# $CO_2$-rich water around Daun

Just outside the city of Daun (West Germany), three maars can be found: the Gemünder, Schalkenmehren and Weinfeld Maars. In addition, multiple $CO_2$-enriched “Quellen” are present (van Overmeeren, 2014). Water of some is available on the commercial market, under the name Dauner or Dauner Sprudel.

## See also

Volcanism in the Eifel

## Anomalies

At several location in the city centre of Daun, but also north and south of it, water wells up as natural spring or in artesian wells. While the water south of Daun is Na-rich (Na-Mg-$HCO_3$-$CO_2$-type), Mg and Ca dominate the chemical signature of water in the central area and north of Daun (Ca-Mg-(Na)-$HCO_3$) (van Overmeeren, 2014). The available data mostly indicate a significant enrichment in $CO_2$ of 1950 – > 3300 mg/l (Hänel, 2020; Käβ and Käβ, 2008; Weertz and Weertz, 2007). The Adolfquelle (253 mg/l) and Margarethen Quelle (1190 mg/l) are exceptions to that, but still exceed the threshold criterium to be classified as Säuerling (Weertz and Weertz, 2007).

Daun is situated on the NW-SE volcanic chain going from Ormond to Bad Bertrich. The now extinct volcanic activity still delivers $CO_2$, as indicated by the high flux density of mantle carbon in this region (May, 2005). The springs are located in a groundwater discharge area, where water (and dissolved gas) flows upwards along fractures and joints in Lower Devonian rocks (Weyer et al., 2012). More specifically, water reaches the surface, especially in valleys, via water circulation through the steep bedding planes and NW-SE fissures and faults (Käβ and Käβ, 2008; van Overmeeren, 2014).

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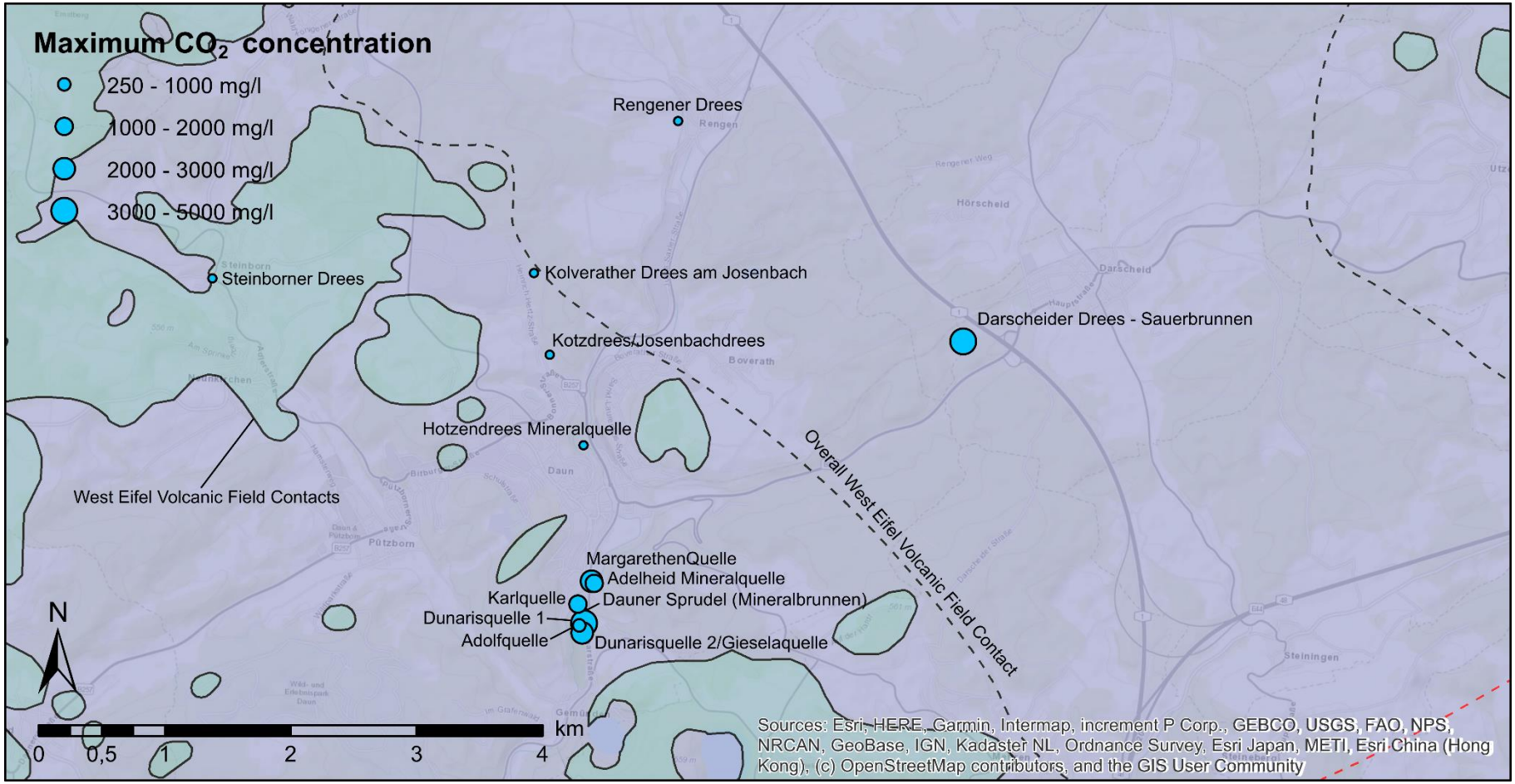


