



Coordinating and integrating state-of-the-art
Earth Observation Activities in the regions of
North Africa, Middle East and Balkans
and Developing Links with GEO related initiatives
toward GEOSS

GEO-CRADLE pre-Kick-Off Meeting
Friday, 18th of February, 2016

Artemios ATZEMOGLOU,
Dr Geologist
Institute of Geology & Mineral
Exploration (IGME-GR)



IONIC Centre, 11 Lysiou Street
Athens, Greece





GEO.M.IN.D. (Geophysical Multilingual Internet-Driven Information Service)

What is GeoMind about?

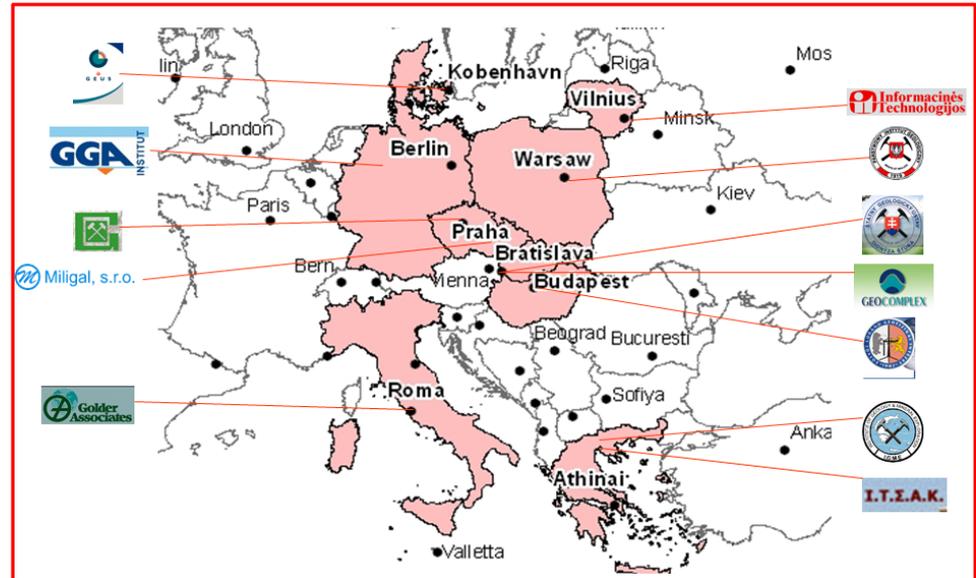
The GEOMIND project was financed by the EU (DIRECTORATE-GENERAL INFORMATION SOCIETY AND MEDIA, **eContentplus**) and the consortium member organizations

GeoMind system was developed to meet the needs of people & organizations who potentially use geophysical data.

GeoMind is a web based information service to search, display and order geophysical data from across Europe

GeoMind Portal provides multilingual platform (10 languages) to utilise geophysical data without a limitation of national boundaries.

The system is multilingual, supports (the project website: <http://thes.igme.gr/geomind/>, the GEOMIND Metadata profile, the thesaurus for geophysics & the system



9 partner countries

PGI (PL), CGS Czech Geological Survey (CZ), Eotvos Lorand Geophysical Institute of Hungary (H), Geocomplex a.s. (SK), GEUS (DK), Leibniz Institute for Applied Geosciences (D), Golder Associates Srl (I), GSSR Geological Survey of the Slovak Republic (SK), IGME (GR), Informacines Technologijos (LT), EPPO-ITSAK Institute of Engineering Seismology and Earthquake Engineering (GR), Miligal s.r.o. (CZ)

Star September 1, 2006 End: August 31, 2008

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GEO.M.IN.D. (Geophysical Multilingual Internet-Driven Information Service)

Project objectives

To develop a unique and sophisticated IT solution for Internet-driven geophysical information service: multilingual user interface, national data resources aggregated, new/extended standards of data representation-exchange developed, user needs analyzed and addressed, system open for geographic-linguistic-thematic extensions, seamless geographic data, information service.

Main project achievements

- Developed unique software for data management:
 1. MDE (Metadata editor)
 2. Portal (<http://www.geomind.eu/portal/home.jsf>)
- Implementation of advanced methodological solutions:
 1. Dynamic multilingualism
 2. XML transformations between different data structures
 3. ISO standard extension for geophysical data
- Big amount of collected metadata sets from different EU countries (over 1 million)
- Wide dissemination of project results through Project web site



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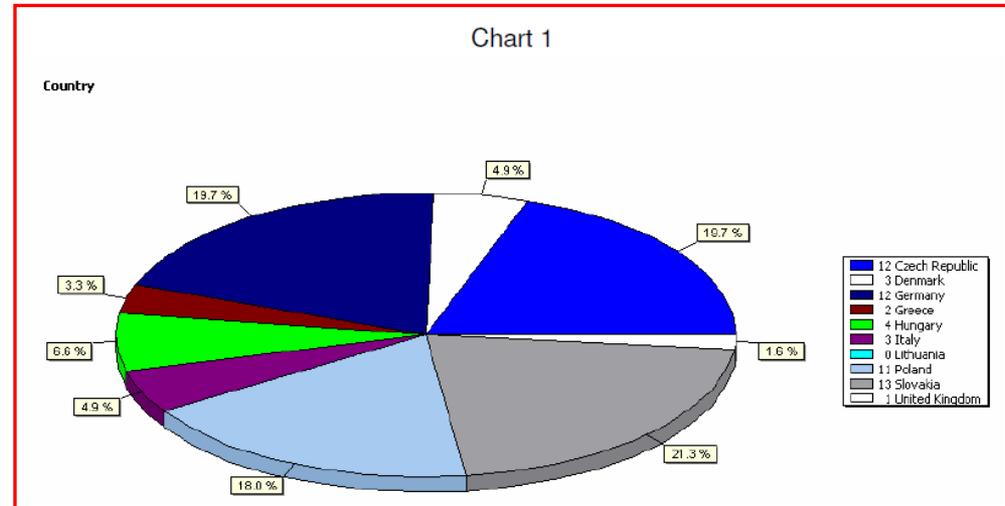
GEO.M.IN.D. (Geophysical Multilingual Internet-Driven Information Service)

User Needs and User Requirements

The report describes how companies and organizations were contacted and interviewed, what their responses were and how their responses relates to the GEOMIND project. This have been done by:

- interviewing a list of potential users.
- All the potential interviewees were contacted via phone or email
- The potential interviewees were sent a cover letter

