



Geo-Seas

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

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(on behalf of the Geo-Seas consortium)





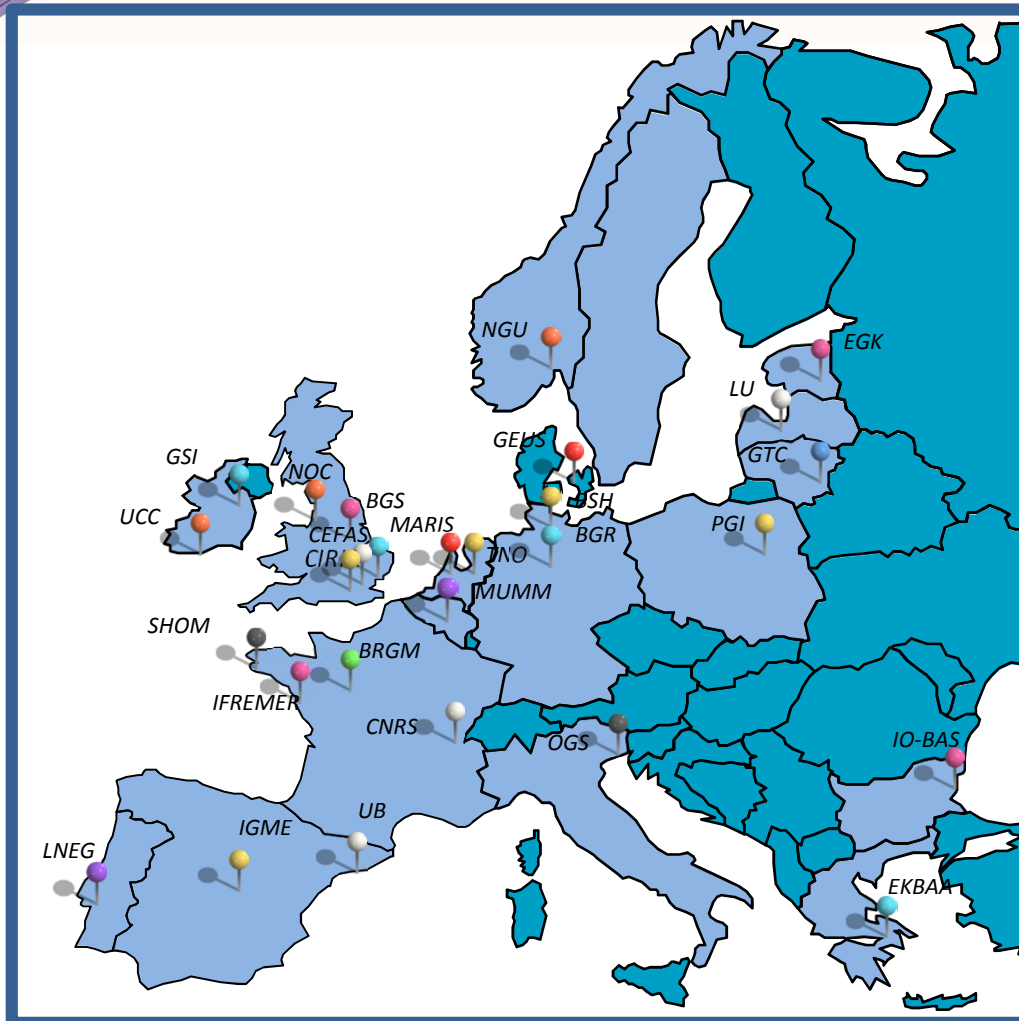
Geo-Seas

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



Partners



- Belgium (MUMM)
- Bulgaria (IO-BAS)
- Denmark (GEUS)
- Estonia (EGK)
- France (IFREMER, BRGM, CNRS, SHOM)
- Germany (BSH, BGR)
- Greece (EKBA,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)



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 metadata base: Common Data Index (CDI)
 - Distributed data model: federated database



Methodology

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 - Centralised metadatabase
 - Distributed data model
- Harmonisation of data formats and exchange formats



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
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- Harmonisation of data formats and exchange formats
- Use of common vocabularies and standards



