



Establishing the European Geological Surveys  
Research Area to deliver a Geological Service  
for Europe

## Deliverable 7.5

### Final version of metadata catalogue and populated Metadatabase

Authors and affiliation:

**Dana Čápková (ČGS),  
Pavla Kramolišová (ČGS),  
Olga Moravcová (ČGS),  
Richard Binko (ČGS),  
Štěpán Kafka (ČGS),  
Blaž Bahar (GeoZS),  
Andrej Vihtelič (GeoZS),  
Martin Hansen (GEUS).**

E-mail of lead author:

**dana.capova@geology.cz**

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## **GENERAL INTRODUCTION**

This deliverable describes the final version of the EGDl Metadata Catalogue, the major updates and work that was performed during the second part of the GIP-P project, and steps that led to the completion of the Metadatabase. The EGDl Metadata Catalogue was developed as the central access point to metadata describing in the standardized form all identified digital and structured data resources and other selected information delivered by the 14 scientific GeoERA projects. Metadata of unstructured documents are not part of the EGDl Metadata Catalogue and populated metadatabase, but they are stored and maintained in components of EGDl Document Repository. The basic principles and technical details of the catalogues as a part of the GeoERA Information Platform (GIP) infrastructure of the European Geological Data Infrastructure (EGDI) were described in the Deliverable 7.1 Working version Metadatabase [7].

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# 1 EGD METADATA

## 1.1 Metadata of the structured data – The EGD Metadata Catalogue

The EGD Metadata Catalogue (MICKA) <https://egdi.geology.cz/> is the central access point to metadata concerning data relevant to GeoERA.

Only digital structured information is to be described by metadata in this catalogue:

- non-geographic and spatial datasets or dataset series and multidimensional models (GeoPackage, GeoTIFF, Shape files, NetCDF, etc.)
- spatial data services as Web Map Services (WMS), Web Feature Services (WFS)
- other digital products (web applications, etc.).

The catalogue enables discovery, view and use of geological data across Europe. It provides tools for compilation of those metadata in a standardized format. Metadata are freely accessible to the public for viewing and searching, but inserting and editing is available for authorized users only. The Catalogue is also integrated into the EGD Portal <http://www.europe-geology.eu/metadata> (Figure 1).

The screenshot displays the EGD Metadata Catalogue (MICKA) interface. At the top, the EGD logo is visible, followed by a navigation bar with links: Onshore Geology, Marine Geology, Mineral Resources, Geohazards, Energy, Soil, Groundwater, All Content, Metadata, About EGD, and Support. The main heading is 'Metadata'. Below this, there's a search bar and a sidebar with various filters: 'Any text', 'Resource type' (with radio buttons for 'Everywhere', 'Title', and 'Title + Abstract'), 'INSPIRE theme', 'GeoERA keywords', 'Project name', 'Metadata Organisation', 'Country', 'Spatial scope', and 'Harvested from'. The main content area shows a list of metadata entries, each with a title, a brief description, and a 'Metadata Contact' link. The entries include: 'As Indioes', 'A - Aquifer media (DRA STC)', 'Abandoned mine lands', 'Ab initio calculations and high P-T experiments on iron, iron alloys and other materials (NERC Grant NEM016181/1)', 'Accessions to the National Geological Records Centre', 'Accretion of the lower oceanic crust: Reconciling evidence of hydrothermal fluid fluxes with mineral cooling rates from ODP Hole 1268D, IODP Exp336 (NERC grant NE/L000068/1)', 'A century of groundwater accumulation in Pakistan and northwest India - dataset (NERC Grant NE/R000068/1)', and 'Acidity of stream water'. At the bottom, there's a pagination bar showing '1 / 390' and a 'Next' button.

## **1.2 Metadata of the unstructured data - The EGDl Document Repository**

The metadata for unstructured documents (PDF documents, DOIs, images and non-specified data on the CSV format) are not stored in the EGDl Metadata Catalogue. They are entered through the EGDl Administration Module (where the metadata is required in order to deliver the files). The metadata are stored and maintained in the EGDl Document Repository components (Apache Solr cores [9] and for backup purpose in repository schema of EGDl PostgreSQL database). For PDF files that are stored in Document Repository, all metadata are also written into PDF file itself.

## 2 TECHNOLOGY

### 2.1 Technological update

At the end of 2019 the new version 6 of the EGDI Metadata Catalogue, based on MlckA system (<https://egdi.geology.cz>) was put into operation and debugged [7]. One of the main reasons for the change was compliance with the new Technical Guidelines 2.0 [3]. The new version of the application was further modified:

- Some items have been added to the EGDI Metadata Profile
- GeoERA-specific codelists were added and completed
- The EGDI-Lite editing form was created to facilitate the creation and editing of metadata by inexperienced editors from a wide community of GeoERA projects

The new version was completed and presented at the GeoERA webinar on April 30, 2020. The link to the EGDI Metadata Catalogue from the EGDI portal was restored. Technological details are given in the previous report “D7.1 Working version Metadatabase” [7]. In the following text, we will focus mainly on the news and improvements that have taken place since then.