SURVEY RESULTS



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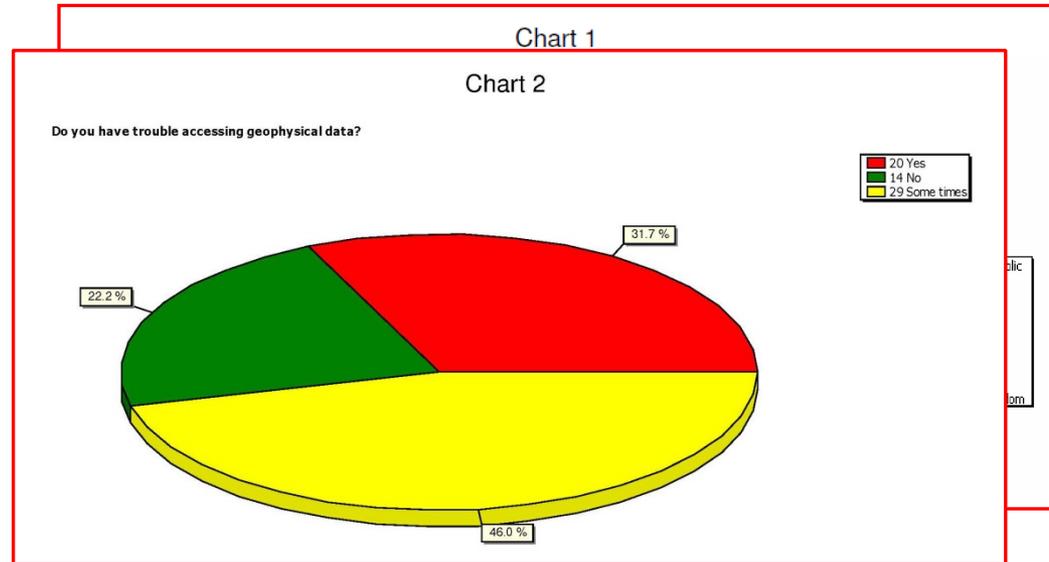
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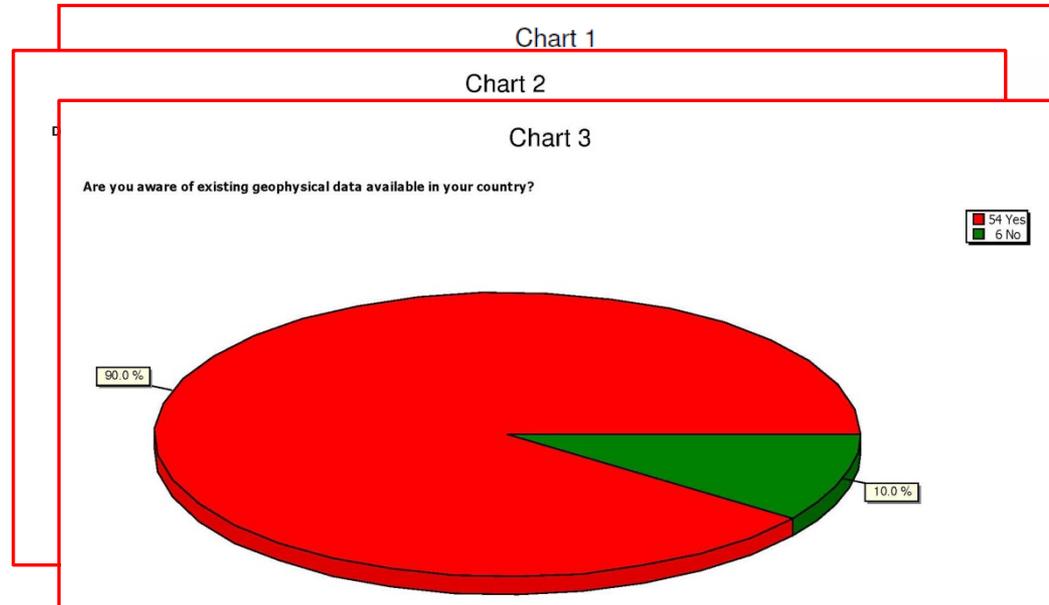
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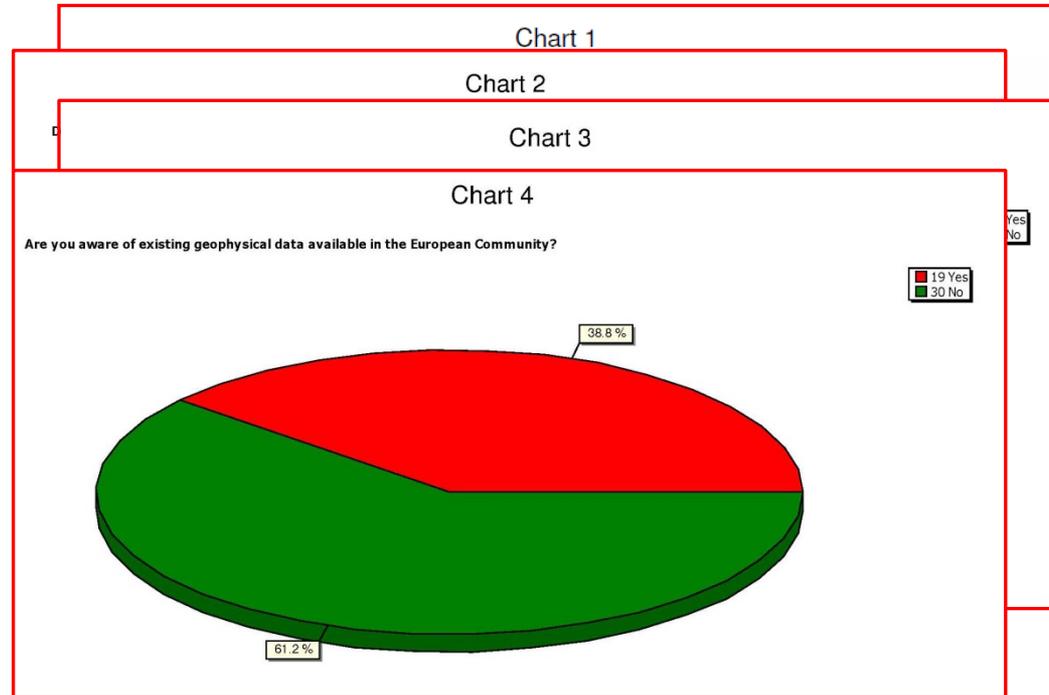
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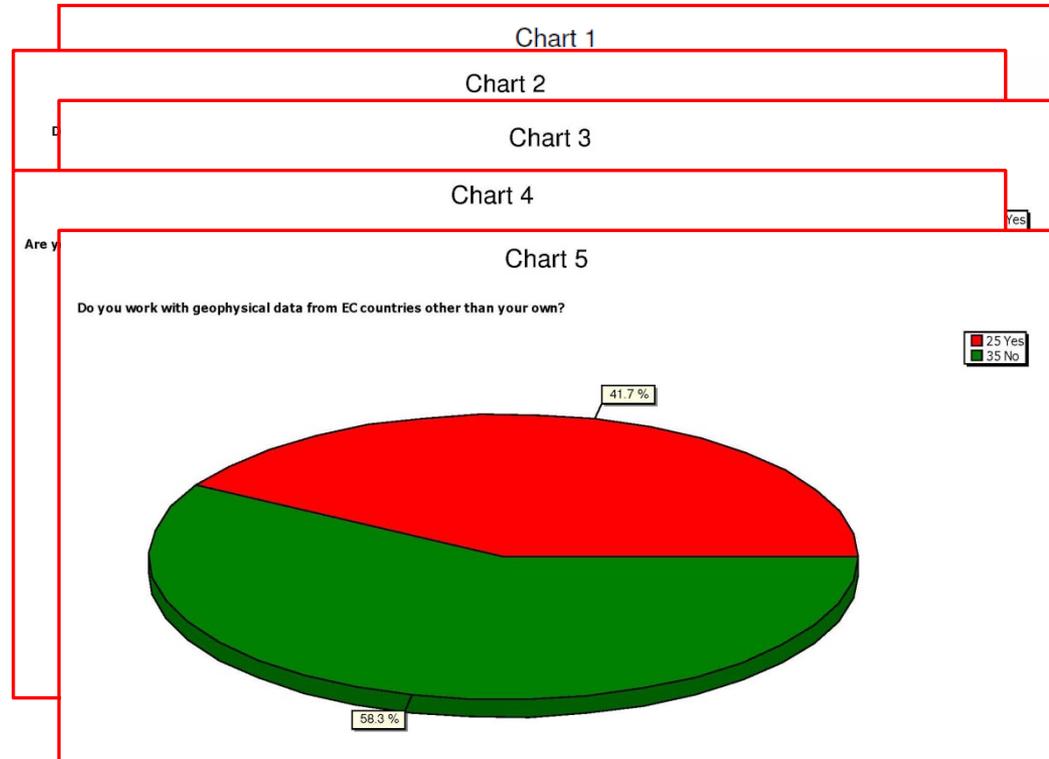
