

## Deliverable

### Portal, Version 2

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## 1 INTRODUCTION

The EGDI platform and its component have been extended through the GIP project and are still being extended.

The platform consists of the following main components:

- The EGDI web GIS platform
  - The EGDI administration module
- The EGDI metadata catalogue (MIcKA)
- The EGDI harvesting tool
- The EGDI document repository
- The EGDI advanced search module
- The EGDI repository search module

Of these systems the development of the metadata catalogue is finalised. The web GIS platform and the harvesting tool are up and running but new functionalities are being added. The administration module is up and running and a new version with support for adding data to the document repository are currently under test and extension together with the repository search component. The search module is currently under development and initial testing at the EGDI test platform.

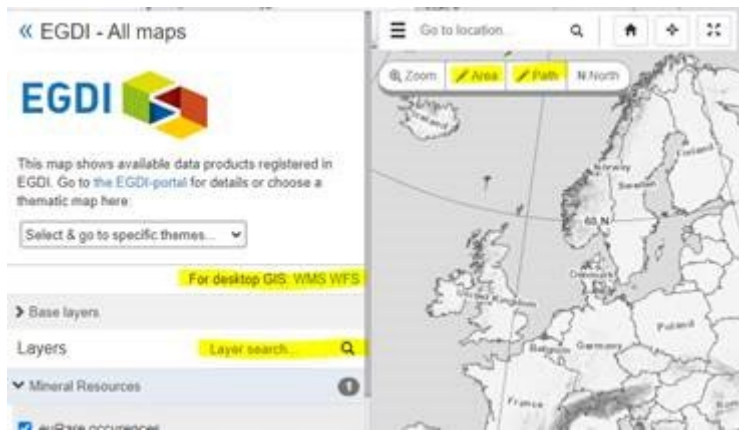


## 2 IMPROVED USABILITY AND DESIGN

During the previous phase of the GIP-project, the EGDI web GIS has continuously been extended with better usability and a more intuitive design.

Major improvements include a new distance and area measuring tool allowing users to access local areas of interest by drawing on the map and receiving distance and/or area measurements. Another improvement is the ability to access data products and data sets as WMS and WFS for embedding EGDI data in users' own desktop GIS software. Finally, a client-side layer search tool has been included. Now users can more easily find data products and data sets without knowing which group it belongs to. This feature will later probably be replaced with a more versatile search tool.

The three new improvements highlighted:



In the works is a complete overhaul of the user GIS tools available on the map. Currently, all tools and options are embedded within the map area. In a future version, a top navigation bar will be introduced where tools and options can be more intuitively explained and selected. This will reduce the map area but at the same time clear the map of hard-to-understand symbols and features. In the next version, the layer details will be extended with more layer-specific functionality. The tabular representation of content will disappear and be replaced with list of functions easier to extend.


Among the minor improvements bugs were corrected in the display of legends from WMS sources. When users moved the WMS layer shown, the legend and metadata would not adjust accordingly. Similarly, the embedded metadata view has been adapted to the new MICKA API.

### 2.1 Administration module

The administration module is where spatial data are uploaded to EGDI, where services are registered and where documents and files are uploaded to the document repository. The Administration module is also where the users upload spatial data to the platform, upload files to the document repository, register services and sets up layers and define maps. It is also in the administration module that data sets are linked to data set

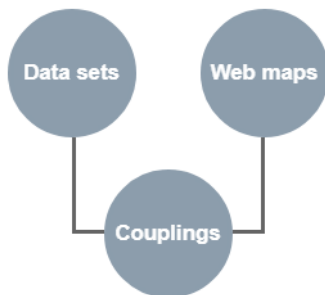


metadata in the metadata catalogue and where metadata are added to files in the document repository.

 [EGDI Admin](#)   [Data set](#)   [Web map](#)   [Couplings](#)

## EGDI ADMIN

This is where we register and maintain our data sets. Here, you can define new data sets and create interactive web maps on top.



### Documents / images

[📄 Upload documents / images](#)

[📁 Edit documents / images](#)

### Data sets

A data set is a well-defined table structure with visualization included. Sources can be database, WFS, WMS, shape files or geopackage.

