

# **GeoPT49 — AN INTERNATIONAL PROFICIENCY TEST FOR ANALYTICAL GEOCHEMISTRY LABORATORIES — REPORT ON ROUND 49 (Basalt, BVA-1) / July 2021**

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## **Abstract**

Results are presented for Round 49 of the International Association of Geoanalysts' Proficiency Testing programme for analytical geochemistry laboratories. The test material distributed in this round was the Basalt, BVA-1, provided by Dr Stephen Wilson in 2019 when at the United States Geological Survey, Denver. In this report, the data contributed by 93 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-ninth round of the international proficiency testing programme, GeoPT, was conducted in a similar manner to earlier rounds (listed in Appendix 1). However, the postponement of previous rounds due to the coronavirus pandemic altered our customary timing (see the **Timetable** section below). The programme is designed to be part of the routine quality assurance procedures employed by an analytical geochemistry laboratory. It is organised by the International Association of Geoanalysts and is conducted in accordance with a published protocol, recently revised (IAG, 2020). The overall aim of the programme is to provide participating laboratories with information on their performance in the form of *z*-scores for each reported measurement result so that each laboratory can decide whether their data quality is satisfactory in relation both to their chosen fitness-for-

purpose criteria and to the results submitted by other laboratories participating in this round. In circumstances where its *z*-scores are unsatisfactory, a participating laboratory is encouraged to investigate for unsuspected analytical bias and to take corrective action when this appears justified.

**Steering Committee for Round 49:** P.C. Webb (administrator and results assessor), P.J. Potts (results reviewer), M. Thompson (statistical advisor), C.J.B. Gowing (distribution manager), S.A. Wilson (supplier of BVA-1).

**Timetable for Round 49:** The coronavirus pandemic caused a short postponement of Round 49 relative to our customary timing for a spring round.

Distribution of sample: April 2021

Results accepted from: 10th May 2021

Results submission deadline: 30th June 2021

Release of report: July 2021

## **Test Material details**

**GeoPT49:** The Basalt test material, BVA-1, was provided by Dr Stephen Wilson in 2019 when at the United States Geological Survey, Denver. The test material had been evaluated for homogeneity by the originator and was considered suitable for use in this proficiency test.

## Submission of results

For GeoPT49 (BVA-1), a total of 3291 results are listed in Table 1 as submitted by 93 laboratories. Of these, 1516 measurement results were designated by their originators as data quality 1 (see **Z-score analysis section** below for explanation of data quality) and are shown in **bold**, whereas 1775 results were specified as data quality 2 and are shown underlined. Results from all laboratories submitting data were used to assess consensus values for each measurand.

It is gratifying that no more than 2 laboratories reported values of '0' (i.e. zero) in this round. Note that participants are instructed **not to report zero values** nor values below their limits of determination. However, it is apparent that several laboratories reported results for **C(tot), Cl and S in units of g/100g instead of mg/kg**. Consequently, we must remind analysts in the **strongest terms** that measurement results of **all trace constituents should be reported in mg/kg**. Analysts should be aware that suspected **invalid results cannot be altered or removed** once they have been submitted and that their corresponding **z-scores will be adversely affected**.

## Assigned values and results summary

Following procedures described in earlier rounds, and detailed fully in the GeoPT protocol (IAG, 2020), 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 of the test material. Values were assigned on the basis that: i) sufficient laboratories (15 or more) had contributed data for estimating the consensus, ii) visual assessment gave confidence that a substantial proportion of the results distribution was symmetrically disposed about the consensus value, iii) the ratio of the uncertainty in the location estimate to the target precision was an acceptably small value, and iv) an evaluation of measurement results by procedure – including both methods of analysis and sample preparation – indicated that no significant procedural bias was discernible amongst measurement results from which the consensus was derived. Where these criteria were largely, but not fully met, or where obvious anomalies in the dataset could be accommodated by judicious selection of the consensus, values were credited with 'provisional' rather than 'assigned' status.

Data assessments involved an examination of barcharts showing the distribution of results contributed for each measurand (as presented in Figures 1 and 2). In addition, when appropriate, a variety of plots permitting discrimination of data by method of analysis and by sample preparation procedure, as developed by Thomas Meisel using the Shiny App (<https://www.shinyapps.io>) and linked to the statistical package 'R', were also examined. This enabled us, when necessary, to refine the selection of consensus values by taking account of data distributions according to analytical procedure.

Consensus values derived from contributed data were provided in 19 instances by the Huber robust mean. Although outliers can be accommodated by this procedure, it is less effective when a dataset is skewed, and frequently does not provide a satisfactory estimation of the consensus. In such circumstances, the median is often a more appropriate robust estimator and was employed in 27 cases. For more severely skewed and strongly tailed datasets, the median may not be suitable and a mode is often a more effective means of estimating the location of the consensus. In this round the use of a mode as a consensus location estimator was preferred in 11 cases, and in just 1 of these, the distribution of data was sufficiently compatible with the conditions outlined above to justify its designation as an assigned value. The procedure used to determine modes was mostly that described by Thompson (2017) involving the estimation of the mass fraction corresponding to the maximum value of the kernel density distribution for the dataset. Such modes provide robust estimates of consensus locations that represent the most coherent part of data distributions often where data are symmetrically disposed, although the dataset as a whole may be asymmetric.

Table 2 lists assigned and provisional values for 11 major components and 46 trace elements in GeoPT49 (BVA-1). Barcharts that were judged to have satisfactory distributions for consensus values to be designated as assigned or provisional values, enabling *z*-scores to be calculated, are shown in Figure 1. These 57 measurands are listed in Table 2 for the analytes: SiO<sub>2</sub>, TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>T, Fe(II)O\*, MnO, MgO, CaO, Na<sub>2</sub>O, K<sub>2</sub>O, P<sub>2</sub>O<sub>5</sub>, Ag\*, Ba\*, Be, Bi\*, Cd\*, Ce, Co, Cr\*, Cs, Cu, Dy, Er, Eu, Ga, Gd, Ge\*, Hf, Ho, In\*, La, Li, Lu, Mo, Nb\*, Nd, Ni\*, Pb, Pr, Rb, Sb\*, Sc, Sm, Sn\*, Sr, Ta, Tb, Th, Tl, Tm, U, V\*, W\*, Y, Yb, Zn\* and Zr. Of these, the measurands of the 15 analytes marked '\*' could be credited only with

provisional status. Such instances of provisional status were conferred because either: i) a relatively small number of results (less than 15, but usually more than 9) 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, or iv) the dataset was affected by bias in one method employed but the remaining data defined a viable consensus.

Bar charts for the 9 analytes: H<sub>2</sub>O<sup>+</sup>, LOI, As, B, C(tot), Cl, F, S and Se 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 highly dispersed for the reliable determination of a consensus for the estimation of z-scores.

A majority of datasets in this round were symmetrically disposed, with remarkably little dispersion of the data. Some asymmetry of distributions was noted however, in particular for MnO, Ba, Cr, Mo, Ni, Pb, Sb, Ta, V, W, Zn and Zr, which required estimation of consensus values using medians and modes. For some of these elements the asymmetry was due to high tails, which in a few cases, especially for Pb and W, reflect XRF data presented at relatively low mass fractions where results have exceedingly poor precision and are below appropriate limits of quantification. In some cases, such as for Mo and Ta the high tails are due dominantly to ICP-MS data that does conform to the main body of coherent data obtained by that method.

Low tails were observed, not only for Zr, which is commonly associated with incomplete dissolution of zircon by acid digestion, but also for the metals, Co, Cr, Cu, Ni, V and Zn, again in association with procedures involving acid digestion. These situations emphasise the potential for bias in data obtained using acid digestion. Another notable bias is observed in XRF data obtained

from powder pellets (PP) in contrast to that obtained by fusion disc (FD) data and that produced by ICP-MS and ICP-AES/OES using acid digestion (AD) or fusion followed by acid digestion (FM\_AD). Bias towards high values on powder pellets is noted for Ba (see Figures 0.1

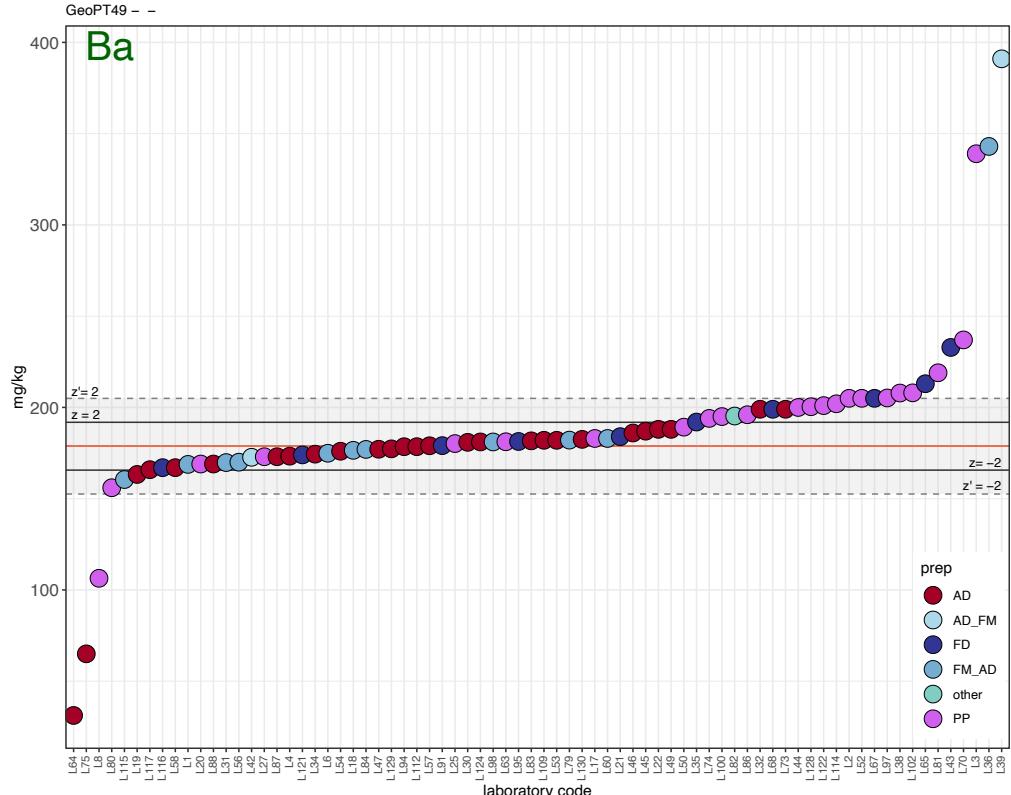


Figure 0.1 A sequential plot of sorted Ba results for BVA-1 represented according to method of sample preparation. Most of the XRF powder pellet data (PP) clearly contrast with data produced by other methods. Codes: AD—acid digestion; AD\_FM—acid digestion & fusion of residue; FD—fusion disc; FM\_AD—fusion & acid digestion; PP—powder pellets; other—not defined.

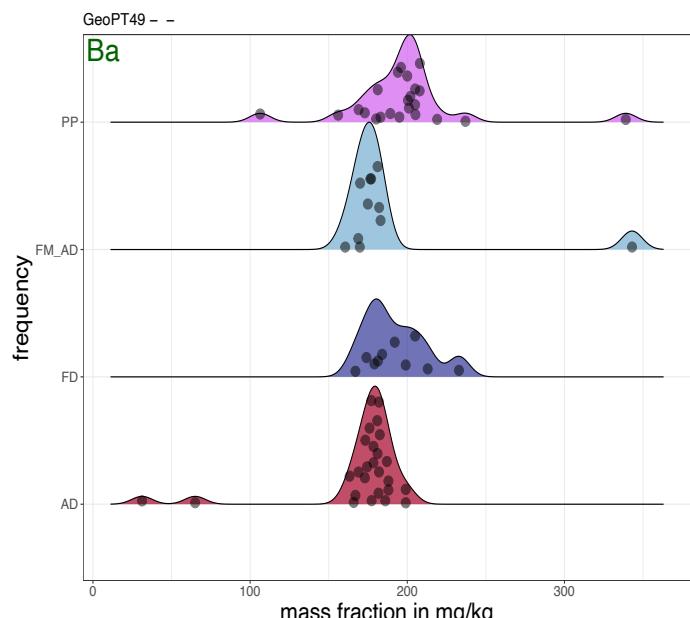


Figure 0.2 A representation of the distribution of Ba data submitted for BVA-1 according to sample preparation procedure. See Figure 0.1 for definition of the symbols.

and 0.2). The situation is reversed for a number of metals, however, in particular Co, Cr, Ni, V and Zn for which the powder pellet data is again biased, but towards lower values as shown for V in Figures 0.3 and 0.4. In most of these cases a consensus value was judiciously chosen to avoid the influence of such bias but those values were credited with only provisional status.

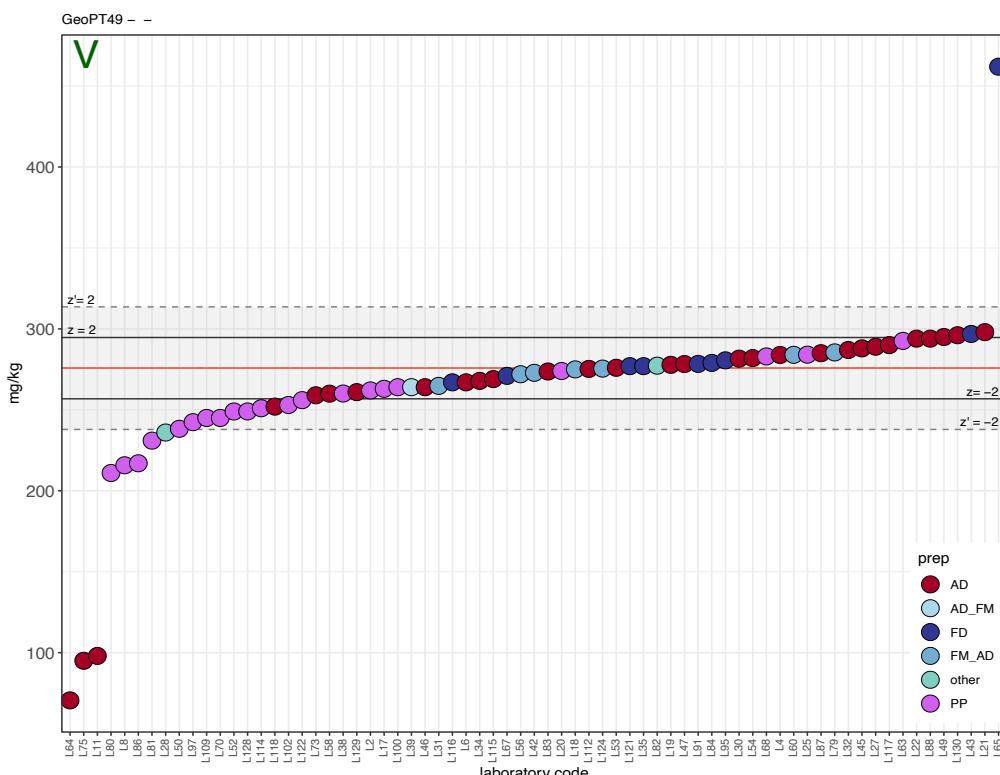


Figure 0.3 A sequential plot of sorted V results for BVA-1 represented according to method of sample preparation. Most of the XRF powder pellet data (PP) clearly contrast with data produced by other methods. See Figure 0.1 for definition of the symbols.

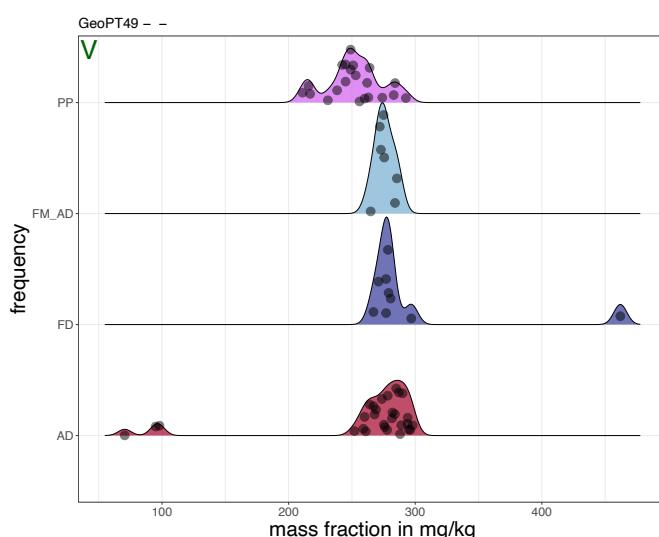


Figure 0.4 A representation of the distribution of V data submitted for BVA-1 according to sample preparation procedure. See Figure 0.1 for definition of the symbols.

As is often the case, some sets of results, such as those of MnO, K<sub>2</sub>O, P<sub>2</sub>O<sub>5</sub>, Nb, Sc and Th feature stepped distributions caused by over-rounding of much of the contributed data. Our recommendation is that for proficiency testing purposes all measurands should be quoted to at least one extra decimal place than would be routine in order for the statistical procedures to more effectively define the consensus. This logic is especially relevant to components reported at low mass fractions.

For Fe(II)O, as in the previous round of GeoPT, a significant proportion of the data exhibited a fair degree of consistency. Although it was a marginal decision, it was considered that it would be useful to recognise a provisional value for Fe(II)O that would permit z-scores to be listed.

### 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.

**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.

The **standard deviation for proficiency ( $\sigma_{pt}$ )** – also referred to as the target precision – for each measurand

assessed was calculated from a modified form of the Horwitz function as follows:

$$\sigma_{\text{pt}} = k \cdot x_{\text{pt}}^{0.8495}$$

Where  $x_{\text{pt}}$  is the mass fraction of the element; the factor  $k = 0.01$  for pure geochemistry laboratories (quality 1) and  $k = 0.02$  for applied geochemistry laboratories (quality 2). Z-scores were calculated for each elemental measurement submitted by each laboratory from:

$$z = [x_i - x_{\text{pt}}] / \sigma_{\text{pt}}$$

Where  $x_i$  is the contributed measurement result,  $x_{\text{pt}}$  is the assigned (or provisional) value and  $\sigma_{\text{pt}}$  is the target standard deviation (all as mass fractions). Z-scores for results contributed to GeoPT49 are listed in Table 3. Those of results designated as data **quality 1** are shown in **bold**: those 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 participating laboratory). If the z-score for an element falls outside this range, more especially if it is outside the range  $-3 < z < 3$ , laboratories are advised to examine their procedures, and if necessary, take appropriate action to ensure that their 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 50, the test material for which will be distributed during September 2021.

## Acknowledgements

The authors once again thank Andrea Mills (BGS) for much-valued assistance in distributing these samples and Thomas Meisel (Montanuniversität Leoben, Austria) for maintenance of the system and development of procedures involving the package 'R' and the Shiny App which has greatly assisted in the investigation of data according to analytical procedure, provided the graphics featured in Figures 0.1, 0.2, 0.3 and 0.4, as well as facilitating the analysis of datasets involving modes derived according to Thompson (2017).

## References

- IAG (2020)** Protocol for the operation of the GeoPT Proficiency testing scheme. International Association of Geoanalysts (Keyworth, UK), 18pp.  
<http://www.geoanalyst.org/wp-content/uploads/2020/07/GeoPT-revised-protocol-2020.pdf>.
- Potts P.J., Webb P.C. and Thompson M. (2015)** Bias in the determination of Zr, Y and rare earth element concentrations in selected silicate rocks by ICP-MS when using some routine acid dissolution procedures: Evidence from the GeoPT proficiency testing programme. *Geostandards and Geoanalytical Research*, **39**, 403–416.
- 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.
- Potts P.J., Webb, P.C. and Thompson M. (2019)** The GeoPT proficiency testing programme as a scheme for the certification of geological reference materials. *Geostandards and Geoanalytical Research*, **43**, 409–418.
- Webb, P.C., Potts P.J., Thompson M., Wilson, S.A. and Gowing, C.J.B. (2019)** The long-term robustness and stability of consensus values as composition location estimators for a typical geochemical test material in the GeoPT proficiency testing programme. *Geostandards and Geoanalytical Research*, **43**, 397–408.
- Potts P.J. and Webb, P.C (2019)** An Evaluation of Methods for Assessing the Competence of Laboratories Based on Performance in the GeoPT Proficiency Testing Scheme. *Geostandards and Geoanalytical Research*, **43**, 217–22.

## **ADDENDUM**

### **— IMPORTANT NOTICES TO ANALYSTS**

#### **Change in uncertainty estimation, 2020**

A change was made to the algorithm for the estimation of the uncertainty of median values and implemented for the first time in Round 47/47A. As described in the revised GeoPT protocol (IAG, 2020), median uncertainties are increased by a factor of 1.2533 compared to those from past rounds. Uncertainty values previously reported for values estimated as medians should be increased by this factor.

#### **Explicit advice to analysts for reporting of procedures involving ignition and fusion**

Note that some laboratories are still listing their procedure for determining LOI as the same as that employed for

major elements, rather than providing separate, specific details. We must remind analysts that it is important to provide information that is appropriate for every analyte. Indeed, analysts reporting measurement results for procedures involving fusion, sintering or ignition, and in particular, LOI determinations, should specify the correct method used and give details both of the temperature used and where appropriate, the end-point criterion, e.g., the duration of ignition. This information should be supplied in the description of the relevant **Procedure**, as **Additional Details**.

We recommend that details of gravimetric procedures are 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/>).

#### **GeoPT1**

Thompson M., Potts P.J., Kane J.S. and Webb P.C. (1996) GeoPT1. International proficiency test for analytical geochemistry laboratories - Report on round 1. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 20, 295-325.

#### **GeoPT2**

Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson, J.S. (1998) GeoPT2. International proficiency test for analytical geochemistry laboratories - Report on round 2. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 22 127-156.

#### **GeoPT3**

Thompson M., Potts P.J., Kane J.S. and Chappell B.W. (1999a) GeoPT3. International proficiency test for analytical geochemistry laboratories - Report on round 3. Geostandards Newsletter: The Journal of Geostandards and Geoanalysis, 23, 87-121.

#### **GeoPT4**

Thompson M., Potts P.J., Kane J.S., Webb P.C. and Watson J.S. (1999b) GeoPT4. 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).

#### **GeoPT5**

Thompson M., Potts P.J., Kane J.S., and Wilson S. (1999c) GeoPT5. 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).

#### **GeoPT6**

Potts P.J., Thompson M., Kane J.S., Webb P.C. and Carignan J. (2000) GEOPT6 - 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.

#### **GeoPT7**

Potts P.J., Thompson M., Kane J.S., and Petrov L.L. (2000) GEOPT7 - an international proficiency test for analytical geochemistry laboratories - report on round 7 (GBPG-1 Garnet-biotite plagiogneiss). International Association of Geoanalysts: Unpublished report.

#### **GeoPT8**

Potts P.J., Thompson M., Kane J.S., Webb, P.C. and Watson J.S. (2000) GEOPT8 - an international proficiency test for analytical geochemistry laboratories - report on round 8 / February 2001 (OU-4 Penmaenmawr microdiorite). International Association of Geoanalysts: Unpublished report.

#### **GeoPT9**

Potts P.J., Thompson M., Webb, P.C. and Watson J.S. (2001) GEOPT9 - an international proficiency test for analytical geochemistry laboratories - report on round 9 / July 2001 (OU-6 Penrhyn slate). International Association of Geoanalysts: Unpublished report.

#### **GeoPT10**

Potts P.J., Thompson M., Webb, P.C., Watson J.S. and Wang Yimin (2001) GEOPT10 - an international proficiency test for analytical geochemistry laboratories - report on round 10 / December 2001 (CH-1 Marine sediment). International Association of Geoanalysts: Unpublished report.

#### **GeoPT11**

Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Watson J.S. (2002) GEOPT11 - an international proficiency test for analytical geochemistry laboratories - report on round 11 / July 2002 (OU-5 Leatton dolerite). International Association of Geoanalysts: Unpublished report.

## Appendix 1 (Cont'd)

### GeoPT12

Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Batjargal B. (2003)  
GEOPT12 - an international proficiency test for analytical geochemistry laboratories - report on round 12 / January 2003 (GAS Serpentinite). International Association of Geoanalysts: Unpublished report.

### GeoPT13

Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Kaspar H.U. (2003)  
GEOPT13 - an international proficiency test for analytical geochemistry laboratories - report on round 13 / July 2003 (Köln Loess). International Association of Geoanalysts: Unpublished report.

### GeoPT14

Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and B. Batjargal (2004)  
GeoPT14 - an international proficiency test for analytical geochemistry laboratories - report on round 14 / January 2004 (OShBO - alkaline granite). International Association of Geoanalysts: Unpublished report.

### GeoPT15

Potts P.J., Thompson M., Chenery S.R., Webb, P.C. and Wang Yimin (2004)  
GeoPT15 - an international proficiency test for analytical geochemistry laboratories - report on round 15 / June 2004 (Ocean floor sediment MSAN). International Association of Geoanalysts: Unpublished report.

### GeoPT16

Potts P.J., Thompson M., Webb, P.C. and S. Wilson (2005)  
GeoPT16 - an international proficiency test for analytical geochemistry laboratories - report on round 16 / February 2005 (Nevada basalt, BNV-1). International Association of Geoanalysts: Unpublished report.

### GeoPT17

Potts P.J., Thompson M., Webb, P.C. and J. Nicholas Walsh (2005)  
GeoPT17 - an international proficiency test for analytical geochemistry laboratories - report on round 17 / July 2005 (Calcareous sandstone, OU-8). International Association of Geoanalysts: Unpublished report.

### GeoPT18

Webb, P.C., Thompson M., Potts P.J. and L. Paul Bedard (2006)  
GeoPT18 - an international proficiency test for analytical geochemistry laboratories - report on round 18 / Jan 2006 (Quartz Diorite, KPT-1). International Association of Geoanalysts: Unpublished report.

### GeoPT19

Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2006)  
GeoPT19 - an international proficiency test for analytical geochemistry laboratories - report on round 19 / July 2006 (Gabbro, MGR-N). International Association of Geoanalysts: Unpublished report.

### GeoPT20

Webb, P.C., Thompson M., Potts P.J. and M. Burnham (2007) GeoPT20 - an international proficiency test for analytical geochemistry laboratories - report on round 20 / Jan 2007 (Ultramafic rock, OPY-1). International Association of Geoanalysts: Unpublished report.

### GeoPT21

Webb, P.C., Thompson M., Potts P.J. and B. Batjargal (2007)  
GeoPT21 - an international proficiency test for analytical geochemistry laboratories - report on round 21 / July 2007 (Granite, MGT-1). International Association of Geoanalysts: Unpublished report.

### GeoPT22

Webb, P.C., Thompson, M., Potts, P.J. and Batjargal, B. (2008)  
GeoPT22 - an international proficiency test for analytical geochemistry laboratories - report on round 22 / January 2008 (Basalt, MBL-1). International Association of Geoanalysts: Unpublished report.

### GeoPT23

Webb, P.C., Thompson, M., Potts, P.J., Watson, J.S. and Kriete, C. (2008)  
GeoPT23 - 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.

### GeoPT24

Webb, P.C., Thompson, M., Potts, P.J. and Watson, J.S. (2009)  
GeoPT24 - an international proficiency test for analytical geochemistry laboratories - report on round 24 / January 2009 (Longmyndian greywacke, OU-10). International Association of Geoanalysts: Unpublished report.

### GeoPT25

Webb, P.C., Thompson, M., Potts, P.J. and Enzweiler, J. (2009)  
GeoPT25 - an international proficiency test for analytical geochemistry laboratories - report on round 25 / July 2009 (Basalt, HTP-1). International Association of Geoanalysts: Unpublished report.

### GeoPT26

Webb, P.C., Thompson, M., Potts, P.J. and Loubsler, M. (2010)  
GeoPT26 - 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.

### GeoPT27

Webb, P.C., Thompson, M., Potts, P.J. and Batjargal, B. (2010)  
GeoPT27 - an international proficiency test for analytical geochemistry laboratories - report on round 27 / July 2010 (Andesite, MGL-AND). International Association of Geoanalysts: Unpublished report.

### GeoPT28

Webb, P.C., Thompson, M., Potts, P.J. and Wilson, S. (2011)  
GeoPT28 - an international proficiency test for analytical geochemistry laboratories - report on round 28 / January 2011 (Shale, SBC-1). International Association of Geoanalysts: Unpublished report.

### GeoPT29

Webb, P.C., Thompson, M., Potts, P.J. and Wilson, S. (2011)  
GeoPT29 - an international proficiency test for analytical geochemistry laboratories - report on round 29 / July 2011 (Nephelinite, NKT-1). International Association of Geoanalysts: Unpublished report.

### GeoPT30

Webb, P.C., Thompson, M., Potts, P.J., Long, D. and Batjargal, B. (2012)  
GeoPT30 - 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.

### GeoPT31

Webb, P.C., Thompson, M., Potts, P.J. and Wilson, S. (2012)  
GeoPT31 - 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.

### GeoPT32

Webb, P.C., Thompson, M., Potts, P.J. and Webber, E. (2013)  
GeoPT32 - an international proficiency test for analytical geochemistry laboratories - report on round 32 / January 2013 (Woodstock Basalt, WG-1). International Association of Geoanalysts: Unpublished report.

### GeoPT33

Webb, P.C., Thompson, M., Potts, P.J., Prusisz, B., and Young, K. (2013)  
GeoPT33 - 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.

## Appendix 1 (Cont'd)

### GeoPT34

Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014)  
GeoPT34 - an international proficiency test for analytical geochemistry laboratories - report on round 34 (Granite, GRI-1) / January 2014.  
International Association of Geoanalysts: Unpublished report.

### GeoPT35

Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014)  
GeoPT35 - an international proficiency test for analytical geochemistry laboratories - report on round 35 (Tonalite, TLM-1) / August 2014.  
International Association of Geoanalysts: Unpublished report.

### GeoPT35A

Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2014)  
GeoPT35A - an international proficiency test for analytical geochemistry laboratories - report on round 35A (Metalliferous sediment, SdAR-H1) / August 2014. International Association of Geoanalysts: Unpublished report.

### GeoPT36

Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2015)  
GeoPT36 - an international proficiency test for analytical geochemistry laboratories - report on round 36 (Gabbro, GSM-1) / January 2015.  
International Association of Geoanalysts: Unpublished report.

### GeoPT36A

Webb, P.C., Thompson, M., Potts, P.J and Wilson, S. (2015)  
GeoPT36A - 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.

### GeoPT37

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Burnham, M. (2015)  
GeoPT37 - an international proficiency test for analytical geochemistry laboratories - report on round 37 (Rhyolite, ORPT-1) / July 2015.  
International Association of Geoanalysts: Unpublished report.

### GeoPT37A

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S. (2015)  
GeoPT37A - an international proficiency test for analytical geochemistry laboratories - report on round 37A (Blended sediment, SdAR-L2) / July 2015. International Association of Geoanalysts: Unpublished report.

### GeoPT38

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2016)  
GeoPT38 - an international proficiency test for analytical geochemistry laboratories - report on round 38 (Gabbro, OU-7) / January 2016.  
International Association of Geoanalysts: Unpublished report.

### GeoPT38A

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Meisel, T. (2016)  
GeoPT38A - an international proficiency test for analytical geochemistry laboratories – special report on round 38A (Modified harzburgite, HARZ01) / June 2016. International Association of Geoanalysts:  
Unpublished report.

### GeoPT39

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2016)  
GeoPT39 - an international proficiency test for analytical geochemistry laboratories - report on round 39 (Syenite, SyMP-1) / July 2016.  
International Association of Geoanalysts: Unpublished report.

### GeoPT39A

Webb, P.C., Thompson, M., Potts, P.J, and Gowing, C.J.B. (2016)  
GeoPT39A - an international proficiency test for analytical geochemistry laboratories - report on round 39A (Nepheline syenite, MNS-1) / July 2016. International Association of Geoanalysts: Unpublished report.

### GeoPT40

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)  
GeoPT40 - 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.

### GeoPT40A

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)  
GeoPT40A - 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.

### GeoPT41

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)  
GeoPT41 - an international proficiency test for analytical geochemistry laboratories - report on round 41 (Andesite, ORA-1) / July 2017.  
International Association of Geoanalysts: Unpublished report.

### GeoPT41A

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Wilson, S.A. (2017)  
GeoPT41A - 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.

### GeoPT42

Webb, P.C., Thompson, M., Potts, P.J, Gowing, C.J.B. and Burnham, M. (2018)  
GeoPT42 – an international proficiency test for analytical geochemistry laboratories – report on round 42 (Queenston shale, QS-1) / January 2018. International Association of Geoanalysts:  
Unpublished report.

### GeoPT43

Webb, P.C., Potts, P.J, Thompson, M. and Gowing, C.J.B. (2018)  
GeoPT43 – an international proficiency test for analytical geochemistry laboratories – report on round 43 (Dolerite, ADS-1) / July 2018. International Association of Geoanalysts:  
Unpublished report.

### GeoPT44

Webb, P.C., Potts, P.J, Thompson, M., Gowing, C.J.B. (2019)  
GeoPT44 – an international proficiency test for analytical geochemistry laboratories – report on round 44 (Calcareous shale, ShCX-1) / January 2019. International Association of Geoanalysts:  
Unpublished report.

### GeoPT44A

Webb, P.C., Potts, P.J, Thompson, M., Gowing, C.J.B. and Wilson, S.A. (2019)  
GeoPT44A – an international proficiency test for analytical geochemistry laboratories – report on round 44A (Calcareous mudrock, CM-1) / January 2019. International Association of Geoanalysts:  
Unpublished report.

### GeoPT45

Webb, P.C., Potts, P.J, Thompson, M., Gowing, C.J.B. and Wilson, S.A. (2019)  
GeoPT45 – an international proficiency test for analytical geochemistry laboratories – report on round 45 (Silicified siltstone, GONV-1) / July 2019. International Association of Geoanalysts: Unpublished report.

### GeoPT46

Webb, P.C., Potts, P.J, Thompson, M. and Gowing, C.J.B. (2020)  
GeoPT46 – an international proficiency test for analytical geochemistry laboratories – report on round 46 (Granodiorite, HG-1) / January 2020. International Association of Geoanalysts:  
Unpublished report.

## **Appendix 1 (Cont'd)**

### **GeoPT46A**

Webb, P.C., Potts, P.J., Thompson, M. Gowing, C.J.B. and Wilson, S.A. (2020)

GeoPT46A – an international proficiency test for analytical geochemistry laboratories – report on round 46A (Phosphate rock, POLC-1) / January 2020. International Association of Geoanalysts: Unpublished report.

### **GeoPT47**

Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2020)

GeoPT47 – an international proficiency test for analytical geochemistry laboratories – report on round 47 (Silty Soil BIM-1) / December 2020. International Association of Geoanalysts: Unpublished report.

### **GeoPT47A**

Webb, P.C., Potts, P.J., Thompson, M. and Gowing, C.J.B. (2020)

GeoPT47A – an international proficiency test for analytical geochemistry laboratories – report on round 47A (Silty Soil, NES-1) / December 2020. International Association of Geoanalysts: Unpublished report.

### **GeoPT48**

Webb, P.C., Potts, P.J., Thompson, M., Gowing, C.J.B., Glodny, J., Wiedenbeck, M. (2021)

GeoPT48 – an international proficiency test for analytical geochemistry laboratories – report on round 48 (Monzonite, MzBP-1) / April 2021. International Association of Geoanalysts: Unpublished report.

