



CzechGEO/EPOS

Section: Geological and Geophysical Databases

Dana Čápková et al.



Presentation outline

- **CGS data sources**
 - geology
 - geophysics
- **How to find and access data**
 - metadata (catalogues, geoportals)
 - data (web applications, web services, data delivery)
- **International requirements (legislation, projects)**
 - INSPIRE
 - EGDI, GeoERA
- **Future plans**



CGS Data Sources

CGS data - diverse types

Form of information:

- structured (database, GIS)
- unstructured (file system, digital archive)
- document (paper reports, primary documentation)

Content groups:

- primary (measured data)
- derived (processed data, for example grids)
- overview (localization and basic information)

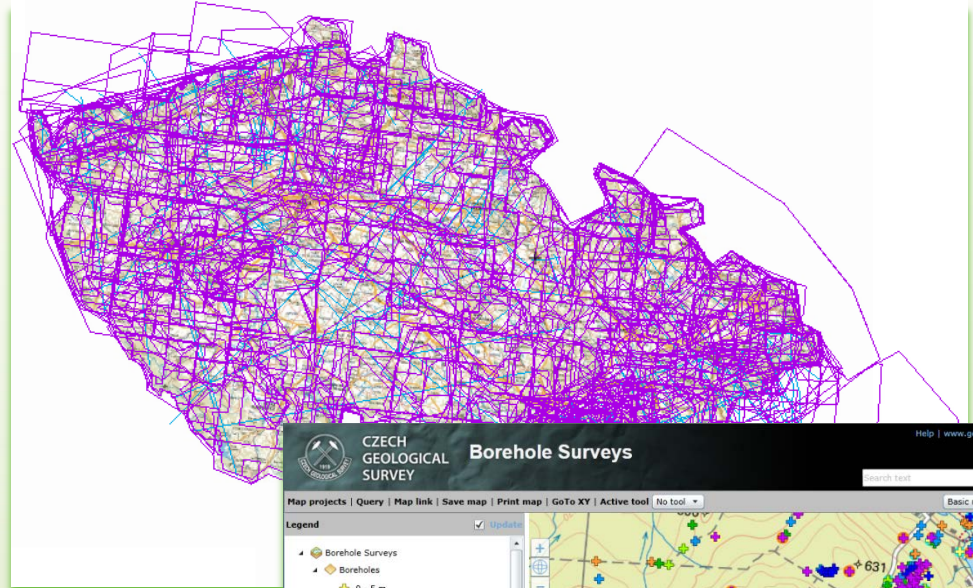
>	GEOLOGIE
>	HYDROGEOLOGIE
>	PŮDY
>	NEROSTNÉ SUROVINY
>	PODDOLOVÁNÍ A DŮLNÍ DÍLA
>	TĚŽEBNÍ ODPADY
>	GEOHAZARDY
>	GEOFYZIKA
>	GEOCHEMIE
>	GEOLOGICKÁ PROZKOUMANOST ČR
>	VZDĚLÁVÁNÍ A POPULARIZACE GEOLOGIE
>	KNIHOVNY A ARCHIVY
>	SBÍRKY A HMOTNÁ DOKUMENTACE



CGS Data – specific relevance for the CzechGeo

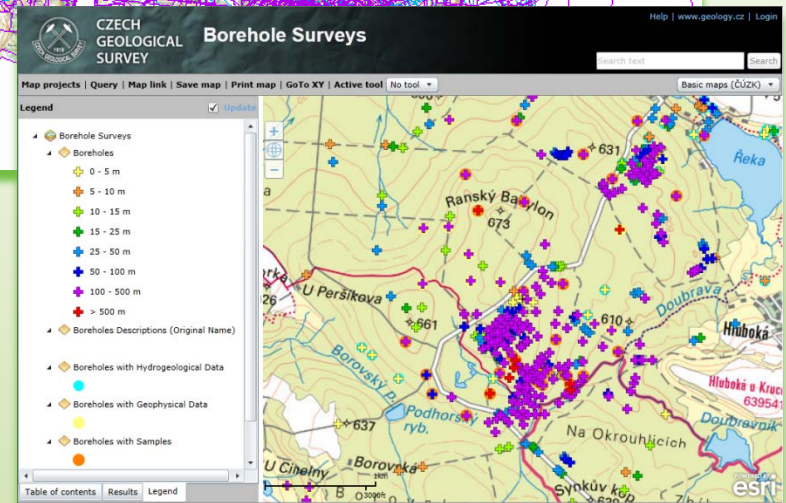
Geophysical data groups:

- gravimetry
- magnetometry
- geoelectrical methods
- seismics
- radiometry
- borehole logging
- petrophysics



Background geological data:

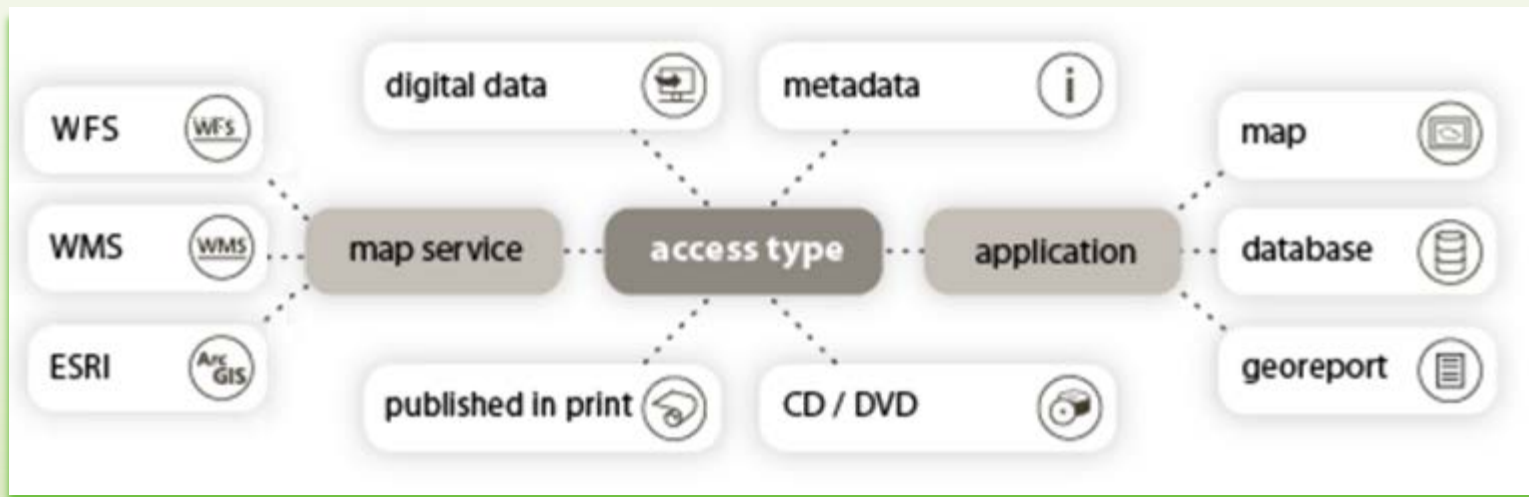
- geological maps, tectonics, boreholes





Standard access to CGS data

- Metadata
- Data
- Web services
- Applications





Public access – what is available










Web services

- WMS: <http://wms.geology.cz/>
- WFS



























Applications

- <http://applications.geology.cz/>
- <http://aplikace.geology.cz/>

Geophysics

-  **Geophysical surveys**  
http://mapy.geology.cz/arcgis/services/Prozkoumanost/Geofyzikalni_prozkoumanost/MapServer/WMServer
(Czech version only)
-  **Geomagnetic field map 1 : 2,000,000**  
http://mapy.geology.cz/arcgis/services/Inspire/geomagnetic_field/MapServer/WMServer
-  **Radiometric field map 1: 2,000,000**  
http://mapy.geology.cz/arcgis/services/Inspire/radiometric_field/MapServer/WMServer