[📄 Upload geopackage file](#)

[📄 Upload shape files](#)

[✍️ Search and create data sets \(advanced\)](#)

The administration module is still under development and testing and it will be extended with more functionality for example to upload 3D models and to register documents by DOI.



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### **3 HARVESTING TOOL**

The EGDI harvesting tool is made for harvesting data delivered by services from many data providers who all contribute to one single dataset.

The harvesting is done in order to ensure that all data are available at the EGDI platform and overcome the fact that if all the data providers have an uptime for their individual services at 95% the combined dataset will very often not be complete.

The harvesting tool is in production but a new version to handle some new features described in the GIP-P report D3.2.2, paragraph 12 including the updated data model for MIN4EU database is under development



## 4 SEARCHING TOOLS

The search tools being developed for the EGDI platform will be more advanced than promised in the project description. It will be possible to

- Search metadata directly from the metadata catalogue
- Search through the data in the document repository (including searching inside uploaded pdf-documents)
- Combined search through metadata, documents and data

### 4.1 Metadata search through the EGDI metadata catalogue

The screenshot displays the EGDI Metadata search interface. On the left, there is a map and a search bar containing 'any text'. Below the search bar are several filter options: 'Only inside the extent', 'Everywhere', 'Title', 'Title + Abstract', 'Resource type', 'INSPIRE theme', 'GeoERA keywords', 'Project name', 'Metadata Organisation', 'Country', 'Harvested from', and 'Sort by'. The search results are displayed on the right, showing a list of metadata entries with their titles and brief descriptions. The entries include 'Aa Indices', 'Abandoned mine lands', 'Ab initio calculations and high P-T experiments on iron, iron alloys and other materials (NERC Grant NE/M015181/1)', 'Accessions to the National Geological Records Centre', and 'Accretion of the lower oceanic crust: Reconciling evidence of hydrothermal fluid fluxes with mineral cooling rates from ODP Hole 1256D, IODP Exp335 (NERC grant NE/L000059/1)'. Each entry has a small icon and a 'Metadata Contact' link.

Figure 1: Through the EGDI metadata catalogue you can search through all the metadata.

<http://www.europe-geology.eu/metadata/>

### 4.2 Repository search

The repository search is made especially for searching through the EGDI document repository and only through this. The document repository supports the following formats:

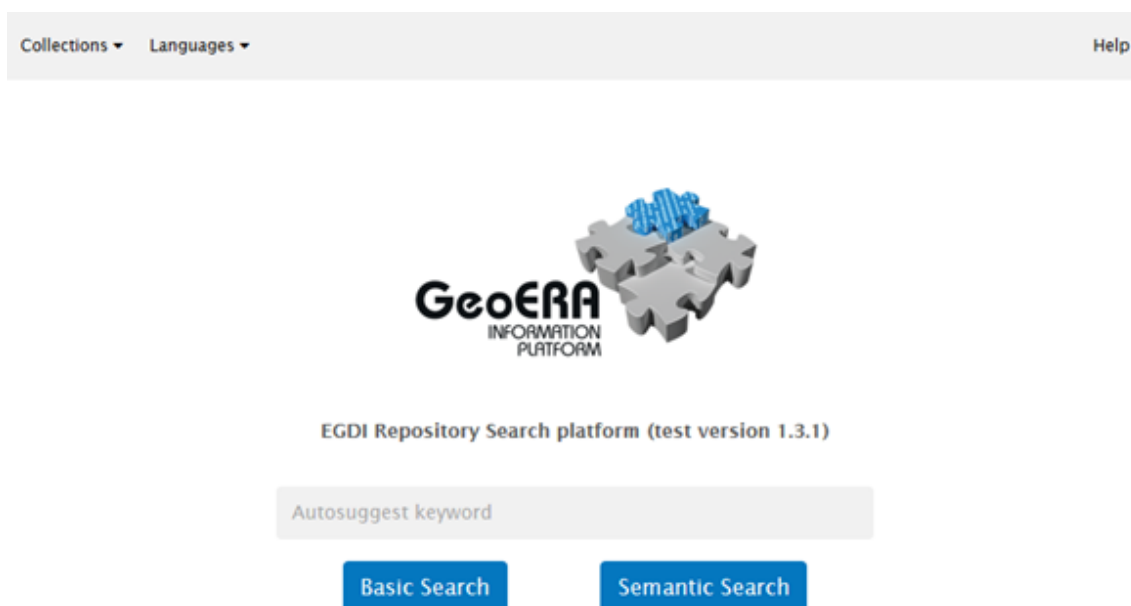
- Documents – pdf
- Documents by reference – DOI



