Belgian Geological data for deep geothermal Energy

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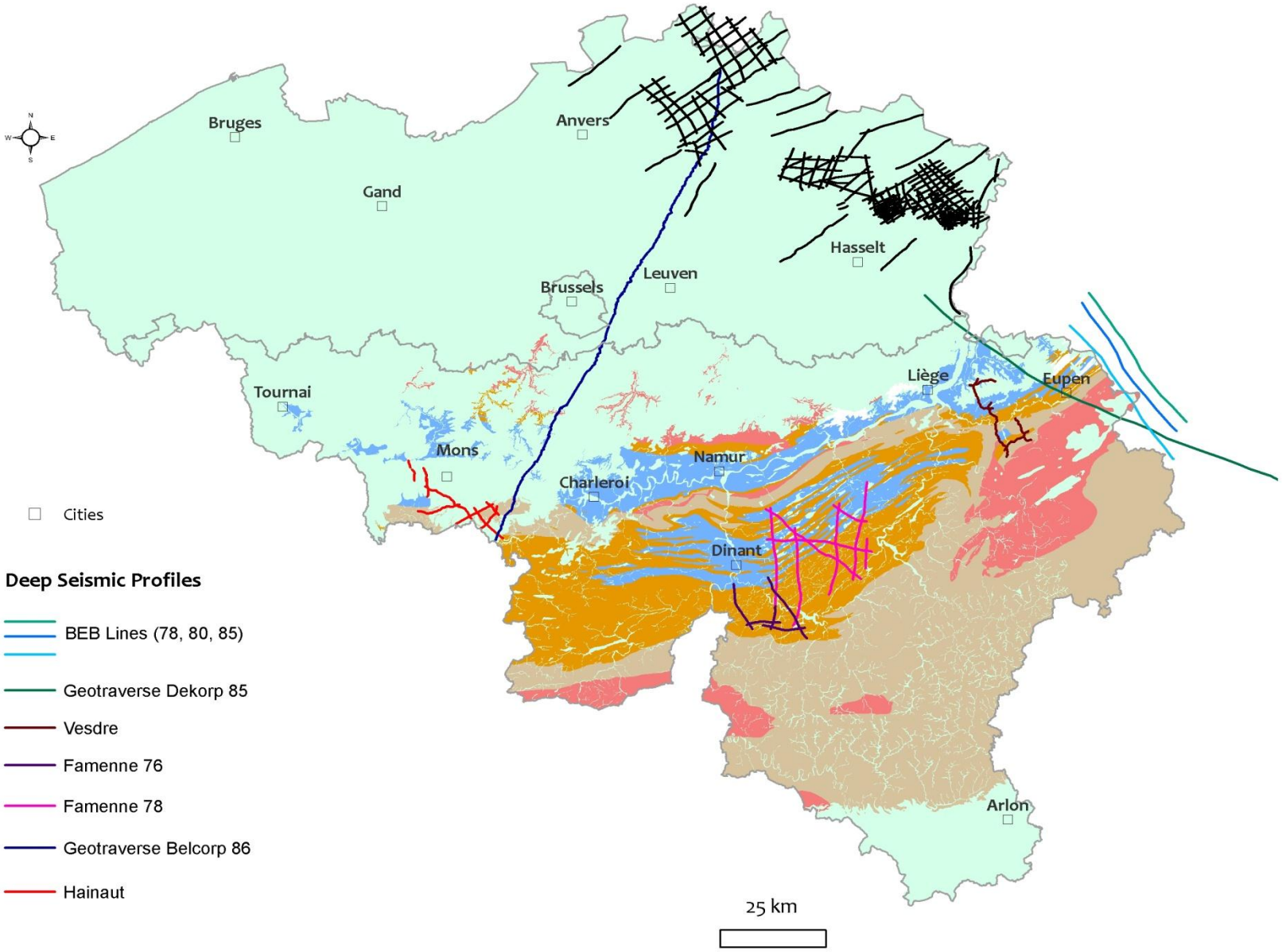
Geological Survey of Belgium