Thematic guidepost to applications

GEOLOGY  	HYDROGEOLOGY  	SOIL 
MINERALS  	IMPACTS OF MINE WORKINGS 	MINING WASTE 
GEOHAZARDS  	ENGINEERING GEOLOGY 	LAND USE PLANNING 
GEOPHYSICS 	GEOCHEMISTRY  	GEOLOGICAL SURVEYS 
LIBRARY 	ARCHIVES  	COLLECTIONS & MATERIAL DOCUMENT. 
EDUCATION & PROMOTION  	NOTIFICATION & DATA COLLECTION  	OPERATIONAL 



What is INSPIRE

- **Legislation: EU spatial data infrastructure to support sharing of environmental spatial information among public sector organisations, to facilitate public access to spatial information across Europe**
 - Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) (and following documents)
 - Common Implementing Rules and Technical Guidelines to ensure that the spatial data infrastructures are compatible and usable
- **Annex II: Theme Geology** (including Geophysical data specification)
- GeophMeasurements, Campaigns





INSPIRE Technology and Standard Requirements

- Metadata
- View services
- Download services
- Data harmonization

PORTAL geo Adresy Metadata Dokumenty Hledat
Zadejte část adresy, název lokality

VÍTEJTE MAPY METADATA ESHOP VALIDACE INSPIRE DOKUMENTY GEOREPORTY NÁPOVĚDA

MAPY
INSPIRE
METADATA
POSKYTOVATEL
VALIDÁTOR
GEOREPORTY
E-SHOP

Vítejte na stránkách Národního geoportálu INSPIRE

Zpřístupnění datových sad služby Copernicus pro monitorování území
01.08.2016
V rámci optimalizace INSPIRE byla vypracována nová kompozice pro monitorování území, High resolution, Natura 2000...

Kvalita INSPIRE
21.06.2016
Stejně jako v případě koupacích míst byla kompozice pravidelně aktualizována a nyní je dostupná i v taktě (pokračování).

Aktualizace INSPIRE a síť INSPIRE
01.03.2016

INSPIRE
Infrastructure for spatial information in Europe
European Commission
Home Learn Implement Participate Use Toolkit

INSPIRE Video
The INSPIRE Directive: a brief description

INSPIRE Special
GIM International Mapping the world

Events
30/11/2016 5th INSPIRE MIG Expert Group Meeting
25/10/2016 MIG T face-to-face Meeting

INSPIRE knowledge base
INSPIRE knowledge base
INSPIRE Legislation
INSPIRE Library
INSPIRE Thematic clusters

News & Events
News
Events
RSS News

INSPIRE Tools
Geoportal
Validator
Metadata Editor
Registry
Data Specification toolkit

INSPIRE knowledge base
Search
INSPIRE conference Search
Conferences
Video Library
Site Map
Web Archive
Feedback

