The National Marine Biological
Analytical Quality Control Scheme
www.nmbaqcs.org

Particle Size Analysis Results for PS49

2013/2014 (Year 20)

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Thomson Unicomarine Ltd.

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Table 1. Summary of the replicate benchmark analysis and particle size information received from participating laboratories for exercise PS49.

Benchmark Data

Sample	Method	% Gravel	% Sand	% Mud	Median ϕ	Mean ϕ	Sediment Description (Post analysis)
PS49 TUM01	NMBAQC	26.27	73.73	0.00	1.382	0.284	Gravelly Sand
PS49 TUM02	NMBAQC	26.91	73.09	0.00	1.468	0.322	Gravelly Sand
PS49 TUM03	NMBAQC	26.88	73.12	0.00	1.433	0.301	Gravelly Sand
PS49 TUM04	NMBAQC	26.88	73.12	0.00	1.465	0.334	Gravelly Sand
PS49 TUM05	NMBAQC	26.90	73.10	0.00	1.478	0.332	Gravelly Sand
PS49 TUM06	NMBAQC	26.92	73.08	0.00	1.420	0.295	Gravelly Sand
PS49 TUM07	NMBAQC	26.91	73.09	0.00	1.444	0.299	Gravelly Sand
PS49 TUM08	NMBAQC	26.91	73.09	0.00	1.382	0.273	Gravelly Sand
PS49 TUM09	NMBAQC	26.91	73.09	0.00	1.333	0.249	Gravelly Sand
PS49 TUM10	NMBAQC	26.90	73.10	0.00	1.357	0.260	Gravelly Sand
TUM AVERAGE	NMBAQC	26.84	73.16	0.00	1.42	0.29	

Participant Data

Lab	Method	% Gravel	% Sand	% Mud	Sediment Description (Post analysis)
LB2003	NMBAQC	12.49	87.51	0.00	Gravelly Sand
LB2007	NMBAQC and Other	28.63	71.37	0.00	Sandy Gravel
LB2015	NMBAQC	28.81	71.19	0.00	Gravelly Sand
LB2020	Other	26.83	72.84	0.33	Gravelly Sand
LB2021	NMBAQC	28.32	71.68	0.00	Gravelly Sand
LB2022	NMBAQC	27.45	72.55	0.00	Gravelly Sand
LB2027	NMBAQC	27.50	72.50	0.00	Gravelly Sand
LB2029	NMBAQC	29.15	70.85	0.00	Gravelly Sand
LB2031	NMBAQC	27.15	72.75	0.10	Gravelly sand
LB2032	NMBAQC	28.28	71.72	0.00	Gravelly sand
LB2054	NMBAQC	27.13	72.87	0.00	Gravelly sand
LB2056	Other	31.44	68.56	0.00	Sandy Gravel
LB2057	NMBAQC	27.45	71.53	1.02	Gravelly sand
LB2060	NMBAQC and Other	26.75	73.25	0.00	Gravelly sand

Key to methods

NMBAQC - States following NMBAQC PSA SOP for supporting biological data

OTHER - Following a different SOP.

Figure 1. Particle size distribution curves resulting from analysis of ten replicate samples of sediment distributed as PS49 (Benchmark Data).

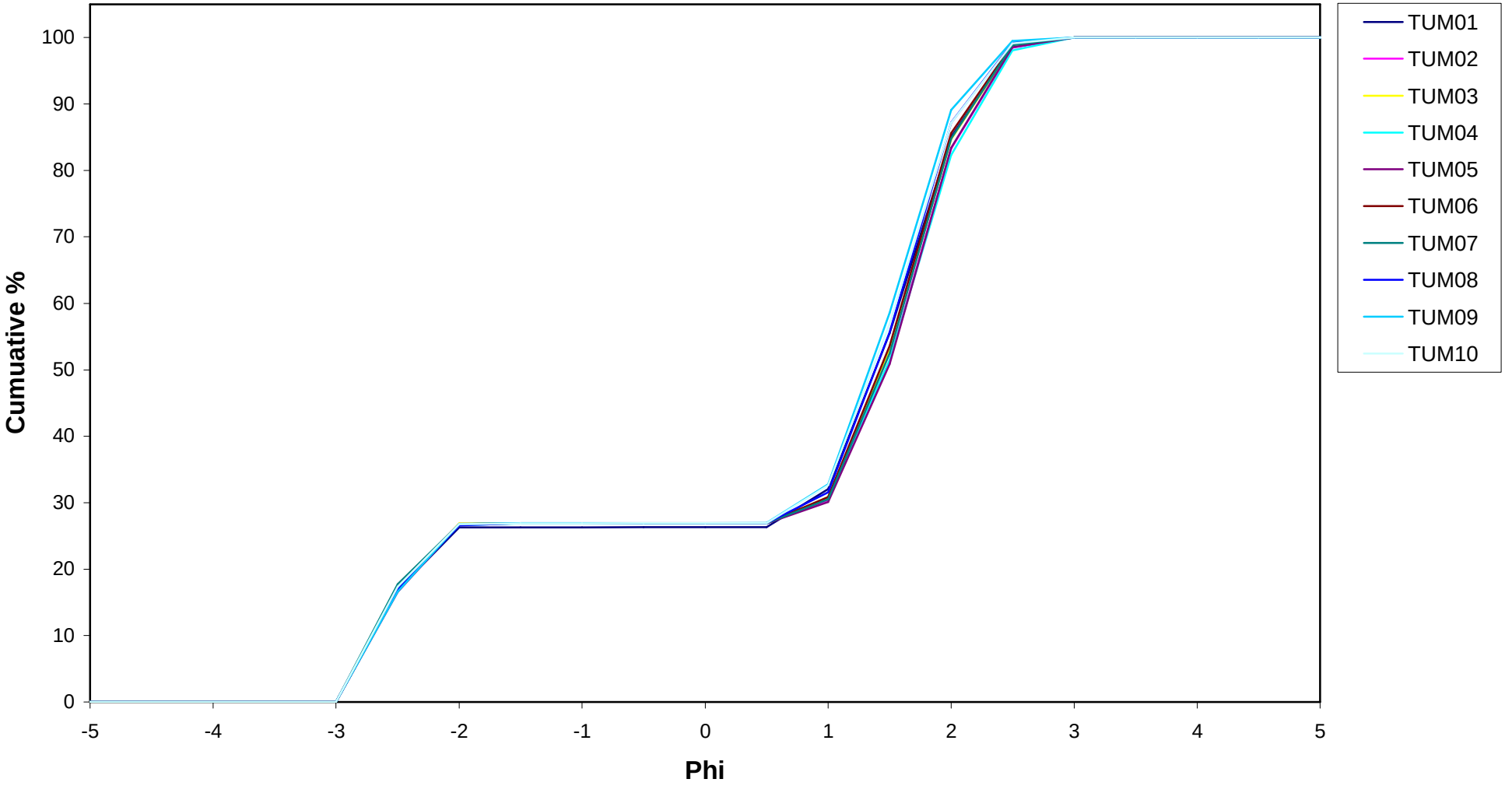


Figure 2. Particle size distribution curves from all participating laboratories for sediment samples from PS49.

