

STANDARD BIOGEOCHEMICAL REFERENCE MATERIAL FOR Au DEPOSITS

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UPDEEP_SPRU_TWIG_DRY

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Content

1. INTRODUCTION	3
2. SOURCE MATERIALS.....	3
3. COMMINATION AND HOMOGENISATION PROCEDURES	3
4. ANALYTICAL PROGRAM.....	4
5. STATISTICAL ANALYSIS	5
6. PARTICIPANT LABORATORIES	5
Actlabs, Ancaster, Canada	5
ALS, Vancouver, Canada	7
Bureau Veritas Acmelabs, Vancouver, Canada	9
7. PREPARER AND SUPPLIER.....	12
8. INTENDED USE.....	12
9. STABILITY AND STORAGE INSTRUCTIONS	12
10. INSTRUCTIONS FOR CORRECT USE.....	13
11. HANDLING INSTRUCTIONS.....	13
12. TRACEABILITY.....	13
13. LEGAL NOTICE.....	13
14. REFERENCES	14

1. INTRODUCTION

UpDeep standard reference materials (SRM) are intended to be used in vegetation (i.e. biogeochemical) analysis for providing an affordable method of controlling the quality of plant samples for mineral exploration purposes. SRMs are produced less rigorously compared to e.g certified reference materials. The UpDeep SRM samples do not follow the ISO standardization and are therefore not certified reference materials (CRM). However, the UpDeep standard reference materials are more affordable and can thus be inserted in the analysis sequence more frequently than CRMs. For the user of the UpDeep SRMs, the purpose is to externally quantify laboratory accuracy and precision.

2. SOURCE MATERIALS

UPDEEP_SPRU_TWIG_DRY SRM is Norway spruce (*Picea abies*) twigs (foliage) collected on top of a Au bearing Tiira prospect in year 2017. UPDEEP_SPRU_TWIG_DRY is one of six reference materials (soil Ah- and B-horizon, common juniper foliage, Scots pine bark, Norway spruce bark and foliage) collected in the UpDeep project on the Mäkärä and Tiira exploration targets in northern Finland.

3. COMMINUTION AND HOMOGENISATION PROCEDURES

The UPDEEP_SPRU_TWIG_DRY SRM was prepared as follows:

- sampling of the common juniper foliage samples in the field
- drying at 40°C for 48 h
- separating the needles and the twigs manually
- milling with Retsch SM 300 heavy metal free cutting mill to 0.5 mm
- homogenizing the milled material by mixing in a mill

- 2 g aliquots were taken from the split homogenized material to be sent to commercial analytical laboratories

4. ANALYTICAL PROGRAM

UPDEEP_SPRU_TWIG_DRY SRM samples were analyzed in three geochemical analytical laboratories:

- Activation Laboratories Ltd. (Actlabs, Ancaster, ON, Canada)
- ALS Minerals/ALS Global (ALS, Vancouver, Canada through, ALS, Sodankylä, Finland)
- Bureau Veritas Minerals Acmelabs (BVAcme labs, Shaughnessy St., Vancouver, BC, Canada)

The analytical methods are presented in table 1.

Table 1. Laboratories, analytical packages and analytical details used to analyse the UPDEEP_SPRU_TWIG_DRY.

Laboratory	Analytical package	pretreatment	sample weight (g)	leaching	Instrumentation	# of elements
ALS	ME-VEG41	drying and milling to 0.5 mm	1	cold digested with nitric acid for 8 hours before being transferred to hot block for 15 minutes at 85°C followed by 2 hours at 115°C	Agilent 725-ES (ICP-OES) ja Agilent 7900 (ICP-MS) corrected for spectral interferences	64
BVAcme labs	VG101-EXT-REE	drying and milling to 0.5 mm	1	HNO ₃ then aqua regia	ICP-MS/ICP-OES	63
Actlabs	2F-Special	drying and milling to 0.5 mm	0.5	aqua regia at 95°C for 2 hours	Finnegan Mat Element 2 High Resolution	61

					ICP/MS (HR-ICP/MS)	
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Ten UPDEEP_SPRU_TWIG_DRY SRM aliquots were sent to each laboratory. Tables 2, 3 and 4 present information values for the laboratory results. The RSD% values < 5 are marked as green, the $5 \leq \text{RSD}\% \leq 15$ are marked with orange and the $\text{RSD}\% > 15$ are marked with red. Elements having less than four observations between the detection limits are coloured grey.

