Supplementary material

Table S1. Porosity at different depths in the investigated soil profiles (S4, S12 and S22).

Depth (cm)	S4	S12	S22
0-10	0.83	0.83	0.70
30-40	0.83	0.47	0.42
60-70	0.36	0.43	0.40

Table S2. Saturated hydraulic conductivity (K) at different depths in the investigated soil profiles (S4, S12 and S22). With a few exceptions (S4 30-40 cm, S22 11-16 cm, S22 20-25 cm and S22 33-38 cm) the values are averages of duplicate samples.

Profile	Depth (cm)	K (µm s^{-1})
S4	30-40	6.4
	45-50	9.3
	50-60	0.61
	60-70	8.5
S12	15-25	8.1
	35-45	6.4
	45-55	2.8
	55-70	2.7
S22	11-16	17
	20-25	76
	33-38	140
	45-50	73
	60-65	60
	80-85	4.7

Table S3. Relative standard deviations (%) for the average element concentrations presented in Table 1 and the number of successful samplings in each of the lysimeters.

	S4				S12					S22				
d (cm)	35	45	55	65	20	30	40	60	70	20	35	50	75	90
Al	16	15	10	15	4.1	23	27	2.6	35	19	39	15	28	8.6
As	7.2	28	15	36	14	30	41	85	85	34	n/a	162	n/a	101
B	38	61	39	40	17	36	34	44	56	30	22	42	34	15
Ba	8.5	11	7.9	9.3	1.1	18	23	14	32	15	23	13	3.8	14
Be	13	14	7.3	13	7.5	10	28	10	3.9	37	24	19	15	18
Ca	5.3	7.4	3.8	13	4.6	20	10	6.6	10	14	10	4.2	3.7	2.4
Cd	14	10	8.5	14	3.3	67	40	54	29	23	28	48	80	35
Cl	6.6	19	3.2	6.7	39	23	18	12	7.1	45	8.7	15	10	4.2
Co	10	10	3.8	12	0.081	30	33	8.7	18	114	8.8	46	12	129
Cr	15	13	12	16	14	38	38	13	27	105	n/a	7.0	n/a	n/a
Cs	30	31	15	27	41	30	35	15	20	25	22	16	5.3	22
Cu	55	73	52	50	4.8	114	68	79	83	37	93	62	12	64
Fe	20	13	12	75	17	32	50	12	25	n/a	n/a	n/a	n/a	n/a
K	20	11	5.2	27	79	44	25	4.4	24	23	14	6.3	2.3	4.4
Li	29	31	35	36	32	38	37	30	36	43	50	79	62	48
La	17	14	15	20	1.5	44	26	5.8	24	29	46	21	43	23
Mg	7.6	10	6.1	6.9	11	16	26	7.7	7.5	15	8.0	10	10	1.9
Mn	13	11	4.9	6.1	14	80	26	7.7	27	20	39	41	71	97
Na	4.4	2.1	2.4	3.7	13	8.7	21	4.4	2.2	4.7	4.1	4.8	8.4	2.8
Ni	13	10	5.7	15	2.6	34	31	13	22	100	16	38	25	19
Pb	45	72	64	36	14	142	52	59	78	60	n/a	111	17	123
pH	1.6	1.1	0.79	1.6	1.2	3.8	4.3	1.1	1.6	0.86	0.74	0.31	0.23	0.71
Rb	31	25	10	27	60	43	22	7.7	25	22	20	7.4	3.1	10
Se	32	71	37	60	26	127	85	121	191	60	52	86	157	79
Si	3.3	6.0	4.6	7.5	23	10	27	3.0	3.5	12	9.6	8.1	6.7	4.4
SO4	20	11	7.8	11	14	17	8.6	3.8	1.8	9.1	2.8	5.8	3.7	3.7
Sr	5.4	4.9	4.4	8.4	0.9	11	26	7.3	7.4	12	10	2.8	3.0	3.8
Th	20	16	20	29	40	17	27	17	22	41	n/a	n/a	n/a	n/a
Ti	20	19	14	23	3.0	32	33	26	54	15	14	119	51	11
Tl	24	18	12	17	40	23	34	10	21	33	31	16	0.8	79
TOC	13	12	9.0	18	11	15	6.0	4.8	7.1	26	36	16	8.7	23
U	27	13	18	28	11	84	29	9.1	32	13	n/a	38	n/a	23
V	10	11	11	27	12	24	31	10	30	57	30	24	18	40
Zn	24	12	7.6	26	59	31	22	36	25	62	30	51	79	45
Zr	56	57	42	62	75	49	51	42	53	55	n/a	8.2	n/a	60
Samples	10	10	9	10	2	8	9	9	9	5	5	9	3	8