About | Contact | Privacy Policy | Legal Notice

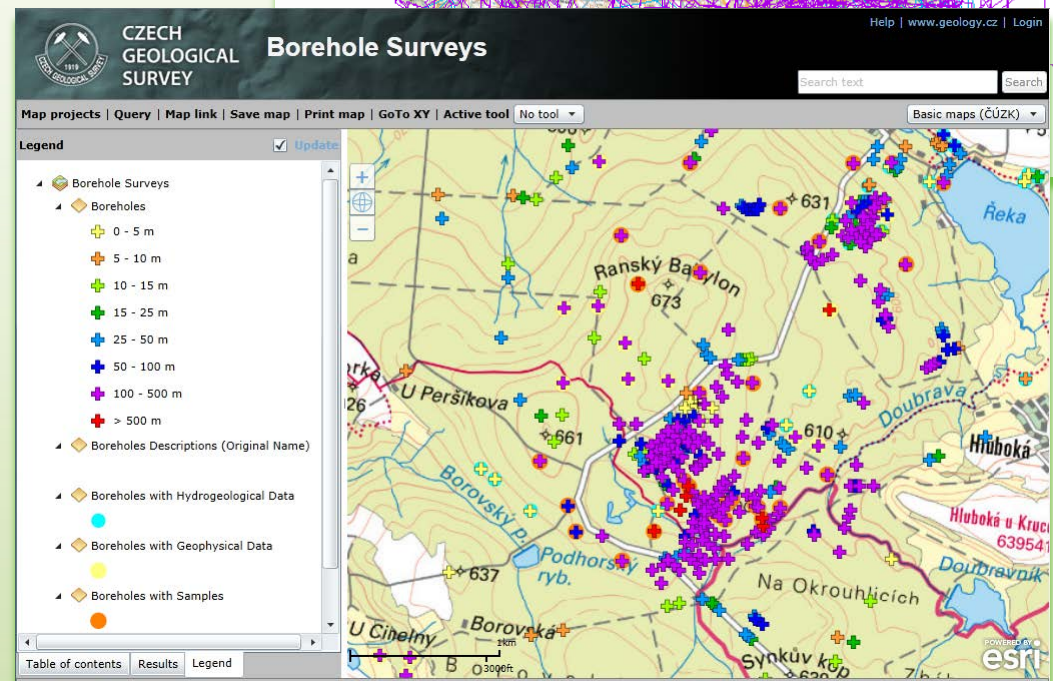
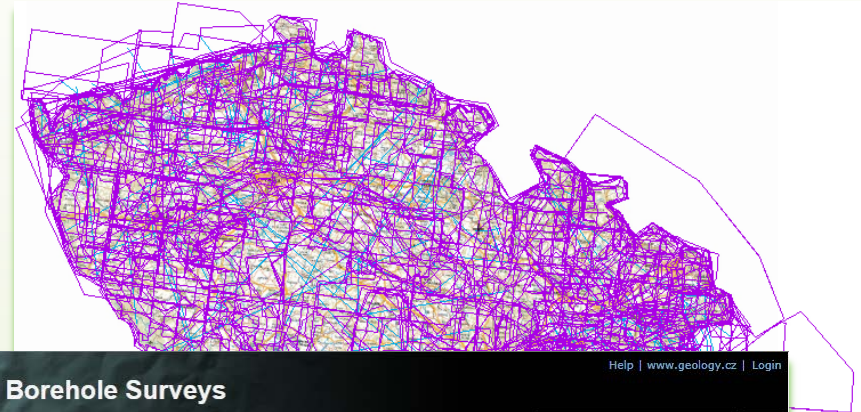
<https://geoportal.gov.cz/>

<http://inspire-geoportal.ec.europa.eu/>



CzechGeo vs. INSPIRE

- Geophysical monitoring stations
- Borehole geophysics
- Airborne geophysics
- Ground geophysics
 - Seismics
 - Gravimetry
 - Radiometry
 - Magnetometry
 - Geoelectrical profiling
 - Geoelectrical sounding





European Geological Data Infrastructure (EGDI)

▪ Aims:

- **Sustainable platform** for results of past and future **European geoscientific projects**
- Ambition to be the **central pan-European geological data node** as a part of the future European Geological Service
- Potential **Information source** for other domains and global activities (EPOS, GEOSS, ...)
- **Live demonstration of implementation of INSPIRE ideas**





EGDI pilot system



- developed 1-6/2016 <http://www.europe-geology.eu/>
- **team:** EGS members, core team: GEUS (leader, portal, viewer), BRGM (hosting, portal), **CGS (metadata)**, GeoZS (harvesting), BGS (INSPIRE)
- **Portal to access services from past European projects:** OneGeology-Europe, GeoMol, Minerals4EU, ProMine, EMODnet Geology, PanGeo, Terrafirma, GEMAS, SPBA, IGME5000, IHME1500, Geomind, EuroGeoSource, eENVplus, etc.
- **Metadata:** everything displayed on the EGDI Portal should also be supplemented by metadata!
- **Metadata catalogue:** [http:// egdi.geology.cz/](http://egdi.geology.cz/) : 1.973 public records: 1.831 datasets, 140 services, 2 applications; harvested from 14 catalogues; 18 data providers (GSO's)