- Pictures – jpeg, jpg, png and tiff
- Tabular data – CSV (comma separated files)

The ‘EGDI document repository search’ thematic application is the single-entry point through which the user interacts with the repository search system and makes his search(es). It is an application that runs in the users’ browser, and which makes specific calls to different backend services to make the users search possible. It enables users to perform a detailed (searching through different metadata fields of a document including searching through document content), thematic (search by related keywords) and ranked (results get evaluated based on the evaluation criteria) search through documents that are uploaded into the document repository through the EGDI admin portal.

The application is currently available <https://www.geo-zs.si/db/egdi-search/> (but it is planned to be moved to a europe-geology.eu domain). When you go to that URL you get the home page of the EGDI Repository Search platform.



In the navigation bar of the application, the user can optionally set the following options in the settings menu:

- Language of the autosuggested keywords list
  - English (default) - predefined
  - Current language of the user's browser

Select a language for autosuggested keywords:

Default (English)     Browser language: en (English)

Figure 3

- Language(s) for the semantic search





Select a language(s) for semantic search:

<input type="checkbox"/> čeština (cs)	<input type="checkbox"/> dansk (da)	<input type="checkbox"/> Deutsch (de)
<input type="checkbox"/> eesti keel (et)	<input type="checkbox"/> ελληνικός (el)	<input checked="" type="checkbox"/> English (en)
<input type="checkbox"/> español (es)	<input type="checkbox"/> français (fr)	<input type="checkbox"/> hrvatski (hr)
<input type="checkbox"/> íslenska (is)	<input type="checkbox"/> italiano (it)	<input type="checkbox"/> lietuvių kalba (lt)
<input type="checkbox"/> magyar (hu)	<input type="checkbox"/> Nederlands (nl)	<input type="checkbox"/> norsk (no)
<input type="checkbox"/> polski (pl)	<input type="checkbox"/> português (pt)	<input type="checkbox"/> română (ro)
<input type="checkbox"/> slovenčina (sk)	<input type="checkbox"/> slovenščina (sl)	<input type="checkbox"/> suomi (fi)
<input type="checkbox"/> svenska (sv)	<input type="checkbox"/> українська мова (uk)	

Figure 4

- Collections from which to get the search results
  - egdi-images
  - egdi-documents
  - egdi-data

Collections ▾ Languages ▾

Select a collection(s):

- Select All / None
- egdi-documents **i**
- egdi-documents-spatial-test **i**
- egdi-images **i**
- egdidocs **i**
- egditest **i**
- egditest-attachments **i**
- egditest-curl **i**
- egditest-fieldupdate **i**
- egeologija-clanki **i**
- geeratest **i**
- openkm **i**
- spatialsearch-test **i**

Figure 5

- Type of search (to be implemented)
  - basic search
  - semantic search
  - advanced search (to be implemented)
- Spatial search (to be implemented)
  - on/off and
  - contains/intersects buttons

In the navigation there is also the help information available on mouse HOVER.



Help

Search examples for Basic search:

1. Start typing, choose the autosuggested keyword and press Basic Search
2. Type "water" and press Basic Search
3. Type \*\* to get only titles and links to document repository

Search examples for Semantic Search:

1. Type "water", leave the pre-chosen language option and press Semantic Search
2. Start typing, choose autosuggested keyword, choose language to get semantically related words in that language and press Semantic Search

Figure 6

### 1.a.1 Input search box

The user then starts entering the characters of the search term in the input search box. As he starts typing, the autosuggested keywords box pops up with suggestions.

geothermal

- deep **geothermal** energy potential
- geothermal** cooling
- geothermal** energy
- geothermal** gradient
- geothermal** heat exchangers borehole
- geothermal** heating
- geothermal** plays
- geothermal** potential
- near surface **geothermal** energy
- shallow **geothermal** energy (SGE)

Basic Search      Semantic Search

Figure 7

The user can then click on the specific word from the autosuggested keywords list or confirms the word with [Enter]. We plan to enable searching by multiple keywords (see Figure 8)

geology x    geothermal x    geotechn|

Figure 8 (this type of search is not implemented yet in version 1.3.2)



Then the user performs the search with a click on the Search button. Based on the search type, additional HTTP GET requests are executed under the hood.

