



CO₂-seepage in Bad Schwalbach

Bad Schwalbach is since long famous for its mineral- and CO₂-rich springs and groundwater. CO₂-seepage is also expressed by the presence of the Brodelbrunnen mofette (a dry CO₂-spring).

Anomalies

Apart from the Brodelbrunnen mofette, the CO₂-concentrations of ground- and spring water in Bad Schwalbach vary between 1192 and 2790 mg/l (Hänel, 2020; Käß and Käß, 2008), i.e. up to ten times the threshold value of 250 mg/l to be classified as Säuerling (Weertz and Weertz, 2007). The occurrence of CO₂-rich water in Bad Schwalbach is not related to Variscan tectonics and faults. Rather, it is associated with extensive, younger N-S (W-dipping) and E-W (S-dipping) fault systems occurring in the "Hünsruckschiefer" lithology. These formed as consequence of the plate tectonic activity associated to the formation of the Oberrheingraben and its extension in the Taunus plateau. The creation of these young faults allows upper mantle CO₂ to migrate towards the surface and be dissolved in the circulating groundwater. In contrast to the Eifel area, young volcanic phenomena are absent in the area of Bad Schwalbach (Käß and Käß, 2008).

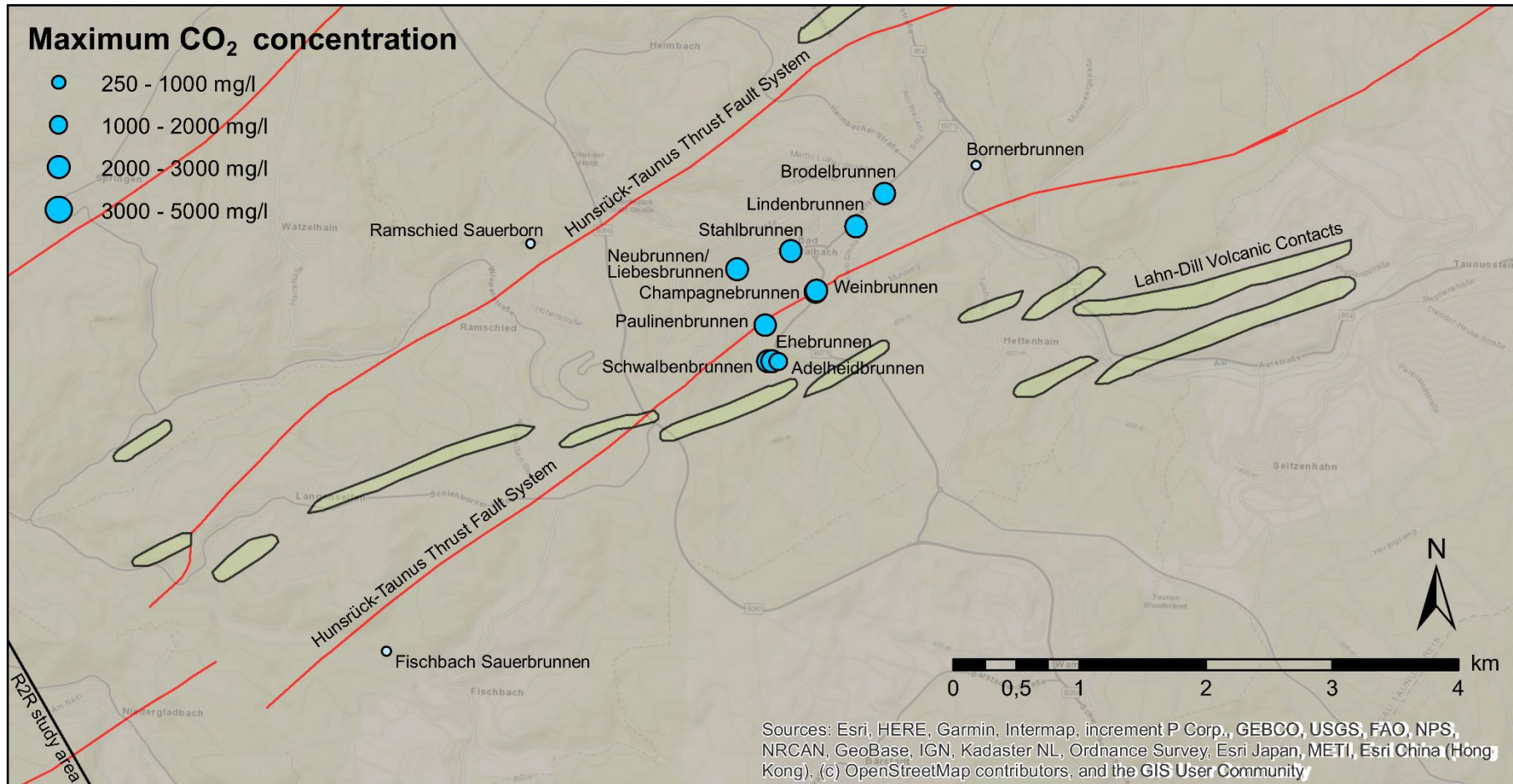


Figure 1: CO₂-seepage in Bad Schwalbach



Data

ID	Coordinates	T	Depth	TDS°	Cl	Na	SO ₄	Free CO ₂	He	³ He/ ⁴ He	Analysis year	References
		°C	m	g/l	mg/l	mg/l	mg/l	mg/l	ppmv			
Bornerbrunnen	50°08'48" North 08°05'11" East											Hänel (2020)
Brodellbrunnen	50°08'40" North 08°04'33" East			0.38				2330			<2008	Käβ and Käβ (2008)
						17					<2020	Hänel (2020)
Lindenbrunnen	50°08'31" North 08°04'22" East			1.09				2251			<2008	Käβ and Käβ (2008)
												Hänel (2020)
Neubrunnen = Liebesbrunnen	50°08'19" North 08°03'33" East			0.71				2460			<2008	Käβ and Käβ (2008)
					90	18		2331			<2020	Hänel (2020)