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code	L1	L2	L3	L4	L6	L8	L10	L11	L13	L14	L17	L18	L19
SiO <sub>2</sub>	g 100g <sup>-1</sup>	<b>52.43</b>	<b>52.27</b>	<b>52.48</b>	<b>52.799</b>	<b>52.55</b>	<b>52.67</b>	<b>51.9</b>	<b>52.2</b>	<b>52.5</b>	<b>52.38</b>	<b>52.37</b>	<b>53.28</b>
TiO <sub>2</sub>	g 100g <sup>-1</sup>	<b>1.13</b>	<b>1.25</b>	<b>1.12</b>	<b>1.181</b>	<b>1.17</b>	<b>0.99</b>	<b>1.18</b>		<b>1.17</b>	<b>1.18</b>	<b>1.119</b>	<b>1.197</b>
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	<b>14.76</b>	<b>14.06</b>	<b>15.08</b>	<b>14.229</b>	<b>14.36</b>	<b>3.29</b>	<b>14.3</b>		<b>14.67</b>	<b>14.08</b>	<b>14.51</b>	<b>14.44</b>
Fe <sub>2</sub> O <sub>3</sub> T	g 100g <sup>-1</sup>	<b>11.14</b>	<b>11.38</b>	<b>11.39</b>	<b>11.431</b>	<b>11.24</b>	<b>11.34</b>	<b>11.4</b>	<b>11.39</b>	<b>11.22</b>	<b>11.557</b>	<b>11.28</b>	<b>11.52</b>
Fe(II)O	g 100g <sup>-1</sup>				<b>7.835</b>		<b>10.2</b>						
MnO	g 100g <sup>-1</sup>	<b>0.172</b>	<b>0.19</b>	<b>0.172</b>	<b>0.175</b>	<b>0.18</b>	<b>0.16</b>	<b>0.202</b>		<b>0.18</b>	<b>0.2</b>	<b>0.162</b>	<b>0.177</b>
MgO	g 100g <sup>-1</sup>	<b>6.495</b>	<b>6.39</b>	<b>6.06</b>	<b>6.673</b>	<b>6.53</b>	<b>4.3</b>	<b>6.6</b>		<b>6.65</b>	<b>6.5</b>	<b>6.637</b>	<b>6.854</b>
CaO	g 100g <sup>-1</sup>	<b>10.45</b>	<b>10.64</b>	<b>10.6</b>	<b>10.370</b>	<b>10.46</b>	<b>9.87</b>		<b>10.33</b>	<b>10.32</b>	<b>10.12</b>	<b>10.443</b>	<b>9.977</b>
Na <sub>2</sub> O	g 100g <sup>-1</sup>	<b>2.228</b>	<b>2.16</b>	<b>2.12</b>	<b>2.251</b>	<b>2.23</b>		<b>2.17</b>		<b>2.2</b>	<b>2.07</b>	<b>2.489</b>	<b>2.274</b>
K <sub>2</sub> O	g 100g <sup>-1</sup>	<b>0.717</b>	<b>0.71</b>	<b>0.794</b>	<b>0.715</b>	<b>0.71</b>	<b>0.7</b>			<b>0.74</b>	<b>0.68</b>	<b>0.713</b>	<b>0.75</b>
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	<b>0.139</b>	<b>0.14</b>	<b>0.22</b>	<b>0.140</b>	<b>0.142</b>	<b>0.63</b>			<b>0.16</b>	<b>0.29</b>	<b>0.148</b>	<b>0.133</b>
H <sub>2</sub> O+	g 100g <sup>-1</sup>												
CO <sub>2</sub>	g 100g <sup>-1</sup>												
LOI	g 100g <sup>-1</sup>		<b>0.38</b>		<b>0.169</b>	<b>0.22</b>	<b>1.18</b>	<b>0.25</b>	<b>0.4</b>	<b>0.32</b>	<b>2.14</b>	<b>0.12</b>	
Ag	mg kg <sup>-1</sup>							<b>6.23</b>					<b>0.06</b>
As	mg kg <sup>-1</sup>				<b>3.049</b>	<b>1.5</b>	<b>5.01</b>					<b>7</b>	<b>1.48</b>
Au	mg kg <sup>-1</sup>												
B	mg kg <sup>-1</sup>												
Ba	mg kg <sup>-1</sup>	<b>168.8</b>	<b>205</b>	<b>339</b>	<b>173.304</b>	<b>174.9</b>	<b>106.390</b>				<b>183</b>	<b>176.5</b>	<b>163.290</b>
Be	mg kg <sup>-1</sup>					<b>0.74</b>	<b>0.66</b>					<b>0.967</b>	<b>0.88</b>
Bi	mg kg <sup>-1</sup>												<b>0.03</b>
Br	mg kg <sup>-1</sup>												
C(org)	mg kg <sup>-1</sup>												<b>264.6</b>
C(tot)	mg kg <sup>-1</sup>												<b>0.08</b>
Cd	mg kg <sup>-1</sup>					<b>0.09</b>	<b>11.2</b>						
Ce	mg kg <sup>-1</sup>		<b>28</b>		<b>26.557</b>	<b>27.3</b>			<b>21.5</b>		<b>28</b>	<b>22.5</b>	<b>24.63</b>
Cl	mg kg <sup>-1</sup>						<b>390.630</b>				<b>292</b>		
Co	mg kg <sup>-1</sup>		<b>41</b>		<b>45.373</b>	<b>44.4</b>	<b>65.83</b>		<b>10</b>		<b>43</b>	<b>44.42</b>	<b>45.76</b>
Cr	mg kg <sup>-1</sup>	<b>163.4</b>	<b>149</b>		<b>167.289</b>	<b>174</b>	<b>332.190</b>				<b>176</b>	<b>162</b>	<b>166.160</b>
Cs	mg kg <sup>-1</sup>				<b>1.171</b>	<b>1.2</b>					<b>6</b>	<b>1.25</b>	<b>1.05</b>
Cu	mg kg <sup>-1</sup>				<b>122.398</b>	<b>119.7</b>	<b>111</b>		<b>123</b>		<b>118</b>	<b>127.9</b>	<b>122.280</b>
Dy	mg kg <sup>-1</sup>				<b>4.244</b>	<b>4.3</b>			<b>4.5</b>			<b>4.122</b>	<b>3.95</b>
Er	mg kg <sup>-1</sup>				<b>2.436</b>	<b>2.4</b>			<b>2.5</b>			<b>2.307</b>	<b>2.31</b>
Eu	mg kg <sup>-1</sup>				<b>1.177</b>	<b>1.2</b>			<b>1.3</b>			<b>1.151</b>	<b>1.07</b>
F	mg kg <sup>-1</sup>											<b>114</b>	
Ga	mg kg <sup>-1</sup>				<b>18.005</b>	<b>18.08</b>					<b>20</b>	<b>15.66</b>	<b>17.19</b>
Gd	mg kg <sup>-1</sup>				<b>4.167</b>	<b>3.99</b>			<b>4.7</b>			<b>4.064</b>	<b>3.81</b>
Ge	mg kg <sup>-1</sup>					<b>1.4</b>						<b>1.231</b>	
Hf	mg kg <sup>-1</sup>				<b>2.895</b>	<b>2.9</b>			<b>2.6</b>			<b>2.614</b>	
Hg	mg kg <sup>-1</sup>												
Ho	mg kg <sup>-1</sup>				<b>0.877</b>	<b>0.9</b>			<b>0.8</b>			<b>0.904</b>	<b>0.81</b>
I	mg kg <sup>-1</sup>												
In	mg kg <sup>-1</sup>					<b>0.07</b>							
Ir	mg kg <sup>-1</sup>												
La	mg kg <sup>-1</sup>		<b>18</b>		<b>12.273</b>	<b>12.4</b>			<b>8.8</b>		<b>5</b>	<b>12.17</b>	<b>11.41</b>
Li	mg kg <sup>-1</sup>				<b>13.122</b>	<b>12.6</b>							<b>19.36</b>
Lu	mg kg <sup>-1</sup>				<b>0.338</b>	<b>0.35</b>			<b>0.4</b>			<b>0.344</b>	<b>0.31</b>
Mo	mg kg <sup>-1</sup>				<b>0.737</b>	<b>0.7</b>	<b>10</b>					<b>0.586</b>	<b>3.3</b>
Nb	mg kg <sup>-1</sup>		<b>8</b>		<b>8.456</b>	<b>8.5</b>	<b>9.21</b>				<b>7</b>	<b>8.088</b>	<b>7.74</b>
Nd	mg kg <sup>-1</sup>				<b>14.664</b>	<b>14.2</b>			<b>15.6</b>		<b>18</b>	<b>14.45</b>	<b>13.66</b>
Ni	mg kg <sup>-1</sup>		<b>78</b>		<b>75.195</b>	<b>68.3</b>	<b>24</b>		<b>16</b>		<b>67</b>	<b>73.64</b>	<b>73.39</b>
Os	mg kg <sup>-1</sup>												
Pb	mg kg <sup>-1</sup>				<b>4.606</b>	<b>4.3</b>	<b>14</b>					<b>5.224</b>	<b>4.11</b>
Pd	mg kg <sup>-1</sup>												
Pr	mg kg <sup>-1</sup>				<b>3.414</b>	<b>3.6</b>			<b>3.1</b>			<b>3.36</b>	<b>3.18</b>
Pt	mg kg <sup>-1</sup>												
Rb	mg kg <sup>-1</sup>		<b>25</b>	<b>22</b>	<b>24.429</b>	<b>23.09</b>	<b>10</b>				<b>31</b>	<b>23.86</b>	<b>23.2</b>
Re	mg kg <sup>-1</sup>												
Rh	mg kg <sup>-1</sup>												
Ru	mg kg <sup>-1</sup>												
S	mg kg <sup>-1</sup>						<b>409.090</b>				<b>131</b>	<b>132.3</b>	<b>680</b>
Sb	mg kg <sup>-1</sup>					<b>0.14</b>	<b>21.05</b>					<b>0.22</b>	<b>0.14</b>
Sc	mg kg <sup>-1</sup>		<b>33</b>		<b>36.857</b>	<b>35.5</b>	<b>186.840</b>		<b>33.8</b>		<b>33</b>	<b>29.03</b>	<b>41.67</b>
Se	mg kg <sup>-1</sup>												<b>0.1</b>
Sm	mg kg <sup>-1</sup>					<b>3.796</b>	<b>3.7</b>		<b>4.2</b>			<b>3.622</b>	<b>3.38</b>
Sn	mg kg <sup>-1</sup>					<b>0.95</b>	<b>0.9</b>	<b>15.37</b>				<b>0.892</b>	
Sr	mg kg <sup>-1</sup>	<b>191.3</b>	<b>198</b>	<b>180</b>	<b>189.388</b>	<b>178.960</b>	<b>181.050</b>				<b>184</b>	<b>181.5</b>	<b>173.040</b>
Ta	mg kg <sup>-1</sup>					<b>0.537</b>	<b>0.54</b>						<b>0.508</b>
Tb	mg kg <sup>-1</sup>					<b>0.685</b>	<b>0.7</b>		<b>0.7</b>			<b>0.701</b>	<b>0.65</b>
Te	mg kg <sup>-1</sup>											<b>2.531</b>	<b>2.34</b>
Th	mg kg <sup>-1</sup>					<b>2.526</b>	<b>2.55</b>		<b>1.3</b>				
Tl	mg kg <sup>-1</sup>					<b>0.139</b>	<b>0.12</b>						<b>0.13</b>
Tm	mg kg <sup>-1</sup>					<b>0.346</b>	<b>0.4</b>		<b>0.4</b>			<b>0.361</b>	<b>0.33</b>
U	mg kg <sup>-1</sup>					<b>0.601</b>	<b>0.58</b>		<b>0.5</b>			<b>0.58</b>	<b>0.49</b>
V	mg kg <sup>-1</sup>		<b>262</b>		<b>283.923</b>	<b>267</b>	<b>215.770</b>		<b>98</b>		<b>263</b>	<b>275</b>	<b>277.820</b>
W	mg kg <sup>-1</sup>						<b>18.36</b>					<b>0.359</b>	
Y	mg kg <sup>-1</sup>		<b>24</b>		<b>23.967</b>	<b>21.8</b>			<b>26.9</b>		<b>23</b>	<b>22.05</b>	<b>21.35</b>
Yb	mg kg <sup>-1</sup>					<b>2.294</b>	<b>2.19</b>		<b>2.6</b>			<b>2.259</b>	<b>2.1</b>
Zn	mg kg <sup>-1</sup>	<b>81.15</b>				<b>81.665</b>	<b>81</b>	<b>35</b>	<b>85</b>	<b>30</b>		<b>77</b>	<b>87.69</b>
Zr	mg kg <sup>-1</sup>	<b>101.4</b>	<b>114</b>	<b>92</b>	<b>107.533</b>	<b>101</b>	<b>108.080</b>				<b>101</b>	<b>99.88</b>	<b>75.78</b>

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

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code	L20	L21	L22	L24	L25	L27	L28	L29	L30	L31	L32	L33	L34	
SiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>52.516</u>	52.12		52.65	<u>52.459</u>	52.42	51.96	52.4		<u>52.169</u>	52.88	<u>52.93</u>	53.19
TiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>1.134</u>	1.183		<u>1.221</u>	1.166	<u>1.16</u>	1.18	<u>1.15</u>		<u>1.235</u>	1.17	1.15	1.146
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	<u>14.145</u>	14.71		<u>14.28</u>	<u>14.394</u>	14.5	14.21	14.2		<u>14.317</u>	14.31	14.23	14.33
Fe <sub>2</sub> O <sub>3</sub> T	g 100g <sup>-1</sup>	<u>11.216</u>	11.35		<u>11.23</u>	<u>11.319</u>	11.33	11.29	11.15		<u>11.447</u>	11.27	11.13	11.56
Fe(II)O	g 100g <sup>-1</sup>									8.46		8.34		
MnO	g 100g <sup>-1</sup>	<u>0.184</u>	<u>0.175</u>		<u>0.172</u>	0.160	0.164	0.179	0.17		<u>0.184</u>	0.18		0.181
MgO	g 100g <sup>-1</sup>	<u>6.636</u>	6.77		<u>6.546</u>	<u>6.624</u>	6.68	<u>6.65</u>	6.62		<u>6.595</u>	6.6	6.51	6.509
CaO	g 100g <sup>-1</sup>	<u>10.376</u>	10.26		<u>10.41</u>	10.47	10.2	10.29	10.45		<u>10.387</u>	10.46	10.5	10.447
Na <sub>2</sub> O	g 100g <sup>-1</sup>	<u>2.225</u>	2.3		<u>2.194</u>	<u>2.303</u>	2.25	2.15	2.23		<u>2.155</u>	2.24	2.24	2.298
K <sub>2</sub> O	g 100g <sup>-1</sup>	<u>0.727</u>	0.73		<u>0.71</u>	<u>0.693</u>	0.72	0.69	0.71		<u>0.714</u>	0.71	0.7	0.72
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	<u>0.143</u>	0.119		<u>0.136</u>		<u>0.139</u>	0.14	0.14		<u>0.14</u>	<u>0.139</u>	0.15	0.147
H <sub>2</sub> O+	g 100g <sup>-1</sup>									0.36		0.72	0.11	
CO <sub>2</sub>	g 100g <sup>-1</sup>													
LOI	g 100g <sup>-1</sup>	<u>0.343</u>			<u>0.331</u>	0.4		0.19	0.25	0.169	<u>0.27</u>	0.11	0.34	0.261
Ag	mg kg <sup>-1</sup>		<u>0.67</u>	0.43									0.039	
As	mg kg <sup>-1</sup>		2	2.23				2.1					1.43	
Au	mg kg <sup>-1</sup>									0.006				
B	mg kg <sup>-1</sup>													
Ba	mg kg <sup>-1</sup>	<u>169</u>	184	188		<u>180.2</u>	173			180.890	169.8	199		174.4
Be	mg kg <sup>-1</sup>		<u>0.85</u>	0.77			<u>0.82</u>	0.39		0.615	0.69	0.67		
Bi	mg kg <sup>-1</sup>			0.05									0.031	
Br	mg kg <sup>-1</sup>		3											
C(org)	mg kg <sup>-1</sup>										300		320	
C(tot)	mg kg <sup>-1</sup>													
Cd	mg kg <sup>-1</sup>		<u>0.09</u>	0.26				<u>0.98</u>		<u>0.075</u>				
Ce	mg kg <sup>-1</sup>	<u>26</u>	<u>28.7</u>	27			<u>25.6</u>			<u>26.335</u>	<u>25.89</u>	29.4		25.77
Cl	mg kg <sup>-1</sup>							145						
Co	mg kg <sup>-1</sup>	<u>39</u>	<u>48.37</u>	45.6			<u>45</u>	42		41.843	<u>45.45</u>	47.5		43.52
Cr	mg kg <sup>-1</sup>	<u>191</u>	113	167		<u>156.3</u>	140	130		<u>163.840</u>	<u>160.5</u>	135		161.1
Cs	mg kg <sup>-1</sup>		1.29	1.29				1.24		1.160	1.38	1.35		1.19
Cu	mg kg <sup>-1</sup>	<u>126</u>	<u>136.830</u>	124.6		<u>111.6</u>	125	114		111.980	116.5	<u>134.5</u>		119.9
Dy	mg kg <sup>-1</sup>		<u>4.51</u>	4.38				4.04			<u>4.515</u>	<u>4.29</u>	4.34	4.19
Er	mg kg <sup>-1</sup>		<u>2.65</u>	2.55				2.37			<u>2.749</u>	<u>2.51</u>	2.58	2.404
Eu	mg kg <sup>-1</sup>		1.3	1.25				1.17			1.241	1.17	<u>1.325</u>	1.148
F	mg kg <sup>-1</sup>													
Ga	mg kg <sup>-1</sup>	<u>18</u>	17	19.3			<u>18</u>			17.144	17.21	19.45		21.68
Gd	mg kg <sup>-1</sup>		<u>4.51</u>	4.39			<u>4.12</u>			4.394	3.83	4.19		4.02
Ge	mg kg <sup>-1</sup>		2	7.6										
Hf	mg kg <sup>-1</sup>		5	4.8			<u>2.76</u>			3.06	<u>2.68</u>	2.81		2.7
Hg	mg kg <sup>-1</sup>							<u>0.001</u>						
Ho	mg kg <sup>-1</sup>		<u>0.92</u>	0.89			<u>0.82</u>			0.952	0.86	<u>0.893</u>		0.861
I	mg kg <sup>-1</sup>													
In	mg kg <sup>-1</sup>									0.066		0.067		
Ir	mg kg <sup>-1</sup>									0.000				
La	mg kg <sup>-1</sup>	<u>13</u>	13.7	12.4			<u>11.8</u>			11.901	11.61	13.1		11.84
Li	mg kg <sup>-1</sup>		<u>15.1</u>	13.53			<u>14.5</u>			11.63		14.7		
Lu	mg kg <sup>-1</sup>		<u>0.34</u>	0.35			<u>0.33</u>			0.375	0.33	<u>0.351</u>		0.33
Mo	mg kg <sup>-1</sup>		<u>0.74</u>	1			<u>0.66</u>			0.729	0.7	0.72		0.806
Nb	mg kg <sup>-1</sup>		Z	10	8.8			7.5			7.530	6.5	8.74	7.87
Nd	mg kg <sup>-1</sup>	<u>14</u>	<u>15.8</u>	15			<u>14.2</u>			14.996	<u>14.28</u>	15.6		14.23
Ni	mg kg <sup>-1</sup>	<u>79</u>	<u>77.3</u>	73.7			<u>74</u>	60		70.93	68.4	<u>78.4</u>		70.75
Os	mg kg <sup>-1</sup>			0.000										
Pb	mg kg <sup>-1</sup>	5	<u>4.71</u>	4.82			<u>4.7</u>	9.1		4.4	<u>4.58</u>	4.4		4.88
Pd	mg kg <sup>-1</sup>										0.011			
Pr	mg kg <sup>-1</sup>		3.8	3.47			<u>3.29</u>			3.505	3.26	3.54		3.36
Pt	mg kg <sup>-1</sup>										0.011			
Rb	mg kg <sup>-1</sup>	<u>27</u>	<u>29</u>	25.6			<u>25.6</u>			24.011	<u>23.39</u>	<u>25.7</u>		24.64
Re	mg kg <sup>-1</sup>													
Rh	mg kg <sup>-1</sup>										0.001			
Ru	mg kg <sup>-1</sup>										0.000			
S	mg kg <sup>-1</sup>							200			160			
Sb	mg kg <sup>-1</sup>		0.21				<u>0.16</u>	3.8			0.147			
Sc	mg kg <sup>-1</sup>	<u>39.8</u>	42.6				<u>37</u>			34.07	36.9	38.7		36.95
Se	mg kg <sup>-1</sup>			2.29									0.122	
Sm	mg kg <sup>-1</sup>		<u>3.93</u>	3.73			<u>3.58</u>			3.83	3.6	3.89		3.55
Sn	mg kg <sup>-1</sup>		1.2	0.21				0.95			0.95	0.96	1.06	
Sr	mg kg <sup>-1</sup>	<u>188</u>	185	195		<u>172.4</u>	193			178.950	177.4	213		180.8
Ta	mg kg <sup>-1</sup>			1				<u>0.59</u>			0.521	0.47	0.58	0.486
Tb	mg kg <sup>-1</sup>		0.7	0.71				0.7			0.722	0.63	<u>0.682</u>	0.674
Te	mg kg <sup>-1</sup>							<u>12.7</u>						
Th	mg kg <sup>-1</sup>		<u>2.8</u>					<u>2.6</u>			2.523	2.34	2.63	2.54
Tl	mg kg <sup>-1</sup>		<u>0.14</u>	0.133				<u>0.12</u>			0.128	0.09	0.113	
Tm	mg kg <sup>-1</sup>		<u>0.38</u>	0.36				<u>0.34</u>			0.388	0.35	0.358	
U	mg kg <sup>-1</sup>		<u>0.61</u>					<u>0.6</u>			0.633	0.58	0.64	0.58
V	mg kg <sup>-1</sup>	<u>274</u>	<u>298</u>	294		<u>284.1</u>	<u>289</u>	<u>236</u>		281.640	<u>264.8</u>	287		267.9
W	mg kg <sup>-1</sup>			<u>0.51</u>				<u>0.33</u>			0.355	0.3	0.35	0.33
Y	mg kg <sup>-1</sup>	<u>23</u>	22	23				22.5			23.451	24.1	24.3	23.6
Yb	mg kg <sup>-1</sup>		<u>2.34</u>	2.34				2.11			2.486	<u>2.23</u>	2.27	2.23
Zn	mg kg <sup>-1</sup>	<u>84</u>	<u>113</u>	96			<u>76.7</u>	<u>77</u>	66		79.83	<u>86.8</u>	<u>89.6</u>	85.95
Zr	mg kg <sup>-1</sup>	<u>97</u>	110	<u>113.6</u>			<u>92.7</u>	<u>110</u>			106.5	97.69	99.3	96.37

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

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code	L35	L36	L37	L38	L39	L40	L42	L43	L44	L45	L46	L47	L48
SiO <sub>2</sub>	g 100g <sup>-1</sup>	<b>52.14</b>	<u>53.254</u>	<u>52.76</u>	<b>52.37</b>		<u>52.27</u>	<u>52.65</u>	<u>52.467</u>	<b>57.1</b>	<b>52.55</b>	<u>51.86</u>	52.16
TiO <sub>2</sub>	g 100g <sup>-1</sup>	<b>1.18</b>	<u>1.168</u>	<u>1.17</u>	<b>1.18</b>	<b>1.18</b>	<u>1.166</u>	<u>1.159</u>	<u>1.09</u>	<b>1.17</b>	<b>1.15</b>	<b>1.165</b>	1.23
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	<b>14.21</b>	<u>14.521</u>	<u>14.59</u>	<b>14.32</b>	<b>14.5</b>	<u>14.35</u>	<u>14.29</u>	<u>14.362</u>	<u>17.9</u>	<b>14.3</b>	<u>14.39</u>	<b>14.15</b>
Fe <sub>2</sub> O <sub>3</sub> T	g 100g <sup>-1</sup>	<b>11.21</b>	<u>11.065</u>	<u>11.13</u>	<b>11.31</b>	<b>10.96</b>	<u>11.29</u>	<u>11.33</u>	<u>11.311</u>	<b>10.8</b>	<u>11.35</u>	<u>11.3</u>	<b>11</b>
Fe(II)O	g 100g <sup>-1</sup>							<u>8.7</u>					
MnO	g 100g <sup>-1</sup>	<b>0.18</b>	<u>0.16</u>	<u>0.17</u>	<b>0.18</b>	<b>0.173</b>		<u>0.187</u>	<u>0.181</u>	<u>0.154</u>	<b>0.18</b>	<u>0.17</u>	<u>0.177</u>
MgO	g 100g <sup>-1</sup>	<b>6.55</b>	<u>6.312</u>	<u>6.62</u>	<b>6.58</b>	<b>6.5</b>	<u>6.55</u>	<u>6.594</u>	<u>6.615</u>		<b>6.58</b>	<b>6.51</b>	<b>6.48</b>
CaO	g 100g <sup>-1</sup>	<b>10.34</b>	<u>9.978</u>	<u>10.22</u>	<b>9.94</b>	<b>10.22</b>	<u>10.55</u>	<u>10.49</u>	<u>10.328</u>	<u>10.5</u>	<b>10.48</b>	<u>10.45</u>	10
Na <sub>2</sub> O	g 100g <sup>-1</sup>	<b>2.2</b>	<u>2.346</u>	<u>2.16</u>	<b>2.31</b>	<b>2.38</b>	<u>2.29</u>	<u>2.281</u>	<u>2.203</u>		<b>2.22</b>	<u>2.29</u>	<u>2.212</u>
K <sub>2</sub> O	g 100g <sup>-1</sup>	<b>0.71</b>	<u>0.705</u>	<u>0.71</u>	<b>0.7</b>	<b>0.7</b>	<u>0.72</u>	<u>0.714</u>	<u>0.732</u>	<u>0.893</u>	<b>0.71</b>	<u>0.75</u>	<u>0.709</u>
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	<b>0.14</b>	<u>0.137</u>	<u>0.14</u>	<b>0.12</b>	<b>0.14</b>		<u>0.144</u>	<u>0.141</u>		<b>0.14</b>	<u>0.17</u>	<u>0.136</u>
H <sub>2</sub> O+	g 100g <sup>-1</sup>							<u>1</u>					
CO <sub>2</sub>	g 100g <sup>-1</sup>							<u>0.08</u>					
LOI	g 100g <sup>-1</sup>	<b>0.95</b>	<u>0.306</u>	<u>0.22</u>	<b>0.02</b>	<b>0.43</b>	<u>0.2</u>	<u>0.509</u>	<u>0.26</u>		<b>0.3</b>		<u>0.473</u>
Ag	mg kg <sup>-1</sup>							<u>0.024</u>					
As	mg kg <sup>-1</sup>					<b>1.6</b>	<b>1.1</b>						
Au	mg kg <sup>-1</sup>												
B	mg kg <sup>-1</sup>												
Ba	mg kg <sup>-1</sup>	<b>192</b>	<u>343</u>		<b>207.9</b>	<b>391</b>		<u>172.7</u>	<u>232.870</u>	<b>200</b>	<b>187</b>	<u>186</u>	<b>177.1</b>
Be	mg kg <sup>-1</sup>							<u>0.63</u>				<u>0.77</u>	<u>0.709</u>
Bi	mg kg <sup>-1</sup>							<u>0.038</u>				<u>0.03</u>	<u>0.037</u>
Br	mg kg <sup>-1</sup>												
C(org)	mg kg <sup>-1</sup>												
C(tot)	mg kg <sup>-1</sup>							<u>501</u>					
Cd	mg kg <sup>-1</sup>							<u>0.042</u>				<u>0.08</u>	<u>0.075</u>
Ce	mg kg <sup>-1</sup>	<b>26.85</b>			<b>37.3</b>	<b>26.9</b>		<u>31.7</u>		<u>28.9</u>	<b>27.6</b>	<u>25</u>	<b>25.39</b>
Cl	mg kg <sup>-1</sup>												
Co	mg kg <sup>-1</sup>		<b>42</b>			<b>44.9</b>	<b>43.54</b>		<u>49.05</u>			<b>45.5</b>	<u>45</u>
Cr	mg kg <sup>-1</sup>	<b>165</b>	<u>140</u>			<b>148.1</b>	<b>158.7</b>		<u>109.4</u>			<b>177</b>	<u>183</u>
Cs	mg kg <sup>-1</sup>	<b>1.3</b>										<b>1.3</b>	<u>1.225</u>
Cu	mg kg <sup>-1</sup>	<b>127</b>	<u>52</u>		<b>112</b>	<b>121.2</b>		<u>116.9</u>		<u>128</u>	<b>127</b>	<u>118</u>	<b>126.8</b>
Dy	mg kg <sup>-1</sup>	<b>4.42</b>				<b>4.25</b>		<u>3.86</u>			<b>4.35</b>	<u>4</u>	<b>4.296</b>
Er	mg kg <sup>-1</sup>	<b>2.51</b>				<b>2.38</b>		<u>2.69</u>			<b>2.5</b>	<u>3</u>	<b>2.495</b>
Eu	mg kg <sup>-1</sup>	<b>1.17</b>				<b>1.71</b>		<u>1.425</u>			<b>1.18</b>	<u>1.4</u>	<b>1.188</b>
F	mg kg <sup>-1</sup>		<u>294</u>										
Ga	mg kg <sup>-1</sup>	<b>16</b>	<u>19</u>		<b>17.3</b>	<b>17.1</b>				<u>17.1</u>	<b>17.8</b>	<u>17</u>	
Gd	mg kg <sup>-1</sup>	<b>4.24</b>				<b>3.97</b>		<u>3.63</u>			<b>4.15</b>	<u>5</u>	<b>4.102</b>
Ge	mg kg <sup>-1</sup>												
Hf	mg kg <sup>-1</sup>	<b>2.9</b>	<u>3</u>		<b>0.9</b>	<b>2.35</b>					<b>2.53</b>		<b>2.665</b>
Hg	mg kg <sup>-1</sup>												
Ho	mg kg <sup>-1</sup>	<b>0.9</b>				<b>0.91</b>		<u>0.85</u>			<b>0.89</b>	<u>1</u>	<b>0.887</b>
I	mg kg <sup>-1</sup>												
In	mg kg <sup>-1</sup>							<u>0.047</u>					<b>0.068</b>
Ir	mg kg <sup>-1</sup>												
La	mg kg <sup>-1</sup>				<b>48.1</b>	<b>12.13</b>		<u>16.2</u>		<u>12.9</u>	<b>12.6</b>	<u>10</u>	<b>11.73</b>
Li	mg kg <sup>-1</sup>		<u>13</u>								<b>13.3</b>	<u>14</u>	<b>13.47</b>
Lu	mg kg <sup>-1</sup>	<b>0.34</b>				<b>0.34</b>					<b>0.34</b>	<u>0.5</u>	<b>0.341</b>
Mo	mg kg <sup>-1</sup>	<b>0.79</b>				<b>0.11</b>					<b>0.78</b>		<b>0.685</b>
Nb	mg kg <sup>-1</sup>	<b>10</b>			<b>6.8</b>	<b>7.8</b>				<u>7</u>	<b>7.99</b>		<b>8.058</b>
Nd	mg kg <sup>-1</sup>	<b>14.44</b>			<b>13.9</b>	<b>14.85</b>		<u>18.25</u>		<u>17.3</u>	<b>14.7</b>	<u>13</u>	<b>14.63</b>
Ni	mg kg <sup>-1</sup>	<b>78</b>	<u>75</u>		<b>61.9</b>	<b>69.9</b>		<u>79.6</u>			<b>78.9</b>	<u>78</u>	<b>73.84</b>
Os	mg kg <sup>-1</sup>												
Pb	mg kg <sup>-1</sup>	<b>6</b>			<b>15.3</b>	<b>4.93</b>		<u>8.055</u>		<u>9</u>	<b>4.89</b>		<b>4.678</b>
Pd	mg kg <sup>-1</sup>												
Pr	mg kg <sup>-1</sup>	<b>3.39</b>				<b>3.29</b>		<u>4.235</u>			<b>3.5</b>	<u>3</u>	<b>3.419</b>
Pt	mg kg <sup>-1</sup>												
Rb	mg kg <sup>-1</sup>	<b>26</b>			<b>25.2</b>	<b>17.7</b>				<u>25.9</u>	<b>25.3</b>	<u>24</u>	<b>24.23</b>
Re	mg kg <sup>-1</sup>												
Rh	mg kg <sup>-1</sup>												
Ru	mg kg <sup>-1</sup>												
S	mg kg <sup>-1</sup>					<b>139</b>		<u>96.2</u>					<b>0.02</b>
Sb	mg kg <sup>-1</sup>					<b>0.35</b>					<b>0.17</b>		<b>0.183</b>
Sc	mg kg <sup>-1</sup>	<b>37</b>			<b>28.4</b>	<b>33.9</b>					<b>37.9</b>	<u>30</u>	<b>37.27</b>
Se	mg kg <sup>-1</sup>												
Sm	mg kg <sup>-1</sup>	<b>3.67</b>				<b>3.81</b>		<u>3.835</u>			<b>3.7</b>	<u>3</u>	<b>3.656</b>
Sn	mg kg <sup>-1</sup>											<b>1.23</b>	<b>1.052</b>
Sr	mg kg <sup>-1</sup>	<b>182</b>	<u>186</u>		<b>183.2</b>	<b>190.3</b>		<u>179.7</u>	<u>202.940</u>	<b>203</b>	<b>189</b>	<u>190</u>	<b>183</b>
Ta	mg kg <sup>-1</sup>	<b>0.57</b>											<b>0.520</b>
Tb	mg kg <sup>-1</sup>	<b>0.71</b>				<b>0.79</b>		<u>0.815</u>			<b>0.71</b>	<u>1</u>	<b>0.691</b>
Te	mg kg <sup>-1</sup>												
Th	mg kg <sup>-1</sup>	<b>2.64</b>				<b>2.7</b>	<b>2.73</b>			<u>1.9</u>	<b>2.45</b>		<b>2.59</b>
Tl	mg kg <sup>-1</sup>						<b>0.185</b>				<b>0.12</b>		<b>0.121</b>
Tm	mg kg <sup>-1</sup>	<b>0.36</b>				<b>0.36</b>		<u>0.475</u>			<b>0.36</b>	<u>0.5</u>	<b>0.365</b>
U	mg kg <sup>-1</sup>	<b>0.58</b>				<b>1.5</b>	<b>0.47</b>				<b>0.58</b>		<b>0.596</b>
V	mg kg <sup>-1</sup>	<b>277</b>				<b>260.1</b>	<b>264</b>		<u>272.9</u>	<u>296.880</u>		<b>288</b>	<u>264</u>
W	mg kg <sup>-1</sup>					<b>27.6</b>	<b>0.24</b>						<b>0.297</b>
Y	mg kg <sup>-1</sup>	<b>24</b>	<u>22</u>		<b>22.3</b>	<b>23.1</b>		<u>20.8</u>		<u>22.9</u>	<b>24.7</b>	<u>22</u>	<b>24</b>
Yb	mg kg <sup>-1</sup>	<b>2.26</b>				<b>2.26</b>		<u>2.69</u>			<b>2.32</b>	<u>2.6</u>	<b>2.304</b>
Zn	mg kg <sup>-1</sup>	<b>81</b>	<u>83</u>		<b>78</b>	<b>85.1</b>		<u>83.55</u>	<u>88.37</u>	<u>77.8</u>	<b>83.3</b>	<u>85</u>	<b>84.66</b>
Zr	mg kg <sup>-1</sup>	<b>104</b>	<u>156</u>		<b>101.7</b>	<b>91.5</b>			<u>96.24</u>	<u>98.4</u>	<b>98.2</b>	<u>102</u>	<b>95.88</b>

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

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code	L49	L50	L52	L53	L54	L56	L57	L58	L59	L60	L63	L64	L65
SiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>52.62</u>	<u>53.197</u>	<u>52.43</u>	<u>52.4</u>	<u>52.62</u>	<u>52.25</u>	<u>52.9</u>	<u>52.67</u>		<u>53.4</u>	<u>51.78</u>	<u>53.25</u>
TiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>1.178</u>	<u>1.176</u>	<u>1.18</u>	<u>1.17</u>	<u>1.2</u>	<u>1.16</u>	<u>1.247</u>	<u>1.18</u>	<u>1.186</u>	<u>1.1</u>	<u>1.171</u>	<u>0.088</u>
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	<u>14.37</u>	<u>14.438</u>	<u>14.35</u>	<u>14.25</u>	<u>14.22</u>	<u>14.27</u>	<u>14.27</u>	<u>14.1</u>	<u>15.625</u>	<u>13.9</u>	<u>18.83</u>	<u>5.706</u>
Fe <sub>2</sub> O <sub>3</sub> T	g 100g <sup>-1</sup>	<u>11.24</u>	<u>11.375</u>	<u>11.55</u>	<u>11.4</u>	<u>11.23</u>	<u>11.42</u>	<u>11.17</u>	<u>11.24</u>	<u>5.273</u>	<u>11.1</u>	<u>11.95</u>	<u>2.613</u>
Fe(II)O	g 100g <sup>-1</sup>						8.611	8.31					
MnO	g 100g <sup>-1</sup>	<u>0.179</u>	<u>0.089</u>	<u>0.18</u>	<u>0.19</u>	<u>0.18</u>	<u>0.18</u>	<u>0.195</u>	<u>0.17</u>	<u>0.216</u>	<u>0.18</u>	<u>0.184</u>	<u>0.017</u>
MgO	g 100g <sup>-1</sup>	<u>6.644</u>	<u>6.917</u>	<u>6.48</u>	<u>6.55</u>	<u>6.62</u>	<u>6.56</u>	<u>7.49</u>	<u>6.57</u>	<u>4.811</u>	<u>6.3</u>	<u>6.634</u>	<u>0.812</u>
CaO	g 100g <sup>-1</sup>	<u>10.5</u>	<u>10.57</u>	<u>10.24</u>	<u>10.33</u>	<u>10.37</u>	<u>10.55</u>	<u>9.49</u>	<u>10.44</u>	<u>10.819</u>	<u>10.5</u>	<u>10.24</u>	<u>2.696</u>
Na <sub>2</sub> O	g 100g <sup>-1</sup>	<u>2.226</u>	<u>1.158</u>	<u>2.21</u>	<u>2.24</u>	<u>2.22</u>	<u>2.26</u>	<u>2.304</u>	<u>2.26</u>		<u>2.2</u>	<u>2.482</u>	<u>0.564</u>
K <sub>2</sub> O	g 100g <sup>-1</sup>	<u>0.737</u>	<u>0.845</u>	<u>0.73</u>	<u>0.69</u>	<u>0.73</u>	<u>0.72</u>	<u>0.706</u>	<u>0.74</u>		<u>0.71</u>	<u>0.790</u>	<u>0.158</u>
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	<u>0.148</u>	<u>0.135</u>	<u>0.14</u>	<u>0.14</u>	<u>0.14</u>	<u>0.125</u>	<u>0.14</u>			<u>0.16</u>	<u>0.145</u>	<u>0.137</u>
H <sub>2</sub> O+	g 100g <sup>-1</sup>				0.308		0.739						
CO <sub>2</sub>	g 100g <sup>-1</sup>				0.03		0.125						
LOI	g 100g <sup>-1</sup>	<u>0.29</u>	<u>0.1</u>	<u>0.34</u>	<u>0.28</u>	<u>0.29</u>	<u>0.07</u>		<u>0.45</u>	<u>0.324</u>	<u>0.3</u>		
Ag	mg kg <sup>-1</sup>					<u>0.070</u>	<u>0.037</u>						<u>0.05</u>
As	mg kg <sup>-1</sup>	<u>1.26</u>				1.12	1.41					1.21	<u>0.97</u>
Au	mg kg <sup>-1</sup>					0.005							
B	mg kg <sup>-1</sup>						11.815					11.37	<u>6.62</u>
Ba	mg kg <sup>-1</sup>	<u>188</u>	<u>189.2</u>	<u>205</u>	<u>182</u>	<u>176</u>	<u>170</u>	<u>179</u>	<u>167</u>		<u>183</u>	<u>181.2</u>	<u>31.24</u>
Be	mg kg <sup>-1</sup>	<u>0.36</u>	<u>1</u>		<u>0.62</u>	<u>0.747</u>	<u>0.68</u>					<u>0.738</u>	<u>0.13</u>
Bi	mg kg <sup>-1</sup>	<u>0.02</u>			0.03								<u>0.03</u>
Br	mg kg <sup>-1</sup>												
C(org)	mg kg <sup>-1</sup>					172							
C(tot)	mg kg <sup>-1</sup>					210							
Cd	mg kg <sup>-1</sup>					0.092	0.09						<u>0.03</u>
Ce	mg kg <sup>-1</sup>	<u>27.3</u>	<u>25.23</u>		<u>24.9</u>	<u>26.7</u>	<u>24.6</u>	<u>25.7</u>			<u>27</u>	<u>25.88</u>	<u>14.49</u>
Cl	mg kg <sup>-1</sup>				49		276.918						
Co	mg kg <sup>-1</sup>	<u>46.1</u>	<u>47.57</u>	<u>44</u>	<u>46.2</u>	<u>47.1</u>	<u>43.8</u>		<u>43</u>			<u>48.31</u>	<u>10.86</u>
Cr	mg kg <sup>-1</sup>	<u>180</u>	<u>145.8</u>	<u>142</u>	<u>138</u>	<u>162</u>	<u>173</u>		<u>150</u>			<u>179</u>	<u>11.98</u>
Cs	mg kg <sup>-1</sup>	<u>1.19</u>	<u>1.08</u>		<u>1.26</u>	<u>1.25</u>	<u>1.1</u>					<u>1.227</u>	<u>0.89</u>
Cu	mg kg <sup>-1</sup>	<u>136</u>	<u>124.740</u>		<u>122</u>	<u>124</u>	<u>108</u>		<u>116</u>	<u>24.83</u>		<u>124.8</u>	<u>119.190</u>
Dy	mg kg <sup>-1</sup>	<u>4.4</u>	<u>4.29</u>		<u>4.25</u>	<u>4.18</u>	<u>4.23</u>	<u>4.11</u>			<u>4.1</u>	<u>3.587</u>	<u>1.17</u>
Er	mg kg <sup>-1</sup>	<u>2.59</u>	<u>2.41</u>		<u>2.62</u>	<u>2.43</u>	<u>2.29</u>	<u>2.39</u>			<u>2.3</u>	<u>2.057</u>	<u>0.57</u>
Eu	mg kg <sup>-1</sup>	<u>1.25</u>	<u>1.17</u>		<u>1.27</u>	<u>1.16</u>	<u>1.18</u>	<u>1.15</u>			<u>1.2</u>	<u>1.15</u>	<u>0.38</u>
F	mg kg <sup>-1</sup>				75		248						
Ga	mg kg <sup>-1</sup>	<u>17.8</u>	<u>18.7</u>	<u>14</u>	<u>18.3</u>	<u>17.8</u>	<u>17.5</u>		<u>23</u>			<u>18.41</u>	<u>9</u>
Gd	mg kg <sup>-1</sup>	<u>4.08</u>	<u>4.03</u>		<u>4.25</u>	<u>4.01</u>	<u>3.83</u>	<u>3.75</u>			<u>3.6</u>	<u>3.531</u>	<u>1.79</u>
Ge	mg kg <sup>-1</sup>	<u>1.45</u>	<u>1.53</u>			<u>1.57</u>	<u>1.54</u>						<u>0.05</u>
Hf	mg kg <sup>-1</sup>	<u>2.86</u>	<u>2.7</u>		<u>2.48</u>	<u>2.76</u>	<u>2.72</u>				<u>2.5</u>	<u>2.151</u>	
Hg	mg kg <sup>-1</sup>						0.002						
Ho	mg kg <sup>-1</sup>	<u>0.91</u>	<u>0.85</u>		<u>0.918</u>	<u>0.862</u>	<u>0.886</u>	<u>0.85</u>			<u>0.8</u>	<u>0.739</u>	<u>0.22</u>
I	mg kg <sup>-1</sup>												
In	mg kg <sup>-1</sup>					<u>0.069</u>	<u>0.07</u>						
Ir	mg kg <sup>-1</sup>												
La	mg kg <sup>-1</sup>	<u>12.4</u>	<u>11.9</u>		<u>12.4</u>	<u>12</u>	<u>11.3</u>	<u>12.2</u>			<u>12.6</u>	<u>11.61</u>	<u>7.14</u>
Li	mg kg <sup>-1</sup>	<u>12.7</u>			<u>13.6</u>	<u>14.4</u>	<u>11.834</u>					<u>14.36</u>	<u>8.65</u>
Lu	mg kg <sup>-1</sup>	<u>0.34</u>	<u>0.32</u>		<u>0.372</u>	<u>0.334</u>	<u>0.328</u>	<u>0.33</u>			<u>0.33</u>	<u>0.289</u>	<u>0.05</u>
Mo	mg kg <sup>-1</sup>	<u>2.37</u>	<u>1.47</u>		<u>0.72</u>		<u>0.66</u>					<u>0.683</u>	<u>0.36</u>
Nb	mg kg <sup>-1</sup>	<u>8.97</u>	<u>8.5</u>		<u>8.46</u>	<u>8.39</u>	<u>6.68</u>				<u>7.8</u>	<u>8.708</u>	<u>0.01</u>
Nd	mg kg <sup>-1</sup>	<u>14.7</u>	<u>14.69</u>		<u>15.1</u>	<u>14.8</u>	<u>13.8</u>	<u>13.9</u>			<u>14.4</u>	<u>13.77</u>	<u>7.55</u>
Ni	mg kg <sup>-1</sup>	<u>74.2</u>	<u>60</u>	<u>64</u>	<u>78</u>	<u>75.3</u>	<u>71.4</u>		<u>63</u>			<u>77.21</u>	<u>17</u>
Os	mg kg <sup>-1</sup>												
Pb	mg kg <sup>-1</sup>	<u>4.64</u>	<u>4.05</u>	<u>8</u>	<u>3.57</u>	<u>4.8</u>	<u>4.45</u>					<u>5.101</u>	<u>1.87</u>
Pd	mg kg <sup>-1</sup>					<u>0.011</u>							
Pr	mg kg <sup>-1</sup>	<u>3.59</u>	<u>3.39</u>		<u>3.67</u>	<u>3.41</u>	<u>3.19</u>	<u>3.32</u>			<u>3.3</u>	<u>3.238</u>	<u>1.79</u>
Pt	mg kg <sup>-1</sup>					<u>0.008</u>							
Rb	mg kg <sup>-1</sup>	<u>23.8</u>	<u>23.81</u>	<u>24</u>	<u>25.6</u>	<u>24</u>	<u>23.5</u>				<u>25</u>	<u>26.27</u>	<u>9.03</u>
Re	mg kg <sup>-1</sup>					<u>0.002</u>							
Rh	mg kg <sup>-1</sup>												
Ru	mg kg <sup>-1</sup>												
S	mg kg <sup>-1</sup>					<u>111</u>	<u>260</u>						
Sb	mg kg <sup>-1</sup>					<u>0.183</u>	<u>0.18</u>						<u>0.001</u>
Sc	mg kg <sup>-1</sup>	<u>34.29</u>	<u>25.52</u>		<u>36.59</u>	<u>38.1</u>	<u>38.23</u>		<u>35</u>		<u>36</u>	<u>33.88</u>	<u>1.32</u>
Se	mg kg <sup>-1</sup>					<u>0.314</u>	<u>0.128</u>						<u>0.13</u>
Sm	mg kg <sup>-1</sup>	<u>3.76</u>	<u>3.68</u>		<u>4</u>	<u>3.67</u>	<u>3.51</u>	<u>3.5</u>			<u>3.6</u>	<u>3.37</u>	<u>1.53</u>
Sn	mg kg <sup>-1</sup>	<u>1.09</u>			<u>1.15</u>		<u>1.01</u>				<u>1</u>		<u>0.09</u>
Sr	mg kg <sup>-1</sup>	<u>194</u>	<u>186.6</u>	<u>182</u>	<u>196.7</u>	<u>189</u>	<u>187</u>	<u>186</u>	<u>156</u>		<u>182</u>	<u>184.6</u>	<u>65.63</u>
Ta	mg kg <sup>-1</sup>	<u>0.57</u>			<u>0.47</u>	<u>0.533</u>	<u>0.56</u>				<u>0.5</u>	<u>0.507</u>	
Tb	mg kg <sup>-1</sup>	<u>0.72</u>	<u>0.68</u>		<u>2.87</u>	<u>0.665</u>	<u>0.628</u>	<u>0.66</u>			<u>0.6</u>	<u>0.587</u>	<u>0.23</u>
Te	mg kg <sup>-1</sup>												
Th	mg kg <sup>-1</sup>	<u>2.58</u>	<u>2.6</u>		<u>2.95</u>	<u>2.48</u>	<u>2.34</u>				<u>2.4</u>	<u>1.854</u>	<u>1.53</u>
Tl	mg kg <sup>-1</sup>	<u>0.123</u>				<u>0.12</u>							<u>0.05</u>
Tm	mg kg <sup>-1</sup>	<u>0.41</u>	<u>0.34</u>		<u>0.352</u>	<u>0.354</u>	<u>0.342</u>	<u>0.34</u>			<u>0.3</u>	<u>0.304</u>	<u>0.07</u>
U	mg kg <sup>-1</sup>	<u>0.62</u>	<u>0.6</u>		<u>0.56</u>	<u>0.577</u>	<u>0.56</u>				<u>0.6</u>	<u>0.545</u>	<u>0.28</u>
V	mg kg <sup>-1</sup>	<u>295</u>	<u>238.3</u>	<u>249</u>	<u>276</u>	<u>282</u>	<u>272</u>		<u>260</u>		<u>284</u>	<u>292.6</u>	<u>70.54</u>
W	mg kg <sup>-1</sup>	<u>0.32</u>				<u>0.522</u>						<u>0.337</u>	<u>0.03</u>
Y	mg kg <sup>-1</sup>	<u>25.5</u>	<u>21.8</u>	<u>22</u>	<u>22.6</u>	<u>23.9</u>	<u>22.7</u>	<u>21.36</u>	<u>20</u>		<u>19</u>	<u>20.16</u>	<u>5.5</u>
Yb	mg kg <sup>-1</sup>	<u>2.24</u>	<u>2.3</u>		<u>2.34</u>	<u>2.25</u>	<u>2.15</u>	<u>2.2</u>			<u>2.2</u>	<u>1.935</u>	<u>0.37</u>
Zn	mg kg <sup>-1</sup>	<u>81.9</u>	<u>77</u>	<u>72</u>	<u>88.95</u>	<u>83.3</u>	<u>90.6</u>		<u>72</u>			<u>103.8</u>	<u>26.24</u>
Zr	mg kg <sup>-1</sup>	<u>102</u>	<u>100.7</u>	<u>99</u>	<u>74.55</u>	<u>106</u>	<u>100</u>				<u>103</u>	<u>81.78</u>	<u>2.94</u>
													<u>59</u>

