

TRACE ELEMENTS CONTENTS AND LEAD ISOTOPES RATIOS IN A FOREST AREA WITH GRANITIC BEDROCK MEASURED BY ICP-MS.

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Studied "Lesní potok" forested catchment 0.765 km² is located approximately 30 km SE of Prague and is a part of the Nature State Reserve "Voděradské bučiny". Prevailing beech *Fagus sylvatica* L., hornbeam *Carpinus betulus* L. and Norway spruce *Picea abies* Karst L. are underlain by biotic monzogranite and twomica syenogranite of the Řičany Massif. A maximum catchment height is 500 m above sea level and the stream discharge is on the 406 m a.s.l. The average runoff is 132 mm and mean annual precipitation is 635 mm.

The bulk atmospheric precipitation, the surface water discharge and the throughfall have been sampled monthly. Water samples were immediately filtered through a 0.45 µm Sartorius nitrocellulose membrane filter and stabilised by 0.5 ml subboiling nitric acid per 100 ml of the sample. Rock and soil samples were decomposed in a mixture of HF + HNO₃ and HCl acids. The distribution of elements throughout the soil profile was determined through extraction of the < 1 mm soil particles by diluted 0.1 M HNO₃, t=24hrs, V/m=200.

Trace elements and lead isotopes were measured using the Varian UltraMass ICP mass spectrometer. Waters and sample solutions were nebulised in the Meinhard and Babington nebuliser into argon atmosphere. Short and long term signal fluctuation were corrected by In, Rh or Eu internal standards. Lead isotopes ratios were measured by peak jumping without internal standard and normalised to Pb isotope standard NBS 981.

Table 1: Lead isotope ratios (mol/mol) and trace elements composition in forested catchment waters (ppb), soil extracts (ppb) and altered bedrocks (ppm) in Autumn 1996 (selection).

Sample / Element	Bulk precipitation ppb	Beech throughfall ppb	Spruce throughfall ppb	Discharge ppb	A soil 0-15 ppb	Bw soil 15-33 ppb	Go soil 33-48 ppb	Gr soil 48-67 ppb	Gr soil 67-74 ppb	Gr soil 84-87 cm	Gr soil 90-101 ppb	syenogranite ppm	monzogranite ppm
206/207 Pb	1.137		1.164	1.07	1.169	1.214	1.196	1.240	1.235	1.210	1.224	1.196	1.185
208/207 Pb	2.34	2.257	2.330	2.06	2.489	2.476	2.460	2.540	2.517	2.498	2.496	2.437	2.431
Pb	3.38	3.17	10.3	0.59	104	55	43	93	94	38	62	64	68
Br	2.99	6.64	18.1	35.5	55	58	71	67	64	52	60	22	29
I	2.35	3.02	6.8	4.13	3.5	5.7	4.5	9.8	12	9.9	13	0.5	0.3
Zn	16	31	100	19	27	18	8.5	22	22	8.7	12	35	86
Cd	0.19	0.67	0.7	0.62	0.73	0.38	0.4	0.55	0.5	0.28	0.31	0.19	0.56
Sr	1.48	4.86	13.9	199	11.7	1.8	1.7	3.3	5.3	3.9	12.5	28	807
Ba	3.8	6.3	12	54	49	100	73	209	185	65	132	39	1305
C	0.082	0.15	0.78	4.04	0.7	1.05	0.8	1.1	1.4	0.6	2	1.2	3.3