Geo-Seas –a pan-European marine geoscientific e-infrastructure

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(on behalf of the Geo-Seas consortium)

e-infrastructure

SEVENTH FRAMEWORK PROGRAMME

What is Geo-Seas?

- e-infrastructure for sharing marine geological and geophysical data

- Developed and implemented as part of an EU-funded Framework 7 (FP7) collaborative project (1st May 2009 to 31 January 2013)

- 28 partner organisations from 17 European maritime countries

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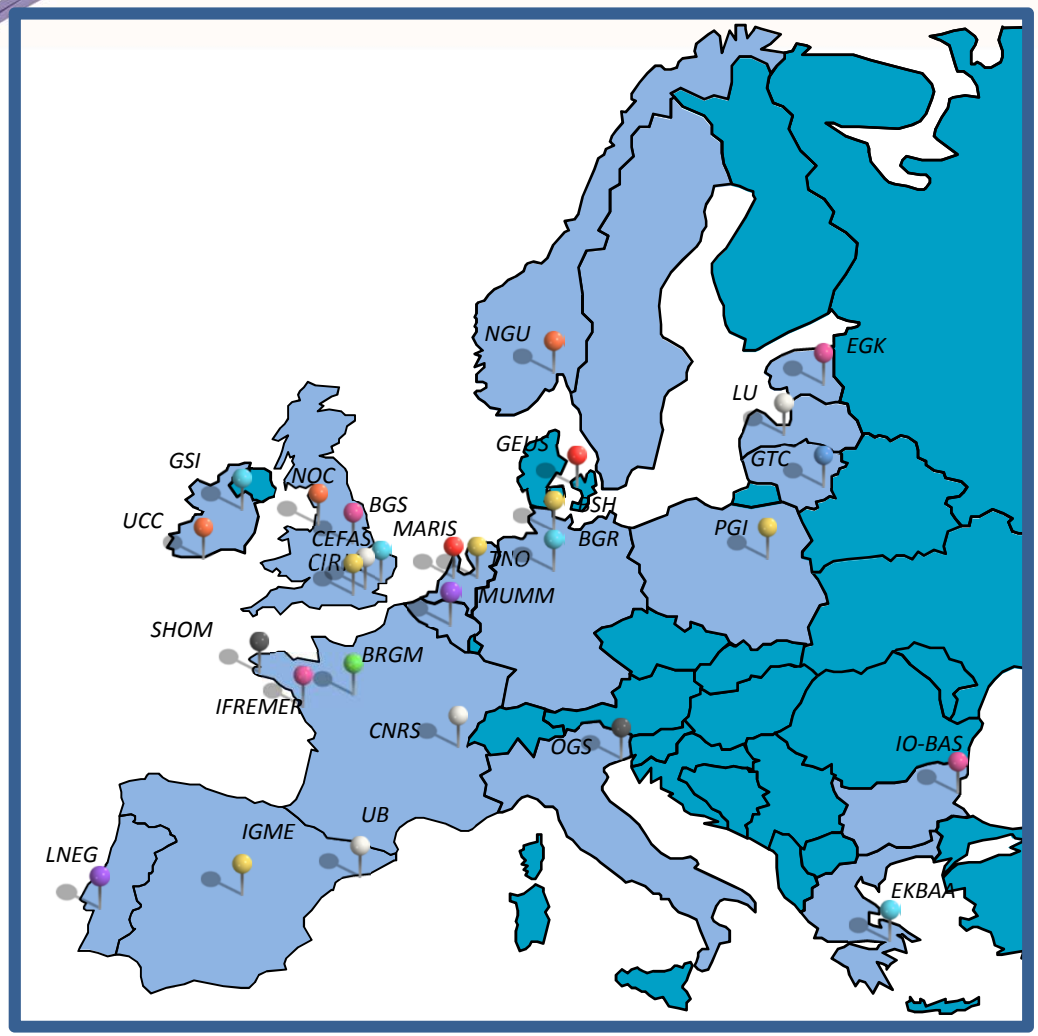
Partners



- Belgium (MUMM)
- Bulgaria (IO-BAS)
- Denmark (GEUS)
- Estonia (EGK)
- France (IFREMER, BRGM, CNRS, SHOM)
- Germany (BSH, BGR)
- Greece (EKBAA,NOA)
- Italy (OGS)
- Ireland (GSI, UCC)
- Lithuania (GTC)
- Latvia (LU)
- Netherlands (MARIS, TNO, EU-Consult)
- Norway (NGU)
- Poland (PGI)
- Portugal (LNEG)
- Spain (IGME, UB)
- United Kingdom (NERC , CEFAS, CIRIA)

