GEOPT10 - AN INTERNATIONAL PROFICIENCY TEST FOR ANALYTICAL GEOCHEMISTRY LABORATORIES - REPORT ON ROUND 10 / December 2001 (CH-1 marine sediment).

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Abstract

Results are presented for round ten, GeoPT10, of the international proficiency testing programme for analytical geochemistry laboratories. The sample distributed for this round was CH-1 marine sediment, a sample collected and prepared by The Institute of Rock and Mineral Analysis, Beijing, as a candidate reference material. In this report, contributed data are listed, together with an assessment of assigned values, z-scores and charts showing both the distribution of contributed results and the overall performance of participating laboratories.

Introduction

This tenth round of the international proficiency testing programme, GeoPT10, was conducted in a similar manner to earlier rounds. The programme is designed to be part of the routine quality assurance scheme of analytical geochemistry laboratories. The trial involves distributing a sample of established homogeneity to participating laboratories, which are required to analyse the sample using a well-characterised technique or techniques operated under routine analytical conditions. Results are then tabulated by the organisers and z-scores calculated by comparing each analysed result submitted with the value assigned to be the best estimate of the true composition. These assigned values were estimated by robust statistical analysis of all the contributed data. By examining the magnitude of the z-score, participating laboratories can decide whether the quality of their data is satisfactory in relation to both their chosen fitness-for-purpose criteria and results submitted by all the other laboratories contributing to the round, and choose to take corrective action if this appears justified.

Full details of the programme have been included in reports of previous rounds, the current publication status of which is listed in Appendix 1. In this report, therefore, only the features of the present round are included and readers interested in further details are invited to review the previously published reports.

Steering Committee for Round 10: M. Thompson (Chair), P.J. Potts (Secretary), P.C Webb, J.S. Watson and Wang Yiming.

Sample: CH-1 is a marine sediment which was collected from the South China Sea by Prof Wang Yimin of the Institute of Rock and Mineral Analysis, Beijing. The sample was prepared as a candidate reference material and its use as the GeoPT10

proficiency testing sample was designed to provide data to contribute to the certification of this sample as a reference material.

The sample is a composite sample of material collected from 12 stations: 16.10 to 18.00° N, 109.40 to 111° E at a depth of 90 to 1212 m. The types of sediment are terrigenous-clastic sediment and calcareous-biodetritus-clay. Data obtained by XRD analysis showed that the main minerals of the sediment were quartz and calcite and a small amount of mica. The raw material was dried in ambient air for three months to remove most of the moisture (soluble sea salts were not removed). After drying, the bulk sample (about 50 kg) was passed through a jaw crusher, mixed well and then dried for 24 hours in a large oven at 65-80°. The hot sample was then immediately placed in a ball mill and continuously ground for 15 hours. The powder was fully mixed again before being bottled. The particle size distribution was measured with a Laser Particle Sizer (SEISHIN LMS-30) and the results were as follows:

size, μm	%	Accumulation, %
0.1	0.00	0.00
1	2.26	2.26
5	55.65	57.91
20	39.81	97.72
50	2.28	100.00
74	0.00	100.00

The sample was tested for homogeneity by selecting at random ten packets of the sample prepared for distribution. Duplicate test portions from each packet were analysed by WD-XRF at the OU. For the elements that could given assigned values, homogeneity was considered to be satisfactory for use in the GeoPT10 round. An analysis of the results is listed in Appendix 2.

Timetable for GeoPT10:

Distribution of sample: September 2001.
Deadline for submission of analytical results: 15th November 2001.
Distribution of preliminary report: January 2002

Submission of results

Results submitted by the eighty-two laboratories that participated in this round are listed in Table 1. All results listed in this Table except data in the final column contributed to the assessment of assigned values.

Assigned values

Following procedures described in earlier rounds, a robust statistical procedure was used to derive assigned value concentrations [X_a], these being judged to be the best estimates of the true composition of this sample. Data in Table 2 lists assigned values for 10 major and 45 trace elements. Values were assigned on the basis that: (i) Sufficient laboratories had contributed data for an element. (ii) The statistical assessment gave confidence that the results showed a central tendency approximating to a normal distribution. Part of this assessment involved examining a bar chart for each element to judge the distribution of results. Bar charts for elements shown in Figure 1 were judged to have satisfactory distributions, namely:
SiO_2, TiO_2, Al_2O_3, Fe_2O_3T, MnO, CaO, MgO, Na_2O, P_2O_5, LOI, B, Ba, Be, Bi, Br, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Li, Lu, Mo, Nb, Nd, Ni, Pb, Pr, Rb, Sb, Sc, Sm, Sn, Sr, Ta, Tb, Th, Tl, Tm, U, V, W, Y, Yb, Zn, Zr. Note that Bi, Cd, Mo and W were assigned provisional values.

Charts in Figure 2 show distribution data for elements that were not judged to be satisfactory in the statistical analysis to assign values. In the present round, values could not be assigned to the following elements:
FeO, K_2O, CO_2, H_2O^+, Ag, As, Cl, F, Ge, S.

The most common reasons for elements failing the assessment of assigned values were as follows:
(i) Insufficient number of contributed results.

(ii) Results showing a strong positive skew in the frequency distribution diagram, sometimes with hints of multimodality.
(iii) A robust mean clearly different from the mode, which makes the determination of a consensus impracticable.
(iv) A very wide distribution of results as judged by the sigma value, so that no matter where the consensus was placed most of the participants would receive an 'unsatisfactory' classification if z-scores were calculated.

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 pure geochemistry laboratories, 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 applied geochemistry laboratories, where, although precision and accuracy are still important, the main objective is to provide results on large numbers of samples collected as part of geochemical mapping projects or geochemical exploration programmes.

The target precision [H_a] for each element assessed was calculated from a modified version of the Horwitz function as follows:

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

Where X_a is the concentration of the element expressed as a *fraction*, and the factor k = 0.01 for pure geochemistry labs and k=0.02 for applied geochemistry labs.

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

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

where

X is the contributed result, X_a is the assigned value and H_a is the target precision.

Z-score results are listed in Table 3 and participating laboratories are invited to assess their performance using the following criterion:

Z-score results in the range $-2<z<2$ are considered to be satisfactory. If the z-score for any element falls outside this range, contributing laboratories are advised to examine their procedures to ensure that determinations are not subject to unsuspected analytical bias.

Participating laboratories

Laboratories that contributed data to this proficiency testing round are listed in Table 4

Overall performance

A summary of the overall performance of individual laboratories in this round is plotted in Figure 3 as a multiple z-score chart. In this chart, the z-score performance for each element is distinguished by symbols that make it simple to identify whether the results were satisfactory or gave z-score values that were greater or lower than the acceptable z-score limits. These data are designed to help individual laboratories to judge their overall performance in this proficiency testing round.

Participation in future rounds

The benefit from proficiency testing arises from regular participation and laboratories are invited to contribute to the GeoPT10 round, the sample for which will be distributed during March 2002.

Acknowledgments

The authors are very grateful to Liz Lomas (OU) for valued assistance with this work. This program was organised on behalf of the International Association of Geoanalysts.

Appendix 1

Publication status of proficiency testing reports

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. Submitted for publication to 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. Submitted for publication to 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. (2000)
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.

Appendix 2

GeoPT10 Homogeneity Report

Homogeneity testing was based on analysis of duplicate test portions taken from each of 10 packets, which had been selected at random. These samples were analysed in duplicate by WD-XRF at the Open University for the major and minor elements (SiO_2, TiO_2, Al_2O_3, Fe_2O_3, MnO, MgO, CaO, Na_2O, K_2O, P_2O_5, LOI) on glass discs and the trace elements (As, Ba, Co, Cr, Cu, Ga, Mo, Nb, Ni, Pb, Rb, S, Sc, Sr, Th, U, V, Y, Zn, Zr) on powder pellets, following the procedures described in the GeoPT1 report.

Statistical analysis of homogeneity data was carried out using a new sequence of tests developed by Fearn and Thompson (Analyst, 2001, 126, 1414-1417) as follows:

DATATEST is the outcome of a range of tests designed to identify analytical problems and discrepancies that could mask differences in analytical results related to inhomogeneity effects, particularly the identification of outliers. All elements listed in the Tables below, passed these tests, except As, where data were close to the detection limit of the technique. Arsenic data were dropped from the evaluation.

CONC is the average concentration derived from the XRF results.

SIGMAP is the target value for the standard deviation derived using the same modified form of the Horwitz function that was used to calculate the target precision for pure geochemistry laboratories (data quality = 1), described above.

F is the well-known F-statistic for one way analysis of variance. When compared to the relevant critical value of 4.94 (majors) or 2.78 (traces) all elements passed the F-test, except TiO_2.

VARSAM is the estimated between-sample variance, which is used to calculate:

SAMRATIO, which is the ratio of the squareroot(VARSAM) / SIGMAP. Where this ratio has a value of less than 0.3, the element data is considered to have passed the harmonised protocol ***(HP-TEST).*** TiO_2 results passed this final evaluation. Results for Pb, Th, Sc and Mo, however, were significant ***(SAMRATIO>0.3)***. Careful re-evaluation of the source data for these elements indicated that inadequate analytical precision had been achieved in the determination of these elements and that interpretation of homogeneity was not reliable.

In the typical interpretation of homogeneity data, the principal criterion is normally that elemental results 'pass' the classical F-test. However, this is not the ultimate arbiter of homogeneity, since the Harmonised Protocol requires that homogeneity will have an insignificant effect on the interpretation of proficiency testing results. If the within-packet variance is particularly small, the F-test may detect a significant level of between-packet variance (indicating inhomogeneity effects), which is, in fact, unimportant in relation to the target precision against which the results from participating laboratories are evaluated. In order to test the significance of data that 'fails' the F-test, the ratio of sampling precision to target precision is calculated. If this ratio is less than 0.3, elemental results are considered to be compatible with those of a homogeneous sample, in the context of this proficiency testing programme. Titanium was the only element that did not pass the F-test, but the SAMRATIO of 0.162 indicates that this (and all the other elements) are fit-for-purpose and compatible with criteria for acceptance in the harmonised protocol. Tables presenting these statistical parameters for both major and trace elements are listed below.

Table H1 showing the results of homogeneity testing on the WD-XRF major element data and LOI.

ANALYTE	DATA TEST	CONC	SIGMAP	VAR-SAM	F	F-TEST	SAMRATIO	HP-TEST
SiO2	OK	44.4382	0.502075	0.0063983	1.35683	OK	0.159318	OK
TiO2	OK	0.5867	0.012714	0.0000042	3.3242	SIG	0.161994	OK
Al2O3	OK	11.9951	0.16505	0.00053	1.47088	OK	0.13948	OK
Fe2O3	OK	4.623	0.073	0.000	2.219	OK	0.093	OK
MnO	OK	0.287	0.007	0.000	1.084	OK	0.027	OK
MgO	OK	2.211	0.039	0.000	1.344	OK	0.146	OK
CaO	OK	12.697	0.173	0.000	0.985	OK	0.000	OK
Na2O	OK	2.781	0.048	0.000	1.244	OK	0.120	OK
K2O	OK	2.013	0.036	0.000	0.584	OK	0.000	OK
P2O5	OK	0.118	0.003	0.000	1.351	OK	0.209	OK
LOI	OK	18.221	0.235	0.000	0.437	OK	0.000	OK

Table H2 showing the results of homogeneity testing on the WD-XRF trace element data.

ANALYTE	DATA TEST	CONC	SIGMA	VAR-SAM	F	F-TEST	SAMRATIO	HP-TEST
Rb	OK	113.8	4.464	0	0.29095	OK	0	OK
Sr	OK	506.1	15.857	0.34	1.23549	OK	0.036756	OK
Y	OK	24.9	1.229	0	0.71457	OK	0	OK
Zr	OK	137.3	5.235	0	0.86637	OK	0	OK
Nb	OK	13.6	0.737	0	0.9398	OK	0	OK
Ba	OK	428.7	13.773	2.473	1.33997	OK	0.114171	OK
Pb	OK	19.6	1.004	0.186	1.17584	OK	0.429977	SIG
Th	OK	13.2	0.715	0.062	1.21999	OK	0.347474	SIG
U	OK	3.3	0.22	0	0.67849	OK	0	OK
Sc	OK	15.6	0.825	0.272	1.37964	OK	0.631635	SIG
V	OK	92.4	3.739	0.373	1.27503	OK	0.163268	OK
Cr	OK	67.4	2.861	0	0.37642	OK	0	OK
Co	OK	9.6	0.546	0	0.60509	OK	0	OK
Ni	OK	46.6	2.091	0	0.42918	OK	0	OK
Cu	OK	23.3	1.159	0	0.23776	OK	0	OK
Zn	OK	91.8	3.718	0	0.50769	OK	0	OK
Ga	OK	14.7	0.785	0	0.81497	OK	0	OK
Mo	OK	-0.3	*	0.045	2.84955	OK	*	SIG
As	OUT	*	*	*	*		*	
S	OK	1034.1	29.098	22.763	1.71501	OK	0.163967	OK
TiO2	OK	5999	129.562	406.806	1.48072	OK	0.155674	OK
Fe2O3	OK	44048.5	704.725	0	0.88687	OK	0	OK

		Table 1: GeoPT10, CH-1, Marine sediment (South China Sea): Results submitted.														
Round identifier		K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K11	K12	K13	K14
Sample		CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1
Technique codes		A,M	X	X	A,M	X	X	IR,T,X	X	X	AA,M,T,X	X	X	X	IR,X	IR,M,X
Test portion (g)		0.1	0.4-5	1	0.25	1	1-3.6	0.3-5.4	0.7	25	0.1-0.75	0.5	9	5	0.1-0.7	0.2-7
Data quality		2	2	2	2	2	1	2	1	2	1	1	2	2	2	2
SiO2	% m/m	45.8	44.36	43.94	45.55	55.05	55.31	44.28	44.33		45.06	45.1		44.95	53.51	44.7
TiO2	% m/m	0.56	0.617		0.6131	0.75	0.68	0.5703	0.5984	0.474	0.605	0.61		0.55	0.74	0.644
Al2O3	% m/m	12.1	12.17	12.75	12.27	15.24	15.27	12.19	12.1		12.32	12.1		12.25	14.64	12.48
Fe2O3	% m/m	4.2	4.47	4.3	4.76	5.01	5.04	4.522	4.435	4.07	4.4	4.42		3.11	5.15	4.49
Fe(II)O	% m/m							1.28			1.27					
MnO	% m/m	0.305	0.338		0.321	0.34	0.36	0.3018	0.303	0.14	0.308	0.32		0.22	0.38	0.306
MgO	% m/m	2.05	2.15	2.25	2.276	2.61	2.67	2.217	2.154		2.296	2.12		2.1	2.67	2.28
CaO	% m/m	12.8	13.12	13.23	13.69	16.11	14.98	13.14	13.2	13.87	13.29	13.2		13.64	16.24	13.23
Na2O	% m/m	2.21	2.42	2.03	2.433	2.56	3.3	1.803	2.573		2.48	2.45		2.41	1.76	2.65
K2O	% m/m	1.67	2.23	1.6	2.155	1.54	2.15	1.449	2.25	4.27	1.347	2.31		2.5	1.47	2.27
P2O5	% m/m	0.13	0.126		0.1239	0.31	0.15	0.2052	0.128		0.139	0.11			0.03	0.134
H2O+	% m/m					0.84		5.44								
CO2	% m/m							12.72							13.67	12.8
LOI	% m/m	17.71	17.79	18.26		17.48		17.76			17.48	17.35			19.07	17.2
Ag	mg/kg															
As	mg/kg		11				6									2.71
Au	mg/kg															
B	mg/kg															
Ba	mg/kg	470	434		500.6		558	521.9	487.4		437			540		481
Be	mg/kg															1.8
Bi	mg/kg															
Br	mg/kg		103													87
Cd	mg/kg		2.2													0.18
Ce	mg/kg	60	59		66.62			55.7			59.82					53.6
Cl	mg/kg		13700										21000			20400
Co	mg/kg	12	7		14.23		15	12.3	10.6		14.95					11.7
Cr	mg/kg	66	61		66.9		43	56.3	65.1		60.32					59.4
Cs	mg/kg	0.85			7.9						7.9					7.53
Cu	mg/kg	11.5	25		25.44		31	24	13.7	22.7	27					19.2
Dy	mg/kg	4.08			4.53						3.59					3.46
Er	mg/kg	2.15			2.53						1.98					1.94
Eu	mg/kg	1			1.2						0.93					0.9
F	mg/kg															
Ga	mg/kg		13		17.99			17.3	15.2		16.41					15.4
Gd	mg/kg	4			5.09						4.89					4.38
Ge	mg/kg															1.48
Hf	mg/kg	3.65			3.74						2.04					3.29
Hg	mg/kg															
Ho	mg/kg	0.81			0.97						0.66					0.66
I	mg/kg		82													
In	mg/kg															
Ir	mg/kg															
La	mg/kg	31.2	26		34.1			28.2			30.47					28.7
Li	mg/kg															
Lu	mg/kg	0.31			0.35						0.25					0.25
Mo	mg/kg	1.2	2													2.09
N	mg/kg															
Nb	mg/kg	10.6	10		11.9		15	13	13		14.34					10.1
Nd	mg/kg	25.7	15		29.2			24.2			25.86					23.1
Ni	mg/kg	28	41		56.76		48	56.8	44.4		45.91					40.3
Os	mg/kg															
Pb	mg/kg	2.7	6					20.3			20.66					17.9
Pd	mg/kg															
Pr	mg/kg	6.85			7.91						6.95					6.39
Pt	mg/kg															
Rb	mg/kg	49	94		108.96		113	101.4	111.5		109.44			120		102
Re	mg/kg															
Rh	mg/kg															
Ru	mg/kg															
S	mg/kg		1020					700					1280		1686	1450
Sb	mg/kg	1.05														0.98
Sc	mg/kg	10.2			11.1			17.8	16.5		10.83					10.3
Se	mg/kg															
Sm	mg/kg	4.9			5.55						4.93					4.28
Sn	mg/kg	2.1														2.87
Sr	mg/kg	463	460		525		562	484.5	511	405	491.12			430		528
Ta	mg/kg	1.1			1.11						1.5					0.85
Tb	mg/kg	0.68			0.66						0.65					0.73
Te	mg/kg															
Th	mg/kg	11.6	12		13.34						11					10.9
Tl	mg/kg															
Tm	mg/kg	0.33									0.27					0.25
U	mg/kg	2.6	2.5								2.38					2.26
V	mg/kg	82	77		105.2		93	96.2	86.2		79.68					85.8
W	mg/kg	2.1														
Y	mg/kg	21.4	19		25.55		22	34.1	25		18.46					21.9
Yb	mg/kg	2.07									1.74					1.91
Zn	mg/kg	92	92				110	93	94.7	72	79.01					90.8
Zr	mg/kg	130	126		127.6		135	138	135		70.5			150		128
		Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;														
		I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;														
		T=titrimetry; W=wet chemistry; X=X-ray fluorescence.														
		Results K82 were submitted too late to contribute to the assessment of assigned values.														