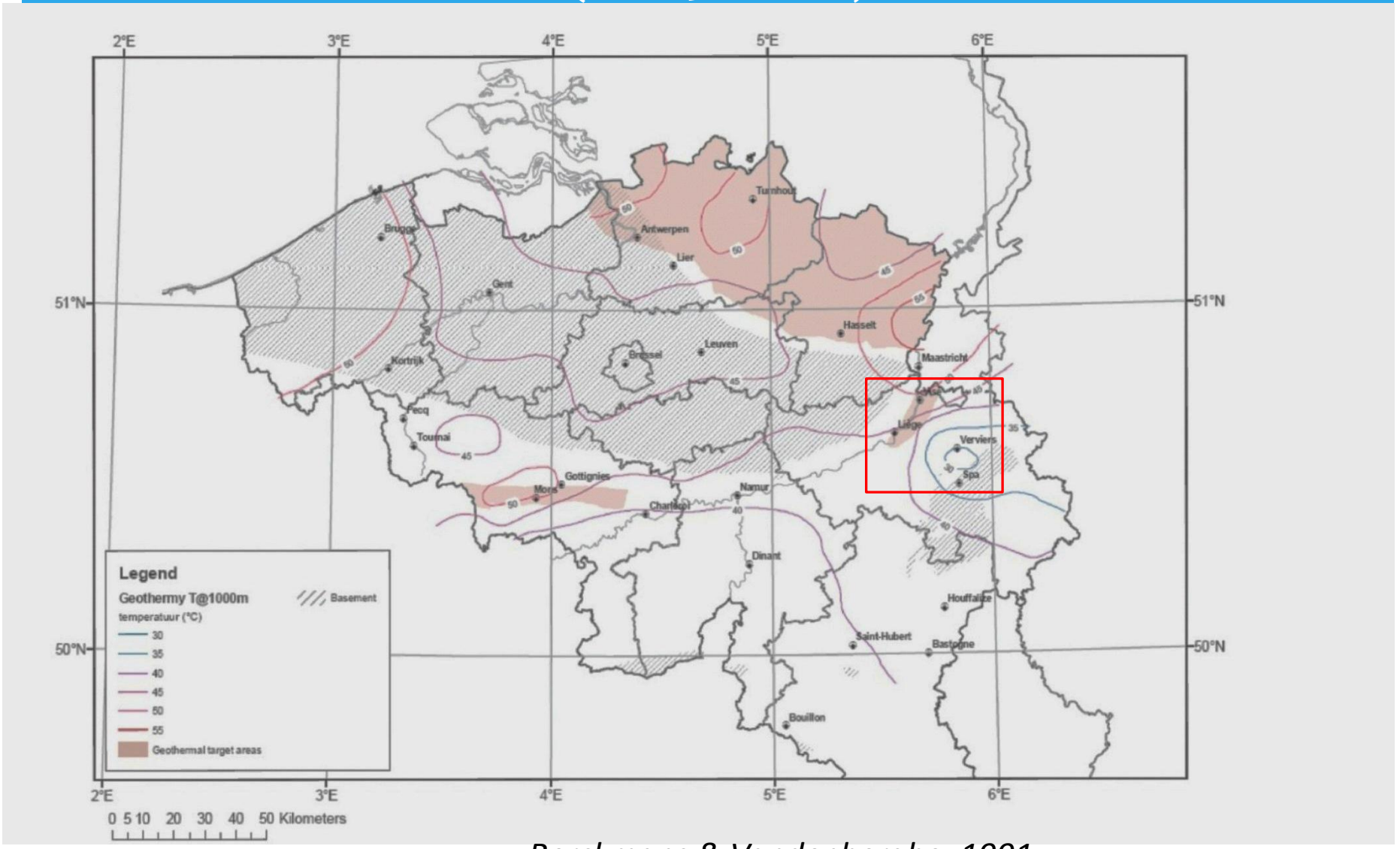
GEOELEC

museum

Available public data at the GSB

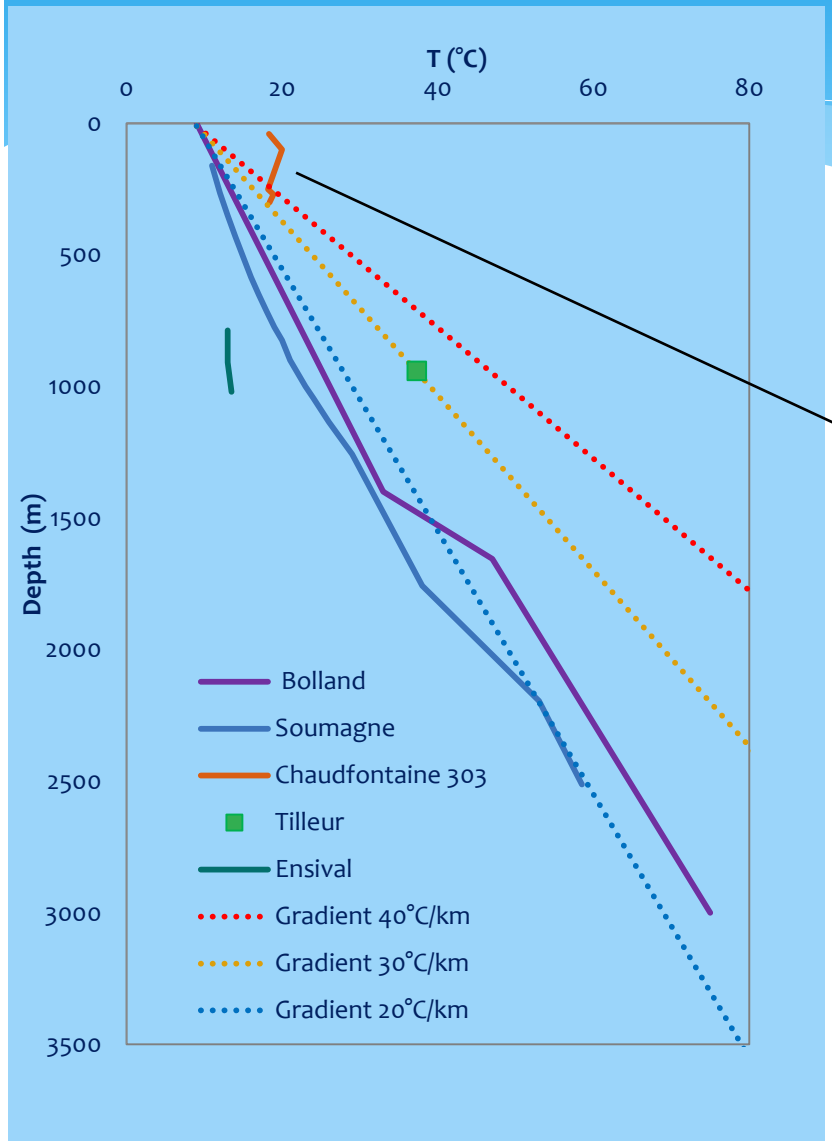


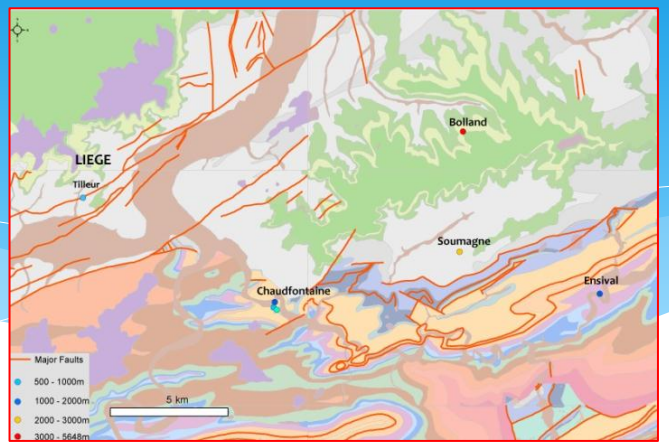
The standard hypothesis: a moderate geothermal gradient (20°C-30°C/km)

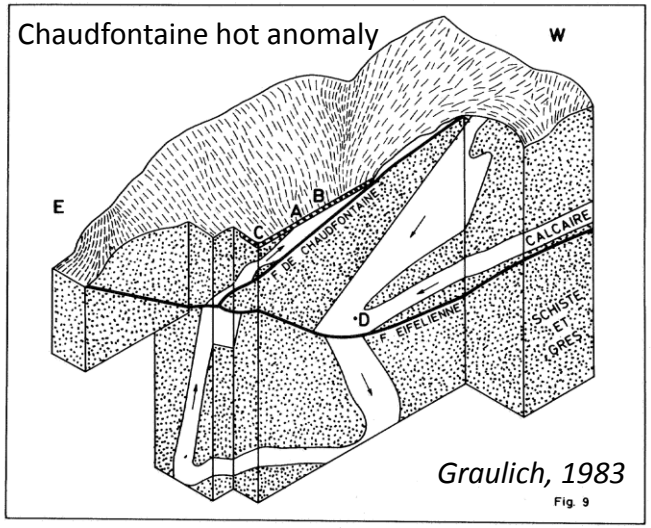


Berckmans & Vandenberghe, 1991

Geothermal gradient variability in Belgium (e.g. eastern Liege area)







➡ The temperature measurements variability is explained by lithology changes and by deep hydrothermal circulation (faults, karstic areas).

Last year projects at the GSB

• Deep geothermal risks and obstacles assessment in Wallonia (by Ecorem in association with GSB)- 6 months

• Update of deep geothermal ressource assessment of Wallonia (by the GSB for SPW)- 1 year

This project concerns low to high enthalpy (depth >300m). The main goal was to provide two geothermal potential maps (300-3000m and 3000-6000m) through a geothermal platform (GIS) including geological, hydrogeological, geophysical, geochemical, environmental and socio-economical data.

Main Conclusions:

The Hainaut basin is relatively well known, it is a favourable area for prospective deep geothermal projects. A considerable potential is also present along the Charleroi-Liege axis and has to be confirmed by geophysical prospection.

→ The potential maps will be published on the cartographic portal of the Walloon Region.

Perspectives at the GSB

- A long-term investigation starts this year on sedimentary rock **fracturation mechanisms** and its implications for porosity, permeability.