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

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code	L67	L68	L70	L73	L74	L75	L78	L79	L80	L81	L82	L83	L84
SiO <sub>2</sub>	g 100g <sup>-1</sup>	52.9	52.81	51.65		52.61	51.78	52.54	51.83	52.83	52.62	52.733	53.15
TiO <sub>2</sub>	g 100g <sup>-1</sup>	1.2	1.13	1.18		1.2	1.154	1.2	1.189	1.21	1.176	1.194	1.13
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	14.47	14.1	14.21		14.22	16.13	14.32	14.54	14.31	14.19	14.306	14.57
Fe <sub>2</sub> O <sub>3</sub> T	g 100g <sup>-1</sup>	11.5	11.39	11.26		11.29	11.03	11.25	11.55	11.49	11.43	11.463	11.24
Fe(II)O	g 100g <sup>-1</sup>			8.44		8.41	7.3						
MnO	g 100g <sup>-1</sup>	0.181	0.18	0.18		0.18	0.15	0.17	0.179	0.18	0.161	0.178	0.18
MgO	g 100g <sup>-1</sup>	6.59	6.64	6.53		6.58	4.99	6.48	6.894	6.59	6.586	6.607	6.65
CaO	g 100g <sup>-1</sup>	10.73	10.57	10.38		10.44	10.19	10.24	10.6	10.66	10.61	10.57	10.87
Na <sub>2</sub> O	g 100g <sup>-1</sup>	2.31	2.19	2.3		2.24	2.32	2.26		2.33	2.084	2.097	2.24
K <sub>2</sub> O	g 100g <sup>-1</sup>	0.73	0.72	0.7		0.71	0.74	0.73	0.764	0.73	0.713	0.712	0.75
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	0.16	0.14	0.14		0.14	0.15	0.14	0.174	0.14	0.131	0.123	0.14
H <sub>2</sub> O+	g 100g <sup>-1</sup>			0.9									
CO <sub>2</sub>	g 100g <sup>-1</sup>			0.11									
LOI	g 100g <sup>-1</sup>	0.23	0.07				1.2	0.31		0.29	0.3	0.28	0.17
Ag	mg kg <sup>-1</sup>					0.06	0.06		0.054				
As	mg kg <sup>-1</sup>						0.68		1.662				
Au	mg kg <sup>-1</sup>												
B	mg kg <sup>-1</sup>					11.4	1.5		43.58				
Ba	mg kg <sup>-1</sup>	205	199	237	199	194	65		182.1	156	219	195.3	181.7
Be	mg kg <sup>-1</sup>					1.12	0.5	0.15		1.506			0.573
Bi	mg kg <sup>-1</sup>						0.01		0.047				
Br	mg kg <sup>-1</sup>												
C(org)	mg kg <sup>-1</sup>												
C(tot)	mg kg <sup>-1</sup>												
Cd	mg kg <sup>-1</sup>						0.065		0.096				0.124
Ce	mg kg <sup>-1</sup>		33	27	26.34		8.5		26.49	33		26.7	26.37
Cl	mg kg <sup>-1</sup>		295	166									26.93
Co	mg kg <sup>-1</sup>	31.1	53	42	43.17	39	14.5		45.47	35	44	45.94	44.52
Cr	mg kg <sup>-1</sup>	210	178	154		149	45		172.5	157	185	165.2	168.6
Cs	mg kg <sup>-1</sup>			1			0.42		0.946			1.378	1.16
Cu	mg kg <sup>-1</sup>	123	109	117	106	113	39		123.5	130	126	103.9	115.9
Dy	mg kg <sup>-1</sup>				4.07	4.46	1.35		4.266			4.034	4.28
Er	mg kg <sup>-1</sup>				2.35	2.69	0.8		2.629			2.326	2.38
Eu	mg kg <sup>-1</sup>					1.21	0.38		1.238			1.161	1.16
F	mg kg <sup>-1</sup>												1.19
Ga	mg kg <sup>-1</sup>	16	17	17	16.63	15.6	5.5		16.2	18		16.7	17.42
Gd	mg kg <sup>-1</sup>	5			4.71	4.36	1.35		4.219			3.878	4.14
Ge	mg kg <sup>-1</sup>	3					0.47						4.18
Hf	mg kg <sup>-1</sup>	3	2				0.9		2.313			2.844	2.71
Hg	mg kg <sup>-1</sup>												2.92
Ho	mg kg <sup>-1</sup>				0.92	0.28		0.873			0.822	0.883	0.89
I	mg kg <sup>-1</sup>												
In	mg kg <sup>-1</sup>				0.06								
Ir	mg kg <sup>-1</sup>												
La	mg kg <sup>-1</sup>	13.5	15	10	12.91		4		12.51	12		11.99	12.16
Li	mg kg <sup>-1</sup>				12.93		3.5		13.73			13.73	13.54
Lu	mg kg <sup>-1</sup>				0.32		0.105		0.329			0.317	0.34
Mo	mg kg <sup>-1</sup>						0.24		0.787				0.685
Nb	mg kg <sup>-1</sup>	8	5	7			2.45		7.674	9	10	8.16	8.32
Nd	mg kg <sup>-1</sup>		19	15	14.82	15.5	4.75		14.7			14.33	14.57
Ni	mg kg <sup>-1</sup>	99	78	61	76.63	65.1	23.5		73.48	56	69	76.84	75.88
Os	mg kg <sup>-1</sup>												
Pb	mg kg <sup>-1</sup>		2	6			1.8		4.769		7		4.64
Pd	mg kg <sup>-1</sup>						0.9						5.35
Pr	mg kg <sup>-1</sup>			3.07	3.56	1.1		3.401			3.291	3.45	3.51
Pt	mg kg <sup>-1</sup>					0.023							
Rb	mg kg <sup>-1</sup>	22.6	29	23	25.11	24	7.5		21.99	30	24	29.38	24.71
Re	mg kg <sup>-1</sup>						0.000						
Rh	mg kg <sup>-1</sup>						0.002						
Ru	mg kg <sup>-1</sup>						0.003						
S	mg kg <sup>-1</sup>		76	35			0.028	161					
Sb	mg kg <sup>-1</sup>						0.05		0.103				
Sc	mg kg <sup>-1</sup>		32	31	35.3	36.7	8.5			35		36.93	36.86
Se	mg kg <sup>-1</sup>						0.2		2.272				
Sm	mg kg <sup>-1</sup>				3.47	3.85	1.2		3.55			3.501	3.67
Sn	mg kg <sup>-1</sup>			2			0.37		0.836				
Sr	mg kg <sup>-1</sup>	203	187	176	190		75		178.1	190	180	197.5	186.1
Ta	mg kg <sup>-1</sup>			1			0.072		0.486			0.523	0.52
Tb	mg kg <sup>-1</sup>				0.72	0.21		0.709			0.613	0.69	0.72
Te	mg kg <sup>-1</sup>												
Th	mg kg <sup>-1</sup>			1			0.95		2.582		4	2.481	2.49
Tl	mg kg <sup>-1</sup>						0.04		0.084				
Tm	mg kg <sup>-1</sup>			0.33	0.37	0.11		0.391			0.315	0.36	0.37
U	mg kg <sup>-1</sup>						0.265		0.619			0.533	0.565
V	mg kg <sup>-1</sup>	271	283	245	259		95		285.5	211	231	277.3	273.7
W	mg kg <sup>-1</sup>			3			0.115		0.384				
Y	mg kg <sup>-1</sup>	23.3	25	21	20.84	23	6.5		23.14	25	18	21.66	23.97
Yb	mg kg <sup>-1</sup>				2.36	2.32	0.75		2.478			2.153	2.25
Zn	mg kg <sup>-1</sup>	84	82	73	78	76	26.5		86.95	82	76	79.02	84
Zr	mg kg <sup>-1</sup>	101	91	94		99	26.4		71.33	100	68	100.2	98.8

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

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code	L85	L86	L87	L88	L91	L94	L95	L97	L98	L100	L102	L103	L105	
SiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>52.66</u>	51.8		52.04	52.468	52.54	51.063	52.24	53.08	<u>52.62</u>	<u>52.59</u>	52.003	
TiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>1.19</u>	1.16	1.2	1.17	1.183	1.155	1.173	<u>1.18</u>	1.162	<u>1.19</u>	<u>1.15</u>	1.115	
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	<u>14.09</u>	16.16	14.58	14.09	14.336	14.36	13.817	14.14	14.486	<u>14.27</u>	<u>14.35</u>	14.53	
Fe <sub>2</sub> O <sub>3</sub> T	g 100g <sup>-1</sup>	<u>11.32</u>	10.66	11.33	11.4	11.281	11.3	11.028	<u>11.63</u>	10.553	<u>11.46</u>	<u>11.28</u>	12.492	
Fe(II)O	g 100g <sup>-1</sup>												7.89	
MnO	g 100g <sup>-1</sup>	<u>0.19</u>	0.2	0.18	0.189	0.176	0.178	0.173	0.16	0.157	<u>0.183</u>	<u>0.16</u>	0.157	
MgO	g 100g <sup>-1</sup>	<u>6.62</u>	6.32	6.67	6.47	6.559	6.62	6.402	<u>6.61</u>	6.653	<u>6.55</u>	<u>6.48</u>	7.72	
CaO	g 100g <sup>-1</sup>	<u>10.49</u>	10.35	10.63	10.19	10.463	10.36	10.175	<u>10.89</u>	9.813	<u>10.52</u>	<u>10.41</u>	10.37	
Na <sub>2</sub> O	g 100g <sup>-1</sup>	<u>2.22</u>	2.56	2.25	2.08	2.242	2.21	2.152	<u>2.3</u>	2.093	<u>2.28</u>	<u>2.24</u>	2.373	
K <sub>2</sub> O	g 100g <sup>-1</sup>	<u>0.72</u>	0.81	0.75	0.706	0.721	0.73	0.709	<u>0.72</u>	0.721	<u>0.71</u>	<u>0.74</u>	0.67	
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	<u>0.139</u>	0.17	0.15	0.134	0.143	0.139	0.136	<u>0.144</u>	<u>0.14</u>	<u>0.145</u>	<u>0.19</u>	0.132	
H <sub>2</sub> O+	g 100g <sup>-1</sup>												0.9	
CO <sub>2</sub>	g 100g <sup>-1</sup>													
LOI	g 100g <sup>-1</sup>	<u>0.34</u>	0.31		0.29	0.3	0.22		<u>0.14</u>	0.688	<u>0.02</u>	<u>0.32</u>	0.24	
Ag	mg kg <sup>-1</sup>					<u>0.046</u>								
As	mg kg <sup>-1</sup>				1.13	1.223			<u>1.7</u>			<u>2</u>		
Au	mg kg <sup>-1</sup>													
B	mg kg <sup>-1</sup>													
Ba	mg kg <sup>-1</sup>		196	173	169	179.080	178.484	181.350	<u>205.2</u>	181.1	<u>195</u>	<u>208</u>		
Be	mg kg <sup>-1</sup>			0.73	0.68		0.843							
Bi	mg kg <sup>-1</sup>					0.022								
Br	mg kg <sup>-1</sup>				1	0.45								
C(org)	mg kg <sup>-1</sup>													
C(tot)	mg kg <sup>-1</sup>								0.03					
Cd	mg kg <sup>-1</sup>					0.057								
Ce	mg kg <sup>-1</sup>	27.7	26.3	26	26.169	27.133			<u>30.2</u>	<u>26.3</u>		<u>34</u>		
Cl	mg kg <sup>-1</sup>					0.020								
Co	mg kg <sup>-1</sup>		27	45.3	44.2		46.209	40.38	<u>42.3</u>	<u>45.3</u>	<u>45</u>			
Cr	mg kg <sup>-1</sup>		187	167	168	168.5		178.7	<u>133</u>		<u>157</u>	<u>162</u>		
Cs	mg kg <sup>-1</sup>	1.14	1.15		1.22	1.149				1.21				
Cu	mg kg <sup>-1</sup>	94	122	120	121.2	126.153			119	124	128	136		
Dy	mg kg <sup>-1</sup>	4.31	4.22	4.34	4.238	4.279				4.19			4.19	
Er	mg kg <sup>-1</sup>	2.53	2.45	2.58	2.410	2.488				2.38			2.2	
Eu	mg kg <sup>-1</sup>	1.21	1.17	1.2	1.181	1.192				1.21			1.06	
F	mg kg <sup>-1</sup>													
Ga	mg kg <sup>-1</sup>		21.32	17.6	<u>16.83</u>	17.171			17	<u>15.8</u>	<u>16.7</u>	<u>19</u>	<u>19</u>	
Gd	mg kg <sup>-1</sup>		4.37	4.06	4.17	4.183	4.117			<u>3.71</u>			3.07	
Ge	mg kg <sup>-1</sup>		3.32		0.88	1.425				0.5				
Hf	mg kg <sup>-1</sup>		3.93	2.78	2.99	2.872	2.548			<u>2.81</u>	<u>3.1</u>			
Hg	mg kg <sup>-1</sup>								0.006					
Ho	mg kg <sup>-1</sup>		0.91	0.87	0.86	0.867	0.887			0.87			0.8	
I	mg kg <sup>-1</sup>													
In	mg kg <sup>-1</sup>													
Ir	mg kg <sup>-1</sup>													
La	mg kg <sup>-1</sup>		13.17	12.1	12.5	12.285	12.055		<u>18.3</u>	<u>12.4</u>		<u>13</u>	13.3	
Li	mg kg <sup>-1</sup>			13.1			13.183							
Lu	mg kg <sup>-1</sup>	0.39	0.33	0.34	0.345	0.338				0.34			0.46	
Mo	mg kg <sup>-1</sup>			0.7	0.73	0.723				1.9				
Nb	mg kg <sup>-1</sup>		7	8.35	8.27	8.615	6.777		<u>6.8</u>	<u>8.19</u>		<u>8</u>		
Nd	mg kg <sup>-1</sup>		15.65	14.4	14.4	14.663	14.563			<u>15.6</u>	<u>14.7</u>		15.2	
Ni	mg kg <sup>-1</sup>		60	76.5	71.8	72.92	75.733			<u>61.7</u>	<u>74.7</u>	<u>67</u>	<u>67</u>	
Os	mg kg <sup>-1</sup>													
Pb	mg kg <sup>-1</sup>		6	4.7	4.46	4.538	4.706			<u>3.9</u>	<u>4.52</u>		<u>7</u>	
Pd	mg kg <sup>-1</sup>													
Pr	mg kg <sup>-1</sup>		3.53	3.34	3.18	3.399	3.355			3.41			1.43	
Pt	mg kg <sup>-1</sup>													
Rb	mg kg <sup>-1</sup>		23	24.5	<u>23.38</u>	24.509	24.333	26.08	<u>25.2</u>	<u>23.8</u>	<u>26</u>	<u>26</u>		
Re	mg kg <sup>-1</sup>													
Rh	mg kg <sup>-1</sup>													
Ru	mg kg <sup>-1</sup>													
S	mg kg <sup>-1</sup>								0.017					
Sb	mg kg <sup>-1</sup>			0.13	0.463									
Sc	mg kg <sup>-1</sup>		4	37.6	<u>35.25</u>	37.022			<u>57.1</u>	<u>38.3</u>		<u>33</u>		
Se	mg kg <sup>-1</sup>				2.24				<u>1.9</u>					
Sm	mg kg <sup>-1</sup>		4.2	3.69	3.66	3.661	3.615		2	<u>3.62</u>			3.42	
Sn	mg kg <sup>-1</sup>			1.02	1.67	1.152	0.62		<u>1.2</u>					
Sr	mg kg <sup>-1</sup>		170	192	<u>169</u>	183.830	187.884	185.2	<u>183.4</u>	183.6	<u>192</u>	<u>193</u>		
Ta	mg kg <sup>-1</sup>		1.12	0.52	0.42	0.758	0.477			0.54				
Tb	mg kg <sup>-1</sup>		0.66	0.69	0.59	0.688	0.679			0.69			0.67	
Te	mg kg <sup>-1</sup>													
Th	mg kg <sup>-1</sup>		2.6	2.45	2.5	2.516	2.504		<u>2.3</u>	<u>2.59</u>		<u>3</u>		
Tl	mg kg <sup>-1</sup>				0.14	0.12	0.124							
Tm	mg kg <sup>-1</sup>		0.37	0.35	0.35	0.361	0.347						0.33	
U	mg kg <sup>-1</sup>		0.61	0.58	0.54	0.575	0.619			<u>1.8</u>	<u>0.59</u>			
V	mg kg <sup>-1</sup>		217	285	294	278.4			<u>280.6</u>	<u>242.4</u>		<u>264</u>	<u>253</u>	
W	mg kg <sup>-1</sup>		1.22											
Y	mg kg <sup>-1</sup>		23.1	24.2	20.1	23.863	24.731			<u>22.7</u>	<u>22.5</u>	<u>23</u>	<u>25</u>	21.4
Yb	mg kg <sup>-1</sup>		2.35	2.25	2.26	2.252	2.244			<u>2.21</u>			1.79	
Zn	mg kg <sup>-1</sup>		93	81.7	83.4	83.79	88.112	82.63		<u>75.4</u>	<u>83.6</u>	<u>82</u>	<u>78</u>	
Zr	mg kg <sup>-1</sup>		85	103	115	105.910	100.6	102.280		<u>96</u>	<u>98.4</u>	<u>98</u>	<u>111</u>	

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

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code	L109	L110	L112	L114	L115	L116	L117	L118	L121	L122	L124	L126	L128
SiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>52.725</u>	52.6	52.5	52.22	52.79	52.48	49.74	52.7	52.22	52.4	52.36	53.25
TiO <sub>2</sub>	g 100g <sup>-1</sup>	<u>1.188</u>	<u>1.17</u>	1.195	1.15	<u>1.18</u>	<u>1.207</u>	<u>1.174</u>	<u>1.26</u>	1.17	1.19	1.164	1.162
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	<u>14.288</u>	14.3	14.3	14.44	<u>14.42</u>	<u>14.31</u>	13.99	<u>13.4</u>	14.3	14.09	14.52	14.53
Fe <sub>2</sub> O <sub>3</sub> T	g 100g <sup>-1</sup>	<u>11.422</u>	<u>11.5</u>	11.1	11.2	<u>11.43</u>	<u>11.33</u>	11.45	<u>11.05</u>	11.32	11.45	11.31	11.42
Fe(II)O	g 100g <sup>-1</sup>					8.61							
MnO	g 100g <sup>-1</sup>	<u>0.162</u>	<u>0.183</u>	0.184	0.17	<u>0.18</u>	0.186	0.164	0.12	0.179	0.181	0.176	<u>0.182</u>
MgO	g 100g <sup>-1</sup>	<u>6.575</u>	<u>6.41</u>	6.82	6.54	<u>6.6</u>	<u>6.63</u>	<u>6.497</u>	<u>6.59</u>	6.57	6.58	6.583	<u>6.56</u>
CaO	g 100g <sup>-1</sup>	<u>10.539</u>	10.4	10.4	<u>10.39</u>	<u>10.35</u>	10.33	9.999	<u>10.63</u>	10.45	10.73	10.479	10.43
Na <sub>2</sub> O	g 100g <sup>-1</sup>	<u>2.235</u>	<u>2.36</u>	2.35	2.21	<u>2.23</u>	<u>2.08</u>	<u>2.237</u>	<u>2.11</u>	2.23	2.25	2.262	<u>2.23</u>
K <sub>2</sub> O	g 100g <sup>-1</sup>	<u>0.726</u>	<u>0.719</u>	0.701	0.73	<u>0.71</u>	0.688	0.722	<u>0.72</u>	0.71	0.73	0.726	<u>0.77</u>
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	<u>0.135</u>	<u>0.137</u>	0.144	0.13	<u>0.14</u>	<u>0.138</u>	0.147	<u>0.107</u>	0.139	0.141	0.145	<u>0.14</u>
H <sub>2</sub> O+	g 100g <sup>-1</sup>				0.25								
CO <sub>2</sub>	g 100g <sup>-1</sup>												
LOI	g 100g <sup>-1</sup>	<u>0.32</u>		0.32	0.22	<u>0.27</u>	<u>0.39</u>		<u>0.38</u>	0.54	0.24	0.367	0.25
Ag	mg kg <sup>-1</sup>	<u>0.06</u>				<u>0.04</u>				0.18			<u>0.053</u>
As	mg kg <sup>-1</sup>	<u>1.6</u>			1	<u>1.2</u>			<u>27</u>	1.45			<u>0.98</u>
Au	mg kg <sup>-1</sup>												<u>0.003</u>
B	mg kg <sup>-1</sup>								<u>184</u>		<u>8.92</u>		13.722
Ba	mg kg <sup>-1</sup>	<u>182</u>		<u>178.5</u>	202	160.5	167	<u>165.9</u>		174	201	181.1	200.4
Be	mg kg <sup>-1</sup>	<u>0.8</u>		<u>0.687</u>		<u>0.74</u>				0.66		0.767	
Bi	mg kg <sup>-1</sup>	<u>0.04</u>			2	<u>0.04</u>				<u>0.03</u>			<u>0.029</u>
Br	mg kg <sup>-1</sup>												
C(org)	mg kg <sup>-1</sup>					<u>300</u>							
C(tot)	mg kg <sup>-1</sup>	<u>300</u>				<u>500</u>							
Cd	mg kg <sup>-1</sup>	<u>0.1</u>		<u>0.084</u>		<u>0.1</u>				0.12			<u>0.030</u>
Ce	mg kg <sup>-1</sup>	<u>24</u>		<u>26.49</u>	35	<u>27.4</u>	<u>26.1</u>	<u>26.86</u>		27.39	29	27.01	<u>39.5</u>
Cl	mg kg <sup>-1</sup>								<u>280</u>	<u>310</u>			
Co	mg kg <sup>-1</sup>	<u>50.9</u>		<u>45.37</u>	43	<u>47</u>	<u>42.8</u>	<u>54.97</u>	<u>10</u>	44	43	45.28	<u>42.54</u>
Cr	mg kg <sup>-1</sup>	<u>114</u>		<u>174.9</u>	152	<u>123</u>	<u>166</u>	<u>298</u>	<u>65</u>	179	145	167.7	<u>158.3</u>
Cs	mg kg <sup>-1</sup>	<u>1.5</u>		<u>1.227</u>	2	<u>1.24</u>				0.75		1.241	
Cu	mg kg <sup>-1</sup>	<u>121.780</u>		<u>115.4</u>	126	<u>127</u>	<u>105</u>	<u>108</u>	<u>89</u>	116	127	123.290	<u>128.5</u>
Dy	mg kg <sup>-1</sup>	<u>4.93</u>		<u>4.193</u>		<u>4.15</u>	<u>4.19</u>	<u>4.61</u>		4.2		4.264	
Er	mg kg <sup>-1</sup>	<u>2.2</u>		<u>2.453</u>		<u>2.88</u>	<u>2.45</u>	<u>2.743</u>		2.46		2.429	
Eu	mg kg <sup>-1</sup>	<u>0.99</u>		<u>1.175</u>		<u>1.2</u>	<u>1.2</u>	<u>1.248</u>		1.19		1.170	
F	mg kg <sup>-1</sup>								<u>260</u>				<u>203</u>
Ga	mg kg <sup>-1</sup>	<u>17</u>		<u>17.07</u>	18	<u>18.4</u>	<u>17</u>	<u>14.68</u>		17.2	18	17.69	<u>18.03</u>
Gd	mg kg <sup>-1</sup>	<u>3.79</u>		<u>4.112</u>		<u>4.24</u>	<u>4.24</u>	<u>4.322</u>		4.15		4.169	
Ge	mg kg <sup>-1</sup>	<u>1.7</u>			1	<u>0.13</u>					1.55		
Hf	mg kg <sup>-1</sup>	<u>3</u>		<u>2.623</u>	1	<u>2.7</u>					2.93		2.917
Hg	mg kg <sup>-1</sup>							<u>0.001</u>					
Ho	mg kg <sup>-1</sup>	<u>0.69</u>		<u>0.887</u>		<u>0.85</u>	<u>0.845</u>	<u>0.927</u>		0.85		0.881	
I	mg kg <sup>-1</sup>					<u>2.2</u>							
In	mg kg <sup>-1</sup>	<u>0.066</u>				<u>0.073</u>							
Ir	mg kg <sup>-1</sup>												
La	mg kg <sup>-1</sup>	<u>12.4</u>		<u>11.98</u>	13	<u>12.1</u>	<u>12.3</u>	<u>12.49</u>		11.75	<u>12</u>	<u>12.370</u>	<u>11.3</u>
Li	mg kg <sup>-1</sup>	<u>14.4</u>		<u>13.36</u>		<u>14</u>				12.19		13.814	
Lu	mg kg <sup>-1</sup>	<u>0.19</u>		<u>0.331</u>		<u>0.36</u>	<u>0.348</u>	<u>0.373</u>		0.35		0.341	
Mo	mg kg <sup>-1</sup>	<u>0.67</u>		<u>0.652</u>		<u>0.72</u>				0.82			<u>0.467</u>
Nb	mg kg <sup>-1</sup>	<u>Z</u>		<u>8.285</u>	8	<u>8</u>	<u>8.8</u>			9.35	8.8	8.29	<u>7.33</u>
Nd	mg kg <sup>-1</sup>	<u>17</u>		<u>14.57</u>	13	<u>14.5</u>	<u>13.2</u>			14.4	13	14.58	
Ni	mg kg <sup>-1</sup>	<u>71</u>		<u>72.09</u>	67	<u>75.8</u>	<u>74.3</u>	<u>69.97</u>	<u>21</u>	73	66	73.56	<u>69.71</u>
Os	mg kg <sup>-1</sup>												
Pb	mg kg <sup>-1</sup>	<u>4.7</u>		<u>4.351</u>	5	<u>4.3</u>		<u>4.627</u>		4.38	<u>4.2</u>	4.697	<u>3.45</u>
Pd	mg kg <sup>-1</sup>												<u>0.011</u>
Pr	mg kg <sup>-1</sup>	<u>3.7</u>		<u>3.441</u>		<u>3.57</u>	<u>3.37</u>	<u>3.582</u>		3.3		3.483	
Pt	mg kg <sup>-1</sup>												
Rb	mg kg <sup>-1</sup>	<u>23</u>		<u>24.45</u>	23	<u>26.3</u>	<u>14.5</u>			26	24	24.55	<u>24.1</u>
Re	mg kg <sup>-1</sup>					<u>0.002</u>							
Rh	mg kg <sup>-1</sup>												
Ru	mg kg <sup>-1</sup>												
S	mg kg <sup>-1</sup>	<u>300</u>				<u>0.01</u>							
Sb	mg kg <sup>-1</sup>	<u>0.15</u>		<u>0.206</u>		<u>0.15</u>			<u>0.126</u>	<u>0.15</u>			
Sc	mg kg <sup>-1</sup>	<u>35</u>		<u>37.45</u>	33	<u>36.4</u>	<u>37.4</u>	<u>33.98</u>		33	35	37.07	<u>31.8</u>
Se	mg kg <sup>-1</sup>	<u>1.3</u>				<u>1</u>			<u>2</u>	<u>0.28</u>			<u>0.110</u>
Sm	mg kg <sup>-1</sup>	<u>4.35</u>		<u>3.665</u>		<u>3.69</u>	<u>3.65</u>	<u>4.087</u>		3.6		3.676	
Sn	mg kg <sup>-1</sup>	<u>1.4</u>		<u>1.117</u>		<u>1</u>	<u>0.9</u>	<u>1.11</u>		0.81			
Sr	mg kg <sup>-1</sup>	<u>199</u>		<u>186.7</u>	180	<u>199</u>	<u>173</u>	<u>178.9</u>		185	177	186.8	<u>185.720</u>
Ta	mg kg <sup>-1</sup>	<u>0.47</u>			<u>0.519</u>		<u>0.53</u>		<u>1.06</u>		0.61		<u>0.517</u>
Tb	mg kg <sup>-1</sup>	<u>0.51</u>		<u>0.684</u>		<u>0.72</u>	<u>0.672</u>	<u>0.737</u>		0.69		0.694	
Te	mg kg <sup>-1</sup>	<u>0.02</u>				<u>0.05</u>			<u>0.221</u>				
Th	mg kg <sup>-1</sup>	<u>2.68</u>		<u>2.433</u>	6	<u>2.61</u>	<u>2.6</u>	<u>2.899</u>		2.34	<u>5.2</u>	2.544	<u>2.13</u>
Tl	mg kg <sup>-1</sup>	<u>0.13</u>		<u>0.119</u>		<u>0.12</u>				0.11			
Tm	mg kg <sup>-1</sup>	<u>0.19</u>		<u>0.362</u>		<u>0.35</u>	<u>0.359</u>	<u>0.383</u>		0.34			
U	mg kg <sup>-1</sup>	<u>0.47</u>		<u>0.598</u>		<u>0.6</u>	<u>0.63</u>	<u>0.655</u>		0.57		0.615	
V	mg kg <sup>-1</sup>	<u>245</u>		<u>275.3</u>	251	<u>269</u>	<u>267</u>	<u>290</u>	<u>252</u>	277	256	275.5	<u>249.020</u>
W	mg kg <sup>-1</sup>	<u>0.3</u>		<u>0.314</u>		<u>0.4</u>				0.44			
Y	mg kg <sup>-1</sup>	<u>21</u>		<u>22.18</u>	23	<u>24</u>	<u>21.4</u>	<u>23.02</u>		22.51	212	23.93	<u>21.78</u>
Yb	mg kg <sup>-1</sup>	<u>2.57</u>		<u>2.249</u>	1	<u>2.36</u>	<u>2.26</u>	<u>2.465</u>		2.17		2.271	
Zn	mg kg <sup>-1</sup>	<u>72</u>		<u>80.99</u>	80	<u>86</u>	<u>84.5</u>		<u>54</u>	78	77	<u>82.56</u>	<u>80.42</u>
Zr	mg kg <sup>-1</sup>	<u>106</u>		<u>97.75</u>	101	<u>98</u>	<u>101</u>	<u>75.96</u>		104	98	110.130	<u>100.830</u>

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

Table 1 - GeoPT49 Contributed data for Basalt, BVA-1. 30/06/2021

Lab Code		L129	L130	-	-	-	-	-	-	-	-	-	-	-
SiO <sub>2</sub>	g 100g <sup>-1</sup>	<b>52.154</b>	<u>54.64</u>											
TiO <sub>2</sub>	g 100g <sup>-1</sup>	<b>1.183</b>	<u>1.13</u>											
Al <sub>2</sub> O <sub>3</sub>	g 100g <sup>-1</sup>	<b>14.259</b>	<u>13.5</u>											
Fe <sub>2</sub> O <sub>3T</sub>	g 100g <sup>-1</sup>	<b>11.274</b>	<u>11.28</u>											
Fe(II)O	g 100g <sup>-1</sup>													
MnO	g 100g <sup>-1</sup>	<b>0.17</b>	<u>0.17</u>											
MgO	g 100g <sup>-1</sup>	<b>6.566</b>	<u>6.02</u>											
CaO	g 100g <sup>-1</sup>	<b>10.479</b>	<u>10.52</u>											
Na <sub>2</sub> O	g 100g <sup>-1</sup>	<b>2.285</b>	<u>1.78</u>											
K <sub>2</sub> O	g 100g <sup>-1</sup>	<b>0.716</b>	<u>0.78</u>											
P <sub>2</sub> O <sub>5</sub>	g 100g <sup>-1</sup>	<b>0.142</b>	<u>0.18</u>											
H <sub>2</sub> O+	g 100g <sup>-1</sup>		<u>0.34</u>											
CO <sub>2</sub>	g 100g <sup>-1</sup>													
LOI	g 100g <sup>-1</sup>	<b>0.38</b>	<u>0.41</u>											
Ag	mg kg <sup>-1</sup>	<b>0.044</b>												
As	mg kg <sup>-1</sup>	<b>0.740</b>												
Au	mg kg <sup>-1</sup>													
B	mg kg <sup>-1</sup>													
Ba	mg kg <sup>-1</sup>	<b>177.314</b>	<u>182.5</u>											
Be	mg kg <sup>-1</sup>	<b>0.603</b>												
Bi	mg kg <sup>-1</sup>	<b>0.030</b>												
Br	mg kg <sup>-1</sup>													
C(org)	mg kg <sup>-1</sup>													
C(tot)	mg kg <sup>-1</sup>													
Cd	mg kg <sup>-1</sup>	<b>0.066</b>												
Ce	mg kg <sup>-1</sup>	<b>26.260</b>												
Cl	mg kg <sup>-1</sup>													
Co	mg kg <sup>-1</sup>	<b>43.552</b>	<u>55.48</u>											
Cr	mg kg <sup>-1</sup>	<b>160.398</b>	<u>157.3</u>											
Cs	mg kg <sup>-1</sup>	<b>1.173</b>												
Cu	mg kg <sup>-1</sup>	<b>134.440</b>	<u>106.7</u>											
Dy	mg kg <sup>-1</sup>	<b>4.408</b>												
Er	mg kg <sup>-1</sup>	<b>2.606</b>												
Eu	mg kg <sup>-1</sup>	<b>1.229</b>												
F	mg kg <sup>-1</sup>													
Ga	mg kg <sup>-1</sup>	<b>17.702</b>												
Gd	mg kg <sup>-1</sup>	<b>4.227</b>												
Ge	mg kg <sup>-1</sup>													
Hf	mg kg <sup>-1</sup>	<b>2.772</b>												
Hg	mg kg <sup>-1</sup>													
Ho	mg kg <sup>-1</sup>	<b>0.914</b>												
I	mg kg <sup>-1</sup>													
In	mg kg <sup>-1</sup>													
Ir	mg kg <sup>-1</sup>													
La	mg kg <sup>-1</sup>	<b>12.248</b>												
Li	mg kg <sup>-1</sup>	<b>11.673</b>	<u>18.24</u>											
Lu	mg kg <sup>-1</sup>	<b>0.354</b>												
Mo	mg kg <sup>-1</sup>	<b>0.714</b>												
Nb	mg kg <sup>-1</sup>	<b>7.648</b>												
Nd	mg kg <sup>-1</sup>	<b>14.833</b>												
Ni	mg kg <sup>-1</sup>	<b>67.643</b>	<u>68.09</u>											
Os	mg kg <sup>-1</sup>													
Pb	mg kg <sup>-1</sup>	<b>4.632</b>	<u>3.37</u>											
Pd	mg kg <sup>-1</sup>													
Pr	mg kg <sup>-1</sup>	<b>3.634</b>												
Pt	mg kg <sup>-1</sup>													
Rb	mg kg <sup>-1</sup>	<b>24.603</b>												
Re	mg kg <sup>-1</sup>													
Rh	mg kg <sup>-1</sup>													
Ru	mg kg <sup>-1</sup>													
S	mg kg <sup>-1</sup>													
Sb	mg kg <sup>-1</sup>	<b>0.177</b>												
Sc	mg kg <sup>-1</sup>	<b>38.018</b>												
Se	mg kg <sup>-1</sup>													
Sm	mg kg <sup>-1</sup>	<b>3.896</b>												
Sn	mg kg <sup>-1</sup>	<b>0.855</b>												
Sr	mg kg <sup>-1</sup>	<b>178.998</b>	<u>181.2</u>											
Ta	mg kg <sup>-1</sup>	<b>0.511</b>												
Tb	mg kg <sup>-1</sup>	<b>0.728</b>												
Te	mg kg <sup>-1</sup>													
Th	mg kg <sup>-1</sup>	<b>2.893</b>												
Tl	mg kg <sup>-1</sup>	<b>0.102</b>												
Tm	mg kg <sup>-1</sup>	<b>0.383</b>												
U	mg kg <sup>-1</sup>	<b>0.607</b>												
V	mg kg <sup>-1</sup>	<b>260.951</b>	<u>296.1</u>											
W	mg kg <sup>-1</sup>	<b>0.311</b>												
Y	mg kg <sup>-1</sup>	<b>23.299</b>	<u>20.75</u>											
Yb	mg kg <sup>-1</sup>	<b>2.340</b>												
Zn	mg kg <sup>-1</sup>	<b>76.846</b>	<u>85.16</u>											
Zr	mg kg <sup>-1</sup>	<b>103.851</b>	<u>114</u>											

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

Table 2 - GeoPT49 Consensus values and statistical summary for Basalt, BVA-1.

