



Ground Water Hydrochemical Composition Dependence on Hydrogeological Position in Bohemian Switzerland

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RESEARCH METHOD

Water hydrochemical composition has been investigated on more than 60 new samples and ca 150 archive samples. Sampling has been grouped for specific rocks - sandstones, volcanites, granites, gravels, moors, limestones and permian rocks. Main anions, cations, heavy metals, pH, conductivity and content of dissolved substances have been analysed. Dependence of hydrochemical composition on hydrogeological position and rock type has been searched.



Spring of water with ferric algae, which indicate high Fe content



The Kamenice river canyon - drainage in the western part of national park. The whole territory represents an area with full hydrogeological cycle, excellent porous and fractured conductivity.



Groundwater leakage through unsaturated sandstone zone characterised by high content of dissolved heavy metals

SAMPLING

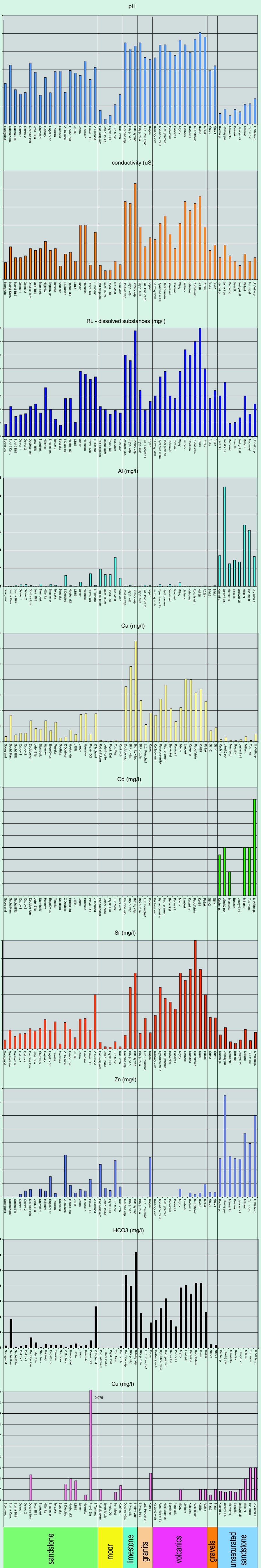
Sampling has been implemented in springs, moors and small creeks. Special water samples have been gathered from sandstone unsaturated zone - leakages under rock overhangs.

Sandstone area in infiltration zone is springless because of high sandstone conductivity. On the contrary in the drainage area in the western part groundwater drainage takes place in a spring form and inflow into the water courses. Main drainage takes place in places, where deep valleys and canyons interrupt groundwater level. Many springs are situated around volcanic rocks.



Jetřichovická Bělá creek - pure clear water coming through concentrated groundwater drainage

WATER HYDROCHEMICAL COMPOSITION



GROUP ROCK TYPE CHARACTERISTICS

Saturated sandstone zone water is characterised by pH 5-6, conductivity 10-20 uS, low Aluminium and HCO₃ content. Dissolved substances are ca 50 - 100 mg/l.

Moor water is characterised by extreme acidity of pH 3 - 4, dissolved substances ca 100 mg/l, very low is Calcium content and HCO₃ is totally absent.

Limestone water is characterised by dissolved substances content ca 200 - 400 mg/l, neutral pH 6.5-7.5, absent Zn, very low Al and high Ca and Sr content.

Granitic rock water is characterised by neutral pH, dissolved substances 100 - 150 mg/l, low Al and medium content of other substances.

Volcanic rocks water is characterised by pH 7-8, dissolved substances 150 - 400 mg/l, very low Al and high Sr. Content of HCO₃ is 50 - 200 mg/l.

Unsaturated sandstone zone water is characterised by very low pH 3-4.5, high Al and Zn content, very special is Cd content and absent HCO₃.

