

**Table S1.** Location of springs and physical parameters of their waters

Outflow number	Coordinates		Morphological location	Environment	Temp. [°C]	EC [μS/cm]	pH [-]
1	N 52° 24' 22.5"	E 015° 13' 11.9"	Valley	Agriculture	9.9	481	6.42
2	N 52° 25' 04.7"	E 015° 13' 49.7"			10.0	602	7.21
3	N 52° 24' 04.0"	E 015° 09' 18.3"		Forest	9.8	307	7.34
4	N 52° 24' 11.8"	E 015° 09' 18.3"		Agriculture	9.8	425	7.38
5	N 52° 25' 59.1"	E 015° 06' 42.9"		Urban	9.8	588	9.30
6	N 52°28' 18.5"	E 015° 08' 23.6"		Agriculture	9.5	592	7.50
7	N 52° 26' 30.5"	E 015° 11' 54.0"	Ryriverbed	Forest	9.3	578	7.60
8	N 52° 26' 13.6"	E 015° 11' 44.1"	Valley		9.8	342	7.60
9	N 52° 26' 13.7"	E 015° 11' 43.0"	Ryriverbed		9.8	428	7.67
10	N 52° 24' 03.7"	E 015° 09' 31.4"	Valley		8.8	301	7.74
11	N 52° 24' 06.2"	E 015° 09' 31.1"			9.0	338	7.76
12	N 52° 24' 06.3"	E 015° 09' 30.3"			9.2	284	7.77
13	N 52° 24' 07.7"	E 015° 09' 29.3"			9.1	317	8.16
14	N 52° 24' 11.5"	E 015° 09' 22.0"			8.8	301	7.80
15	N 52° 24' 68.3"	E 015° 08' 80.9"			9.1	298	7.84
16	N 52° 24' 31.9"	E 015° 07' 43.9"			9.6	434	7.76
17	N 52° 24' 36.7"	E 015° 07' 36.0"			9.2	392	7.86
18	N 52° 24' 41.0"	E 015° 07' 26.6"	8.7		397	7.79	
19	N 52° 28' 36.3"	E 015° 06' 70.0"	Hillside	Urban	8.3	382	7.84
20	N 52° 28' 57.6"	E 015° 05' 13.5"	Scarp-foot	Forest	7.5	376	7.77
21	N 52° 29' 20.1"	E 015° 05' 63.4"			8.7	526	7.60
22	N 52° 29' 20.1"	E 015° 05' 61.1"			9.4	559	8.90
23	N 52° 29' 19.7"	E 015° 04' 60.2"			9.1	546	7.60
24	N 52° 29' 19.6"	E 015° 04' 57.6"			9.4	549	7.70
25	N 52° 29' 23.4"	E 015° 04' 35.1"			9.1	508	7.62
26	N 52° 29' 23.7"	E 015° 04' 33.2"			9.2	549	7.68
27	N 52° 26' 81.3"	E 015° 06' 34.5"			Valley	Urban	9.8
28	N 52° 26' 64.5"	E 015° 11' 69.3"	9.7	413			7.66