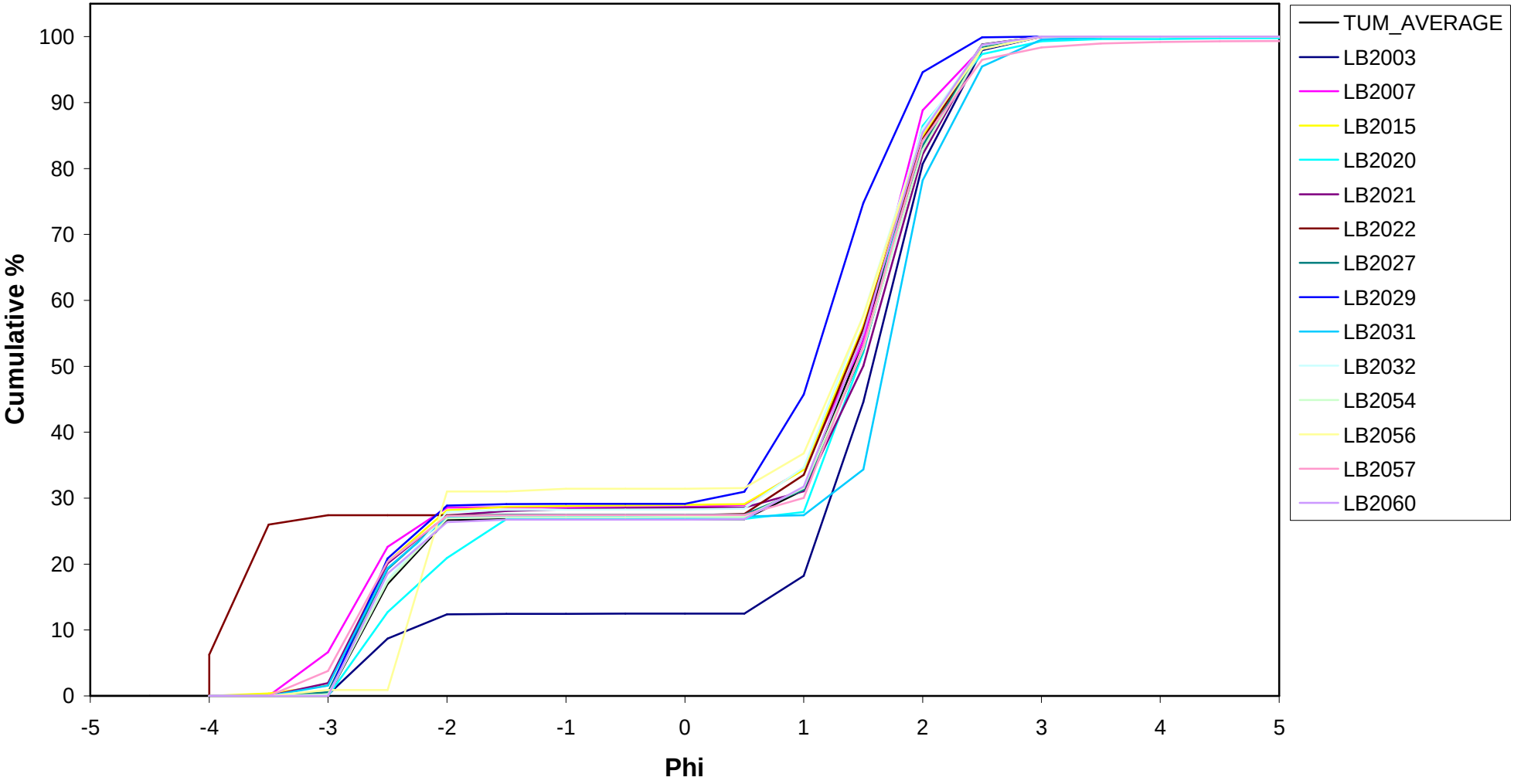


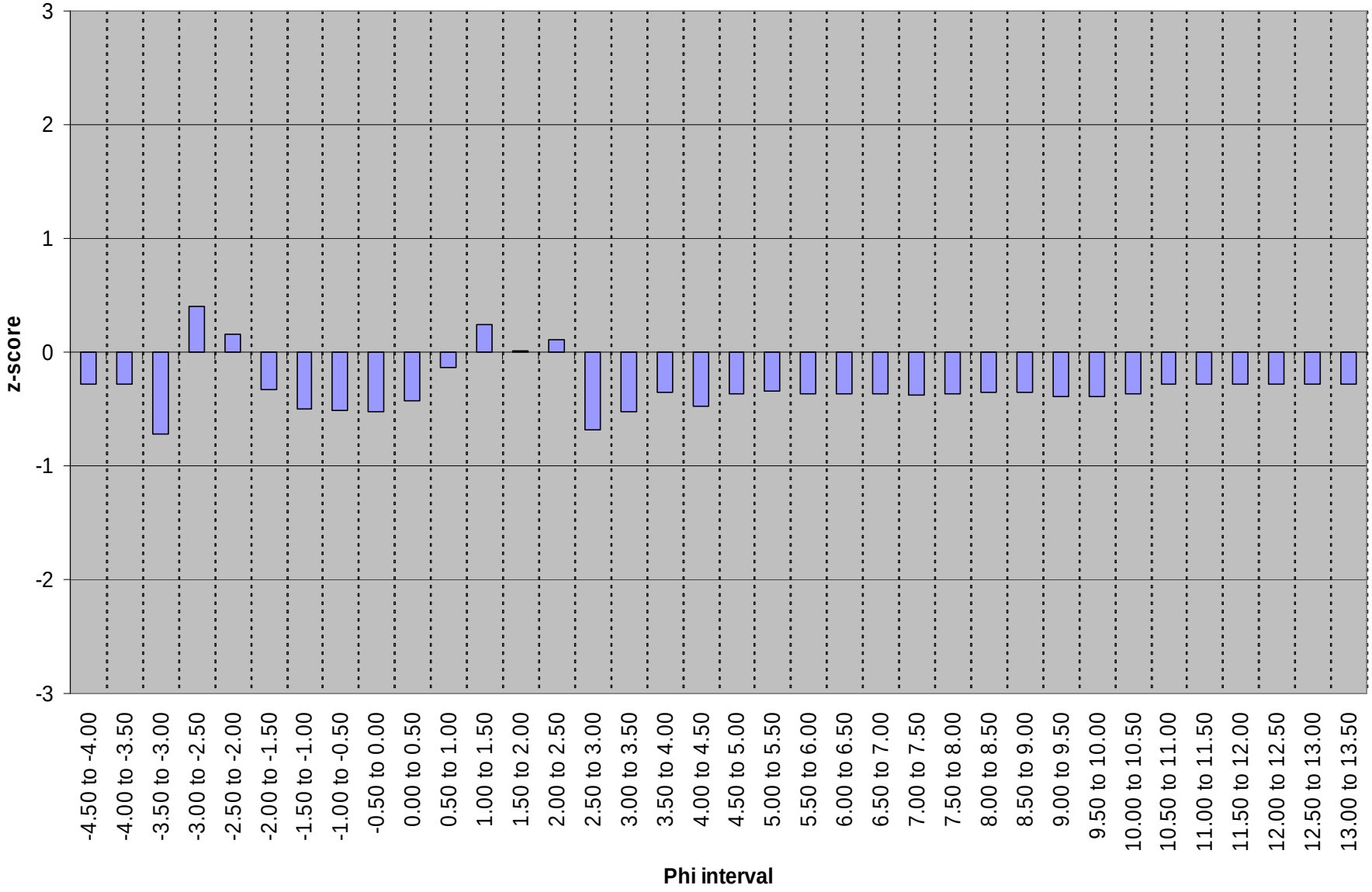
Table 2. Summary of z-scores for each half-phi interval for PS49; data from all participating laboratories included in mean and standard deviation calculations.

	-5.50 to -5.00	-5.00 to -4.50	-4.50 to -4.00	-4.00 to -3.50	-3.50 to -3.00	-3.00 to -2.50	-2.50 to -2.00	-2.00 to -1.50	-1.50 to -1.00	-1.00 to -0.50	-0.50 to 0.00	0.00 to 0.50	0.50 to 1.00	1.00 to 1.50	1.50 to 2.00	2.00 to 2.50	2.50 to 3.00	3.00 to 3.50	3.50 to 4.00
TUM AVERAGE	0	0	-0.277	-0.283	-0.724	0.402	0.155	-0.332	-0.503	-0.507	-0.524	-0.429	-0.136	0.243	0.009	0.112	-0.683	-0.524	-0.357
LB2003	0	0	-0.277	-0.283	-0.621	-0.890	-0.779	-0.348	-0.521	-0.498	-0.591	-0.445	0.279	1.008	0.929	1.324	0.377	-0.524	-0.357
LB2007	0	0	-0.277	-0.283	2.917	0.241	-0.425	-0.383	-0.521	-0.527	0.735	0.276	0.165	-0.428	0.719	-1.196	-0.219	-0.187	-0.270
LB2015	0	0	-0.277	-0.205	-0.080	0.666	-0.127	-0.084	0.458	1.870	2.250	-0.191	0.098	0.071	-0.491	0.089	-0.154	-0.524	-0.357
LB2020	0	0	-0.277	-0.283	-0.724	-0.249	-0.073	3.563	-0.521	0.468	-0.591	-0.445	-1.172	0.550	0.611	-0.750	0.210	1.537	-0.357
LB2021	0	0	-0.277	-0.283	0.365	0.570	-0.217	0.026	1.660	2.761	2.324	-0.444	-0.722	-0.529	0.159	0.960	-0.060	-0.524	-0.357
LB2022	0	0	3.596	3.595	0.057	-2.188	-1.347	-0.423	-0.521	-0.527	-0.591	-0.077	0.322	0.133	-0.487	0.206	-0.023	-0.524	-0.357
LB2027	0	0	-0.277	-0.283	-0.401	0.649	-0.095	-0.294	-0.452	-0.476	-0.493	-0.445	-0.314	-0.079	-0.053	0.554	-0.155	-0.524	-0.357
LB2029	0	0	-0.277	-0.283	-0.724	0.982	-0.095	-0.255	-0.493	-0.465	-0.471	3.512	3.017	1.574	-2.218	-2.570	-2.050	-0.524	-0.357
LB2031	0	0	-0.277	-0.283	0.133	0.521	-0.148	-0.392	-0.476	-0.477	-0.300	-0.330	-1.409	-3.052	2.444	1.326	2.870	1.232	0.761
LB2032	0	0	-0.277	-0.283	-0.724	0.493	0.251	-0.186	-0.433	-0.266	-0.214	-0.083	0.409	0.324	-0.566	-0.188	-0.562	-0.524	-0.357
LB2054	0	0	-0.277	-0.283	-0.588	0.420	0.134	-0.298	-0.453	-0.476	-0.494	-0.373	-0.144	-0.074	-0.215	0.671	0.141	-0.524	-0.357
LB2056	0	0	-0.277	-0.283	-0.231	-2.188	3.330	-0.423	2.905	-0.527	-0.591	-0.208	0.129	-0.144	-0.683	-0.143	0.113	-0.524	-0.357
LB2057	0	0	-0.277	-0.283	1.343	0.339	-0.276	-0.336	-0.249	-0.406	-0.591	-0.445	-0.690	0.315	-0.025	-0.306	0.187	2.661	3.439
LB2060	0	0	-0.277	-0.283	-0.724	0.633	-0.134	-0.166	-0.380	-0.456	-0.382	-0.300	0.030	0.331	-0.122	0.022	-0.674	-0.524	-0.357
Mean	0	0	0.449	1.438	1.325	14.382	8.676	0.624	0.062	0.028	0.016	0.206	4.844	21.543	31.271	13.192	1.745	0.098	0.020
St. Dev	0	0	1.621	5.090	1.831	6.573	6.442	1.476	0.118	0.053	0.027	0.462	3.279	4.792	5.162	3.076	0.809	0.186	0.055

	4.00 to 4.50	4.50 to 5.00	5.00 to 5.50	5.50 to 6.00	6.00 to 6.50	6.50 to 7.00	7.00 to 7.50	7.50 to 8.00	8.00 to 8.50	8.50 to 9.00	9.00 to 9.50	9.50 to 10.00	10.00 to 10.50	10.50 to 11.00	11.00 to 11.50	11.50 to 12.00	12.00 to 12.50	12.50 to 13.00	13.00 to 13.50
TUM AVERAGE	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2003	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2007	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2015	-0.473	-0.360	-0.338	-0.366	0.950	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2020	2.469	0.945	0.569	1.048	-0.361	0.947	1.269	1.033	0.754	0.921	1.613	1.764	1.153	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2021	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2022	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2027	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2029	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2031	0.498	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2032	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2054	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2056	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
LB2057	2.234	3.381	3.492	3.342	3.378	3.380	3.249	3.348	3.442	3.389	3.070	2.978	3.300	3.596	3.596	3.596	3.596	3.596	3.596
LB2060	-0.473	-0.360	-0.338	-0.366	-0.361	-0.361	-0.376	-0.365	-0.350	-0.359	-0.390	-0.395	-0.371	-0.277	-0.277	-0.277	-0.277	-0.277	-0.277
Mean	0.018	0.004	0.004	0.004	0.003	0.004	0.004	0.003	0.003	0.004	0.006	0.007	0.006	0.004	0.003	0.003	0.002	0.002	0.001
St. Dev	0.038	0.012	0.011	0.010	0.009	0.010	0.010	0.009	0.009	0.011	0.016	0.018	0.016	0.014	0.012	0.009	0.007	0.006	0.004

z-score >1.96 or <-1.96
All values equal 0

Figure 3. Summary of z-scores for the benchmark data (TUM Average); data from all participating laboratories included in mean and standard deviation calculations.



Results of SIMPROF testing on PSA Ring test PS49 data

Data was entered into PRIMER v. 6.1.13 in half-phi intervals; any missing data was entered as zero. The data did not need to be transformed as all data was on a similar percentage scale. A Euclidean distance matrix was created from the data; The Euclidean distance between two samples (labs) *j* and *k,* is defined algebraically as $d_{jk} = \sqrt{\sum_{i=1}^{p}(y_{ij} - y_{ik})^2}$. From this distance matrix cluster analysis was carried out including a SIMPROF test at a 5% significance level. The red SIMPROF lines on the dendrogram indicate labs that cannot be distinguished from each other at the 5% significance level; the black lines indicate labs that can be distinguished from each other. The results are presented as a cluster dendrogram (Figure 4) and non-metric Multi-Dimensional Scaling (MDS) diagrams (Figures 5) below. It is important to note that, although the MDS plot is bounded by a box, the box does not represent either axes or scale. Two samples with a high similarity index will appear close together while those less similar will appear further apart. The 'correct' configuration of sample points will be multidimensional and the plot represents the best 2-dimensional solution to the problem. The technique should be viewed as complementary to cluster analysis, offering a different perspective of the same information.

Figure 4. Cluster dendrogram of PS49 including all laboratories, with the benchmark replicates (TUM average).