5. STATISTICAL ANALYSIS

Analysed elements, units, lower (LDL) and upper detection limits (UDL), percentage of <LDL, >UDL and discretized values, mean, median, standard deviation (SD), relative standard deviation (RSD%) and median absolute deviation (MAD) are presented in Chapter 6. Original data, quality control monitoring results and statistical measures are available upon request.

6. PARTICIPANT LABORATORIES

6.1. Actlabs, Ancaster, Canada

Table 2. Statistics for UPDEEP_SPRU_TWIG_DRY_Actlabs based on 10 aliquots. LDL = lower detection limit, pct_LDL = percent of samples under lower detection limit, UDL = upper detection limit, pct_UDL = percent of samples over upper detection limit, pct_discr = percent of discretized values, SD = standard deviation, RSD% = relative standard deviation percent and MAD= median absolute deviation. The RSD% values < 5 are marked as green, the $5 \leq \text{RSD}\% \leq 15$ are marked with orange and the $\text{RSD}\% > 15$ are marked with red. Elements having less than four observations between the detection limits are coloured grey.

element	unit	LDL_ppm	pct_LDL	UDL	pct_UDL	pct_discr	MEAN	MEDIAN	SD	RSD %	MAD
Ag	ppb	200	100	NA	0	100	150	150	0	0	0
As	ppb	4	0	NA	0	0	558.6	553.5	29.3189	5.2486	33.3585

Au	ppb	NA	0	NA	0	0						
B	ppb	3000	0	NA	0	0	8261	8230	202.1248	2.4467	200.151	
Ba	ppb	100	0	NA	0	0	65030	64500	3575.2389	5.4978	2965.2	
Be	ppb	30	100	NA	0	100	22.5	22.5	0	0	0	
Bi	ppb	5	90	NA	0	90	3.952	3.75	0.6388	16.1635	0	
Ca	ppb	10000	0	NA	0	0	3778000	3775000	57115.8666	1.5118	66717	
Cd	ppb	3	0	NA	0	0	43.05	43.55	2.4209	5.6234	2.8169	
Ce	ppb	1	0	NA	0	0	80.3	73.9	19.7988	24.656	2.8169	
Co	ppb	0.9	0	NA	0	30	218.1	217	3.6953	1.6943	2.9652	
Cr	ppb	7	0	NA	0	0	181	176.5	15.5492	8.5907	14.0847	
Cs	ppb	1	0	NA	0	0	81.57	81.35	2.124	2.6039	2.0015	
Cu	ppb	10	0	NA	0	0	6128	5995	462.5245	7.5477	192.738	
Dy	ppb	1	0	NA	0	0	4.648	4.72	0.2484	5.3434	0.3262	
Er	ppb	0.3	0	NA	0	0	2.272	2.28	0.1457	6.4112	0.1112	
Eu	ppb	0.6	0	NA	0	0	2.28	2.31	0.1881	8.2521	0.1112	
Fe	ppb	200	0	NA	0	0	99090	98250	5629.9694	5.6817	4521.93	
Ga	ppb	3	0	NA	0	0	37.19	36.9	4.6663	12.5472	3.41	
Gd	ppb	1	0	NA	0	0	7.141	7.1	0.3704	5.1864	0.3558	
Ge	ppb	2	10	NA	0	0	4.434	4.565	1.3609	30.6933	1.0971	
Hf	ppb	1	50	NA	0	50	0.951	0.89	0.2244	23.5934	0.2076	
Hg	ppb	100	100	NA	0	100	75	75	0	0	0	
Ho	ppb	0.4	0	NA	0	0	0.8722	0.8555	0.0777	8.9103	0.083	
In	ppb	1	100	NA	0	100	0.75	0.75	0	0	0	
K	ppb	600	0	NA	0	0	3483000	3505000	68645.6278	1.9709	51891	
La	ppb	1	0	NA	0	0	61.22	57.45	12.4886	20.3995	2.5204	
Li	ppb	300	100	NA	0	100	225	225	0	0	0	
Lu	ppb	0.6	80	NA	0	80	0.5184	0.45	0.1488	28.7064	0	
Mg	ppb	200	0	NA	0	0	824500	822500	13599.4281	1.6494	16308.6	
Mn	ppb	10	0	NA	0	0	512.8	513.5	12.4793	2.4336	12.6021	
Mo	ppb	3	0	NA	0	0	24.6	24.25	1.4727	5.9866	1.3343	
Na	ppb	1000	0	NA	0	0	36460	36300	857.9044	2.353	1111.95	
Nb	ppb	2	0	NA	0	0	7.289	7.19	0.6339	8.6969	0.5189	
Nd	ppb	1	0	NA	0	0	42.32	40.9	5.3372	12.6116	0.8896	
Ni	ppb	30	0	NA	0	0	2061	2030	98.5957	4.7839	66.717	
Pb	ppb	4	0	NA	0	0	504.2	483.5	90.5892	17.9669	95.6277	
Pd	ppb	10	100	NA	0	100	7.5	7.5	0	0	0	
Pr	ppb	0.7	0	NA	0	30	11.19	10.55	1.8502	16.5344	0.5189	