Table S4. Element concentrations in spruce shoots and bilberry leaves from S4 and S22, respectively. All concentrations are given in mg kg^{-1}.

Element	Spruce shoots S4	Spruce shoots S22	Bilberry leaves S4	Bilberry leaves S22
Al	43	23	57	60
Sb	0.001	0.001	0.003	0.003
As	0.03	0.01	0.04	0.01
Ba	1.3	6.5	31	28
Pb	0.01	0.03	0.05	0.02
B	11	12	10	11
Br	0.7	2	3	5
Ce	0.002	0.002	0.01	0.01
Cs	0.84	0.21	0.81	0.15
P	3100	2500	2000	2000
Ga	0.001	0.001	0.002	0.002
I	0.1	0.1	0.2	0.2
Fe	23	19	54	45
Cd	0.023	0.06	0.06	0.03
Ca	630	940	3700	4100
K	12000	11000	9200	9500
Si	160	130	50	40
Co	0.07	0.04	0.04	0.01
Cu	4.5	4.4	7.3	6.6
Cr	0.01	0.01	0.04	0.06
Hg	0.01	0.01	0.01	0.01
La	0.001	0.002	0.006	0.005
Li	0.11	0.09	0.06	0.05
Mg	1000	960	1500	1600
Mn	100	250	610	1800
Mo	0.1	0.02	0.1	0.1
Na	2.3	2.3	6	5
Nd	0.001	0.001	0.004	0.004
Nb	0.001	0.001	0.002	0.002
Ni	4.4	2.9	0.7	0.4
Rb	76	84	80	86
Ag	0.01	0.01	0.003	0.003
Sr	1.1	2.3	5.7	2.2
S	1000	890	1700	1600
Tl	0.01	0.002	0.001	0.001
Sn	0.005	0.004	0.01	0.01
Ti	0.1	0.08	0.01	0.3
V	0.009	0.007	0.04	0.02
Bi	0.001	0.001	0.001	0.001
W	0.01	0.01	0.01	0.06
Y	0.001	0.001	0.003	0.005
Zn	38	40	17	18
Zr	0.004	0.004	0.01	0.01