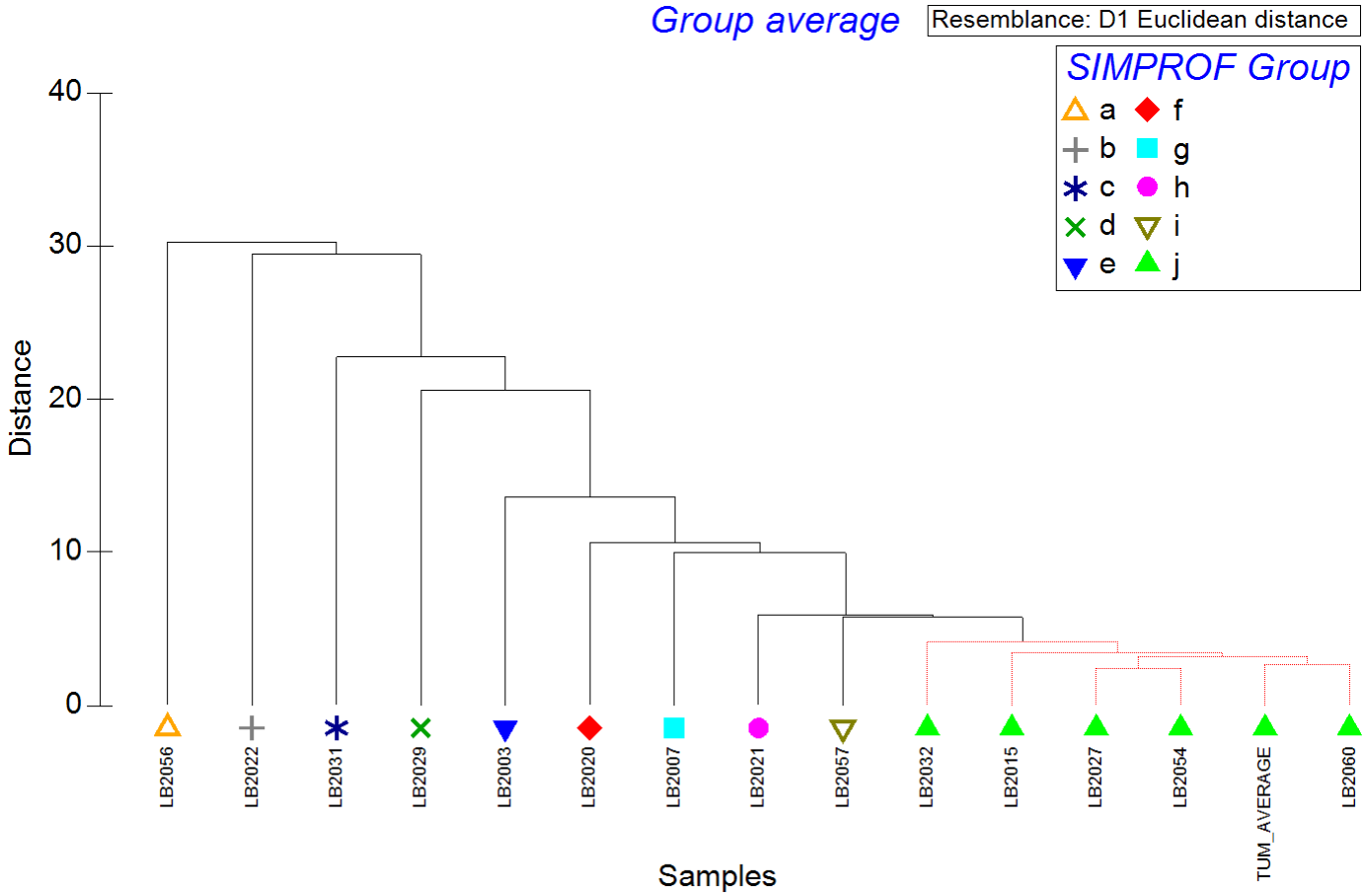
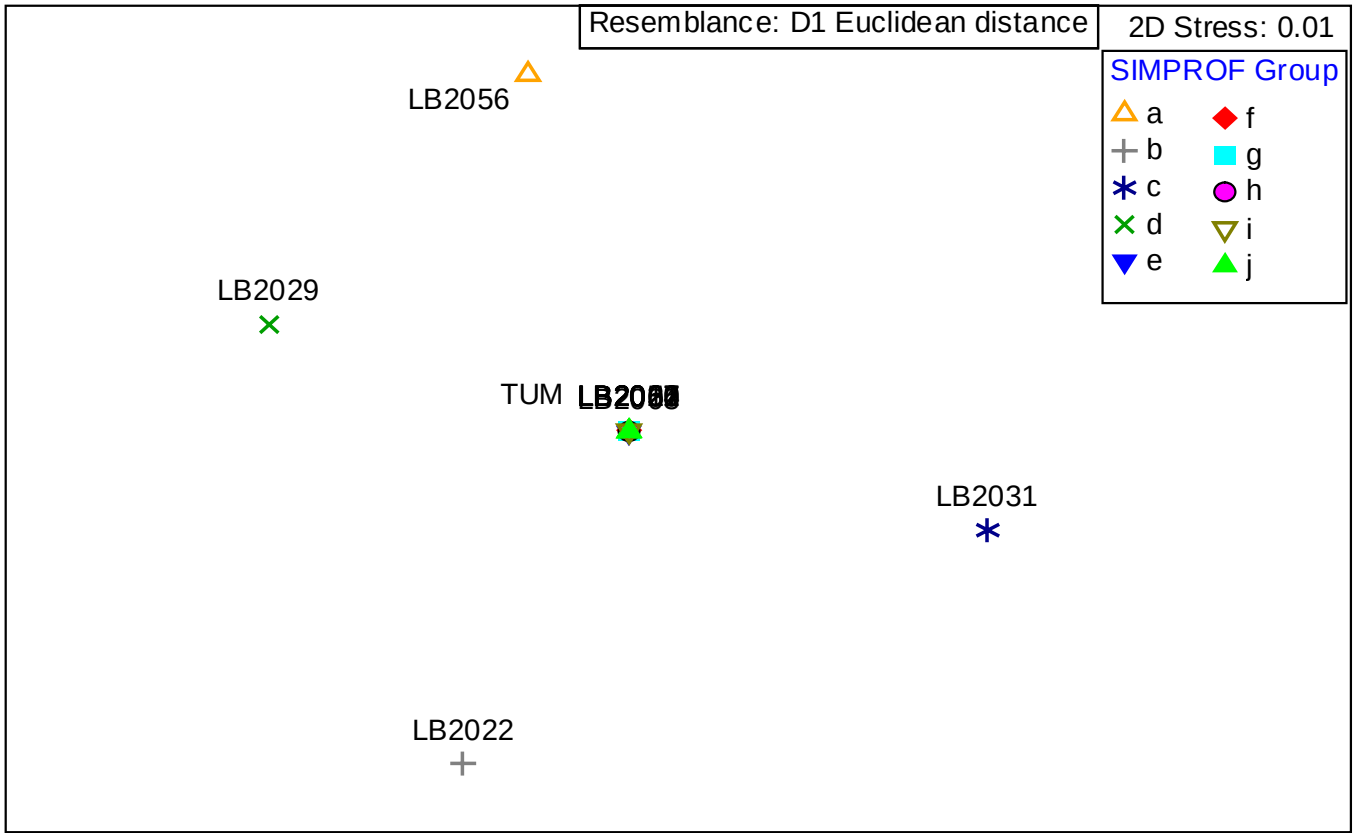
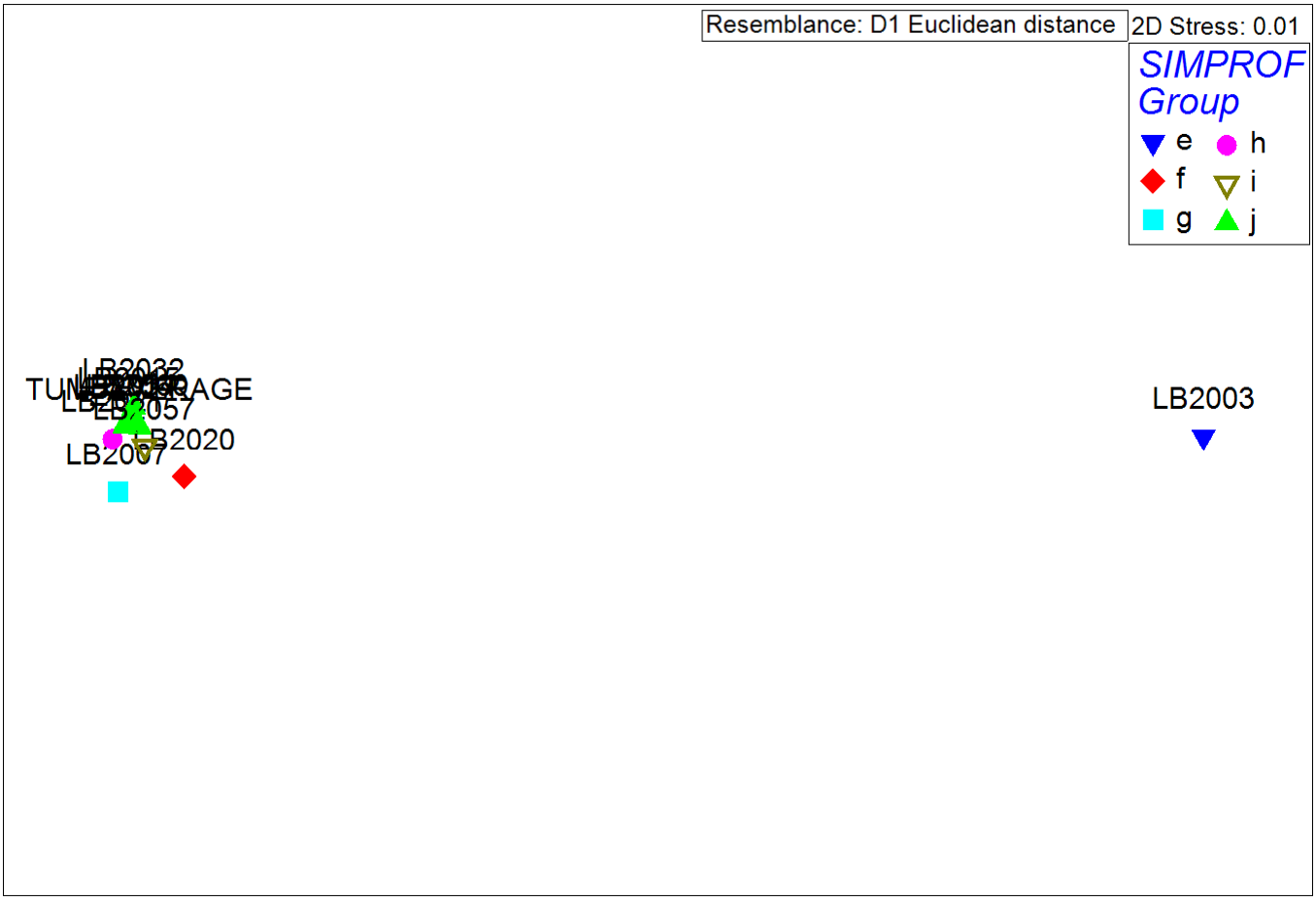


Figure 5. a) MDS plot of PS49 with the benchmark replicates (TUM AVERAGE) averaged; b) a subset of cluster groups e through j; and c) a subset of cluster groups f through j.

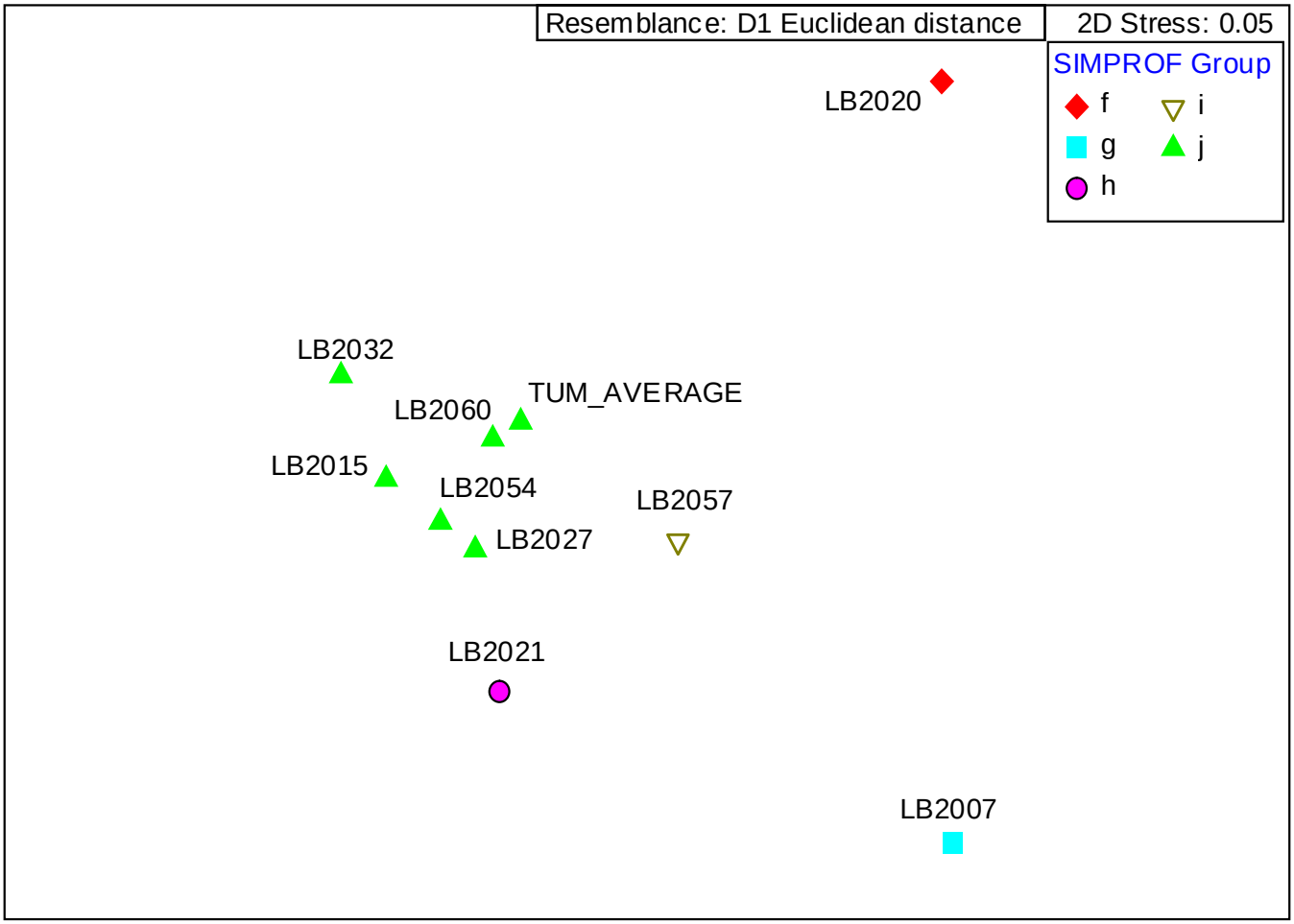
a)



b)



c)



Due to a problem with the distributed workbook formulas, the data received was merged independently before further analyses were performed. Statistical analysis is based on the results presented in Appendix 2.

The cluster analysis separates the laboratories into 10 SIMPROF cluster groups; nine of these groups each comprise a single laboratory.

Cluster group a is formed of a single laboratory (LB2056). Figure 2 shows that LB2056 recorded a sharp rise in the percentage of particles present between phi -2.5 and -2. This is shown in Table 1 with LB2056 recording a higher percentage of gravel and a lower percentage of sand than all other laboratories. These findings are supported by table 2 which shows different recorded values at these phi intervals.