Pt	ppb	300	100	NA	0	100	225	225	0	0	0
Rb	ppb	2	0	NA	0	0	11310	11300	166.333	1.4707	148.26
Re	ppb	0.4	100	NA	0	100	0.3	0.3	0	0	0
Sb	ppb	8	0	NA	0	0	22.05	22.05	2.7842	12.6267	2.1498
Sc	ppb	20	100	NA	0	100	15	15	0	0	0
Se	ppb	20	30	NA	0	30	35.86	34.2	18.2505	50.8937	24.8335
Sm	ppb	1	0	NA	0	0	7.693	7.54	0.8273	10.7537	0.8451
Sn	ppb	40	100	NA	0	100	30	30	0	0	0
Sr	ppb	20	0	NA	0	30	20180	20150	214.9935	1.0654	148.26
Ta	ppb	0.2	0	NA	0	0	0.9608	0.9205	0.1266	13.1815	0.0445
Tb	ppb	0.6	0	NA	0	0	0.9596	0.9535	0.0632	6.5841	0.0497
Te	ppb	20	80	NA	0	80	17.33	15	5.0253	28.9976	0
Th	ppb	0.6	0	NA	0	0	12.474	10.03	5.5159	44.2191	3.0393
Ti	ppb	40	0	NA	0	0	2095	2155	142.848	6.8185	51.891
Tl	ppb	0.7	0	NA	0	0	42.77	42.7	0.859	2.0084	0.7413
Tm	ppb	0.5	100	NA	0	100	0.375	0.375	0	0	0
U	ppb	0.4	0	NA	0	0	2.621	2.415	0.9747	37.1892	0.2743
V	ppb	6	0	NA	0	0	207.2	206.5	8.5349	4.1192	7.413
W	ppb	3	90	NA	0	90	2.483	2.25	0.7368	29.6742	0
Y	ppb	1	0	NA	0	0	29.96	29.25	2.2907	7.6457	1.5567
Yb	ppb	0.4	0	NA	0	0	1.643	1.655	0.1543	9.3943	0.1186
Zn	ppb	400	0	NA	0	0	82360	82150	1607.759	1.9521	1556.73
Zr	ppb	10	0	NA	0	0	43.77	42.85	3.4986	7.9931	3.2617