Geo-Seas

Common vocabularies

(GSA0) Geo-Seas Seismic Data Product Types

Pan-European infrastructure for Ocean & Marine Data Management

SeaDataNet

BODC Vocab Library

(GSA0) Geo-Seas Seismic Data Product Types

Entrykey	Entryterm	Entrytermabbr	Entrytermdef
FLDM	Field data: multi-fold	FieldDataMultiFold	Multi-fold seismic that they should undergone any p
FLDS	Field data: single-fold continuous profile	FieldDataSingleFold	Single-fold seism specifications, b
MIGR	Migrated	Migrated	Seismic data that
OTHR	Other	Other	Seismic data that Processing need
PRSM	Processed: multi-fold	ProcessedMultiFold	Multi-fold seismic muting, wavelet
PRSS	Processed: single-fold continuous profile	ProcSingleFold	Single-fold seism muting, wavelet
STAK	Stacked	Stacked	Processed multi-result in zero off

Done

(GS30) Geo-Seas adjusted Folk sediment lithology clas...

Pan-European infrastructure for Ocean & Marine Data Management

SeaDataNet

BODC Vocab Library

(GS30) Geo-Seas adjusted Folk sediment lithology classes

[Back to overview](#)

[Export subset of list](#) | [Export full list](#) | [New query](#) | Found 17 | Show (1-15) | Previous | [Next 2](#)

Entrykey	Entryterm	Entrytermabbr	Entrytermdef	Entrytermlastmod
(g)M	slightly gravelly mud	slGravMud	Sand:mud ratio = <1:9 and gravel percentage 1-5	2010-10-14
(g)mS	slightly gravelly muddy sand	slGravMudSand	Sand:mud ratio = 1:1 to 9:1 and gravel percentage 1-5	2010-10-14
(g)S	slightly gravelly sand	slGravSand	Sand:mud ratio = >9:1 and gravel percentage 1-5	2010-10-14
(g)sM	slightly gravelly sandy mud	slGravSandMud	Sand:mud ratio = 1:9 to 1:1 and gravel percentage 1-5	2010-10-14
(m)S	slightly muddy sand	slMudSand	Sand:mud ratio = 3:1 to 19:1 and gravel percentage <1	2010-10-14
(s)M	slightly sandy mud	slSandMud	Sand:mud ratio = 1:19 to 1:3 and gravel percentage <1	2010-10-14
G	gravel	gravel	Sand:mud ratio = all ratios and gravel percentage >80	2010-10-14
gM	gravelly mud	gravMud	Sand:mud ratio = <1:1 and gravel percentage 5-30	2010-10-14
gmS	gravelly muddy sand	gravMudSand	Sand:mud ratio = 1:1 to 9:1 and gravel percentage 5-30	2010-10-14
gS	gravelly sand	gravSand	Sand:mud ratio = >9:1 and gravel percentage 5-30	2010-10-14
M	mud	mud	Sand:mud ratio = <1:19 and gravel percentage <1	2010-10-14
mG	muddy gravel	mudGrav	Sand:mud ratio = <1:1 and gravel percentage 30-80	2010-10-14
mS	muddy sand	mudSand	Sand:mud ratio = 1:1 to 3:1 and gravel percentage <1	2010-10-14
msG	muddy sandy gravel	mudSandGrav	Sand:mud ratio = 1:1 to 9:1 and gravel percentage 30-80	2010-10-14
S	sand	sand	Sand:mud ratio = >19:1 and gravel percentage <1	2010-10-14

[Export subset of list](#) | [Export full list](#) | [New query](#) | Found 17 | Show (1-15) | Previous | [Next 2](#)