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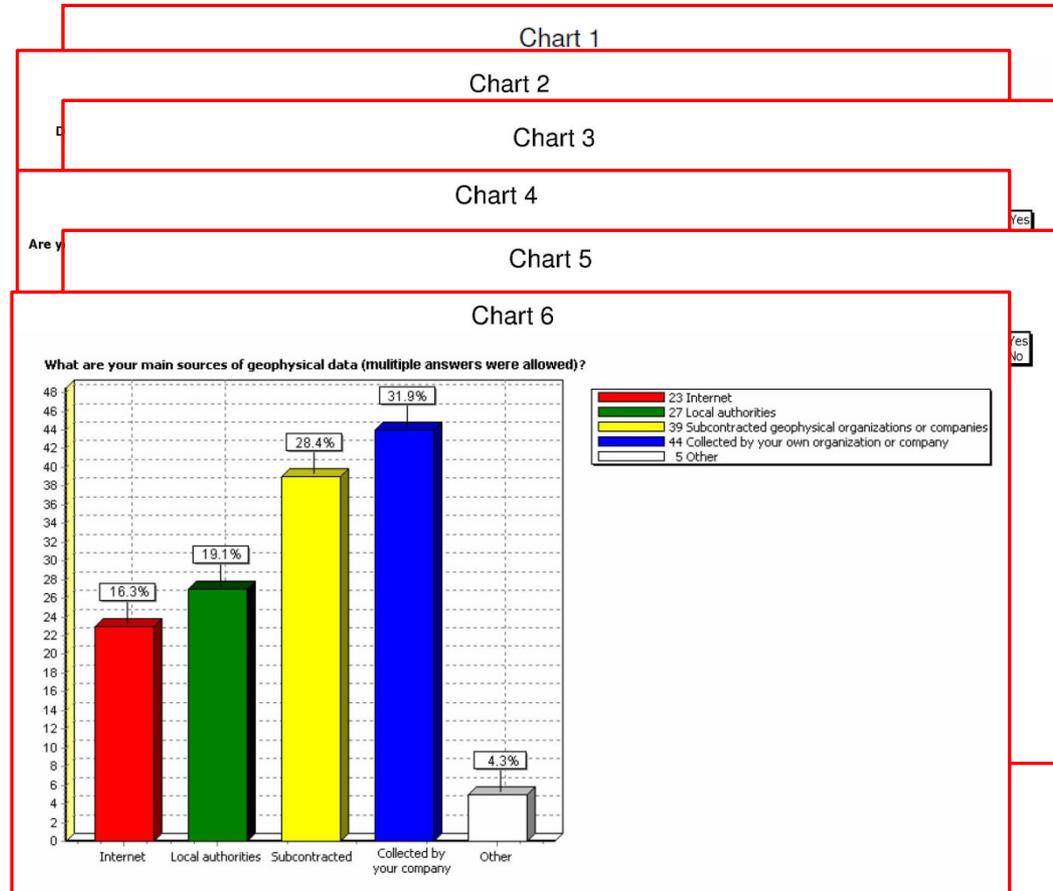
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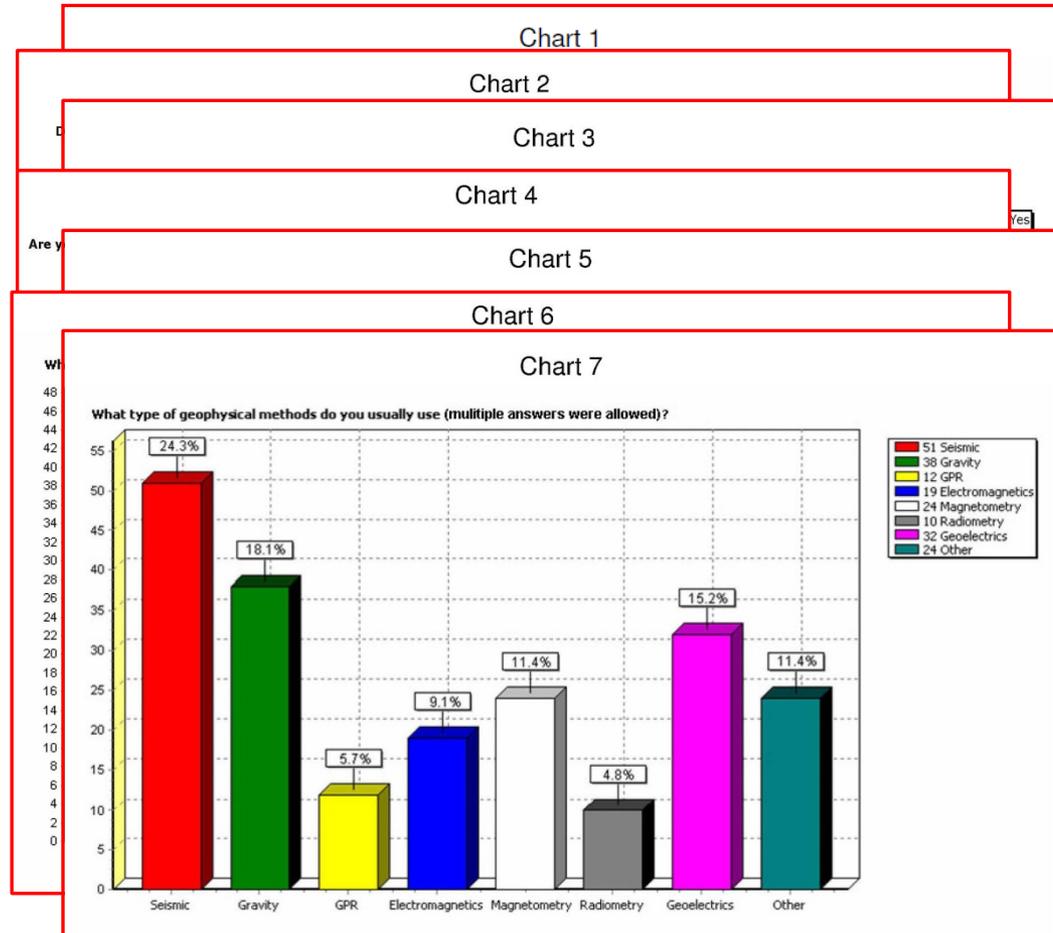
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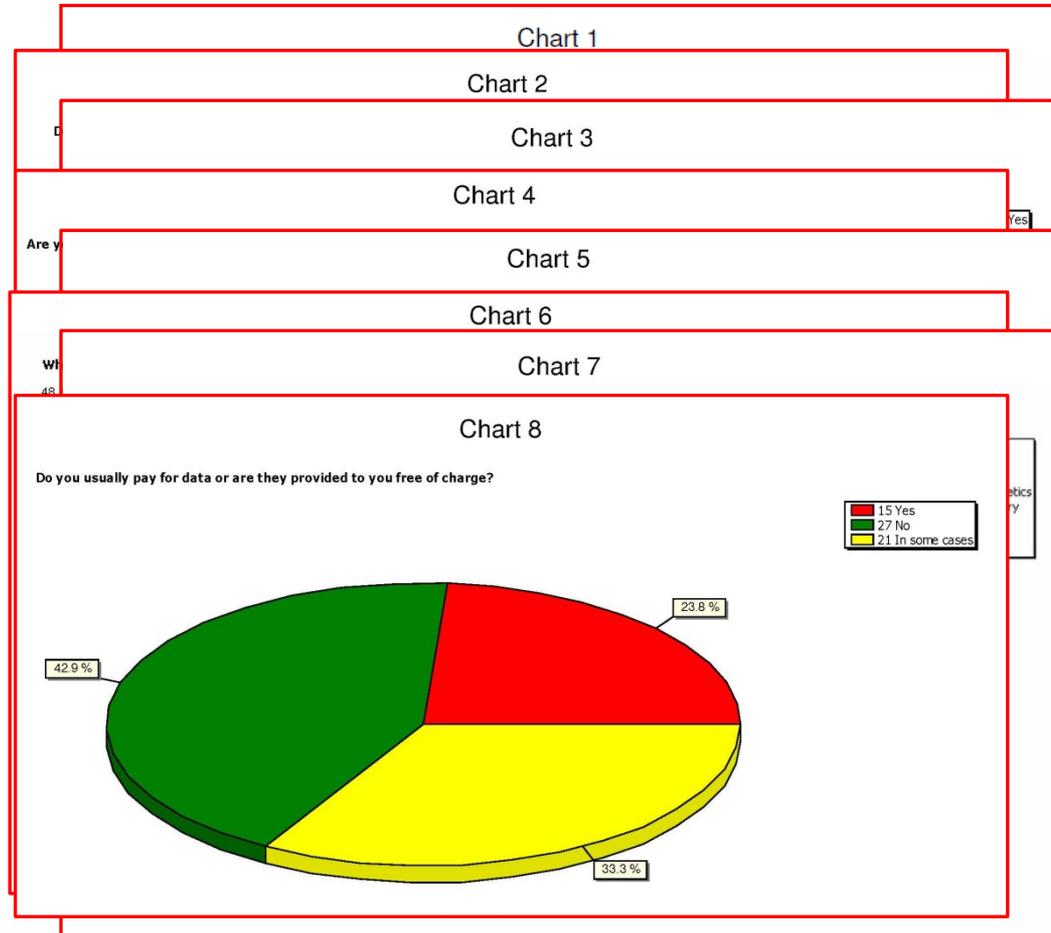
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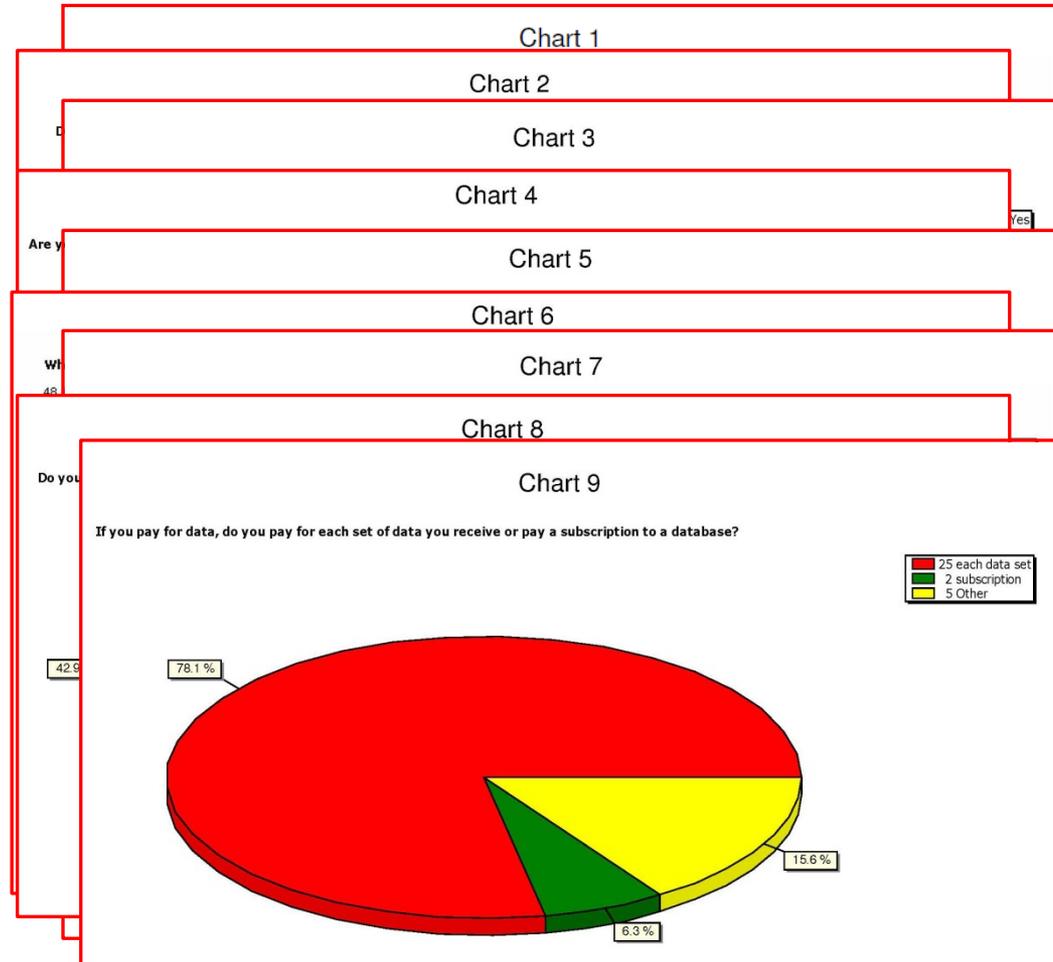
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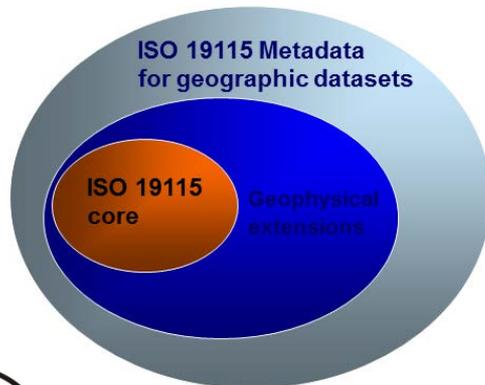