		Table 1: GeoPT10, CH-1, Marine sediment (South China Sea): Results submitted.														
Round identifier		K15	K16	K16	K17	K17	K18	K19	K20	K21	K21	K22	K23	K23	K24	K25
Sample		CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1
Technique codes		X	M	M	X	X	AA,C,G, T	M	X	I	I	X	T,X	T,X	AA,Co,X	A
Test portion (g)		0.02-0.7	0.1	0.1	0.6	6	0.05-0.5	0.1	1.2	0.2	0.2	1-4.5	0.55-6	6	0.01-0.7	0.2
Data quality		2	1	2	1	2	1	1	1	1	2	1	1	2	1	2
SiO2	% m/m	45.0			44.95		45.58		44.6			45.04	45		44.73	
TiO2	% m/m	0.600			0.62		0.58		0.600		0.68	0.61	0.613		0.61	0.49
Al2O3	% m/m	12.8			12.16		12.4		12.29	13.43		12.36	12.335		12.12	12.1
Fe2O3	% m/m	4.50			4.49		4.58		4.46	4.37		4.46	4.532		4.42	4.31
Fe(II)O	% m/m						2.47						1.42			
MnO	% m/m	0.310			0.304		0.26		0.300	0.31		0.3	0.31		0.3	0.3
MgO	% m/m				2.34		2		2.21		1.94	2.23	2.222		2.18	2.09
CaO	% m/m	13.40			13.28		13.29		13.35	12.83		13.39	13.488		13.07	12.6
Na2O	% m/m				2.42		2.74		2.11	2.56		1.88	2.304		2.47	2.41
K2O	% m/m	2.30			2.21		2.35		1.75	2.24		1.44	1.516		3.28	2.31
P2O5	% m/m				0.14		0.2		0.130			0.12	0.13		0.12	0.1
H2O+	% m/m						4.01								4.48	
CO2	% m/m														13.04	
LOI	% m/m				18.37		13.15		18.04			17.98	3.57		18.43	
Ag	mg/kg															
As	mg/kg										4.9				3	
Au	mg/kg															
B	mg/kg															
Ba	mg/kg	435	685		525			472.85	487.0	547		492.5	539		494	499
Be	mg/kg															
Bi	mg/kg														0	
Br	mg/kg	98.0				100				94.3						
Cd	mg/kg														1	
Ce	mg/kg	50.0	61.3		76			61.73	80.0	64.8				51	60	45
Cl	mg/kg	20000.0				14200				22600					13877	
Co	mg/kg				15				11.0	12.4		13.8			13	10
Cr	mg/kg	140			48				70.0	63.7		67.8	74.8		58	58
Cs	mg/kg	8.0	7.91			10		7.94		8.53					8	
Cu	mg/kg	39.0			34							21.8	23.1		23	27
Dy	mg/kg		4.09					3.95			4.07				2	3.6
Er	mg/kg		2.36					2.11							2	
Eu	mg/kg		1.044					0.982		1.06					2	1.1
F	mg/kg					930									728	
Ga	mg/kg	14.0			12				17.0			15.3			13	
Gd	mg/kg		4.45					4.33							5	
Ge	mg/kg															
Hf	mg/kg			3.43				2.49		4.02					5	
Hg	mg/kg															
Ho	mg/kg		0.802					0.751							1	
I	mg/kg									107						
In	mg/kg															
Ir	mg/kg															
La	mg/kg	25.0	30.8		101			30.36		31.6				29	33	28
Li	mg/kg														35	75
Lu	mg/kg		0.332					0.307		0.35						
Mo	mg/kg														0	
N	mg/kg															
Nb	mg/kg	6.0		12.9		15		10.06	22.0			12.3	13.9		14	
Nd	mg/kg	25.0	26.2			29		26.17		28.3					26	30
Ni	mg/kg	41.0			49				49.0			45.4	45		38	42
Os	mg/kg															
Pb	mg/kg	20.0		38.0	28			19.08				21.6	19.8		20	18
Pd	mg/kg															
Pr	mg/kg	11.0	7.00					6.81							8	
Pt	mg/kg															
Rb	mg/kg	120.0	109.8		123			105.11	82.0	114		108.7	108.3		111	
Re	mg/kg															
Rh	mg/kg															
Ru	mg/kg															
S	mg/kg														1166	
Sb	mg/kg										1.06				6	
Sc	mg/kg									11.1		14.3			20	10
Se	mg/kg															
Sm	mg/kg		5.14					4.83		5.53					6	3.7
Sn	mg/kg														3	
Sr	mg/kg	550.0	518		530			468.05	535.0		520	490.3	493.7		476	505
Ta	mg/kg			0.944				0.989		0.96					2	
Tb	mg/kg		0.694					0.63		0.65					2	
Te	mg/kg															
Th	mg/kg	14.0	12.39					12.06		12.7					10	
Tl	mg/kg															
Tm	mg/kg		0.329					0.307								
U	mg/kg	4.5	2.81					2.47			2.7				3	
V	mg/kg				90					89.1		91.5	97.8		91	76
W	mg/kg														0	
Y	mg/kg	24.0	22.5			20		22.55	34.0			23.4	25.4		21	18
Yb	mg/kg		2.23					1.915		2.5					3	1.7
Zn	mg/kg	100.0			105				72.0		86.1		96.2		97	92
Zr	mg/kg	154.0		121.1	145			94.67	183.0		136	134.7	140.8		167	
		Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;														
		I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;														
		T=titrimetry; W=wet chemistry; X=X-ray fluorescence.														
		Results K82 were submitted too late to contribute to the assessment of assigned values.														

		Table 1: GeoPT10, CH-1, Marine sediment (South China Sea): Results submitted.														
Round identifier		K26	K27	K27	K28	K29	K30	K31	K32	K33	K34	K34	K35	K35	K36	K37
Sample		CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1
Technique codes		X	M,X	X	M,X	M,X	X	X	AA,X	AA,E,X	M	M	M	M	AA,A,O,X	A,AA,W,X
Test portion (g)		1.0-5	0.1-10	10	0.025-0.5	0.1-4	8.0-10	1	0.8-8	0.1-4	0.05	0.05	0.1	0.1	0.2-3	0.1-15
Data quality		2	1	2	1	2	2	1	2	2	1	2	1	2	1	2
SiO2	% m/m	44.54	44.13		44.57	45.62		45.76	43.66	43.65					43.22	43.75
TiO2	% m/m	0.6	0.58		0.601	0.567	0.58	0.58	0.696	0.54					0.595	0.64
Al2O3	% m/m	12.42	12.21		12.32	12.22		12.3	12.92	12.72					11.95	12.15
Fe2O3	% m/m	4.65	4.39		4.52	3.99	4.35	4.45	4.63	5.38					4.36	4.53
Fe(II)O	% m/m														1.26	1.01
MnO	% m/m	0.3	0.29		0.31	0.278	0.29	0.29	0.29	0.285					0.319	0.28
MgO	% m/m	2.21	2		2.18	2.22		1.38	1.87	2.56					2.29	2.26
CaO	% m/m	13.31	13.07		13.13	13.17	13.6	13.19	13.54	13.12					13.47	12.86
Na2O	% m/m	1.78	2.54		2.47	1.99		2.59	2.14	2.24					2.57	2.24
K2O	% m/m	1.68	2.12		2.32	1.84	2.29	2.41	1.5	2.18					2.33	2.24
P2O5	% m/m	0.12	0.15		0.14	0.128		0.13	0.03	0.097					0.12	0.13
H2O+	% m/m														7.81	6.16
CO2	% m/m														12.48	9.53
LOI	% m/m	18.18	18.49		17.54	17.96		17.16	17.23						18.1	18.8
Ag	mg/kg		0.13													0.2
As	mg/kg			3		3.6			6.8						7.6	
Au	mg/kg															1.04
B	mg/kg															
Ba	mg/kg	492	527		537	492	484		434	455	495.7		470.369		452	424
Be	mg/kg		2.11		1.93	2.09					2.3				3	2
Bi	mg/kg		0.31		0.31	0.37			0.6				0.27745		0.81	
Br	mg/kg		137				88		105							
Cd	mg/kg		0.24		0.24	0.25				0.227				0.33191		
Ce	mg/kg		66.17		64.2	66	60				62.3		63.4469		56.2	
Cl	mg/kg					13240										
Co	mg/kg		13.5		13.3	11.5		31		12	13.8		12.0413		9.1	13
Cr	mg/kg		79.2		61.4	66	35	103	46.5	62	60.2		63.5654		50	31
Cs	mg/kg		8.42		8.08						9.01					
Cu	mg/kg		23		23.6	22	24	23	18.4	22.7			29.5006		24	18
Dy	mg/kg		4.29		4.08	3.34					3.66		4.18252		3.94	
Er	mg/kg		2.46		2.36	1.8					1.93		2.4086		1.99	
Eu	mg/kg		1.12		1.08	1.1					1.04		0.93828		0.94	
F	mg/kg					643									990	67
Ga	mg/kg		15.96		15.5	15.6	15	17	15				15.599			7
Gd	mg/kg		4.65		4.83	4					4.15		4.40976			
Ge	mg/kg								2.5					1.41715		
Hf	mg/kg		3.94		3.89	2					2.277		3.3732			
Hg	mg/kg														0.036	
Ho	mg/kg		0.84		0.85	0.65					0.747		0.82929		0.98	
I	mg/kg															
In	mg/kg		0.06		0.059											
Ir	mg/kg															
La	mg/kg		34.7		32.5	34	31				32.2		31.6941		30.5	
Li	mg/kg		54.4		57.5	56					68.4				56	57
Lu	mg/kg		0.35		0.36	0.25					0.262		0.3321		0.32	
Mo	mg/kg		1.26		1.37	1.41						0.9			1	10.4
N	mg/kg															
Nb	mg/kg	13	13.5		13.8	11		25	11	14.8	12.05		18.2074		12	5
Nd	mg/kg		29.2		26.5	29	28				26.08		26.6585		25.6	
Ni	mg/kg		44.6		42.1	41	42	41	37	42.6	46.6			45.756	38	46
Os	mg/kg															
Pb	mg/kg		19.2		17.98	21	23		19	20.4	20.98		18.6126		18	16
Pd	mg/kg															0.01
Pr	mg/kg		7.83		6.95	7.7					7.02		7.34897		6.5	
Pt	mg/kg															
Rb	mg/kg	102	110.1		107	111	107	112	100	107	111.3		103.529		111	97
Re	mg/kg															
Rh	mg/kg															
Ru	mg/kg															
S	mg/kg		1400			1260									780	1200
Sb	mg/kg		0.99			1.04							1.27835		0.69	1.09
Sc	mg/kg		15.4		11.3	11.9					11.7					7
Se	mg/kg			0.9					0.9							
Sm	mg/kg		5.6		5.09	5.4					5.1		5.17299		5.43	
Sn	mg/kg	5	3.51		2.83	3										
Sr	mg/kg	463	548		513	443	496	550	492	503	529.2		507.267		479	442
Ta	mg/kg		1.19		1.15	0.9					0.964					
Tb	mg/kg		0.74		0.71	0.63					0.605		0.68173			
Te	mg/kg															
Th	mg/kg	11	12.67		12.02	13	9		8.5	12.3	11.42		11.281		13	
Tl	mg/kg		0.6		0.62	0.57					0.73					
Tm	mg/kg				0.37	0.26					0.322		0.34767		0.4	
U	mg/kg		2.72		2.69	2.15			2.6		2.359		2.72089		2	
V	mg/kg		99.6		90.04	87					85.6			85.3333	63	70
W	mg/kg			3	2.1	2					85.6					10
Y	mg/kg	20	23.4		22.7	16	21	32	22	20.8	22.2		23.3522		25	23
Yb	mg/kg		2.33		2.27	1.72					1.936		2.30982		2.2	1
Zn	mg/kg		98.2		93.6	96	97	87	97	82.7			98.4185		93	88
Zr	mg/kg	132	147.8		138	164	155	118	144	143	74.2		131.661		136	123

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;
I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;
T=titrimetry; W=wet chemistry; X=X-ray fluorescence.

Results K82 were submitted too late to contribute to the assessment of assigned values.

		Table 1: GeoPT10, CH-1, Marine sediment (South China Sea): Results submitted.														
Round identifier		K38	K39	K39	K40	K40	K41	K41	K42	K43	K44	K45	K46	K47	K47	K48
Sample		CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1
Technique codes		IR,X	X	X	A,IR,M,T,X	A,IR,M,T,X	M	M	A,M,O,X	X	X	X	A,I,M,X	A,IR,X	A,IR,X	I,IR
Test portion (g)		0.15-0.8	1.2	9	0.2-4	0.2-4	0.1	0.1	0.1-12	1.5	1.0-7	0.7-5	0.1-0.8	0.2-7.5	0.2-7.5	1.0-2
Data quality		2	1	2	1	2	1	2	2	2	1	2	1	1	2	1
SiO2	% m/m	44.77	45.064		44.66				44.49	45.05	44.28	44.83	44.6	44.52		
TiO2	% m/m	0.61	0.5972		0.58			0.63	0.6	0.61	0.601	0.62	0.61	0.63		
Al2O3	% m/m	12.27	12.371		12.77				12.1	12.23	12.387	12.26	12.23	12.14		11.9
Fe2O3	% m/m	4.44	4.519		4.50				4.43	4.31	4.35	4.53	4.437	4.5		4.29
Fe(II)O	% m/m				1.34						1.77					
MnO	% m/m	0.307	0.2953		0.31			0.34	0.32	0.29	0.306	0.32	0.303	0.335		0.31
MgO	% m/m	2.2	2.058		2.16				2.14	2.31	2.147	2.17	2.27	2.22		2.17
CaO	% m/m	13.27	13.548		13.52				13.07	13.36	13.37	13.27	13.37	13.28		
Na2O	% m/m	2.46	2.035		2.35				2.39	1.94	2.43	2.49	1.97	2.46		2.29
K2O	% m/m	2.27	1.341		1.52				2.25	1.48	2.31	2.31	1.267	2.22		
P2O5	% m/m	0.13	0.1439		0.12				0.12	0.12	0.124	0.12	0.133	0.128		
H2O+	% m/m				3.99									4.53		
CO2	% m/m	13.04				12.7							10.197	12.88		
LOI	% m/m	18.27	17.71		16.92				17.93	18.3	17.74	18.43	18.033	17.96		
Ag	mg/kg					0.10										
As	mg/kg								4				4.52			4.1
Au	mg/kg															
B	mg/kg															
Ba	mg/kg	495		655.5		460		439,0	473		482	555	507	497		500
Be	mg/kg					2.08			1.92				2.093	1.9		
Bi	mg/kg												0.237			
Br	mg/kg								99				103.3			
Cd	mg/kg					0.265			0.24				0.253			
Ce	mg/kg	61				59.39	59.56		60				56.67	59.8		63.5
Cl	mg/kg														4172	17004
Co	mg/kg	10		19.9		11.89			12		14	14	12.5	11		12.9
Cr	mg/kg	59		66		58		65.03	62		33	47	62.97	63		57.6
Cs	mg/kg					8.21	7.635		8.1				7.997			7.54
Cu	mg/kg	23		29.7		22		26.7	24		24	23	21	20		
Dy	mg/kg					4.02	3.494		3.83				3.633		5.24	1.9
Er	mg/kg					2.14	1.890		2.17				1.987		2.68	
Eu	mg/kg					1.05	0.936		1.11				0.812	1.13		1.18
F	mg/kg														810	
Ga	mg/kg	16		15.1		13.91			15				16.33	15		
Gd	mg/kg					4.45	4.255		4.28				4.07		4.68	
Ge	mg/kg								1				1.123			
Hf	mg/kg					3.39		2.20	3				3.667		4.5	3.47
Hg	mg/kg												0.048			
Ho	mg/kg					0.8	0.668		0.767					0.88		
I	mg/kg															
In	mg/kg															0.05
Ir	mg/kg															
La	mg/kg	30				30.08	30.26		29.4				29.53	33.2		29.5
Li	mg/kg					61			58.2				64.27	80		
Lu	mg/kg					0.34	0.271		0.297					0.34		0.32
Mo	mg/kg					1.43			1.34				1.323			
N	mg/kg														685	
Nb	mg/kg	13		13		11.55		10.5	13.2		12		12		13	
Nd	mg/kg	27				25.46	25.32		25.1				23.93	27.4		26.2
Ni	mg/kg	40		74.1		46			45		41	56	43.7	43		90
Os	mg/kg															
Pb	mg/kg	22				19.44	22.4		21		20	23	19.7		26	
Pd	mg/kg															
Pr	mg/kg					6.82	6.848		6.9				6.24		7.24	
Pt	mg/kg															
Rb	mg/kg	108		113.3		107.56	113.6		106		109	110	110	111		106
Re	mg/kg															
Rh	mg/kg															
Ru	mg/kg															
S	mg/kg			1322.3								0.09		1480		440
Sb	mg/kg					0.94			0.977				1.05			1.22
Sc	mg/kg					10.19	11.5		15				11.43	10.9		10.42
Se	mg/kg								1.2				0.583			1.4
Sm	mg/kg					5.06	4.743		4.87				4.377		4.84	5
Sn	mg/kg					2.85			2.9				3.33			
Sr	mg/kg	541		280.6		494.05	573,0		501		480	499	514.3	480		
Ta	mg/kg					0.99		0.98	0.868							0.95
Tb	mg/kg					0.68	0.588		0.655						0.83	0.64
Te	mg/kg															
Th	mg/kg			11.2		11.8	12.53		11.97		13	10	12.77		6	12.73
Tl	mg/kg					0.77			0.553				0.627			
Tm	mg/kg					0.38	0.274		0.316				0.296	0.33		
U	mg/kg			2.1		2.71	2.45		2.9			2	3.13			2.79
V	mg/kg	89		99.5		79.84			84		99		86.07	93		91
W	mg/kg					1.82			2							
Y	mg/kg	29		34.1		23.45	19.36		20.5		17		26.8	23.2		
Yb	mg/kg					2.24	1.837		2.05				2	2.34		2.07
Zn	mg/kg	101		89		97			98		102	98	102.7	95		
Zr	mg/kg	140		115.7		121.67		80.6	130		150		140.3	134		
		Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;														
		I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;														
		T=titrimetry; W=wet chemistry; X=X-ray fluorescence.														
		Results K82 were submitted too late to contribute to the assessment of assigned values.														

Table 1: GeoPT10, CH-1, Marine sediment (South China Sea): Results submitted.

