FLUID ATLAS FOR GEOTHERMAL FLUIDS AND CRITICAL RAW MATERIALS

Open data. Spatial insight.
Sustainable future.

The CRM-geothermal Fluid Atlas is a web-based, interactive mapping platform that presents geothermal fluids and their associated critical raw materials (CRMs) in a spatially integrated form across Europe and Eastern Africa. It makes complex geothermal, geochemical, and geological information accessible, transparent and comparable by placing it into a clear geographic context.

What can you explore?

Explore

The spatial distribution of geothermal sites and associated samples across Europe and East Africa

Examine

Variations in fluid properties and chemical composition, including CRM-relevant element concentrations

Assess

The availability and spatial coverage of data for selected parameters

Identify

Spatial patterns and sampling locations with elevated measured concentrations

Support

Scientific research, resource assessment and data-driven decision-making

What data does the Atlas include?

The Atlas integrates multiple datasets from both legacy and newly generated sources, harmonised into a common structure and georeferenced for consistent comparison.

Geothermal wells | **Fluid samples** | **Rock samples** | **Gas compositions** | **Mineral scales & precipitates**

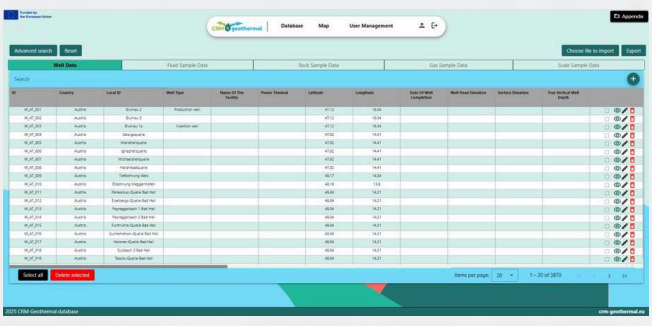
Each site includes detailed analytical results with metadata on sampling conditions, analytical methods and references, ensuring transparency and reliability.

Open, Fair & Accessible to all

The Fluid Atlas follows FAIR data principles:

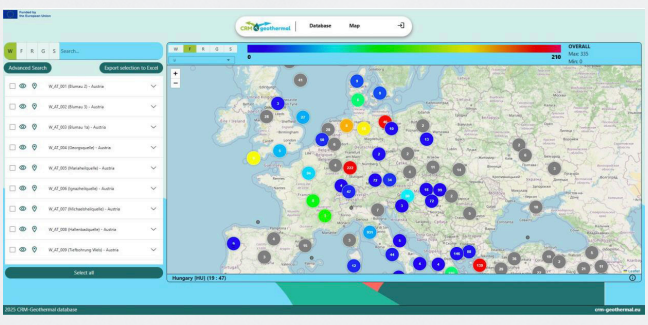
Findable | **Accessible** | **Interoperable** | **Reusable**

Two complementary views



Database view

- Browse and query the underlying database using keyword searches or advanced attribute-based filters, including temperature, fluid chemistry, CRM-relevant elements and other parameters
- View detailed analytical results and associated metadata.
- Export selected records for further analysis.
- Registered users can upload new data and edit their own records, while administrators can manage and quality check all records.
- New and updated records are immediately reflected on the map, making the Atlas a live, continuously growing resource.



Map view

- Explore the spatial distribution of geothermal wells and associated samples through interactive maps with search and filtering options.
- Select from the numerical variables available for each data type, including well and sampling parameters, physicochemical properties, major ions, trace elements, dissolved gases and isotope values.
- Display the selected variable using graduated colours. The colour scale automatically adjusts to the visible map extent as you zoom, revealing both broad spatial patterns and local differences.
- Compare the minimum and maximum values for the full database with those for the currently visible map extent, and identify locations with relatively high or low measured values.
- Click individual points to view detailed analytical results and associated metadata.

Visit the Fluid Atlas crmgeothermal.iit.uni-miskolc.hu

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