**Table S2.** Statistical comparison of physico-chemical parameters determination results for spring water samples

*A. Agricultural area (n=4)*

Parameters	Units	Minimum	Lower quartile	Average	Mean	Upper quartile	Maximum
T	[°C]	9.50	9.65	9.80	9.85	9.95	10.0
EC	[μS/cm]	425	453	525	536.5	597	602
pH	[-]	6.42	6.82	7.13	7.30	7.44	7.50
Alkalinity	[mval/l]	2.5	2.7	2.9	2.9	3.1	3.2
NH <sub>4</sub> <sup>+</sup>	[mg/l]	0.192	0.402	0.544	0.611	0.686	0.761
NO <sub>2</sub> <sup>-</sup>		0.011	0.013	0.114	0.018	0.215	0.408
NO <sub>3</sub> <sup>-</sup>		6.14	14.3	30.8	30.7	47.2	55.6
Fe		0.05	0.06	0.28	0.08	0.49	0.89
Mn		0.02	0.02	0.04	0.03	0.06	0.09
Cl <sup>-</sup>		9.06	9.73	13.7	11.4	17.6	22.9
PO <sub>4</sub> <sup>3-</sup>		0.08	0.09	0.11	0.10	0.13	0.15
SO <sub>4</sub> <sup>2-</sup>		30.4	31.8	39.0	33.8	46.3	58.1
Ca <sup>2+</sup>		64.5	67.5	72.7	70.7	77.9	84.9
Mg <sup>2+</sup>		5.55	5.83	7.90	7.37	9.97	11.3
Na <sup>+</sup>		4.03	4.54	5.22	5.18	5.91	6.50
K <sup>+</sup>		1.19	1.66	2.17	2.37	2.68	2.73
Be	[μg/l]	0.007	0.008	0.010	0.009	0.012	0.015
As		0.82	0.85	1.23	1.24	1.62	1.63
Sr		79.7	84.2	95.1	91.7	105.9	117.2
Zn		12.2	12.9	57.6	27.3	102.2	163.4
Pb		0.77	1.03	1.35	1.31	1.68	2.03
Cr		0.11	0.11	0.13	0.12	0.15	0.17
Ni		1.49	1.52	1.65	1.60	1.78	1.89
Cu		2.47	3.27	4.58	4.38	5.88	7.06
Ba		13.9	17.5	22.2	23.3	26.8	28.1
Li		1.05	1.17	1.99	1.81	2.82	3.30
Tm		0.0005	0.0005	0.0016	0.0016	0.0027	0.0028
Th		0.0019	0.0027	0.0041	0.0037	0.0055	0.0071
Pr		0.0042	0.0098	0.0310	0.0287	0.0522	0.0623
Eu		0.0071	0.0079	0.0131	0.0130	0.0182	0.0191
Er		0.0047	0.0055	0.0113	0.0106	0.0172	0.0195
Dy		0.0045	0.0073	0.0188	0.0180	0.0303	0.0347
Lu		0.0007	0.0008	0.0018	0.0019	0.0028	0.0028
Ho		0.0010	0.0014	0.0039	0.0037	0.0064	0.0072
Tb		0.0003	0.0009	0.0033	0.0032	0.0058	0.0066
Gd		0.0055	0.0096	0.0261	0.0245	0.0427	0.0500
Sm		0.0042	0.0085	0.0244	0.0228	0.0403	0.0478
Sc		0.445	0.457	0.546	0.527	0.635	0.685
Nd		0.020	0.039	0.122	0.110	0.205	0.248
Ce		0.036	0.087	0.196	0.208	0.304	0.331
La		0.022	0.044	0.131	0.120	0.218	0.262
Al		16.3	17.2	19.5	18.5	21.8	24.8
V		0.32	0.39	0.48	0.50	0.57	0.59
Co		0.18	0.18	0.21	0.21	0.25	0.25
Se		0.18	0.21	0.30	0.25	0.40	0.53
Sb		0.08	0.09	0.11	0.10	0.12	0.14
Rb		0.58	0.66	0.72	0.74	0.79	0.83

Mo	0.15	0.17	0.25	0.20	0.32	0.43
U	0.173	0.249	0.426	0.433	0.603	0.667
Cd	0.007	0.014	0.024	0.026	0.034	0.037

