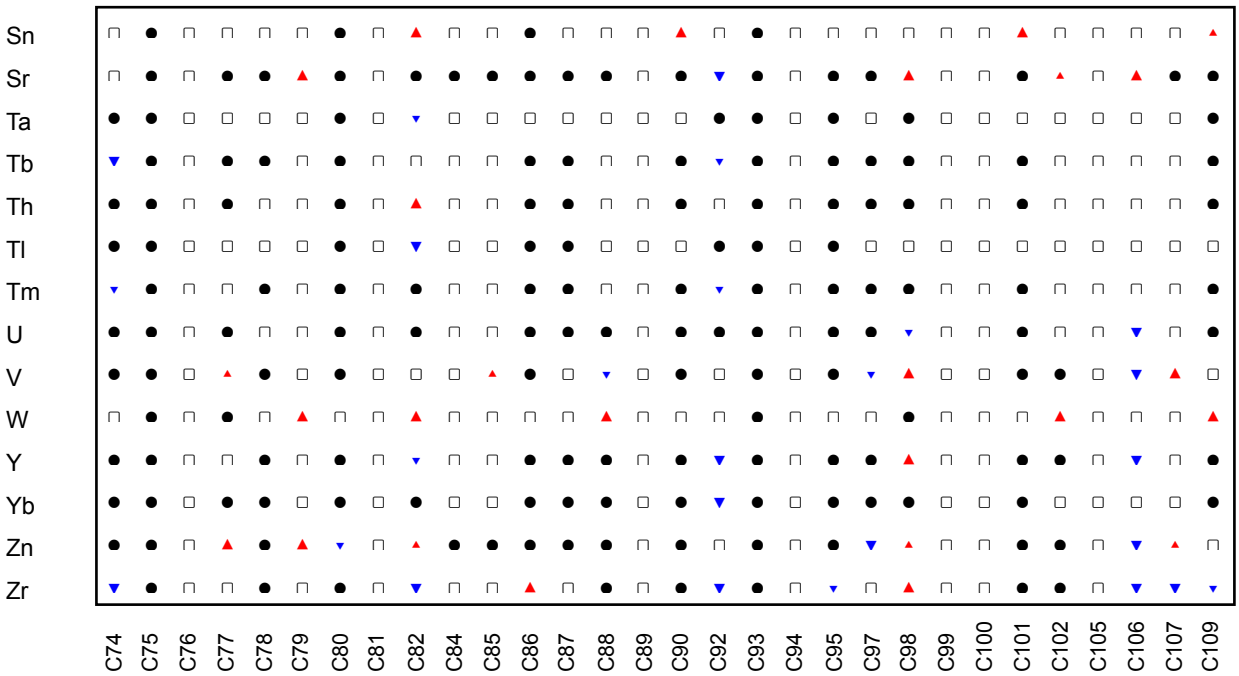


Figure 3: GeoPT44 - Calcareous shale, ShCX-1. Multiple z-score charts for laboratories participating in the GeoPT44 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).

Multiple Z-Score Chart for GeoPT44

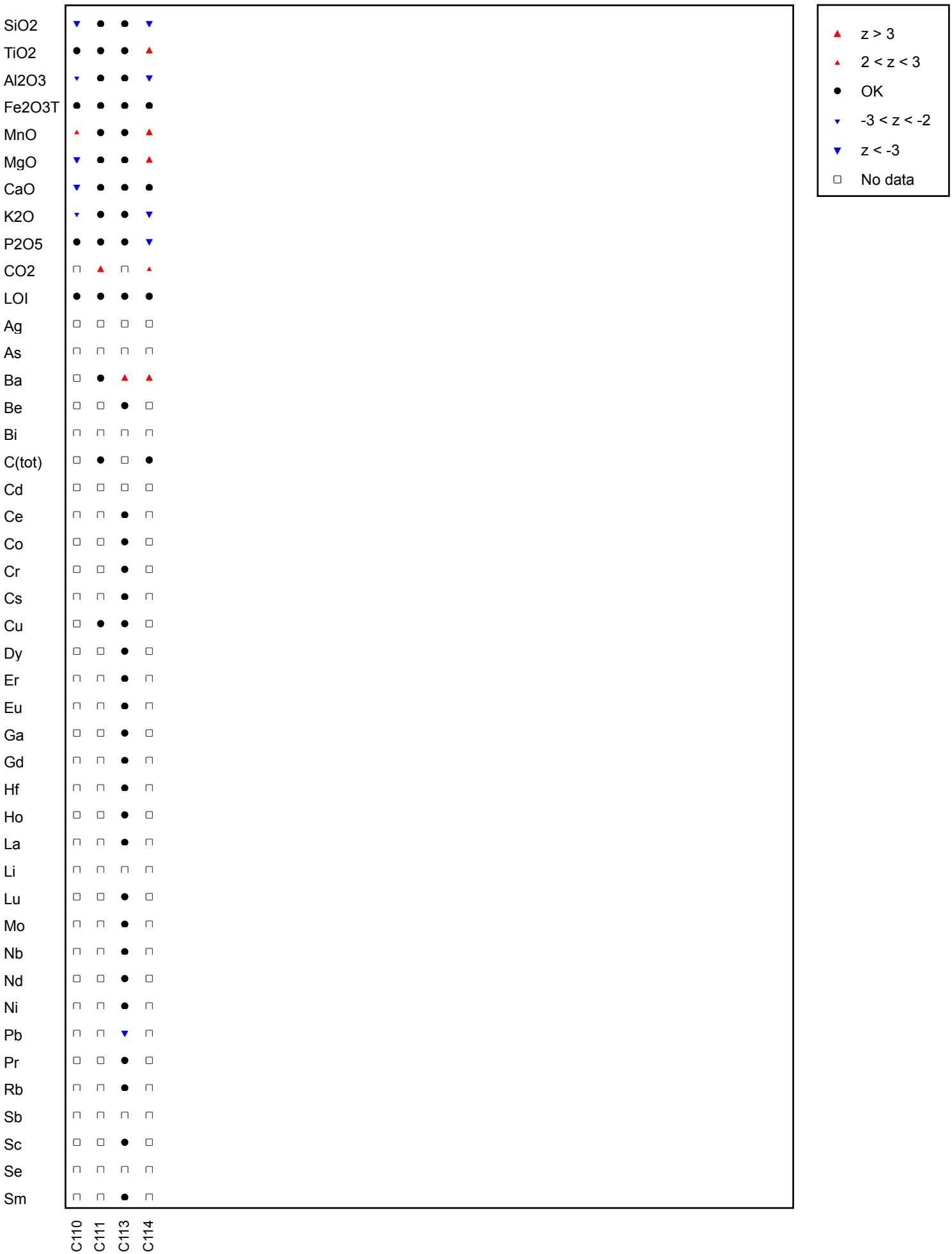


Figure 3: GeoPT44 - Calcareous shale, ShCX-1. Multiple z-score charts for laboratories participating in the GeoPT44 round. Symbols indicate whether or not an elemental result complies with the -2<z<+2 criteria (see key).