Geophysical investigations to evaluate the deep geothermal potential in Wallonia

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To explore the potential of geothermal energy in Wallonia, gathering primary subsurface data is essential. As part of this effort, seismic acquisition was a critical component of the DGE-ROLLOUT project (Interreg North-West Europe), which concluded in October 2023. The project's numerous new cross-border seismic lines provided significant insights into geological uncertainties, particularly in border regions (BE/DE, BE/NL). These efforts facilitated the integration of different mapping areas of the main targeted geothermal reservoir (Dinantian) and enhanced knowledge exchange on potential geothermal aquifers.

In Wallonia, the Geological Survey of Belgium (GSB) conducted 63.5 km of seismic lines in December 2022 in the eastern and western parts of Namur province. This survey aimed to investigate the extension of Dinantian limestones beneath the Midi-Eifelian Fault. The findings offered new perspectives on the geometry of the Midi-Eifelian Fault, the potential location of Dinantian limestones at depths of 4-5 km, and the presence of Givetian-Frasnian carbonates at shallower depths (2-3 km) in the Condroz area. Concurrently, the reprocessing and reinterpretation of the Dekorp 1A line indicated a high likelihood of Dinantian carbonates at suitable depths for deep geothermal energy in the Eupen region.

Encouraged by these promising results, the Walloon government has approved further geophysical investigations in 2024. The WalScan project aims to acquire approximately 400 km of seismic lines across four areas: Charleroi, Liège, Verviers/Eupen, and Wavre/Louvain-La Neuve. Coordinated by the GSB, WalScan involves experienced partners such as UMONS, ULG, and EPI Ltd, who bring extensive geophysics expertise and regional geological knowledge. Scheduled for Autumn 2025, the campaign will focus on identifying the Dinantian carbonates in the first three areas, while the London-Brabant Massif in Walloon Brabant will be investigated using a series of complementary geophysical methods.

SESSION 12 - GEO-ENERGY

Fault-bound AVO anomalies in Dinantian limestone of the Campine Basin