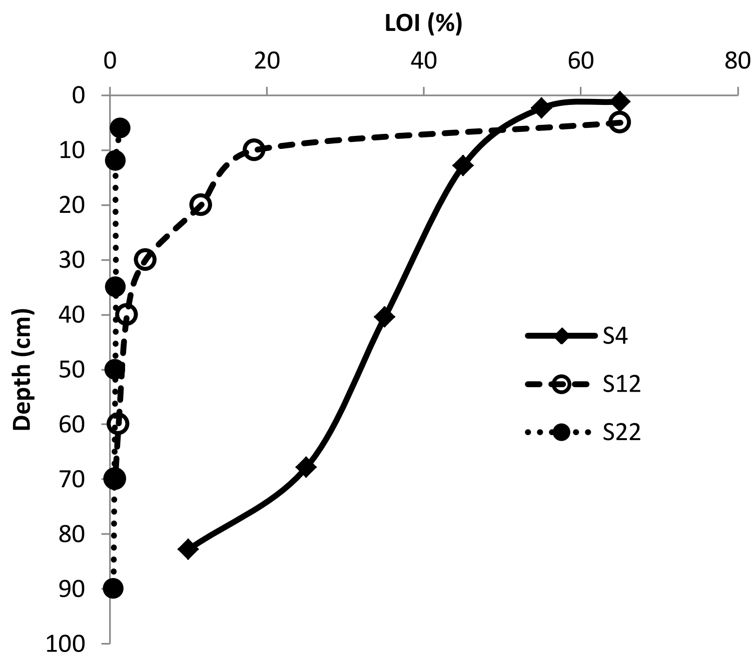

Figure S1. Loss on ignition (LOI) as a function of depth in the investigated soil profiles (S4, S12 and S22).

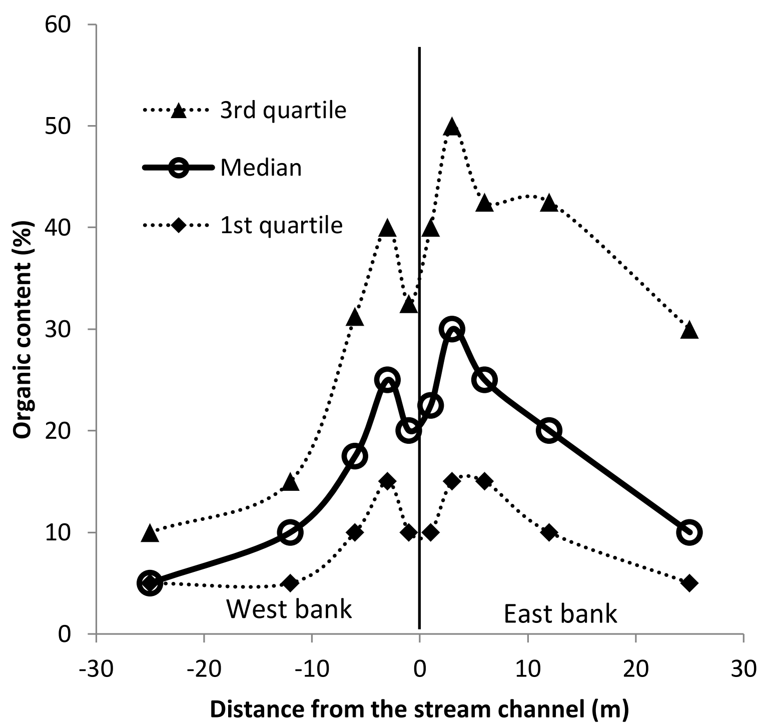

Figure S2. Soil organic content on both sides of the stream channel based on investigations every 20 m along Västrabäcken (C2). The distance was in this case measured perpendicular to the stream, whereas the investigated sites (S4, S12 and S22) were named based on their distance from the stream channel along the flow pathway of the groundwater. The investigated transect is located on the east stream bank.