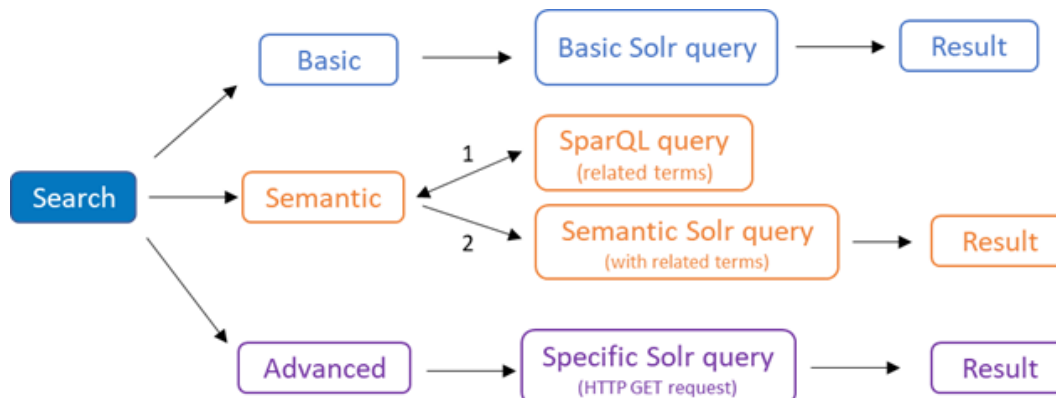


Figure 9

Example of a Basic search:

- User types the searched word(s) and presses Search button.
- The searched word(s) are displayed and highlighted in the results which are grouped and displayed to the user.

GeoERA INFORMATION PLATFORM

EGDI Repository Search platform (test version 1.3.1)

rock

Basic Search Semantic Search

Searched word: rock

egdi-documents (8)

Physical Geology - 2nd Edition score: 146  
content: from Robson Glacier drains into Berg Lake in the bottom right. There are many geological features portrayed here. The sedimentary **rock** that these mountains are made of formed in ocean water over 500  
attachments (5)  
full data

The Alpine-Carpathian-Dinaridic orogenic system: correlation and evolution of tectonic units score: 127  
content: **rock** associations and is extremely heterogeneous. It comprises tectonic elements, some of which can be traced along strike over long distances; they often define important sutures and/or important  
attachments (1)  
full data

20 Methodologies and Technologies for Mitigation of Undesired CO2 Migration in the Subsurface score: 126  
content: fractures in cement; and f) between cement and **rock** (from Gasda et al., 2004) ..... 23  
Figure 3 - illustrations of wellheads on a fixed platform (left) and on  
full data



Figure 10

Example of a Semantic search:

- User types the searched word(s) and presses Search button.
- The searched word and related terms for a specific language are displayed and highlighted in the results which are grouped and displayed to the user.