Round identifier		K49	K50	K51	K51	K52	K53	K54	K55	K56	K56	K57	K58	K59
Sample		CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1
Technique codes		M,T,X	A,G	AA,E,C,M,X	AA,E,C,M,X	A,AA,X	A,IR,M,X	AA,IR,T	AA	X	X	A,M,X	A,AA,ISE,M,O,T	AA,G,T
Test portion (g)		0.05-0.7	0.25-0.5	0.06-5	0.06-5	0.1-6	0.25-1	0.1-0.5	0.1	0.7	10	0.1-3	0.2-0.5	0.1-0.5
Data quality		2	1	1	2	2	2	1	1	1	2	2	2	2
SiO2	% m/m	44.67	43.45	43.863		44.38	45.2		39.41	44.853		43.8	44.2	44.6
TiO2	% m/m	0.6	0.60	0.64		0.61	0.61		-	0.593		0.655	0.61	0.672
Al2O3	% m/m	12.13	12.13	12.349		13.75	12.15	12.11	11.32	12.032		12.5	12	12.4
Fe2O3	% m/m	4.43	4.52	4.651		4.54	4.6	4.72	1.41	4.631		4.55	4.55	4.40
Fe(II)O	% m/m	1.34		1.33			3.24	1.66	-			1.3	1.6	1.11
MnO	% m/m	0.3	0.37	0.304		0.306	0.32	0.285	0.08	0.289		0.34	0.306	0.299
MgO	% m/m	2.2	2.26	2.032		2.26	2.2	2.18	1.9	2.235		2.15	2.15	2.56
CaO	% m/m	13.04	14.54	12.79		13.43	13.6	14.51	9.42	12.857		14.2	13	11.4
Na2O	% m/m	2.59	2.35	2.654		2.2	2.1	2.62	2.2	2.831		2.01	2.44	2.64
K2O	% m/m	2.23	1.53	2.277		1.4	1.37	2.3	2.01	2.023		1.47	2.28	
P2O5	% m/m	0.13		0.119		0.132	0.12		-	0.122		0.13	0.13	
H2O+	% m/m					0.75		4.59	-			4.7		
CO2	% m/m			10.291			12.8	10.84	-			10.2	3.5	
LOI	% m/m	18.1	17.96	18.33		18.27	17.8	18.45	-	18.08		18.2	18	
Ag	mg/kg												0.1	
As	mg/kg										9.1	8	4	
Au	mg/kg													
B	mg/kg						78					82	80	
Ba	mg/kg	464.9			436.3	511	487	655			438.7	533	500	
Be	mg/kg	2.3			4.7		2					2.2	2	
Bi	mg/kg											0.39	0.31	
Br	mg/kg													
Cd	mg/kg												0.2	
Ce	mg/kg	59.85			42.7	59.9	76					61.8	62.5	
Cl	mg/kg						19000					20800	19300	
Co	mg/kg	12.42			11.1	9	12				7.7	12	13	
Cr	mg/kg	70.14			67.6	48	70	50			63.1	67	65	66
Cs	mg/kg	8.65			7.37		12					7.3	8.7	
Cu	mg/kg	22.34				27	19	19		22.1		28	23	
Dy	mg/kg	3.9			2.40	3	3.7					4.2	4.4	
Er	mg/kg	2.14			1.27	1.6	2.2					2.48	2.3	
Eu	mg/kg	1.01			0.77	0.82	1.6					1.111	1	
F	mg/kg						670					785	680	
Ga	mg/kg	14.97				16	24				14.7	15	15.6	
Gd	mg/kg	4.25			3.4	3.8	4.5					4.78	4.3	
Ge	mg/kg	1.37			0.8		7.6					3.2	1	
Hf	mg/kg	3.74			0.95	3	2.1					3.3	3.9	
Hg	mg/kg					0.037						0.038	0.3	
Ho	mg/kg	0.87			0.45	0.5	0.8					0.82	0.9	
I	mg/kg													
In	mg/kg												0.06	
Ir	mg/kg													
La	mg/kg	30.37			22.4	28.1	43					34.4	31.1	
Li	mg/kg	64.58			56.4		57	52				58	59.5	
Lu	mg/kg	0.36			0.17		0.3					0.368	0.35	
Mo	mg/kg											2.2	1.2	
N	mg/kg													
Nb	mg/kg	13.58			12	11	30			13.6		14	12	
Nd	mg/kg	26.95			20.7	23.9	33					25.9	25.5	
Ni	mg/kg	46.87			46	48	46	39		46.4		41	41	45.0
Os	mg/kg													
Pb	mg/kg	20.59			72.8	20.6	26	22		18.9		20	22	
Pd	mg/kg													
Pr	mg/kg	7.05			5.36	5.6	8.5					7.62	7.05	
Pt	mg/kg													
Rb	mg/kg	113.7			100	116	131	98		110.6		100	118	
Re	mg/kg													
Rh	mg/kg													
Ru	mg/kg													
S	mg/kg						1130				1101.2	0.1	1200	
Sb	mg/kg											1.32	1.05	
Sc	mg/kg	11.22			19.7	10.27					14.8	11	12	
Se	mg/kg												0.7	
Sm	mg/kg	5.11			4.05	4.7	6.2					5.73	5.1	
Sn	mg/kg	3.14			2.4		3.4					4.4	2.9	
Sr	mg/kg	527.8			540	548	534	510		496.7		503	527	
Ta	mg/kg	1.08			0.55		1.2					1.93	1	
Tb	mg/kg	0.67			0.46	0.6	0.6					0.75	0.72	
Te	mg/kg													
Th	mg/kg	12.74			9	10	13				13.2	13.2	13	
Tl	mg/kg											0.07	0.65	
Tm	mg/kg	0.35			0.2		0.3					0.379	0.4	
U	mg/kg	2.67			14	3.5	2.5				1.8	2.8	2.9	
V	mg/kg	83.22			73.2	65	82				91.4	89	86	
W	mg/kg				0.81							2.2	2.2	
Y	mg/kg	26.42			22	14.1	23			23.8		24	23.3	
Yb	mg/kg	2.29			1.12	1.36	1.9					2.23	2.2	
Zn	mg/kg	84.5			82	110	99	103		87.1		100	96	
Zr	mg/kg	148.5			120	168	130			136.8		126	135	

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;
I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;
T=titrimetry; W=wet chemistry; X=X-ray fluorescence.

Results K82 were submitted too late to contribute to the assessment of assigned values.

		Table 1: GeoPT10, CH-1, Marine sediment (South China Sea): Results submitted.														
Round identifier		K60	K61	K62	K63	K64	K65	K66	K67	K67	K68	K69	K70	K71	K72	K73
Sample		CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1
Technique codes		A	X	M,X	X	A,M	X	AA,C,G,O	I	I	A	M,X	A,AA	A,AA,C,O	X	A,X
Test portion (g)		0.5-1	0.8-10	0.125-3.5	1.0-10	0.2-0.5	0.174	0.1-2	1.0-10	1.0-10	0.1	0.25-0.35	0.05-0.5	0.125-1	0.4	1-1.5
Data quality		2	1	1	1	2	1	1	1	2	1	2	2	2	2	2
SiO2	% m/m	44.94	44.18	47.63	45.4	44.69	44.58	44.10				44.88		44.35	45.07	44.46
TiO2	% m/m	0.585	0.571	0.6	0.59	0.61	0,636	0.65			0.48	0.61	0.5386	0.61	0.60	0.61
Al2O3	% m/m	12.10	12.18	12.21	12.15	11.56	12.13	12.50			12.22	12.08	12.0839	12.77	12.19	12.05
Fe2O3	% m/m	4.29	4.36	4.51	3.92	4.35	4.61	4.40		4.46	4.54	4.83	4.43247	4.63	4.45	4.46
Fe(II)O	% m/m															
MnO	% m/m	0.271	0.302	0.31	0.32	0.29	0.34	0.35			0.30	0.22	0.30429	0.303	0.31	0.32
MgO	% m/m	1.99	2.14	2.19	2.17	2.05	2.19	2.09			2.18	2.16	2.15121	2.37	2.34	2.13
CaO	% m/m	13.02	12.9	13.45	13.37	12.81	13.58	13.32		12.77	13.1	13.87	13.2931	12.90	13.22	13.24
Na2O	% m/m	2.70	2.46	2.15	2.3	2.38	1.81	2.46		2.445	2.45	2.2	2.48	2.54	2.47	1.95
K2O	% m/m	2.16	2.197	1.48	1.9	2.13	2.60	2.62		2.05	2.60	1.5	2.25	2.40	2.32	1.38
P2O5	% m/m	0.115	0.116	0.12	0.13	0.12	0.130	0.13				0.13	0.13828	0.125	0.12	0.12
H2O+	% m/m													3.29		
CO2	% m/m							13.39								
LOI	% m/m	18.4	17.7	18.19	16.5		17.35	17.16				17.93		17.51		18.45
Ag	mg/kg															
As	mg/kg		4.4			8.2				4.41				4.84		2.6
Au	mg/kg															
B	mg/kg															
Ba	mg/kg	499		466	519	537				482		493	502.198	489		500
Be	mg/kg													2.60		
Bi	mg/kg													111		0.10
Br	mg/kg		107							101						
Cd	mg/kg															
Ce	mg/kg			56.32	57	63.5			57.7			64.704				
Cl	mg/kg															
Co	mg/kg	11	11		1	12				12.4		17.3	12.465			13
Cr	mg/kg	66	80	58	19	56				63.3						52
Cs	mg/kg			7.37						7.5		6.636				
Cu	mg/kg	22	23	0		26.8					1.9	18.4	21.11	38.2		30
Dy	mg/kg			4.15		4.1						4.51				
Er	mg/kg			2.26		2.2						2.543				
Eu	mg/kg			1.02		1			0.98			1.121				
F	mg/kg													767		
Ga	mg/kg			15.59	10	15						15				
Gd	mg/kg			4.37		4.7						4.76				
Ge	mg/kg															
Hf	mg/kg			3.53						3.7		3.848				
Hg	mg/kg													0.60		
Ho	mg/kg			0.82		0.7			0.98			0.897				
I	mg/kg		105													
In	mg/kg															
Ir	mg/kg															
La	mg/kg			30.33	44	31.5			30.45			33.001		34		
Li	mg/kg	65														
Lu	mg/kg			0.32					0.288			0.38				
Mo	mg/kg					1.3								1.36		
N	mg/kg															
Nb	mg/kg		9	11.84	12							13.2		19.0		
Nd	mg/kg			23.3		25.5			26.21			29.624				
Ni	mg/kg	37	48	36	42	48.6					36	39.1	41.66	48.2		27
Os	mg/kg							0.18								
Pb	mg/kg		18	19.85	19	15						23.37	30.0874			14
Pd	mg/kg															
Pr	mg/kg			6.12		6.7						8.172				
Pt	mg/kg															
Rb	mg/kg		107.8	100.97	97	101				106		108.3				
Re	mg/kg															
Rh	mg/kg															
Ru	mg/kg															
S	mg/kg	1500														
Sb	mg/kg									1.05				1.21		
Sc	mg/kg			10.69	14					10.59						
Se	mg/kg															
Sm	mg/kg			5.01		4.6			4.9			5.431				
Sn	mg/kg		2.5													0.4
Sr	mg/kg	497	512	492.93	521	527					50.6	480.3	507.513	547		470
Ta	mg/kg			1								1.051				
Tb	mg/kg			0.7		0.6			0.76			0.723				
Te	mg/kg															
Th	mg/kg		13.5	11.58	10					11.73		12.88				
Tl	mg/kg															
Tm	mg/kg			0.34								0.36				
U	mg/kg		2.3	2.35	3							3.125				
V	mg/kg	86	108	82.85	97	90					8.2		82.4667	91		70
W	mg/kg													1.95		
Y	mg/kg		22.7	23.21	24	24						25.2		22		
Yb	mg/kg			2.09		2.1			2.16			2.404				
Zn	mg/kg	92	96	85	55	95						94.8	90.2051	142		80
Zr	mg/kg		130	121.46	125	130						135.2	84.4423			

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;
I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;
T=titrimetry; W=wet chemistry; X=X-ray fluorescence.
Results K82 were submitted too late to contribute to the assessment of assigned values.

		Table 1: GeoPT10, CH-1, Marine sediment (South China Sea): Results submitted.									
Round identifier		K74	K74	K75	K76	K77	K78	K79	K80	K81	K82
Sample		CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1	CH-1
Technique codes		AA,AE,M,X	AA,E,M,X	A	X	A,X	M	I	X	A	A,M,O
Test portion (g)		0.1-1.2	0.1-1.2	0.25	6	0.5-5	0.25	0.15	0.27-10	0.5-1	0.3-0.5
Data quality		1	2	1	2	2	1	1	1	2	2
SiO2	% m/m			44.24		44.64			44.177	43.3	44.71
TiO2	% m/m			0.61	0.6	0.606			0.592	0.59	0.594
Al2O3	% m/m			12.40	11.75	12.07			12.162	12.6	12.24
Fe2O3	% m/m			4.39		4.6		4.16	4.396	4.53	4.488
Fe(II)O	% m/m					1.74					
MnO	% m/m			0.30	0.31	0.309			0.303	0.29	0.325
MgO	% m/m			2.00	1.97	2.15			2.208	2.17	2.215
CaO	% m/m			13.60	13.33	13.3			13.072	13.15	13.77
Na2O	% m/m	2.57		2.35	2.78	2.53		2.44	2.42	2.7	2.501
K2O	% m/m	2.29		2.10	2.14	2.34			2.173	2.35	2.268
P2O5	% m/m			0.14		0.124			0.12	0.18	0.128
H2O+	% m/m			1.01							
CO2	% m/m					10.71					12.5
LOI	% m/m			17.25		17.19				17.5	17.39
Ag	mg/kg		0.35						0.02		
As	mg/kg		14			4		4.3	5.6		
Au	mg/kg										
B	mg/kg		125			77				86	80
Ba	mg/kg		476	513	460	490	498	473	544	460	4.60
Be	mg/kg		3.5			2			2.8	2.78	1.3
Bi	mg/kg								0.3	7	
Br	mg/kg							74			
Cd	mg/kg		0.38						0.32	6	
Ce	mg/kg		58			59	63.5	63.2	66.86	52.65	54.6
Cl	mg/kg										
Co	mg/kg		15	16			14.0	11.6		13.65	16
Cr	mg/kg		50	69	54	63		60	79	21	50
Cs	mg/kg	0.0007						7.4	7.39		8.53
Cu	mg/kg		39	26	52	26			27	29	21
Dy	mg/kg		2.69			4	4.13		3.88	7.5	2.80
Er	mg/kg		1.46			2.3	2.40		2.34	0.91	1.25
Eu	mg/kg		1.095			1		1.04	1	0.58	
F	mg/kg		800						710		
Ga	mg/kg		15.6			16.6	17.9		14.6		
Gd	mg/kg		3.58			4.6			4.46	2.18	
Ge	mg/kg		1.4						1.45		5.64
Hf	mg/kg					4.2	4.09	3.75	3.6		
Hg	mg/kg					0.035					
Ho	mg/kg		0.51			0.75	0.890		0.79		0.50
I	mg/kg										
In	mg/kg										
Ir	mg/kg										
La	mg/kg		28.5			35	33.8	30.5	32.01	14.58	30.9
Li	mg/kg	0.0057				55				60.7	35
Lu	mg/kg		0.21			0.3	0.339	0.36	0.3	0.35	
Mo	mg/kg		1.8					8.0	2.6		
N	mg/kg										
Nb	mg/kg		11.5	12		13.5	13.9		14.4	18	
Nd	mg/kg		27.1			26	26.4		26.25	24.42	25.4
Ni	mg/kg		55	43	40	46			50	35	39
Os	mg/kg										
Pb	mg/kg		26			22			23.6	17	
Pd	mg/kg										
Pr	mg/kg		6.55			7.1	7.27		7.13		6.93
Pt	mg/kg										
Rb	mg/kg	0.011			101	103	101	105	119.3		118
Re	mg/kg										
Rh	mg/kg										
Ru	mg/kg										
S	mg/kg								765	1100	
Sb	mg/kg		0.45					1.1	1.3		
Sc	mg/kg		10.1	11				11.1	11	20	9.2
Se	mg/kg										
Sm	mg/kg		5.18			4.6	5.82	4.96	5.01	4.21	5.02
Sn	mg/kg		4.9			3.7			4.6		
Sr	mg/kg		640	515	502	484	533	475	496.7	477	440
Ta	mg/kg		0.72				1.10	1.02	0.5		16
Tb	mg/kg		0.49				0.804	0.65	0.71		
Te	mg/kg										
Th	mg/kg		10.1			11.9	12.2	11.8	13		12.1
Tl	mg/kg										
Tm	mg/kg		0.2			<0,5	0.406				
U	mg/kg		1.85				2.94		2.71		
V	mg/kg		100	83		86			103	104	71
W	mg/kg		1.64					2.5			
Y	mg/kg		17.3	27		23	24.7		24.1	23	12
Yb	mg/kg		1.37			2	2.41	2.13	2.24	0.83	1.18
Zn	mg/kg		98	97	94	105		88	96	109	82
Zr	mg/kg		45	140	155	141	132	135	141	46	53
		Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;									
		I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;									
		T=titrimetry; W=wet chemistry; X=X-ray fluorescence.									
		Results K82 were submitted too late to contribute to the assessment of assigned values.									

Table 2 GeoPT 10 (CH-1)
Assigned values and robust statistical analysis of contributed data

	X_a % m/m	H_a % m/m	sdm % m/m	H_a/s ratio	Status
SiO_2	44.654	0.504	0.086	0.170	Assigned
TiO_2	0.604	0.013	0.003	0.263	Assigned
Al_2O_3	12.220	0.168	0.021	0.127	Assigned
Fe_2O_3T	4.468	0.071	0.017	0.241	Assigned
MnO	0.305	0.007	0.002	0.295	Assigned
MgO	2.178	0.039	0.014	0.370	Assigned
CaO	13.276	0.180	0.040	0.220	Assigned
Na_2O	2.432	0.043	0.024	0.575	Provisional
P_2O_5	0.127	0.003	0.001	0.403	Assigned
LOI	17.853	0.231	0.074	0.318	Assigned
	$mg\ kg^{-1}$	$mg\ kg^{-1}$	$mg\ kg^{-1}$		Status
B	81.0	3.3	2.1	0.634	Assigned
Ba	493.5	15.5	4.7	0.303	Assigned
Be	2.09	0.15	0.06	0.374	Assigned
Bi	0.31	0.03	0.03	1.025	Provisional
Br	98.7	4.0	2.6	0.659	Assigned
Cd	0.25	0.02	0.02	0.815	Provisional
Ce	60.5	2.6	0.7	0.274	Assigned
Co	12.49	0.68	0.27	0.395	Assigned
Cr	60.6	2.6	1.3	0.506	Assigned
Cs	7.89	0.46	0.13	0.279	Assigned
Cu	23.05	1.15	0.59	0.517	Assigned
Dy	3.88	0.25	0.09	0.341	Assigned
Er	2.15	0.15	0.05	0.355	Assigned
Eu	1.029	0.082	0.019	0.226	Assigned
Ga	15.36	0.81	0.21	0.260	Assigned
Gd	4.39	0.28	0.08	0.268	Assigned
Hf	3.57	0.24	0.09	0.367	Assigned

	X_a $mg\ kg^{-1}$	H_a $mg\ kg^{-1}$	sdm $mg\ kg^{-1}$	H_a/s ratio	Status
Ho	0.796	0.066	0.023	0.352	Assigned
La	31.10	1.48	0.41	0.274	Assigned
Li	58.9	2.6	1.4	0.546	Assigned
Lu	0.316	0.030	0.008	0.268	Assigned
Mo	1.37	0.10	0.09	0.843	Provisional
Nb	12.80	0.70	0.27	0.393	Assigned
Nd	26.24	1.28	0.32	0.246	Assigned
Ni	43.8	2.0	0.7	0.339	Assigned
Pb	20.15	1.03	0.39	0.378	Assigned
Pr	7.07	0.42	0.12	0.288	Assigned
Rb	107.3	4.2	0.9	0.217	Assigned
Sb	1.05	0.08	0.02	0.284	Assigned
Sc	11.10	0.62	0.20	0.324	Assigned
Sm	5.04	0.32	0.08	0.257	Assigned
Sn	3.00	0.20	0.15	0.734	Assigned
Sr	502.8	15.8	4.0	0.257	Assigned
Ta	1.02	0.08	0.03	0.400	Assigned
Tb	0.675	0.057	0.013	0.219	Assigned
Th	11.87	0.65	0.20	0.302	Assigned
Tl	0.62	0.05	0.02	0.464	Assigned
Tm	0.325	0.031	0.012	0.389	Assigned
U	2.62	0.18	0.07	0.382	Assigned
V	87.6	3.6	1.4	0.391	Assigned
W	2.14	0.15	0.21	1.407	Provisional
Y	22.92	1.14	0.39	0.340	Assigned
Yb	2.09	0.15	0.04	0.293	Assigned
Zn	94.2	3.8	1.1	0.279	Assigned
Zr	133.7	5.1	2.0	0.383	Assigned

X_a=assigned value calculated as the robust mean of submitted data.
H_a=target precision calculated using a modified version of the Horwitz equation for Data quality 1.
sdm=standard deviation of the mean calculated from submitted data using robust statistics.

