



CRM-GEOTHERMAL DATABASE AND FLUID ATLAS FOR EUROPE AND EAST AFRICA

USER GUIDE

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Overview

The CRM-Geothermal Fluid Atlas and Database tool was developed within the framework of the Horizon Europe project “CRM-Geothermal – Raw materials from geothermal fluids: occurrence, enrichment, extraction.” The system was designed and implemented by the University of Miskolc, with contributions from project partners across Europe. It provides access to a comprehensive database of geothermal fluid, rock, well, and gas sample data. The tool allows users to search, visualize, and export datasets supporting research on critical raw materials in geothermal environments.

Getting started

The CRM-Geothermal web application can be accessed at <https://crmgeothermal.iit.uni-miskolc.hu>. The system has three access levels: User, Registered User, and Administrator. To ensure database security and maintain data quality, automatic registration is disabled. If you wish to become a registered user to contribute to the database, please contact Katrin Kieling (Project Coordinator, katrin.kieling@gfz.de) or Anna Seres (Leader of WP1, anna.seres@uni-miskolc.hu). The following sections describe the tools available to each access level, but in general Users can view, search, and export data, Registered Users can additionally upload and edit data, but may edit only their own uploads, and Administrators have full privileges on all data and can approve or remove user registrations. Tools only available for only registered users or admins are described in *italics*.

Detailed Features

The following pages present the main functions of the CRM-Geothermal web application through numbered screenshots and brief explanations. The tool consists of two primary views: the Database view (Figure 1.) and the Map view (Figure 7.). In the following guide, these are displayed in the two main images, where the numbered labels indicate the layout and functionality of each component. Additional smaller images illustrate what appears when specific functions are selected, helping you understand how to navigate, search, upload, edit, and export data in the system. To display the Map view properly, please enable location access in your browser and ensure that location services are turned on in your computer’s system settings.

Support

If you encounter any issues while using the CRM-Geothermal web application, or you have questions related to access rights, data upload, or system functionality, please contact Katrin Kieling (katrin.kieling@gfz.de) or Anna Seres (anna.seres@uni-miskolc.hu). Feedback and suggestions for improving the tool are also welcome.

Version Information

This document reflects the current functionality of the tool as of March, 2026 and will be updated as new features are introduced. Please refer to the project website or contact the project coordinators for the latest version.

The screenshot displays the CRM-geothermal Fluid Atlas and Database tool interface. The top navigation bar includes the CRM-geothermal logo and menu items: Database (1), Map (2), User Management (3), and user profile icons (4, 5). On the right, there are links for Appendix (22), Choose file to import (20), and Export (21). The main content area is divided into tabs: Well Data (selected), Fluid Sample Data, Rock Sample Data, Gas Sample Data, and Scale Sample Data. A search bar (15) is located at the top left of the Well Data tab. Below it is a table with columns: ID, Country, Local ID, Well Type, Name Of The Facility, Power thermal (6), Latitude, Longitude, Date Of Well Completion, Well Head Elevation, Surface Elevation, True Vertical Well Depth, and Mea (16). The table lists wells from W_AT_001 to W_AT_018. A search filter (14) is applied to the Country column, showing 'Austria'. A filter (8) is applied to the Well Type column, showing 'Injektion well'. A filter (9) is applied to the Local ID column, showing 'W_AT_009_FS_001' and 'W_AT_009_RS_001'. The table has a pagination bar at the bottom showing 'Items per page: 20' (10) and '1 - 20 of 3870'. At the bottom left, there are buttons for 'Select none' and 'Delete selected' (17, 18). On the right side of the table, there are action icons for each row, including a checkbox (11), a magnifying glass (12), a pencil (13), and a trash can (19).