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Objectives

To facilitate the sharing and re-use of marine geoscience data by the users across a wide range of disciplines by:

- Creating a unified marine geoscientific data e-infrastructure across Europe
- Improving the users ability to discover, locate, assess and download federated marine geological and geophysical datasets
- Providing direct user-access to harmonized marine geological and geophysical **metadata and data** in common, standard formats via a single portal.
- Underpinning key European Directives such as INSPIRE and global framework programmes e.g. GEOSS (Global Earth Observation System of Systems) and GMES (Global Monitoring for Environment and Security)

Methodology

- Adopt pre-existing methodologies and technologies developed by SeaDataNet for use with geological and geophysical data types
  - Centralised metadatabase: Common Data Index (CDI)
  - Distributed data model: federated database

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- Harmonisation of data formats and exchange formats

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Data delivery and exchange formats

• Bathymetry (tracking)	ODV
• Bathymetry (gridded & swath)	NetCDF
• Borehole	ODV & GeoSciML
• Borehole (images)	PNG
• Seismic (digital data)	SEG-Y
• Seismic (scanned images)	TIFF / PNG
• Seismic (navigation)	UKOOA
• Side scan sonar	XTF
• Images	PNG
• Maps (data products)	GeoSciML

Methodology

- Adopt pre-existing methodologies and technologies developed by SeaDataNet for use with geological and geophysical data types
    - Centralised metadatabase
    - Distributed data model
- Harmonisation of data formats and exchange formats
- Use of common vocabularies and standards

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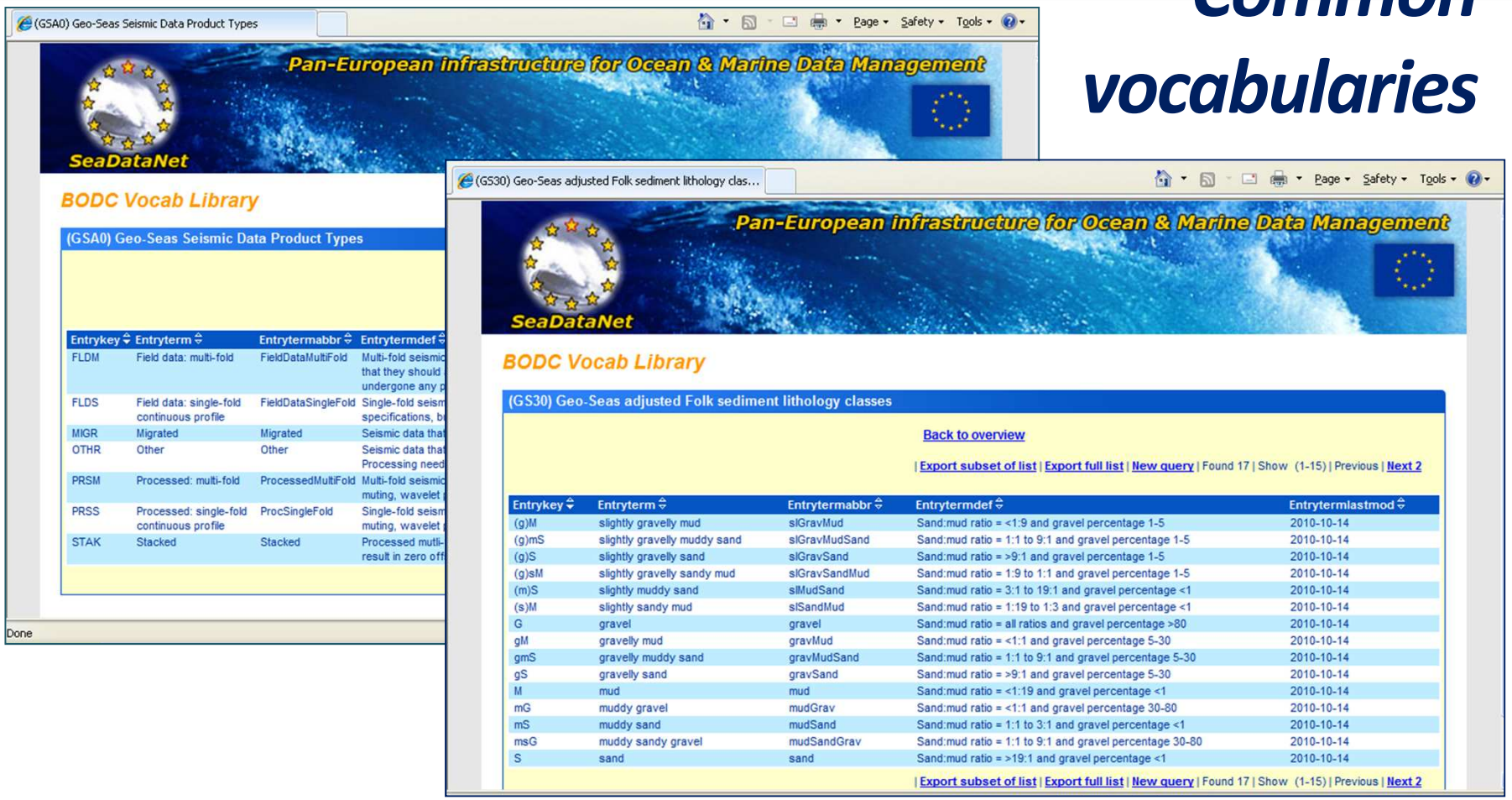
Common vocabularies