		Table 3 GeoPT10: CH-1 Marine sediment: Z-scores																						
Round identifier		K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K11	K12	K13	K14	K15	K16	K16	K17	K17	K18	K19	K20
Technique codes		A,M	X	X	A,M	X	X	IR,T,X	X	X	AA,M,T,X	X	X	X	IR,X	IR,M,X	X	M	M	X	X	AA,C,G, T	M	X
Test portion (g)		0.1	0.4-5	1	0.25	1	1-3.6	0.3-5.4	0.7	25	0.1-0.75	0.5	9	5	0.1-0.7	0.2-7	0.02-0.7	0.1	0.1	0.6	6	0.05-0.5	0.1	1.2
Data quality		2	2	2	2	2	1	2	1	2	1	1	2	2	2	2	2	1	2	1	2	1	1	1
SiO2	% m/m	1.14	-0.29	-0.71	0.89	10.31	21.14	-0.37	-0.64	*	0.81	0.88	*	0.29	8.78	0.05	0.34	*	*	0.59	*	1.84	*	-0.11
TiO2	% m/m	-1.69	0.50	*	0.35	5.60	5.83	-1.29	-0.43	-4.99	0.08	0.46	*	-2.07	5.22	1.54	-0.15	*	*	1.23	*	-1.84	*	-0.31
Al2O3	% m/m	-0.36	-0.15	1.58	0.15	9.01	18.19	-0.09	-0.72	*	0.60	-0.72	*	0.09	7.22	0.78	1.73	*	*	-0.36	*	1.07	*	0.42
Fe2O3	% m/m	-1.88	0.01	-1.18	2.05	3.80	8.02	0.38	-0.47	-2.79	-0.96	-0.68	*	-9.52	4.78	0.15	0.22	*	*	0.31	*	1.57	*	-0.12
MnO	% m/m	0.00	2.26	*	1.09	2.40	7.54	-0.22	-0.28	-11.31	0.41	2.05	*	-5.83	5.14	0.07	0.34	*	*	-0.14	*	-6.17	*	-0.69
MgO	% m/m	-1.65	-0.36	0.93	1.26	5.57	12.69	0.50	-0.62	*	3.04	-1.50	*	-1.01	6.35	1.31	*	*	*	4.18	*	-4.60	*	0.82
CaO	% m/m	-1.32	-0.43	-0.13	1.15	7.88	9.47	-0.38	-0.42	1.65	0.08	-0.42	*	1.01	8.24	-0.13	0.35	*	*	0.02	*	0.08	*	0.41
Na2O	% m/m	-2.60	-0.14	-4.72	0.02	1.51	20.42	-7.39	3.33	*	1.14	0.43	*	-0.25	-7.89	2.57	*	*	*	-0.27	*	7.25	*	-7.56
P2O5	% m/m	0.41	-0.17	*	-0.47	26.35	6.58	11.25	0.24	*	3.41	-4.95	*	*	-14.01	0.98	*	*	*	3.70	*	20.99	*	0.81
LOI	% m/m	-0.31	-0.14	0.88	*	-0.81	*	-0.20	*	*	-1.61	-2.17	*	*	2.63	-1.41	*	*	*	2.23	*	-20.33	*	0.81
B		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Ba	mg/kg	-0.76	-1.92	*	0.23	*	4.16	0.91	-0.39	*	-3.64	*	*	1.50	*	-0.40	-1.88	12.34	*	2.03	*	*	-1.33	-0.42
Be	mg/kg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-0.98	*	*	*	*	*	*	*	*
Bi	mg/kg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Br	mg/kg	*	0.54	*	*	*	*	*	*	*	*	*	*	*	*	-1.48	-0.09	*	*	*	0.17	*	*	*
Cd	mg/kg	*	39.12	*	*	*	*	*	*	*	*	*	*	*	*	-1.47	*	*	*	*	*	*	*	*
Ce	mg/kg	-0.10	-0.29	*	1.17	*	*	-0.92	*	*	-0.27	*	*	*	*	-1.33	-2.02	0.30	*	5.93	*	*	0.46	7.46
Co	mg/kg	-0.36	-4.02	*	1.27	*	3.67	-0.14	-2.77	*	3.60	*	*	*	*	-0.58	*	*	*	3.67	*	*	*	-2.18
Cr	mg/kg	1.04	0.08	*	1.21	*	-6.73	-0.82	1.73	*	-0.10	*	*	*	*	-0.23	15.20	*	*	-4.81	*	*	*	3.61
Cs	mg/kg	-7.61	*	*	0.02	*	*	*	*	*	0.03	*	*	*	*	-0.38	0.12	0.05	*	*	2.29	*	0.12	*
Cu	mg/kg	-5.02	0.85	*	1.04	*	6.91	0.41	-8.13	-0.15	3.44	*	*	*	*	-1.67	6.94	*	*	9.52	*	*	*	*
Dy	mg/kg	0.40	*	*	1.29	*	*	*	*	*	-1.13	*	*	*	*	-0.82	*	0.85	*	*	*	*	0.29	*
Er	mg/kg	0.01	*	*	1.25	*	*	*	*	*	-1.09	*	*	*	*	-0.68	*	1.39	*	*	*	*	-0.25	*
Eu	mg/kg	-0.18	*	*	1.04	*	*	*	*	*	-1.21	*	*	*	*	-0.79	*	0.18	*	*	*	*	-0.58	*
Ga	mg/kg	*	-1.45	*	1.61	*	*	1.19	-0.20	*	1.28	*	*	*	*	0.02	-0.84	*	*	-4.13	*	*	*	2.01
Gd	mg/kg	-0.69	*	*	1.25	*	*	*	*	*	1.78	*	*	*	*	-0.02	*	0.22	*	*	*	*	-0.21	*
Hf	mg/kg	0.18	*	*	0.37	*	*	*	*	*	-6.48	*	*	*	*	-0.58	*	*	-0.29	*	*	*	-4.56	*
Ho	mg/kg	0.11	*	*	1.32	*	*	*	*	*	-2.06	*	*	*	*	-1.03	*	0.09	*	*	*	*	-0.68	*
La	mg/kg	0.03	-1.72	*	1.01	*	*	-0.98	*	*	-0.43	*	*	*	*	-0.81	-2.06	-0.20	*	47.14	*	*	-0.50	*
Li	mg/kg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Lu	mg/kg	-0.09	*	*	0.57	*	*	*	*	*	-2.19	*	*	*	*	-1.09	*	0.54	*	*	*	*	-0.29	*
Mo	mg/kg	-0.79	3.05	*	*	*	*	*	*	*	*	*	*	*	*	3.48	*	*	*	*	*	*	*	*
Nb	mg/kg	-1.57	-2.00	*	-0.64	*	3.16	0.15	0.29	*	2.22	*	*	*	*	-1.93	-4.87	*	0.08	*	1.58	*	-3.92	13.20
Nd	mg/kg	-0.21	-4.38	*	1.15	*	*	-0.79	*	*	-0.29	*	*	*	*	-1.22	-0.48	-0.03	*	*	1.08	*	-0.05	*
Ni	mg/kg	-3.98	-0.70	*	3.27	*	2.13	3.28	0.31	*	1.08	*	*	*	*	-0.88	-0.70	*	*	2.63	*	*	*	2.63
Pb	mg/kg	-8.51	-6.90	*	*	*	*	0.07	*	*	0.50	*	*	*	*	-1.10	-0.07	*	8.70	7.65	*	*	-1.04	*
Pr	mg/kg	-0.26	*	*	1.00	*	*	*	*	*	-0.29	*	*	*	*	-0.81	4.66	-0.17	*	*	*	*	-0.62	*
Rb	mg/kg	-6.87	-1.57	*	0.19	*	1.33	-0.70	0.98	*	0.49	*	*	1.49	*	-0.63	1.49	0.58	*	3.69	*	*	-0.53	-5.97
Sb	mg/kg	0.00	*	*	*	*	*	*	*	*	*	*	*	*	*	-0.42	*	*	*	*	*	*	*	*
Sc	mg/kg	-0.73	*	*	0.00	*	*	5.42	8.74	*	-0.44	*	*	*	*	-0.65	*	*	*	*	*	*	*	*
Sm	mg/kg	-0.22	*	*	0.81	*	*	*	*	*	-0.34	*	*	*	*	-1.20	*	0.32	*	*	*	*	-0.66	*
Sn	mg/kg	-2.21	*	*	*	*	*	*	*	*	*	*	*	*	*	-0.32	*	*	*	*	*	*	*	*
Sr	mg/kg	-1.26	-1.36	*	0.70	*	3.75	-0.58	0.52	-3.10	-0.74	*	*	-2.31	*	0.80	1.49	0.96	*	1.72	*	*	-2.21	2.04
Ta	mg/kg	0.50	*	*	0.56	*	*	*	*	*	5.92	*	*	*	*	-1.04	*	*	-0.46	*	*	*	-0.37	*
Tb	mg/kg	0.05	*	*	-0.13	*	*	*	*	*	-0.43	*	*	*	*	0.48	*	0.34	*	*	*	*	-0.78	*
Th	mg/kg	-0.20	0.10	*	1.13	*	*	*	*	*	-1.32	*	*	*	*	-0.74	1.63	0.80	*	*	*	*	0.30	*
Tl	mg/kg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tm	mg/kg	0.09	*	*	*	*	*	*	*	*	-1.78	*	*	*	*	-1.21	*	0.14	*	*	*	*	-0.57	*
U	mg/kg	-0.07	-0.34	*	*	*	*	*	*	*	-1.34	*	*	*	*	-1.00	5.17	1.02	*	*	*	*	-0.85	*
V	mg/kg	-0.79	-1.49	*	2.46	*	1.50	1.20	-0.40	*	-2.22	*	*	*	*	-0.26	*	*	*	0.66	*	*	*	*
W	mg/kg	-0.12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Y	mg/kg	-0.67	-1.71	*	1.15	*	-0.81	4.88	1.82	*	-3.90	*	*	*	*	-0.45	0.47	-0.37	*	*	-1.28	*	-0.33	9.68
Yb	mg/kg	-0.07	*	*	*	*	*	*	*	*	-2.34	*	*	*	*	-0.60	*	0.94	*	*	*	*	-1.17	*
Zn	mg/kg	-0.29	-0.29	*	*	*	4.15	-0.16	0.12	-2.92	-4.00	*	*	*	*	-0.45	0.76	*	*	2.83	*	*	*	-5.85
Zr	mg/kg	-0.36	-0.75	*	-0.59	*	0.26	0.42	0.26	*	-12.34	*	*	1.60	*	-0.55	1.99	*	-1.23	2.22	*	*	-7.62	9.64

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;
I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;
T=titrimetry; W=wet chemistry; X=X-ray fluorescence.
*=no data reported

Table 3 GeoPT10: CH-1 Marine sediment: Z-scores

Round identifier		K21	K21	K22	K23	K23	K24	K25	K26	K27	K27	K28	K29	K30	K31	K32	K33	K34	K34	K35	K35	K36	K37	K38
Technique codes		I	I	X	T,X	T,X	AA,Co,X	A	X	M,X	X	M,X	M,X	X	X	AA,X	AA,E,X	M	M	M	M	AA,A,O,X	A,AA,W,X	IR,X
Test portion (g)		0.2	0.2	1-4.5	0.55-6	6	0.01-0.7	0.2	1.0-5	0.1-10	10	0.025-0.5	0.1-4	8.0-10	1	0.8-8	0.1-4	0.05	0.05	0.1	0.1	0.2-3	0.1-15	0.15-0.8
Data quality		1	2	1	1	2	1	2	2	1	2	1	2	2	1	2	2	1	2	1	2	1	2	2
SiO2	% m/m	*	*	0.77	0.69	*	0.15	*	-0.11	-1.04	*	-0.17	0.96	*	2.19	-0.99	-1.00	*	*	*	*	-2.84	-0.90	0.11
TiO2	% m/m	*	2.92	0.46	0.69	*	0.46	-4.37	-0.15	-1.84	*	-0.23	-1.42	-0.92	-1.84	3.53	-2.46	*	*	*	*	-0.69	1.38	0.23
Al2O3	% m/m	7.22	*	0.84	0.69	*	-0.60	-0.36	0.60	-0.06	*	0.60	0.00	*	0.48	2.09	1.49	*	*	*	*	-1.61	-0.21	0.15
Fe2O3	% m/m	-1.38	*	-0.12	0.89	*	-0.68	-1.11	1.27	-1.10	*	0.73	-3.35	-0.83	-0.26	1.13	6.39	*	*	*	*	-1.52	0.43	-0.20
MnO	% m/m	0.68	*	-0.69	0.68	*	-0.69	-0.35	-0.35	-2.06	*	0.68	-1.85	-1.03	-2.06	-1.03	-1.37	*	*	*	*	1.91	-1.72	0.13
MgO	% m/m	*	-3.07	1.34	1.13	*	0.05	-1.14	0.41	-4.60	*	0.05	0.54	*	-20.60	-3.98	4.93	*	*	*	*	2.89	1.06	0.28
CaO	% m/m	-2.48	*	0.64	1.18	*	-1.14	-1.88	0.10	-1.14	*	-0.81	-0.29	0.90	-0.48	0.73	-0.43	*	*	*	*	1.08	-1.16	-0.02
Na2O	% m/m	3.02	*	-12.96	-3.00	*	0.91	-0.25	-7.66	2.55	*	0.91	-5.19	*	3.73	-3.43	-2.25	*	*	*	*	3.26	-2.25	0.34
P2O5	% m/m	*	*	-2.07	0.81	*	-2.07	-3.92	-1.03	6.58	*	3.70	0.12	*	0.81	-14.01	-4.35	*	*	*	*	-2.07	0.41	0.41
LOI	% m/m	*	*	0.55	-61.73	*	2.49	*	0.71	2.75	*	-1.35	0.23	*	-3.00	-1.35	*	*	*	*	*	1.07	2.05	0.90
B		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Ba	mg/kg	3.45	*	-0.06	2.93	*	0.03	0.18	-0.05	2.16	*	2.80	-0.05	-0.31	*	-1.92	-1.24	0.14	*	-1.49	*	-2.67	-2.24	0.05
Be	mg/kg	*	*	*	*	*	*	*	*	0.11	*	-1.09	-0.01	*	*	*	*	1.38	*	*	*	6.06	-0.31	*
Bi	mg/kg	*	*	*	*	*	-10.48	*	*	0.00	*	0.00	1.01	*	*	4.90	*	*	*	-1.10	*	16.91	*	*
Br	mg/kg	-1.11	*	*	*	*	*	*	*	9.69	*	*	*	-1.35	*	0.80	*	*	*	*	*	*	*	*
Cd	mg/kg	*	*	*	*	*	30.02	*	*	-0.52	*	-0.52	-0.06	*	*	*	-0.52	*	*	*	1.59	*	*	*
Ce	mg/kg	1.64	*	*	*	-1.82	-0.20	-2.97	*	2.16	*	1.41	1.05	-0.10	*	*	*	0.68	*	1.12	*	-1.66	*	0.09
Co	mg/kg	-0.13	*	1.92	*	*	0.74	-1.82	*	1.48	*	1.18	-0.73	*	27.09	*	-0.36	1.92	*	-0.66	*	-4.96	0.37	-1.82
Cr	mg/kg	1.19	*	2.76	5.44	*	-0.99	-0.49	*	7.13	*	0.31	1.04	-4.90	16.24	-2.69	0.27	-0.15	*	1.14	*	-4.05	-5.66	-0.30
Cs	mg/kg	1.39	*	*	*	*	0.25	*	*	1.16	*	0.42	*	*	*	*	*	2.43	*	*	*	*	*	*
Cu	mg/kg	*	*	-1.09	0.04	*	-0.04	1.72	*	-0.04	*	0.48	-0.46	0.41	-0.04	-2.02	-0.15	*	*	5.61	*	0.83	-2.20	-0.02
Dy	mg/kg	*	0.38	*	*	*	-7.42	-0.54	*	1.64	*	0.81	-1.06	*	*	*	*	-0.85	*	1.21	*	0.25	*	*
Er	mg/kg	*	*	*	*	*	-0.96	*	*	2.04	*	1.39	-1.14	*	*	*	*	-1.42	*	1.70	*	-1.03	*	*
Eu	mg/kg	0.37	*	*	*	*	11.84	0.43	*	1.11	*	0.62	0.43	*	*	*	*	0.13	*	-1.11	*	-1.09	*	*
Ga	mg/kg	*	*	-0.08	*	*	-2.90	*	*	0.73	*	0.17	0.14	-0.22	2.01	-0.22	*	*	*	0.29	*	*	-5.13	0.39
Gd	mg/kg	*	*	*	*	*	2.18	*	*	0.93	*	1.57	-0.69	*	*	*	*	-0.85	*	0.07	*	*	*	*
Hf	mg/kg	1.93	*	*	*	*	6.09	*	*	1.59	*	1.38	-3.32	*	*	*	*	-5.47	*	-0.81	*	*	*	*
Ho	mg/kg	*	*	*	*	*	3.09	*	*	0.67	*	0.82	-1.11	*	*	*	*	-0.74	*	0.50	*	2.79	*	*
La	mg/kg	0.34	*	*	*	-0.71	1.28	-1.05	*	2.43	*	0.94	0.98	-0.03	*	*	*	0.74	*	0.40	*	-0.40	*	-0.37
Li	mg/kg	*	*	*	*	*	-9.38	3.15	*	-1.78	*	-0.56	-0.58	*	*	*	*	3.71	*	*	*	-1.15	-0.38	*
Lu	mg/kg	1.14	*	*	*	*	*	*	*	1.14	*	1.48	-1.09	*	*	*	*	-1.79	*	0.55	*	0.15	*	*
Mo	mg/kg	*	*	*	*	*	-13.10	*	*	-1.01	*	0.05	0.22	*	*	*	*	*	-2.23	*	*	-3.50	43.36	*
Nb	mg/kg	*	*	-0.71	1.58	*	1.73	*	0.15	1.01	*	1.44	-1.29	*	17.50	-1.29	1.44	-1.07	*	7.76	*	-1.14	-5.59	0.15
Nd	mg/kg	1.61	*	*	*	*	-0.18	1.47	*	2.31	*	0.21	1.08	0.69	*	*	*	-0.12	*	0.33	*	-0.50	*	0.30
Ni	mg/kg	*	*	0.82	0.62	*	-2.91	-0.45	*	0.42	*	-0.85	-0.70	-0.45	-1.40	-1.71	-0.30	1.42	*	*	0.50	-2.91	0.56	-0.95
Pb	mg/kg	*	*	1.41	-0.34	*	-0.15	-1.05	*	-0.93	*	-2.12	0.41	1.39	*	-0.56	0.12	0.81	*	-1.50	*	-2.10	-2.02	0.90
Pr	mg/kg	*	*	*	*	*	2.20	*	*	1.80	*	-0.29	0.75	*	*	*	*	-0.12	*	0.66	*	-1.36	*	*
Rb	mg/kg	1.57	*	0.32	0.22	*	0.86	*	-0.63	0.65	*	-0.08	0.43	-0.04	1.10	-0.86	-0.04	0.93	*	-0.90	*	0.86	-1.22	0.08
Sb	mg/kg	*	0.06	*	*	*	59.38	*	*	-0.72	*	*	-0.06	*	*	*	*	*	*	2.74	*	-4.32	0.24	*
Sc	mg/kg	0.00	*	5.18	*	*	14.40	-0.89	*	6.96	*	0.32	0.65	*	*	*	*	0.97	*	*	*	*	-3.32	*
Sm	mg/kg	1.56	*	*	*	*	3.04	-2.12	*	1.78	*	0.16	0.57	*	*	*	*	0.19	*	0.43	*	1.24	*	*
Sn	mg/kg	*	*	*	*	*	0.00	*	4.92	2.51	*	-0.84	0.00	*	*	*	*	*	*	*	*	*	*	*
Sr	mg/kg	*	0.54	-0.80	-0.58	*	-1.70	0.07	-1.26	2.86	*	0.64	-1.90	-0.22	2.99	-0.34	0.00	1.67	*	0.28	*	-1.51	-1.93	1.21
Ta	mg/kg	-0.72	*	*	*	*	12.07	*	*	2.11	*	1.61	-0.73	*	*	*	*	-0.68	*	*	*	*	*	*
Tb	mg/kg	-0.43	*	*	*	*	23.15	*	*	1.14	*	0.62	-0.39	*	*	*	*	-1.22	*	0.13	*	*	*	*
Th	mg/kg	1.28	*	*	*	*	-2.85	*	-0.66	1.23	*	0.24	0.87	-2.19	*	-2.57	0.33	-0.68	*	-0.89	*	1.73	*	*
Tl	mg/kg	*	*	*	*	*	*	*	*	-0.38	*	0.00	-0.47	*	*	*	*	2.06	*	*	*	*	*	*
Tm	mg/kg	*	*	*	*	*	*	*	*	*	*	1.48	-1.05	*	*	*	*	-0.08	*	0.75	*	2.45	*	*
U	mg/kg	*	0.21	*	*	*	2.07	*	*	0.53	*	0.36	-1.31	*	*	-0.07	*	-1.46	*	0.53	*	-3.44	*	*
V	mg/kg	0.41	*	1.08	2.85	*	0.94	-1.63	*	3.35	*	0.68	-0.09	*	*	*	*	-0.57	*	*	-0.32	-6.89	-2.46	0.19
W	mg/kg	*	*	*	*	*	-14.02	*	*	*	2.83	-0.24	-0.45	*	*	*	*	547.36	*	*	*	*	25.78	*
Y	mg/kg	*	*	0.42	2.16	*	-1.68	-2.15	-1.28	0.42	*	-0.19	-3.02	-0.84	7.93	-0.40	-0.93	-0.63	*	0.38	*	1.82	0.03	2.66
Yb	mg/kg	2.74	*	*	*	*	6.08	-1.30	*	1.60	*	1.20	-1.24	*	*	*	*	-1.03	*	1.47	*	0.74	-3.64	*
Zn	mg/kg	*	-1.07	*	0.52	*	0.73	-0.29	*	1.04	*	-0.17	0.23	0.36	-1.90	0.36	-1.52	*	*	1.10	*	-0.32	-0.82	0.89
Zr	mg/kg	*	0.23	0.20	1.40	*	6.52	*	-0.16	2.76	*	0.85	2.96	2.09	-3.06	1.01	0.91	-11.62	*	-0.39	*	0.46	-1.04	0.62