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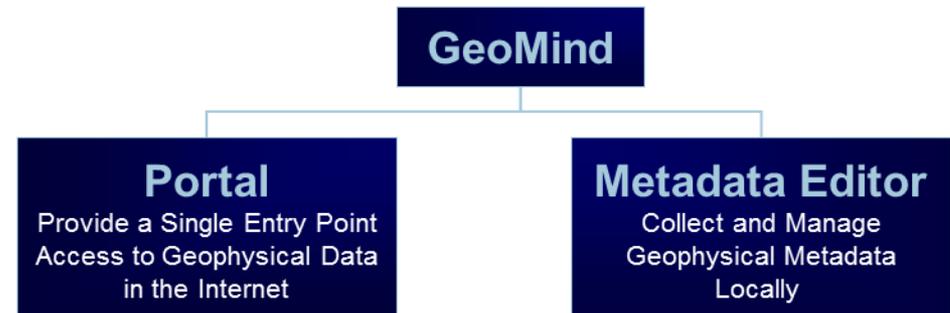
What type of data are included?

- Metadata (GeoMind profile: detailed description, geographical extent of particular data, campaigns etc.)
- Detailed data: Vertical Electrical Sounding (VES), Time domain electromagnetics (TDEM), Magnetotelluric & Telluric, Gravimetry, Magnetometry (Ground & Airborne), Radiometry (Airborn & Ground), Complex Airborn, Observ. Mag & pulsation, Observ. Extensometry, Seismics (2D seismic profiles, 2D seismic field data, 2D tomo velocity, 3D tomo velocity, stacking velocity; deep seismic refraction), Seismological data, Borehole logging, Petrophysical data

GeoMind metadata profile:
ISO 19115, 19139 compliant



Hierarchy of system functions



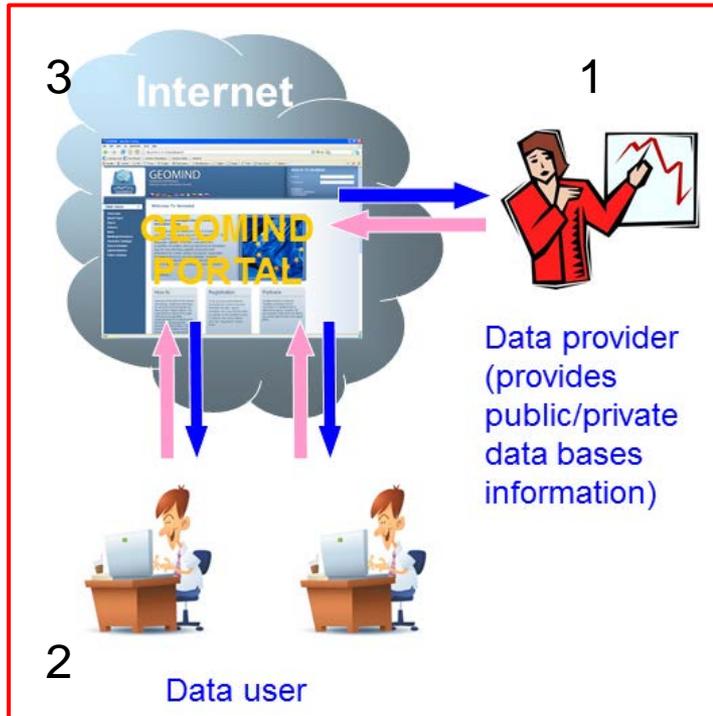
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GEO.M.IN.D. (Geophysical Multilingual Internet-Driven Information Service)

How does GEOMIND work?



1. Several organizations provide their geophysical data through the **GEOMIND portal**.

2. An individual interested in geophysical data is able to search (textually or graphically) **GEOMIND system** for types of data available from data providers.

3. Once the users have found data they will be able to directly place their order with the data provider on the **GEOMIND portal**.



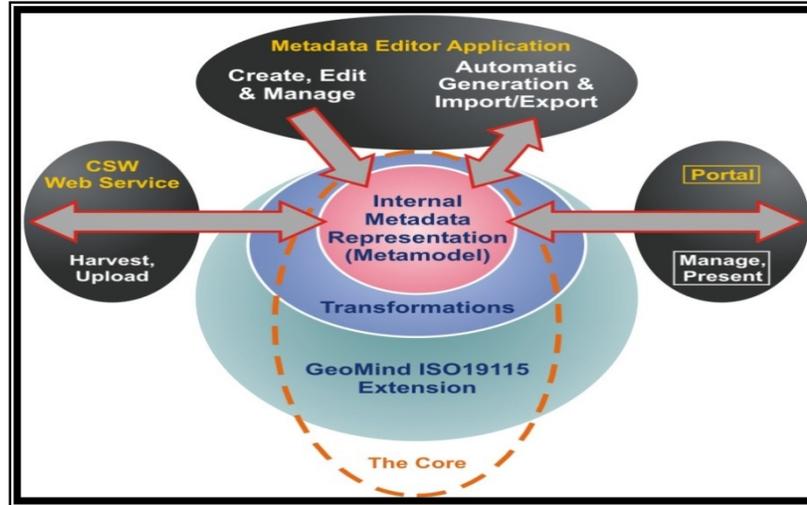
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Metadata Editor



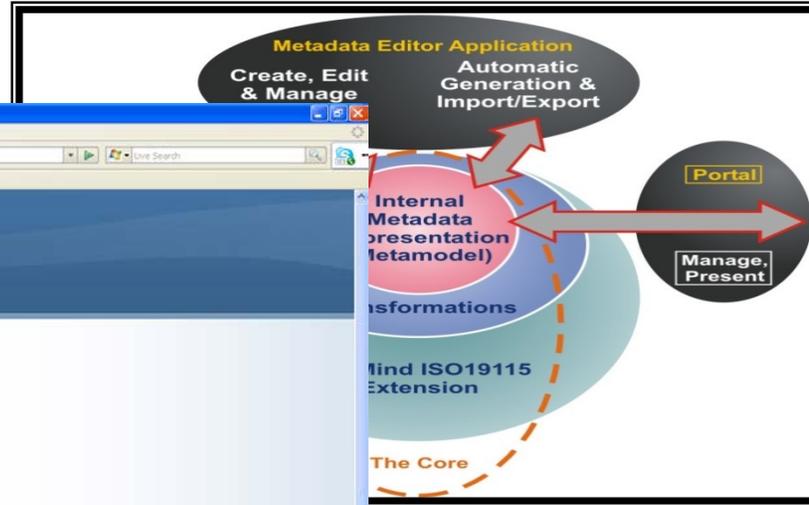
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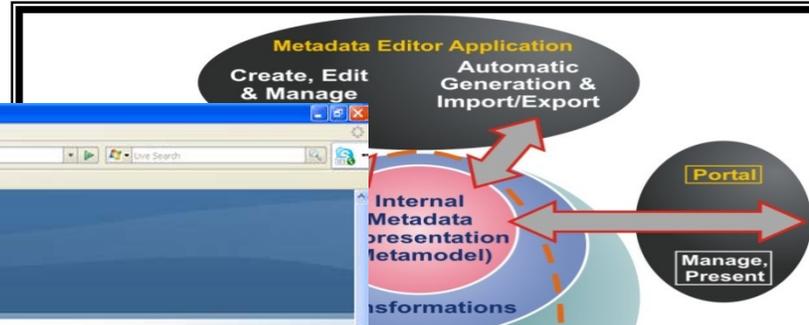
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Metadata Editor



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GEO.M.IN.D. (Geophysical Multilingual Internet-Driven Information Service)

Project website

Home

Project
Project Presentation
Partners
News & Events
Publications
RSS Reader
Links

LOGIN FORM

Username

Password

A Geophysical Multilingual Internet-Driven Information Service

Various geophysical databases exist in European countries, both in public and private organisations. They are dispersed and have various standards and languages applied. Thus their usefulness and availability are limited, although geophysical information may be very effectively applied, processed and interpreted for a wide variety of purposes: exploration for mineral resources and groundwater, studying environmental features for spatial planning, construction works or detection of potential geohazards, research studies etc.

The competitiveness of geodata handlers and organisations specialized in geodata processing will be enhanced if these databases are integrated and accessed via the Internet, offering cross-border, European-wide, unified electronic services, making geophysical data much more available.

Therefore an Internet-driven multilingual information system, integrating geophysical data coming from national data holdings, is being proposed to be designed, developed and set up.