Methodology

- Adoption and adaption of pre-existing methodologies and technologies developed by SeaDataNet for use with geological and geophysical data types
    - Centralised metadatabase
    - Distributed data model
- Harmonisation of data formats and exchange formats
- Use of common vocabularies and standards
- Re-use of pre-existing metadata catalogues as the basis for development of Geo-Seas metadatabase

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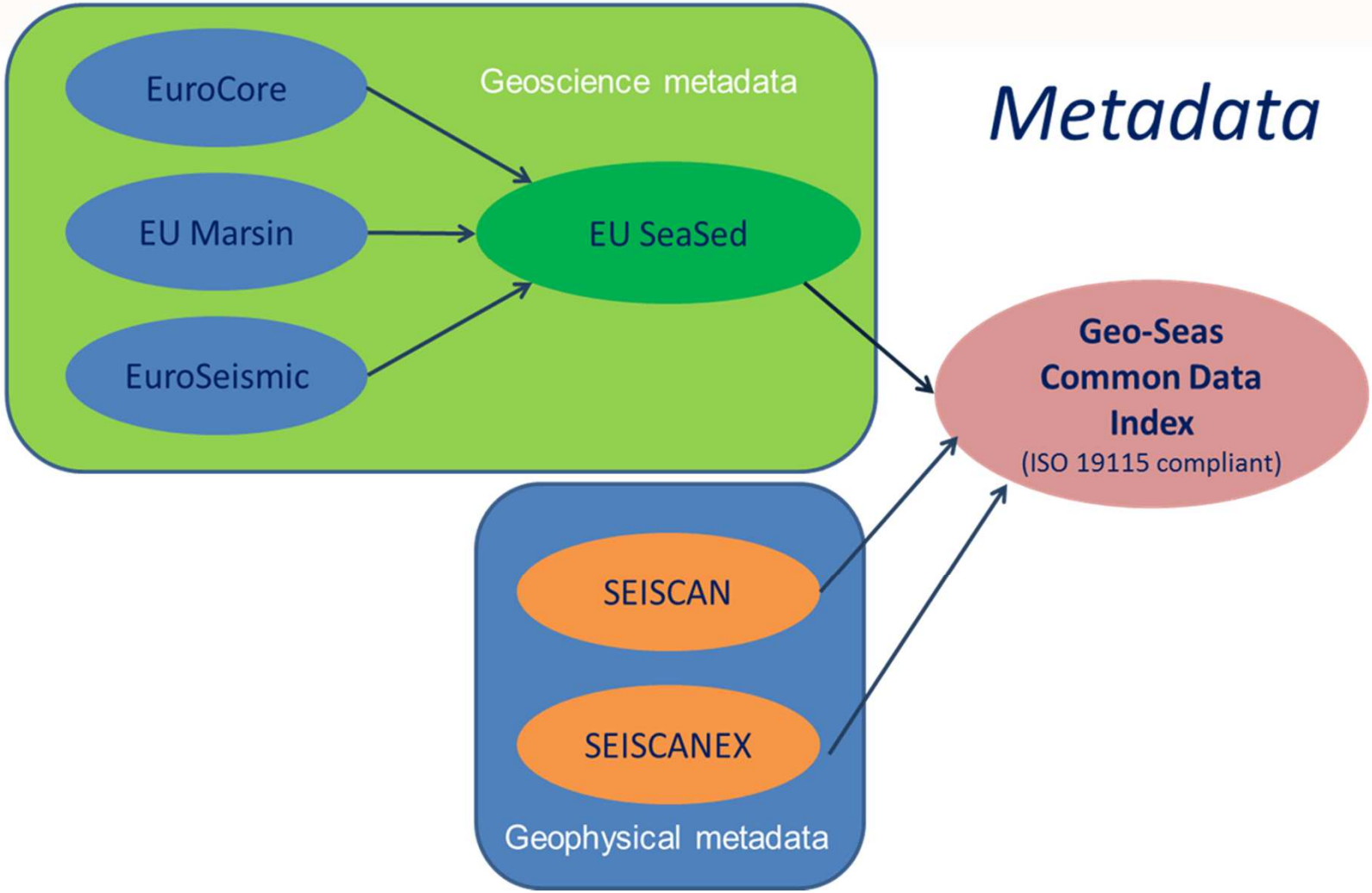
Metadata