*Figure 1: $CO_2$-rich water around Daun*

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Data

| ID | Coordinates | T | Depth | TDS° | Cl | Na | $SO_4$ | Free $CO_2$ | He | $^3He/^4He$ | Analysis year | References |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | °C | m | g/l | mg/l | mg/l | mg/l | mg/l | ppmv | | | |
| Dunarisquelle 1 | 50°11'09" North 06°49'59" East | | | | 59.4 | 689 | 39 | 3020 | | | 2000 | Hänel (2020) |
| | | 7.3 | 12.1 | 2.66 | | | | 2030 | | | 2007 | Käß and Käß (2008) |
| | | | | | | | | 5000 | | | 2014 | van Overmeeren (2014) |
| Dunarisquelle 2/ Gieselaquelle | 50°11'06" North 06°49'58" East | 11.2 | 51.2 | 3.87 – 3.94 | 54.3 | 778 | 42 | 2100 | | | 2007 | Käß and Käß (2008) |
| Adelheid Mineralquelle | 50°11'20" North 06°50'02" East | | | | | | | | | 4.03 | 1992 | Griesshaber et al. (1992) |
| | | 11.9 | 51 | 4.61 | | | | 1950 | | | 2007 | Käß and Käß (2008) |
| Margarethen Quelle | 50°11'20" North 06°50'01" East | 11.8 | 68 | 4.98 | | | | 2010 | | | 2007 | Käß and Käß (2008) |
| Karlquelle | 50°11'14" North 06°49'56" East | 10.8 | 30 | 1.08 | | | | 1190 | | | 2007 | Käß and Käß (2008) |
| Adolfquelle | 50°11'08" North 06°49'57" East | 10.4 | 30 | 0.61 | | | | 253 | | | 2007 | Käß and Käß (2008) |
| Mineralbrunnen Dauner sprudel | 50°11'12" North 06°49'58" East | | | | | | | | | | | Datenbank der Kulturgüter in der Region Trier (2020) |
| Darscheider Drees - Sauerbrunnen | 50°12'30" North 06°52'30" East | | | | | | | > 3300 | | | <2007 | Weertz and Weertz (2007) |
| | | 9.6 | | | | | | | | | <2014 | Hänel (2020) |
| Mineralquelle Hotzendrees* | 50°09'37" North 06°49'17" East | | | | | | | | | | | Hänel (2020) |
| Steinborner Drees (Steema Drees)* | 50°12'36" North 06°47'19" East | | | | | | | | | 3.40 | 1992 | Griesshaber et al. (1992) |
| | | | | | 11.8 | 177.5 | 8 | | | | <2020 | Hänel (2020) |
| | | | | | | | | | | | | Weertz and Weertz (2007) |
| Kolverather Drees am Josenbach* | 50°12'42" North 06°49'32" East | | | | | | | | | | | Datenbank der Kulturgüter in der Region Trier (2020) |
| Kotzdrees/ Josenbachdrees* | 50°12'20" North 06°49'40" East | | | | | | | | | | | Hänel (2020) |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rengener Drees* | 50°13’24” North 06°50’29” East | 11.2 – 12.3 | | | | | | | | | <2020 | Hänel (2020) |
| | | | | | | | | | | | | Datenbank der Kulturgüter in der Region Trier (2020) |

° TDS = Total Dissolved Solids

* Springs in the central and north Daun area

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