AUG SEP 2007 OCT

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9	10	11	12	13	14	15
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23	24	25	26	27	28	29
30						

EVENTS

- 6th Technical Meeting in Luxembourg

LATEST FILES

- TEZ_S2

<http://thes.igme.gr/geomind/>



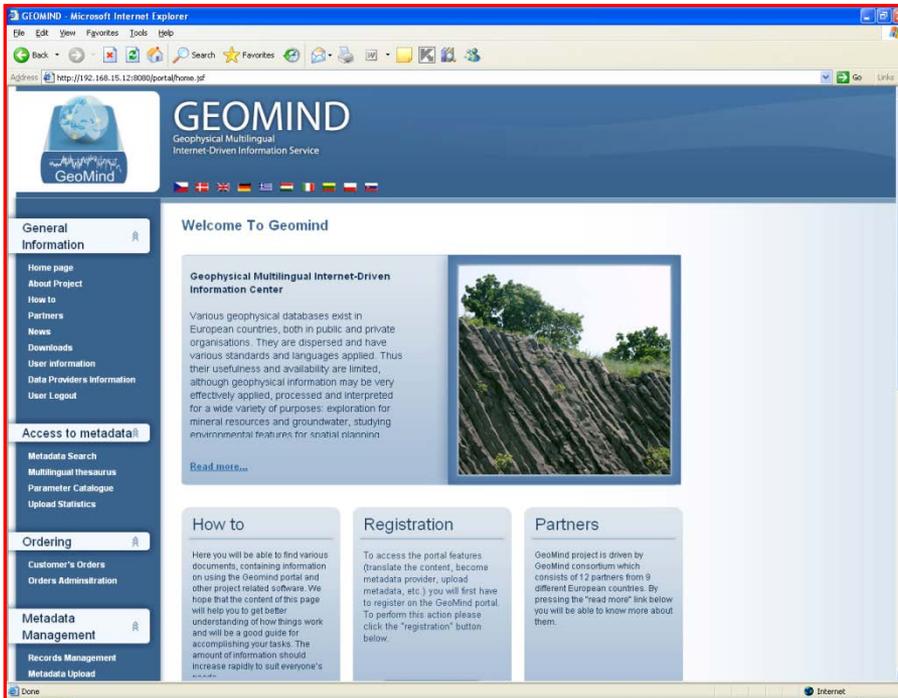
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GEO.M.IN.D. (Geophysical Multilingual Internet-Driven Information Service)

Project portal



<http://www.geomind.eu/portal/home.jsf>



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In.Geo.Cloud.S. (INspired GEOdata CLOUD Services)

What is InGeoCloudS about?



Co-funded by the European Commission under the Information and Communication Technologies Policy Support Programme Area: CIP - ICT - PSP 2011 4.1 - Towards a cloud of public services, Pilot Type B

The project demonstrated that a Cloud infrastructure can be used by public organisations to provide more efficient, scalable and flexible services for creating, sharing and disseminating spatial environmental data



ID-Card of the Project

5 Geological Surveys bringing in 6 initial Use Cases (datasets and applications) about: Ground Water Management, Geo-Hazards (Landslides and Earthquakes) & GeoPublication and Web Mapping made easy



3 ICT organizations key-expertise in: Cloud Computing, GIS, Semantic Web and Linked Data & Software architecture and integration...



5 partner countries, 8 Organisations

BRGM (FR), GEO-ZS (SL), GEUS (DK), IGME (GR), EPPO-ITSAK Earthquake Planning & Protection Organization-Institute of Engineering Seismology and Earthquake Engineering (GR), CNR (I), AKKA (FR), FORTH (GR).

Star February 1, 2012 End: August 31, 2014

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In.Geo.Cloud.S. (INspired GEOdata CLOUD Services)

Data Used: Spatial Environmental Data

The Digitized Earth: availability of data generated by various institutions all over Europe in numerous domains:

- Geography,
- Earth observation,
- Geology,
- Public Administration
- Private “Geo-Companies”

Data transformations

Heterogeneous datasets from the same or different thematic fields can be supplied by data providers. There is a need of not only describing the meta-data of all of these datasets in a unified way, but also integrate them in a way that allows for minimal changes to the original formats and expands the ability to pose queries in a uniform way, while enabling posing and evaluating cross-provider queries for datasets involved in the same semantic field.

To overcome this diversity the initiative of Linked Open Data (LOD) has implemented.

- **unify the data**
- **make the data machine-readable**
- **make data possible to semantically access and**
- **interlink heterogeneous but (semi-) structured resources at data level.**



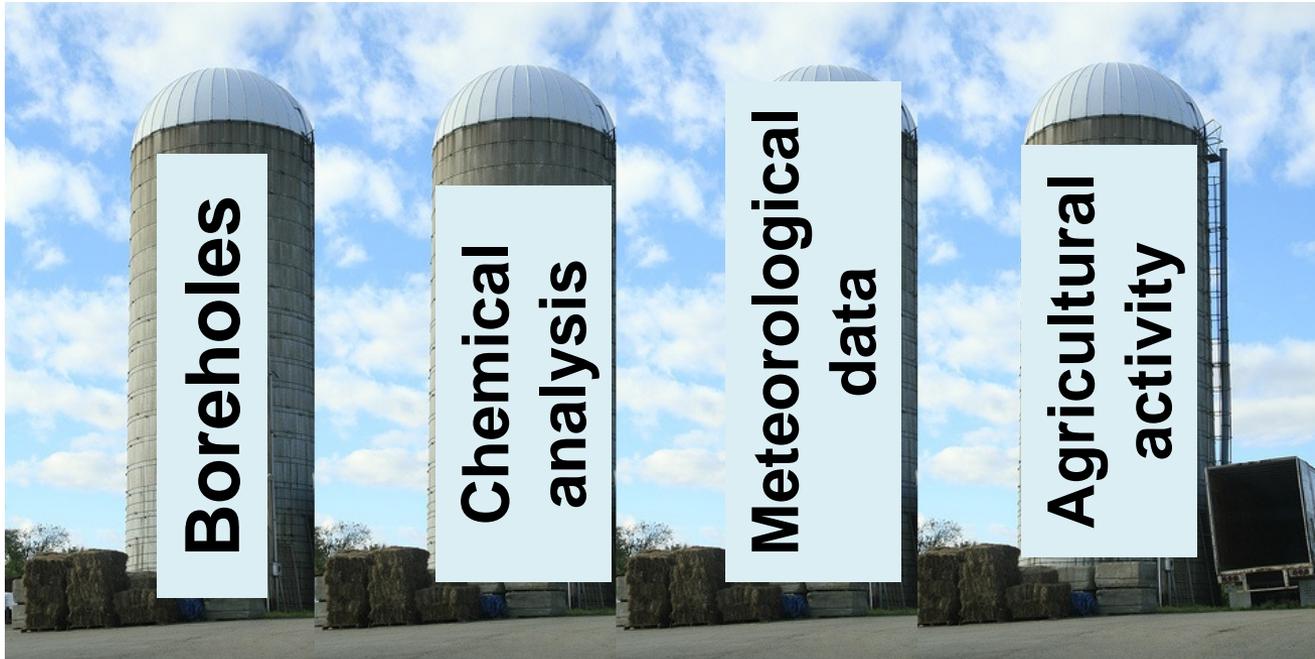
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Data transformations



Linked Data is about using the Web to connect related data that wasn't previously linked. A recommended best practice for **exposing, sharing, and connecting pieces of data, information and knowledge on the Semantic Web.**