Methodology

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- Use of common vocabularies and standards
- Extension of CDI metadata schema with O&M and SensorML for use with seismic data

Geo-Seas data discovery and access service

- 26 data centres now fully operational and connected to the e-infrastructure
- fully operational data discovery and access service via the Geo-Seas portal
- in excess of 135 000 datasets already available and increasing as data centres add additional datasets

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Visualisation tools and services

- Assist users in data discovery and selection process
- Allow users to browse large data sets before requesting access
- Expose restricted datasets for discovery purposes

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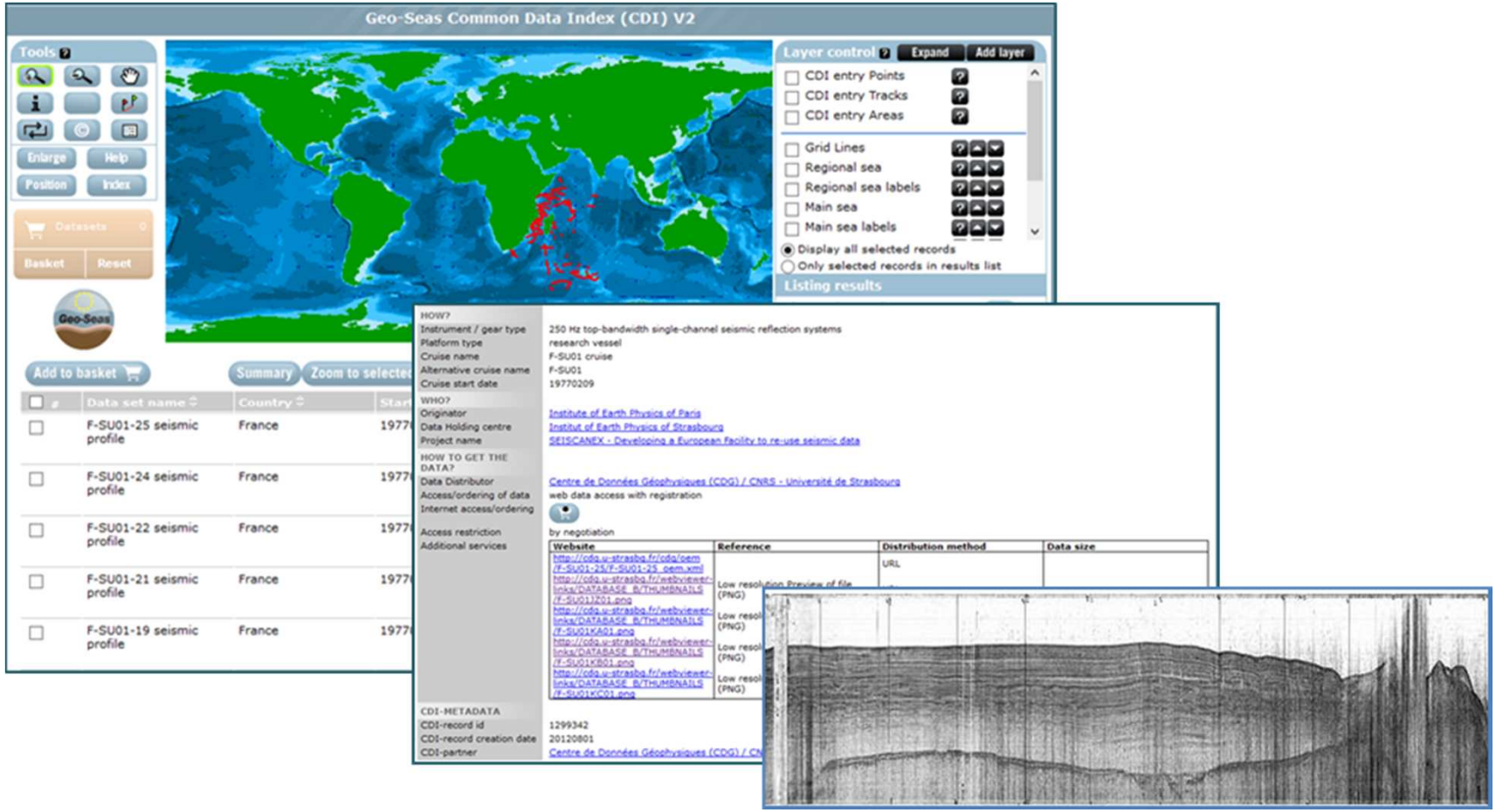
Low-resolution seismic viewing service



