

## Supplementary Material 1

Averages, standard deviation, accuracy, and method precision calculated from averages of each digested sample.

Table S1: Replicate analyses of MESS-3 reference material during ICP-OES measurements (n=13 digested samples, 10 ICP-OES runs).

LOQ <sup>#</sup> [mg/kg]	Element	MESS-3 reference [mg/kg]	MESS-3 measured [mg/kg]	Accuracy (%)	Method precision (%RSD)
19-231	<b>Al</b>	85900±2300	68879±13622	-20	20
13-158	<b>Ca</b>	14700±600	13291±1094	-10	8
5-24	<b>Cu</b>	33.9±1.6	33±1	-3	4
98-379	<b>Fe</b>	43400±1100	39219±2264	-10	6
9-101	<b>Mn</b>	324±12	302±22	-7	7
86-741	<b>P</b>	1200 <sup>a</sup>	1257±128	+5	10
2-16	<b>Sr</b>	129±11	114±17	-11	15
8-28	<b>V</b>	243±10	233±17	-4	7
4-15	<b>Zn</b>	159±8	147±6	-7	4

<sup>#</sup> LOQ: limit of quantification; 10\*standard deviation of acid blanks for each run

<sup>a</sup> information value

Table S2: Replicate analyses of BHVO-2 reference material during ICP-OES measurements (n=13 digested samples, 10 ICP-OES runs).

LOQ <sup>#</sup> [mg/kg]	Element	BHVO-2 reference [mg/kg]	BHVO-2 measured [mg/kg]	Accuracy (%)	Method precision (%RSD)
19-231	<b>Al</b>	71600±800	74535±1889	+4	3
13-158	<b>Ca</b>	81700±1200	83017±2188	+2	3
5-24	<b>Cu</b>	127±7	135±5	+7	3
98-379	<b>Fe</b>	86300±1400	87880±2323	+2	3
9-101	<b>Mn</b>	1290±40	1347±35	+4	3
86-741	<b>P</b>	1200±100	1307±143	+9	11
2-16	<b>Sr</b>	389±23	392±10	+1	3
8-28	<b>V</b>	317±11	315±16	+22	19
4-15	<b>Zn</b>	103±6	117±5	+14	5

<sup>#</sup> LOQ: limit of quantification; 10\*standard deviation of acid blanks for each run

Table S3: Replicate analyses of MESS-3 reference material during ICP-MS measurements (n=13 digested samples, 8 ICP-MS runs; one less for Mo).

Average LOQ# [mg/kg]	Element	MESS-3 reference [mg/kg]	MESS-3 measured [mg/kg]	Accuracy (%)	Method precision (%RSD)
0.25	<b>Co</b>	14.4±2	14.5±0.5	+1	4
0.25	<b>Ni</b>	46.9±2.2	49.1±2	+5	4
0.67	<b>Mo</b>	2.78±0.07	2.78±0.16	0	6
0.07	<b>U</b>	4b	3.3±0.7	-17	21

# LOQ: limit of quantification; 10\*standard deviation of acid blanks for each run

<sup>b</sup> information value

Table S4: Replicate analyses of BHVO-2 CRM during ICP-MS measurements (n=13 digested samples; 9 ICP-MS runs; one less for Co, Ni, Ba, Eu, and Tb).

Average LOQ# [mg/kg]	Element	BHVO-2 recommended [mg/kg]	BHVO-2 measured [mg/kg]	Accuracy (%)	Precision (%)
0.25	Co	45±3	46±1	+2	3
0.25	Ni	119±7	125±4	+5	3
0.58	Ba	130±13	129±6	-1	5
0.10	Y	26±2	25±1	-5	3
0.05	La	15±1	16±1	+4	5
0.05	Ce	38±2	39±2	+3	5
0.04	Pr	---	5.5±0.3	---	5
0.28	Nd	25.0±1.8	25±1	0	5
0.24	Sm	6.2±0.4b	6.3±0.3	+1	5
0.09	Eu	---	2.1±0.1	---	5
0.15	Gd	6.3±0.2b	6.7±0.4	+7	6
0.05	Tb	0.9b	0.96±0.04	+7	5
0.15	Dy	---	5.5±0.3	---	5
0.05	Ho	1.04±0.04b	1.00±0.04	-4	4
0.13	Er	---	2.6±0.1	---	5
0.05	Tm	---	0.34±0.02	---	5
0.15	Yb	2.0±0.2b	2.0±0.1	+2	4
0.04	Lu	0.28±0.01b	0.28±0.02	-2	6

# LOQ: limit of quantification; 10\*standard deviation of acid blanks for each run

<sup>b</sup> information value

Table S5: Replicate analyses of NASS-6 seawater certified reference material during ICP-MS measurements.