6.2. ALS, Vancouver, Canada

Table 3. Statistics for UPDEEP_SPRU_TWIG_DRY_ALS based on 10 aliquots. LDL = lower detection limit, pct_LDL = percent of samples under lower detection limit, UDL = upper detection limit, pct_UDL = percent of samples over upper detection limit, pct_discr = percent of discretized values, SD = standard deviation, RSD% = relative standard deviation percent and MAD= median absolute deviation. The RSD% values < 5 are marked as green, the $5 \leq RSD\% \leq 15$ are marked with orange and the $RSD\% > 15$ are marked with red. Elements having less than four observations between the detection limits are coloured grey.

element	unit	LDL_ppm	pct_LDL	UDL	pct_UDL	pct_discr	MEAN	MEDIAN	SD	RSD %	MAD
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Ag	ppm	NA	0	NA	0	80	0.0152	0.015	0.0008	5.1895	0.0015
Al	%	NA	0	NA	0	100	0.01	0.01	0	0	0
As	ppm	NA	0	NA	0	0	0.609	0.615	0.0438	7.1971	0.0445
Au	ppm	NA	0	NA	0	100	0.0002	0.0002	0	21.002	0
B	ppm	NA	0	NA	0	80	7.2	7	0.4216	5.8561	0
Ba	ppm	NA	0	NA	0	0	69.85	69.65	1.1984	1.7156	1.4085
Be	ppm	0.01	100	NA	0	100	0.0075	0.0075	0	0	0
Bi	ppm	NA	0	NA	0	50	0.0044	0.004	0.0014	32.4964	0.0007
Ca	%	NA	0	NA	0	80	0.431	0.43	0.0074	1.712	0.0074
Cd	ppm	NA	0	NA	0	40	0.0447	0.0445	0.0014	3.1726	0.0007
Ce	ppm	NA	0	NA	0	0	0.0822	0.0825	0.0026	3.1827	0.0022
Co	ppm	NA	0	NA	0	0	0.2271	0.2265	0.0071	3.1098	0.0037
Cr	ppm	NA	0	NA	0	40	0.275	0.25	0.082	29.8019	0.0445
Cs	ppm	NA	0	NA	0	30	0.0831	0.082	0.0028	3.4248	0.0015
Cu	ppm	NA	0	NA	0	0	6.066	6.055	0.148	2.4392	0.1705
Dy	ppm	NA	0	NA	0	100	0.0044	0.004	0.0005	11.7363	0
Er	ppm	0.002	10	NA	0	80	0.002	0.002	0.0004	17.9967	0
Eu	ppm	0.002	40	NA	0	100	0.0018	0.002	0.0003	14.3444	0
Fe	ppm	NA	0	NA	0	0	100.6	99	4.812	4.7833	4.4478
Ga	ppm	NA	0	NA	0	60	0.0173	0.017	0.0008	4.7588	0
Gd	ppm	NA	0	NA	0	90	0.0066	0.0065	0.0007	10.594	0.0007
Ge	ppm	0.005	80	NA	0	80	0.004	0.0038	0.0005	13.1762	0
Hf	ppm	0.002	90	NA	0	90	0.0016	0.0015	0.0002	10.2009	0
Hg	ppm	NA	0	NA	0	30	0.0231	0.023	0.0019	8.0213	0.0015
Ho	ppm	NA	0	NA	0	100	0.001	0.001	0	0	0
In	ppm	0.005	100	NA	0	100	0.0038	0.0038	0	0	0
K	%	NA	0	NA	0	80	0.398	0.4	0.0079	1.9819	0.0148
La	ppm	NA	0	NA	0	30	0.0634	0.063	0.0023	3.5814	0.0015
Li	ppm	NA	0	NA	0	100	0.1	0.1	0	0	0
Lu	ppm	0.001	100	NA	0	100	0.0008	0.0008	0	0	0
Mg	%	NA	0	NA	0	40	0.0891	0.0885	0.0016	1.7903	0.0015
Mn	ppm	NA	0	NA	0	0	546	544	9.3333	1.7094	10.3782
Mo	ppm	NA	0	NA	0	80	0.032	0.03	0.0042	13.1762	0
Na	%	NA	0	NA	0	70	0.0277	0.028	0.0009	3.4248	0.0015
Nb	ppm	NA	0	NA	0	100	0.0067	0.007	0.0005	7.2096	0
Nd	ppm	NA	0	NA	0	30	0.0483	0.048	0.0024	4.8848	0.0022
Ni	ppm	NA	0	NA	0	0	2.156	2.145	0.0858	3.9791	0.0297