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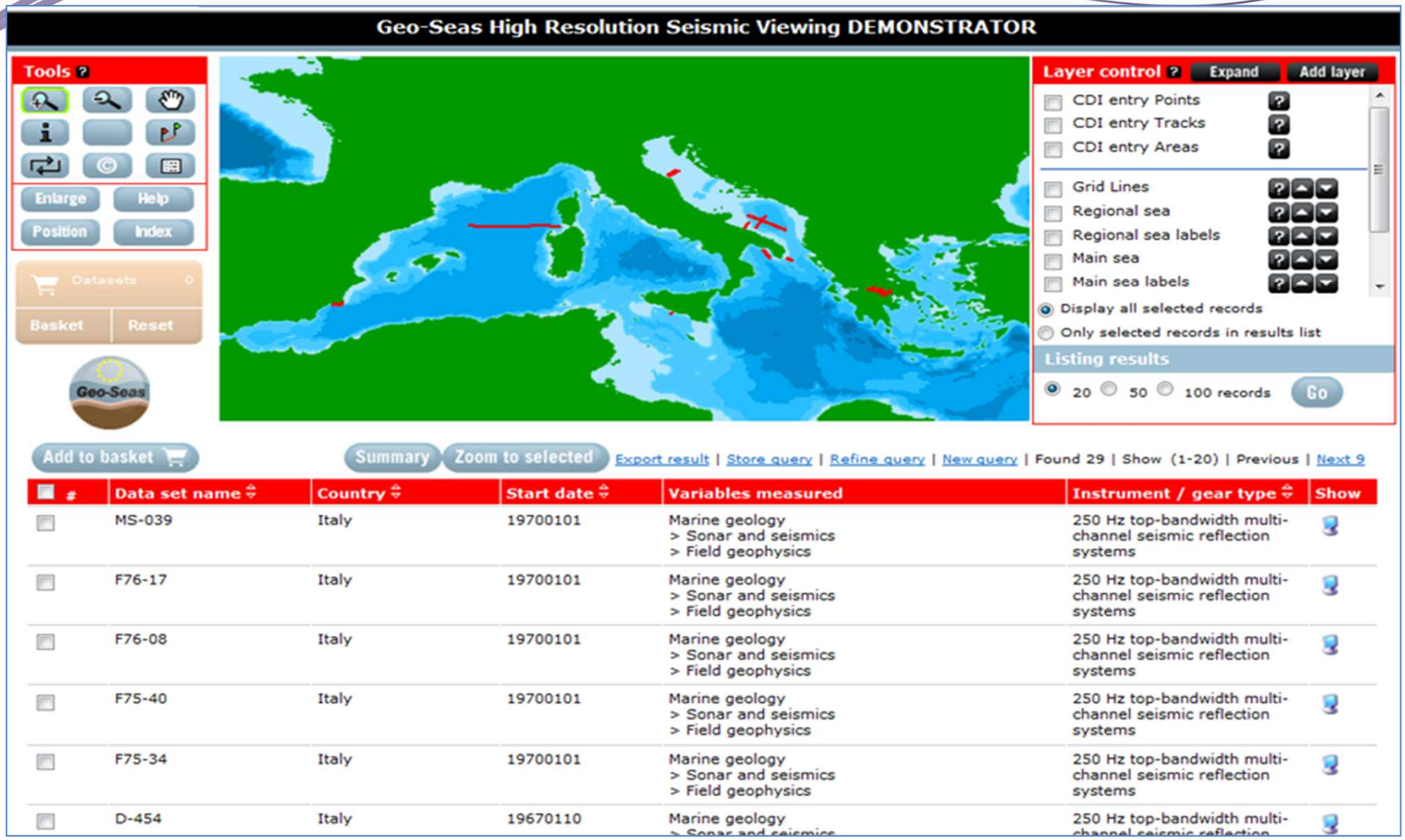

