



## Thermal anomalies in the Campine basin

Some borehole measurements and water temperatures in the Campine Basin show a positive thermal anomaly.

### Anomalies

Assuming a  $10 + 30 \text{ }^\circ\text{C}/\text{km}$  geothermal gradient, an anomaly up to  $27^\circ\text{C}$  ( $104 \text{ }^\circ\text{C}$  at 2225 m depth) was observed in the Turnhout borehole (Grosjean, 1954). These anomalies all occur at the karstified top of the Dinantian limestones (Vandenberghe and Bouckaert, 1980), which form the main reservoir layer for subsurface applications (e.g. gas storage, geothermal) in the area. The thermal anomaly is too strong to be explained by conduction only and must be related to fluid flow. They might relate to local convective and/or advective flow along fault zones, but further research is needed.

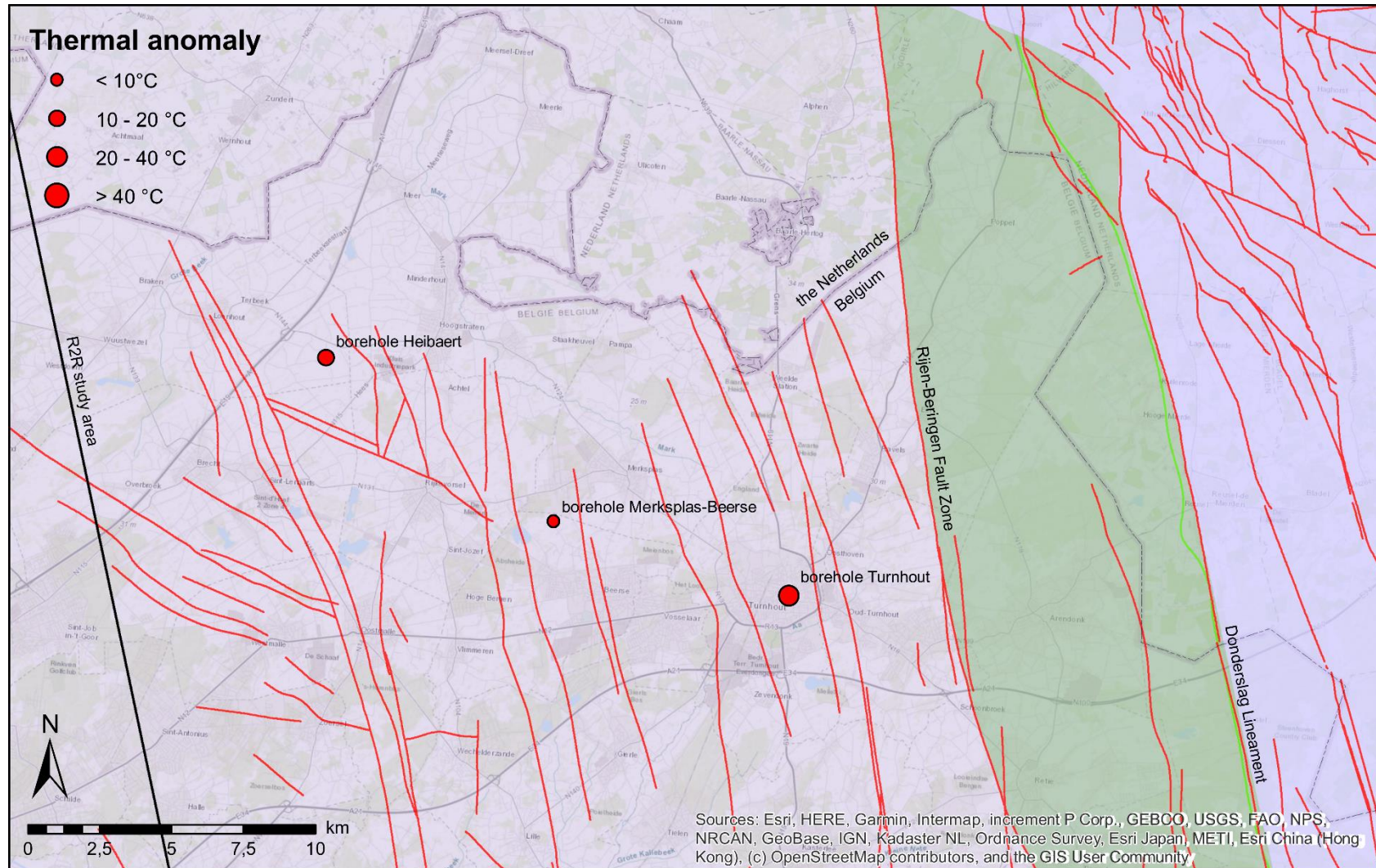


Figure 1: Thermal anomalies in the Campine Basin



## Data

ID	Coordinates	T	Depth	TDS°	Cl	Na	SO <sub>4</sub>	Free CO <sub>2</sub>	He	<sup>3</sup> He/ <sup>4</sup> He	Analysis year	References
		°C	m	g/l	mg/l	mg/l	mg/l	mg/l	ppmv			
Borehole Turnhout	51°19'23" North 04°57'05" East	85.4*	1877								1954	Grosjean (1954)
		102.8*	2185								1954	
		103.6*	2225								1954	
				135								<1956
Borehole Heibaert	51°23'21" North 04°42'14" East	63	1102	96 – 114							<1980	Vandenberghe and Bouckaert (1980)
Borehole Merksplas – Beerse	51°20'30" North 04°49'39" East	48.8*	1100								1983	Vandenberghe et al. (2000)
		66.6*	1600								1983	
		72.2*	1761								1983	
		73.9		120 – 147.75	70900 – 81000	33500 – 41000	652 – 708				<2000	

° TDS = Total Dissolved Solids

\* Rock temperature instead of water sample temperature.

## References

- Grosjean, A., 1954. Mesures de température aux profondeurs de 2.185 et 2.225 m dans le sondage de Turnhout (Campine belge). Bulletin de la Société belge de Géologie 63, 193-201.
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- Vandenberghe, N., Duser, M., Boonen, P., Sun Fan, L., Voets, R., Bouckaert, J., 2000. The Merksplas-Beerse geothermal well (17W265) and the Dinantian Reservoir. Geologica Belgica 3, 349-367.

## Cite this source

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