#### The EGDI Metadata Profile

- An element *Source Citation (Lineage)* was added as required by the editors
- Some other anchor-based elements were added according to INSPIRE recommendation:
  - *Country codes*
  - *Scope*
  - *Priority datasets*
  - *Extent - Geographic description identifier*

#### Keywords

- The newly created codelists were integrated:
  - *GeoERA Keyword Thesaurus* (<https://data.geoscience.earth/ncl/geoera/>),
  - *Projects name* (<https://data.geoscience.earth/ncl/project/>)
- Editing of keywords of type *stratum*, *temporal* and *discipline* was enabled in both editing forms.
- The licenses codelist (element 18.1) was extended by new items:
  - *Public Domain CCO* <https://creativecommons.org/share-your-work/public-domain/cc0/>,
  - *GNU General Public License* <https://www.gnu.org/licenses/gpl-3.0.en.html>

#### HTML presentation

- Display and adding of related resources were improved:
  - links between superset/ subsets
  - link between service and dataset (*operatesOn* and vice versa)
  - link between dataset and *lineage source*
  - external metadata record links may be displayed and processed
- Some licenses were added (CC0 and GPL)

#### Search form

- Full text search based on lexemes rather than SQL LIKE operators
- Some elements were added
  - *GeoERA Keywords*
  - *Project name*
  - *Metadata Organization*
  - *Country*
  - *Spatial Scope*
  - *Harvested from*

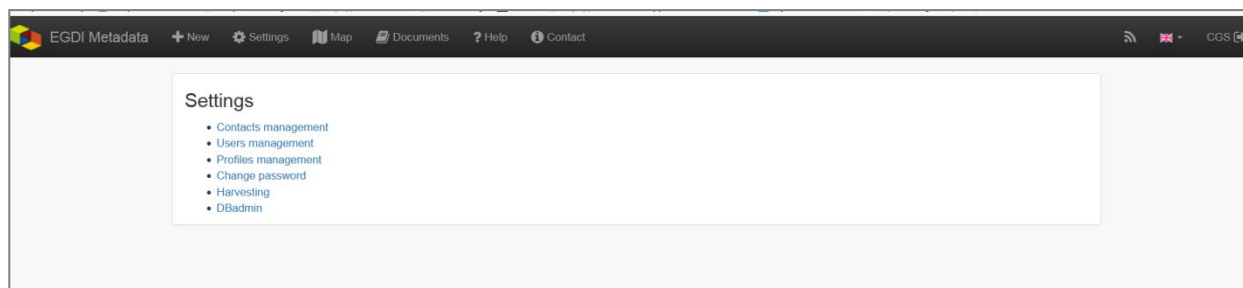
## Harvest reports

A harvest reporting logic was changed:

- Harvest reports are html documents on the server side rather than email body
- Historical harvesting reports are available
- Harvest reports include links to original and harvested metadata records for better comparison and navigation

**Administrator tools** to improve database management were changed:

- Bulk edits
- Cleaning tools



**Validator** was changed, see chapter 4.3.

## Help for editors extended

- Additional tutorial documents were added (training videos – see chapter 7.4 , more documents).
- FAQ, see chapter 7.3



### 3 OPERATION AND MAINTENANCE

The main activities were focused on the installation, debugging, testing and implementation of the new version of MlckA 6 technology, including later subversions, containing patches for detected bugs. Related modifications were made to the contents of the EGDl metadata catalogue. Security procedures are implemented on an ongoing basis and SW patches are incorporated as needed. The previous EGDl Metadata Catalogue EGDl based on MlckA version 5 was backed-up and terminated on July 1, 2021.

The SuSE Linux operating system was updated on the server in connection with the installation of a new version of the MlckA software.

The data is stored in a dedicated PostgreSQL database (9.3.6) that is backed up regularly once a week. The latest version of the backup is kept for a month. After any major intervention on the server, a complete server backup is created at the virtualization platform level to allow for swift recovery if needed. This backup is used as a server clone to test major application changes. Regular database increments and changes in application code are backed up once a week. In addition, one backup copy is stored for each month for a year.

A separate test version of the Catalogue <https://egdi-test.geology.cz/> for development and testing of changes and fixes was completed, which will ensure a safer workflow between programmers and administrators of the EGDl metainformation system.