#	Data set name	Country	Start date	Variables measured	Instrument / gear type	Show
	MS-039	Italy	19700101	Marine geology > Sonar and seismics > Field geophysics	250 Hz top-bandwidth multi-channel seismic reflection systems	
	F76-17	Italy	19700101	Marine geology > Sonar and seismics > Field geophysics	250 Hz top-bandwidth multi-channel seismic reflection systems	
	F76-08	Italy	19700101	Marine geology > Sonar and seismics > Field geophysics	250 Hz top-bandwidth multi-channel seismic reflection systems	
	F75-40	Italy	19700101	Marine geology > Sonar and seismics > Field geophysics	250 Hz top-bandwidth multi-channel seismic reflection systems	
	F75-34	Italy	19700101	Marine geology > Sonar and seismics > Field geophysics	250 Hz top-bandwidth multi-channel seismic reflection systems	
	D-454	Italy	19670110	Marine geology	250 Hz top-bandwidth multi-	

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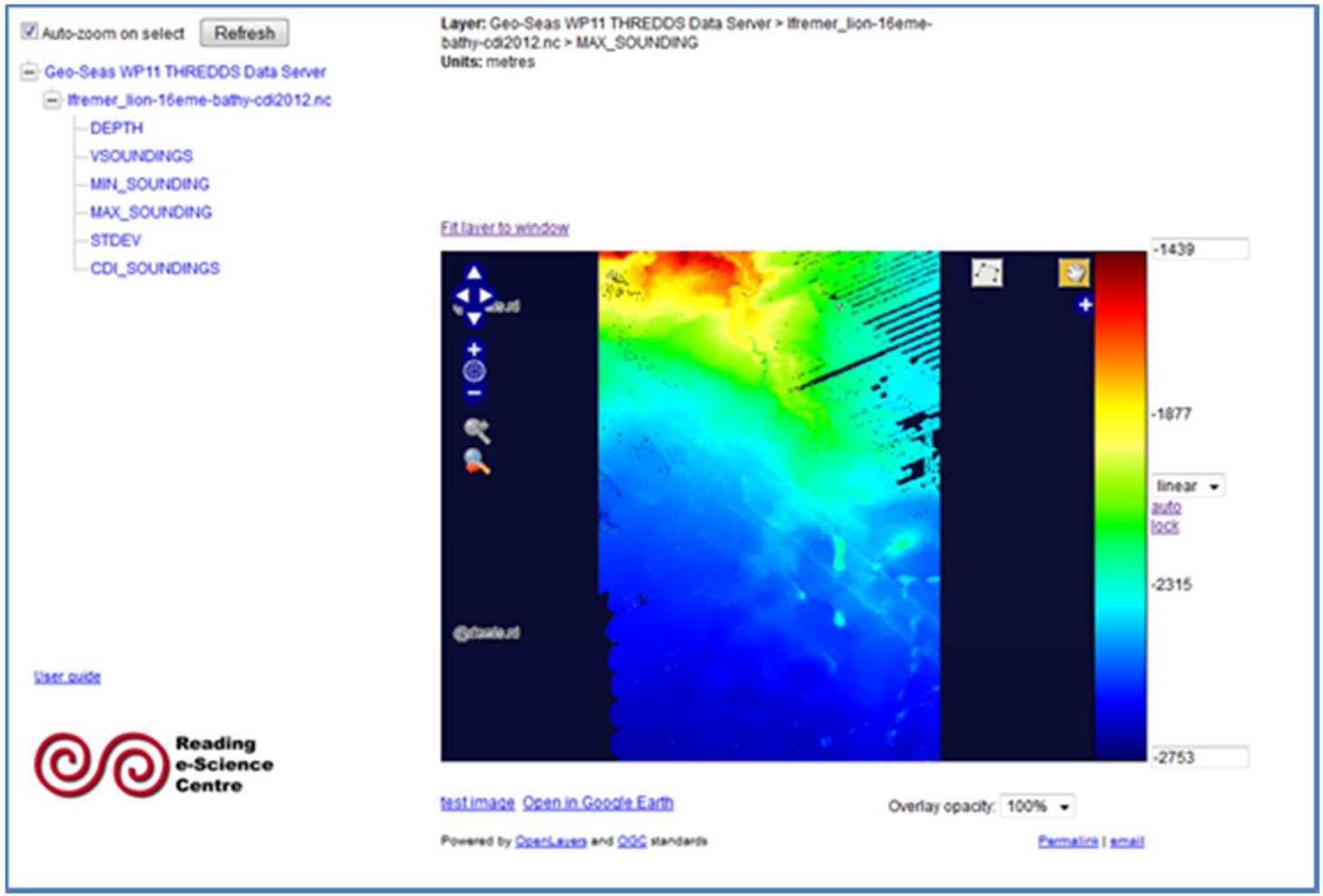
2D DTM viewing service