	Consensus Value	Uncertainty of consensus value	Horwitz Target Precision	Uncertainty/Target Precision	Number of reported results	Robust Mean of results	Robust SD of results	Median of results	Status of consensus value	Type of consensus value
	$x_{pt}$	$u(x_{pt})$	$\sigma_{pt}$	$u(x_{pt})/\sigma_{pt}$	$n$					
	$\text{g } 100\text{g}^{-1}$	$\text{g } 100\text{g}^{-1}$	$\text{g } 100\text{g}^{-1}$			$\text{g } 100\text{g}^{-1}$	$\text{g } 100\text{g}^{-1}$	$\text{g } 100\text{g}^{-1}$		
SiO <sub>2</sub>	52.52	0.04891	0.5787	0.08453	82	52.52	0.4429	52.51	Assigned	Robust Mean
TiO <sub>2</sub>	1.176	0.002789	0.02295	0.1215	87	1.173	0.02417	1.176	Assigned	Median
Al <sub>2</sub> O <sub>3</sub>	14.32	0.0253	0.1918	0.1319	87	14.34	0.2159	14.32	Assigned	Median
Fe <sub>2</sub> O <sub>3</sub> T	11.31	0.01783	0.157	0.1135	88	11.3	0.1625	11.31	Assigned	Median
Fe(II)O	8.425	0.09945	0.1223	0.8134	12	8.361	0.3958	8.425	Provisional	Median
MnO	0.179	0.001227	0.004638	0.2646	86	0.1759	0.01094	0.179	Assigned	Median
MgO	6.58	0.01172	0.09911	0.1183	86	6.573	0.09826	6.58	Assigned	Median
CaO	10.43	0.02171	0.1466	0.1481	87	10.4	0.1823	10.43	Assigned	Median
Na <sub>2</sub> O	2.235	0.008978	0.0396	0.2267	82	2.235	0.0813	2.239	Assigned	Robust Mean
K <sub>2</sub> O	0.72	0.002015	0.01513	0.1332	85	0.7211	0.01999	0.72	Assigned	Median
P <sub>2</sub> O <sub>5</sub>	0.14	0.0006361	0.003764	0.169	82	0.1413	0.006792	0.14	Assigned	Median
	$\text{mg kg}^{-1}$	$\text{mg kg}^{-1}$	$\text{mg kg}^{-1}$			$\text{mg kg}^{-1}$	$\text{mg kg}^{-1}$	$\text{mg kg}^{-1}$		
Ag	0.05214	0.005261	0.006505	0.8088	18	0.062	0.02839	0.057	Provisional	Mode
Ba	178.5	2.18	6.543	0.3332	74	185	17.13	181.8	Provisional	Mode
Be	0.709	0.02795	0.05972	0.4681	35	0.7101	0.1497	0.709	Assigned	Median
Bi	0.03019	0.003225	0.004089	0.7888	18	0.03329	0.009868	0.03019	Provisional	Median
Cd	0.08756	0.006867	0.0101	0.6796	23	0.08756	0.03293	0.09	Provisional	Robust Mean
Ce	26.7	0.2063	1.303	0.1584	60	26.83	1.793	26.7	Assigned	Median
Co	44.42	0.3734	2.007	0.186	65	44.22	3.151	44.42	Assigned	Median
Cr	165	3.01	6.12	0.4918	68	159.4	20.27	162	Provisional	Mode
Cs	1.215	0.01924	0.09437	0.2039	40	1.206	0.1219	1.215	Assigned	Median
Cu	121.9	1.135	4.732	0.2398	70	119.9	8.966	121.9	Assigned	Median
Dy	4.25	0.02389	0.2734	0.08738	49	4.241	0.1712	4.25	Assigned	Median
Er	2.461	0.02287	0.1719	0.133	49	2.461	0.1601	2.45	Assigned	Robust Mean
Eu	1.194	0.007846	0.09301	0.08436	48	1.194	0.05436	1.189	Assigned	Robust Mean
Ga	17.43	0.1571	0.9067	0.1732	60	17.43	1.217	17.26	Assigned	Robust Mean
Gd	4.13	0.03416	0.2668	0.128	50	4.091	0.2919	4.13	Assigned	Median
Ge	1.482	0.08631	0.1118	0.7723	19	1.397	0.8601	1.45	Provisional	Mode
Hf	2.76	0.04432	0.1895	0.2339	45	2.743	0.2784	2.76	Assigned	Median
Ho	0.875	0.006705	0.07141	0.0939	48	0.8696	0.04533	0.875	Assigned	Median
In	0.068	0.0021	0.008151	0.2576	10	0.06699	0.004286	0.0673	Provisional	Mode
La	12.29	0.09883	0.6737	0.1467	61	12.29	0.7719	12.27	Assigned	Robust Mean
Li	13.5	0.225	0.7298	0.3083	32	13.41	1.164	13.5	Assigned	Median
Lu	0.3399	0.002805	0.03198	0.08769	47	0.3399	0.01923	0.34	Assigned	Robust Mean
Mo	0.7069	0.00974	0.05957	0.1635	35	0.7309	0.1251	0.72	Assigned	Mode
Nb	8	0.1384	0.4679	0.2958	56	7.956	0.9214	8	Provisional	Median
Nd	14.63	0.1029	0.7816	0.1317	57	14.63	0.7769	14.63	Assigned	Robust Mean
Ni	74.3	1.34	3.107	0.4312	69	70.69	6.987	72	Provisional	Mode
Pb	4.697	0.07942	0.2977	0.2668	55	4.792	0.8818	4.697	Assigned	Median
Pr	3.391	0.02724	0.2257	0.1207	49	3.391	0.1907	3.399	Assigned	Robust Mean
Rb	24.4	0.1996	1.207	0.1654	65	24.4	1.609	24.43	Assigned	Robust Mean
Sb	0.1615	0.015	0.017	0.8825	24	0.1724	0.05951	0.165	Provisional	Mode
Sc	36	0.4966	1.679	0.2957	57	35.44	3.195	36	Assigned	Median
Sm	3.668	0.03088	0.2412	0.128	50	3.666	0.1966	3.668	Assigned	Median
Sn	1.016	0.03863	0.0811	0.4764	32	1.016	0.2185	1.005	Provisional	Robust Mean
Sr	185	0.9924	6.744	0.1471	73	185	8.479	185	Assigned	Robust Mean
Ta	0.5204	0.01064	0.04592	0.2317	36	0.533	0.05621	0.5204	Assigned	Median
Tb	0.69	0.006034	0.05836	0.1034	48	0.6855	0.0439	0.69	Assigned	Median
Th	2.54	0.02602	0.1766	0.1474	51	2.532	0.2246	2.54	Assigned	Median
Tl	0.12	0.003182	0.01321	0.2409	25	0.12	0.01591	0.12	Assigned	Robust Mean
Tm	0.3557	0.004119	0.03324	0.1239	46	0.3557	0.02794	0.3585	Assigned	Robust Mean
U	0.5851	0.006188	0.05073	0.122	44	0.5851	0.04105	0.585	Assigned	Robust Mean
V	275.5	3.09	9.46	0.3266	69	269	20.61	272.9	Provisional	Mode
W	0.33	0.015	0.03119	0.4809	24	0.3787	0.1398	0.3433	Provisional	Mode
Y	22.69	0.1979	1.134	0.1745	70	22.69	1.656	22.95	Assigned	Robust Mean
Yb	2.267	0.01675	0.1603	0.1045	50	2.267	0.1184	2.26	Assigned	Robust Mean
Zn	82.56	1.48	3.399	0.4355	72	81.22	6.407	81.95	Provisional	Mode
Zr	99.75	0.9314	3.991	0.2334	70	99.75	7.793	100.1	Assigned	Robust Mean

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

Lab Code	L1	L2	L3	L4	L6	L8	L10	L11	L13	L14	L17	L18	L19	
SiO <sub>2</sub>	-0.15	-0.43	-0.03	0.48	<u>0.03</u>	0.26	-0.53	-0.28	-0.02	-0.24	-0.26	0.66	0.91	
TiO <sub>2</sub>	-2.00	3.22	<u>-1.22</u>	0.22	-0.13	-8.10	0.09	*	-0.13	0.17	-2.48	0.46	0.09	
Al <sub>2</sub> O <sub>3</sub>	2.31	-1.34	1.99	-0.46	0.11	-57.48	<u>-0.04</u>	*	0.92	-1.24	1.01	0.61	0.32	
Fe <sub>2</sub> O <sub>3T</sub>	-1.08	0.45	<u>0.25</u>	0.77	<u>-0.22</u>	0.19	0.29	<u>0.29</u>	0.25	-0.57	1.57	<u>-0.10</u>	0.67	
Fe(II)O	*	*	*	-4.82	*	14.52	*	*	*	*	*	*	*	
MnO	-1.53	2.37	<u>-0.75</u>	-0.88	0.11	-4.10	2.48	*	0.11	4.53	-3.62	-0.22	0.11	
MgO	-0.86	-1.92	<u>-2.62</u>	0.94	<u>-0.25</u>	-23.00	0.10	*	0.35	-0.81	0.58	1.38	0.00	
CaO	0.14	1.43	0.58	-0.41	0.10	-3.82	*	-0.34	-0.38	-2.11	0.09	<u>-1.55</u>	-0.38	
Na <sub>2</sub> O	-0.17	-1.89	<u>-1.45</u>	0.40	<u>-0.06</u>	*	-0.82	*	-0.44	-4.16	6.42	0.50	0.70	
K <sub>2</sub> O	-0.22	-0.66	<u>2.45</u>	-0.36	<u>-0.33</u>	-1.32	*	*	0.66	-2.64	-0.46	0.53	0.99	
P <sub>2</sub> O <sub>5</sub>	-0.40	0.00	<u>10.63</u>	<u>-0.05</u>	<u>0.27</u>	130.18	*	*	<u>2.66</u>	39.85	2.13	<u>-0.93</u>	1.33	
Ag	*	*	*	*	*	949.73	*	*	*	*	*	*	0.60	
Ba	-1.48	4.05	<u>12.27</u>	-0.79	<u>-0.28</u>	-11.02	*	*	*	*	0.69	<u>-0.15</u>	-1.16	
Be	*	*	*	0.52	<u>-0.41</u>	*	*	*	*	*	*	2.16	1.43	
Bi	*	*	*	*	*	*	*	*	*	*	*	*	<u>-0.02</u>	
Cd	*	*	*	*	<u>0.12</u>	1099.81	*	*	*	*	*	*	<u>-0.37</u>	
Ce	*	<u>0.50</u>	*	-0.11	0.23	*	*	-2.00	*	*	1.00	-1.61	-0.79	
Co	*	-1.70	*	0.47	<u>-0.00</u>	10.67	*	-8.57	*	*	-0.71	0.00	0.33	
Cr	-0.26	-2.61	*	0.37	0.74	27.32	*	*	*	*	1.80	<u>-0.25</u>	0.09	
Cs	*	*	*	-0.47	<u>-0.08</u>	*	*	*	*	*	50.70	0.19	-0.87	
Cu	*	*	*	0.11	<u>-0.23</u>	-2.30	*	0.12	*	*	-0.82	0.64	0.04	
Dy	*	*	*	-0.02	<u>0.09</u>	*	*	0.46	*	*	*	-0.23	-0.55	
Er	*	*	*	-0.14	<u>-0.18</u>	*	*	0.11	*	*	*	-0.45	-0.44	
Eu	*	*	*	-0.19	<u>0.03</u>	*	*	0.57	*	*	*	-0.23	-0.67	
Ga	*	*	*	0.63	<u>0.36</u>	*	*	*	*	*	2.83	-0.98	-0.13	
Gd	*	*	*	0.14	<u>-0.26</u>	*	*	1.07	*	*	*	-0.12	-0.60	
Ge	*	*	*	*	<u>-0.37</u>	*	*	*	*	*	*	-1.13	*	
Hf	*	*	*	0.71	0.37	*	*	-0.42	*	*	*	-0.39	*	
Ho	*	*	*	0.03	0.18	*	*	-0.53	*	*	*	0.20	-0.46	
In	*	*	*	*	<u>0.12</u>	*	*	*	*	*	*	*	*	
La	*	<u>4.24</u>	*	-0.02	0.08	*	*	-2.59	*	*	-10.82	-0.09	-0.65	
Li	*	*	*	-0.52	<u>-0.62</u>	*	*	*	*	*	*	*	4.01	
Lu	*	*	*	-0.06	<u>0.16</u>	*	*	0.94	*	*	*	0.06	-0.47	
Mo	*	*	*	0.51	<u>-0.06</u>	156.01	*	*	*	*	*	*	-1.01	21.77
Nb	*	<u>0.00</u>	*	0.97	<u>0.53</u>	2.59	*	*	*	*	*	-2.14	0.09	-0.28
Nd	*	*	*	0.04	<u>-0.28</u>	*	*	0.62	*	*	4.31	-0.12	-0.62	
Ni	*	<u>1.19</u>	*	0.29	<u>-0.97</u>	-16.19	*	-9.38	*	*	-2.35	-0.11	-0.15	
Pb	*	*	*	-0.31	<u>-0.67</u>	31.25	*	*	*	*	*	0.89	-0.99	
Pr	*	*	*	0.10	0.46	*	*	-0.64	*	*	*	-0.07	-0.47	
Rb	*	0.50	<u>-0.99</u>	0.02	<u>-0.54</u>	-11.93	*	*	*	*	5.47	-0.22	-0.50	
Sb	*	*	*	*	<u>-0.63</u>	1229.04	*	*	*	*	*	*	1.72	-0.63
Sc	*	<u>-0.89</u>	*	0.51	<u>-0.15</u>	89.83	*	-0.66	*	*	-1.79	-2.08	1.69	
Sm	*	*	*	0.53	<u>0.07</u>	*	*	1.10	*	*	*	-0.09	-0.60	
Sn	*	*	*	-0.82	<u>-0.72</u>	176.99	*	*	*	*	*	-0.77	*	
Sr	<u>0.94</u>	1.93	<u>-0.37</u>	0.65	<u>-0.45</u>	-0.58	*	*	*	*	-0.15	-0.26	-0.89	
Ta	*	*	*	0.36	0.21	*	*	*	*	*	*	-0.13	*	
Tb	*	*	*	-0.09	0.09	*	*	0.09	*	*	*	0.09	-0.34	
Th	*	*	*	-0.08	0.03	*	*	-3.51	*	*	*	-0.03	-0.57	
Tl	*	*	*	1.44	<u>-0.00</u>	*	*	*	*	*	*	*	0.38	
Tm	*	*	*	-0.29	0.67	*	*	0.67	*	*	*	0.08	-0.39	
U	*	*	*	0.31	<u>-0.05</u>	*	*	-0.84	*	*	*	-0.05	-0.94	
V	*	<u>-0.71</u>	*	0.89	<u>-0.45</u>	-6.31	*	-9.38	*	*	-1.32	-0.03	0.12	
W	*	*	*	*	*	578.12	*	*	*	*	*	0.46	*	
Y	*	<u>1.16</u>	*	1.13	<u>-0.39</u>	*	*	1.86	*	*	0.28	-0.28	-0.59	
Yb	*	*	*	0.17	<u>-0.24</u>	*	*	1.04	*	*	*	-0.02	-0.52	
Zn	<u>-0.41</u>	*	*	-0.26	<u>-0.23</u>	-13.99	<u>0.36</u>	-7.73	*	*	-1.64	0.75	3.32	
Zr	0.41	3.57	<u>-0.97</u>	1.95	0.16	2.09	*	*	*	*	0.31	0.02	-3.00	

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

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

Lab Code	L20	L21	L22	L24	L25	L27	L28	L29	L30	L31	L32	L33	L34
SiO <sub>2</sub>	-0.00	<u>-0.34</u>	*	<u>0.11</u>	<u>-0.05</u>	-0.09	-0.48	-0.10	*	<u>-0.30</u>	0.31	0.71	1.16
TiO <sub>2</sub>	-0.91	<u>0.15</u>	*	<u>0.98</u>	<u>-0.22</u>	-0.35	0.09	-0.57	*	<u>1.29</u>	-0.13	-1.13	-1.31
Al <sub>2</sub> O <sub>3</sub>	<u>-0.45</u>	<u>1.02</u>	*	<u>-0.10</u>	<u>0.20</u>	<u>0.48</u>	<u>-0.28</u>	<u>-0.30</u>	*	<u>0.00</u>	<u>-0.02</u>	<u>-0.45</u>	0.07
Fe <sub>2</sub> O <sub>3</sub> T	<u>-0.30</u>	<u>0.13</u>	*	<u>-0.25</u>	<u>0.03</u>	<u>0.06</u>	<u>-0.06</u>	<u>-0.51</u>	*	<u>0.44</u>	<u>-0.13</u>	<u>-1.15</u>	1.59
Fe(II)O	*	*	*	*	*	*	*	*	<u>0.14</u>	*	<u>-0.35</u>	*	*
MnO	<u>0.54</u>	<u>-0.43</u>	*	<u>-0.75</u>	<u>-2.01</u>	<u>-1.62</u>	<u>0.00</u>	<u>-0.97</u>	*	<u>0.54</u>	<u>0.11</u>	*	0.45
MgO	<u>0.28</u>	<u>0.96</u>	*	<u>-0.17</u>	<u>0.22</u>	<u>0.50</u>	<u>0.35</u>	<u>0.20</u>	*	<u>0.08</u>	<u>0.10</u>	<u>-0.71</u>	-0.72
CaO	-0.18	<u>-0.58</u>	*	<u>-0.07</u>	<u>0.14</u>	<u>-0.78</u>	<u>-0.48</u>	<u>0.07</u>	*	<u>-0.15</u>	<u>0.10</u>	0.48	0.12
Na <sub>2</sub> O	<u>-0.12</u>	<u>0.83</u>	*	<u>-0.51</u>	<u>0.86</u>	<u>0.19</u>	<u>-1.07</u>	<u>-0.06</u>	*	<u>-1.01</u>	<u>0.07</u>	<u>0.13</u>	1.60
K <sub>2</sub> O	<u>0.23</u>	<u>0.33</u>	*	<u>-0.33</u>	<u>-0.89</u>	<u>0.00</u>	<u>-0.99</u>	<u>-0.33</u>	*	<u>-0.20</u>	<u>-0.33</u>	<u>-1.32</u>	0.00
P <sub>2</sub> O <sub>5</sub>	<u>0.40</u>	<u>-2.79</u>	*	<u>-0.53</u>	*	<u>-0.13</u>	<u>0.00</u>	<u>0.00</u>	*	<u>0.00</u>	<u>-0.13</u>	<b>2.66</b>	1.89
Ag	*	<b>47.49</b>	<b>58.09</b>	*	*	*	*	*	*	*	*	<u>-1.01</u>	*
Ba	<u>-0.73</u>	<u>0.42</u>	<u>1.45</u>	*	<u>0.13</u>	<u>-0.42</u>	*	*	<u>0.18</u>	<u>-0.66</u>	<u>1.57</u>	*	-0.63
Be	*	<u>1.18</u>	<u>1.02</u>	*	*	<u>0.93</u>	<u>-2.67</u>	*	<u>-0.79</u>	<u>-0.16</u>	<u>-0.33</u>	*	*
Bi	*	*	<u>4.85</u>	*	*	*	*	*	*	*	<u>0.10</u>	*	*
Cd	*	<u>0.12</u>	<b>17.07</b>	*	*	*	<b>44.16</b>	*	<u>-0.62</u>	*	*	*	*
Ce	<u>-0.27</u>	<u>0.77</u>	<u>0.23</u>	*	*	<u>-0.84</u>	*	*	<u>-0.14</u>	<u>-0.31</u>	<u>1.04</u>	*	-0.71
Co	<u>-1.35</u>	<u>0.98</u>	<u>0.59</u>	*	*	<u>0.14</u>	<u>-0.60</u>	*	<u>-0.64</u>	<u>0.26</u>	<u>0.77</u>	*	-0.45
Cr	<u>2.12</u>	<u>-4.25</u>	<u>0.33</u>	*	<u>-0.71</u>	<u>-2.04</u>	<u>-2.86</u>	*	<u>-0.09</u>	<u>-0.37</u>	<u>-2.45</u>	*	-0.64
Cs	*	<u>0.40</u>	<u>0.79</u>	*	*	<u>0.13</u>	*	*	<u>-0.29</u>	<u>0.87</u>	<u>0.72</u>	*	-0.26
Cu	<u>0.43</u>	<u>1.58</u>	<u>0.57</u>	*	<u>-1.09</u>	<u>0.33</u>	<u>-0.83</u>	*	<u>-1.05</u>	<u>-0.57</u>	<u>1.33</u>	*	-0.42
Dy	*	<u>0.48</u>	<u>0.48</u>	*	*	<u>-0.77</u>	*	*	<u>0.48</u>	<u>0.07</u>	<u>0.16</u>	*	-0.22
Er	*	<u>0.55</u>	<u>0.52</u>	*	*	<u>-0.53</u>	*	*	<u>0.84</u>	<u>0.14</u>	<u>0.35</u>	*	-0.33
Eu	*	<u>0.57</u>	<u>0.60</u>	*	*	<u>-0.26</u>	*	*	<u>0.25</u>	<u>-0.13</u>	<u>0.70</u>	*	-0.50
Ga	<u>0.31</u>	<u>-0.24</u>	<u>2.06</u>	*	*	<u>0.31</u>	*	*	<u>-0.16</u>	<u>-0.12</u>	<u>1.11</u>	*	4.69
Gd	*	<u>0.71</u>	<u>0.97</u>	*	*	<u>-0.04</u>	*	*	<u>0.49</u>	<u>-0.56</u>	<u>0.11</u>	*	-0.41
Ge	<u>2.32</u>	*	<b>54.74</b>	*	*	*	*	*	*	*	*	*	*
Hf	*	<u>5.91</u>	<u>10.77</u>	*	*	<u>0.00</u>	*	*	<u>0.79</u>	<u>-0.21</u>	<u>0.13</u>	*	-0.32
Ho	*	<u>0.32</u>	<u>0.21</u>	*	*	<u>-0.77</u>	*	*	<u>0.54</u>	<u>-0.11</u>	<u>0.13</u>	*	-0.20
In	*	*	*	*	*	*	*	*	<u>-0.11</u>	*	<u>-0.06</u>	*	*
La	<u>0.53</u>	<u>1.05</u>	<u>0.17</u>	*	*	<u>-0.72</u>	*	*	<u>-0.29</u>	<u>-0.50</u>	<u>0.60</u>	*	-0.66
Li	*	<u>1.10</u>	<u>0.04</u>	*	*	<u>0.69</u>	*	*	<u>-1.28</u>	*	<u>0.82</u>	*	*
Lu	*	<u>0.00</u>	<u>0.32</u>	*	*	<u>-0.31</u>	*	*	<u>0.54</u>	<u>-0.16</u>	<u>0.17</u>	*	-0.31
Mo	*	<u>0.28</u>	<u>4.92</u>	*	*	<u>-0.39</u>	*	*	<u>0.19</u>	<u>-0.06</u>	<u>0.11</u>	*	1.66
Nb	<u>-1.07</u>	<u>2.14</u>	<u>1.71</u>	*	*	<u>-0.53</u>	*	*	<u>-0.50</u>	<u>-1.60</u>	<u>0.79</u>	*	-0.28
Nd	<u>-0.41</u>	<u>0.75</u>	<u>0.47</u>	*	*	<u>-0.56</u>	*	*	<u>0.23</u>	<u>-0.23</u>	<u>0.62</u>	*	-0.52
Ni	<u>0.76</u>	<u>0.48</u>	<u>-0.19</u>	*	*	<u>-0.05</u>	<u>-2.30</u>	*	<u>-0.54</u>	<u>-0.95</u>	<u>0.66</u>	*	-1.14
Pb	<u>0.51</u>	<u>0.02</u>	<u>0.41</u>	*	*	<u>0.01</u>	<u>7.40</u>	*	<u>-0.50</u>	<u>-0.20</u>	<u>-0.50</u>	*	0.61
Pr	*	<u>0.91</u>	<u>0.35</u>	*	*	<u>-0.45</u>	*	*	<u>0.25</u>	<u>-0.29</u>	<u>0.33</u>	*	-0.14
Rb	<u>1.08</u>	<u>1.91</u>	<u>1.00</u>	*	*	<u>0.50</u>	*	*	<u>-0.16</u>	<u>-0.42</u>	<u>0.54</u>	*	0.20
Sb	*	<u>1.43</u>	*	*	*	<u>-0.04</u>	<u>107.04</u>	*	<u>-0.43</u>	*	*	*	*
Sc	*	<u>1.13</u>	<u>3.93</u>	*	*	<u>0.30</u>	*	*	<u>-0.57</u>	<u>0.27</u>	<u>0.80</u>	*	0.57
Sm	*	<u>0.54</u>	<u>0.26</u>	*	*	<u>-0.36</u>	*	*	<u>0.34</u>	<u>-0.14</u>	<u>0.46</u>	*	-0.49
Sn	*	<u>1.13</u>	<u>-9.94</u>	*	*	<u>-0.41</u>	*	*	<u>-0.41</u>	<u>-0.35</u>	<u>0.27</u>	*	*
Sr	<u>0.22</u>	<u>0.00</u>	<u>1.48</u>	*	<u>-0.93</u>	<u>0.59</u>	*	*	<u>-0.45</u>	<u>-0.56</u>	<u>2.08</u>	*	-0.62
Ta	*	*	<b>10.45</b>	*	*	<u>0.76</u>	*	*	<u>0.00</u>	<u>-0.55</u>	<u>0.65</u>	*	-0.75
Tb	*	<u>0.09</u>	<u>0.34</u>	*	*	<u>0.17</u>	*	*	<u>0.28</u>	<u>-0.51</u>	<u>-0.07</u>	*	-0.27
Th	*	<u>0.74</u>	*	*	*	<u>0.17</u>	*	*	<u>-0.05</u>	<u>-0.57</u>	<u>0.25</u>	*	0.00
Tl	*	<u>0.76</u>	<u>0.98</u>	*	*	<u>-0.00</u>	*	*	<u>0.29</u>	<u>-1.14</u>	<u>-0.27</u>	*	*
Tm	*	<u>0.36</u>	<u>0.13</u>	*	*	<u>-0.47</u>	*	*	<u>0.49</u>	<u>-0.09</u>	<u>0.03</u>	*	*
U	*	<u>0.25</u>	*	*	*	<u>0.15</u>	*	*	<u>0.47</u>	<u>-0.05</u>	<u>0.54</u>	*	-0.10
V	<u>-0.08</u>	<u>1.19</u>	<u>1.96</u>	*	<u>0.45</u>	<u>0.71</u>	<u>-2.09</u>	*	<u>0.32</u>	<u>-0.57</u>	<u>0.61</u>	*	-0.80
W	*	*	<u>5.77</u>	*	*	<u>0.00</u>	*	*	<u>0.40</u>	<u>-0.48</u>	<u>0.32</u>	*	0.00
Y	<u>0.14</u>	<u>-0.30</u>	<u>0.28</u>	*	*	<u>-0.16</u>	*	*	<u>0.34</u>	<u>0.62</u>	<u>0.71</u>	*	0.81
Yb	*	<u>0.23</u>	<u>0.46</u>	*	*	<u>-0.98</u>	*	*	<u>0.68</u>	<u>-0.11</u>	<u>0.01</u>	*	-0.23
Zn	<u>0.21</u>	<u>4.48</u>	<u>3.95</u>	*	<u>-0.86</u>	<u>-0.82</u>	<u>-2.44</u>	*	<u>-0.40</u>	<u>0.62</u>	<u>1.04</u>	*	1.00
Zr	<u>-0.34</u>	<u>1.28</u>	<u>3.47</u>	*	<u>-0.88</u>	<u>1.28</u>	*	*	<u>0.85</u>	<u>-0.26</u>	<u>-0.06</u>	*	-0.85

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

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

Lab Code	L35	L36	L37	L38	L39	L40	L42	L43	L44	L45	L46	L47	L48
SiO <sub>2</sub>	-0.66	<u>0.63</u>	<u>0.21</u>	-0.26	*	-0.22	<u>0.11</u>	-0.05	<u>3.96</u>	0.05	-0.57	*	-0.31
TiO <sub>2</sub>	0.17	<u>-0.17</u>	<u>-0.13</u>	0.17	<u>0.17</u>	<u>0.09</u>	<u>-0.22</u>	-0.37	<u>-1.87</u>	-0.26	-0.57	-0.48	1.18
Al <sub>2</sub> O <sub>3</sub>	-0.56	<u>0.53</u>	<u>0.71</u>	0.02	<u>0.95</u>	<u>0.09</u>	-0.07	<u>0.12</u>	<u>9.34</u>	-0.09	<u>0.19</u>	-0.87	0.97
Fe <sub>2</sub> O <sub>3</sub> T	-0.64	<u>-0.78</u>	<u>-0.57</u>	0.00	-2.23	-0.06	<u>0.06</u>	<u>0.00</u>	-1.62	0.25	-0.03	<u>0.45</u>	<u>-0.99</u>
Fe(II)O	*	*	*	*	*	*	<u>1.12</u>	*	*	*	*	*	*
MnO	0.22	<u>-2.05</u>	<u>-0.97</u>	0.22	-1.29	*	<u>0.86</u>	<u>0.25</u>	<u>-2.70</u>	0.22	<u>-0.97</u>	-0.50	<u>-0.97</u>
MgO	-0.30	<u>-1.35</u>	<u>0.20</u>	0.00	-0.81	<u>-0.15</u>	<u>0.07</u>	<u>0.18</u>	*	0.00	<u>-0.35</u>	-1.01	<u>0.96</u>
CaO	-0.61	<u>-1.54</u>	<u>-0.72</u>	-3.34	-1.43	<u>0.41</u>	<u>0.20</u>	-0.35	<u>0.24</u>	0.34	<u>0.07</u>	-2.93	<u>-0.75</u>
Na <sub>2</sub> O	-0.88	<u>1.41</u>	<u>-0.94</u>	1.90	3.67	<u>0.70</u>	<u>0.59</u>	-0.40	*	-0.37	<u>0.70</u>	-0.57	1.08
K <sub>2</sub> O	-0.66	<u>-0.50</u>	<u>-0.33</u>	-1.32	-1.32	<u>0.00</u>	<u>-0.20</u>	<u>0.40</u>	<u>5.72</u>	-0.66	<u>0.99</u>	-0.76	<u>0.66</u>
P <sub>2</sub> O <sub>5</sub>	0.00	<u>-0.40</u>	<u>0.00</u>	-5.31	0.00	*	<u>0.53</u>	<u>0.13</u>	*	0.00	<u>3.98</u>	-1.20	<u>0.00</u>
Ag	*	*	*	*	-4.33	*	*	*	*	*	*	*	*
Ba	<b>2.06</b>	<u>12.57</u>	*	<b>4.49</b>	<b>32.48</b>	*	<u>-0.44</u>	<b>4.15</b>	<u>1.64</u>	1.30	<u>0.57</u>	-0.21	*
Be	*	*	*	*	-1.32	*	*	*	*	1.02	*	0.00	*
Bi	*	*	*	*	<b>1.91</b>	*	*	*	*	-0.05	*	<b>1.69</b>	*
Cd	*	*	*	*	-4.51	*	*	*	*	-0.75	*	-1.22	*
Ce	<b>0.12</b>	*	*	<b>8.14</b>	<b>0.15</b>	*	<u>1.92</u>	*	<u>0.84</u>	0.69	<u>-0.65</u>	-1.01	*
Co	*	<u>-0.60</u>	*	<b>0.24</b>	<u>-0.44</u>	*	<u>1.15</u>	*	*	0.54	<u>0.14</u>	0.13	*
Cr	<b>0.00</b>	<u>-2.04</u>	*	<u>-2.76</u>	<u>-1.03</u>	*	<u>-4.54</u>	*	*	1.96	<u>1.47</u>	-1.06	*
Cs	0.90	*	*	*	*	*	*	*	*	0.90	*	0.11	*
Cu	1.08	<u>-7.39</u>	*	<u>-2.09</u>	-0.15	*	<u>-0.53</u>	*	<u>0.65</u>	1.08	<u>-0.41</u>	1.04	*
Dy	0.62	*	*	*	0.00	*	<u>-0.71</u>	*	*	0.37	<u>-0.46</u>	0.17	*
Er	0.29	*	*	*	-0.47	*	<u>0.67</u>	*	*	0.23	<u>1.57</u>	0.20	*
Eu	-0.26	*	*	*	<b>5.54</b>	*	<u>1.24</u>	*	*	-0.15	<u>1.11</u>	-0.07	*
Ga	-1.58	<u>0.87</u>	*	<u>-0.14</u>	-0.36	*	*	*	<u>-0.18</u>	0.41	<u>-0.24</u>	*	*
Gd	0.41	*	*	*	-0.60	*	<u>-0.94</u>	*	*	0.07	<u>1.63</u>	-0.10	*
Ge	*	*	*	*	*	*	*	*	*	*	*	*	*
Hf	<b>0.74</b>	<u>0.63</u>	*	<u>-9.82</u>	-2.16	*	*	*	*	-1.21	*	<u>-0.50</u>	*
Ho	0.35	*	*	*	<b>0.49</b>	*	<u>-0.18</u>	*	*	0.21	<u>0.88</u>	0.16	*
In	*	*	*	*	<u>-2.58</u>	*	*	*	*	*	*	<u>-0.05</u>	*
La	*	*	*	*	<b>53.16</b>	-0.23	*	<u>2.90</u>	*	<u>0.46</u>	0.46	<u>-1.70</u>	-0.83
Li	*	<u>-0.34</u>	*	*	*	*	*	*	*	-0.27	<u>0.34</u>	-0.04	*
Lu	0.00	*	*	*	0.00	*	*	*	*	0.00	<u>2.50</u>	0.04	*
Mo	<b>1.40</b>	*	*	*	<u>-10.02</u>	*	*	*	*	1.23	*	<u>-0.37</u>	*
Nb	4.27	*	*	*	<u>-2.56</u>	<u>-0.43</u>	*	*	*	<u>-1.07</u>	-0.02	*	<b>0.12</b>
Nd	-0.25	*	*	*	<u>-0.94</u>	<b>0.28</b>	*	<u>2.31</u>	*	<u>1.71</u>	0.08	<u>-1.05</u>	-0.01
Ni	<b>1.19</b>	<u>0.11</u>	*	<u>-3.99</u>	<u>-1.42</u>	*	<u>0.85</u>	*	*	1.48	<u>0.60</u>	<u>-0.15</u>	*
Pb	4.38	*	*	*	<b>35.62</b>	<b>0.78</b>	*	<u>5.64</u>	*	<u>7.23</u>	0.65	*	-0.06
Pr	-0.00	*	*	*	-0.45	*	<u>1.87</u>	*	*	0.48	<u>-0.87</u>	0.12	*
Rb	1.33	*	*	*	<b>0.66</b>	<u>-5.55</u>	*	*	*	0.75	<u>-0.17</u>	-0.14	*
Sb	*	*	*	*	<b>11.09</b>	*	*	*	*	0.50	*	1.27	*
Sc	0.60	*	*	*	<u>-4.53</u>	-1.25	*	*	*	1.13	<u>-1.79</u>	0.76	*
Sm	0.01	*	*	*	<b>0.59</b>	*	<u>0.35</u>	*	*	0.13	<u>-1.38</u>	-0.05	*
Sn	*	*	*	*	*	*	*	*	*	2.63	*	<b>0.44</b>	*
Sr	-0.44	<u>0.07</u>	*	<u>-0.27</u>	<b>0.79</b>	*	<u>-0.39</u>	<u>1.33</u>	<u>1.34</u>	0.59	<u>0.37</u>	-0.30	*
Ta	1.08	*	*	*	*	*	*	*	*	*	*	-0.00	*
Tb	0.34	*	*	*	<b>1.71</b>	*	<u>1.07</u>	*	*	0.34	<u>2.66</u>	0.02	*
Th	0.57	*	*	*	<b>0.91</b>	<b>1.08</b>	*	*	*	<u>-1.81</u>	-0.51	*	<b>0.28</b>
Tl	*	*	*	*	<b>4.92</b>	*	*	*	*	-0.00	*	<b>0.06</b>	*
Tm	0.13	*	*	*	0.13	*	<u>1.79</u>	*	*	0.13	<u>2.17</u>	0.28	*
U	-0.10	*	*	*	<b>18.03</b>	-2.27	*	*	*	-0.10	*	<b>0.21</b>	*
V	<b>0.16</b>	*	*	*	<u>-1.63</u>	<u>-1.22</u>	*	<u>-0.14</u>	<u>1.13</u>	*	1.32	<u>-0.61</u>	0.30
W	*	*	*	*	<b>874.39</b>	-2.89	*	*	*	*	*	*	-1.06
Y	1.16	<u>-0.30</u>	*	<u>-0.34</u>	0.37	*	<u>-0.83</u>	*	<u>0.09</u>	1.78	<u>-0.30</u>	1.16	*
Yb	-0.04	*	*	*	-0.04	*	<u>1.32</u>	*	*	0.33	<u>1.04</u>	0.23	*
Zn	-0.46	<u>0.06</u>	*	<u>-1.34</u>	0.75	*	<u>0.15</u>	<u>0.85</u>	<u>-0.70</u>	0.22	<u>0.36</u>	<b>0.62</b>	*
Zr	1.06	<u>7.05</u>	*	<b>0.49</b>	-2.07	*	*	<u>-0.44</u>	<u>-0.17</u>	-0.39	<u>0.28</u>	<u>-0.97</u>	*