EGDI Portal - Map Viewer - functional prototype

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




EGDI Portal - Metadata Catalogue functional prototype

- MICKA technology
- Harvesting from the national catalogues
- Import, insert, edit and search metadata
- Connection to the EGDI Portal

The screenshot shows the EGDI Metadata Catalogue website. At the top left is the EGDI logo, a stylized 3D cube with green, yellow, and red faces. To its right is the text "European Geological Data Infrastructure Metadata Catalogue". In the top right corner, there is an RSS icon and a "Login" link. On the left side, there is a navigation menu with the following items: Home (highlighted), Search, Map Viewer, Help, and Contact. Below the menu is the logo of the Czech Geological Survey, which includes the text "CZECH GEOLOGICAL SURVEY" and the year "1919". The main content area features a heading "Welcome to the EGDI Metadata Catalogue" followed by a paragraph of text: "The EGDI Metadata Catalogue is the central access point to metadata concerning structured geological data. It provides tools for compilation of those metadata in a standardized format that will allow users to effectively search through the database. In order to make the data discoverable in the most efficient way, the catalogue is fully compliant with international standards and supports the distributed system of metadata administration. Only digital and structured information (spatial datasets or dataset series and spatial data services - WMS, WFS) should be described by metadata in this catalogue. In order to display a metadata record for which an on-line map service is available, the Metadata Catalogue will be integrated into the EGDI Portal. The catalogue enables systematic discovery, viewing and use of geological data across Europe." To the right of this text is a map of Europe with several countries shaded in grey. At the bottom right of the main content area, the URL <http://egdi.geology.cz/> is displayed in a large blue font. The footer of the page contains the text "© Czech Geological Survey 2016".




EGDI Metadata Catalogue - search metadata records



European Geological Data Infrastructure Metadata Catalogue

Logged user: CGS logout

- Home
- Search**
- New record
- Admin
- Map Viewer
- Help
- Cookbook
- Contact



Search metadata records

Fulltext:

All Title Title & Abstract

Keywords (INSPIRE Themes, Gemet, 1G-E):

Type:

Metadata Organisation:


Country:

Harvested from:

Metadata record status:
 Public Private
 EGDI My records only

Order by:

Use map extent



Extent: -21.883 27.056 37.883 62.592



EGDI Metadata Catalogue – search results



European Geological Data Infrastructure Metadata Catalogue

Logged user: CGS [logout](#)

Search > Found (3)

Found: 3

Sort by: Title Ascending

- Home
- Search
- Found**
- New record
- Admin
- Map Viewer
- Help
- Cookbook
- Contact



EGDI WMS services for Geophysics, Hungary

INSPIRE View services provided for EGDI Geophysics

Public Metadata Contact: Geological and Geophysical Institute of Hungary (MFGI), Hungary, Date Stamp: 2016-06-14

Verical Electric Soundings in Europe

Parent metadata record of national datasets containing spatial features of type Vertical Electric Sounding. Metadata is used to look up datasets and services contributing to the the Annex II Geology theme INSPIRE layer officially titled as GE.VerticalElectricSounding.

Public Metadata Contact: Geological and Geophysical Institute of Hungary (MFGI), Hungary, Date Stamp: 2016-05-31

Vertical Electric Soundings at NW Hungary

This dataset contains VES measurement locations in the Kisalföld area at NW Hungary. It was reconstructed for demonstration purposes in the EGDI-Bridge project from the former GEOMIND project metadata. Related online resources provide INSPIRE compliant WMS and WFS services

Public Metadata Contact: Geological and Geophysical Institute of Hungary (MFGI), Hungary, Date Stamp: 2016-06-21



EGDI Metadata Catalogue – search results



European Geological Data Infrastructure Metadata Catalogue

Logged user: CGS [logout](#)

- Home
- Search
- Found**
- New record
- Admin
- Map Viewer
- Help
- Cookbook
- Contact