## 4 EGDl METADATA PROFILE

### 4.1 Minimum required metadata elements

A proposed minimum of the EGDl (GeoERA) metadata elements was agreed. Without filling them in, it is not possible to create and save a metadata record in the EGDl Metadata catalogue.

Table 1: Minimum required metadata elements

No. of the EGDl Metadata Profile element	Name of the EGDl Metadata Profile element
1	Resource title
2	Resource abstract
3	Resource type
19	Responsible party
28.1	Metadata point of contact

### 4.2 GeoERA metadata profile for structured data with the extension to describe 3D geological models

The EGDl metadata profile documents a unified methodology for the description of structured metadata of GeoERA project results (structured data to be included in EGDl) with an extension to unify the description of 3D geological models. This metadata profile is compatible with the relevant international standards EN ISO and complies with the requirements of the INSPIRE Directive.

There are two editing forms available in the EGDl Metadata Catalogue:

1. **EGDI-Lite** – set by default, user friendly, easy to fill, less options (Figure 3)
2. **EGDI-full** – follows the ISO structure and has more options, but more knowledge and experience with metadata is needed on the part of the editor (Figure 4)


**It is recommended to use the EGDl-Lite editing form to fill in metadata within the GeoERA projects.**

The Cookbook [2] describes step by step how to fill in the EGDl metadata using the EGDl-Lite editing form to be INSPIRE compliant.


← → ↻ ⌂ egdi.geology.cz/record/edit/613f179c-c140-4637-9f2d-58ac0a010855?prof... ☆ 2388

Micka Save Stop Cancel EGD-Lite


## New record / update record




Status: Private Group for editing: editor For viewing: reader


Metadata language: 


**1 Resource title**





**2 Resource abstract**





**3 Resource type**

Select one ...

**4 Resource locator**

URL


Function


Select one ...

Protocol


Select one ...


Name





Description





**5 Unique resource identifier**

URI

Text

Code space

**7 Resource language**

**Validate**

XSD Not valid

1 Resource title

2 Resource abstract

3 Resource type

4 Resource locator

5 Unique resource identifier

7 Resource language

8 Topic category

11 Geographic bounding box

14.1 Reference date - Date of publication/ last revision/ creation

14.2 Temporal extent

15 Lineage

16 Spatial resolution

17.1 Specification Missing  
"Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services"

18.1 Conditions applying to access and use

18.2 Limitations on public access

19 Responsible party

20 Data quality

Figure 3: An empty EGD-Lite editing form with the dynamic validation panel on the right

Micka
Save
Stop
Cancel
EGDI-full

New record / update record

Status: Private
Group for editing: editor
For viewing: reader

Metadata language:

(11) File Identifier 613f179c-c140-4637-9f2d-58ac0a010855  
(10.3) language English  
(CZ-2) Parent Identifier  
  
  
(1.3) Resource type dataset  
Hierarchy Level Name  
  
  
(10.1) Metadata Contact  
Individual Name  
  
  
Organisation Name  
  
  
Position Name  
  
  
Contact Info  
phone  
voice  
  
Address  
Delivery Point  
  
  
city  
  
administrative Area  
  
Postal Code  
  
country

Validate
XSD Not valid
1 Resource title
2 Resource abstract
4 Resource locator
5 Unique resource identifier
7 Resource language
8 Topic category
11 Geographic bounding box
14.1 Reference date - Date of publication/ last revision/ creation
14.2 Temporal extent
15 Lineage
16 Spatial resolution
17.1 Specification Missing "Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services"
18.1 Conditions applying to access and use
18.2 Limitations on public access
19 Responsible party  
a: Name  
b: e-mail

Figure 4: An empty EGDI-full editing form with the dynamic validation panel on the right

### 4.3 Validation update

Validation checks compliance of EGDI metadata record with the new INSPIRE metadata Technical Guidelines version 2.0 [3]. XML Schema Validation (XSD) was added to speed up the validation process. Element numbering was also changed in line with the EGDI Metadata Profile.

## **5 THE EGDI DOCUMENT REPOSITORY PROFILE**

### **5.1 Metadata attributes used to describe Unstructured data**

In the Administration Module you can add the following metadata to the files being uploaded to EGDI document repository:

- Title
- Abstract
- Keywords
- Created date
- Authors
- Accessibility (type of license)
- Language
- Spatial coverage

Accessibility and spatial coverage are optional, the rest are required. Language is not used for pictures.

## 6 EGDl METADATA RULES

### 6.1 General rules

- All data available within GIP-P must be supplemented by metadata.
- Metadata can be harvested directly from permanently updated national catalogues or catalogues of ongoing projects, as long as they meet the EGDl requirements.
- Each completed project must have an active contact for the metadata maintenance.