Cluster group b is formed of a single laboratory (LB2022). Figure 2 shows that LB2022 recorded a greater percentage of particles between phi levels -4 and -2.5 compared to other laboratories. LB2022 also did not record any results between phi intervals -2.5 and 0.00.

Cluster group c is formed of a single laboratory (LB2031). Figure 2 shows that LB2031 recorded a lower percentage of particles between phi levels 1 and 3. This is supported by the z-score results in Table 2 where the phi intervals between 1 and 2, and 2.5 to 3 differ from other laboratories (omitting LB2029).

Cluster group d is formed of a single laboratory (LB2029). Figure 2 shows that LB2029 recorded a greater percentage of particles were between phi intervals 0 and 2.5. This is also shown by Table 2 for phi intervals between 0 and 1, and 1.5 to 3.

Cluster group e is formed of a single laboratory (LB2003). Figure 2 shows that LB2003 recorded a lower of percentage of particles between phi levels -2.5 and 2. This is shown in Table 1 as LB2003 recorded a higher percentage of sand and a lower percentage of gravel than all other laboratories.

Cluster group f is formed of a single laboratory (LB2020). Figure 2 shows that LB2020 recorded a lower percentage of particles between phi levels -3 and -1.5. However the individual figures for each half phi interval were not comparatively different enough to be supported by Table 2. Table 2 shows that LB2020 recorded different phi intervals at 1.5 and 4.5 respectively compared to other laboratories.

Cluster groups g (LB2007), h (LB2021), i (LB2057) and j (LB2032, LB2015, LB2027, LB2054, TUM_Average and LB2060) show a euclidean distance below ten leading to an increasingly high similarity between these groups. Cluster group g recorded a higher percentage of particles between phi intervals -3.5 and -3. Group h recorded a slightly higher percentage of particles between phi intervals -1 and 0. Group i continued to record particles between phi intervals 3 and 13.5, contributing to the high z-scores shown in Table 2. All of the laboratories within cluster group j fall below the five percent confidence interval. Within this group only LB2015 was flagged in Table 2 between phi intervals -0.50 and 0. However, the similarities within the rest of the distribution for this laboratory are comparable to all other laboratories within this group.

Appendices

Appendix 1. Final Summary Data sheets as supplied by participating laboratories (arranged by Lab Code).

NMBAQCS - PS Exercise Data Workbook
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Return to Thomson Unicomarine Ltd. by 29-11-13

Exercise Code:	**PS49**
LabCode:	**LB2003**
Sample Code:	**PS492003**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**1.2300**
-3.00 to -2.50; 5.6 mm	**55.5900**
-2.50 to -2.00; 4 mm	**23.8100**
-2.00 to -1.50; 2.8 mm	**0.7200**
-1.50 to -1.00; 2 mm	**0.0000**
-1.00 to -0.50; 1.4 mm	**0.0100**
-0.50 to 0.00; 1 mm	**0.0000**
0.00 to 0.50; (707 µm)	0.0000
0.50 to 1.00; (500 µm)	37.5215
1.00 to 1.50; (353.6 µm)	171.8245
1.50 to 2.00; (250 µm)	234.9506
2.00 to 2.50; (176.8 µm)	112.4803
2.50 to 3.00; (125 µm)	13.3531
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

NMBAQCS - PS Exercise Data Workbook
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Return to Thomson Unicomarine Ltd. by 29-11-13

Exercise Code:	**PS49**
LabCode:	**LB2007**
Sample Code:	**PS492007**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**4.9130**
-3.00 to -2.50; 5.6 mm	**17.9810**
-2.50 to -2.00; 4 mm	**6.8490**
-2.00 to -1.50; 2.8 mm	**0.0000**
-1.50 to -1.00; 2 mm	**0.0000**
-1.00 to -0.50; 1.4 mm	**0.0000**
-0.50 to 0.00; 1 mm	**0.0060**
0.00 to 0.50; (707 µm)	0.0750
0.50 to 1.00; (500 µm)	0.2230
1.00 to 1.50; (353.6 µm)	10.1060
1.50 to 2.00; (250 µm)	41.1120
2.00 to 2.50; (176.8 µm)	13.8060
2.50 to 3.00; (125 µm)	3.0820
3.00 to 3.50; (88.39 µm)	0.1050
3.50 to 4.00; (62.5 µm)	0.0020
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2015**
Sample Code:	**PS492015**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.3956**
-3.50 to -3.00; 8 mm	**1.1790**
-3.00 to -2.50; 5.6 mm	**18.7592**
-2.50 to -2.00; 4 mm	**7.8597**
-2.00 to -1.50; 2.8 mm	**0.4999**
-1.50 to -1.00; 2 mm	**0.1156**
-1.00 to -0.50; 1.4 mm	**0.1271**
-0.50 to 0.00; 1 mm	**0.0780**
0.00 to 0.50; (707 µm)	0.1175
0.50 to 1.00; (500 µm)	5.1662
1.00 to 1.50; (353.6 µm)	21.8801
1.50 to 2.00; (250 µm)	28.7350
2.00 to 2.50; (176.8 µm)	28.7350
2.50 to 3.00; (125 µm)	1.6201
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2020**
Sample Code:	**PS492020**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
63 mm	**0.0000**
50 mm	**0.0000**
37.5 mm	**0.0000**
28 mm	**0.0000**
20 mm	**0.0000**
14 mm	**0.0000**
10 mm	**0.0000**
6.3 mm	**48.3000**
5 mm	**31.1000**
3.35 mm	**22.3000**
2 mm	**0.0000**
1.18 mm	**0.2000**
1 mm	**0.0000**
0.08 to 0.48 (717 m)	0.0000
0.61 to 1.02 (494 m)	3.7963
1.15 to 1.56 (440 m)	91.6739
1.69 to 2.09 (234 m)	130.5079
2.23 to 2.63 (161 m)	41.2694
2.77 to 3.17 (111 m)	7.2600
3.31 to 3.71 (76 m)	1.4575
3.84 to 4.25 (53 m)	0.4283
4.38 to 4.79 (36 m)	0.0585
4.92 to 5.32 (25 m)	0.0369
5.46 to 5.86 (17 m)	0.0523
6.00 to 6.40 (12 m)	0.0462
6.53 to 6.94 (8 m)	0.0493
7.07 to 7.48 (5.6 m)	0.0616
7.61 to 8.02 (3.9 m)	0.0462
8.15 to 8.55 (2.7 m)	0.0369
8.69 to 9.09 (1.8 m)	0.0554
9.23 to 9.63 (1.3 m)	0.1201
9.77 to 10.17 (0.9 m)	0.1478
10.30 to 10.71 (0.6 m)	0.0924
10.84 to 11.25 (0.4 m)	0.0000
11.38 to 11.78 (0.3 m)	0.0000
11.92 to 12.32 (0.2 m)	0.0000
12.46 to 12.87 (0.13 m)	0.0000
13.00 to 13.39 (0.1 m)	0.0000
13.54 to 13.93 (0.06 m)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2021**
Sample Code:	**PS492021**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**6.9700**
-3.00 to -2.50; 5.6 mm	**63.4100**
-2.50 to -2.00; 4 mm	**25.4600**
-2.00 to -1.50; 2.8 mm	**2.3200**
-1.50 to -1.00; 2 mm	**0.9000**
-1.00 to -0.50; 1.4 mm	**0.6100**
-0.50 to 0.00; 1 mm	**0.2800**
0.00 to 0.50; (707 µm)	0.0014
0.50 to 1.00; (500 µm)	8.6636
1.00 to 1.50; (353.6 µm)	66.4859
1.50 to 2.00; (250 µm)	112.2454
2.00 to 2.50; (176.8 µm)	56.4703
2.50 to 3.00; (125 µm)	5.9328
3.00 to 3.50; (88.39 µm)	0.0003
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2022**
Sample Code:	**PS492022**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**23.4500**
-4.00 to -3.50; 11.2 mm	**73.7000**
-3.50 to -3.00; 8 mm	**5.3400**
-3.00 to -2.50; 5.6 mm	**0.0000**
-2.50 to -2.00; 4 mm	**0.0000**
-2.00 to -1.50; 2.8 mm	**0.0000**
-1.50 to -1.00; 2 mm	**0.0000**
-1.00 to -0.50; 1.4 mm	**0.0000**
-0.50 to 0.00; 1 mm	**0.0000**
0.00 to 0.50; (707 µm)	0.4606
0.50 to 1.00; (500 µm)	15.9855
1.00 to 1.50; (353.6 µm)	60.0945
1.50 to 2.00; (250 µm)	77.9133
2.00 to 2.50; (176.8 µm)	37.4620
2.50 to 3.00; (125 µm)	4.6782
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2027**
Sample Code:	**PS492027**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**2.1800**
-3.00 to -2.50; 5.6 mm	**68.8500**
-2.50 to -2.00; 4 mm	**29.7700**
-2.00 to -1.50; 2.8 mm	**0.7000**
-1.50 to -1.00; 2 mm	**0.0300**
-1.00 to -0.50; 1.4 mm	**0.0100**
-0.50 to 0.00; 1 mm	**0.0100**
0.00 to 0.50; (707 µm)	0.0000
0.50 to 1.00; (500 µm)	14.0828
1.00 to 1.50; (353.6 µm)	78.1272
1.50 to 2.00; (250 µm)	114.4403
2.00 to 2.50; (176.8 µm)	54.9900
2.50 to 3.00; (125 µm)	5.9798
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2029**
Sample Code:	**PS492029**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**0.0000**
-3.00 to -2.50; 5.6 mm	**63.2500**
-2.50 to -2.00; 4 mm	**24.4700**
-2.00 to -1.50; 2.8 mm	**0.7500**
-1.50 to -1.00; 2 mm	**0.0100**
-1.00 to -0.50; 1.4 mm	**0.0100**
-0.50 to 0.00; 1 mm	**0.0100**
0.00 to 0.50; (707 µm)	5.5475
0.50 to 1.00; (500 µm)	44.7315
1.00 to 1.50; (353.6 µm)	88.2783
1.50 to 2.00; (250 µm)	60.1577
2.00 to 2.50; (176.8 µm)	16.0409
2.50 to 3.00; (125 µm)	0.2640
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2031**
Sample Code:	**PS492031**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**1.5684**
-3.00 to -2.50; 5.6 mm	**17.8064**
-2.50 to -2.00; 4 mm	**7.7222**
-2.00 to -1.50; 2.8 mm	**0.0453**
-1.50 to -1.00; 2 mm	**0.0053**
-1.00 to -0.50; 1.4 mm	**0.0027**
-0.50 to 0.00; 1 mm	**0.0080**
0.00 to 0.50; (707 µm)	0.0533
0.50 to 1.00; (500 µm)	0.2237
1.00 to 1.50; (353.6 µm)	6.9180
1.50 to 2.00; (250 µm)	43.8835
2.00 to 2.50; (176.8 µm)	17.2711
2.50 to 3.00; (125 µm)	4.0661
3.00 to 3.50; (88.39 µm)	0.3275
3.50 to 4.00; (62.5 µm)	0.0612
4.00 to 4.50; (44.19 µm)	0.0373
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2032**
Sample Code:	**PS492032**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**0.0000**
-3.00 to -2.50; 5.6 mm	**50.9900**
-2.50 to -2.00; 4 mm	**29.7900**
-2.00 to -1.50; 2.8 mm	**1.0100**
-1.50 to -1.00; 2 mm	**0.0300**
-1.00 to -0.50; 1.4 mm	**0.0400**
-0.50 to 0.00; 1 mm	**0.0300**
0.00 to 0.50; (707 µm)	0.4838
0.50 to 1.00; (500 µm)	17.9004
1.00 to 1.50; (353.6 µm)	66.8261
1.50 to 2.00; (250 µm)	82.0358
2.00 to 2.50; (176.8 µm)	36.4997
2.50 to 3.00; (125 µm)	3.7343
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2054**
Sample Code:	**PS492054**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**0.9300**
-3.00 to -2.50; 5.6 mm	**64.1700**
-2.50 to -2.00; 4 mm	**35.7100**
-2.00 to -1.50; 2.8 mm	**0.6900**
-1.50 to -1.00; 2 mm	**0.0300**
-1.00 to -0.50; 1.4 mm	**0.0100**
-0.50 to 0.00; 1 mm	**0.0100**
0.00 to 0.50; (707 µm)	0.1247
0.50 to 1.00; (500 µm)	16.3605
1.00 to 1.50; (353.6 µm)	79.3009
1.50 to 2.00; (250 µm)	112.8810
2.00 to 2.50; (176.8 µm)	57.0958
2.50 to 3.00; (125 µm)	6.9571
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