P	%	NA	0	NA	0	0	0.1205	0.12	0.0021	1.7604	0.003
Pb	ppm	NA	0	NA	0	0	0.467	0.465	0.0189	4.044	0.0222
Pd	ppm	0.001	100	NA	0	100	0.0008	0.0008	0	0	0
Pr	ppm	NA	0	NA	0	70	0.0121	0.012	0.0006	4.6913	0
Pt	ppm	0.001	100	NA	0	100	0.0008	0.0008	0	0	0
Rb	ppm	NA	0	NA	0	0	11.945	11.9	0.2743	2.2965	0.2224
Re	ppm	0.001	100	NA	0	100	0.0008	0.0008	0	0	0
S	%	NA	0	NA	0	100	0.07	0.07	0	0	0
Sb	ppm	NA	0	NA	0	100	0.036	0.04	0.0052	14.3444	0
Sc	ppm	NA	0	NA	0	70	0.071	0.07	0.0057	7.995	0
Se	ppm	NA	0	NA	0	0	0.03	0.0305	0.0035	11.547	0.0037
Sm	ppm	NA	0	NA	0	30	0.0087	0.0085	0.0013	15.3735	0.0015
Sn	ppm	NA	0	NA	0	80	0.032	0.03	0.0042	13.1762	0
Sr	ppm	NA	0	NA	0	0	21.3	21.25	0.3197	1.501	0.3706
Ta	ppm	0.001	60	NA	0	100	0.0008	0.0008	0.0001	15.1882	0
Tb	ppm	NA	0	NA	0	100	0.001	0.001	0	0	0
Te	ppm	0.02	100	NA	0	100	0.015	0.015	0	0	0
Th	ppm	NA	0	NA	0	50	0.0062	0.006	0.0009	14.8216	0.0007
Ti	%	0.001	100	NA	0	100	0.0008	0.0008	0	0	0
Tl	ppm	NA	0	NA	0	90	0.0462	0.046	0.001	2.2355	0.0015
Tm	ppm	0.001	100	NA	0	100	0.0008	0.0008	0	0	0
U	ppm	0.005	100	NA	0	100	0.0038	0.0038	0	0	0
V	ppm	NA	0	NA	0	40	0.296	0.3	0.0107	3.6316	0.0148
W	ppm	NA	0	NA	0	100	0.01	0.01	0	0	0
Y	ppm	NA	0	NA	0	30	0.0323	0.032	0.0017	5.2723	0.0015
Yb	ppm	0.003	100	NA	0	100	0.0022	0.0022	0	0	0
Zn	ppm	NA	0	NA	0	0	88.81	88.5	1.4286	1.6086	1.1861
Zr	ppm	NA	0	NA	0	40	0.057	0.05	0.0164	28.7086	0.0148

6.3. Bureau Veritas Acmelabs, Vancouver, Canada

Table 4. Statistics for UPDEEP_SPRU_TWIG_DRY_BVAcmelabs based on 10 aliquots. LDL = lower detection limit, pct_LDL = percent of samples under lower detection limit, UDL = upper detection limit, pct_UDL = percent of samples over upper detection limit, pct_discr = percent of discretized

values, SD = standard deviation, RSD% = relative standard deviation percent and MAD= median absolute deviation. The RSD% values < 5 are marked as green, the $5 \leq \text{RSD}\% \leq 15$ are marked with orange and the $\text{RSD}\% > 15$ are marked with red. Elements having less than four observations between the detection limits are coloured grey.