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;
I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;
T=titrimetry; W=wet chemistry; X=X-ray fluorescence.
*=no data reported

Table 3 GeoPT10: CH-1 Marine sediment: Z-scores

Round identifier		K39	K39	K40	K40	K41	K41	K42	K43	K44	K45	K46	K47	K47	K48	K49	K50	K51	K51	K52	K53	K54	K55	K56
Technique codes		X	X	A,IR,M,T,X	A,IR,M,T,X	M	M	A,M,O,X	X	X	X	A,I,M,X	A,IR,X	A,IR,X	I,IR	M,T,X	A,G	AA,E,C,M,X	AA,E,C,M,X	A,AA,X	A,IR,M,X	AA,IR,T	AA	X
Test portion (g)		1.2	9	0.2-4	0.2-4	0.1	0.1	0.1-12	1.5	1.0-7	0.7-5	0.1-0.8	0.2-7.5	0.2-7.5	1.0-2	0.05-0.7	0.25-0.5	0.06-5	0.06-5	0.1-6	0.25-1	0.1-0.5	0.1	0.7
Data quality		1	2	1	2	1	2	2	2	1	2	1	1	2	1	2	1	1	2	2	2	1	1	1
SiO2	% m/m	0.81	*	0.01	*	*	*	-0.16	0.39	-0.74	0.17	-0.11	-0.27	*	*	0.02	-2.39	-1.57	*	-0.27	0.54	*	-10.40	0.39
TiO2	% m/m	-0.52	*	-1.84	*	*	1.00	-0.15	0.23	-0.23	0.61	0.46	2.00	*	*	-0.15	-0.31	2.76	*	0.23	0.23	*	*	-0.84
Al2O3	% m/m	0.90	*	3.28	*	*	*	-0.36	0.03	1.00	0.12	0.06	-0.48	*	-1.91	-0.27	-0.54	0.77	*	4.56	-0.21	-0.66	-5.37	-1.12
Fe2O3	% m/m	0.71	*	0.45	*	*	*	-0.27	-1.11	-1.66	0.43	-0.44	0.45	*	-2.50	-0.27	0.73	2.56	*	0.50	0.92	3.53	-42.87	2.28
MnO	% m/m	-1.33	*	0.68	*	*	2.40	1.03	-1.03	0.13	1.03	-0.28	4.11	*	0.68	-0.35	8.91	-0.14	*	0.07	1.03	-2.75	-30.85	-2.20
MgO	% m/m	-3.10	*	-0.47	*	*	*	-0.49	1.70	-0.80	-0.11	2.37	1.08	*	-0.21	0.28	2.11	-3.77	*	1.06	0.28	0.05	-7.18	1.47
CaO	% m/m	1.51	*	1.36	*	*	*	-0.57	0.23	0.52	-0.02	0.52	0.02	*	*	-0.66	7.03	-2.70	*	0.43	0.90	6.86	-21.43	-2.33
Na2O	% m/m	-9.32	*	-1.92	*	*	*	-0.49	-5.78	-0.04	0.69	-10.85	0.67	*	-3.33	1.86	-1.92	5.23	*	-2.72	-3.90	4.43	-5.44	9.39
P2O5	% m/m	4.82	*	-2.07	*	*	*	-1.03	-1.03	-0.92	-1.03	1.68	0.24	*	*	0.41	*	-2.36	*	0.69	-1.03	*	*	-1.49
LOI	% m/m	-0.62	*	-4.03	*	*	*	0.17	0.97	-0.49	1.25	0.78	0.46	*	*	0.53	0.46	2.06	*	0.90	-0.11	2.58	*	0.98
B		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-0.45	*	*	*
Ba	mg/kg	*	5.22	*	-1.08	*	*	-0.66	*	-0.74	1.98	0.87	0.23	*	0.42	-0.92	*	*	-1.84	0.56	-0.21	10.40	*	*
Be	mg/kg	*	*	*	-0.04	*	*	-0.58	*	*	*	0.00	-1.29	*	*	0.69	*	*	8.70	*	-0.31	*	*	*
Bi	mg/kg	*	*	*	*	*	*	*	*	*	*	-2.47	*	*	*	*	*	*	*	*	*	*	*	*
Br	mg/kg	*	*	*	*	*	*	0.04	*	*	*	1.17	*	*	*	*	*	*	*	*	*	*	*	*
Cd	mg/kg	*	*	*	0.24	*	*	-0.26	*	*	*	0.00	*	*	*	*	*	*	*	*	*	*	*	*
Ce	mg/kg	*	*	*	-0.22	-0.37	*	-0.10	*	*	*	-1.48	-0.28	*	1.14	-0.13	*	*	-3.41	-0.12	2.96	*	*	*
Co	mg/kg	*	5.42	*	-0.44	*	*	-0.36	*	2.21	1.10	0.01	-2.18	*	0.60	-0.05	*	*	-1.02	-2.56	-0.36	*	*	*
Cr	mg/kg	*	1.04	*	-0.49	*	0.85	0.27	*	-10.56	-2.60	0.92	0.93	*	-1.14	1.83	*	*	1.34	-2.41	1.80	-4.05	*	*
Cs	mg/kg	*	*	*	0.35	-0.54	*	0.23	*	*	*	0.24	*	*	-0.75	0.83	*	*	-0.56	*	4.45	*	*	*
Cu	mg/kg	*	2.89	*	-0.46	*	1.59	0.41	*	0.83	-0.02	-1.78	-2.65	*	*	-0.31	*	*	*	1.72	-1.76	-3.52	*	-0.83
Dy	mg/kg	*	*	*	0.29	-1.51	*	-0.09	*	*	*	-0.96	*	2.70	-7.81	0.05	*	*	-2.92	-1.73	-0.35	*	*	*
Er	mg/kg	*	*	*	-0.02	-1.68	*	0.07	*	*	*	-1.05	*	1.74	*	-0.02	*	*	-2.87	-1.79	0.17	*	*	*
Eu	mg/kg	*	*	*	0.13	-1.14	*	0.49	*	*	*	-2.65	1.23	*	1.84	-0.12	*	*	-1.58	-1.28	3.48	*	*	*
Ga	mg/kg	*	-0.16	*	-0.89	*	*	-0.22	*	*	*	1.19	-0.45	*	*	-0.24	*	*	*	0.39	5.30	*	*	*
Gd	mg/kg	*	*	*	0.11	-0.48	*	-0.19	*	*	*	-1.13	*	0.52	*	-0.25	*	*	-1.76	-1.05	0.20	*	*	*
Hf	mg/kg	*	*	*	-0.37	*	-2.90	-1.20	*	*	*	0.43	*	1.99	-0.40	0.37	*	*	-5.55	-1.20	-3.11	*	*	*
Ho	mg/kg	*	*	*	0.03	-1.94	*	-0.22	*	*	*	*	1.27	*	*	0.56	*	*	-2.63	-2.25	0.03	*	*	*
La	mg/kg	*	*	*	-0.34	-0.57	*	-0.57	*	*	*	-1.06	1.42	*	-1.08	-0.25	*	*	-2.93	-1.01	4.01	*	*	*
Li	mg/kg	*	*	*	0.40	*	*	-0.15	*	*	*	2.09	8.25	*	*	1.10	*	*	-0.50	*	-0.38	-2.72	*	*
Lu	mg/kg	*	*	*	0.41	-1.49	*	-0.31	*	*	*	*	0.81	*	0.15	0.74	*	*	-2.42	*	-0.26	*	*	*
Mo	mg/kg	*	*	*	0.31	*	*	-0.12	*	*	*	-0.40	*	*	*	*	*	*	*	*	*	*	*	*
Nb	mg/kg	*	0.15	*	-0.89	*	-1.65	0.29	*	-1.14	*	-1.14	*	0.15	*	0.56	*	*	-0.57	-1.29	12.34	*	*	1.15
Nd	mg/kg	*	*	*	-0.30	-0.71	*	-0.44	*	*	*	-1.80	0.91	*	-0.03	0.28	*	*	-2.16	-0.91	2.64	*	*	*
Ni	mg/kg	*	7.65	*	0.56	*	*	0.31	*	-1.40	3.08	-0.04	-0.39	*	23.31	0.78	*	*	0.56	1.07	0.56	-2.41	*	1.32
Pb	mg/kg	*	*	*	-0.35	2.19	*	0.41	*	-0.15	1.39	-0.44	*	2.85	*	0.21	*	*	25.67	0.22	2.85	1.80	*	-1.22
Pr	mg/kg	*	*	*	-0.30	-0.53	*	-0.20	*	*	*	-1.97	*	0.20	*	-0.03	*	*	-2.03	-1.75	1.70	*	*	*
Rb	mg/kg	*	0.70	*	0.03	1.47	*	-0.16	*	0.39	0.31	0.62	0.86	*	-0.32	0.75	*	*	-0.86	1.02	2.78	-2.20	*	0.77
Sb	mg/kg	*	*	*	-0.66	*	*	-0.44	*	*	*	0.00	*	*	2.04	*	*	*	*	*	*	*	*	*
Sc	mg/kg	*	*	*	-0.74	0.65	*	3.16	*	*	*	0.53	-0.32	*	-1.10	0.10	*	*	6.96	-0.67	*	*	*	*
Sm	mg/kg	*	*	*	0.03	-0.94	*	-0.27	*	*	*	-2.09	*	-0.31	-0.12	0.11	*	*	-1.56	-0.54	1.84	*	*	*
Sn	mg/kg	*	*	*	-0.37	*	*	-0.25	*	*	*	1.62	*	*	*	0.34	*	*	-1.48	*	0.98	*	*	*
Sr	mg/kg	*	-7.05	*	-0.28	*	*	-0.06	*	-1.45	-0.12	0.73	-1.45	*	*	0.79	*	*	1.18	1.43	0.99	0.45	*	-0.39
Ta	mg/kg	*	*	*	-0.18	*	-0.24	-0.93	*	*	*	*	*	*	-0.85	0.38	*	*	-2.88	*	1.11	*	*	*
Tb	mg/kg	*	*	*	0.05	-1.51	*	-0.17	*	*	*	*	*	1.36	-0.60	-0.04	*	*	-1.87	-0.65	-0.65	*	*	*
Th	mg/kg	*	-0.51	*	-0.05	1.02	*	0.08	*	1.73	-1.43	1.38	*	-4.48	1.32	0.67	*	*	-2.19	-1.43	0.87	*	*	*
Tl	mg/kg	*	*	*	1.41	*	*	-0.63	*	*	*	0.13	*	*	*	*	*	*	*	*	*	*	*	*
Tm	mg/kg	*	*	*	0.90	-1.65	*	-0.14	*	*	*	-0.93	0.18	*	*	0.41	*	*	-2.03	*	-0.40	*	*	*
U	mg/kg	*	-1.44	*	0.24	-0.96	*	0.76	*	*	-1.72	2.79	*	*	0.91	0.13	*	*	31.34	2.41	-0.34	*	*	*
V	mg/kg	*	1.66	*	-1.09	*	*	-0.51	*	3.18	*	-0.43	1.50	*	0.94	-0.62	*	*	-2.02	-3.16	-0.79	*	*	*
W	mg/kg	*	*	*	-1.04	*	*	-0.45	*	*	*	*	*	*	*	*	*	*	-4.35	*	*	*	*	*
Y	mg/kg	*	4.88	*	0.23	-3.11	*	-1.06	*	-5.18	*	3.39	0.24	*	*	1.53	*	*	-0.40	-3.86	0.03	*	*	0.77
Yb	mg/kg	*	*	*	0.50	-1.69	*	-0.13	*	*	*	-0.60	1.67	*	-0.13	0.67	*	*	-3.24	-2.44	-0.63	*	*	*
Zn	mg/kg	*	-0.69	*	0.36	*	*	0.50	*	2.04	0.50	2.23	0.20	*	*	-1.28	*	*	-1.61	2.07	0.63	2.31	*	-1.88
Zr	mg/kg	*	-1.75	*	-1.17	*	-5.18	-0.36	*	3.19	*	1.30	0.07	*	*	1.45	*	*	-1.33	3.36	-0.36	*	*	0.61

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;
I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;
T=titrimetry; W=wet chemistry; X=X-ray fluorescence.
*=no data reported

Table 3 GeoPT10: CH-1 Marine sediment: Z-scores

Round identifier		K56	K57	K58	K59	K60	K61	K62	K63	K64	K65	K66	K67	K67	K68	K69	K70	K71	K72	K73	K74	K74	K75	K76
Technique codes		X	A,M,X	A,AA,ISE,M,O,T	AA,G,T	A	X	M.X	X	A,M	X	AA,C,G,O	I	I	A	M,X	A,AA	A,AA,C,O	X	A,X	AA,AE,M,X	AA,E,M,X	A	X
Test portion (g)		10	0.1-3	0.2-0.5	0.1-0.5	0.5-1	0.8-10	0.125-3.5	1.0-10	0.2-0.5	0.174	0.1-2	1.0-10	1.0-10	0.1	0.25-0.35	0.05-0.5	0.125-1	0.4	1-1.5	0.1-1.2	0.1-1.2	0.25	6
Data quality		2	2	2	2	2	1	1	1	2	1	1	1	2	1	2	2	2	2	2	1	2	1	2
SiO2	% m/m	*	-0.85	-0.45	-0.05	0.28	-0.94	5.90	1.48	0.04	-0.15	-1.10	*	*	*	0.22	*	-0.30	0.41	-0.19	*	*	-0.82	*
TiO2	% m/m	*	1.96	0.23	2.61	-0.73	-2.53	-0.31	-1.07	0.23	*	3.53	*	*	-9.51	0.23	-2.51	0.23	-0.15	0.23	*	*	0.46	-0.15
Al2O3	% m/m	*	0.84	-0.66	0.54	-0.36	-0.24	-0.06	-0.42	-1.97	-0.54	1.67	*	*	0.00	-0.42	-0.41	1.64	-0.09	-0.51	*	*	1.07	-1.40
Fe2O3	% m/m	*	0.57	0.57	-0.48	-1.25	-1.52	0.59	-7.69	-0.83	1.99	-0.96	*	-0.06	1.01	2.54	-0.25	1.13	-0.13	-0.06	*	*	-1.10	*
MnO	% m/m	*	2.40	0.07	-0.41	-2.33	-0.42	0.68	2.05	-1.03	4.79	6.16	*	*	-0.69	-5.83	-0.05	-0.14	0.34	1.03	*	*	-0.69	0.34
MgO	% m/m	*	-0.36	-0.36	4.93	-2.43	-0.99	0.31	-0.21	-1.65	0.31	-2.28	*	*	0.05	-0.23	-0.35	2.48	2.09	-0.62	*	*	-4.60	-2.69
CaO	% m/m	*	2.57	-0.77	-5.21	-0.71	-2.09	0.97	0.52	-1.29	1.69	0.25	*	-1.41	-0.98	1.65	0.05	-1.04	-0.15	-0.10	*	*	1.80	0.15
Na2O	% m/m	*	-4.95	0.10	2.45	3.16	0.67	-6.62	-3.09	-0.61	-14.61	0.67	*	0.16	0.43	-2.72	0.57	1.28	0.45	-5.66	3.26	*	-1.92	4.10
P2O5	% m/m	*	0.41	0.41	*	-1.76	-3.22	-2.07	0.81	-1.03	0.81	0.81	*	*	*	0.41	1.60	-0.31	-1.03	-1.03	*	*	3.70	*
LOI	% m/m	*	0.75	0.32	*	1.18	-0.66	1.46	-5.85	*	-2.17	-3.00	*	*	*	0.17	*	-0.74	*	1.29	*	*	-2.61	*
B		*	0.15	-0.15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	6.58	*	*
Ba	mg/kg	-1.77	1.27	0.21	*	0.18	*	-1.77	1.64	1.40	*	*	*	-0.37	*	-0.02	0.28	-0.15	*	0.21	*	-0.56	1.26	-1.08
Be	mg/kg	*	0.36	-0.31	*	*	*	*	*	*	*	*	*	*	*	*	*	1.69	*	*	*	4.70	*	*
Bi	mg/kg	*	1.35	0.00	*	*	*	*	*	*	*	*	*	*	*	*	*	1871.40	*	-3.55	*	*	*	*
Br	mg/kg	*	*	*	*	*	2.10	*	*	*	*	*	*	0.29	*	*	*	*	*	*	*	*	*	*
Cd	mg/kg	*	*	-1.07	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2.55	*	*
Ce	mg/kg	*	0.24	0.38	*	*	*	-1.61	-1.35	0.57	*	*	-1.08	*	*	0.80	*	*	*	*	*	-0.48	*	*
Co	mg/kg	-3.51	-0.36	0.37	*	-1.09	-2.18	*	-16.82	-0.36	*	*	*	-0.07	*	3.52	-0.02	*	*	0.37	*	1.84	5.14	*
Cr	mg/kg	0.48	1.23	0.85	1.04	1.04	7.43	-0.99	-15.91	-0.88	*	*	*	0.52	*	*	*	*	*	-1.64	*	-2.02	3.22	-1.26
Cs	mg/kg	*	-0.63	0.88	*	*	*	-1.12	*	*	*	*	*	-0.42	*	-1.35	*	*	*	*	-17.06	*	*	*
Cu	mg/kg	*	2.15	-0.02	*	-0.46	-0.04	-20.05	*	1.63	*	*	*	*	-18.40	-2.02	-0.84	6.59	*	3.02	*	6.94	2.57	12.59
Dy	mg/kg	*	0.64	1.04	*	*	*	1.09	*	0.44	*	*	*	*	*	1.25	*	*	*	*	*	-2.34	*	*
Er	mg/kg	*	1.09	0.50	*	*	*	0.73	*	0.17	*	*	*	*	*	1.29	*	*	*	*	*	-2.25	*	*
Eu	mg/kg	*	0.50	-0.18	*	*	*	-0.11	*	-0.18	*	*	-0.60	*	*	0.56	*	*	*	*	*	0.40	*	*
Ga	mg/kg	-0.41	-0.22	0.14	*	*	*	0.28	-6.59	-0.22	*	*	*	*	*	-0.22	*	*	*	*	*	0.14	*	*
Gd	mg/kg	*	0.70	-0.16	*	*	*	-0.07	*	0.55	*	*	*	*	*	0.66	*	*	*	*	*	-1.44	*	*
Hf	mg/kg	*	-0.56	0.71	*	*	*	-0.15	*	*	*	*	*	0.29	*	0.60	*	*	*	*	*	*	*	*
Ho	mg/kg	*	0.18	0.79	*	*	*	0.36	*	-0.73	*	*	2.79	*	*	0.77	*	*	*	*	*	-2.17	*	*
La	mg/kg	*	1.11	0.00	*	*	*	-0.52	8.70	0.13	*	*	-0.44	*	*	0.64	*	0.98	*	*	*	-0.88	*	*
Li	mg/kg	*	-0.18	0.11	*	1.19	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-23.09	*	*	*
Lu	mg/kg	*	0.87	0.57	*	*	*	0.15	*	*	*	*	-0.92	*	*	1.07	*	*	*	*	*	-1.76	*	*
Mo	mg/kg	*	4.01	-0.79	*	*	*	*	*	-0.31	*	*	*	*	*	*	*	-0.02	*	*	*	2.09	*	*
Nb	mg/kg	*	0.86	-0.57	*	*	-5.44	-1.37	-1.14	*	*	*	*	*	*	0.29	*	4.45	*	*	*	-0.93	-1.14	*
Nd	mg/kg	*	-0.13	-0.29	*	*	*	-2.29	*	-0.29	*	*	-0.02	*	*	1.32	*	*	*	*	*	0.34	*	*
Ni	mg/kg	*	-0.70	-0.70	0.31	-1.71	2.13	-3.92	-0.90	1.22	*	*	*	*	-3.92	-1.18	-0.53	1.12	*	-4.23	*	2.83	-0.39	-0.95
Pb	mg/kg	*	-0.07	0.90	*	*	-2.10	-0.29	-1.12	-2.51	*	*	*	*	*	1.57	4.84	*	*	-3.00	*	2.85	*	*
Pr	mg/kg	*	0.65	-0.03	*	*	*	-2.26	*	-0.44	*	*	*	*	*	1.31	*	*	*	*	*	-0.62	*	*
Rb	mg/kg	*	-0.86	1.25	*	*	0.11	-1.50	-2.44	-0.75	*	*	*	-0.16	*	0.11	*	*	*	*	-25.27	*	*	-0.75
Sb	mg/kg	*	1.62	0.00	*	*	*	*	*	*	*	*	*	0.00	*	*	*	0.96	*	*	*	-3.60	*	*
Sc	mg/kg	2.99	-0.08	0.73	*	*	*	-0.66	4.69	*	*	*	*	-0.41	*	*	*	*	*	*	*	-0.81	-0.16	*
Sm	mg/kg	*	1.09	0.10	*	*	*	-0.09	*	-0.69	*	*	-0.44	*	*	0.62	*	*	*	*	*	0.22	*	*
Sn	mg/kg	*	3.44	-0.25	*	*	-2.46	*	*	*	*	*	*	*	*	*	*	*	*	-6.39	*	4.67	*	*
Sr	mg/kg	*	0.00	0.77	*	-0.19	0.58	-0.63	1.15	0.77	*	*	*	*	-28.68	-0.71	0.15	1.40	*	-1.04	*	4.35	0.77	-0.03
Ta	mg/kg	*	5.61	-0.12	*	*	*	-0.23	*	*	*	*	*	*	*	0.20	*	*	*	*	*	-1.84	*	*
Tb	mg/kg	*	0.66	0.40	*	*	*	0.44	*	-0.65	*	*	1.49	*	*	0.42	*	*	*	*	*	-1.61	*	*
Th	mg/kg	1.02	1.02	0.87	*	*	2.50	-0.44	-2.85	*	*	*	*	-0.10	*	0.78	*	*	*	*	*	-1.35	*	*
Tl	mg/kg	*	-5.16	0.28	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tm	mg/kg	*	0.88	1.23	*	*	*	0.50	*	*	*	*	*	*	*	0.58	*	*	*	*	*	-2.03	*	*
U	mg/kg	-2.27	0.48	0.76	*	*	-1.79	-1.51	2.07	*	*	*	*	*	*	1.38	*	*	*	*	*	-2.13	*	*
V	mg/kg	0.53	0.19	-0.23	*	-0.23	5.70	-1.34	2.62	0.33	*	*	*	*	-22.22	*	-0.72	0.47	*	-2.46	*	1.73	-1.29	*
W	mg/kg	*	0.21	0.21	*	*	*	*	*	*	*	*	*	*	*	*	*	-0.61	*	*	*	-1.63	*	*
Y	mg/kg	*	0.47	0.16	*	*	-0.19	0.25	0.94	0.47	*	*	*	*	*	0.99	*	-0.40	*	*	*	-2.46	3.56	*
Yb	mg/kg	*	0.47	0.37	*	*	*	0.00	*	0.03	*	*	0.47	*	*	1.05	*	*	*	*	*	-2.41	*	*
Zn	mg/kg	*	0.76	0.23	*	-0.29	0.46	-2.43	-10.32	0.10	*	*	*	*	*	0.07	-0.53	6.28	*	-1.87	*	0.50	0.73	-0.03
Zr	mg/kg	*	-0.75	0.13	*	*	-0.71	-2.38	-1.69	-0.36	*	*	*	*	*	0.15	-4.81	*	*	*	*	-8.66	1.24	2.09