ID	Country	Local ID	Well Type	Name Of The Facility	Power thermal	Latitude	Longitude	Date Of Well Completion	Well Head Elevation	Surface Elevation	True Vertical Well Depth	Mea
W_AT_001	Austria	Blumau 2	Production well			47.12	16.04					
W_AT_002	Austria	Blumau 3				47.12	16.04					
W_AT_003	Austria	Blumau 1a	Injektion well			47.12	16.04					
W_AT_004		Georgsquelle				47.02	14.41					
W_AT_005		Mariaheilquelle				47.02	14.41					
W_AT_006		Ignazheilquelle				47.02	14.41					
W_AT_007	Austria	Michaelshelquelle				47.02	14.41					
W_AT_008	Austria	Hallenbadquelle				47.02	14.41					
W_AT_009	Austria	Tiefbohrung Wels				48.17	14.04					
W_AT_010	Austria	Ötbohrung Meggenhofen				48.18	13.8					
W_AT_011	Austria	Paracelsus-Quelle Bad Hall				48.04	14.21					
W_AT_012	Austria	Eiselbergs-Quelle Bad Hall				48.04	14.21					
W_AT_013	Austria	Feyreggerbach 1 Bad Hall				48.04	14.21					
W_AT_014	Austria	Feyreggerbach 2 Bad Hall				48.04	14.21					
W_AT_015	Austria	Furtmühle-Quelle Bad Hall				48.04	14.21					
W_AT_016	Austria	Gunterhöhen-Quelle Bad Hall				48.04	14.21					
W_AT_017	Austria	Haller-Quelle Bad Hall				48.04	14.21					
W_AT_018	Austria	Sulzbach 2 Bad Hall				48.04	14.21					

Figure 1: Database view of the CRM-geothermal Fluid Atlas and Database tool

DATABASE VIEW

Top navigation bar

1. Database: switch to the Database view here
2. Map: switch to the Map view here
3. *User management: adding or deleting users or changing their role is possible here. Accessible only to administrators.*
4. *User profile: checking and modifying username, name, institution and email address. Available to registered users and admins.*
5. Login/logout: login is only possible after registration from one of the administrators with the e-mails indicated above.

General structure, layout

6. Well, fluid, rock, gas and scale data on different sheets
7. Attributes of the data
8. List of wells, fluids, etc
9. ID of fluid, rock, gas or scale, belonging the given well. Clicking on it takes you to the chosen fluid, rock, etc data.
10. Number of wells, fluids, etc by page

Data management

11. View data: Data of the selected well, fluid, gas, rock or scale in a view window. The small globe icon shows the location of the selected well. Figure 2., 3.
12. *Edit data: Data of the selected well, fluid, gas, rock or scale in an edit window. Here you can modify any data, but only in case it is data you uploaded yourself. Administrators can modify any data. The small globe icon shows the location of the selected well to help ensure the coordinates are correct. Available to registered users and admins. Figure 4.*
13. *Delete data: Deletes the selected data. Registered users can only delete (or edit) the data uploaded by themselves. Admins can delete any data. Deleting a well deletes all the corresponding fluids, rocks, gases and scales.*

Well Data  ✕

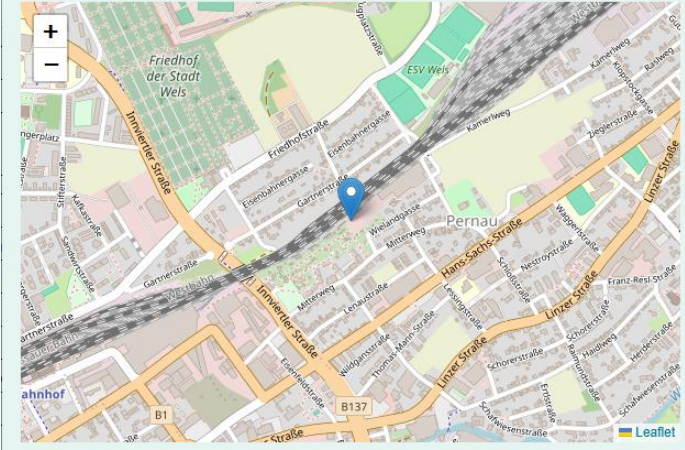
Basic Info ^

Well ID: W_AT_001
 Local ID: Blumau 2
 Country: Austria
 Facility Name:
 Well Type: Production well
 Latitude: 47.12°
 Longitude: 16.04°
 Date Of Well Completion:
 Power Thermal: -

Depth & Elevation ^

Well Head Elevation: -
 Surface Elevation: -
 True Vertical Well Depth: -
 Measured Well Depth: 2843 m

Figure 2. Data view window for wells



Country: Austria
 Country code: AT
 Latitude: 48.17
 Longitude: 14.04

OK

Figure 3. Location check with the globe icon

Figure 4. Data editor window for wells

Search options, selections

14. General search: free-text search. It searches for the typed characters in the whole dataset of the active sheet. E.g. if the Well sheet is active, the search will be conducted in the whole well sheet, it does not have to be related to any attribute, but the search will not run for the other sheets

15. Advanced search: searches for the values of each attribute. More than one search criteria can be added from different sheets. In this latter case there is “AND” relation between the different criteria. Figure 5.