### 6.2 Relations in metadata

To express the relationships between the data and the services that publish it, the editor must manually add a link to the service address from the EGDl Map Viewer to the metadata record. The URL of the service should be filled in as the **on-line resource** (item **"4 Resource locator"** of the EGDl Metadata Profile), more details in document FAQ [8].

The connection between the metadata of different parts of a dataset depends on how the related data layer is created and what the relationship should express:

- 1) The data relationship when "something is part of something else" - The resulting dataset is a **superset** with lower units - **subsets** (like a book with its chapters). In the subset record, select the higher item in the list in item **"30 Parent Identifier"** (Figure 5).

[Basic metadata](#) / [Full Metadata](#)

**GeoERA HOVER WP7 / Pan-European Vulnerability to Pollution DRASTIC**

Public

**Abstract**

DRASTIC represents the groundwater pollution potential of the uppermost aquifer systems over Europe in five classes 1 - 5 (very low, low, moderate, high, very high) on a 1 km pixel basis. The DRASTIC index according to Aller et al. (1987) is constituted as a weighted linear sum of seven environmental parameters (Depth to water table, Net recharge, Aquifer media, Soil media, Topography/slope, Impact of vadose zone media, Hydraulic conductivity) with parameter classes scored from 1..10 for their specific impact on groundwater pollution potential.

Type	series
Resource Locator	
Identifier	DRASTIC_EU
Language	English
Topic category	Geoscientific information
Keywords	<p><b>Spatial scope:</b></p> <p>European</p> <p><b>European Geoscience Registry - Projects:</b></p> <p>HOVER</p> <p><b>Free:</b></p> <p>Groundwater, Pollution Potential, Aquifer, Europe, DRASTIC, EGD</p>
Bounding box	-24.591, 30.355, 71.487, 71.201
Date	creation: 2020-10-19
Spatial Representation	grid
Contact Info	<p>Federal Institute for Geosciences and Natural Resources (BGR)</p> <p>Stilleweg 2, Hanover, 30655, Germany</p> <p>email: <a href="mailto:Andreas.Guenther@bgr.de">Andreas.Guenther@bgr.de</a></p> <p>Role: originator</p>

**Data Quality**

**Lineage**

DRASTIC calculation and parameter scoring was done with SAGA GIS 7.7.1 software.

**Spatial Resolution**

**Conformity** [INSPIRE DIRECTIVE 2007/2/ES](#)

**Constraints**

**Access and use conditions** [Copyright \(All Rights Reserved\)](#)

**Limitations on public access** [no limitations to public access](#)

**Metadata about metadata**

Metadata identifier	60e8fc02-e01c-40c5-b878-73990a010833
Metadata Contact	<p>Federal Institute for Geosciences and Natural Resources (BGR)</p> <p>Stilleweg 2, Hanover, 30655, Germany</p> <p>email: <a href="mailto:Andreas.Guenther@bgr.de">Andreas.Guenther@bgr.de</a></p> <p>Role: point of contact</p>
Date Stamp	2021-08-31

**Coupled Resource**

**Children**

- Pan-European Vulnerability to Pollution: A-Layer - Aquifer media
- Pan-European Vulnerability to Pollution: C-Layer - Hydraulic conductivity
- Pan-European Vulnerability to Pollution: D-Layer - Depth to water table (10km Resolution)
- Pan-European Vulnerability to Pollution: DRASTIC map
- Pan-European Vulnerability to Pollution: I-Layer - Impact of vadose zone media
- Pan-European Vulnerability to Pollution: R-Layer - Net recharge
- Pan-European Vulnerability to Pollution: S-Layer - Soil media
- Pan-European Vulnerability to Pollution: T-Layer - Topography/slope

Figure 5: The Parent (superset) metadata record with more Children (subset) records

- 2) The relationship of data when "something comes out / uses something" - The resulting layer is created by transforming or compiling other resources (modifying them, such as geographic or semantic harmonization). These resources must be identified by the item "**31 Sources**" (list the sources citation). If the source metadata does not exist in the EGD Metadata Catalogue, the URL of the external metadata in xml can also be entered in the field.