Schwalbenbrunnen	50°07'54" North 08°03'49" East									1.90	1992	Griesshaber et al. (1992)
				1.66				2090			<2008	Käβ and Käβ (2008)
		9	93		23	54		2042			<2020	Hänel (2020)
Paulinenbrunnen	50°08'04" North 08°03'46" East			0.50				1192			<2008	Käβ and Käβ (2008)
					80	21		2306			<2020	Hänel (2020)
Ehebrunnen	50°07'55" North 08°03'47" East			0.76				1786			<2008	Käβ and Käβ (2008)
		7.2	5.7		27.2	16.9	23.4	2266			1996	Hänel (2020)
					20	17		2041			<2020	
Adelheidbrunnen	50°07'54" North 08°03'51" East			1.13				1432			<2008	Käβ and Käβ (2008)
		7.5	9		26.2	32.3	29.5	1496			1996	Hänel (2020)
					12	25		1700			<2020	
Weinbrunnen	50°08'13" North 08°04'06" East	11.6		1.32	67.8	65.5	36	2290			2004	Käβ and Käβ (2008)
				1.20				2790			<2008	
		9.9			106	64		2529			<2020	Hänel (2020)
Champagnebrunnen	50°08'13" North 08°04'06" East			1.18				2316			<2008	Käβ and Käβ (2008)



Stahlbrunnen	50°08'24" North 08°03'55" East	10			15	61	35	2792			<1992	Griesshaber et al. (1992)	
											2.10		1992
				0.71					2655			<2008	Käβ and Käβ (2008)
		10			90	21		2740			<2020	Hänel (2020)	
Ramschied Sauerborn	50°08'24" North 08°02'08" East											Hänel (2020)	
Fischbach Sauerbrunnen	50°06'35" North 08°01'13" East											Hänel (2020)	

° TDS = Total Dissolved Solids

References

Griesshaber, E., O'Nions, R.K., Oxburg, E.R., 1992. Helium and carbon isotope systematics in crustal fluids from the Eifel, the Rhine Graben and Black Forest, F.R.G. *Chemical Geology* 99, 213-235.

Hänel, M., 2020. *Wasserquellen-Atlas*. <http://www.quellenatlas.eu/39994.html>

Käβ, W., Käβ, H., 2008. *Deutsches Baderbuch*, 2 ed. Vereinigung für Bäder- und Klimakunde e.V., Stuttgart.

Weertz, J., Weertz, E., 2007. Eifelbrunnetjes met een vulkanisch trekje. *Grondboor en Hamer* 2, 37-41.

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