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Exercise Code:	**PS49**
LabCode:	**LB2056**
Sample Code:	**PS492056**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	
-6.00 to -5.50; 45 mm	
-5.50 to -5.00; 31.5 mm	
-5.00 to -4.50; 22.4 mm	
-4.50 to -4.00; 16 mm	
-4.00 to -3.50; 11.2 mm	
-3.50 to -3.00; 8 mm	**2.9000**
-3.00 to -2.50; 5.6 mm	
-2.50 to -2.00; 4 mm	**96.9000**
-2.00 to -1.50; 2.8 mm	
-1.50 to -1.00; 2 mm	**1.3000**
-1.00 to -0.50; 1.4 mm	**0.0000**
-0.50 to 0.00; 1 mm	**0.0000**
0.00 to 0.50; (707 µm)	0.3523
0.50 to 1.00; (500 µm)	16.9395
1.00 to 1.50; (353.6 µm)	67.0678
1.50 to 2.00; (250 µm)	89.2277
2.00 to 2.50; (176.8 µm)	41.0095
2.50 to 3.00; (125 µm)	5.9045
3.00 to 3.50; (88.39 µm)	0.0002
3.50 to 4.00; (62.5 µm)	0.0002
4.00 to 4.50; (44.19 µm)	0.0002
4.50 to 5.00; (31.25 µm)	0.0002
5.00 to 5.50; (22.097 µm)	0.0002
5.50 to 6.00; (15.625 µm)	0.0002
6.00 to 6.50; (11.049 µm)	0.0002
6.50 to 7.00; (7.813 µm)	0.0002
7.00 to 7.50; (5.524 µm)	0.0002
7.50 to 8.00; (3.906 µm)	0.0002
8.00 to 8.50; (2.762 µm)	
8.50 to 9.00; (1.953 µm)	0.0002
9.00 to 9.50; (1.381 µm)	
9.50 to 10.00; (0.977 µm)	0.0002
10.00 to 10.50; (0.691 µm)	0.0002
10.50 to 11.00; (0.488 µm)	
11.00 to 11.50; (0.345 µm)	
11.50 to 12.00; (0.244 µm)	
12.00 to 12.50; (0.173 µm)	
12.50 to 13.00; (0.122 µm)	
13.00 to 13.50; (0.086 µm)	

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Exercise Code:	**PS49**
LabCode:	**LB2057**
Sample Code:	**PS492057**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total volume % (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**11.8000**
-3.00 to -2.50; 5.6 mm	**51.8000**
-2.50 to -2.00; 4 mm	**21.5000**
-2.00 to -1.50; 2.8 mm	**0.4000**
-1.50 to -1.00; 2 mm	**0.1000**
-1.00 to -0.50; 1.4 mm	**0.0200**
-0.50 to 0.00; 1 mm	**0.0000**
0.00 to 0.50; (707 µm)	0.0009
0.50 to 1.00; (500 µm)	8.0520
1.00 to 1.50; (353.6 µm)	71.8810
1.50 to 2.00; (250 µm)	97.1083
2.00 to 2.50; (176.8 µm)	38.2031
2.50 to 3.00; (125 µm)	5.9117
3.00 to 3.50; (88.39 µm)	1.8520
3.50 to 4.00; (62.5 µm)	0.6482
4.00 to 4.50; (44.19 µm)	0.3241
4.50 to 5.00; (31.25 µm)	0.1379
5.00 to 5.50; (22.097 µm)	0.1283
5.50 to 6.00; (15.625 µm)	0.1129
6.00 to 6.50; (11.049 µm)	0.1083
6.50 to 7.00; (7.813 µm)	0.1159
7.00 to 7.50; (5.524 µm)	0.1116
7.50 to 8.00; (3.906 µm)	0.1009
8.00 to 8.50; (2.762 µm)	0.1044
8.50 to 9.00; (1.953 µm)	0.1334
9.00 to 9.50; (1.381 µm)	0.1706
9.50 to 10.00; (0.977 µm)	0.1899
10.00 to 10.50; (0.691 µm)	0.1830
10.50 to 11.00; (0.488 µm)	0.1632
11.00 to 11.50; (0.345 µm)	0.1389
11.50 to 12.00; (0.244 µm)	0.1147
12.00 to 12.50; (0.173 µm)	0.0894
12.50 to 13.00; (0.122 µm)	0.0689
13.00 to 13.50; (0.086 µm)	0.0464

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Exercise Code:	**PS49**
LabCode:	**LB2060**
Sample Code:	**PS492060**

Phi interval (explicit) + sieve mesh (theoretical sieves shown in brackets)	Total weight (g) (mark as "0" for not analysed or no material)
-6.50 to -6.00; 63 mm	**0.0000**
-6.00 to -5.50; 45 mm	**0.0000**
-5.50 to -5.00; 31.5 mm	**0.0000**
-5.00 to -4.50; 22.4 mm	**0.0000**
-4.50 to -4.00; 16 mm	**0.0000**
-4.00 to -3.50; 11.2 mm	**0.0000**
-3.50 to -3.00; 8 mm	**0.0000**
-3.00 to -2.50; 5.6 mm	**64.4150**
-2.50 to -2.00; 4 mm	**27.1280**
-2.00 to -1.50; 2.8 mm	**1.3180**
-1.50 to -1.00; 2 mm	**0.0580**
-1.00 to -0.50; 1.4 mm	**0.0130**
-0.50 to 0.00; 1 mm	**0.0200**
0.00 to 0.50; (707 µm)	0.2333
0.50 to 1.00; (500 µm)	17.1599
1.00 to 1.50; (353.6 µm)	80.3387
1.50 to 2.00; (250 µm)	106.4156
2.00 to 2.50; (176.8 µm)	46.0584
2.50 to 3.00; (125 µm)	4.1660
3.00 to 3.50; (88.39 µm)	0.0000
3.50 to 4.00; (62.5 µm)	0.0000
4.00 to 4.50; (44.19 µm)	0.0000
4.50 to 5.00; (31.25 µm)	0.0000
5.00 to 5.50; (22.097 µm)	0.0000
5.50 to 6.00; (15.625 µm)	0.0000
6.00 to 6.50; (11.049 µm)	0.0000
6.50 to 7.00; (7.813 µm)	0.0000
7.00 to 7.50; (5.524 µm)	0.0000
7.50 to 8.00; (3.906 µm)	0.0000
8.00 to 8.50; (2.762 µm)	0.0000
8.50 to 9.00; (1.953 µm)	0.0000
9.00 to 9.50; (1.381 µm)	0.0000
9.50 to 10.00; (0.977 µm)	0.0000
10.00 to 10.50; (0.691 µm)	0.0000
10.50 to 11.00; (0.488 µm)	0.0000
11.00 to 11.50; (0.345 µm)	0.0000
11.50 to 12.00; (0.244 µm)	0.0000
12.00 to 12.50; (0.173 µm)	0.0000
12.50 to 13.00; (0.122 µm)	0.0000
13.00 to 13.50; (0.086 µm)	0.0000

Appendix 2. Percentage proportion of participant phi-intervals using independently merged data.

Laboratory	LB2003	LB2007	LB2015	LB2020	LB2021	LB2022	LB2027	LB2029	LB2031	LB2032	LB2054	LB2056	LB2057	LB2060
Phi-interval														
-6.50 to -6.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-6.00 to -5.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5.50 to -5.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5.00 to -4.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-4.50 to -4.00	0	0	0	0	0	6.279624	0	0	0	0	0	0	0	0
-4.00 to -3.50	0	0	0.395874	0	0	19.73596	0	0	0	0	0	0	0	0
-3.50 to -3.00	0.188798	6.664746	1.178952	0	1.992852	1.429987	0.590514	0	1.568408	0	0.248484	0.901741	3.784234	0
-3.00 to -2.50	8.532748	15.96749	18.75921	12.74406	18.13009	0	18.64994	20.83882	17.80636	17.62104	17.14538	0	16.61215	18.54608
-2.50 to -2.00	3.654699	5.937334	7.859682	8.205805	7.279485	0	8.064036	8.062072	7.722213	10.29478	9.54124	30.1306	6.895004	7.810575
-2.00 to -1.50	0.110516	0.058735	0.499899	5.883905	0.663331	0	0.189615	0.247101	0.045268	0.349034	0.184359	0	0.128279	0.379473
-1.50 to -1.00	0	0	0.115584	0	0.257327	0	0.008126	0.003295	0.005326	0.010367	0.008016	0.404229	0.03207	0.016699
-1.00 to -0.50	0.001535	0	0.127142	0.05277	0.17441	0	0.002709	0.003295	0.002663	0.013823	0.002672	0	0.006414	0.003743
-0.50 to 0.00	0	0.036427	0.078019	0	0.080057	0	0.002709	0.003295	0.007988	0.010367	0.002672	0	0	0.005758
0.00 to 0.50	0	0.333003	0.117523	0	0.000397	0.169987	0	1.82771	0.053257	0.167182	0.033306	0.109541	0.000287	0.06718
0.50 to 1.00	5.759338	5.383692	5.166292	1.001304	2.477092	5.899547	3.814708	14.73759	0.223678	6.18599	4.371306	5.267234	2.582261	4.940604
1.00 to 1.50	26.37408	19.49015	21.88063	24.17991	19.00958	22.1783	21.16293	29.08484	6.918038	23.09364	21.18817	20.85427	23.05209	23.13078
1.50 to 2.00	36.06358	34.98087	28.73563	34.42277	32.09308	28.75446	30.99934	19.82001	43.88347	28.34979	30.16032	27.74478	31.14243	30.63873
2.00 to 2.50	17.26509	9.511915	13.46549	10.88522	16.14593	13.8256	14.89557	5.284971	17.27113	12.61349	15.25523	12.75165	12.25165	13.26092
2.50 to 3.00	2.049621	1.567855	1.620086	1.914902	1.696285	1.726534	1.619801	0.086988	4.066145	1.290495	1.858852	1.835957	1.895857	1.19946
3.00 to 3.50	0	0.062985	0	0.384442	7.94E-05	0	0	0	0.327528	0	0	0	0.593947	0
3.50 to 4.00	0	0.004802	0	0	0	0	0	0	0.061245	0	0	0	0.207875	0
4.00 to 4.50	0	0	0	0.112961	0	0	0	0	0.03728	0	0	0	0.103933	0
4.50 to 5.00	0	0	0	0.01543	0	0	0	0	0	0	0	0	0.044233	0
5.00 to 5.50	0	0	0	0.009745	0	0	0	0	0	0	0	0	0.041137	0
5.50 to 6.00	0	0	0	0.013805	0	0	0	0	0	0	0	0	0.036219	0
6.00 to 6.50	0	0	0	0.012181	0	0	0	0	0	0	0	0	0.034742	0
6.50 to 7.00	0	0	0	0.012993	0	0	0	0	0	0	0	0	0.037164	0
7.00 to 7.50	0	0	0	0.016242	0	0	0	0	0	0	0	0	0.035795	0
7.50 to 8.00	0	0	0	0.012181	0	0	0	0	0	0	0	0	0.032347	0
8.00 to 8.50	0	0	0	0.009745	0	0	0	0	0	0	0	0	0.033466	0
8.50 to 9.00	0	0	0	0.014618	0	0	0	0	0	0	0	0	0.042787	0
9.00 to 9.50	0	0	0	0.031671	0	0	0	0	0	0	0	0	0.054707	0
9.50 to 10.00	0	0	0	0.03898	0	0	0	0	0	0	0	0	0.060911	0
10.00 to 10.50	0	0	0	0.024363	0	0	0	0	0	0	0	0	0.058691	0
10.50 to 11.00	0	0	0	0	0	0	0	0	0	0	0	0	0.052352	0
11.00 to 11.50	0	0	0	0	0	0	0	0	0	0	0	0	0.044554	0
11.50 to 12.00	0	0	0	0	0	0	0	0	0	0	0	0	0.03677	0
12.00 to 12.50	0	0	0	0	0	0	0	0	0	0	0	0	0.028674	0
12.50 to 13.00	0	0	0	0	0	0	0	0	0	0	0	0	0.022083	0
13.00 to 13.50	0	0	0	0	0	0	0	0	0	0	0	0	0.01489	0

Appendix 3. Z-score calculations when data from all participating laboratories are included in mean and standard deviation calculations.