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

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

Lab Code	L49	L50	L52	L53	L54	L56	L57	L58	L59	L60	L63	L64	L65
SiO <sub>2</sub>	0.09	0.59	-0.08	-0.21	0.09	-0.47	0.66	0.13	*	0.76	-1.28	*	1.26
TiO <sub>2</sub>	0.04	0.00	0.09	-0.26	0.52	-0.70	3.09	0.09	0.22	-1.66	-0.22	-23.70	0.61
Al <sub>2</sub> O <sub>3</sub>	0.14	0.32	0.09	-0.35	-0.25	-0.25	-0.25	-0.57	3.41	-1.09	23.53	-22.44	1.21
Fe <sub>2</sub> O <sub>3</sub> T	-0.22	0.21	0.76	0.57	-0.25	0.70	-0.89	-0.22	-19.22	-0.67	4.08	-27.69	-0.19
Fe(II)O	*	*	*	*	*	1.52	-0.94	*	*	*	*	*	*
MnO	0.00	-9.70	0.11	2.37	0.11	0.22	3.45	-0.97	3.99	0.11	1.10	-17.46	6.68
MgO	0.32	1.70	-0.50	-0.30	0.20	-0.20	9.18	-0.05	-8.92	-1.41	0.54	-29.10	1.11
CaO	0.24	0.48	-0.65	-0.68	-0.20	0.82	-6.41	0.03	1.33	0.24	-1.30	-26.38	0.89
Na <sub>2</sub> O	-0.11	-13.59	-0.31	0.13	-0.19	0.64	1.75	0.32	*	-0.44	6.25	-21.09	-5.17
K <sub>2</sub> O	0.56	4.13	0.33	-1.98	0.33	0.00	-0.93	0.66	*	-0.33	4.59	-18.57	1.98
P <sub>2</sub> O <sub>5</sub>	1.06	-0.66	0.00	0.00	0.00	0.00	-3.93	0.00	*	2.66	1.43	-0.40	0.00
Ag	*	*	*	2.81	*	-2.33	*	*	*	*	*	-0.16	*
Ba	0.73	0.82	2.03	0.53	-0.19	-1.30	0.04	-0.88	*	0.34	0.41	-11.25	5.27
Be	-2.92	2.44	*	-1.49	0.32	-0.49	*	*	*	*	0.48	-4.85	*
Bi	-1.25	*	*	-0.05	*	*	*	*	*	*	*	-0.02	*
Cd	*	*	*	0.44	*	0.24	*	*	*	*	*	-2.85	*
Ce	0.23	-0.56	*	-1.38	0.00	-1.61	-0.77	*	*	0.12	-0.63	-4.69	*
Co	0.42	0.78	-0.10	0.89	0.67	-0.31	*	-0.35	*	*	1.94	-8.36	*
Cr	1.23	-1.57	-1.88	-4.41	-0.25	1.31	*	-1.23	*	*	2.29	-12.50	-6.37
Cs	-0.13	-0.72	*	0.48	0.19	-1.22	*	*	*	*	0.13	-1.72	*
Cu	1.49	0.30	*	0.02	0.22	-2.94	*	-0.62	-10.26	*	0.61	-0.29	0.02
Dy	0.27	0.07	*	0.00	-0.13	-0.07	-0.51	*	*	-0.27	-2.42	-5.63	*
Er	0.38	-0.15	*	0.93	-0.09	-0.99	-0.41	*	*	-0.47	-2.35	-5.50	*
Eu	0.30	-0.13	*	0.81	-0.18	-0.15	-0.48	*	*	0.03	-0.48	-4.38	*
Ga	0.20	0.70	-1.89	0.96	0.20	0.08	*	3.07	*	*	1.08	*	-9.30
Gd	-0.09	-0.19	*	0.45	-0.22	-1.12	-1.42	*	*	-0.99	-2.24	-4.38	*
Ge	-0.15	0.21	*	*	0.39	0.51	*	*	*	*	*	-6.41	*
Hf	0.26	-0.16	*	-1.48	0.00	-0.21	*	*	*	-0.69	-3.21	*	*
Ho	0.25	-0.18	*	0.60	-0.09	0.15	-0.35	*	*	-0.53	-1.90	-4.59	*
In	*	*	*	0.12	*	0.25	*	*	*	*	*	*	*
La	0.08	-0.29	*	0.17	-0.21	-1.46	-0.13	*	*	0.23	-1.00	-3.82	*
Li	-0.55	*	*	0.14	0.62	-2.28	*	*	*	*	1.18	-3.32	*
Lu	0.00	-0.31	*	1.00	-0.09	-0.37	-0.31	*	*	-0.16	-1.59	-4.53	*
Mo	13.96	6.41	*	0.22	*	-0.79	*	*	*	*	-0.41	-2.91	*
Nb	1.04	0.53	*	0.98	0.42	-2.82	*	*	*	-0.21	1.51	-8.54	*
Nd	0.04	0.04	*	0.60	0.11	-1.07	-0.94	*	*	-0.15	-1.11	-4.53	*
Ni	-0.02	-2.30	-1.66	1.19	0.16	-0.93	*	-1.82	*	*	0.94	-9.22	-2.99
Pb	-0.10	-1.09	5.55	-3.79	0.17	-0.83	*	*	*	*	1.36	-4.75	*
Pr	0.44	-0.00	*	1.24	0.04	-0.89	-0.31	*	*	-0.20	-0.68	-3.55	*
Rb	-0.25	-0.24	-0.17	1.00	-0.17	-0.75	*	*	*	0.25	1.55	-6.37	-2.82
Sb	*	*	*	1.27	*	1.09	*	*	*	*	*	-4.72	*
Sc	-0.51	-3.12	*	0.35	0.63	1.33	*	-0.30	*	0.00	-1.26	-10.33	*
Sm	0.19	0.03	*	1.38	0.01	-0.65	-0.69	*	*	-0.14	-1.23	-4.43	*
Sn	0.45	*	*	1.65	*	-0.08	*	*	*	-0.10	*	-5.71	*
Sr	0.67	0.12	-0.22	1.74	0.30	0.30	0.15	-2.15	*	-0.22	-0.06	-8.85	-5.19
Ta	0.54	*	*	-1.10	0.14	0.86	*	*	*	-0.22	-0.29	*	*
Tb	0.26	-0.09	*	37.36	-0.21	-1.06	-0.51	*	*	-0.77	-1.76	-3.94	*
Th	0.11	0.17	*	2.32	-0.17	-1.13	*	*	*	-0.40	-3.89	-2.86	*
Tl	0.11	*	*	-0.00	*	*	*	*	*	*	*	-2.65	*
Tm	0.82	-0.24	*	-0.11	-0.03	-0.41	-0.47	*	*	-0.84	-1.55	-4.30	*
U	0.34	0.15	*	-0.50	-0.08	-0.50	*	*	*	0.15	-0.78	-3.01	*
V	1.03	-1.97	-1.40	0.05	0.34	-0.37	*	-0.82	*	0.45	1.81	-10.83	19.71
W	-0.16	*	*	6.16	*	*	*	*	*	*	0.21	-4.81	*
Y	1.24	-0.39	-0.30	-0.08	0.54	0.01	-1.17	-1.18	*	-1.62	-2.23	-7.58	-5.89
Yb	-0.08	0.10	*	0.46	-0.05	-0.73	-0.42	*	*	-0.21	-2.07	-5.92	*
Zn	-0.10	-0.82	-1.55	1.88	0.11	2.37	*	-1.55	*	*	6.25	-8.29	-3.11
Zr	0.28	0.12	-0.09	-6.31	0.78	0.06	*	*	*	0.41	-4.50	-12.13	-10.21

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

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

Lab Code	L67	L68	L70	L73	L74	L75	L78	L79	L80	L81	L82	L83	L84
SiO <sub>2</sub>	<u>0.33</u>	0.50	-1.50	*	<u>0.08</u>	-0.64	<u>0.02</u>	-0.60	<u>0.27</u>	<u>0.09</u>	0.37	*	1.09
TiO <sub>2</sub>	<u>0.52</u>	<b>-2.00</b>	0.17	*	<u>0.52</u>	-0.48	<u>0.52</u>	0.28	<u>0.74</u>	<u>0.00</u>	0.78	-2.00	0.26
Al <sub>2</sub> O <sub>3</sub>	<u>0.40</u>	-1.13	-0.56	*	<u>-0.25</u>	<u>4.73</u>	<u>0.01</u>	<u>0.58</u>	-0.02	-0.33	-0.06	1.32	0.75
Fe <sub>2</sub> O <sub>3</sub> T	<u>0.61</u>	<b>0.51</b>	-0.32	*	<u>-0.06</u>	<u>-4.60</u>	*	*	*	<u>0.38</u>	<u>0.97</u>	-0.45	0.45
Fe(II)O	*	*	0.12	*	<u>-0.06</u>	<u>-4.60</u>	*	*	*	*	*	*	*
MnO	<u>0.22</u>	0.22	0.22	*	<u>0.11</u>	-3.13	<u>0.97</u>	0.00	<u>0.11</u>	<u>-1.94</u>	-0.22	0.22	-0.43
MgO	<u>0.05</u>	0.61	-0.50	*	<u>0.00</u>	<u>-8.02</u>	<u>-0.50</u>	<u>1.58</u>	<u>0.05</u>	<u>0.03</u>	0.27	0.71	0.81
CaO	<u>1.02</u>	0.96	-0.34	*	<u>0.03</u>	<u>-0.82</u>	<u>-0.65</u>	<u>0.58</u>	<u>0.78</u>	<u>0.61</u>	0.96	3.00	1.09
Na <sub>2</sub> O	<u>0.95</u>	-1.13	1.65	*	<u>0.07</u>	<u>1.08</u>	<u>0.32</u>	*	<u>1.20</u>	<u>-1.90</u>	-3.48	*	0.13
K <sub>2</sub> O	<u>0.33</u>	<b>0.00</b>	-1.32	*	<u>-0.33</u>	<u>0.66</u>	<u>0.33</u>	<u>1.45</u>	<u>0.33</u>	<u>-0.23</u>	-0.53	1.98	0.00
P <sub>2</sub> O <sub>5</sub>	<u>2.66</u>	<b>0.00</b>	<b>0.00</b>	*	<u>0.00</u>	<u>1.33</u>	<u>0.00</u>	<u>4.52</u>	<u>0.00</u>	<u>-1.20</u>	-4.52	<b>0.00</b>	-0.80
Ag	*	*	*	*	<u>0.60</u>	<u>0.60</u>	*	<u>0.14</u>	*	*	*	*	*
Ba	<u>2.03</u>	<b>3.13</b>	<b>8.94</b>	<u>1.57</u>	<u>1.18</u>	<u>-8.67</u>	*	<u>0.28</u>	<u>-1.72</u>	<u>3.09</u>	<b>2.57</b>	<b>0.49</b>	-0.23
Be	*	*	*	<u>3.44</u>	<u>-1.75</u>	<u>-4.68</u>	*	<u>6.67</u>	*	*	-2.28	*	*
Bi	*	*	*	*	*	<u>-2.47</u>	*	<u>2.06</u>	*	*	*	*	*
Cd	*	*	*	*	*	<u>-1.12</u>	*	<u>0.42</u>	*	*	*	3.61	*
Ce	*	<b>4.84</b>	<b>0.23</b>	<u>-0.14</u>	*	<u>-6.99</u>	*	<u>-0.08</u>	<u>2.42</u>	*	<b>0.00</b>	-0.25	0.18
Co	<u>-3.32</u>	4.27	-1.21	<u>-0.31</u>	<u>-1.35</u>	<u>-7.45</u>	*	<u>0.26</u>	<u>-2.35</u>	<u>-0.10</u>	0.76	0.05	*
Cr	<u>3.68</u>	<b>2.12</b>	<b>-1.80</b>	*	<u>-1.31</u>	<u>-9.80</u>	*	<u>0.61</u>	<u>-0.65</u>	<u>1.63</u>	0.03	0.59	0.16
Cs	*	*	-2.28	*	*	<u>-4.21</u>	*	<u>-1.43</u>	*	*	1.73	-0.58	-0.48
Cu	<u>0.12</u>	<b>-2.72</b>	<b>-1.03</b>	<u>-1.68</u>	<u>-0.94</u>	<u>-8.76</u>	*	<u>0.17</u>	<u>0.86</u>	<u>0.43</u>	-3.80	-1.27	0.23
Dy	*	*	*	<u>-0.33</u>	<u>0.38</u>	<u>-5.30</u>	*	<u>0.03</u>	*	*	-0.79	0.11	0.29
Er	*	*	*	<u>-0.32</u>	<u>0.67</u>	<u>-4.83</u>	*	<u>0.49</u>	*	*	-0.78	-0.47	-0.18
Eu	*	*	*	*	<u>0.08</u>	<u>-4.38</u>	*	<u>0.23</u>	*	*	-0.36	-0.37	-0.05
Ga	<u>-0.79</u>	<b>-0.47</b>	<b>-0.47</b>	<u>-0.44</u>	<u>-1.01</u>	<u>-6.58</u>	*	<u>-0.68</u>	<u>0.31</u>	*	-0.80	-0.01	-1.58
Gd	*	<b>3.26</b>	*	<u>1.09</u>	<u>0.43</u>	<u>-5.21</u>	*	<u>0.17</u>	*	*	-0.94	0.04	0.19
Ge	*	<b>13.58</b>	*	*	*	<u>-4.53</u>	*	*	*	*	*	*	*
Hf	*	<b>1.27</b>	<b>-4.01</b>	*	*	<u>-4.91</u>	*	<u>-1.18</u>	*	*	0.44	-0.26	0.84
Ho	*	*	*	*	<u>0.32</u>	<u>-4.17</u>	*	<u>-0.01</u>	*	*	-0.74	0.11	0.21
In	*	*	*	*	<u>-0.49</u>	*	*	*	*	*	*	*	*
La	<u>0.90</u>	<b>4.03</b>	<b>-3.39</b>	<u>0.46</u>	*	<u>-6.15</u>	*	<u>0.17</u>	<u>-0.21</u>	*	-0.44	-0.19	0.49
Li	*	*	*	<u>-0.39</u>	*	<u>-6.85</u>	*	<u>0.16</u>	*	*	0.32	0.05	*
Lu	*	*	*	<u>-0.31</u>	*	<u>-3.67</u>	*	<u>-0.17</u>	*	*	-0.72	0.00	0.32
Mo	*	*	*	*	*	<u>-3.92</u>	*	<u>0.67</u>	*	*	*	-0.37	*
Nb	<u>0.00</u>	<b>-6.41</b>	<b>-2.14</b>	*	*	<u>-5.93</u>	*	<u>-0.35</u>	<u>1.07</u>	<u>2.14</u>	*	<b>0.34</b>	<b>0.68</b>
Nd	*	<b>5.59</b>	<b>0.47</b>	<u>0.12</u>	<u>0.55</u>	<u>-6.32</u>	*	<u>0.04</u>	*	*	-0.39	-0.08	0.48
Ni	<u>3.97</u>	<b>1.19</b>	<b>-4.28</b>	<u>0.37</u>	<u>-1.48</u>	<u>-8.17</u>	*	<u>-0.13</u>	<u>-2.94</u>	<u>-0.85</u>	<b>0.82</b>	<b>0.51</b>	-0.74
Pb	*	<b>-9.06</b>	<b>4.38</b>	*	*	<u>-4.87</u>	*	<u>0.12</u>	*	<u>3.87</u>	*	-0.19	2.19
Pr	*	*	*	<u>-0.71</u>	<u>0.37</u>	<u>-5.08</u>	*	<u>0.02</u>	*	*	-0.44	0.26	0.53
Rb	<u>-0.75</u>	<b>3.81</b>	<b>-1.16</b>	<u>0.29</u>	<u>-0.17</u>	<u>-7.00</u>	*	<u>-1.00</u>	<u>2.32</u>	<u>-0.17</u>	4.13	<b>0.26</b>	0.33
Sb	*	*	*	*	*	<u>-3.28</u>	*	<u>-1.72</u>	*	*	*	*	*
Sc	*	<b>-2.38</b>	<b>-2.98</b>	<u>-0.21</u>	<u>0.21</u>	<u>-8.19</u>	*	*	<u>-0.30</u>	*	<b>0.55</b>	<b>0.51</b>	1.07
Sm	*	*	*	<u>-0.41</u>	<u>0.38</u>	<u>-5.11</u>	*	<u>-0.24</u>	*	*	-0.69	0.01	0.38
Sn	*	*	<b>12.13</b>	*	*	<u>-3.99</u>	*	<u>-1.11</u>	*	*	*	*	*
Sr	<u>1.34</u>	<b>0.30</b>	-1.33	<u>0.37</u>	*	<u>-8.15</u>	*	<u>-0.51</u>	<u>0.37</u>	<u>-0.37</u>	1.85	0.16	0.30
Ta	*	*	<b>10.45</b>	*	*	<u>-4.88</u>	*	<u>-0.37</u>	*	*	0.06	-0.01	-0.01
Tb	*	*	*	*	<u>0.26</u>	<u>-4.11</u>	*	<u>0.16</u>	*	*	-1.32	0.00	0.51
Th	*	*	<b>-8.72</b>	*	*	<u>-4.50</u>	*	<u>0.12</u>	*	<u>4.13</u>	-0.33	-0.28	0.17
Tl	*	*	*	*	*	<u>-3.03</u>	*	<u>-1.36</u>	*	*	*	*	*
Tm	*	*	*	<u>-0.39</u>	<u>0.21</u>	<u>-3.70</u>	*	<u>0.53</u>	*	*	-1.23	0.13	0.43
U	*	*	*	*	*	<u>-3.16</u>	*	<u>0.33</u>	*	*	-1.03	-0.40	0.10
V	<u>-0.24</u>	<b>0.79</b>	<b>-3.22</b>	<u>-0.87</u>	*	<u>-9.54</u>	*	<u>0.53</u>	<u>-3.41</u>	<u>-2.35</u>	<b>0.19</b>	-0.19	<b>0.37</b>
W	*	*	<b>85.61</b>	*	*	<u>-3.45</u>	*	<u>0.87</u>	*	*	*	*	*
Y	<u>0.27</u>	<b>2.04</b>	<b>-1.49</b>	<u>-0.81</u>	<u>0.14</u>	<u>-7.13</u>	*	<u>0.20</u>	<u>1.02</u>	<u>-2.07</u>	-0.90	1.13	1.42
Yb	*	*	*	<u>0.29</u>	<u>0.17</u>	<u>-4.73</u>	*	<u>0.66</u>	*	*	-0.71	-0.10	0.15
Zn	<u>0.21</u>	<b>-0.16</b>	<b>-2.81</b>	<u>-0.67</u>	<u>-0.97</u>	<u>-8.25</u>	*	<u>0.65</u>	<u>-0.08</u>	<u>-0.97</u>	*	-1.04	0.42
Zr	<u>0.16</u>	<b>-2.19</b>	<b>-1.44</b>	*	<u>-0.09</u>	<u>-9.19</u>	*	<u>-3.56</u>	<u>0.03</u>	<u>-3.98</u>	<b>0.11</b>	-0.24	<b>1.57</b>

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

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

Lab Code	L85	L86	L87	L88	L91	L94	L95	L97	L98	L100	L102	L103	L105
SiO <sub>2</sub>	<u>0.12</u>	-1.24	*	-0.83	-0.09	0.04	-2.52	-0.24	<u>0.48</u>	<u>0.09</u>	<u>0.06</u>	*	-0.89
TiO <sub>2</sub>	<u>0.30</u>	-0.70	<u>1.05</u>	-0.26	<u>0.29</u>	-0.91	-0.13	<u>0.09</u>	-0.30	<u>0.30</u>	-0.57	*	-2.66
Al <sub>2</sub> O <sub>3</sub>	<u>-0.59</u>	<u>9.61</u>	1.37	-1.18	0.10	0.22	-2.61	-0.46	<u>0.44</u>	-0.12	<u>0.09</u>	*	1.11
Fe <sub>2</sub> O <sub>3</sub> T	<u>0.03</u>	-4.14	0.13	<u>0.57</u>	-0.18	-0.06	-1.79	<u>1.02</u>	-2.41	<u>0.48</u>	-0.10	*	-56.16
Fe(II)O	*	*	*	*	*	*	*	*	*	*	*	*	-4.38
MnO	<u>1.19</u>	<u>4.53</u>	<u>0.22</u>	<u>2.16</u>	-0.75	-0.24	-1.35	-2.05	-2.37	<u>0.43</u>	-2.05	*	-4.74
MgO	<u>0.20</u>	-2.62	0.91	-1.11	-0.21	0.40	-1.79	<u>0.15</u>	<u>0.37</u>	-0.15	-0.50	*	11.50
CaO	<u>0.20</u>	-0.55	1.36	-1.64	0.23	-0.48	-1.74	<u>1.57</u>	-2.10	<u>0.31</u>	-0.07	*	-0.41
Na <sub>2</sub> O	<u>-0.19</u>	8.22	0.39	-3.91	0.19	-0.62	-2.09	<u>0.83</u>	-1.79	<u>0.57</u>	<u>0.07</u>	*	3.49
K <sub>2</sub> O	<u>0.00</u>	<u>5.95</u>	<u>1.98</u>	-0.93	0.07	0.66	-0.76	<u>0.00</u>	<u>0.03</u>	-0.33	<u>0.66</u>	*	-3.30
P <sub>2</sub> O <sub>5</sub>	<u>-0.13</u>	<u>7.97</u>	<u>2.66</u>	-1.59	<u>0.85</u>	-0.27	-1.06	<u>0.53</u>	<u>0.00</u>	<u>0.66</u>	<u>6.64</u>	*	-2.13
Ag	*	*	*	*	<u>-0.94</u>	*	*	*	*	*	*	*	*
Ba	*	<u>2.67</u>	-0.84	<u>-1.45</u>	<u>0.09</u>	-0.00	<u>0.44</u>	<u>2.04</u>	<u>0.20</u>	<u>1.26</u>	<u>2.25</u>	*	*
Be	*	*	0.35	<u>-0.49</u>	*	2.24	*	*	*	*	*	*	*
Bi	*	*	*	*	<u>-2.03</u>	*	*	*	*	*	*	*	*
Cd	*	*	*	*	<u>-3.01</u>	*	*	*	*	*	*	*	*
Ce	*	0.77	-0.31	<u>-0.54</u>	-0.41	0.33	*	<u>1.34</u>	-0.15	*	<u>2.80</u>	*	*
Co	*	-8.68	0.44	-0.11	*	0.89	-2.01	<u>-0.53</u>	<u>0.22</u>	<u>0.14</u>	*	*	*
Cr	*	3.59	0.33	<u>0.49</u>	0.57	*	2.24	<u>-2.61</u>	*	<u>-0.65</u>	<u>-0.25</u>	*	*
Cs	*	-0.79	-0.69	*	0.05	-0.70	*	*	<u>-0.03</u>	*	*	*	*
Cu	*	-5.89	0.02	-0.40	-0.15	0.90	*	<u>-0.31</u>	<u>0.22</u>	<u>0.65</u>	<u>1.49</u>	*	*
Dy	*	0.22	-0.11	0.33	-0.05	0.11	*	*	<u>-0.11</u>	*	*	*	-0.22
Er	*	0.40	-0.06	<u>0.69</u>	-0.29	0.16	*	*	<u>-0.23</u>	*	*	*	-1.52
Eu	*	0.17	-0.26	<u>0.06</u>	-0.14	-0.03	*	*	<u>0.08</u>	*	*	*	-1.44
Ga	*	4.29	0.19	<u>-0.33</u>	-0.29	*	<u>-0.47</u>	-0.90	-0.40	<u>0.87</u>	<u>0.87</u>	*	*
Gd	*	0.90	-0.26	<u>0.15</u>	0.20	<u>-0.05</u>	*	*	<u>-0.79</u>	*	*	*	-3.97
Ge	*	<u>16.44</u>	*	<u>-2.70</u>	<u>-0.51</u>	*	*	<u>-4.40</u>	*	*	*	*	*
Hf	*	6.17	0.11	1.21	0.59	-1.12	*	*	<u>0.13</u>	<u>0.90</u>	*	*	*
Ho	*	0.49	-0.07	<u>-0.21</u>	-0.11	0.17	*	*	<u>-0.04</u>	*	*	*	-1.05
In	*	*	*	*	*	*	*	*	*	*	*	*	*
La	*	1.31	-0.28	0.32	-0.00	-0.34	*	<u>4.46</u>	<u>0.08</u>	*	<u>0.53</u>	<u>1.50</u>	*
Li	*	*	-0.55	*	*	-0.43	*	*	*	*	*	*	*
Lu	*	1.57	-0.31	0.00	0.17	-0.06	*	*	<u>0.00</u>	*	*	*	3.75
Mo	*	*	-0.12	<u>0.39</u>	<u>0.27</u>	*	*	<u>10.01</u>	*	*	*	*	*
Nb	*	<u>-2.14</u>	0.75	<u>0.58</u>	<u>1.31</u>	-2.61	*	<u>-1.28</u>	<u>0.20</u>	*	<u>0.00</u>	*	*
Nd	*	1.30	-0.30	-0.30	0.04	-0.09	*	<u>0.62</u>	<u>0.04</u>	*	*	*	0.72
Ni	*	<u>-4.60</u>	0.71	<u>-0.80</u>	<u>-0.44</u>	0.46	*	<u>-2.03</u>	<u>0.06</u>	<u>-1.17</u>	<u>-1.17</u>	*	*
Pb	*	4.38	0.01	-0.80	-0.53	0.03	*	<u>-1.34</u>	<u>-0.30</u>	*	<u>3.87</u>	*	*
Pr	*	0.62	-0.23	-0.93	0.04	-0.16	*	*	<u>0.04</u>	*	*	*	-8.69
Rb	*	<u>-1.16</u>	0.08	<u>-0.42</u>	0.09	-0.05	<u>0.56</u>	<u>0.33</u>	-0.25	<u>0.66</u>	<u>0.66</u>	*	*
Sb	*	*	*	<u>-1.85</u>	<u>17.74</u>	*	*	*	*	*	*	*	*
Sc	*	<u>-19.06</u>	0.95	<u>-0.22</u>	0.61	*	*	<u>6.28</u>	<u>0.68</u>	*	<u>-0.89</u>	*	*
Sm	*	2.21	0.09	<u>-0.03</u>	-0.03	-0.22	*	<u>-3.46</u>	<u>-0.10</u>	*	*	*	-1.03
Sn	*	*	0.04	<u>4.03</u>	1.67	<u>-4.89</u>	*	<u>1.13</u>	*	*	*	*	*
Sr	*	<u>-2.22</u>	1.04	<u>-1.19</u>	-0.17	0.43	<u>0.03</u>	<u>-0.12</u>	-0.10	<u>0.52</u>	<u>0.59</u>	*	*
Ta	*	<u>13.06</u>	-0.01	<u>-2.19</u>	5.18	-0.94	*	*	<u>0.21</u>	*	*	*	*
Tb	*	-0.51	0.00	-1.71	-0.04	-0.19	*	*	<u>0.00</u>	*	*	*	-0.34
Th	*	0.34	-0.51	-0.23	-0.14	-0.20	*	<u>-0.68</u>	<u>0.14</u>	*	<u>1.30</u>	*	*
Tl	*	*	1.51	-0.00	0.31	*	*	*	*	*	*	*	*
Tm	*	0.43	-0.17	-0.17	0.15	-0.26	*	*	*	*	*	*	-0.77
U	*	0.49	-0.10	-0.89	-0.19	0.67	*	<u>11.97</u>	<u>0.05</u>	*	*	*	*
V	*	<u>-6.18</u>	1.00	<u>1.96</u>	<u>0.31</u>	*	<u>0.54</u>	<u>-1.75</u>	*	<u>-0.61</u>	<u>-1.19</u>	*	*
W	*	<u>28.54</u>	*	*	*	*	*	*	*	*	*	*	*
Y	*	0.37	1.34	-2.28	1.04	1.80	*	<u>0.01</u>	-0.08	<u>0.14</u>	<u>1.02</u>	-1.13	*
Yb	*	0.52	-0.10	-0.04	-0.09	-0.14	*	*	<u>-0.18</u>	*	*	-2.97	*
Zn	*	3.07	-0.25	0.25	0.36	1.63	<u>0.02</u>	<u>-1.05</u>	<u>0.15</u>	<u>-0.08</u>	<u>-0.67</u>	*	*
Zr	*	-3.70	0.81	3.82	1.54	0.21	<u>0.63</u>	<u>-0.47</u>	-0.17	<u>-0.22</u>	<u>1.41</u>	*	*

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

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

Lab Code	L109	L110	L112	L114	L115	L116	L117	L118	L121	L122	L124	L126	L128
SiO <sub>2</sub>	<u>0.18</u>	<u>0.07</u>	-0.03	-0.52	<u>0.23</u>	<u>-0.03</u>	-2.40	0.16	-0.52	-0.21	-0.28	<u>0.63</u>	*
TiO <sub>2</sub>	<u>0.26</u>	<u>-0.13</u>	0.83	-1.13	<u>0.09</u>	<u>0.68</u>	<u>-0.04</u>	<u>1.83</u>	-0.26	<u>0.61</u>	-0.54	<u>-0.30</u>	*
Al <sub>2</sub> O <sub>3</sub>	<u>-0.08</u>	<u>-0.04</u>	-0.09	<u>0.64</u>	<u>0.27</u>	<u>-0.02</u>	-0.85	-2.39	-0.09	-1.18	<u>1.06</u>	<u>0.56</u>	*
Fe <sub>2</sub> O <sub>3</sub> T	<u>0.36</u>	<u>0.61</u>	-1.34	-0.70	<u>0.38</u>	<u>0.06</u>	<u>0.45</u>	-0.83	<u>0.06</u>	<u>0.89</u>	<u>0.00</u>	<u>0.35</u>	*
Fe(II)O	*	*	*	*	<u>0.76</u>	*	*	*	*	*	*	*	*
MnO	-1.83	<u>0.43</u>	1.08	-1.94	<u>0.11</u>	<u>0.75</u>	-1.63	-6.36	0.00	0.43	-0.56	<u>0.32</u>	<u>-1.55</u>
MgO	<u>-0.03</u>	<u>-0.86</u>	2.42	-0.40	<u>0.10</u>	<u>0.25</u>	<u>-0.42</u>	<u>0.05</u>	-0.10	<u>0.00</u>	<u>0.03</u>	<u>-0.10</u>	*
CaO	<u>0.37</u>	<u>-0.10</u>	-0.20	-0.27	<u>-0.27</u>	<u>-0.34</u>	-1.47	0.68	0.14	<u>2.05</u>	0.33	<u>0.00</u>	*
Na <sub>2</sub> O	<u>0.00</u>	<u>1.58</u>	2.91	-0.62	<u>-0.06</u>	<u>-1.95</u>	<u>0.03</u>	-1.57	-0.12	<u>0.39</u>	<u>0.69</u>	<u>-0.06</u>	*
K <sub>2</sub> O	<u>0.20</u>	<u>-0.03</u>	-1.26	<u>0.66</u>	<u>-0.33</u>	<u>-1.06</u>	<u>0.08</u>	<u>0.00</u>	-0.66	<u>0.66</u>	<u>0.42</u>	<u>1.65</u>	*
P <sub>2</sub> O <sub>5</sub>	<u>-0.66</u>	<u>-0.40</u>	<u>1.06</u>	<u>-2.66</u>	<u>0.00</u>	<u>-0.27</u>	<u>0.90</u>	-4.38	-0.27	<u>0.27</u>	<u>1.37</u>	<u>0.00</u>	*
Ag	<u>0.60</u>	*	*	*	<u>-0.93</u>	*	*	*	<u>19.66</u>	*	*	*	<u>0.07</u>
Ba	<u>0.27</u>	*	<u>0.00</u>	<u>3.59</u>	<u>-1.38</u>	<u>-0.88</u>	<u>-0.96</u>	*	-0.69	<u>3.44</u>	<u>0.40</u>	*	<u>1.67</u>
Be	<u>0.76</u>	*	-0.37	*	<u>0.26</u>	*	*	*	-0.82	*	<u>0.97</u>	*	*
Bi	<u>1.20</u>	*	*	<b>481.76</b>	<u>1.20</u>	*	*	*	<u>-0.02</u>	*	*	*	<u>-0.12</u>
Cd	<u>0.62</u>	*	-0.35	*	<u>0.62</u>	*	*	*	<u>3.21</u>	*	*	*	<u>-2.83</u>
Ce	<u>-1.04</u>	*	-0.16	<u>6.37</u>	<u>0.27</u>	<u>-0.23</u>	<u>0.06</u>	*	<u>0.53</u>	<u>1.77</u>	<u>0.24</u>	*	<u>4.91</u>
Co	<u>1.61</u>	*	0.47	-0.71	<u>0.64</u>	<u>-0.40</u>	<u>2.63</u>	-8.57	-0.21	-0.71	<u>0.43</u>	*	<u>-0.47</u>
Cr	-4.17	*	1.62	-2.12	<u>-3.43</u>	<u>0.08</u>	<u>10.87</u>	-8.17	2.29	-3.27	<u>0.44</u>	*	<u>-0.55</u>
Cs	<u>1.51</u>	*	0.13	8.32	<u>0.13</u>	*	*	*	-4.93	*	0.27	*	*
Cu	<u>-0.01</u>	*	-1.37	<u>0.87</u>	<u>0.54</u>	<u>-1.78</u>	<u>-1.47</u>	-3.48	-1.24	<u>1.08</u>	<u>0.30</u>	*	<u>0.70</u>
Dy	<u>1.24</u>	*	-0.21	*	<u>-0.18</u>	<u>-0.11</u>	<u>0.66</u>	*	-0.18	*	<u>0.05</u>	*	*
Er	<u>-0.76</u>	*	-0.04	*	<u>1.22</u>	<u>-0.03</u>	<u>0.82</u>	*	-0.00	*	-0.18	*	*
Eu	<u>-1.10</u>	*	-0.21	*	<u>0.03</u>	<u>0.03</u>	<u>0.29</u>	*	-0.05	*	-0.26	*	*
Ga	<u>-0.24</u>	*	-0.40	<u>0.63</u>	<u>0.53</u>	<u>-0.24</u>	<u>-1.52</u>	*	-0.25	<u>0.63</u>	<u>0.29</u>	*	<u>0.33</u>
Gd	<u>-0.64</u>	*	-0.07	*	<u>0.21</u>	<u>0.21</u>	<u>0.36</u>	*	<u>0.07</u>	*	<u>0.15</u>	*	*
Ge	<u>0.97</u>	*	*	<u>-4.32</u>	<u>-6.05</u>	*	*	*	<u>0.60</u>	*	*	*	*
Hf	<u>0.63</u>	*	-0.72	<u>-9.29</u>	<u>-0.16</u>	*	*	*	<u>0.90</u>	*	<u>0.83</u>	*	*
Ho	<u>-1.30</u>	*	0.17	*	<u>-0.18</u>	<u>-0.21</u>	<u>0.36</u>	*	-0.35	*	<u>0.08</u>	*	*
In	<u>-0.12</u>	*	*	*	<u>0.31</u>	*	*	*	*	*	*	*	*
La	<u>0.08</u>	*	-0.46	<u>1.06</u>	<u>-0.14</u>	<u>0.01</u>	<u>0.15</u>	*	-0.80	<u>-0.21</u>	<u>0.12</u>	*	<u>-0.73</u>
Li	<u>0.62</u>	*	-0.19	*	<u>0.34</u>	*	*	*	-1.79	*	<u>0.43</u>	*	*
Lu	<u>-2.34</u>	*	-0.28	*	<u>0.31</u>	<u>0.13</u>	<u>0.52</u>	*	<u>0.32</u>	*	<u>0.04</u>	*	*
Mo	<u>-0.31</u>	*	-0.92	*	<u>0.11</u>	*	*	*	<u>1.90</u>	*	*	*	<u>-2.01</u>
Nb	<u>-1.07</u>	*	<u>0.61</u>	<u>0.00</u>	<u>0.00</u>	<u>0.85</u>	*	*	<u>2.89</u>	<u>1.71</u>	<u>0.62</u>	*	<u>-0.72</u>
Nd	<u>1.51</u>	*	-0.08	<u>-2.09</u>	<u>-0.09</u>	<u>-0.92</u>	*	*	-0.30	<u>-2.09</u>	-0.07	*	*
Ni	<u>-0.53</u>	*	-0.71	<u>-2.35</u>	<u>0.24</u>	<u>-0.00</u>	<u>-0.70</u>	-8.58	-0.42	-2.67	-0.24	*	<u>-0.74</u>
Pb	<u>0.01</u>	*	-1.16	<u>1.02</u>	<u>-0.67</u>	*	<u>-0.12</u>	*	-1.06	<u>-0.83</u>	<u>0.00</u>	*	<u>-2.09</u>
Pr	<u>0.68</u>	*	0.22	*	<u>0.40</u>	<u>-0.05</u>	<u>0.42</u>	*	-0.40	*	<u>0.41</u>	*	*
Rb	<u>-0.58</u>	*	0.04	<u>-1.16</u>	<u>0.79</u>	<u>-4.10</u>	*	*	1.33	-0.33	<u>0.13</u>	*	<u>-0.12</u>
Sb	<u>-0.34</u>	*	2.62	*	<u>-0.34</u>	*	*	-1.04	-0.68	*	*	*	*
Sc	<u>-0.30</u>	*	0.86	<u>-1.79</u>	<u>0.12</u>	<u>0.42</u>	<u>-0.60</u>	*	-1.79	-0.60	<u>0.64</u>	*	<u>-1.25</u>
Sm	<u>1.41</u>	*	-0.01	*	<u>0.05</u>	<u>-0.04</u>	<u>0.87</u>	*	-0.28	*	<u>0.04</u>	*	*
Sn	<u>2.37</u>	*	1.24	*	<u>-0.10</u>	<u>-0.72</u>	<u>0.58</u>	*	-2.55	*	*	*	*
Sr	<u>1.04</u>	*	0.25	<u>-0.74</u>	<u>1.04</u>	<u>-0.89</u>	<u>-0.45</u>	*	0.00	-1.18	<u>0.27</u>	*	<u>0.05</u>
Ta	<u>-0.55</u>	*	-0.03	*	<u>0.11</u>	*	<u>5.88</u>	*	1.95	*	-0.07	*	*
Tb	<u>-1.54</u>	*	-0.10	*	<u>0.26</u>	<u>-0.15</u>	<u>0.40</u>	*	0.00	*	<u>0.07</u>	*	*
Th	<u>0.40</u>	*	-0.61	<b>19.60</b>	<u>0.20</u>	<u>0.17</u>	<u>1.02</u>	*	-1.13	<u>7.53</u>	<u>0.02</u>	*	<u>-1.16</u>
Tl	<u>0.38</u>	*	-0.08	*	<u>-0.00</u>	*	*	*	-0.76	*	*	*	*
Tm	<u>-2.49</u>	*	0.19	*	<u>-0.09</u>	<u>0.05</u>	<u>0.41</u>	*	-0.47	*	*	*	*
U	<u>-1.13</u>	*	0.25	*	<u>0.15</u>	<u>0.44</u>	<u>0.69</u>	*	-0.30	*	<u>0.60</u>	*	*
V	<u>-1.61</u>	*	-0.02	<u>-2.59</u>	<u>-0.34</u>	<u>-0.45</u>	<u>0.77</u>	-1.24	0.16	-2.06	<u>0.00</u>	*	<u>-1.40</u>
W	<u>-0.48</u>	*	-0.51	*	<u>1.12</u>	*	*	*	3.53	*	*	*	*
Y	<u>-0.74</u>	*	-0.45	0.28	<u>0.58</u>	<u>-0.57</u>	<u>0.15</u>	*	-0.15	<b>166.91</b>	1.10	*	<u>-0.40</u>
Yb	<u>0.95</u>	*	-0.11	-7.90	<u>0.29</u>	<u>-0.02</u>	<u>0.62</u>	*	-0.60	*	<u>0.03</u>	*	*
Zn	<u>-1.55</u>	*	-0.46	-0.75	<u>0.51</u>	<u>0.29</u>	*	-4.20	-1.34	-1.64	<u>0.00</u>	*	<u>-0.31</u>
Zr	<u>0.78</u>	*	-0.50	0.31	<u>-0.22</u>	<u>0.16</u>	<u>-2.98</u>	*	1.06	-0.44	<u>2.60</u>	*	<u>0.14</u>

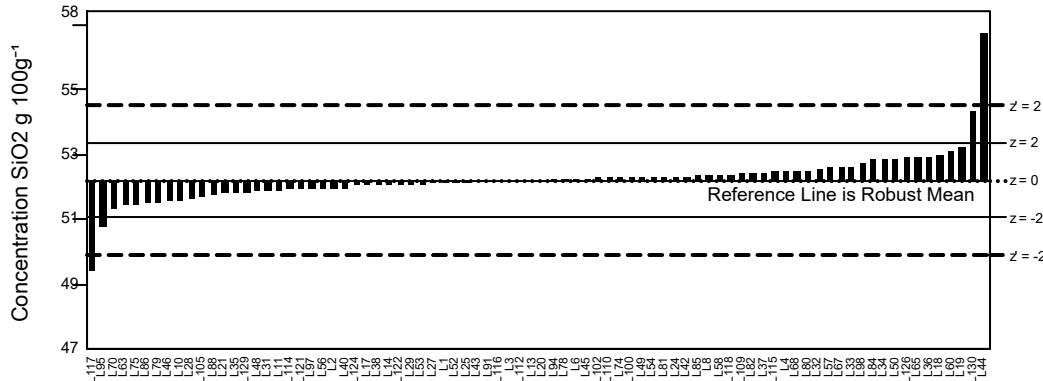
Bold entries are Data Quality 1 - Underlined entries are Data Quality 2 - Entries in italics are derived from Provisional Values.