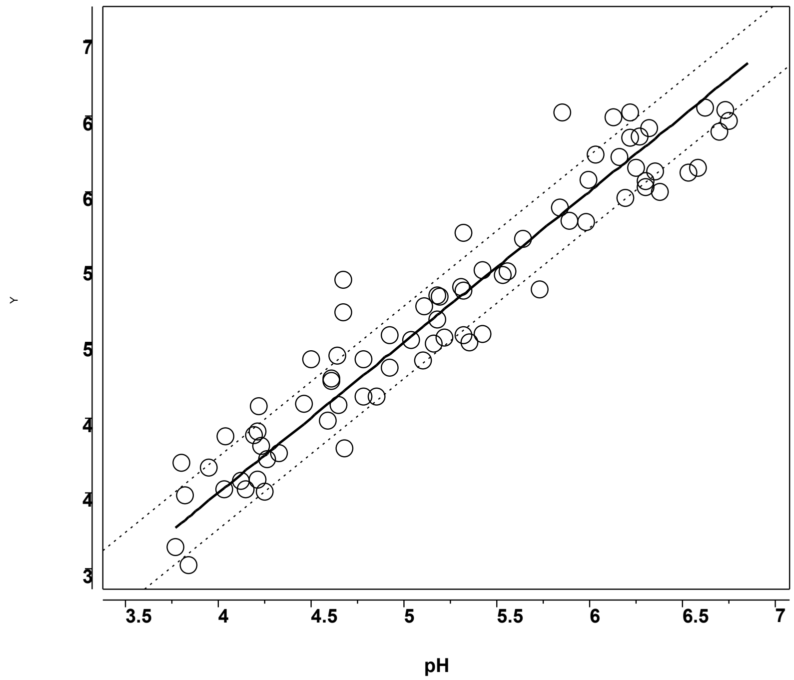

Figure S3. Comparison between measured pH and modelled pH 1996-1998.

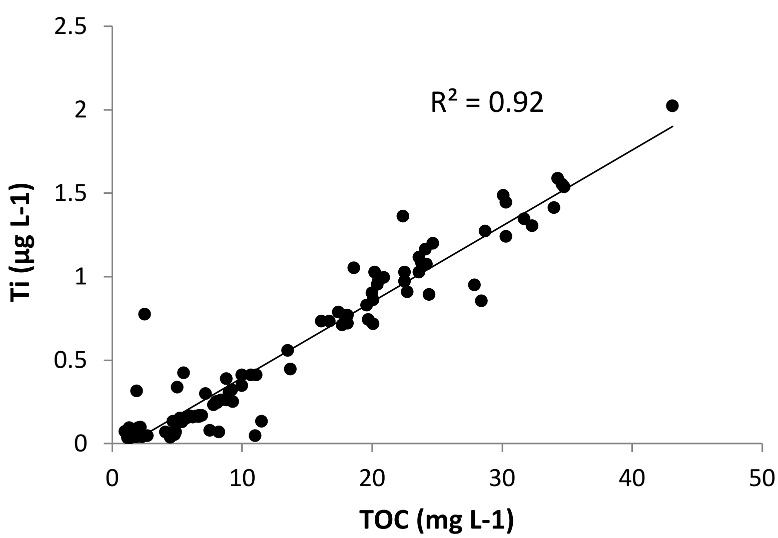

Figure S4. Ti concentrations in soil water and groundwater from eight sampling occasions in the investigated transect as a function of the TOC concentration.