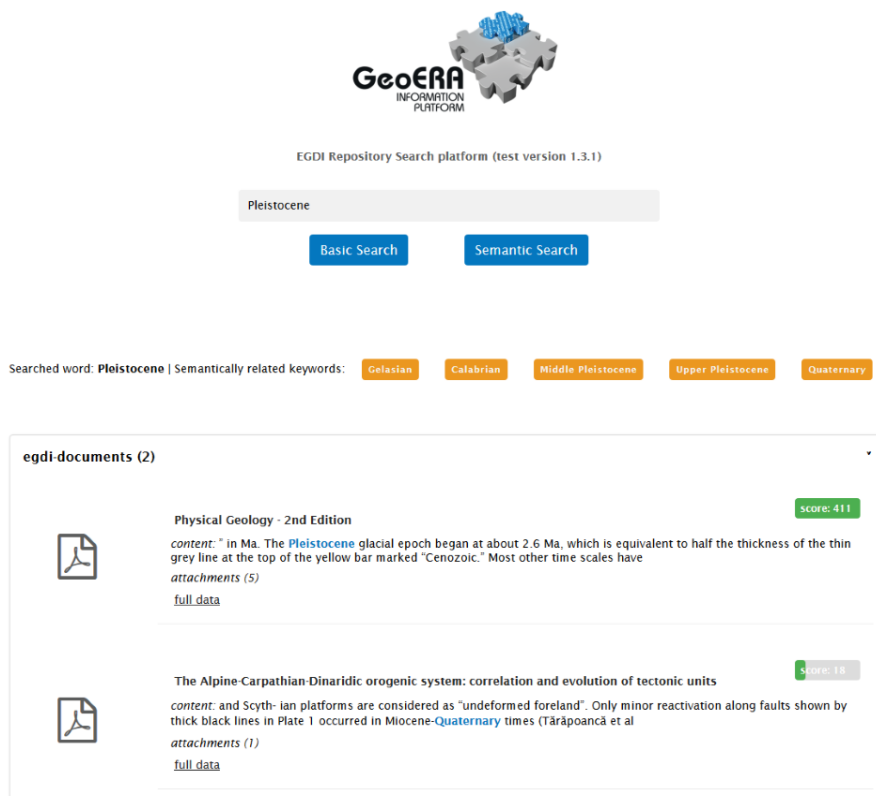


Figure 11

Example of Advanced search:

- User can type specific Filter query parameters, e.g.:
  - Author: “Nina Rman” - search returns only the documents where one of the authors is “Nina Rman”
  - Bottled AND mineral water - (boolean operator) search returns only the documents which contain both terms. Other boolean operators include OR, NOT.



EGDI Repository Search platform (test version 1.3.1)

jurassic OR pleistocene

Basic Search

Semantic Search

Searched word: **jurassic OR pleistocene**

egdi-documents (2)



**Physical Geology - 2nd Edition**

score: 411

*content:* " in Ma. The **Pleistocene** glacial epoch began at about 2.6 Ma, which is equivalent to half the thickness of the thin grey line at the top of the yellow bar marked "Cenozoic." Most other time scales have

*attachments (5)*

[full data](#)



**The Alpine Carpathian-Dinaridic orogenic system: correlation and evolution of tectonic units**

score: 5

*content:* Triassic parts of Neotethys (Meliana-Maliac) are preserved only as ophiolitic mélanges present below obducted **Jurassic** Neotethyan (Vardar) ophiolites. The opening of the Alpine Tethys was largely contem

*attachments (1)*

[full data](#)

Figure 12



The user interface will also implement the geographically aware type of search in combination with the three types of searches mentioned above. The user will be able to choose the area of interest in the web map and then cross examine this area with conjunction to input field values.

### 4.3 Advanced search

The advanced search system is a multilingual web application which can find geoscientific information available in the European area and, especially, the products generated by other projects of the GeoERA. This application includes a complex search that will allow users to:

- Find relevant resources based on the metadata from Micka (the EGDI and GeoERA metadata catalogue).
- Access the resources through the available links (distributions). For example, the URL of a WMS service associated to the resource or the URL of a viewer where to visualize the resource, etc.
- Access to thematic applications is also included. These applications are specialized web application to facilitate concrete thematic capabilities to query, display and analyse a resource. They are, therefore, outstanding distributions. The GeoERA Document Repository, an application with specific functionality for document searching, is an example of thematic application.
- View basic metadata of those resources and access to the full metadata record in Micka.
- Select subsets of elements in a resource (e.g. documents in the document repository, mines or mineral occurrences in Minerals4EU, points in a water database, etc.) and view their main attributes and location on a map. Searches can be made inside all available resources, as long as a connector (feature distribution) is developed to allow the system to launch the search.

The search tool allows the users to perform:

- Full text search.
- Spatial search area.
- Filter by topic category.
- Filter by resource type.
- Filter by format.