Table 3 - GeoPT49 Z-scores for Basalt, BVA-1. 30/06/2021

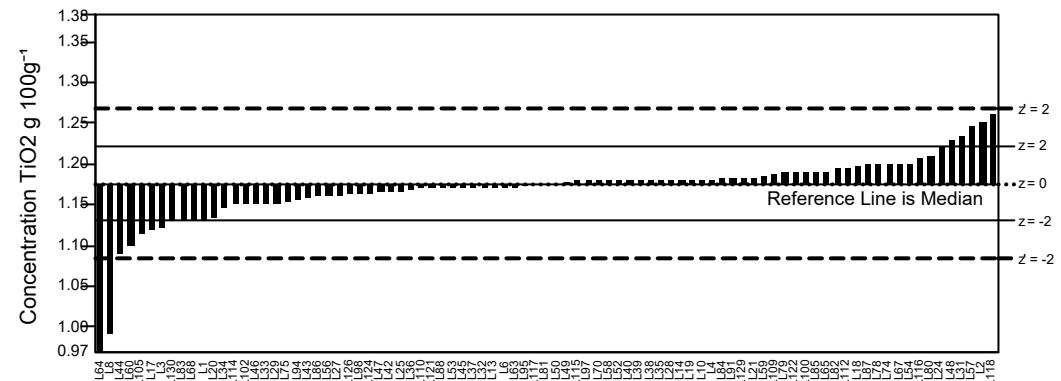
Lab Code	L129	L130
SiO <sub>2</sub>	<b>-0.63</b>	<u>1.83</u>
TiO <sub>2</sub>	<b>0.30</b>	<u>-1.00</u>
Al <sub>2</sub> O <sub>3</sub>	<b>-0.30</b>	<u>-2.13</u>
Fe <sub>2</sub> O <sub>3T</sub>	<b>-0.23</b>	<u>-0.10</u>
Fe(II)O	*	*
MnO	<b>-1.94</b>	<u>-0.97</u>
MgO	<b>-0.14</b>	<u>-2.83</u>
CaO	<b>0.33</b>	<u>0.31</u>
Na <sub>2</sub> O	<b>1.27</b>	<u>-5.74</u>
K <sub>2</sub> O	<b>-0.26</b>	<u>1.98</u>
P <sub>2</sub> O <sub>5</sub>	<b>0.53</b>	<u>5.31</u>
Ag	<b>-1.21</b>	*
Ba	<b>-0.18</b>	<u>0.31</u>
Be	<b>-1.77</b>	*
Bi	<b>0.05</b>	*
Cd	<b>-2.09</b>	*
Ce	<b>-0.34</b>	*
Co	<b>-0.43</b>	<u>2.75</u>
Cr	<b>-0.75</b>	<u>-0.63</u>
Cs	<b>-0.45</b>	*
Cu	<b>2.65</b>	<u>-1.61</u>
Dy	<b>0.58</b>	*
Er	<b>0.84</b>	*
Eu	<b>0.37</b>	*
Ga	<b>0.30</b>	*
Gd	<b>0.36</b>	*
Ge	*	*
Hf	<b>0.07</b>	*
Ho	<b>0.55</b>	*
In	*	*
La	<b>-0.06</b>	*
Li	<b>-2.50</b>	<u>3.25</u>
Lu	<b>0.44</b>	*
Mo	<b>0.11</b>	*
Nb	<b>-0.75</b>	*
Nd	<b>0.25</b>	*
Ni	<b>-2.14</b>	<u>-1.00</u>
Pb	<b>-0.22</b>	<u>-2.23</u>
Pr	<b>1.08</b>	*
Rb	<b>0.17</b>	*
Sb	<b>0.90</b>	*
Sc	<b>1.20</b>	*
Sm	<b>0.95</b>	*
Sn	<b>-2.00</b>	*
Sr	<b>-0.89</b>	<u>-0.28</u>
Ta	<b>-0.19</b>	*
Tb	<b>0.65</b>	*
Th	<b>2.00</b>	*
Tl	<b>-1.34</b>	*
Tm	<b>0.82</b>	*
U	<b>0.43</b>	*
V	<b>-1.54</b>	<u>1.09</u>
W	<b>-0.62</b>	*
Y	<b>0.54</b>	<u>-0.85</u>
Yb	<b>0.46</b>	*
Zn	<b>-1.68</b>	<u>0.38</u>
Zr	<b>1.03</b>	<u>1.78</u>

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

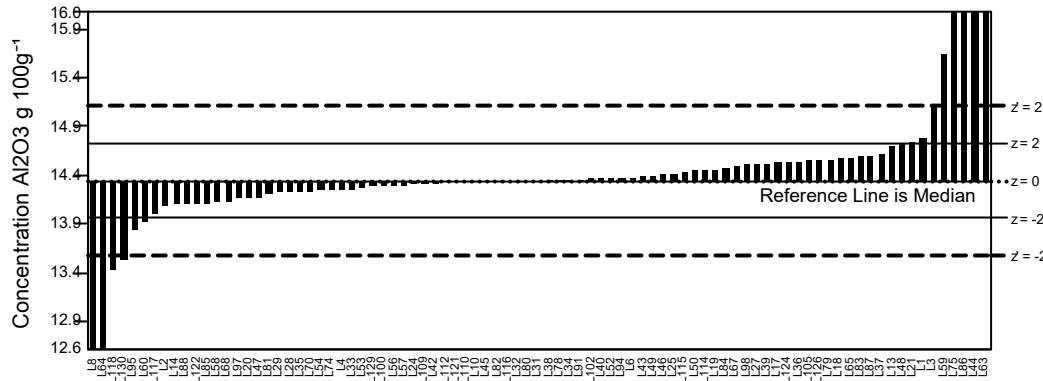
GeoPT49 - Barchart for SiO<sub>2</sub>



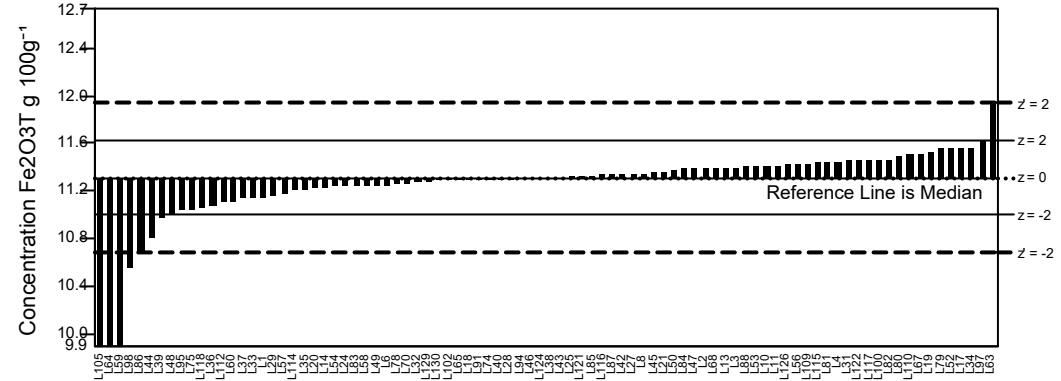
GeoPT49 - Barchart for TiO<sub>2</sub>



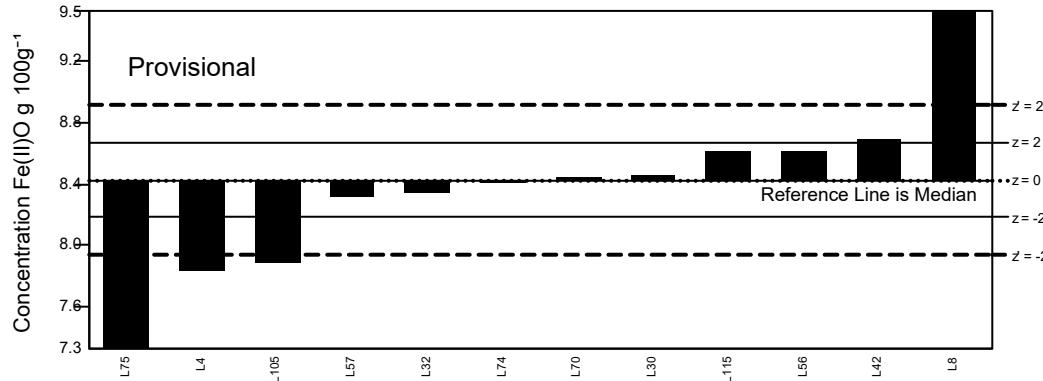
GeoPT49 - Barchart for Al<sub>2</sub>O<sub>3</sub>



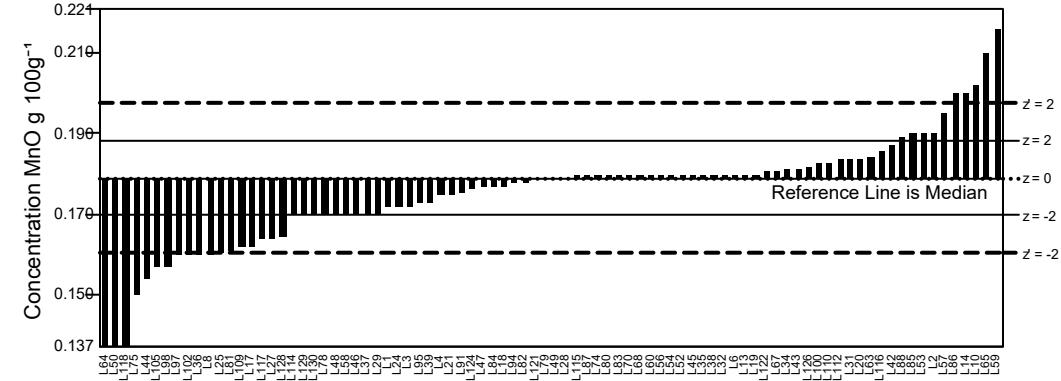
GeoPT49 - Barchart for Fe<sub>2</sub>O<sub>3T</sub>



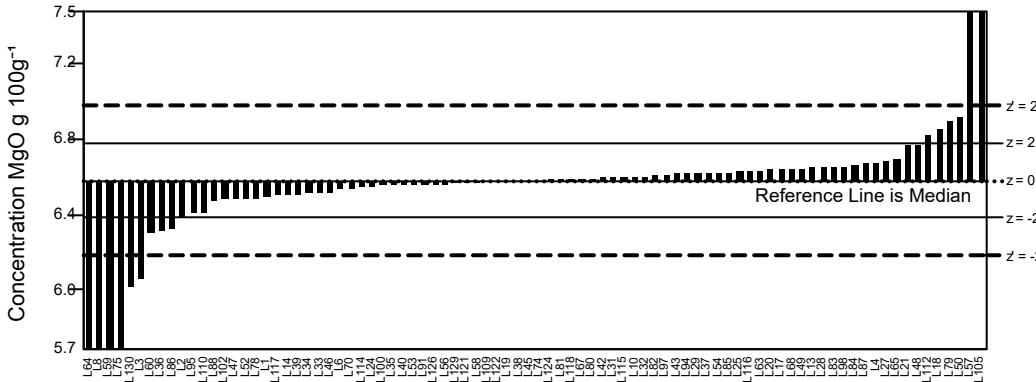
GeoPT49 - Barchart for Fe(II)O



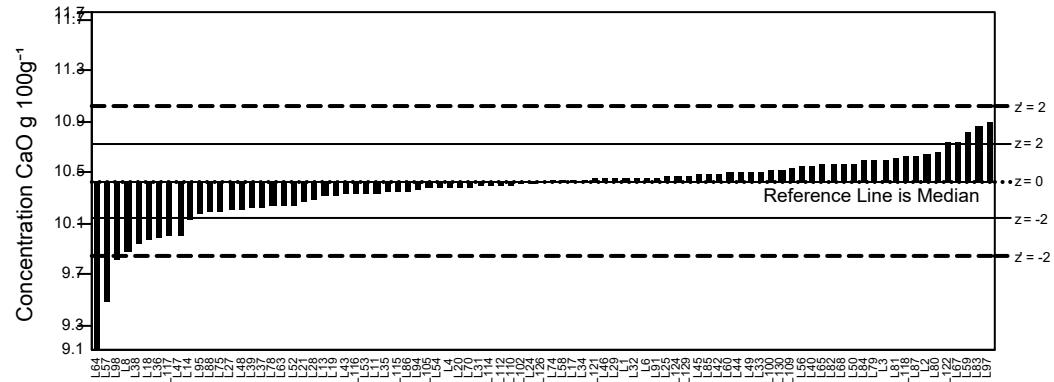
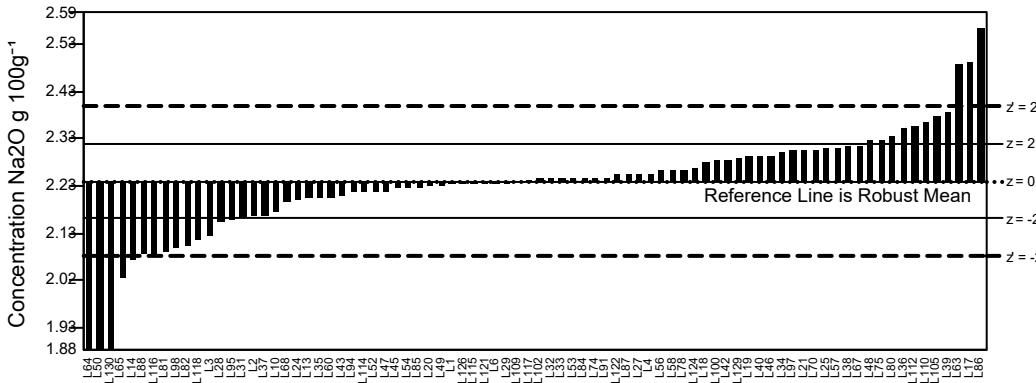
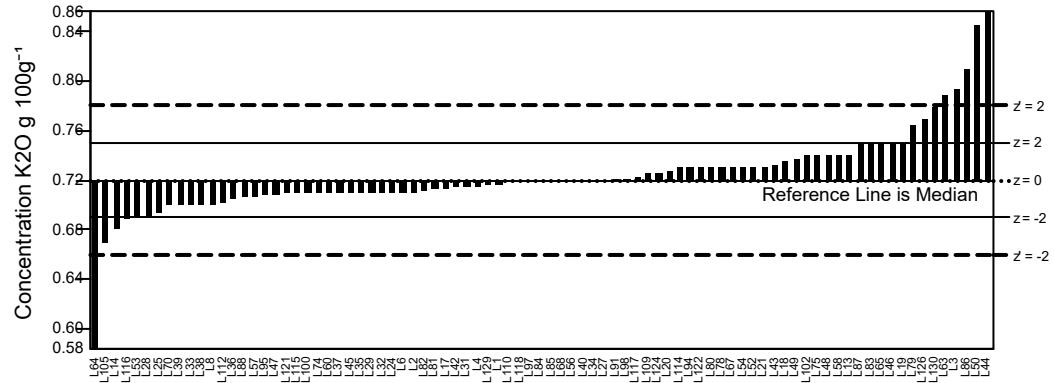
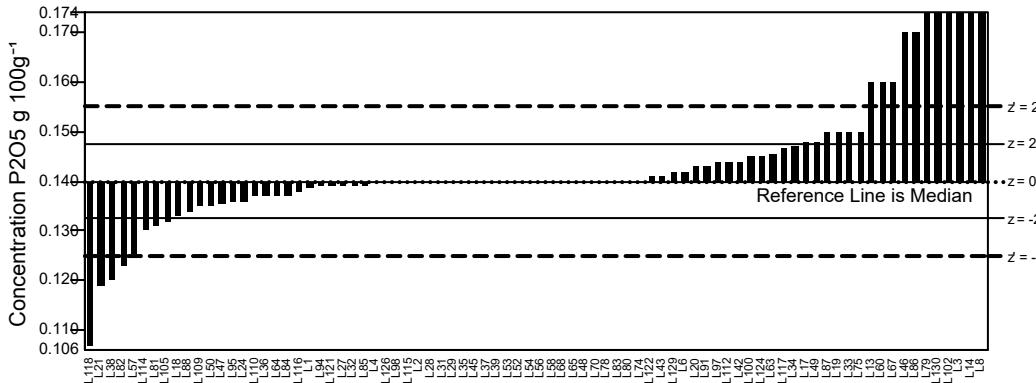
GeoPT49 - Barchart for MnO



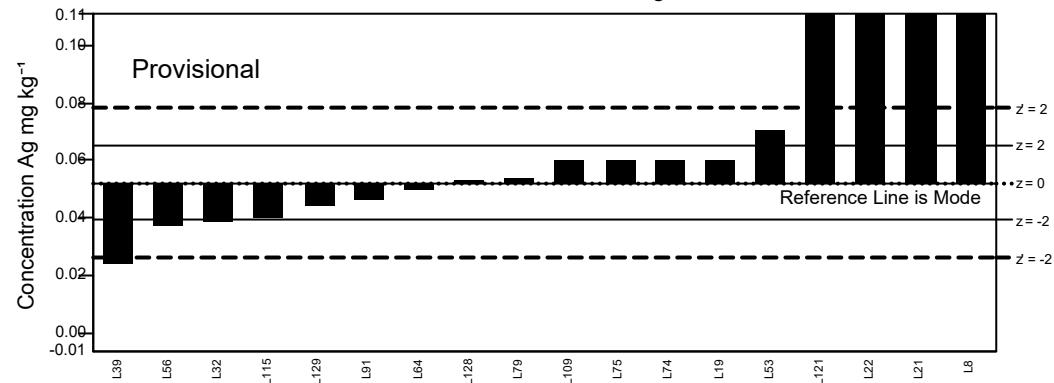
GeoPT49 - Barchart for MgO

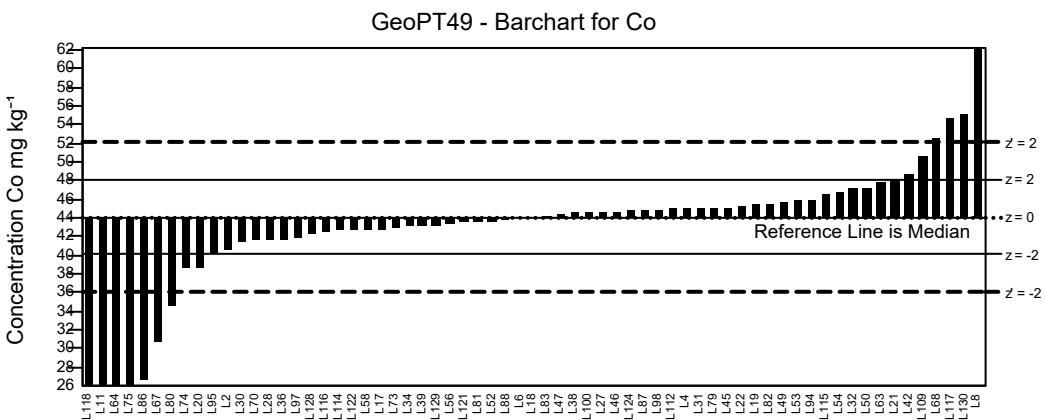
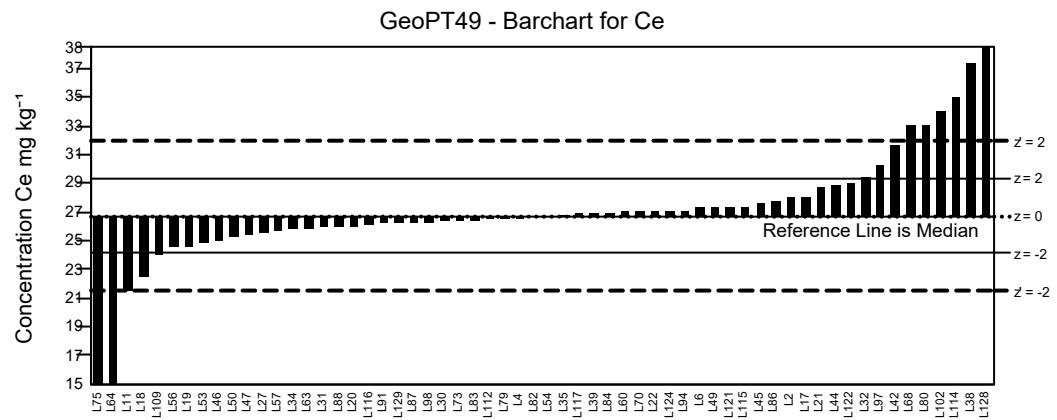
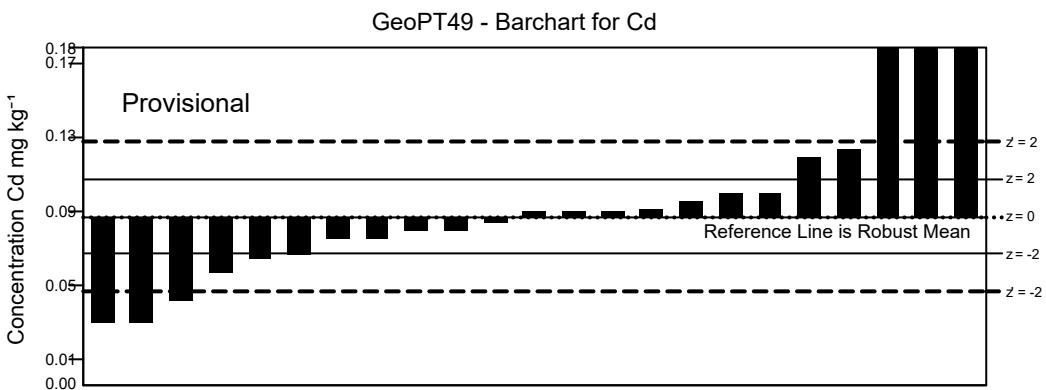
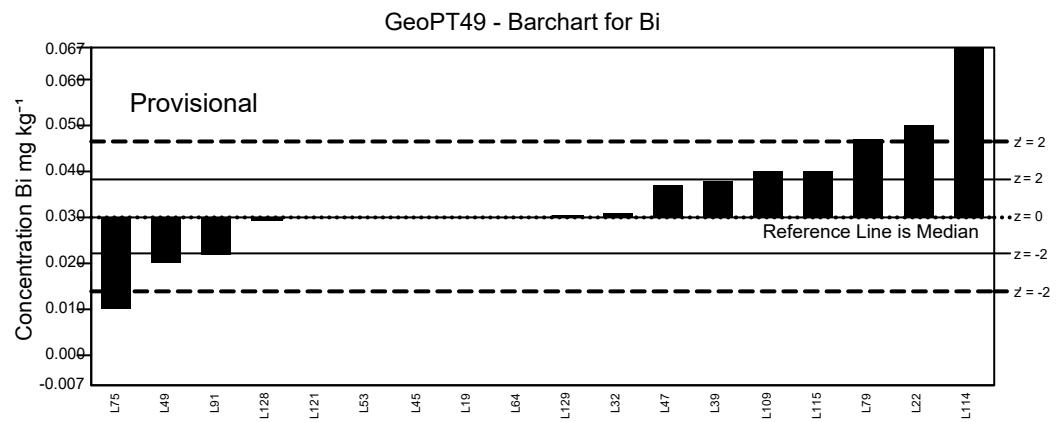
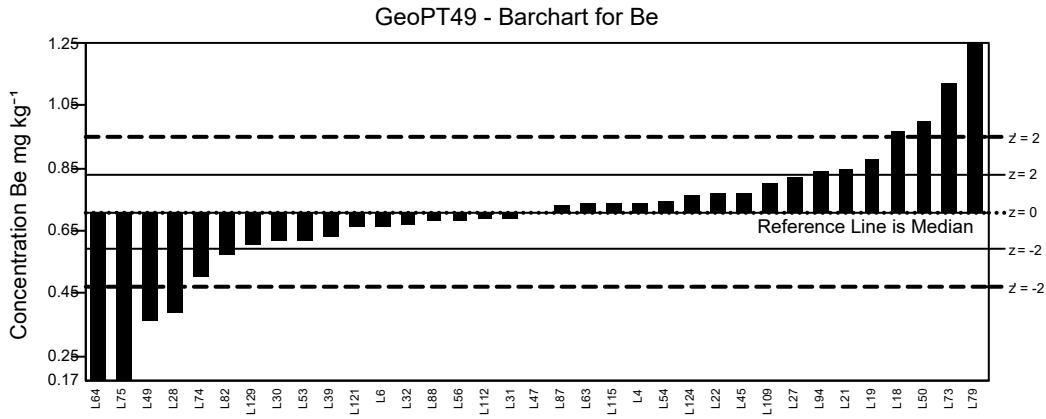
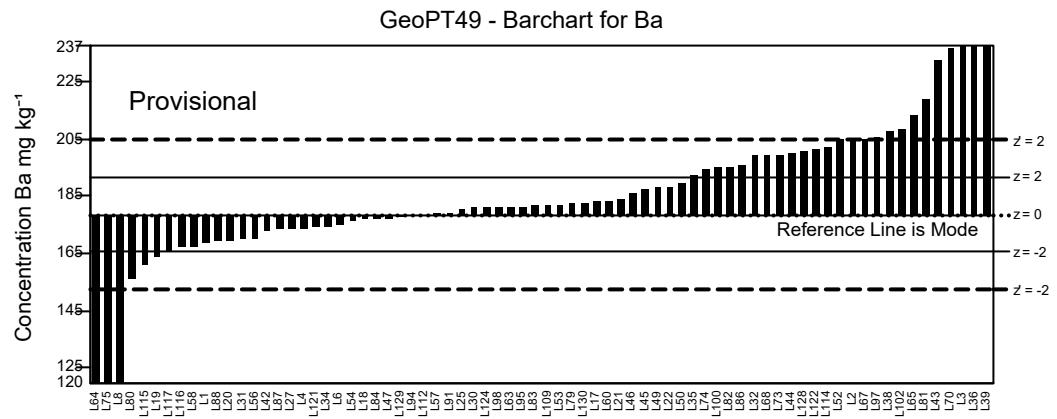


GeoPT49 - Barchart for CaO

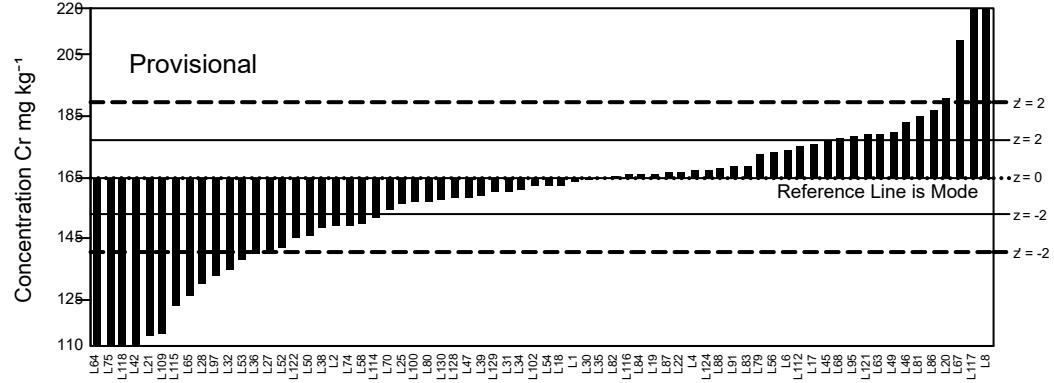
GeoPT49 - Barchart for Na<sub>2</sub>OGeoPT49 - Barchart for K<sub>2</sub>OGeoPT49 - Barchart for P<sub>2</sub>O<sub>5</sub>