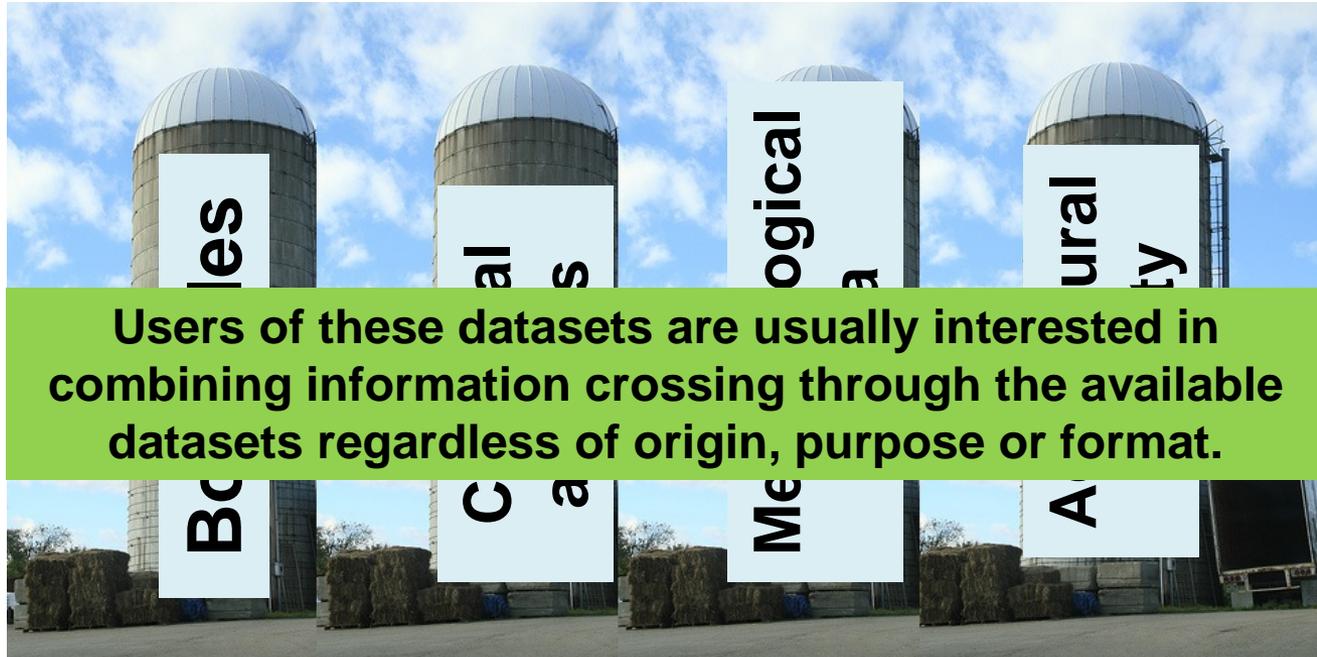
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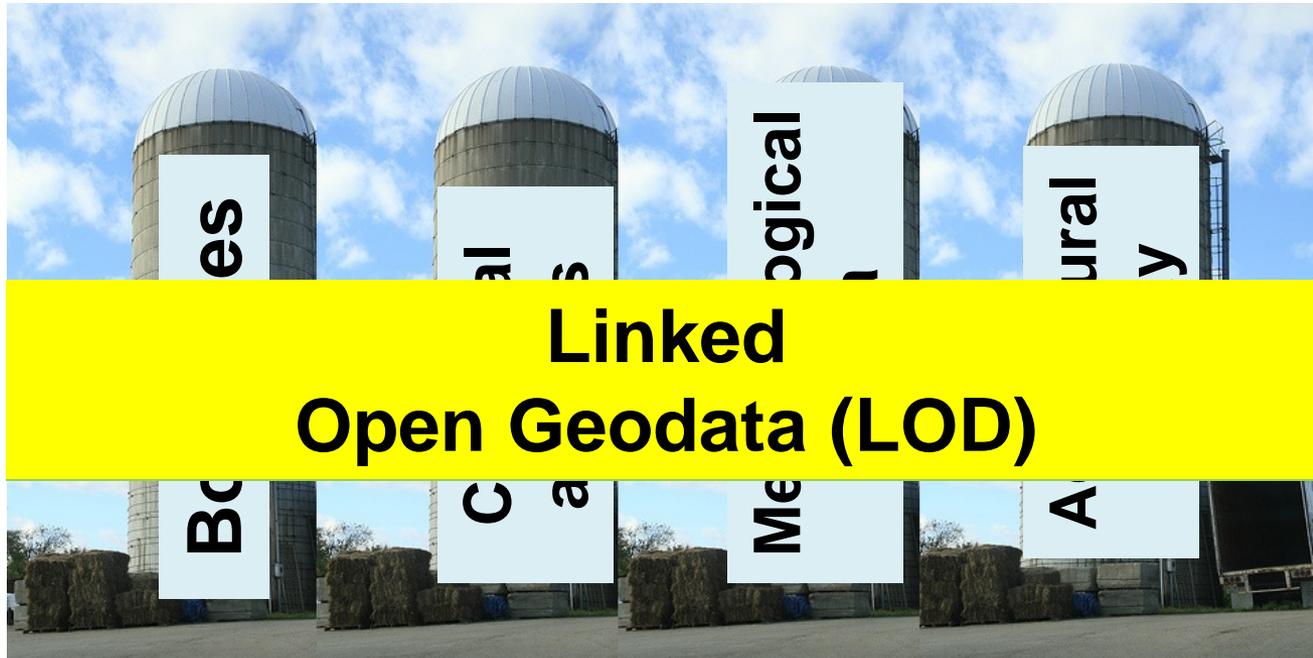
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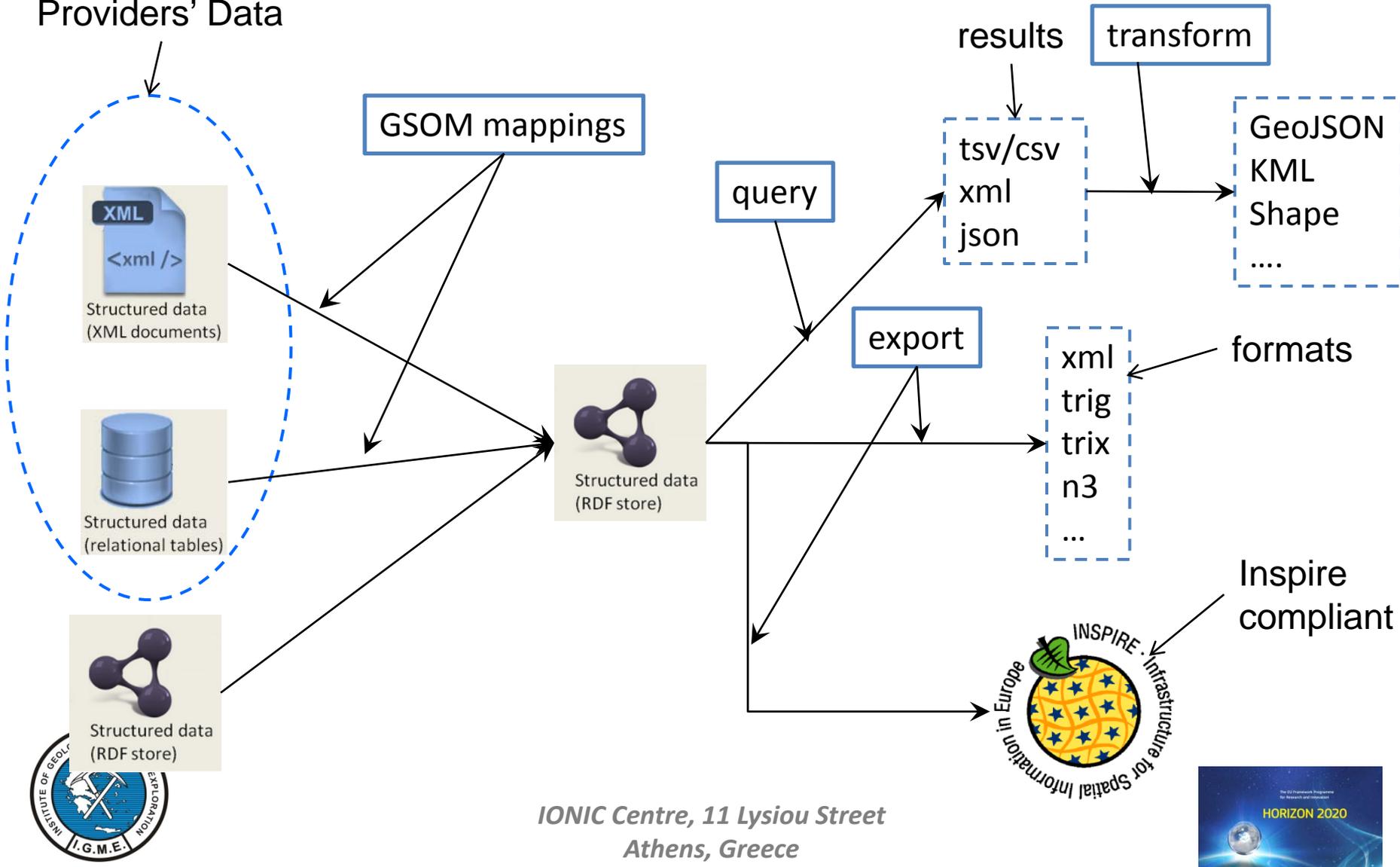
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Providers' Data



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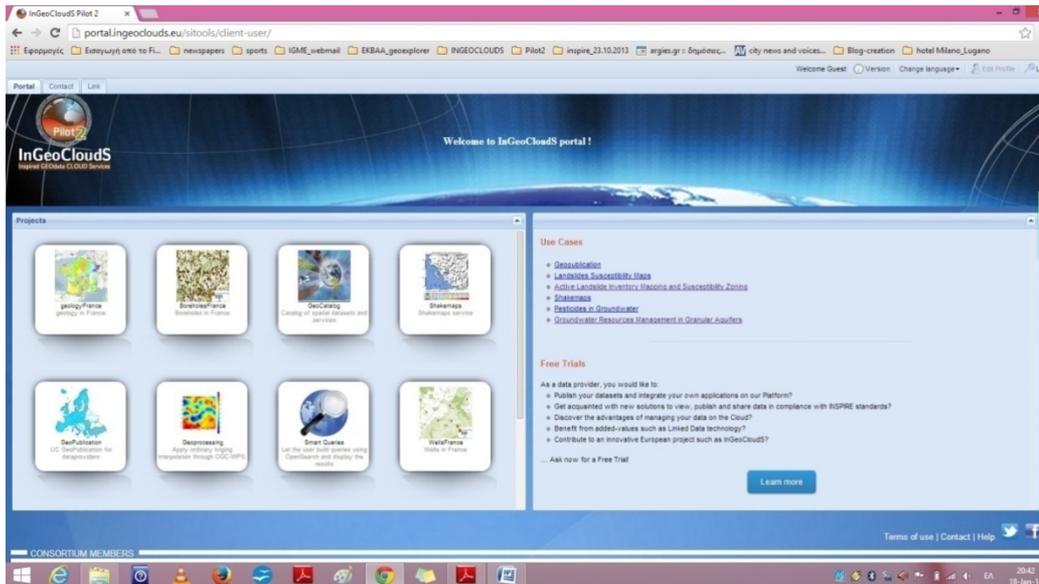


In.Geo.Cloud.S. (INspired GEOdata CLOUD Services)

InGeoCloudS Portal (Pilot)

<http://athos1.igme.gr:8080/OL/index-all.html>

The Pilot features a Portal for grouping all high-level tools and for improving datasets and services visibility. This was hosted in Amazon and we had to pay annual fees (without additional funding). Now it is down and some features are presented locally (servers).



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In.Geo.Cloud.S. (INspired GEOdata CLOUD Services)

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Projets

- Smart Queries**
Let the user build queries using OpenSearch and display the results
- GeoHazard**
Geohazard Management in Slovenia
- Shakemaps**
Shakemaps Service
- GeoPublication**
UC GeoPublication for cooperatives
- geology/France**
geology in France
- Groundwater**
Pesticides in groundwater in Denmark

Groundwater
Pesticides in GroundWater This application is about finding areas where there are high concentrations of pesticides in the groundwater. The user is able to search for specific pesticides and restrict the output to pesticides found at a certain depth interval and/or from certain geology (lithology or lithostratigraphy).

Shakemaps
ShakeMaps This application is about viewing and downloading shaking intensity distribution maps for important earthquakes. The application produces automatically a new shakemap dataset a few minutes after the earthquake. Data is available to the user for viewing over a mapping interface and for downloading and re-using through the use of WMS and WFS services.