## 6.3 Use of keywords

Some of the required external registers and codelists are integrated directly in the EGD Metadata Catalogue:

### European Geoscience Registry

- GeoERA Keyword Thesaurus (<https://data.geoscience.earth/ncl/geoera/keyword>)
- Project name (<https://data.geoscience.earth/ncl/project>)

### INSPIRE registry

- INSPIRE theme registry <https://inspire.ec.europa.eu/theme/>
- INSPIRE metadata code list register <https://inspire.ec.europa.eu/metadata-codelist/>
  - Spatial scope <http://inspire.ec.europa.eu/metadata-codelist/SpatialScope>
  - Priority dataset <http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset>
  - Limitations on public access <http://inspire.ec.europa.eu/metadata-codelist/LimitationsOnPublicAccess>
  - Use constraints <http://inspire.ec.europa.eu/metadata-codelist/ConditionsApplyingToAccessAndUse>
  - INSPIRE services <https://inspire.ec.europa.eu/metadata-codelist/SpatialDataServiceCategory>
  - Topic Category - EN ISO 19115 <https://inspire.ec.europa.eu/metadata-codelist/TopicCategory>

### Other

- Extent - Country code <https://publications.europa.eu/resource/authority/country>
- INSPIRE compliancy <http://data.europa.eu/eli/reg/2010/1089>
- Reference systems <http://www.opengis.net/def/crs/EPSSG/0/>
- GEMET <https://www.eionet.europa.eu/gemet/en/themes/>



## 7 CONTENT OF THE EGD METADATA

### 7.1 Content of the EGD Metadata Catalogue

The developed metadatabase was populated with metadata from GeoERA scientific projects - as of 30 September 2021, it contained 439 records describing data sets and services. In total 50 metadata editors from 15 GeoERA projects were involved. Each editor had a secured access and could share own records with the project team so that the result was both technically and content-wise correct. A statistical overview of the number of the GeoERA metadata records in the EGD Metadata Catalogue can be found in Table 2.

Most GeoERA metadata records of structured data were created directly in the EGD Metadata Catalogue using EGD-Lite editing form. Of these records, 391 are already public and can also be freely used and downloaded using the csw service

<https://egdi.geology.cz/csw/?service=CSW&request=GetCapabilities>. 432 metadata records describe datasets and only 7 services. In the future, it would be appropriate to describe not only datasets, but also individual layers and also the services related to them and to interconnect them. The interlinking and hierarchy of metadata records is a big challenge for the future.

Currently, it can be said that every dataset is described by metadata, but not every layer and service is also described. Some layers are described by the same metadata record, either due to time constraints or different approaches to data description. So now there is a dual approach to detailed metadata descriptions:

1. One metadata record for each individual layer and one parent metadata record for the entire dataset and links to all their child metadata records for the layer. As example Hover project did as follows: <https://egdi.geology.cz/record/basic/6113a3f0-1028-45c1-b1cf-08ef0a010833>
2. One metadata record for the entire dataset, for example HotLime Project: All HotLime partners have prepared map sets. This means that for each area they upload several layers with different themes (e.g. fault network, thickness of reservoir, depth of reservoir, geothermal potential assessment, etc.). Since the authors, the responsible institution, areal coverage (bounding box), etc. are the same for each layer of the area, they have prepared only one metadata record for each area with lists of all information of this area. Thus, several layers (of the same area) are linked to the same metadata record, see example:

<https://egdi.geology.cz/record/basic/602f94c8-8bfc-42b6-a8a2-61070a010833>

Table 2: GeoERA metadata records in the EGD Metadata Catalogue (as of 30 September 2021)

GeoERA Project name	Metadata records		Resource type		Total number of metadata records	Total number of metadata editors
	Public	Private	Dataset	Service		
3DGEO-EU	4	2	6	0	6	1
EuroLithos	0	0	0	0	0	1
FRAME	29	1	29	1	30	2
GARAH	35	22	57	0	57	2
GeoConnect <sup>3d</sup>	1	0	1	0	1	3
GIP-P	4	0	2	2	4	9
HIKE	18	0	18	0	18	2
HotLime	15	1	16	0	16	1
HOVER	136	2 test	138	0	138	8
MINDeSEA	10	0	10	0	10	1
MIntell4EU	7	1	4	4	8	2
MUSE	66	0	66	0	66	3
RESOURCE	2	0	2	0	2	1
TACTIC	64	19	83	0	83	13
VOGERA	0	0	0	0	0	1
<b>Total</b>	<b>391</b>	<b>48</b>	<b>432</b>	<b>7</b>	<b>439</b>	<b>50</b>

During the project, continuous support for the GeoERA projects metadata editors was provided and a detailed revision of the metadata has been performed several times. The most thorough one is carried out in the last months of the project. During the revision, the support team added links to the maps in EGDl MapViewer and made some minor changes. Individual editors were contacted to improve existing metadata records based on revision results.

Metadata editors were advised to specifically review their metadata records and check the following:

1. Item 10.1. Keyword / **Project name** should be selected from the Codelist (European Geoscience Registry - Projects), not as a free keyword. Only correctly marked metadata records can be searched correctly.
2. All finished metadata records are **"Public"**. Only public metadata records are visible and searchable for others.
3. Add **link of a service URL from the EGDl Map Viewer** to EGDl metadata record. The metadata editor must revisit the EGDl Metadata Catalogue after uploading the data because the online resource URL is not available until the dataset is uploaded to the EGDl platform. Service URL should be filled as on-line resource (item **4 Resource locator** of the EGDl Metadata Profile).
4. **Hierarchy of metadata records** - link them through the parent-child element **"30 Parent identifier"**

All these most important improvements are also included in the FAQ document [8].