GeoPT49 - Barchart for Ag

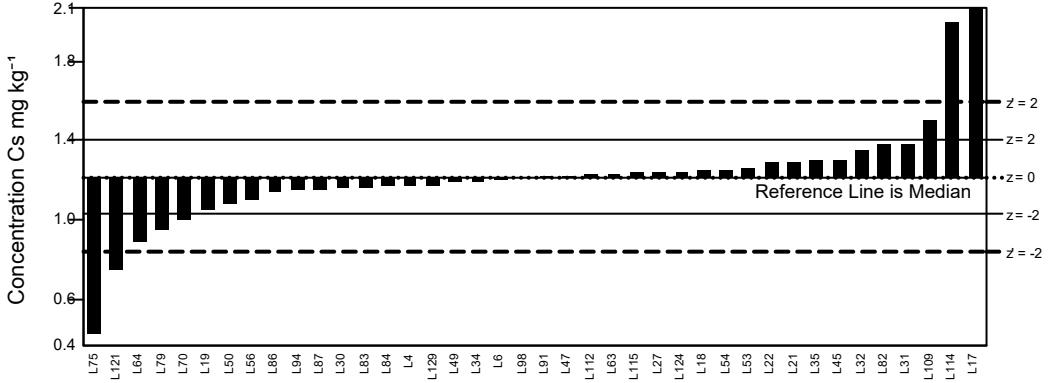




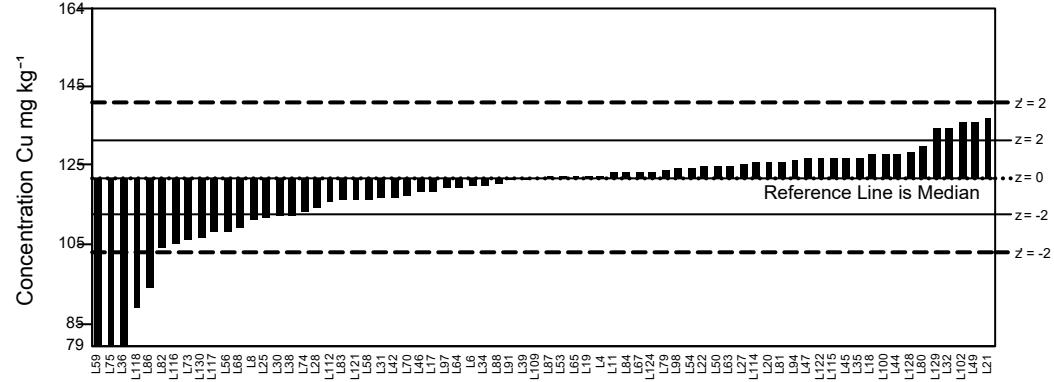
GeoPT49 - Barchart for Cr



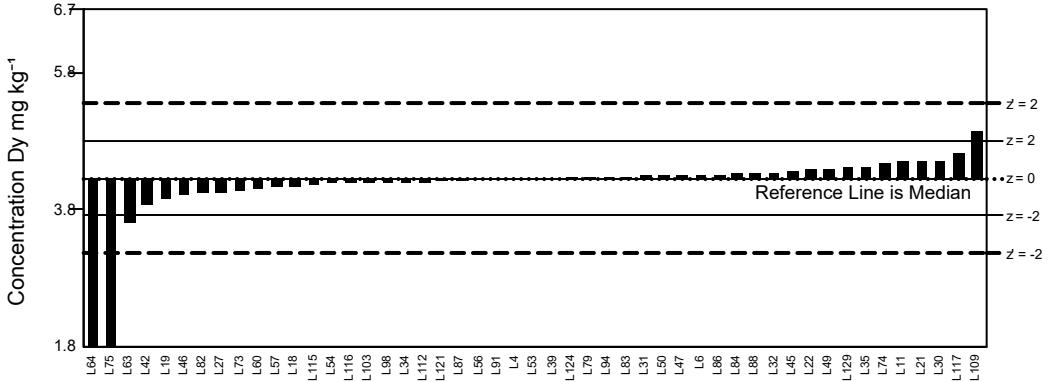
GeoPT49 - Barchart for Cs



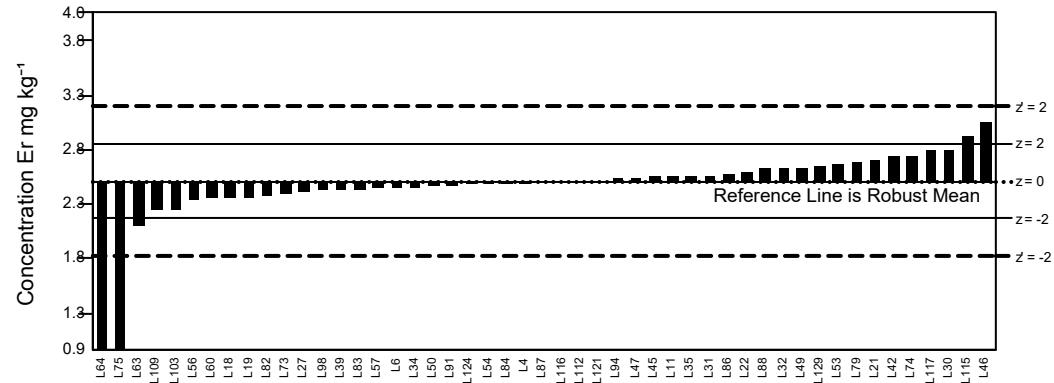
GeoPT49 - Barchart for Cu



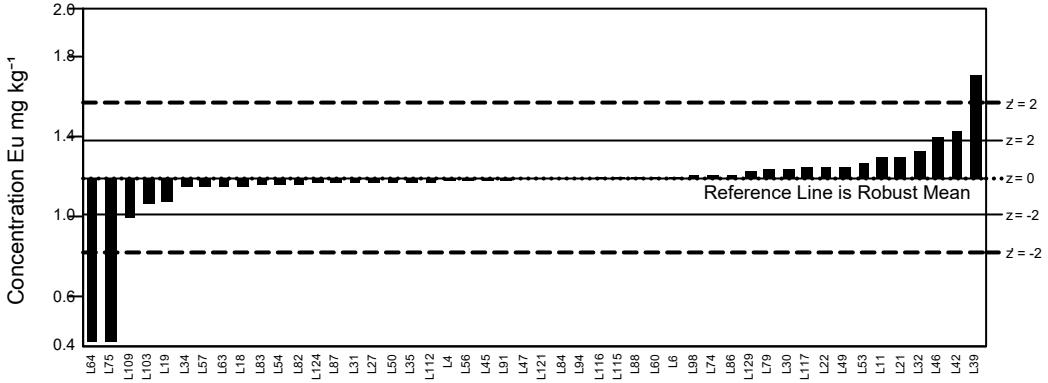
GeoPT49 - Barchart for Dy



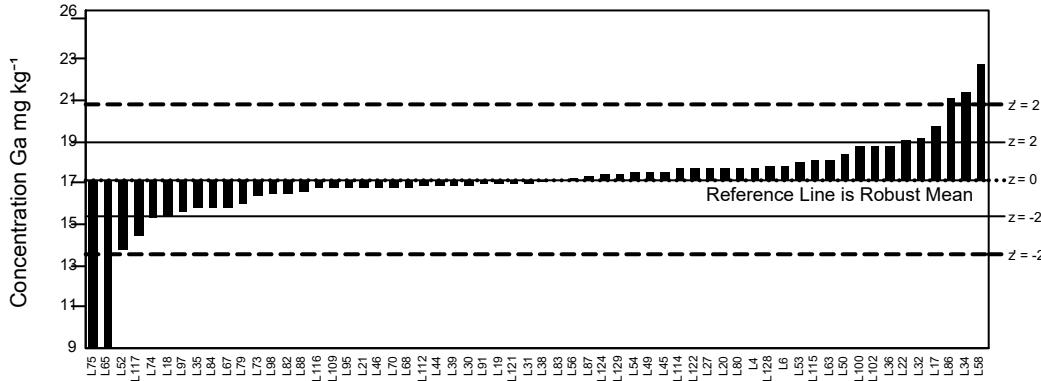
GeoPT49 - Barchart for Er



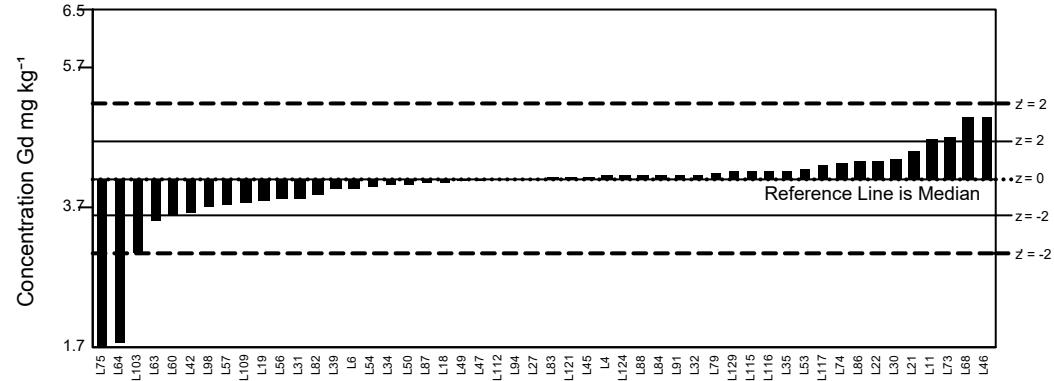
GeoPT49 - Barchart for Eu



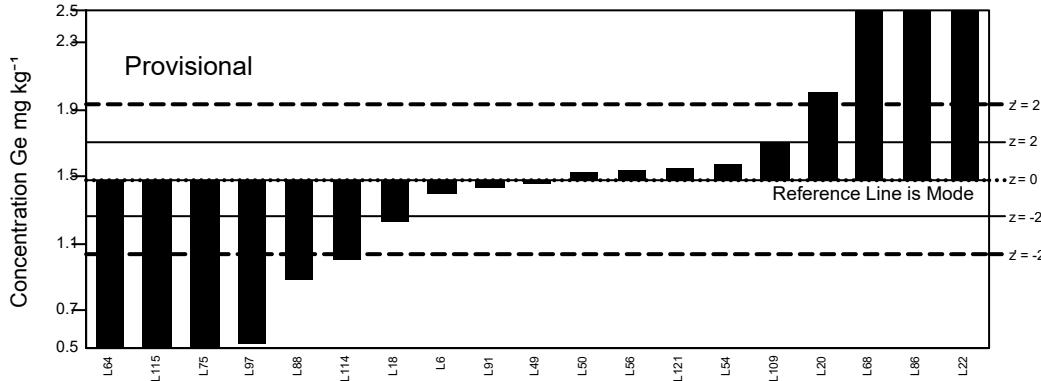
GeoPT49 - Barchart for Ga



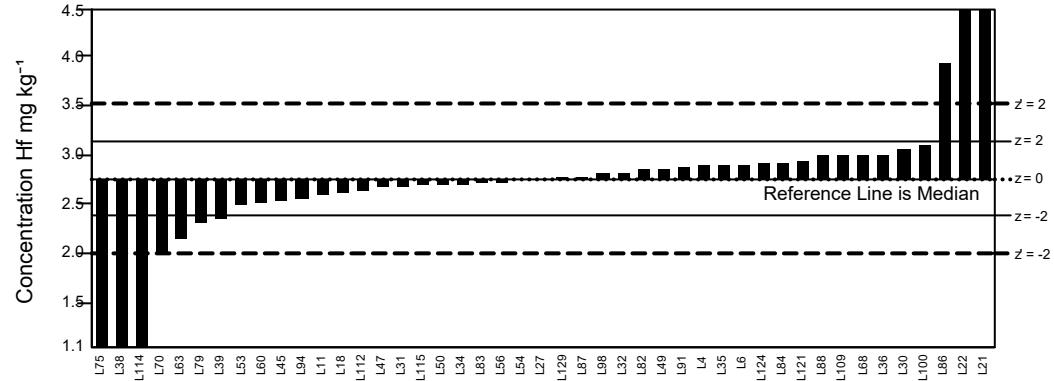
GeoPT49 - Barchart for Gd



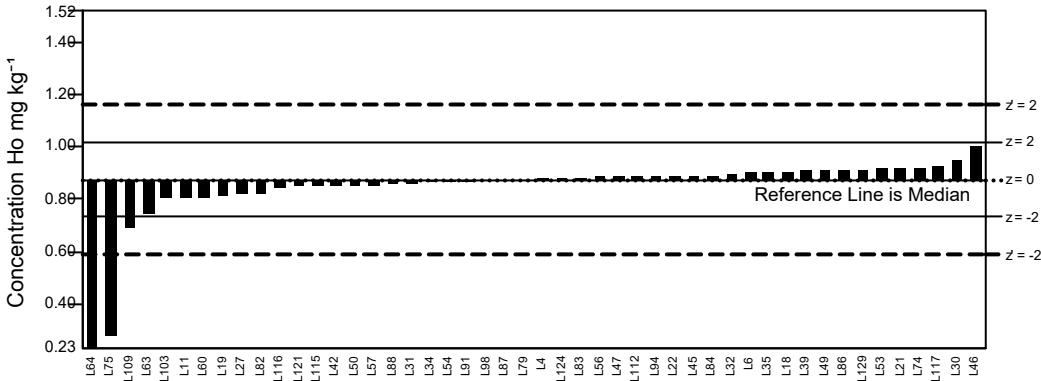
GeoPT49 - Barchart for Ge



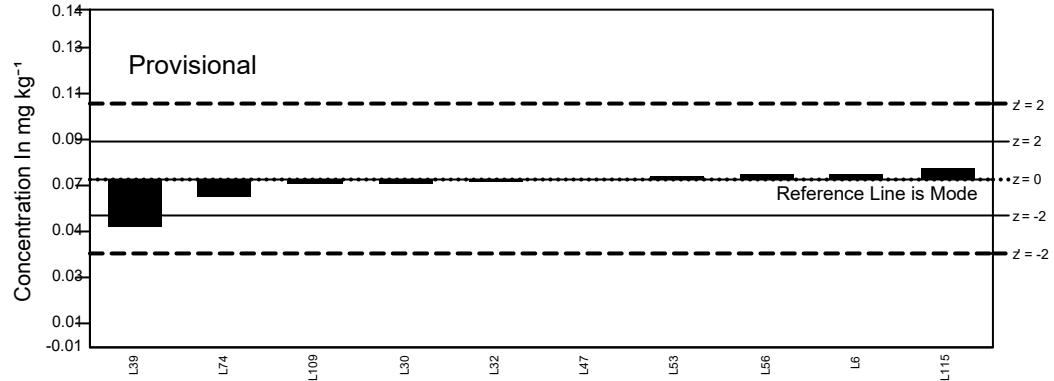
GeoPT49 - Barchart for Hf



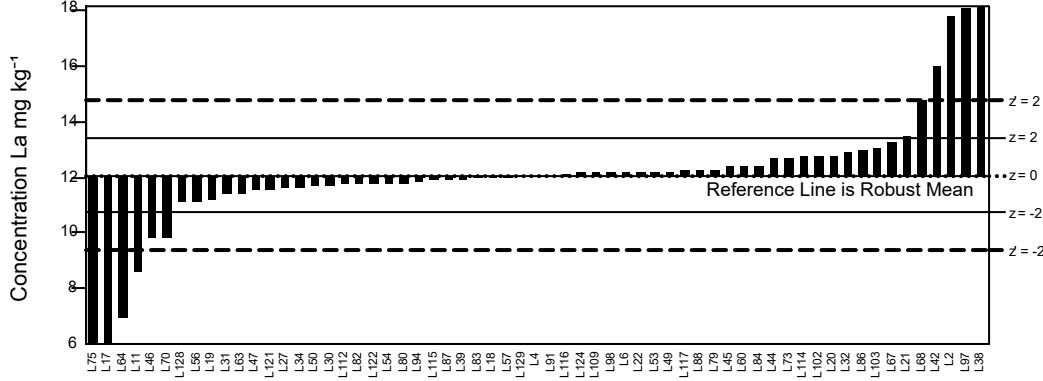
GeoPT49 - Barchart for Ho



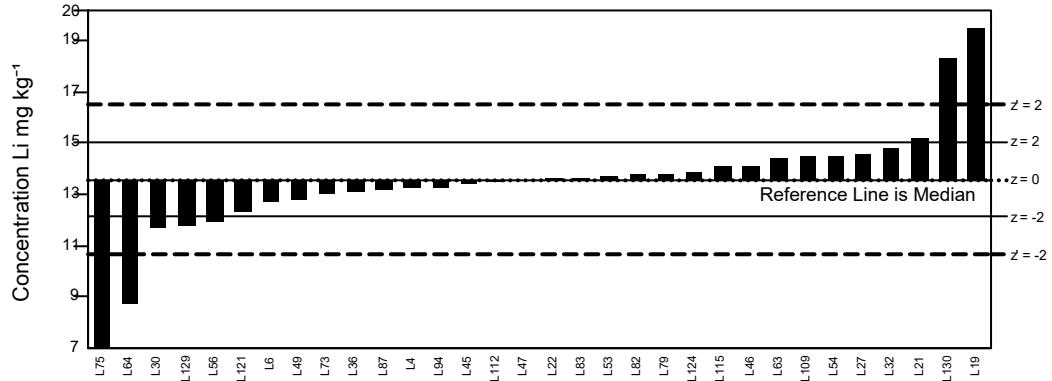
GeoPT49 - Barchart for In



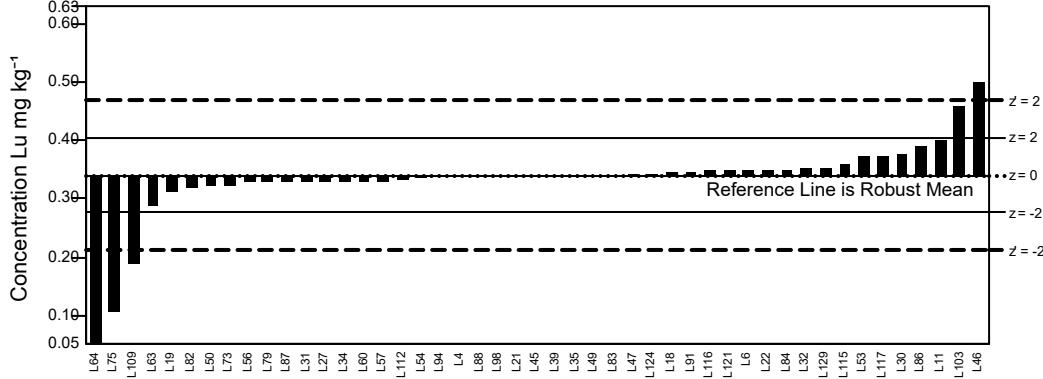
GeoPT49 - Barchart for La



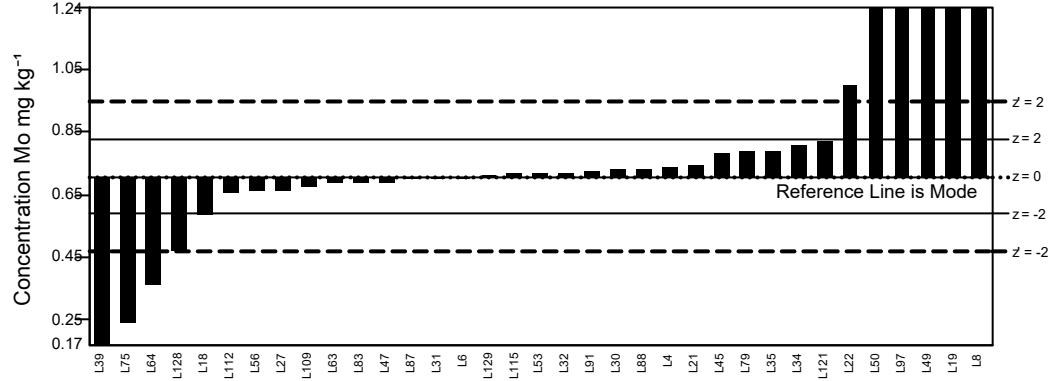
GeoPT49 - Barchart for Li



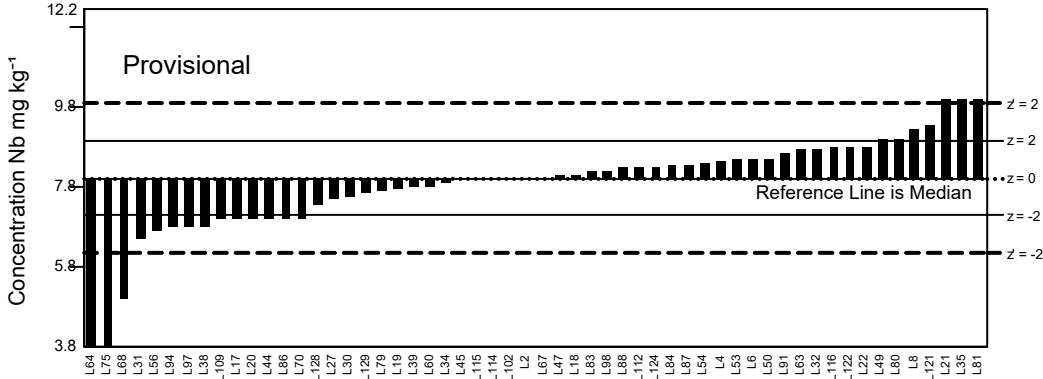
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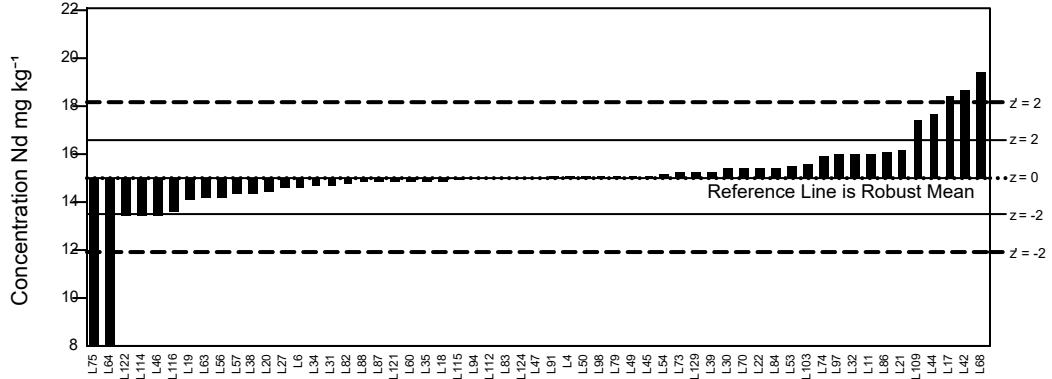
GeoPT49 - Barchart for Mo



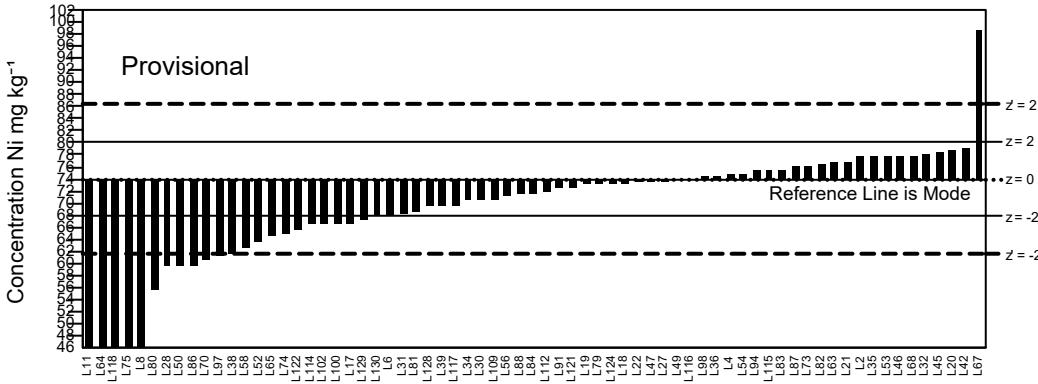
GeoPT49 - Barchart for Nb



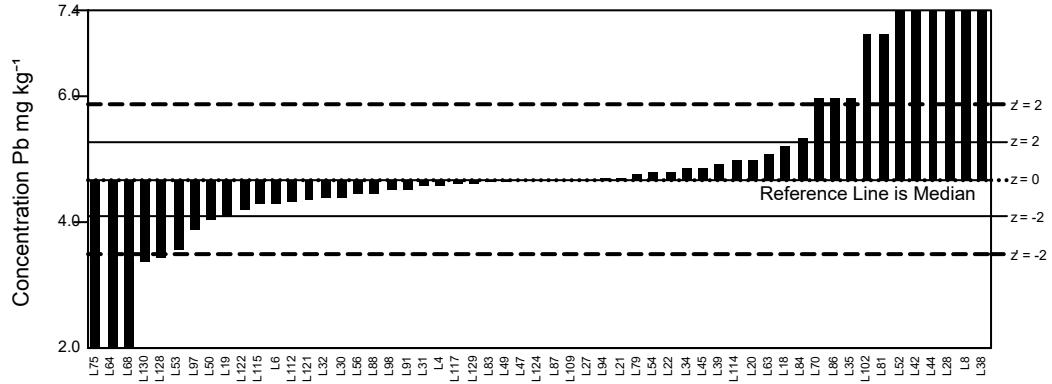
GeoPT49 - Barchart for Nd



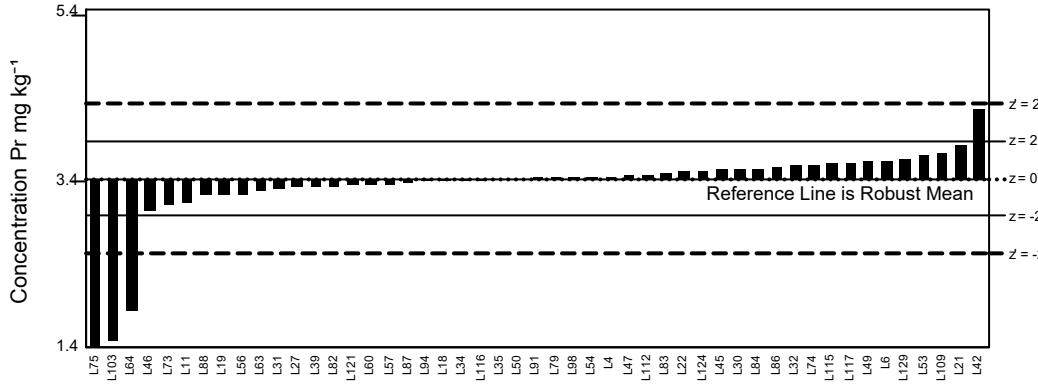
GeoPT49 - Barchart for Ni



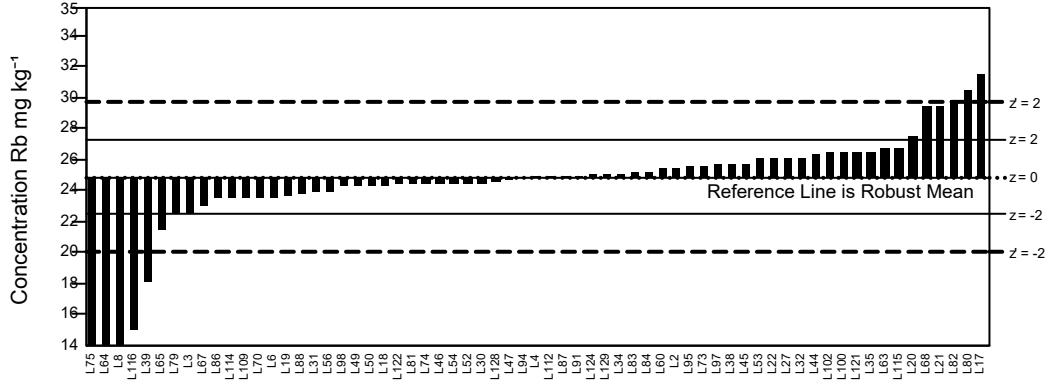
GeoPT49 - Barchart for Pb



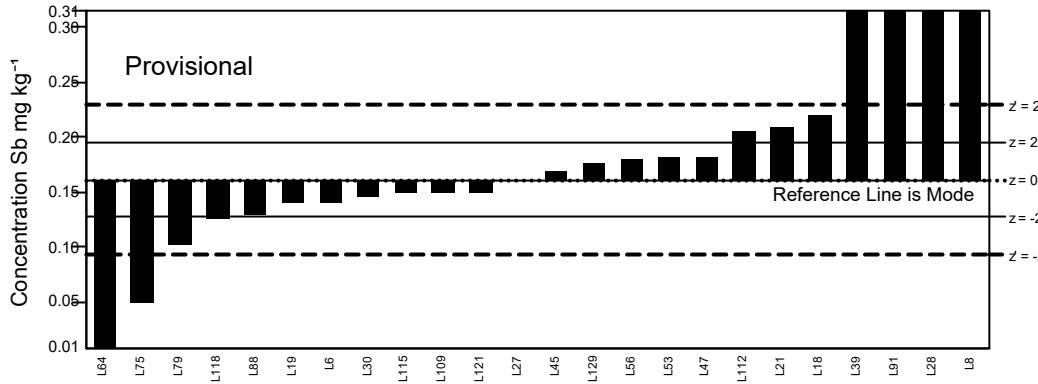
GeoPT49 - Barchart for Pr



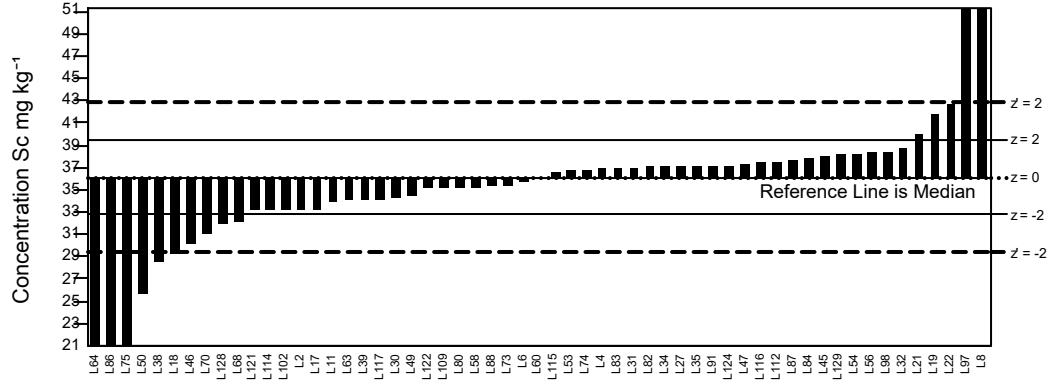
GeoPT49 - Barchart for Rb



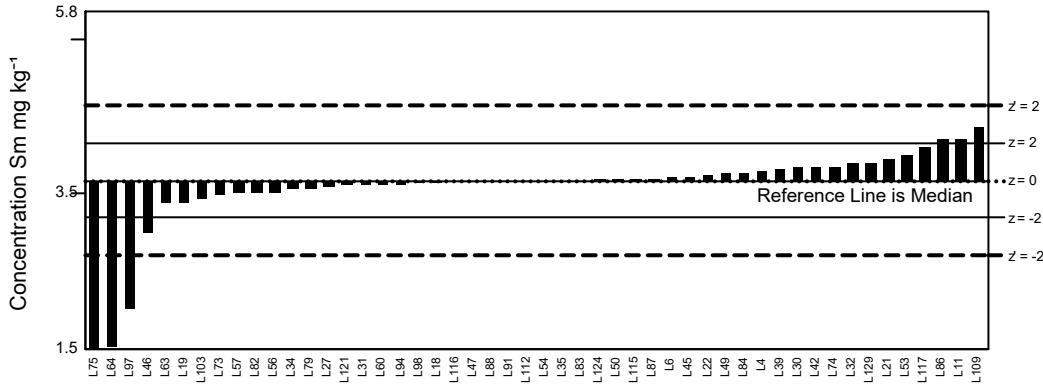
GeoPT49 - Barchart for Sb



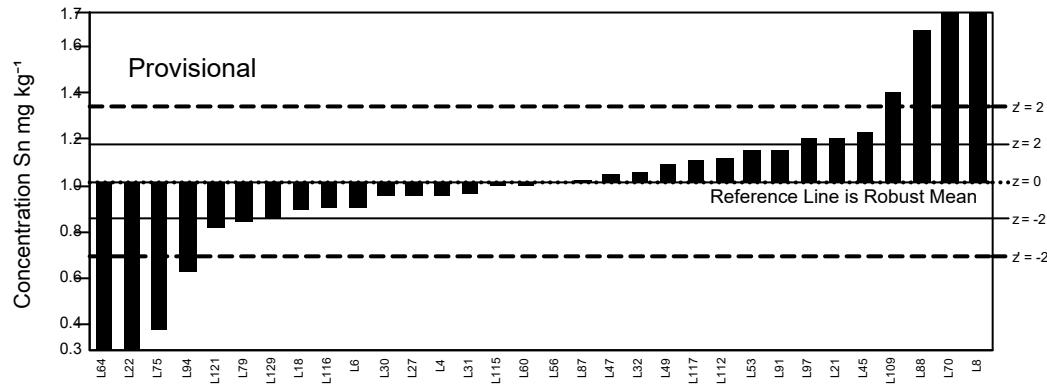
GeoPT49 - Barchart for Sc



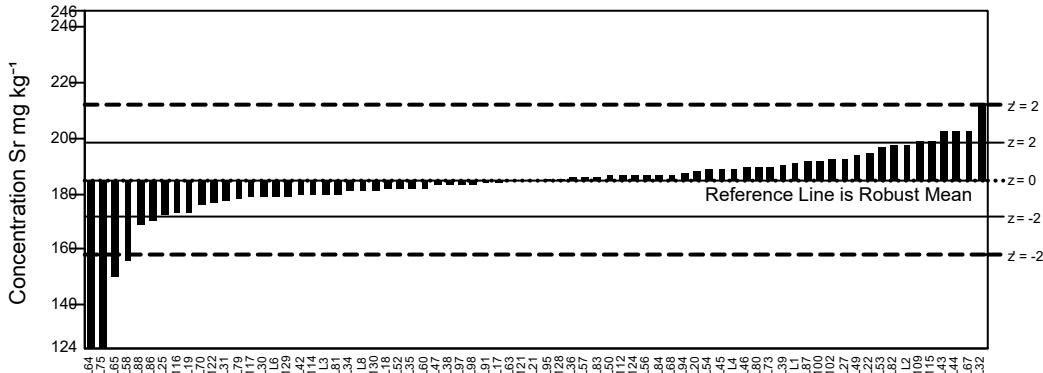
GeoPT49 - Barchart for Sm



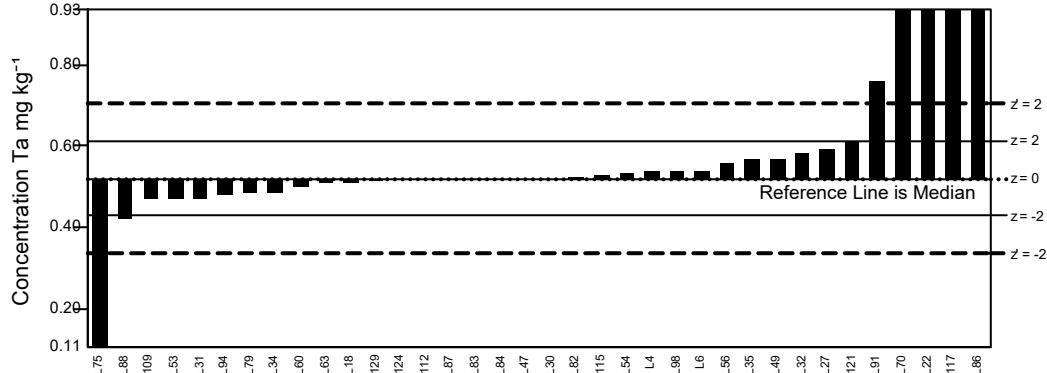
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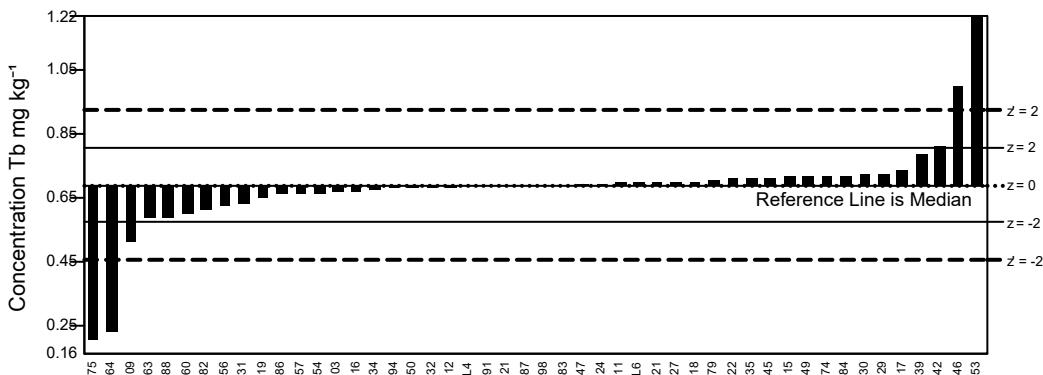
GeoPT49 - Barchart for Sr



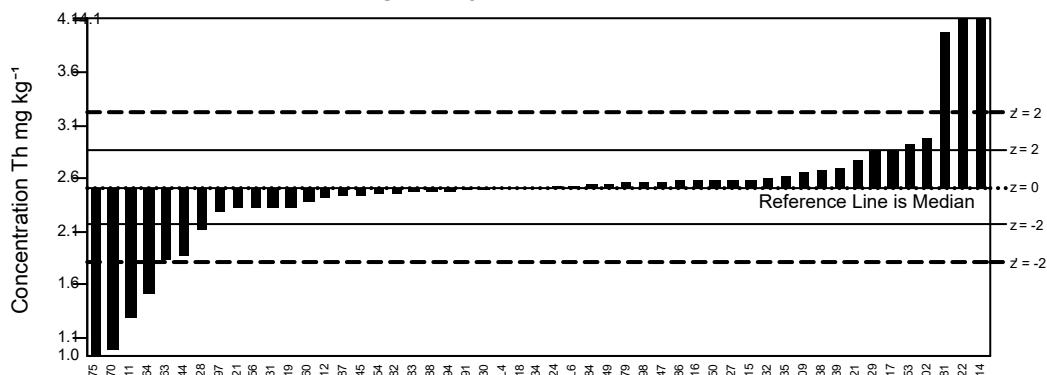
GeoPT49 - Barchart for Ta

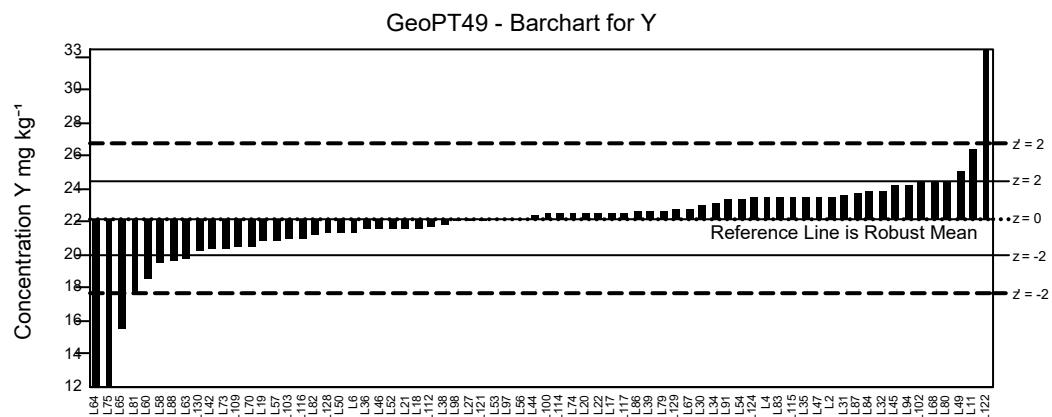
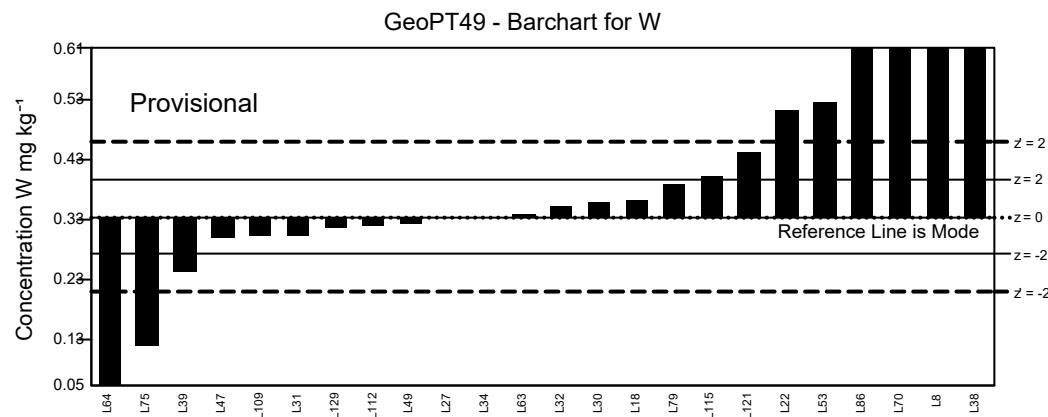
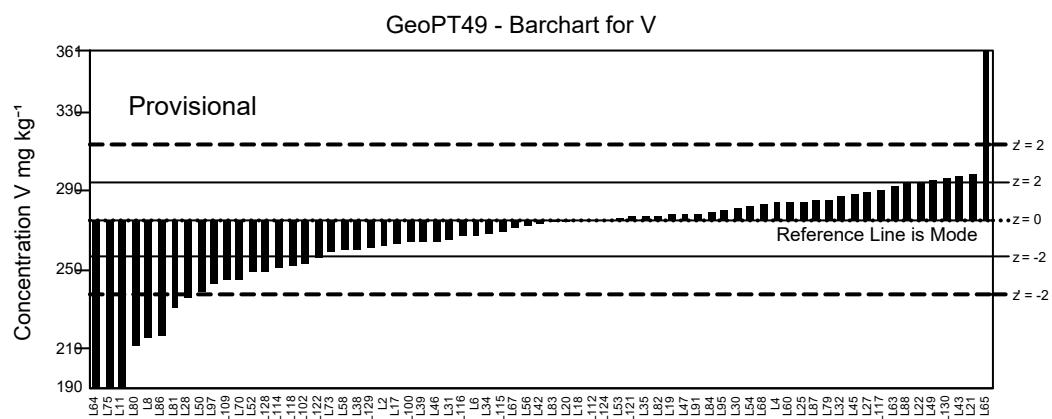
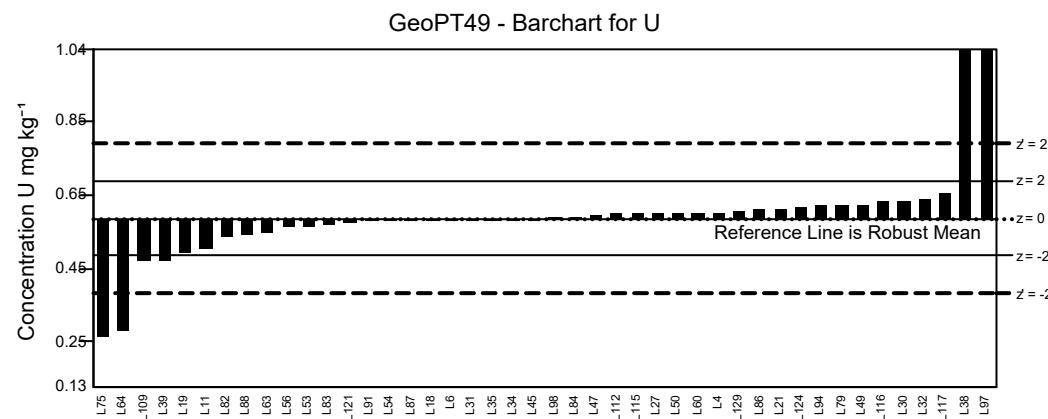
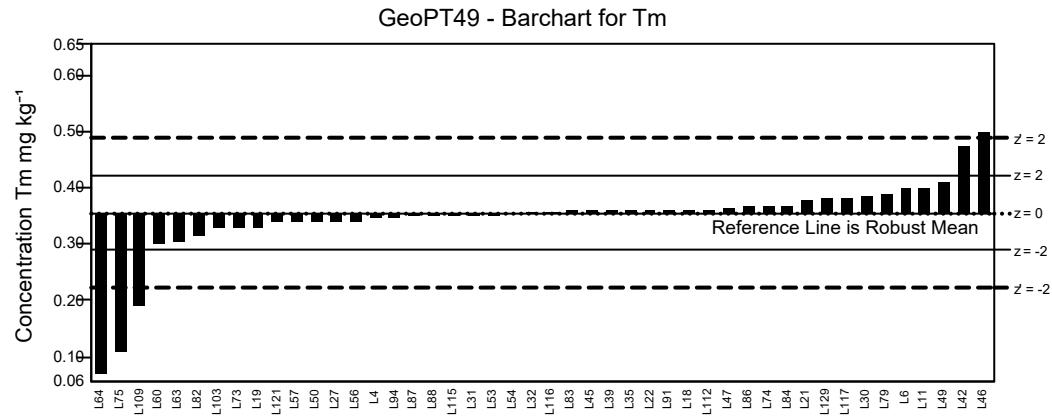
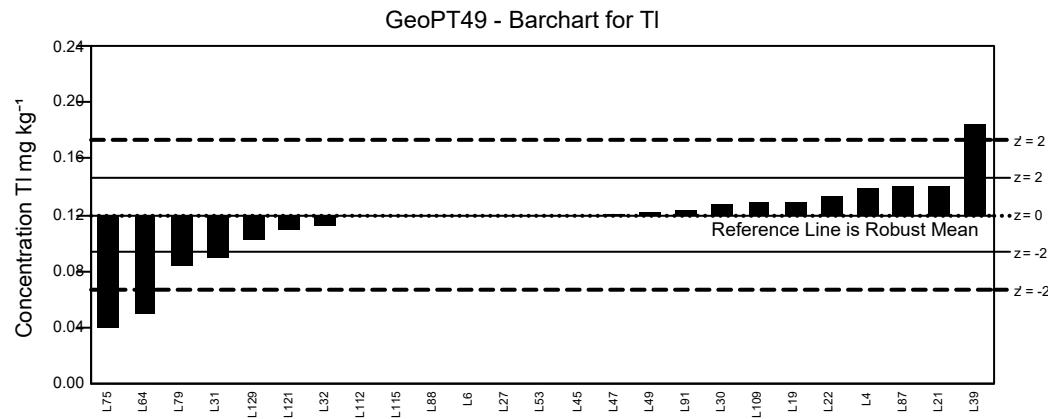