GeoHazard
Landslides Susceptibility Maps This application provides automatically produced susceptibility maps of triggering landslides due to higher precipitation levels. The endangered zones will be predicted using the combination of the landslide susceptibility model, the precipitation forecast and the landslide triggering threshold values. Data is available to the user for viewing over a mapping interface and for downloading and re-using through the use of WMS and WFS services.

GeoPublication
An integrated Platform/infrastructure for data dissemination The Inspire Compliant Data publication is a data-provider service that allows to publish your own geo-data and to create maps. It allows you to simplify the re-use of data, without worrying about all technical, legal and Information Technology (IT) issues.

Conditions d'utilisation | Politique de confidentialité | Contact | Aide



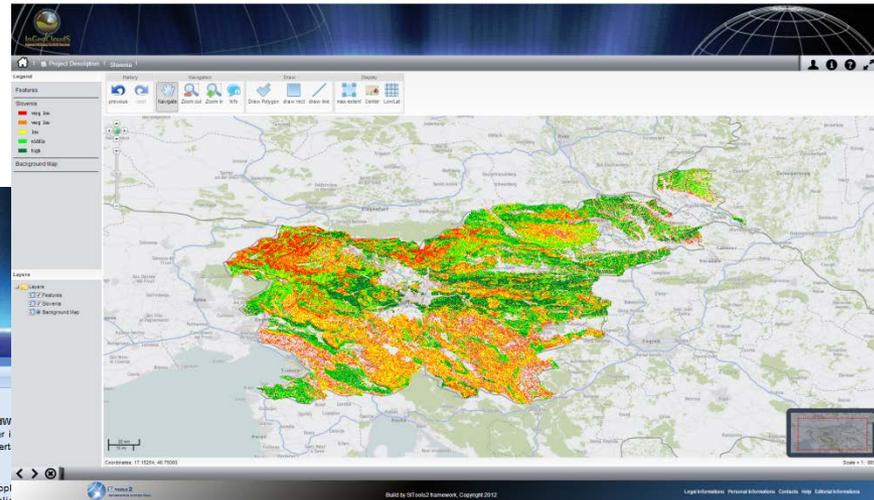
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Shakesmaps service

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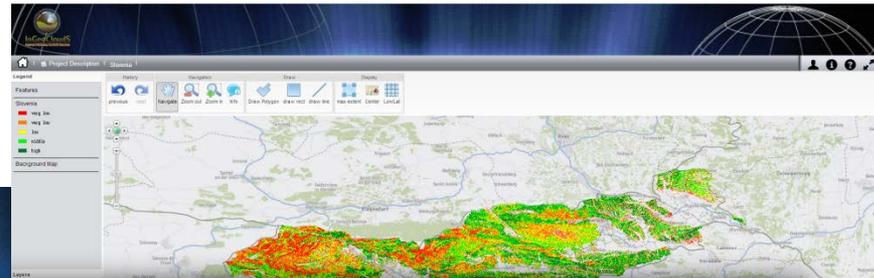
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In.Geo.Cloud.S. (INspired GEOdata CLOUD Services)

InGeoCloudS Portal (Pilot)
<http://athos1.igme.gr:8080/OL/index-all.html>



Smart Queries

The name of the openservice service

year: Between And

altitude: Between And

landcover:

movement_type:

mov_source:

lithology:

implication:

slope_tilting:

municipality:

History Navigation Display

previous next Navigate Zoom out Zoom in max extent Center Lon/Lat

Coordinates: 22.25964, 38.49492

Scale = 1 : 865K

100 Results

landcover	movement_type	altitude	rainfall	municipality	slope_tilting	year	lithology
Land principally ...	Translational Sh...	720	1142	http://www.ekb...	(Moderate)Μέσ...	1938	Flysch/Φλύσχη
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Land principally ...	Settlements/KoB...	860	1199	http://www.ekb...	(Steep)Ισχυρή (...)	1956	Flysch/Φλύσχη
Land principally ...	Settlements/KoB...	750	1072	http://www.ekb...	(Moderate Steep...	1956	Flysch/Φλύσχη
Land principally ...	Composite/Ζύνθ...	650	1189	http://www.ekb...	(Moderate Gentl...	1956	Flysch/Φλύσχη
Broad-leaved fo...	Soil Displaceme...	1017	1323	http://www.ekb...	(Moderate Steep...	1963	Flysch/Φλύσχη
Land principally ...	Translational Sh...	900	1162	http://www.ekb...	(Nearly Vertical)...	1963	Flysch/Φλύσχη

Reinitialize Search



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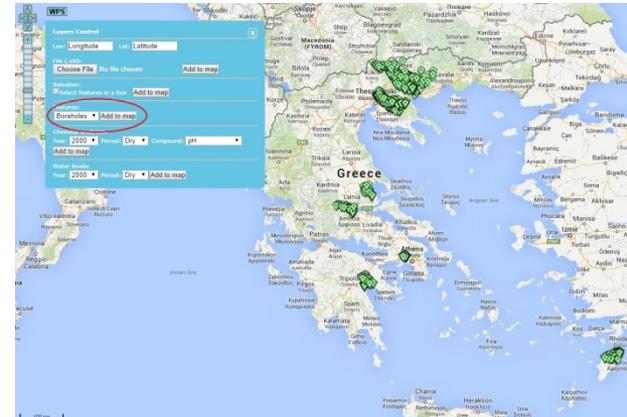


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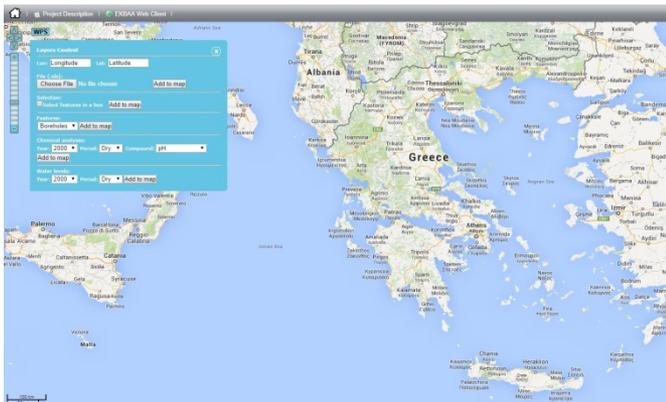
Applications using our transformed data

1. Publishing e.g. boreholes and chemical analysis data
2. Geoprocessing (WPS)

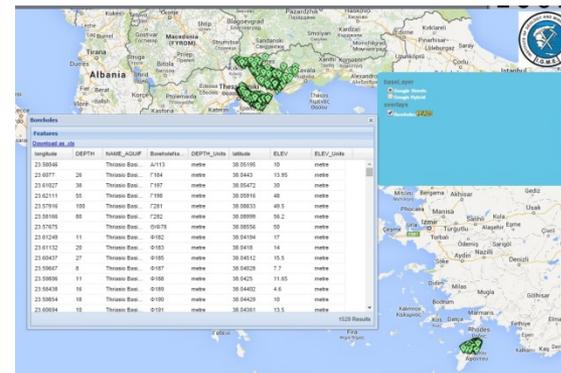
Publishing boreholes



1. Publishing boreholes, chemical analysis and water level data



Publishing & downloading boreholes



<http://athos1.igme.gr:8080/OL/index-all.html>



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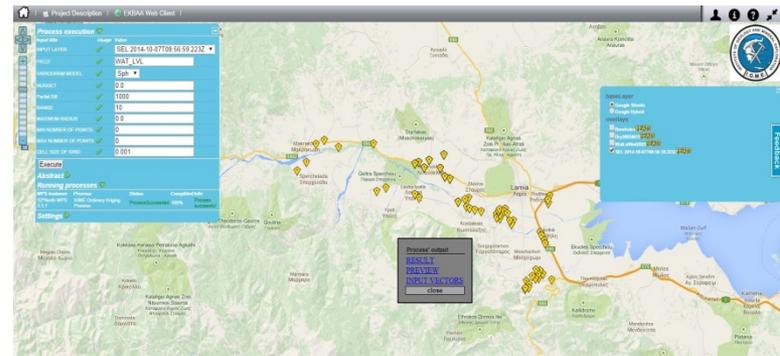
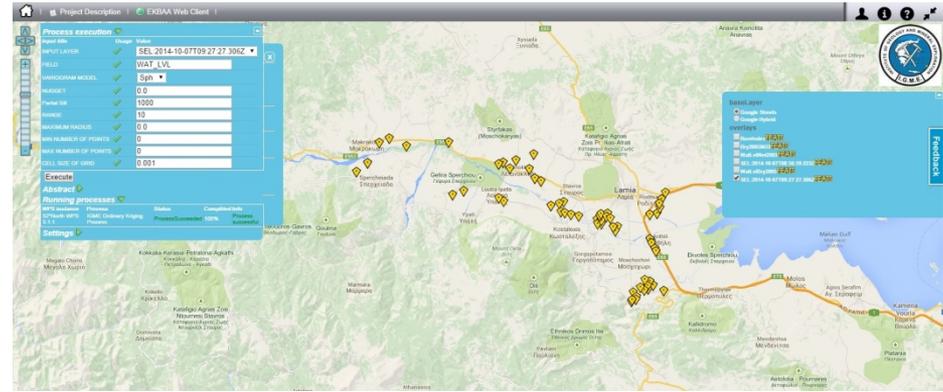
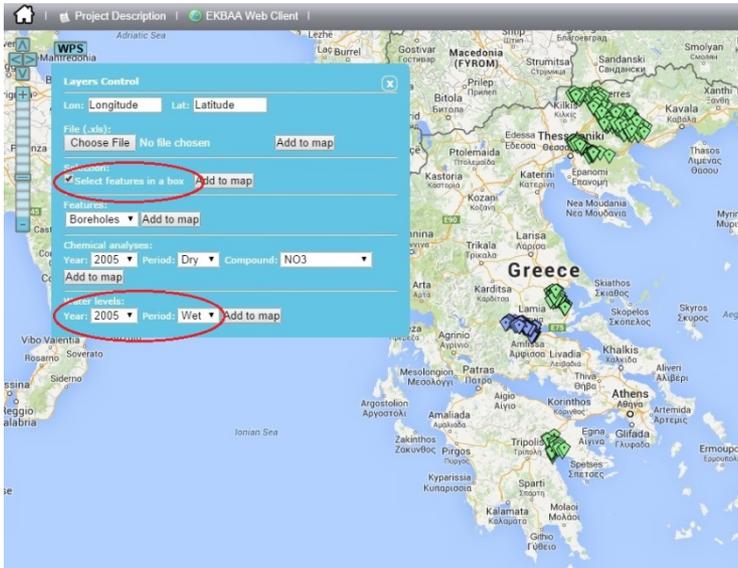