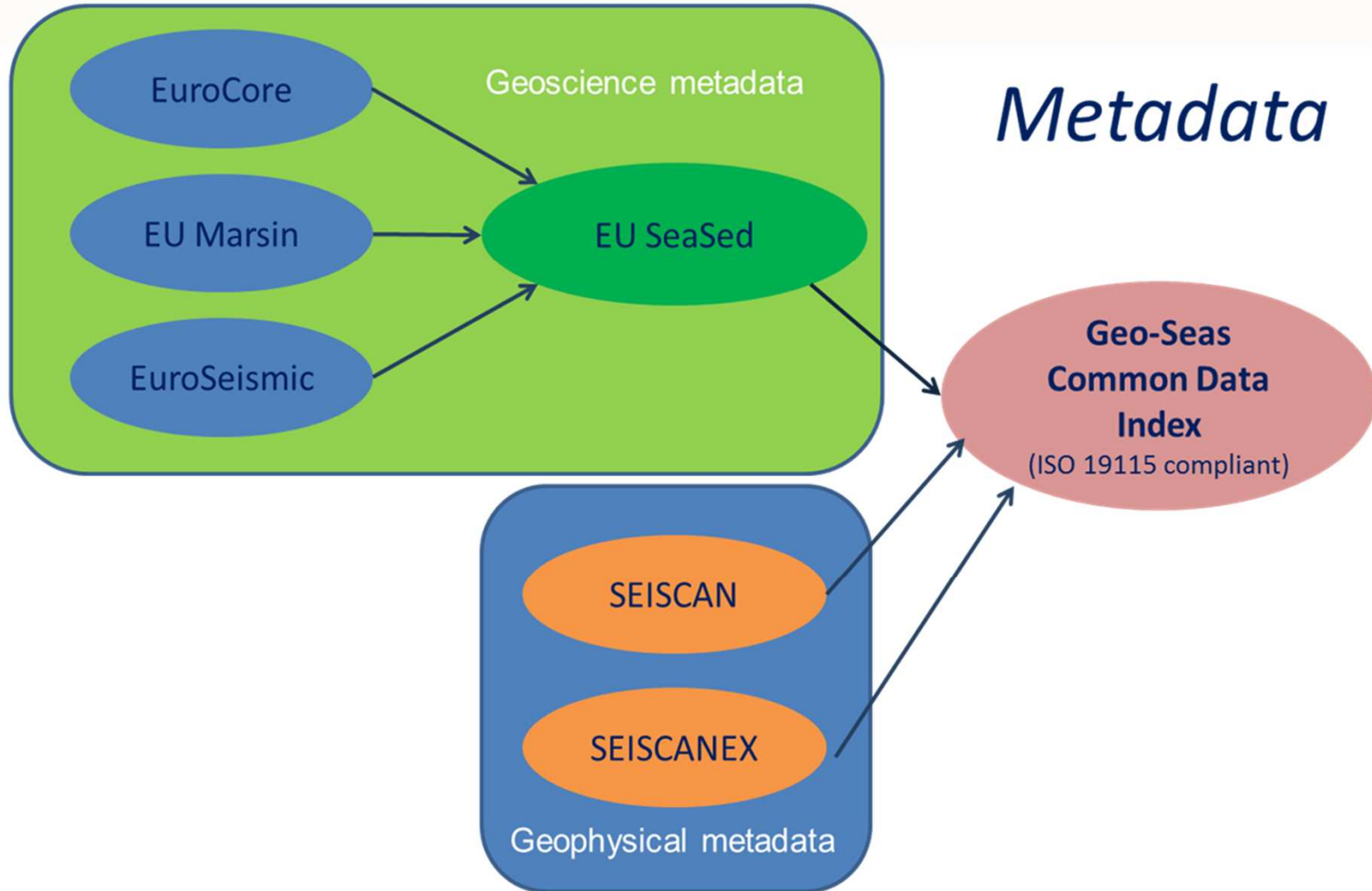


Methodology

- 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



Geo-Seas





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
- **Extension of CDI metadata schema with O&M and SensorML for use with seismic data**



Geo-Seas data discovery and access service

GEO-SEAS COMMON DATA INDEX (CDI) V2

Reset all steps > Rock and sediment chemistry > sediment grabs > Marine geology > Rock and sediment physical properties > German Oceanographic Datacentre (NOGC)

#	Data set name	Country	Start date	Variables measured	Instrument / gear type	Show
1	ELR109s_G02	Greece	19850720	Administration and dimensions > Administration and dimensions Marine geology > Rock and sediment physical properties > Rock and sediment lithology and mineralogy Terrestrial > Rock and sediment lithology and mineralogy > Rock and sediment physical properties	sediment grabs	Show
2	ELR108s_G02	Greece	19850720	Administration and dimensions > Administration and dimensions Marine geology	sediment grabs	Show
3	ELR107s_G02	Greece		Marine geology > Rock and sediment physical properties > Rock and sediment lithology and mineralogy Terrestrial > Rock and sediment lithology and mineralogy > Rock and sediment physical properties		Show