## 7.2 Content of the EGDl Document Repository

By 30 September the total 653 repository items (39 DOIs and 401 PDFs, total 440, 203 pictures and 1 data) were uploaded in production repository by GeoERA projects.

Project	DOIs	PDFs	Images	Data
Eurolithos		91		
Frame	23	48		1
Garah		13	2	
Geoconnect3d	1	15	11	
Hike	11	20	23	
Hotlime		37	14	
Hover		50		
Muse		99	3	
Resource	4	1	1	
Tactic		25	155	

## 8 COOKBOOKS, TRAININGS AND HELPDESK

The planned training workshop for metadata in March 2020 in Ljubljana was canceled due to the global covid situation and the work focused on creating a more detailed and clear documentation and providing the metadata support. A Metadata Profile was created [1], Cookbook for EGDI – Lite editing form [2] was compiled, Frequently Asked Questions [8] were explained in detail, and training videos were created and made available in collaboration with WP8.

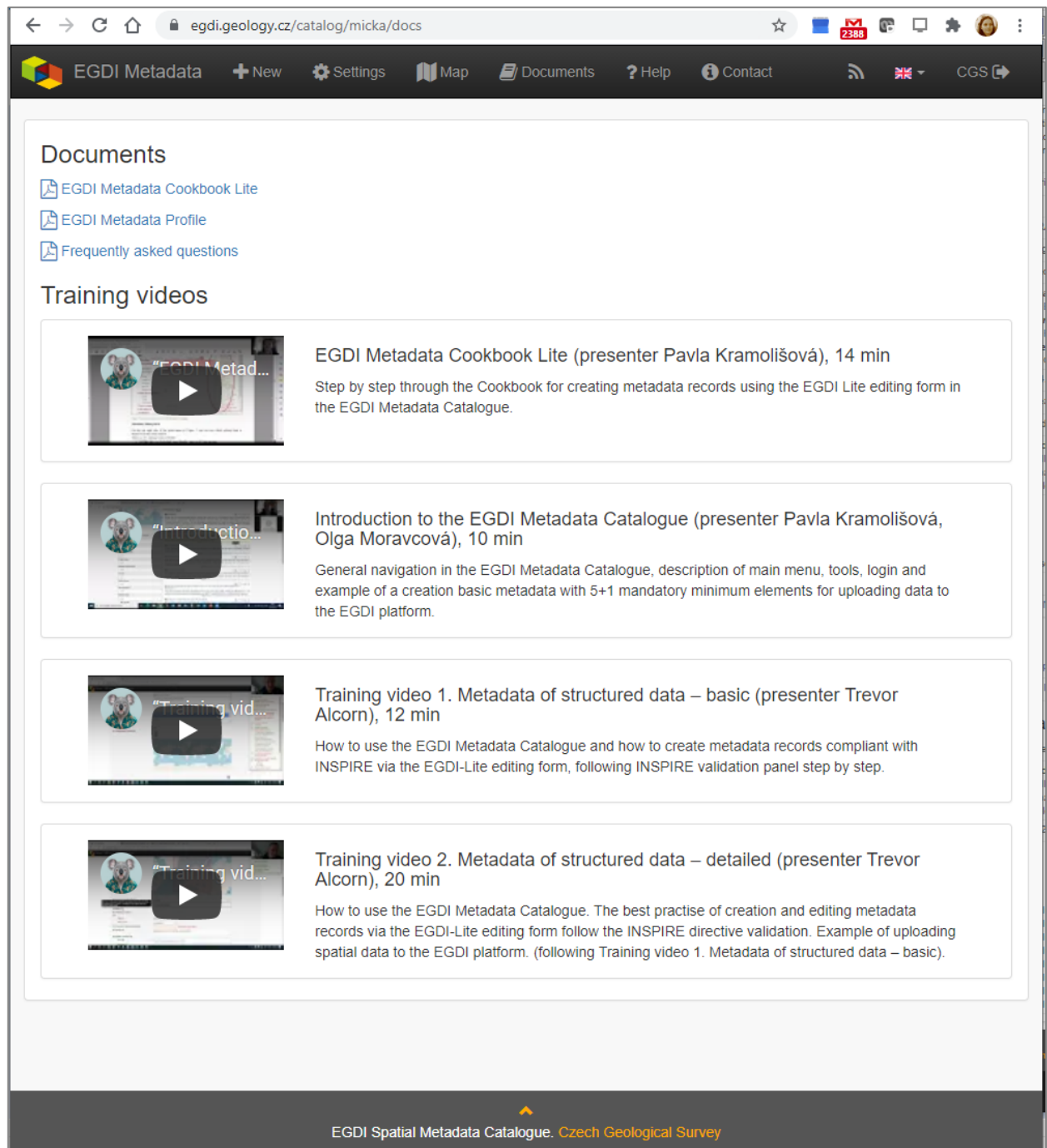


Figure 6: The documents available in the EGDI Metadata Catalogue

### 8.1 EGDI Metadata Cookbook Lite

This document [2] shows how to use the EGDI Metadata Catalogue and how to fill the EGDI metadata using the EGDI-Lite editing form step by step. The Cookbook guides the user to create a metadata record on an example for a spatial dataset and a spatial data service with an extension to describe 3D geological models.

The Cookbook documentation is integrated directly in the EGDI Metadata Catalogue (<https://egdi.geology.cz/catalog/micka/docs>) for authorized users and it is also available on the GitHub as MICKA Documentation <https://czechgeologicalsurvey.github.io/MICKA-Docs/> and on the GeoERA Data provider support webpage (<https://geoera-gip.github.io/support/>).

## 8.2 EGDI Metadata Profile

The EGDI metadata profile is compliant with the requirements of the INSPIRE Directive as regards metadata, and the EN ISO 19115:2003(E) terminology is implemented and it is described in more technical details in a separate document [1].

The profile documentation is integrated directly in the EGDI Metadata Catalogue (<https://egdi.geology.cz/catalog/micka/docs>) for authorized users and it is also available on the GitHub as MICKA Documentation <https://czechgeologicalsurvey.github.io/MICKA-Docs/> and on the GeoERA Documentation (<http://egdi-public.gitlabpages.geus.dk/egdi-documentation/#/>).

## 8.3 FAQs

The document [8] includes questions and answers that GeoERA users most often asked the technical support team by emails and during the metadata webinars.