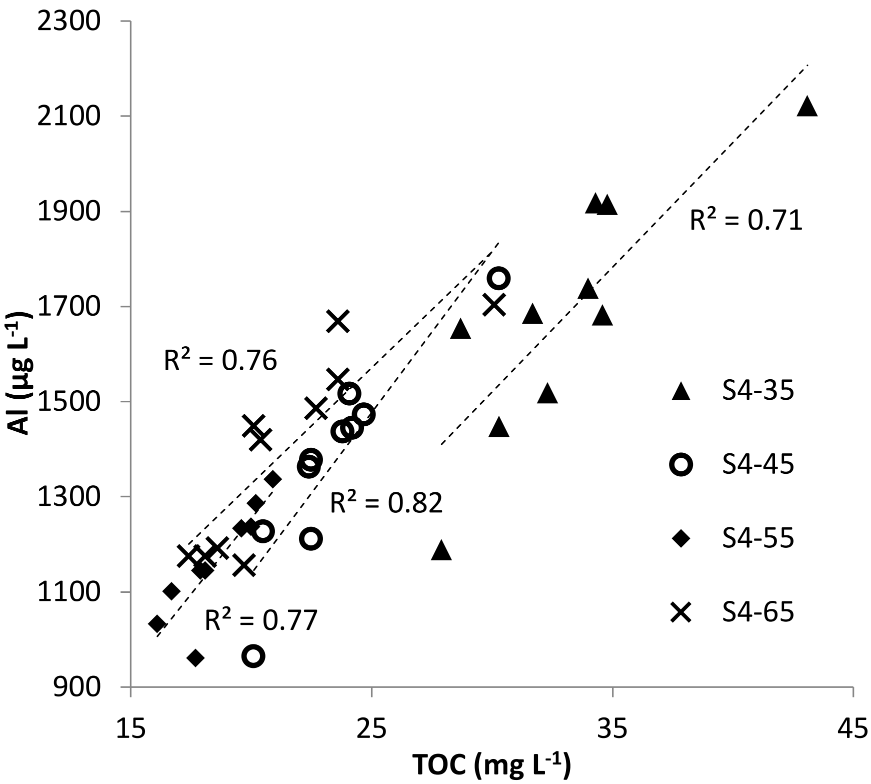

Figure S5. Al and TOC in the four horizons in S4. At all depths the Al concentration was more or less strongly correlated to TOC concentration, suggesting that the temporal variability in Al concentrations is connected to TOC.