	-5.00 to -4.50	z-score	- 4.50 to - 4.00	z-score	-4.00 to -3.50	z-score	-3.50 to -3.00	z-score	-3.00 to -2.50	z-score	-2.50 to -2.00	z-score
TUM AVERAGE	0.000	0.000	0.000	-0.277	0.000	-0.283	0.000	-0.724	17.025	0.402	9.677	0.155
LB2003	0.000	0.000	0.000	-0.277	0.000	-0.283	0.189	-0.621	8.533	-0.890	3.655	-0.779
LB2007	0.000	0.000	0.000	-0.277	0.000	-0.283	6.665	2.917	15.967	0.241	5.937	-0.425
LB2015	0.000	0.000	0.000	-0.277	0.396	-0.205	1.179	-0.080	18.759	0.666	7.860	-0.127
LB2020	0.000	0.000	0.000	-0.277	0.000	-0.283	0.000	-0.724	12.744	-0.249	8.206	-0.073
LB2021	0.000	0.000	0.000	-0.277	0.000	-0.283	1.993	0.365	18.130	0.570	7.279	-0.217
LB2022	0.000	0.000	6.280	3.596	19.736	3.595	1.430	0.057	0.000	-2.188	0.000	-1.347
LB2027	0.000	0.000	0.000	-0.277	0.000	-0.283	0.591	-0.401	18.650	0.649	8.064	-0.095
LB2029	0.000	0.000	0.000	-0.277	0.000	-0.283	0.000	-0.724	20.839	0.982	8.062	-0.095
LB2031	0.000	0.000	0.000	-0.277	0.000	-0.283	1.568	0.133	17.806	0.521	7.722	-0.148
LB2032	0.000	0.000	0.000	-0.277	0.000	-0.283	0.000	-0.724	17.621	0.493	10.295	0.251
LB2054	0.000	0.000	0.000	-0.277	0.000	-0.283	0.248	-0.588	17.145	0.420	9.541	0.134
LB2056	0.000	0.000	0.000	-0.277	0.000	-0.283	0.902	-0.231	0.000	-2.188	30.131	3.330
LB2057	0.000	0.000	0.000	-0.277	0.000	-0.283	3.784	1.343	16.612	0.339	6.895	-0.276
LB2060	0.000	0.000	0.000	-0.277	0.000	-0.283	0.000	-0.724	18.546	0.633	7.811	-0.134
Mean	0.000		0.449		1.438		1.325		14.382		8.676	
St. Dev	0.000		1.621		5.090		1.831		6.573		6.442	

	-2.00 to -1.50	z-score	-1.50 to -1.00	z-score	-1.00 to -0.50	z-score	-0.50 to 0.00	z-score	0.00 to 0.50	z-score	0.50 to 1.00	z-score
TUM AVERAGE	0.135	-0.332	0.002	-0.503	0.001	-0.507	0.002	-0.524	0.008	-0.429	4.398	-0.136
LB2003	0.111	-0.348	0.000	-0.521	0.002	-0.498	0.000	-0.591	0.000	-0.445	5.759	0.279
LB2007	0.059	-0.383	0.000	-0.521	0.000	-0.527	0.036	0.735	0.333	0.276	5.384	0.165
LB2015	0.500	-0.084	0.116	0.458	0.127	1.870	0.078	2.250	0.118	-0.191	5.166	0.098
LB2020	5.884	3.563	0.000	-0.521	0.053	0.468	0.000	-0.591	0.000	-0.445	1.001	-1.172
LB2021	0.663	0.026	0.257	1.660	0.174	2.761	0.080	2.324	0.000	-0.444	2.477	-0.722
LB2022	0.000	-0.423	0.000	-0.521	0.000	-0.527	0.000	-0.591	0.170	-0.077	5.900	0.322
LB2027	0.190	-0.294	0.008	-0.452	0.003	-0.476	0.003	-0.493	0.000	-0.445	3.815	-0.314
LB2029	0.247	-0.255	0.003	-0.493	0.003	-0.465	0.003	-0.471	1.828	3.512	14.738	3.017
LB2031	0.045	-0.392	0.005	-0.476	0.003	-0.477	0.008	-0.300	0.053	-0.330	0.224	-1.409
LB2032	0.349	-0.186	0.010	-0.433	0.014	-0.266	0.010	-0.214	0.167	-0.083	6.186	0.409
LB2054	0.184	-0.298	0.008	-0.453	0.003	-0.476	0.003	-0.494	0.033	-0.373	4.371	-0.144
LB2056	0.000	-0.423	0.404	2.905	0.000	-0.527	0.000	-0.591	0.110	-0.208	5.267	0.129
LB2057	0.128	-0.336	0.032	-0.249	0.006	-0.406	0.000	-0.591	0.000	-0.445	2.582	-0.690
LB2060	0.379	-0.166	0.017	-0.380	0.004	-0.456	0.006	-0.382	0.067	-0.300	4.941	0.030
Mean	0.624		0.062		0.028		0.016		0.206		4.844	
St. Dev	1.476		0.118		0.053		0.027		0.462		3.279	

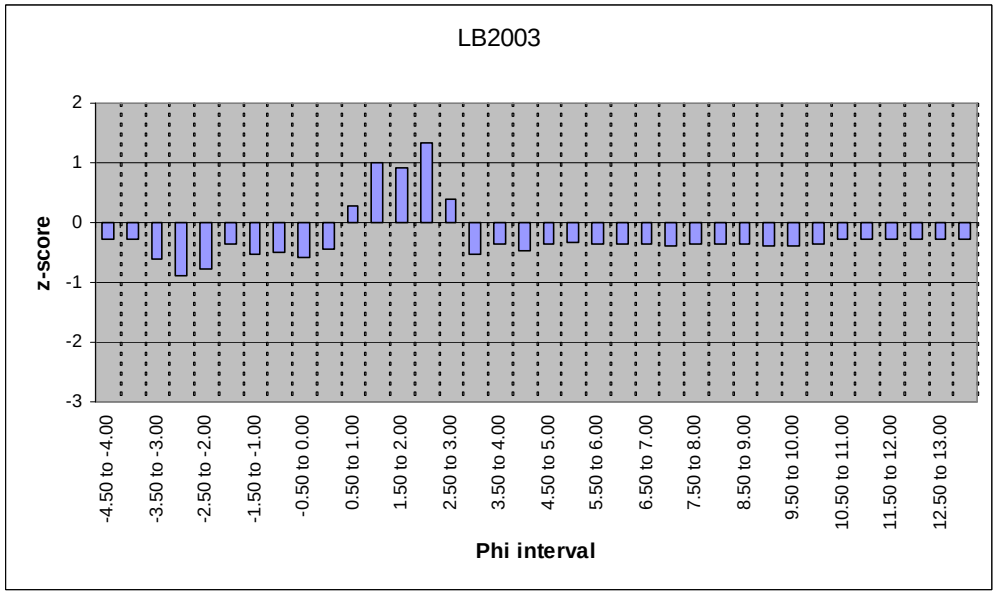
	1.00 to 1.50	z-score	1.50 to 2.00	z-score	2.00 to 2.50	z-score	2.50 to 3.00	z-score	3.00 to 3.50	z-score	3.50 to 4.00	z-score
TUM AVERAGE	22.706	0.243	31.320	0.009	13.536	0.112	1.192	-0.683	0.000	-0.524	0.000	-0.357
LB2003	26.374	1.008	36.064	0.929	17.265	1.324	2.050	0.377	0.000	-0.524	0.000	-0.357
LB2007	19.490	-0.428	34.981	0.719	9.512	-1.196	1.568	-0.219	0.063	-0.187	0.005	-0.270
LB2015	21.881	0.071	28.736	-0.491	13.465	0.089	1.620	-0.154	0.000	-0.524	0.000	-0.357
LB2020	24.180	0.550	34.423	0.611	10.885	-0.750	1.915	0.210	0.384	1.537	0.000	-0.357
LB2021	19.010	-0.529	32.093	0.159	16.146	0.960	1.696	-0.060	0.000	-0.524	0.000	-0.357
LB2022	22.178	0.133	28.754	-0.487	13.826	0.206	1.727	-0.023	0.000	-0.524	0.000	-0.357
LB2027	21.163	-0.079	30.999	-0.053	14.896	0.554	1.620	-0.155	0.000	-0.524	0.000	-0.357
LB2029	29.085	1.574	19.820	-2.218	5.285	-2.570	0.087	-2.050	0.000	-0.524	0.000	-0.357
LB2031	6.918	-3.052	43.883	2.444	17.271	1.326	4.066	2.870	0.328	1.232	0.061	0.761
LB2032	23.094	0.324	28.350	-0.566	12.613	-0.188	1.290	-0.562	0.000	-0.524	0.000	-0.357
LB2054	21.188	-0.074	30.160	-0.215	15.255	0.671	1.859	0.141	0.000	-0.524	0.000	-0.357
LB2056	20.854	-0.144	27.745	-0.683	12.752	-0.143	1.836	0.113	0.000	-0.524	0.000	-0.357
LB2057	23.052	0.315	31.142	-0.025	12.252	-0.306	1.896	0.187	0.594	2.661	0.208	3.439
LB2060	23.131	0.331	30.639	-0.122	13.261	0.022	1.199	-0.674	0.000	-0.524	0.000	-0.357
Mean	21.543		31.271		13.192		1.745		0.098		0.020	
St. Dev	4.792		5.162		3.076		0.809		0.186		0.055	

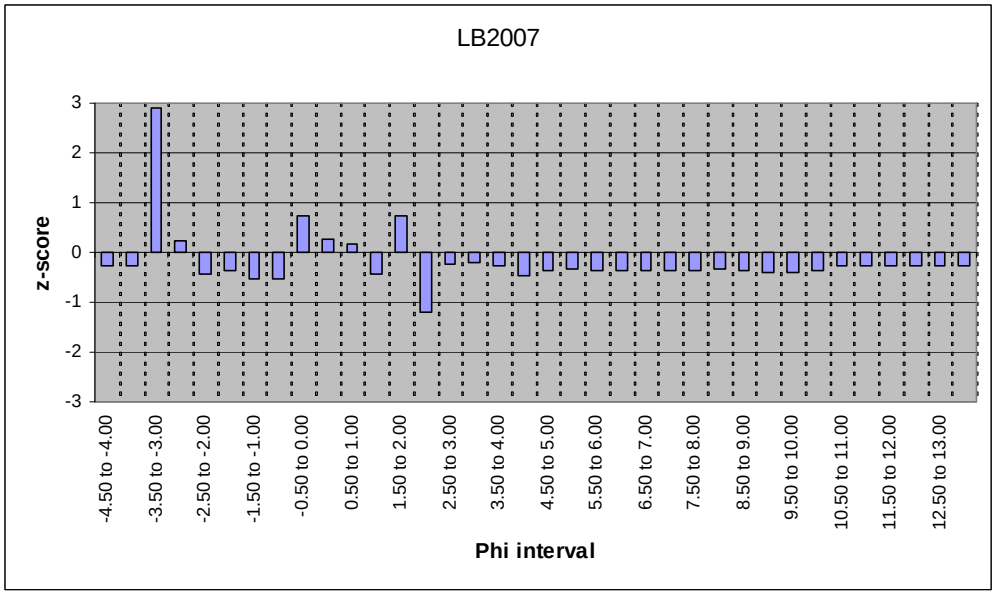
	4.00 to 4.50	z-score	4.50 to 5.00	z-score	5.00 to 5.50	z-score	5.50 to 6.00	z-score	6.00 to 6.50	z-score	6.50 to 7.00	z-score
TUM AVERAGE	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2003	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2007	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2015	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2020	0.113	2.469	0.015	0.945	0.010	0.569	0.014	1.048	0.012	0.950	0.013	0.947
LB2021	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2022	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2027	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2029	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2031	0.037	0.498	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2032	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2054	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2056	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
LB2057	0.104	2.234	0.044	3.381	0.041	3.492	0.036	3.342	0.035	3.378	0.037	3.380
LB2060	0.000	-0.473	0.000	-0.360	0.000	-0.338	0.000	-0.366	0.000	-0.361	0.000	-0.361
Mean	0.018		0.004		0.004		0.004		0.003		0.004	
St. Dev	0.038		0.012		0.011		0.010		0.009		0.010	