List of ground water and surface water samples																			
name	pH	NO ₃	PO ₄	Cl	SO ₄	NH ₄	KNK-4.5	US	RL	Al	Be	Ca	Cd	Cu	Fe	K	Mg	Mn	Ni
Soorgrund	5.24	4.7			3.8	17		0.11	9.3	46	0.03	8.6			0.026	1.3	1.8	0.024	0.2
Saucha Kam.	6.26				1.7	12		1.51	18	110	0.004	34			1.2	1.9	2.6	0.067	3.1
Saucha Bl. s.	4.9				3.8	29		0.05	12	74	0.11	8.9			0.04	2.4	2.3	0.051	0.8
Ostrov 1	4.66	15			3.5	27		0.1	12	80	0.18	11			0.018	1.1	2.6	0.064	1.7
Ostrov 2	4.74	16			4.1	29		0.13	84	0.21	11	8.9			0.019	1.2	2.3	0.051	0.4
Doubnice lom	6.38	6.8	0.21		3.5	39		0.54	17	110	0.086	27		0.0047	0.057	0.93	3.7	0.054	0.2
Jeteš Bl. s.	5.86	16			6.3	30		0.27	16	120	0.034	17		0.016	2	3.6	0.073	4	0.5
Šternbark	4.59	3.3			2.7	49		0.03	17	87	0.24	0.0012	16		0.13	1.9	2.9	0.11	16.5
Hájek	5.57	5.1			6.7	77		0.19	21	180	0.034	27			0.03	1.7	2.9	0.09	0.6
Brázdovský ry.	4.73				2.1	42		0.15	16	100	0.19	14			0.008	1.7	2.9	0.09	1.6
Terenská	5.5	0.3	0.31		2.1	49		0.29	17	64	0.11	25			0.005	1.8	2.4	0.14	0.005
Soší ská	5.93	3.4			2.9	10		0.13	7.4	42	0.003	4.6			0.003	1.7	2.9	0.09	1.6
Z. Doubnice	4.73	9.2	0.2		5.4	40		0.15	14	140	1.2	0.003	8.1		0.003	0.017	2.6	6.2	0.49
Hlebočí důl	5.96				0.1	1.9	56		0.13	15	140	0.068	1.6		0.004	0.079	1	5.2	0.01
J. Bl. la	5.62	12			0.09	5.9	17		0.22	10	52	0.033	3.5		0.0036	0.035	0.79	2.1	0.031
Janov	5.99	46			15	64		0.09	30	240	0.46	35			0.015	8.5	6	0.055	6.9
Háensko	6.48	30			1.7	63		0.14	30	230	0.026	36			0.001	0.015	4.8	4.7	0.002
Prácheň důl	5.46		0.23		0.38	7.2	114		0.38	7.2	114		36		0.076	16	2.1	3.1	0.07
Z. Tschand	6.13		0.07	2.2	30	0.72	2.18	26	220	0.096		36				9.8	1.2	14	1.8
Pod skalkem	3.75	3.3	0.32		1.9	22	0.06		0.71	110	1.6				0.002	4.7	0.34	0.48	0.19
Janovské	3.27				1.4	7.1		0	4.5	19	1.3	0.01				1.8	0.49	0.16	0.49
Prácheň důl	3.48				1.6	6		0.52	82	1.3	0.04					2.3	0.23	0.17	0.086
Tur. most	4.07	3.4	0.3		1.4	28		0	58	3.2	1.6				0.0015	0.23	0.64	0.76	0.51
Kunt. vrch	4.64		0.19		0.81	0.08	8.1	87	0.9						0.0027	2.5	1.8	0.35	0.22
Doubnice váp.	7.49	5.5	0.27		2.3	48	0.18	3.94	43	300	0.04	71			0.032	1.4	29	0.016	1.7
Blýž. v. váp.	7.15		0.16		3.7	42	0.066	37							0.002	0.85	11	0.021	2.1
Blýž. v. váp.	7.32	7.6	0.26		3.4	64		5.05	35	390	0.035	130			0.012	0.85	11	0.021	2.1
Blýž. v. váp.	7.49	2.3			2.2	47		1.92	29	170	0.051	50			0.049	0.67	7.2	0.011	5.2
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