<http://www.geo-seas.eu>

- 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



Geo-Seas

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



Low-resolution seismic viewing service

Geo-Seas Common Data Index (CDI) V2

Tools

Enlarge Help
Position Index

Layer control Expand Add layer

- CDI entry Points
- CDI entry Tracks
- CDI entry Areas
- Grid Lines
- Regional sea
- Regional sea labels
- Main sea
- Main sea labels
- Display all selected records
- Only selected records in results list

Listing results

#	Data set name	Country	Start
<input type="checkbox"/>	F-SU01-25 seismic profile	France	1977
<input type="checkbox"/>	F-SU01-24 seismic profile	France	1977
<input type="checkbox"/>	F-SU01-22 seismic profile	France	1977
<input type="checkbox"/>	F-SU01-21 seismic profile	France	1977
<input type="checkbox"/>	F-SU01-19 seismic profile	France	1977

HOW?
Instrument / gear type: 250 Hz top-bandwidth single-channel seismic reflection systems
Platform type: research vessel
Cruise name: F-SU01 cruise
Alternative cruise name: F-SU01
Cruise start date: 19770209

WHO?
Originator: [Institute of Earth Physics of Paris](#)
Data Holding centre: [Institut of Earth Physics of Strasbourg](#)
Project name: [SEISCANEX - Developing a European facility to re-use seismic data](#)

HOW TO GET THE DATA?
Data Distributor: [Centre de Données Géophysiques \(CDG\) / CNRS - Université de Strasbourg](#)
Access/ordering of data: web data access with registration
Internet access/ordering: by negotiation

Access restriction

Additional services

Website	Reference	Distribution method	Data size
http://cdg.u-strasbg.fr/cdi/cdm/F-SU01-25/F-SU01-25_oem.xml		URL	
http://cdg.u-strasbg.fr/seisviewer/links/DATABASE_BTHUMBNAILS/F-SU01201.png	Low resolution Preview of file (PNG)		
http://cdg.u-strasbg.fr/seisviewer/links/DATABASE_BTHUMBNAILS/F-SU01K01.png	Low resol (PNG)		
http://cdg.u-strasbg.fr/seisviewer/links/DATABASE_BTHUMBNAILS/F-SU01K02.png	Low resol (PNG)		
http://cdg.u-strasbg.fr/seisviewer/links/DATABASE_BTHUMBNAILS/F-SU01K03.png	Low resol (PNG)		
http://cdg.u-strasbg.fr/seisviewer/links/DATABASE_BTHUMBNAILS/F-SU01K04.png	Low resol (PNG)		

CDI-METADATA
CDI-record id: 1299342
CDI-record creation date: 20120801
CDI-partner: [Centre de Données Géophysiques \(CDG\) / CNRS](#)



Geo-Seas

Geo-Seas High Resolution Seismic Viewing DEMONSTRATOR

Tools ?

Enlarge Help
Position Index

Datasets 0

Basket Reset

Add to basket

Layer control ? Expand Add layer

- CDI entry Points ?
- CDI entry Tracks ?
- CDI entry Areas ?
- Grid Lines ?
- Regional sea ?
- Regional sea labels ?
- Main sea ?
- Main sea labels ?

Display all selected records
 Only selected records in results list

Listing results

20 50 100 records **Go**

[Summary](#) [Zoom to selected](#) [Export result](#) | [Store query](#) | [Refine query](#) | [New query](#) | Found 29 | Show (1-20) | Previous | [Next 9](#)

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



2D DTM viewing service

Auto-zoom on select

Geo-Seas WP11 THREDDS Data Server

- lfremer_lion-16eme-bathy-cd2012.nc
 - DEPTH
 - VSOUNDINGS
 - MIN_SOUNDING
 - MAX_SOUNDING
 - STDEV
 - CDI_SOUNDINGS

Layer: Geo-Seas WP11 THREDDS Data Server > lfremer_lion-16eme-bathy-cd2012.nc > MAX_SOUNDING
Units: metres