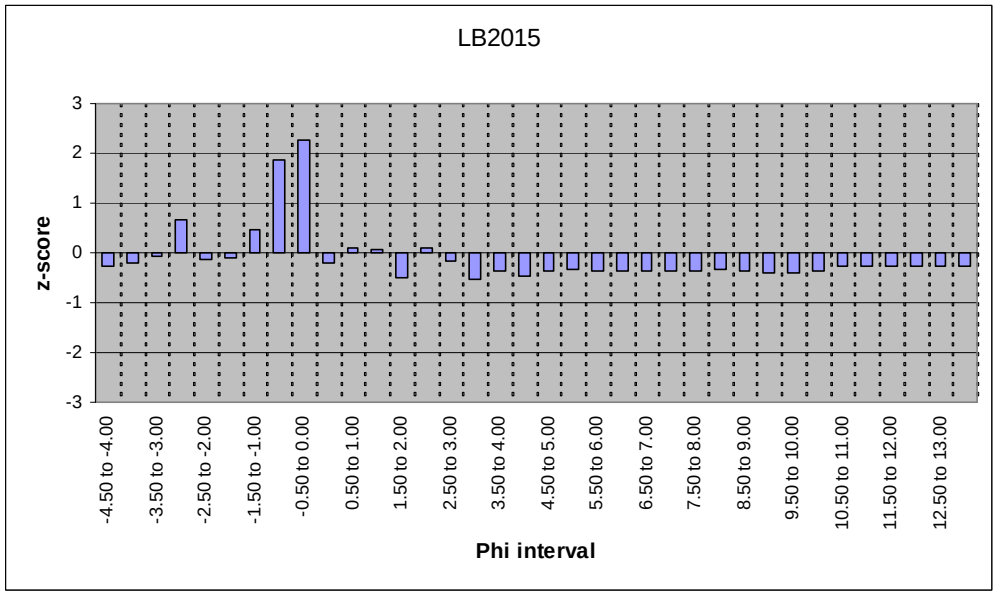
	7.00 to 7.50	z-score	7.50 to 8.00	z-score	8.00 to 8.50	z-score	8.50 to 9.00	z-score	9.00 to 9.50	z-score	9.50 to 10.00	z-score
TUM AVERAGE	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2003	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2007	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2015	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2020	0.016	1.269	0.012	1.033	0.010	0.754	0.015	0.921	0.032	1.613	0.039	1.764
LB2021	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2022	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2027	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2029	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2031	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2032	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2054	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2056	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
LB2057	0.036	3.249	0.032	3.348	0.033	3.442	0.043	3.389	0.055	3.070	0.061	2.978
LB2060	0.000	-0.376	0.000	-0.365	0.000	-0.350	0.000	-0.359	0.000	-0.390	0.000	-0.395
Mean	0.004		0.003		0.003		0.004		0.006		0.007	
St. Dev	0.010		0.009		0.009		0.011		0.016		0.018	

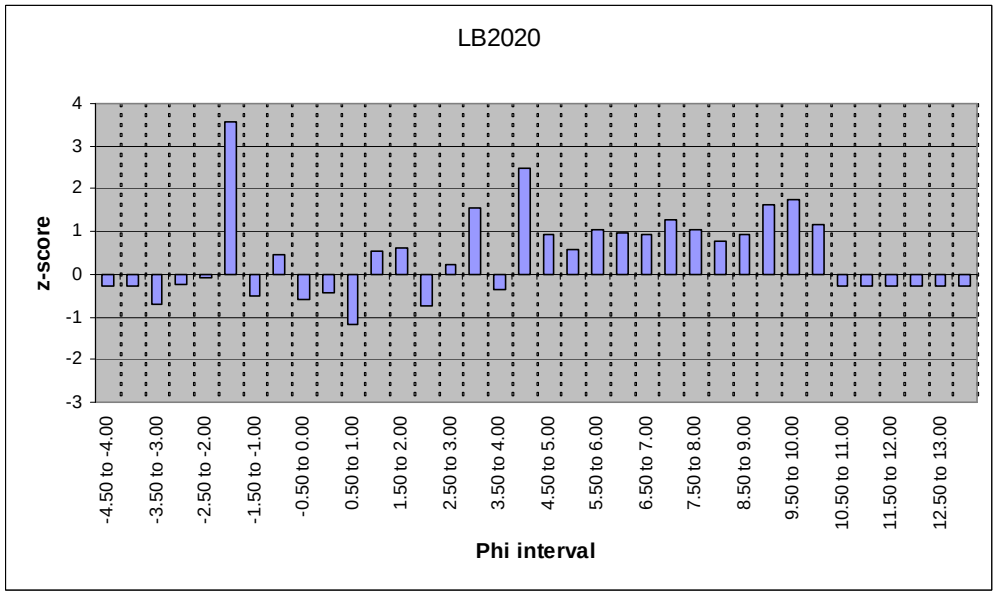
	10.00 to 10.50	z-score	10.50 to 11.00	z-score	11.00 to 11.50	z-score	11.50 to 12.00	z-score	12.00 to 12.50	z-score	12.50 to 13.00	z-score	13.00 to 13.50	z-score
TUM AVERAGE	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2003	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2007	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2015	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2020	0.024	1.153	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2021	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2022	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2027	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2029	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2031	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2032	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2054	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2056	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
LB2057	0.059	3.300	0.052	3.596	0.045	3.596	0.037	3.596	0.029	3.596	0.022	3.596	0.015	3.596
LB2060	0.000	-0.371	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277	0.000	-0.277
Mean	0.006		0.004		0.003		0.003		0.002		0.002		0.001	
St. Dev	0.016		0.014		0.012		0.009		0.007		0.006		0.004	

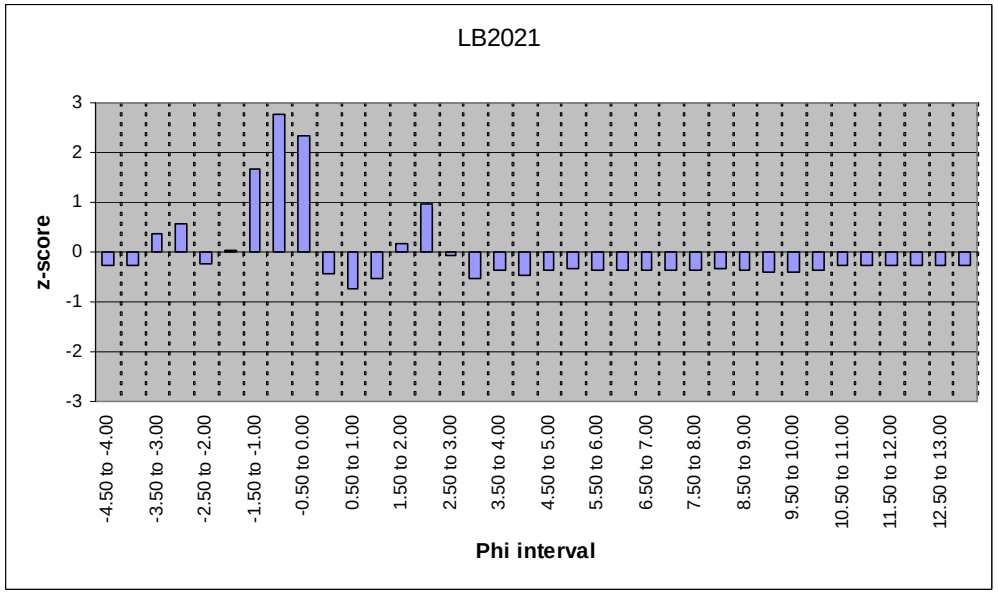
Appendix 4. Summary of z-scores for each half-phi interval for PS49; when data from all participating laboratories included in the mean and standard deviation calculations.