### GeoERA Search System

Main catalogue that allows you to discover, display and query resources in the Search System

#### List of results

Show only the resources for which it has been searched in its data. [Why these results?](#)  
 Off

13 results

- Document repository** 68 [↗](#)  
0 documents  
HTML  
Shared storage space where documents generated in GeoERA project are stored and are accessible to end-users.
- ProMine Project** 66 [↗](#)  
HTML HTML  
Nano-particle products from new mineral resources in Europe
- Minerals4EU - Mineral intelligence network for Europe** 66 [↗](#)  
23,289 mines 23,289 mines  
HTML HTML HTML HTML HTML HTML  
Minerals4EU - Mineral intelligence network for Europe
- IGME5000 - 1:5 Million International Geological Map of Europe and Adjacent Areas** 64 [↗](#)  
MICKA HTML WMS HTML  
The 1:5 Million International Geological Map of Europe and Adjacent Areas shows the pre-Quaternary geology of Europe onsho...
- EuroGeoSource** 64 [↗](#)  
MICKA WMS HTML WFS  
Harmonized geo-energy, mineral resource and area management data coming from various countries based on key economic a...
- Spanish Inventory of Geological Sites of Interest** 57 [↗](#)  
4,021 geosites 4,021 geosites  
HTML WMS  
Esta aplicación permite acceder a la base de datos del Inventario Español de Lugares de Interés Geológico (IELIG) que, de acuerd...
- Geological digital Map of Italy 1:500.000** 53 [↗](#)  
MICKA HTML  
The database containing the Geological Map of Italy at a scale 1:500.000 was compiled during the 1990's by digitizing the publis...
- eENVplus OneGeology-Europe\_1:1M\_FVG** 53 [↗](#)  
MICKA HTML HTML HTML  
The database represents a subset of the GEO1MDB that is the Geological Map of Italy at the scale 1:1.000.000 trim for the eENVp...

Use spatial intersection in the search  
 On

Current extension

Topic categories  
Select: All | None  
 Energy  
 Geohazards  
 Geology  
 Groundwater  
 Marine geology  
 Mineral resources  
 Onshore geology  
 Soil

Resource type  
Select: All | None  
 Databases  
 Documents  
 Maps  
 Projects

Formats  
Select: All | None  
 ESRI:FEATURE  
 ESRI:MAP  
 HTML  
 JPG  
 PDF  
 PNG  
 WFS  
 WMS

Figure 2: Overview of the advanced search system where the search criteria and the list of results can be viewed.

A large number of elements are used to establish the order in which the datasets are displayed in the result list: similarity between the search text and the dataset metadata, the relevance of the dataset, the dataset relevance for the selected topics and similarity between the area of the search polygon and the area of the dataset boundary. Before performing the search, the query string is enriched with the narrower, broader and related terms or translations for them in the search string found in the GeoERA thesaurus. When establishing the similarity between the search text and the dataset metadata, different weights are used. For example, if the similarity is made with a main term or a translation of it, the weight is greater than if it is made with a narrower, broader term. As can be expected, the similarity with the dataset title has also more weight than the one with the dataset description or keywords. These weights will be adjusted so that the proposed results are in the order that is most appropriate to the search performed.



For each of the results listed, the system offers all the online access possibilities for the dataset: existing web applications to facilitate concrete thematic capabilities to query, display and analyse the dataset; URLs to access the dataset in certain formats (e.g. CSV, SHP); services to display or query the dataset (e.g. WMS, WFS); metadata details (e.g. ISO 19115).

In addition to display a ranked list of results that meet the query specified by the user, one of the most important features of the system is that using the search criteria, besides searching for datasets through their metadata, it searches inside datasets to get and display records from a database, documents in a document repository or concepts from a project vocabulary.