LOQ <sup>#</sup> [μg/kg]	Element	n (number of ICP- MS runs)	NASS-6 reference [μg/kg]	NASS-6 measured [μg/kg]	Accuracy (%)	Method precision (%RSD)
0.029-0.80	<b>Cd</b>	3	0.0303±0.0019	0.037±0.0012	+22	3.1
0.02-0.17	<b>U</b>	5	3 <sup>a</sup>	2.73±0.1	-9	3.7
0.44-2.90	<b>V (KED)</b>	4	1.42±0.16	1.45±0.08	+2	5.5
0.56-2.20	<b>Mn (KED)</b>	---	0.516±0.047	---		
0.07-0.26	<b>Co (KED)</b>	---	0.015 <sup>a</sup>	---		
0.12-3	<b>Cu (KED)</b>	---	0.242±0.025	---		
0.88-4.8	<b>As (KED)</b>	2	1.40±0.12	1.22±0.02	-13	1.5
0.3-5.7	<b>Mo (KED)</b>	5	9.66±0.70	9.87±0.27	+2	2.7

<sup>#</sup> LOQ: limit of quantification; 10\*standard deviation of acid blanks for each run

<sup>a</sup> information value

Table S6: Replicate analyses of NASS-7 seawater certified reference material during ICP-MS measurements.

LOQ <sup>#</sup> [μg/kg]	Element	n (number of ICP- MS runs)	NASS-7 reference [μg/kg]	NASS-7 measured [μg/kg]	Accuracy (%)	Method precision (%RSD)
0.029-0.80	<b>Cd</b>	2	0.0157±0.0016	0.021±0.003	+34	14
0.02-0.17	<b>U</b>	7	2.81±0.16	2.65±0.23	-6	8.6
0.44-2.90	<b>V (KED)</b>	5	1.27±0.08 <sup>a</sup>	1.38±0.15	+9	11
0.56-2.20	<b>Mn (KED)</b>	1	0.74±0.06	0.73	-1	---
0.07-0.26	<b>Co (KED)</b>	---	0.0143±0.0014	---		
0.12-3	<b>Cu (KED)</b>	---	0.195±0.014	---		
0.88-4.8	<b>As (KED)</b>	4	1.23±0.06 <sup>a</sup>	1.14±0.12	-7	11
0.3-5.7	<b>Mo (KED)</b>	7	9.10±0.40	8.99±0.43	-1	4.8

<sup>#</sup> LOQ: limit of quantification; 10\*standard deviation of acid blanks for each run

<sup>a</sup> reference value

Table 7: Replicate analyses of SLEW-3 estuarine water reference material during ICP-MS measurements (n= 7 ICP-MS runs). Runs for which the values were far below the LOQ were excluded.

LOQ <sup>#</sup> [µg/kg]	Element	n (number of ICP- MS runs)	SLEW-3 reference [µg/kg]	SLEW-3 measured [µg/kg]	Accuracy (%)	Method precision (%RSD)
0.029-0.80	<b>Cd</b>	5	0.047±0.004	0.052±0.003	+10	6.4
0.02-0.17	<b>U</b>	7	1.8 <sup>b</sup>	1.51±0.12	-16	8.2
0.44-2.90	<b>V (KED)</b>	7	2.54±0.31	2.75±0.29	+8	10.7
0.56-2.20	<b>Mn (KED)</b>	6	1.59±0.22	1.29±0.22	-19	17.4
0.07-0.26	<b>Co (KED)</b>	---	0.040±0.010	---		
0.12-3	<b>Cu (KED)</b>	6	1.53±0.12	1.51±0.45	-1	30
0.88-4.8	<b>As (KED)</b>	2	1.34±0.09	1.27±0.03	-5	2.2
0.3-5.7	<b>Mo (KED)</b>	7	5.1 <sup>b</sup>	4.7±0.3	-8	6.7

<sup>#</sup> LOQ: limit of quantification; 10\*standard deviation of acid blanks for each run

<sup>b</sup> information value