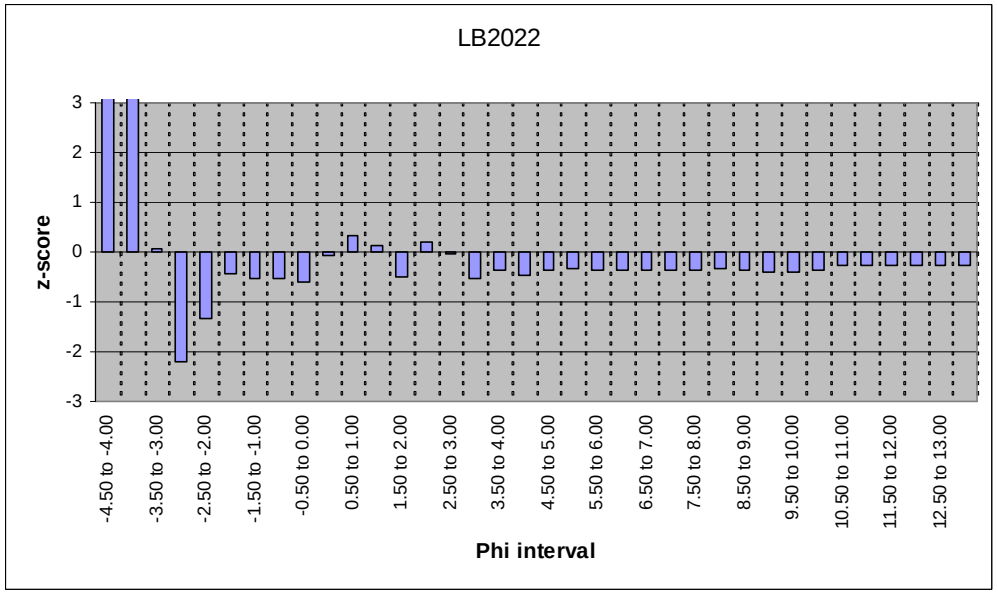


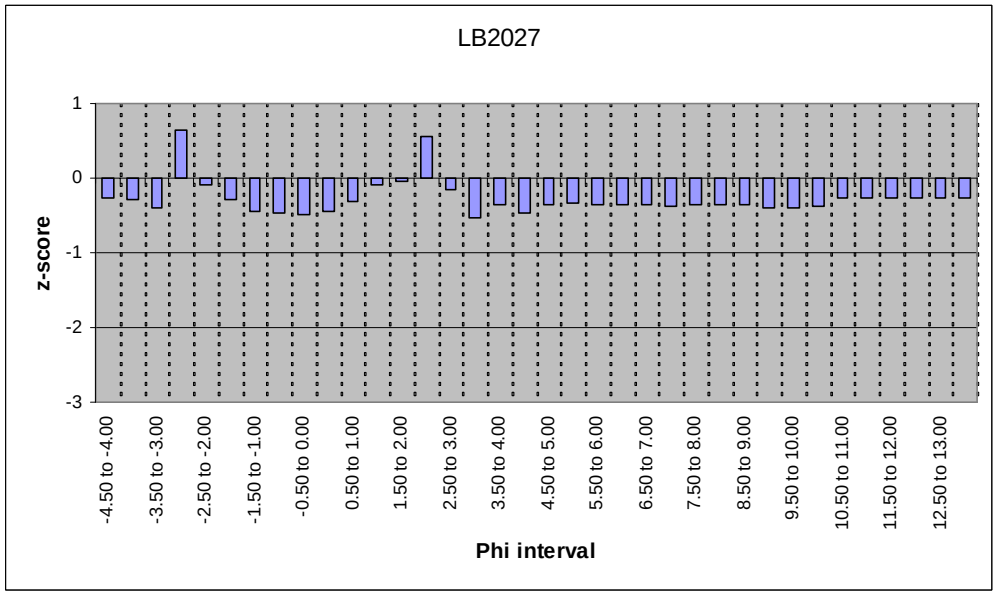


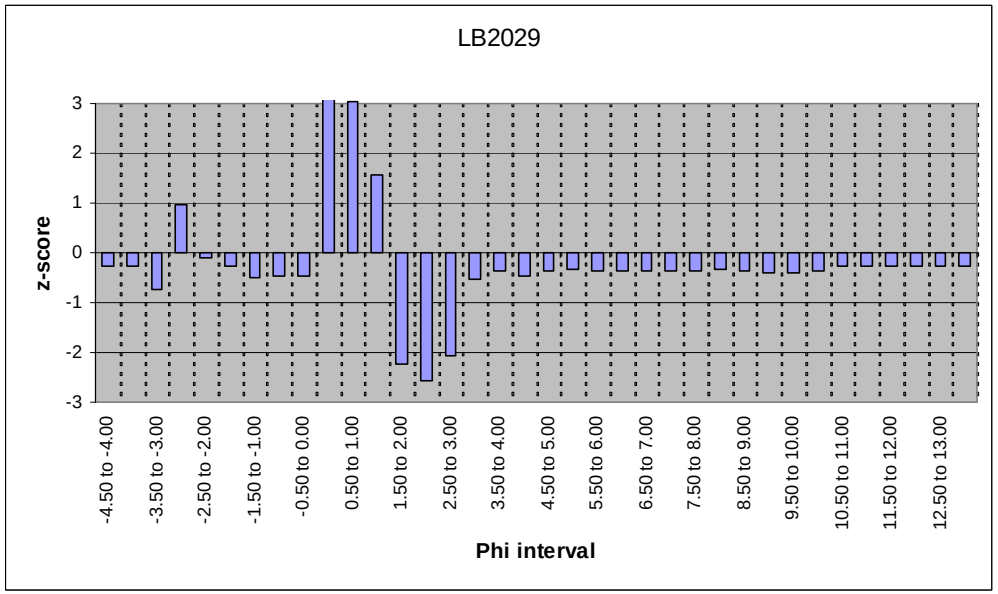


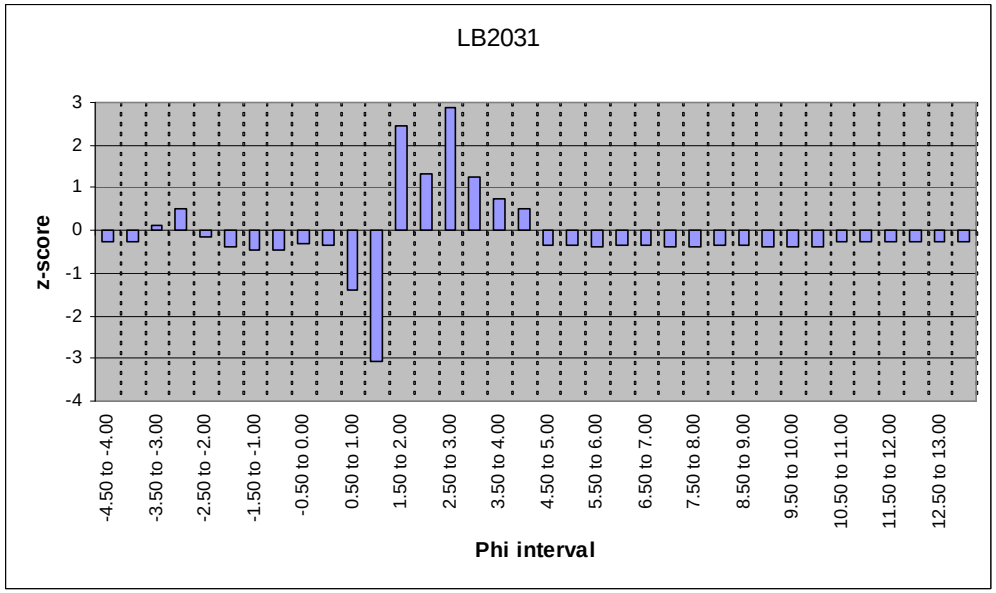


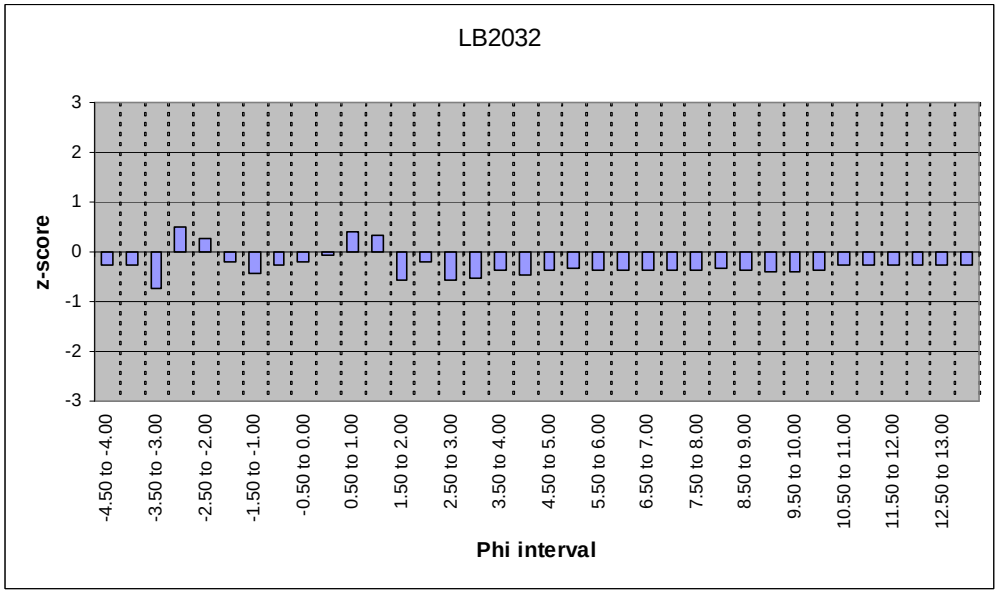

LB2021
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2022
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2027
z-score
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2029
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2031
z-score
3
2
1
0
-1
-2
-3
-4
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2032
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
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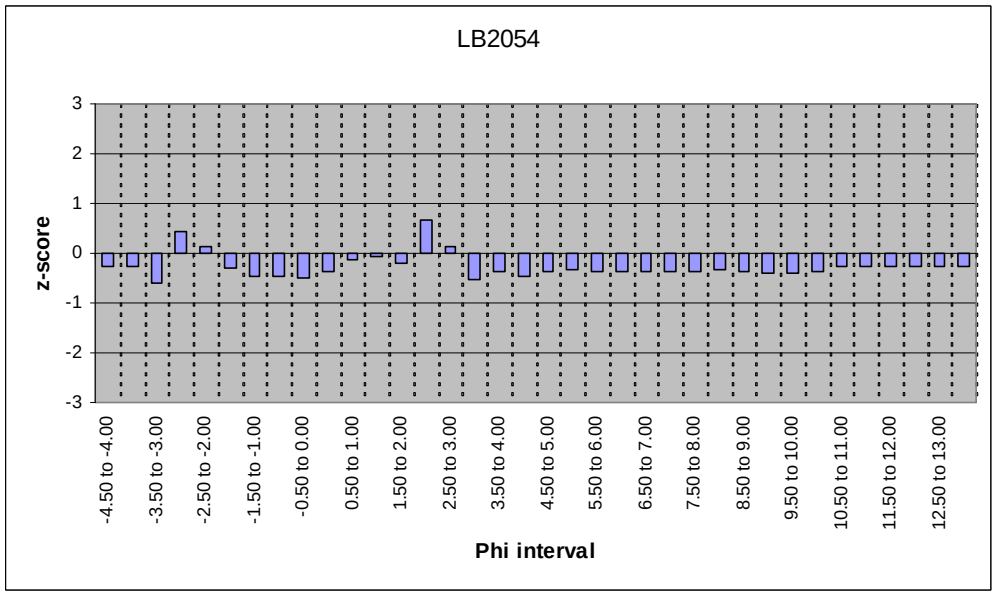
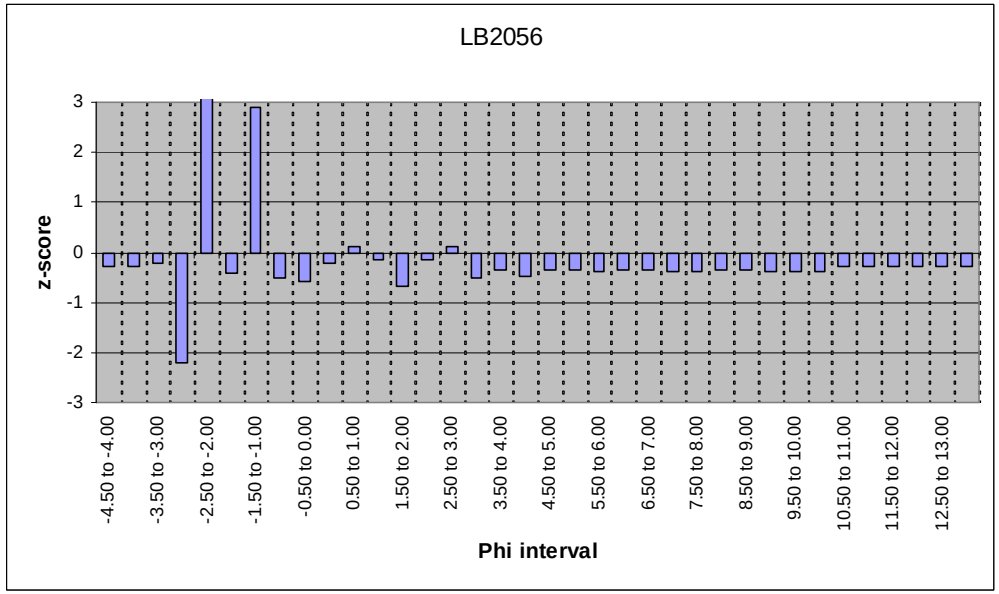
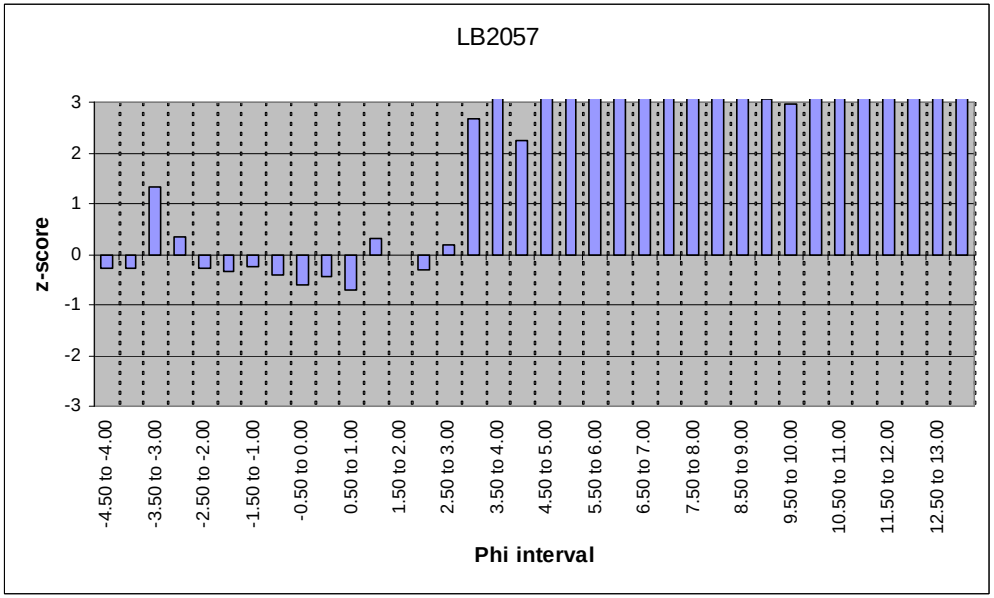
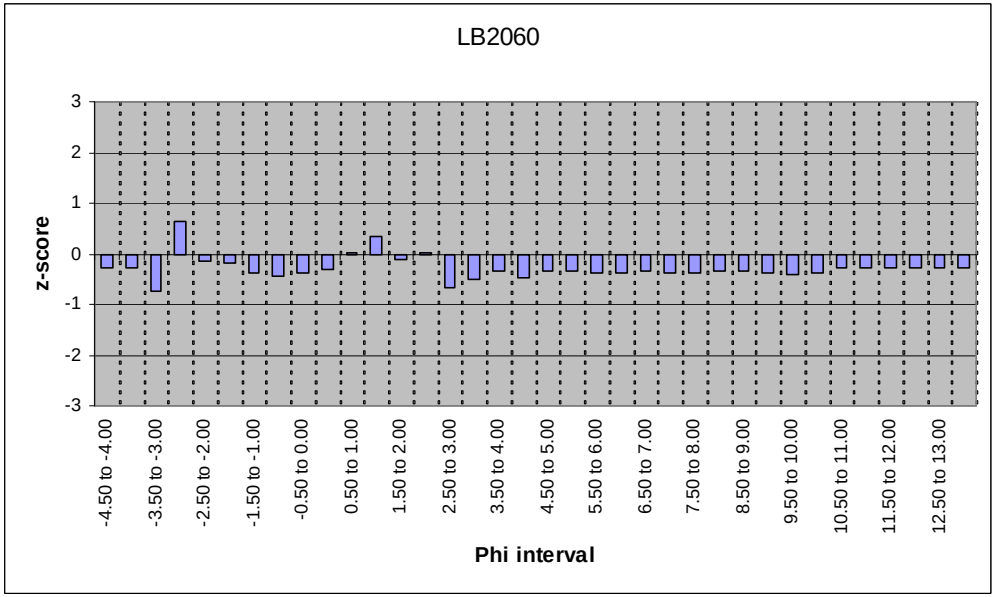
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2054
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2056
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval

.


LB2057
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval


LB2060
z-score
3
2
1
0
-1
-2
-3
-4.50 to -4.00
-3.50 to -3.00
-2.50 to -2.00
-1.50 to -1.00
-0.50 to 0.00
0.50 to 1.00
1.50 to 2.00
2.50 to 3.00
3.50 to 4.00
4.50 to 5.00
5.50 to 6.00
6.50 to 7.00
7.50 to 8.00
8.50 to 9.00
9.50 to 10.00
10.50 to 11.00
11.50 to 12.00
12.50 to 13.00
Phi interval