*B. Forest area (n=17)*

Parameters	Units	Minimum	Lower quartile	Average	Mean	Upper quartile	Maximum
T	[°C]	7.50	9.00	9.12	9.10	9.40	9.80
EC	[µS/cm]	284	307	418	376	546	578
pH	[-]	7.34	7.60	7.77	7.70	7.77	8.90
Alkalinity	[mval/l]	1.8	2.6	3.0	2.9	3.5	4.6
NH <sub>4</sub> <sup>+</sup>	[mg/l]	0.132	0.440	0.546	0.520	0.637	0.977
NO <sub>2</sub> <sup>-</sup>		0.003	0.008	0.044	0.009	0.013	0.441
NO <sub>3</sub> <sup>-</sup>		0.124	0.744	2.32	0.898	1.95	13.2
Fe		0.05	0.87	5.52	1.86	6.72	25.3
Mn		0.01	0.05	0.39	0.08	0.24	2.96
Cl <sup>-</sup>		4.72	9.47	11.4	10.5	11.8	30.7
PO <sub>4</sub> <sup>3-</sup>		0.07	0.08	0.11	0.09	0.11	0.21
SO <sub>4</sub> <sup>2-</sup>		8.47	24.8	59.8	73.7	89.2	119.0
Ca <sup>2+</sup>		60.7	66.4	76.3	78.5	81.0	95.9
Mg <sup>2+</sup>		1.91	3.89	5.72	6.34	7.44	9.12
Na <sup>+</sup>		2.55	4.53	5.62	5.32	6.12	12.2
K <sup>+</sup>		0.30	0.81	1.50	1.14	1.88	5.84
Be		0.005	0.008	0.037	0.015	0.028	0.301
As		0.68	1.09	3.19	2.09	3.96	12.6
Sr		49.5	58.0	84.2	70.4	94.9	200.4
Zn	[µg/l]	1.85	4.17	20.1	5.87	24.2	106.4
Pb		0.22	0.50	1.44	1.10	2.02	4.08
Cr		0.02	0.10	0.21	0.17	0.23	0.74
Ni		0.65	0.84	1.20	1.06	1.29	2.54
Cu		0.57	0.71	2.46	1.74	2.73	9.77
Ba		5.60	8.92	26.2	13.5	17.0	151.8
Li		0.48	1.16	2.81	2.35	2.68	12.1
Tm		0.0002	0.0004	0.0035	0.0007	0.0023	0.0359
Th		0.0003	0.0021	0.0250	0.0152	0.0288	0.1189
Pr		0.0006	0.0098	0.0853	0.0258	0.0801	0.7201
Eu		0.0007	0.0044	0.0236	0.0104	0.0194	0.1777
Er		0.0010	0.0037	0.0312	0.0118	0.0238	0.2822
Dy		0.0002	0.0067	0.0555	0.0210	0.0513	0.4865
Lu		0.0001	0.0003	0.0033	0.0006	0.0019	0.0330
Ho		0.0002	0.0008	0.0106	0.0039	0.0090	0.0996
Tb		0.0002	0.0008	0.0097	0.0038	0.0078	0.0881
Gd		0.0016	0.0094	0.0743	0.0260	0.0613	0.6622
Sm		0.0003	0.0073	0.0654	0.0214	0.0502	0.5524
Sc		0.412	0.658	1.06	1.06	1.18	2.03
Nd		0.008	0.043	0.337	0.104	0.285	2.86
Ce		0.020	0.102	0.794	0.257	0.893	6.10
La		0.005	0.043	0.379	0.120	0.338	3.25
Al		4.67	15.4	64.7	29.8	66.6	351.5
V		0.11	0.27	0.79	0.63	0.94	3.64
Co		0.07	0.15	0.31	0.19	0.36	1.35
Se		0.08	0.11	0.19	0.15	0.22	0.46

Sb	0.01	0.05	0.08	0.06	0.08	0.36
Rb	0.37	0.61	1.69	0.81	1.17	13.8
Mo	0.01	0.15	0.35	0.27	0.39	1.86
U	0.009	0.090	0.341	0.228	0.438	1.29
Cd	0.001	0.004	0.019	0.008	0.025	0.066