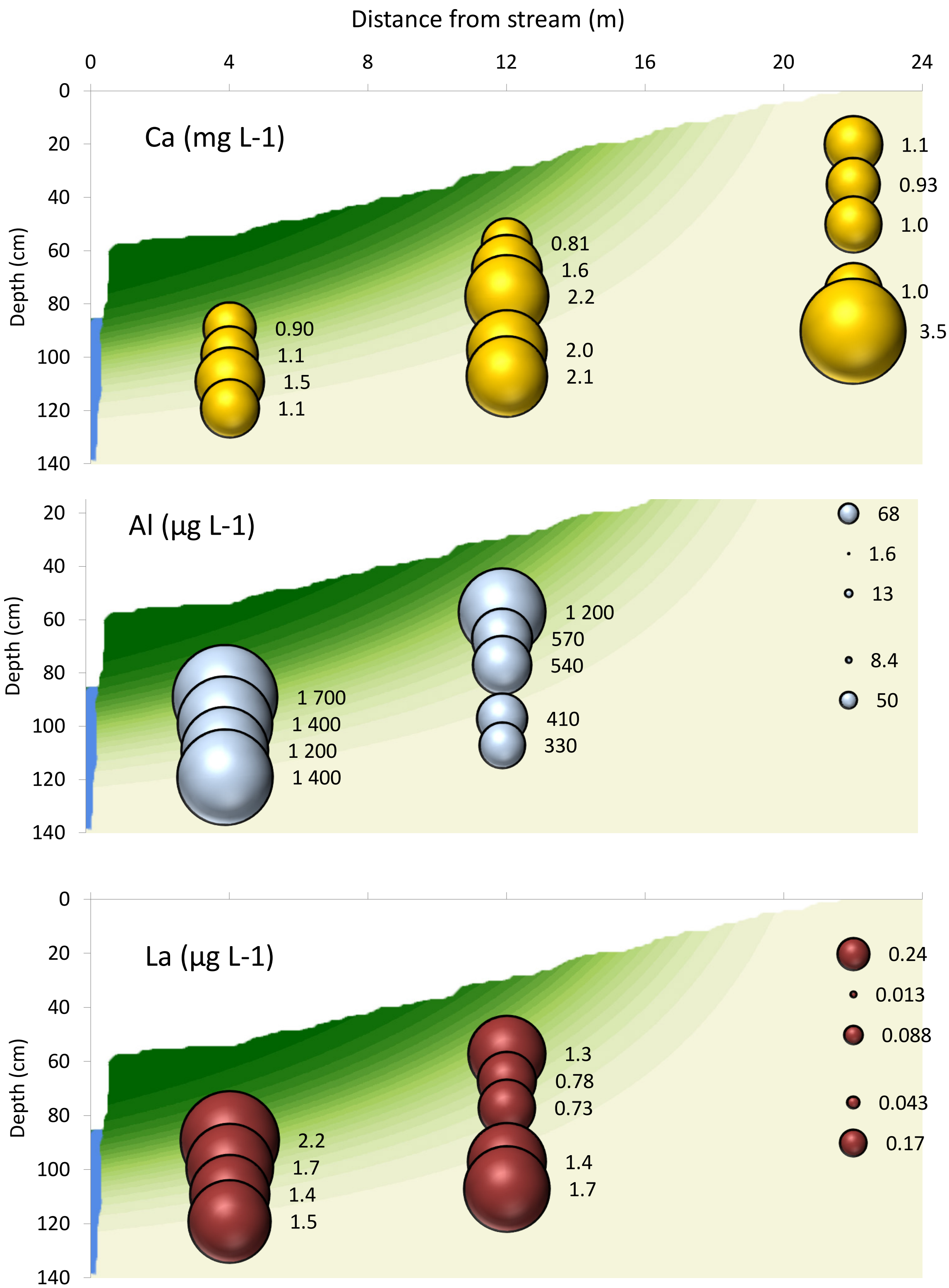

Figure S6. Average concentrations of Ca (top), Al (middle) and La (bottom) in soil water and groundwater.