Search > Found (3)

Found: 3

Sort by: Title Ascending

-  **EGDI WMS services for Geophysics, Hungary**
INSPIRE View services provided for EGDI Geophysics
Public Metadata Contact: Geological and Geophysical Institute of Hungary (MFGI), Hungary, Date Stamp: 2016-06-14
-  **Verical Electric Soundings in Europe**
Parent metadata record of national datasets containing spatial features of type Vertical Electric Sounding. Metadata is used to look up datasets and services contributing to the the Annex II Geology theme INSPIRE layer officially titled as GE.VerticalElectricSounding.
Public Metadata Contact: Geological and Geophysical Institute of Hungary (MFGI), Hungary, Date Stamp: 2016-05-31
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This dataset contains VES measurement locations in the Kisalföld area at NW Hungary. It was reconstructed for demonstration purposes in the EGDI-Bridge project in the metadata. Related online resources provide INSPIRE compliant WMS and WFS services
Public Metadata Contact: Geological and Geophysical Institute of Hungary (MFGI), Hungary, Date Stamp: 2016-06-21



WW

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EGDI Metadata Catalogue – basic metadata



European Geological Data Infrastructure Metadata Catalogue



Logged user: CGS logout

Home

Search

Found

Basic metadata

New record

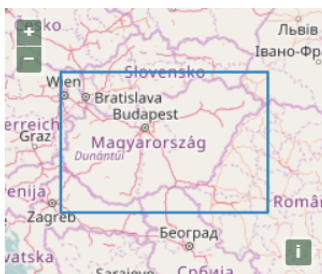
Admin

Map Viewer

Help

Cookbook

Contact



Search > Found (3) > Basic metadata

Vertical Electric Soundings at NW Hungary

Basic metadata

Abstract

This dataset contains VES measurement locations in the Kisalföld area at NW Hungary. It was reconstructed for demonstration purposes in the EGDI-Bridge project from the former GEOMIND project metadata. Related online resources provide INSPIRE compliant WMS and WFS services

Type

dataset - <http://egdi.geus.dk>

Resource Locator

- <http://geonetwork.mfgi.hu:8080/geoserver/egdi/wms>
- <http://geonetwork.mfgi.hu:8080/geoserver/egdi/wfs>
- http://egdi.brgm.fr/egdi/#baslay=baseMapEEA,baseMapGEUS&optlay=&extent=2883290,2170320,5297550,3445360&layers=egdi_resistivity_map,egdi_2d_seismics,egdi_soundings

Identifier

GE.verticalElectricSounding

Language

English

Topic category

geoscientific information

Keywords

GEMET - INSPIRE themes, version 1.0:
Free: verticalElectricSounding
Free: geophysics
Free: EGDI

Bounding box

16.253814890009, 45.58204555978, 23.021393015009, 48.70216274728

Date

publication: 2016-03-02

Spatial Representation

vector

Contact Info

MFGI/TFO
 Sörös László
 email: sores.laszlo@mfgi.hu
 Role: custodian

Data Quality

Lineage

Data was extracted from the Hungarian national archive.

