



Thermal CO₂-rich water in Bad Breisig

Bad Breisig am Rhein is officially registered as “Kurstadt” and is well known for its spa tourism. Naturally thermal and CO₂-rich water is exploited at multiple locations for this purpose.

Anomalies

Groundwater in Bad Breisig shows a temperature from 12 to 36 °C, depending on the location and depth (Hänel, 2020; Käß and Käß, 2008; Romer Thermen, n.d.). Taking into account a shallow groundwater temperature of maximum 12 °C (< 500 m depth) and a geothermal gradient of 10 + 30 °C/km for deep groundwater (> 500 m depth), this translates into a positive temperature anomaly of 1 to 8 °C. Additionally, the CO₂-content of water in Bad Breisig, 539 – 1515 mg/l (Hänel, 2020; Käß and Käß, 2008), is significantly elevated compared to the general threshold of 250 mg/l to be classified as Sauerbrunnen (Weertz and Weertz, 2007). Strain differences in the hinge zone of the NE-SW Hönningen-Seifen anticline are interpreted as the main cause leading to the slightly thermally anomalous, geyser-like springs in Bad Breisig (Käß and Käß, 2008; Schwille, 1961).

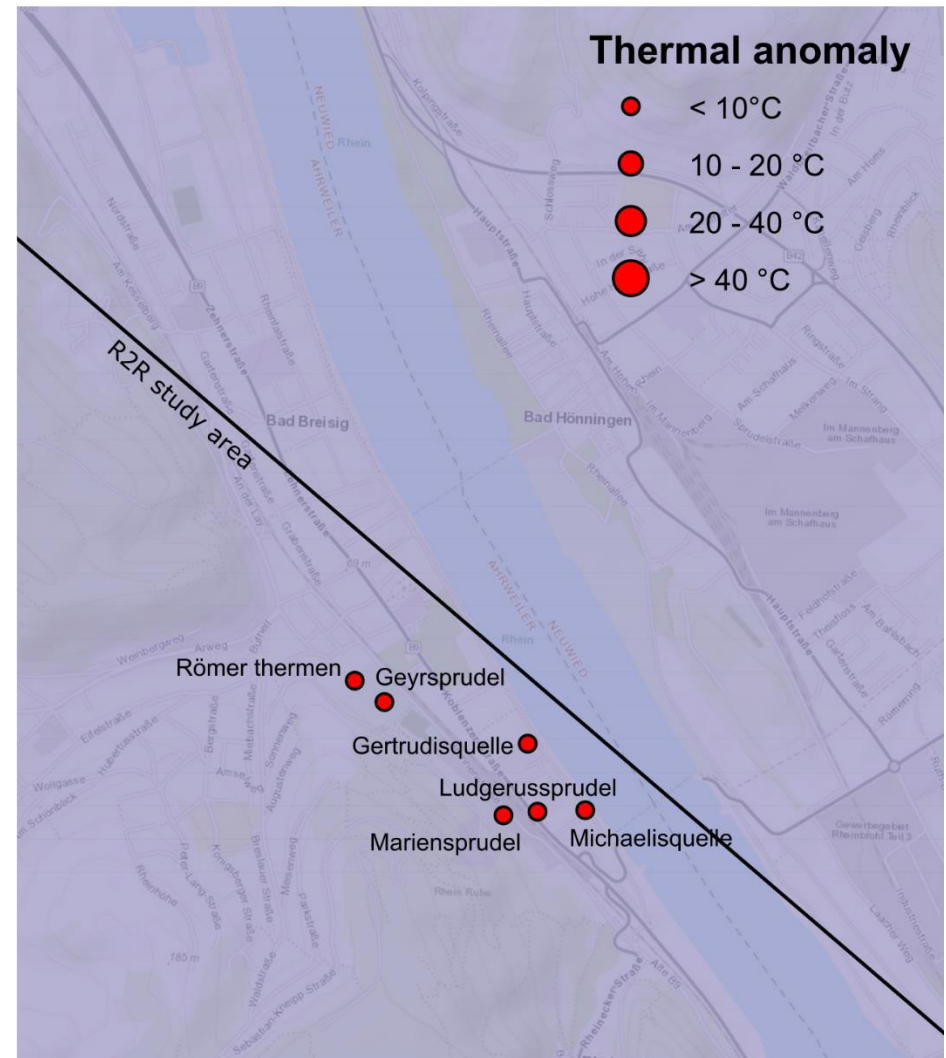
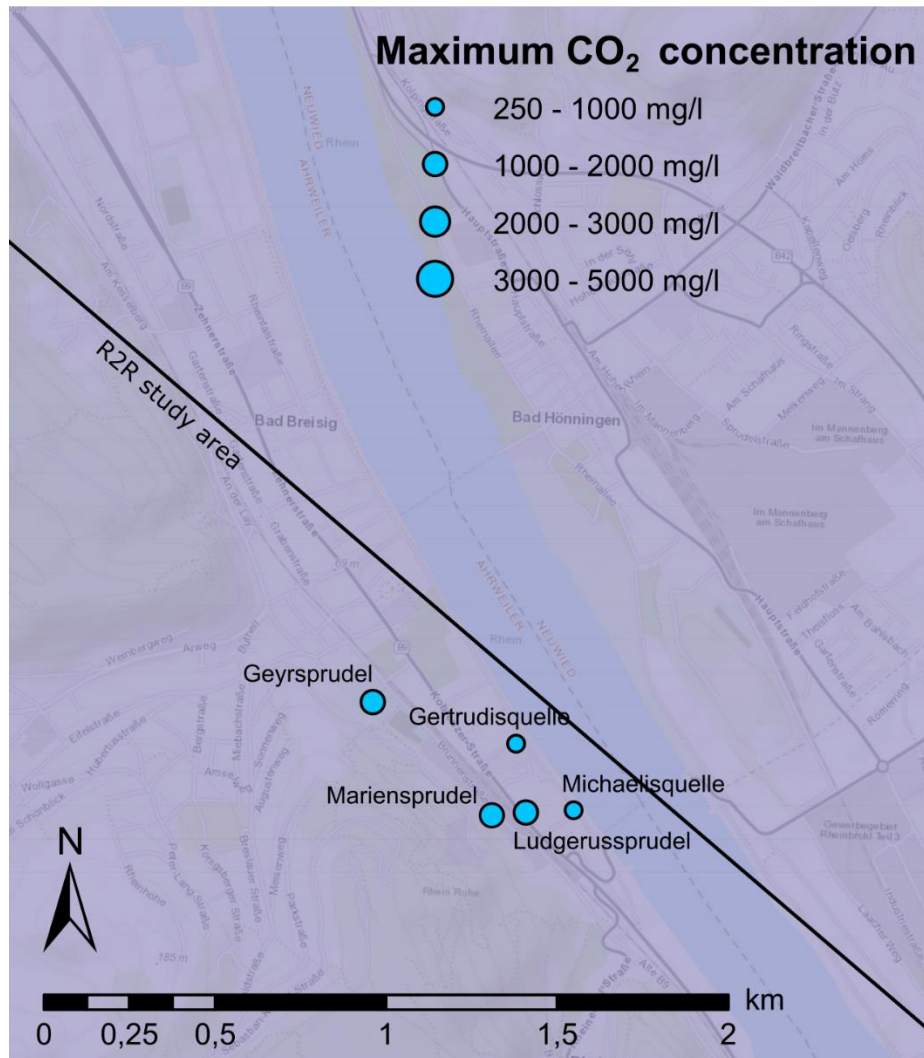