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric;
I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other;
T=titrimetry; W=wet chemistry; X=X-ray fluorescence.
*=no data reported

Table 3 GeoPT10: CH-1 Marine sediment: Z-scores

Round identifier		K77	K78	K79	K80	K81	K82
Technique codes		A,X	M	I	X	A	A,M,O
Test portion (g)		0.5-5	0.25	0.15	0.27-10	0.5-1	0.3-0.5
Data quality		2	1.00	1	1	2	2.00
SiO2	% m/m	-0.01	*	*	-0.95	-1.34	0.06
TiO2	% m/m	0.08	*	*	-0.92	-0.54	-0.38
Al2O3	% m/m	-0.45	*	*	-0.35	1.13	0.06
Fe2O3	% m/m	0.92	*	-4.32	-1.01	0.43	0.14
MnO	% m/m	0.27	*	*	-0.28	-1.03	1.37
MgO	% m/m	-0.36	*	*	0.77	-0.11	0.48
CaO	% m/m	0.07	*	*	-1.13	-0.35	1.37
Na2O	% m/m	1.16	*	0.20	-0.27	3.16	0.82
P2O5	% m/m	-0.46	*	*	-2.07	7.61	0.12
LOI	% m/m	-1.43	*	*	*	-0.76	-1.00
B		-0.60	*	*	*	0.75	-0.15
Ba	mg/kg	-0.11	0.29	-1.32	3.25	-1.08	-15.75
Be	mg/kg	-0.31	*	*	4.72	2.29	-2.65
Bi	mg/kg	*	*	*	-0.34	113.11	*
Br	mg/kg	*	*	-6.24	*	*	*
Cd	mg/kg	*	*	*	2.69	115.47	*
Ce	mg/kg	-0.29	1.14	1.02	2.43	-1.51	-1.14
Co	mg/kg	*	2.21	-1.30	*	0.85	2.57
Cr	mg/kg	0.46	*	-0.22	7.05	-7.57	-2.02
Cs	mg/kg	*	*	-1.05	-1.07	*	0.70
Cu	mg/kg	1.28	*	*	3.44	2.59	-0.89
Dy	mg/kg	0.25	1.01	*	0.02	7.17	-2.13
Er	mg/kg	0.50	1.65	*	1.26	-4.04	-2.93
Eu	mg/kg	-0.18	*	0.13	-0.36	-2.74	*
Ga	mg/kg	0.76	3.11	*	-0.94	*	*
Gd	mg/kg	0.38	*	*	0.25	-3.93	*
Hf	mg/kg	1.35	2.23	0.79	0.15	*	*
Ho	mg/kg	-0.35	1.43	*	-0.09	*	-2.25
La	mg/kg	1.31	1.82	-0.40	0.61	-5.57	-0.07
Li	mg/kg	-0.77	*	*	*	0.34	-4.69
Lu	mg/kg	-0.26	0.78	1.48	-0.52	0.57	*
Mo	mg/kg	*	*	63.69	11.85	*	*
Nb	mg/kg	0.51	1.58	*	2.30	3.73	*
Nd	mg/kg	-0.09	0.13	*	0.01	-0.71	-0.33
Ni	mg/kg	0.56	*	*	3.14	-2.21	-1.20
Pb	mg/kg	0.90	*	*	3.36	-1.54	*
Pr	mg/kg	0.03	0.47	*	0.14	*	-0.17
Rb	mg/kg	-0.51	-1.49	-0.55	2.81	*	1.25
Sb	mg/kg	*	*	0.60	3.00	*	*
Sc	mg/kg	*	*	0.00	-0.16	7.20	-1.54
Sm	mg/kg	-0.69	2.47	-0.25	-0.09	-1.31	-0.03
Sn	mg/kg	1.72	*	*	7.87	*	*
Sr	mg/kg	-0.60	1.91	-1.77	-0.39	-0.82	-1.99
Ta	mg/kg	*	1.00	0.01	-6.38	*	92.18
Tb	mg/kg	*	2.26	-0.43	0.62	*	*
Th	mg/kg	0.03	0.51	-0.10	1.73	*	0.18
Tl	mg/kg	*	*	*	*	*	*
Tm	mg/kg	*	2.65	*	*	*	*
U	mg/kg	*	1.74	*	0.47	*	*
V	mg/kg	-0.23	*	*	4.30	2.29	-2.33
W	mg/kg	*	*	2.38	*	*	*
Y	mg/kg	0.03	1.55	*	1.03	0.03	-4.77
Yb	mg/kg	-0.30	2.14	0.27	1.00	-4.21	-3.04
Zn	mg/kg	1.42	*	-1.64	0.46	1.94	-1.61
Zr	mg/kg	0.72	-0.32	0.26	1.43	-8.57	-7.88

Technique codes: A: ICP-AES; AA: AAS; C=colorimetry; E=(atomic) emission spectrometry; G=gravimetric; I=INAA; IR= infra red detection; ISE=ion selective electrodes; M=ICP-MS; O=other; T=titrimetry; W=wet chemistry; X=X-ray fluorescence.

*=no data reported

Table 4
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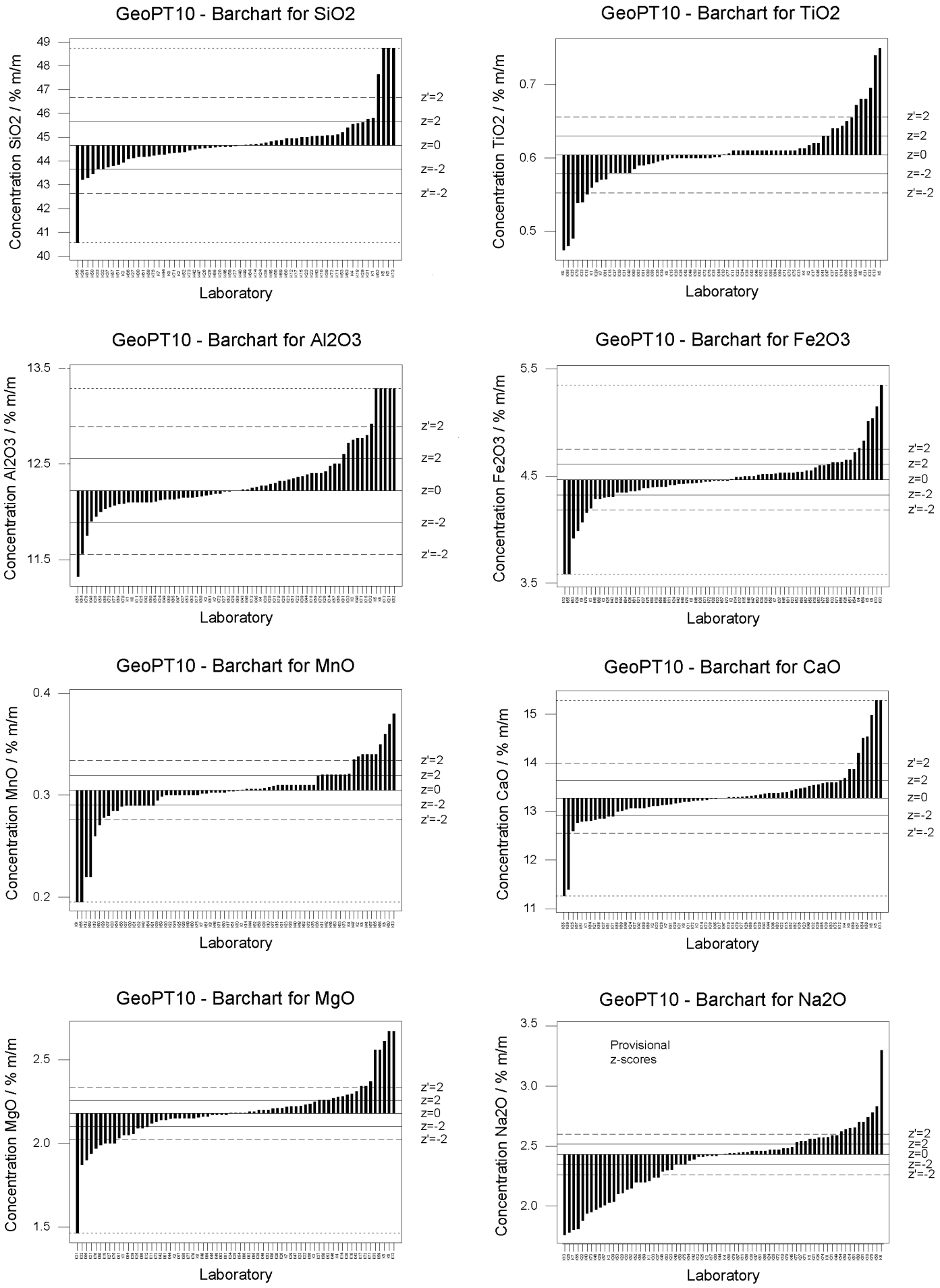
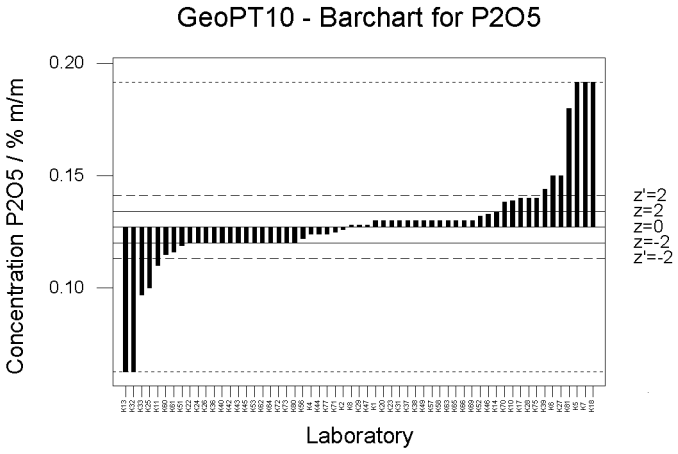
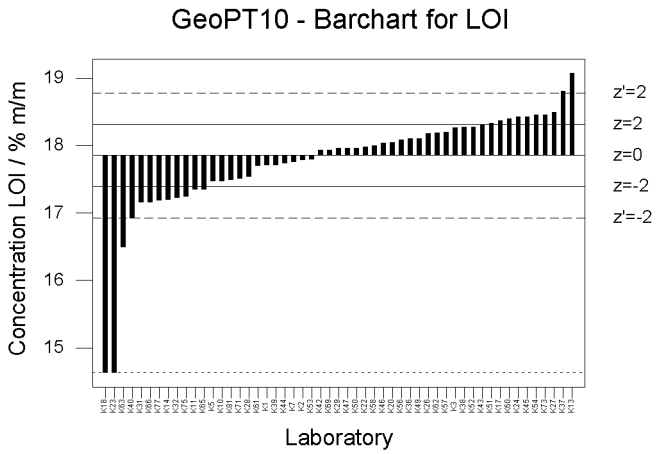
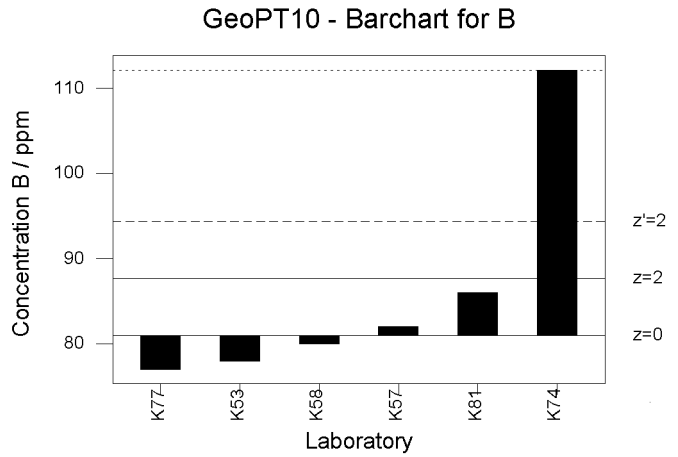
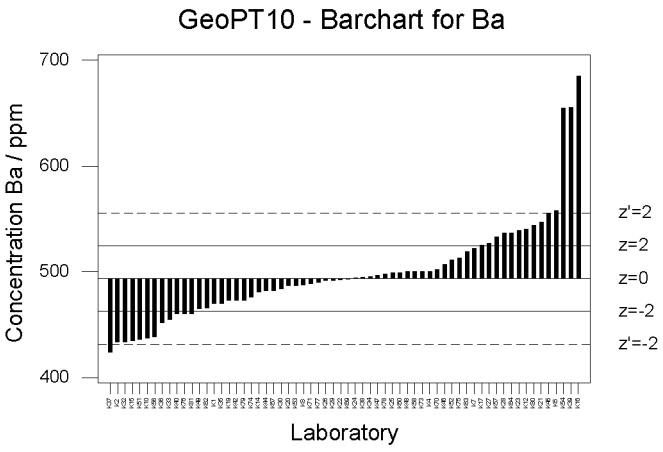


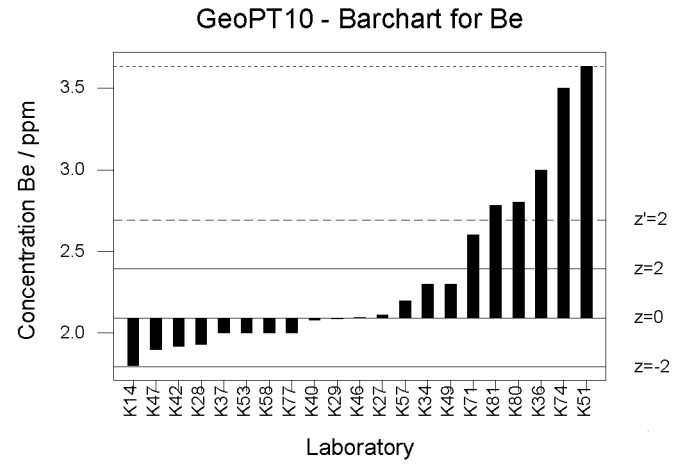
Figure 1 GeoPT10, CH-1, marine sediment: data distribution charts for elements for which values were assigned. Horizontal lines show limits for -2<z<2 for pure geochemistry labs (solid lines) and -2<z'<2 for applied geochemistry labs (pecked lines).