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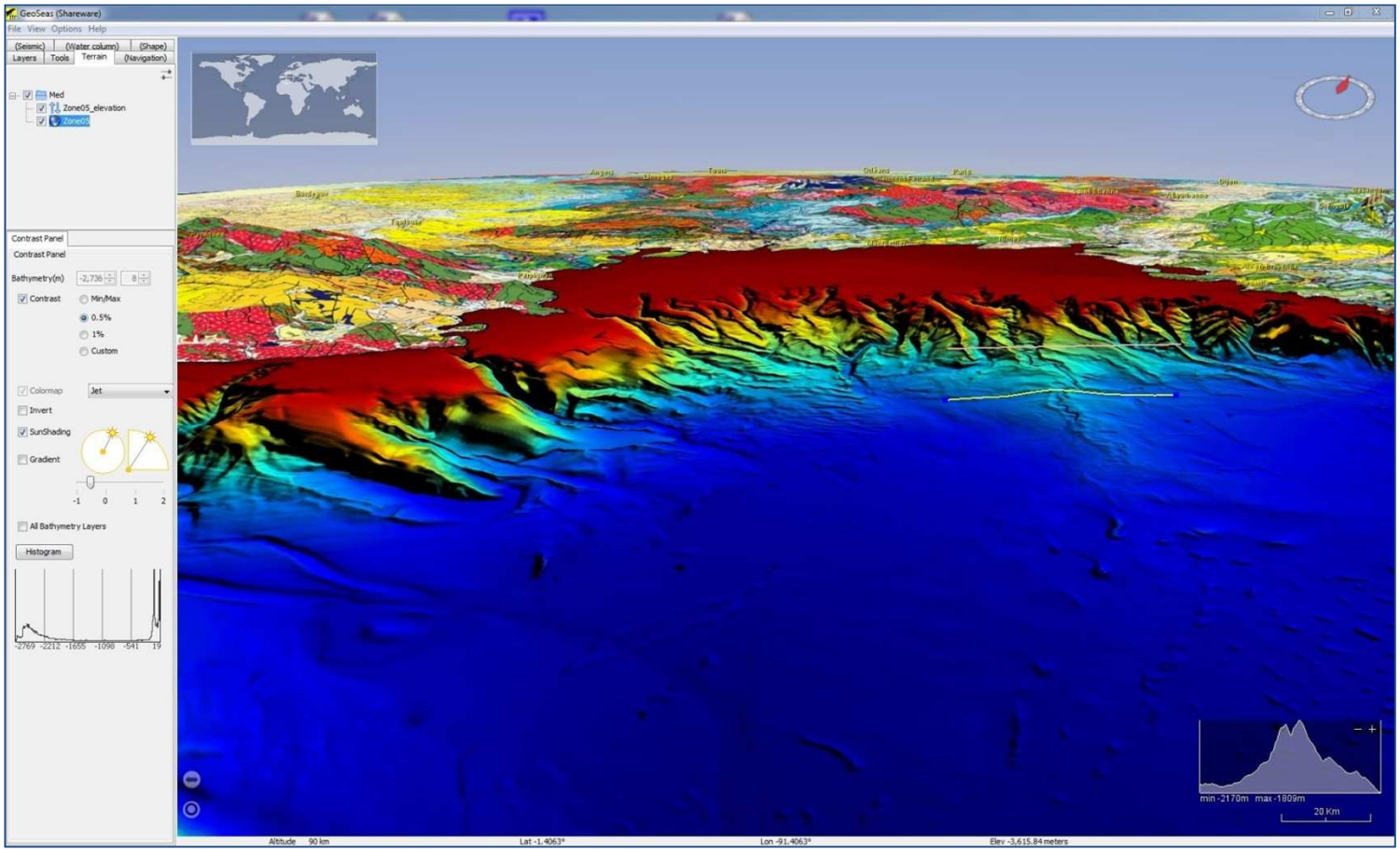
3D Digital Terrain Model (DTM) viewer