[Fit layer to window](#)

linear
auto
lock

test image [Open in Google Earth](#) Overlay opacity: 100%

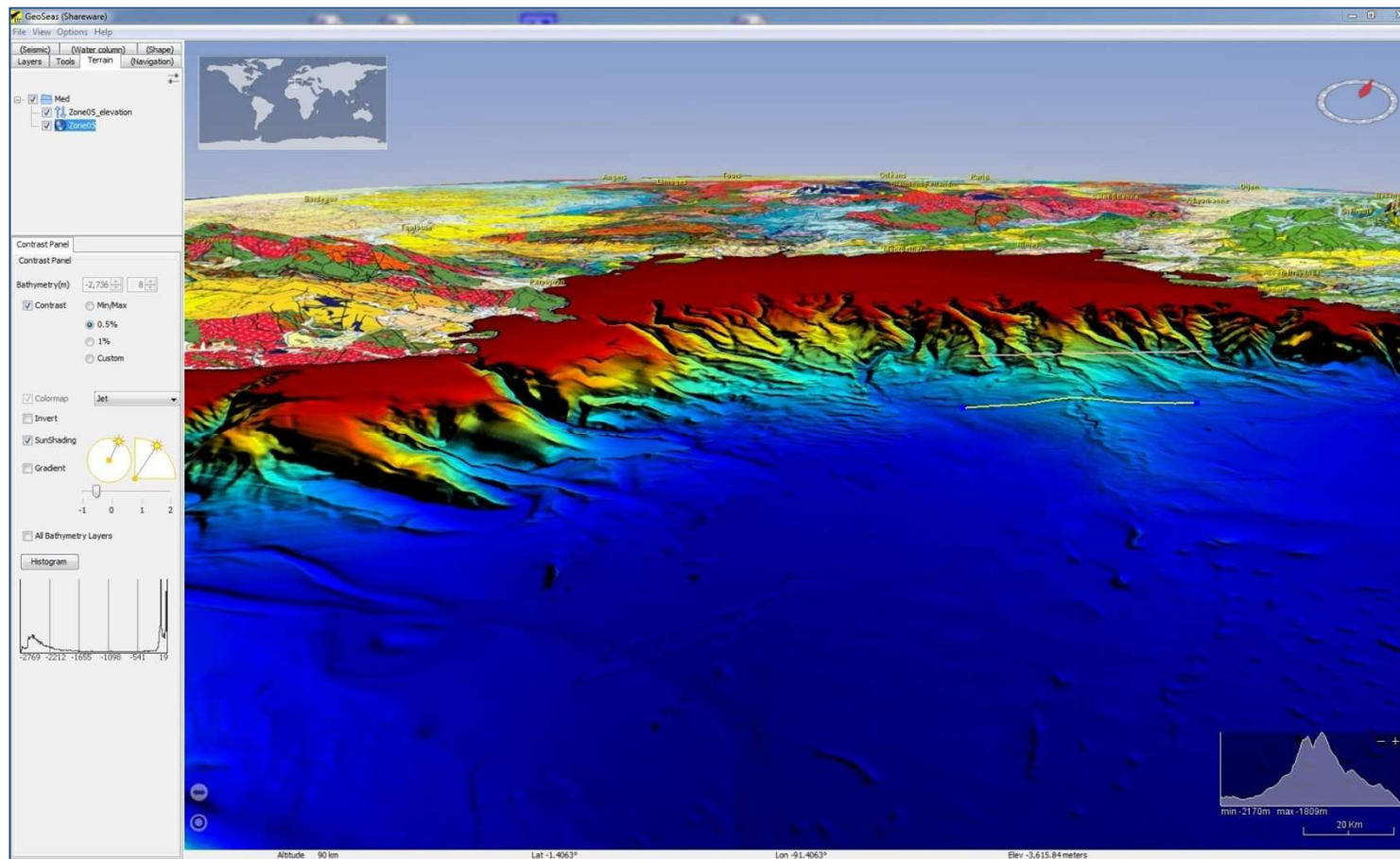
Powered by [OceanView](#) and [OGC](#) standards [Feedback](#) | [email](#)

[User guide](#)