Spatial Resolution


Equivalent Scale = 1:10000

Conformity

Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive



EGDI Metadata Catalogue – link to layer on the EGDI Portal



European Geological Data Infrastructure
Metadata Catalogue

Logged user: CGS logout

Search > Found (3) > Basic metadata

Vertical Electric Soundings at NW Hungary

Home

Search

Found

Basic metadata

New record

Admin

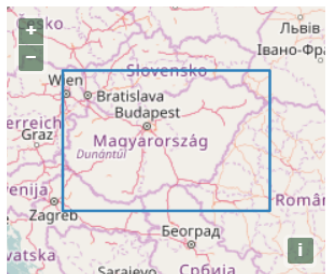
Map Viewer


Help

Cookbook

Contact

Basic metadata	
Abstract	This dataset contains VES measurement locations in the Kislápföld area at NW Hungary. It was reconstructed for demonstration purposes in the EGDI-Bridge project from the former GEOMIND project metadata. Related online resources provide INSPIRE compliant WMS and WFS services
Type	dataset - http://egdi.geus.dk
Resource Locator	<ul style="list-style-type: none"> • http://geonetwork.mfgi.hu:8080/geoserver/egdi/wms • http://geonetwork.mfgi.hu:8080/geoserver/egdi/wfs • http://egdi.brgm.fr/egdi/#baslay=baseMapEEA,baseMapGEUS&optlay=&extent=2883290,2170320,5297550,3445360&layers=egdi_resistivity_map,egdi_2d_seismics,egdi_soundings
Identifier	GE.verticalElectricSounding
Language	English
Topic category	geoscientific information
Keywords	<p><i>GEMET - INSPIRE themes, version 1.0:</i></p> <p>Free: verticalElectricSounding</p> <p>Free: geophysics</p> <p>Free: EGDI</p>
Bounding box	16.253814890009, 45.58204555978, 23.021393015009, 48.70216274728
Date	publication: 2016-03-02
Spatial Representation	vector
Contact Info	<p>MFGI/TFO</p> <p>Sörös László</p> <p>email: sores.laszlo@mfgi.hu</p> <p>Role: custodian</p>
Data Quality	
Lineage	Data was extracted from the Hungarian national archive.
Spatial Resolution	Equivalent Scale = 1:10000
Conformity	Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive





**CZECH
GEOLOGICAL
SURVEY**

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EGDI Metadata Catalogue → display of layer on the EGDI Portal

Layer chooser

- Mineral Resources
- Geological Map 1:1M
- Geological Map 1:5M
- Geological Map 1:100k
- Hydrogeological Map 1:1.5M
- Geochemistry
- Marine Geology
- Southern Permian Basin Atlas
- Geohazards
- Geophysics **3**

Vertical electrical soundings

2D seismics

Base map
OSM hosted by GEUS

Optional layers

Legends

- Vertical electrical soundings
 - soundings
- 2D seismics
 - 2D seismics
- EGDI Resistivity (10m)
 - 4
 - 8
 - 12
 - 16
 - 24
 - 32
 - 40
 - 50
 - 60
 - 100
 - 160



EGDI Metadata Catalogue → display of layer on the EGDI Portal

Layer chooser

- Mineral Resources
- Geological Map 1:1M
- Geological Map 1:5M
- Geological Map 1:100k
- Hydrogeological Map 1:1.5M
- Geochemistry
- Marine Geology
- Southern Permian Basin Atlas
- Geohazards
- Geophysics **3**

Vertical electrical soundings

2D seismics

Vertical electrical soundings

- soundings

2D seismics

- 2D seismics

EGDI Resistivity (10m)

- 4
- 8
- 12
- 16
- 24
- 32
- 40
- 50
- 60
- 100
- 160

Base map: OSM hosted by GEUS

Optional layers: []

200 km

DD: XY: EGDI



Layer on the EGDI Portal → display metadata from EGDI MC

Layer chooser

- Mineral Resources
- Geological Map 1:1M
- Geological Map 1:5M
- Geological Map 1:100k
- Hydrogeological Map 1:1.5M
- Geochemistry
- Marine Geology
- Southern Permian Basin Atlas
- Geohazards
- Geophysics 3
 - Vertical electrical soundings
 - Vertical Electric Soundings at NW Hungary
 - 2D seismics

Vertical Electric Soundings at NW Hungary

This dataset contains VES measurement locations in the Kisalföld area at NW Hungary. It was reconstructed for demonstration purposes in the EGDI-Bridge

Base map: OSM hosted by GEUS

Optional layers

Legends

- Vertical electrical soundings
 - soundings
- 2D seismics
 - 2D seismics
- EGDI Resistivity (10m)
 - 4
 - 8
 - 12
 - 16
 - 24
 - 32
 - 40
 - 50
 - 60
 - 100
 - 160