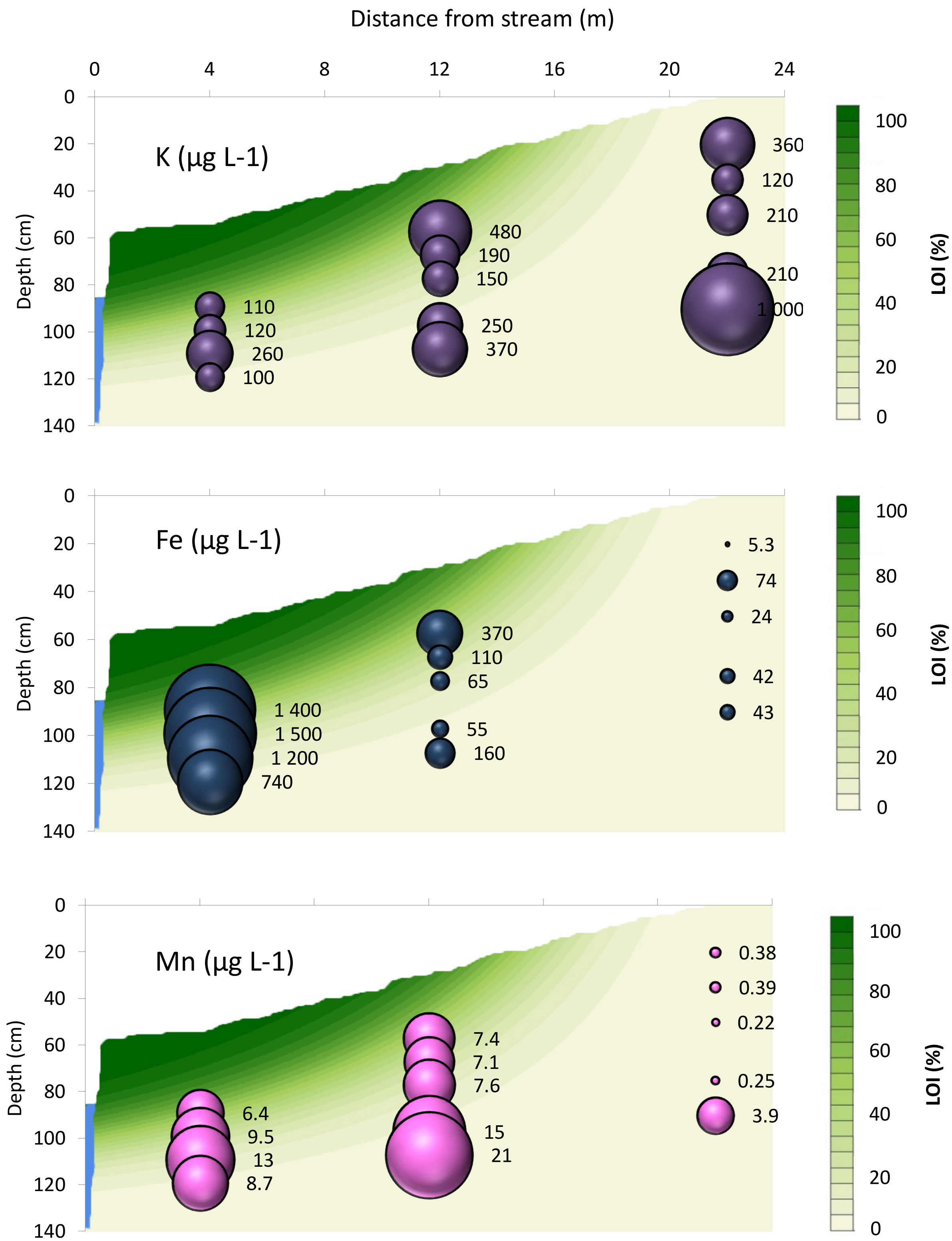

Figure S7. Average concentrations of K (top), Fe (middle) and Mn (bottom) in soil water and groundwater.

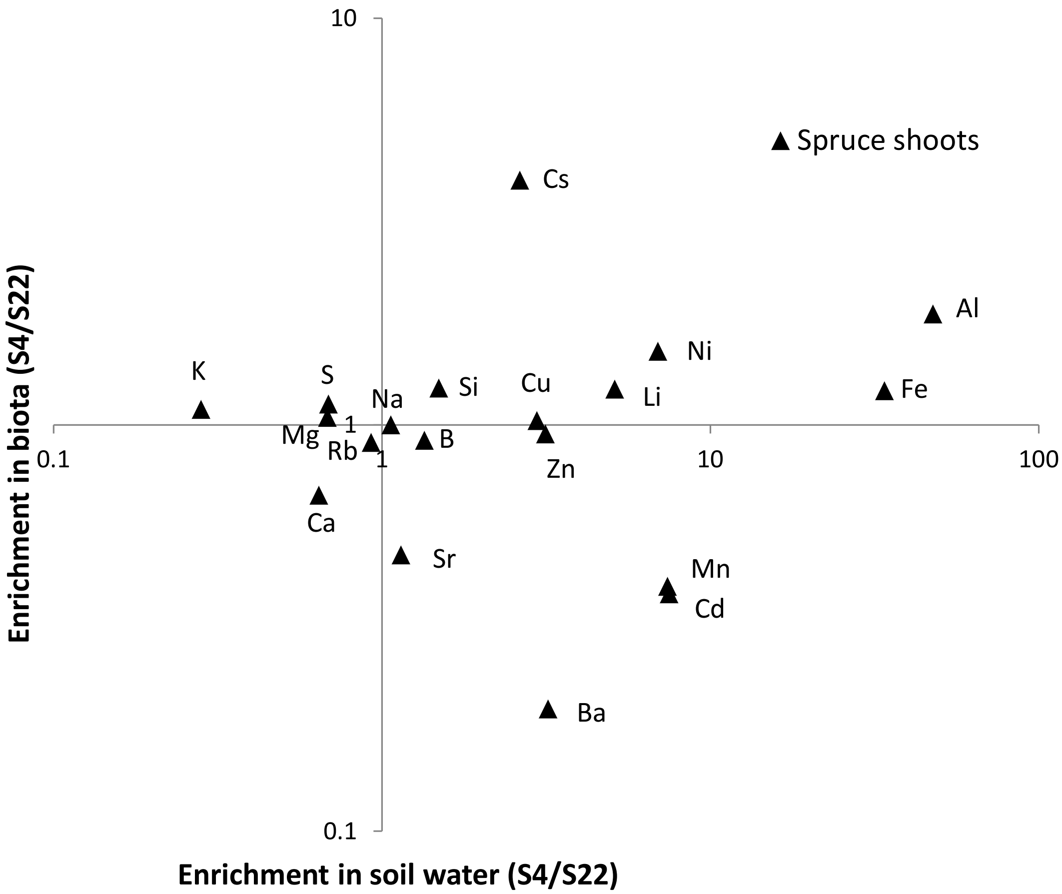

Figure S8. Enrichment in spruce shoots vs. enrichment in soil water when comparing the uphill site (S22) and the riparian site (S4) for various elements.