element	unit	LDL_ppm	pct_LDL	UDL	pct_UDL	pct_discr	MEAN	MEDIAN	SD	RSD %	MAD
Ag	PPB	2	0	NA	0	80	14.3	14	1.767	12.3565	0
Al	%	0.01	90	NA	0	90	0.0078	0.0075	0.0008	10.2009	0
As	PPM	0.1	0	NA	0	70	0.51	0.5	0.0568	11.1303	0
Au	PPB	0.2	0	NA	0	0	0.55	0.45	0.4249	77.2579	0.2224
B	PPM	1	0	NA	0	50	10.1	10	1.1005	10.8961	0.7413
Ba	PPM	0.1	0	NA	0	0	69.88	68.95	3.5049	5.0155	3.4841
Be	PPM	0.1	100	NA	0	100	0.075	0.075	0	0	0
Bi	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Ca	%	0.01	0	NA	0	30	0.416	0.41	0.019	4.561	0.0148
Cd	PPM	0.01	0	NA	0	100	0.044	0.04	0.0052	11.7363	0
Ce	PPM	0.1	80	NA	0	80	0.08	0.075	0.0105	13.1762	0
Co	PPM	0.01	0	NA	0	30	0.226	0.235	0.0227	10.0468	0.0222
Cr	PPM	0.1	0	NA	0	70	1.5	1.5	0.1054	7.0273	0.1483
Cs	PPM	0.02	0	NA	0	80	0.092	0.09	0.0042	4.583	0
Cu	PPM	0.01	0	NA	0	0	6.219	6.185	0.1418	2.2796	0.1408
Dy	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Er	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Eu	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Fe	%	0.001	0	NA	0	50	0.0146	0.014	0.0012	8.0396	0.0007
Ga	PPM	0.1	100	NA	0	100	0.075	0.075	0	0	0
Gd	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Ge	PPM	0.01	100	NA	0	100	0.0075	0.0075	0	0	0
Hf	PPM	0.001	40	NA	0	80	0.0018	0.002	0.0011	60.9988	0.0017
Hg	PPB	1	0	NA	0	0	25.9	26	3.6347	14.0336	3.7065
Ho	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
In	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
K	%	0.01	0	NA	0	40	0.39	0.385	0.017	4.3581	0.0074
La	PPM	0.01	0	NA	0	90	0.057	0.055	0.0095	16.6436	0.0074
Li	PPM	0.01	0	NA	0	60	0.054	0.055	0.0151	27.8805	0.0148
Lu	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Mg	%	0.001	0	NA	0	30	0.094	0.095	0.0041	4.4006	0.0044
Mn	PPM	1	0	NA	0	0	553	559	25.5082	4.6127	14.826