In.Geo.Cloud.S. (INspired GEOdata CLOUD Services)

2. Geoprocessing (kriging)

Geoprocessing refers to Ordinary Kriging interpolation which has been implemented as a Web Processing Service (WPS) (OGC, 2007) process.



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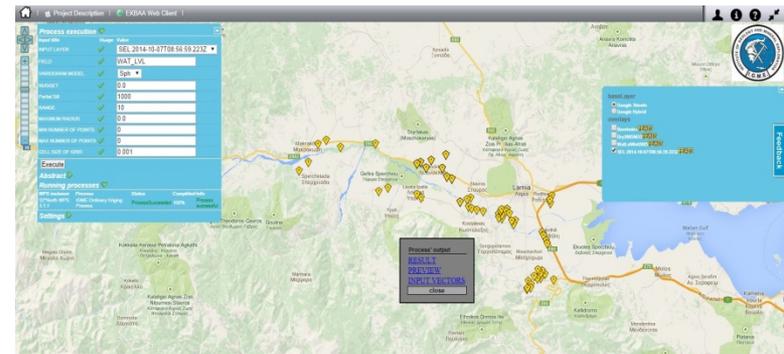
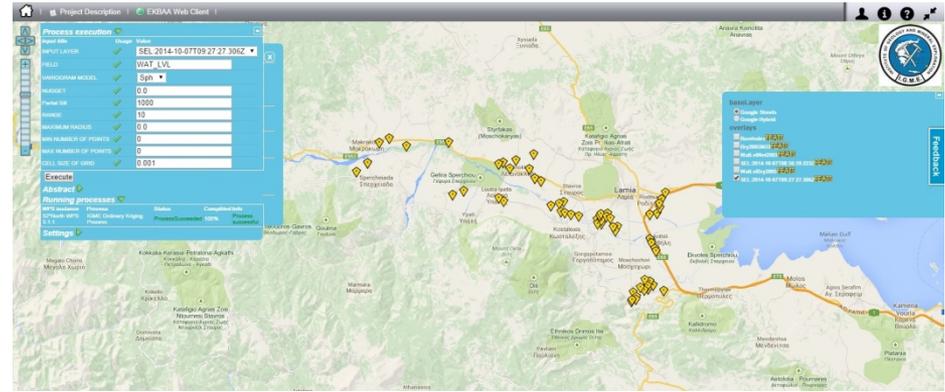
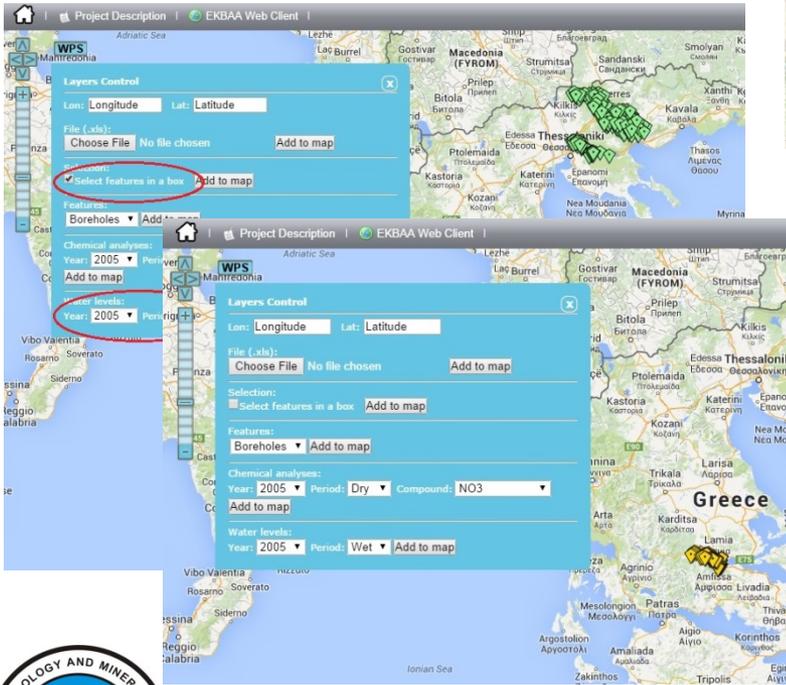




In.Geo.Cloud.S. (INspired GEOdata CLOUD Services)

2. Geoprocessing (kriging)

Geoprocessing refers to Ordinary Kriging interpolation which has been implemented as a Web Processing Service (WPS) (OGC, 2007) process.



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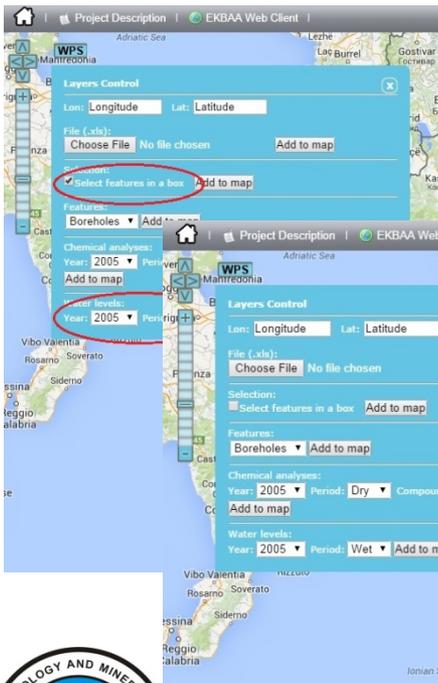
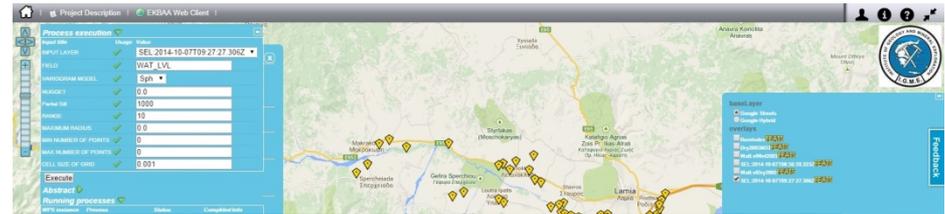




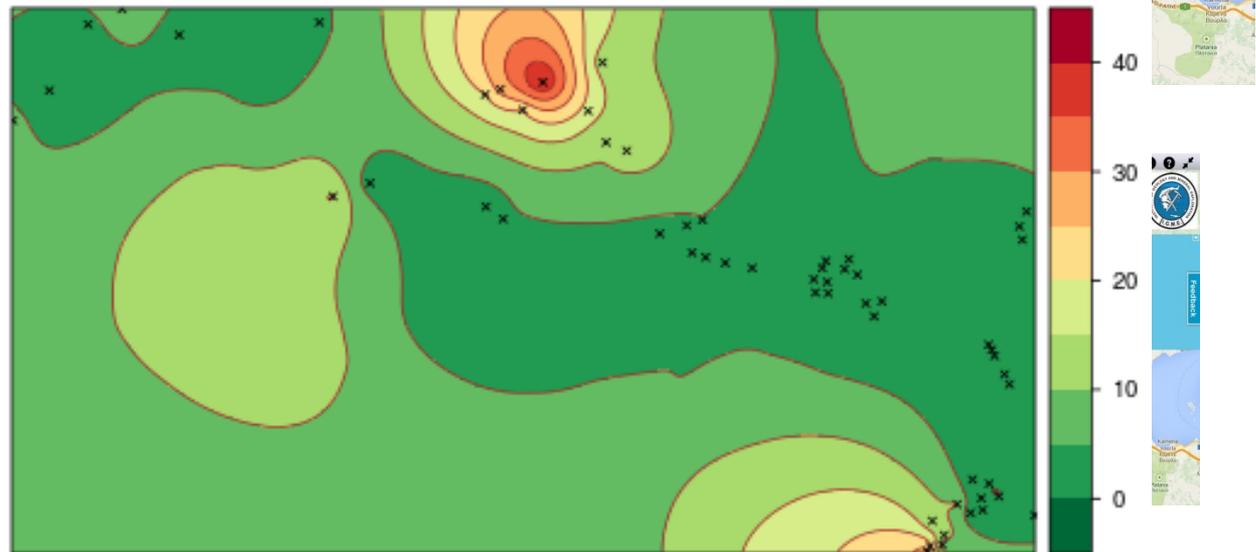
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OrdinaryKriging Prediction



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Thank you
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