The FAQ documentation is integrated directly in the EGDI Metadata Catalogue (<https://egdi.geology.cz/catalog/micka/docs>) for authorized users and it is also available on the GitHub as MICKA Documentation <https://czechgeologicalsurvey.github.io/MICKA-Docs/> and on the GeoERA Documentation (<http://egdi-public.gitlabpages.geus.dk/egdi-documentation/#/>).

## 8.4 Training videos

In cooperation with WP8 we prepared 5 videos with the thematic presentations to help GeoERA science projects and other EGDI data providers better understand how to use the EGDI Metadata Catalogue and create metadata, see <https://egdi.geology.cz/catalog/micka/docs> (Figure 6) or YouTube (Figure 7):

**Video 1: “EGDI Metadata Cookbook Lite”** (presenter Pavla Kramolišová), 14 min: Step by step through the Cookbook for creating metadata records using the EGDI Lite editing form in the EGDI Metadata Catalogue.

**Video 2: “Introduction to the EGDI Metadata Catalogue”** (presenters Pavla Kramolišová, Olga Moravcová), 10 min: General navigation in the EGDI Metadata Catalogue, description of the main menu, tools, login and example of creation a basic metadata record with 5+1 mandatory minimum elements for uploading data to the EGDI platform.

**Video 3: “Training video 1. Metadata of structured data – basic”** (presenter Trevor Alcorn), 12 min: How to use the EGDI Metadata Catalogue and how to create metadata records compliant with INSPIRE via the EGDI-Lite editing form, following INSPIRE validation panel step by step.

**Video 4: “Training video 2. Metadata of structured data – detailed”** (presenter Trevor Alcorn), 20 min: How to use the EGDI Metadata Catalogue. Best practice for creating and editing metadata records using the EGDI-Lite editing form with INSPIRE validation. Example of uploading spatial data to the EGDI platform (following Training video 1. Metadata of structured data – basic).

**Video 5: “Training video 3. Metadata of unstructured files”** (presenter James Trench), 6 min: How to create a metadata for an unstructured file (PDF) during the file uploading process to the EGDI Document Repository, part of the EGDI platform.

The videos are shared in the EGDI Metadata Catalogue ( <https://egdi.geology.cz/catalog/micka/docs>) for authorized users and at the GeoERA Support webpage ( <https://geoera-gip.github.io/support/>) are included links to all five videos which are hosted on YouTube at [https://www.youtube.com/playlist?list=PLrUsUX02MJ2bT7HEH6puswgE5xn\\_vgBh-](https://www.youtube.com/playlist?list=PLrUsUX02MJ2bT7HEH6puswgE5xn_vgBh-).