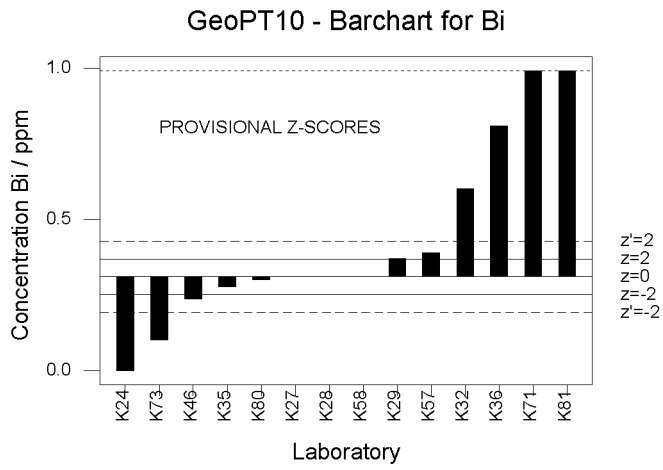


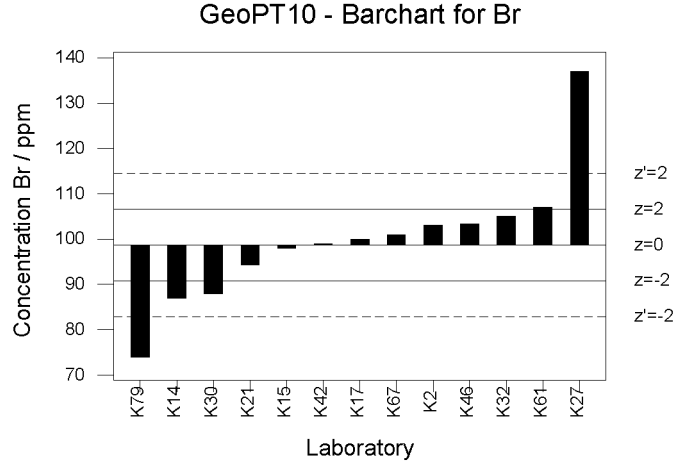












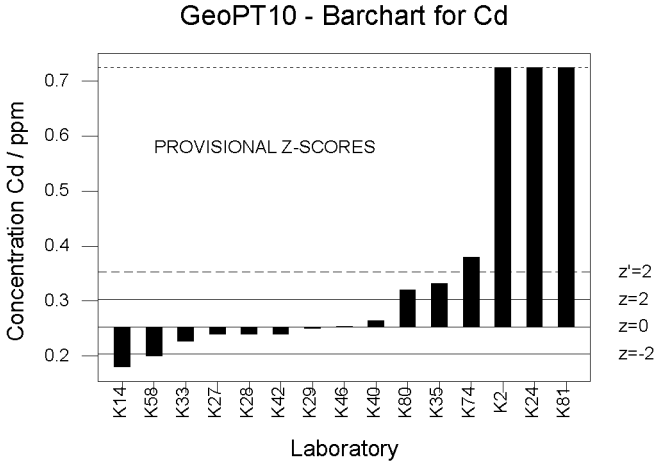
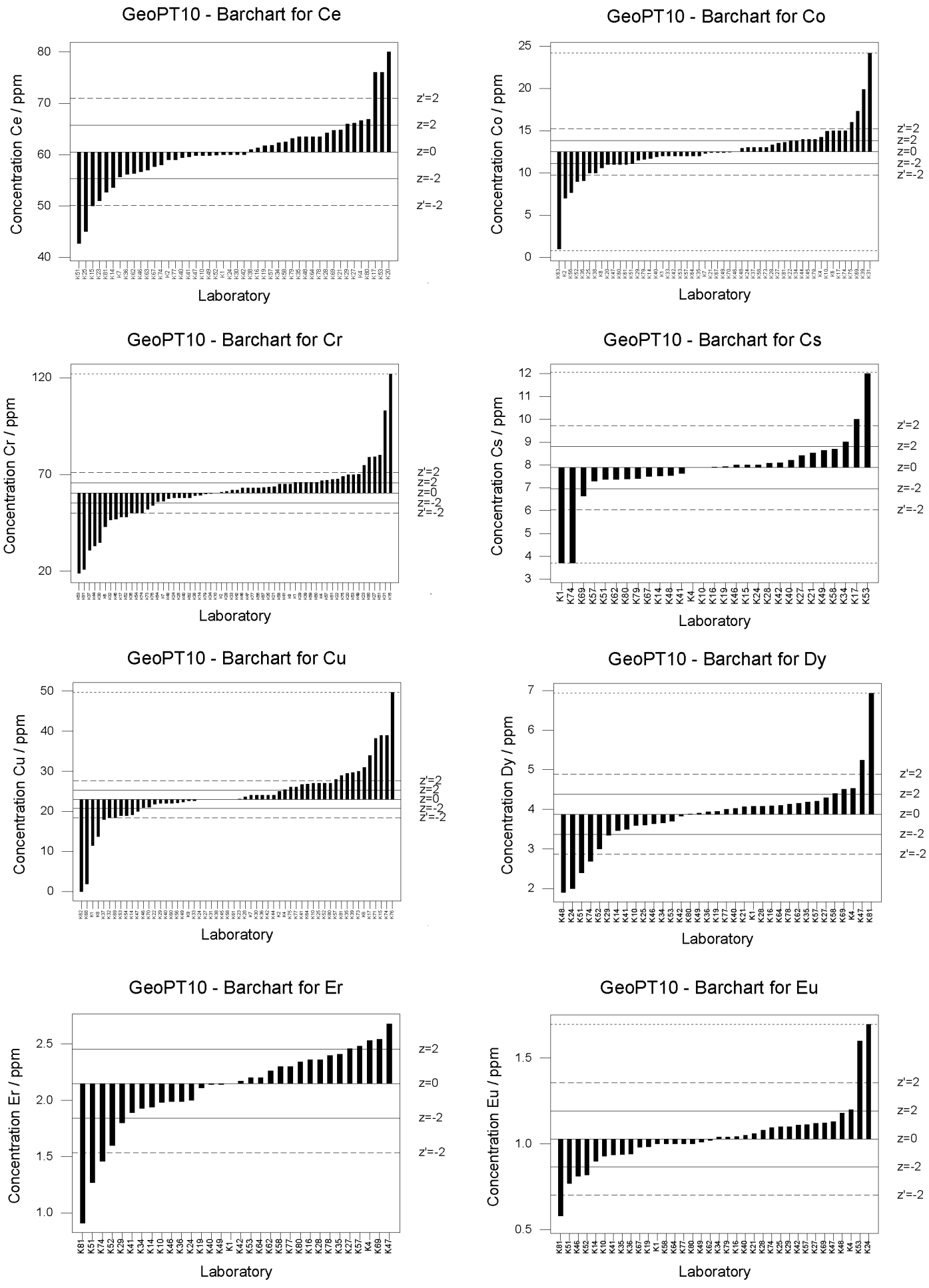


Figure 1 GeoPT10, CH-1, marine sediment: data distribution charts for elements for which values were assigned. Horizontal lines show limits for -2<z<2 for pure geochemistry labs (solid lines) and -2<z'<2 for applied geochemistry labs (pecked lines).



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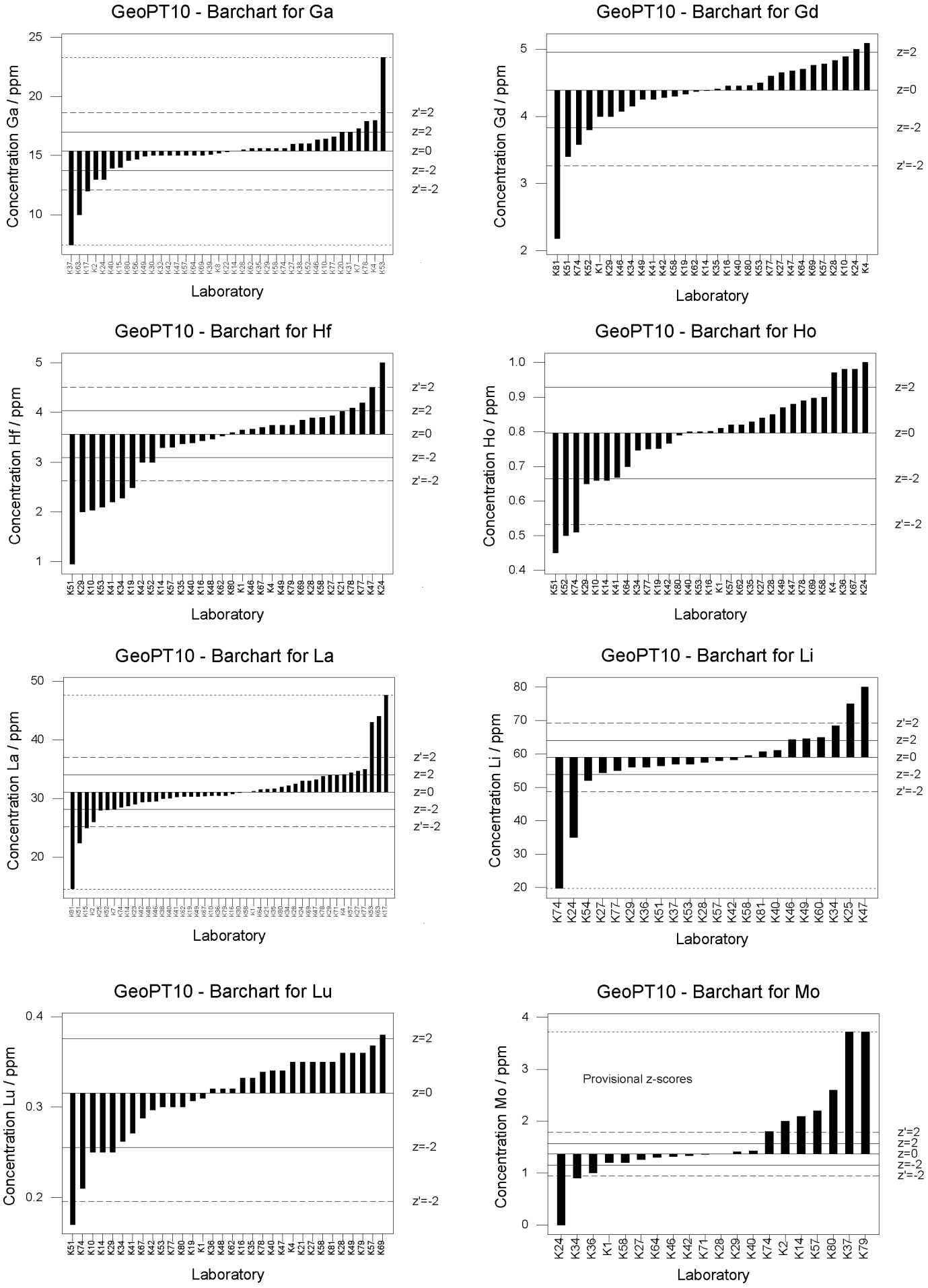

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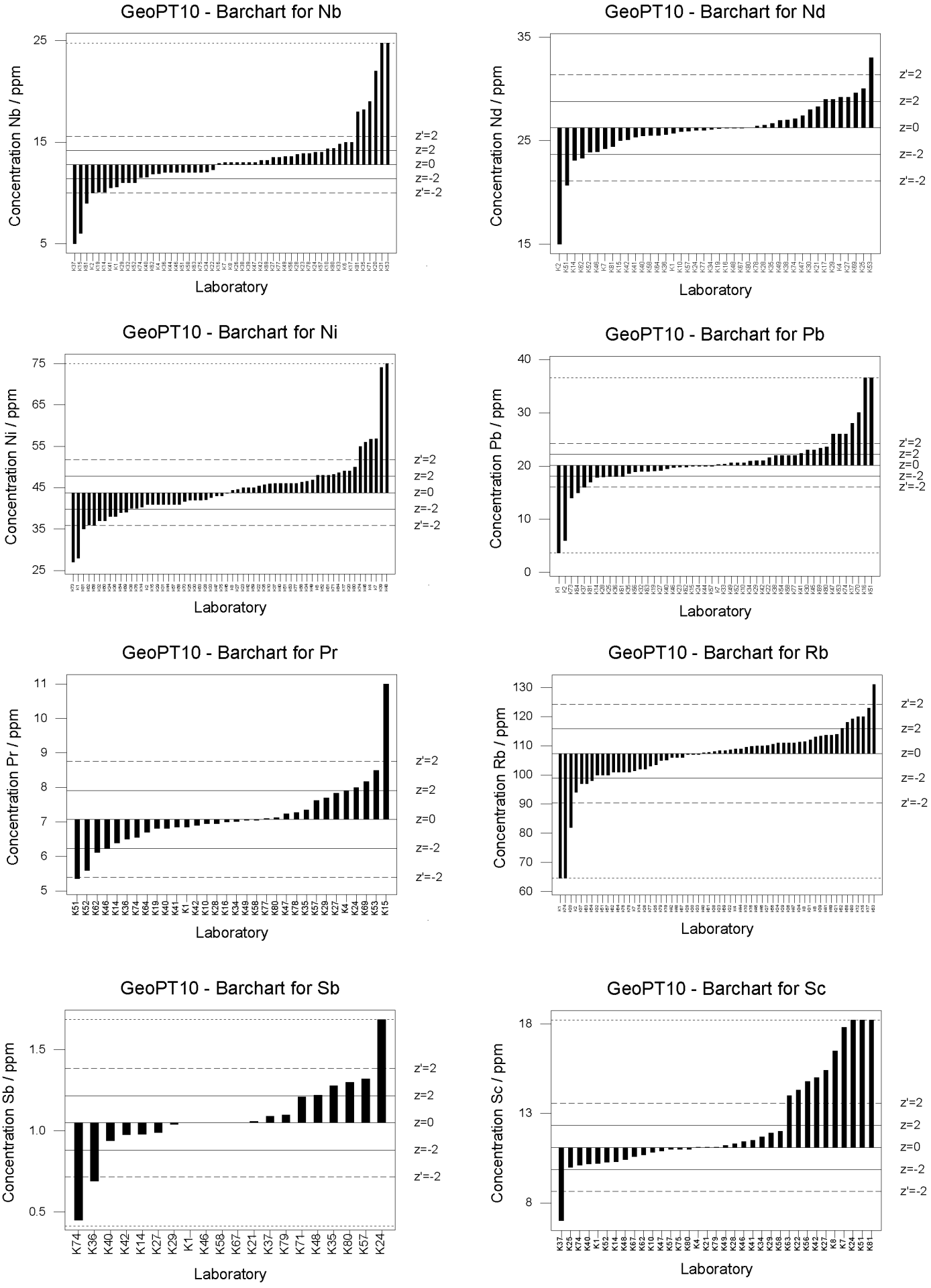

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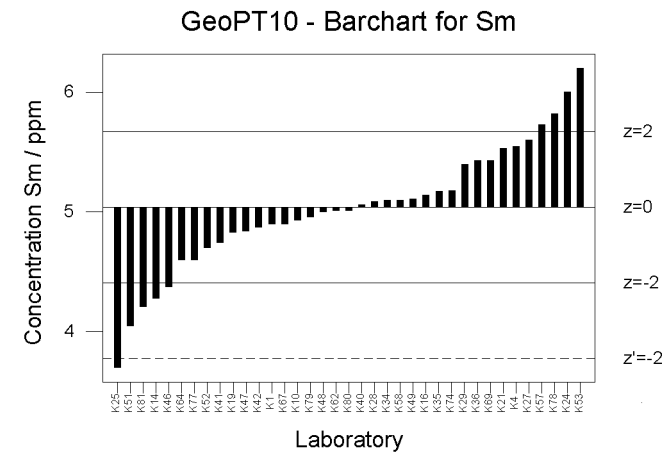