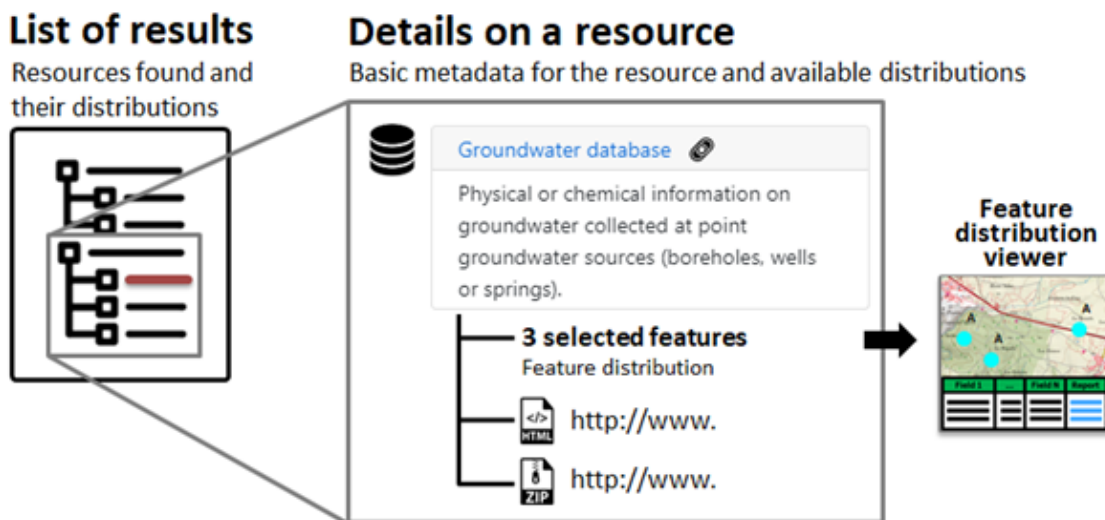


Figure 2: List of results details. Basic metadata, available distributions and the number of selected features is displayed for a resource. By clicking on the number of results of selected features it is possible to display selected features in a viewer.





## 5 3D VIEWER

The 3D viewer currently attached to the EGDI platform reads geological models directly from the 3D database (part of the EGDI backend) and is capable of viewing geological models stored in the EGDI 3D model database. The viewer is web based and the user needs no plugin a 3'd party tools in order to see the models.

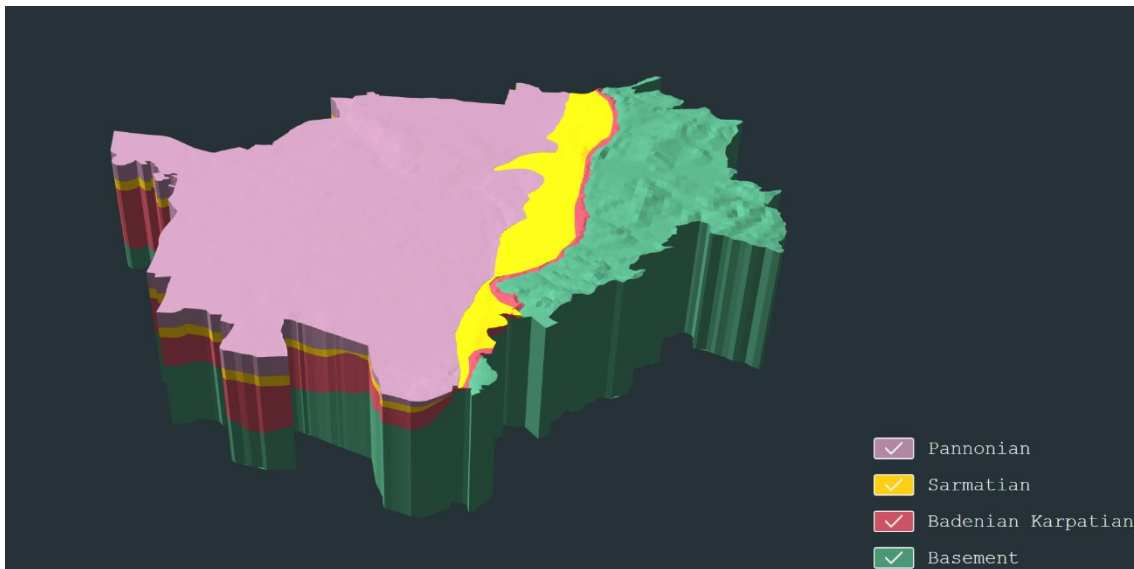


Figure 2: A geological model of the Vienna area

It is still being investigated if it is possible to use other tools to visualise the models.