16. Checkmark for selecting data in case more wells, fluids, rocks, gases or scales need to be deleted or exported at once

17. Select all/Select none: Select all: Selects all items on the active sheet. If no search was made, this means all wells, fluids, etc. If a search was conducted previously, select all selects the result of the search. Select none: clears selection. You can remove all checkmarks from the active sheet (well, fluid, rock, etc)

18. Delete selected: deletes the selected rows (marked with a checkmark). In case a well is deleted, the corresponding fluids, rocks, gases and scales are also deleted.

Sample	Attribute	Operator	Value	Value
Well	Outflow Temperature	greater than	70	
Well	Well Yield	greater than	100	
Fluid	Li	greater than	50	
		equals		

Figure 5. Advanced search of CRM-geothermal Fluid Atlas and Database tool

Data import/export

19. Add new well/fluid/rock/gas/scale sample: A new item can be added and the data typed in through the data edit window. Fields marked with red are mandatory. Available to registered users and admins. Figure 6.

20. Choose file to import: Adding new data is possible in two ways. One is typing the data directly into the tool through the tool's data edit interface, see in previous point. The other option is importing it from an excel file with this button. In order to successfully upload the data, it has to be in the official CRM-geothermal excel template, available for download from <https://crm-geothermal.eu/>.

21. Export: You can export selected data into xlsx format.

22. Appendix: You can download the files:

- CRM-geothermal Fluid Atlas User Guide
- Guidelines for Data Collection
- CRM-geothermal data Collection Template

Well Data

Well ID * format: W_HU_002	Name of the facility	Country*
Local ID for well*	Date of well completion year	Latitude* °
Well type	Power MWth	Longitude* °

Wellhead elevation amsl	True vertical well depth m	Top of screened interval m	Top of screened interval m
Surface elevation amsl	Measured well depth m	Bottom of screened interval m	Bottom of screened interval m
Hydraulic head amsl	PZ data MPa/	PZ data depth m	

Bottomhole temperature °C	Outflow temperature °C	Well yield m³/	Scaling exists ▼
Depth of measured bottomhole temp m	Year of outflow temp. measurement year	Year of well yield measurement year	Inhibitor added ▼
	Remarks on well yield measurement	Geothermal gradient in °C/100m	

References for the data	Remarks
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Save data Cancel

Figure 6. Add new data window for wells. Fields marked with red are mandatory

MAP VIEW

General structure, layout

23. List of wells: The left side of the view shows the list of the wells, while the right side shows their location on the map.

24, 25. Corresponding fluid, rock, gas and scale ID: If the well has fluid, rock, gas or scale data, the ID of these can be seen by clicking the well. Clicking on these ID shows the fluid, rock etc. data in the data view window.

Data Management

26. View data: data of the given well can be seen in the data view window.

27. Location pin: The map zooms in to the selected well, when clicked on it.

Search options, selections

28. General search: free-text search. It searches for the typed characters in the whole dataset of the sheet selected beside the search box (W-well, F-fluid, R-rock, G-gas, S-scale). E.g. if the W is selected, the search will be conducted in the whole well sheet, it does not have to be related to any attribute, but the search will not run for the other sheets

29. Advanced search: searches for the values of each attribute. More than one search criteria can be added from different sheets. In this latter case there is "AND" relation between the different criteria. Figure 5.

30. Select all/select none: Select all: Selects all wells. If no search was made, this means all wells of the database. If a search was conducted previously, select all selects the result of the search. Select none: clears selection. All checkmarks are removed.

31. Pin on the map: clicking on any pin on the map selects the corresponding well, which appears in the left pane.

Graduated colour view

32. Selection box for graduated colour view: Any numerical variables can be represented on the map by graduated colours. Select datasheet first (W-well, F-fluid, R-rock, G-gas, S-scale), then from the drop down menu, select the desired numerical element, property, etc..

33. Minimum and maximum value of the selected numerical variable in the database.

34. Minimum value of the selected variable in the current map extent

35. Maximum value of the selected variable in the current map extent

36. Map navigation and box selection: pins/wells can be selected by drawing a rectangle on the map by holding the right mouse button.

37. Coordinate and country of the selected well.

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