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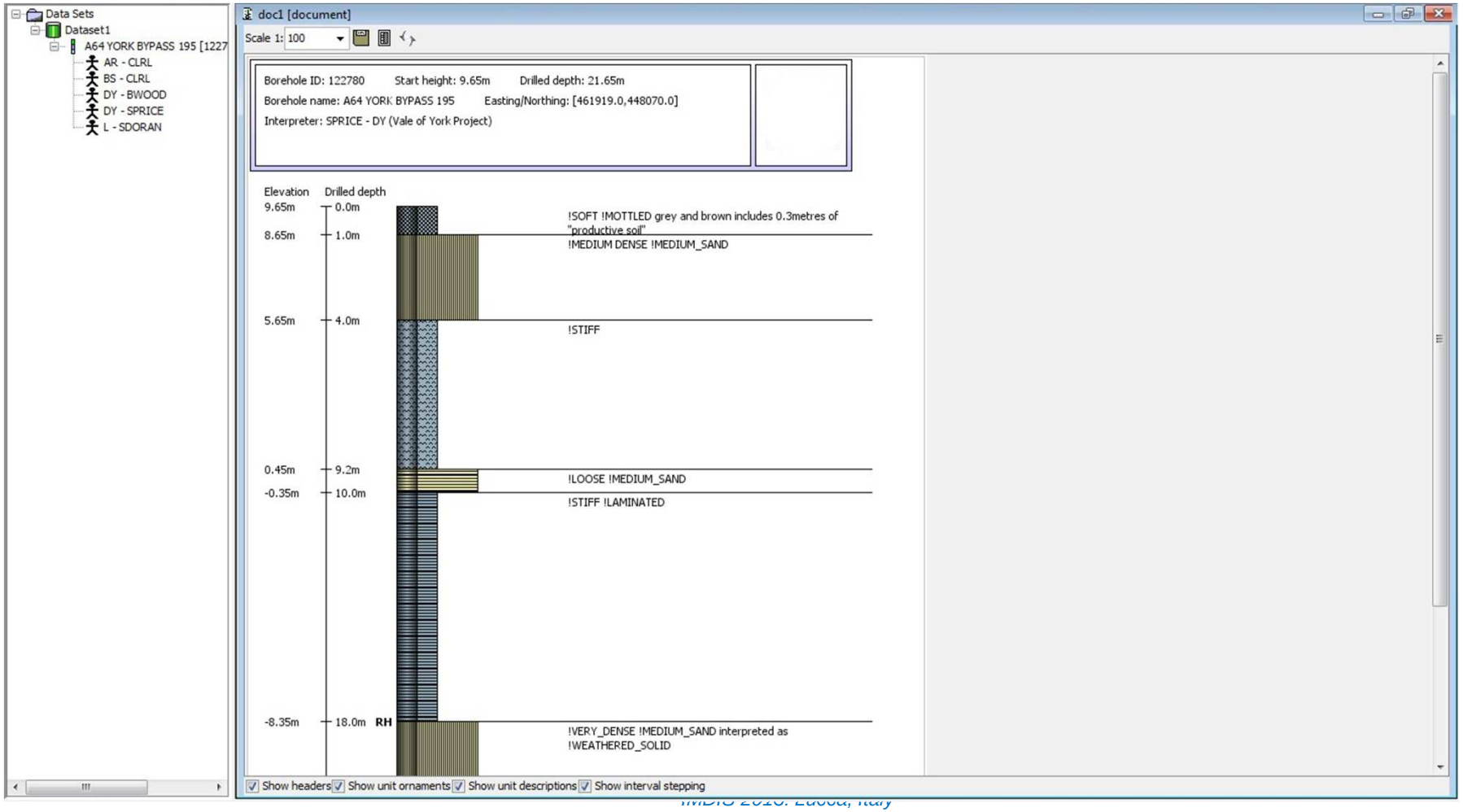
Porcupine® borehole log viewing tool



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Key outcomes

- Creation of a joint e-infrastructure for the delivery of marine geoscience data and oceanographic data in partnership with SeaDataNet
- Improved discovery and access to federated European marine geological and geophysical data via the portal Geo-Seas
- Increased interoperability of marine data with other disciplines and also between European organisations and projects
- Development of collaborative relationships with organisations and projects beyond Europe to development common approaches to marine data management e.g. ODIP, R2R in the USA and IMOS in Australia

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What next?

- Continued expansion of the number of datasets available on the Geo-Seas portal (partner exploitation agreement)
- Promotion and dissemination of the outcomes of the project outcomes via other initiatives e.g. ODIP, EMODNET, EGDI-Scope, RDA etc.
- Engage with other communities: e.g. marine archaeologists
- Proposal to the EU for Geo-Seas II (2014)
    - Additional partners
    - Add extra agreed data types
    - New tools and services?

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