*C. Urban area (n=7)*

Parameters	Units	Minimum	Lower quartile	Average	Mean	Upper quartile	Maximum
T	[°C]	8.30	8.70	9.30	9.60	9.80	9.80
EC	[μS/cm]	303	382	415.6	397	434	588
pH	[-]	7.48	7.66	7.74	7.79	7.84	7.86
Alkalinity	[mval/l]	3.0	3.1	3.4	3.6	3.7	4.0
NH <sub>4</sub> <sup>+</sup>	[mg/l]	0.188	0.467	0.906	0.750	1.24	1.84
NO <sub>2</sub> <sup>-</sup>		0.007	0.008	0.024	0.011	0.024	0.090
NO <sub>3</sub> <sup>-</sup>		0.095	0.125	5.93	2.13	13.4	18.3
Fe		0.29	0.93	2.34	1.20	2.38	8.99
Mn		0.01	0.03	0.08	0.05	0.14	0.26
Cl <sup>-</sup>		5.27	10.7	19.7	18.1	31.3	32.3
PO <sub>4</sub> <sup>3-</sup>		0.08	0.09	0.12	0.11	0.12	0.21
SO <sub>4</sub> <sup>2-</sup>		25.8	40.2	55.9	58.1	71.6	85.0
Ca <sup>2+</sup>		73.7	74.4	83.3	80.9	94.3	98.6
Mg <sup>2+</sup>		5.48	5.96	6.76	6.84	7.50	7.95
Na <sup>+</sup>		4.89	5.29	9.07	7.61	12.6	15.1
K <sup>+</sup>		0.92	1.41	3.21	2.39	5.49	6.60
Be		0.009	0.011	0.019	0.019	0.026	0.037
As		1.09	1.25	1.66	1.57	1.89	3.00
Sr		81.3	84.4	123.2	116.3	161.3	165.5
Zn	[μg/l]	2.19	3.54	29.3	9.85	72.4	100.5
Pb		0.45	0.48	1.27	0.68	1.23	4.62
Cr		0.08	0.09	0.26	0.24	0.43	0.49
Ni		0.76	0.82	1.49	1.35	2.52	2.64
Cu		0.75	1.07	3.02	2.35	5.84	7.22
Ba		14.1	17.9	23.8	20.3	24.6	49.6
Li		1.09	1.09	3.59	2.94	5.90	7.61
Tm		0.0001	0.0001	0.0009	0.0003	0.0008	0.0043
Th		0.0048	0.0100	0.0280	0.0263	0.0475	0.0537
Pr		0.0084	0.0099	0.0305	0.0124	0.0199	0.1336
Eu		0.0089	0.0089	0.0148	0.0101	0.0138	0.0424
Er		0.0018	0.0050	0.0110	0.0059	0.0070	0.0455
Dy		0.0053	0.0074	0.0204	0.0099	0.0136	0.0857
Lu		0.0002	0.0002	0.0012	0.0005	0.0010	0.0055
Ho		0.0002	0.0010	0.0033	0.0015	0.0019	0.0157
Tb		0.0000	0.0004	0.0029	0.0008	0.0020	0.0148
Gd		0.0047	0.0063	0.0248	0.0114	0.0143	0.1137
Sm		0.0067	0.0086	0.0252	0.0108	0.0176	0.1077
Sc		0.732	1.07	1.23	1.25	1.45	1.59
Nd		0.037	0.047	0.125	0.054	0.083	0.534
Ce		0.079	0.083	0.277	0.126	0.188	1.18
La		0.034	0.043	0.125	0.065	0.083	0.529
Al		10.9	15.4	37.9	16.0	34.9	147.5
V		0.22	0.27	0.65	0.55	0.95	1.39

Co	0.14	0.15	0.25	0.21	0.27	0.58
Se	0.18	0.26	0.37	0.39	0.44	0.53
Sb	0.06	0.08	0.27	0.13	0.19	1.22
Rb	0.73	0.85	2.50	1.12	3.78	7.97
Mo	0.26	0.41	0.74	0.54	1.17	1.36
U	0.105	0.118	0.283	0.231	0.483	0.561
Cd	0.002	0.003	0.024	0.008	0.049	0.088