Geo-Seas

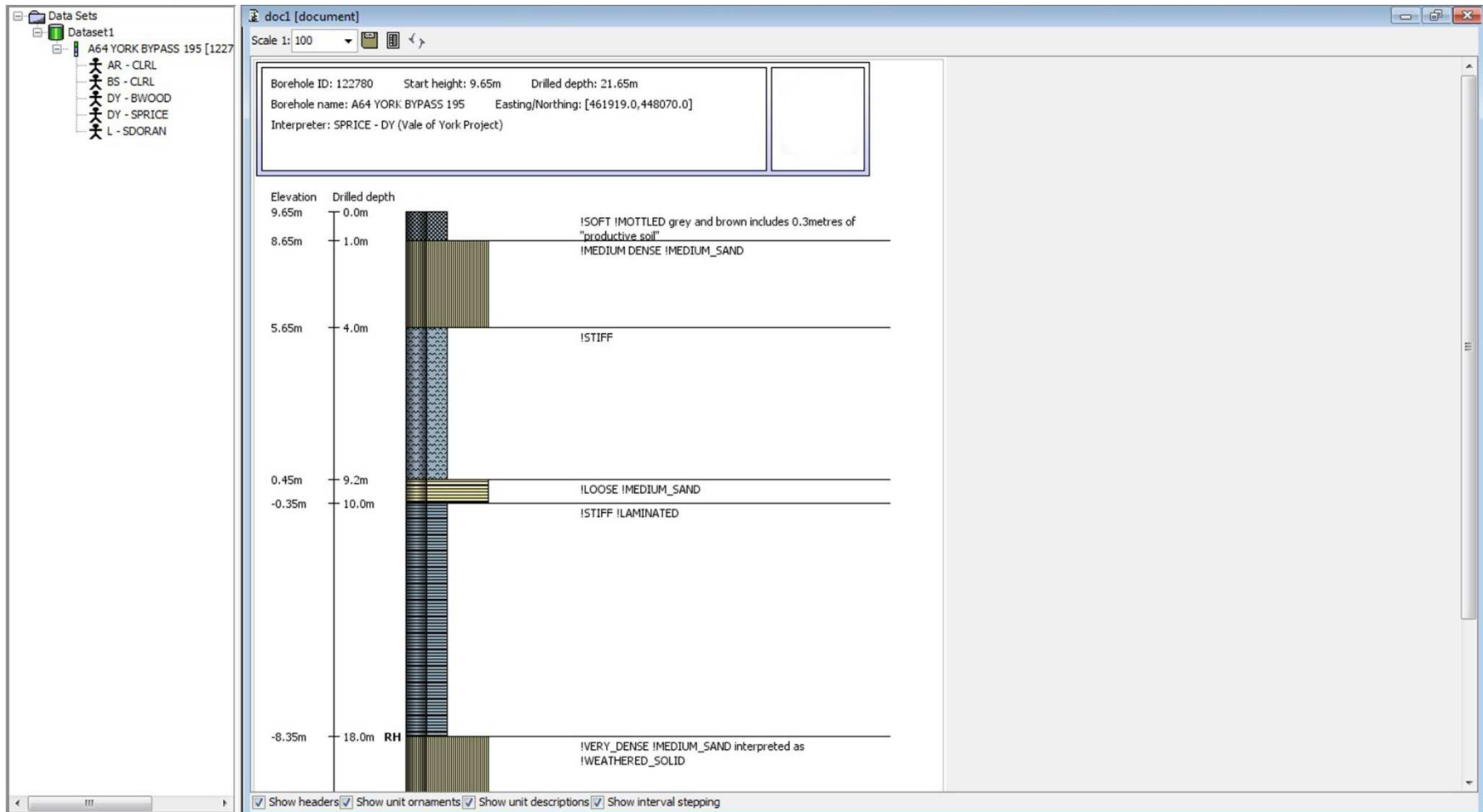
3D Digital Terrain Model (DTM) viewer



IMDIS 2013: Lucca, Italy



Porcupine[®] borehole log viewing tool





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



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?



Geo-Seas

*a pan-European network for marine
geoscientific data linking 26 marine
geoscience data centres from
17 coastal countries*

Thank you

<http://www.geo-seas.eu>