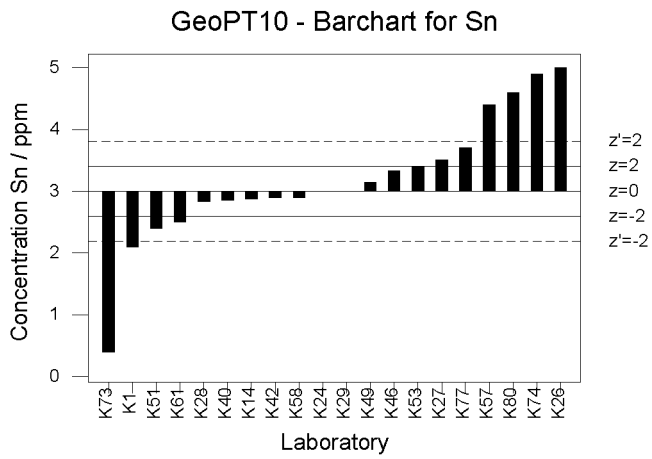

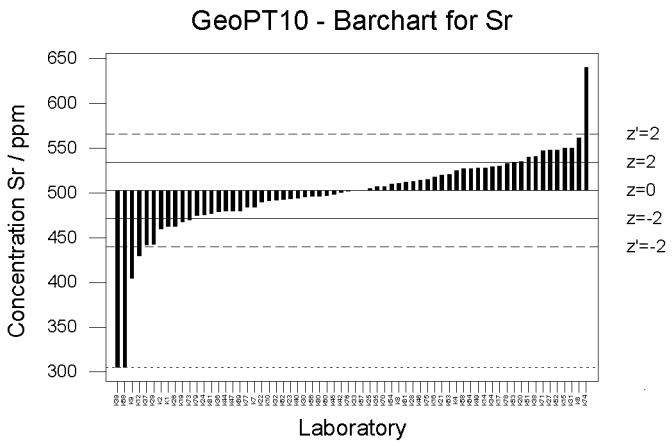

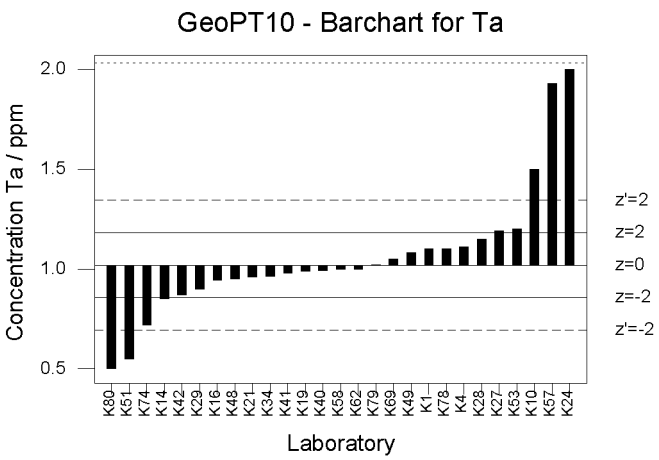

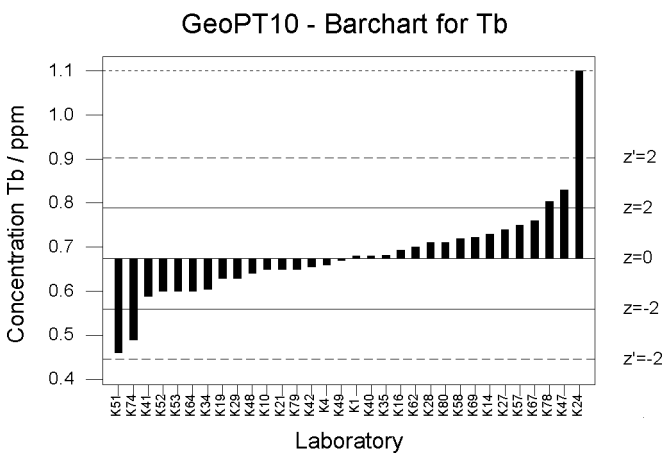

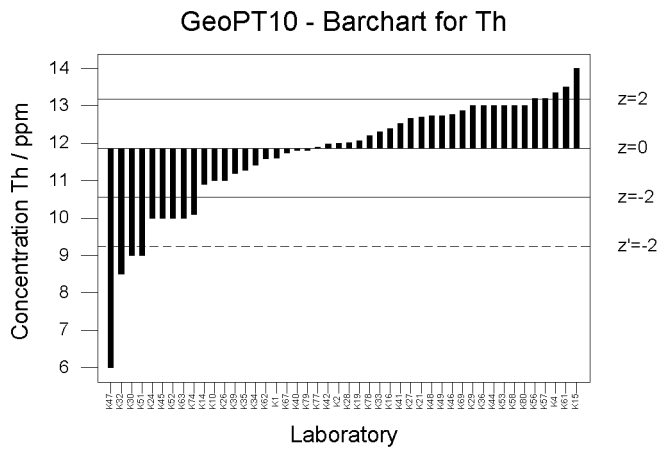

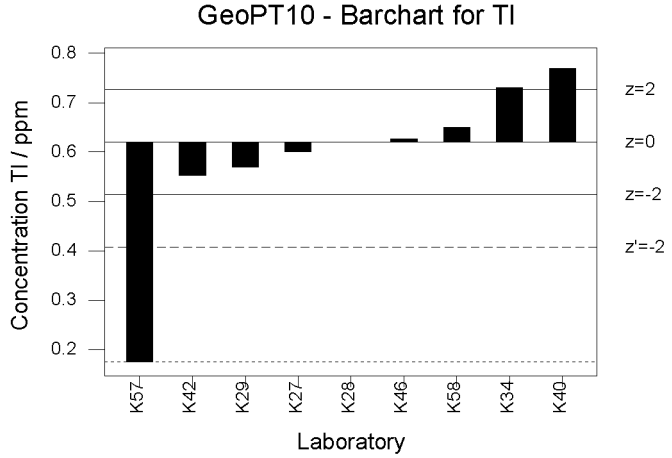

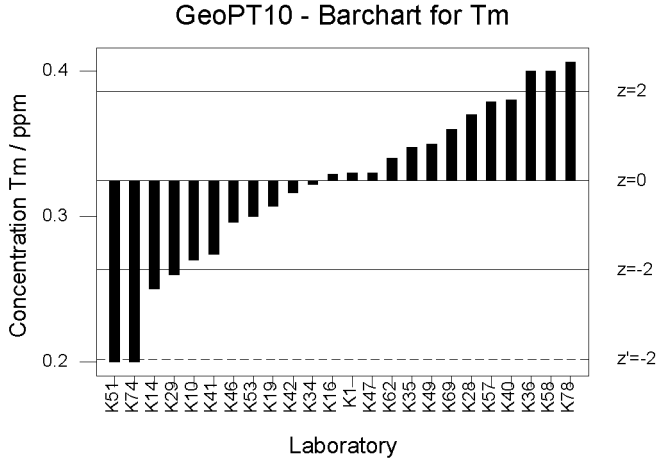

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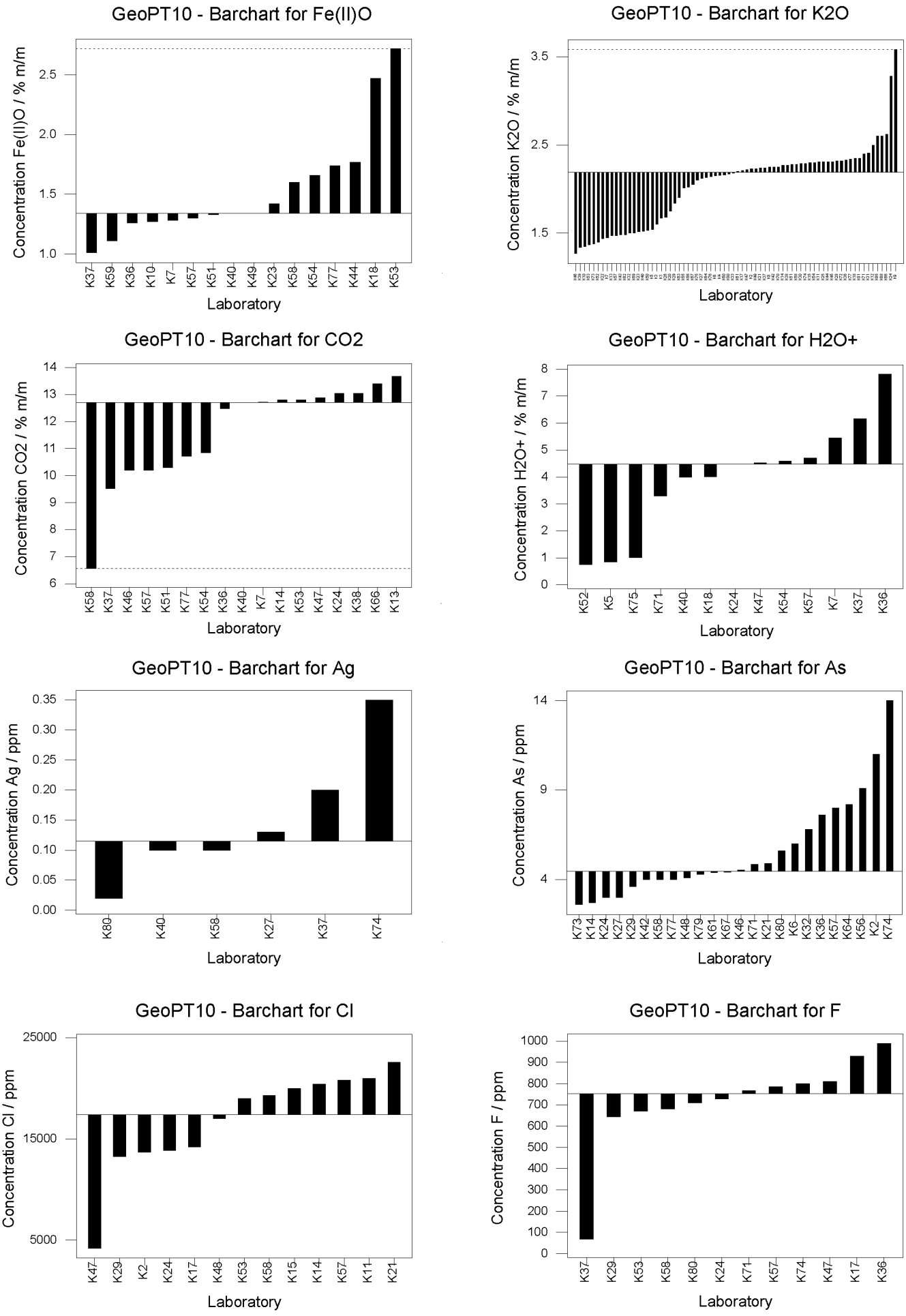
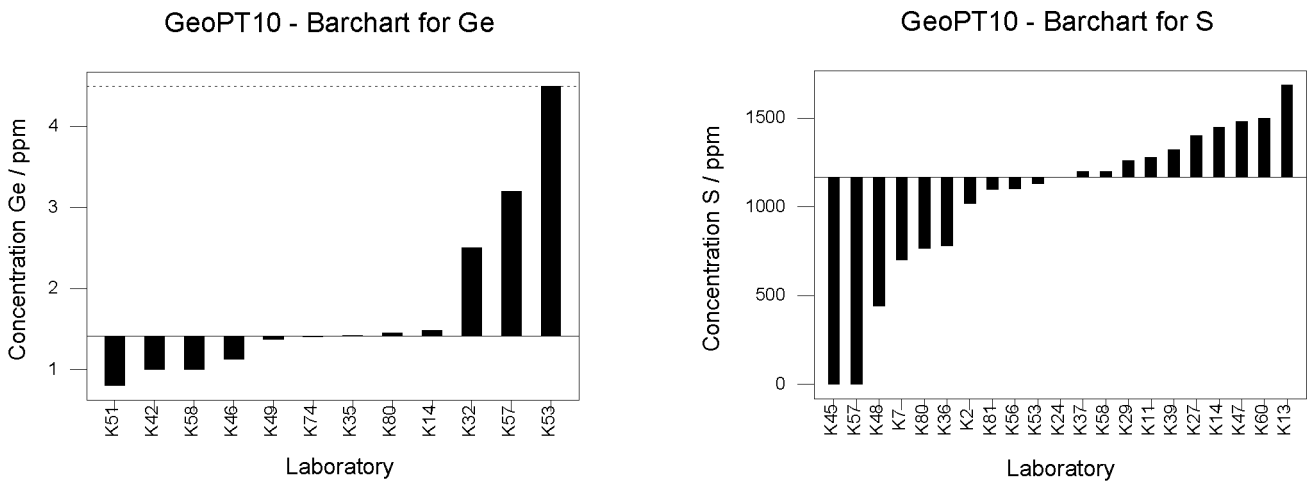


Figure 2 GeoPT10, CH-1, marine sediment: data distribution charts for elements for which values were *not* assigned.



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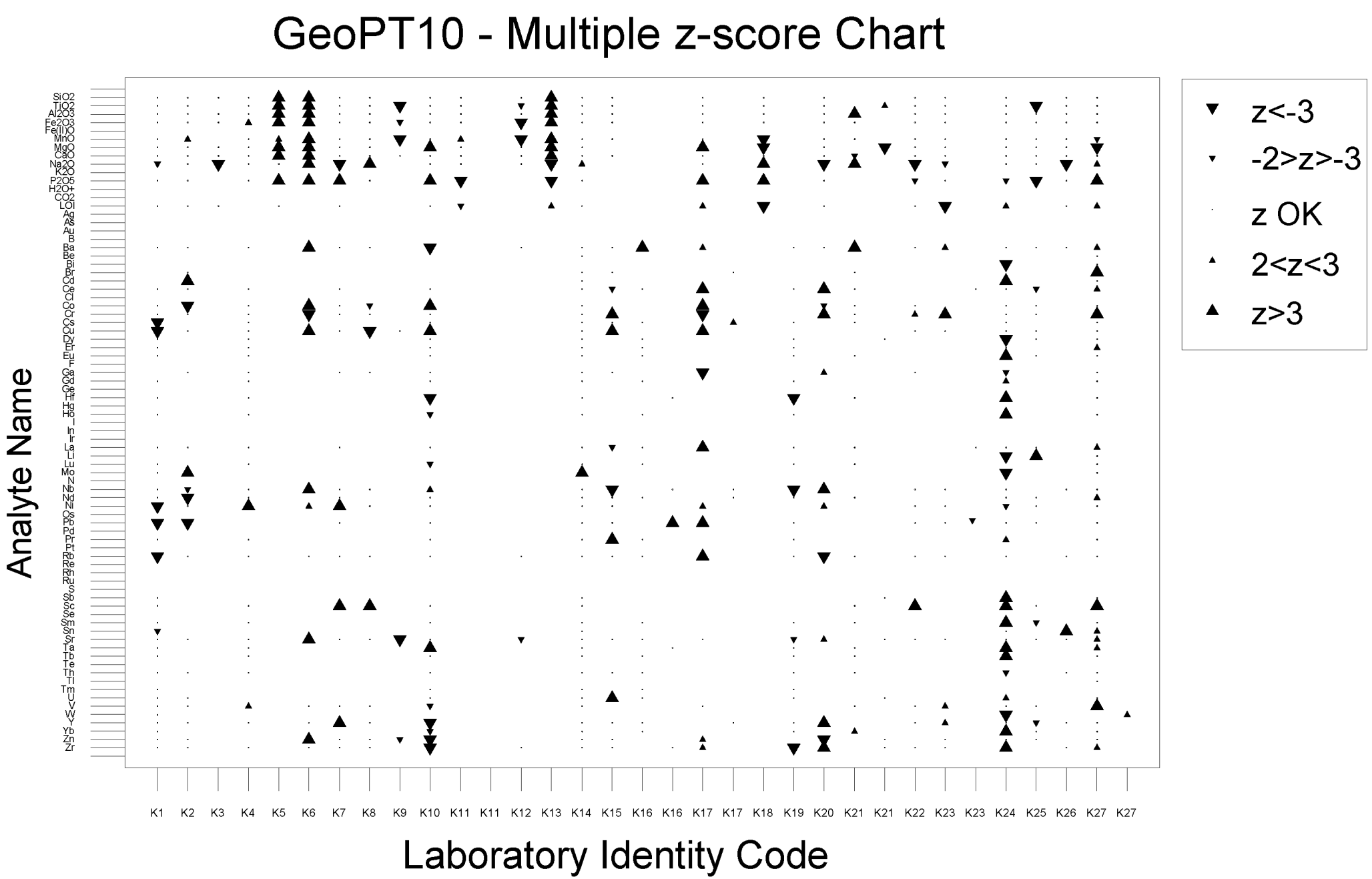
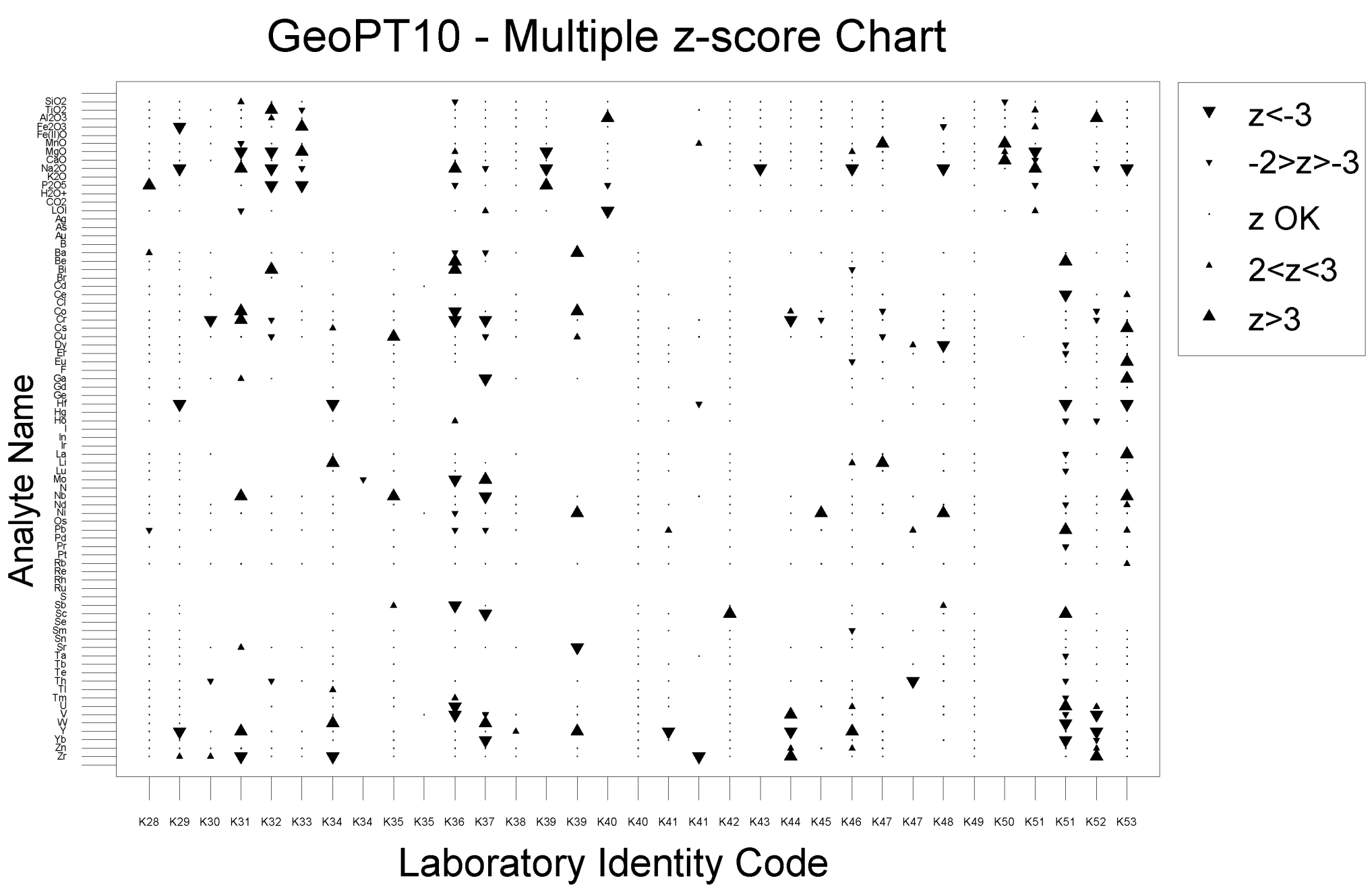


Figure 3 GeoPT10, CH-1, marine sediment: multiple z-score charts for laboratories participating in the GeoPT10 round. Symbols indicate whether or not an elemental result complies with the -2<z< +2 criteria. Satisfactory data are plotted as ".". data for other categories are plotted as follows: z<-3 (▼), -3<z<-2 (▾), +2<z<+3 (▴), , z>+3 (▲).



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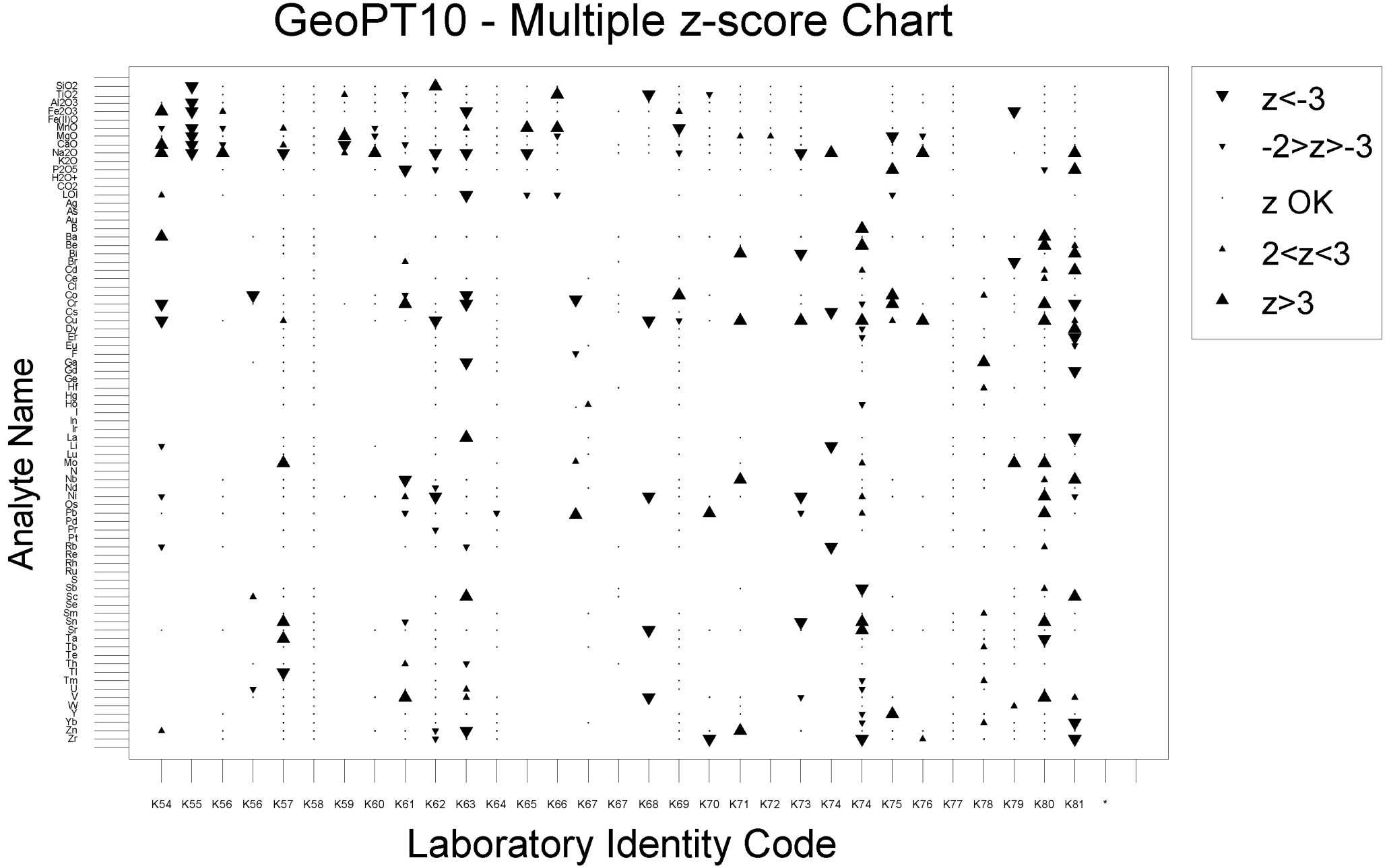

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