Figure 1: Thermal CO₂-rich water in Bad Breisig



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			
Römer Thermen	50°30'24" North 07°17'55" East	36									<2021	Römer Thermen (n.d.)
Geiersprudel (Geyrsprudel)	50°30'22" North 07°17'59" East	28.5	605	5.45				1515			<2008	Käβ and Käβ (2008)
		31.2		5.35	739	970	154	1120	2002			
		31.2 – 34	605	5.35	739	970				2002	Hänel (2020)	
Gertrudisquelle	50°30'18" North 07°17'22" East	13.5	98	1.30				960			<2008	Käβ and Käβ (2008)
		15	98								<2020	Hänel (2020)
Mariensprudel	50°30'12" North 07°18'19" East	25.5	630	4.38				1233			<2008	Käβ and Käβ (2008)
		33	630								<2020	Hänel (2020)
Michaelisquelle	50°30'12" North 07°18'31" East	13	25	2.01				539			<2008	Käβ and Käβ (2008)
		12	25								<2020	Hänel (2020)
Ludgerussprudel	50°30'12" North 07°18'24" East	27	608	6.34				1133			<2008	Käβ and Käβ (2008)
		30	620								<2020	Hänel (2020)

° TDS = Total Dissolved Solids

References

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Schwille, F., 1961. Die Mineralquellen des Mittelrheingebietes. Deutsche Gewässerkundliche Mitteilungen 5, 110-117.

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

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