Mo	PPM	0.01	0	NA	0	100	0.036	0.04	0.0052	14.3444	0
Na	%	0.001	0	NA	0	100	0.0046	0.005	0.0005	11.226	0
Nb	PPM	0.01	80	NA	0	80	0.008	0.0075	0.0011	13.1762	0
Nd	PPM	0.02	0	NA	0	100	0.039	0.04	0.0088	22.4512	0.0148
Ni	PPM	0.1	0	NA	0	30	2.25	2.25	0.2461	10.9369	0.1483
P	%	0.001	0	NA	0	30	0.12	0.118	0.0057	4.714	0.0059
Pb	PPM	0.01	0	NA	0	0	0.518	0.495	0.0694	13.3997	0.0593
Pd	PPB	2	100	NA	0	100	1.5	1.5	0	0	0
Pr	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Pt	PPB	1	100	NA	0	100	0.75	0.75	0	0	0
Rb	PPM	0.1	0	NA	0	30	13.05	13	0.4625	3.5439	0.6672
Re	PPB	1	100	NA	0	100	0.75	0.75	0	0	0
S	%	0.05	50	NA	0	50	0.0538	0.0438	0.0212	39.4207	0.0093
Sb	PPM	0.02	0	NA	0	80	0.038	0.04	0.0042	11.0957	0
Sc	PPM	0.1	0	NA	0	80	0.18	0.2	0.0789	43.8228	0.1483
Se	PPM	0.1	0	NA	0	80	0.2	0.2	0.0471	23.5702	0
Sm	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Sn	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Sr	PPM	0.5	0	NA	0	0	22.12	22.3	1.1961	5.4073	1.4826
Ta	PPM	0.001	80	NA	0	80	0.0008	0.0008	0.0001	13.1762	0
Tb	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Te	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Th	PPM	0.1	100	NA	0	100	0.075	0.075	0	0	0
Ti	PPM	1	0	NA	0	100	3.6	4	0.5164	14.3444	0
Tl	PPM	0.02	0	NA	0	100	0.046	0.05	0.0052	11.226	0
Tm	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
U	PPM	0.01	60	NA	0	60	0.0585	0.0075	0.1417	242.2256	0
V	PPM	2	100	NA	0	100	1.5	1.5	0	0	0
W	PPM	0.1	100	NA	0	100	0.075	0.075	0	0	0
Y	PPM	0.001	0	NA	0	0	0.0324	0.032	0.0033	10.3086	0.0022
Yb	PPM	0.02	100	NA	0	100	0.015	0.015	0	0	0
Zn	PPM	0.1	0	NA	0	0	84.38	84.7	4.3568	5.1633	3.9289
Zr	PPM	0.01	0	NA	0	90	0.087	0.06	0.096	110.3887	0

7. PREPARER AND SUPPLIER

UPDEEP_SPRU_TWIG_DRY SRMs are prepared by the Geological Survey of Finland (GTK) in a project Upscaling deep buried geochemical exploration techniques into European business (UpDeep) and supplied by GTK and Scandinavian Geopool.

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8. INTENDED USE

UPDEEP_SPRU_TWIG_DRY SRM is intended to quantify laboratory accuracy and to monitor laboratory precision, drift, periodic concentration shifts, unusual breaks and outliers in analytical results of vegetation samples for mineral exploration.

9. STABILITY AND STORAGE INSTRUCTIONS

UPDEEP_SPRU_TWIG_DRY SRM should be stored in a room temperature unopened in their own plastic containers. Stability of the materials is not tested.

10. INSTRUCTIONS FOR CORRECT USE

UPDEEP_SPRU_TWIG_DRY SRM should be only be used to monitor the quality of dry weight biogeochemical samples of the similar matrix and concentration ranges.

11. HANDLING INSTRUCTIONS

Keep dry and do not touch with bare hands to avoid SRM contamination.

12. TRACEABILITY

The analyzed SRM samples represent the entire batch of prepared SRM. All the analyzed samples have individual names and can be traced back into the original analytical results. The laboratories were chosen on the basis of the availability of the analytical services specific to plants and offered range of elements usable for mineral exploration. The laboratories have ISO/IEC 17025:2005 accreditation (ALS Minerals/ALS Global), Quality ISO9001:2008, Environmental Management: ISO14001, Safety Management OH SAS 18001 and AS4801 certificates (Bureau Veritas Minerals Acmelabs) and ISO/IEC 17025 (Activation Laboratories Ltd).

13. LEGAL NOTICE

Geological Survey of Finland and Scandinavian Geopool have prepared and Geological Survey of Finland and Vienna Technical University have statistically evaluated the property values of this reference material to the best of their ability. Geological Survey of Finland, Scandinavian Geopool and Vienna Technical University assume no liability for any errors in this material and information. Geological Survey of Finland, Scandinavian Geopool and Vienna Technical University shall be free from, and indemnified by the user against, any liability for any damage or loss, whether direct or consequential, arising from or as a result of the use of this material and information.

14. REFERENCES

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