GeoPT49 - Barchart for Tb

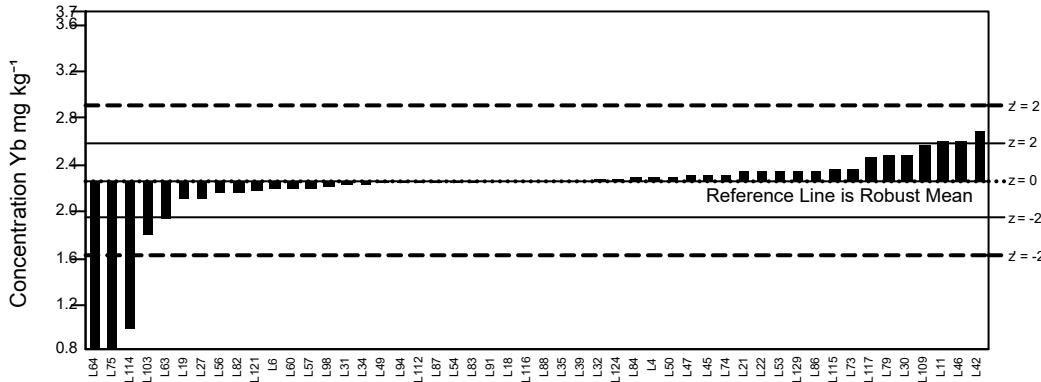


GeoPT49 - Barchart for Th

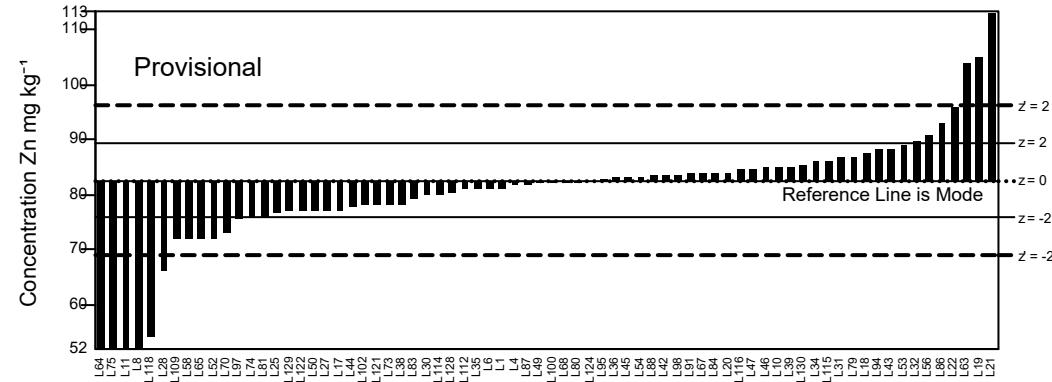




GeoPT49 - Barchart for Yb



GeoPT49 - Barchart for Zn



GeoPT49 - Barchart for Zr

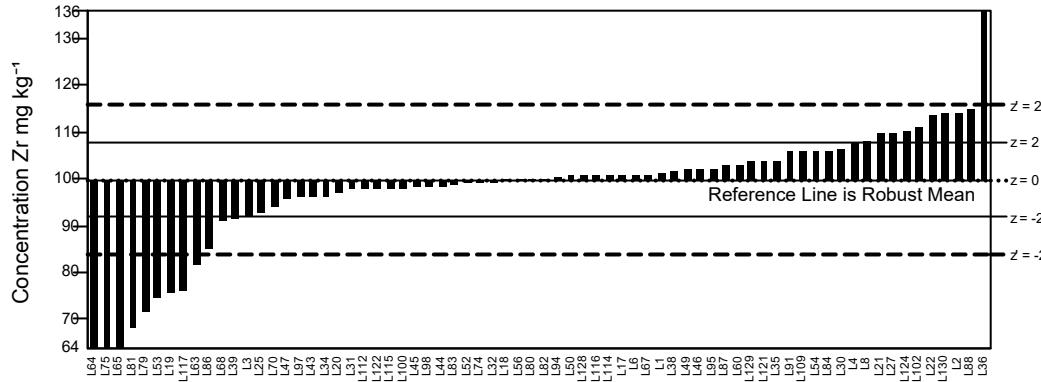
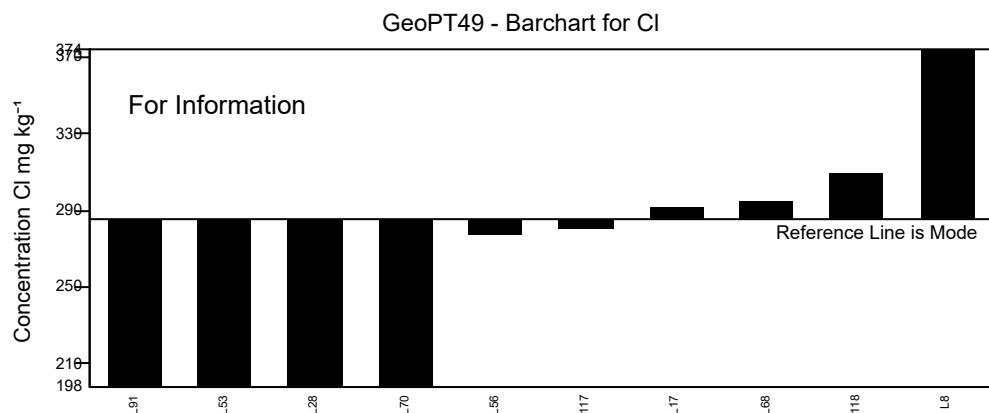
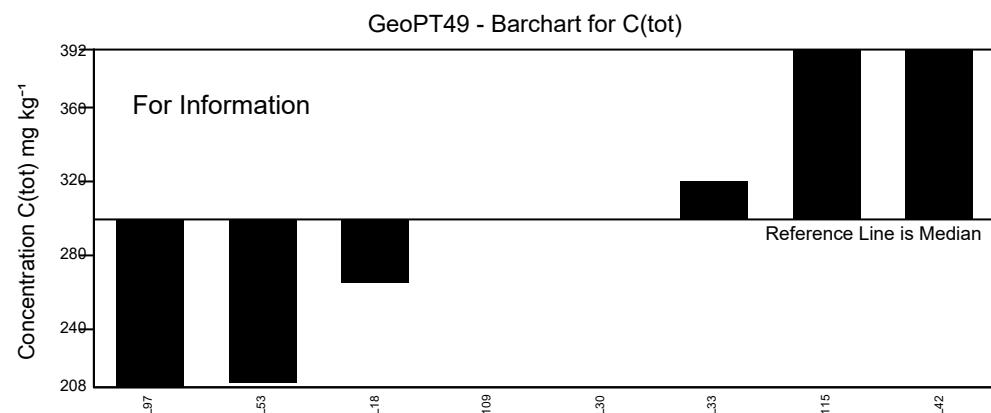
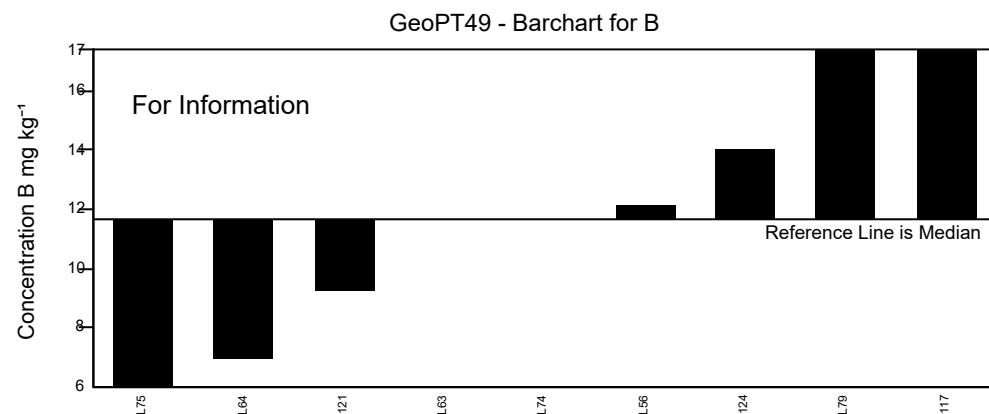
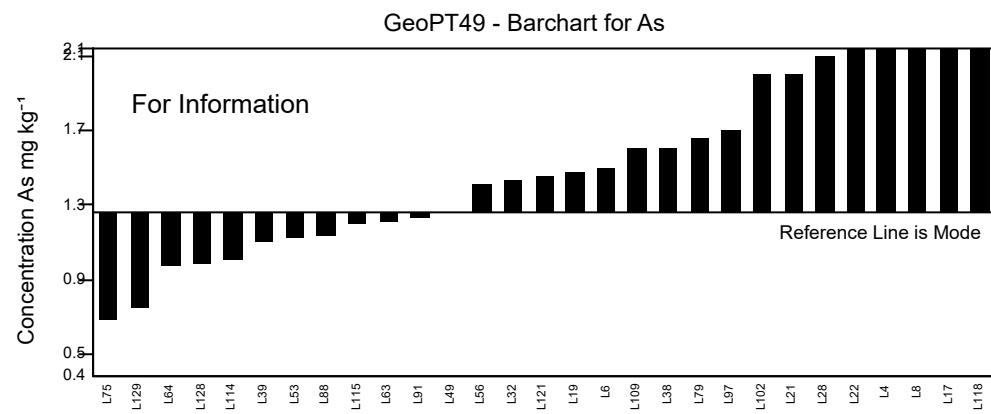
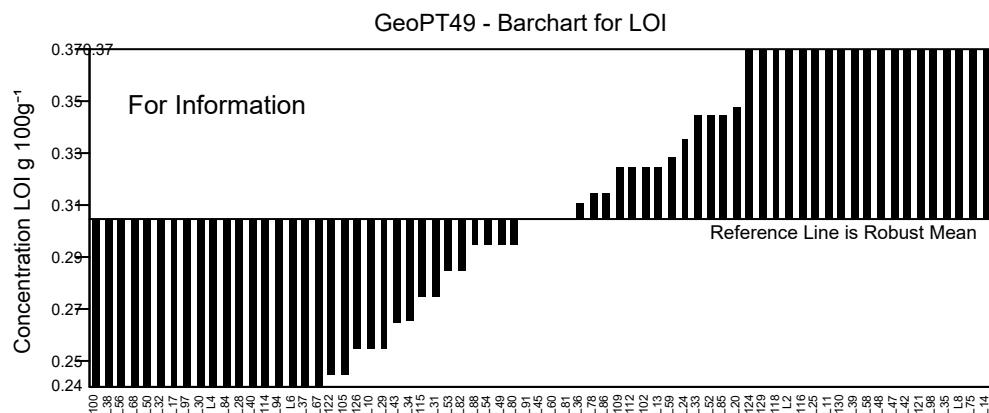
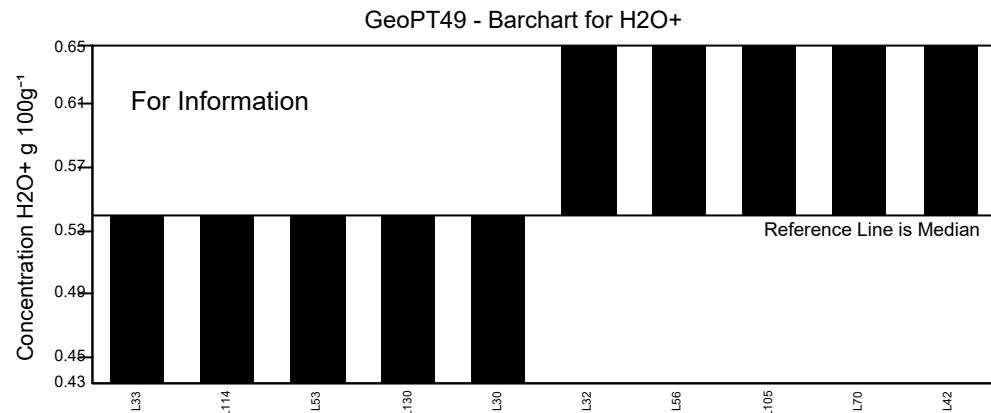


Figure 1: GeoPT49 - Basalt, BVA-1. Data distribution charts for elements for which values were assigned or provisional values given for guidance. Horizontal lines show the limits for  $-2 < z < 2$  for pure geochemistry labs (solid lines) and  $-2 < z' < 2$  for applied geochemistry labs (pecked lines).



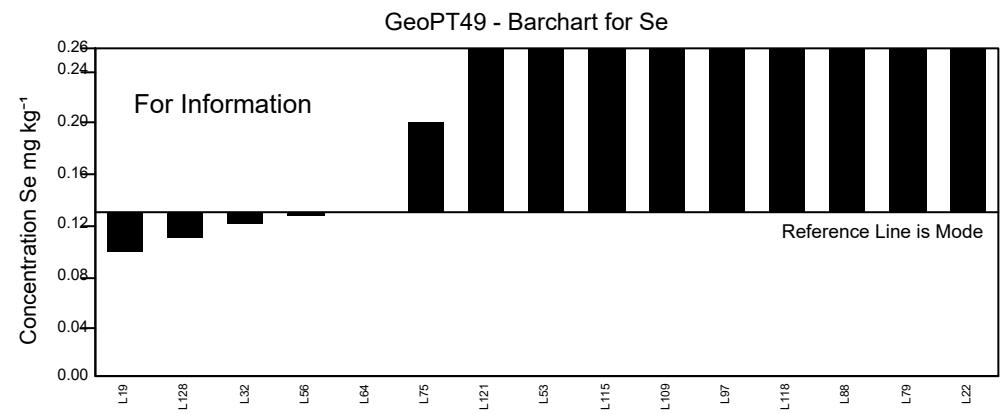
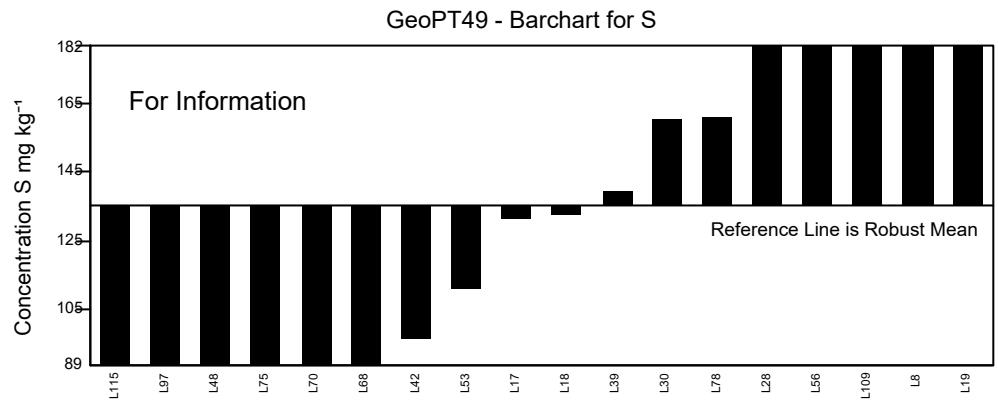
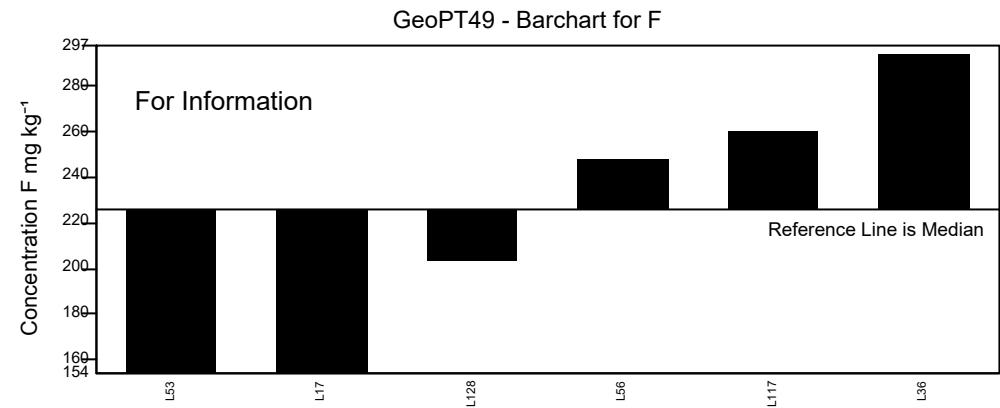
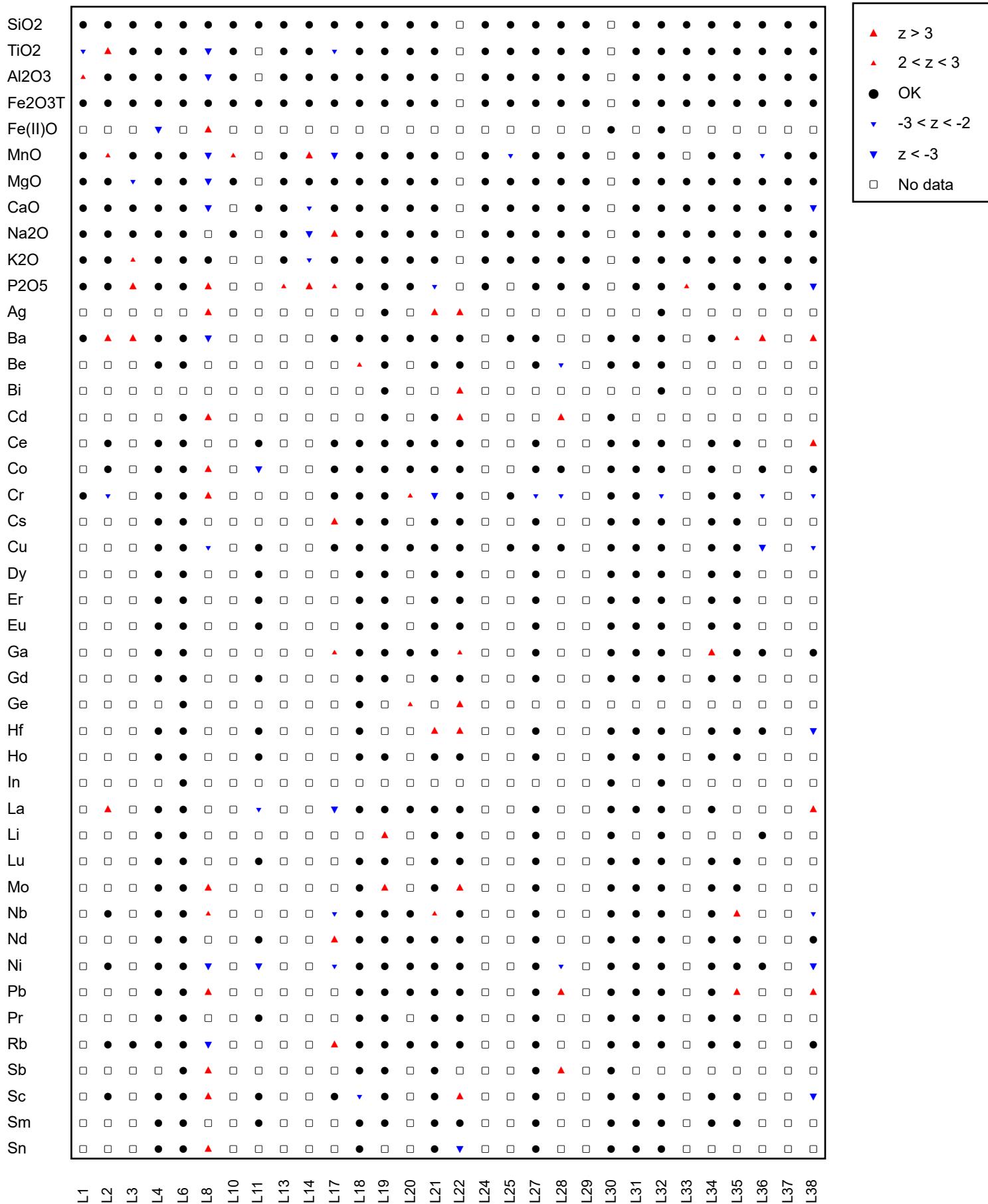


Figure 2: GeoPT49 - Basalt, BVA-1. Data distribution charts provided for information only for elements for which values could not be assigned.

### Multiple Z-Score Chart for GeoPT49



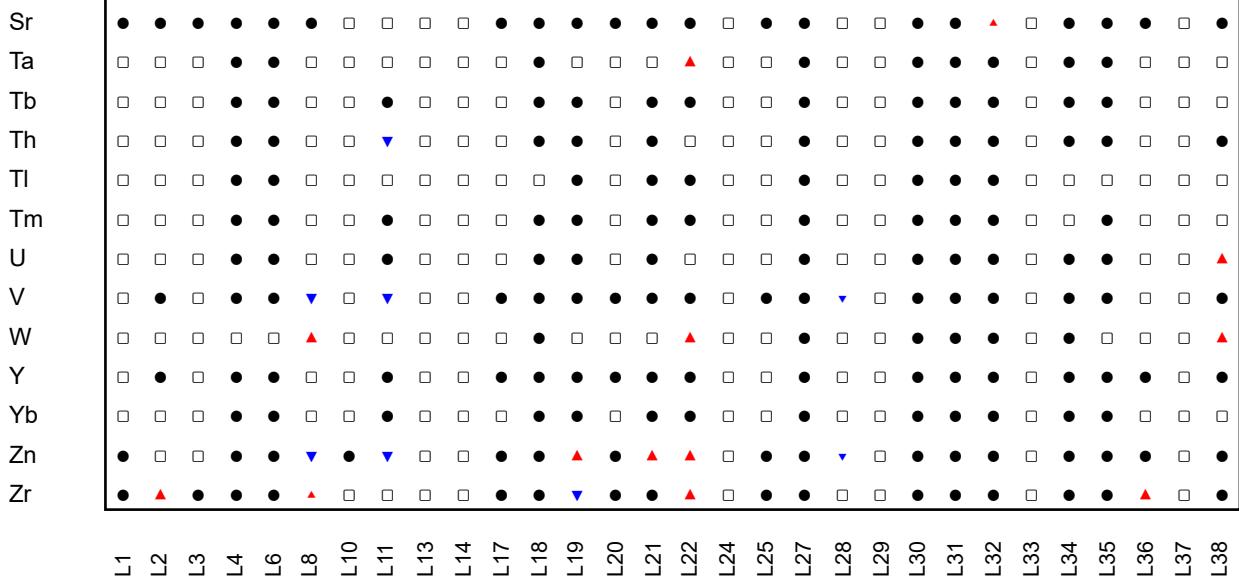
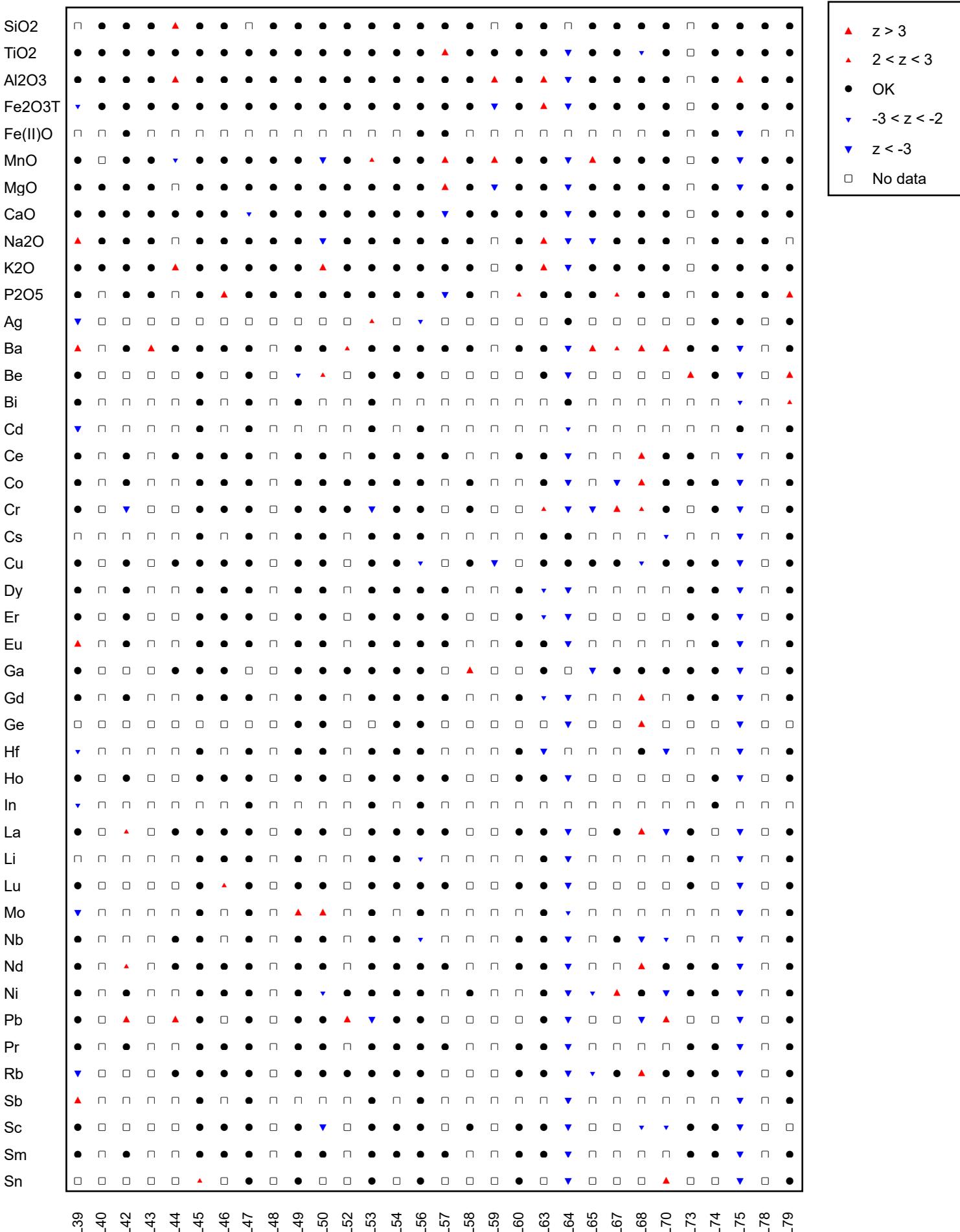


Figure 3: GeoPT49 - Basalt, BVA-1. Multiple z-score charts for laboratories participating in the GeoPT49 round. Symbols indicate whether or not an elemental result complies with the  $-2 < z < +2$  criteria (see key).

### Multiple Z-Score Chart for GeoPT49



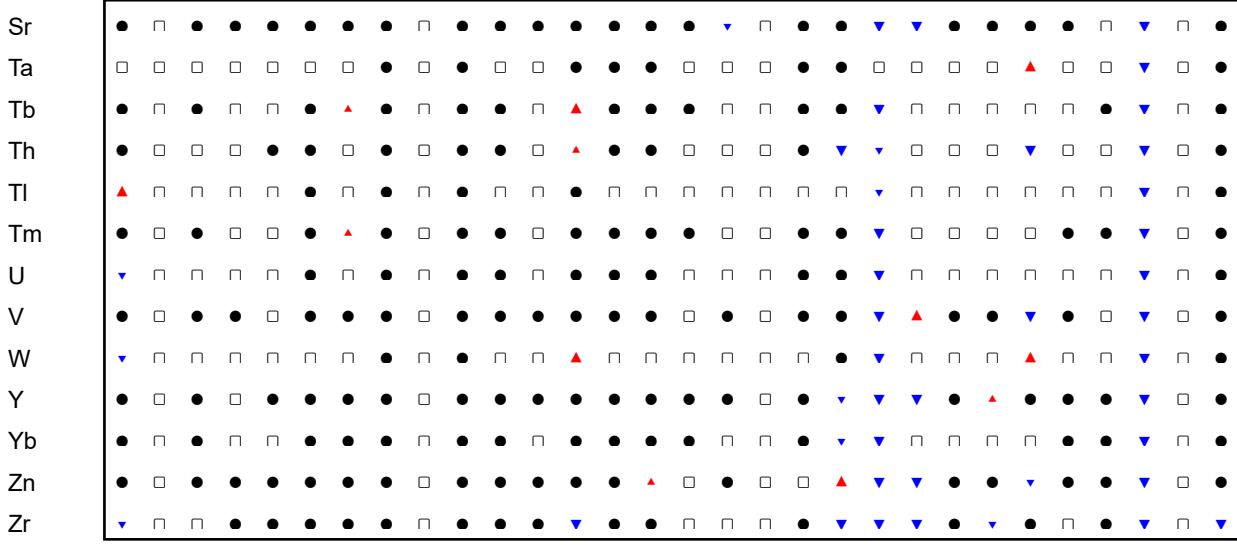
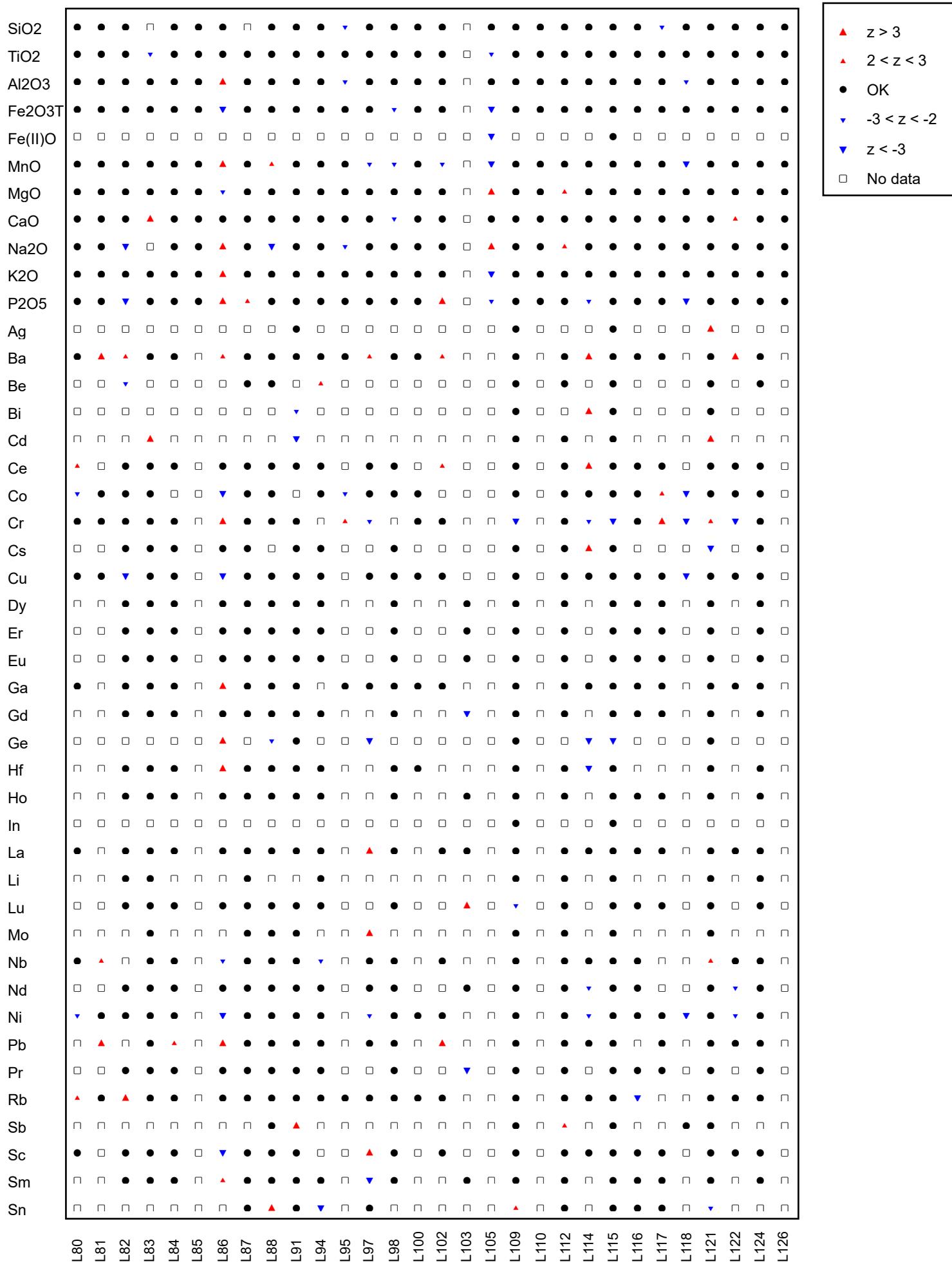


Figure 3: GeoPT49 - Basalt, BVA-1. Multiple z-score charts for laboratories participating in the GeoPT49 round. Symbols indicate whether or not an elemental result complies with the  $-2 < z < +2$  criteria (see key).

### Multiple Z-Score Chart for GeoPT49



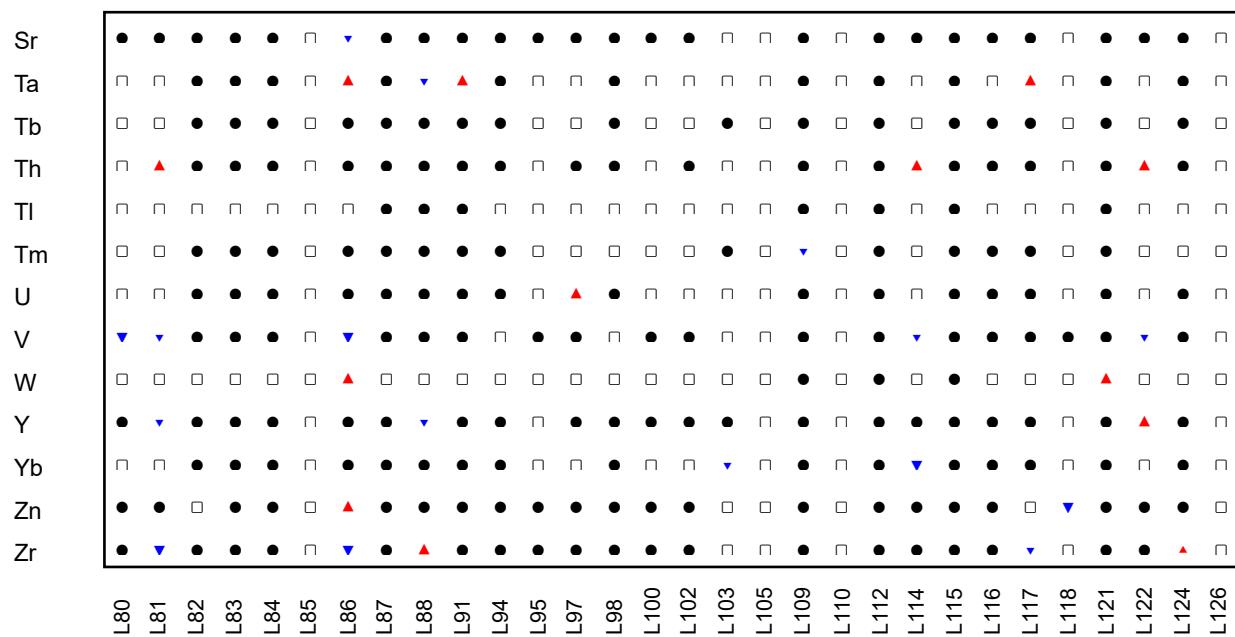
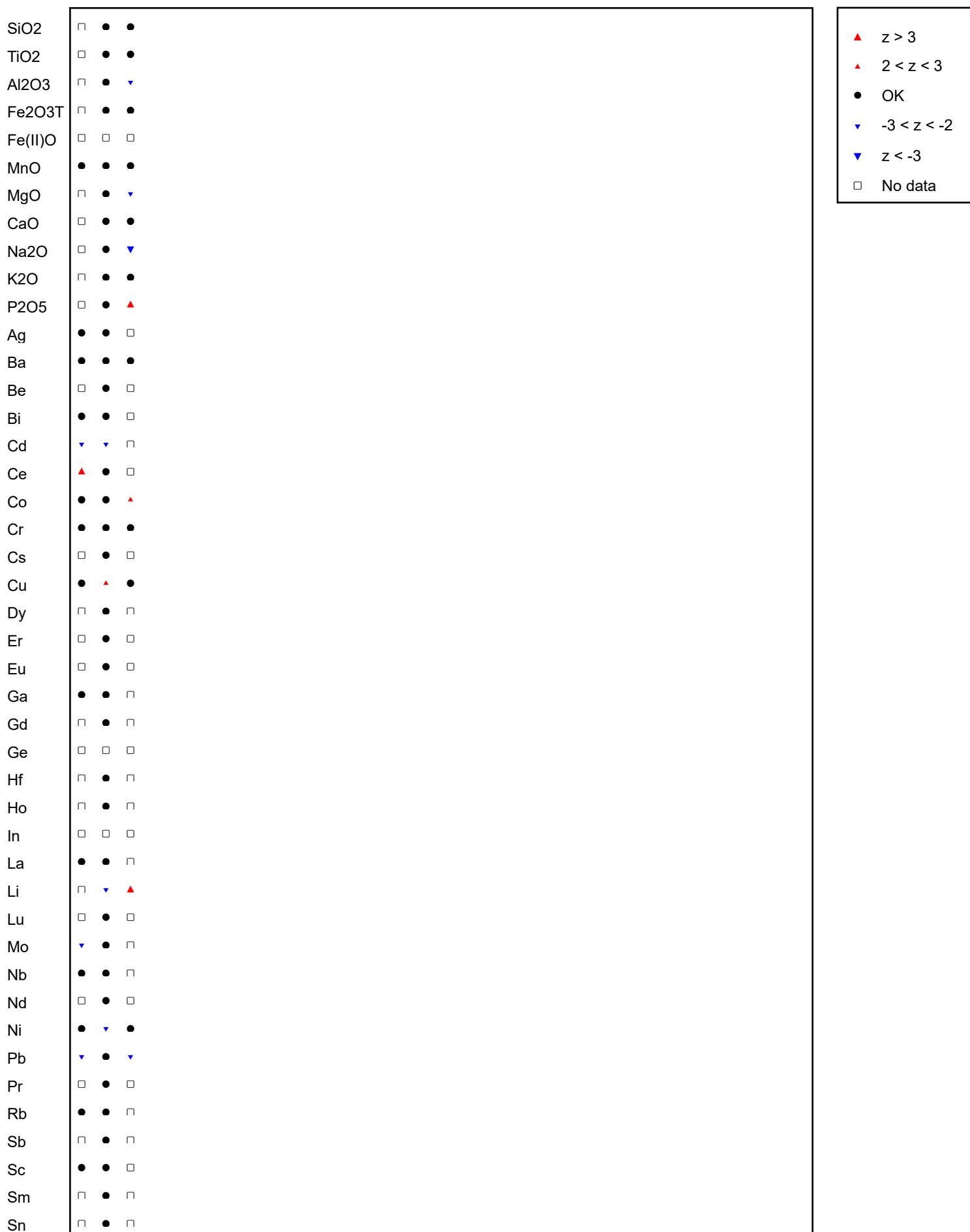
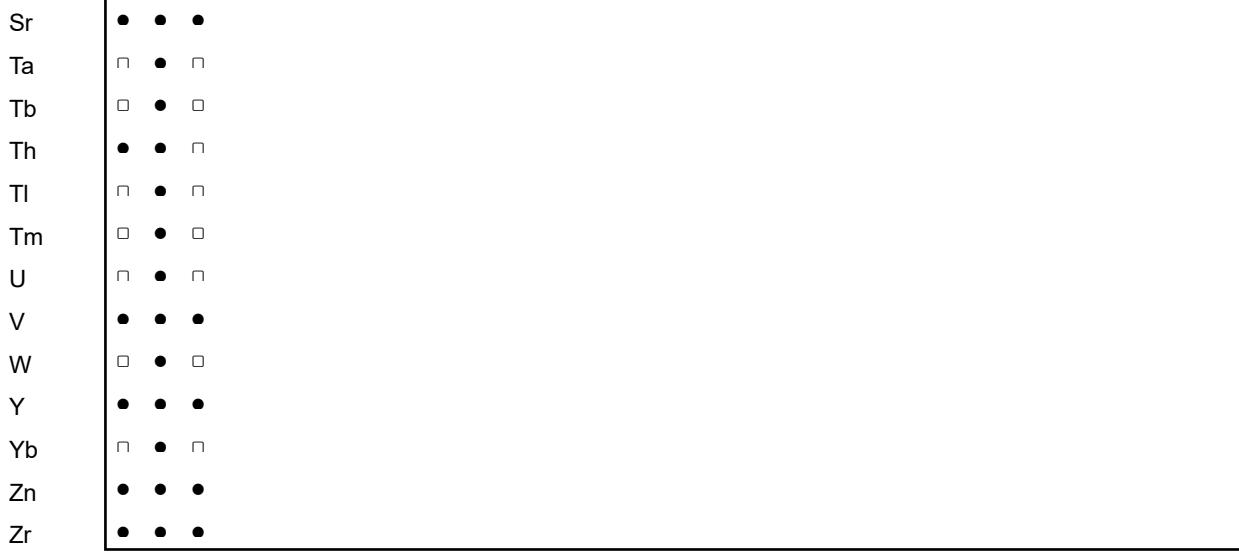


Figure 3: GeoPT49 - Basalt, BVA-1. Multiple z-score charts for laboratories participating in the GeoPT49 round. Symbols indicate whether or not an elemental result complies with the  $-2 < z < +2$  criteria (see key).

### Multiple Z-Score Chart for GeoPT49



L128 L129 L130



L128 L129 L130

Figure 3: GeoPT49 - Basalt, BVA-1. Multiple z-score charts for laboratories participating in the GeoPT49 round. Symbols indicate whether or not an elemental result complies with the  $-2 < z < +2$  criteria (see key).