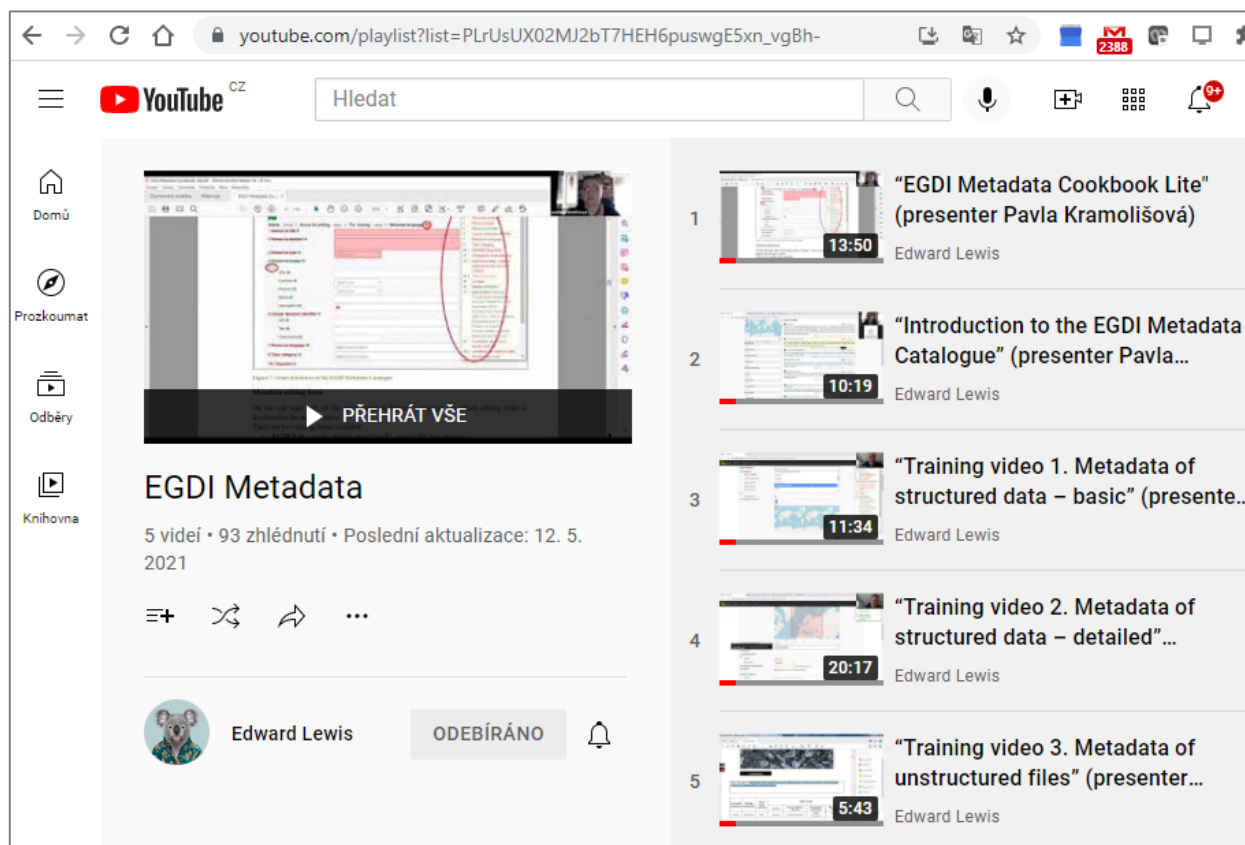


Figure 7 : The EGDI Metadata YouTube channel

## 9 CONCLUSIONS

The EGDI Metadata Catalogue has been continuously modified for technical and legislative reasons (INSPIRE) in order to best suit the standardized metadata description and achieve high usability of the outputs of the GeoERA scientific projects. The developed metadata profile fully respects existing relevant standards. Priority was given to the constant support of metadata editors, rich and relevant content and system security. The creation of two editing forms (EGDI-full and EGDI-Lite) enabled easy insertion of metadata for both inexperienced editors and the skilled ones. The integration of central codelists, connection to the EGDI Portal and the definition of certain rules have improved the degree of FAIRness achieved.

The developed metadatabase was populated with metadata from GeoERA scientific projects - as of September 30, 2021, it contained 439 records describing data sets and services. In total 50 metadata editors from 15 GeoERA projects were involved. The total of 653 items (39 DOIs and 401 PDFs, total 440, 203 pictures and 1 data) were uploaded in production Document Repository by GeoERA projects. The interaction of the support team with the editors facilitated their work, many training materials and cookbooks were created.

The system and the team are ready to continue working on the CSA project and further improve the system to achieve a higher degree of FAIRness and the best possible usability of the content.

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