Title and abstract displayed on-line from EGDI metadata catalogue



Layer on the EGD Portal → link to the basic metadata in EGD MC

Layer chooser

- Mineral Resources
- Geological Map 1:1M
- Geological Map 1:5M
- Geological Map 1:100k
- Hydrogeological Map 1:1.5M
- Geochemistry
- Marine Geology
- Southern Permian Basin Atlas
- Geohazards
- Geophysics 3
 - Vertical electrical soundings
 -
 - 2D seismics
 -
 - Depth min -
 - Depth max -

Vertical Electric Soundings at NW Hungary

This dataset contains VES measurement locations in the Kisalföld area at NW Hungary. It was reconstructed for demonstration purposes in the EGD-Bridge

Base map OSM hosted by GEUS

Optional layers

Legends

- Vertical electrical soundings
 - soundings
- 2D seismics
 - ↗ 2D seismics
- EGDI Resistivity (10m)
 - 4
 - 8
 - 12
 - 16
 - 24
 - 32
 - 40
 - 50
 - 60
 - 100
 - 160



“There and Back Again”

Layer on the EGDI portal → report from EGDI MC

egdi.geology.cz/csw/?service=CSW&request=GetRecordById&id=9152a3f6-9f14-4beb-96ef-005447b84216&format=text/html&ElementSetName=brief&lang=cs

Vertical Electric Soundings at NW Hungary

Basic metadata

Abstract
This dataset contains VES measurement locations in the Kisalföld area at NW Hungary. It was reconstructed for demonstration purposes in the EGDI-GEOMIND project metadata. Related online resources provide INSPIRE compliant WMS and WFS services

Type dataset - <http://egdi.geus.dk>

Resource Locator
<http://geonetwork.mfgi.hu:8080/geoserver/egdi/wms>
<http://geonetwork.mfgi.hu:8080/geoserver/egdi/wfs>
<http://egdi.brgm.fr/egdi/#baslay=baseMapEEA,baseMapGEUS&optlay=&extent=2883290,2175150,2883290,2175150>
sistivity_map,egdi_2d_seismics,egdi_soundings

Identifier GE.verticalElectricSounding

Language English

Topic category geoscientific information

Keywords
GEMET - INSPIRE themes, version 1.0:
Free: verticalElectricSounding
Free: geophysics
Free: EGDI

Bounding box 16.253814890009, 45.58204555978, 23.021393015009, 48.70216274728

Date publication: 2016-03-02

Spatial Representation vector

Contact Info
MFGI/TFO
Sörös László
email: sores.laszlo@mfgi.hu
Role: custodian

Data Quality

Lineage Data was extracted from the Hungarian national archive.

Spatial Resolution Equivalent Scale = 1:10000

Conformity 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

Constraints

Use Limitation no limitations on use of metadata

Access Constraints other restrictions
To access data registration is required





Future of the EGDI

- EGDI is a central pillar in EGS' strategy towards a European Geological Service
- EGDI will provide the data and services to carry out pan-European research and support of policy making, risk mitigation, resource evaluation etc.
- EGDI will be the basis for:
 - Information Platform in the GeoERA programme (ERA-Net on Applied Geoscience Information Platform Theme)
 - Thematic Core Services on Geological Information and Modelling of EPOS
 - other data infrastructures (EMODnet, Copernicus and GEOSS)
- It is build on European and international standards (INSPIRE, CGI, OGC)



CzechGeo: future plans

- **Inventory of geophysical and geological data in CR**
 - CGS data sources
 - Other available data sources
- **Consolidation of geophysical and geological data in CR**
- **Effective access to geophysical data including INSPIRE**
- **Relation to RIs:**
 - EPOS
 - further development of EGDI
 - coordination with GeoERA



Poděkování:

Velká infrastruktura CzechGeo/EPOS je podpořena v letech 2016-2019 projektem LM2015079 Ministerstva školství, mládeže a tělovýchovy ČR.

Thank you for your attention!

Dana Čápková

Eva Hudečková, Lucie Kondrová, Pavla Kramolišová, Roman Kujal,

Olga Moravcová