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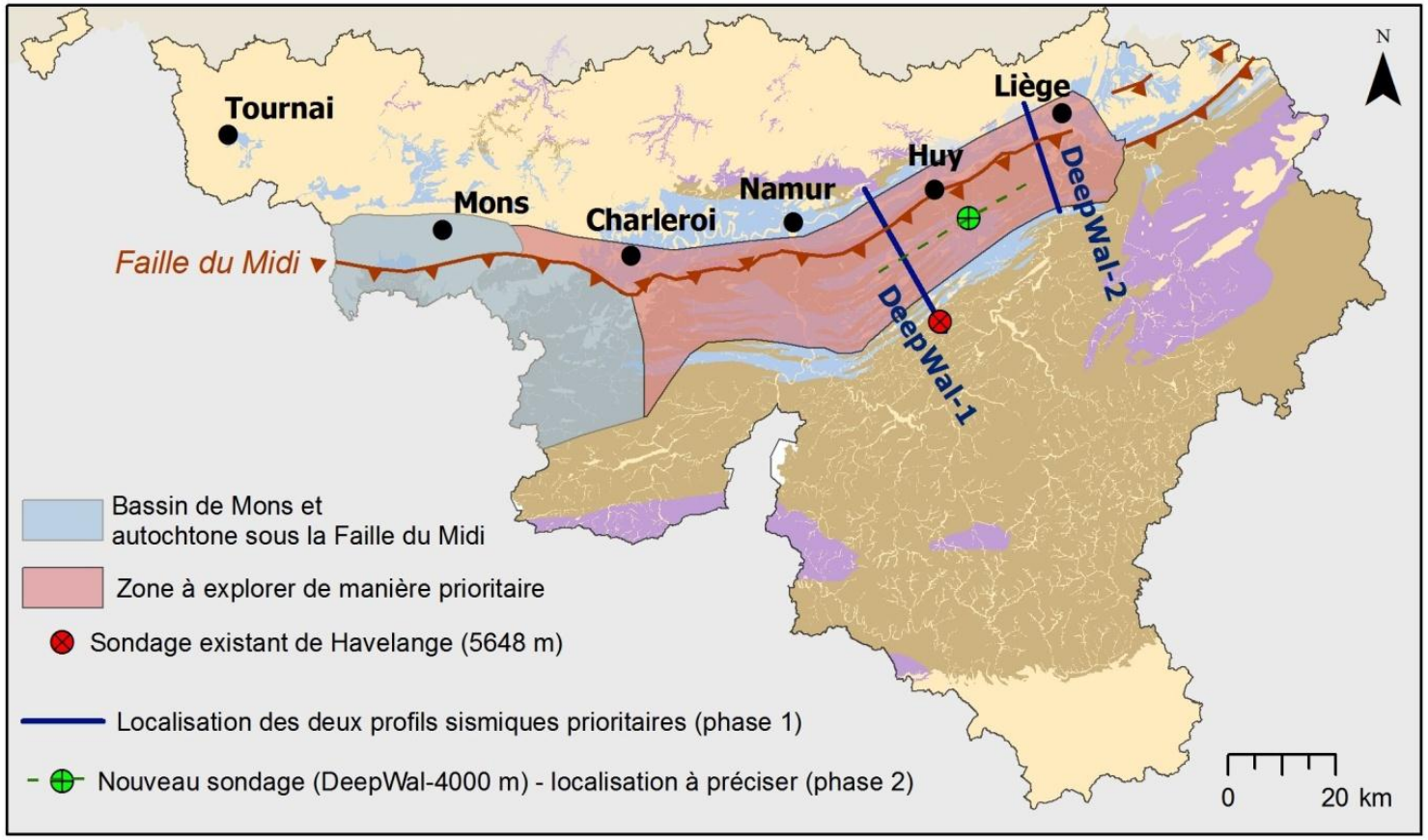
- Missing data for great depth: **a new data acquisition phase is necessary** (deep seismics, geothermometry, MT, etc.)



Prospective projects

- **Mol Project (VITO):** The first real project for high temperature in Belgium and exemplary for the Campine basin, despite the risk of unknown reservoir properties.

- **Hainaut Basin (Earth Solutions/Umons/IDEA):**
  - The carboniferous aquifer exploited at Saint-Ghislain has a stable production since 1986 (start-up date), implying a high probability of success for the heat geothermal projects focusing on the same reservoir ("Ghlin reopening" and "Mons station" projects).
  - The third project (Earth Solutions / R. De Schaetzen) concerning geothermal electricity production needs to obtain a much higher density of information necessary to reduce geological risks.

Conclusions

- These projects represent the first test cases at great depth in Belgium, which is unknown territory.
- This means there is a substantial risk but also opportunities.

Thank you for your attention …